



CORE65LPSVT_1.20V 5.1

Standard Cell Library

User Manual & Databook

April 2008



CMOS065_LP Technology

- 65.0 nm CMOS065_LP VLSI design platform.
- 866 SSI Combinational & Sequential cells.
- Multiple process options.

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Sept 2004	1.0	Initial release
Sept 2004	1.1	Small change
Dec 2004	2.0	Big change
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HS65_LSS_SDFPRQT	773
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1 Overview

CORE65LPSVT is a Standard Cell library for 65 nanometer CMOS065_LP VLSI digital design platform. This library is optimized for use in low power applications and provides a rich portfolio of 866 combinational and sequential cells. The entire 65nm library platform includes multiple process options that allow individual cells to be optimized for high performance, low power or general purpose use.

2 Library Architecture

This section illustrates the architecture used for CORL65LP Standard Cell library.

Table 1 on page 7 shows the Physical Specifications for this library.

Parameter	Measurement
Drawn Gate Length (μm)	0.06
Layout Grid (μm)	0.005
Vertical Pin Grid (μm)	0.2
Horizontal Pin Grid (μm)	0.2
Cell Power and Ground Rail Width (μm)	0.56

Table 1: Physical Specifications

Table 1 on page 8 shows the Cell architecture for the CORE65LPSVT library.

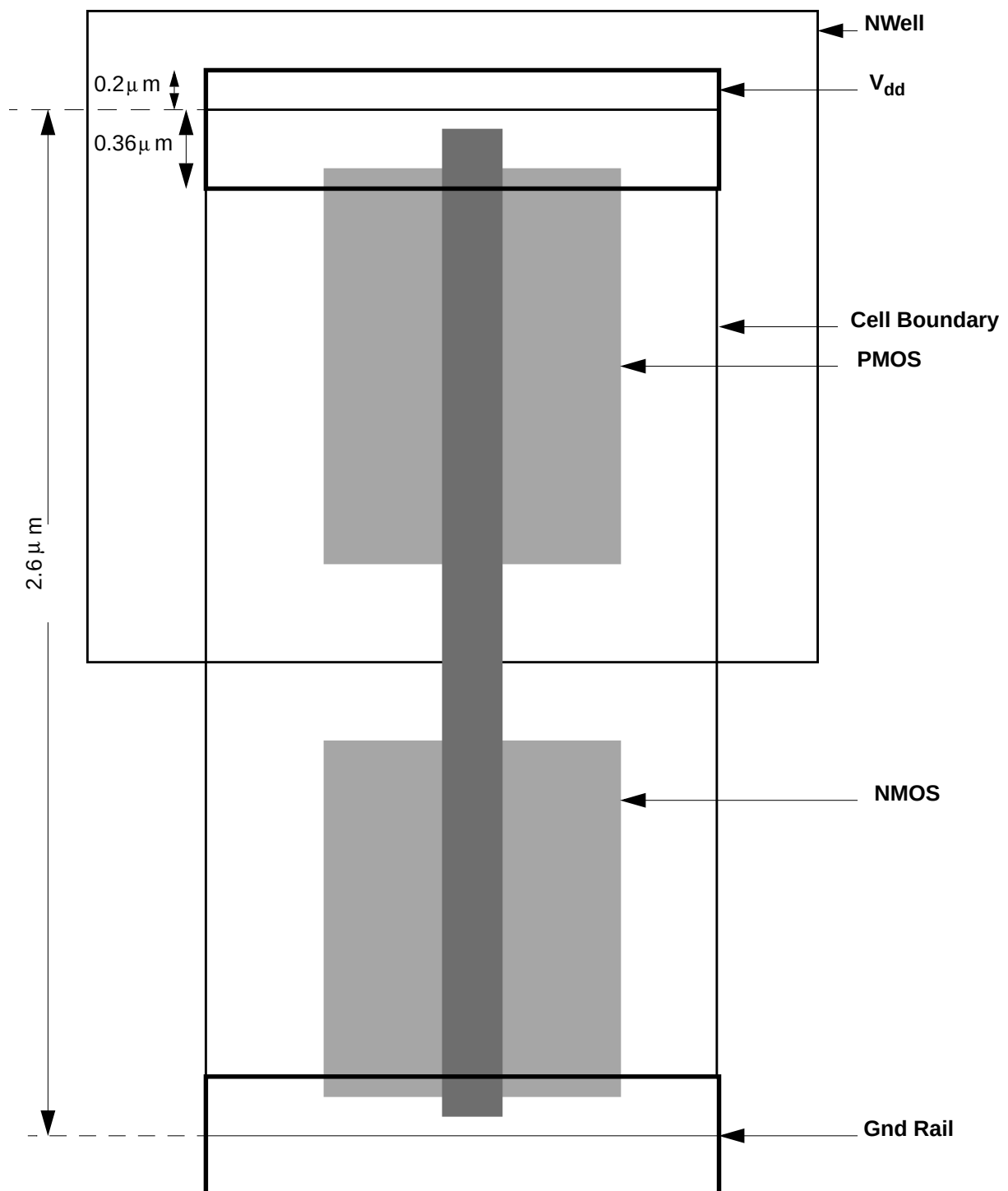


Figure 1: Library Architecture

GLOBAL PARAMETERS

This chapter specifies global parameters for the CORE65LPSVT Standard Cell Library. It covers Physical Specifications, Electrical Specifications, Derating Factors, Propagation Delay, Transition Time, Timing Constraints, Power Dissipation and DRC violations.

1 Physical Specifications

In this library, all pins are located on the vertical and horizontal pin grids. Most place-and-route tools work more efficiently with all pins on grids, and some tools even require it.

All cells have been characterized with a fully populated metal2 and metal3 routing grid across the entire cell layout. Table 2 on page 9 describes the Electrical Specifications for this library.CORE65LPSVT

Parameter	Worst	Nominal	Best
DC Supply Voltage	0.9 V	1.0 V	1.1 V
	-	1.05 V	-
	1.0 V	1.1 V	1.15 V
	1.1 V	1.2 V	1.3 V
	-	1.3 V	-
Junction Temperature	125° C	25° C	-40° C

Table 2: Electrical Specifications

2 Propagation Delay and Transition Time

The Propagation Delay through a cell is the sum of the intrinsic delay, the load dependent delay, and the input-slew dependent delay. Delays are defined as the time interval between the input stimulus crossing the threshold of 40% of V_{dd} for the rising signal and 60% of V_{dd} for the falling signal and the output stimulus crossing the threshold of 40% of V_{dd} for the rising signal and 60% of V_{dd} for the falling signal. Figure 2 on page 10 illustrates the Propagation Delay.

The Transition times (slews) on input and output pins are defined as the time interval between the signal crossing 20% of V_{dd} and 80% of V_{dd} . Figure 3 on page 10 illustrates Transition Time measurements.



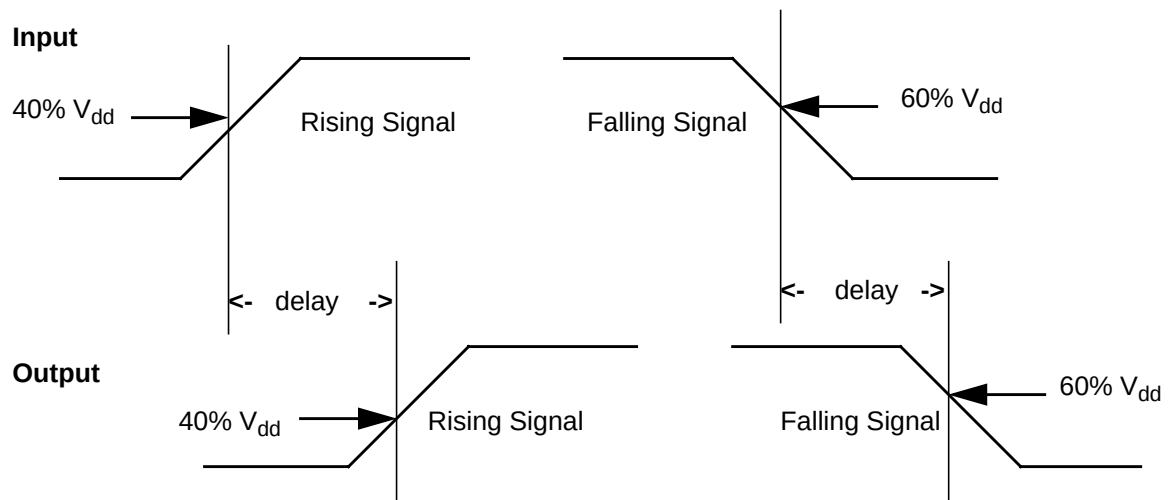


Figure 2: Thresholds for Propagation Delay Measurements

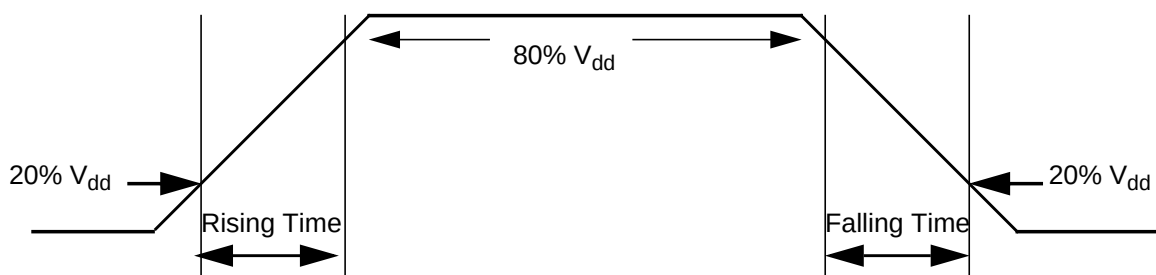


Figure 3: Thresholds for Transition Time Measurements

Factors that affect propagation delay and transition time include: temperature, supply voltage, process variations, load, input transition time and input signal polarity. The timing models provided with this library include the effects of all these factors for three different combinations of supply voltage, process and temperature.

The CORE65LPSVT library does not contain any negative propagation delays.

NOTE: There are negative tristate delays for ITH*, BTH* cells (for details refer to the document on "Known Problems & Solutions".)

3 Derating Factors

Derating Factors are coefficients that the typical process characterization data is multiplied by to arrive at timing data that reflects appropriate operating conditions. The CORE65LPSVT library does **not** have any Derating Factors as the cells have been characterized at each of the three PVT (Process, Voltage, Temperature) corners: Best, Nominal and Worst.

4 Timing Constraints

Timing Constraints define the minimum time intervals during which specific signals must be held steady in order to ensure the correct functioning of any given cell. Timing Constraints include: setup time, hold time, recovery time, removal time and minimum pulse width.

The sequential-cell timing models provided with this library include the effects of input-transition time, data-signal and clock-signal polarity on timing constraints. To simplify calculations, the datasheets specify timing constraint values for 0.020ns data slew and 0.020ns clock slew. Other factors that affect timing constraints include temperature, supply voltage, and process variations.

Timing Constraints can affect propagation delays. The intrinsic delays given in the datasheets are measured with relaxed timing constraints (longer than necessary setup times, hold times, recovery times, removal times and pulse widths). The use of shorter timing constraint intervals may increase the delay.

NOTE: All the Timing Constraints explained below are for flops triggered by rising clock edge. For falling edge triggered flops, the measurements are done with respect to the falling edge of clock crossing 60% of V_{dd} .



4.1 Setup Time

The Setup Time for a sequential cell is the minimum length of time the data-input signal must remain stable before the active edge of the clock (or other specified signal) to ensure correct functioning of the cell. The cell is considered functional as long as the delay for the output reaching its expected value does not exceed the reference delay (measured with a large setup time) by more than 10%.

Setup constraint values are measured as:

- the interval between the data signal crossing 40% of V_{dd} for the rising transition and the clock signal crossing 40% of V_{dd} .
- the interval between the data signal crossing 60% of V_{dd} for the falling transition and the clock signal crossing 40% of V_{dd} .

For the measurement of setup time, the data- input signal is kept stable after the active clock edge for an infinite hold time.

Figure 4 on page 12 illustrates Setup Time for a sequential cell.

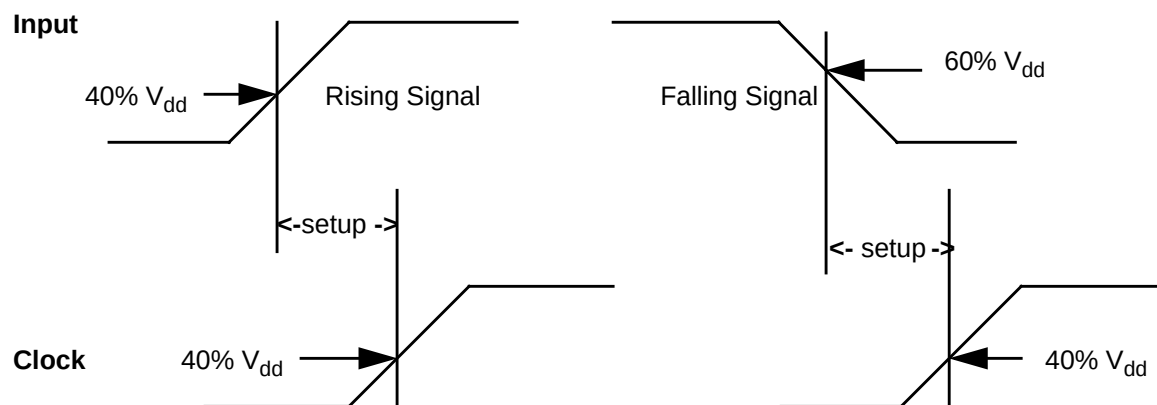


Figure 4: Setup Time

4.2 Hold Time

The Hold Time for a sequential cell is the minimum length of time the input signal must remain stable after the active edge of the clock (or other specified signal) to ensure correct functioning of the cell. The cell is considered functional as long as the delay for the output reaching its expected value does not exceed the reference delay (measured with a large hold time) by more than 10%. Hold-constraint values are measured as:

- the interval between clock signal crossing 40% of V_{dd} and the data signal crossing 40% of V_{dd} for the rising transition.
- the interval between clock signal crossing 40% of V_{dd} and the data signal crossing 60% of V_{dd} for the falling transition.

For the measurement of Hold Time, the data- input signal is held stable before the active clock edge for an infinite Setup Time.

Figure 5 on page 13 illustrates Hold Time for a sequential cell.

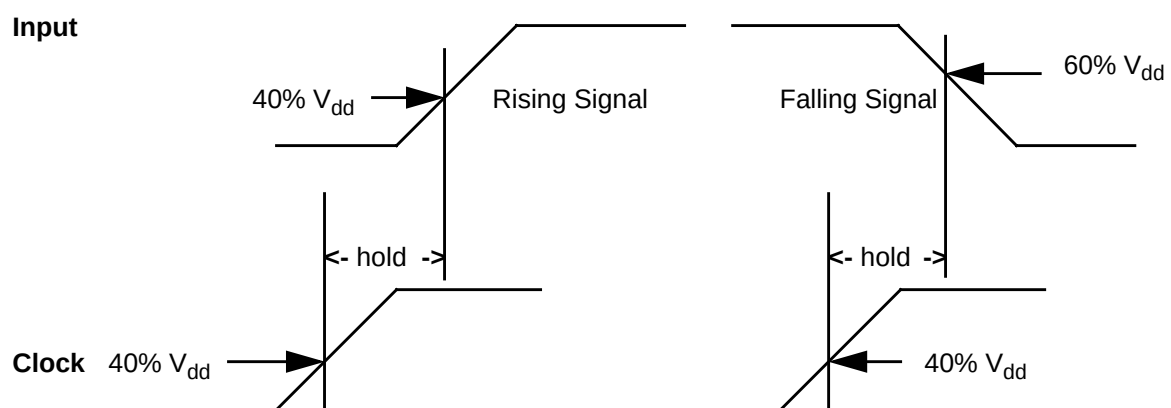


Figure 5: Hold Time

4.3 Recovery Time

Recovery Time for a sequential cell is the minimum length of time that the active low set or reset signal must remain high before the active edge of the clock to ensure correct functioning of the cell. The cell is considered functional as long as the delay for the output reaching its expected value does not exceed the reference delay (measured with a large recovery time) by more than 10%. Recovery constraint values are measured as the interval between the data signal crossing 40% of V_{dd} for the rising transition and the clock signal crossing 40% of V_{dd} .

For the measurement of Recovery Time, the set or reset signal is held stable after the active clock edge for an infinite time.

Figure 6 on page 14 illustrates Recovery Time.

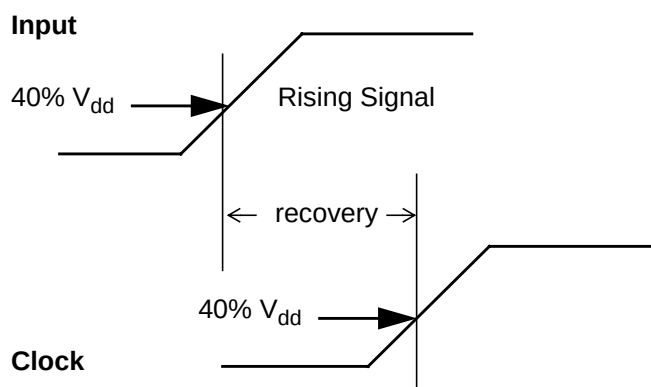


Figure 6: Recovery Time

4.4 Removal Time

Removal Time for a sequential cell is the minimum length of time that the active low set or reset signal must remain low after the active edge of the clock to ensure correct functioning of the cell. The cell is considered functional as long as the delay for the output reaching its expected value does not exceed the reference delay (measured with a large recovery time) by more than 10%. Removal constraint values are measured as the interval between the clock signal crossing 40% of V_{dd} and the data signal crossing 40% of V_{dd} for the rising transition.

For the measurement of Removal Time, the set or reset signal is held stable before the active clock edge for an infinite time.

Figure 7 on page 15 illustrates Removal Time.

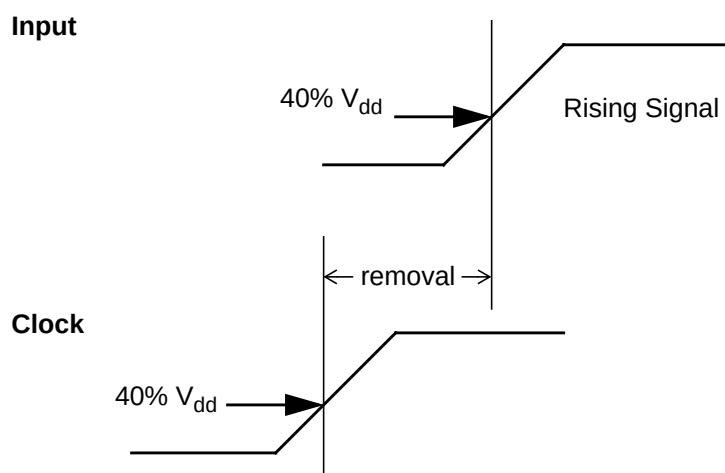


Figure 7: Removal Time

4.5 Minimum Pulse Width

Minimum Pulse Width is the minimum length of time between the leading and trailing edges of a pulse waveform (usually the clock signal) required to ensure the correct functioning of the cell. Minimum Pulse Width High (minpwh) is measured as the interval between the rising edge of the signal crossing 40% of V_{dd} and the falling edge of the signal crossing 60% of V_{dd} . Minimum Pulse Width Low (minpwl) is measured as the interval between the falling edge of the signal crossing 60% of V_{dd} and the rising edge of the signal crossing 40% of V_{dd} .

Figure 8 on page 16 illustrates Minimum Pulse Width.



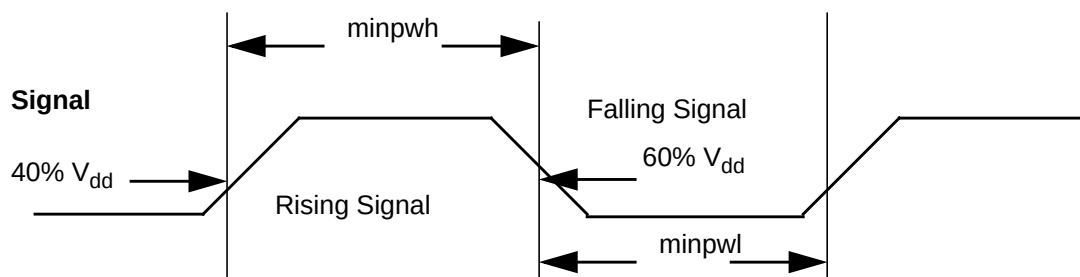


Figure 8: Minimum Pulse Width

5 Power Dissipation

The Power Dissipation internal to a cell, when a given input switches, is primarily dependent upon the cell design itself. The Power Dissipation of a complete design, or part of a design, using cells from the library is primarily a function of the switching frequency of the design's internal nets. These nets include the inputs and outputs of each cell and the capacitive load associated with the outputs of each cell.

The CORE65LPSVT datasheets contain both an AC power table which documents the internal energy consumption of each cell and a Pin Capacitance table which gives input-pin capacitance data used to compute output loading. This information, coupled with design-specific information, can be used to estimate the total Power Dissipation of a cell within a design.

The AC power tables specify the amount of energy consumed within a cell (W/MHz) for a specific process, voltage and temperature when the corresponding pin changes state. The energy data in the tables were measured for the highest input slope and no loading at the outputs.

In addition, the datasheets also contain a table for Leakage Power as it has become an important consideration in the recent technologies.

6 DRC Violations

None of the cells in the CORE65LPSVT Standard Cell library have any DRC error.

FRONT-END DATA SPECIFICATIONS

This chapter provides standard front-end library information to ensure the compatibility of CMOS065_LP_L libraries in UNICAD 2.4 environment.

1 Library Contents by Purposes

The following tables provide the sets of Unicad Purposes provided for CMOS065_LP_L Standard Cell libraries:

Unicad Purpose	Notes
STFs Timing	Refer to the section "Timing Models and Databases"
STFs Power	Refer to the section "Timing Models and Databases"

Table 3: PVT for Timing and Power

Unicad Purpose	Notes
VHDL_FUNCT	VHDL Function models source code
BEHAVIOUR	Source models for Verilog
SYNOPSYS_FORMALITY	Formality models
SYNOPSYS_TETRAMAX	Models for Tetramax
NOVAS	Symbol models for Debussy
HDL_EMUL	Emulator models for CELARO

Table 4: Views Provided in Library

2 Timing Models and Databases

The library timing models are generated without any deratings from their respective characterized databases. The STF databases are generated for the following Characterization conditions .



PVT Name	Process	Voltage	Temperature	Slope
PffV1050T125	Best	1.05V	125C	0.005 0.026 0.053 0.11 0.21 0.42
PffV1050Tm40			-40C	
PffV1050Tm40Y10			105C	
PffV1050T105**				
PffV1100T125	Best	1.10V	125C	0.005 0.026 0.053 0.11 0.21 0.42
PffV1100Tm40			-40C	
PffV1100Tm40Y10			105C	
PffV1100T105**				
PttV1000T025	Typ	1.00V	25C	0.005 0.16 0.32 0.63
PssV0900T125	Worst	0.90V	125C	0.005 0.059 0.12 0.24 0.47 0.94
PssV0900T125Y10				
PssV0900T105**			105C	
PssV0900Tm40	Worst	0.90V	-40C	
PssV0900Tm40Y10				
PssV0950T125	Worst	0.95V	125C	0.005 0.055 0.11 0.22 0.41 0.82
PssV0950T125Y10				
PssV0950T105**			105C	
PssV0950Tm40	Worst	0.95V	-40C	
PssV0950Tm40Y10				
PffV1150T125	Best	1.15V	125C	0.005 0.023 0.045 0.09 0.18 0.36
PffV1150Tm40			-40C	
PffV1150Tm40Y10				
PffV1150T105**			105C	
PttV1100T025	Typ	1.10V	25C	0.005 0.13 0.25 0.50

Table 5:

PVT Name	Process	Voltage	Temperature	Slope
PssV1000T125	Worst	1.00V	125C	0.005 0.048 0.095 0.19 0.38 0.76
PssV1000T125Y10				
PssV1000Tm40			-40C	
PssV1000Tm40Y10				
PssV1000T105**			105C	
PssV1050T125	Worst	1.05V	125C	0.005 0.043 0.085 0.17 0.35 0.70
PssV1050T125Y10				
PssV1050Tm40			-40C	
PssV1050Tm40Y10				
PssV1050T105**			105C	
PffV1250T125	Best	1.25V	125C	0.005 0.02 0.041 0.083 0.17 0.33
PffV1250Tm40			-40C	
PffV1250Tm40Y10				
PffV1250T105**			105C	
PffV1300T125	Best	1.30V	125C	0.005 0.02 0.041 0.083 0.17 0.33
PffV1300Tm40			-40C	
PffV1300Tm40Y10				
PffV1300T105**			105C	
PttV1200T025	Typ	1.20V	25C	0.005 0.12 0.24 0.47
PssV1100T125	Worst	1.10V	125C	0.005 0.043 0.085 0.17 0.34 0.68
PssV1100T125Y10				
PssV1100T105**			105C	
PssV1150T125	Worst	1.15V	125C	0.005 0.04 0.08 0.16 0.31 0.62
PssV1150T125Y10				
PssV1150T105**			105C	
PttV1050T125	Typ	1.05V	125C	0.005 0.05 0.09 0.17 0.33 0.66
PttV1050T125Y10				
PttV1050T000	Typ	1.05V	0C	0.005 0.04 0.08 0.15 0.29 0.58

Table 5:



PVT Name	Process	Voltage	Temperature	Slope
PttV1050T000Y10	Typ	1.05V	0C	
PttV1300T125	Typ	1.3V	125C	0.005 0.03 0.06 0.12 0.24 0.48
PssV1100Tm40	Worst	1.10V	m40	0.005 0.043 0.085 0.17 0.34 0.68
PssV1100Tm40Y10				

Table 5:

** Leakpower characterization only.

3 Operating Conditions Definition

The set of operating conditions defined for the library depict the process, voltage and temperature center for that condition. Depending on the design specifications, the appropriate operating condition name should be chosen.

Table 6, "Operating Conditions," on page 20 lists the available operating condition names, grouped by the power supply operating range.

Operating Condition	Name	Temperature	Process	Voltage
Best Industrial 1.3 V	PffV1300Tm40	-40C	MAX (0.8)	1.30 V
Worst Military 1.10 V	PssV1100T125	125C	MIN(1.2)	1.10 V

Table 6: Operating Conditions

NOTE: The k-factors are not provided in STF files.

READING STANDARD CELL DATASHEET

This chapter describes the components of the Datasheet for the cell.

1 Cell Category

The cell category field specifies the type of cell. The datasheets are presented alphabetically by the cell category.

2 Base Cell Name

The cell name field contains the cell name. The cell name presented here is the base cell name. The Cell Size table displays specific cell names for the different drives.

3 Cell Description

Function of the cell. When applicable, the cell specific attributes and characteristics as well as the equation(s) for the output pins are provided.

4 Functions

The function table gives all possible combinations of input and output signals for the cell.

Table 7, "Functions Key," on page 21 defines the symbols used in datasheet function tables.

Symbol	Description
0	Logic Low
1	Logic High
↓	High to Low Transition
↑	Low to High Transition
x	Don' t Care
IL	Illegal/Undefined
Z	High Impedance

Table 7: Functions Key



Symbol	Description
/	Low to High Transition
\	High to Low Transition
-	No Change

Table 7: Functions Key

5 Logic Symbol

The logic symbol is a graphical representation of the cell, similar to the view in the schematic editor when the cell is instantiated. The symbol shows the name and location of the input and output pins.

6 Cell Size

The cell size table gives the height and width (μm) for each drive strength of the cell.

7 Functional Schematic

The functional schematic provides a functional representation of the cell.

8 Drive Strength

The drive strength of each cell is indicated by an X followed by the unit strength.

9 Leakage Power

The leakage power depicts the average power consumed by the cell in the stand-by mode (i.e. when the input is constant).

10 Internal Energy at Minimum Output Load

The internal energy table shows the amount of energy consumed ($\mu\text{W}/\text{MHz}$) within the cell when the corresponding pin changes state. The energy data for each drive strength of the cell in the datasheet is calculated as a function of Transition time (ns) at a particular process, voltage and temperature, input slew of **0.020ns** and no external load at the output pins.

11 Pin Capacitance

The pin capacitance table shows the typical loading (pF) at the input pins of the cell for each drive strength of the cell.

12 Propagation Delay

The propagation delay table shows the intrinsic delay (ns) which is the delay through the cell when there is no load on the output, and the load multiplier for load dependent delay, K_{load} (ns/pF). The delays and load multiplier for each drive strength of the cell are calculated as a function of C(load in pF) and input slew of 0.020ns.

13 Transition Delay

The transition delay table shows the intrinsic delay (ns) which is the slope of the cell output when there is no load, and the load multiplier for load dependent delay, K_{load} (ns/pF). The delays and load multiplier for each drive strength of the cell calculated as a function of C(load in pF) and Transition time at a particular process, voltage and temperature, and input slew of 0.020ns.

14 Timing Constraints

The timing constraints table in the datasheet shows the timing conditions (ns) required to maintain proper functionality at a particular process, voltage and temperature. Setup constraint values are measured for 0.020ns data slew and 0.020ns clock slew. Hold constraint values are measured for 0.020ns data slew and 0.020ns clock slew. The Timing Constraints for each drive strength of the cell is measured as a function of input transition time(ns).



DATA SHEETS

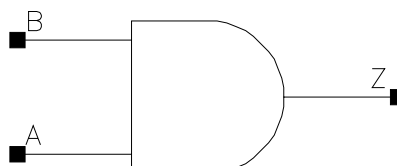


HS65_LS_AND2

Cell Description

2 Input AND

Logical Symbol



Functions

A	B	Z
0	-	0
-	0	0
1	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.00	2.6000
X9	2.6	1.20	3.1200
X18	2.6	1.40	3.6400
X27	2.6	2.20	5.7200
X35	2.6	2.40	6.2400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.251e-07	4.663e-10
X9	2.207e-07	7.994e-10
X18	4.318e-07	1.599e-09
X27	6.691e-07	2.498e-09
X35	8.865e-07	3.297e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	3.117e-05	3.002e-08
X9	5.869e-05	3.998e-08
X18	1.200e-04	5.665e-08
X27	1.849e-04	8.093e-08
X35	2.490e-04	9.749e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	2.755e-05	2.668e-08
X9	5.140e-05	3.424e-08
X18	1.048e-04	4.604e-08
X27	1.616e-04	6.512e-08
X35	2.175e-04	7.692e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A (stable)	5.170e-05	9.591e-05	1.842e-04	3.285e-04	4.263e-04
B (stable)	1.903e-04	3.556e-04	6.605e-04	1.332e-03	1.671e-03
A to Z	5.500e-03	8.875e-03	1.549e-02	2.350e-02	3.065e-02
B to Z	5.203e-03	8.359e-03	1.445e-02	2.156e-02	2.816e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A (stable)	-8.696e-07	-8.700e-07	-2.609e-06	-4.348e-06	-6.087e-06
B (stable)	-8.696e-07	-1.739e-06	-4.348e-06	-6.087e-06	-7.826e-06
A to Z	-1.890e-06	-2.010e-06	-4.748e-06	-8.362e-06	-9.097e-06
B to Z	-1.757e-06	-1.879e-06	-5.626e-06	-7.490e-06	-1.071e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0010	0.0015	0.0023	0.0037	0.0046
B	0.0012	0.0015	0.0022	0.0035	0.0043

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0413	0.0360	0.0338	0.0332	0.0331	2.3369	1.1767	0.5785	0.3870	0.2878
A to Z↑	0.0454	0.0409	0.0368	0.0364	0.0359	3.2251	1.6479	0.8227	0.5452	0.4093
B to Z↓	0.0391	0.0341	0.0317	0.0307	0.0308	2.3337	1.1753	0.5776	0.3858	0.2872
B to Z↑	0.0441	0.0392	0.0349	0.0339	0.0335	3.2272	1.6489	0.8234	0.5456	0.4095

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0627	0.0546	0.0510	0.0499	0.0497	3.7541	1.8413	0.8922	0.5945	0.4398
A to Z↑	0.0745	0.0676	0.0595	0.0588	0.0576	4.7127	2.4007	1.1881	0.7865	0.5890
B to Z↓	0.0595	0.0518	0.0480	0.0460	0.0460	3.7463	1.8378	0.8905	0.5924	0.4385
B to Z↑	0.0719	0.0647	0.0566	0.0548	0.0538	4.7144	2.4017	1.1886	0.7868	0.5892

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0583	0.0509	0.0475	0.0466	0.0464	3.4686	1.7062	0.8288	0.5523	0.4089
A to Z↑	0.0684	0.0619	0.0547	0.0541	0.0531	4.3846	2.2306	1.1045	0.7312	0.5475
B to Z↓	0.0554	0.0482	0.0447	0.0429	0.0429	3.4602	1.7024	0.8271	0.5505	0.4075
B to Z↑	0.0662	0.0594	0.0521	0.0505	0.0496	4.3908	2.2318	1.1045	0.7314	0.5475



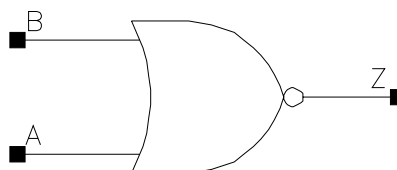


HS65_LS_AND2AB

Cell Description

2 Input AND, A and B Inputs Inverted

Logical Symbol



Functions

A	B	Z
-	1	0
1	-	0
0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X9	2.6	1.40	3.6400
X18	2.6	1.60	4.1600
X27	2.6	2.20	5.7200
X35	2.6	2.40	6.2400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X9	2.736e-07	7.660e-10
X18	4.642e-07	1.632e-09
X27	6.761e-07	2.365e-09
X35	9.067e-07	3.131e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds



Average Leakage Power (mW) at 125C, 1.30V Best process

X9	6.865e-05	4.287e-08
X18	1.250e-04	5.824e-08
X27	1.867e-04	8.032e-08
X35	2.570e-04	9.652e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X9	6.043e-05	3.691e-08
X18	1.093e-04	4.795e-08
X27	1.630e-04	6.516e-08
X35	2.241e-04	7.661e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X9	X18	X27	X35
A to Z	1.206e-02	1.760e-02	2.483e-02	3.198e-02
B to Z	1.148e-02	1.693e-02	2.370e-02	3.045e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X9	X18	X27	X35
A to Z	-4.740e-06	-6.610e-06	-9.470e-06	-1.335e-05
B to Z	8.620e-07	-1.012e-06	-2.700e-07	1.470e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X9	X18	X27	X35
A	0.0010	0.0015	0.0017	0.0021
B	0.0011	0.0014	0.0018	0.0022

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X9	X18	X27	X35	X9	X18	X27	X35
A to Z↓	0.0678	0.0588	0.0553	0.0534	1.2501	0.5986	0.3975	0.2932

Propagation Delay at 25C, 1.20V Typ process

A to Z ↑	0.0866	0.0758	0.0688	0.0664	1.6256	0.8242	0.5487	0.4096
B to Z ↓	0.0648	0.0567	0.0530	0.0504	1.2493	0.5977	0.3972	0.2933
B to Z ↑	0.0833	0.0728	0.0654	0.0628	1.6252	0.8239	0.5486	0.4095

Propagation Delay at 125C, 1.10V Worst process

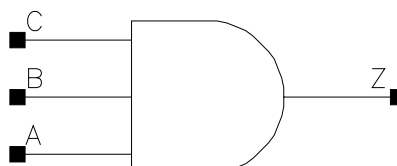
Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X9	X18	X27	X35	X9	X18	X27	X35
A to Z ↓	0.1084	0.0936	0.0883	0.0847	2.0162	0.9338	0.6178	0.4503
A to Z ↑	0.1386	0.1210	0.1101	0.1063	2.3801	1.1937	0.7932	0.5917
B to Z ↓	0.1033	0.0900	0.0844	0.0797	2.0154	0.9329	0.6174	0.4503
B to Z ↑	0.1325	0.1156	0.1042	0.1000	2.3794	1.1933	0.7930	0.5921

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X9	X18	X27	X35	X9	X18	X27	X35
A to Z ↓	0.1003	0.0867	0.0818	0.0786	1.8603	0.8661	0.5729	0.4185
A to Z ↑	0.1273	0.1112	0.1013	0.0978	2.2087	1.1091	0.7370	0.5501
B to Z ↓	0.0955	0.0833	0.0781	0.0739	1.8581	0.8647	0.5728	0.4186
B to Z ↑	0.1218	0.1063	0.0958	0.0920	2.2101	1.1089	0.7374	0.5502



HS65_LS_AND3

Cell Description
 3 Input AND
Logical Symbol**Functions**

A	B	C	Z
-	0	-	0
0	-	-	0
-	-	0	0
1	1	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.40	3.6400
X9	2.6	1.40	3.6400
X18	2.6	1.80	4.6800
X27	2.6	2.60	6.7600
X35	2.6	3.00	7.8000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.109e-07	4.663e-10
X9	1.820e-07	8.826e-10
X18	3.610e-07	1.749e-09
X27	5.573e-07	2.598e-09
X35	7.334e-07	3.531e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	2.624e-05	3.435e-08
X9	4.580e-05	4.305e-08
X18	9.506e-05	6.249e-08
X27	1.452e-04	8.755e-08
X35	1.947e-04	1.069e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	2.324e-05	3.069e-08
X9	4.020e-05	3.683e-08
X18	8.322e-05	5.111e-08
X27	1.272e-04	7.081e-08
X35	1.704e-04	8.497e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	6.824e-03	1.029e-02	1.807e-02	2.661e-02	3.382e-02
B to Z	6.527e-03	9.763e-03	1.698e-02	2.495e-02	3.163e-02
C to Z	6.202e-03	9.189e-03	1.573e-02	2.317e-02	2.921e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-1.003e-06	-2.016e-06	-4.013e-06	-6.748e-06	-9.491e-06
B to Z	-1.003e-06	-2.002e-06	-5.752e-06	-7.746e-06	-1.149e-05
C to Z	-1.890e-06	-1.878e-06	-4.753e-06	-8.621e-06	-1.071e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0011	0.0015	0.0023	0.0038	0.0046
B	0.0011	0.0015	0.0022	0.0037	0.0045

Pin Capacitance (pf) at 25C, 1.20V Typ process

C	0.0010	0.0014	0.0022	0.0035	0.0043

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0482	0.0414	0.0384	0.0367	0.0358	2.3448	1.2014	0.5811	0.3901	0.2902
A to Z↑	0.0675	0.0578	0.0512	0.0491	0.0471	3.1897	1.6810	0.8374	0.5547	0.4153
B to Z↓	0.0464	0.0408	0.0366	0.0348	0.0339	2.3408	1.2012	0.5795	0.3891	0.2893
B to Z↑	0.0664	0.0567	0.0497	0.0475	0.0455	3.1909	1.6804	0.8375	0.5550	0.4156
C to Z↓	0.0442	0.0384	0.0340	0.0325	0.0315	2.3358	1.1995	0.5786	0.3881	0.2889
C to Z↑	0.0632	0.0533	0.0460	0.0439	0.0419	3.1940	1.6825	0.8381	0.5548	0.4155

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0731	0.0631	0.0579	0.0554	0.0539	3.7431	1.9009	0.8939	0.6010	0.4432
A to Z↑	0.1161	0.1003	0.0870	0.0832	0.0791	4.6891	2.4730	1.2146	0.8057	0.6006
B to Z↓	0.0706	0.0623	0.0553	0.0525	0.0510	3.7335	1.8993	0.8907	0.5985	0.4412
B to Z↑	0.1134	0.0976	0.0840	0.0801	0.0761	4.6899	2.4723	1.2144	0.8059	0.6007
C to Z↓	0.0675	0.0590	0.0518	0.0490	0.0474	3.7242	1.8937	0.8882	0.5971	0.4401
C to Z↑	0.1069	0.0910	0.0771	0.0733	0.0693	4.6907	2.4729	1.2147	0.8058	0.6009

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0680	0.0587	0.0540	0.0517	0.0503	3.4638	1.7579	0.8306	0.5583	0.4121
A to Z↑	0.1056	0.0911	0.0792	0.0759	0.0722	4.3616	2.2942	1.1281	0.7485	0.5584
B to Z↓	0.0656	0.0580	0.0515	0.0490	0.0476	3.4550	1.7567	0.8276	0.5558	0.4103



Propagation Delay at 125C, 1.15V Worst process

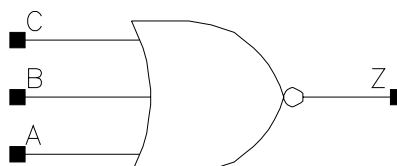
B to Z$\uparrow$	0.1032	0.0887	0.0766	0.0731	0.0695	4.3628	2.2956	1.1288	0.7487	0.5585
C to Z$\downarrow$	0.0626	0.0548	0.0481	0.0456	0.0442	3.4463	1.7514	0.8254	0.5545	0.4095
C to Z$\uparrow$	0.0974	0.0828	0.0703	0.0670	0.0634	4.3628	2.2961	1.1289	0.7487	0.5584

HS65_LS_AND3ABC

Cell Description

3 Input And, A, B and C Inputs Inverted

Logical Symbol



Functions

A	B	C	Z
1	-	-	0
-	1	-	0
-	-	1	0
0	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X9	2.6	1.80	4.6800
X18	2.6	2.00	5.2000
X27	2.6	2.40	6.2400
X35	2.6	2.60	6.7600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X9	2.391e-07	9.992e-10
X18	4.154e-07	1.765e-09
X27	5.852e-07	2.681e-09
X35	7.609e-07	3.514e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X9	5.944e-05	5.028e-08
X18	1.072e-04	6.594e-08
X27	1.547e-04	8.788e-08
X35	2.041e-04	1.056e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X9	5.235e-05	4.313e-08
X18	9.392e-05	5.431e-08
X27	1.351e-04	7.095e-08
X35	1.781e-04	8.368e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X9	X18	X27	X35
A to Z	1.177e-02	1.870e-02	2.621e-02	3.347e-02
B to Z	1.108e-02	1.806e-02	2.518e-02	3.210e-02
C to Z	1.026e-02	1.718e-02	2.394e-02	3.042e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X9	X18	X27	X35
A to Z	-8.840e-06	-1.086e-05	-1.486e-05	-1.999e-05
B to Z	-1.499e-05	-1.726e-05	-2.487e-05	-3.388e-05
C to Z	7.300e-07	-2.700e-07	4.700e-07	3.080e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X9	X18	X27	X35
A	0.0011	0.0013	0.0016	0.0019
B	0.0012	0.0013	0.0016	0.0019
C	0.0013	0.0012	0.0016	0.0019

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X9	X18	X27	X35	X9	X18	X27	X35
A to Z↓	0.0676	0.0708	0.0660	0.0641	1.2296	0.5944	0.3947	0.2980
A to Z↑	0.0899	0.1031	0.0909	0.0881	1.6249	0.8275	0.5473	0.4121
B to Z↓	0.0642	0.0684	0.0633	0.0614	1.2303	0.5937	0.3949	0.2977
B to Z↑	0.0875	0.1010	0.0886	0.0857	1.6248	0.8271	0.5473	0.4119
C to Z↓	0.0604	0.0651	0.0598	0.0577	1.2298	0.5939	0.3946	0.2978
C to Z↑	0.0797	0.0931	0.0808	0.0774	1.6248	0.8273	0.5471	0.4119

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X9	X18	X27	X35	X9	X18	X27	X35
A to Z↓	0.1089	0.1134	0.1061	0.1029	1.9751	0.9300	0.6151	0.4629
A to Z↑	0.1481	0.1692	0.1500	0.1458	2.3763	1.1986	0.7933	0.5958
B to Z↓	0.1035	0.1094	0.1014	0.0983	1.9737	0.9298	0.6148	0.4628
B to Z↑	0.1427	0.1642	0.1447	0.1404	2.3765	1.1982	0.7933	0.5961
C to Z↓	0.0967	0.1036	0.0957	0.0923	1.9735	0.9289	0.6143	0.4624
C to Z↑	0.1290	0.1504	0.1313	0.1261	2.3746	1.1988	0.7932	0.5959

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X9	X18	X27	X35	X9	X18	X27	X35
A to Z↓	0.1010	0.1050	0.0983	0.0954	1.8229	0.8625	0.5703	0.4294
A to Z↑	0.1357	0.1548	0.1373	0.1334	2.2059	1.1142	0.7369	0.5541
B to Z↓	0.0959	0.1013	0.0939	0.0910	1.8221	0.8616	0.5699	0.4292
B to Z↑	0.1307	0.1502	0.1324	0.1284	2.2060	1.1138	0.7370	0.5541
C to Z↓	0.0895	0.0958	0.0885	0.0853	1.8206	0.8608	0.5700	0.4291



Propagation Delay at 125C, 1.15V Worst process

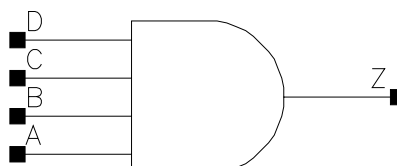
C to Z[↑]	0.1182	0.1375	0.1200	0.1153	2.2055	1.1137	0.7367	0.5540

HS65_LS_AND4

Cell Description

4 Input AND

Logical Symbol



Functions

A	B	C	D	Z
-	0	-	-	0
-	-	0	-	0
-	-	-	0	0
0	-	-	-	0
1	1	1	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X3	2.6	2.00	5.2000
X6	2.6	2.00	5.2000
X13	2.6	2.40	6.2400
X19	2.6	4.20	10.9200
X25	2.6	5.00	13.0000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X3	1.575e-07	5.412e-10
X6	2.472e-07	1.091e-09
X13	4.501e-07	2.132e-09
X19	7.263e-07	3.272e-09
X25	9.001e-07	4.305e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X3	3.759e-05	4.262e-08
X6	6.390e-05	5.338e-08
X13	1.248e-04	7.640e-08
X19	2.002e-04	1.158e-07
X25	2.493e-04	1.432e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X3	3.344e-05	3.805e-08
X6	5.625e-05	4.570e-08
X13	1.093e-04	6.252e-08
X19	1.756e-04	9.478e-08
X25	2.183e-04	1.158e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X3	X6	X13	X19	X25
A to Z	6.838e-03	1.066e-02	2.027e-02	2.885e-02	4.002e-02
B to Z	6.498e-03	1.009e-02	1.912e-02	2.703e-02	3.692e-02
C to Z	6.287e-03	9.549e-03	1.562e-02	2.486e-02	3.193e-02
D to Z	5.900e-03	8.963e-03	1.460e-02	2.307e-02	2.915e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X3	X6	X13	X19	X25
A to Z	-1.587e-05	-2.984e-05	-7.523e-05	-1.102e-04	-1.725e-04
B to Z	-3.842e-06	-6.967e-06	-1.737e-05	-2.864e-05	-3.999e-05
C to Z	-2.078e-06	-3.919e-06	-7.924e-06	-1.367e-05	-1.592e-05
D to Z	-2.054e-06	-4.668e-06	-9.531e-06	-1.541e-05	-1.989e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X3	X6	X13	X19	X25

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0011	0.0016	0.0023	0.0038	0.0042
B	0.0011	0.0015	0.0023	0.0034	0.0043
C	0.0012	0.0015	0.0023	0.0037	0.0042
D	0.0010	0.0014	0.0022	0.0034	0.0043

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X13	X19	X25	X3	X6	X13	X19	X25
A to Z↓	0.0452	0.0389	0.0383	0.0360	0.0373	2.6656	1.4126	0.7019	0.4735	0.3518
A to Z↑	0.0568	0.0504	0.0483	0.0450	0.0488	6.0511	3.2580	1.6086	1.0819	0.8391
B to Z↓	0.0432	0.0369	0.0361	0.0340	0.0343	2.6619	1.4106	0.7007	0.4726	0.3506
B to Z↑	0.0552	0.0486	0.0462	0.0428	0.0456	6.0597	3.2595	1.6098	1.0823	0.8390
C to Z↓	0.0451	0.0386	0.0345	0.0354	0.0351	2.6760	1.4194	0.7178	0.4772	0.3529
C to Z↑	0.0528	0.0461	0.0393	0.0404	0.0409	6.0506	3.2591	1.6100	1.0841	0.8394
D to Z↓	0.0429	0.0363	0.0324	0.0332	0.0321	2.6737	1.4164	0.7169	0.4759	0.3520
D to Z↑	0.0512	0.0445	0.0375	0.0383	0.0380	6.0586	3.2608	1.6104	1.0837	0.8395

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X13	X19	X25	X3	X6	X13	X19	X25
A to Z↓	0.0688	0.0594	0.0582	0.0546	0.0567	4.1920	2.1888	1.0733	0.7210	0.5410
A to Z↑	0.0934	0.0836	0.0787	0.0729	0.0787	9.2353	5.0045	2.4370	1.6352	1.2590
B to Z↓	0.0659	0.0566	0.0552	0.0514	0.0522	4.1834	2.1837	1.0713	0.7188	0.5388
B to Z↑	0.0908	0.0808	0.0758	0.0697	0.0739	9.2437	5.0046	2.4379	1.6356	1.2591
C to Z↓	0.0687	0.0591	0.0521	0.0534	0.0528	4.2102	2.1969	1.0911	0.7273	0.5423
C to Z↑	0.0869	0.0766	0.0638	0.0655	0.0659	9.2302	5.0054	2.4364	1.6377	1.2592
D to Z↓	0.0656	0.0556	0.0491	0.0499	0.0485	4.2035	2.1922	1.0884	0.7249	0.5398
D to Z↑	0.0840	0.0736	0.0609	0.0619	0.0610	9.2431	5.0092	2.4364	1.6374	1.2594

Propagation Delay at 125C, 1.15V Worst process

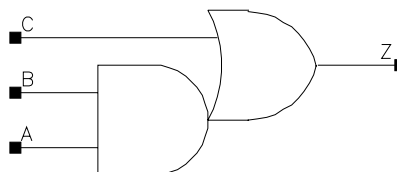
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X13	X19	X25	X3	X6	X13	X19	X25
A to Z↓	0.0641	0.0554	0.0542	0.0510	0.0530	3.8891	2.0322	0.9989	0.6709	0.5029
A to Z↑	0.0855	0.0764	0.0720	0.0668	0.0722	8.5094	4.5981	2.2430	1.5052	1.1603
B to Z↓	0.0614	0.0527	0.0514	0.0480	0.0486	3.8817	2.0270	0.9965	0.6691	0.5009
B to Z↑	0.0833	0.0739	0.0694	0.0640	0.0679	8.5187	4.6003	2.2438	1.5056	1.1603
C to Z↓	0.0639	0.0550	0.0486	0.0498	0.0493	3.9059	2.0399	1.0156	0.6768	0.5041
C to Z↑	0.0798	0.0702	0.0586	0.0602	0.0606	8.5040	4.5989	2.2425	1.5076	1.1602
D to Z↓	0.0610	0.0517	0.0458	0.0466	0.0452	3.8985	2.0350	1.0133	0.6747	0.5020
D to Z↑	0.0772	0.0676	0.0560	0.0570	0.0563	8.5193	4.6025	2.2427	1.5076	1.1602

HS65_LS_AO12

Cell Description

2 Input AND into 2 Input OR

Logical Symbol



Functions

A	B	C	Z
0	-	0	0
-	0	0	0
-	-	1	1
1	1	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.40	3.6400
X9	2.6	1.40	3.6400
X18	2.6	1.60	4.1600
X27	2.6	2.60	6.7600
X35	2.6	3.00	7.8000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.797e-07	4.163e-10
X9	2.730e-07	6.994e-10
X18	5.603e-07	1.366e-09
X27	8.558e-07	2.115e-09
X35	1.163e-06	2.764e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.679e-05	3.394e-08
X9	7.735e-05	3.978e-08
X18	1.680e-04	5.454e-08
X27	2.546e-04	7.810e-08
X35	3.516e-04	9.463e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	4.123e-05	3.044e-08
X9	6.759e-05	3.461e-08
X18	1.464e-04	4.538e-08
X27	2.221e-04	6.431e-08
X35	3.064e-04	7.683e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	6.002e-03	8.933e-03	1.541e-02	2.363e-02	3.201e-02
B to Z	5.642e-03	8.383e-03	1.426e-02	2.184e-02	2.959e-02
C to Z	6.938e-03	1.005e-02	1.728e-02	2.623e-02	3.528e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-1.482e-07	-2.770e-07	5.934e-07	1.209e-06	3.360e-07
B to Z	-1.686e-07	-8.920e-07	7.271e-07	-1.275e-06	2.209e-06
C to Z	-1.377e-05	-2.010e-05	-3.733e-05	-4.940e-05	-6.357e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0011	0.0013	0.0021	0.0033	0.0041
B	0.0011	0.0014	0.0023	0.0037	0.0045

Pin Capacitance (pf) at 25C, 1.20V Typ process

C	0.0011	0.0013	0.0020	0.0035	0.0043

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0585	0.0556	0.0519	0.0510	0.0522	2.4089	1.2577	0.6152	0.4164	0.3100
A to Z↑	0.0439	0.0422	0.0377	0.0375	0.0374	3.0992	1.6578	0.8291	0.5608	0.4181
B to Z↓	0.0538	0.0508	0.0465	0.0461	0.0464	2.3982	1.2514	0.6113	0.4137	0.3078
B to Z↑	0.0423	0.0403	0.0355	0.0358	0.0352	3.1015	1.6579	0.8292	0.5607	0.4181
C to Z↓	0.0617	0.0579	0.0537	0.0525	0.0533	2.3939	1.2503	0.6112	0.4137	0.3079
C to Z↑	0.0399	0.0376	0.0343	0.0344	0.0343	3.0834	1.6484	0.8249	0.5588	0.4164

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0927	0.0883	0.0817	0.0799	0.0816	3.8662	2.0120	0.9567	0.6431	0.4770
A to Z↑	0.0722	0.0700	0.0616	0.0605	0.0599	4.5010	2.4227	1.1964	0.8047	0.5994
B to Z↓	0.0851	0.0805	0.0731	0.0721	0.0728	3.8429	2.0006	0.9495	0.6386	0.4731
B to Z↑	0.0694	0.0668	0.0579	0.0575	0.0564	4.5032	2.4229	1.1961	0.8050	0.5995
C to Z↓	0.0985	0.0927	0.0853	0.0831	0.0844	3.8398	1.9996	0.9497	0.6387	0.4734
C to Z↑	0.0624	0.0591	0.0530	0.0538	0.0531	4.4729	2.4046	1.1885	0.8015	0.5963

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0853	0.0812	0.0753	0.0737	0.0753	3.5755	1.8590	0.8876	0.5971	0.4433
A to Z↑	0.0663	0.0641	0.0565	0.0557	0.0552	4.1872	2.2492	1.1120	0.7489	0.5575
B to Z↓	0.0782	0.0740	0.0672	0.0665	0.0670	3.5559	1.8483	0.8810	0.5929	0.4397



Propagation Delay at 125C, 1.15V Worst process

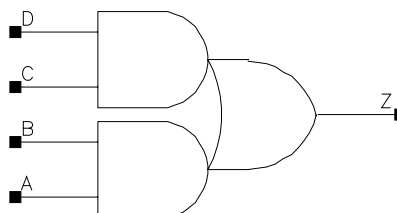
B to Z$\uparrow$	0.0638	0.0613	0.0533	0.0531	0.0521	4.1906	2.2496	1.1121	0.7489	0.5578
C to Z$\downarrow$	0.0907	0.0853	0.0785	0.0767	0.0778	3.5513	1.8476	0.8813	0.5931	0.4399
C to Z$\uparrow$	0.0582	0.0551	0.0495	0.0502	0.0496	4.1628	2.2336	1.1051	0.7457	0.5548

HS65_LS_AO22

Cell Description

Double 2 Input AND into 2 Input OR

Logical Symbol



Functions

A	B	C	D	Z
-	0	-	0	0
0	-	-	0	0
0	-	0	-	0
-	0	0	-	0
-	-	1	1	1
1	1	-	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.60	4.1600
X9	2.6	1.60	4.1600
X18	2.6	2.20	5.7200
X27	2.6	3.40	8.8400
X35	2.6	3.80	9.8800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.672e-07	3.997e-10
X9	2.754e-07	7.577e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X18	5.656e-07	1.549e-09
X27	8.830e-07	2.331e-09
X35	1.157e-06	3.098e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.247e-05	3.576e-08
X9	7.602e-05	4.287e-08
X18	1.653e-04	6.271e-08
X27	2.543e-04	8.979e-08
X35	3.408e-04	1.075e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.755e-05	3.227e-08
X9	6.657e-05	3.716e-08
X18	1.443e-04	5.239e-08
X27	2.223e-04	7.441e-08
X35	2.975e-04	8.759e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	8.109e-03	1.108e-02	1.968e-02	2.977e-02	3.951e-02
B to Z	7.980e-03	1.054e-02	1.838e-02	2.799e-02	3.702e-02
C to Z	6.521e-03	9.281e-03	1.586e-02	2.434e-02	3.235e-02
D to Z	6.223e-03	8.718e-03	1.475e-02	2.261e-02	3.002e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-9.352e-06	-1.085e-05	-2.393e-05	-3.384e-05	-4.426e-05
B to Z	-9.799e-06	-1.106e-05	-2.234e-05	-3.140e-05	-4.185e-05
C to Z	-1.627e-07	-1.463e-07	1.132e-06	4.650e-07	1.495e-06
D to Z	1.328e-07	-1.057e-07	4.762e-07	-8.572e-07	7.673e-07

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0009	0.0014	0.0021	0.0036	0.0044
B	0.0014	0.0016	0.0022	0.0033	0.0041
C	0.0010	0.0014	0.0022	0.0036	0.0044
D	0.0010	0.0014	0.0022	0.0034	0.0042

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0849	0.0640	0.0615	0.0596	0.0603	2.5170	1.2503	0.6072	0.4151	0.3095
A to Z↑	0.0638	0.0500	0.0457	0.0449	0.0446	3.3520	1.6680	0.8384	0.5677	0.4232
B to Z↓	0.0811	0.0603	0.0562	0.0558	0.0562	2.4972	1.2471	0.6034	0.4140	0.3087
B to Z↑	0.0645	0.0486	0.0432	0.0429	0.0424	3.3514	1.6688	0.8383	0.5678	0.4232
C to Z↓	0.0709	0.0556	0.0518	0.0508	0.0513	2.5034	1.2480	0.6050	0.4140	0.3086
C to Z↑	0.0543	0.0433	0.0369	0.0373	0.0370	3.3255	1.6613	0.8321	0.5638	0.4202
D to Z↓	0.0663	0.0514	0.0472	0.0470	0.0475	2.4925	1.2430	0.6020	0.4127	0.3077
D to Z↑	0.0530	0.0414	0.0350	0.0354	0.0350	3.3276	1.6621	0.8325	0.5640	0.4204

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1366	0.1024	0.0984	0.0948	0.0957	4.0526	1.9925	0.9404	0.6387	0.4751
A to Z↑	0.1072	0.0840	0.0757	0.0739	0.0728	4.9408	2.4460	1.2217	0.8228	0.6121
B to Z↓	0.1302	0.0967	0.0896	0.0883	0.0888	4.0193	1.9865	0.9331	0.6359	0.4730
B to Z↑	0.1078	0.0813	0.0715	0.0706	0.0691	4.9384	2.4464	1.2217	0.8229	0.6120
C to Z↓	0.1124	0.0879	0.0815	0.0796	0.0802	4.0287	1.9879	0.9362	0.6366	0.4734
C to Z↑	0.0892	0.0717	0.0592	0.0600	0.0589	4.8818	2.4305	1.2093	0.8149	0.6061
D to Z↓	0.1049	0.0812	0.0740	0.0732	0.0737	4.0092	1.9787	0.9305	0.6337	0.4714
D to Z↑	0.0866	0.0683	0.0562	0.0569	0.0557	4.8791	2.4305	1.2095	0.8151	0.6063



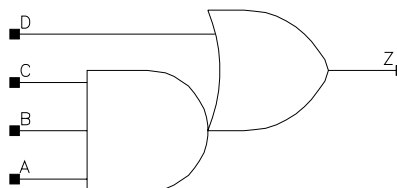
Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1257	0.0944	0.0907	0.0875	0.0883	3.7498	1.8421	0.8733	0.5936	0.4417
A to Z↑	0.0983	0.0770	0.0696	0.0680	0.0671	4.5979	2.2702	1.1351	0.7647	0.5690
B to Z↓	0.1197	0.0889	0.0825	0.0814	0.0819	3.7177	1.8362	0.8666	0.5910	0.4399
B to Z↑	0.0990	0.0747	0.0658	0.0651	0.0638	4.5968	2.2706	1.1350	0.7648	0.5690
C to Z↓	0.1034	0.0810	0.0752	0.0735	0.0741	3.7272	1.8380	0.8695	0.5915	0.4401
C to Z↑	0.0817	0.0656	0.0545	0.0553	0.0543	4.5435	2.2568	1.1234	0.7578	0.5636
D to Z↓	0.0964	0.0747	0.0682	0.0675	0.0681	3.7082	1.8291	0.8642	0.5890	0.4383
D to Z↑	0.0795	0.0626	0.0518	0.0525	0.0514	4.5426	2.2570	1.1237	0.7576	0.5637

HS65_LS_AO31

Cell Description
2 wide 3-1 AND-OR

Logical Symbol



Functions

A	B	C	D	Z
-	0	-	0	0
-	-	0	0	0
0	-	-	0	0
1	1	1	-	1
-	-	-	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.60	4.1600
X9	2.6	1.60	4.1600
X18	2.6	2.00	5.2000
X27	2.6	3.40	8.8400
X35	2.6	3.60	9.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.732e-07	3.414e-10
X9	2.674e-07	6.078e-10
X18	5.500e-07	1.149e-09
X27	8.515e-07	1.774e-09
X35	1.104e-06	2.340e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.473e-05	3.382e-08
X9	7.443e-05	3.911e-08
X18	1.624e-04	5.380e-08
X27	2.503e-04	7.810e-08
X35	3.251e-04	9.015e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.944e-05	3.081e-08
X9	6.508e-05	3.452e-08
X18	1.416e-04	4.576e-08
X27	2.184e-04	6.610e-08
X35	2.834e-04	7.479e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	7.814e-03	1.120e-02	1.949e-02	2.944e-02	3.904e-02
B to Z	7.371e-03	1.070e-02	1.848e-02	2.786e-02	3.694e-02
C to Z	6.967e-03	1.007e-02	1.725e-02	2.578e-02	3.373e-02
D to Z	5.827e-03	8.542e-03	1.457e-02	2.144e-02	2.840e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-6.113e-06	-9.983e-06	-1.998e-05	-2.823e-05	-3.911e-05
B to Z	-7.736e-06	-1.173e-05	-2.158e-05	-3.233e-05	-4.220e-05
C to Z	-6.719e-06	-9.985e-06	-1.945e-05	-2.946e-05	-3.732e-05
D to Z	-2.207e-07	-1.729e-08	6.333e-07	-3.586e-08	9.401e-07

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0011	0.0014	0.0022	0.0037	0.0040
B	0.0011	0.0015	0.0022	0.0039	0.0044
C	0.0011	0.0014	0.0022	0.0037	0.0046
D	0.0011	0.0013	0.0021	0.0033	0.0040

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0715	0.0670	0.0622	0.0616	0.0623	2.4196	1.2586	0.6135	0.4148	0.3138
A to Z↑	0.0664	0.0625	0.0542	0.0552	0.0552	3.1701	1.6918	0.8424	0.5709	0.4271
B to Z↓	0.0679	0.0635	0.0588	0.0575	0.0584	2.4113	1.2529	0.6110	0.4128	0.3116
B to Z↑	0.0655	0.0619	0.0533	0.0535	0.0543	3.1761	1.6921	0.8429	0.5711	0.4270
C to Z↓	0.0631	0.0586	0.0534	0.0519	0.0515	2.3981	1.2479	0.6073	0.4103	0.3091
C to Z↑	0.0622	0.0582	0.0498	0.0493	0.0494	3.1741	1.6927	0.8428	0.5712	0.4271
D to Z↓	0.0518	0.0485	0.0445	0.0428	0.0433	2.3791	1.2387	0.6031	0.4076	0.3075
D to Z↑	0.0354	0.0332	0.0300	0.0291	0.0286	3.0843	1.6488	0.8238	0.5576	0.4162

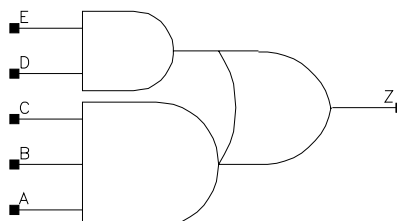
Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1138	0.1068	0.0987	0.0970	0.0975	3.8882	2.0132	0.9516	0.6388	0.4884
A to Z↑	0.1159	0.1099	0.0932	0.0948	0.0945	4.6623	2.4957	1.2241	0.8262	0.6171
B to Z↓	0.1080	0.1011	0.0933	0.0907	0.0919	3.8707	2.0016	0.9465	0.6342	0.4845
B to Z↑	0.1134	0.1077	0.0909	0.0918	0.0923	4.6667	2.4956	1.2242	0.8266	0.6173
C to Z↓	0.1002	0.0934	0.0848	0.0818	0.0810	3.8475	1.9923	0.9396	0.6301	0.4798
C to Z↑	0.1068	0.1006	0.0842	0.0839	0.0832	4.6684	2.4970	1.2243	0.8266	0.6171
D to Z↓	0.0811	0.0761	0.0694	0.0663	0.0667	3.8158	1.9765	0.9321	0.6254	0.4772
D to Z↑	0.0545	0.0516	0.0461	0.0444	0.0433	4.4783	2.4063	1.1852	0.7983	0.5950

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1050	0.0985	0.0911	0.0897	0.0902	3.5971	1.8605	0.8834	0.5934	0.4532
A to Z ↑	0.1057	0.1000	0.0851	0.0866	0.0864	4.3362	2.3170	1.1378	0.7684	0.5738
B to Z ↓	0.0995	0.0932	0.0860	0.0837	0.0848	3.5800	1.8500	0.8787	0.5893	0.4496
B to Z ↑	0.1034	0.0981	0.0830	0.0838	0.0844	4.3418	2.3172	1.1377	0.7684	0.5739
C to Z ↓	0.0923	0.0860	0.0781	0.0755	0.0747	3.5598	1.8404	0.8722	0.5853	0.4453
C to Z ↑	0.0975	0.0917	0.0771	0.0767	0.0762	4.3433	2.3171	1.1383	0.7685	0.5739
D to Z ↓	0.0749	0.0702	0.0641	0.0613	0.0618	3.5283	1.8261	0.8655	0.5812	0.4428
D to Z ↑	0.0508	0.0480	0.0430	0.0415	0.0404	4.1653	2.2340	1.1019	0.7426	0.5537

HS65_LS_AO32

Cell Description
 2 wide 3-2 AND-OR
Logical Symbol**Functions**

A	B	C	D	E	Z
-	-	0	0	-	0
-	-	0	-	0	0
0	-	-	-	0	0
0	-	-	0	-	0
-	0	-	-	0	0
-	0	-	0	-	0
-	-	-	1	1	1
1	1	1	-	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.80	4.6800
X9	2.6	2.00	5.2000
X18	2.6	2.20	5.7200
X27	2.6	4.00	10.4000
X35	2.6	4.40	11.4400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.612e-07	4.163e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X9	2.707e-07	7.952e-10
X18	5.293e-07	1.611e-09
X27	8.114e-07	2.444e-09
X35	1.050e-06	3.231e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	3.985e-05	3.734e-08
X9	7.279e-05	4.721e-08
X18	1.508e-04	6.348e-08
X27	2.300e-04	9.666e-08
X35	2.982e-04	1.148e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.528e-05	3.372e-08
X9	6.382e-05	4.120e-08
X18	1.318e-04	5.284e-08
X27	2.012e-04	8.051e-08
X35	2.606e-04	9.400e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	7.964e-03	1.263e-02	2.154e-02	3.331e-02	4.530e-02
B to Z	7.650e-03	1.209e-02	2.055e-02	3.130e-02	4.277e-02
C to Z	7.306e-03	1.149e-02	1.930e-02	2.941e-02	3.967e-02
D to Z	6.318e-03	9.832e-03	1.673e-02	2.497e-02	3.484e-02
E to Z	6.002e-03	9.214e-03	1.548e-02	2.318e-02	3.171e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-7.936e-06	-1.403e-05	-2.557e-05	-3.731e-05	-5.455e-05
B to Z	-7.880e-06	-1.368e-05	-2.505e-05	-3.926e-05	-5.433e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

C to Z	-7.510e-06	-1.313e-05	-2.504e-05	-3.713e-05	-5.181e-05
D to Z	7.856e-08	-3.494e-07	8.551e-07	-9.519e-08	6.370e-07
E to Z	-1.661e-07	-2.206e-07	8.303e-07	-4.656e-08	5.806e-07

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0010	0.0014	0.0022	0.0035	0.0041
B	0.0010	0.0014	0.0021	0.0034	0.0040
C	0.0010	0.0014	0.0022	0.0032	0.0041
D	0.0010	0.0013	0.0021	0.0035	0.0042
E	0.0010	0.0014	0.0022	0.0033	0.0043

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0826	0.0722	0.0667	0.0671	0.0691	2.5025	1.2545	0.6176	0.4184	0.3154
A to Z↑	0.0787	0.0697	0.0595	0.0617	0.0658	3.2264	1.7103	0.8500	0.5791	0.4360
B to Z↓	0.0791	0.0690	0.0635	0.0627	0.0653	2.4913	1.2502	0.6153	0.4163	0.3136
B to Z↑	0.0780	0.0689	0.0586	0.0597	0.0646	3.2274	1.7108	0.8501	0.5792	0.4361
C to Z↓	0.0745	0.0648	0.0587	0.0584	0.0598	2.4805	1.2453	0.6121	0.4148	0.3118
C to Z↑	0.0747	0.0654	0.0550	0.0557	0.0595	3.2291	1.7114	0.8507	0.5793	0.4362
D to Z↓	0.0646	0.0558	0.0515	0.0501	0.0529	2.4624	1.2387	0.6097	0.4124	0.3106
D to Z↑	0.0512	0.0450	0.0392	0.0380	0.0405	3.1343	1.6716	0.8332	0.5657	0.4240
E to Z↓	0.0604	0.0514	0.0469	0.0461	0.0477	2.4526	1.2336	0.6066	0.4112	0.3089
E to Z↑	0.0496	0.0427	0.0367	0.0356	0.0375	3.1348	1.6721	0.8336	0.5660	0.4241

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1323	0.1156	0.1063	0.1062	0.1091	4.0434	1.9887	0.9586	0.6450	0.4873



Propagation Delay at 125C, 1.10V Worst process

A to Z ↑	0.1386	0.1231	0.1025	0.1067	0.1136	4.8091	2.5316	1.2395	0.8461	0.6345
B to Z ↓	0.1264	0.1104	0.1012	0.0994	0.1032	4.0199	1.9793	0.9538	0.6406	0.4839
B to Z ↑	0.1362	0.1206	0.1002	0.1026	0.1103	4.8112	2.5327	1.2399	0.8458	0.6346
C to Z ↓	0.1189	0.1035	0.0935	0.0922	0.0946	3.9995	1.9703	0.9481	0.6376	0.4809
C to Z ↑	0.1295	0.1138	0.0934	0.0952	0.1008	4.8116	2.5327	1.2400	0.8460	0.6347
D to Z ↓	0.1019	0.0881	0.0807	0.0779	0.0820	3.9705	1.9595	0.9436	0.6337	0.4784
D to Z ↑	0.0839	0.0743	0.0634	0.0608	0.0651	4.6174	2.4499	1.2047	0.8186	0.6104
E to Z ↓	0.0948	0.0808	0.0731	0.0714	0.0738	3.9509	1.9488	0.9376	0.6309	0.4752
E to Z ↑	0.0809	0.0704	0.0593	0.0571	0.0601	4.6174	2.4506	1.2048	0.8190	0.6106

Propagation Delay at 125C, 1.15V Worst process

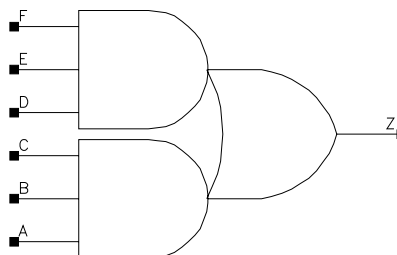
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1219	0.1065	0.0981	0.0982	0.1008	3.7372	1.8406	0.8897	0.5992	0.4525
A to Z ↑	0.1263	0.1121	0.0936	0.0975	0.1038	4.4678	2.3495	1.1514	0.7859	0.5895
B to Z ↓	0.1164	0.1017	0.0933	0.0917	0.0953	3.7169	1.8322	0.8854	0.5953	0.4495
B to Z ↑	0.1242	0.1098	0.0915	0.0938	0.1009	4.4691	2.3503	1.1515	0.7860	0.5896
C to Z ↓	0.1095	0.0953	0.0861	0.0851	0.0873	3.6976	1.8239	0.8802	0.5926	0.4467
C to Z ↑	0.1181	0.1037	0.0854	0.0871	0.0922	4.4706	2.3505	1.1519	0.7859	0.5897
D to Z ↓	0.0939	0.0813	0.0746	0.0721	0.0759	3.6697	1.8135	0.8760	0.5889	0.4444
D to Z ↑	0.0769	0.0680	0.0582	0.0560	0.0598	4.2893	2.2741	1.1199	0.7611	0.5677
E to Z ↓	0.0874	0.0745	0.0675	0.0660	0.0683	3.6520	1.8040	0.8705	0.5863	0.4415
E to Z ↑	0.0743	0.0645	0.0546	0.0527	0.0554	4.2894	2.2742	1.1200	0.7613	0.5677

HS65_LS_AO33

Cell Description

Double 3 Input AND into 2 Input OR, 9x Drive

Logical Symbol



Functions

A	B	C	D	E	F	Z
0	-	-	-	-	0	0
-	-	0	-	0	-	0
-	-	0	0	-	-	0
0	-	-	0	-	-	0
0	-	-	-	0	-	0
-	-	0	-	-	0	0
-	0	-	-	-	0	0
-	0	-	-	0	-	0
-	0	-	0	-	-	0
1	1	1	-	-	-	1
-	-	-	1	1	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.20	5.7200
X9	2.6	2.20	5.7200
X18	2.6	2.40	6.2400
X27	2.6	4.40	11.4400
X35	2.6	5.20	13.5200



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.504e-07	4.767e-10
X9	2.484e-07	9.076e-10
X18	4.782e-07	1.784e-09
X27	7.300e-07	2.679e-09
X35	9.420e-07	3.574e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	3.615e-05	4.207e-08
X9	6.465e-05	5.085e-08
X18	1.322e-04	6.880e-08
X27	1.998e-04	1.056e-07
X35	2.585e-04	1.289e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.207e-05	3.803e-08
X9	5.680e-05	4.426e-08
X18	1.157e-04	5.707e-08
X27	1.751e-04	8.780e-08
X35	2.263e-04	1.058e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	8.630e-03	1.358e-02	2.337e-02	3.635e-02	4.954e-02
B to Z	8.273e-03	1.303e-02	2.237e-02	3.464e-02	4.705e-02
C to Z	7.892e-03	1.243e-02	2.120e-02	3.278e-02	4.394e-02
D to Z	7.041e-03	1.092e-02	1.882e-02	2.812e-02	3.925e-02
E to Z	6.740e-03	1.030e-02	1.770e-02	2.642e-02	3.659e-02
F to Z	6.392e-03	9.720e-03	1.652e-02	2.458e-02	3.349e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-8.588e-06	-1.521e-05	-2.830e-05	-4.634e-05	-6.682e-05
B to Z	-8.596e-06	-1.587e-05	-2.918e-05	-4.631e-05	-7.081e-05
C to Z	-8.180e-06	-1.491e-05	-2.721e-05	-4.426e-05	-6.620e-05
D to Z	4.085e-07	6.961e-07	1.432e-06	1.010e-06	2.784e-06
E to Z	-3.927e-07	-5.300e-07	2.453e-07	2.033e-07	8.787e-07
F to Z	4.943e-07	-1.023e-07	8.409e-07	1.429e-10	2.038e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0010	0.0014	0.0022	0.0035	0.0041
B	0.0009	0.0014	0.0022	0.0035	0.0040
C	0.0009	0.0014	0.0022	0.0032	0.0041
D	0.0009	0.0014	0.0021	0.0036	0.0040
E	0.0009	0.0014	0.0022	0.0036	0.0041
↓	0.0010	0.0014	0.0022	0.0034	0.0042

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0844	0.0738	0.0683	0.0690	0.0712	2.5086	1.2649	0.6214	0.4214	0.3166
A to Z↑	0.0848	0.0750	0.0643	0.0673	0.0719	3.3247	1.7197	0.8557	0.5844	0.4397
B to Z↓	0.0820	0.0708	0.0653	0.0655	0.0677	2.5060	1.2608	0.6193	0.4196	0.3148
B to Z↑	0.0843	0.0740	0.0635	0.0659	0.0708	3.3299	1.7203	0.8558	0.5845	0.4399
C to Z↓	0.0775	0.0668	0.0611	0.0617	0.0626	2.4944	1.2559	0.6165	0.4185	0.3132
C to Z↑	0.0807	0.0707	0.0601	0.0618	0.0655	3.3305	1.7211	0.8561	0.5846	0.4401
D to Z↓	0.0718	0.0618	0.0572	0.0557	0.0586	2.4915	1.2564	0.6174	0.4178	0.3139
D to Z↑	0.0698	0.0606	0.0524	0.0513	0.0567	3.2995	1.7057	0.8497	0.5769	0.4351
E to Z↓	0.0683	0.0581	0.0536	0.0519	0.0547	2.4800	1.2505	0.6143	0.4159	0.3119
E to Z↑	0.0689	0.0591	0.0510	0.0495	0.0548	3.3005	1.7059	0.8496	0.5772	0.4351



Propagation Delay at 25C, 1.20V Typ process

F to Z↓	0.0640	0.0540	0.0493	0.0479	0.0495	2.4698	1.2459	0.6116	0.4146	0.3103
F to Z↑	0.0655	0.0556	0.0474	0.0459	0.0494	3.3014	1.7060	0.8499	0.5773	0.4352

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1352	0.1182	0.1090	0.1097	0.1129	4.0504	2.0096	0.9653	0.6508	0.4890
A to Z↑	0.1502	0.1332	0.1115	0.1173	0.1251	4.9531	2.5551	1.2511	0.8575	0.6424
B to Z↓	0.1314	0.1132	0.1041	0.1041	0.1073	4.0428	2.0007	0.9609	0.6470	0.4858
B to Z↑	0.1481	0.1303	0.1091	0.1141	0.1219	4.9582	2.5561	1.2514	0.8575	0.6425
C to Z↓	0.1239	0.1068	0.0974	0.0978	0.0994	4.0211	1.9918	0.9560	0.6447	0.4830
C to Z↑	0.1407	0.1237	0.1028	0.1067	0.1120	4.9590	2.5562	1.2516	0.8576	0.6428
D to Z↓	0.1136	0.0976	0.0899	0.0871	0.0912	4.0186	1.9935	0.9573	0.6439	0.4841
D to Z↑	0.1201	0.1048	0.0890	0.0864	0.0960	4.8909	2.5232	1.2379	0.8416	0.6323
E to Z↓	0.1078	0.0915	0.0841	0.0812	0.0849	3.9966	1.9816	0.9514	0.6402	0.4803
E to Z↑	0.1175	0.1012	0.0858	0.0829	0.0918	4.8903	2.5228	1.2379	0.8418	0.6323
F to Z↓	0.1008	0.0850	0.0772	0.0748	0.0770	3.9764	1.9729	0.9462	0.6373	0.4774
F to Z↑	0.1106	0.0944	0.0790	0.0763	0.0817	4.8910	2.5230	1.2378	0.8418	0.6326

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1247	0.1089	0.1005	0.1013	0.1042	3.7454	1.8597	0.8961	0.6046	0.4543
A to Z↑	0.1368	0.1212	0.1017	0.1071	0.1143	4.6058	2.3703	1.1623	0.7964	0.5966
B to Z↓	0.1211	0.1043	0.0960	0.0961	0.0991	3.7389	1.8516	0.8921	0.6011	0.4513
B to Z↑	0.1350	0.1186	0.0996	0.1042	0.1114	4.6112	2.3710	1.1624	0.7964	0.5967
C to Z↓	0.1142	0.0982	0.0897	0.0902	0.0917	3.7190	1.8436	0.8875	0.5990	0.4488
C to Z↑	0.1282	0.1127	0.0939	0.0975	0.1024	4.6118	2.3716	1.1626	0.7964	0.5970
D to Z↓	0.1048	0.0900	0.0831	0.0806	0.0845	3.7156	1.8448	0.8887	0.5982	0.4497

Propagation Delay at 125C, 1.15V Worst process

D to Z ↑	0.1093	0.0953	0.0810	0.0789	0.0876	4.5479	2.3401	1.1499	0.7819	0.5874
E to Z ↓	0.0994	0.0844	0.0776	0.0751	0.0785	3.6952	1.8339	0.8832	0.5948	0.4462
E to Z ↑	0.1070	0.0920	0.0782	0.0757	0.0838	4.5481	2.3406	1.1500	0.7820	0.5874
F to Z ↓	0.0929	0.0783	0.0712	0.0691	0.0711	3.6770	1.8259	0.8785	0.5922	0.4436
F to Z ↑	0.1008	0.0859	0.0721	0.0698	0.0747	4.5474	2.3409	1.1500	0.7820	0.5875

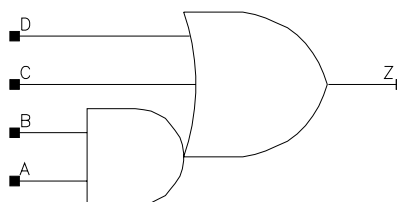


HS65_LS_AO112

Cell Description

2 Input AND into 3 Input OR

Logical Symbol



Functions

A	B	C	D	Z
-	0	0	0	0
0	-	0	0	0
1	1	-	-	1
-	-	-	1	1
-	-	1	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.60	4.1600
X9	2.6	1.60	4.1600
X18	2.6	1.80	4.6800
X27	2.6	3.40	8.8400
X35	2.6	3.60	9.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.795e-07	5.579e-10
X9	2.605e-07	6.828e-10
X18	5.370e-07	1.282e-09
X27	8.461e-07	1.965e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X35	1.111e-06	2.581e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.755e-05	3.911e-08
X9	7.495e-05	4.134e-08
X18	1.635e-04	5.598e-08
X27	2.609e-04	8.540e-08
X35	3.394e-04	9.992e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	4.184e-05	3.466e-08
X9	6.547e-05	3.627e-08
X18	1.424e-04	4.706e-08
X27	2.272e-04	7.186e-08
X35	2.957e-04	8.254e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	6.992e-03	9.383e-03	1.623e-02	2.371e-02	3.234e-02
B to Z	6.552e-03	8.917e-03	1.531e-02	2.216e-02	3.032e-02
C to Z	8.784e-03	1.119e-02	1.962e-02	2.918e-02	3.928e-02
D to Z	8.095e-03	1.052e-02	1.829e-02	2.708e-02	3.634e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-1.836e-07	5.930e-07	-4.192e-07	1.958e-07	-6.800e-08
B to Z	-7.100e-08	-1.620e-07	5.852e-07	-1.159e-06	-1.540e-07
C to Z	-1.304e-05	-1.284e-05	-2.596e-05	-3.895e-05	-5.048e-05
D to Z	-6.790e-06	-7.709e-06	-1.566e-05	-2.146e-05	-2.660e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0013	0.0014	0.0021	0.0033	0.0039
B	0.0012	0.0013	0.0021	0.0032	0.0042
C	0.0011	0.0013	0.0019	0.0026	0.0035
D	0.0012	0.0013	0.0019	0.0029	0.0037

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0686	0.0743	0.0665	0.0641	0.0667	2.5279	1.3432	0.6487	0.4359	0.3304
A to Z↑	0.0452	0.0492	0.0427	0.0405	0.0416	3.1058	1.6702	0.8334	0.5638	0.4219
B to Z↓	0.0639	0.0700	0.0622	0.0585	0.0605	2.5186	1.3394	0.6471	0.4340	0.3280
B to Z↑	0.0437	0.0476	0.0410	0.0382	0.0396	3.1090	1.6706	0.8336	0.5639	0.4221
C to Z↓	0.0801	0.0850	0.0774	0.0755	0.0776	2.5165	1.3371	0.6462	0.4342	0.3287
C to Z↑	0.0480	0.0495	0.0465	0.0468	0.0456	3.1087	1.6638	0.8344	0.5675	0.4234
D to Z↓	0.0783	0.0834	0.0754	0.0735	0.0750	2.5193	1.3381	0.6466	0.4344	0.3288
D to Z↑	0.0462	0.0481	0.0446	0.0442	0.0436	3.1047	1.6614	0.8324	0.5650	0.4217

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1112	0.1202	0.1070	0.1024	0.1064	4.0999	2.1736	1.0241	0.6778	0.5181
A to Z↑	0.0751	0.0820	0.0705	0.0659	0.0676	4.5084	2.4415	1.2043	0.8137	0.6101
B to Z↓	0.1033	0.1128	0.0995	0.0928	0.0965	4.0806	2.1652	1.0200	0.6738	0.5141
B to Z↑	0.0724	0.0791	0.0676	0.0624	0.0645	4.5090	2.4421	1.2047	0.8139	0.6100
C to Z↓	0.1333	0.1410	0.1281	0.1245	0.1277	4.0791	2.1633	1.0198	0.6748	0.5152
C to Z↑	0.0760	0.0783	0.0730	0.0732	0.0712	4.5174	2.4315	1.2074	0.8206	0.6129
D to Z↓	0.1291	0.1371	0.1237	0.1200	0.1224	4.0828	2.1636	1.0197	0.6747	0.5152
D to Z↑	0.0730	0.0761	0.0701	0.0685	0.0683	4.5023	2.4244	1.2023	0.8150	0.6099



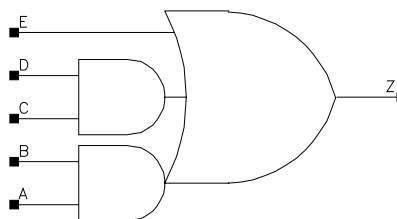
Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1016	0.1098	0.0979	0.0938	0.0975	3.7893	2.0060	0.9482	0.6290	0.4802
A to Z ↑	0.0688	0.0750	0.0646	0.0606	0.0621	4.1940	2.2671	1.1192	0.7565	0.5669
B to Z ↓	0.0942	0.1030	0.0909	0.0850	0.0883	3.7706	1.9984	0.9449	0.6254	0.4765
B to Z ↑	0.0664	0.0725	0.0620	0.0574	0.0593	4.1966	2.2671	1.1198	0.7567	0.5670
C to Z ↓	0.1218	0.1289	0.1172	0.1141	0.1170	3.7705	1.9967	0.9444	0.6264	0.4776
C to Z ↑	0.0708	0.0728	0.0680	0.0682	0.0664	4.2035	2.2591	1.1222	0.7628	0.5698
D to Z ↓	0.1181	0.1254	0.1132	0.1100	0.1122	3.7739	1.9973	0.9445	0.6264	0.4776
D to Z ↑	0.0680	0.0708	0.0653	0.0639	0.0636	4.1893	2.2528	1.1182	0.7579	0.5669

HS65_LS_AO212

Cell Description
3 wide 2-2-1 AND-OR

Logical Symbol



Functions

A	B	C	D	E	Z
-	0	0	-	0	0
-	0	-	0	0	0
0	-	-	0	0	0
0	-	0	-	0	0
1	1	-	-	-	1
-	-	-	-	1	1
-	-	1	1	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.80	4.6800
X9	2.6	2.20	5.7200
X18	2.6	2.40	6.2400
X27	2.6	4.00	10.4000
X35	2.6	4.20	10.9200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	2.038e-07	5.621e-10
X9	2.880e-07	6.994e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X18	5.761e-07	1.332e-09
X27	8.854e-07	2.044e-09
X35	1.186e-06	2.677e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	5.353e-05	4.098e-08
X9	8.260e-05	4.720e-08
X18	1.728e-04	6.185e-08
X27	2.662e-04	9.120e-08
X35	3.587e-04	1.051e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	4.716e-05	3.654e-08
X9	7.221e-05	4.178e-08
X18	1.506e-04	5.253e-08
X27	2.322e-04	7.716e-08
X35	3.128e-04	8.720e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	1.158e-02	1.287e-02	2.183e-02	3.323e-02	4.394e-02
B to Z	1.109e-02	1.238e-02	2.086e-02	3.171e-02	4.187e-02
C to Z	8.501e-03	9.993e-03	1.667e-02	2.501e-02	3.357e-02
D to Z	8.015e-03	9.525e-03	1.570e-02	2.346e-02	3.155e-02
E to Z	9.638e-03	1.117e-02	1.870e-02	2.840e-02	3.745e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-2.072e-05	-1.776e-05	-3.264e-05	-4.678e-05	-6.620e-05
B to Z	-1.994e-05	-1.705e-05	-3.055e-05	-4.605e-05	-6.391e-05
C to Z	5.470e-07	-3.333e-10	1.238e-06	1.110e-06	6.883e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D to Z	3.440e-07	-2.063e-07	9.622e-07	2.970e-07	8.747e-07
E to Z	-1.042e-05	-1.226e-05	-2.225e-05	-3.091e-05	-3.694e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0014	0.0013	0.0020	0.0033	0.0041
B	0.0013	0.0014	0.0021	0.0032	0.0038
C	0.0013	0.0013	0.0020	0.0030	0.0039
D	0.0013	0.0013	0.0020	0.0033	0.0043
E	0.0012	0.0011	0.0019	0.0026	0.0039

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1018	0.0965	0.0885	0.0883	0.0865	2.5531	1.3031	0.6482	0.4414	0.3289
A to Z↑	0.0649	0.0628	0.0534	0.0535	0.0534	2.8996	1.7081	0.8493	0.5724	0.4287
B to Z↓	0.0965	0.0908	0.0822	0.0830	0.0819	2.5421	1.2942	0.6426	0.4396	0.3280
B to Z↑	0.0633	0.0614	0.0518	0.0514	0.0515	2.8997	1.7087	0.8497	0.5725	0.4288
C to Z↓	0.0794	0.0764	0.0691	0.0683	0.0690	2.5367	1.2949	0.6437	0.4397	0.3279
C to Z↑	0.0505	0.0515	0.0436	0.0428	0.0424	2.8434	1.6923	0.8416	0.5664	0.4235
D to Z↓	0.0735	0.0724	0.0647	0.0628	0.0627	2.5223	1.2910	0.6418	0.4368	0.3252
D to Z↑	0.0489	0.0501	0.0419	0.0412	0.0404	2.8449	1.6925	0.8419	0.5667	0.4236
E to Z↓	0.0860	0.0830	0.0752	0.0750	0.0739	2.5202	1.2856	0.6393	0.4362	0.3251
E to Z↑	0.0509	0.0502	0.0450	0.0451	0.0438	2.8356	1.6813	0.8396	0.5655	0.4223

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1700	0.1600	0.1467	0.1452	0.1426	4.1249	2.0811	1.0197	0.6879	0.5125
A to Z↑	0.1107	0.1074	0.0892	0.0891	0.0890	4.2347	2.5422	1.2474	0.8293	0.6238



Propagation Delay at 125C, 1.10V Worst process

B to Z↓	0.1611	0.1501	0.1360	0.1359	0.1340	4.1054	2.0651	1.0100	0.6840	0.5100
B to Z↑	0.1075	0.1046	0.0865	0.0858	0.0856	4.2347	2.5427	1.2477	0.8295	0.6236
C to Z↓	0.1293	0.1235	0.1112	0.1092	0.1100	4.0942	2.0656	1.0112	0.6839	0.5099
C to Z↑	0.0832	0.0861	0.0715	0.0698	0.0682	4.1245	2.5077	1.2305	0.8169	0.6130
D to Z↓	0.1194	0.1166	0.1035	0.1001	0.1000	4.0680	2.0578	1.0070	0.6791	0.5056
D to Z↑	0.0803	0.0834	0.0685	0.0669	0.0651	4.1259	2.5080	1.2309	0.8170	0.6132
E to Z↓	0.1420	0.1362	0.1231	0.1221	0.1199	4.0640	2.0485	1.0030	0.6779	0.5049
E to Z↑	0.0798	0.0796	0.0702	0.0695	0.0680	4.1021	2.4845	1.2259	0.8141	0.6110

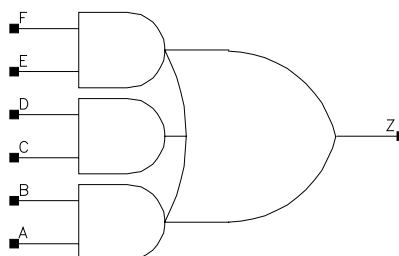
Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1555	0.1465	0.1344	0.1333	0.1308	3.8151	1.9257	0.9451	0.6383	0.4755
A to Z↑	0.1013	0.0981	0.0819	0.0819	0.0818	3.9483	2.3578	1.1584	0.7711	0.5796
B to Z↓	0.1472	0.1374	0.1245	0.1247	0.1230	3.7968	1.9110	0.9362	0.6348	0.4734
B to Z↑	0.0986	0.0958	0.0796	0.0789	0.0788	3.9486	2.3581	1.1586	0.7711	0.5797
C to Z↓	0.1181	0.1130	0.1018	0.1002	0.1010	3.7867	1.9115	0.9373	0.6347	0.4732
C to Z↑	0.0762	0.0787	0.0655	0.0641	0.0627	3.8446	2.3261	1.1427	0.7595	0.5699
D to Z↓	0.1089	0.1066	0.0947	0.0918	0.0916	3.7624	1.9042	0.9335	0.6302	0.4692
D to Z↑	0.0737	0.0763	0.0629	0.0616	0.0600	3.8465	2.3263	1.1430	0.7597	0.5699
E to Z↓	0.1297	0.1246	0.1127	0.1120	0.1099	3.7592	1.8958	0.9299	0.6292	0.4687
E to Z↑	0.0743	0.0740	0.0654	0.0648	0.0634	3.8267	2.3060	1.1390	0.7573	0.5680

HS65_LS_AO222

Cell Description
3 wide 2-2-2 AND-OR

Logical Symbol



Functions

A	B	C	D	E	F	Z
-	0	0	-	-	0	0
0	-	0	-	-	0	0
0	-	-	0	0	-	0
0	-	0	-	0	-	0
-	0	-	0	0	-	0
0	-	-	0	-	0	0
-	0	0	-	0	-	0
-	0	-	0	-	0	0
1	-	-	-	1	1	1
-	-	0	-	1	1	1
-	-	1	1	-	0	1
-	-	-	0	1	1	1
1	1	-	-	-	-	1
0	-	1	1	-	-	1
-	-	1	1	0	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.20	5.7200



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X9	2.6	2.40	6.2400
X18	2.6	2.60	6.7600
X27	2.6	4.40	11.4400
X35	2.6	4.80	12.4800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.952e-07	4.455e-10
X9	3.086e-07	7.723e-10
X18	6.065e-07	1.505e-09
X27	9.401e-07	2.269e-09
X35	1.235e-06	3.006e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.971e-05	4.217e-08
X9	8.587e-05	5.061e-08
X18	1.783e-04	6.672e-08
X27	2.727e-04	9.894e-08
X35	3.655e-04	1.171e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	4.394e-05	3.822e-08
X9	7.520e-05	4.465e-08
X18	1.557e-04	5.640e-08
X27	2.383e-04	8.339e-08
X35	3.190e-04	9.710e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	9.901e-03	1.379e-02	2.406e-02	3.695e-02	4.828e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

B to Z	9.719e-03	1.330e-02	2.301e-02	3.478e-02	4.624e-02
C to Z	8.213e-03	1.209e-02	2.092e-02	3.183e-02	4.233e-02
D to Z	7.909e-03	1.157e-02	2.001e-02	3.028e-02	4.030e-02
E to Z	6.650e-03	9.758e-03	1.710e-02	2.637e-02	3.550e-02
F to Z	6.334e-03	9.261e-03	1.617e-02	2.481e-02	3.296e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-1.595e-05	-2.168e-05	-3.930e-05	-5.664e-05	-7.935e-05
B to Z	-1.627e-05	-2.100e-05	-3.860e-05	-5.646e-05	-7.885e-05
C to Z	-7.353e-06	-1.056e-05	-2.000e-05	-2.475e-05	-3.739e-05
D to Z	-7.074e-06	-1.087e-05	-1.846e-05	-2.353e-05	-3.452e-05
E to Z	-5.928e-07	-2.662e-07	6.807e-07	6.370e-07	2.404e-06
F to Z	-5.579e-07	-4.871e-07	9.707e-07	3.063e-07	1.198e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0009	0.0014	0.0020	0.0032	0.0040
B	0.0013	0.0014	0.0020	0.0031	0.0038
C	0.0010	0.0013	0.0020	0.0037	0.0040
D	0.0011	0.0014	0.0020	0.0032	0.0038
E	0.0010	0.0014	0.0021	0.0035	0.0039
↓	0.0012	0.0014	0.0021	0.0033	0.0039

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1162	0.1007	0.0932	0.0925	0.0919	2.6547	1.3272	0.6559	0.4433	0.3319
A to Z↑	0.0723	0.0646	0.0567	0.0595	0.0555	3.3567	1.7107	0.8515	0.5803	0.4316
B to Z↓	0.1116	0.0963	0.0885	0.0852	0.0874	2.6332	1.3230	0.6534	0.4396	0.3307
B to Z↑	0.0728	0.0633	0.0549	0.0566	0.0539	3.3583	1.7116	0.8518	0.5804	0.4317
C to Z↓	0.1029	0.0934	0.0858	0.0840	0.0852	2.6414	1.3256	0.6545	0.4415	0.3315



Propagation Delay at 25C, 1.20V Typ process

C to Z ↑	0.0650	0.0593	0.0520	0.0516	0.0520	3.3062	1.6953	0.8445	0.5737	0.4282
D to Z ↓	0.0990	0.0890	0.0818	0.0796	0.0804	2.6314	1.3205	0.6527	0.4399	0.3301
D to Z ↑	0.0639	0.0578	0.0504	0.0499	0.0501	3.3068	1.6951	0.8447	0.5739	0.4283
E to Z ↓	0.0808	0.0728	0.0675	0.0676	0.0688	2.6241	1.3179	0.6511	0.4392	0.3299
E to Z ↑	0.0548	0.0494	0.0437	0.0433	0.0456	3.2796	1.6822	0.8395	0.5700	0.4261
F to Z ↓	0.0766	0.0686	0.0633	0.0631	0.0629	2.6128	1.3130	0.6489	0.4375	0.3282
F to Z ↑	0.0536	0.0479	0.0421	0.0415	0.0429	3.2811	1.6830	0.8398	0.5703	0.4263

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1923	0.1671	0.1546	0.1519	0.1515	4.2957	2.1172	1.0314	0.6909	0.5166
A to Z ↑	0.1234	0.1097	0.0942	0.1006	0.0915	4.9817	2.5314	1.2434	0.8493	0.6264
B to Z ↓	0.1841	0.1598	0.1469	0.1397	0.1431	4.2579	2.1098	1.0275	0.6841	0.5139
B to Z ↑	0.1237	0.1070	0.0910	0.0955	0.0885	4.9828	2.5319	1.2436	0.8493	0.6264
C to Z ↓	0.1691	0.1536	0.1409	0.1368	0.1389	4.2699	2.1132	1.0286	0.6876	0.5154
C to Z ↑	0.1097	0.0999	0.0855	0.0851	0.0858	4.8808	2.4975	1.2289	0.8357	0.6199
D to Z ↓	0.1624	0.1462	0.1343	0.1287	0.1302	4.2524	2.1041	1.0253	0.6840	0.5126
D to Z ↑	0.1073	0.0970	0.0827	0.0821	0.0824	4.8806	2.4976	1.2289	0.8359	0.6199
E to Z ↓	0.1305	0.1176	0.1086	0.1079	0.1094	4.2396	2.0994	1.0223	0.6832	0.5123
E to Z ↑	0.0906	0.0818	0.0711	0.0701	0.0739	4.8222	2.4711	1.2185	0.8276	0.6149
F to Z ↓	0.1234	0.1105	0.1014	0.1000	0.0996	4.2195	2.0901	1.0180	0.6797	0.5091
F to Z ↑	0.0881	0.0790	0.0684	0.0670	0.0692	4.8218	2.4715	1.2185	0.8278	0.6150

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1764	0.1532	0.1417	0.1396	0.1391	3.9742	1.9594	0.9562	0.6412	0.4796
A to Z ↑	0.1130	0.1005	0.0865	0.0923	0.0842	4.6337	2.3498	1.1552	0.7889	0.5823

Propagation Delay at 125C, 1.15V Worst process

B to Z↓	0.1687	0.1464	0.1346	0.1283	0.1314	3.9391	1.9524	0.9525	0.6350	0.4771
B to Z↑	0.1134	0.0981	0.0837	0.0877	0.0816	4.6356	2.3504	1.1555	0.7889	0.5823
C to Z↓	0.1548	0.1407	0.1291	0.1255	0.1274	3.9503	1.9556	0.9536	0.6381	0.4784
C to Z↑	0.1005	0.0916	0.0786	0.0783	0.0789	4.5402	2.3183	1.1418	0.7765	0.5762
D to Z↓	0.1485	0.1337	0.1229	0.1181	0.1195	3.9339	1.9472	0.9505	0.6349	0.4759
D to Z↑	0.0985	0.0890	0.0762	0.0756	0.0759	4.5400	2.3185	1.1419	0.7766	0.5762
E to Z↓	0.1193	0.1076	0.0995	0.0991	0.1004	3.9223	1.9427	0.9477	0.6341	0.4756
E to Z↑	0.0829	0.0748	0.0652	0.0644	0.0678	4.4851	2.2945	1.1321	0.7692	0.5717
F to Z↓	0.1127	0.1010	0.0928	0.0917	0.0914	3.9033	1.9343	0.9438	0.6309	0.4726
F to Z↑	0.0808	0.0724	0.0628	0.0617	0.0637	4.4862	2.2947	1.1323	0.7693	0.5717

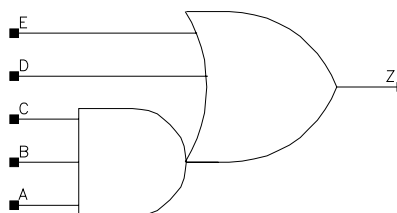


HS65_LS_AO311

Cell Description

3 Input AND into 3 Input OR

Logical Symbol



Functions

A	B	C	D	E	Z
-	0	-	0	0	0
-	-	0	0	0	0
0	-	-	0	0	0
-	-	-	1	-	1
1	1	1	-	-	1
-	-	-	-	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.80	4.6800
X9	2.6	1.80	4.6800
X18	2.6	2.20	5.7200
X27	2.6	4.00	10.4000
X35	2.6	4.20	10.9200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.876e-07	3.331e-10
X9	2.648e-07	4.372e-10
X18	5.612e-07	8.576e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X27	8.591e-07	1.282e-09
X35	1.145e-06	1.699e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.928e-05	3.587e-08
X9	7.522e-05	3.804e-08
X18	1.695e-04	5.014e-08
X27	2.622e-04	7.459e-08
X35	3.486e-04	8.435e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	4.338e-05	3.277e-08
X9	6.573e-05	3.432e-08
X18	1.477e-04	4.383e-08
X27	2.284e-04	6.518e-08
X35	3.038e-04	7.244e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	9.743e-03	1.240e-02	2.145e-02	3.257e-02	4.319e-02
B to Z	9.238e-03	1.183e-02	2.055e-02	3.110e-02	4.131e-02
C to Z	8.759e-03	1.133e-02	1.951e-02	2.906e-02	3.863e-02
D to Z	7.317e-03	9.766e-03	1.694e-02	2.452e-02	3.281e-02
E to Z	6.572e-03	8.973e-03	1.524e-02	2.193e-02	2.944e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-1.145e-05	-1.423e-05	-2.874e-05	-4.775e-05	-5.539e-05
B to Z	-1.309e-05	-1.497e-05	-2.647e-05	-4.460e-05	-6.261e-05
C to Z	-1.294e-05	-1.458e-05	-2.970e-05	-4.448e-05	-6.132e-05
D to Z	-4.133e-06	-4.872e-06	-9.867e-06	-1.336e-05	-1.820e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

E to Z	2.332e-07	-1.523e-07	1.344e-06	1.415e-06	1.387e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0013	0.0014	0.0020	0.0032	0.0040
B	0.0013	0.0014	0.0020	0.0031	0.0039
C	0.0013	0.0014	0.0021	0.0032	0.0039
D	0.0012	0.0012	0.0018	0.0031	0.0040
E	0.0012	0.0012	0.0019	0.0027	0.0035

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0882	0.0946	0.0871	0.0849	0.0854	2.4789	1.3319	0.6455	0.4301	0.3246
A to Z↑	0.0707	0.0766	0.0652	0.0664	0.0662	3.1778	1.7229	0.8557	0.5830	0.4362
B to Z↓	0.0837	0.0896	0.0826	0.0803	0.0814	2.4696	1.3260	0.6423	0.4277	0.3229
B to Z↑	0.0700	0.0751	0.0644	0.0651	0.0653	3.1832	1.7230	0.8563	0.5828	0.4362
C to Z↓	0.0777	0.0838	0.0760	0.0729	0.0739	2.4540	1.3176	0.6371	0.4244	0.3203
C to Z↑	0.0666	0.0720	0.0611	0.0607	0.0611	3.1839	1.7241	0.8565	0.5828	0.4362
D to Z↓	0.0682	0.0738	0.0681	0.0639	0.0651	2.4343	1.3062	0.6324	0.4213	0.3178
D to Z↑	0.0423	0.0448	0.0409	0.0397	0.0385	3.0801	1.6625	0.8319	0.5646	0.4211
E to Z↓	0.0621	0.0678	0.0610	0.0567	0.0578	2.4345	1.3064	0.6325	0.4213	0.3178
E to Z↑	0.0393	0.0416	0.0376	0.0352	0.0358	3.0765	1.6605	0.8308	0.5624	0.4210

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1449	0.1554	0.1428	0.1383	0.1393	3.9913	2.1496	1.0101	0.6672	0.5045
A to Z↑	0.1254	0.1360	0.1137	0.1158	0.1152	4.6686	2.5577	1.2503	0.8514	0.6378
B to Z↓	0.1373	0.1470	0.1352	0.1304	0.1321	3.9692	2.1370	1.0038	0.6622	0.5010



Propagation Delay at 125C, 1.10V Worst process

B to Z ↑	0.1230	0.1323	0.1112	0.1127	0.1124	4.6749	2.5585	1.2507	0.8513	0.6378
C to Z ↓	0.1273	0.1373	0.1245	0.1182	0.1197	3.9419	2.1232	0.9955	0.6563	0.4963
C to Z ↑	0.1164	0.1260	0.1050	0.1042	0.1042	4.6746	2.5584	1.2507	0.8512	0.6379
D to Z ↓	0.1109	0.1201	0.1103	0.1027	0.1045	3.9057	2.1021	0.9859	0.6505	0.4917
D to Z ↑	0.0660	0.0701	0.0634	0.0610	0.0594	4.4603	2.4311	1.1998	0.8142	0.6082
E to Z ↓	0.0999	0.1091	0.0974	0.0900	0.0915	3.9062	2.1022	0.9859	0.6506	0.4917
E to Z ↑	0.0608	0.0646	0.0583	0.0538	0.0548	4.4480	2.4257	1.1975	0.8098	0.6072

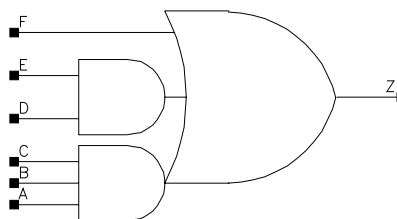
Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1330	0.1427	0.1311	0.1273	0.1282	3.6924	1.9849	0.9366	0.6195	0.4683
A to Z ↑	0.1140	0.1237	0.1037	0.1058	0.1052	4.3433	2.3738	1.1619	0.7911	0.5926
B to Z ↓	0.1260	0.1349	0.1241	0.1200	0.1215	3.6733	1.9734	0.9310	0.6151	0.4650
B to Z ↑	0.1120	0.1203	0.1014	0.1030	0.1028	4.3498	2.3750	1.1621	0.7913	0.5926
C to Z ↓	0.1167	0.1258	0.1141	0.1086	0.1100	3.6467	1.9601	0.9232	0.6096	0.4608
C to Z ↑	0.1060	0.1147	0.0959	0.0953	0.0954	4.3487	2.3748	1.1623	0.7912	0.5926
D to Z ↓	0.1016	0.1100	0.1011	0.0943	0.0960	3.6131	1.9408	0.9145	0.6044	0.4566
D to Z ↑	0.0615	0.0652	0.0591	0.0570	0.0555	4.1509	2.2585	1.1157	0.7571	0.5654
E to Z ↓	0.0915	0.0999	0.0893	0.0827	0.0841	3.6140	1.9412	0.9146	0.6043	0.4565
E to Z ↑	0.0566	0.0600	0.0542	0.0501	0.0511	4.1402	2.2529	1.1135	0.7534	0.5645

HS65_LS_AO312

Cell Description
3 wide 3-1-2 AND-OR

Logical Symbol



Functions

A	B	C	D	E	F	Z
-	0	-	-	0	0	0
-	-	0	0	-	0	0
0	-	-	-	0	0	0
0	-	-	0	-	0	0
-	-	0	-	0	0	0
-	0	-	0	-	0	0
-	-	-	1	1	-	1
-	-	-	-	-	1	1
1	1	1	-	-	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.20	5.7200
X9	2.6	2.20	5.7200
X18	2.6	2.40	6.2400
X27	2.6	4.40	11.4400
X35	2.6	5.20	13.5200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X4	2.136e-07	5.371e-10
X9	2.905e-07	6.974e-10
X18	5.821e-07	1.372e-09
X27	8.897e-07	2.067e-09
X35	1.161e-06	2.729e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	5.528e-05	4.380e-08
X9	8.177e-05	4.709e-08
X18	1.730e-04	6.184e-08
X27	2.648e-04	9.442e-08
X35	3.457e-04	1.153e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	4.869e-05	3.932e-08
X9	7.154e-05	4.164e-08
X18	1.509e-04	5.242e-08
X27	2.310e-04	8.016e-08
X35	3.015e-04	9.685e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	1.133e-02	1.388e-02	2.410e-02	3.688e-02	5.014e-02
B to Z	1.083e-02	1.333e-02	2.301e-02	3.522e-02	4.753e-02
C to Z	1.026e-02	1.270e-02	2.175e-02	3.314e-02	4.421e-02
D to Z	7.974e-03	1.030e-02	1.734e-02	2.606e-02	3.588e-02
E to Z	7.489e-03	9.792e-03	1.642e-02	2.437e-02	3.320e-02
F to Z	9.050e-03	1.141e-02	1.940e-02	2.905e-02	3.941e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

A to Z	-1.678e-05	-1.860e-05	-3.524e-05	-5.233e-05	-7.099e-05
B to Z	-1.795e-05	-1.963e-05	-3.548e-05	-5.388e-05	-7.281e-05
C to Z	-1.661e-05	-1.850e-05	-3.326e-05	-5.053e-05	-7.353e-05
D to Z	6.363e-07	2.130e-07	1.559e-06	1.971e-07	3.167e-06
E to Z	2.573e-07	7.200e-08	1.245e-06	1.142e-06	1.916e-06
F to Z	-1.046e-05	-1.125e-05	-2.119e-05	-2.926e-05	-4.231e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0013	0.0014	0.0021	0.0034	0.0040
B	0.0013	0.0014	0.0021	0.0033	0.0040
C	0.0013	0.0013	0.0021	0.0033	0.0040
D	0.0013	0.0013	0.0021	0.0031	0.0039
E	0.0012	0.0013	0.0020	0.0034	0.0039
↓	0.0012	0.0012	0.0019	0.0032	0.0034

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1026	0.1047	0.0975	0.0964	0.1015	2.5332	1.3337	0.6561	0.4454	0.3358
A to Z↑	0.0752	0.0763	0.0647	0.0660	0.0706	3.2180	1.7205	0.8557	0.5851	0.4387
B to Z↓	0.0985	0.0997	0.0922	0.0919	0.0954	2.5236	1.3270	0.6524	0.4429	0.3331
B to Z↑	0.0744	0.0754	0.0639	0.0652	0.0695	3.2185	1.7210	0.8558	0.5851	0.4388
C to Z↓	0.0914	0.0927	0.0846	0.0843	0.0867	2.5045	1.3172	0.6463	0.4394	0.3304
C to Z↑	0.0711	0.0720	0.0605	0.0615	0.0643	3.2206	1.7220	0.8564	0.5852	0.4389
D to Z↓	0.0747	0.0768	0.0696	0.0693	0.0724	2.4847	1.3091	0.6431	0.4375	0.3286
D to Z↑	0.0495	0.0522	0.0444	0.0436	0.0460	3.1347	1.6855	0.8399	0.5711	0.4275
E to Z↓	0.0701	0.0727	0.0659	0.0631	0.0661	2.4756	1.3051	0.6416	0.4341	0.3268
E to Z↑	0.0477	0.0505	0.0428	0.0415	0.0434	3.1361	1.6860	0.8402	0.5714	0.4278
F to Z↓	0.0796	0.0813	0.0743	0.0725	0.0759	2.4652	1.2985	0.6384	0.4333	0.3256
F to Z↑	0.0497	0.0504	0.0456	0.0458	0.0460	3.1208	1.6706	0.8364	0.5698	0.4254

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1696	0.1727	0.1607	0.1586	0.1656	4.0729	2.1285	1.0279	0.6938	0.5235
A to Z↑	0.1338	0.1365	0.1127	0.1144	0.1227	4.7397	2.5530	1.2503	0.8569	0.6397
B to Z↓	0.1626	0.1642	0.1518	0.1504	0.1555	4.0523	2.1151	1.0207	0.6887	0.5188
B to Z↑	0.1312	0.1338	0.1103	0.1120	0.1195	4.7413	2.5533	1.2504	0.8569	0.6398
C to Z↓	0.1509	0.1527	0.1393	0.1376	0.1415	4.0189	2.0987	1.0109	0.6828	0.5142
C to Z↑	0.1246	0.1270	0.1039	0.1047	0.1097	4.7426	2.5534	1.2507	0.8569	0.6398
D to Z↓	0.1206	0.1238	0.1117	0.1106	0.1149	3.9827	2.0827	1.0037	0.6786	0.5105
D to Z↑	0.0817	0.0867	0.0727	0.0710	0.0750	4.5654	2.4757	1.2174	0.8295	0.6179
E to Z↓	0.1129	0.1167	0.1052	0.1006	0.1045	3.9650	2.0747	1.0005	0.6731	0.5072
E to Z↑	0.0786	0.0836	0.0700	0.0675	0.0703	4.5658	2.4760	1.2178	0.8297	0.6179
F to Z↓	0.1302	0.1327	0.1210	0.1175	0.1223	3.9471	2.0637	0.9951	0.6713	0.5050
F to Z↑	0.0782	0.0795	0.0709	0.0705	0.0719	4.5324	2.4459	1.2093	0.8255	0.6138

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1556	0.1585	0.1475	0.1458	0.1524	3.7713	1.9697	0.9533	0.6440	0.4857
A to Z↑	0.1217	0.1240	0.1028	0.1046	0.1121	4.4075	2.3695	1.1616	0.7959	0.5944
B to Z↓	0.1491	0.1506	0.1392	0.1382	0.1430	3.7531	1.9574	0.9467	0.6394	0.4815
B to Z↑	0.1194	0.1215	0.1007	0.1024	0.1092	4.4082	2.3699	1.1618	0.7961	0.5944
C to Z↓	0.1381	0.1398	0.1276	0.1264	0.1299	3.7222	1.9421	0.9376	0.6338	0.4771
C to Z↑	0.1134	0.1154	0.0949	0.0959	0.1004	4.4094	2.3701	1.1620	0.7962	0.5945
D to Z↓	0.1104	0.1134	0.1024	0.1016	0.1056	3.6879	1.9274	0.9310	0.6301	0.4738
D to Z↑	0.0748	0.0793	0.0666	0.0652	0.0688	4.2463	2.2984	1.1313	0.7710	0.5744
E to Z↓	0.1032	0.1068	0.0964	0.0923	0.0960	3.6719	1.9202	0.9282	0.6249	0.4708
E to Z↑	0.0720	0.0765	0.0642	0.0621	0.0646	4.2464	2.2985	1.1315	0.7711	0.5743
F to Z↓	0.1193	0.1216	0.1109	0.1079	0.1124	3.6553	1.9100	0.9232	0.6234	0.4688

Propagation Delay at 125C, 1.15V Worst process

F to Z[↑]	0.0728	0.0739	0.0660	0.0657	0.0670	4.2173	2.2717	1.1245	0.7674	0.5708

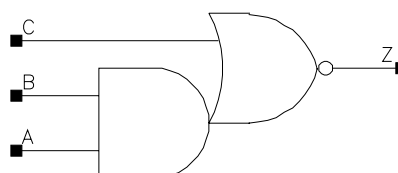


HS65_LS_AOI12

Cell Description

2 Input AND into 2 Input NOR

Logical Symbol



Functions

A	B	C	Z
-	-	1	0
1	1	-	0
0	-	0	1
-	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.00	2.6000
X3	2.6	1.20	3.1200
X4	2.6	1.20	3.1200
X6	2.6	1.20	3.1200
X9	2.6	2.00	5.2000
X12	2.6	2.00	5.2000
X17	2.6	2.60	6.7600
X23	2.6	3.40	8.8400
X35	2.6	5.00	13.0000
X46	2.6	6.60	17.1600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	7.649e-08	2.706e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X3	1.026e-07	4.205e-10
X4	1.454e-07	6.204e-10
X6	1.842e-07	7.869e-10
X9	2.979e-07	1.153e-09
X12	3.809e-07	1.536e-09
X17	5.816e-07	2.319e-09
X23	7.800e-07	3.102e-09
X35	1.170e-06	4.584e-09
X46	1.573e-06	6.149e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	1.889e-05	2.793e-08
X3	2.681e-05	3.163e-08
X4	3.969e-05	3.547e-08
X6	5.223e-05	3.913e-08
X9	8.249e-05	5.512e-08
X12	1.093e-04	6.262e-08
X17	1.678e-04	8.304e-08
X23	2.255e-04	1.064e-07
X35	3.436e-04	1.524e-07
X46	4.615e-04	1.982e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	1.677e-05	2.555e-08
X3	2.361e-05	2.835e-08
X4	3.479e-05	3.107e-08
X6	4.565e-05	3.372e-08
X9	7.229e-05	4.699e-08
X12	9.550e-05	5.227e-08
X17	1.466e-04	6.805e-08
X23	1.971e-04	8.655e-08
X35	3.001e-04	1.229e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

X46	4.032e-04	1.591e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X3	X4	X6	X9
A to Z	2.862e-03	3.201e-03	4.216e-03	5.288e-03	8.630e-03
B to Z	2.461e-03	2.675e-03	3.483e-03	4.277e-03	6.514e-03
C to Z	3.663e-03	4.352e-03	5.935e-03	7.488e-03	1.157e-02
Pin Cycle (vdd)	X12	X17	X23	X35	X46
A to Z	1.087e-02	1.539e-02	2.049e-02	3.097e-02	4.092e-02
B to Z	8.256e-03	1.148e-02	1.516e-02	2.290e-02	3.096e-02
C to Z	1.472e-02	2.058e-02	2.771e-02	4.107e-02	5.542e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X3	X4	X6	X9
A to Z	7.690e-07	1.652e-06	1.506e-06	3.248e-06	5.870e-06
B to Z	1.812e-06	1.763e-06	3.396e-06	4.391e-06	6.130e-06
C to Z	-1.418e-05	-2.055e-05	-2.732e-05	-3.499e-05	-5.350e-05
Pin Cycle (vdds)	X12	X17	X23	X35	X46
A to Z	9.360e-06	1.184e-05	1.780e-05	2.332e-05	2.561e-05
B to Z	8.000e-06	1.223e-05	1.798e-05	2.201e-05	2.884e-05
C to Z	-6.668e-05	-8.040e-05	-1.078e-04	-1.680e-04	-2.244e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X3	X4	X6	X9
A	0.0013	0.0012	0.0016	0.0018	0.0034
B	0.0009	0.0013	0.0016	0.0019	0.0029
C	0.0011	0.0012	0.0016	0.0019	0.0029
Pin	X12	X17	X23	X35	X46
A	0.0040	0.0054	0.0077	0.0114	0.0144
B	0.0035	0.0052	0.0069	0.0104	0.0147
C	0.0036	0.0054	0.0071	0.0103	0.0138



Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X4	X6	X9	X2	X3	X4	X6	X9
A to Z↓	0.0226	0.0192	0.0175	0.0168	0.0174	5.7789	3.9659	2.6578	1.9848	1.2934
A to Z↑	0.0317	0.0249	0.0230	0.0226	0.0236	9.4451	6.1561	4.2765	3.3223	2.1442
B to Z↓	0.0203	0.0172	0.0156	0.0146	0.0143	5.7999	3.9807	2.6719	1.9928	1.2995
B to Z↑	0.0283	0.0217	0.0200	0.0192	0.0191	9.6261	6.0850	4.2118	3.2570	2.1762
C to Z↓	0.0200	0.0174	0.0169	0.0163	0.0160	3.9611	2.7362	1.9115	1.4436	0.9390
C to Z↑	0.0355	0.0291	0.0283	0.0278	0.0278	8.9511	5.7735	4.0089	3.1119	2.0342
	X12	X17	X23	X35	X46	X12	X17	X23	X35	X46
A to Z↓	0.0168	0.0165	0.0163	0.0163	0.0163	0.9778	0.6827	0.5035	0.3388	0.2574
A to Z↑	0.0231	0.0226	0.0226	0.0228	0.0228	1.6632	1.1293	0.8431	0.5677	0.4300
B to Z↓	0.0138	0.0136	0.0134	0.0134	0.0137	0.9819	0.6866	0.5062	0.3408	0.2590
B to Z↑	0.0189	0.0182	0.0182	0.0182	0.0185	1.6958	1.1216	0.8516	0.5713	0.4274
C to Z↓	0.0158	0.0151	0.0152	0.0152	0.0152	0.7201	0.4802	0.3634	0.2482	0.1859
C to Z↑	0.0277	0.0264	0.0266	0.0264	0.0267	1.5830	1.0617	0.7978	0.5361	0.4048

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X4	X6	X9	X2	X3	X4	X6	X9
A to Z↓	0.0372	0.0317	0.0286	0.0275	0.0285	9.9050	6.8318	4.5001	3.3396	2.1650
A to Z↑	0.0469	0.0368	0.0341	0.0336	0.0349	14.2728	9.2803	6.4434	5.0089	3.2201
B to Z↓	0.0336	0.0285	0.0258	0.0242	0.0236	9.9129	6.8448	4.5101	3.3450	2.1690
B to Z↑	0.0416	0.0317	0.0294	0.0283	0.0279	14.6109	9.1737	6.3555	4.9240	3.2446
C to Z↓	0.0315	0.0274	0.0267	0.0256	0.0253	6.1084	4.2470	2.9475	2.2114	1.4379
C to Z↑	0.0540	0.0441	0.0430	0.0425	0.0421	13.5782	8.7187	6.0530	4.7007	3.0476
	X12	X17	X23	X35	X46	X12	X17	X23	X35	X46
A to Z↓	0.0275	0.0267	0.0266	0.0265	0.0263	1.6189	1.1096	0.8178	0.5458	0.4122
A to Z↑	0.0343	0.0333	0.0333	0.0335	0.0333	2.4945	1.6812	1.2546	0.8408	0.6340

Propagation Delay at 125C, 1.10V Worst process

B to Z↓	0.0227	0.0223	0.0219	0.0218	0.0222	1.6224	1.1127	0.8201	0.5473	0.4133
B to Z↑	0.0276	0.0265	0.0264	0.0264	0.0269	2.5228	1.6683	1.2603	0.8435	0.6322
C to Z↓	0.0248	0.0236	0.0238	0.0236	0.0237	1.0902	0.7210	0.5442	0.3675	0.2748
C to Z↑	0.0421	0.0399	0.0401	0.0398	0.0401	2.3653	1.5821	1.1858	0.7937	0.5976

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X4	X6	X9	X2	X3	X4	X6	X9
A to Z↓	0.0346	0.0294	0.0266	0.0256	0.0266	9.0408	6.2218	4.1009	3.0410	1.9748
A to Z↑	0.0438	0.0344	0.0319	0.0315	0.0326	13.1780	8.5522	5.9308	4.6087	2.9664
B to Z↓	0.0314	0.0266	0.0241	0.0226	0.0221	9.0429	6.2270	4.1099	3.0478	1.9791
B to Z↑	0.0389	0.0297	0.0275	0.0265	0.0261	13.4706	8.4535	5.8498	4.5305	2.9924
C to Z↓	0.0298	0.0259	0.0253	0.0243	0.0239	5.6774	3.9363	2.7320	2.0510	1.3346
C to Z↑	0.0503	0.0412	0.0402	0.0396	0.0393	12.5252	8.0368	5.5735	4.3244	2.8077
	X12	X17	X23	X35	X46	X12	X17	X23	X35	X46
A to Z↓	0.0256	0.0250	0.0248	0.0247	0.0246	1.4786	1.0160	0.7491	0.5005	0.3782
A to Z↑	0.0321	0.0312	0.0312	0.0314	0.0312	2.2967	1.5494	1.1562	0.7751	0.5853
B to Z↓	0.0213	0.0209	0.0205	0.0205	0.0208	1.4813	1.0190	0.7510	0.5019	0.3794
B to Z↑	0.0258	0.0248	0.0248	0.0248	0.0252	2.3252	1.5377	1.1625	0.7777	0.5833
C to Z↓	0.0235	0.0224	0.0225	0.0224	0.0225	1.0131	0.6706	0.5064	0.3425	0.2561
C to Z↑	0.0393	0.0372	0.0375	0.0372	0.0375	2.1777	1.4571	1.0925	0.7321	0.5508

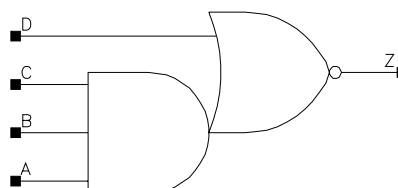


HS65_LS_AOI13

Cell Description

2 wide 3-1 AND-OR-INVERT

Logical Symbol



Functions

A	B	C	D	Z
1	1	1	-	0
-	-	-	1	0
0	-	-	0	1
-	0	-	0	1
-	-	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.40	3.6400
X3	2.6	1.40	3.6400
X4	2.6	1.40	3.6400
X5	2.6	1.40	3.6400
X8	2.6	2.40	6.2400
X10	2.6	2.40	6.2400
X15	2.6	3.40	8.8400
X20	2.6	4.60	11.9600
X31	2.6	6.60	17.1600
X41	2.6	8.60	22.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X2	7.966e-08	3.935e-10
X3	1.045e-07	5.850e-10
X4	1.462e-07	8.202e-10
X5	1.856e-07	1.051e-09
X8	2.903e-07	1.593e-09
X10	3.728e-07	2.059e-09
X15	5.766e-07	3.075e-09
X20	7.784e-07	4.099e-09
X31	1.142e-06	6.106e-09
X41	1.544e-06	8.129e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	1.934e-05	3.281e-08
X3	2.692e-05	3.651e-08
X4	3.956e-05	4.165e-08
X5	5.217e-05	4.655e-08
X8	7.991e-05	6.726e-08
X10	1.062e-04	7.730e-08
X15	1.642e-04	1.065e-07
X20	2.234e-04	1.393e-07
X31	3.296e-04	1.988e-07
X41	4.458e-04	2.587e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	1.718e-05	2.967e-08
X3	2.373e-05	3.231e-08
X4	3.471e-05	3.596e-08
X5	4.564e-05	3.947e-08
X8	7.011e-05	5.661e-08
X10	9.294e-05	6.375e-08
X15	1.436e-04	8.667e-08
X20	1.955e-04	1.129e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

X31	2.882e-04	1.596e-07
X41	3.898e-04	2.068e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X3	X4	X5	X8
A to Z	3.312e-03	4.430e-03	5.927e-03	7.519e-03	1.261e-02
B to Z	2.932e-03	3.867e-03	5.119e-03	6.443e-03	1.088e-02
C to Z	2.635e-03	3.368e-03	4.344e-03	5.381e-03	8.425e-03
D to Z	4.060e-03	5.444e-03	7.445e-03	9.368e-03	1.490e-02
Pin Cycle (vdd)	X10	X15	X20	X31	X41
A to Z	1.588e-02	2.210e-02	3.071e-02	4.405e-02	5.829e-02
B to Z	1.352e-02	1.846e-02	2.614e-02	3.642e-02	4.817e-02
C to Z	1.038e-02	1.437e-02	1.999e-02	2.811e-02	3.713e-02
D to Z	1.861e-02	2.677e-02	3.661e-02	5.357e-02	7.085e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X3	X4	X5	X8
A to Z	7.330e-07	1.629e-06	3.260e-06	4.140e-06	6.480e-06
B to Z	8.700e-07	7.320e-07	1.620e-06	3.380e-06	5.870e-06
C to Z	8.640e-07	1.626e-06	3.380e-06	4.260e-06	7.000e-06
D to Z	-9.694e-06	-1.445e-05	-2.020e-05	-2.557e-05	-3.923e-05
Pin Cycle (vdds)	X10	X15	X20	X31	X41
A to Z	1.010e-05	1.480e-05	1.598e-05	2.014e-05	1.982e-05
B to Z	6.600e-06	9.680e-06	1.064e-05	5.710e-06	8.800e-06
C to Z	8.480e-06	1.120e-05	1.413e-05	1.370e-05	1.305e-05
D to Z	-5.070e-05	-7.346e-05	-1.043e-04	-1.522e-04	-2.025e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X3	X4	X5	X8
A	0.0010	0.0012	0.0015	0.0019	0.0030
B	0.0009	0.0012	0.0015	0.0019	0.0032
C	0.0010	0.0012	0.0016	0.0019	0.0031
D	0.0010	0.0012	0.0016	0.0019	0.0029



Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X10	X15	X20	X31	X41
A	0.0037	0.0054	0.0071	0.0105	0.0141
B	0.0038	0.0053	0.0073	0.0102	0.0138
C	0.0038	0.0051	0.0072	0.0099	0.0134
D	0.0037	0.0053	0.0072	0.0104	0.0140

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X4	X5	X8	X2	X3	X4	X5	X8
A to Z↓	0.0296	0.0281	0.0259	0.0248	0.0271	8.1643	5.6037	3.7155	2.7706	1.8777
A to Z↑	0.0322	0.0301	0.0287	0.0284	0.0299	9.0856	6.1482	4.2779	3.3276	2.1621
B to Z↓	0.0282	0.0265	0.0242	0.0230	0.0256	8.1839	5.6234	3.7300	2.7801	1.8853
B to Z↑	0.0293	0.0272	0.0258	0.0254	0.0273	9.0405	6.1212	4.2605	3.3156	2.1592
C to Z↓	0.0261	0.0236	0.0210	0.0196	0.0202	8.1979	5.6328	3.7376	2.7874	1.8901
C to Z↑	0.0273	0.0245	0.0226	0.0217	0.0221	8.9972	6.0680	4.2050	3.2589	2.1307
D to Z↓	0.0208	0.0199	0.0191	0.0183	0.0190	3.9135	2.7171	1.8952	1.4420	0.9849
D to Z↑	0.0354	0.0328	0.0316	0.0309	0.0317	7.9787	5.3963	3.7546	2.9170	1.9000
	X10	X15	X20	X31	X41	X10	X15	X20	X31	X41
A to Z↓	0.0261	0.0251	0.0258	0.0258	0.0261	1.4174	0.9655	0.7240	0.5000	0.3764
A to Z↑	0.0294	0.0284	0.0291	0.0285	0.0287	1.6784	1.1325	0.8501	0.5698	0.4305
B to Z↓	0.0243	0.0231	0.0241	0.0237	0.0239	1.4233	0.9698	0.7279	0.5022	0.3783
B to Z↑	0.0264	0.0252	0.0262	0.0251	0.0252	1.6761	1.1277	0.8480	0.5650	0.4264
C to Z↓	0.0190	0.0185	0.0189	0.0188	0.0189	1.4272	0.9727	0.7300	0.5032	0.3793
C to Z↑	0.0212	0.0205	0.0210	0.0206	0.0207	1.6463	1.1223	0.8415	0.5678	0.4280
D to Z↓	0.0180	0.0176	0.0178	0.0178	0.0178	0.7352	0.4881	0.3664	0.2498	0.1869
D to Z↑	0.0309	0.0302	0.0309	0.0307	0.0308	1.4736	0.9940	0.7472	0.5002	0.3773

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X4	X5	X8	X2	X3	X4	X5	X8
A to Z↓	0.0515	0.0491	0.0448	0.0428	0.0467	14.5624	10.0323	6.5493	4.8470	3.2786
A to Z↑	0.0477	0.0447	0.0429	0.0424	0.0441	13.6843	9.2782	6.4609	5.0213	3.2283
B to Z↓	0.0485	0.0458	0.0416	0.0395	0.0440	14.5582	10.0337	6.5553	4.8498	3.2819
B to Z↑	0.0432	0.0403	0.0384	0.0379	0.0404	13.5779	9.2108	6.4134	4.9807	3.2258
C to Z↓	0.0445	0.0406	0.0360	0.0336	0.0345	14.5844	10.0473	6.5604	4.8544	3.2852
C to Z↑	0.0400	0.0361	0.0336	0.0324	0.0327	13.5281	9.1508	6.3519	4.9195	3.1917
D to Z↓	0.0328	0.0315	0.0303	0.0290	0.0300	6.0522	4.2105	2.9123	2.1908	1.5047
D to Z↑	0.0536	0.0500	0.0484	0.0474	0.0481	11.9864	8.1244	5.6541	4.3904	2.8339
	X10	X15	X20	X31	X41	X10	X15	X20	X31	X41
A to Z↓	0.0447	0.0423	0.0435	0.0432	0.0433	2.4475	1.6260	1.2213	0.8353	0.6257
A to Z↑	0.0434	0.0420	0.0428	0.0417	0.0418	2.5021	1.6860	1.2594	0.8425	0.6349
B to Z↓	0.0415	0.0387	0.0405	0.0395	0.0394	2.4497	1.6274	1.2228	0.8361	0.6268
B to Z↑	0.0392	0.0371	0.0386	0.0368	0.0368	2.4978	1.6727	1.2568	0.8335	0.6276
C to Z↓	0.0324	0.0308	0.0316	0.0311	0.0310	2.4516	1.6293	1.2243	0.8372	0.6272
C to Z↑	0.0315	0.0301	0.0309	0.0300	0.0300	2.4641	1.6656	1.2494	0.8376	0.6305
D to Z↓	0.0283	0.0275	0.0277	0.0277	0.0275	1.1027	0.7311	0.5436	0.3709	0.2767
D to Z↑	0.0470	0.0459	0.0468	0.0463	0.0463	2.1947	1.4760	1.1057	0.7381	0.5556

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X4	X5	X8	X2	X3	X4	X5	X8
A to Z↓	0.0474	0.0451	0.0413	0.0394	0.0430	13.2227	9.0799	5.9314	4.3894	2.9740
A to Z↑	0.0447	0.0419	0.0402	0.0397	0.0413	12.6326	8.5498	5.9461	4.6192	2.9757
B to Z↓	0.0446	0.0421	0.0383	0.0364	0.0406	13.2279	9.0870	5.9367	4.3937	2.9768
B to Z↑	0.0404	0.0377	0.0360	0.0354	0.0378	12.5393	8.4869	5.9032	4.5843	2.9742
C to Z↓	0.0411	0.0375	0.0333	0.0311	0.0319	13.2395	9.0930	5.9414	4.3972	2.9793



Propagation Delay at 125C, 1.15V Worst process

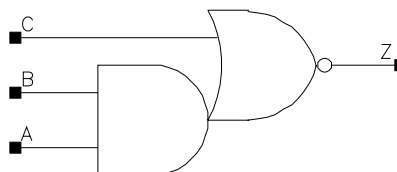
C to Z ↑	0.0374	0.0338	0.0313	0.0302	0.0306	12.4952	8.4312	5.8459	4.5243	2.9417
D to Z ↓	0.0310	0.0298	0.0286	0.0274	0.0284	5.6237	3.9037	2.7009	2.0336	1.3984
D to Z ↑	0.0500	0.0467	0.0451	0.0442	0.0449	11.0588	7.4853	5.2024	4.0369	2.6100
	X10	X15	X20	X31	X41	X10	X15	X20	X31	X41
A to Z ↓	0.0412	0.0391	0.0402	0.0399	0.0400	2.2214	1.4808	1.1119	0.7614	0.5707
A to Z ↑	0.0407	0.0393	0.0401	0.0391	0.0392	2.3050	1.5535	1.1609	0.7773	0.5858
B to Z ↓	0.0383	0.0358	0.0374	0.0365	0.0365	2.2235	1.4822	1.1138	0.7620	0.5716
B to Z ↑	0.0367	0.0348	0.0361	0.0345	0.0345	2.3015	1.5419	1.1586	0.7691	0.5793
C to Z ↓	0.0300	0.0286	0.0293	0.0290	0.0289	2.2256	1.4837	1.1150	0.7633	0.5724
C to Z ↑	0.0294	0.0282	0.0289	0.0281	0.0281	2.2694	1.5354	1.1504	0.7732	0.5819
D to Z ↓	0.0268	0.0261	0.0263	0.0263	0.0261	1.0253	0.6801	0.5063	0.3454	0.2578
D to Z ↑	0.0438	0.0428	0.0437	0.0432	0.0433	2.0203	1.3592	1.0187	0.6803	0.5122

HS65_LS_AOI21

Cell Description

2 Input AND into 2 Input NOR

Logical Symbol



Functions

A	B	C	Z
-	-	1	0
1	1	-	0
0	-	0	1
-	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.00	2.6000
X3	2.6	1.20	3.1200
X4	2.6	1.20	3.1200
X6	2.6	1.20	3.1200
X9	2.6	2.00	5.2000
X12	2.6	2.00	5.2000
X17	2.6	2.60	6.7600
X23	2.6	3.40	8.8400
X35	2.6	5.00	13.0000
X46	2.6	6.60	17.1600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	7.723e-08	2.040e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X3	1.051e-07	2.706e-10
X4	1.475e-07	3.872e-10
X6	1.873e-07	4.705e-10
X9	3.038e-07	7.036e-10
X12	3.872e-07	9.867e-10
X17	5.896e-07	1.436e-09
X23	7.895e-07	1.886e-09
X35	1.182e-06	2.802e-09
X46	1.596e-06	3.701e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	1.909e-05	2.481e-08
X3	2.730e-05	2.840e-08
X4	4.019e-05	3.083e-08
X6	5.290e-05	3.320e-08
X9	8.342e-05	4.453e-08
X12	1.106e-04	4.898e-08
X17	1.695e-04	6.419e-08
X23	2.277e-04	8.001e-08
X35	3.463e-04	1.130e-07
X46	4.663e-04	1.460e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	1.693e-05	2.299e-08
X3	2.404e-05	2.606e-08
X4	3.522e-05	2.782e-08
X6	4.623e-05	2.953e-08
X9	7.310e-05	3.926e-08
X12	9.667e-05	4.234e-08
X17	1.481e-04	5.461e-08
X23	1.990e-04	6.748e-08
X35	3.024e-04	9.446e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

X46	4.074e-04	1.215e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X3	X4	X6	X9
A (stable)	5.038e-05	9.275e-05	1.319e-04	1.717e-04	2.984e-04
B (stable)	3.604e-04	5.883e-04	8.147e-04	1.036e-03	1.720e-03
C (stable)	1.500e-05	8.000e-05	7.687e-05	8.374e-05	1.499e-04
A to Z	3.054e-03	4.400e-03	5.879e-03	7.391e-03	1.149e-02
B to Z	2.797e-03	3.916e-03	5.146e-03	6.372e-03	9.344e-03
C to Z	1.940e-03	2.536e-03	3.191e-03	3.917e-03	5.551e-03
Pin Cycle (vdd)	X12	X17	X23	X35	X46
A (stable)	3.641e-04	5.485e-04	7.696e-04	1.156e-03	1.434e-03
B (stable)	2.135e-03	2.959e-03	4.069e-03	6.093e-03	7.947e-03
C (stable)	1.997e-04	2.387e-04	1.717e-04	2.280e-04	4.859e-04
A to Z	1.446e-02	2.063e-02	2.758e-02	4.145e-02	5.440e-02
B to Z	1.178e-02	1.670e-02	2.221e-02	3.331e-02	4.437e-02
C to Z	7.023e-03	1.007e-02	1.332e-02	2.026e-02	2.632e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X3	X4	X6	X9
A (stable)	-4.319e-06	-6.232e-06	-9.058e-06	-1.188e-05	-1.807e-05
B (stable)	-1.408e-04	-2.144e-04	-3.018e-04	-3.895e-04	-5.854e-04
C (stable)	3.357e-04	5.165e-04	7.213e-04	9.272e-04	1.396e-03
A to Z	-6.792e-06	-7.088e-06	-1.288e-05	-1.499e-05	-2.112e-05
B to Z	-5.750e-06	-7.848e-06	-8.180e-06	-1.033e-05	-1.850e-05
C to Z	8.270e-07	1.733e-06	2.875e-06	3.813e-06	5.219e-06
Pin Cycle (vdds)	X12	X17	X23	X35	X46
A (stable)	-2.319e-05	-3.088e-05	-4.258e-05	-6.396e-05	-8.096e-05
B (stable)	-7.631e-04	-9.697e-04	-1.324e-03	-1.940e-03	-2.564e-03
C (stable)	1.816e-03	2.295e-03	3.136e-03	4.591e-03	6.065e-03
A to Z	-2.751e-05	-3.687e-05	-4.838e-05	-7.594e-05	-8.450e-05
B to Z	-2.363e-05	-3.090e-05	-3.876e-05	-5.922e-05	-7.450e-05
C to Z	8.284e-06	1.308e-05	1.682e-05	2.230e-05	2.600e-05



Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X3	X4	X6	X9
A	0.0013	0.0013	0.0017	0.0020	0.0036
B	0.0010	0.0013	0.0017	0.0020	0.0031
C	0.0010	0.0012	0.0016	0.0019	0.0028
Pin	X12	X17	X23	X35	X46
A	0.0042	0.0057	0.0081	0.0120	0.0152
B	0.0037	0.0055	0.0073	0.0110	0.0151
C	0.0035	0.0052	0.0069	0.0105	0.0135

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X4	X6	X9	X2	X3	X4	X6	X9
A to Z↓	0.0221	0.0219	0.0202	0.0193	0.0194	5.7964	3.9685	2.6635	1.9936	1.3048
A to Z↑	0.0327	0.0303	0.0289	0.0284	0.0285	9.5368	6.1088	4.2644	3.3125	2.1187
B to Z↓	0.0215	0.0205	0.0185	0.0173	0.0164	5.8180	3.9833	2.6747	1.9995	1.3090
B to Z↑	0.0316	0.0280	0.0261	0.0252	0.0242	9.7115	6.0431	4.1978	3.2440	2.1487
C to Z↓	0.0146	0.0137	0.0126	0.0119	0.0112	3.9677	2.7380	1.9139	1.4454	0.9430
C to Z↑	0.0244	0.0212	0.0195	0.0188	0.0179	8.9951	5.7239	3.9887	3.0884	2.0025
	X12	X17	X23	X35	X46	X12	X17	X23	X35	X46
A to Z↓	0.0186	0.0184	0.0183	0.0183	0.0180	0.9830	0.6861	0.5057	0.3399	0.2583
A to Z↑	0.0280	0.0273	0.0272	0.0273	0.0271	1.6372	1.1248	0.8338	0.5608	0.4260
B to Z↓	0.0157	0.0158	0.0155	0.0155	0.0156	0.9864	0.6894	0.5082	0.3414	0.2595
B to Z↑	0.0238	0.0230	0.0230	0.0230	0.0231	1.6685	1.1166	0.8419	0.5645	0.4243
C to Z↓	0.0110	0.0106	0.0106	0.0107	0.0105	0.7221	0.4824	0.3643	0.2486	0.1869
C to Z↑	0.0178	0.0176	0.0175	0.0177	0.0175	1.5536	1.0547	0.7871	0.5289	0.4003

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X4	X6	X9	X2	X3	X4	X6	X9

Propagation Delay at 125C, 1.10V Worst process

A to Z↓	0.0366	0.0365	0.0334	0.0319	0.0320	9.9388	6.8464	4.5158	3.3602	2.1905
A to Z↑	0.0496	0.0458	0.0439	0.0433	0.0433	14.4985	9.2279	6.4425	5.0050	3.1939
B to Z↓	0.0358	0.0344	0.0309	0.0290	0.0273	9.9533	6.8542	4.5197	3.3641	2.1930
B to Z↑	0.0477	0.0420	0.0394	0.0382	0.0364	14.7981	9.1242	6.3478	4.9141	3.2160
C to Z↓	0.0226	0.0213	0.0198	0.0187	0.0176	6.1006	4.2365	2.9418	2.2065	1.4412
C to Z↑	0.0355	0.0310	0.0287	0.0277	0.0260	13.6328	8.5908	5.9913	4.6458	2.9944
	X12	X17	X23	X35	X46	X12	X17	X23	X35	X46
A to Z↓	0.0305	0.0300	0.0297	0.0295	0.0290	1.6312	1.1181	0.8242	0.5486	0.4147
A to Z↑	0.0424	0.0412	0.0410	0.0411	0.0407	2.4687	1.6777	1.2457	0.8351	0.6302
B to Z↓	0.0260	0.0259	0.0254	0.0253	0.0253	1.6331	1.1200	0.8253	0.5493	0.4152
B to Z↑	0.0359	0.0346	0.0345	0.0345	0.0346	2.4943	1.6631	1.2502	0.8370	0.6283
C to Z↓	0.0172	0.0166	0.0165	0.0167	0.0164	1.0892	0.7216	0.5438	0.3675	0.2753
C to Z↑	0.0259	0.0256	0.0253	0.0257	0.0252	2.3175	1.5643	1.1669	0.7818	0.5888

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X4	X6	X9	X2	X3	X4	X6	X9
A to Z↓	0.0340	0.0339	0.0311	0.0297	0.0298	9.0776	6.2295	4.1124	3.0608	1.9977
A to Z↑	0.0463	0.0429	0.0410	0.0405	0.0404	13.3778	8.5106	5.9342	4.6049	2.9418
B to Z↓	0.0334	0.0320	0.0288	0.0270	0.0255	9.0824	6.2363	4.1169	3.0642	1.9996
B to Z↑	0.0444	0.0392	0.0367	0.0356	0.0340	13.6484	8.4186	5.8468	4.5188	2.9649
C to Z↓	0.0214	0.0202	0.0187	0.0177	0.0166	5.6713	3.9283	2.7280	2.0474	1.3382
C to Z↑	0.0333	0.0291	0.0269	0.0260	0.0244	12.5757	7.9251	5.5198	4.2773	2.7609
	X12	X17	X23	X35	X46	X12	X17	X23	X35	X46
A to Z↓	0.0284	0.0279	0.0277	0.0276	0.0271	1.4888	1.0230	0.7541	0.5030	0.3805
A to Z↑	0.0396	0.0385	0.0384	0.0384	0.0381	2.2709	1.5462	1.1474	0.7698	0.5817
B to Z↓	0.0243	0.0242	0.0238	0.0237	0.0238	1.4907	1.0250	0.7554	0.5037	0.3810
B to Z↑	0.0335	0.0323	0.0322	0.0322	0.0323	2.2977	1.5331	1.1527	0.7716	0.5796
C to Z↓	0.0163	0.0157	0.0157	0.0158	0.0156	1.0127	0.6716	0.5063	0.3427	0.2568
C to Z↑	0.0244	0.0240	0.0238	0.0241	0.0237	2.1355	1.4427	1.0763	0.7211	0.5436



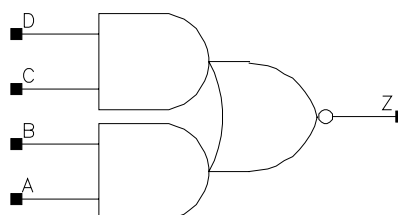


HS65_LS_AOI22

Cell Description

Double 2 Input AND into 2 Input NOR, 8x Drive

Logical Symbol



Functions

A	B	C	D	Z
-	-	1	1	0
1	1	-	-	0
-	0	-	0	1
0	-	0	-	1
-	0	0	-	1
0	-	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X1	2.6	1.40	3.6400
X3	2.6	1.40	3.6400
X4	2.6	1.40	3.6400
X6	2.6	1.40	3.6400
X8	2.6	2.40	6.2400
X11	2.6	2.40	6.2400
X17	2.6	3.40	8.8400
X22	2.6	4.60	11.9600
X33	2.6	6.60	17.1600
X44	2.6	8.60	22.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X1	8.783e-08	2.478e-10
X3	1.275e-07	3.643e-10
X4	1.847e-07	5.225e-10
X6	2.327e-07	6.641e-10
X8	3.724e-07	9.972e-10
X11	4.765e-07	1.280e-09
X17	7.248e-07	1.888e-09
X22	9.730e-07	2.529e-09
X33	1.465e-06	3.737e-09
X44	1.963e-06	4.961e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X1	2.119e-05	2.861e-08
X3	3.400e-05	3.155e-08
X4	5.154e-05	3.463e-08
X6	6.737e-05	3.759e-08
X8	1.052e-04	5.314e-08
X11	1.392e-04	5.908e-08
X17	2.128e-04	8.050e-08
X22	2.864e-04	1.039e-07
X33	4.319e-04	1.467e-07
X44	5.799e-04	1.897e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X1	1.889e-05	2.661e-08
X3	2.998e-05	2.873e-08
X4	4.524e-05	3.089e-08
X6	5.899e-05	3.298e-08
X8	9.235e-05	4.628e-08
X11	1.219e-04	5.045e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

X17	1.863e-04	6.791e-08
X22	2.508e-04	8.720e-08
X33	3.783e-04	1.221e-07
X44	5.079e-04	1.571e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X1	X3	X4	X6	X8
A (stable)	5.313e-05	9.609e-05	1.371e-04	1.808e-04	3.228e-04
B (stable)	6.331e-05	1.124e-04	1.625e-04	2.135e-04	3.922e-04
C (stable)	3.118e-05	5.441e-05	7.876e-05	1.063e-04	2.393e-04
D (stable)	1.191e-04	2.062e-04	2.942e-04	4.186e-04	7.709e-04
A to Z	3.703e-03	5.553e-03	7.477e-03	9.540e-03	1.472e-02
B to Z	3.499e-03	5.122e-03	6.823e-03	8.646e-03	1.297e-02
C to Z	2.351e-03	3.439e-03	4.561e-03	5.725e-03	9.336e-03
D to Z	2.079e-03	2.911e-03	3.766e-03	4.600e-03	7.293e-03
Pin Cycle (vdd)	X11	X17	X22	X33	X44
A (stable)	4.136e-04	6.268e-04	8.372e-04	1.241e-03	1.648e-03
B (stable)	4.941e-04	7.490e-04	9.989e-04	1.505e-03	1.978e-03
C (stable)	2.976e-04	4.279e-04	5.827e-04	8.953e-04	1.189e-03
D (stable)	9.535e-04	1.446e-03	1.924e-03	2.856e-03	3.814e-03
A to Z	1.863e-02	2.714e-02	3.653e-02	5.462e-02	7.237e-02
B to Z	1.641e-02	2.374e-02	3.194e-02	4.808e-02	6.367e-02
C to Z	1.169e-02	1.683e-02	2.288e-02	3.451e-02	4.575e-02
D to Z	9.117e-03	1.295e-02	1.769e-02	2.718e-02	3.593e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X1	X3	X4	X6	X8
A (stable)	-2.217e-06	-4.487e-06	-6.904e-06	-8.278e-06	-1.284e-05
B (stable)	-2.965e-06	-4.287e-06	-7.252e-06	-9.470e-06	-1.463e-05
C (stable)	2.348e-06	4.496e-06	5.870e-06	8.192e-06	9.887e-06
D (stable)	6.400e-06	1.343e-05	2.070e-05	2.744e-05	4.104e-05
A to Z	-5.903e-06	-1.069e-05	-1.580e-05	-1.925e-05	-2.562e-05
B to Z	-2.618e-05	-4.649e-05	-6.821e-05	-8.849e-05	-1.220e-04
C to Z	4.387e-07	8.173e-07	2.164e-06	2.941e-06	6.290e-06



Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D to Z	2.547e-07	1.457e-06	2.201e-06	3.987e-06	5.700e-06
Pin Cycle (vdds)	X11	X17	X22	X33	X44
A (stable)	-1.646e-05	-2.377e-05	-3.172e-05	-4.573e-05	-6.050e-05
B (stable)	-1.891e-05	-2.766e-05	-3.721e-05	-5.520e-05	-7.337e-05
C (stable)	1.343e-05	2.017e-05	2.808e-05	3.658e-05	4.738e-05
D (stable)	5.534e-05	8.158e-05	1.095e-04	1.626e-04	2.158e-04
A to Z	-3.271e-05	-4.677e-05	-5.996e-05	-9.350e-05	-1.203e-04
B to Z	-1.634e-04	-2.370e-04	-3.216e-04	-4.703e-04	-6.248e-04
C to Z	8.813e-06	1.128e-05	1.790e-05	1.485e-05	1.588e-05
D to Z	8.447e-06	1.358e-05	1.652e-05	1.987e-05	2.298e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X1	X3	X4	X6	X8
A	0.0010	0.0013	0.0016	0.0020	0.0033
B	0.0010	0.0013	0.0017	0.0020	0.0030
C	0.0009	0.0012	0.0015	0.0019	0.0034
D	0.0009	0.0012	0.0016	0.0019	0.0029
Pin	X11	X17	X22	X33	X44
A	0.0041	0.0055	0.0078	0.0111	0.0149
B	0.0037	0.0054	0.0072	0.0112	0.0150
C	0.0041	0.0054	0.0076	0.0107	0.0143
D	0.0036	0.0053	0.0069	0.0109	0.0148

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X6	X8	X1	X3	X4	X6	X8
A to Z↓	0.0273	0.0252	0.0233	0.0223	0.0224	6.7944	3.9135	2.6311	1.9658	1.2954
A to Z↑	0.0408	0.0369	0.0339	0.0337	0.0333	10.4383	6.0469	4.0259	3.1274	2.0124
B to Z↓	0.0264	0.0235	0.0213	0.0202	0.0198	6.8289	3.9237	2.6390	1.9709	1.3000
B to Z↑	0.0387	0.0342	0.0310	0.0305	0.0298	10.4178	6.0102	3.9972	3.0981	2.0359
C to Z↓	0.0203	0.0188	0.0174	0.0167	0.0174	6.7376	3.8937	2.6170	1.9647	1.2908
C to Z↑	0.0282	0.0256	0.0238	0.0235	0.0247	10.3840	5.9752	4.0011	3.1029	2.0003

Propagation Delay at 25C, 1.20V Typ process

D to Z↓	0.0190	0.0168	0.0151	0.0141	0.0143	6.7817	3.9091	2.6299	1.9720	1.2967
D to Z↑	0.0257	0.0227	0.0207	0.0200	0.0207	10.3310	5.9362	3.9705	3.0732	2.0271
	X11	X17	X22	X33	X44	X11	X17	X22	X33	X44
A to Z↓	0.0217	0.0219	0.0218	0.0223	0.0225	0.9784	0.6824	0.5033	0.3426	0.2590
A to Z↑	0.0327	0.0328	0.0327	0.0334	0.0336	1.5568	1.0631	0.7904	0.5362	0.4034
B to Z↓	0.0192	0.0193	0.0193	0.0196	0.0199	0.9816	0.6850	0.5052	0.3441	0.2601
B to Z↑	0.0294	0.0289	0.0291	0.0296	0.0298	1.5784	1.0587	0.7964	0.5363	0.4050
C to Z↓	0.0168	0.0166	0.0167	0.0171	0.0174	0.9747	0.6790	0.5024	0.3410	0.2571
C to Z↑	0.0241	0.0240	0.0241	0.0247	0.0249	1.5464	1.0552	0.7844	0.5337	0.4024
D to Z↓	0.0138	0.0138	0.0139	0.0143	0.0145	0.9794	0.6829	0.5051	0.3430	0.2588
D to Z↑	0.0204	0.0199	0.0203	0.0208	0.0209	1.5716	1.0517	0.7931	0.5315	0.4005

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X6	X8	X1	X3	X4	X6	X8
A to Z↓	0.0457	0.0425	0.0388	0.0370	0.0371	11.5797	6.7178	4.4329	3.2879	2.1649
A to Z↑	0.0619	0.0566	0.0521	0.0518	0.0508	15.6904	9.1324	6.0767	4.7179	3.0255
B to Z↓	0.0442	0.0398	0.0359	0.0338	0.0332	11.5876	6.7206	4.4343	3.2899	2.1662
B to Z↑	0.0583	0.0520	0.0473	0.0466	0.0452	15.6043	9.0501	6.0197	4.6666	3.0417
C to Z↓	0.0332	0.0307	0.0283	0.0273	0.0284	11.4483	6.6711	4.3967	3.2859	2.1504
C to Z↑	0.0412	0.0378	0.0352	0.0348	0.0365	15.5006	8.9865	6.0021	4.6593	2.9922
D to Z↓	0.0310	0.0276	0.0249	0.0233	0.0236	11.4699	6.6787	4.4030	3.2915	2.1544
D to Z↑	0.0372	0.0330	0.0303	0.0293	0.0302	15.3746	8.9026	5.9448	4.6102	3.0115
	X11	X17	X22	X33	X44	X11	X17	X22	X33	X44
A to Z↓	0.0357	0.0357	0.0355	0.0359	0.0361	1.6181	1.1088	0.8177	0.5513	0.4151
A to Z↑	0.0501	0.0499	0.0498	0.0503	0.0504	2.3357	1.5831	1.1774	0.7920	0.5957
B to Z↓	0.0320	0.0318	0.0317	0.0321	0.0322	1.6191	1.1100	0.8183	0.5521	0.4155
B to Z↑	0.0447	0.0438	0.0441	0.0445	0.0447	2.3544	1.5726	1.1802	0.7942	0.5979
C to Z↓	0.0273	0.0269	0.0270	0.0273	0.0276	1.6072	1.1000	0.8130	0.5476	0.4113
C to Z↑	0.0358	0.0352	0.0355	0.0359	0.0361	2.3094	1.5643	1.1628	0.7849	0.5909



Propagation Delay at 125C, 1.10V Worst process

D to Z↓	0.0227	0.0224	0.0225	0.0231	0.0232	1.6105	1.1031	0.8152	0.5492	0.4126
D to Z↑	0.0297	0.0290	0.0294	0.0301	0.0302	2.3321	1.5557	1.1706	0.7823	0.5884

Propagation Delay at 125C, 1.15V Worst process

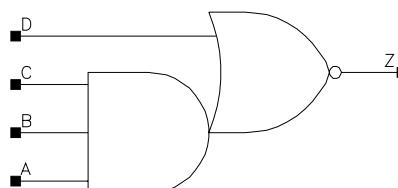
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X6	X8	X1	X3	X4	X6	X8
A to Z↓	0.0424	0.0393	0.0360	0.0344	0.0345	10.5906	6.1172	4.0410	2.9990	1.9755
A to Z↑	0.0578	0.0529	0.0486	0.0483	0.0474	14.4961	8.4173	5.5935	4.3391	2.7853
B to Z↓	0.0412	0.0370	0.0334	0.0315	0.0310	10.6001	6.1202	4.0428	3.0004	1.9772
B to Z↑	0.0545	0.0485	0.0441	0.0434	0.0422	14.4284	8.3474	5.5409	4.2938	2.8032
C to Z↓	0.0308	0.0286	0.0264	0.0254	0.0265	10.4660	6.0725	4.0084	2.9953	1.9632
C to Z↑	0.0387	0.0355	0.0331	0.0327	0.0343	14.3427	8.2882	5.5316	4.2918	2.7581
D to Z↓	0.0290	0.0258	0.0233	0.0218	0.0221	10.4902	6.0818	4.0170	3.0008	1.9674
D to Z↑	0.0349	0.0310	0.0284	0.0274	0.0284	14.2341	8.2153	5.4799	4.2459	2.7788
	X11	X17	X22	X33	X44	X11	X17	X22	X33	X44
A to Z↓	0.0333	0.0333	0.0331	0.0335	0.0337	1.4776	1.0153	0.7488	0.5058	0.3809
A to Z↑	0.0467	0.0466	0.0465	0.0471	0.0472	2.1487	1.4582	1.0846	0.7307	0.5494
B to Z↓	0.0298	0.0297	0.0296	0.0300	0.0302	1.4790	1.0165	0.7495	0.5064	0.3814
B to Z↑	0.0416	0.0409	0.0411	0.0416	0.0418	2.1684	1.4492	1.0882	0.7320	0.5516
C to Z↓	0.0254	0.0251	0.0252	0.0255	0.0259	1.4682	1.0075	0.7449	0.5024	0.3776
C to Z↑	0.0335	0.0331	0.0333	0.0338	0.0339	2.1274	1.4426	1.0722	0.7246	0.5455
D to Z↓	0.0212	0.0210	0.0211	0.0217	0.0218	1.4719	1.0106	0.7470	0.5040	0.3789
D to Z↑	0.0279	0.0272	0.0276	0.0283	0.0283	2.1504	1.4351	1.0801	0.7223	0.5434

HS65_LS_AOI31

Cell Description

2 wide 3-1 AND-OR-INVERT

Logical Symbol



Functions

A	B	C	D	Z
1	1	1	-	0
-	-	-	1	0
0	-	-	0	1
-	0	-	0	1
-	-	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.40	3.6400
X3	2.6	1.40	3.6400
X4	2.6	1.40	3.6400
X5	2.6	1.40	3.6400
X8	2.6	2.40	6.2400
X10	2.6	2.40	6.2400
X15	2.6	3.40	8.8400
X20	2.6	4.60	11.9600
X31	2.6	6.60	17.1600
X41	2.6	8.60	22.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X2	8.236e-08	1.936e-10
X3	1.051e-07	2.602e-10
X4	1.515e-07	3.851e-10
X5	1.916e-07	4.934e-10
X8	3.012e-07	7.265e-10
X10	3.852e-07	9.513e-10
X15	5.950e-07	1.376e-09
X20	8.028e-07	1.811e-09
X31	1.179e-06	2.725e-09
X41	1.594e-06	3.616e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	1.988e-05	2.814e-08
X3	2.715e-05	2.975e-08
X4	4.066e-05	3.210e-08
X5	5.349e-05	3.430e-08
X8	8.224e-05	4.719e-08
X10	1.090e-04	5.138e-08
X15	1.682e-04	7.001e-08
X20	2.289e-04	8.899e-08
X31	3.381e-04	1.248e-07
X41	4.570e-04	1.605e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	1.765e-05	2.626e-08
X3	2.392e-05	2.744e-08
X4	3.566e-05	2.911e-08
X5	4.678e-05	3.066e-08
X8	7.212e-05	4.195e-08
X10	9.533e-05	4.487e-08
X15	1.471e-04	6.045e-08
X20	2.002e-04	7.648e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

X31	2.954e-04	1.064e-07
X41	3.995e-04	1.362e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X3	X4	X5	X8
A to Z	3.762e-03	5.050e-03	6.880e-03	8.765e-03	1.417e-02
B to Z	3.400e-03	4.509e-03	6.089e-03	7.710e-03	1.235e-02
C to Z	3.045e-03	3.952e-03	5.320e-03	6.632e-03	9.945e-03
D to Z	1.988e-03	2.492e-03	3.339e-03	4.040e-03	6.233e-03
Pin Cycle (vdd)	X10	X15	X20	X31	X41
A to Z	1.796e-02	2.615e-02	3.547e-02	5.304e-02	6.989e-02
B to Z	1.573e-02	2.250e-02	3.074e-02	4.531e-02	5.971e-02
C to Z	1.261e-02	1.837e-02	2.469e-02	3.700e-02	4.856e-02
D to Z	7.704e-03	1.093e-02	1.480e-02	2.156e-02	2.811e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X3	X4	X5	X8
A to Z	-5.079e-06	-7.848e-06	-1.109e-05	-1.346e-05	-2.323e-05
B to Z	-5.886e-06	-7.821e-06	-1.096e-05	-1.422e-05	-2.411e-05
C to Z	-5.744e-06	-7.840e-06	-1.019e-05	-1.308e-05	-1.947e-05
D to Z	7.813e-07	1.086e-06	2.152e-06	3.621e-06	4.711e-06
Pin Cycle (vdds)	X10	X15	X20	X31	X41
A to Z	-2.599e-05	-4.100e-05	-5.416e-05	-8.900e-05	-1.212e-04
B to Z	-3.023e-05	-3.985e-05	-5.613e-05	-9.420e-05	-1.216e-04
C to Z	-2.484e-05	-2.924e-05	-4.526e-05	-7.380e-05	-1.102e-04
D to Z	6.674e-06	1.175e-05	1.509e-05	1.646e-05	1.555e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X3	X4	X5	X8
A	0.0010	0.0012	0.0016	0.0020	0.0031
B	0.0010	0.0013	0.0016	0.0020	0.0033
C	0.0010	0.0013	0.0016	0.0020	0.0032
D	0.0010	0.0012	0.0015	0.0019	0.0029



Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X10	X15	X20	X31	X41
A	0.0039	0.0056	0.0075	0.0111	0.0148
B	0.0041	0.0055	0.0076	0.0108	0.0144
C	0.0040	0.0053	0.0075	0.0105	0.0140
D	0.0036	0.0053	0.0071	0.0101	0.0139

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X4	X5	X8	X2	X3	X4	X5	X8
A to Z↓	0.0312	0.0297	0.0276	0.0263	0.0280	8.2076	5.6504	3.7406	2.7898	1.8921
A to Z↑	0.0359	0.0337	0.0323	0.0320	0.0329	9.0467	6.1484	4.2658	3.3229	2.1559
B to Z↓	0.0301	0.0284	0.0261	0.0247	0.0263	8.2212	5.6639	3.7516	2.7988	1.8991
B to Z↑	0.0333	0.0311	0.0297	0.0292	0.0299	9.0236	6.1251	4.2452	3.3058	2.1304
C to Z↓	0.0273	0.0251	0.0231	0.0214	0.0213	8.2330	5.6708	3.7563	2.8032	1.9030
C to Z↑	0.0305	0.0279	0.0267	0.0258	0.0252	8.9666	6.0675	4.1891	3.2485	2.1019
D to Z↓	0.0143	0.0132	0.0124	0.0115	0.0114	3.9372	2.7495	1.9017	1.4481	0.9901
D to Z↑	0.0226	0.0204	0.0193	0.0184	0.0183	7.8072	5.2950	3.6656	2.8518	1.8450
	X10	X15	X20	X31	X41	X10	X15	X20	X31	X41
A to Z↓	0.0270	0.0266	0.0270	0.0277	0.0277	1.4294	0.9739	0.7294	0.5034	0.3791
A to Z↑	0.0326	0.0321	0.0326	0.0328	0.0329	1.6756	1.1299	0.8471	0.5688	0.4282
B to Z↓	0.0255	0.0248	0.0251	0.0256	0.0257	1.4346	0.9772	0.7321	0.5050	0.3806
B to Z↑	0.0296	0.0292	0.0295	0.0297	0.0299	1.6511	1.1238	0.8390	0.5634	0.4246
C to Z↓	0.0206	0.0204	0.0204	0.0211	0.0210	1.4375	0.9795	0.7338	0.5063	0.3816
C to Z↑	0.0248	0.0247	0.0248	0.0255	0.0255	1.6221	1.1182	0.8318	0.5673	0.4278
D to Z↓	0.0108	0.0106	0.0106	0.0107	0.0111	0.7394	0.4911	0.3689	0.2513	0.1880
D to Z↑	0.0178	0.0176	0.0178	0.0176	0.0178	1.4299	0.9738	0.7275	0.4902	0.3691

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X4	X5	X8	X2	X3	X4	X5	X8
A to Z↓	0.0551	0.0528	0.0483	0.0458	0.0487	14.6450	10.1245	6.5979	4.8877	3.3088
A to Z↑	0.0540	0.0508	0.0490	0.0486	0.0490	13.6392	9.2964	6.4498	5.0219	3.2244
B to Z↓	0.0524	0.0498	0.0453	0.0428	0.0455	14.6515	10.1238	6.6018	4.8915	3.3104
B to Z↑	0.0499	0.0468	0.0449	0.0444	0.0449	13.5568	9.2252	6.3942	4.9750	3.1975
C to Z↓	0.0472	0.0437	0.0400	0.0370	0.0366	14.6567	10.1291	6.6027	4.8914	3.3121
C to Z↑	0.0455	0.0419	0.0403	0.0391	0.0380	13.4993	9.1578	6.3290	4.9102	3.1621
D to Z↓	0.0222	0.0206	0.0195	0.0181	0.0179	6.0787	4.2531	2.9111	2.1913	1.5063
D to Z↑	0.0326	0.0296	0.0281	0.0270	0.0264	11.6382	7.9163	5.4805	4.2616	2.7376
	X10	X15	X20	X31	X41	X10	X15	X20	X31	X41
A to Z↓	0.0466	0.0453	0.0458	0.0466	0.0464	2.4709	1.6423	1.2311	0.8422	0.6311
A to Z↑	0.0486	0.0482	0.0486	0.0488	0.0488	2.5046	1.6863	1.2591	0.8430	0.6338
B to Z↓	0.0439	0.0418	0.0425	0.0429	0.0427	2.4726	1.6432	1.2319	0.8427	0.6315
B to Z↑	0.0447	0.0438	0.0442	0.0443	0.0444	2.4774	1.6706	1.2481	0.8336	0.6270
C to Z↓	0.0352	0.0342	0.0343	0.0351	0.0347	2.4738	1.6439	1.2327	0.8430	0.6316
C to Z↑	0.0375	0.0370	0.0372	0.0379	0.0378	2.4429	1.6632	1.2392	0.8387	0.6307
D to Z↓	0.0169	0.0167	0.0165	0.0166	0.0169	1.1044	0.7325	0.5450	0.3716	0.2772
D to Z↑	0.0257	0.0254	0.0255	0.0251	0.0252	2.1195	1.4349	1.0704	0.7180	0.5399

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X4	X5	X8	X2	X3	X4	X5	X8
A to Z↓	0.0507	0.0485	0.0444	0.0421	0.0448	13.2951	9.1615	5.9747	4.4265	3.0002
A to Z↑	0.0505	0.0475	0.0458	0.0454	0.0459	12.5879	8.5684	5.9349	4.6182	2.9733
B to Z↓	0.0483	0.0458	0.0417	0.0394	0.0420	13.2987	9.1617	5.9788	4.4285	3.0009
B to Z↑	0.0467	0.0438	0.0420	0.0415	0.0420	12.5171	8.5032	5.8864	4.5781	2.9466
C to Z↓	0.0435	0.0403	0.0369	0.0342	0.0339	13.3043	9.1649	5.9809	4.4307	3.0026



Propagation Delay at 125C, 1.15V Worst process

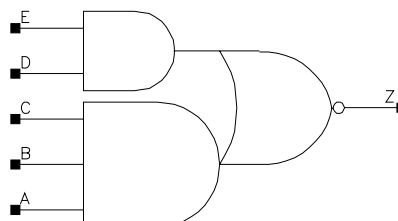
C to Z ↑	0.0426	0.0391	0.0376	0.0364	0.0354	12.4622	8.4431	5.8259	4.5171	2.9140
D to Z ↓	0.0211	0.0196	0.0184	0.0172	0.0169	5.6516	3.9457	2.7013	2.0356	1.4010
D to Z ↑	0.0307	0.0279	0.0265	0.0253	0.0249	10.7651	7.3066	5.0549	3.9273	2.5270
	X10	X15	X20	X31	X41	X10	X15	X20	X31	X41
A to Z ↓	0.0429	0.0418	0.0423	0.0431	0.0429	2.2422	1.4950	1.1209	0.7676	0.5758
A to Z ↑	0.0455	0.0451	0.0455	0.0457	0.0457	2.3070	1.5538	1.1607	0.7774	0.5846
B to Z ↓	0.0404	0.0387	0.0393	0.0397	0.0396	2.2438	1.4961	1.1215	0.7681	0.5761
B to Z ↑	0.0418	0.0410	0.0414	0.0414	0.0416	2.2813	1.5400	1.1502	0.7688	0.5784
C to Z ↓	0.0326	0.0317	0.0318	0.0326	0.0323	2.2446	1.4964	1.1222	0.7686	0.5764
C to Z ↑	0.0349	0.0346	0.0347	0.0354	0.0353	2.2490	1.5332	1.1421	0.7738	0.5826
D to Z ↓	0.0160	0.0158	0.0157	0.0157	0.0161	1.0278	0.6820	0.5082	0.3463	0.2585
D to Z ↑	0.0242	0.0239	0.0240	0.0237	0.0238	1.9551	1.3247	0.9882	0.6632	0.4989

HS65_LS_AOI32

Cell Description

2 wide 3-2 AND-OR-INVERT

Logical Symbol



Functions

A	B	C	D	E	Z
-	-	-	1	1	0
1	1	1	-	-	0
-	-	0	0	-	1
0	-	-	0	-	1
-	0	-	-	0	1
-	-	0	-	0	1
0	-	-	-	0	1
-	0	-	0	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X3	2.6	1.60	4.1600
X5	2.6	1.60	4.1600
X10	2.6	3.00	7.8000
X15	2.6	4.20	10.9200
X20	2.6	5.60	14.5600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X3	1.216e-07	3.446e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X5	2.254e-07	5.912e-10
X10	4.632e-07	1.119e-09
X15	7.025e-07	1.635e-09
X20	9.407e-07	2.164e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X3	3.209e-05	3.215e-08
X5	6.456e-05	3.712e-08
X10	1.341e-04	6.046e-08
X15	2.042e-04	8.167e-08
X20	2.740e-04	1.049e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X3	2.833e-05	2.950e-08
X5	5.661e-05	3.301e-08
X10	1.176e-04	5.272e-08
X15	1.791e-04	7.040e-08
X20	2.403e-04	9.013e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X3	X5	X10	X15	X20
A to Z	6.464e-03	1.115e-02	2.250e-02	3.286e-02	4.484e-02
B to Z	5.933e-03	1.011e-02	1.982e-02	2.917e-02	3.949e-02
C to Z	5.309e-03	8.917e-03	1.764e-02	2.517e-02	3.412e-02
D to Z	3.677e-03	6.166e-03	1.227e-02	1.778e-02	2.423e-02
E to Z	3.162e-03	5.099e-03	9.610e-03	1.389e-02	1.912e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X3	X5	X10	X15	X20
A to Z	-1.175e-05	-1.834e-05	-4.015e-05	-5.273e-05	-7.611e-05
B to Z	-1.256e-05	-1.982e-05	-4.238e-05	-5.471e-05	-8.482e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

C to Z	-1.103e-05	-1.779e-05	-2.849e-05	-4.622e-05	-7.043e-05
D to Z	8.760e-07	2.557e-06	8.734e-06	1.039e-05	1.182e-05
E to Z	9.313e-07	3.383e-06	8.514e-06	1.258e-05	1.148e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X3	X5	X10	X15	X20
A	0.0013	0.0020	0.0043	0.0056	0.0084
B	0.0013	0.0020	0.0040	0.0055	0.0077
C	0.0013	0.0020	0.0037	0.0053	0.0071
D	0.0012	0.0019	0.0041	0.0055	0.0077
E	0.0012	0.0020	0.0036	0.0054	0.0070

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X5	X10	X15	X20	X3	X5	X10	X15	X20
A to Z↓	0.0356	0.0311	0.0305	0.0313	0.0316	5.5724	2.7571	1.3615	0.9693	0.7124
A to Z↑	0.0399	0.0377	0.0376	0.0375	0.0379	5.7954	3.1396	1.5591	1.0679	0.7945
B to Z↓	0.0345	0.0297	0.0283	0.0296	0.0294	5.5840	2.7651	1.3662	0.9726	0.7147
B to Z↑	0.0375	0.0351	0.0343	0.0345	0.0347	5.7722	3.1213	1.5601	1.0619	0.7944
C to Z↓	0.0306	0.0257	0.0250	0.0253	0.0253	5.5885	2.7680	1.3677	0.9743	0.7158
C to Z↑	0.0339	0.0313	0.0315	0.0305	0.0310	5.7556	3.0998	1.5852	1.0602	0.8012
D to Z↓	0.0191	0.0169	0.0167	0.0166	0.0167	3.9095	1.9732	0.9749	0.6802	0.5043
D to Z↑	0.0250	0.0235	0.0236	0.0236	0.0237	5.2935	2.8631	1.4243	0.9736	0.7257
E to Z↓	0.0171	0.0145	0.0138	0.0137	0.0139	3.9247	1.9826	0.9797	0.6845	0.5074
E to Z↑	0.0225	0.0204	0.0200	0.0198	0.0202	5.2678	2.8377	1.4493	0.9709	0.7343

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X5	X10	X15	X20	X3	X5	X10	X15	X20
A to Z↓	0.0640	0.0546	0.0533	0.0538	0.0544	9.9798	4.8020	2.3494	1.6315	1.2030



Propagation Delay at 125C, 1.10V Worst process

A to Z ↑	0.0609	0.0580	0.0575	0.0570	0.0576	8.7596	4.7408	2.3419	1.5909	1.1847
B to Z ↓	0.0613	0.0518	0.0490	0.0504	0.0502	9.9804	4.8040	2.3500	1.6318	1.2034
B to Z ↑	0.0570	0.0538	0.0524	0.0523	0.0526	8.6911	4.6896	2.3345	1.5762	1.1798
C to Z ↓	0.0539	0.0448	0.0432	0.0429	0.0429	9.9794	4.8025	2.3503	1.6323	1.2036
C to Z ↑	0.0514	0.0478	0.0478	0.0462	0.0468	8.6783	4.6609	2.3597	1.5729	1.1858
D to Z ↓	0.0313	0.0275	0.0273	0.0268	0.0269	6.7363	3.2921	1.6036	1.0989	0.8145
D to Z ↑	0.0367	0.0347	0.0347	0.0345	0.0347	7.9163	4.2746	2.1170	1.4347	1.0689
E to Z ↓	0.0283	0.0238	0.0225	0.0222	0.0225	6.7441	3.2980	1.6074	1.1026	0.8170
E to Z ↑	0.0327	0.0298	0.0291	0.0287	0.0292	7.8635	4.2271	2.1375	1.4270	1.0771

Propagation Delay at 125C, 1.15V Worst process

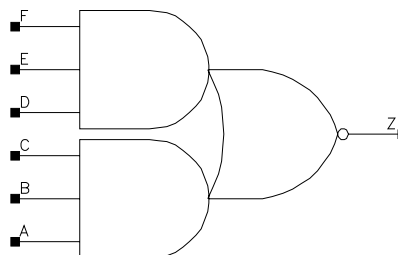
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X5	X10	X15	X20	X3	X5	X10	X15	X20
A to Z ↓	0.0587	0.0502	0.0490	0.0497	0.0502	9.0316	4.3516	2.1322	1.4856	1.0949
A to Z ↑	0.0568	0.0541	0.0537	0.0532	0.0538	8.0736	4.3600	2.1548	1.4657	1.0914
B to Z ↓	0.0563	0.0476	0.0452	0.0465	0.0463	9.0334	4.3537	2.1330	1.4863	1.0954
B to Z ↑	0.0532	0.0502	0.0489	0.0489	0.0491	8.0087	4.3161	2.1492	1.4527	1.0869
C to Z ↓	0.0496	0.0414	0.0399	0.0398	0.0398	9.0306	4.3534	2.1331	1.4864	1.0957
C to Z ↑	0.0479	0.0445	0.0446	0.0431	0.0437	7.9971	4.2899	2.1741	1.4499	1.0930
D to Z ↓	0.0291	0.0257	0.0254	0.0250	0.0251	6.1252	3.0010	1.4654	1.0069	0.7463
D to Z ↑	0.0345	0.0326	0.0326	0.0325	0.0326	7.3051	3.9397	1.9519	1.3241	0.9866
E to Z ↓	0.0264	0.0223	0.0211	0.0208	0.0211	6.1350	3.0079	1.4694	1.0105	0.7487
E to Z ↑	0.0307	0.0280	0.0273	0.0270	0.0274	7.2592	3.8966	1.9734	1.3176	0.9946

HS65_LS_AOI33

Cell Description

Double 3 Input AND into 2 Input NOR

Logical Symbol



Functions

A	B	C	D	E	F	Z
1	1	1	-	-	-	0
-	-	-	1	1	1	0
-	-	0	0	-	-	1
-	-	0	-	0	-	1
-	0	-	-	-	0	1
0	-	-	0	-	-	1
-	0	-	0	-	-	1
0	-	-	-	-	0	1
-	-	0	-	-	0	1
-	0	-	-	0	-	1
0	-	-	-	0	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	2.00	5.2000
X5	2.6	2.00	5.2000
X9	2.6	4.00	10.4000
X14	2.6	5.00	13.0000
X19	2.6	7.00	18.2000



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	1.190e-07	3.420e-10
X5	2.057e-07	5.897e-10
X9	4.006e-07	1.101e-09
X14	6.351e-07	1.618e-09
X19	8.232e-07	2.131e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	3.071e-05	3.592e-08
X5	5.854e-05	4.087e-08
X9	1.127e-04	6.943e-08
X14	1.829e-04	8.875e-08
X19	2.342e-04	1.173e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	2.718e-05	3.314e-08
X5	5.147e-05	3.664e-08
X9	9.911e-05	6.147e-08
X14	1.608e-04	7.739e-08
X19	2.060e-04	1.022e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X5	X9	X14	X19
A to Z	7.519e-03	1.304e-02	2.791e-02	3.881e-02	5.314e-02
B to Z	7.006e-03	1.193e-02	2.527e-02	3.512e-02	4.806e-02
C to Z	6.473e-03	1.080e-02	2.266e-02	3.115e-02	4.283e-02
D to Z	4.840e-03	8.285e-03	1.744e-02	2.452e-02	3.310e-02
E to Z	4.238e-03	7.112e-03	1.482e-02	2.084e-02	2.816e-02
F to Z	3.747e-03	5.973e-03	1.215e-02	1.687e-02	2.279e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X5	X9	X14	X19
A to Z	-1.385e-05	-2.409e-05	-4.988e-05	-7.073e-05	-9.690e-05
B to Z	-1.445e-05	-2.527e-05	-5.261e-05	-7.232e-05	-9.980e-05
C to Z	-1.289e-05	-2.156e-05	-4.734e-05	-6.513e-05	-9.763e-05
D to Z	1.704e-06	4.973e-06	8.804e-06	1.182e-05	1.214e-05
E to Z	1.241e-06	2.859e-06	5.819e-06	6.920e-06	3.421e-06
F to Z	1.935e-06	4.517e-06	8.556e-06	1.000e-05	9.719e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X5	X9	X14	X19
A	0.0013	0.0019	0.0037	0.0056	0.0074
B	0.0013	0.0019	0.0037	0.0054	0.0072
C	0.0014	0.0020	0.0036	0.0053	0.0069
D	0.0012	0.0019	0.0037	0.0055	0.0072
E	0.0013	0.0019	0.0036	0.0054	0.0070
↓	0.0013	0.0019	0.0035	0.0052	0.0069

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X9	X14	X19	X2	X5	X9	X14	X19
A to Z↓	0.0391	0.0346	0.0384	0.0355	0.0372	5.5618	2.7497	1.5022	0.9676	0.7542
A to Z↑	0.0418	0.0400	0.0425	0.0404	0.0414	5.4245	2.9310	1.4903	0.9983	0.7522
B to Z↓	0.0381	0.0330	0.0366	0.0338	0.0354	5.5761	2.7567	1.5063	0.9708	0.7562
B to Z↑	0.0397	0.0373	0.0396	0.0375	0.0385	5.4038	2.9156	1.4822	0.9936	0.7489
C to Z↓	0.0353	0.0296	0.0325	0.0295	0.0312	5.5838	2.7598	1.5090	0.9722	0.7575
C to Z↑	0.0374	0.0343	0.0360	0.0338	0.0347	5.4030	2.9011	1.4794	0.9926	0.7477
D to Z↓	0.0276	0.0247	0.0268	0.0251	0.0259	5.5108	2.7311	1.4907	0.9630	0.7487
D to Z↑	0.0296	0.0284	0.0293	0.0286	0.0287	5.3178	2.8623	1.4512	0.9755	0.7345
E to Z↓	0.0259	0.0226	0.0245	0.0230	0.0238	5.5294	2.7405	1.4969	0.9675	0.7523
E to Z↑	0.0270	0.0255	0.0263	0.0257	0.0259	5.2978	2.8501	1.4439	0.9714	0.7310



Propagation Delay at 25C, 1.20V Typ process

F to Z↓	0.0230	0.0189	0.0200	0.0184	0.0192	5.5477	2.7466	1.5018	0.9701	0.7548
F to Z↑	0.0248	0.0223	0.0226	0.0219	0.0221	5.2962	2.8332	1.4409	0.9709	0.7304

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X9	X14	X19	X2	X5	X9	X14	X19
A to Z↓	0.0707	0.0616	0.0681	0.0615	0.0648	9.8942	4.7892	2.5805	1.6284	1.2746
A to Z↑	0.0641	0.0618	0.0651	0.0616	0.0630	8.1598	4.4115	2.2235	1.4842	1.1157
B to Z↓	0.0684	0.0584	0.0643	0.0580	0.0612	9.8963	4.7903	2.5811	1.6292	1.2750
B to Z↑	0.0607	0.0575	0.0606	0.0571	0.0585	8.0878	4.3653	2.2014	1.4712	1.1070
C to Z↓	0.0629	0.0522	0.0569	0.0506	0.0537	9.9004	4.7904	2.5814	1.6296	1.2752
C to Z↑	0.0571	0.0526	0.0549	0.0513	0.0527	8.0938	4.3429	2.1955	1.4688	1.1049
D to Z↓	0.0482	0.0426	0.0458	0.0422	0.0437	9.7767	4.7434	2.5541	1.6161	1.2616
D to Z↑	0.0438	0.0423	0.0432	0.0420	0.0421	7.9283	4.2745	2.1501	1.4390	1.0812
E to Z↓	0.0447	0.0387	0.0418	0.0385	0.0400	9.7790	4.7464	2.5560	1.6177	1.2625
E to Z↑	0.0398	0.0379	0.0387	0.0377	0.0378	7.8580	4.2357	2.1294	1.4282	1.0725
F to Z↓	0.0394	0.0322	0.0338	0.0307	0.0320	9.7911	4.7489	2.5585	1.6192	1.2641
F to Z↑	0.0364	0.0329	0.0330	0.0319	0.0321	7.8628	4.2123	2.1235	1.4259	1.0712

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X9	X14	X19	X2	X5	X9	X14	X19
A to Z↓	0.0648	0.0566	0.0626	0.0567	0.0597	8.9634	4.3399	2.3429	1.4832	1.1601
A to Z↑	0.0598	0.0576	0.0607	0.0575	0.0588	7.5190	4.0559	2.0465	1.3667	1.0278
B to Z↓	0.0627	0.0536	0.0591	0.0535	0.0564	8.9677	4.3413	2.3439	1.4837	1.1605
B to Z↑	0.0567	0.0536	0.0564	0.0533	0.0546	7.4578	4.0160	2.0272	1.3554	1.0200
C to Z↓	0.0578	0.0481	0.0524	0.0468	0.0496	8.9700	4.3415	2.3441	1.4841	1.1607
C to Z↑	0.0532	0.0490	0.0512	0.0479	0.0491	7.4627	3.9958	2.0222	1.3534	1.0184
D to Z↓	0.0443	0.0393	0.0422	0.0390	0.0404	8.8623	4.2991	2.3201	1.4723	1.1483

Propagation Delay at 125C, 1.15V Worst process

D to Z ↑	0.0411	0.0397	0.0405	0.0395	0.0395	7.3198	3.9402	1.9834	1.3281	0.9980
E to Z ↓	0.0411	0.0357	0.0385	0.0356	0.0370	8.8680	4.3027	2.3220	1.4735	1.1494
E to Z ↑	0.0374	0.0355	0.0363	0.0354	0.0356	7.2593	3.9058	1.9651	1.3185	0.9905
F to Z ↓	0.0363	0.0298	0.0313	0.0285	0.0297	8.8736	4.3062	2.3245	1.4754	1.1513
F to Z ↑	0.0341	0.0309	0.0310	0.0300	0.0302	7.2634	3.8837	1.9599	1.3163	0.9894

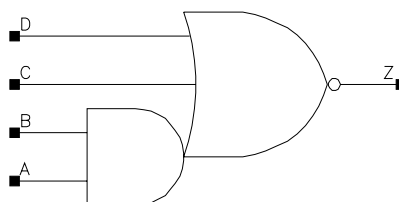


HS65_LS_AOI112

Cell Description

2 Input AND into 3 Input NOR

Logical Symbol



Functions

A	B	C	D	Z
1	1	-	-	0
-	-	-	1	0
-	-	1	-	0
-	0	0	0	1
0	-	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X1	2.6	1.40	3.6400
X2	2.6	1.40	3.6400
X3	2.6	1.40	3.6400
X4	2.6	1.40	3.6400
X7	2.6	2.40	6.2400
X9	2.6	2.40	6.2400
X13	2.6	3.40	8.8400
X18	2.6	4.80	12.4800
X26	2.6	6.60	17.1600
X35	2.6	8.60	22.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X1	7.252e-08	5.183e-10
X2	7.528e-08	5.183e-10
X3	1.002e-07	7.848e-10
X4	1.259e-07	9.930e-10
X7	1.938e-07	1.509e-09
X9	2.603e-07	1.967e-09
X13	3.731e-07	2.968e-09
X18	5.042e-07	3.941e-09
X26	7.770e-07	5.889e-09
X35	1.039e-06	7.888e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X1	1.726e-05	3.576e-08
X2	1.811e-05	3.650e-08
X3	2.534e-05	4.160e-08
X4	3.311e-05	4.649e-08
X7	5.232e-05	6.719e-08
X9	6.906e-05	7.719e-08
X13	1.018e-04	1.064e-07
X18	1.350e-04	1.414e-07
X26	2.155e-04	1.991e-07
X35	2.848e-04	2.590e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X1	1.530e-05	3.186e-08
X2	1.603e-05	3.236e-08
X3	2.230e-05	3.601e-08
X4	2.904e-05	3.953e-08
X7	4.584e-05	5.668e-08
X9	6.056e-05	6.384e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

X13	8.906e-05	8.685e-08
X18	1.184e-04	1.153e-07
X26	1.886e-04	1.605e-07
X35	2.493e-04	2.078e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X1	X2	X3	X4	X7
A to Z	3.186e-03	3.335e-03	4.388e-03	5.404e-03	8.293e-03
B to Z	2.782e-03	2.903e-03	3.740e-03	4.501e-03	6.539e-03
C to Z	5.147e-03	5.419e-03	7.385e-03	9.215e-03	1.411e-02
D to Z	4.411e-03	4.633e-03	6.274e-03	7.736e-03	1.158e-02
Pin Cycle (vdd)	X9	X13	X18	X26	X35
A to Z	1.087e-02	1.528e-02	2.084e-02	3.012e-02	4.038e-02
B to Z	8.569e-03	1.188e-02	1.602e-02	2.343e-02	3.099e-02
C to Z	1.808e-02	2.582e-02	3.536e-02	5.167e-02	6.881e-02
D to Z	1.512e-02	2.097e-02	2.858e-02	4.194e-02	5.607e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X1	X2	X3	X4	X7
A to Z	6.550e-07	6.980e-07	1.448e-06	4.212e-06	7.580e-06
B to Z	1.739e-06	1.598e-06	2.447e-06	5.082e-06	6.820e-06
C to Z	-1.116e-05	-1.136e-05	-1.632e-05	-2.104e-05	-3.142e-05
D to Z	-5.340e-06	-5.237e-06	-7.407e-06	-1.019e-05	-1.152e-05
Pin Cycle (vdds)	X9	X13	X18	X26	X35
A to Z	1.006e-05	1.367e-05	1.410e-05	2.227e-05	1.860e-05
B to Z	8.570e-06	1.480e-05	1.925e-05	2.144e-05	2.152e-05
C to Z	-4.044e-05	-5.845e-05	-7.893e-05	-1.221e-04	-1.464e-04
D to Z	-1.555e-05	-2.078e-05	-3.362e-05	-4.827e-05	-6.667e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X1	X2	X3	X4	X7
A	0.0012	0.0011	0.0015	0.0018	0.0031
B	0.0012	0.0012	0.0015	0.0018	0.0027



Pin Capacitance (pf) at 25C, 1.20V Typ process

C	0.0012	0.0011	0.0015	0.0017	0.0026
D	0.0012	0.0012	0.0015	0.0017	0.0027
Pin	X9	X13	X18	X26	X35
A	0.0038	0.0050	0.0066	0.0104	0.0133
B	0.0033	0.0049	0.0064	0.0095	0.0130
C	0.0034	0.0047	0.0065	0.0095	0.0124
D	0.0036	0.0045	0.0061	0.0095	0.0126

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X3	X4	X7	X1	X2	X3	X4	X7
A to Z↓	0.0209	0.0212	0.0196	0.0190	0.0188	4.8857	4.6473	3.0905	2.3509	1.5144
A to Z↑	0.0302	0.0300	0.0282	0.0277	0.0276	9.8551	9.2068	6.3765	4.9226	3.2077
B to Z↓	0.0191	0.0194	0.0176	0.0167	0.0158	4.9252	4.6690	3.1046	2.3626	1.5213
B to Z↑	0.0265	0.0263	0.0242	0.0231	0.0222	9.8060	9.1420	6.3205	4.8674	3.2344
C to Z↓	0.0240	0.0241	0.0232	0.0222	0.0220	4.1393	3.8184	2.6757	2.0463	1.3748
C to Z↑	0.0460	0.0456	0.0433	0.0416	0.0414	9.4484	8.8411	6.1155	4.7165	3.0933
D to Z↓	0.0224	0.0225	0.0217	0.0206	0.0206	4.0223	3.7256	2.6059	1.9948	1.3532
D to Z↑	0.0428	0.0424	0.0404	0.0386	0.0380	9.4730	8.8556	6.1291	4.7242	3.1009
	X9	X13	X18	X26	X35	X9	X13	X18	X26	X35
A to Z↓	0.0187	0.0182	0.0187	0.0182	0.0188	1.1498	0.7926	0.6018	0.3939	0.3035
A to Z↑	0.0277	0.0273	0.0277	0.0270	0.0275	2.4753	1.6857	1.2738	0.8450	0.6449
B to Z↓	0.0156	0.0154	0.0157	0.0154	0.0158	1.1546	0.7977	0.6047	0.3965	0.3052
B to Z↑	0.0223	0.0218	0.0221	0.0217	0.0218	2.5026	1.6800	1.2764	0.8493	0.6437
C to Z↓	0.0213	0.0211	0.0209	0.0208	0.0209	1.0159	0.7005	0.5121	0.3511	0.2612
C to Z↑	0.0411	0.0397	0.0411	0.0400	0.0409	2.3918	1.6185	1.2264	0.8141	0.6196
D to Z↓	0.0203	0.0198	0.0197	0.0193	0.0199	0.9984	0.6991	0.5069	0.3439	0.2592
D to Z↑	0.0387	0.0366	0.0375	0.0365	0.0375	2.3973	1.6224	1.2291	0.8162	0.6212

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X3	X4	X7	X1	X2	X3	X4	X7
A to Z↓	0.0347	0.0350	0.0323	0.0314	0.0310	8.3436	7.9658	5.2770	3.9736	2.5455
A to Z↑	0.0451	0.0446	0.0422	0.0416	0.0413	15.0829	14.1500	9.8019	7.5835	4.9104
B to Z↓	0.0320	0.0322	0.0293	0.0279	0.0263	8.3604	7.9799	5.2868	3.9809	2.5490
B to Z↑	0.0390	0.0385	0.0356	0.0342	0.0326	14.9998	14.0414	9.7211	7.5070	4.9289
C to Z↓	0.0381	0.0383	0.0370	0.0353	0.0345	6.3751	5.9426	4.1659	3.1767	2.0891
C to Z↑	0.0734	0.0728	0.0694	0.0671	0.0661	14.5212	13.6098	9.4275	7.2838	4.7377
D to Z↓	0.0355	0.0356	0.0344	0.0326	0.0322	6.1860	5.7878	4.0182	3.0549	2.0434
D to Z↑	0.0675	0.0669	0.0640	0.0615	0.0600	14.5179	13.6088	9.4282	7.2850	4.7393
	X9	X13	X18	X26	X35	X9	X13	X18	X26	X35
A to Z↓	0.0306	0.0296	0.0303	0.0294	0.0302	1.9169	1.2946	0.9849	0.6393	0.4907
A to Z↑	0.0414	0.0406	0.0411	0.0402	0.0406	3.7890	2.5576	1.9322	1.2788	0.9696
B to Z↓	0.0259	0.0252	0.0257	0.0249	0.0254	1.9204	1.2983	0.9877	0.6401	0.4914
B to Z↑	0.0328	0.0320	0.0324	0.0316	0.0318	3.8107	2.5461	1.9347	1.2801	0.9669
C to Z↓	0.0335	0.0334	0.0331	0.0323	0.0324	1.5504	1.0767	0.7853	0.5230	0.3914
C to Z↑	0.0656	0.0633	0.0654	0.0634	0.0644	3.6609	2.4599	1.8647	1.2330	0.9333
D to Z↓	0.0322	0.0311	0.0312	0.0302	0.0309	1.5340	1.0521	0.7754	0.5130	0.3877
D to Z↑	0.0612	0.0575	0.0589	0.0573	0.0584	3.6633	2.4614	1.8644	1.2330	0.9343

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X3	X4	X7	X1	X2	X3	X4	X7
A to Z↓	0.0321	0.0324	0.0301	0.0292	0.0289	7.6007	7.2595	4.8037	3.6183	2.3220
A to Z↑	0.0419	0.0415	0.0392	0.0386	0.0384	13.8571	12.9889	8.9879	6.9478	4.5049
B to Z↓	0.0298	0.0301	0.0274	0.0260	0.0245	7.6200	7.2697	4.8125	3.6257	2.3261
B to Z↑	0.0362	0.0358	0.0331	0.0317	0.0302	13.7772	12.8916	8.9125	6.8764	4.5247
C to Z↓	0.0360	0.0362	0.0349	0.0334	0.0326	5.9283	5.5219	3.8601	2.9427	1.9413



Propagation Delay at 125C, 1.15V Worst process

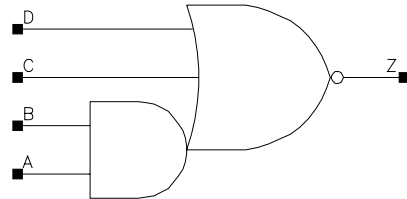
C to Z ↑	0.0679	0.0673	0.0641	0.0619	0.0611	13.3392	12.4940	8.6390	6.6677	4.3466
D to Z ↓	0.0336	0.0337	0.0325	0.0308	0.0305	5.7522	5.3788	3.7284	2.8360	1.8997
D to Z ↑	0.0624	0.0618	0.0591	0.0568	0.0555	13.3317	12.4906	8.6428	6.6674	4.3469
	X9	X13	X18	X26	X35	X9	X13	X18	X26	X35
A to Z ↓	0.0285	0.0276	0.0283	0.0275	0.0282	1.7495	1.1852	0.9016	0.5854	0.4496
A to Z ↑	0.0385	0.0377	0.0382	0.0373	0.0377	3.4734	2.3473	1.7729	1.1742	0.8907
B to Z ↓	0.0242	0.0236	0.0241	0.0234	0.0239	1.7529	1.1886	0.9032	0.5866	0.4508
B to Z ↑	0.0304	0.0297	0.0301	0.0294	0.0296	3.4955	2.3372	1.7769	1.1755	0.8884
C to Z ↓	0.0317	0.0316	0.0313	0.0306	0.0307	1.4405	0.9983	0.7290	0.4872	0.3644
C to Z ↑	0.0607	0.0586	0.0605	0.0587	0.0596	3.3553	2.2569	1.7106	1.1311	0.8573
D to Z ↓	0.0305	0.0295	0.0295	0.0286	0.0293	1.4236	0.9782	0.7196	0.4776	0.3610
D to Z ↑	0.0565	0.0532	0.0545	0.0530	0.0541	3.3581	2.2580	1.7104	1.1319	0.8577

HS65_LS_AOI211

Cell Description

2 Input AND into 3 Input NOR

Logical Symbol



Functions

A	B	C	D	Z
1	1	-	-	0
-	-	-	1	0
-	-	1	-	0
-	0	0	0	1
0	-	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X1	2.6	1.40	3.6400
X2	2.6	1.40	3.6400
X3	2.6	1.40	3.6400
X4	2.6	1.40	3.6400
X7	2.6	2.40	6.2400
X9	2.6	2.40	6.2400
X13	2.6	3.40	8.8400
X18	2.6	4.80	12.4800
X26	2.6	6.60	17.1600
X35	2.6	8.60	22.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X1	7.359e-08	2.644e-10
X2	7.644e-08	2.915e-10
X3	1.020e-07	4.101e-10
X4	1.281e-07	5.100e-10
X7	1.974e-07	7.681e-10
X9	2.650e-07	1.018e-09
X13	3.799e-07	1.501e-09
X18	5.142e-07	1.984e-09
X26	7.908e-07	2.983e-09
X35	1.057e-06	3.999e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X1	1.747e-05	3.058e-08
X2	1.834e-05	3.100e-08
X3	2.570e-05	3.375e-08
X4	3.356e-05	3.640e-08
X7	5.304e-05	4.999e-08
X9	7.000e-05	5.484e-08
X13	1.031e-04	7.534e-08
X18	1.370e-04	9.819e-08
X26	2.183e-04	1.347e-07
X35	2.886e-04	1.737e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X1	1.549e-05	2.815e-08
X2	1.624e-05	2.844e-08
X3	2.261e-05	3.044e-08
X4	2.944e-05	3.239e-08
X7	4.647e-05	4.416e-08
X9	6.139e-05	4.762e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

X13	9.022e-05	6.474e-08
X18	1.202e-04	8.417e-08
X26	1.910e-04	1.142e-07
X35	2.526e-04	1.466e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X1	X2	X3	X4	X7
A to Z	4.904e-03	5.156e-03	7.079e-03	9.026e-03	1.367e-02
B to Z	4.478e-03	4.707e-03	6.412e-03	8.108e-03	1.195e-02
C to Z	3.134e-03	3.286e-03	4.514e-03	5.798e-03	8.500e-03
D to Z	2.429e-03	2.524e-03	3.321e-03	4.224e-03	5.624e-03
Pin Cycle (vdd)	X9	X13	X18	X26	X35
A to Z	1.757e-02	2.578e-02	3.451e-02	5.000e-02	6.726e-02
B to Z	1.527e-02	2.235e-02	2.970e-02	4.320e-02	5.800e-02
C to Z	1.090e-02	1.605e-02	2.162e-02	3.105e-02	4.236e-02
D to Z	7.122e-03	1.051e-02	1.371e-02	1.987e-02	2.695e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X1	X2	X3	X4	X7
A to Z	-1.015e-05	-1.115e-05	-1.645e-05	-2.070e-05	-3.010e-05
B to Z	-1.073e-05	-1.102e-05	-1.454e-05	-1.827e-05	-2.720e-05
C to Z	-3.273e-06	-3.033e-06	-4.698e-06	-4.613e-06	-6.917e-06
D to Z	1.523e-06	1.440e-06	2.600e-06	4.304e-06	5.361e-06
Pin Cycle (vdds)	X9	X13	X18	X26	X35
A to Z	-3.899e-05	-5.437e-05	-7.641e-05	-1.097e-04	-1.192e-04
B to Z	-2.567e-05	-4.787e-05	-6.592e-05	-9.300e-05	-1.383e-04
C to Z	-8.473e-06	-1.340e-05	-1.947e-05	-2.565e-05	-3.555e-05
D to Z	6.846e-06	1.258e-05	1.567e-05	1.924e-05	1.916e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X1	X2	X3	X4	X7
A	0.0012	0.0012	0.0016	0.0019	0.0032
B	0.0013	0.0013	0.0016	0.0019	0.0029



Pin Capacitance (pf) at 25C, 1.20V Typ process

C	0.0012	0.0011	0.0015	0.0018	0.0028
D	0.0012	0.0011	0.0014	0.0017	0.0024
Pin	X9	X13	X18	X26	X35
A	0.0040	0.0055	0.0072	0.0110	0.0143
B	0.0036	0.0053	0.0070	0.0103	0.0140
C	0.0037	0.0045	0.0062	0.0098	0.0129
D	0.0031	0.0043	0.0059	0.0088	0.0116

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X3	X4	X7	X1	X2	X3	X4	X7
A to Z↓	0.0245	0.0251	0.0234	0.0229	0.0218	5.0231	4.7251	3.1428	2.3909	1.5421
A to Z↑	0.0432	0.0429	0.0415	0.0412	0.0404	9.8251	9.2092	6.3817	4.9597	3.1782
B to Z↓	0.0229	0.0234	0.0216	0.0208	0.0193	5.0536	4.7414	3.1529	2.3982	1.5476
B to Z↑	0.0395	0.0392	0.0374	0.0368	0.0358	9.7529	9.1265	6.2944	4.8719	3.2189
C to Z↓	0.0181	0.0182	0.0178	0.0175	0.0170	4.0164	3.7224	2.6239	1.9929	1.3535
C to Z↑	0.0329	0.0327	0.0318	0.0319	0.0306	9.4139	8.7967	6.0886	4.7262	3.0619
D to Z↓	0.0162	0.0162	0.0155	0.0152	0.0137	4.1035	3.7993	2.6813	2.0337	1.3665
D to Z↑	0.0269	0.0266	0.0247	0.0245	0.0217	9.4650	8.8260	6.1039	4.7373	3.0700
	X9	X13	X18	X26	X35	X9	X13	X18	X26	X35
A to Z↓	0.0214	0.0216	0.0218	0.0210	0.0219	1.1720	0.8078	0.6114	0.4012	0.3091
A to Z↑	0.0403	0.0405	0.0409	0.0398	0.0408	2.4514	1.6836	1.2744	0.8437	0.6401
B to Z↓	0.0188	0.0191	0.0191	0.0186	0.0192	1.1758	0.8111	0.6141	0.4028	0.3105
B to Z↑	0.0355	0.0351	0.0356	0.0348	0.0353	2.4915	1.6732	1.2779	0.8485	0.6360
C to Z↓	0.0165	0.0166	0.0164	0.0160	0.0166	0.9992	0.6998	0.5080	0.3443	0.2588
C to Z↑	0.0307	0.0304	0.0311	0.0298	0.0309	2.3663	1.6110	1.2228	0.8106	0.6127
D to Z↓	0.0132	0.0134	0.0131	0.0129	0.0132	1.0102	0.6965	0.5095	0.3492	0.2592
D to Z↑	0.0214	0.0217	0.0216	0.0207	0.0215	2.3705	1.6153	1.2267	0.8126	0.6144

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X3	X4	X7	X1	X2	X3	X4	X7
A to Z↓	0.0417	0.0424	0.0395	0.0383	0.0363	8.6240	8.1343	5.3906	4.0595	2.6043
A to Z↑	0.0684	0.0678	0.0658	0.0656	0.0639	15.1021	14.1715	9.8230	7.6388	4.8874
B to Z↓	0.0391	0.0399	0.0367	0.0352	0.0324	8.6247	8.1337	5.3913	4.0604	2.6048
B to Z↑	0.0621	0.0615	0.0590	0.0581	0.0561	14.9845	14.0424	9.7040	7.5255	4.9214
C to Z↓	0.0286	0.0287	0.0282	0.0276	0.0265	6.1599	5.7722	4.0424	3.0463	2.0420
C to Z↑	0.0509	0.0505	0.0492	0.0496	0.0474	14.3949	13.4959	9.3475	7.2584	4.6834
D to Z↓	0.0254	0.0254	0.0244	0.0239	0.0214	6.2630	5.8748	4.1532	3.1381	2.0646
D to Z↑	0.0401	0.0396	0.0369	0.0368	0.0322	14.4312	13.5182	9.3591	7.2685	4.6884
	X9	X13	X18	X26	X35	X9	X13	X18	X26	X35
A to Z↓	0.0355	0.0354	0.0356	0.0341	0.0352	1.9630	1.3254	1.0053	0.6535	0.5017
A to Z↑	0.0638	0.0637	0.0643	0.0623	0.0635	3.7701	2.5591	1.9354	1.2795	0.9655
B to Z↓	0.0314	0.0315	0.0316	0.0304	0.0312	1.9636	1.3262	1.0059	0.6540	0.5021
B to Z↑	0.0557	0.0548	0.0556	0.0540	0.0546	3.8057	2.5420	1.9399	1.2831	0.9608
C to Z↓	0.0261	0.0258	0.0257	0.0249	0.0256	1.5336	1.0531	0.7763	0.5132	0.3873
C to Z↑	0.0475	0.0469	0.0480	0.0459	0.0473	3.6155	2.4399	1.8512	1.2237	0.9220
D to Z↓	0.0206	0.0210	0.0205	0.0199	0.0203	1.5326	1.0647	0.7768	0.5172	0.3864
D to Z↑	0.0317	0.0321	0.0319	0.0305	0.0315	3.6180	2.4431	1.8546	1.2247	0.9228

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X3	X4	X7	X1	X2	X3	X4	X7
A to Z↓	0.0385	0.0392	0.0365	0.0355	0.0337	7.8575	7.4090	4.9054	3.6970	2.3753
A to Z↑	0.0635	0.0630	0.0611	0.0608	0.0593	13.8620	13.0071	9.0040	6.9988	4.4830
B to Z↓	0.0363	0.0370	0.0341	0.0327	0.0302	7.8598	7.4096	4.9072	3.6977	2.3760
B to Z↑	0.0576	0.0571	0.0547	0.0538	0.0521	13.7665	12.9006	8.9019	6.8928	4.5168
C to Z↓	0.0271	0.0272	0.0267	0.0262	0.0251	5.7302	5.3653	3.7526	2.8290	1.8981



Propagation Delay at 125C, 1.15V Worst process

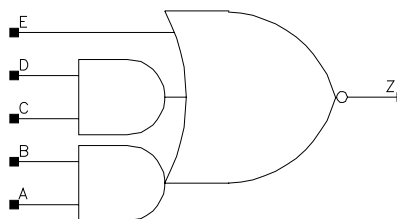
C to Z ↑	0.0472	0.0468	0.0456	0.0459	0.0439	13.2249	12.3958	8.5751	6.6539	4.2977
D to Z ↓	0.0240	0.0241	0.0231	0.0226	0.0202	5.8286	5.4610	3.8512	2.9092	1.9192
D to Z ↑	0.0373	0.0367	0.0343	0.0342	0.0300	13.2663	12.4179	8.5870	6.6635	4.3024
	X9	X13	X18	X26	X35	X9	X13	X18	X26	X35
A to Z ↓	0.0329	0.0329	0.0331	0.0318	0.0329	1.7912	1.2129	0.9198	0.5987	0.4598
A to Z ↑	0.0591	0.0591	0.0597	0.0578	0.0590	3.4547	2.3490	1.7764	1.1746	0.8870
B to Z ↓	0.0293	0.0294	0.0295	0.0284	0.0292	1.7917	1.2138	0.9206	0.5991	0.4603
B to Z ↑	0.0516	0.0508	0.0516	0.0501	0.0507	3.4913	2.3339	1.7805	1.1782	0.8826
C to Z ↓	0.0247	0.0245	0.0243	0.0236	0.0243	1.4232	0.9789	0.7206	0.4779	0.3606
C to Z ↑	0.0440	0.0435	0.0446	0.0426	0.0439	3.3151	2.2399	1.6995	1.1236	0.8467
D to Z ↓	0.0195	0.0199	0.0195	0.0189	0.0193	1.4246	0.9876	0.7214	0.4822	0.3600
D to Z ↑	0.0295	0.0299	0.0297	0.0285	0.0294	3.3182	2.2430	1.7028	1.1248	0.8479

HS65_LS_AOI212

Cell Description

3 wide 2-2-1 AND-OR-INVERT

Logical Symbol



Functions

A	B	C	D	E	Z
1	1	-	-	-	0
-	-	-	-	1	0
-	-	1	1	-	0
-	0	0	-	0	1
-	0	-	0	0	1
0	-	-	0	0	1
0	-	0	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.60	4.1600
X4	2.6	1.60	4.1600
X9	2.6	3.00	7.8000
X13	2.6	4.20	10.9200
X18	2.6	5.80	15.0800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	1.031e-07	4.944e-10
X4	1.715e-07	9.118e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X9	3.583e-07	1.764e-09
X13	5.407e-07	2.651e-09
X18	6.870e-07	3.517e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	2.516e-05	3.680e-08
X4	4.620e-05	4.561e-08
X9	9.698e-05	7.635e-08
X13	1.508e-04	1.059e-07
X18	1.875e-04	1.396e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	2.225e-05	3.299e-08
X4	4.052e-05	3.931e-08
X9	8.505e-05	6.430e-08
X13	1.321e-04	8.817e-08
X18	1.643e-04	1.160e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X4	X9	X13	X18
A to Z	6.551e-03	1.111e-02	2.214e-02	3.223e-02	4.371e-02
B to Z	6.108e-03	1.023e-02	1.992e-02	2.890e-02	3.921e-02
C to Z	3.586e-03	5.862e-03	1.197e-02	1.685e-02	2.332e-02
D to Z	3.161e-03	4.984e-03	9.580e-03	1.346e-02	1.866e-02
E to Z	4.819e-03	7.992e-03	1.569e-02	2.266e-02	3.101e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X4	X9	X13	X18
A to Z	-1.577e-05	-2.583e-05	-4.519e-05	-7.204e-05	-1.021e-04
B to Z	-1.427e-05	-2.563e-05	-4.874e-05	-6.732e-05	-9.503e-05
C to Z	1.272e-06	4.144e-06	7.703e-06	1.302e-05	1.376e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D to Z	1.619e-06	4.547e-06	8.173e-06	1.408e-05	1.469e-05
E to Z	-9.137e-06	-1.710e-05	-2.490e-05	-4.152e-05	-6.353e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X4	X9	X13	X18
A	0.0013	0.0019	0.0040	0.0054	0.0072
B	0.0013	0.0019	0.0036	0.0053	0.0070
C	0.0012	0.0019	0.0035	0.0050	0.0066
D	0.0012	0.0018	0.0033	0.0049	0.0064
E	0.0012	0.0018	0.0039	0.0045	0.0060

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X9	X13	X18	X2	X4	X9	X13	X18
A to Z↓	0.0301	0.0268	0.0258	0.0258	0.0266	4.7015	2.3890	1.1607	0.8006	0.6105
A to Z↑	0.0522	0.0490	0.0488	0.0485	0.0495	8.8778	4.8054	2.3810	1.6280	1.2312
B to Z↓	0.0285	0.0249	0.0233	0.0234	0.0242	4.7155	2.3956	1.1637	0.8033	0.6126
B to Z↑	0.0486	0.0446	0.0444	0.0434	0.0445	8.7944	4.7183	2.4198	1.6172	1.2250
C to Z↓	0.0216	0.0190	0.0194	0.0184	0.0191	4.5959	2.3311	1.2044	0.7870	0.6020
C to Z↑	0.0326	0.0298	0.0305	0.0298	0.0309	8.7628	4.7156	2.3793	1.6183	1.2214
D to Z↓	0.0199	0.0170	0.0164	0.0155	0.0161	4.6205	2.3435	1.2116	0.7917	0.6053
D to Z↑	0.0297	0.0264	0.0251	0.0246	0.0256	8.8645	4.7940	2.3817	1.6121	1.2244
E to Z↓	0.0219	0.0205	0.0197	0.0192	0.0206	3.6432	1.9952	0.9793	0.6716	0.5302
E to Z↑	0.0417	0.0383	0.0381	0.0371	0.0382	8.3251	4.4895	2.2583	1.5266	1.1562

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X9	X13	X18	X2	X4	X9	X13	X18
A to Z↓	0.0515	0.0456	0.0436	0.0428	0.0441	8.0913	4.0619	1.9472	1.3127	1.0044
A to Z↑	0.0834	0.0788	0.0781	0.0772	0.0788	13.6266	7.3804	3.6534	2.4705	1.8703



Propagation Delay at 125C, 1.10V Worst process

B to Z↓	0.0490	0.0427	0.0396	0.0391	0.0404	8.0896	4.0613	1.9472	1.3131	1.0045
B to Z↑	0.0771	0.0715	0.0705	0.0688	0.0704	13.5006	7.2642	3.6876	2.4538	1.8602
C to Z↓	0.0356	0.0313	0.0317	0.0298	0.0311	7.8645	3.9255	1.9989	1.2840	0.9852
C to Z↑	0.0488	0.0450	0.0459	0.0446	0.0462	13.4070	7.2297	3.6297	2.4468	1.8489
D to Z↓	0.0331	0.0282	0.0270	0.0254	0.0264	7.8748	3.9315	2.0032	1.2874	0.9877
D to Z↑	0.0440	0.0393	0.0373	0.0363	0.0378	13.5489	7.3290	3.6278	2.4350	1.8508
E to Z↓	0.0347	0.0324	0.0312	0.0300	0.0328	5.6441	3.0551	1.4922	1.0010	0.8193
E to Z↑	0.0652	0.0604	0.0598	0.0580	0.0597	12.7317	6.8747	3.4400	2.3073	1.7487

Propagation Delay at 125C, 1.15V Worst process

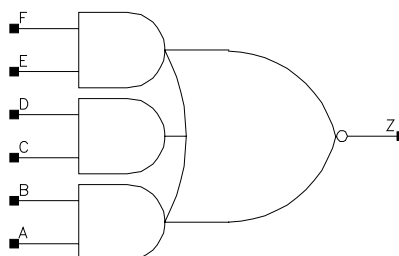
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X9	X13	X18	X2	X4	X9	X13	X18
A to Z↓	0.0476	0.0422	0.0404	0.0398	0.0409	7.3713	3.6977	1.7767	1.2017	0.9187
A to Z↑	0.0772	0.0729	0.0723	0.0715	0.0730	12.5168	6.7624	3.3481	2.2667	1.7157
B to Z↓	0.0454	0.0396	0.0369	0.0365	0.0377	7.3705	3.6977	1.7764	1.2019	0.9190
B to Z↑	0.0714	0.0661	0.0652	0.0637	0.0651	12.3943	6.6540	3.3819	2.2520	1.7066
C to Z↓	0.0331	0.0291	0.0295	0.0278	0.0290	7.1672	3.5769	1.8259	1.1756	0.9019
C to Z↑	0.0453	0.0418	0.0427	0.0415	0.0429	12.3188	6.6265	3.3285	2.2468	1.6979
D to Z↓	0.0309	0.0264	0.0253	0.0238	0.0247	7.1770	3.5831	1.8302	1.1789	0.9038
D to Z↑	0.0408	0.0365	0.0347	0.0338	0.0351	12.4539	6.7225	3.3277	2.2361	1.6999
E to Z↓	0.0328	0.0306	0.0295	0.0284	0.0310	5.2440	2.8356	1.3867	0.9324	0.7588
E to Z↑	0.0604	0.0558	0.0553	0.0537	0.0553	11.6899	6.2992	3.1538	2.1178	1.6050

HS65_LS_AOI222

Cell Description

3 wide 2-2-2 AND-OR-INVERT

Logical Symbol



Functions

A	B	C	D	E	F	Z
-	-	0	-	1	1	0
1	-	-	-	1	1	0
-	-	-	0	1	1	0
0	-	1	1	-	-	0
-	-	1	1	-	0	0
1	1	-	-	-	-	0
-	-	1	1	0	-	0
0	-	0	-	0	-	1
0	-	0	-	-	0	1
0	-	-	0	0	-	1
0	-	-	0	-	0	1
-	0	0	-	0	-	1
-	0	-	0	0	-	1
-	0	0	-	-	0	1
-	0	-	0	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	2.00	5.2000



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.20	5.7200
X9	2.6	3.60	9.3600
X13	2.6	5.00	13.0000
X18	2.6	6.80	17.6800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	1.328e-07	4.564e-10
X4	2.400e-07	8.519e-10
X9	4.901e-07	1.651e-09
X13	7.428e-07	2.453e-09
X18	9.813e-07	3.256e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	3.396e-05	3.951e-08
X4	6.693e-05	4.945e-08
X9	1.380e-04	8.032e-08
X13	2.097e-04	1.085e-07
X18	2.763e-04	1.424e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	3.001e-05	3.580e-08
X4	5.871e-05	4.334e-08
X9	1.210e-04	6.879e-08
X13	1.840e-04	9.177e-08
X18	2.424e-04	1.202e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X4	X9	X13	X18
A to Z	7.820e-03	1.381e-02	2.613e-02	3.879e-02	5.177e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

B to Z	7.415e-03	1.289e-02	2.393e-02	3.565e-02	4.725e-02
C to Z	5.958e-03	1.035e-02	1.992e-02	2.991e-02	3.897e-02
D to Z	5.449e-03	9.500e-03	1.770e-02	2.682e-02	3.479e-02
E to Z	3.976e-03	6.652e-03	1.354e-02	1.978e-02	2.556e-02
F to Z	3.579e-03	5.777e-03	1.117e-02	1.638e-02	2.083e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X4	X9	X13	X18
A to Z	-1.865e-05	-3.825e-05	-6.391e-05	-9.407e-05	-1.283e-04
B to Z	-1.859e-05	-3.660e-05	-6.094e-05	-9.009e-05	-1.231e-04
C to Z	-6.982e-06	-1.413e-05	-2.333e-05	-3.993e-05	-5.409e-05
D to Z	-6.758e-06	-1.282e-05	-1.874e-05	-3.386e-05	-4.951e-05
E to Z	1.279e-06	2.479e-06	9.214e-06	6.714e-06	9.698e-06
F to Z	2.030e-06	4.200e-06	8.208e-06	8.663e-06	1.075e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X4	X9	X13	X18
A	0.0012	0.0019	0.0040	0.0054	0.0076
B	0.0013	0.0019	0.0036	0.0051	0.0070
C	0.0012	0.0019	0.0039	0.0053	0.0073
D	0.0014	0.0020	0.0034	0.0056	0.0068
E	0.0012	0.0019	0.0038	0.0054	0.0066
↓	0.0012	0.0018	0.0033	0.0052	0.0065

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X9	X13	X18	X2	X4	X9	X13	X18
A to Z↓	0.0321	0.0287	0.0274	0.0278	0.0275	4.6915	2.3628	1.1642	0.8082	0.5995
A to Z↑	0.0592	0.0554	0.0538	0.0540	0.0543	8.5580	4.4693	2.2714	1.5346	1.1571
B to Z↓	0.0311	0.0270	0.0250	0.0258	0.0251	4.7049	2.3693	1.1670	0.8108	0.6012
B to Z↑	0.0568	0.0523	0.0497	0.0499	0.0499	8.6293	4.5247	2.3004	1.5455	1.1642
C to Z↓	0.0288	0.0256	0.0247	0.0254	0.0249	4.5043	2.2667	1.1244	0.7836	0.5888



Propagation Delay at 25C, 1.20V Typ process

C to Z ↑	0.0506	0.0471	0.0466	0.0470	0.0465	8.5402	4.4826	2.2793	1.5367	1.1603
D to Z ↓	0.0268	0.0238	0.0222	0.0230	0.0226	4.5196	2.2752	1.1280	0.7870	0.5908
D to Z ↑	0.0468	0.0443	0.0422	0.0429	0.0422	8.6242	4.5459	2.3064	1.5518	1.1671
E to Z ↓	0.0220	0.0202	0.0196	0.0195	0.0195	4.5528	2.3237	1.1399	0.7900	0.6014
E to Z ↑	0.0331	0.0304	0.0319	0.0312	0.0306	8.4774	4.4517	2.2673	1.5238	1.1495
F to Z ↓	0.0206	0.0174	0.0165	0.0166	0.0165	4.5757	2.3346	1.1448	0.7948	0.6047
F to Z ↑	0.0306	0.0263	0.0265	0.0265	0.0258	8.4921	4.4632	2.2634	1.5269	1.1521

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X9	X13	X18	X2	X4	X9	X13	X18
A to Z ↓	0.0553	0.0486	0.0461	0.0462	0.0457	8.0573	3.9747	1.9428	1.3262	0.9840
A to Z ↑	0.0949	0.0897	0.0867	0.0860	0.0867	13.1118	6.8561	3.4767	2.3209	1.7530
B to Z ↓	0.0537	0.0462	0.0425	0.0432	0.0420	8.0555	3.9734	1.9424	1.3260	0.9839
B to Z ↑	0.0909	0.0844	0.0796	0.0793	0.0793	13.2221	6.9356	3.5009	2.3378	1.7585
C to Z ↓	0.0485	0.0425	0.0408	0.0415	0.0411	7.6690	3.7550	1.8512	1.2736	0.9656
C to Z ↑	0.0796	0.0747	0.0736	0.0734	0.0730	13.0608	6.8516	3.4809	2.3189	1.7547
D to Z ↓	0.0452	0.0399	0.0370	0.0380	0.0375	7.6695	3.7562	1.8519	1.2745	0.9660
D to Z ↑	0.0732	0.0700	0.0660	0.0669	0.0657	13.1854	6.9484	3.5000	2.3405	1.7574
E to Z ↓	0.0363	0.0328	0.0322	0.0316	0.0316	7.7666	3.9046	1.8905	1.2885	0.9850
E to Z ↑	0.0494	0.0453	0.0482	0.0464	0.0456	12.9538	6.7944	3.4542	2.2970	1.7333
F to Z ↓	0.0342	0.0289	0.0274	0.0272	0.0270	7.7815	3.9113	1.8931	1.2915	0.9876
F to Z ↑	0.0452	0.0390	0.0394	0.0390	0.0380	12.9531	6.8028	3.4352	2.2979	1.7341

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X9	X13	X18	X2	X4	X9	X13	X18
A to Z ↓	0.0511	0.0450	0.0427	0.0429	0.0424	7.3474	3.6272	1.7742	1.2142	0.9008
A to Z ↑	0.0879	0.0829	0.0802	0.0797	0.0803	12.0490	6.2835	3.1876	2.1309	1.6095

Propagation Delay at 125C, 1.15V Worst process

B to Z↓	0.0497	0.0428	0.0395	0.0402	0.0392	7.3457	3.6256	1.7737	1.2140	0.9006
B to Z↑	0.0842	0.0780	0.0736	0.0734	0.0734	12.1519	6.3575	3.2125	2.1465	1.6147
C to Z↓	0.0450	0.0395	0.0380	0.0387	0.0383	6.9981	3.4307	1.6930	1.1670	0.8834
C to Z↑	0.0737	0.0690	0.0681	0.0679	0.0676	11.9988	6.2810	3.1914	2.1295	1.6100
D to Z↓	0.0421	0.0372	0.0345	0.0355	0.0350	6.9982	3.4324	1.6939	1.1678	0.8840
D to Z↑	0.0677	0.0646	0.0611	0.0618	0.0608	12.1216	6.3708	3.2119	2.1487	1.6138
E to Z↓	0.0337	0.0305	0.0300	0.0295	0.0295	7.0810	3.5584	1.7268	1.1797	0.9016
E to Z↑	0.0460	0.0422	0.0448	0.0432	0.0425	11.9085	6.2317	3.1698	2.1101	1.5922
F to Z↓	0.0319	0.0270	0.0256	0.0255	0.0253	7.0942	3.5646	1.7295	1.1826	0.9038
F to Z↑	0.0420	0.0363	0.0367	0.0363	0.0354	11.9116	6.2401	3.1535	2.1117	1.5942

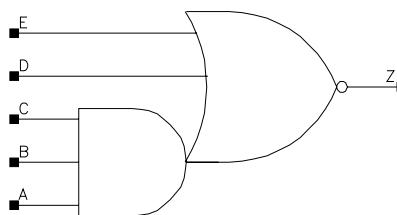


HS65_LS_AOI311

Cell Description

3 Input AND into 3 Input NOR

Logical Symbol



Functions

A	B	C	D	E	Z
1	1	1	-	-	0
-	-	-	1	-	0
-	-	-	-	1	0
-	-	0	0	0	1
-	0	-	0	0	1
0	-	-	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.60	4.1600
X4	2.6	1.60	4.1600
X8	2.6	3.00	7.8000
X12	2.6	4.20	10.9200
X16	2.6	5.60	14.5600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	8.149e-08	2.842e-10
X4	1.367e-07	5.090e-10
X8	2.749e-07	9.919e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X12	4.153e-07	1.480e-09
X16	5.548e-07	1.975e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	1.924e-05	3.248e-08
X4	3.529e-05	3.773e-08
X8	7.156e-05	5.954e-08
X12	1.122e-04	8.140e-08
X16	1.482e-04	1.033e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	1.704e-05	2.995e-08
X4	3.096e-05	3.373e-08
X8	6.279e-05	5.226e-08
X12	9.824e-05	7.077e-08
X16	1.298e-04	8.934e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X4	X8	X12	X16
A to Z	5.865e-03	1.023e-02	2.143e-02	3.071e-02	4.178e-02
B to Z	5.441e-03	9.346e-03	1.927e-02	2.741e-02	3.719e-02
C to Z	4.936e-03	8.410e-03	1.682e-02	2.392e-02	3.244e-02
D to Z	3.443e-03	5.953e-03	1.177e-02	1.681e-02	2.264e-02
E to Z	2.663e-03	4.426e-03	7.772e-03	1.132e-02	1.472e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X4	X8	X12	X16
A to Z	-1.139e-05	-1.873e-05	-4.549e-05	-5.233e-05	-9.097e-05
B to Z	-1.216e-05	-2.155e-05	-3.935e-05	-5.232e-05	-9.430e-05
C to Z	-1.202e-05	-2.141e-05	-3.897e-05	-5.530e-05	-8.114e-05
D to Z	-3.050e-06	-4.494e-06	-9.260e-06	-1.346e-05	-1.939e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

E to Z	1.149e-06	4.199e-06	7.713e-06	1.224e-05	1.238e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X4	X8	X12	X16
A	0.0013	0.0019	0.0040	0.0053	0.0078
B	0.0012	0.0019	0.0036	0.0052	0.0074
C	0.0012	0.0019	0.0035	0.0051	0.0068
D	0.0012	0.0018	0.0041	0.0046	0.0068
E	0.0012	0.0017	0.0032	0.0044	0.0060

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X8	X12	X16	X2	X4	X8	X12	X16
A to Z↓	0.0356	0.0317	0.0318	0.0312	0.0308	6.7214	3.3382	1.7023	1.1451	0.8448
A to Z↑	0.0476	0.0458	0.0471	0.0468	0.0469	9.1678	4.9640	2.4805	1.7021	1.2637
B to Z↓	0.0349	0.0304	0.0300	0.0294	0.0287	6.7346	3.3470	1.7063	1.1485	0.8474
B to Z↑	0.0444	0.0422	0.0435	0.0425	0.0427	9.1460	4.9441	2.4924	1.6951	1.2657
C to Z↓	0.0314	0.0270	0.0258	0.0251	0.0246	6.7421	3.3495	1.7099	1.1505	0.8486
C to Z↑	0.0404	0.0377	0.0380	0.0370	0.0375	9.0684	4.8675	2.4770	1.6875	1.2732
D to Z↓	0.0184	0.0173	0.0166	0.0160	0.0164	3.7228	1.9906	1.0015	0.6753	0.5153
D to Z↑	0.0326	0.0312	0.0312	0.0303	0.0305	8.2937	4.4714	2.2513	1.5393	1.1506
E to Z↓	0.0162	0.0150	0.0133	0.0131	0.0131	3.8080	2.0261	1.0207	0.6832	0.5189
E to Z↑	0.0268	0.0247	0.0223	0.0223	0.0218	8.3189	4.4845	2.2576	1.5445	1.1540

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X8	X12	X16	X2	X4	X8	X12	X16
A to Z↓	0.0645	0.0567	0.0562	0.0541	0.0535	12.0196	5.8938	2.9547	1.9466	1.4406
A to Z↑	0.0750	0.0727	0.0742	0.0733	0.0735	14.1057	7.6517	3.8078	2.5842	1.9229
B to Z↓	0.0623	0.0538	0.0526	0.0505	0.0496	12.0205	5.8943	2.9550	1.9466	1.4406



Propagation Delay at 125C, 1.10V Worst process

B to Z ↑	0.0697	0.0667	0.0684	0.0665	0.0667	14.0255	7.5953	3.8078	2.5662	1.9185
C to Z ↓	0.0558	0.0477	0.0450	0.0431	0.0423	12.0191	5.8939	2.9546	1.9465	1.4406
C to Z ↑	0.0631	0.0594	0.0594	0.0576	0.0582	13.9494	7.5095	3.7876	2.5569	1.9267
D to Z ↓	0.0290	0.0273	0.0263	0.0249	0.0254	5.7805	3.0408	1.5366	1.0058	0.7709
D to Z ↑	0.0500	0.0482	0.0481	0.0465	0.0468	12.6860	6.8538	3.4301	2.3215	1.7362
E to Z ↓	0.0254	0.0236	0.0208	0.0205	0.0204	5.8970	3.1196	1.5483	1.0248	0.7827
E to Z ↑	0.0398	0.0371	0.0330	0.0331	0.0322	12.7041	6.8622	3.4340	2.3253	1.7392

Propagation Delay at 125C, 1.15V Worst process

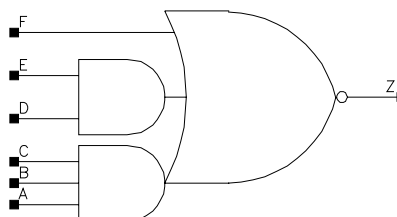
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X8	X12	X16	X2	X4	X8	X12	X16
A to Z ↓	0.0590	0.0519	0.0515	0.0498	0.0492	10.8870	5.3343	2.6829	1.7717	1.3109
A to Z ↑	0.0698	0.0675	0.0689	0.0682	0.0683	12.9577	7.0080	3.4901	2.3720	1.7644
B to Z ↓	0.0571	0.0493	0.0483	0.0466	0.0456	10.8892	5.3367	2.6827	1.7724	1.3113
B to Z ↑	0.0648	0.0619	0.0634	0.0617	0.0620	12.8938	6.9589	3.4914	2.3572	1.7616
C to Z ↓	0.0512	0.0439	0.0415	0.0398	0.0391	10.8861	5.3362	2.6826	1.7718	1.3109
C to Z ↑	0.0585	0.0550	0.0551	0.0535	0.0540	12.8154	6.8794	3.4727	2.3483	1.7687
D to Z ↓	0.0275	0.0259	0.0249	0.0236	0.0241	5.3713	2.8238	1.4258	0.9367	0.7178
D to Z ↑	0.0465	0.0447	0.0447	0.0432	0.0435	11.6618	6.2843	3.1470	2.1326	1.5952
E to Z ↓	0.0241	0.0223	0.0197	0.0194	0.0193	5.4798	2.8926	1.4390	0.9535	0.7278
E to Z ↑	0.0371	0.0345	0.0308	0.0308	0.0300	11.6796	6.2935	3.1508	2.1367	1.5976

HS65_LS_AOI312

Cell Description

3 wide 3-1-2 AND-OR-INVERT

Logical Symbol



Functions

A	B	C	D	E	F	Z
-	-	-	1	1	-	0
-	-	-	-	-	1	0
1	1	1	-	-	-	0
0	-	-	0	-	0	1
0	-	-	-	0	0	1
-	0	-	0	-	0	1
-	0	-	-	0	0	1
-	-	0	0	-	0	1
-	-	0	-	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	2.00	5.2000
X4	2.6	2.00	5.2000
X8	2.6	3.40	8.8400
X13	2.6	5.00	13.0000
X17	2.6	6.60	17.1600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X2	1.118e-07	4.637e-10
X4	1.866e-07	8.509e-10
X8	3.825e-07	1.670e-09
X13	5.599e-07	2.485e-09
X17	7.732e-07	3.322e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	2.707e-05	3.969e-08
X4	5.006e-05	4.785e-08
X8	1.028e-04	7.718e-08
X13	1.529e-04	1.092e-07
X17	2.130e-04	1.404e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	2.396e-05	3.593e-08
X4	4.392e-05	4.176e-08
X8	9.022e-05	6.570e-08
X13	1.340e-04	9.221e-08
X17	1.867e-04	1.181e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X4	X8	X13	X17
A to Z	7.553e-03	1.319e-02	2.632e-02	3.933e-02	5.319e-02
B to Z	7.009e-03	1.214e-02	2.372e-02	3.566e-02	4.794e-02
C to Z	6.436e-03	1.101e-02	2.138e-02	3.168e-02	4.262e-02
D to Z	3.852e-03	6.440e-03	1.270e-02	1.882e-02	2.503e-02
E to Z	3.409e-03	5.582e-03	1.054e-02	1.558e-02	2.077e-02
F to Z	5.056e-03	8.657e-03	1.654e-02	2.463e-02	3.307e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X4	X8	X13	X17

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

A to Z	-1.616e-05	-2.765e-05	-5.718e-05	-8.639e-05	-1.115e-04
B to Z	-1.661e-05	-2.935e-05	-5.347e-05	-8.524e-05	-1.130e-04
C to Z	-1.433e-05	-2.753e-05	-4.753e-05	-7.929e-05	-1.111e-04
D to Z	1.817e-06	4.159e-06	6.957e-06	9.431e-06	9.999e-06
E to Z	2.023e-06	4.547e-06	7.537e-06	1.002e-05	1.256e-05
F to Z	-1.019e-05	-1.735e-05	-2.767e-05	-5.043e-05	-6.355e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X4	X8	X13	X17
A	0.0013	0.0019	0.0044	0.0057	0.0084
B	0.0013	0.0020	0.0040	0.0056	0.0078
C	0.0012	0.0019	0.0037	0.0054	0.0071
D	0.0012	0.0018	0.0035	0.0052	0.0067
E	0.0012	0.0018	0.0037	0.0049	0.0070
↓	0.0012	0.0018	0.0039	0.0046	0.0070

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X8	X13	X17	X2	X4	X8	X13	X17
A to Z↓	0.0380	0.0337	0.0327	0.0339	0.0338	5.6925	2.8257	1.3979	0.9737	0.7236
A to Z↑	0.0597	0.0570	0.0565	0.0580	0.0580	8.9461	4.8056	2.3951	1.6466	1.2269
B to Z↓	0.0368	0.0324	0.0307	0.0323	0.0318	5.7058	2.8342	1.4027	0.9769	0.7259
B to Z↑	0.0556	0.0527	0.0516	0.0531	0.0531	8.9278	4.7881	2.4074	1.6411	1.2292
C to Z↓	0.0335	0.0289	0.0271	0.0282	0.0278	5.7130	2.8374	1.4044	0.9785	0.7270
C to Z↑	0.0509	0.0473	0.0470	0.0470	0.0475	8.8548	4.7145	2.4346	1.6328	1.2364
D to Z↓	0.0221	0.0194	0.0190	0.0192	0.0188	4.6811	2.3172	1.1618	0.8006	0.5862
D to Z↑	0.0340	0.0314	0.0317	0.0319	0.0320	8.3608	4.4627	2.2824	1.5381	1.1610
E to Z↓	0.0203	0.0174	0.0162	0.0164	0.0160	4.7041	2.3298	1.1682	0.8054	0.5898
E to Z↑	0.0311	0.0283	0.0264	0.0273	0.0269	8.4551	4.5388	2.2457	1.5513	1.1534
F to Z↓	0.0218	0.0208	0.0202	0.0201	0.0202	3.5995	1.9884	1.0000	0.6850	0.5136
F to Z↑	0.0414	0.0390	0.0379	0.0380	0.0383	7.8969	4.2263	2.1321	1.4515	1.0888

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X8	X13	X17	X2	X4	X8	X13	X17
A to Z↓	0.0692	0.0602	0.0580	0.0590	0.0588	10.1681	4.9469	2.4257	1.6496	1.2230
A to Z↑	0.0955	0.0916	0.0903	0.0919	0.0920	13.7402	7.3794	3.6737	2.4942	1.8632
B to Z↓	0.0664	0.0574	0.0540	0.0557	0.0548	10.1689	4.9477	2.4261	1.6500	1.2231
B to Z↑	0.0886	0.0845	0.0822	0.0839	0.0840	13.6719	7.3305	3.6740	2.4795	1.8606
C to Z↓	0.0602	0.0512	0.0476	0.0485	0.0477	10.1680	4.9465	2.4256	1.6497	1.2229
C to Z↑	0.0807	0.0755	0.0742	0.0740	0.0746	13.5852	7.2444	3.7008	2.4706	1.8668
D to Z↓	0.0366	0.0318	0.0308	0.0313	0.0303	7.9903	3.8904	1.9175	1.3201	0.9493
D to Z↑	0.0512	0.0475	0.0476	0.0477	0.0477	12.7619	6.8195	3.4601	2.3172	1.7471
E to Z↓	0.0337	0.0289	0.0267	0.0270	0.0261	7.9987	3.8970	1.9219	1.3227	0.9517
E to Z↑	0.0463	0.0424	0.0395	0.0404	0.0399	12.8895	6.9145	3.4217	2.3349	1.7394
F to Z↓	0.0345	0.0329	0.0321	0.0317	0.0316	5.5683	3.0382	1.5311	1.0431	0.7731
F to Z↑	0.0648	0.0613	0.0593	0.0590	0.0596	12.0454	6.4471	3.2383	2.1845	1.6398

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X8	X13	X17	X2	X4	X8	X13	X17
A to Z↓	0.0634	0.0552	0.0532	0.0543	0.0541	9.2108	4.4812	2.2001	1.5015	1.1134
A to Z↑	0.0885	0.0848	0.0837	0.0852	0.0853	12.6108	6.7617	3.3661	2.2889	1.7091
B to Z↓	0.0608	0.0527	0.0496	0.0513	0.0505	9.2117	4.4816	2.2005	1.5019	1.1136
B to Z↑	0.0821	0.0782	0.0762	0.0778	0.0778	12.5524	6.7191	3.3687	2.2768	1.7069
C to Z↓	0.0552	0.0471	0.0439	0.0449	0.0441	9.2105	4.4812	2.1999	1.5014	1.1135
C to Z↑	0.0747	0.0698	0.0687	0.0685	0.0691	12.4653	6.6363	3.3949	2.2684	1.7137
D to Z↓	0.0339	0.0296	0.0288	0.0292	0.0283	7.2877	3.5467	1.7521	1.2064	0.8698
D to Z↑	0.0476	0.0441	0.0443	0.0444	0.0444	11.7277	6.2536	3.1762	2.1285	1.6059
E to Z↓	0.0315	0.0270	0.0250	0.0253	0.0245	7.2959	3.5529	1.7565	1.2092	0.8724
E to Z↑	0.0430	0.0394	0.0368	0.0377	0.0372	11.8484	6.3454	3.1391	2.1457	1.5976
F to Z↓	0.0326	0.0312	0.0303	0.0300	0.0299	5.1743	2.8209	1.4215	0.9682	0.7191

Propagation Delay at 125C, 1.15V Worst process

F to Z[↑]	0.0601	0.0568	0.0549	0.0548	0.0552	11.0626	5.9121	2.9710	2.0067	1.5059

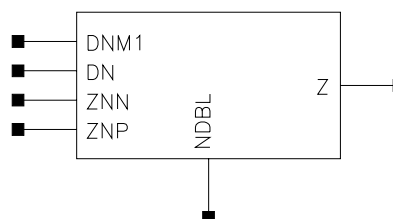


HS65_LS_BDECN

Cell Description

complex AO for booth decoder

Logical Symbol



Functions

NDBL	DN	DNM1	ZNP	ZNN	Z
1	0	-	-	ZNN	!ZNN
0	-	0	-	ZNN	!ZNN
0	-	1	ZNP	-	!ZNP
1	1	-	ZNP	-	!ZNP

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	3.00	7.8000
X9	2.6	3.20	8.3200
X20	2.6	5.40	14.0400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	3.664e-07	9.118e-10
X9	4.816e-07	1.595e-09
X20	1.019e-06	3.197e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	9.368e-05	6.085e-08



Average Leakage Power (mW) at 125C, 1.30V Best process

X9	1.256e-04	7.730e-08
X20	2.925e-04	1.297e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	8.276e-05	5.375e-08
X9	1.107e-04	6.608e-08
X20	2.557e-04	1.082e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X20
DN to Z	1.346e-02	5.273e-03	1.932e-02
DNM1 to Z	1.316e-02	5.431e-03	2.045e-02
NDBL to Z	1.514e-02	5.912e-03	1.752e-02
ZNN to Z	5.167e-03	2.718e-03	1.511e-02
ZNP to Z	2.723e-03	2.677e-03	1.527e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X20
DN to Z	-2.012e-05	-1.970e-06	-1.803e-05
DNM1 to Z	-1.282e-05	-1.966e-06	-1.602e-05
NDBL to Z	6.987e-05	-2.221e-06	1.036e-03
ZNN to Z	-1.224e-05	-4.909e-07	-1.908e-04
ZNP to Z	5.457e-06	-1.209e-05	-2.944e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X20
DN	0.0015	0.0018	0.0034
DNM1	0.0013	0.0018	0.0037
NDBL	0.0021	0.0019	0.0049
ZNN	0.0013	0.0075	0.0115
ZNP	0.0013	0.0081	0.0109

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X4	X9	X20	X4	X9	X20
DN to Z↓	0.0780	0.0797	0.0545	5.1437	1.3369	1.1970
DN to Z↑	0.0784	0.0740	0.0554	6.6821	1.6682	1.7272
DNM1 to Z↓	0.0823	0.0773	0.0542	5.1516	1.3387	1.1911
DNM1 to Z↑	0.0840	0.0740	0.0513	6.6755	1.6668	1.7217
NDBL to Z↓	0.0891	0.0635	0.0309	5.1464	1.3325	1.1899
NDBL to Z↑	0.0877	0.0605	0.0325	6.6540	1.6696	1.7221
ZNN to Z↓	0.0307	0.0621	0.0425	5.1720	1.3666	1.2001
ZNN to Z↑	0.0360	0.0544	0.0448	6.2550	1.6742	1.7289
ZNP to Z↓	0.0206	0.0592	0.0442	5.1803	1.3315	1.2001
ZNP to Z↑	0.0194	0.0571	0.0433	5.4236	1.6926	1.7290

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X4	X9	X20	X4	X9	X20
DN to Z↓	0.1321	0.1312	0.0899	8.9202	2.1699	2.0193
DN to Z↑	0.1291	0.1190	0.0876	10.1353	2.4693	2.6048
DNM1 to Z↓	0.1391	0.1286	0.0893	8.9341	2.1672	1.9911
DNM1 to Z↑	0.1382	0.1189	0.0802	10.1360	2.4679	2.5893
NDBL to Z↓	0.1499	0.1043	0.0482	8.9241	2.1663	1.9913
NDBL to Z↑	0.1451	0.0954	0.0500	10.0953	2.4727	2.5894
ZNN to Z↓	0.0522	0.1067	0.0722	8.9294	2.1958	2.0080
ZNN to Z↑	0.0547	0.0882	0.0703	9.4271	2.4569	2.5991
ZNP to Z↓	0.0340	0.1003	0.0742	8.9254	2.1394	2.0080
ZNP to Z↑	0.0281	0.0927	0.0674	8.1575	2.4908	2.5986



Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X4	X9	X20	X4	X9	X20
DN to Z↓	0.1209	0.1199	0.0826	8.1298	2.0010	1.8401
DN to Z↑	0.1184	0.1090	0.0810	9.3471	2.2908	2.3986
DNM1 to Z↓	0.1273	0.1175	0.0821	8.1445	1.9997	1.8174
DNM1 to Z↑	0.1267	0.1090	0.0743	9.3430	2.2906	2.3846
NDBL to Z↓	0.1376	0.0956	0.0449	8.1374	1.9976	1.8166
NDBL to Z↑	0.1332	0.0876	0.0467	9.3072	2.2943	2.3848
ZNN to Z↓	0.0482	0.0964	0.0659	8.1413	2.0256	1.8316
ZNN to Z↑	0.0511	0.0804	0.0649	8.6905	2.2795	2.3933
ZNP to Z↓	0.0316	0.0910	0.0678	8.1385	1.9727	1.8315
ZNP to Z↑	0.0264	0.0843	0.0624	7.5225	2.3115	2.3933

HS65_LS_BENC

Cell Description
encoder for booth decoder

Logical Symbol



Functions

Y0	Y1	DBL
0	Y1	!Y1
1	Y1	Y1

Functions

Y0	Y1	Y2	NZP
-	0	1	0
0	-	1	0
1	1	-	1
-	-	0	1

Functions

Y0	Y1	Y2	NZN
-	1	0	0
1	-	0	0
0	0	-	1
-	-	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X41	2.6	11.00	28.6000
X71	2.6	14.60	37.9600



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X41	3.861e-06	9.259e-09
X71	7.439e-06	1.615e-08

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X41	1.133e-03	2.930e-07
X71	2.247e-03	4.578e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X41	9.885e-04	2.346e-07
X71	1.957e-03	3.583e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X41	X71
Y0 to DBL	2.737e-02	5.986e-02
Y0 to NZN	1.745e-02	6.170e-02
Y0 to NZP	3.729e-02	5.802e-02
Y1 to DBL	2.976e-02	6.173e-02
Y1 to NZN	3.470e-02	6.362e-02
Y1 to NZP	2.482e-02	5.984e-02
Y2 to NZN	3.242e-02	6.958e-02
Y2 to NZP	2.680e-02	6.603e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X41	X71
Y0 to DBL	-1.472e-05	-1.432e-05
Y0 to NZN	1.000e-07	-4.130e-06
Y0 to NZP	-2.954e-05	-2.452e-05
Y1 to DBL	-6.532e-05	-4.588e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Y1 to NZN	-9.055e-05	-6.147e-05
Y1 to NZP	-4.009e-05	-3.030e-05
Y2 to NZN	-2.633e-06	-1.854e-06
Y2 to NZP	-1.301e-05	-1.330e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X41	X71
Y0	0.0222	0.0163
Y1	0.0142	0.0123
Y2	0.0099	0.0064

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)		Kload (ns/pf)	
	X41	X71	X41	X71
Y0 to DBL↓	0.0467	0.0655	0.2522	0.1566
Y0 to DBL↑	0.0402	0.0709	0.3793	0.2183
Y0 to NZN↓	0.0132	0.0634	0.4893	0.1601
Y0 to NZN↑	0.0208	0.0587	0.9490	0.2164
Y0 to NZP↓	0.0566	0.0788	0.5455	0.1527
Y0 to NZP↑	0.0516	0.0742	0.4298	0.2124
Y1 to DBL↓	0.0484	0.0675	0.2503	0.1556
Y1 to DBL↑	0.0446	0.0708	0.3754	0.2180
Y1 to NZN↓	0.0161	0.0714	0.4935	0.1605
Y1 to NZN↑	0.0261	0.0629	0.9471	0.2164
Y1 to NZP↓	0.0581	0.0841	0.5460	0.1526
Y1 to NZP↑	0.0521	0.0792	0.4303	0.2121
Y2 to NZN↓	0.0461	0.0830	0.4646	0.1579
Y2 to NZN↑	0.0351	0.0702	0.5127	0.2141
Y2 to NZP↓	0.0130	0.0648	0.5464	0.1525
Y2 to NZP↑	0.0124	0.0544	0.4293	0.2121



Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)		Kload (ns/pf)	
	X41	X71	X41	X71
Y0 to DBL↓	0.0758	0.1039	0.3847	0.2372
Y0 to DBL↑	0.0636	0.1126	0.5411	0.3105
Y0 to NZN↓	0.0214	0.1029	0.7916	0.2401
Y0 to NZN↑	0.0305	0.0912	1.4181	0.3062
Y0 to NZP↓	0.0863	0.1274	0.9056	0.2329
Y0 to NZP↑	0.0833	0.1189	0.6180	0.3029
Y1 to DBL↓	0.0776	0.1067	0.3844	0.2359
Y1 to DBL↑	0.0676	0.1129	0.5395	0.3094
Y1 to NZN↓	0.0263	0.1175	0.8003	0.2406
Y1 to NZN↑	0.0390	0.0981	1.4162	0.3062
Y1 to NZP↓	0.0894	0.1338	0.9064	0.2330
Y1 to NZP↑	0.0850	0.1260	0.6181	0.3030
Y2 to NZN↓	0.0712	0.1352	0.7568	0.2373
Y2 to NZN↑	0.0536	0.1113	0.7318	0.3036
Y2 to NZP↓	0.0212	0.1052	0.9014	0.2329
Y2 to NZP↑	0.0174	0.0831	0.6087	0.3025

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)		Kload (ns/pf)	
	X41	X71	X41	X71
Y0 to DBL↓	0.0694	0.0957	0.3577	0.2208
Y0 to DBL↑	0.0586	0.1035	0.5035	0.2889
Y0 to NZN↓	0.0201	0.0946	0.7252	0.2239
Y0 to NZN↑	0.0285	0.0842	1.3068	0.2849
Y0 to NZP↓	0.0798	0.1171	0.8278	0.2169
Y0 to NZP↑	0.0766	0.1097	0.5746	0.2821
Y1 to DBL↓	0.0715	0.0984	0.3571	0.2197

Propagation Delay at 125C, 1.15V Worst process

Y1 to DBL↑	0.0626	0.1038	0.5013	0.2881
Y1 to NZN↓	0.0246	0.1081	0.7329	0.2242
Y1 to NZN↑	0.0363	0.0905	1.3052	0.2854
Y1 to NZP↓	0.0826	0.1233	0.8286	0.2167
Y1 to NZP↑	0.0779	0.1163	0.5745	0.2822
Y2 to NZN↓	0.0660	0.1244	0.6930	0.2211
Y2 to NZN↑	0.0502	0.1030	0.6812	0.2827
Y2 to NZP↓	0.0198	0.0967	0.8239	0.2167
Y2 to NZP↑	0.0165	0.0771	0.5666	0.2817

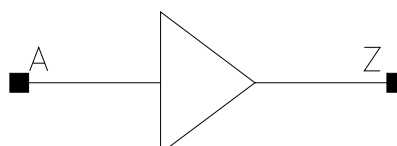


HS65_LS_BF

Cell Description

Internal Non-Inverting Buffer

Logical Symbol



Functions

A	Z
A	A

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	0.80	2.0800
X4	2.6	0.80	2.0800
X7	2.6	0.80	2.0800
X9	2.6	0.80	2.0800
X13	2.6	1.20	3.1200
X18	2.6	1.20	3.1200
X22	2.6	1.40	3.6400
X27	2.6	1.40	3.6400
X31	2.6	2.00	5.2000
X35	2.6	2.00	5.2000
X40	2.6	2.20	5.7200
X44	2.6	2.20	5.7200
X49	2.6	2.40	6.2400
X53	2.6	2.40	6.2400
X62	2.6	3.00	7.8000
X71	2.6	3.20	8.3200
X106	2.6	4.60	11.9600



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X142	2.6	6.00	15.6000
X213	2.6	8.60	22.3600
X284	2.6	11.60	30.1600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	1.133e-07	1.998e-10
X4	1.388e-07	3.997e-10
X7	1.731e-07	3.997e-10
X9	2.140e-07	5.329e-10
X13	3.611e-07	8.660e-10
X18	4.590e-07	1.066e-09
X22	5.978e-07	1.465e-09
X27	6.889e-07	1.599e-09
X31	8.753e-07	1.998e-09
X35	9.498e-07	2.132e-09
X40	1.094e-06	2.465e-09
X44	1.186e-06	2.798e-09
X49	1.327e-06	3.064e-09
X53	1.414e-06	3.331e-09
X62	1.688e-06	3.930e-09
X71	1.922e-06	4.463e-09
X106	2.895e-06	6.595e-09
X142	3.908e-06	8.926e-09
X213	5.855e-06	1.332e-08
X284	7.901e-06	1.785e-08

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	2.865e-05	2.417e-08
X4	3.668e-05	2.620e-08
X7	4.701e-05	2.829e-08
X9	5.990e-05	3.110e-08

Average Leakage Power (mW) at 125C, 1.30V Best process

X13	1.013e-04	3.969e-08
X18	1.337e-04	4.474e-08
X22	1.735e-04	5.275e-08
X27	2.049e-04	5.795e-08
X31	2.542e-04	6.776e-08
X35	2.795e-04	7.296e-08
X40	3.206e-04	8.068e-08
X44	3.534e-04	8.581e-08
X49	3.931e-04	9.251e-08
X53	4.244e-04	9.750e-08
X62	5.035e-04	1.152e-07
X71	5.766e-04	1.267e-07
X106	8.755e-04	1.812e-07
X142	1.178e-03	2.365e-07
X213	1.778e-03	3.446e-07
X284	2.402e-03	4.601e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	2.542e-05	2.213e-08
X4	3.231e-05	2.352e-08
X7	4.123e-05	2.505e-08
X9	5.235e-05	2.699e-08
X13	8.854e-05	3.386e-08
X18	1.165e-04	3.747e-08
X22	1.513e-04	4.365e-08
X27	1.784e-04	4.725e-08
X31	2.217e-04	5.523e-08
X35	2.436e-04	5.884e-08
X40	2.795e-04	6.495e-08
X44	3.078e-04	6.842e-08
X49	3.425e-04	7.341e-08
X53	3.695e-04	7.688e-08
X62	4.386e-04	9.097e-08
X71	5.022e-04	9.936e-08



Average Leakage Power (mW) at 125C, 1.25V Best process

X106	7.623e-04	1.406e-07
X142	1.026e-03	1.826e-07
X213	1.548e-03	2.642e-07
X284	2.092e-03	3.521e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X4	X7	X9	X13
A to Z	4.502e-03	5.413e-03	6.246e-03	7.365e-03	9.987e-03
Pin Cycle (vdd)	X18	X22	X27	X31	X35
A to Z	1.279e-02	1.701e-02	1.936e-02	2.230e-02	2.429e-02
Pin Cycle (vdd)	X40	X44	X49	X53	X62
A to Z	2.855e-02	3.080e-02	3.393e-02	3.603e-02	4.299e-02
Pin Cycle (vdd)	X71	X106	X142	X213	X284
A to Z	4.839e-02	7.204e-02	9.787e-02	1.510e-01	2.239e-01

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X4	X7	X9	X13
A to Z	-1.005e-06	-8.870e-07	-8.700e-07	-1.133e-06	-2.751e-06
Pin Cycle (vdds)	X18	X22	X27	X31	X35
A to Z	-2.616e-06	-4.619e-06	-3.875e-06	-7.490e-06	-7.360e-06
Pin Cycle (vdds)	X40	X44	X49	X53	X62
A to Z	-7.880e-06	-1.023e-05	-1.036e-05	-1.010e-05	-1.296e-05
Pin Cycle (vdds)	X71	X106	X142	X213	X284
A to Z	-1.380e-05	-1.732e-05	-2.449e-05	-2.576e-05	-2.622e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X4	X7	X9	X13
A	0.0010	0.0010	0.0011	0.0012	0.0014
Pin	X18	X22	X27	X31	X35
A	0.0018	0.0021	0.0023	0.0029	0.0031
Pin	X40	X44	X49	X53	X62

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0034	0.0037	0.0041	0.0043	0.0052
Pin	X71	X106	X142	X213	X284
A	0.0058	0.0086	0.0132	0.0189	0.0257

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X7	X9	X13	X2	X4	X7	X9	X13
A to Z↓	0.0382	0.0392	0.0396	0.0374	0.0358	4.1133	2.4222	1.6106	1.2198	0.7825
A to Z↑	0.0336	0.0334	0.0335	0.0320	0.0307	5.6661	3.2194	2.1254	1.6455	1.0620
	X18	X22	X27	X31	X35	X18	X22	X27	X31	X35
A to Z↓	0.0350	0.0359	0.0351	0.0334	0.0328	0.5840	0.4594	0.3872	0.3209	0.2907
A to Z↑	0.0297	0.0303	0.0295	0.0278	0.0279	0.8070	0.6385	0.5412	0.4614	0.4060
	X40	X44	X49	X53	X62	X40	X44	X49	X53	X62
A to Z↓	0.0336	0.0332	0.0335	0.0331	0.0332	0.2564	0.2326	0.2097	0.1947	0.1682
A to Z↑	0.0285	0.0281	0.0283	0.0279	0.0282	0.3588	0.3256	0.2937	0.2718	0.2342
	X71	X106	X142	X213	X284	X71	X106	X142	X213	X284
A to Z↓	0.0333	0.0334	0.0342	0.0354	0.0369	0.1480	0.1020	0.0793	0.0586	0.0506
A to Z↑	0.0279	0.0280	0.0286	0.0298	0.0321	0.2056	0.1393	0.1064	0.0758	0.0632

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X7	X9	X13	X2	X4	X7	X9	X13
A to Z↓	0.0576	0.0597	0.0603	0.0569	0.0540	6.4780	3.9257	2.5822	1.9527	1.2181
A to Z↑	0.0515	0.0515	0.0518	0.0499	0.0475	8.1771	4.6918	3.1023	2.4045	1.5309
	X18	X22	X27	X31	X35	X18	X22	X27	X31	X35
A to Z↓	0.0528	0.0543	0.0529	0.0500	0.0491	0.9060	0.7095	0.5950	0.4933	0.4453
A to Z↑	0.0459	0.0467	0.0453	0.0427	0.0427	1.1676	0.9185	0.7788	0.6626	0.5835
	X40	X44	X49	X53	X62	X40	X44	X49	X53	X62



Propagation Delay at 125C, 1.10V Worst process

A to Z↓	0.0503	0.0497	0.0500	0.0494	0.0495	0.3925	0.3548	0.3203	0.2964	0.2558
A to Z↑	0.0435	0.0428	0.0430	0.0425	0.0429	0.5142	0.4668	0.4206	0.3894	0.3353
	X71	X106	X142	X213	X284	X71	X106	X142	X213	X284
A to Z↓	0.0496	0.0496	0.0505	0.0519	0.0535	0.2249	0.1541	0.1195	0.0870	0.0731
A to Z↑	0.0423	0.0421	0.0429	0.0440	0.0456	0.2939	0.1986	0.1515	0.1066	0.0871

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X7	X9	X13	X2	X4	X7	X9	X13
A to Z↓	0.0537	0.0555	0.0560	0.0529	0.0503	6.0250	3.6285	2.3838	1.8010	1.1301
A to Z↑	0.0481	0.0481	0.0484	0.0465	0.0443	7.6320	4.3704	2.8826	2.2326	1.4237
	X18	X22	X27	X31	X35	X18	X22	X27	X31	X35
A to Z↓	0.0492	0.0505	0.0493	0.0466	0.0458	0.8405	0.6589	0.5529	0.4584	0.4139
A to Z↑	0.0428	0.0435	0.0423	0.0399	0.0399	1.0847	0.8543	0.7241	0.6162	0.5426
	X40	X44	X49	X53	X62	X40	X44	X49	X53	X62
A to Z↓	0.0469	0.0463	0.0466	0.0461	0.0462	0.3650	0.3300	0.2980	0.2759	0.2380
A to Z↑	0.0407	0.0400	0.0402	0.0397	0.0401	0.4784	0.4341	0.3912	0.3623	0.3119
	X71	X106	X142	X213	X284	X71	X106	X142	X213	X284
A to Z↓	0.0463	0.0463	0.0471	0.0485	0.0503	0.2093	0.1436	0.1115	0.0812	0.0684
A to Z↑	0.0395	0.0394	0.0402	0.0413	0.0431	0.2734	0.1848	0.1413	0.0994	0.0815

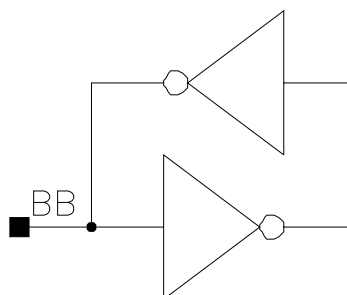
HS65_LS_BK1

Cell Description

Buskeeper Cell

The cell has "dont_use" and "dont_touch" attributes set in the Synopsys STF.

Logical Symbol



Functions

BB	OLDBB	BB
BB	BB	BB
Z	0	L
Z	1	H

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X1	2.6	2.00	5.2000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X1	1.404e-07	2.998e-10

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X1	3.214e-05	3.727e-08



Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X1	2.845e-05	3.417e-08

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X1
BB	0.0051

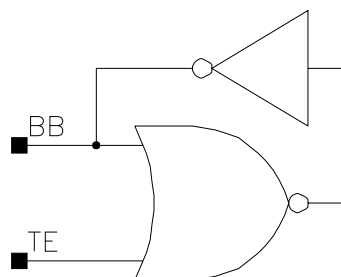
HS65_LS_BK1S

Cell Description

Buskeeper Cell with Enable

The cell has "dont_use" and "dont_touch" attributes set in the Synopsys STF.

Logical Symbol



Functions

BB	OLDBB	BB
BB	-	BB
Z	-	H
BB	BB	BB
Z	1	H
Z	0	L

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X1	2.6	2.20	5.7200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X1	1.570e-07	3.331e-10

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X1	3.676e-05	3.911e-08



Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X1	3.258e-05	3.608e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X1
TE to BB	2.713e-03

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X1
TE to BB	2.506e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X1
BB	0.0059
TE	0.0015

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X1	X1
TE to BB [↑]	-0.0303	16.2641

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X1	X1
TE to BB [↑]	-0.0379	25.2830

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X1	X1
TE to BB↑	-0.0320	23.3042

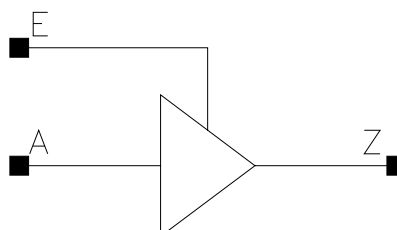


HS65_LS_BTH

Cell Description

Internal Tristate Non-Inverting Buffer, Positive Enable

Logical Symbol



Functions

E	A	Z
1	A	A
0	-	Z

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X10	2.6	2.00	5.2000
X15	2.6	2.60	6.7600
X20	2.6	3.60	9.3600
X25	2.6	4.00	10.4000
X30	2.6	4.80	12.4800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X10	3.674e-07	9.659e-10
X15	5.081e-07	1.432e-09
X20	7.294e-07	1.899e-09
X25	9.497e-07	2.431e-09
X30	1.086e-06	2.931e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X10	1.024e-04	5.149e-08
X15	1.450e-04	6.769e-08
X20	2.049e-04	8.577e-08
X25	2.743e-04	9.933e-08
X30	3.160e-04	1.163e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X10	8.984e-05	4.444e-08
X15	1.269e-04	5.742e-08
X20	1.798e-04	7.237e-08
X25	2.402e-04	8.292e-08
X30	2.765e-04	9.676e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X10	X15	X20	X25	X30
A to Z	1.861e-02	2.609e-02	3.474e-02	4.228e-02	5.112e-02
E to Z	5.840e-03	8.877e-03	1.185e-02	1.455e-02	1.724e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X10	X15	X20	X25	X30
A to Z	-1.168e-05	-1.484e-05	-2.773e-05	-3.024e-05	-3.300e-05
E to Z	2.065e-03	3.062e-03	3.898e-03	4.786e-03	5.925e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X10	X15	X20	X25	X30
A	0.0017	0.0022	0.0031	0.0036	0.0042
E	0.0031	0.0038	0.0055	0.0066	0.0073
Z	0.0022	0.0032	0.0040	0.0053	0.0061

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X10	X15	X20	X25	X30	X10	X15	X20	X25	X30
A to Z↓	0.0414	0.0393	0.0380	0.0374	0.0379	1.0746	0.7510	0.5681	0.4506	0.3813
A to Z↑	0.0397	0.0379	0.0376	0.0364	0.0367	1.7899	1.2306	0.9258	0.7422	0.6216
E to Z↓	0.0228	0.0232	0.0224	0.0214	0.0221	1.0868	0.7583	0.5744	0.4564	0.3863
E to Z↑	0.0146	0.0149	0.0142	0.0136	0.0137	1.7853	1.2277	0.9234	0.7401	0.6200

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X10	X15	X20	X25	X30	X10	X15	X20	X25	X30
A to Z↓	0.0637	0.0603	0.0583	0.0569	0.0579	1.8039	1.2425	0.9397	0.7374	0.6257
A to Z↑	0.0622	0.0592	0.0585	0.0562	0.0568	2.7167	1.8494	1.3902	1.1093	0.9298
E to Z↓	0.0338	0.0349	0.0331	0.0315	0.0324	1.7945	1.2333	0.9338	0.7339	0.6229
E to Z↑	0.0205	0.0212	0.0197	0.0186	0.0190	2.7082	1.8447	1.3865	1.1063	0.9273

Propagation Delay at 125C, 1.15V Worst process

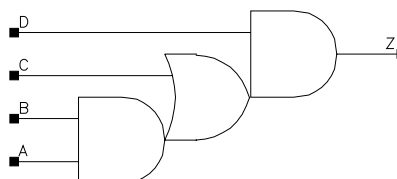
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X10	X15	X20	X25	X30	X10	X15	X20	X25	X30
A to Z↓	0.0590	0.0559	0.0541	0.0529	0.0537	1.6473	1.1370	0.8595	0.6760	0.5730
A to Z↑	0.0578	0.0551	0.0545	0.0525	0.0530	2.4994	1.7041	1.2809	1.0227	0.8573
E to Z↓	0.0318	0.0328	0.0312	0.0296	0.0306	1.6387	1.1289	0.8552	0.6729	0.5709
E to Z↑	0.0193	0.0200	0.0187	0.0176	0.0180	2.4918	1.6990	1.2775	1.0197	0.8548



HS65_LS_CB4I1

Cell Description
2 wide 2-3 AND-OR

Logical Symbol



Functions

A	B	C	D	Z
-	0	0	-	0
0	-	0	-	0
-	-	-	0	0
1	1	-	1	1
-	-	1	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.60	4.1600
X9	2.6	1.60	4.1600
X18	2.6	2.00	5.2000
X27	2.6	3.40	8.8400
X35	2.6	3.60	9.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.459e-07	4.247e-10
X9	2.442e-07	7.994e-10
X18	4.912e-07	1.590e-09
X27	7.378e-07	2.456e-09
X35	9.731e-07	3.247e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	3.626e-05	3.550e-08
X9	6.556e-05	4.351e-08
X18	1.393e-04	6.175e-08
X27	2.052e-04	9.132e-08
X35	2.750e-04	1.078e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.206e-05	3.195e-08
X9	5.743e-05	3.763e-08
X18	1.217e-04	5.109e-08
X27	1.794e-04	7.534e-08
X35	2.402e-04	8.711e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	7.226e-03	1.080e-02	1.840e-02	2.810e-02	3.729e-02
B to Z	6.960e-03	1.025e-02	1.724e-02	2.629e-02	3.488e-02
C to Z	5.972e-03	8.815e-03	1.478e-02	2.248e-02	3.013e-02
D to Z	7.103e-03	1.051e-02	1.780e-02	2.731e-02	3.589e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-6.737e-06	-9.713e-06	-1.946e-05	-2.833e-05	-3.981e-05
B to Z	-5.852e-06	-1.047e-05	-1.859e-05	-2.632e-05	-3.655e-05
C to Z	-1.450e-07	1.923e-07	1.311e-06	1.491e-07	1.062e-06
D to Z	-8.159e-07	-1.504e-06	-3.048e-06	-4.521e-06	-6.143e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0010	0.0013	0.0021	0.0036	0.0043
B	0.0010	0.0015	0.0023	0.0033	0.0041
C	0.0010	0.0014	0.0023	0.0033	0.0042
D	0.0010	0.0015	0.0023	0.0035	0.0042

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0769	0.0638	0.0588	0.0579	0.0583	2.5053	1.2447	0.6114	0.4164	0.3099
A to Z↑	0.0755	0.0638	0.0551	0.0561	0.0556	3.3255	1.6921	0.8449	0.5744	0.4289
B to Z↓	0.0725	0.0590	0.0535	0.0537	0.0542	2.4933	1.2382	0.6069	0.4150	0.3092
B to Z↑	0.0731	0.0604	0.0514	0.0522	0.0516	3.3276	1.6929	0.8451	0.5742	0.4289
C to Z↓	0.0630	0.0520	0.0474	0.0471	0.0478	2.4818	1.2354	0.6064	0.4136	0.3079
C to Z↑	0.0488	0.0406	0.0350	0.0367	0.0369	3.2421	1.6597	0.8298	0.5645	0.4217
D to Z↓	0.0499	0.0411	0.0377	0.0379	0.0378	2.4126	1.2102	0.5930	0.4049	0.3005
D to Z↑	0.0616	0.0518	0.0450	0.0468	0.0463	3.2643	1.6675	0.8336	0.5668	0.4234

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1230	0.1021	0.0936	0.0922	0.0927	4.0367	1.9759	0.9458	0.6433	0.4775
A to Z↑	0.1304	0.1112	0.0937	0.0960	0.0942	4.9156	2.4902	1.2267	0.8328	0.6211
B to Z↓	0.1156	0.0941	0.0849	0.0851	0.0856	4.0132	1.9630	0.9379	0.6402	0.4754
B to Z↑	0.1251	0.1045	0.0869	0.0886	0.0869	4.9138	2.4916	1.2271	0.8327	0.6212
C to Z↓	0.0995	0.0820	0.0743	0.0738	0.0747	3.9950	1.9584	0.9364	0.6377	0.4732
C to Z↑	0.0798	0.0665	0.0561	0.0591	0.0590	4.7455	2.4246	1.1971	0.8133	0.6069
D to Z↓	0.0759	0.0623	0.0566	0.0570	0.0569	3.8811	1.9166	0.9140	0.6234	0.4608
D to Z↑	0.1041	0.0882	0.0747	0.0783	0.0770	4.7938	2.4427	1.2048	0.8180	0.6102



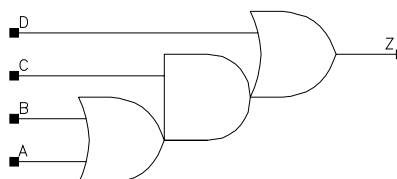
Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1133	0.0940	0.0862	0.0851	0.0855	3.7352	1.8280	0.8779	0.5972	0.4435
A to Z ↑	0.1189	0.1012	0.0855	0.0876	0.0861	4.5756	2.3124	1.1400	0.7740	0.5774
B to Z ↓	0.1064	0.0866	0.0782	0.0784	0.0788	3.7123	1.8162	0.8713	0.5946	0.4417
B to Z ↑	0.1141	0.0952	0.0794	0.0810	0.0794	4.5757	2.3132	1.1401	0.7741	0.5774
C to Z ↓	0.0916	0.0755	0.0685	0.0681	0.0689	3.6956	1.8115	0.8697	0.5923	0.4397
C to Z ↑	0.0733	0.0611	0.0517	0.0544	0.0544	4.4198	2.2522	1.1132	0.7563	0.5645
D to Z ↓	0.0707	0.0581	0.0528	0.0533	0.0531	3.5878	1.7725	0.8487	0.5789	0.4282
D to Z ↑	0.0953	0.0806	0.0686	0.0718	0.0706	4.4635	2.2681	1.1201	0.7606	0.5675

HS65_LS_CB4I6

Cell Description
2 wide 2-3 OR-AND

Logical Symbol



Functions

A	B	C	D	Z
-	-	0	0	0
0	0	-	0	0
-	-	-	1	1
1	-	1	-	1
-	1	1	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.60	4.1600
X9	2.6	1.60	4.1600
X18	2.6	2.00	5.2000
X27	2.6	3.20	8.3200
X35	2.6	3.60	9.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.939e-07	5.745e-10
X9	2.725e-07	7.411e-10
X18	5.512e-07	1.374e-09
X27	8.447e-07	2.098e-09
X35	1.151e-06	2.781e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	5.077e-05	3.883e-08
X9	7.673e-05	4.204e-08
X18	1.646e-04	5.913e-08
X27	2.530e-04	8.526e-08
X35	3.472e-04	1.024e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	4.468e-05	3.444e-08
X9	6.708e-05	3.673e-08
X18	1.435e-04	4.967e-08
X27	2.206e-04	7.110e-08
X35	3.026e-04	8.405e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	8.149e-03	1.036e-02	1.804e-02	2.717e-02	3.585e-02
B to Z	7.364e-03	9.533e-03	1.638e-02	2.486e-02	3.263e-02
C to Z	6.551e-03	8.607e-03	1.482e-02	2.290e-02	2.980e-02
D to Z	8.483e-03	1.069e-02	1.860e-02	2.836e-02	3.708e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-5.021e-06	-5.139e-06	-1.113e-05	-1.313e-05	-1.738e-05
B to Z	5.710e-07	7.240e-07	3.232e-07	1.199e-06	8.050e-07
C to Z	-9.097e-07	-1.722e-06	-2.404e-06	-3.982e-06	-6.901e-06
D to Z	-1.110e-05	-1.307e-05	-2.437e-05	-3.516e-05	-4.538e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0013	0.0013	0.0020	0.0034	0.0042
B	0.0013	0.0014	0.0022	0.0032	0.0040
C	0.0013	0.0014	0.0021	0.0031	0.0041
D	0.0012	0.0012	0.0019	0.0027	0.0036

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0810	0.0850	0.0783	0.0760	0.0765	2.5296	1.3189	0.6435	0.4364	0.3257
A to Z↑	0.0511	0.0534	0.0479	0.0471	0.0457	3.0995	1.6696	0.8345	0.5675	0.4225
B to Z↓	0.0730	0.0772	0.0701	0.0688	0.0685	2.5302	1.3188	0.6436	0.4364	0.3257
B to Z↑	0.0456	0.0479	0.0422	0.0440	0.0417	3.0845	1.6627	0.8302	0.5667	0.4214
C to Z↓	0.0485	0.0506	0.0457	0.0469	0.0460	2.4356	1.2666	0.6198	0.4216	0.3139
C to Z↑	0.0422	0.0445	0.0398	0.0410	0.0388	3.0896	1.6628	0.8309	0.5662	0.4210
D to Z↓	0.0656	0.0685	0.0630	0.0626	0.0627	2.4574	1.2785	0.6244	0.4244	0.3162
D to Z↑	0.0468	0.0471	0.0449	0.0461	0.0438	3.1000	1.6635	0.8333	0.5676	0.4221

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1321	0.1384	0.1274	0.1232	0.1237	4.0939	2.1228	1.0105	0.6790	0.5062
A to Z↑	0.0855	0.0895	0.0794	0.0778	0.0748	4.4957	2.4423	1.2048	0.8222	0.6103
B to Z↓	0.1175	0.1243	0.1124	0.1100	0.1092	4.0960	2.1231	1.0109	0.6791	0.5062
B to Z↑	0.0753	0.0794	0.0688	0.0718	0.0670	4.4694	2.4284	1.1968	0.8200	0.6077
C to Z↓	0.0775	0.0807	0.0723	0.0737	0.0720	3.9231	2.0274	0.9668	0.6516	0.4844
C to Z↑	0.0696	0.0735	0.0650	0.0667	0.0627	4.4741	2.4288	1.1979	0.8188	0.6075
D to Z↓	0.1070	0.1116	0.1023	0.1011	0.1010	3.9661	2.0505	0.9762	0.6573	0.4889
D to Z↑	0.0737	0.0743	0.0707	0.0717	0.0682	4.4997	2.4323	1.2037	0.8215	0.6100



Propagation Delay at 125C, 1.15V Worst process

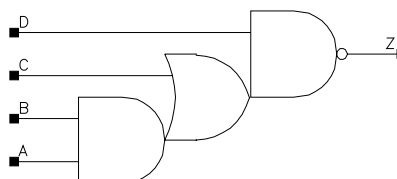
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1210	0.1268	0.1168	0.1130	0.1135	3.7872	1.9605	0.9367	0.6300	0.4697
A to Z↑	0.0785	0.0821	0.0729	0.0715	0.0689	4.1837	2.2676	1.1204	0.7642	0.5677
B to Z↓	0.1076	0.1138	0.1030	0.1009	0.1002	3.7872	1.9610	0.9367	0.6301	0.4698
B to Z↑	0.0692	0.0728	0.0633	0.0660	0.0617	4.1599	2.2539	1.1127	0.7624	0.5651
C to Z↓	0.0712	0.0742	0.0665	0.0679	0.0663	3.6278	1.8726	0.8964	0.6049	0.4498
C to Z↑	0.0640	0.0676	0.0599	0.0615	0.0579	4.1627	2.2559	1.1140	0.7613	0.5648
D to Z↓	0.0983	0.1025	0.0940	0.0930	0.0929	3.6676	1.8941	0.9051	0.6101	0.4541
D to Z↑	0.0688	0.0692	0.0658	0.0668	0.0636	4.1867	2.2590	1.1191	0.7637	0.5671

HS65_LS_CBI4I1

Cell Description

2 wide 2-3 AND-OR-INVERT

Logical Symbol



Functions

A	B	C	D	Z
-	-	1	1	0
1	1	-	1	0
-	0	0	-	1
0	-	0	-	1
-	-	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X3	2.6	1.40	3.6400
X5	2.6	1.40	3.6400
X11	2.6	2.40	6.2400
X16	2.6	3.40	8.8400
X21	2.6	4.60	11.9600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X3	1.064e-07	3.102e-10
X5	1.974e-07	5.683e-10
X11	4.105e-07	1.051e-09
X16	6.155e-07	1.543e-09
X21	8.347e-07	2.026e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X3	2.776e-05	2.979e-08
X5	5.582e-05	3.440e-08
X11	1.179e-04	5.315e-08
X16	1.768e-04	7.175e-08
X21	2.413e-04	9.234e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X3	2.448e-05	2.737e-08
X5	4.888e-05	3.057e-08
X11	1.033e-04	4.611e-08
X16	1.549e-04	6.150e-08
X21	2.113e-04	7.883e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X3	X5	X11	X16	X21
A to Z	5.573e-03	9.503e-03	1.844e-02	2.699e-02	3.618e-02
B to Z	5.065e-03	8.465e-03	1.598e-02	2.341e-02	3.119e-02
C to Z	3.786e-03	6.162e-03	1.122e-02	1.690e-02	2.230e-02
D to Z	2.695e-03	4.224e-03	7.622e-03	1.114e-02	1.499e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X3	X5	X11	X16	X21
A to Z	-8.740e-06	-1.407e-05	-2.911e-05	-3.415e-05	-5.011e-05
B to Z	-7.717e-06	-1.497e-05	-2.271e-05	-4.148e-05	-5.461e-05
C to Z	7.737e-07	3.068e-06	8.750e-06	1.102e-05	1.799e-05
D to Z	1.316e-07	7.710e-07	1.878e-06	1.614e-06	2.744e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X3	X5	X11	X16	X21

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0013	0.0020	0.0041	0.0057	0.0079
B	0.0012	0.0019	0.0038	0.0055	0.0073
C	0.0013	0.0020	0.0040	0.0054	0.0077
D	0.0013	0.0021	0.0039	0.0056	0.0074

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X5	X11	X16	X21	X3	X5	X11	X16	X21
A to Z↓	0.0338	0.0291	0.0277	0.0284	0.0280	5.8039	2.8561	1.4028	0.9843	0.7229
A to Z↑	0.0352	0.0330	0.0323	0.0323	0.0323	6.0282	3.2439	1.6379	1.1165	0.8368
B to Z↓	0.0328	0.0279	0.0259	0.0268	0.0262	5.8160	2.8666	1.4078	0.9874	0.7252
B to Z↑	0.0336	0.0312	0.0299	0.0298	0.0298	6.0997	3.3124	1.6626	1.1243	0.8412
C to Z↓	0.0217	0.0186	0.0175	0.0177	0.0176	3.9658	1.9686	0.9742	0.6805	0.5037
C to Z↑	0.0269	0.0244	0.0232	0.0235	0.0234	5.6906	3.0793	1.5507	1.0508	0.7878
D to Z↓	0.0190	0.0157	0.0146	0.0149	0.0148	4.4965	2.2305	1.0985	0.7696	0.5673
D to Z↑	0.0150	0.0132	0.0125	0.0125	0.0126	3.1251	1.6823	0.8591	0.5706	0.4316

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X5	X11	X16	X21	X3	X5	X11	X16	X21
A to Z↓	0.0602	0.0509	0.0478	0.0484	0.0477	10.3955	4.9863	2.4055	1.6596	1.2161
A to Z↑	0.0527	0.0499	0.0489	0.0482	0.0485	9.0978	4.9072	2.4726	1.6640	1.2511
B to Z↓	0.0579	0.0486	0.0444	0.0454	0.0442	10.3949	4.9856	2.4065	1.6603	1.2166
B to Z↑	0.0505	0.0474	0.0451	0.0447	0.0446	9.1878	4.9907	2.4888	1.6733	1.2497
C to Z↓	0.0359	0.0306	0.0286	0.0288	0.0286	6.8205	3.2775	1.6049	1.1006	0.8146
C to Z↑	0.0392	0.0359	0.0339	0.0341	0.0340	8.5324	4.6187	2.3162	1.5569	1.1683
D to Z↓	0.0318	0.0262	0.0242	0.0243	0.0241	7.8368	3.7676	1.8306	1.2607	0.9279
D to Z↑	0.0211	0.0187	0.0174	0.0174	0.0174	4.4152	2.3721	1.1976	0.7981	0.6000



Propagation Delay at 125C, 1.15V Worst process

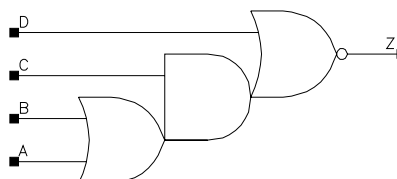
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X5	X11	X16	X21	X3	X5	X11	X16	X21
A to Z ↓	0.0552	0.0468	0.0440	0.0446	0.0440	9.4096	4.5182	2.1850	1.5110	1.1075
A to Z ↑	0.0493	0.0466	0.0457	0.0451	0.0454	8.3906	4.5126	2.2758	1.5337	1.1522
B to Z ↓	0.0532	0.0447	0.0410	0.0420	0.0409	9.4065	4.5188	2.1861	1.5119	1.1079
B to Z ↑	0.0472	0.0442	0.0422	0.0418	0.0417	8.4801	4.5926	2.2925	1.5425	1.1519
C to Z ↓	0.0334	0.0285	0.0267	0.0268	0.0267	6.2123	2.9904	1.4664	1.0086	0.7465
C to Z ↑	0.0368	0.0337	0.0318	0.0320	0.0320	7.8745	4.2522	2.1335	1.4356	1.0773
D to Z ↓	0.0295	0.0244	0.0225	0.0228	0.0225	7.1186	3.4296	1.6695	1.1526	0.8485
D to Z ↑	0.0200	0.0177	0.0165	0.0165	0.0165	4.1149	2.2077	1.1162	0.7440	0.5596

HS65_LS_CBI4I6

Cell Description

2 wide 2-3 OR-AND-INVERT, 9x Drive

Logical Symbol



Functions

A	B	C	D	Z
-	-	-	1	0
1	-	1	-	0
-	1	1	-	0
0	0	-	0	1
-	-	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.40	3.6400
X5	2.6	1.40	3.6400
X9	2.6	2.40	6.2400
X14	2.6	3.40	8.8400
X18	2.6	4.60	11.9600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	9.580e-08	2.811e-10
X5	1.629e-07	5.225e-10
X9	3.337e-07	9.638e-10
X14	5.115e-07	1.480e-09
X18	6.846e-07	1.963e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	2.365e-05	3.075e-08
X5	4.394e-05	3.601e-08
X9	8.993e-05	5.389e-08
X14	1.422e-04	7.409e-08
X18	1.898e-04	9.445e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	2.090e-05	2.824e-08
X5	3.849e-05	3.207e-08
X9	7.879e-05	4.682e-08
X14	1.244e-04	6.373e-08
X18	1.661e-04	8.078e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X5	X9	X14	X18
A to Z	5.520e-03	9.369e-03	1.761e-02	2.635e-02	3.465e-02
B to Z	4.765e-03	7.904e-03	1.424e-02	2.139e-02	2.829e-02
C to Z	3.971e-03	6.617e-03	1.179e-02	1.784e-02	2.376e-02
D to Z	2.359e-03	3.638e-03	6.037e-03	8.869e-03	1.157e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X5	X9	X14	X18
A to Z	-1.006e-05	-2.424e-05	-3.494e-05	-5.473e-05	-7.584e-05
B to Z	-6.210e-06	-9.030e-06	-1.530e-05	-1.822e-05	-2.848e-05
C to Z	-3.585e-06	-1.957e-06	-4.633e-07	6.100e-07	-1.931e-05
D to Z	1.889e-06	4.500e-06	8.439e-06	1.320e-05	1.962e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X5	X9	X14	X18

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0013	0.0020	0.0041	0.0055	0.0075
B	0.0012	0.0018	0.0036	0.0052	0.0073
C	0.0013	0.0020	0.0040	0.0052	0.0069
D	0.0012	0.0017	0.0032	0.0044	0.0060

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X9	X14	X18	X2	X5	X9	X14	X18
A to Z↓	0.0269	0.0234	0.0225	0.0220	0.0220	4.6293	2.3264	1.2012	0.7959	0.6121
A to Z↑	0.0473	0.0437	0.0413	0.0423	0.0412	9.1831	4.9340	2.4718	1.6967	1.2420
B to Z↓	0.0265	0.0234	0.0216	0.0215	0.0211	4.7096	2.3991	1.2091	0.8021	0.6028
B to Z↑	0.0451	0.0412	0.0379	0.0390	0.0378	9.2022	4.9430	2.4761	1.7002	1.2448
C to Z↓	0.0217	0.0188	0.0176	0.0171	0.0175	4.4209	2.2417	1.1428	0.7560	0.5782
C to Z↑	0.0285	0.0258	0.0235	0.0239	0.0240	6.0843	3.2468	1.6280	1.1205	0.8442
D to Z↓	0.0155	0.0138	0.0123	0.0124	0.0121	3.7251	2.0055	1.0155	0.7005	0.5175
D to Z↑	0.0223	0.0195	0.0176	0.0175	0.0171	6.9778	3.7310	1.8694	1.2851	0.9546

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X9	X14	X18	X2	X5	X9	X14	X18
A to Z↓	0.0453	0.0390	0.0375	0.0358	0.0360	7.9391	3.9154	2.0217	1.2987	0.9995
A to Z↑	0.0746	0.0696	0.0651	0.0664	0.0649	14.1489	7.6170	3.7906	2.5765	1.8948
B to Z↓	0.0445	0.0389	0.0355	0.0351	0.0345	8.0624	4.0354	2.0092	1.3108	0.9869
B to Z↑	0.0701	0.0648	0.0589	0.0605	0.0588	14.1508	7.6189	3.7905	2.5767	1.8953
C to Z↓	0.0363	0.0312	0.0292	0.0279	0.0284	7.4888	3.7370	1.8962	1.2231	0.9355
C to Z↑	0.0429	0.0392	0.0356	0.0359	0.0361	9.1639	4.9088	2.4499	1.6672	1.2533
D to Z↓	0.0241	0.0218	0.0193	0.0192	0.0188	5.7479	3.1162	1.5468	1.0518	0.7740
D to Z↑	0.0326	0.0286	0.0256	0.0254	0.0248	10.5656	5.6714	2.8239	1.9207	1.4278



Propagation Delay at 125C, 1.15V Worst process

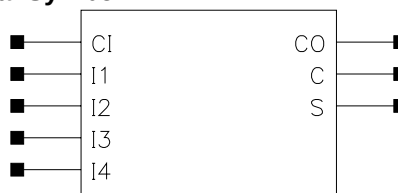
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X9	X14	X18	X2	X5	X9	X14	X18
A to Z↓	0.0419	0.0362	0.0348	0.0333	0.0335	7.2347	3.5711	1.8439	1.1898	0.9156
A to Z↑	0.0691	0.0644	0.0604	0.0616	0.0601	12.9941	6.9780	3.4748	2.3643	1.7383
B to Z↓	0.0413	0.0362	0.0331	0.0327	0.0322	7.3427	3.6787	1.8347	1.1999	0.9035
B to Z↑	0.0650	0.0599	0.0546	0.0560	0.0545	12.9952	6.9791	3.4750	2.3651	1.7385
C to Z↓	0.0338	0.0291	0.0273	0.0261	0.0266	6.8323	3.4112	1.7322	1.1212	0.8578
C to Z↑	0.0400	0.0365	0.0332	0.0335	0.0337	8.4512	4.5182	2.2552	1.5372	1.1554
D to Z↓	0.0228	0.0206	0.0182	0.0182	0.0178	5.3390	2.8864	1.4369	0.9785	0.7207
D to Z↑	0.0304	0.0267	0.0240	0.0238	0.0232	9.7277	5.2089	2.5951	1.7677	1.3137

HS65_LS_D42CO

Cell Description

4:2 compressor, with CO output

Logical Symbol



Functions

I3	I2	I1	CO
-	I2	I2	!I2
I3	I3	-	!I3
I3	-	I3	!I3

Functions

I4	I3	I2	I1	CI	S
I4	I4	I2	I2	CI	!CI
I4	!I4	I2	!I2	CI	!CI
I4	I4	I2	!I2	CI	CI
I4	!I4	I2	I2	CI	CI

Functions

I4	I3	I2	I1	CI	C
-	I3	I2	!I2	I3	!I3
0	1	-	-	1	0
0	-	0	-	1	0
0	-	-	0	1	0
1	-	-	-	0	1
-	I3	I2	I2	!I3	I3
I4	!I4	I2	!I2	-	I4
I4	I4	I2	I2	-	I4

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X9	2.6	9.40	24.4400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X9	2.758e-06	7.282e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X9	7.788e-04	2.489e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X9	6.810e-04	2.021e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X9
CI to C	7.610e-03
CI to S	7.054e-03
I1 to C	1.669e-02
I1 to CO	1.518e-02
I1 to S	2.399e-02
I2 to C	1.502e-02
I2 to CO	1.430e-02
I2 to S	2.130e-02
I3 to C	1.341e-02
I3 to CO	1.446e-02
I3 to S	1.901e-02
I4 to C	1.538e-02
I4 to S	2.029e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X9
Cl to C	-3.193e-06
Cl to S	-3.900e-06
I1 to C	-4.322e-06
I1 to CO	-3.930e-06
I1 to S	-6.548e-06
I2 to C	-4.503e-06
I2 to CO	-3.427e-06
I2 to S	-7.661e-06
I3 to C	-4.661e-06
I3 to CO	-3.865e-06
I3 to S	-6.624e-06
I4 to C	-5.097e-06
I4 to S	-6.714e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X9
Cl	0.0078
I1	0.0046
I2	0.0144
I3	0.0069
I4	0.0089

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X9	X9
Cl to C↓	0.0267	1.2312
Cl to C↑	0.0271	1.6718
Cl to S↓	0.0364	1.2257
Cl to S↑	0.0327	1.6423
I1 to C↓	0.0996	1.2259



Propagation Delay at 25C, 1.20V Typ process

I1 to C↑	0.1036	1.6631
I1 to CO↓	0.1029	1.3307
I1 to CO↑	0.0956	1.6934
I1 to S↓	0.0995	1.2163
I1 to S↑	0.1036	1.6376
I2 to C↓	0.0940	1.2269
I2 to C↑	0.1008	1.6641
I2 to CO↓	0.1023	1.3397
I2 to CO↑	0.0997	1.7030
I2 to S↓	0.0935	1.2171
I2 to S↑	0.1004	1.6389
I3 to C↓	0.1060	1.2268
I3 to C↑	0.1043	1.6597
I3 to CO↓	0.0357	1.2875
I3 to CO↑	0.0329	1.6915
I3 to S↓	0.1055	1.2171
I3 to S↑	0.1049	1.6361
I4 to C↓	0.1032	1.2263
I4 to C↑	0.0944	1.6538
I4 to S↓	0.1000	1.2183
I4 to S↑	0.0974	1.6354

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X9	X9
CI to C↓	0.0438	1.8966
CI to C↑	0.0414	2.3941
CI to S↓	0.0592	1.8952
CI to S↑	0.0518	2.3697
I1 to C↓	0.1658	1.9252

Propagation Delay at 125C, 1.10V Worst process

I1 to C↑	0.1711	2.4140
I1 to CO↓	0.1721	2.1450
I1 to CO↑	0.1535	2.4964
I1 to S↓	0.1653	1.8977
I1 to S↑	0.1708	2.3801
I2 to C↓	0.1577	1.9254
I2 to C↑	0.1662	2.4170
I2 to CO↓	0.1734	2.1602
I2 to CO↑	0.1621	2.5154
I2 to S↓	0.1564	1.8983
I2 to S↑	0.1652	2.3827
I3 to C↓	0.1730	1.9267
I3 to C↑	0.1692	2.4097
I3 to CO↓	0.0595	2.0355
I3 to CO↑	0.0505	2.4532
I3 to S↓	0.1721	1.8984
I3 to S↑	0.1699	2.3767
I4 to C↓	0.1693	1.9270
I4 to C↑	0.1563	2.4083
I4 to S↓	0.1646	1.8994
I4 to S↑	0.1596	2.3756

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X9	X9
CI to C↓	0.0403	1.7575
CI to C↑	0.0384	2.2256
CI to S↓	0.0543	1.7574
CI to S↑	0.0477	2.2013
I1 to C↓	0.1510	1.7830



Propagation Delay at 125C, 1.15V Worst process

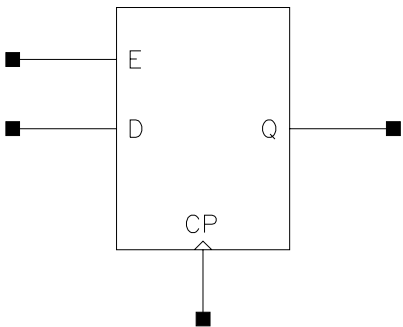
I1 to C↑	0.1555	2.2436
I1 to CO↓	0.1572	1.9802
I1 to CO↑	0.1404	2.3174
I1 to S↓	0.1506	1.7593
I1 to S↑	0.1553	2.2113
I2 to C↓	0.1433	1.7840
I2 to C↑	0.1507	2.2457
I2 to CO↓	0.1577	1.9947
I2 to CO↑	0.1476	2.3339
I2 to S↓	0.1421	1.7607
I2 to S↑	0.1498	2.2133
I3 to C↓	0.1578	1.7838
I3 to C↑	0.1543	2.2402
I3 to CO↓	0.0544	1.8794
I3 to CO↑	0.0467	2.2779
I3 to S↓	0.1570	1.7605
I3 to S↑	0.1549	2.2077
I4 to C↓	0.1536	1.7848
I4 to C↑	0.1416	2.2374
I4 to S↓	0.1498	1.7615
I4 to S↑	0.1453	2.2080

HS65_LS_DFPHQ

Cell Description

D-Type Flipflop; 1 Phase Positive Edge Triggered;
Active Low Set; Q Output Only
The cell has "dont_use" attribute set in the Syn-
opsys STF.

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

CP	E	D	IQ	IQ
/	0	-	IQ	IQ
/	1	D	-	D
-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	4.00	10.4000
X9	2.6	4.00	10.4000
X18	2.6	4.20	10.9200
X27	2.6	4.60	11.9600
X35	2.6	4.80	12.4800



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	5.421e-07	1.157e-09
X9	6.197e-07	1.366e-09
X18	7.961e-07	1.765e-09
X27	9.818e-07	2.223e-09
X35	1.162e-06	2.615e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.389e-04	7.454e-08
X9	1.615e-04	7.874e-08
X18	2.139e-04	8.781e-08
X27	2.693e-04	1.006e-07
X35	3.236e-04	1.097e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.231e-04	6.559e-08
X9	1.426e-04	6.860e-08
X18	1.882e-04	7.525e-08
X27	2.365e-04	8.533e-08
X35	2.838e-04	9.197e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.204e-03	9.283e-03	9.276e-03	9.275e-03	9.264e-03
D (stable)	3.356e-03	3.374e-03	3.377e-03	3.369e-03	3.376e-03
E (stable)	1.393e-02	1.409e-02	1.410e-02	1.407e-02	1.409e-02
CP to Q	1.950e-02	2.172e-02	2.823e-02	3.649e-02	4.690e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.591e-04	1.579e-04	1.621e-04	1.582e-04	1.585e-04
D (stable)	-1.443e-04	-1.443e-04	-1.457e-04	-1.442e-04	-1.446e-04
E (stable)	3.265e-07	-1.085e-07	-5.430e-07	-1.085e-07	-1.785e-07
CP to Q	-2.777e-04	-2.627e-04	-2.757e-04	-2.657e-04	-2.668e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0012	0.0012	0.0012	0.0012	0.0012
E	0.0017	0.0017	0.0017	0.0017	0.0017

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.0907	0.0964	0.1167	0.1301	0.1481	2.6683	1.3648	0.7167	0.4968	0.3953
CP to Q↑	0.0889	0.0909	0.1008	0.1120	0.1230	3.2543	1.6916	0.8592	0.5928	0.4573

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1481	0.1578	0.1924	0.2151	0.2459	4.3396	2.1987	1.1406	0.7845	0.6257
CP to Q↑	0.1425	0.1460	0.1622	0.1807	0.1986	4.7644	2.4925	1.2671	0.8766	0.6813

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1361	0.1450	0.1767	0.1976	0.2259	4.0113	2.0303	1.0546	0.7257	0.5779



Propagation Delay at 125C, 1.15V Worst process

CP to Q↑	0.1309	0.1340	0.1489	0.1660	0.1826	4.4335	2.3134	1.1757	0.8129	0.6306

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.075	0.085	0.12	0.14	0.165
CP	min_pulse_width_low	0.155	0.155	0.15	0.145	0.14
D↓	hold_rising to CP	-0.0483	-0.0435	-0.0435	-0.0435	-0.0435
D↑	hold_rising to CP	-0.0519	-0.0519	-0.0519	-0.0519	-0.0519
D↓	setup_rising to CP	0.1287	0.1286	0.1186	0.1136	0.1084
D↑	setup_rising to CP	0.0923	0.0923	0.0923	0.0923	0.0923
E↓	hold_rising to CP	-0.0329	-0.0329	-0.0329	-0.0331	-0.0326
E↑	hold_rising to CP	-0.0479	-0.0526	-0.0526	-0.0526	-0.0526
E↓	setup_rising to CP	0.1024	0.1027	0.1027	0.1027	0.1027
E↑	setup_rising to CP	0.1377	0.1376	0.1276	0.1226	0.1179

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.115	0.14	0.2	0.225	0.275
CP	min_pulse_width_low	0.255	0.255	0.24	0.23	0.225
D↓	hold_rising to CP	-0.0892	-0.0845	-0.0846	-0.0846	-0.0845
D↑	hold_rising to CP	-0.1085	-0.1085	-0.1089	-0.1089	-0.1135
D↓	setup_rising to CP	0.2100	0.2097	0.1947	0.1850	0.1795
D↑	setup_rising to CP	0.1689	0.1688	0.1693	0.1693	0.1688
E↓	hold_rising to CP	-0.0689	-0.0643	-0.0644	-0.0644	-0.0643
E↑	hold_rising to CP	-0.1055	-0.1055	-0.1102	-0.1055	-0.1055
E↓	setup_rising to CP	0.1741	0.1744	0.1744	0.1744	0.1744
E↑	setup_rising to CP	0.2250	0.2251	0.2103	0.2002	0.1905

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.105	0.13	0.18	0.21	0.25
CP	min_pulse_width_low	0.235	0.23	0.225	0.215	0.21
D↓	hold_rising to CP	-0.0789	-0.0790	-0.0739	-0.0739	-0.0739

Timing Constraints (ns) at 125C, 1.15V Worst process

D↑	hold_rising to CP	-0.0932	-0.0979	-0.0984	-0.0984	-0.0982
D↓	setup_rising to CP	0.1944	0.1894	0.1744	0.1694	0.1644
D↑	setup_rising to CP	0.1584	0.1589	0.1589	0.1589	0.1589
E↓	hold_rising to CP	-0.0634	-0.0634	-0.0634	-0.0634	-0.0634
E↑	hold_rising to CP	-0.0950	-0.0949	-0.0949	-0.0949	-0.0949
E↓	setup_rising to CP	0.1590	0.1589	0.1589	0.1589	0.1589
E↑	setup_rising to CP	0.2048	0.2045	0.1900	0.1798	0.1747

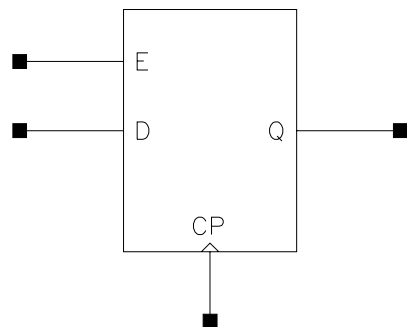


Speed-Optimised

HS65_LSS_DFPHQ

Cell Description
D-Type Flipflop; 1 Phase Positive Edge Triggered;
Active Low Set; Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

CP	E	D	IQ	IQ
/	0	-	IQ	IQ
/	1	D	-	D
-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	5.00	13.0000
X27	2.6	5.20	13.5200
X35	2.6	5.40	14.0400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X18	9.380e-07	2.207e-09
X27	1.113e-06	2.631e-09
X35	1.285e-06	3.023e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.548e-04	1.045e-07
X27	3.072e-04	1.150e-07
X35	3.587e-04	1.240e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.238e-04	8.908e-08
X27	2.695e-04	9.695e-08
X35	3.143e-04	1.036e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.267e-03	9.202e-03	9.059e-03
D (stable)	3.385e-03	3.380e-03	3.375e-03
E (stable)	1.408e-02	1.408e-02	1.404e-02
CP to Q	3.319e-02	3.864e-02	4.350e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.635e-04	1.641e-04	1.636e-04
D (stable)	-1.468e-04	-1.428e-04	-1.462e-04
E (stable)	3.915e-07	8.915e-07	9.565e-07
CP to Q	-2.877e-04	-2.927e-04	-2.858e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

CP	0.0010	0.0010	0.0010
D	0.0012	0.0012	0.0012
E	0.0017	0.0017	0.0017

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1477	0.1527	0.1554	0.5869	0.3947	0.3003
CP to Q↑	0.1611	0.1660	0.1686	0.8123	0.5476	0.4136

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2433	0.2514	0.2555	0.9283	0.6167	0.4677
CP to Q↑	0.2606	0.2687	0.2728	1.1833	0.7939	0.5995

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2233	0.2308	0.2347	0.8588	0.5716	0.4340
CP to Q↑	0.2389	0.2465	0.2503	1.0990	0.7376	0.5572

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.075	0.075	0.07
CP	min_pulse_width_low	0.15	0.15	0.15
D↓	hold_rising to CP	-0.0483	-0.0483	-0.0483
D↑	hold_rising to CP	-0.0519	-0.0519	-0.0519
D↓	setup_rising to CP	0.1234	0.1234	0.1234



Timing Constraints (ns) at 25C, 1.20V Typ process

D↑	setup_rising to CP	0.0871	0.0871	0.0871
E↓	hold_rising to CP	-0.0329	-0.0329	-0.0378
E↑	hold_rising to CP	-0.0479	-0.0479	-0.0479
E↓	setup_rising to CP	0.1026	0.1024	0.1024
E↑	setup_rising to CP	0.1324	0.1326	0.1326

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.12	0.12	0.115
CP	min_pulse_width_low	0.245	0.245	0.24
D↓	hold_rising to CP	-0.0897	-0.0896	-0.0895
D↑	hold_rising to CP	-0.1089	-0.1089	-0.1088
D↓	setup_rising to CP	0.1995	0.1995	0.1995
D↑	setup_rising to CP	0.1638	0.1591	0.1638
E↓	hold_rising to CP	-0.0689	-0.0689	-0.0689
E↑	hold_rising to CP	-0.1052	-0.1052	-0.1055
E↓	setup_rising to CP	0.1741	0.1741	0.1739
E↑	setup_rising to CP	0.2150	0.2105	0.2103

Timing Constraints (ns) at 125C, 1.15V Worst process

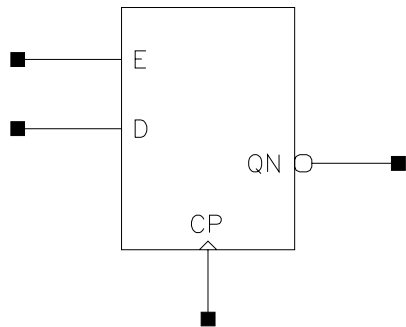
Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.105	0.105	0.105
CP	min_pulse_width_low	0.225	0.225	0.225
D↓	hold_rising to CP	-0.0790	-0.0789	-0.0835
D↑	hold_rising to CP	-0.0984	-0.0984	-0.0982
D↓	setup_rising to CP	0.1838	0.1792	0.1792
D↑	setup_rising to CP	0.1534	0.1534	0.1532
E↓	hold_rising to CP	-0.0639	-0.0639	-0.0637
E↑	hold_rising to CP	-0.0945	-0.0945	-0.0949
E↓	setup_rising to CP	0.1590	0.1590	0.1589
E↑	setup_rising to CP	0.1948	0.1948	0.1943

HS65_LS_DFPHQN

Cell Description

D-Type Flipflop; 1 Phase Positive Edge Triggered;
Active Low Set;QN Output Only
The cell has "dont_use" attribute set in the Syn-
opsys STF.

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

CP	E	D	IQ	IQ
/	0	-	IQ	IQ
/	1	D	-	D
-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	4.20	10.9200
X9	2.6	4.20	10.9200
X18	2.6	4.40	11.4400
X27	2.6	4.80	12.4800
X35	2.6	5.00	13.0000



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	5.404e-07	1.191e-09
X9	6.187e-07	1.391e-09
X18	7.933e-07	1.790e-09
X27	9.815e-07	2.232e-09
X35	1.161e-06	2.656e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.388e-04	7.722e-08
X9	1.619e-04	8.137e-08
X18	2.137e-04	9.044e-08
X27	2.702e-04	1.032e-07
X35	3.244e-04	1.123e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.230e-04	6.804e-08
X9	1.430e-04	7.103e-08
X18	1.881e-04	7.766e-08
X27	2.372e-04	8.766e-08
X35	2.844e-04	9.437e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.201e-03	9.347e-03	9.265e-03	9.322e-03	9.325e-03
D (stable)	3.389e-03	3.396e-03	3.395e-03	3.389e-03	3.394e-03
E (stable)	1.405e-02	1.418e-02	1.417e-02	1.416e-02	1.417e-02
CP to QN	2.038e-02	2.261e-02	2.814e-02	3.506e-02	4.295e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.822e-04	1.792e-04	1.793e-04	1.812e-04	1.817e-04
D (stable)	-1.485e-04	-1.456e-04	-1.488e-04	-1.457e-04	-1.458e-04
E (stable)	8.327e-06	5.761e-06	8.327e-06	5.391e-06	6.327e-06
CP to QN	-3.327e-04	-3.235e-04	-3.028e-04	-3.416e-04	-3.427e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0012	0.0012	0.0012	0.0012	0.0012
E	0.0017	0.0018	0.0018	0.0018	0.0018

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1345	0.1371	0.1506	0.1546	0.1673	2.5571	1.2962	0.6636	0.4455	0.3469
CP to QN↑	0.1236	0.1250	0.1337	0.1465	0.1564	3.2603	1.6855	0.8521	0.5801	0.4438

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.2180	0.2219	0.2418	0.2482	0.2673	4.1443	2.0689	1.0445	0.6942	0.5413
CP to QN↑	0.2020	0.2047	0.2182	0.2388	0.2541	4.7663	2.4718	1.2482	0.8481	0.6510

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.2000	0.2036	0.2225	0.2284	0.2465	3.8305	1.9115	0.9675	0.6436	0.5012



Propagation Delay at 125C, 1.15V Worst process

CP to QN↑	0.1855	0.1880	0.2007	0.2200	0.2345	4.4344	2.2963	1.1589	0.7872	0.6039

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.07	0.07	0.075	0.08	0.085
CP	min_pulse_width_low	0.15	0.155	0.155	0.15	0.15
D↓	hold_rising to CP	-0.0483	-0.0483	-0.0483	-0.0483	-0.0483
D↑	hold_rising to CP	-0.0519	-0.0519	-0.0519	-0.0519	-0.0519
D↓	setup_rising to CP	0.1284	0.1284	0.1284	0.1234	0.1234
D↑	setup_rising to CP	0.0923	0.0923	0.0874	0.0871	0.0871
E↓	hold_rising to CP	-0.0329	-0.0329	-0.0329	-0.0329	-0.0329
E↑	hold_rising to CP	-0.0479	-0.0479	-0.0479	-0.0479	-0.0479
E↓	setup_rising to CP	0.1024	0.1024	0.1024	0.1024	0.1024
E↑	setup_rising to CP	0.1327	0.1374	0.1376	0.1327	0.1324

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.11	0.115	0.12	0.135	0.145
CP	min_pulse_width_low	0.25	0.25	0.25	0.245	0.245
D↓	hold_rising to CP	-0.0897	-0.0892	-0.0897	-0.0897	-0.0896
D↑	hold_rising to CP	-0.1085	-0.1085	-0.1085	-0.1089	-0.1088
D↓	setup_rising to CP	0.2049	0.2049	0.2045	0.1999	0.1995
D↑	setup_rising to CP	0.1638	0.1638	0.1638	0.1638	0.1591
E↓	hold_rising to CP	-0.0689	-0.0689	-0.0689	-0.0689	-0.0689
E↑	hold_rising to CP	-0.1052	-0.1056	-0.1052	-0.1052	-0.1050
E↓	setup_rising to CP	0.1741	0.1739	0.1739	0.1739	0.1739
E↑	setup_rising to CP	0.2200	0.2200	0.2200	0.2150	0.2150

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.1	0.105	0.11	0.125	0.135
CP	min_pulse_width_low	0.23	0.23	0.23	0.225	0.225
D↓	hold_rising to CP	-0.0790	-0.0790	-0.0790	-0.0790	-0.0789

Timing Constraints (ns) at 125C, 1.15V Worst process

D↑	hold_rising to CP	-0.0979	-0.0979	-0.0979	-0.0979	-0.0982
D↓	setup_rising to CP	0.1889	0.1894	0.1889	0.1843	0.1792
D↑	setup_rising to CP	0.1539	0.1539	0.1539	0.1534	0.1486
E↓	hold_rising to CP	-0.0639	-0.0639	-0.0639	-0.0639	-0.0639
E↑	hold_rising to CP	-0.0945	-0.0950	-0.0950	-0.0950	-0.0945
E↓	setup_rising to CP	0.1589	0.1589	0.1589	0.1589	0.1589
E↑	setup_rising to CP	0.1997	0.1997	0.1997	0.1947	0.1948



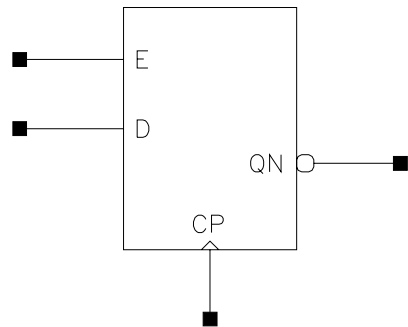
Speed-Optimised

HS65_LSS_DFPHQN

Cell Description

D-Type Flipflop; 1 Phase Positive Edge Triggered;
Active Low Set;QN Output Only

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

CP	E	D	IQ	IQ
/	0	-	IQ	IQ
/	1	D	-	D
-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	4.80	12.4800
X27	2.6	5.00	13.0000
X35	2.6	5.40	14.0400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X18	9.392e-07	2.207e-09
X27	1.110e-06	2.615e-09
X35	1.301e-06	3.031e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.543e-04	1.019e-07
X27	3.052e-04	1.123e-07
X35	3.634e-04	1.233e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.234e-04	8.672e-08
X27	2.677e-04	9.457e-08
X35	3.184e-04	1.031e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.196e-03	9.137e-03	9.135e-03
D (stable)	3.344e-03	3.335e-03	3.342e-03
E (stable)	1.398e-02	1.394e-02	1.399e-02
CP to QN	3.246e-02	3.793e-02	4.307e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.615e-04	1.626e-04	1.652e-04
D (stable)	-1.417e-04	-1.417e-04	-1.414e-04
E (stable)	-5.739e-06	-6.544e-06	-5.048e-06
CP to QN	-2.565e-04	-2.655e-04	-2.895e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

CP	0.0010	0.0010	0.0010
D	0.0012	0.0012	0.0012
E	0.0017	0.0017	0.0017

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1128	0.1181	0.1221	0.5875	0.3964	0.2984
CP to QN↑	0.1237	0.1300	0.1334	0.8155	0.5505	0.4149

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1840	0.1926	0.1988	0.9293	0.6205	0.4637
CP to QN↑	0.2028	0.2134	0.2185	1.1889	0.8000	0.6020

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1686	0.1766	0.1824	0.8594	0.5747	0.4300
CP to QN↑	0.1858	0.1955	0.2004	1.1045	0.7431	0.5588

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.08	0.08	0.085
CP	min_pulse_width_low	0.15	0.15	0.15
D↓	hold_rising to CP	-0.0483	-0.0484	-0.0483
D↑	hold_rising to CP	-0.0519	-0.0519	-0.0519
D↓	setup_rising to CP	0.1189	0.1186	0.1186



Timing Constraints (ns) at 25C, 1.20V Typ process

D↑	setup_rising to CP	0.0923	0.0923	0.0923
E↓	hold_rising to CP	-0.0329	-0.0329	-0.0329
E↑	hold_rising to CP	-0.0526	-0.0526	-0.0526
E↓	setup_rising to CP	0.1024	0.1024	0.1024
E↑	setup_rising to CP	0.1279	0.1276	0.1276

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.135	0.14	0.14
CP	min_pulse_width_low	0.245	0.24	0.24
D↓	hold_rising to CP	-0.0892	-0.0891	-0.0891
D↑	hold_rising to CP	-0.1090	-0.1083	-0.1083
D↓	setup_rising to CP	0.1997	0.1950	0.1945
D↑	setup_rising to CP	0.1689	0.1688	0.1688
E↓	hold_rising to CP	-0.0690	-0.0689	-0.0689
E↑	hold_rising to CP	-0.1055	-0.1055	-0.1055
E↓	setup_rising to CP	0.1741	0.1739	0.1739
E↑	setup_rising to CP	0.2152	0.2101	0.2101

Timing Constraints (ns) at 125C, 1.15V Worst process

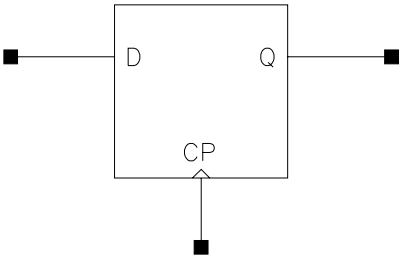
Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.12	0.125	0.13
CP	min_pulse_width_low	0.225	0.225	0.225
D↓	hold_rising to CP	-0.0790	-0.0789	-0.0789
D↑	hold_rising to CP	-0.0984	-0.0977	-0.0977
D↓	setup_rising to CP	0.1793	0.1789	0.1789
D↑	setup_rising to CP	0.1584	0.1584	0.1584
E↓	hold_rising to CP	-0.0634	-0.0634	-0.0634
E↑	hold_rising to CP	-0.0949	-0.0949	-0.0949
E↓	setup_rising to CP	0.1589	0.1589	0.1589
E↑	setup_rising to CP	0.1945	0.1899	0.1899

HS65_LS_DFPQ

Cell Description

D Flip-Flop with 1 Phase Positive Edge Triggered
Clock, Q Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	CP	IQ	IQ
D	/	-	D
-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	3.00	7.8000
X9	2.6	3.00	7.8000
X18	2.6	3.20	8.3200
X27	2.6	3.60	9.3600
X35	2.6	3.80	9.8800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	4.944e-07	1.049e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X9	5.712e-07	1.266e-09
X18	7.444e-07	1.665e-09
X27	9.374e-07	2.165e-09
X35	1.117e-06	2.531e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.276e-04	6.338e-08
X9	1.500e-04	6.753e-08
X18	2.016e-04	7.658e-08
X27	2.589e-04	9.015e-08
X35	3.132e-04	9.930e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.130e-04	5.541e-08
X9	1.324e-04	5.836e-08
X18	1.773e-04	6.502e-08
X27	2.272e-04	7.560e-08
X35	2.745e-04	8.226e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.092e-03	9.159e-03	9.077e-03	9.276e-03	9.235e-03
D (stable)	5.307e-03	5.346e-03	5.328e-03	5.471e-03	5.455e-03
CP to Q	1.671e-02	1.900e-02	2.556e-02	3.342e-02	4.319e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.052e-04	1.042e-04	1.068e-04	1.019e-04	1.009e-04
D (stable)	-1.294e-04	-1.297e-04	-1.307e-04	-1.299e-04	-1.299e-04
CP to Q	-6.544e-05	-6.043e-05	-7.056e-05	-4.843e-05	-4.444e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0014	0.0014	0.0014	0.0014	0.0014

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.0899	0.0957	0.1178	0.1228	0.1391	2.6692	1.3637	0.7229	0.4838	0.3831
CP to Q↑	0.0875	0.0897	0.1003	0.1089	0.1189	3.2582	1.6907	0.8614	0.5904	0.4543

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1466	0.1563	0.1947	0.2020	0.2300	4.3379	2.1966	1.1512	0.7638	0.6058
CP to Q↑	0.1401	0.1438	0.1612	0.1753	0.1918	4.7717	2.4891	1.2722	0.8732	0.6762

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1346	0.1436	0.1786	0.1856	0.2113	4.0108	2.0285	1.0642	0.7066	0.5598
CP to Q↑	0.1286	0.1319	0.1479	0.1609	0.1762	4.4383	2.3101	1.1800	0.8099	0.6263

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.065	0.075	0.11	0.115	0.135
CP	min_pulse_width_low	0.125	0.12	0.11	0.115	0.11
D↓	hold_rising to CP	-0.0032	-0.0032	0.0016	0.0016	0.0016



Timing Constraints (ns) at 25C, 1.20V Typ process

D↑	hold_rising to CP	-0.0168	-0.0167	-0.0167	-0.0167	-0.0167
D↓	setup_rising to CP	0.0835	0.0789	0.0687	0.0687	0.0635
D↑	setup_rising to CP	0.0575	0.0575	0.0575	0.0578	0.0575

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.1	0.125	0.18	0.19	0.225
CP	min_pulse_width_low	0.205	0.2	0.185	0.185	0.175
D↓	hold_rising to CP	-0.0148	-0.0148	-0.0148	-0.0148	-0.0148
D↑	hold_rising to CP	-0.0440	-0.0440	-0.0486	-0.0486	-0.0486
D↓	setup_rising to CP	0.1303	0.1253	0.1103	0.1103	0.1002
D↑	setup_rising to CP	0.0943	0.0943	0.0943	0.0942	0.0942

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.095	0.115	0.165	0.17	0.205
CP	min_pulse_width_low	0.185	0.18	0.165	0.17	0.16
D↓	hold_rising to CP	-0.0142	-0.0143	-0.0097	-0.0097	-0.0144
D↑	hold_rising to CP	-0.0384	-0.0384	-0.0384	-0.0430	-0.0435
D↓	setup_rising to CP	0.1150	0.1147	0.0997	0.0997	0.0900
D↑	setup_rising to CP	0.0841	0.0841	0.0840	0.0887	0.0887

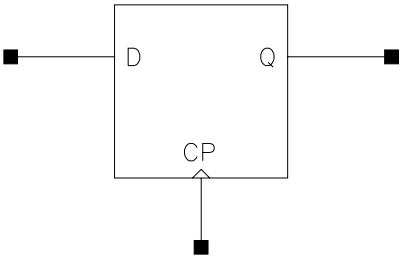
Speed-Optimised

HS65_LSS_DFPQ

Cell Description

D Flip-Flop with 1 Phase Positive Edge Triggered
Clock, Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	CP	IQ	IQ
D	/	-	D
-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	4.00	10.4000
X27	2.6	4.20	10.9200
X35	2.6	4.40	11.4400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	8.864e-07	2.082e-09
X27	1.056e-06	2.515e-09
X35	1.235e-06	2.914e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.423e-04	9.307e-08
X27	2.926e-04	1.035e-07
X35	3.467e-04	1.126e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.127e-04	7.867e-08
X27	2.565e-04	8.658e-08
X35	3.036e-04	9.329e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	8.950e-03	8.922e-03	8.913e-03
D (stable)	5.248e-03	5.222e-03	5.226e-03
CP to Q	3.026e-02	3.561e-02	4.057e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.382e-04	1.337e-04	1.343e-04
D (stable)	-1.318e-04	-1.305e-04	-1.307e-04
CP to Q	-1.974e-04	-1.806e-04	-1.834e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0015	0.0015	0.0015

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1314	0.1363	0.1404	0.5854	0.3980	0.2995
CP to Q↑	0.1467	0.1514	0.1553	0.8110	0.5473	0.4118

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2170	0.2249	0.2311	0.9256	0.6228	0.4660
CP to Q↑	0.2379	0.2457	0.2518	1.1817	0.7936	0.5974

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1992	0.2064	0.2122	0.8559	0.5769	0.4324
CP to Q↑	0.2183	0.2256	0.2312	1.0967	0.7377	0.5549

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.065	0.065	0.065
CP	min_pulse_width_low	0.12	0.12	0.12
D↓	hold_rising to CP	-0.0032	-0.0032	-0.0032
D↑	hold_rising to CP	-0.0168	-0.0168	-0.0168
D↓	setup_rising to CP	0.0787	0.0783	0.0785
D↑	setup_rising to CP	0.0523	0.0523	0.0523



Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.105	0.105	0.105
CP	min_pulse_width_low	0.195	0.19	0.19
D↓	hold_rising to CP	-0.0199	-0.0194	-0.0199
D↑	hold_rising to CP	-0.0440	-0.0440	-0.0440
D↓	setup_rising to CP	0.1202	0.1203	0.1198
D↑	setup_rising to CP	0.0886	0.0840	0.0840

Timing Constraints (ns) at 125C, 1.15V Worst process

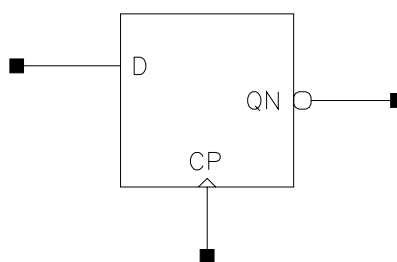
Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.095	0.095	0.095
CP	min_pulse_width_low	0.175	0.175	0.175
D↓	hold_rising to CP	-0.0142	-0.0142	-0.0142
D↑	hold_rising to CP	-0.0384	-0.0384	-0.0384
D↓	setup_rising to CP	0.1095	0.1097	0.1097
D↑	setup_rising to CP	0.0836	0.0837	0.0837

HS65_LS_DFPQN

Cell Description

D Flip-Flop with 1 Phase Positive Edge Triggered Clock, QN Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

D	CP	IQ	IQ
D	/	-	D
-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	3.20	8.3200
X9	2.6	3.20	8.3200
X18	2.6	3.40	8.8400
X27	2.6	3.80	9.8800
X35	2.6	4.00	10.4000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	4.841e-07	1.132e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X9	5.670e-07	1.249e-09
X18	7.495e-07	1.782e-09
X27	9.362e-07	2.182e-09
X35	1.116e-06	2.631e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.239e-04	6.668e-08
X9	1.497e-04	6.996e-08
X18	2.036e-04	8.075e-08
X27	2.593e-04	9.336e-08
X35	3.136e-04	1.025e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.097e-04	5.827e-08
X9	1.321e-04	6.065e-08
X18	1.790e-04	6.849e-08
X27	2.275e-04	7.848e-08
X35	2.748e-04	8.516e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	8.940e-03	9.060e-03	9.102e-03	9.061e-03	9.007e-03
D (stable)	5.224e-03	5.273e-03	5.360e-03	5.271e-03	5.268e-03
CP to QN	1.747e-02	1.966e-02	2.478e-02	3.173e-02	3.809e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.085e-04	1.179e-04	1.143e-04	1.094e-04	1.124e-04
D (stable)	-1.297e-04	-1.294e-04	-1.300e-04	-1.302e-04	-1.297e-04
CP to QN	-7.842e-05	-1.174e-04	-1.003e-04	-8.030e-05	-9.443e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0015	0.0014	0.0015	0.0014	0.0014

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1243	0.1255	0.1279	0.1280	0.1358	2.4952	1.2620	0.6230	0.4125	0.3165
CP to QN↑	0.1029	0.1113	0.1154	0.1398	0.1492	3.1027	1.6612	0.8349	0.5692	0.4341

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.2026	0.2033	0.2065	0.2071	0.2191	4.0698	2.0200	0.9804	0.6421	0.4916
CP to QN↑	0.1680	0.1826	0.1882	0.2286	0.2431	4.5285	2.4351	1.2195	0.8306	0.6350

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1858	0.1867	0.1896	0.1902	0.2014	3.7561	1.8665	0.9080	0.5954	0.4560
CP to QN↑	0.1543	0.1677	0.1731	0.2105	0.2242	4.2102	2.2623	1.1322	0.7713	0.5895

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.055	0.065	0.065	0.075	0.085
CP	min_pulse_width_low	0.12	0.125	0.125	0.12	0.12
D↓	hold_rising to CP	-0.0032	-0.0032	-0.0032	-0.0032	-0.0032



Timing Constraints (ns) at 25C, 1.20V Typ process

D↑	hold_rising to CP	-0.0168	-0.0167	-0.0168	-0.0167	-0.0167
D↓	setup_rising to CP	0.0787	0.0833	0.0835	0.0785	0.0785
D↑	setup_rising to CP	0.0575	0.0575	0.0575	0.0526	0.0575

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.09	0.105	0.1	0.13	0.14
CP	min_pulse_width_low	0.195	0.2	0.2	0.195	0.19
D↓	hold_rising to CP	-0.0194	-0.0194	-0.0194	-0.0195	-0.0199
D↑	hold_rising to CP	-0.0440	-0.0440	-0.0440	-0.0486	-0.0486
D↓	setup_rising to CP	0.1252	0.1252	0.1252	0.1203	0.1152
D↑	setup_rising to CP	0.0891	0.0891	0.0891	0.0891	0.0891

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.08	0.095	0.09	0.12	0.13
CP	min_pulse_width_low	0.18	0.185	0.185	0.175	0.175
D↓	hold_rising to CP	-0.0142	-0.0142	-0.0142	-0.0142	-0.0142
D↑	hold_rising to CP	-0.0384	-0.0384	-0.0384	-0.0384	-0.0430
D↓	setup_rising to CP	0.1145	0.1150	0.1145	0.1097	0.1097
D↑	setup_rising to CP	0.0841	0.0841	0.0841	0.0841	0.0841

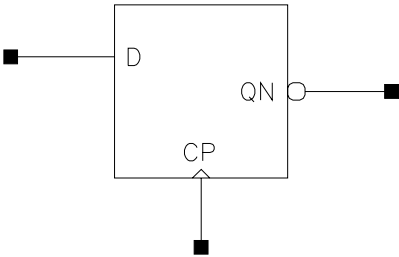
Speed-Optimised

HS65_LSS_DFPQN

Cell Description

D Flip-Flop with 1 Phase Positive Edge Triggered
Clock, QN Output Only

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

D	CP	IQ	IQ
D	/	-	D
-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	3.80	9.8800
X27	2.6	4.00	10.4000
X35	2.6	4.20	10.9200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	8.932e-07	2.082e-09
X27	1.062e-06	2.498e-09
X35	1.238e-06	2.914e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.436e-04	9.071e-08
X27	2.937e-04	1.012e-07
X35	3.470e-04	1.103e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.139e-04	7.645e-08
X27	2.575e-04	8.436e-08
X35	3.039e-04	9.106e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.043e-03	9.024e-03	8.960e-03
D (stable)	5.308e-03	5.297e-03	5.291e-03
CP to QN	2.969e-02	3.508e-02	4.007e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.102e-04	1.145e-04	1.169e-04
D (stable)	-1.335e-04	-1.332e-04	-1.335e-04
CP to QN	-8.944e-05	-1.064e-04	-1.172e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0015	0.0015	0.0015

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1118	0.1171	0.1214	0.5872	0.3989	0.3005
CP to QN↑	0.1231	0.1294	0.1345	0.8147	0.5501	0.4161

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1823	0.1910	0.1980	0.9286	0.6244	0.4684
CP to QN↑	0.2013	0.2120	0.2208	1.1887	0.7992	0.6042

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1671	0.1751	0.1816	0.8590	0.5786	0.4341
CP to QN↑	0.1845	0.1942	0.2023	1.1036	0.7426	0.5611

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.075	0.08	0.08
CP	min_pulse_width_low	0.115	0.115	0.11
D↓	hold_rising to CP	-0.0032	-0.0032	-0.0032
D↑	hold_rising to CP	-0.0167	-0.0167	-0.0168
D↓	setup_rising to CP	0.0735	0.0735	0.0687
D↑	setup_rising to CP	0.0575	0.0575	0.0575



Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.13	0.135	0.14
CP	min_pulse_width_low	0.19	0.185	0.185
D↓	hold_rising to CP	-0.0148	-0.0148	-0.0148
D↑	hold_rising to CP	-0.0440	-0.0440	-0.0440
D↓	setup_rising to CP	0.1153	0.1103	0.1103
D↑	setup_rising to CP	0.0891	0.0891	0.0891

Timing Constraints (ns) at 125C, 1.15V Worst process

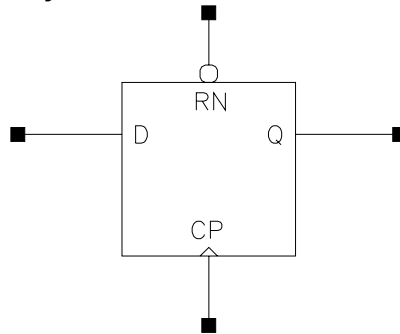
Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.115	0.12	0.125
CP	min_pulse_width_low	0.17	0.17	0.165
D↓	hold_rising to CP	-0.0143	-0.0144	-0.0142
D↑	hold_rising to CP	-0.0384	-0.0384	-0.0384
D↓	setup_rising to CP	0.1047	0.1048	0.0997
D↑	setup_rising to CP	0.0841	0.0841	0.0841

HS65_LS_DFPRQ

Cell Description

D-Type Flipflop; 1 Phase Positive Edge Triggered;
Active Low Reset; Q Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	CP	RN	IQ	IQ
-	-	0	-	0
D	/	1	-	D
-	-	1	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	4.00	10.4000
X9	2.6	4.00	10.4000
X18	2.6	4.20	10.9200
X27	2.6	4.60	11.9600
X35	2.6	4.80	12.4800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X4	5.583e-07	1.299e-09
X9	6.206e-07	1.543e-09
X18	7.706e-07	2.109e-09
X27	9.236e-07	2.676e-09
X35	1.077e-06	3.231e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.429e-04	7.722e-08
X9	1.604e-04	8.272e-08
X18	2.025e-04	9.421e-08
X27	2.450e-04	1.096e-07
X35	2.889e-04	1.211e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.266e-04	6.755e-08
X9	1.417e-04	7.142e-08
X18	1.784e-04	7.970e-08
X27	2.155e-04	9.159e-08
X35	2.538e-04	9.989e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.617e-03	9.696e-03	9.647e-03	9.654e-03	9.673e-03
D (stable)	4.558e-03	4.552e-03	4.552e-03	4.518e-03	4.520e-03
RN (stable)	8.572e-03	8.629e-03	8.665e-03	8.568e-03	8.558e-03
CP to Q	1.745e-02	1.953e-02	2.592e-02	3.475e-02	4.529e-02
RN to Q	1.538e-02	1.606e-02	1.837e-02	2.075e-02	2.405e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	4.154e-05	4.104e-05	4.302e-05	4.169e-05	4.227e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	-7.409e-05	-7.020e-05	-7.051e-05	-7.036e-05	-7.034e-05
RN (stable)	-1.870e-06	-2.870e-06	-2.739e-06	-2.739e-06	-2.000e-06
CP to Q	7.932e-05	6.057e-05	5.256e-05	5.943e-05	5.744e-05
RN to Q	-6.652e-04	-3.852e-04	-2.455e-04	2.736e-04	4.188e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0011	0.0011	0.0011	0.0011	0.0011
D	0.0014	0.0014	0.0014	0.0014	0.0014
RN	0.0016	0.0017	0.0017	0.0017	0.0017

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.0917	0.0970	0.1156	0.1324	0.1505	2.6099	1.3786	0.7201	0.5037	0.3999
CP to Q↑	0.0881	0.0898	0.0989	0.1137	0.1253	3.2219	1.6942	0.8598	0.5983	0.4620
RN to Q↓	0.0671	0.0700	0.0875	0.1061	0.1242	2.4992	1.3130	0.6627	0.4568	0.3543

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1499	0.1589	0.1908	0.2191	0.2499	4.2380	2.2289	1.1485	0.7973	0.6339
CP to Q↑	0.1412	0.1442	0.1591	0.1834	0.2024	4.7416	2.4996	1.2694	0.8875	0.6897
RN to Q↓	0.1235	0.1077	0.1331	0.1607	0.1875	3.8949	2.1100	1.0470	0.7155	0.5554

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1375	0.1458	0.1750	0.2011	0.2295	3.9127	2.0574	1.0615	0.7371	0.5854



Propagation Delay at 125C, 1.15V Worst process

CP to Q↑	0.1295	0.1322	0.1459	0.1683	0.1859	4.4092	2.3199	1.1779	0.8230	0.6389
RN to Q↓	0.1144	0.0999	0.1239	0.1499	0.1752	3.5956	1.9463	0.9678	0.6617	0.5131

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.07	0.075	0.105	0.13	0.15
CP	min_pulse_width_low	0.13	0.13	0.12	0.115	0.115
D↓	hold_rising to CP	-0.0034	-0.0086	-0.0086	-0.0086	-0.0082
D↑	hold_rising to CP	-0.0171	-0.0171	-0.0171	-0.0171	-0.0220
D↓	setup_rising to CP	0.0837	0.0840	0.0789	0.0737	0.0739
D↑	setup_rising to CP	0.0776	0.0776	0.0776	0.0779	0.0776
RN	min_pulse_width_low	0.065	0.07	0.09	0.115	0.14
RN↑	recovery_rising to CP	0.0475	0.0475	0.0475	0.0527	0.0524
RN↑	removal_rising to CP	-0.0023	-0.0023	-0.0023	-0.0023	-0.0023

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.105	0.125	0.175	0.215	0.255
CP	min_pulse_width_low	0.21	0.215	0.2	0.19	0.185
D↓	hold_rising to CP	-0.0245	-0.0300	-0.0248	-0.0248	-0.0248
D↑	hold_rising to CP	-0.0490	-0.0490	-0.0536	-0.0541	-0.0541
D↓	setup_rising to CP	0.1353	0.1405	0.1254	0.1158	0.1103
D↑	setup_rising to CP	0.1247	0.1299	0.1297	0.1297	0.1297
RN	min_pulse_width_low	0.1	0.1	0.14	0.17	0.21
RN↑	recovery_rising to CP	0.0752	0.0798	0.0803	0.0802	0.0802
RN↑	removal_rising to CP	-0.0044	-0.0044	-0.0048	-0.0048	-0.0044

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.1	0.115	0.16	0.195	0.23
CP	min_pulse_width_low	0.19	0.195	0.18	0.175	0.17
D↓	hold_rising to CP	-0.0192	-0.0243	-0.0197	-0.0197	-0.0192
D↑	hold_rising to CP	-0.0434	-0.0434	-0.0439	-0.0485	-0.0485

Timing Constraints (ns) at 125C, 1.15V Worst process

D↓	setup_rising to CP	0.1247	0.1252	0.1148	0.1052	0.1002
D↑	setup_rising to CP	0.1145	0.1192	0.1192	0.1192	0.1192
RN	min_pulse_width_low	0.09	0.09	0.13	0.16	0.195
RN↑	recovery_rising to CP	0.0695	0.0742	0.0747	0.0745	0.0745
RN↑	removal_rising to CP	-0.0037	-0.0037	-0.0042	-0.0042	-0.0042



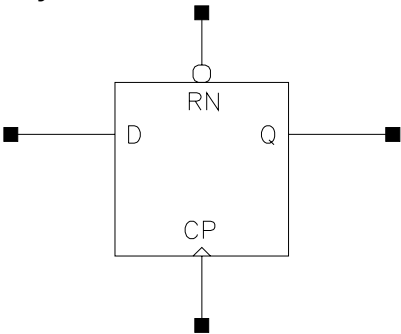
Speed-Optimised

HS65_LSS_DFPRQ

Cell Description

D-Type Flipflop; 1 Phase Positive Edge Triggered;
Active Low Reset; Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	CP	RN	IQ	IQ
-	-	0	-	0
D	/	1	-	D
-	-	1	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	4.60	11.9600
X27	2.6	4.80	12.4800
X35	2.6	5.20	13.5200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	9.673e-07	2.431e-09
X27	1.123e-06	2.942e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X35	1.281e-06	3.519e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.620e-04	1.044e-07
X27	3.065e-04	1.177e-07
X35	3.520e-04	1.312e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.302e-04	8.794e-08
X27	2.690e-04	9.787e-08
X35	3.086e-04	1.080e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.487e-03	9.529e-03	9.534e-03
D (stable)	4.500e-03	4.509e-03	4.515e-03
RN (stable)	8.560e-03	8.540e-03	8.579e-03
CP to Q	3.143e-02	3.692e-02	4.203e-02
RN to Q	2.292e-02	2.511e-02	2.747e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	4.609e-05	4.554e-05	4.740e-05
D (stable)	-6.915e-05	-6.930e-05	-6.891e-05
RN (stable)	-2.739e-06	-2.739e-06	-2.000e-06
CP to Q	2.643e-05	2.930e-05	1.556e-05
RN to Q	-7.085e-04	-1.855e-04	6.952e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

CP	0.0011	0.0011	0.0011
D	0.0014	0.0014	0.0014
RN	0.0015	0.0015	0.0015

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1327	0.1370	0.1418	0.5760	0.3904	0.2954
CP to Q↑	0.1407	0.1445	0.1486	0.8073	0.5471	0.4106
RN to Q↓	0.1232	0.1280	0.1326	0.5751	0.3902	0.2951

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2174	0.2243	0.2319	0.8965	0.6033	0.4551
CP to Q↑	0.2277	0.2337	0.2400	1.1692	0.7883	0.5924
RN to Q↓	0.1944	0.2022	0.2098	0.8957	0.6028	0.4548

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1996	0.2059	0.2130	0.8313	0.5603	0.4230
CP to Q↑	0.2090	0.2146	0.2204	1.0859	0.7331	0.5503
RN to Q↓	0.1795	0.1867	0.1937	0.8305	0.5597	0.4223

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.065	0.065	0.065



Timing Constraints (ns) at 25C, 1.20V Typ process

CP	min_pulse_width_low	0.125	0.125	0.125
D↓	hold_rising to CP	-0.0085	-0.0085	-0.0083
D↑	hold_rising to CP	-0.0171	-0.0171	-0.0171
D↓	setup_rising to CP	0.0840	0.0840	0.0837
D↑	setup_rising to CP	0.0726	0.0726	0.0724
RN	min_pulse_width_low	0.065	0.065	0.065
RN↑	recovery_rising to CP	0.0425	0.0425	0.0422
RN↑	removal_rising to CP	-0.0023	-0.0023	-0.0020

Timing Constraints (ns) at 125C, 1.10V Worst process

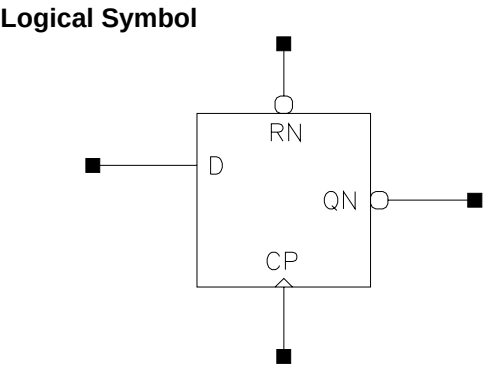
Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.105	0.105	0.105
CP	min_pulse_width_low	0.205	0.205	0.205
D↓	hold_rising to CP	-0.0298	-0.0298	-0.0298
D↑	hold_rising to CP	-0.0536	-0.0536	-0.0536
D↓	setup_rising to CP	0.1353	0.1353	0.1302
D↑	setup_rising to CP	0.1196	0.1196	0.1144
RN	min_pulse_width_low	0.095	0.095	0.095
RN↑	recovery_rising to CP	0.0652	0.0652	0.0652
RN↑	removal_rising to CP	-0.0044	0.0003	0.0003

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.095	0.095	0.095
CP	min_pulse_width_low	0.19	0.19	0.185
D↓	hold_rising to CP	-0.0247	-0.0247	-0.0247
D↑	hold_rising to CP	-0.0439	-0.0485	-0.0485
D↓	setup_rising to CP	0.1200	0.1200	0.1200
D↑	setup_rising to CP	0.1090	0.1090	0.1090
RN	min_pulse_width_low	0.085	0.085	0.085
RN↑	recovery_rising to CP	0.0642	0.0595	0.0595
RN↑	removal_rising to CP	-0.0042	-0.0042	-0.0042

HS65_LS_DFPRQN

Cell Description
D-Type Flipflop; 1 Phase Positive Edge Triggered;
Active Low Reset; QN Output Only
The cell has "dont_use" attribute set in the Syn-
opsys STF.



Functions

IQ	QN
IQ	!IQ

Functions

D	CP	RN	IQ	IQ
-	-	0	-	0
D	/	1	-	D
-	-	1	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	4.00	10.4000
X9	2.6	4.00	10.4000
X18	2.6	4.20	10.9200
X27	2.6	4.60	11.9600
X35	2.6	4.80	12.4800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X4	5.833e-07	1.188e-09
X9	6.556e-07	1.332e-09
X18	8.612e-07	1.654e-09
X27	1.064e-06	1.876e-09
X35	1.272e-06	2.176e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.508e-04	7.474e-08
X9	1.738e-04	7.749e-08
X18	2.370e-04	8.487e-08
X27	3.009e-04	9.355e-08
X35	3.658e-04	1.006e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.335e-04	6.568e-08
X9	1.533e-04	6.763e-08
X18	2.083e-04	7.318e-08
X27	2.639e-04	8.029e-08
X35	3.204e-04	8.559e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.637e-03	9.697e-03	9.642e-03	9.701e-03	9.699e-03
D (stable)	4.502e-03	4.502e-03	4.472e-03	4.485e-03	4.478e-03
RN (stable)	8.500e-03	8.527e-03	8.518e-03	8.535e-03	8.507e-03
CP to QN	1.865e-02	2.101e-02	2.608e-02	3.261e-02	3.961e-02
RN to QN	1.643e-02	1.791e-02	2.041e-02	2.405e-02	2.731e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	-1.428e-05	-1.340e-05	-1.170e-05	-1.334e-05	-1.361e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	-8.888e-05	-8.872e-05	-9.017e-05	-8.888e-05	-8.872e-05
RN (stable)	-2.000e-06	-2.739e-06	-2.000e-06	-2.000e-06	-2.739e-06
CP to QN	7.143e-05	6.531e-05	5.843e-05	6.543e-05	6.557e-05
RN to QN	-1.097e-03	-1.386e-03	-1.501e-03	-2.123e-03	-2.200e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0011	0.0011	0.0011	0.0011	0.0011
D	0.0014	0.0014	0.0014	0.0014	0.0014
RN	0.0015	0.0015	0.0015	0.0015	0.0015

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1196	0.1236	0.1288	0.1480	0.1547	2.4313	1.2468	0.6199	0.4340	0.3318
CP to QN↑	0.1099	0.1165	0.1237	0.1351	0.1448	3.0922	1.6625	0.8337	0.5677	0.4319
RN to QN↑	0.1001	0.1050	0.1104	0.1214	0.1301	3.0878	1.6587	0.8314	0.5665	0.4315

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1938	0.2003	0.2080	0.2375	0.2474	3.9220	1.9998	0.9762	0.6773	0.5171
CP to QN↑	0.1789	0.1896	0.2012	0.2190	0.2342	4.5124	2.4404	1.2181	0.8275	0.6318
RN to QN↑	0.1557	0.1637	0.1723	0.1893	0.2031	4.4926	2.4348	1.2136	0.8254	0.6302

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1777	0.1837	0.1910	0.2185	0.2279	3.6253	1.8463	0.9037	0.6279	0.4792



Propagation Delay at 125C, 1.15V Worst process

CP to QN $\uparrow$	0.1642	0.1741	0.1848	0.2015	0.2158	4.1964	2.2672	1.1316	0.7690	0.5865
RN to QN $\uparrow$	0.1441	0.1513	0.1593	0.1752	0.1881	4.1807	2.2598	1.1270	0.7666	0.5852

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.065	0.065	0.07	0.075	0.075
CP	min_pulse_width_low	0.13	0.13	0.13	0.13	0.125
D $\downarrow$	hold_rising to CP	-0.0086	-0.0086	-0.0086	-0.0086	-0.0086
D $\uparrow$	hold_rising to CP	-0.0171	-0.0171	-0.0171	-0.0171	-0.0171
D $\downarrow$	setup_rising to CP	0.0838	0.0840	0.0837	0.0837	0.0839
D $\uparrow$	setup_rising to CP	0.0724	0.0724	0.0726	0.0726	0.0677
RN	min_pulse_width_low	0.065	0.065	0.07	0.075	0.075
RN $\uparrow$	recovery_rising to CP	0.0425	0.0425	0.0425	0.0376	0.0375
RN $\uparrow$	removal_rising to CP	-0.0072	-0.0072	-0.0072	-0.0072	-0.0072

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.1	0.105	0.115	0.12	0.13
CP	min_pulse_width_low	0.215	0.21	0.21	0.205	0.205
D $\downarrow$	hold_rising to CP	-0.0298	-0.0300	-0.0300	-0.0300	-0.0298
D $\uparrow$	hold_rising to CP	-0.0536	-0.0536	-0.0491	-0.0536	-0.0536
D $\downarrow$	setup_rising to CP	0.1403	0.1358	0.1353	0.1308	0.1303
D $\uparrow$	setup_rising to CP	0.1195	0.1196	0.1197	0.1145	0.1144
RN	min_pulse_width_low	0.095	0.095	0.1	0.11	0.12
RN $\uparrow$	recovery_rising to CP	0.0702	0.0702	0.0697	0.0652	0.0647
RN $\uparrow$	removal_rising to CP	-0.0044	-0.0044	-0.0049	-0.0049	-0.0044

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.09	0.095	0.105	0.11	0.12
CP	min_pulse_width_low	0.195	0.195	0.19	0.19	0.185
D $\downarrow$	hold_rising to CP	-0.0247	-0.0243	-0.0243	-0.0248	-0.0242
D $\uparrow$	hold_rising to CP	-0.0434	-0.0434	-0.0435	-0.0439	-0.0480

Timing Constraints (ns) at 125C, 1.15V Worst process

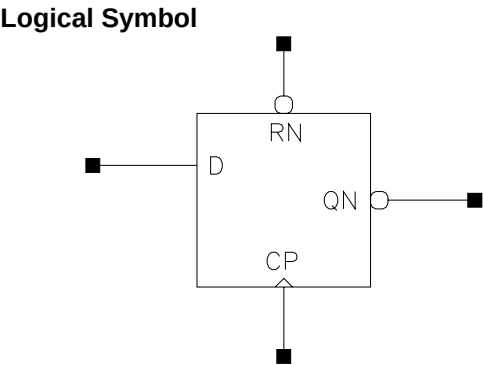
D↓	setup_rising to CP	0.1250	0.1252	0.1200	0.1202	0.1197
D↑	setup_rising to CP	0.1095	0.1095	0.1090	0.1044	0.1039
RN	min_pulse_width_low	0.09	0.09	0.095	0.1	0.11
RN↑	recovery_rising to CP	0.0645	0.0645	0.0645	0.0595	0.0595
RN↑	removal_rising to CP	-0.0042	-0.0037	-0.0042	-0.0042	-0.0037



Speed-Optimised

HS65_LSS_DFPRQN

Cell Description
D-Type Flipflop; 1 Phase Positive Edge Triggered;
Active Low Reset; QN Output Only



Functions

IQ	QN
IQ	!IQ

Functions

D	CP	RN	IQ	IQ
-	-	0	-	0
D	/	1	-	D
-	-	1	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	4.60	11.9600
X27	2.6	4.80	12.4800
X35	2.6	5.00	13.0000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.018e-06	2.087e-09
X27	1.219e-06	2.365e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X35	1.426e-06	2.665e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.826e-04	9.897e-08
X27	3.459e-04	1.065e-07
X35	4.108e-04	1.132e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.481e-04	8.427e-08
X27	3.031e-04	9.008e-08
X35	3.596e-04	9.509e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.692e-03	9.695e-03	9.697e-03
D (stable)	4.569e-03	4.565e-03	4.568e-03
RN (stable)	8.730e-03	8.723e-03	8.731e-03
CP to QN	3.145e-02	3.683e-02	4.202e-02
RN to QN	2.226e-02	2.542e-02	2.808e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	-4.275e-06	-3.007e-06	-4.630e-06
D (stable)	-9.020e-05	-9.003e-05	-8.988e-05
RN (stable)	-2.739e-06	-2.000e-06	-2.869e-06
CP to QN	9.565e-06	5.650e-07	1.144e-05
RN to QN	-9.605e-04	-1.531e-03	-1.686e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

CP	0.0011	0.0011	0.0011
D	0.0014	0.0014	0.0014
RN	0.0014	0.0015	0.0015

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1149	0.1196	0.1245	0.5779	0.3913	0.2965
CP to QN↑	0.1276	0.1324	0.1375	0.8120	0.5483	0.4133
RN to QN↑	0.0998	0.1047	0.1092	0.8103	0.5464	0.4114

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1874	0.1952	0.2029	0.8999	0.6052	0.4574
CP to QN↑	0.2089	0.2169	0.2250	1.1779	0.7926	0.5976
RN to QN↑	0.1549	0.1630	0.1700	1.1738	0.7886	0.5941

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1717	0.1789	0.1860	0.8346	0.5616	0.4247
CP to QN↑	0.1912	0.1986	0.2061	1.0940	0.7365	0.5555
RN to QN↑	0.1430	0.1505	0.1570	1.0904	0.7332	0.5521

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.08	0.08	0.085



Timing Constraints (ns) at 25C, 1.20V Typ process

CP	min_pulse_width_low	0.12	0.12	0.12
D↓	hold_rising to CP	-0.0086	-0.0086	-0.0086
D↑	hold_rising to CP	-0.0171	-0.0171	-0.0171
D↓	setup_rising to CP	0.0789	0.0789	0.0789
D↑	setup_rising to CP	0.0727	0.0727	0.0724
RN	min_pulse_width_low	0.075	0.075	0.075
RN↑	recovery_rising to CP	0.0477	0.0425	0.0425
RN↑	removal_rising to CP	-0.0023	-0.0023	-0.0072

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.135	0.14	0.145
CP	min_pulse_width_low	0.2	0.2	0.2
D↓	hold_rising to CP	-0.0253	-0.0253	-0.0300
D↑	hold_rising to CP	-0.0536	-0.0536	-0.0536
D↓	setup_rising to CP	0.1305	0.1258	0.1254
D↑	setup_rising to CP	0.1247	0.1247	0.1247
RN	min_pulse_width_low	0.115	0.12	0.12
RN↑	recovery_rising to CP	0.0748	0.0748	0.0702
RN↑	removal_rising to CP	-0.0044	-0.0044	-0.0044

Timing Constraints (ns) at 125C, 1.15V Worst process

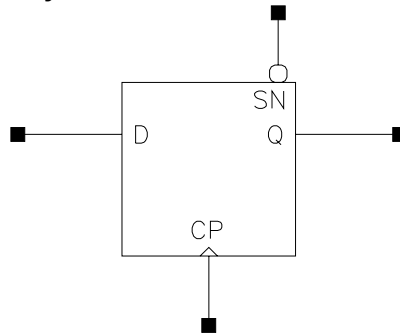
Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.125	0.13	0.13
CP	min_pulse_width_low	0.185	0.185	0.18
D↓	hold_rising to CP	-0.0243	-0.0243	-0.0243
D↑	hold_rising to CP	-0.0434	-0.0434	-0.0439
D↓	setup_rising to CP	0.1152	0.1152	0.1148
D↑	setup_rising to CP	0.1140	0.1141	0.1141
RN	min_pulse_width_low	0.105	0.105	0.11
RN↑	recovery_rising to CP	0.0697	0.0692	0.0645
RN↑	removal_rising to CP	-0.0037	-0.0037	-0.0037

HS65_LS_DFPSQ

Cell Description

D-Type Flipflop; 1 Phase Positive Edge Triggered;
Active Low Set; Q Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	CP	SN	IQ	IQ
-	-	0	-	1
D	/	1	-	D
-	-	1	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	4.20	10.9200
X9	2.6	4.20	10.9200
X18	2.6	4.40	11.4400
X27	2.6	4.80	12.4800
X35	2.6	5.00	13.0000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X4	5.862e-07	1.277e-09
X9	6.544e-07	1.421e-09
X18	8.517e-07	1.665e-09
X27	1.066e-06	2.032e-09
X35	1.272e-06	2.287e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.497e-04	7.877e-08
X9	1.715e-04	8.149e-08
X18	2.326e-04	8.813e-08
X27	2.991e-04	9.846e-08
X35	3.641e-04	1.052e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.325e-04	6.905e-08
X9	1.514e-04	7.100e-08
X18	2.045e-04	7.600e-08
X27	2.624e-04	8.432e-08
X35	3.189e-04	8.934e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	1.030e-02	1.043e-02	1.040e-02	1.046e-02	1.044e-02
D (stable)	5.120e-03	5.102e-03	5.063e-03	5.160e-03	5.137e-03
SN (stable)	8.995e-03	9.039e-03	9.004e-03	9.231e-03	9.150e-03
CP to Q	1.809e-02	2.026e-02	2.643e-02	3.482e-02	4.456e-02
SN to Q	1.323e-02	1.447e-02	1.701e-02	2.075e-02	2.347e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	7.975e-05	7.672e-05	7.125e-05	7.912e-05	7.927e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	-9.546e-05	-9.287e-05	-9.096e-05	-9.269e-05	-9.258e-05
SN (stable)	-1.674e-05	-1.748e-05	-1.761e-05	-1.861e-05	-1.774e-05
CP to Q	4.243e-05	4.557e-05	6.757e-05	2.869e-05	2.556e-05
SN to Q	-4.842e-05	-3.683e-04	-4.923e-04	-1.033e-03	-1.184e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0011	0.0011	0.0011	0.0011	0.0011
D	0.0015	0.0015	0.0014	0.0015	0.0015
SN	0.0015	0.0015	0.0015	0.0015	0.0015

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.0929	0.0994	0.1175	0.1299	0.1462	2.5926	1.3918	0.7229	0.4980	0.3942
CP to Q↑	0.0902	0.0921	0.1007	0.1103	0.1198	3.2225	1.6864	0.8590	0.5893	0.4527
SN to Q↑	0.0693	0.0710	0.0802	0.0917	0.1008	3.1970	1.6698	0.8436	0.5738	0.4365

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1517	0.1628	0.1936	0.2145	0.2425	4.1985	2.2626	1.1560	0.7893	0.6249
CP to Q↑	0.1443	0.1476	0.1617	0.1776	0.1931	4.7226	2.4819	1.2664	0.8705	0.6728
SN to Q↑	0.1080	0.1107	0.1247	0.1429	0.1568	4.6670	2.4479	1.2353	0.8386	0.6401

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1392	0.1494	0.1776	0.1969	0.2227	3.8811	2.0859	1.0679	0.7296	0.5771



Propagation Delay at 125C, 1.15V Worst process

CP to Q↑	0.1323	0.1352	0.1483	0.1628	0.1773	4.3925	2.3046	1.1756	0.8075	0.6232
SN to Q↑	0.0999	0.1024	0.1155	0.1324	0.1456	4.3416	2.2719	1.1476	0.7789	0.5938

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.07	0.08	0.11	0.125	0.15
CP	min_pulse_width_low	0.15	0.15	0.145	0.14	0.14
D↓	hold_rising to CP	-0.0082	-0.0082	-0.0082	-0.0034	-0.0036
D↑	hold_rising to CP	-0.0223	-0.0223	-0.0223	-0.0226	-0.0226
D↓	setup_rising to CP	0.1037	0.0988	0.0940	0.0888	0.0887
D↑	setup_rising to CP	0.0777	0.0777	0.0777	0.0777	0.0777
SN	min_pulse_width_low	0.065	0.065	0.075	0.085	0.095
SN↑	recovery_rising to CP	0.0381	0.0384	0.0284	0.0284	0.0234
SN↑	removal_rising to CP	0.0484	0.0487	0.0487	0.0487	0.0487

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.11	0.13	0.18	0.21	0.245
CP	min_pulse_width_low	0.25	0.25	0.24	0.23	0.225
D↓	hold_rising to CP	-0.0244	-0.0248	-0.0248	-0.0244	-0.0245
D↑	hold_rising to CP	-0.0591	-0.0591	-0.0591	-0.0591	-0.0591
D↓	setup_rising to CP	0.1652	0.1652	0.1598	0.1553	0.1500
D↑	setup_rising to CP	0.1295	0.1296	0.1296	0.1300	0.1300
SN	min_pulse_width_low	0.095	0.095	0.11	0.135	0.15
SN↑	recovery_rising to CP	0.0703	0.0653	0.0550	0.0500	0.0405
SN↑	removal_rising to CP	0.0718	0.0718	0.0718	0.0718	0.0718

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.1	0.12	0.165	0.19	0.225
CP	min_pulse_width_low	0.225	0.225	0.22	0.215	0.21
D↓	hold_rising to CP	-0.0192	-0.0244	-0.0197	-0.0192	-0.0192
D↑	hold_rising to CP	-0.0535	-0.0535	-0.0535	-0.0535	-0.0535

Timing Constraints (ns) at 125C, 1.15V Worst process

D↓	setup_rising to CP	0.1592	0.1552	0.1498	0.1402	0.1347
D↑	setup_rising to CP	0.1190	0.1190	0.1190	0.1194	0.1194
SN	min_pulse_width_low	0.085	0.085	0.105	0.125	0.145
SN↑	recovery_rising to CP	0.0647	0.0597	0.0498	0.0448	0.0347
SN↑	removal_rising to CP	0.0671	0.0671	0.0671	0.0671	0.0671



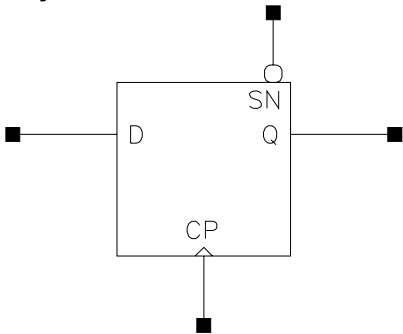
Speed-Optimised

HS65_LSS_DFPSQ

Cell Description

D-Type Flipflop; 1 Phase Positive Edge Triggered;
Active Low Set; Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	CP	SN	IQ	IQ
-	-	0	-	1
D	/	1	-	D
-	-	1	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	4.80	12.4800
X27	2.6	5.20	13.5200
X35	2.6	5.40	14.0400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	9.729e-07	2.232e-09
X27	1.225e-06	2.531e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X35	1.428e-06	2.787e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.662e-04	1.033e-07
X27	3.466e-04	1.128e-07
X35	4.101e-04	1.194e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.337e-04	8.781e-08
X27	3.037e-04	9.544e-08
X35	3.590e-04	1.005e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	1.013e-02	1.032e-02	1.032e-02
D (stable)	5.061e-03	5.088e-03	5.085e-03
SN (stable)	9.168e-03	8.977e-03	8.981e-03
CP to Q	3.059e-02	3.799e-02	4.289e-02
SN to Q	1.901e-02	2.333e-02	2.594e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.082e-04	8.712e-05	8.677e-05
D (stable)	-9.722e-05	-9.660e-05	-9.675e-05
SN (stable)	-1.561e-05	-1.674e-05	-1.761e-05
CP to Q	-1.474e-04	-4.569e-06	-4.440e-06
SN to Q	1.056e-04	-4.743e-04	-5.844e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

CP	0.0011	0.0011	0.0011
D	0.0015	0.0015	0.0015
SN	0.0015	0.0015	0.0015

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1295	0.1467	0.1505	0.5858	0.3916	0.2969
CP to Q↑	0.1480	0.1634	0.1671	0.8115	0.5455	0.4112
SN to Q↑	0.1310	0.1417	0.1452	0.8116	0.5452	0.4112

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2129	0.2391	0.2452	0.9265	0.6027	0.4568
CP to Q↑	0.2392	0.2632	0.2689	1.1827	0.7861	0.5929
SN to Q↑	0.2089	0.2253	0.2308	1.1821	0.7856	0.5929

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1955	0.2196	0.2253	0.8572	0.5594	0.4243
CP to Q↑	0.2196	0.2416	0.2469	1.0982	0.7305	0.5511
SN to Q↑	0.1926	0.2077	0.2128	1.0977	0.7303	0.5511

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.06	0.07	0.07



Timing Constraints (ns) at 25C, 1.20V Typ process

CP	min_pulse_width_low	0.15	0.145	0.145
D↓	hold_rising to CP	-0.0082	-0.0082	-0.0082
D↑	hold_rising to CP	-0.0224	-0.0226	-0.0226
D↓	setup_rising to CP	0.0985	0.0935	0.0937
D↑	setup_rising to CP	0.0727	0.0727	0.0727
SN	min_pulse_width_low	0.065	0.065	0.065
SN↑	recovery_rising to CP	0.0381	0.0334	0.0334
SN↑	removal_rising to CP	0.0484	0.0487	0.0487

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.1	0.115	0.115
CP	min_pulse_width_low	0.24	0.235	0.235
D↓	hold_rising to CP	-0.0295	-0.0249	-0.0249
D↑	hold_rising to CP	-0.0590	-0.0591	-0.0638
D↓	setup_rising to CP	0.1597	0.1598	0.1598
D↑	setup_rising to CP	0.1194	0.1194	0.1194
SN	min_pulse_width_low	0.095	0.095	0.095
SN↑	recovery_rising to CP	0.0653	0.0600	0.0553
SN↑	removal_rising to CP	0.0715	0.0718	0.0718

Timing Constraints (ns) at 125C, 1.15V Worst process

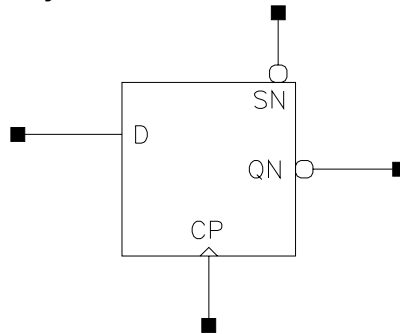
Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.09	0.105	0.105
CP	min_pulse_width_low	0.225	0.22	0.22
D↓	hold_rising to CP	-0.0244	-0.0239	-0.0239
D↑	hold_rising to CP	-0.0534	-0.0535	-0.0535
D↓	setup_rising to CP	0.1495	0.1447	0.1447
D↑	setup_rising to CP	0.1092	0.1089	0.1089
SN	min_pulse_width_low	0.085	0.085	0.085
SN↑	recovery_rising to CP	0.0597	0.0547	0.0547
SN↑	removal_rising to CP	0.0668	0.0671	0.0671

HS65_LS_DFPSQN

Cell Description

D-Type Flipflop; 1 Phase Positive Edge Triggered;
Active Low Set; QN Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

D	CP	SN	IQ	IQ
-	-	0	-	1
D	/	1	-	D
-	-	1	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	4.20	10.9200
X9	2.6	4.20	10.9200
X18	2.6	4.40	11.4400
X27	2.6	4.80	12.4800
X35	2.6	5.00	13.0000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X4	5.515e-07	1.399e-09
X9	6.198e-07	1.676e-09
X18	7.902e-07	2.276e-09
X27	9.496e-07	2.820e-09
X35	1.104e-06	3.375e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.400e-04	8.185e-08
X9	1.591e-04	8.737e-08
X18	2.087e-04	9.956e-08
X27	2.540e-04	1.147e-07
X35	2.982e-04	1.262e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.240e-04	7.132e-08
X9	1.406e-04	7.524e-08
X18	1.837e-04	8.410e-08
X27	2.232e-04	9.577e-08
X35	2.617e-04	1.041e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	1.023e-02	1.023e-02	1.022e-02	1.031e-02	1.026e-02
D (stable)	5.101e-03	5.101e-03	5.085e-03	5.154e-03	5.108e-03
SN (stable)	9.230e-03	9.216e-03	9.232e-03	9.289e-03	9.209e-03
CP to QN	1.795e-02	2.000e-02	2.578e-02	3.229e-02	3.893e-02
SN to QN	1.228e-02	1.304e-02	1.587e-02	1.872e-02	2.245e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	7.136e-05	7.246e-05	7.164e-05	7.100e-05	7.083e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	-9.254e-05	-9.271e-05	-9.169e-05	-9.585e-05	-9.271e-05
SN (stable)	-1.548e-05	-1.561e-05	-1.561e-05	-1.561e-05	-1.648e-05
CP to QN	-8.954e-05	-9.557e-05	-9.769e-05	-7.157e-05	-8.569e-05
SN to QN	4.627e-04	7.365e-04	8.547e-04	1.404e-03	1.529e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0011	0.0011	0.0011	0.0011	0.0011
D	0.0015	0.0015	0.0015	0.0015	0.0015
SN	0.0015	0.0015	0.0015	0.0015	0.0015

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN ↓	0.1218	0.1251	0.1276	0.1406	0.1521	2.4820	1.2377	0.6137	0.4245	0.3298
CP to QN ↑	0.1065	0.1090	0.1139	0.1227	0.1291	3.3083	1.6348	0.8212	0.5569	0.4226
SN to QN ↓	0.1050	0.1082	0.1109	0.1240	0.1350	2.4820	1.2366	0.6133	0.4242	0.3296

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN ↓	0.1972	0.2021	0.2060	0.2259	0.2433	4.0154	1.9718	0.9619	0.6600	0.5127
CP to QN ↑	0.1739	0.1782	0.1866	0.2008	0.2108	4.8464	2.3992	1.1974	0.8094	0.6149
SN to QN ↓	0.1671	0.1719	0.1759	0.1961	0.2127	4.0150	1.9706	0.9612	0.6594	0.5122

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN ↓	0.1810	0.1855	0.1892	0.2078	0.2241	3.7160	1.8239	0.8911	0.6123	0.4754



Propagation Delay at 125C, 1.15V Worst process

CP to QN↑	0.1598	0.1637	0.1713	0.1845	0.1939	4.5136	2.2262	1.1118	0.7515	0.5710
SN to QN↓	0.1543	0.1588	0.1625	0.1813	0.1970	3.7117	1.8220	0.8905	0.6118	0.4749

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.06	0.06	0.065	0.07	0.075
CP	min_pulse_width_low	0.15	0.15	0.15	0.15	0.15
D↓	hold_rising to CP	-0.0082	-0.0082	-0.0082	-0.0082	-0.0082
D↑	hold_rising to CP	-0.0224	-0.0224	-0.0223	-0.0273	-0.0224
D↓	setup_rising to CP	0.1037	0.1037	0.1037	0.1037	0.0985
D↑	setup_rising to CP	0.0725	0.0725	0.0725	0.0725	0.0725
SN	min_pulse_width_low	0.065	0.065	0.065	0.065	0.065
SN↑	recovery_rising to CP	0.0430	0.0430	0.0381	0.0381	0.0384
SN↑	removal_rising to CP	0.0484	0.0484	0.0484	0.0487	0.0484

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.095	0.1	0.105	0.115	0.12
CP	min_pulse_width_low	0.245	0.245	0.245	0.245	0.24
D↓	hold_rising to CP	-0.0295	-0.0295	-0.0295	-0.0295	-0.0295
D↑	hold_rising to CP	-0.0590	-0.0590	-0.0590	-0.0636	-0.0590
D↓	setup_rising to CP	0.1652	0.1652	0.1652	0.1652	0.1602
D↑	setup_rising to CP	0.1244	0.1244	0.1244	0.1244	0.1194
SN	min_pulse_width_low	0.095	0.095	0.095	0.095	0.1
SN↑	recovery_rising to CP	0.0703	0.0703	0.0698	0.0653	0.0653
SN↑	removal_rising to CP	0.0714	0.0714	0.0715	0.0718	0.0714

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.085	0.09	0.095	0.105	0.11
CP	min_pulse_width_low	0.225	0.225	0.225	0.225	0.225
D↓	hold_rising to CP	-0.0244	-0.0244	-0.0244	-0.0244	-0.0244
D↑	hold_rising to CP	-0.0534	-0.0534	-0.0535	-0.0534	-0.0534

Timing Constraints (ns) at 125C, 1.15V Worst process

D↓	setup_rising to CP	0.1545	0.1545	0.1545	0.1547	0.1495
D↑	setup_rising to CP	0.1139	0.1139	0.1139	0.1139	0.1092
SN	min_pulse_width_low	0.085	0.085	0.085	0.09	0.095
SN↑	recovery_rising to CP	0.0647	0.0647	0.0647	0.0597	0.0597
SN↑	removal_rising to CP	0.0668	0.0668	0.0668	0.0671	0.0668



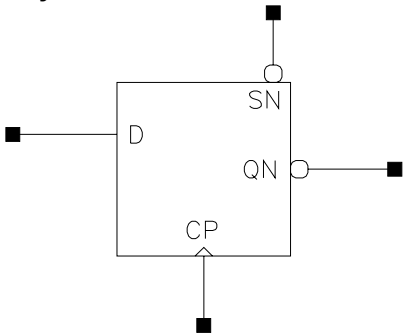
Speed-Optimised

HS65_LSS_DFPSQN

Cell Description

D-Type Flipflop; 1 Phase Positive Edge Triggered;
Active Low Set; QN Output Only

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

D	CP	SN	IQ	IQ
-	-	0	-	1
D	/	1	-	D
-	-	1	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	4.80	12.4800
X27	2.6	5.20	13.5200
X35	2.6	5.40	14.0400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	9.542e-07	2.487e-09
X27	1.123e-06	3.053e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X35	1.273e-06	3.597e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.571e-04	1.082e-07
X27	3.060e-04	1.234e-07
X35	3.490e-04	1.348e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.259e-04	9.104e-08
X27	2.685e-04	1.029e-07
X35	3.060e-04	1.111e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	1.037e-02	1.040e-02	1.038e-02
D (stable)	5.077e-03	5.096e-03	5.076e-03
SN (stable)	8.969e-03	8.971e-03	8.965e-03
CP to QN	3.169e-02	3.747e-02	4.233e-02
SN to QN	1.960e-02	2.193e-02	2.411e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	6.008e-05	5.858e-05	5.958e-05
D (stable)	-8.959e-05	-8.986e-05	-9.017e-05
SN (stable)	-1.761e-05	-1.748e-05	-1.661e-05
CP to QN	-7.308e-06	4.696e-06	-5.304e-06
SN to QN	3.887e-04	8.875e-04	1.083e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

CP	0.0011	0.0011	0.0011
D	0.0014	0.0014	0.0014
SN	0.0015	0.0015	0.0015

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1165	0.1221	0.1262	0.5839	0.3924	0.2960
CP to QN↑	0.1287	0.1343	0.1379	0.8124	0.5479	0.4130
SN to QN↓	0.0939	0.0995	0.1031	0.5826	0.3916	0.2952

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1897	0.1987	0.2053	0.9097	0.6046	0.4566
CP to QN↑	0.2105	0.2192	0.2250	1.1791	0.7905	0.5969
SN to QN↓	0.1497	0.1585	0.1643	0.9076	0.6028	0.4550

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1737	0.1820	0.1882	0.8434	0.5615	0.4240
CP to QN↑	0.1927	0.2009	0.2062	1.0951	0.7347	0.5547
SN to QN↓	0.1381	0.1463	0.1516	0.8418	0.5595	0.4226

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.08	0.085	0.085



Timing Constraints (ns) at 25C, 1.20V Typ process

CP	min_pulse_width_low	0.145	0.145	0.145
D↓	hold_rising to CP	-0.0082	-0.0082	-0.0082
D↑	hold_rising to CP	-0.0223	-0.0226	-0.0223
D↓	setup_rising to CP	0.0940	0.0940	0.0940
D↑	setup_rising to CP	0.0774	0.0774	0.0727
SN	min_pulse_width_low	0.065	0.065	0.065
SN↑	recovery_rising to CP	0.0336	0.0284	0.0284
SN↑	removal_rising to CP	0.0487	0.0487	0.0487

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.14	0.14	0.145
CP	min_pulse_width_low	0.24	0.24	0.235
D↓	hold_rising to CP	-0.0248	-0.0248	-0.0248
D↑	hold_rising to CP	-0.0591	-0.0591	-0.0591
D↓	setup_rising to CP	0.1598	0.1598	0.1598
D↑	setup_rising to CP	0.1246	0.1244	0.1246
SN	min_pulse_width_low	0.095	0.1	0.1
SN↑	recovery_rising to CP	0.0553	0.0555	0.0555
SN↑	removal_rising to CP	0.0718	0.0718	0.0718

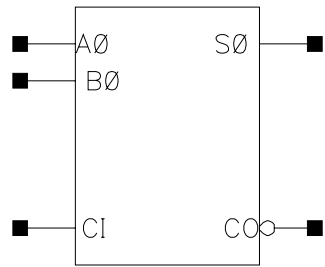
Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.125	0.13	0.13
CP	min_pulse_width_low	0.225	0.22	0.22
D↓	hold_rising to CP	-0.0244	-0.0244	-0.0244
D↑	hold_rising to CP	-0.0535	-0.0535	-0.0535
D↓	setup_rising to CP	0.1498	0.1498	0.1447
D↑	setup_rising to CP	0.1144	0.1144	0.1139
SN	min_pulse_width_low	0.085	0.09	0.095
SN↑	recovery_rising to CP	0.0497	0.0498	0.0498
SN↑	removal_rising to CP	0.0671	0.0671	0.0671

HS65_LS_FA1

Cell Description
1 Bit Full-Adder

Logical Symbol



Functions

A0	B0	CI	S0
A0	!A0	CI	!CI
A0	A0	CI	CI

Functions

A0	B0	CI	CO
A0	-	A0	A0
A0	A0	-	A0
-	B0	B0	B0

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	3.60	9.3600
X9	2.6	4.20	10.9200
X18	2.6	5.40	14.0400
X27	2.6	8.20	21.3200
X35	2.6	10.20	26.5200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X4	3.846e-07	7.994e-10
X9	6.260e-07	1.499e-09
X18	1.265e-06	2.998e-09
X27	1.936e-06	4.496e-09
X35	2.585e-06	5.945e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	9.765e-05	6.233e-08
X9	1.729e-04	8.189e-08
X18	3.706e-04	1.211e-07
X27	5.590e-04	1.770e-07
X35	7.614e-04	2.250e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	8.632e-05	5.570e-08
X9	1.514e-04	7.095e-08
X18	3.234e-04	1.012e-07
X27	4.885e-04	1.472e-07
X35	6.646e-04	1.859e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A0 to CO	7.374e-03	1.113e-02	2.048e-02	3.030e-02	4.184e-02
A0 to S0	7.549e-03	1.124e-02	2.127e-02	3.114e-02	4.363e-02
B0 to CO	7.333e-03	1.100e-02	1.981e-02	2.994e-02	4.128e-02
B0 to S0	7.280e-03	1.085e-02	1.997e-02	3.007e-02	4.198e-02
CI to CO	6.892e-03	1.042e-02	1.880e-02	2.817e-02	3.875e-02
CI to S0	7.044e-03	1.052e-02	1.935e-02	2.816e-02	3.954e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

A0 to CO	-1.084e-04	-1.647e-04	-4.103e-04	-5.440e-04	-8.491e-04
A0 to S0	-6.264e-05	-9.358e-05	-2.301e-04	-3.152e-04	-4.844e-04
B0 to CO	-4.526e-05	-7.239e-05	-1.470e-04	-2.806e-04	-3.829e-04
B0 to S0	1.477e-05	2.119e-05	9.841e-07	-3.778e-05	-4.279e-05
CI to CO	9.099e-05	1.360e-04	3.866e-04	5.963e-04	8.958e-04
CI to S0	4.066e-05	6.109e-05	1.803e-04	2.842e-04	4.339e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A0	0.0038	0.0052	0.0080	0.0120	0.0149
B0	0.0037	0.0050	0.0073	0.0111	0.0138
CI	0.0026	0.0037	0.0056	0.0088	0.0111

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A0 to CO ↓	0.0917	0.0768	0.0729	0.0693	0.0678	2.6530	1.2953	0.6363	0.4333	0.3228
A0 to CO ↑	0.0670	0.0576	0.0527	0.0507	0.0483	3.2270	1.6849	0.8441	0.5715	0.4264
A0 to S0 ↓	0.1054	0.0928	0.0905	0.0864	0.0898	2.5165	1.2470	0.6234	0.4246	0.3203
A0 to S0 ↑	0.1119	0.0993	0.0951	0.0925	0.0952	3.2306	1.6555	0.8294	0.5651	0.4227
B0 to CO ↓	0.0896	0.0750	0.0676	0.0652	0.0657	2.6710	1.3058	0.6427	0.4386	0.3270
B0 to CO ↑	0.0656	0.0568	0.0488	0.0479	0.0477	3.2332	1.6905	0.8427	0.5731	0.4276
B0 to S0 ↓	0.1047	0.0935	0.0870	0.0854	0.0898	2.5180	1.2467	0.6224	0.4233	0.3186
B0 to S0 ↑	0.1113	0.0998	0.0913	0.0908	0.0944	3.2310	1.6579	0.8407	0.5656	0.4230
CI to CO ↓	0.0809	0.0678	0.0625	0.0614	0.0616	2.6770	1.3096	0.6488	0.4410	0.3290
CI to CO ↑	0.0608	0.0520	0.0474	0.0453	0.0451	3.2317	1.6895	0.8459	0.5733	0.4281
CI to S0 ↓	0.0995	0.0873	0.0839	0.0794	0.0836	2.5167	1.2457	0.6206	0.4222	0.3177
CI to S0 ↑	0.1065	0.0948	0.0912	0.0888	0.0922	3.2285	1.6566	0.8403	0.5649	0.4223

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A0 to CO ↓	0.1462	0.1217	0.1167	0.1086	0.1074	4.2827	2.0560	0.9803	0.6692	0.4966
A0 to CO ↑	0.1114	0.0953	0.0859	0.0812	0.0779	4.7542	2.4708	1.2214	0.8242	0.6137
A0 to S0 ↓	0.1749	0.1540	0.1493	0.1408	0.1470	4.0647	1.9763	0.9706	0.6582	0.4949
A0 to S0 ↑	0.1840	0.1633	0.1560	0.1503	0.1546	4.7355	2.4212	1.2010	0.8146	0.6094
B0 to CO ↓	0.1423	0.1186	0.1075	0.1027	0.1032	4.3127	2.0758	0.9924	0.6786	0.5045
B0 to CO ↑	0.1093	0.0940	0.0791	0.0776	0.0764	4.7646	2.4765	1.2187	0.8262	0.6154
B0 to S0 ↓	0.1733	0.1540	0.1427	0.1387	0.1459	4.0603	1.9737	0.9685	0.6552	0.4915
B0 to S0 ↑	0.1832	0.1641	0.1510	0.1485	0.1535	4.7393	2.4252	1.2146	0.8154	0.6101
CI to CO ↓	0.1283	0.1074	0.0987	0.0962	0.0963	4.3268	2.0818	1.0047	0.6823	0.5070
CI to CO ↑	0.1000	0.0859	0.0765	0.0728	0.0716	4.7566	2.4749	1.2237	0.8254	0.6150
CI to S0 ↓	0.1640	0.1444	0.1374	0.1289	0.1354	4.0578	1.9724	0.9641	0.6530	0.4899
CI to S0 ↑	0.1751	0.1563	0.1493	0.1440	0.1487	4.7367	2.4232	1.2133	0.8144	0.6091

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A0 to CO ↓	0.1344	0.1120	0.1074	0.1001	0.0989	3.9613	1.9019	0.9108	0.6211	0.4614
A0 to CO ↑	0.1021	0.0873	0.0789	0.0748	0.0717	4.4182	2.2945	1.1354	0.7666	0.5711
A0 to S0 ↓	0.1605	0.1411	0.1369	0.1295	0.1350	3.7614	1.8296	0.9008	0.6108	0.4597
A0 to S0 ↑	0.1689	0.1498	0.1431	0.1381	0.1420	4.4100	2.2491	1.1168	0.7577	0.5670
B0 to CO ↓	0.1309	0.1090	0.0989	0.0946	0.0951	3.9887	1.9198	0.9217	0.6298	0.4684
B0 to CO ↑	0.1002	0.0861	0.0728	0.0714	0.0705	4.4284	2.2998	1.1328	0.7684	0.5725
B0 to S0 ↓	0.1590	0.1412	0.1310	0.1275	0.1341	3.7579	1.8274	0.8988	0.6085	0.4564
B0 to S0 ↑	0.1682	0.1505	0.1384	0.1364	0.1410	4.4151	2.2529	1.1296	0.7587	0.5676
CI to CO ↓	0.1179	0.0987	0.0908	0.0887	0.0888	4.0011	1.9252	0.9325	0.6331	0.4708
CI to CO ↑	0.0917	0.0787	0.0704	0.0671	0.0660	4.4221	2.2983	1.1375	0.7676	0.5720
CI to S0 ↓	0.1504	0.1323	0.1261	0.1186	0.1245	3.7558	1.8262	0.8946	0.6066	0.4552

Propagation Delay at 125C, 1.15V Worst process

CI to S0↑	0.1607	0.1433	0.1369	0.1323	0.1366	4.4119	2.2509	1.1283	0.7578	0.5670





Path 1

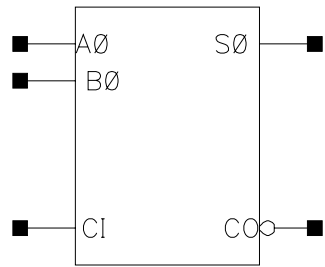
Speed-

HS65_LSS1_FA1

Optimised

Cell Description
1 Bit Full-Adder

Logical Symbol



Functions

A0	B0	CI	S0
A0	!A0	CI	!CI
A0	A0	CI	CI

Functions

A0	B0	CI	CO
A0	-	A0	A0
A0	A0	-	A0
-	B0	B0	B0

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X9	2.6	4.40	11.4400
X21	2.6	4.60	11.9600
X35	2.6	7.80	20.2800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X9	1.412e-06	3.830e-09
X21	1.805e-06	4.730e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X35	3.484e-06	8.493e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X9	4.008e-04	1.329e-07
X21	5.210e-04	1.502e-07
X35	1.025e-03	2.514e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X9	3.502e-04	1.081e-07
X21	4.548e-04	1.204e-07
X35	8.937e-04	1.985e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X9	X21	X35
A0 to CO	1.420e-02	1.834e-02	3.311e-02
A0 to S0	1.772e-02	2.149e-02	3.960e-02
B0 to CO	1.313e-02	1.731e-02	3.336e-02
B0 to S0	1.479e-02	1.839e-02	3.831e-02
CI to CO	8.104e-03	1.139e-02	3.138e-02
CI to S0	1.080e-02	1.499e-02	3.089e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X9	X21	X35
A0 to CO	-2.751e-06	-3.049e-06	-6.606e-06
A0 to S0	-3.906e-06	-3.984e-06	-9.970e-06
B0 to CO	-7.237e-06	-6.855e-06	-3.865e-06
B0 to S0	-1.009e-05	-9.713e-06	-6.023e-06
CI to CO	-8.685e-07	-3.609e-06	-7.302e-06
CI to S0	-3.151e-06	-5.451e-06	-1.031e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X9	X21	X35
A0	0.0045	0.0045	0.0086
B0	0.0089	0.0088	0.0101
CI	0.0051	0.0062	0.0129

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X9	X21	X35	X9	X21	X35
A0 to CO↓	0.0758	0.0836	0.0799	1.3264	0.6411	0.2909
A0 to CO↑	0.0680	0.0747	0.0731	1.7176	0.8559	0.4131
A0 to S0↓	0.0672	0.0731	0.0933	1.2400	0.6126	0.2965
A0 to S0↑	0.0659	0.0737	0.0852	1.6625	0.8376	0.4068
B0 to CO↓	0.0654	0.0760	0.0857	1.3174	0.6413	0.2909
B0 to CO↑	0.0547	0.0618	0.0769	1.7062	0.8511	0.4137
B0 to S0↓	0.0635	0.0684	0.0868	1.2407	0.6129	0.2963
B0 to S0↑	0.0663	0.0753	0.0760	1.6621	0.8379	0.4067
CI to CO↓	0.0588	0.0651	0.0475	1.3486	0.6547	0.2910
CI to CO↑	0.0502	0.0567	0.0456	1.7352	0.8651	0.4137
CI to S0↓	0.0441	0.0487	0.0583	1.2526	0.6175	0.2967
CI to S0↑	0.0398	0.0453	0.0539	1.6692	0.8397	0.4071

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X9	X21	X35	X9	X21	X35
A0 to CO↓	0.1228	0.1352	0.1260	2.1609	0.9986	0.4430
A0 to CO↑	0.1110	0.1217	0.1157	2.5206	1.2394	0.5902
A0 to S0↓	0.1093	0.1185	0.1508	1.9803	0.9460	0.4475
A0 to S0↑	0.1061	0.1185	0.1358	2.4321	1.2116	0.5820
B0 to CO↓	0.1044	0.1201	0.1382	2.1345	0.9932	0.4426



Propagation Delay at 125C, 1.10V Worst process

B0 to CO ↑	0.0889	0.1003	0.1261	2.4984	1.2297	0.5905
B0 to S0 ↓	0.1049	0.1124	0.1406	1.9802	0.9459	0.4474
B0 to S0 ↑	0.1059	0.1199	0.1229	2.4309	1.2121	0.5819
CI to CO ↓	0.0961	0.1060	0.0737	2.1805	1.0126	0.4429
CI to CO ↑	0.0824	0.0925	0.0720	2.5377	1.2493	0.5905
CI to S0 ↓	0.0722	0.0791	0.0938	1.9850	0.9471	0.4474
CI to S0 ↑	0.0644	0.0728	0.0863	2.4293	1.2089	0.5819

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X9	X21	X35	X9	X21	X35
A0 to CO ↓	0.1123	0.1236	0.1153	1.9890	0.9257	0.4121
A0 to CO ↑	0.1012	0.1109	0.1062	2.3400	1.1519	0.5490
A0 to S0 ↓	0.1001	0.1086	0.1382	1.8301	0.8786	0.4167
A0 to S0 ↑	0.0971	0.1084	0.1248	2.2580	1.1263	0.5415
B0 to CO ↓	0.0957	0.1103	0.1262	1.9672	0.9218	0.4120
B0 to CO ↑	0.0815	0.0918	0.1154	2.3193	1.1428	0.5494
B0 to S0 ↓	0.0958	0.1028	0.1287	1.8295	0.8784	0.4166
B0 to S0 ↑	0.0968	0.1095	0.1127	2.2578	1.1267	0.5412
CI to CO ↓	0.0878	0.0969	0.0679	2.0100	0.9398	0.4119
CI to CO ↑	0.0755	0.0847	0.0663	2.3562	1.1611	0.5489
CI to S0 ↓	0.0661	0.0725	0.0862	1.8348	0.8799	0.4165
CI to S0 ↑	0.0592	0.0667	0.0792	2.2564	1.1238	0.5413

Path

2

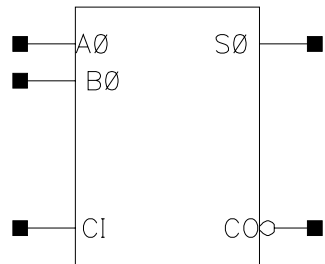
Speed-

HS65_LSS2_FA1

Optimised

Cell Description
1 Bit Full-Adder

Logical Symbol



Functions

A0	B0	CI	S0
A0	!A0	CI	!CI
A0	A0	CI	CI

Functions

A0	B0	CI	CO
A0	-	A0	A0
A0	A0	-	A0
-	B0	B0	B0

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	12.20	31.7200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	3.883e-06	8.676e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	1.147e-03	2.938e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	1.001e-03	2.382e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18
A0 to CO	4.246e-02
A0 to S0	4.877e-02
B0 to CO	4.711e-02
B0 to S0	5.237e-02
CI to CO	2.213e-02
CI to S0	2.652e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18
A0 to CO	-6.968e-05
A0 to S0	-6.881e-04
B0 to CO	-3.436e-05
B0 to S0	-5.553e-04
CI to CO	-1.462e-05
CI to S0	1.124e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18
A0	0.0109
B0	0.0153
CI	0.0068

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X18	X18
A0 to CO↓	0.0543	0.4878
A0 to CO↑	0.0540	0.8893
A0 to S0↓	0.0766	0.6365
A0 to S0↑	0.0678	0.8320
B0 to CO↓	0.0457	0.4717
B0 to CO↑	0.0510	0.8511
B0 to S0↓	0.0667	0.6373
B0 to S0↑	0.0632	0.8318
CI to CO↓	0.0623	0.4563
CI to CO↑	0.0445	0.7848
CI to S0↓	0.0704	0.6442
CI to S0↑	0.0483	0.8367

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X18	X18
A0 to CO↓	0.0785	0.7936
A0 to CO↑	0.0787	1.3278
A0 to S0↓	0.1186	0.9940
A0 to S0↑	0.1023	1.2019
B0 to CO↓	0.0711	0.7653
B0 to CO↑	0.0794	1.2699
B0 to S0↓	0.1064	0.9949
B0 to S0↑	0.0979	1.2019
CI to CO↓	0.0948	0.7289
CI to CO↑	0.0681	1.1630
CI to S0↓	0.1108	0.9965



Propagation Delay at 125C, 1.10V Worst process

CI to S0↑	0.0743	1.2033

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X18	X18
A0 to CO↓	0.0734	0.7277
A0 to CO↑	0.0738	1.2243
A0 to S0↓	0.1093	0.9217
A0 to S0↑	0.0947	1.1174
B0 to CO↓	0.0659	0.7022
B0 to CO↑	0.0738	1.1713
B0 to S0↓	0.0978	0.9222
B0 to S0↑	0.0901	1.1174
CI to CO↓	0.0879	0.6711
CI to CO↑	0.0634	1.0742
CI to S0↓	0.1016	0.9246
CI to S0↑	0.0688	1.1186

HS65_LS_HA1

Cell Description

Half-Adder, Optimized for signal path 1 speed

Logical Symbol



Functions

A0	B0	S0
1	B0	!B0
0	B0	B0

Functions

A0	B0	CO
0	-	0
-	0	0
1	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.00	5.2000
X9	2.6	2.40	6.2400
X18	2.6	2.80	7.2800
X27	2.6	4.60	11.9600
X35	2.6	5.20	13.5200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	2.942e-07	7.994e-10
X9	5.038e-07	1.565e-09
X18	1.034e-06	3.164e-09
X27	1.627e-06	4.730e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X35	2.146e-06	6.328e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	7.530e-05	4.766e-08
X9	1.387e-04	6.661e-08
X18	2.963e-04	9.865e-08
X27	4.658e-04	1.478e-07
X35	6.235e-04	1.815e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	6.650e-05	4.156e-08
X9	1.213e-04	5.586e-08
X18	2.585e-04	7.879e-08
X27	4.067e-04	1.178e-07
X35	5.439e-04	1.424e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A0 to CO	6.726e-03	1.029e-02	1.792e-02	2.713e-02	3.570e-02
A0 to S0	6.337e-03	9.679e-03	1.698e-02	2.586e-02	3.494e-02
B0 to CO	6.358e-03	9.907e-03	1.719e-02	2.594e-02	3.405e-02
B0 to S0	6.102e-03	9.220e-03	1.608e-02	2.445e-02	3.296e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A0 to CO	-7.274e-05	-1.425e-04	-2.777e-04	-4.572e-04	-6.203e-04
A0 to S0	-3.867e-05	-7.584e-05	-1.477e-04	-2.425e-04	-3.296e-04
B0 to CO	6.802e-05	1.349e-04	2.590e-04	4.297e-04	5.835e-04
B0 to S0	3.312e-05	6.650e-05	1.277e-04	2.112e-04	2.881e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A0	0.0017	0.0024	0.0038	0.0064	0.0078
B0	0.0014	0.0022	0.0033	0.0055	0.0064

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A0 to CO↓	0.0520	0.0425	0.0387	0.0388	0.0370	2.3697	1.2170	0.5979	0.4043	0.2972
A0 to CO↑	0.0588	0.0485	0.0424	0.0421	0.0397	3.1587	1.6738	0.8362	0.5668	0.4216
A0 to S0↓	0.0843	0.0727	0.0659	0.0647	0.0647	2.4034	1.1930	0.5875	0.3979	0.2970
A0 to S0↑	0.0764	0.0672	0.0613	0.0605	0.0622	3.1819	1.6398	0.8210	0.5559	0.4173
B0 to CO↓	0.0470	0.0410	0.0367	0.0365	0.0353	2.3538	1.2161	0.5966	0.4035	0.2968
B0 to CO↑	0.0547	0.0468	0.0407	0.0398	0.0378	3.1559	1.6750	0.8365	0.5671	0.4218
B0 to S0↓	0.0804	0.0703	0.0637	0.0620	0.0622	2.4046	1.1931	0.5875	0.3979	0.2970
B0 to S0↑	0.0733	0.0668	0.0606	0.0597	0.0617	3.1875	1.6413	0.8221	0.5567	0.4176

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A0 to CO↓	0.0786	0.0644	0.0581	0.0578	0.0552	3.7950	1.9234	0.9225	0.6165	0.4479
A0 to CO↑	0.0959	0.0804	0.0688	0.0674	0.0631	4.6244	2.4477	1.2095	0.8142	0.6019
A0 to S0↓	0.1373	0.1198	0.1074	0.1042	0.1039	3.8620	1.8847	0.9067	0.6087	0.4521
A0 to S0↑	0.1226	0.1085	0.0973	0.0954	0.0985	4.6420	2.3917	1.1839	0.7981	0.5983
B0 to CO↓	0.0710	0.0621	0.0551	0.0546	0.0524	3.7648	1.9212	0.9204	0.6148	0.4468
B0 to CO↑	0.0886	0.0774	0.0661	0.0638	0.0601	4.6212	2.4482	1.2098	0.8146	0.6021
B0 to S0↓	0.1304	0.1156	0.1035	0.0996	0.0996	3.8619	1.8857	0.9067	0.6090	0.4523
B0 to S0↑	0.1182	0.1084	0.0966	0.0945	0.0978	4.6505	2.3955	1.1863	0.7993	0.5992

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A0 to CO ↓	0.0731	0.0598	0.0541	0.0540	0.0515	3.5093	1.7796	0.8566	0.5731	0.4174
A0 to CO ↑	0.0881	0.0735	0.0631	0.0620	0.0582	4.2983	2.2736	1.1243	0.7576	0.5602
A0 to S0 ↓	0.1262	0.1098	0.0985	0.0958	0.0955	3.5677	1.7443	0.8422	0.5660	0.4208
A0 to S0 ↑	0.1128	0.0996	0.0896	0.0880	0.0907	4.3154	2.2222	1.1012	0.7427	0.5567
B0 to CO ↓	0.0660	0.0577	0.0512	0.0508	0.0489	3.4821	1.7774	0.8543	0.5717	0.4163
B0 to CO ↑	0.0814	0.0709	0.0608	0.0588	0.0555	4.2991	2.2744	1.1244	0.7577	0.5603
B0 to S0 ↓	0.1199	0.1060	0.0951	0.0917	0.0917	3.5699	1.7441	0.8421	0.5662	0.4208
B0 to S0 ↑	0.1087	0.0996	0.0889	0.0871	0.0900	4.3220	2.2258	1.1031	0.7438	0.5576

Path 1 Speed- Optimised

HS65_LSS1_HA1

Cell Description

Half-Adder, Optimized for signal path 1 speed

Logical Symbol



Functions

A0	B0	S0
1	B0	!B0
0	B0	B0

Functions

A0	B0	CO
0	-	0
-	0	0
1	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X8	2.6	2.60	6.7600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X8	7.240e-07	1.998e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X8	2.041e-04	7.667e-08



Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X8	1.781e-04	6.349e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X8
A0 to CO	5.647e-03
A0 to S0	7.457e-03
B0 to CO	7.484e-03
B0 to S0	1.029e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X8
A0 to CO	-4.479e-06
A0 to S0	-4.124e-06
B0 to CO	5.226e-06
B0 to S0	3.580e-07

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X8
A0	0.0054
B0	0.0063

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X8	X8
A0 to CO↓	0.0404	1.2327
A0 to CO↑	0.0387	1.8180
A0 to S0↓	0.0351	1.2079
A0 to S0↑	0.0270	1.8284
B0 to CO↓	0.0379	1.2301

Propagation Delay at 25C, 1.20V Typ process

B0 to CO↑	0.0370	1.8192
B0 to S0↓	0.0437	1.1959
B0 to S0↑	0.0312	1.8253

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X8	X8
A0 to CO↓	0.0614	1.9721
A0 to CO↑	0.0638	2.6623
A0 to S0↓	0.0567	1.8920
A0 to S0↑	0.0422	2.6334
B0 to CO↓	0.0577	1.9660
B0 to CO↑	0.0608	2.6637
B0 to S0↓	0.0705	1.8888
B0 to S0↑	0.0481	2.6312

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X8	X8
A0 to CO↓	0.0572	1.8213
A0 to CO↑	0.0585	2.4724
A0 to S0↓	0.0520	1.7516
A0 to S0↑	0.0391	2.4474
B0 to CO↓	0.0536	1.8154
B0 to CO↑	0.0559	2.4732
B0 to S0↓	0.0647	1.7484
B0 to S0↑	0.0447	2.4436

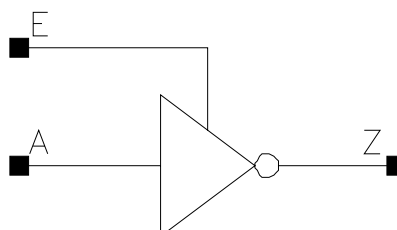


HS65_LS_ITH

Cell Description

Internal Tristate Inverting Buffer, Positive Enable

Logical Symbol



Functions

A	E	Z
A	1	!A
-	0	Z

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X10	2.6	1.80	4.6800
X15	2.6	2.20	5.7200
X20	2.6	3.20	8.3200
X25	2.6	3.40	8.8400
X30	2.6	4.20	10.9200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X10	2.467e-07	7.245e-10
X15	3.634e-07	1.024e-09
X20	4.957e-07	1.357e-09
X25	6.314e-07	1.790e-09
X30	7.189e-07	2.057e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X10	6.856e-05	4.398e-08
X15	1.040e-04	5.553e-08
X20	1.383e-04	7.130e-08
X25	1.806e-04	8.054e-08
X30	2.052e-04	9.508e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X10	6.024e-05	3.855e-08
X15	9.119e-05	4.784e-08
X20	1.215e-04	6.124e-08
X25	1.585e-04	6.828e-08
X30	1.801e-04	8.053e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X10	X15	X20	X25	X30
A to Z	1.080e-02	1.529e-02	2.106e-02	2.540e-02	3.092e-02
E to Z	6.214e-03	8.958e-03	1.132e-02	1.434e-02	1.749e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X10	X15	X20	X25	X30
A to Z	-1.765e-05	-2.550e-05	-3.986e-05	-4.514e-05	-5.426e-05
E to Z	1.830e-03	2.733e-03	3.136e-03	3.769e-03	4.737e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X10	X15	X20	X25	X30
A	0.0040	0.0052	0.0069	0.0086	0.0102
E	0.0029	0.0039	0.0052	0.0065	0.0071
Z	0.0022	0.0032	0.0040	0.0052	0.0060

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X10	X15	X20	X25	X30	X10	X15	X20	X25	X30
A to Z↓	0.0142	0.0137	0.0145	0.0138	0.0142	1.0888	0.7535	0.5828	0.4543	0.3811
A to Z↑	0.0214	0.0207	0.0217	0.0210	0.0210	1.8058	1.2370	0.9369	0.7459	0.6231
E to Z↓	0.0240	0.0231	0.0224	0.0220	0.0221	1.0839	0.7518	0.5810	0.4533	0.3801
E to Z↑	0.0161	0.0155	0.0159	0.0147	0.0150	1.7891	1.2255	0.9290	0.7391	0.6175

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X10	X15	X20	X25	X30	X10	X15	X20	X25	X30
A to Z↓	0.0230	0.0220	0.0233	0.0220	0.0225	1.8141	1.2313	0.9604	0.7364	0.6189
A to Z↑	0.0317	0.0302	0.0318	0.0305	0.0309	2.7268	1.8459	1.4009	1.1093	0.9271
E to Z↓	0.0357	0.0347	0.0327	0.0323	0.0327	1.7946	1.2192	0.9498	0.7290	0.6122
E to Z↑	0.0227	0.0216	0.0218	0.0203	0.0209	2.7190	1.8403	1.3971	1.1057	0.9242

Propagation Delay at 125C, 1.15V Worst process

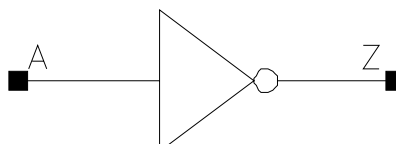
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X10	X15	X20	X25	X30	X10	X15	X20	X25	X30
A to Z↓	0.0215	0.0206	0.0218	0.0206	0.0211	1.6560	1.1272	0.8780	0.6749	0.5670
A to Z↑	0.0297	0.0284	0.0299	0.0286	0.0290	2.5098	1.7013	1.2908	1.0225	0.8546
E to Z↓	0.0335	0.0325	0.0309	0.0305	0.0308	1.6390	1.1165	0.8688	0.6686	0.5613
E to Z↑	0.0213	0.0204	0.0206	0.0192	0.0197	2.5013	1.6957	1.2870	1.0192	0.8518



Cell Description

Inverter

Logical Symbol



Functions

A	Z
A	!A

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	0.60	1.5600
X4	2.6	0.60	1.5600
X7	2.6	0.60	1.5600
X9	2.6	0.60	1.5600
X13	2.6	0.80	2.0800
X18	2.6	0.80	2.0800
X22	2.6	1.20	3.1200
X27	2.6	1.20	3.1200
X31	2.6	1.40	3.6400
X35	2.6	1.40	3.6400
X40	2.6	1.60	4.1600
X44	2.6	1.60	4.1600
X49	2.6	2.00	5.2000
X53	2.6	2.00	5.2000
X62	2.6	2.20	5.7200
X71	2.6	2.40	6.2400
X106	2.6	3.40	8.8400



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X142	2.6	4.60	11.9600
X213	2.6	6.60	17.1600
X284	2.6	8.60	22.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	5.527e-08	1.832e-10
X4	8.643e-08	2.498e-10
X7	1.220e-07	3.831e-10
X9	1.556e-07	5.163e-10
X13	2.526e-07	6.495e-10
X18	3.237e-07	8.493e-10
X22	4.396e-07	1.116e-09
X27	5.127e-07	1.316e-09
X31	6.201e-07	1.449e-09
X35	6.873e-07	1.715e-09
X40	7.954e-07	1.915e-09
X44	8.677e-07	2.115e-09
X49	9.877e-07	2.381e-09
X53	1.055e-06	2.581e-09
X62	1.234e-06	2.981e-09
X71	1.420e-06	3.381e-09
X106	2.151e-06	5.046e-09
X142	2.893e-06	6.712e-09
X213	4.379e-06	1.004e-08
X284	5.855e-06	1.331e-08

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	1.408e-05	1.999e-08
X4	2.321e-05	2.208e-08
X7	3.423e-05	2.417e-08
X9	4.490e-05	2.620e-08

Average Leakage Power (mW) at 125C, 1.30V Best process

X13	7.184e-05	3.146e-08
X18	9.442e-05	3.522e-08
X22	1.277e-04	4.366e-08
X27	1.520e-04	4.748e-08
X31	1.816e-04	5.275e-08
X35	2.042e-04	5.665e-08
X40	2.339e-04	6.307e-08
X44	2.587e-04	6.704e-08
X49	2.928e-04	7.426e-08
X53	3.159e-04	7.808e-08
X62	3.699e-04	8.840e-08
X71	4.263e-04	9.742e-08
X106	6.485e-04	1.384e-07
X142	8.747e-04	1.813e-07
X213	1.328e-03	2.630e-07
X284	1.777e-03	3.448e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	1.249e-05	1.867e-08
X4	2.035e-05	2.012e-08
X7	2.988e-05	2.165e-08
X9	3.909e-05	2.304e-08
X13	6.270e-05	2.706e-08
X18	8.221e-05	2.963e-08
X22	1.114e-04	3.664e-08
X27	1.324e-04	3.927e-08
X31	1.583e-04	4.337e-08
X35	1.778e-04	4.607e-08
X40	2.038e-04	5.114e-08
X44	2.253e-04	5.391e-08
X49	2.551e-04	5.981e-08
X53	2.750e-04	6.245e-08
X62	3.220e-04	7.029e-08
X71	3.712e-04	7.681e-08



Average Leakage Power (mW) at 125C, 1.25V Best process

X106	5.646e-04	1.078e-07
X142	7.615e-04	1.407e-07
X213	1.156e-03	2.023e-07
X284	1.547e-03	2.642e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X4	X7	X9	X13
A to Z	1.380e-03	1.910e-03	2.343e-03	2.872e-03	3.852e-03
Pin Cycle (vdd)	X18	X22	X27	X31	X35
A to Z	4.682e-03	6.572e-03	7.456e-03	8.335e-03	9.119e-03
Pin Cycle (vdd)	X40	X44	X49	X53	X62
A to Z	1.096e-02	1.175e-02	1.279e-02	1.354e-02	1.613e-02
Pin Cycle (vdd)	X71	X106	X142	X213	X284
A to Z	1.775e-02	2.681e-02	3.590e-02	6.028e-02	1.126e-01

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X4	X7	X9	X13
A to Z	-8.696e-07	-1.721e-06	-8.390e-07	-1.592e-06	-2.713e-06
Pin Cycle (vdds)	X18	X22	X27	X31	X35
A to Z	-3.975e-06	-2.710e-06	-3.100e-06	-4.320e-06	-4.450e-06
Pin Cycle (vdds)	X40	X44	X49	X53	X62
A to Z	-5.230e-06	-4.450e-06	-6.500e-06	-5.440e-06	-8.020e-06
Pin Cycle (vdds)	X71	X106	X142	X213	X284
A to Z	-8.620e-06	-9.910e-06	-1.117e-05	-1.656e-05	-1.740e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X4	X7	X9	X13
A	0.0010	0.0013	0.0016	0.0020	0.0033
Pin	X18	X22	X27	X31	X35
A	0.0040	0.0050	0.0058	0.0071	0.0079
Pin	X40	X44	X49	X53	X62

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0092	0.0099	0.0112	0.0120	0.0144
Pin	X71	X106	X142	X213	X284
A	0.0170	0.0271	0.0367	0.0562	0.0747

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X7	X9	X13	X2	X4	X7	X9	X13
A to Z↓	0.0132	0.0119	0.0107	0.0103	0.0095	4.1251	2.3529	1.6004	1.2111	0.7712
A to Z↑	0.0158	0.0137	0.0125	0.0121	0.0114	5.5980	3.1230	2.1529	1.6604	1.0764
	X18	X22	X27	X31	X35	X18	X22	X27	X31	X35
A to Z↓	0.0092	0.0095	0.0093	0.0092	0.0091	0.5881	0.4626	0.3898	0.3271	0.2922
A to Z↑	0.0112	0.0115	0.0114	0.0113	0.0111	0.8315	0.6485	0.5499	0.4674	0.4123
	X40	X44	X49	X53	X62	X40	X44	X49	X53	X62
A to Z↓	0.0094	0.0093	0.0095	0.0094	0.0097	0.2581	0.2340	0.2101	0.1955	0.1690
A to Z↑	0.0115	0.0114	0.0116	0.0115	0.0118	0.3643	0.3305	0.2985	0.2765	0.2387
	X71	X106	X142	X213	X284	X71	X106	X142	X213	X284
A to Z↓	0.0099	0.0106	0.0122	0.0160	0.0207	0.1487	0.1021	0.0794	0.0595	0.0537
A to Z↑	0.0120	0.0127	0.0145	0.0187	0.0248	0.2099	0.1431	0.1106	0.0804	0.0689

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X7	X9	X13	X2	X4	X7	X9	X13
A to Z↓	0.0204	0.0187	0.0169	0.0163	0.0150	6.3286	3.7029	2.5063	1.8883	1.1953
A to Z↑	0.0220	0.0193	0.0176	0.0171	0.0159	7.9800	4.4652	3.0886	2.3862	1.5377
	X18	X22	X27	X31	X35	X18	X22	X27	X31	X35
A to Z↓	0.0146	0.0149	0.0146	0.0143	0.0141	0.9078	0.7039	0.5903	0.4958	0.4413
A to Z↑	0.0156	0.0160	0.0158	0.0155	0.0152	1.1891	0.9210	0.7817	0.6638	0.5858
	X40	X44	X49	X53	X62	X40	X44	X49	X53	X62



Propagation Delay at 125C, 1.10V Worst process

A to Z↓	0.0146	0.0144	0.0145	0.0144	0.0147	0.3898	0.3521	0.3150	0.2920	0.2517
A to Z↑	0.0157	0.0156	0.0157	0.0156	0.0159	0.5163	0.4689	0.4221	0.3907	0.3363
	X71	X106	X142	X213	X284	X71	X106	X142	X213	X284
A to Z↓	0.0149	0.0156	0.0175	0.0219	0.0274	0.2202	0.1491	0.1143	0.0827	0.0718
A to Z↑	0.0160	0.0168	0.0186	0.0230	0.0289	0.2948	0.1992	0.1523	0.1083	0.0905

Propagation Delay at 125C, 1.15V Worst process

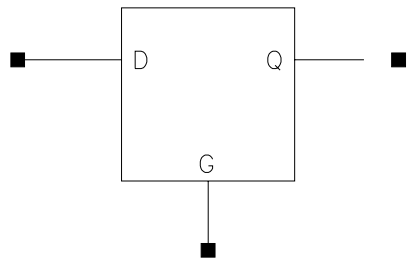
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X7	X9	X13	X2	X4	X7	X9	X13
A to Z↓	0.0193	0.0177	0.0160	0.0154	0.0142	5.8850	3.4218	2.3182	1.7469	1.1071
A to Z↑	0.0209	0.0183	0.0167	0.0162	0.0151	7.4393	4.1577	2.8732	2.2183	1.4311
	X18	X22	X27	X31	X35	X18	X22	X27	X31	X35
A to Z↓	0.0138	0.0141	0.0138	0.0135	0.0133	0.8413	0.6538	0.5485	0.4608	0.4103
A to Z↑	0.0147	0.0152	0.0149	0.0147	0.0144	1.1058	0.8577	0.7273	0.6180	0.5450
	X40	X44	X49	X53	X62	X40	X44	X49	X53	X62
A to Z↓	0.0138	0.0137	0.0137	0.0136	0.0140	0.3625	0.3274	0.2932	0.2719	0.2344
A to Z↑	0.0149	0.0148	0.0149	0.0148	0.0151	0.4808	0.4364	0.3930	0.3636	0.3132
	X71	X106	X142	X213	X284	X71	X106	X142	X213	X284
A to Z↓	0.0141	0.0148	0.0167	0.0211	0.0265	0.2053	0.1392	0.1069	0.0776	0.0677
A to Z↑	0.0152	0.0160	0.0178	0.0222	0.0281	0.2745	0.1857	0.1422	0.1013	0.0849

HS65_LS_LDHQ

Cell Description

D Latch with Active High Transparent, Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	G	IQ	IQ
D	1	-	D
-	0	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.60	6.7600
X9	2.6	2.60	6.7600
X18	2.6	2.80	7.2800
X27	2.6	4.00	10.4000
X35	2.6	4.20	10.9200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	3.258e-07	6.883e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X9	4.181e-07	9.104e-10
X18	7.021e-07	1.643e-09
X27	9.710e-07	2.420e-09
X35	1.293e-06	3.175e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	8.313e-05	5.018e-08
X9	1.110e-04	5.540e-08
X18	1.975e-04	7.221e-08
X27	2.768e-04	9.824e-08
X35	3.773e-04	1.151e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	7.364e-05	4.483e-08
X9	9.776e-05	4.857e-08
X18	1.729e-04	6.095e-08
X27	2.419e-04	8.202e-08
X35	3.293e-04	9.439e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
D (stable)	1.765e-04	2.894e-04	5.333e-04	1.314e-03	1.376e-03
G (stable)	6.452e-03	7.136e-03	9.504e-03	1.221e-02	1.426e-02
D to Q	9.151e-03	1.297e-02	1.935e-02	2.829e-02	3.645e-02
G to Q	1.362e-02	1.811e-02	2.516e-02	3.404e-02	4.307e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
D (stable)	-7.280e-05	-1.236e-04	-2.264e-04	-5.328e-04	-5.434e-04
G (stable)	4.720e-05	5.013e-05	4.963e-05	4.757e-05	4.793e-05
D to Q	-2.874e-05	-3.660e-05	-5.147e-05	-9.259e-05	-9.708e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

G to Q	-1.443e-04	3.131e-04	7.142e-04	1.406e-03	1.527e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
D	0.0009	0.0014	0.0020	0.0031	0.0039
G	0.0011	0.0011	0.0015	0.0018	0.0022

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to Q↓	0.0773	0.0688	0.0597	0.0617	0.0605	2.5355	1.2815	0.6214	0.4268	0.3130
D to Q↑	0.0573	0.0524	0.0441	0.0458	0.0452	3.1671	1.6792	0.8345	0.5686	0.4226
G to Q↓	0.0902	0.0848	0.0698	0.0656	0.0651	2.5338	1.2812	0.6207	0.4262	0.3127
G to Q↑	0.0967	0.0961	0.0752	0.0709	0.0667	3.1690	1.6791	0.8343	0.5678	0.4222

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to Q↓	0.1232	0.1098	0.0946	0.0971	0.0947	4.0729	2.0371	0.9674	0.6666	0.4817
D to Q↑	0.0955	0.0871	0.0722	0.0751	0.0736	4.6404	2.4659	1.2091	0.8229	0.6084
G to Q↓	0.1462	0.1371	0.1133	0.1056	0.1040	4.0727	2.0387	0.9674	0.6666	0.4818
G to Q↑	0.1584	0.1562	0.1225	0.1152	0.1084	4.6450	2.4660	1.2094	0.8224	0.6083

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to Q↓	0.1132	0.1009	0.0871	0.0896	0.0874	3.7655	1.8842	0.8970	0.6178	0.4474
D to Q↑	0.0874	0.0797	0.0662	0.0691	0.0677	4.3153	2.2885	1.1237	0.7650	0.5657



Propagation Delay at 125C, 1.15V Worst process

G to Q↓	0.1344	0.1261	0.1042	0.0973	0.0959	3.7671	1.8857	0.8974	0.6179	0.4476
G to Q↑	0.1454	0.1435	0.1125	0.1058	0.0995	4.3166	2.2900	1.1235	0.7644	0.5657

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_falling to G	-0.0223	-0.0123	-0.0071	-0.0119	-0.0067
D↑	hold_falling to G	0.0126	0.0220	0.0225	0.0175	0.0128
D↓	setup_falling to G	0.0624	0.0579	0.0527	0.0574	0.0574
D↑	setup_falling to G	0.0231	0.0135	0.0129	0.0179	0.0226
G	min_pulse_width_high	0.07	0.07	0.06	0.055	0.055

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_falling to G	-0.0485	-0.0379	-0.0276	-0.0332	-0.0280
D↑	hold_falling to G	0.0109	0.0206	0.0209	0.0108	0.0109
D↓	setup_falling to G	0.0931	0.0882	0.0831	0.0829	0.0829
D↑	setup_falling to G	0.0398	0.0253	0.0247	0.0297	0.0347
G	min_pulse_width_high	0.11	0.105	0.09	0.08	0.085

Timing Constraints (ns) at 125C, 1.15V Worst process

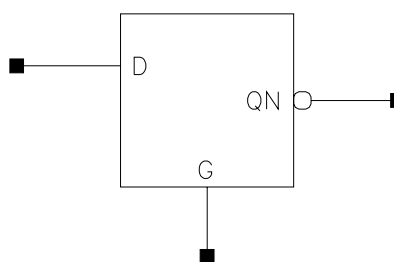
Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_falling to G	-0.0429	-0.0329	-0.0225	-0.0276	-0.0271
D↑	hold_falling to G	0.0108	0.0213	0.0215	0.0160	0.0115
D↓	setup_falling to G	0.0881	0.0833	0.0781	0.0780	0.0780
D↑	setup_falling to G	0.0347	0.0247	0.0242	0.0245	0.0295
G	min_pulse_width_high	0.1	0.095	0.08	0.075	0.075

HS65_LS_LDHQN

Cell Description

D Latch with Active High Transparent, QN Output Only

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

D	G	IQ	IQ
D	1	-	D
-	0	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.60	6.7600
X9	2.6	2.60	6.7600
X18	2.6	2.80	7.2800
X27	2.6	4.00	10.4000
X35	2.6	4.40	11.4400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	3.316e-07	6.439e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X9	4.013e-07	9.548e-10
X18	7.198e-07	1.754e-09
X27	1.029e-06	2.665e-09
X35	1.367e-06	3.531e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	8.423e-05	5.080e-08
X9	1.065e-04	5.588e-08
X18	2.040e-04	7.428e-08
X27	2.940e-04	1.030e-07
X35	3.974e-04	1.228e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	7.460e-05	4.526e-08
X9	9.384e-05	4.890e-08
X18	1.785e-04	6.224e-08
X27	2.567e-04	8.537e-08
X35	3.465e-04	1.002e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
D (stable)	1.681e-04	2.820e-04	5.294e-04	1.384e-03	1.478e-03
G (stable)	6.915e-03	7.059e-03	9.073e-03	1.188e-02	1.505e-02
D to QN	1.006e-02	1.268e-02	2.092e-02	3.061e-02	3.992e-02
G to QN	1.444e-02	1.683e-02	2.624e-02	3.636e-02	4.681e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
D (stable)	-7.080e-05	-1.187e-04	-2.263e-04	-5.548e-04	-6.257e-04
G (stable)	5.057e-05	4.813e-05	5.113e-05	4.776e-05	4.626e-05
D to QN	-2.886e-05	-3.573e-05	-5.222e-05	-8.847e-05	-1.141e-04

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

G to QN	1.621e-04	4.077e-04	6.943e-04	1.531e-03	1.823e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
D	0.0010	0.0013	0.0020	0.0031	0.0039
G	0.0010	0.0012	0.0015	0.0018	0.0023

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to QN↓	0.0797	0.0756	0.0648	0.0646	0.0629	2.3445	1.2514	0.6046	0.4118	0.3055
D to QN↑	0.0933	0.0830	0.0744	0.0741	0.0722	3.2235	1.6636	0.8308	0.5629	0.4194
G to QN↓	0.1218	0.1195	0.0952	0.0895	0.0852	2.3493	1.2525	0.6051	0.4117	0.3056
G to QN↑	0.1110	0.1003	0.0844	0.0775	0.0762	3.2146	1.6614	0.8311	0.5629	0.4196

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to QN↓	0.1325	0.1254	0.1064	0.1066	0.1031	3.7572	2.0080	0.9368	0.6397	0.4728
D to QN↑	0.1485	0.1328	0.1196	0.1185	0.1153	4.7045	2.4366	1.2016	0.8124	0.6045
G to QN↓	0.1991	0.1940	0.1551	0.1459	0.1382	3.7648	2.0092	0.9375	0.6400	0.4730
G to QN↑	0.1785	0.1615	0.1378	0.1258	0.1235	4.6974	2.4365	1.2024	0.8127	0.6048

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to QN↓	0.1216	0.1150	0.0978	0.0980	0.0949	3.4760	1.8538	0.8698	0.5934	0.4386
D to QN↑	0.1368	0.1223	0.1100	0.1092	0.1063	4.3809	2.2633	1.1165	0.7551	0.5620



Propagation Delay at 125C, 1.15V Worst process

G to QN↓	0.1830	0.1784	0.1425	0.1341	0.1271	3.4808	1.8549	0.8699	0.5935	0.4388
G to QN↑	0.1644	0.1488	0.1266	0.1158	0.1136	4.3698	2.2632	1.1173	0.7559	0.5625

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_falling to G	-0.0176	-0.0073	-0.0067	-0.0069	-0.0065
D↑	hold_falling to G	0.0170	0.0221	0.0225	0.0178	0.0178
D↓	setup_falling to G	0.0523	0.0421	0.0418	0.0415	0.0416
D↑	setup_falling to G	0.0128	0.0077	0.0070	0.0071	0.0073
G	min_pulse_width_high	0.065	0.055	0.045	0.04	0.04

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_falling to G	-0.0482	-0.0284	-0.0277	-0.0276	-0.0225
D↑	hold_falling to G	0.0106	0.0206	0.0212	0.0163	0.0167
D↓	setup_falling to G	0.0834	0.0679	0.0626	0.0623	0.0623
D↑	setup_falling to G	0.0249	0.0144	0.0138	0.0141	0.0138
G	min_pulse_width_high	0.1	0.085	0.075	0.065	0.06

Timing Constraints (ns) at 125C, 1.15V Worst process

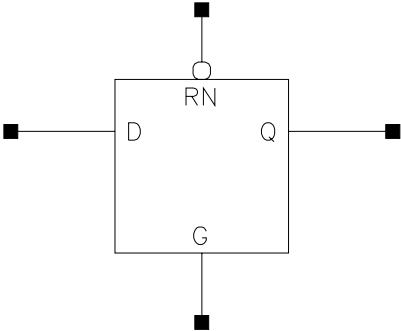
Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_falling to G	-0.0426	-0.0274	-0.0221	-0.0225	-0.0220
D↑	hold_falling to G	0.0108	0.0211	0.0214	0.0164	0.0169
D↓	setup_falling to G	0.0779	0.0623	0.0570	0.0573	0.0568
D↑	setup_falling to G	0.0237	0.0097	0.0090	0.0140	0.0135
G	min_pulse_width_high	0.095	0.075	0.065	0.06	0.055

HS65_LS_LDHRQ

Cell Description

D Latch with Active High Transparent, Preset
Active Low, Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	G	RN	IQ	IQ
-	-	0	-	0
D	1	1	-	D
-	0	1	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	3.00	7.8000
X9	2.6	3.00	7.8000
X18	2.6	3.40	8.8400
X27	2.6	4.60	11.9600
X35	2.6	5.20	13.5200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X4	2.847e-07	8.260e-10
X9	3.592e-07	1.159e-09
X18	6.048e-07	2.092e-09
X27	8.929e-07	3.131e-09
X35	1.168e-06	4.077e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	7.114e-05	5.669e-08
X9	9.151e-05	6.402e-08
X18	1.625e-04	8.586e-08
X27	2.430e-04	1.170e-07
X35	3.241e-04	1.406e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	6.309e-05	5.039e-08
X9	8.072e-05	5.562e-08
X18	1.424e-04	7.172e-08
X27	2.127e-04	9.658e-08
X35	2.832e-04	1.144e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
D (stable)	2.822e-04	3.736e-04	6.430e-04	1.043e-03	1.285e-03
G (stable)	6.410e-03	6.710e-03	9.493e-03	1.291e-02	1.524e-02
RN (stable)	6.278e-05	8.731e-05	1.387e-04	4.122e-04	2.558e-04
D to Q	9.871e-03	1.307e-02	2.020e-02	3.110e-02	4.011e-02
G to Q	1.480e-02	1.768e-02	2.598e-02	3.708e-02	4.630e-02
RN to Q	1.101e-02	1.442e-02	2.229e-02	3.323e-02	4.244e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	-3.933e-05	-6.282e-05	-1.178e-04	-2.623e-04	-3.579e-04
G (stable)	-2.022e-06	-2.305e-06	-3.739e-06	-4.848e-06	-6.033e-06
RN (stable)	0.000e+00	-1.000e-06	-2.739e-06	1.122e-05	-1.609e-06
D to Q	-8.609e-06	-1.047e-05	-1.708e-05	-2.507e-05	-3.655e-05
G to Q	1.634e-04	2.374e-04	1.301e-04	2.738e-04	4.660e-04
RN to Q	-8.018e-06	-8.122e-06	-1.212e-05	-1.964e-05	-2.777e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
D	0.0009	0.0012	0.0020	0.0031	0.0038
G	0.0010	0.0010	0.0015	0.0019	0.0023
RN	0.0011	0.0014	0.0020	0.0032	0.0039

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to Q↓	0.0829	0.0715	0.0635	0.0651	0.0651	2.6145	1.3247	0.6313	0.4293	0.3189
D to Q↑	0.0808	0.0722	0.0614	0.0642	0.0627	3.4771	1.7373	0.8558	0.5841	0.4357
G to Q↓	0.0968	0.0859	0.0737	0.0695	0.0676	2.6120	1.3231	0.6304	0.4287	0.3186
G to Q↑	0.1154	0.1076	0.0877	0.0839	0.0792	3.4830	1.7382	0.8562	0.5841	0.4355
RN to Q↓	0.0604	0.0501	0.0427	0.0417	0.0415	2.5081	1.2873	0.6158	0.4208	0.3117
RN to Q↑	0.0864	0.0767	0.0653	0.0663	0.0645	3.4769	1.7370	0.8559	0.5840	0.4355

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to Q↓	0.1332	0.1152	0.1022	0.1030	0.1026	4.2406	2.1495	0.9967	0.6692	0.4947
D to Q↑	0.1393	0.1260	0.1068	0.1103	0.1065	5.1858	2.5838	1.2622	0.8521	0.6346
G to Q↓	0.1578	0.1402	0.1212	0.1127	0.1091	4.2407	2.1498	0.9965	0.6692	0.4946
G to Q↑	0.1933	0.1805	0.1478	0.1397	0.1312	5.2033	2.5888	1.2640	0.8527	0.6350



Propagation Delay at 125C, 1.10V Worst process

RN to Q↓	0.0924	0.0771	0.0654	0.0631	0.0626	4.0571	2.0845	0.9682	0.6542	0.4821
RN to Q↑	0.1502	0.1352	0.1147	0.1150	0.1107	5.1879	2.5843	1.2623	0.8522	0.6345

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to Q↓	0.1223	0.1058	0.0939	0.0949	0.0946	3.9153	1.9820	0.9227	0.6204	0.4590
D to Q↑	0.1267	0.1143	0.0970	0.1005	0.0972	4.8230	2.3954	1.1710	0.7914	0.5896
G to Q↓	0.1449	0.1287	0.1112	0.1036	0.1004	3.9153	1.9821	0.9227	0.6205	0.4590
G to Q↑	0.1767	0.1647	0.1349	0.1276	0.1200	4.8384	2.4012	1.1727	0.7922	0.5899
RN to Q↓	0.0858	0.0716	0.0609	0.0589	0.0584	3.7483	1.9219	0.8963	0.6067	0.4474
RN to Q↑	0.1369	0.1228	0.1043	0.1048	0.1011	4.8243	2.3967	1.1712	0.7916	0.5896

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_falling to G	-0.0226	-0.0124	-0.0072	-0.0119	-0.0122
D↑	hold_falling to G	0.0017	0.0069	0.0121	0.0071	0.0071
D↓	setup_falling to G	0.0676	0.0577	0.0577	0.0624	0.0624
D↑	setup_falling to G	0.0488	0.0388	0.0387	0.0435	0.0435
G	min_pulse_width_high	0.075	0.07	0.06	0.06	0.06
RN	min_pulse_width_low	0.055	0.045	0.035	0.035	0.035
RN↑	recovery_falling to G	0.0581	0.0483	0.0385	0.0433	0.0481
RN↑	removal_falling to G	-0.0278	-0.0181	-0.0131	-0.0178	-0.0176

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_falling to G	-0.0535	-0.0383	-0.0332	-0.0382	-0.0382
D↑	hold_falling to G	-0.0294	-0.0148	-0.0047	-0.0144	-0.0142
D↓	setup_falling to G	0.1037	0.0881	0.0835	0.0884	0.0930
D↑	setup_falling to G	0.0850	0.0800	0.0653	0.0753	0.0747
G	min_pulse_width_high	0.135	0.125	0.095	0.09	0.09

Timing Constraints (ns) at 125C, 1.10V Worst process

RN	min_pulse_width_low	0.075	0.065	0.055	0.05	0.05
RN↑	recovery_falling to G	0.1003	0.0853	0.0753	0.0798	0.0797
RN↑	removal_falling to G	-0.0598	-0.0450	-0.0302	-0.0392	-0.0392

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_falling to G	-0.0479	-0.0328	-0.0276	-0.0326	-0.0326
D↑	hold_falling to G	-0.0238	-0.0093	0.0010	-0.0090	-0.0090
D↓	setup_falling to G	0.0931	0.0831	0.0831	0.0829	0.0834
D↑	setup_falling to G	0.0847	0.0702	0.0597	0.0697	0.0697
G	min_pulse_width_high	0.125	0.11	0.085	0.085	0.08
RN	min_pulse_width_low	0.075	0.06	0.05	0.045	0.045
RN↑	recovery_falling to G	0.0944	0.0844	0.0698	0.0742	0.0742
RN↑	removal_falling to G	-0.0543	-0.0347	-0.0292	-0.0342	-0.0340

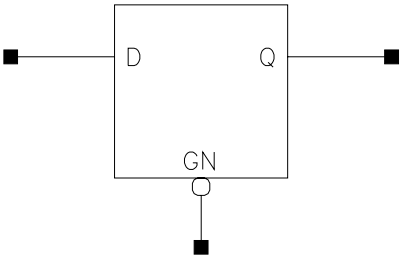


HS65_LS_LDLQ

Cell Description

D Latch with Active Low Transparent, Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	GN	IQ	IQ
D	0	-	D
-	1	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.60	6.7600
X9	2.6	2.60	6.7600
X18	2.6	2.80	7.2800
X27	2.6	4.20	10.9200
X35	2.6	4.20	10.9200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	3.288e-07	6.439e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X9	3.957e-07	9.104e-10
X18	7.014e-07	1.621e-09
X27	9.853e-07	2.420e-09
X35	1.295e-06	3.197e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	8.355e-05	5.044e-08
X9	1.051e-04	5.552e-08
X18	1.985e-04	7.154e-08
X27	2.812e-04	1.002e-07
X35	3.771e-04	1.147e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	7.402e-05	4.503e-08
X9	9.255e-05	4.866e-08
X18	1.737e-04	6.021e-08
X27	2.457e-04	8.387e-08
X35	3.291e-04	9.400e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
D (stable)	1.754e-04	2.910e-04	5.466e-04	1.421e-03	1.345e-03
GN (stable)	6.727e-03	6.995e-03	9.577e-03	1.226e-02	1.434e-02
D to Q	9.750e-03	1.237e-02	2.003e-02	2.833e-02	3.671e-02
GN to Q	1.699e-02	1.931e-02	2.918e-02	3.932e-02	4.895e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
D (stable)	-7.580e-05	-1.240e-04	-2.368e-04	-5.426e-04	-5.334e-04
GN (stable)	4.870e-05	4.926e-05	4.776e-05	4.713e-05	4.693e-05
D to Q	-2.972e-05	-3.673e-05	-5.321e-05	-9.347e-05	-9.769e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

GN to Q	-1.503e-04	-3.058e-04	3.730e-04	1.308e-03	1.440e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
D	0.0010	0.0014	0.0020	0.0031	0.0039
GN	0.0010	0.0010	0.0015	0.0018	0.0022

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to Q↓	0.0792	0.0677	0.0612	0.0617	0.0601	2.5560	1.3054	0.6231	0.4234	0.3132
D to Q↑	0.0593	0.0520	0.0451	0.0466	0.0457	3.1616	1.6614	0.8352	0.5688	0.4228
GN to Q↓	0.1209	0.1125	0.0929	0.0865	0.0816	2.5542	1.3041	0.6222	0.4227	0.3127
GN to Q↑	0.0866	0.0821	0.0655	0.0625	0.0601	3.1665	1.6619	0.8358	0.5692	0.4226

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to Q↓	0.1267	0.1086	0.0971	0.0965	0.0944	4.1105	2.1117	0.9680	0.6572	0.4819
D to Q↑	0.0989	0.0870	0.0735	0.0763	0.0745	4.6379	2.4535	1.2094	0.8221	0.6085
GN to Q↓	0.1939	0.1802	0.1491	0.1372	0.1303	4.1121	2.1117	0.9677	0.6571	0.4819
GN to Q↑	0.1386	0.1305	0.1028	0.0979	0.0942	4.6420	2.4556	1.2109	0.8235	0.6088

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to Q↓	0.1163	0.0997	0.0893	0.0891	0.0870	3.8011	1.9474	0.8979	0.6095	0.4476
D to Q↑	0.0905	0.0796	0.0675	0.0701	0.0685	4.3146	2.2761	1.1236	0.7646	0.5660



Propagation Delay at 125C, 1.15V Worst process

GN to Q↓	0.1782	0.1655	0.1370	0.1263	0.1199	3.8028	1.9474	0.8979	0.6096	0.4475
GN to Q↑	0.1274	0.1199	0.0947	0.0902	0.0868	4.3189	2.2788	1.1255	0.7656	0.5663

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_rising to GN	-0.0032	0.0071	0.0070	0.0023	0.0023
D↑	hold_rising to GN	-0.0067	-0.0014	0.0038	-0.0012	-0.0010
D↓	setup_rising to GN	0.0486	0.0384	0.0436	0.0384	0.0434
D↑	setup_rising to GN	0.0521	0.0419	0.0416	0.0417	0.0417
GN	min_pulse_width_low	0.085	0.075	0.07	0.06	0.06

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_rising to GN	-0.0197	-0.0041	-0.0043	-0.0046	-0.0091
D↑	hold_rising to GN	-0.0288	-0.0188	-0.0132	-0.0181	-0.0181
D↓	setup_rising to GN	0.0794	0.0499	0.0644	0.0598	0.0647
D↑	setup_rising to GN	0.0838	0.0738	0.0635	0.0684	0.0684
GN	min_pulse_width_low	0.135	0.115	0.105	0.09	0.09

Timing Constraints (ns) at 125C, 1.15V Worst process

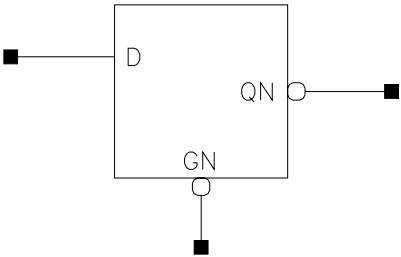
Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_rising to GN	-0.0189	0.0013	-0.0037	-0.0035	-0.0085
D↑	hold_rising to GN	-0.0232	-0.0179	-0.0128	-0.0129	-0.0124
D↓	setup_rising to GN	0.0692	0.0492	0.0592	0.0542	0.0637
D↑	setup_rising to GN	0.0788	0.0683	0.0584	0.0630	0.0629
GN	min_pulse_width_low	0.125	0.105	0.095	0.08	0.08

HS65_LS_LDLQN

Cell Description

D Latch with Active Low Transparent; QN Output Only

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

D	GN	IQ	IQ
D	0	-	D
-	1	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.20	5.7200
X9	2.6	2.80	7.2800
X18	2.6	2.80	7.2800
X27	2.6	4.00	10.4000
X35	2.6	4.20	10.9200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	3.384e-07	7.105e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X9	4.065e-07	9.326e-10
X18	7.279e-07	1.843e-09
X27	1.044e-06	2.687e-09
X35	1.409e-06	3.575e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	8.549e-05	4.770e-08
X9	1.078e-04	5.800e-08
X18	2.063e-04	7.416e-08
X27	2.982e-04	1.029e-07
X35	4.129e-04	1.208e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	7.571e-05	4.226e-08
X9	9.492e-05	5.086e-08
X18	1.804e-04	6.210e-08
X27	2.604e-04	8.528e-08
X35	3.600e-04	9.832e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
D (stable)	1.767e-04	2.845e-04	5.308e-04	1.261e-03	1.082e-03
GN (stable)	6.170e-03	7.708e-03	8.979e-03	1.234e-02	1.523e-02
D to QN	9.655e-03	1.289e-02	2.086e-02	3.110e-02	3.896e-02
GN to QN	1.602e-02	2.104e-02	2.959e-02	4.227e-02	5.273e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
D (stable)	-7.480e-05	-1.212e-04	-2.258e-04	-5.131e-04	-4.573e-04
GN (stable)	8.863e-05	4.870e-05	4.720e-05	4.663e-05	4.663e-05
D to QN	-3.872e-05	-3.661e-05	-4.961e-05	-9.073e-05	-7.982e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

GN to QN	-1.867e-04	2.042e-04	3.333e-04	1.318e-03	1.080e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
D	0.0009	0.0013	0.0020	0.0032	0.0041
GN	0.0011	0.0012	0.0015	0.0019	0.0022

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to QN↓	0.0795	0.0765	0.0648	0.0650	0.0613	2.2841	1.2466	0.6035	0.4105	0.3023
D to QN↑	0.0945	0.0838	0.0745	0.0751	0.0685	3.0700	1.6597	0.8307	0.5628	0.4176
GN to QN↓	0.1030	0.1108	0.0842	0.0796	0.0760	2.2841	1.2474	0.6037	0.4108	0.3026
GN to QN↑	0.1317	0.1337	0.1046	0.0998	0.0941	3.0750	1.6596	0.8304	0.5628	0.4175

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to QN↓	0.1331	0.1271	0.1064	0.1071	0.1003	3.6628	1.9926	0.9335	0.6363	0.4634
D to QN↑	0.1510	0.1340	0.1197	0.1198	0.1087	4.4740	2.4257	1.2005	0.8127	0.5990
GN to QN↓	0.1667	0.1762	0.1339	0.1267	0.1207	3.6649	1.9951	0.9340	0.6369	0.4636
GN to QN↑	0.2114	0.2130	0.1691	0.1604	0.1507	4.4794	2.4265	1.2006	0.8133	0.5992

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to QN↓	0.1222	0.1166	0.0978	0.0986	0.0923	3.3875	1.8408	0.8665	0.5902	0.4307
D to QN↑	0.1390	0.1234	0.1102	0.1104	0.1003	4.1573	2.2531	1.1156	0.7558	0.5572



Propagation Delay at 125C, 1.15V Worst process

GN to QN↓	0.1534	0.1620	0.1233	0.1166	0.1112	3.3894	1.8425	0.8669	0.5907	0.4308
GN to QN↑	0.1945	0.1959	0.1554	0.1474	0.1386	4.1660	2.2543	1.1158	0.7560	0.5572

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_rising to GN	-0.0086	0.0117	0.0073	0.0073	0.0125
D↑	hold_rising to GN	-0.0117	-0.0016	0.0041	0.0040	0.0041
D↓	setup_rising to GN	0.0476	0.0229	0.0274	0.0277	0.0222
D↑	setup_rising to GN	0.0468	0.0364	0.0309	0.0310	0.0309
GN	min_pulse_width_low	0.075	0.07	0.05	0.045	0.045

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_rising to GN	-0.0294	0.0056	0.0007	0.0009	0.0059
D↑	hold_rising to GN	-0.0388	-0.0237	-0.0128	-0.0177	-0.0081
D↓	setup_rising to GN	0.0698	0.0344	0.0388	0.0393	0.0337
D↑	setup_rising to GN	0.0788	0.0635	0.0528	0.0529	0.0481
GN	min_pulse_width_low	0.125	0.11	0.08	0.075	0.07

Timing Constraints (ns) at 125C, 1.15V Worst process

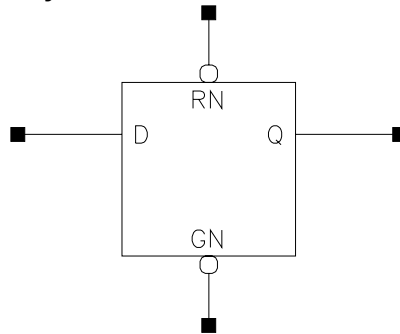
Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_rising to GN	-0.0246	0.0056	0.0014	0.0014	0.0066
D↑	hold_rising to GN	-0.0332	-0.0184	-0.0076	-0.0125	-0.0076
D↓	setup_rising to GN	0.0637	0.0334	0.0336	0.0336	0.0331
D↑	setup_rising to GN	0.0733	0.0579	0.0471	0.0520	0.0424
GN	min_pulse_width_low	0.115	0.1	0.075	0.07	0.065

HS65_LS_LDLRQ

Cell Description

D Latch with Active Low Transparent, Preset
Active Low, Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	GN	RN	IQ	IQ
-	-	0	-	0
D	0	1	-	D
-	1	1	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.80	7.2800
X9	2.6	2.80	7.2800
X18	2.6	3.40	8.8400
X27	2.6	4.60	11.9600
X35	2.6	4.80	12.4800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X4	2.779e-07	7.860e-10
X9	3.552e-07	1.146e-09
X18	6.075e-07	2.132e-09
X27	8.909e-07	3.118e-09
X35	1.152e-06	4.050e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	6.985e-05	5.474e-08
X9	9.140e-05	6.213e-08
X18	1.634e-04	8.585e-08
X27	2.435e-04	1.172e-07
X35	3.192e-04	1.366e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	6.195e-05	4.852e-08
X9	8.060e-05	5.380e-08
X18	1.432e-04	7.168e-08
X27	2.131e-04	9.680e-08
X35	2.789e-04	1.106e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
D (stable)	1.095e-04	1.825e-04	3.369e-04	7.836e-04	1.058e-03
GN (stable)	6.586e-03	7.371e-03	9.830e-03	1.291e-02	1.573e-02
RN (stable)	6.626e-05	8.617e-05	1.372e-04	2.329e-04	2.456e-04
D to Q	1.036e-02	1.376e-02	2.017e-02	3.127e-02	4.000e-02
GN to Q	1.713e-02	2.111e-02	2.942e-02	4.221e-02	5.250e-02
RN to Q	1.149e-02	1.521e-02	2.216e-02	3.343e-02	4.247e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	-4.189e-05	-6.748e-05	-1.242e-04	-2.807e-04	-3.888e-04
GN (stable)	2.266e-05	2.188e-05	2.008e-05	8.154e-05	1.617e-05
RN (stable)	0.000e+00	-8.696e-07	-8.696e-07	4.130e-06	-7.392e-07
D to Q	-7.870e-06	-9.591e-06	-1.534e-05	-3.056e-05	-3.469e-05
GN to Q	-4.617e-04	-3.877e-04	3.175e-05	2.614e-06	2.948e-05
RN to Q	-7.000e-06	-7.983e-06	-1.125e-05	-2.238e-05	-2.464e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
D	0.0010	0.0013	0.0020	0.0032	0.0039
GN	0.0010	0.0009	0.0015	0.0019	0.0022
RN	0.0012	0.0015	0.0020	0.0032	0.0039

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to Q↓	0.0868	0.0740	0.0629	0.0650	0.0651	2.6576	1.3203	0.6287	0.4287	0.3187
D to Q↑	0.0844	0.0746	0.0614	0.0647	0.0630	3.4802	1.7468	0.8594	0.5847	0.4355
GN to Q↓	0.1268	0.1199	0.0944	0.0890	0.0865	2.6541	1.3187	0.6278	0.4280	0.3183
GN to Q↑	0.1067	0.1013	0.0771	0.0739	0.0733	3.4912	1.7499	0.8602	0.5845	0.4354
RN to Q↓	0.0621	0.0513	0.0429	0.0422	0.0416	2.5257	1.2777	0.6137	0.4195	0.3121
RN to Q↑	0.0897	0.0795	0.0650	0.0669	0.0648	3.4842	1.7476	0.8595	0.5845	0.4353

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to Q↓	0.1396	0.1192	0.1009	0.1028	0.1027	4.3160	2.1219	0.9896	0.6668	0.4946
D to Q↑	0.1453	0.1302	0.1065	0.1107	0.1068	5.2093	2.6080	1.2642	0.8528	0.6340
GN to Q↓	0.2041	0.1927	0.1528	0.1426	0.1387	4.3146	2.1219	0.9895	0.6663	0.4945
GN to Q↑	0.1754	0.1660	0.1262	0.1197	0.1178	5.2307	2.6143	1.2661	0.8533	0.6347



Propagation Delay at 125C, 1.10V Worst process

RN to Q↓	0.0955	0.0791	0.0657	0.0639	0.0627	4.0964	2.0482	0.9624	0.6507	0.4829
RN to Q↑	0.1558	0.1401	0.1141	0.1158	0.1111	5.2132	2.6083	1.2643	0.8527	0.6343

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D to Q↓	0.1281	0.1094	0.0928	0.0947	0.0947	3.9851	1.9597	0.9167	0.6186	0.4588
D to Q↑	0.1322	0.1181	0.0968	0.1010	0.0975	4.8405	2.4170	1.1731	0.7921	0.5892
GN to Q↓	0.1873	0.1769	0.1402	0.1310	0.1274	3.9841	1.9600	0.9165	0.6181	0.4587
GN to Q↑	0.1604	0.1516	0.1154	0.1097	0.1080	4.8619	2.4245	1.1748	0.7927	0.5896
RN to Q↓	0.0885	0.0734	0.0612	0.0596	0.0585	3.7806	1.8915	0.8915	0.6037	0.4482
RN to Q↑	0.1419	0.1273	0.1037	0.1057	0.1015	4.8435	2.4181	1.1736	0.7924	0.5893

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_rising to GN	-0.0084	0.0068	0.0070	0.0020	-0.0032
D↑	hold_rising to GN	-0.0273	-0.0174	-0.0115	-0.0167	-0.0167
D↓	setup_rising to GN	0.0586	0.0438	0.0384	0.0482	0.0484
D↑	setup_rising to GN	0.0776	0.0725	0.0623	0.0670	0.0622
GN	min_pulse_width_low	0.09	0.085	0.07	0.07	0.065
RN	min_pulse_width_low	0.055	0.045	0.035	0.035	0.035
RN↑	recovery_rising to GN	0.0823	0.0773	0.0624	0.0668	0.0671
RN↑	removal_rising to GN	-0.0519	-0.0469	-0.0367	-0.0365	-0.0365

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_rising to GN	-0.0344	-0.0095	-0.0043	-0.0092	-0.0147
D↑	hold_rising to GN	-0.0640	-0.0593	-0.0435	-0.0488	-0.0483
D↓	setup_rising to GN	0.0847	0.0649	0.0645	0.0697	0.0748
D↑	setup_rising to GN	0.1341	0.1195	0.0989	0.1088	0.1037
GN	min_pulse_width_low	0.15	0.15	0.11	0.11	0.105

Timing Constraints (ns) at 125C, 1.10V Worst process

RN	min_pulse_width_low	0.08	0.065	0.055	0.05	0.05
RN↑	recovery_rising to GN	0.1441	0.1294	0.1089	0.1137	0.1086
RN↑	removal_rising to GN	-0.0939	-0.0840	-0.0690	-0.0737	-0.0687

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
D↓	hold_rising to GN	-0.0287	-0.0044	-0.0037	-0.0085	-0.0137
D↑	hold_rising to GN	-0.0584	-0.0485	-0.0379	-0.0432	-0.0381
D↓	setup_rising to GN	0.0843	0.0594	0.0589	0.0687	0.0692
D↑	setup_rising to GN	0.1235	0.1089	0.0887	0.0986	0.0936
GN	min_pulse_width_low	0.14	0.135	0.1	0.1	0.095
RN	min_pulse_width_low	0.075	0.06	0.05	0.05	0.045
RN↑	recovery_rising to GN	0.1335	0.1189	0.0984	0.1036	0.0981
RN↑	removal_rising to GN	-0.0837	-0.0785	-0.0634	-0.0677	-0.0626

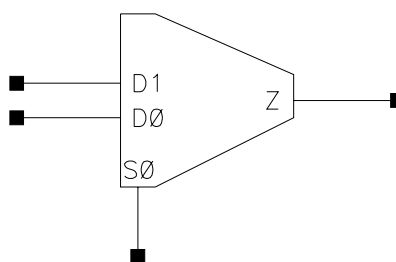


HS65_LS_MUX21

Cell Description

2:1 Non-Inverting Multiplexer

Logical Symbol



Functions

D0	D1	S0	Z
D0	-	0	D0
-	D1	1	D1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.60	4.1600
X9	2.6	1.80	4.6800
X18	2.6	2.40	6.2400
X27	2.6	3.60	9.3600
X35	2.6	4.00	10.4000
X44	2.6	5.60	14.5600
X53	2.6	5.80	15.0800
X62	2.6	7.20	18.7200
X71	2.6	7.40	19.2400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	3.068e-07	7.660e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X9	4.551e-07	1.266e-09
X18	9.153e-07	2.498e-09
X27	1.367e-06	3.780e-09
X35	1.824e-06	4.963e-09
X44	2.332e-06	6.278e-09
X53	2.794e-06	7.477e-09
X62	3.318e-06	8.593e-09
X71	3.759e-06	9.792e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	7.919e-05	4.348e-08
X9	1.252e-04	5.423e-08
X18	2.692e-04	8.317e-08
X27	3.943e-04	1.204e-07
X35	5.401e-04	1.472e-07
X44	6.863e-04	1.869e-07
X53	8.315e-04	2.116e-07
X62	9.860e-04	2.466e-07
X71	1.128e-03	2.707e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	7.003e-05	3.778e-08
X9	1.097e-04	4.569e-08
X18	2.347e-04	6.724e-08
X27	3.441e-04	9.650e-08
X35	4.705e-04	1.162e-07
X44	5.986e-04	1.478e-07
X53	7.245e-04	1.654e-07
X62	8.595e-04	1.934e-07
X71	9.826e-04	2.106e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
D0 (stable)	1.816e-03	2.129e-03	4.058e-03	6.217e-03	7.405e-03
D1 (stable)	1.834e-03	2.177e-03	3.788e-03	6.366e-03	7.876e-03
S0 (stable)	2.842e-03	2.829e-03	3.682e-03	5.311e-03	6.988e-03
D0 to Z	7.549e-03	1.011e-02	1.829e-02	2.879e-02	3.786e-02
D1 to Z	7.486e-03	1.011e-02	1.823e-02	2.787e-02	3.728e-02
S0 to Z	8.949e-03	1.136e-02	1.880e-02	2.875e-02	3.867e-02
Pin Cycle (vdd)	X44	X53	X62	X71	
D0 (stable)	1.054e-02	1.193e-02	1.248e-02	1.389e-02	
D1 (stable)	8.905e-03	1.026e-02	1.343e-02	1.481e-02	
S0 (stable)	8.775e-03	9.999e-03	1.149e-02	1.254e-02	
D0 to Z	4.719e-02	5.497e-02	6.493e-02	7.283e-02	
D1 to Z	4.480e-02	5.250e-02	6.465e-02	7.248e-02	
S0 to Z	4.648e-02	5.453e-02	6.549e-02	7.307e-02	

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
D0 (stable)	4.350e-07	-6.500e-08	-1.000e-06	-5.650e-07	-1.130e-06
D1 (stable)	0.000e+00	4.350e-07	-3.690e-07	-1.566e-06	-1.195e-06
S0 (stable)	-1.739e-06	-1.304e-06	-1.304e-06	-3.108e-06	-3.913e-06
D0 to Z	-9.050e-07	-1.893e-06	-2.750e-06	-3.750e-06	-5.685e-06
D1 to Z	-1.500e-07	-8.850e-07	-2.012e-06	-2.870e-06	-4.980e-06
S0 to Z	-1.769e-06	-3.191e-06	-4.423e-06	-6.724e-06	-7.592e-06
Pin Cycle (vdds)	X44	X53	X62	X71	
D0 (stable)	-1.395e-06	-2.530e-06	-1.390e-06	-1.085e-06	
D1 (stable)	-7.850e-07	2.600e-07	-1.825e-06	-8.700e-07	
S0 (stable)	-4.479e-06	-6.283e-06	-5.848e-06	-5.783e-06	
D0 to Z	-6.945e-06	-9.055e-06	-9.010e-06	-7.470e-06	
D1 to Z	-5.880e-06	-7.815e-06	-8.705e-06	-6.505e-06	
S0 to Z	-9.852e-06	-1.233e-05	-1.377e-05	-1.527e-05	

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
D0	0.0011	0.0014	0.0021	0.0036	0.0042
D1	0.0011	0.0015	0.0023	0.0036	0.0042
S0	0.0016	0.0024	0.0031	0.0040	0.0047
Pin	X44	X53	X62	X71	
D0	0.0053	0.0061	0.0073	0.0081	
D1	0.0055	0.0061	0.0073	0.0081	
S0	0.0066	0.0073	0.0085	0.0093	

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D0 to Z↓	0.0691	0.0565	0.0505	0.0520	0.0517	2.5863	1.2732	0.6164	0.4232	0.3153
D0 to Z↑	0.0565	0.0468	0.0427	0.0457	0.0444	3.3887	1.6660	0.8316	0.5676	0.4234
D1 to Z↓	0.0695	0.0571	0.0515	0.0521	0.0523	2.5843	1.2713	0.6164	0.4223	0.3149
D1 to Z↑	0.0567	0.0462	0.0409	0.0423	0.0421	3.4028	1.6690	0.8301	0.5659	0.4222
S0 to Z↓	0.0637	0.0547	0.0477	0.0490	0.0497	2.5852	1.2702	0.6151	0.4220	0.3147
S0 to Z↑	0.0584	0.0521	0.0446	0.0469	0.0471	3.3999	1.6688	0.8308	0.5670	0.4230
	X44	X53	X62	X71		X44	X53	X62	X71	
D0 to Z↓	0.0507	0.0502	0.0512	0.0511		0.2522	0.2122	0.1878	0.1671	
D0 to Z↑	0.0439	0.0433	0.0430	0.0424		0.3411	0.2849	0.2478	0.2175	
D1 to Z↓	0.0491	0.0492	0.0520	0.0518		0.2510	0.2111	0.1878	0.1670	
D1 to Z↑	0.0402	0.0395	0.0419	0.0414		0.3395	0.2840	0.2474	0.2176	
S0 to Z↓	0.0462	0.0461	0.0482	0.0480		0.2509	0.2112	0.1876	0.1668	
S0 to Z↑	0.0449	0.0442	0.0454	0.0448		0.3406	0.2846	0.2474	0.2176	

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35

Propagation Delay at 125C, 1.10V Worst process

D0 to Z↓	0.1124	0.0915	0.0816	0.0836	0.0830	4.1917	2.0341	0.9549	0.6532	0.4845
D0 to Z↑	0.0922	0.0764	0.0689	0.0739	0.0708	4.9880	2.4407	1.2006	0.8178	0.6084
D1 to Z↓	0.1131	0.0925	0.0829	0.0837	0.0840	4.1897	2.0322	0.9553	0.6518	0.4840
D1 to Z↑	0.0921	0.0752	0.0654	0.0678	0.0668	5.0027	2.4443	1.1984	0.8145	0.6066
S0 to Z↓	0.1055	0.0899	0.0784	0.0803	0.0811	4.1908	2.0321	0.9543	0.6517	0.4839
S0 to Z↑	0.0924	0.0819	0.0697	0.0734	0.0730	5.0007	2.4454	1.1999	0.8167	0.6080
	X44	X53	X62	X71		X44	X53	X62	X71	
D0 to Z↓	0.0810	0.0801	0.0817	0.0813		0.3854	0.3240	0.2868	0.2551	
D0 to Z↑	0.0702	0.0690	0.0682	0.0671		0.4884	0.4081	0.3545	0.3117	
D1 to Z↓	0.0784	0.0783	0.0831	0.0827		0.3838	0.3226	0.2866	0.2549	
D1 to Z↑	0.0636	0.0622	0.0660	0.0650		0.4869	0.4063	0.3540	0.3112	
S0 to Z↓	0.0750	0.0743	0.0776	0.0773		0.3840	0.3228	0.2863	0.2547	
S0 to Z↑	0.0693	0.0680	0.0698	0.0685		0.4875	0.4075	0.3544	0.3115	

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D0 to Z↓	0.1029	0.0838	0.0748	0.0767	0.0761	3.8755	1.8796	0.8865	0.6066	0.4503
D0 to Z↑	0.0846	0.0701	0.0634	0.0679	0.0651	4.6456	2.2681	1.1160	0.7607	0.5660
D1 to Z↓	0.1034	0.0848	0.0760	0.0768	0.0771	3.8715	1.8774	0.8867	0.6051	0.4498
D1 to Z↑	0.0845	0.0690	0.0602	0.0624	0.0616	4.6591	2.2703	1.1143	0.7576	0.5644
S0 to Z↓	0.0965	0.0824	0.0719	0.0737	0.0744	3.8732	1.8774	0.8858	0.6052	0.4496
S0 to Z↑	0.0849	0.0753	0.0642	0.0676	0.0673	4.6534	2.2716	1.1155	0.7596	0.5656
	X44	X53	X62	X71		X44	X53	X62	X71	
D0 to Z↓	0.0744	0.0736	0.0751	0.0747		0.3583	0.3014	0.2668	0.2373	
D0 to Z↑	0.0646	0.0636	0.0629	0.0619		0.4544	0.3796	0.3297	0.2899	
D1 to Z↓	0.0721	0.0719	0.0764	0.0760		0.3569	0.3000	0.2666	0.2372	
D1 to Z↑	0.0587	0.0575	0.0609	0.0600		0.4530	0.3780	0.3295	0.2897	
S0 to Z↓	0.0690	0.0684	0.0714	0.0711		0.3571	0.3002	0.2665	0.2369	
S0 to Z↑	0.0640	0.0628	0.0644	0.0633		0.4535	0.3792	0.3299	0.2899	



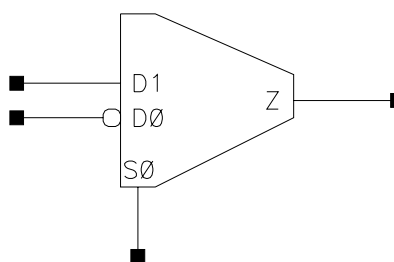


HS65_LS_MUX2I1

Cell Description

2:1 Non-Inverting Multiplexer, D0 Input Inverted

Logical Symbol



Functions

D0	D1	S0	Z
D0	-	0	!D0
-	D1	1	D1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X3	2.6	1.60	4.1600
X6	2.6	1.60	4.1600
X12	2.6	2.60	6.7600
X18	2.6	4.00	10.4000
X24	2.6	4.80	12.4800
X30	2.6	6.00	15.6000
X36	2.6	6.80	17.6800
X42	2.6	8.20	21.3200
X48	2.6	9.00	23.4000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X3	1.869e-07	4.913e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X6	3.407e-07	1.008e-09
X12	6.560e-07	1.940e-09
X18	1.033e-06	2.923e-09
X24	1.372e-06	3.872e-09
X30	1.746e-06	4.871e-09
X36	2.083e-06	5.754e-09
X42	2.460e-06	6.753e-09
X48	2.798e-06	7.719e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X3	4.896e-05	3.740e-08
X6	9.594e-05	4.541e-08
X12	1.884e-04	7.336e-08
X18	2.985e-04	1.059e-07
X24	4.006e-04	1.305e-07
X30	5.082e-04	1.622e-07
X36	6.107e-04	1.867e-07
X42	7.194e-04	2.189e-07
X48	8.225e-04	2.435e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X3	4.320e-05	3.338e-08
X6	8.394e-05	3.875e-08
X12	1.646e-04	6.078e-08
X18	2.608e-04	8.715e-08
X24	3.498e-04	1.059e-07
X30	4.440e-04	1.314e-07
X36	5.333e-04	1.502e-07
X42	6.285e-04	1.762e-07
X48	7.183e-04	1.951e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X3	X6	X12	X18	X24
D0 to Z	2.973e-03	4.152e-03	8.048e-03	1.267e-02	1.651e-02
D1 to Z	8.122e-03	1.221e-02	2.351e-02	3.477e-02	4.599e-02
S0 to Z	6.059e-03	9.157e-03	1.797e-02	2.707e-02	3.578e-02
Pin Cycle (vdd)	X30	X36	X42	X48	
D0 to Z	2.118e-02	2.461e-02	2.931e-02	3.270e-02	
D1 to Z	5.871e-02	6.922e-02	8.026e-02	9.090e-02	
S0 to Z	4.514e-02	5.337e-02	6.228e-02	7.067e-02	

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X3	X6	X12	X18	X24
D0 to Z	9.285e-07	3.106e-06	6.885e-06	1.050e-05	1.219e-05
D1 to Z	4.514e-06	1.263e-05	3.016e-05	1.358e-05	2.220e-05
S0 to Z	-9.020e-06	-1.798e-05	-3.594e-05	-4.966e-05	-6.742e-05
Pin Cycle (vdds)	X30	X36	X42	X48	
D0 to Z	1.435e-05	1.551e-05	1.975e-05	1.194e-05	
D1 to Z	2.322e-05	2.778e-05	3.665e-05	4.323e-05	
S0 to Z	-8.103e-05	-9.999e-05	-1.169e-04	-1.281e-04	

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X3	X6	X12	X18	X24
D0	0.0012	0.0019	0.0035	0.0051	0.0070
D1	0.0010	0.0015	0.0022	0.0034	0.0042
S0	0.0021	0.0030	0.0052	0.0077	0.0102
Pin	X30	X36	X42	X48	
D0	0.0086	0.0105	0.0122	0.0141	
D1	0.0054	0.0063	0.0074	0.0083	
S0	0.0124	0.0151	0.0172	0.0199	

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X12	X18	X24	X3	X6	X12	X18	X24
D0 to Z↓	0.0184	0.0139	0.0143	0.0146	0.0143	4.1504	1.9644	1.0506	0.6981	0.5221
D0 to Z↑	0.0239	0.0194	0.0192	0.0198	0.0195	6.1020	3.2528	1.6722	1.1196	0.8306
D1 to Z↓	0.0536	0.0439	0.0430	0.0414	0.0417	3.7397	1.8817	0.9682	0.6307	0.4775
D1 to Z↑	0.0533	0.0449	0.0414	0.0415	0.0415	3.1020	1.6437	0.8268	0.5579	0.4159
S0 to Z↓	0.0434	0.0349	0.0348	0.0344	0.0345	4.0624	1.9701	1.0377	0.6844	0.5143
S0 to Z↑	0.0459	0.0390	0.0372	0.0379	0.0378	4.9347	2.6402	1.3560	0.9079	0.6728
	X30	X36	X42	X48		X30	X36	X42	X48	
D0 to Z↓	0.0146	0.0142	0.0146	0.0148		0.4209	0.3492	0.3019	0.2635	
D0 to Z↑	0.0199	0.0194	0.0198	0.0199		0.6780	0.5600	0.4860	0.4223	
D1 to Z↓	0.0422	0.0422	0.0417	0.0419		0.3814	0.3204	0.2735	0.2420	
D1 to Z↑	0.0423	0.0421	0.0414	0.0416		0.3356	0.2796	0.2410	0.2114	
S0 to Z↓	0.0346	0.0346	0.0346	0.0347		0.4136	0.3445	0.2967	0.2600	
S0 to Z↑	0.0379	0.0377	0.0377	0.0377		0.5477	0.4533	0.3932	0.3420	

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X12	X18	X24	X3	X6	X12	X18	X24
D0 to Z↓	0.0306	0.0230	0.0234	0.0237	0.0231	7.1265	3.2655	1.7377	1.1339	0.8386
D0 to Z↑	0.0353	0.0287	0.0283	0.0290	0.0284	9.2155	4.9215	2.5108	1.6651	1.2373
D1 to Z↓	0.0856	0.0691	0.0681	0.0648	0.0652	6.4696	3.1569	1.6203	1.0327	0.7805
D1 to Z↑	0.0874	0.0738	0.0672	0.0670	0.0665	4.5045	2.3792	1.1955	0.7989	0.5928
S0 to Z↓	0.0686	0.0545	0.0545	0.0534	0.0533	7.0295	3.3065	1.7336	1.1219	0.8364
S0 to Z↑	0.0740	0.0632	0.0595	0.0603	0.0597	7.3471	3.9464	2.0152	1.3360	0.9910
	X30	X36	X42	X48		X30	X36	X42	X48	
D0 to Z↓	0.0236	0.0229	0.0234	0.0234		0.6769	0.5580	0.4828	0.4189	
D0 to Z↑	0.0291	0.0283	0.0290	0.0288		1.0046	0.8314	0.7180	0.6251	

Propagation Delay at 125C, 1.10V Worst process

D1 to Z↓	0.0658	0.0658	0.0647	0.0650		0.6187	0.5195	0.4416	0.3905	
D1 to Z↑	0.0678	0.0671	0.0658	0.0657		0.4792	0.3988	0.3429	0.3005	
S0 to Z↓	0.0536	0.0534	0.0531	0.0532		0.6710	0.5570	0.4788	0.4182	
S0 to Z↑	0.0600	0.0594	0.0592	0.0590		0.8036	0.6658	0.5760	0.5012	

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X12	X18	X24	X3	X6	X12	X18	X24
D0 to Z↓	0.0286	0.0215	0.0219	0.0222	0.0217	6.4925	2.9790	1.5864	1.0381	0.7690
D0 to Z↑	0.0330	0.0268	0.0264	0.0271	0.0266	8.4947	4.5259	2.3118	1.5352	1.1403
D1 to Z↓	0.0790	0.0640	0.0630	0.0601	0.0604	5.8959	2.8788	1.4778	0.9450	0.7146
D1 to Z↑	0.0806	0.0680	0.0621	0.0619	0.0615	4.1913	2.2112	1.1109	0.7431	0.5518
S0 to Z↓	0.0635	0.0506	0.0506	0.0497	0.0495	6.4054	3.0157	1.5823	1.0269	0.7665
S0 to Z↑	0.0683	0.0582	0.0549	0.0557	0.0553	6.7923	3.6389	1.8590	1.2342	0.9150
	X30	X36	X42	X48		X30	X36	X42	X48	
D0 to Z↓	0.0222	0.0215	0.0220	0.0220		0.6208	0.5122	0.4432	0.3846	
D0 to Z↑	0.0273	0.0265	0.0271	0.0270		0.9264	0.7668	0.6625	0.5767	
D1 to Z↓	0.0610	0.0610	0.0601	0.0603		0.5669	0.4762	0.4051	0.3582	
D1 to Z↑	0.0627	0.0621	0.0610	0.0609		0.4461	0.3713	0.3192	0.2797	
S0 to Z↓	0.0498	0.0496	0.0494	0.0495		0.6150	0.5105	0.4391	0.3838	
S0 to Z↑	0.0555	0.0550	0.0548	0.0546		0.7431	0.6157	0.5322	0.4631	

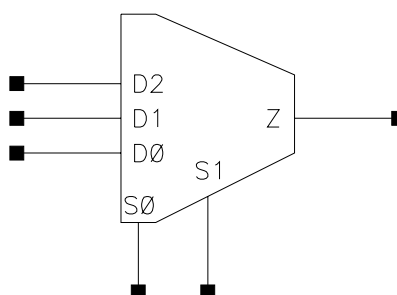


HS65_LS_MUX31

Cell Description

3:1 Non-Inverting Multiplexer

Logical Symbol



Functions

D0	D1	D2	S0	S1	Z
D0	-	-	0	0	D0
-	D1	-	1	0	D1
-	-	D2	-	1	D2

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.80	7.2800
X9	2.6	3.00	7.8000
X18	2.6	4.00	10.4000
X27	2.6	6.20	16.1200
X35	2.6	6.20	16.1200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	2.873e-07	5.912e-10
X9	4.019e-07	9.284e-10
X18	7.538e-07	1.724e-09
X27	1.145e-06	2.602e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X35	1.466e-06	3.401e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	7.283e-05	5.080e-08
X9	1.067e-04	5.932e-08
X18	2.118e-04	8.482e-08
X27	3.233e-04	1.228e-07
X35	4.250e-04	1.385e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	6.452e-05	4.576e-08
X9	9.387e-05	5.235e-08
X18	1.855e-04	7.265e-08
X27	2.829e-04	1.048e-07
X35	3.711e-04	1.156e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
D0 to Z	9.078e-03	1.190e-02	2.244e-02	3.316e-02	4.272e-02
D1 to Z	9.112e-03	1.192e-02	2.239e-02	3.306e-02	4.253e-02
D2 to Z	6.733e-03	9.344e-03	1.892e-02	2.800e-02	3.541e-02
S0 to Z	1.186e-02	1.551e-02	2.797e-02	4.158e-02	5.264e-02
S1 to Z	8.459e-03	1.119e-02	2.068e-02	3.081e-02	3.721e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
D0 to Z	-5.163e-06	-3.751e-06	-8.942e-06	-7.908e-06	-1.642e-05
D1 to Z	-4.283e-06	-3.432e-06	-5.980e-06	-2.545e-06	-1.296e-05
D2 to Z	-3.892e-06	-6.710e-06	-1.562e-05	-2.159e-05	-2.921e-05
S0 to Z	-2.532e-05	-4.025e-05	-7.766e-05	-1.251e-04	-1.525e-04
S1 to Z	6.855e-05	9.327e-05	1.950e-04	2.725e-04	4.037e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
D0	0.0011	0.0013	0.0019	0.0030	0.0036
D1	0.0009	0.0014	0.0020	0.0030	0.0037
D2	0.0010	0.0014	0.0027	0.0039	0.0038
S0	0.0019	0.0022	0.0032	0.0048	0.0052
S1	0.0018	0.0023	0.0031	0.0045	0.0048

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D0 to Z↓	0.1331	0.1070	0.1049	0.1003	0.1004	2.8154	1.3639	0.6754	0.4572	0.3399
D0 to Z↑	0.0927	0.0781	0.0719	0.0693	0.0691	3.2744	1.7240	0.8640	0.5857	0.4381
D1 to Z↓	0.1341	0.1067	0.1047	0.0999	0.0995	2.8158	1.3620	0.6748	0.4571	0.3396
D1 to Z↑	0.0930	0.0775	0.0712	0.0694	0.0671	3.2757	1.7225	0.8622	0.5860	0.4369
D2 to Z↓	0.0717	0.0615	0.0633	0.0619	0.0621	2.5316	1.2588	0.6200	0.4228	0.3147
D2 to Z↑	0.0536	0.0470	0.0479	0.0464	0.0452	3.1225	1.6645	0.8381	0.5684	0.4241
S0 to Z↓	0.1415	0.1173	0.1152	0.1107	0.1095	2.8085	1.3592	0.6736	0.4560	0.3387
S0 to Z↑	0.1057	0.0933	0.0857	0.0845	0.0814	3.2772	1.7250	0.8643	0.5864	0.4383
S1 to Z↓	0.0747	0.0669	0.0658	0.0643	0.0608	2.6360	1.2946	0.6416	0.4356	0.3242
S1 to Z↑	0.0654	0.0611	0.0592	0.0582	0.0537	3.2028	1.6952	0.8507	0.5771	0.4308

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D0 to Z↓	0.2173	0.1757	0.1725	0.1636	0.1628	4.5956	2.1995	1.0616	0.7152	0.5305
D0 to Z↑	0.1611	0.1379	0.1252	0.1195	0.1182	4.8479	2.5534	1.2636	0.8524	0.6368
D1 to Z↓	0.2190	0.1753	0.1719	0.1631	0.1617	4.5968	2.1964	1.0603	0.7153	0.5300
D1 to Z↑	0.1621	0.1370	0.1235	0.1201	0.1139	4.8475	2.5507	1.2603	0.8532	0.6340
D2 to Z↓	0.1144	0.0984	0.1008	0.0979	0.0984	4.0924	2.0093	0.9595	0.6527	0.4848



Propagation Delay at 125C, 1.10V Worst process

D2 to Z↑	0.0889	0.0787	0.0799	0.0772	0.0742	4.5562	2.4381	1.2125	0.8201	0.6106
S0 to Z↓	0.2334	0.1944	0.1916	0.1828	0.1804	4.5804	2.1910	1.0577	0.7133	0.5284
S0 to Z↑	0.1825	0.1623	0.1477	0.1441	0.1383	4.8544	2.5561	1.2645	0.8543	0.6365
S1 to Z↓	0.1242	0.1101	0.1088	0.1051	0.1001	4.3331	2.0931	1.0087	0.6829	0.5066
S1 to Z↑	0.1096	0.1028	0.0985	0.0963	0.0879	4.7153	2.5005	1.2384	0.8370	0.6237

Propagation Delay at 125C, 1.15V Worst process

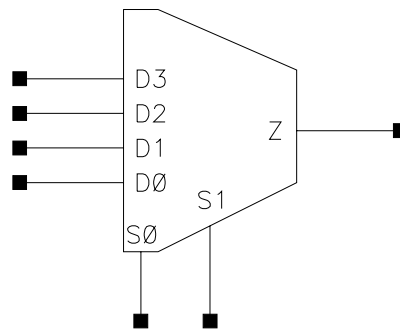
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D0 to Z↓	0.1995	0.1612	0.1581	0.1503	0.1497	4.2477	2.0320	0.9839	0.6630	0.4921
D0 to Z↑	0.1469	0.1254	0.1140	0.1091	0.1081	4.5098	2.3703	1.1738	0.7924	0.5916
D1 to Z↓	0.2010	0.1607	0.1576	0.1497	0.1486	4.2486	2.0291	0.9827	0.6631	0.4917
D1 to Z↑	0.1478	0.1246	0.1126	0.1096	0.1043	4.5114	2.3672	1.1709	0.7926	0.5894
D2 to Z↓	0.1052	0.0905	0.0928	0.0903	0.0907	3.7843	1.8570	0.8911	0.6062	0.4501
D2 to Z↑	0.0816	0.0721	0.0733	0.0709	0.0682	4.2398	2.2633	1.1270	0.7624	0.5682
S0 to Z↓	0.2143	0.1785	0.1758	0.1680	0.1660	4.2343	2.0241	0.9804	0.6616	0.4901
S0 to Z↑	0.1666	0.1479	0.1347	0.1317	0.1265	4.5162	2.3725	1.1748	0.7938	0.5921
S1 to Z↓	0.1137	0.1010	0.0998	0.0966	0.0921	4.0051	1.9338	0.9357	0.6335	0.4702
S1 to Z↑	0.1004	0.0942	0.0904	0.0885	0.0809	4.3869	2.3208	1.1507	0.7780	0.5796

HS65_LS_MUX41

Cell Description

4:1 Non-Inverting Multiplexer

Logical Symbol



Functions

D0	D1	D2	D3	S0	S1	Z
1	1	1	1	-	-	1
D0	-	-	-	0	0	D0
-	D1	-	-	1	0	D1
-	-	D2	-	0	1	D2
-	-	-	D3	1	1	D3

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	4.00	10.4000
X9	2.6	4.00	10.4000
X18	2.6	6.80	17.6800
X27	2.6	7.80	20.2800
X35	2.6	8.60	22.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	3.056e-07	6.058e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X9	4.151e-07	9.347e-10
X18	7.863e-07	1.751e-09
X27	1.165e-06	2.637e-09
X35	1.566e-06	3.491e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	7.639e-05	6.223e-08
X9	1.090e-04	6.896e-08
X18	2.151e-04	1.107e-07
X27	3.286e-04	1.387e-07
X35	4.521e-04	1.626e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	6.772e-05	5.668e-08
X9	9.598e-05	6.150e-08
X18	1.886e-04	9.743e-08
X27	2.875e-04	1.198e-07
X35	3.950e-04	1.384e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
D0 (stable)	1.878e-04	2.575e-04	5.120e-04	7.326e-04	8.801e-04
D1 (stable)	2.497e-04	3.192e-04	5.526e-04	7.663e-04	9.503e-04
D2 (stable)	1.807e-04	2.574e-04	4.496e-04	6.045e-04	7.551e-04
D3 (stable)	1.874e-04	2.656e-04	4.409e-04	6.153e-04	7.604e-04
S0 (stable)	4.665e-03	5.501e-03	1.033e-02	1.373e-02	1.736e-02
S1 (stable)	3.476e-03	3.853e-03	5.559e-03	7.477e-03	9.465e-03
D0 to Z	9.571e-03	1.307e-02	2.169e-02	3.287e-02	4.236e-02
D1 to Z	9.640e-03	1.315e-02	2.178e-02	3.313e-02	4.234e-02
D2 to Z	9.002e-03	1.269e-02	2.261e-02	3.389e-02	4.345e-02
D3 to Z	9.204e-03	1.294e-02	2.267e-02	3.404e-02	4.359e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

S0 to Z	1.410e-02	1.870e-02	3.317e-02	4.826e-02	6.148e-02
S1 to Z	9.744e-03	1.274e-02	2.047e-02	3.136e-02	4.050e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
D0 (stable)	-3.355e-05	-4.394e-05	-8.047e-05	-1.051e-04	-1.441e-04
D1 (stable)	-3.607e-05	-4.819e-05	-7.553e-05	-7.400e-05	-6.957e-05
D2 (stable)	-3.595e-05	-5.175e-05	-7.691e-05	-8.528e-05	-1.023e-04
D3 (stable)	-1.070e-05	-1.657e-05	-1.934e-05	-2.458e-05	-2.945e-05
S0 (stable)	-1.893e-04	-3.055e-04	-6.172e-04	-8.855e-04	-1.174e-03
S1 (stable)	1.826e-04	2.788e-04	5.086e-04	6.794e-04	8.643e-04
D0 to Z	-2.190e-06	-4.276e-06	-8.222e-06	-6.643e-06	-6.674e-06
D1 to Z	-2.356e-05	-3.441e-05	-7.154e-05	-9.825e-05	-1.212e-04
D2 to Z	-4.703e-06	-7.501e-06	-7.517e-06	-5.235e-06	-1.062e-05
D3 to Z	-6.466e-06	-1.032e-05	-1.523e-05	-1.260e-05	-1.838e-05
S0 to Z	-1.578e-04	-2.610e-04	-5.120e-04	-7.324e-04	-9.546e-04
S1 to Z	2.370e-04	3.663e-04	6.775e-04	8.891e-04	1.162e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
D0	0.0010	0.0013	0.0023	0.0029	0.0036
D1	0.0010	0.0013	0.0023	0.0030	0.0037
D2	0.0010	0.0012	0.0022	0.0030	0.0036
D3	0.0012	0.0015	0.0022	0.0029	0.0036
S0	0.0032	0.0037	0.0060	0.0077	0.0095
S1	0.0018	0.0019	0.0026	0.0039	0.0046

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D0 to Z↓	0.1399	0.1158	0.0985	0.0997	0.0986	2.8707	1.3941	0.6686	0.4552	0.3410
D0 to Z↑	0.0961	0.0819	0.0696	0.0710	0.0664	3.4675	1.7330	0.8636	0.5859	0.4375



Propagation Delay at 25C, 1.20V Typ process

D1 to Z↓	0.1399	0.1156	0.0980	0.0998	0.0978	2.8697	1.3934	0.6684	0.4552	0.3408
D1 to Z↑	0.0962	0.0812	0.0691	0.0699	0.0655	3.4660	1.7308	0.8628	0.5848	0.4367
D2 to Z↓	0.1325	0.1133	0.1034	0.1037	0.1020	2.8459	1.3905	0.6726	0.4570	0.3423
D2 to Z↑	0.0909	0.0790	0.0700	0.0703	0.0659	3.4514	1.7292	0.8641	0.5859	0.4376
D3 to Z↓	0.1358	0.1153	0.1035	0.1040	0.1023	2.8478	1.3897	0.6729	0.4574	0.3427
D3 to Z↑	0.0933	0.0798	0.0702	0.0695	0.0662	3.4561	1.7295	0.8644	0.5852	0.4377
S0 to Z↓	0.1482	0.1290	0.1180	0.1178	0.1152	2.8515	1.3886	0.6695	0.4553	0.3409
S0 to Z↑	0.1122	0.1010	0.0935	0.0928	0.0877	3.4652	1.7328	0.8658	0.5866	0.4380
S1 to Z↓	0.0962	0.0837	0.0724	0.0753	0.0746	2.8396	1.3849	0.6683	0.4551	0.3410
S1 to Z↑	0.0777	0.0687	0.0590	0.0612	0.0592	3.4488	1.7259	0.8617	0.5841	0.4363

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D0 to Z↓	0.2276	0.1898	0.1608	0.1631	0.1613	4.6861	2.2696	1.0600	0.7136	0.5325
D0 to Z↑	0.1680	0.1441	0.1220	0.1241	0.1141	5.1722	2.5769	1.2690	0.8565	0.6363
D1 to Z↓	0.2271	0.1890	0.1597	0.1629	0.1596	4.6815	2.2671	1.0590	0.7131	0.5317
D1 to Z↑	0.1678	0.1423	0.1209	0.1213	0.1119	5.1693	2.5726	1.2674	0.8540	0.6347
D2 to Z↓	0.2161	0.1858	0.1675	0.1683	0.1655	4.6487	2.2647	1.0664	0.7163	0.5342
D2 to Z↑	0.1585	0.1391	0.1226	0.1221	0.1124	5.1426	2.5711	1.2699	0.8551	0.6352
D3 to Z↓	0.2215	0.1894	0.1681	0.1692	0.1666	4.6491	2.2634	1.0673	0.7171	0.5349
D3 to Z↑	0.1625	0.1409	0.1229	0.1202	0.1130	5.1514	2.5725	1.2695	0.8537	0.6356
S0 to Z↓	0.2431	0.2129	0.1934	0.1934	0.1891	4.6508	2.2593	1.0613	0.7133	0.5316
S0 to Z↑	0.1931	0.1743	0.1592	0.1577	0.1470	5.1685	2.5783	1.2722	0.8567	0.6368
S1 to Z↓	0.1593	0.1382	0.1197	0.1249	0.1236	4.6455	2.2591	1.0627	0.7148	0.5332
S1 to Z↑	0.1308	0.1159	0.0991	0.1025	0.0975	5.1487	2.5692	1.2669	0.8534	0.6345

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
D0 to Z↓	0.2089	0.1741	0.1478	0.1498	0.1481	4.3327	2.0939	0.9812	0.6615	0.4939
D0 to Z↑	0.1531	0.1311	0.1112	0.1131	0.1043	4.8135	2.3917	1.1785	0.7956	0.5911
D1 to Z↓	0.2085	0.1734	0.1468	0.1496	0.1466	4.3287	2.0916	0.9805	0.6611	0.4932
D1 to Z↑	0.1529	0.1295	0.1103	0.1107	0.1023	4.8106	2.3874	1.1773	0.7931	0.5897
D2 to Z↓	0.1981	0.1703	0.1540	0.1546	0.1521	4.2969	2.0890	0.9879	0.6640	0.4954
D2 to Z↑	0.1444	0.1265	0.1118	0.1114	0.1028	4.7862	2.3856	1.1786	0.7945	0.5901
D3 to Z↓	0.2032	0.1736	0.1546	0.1555	0.1530	4.2977	2.0878	0.9887	0.6647	0.4960
D3 to Z↑	0.1482	0.1281	0.1121	0.1097	0.1034	4.7939	2.3870	1.1791	0.7932	0.5904
S0 to Z↓	0.2232	0.1954	0.1779	0.1777	0.1739	4.2999	2.0842	0.9826	0.6613	0.4931
S0 to Z↑	0.1761	0.1588	0.1455	0.1440	0.1345	4.8098	2.3927	1.1815	0.7959	0.5920
S1 to Z↓	0.1458	0.1266	0.1099	0.1146	0.1136	4.2946	2.0840	0.9839	0.6627	0.4945
S1 to Z↑	0.1194	0.1058	0.0907	0.0938	0.0895	4.7908	2.3841	1.1764	0.7930	0.5897

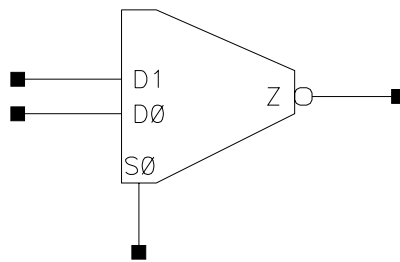


HS65_LS_MUXI21

Cell Description

2:1 Inverting Multiplexer

Logical Symbol



Functions

D0	D1	S0	Z
D0	-	0	!D0
-	D1	1	!D1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.40	3.6400
X5	2.6	1.80	4.6800
X10	2.6	3.20	8.3200
X15	2.6	4.00	10.4000
X20	2.6	5.40	14.0400
X30	2.6	8.00	20.8000
X40	2.6	10.40	27.0400
X50	2.6	12.60	32.7600
X60	2.6	14.40	37.4400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	1.640e-07	3.581e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X5	2.888e-07	7.244e-10
X10	5.873e-07	1.391e-09
X15	8.962e-07	2.057e-09
X20	1.144e-06	2.773e-09
X30	1.769e-06	4.105e-09
X40	2.382e-06	5.437e-09
X50	2.994e-06	6.770e-09
X60	3.571e-06	8.152e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	4.239e-05	3.251e-08
X5	8.156e-05	4.305e-08
X10	1.704e-04	7.036e-08
X15	2.591e-04	9.039e-08
X20	3.296e-04	1.177e-07
X30	5.146e-04	1.699e-07
X40	6.954e-04	2.189e-07
X50	8.757e-04	2.672e-07
X60	1.051e-03	3.108e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	3.750e-05	2.940e-08
X5	7.154e-05	3.783e-08
X10	1.492e-04	6.061e-08
X15	2.270e-04	7.643e-08
X20	2.885e-04	9.924e-08
X30	4.505e-04	1.424e-07
X40	6.087e-04	1.826e-07
X50	7.665e-04	2.221e-07
X60	9.200e-04	2.570e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X5	X10	X15	X20
D0 to Z	3.551e-03	6.948e-03	1.383e-02	1.939e-02	2.711e-02
D1 to Z	3.533e-03	6.583e-03	1.388e-02	1.928e-02	2.658e-02
S0 to Z	5.217e-03	8.889e-03	1.807e-02	2.182e-02	2.941e-02
Pin Cycle (vdd)	X30	X40	X50	X60	
D0 to Z	4.036e-02	5.338e-02	6.629e-02	7.946e-02	
D1 to Z	3.947e-02	5.252e-02	6.526e-02	7.773e-02	
S0 to Z	4.374e-02	5.659e-02	7.153e-02	8.562e-02	

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X5	X10	X15	X20
D0 to Z	-5.240e-06	-1.354e-05	-2.371e-05	-3.295e-05	-4.211e-05
D1 to Z	-1.839e-06	-5.700e-07	-4.550e-07	-2.331e-05	-3.790e-05
S0 to Z	1.014e-04	2.842e-04	4.996e-04	6.819e-04	1.121e-03
Pin Cycle (vdds)	X30	X40	X50	X60	
D0 to Z	-6.790e-05	-9.450e-05	-1.094e-04	-1.382e-04	
D1 to Z	-4.661e-05	-6.370e-05	-6.300e-05	-6.770e-05	
S0 to Z	1.678e-03	2.116e-03	2.603e-03	3.151e-03	

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X5	X10	X15	X20
D0	0.0012	0.0018	0.0039	0.0052	0.0069
D1	0.0013	0.0019	0.0039	0.0052	0.0069
S0	0.0020	0.0027	0.0053	0.0074	0.0091
Pin	X30	X40	X50	X60	
D0	0.0102	0.0136	0.0172	0.0204	
D1	0.0102	0.0136	0.0172	0.0204	
S0	0.0136	0.0180	0.0237	0.0284	

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X10	X15	X20	X2	X5	X10	X15	X20
D0 to Z↓	0.0225	0.0214	0.0205	0.0205	0.0214	4.4770	2.1785	1.0619	0.7439	0.5814
D0 to Z↑	0.0282	0.0286	0.0278	0.0273	0.0286	6.7622	3.5978	1.7810	1.2332	0.9404
D1 to Z↓	0.0208	0.0193	0.0197	0.0192	0.0203	4.3716	2.1519	1.0711	0.7486	0.5722
D1 to Z↑	0.0285	0.0283	0.0293	0.0290	0.0293	6.7117	3.5841	1.7918	1.2334	0.9334
S0 to Z↓	0.0339	0.0305	0.0311	0.0266	0.0286	4.3467	2.1315	1.0445	0.7312	0.5685
S0 to Z↑	0.0324	0.0309	0.0313	0.0269	0.0269	6.6280	3.5460	1.7619	1.2187	0.9263
	X30	X40	X50	X60		X30	X40	X50	X60	
D0 to Z↓	0.0211	0.0211	0.0206	0.0207		0.3858	0.2902	0.2338	0.1988	
D0 to Z↑	0.0289	0.0296	0.0295	0.0301		0.6285	0.4736	0.3811	0.3221	
D1 to Z↓	0.0210	0.0221	0.0228	0.0239		0.3815	0.2881	0.2333	0.2002	
D1 to Z↑	0.0291	0.0292	0.0291	0.0293		0.6257	0.4720	0.3808	0.3220	
S0 to Z↓	0.0293	0.0296	0.0308	0.0315		0.3781	0.2854	0.2307	0.1975	
S0 to Z↑	0.0269	0.0269	0.0280	0.0292		0.6219	0.4697	0.3786	0.3196	

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X10	X15	X20	X2	X5	X10	X15	X20
D0 to Z↓	0.0376	0.0356	0.0339	0.0333	0.0353	7.6909	3.6550	1.7467	1.2067	0.9582
D0 to Z↑	0.0424	0.0438	0.0423	0.0412	0.0432	10.2336	5.4467	2.6763	1.8348	1.4042
D1 to Z↓	0.0345	0.0317	0.0326	0.0314	0.0329	7.4779	3.5846	1.7737	1.2210	0.9376
D1 to Z↑	0.0428	0.0428	0.0445	0.0434	0.0441	10.1334	5.4148	2.7001	1.8401	1.3927
S0 to Z↓	0.0528	0.0478	0.0487	0.0410	0.0442	7.5262	3.5965	1.7368	1.1976	0.9407
S0 to Z↑	0.0506	0.0488	0.0492	0.0421	0.0427	10.0601	5.3842	2.6656	1.8222	1.3861
	X30	X40	X50	X60		X30	X40	X50	X60	
D0 to Z↓	0.0347	0.0345	0.0338	0.0339		0.6283	0.4699	0.3765	0.3176	
D0 to Z↑	0.0434	0.0440	0.0438	0.0446		0.9352	0.7023	0.5635	0.4738	

Propagation Delay at 125C, 1.10V Worst process

D1 to Z↓	0.0334	0.0345	0.0354	0.0369		0.6187	0.4644	0.3735	0.3170	
D1 to Z↑	0.0438	0.0439	0.0437	0.0438		0.9293	0.6994	0.5621	0.4732	
S0 to Z↓	0.0447	0.0447	0.0463	0.0469		0.6187	0.4638	0.3724	0.3152	
S0 to Z↑	0.0427	0.0424	0.0435	0.0440		0.9253	0.6966	0.5594	0.4713	

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X10	X15	X20	X2	X5	X10	X15	X20
D0 to Z↓	0.0348	0.0330	0.0314	0.0310	0.0328	7.0023	3.3329	1.5972	1.1055	0.8762
D0 to Z↑	0.0396	0.0408	0.0395	0.0385	0.0404	9.4310	5.0096	2.4641	1.6916	1.2954
D1 to Z↓	0.0321	0.0295	0.0303	0.0293	0.0307	6.8094	3.2714	1.6205	1.1179	0.8578
D1 to Z↑	0.0399	0.0400	0.0415	0.0405	0.0412	9.3401	4.9802	2.4846	1.6959	1.2826
S0 to Z↓	0.0491	0.0445	0.0453	0.0383	0.0412	6.8530	3.2784	1.5870	1.0966	0.8605
S0 to Z↑	0.0472	0.0455	0.0458	0.0394	0.0399	9.2696	4.9530	2.4537	1.6795	1.2774
	X30	X40	X50	X60		X30	X40	X50	X60	
D0 to Z↓	0.0322	0.0321	0.0314	0.0314		0.5753	0.4308	0.3453	0.2917	
D0 to Z↑	0.0405	0.0411	0.0410	0.0417		0.8625	0.6480	0.5198	0.4376	
D1 to Z↓	0.0311	0.0322	0.0330	0.0345		0.5672	0.4260	0.3430	0.2913	
D1 to Z↑	0.0409	0.0410	0.0407	0.0408		0.8574	0.6451	0.5189	0.4373	
S0 to Z↓	0.0418	0.0418	0.0433	0.0440		0.5667	0.4254	0.3417	0.2896	
S0 to Z↑	0.0399	0.0397	0.0408	0.0415		0.8531	0.6425	0.5160	0.4348	

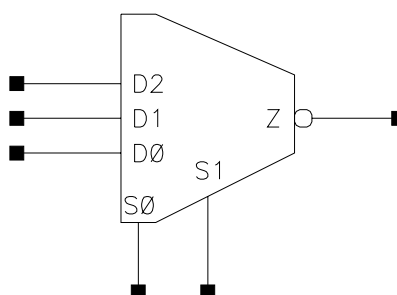


HS65_LS_MUXI31

Cell Description

3:1 Inverting Multiplexer

Logical Symbol



Functions

D0	D1	D2	S0	S1	Z
D0	-	-	0	0	!D0
-	D1	-	1	0	!D1
-	-	D2	-	1	!D2

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	2.80	7.2800
X4	2.6	3.00	7.8000
X7	2.6	5.40	14.0400
X11	2.6	7.00	18.2000
X15	2.6	9.60	24.9600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	2.329e-07	5.121e-10
X4	4.189e-07	9.701e-10
X7	7.885e-07	1.870e-09
X11	1.298e-06	2.777e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X15	1.645e-06	3.701e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	5.941e-05	4.853e-08
X4	1.147e-04	5.971e-08
X7	2.230e-04	1.017e-07
X11	3.691e-04	1.331e-07
X15	4.709e-04	1.764e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	5.263e-05	4.411e-08
X4	1.006e-04	5.256e-08
X7	1.952e-04	8.821e-08
X11	3.233e-04	1.137e-07
X15	4.121e-04	1.506e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X4	X7	X11	X15
D0 to Z	6.193e-03	9.876e-03	2.035e-02	2.859e-02	3.922e-02
D1 to Z	5.969e-03	9.787e-03	2.021e-02	2.850e-02	3.885e-02
D2 to Z	3.603e-03	6.404e-03	1.428e-02	1.931e-02	2.716e-02
S0 to Z	9.623e-03	1.555e-02	3.080e-02	4.315e-02	5.853e-02
S1 to Z	5.367e-03	8.445e-03	1.628e-02	2.214e-02	2.986e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X4	X7	X11	X15
D0 to Z	-2.801e-06	-6.600e-07	-1.760e-05	-1.453e-05	-2.325e-05
D1 to Z	-8.155e-07	5.100e-07	1.438e-06	-3.507e-06	-2.171e-05
D2 to Z	-5.630e-06	-1.099e-05	-1.889e-05	-2.768e-05	-3.982e-05
S0 to Z	-3.932e-05	-7.779e-05	-1.657e-04	-2.101e-04	-2.797e-04
S1 to Z	9.790e-05	1.984e-04	3.873e-04	5.462e-04	7.517e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X4	X7	X11	X15
D0	0.0014	0.0019	0.0034	0.0048	0.0065
D1	0.0011	0.0018	0.0034	0.0049	0.0063
D2	0.0012	0.0018	0.0036	0.0053	0.0071
S0	0.0018	0.0032	0.0056	0.0083	0.0108
S1	0.0019	0.0028	0.0053	0.0073	0.0098

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X7	X11	X15	X2	X4	X7	X11	X15
D0 to Z↓	0.0429	0.0347	0.0361	0.0334	0.0347	6.5463	3.2354	1.6884	1.0905	0.8364
D0 to Z↑	0.0607	0.0537	0.0557	0.0527	0.0540	10.1753	5.5104	2.8615	1.8876	1.4258
D1 to Z↓	0.0413	0.0330	0.0364	0.0325	0.0351	6.6452	3.0917	1.7154	1.0682	0.8482
D1 to Z↑	0.0584	0.0524	0.0553	0.0520	0.0540	10.0929	5.4226	2.8566	1.8731	1.4347
D2 to Z↓	0.0208	0.0191	0.0212	0.0189	0.0204	4.3801	2.1727	1.1785	0.7488	0.5861
D2 to Z↑	0.0286	0.0279	0.0308	0.0285	0.0298	6.6970	3.5950	1.8799	1.2388	0.9425
S0 to Z↓	0.0564	0.0471	0.0479	0.0443	0.0464	6.5782	3.1696	1.6972	1.0790	0.8396
S0 to Z↑	0.0693	0.0630	0.0646	0.0612	0.0629	10.1084	5.4467	2.8502	1.8728	1.4265
S1 to Z↓	0.0302	0.0258	0.0259	0.0237	0.0245	5.4934	2.6690	1.4281	0.9082	0.7089
S1 to Z↑	0.0319	0.0281	0.0283	0.0259	0.0263	8.3185	4.5006	2.3448	1.5399	1.1726

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X7	X11	X15	X2	X4	X7	X11	X15
D0 to Z↓	0.0767	0.0614	0.0627	0.0571	0.0595	11.6866	5.6870	2.8819	1.8376	1.4163
D0 to Z↑	0.0955	0.0861	0.0881	0.0827	0.0849	15.7098	8.5169	4.3600	2.8613	2.1658
D1 to Z↓	0.0739	0.0581	0.0636	0.0555	0.0604	11.8759	5.4003	2.9447	1.7932	1.4397
D1 to Z↑	0.0920	0.0838	0.0876	0.0816	0.0850	15.5578	8.3787	4.3499	2.8382	2.1788
D2 to Z↓	0.0346	0.0316	0.0351	0.0308	0.0334	7.4996	3.6173	1.9524	1.2081	0.9627



Propagation Delay at 125C, 1.10V Worst process

D2 to Z↑	0.0430	0.0425	0.0467	0.0428	0.0449	10.0852	5.4318	2.8138	1.8402	1.4064
S0 to Z↓	0.0977	0.0808	0.0819	0.0739	0.0779	11.7974	5.5885	2.9208	1.8277	1.4317
S0 to Z↑	0.1114	0.1030	0.1045	0.0977	0.1005	15.6275	8.4330	4.3528	2.8453	2.1725
S1 to Z↓	0.0485	0.0412	0.0415	0.0374	0.0387	9.7227	4.6247	2.4330	1.5167	1.1956
S1 to Z↑	0.0478	0.0432	0.0438	0.0397	0.0406	12.8393	6.9666	3.5842	2.3444	1.7882

Propagation Delay at 125C, 1.15V Worst process

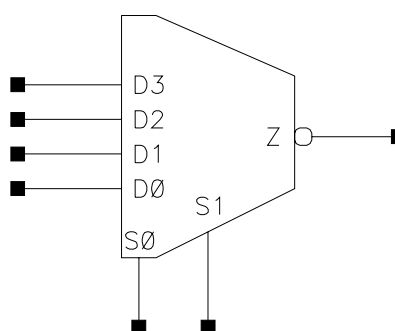
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X7	X11	X15	X2	X4	X7	X11	X15
D0 to Z↓	0.0702	0.0564	0.0577	0.0527	0.0549	10.5762	5.1471	2.6186	1.6733	1.2887
D0 to Z↑	0.0884	0.0795	0.0815	0.0766	0.0786	14.4258	7.8026	4.0016	2.6283	1.9882
D1 to Z↓	0.0677	0.0534	0.0585	0.0512	0.0557	10.7458	4.8928	2.6745	1.6340	1.3097
D1 to Z↑	0.0852	0.0774	0.0810	0.0756	0.0786	14.2901	7.6750	3.9943	2.6067	2.0007
D2 to Z↓	0.0321	0.0294	0.0325	0.0287	0.0311	6.8248	3.2994	1.7839	1.1075	0.8806
D2 to Z↑	0.0401	0.0396	0.0435	0.0400	0.0419	9.3007	4.9963	2.5914	1.6960	1.2962
S0 to Z↓	0.0896	0.0742	0.0753	0.0682	0.0718	10.6801	5.0609	2.6540	1.6643	1.3023
S0 to Z↑	0.1031	0.0952	0.0967	0.0905	0.0931	14.3494	7.7248	3.9938	2.6126	1.9947
S1 to Z↓	0.0452	0.0385	0.0387	0.0349	0.0362	8.8135	4.1975	2.2137	1.3843	1.0897
S1 to Z↑	0.0447	0.0403	0.0409	0.0372	0.0379	11.8034	6.3896	3.2928	2.1553	1.6435

HS65_LS_MUXI41

Cell Description

4:1 Inverting Multiplexer

Logical Symbol



Functions

D0	D1	D2	D3	S0	S1	Z
D0	-	-	-	0	0	!D0
-	D1	-	-	1	0	!D1
-	-	D2	-	0	1	!D2
-	-	-	D3	1	1	!D3
1	1	1	1	-	-	0

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	3.80	9.8800
X4	2.6	4.00	10.4000
X7	2.6	6.80	17.6800
X11	2.6	10.40	27.0400
X15	2.6	14.40	37.4400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	2.728e-07	5.204e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X4	4.424e-07	9.888e-10
X7	8.806e-07	1.928e-09
X11	1.376e-06	2.904e-09
X15	1.832e-06	3.878e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	6.773e-05	5.887e-08
X4	1.208e-04	7.039e-08
X7	2.464e-04	1.165e-07
X11	3.832e-04	1.677e-07
X15	5.070e-04	2.270e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	6.004e-05	5.390e-08
X4	1.062e-04	6.261e-08
X7	2.158e-04	1.021e-07
X11	3.359e-04	1.463e-07
X15	4.447e-04	1.982e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X4	X7	X11	X15
D0 to Z	6.495e-03	1.044e-02	2.012e-02	2.942e-02	3.990e-02
D1 to Z	6.481e-03	1.032e-02	2.003e-02	2.913e-02	3.931e-02
D2 to Z	6.547e-03	1.034e-02	2.026e-02	2.922e-02	4.039e-02
D3 to Z	6.530e-03	1.029e-02	2.019e-02	2.911e-02	4.069e-02
S0 to Z	1.333e-02	2.046e-02	4.170e-02	5.715e-02	7.783e-02
S1 to Z	6.692e-03	9.741e-03	1.910e-02	2.576e-02	3.512e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X4	X7	X11	X15
D0 to Z	2.900e-07	3.305e-06	1.263e-05	9.924e-06	1.182e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D1 to Z	-9.138e-07	-1.604e-06	7.734e-06	1.611e-06	-6.665e-06
D2 to Z	-6.754e-06	-9.481e-06	-8.068e-06	-2.467e-05	-5.669e-05
D3 to Z	1.989e-06	1.002e-05	1.970e-05	1.973e-05	1.203e-05
S0 to Z	-3.780e-04	-7.809e-04	-1.398e-03	-2.273e-03	-3.080e-03
S1 to Z	3.430e-04	7.184e-04	1.224e-03	2.029e-03	2.800e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X4	X7	X11	X15
D0	0.0012	0.0018	0.0034	0.0048	0.0063
D1	0.0012	0.0017	0.0034	0.0049	0.0064
D2	0.0012	0.0018	0.0033	0.0049	0.0065
D3	0.0012	0.0018	0.0033	0.0049	0.0065
S0	0.0036	0.0054	0.0119	0.0139	0.0186
S1	0.0021	0.0028	0.0048	0.0073	0.0096

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X7	X11	X15	X2	X4	X7	X11	X15
D0 to Z↓	0.0424	0.0348	0.0343	0.0352	0.0360	6.3208	3.1364	1.5983	1.1339	0.8555
D0 to Z↑	0.0628	0.0557	0.0538	0.0536	0.0553	10.2134	5.4853	2.7728	1.8915	1.4401
D1 to Z↓	0.0414	0.0334	0.0339	0.0343	0.0351	6.1413	3.0218	1.5842	1.1078	0.8385
D1 to Z↑	0.0623	0.0544	0.0535	0.0530	0.0544	10.1271	5.4106	2.7681	1.8795	1.4297
D2 to Z↓	0.0411	0.0336	0.0331	0.0341	0.0350	6.3670	3.1441	1.6038	1.1429	0.8557
D2 to Z↑	0.0640	0.0561	0.0550	0.0543	0.0567	10.2264	5.4930	2.7723	1.8869	1.4372
D3 to Z↓	0.0413	0.0335	0.0328	0.0338	0.0355	6.4073	3.1469	1.5870	1.1310	0.8561
D3 to Z↑	0.0637	0.0558	0.0549	0.0541	0.0570	10.2411	5.4872	2.7655	1.8895	1.4401
S0 to Z↓	0.0645	0.0521	0.0552	0.0517	0.0528	6.3024	3.1082	1.5894	1.1284	0.8510
S0 to Z↑	0.0800	0.0699	0.0711	0.0670	0.0693	10.1713	5.4548	2.7564	1.8828	1.4339
S1 to Z↓	0.0332	0.0265	0.0276	0.0272	0.0302	6.2123	3.0689	1.5701	1.1112	0.8382
S1 to Z↑	0.0394	0.0325	0.0333	0.0295	0.0320	10.0678	5.4017	2.7358	1.8683	1.4210



Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X7	X11	X15	X2	X4	X7	X11	X15
D0 to Z↓	0.0756	0.0610	0.0597	0.0607	0.0616	11.1932	5.4376	2.7501	1.9257	1.4457
D0 to Z↑	0.0997	0.0892	0.0855	0.0842	0.0869	15.7381	8.4364	4.2451	2.8659	2.1837
D1 to Z↓	0.0735	0.0583	0.0588	0.0589	0.0600	10.8648	5.2171	2.7129	1.8759	1.4163
D1 to Z↑	0.0985	0.0869	0.0849	0.0833	0.0855	15.5722	8.3242	4.2342	2.8456	2.1693
D2 to Z↓	0.0737	0.0591	0.0579	0.0593	0.0603	11.3124	5.4602	2.7597	1.9542	1.4531
D2 to Z↑	0.1010	0.0893	0.0872	0.0849	0.0888	15.7617	8.4735	4.2471	2.8589	2.1827
D3 to Z↓	0.0739	0.0589	0.0570	0.0584	0.0609	11.3735	5.4680	2.7189	1.9211	1.4511
D3 to Z↑	0.1010	0.0890	0.0869	0.0848	0.0894	15.7919	8.4637	4.2320	2.8697	2.1886
S0 to Z↓	0.1092	0.0876	0.0919	0.0860	0.0876	11.2186	5.4150	2.7439	1.9300	1.4487
S0 to Z↑	0.1282	0.1133	0.1141	0.1064	0.1104	15.6978	8.4182	4.2297	2.8609	2.1816
S1 to Z↓	0.0543	0.0424	0.0445	0.0417	0.0450	11.0639	5.3420	2.7082	1.8980	1.4242
S1 to Z↑	0.0603	0.0500	0.0511	0.0446	0.0475	15.5937	8.3618	4.2118	2.8434	2.1662

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X7	X11	X15	X2	X4	X7	X11	X15
D0 to Z↓	0.0693	0.0561	0.0549	0.0559	0.0568	10.1484	4.9328	2.4980	1.7511	1.3158
D0 to Z↑	0.0921	0.0824	0.0790	0.0780	0.0805	14.4551	7.7357	3.8957	2.6326	2.0059
D1 to Z↓	0.0674	0.0536	0.0541	0.0543	0.0553	9.8533	4.7356	2.4657	1.7067	1.2894
D1 to Z↑	0.0911	0.0803	0.0785	0.0771	0.0791	14.3092	7.6308	3.8865	2.6143	1.9926
D2 to Z↓	0.0675	0.0543	0.0532	0.0545	0.0555	10.2488	4.9531	2.5060	1.7751	1.3215
D2 to Z↑	0.0935	0.0826	0.0806	0.0786	0.0823	14.4750	7.7636	3.8935	2.6259	2.0042
D3 to Z↓	0.0677	0.0541	0.0525	0.0537	0.0561	10.3138	4.9590	2.4705	1.7472	1.3199
D3 to Z↑	0.0934	0.0823	0.0804	0.0786	0.0827	14.5017	7.7574	3.8806	2.6354	2.0096
S0 to Z↓	0.1002	0.0805	0.0844	0.0792	0.0807	10.1717	4.9131	2.4931	1.7547	1.3182
S0 to Z↑	0.1185	0.1047	0.1054	0.0986	0.1023	14.4154	7.7162	3.8799	2.6272	2.0031
S1 to Z↓	0.0504	0.0395	0.0415	0.0391	0.0423	10.0288	4.8454	2.4598	1.7253	1.2956

Propagation Delay at 125C, 1.15V Worst process

S1 to Z↑	0.0562	0.0465	0.0476	0.0418	0.0446	14.3160	7.6620	3.8628	2.6108	1.9885

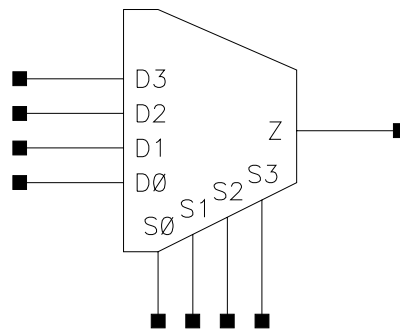


HS65_LS_MX41

Cell Description

4:1 Multiplexer, with unary-coded select

Logical Symbol



Functions

D0	D1	D2	D3	S0	S1	S2	S3	Z
0	0	0	0	-	-	-	-	0
0	0	0	-	-	-	-	0	0
-	0	0	0	0	-	-	-	0
0	0	-	-	-	-	0	0	0
0	-	0	-	-	0	-	0	0
-	0	0	-	0	-	-	0	0
-	0	-	0	0	-	0	-	0
0	-	0	0	-	0	-	-	0
0	-	-	0	-	0	0	-	0
0	-	-	-	-	0	0	0	0
-	-	-	0	0	0	0	-	0
-	0	-	-	0	-	0	0	0
0	0	-	0	-	-	0	-	0
-	-	-	-	0	0	0	0	0
-	-	0	-	0	0	-	0	0
-	-	0	0	0	0	-	-	0
0	0	-	1	-	-	-	1	1
-	0	-	1	-	-	0	1	1

Functions

D0	D1	D2	D3	S0	S1	S2	S3	Z
-	1	0	-	-	1	-	-	1
1	-	-	-	1	1	1	-	1
-	-	0	1	-	0	-	1	1
-	1	-	-	-	1	0	-	1
1	-	-	-	1	-	-	0	1
1	D1	-	D1	1	-	-	-	1
-	-	1	-	-	-	1	0	1
0	-	1	-	-	-	1	-	1
-	-	1	0	0	-	1	-	1
-	1	1	-	0	-	1	-	1
-	0	-	1	0	-	-	1	1
-	0	-	1	-	0	-	1	1
-	-	1	1	-	-	0	1	1
-	1	-	-	-	1	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	3.00	7.8000
X7	2.6	3.00	7.8000
X14	2.6	4.00	10.4000
X21	2.6	6.60	17.1600
X29	2.6	7.40	19.2400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	2.682e-07	6.110e-10
X7	4.289e-07	1.156e-09
X14	8.362e-07	2.284e-09
X21	1.305e-06	3.446e-09
X29	1.600e-06	4.558e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds

Average Leakage Power (mW) at 125C, 1.30V Best process

X4	6.624e-05	5.278e-08
X7	1.170e-04	6.252e-08
X14	2.442e-04	9.416e-08
X21	3.729e-04	1.408e-07
X29	4.594e-04	1.707e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	5.881e-05	4.755e-08
X7	1.028e-04	5.417e-08
X14	2.137e-04	7.887e-08
X21	3.269e-04	1.178e-07
X29	4.021e-04	1.408e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X7	X14	X21	X29
D0 to Z	8.727e-03	1.315e-02	2.415e-02	3.743e-02	4.891e-02
D1 to Z	7.276e-03	1.134e-02	2.040e-02	3.194e-02	4.264e-02
D2 to Z	8.365e-03	1.225e-02	2.153e-02	3.368e-02	4.338e-02
D3 to Z	6.977e-03	1.049e-02	1.773e-02	2.793e-02	3.663e-02
S0 to Z	8.456e-03	1.261e-02	2.305e-02	3.576e-02	4.607e-02
S1 to Z	6.972e-03	1.079e-02	1.929e-02	3.023e-02	3.984e-02
S2 to Z	8.034e-03	1.171e-02	2.032e-02	3.169e-02	4.043e-02
S3 to Z	6.664e-03	9.928e-03	1.667e-02	2.608e-02	3.362e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X7	X14	X21	X29
D0 to Z	-9.694e-06	-1.147e-05	-2.553e-05	-3.573e-05	-4.458e-05
D1 to Z	-1.001e-07	-6.661e-07	-3.151e-07	-9.867e-07	-1.726e-06
D2 to Z	-8.346e-06	-1.027e-05	-2.211e-05	-3.077e-05	-4.107e-05
D3 to Z	1.167e-06	9.582e-07	2.260e-06	3.959e-06	6.842e-06
S0 to Z	-1.297e-05	-1.426e-05	-3.253e-05	-4.473e-05	-5.723e-05
S1 to Z	-8.530e-08	-8.908e-07	-2.393e-07	-2.106e-06	-2.076e-06



Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

S2 to Z	-8.912e-06	-1.045e-05	-2.183e-05	-2.842e-05	-4.034e-05
S3 to Z	1.193e-06	1.048e-06	2.821e-06	3.429e-06	3.475e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X7	X14	X21	X29
D0	0.0010	0.0014	0.0021	0.0034	0.0042
D1	0.0010	0.0014	0.0022	0.0036	0.0042
D2	0.0010	0.0014	0.0021	0.0037	0.0041
D3	0.0010	0.0014	0.0022	0.0036	0.0042
S0	0.0012	0.0016	0.0022	0.0034	0.0041
S1	0.0010	0.0014	0.0023	0.0034	0.0042
S2	0.0011	0.0016	0.0022	0.0033	0.0042
S3	0.0010	0.0014	0.0023	0.0035	0.0043

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X7	X14	X21	X29	X4	X7	X14	X21	X29
D0 to Z↓	0.0870	0.0724	0.0700	0.0703	0.0715	4.1190	2.0400	0.9795	0.6934	0.5305
D0 to Z↑	0.0656	0.0547	0.0508	0.0513	0.0525	3.1809	1.6664	0.8345	0.5654	0.4226
D1 to Z↓	0.0747	0.0639	0.0603	0.0610	0.0637	4.1126	2.0367	0.9776	0.6922	0.5300
D1 to Z↑	0.0551	0.0480	0.0422	0.0431	0.0454	3.1511	1.6581	0.8274	0.5605	0.4196
D2 to Z↓	0.0845	0.0686	0.0647	0.0654	0.0661	4.1231	2.0379	0.9775	0.6934	0.5311
D2 to Z↑	0.0634	0.0524	0.0477	0.0476	0.0491	3.1458	1.6747	0.8555	0.5676	0.4261
D3 to Z↓	0.0723	0.0600	0.0549	0.0558	0.0571	4.1153	2.0340	0.9749	0.6918	0.5298
D3 to Z↑	0.0538	0.0450	0.0391	0.0400	0.0419	3.1193	1.6646	0.8481	0.5630	0.4228
S0 to Z↓	0.0839	0.0689	0.0652	0.0664	0.0664	4.1134	2.0365	0.9767	0.6924	0.5294
S0 to Z↑	0.0647	0.0532	0.0487	0.0494	0.0498	3.1825	1.6673	0.8347	0.5650	0.4226
S1 to Z↓	0.0709	0.0599	0.0554	0.0572	0.0583	4.1072	2.0334	0.9749	0.6915	0.5288
S1 to Z↑	0.0536	0.0461	0.0403	0.0412	0.0427	3.1513	1.6582	0.8277	0.5608	0.4200
S2 to Z↓	0.0799	0.0647	0.0597	0.0610	0.0604	4.1153	2.0339	0.9741	0.6924	0.5292
S2 to Z↑	0.0618	0.0507	0.0454	0.0454	0.0464	3.1477	1.6754	0.8558	0.5679	0.4264

Propagation Delay at 25C, 1.20V Typ process

S3 to Z↓	0.0685	0.0561	0.0502	0.0517	0.0513	4.1088	2.0295	0.9721	0.6907	0.5281
S3 to Z↑	0.0523	0.0433	0.0373	0.0380	0.0389	3.1200	1.6649	0.8486	0.5632	0.4231

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X7	X14	X21	X29	X4	X7	X14	X21	X29
D0 to Z↓	0.1403	0.1166	0.1131	0.1131	0.1150	7.1552	3.4745	1.6144	1.1356	0.8737
D0 to Z↑	0.1103	0.0915	0.0843	0.0846	0.0866	4.6240	2.4264	1.2147	0.8151	0.6058
D1 to Z↓	0.1192	0.1020	0.0961	0.0971	0.1013	7.1452	3.4696	1.6112	1.1336	0.8728
D1 to Z↑	0.0905	0.0794	0.0682	0.0696	0.0736	4.5605	2.4070	1.1991	0.8051	0.5998
D2 to Z↓	0.1360	0.1101	0.1042	0.1046	0.1054	7.1703	3.4775	1.6151	1.1372	0.8754
D2 to Z↑	0.1069	0.0876	0.0788	0.0778	0.0808	4.5909	2.4434	1.2313	0.8191	0.6142
D3 to Z↓	0.1147	0.0953	0.0870	0.0881	0.0899	7.1555	3.4709	1.6106	1.1346	0.8731
D3 to Z↑	0.0886	0.0739	0.0628	0.0643	0.0679	4.5320	2.4195	1.2152	0.8097	0.6078
S0 to Z↓	0.1355	0.1112	0.1051	0.1063	0.1069	7.1462	3.4695	1.6097	1.1336	0.8718
S0 to Z↑	0.1082	0.0887	0.0808	0.0815	0.0820	4.6231	2.4272	1.2147	0.8147	0.6057
S1 to Z↓	0.1129	0.0956	0.0882	0.0906	0.0927	7.1348	3.4634	1.6068	1.1317	0.8706
S1 to Z↑	0.0877	0.0761	0.0651	0.0664	0.0690	4.5597	2.4072	1.1995	0.8052	0.6002
S2 to Z↓	0.1285	0.1037	0.0958	0.0972	0.0961	7.1539	3.4696	1.6087	1.1342	0.8717
S2 to Z↑	0.1037	0.0846	0.0749	0.0740	0.0762	4.5904	2.4445	1.2316	0.8194	0.6145
S3 to Z↓	0.1085	0.0890	0.0795	0.0813	0.0806	7.1410	3.4628	1.6051	1.1319	0.8700
S3 to Z↑	0.0857	0.0709	0.0598	0.0609	0.0628	4.5305	2.4205	1.2157	0.8095	0.6080

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X7	X14	X21	X29	X4	X7	X14	X21	X29
D0 to Z↓	0.1288	0.1070	0.1038	0.1038	0.1056	6.5142	3.1657	1.4784	1.0406	0.7997
D0 to Z↑	0.1012	0.0839	0.0775	0.0779	0.0797	4.3067	2.2547	1.1285	0.7578	0.5638
D1 to Z↓	0.1093	0.0936	0.0882	0.0892	0.0930	6.5055	3.1607	1.4754	1.0389	0.7987



Propagation Delay at 125C, 1.15V Worst process

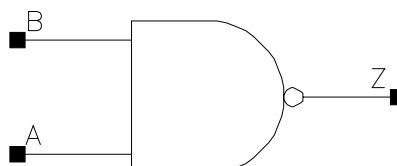
D1 to Z↑	0.0831	0.0727	0.0628	0.0641	0.0677	4.2484	2.2362	1.1146	0.7493	0.5584
D2 to Z↓	0.1253	0.1014	0.0960	0.0965	0.0973	6.5335	3.1693	1.4792	1.0420	0.8015
D2 to Z↑	0.0980	0.0803	0.0724	0.0716	0.0743	4.2723	2.2711	1.1457	0.7615	0.5715
D3 to Z↓	0.1057	0.0878	0.0802	0.0813	0.0830	6.5189	3.1623	1.4746	1.0394	0.7994
D3 to Z↑	0.0812	0.0678	0.0578	0.0592	0.0624	4.2167	2.2491	1.1308	0.7530	0.5652
S0 to Z↓	0.1242	0.1019	0.0964	0.0976	0.0980	6.5081	3.1604	1.4742	1.0387	0.7981
S0 to Z↑	0.0995	0.0816	0.0744	0.0751	0.0755	4.3067	2.2553	1.1284	0.7579	0.5638
S1 to Z↓	0.1034	0.0876	0.0809	0.0832	0.0850	6.4972	3.1550	1.4714	1.0371	0.7970
S1 to Z↑	0.0807	0.0698	0.0600	0.0613	0.0635	4.2479	2.2364	1.1149	0.7492	0.5585
S2 to Z↓	0.1183	0.0955	0.0882	0.0896	0.0886	6.5180	3.1615	1.4732	1.0396	0.7982
S2 to Z↑	0.0952	0.0777	0.0689	0.0683	0.0702	4.2724	2.2719	1.1455	0.7617	0.5714
S3 to Z↓	0.0999	0.0819	0.0733	0.0750	0.0744	6.5055	3.1547	1.4699	1.0376	0.7964
S3 to Z↑	0.0787	0.0651	0.0552	0.0562	0.0578	4.2160	2.2494	1.1309	0.7536	0.5656

HS65_LS_NAND2

Cell Description

2 Input NAND

Logical Symbol



Functions

A	B	Z
1	1	0
0	-	1
-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	0.80	2.0800
X4	2.6	0.80	2.0800
X5	2.6	0.80	2.0800
X7	2.6	0.80	2.0800
X11	2.6	1.40	3.6400
X14	2.6	1.40	3.6400
X21	2.6	2.00	5.2000
X29	2.6	2.40	6.2400
X43	2.6	3.40	8.8400
X57	2.6	4.60	11.9600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	5.550e-08	2.082e-10
X4	8.345e-08	2.748e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X5	1.178e-07	3.748e-10
X7	1.509e-07	4.747e-10
X11	2.611e-07	7.411e-10
X14	3.205e-07	9.077e-10
X21	4.879e-07	1.307e-09
X29	6.576e-07	1.740e-09
X43	9.957e-07	2.573e-09
X57	1.339e-06	3.406e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	1.371e-05	2.154e-08
X4	2.220e-05	2.342e-08
X5	3.278e-05	2.537e-08
X7	4.313e-05	2.724e-08
X11	7.331e-05	3.760e-08
X14	9.344e-05	4.066e-08
X21	1.430e-04	5.416e-08
X29	1.935e-04	6.567e-08
X43	2.940e-04	9.071e-08
X57	3.964e-04	1.176e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	1.222e-05	2.012e-08
X4	1.956e-05	2.141e-08
X5	2.875e-05	2.283e-08
X7	3.774e-05	2.408e-08
X11	6.429e-05	3.279e-08
X14	8.176e-05	3.490e-08
X21	1.251e-04	4.573e-08
X29	1.693e-04	5.471e-08
X43	2.573e-04	7.453e-08
X57	3.469e-04	9.621e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X4	X5	X7	X11
A (stable)	5.156e-05	9.565e-05	1.387e-04	1.830e-04	2.962e-04
B (stable)	1.973e-04	3.507e-04	5.039e-04	6.605e-04	1.059e-03
A to Z	2.013e-03	3.050e-03	3.885e-03	4.816e-03	7.355e-03
B to Z	1.753e-03	2.548e-03	3.108e-03	3.770e-03	5.490e-03
Pin Cycle (vdd)	X14	X21	X29	X43	X57
A (stable)	3.800e-04	5.557e-04	7.452e-04	1.109e-03	1.472e-03
B (stable)	1.362e-03	1.994e-03	2.663e-03	4.002e-03	5.321e-03
A to Z	8.960e-03	1.330e-02	1.744e-02	2.603e-02	3.484e-02
B to Z	6.600e-03	1.001e-02	1.288e-02	1.918e-02	2.570e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X4	X5	X7	X11
A (stable)	-8.696e-07	-1.739e-06	-2.609e-06	-3.478e-06	-5.218e-06
B (stable)	-1.739e-06	-2.609e-06	-3.478e-06	-4.348e-06	-6.957e-06
A to Z	-8.340e-07	-1.721e-06	-1.711e-06	-1.718e-06	-1.570e-06
B to Z	7.200e-08	-8.340e-07	-8.270e-07	-1.718e-06	-2.570e-06
Pin Cycle (vdds)	X14	X21	X29	X43	X57
A (stable)	-6.087e-06	-7.957e-06	-1.143e-05	-1.565e-05	-2.013e-05
B (stable)	-8.696e-06	-1.217e-05	-1.652e-05	-2.361e-05	-3.057e-05
A to Z	-2.710e-06	-3.710e-06	-4.180e-06	-4.130e-06	-5.390e-06
B to Z	-3.450e-06	-3.840e-06	-5.580e-06	-8.630e-06	-9.450e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X4	X5	X7	X11
A	0.0010	0.0014	0.0017	0.0021	0.0037
B	0.0009	0.0013	0.0017	0.0020	0.0031
Pin	X14	X21	X29	X43	X57
A	0.0041	0.0058	0.0079	0.0120	0.0163
B	0.0037	0.0057	0.0075	0.0115	0.0158



Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X5	X7	X11	X2	X4	X5	X7	X11
A to Z↓	0.0204	0.0190	0.0171	0.0163	0.0159	6.9746	4.0076	2.6951	2.0207	1.2865
A to Z↑	0.0187	0.0170	0.0158	0.0153	0.0146	5.5744	3.1135	2.1613	1.6623	1.0196
B to Z↓	0.0191	0.0172	0.0149	0.0140	0.0131	6.9982	4.0216	2.7054	2.0285	1.2907
B to Z↑	0.0176	0.0156	0.0141	0.0135	0.0126	5.5850	3.1198	2.1668	1.6668	1.0399
	X14	X21	X29	X43	X57	X14	X21	X29	X43	X57
A to Z↓	0.0152	0.0149	0.0147	0.0146	0.0146	0.9816	0.6572	0.4894	0.3263	0.2460
A to Z↑	0.0146	0.0146	0.0144	0.0143	0.0144	0.8313	0.5626	0.4203	0.2815	0.2132
B to Z↓	0.0124	0.0125	0.0122	0.0121	0.0121	0.9850	0.6598	0.4912	0.3277	0.2471
B to Z↑	0.0125	0.0126	0.0124	0.0122	0.0122	0.8520	0.5646	0.4264	0.2846	0.2153

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X5	X7	X11	X2	X4	X5	X7	X11
A to Z↓	0.0329	0.0311	0.0280	0.0267	0.0260	11.8923	6.9585	4.6139	3.4405	2.1629
A to Z↑	0.0264	0.0241	0.0224	0.0218	0.0207	7.9223	4.4415	3.0872	2.3722	1.4462
B to Z↓	0.0310	0.0283	0.0246	0.0232	0.0214	11.8971	6.9669	4.6235	3.4458	2.1655
B to Z↑	0.0247	0.0221	0.0199	0.0192	0.0176	7.9350	4.4469	3.0925	2.3760	1.4593
	X14	X21	X29	X43	X57	X14	X21	X29	X43	X57
A to Z↓	0.0248	0.0242	0.0240	0.0237	0.0237	1.6364	1.0835	0.8051	0.5340	0.3995
A to Z↑	0.0207	0.0205	0.0203	0.0201	0.0201	1.1804	0.7913	0.5921	0.3954	0.2978
B to Z↓	0.0203	0.0205	0.0199	0.0196	0.0196	1.6391	1.0860	0.8067	0.5352	0.4007
B to Z↑	0.0175	0.0176	0.0172	0.0171	0.0171	1.1956	0.7934	0.5968	0.3977	0.2995

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X5	X7	X11	X2	X4	X5	X7	X11
A to Z↓	0.0306	0.0288	0.0259	0.0248	0.0242	10.8717	6.3284	4.1996	3.1292	1.9726
A to Z↑	0.0251	0.0229	0.0212	0.0207	0.0196	7.3894	4.1341	2.8701	2.2050	1.3456
B to Z↓	0.0290	0.0264	0.0230	0.0216	0.0201	10.8885	6.3338	4.2066	3.1351	1.9757
B to Z↑	0.0234	0.0209	0.0189	0.0181	0.0167	7.4009	4.1409	2.8754	2.2093	1.3601
	X14	X21	X29	X43	X57	X14	X21	X29	X43	X57
A to Z↓	0.0230	0.0226	0.0223	0.0221	0.0221	1.4927	0.9899	0.7358	0.4883	0.3657
A to Z↑	0.0196	0.0194	0.0193	0.0191	0.0191	1.0976	0.7366	0.5510	0.3682	0.2775
B to Z↓	0.0190	0.0192	0.0186	0.0184	0.0184	1.4958	0.9927	0.7377	0.4897	0.3670
B to Z↑	0.0166	0.0167	0.0163	0.0162	0.0162	1.1136	0.7387	0.5559	0.3706	0.2793

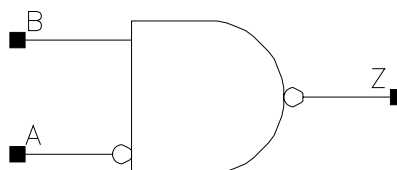


HS65_LS_NAND2A

Cell Description

2 Input NAND, A Input Inverted, 7x Drive

Logical Symbol



Functions

A	B	Z
0	1	0
-	0	1
1	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.20	3.1200
X7	2.6	1.20	3.1200
X14	2.6	1.60	4.1600
X21	2.6	2.20	5.7200
X29	2.6	2.60	6.7600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.492e-07	3.914e-10
X7	2.123e-07	5.579e-10
X14	4.058e-07	1.091e-09
X21	6.225e-07	1.590e-09
X29	8.303e-07	2.057e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	3.853e-05	3.020e-08
X7	5.867e-05	3.345e-08
X14	1.174e-04	4.694e-08
X21	1.814e-04	6.253e-08
X29	2.449e-04	7.602e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.403e-05	2.717e-08
X7	5.152e-05	2.942e-08
X14	1.028e-04	3.986e-08
X21	1.587e-04	5.218e-08
X29	2.141e-04	6.266e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X7	X14	X21	X29
A to Z	6.465e-03	9.076e-03	1.692e-02	2.436e-02	3.191e-02
B to Z	2.569e-03	3.803e-03	6.652e-03	9.777e-03	1.271e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X7	X14	X21	X29
A to Z	-1.756e-06	-1.749e-06	-4.490e-06	-5.350e-06	-6.230e-06
B to Z	-1.721e-06	-2.588e-06	-3.450e-06	-5.810e-06	-7.240e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X7	X14	X21	X29
A	0.0011	0.0011	0.0014	0.0019	0.0022
B	0.0013	0.0020	0.0037	0.0053	0.0074

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X7	X14	X21	X29	X4	X7	X14	X21	X29
A to Z↓	0.0429	0.0485	0.0484	0.0466	0.0474	3.9532	2.0120	0.9755	0.6819	0.4891
A to Z↑	0.0352	0.0374	0.0391	0.0370	0.0375	2.8195	1.6155	0.8153	0.5559	0.4143
B to Z↓	0.0170	0.0139	0.0124	0.0125	0.0119	3.9933	2.0252	0.9781	0.6859	0.4902
B to Z↑	0.0148	0.0134	0.0125	0.0123	0.0121	2.8789	1.6663	0.8525	0.5669	0.4265

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X7	X14	X21	X29	X4	X7	X14	X21	X29
A to Z↓	0.0671	0.0752	0.0748	0.0719	0.0730	6.8838	3.4477	1.6393	1.1214	0.8097
A to Z↑	0.0544	0.0580	0.0610	0.0569	0.0574	4.0531	2.3434	1.1802	0.7931	0.5925
B to Z↓	0.0280	0.0230	0.0202	0.0203	0.0194	6.8884	3.4334	1.6277	1.1157	0.8035
B to Z↑	0.0209	0.0190	0.0175	0.0173	0.0169	4.0902	2.3687	1.1957	0.7962	0.5966

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X7	X14	X21	X29	X4	X7	X14	X21	X29
A to Z↓	0.0620	0.0695	0.0692	0.0665	0.0675	6.2670	3.1363	1.4957	1.0265	0.7404
A to Z↑	0.0508	0.0541	0.0567	0.0531	0.0535	3.7732	2.1783	1.0961	0.7380	0.5512
B to Z↓	0.0261	0.0215	0.0189	0.0190	0.0181	6.2692	3.1250	1.4857	1.0214	0.7348
B to Z↑	0.0198	0.0180	0.0166	0.0164	0.0160	3.8093	2.2031	1.1138	0.7415	0.5559

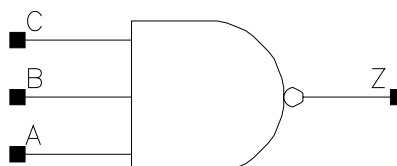


HS65_LS_NAND3

Cell Description

3 Input NAND

Logical Symbol



Functions

A	B	C	Z
1	1	1	0
-	0	-	1
-	-	0	1
0	-	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.00	2.6000
X3	2.6	1.00	2.6000
X5	2.6	1.00	2.6000
X6	2.6	1.20	3.1200
X9	2.6	2.00	5.2000
X13	2.6	2.00	5.2000
X19	2.6	2.60	6.7600
X25	2.6	3.40	8.8400
X38	2.6	5.00	13.0000
X50	2.6	6.60	17.1600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	4.291e-08	1.708e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X3	6.298e-08	2.540e-10
X5	9.088e-08	3.207e-10
X6	1.176e-07	3.873e-10
X9	1.911e-07	5.705e-10
X13	2.425e-07	7.203e-10
X19	3.664e-07	1.020e-09
X25	4.937e-07	1.337e-09
X38	7.495e-07	1.953e-09
X50	1.005e-06	2.585e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	1.038e-05	2.282e-08
X3	1.656e-05	2.427e-08
X5	2.476e-05	2.582e-08
X6	3.319e-05	2.908e-08
X9	5.258e-05	3.933e-08
X13	6.928e-05	4.222e-08
X19	1.050e-04	5.373e-08
X25	1.420e-04	6.682e-08
X38	2.166e-04	9.329e-08
X50	2.910e-04	1.198e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	9.287e-06	2.153e-08
X3	1.465e-05	2.252e-08
X5	2.181e-05	2.359e-08
X6	2.917e-05	2.639e-08
X9	4.632e-05	3.542e-08
X13	6.089e-05	3.740e-08
X19	9.226e-05	4.698e-08
X25	1.248e-04	5.794e-08
X38	1.904e-04	8.023e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

X50	2.558e-04	1.026e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X3	X5	X6	X9
A to Z	2.665e-03	4.090e-03	5.599e-03	7.355e-03	1.110e-02
B to Z	2.334e-03	3.524e-03	4.832e-03	6.309e-03	9.339e-03
C to Z	2.119e-03	3.048e-03	4.050e-03	5.154e-03	6.528e-03
Pin Cycle (vdd)	X13	X19	X25	X38	X50
A to Z	1.405e-02	2.038e-02	2.698e-02	4.027e-02	5.364e-02
B to Z	1.173e-02	1.664e-02	2.235e-02	3.332e-02	4.435e-02
C to Z	8.257e-03	1.260e-02	1.600e-02	2.396e-02	3.201e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X3	X5	X6	X9
A to Z	-9.900e-08	4.700e-08	-9.000e-08	-8.000e-08	-1.830e-06
B to Z	-1.005e-06	-9.570e-07	-8.400e-07	-2.590e-06	-4.200e-06
C to Z	3.600e-08	-8.460e-07	4.000e-08	-1.710e-06	-2.710e-06
Pin Cycle (vdds)	X13	X19	X25	X38	X50
A to Z	-3.500e-07	-9.500e-07	5.700e-07	-4.970e-06	-3.480e-06
B to Z	-4.460e-06	-7.940e-06	-9.540e-06	-1.576e-05	-2.051e-05
C to Z	-3.450e-06	-5.710e-06	-7.060e-06	-1.556e-05	-1.917e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X3	X5	X6	X9
A	0.0009	0.0013	0.0017	0.0020	0.0032
B	0.0011	0.0014	0.0017	0.0020	0.0034
C	0.0009	0.0013	0.0016	0.0020	0.0030
Pin	X13	X19	X25	X38	X50
A	0.0039	0.0057	0.0075	0.0114	0.0152
B	0.0041	0.0055	0.0078	0.0117	0.0157
C	0.0036	0.0054	0.0071	0.0107	0.0144

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X5	X6	X9	X2	X3	X5	X6	X9
A to Z↓	0.0295	0.0272	0.0252	0.0244	0.0249	9.9172	5.6884	3.7507	2.7571	1.8585
A to Z↑	0.0221	0.0202	0.0206	0.0185	0.0180	5.8421	3.3561	2.5758	1.6656	1.0986
B to Z↓	0.0279	0.0253	0.0237	0.0228	0.0229	9.9306	5.7067	3.7609	2.7669	1.8658
B to Z↑	0.0205	0.0187	0.0193	0.0173	0.0167	5.8139	3.3411	2.5767	1.6592	1.0757
C to Z↓	0.0262	0.0227	0.0204	0.0191	0.0170	9.9558	5.7181	3.7674	2.7715	1.8703
C to Z↑	0.0195	0.0170	0.0176	0.0154	0.0140	5.7075	3.2200	2.6440	1.6665	1.0822
	X13	X19	X25	X38	X50	X13	X19	X25	X38	X50
A to Z↓	0.0240	0.0235	0.0235	0.0236	0.0237	1.4038	0.9590	0.7223	0.4860	0.3671
A to Z↑	0.0179	0.0176	0.0175	0.0175	0.0176	0.8529	0.5666	0.4283	0.2866	0.2159
B to Z↓	0.0221	0.0213	0.0216	0.0215	0.0216	1.4093	0.9626	0.7252	0.4884	0.3693
B to Z↑	0.0165	0.0162	0.0162	0.0162	0.0163	0.8308	0.5644	0.4221	0.2835	0.2144
C to Z↓	0.0164	0.0170	0.0164	0.0164	0.0165	1.4116	0.9648	0.7266	0.4894	0.3702
C to Z↑	0.0138	0.0139	0.0136	0.0136	0.0137	0.8368	0.5671	0.4245	0.2857	0.2161

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X5	X6	X9	X2	X3	X5	X6	X9
A to Z↓	0.0508	0.0471	0.0435	0.0420	0.0423	17.5773	10.2171	6.6747	4.8580	3.2436
A to Z↑	0.0314	0.0288	0.0295	0.0263	0.0250	8.3301	4.7998	3.7110	2.3650	1.5414
B to Z↓	0.0473	0.0437	0.0408	0.0392	0.0393	17.5846	10.2178	6.6792	4.8620	3.2451
B to Z↑	0.0289	0.0267	0.0277	0.0247	0.0236	8.2509	4.7480	3.6901	2.3442	1.5179
C to Z↓	0.0442	0.0388	0.0349	0.0327	0.0287	17.5946	10.2272	6.6830	4.8646	3.2492
C to Z↑	0.0277	0.0244	0.0253	0.0220	0.0198	8.1485	4.6006	3.8050	2.3623	1.5226
	X13	X19	X25	X38	X50	X13	X19	X25	X38	X50
A to Z↓	0.0406	0.0396	0.0394	0.0392	0.0393	2.4157	1.6296	1.2194	0.8134	0.6119
A to Z↑	0.0249	0.0247	0.0244	0.0244	0.0245	1.1967	0.7974	0.5990	0.3999	0.3006

Propagation Delay at 125C, 1.10V Worst process

B to Z↓	0.0377	0.0359	0.0364	0.0361	0.0361	2.4185	1.6306	1.2205	0.8152	0.6124
B to Z↑	0.0234	0.0229	0.0228	0.0228	0.0229	1.1734	0.7888	0.5917	0.3961	0.2983
C to Z↓	0.0276	0.0284	0.0272	0.0271	0.0272	2.4198	1.6325	1.2217	0.8160	0.6131
C to Z↑	0.0195	0.0197	0.0192	0.0191	0.0192	1.1791	0.7953	0.5946	0.3988	0.3005

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X5	X6	X9	X2	X3	X5	X6	X9
A to Z↓	0.0468	0.0433	0.0400	0.0386	0.0390	16.0089	9.2433	6.0373	4.3949	2.9415
A to Z↑	0.0298	0.0273	0.0281	0.0250	0.0238	7.7753	4.4742	3.4705	2.1992	1.4361
B to Z↓	0.0436	0.0402	0.0375	0.0361	0.0362	15.9972	9.2498	6.0431	4.3986	2.9444
B to Z↑	0.0275	0.0253	0.0263	0.0235	0.0224	7.7094	4.4287	3.4512	2.1807	1.4132
C to Z↓	0.0408	0.0358	0.0322	0.0302	0.0266	16.0085	9.2546	6.0454	4.4026	2.9471
C to Z↑	0.0263	0.0231	0.0240	0.0209	0.0188	7.5969	4.2826	3.5592	2.1972	1.4191
	X13	X19	X25	X38	X50	X13	X19	X25	X38	X50
A to Z↓	0.0374	0.0365	0.0363	0.0362	0.0363	2.1935	1.4820	1.1099	0.7416	0.5579
A to Z↑	0.0237	0.0235	0.0232	0.0232	0.0233	1.1143	0.7423	0.5580	0.3725	0.2802
B to Z↓	0.0347	0.0332	0.0336	0.0333	0.0334	2.1959	1.4834	1.1114	0.7430	0.5586
B to Z↑	0.0222	0.0217	0.0217	0.0217	0.0218	1.0918	0.7348	0.5510	0.3691	0.2780
C to Z↓	0.0256	0.0264	0.0253	0.0252	0.0253	2.1977	1.4855	1.1127	0.7438	0.5594
C to Z↑	0.0185	0.0187	0.0182	0.0181	0.0183	1.0981	0.7408	0.5540	0.3719	0.2803

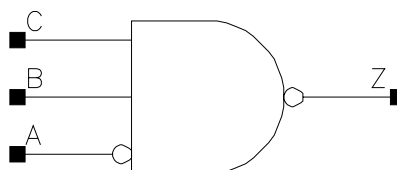


HS65_LS_NAND3A

Cell Description

3 Input NAND, A Input Inverted

Logical Symbol



Functions

A	B	C	Z
0	1	1	0
-	0	-	1
1	-	-	1
-	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X3	2.6	1.40	3.6400
X6	2.6	1.40	3.6400
X13	2.6	2.20	5.7200
X19	2.6	3.00	7.8000
X25	2.6	3.80	9.8800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X3	1.281e-07	3.206e-10
X6	1.757e-07	4.871e-10
X13	3.384e-07	8.868e-10
X19	5.028e-07	1.287e-09
X25	6.696e-07	1.686e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X3	3.253e-05	3.044e-08
X6	4.766e-05	3.336e-08
X13	9.540e-05	4.860e-08
X19	1.440e-04	6.399e-08
X25	1.948e-04	7.906e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X3	2.881e-05	2.789e-08
X6	4.201e-05	2.996e-08
X13	8.378e-05	4.247e-08
X19	1.264e-04	5.520e-08
X25	1.707e-04	6.760e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X3	X6	X13	X19	X25
A to Z	7.572e-03	1.121e-02	2.124e-02	3.112e-02	4.166e-02
B to Z	3.737e-03	6.087e-03	1.101e-02	1.680e-02	2.179e-02
C to Z	3.170e-03	4.975e-03	8.503e-03	1.271e-02	1.705e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X3	X6	X13	X19	X25
A to Z	-1.759e-06	-1.750e-06	-3.750e-06	-4.220e-06	-8.490e-06
B to Z	-1.716e-06	-2.730e-06	-4.730e-06	-6.940e-06	-9.280e-06
C to Z	4.700e-08	-8.300e-07	-3.590e-06	-5.710e-06	-7.930e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X3	X6	X13	X19	X25
A	0.0011	0.0011	0.0016	0.0019	0.0022
B	0.0014	0.0020	0.0042	0.0054	0.0080

Pin Capacitance (pf) at 25C, 1.20V Typ process

C	0.0013	0.0020	0.0036	0.0053	0.0076

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X13	X19	X25	X3	X6	X13	X19	X25
A to Z↓	0.0523	0.0553	0.0551	0.0544	0.0558	5.5905	2.7901	1.3624	0.9663	0.6778
A to Z↑	0.0379	0.0408	0.0425	0.0399	0.0416	3.0487	1.6179	0.8209	0.5564	0.4181
B to Z↓	0.0262	0.0224	0.0205	0.0213	0.0199	5.6286	2.8042	1.3684	0.9712	0.6803
B to Z↑	0.0185	0.0170	0.0160	0.0162	0.0157	3.1063	1.6598	0.8294	0.5647	0.4154
C to Z↓	0.0229	0.0189	0.0164	0.0171	0.0162	5.6392	2.8097	1.3696	0.9732	0.6812
C to Z↑	0.0169	0.0152	0.0138	0.0139	0.0136	3.1235	1.6690	0.8342	0.5673	0.4185

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X13	X19	X25	X3	X6	X13	X19	X25
A to Z↓	0.0854	0.0889	0.0877	0.0867	0.0884	10.0467	4.9305	2.3744	1.6369	1.1664
A to Z↑	0.0585	0.0632	0.0660	0.0613	0.0636	4.3847	2.3445	1.1854	0.7941	0.5976
B to Z↓	0.0452	0.0385	0.0350	0.0359	0.0337	10.0396	4.9219	2.3680	1.6335	1.1621
B to Z↑	0.0262	0.0242	0.0227	0.0229	0.0222	4.3715	2.3456	1.1683	0.7889	0.5833
C to Z↓	0.0391	0.0323	0.0277	0.0284	0.0272	10.0533	4.9266	2.3682	1.6352	1.1631
C to Z↑	0.0241	0.0217	0.0195	0.0197	0.0193	4.4198	2.3694	1.1711	0.7950	0.5857

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X13	X19	X25	X3	X6	X13	X19	X25
A to Z↓	0.0786	0.0819	0.0807	0.0799	0.0814	9.0952	4.4613	2.1530	1.4905	1.0595
A to Z↑	0.0547	0.0590	0.0615	0.0572	0.0594	4.0837	2.1789	1.1021	0.7390	0.5559
B to Z↓	0.0415	0.0354	0.0322	0.0332	0.0311	9.0949	4.4558	2.1474	1.4872	1.0555



Propagation Delay at 125C, 1.15V Worst process

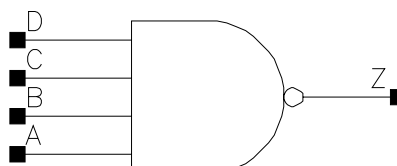
B to Z$\uparrow$	0.0249	0.0230	0.0216	0.0217	0.0211	4.0757	2.1819	1.0876	0.7349	0.5432
C to Z$\downarrow$	0.0360	0.0298	0.0256	0.0264	0.0252	9.1010	4.4586	2.1478	1.4891	1.0566
C to Z$\uparrow$	0.0228	0.0205	0.0185	0.0187	0.0183	4.1186	2.2037	1.0911	0.7407	0.5459

HS65_LS_NAND4

Cell Description

4 Input NAND

Logical Symbol



Functions

A	B	C	D	Z
1	1	1	1	0
-	-	0	-	1
-	0	-	-	1
0	-	-	-	1
-	-	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.20	5.7200
X9	2.6	2.20	5.7200
X18	2.6	2.60	6.7600
X27	2.6	3.20	8.3200
X35	2.6	3.60	9.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	2.496e-07	4.829e-10
X9	3.528e-07	6.162e-10
X18	7.155e-07	1.182e-09
X27	1.057e-06	1.882e-09
X35	1.454e-06	2.365e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	6.661e-05	4.235e-08
X9	1.008e-04	4.525e-08
X18	2.167e-04	6.043e-08
X27	3.217e-04	7.881e-08
X35	4.557e-04	9.136e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	5.883e-05	3.827e-08
X9	8.832e-05	4.032e-08
X18	1.891e-04	5.199e-08
X27	2.805e-04	6.612e-08
X35	3.970e-04	7.584e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	1.011e-02	1.249e-02	2.158e-02	2.993e-02	3.972e-02
B to Z	9.802e-03	1.218e-02	2.111e-02	2.917e-02	3.859e-02
C to Z	1.031e-02	1.292e-02	1.990e-02	3.246e-02	3.685e-02
D to Z	9.978e-03	1.259e-02	1.938e-02	3.173e-02	3.585e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-1.888e-06	-1.878e-06	-3.199e-05	-7.010e-06	-6.751e-05
B to Z	-1.887e-06	-2.009e-06	-9.474e-06	-8.760e-06	-1.886e-05
C to Z	-3.000e-06	-3.992e-06	-4.750e-06	-1.251e-05	-7.750e-06
D to Z	-3.000e-06	-4.000e-06	-4.882e-06	-1.312e-05	-8.740e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0011	0.0012	0.0015	0.0019	0.0022
B	0.0011	0.0011	0.0014	0.0019	0.0022
C	0.0010	0.0010	0.0015	0.0019	0.0023
D	0.0010	0.0011	0.0015	0.0020	0.0022

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0963	0.0874	0.0801	0.0723	0.0723	2.4637	1.2297	0.6026	0.3986	0.2962
A to Z↑	0.0626	0.0664	0.0601	0.0540	0.0550	3.7318	1.6236	0.8181	0.5406	0.4054
B to Z↓	0.0948	0.0859	0.0783	0.0703	0.0703	2.4630	1.2298	0.6021	0.3988	0.2961
B to Z↑	0.0603	0.0639	0.0578	0.0520	0.0528	3.7320	1.6229	0.8174	0.5408	0.4054
C to Z↓	0.0984	0.0895	0.0725	0.0773	0.0664	2.4642	1.2297	0.6023	0.3989	0.2961
C to Z↑	0.0644	0.0653	0.0570	0.0564	0.0536	3.7348	1.6249	0.8176	0.5410	0.4052
D to Z↓	0.0967	0.0880	0.0709	0.0757	0.0647	2.4640	1.2296	0.6024	0.3989	0.2959
D to Z↑	0.0617	0.0641	0.0546	0.0544	0.0516	3.7333	1.6245	0.8176	0.5412	0.4051

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1605	0.1461	0.1340	0.1212	0.1194	3.9852	1.9734	0.9334	0.6180	0.4522
A to Z↑	0.0966	0.1029	0.0924	0.0825	0.0843	5.4424	2.3782	1.1773	0.7776	0.5798
B to Z↓	0.1577	0.1434	0.1311	0.1177	0.1164	3.9849	1.9734	0.9328	0.6181	0.4522
B to Z↑	0.0932	0.0991	0.0892	0.0796	0.0812	5.4436	2.3776	1.1765	0.7778	0.5800
C to Z↓	0.1644	0.1504	0.1213	0.1292	0.1094	3.9850	1.9738	0.9325	0.6180	0.4522
C to Z↑	0.0998	0.1018	0.0879	0.0867	0.0817	5.4501	2.3804	1.1754	0.7791	0.5790
D to Z↓	0.1614	0.1475	0.1184	0.1264	0.1065	3.9838	1.9733	0.9328	0.6179	0.4522
D to Z↑	0.0957	0.1000	0.0841	0.0837	0.0789	5.4453	2.3805	1.1746	0.7789	0.5790



Propagation Delay at 125C, 1.15V Worst process

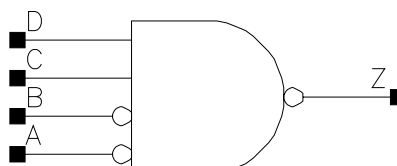
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1469	0.1336	0.1222	0.1106	0.1092	3.6839	1.8234	0.8660	0.5736	0.4207
A to Z↑	0.0896	0.0954	0.0858	0.0766	0.0784	5.0895	2.2064	1.0945	0.7231	0.5394
B to Z↓	0.1444	0.1312	0.1197	0.1075	0.1066	3.6821	1.8236	0.8660	0.5734	0.4208
B to Z↑	0.0863	0.0918	0.0828	0.0739	0.0754	5.0894	2.2060	1.0938	0.7230	0.5394
C to Z↓	0.1503	0.1373	0.1108	0.1179	0.1002	3.6831	1.8237	0.8661	0.5738	0.4207
C to Z↑	0.0928	0.0944	0.0815	0.0805	0.0759	5.0941	2.2101	1.0923	0.7241	0.5386
D to Z↓	0.1477	0.1348	0.1083	0.1154	0.0977	3.6814	1.8236	0.8662	0.5738	0.4206
D to Z↑	0.0889	0.0927	0.0780	0.0777	0.0732	5.0930	2.2096	1.0926	0.7241	0.5383

HS65_LS_NAND4AB

Cell Description

4 Input NAND, A and B Inputs Inverted ,6x Drive

Logical Symbol



Functions

A	B	C	D	Z
0	0	1	1	0
1	-	-	-	1
-	-	-	0	1
-	-	0	-	1
-	1	-	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X3	2.6	1.40	3.6400
X6	2.6	1.60	4.1600
X13	2.6	2.60	6.7600
X19	2.6	3.80	9.8800
X25	2.6	4.60	11.9600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X3	1.039e-07	2.498e-10
X6	1.631e-07	4.351e-10
X13	3.128e-07	8.015e-10
X19	5.176e-07	1.201e-09
X25	6.636e-07	1.592e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X3	2.625e-05	2.995e-08
X6	4.512e-05	3.523e-08
X13	8.972e-05	5.224e-08
X19	1.484e-04	7.032e-08
X25	1.942e-04	8.491e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X3	2.332e-05	2.759e-08
X6	3.977e-05	3.181e-08
X13	7.877e-05	4.620e-08
X19	1.305e-04	6.159e-08
X25	1.705e-04	7.371e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X3	X6	X13	X19	X25
A to Z	7.727e-03	1.277e-02	2.439e-02	3.576e-02	5.017e-02
B to Z	7.233e-03	1.201e-02	2.292e-02	3.351e-02	4.714e-02
C to Z	3.466e-03	6.107e-03	1.150e-02	1.693e-02	2.243e-02
D to Z	2.996e-03	5.005e-03	8.376e-03	1.281e-02	1.682e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X3	X6	X13	X19	X25
A to Z	-3.688e-06	-7.344e-06	-1.582e-05	-2.130e-05	-3.143e-05
B to Z	-1.310e-07	-7.500e-07	2.600e-07	-7.900e-07	-2.010e-06
C to Z	-1.873e-06	-2.470e-06	-6.470e-06	-7.680e-06	-1.129e-05
D to Z	-8.460e-07	-1.710e-06	-3.720e-06	-3.970e-06	-8.810e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X3	X6	X13	X19	X25

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0010	0.0014	0.0021	0.0034	0.0041
B	0.0011	0.0016	0.0022	0.0033	0.0040
C	0.0013	0.0020	0.0037	0.0054	0.0077
D	0.0012	0.0020	0.0036	0.0053	0.0071

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X13	X19	X25	X3	X6	X13	X19	X25
A to Z↓	0.0705	0.0654	0.0655	0.0616	0.0656	6.5090	2.7857	1.5063	0.9667	0.7114
A to Z↑	0.0420	0.0393	0.0375	0.0357	0.0385	3.3615	1.6345	0.8202	0.5556	0.4191
B to Z↓	0.0679	0.0625	0.0625	0.0586	0.0625	6.5083	2.7873	1.5071	0.9669	0.7114
B to Z↑	0.0388	0.0377	0.0354	0.0335	0.0361	3.3557	1.6335	0.8195	0.5546	0.4187
C to Z↓	0.0275	0.0224	0.0226	0.0214	0.0210	6.5187	2.7937	1.5106	0.9698	0.7120
C to Z↑	0.0188	0.0170	0.0162	0.0163	0.0162	3.4213	1.6589	0.8329	0.5646	0.4244
D to Z↓	0.0244	0.0189	0.0173	0.0171	0.0164	6.5252	2.7986	1.5130	0.9719	0.7134
D to Z↑	0.0175	0.0152	0.0138	0.0139	0.0137	3.4401	1.6676	0.8375	0.5666	0.4238

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X13	X19	X25	X3	X6	X13	X19	X25
A to Z↓	0.1180	0.1082	0.1088	0.1011	0.1074	11.6641	4.9109	2.6102	1.6361	1.2063
A to Z↑	0.0654	0.0616	0.0579	0.0553	0.0592	4.8627	2.3622	1.1728	0.7916	0.5989
B to Z↓	0.1127	0.1026	0.1029	0.0952	0.1012	11.6610	4.9144	2.6103	1.6365	1.2064
B to Z↑	0.0603	0.0589	0.0546	0.0511	0.0548	4.8491	2.3575	1.1707	0.7897	0.5975
C to Z↓	0.0473	0.0384	0.0387	0.0360	0.0352	11.6304	4.8940	2.6001	1.6299	1.1987
C to Z↑	0.0266	0.0243	0.0230	0.0229	0.0228	4.8341	2.3435	1.1697	0.7885	0.5931
D to Z↓	0.0415	0.0323	0.0292	0.0284	0.0273	11.6321	4.8982	2.6021	1.6312	1.1998
D to Z↑	0.0248	0.0217	0.0196	0.0197	0.0193	4.8890	2.3663	1.1796	0.7937	0.5910



Propagation Delay at 125C, 1.15V Worst process

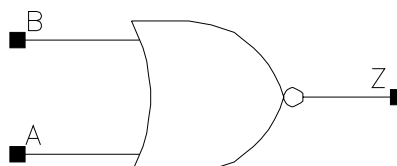
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X13	X19	X25	X3	X6	X13	X19	X25
A to Z ↓	0.1078	0.0989	0.0994	0.0926	0.0982	10.5775	4.4478	2.3678	1.4902	1.0982
A to Z ↑	0.0612	0.0575	0.0542	0.0518	0.0554	4.5281	2.1960	1.0913	0.7368	0.5570
B to Z ↓	0.1030	0.0939	0.0940	0.0872	0.0926	10.5753	4.4487	2.3688	1.4904	1.0984
B to Z ↑	0.0564	0.0550	0.0511	0.0479	0.0513	4.5163	2.1920	1.0893	0.7350	0.5559
C to Z ↓	0.0435	0.0353	0.0357	0.0333	0.0326	10.5473	4.4314	2.3590	1.4841	1.0914
C to Z ↑	0.0253	0.0230	0.0218	0.0218	0.0216	4.5050	2.1800	1.0892	0.7345	0.5526
D to Z ↓	0.0383	0.0298	0.0270	0.0264	0.0253	10.5534	4.4342	2.3611	1.4857	1.0924
D to Z ↑	0.0236	0.0206	0.0186	0.0187	0.0183	4.5527	2.2008	1.0987	0.7396	0.5511

HS65_LS_NOR2

Cell Description

2 Input NOR

Logical Symbol



Functions

A	B	Z
-	1	0
1	-	0
0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	0.80	2.0800
X3	2.6	0.80	2.0800
X5	2.6	0.80	2.0800
X6	2.6	0.80	2.0800
X9	2.6	1.40	3.6400
X13	2.6	1.40	3.6400
X19	2.6	2.00	5.2000
X25	2.6	2.40	6.2400
X38	2.6	3.40	8.8400
X50	2.6	4.60	11.9600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	5.896e-08	1.832e-10
X3	7.901e-08	2.498e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X5	1.094e-07	4.247e-10
X6	1.408e-07	4.913e-10
X9	2.386e-07	7.244e-10
X13	2.958e-07	9.576e-10
X19	4.533e-07	1.391e-09
X25	6.090e-07	1.890e-09
X38	9.150e-07	2.823e-09
X50	1.237e-06	3.822e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	1.461e-05	2.309e-08
X3	2.055e-05	2.490e-08
X5	2.966e-05	2.749e-08
X6	3.933e-05	2.991e-08
X9	6.528e-05	3.998e-08
X13	8.426e-05	4.456e-08
X19	1.300e-04	6.004e-08
X25	1.750e-04	7.271e-08
X38	2.690e-04	1.009e-07
X50	3.622e-04	1.311e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	1.297e-05	2.144e-08
X3	1.808e-05	2.269e-08
X5	2.597e-05	2.446e-08
X6	3.434e-05	2.626e-08
X9	5.715e-05	3.480e-08
X13	7.356e-05	3.802e-08
X19	1.135e-04	5.045e-08
X25	1.528e-04	6.023e-08
X38	2.345e-04	8.254e-08
X50	3.159e-04	1.067e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X3	X5	X6	X9
A (stable)	9.800e-05	1.494e-04	2.228e-04	2.935e-04	4.908e-04
B (stable)	6.131e-06	6.000e-06	7.000e-06	5.000e-06	1.077e-04
A to Z	2.238e-03	2.877e-03	3.826e-03	4.852e-03	7.840e-03
B to Z	1.749e-03	2.108e-03	2.662e-03	3.322e-03	4.599e-03
Pin Cycle (vdd)	X13	X19	X25	X38	X50
A (stable)	6.387e-04	9.609e-04	1.277e-03	1.927e-03	2.546e-03
B (stable)	1.577e-04	7.687e-05	2.066e-04	2.526e-04	3.166e-04
A to Z	9.814e-03	1.401e-02	1.869e-02	2.722e-02	3.622e-02
B to Z	5.522e-03	8.523e-03	1.072e-02	1.557e-02	2.072e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X3	X5	X6	X9
A (stable)	-6.739e-06	-9.739e-06	-1.374e-05	-1.861e-05	-3.596e-05
B (stable)	1.439e-04	2.089e-04	2.989e-04	3.869e-04	8.913e-04
A to Z	-3.661e-06	-5.531e-06	-7.518e-06	-8.520e-06	-1.223e-05
B to Z	3.600e-08	9.360e-07	1.793e-06	3.555e-06	6.427e-06
Pin Cycle (vdds)	X13	X19	X25	X38	X50
A (stable)	-4.596e-05	-5.896e-05	-8.591e-05	-1.170e-04	-1.651e-04
B (stable)	1.154e-03	1.314e-03	1.977e-03	2.760e-03	3.680e-03
A to Z	-1.638e-05	-2.162e-05	-2.800e-05	-4.005e-05	-5.829e-05
B to Z	8.497e-06	1.365e-05	1.794e-05	2.516e-05	3.231e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X3	X5	X6	X9
A	0.0010	0.0013	0.0016	0.0020	0.0029
B	0.0011	0.0013	0.0015	0.0019	0.0029
Pin	X13	X19	X25	X38	X50
A	0.0036	0.0053	0.0071	0.0103	0.0138
B	0.0034	0.0051	0.0067	0.0099	0.0133



Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X5	X6	X9	X2	X3	X5	X6	X9
A to Z↓	0.0161	0.0149	0.0141	0.0137	0.0131	4.0698	2.7661	1.9193	1.4564	0.9317
A to Z↑	0.0254	0.0230	0.0215	0.0211	0.0216	9.1008	6.1622	4.2465	3.2579	2.1362
B to Z↓	0.0147	0.0133	0.0122	0.0118	0.0109	4.0777	2.7723	1.9234	1.4598	0.9333
B to Z↑	0.0227	0.0198	0.0178	0.0173	0.0162	9.1341	6.1878	4.2590	3.2719	2.1467
	X13	X19	X25	X38	X50	X13	X19	X25	X38	X50
A to Z↓	0.0129	0.0127	0.0125	0.0123	0.0124	0.7209	0.4862	0.3634	0.2463	0.1858
A to Z↑	0.0212	0.0205	0.0206	0.0201	0.0202	1.6615	1.1173	0.8408	0.5630	0.4250
B to Z↓	0.0105	0.0106	0.0102	0.0100	0.0101	0.7221	0.4874	0.3642	0.2470	0.1865
B to Z↑	0.0154	0.0158	0.0153	0.0150	0.0151	1.6691	1.1223	0.8450	0.5657	0.4279

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X5	X6	X9	X2	X3	X5	X6	X9
A to Z↓	0.0251	0.0235	0.0222	0.0216	0.0206	6.2669	4.3033	2.9887	2.2499	1.4256
A to Z↑	0.0376	0.0344	0.0323	0.0318	0.0324	13.7777	9.3720	6.4708	4.9622	3.2104
B to Z↓	0.0228	0.0208	0.0193	0.0187	0.0172	6.2698	4.3051	2.9916	2.2509	1.4226
B to Z↑	0.0330	0.0290	0.0263	0.0256	0.0235	13.7925	9.3854	6.4820	4.9717	3.2197
	X13	X19	X25	X38	X50	X13	X19	X25	X38	X50
A to Z↓	0.0202	0.0199	0.0195	0.0192	0.0192	1.0949	0.7307	0.5452	0.3653	0.2745
A to Z↑	0.0320	0.0307	0.0308	0.0302	0.0302	2.4958	1.6675	1.2525	0.8357	0.6292
B to Z↓	0.0165	0.0166	0.0161	0.0158	0.0158	1.0929	0.7303	0.5445	0.3650	0.2748
B to Z↑	0.0225	0.0230	0.0222	0.0217	0.0217	2.5032	1.6725	1.2562	0.8385	0.6320

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X5	X6	X9	X2	X3	X5	X6	X9
A to Z↓	0.0238	0.0223	0.0210	0.0204	0.0196	5.8252	3.9871	2.7677	2.0840	1.3233
A to Z↑	0.0351	0.0321	0.0301	0.0296	0.0303	12.7161	8.6337	5.9529	4.5615	2.9569
B to Z↓	0.0216	0.0197	0.0182	0.0177	0.0163	5.8291	3.9894	2.7696	2.0849	1.3215
B to Z↑	0.0309	0.0271	0.0246	0.0239	0.0220	12.7284	8.6458	5.9610	4.5702	2.9672
	X13	X19	X25	X38	X50	X13	X19	X25	X38	X50
A to Z↓	0.0191	0.0189	0.0186	0.0182	0.0182	1.0170	0.6795	0.5072	0.3403	0.2559
A to Z↑	0.0299	0.0287	0.0288	0.0282	0.0283	2.2982	1.5366	1.1542	0.7705	0.5810
B to Z↓	0.0157	0.0157	0.0153	0.0149	0.0150	1.0155	0.6797	0.5069	0.3402	0.2564
B to Z↑	0.0210	0.0216	0.0208	0.0203	0.0204	2.3051	1.5415	1.1580	0.7733	0.5831

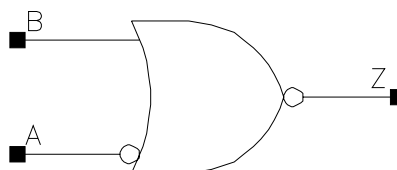


HS65_LS_NOR2A

Cell Description

2 Input NOR, A Input Inverted, 6x Drive

Logical Symbol



Functions

A	B	Z
0	-	0
-	1	0
1	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X3	2.6	1.00	2.6000
X6	2.6	1.20	3.1200
X13	2.6	1.60	4.1600
X19	2.6	2.20	5.7200
X25	2.6	2.60	6.7600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X3	1.277e-07	3.581e-10
X6	2.040e-07	5.995e-10
X13	4.130e-07	1.166e-09
X19	5.960e-07	1.699e-09
X25	7.952e-07	2.298e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X3	3.335e-05	2.919e-08
X6	5.577e-05	3.608e-08
X13	1.167e-04	5.135e-08
X19	1.707e-04	6.841e-08
X25	2.303e-04	8.241e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X3	2.944e-05	2.619e-08
X6	4.889e-05	3.168e-08
X13	1.019e-04	4.316e-08
X19	1.490e-04	5.686e-08
X25	2.009e-04	6.758e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X3	X6	X13	X19	X25
A to Z	6.326e-03	8.976e-03	1.702e-02	2.431e-02	3.271e-02
B to Z	2.241e-03	3.351e-03	5.601e-03	8.270e-03	1.105e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X3	X6	X13	X19	X25
A to Z	-1.382e-05	-3.122e-05	-6.195e-05	-1.077e-04	-1.374e-04
B to Z	9.370e-07	3.555e-06	7.764e-06	1.286e-05	1.660e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X3	X6	X13	X19	X25
A	0.0010	0.0011	0.0018	0.0019	0.0022
B	0.0012	0.0018	0.0035	0.0049	0.0071

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X13	X19	X25	X3	X6	X13	X19	X25
A to Z↓	0.0420	0.0449	0.0411	0.0430	0.0446	2.7213	1.4145	0.7146	0.4812	0.3516
A to Z↑	0.0417	0.0426	0.0407	0.0420	0.0429	6.0465	3.2120	1.6112	1.1108	0.8103
B to Z↓	0.0139	0.0117	0.0105	0.0103	0.0100	2.8360	1.4516	0.7311	0.4870	0.3552
B to Z↑	0.0203	0.0170	0.0153	0.0154	0.0150	6.1096	3.2430	1.6275	1.1218	0.8184

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X13	X19	X25	X3	X6	X13	X19	X25
A to Z↓	0.0648	0.0687	0.0628	0.0656	0.0679	4.3233	2.2064	1.1102	0.7342	0.5385
A to Z↑	0.0657	0.0673	0.0639	0.0655	0.0670	9.2580	4.9216	2.4511	1.6671	1.2257
B to Z↓	0.0218	0.0185	0.0164	0.0162	0.0157	4.4352	2.2217	1.0939	0.7295	0.5270
B to Z↑	0.0298	0.0252	0.0224	0.0223	0.0218	9.2871	4.9305	2.4563	1.6705	1.2272

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X13	X19	X25	X3	X6	X13	X19	X25
A to Z↓	0.0603	0.0640	0.0584	0.0611	0.0632	4.0022	2.0466	1.0299	0.6829	0.5008
A to Z↑	0.0609	0.0623	0.0592	0.0607	0.0620	8.5220	4.5248	2.2545	1.5364	1.1280
B to Z↓	0.0206	0.0175	0.0156	0.0154	0.0149	4.1059	2.0607	1.0181	0.6789	0.4912
B to Z↑	0.0278	0.0236	0.0210	0.0209	0.0204	8.5544	4.5320	2.2596	1.5397	1.1298



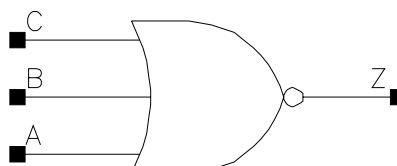


HS65_LS_NOR3

Cell Description

3 Input NOR

Logical Symbol



Functions

A	B	C	Z
1	-	-	0
-	1	-	0
-	-	1	0
0	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X1	2.6	1.00	2.6000
X2	2.6	1.00	2.6000
X3	2.6	1.00	2.6000
X4	2.6	1.00	2.6000
X7	2.6	1.80	4.6800
X9	2.6	1.80	4.6800
X13	2.6	2.60	6.7600
X18	2.6	3.40	8.8400
X26	2.6	4.40	11.4400
X35	2.6	5.80	15.0800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X1	5.201e-08	2.790e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X2	6.067e-08	3.622e-10
X3	6.820e-08	4.122e-10
X4	8.495e-08	5.288e-10
X7	1.376e-07	7.619e-10
X9	1.777e-07	1.028e-09
X13	2.735e-07	1.595e-09
X18	3.704e-07	2.078e-09
X26	5.342e-07	2.960e-09
X35	7.481e-07	4.043e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X1	1.229e-05	2.724e-08
X2	1.471e-05	2.943e-08
X3	1.705e-05	3.054e-08
X4	2.217e-05	3.329e-08
X7	3.729e-05	4.638e-08
X9	4.689e-05	5.151e-08
X13	7.520e-05	6.995e-08
X18	1.008e-04	8.810e-08
X26	1.455e-04	1.207e-07
X35	2.030e-04	1.559e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X1	1.090e-05	2.488e-08
X2	1.300e-05	2.645e-08
X3	1.501e-05	2.727e-08
X4	1.945e-05	2.926e-08
X7	3.263e-05	4.052e-08
X9	4.113e-05	4.413e-08
X13	6.576e-05	5.926e-08
X18	8.820e-05	7.404e-08
X26	1.274e-04	1.008e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

X35	1.778e-04	1.290e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X1	X2	X3	X4	X7
A to Z	3.797e-03	4.710e-03	5.311e-03	6.527e-03	1.036e-02
B to Z	3.172e-03	3.817e-03	4.292e-03	5.117e-03	8.455e-03
C to Z	2.417e-03	2.766e-03	3.085e-03	3.525e-03	4.545e-03
Pin Cycle (vdd)	X9	X13	X18	X26	X35
A to Z	1.306e-02	1.917e-02	2.623e-02	3.699e-02	4.998e-02
B to Z	1.055e-02	1.434e-02	1.997e-02	2.794e-02	3.763e-02
C to Z	5.870e-03	8.520e-03	1.122e-02	1.656e-02	2.232e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X1	X2	X3	X4	X7
A to Z	-7.853e-06	-9.810e-06	-1.082e-05	-1.292e-05	-2.459e-05
B to Z	-1.197e-05	-1.799e-05	-2.090e-05	-2.824e-05	-7.788e-05
C to Z	1.016e-06	1.675e-06	2.542e-06	3.417e-06	5.984e-06
Pin Cycle (vdds)	X9	X13	X18	X26	X35
A to Z	-2.092e-05	-4.285e-05	-5.400e-05	-7.020e-05	-8.400e-05
B to Z	-9.238e-05	-8.957e-05	-1.512e-04	-1.776e-04	-2.409e-04
C to Z	8.600e-06	1.473e-05	2.046e-05	3.089e-05	4.106e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X1	X2	X3	X4	X7
A	0.0012	0.0014	0.0015	0.0018	0.0026
B	0.0013	0.0014	0.0015	0.0018	0.0028
C	0.0012	0.0013	0.0014	0.0017	0.0024
Pin	X9	X13	X18	X26	X35
A	0.0032	0.0048	0.0064	0.0091	0.0127
B	0.0035	0.0046	0.0066	0.0090	0.0124
C	0.0030	0.0044	0.0057	0.0082	0.0117



Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X3	X4	X7	X1	X2	X3	X4	X7
A to Z↓	0.0210	0.0219	0.0208	0.0201	0.0177	4.4111	3.6626	2.9810	2.3539	1.3739
A to Z↑	0.0353	0.0330	0.0329	0.0318	0.0325	9.7351	7.1786	6.3082	4.8967	3.1964
B to Z↓	0.0199	0.0203	0.0193	0.0184	0.0169	4.2965	3.5764	2.9136	2.2947	1.3358
B to Z↑	0.0339	0.0311	0.0309	0.0291	0.0308	9.7785	7.2109	6.3214	4.9097	3.2049
C to Z↓	0.0174	0.0173	0.0165	0.0157	0.0130	4.3533	3.6093	2.9389	2.3362	1.3382
C to Z↑	0.0267	0.0236	0.0233	0.0215	0.0178	9.8170	7.2323	6.3368	4.9239	3.2141
	X9	X13	X18	X26	X35	X9	X13	X18	X26	X35
A to Z↓	0.0216	0.0167	0.0168	0.0164	0.0161	1.4157	0.6875	0.5222	0.3530	0.2552
A to Z↑	0.0320	0.0311	0.0319	0.0318	0.0317	2.4706	1.6747	1.2617	0.8868	0.6542
B to Z↓	0.0201	0.0155	0.0159	0.0157	0.0154	1.3529	0.6692	0.5086	0.3478	0.2518
B to Z↑	0.0301	0.0278	0.0290	0.0285	0.0284	2.4785	1.6796	1.2655	0.8892	0.6560
C to Z↓	0.0150	0.0125	0.0125	0.0125	0.0124	1.3586	0.6813	0.5209	0.3508	0.2543
C to Z↑	0.0182	0.0181	0.0177	0.0184	0.0184	2.4849	1.6851	1.2689	0.8918	0.6579

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X3	X4	X7	X1	X2	X3	X4	X7
A to Z↓	0.0330	0.0348	0.0332	0.0323	0.0278	6.8057	5.7557	4.7423	3.7492	2.1181
A to Z↑	0.0553	0.0519	0.0519	0.0504	0.0515	14.9928	11.1005	9.7636	7.5926	4.9130
B to Z↓	0.0314	0.0323	0.0308	0.0294	0.0263	6.6209	5.5959	4.5935	3.6098	2.0140
B to Z↑	0.0518	0.0476	0.0475	0.0449	0.0474	15.0223	11.1103	9.7689	7.5942	4.9178
C to Z↓	0.0272	0.0273	0.0262	0.0251	0.0203	6.6555	5.6432	4.6480	3.7207	2.0176
C to Z↑	0.0396	0.0349	0.0346	0.0320	0.0262	15.0387	11.1216	9.7841	7.6074	4.9240
	X9	X13	X18	X26	X35	X9	X13	X18	X26	X35
A to Z↓	0.0349	0.0260	0.0260	0.0256	0.0251	2.2641	1.0404	0.7850	0.5335	0.3851
A to Z↑	0.0505	0.0489	0.0501	0.0499	0.0496	3.7920	2.5495	1.9158	1.3404	0.9867

Propagation Delay at 125C, 1.10V Worst process

B to Z↓	0.0324	0.0242	0.0249	0.0245	0.0241	2.1654	1.0013	0.7673	0.5217	0.3771
B to Z↑	0.0462	0.0426	0.0443	0.0434	0.0431	3.7946	2.5515	1.9171	1.3412	0.9873
C to Z↓	0.0240	0.0197	0.0196	0.0196	0.0194	2.1702	1.0262	0.7828	0.5274	0.3816
C to Z↑	0.0267	0.0266	0.0259	0.0269	0.0268	3.7996	2.5565	1.9202	1.3437	0.9884

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X3	X4	X7	X1	X2	X3	X4	X7
A to Z↓	0.0313	0.0329	0.0314	0.0306	0.0263	6.3363	5.3465	4.3977	3.4809	1.9633
A to Z↑	0.0513	0.0481	0.0481	0.0467	0.0477	13.7645	10.1656	8.9453	6.9502	4.5062
B to Z↓	0.0298	0.0306	0.0292	0.0279	0.0250	6.1658	5.2009	4.2646	3.3577	1.8728
B to Z↑	0.0480	0.0441	0.0440	0.0415	0.0438	13.7920	10.1803	8.9538	6.9565	4.5104
C to Z↓	0.0257	0.0258	0.0247	0.0237	0.0192	6.1992	5.2410	4.3105	3.4497	1.8763
C to Z↑	0.0367	0.0324	0.0321	0.0296	0.0244	13.8113	10.2030	8.9664	6.9658	4.5156
	X9	X13	X18	X26	X35	X9	X13	X18	X26	X35
A to Z↓	0.0332	0.0246	0.0247	0.0242	0.0238	2.1180	0.9670	0.7307	0.4960	0.3583
A to Z↑	0.0468	0.0454	0.0465	0.0463	0.0460	3.4762	2.3392	1.7581	1.2311	0.9057
B to Z↓	0.0307	0.0230	0.0236	0.0232	0.0229	2.0207	0.9321	0.7136	0.4855	0.3510
B to Z↑	0.0428	0.0395	0.0410	0.0402	0.0400	3.4791	2.3414	1.7602	1.2320	0.9066
C to Z↓	0.0228	0.0186	0.0186	0.0186	0.0184	2.0258	0.9543	0.7283	0.4906	0.3554
C to Z↑	0.0248	0.0247	0.0241	0.0250	0.0250	3.4838	2.3459	1.7626	1.2341	0.9079

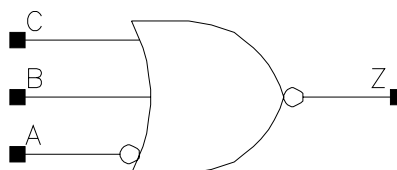


HS65_LS_NOR3A

Cell Description

3 Input NOR, A Input Inverted

Logical Symbol



Functions

A	B	C	Z
-	-	1	0
0	-	-	0
-	1	-	0
1	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.20	3.1200
X4	2.6	1.40	3.6400
X9	2.6	2.20	5.7200
X13	2.6	3.00	7.8000
X18	2.6	3.80	9.8800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	1.150e-07	3.789e-10
X4	1.510e-07	6.495e-10
X9	2.959e-07	1.266e-09
X13	4.255e-07	1.882e-09
X18	5.428e-07	2.465e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	2.781e-05	3.195e-08
X4	3.874e-05	3.958e-08
X9	7.886e-05	5.889e-08
X13	1.162e-04	8.061e-08
X18	1.518e-04	9.951e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	2.467e-05	2.868e-08
X4	3.413e-05	3.473e-08
X9	6.913e-05	5.010e-08
X13	1.016e-04	6.776e-08
X18	1.326e-04	8.290e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X4	X9	X13	X18
A to Z	7.815e-03	1.072e-02	2.044e-02	2.972e-02	4.127e-02
B to Z	3.627e-03	5.310e-03	9.647e-03	1.464e-02	1.977e-02
C to Z	2.857e-03	3.705e-03	6.202e-03	9.076e-03	1.183e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X4	X9	X13	X18
A to Z	-3.766e-05	-8.407e-05	-1.610e-04	-2.717e-04	-3.731e-04
B to Z	-2.985e-06	-5.130e-06	-4.410e-06	-6.320e-06	-1.012e-05
C to Z	9.000e-07	4.284e-06	9.494e-06	1.498e-05	1.980e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X4	X9	X13	X18
A	0.0011	0.0011	0.0016	0.0019	0.0022
B	0.0012	0.0018	0.0036	0.0048	0.0066

Pin Capacitance (pf) at 25C, 1.20V Typ process

C	0.0012	0.0017	0.0031	0.0045	0.0058

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X9	X13	X18	X2	X4	X9	X13	X18
A to Z↓	0.0493	0.0494	0.0495	0.0448	0.0490	4.2132	2.0058	0.9998	0.6294	0.5087
A to Z↑	0.0564	0.0532	0.0516	0.0525	0.0544	9.0704	4.8431	2.4222	1.6810	1.2483
B to Z↓	0.0219	0.0173	0.0159	0.0153	0.0160	4.2587	2.0011	0.9905	0.6300	0.5040
B to Z↑	0.0355	0.0295	0.0274	0.0282	0.0281	9.1155	4.8738	2.4361	1.6914	1.2550
C to Z↓	0.0186	0.0148	0.0128	0.0132	0.0126	4.0164	2.0467	0.9932	0.6888	0.5151
C to Z↑	0.0289	0.0218	0.0186	0.0190	0.0182	9.1351	4.8860	2.4408	1.6960	1.2580

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X9	X13	X18	X2	X4	X9	X13	X18
A to Z↓	0.0764	0.0763	0.0763	0.0689	0.0754	6.7036	3.1539	1.5659	0.9722	0.7834
A to Z↑	0.0901	0.0854	0.0824	0.0834	0.0861	14.0413	7.5334	3.7432	2.5590	1.9047
B to Z↓	0.0346	0.0273	0.0251	0.0239	0.0249	6.6439	3.0654	1.5098	0.9498	0.7563
B to Z↑	0.0547	0.0460	0.0425	0.0435	0.0436	14.0530	7.5368	3.7447	2.5605	1.9046
C to Z↓	0.0289	0.0234	0.0201	0.0207	0.0196	6.1914	3.1688	1.5065	1.0462	0.7682
C to Z↑	0.0429	0.0325	0.0275	0.0280	0.0267	14.0587	7.5506	3.7487	2.5648	1.9066

Propagation Delay at 125C, 1.15V Worst process

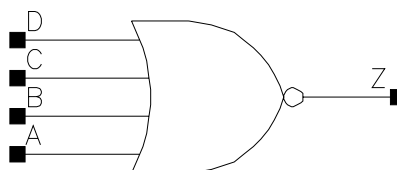
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X9	X13	X18	X2	X4	X9	X13	X18
A to Z↓	0.0713	0.0711	0.0710	0.0642	0.0702	6.2319	2.9237	1.4530	0.9035	0.7281
A to Z↑	0.0833	0.0789	0.0761	0.0770	0.0795	12.8861	6.8947	3.4291	2.3492	1.7475
B to Z↓	0.0328	0.0259	0.0238	0.0227	0.0236	6.1805	2.8459	1.4030	0.8835	0.7039



Propagation Delay at 125C, 1.15V Worst process

B to Z$\uparrow$	0.0506	0.0426	0.0393	0.0404	0.0403	12.8902	6.9028	3.4309	2.3509	1.7478
C to Z$\downarrow$	0.0273	0.0221	0.0190	0.0196	0.0186	5.7619	2.9356	1.4007	0.9718	0.7156
C to Z$\uparrow$	0.0398	0.0301	0.0255	0.0260	0.0248	12.9072	6.9137	3.4340	2.3544	1.7499

HS65_LS_NOR4

Cell Description
 4 Input NOR
Logical Symbol**Functions**

A	B	C	D	Z
1	-	-	-	0
-	-	-	1	0
-	-	1	-	0
-	1	-	-	0
0	0	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.00	5.2000
X9	2.6	2.20	5.7200
X18	2.6	2.60	6.7600
X27	2.6	3.20	8.3200
X35	2.6	3.60	9.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	2.247e-07	7.994e-10
X9	2.789e-07	1.166e-09
X18	4.731e-07	2.148e-09
X27	7.461e-07	3.214e-09
X35	9.658e-07	4.255e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	5.430e-05	4.794e-08
X9	6.900e-05	5.698e-08
X18	1.224e-04	7.888e-08
X27	1.974e-04	1.064e-07
X35	2.622e-04	1.295e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	4.812e-05	4.189e-08
X9	6.087e-05	4.875e-08
X18	1.074e-04	6.486e-08
X27	1.730e-04	8.585e-08
X35	2.295e-04	1.028e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	1.034e-02	1.315e-02	2.011e-02	3.023e-02	3.793e-02
B to Z	9.804e-03	1.262e-02	1.943e-02	2.913e-02	3.649e-02
C to Z	1.009e-02	1.263e-02	2.108e-02	3.195e-02	4.102e-02
D to Z	9.693e-03	1.211e-02	2.031e-02	3.088e-02	3.957e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-4.606e-06	-4.731e-06	-7.740e-06	-1.135e-05	-1.596e-05
B to Z	8.840e-07	-1.310e-07	-1.350e-07	-1.139e-06	-2.142e-06
C to Z	-4.624e-06	-5.486e-06	-9.483e-06	-1.222e-05	-1.635e-05
D to Z	-1.800e-08	-1.330e-07	-3.013e-06	-2.264e-06	-3.398e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0012	0.0012	0.0014	0.0017	0.0020
B	0.0013	0.0013	0.0014	0.0018	0.0021
C	0.0011	0.0010	0.0014	0.0018	0.0021
D	0.0011	0.0011	0.0015	0.0018	0.0021

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0644	0.0606	0.0536	0.0535	0.0503	2.5041	1.2233	0.5875	0.3866	0.2857
A to Z↑	0.0964	0.0893	0.0817	0.0798	0.0755	2.8348	1.6663	0.8260	0.5469	0.4097
B to Z↓	0.0608	0.0583	0.0520	0.0503	0.0481	2.5025	1.2242	0.5868	0.3865	0.2855
B to Z↑	0.0937	0.0866	0.0786	0.0768	0.0722	2.8340	1.6665	0.8257	0.5470	0.4096
C to Z↓	0.0621	0.0584	0.0549	0.0545	0.0536	2.5092	1.2229	0.5890	0.3871	0.2858
C to Z↑	0.0992	0.0901	0.0828	0.0831	0.0824	2.8342	1.6680	0.8259	0.5471	0.4099
D to Z↓	0.0590	0.0562	0.0533	0.0520	0.0520	2.5057	1.2219	0.5887	0.3870	0.2860
D to Z↑	0.0963	0.0873	0.0796	0.0802	0.0793	2.8339	1.6679	0.8259	0.5471	0.4099

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1029	0.0970	0.0858	0.0848	0.0789	4.1315	1.9674	0.9224	0.5949	0.4337
A to Z↑	0.1575	0.1468	0.1329	0.1292	0.1215	4.1725	2.4464	1.1906	0.7906	0.5880
B to Z↓	0.0968	0.0928	0.0831	0.0790	0.0756	4.1325	1.9668	0.9221	0.5945	0.4333
B to Z↑	0.1524	0.1418	0.1272	0.1237	0.1157	4.1708	2.4464	1.1901	0.7907	0.5879
C to Z↓	0.0998	0.0937	0.0879	0.0860	0.0843	4.1451	1.9641	0.9252	0.5960	0.4346
C to Z↑	0.1631	0.1472	0.1354	0.1346	0.1331	4.1763	2.4450	1.1904	0.7905	0.5882
D to Z↓	0.0946	0.0898	0.0852	0.0818	0.0819	4.1392	1.9640	0.9255	0.5957	0.4345
D to Z↑	0.1578	0.1420	0.1298	0.1293	0.1275	4.1721	2.4456	1.1905	0.7908	0.5882



Propagation Delay at 125C, 1.15V Worst process

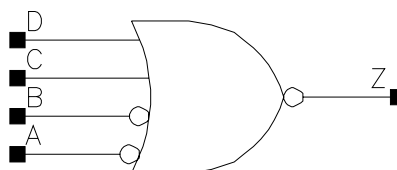
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0955	0.0898	0.0794	0.0786	0.0733	3.8371	1.8150	0.8545	0.5527	0.4038
A to Z↑	0.1444	0.1339	0.1217	0.1184	0.1115	3.8808	2.2710	1.1070	0.7347	0.5467
B to Z↓	0.0898	0.0859	0.0769	0.0733	0.0701	3.8367	1.8143	0.8537	0.5524	0.4038
B to Z↑	0.1398	0.1294	0.1166	0.1134	0.1062	3.8792	2.2707	1.1070	0.7346	0.5469
C to Z↓	0.0926	0.0868	0.0815	0.0799	0.0783	3.8493	1.8119	0.8570	0.5535	0.4045
C to Z↑	0.1493	0.1347	0.1237	0.1230	0.1216	3.8830	2.2706	1.1071	0.7348	0.5471
D to Z↓	0.0877	0.0831	0.0789	0.0759	0.0759	3.8401	1.8111	0.8569	0.5534	0.4044
D to Z↑	0.1444	0.1300	0.1185	0.1182	0.1165	3.8772	2.2706	1.1068	0.7347	0.5471

HS65_LS_NOR4AB

Cell Description

4 Input NOR, A and B Inputs Inverted ,9x Drive

Logical Symbol



Functions

A	B	C	D	Z
-	-	1	-	0
-	0	-	-	0
-	-	-	1	0
0	-	-	-	0
1	1	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.40	3.6400
X4	2.6	1.60	4.1600
X9	2.6	2.40	6.2400
X13	2.6	3.80	9.8800
X18	2.6	4.60	11.9600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	8.288e-08	3.476e-10
X4	1.609e-07	7.244e-10
X9	2.673e-07	1.499e-09
X13	4.524e-07	2.215e-09
X18	5.293e-07	2.806e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	1.999e-05	3.259e-08
X4	4.208e-05	4.383e-08
X9	7.193e-05	6.545e-08
X13	1.216e-04	9.547e-08
X18	1.445e-04	1.145e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	1.780e-05	2.958e-08
X4	3.702e-05	3.820e-08
X9	6.309e-05	5.520e-08
X13	1.067e-04	8.015e-08
X18	1.268e-04	9.555e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X4	X9	X13	X18
A to Z	7.123e-03	1.255e-02	2.261e-02	3.468e-02	4.537e-02
B to Z	6.786e-03	1.178e-02	2.138e-02	3.253e-02	4.279e-02
C to Z	3.056e-03	5.347e-03	9.390e-03	1.487e-02	2.011e-02
D to Z	2.400e-03	3.746e-03	6.043e-03	9.282e-03	1.194e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X4	X9	X13	X18
A to Z	-2.892e-05	-8.560e-05	-1.649e-04	-2.756e-04	-4.076e-04
B to Z	-4.886e-06	-1.409e-05	-2.250e-05	-3.251e-05	-5.483e-05
C to Z	-2.021e-06	-4.270e-06	-5.150e-06	-7.190e-06	-1.274e-05
D to Z	8.070e-07	4.283e-06	9.494e-06	1.485e-05	1.918e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X4	X9	X13	X18

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0010	0.0016	0.0022	0.0037	0.0039
B	0.0009	0.0016	0.0022	0.0035	0.0038
C	0.0012	0.0018	0.0036	0.0049	0.0067
D	0.0013	0.0017	0.0031	0.0045	0.0058

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X9	X13	X18	X2	X4	X9	X13	X18
A to Z↓	0.0493	0.0434	0.0419	0.0384	0.0424	4.0183	1.8852	1.0109	0.5998	0.5001
A to Z↑	0.0694	0.0567	0.0569	0.0562	0.0578	11.1472	4.8557	2.4169	1.6698	1.2549
B to Z↓	0.0471	0.0410	0.0398	0.0363	0.0402	4.0127	1.8827	1.0092	0.5990	0.4997
B to Z↑	0.0674	0.0542	0.0544	0.0532	0.0549	11.1616	4.8596	2.4175	1.6695	1.2552
C to Z↓	0.0196	0.0168	0.0159	0.0150	0.0161	4.1620	1.9096	1.0058	0.6059	0.5002
C to Z↑	0.0372	0.0297	0.0268	0.0283	0.0288	11.2007	4.8911	2.4317	1.6790	1.2618
D to Z↓	0.0170	0.0145	0.0130	0.0130	0.0126	4.0560	1.9516	1.0083	0.6711	0.5094
D to Z↑	0.0302	0.0220	0.0187	0.0191	0.0184	11.1998	4.9037	2.4374	1.6833	1.2652

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X9	X13	X18	X2	X4	X9	X13	X18
A to Z↓	0.0764	0.0668	0.0648	0.0588	0.0649	6.3417	2.9371	1.5963	0.9223	0.7686
A to Z↑	0.1152	0.0943	0.0942	0.0920	0.0941	17.2774	7.5405	3.7329	2.5454	1.9133
B to Z↓	0.0730	0.0633	0.0619	0.0554	0.0614	6.3298	2.9305	1.5936	0.9202	0.7671
B to Z↑	0.1125	0.0911	0.0912	0.0884	0.0907	17.2567	7.5445	3.7340	2.5459	1.9140
C to Z↓	0.0306	0.0265	0.0251	0.0235	0.0252	6.3783	2.9083	1.5429	0.9102	0.7530
C to Z↑	0.0574	0.0463	0.0415	0.0439	0.0444	17.2723	7.5454	3.7326	2.5449	1.9137
D to Z↓	0.0264	0.0228	0.0204	0.0204	0.0197	6.2092	3.0058	1.5397	1.0144	0.7604
D to Z↑	0.0450	0.0328	0.0276	0.0282	0.0269	17.2881	7.5595	3.7391	2.5493	1.9155

Propagation Delay at 125C, 1.15V Worst process

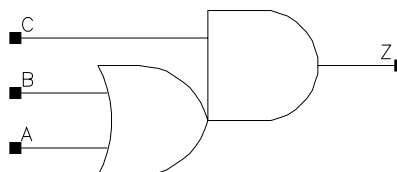
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X4	X9	X13	X18	X2	X4	X9	X13	X18
A to Z↓	0.0712	0.0624	0.0604	0.0550	0.0607	5.8871	2.7266	1.4798	0.8581	0.7145
A to Z↑	0.1055	0.0863	0.0861	0.0843	0.0863	15.8668	6.9005	3.4204	2.3358	1.7560
B to Z↓	0.0680	0.0591	0.0576	0.0518	0.0574	5.8777	2.7208	1.4773	0.8560	0.7134
B to Z↑	0.1031	0.0835	0.0835	0.0811	0.0833	15.8661	6.9041	3.4208	2.3363	1.7565
C to Z↓	0.0290	0.0251	0.0238	0.0223	0.0239	5.9318	2.7016	1.4330	0.8469	0.7005
C to Z↑	0.0531	0.0428	0.0385	0.0406	0.0412	15.8576	6.9131	3.4209	2.3361	1.7566
D to Z↓	0.0250	0.0216	0.0193	0.0193	0.0187	5.7812	2.7858	1.4305	0.9426	0.7081
D to Z↑	0.0417	0.0304	0.0256	0.0262	0.0251	15.8763	6.9234	3.4262	2.3396	1.7582

HS65_LS_OA12

Cell Description

2 Input OR into 2 Input AND, 9x Drive

Logical Symbol



Functions

A	B	C	Z
0	0	-	0
-	-	0	0
1	-	1	1
-	1	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.40	3.6400
X9	2.6	1.40	3.6400
X18	2.6	1.60	4.1600
X27	2.6	2.80	7.2800
X35	2.6	3.00	7.8000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.480e-07	4.163e-10
X9	2.495e-07	8.327e-10
X18	5.017e-07	1.565e-09
X27	7.722e-07	2.348e-09
X35	1.031e-06	3.147e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	3.745e-05	3.347e-08
X9	6.830e-05	4.117e-08
X18	1.443e-04	5.714e-08
X27	2.208e-04	8.458e-08
X35	2.994e-04	1.006e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.309e-05	3.005e-08
X9	5.979e-05	3.549e-08
X18	1.259e-04	4.694e-08
X27	1.929e-04	6.916e-08
X35	2.613e-04	8.067e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	5.953e-03	9.326e-03	1.585e-02	2.431e-02	3.237e-02
B to Z	5.535e-03	8.566e-03	1.437e-02	2.184e-02	2.918e-02
C to Z	6.528e-03	9.952e-03	1.679e-02	2.541e-02	3.368e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-3.739e-06	-8.355e-06	-1.408e-05	-2.517e-05	-2.991e-05
B to Z	-9.051e-07	-8.920e-07	-2.690e-07	8.626e-07	-1.882e-06
C to Z	-6.734e-07	-1.254e-06	-2.916e-06	-5.206e-06	-5.495e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0010	0.0013	0.0021	0.0032	0.0041
B	0.0010	0.0014	0.0023	0.0036	0.0045

Pin Capacitance (pf) at 25C, 1.20V Typ process

C	0.0009	0.0014	0.0023	0.0036	0.0047

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0634	0.0545	0.0502	0.0498	0.0504	2.4366	1.2311	0.6076	0.4110	0.3064
A to Z↑	0.0496	0.0443	0.0391	0.0391	0.0390	3.1196	1.6615	0.8304	0.5627	0.4198
B to Z↓	0.0607	0.0515	0.0470	0.0461	0.0467	2.4377	1.2315	0.6077	0.4112	0.3065
B to Z↑	0.0455	0.0397	0.0345	0.0346	0.0343	3.1099	1.6562	0.8272	0.5605	0.4180
C to Z↓	0.0467	0.0395	0.0361	0.0361	0.0356	2.3537	1.2001	0.5923	0.4009	0.2979
C to Z↑	0.0511	0.0449	0.0394	0.0401	0.0391	3.1079	1.6568	0.8280	0.5609	0.4182

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1011	0.0871	0.0799	0.0786	0.0793	3.9156	1.9473	0.9408	0.6309	0.4689
A to Z↑	0.0820	0.0738	0.0637	0.0637	0.0628	4.5455	2.4260	1.1999	0.8078	0.6021
B to Z↓	0.0960	0.0817	0.0742	0.0724	0.0730	3.9155	1.9477	0.9412	0.6310	0.4691
B to Z↑	0.0747	0.0655	0.0557	0.0562	0.0553	4.5254	2.4147	1.1935	0.8035	0.5989
C to Z↓	0.0708	0.0602	0.0545	0.0543	0.0536	3.7746	1.8940	0.9140	0.6133	0.4543
C to Z↑	0.0846	0.0747	0.0641	0.0649	0.0631	4.5244	2.4161	1.1947	0.8046	0.5996

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0929	0.0801	0.0734	0.0724	0.0730	3.6201	1.8020	0.8735	0.5863	0.4361
A to Z↑	0.0754	0.0678	0.0587	0.0587	0.0580	4.2309	2.2522	1.1150	0.7515	0.5603
B to Z↓	0.0883	0.0752	0.0682	0.0667	0.0672	3.6196	1.8021	0.8737	0.5864	0.4362



Propagation Delay at 125C, 1.15V Worst process

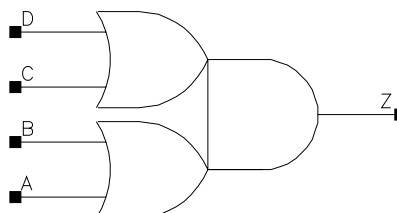
B to Z$\uparrow$	0.0687	0.0602	0.0514	0.0518	0.0510	4.2118	2.2430	1.1097	0.7477	0.5571
C to Z$\downarrow$	0.0659	0.0560	0.0509	0.0507	0.0500	3.4883	1.7522	0.8483	0.5700	0.4226
C to Z$\uparrow$	0.0777	0.0685	0.0590	0.0598	0.0581	4.2098	2.2440	1.1107	0.7485	0.5578

HS65_LS_OA22

Cell Description

Double 2 Input OR into 2 Input AND

Logical Symbol



Functions

A	B	C	D	Z
0	0	-	-	0
-	-	0	0	0
-	1	1	-	1
1	-	1	-	1
1	-	-	1	1
-	1	-	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.80	4.6800
X9	2.6	1.80	4.6800
X18	2.6	2.20	5.7200
X27	2.6	3.40	8.8400
X35	2.6	3.80	9.8800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.742e-07	3.747e-10
X9	2.932e-07	7.327e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X18	5.716e-07	1.440e-09
X27	8.994e-07	2.148e-09
X35	1.188e-06	2.831e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.465e-05	3.657e-08
X9	8.297e-05	4.355e-08
X18	1.676e-04	6.042e-08
X27	2.616e-04	8.633e-08
X35	3.528e-04	1.031e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.942e-05	3.316e-08
X9	7.256e-05	3.815e-08
X18	1.462e-04	5.080e-08
X27	2.284e-04	7.198e-08
X35	3.077e-04	8.459e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	7.586e-03	1.112e-02	1.948e-02	2.931e-02	3.908e-02
B to Z	7.169e-03	1.038e-02	1.795e-02	2.690e-02	3.589e-02
C to Z	6.519e-03	9.739e-03	1.653e-02	2.514e-02	3.355e-02
D to Z	6.099e-03	8.927e-03	1.505e-02	2.273e-02	3.036e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-5.751e-06	-9.698e-06	-1.897e-05	-2.986e-05	-3.715e-05
B to Z	-1.440e-06	-2.269e-06	-3.066e-06	-4.742e-06	-6.174e-06
C to Z	-4.652e-06	-9.101e-06	-1.533e-05	-2.638e-05	-3.399e-05
D to Z	-1.024e-06	-7.607e-07	-1.180e-06	-2.848e-06	-3.221e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0010	0.0016	0.0021	0.0035	0.0043
B	0.0010	0.0014	0.0022	0.0034	0.0042
C	0.0010	0.0014	0.0021	0.0035	0.0043
D	0.0010	0.0014	0.0022	0.0034	0.0042

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0807	0.0660	0.0621	0.0602	0.0607	2.5278	1.2601	0.6323	0.4270	0.3181
A to Z↑	0.0591	0.0496	0.0458	0.0444	0.0444	3.1314	1.6606	0.8359	0.5640	0.4205
B to Z↓	0.0783	0.0633	0.0589	0.0569	0.0574	2.5292	1.2609	0.6326	0.4273	0.3183
B to Z↑	0.0550	0.0467	0.0417	0.0413	0.0413	3.1218	1.6604	0.8329	0.5628	0.4199
C to Z↓	0.0675	0.0560	0.0512	0.0502	0.0506	2.4982	1.2463	0.6260	0.4228	0.3150
C to Z↑	0.0521	0.0443	0.0405	0.0396	0.0395	3.1282	1.6609	0.8352	0.5635	0.4203
D to Z↓	0.0649	0.0528	0.0480	0.0469	0.0472	2.4995	1.2473	0.6264	0.4233	0.3153
D to Z↑	0.0483	0.0410	0.0364	0.0364	0.0365	3.1184	1.6580	0.8324	0.5625	0.4196

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1293	0.1063	0.0996	0.0959	0.0967	4.0900	2.0003	0.9993	0.6680	0.4964
A to Z↑	0.0982	0.0827	0.0759	0.0733	0.0725	4.5614	2.4196	1.2062	0.8102	0.6038
B to Z↓	0.1243	0.1011	0.0937	0.0899	0.0906	4.0900	2.0005	0.9993	0.6681	0.4964
B to Z↑	0.0910	0.0778	0.0681	0.0672	0.0666	4.5409	2.4166	1.2001	0.8071	0.6017
C to Z↓	0.1082	0.0900	0.0820	0.0799	0.0804	4.0317	1.9734	0.9856	0.6592	0.4898
C to Z↑	0.0858	0.0738	0.0665	0.0649	0.0642	4.5548	2.4193	1.2049	0.8093	0.6032
D to Z↓	0.1032	0.0843	0.0764	0.0741	0.0743	4.0330	1.9737	0.9858	0.6594	0.4900
D to Z↑	0.0789	0.0675	0.0590	0.0587	0.0583	4.5373	2.4117	1.1992	0.8064	0.6012



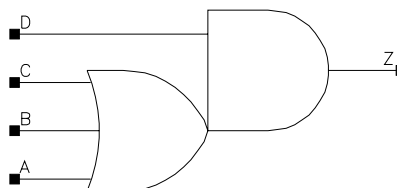
Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1190	0.0978	0.0918	0.0885	0.0892	3.7796	1.8506	0.9247	0.6190	0.4602
A to Z ↑	0.0903	0.0760	0.0698	0.0675	0.0669	4.2435	2.2475	1.1218	0.7536	0.5616
B to Z ↓	0.1145	0.0931	0.0864	0.0831	0.0837	3.7794	1.8506	0.9251	0.6191	0.4603
B to Z ↑	0.0837	0.0714	0.0627	0.0619	0.0614	4.2251	2.2447	1.1163	0.7512	0.5600
C to Z ↓	0.0993	0.0827	0.0754	0.0736	0.0740	3.7271	1.8256	0.9124	0.6111	0.4543
C to Z ↑	0.0789	0.0678	0.0613	0.0599	0.0593	4.2387	2.2475	1.1205	0.7531	0.5612
D to Z ↓	0.0949	0.0775	0.0703	0.0683	0.0685	3.7274	1.8264	0.9129	0.6114	0.4544
D to Z ↑	0.0726	0.0621	0.0544	0.0542	0.0539	4.2227	2.2408	1.1155	0.7504	0.5593

HS65_LS_OA31

Cell Description
2 wide 1-3 OR-AND

Logical Symbol



Functions

A	B	C	D	Z
-	-	-	0	0
0	0	0	-	0
1	-	-	1	1
-	-	1	1	1
-	1	-	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.60	4.1600
X9	2.6	1.60	4.1600
X18	2.6	2.00	5.2000
X27	2.6	3.20	8.3200
X35	2.6	3.60	9.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.566e-07	4.163e-10
X9	2.510e-07	7.744e-10
X18	5.134e-07	1.532e-09
X27	7.904e-07	2.331e-09
X35	1.027e-06	3.106e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	3.963e-05	3.577e-08
X9	6.811e-05	4.284e-08
X18	1.468e-04	6.068e-08
X27	2.251e-04	8.783e-08
X35	2.944e-04	1.056e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.498e-05	3.219e-08
X9	5.959e-05	3.715e-08
X18	1.281e-04	5.041e-08
X27	1.965e-04	7.255e-08
X35	2.568e-04	8.571e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	7.479e-03	1.123e-02	1.941e-02	2.959e-02	3.940e-02
B to Z	6.965e-03	1.043e-02	1.796e-02	2.731e-02	3.617e-02
C to Z	6.427e-03	9.638e-03	1.622e-02	2.488e-02	3.287e-02
D to Z	5.923e-03	8.804e-03	1.471e-02	2.209e-02	2.927e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-6.985e-06	-1.173e-05	-2.184e-05	-3.695e-05	-4.708e-05
B to Z	-4.020e-06	-5.131e-06	-1.213e-05	-1.713e-05	-2.039e-05
C to Z	-1.660e-07	-1.450e-07	-4.150e-07	-6.742e-07	9.380e-07
D to Z	-1.780e-06	-2.908e-06	-6.319e-06	-9.110e-06	-1.331e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0011	0.0013	0.0020	0.0034	0.0043
B	0.0010	0.0014	0.0020	0.0033	0.0041
C	0.0010	0.0013	0.0021	0.0037	0.0040
D	0.0011	0.0014	0.0021	0.0033	0.0040

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0944	0.0868	0.0796	0.0799	0.0789	2.5802	1.3062	0.6389	0.4341	0.3228
A to Z↑	0.0592	0.0565	0.0497	0.0503	0.0505	3.1322	1.6732	0.8372	0.5674	0.4238
B to Z↓	0.0923	0.0841	0.0773	0.0769	0.0757	2.5821	1.3071	0.6392	0.4343	0.3228
B to Z↑	0.0571	0.0542	0.0471	0.0469	0.0468	3.1278	1.6687	0.8340	0.5645	0.4217
C to Z↓	0.0851	0.0773	0.0691	0.0692	0.0681	2.5830	1.3072	0.6392	0.4343	0.3229
C to Z↑	0.0524	0.0495	0.0421	0.0418	0.0426	3.1157	1.6631	0.8305	0.5622	0.4206
D to Z↓	0.0387	0.0347	0.0311	0.0309	0.0305	2.3559	1.2089	0.5922	0.4026	0.2987
D to Z↑	0.0465	0.0438	0.0381	0.0371	0.0383	3.1091	1.6599	0.8301	0.5620	0.4198

Propagation Delay at 125C, 1.10V Worst process

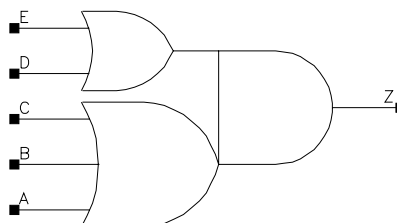
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1546	0.1426	0.1310	0.1304	0.1287	4.1767	2.0946	0.9992	0.6761	0.5012
A to Z↑	0.0993	0.0954	0.0823	0.0830	0.0842	4.5770	2.4503	1.2112	0.8184	0.6111
B to Z↓	0.1498	0.1368	0.1258	0.1244	0.1222	4.1788	2.0945	0.9994	0.6763	0.5013
B to Z↑	0.0952	0.0909	0.0775	0.0768	0.0771	4.5579	2.4388	1.2045	0.8122	0.6059
C to Z↓	0.1364	0.1242	0.1108	0.1106	0.1082	4.1794	2.0954	0.9996	0.6763	0.5013
C to Z↑	0.0865	0.0822	0.0687	0.0680	0.0692	4.5347	2.4284	1.1975	0.8079	0.6035
D to Z↓	0.0594	0.0533	0.0473	0.0465	0.0460	3.7881	1.9186	0.9131	0.6178	0.4565
D to Z↑	0.0758	0.0719	0.0617	0.0600	0.0620	4.5224	2.4210	1.1967	0.8075	0.6026



Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1418	0.1307	0.1201	0.1198	0.1182	3.8611	1.9355	0.9266	0.6272	0.4652
A to Z ↑	0.0912	0.0875	0.0757	0.0764	0.0774	4.2589	2.2754	1.1262	0.7613	0.5683
B to Z ↓	0.1373	0.1254	0.1154	0.1142	0.1123	3.8631	1.9360	0.9268	0.6273	0.4652
B to Z ↑	0.0875	0.0834	0.0713	0.0708	0.0710	4.2382	2.2651	1.1196	0.7555	0.5639
C to Z ↓	0.1251	0.1138	0.1016	0.1015	0.0994	3.8642	1.9366	0.9268	0.6275	0.4653
C to Z ↑	0.0795	0.0754	0.0631	0.0626	0.0636	4.2206	2.2557	1.1132	0.7513	0.5614
D to Z ↓	0.0552	0.0496	0.0441	0.0433	0.0429	3.4993	1.7737	0.8478	0.5740	0.4246
D to Z ↑	0.0699	0.0662	0.0570	0.0555	0.0573	4.2078	2.2491	1.1127	0.7512	0.5606

HS65_LS_OA32

Cell Description
 2 wide 2-3 OR-AND
Logical Symbol**Functions**

A	B	C	D	E	Z
0	0	0	-	-	0
-	-	-	0	0	0
-	1	-	-	1	1
-	1	-	1	-	1
1	-	-	1	-	1
1	-	-	-	1	1
-	-	1	1	-	1
-	-	1	-	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.80	4.6800
X9	2.6	2.00	5.2000
X18	2.6	2.20	5.7200
X27	2.6	4.00	10.4000
X35	2.6	4.20	10.9200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.723e-07	4.080e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X9	2.930e-07	6.994e-10
X18	5.956e-07	1.374e-09
X27	8.980e-07	2.069e-09
X35	1.185e-06	2.735e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.473e-05	3.720e-08
X9	8.295e-05	4.501e-08
X18	1.773e-04	5.960e-08
X27	2.627e-04	9.085e-08
X35	3.520e-04	1.054e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.947e-05	3.368e-08
X9	7.253e-05	3.967e-08
X18	1.546e-04	5.032e-08
X27	2.292e-04	7.676e-08
X35	3.069e-04	8.742e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	8.289e-03	1.218e-02	2.112e-02	3.275e-02	4.310e-02
B to Z	7.805e-03	1.149e-02	1.955e-02	3.031e-02	3.979e-02
C to Z	7.242e-03	1.067e-02	1.801e-02	2.777e-02	3.642e-02
D to Z	6.614e-03	9.905e-03	1.681e-02	2.572e-02	3.405e-02
E to Z	6.123e-03	9.013e-03	1.522e-02	2.321e-02	3.077e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-8.492e-06	-1.322e-05	-2.597e-05	-3.928e-05	-5.036e-05
B to Z	-5.303e-06	-6.749e-06	-1.242e-05	-1.871e-05	-2.589e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

C to Z	-5.830e-07	-1.900e-06	-1.331e-06	-3.172e-06	-2.811e-06
D to Z	-3.809e-06	-7.900e-06	-1.086e-05	-1.665e-05	-2.030e-05
E to Z	-3.866e-07	-3.350e-07	2.893e-07	-1.126e-06	-1.337e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0010	0.0013	0.0020	0.0036	0.0043
B	0.0010	0.0013	0.0020	0.0033	0.0041
C	0.0010	0.0013	0.0021	0.0032	0.0038
D	0.0010	0.0013	0.0020	0.0033	0.0042
E	0.0011	0.0013	0.0022	0.0032	0.0040

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1067	0.0933	0.0856	0.0865	0.0862	2.7226	1.3395	0.6586	0.4511	0.3378
A to Z↑	0.0645	0.0593	0.0523	0.0535	0.0524	3.1839	1.6734	0.8381	0.5691	0.4243
B to Z↓	0.1048	0.0918	0.0829	0.0832	0.0829	2.7243	1.3401	0.6588	0.4512	0.3379
B to Z↑	0.0623	0.0575	0.0495	0.0502	0.0493	3.1791	1.6710	0.8354	0.5664	0.4222
C to Z↓	0.0971	0.0846	0.0757	0.0755	0.0749	2.7249	1.3405	0.6591	0.4512	0.3379
C to Z↑	0.0576	0.0532	0.0455	0.0465	0.0457	3.1680	1.6672	0.8328	0.5652	0.4215
D to Z↓	0.0632	0.0561	0.0507	0.0499	0.0500	2.5455	1.2596	0.6222	0.4252	0.3184
D to Z↑	0.0524	0.0490	0.0430	0.0429	0.0425	3.1655	1.6660	0.8335	0.5651	0.4212
E to Z↓	0.0603	0.0524	0.0471	0.0463	0.0464	2.5467	1.2604	0.6228	0.4257	0.3187
E to Z↑	0.0481	0.0441	0.0385	0.0393	0.0389	3.1558	1.6601	0.8306	0.5638	0.4202

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1759	0.1545	0.1413	0.1425	0.1421	4.4511	2.1441	1.0377	0.7113	0.5341



Propagation Delay at 125C, 1.10V Worst process

A to Z ↑	0.1083	0.1003	0.0865	0.0897	0.0869	4.6617	2.4502	1.2136	0.8206	0.6116
B to Z ↓	0.1714	0.1507	0.1354	0.1358	0.1352	4.4534	2.1444	1.0378	0.7113	0.5341
B to Z ↑	0.1041	0.0969	0.0815	0.0833	0.0809	4.6438	2.4427	1.2067	0.8150	0.6071
C to Z ↓	0.1571	0.1374	0.1222	0.1216	0.1207	4.4537	2.1450	1.0380	0.7114	0.5342
C to Z ↑	0.0954	0.0887	0.0742	0.0762	0.0739	4.6215	2.4329	1.2015	0.8118	0.6047
D to Z ↓	0.1019	0.0903	0.0810	0.0793	0.0793	4.1434	2.0005	0.9705	0.6633	0.4978
D to Z ↑	0.0862	0.0814	0.0702	0.0707	0.0692	4.6203	2.4333	1.2037	0.8127	0.6054
E to Z ↓	0.0965	0.0837	0.0747	0.0730	0.0730	4.1431	2.0010	0.9704	0.6634	0.4980
E to Z ↑	0.0787	0.0723	0.0620	0.0635	0.0622	4.6009	2.4209	1.1975	0.8093	0.6030

Propagation Delay at 125C, 1.15V Worst process

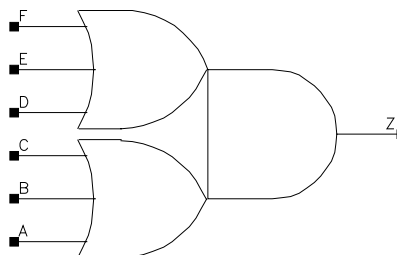
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1614	0.1418	0.1297	0.1309	0.1306	4.1082	1.9819	0.9612	0.6587	0.4943
A to Z ↑	0.0995	0.0920	0.0797	0.0825	0.0800	4.3391	2.2760	1.1281	0.7635	0.5688
B to Z ↓	0.1572	0.1383	0.1243	0.1248	0.1242	4.1105	1.9823	0.9613	0.6587	0.4943
B to Z ↑	0.0957	0.0890	0.0751	0.0767	0.0745	4.3227	2.2688	1.1219	0.7581	0.5647
C to Z ↓	0.1440	0.1261	0.1122	0.1117	0.1108	4.1107	1.9826	0.9615	0.6587	0.4944
C to Z ↑	0.0877	0.0815	0.0683	0.0701	0.0682	4.3021	2.2594	1.1172	0.7551	0.5626
D to Z ↓	0.0935	0.0829	0.0745	0.0731	0.0730	3.8244	1.8507	0.8998	0.6151	0.4613
D to Z ↑	0.0795	0.0749	0.0649	0.0652	0.0639	4.2995	2.2598	1.1191	0.7559	0.5632
E to Z ↓	0.0886	0.0769	0.0687	0.0673	0.0673	3.8246	1.8511	0.9002	0.6152	0.4615
E to Z ↑	0.0725	0.0666	0.0573	0.0587	0.0576	4.2818	2.2489	1.1137	0.7530	0.5610

HS65_LS_OA33

Cell Description

Double 3 Input OR into 2 Input AND

Logical Symbol



Functions

A	B	C	D	E	F	Z
-	-	-	0	0	0	0
0	0	0	-	-	1	0
0	0	0	-	1	-	0
0	0	0	1	-	-	0
-	1	-	-	-	1	1
1	-	-	1	-	-	1
-	1	-	1	-	-	1
-	-	1	1	-	-	1
-	-	1	-	-	1	1
1	-	-	-	-	1	1
-	-	1	-	1	-	1
-	1	-	-	1	-	1
1	-	-	-	1	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.20	5.7200
X9	2.6	2.20	5.7200
X18	2.6	2.60	6.7600



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X27	2.6	4.40	11.4400
X35	2.6	5.00	13.0000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.802e-07	3.997e-10
X9	2.879e-07	6.620e-10
X18	6.115e-07	1.280e-09
X27	8.912e-07	1.961e-09
X35	1.214e-06	2.573e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.703e-05	4.088e-08
X9	8.219e-05	4.650e-08
X18	1.850e-04	6.261e-08
X27	2.636e-04	9.319e-08
X35	3.670e-04	1.128e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	4.147e-05	3.728e-08
X9	7.183e-05	4.130e-08
X18	1.613e-04	5.356e-08
X27	2.300e-04	7.954e-08
X35	3.199e-04	9.513e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	8.939e-03	1.332e-02	2.278e-02	3.525e-02	4.693e-02
B to Z	8.462e-03	1.263e-02	2.139e-02	3.289e-02	4.408e-02
C to Z	7.946e-03	1.177e-02	1.984e-02	3.036e-02	3.985e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D to Z	7.582e-03	1.153e-02	1.971e-02	2.948e-02	3.983e-02
E to Z	7.082e-03	1.067e-02	1.810e-02	2.712e-02	3.696e-02
F to Z	6.528e-03	9.891e-03	1.647e-02	2.468e-02	3.262e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-9.126e-06	-1.382e-05	-2.422e-05	-3.962e-05	-5.952e-05
B to Z	-5.265e-06	-8.070e-06	-1.377e-05	-2.131e-05	-3.572e-05
C to Z	8.730e-07	2.310e-06	5.888e-06	9.392e-06	9.302e-06
D to Z	-7.947e-06	-1.351e-05	-2.477e-05	-3.285e-05	-5.089e-05
E to Z	-1.973e-06	-2.035e-06	-3.431e-06	-1.574e-06	-1.126e-05
F to Z	-8.334e-07	-1.596e-06	-1.083e-06	-1.018e-06	-3.338e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0011	0.0013	0.0020	0.0035	0.0038
B	0.0010	0.0013	0.0020	0.0033	0.0040
C	0.0010	0.0013	0.0020	0.0031	0.0038
D	0.0010	0.0013	0.0020	0.0034	0.0038
E	0.0010	0.0013	0.0020	0.0033	0.0042
↓	0.0010	0.0013	0.0021	0.0032	0.0039

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1131	0.1024	0.0916	0.0927	0.0941	2.7473	1.3868	0.6728	0.4633	0.3470
A to Z↑	0.0650	0.0616	0.0535	0.0551	0.0541	3.1552	1.6812	0.8388	0.5702	0.4266
B to Z↓	0.1113	0.1009	0.0896	0.0902	0.0919	2.7488	1.3873	0.6731	0.4634	0.3471
B to Z↑	0.0640	0.0595	0.0511	0.0517	0.0518	3.1551	1.6789	0.8369	0.5675	0.4244
C to Z↓	0.1046	0.0932	0.0823	0.0823	0.0812	2.7494	1.3876	0.6732	0.4635	0.3474
C to Z↑	0.0602	0.0553	0.0473	0.0483	0.0471	3.1469	1.6740	0.8346	0.5664	0.4231
D to Z↓	0.0923	0.0844	0.0757	0.0739	0.0755	2.6965	1.3665	0.6623	0.4553	0.3409



Propagation Delay at 25C, 1.20V Typ process

D to Z ↑	0.0579	0.0552	0.0480	0.0483	0.0476	3.1564	1.6810	0.8387	0.5688	0.4256
E to Z ↓	0.0900	0.0814	0.0727	0.0705	0.0732	2.6973	1.3669	0.6626	0.4555	0.3410
E to Z ↑	0.0546	0.0513	0.0446	0.0444	0.0450	3.1409	1.6728	0.8346	0.5661	0.4234
F to Z ↓	0.0824	0.0746	0.0649	0.0631	0.0621	2.6979	1.3671	0.6627	0.4557	0.3414
F to Z ↑	0.0504	0.0473	0.0404	0.0405	0.0396	3.1325	1.6690	0.8321	0.5649	0.4219

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1871	0.1706	0.1523	0.1537	0.1558	4.4750	2.2458	1.0634	0.7367	0.5502
A to Z ↑	0.1093	0.1040	0.0883	0.0924	0.0888	4.6195	2.4703	1.2144	0.8231	0.6177
B to Z ↓	0.1826	0.1665	0.1475	0.1480	0.1509	4.4760	2.2462	1.0635	0.7367	0.5502
B to Z ↑	0.1071	0.1002	0.0840	0.0859	0.0852	4.6101	2.4622	1.2091	0.8172	0.6140
C to Z ↓	0.1700	0.1525	0.1342	0.1336	0.1316	4.4771	2.2465	1.0636	0.7367	0.5506
C to Z ↑	0.1000	0.0923	0.0773	0.0792	0.0762	4.5917	2.4520	1.2045	0.8144	0.6105
D to Z ↓	0.1532	0.1408	0.1260	0.1217	0.1247	4.3838	2.2092	1.0440	0.7218	0.5388
D to Z ↑	0.0962	0.0925	0.0789	0.0798	0.0771	4.6170	2.4685	1.2139	0.8204	0.6158
E to Z ↓	0.1481	0.1345	0.1197	0.1154	0.1197	4.3844	2.2091	1.0441	0.7219	0.5388
E to Z ↑	0.0905	0.0853	0.0726	0.0730	0.0732	4.5869	2.4515	1.2051	0.8146	0.6120
F to Z ↓	0.1341	0.1220	0.1053	0.1019	0.1001	4.3842	2.2093	1.0441	0.7219	0.5393
F to Z ↑	0.0828	0.0780	0.0652	0.0659	0.0636	4.5680	2.4424	1.2001	0.8118	0.6085

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1717	0.1564	0.1398	0.1413	0.1432	4.1333	2.0728	0.9845	0.6813	0.5091
A to Z ↑	0.1004	0.0954	0.0813	0.0849	0.0818	4.2984	2.2943	1.1292	0.7656	0.5744
B to Z ↓	0.1675	0.1527	0.1353	0.1360	0.1387	4.1347	2.0730	0.9846	0.6813	0.5091
B to Z ↑	0.0984	0.0919	0.0773	0.0790	0.0785	4.2895	2.2862	1.1243	0.7602	0.5709

Propagation Delay at 125C, 1.15V Worst process

C to Z↓	0.1560	0.1398	0.1231	0.1228	0.1210	4.1354	2.0733	0.9848	0.6813	0.5095
C to Z↑	0.0919	0.0846	0.0711	0.0729	0.0703	4.2732	2.2775	1.1201	0.7576	0.5678
D to Z↓	0.1402	0.1288	0.1153	0.1117	0.1144	4.0502	2.0391	0.9670	0.6677	0.4987
D to Z↑	0.0886	0.0850	0.0728	0.0736	0.0713	4.2949	2.2922	1.1286	0.7632	0.5727
E to Z↓	0.1354	0.1229	0.1095	0.1057	0.1098	4.0503	2.0392	0.9670	0.6678	0.4988
E to Z↑	0.0833	0.0784	0.0670	0.0673	0.0677	4.2672	2.2761	1.1205	0.7578	0.5690
F to Z↓	0.1226	0.1115	0.0963	0.0934	0.0917	4.0501	2.0393	0.9671	0.6679	0.4992
F to Z↑	0.0762	0.0717	0.0602	0.0608	0.0588	4.2496	2.2684	1.1159	0.7551	0.5658

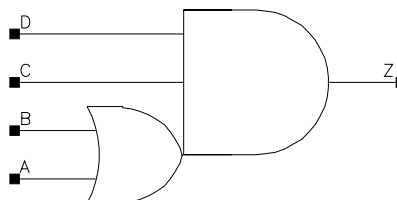


HS65_LS_OA112

Cell Description

2 Input OR into 3 Input AND

Logical Symbol



Functions

A	B	C	D	Z
-	-	0	-	0
0	0	-	-	0
-	-	-	0	0
1	-	1	1	1
-	1	1	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.60	4.1600
X9	2.6	1.60	4.1600
X18	2.6	1.80	4.6800
X27	2.6	3.20	8.3200
X35	2.6	3.60	9.3600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.253e-07	4.829e-10
X9	2.071e-07	9.076e-10
X18	4.110e-07	1.774e-09
X27	6.248e-07	2.656e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X35	8.151e-07	3.564e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	3.008e-05	3.629e-08
X9	5.344e-05	4.508e-08
X18	1.114e-04	6.284e-08
X27	1.681e-04	9.367e-08
X35	2.199e-04	1.136e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	2.664e-05	3.253e-08
X9	4.689e-05	3.875e-08
X18	9.745e-05	5.140e-08
X27	1.472e-04	7.650e-08
X35	1.924e-04	9.125e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	6.602e-03	1.021e-02	1.720e-02	2.622e-02	3.466e-02
B to Z	6.180e-03	9.450e-03	1.572e-02	2.379e-02	3.143e-02
C to Z	7.437e-03	1.125e-02	1.909e-02	2.943e-02	3.857e-02
D to Z	7.139e-03	1.081e-02	1.815e-02	2.789e-02	3.661e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-4.627e-06	-8.348e-06	-1.556e-05	-2.504e-05	-3.078e-05
B to Z	-1.038e-06	-1.390e-07	-1.015e-06	-1.010e-06	-2.700e-07
C to Z	-1.346e-06	-2.971e-06	-4.336e-06	-7.960e-06	-9.043e-06
D to Z	-1.216e-06	-1.963e-06	-4.207e-06	-6.361e-06	-8.610e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0010	0.0014	0.0022	0.0036	0.0041
B	0.0010	0.0014	0.0022	0.0033	0.0045
C	0.0010	0.0014	0.0023	0.0037	0.0041
D	0.0010	0.0014	0.0023	0.0037	0.0046

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0715	0.0596	0.0540	0.0532	0.0541	2.5056	1.2496	0.6132	0.4158	0.3145
A to Z↑	0.0675	0.0584	0.0498	0.0504	0.0512	3.2249	1.6962	0.8448	0.5733	0.4308
B to Z↓	0.0691	0.0568	0.0510	0.0500	0.0505	2.5070	1.2499	0.6136	0.4159	0.3145
B to Z↑	0.0635	0.0546	0.0467	0.0463	0.0457	3.2171	1.6941	0.8442	0.5723	0.4285
C to Z↓	0.0522	0.0438	0.0400	0.0407	0.0402	2.3947	1.2134	0.5962	0.4051	0.3056
C to Z↑	0.0726	0.0626	0.0538	0.0558	0.0551	3.2086	1.6915	0.8433	0.5720	0.4293
D to Z↓	0.0520	0.0425	0.0385	0.0390	0.0385	2.3955	1.2104	0.5947	0.4038	0.3044
D to Z↑	0.0726	0.0619	0.0529	0.0543	0.0542	3.2133	1.6925	0.8434	0.5721	0.4295

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1150	0.0958	0.0865	0.0846	0.0861	4.0457	1.9846	0.9506	0.6397	0.4897
A to Z↑	0.1160	0.1008	0.0842	0.0859	0.0856	4.7750	2.5030	1.2285	0.8307	0.6266
B to Z↓	0.1102	0.0907	0.0811	0.0788	0.0799	4.0449	1.9844	0.9507	0.6399	0.4897
B to Z↑	0.1078	0.0930	0.0780	0.0772	0.0761	4.7535	2.4942	1.2254	0.8269	0.6228
C to Z↓	0.0796	0.0670	0.0605	0.0611	0.0605	3.8574	1.9207	0.9194	0.6212	0.4742
C to Z↑	0.1267	0.1097	0.0922	0.0954	0.0937	4.7462	2.4937	1.2244	0.8273	0.6240
D to Z↓	0.0795	0.0651	0.0583	0.0586	0.0583	3.8562	1.9144	0.9164	0.6188	0.4719
D to Z↑	0.1258	0.1078	0.0900	0.0924	0.0917	4.7518	2.4940	1.2248	0.8274	0.6241



Propagation Delay at 125C, 1.15V Worst process

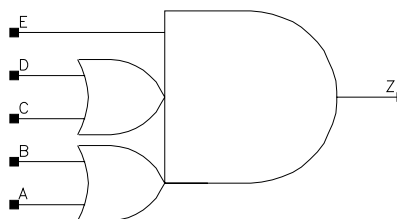
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1056	0.0879	0.0794	0.0778	0.0792	3.7399	1.8349	0.8820	0.5944	0.4542
A to Z ↑	0.1057	0.0917	0.0769	0.0784	0.0783	4.4387	2.3235	1.1418	0.7720	0.5825
B to Z ↓	0.1012	0.0833	0.0745	0.0725	0.0735	3.7389	1.8353	0.8824	0.5945	0.4541
B to Z ↑	0.0982	0.0846	0.0712	0.0705	0.0695	4.4182	2.3156	1.1386	0.7687	0.5789
C to Z ↓	0.0740	0.0623	0.0564	0.0571	0.0565	3.5639	1.7766	0.8538	0.5772	0.4399
C to Z ↑	0.1153	0.0997	0.0840	0.0870	0.0855	4.4119	2.3138	1.1379	0.7692	0.5800
D to Z ↓	0.0739	0.0605	0.0543	0.0546	0.0543	3.5634	1.7711	0.8509	0.5749	0.4379
D to Z ↑	0.1145	0.0980	0.0821	0.0843	0.0837	4.4181	2.3149	1.1381	0.7693	0.5800

HS65_LS_OA212

Cell Description

3 wide 1-2-2 OR-AND

Logical Symbol



Functions

A	B	C	D	E	Z
0	0	-	-	-	0
-	-	-	-	0	0
-	-	0	0	-	0
1	-	-	1	1	1
1	-	1	-	1	1
-	1	-	1	1	1
-	1	1	-	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.00	5.2000
X9	2.6	2.20	5.7200
X18	2.6	2.40	6.2400
X27	2.6	4.00	10.4000
X35	2.6	4.40	11.4400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.443e-07	4.788e-10
X9	2.361e-07	8.910e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X18	4.738e-07	1.761e-09
X27	7.316e-07	2.685e-09
X35	9.640e-07	3.547e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	3.538e-05	4.019e-08
X9	6.223e-05	5.075e-08
X18	1.306e-04	6.871e-08
X27	2.000e-04	1.014e-07
X35	2.677e-04	1.220e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.131e-05	3.624e-08
X9	5.458e-05	4.419e-08
X18	1.142e-04	5.700e-08
X27	1.750e-04	8.384e-08
X35	2.340e-04	9.920e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	8.413e-03	1.276e-02	2.189e-02	3.335e-02	4.495e-02
B to Z	7.951e-03	1.195e-02	2.043e-02	3.087e-02	4.142e-02
C to Z	6.919e-03	1.029e-02	1.774e-02	2.724e-02	3.723e-02
D to Z	6.505e-03	9.528e-03	1.624e-02	2.451e-02	3.347e-02
E to Z	7.529e-03	1.101e-02	1.872e-02	2.852e-02	3.828e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-6.085e-06	-9.108e-06	-1.684e-05	-2.804e-05	-3.658e-05
B to Z	-9.490e-07	-1.649e-06	-2.951e-06	-5.296e-06	-6.777e-06
C to Z	-4.362e-06	-8.352e-06	-1.424e-05	-2.421e-05	-3.336e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D to Z	-7.227e-07	-8.107e-07	-1.185e-06	-1.442e-06	-1.533e-06
E to Z	-2.807e-06	-4.596e-06	-8.584e-06	-1.493e-05	-2.000e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0010	0.0013	0.0022	0.0035	0.0041
B	0.0011	0.0014	0.0022	0.0034	0.0040
C	0.0009	0.0013	0.0022	0.0034	0.0041
D	0.0010	0.0014	0.0023	0.0034	0.0042
E	0.0010	0.0013	0.0022	0.0039	0.0043

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0893	0.0761	0.0689	0.0675	0.0708	2.5879	1.3137	0.6349	0.4334	0.3241
A to Z↑	0.0855	0.0719	0.0635	0.0628	0.0658	3.2505	1.6773	0.8498	0.5758	0.4327
B to Z↓	0.0873	0.0732	0.0662	0.0645	0.0672	2.5900	1.3141	0.6354	0.4336	0.3242
B to Z↑	0.0790	0.0655	0.0599	0.0581	0.0600	3.2299	1.6688	0.8489	0.5741	0.4306
C to Z↓	0.0734	0.0608	0.0548	0.0551	0.0566	2.5487	1.2922	0.6251	0.4277	0.3182
C to Z↑	0.0719	0.0596	0.0550	0.0539	0.0570	3.2402	1.6727	0.8504	0.5753	0.4321
D to Z↓	0.0712	0.0580	0.0516	0.0513	0.0523	2.5500	1.2928	0.6256	0.4280	0.3184
D to Z↑	0.0678	0.0559	0.0488	0.0482	0.0511	3.2318	1.6694	0.8461	0.5730	0.4302
E to Z↓	0.0529	0.0435	0.0390	0.0383	0.0393	2.4092	1.2427	0.6005	0.4099	0.3038
E to Z↑	0.0757	0.0616	0.0556	0.0548	0.0567	3.2231	1.6663	0.8461	0.5728	0.4298

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1432	0.1227	0.1107	0.1075	0.1129	4.1925	2.1267	0.9952	0.6785	0.5036
A to Z↑	0.1490	0.1272	0.1105	0.1094	0.1136	4.8044	2.4704	1.2381	0.8346	0.6282



Propagation Delay at 125C, 1.10V Worst process

B to Z↓	0.1387	0.1171	0.1056	0.1018	0.1062	4.1951	2.1268	0.9953	0.6785	0.5037
B to Z↑	0.1369	0.1147	0.1036	0.0995	0.1025	4.7652	2.4521	1.2349	0.8300	0.6239
C to Z↓	0.1184	0.0988	0.0883	0.0879	0.0905	4.1190	2.0849	0.9756	0.6663	0.4923
C to Z↑	0.1229	0.1032	0.0938	0.0919	0.0963	4.7853	2.4616	1.2383	0.8331	0.6270
D to Z↓	0.1138	0.0937	0.0827	0.0811	0.0829	4.1190	2.0845	0.9757	0.6664	0.4923
D to Z↑	0.1146	0.0957	0.0824	0.0811	0.0852	4.7628	2.4525	1.2295	0.8281	0.6229
E to Z↓	0.0808	0.0670	0.0597	0.0581	0.0596	3.8801	1.9959	0.9296	0.6345	0.4657
E to Z↑	0.1301	0.1071	0.0950	0.0933	0.0960	4.7488	2.4477	1.2298	0.8277	0.6223

Propagation Delay at 125C, 1.15V Worst process

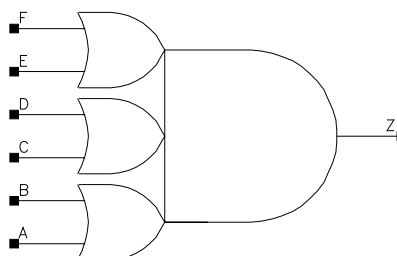
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1319	0.1129	0.1020	0.0993	0.1042	3.8752	1.9619	0.9225	0.6288	0.4673
A to Z↑	0.1358	0.1156	0.1007	0.0998	0.1037	4.4678	2.2933	1.1502	0.7757	0.5838
B to Z↓	0.1278	0.1078	0.0973	0.0941	0.0981	3.8777	1.9621	0.9226	0.6289	0.4674
B to Z↑	0.1247	0.1043	0.0944	0.0908	0.0936	4.4295	2.2765	1.1475	0.7718	0.5799
C to Z↓	0.1087	0.0906	0.0811	0.0809	0.0833	3.8075	1.9234	0.9046	0.6179	0.4570
C to Z↑	0.1120	0.0939	0.0856	0.0839	0.0881	4.4494	2.2847	1.1505	0.7745	0.5827
D to Z↓	0.1045	0.0859	0.0760	0.0747	0.0763	3.8075	1.9235	0.9047	0.6179	0.4570
D to Z↑	0.1044	0.0871	0.0752	0.0741	0.0779	4.4291	2.2779	1.1423	0.7697	0.5788
E to Z↓	0.0751	0.0623	0.0556	0.0542	0.0555	3.5853	1.8418	0.8627	0.5887	0.4328
E to Z↑	0.1186	0.0974	0.0866	0.0852	0.0877	4.4160	2.2723	1.1427	0.7696	0.5785

HS65_LS_OA222

Cell Description

Triple 2 Input OR into 3 Input AND

Logical Symbol



Functions

A	B	C	D	E	F	Z
0	0	-	-	-	-	0
-	-	0	0	-	-	0
-	-	-	-	0	0	0
1	-	-	1	-	1	1
-	1	-	1	-	1	1
1	-	1	-	-	1	1
-	1	1	-	-	1	1
1	-	-	1	1	-	1
-	1	-	1	1	-	1
-	1	1	-	1	-	1
1	-	1	-	1	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.20	5.7200
X9	2.6	2.40	6.2400
X18	2.6	2.60	6.7600
X27	2.6	4.40	11.4400
X35	2.6	4.80	12.4800



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.771e-07	4.746e-10
X9	2.834e-07	9.014e-10
X18	5.659e-07	1.761e-09
X27	8.763e-07	2.648e-09
X35	1.168e-06	3.512e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.401e-05	4.222e-08
X9	7.642e-05	5.289e-08
X18	1.614e-04	7.087e-08
X27	2.459e-04	1.051e-07
X35	3.370e-04	1.250e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.894e-05	3.818e-08
X9	6.698e-05	4.625e-08
X18	1.409e-04	5.920e-08
X27	2.151e-04	8.756e-08
X35	2.944e-04	1.024e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	9.055e-03	1.402e-02	2.425e-02	3.603e-02	4.739e-02
B to Z	8.684e-03	1.317e-02	2.263e-02	3.349e-02	4.412e-02
C to Z	8.238e-03	1.263e-02	2.192e-02	3.238e-02	4.271e-02
D to Z	7.820e-03	1.187e-02	2.036e-02	3.003e-02	3.939e-02
E to Z	6.882e-03	1.082e-02	1.883e-02	2.783e-02	3.756e-02
F to Z	6.448e-03	1.001e-02	1.729e-02	2.533e-02	3.354e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-5.619e-06	-9.944e-06	-1.697e-05	-2.326e-05	-3.374e-05
B to Z	-1.903e-06	-2.823e-06	-2.904e-06	-5.267e-06	-9.564e-06
C to Z	-5.867e-06	-1.120e-05	-2.125e-05	-3.081e-05	-4.104e-05
D to Z	-1.673e-06	-3.019e-06	-4.661e-06	-7.770e-06	-8.399e-06
E to Z	-5.017e-06	-1.004e-05	-1.810e-05	-2.708e-05	-3.725e-05
F to Z	-1.231e-06	-1.391e-06	-3.419e-06	-4.259e-06	-4.184e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0010	0.0015	0.0021	0.0037	0.0044
B	0.0011	0.0014	0.0022	0.0034	0.0041
C	0.0010	0.0014	0.0022	0.0037	0.0044
D	0.0010	0.0014	0.0022	0.0038	0.0042
E	0.0010	0.0015	0.0022	0.0035	0.0042
↓	0.0011	0.0014	0.0022	0.0033	0.0042

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0956	0.0819	0.0738	0.0718	0.0706	2.6108	1.3257	0.6462	0.4428	0.3266
A to Z↑	0.0847	0.0756	0.0664	0.0634	0.0641	3.2296	1.7057	0.8518	0.5751	0.4308
B to Z↓	0.0945	0.0787	0.0705	0.0683	0.0672	2.6125	1.3266	0.6466	0.4430	0.3268
B to Z↑	0.0821	0.0717	0.0629	0.0597	0.0597	3.2285	1.7049	0.8513	0.5740	0.4300
C to Z↓	0.0877	0.0739	0.0667	0.0646	0.0639	2.5788	1.3126	0.6400	0.4384	0.3232
C to Z↑	0.0810	0.0715	0.0629	0.0607	0.0609	3.2316	1.7064	0.8518	0.5756	0.4308
D to Z↓	0.0856	0.0714	0.0636	0.0617	0.0603	2.5798	1.3129	0.6403	0.4387	0.3234
D to Z↑	0.0774	0.0680	0.0599	0.0557	0.0560	3.2245	1.7035	0.8509	0.5731	0.4297
E to Z↓	0.0723	0.0621	0.0560	0.0541	0.0558	2.5340	1.2965	0.6334	0.4332	0.3202
E to Z↑	0.0674	0.0610	0.0539	0.0520	0.0529	3.2248	1.7039	0.8507	0.5743	0.4304



Propagation Delay at 25C, 1.20V Typ process

F to Z↓	0.0698	0.0592	0.0528	0.0506	0.0510	2.5352	1.2971	0.6339	0.4335	0.3204
F to Z↑	0.0636	0.0572	0.0506	0.0475	0.0480	3.2177	1.7006	0.8494	0.5726	0.4290

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1528	0.1321	0.1184	0.1147	0.1124	4.2167	2.1333	1.0135	0.6977	0.5072
A to Z↑	0.1484	0.1343	0.1155	0.1097	0.1105	4.7649	2.5138	1.2400	0.8327	0.6233
B to Z↓	0.1498	0.1261	0.1123	0.1083	0.1062	4.2185	2.1339	1.0137	0.6977	0.5073
B to Z↑	0.1426	0.1265	0.1092	0.1019	0.1011	4.7512	2.5075	1.2378	0.8295	0.6203
C to Z↓	0.1406	0.1196	0.1071	0.1038	0.1024	4.1564	2.1075	1.0015	0.6897	0.5010
C to Z↑	0.1409	0.1259	0.1083	0.1040	0.1038	4.7643	2.5128	1.2393	0.8331	0.6231
D to Z↓	0.1361	0.1147	0.1015	0.0983	0.0959	4.1563	2.1073	1.0016	0.6898	0.5010
D to Z↑	0.1333	0.1189	0.1028	0.0943	0.0939	4.7463	2.5054	1.2370	0.8280	0.6198
E to Z↓	0.1170	0.1014	0.0905	0.0868	0.0893	4.0787	2.0782	0.9894	0.6793	0.4948
E to Z↑	0.1154	0.1058	0.0917	0.0880	0.0885	4.7521	2.5085	1.2375	0.8311	0.6221
F to Z↓	0.1120	0.0960	0.0847	0.0807	0.0810	4.0796	2.0781	0.9896	0.6795	0.4948
F to Z↑	0.1075	0.0982	0.0852	0.0789	0.0795	4.7319	2.4997	1.2337	0.8267	0.6188

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1409	0.1218	0.1093	0.1060	0.1039	3.8998	1.9700	0.9392	0.6459	0.4706
A to Z↑	0.1353	0.1222	0.1053	0.1002	0.1010	4.4324	2.3339	1.1523	0.7743	0.5795
B to Z↓	0.1382	0.1163	0.1037	0.1002	0.0983	3.9015	1.9707	0.9393	0.6459	0.4707
B to Z↑	0.1300	0.1150	0.0995	0.0932	0.0926	4.4207	2.3281	1.1503	0.7714	0.5769
C to Z↓	0.1295	0.1101	0.0987	0.0957	0.0944	3.8443	1.9463	0.9282	0.6386	0.4649
C to Z↑	0.1284	0.1145	0.0988	0.0950	0.0949	4.4333	2.3333	1.1517	0.7747	0.5793
D to Z↓	0.1254	0.1056	0.0935	0.0907	0.0885	3.8446	1.9463	0.9282	0.6386	0.4649

Propagation Delay at 125C, 1.15V Worst process

D to Z[↑]	0.1216	0.1081	0.0937	0.0862	0.0859	4.4153	2.3261	1.1496	0.7700	0.5764
E to Z[↓]	0.1074	0.0930	0.0831	0.0799	0.0822	3.7732	1.9197	0.9172	0.6292	0.4593
E to Z[↑]	0.1053	0.0963	0.0838	0.0806	0.0811	4.4205	2.3293	1.1500	0.7728	0.5784
F to Z[↓]	0.1028	0.0880	0.0778	0.0743	0.0746	3.7734	1.9197	0.9173	0.6293	0.4594
F to Z[↑]	0.0981	0.0894	0.0778	0.0723	0.0729	4.4028	2.3210	1.1466	0.7689	0.5753

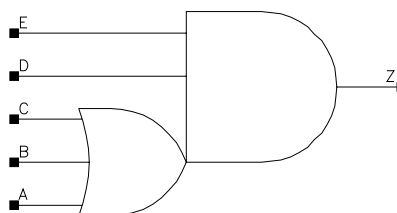


HS65_LS_OA311

Cell Description

BOOLEAN : ((A+B+C) • D • E)

Logical Symbol



Functions

A	B	C	D	E	Z
0	0	0	-	-	0
-	-	-	-	0	0
-	-	-	0	-	0
-	-	1	1	1	1
1	-	-	1	1	1
-	1	-	1	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.80	4.6800
X9	2.6	1.80	4.6800
X18	2.6	2.20	5.7200
X27	2.6	4.00	10.4000
X35	2.6	4.40	11.4400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.338e-07	4.746e-10
X9	2.235e-07	8.910e-10
X18	4.412e-07	1.782e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X27	6.677e-07	2.673e-09
X35	8.860e-07	3.568e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	3.199e-05	3.826e-08
X9	5.718e-05	4.711e-08
X18	1.197e-04	6.691e-08
X27	1.780e-04	1.016e-07
X35	2.407e-04	1.214e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	2.831e-05	3.438e-08
X9	5.014e-05	4.064e-08
X18	1.046e-04	5.524e-08
X27	1.557e-04	8.395e-08
X35	2.104e-04	9.859e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	8.222e-03	1.291e-02	2.225e-02	3.393e-02	4.569e-02
B to Z	7.788e-03	1.219e-02	2.087e-02	3.168e-02	4.252e-02
C to Z	7.319e-03	1.137e-02	1.922e-02	2.877e-02	3.850e-02
D to Z	6.527e-03	1.050e-02	1.747e-02	2.549e-02	3.458e-02
E to Z	6.177e-03	9.926e-03	1.637e-02	2.359e-02	3.142e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-6.887e-06	-1.187e-05	-2.099e-05	-3.846e-05	-4.824e-05
B to Z	-5.133e-06	-9.885e-06	-2.127e-05	-3.379e-05	-4.665e-05
C to Z	7.370e-07	4.610e-07	3.230e-07	8.100e-07	2.415e-06
D to Z	-1.254e-06	-1.891e-06	-4.274e-06	-7.517e-06	-9.869e-06

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

E to Z	-6.828e-07	-2.035e-06	-3.522e-06	-5.307e-06	-7.800e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0010	0.0014	0.0021	0.0034	0.0040
B	0.0010	0.0014	0.0021	0.0033	0.0040
C	0.0010	0.0014	0.0022	0.0033	0.0040
D	0.0010	0.0014	0.0022	0.0038	0.0042
E	0.0010	0.0014	0.0022	0.0034	0.0042

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1151	0.1005	0.0917	0.0921	0.0955	2.6953	1.3435	0.6525	0.4467	0.3326
A to Z↑	0.0791	0.0714	0.0619	0.0619	0.0634	3.2113	1.7019	0.8487	0.5758	0.4315
B to Z↓	0.1145	0.0984	0.0898	0.0899	0.0931	2.6988	1.3441	0.6527	0.4468	0.3327
B to Z↑	0.0763	0.0676	0.0586	0.0588	0.0598	3.2058	1.6954	0.8459	0.5727	0.4290
C to Z↓	0.1070	0.0915	0.0821	0.0812	0.0830	2.6991	1.3442	0.6528	0.4469	0.3327
C to Z↑	0.0706	0.0618	0.0527	0.0525	0.0539	3.1928	1.6889	0.8412	0.5700	0.4271
D to Z↓	0.0469	0.0409	0.0364	0.0345	0.0355	2.3857	1.2203	0.5941	0.4075	0.3006
D to Z↑	0.0643	0.0585	0.0504	0.0490	0.0512	3.1807	1.6856	0.8408	0.5697	0.4265
E to Z↓	0.0445	0.0386	0.0341	0.0324	0.0323	2.3800	1.2191	0.5933	0.4070	0.2996
E to Z↑	0.0613	0.0556	0.0474	0.0454	0.0465	3.1815	1.6859	0.8410	0.5696	0.4265

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1886	0.1658	0.1515	0.1508	0.1564	4.3810	2.1617	1.0210	0.7022	0.5172
A to Z↑	0.1383	0.1258	0.1068	0.1076	0.1084	4.7448	2.5099	1.2342	0.8341	0.6252
B to Z↓	0.1858	0.1609	0.1468	0.1455	0.1508	4.3856	2.1622	1.0211	0.7022	0.5172



Propagation Delay at 125C, 1.10V Worst process

B to Z ↑	0.1325	0.1182	0.1004	0.1009	0.1016	4.7233	2.4945	1.2267	0.8276	0.6199
C to Z ↓	0.1722	0.1482	0.1328	0.1297	0.1326	4.3869	2.1623	1.0214	0.7021	0.5173
C to Z ↑	0.1217	0.1071	0.0895	0.0890	0.0908	4.6960	2.4781	1.2188	0.8216	0.6162
D to Z ↓	0.0719	0.0626	0.0552	0.0524	0.0536	3.8395	1.9399	0.9125	0.6305	0.4592
D to Z ↑	0.1099	0.1005	0.0848	0.0828	0.0853	4.6749	2.4745	1.2173	0.8214	0.6152
E to Z ↓	0.0685	0.0595	0.0521	0.0491	0.0488	3.8298	1.9363	0.9108	0.6290	0.4571
E to Z ↑	0.1039	0.0949	0.0794	0.0762	0.0769	4.6744	2.4745	1.2177	0.8212	0.6153

Propagation Delay at 125C, 1.15V Worst process

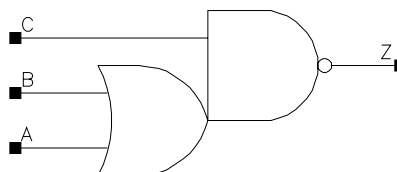
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z ↓	0.1732	0.1521	0.1390	0.1387	0.1439	4.0500	1.9975	0.9469	0.6507	0.4801
A to Z ↑	0.1262	0.1145	0.0975	0.0983	0.0992	4.4114	2.3292	1.1470	0.7758	0.5812
B to Z ↓	0.1705	0.1475	0.1346	0.1339	0.1387	4.0548	1.9979	0.9471	0.6507	0.4801
B to Z ↑	0.1210	0.1076	0.0917	0.0922	0.0930	4.3908	2.3154	1.1403	0.7696	0.5763
C to Z ↓	0.1580	0.1359	0.1218	0.1193	0.1220	4.0545	1.9982	0.9473	0.6507	0.4802
C to Z ↑	0.1110	0.0975	0.0817	0.0813	0.0830	4.3669	2.3019	1.1323	0.7642	0.5729
D to Z ↓	0.0668	0.0582	0.0514	0.0488	0.0500	3.5473	1.7931	0.8478	0.5850	0.4270
D to Z ↑	0.1002	0.0915	0.0774	0.0757	0.0781	4.3474	2.2974	1.1317	0.7639	0.5721
E to Z ↓	0.0636	0.0552	0.0484	0.0457	0.0455	3.5391	1.7894	0.8464	0.5837	0.4251
E to Z ↑	0.0948	0.0865	0.0726	0.0697	0.0705	4.3482	2.2978	1.1316	0.7639	0.5721

HS65_LS_OAI12

Cell Description

2 Input OR into 2 Input NAND

Logical Symbol



Functions

A	B	C	Z
1	-	1	0
-	1	1	0
0	0	-	1
-	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.00	2.6000
X3	2.6	1.00	2.6000
X5	2.6	1.20	3.1200
X6	2.6	1.20	3.1200
X9	2.6	2.00	5.2000
X12	2.6	2.00	5.2000
X18	2.6	2.60	6.7600
X24	2.6	3.40	8.8400
X37	2.6	5.00	13.0000
X49	2.6	6.60	17.1600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	6.810e-08	1.957e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X3	9.825e-08	3.456e-10
X5	1.469e-07	4.622e-10
X6	1.874e-07	6.120e-10
X9	3.001e-07	8.952e-10
X12	3.868e-07	1.162e-09
X18	5.866e-07	1.695e-09
X24	7.909e-07	2.244e-09
X37	1.200e-06	3.343e-09
X49	1.612e-06	4.426e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	1.663e-05	2.419e-08
X3	2.596e-05	2.674e-08
X5	4.085e-05	3.119e-08
X6	5.389e-05	3.372e-08
X9	8.380e-05	4.673e-08
X12	1.125e-04	5.180e-08
X18	1.713e-04	6.794e-08
X24	2.318e-04	8.595e-08
X37	3.533e-04	1.219e-07
X49	4.758e-04	1.580e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	1.481e-05	2.245e-08
X3	2.287e-05	2.429e-08
X5	3.584e-05	2.786e-08
X6	4.716e-05	2.963e-08
X9	7.352e-05	4.071e-08
X12	9.845e-05	4.422e-08
X18	1.499e-04	5.699e-08
X24	2.029e-04	7.151e-08
X37	3.092e-04	1.006e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

X49	4.164e-04	1.297e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X3	X5	X6	X9
A to Z	2.470e-03	3.311e-03	4.693e-03	5.850e-03	8.981e-03
B to Z	2.110e-03	2.601e-03	3.588e-03	4.389e-03	6.570e-03
C to Z	3.039e-03	4.310e-03	5.609e-03	7.016e-03	1.075e-02
Pin Cycle (vdd)	X12	X18	X24	X37	X49
A to Z	1.149e-02	1.686e-02	2.282e-02	3.424e-02	4.546e-02
B to Z	8.283e-03	1.160e-02	1.555e-02	2.340e-02	3.086e-02
C to Z	1.354e-02	1.914e-02	2.578e-02	3.861e-02	5.117e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X3	X5	X6	X9
A to Z	-3.697e-06	-5.531e-06	-8.400e-06	-1.039e-05	-1.675e-05
B to Z	3.600e-08	9.170e-07	1.663e-06	2.664e-06	4.280e-06
C to Z	-5.890e-07	-5.853e-07	-2.853e-07	8.333e-09	-2.367e-07
Pin Cycle (vdds)	X12	X18	X24	X37	X49
A to Z	-2.000e-05	-2.900e-05	-3.834e-05	-6.003e-05	-7.800e-05
B to Z	6.150e-06	1.177e-05	1.511e-05	1.658e-05	2.315e-05
C to Z	8.533e-07	2.530e-06	1.930e-06	4.537e-06	4.443e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X3	X5	X6	X9
A	0.0010	0.0013	0.0016	0.0019	0.0033
B	0.0009	0.0013	0.0016	0.0019	0.0029
C	0.0010	0.0014	0.0017	0.0020	0.0032
Pin	X12	X18	X24	X37	X49
A	0.0040	0.0054	0.0078	0.0117	0.0154
B	0.0035	0.0052	0.0069	0.0104	0.0140
C	0.0039	0.0057	0.0075	0.0114	0.0152

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X5	X6	X9	X2	X3	X5	X6	X9
A to Z↓	0.0227	0.0190	0.0180	0.0173	0.0174	7.0362	3.9593	2.7336	2.0635	1.3646
A to Z↑	0.0301	0.0247	0.0239	0.0234	0.0231	10.7320	6.0469	4.1742	3.2363	2.0839
B to Z↓	0.0210	0.0168	0.0153	0.0145	0.0146	7.0270	3.9465	2.6478	1.9850	1.3823
B to Z↑	0.0284	0.0220	0.0209	0.0201	0.0194	10.7607	6.0735	4.1885	3.2505	2.0926
C to Z↓	0.0265	0.0227	0.0210	0.0201	0.0204	6.6484	3.7185	2.5606	1.9284	1.2982
C to Z↑	0.0232	0.0196	0.0182	0.0179	0.0177	5.5587	3.1204	2.1460	1.6648	1.0789
	X12	X18	X24	X37	X49	X12	X18	X24	X37	X49
A to Z↓	0.0168	0.0168	0.0168	0.0168	0.0168	1.0211	0.6979	0.5179	0.3476	0.2631
A to Z↑	0.0232	0.0232	0.0234	0.0234	0.0234	1.6165	1.1148	0.8287	0.5581	0.4216
B to Z↓	0.0141	0.0135	0.0137	0.0136	0.0136	1.0441	0.6842	0.5216	0.3489	0.2628
B to Z↑	0.0191	0.0187	0.0187	0.0187	0.0187	1.6222	1.1197	0.8324	0.5611	0.4233
C to Z↓	0.0196	0.0187	0.0188	0.0188	0.0187	0.9769	0.6551	0.4911	0.3290	0.2485
C to Z↑	0.0175	0.0169	0.0170	0.0171	0.0170	0.8362	0.5658	0.4233	0.2835	0.2141

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X5	X6	X9	X2	X3	X5	X6	X9
A to Z↓	0.0373	0.0320	0.0301	0.0287	0.0290	11.9521	6.9150	4.6179	3.4497	2.2855
A to Z↑	0.0446	0.0369	0.0360	0.0353	0.0348	16.2072	9.1493	6.3172	4.9066	3.1400
B to Z↓	0.0342	0.0279	0.0254	0.0239	0.0240	11.9411	6.8789	4.4729	3.3211	2.2844
B to Z↑	0.0415	0.0325	0.0309	0.0299	0.0286	16.2262	9.1685	6.3327	4.9148	3.1454
C to Z↓	0.0439	0.0384	0.0349	0.0333	0.0337	11.2855	6.5001	4.3182	3.2191	2.1615
C to Z↑	0.0328	0.0278	0.0259	0.0255	0.0250	7.8945	4.4357	3.0487	2.3643	1.5222
	X12	X18	X24	X37	X49	X12	X18	X24	X37	X49
A to Z↓	0.0278	0.0275	0.0275	0.0274	0.0273	1.6809	1.1352	0.8395	0.5585	0.4199
A to Z↑	0.0349	0.0348	0.0351	0.0351	0.0351	2.4373	1.6624	1.2372	0.8303	0.6245

Propagation Delay at 125C, 1.10V Worst process

B to Z↓	0.0230	0.0221	0.0221	0.0221	0.0219	1.6950	1.1082	0.8371	0.5567	0.4180
B to Z↑	0.0282	0.0275	0.0273	0.0274	0.0273	2.4423	1.6664	1.2400	0.8321	0.6265
C to Z↓	0.0321	0.0306	0.0306	0.0306	0.0303	1.5950	1.0631	0.7923	0.5274	0.3959
C to Z↑	0.0248	0.0239	0.0240	0.0240	0.0239	1.1797	0.7948	0.5939	0.3966	0.2988

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X5	X6	X9	X2	X3	X5	X6	X9
A to Z↓	0.0348	0.0298	0.0281	0.0268	0.0270	10.9395	6.2752	4.2076	3.1452	2.0844
A to Z↑	0.0417	0.0345	0.0336	0.0329	0.0325	14.9608	8.4394	5.8202	4.5124	2.8924
B to Z↓	0.0319	0.0261	0.0237	0.0224	0.0225	10.9349	6.2450	4.0756	3.0273	2.0876
B to Z↑	0.0388	0.0304	0.0289	0.0279	0.0267	14.9943	8.4526	5.8283	4.5203	2.8979
C to Z↓	0.0407	0.0356	0.0324	0.0309	0.0314	10.3296	5.8969	3.9326	2.9336	1.9723
C to Z↑	0.0312	0.0265	0.0246	0.0242	0.0238	7.3646	4.1303	2.8370	2.1986	1.4173
	X12	X18	X24	X37	X49	X12	X18	X24	X37	X49
A to Z↓	0.0260	0.0258	0.0258	0.0257	0.0256	1.5357	1.0388	0.7685	0.5122	0.3854
A to Z↑	0.0326	0.0324	0.0327	0.0327	0.0327	2.2430	1.5318	1.1397	0.7654	0.5763
B to Z↓	0.0216	0.0207	0.0208	0.0207	0.0206	1.5517	1.0149	0.7677	0.5111	0.3839
B to Z↑	0.0264	0.0257	0.0256	0.0256	0.0255	2.2477	1.5361	1.1427	0.7673	0.5778
C to Z↓	0.0299	0.0285	0.0286	0.0285	0.0283	1.4578	0.9732	0.7259	0.4835	0.3634
C to Z↑	0.0236	0.0227	0.0228	0.0229	0.0227	1.0979	0.7399	0.5529	0.3694	0.2784

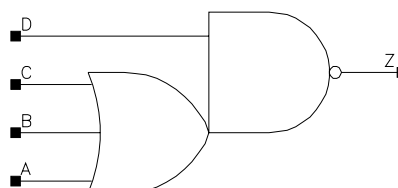


HS65_LS_OAI13

Cell Description

2 wide 1-3 OR-AND-INVERT, 7x Drive

Logical Symbol



Functions

A	B	C	D	Z
1	-	-	1	0
-	-	1	1	0
-	1	-	1	0
0	0	0	-	1
-	-	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X1	2.6	1.40	3.6400
X2	2.6	1.40	3.6400
X4	2.6	1.40	3.6400
X5	2.6	1.40	3.6400
X7	2.6	2.40	6.2400
X10	2.6	2.40	6.2400
X15	2.6	3.40	8.8400
X20	2.6	4.60	11.9600
X30	2.6	6.60	17.1600
X40	2.6	8.80	22.8800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X1	7.141e-08	2.561e-10
X2	9.156e-08	3.643e-10
X4	1.324e-07	5.392e-10
X5	1.701e-07	6.724e-10
X7	2.635e-07	9.888e-10
X10	3.547e-07	1.289e-09
X15	5.242e-07	1.921e-09
X20	7.218e-07	2.538e-09
X30	1.094e-06	3.778e-09
X40	1.428e-06	5.011e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X1	1.726e-05	2.896e-08
X2	2.365e-05	3.134e-08
X4	3.579e-05	3.449e-08
X5	4.725e-05	3.728e-08
X7	7.208e-05	5.329e-08
X10	9.991e-05	5.936e-08
X15	1.476e-04	8.043e-08
X20	2.045e-04	1.044e-07
X30	3.110e-04	1.475e-07
X40	4.118e-04	1.924e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X1	1.536e-05	2.685e-08
X2	2.088e-05	2.849e-08
X4	3.145e-05	3.070e-08
X5	4.142e-05	3.268e-08
X7	6.335e-05	4.640e-08
X10	8.759e-05	5.071e-08
X15	1.294e-04	6.780e-08
X20	1.793e-04	8.765e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

X30	2.727e-04	1.228e-07
X40	3.607e-04	1.597e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X1	X2	X4	X5	X7
A to Z	3.503e-03	4.718e-03	6.327e-03	8.030e-03	1.322e-02
B to Z	2.987e-03	3.915e-03	5.169e-03	6.523e-03	1.080e-02
C to Z	2.579e-03	3.199e-03	4.026e-03	5.001e-03	7.533e-03
D to Z	3.657e-03	4.817e-03	6.302e-03	7.914e-03	1.254e-02
Pin Cycle (vdd)	X10	X15	X20	X30	X40
A to Z	1.699e-02	2.338e-02	3.251e-02	4.803e-02	6.254e-02
B to Z	1.381e-02	1.847e-02	2.615e-02	3.854e-02	4.983e-02
C to Z	9.550e-03	1.312e-02	1.824e-02	2.688e-02	3.478e-02
D to Z	1.584e-02	2.243e-02	3.068e-02	4.550e-02	6.002e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X1	X2	X4	X5	X7
A to Z	-5.854e-06	-9.620e-06	-1.275e-05	-1.763e-05	-2.898e-05
B to Z	-2.786e-06	-3.751e-06	-4.900e-06	-6.040e-06	-1.066e-05
C to Z	9.430e-07	9.060e-07	2.662e-06	4.271e-06	5.240e-06
D to Z	-1.158e-06	-1.653e-06	-2.545e-06	-2.697e-06	-6.164e-06
Pin Cycle (vdds)	X10	X15	X20	X30	X40
A to Z	-3.085e-05	-4.596e-05	-6.833e-05	-9.320e-05	-1.267e-04
B to Z	-1.204e-05	-1.419e-05	-2.505e-05	-3.249e-05	-5.180e-05
C to Z	1.022e-05	1.383e-05	1.590e-05	2.346e-05	1.844e-05
D to Z	-5.916e-06	-8.249e-06	-1.474e-05	-1.920e-05	-2.772e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X1	X2	X4	X5	X7
A	0.0010	0.0013	0.0015	0.0019	0.0029
B	0.0009	0.0011	0.0015	0.0018	0.0030
C	0.0011	0.0013	0.0015	0.0018	0.0029
D	0.0011	0.0013	0.0016	0.0020	0.0030



Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X10	X15	X20	X30	X40
A	0.0036	0.0052	0.0069	0.0103	0.0135
B	0.0038	0.0050	0.0070	0.0104	0.0128
C	0.0036	0.0048	0.0068	0.0100	0.0123
D	0.0037	0.0054	0.0071	0.0106	0.0140

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X4	X5	X7	X1	X2	X4	X5	X7
A to Z↓	0.0265	0.0253	0.0231	0.0224	0.0227	6.9916	4.7905	3.1599	2.4197	1.5894
A to Z↑	0.0453	0.0406	0.0376	0.0373	0.0401	14.1723	9.1698	6.2019	4.8586	3.2106
B to Z↓	0.0242	0.0228	0.0209	0.0202	0.0217	6.8763	4.6922	3.0973	2.3702	1.5864
B to Z↑	0.0422	0.0374	0.0345	0.0341	0.0372	14.1924	9.1843	6.2121	4.8664	3.2179
C to Z↓	0.0225	0.0202	0.0179	0.0170	0.0175	6.8307	4.6432	3.0404	2.3129	1.5638
C to Z↑	0.0378	0.0316	0.0278	0.0268	0.0260	14.2479	9.2079	6.2233	4.8768	3.2268
D to Z↓	0.0278	0.0262	0.0237	0.0228	0.0232	6.1393	4.1985	2.7713	2.1200	1.4087
D to Z↑	0.0230	0.0206	0.0190	0.0186	0.0187	4.9899	3.1971	2.1328	1.6724	1.1133
	X10	X15	X20	X30	X40	X10	X15	X20	X30	X40
A to Z↓	0.0221	0.0214	0.0215	0.0215	0.0213	1.1942	0.8195	0.6028	0.4046	0.3072
A to Z↑	0.0396	0.0373	0.0387	0.0388	0.0388	2.4671	1.6833	1.2629	0.8514	0.6493
B to Z↓	0.0209	0.0197	0.0202	0.0201	0.0205	1.1913	0.8042	0.6022	0.3999	0.3121
B to Z↑	0.0364	0.0338	0.0353	0.0352	0.0351	2.4722	1.6873	1.2664	0.8524	0.6510
C to Z↓	0.0165	0.0160	0.0162	0.0163	0.0164	1.1613	0.7985	0.5922	0.3969	0.3087
C to Z↑	0.0255	0.0247	0.0251	0.0251	0.0251	2.4778	1.6909	1.2696	0.8553	0.6528
D to Z↓	0.0222	0.0218	0.0219	0.0220	0.0223	1.0567	0.7194	0.5336	0.3564	0.2746
D to Z↑	0.0184	0.0180	0.0183	0.0184	0.0185	0.8541	0.5686	0.4299	0.2869	0.2164

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X4	X5	X7	X1	X2	X4	X5	X7
A to Z↓	0.0445	0.0430	0.0393	0.0378	0.0382	11.8088	8.2007	5.3848	4.0737	2.6540
A to Z↑	0.0711	0.0641	0.0596	0.0595	0.0637	21.7501	14.1324	9.5744	7.5109	4.9282
B to Z↓	0.0405	0.0384	0.0351	0.0338	0.0362	11.6104	7.9838	5.2371	3.9527	2.6539
B to Z↑	0.0650	0.0579	0.0537	0.0534	0.0580	21.7478	14.1281	9.5722	7.5159	4.9307
C to Z↓	0.0372	0.0337	0.0298	0.0282	0.0289	11.5567	7.9175	5.1642	3.8799	2.6323
C to Z↑	0.0566	0.0474	0.0417	0.0405	0.0389	21.7916	14.1489	9.5882	7.5256	4.9369
D to Z↓	0.0462	0.0439	0.0396	0.0379	0.0386	10.3050	7.1265	4.6705	3.5271	2.3390
D to Z↑	0.0326	0.0294	0.0271	0.0266	0.0265	6.9958	4.5081	3.0140	2.3627	1.5546
	X10	X15	X20	X30	X40	X10	X15	X20	X30	X40
A to Z↓	0.0366	0.0357	0.0353	0.0352	0.0347	1.9549	1.3462	0.9760	0.6522	0.4920
A to Z↑	0.0628	0.0588	0.0610	0.0608	0.0605	3.7845	2.5544	1.9182	1.2871	0.9782
B to Z↓	0.0346	0.0324	0.0332	0.0328	0.0330	1.9556	1.3127	0.9772	0.6451	0.4973
B to Z↑	0.0571	0.0524	0.0549	0.0546	0.0540	3.7868	2.5554	1.9186	1.2874	0.9785
C to Z↓	0.0273	0.0262	0.0265	0.0265	0.0263	1.9169	1.3058	0.9621	0.6417	0.4908
C to Z↑	0.0383	0.0367	0.0374	0.0373	0.0370	3.7915	2.5589	1.9209	1.2888	0.9796
D to Z↓	0.0365	0.0359	0.0358	0.0356	0.0360	1.7189	1.1709	0.8589	0.5707	0.4356
D to Z↑	0.0261	0.0255	0.0257	0.0258	0.0260	1.1928	0.7961	0.5981	0.3986	0.3009

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X4	X5	X7	X1	X2	X4	X5	X7
A to Z↓	0.0414	0.0399	0.0365	0.0351	0.0356	10.8055	7.4709	4.9035	3.7131	2.4229
A to Z↑	0.0659	0.0593	0.0551	0.0550	0.0589	20.0003	12.9616	8.7764	6.8802	4.5212
B to Z↓	0.0378	0.0357	0.0327	0.0315	0.0338	10.6223	7.2779	4.7711	3.6050	2.4210
B to Z↑	0.0603	0.0536	0.0497	0.0493	0.0537	20.0124	12.9682	8.7795	6.8808	4.5223
C to Z↓	0.0348	0.0314	0.0278	0.0264	0.0270	10.5722	7.2120	4.7024	3.5362	2.3995



Propagation Delay at 125C, 1.15V Worst process

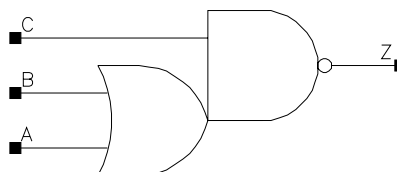
C to Z ↑	0.0525	0.0439	0.0387	0.0375	0.0361	20.0566	12.9852	8.7909	6.8930	4.5285
D to Z ↓	0.0429	0.0407	0.0367	0.0352	0.0359	9.4272	6.4905	4.2539	3.2157	2.1345
D to Z ↑	0.0310	0.0279	0.0257	0.0253	0.0252	6.5287	4.2002	2.8054	2.1978	1.4483
	X10	X15	X20	X30	X40	X10	X15	X20	X30	X40
A to Z ↓	0.0341	0.0332	0.0330	0.0329	0.0324	1.7891	1.2309	0.8947	0.5982	0.4515
A to Z ↑	0.0581	0.0544	0.0565	0.0563	0.0561	3.4702	2.3450	1.7611	1.1814	0.8989
B to Z ↓	0.0323	0.0303	0.0311	0.0307	0.0309	1.7882	1.2011	0.8953	0.5917	0.4567
B to Z ↑	0.0528	0.0485	0.0508	0.0505	0.0501	3.4721	2.3458	1.7616	1.1820	0.8989
C to Z ↓	0.0255	0.0245	0.0249	0.0248	0.0247	1.7516	1.1943	0.8807	0.5880	0.4507
C to Z ↑	0.0354	0.0341	0.0347	0.0346	0.0344	3.4761	2.3493	1.7639	1.1834	0.9002
D to Z ↓	0.0340	0.0335	0.0333	0.0332	0.0336	1.5724	1.0708	0.7871	0.5233	0.3998
D to Z ↑	0.0248	0.0242	0.0245	0.0245	0.0248	1.1109	0.7413	0.5575	0.3715	0.2805

HS65_LS_OAI21

Cell Description

2 Input OR into 2 Input NAND

Logical Symbol



Functions

A	B	C	Z
1	-	1	0
-	1	1	0
0	0	-	1
-	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.00	2.6000
X3	2.6	1.00	2.6000
X5	2.6	1.20	3.1200
X6	2.6	1.20	3.1200
X9	2.6	2.00	5.2000
X12	2.6	2.00	5.2000
X18	2.6	2.60	6.7600
X24	2.6	3.40	8.8400
X37	2.6	5.00	13.0000
X49	2.6	6.60	17.1600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	6.711e-08	2.290e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X3	1.046e-07	3.290e-10
X5	1.532e-07	4.788e-10
X6	1.957e-07	6.287e-10
X9	3.110e-07	8.952e-10
X12	4.045e-07	1.162e-09
X18	6.136e-07	1.728e-09
X24	8.279e-07	2.261e-09
X37	1.257e-06	3.327e-09
X49	1.687e-06	4.426e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	1.653e-05	2.417e-08
X3	2.749e-05	2.672e-08
X5	4.227e-05	3.119e-08
X6	5.583e-05	3.372e-08
X9	8.631e-05	4.676e-08
X12	1.168e-04	5.176e-08
X18	1.779e-04	6.791e-08
X24	2.411e-04	8.591e-08
X37	3.678e-04	1.219e-07
X49	4.950e-04	1.580e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	1.471e-05	2.250e-08
X3	2.417e-05	2.423e-08
X5	3.705e-05	2.786e-08
X6	4.882e-05	2.961e-08
X9	7.565e-05	4.071e-08
X12	1.021e-04	4.420e-08
X18	1.556e-04	5.693e-08
X24	2.108e-04	7.149e-08
X37	3.216e-04	1.006e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

X49	4.328e-04	1.297e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X3	X5	X6	X9
A (stable)	5.388e-05	1.097e-04	1.585e-04	2.006e-04	2.938e-04
B (stable)	2.967e-05	4.816e-05	7.678e-05	9.863e-05	1.557e-04
C (stable)	6.187e-04	1.123e-03	1.379e-03	1.726e-03	2.608e-03
A to Z	2.790e-03	4.582e-03	5.932e-03	7.497e-03	1.110e-02
B to Z	2.492e-03	3.829e-03	4.815e-03	6.011e-03	8.661e-03
C to Z	1.889e-03	2.715e-03	3.516e-03	4.393e-03	6.119e-03
Pin Cycle (vdd)	X12	X18	X24	X37	X49
A (stable)	3.824e-04	6.203e-04	8.575e-04	1.296e-03	1.726e-03
B (stable)	2.032e-04	3.064e-04	4.154e-04	5.947e-04	7.957e-04
C (stable)	3.248e-03	4.346e-03	6.014e-03	8.836e-03	1.170e-02
A to Z	1.418e-02	2.070e-02	2.794e-02	4.144e-02	5.501e-02
B to Z	1.092e-02	1.547e-02	2.065e-02	3.076e-02	4.068e-02
C to Z	7.767e-03	1.138e-02	1.499e-02	2.236e-02	2.954e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X3	X5	X6	X9
A (stable)	-3.783e-06	-6.652e-06	-1.014e-05	-1.326e-05	-1.996e-05
B (stable)	-5.246e-06	-1.016e-05	-1.657e-05	-2.148e-05	-3.106e-05
C (stable)	-1.739e-06	-2.609e-06	-4.348e-06	-5.217e-06	-8.696e-06
A to Z	-3.703e-06	-5.802e-06	-9.410e-06	-1.154e-05	-1.728e-05
B to Z	-1.000e-07	-8.700e-08	1.663e-06	2.533e-06	4.290e-06
C to Z	1.369e-06	2.847e-06	6.277e-06	8.629e-06	1.188e-05
Pin Cycle (vdds)	X12	X18	X24	X37	X49
A (stable)	-2.632e-05	-4.078e-05	-5.380e-05	-8.101e-05	-1.107e-04
B (stable)	-4.084e-05	-5.232e-05	-7.484e-05	-9.458e-05	-1.265e-04
C (stable)	-1.130e-05	-1.652e-05	-2.261e-05	-3.852e-05	-5.009e-05
A to Z	-2.013e-05	-3.275e-05	-3.900e-05	-5.745e-05	-8.320e-05
B to Z	7.640e-06	1.238e-05	1.634e-05	2.139e-05	2.752e-05
C to Z	1.673e-05	1.507e-05	2.446e-05	2.120e-05	2.663e-05



Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X3	X5	X6	X9
A	0.0011	0.0014	0.0017	0.0020	0.0033
B	0.0010	0.0013	0.0016	0.0020	0.0030
C	0.0010	0.0014	0.0016	0.0020	0.0031
Pin	X12	X18	X24	X37	X49
A	0.0041	0.0056	0.0081	0.0119	0.0159
B	0.0036	0.0053	0.0071	0.0107	0.0144
C	0.0038	0.0056	0.0074	0.0113	0.0151

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X5	X6	X9	X2	X3	X5	X6	X9
A to Z↓	0.0248	0.0241	0.0217	0.0210	0.0205	7.0836	3.9666	2.7242	2.0561	1.3388
A to Z↑	0.0325	0.0313	0.0285	0.0282	0.0270	10.7335	6.0509	4.1759	3.2369	2.0853
B to Z↓	0.0244	0.0220	0.0191	0.0183	0.0177	7.2137	3.9441	2.6333	1.9741	1.3535
B to Z↑	0.0322	0.0285	0.0256	0.0250	0.0234	10.7600	6.0708	4.1869	3.2484	2.0919
C to Z↓	0.0200	0.0171	0.0157	0.0151	0.0144	6.7616	3.7274	2.5499	1.9218	1.2776
C to Z↑	0.0174	0.0151	0.0138	0.0136	0.0126	5.5688	3.1294	2.1522	1.6702	1.0836
	X12	X18	X24	X37	X49	X12	X18	X24	X37	X49
A to Z↓	0.0198	0.0196	0.0195	0.0194	0.0193	0.9975	0.6943	0.5100	0.3427	0.2595
A to Z↑	0.0270	0.0270	0.0271	0.0270	0.0270	1.6167	1.1145	0.8284	0.5575	0.4212
B to Z↓	0.0171	0.0166	0.0166	0.0165	0.0164	1.0190	0.6803	0.5137	0.3444	0.2598
B to Z↑	0.0231	0.0229	0.0227	0.0227	0.0226	1.6209	1.1182	0.8312	0.5598	0.4226
C to Z↓	0.0139	0.0138	0.0136	0.0137	0.0136	0.9579	0.6543	0.4861	0.3263	0.2470
C to Z↑	0.0126	0.0124	0.0122	0.0123	0.0122	0.8405	0.5688	0.4248	0.2852	0.2157

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X5	X6	X9	X2	X3	X5	X6	X9

Propagation Delay at 125C, 1.10V Worst process

A to Z↓	0.0408	0.0409	0.0361	0.0347	0.0340	12.0239	6.9622	4.6131	3.4463	2.2557
A to Z↑	0.0485	0.0470	0.0430	0.0426	0.0405	16.2199	9.1796	6.3312	4.9158	3.1476
B to Z↓	0.0398	0.0368	0.0314	0.0300	0.0291	12.2536	6.9108	4.4554	3.3053	2.2509
B to Z↑	0.0473	0.0422	0.0379	0.0372	0.0345	16.2368	9.1894	6.3428	4.9208	3.1504
C to Z↓	0.0324	0.0285	0.0258	0.0248	0.0237	11.3741	6.4883	4.2802	3.1929	2.1225
C to Z↑	0.0244	0.0213	0.0195	0.0192	0.0178	7.8978	4.4333	3.0517	2.3673	1.5249
	X12	X18	X24	X37	X49	X12	X18	X24	X37	X49
A to Z↓	0.0326	0.0319	0.0318	0.0315	0.0313	1.6535	1.1326	0.8313	0.5543	0.4167
A to Z↑	0.0407	0.0404	0.0406	0.0404	0.0403	2.4419	1.6646	1.2389	0.8307	0.6247
B to Z↓	0.0279	0.0269	0.0269	0.0267	0.0266	1.6646	1.1040	0.8281	0.5520	0.4149
B to Z↑	0.0341	0.0336	0.0333	0.0332	0.0331	2.4449	1.6671	1.2406	0.8317	0.6260
C to Z↓	0.0227	0.0225	0.0221	0.0220	0.0218	1.5619	1.0562	0.7822	0.5215	0.3922
C to Z↑	0.0177	0.0173	0.0171	0.0171	0.0170	1.1826	0.7974	0.5950	0.3984	0.3003

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X5	X6	X9	X2	X3	X5	X6	X9
A to Z↓	0.0380	0.0379	0.0335	0.0323	0.0316	10.9948	6.3130	4.2032	3.1412	2.0569
A to Z↑	0.0454	0.0439	0.0401	0.0398	0.0379	14.9772	8.4599	5.8298	4.5187	2.8982
B to Z↓	0.0370	0.0341	0.0293	0.0279	0.0271	11.2008	6.2680	4.0581	3.0144	2.0565
B to Z↑	0.0443	0.0396	0.0355	0.0348	0.0323	15.0064	8.4679	5.8356	4.5235	2.9012
C to Z↓	0.0302	0.0265	0.0242	0.0232	0.0222	10.4248	5.8898	3.9056	2.9150	1.9392
C to Z↑	0.0232	0.0203	0.0185	0.0182	0.0169	7.3686	4.1310	2.8405	2.2025	1.4212
	X12	X18	X24	X37	X49	X12	X18	X24	X37	X49
A to Z↓	0.0303	0.0298	0.0296	0.0294	0.0292	1.5097	1.0368	0.7608	0.5076	0.3823
A to Z↑	0.0380	0.0378	0.0380	0.0377	0.0377	2.2463	1.5331	1.1407	0.7653	0.5763
B to Z↓	0.0260	0.0251	0.0251	0.0249	0.0248	1.5239	1.0110	0.7593	0.5067	0.3810
B to Z↑	0.0320	0.0315	0.0312	0.0311	0.0310	2.2491	1.5360	1.1429	0.7667	0.5773
C to Z↓	0.0213	0.0211	0.0207	0.0207	0.0205	1.4294	0.9682	0.7173	0.4789	0.3605
C to Z↑	0.0167	0.0164	0.0162	0.0162	0.0161	1.1015	0.7431	0.5545	0.3712	0.2800



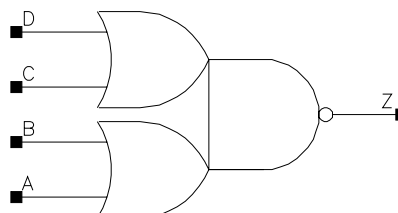


HS65_LS_OAI22

Cell Description

Double 2 Input OR into 2 Input NAND

Logical Symbol



Functions

A	B	C	D	Z
1	-	1	-	0
-	1	1	-	0
-	1	-	1	0
1	-	-	1	0
0	0	-	-	1
-	-	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X1	2.6	1.40	3.6400
X3	2.6	1.40	3.6400
X4	2.6	1.40	3.6400
X6	2.6	1.40	3.6400
X8	2.6	2.40	6.2400
X11	2.6	2.40	6.2400
X17	2.6	3.40	8.8400
X22	2.6	4.60	11.9600
X33	2.6	6.60	17.1600
X44	2.6	8.80	22.8800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X1	8.290e-08	2.602e-10
X3	1.216e-07	4.018e-10
X4	1.764e-07	5.683e-10
X6	2.277e-07	7.432e-10
X8	3.607e-07	1.110e-09
X11	4.692e-07	1.459e-09
X17	7.137e-07	2.159e-09
X22	9.597e-07	2.866e-09
X33	1.450e-06	4.274e-09
X44	1.940e-06	5.664e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X1	2.007e-05	2.900e-08
X3	3.218e-05	3.234e-08
X4	4.883e-05	3.579e-08
X6	6.508e-05	3.913e-08
X8	1.008e-04	5.578e-08
X11	1.356e-04	6.253e-08
X17	2.073e-04	8.596e-08
X22	2.797e-04	1.113e-07
X33	4.239e-04	1.581e-07
X44	5.678e-04	2.077e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X1	1.787e-05	2.689e-08
X3	2.835e-05	2.921e-08
X4	4.283e-05	3.169e-08
X6	5.694e-05	3.404e-08
X8	8.838e-05	4.811e-08
X11	1.186e-04	5.292e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

X17	1.814e-04	7.183e-08
X22	2.447e-04	9.258e-08
X33	3.708e-04	1.303e-07
X44	4.967e-04	1.708e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X1	X3	X4	X6	X8
A (stable)	7.070e-05	1.248e-04	1.794e-04	2.339e-04	3.880e-04
B (stable)	3.639e-05	4.763e-05	6.203e-05	8.134e-05	1.444e-04
C (stable)	1.855e-04	3.267e-04	4.702e-04	6.178e-04	1.074e-03
D (stable)	2.224e-04	2.882e-04	3.804e-04	4.773e-04	7.086e-04
A to Z	3.535e-03	5.243e-03	7.122e-03	9.078e-03	1.435e-02
B to Z	3.103e-03	4.459e-03	5.969e-03	7.525e-03	1.159e-02
C to Z	2.367e-03	3.592e-03	4.908e-03	6.216e-03	1.025e-02
D to Z	1.956e-03	2.807e-03	3.735e-03	4.660e-03	7.409e-03
Pin Cycle (vdd)	X11	X17	X22	X33	X44
A (stable)	5.114e-04	7.547e-04	9.994e-04	1.528e-03	1.963e-03
B (stable)	1.814e-04	2.792e-04	3.678e-04	5.480e-04	7.481e-04
C (stable)	1.372e-03	2.049e-03	2.730e-03	4.082e-03	5.593e-03
D (stable)	8.752e-04	1.245e-03	1.673e-03	2.472e-03	3.163e-03
A to Z	1.813e-02	2.632e-02	3.566e-02	5.303e-02	6.944e-02
B to Z	1.452e-02	2.116e-02	2.851e-02	4.230e-02	5.511e-02
C to Z	1.280e-02	1.878e-02	2.548e-02	3.786e-02	4.987e-02
D to Z	9.192e-03	1.348e-02	1.827e-02	2.706e-02	3.543e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X1	X3	X4	X6	X8
A (stable)	-3.765e-06	-6.313e-06	-8.983e-06	-1.183e-05	-1.941e-05
B (stable)	-3.670e-06	-7.043e-06	-9.791e-06	-1.363e-05	-1.680e-05
C (stable)	-6.359e-05	-1.142e-04	-1.660e-04	-2.207e-04	-3.609e-04
D (stable)	5.383e-05	9.577e-05	1.392e-04	1.847e-04	3.042e-04
A to Z	-2.420e-06	-2.447e-06	-1.850e-06	-2.457e-06	-5.103e-06
B to Z	-1.326e-06	-2.076e-06	-2.717e-06	-2.499e-06	-2.920e-06
C to Z	-5.363e-06	-9.936e-06	-1.380e-05	-1.737e-05	-2.880e-05



Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D to Z	1.348e-06	3.686e-06	5.814e-06	9.090e-06	6.043e-06
Pin Cycle (vdds)	X11	X17	X22	X33	X44
A (stable)	-2.468e-05	-3.624e-05	-4.921e-05	-7.255e-05	-9.341e-05
B (stable)	-2.312e-05	-3.714e-05	-4.565e-05	-6.745e-05	-9.744e-05
C (stable)	-4.683e-04	-6.980e-04	-9.502e-04	-1.390e-03	-1.961e-03
D (stable)	3.946e-04	5.845e-04	8.032e-04	1.171e-03	1.670e-03
A to Z	-6.683e-06	-2.997e-06	-1.027e-05	-1.576e-05	-3.543e-05
B to Z	-3.057e-06	-3.303e-06	-5.120e-06	-9.733e-06	-1.916e-05
C to Z	-3.799e-05	-5.399e-05	-7.515e-05	-1.123e-04	-1.560e-04
D to Z	1.177e-05	2.521e-05	2.366e-05	3.352e-05	5.329e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X1	X3	X4	X6	X8
A	0.0009	0.0013	0.0016	0.0019	0.0033
B	0.0009	0.0012	0.0016	0.0019	0.0030
C	0.0010	0.0013	0.0016	0.0020	0.0034
D	0.0009	0.0012	0.0016	0.0019	0.0029
Pin	X11	X17	X22	X33	X44
A	0.0042	0.0056	0.0079	0.0118	0.0147
B	0.0036	0.0054	0.0070	0.0105	0.0141
C	0.0041	0.0055	0.0078	0.0115	0.0144
D	0.0036	0.0053	0.0069	0.0103	0.0138

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X6	X8	X1	X3	X4	X6	X8
A to Z↓	0.0286	0.0266	0.0244	0.0235	0.0237	6.6907	3.9610	2.5907	1.9454	1.2648
A to Z↑	0.0382	0.0334	0.0318	0.0315	0.0320	10.8501	6.0544	4.1794	3.2357	2.1116
B to Z↓	0.0262	0.0237	0.0216	0.0207	0.0209	6.5756	3.8722	2.5304	1.8956	1.2713
B to Z↑	0.0354	0.0302	0.0284	0.0278	0.0277	10.8804	6.0713	4.1936	3.2446	2.1179
C to Z↓	0.0215	0.0204	0.0189	0.0181	0.0186	6.6786	3.9296	2.5888	1.9437	1.2636
C to Z↑	0.0280	0.0250	0.0238	0.0232	0.0242	10.8416	6.0530	4.1802	3.2330	2.1132

Propagation Delay at 25C, 1.20V Typ process

D to Z↓	0.0191	0.0175	0.0159	0.0151	0.0156	6.5935	3.8491	2.5275	1.8912	1.2757
D to Z↑	0.0252	0.0215	0.0200	0.0192	0.0194	10.8927	6.0759	4.1983	3.2448	2.1215
	X11	X17	X22	X33	X44	X11	X17	X22	X33	X44
A to Z↓	0.0229	0.0228	0.0227	0.0229	0.0233	0.9544	0.6569	0.4847	0.3266	0.2518
A to Z↑	0.0314	0.0312	0.0314	0.0317	0.0320	1.6189	1.1145	0.8248	0.5581	0.4266
B to Z↓	0.0202	0.0199	0.0201	0.0203	0.0203	0.9668	0.6477	0.4866	0.3270	0.2480
B to Z↑	0.0270	0.0272	0.0271	0.0274	0.0274	1.6232	1.1181	0.8274	0.5595	0.4281
C to Z↓	0.0178	0.0180	0.0178	0.0179	0.0183	0.9540	0.6564	0.4834	0.3254	0.2519
C to Z↑	0.0234	0.0235	0.0236	0.0239	0.0241	1.6201	1.1148	0.8265	0.5594	0.4252
D to Z↓	0.0150	0.0149	0.0151	0.0153	0.0153	0.9708	0.6474	0.4896	0.3300	0.2480
D to Z↑	0.0187	0.0189	0.0190	0.0191	0.0191	1.6267	1.1200	0.8303	0.5622	0.4272

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X6	X8	X1	X3	X4	X6	X8
A to Z↓	0.0478	0.0451	0.0408	0.0392	0.0395	11.3441	6.8125	4.3614	3.2459	2.1103
A to Z↑	0.0570	0.0502	0.0481	0.0478	0.0484	16.3442	9.1607	6.3353	4.9156	3.1877
B to Z↓	0.0434	0.0397	0.0357	0.0340	0.0344	11.1690	6.6219	4.2215	3.1331	2.0951
B to Z↑	0.0519	0.0448	0.0424	0.0417	0.0414	16.3542	9.1663	6.3390	4.9187	3.1916
C to Z↓	0.0356	0.0343	0.0315	0.0301	0.0310	11.2255	6.7195	4.3276	3.2242	2.0961
C to Z↑	0.0417	0.0373	0.0356	0.0350	0.0364	16.2720	9.1386	6.3192	4.8943	3.1826
D to Z↓	0.0314	0.0290	0.0262	0.0248	0.0255	11.0927	6.5497	4.1956	3.1114	2.0882
D to Z↑	0.0369	0.0317	0.0295	0.0285	0.0285	16.3048	9.1507	6.3289	4.9012	3.1892
	X11	X17	X22	X33	X44	X11	X17	X22	X33	X44
A to Z↓	0.0378	0.0374	0.0373	0.0372	0.0374	1.5644	1.0642	0.7833	0.5239	0.4007
A to Z↑	0.0477	0.0470	0.0473	0.0476	0.0478	2.4452	1.6641	1.2343	0.8301	0.6323
B to Z↓	0.0329	0.0324	0.0325	0.0326	0.0325	1.5678	1.0413	0.7791	0.5208	0.3936
B to Z↑	0.0403	0.0403	0.0402	0.0404	0.0403	2.4472	1.6662	1.2357	0.8314	0.6334
C to Z↓	0.0294	0.0294	0.0292	0.0291	0.0294	1.5551	1.0571	0.7760	0.5185	0.3984
C to Z↑	0.0353	0.0352	0.0354	0.0356	0.0358	2.4409	1.6608	1.2335	0.8305	0.6291



Propagation Delay at 125C, 1.10V Worst process

D to Z↓	0.0244	0.0242	0.0244	0.0245	0.0244	1.5639	1.0357	0.7804	0.5229	0.3916
D to Z↑	0.0276	0.0277	0.0277	0.0278	0.0277	2.4461	1.6653	1.2364	0.8327	0.6317

Propagation Delay at 125C, 1.15V Worst process

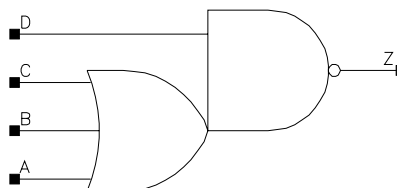
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X6	X8	X1	X3	X4	X6	X8
A to Z↓	0.0445	0.0418	0.0379	0.0365	0.0367	10.3785	6.2041	3.9716	2.9577	1.9243
A to Z↑	0.0533	0.0470	0.0449	0.0447	0.0453	15.1059	8.4431	5.8307	4.5187	2.9349
B to Z↓	0.0404	0.0369	0.0332	0.0317	0.0320	10.2230	6.0386	3.8524	2.8607	1.9148
B to Z↑	0.0486	0.0420	0.0397	0.0391	0.0387	15.1140	8.4491	5.8347	4.5216	2.9377
C to Z↓	0.0333	0.0320	0.0294	0.0281	0.0289	10.2858	6.1288	3.9491	2.9436	1.9145
C to Z↑	0.0390	0.0348	0.0333	0.0326	0.0340	15.0536	8.4276	5.8175	4.5019	2.9315
D to Z↓	0.0293	0.0271	0.0246	0.0233	0.0239	10.1652	5.9794	3.8326	2.8444	1.9115
D to Z↑	0.0345	0.0296	0.0277	0.0267	0.0267	15.0745	8.4376	5.8280	4.5091	2.9374
	X11	X17	X22	X33	X44	X11	X17	X22	X33	X44
A to Z↓	0.0352	0.0348	0.0347	0.0347	0.0350	1.4296	0.9741	0.7172	0.4803	0.3678
A to Z↑	0.0445	0.0440	0.0442	0.0445	0.0447	2.2492	1.5326	1.1367	0.7655	0.5832
B to Z↓	0.0307	0.0303	0.0303	0.0305	0.0304	1.4351	0.9541	0.7145	0.4779	0.3615
B to Z↑	0.0378	0.0378	0.0377	0.0379	0.0378	2.2514	1.5352	1.1382	0.7663	0.5842
C to Z↓	0.0275	0.0275	0.0273	0.0273	0.0277	1.4229	0.9691	0.7117	0.4763	0.3663
C to Z↑	0.0329	0.0328	0.0330	0.0333	0.0334	2.2465	1.5305	1.1365	0.7661	0.5809
D to Z↓	0.0229	0.0227	0.0230	0.0231	0.0230	1.4341	0.9506	0.7166	0.4806	0.3601
D to Z↑	0.0258	0.0259	0.0260	0.0261	0.0260	2.2517	1.5351	1.1395	0.7681	0.5827

HS65_LS_OAI31

Cell Description

2 wide 1-3 OR-AND-INVERT, 7x Drive

Logical Symbol



Functions

A	B	C	D	Z
1	-	-	1	0
-	-	1	1	0
-	1	-	1	0
0	0	0	-	1
-	-	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X1	2.6	1.40	3.6400
X2	2.6	1.40	3.6400
X4	2.6	1.40	3.6400
X5	2.6	1.40	3.6400
X7	2.6	2.40	6.2400
X10	2.6	2.40	6.2400
X15	2.6	3.40	8.8400
X20	2.6	4.60	11.9600
X30	2.6	6.60	17.1600
X40	2.6	8.80	22.8800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X1	7.697e-08	2.478e-10
X2	9.923e-08	3.643e-10
X4	1.478e-07	5.413e-10
X5	1.844e-07	6.641e-10
X7	2.871e-07	9.909e-10
X10	3.890e-07	1.297e-09
X15	5.787e-07	1.913e-09
X20	7.896e-07	2.546e-09
X30	1.198e-06	3.770e-09
X40	1.558e-06	5.002e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X1	1.840e-05	2.894e-08
X2	2.537e-05	3.132e-08
X4	3.917e-05	3.436e-08
X5	5.065e-05	3.729e-08
X7	7.826e-05	5.327e-08
X10	1.090e-04	5.935e-08
X15	1.617e-04	8.041e-08
X20	2.225e-04	1.044e-07
X30	3.391e-04	1.475e-07
X40	4.463e-04	1.924e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X1	1.635e-05	2.680e-08
X2	2.235e-05	2.849e-08
X4	3.434e-05	3.060e-08
X5	4.429e-05	3.270e-08
X7	6.862e-05	4.643e-08
X10	9.532e-05	5.070e-08
X15	1.414e-04	6.780e-08
X20	1.945e-04	8.768e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

X30	2.965e-04	1.228e-07
X40	3.899e-04	1.596e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X1	X2	X4	X5	X7
A to Z	3.578e-03	4.991e-03	6.847e-03	8.620e-03	1.401e-02
B to Z	3.099e-03	4.237e-03	5.730e-03	7.151e-03	1.159e-02
C to Z	2.689e-03	3.503e-03	4.586e-03	5.612e-03	8.281e-03
D to Z	2.118e-03	2.768e-03	3.670e-03	4.495e-03	6.784e-03
Pin Cycle (vdd)	X10	X15	X20	X30	X40
A to Z	1.805e-02	2.606e-02	3.545e-02	5.278e-02	6.946e-02
B to Z	1.492e-02	2.110e-02	2.894e-02	4.305e-02	5.662e-02
C to Z	1.064e-02	1.561e-02	2.081e-02	3.110e-02	4.150e-02
D to Z	8.723e-03	1.224e-02	1.678e-02	2.488e-02	3.256e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X1	X2	X4	X5	X7
A to Z	-5.854e-06	-9.720e-06	-1.300e-05	-1.599e-05	-2.647e-05
B to Z	-2.927e-06	-3.886e-06	-6.040e-06	-6.160e-06	-1.280e-05
C to Z	-1.410e-07	1.671e-06	2.508e-06	4.139e-06	5.850e-06
D to Z	-9.014e-07	-9.983e-07	-1.809e-06	-2.004e-06	-2.966e-06
Pin Cycle (vdds)	X10	X15	X20	X30	X40
A to Z	-3.614e-05	-5.090e-05	-6.787e-05	-9.670e-05	-1.386e-04
B to Z	-1.507e-05	-1.895e-05	-2.711e-05	-4.026e-05	-6.160e-05
C to Z	1.096e-05	1.559e-05	2.177e-05	2.778e-05	2.586e-05
D to Z	-4.437e-06	-4.857e-06	-7.691e-06	-1.330e-05	-2.123e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X1	X2	X4	X5	X7
A	0.0010	0.0013	0.0016	0.0019	0.0029
B	0.0010	0.0012	0.0015	0.0019	0.0030
C	0.0011	0.0013	0.0015	0.0018	0.0029
D	0.0011	0.0013	0.0016	0.0020	0.0030



Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X10	X15	X20	X30	X40
A	0.0037	0.0054	0.0071	0.0106	0.0140
B	0.0039	0.0052	0.0072	0.0107	0.0133
C	0.0037	0.0050	0.0070	0.0104	0.0128
D	0.0037	0.0053	0.0071	0.0106	0.0140

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X4	X5	X7	X1	X2	X4	X5	X7
A to Z↓	0.0276	0.0269	0.0251	0.0242	0.0242	6.9480	4.7592	3.1439	2.4218	1.5826
A to Z↑	0.0464	0.0428	0.0409	0.0400	0.0425	14.1903	9.1786	6.2784	4.8641	3.2166
B to Z↓	0.0262	0.0254	0.0233	0.0224	0.0234	6.9080	4.7327	3.0737	2.3652	1.5577
B to Z↑	0.0441	0.0403	0.0383	0.0372	0.0396	14.2158	9.1930	6.2872	4.8714	3.2219
C to Z↓	0.0245	0.0229	0.0205	0.0194	0.0195	6.8645	4.6758	3.0158	2.3066	1.5313
C to Z↑	0.0399	0.0346	0.0317	0.0301	0.0287	14.2549	9.2113	6.2977	4.8797	3.2287
D to Z↓	0.0196	0.0184	0.0169	0.0160	0.0155	6.1157	4.1640	2.7228	2.0945	1.3752
D to Z↑	0.0163	0.0146	0.0137	0.0130	0.0125	5.0222	3.2091	2.1674	1.6825	1.1218
	X10	X15	X20	X30	X40	X10	X15	X20	X30	X40
A to Z↓	0.0236	0.0236	0.0234	0.0236	0.0237	1.1929	0.8134	0.6018	0.4042	0.3059
A to Z↑	0.0420	0.0413	0.0420	0.0423	0.0427	2.4696	1.6851	1.2614	0.8511	0.6505
B to Z↓	0.0226	0.0222	0.0223	0.0224	0.0229	1.1699	0.7972	0.5943	0.3971	0.3082
B to Z↑	0.0391	0.0380	0.0387	0.0389	0.0391	2.4740	1.6882	1.2638	0.8523	0.6519
C to Z↓	0.0187	0.0186	0.0186	0.0188	0.0193	1.1402	0.7894	0.5843	0.3932	0.3055
C to Z↑	0.0285	0.0289	0.0286	0.0289	0.0294	2.4779	1.6911	1.2666	0.8542	0.6531
D to Z↓	0.0150	0.0149	0.0149	0.0150	0.0152	1.0312	0.7082	0.5245	0.3521	0.2712
D to Z↑	0.0123	0.0121	0.0122	0.0124	0.0126	0.8602	0.5729	0.4328	0.2894	0.2176

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X4	X5	X7	X1	X2	X4	X5	X7
A to Z↓	0.0460	0.0455	0.0421	0.0405	0.0403	11.7957	8.1736	5.3641	4.0922	2.6467
A to Z↑	0.0725	0.0675	0.0648	0.0637	0.0670	21.7769	14.1629	9.7101	7.5323	4.9419
B to Z↓	0.0435	0.0424	0.0387	0.0372	0.0387	11.7495	8.0814	5.2029	3.9547	2.6209
B to Z↑	0.0677	0.0624	0.0595	0.0581	0.0616	21.7760	14.1568	9.7067	7.5359	4.9447
C to Z↓	0.0403	0.0378	0.0337	0.0320	0.0320	11.6842	8.0106	5.1292	3.8803	2.5881
C to Z↑	0.0593	0.0517	0.0475	0.0454	0.0426	21.8054	14.1803	9.7187	7.5433	4.9483
D to Z↓	0.0320	0.0304	0.0277	0.0263	0.0254	10.1741	6.9996	4.5500	3.4631	2.2679
D to Z↑	0.0229	0.0206	0.0193	0.0183	0.0174	7.0036	4.5144	3.0553	2.3699	1.5617
	X10	X15	X20	X30	X40	X10	X15	X20	X30	X40
A to Z↓	0.0387	0.0388	0.0381	0.0382	0.0382	1.9588	1.3378	0.9776	0.6539	0.4914
A to Z↑	0.0665	0.0648	0.0660	0.0661	0.0665	3.7929	2.5607	1.9178	1.2885	0.9804
B to Z↓	0.0372	0.0362	0.0364	0.0363	0.0369	1.9346	1.3011	0.9703	0.6432	0.4943
B to Z↑	0.0612	0.0585	0.0600	0.0599	0.0600	3.7951	2.5613	1.9181	1.2886	0.9807
C to Z↓	0.0307	0.0303	0.0302	0.0304	0.0308	1.8941	1.2893	0.9541	0.6382	0.4877
C to Z↑	0.0427	0.0428	0.0425	0.0428	0.0434	3.7978	2.5641	1.9207	1.2896	0.9817
D to Z↓	0.0244	0.0241	0.0239	0.0239	0.0240	1.6722	1.1405	0.8398	0.5603	0.4273
D to Z↑	0.0172	0.0169	0.0170	0.0171	0.0173	1.1983	0.7999	0.6008	0.4009	0.3021

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X4	X5	X7	X1	X2	X4	X5	X7
A to Z↓	0.0427	0.0422	0.0391	0.0376	0.0374	10.7934	7.4440	4.8867	3.7299	2.4172
A to Z↑	0.0673	0.0626	0.0601	0.0590	0.0622	20.0305	12.9950	8.8980	6.8970	4.5325
B to Z↓	0.0405	0.0395	0.0360	0.0346	0.0360	10.7564	7.3731	4.7466	3.6109	2.3905
B to Z↑	0.0628	0.0579	0.0552	0.0539	0.0571	20.0383	12.9990	8.8995	6.8964	4.5331
C to Z↓	0.0375	0.0351	0.0314	0.0298	0.0298	10.6932	7.3024	4.6721	3.5373	2.3583



Propagation Delay at 125C, 1.15V Worst process

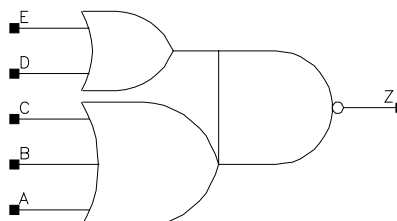
C to Z ↑	0.0551	0.0480	0.0441	0.0421	0.0396	20.0711	13.0124	8.9075	6.9069	4.5380
D to Z ↓	0.0299	0.0284	0.0259	0.0246	0.0238	9.3355	6.3964	4.1572	3.1662	2.0753
D to Z ↑	0.0218	0.0196	0.0183	0.0174	0.0165	6.5405	4.2076	2.8453	2.2059	1.4563
	X10	X15	X20	X30	X40	X10	X15	X20	X30	X40
A to Z ↓	0.0361	0.0361	0.0355	0.0356	0.0356	1.7924	1.2243	0.8962	0.5998	0.4513
A to Z ↑	0.0617	0.0602	0.0613	0.0614	0.0618	3.4763	2.3501	1.7597	1.1823	0.9009
B to Z ↓	0.0346	0.0337	0.0340	0.0339	0.0344	1.7678	1.1913	0.8882	0.5897	0.4539
B to Z ↑	0.0567	0.0543	0.0556	0.0556	0.0557	3.4779	2.3504	1.7605	1.1829	0.9010
C to Z ↓	0.0286	0.0282	0.0282	0.0284	0.0288	1.7297	1.1808	0.8738	0.5850	0.4483
C to Z ↑	0.0396	0.0399	0.0395	0.0398	0.0404	3.4811	2.3532	1.7628	1.1844	0.9020
D to Z ↓	0.0229	0.0226	0.0225	0.0225	0.0226	1.5333	1.0469	0.7715	0.5152	0.3932
D to Z ↑	0.0163	0.0160	0.0161	0.0162	0.0164	1.1170	0.7454	0.5604	0.3740	0.2818

HS65_LS_OAI32

Cell Description

2 wide 2-3 OR-AND-INVERT

Logical Symbol



Functions

A	B	C	D	E	Z
-	1	-	-	1	0
-	1	-	1	-	0
-	-	1	1	-	0
-	-	1	-	1	0
1	-	-	1	-	0
1	-	-	-	1	0
0	0	0	-	-	1
-	-	-	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.60	4.1600
X5	2.6	1.60	4.1600
X9	2.6	3.00	7.8000
X14	2.6	4.20	10.9200
X19	2.6	5.60	14.5600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	1.143e-07	4.424e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X5	2.062e-07	8.296e-10
X9	4.252e-07	1.629e-09
X14	6.448e-07	2.416e-09
X19	8.653e-07	3.228e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	2.886e-05	3.545e-08
X5	5.683e-05	4.327e-08
X9	1.184e-04	7.268e-08
X14	1.803e-04	1.002e-07
X19	2.426e-04	1.296e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	2.546e-05	3.197e-08
X5	4.976e-05	3.750e-08
X9	1.037e-04	6.167e-08
X14	1.578e-04	8.400e-08
X19	2.124e-04	1.082e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X5	X9	X14	X19
A to Z	6.041e-03	1.026e-02	2.158e-02	3.127e-02	4.238e-02
B to Z	5.321e-03	8.806e-03	1.841e-02	2.630e-02	3.600e-02
C to Z	4.497e-03	7.215e-03	1.459e-02	2.093e-02	2.845e-02
D to Z	3.760e-03	6.324e-03	1.351e-02	1.965e-02	2.638e-02
E to Z	2.991e-03	4.813e-03	9.879e-03	1.435e-02	1.938e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X5	X9	X14	X19
A to Z	-1.050e-05	-1.996e-05	-3.965e-05	-6.094e-05	-8.062e-05
B to Z	-5.389e-06	-9.243e-06	-1.816e-05	-2.601e-05	-3.505e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

C to Z	3.857e-07	1.609e-06	3.867e-06	8.923e-06	4.023e-06
D to Z	-2.799e-06	-3.747e-06	-3.371e-06	-9.941e-06	-9.566e-06
E to Z	1.262e-06	4.592e-06	7.056e-06	1.581e-05	1.302e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X5	X9	X14	X19
A	0.0012	0.0019	0.0042	0.0054	0.0079
B	0.0013	0.0019	0.0039	0.0052	0.0074
C	0.0012	0.0018	0.0034	0.0051	0.0065
D	0.0013	0.0019	0.0040	0.0053	0.0075
E	0.0013	0.0019	0.0035	0.0051	0.0067

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X9	X14	X19	X2	X5	X9	X14	X19
A to Z↓	0.0308	0.0271	0.0274	0.0271	0.0272	4.4930	2.2609	1.1187	0.7695	0.5688
A to Z↑	0.0484	0.0449	0.0465	0.0462	0.0468	9.0657	4.8615	2.4160	1.6711	1.2441
B to Z↓	0.0289	0.0255	0.0259	0.0254	0.0256	4.3823	2.2309	1.1083	0.7543	0.5616
B to Z↑	0.0465	0.0423	0.0434	0.0431	0.0437	9.0795	4.8686	2.4200	1.6742	1.2455
C to Z↓	0.0259	0.0225	0.0227	0.0222	0.0224	4.3529	2.2071	1.1276	0.7506	0.5666
C to Z↑	0.0393	0.0347	0.0342	0.0344	0.0345	9.0891	4.8738	2.4228	1.6769	1.2473
D to Z↓	0.0216	0.0193	0.0194	0.0194	0.0192	4.1355	2.0991	1.0350	0.7094	0.5247
D to Z↑	0.0244	0.0223	0.0230	0.0229	0.0231	6.0222	3.2384	1.6094	1.1140	0.8327
E to Z↓	0.0187	0.0161	0.0162	0.0160	0.0163	4.0604	2.0474	1.0518	0.7007	0.5311
E to Z↑	0.0210	0.0185	0.0183	0.0184	0.0185	6.0533	3.2522	1.6174	1.1202	0.8366

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X9	X14	X19	X2	X5	X9	X14	X19
A to Z↓	0.0524	0.0457	0.0458	0.0448	0.0450	7.6855	3.8054	1.8499	1.2577	0.9280



Propagation Delay at 125C, 1.10V Worst process

A to Z ↑	0.0764	0.0717	0.0742	0.0731	0.0740	13.9662	7.5273	3.7307	2.5448	1.8980
B to Z ↓	0.0487	0.0425	0.0428	0.0418	0.0421	7.4488	3.6993	1.8163	1.2227	0.9099
B to Z ↑	0.0721	0.0665	0.0683	0.0670	0.0680	13.9677	7.5300	3.7304	2.5454	1.8983
C to Z ↓	0.0431	0.0371	0.0371	0.0362	0.0364	7.3916	3.6577	1.8346	1.2157	0.9134
C to Z ↑	0.0592	0.0528	0.0519	0.0518	0.0519	13.9744	7.5346	3.7321	2.5480	1.8988
D to Z ↓	0.0362	0.0322	0.0320	0.0317	0.0315	6.9474	3.4663	1.6824	1.1410	0.8412
D to Z ↑	0.0364	0.0336	0.0347	0.0343	0.0345	9.0666	4.8909	2.4250	1.6575	1.2395
E to Z ↓	0.0308	0.0265	0.0264	0.0259	0.0262	6.7912	3.3493	1.6894	1.1192	0.8463
E to Z ↑	0.0309	0.0274	0.0269	0.0269	0.0269	9.0833	4.9017	2.4312	1.6630	1.2428

Propagation Delay at 125C, 1.15V Worst process

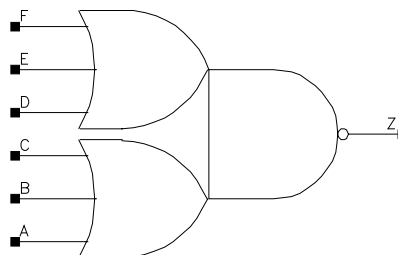
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X9	X14	X19	X2	X5	X9	X14	X19
A to Z ↓	0.0485	0.0424	0.0425	0.0417	0.0418	6.9994	3.4663	1.6904	1.1511	0.8494
A to Z ↑	0.0709	0.0665	0.0688	0.0678	0.0686	12.8253	6.8919	3.4172	2.3349	1.7412
B to Z ↓	0.0452	0.0395	0.0398	0.0389	0.0392	6.7890	3.3790	1.6610	1.1200	0.8335
B to Z ↑	0.0669	0.0616	0.0632	0.0622	0.0630	12.8274	6.8923	3.4173	2.3358	1.7404
C to Z ↓	0.0401	0.0345	0.0346	0.0337	0.0340	6.7387	3.3413	1.6792	1.1135	0.8374
C to Z ↑	0.0550	0.0490	0.0482	0.0481	0.0483	12.8334	6.8991	3.4189	2.3381	1.7420
D to Z ↓	0.0338	0.0301	0.0300	0.0297	0.0295	6.3457	3.1695	1.5418	1.0472	0.7725
D to Z ↑	0.0340	0.0314	0.0324	0.0320	0.0322	8.3609	4.5000	2.2317	1.5280	1.1428
E to Z ↓	0.0288	0.0248	0.0248	0.0244	0.0246	6.2084	3.0671	1.5510	1.0283	0.7779
E to Z ↑	0.0290	0.0256	0.0252	0.0252	0.0252	8.3782	4.5107	2.2377	1.5331	1.1454

HS65_LS_OAI33

Cell Description

Double 3 Input OR into 2 Input NAND

Logical Symbol



Functions

A	B	C	D	E	F	Z
-	-	1	1	-	-	0
-	1	-	1	-	-	0
-	1	-	-	-	1	0
1	-	-	1	-	-	0
-	1	-	-	1	-	0
1	-	-	-	1	-	0
-	-	1	-	-	1	0
1	-	-	-	-	1	0
-	-	1	-	1	-	0
0	0	0	1	-	-	1
-	-	-	0	0	0	1
0	0	0	-	1	-	1
0	0	0	-	-	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	2.00	5.2000
X3	2.6	2.00	5.2000
X6	2.6	3.40	8.8400



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X10	2.6	5.00	13.0000
X13	2.6	7.00	18.2000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	1.049e-07	4.897e-10
X3	1.892e-07	9.227e-10
X6	3.850e-07	1.822e-09
X10	5.834e-07	2.736e-09
X13	7.807e-07	3.621e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	2.578e-05	4.068e-08
X3	5.134e-05	4.964e-08
X6	1.052e-04	8.161e-08
X10	1.601e-04	1.155e-07
X13	2.146e-04	1.557e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	2.277e-05	3.670e-08
X3	4.500e-05	4.305e-08
X6	9.224e-05	6.915e-08
X10	1.403e-04	9.710e-08
X13	1.881e-04	1.309e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X3	X6	X10	X13
A to Z	6.936e-03	1.199e-02	2.474e-02	3.575e-02	4.858e-02
B to Z	6.204e-03	1.048e-02	2.158e-02	3.108e-02	4.182e-02
C to Z	5.389e-03	8.900e-03	1.784e-02	2.550e-02	3.463e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D to Z	5.194e-03	9.039e-03	1.819e-02	2.673e-02	3.607e-02
E to Z	4.433e-03	7.542e-03	1.503e-02	2.188e-02	2.936e-02
F to Z	3.579e-03	5.867e-03	1.139e-02	1.626e-02	2.196e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X3	X6	X10	X13
A to Z	-1.193e-05	-2.287e-05	-4.346e-05	-6.709e-05	-8.644e-05
B to Z	-6.069e-06	-1.024e-05	-2.103e-05	-3.302e-05	-4.383e-05
C to Z	2.955e-06	8.270e-06	1.130e-05	2.277e-05	2.900e-05
D to Z	-9.456e-06	-1.627e-05	-3.281e-05	-4.586e-05	-7.104e-05
E to Z	3.719e-07	3.276e-06	4.371e-07	9.461e-06	6.843e-06
F to Z	9.711e-07	3.031e-06	5.900e-06	7.214e-06	1.121e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X3	X6	X10	X13
A	0.0012	0.0019	0.0043	0.0057	0.0072
B	0.0013	0.0019	0.0040	0.0057	0.0069
C	0.0012	0.0019	0.0035	0.0052	0.0068
D	0.0012	0.0020	0.0044	0.0058	0.0072
E	0.0012	0.0019	0.0039	0.0056	0.0070
↓	0.0012	0.0019	0.0036	0.0052	0.0068

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X6	X10	X13	X2	X3	X6	X10	X13
A to Z↓	0.0322	0.0290	0.0288	0.0281	0.0288	4.1995	2.1674	1.0647	0.7202	0.5512
A to Z↑	0.0533	0.0503	0.0513	0.0501	0.0520	9.0252	4.8707	2.4219	1.6509	1.2737
B to Z↓	0.0304	0.0271	0.0273	0.0267	0.0272	4.1125	2.1080	1.0492	0.7083	0.5397
B to Z↑	0.0513	0.0475	0.0483	0.0474	0.0487	9.0371	4.8807	2.4266	1.6548	1.2757
C to Z↓	0.0279	0.0242	0.0244	0.0236	0.0241	4.1451	2.0902	1.0694	0.7099	0.5382
C to Z↑	0.0443	0.0400	0.0393	0.0386	0.0401	9.0465	4.8890	2.4300	1.6569	1.2790
D to Z↓	0.0251	0.0230	0.0222	0.0218	0.0222	4.1452	2.1350	1.0558	0.7105	0.5454



Propagation Delay at 25C, 1.20V Typ process

D to Z ↑	0.0398	0.0379	0.0374	0.0370	0.0380	9.0048	4.8670	2.4198	1.6524	1.2744
E to Z ↓	0.0236	0.0211	0.0205	0.0202	0.0206	4.0758	2.0910	1.0442	0.7002	0.5338
E to Z ↑	0.0377	0.0347	0.0337	0.0335	0.0344	9.0302	4.8790	2.4261	1.6569	1.2786
F to Z ↓	0.0207	0.0178	0.0173	0.0170	0.0171	4.0991	2.0705	1.0469	0.7029	0.5320
F to Z ↑	0.0299	0.0262	0.0249	0.0243	0.0250	9.0460	4.8917	2.4342	1.6623	1.2835

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X6	X10	X13	X2	X3	X6	X10	X13
A to Z ↓	0.0549	0.0488	0.0481	0.0466	0.0475	7.1299	3.5841	1.7411	1.1667	0.8880
A to Z ↑	0.0849	0.0810	0.0822	0.0799	0.0828	13.9172	7.5340	3.7385	2.5257	1.9399
B to Z ↓	0.0514	0.0451	0.0452	0.0441	0.0446	6.9455	3.4370	1.7000	1.1408	0.8621
B to Z ↑	0.0803	0.0753	0.0762	0.0745	0.0764	13.9123	7.5356	3.7384	2.5257	1.9404
C to Z ↓	0.0469	0.0399	0.0399	0.0385	0.0392	7.0173	3.3988	1.7190	1.1372	0.8580
C to Z ↑	0.0677	0.0618	0.0603	0.0589	0.0611	13.9243	7.5440	3.7415	2.5291	1.9427
D to Z ↓	0.0424	0.0384	0.0369	0.0360	0.0364	6.9708	3.4896	1.7098	1.1412	0.8702
D to Z ↑	0.0630	0.0604	0.0595	0.0587	0.0601	13.8466	7.5002	3.7251	2.5203	1.9362
E to Z ↓	0.0395	0.0349	0.0337	0.0332	0.0335	6.8206	3.3820	1.6752	1.1185	0.8456
E to Z ↑	0.0586	0.0545	0.0528	0.0523	0.0536	13.8517	7.5040	3.7240	2.5224	1.9367
F to Z ↓	0.0344	0.0292	0.0282	0.0277	0.0278	6.8782	3.3442	1.6734	1.1169	0.8415
F to Z ↑	0.0446	0.0395	0.0375	0.0363	0.0373	13.8687	7.5137	3.7316	2.5274	1.9418

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X3	X6	X10	X13	X2	X3	X6	X10	X13
A to Z ↓	0.0508	0.0453	0.0446	0.0433	0.0442	6.4953	3.2697	1.5913	1.0678	0.8135
A to Z ↑	0.0787	0.0750	0.0761	0.0741	0.0768	12.7787	6.8988	3.4233	2.3158	1.7802
B to Z ↓	0.0477	0.0419	0.0421	0.0410	0.0416	6.3331	3.1408	1.5553	1.0447	0.7905
B to Z ↑	0.0745	0.0697	0.0705	0.0690	0.0709	12.7810	6.9002	3.4245	2.3176	1.7808

Propagation Delay at 125C, 1.15V Worst process

C to Z↓	0.0435	0.0372	0.0372	0.0359	0.0366	6.3951	3.1073	1.5745	1.0422	0.7869
C to Z↑	0.0629	0.0573	0.0560	0.0547	0.0568	12.7858	6.9075	3.4267	2.3189	1.7828
D to Z↓	0.0394	0.0358	0.0345	0.0337	0.0341	6.3684	3.1945	1.5674	1.0474	0.7995
D to Z↑	0.0583	0.0559	0.0550	0.0543	0.0557	12.7223	6.8731	3.4141	2.3129	1.7770
E to Z↓	0.0369	0.0327	0.0316	0.0311	0.0315	6.2351	3.0994	1.5373	1.0272	0.7774
E to Z↑	0.0541	0.0503	0.0488	0.0484	0.0496	12.7344	6.8745	3.4136	2.3141	1.7785
F to Z↓	0.0321	0.0274	0.0265	0.0260	0.0261	6.2845	3.0654	1.5364	1.0266	0.7739
F to Z↑	0.0414	0.0365	0.0347	0.0337	0.0346	12.7424	6.8842	3.4203	2.3186	1.7826

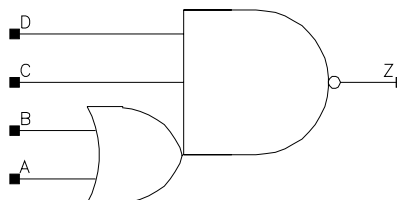


HS65_LS_OAI112

Cell Description

2 Input OR into 3 Input NAND, 8x Drive

Logical Symbol



Functions

A	B	C	D	Z
-	1	1	1	0
1	-	1	1	0
-	-	0	-	1
0	0	-	-	1
-	-	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X1	2.6	1.40	3.6400
X3	2.6	1.40	3.6400
X4	2.6	1.40	3.6400
X5	2.6	1.40	3.6400
X8	2.6	2.40	6.2400
X11	2.6	2.40	6.2400
X16	2.6	3.40	8.8400
X22	2.6	4.80	12.4800
X33	2.6	6.80	17.6800
X44	2.6	9.00	23.4000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X1	5.423e-08	1.978e-10
X3	7.973e-08	2.977e-10
X4	1.164e-07	3.977e-10
X5	1.502e-07	5.080e-10
X8	2.348e-07	7.307e-10
X11	3.091e-07	9.389e-10
X16	4.703e-07	1.372e-09
X22	6.193e-07	1.797e-09
X33	9.390e-07	2.654e-09
X44	1.262e-06	3.497e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X1	1.312e-05	2.723e-08
X3	2.109e-05	2.930e-08
X4	3.197e-05	3.135e-08
X5	4.249e-05	3.342e-08
X8	6.567e-05	4.657e-08
X11	8.844e-05	5.059e-08
X16	1.352e-04	6.825e-08
X22	1.772e-04	8.930e-08
X33	2.698e-04	1.242e-07
X44	3.637e-04	1.610e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X1	1.172e-05	2.562e-08
X3	1.864e-05	2.702e-08
X4	2.814e-05	2.851e-08
X5	3.731e-05	2.991e-08
X8	5.780e-05	4.149e-08
X11	7.767e-05	4.429e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

X16	1.188e-04	5.911e-08
X22	1.556e-04	7.714e-08
X33	2.369e-04	1.063e-07
X44	3.194e-04	1.373e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X1	X3	X4	X5	X8
A (stable)	2.020e-04	2.941e-04	4.018e-04	5.227e-04	8.553e-04
B (stable)	1.774e-04	2.511e-04	3.400e-04	4.397e-04	7.247e-04
C (stable)	4.475e-05	6.791e-05	9.270e-05	1.241e-04	2.811e-04
D (stable)	1.246e-04	1.905e-04	2.635e-04	3.433e-04	6.383e-04
A to Z	2.757e-03	4.052e-03	5.468e-03	6.887e-03	1.025e-02
B to Z	2.354e-03	3.283e-03	4.309e-03	5.371e-03	7.611e-03
C to Z	3.612e-03	5.251e-03	7.105e-03	9.082e-03	1.374e-02
D to Z	3.394e-03	4.750e-03	6.343e-03	8.056e-03	1.194e-02
Pin Cycle (vdd)	X11	X16	X22	X33	X44
A (stable)	1.091e-03	1.561e-03	2.099e-03	3.103e-03	4.118e-03
B (stable)	9.092e-04	1.279e-03	1.767e-03	2.589e-03	3.426e-03
C (stable)	3.474e-04	4.999e-04	7.107e-04	1.014e-03	1.306e-03
D (stable)	8.136e-04	1.235e-03	1.800e-03	2.579e-03	3.420e-03
A to Z	1.332e-02	1.966e-02	2.692e-02	3.954e-02	5.238e-02
B to Z	9.724e-03	1.452e-02	1.960e-02	2.880e-02	3.823e-02
C to Z	1.758e-02	2.589e-02	3.487e-02	5.152e-02	6.848e-02
D to Z	1.538e-02	2.222e-02	2.985e-02	4.416e-02	5.865e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X1	X3	X4	X5	X8
A (stable)	-3.826e-06	-6.783e-06	-1.001e-05	-1.262e-05	-2.001e-05
B (stable)	-4.068e-06	-7.137e-06	-1.122e-05	-1.357e-05	-2.104e-05
C (stable)	-6.956e-07	-1.043e-06	-1.565e-06	-2.287e-06	-3.652e-06
D (stable)	-2.696e-07	-2.435e-07	-1.913e-07	1.826e-07	-9.303e-07
A to Z	-3.655e-06	-5.640e-06	-9.270e-06	-1.126e-05	-1.688e-05
B to Z	1.016e-06	7.800e-07	2.550e-06	4.310e-06	6.040e-06
C to Z	9.233e-08	1.338e-06	3.180e-06	4.560e-06	5.053e-06



Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D to Z	-1.197e-06	-1.487e-06	-2.407e-06	-2.233e-06	-3.443e-06
Pin Cycle (vdds)	X11	X16	X22	X33	X44
A (stable)	-2.627e-05	-3.932e-05	-5.691e-05	-8.357e-05	-1.075e-04
B (stable)	-2.765e-05	-4.089e-05	-6.003e-05	-8.538e-05	-1.169e-04
C (stable)	-4.026e-06	-5.791e-06	-8.287e-06	-1.080e-05	-1.327e-05
D (stable)	-5.043e-07	2.640e-08	-4.958e-07	-3.044e-07	5.304e-07
A to Z	-2.187e-05	-3.396e-05	-4.855e-05	-6.940e-05	-9.660e-05
B to Z	6.900e-06	1.287e-05	1.194e-05	1.414e-05	1.189e-05
C to Z	8.727e-06	1.247e-05	1.191e-05	1.733e-05	1.842e-05
D to Z	-2.970e-06	-6.297e-06	-9.987e-06	-1.584e-05	-1.953e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X1	X3	X4	X5	X8
A	0.0009	0.0012	0.0016	0.0020	0.0031
B	0.0010	0.0012	0.0015	0.0019	0.0028
C	0.0009	0.0012	0.0015	0.0019	0.0031
D	0.0009	0.0012	0.0016	0.0020	0.0032
Pin	X11	X16	X22	X33	X44
A	0.0040	0.0053	0.0070	0.0104	0.0140
B	0.0034	0.0051	0.0066	0.0098	0.0133
C	0.0038	0.0056	0.0074	0.0111	0.0149
D	0.0041	0.0055	0.0072	0.0108	0.0145

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X5	X8	X1	X3	X4	X5	X8
A to Z↓	0.0294	0.0259	0.0237	0.0223	0.0226	10.0792	5.6489	3.7390	2.7778	1.8760
A to Z↑	0.0324	0.0284	0.0267	0.0260	0.0259	10.8393	6.0832	4.1830	3.2383	2.1119
B to Z↓	0.0266	0.0230	0.0208	0.0195	0.0184	10.1816	5.7731	3.8419	2.8686	1.8919
B to Z↑	0.0301	0.0253	0.0233	0.0225	0.0213	10.8822	6.1061	4.1999	3.2513	2.1213
C to Z↓	0.0368	0.0322	0.0297	0.0286	0.0289	9.7059	5.4904	3.6434	2.7129	1.8098
C to Z↑	0.0244	0.0215	0.0206	0.0203	0.0202	5.6659	3.1357	2.1599	1.6739	1.1107

Propagation Delay at 25C, 1.20V Typ process

D to Z↓	0.0369	0.0311	0.0284	0.0270	0.0274	9.7418	5.5030	3.6558	2.7241	1.8171
D to Z↑	0.0239	0.0206	0.0195	0.0191	0.0191	5.6354	3.1238	2.1524	1.6676	1.0887
	X11	X16	X22	X33	X44	X11	X16	X22	X33	X44
A to Z↓	0.0220	0.0225	0.0232	0.0230	0.0232	1.4121	0.9835	0.7509	0.5037	0.3807
A to Z↑	0.0255	0.0258	0.0265	0.0264	0.0267	1.6187	1.1145	0.8418	0.5646	0.4248
B to Z↓	0.0179	0.0181	0.0188	0.0187	0.0189	1.4294	0.9695	0.7500	0.5028	0.3789
B to Z↑	0.0210	0.0215	0.0217	0.0217	0.0218	1.6249	1.1200	0.8468	0.5661	0.4266
C to Z↓	0.0279	0.0282	0.0288	0.0288	0.0292	1.3635	0.9403	0.7214	0.4835	0.3651
C to Z↑	0.0201	0.0199	0.0201	0.0201	0.0204	0.8547	0.5686	0.4257	0.2861	0.2163
D to Z↓	0.0264	0.0262	0.0268	0.0268	0.0271	1.3695	0.9441	0.7238	0.4855	0.3665
D to Z↑	0.0186	0.0185	0.0186	0.0187	0.0190	0.8339	0.5657	0.4247	0.2846	0.2150

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X5	X8	X1	X3	X4	X5	X8
A to Z↓	0.0506	0.0452	0.0411	0.0386	0.0387	17.7696	10.0873	6.5690	4.8333	3.2552
A to Z↑	0.0485	0.0427	0.0404	0.0396	0.0390	16.2660	9.1988	6.3246	4.8930	3.1811
B to Z↓	0.0453	0.0395	0.0355	0.0333	0.0310	17.8950	10.2942	6.7406	4.9824	3.2558
B to Z↑	0.0443	0.0376	0.0349	0.0337	0.0318	16.2980	9.2060	6.3306	4.9041	3.1871
C to Z↓	0.0651	0.0574	0.0524	0.0500	0.0501	17.1577	9.8180	6.4094	4.7309	3.1397
C to Z↑	0.0342	0.0305	0.0292	0.0289	0.0284	7.9808	4.4564	3.0644	2.3734	1.5577
D to Z↓	0.0645	0.0550	0.0497	0.0472	0.0472	17.1654	9.8215	6.4123	4.7330	3.1413
D to Z↑	0.0336	0.0292	0.0277	0.0273	0.0270	7.8830	4.4062	3.0295	2.3457	1.5358
	X11	X16	X22	X33	X44	X11	X16	X22	X33	X44
A to Z↓	0.0377	0.0380	0.0390	0.0385	0.0385	2.4210	1.6513	1.2587	0.8378	0.6291
A to Z↑	0.0387	0.0387	0.0398	0.0395	0.0397	2.4387	1.6604	1.2561	0.8389	0.6290
B to Z↓	0.0299	0.0302	0.0312	0.0309	0.0309	2.4268	1.6231	1.2573	0.8367	0.6272
B to Z↑	0.0312	0.0317	0.0321	0.0319	0.0320	2.4427	1.6642	1.2583	0.8401	0.6308
C to Z↓	0.0481	0.0481	0.0491	0.0487	0.0489	2.3365	1.5819	1.2138	0.8072	0.6058
C to Z↑	0.0283	0.0281	0.0282	0.0282	0.0285	1.1969	0.7980	0.5975	0.4000	0.3017



Propagation Delay at 125C, 1.10V Worst process

D to Z↓	0.0456	0.0446	0.0455	0.0452	0.0453	2.3386	1.5832	1.2145	0.8076	0.6061
D to Z↑	0.0266	0.0262	0.0264	0.0264	0.0267	1.1754	0.7892	0.5949	0.3976	0.2995

Propagation Delay at 125C, 1.15V Worst process

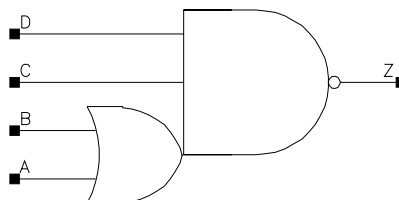
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X5	X8	X1	X3	X4	X5	X8
A to Z↓	0.0467	0.0416	0.0379	0.0356	0.0358	16.1628	9.1279	5.9459	4.3789	2.9519
A to Z↑	0.0452	0.0398	0.0377	0.0368	0.0364	15.0516	8.4721	5.8187	4.5045	2.9286
B to Z↓	0.0418	0.0364	0.0328	0.0308	0.0288	16.2787	9.3163	6.1046	4.5148	2.9563
B to Z↑	0.0415	0.0351	0.0326	0.0315	0.0297	15.0638	8.4857	5.8294	4.5118	2.9352
C to Z↓	0.0597	0.0526	0.0480	0.0459	0.0461	15.6143	8.8755	5.8019	4.2839	2.8475
C to Z↑	0.0325	0.0290	0.0278	0.0275	0.0270	7.4450	4.1471	2.8512	2.2072	1.4508
D to Z↓	0.0593	0.0505	0.0456	0.0434	0.0435	15.6176	8.8795	5.8048	4.2869	2.8495
D to Z↑	0.0319	0.0277	0.0263	0.0259	0.0256	7.3612	4.1045	2.8208	2.1829	1.4296
	X11	X16	X22	X33	X44	X11	X16	X22	X33	X44
A to Z↓	0.0348	0.0353	0.0362	0.0357	0.0358	2.1978	1.5032	1.1463	0.7637	0.5740
A to Z↑	0.0361	0.0361	0.0371	0.0369	0.0371	2.2440	1.5299	1.1580	0.7730	0.5806
B to Z↓	0.0278	0.0281	0.0290	0.0287	0.0288	2.2059	1.4782	1.1452	0.7628	0.5723
B to Z↑	0.0292	0.0297	0.0300	0.0298	0.0299	2.2480	1.5338	1.1599	0.7748	0.5820
C to Z↓	0.0443	0.0443	0.0453	0.0449	0.0452	2.1218	1.4400	1.1044	0.7356	0.5524
C to Z↑	0.0269	0.0267	0.0269	0.0268	0.0272	1.1147	0.7429	0.5564	0.3726	0.2812
D to Z↓	0.0420	0.0411	0.0420	0.0418	0.0419	2.1238	1.4411	1.1056	0.7362	0.5527
D to Z↑	0.0252	0.0249	0.0251	0.0251	0.0254	1.0936	0.7352	0.5539	0.3705	0.2791

HS65_LS_OAI211

Cell Description

2 Input OR into 3 Input NAND, 8x Drive

Logical Symbol



Functions

A	B	C	D	Z
-	1	1	1	0
1	-	1	1	0
-	-	0	-	1
0	0	-	-	1
-	-	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X1	2.6	1.40	3.6400
X3	2.6	1.40	3.6400
X4	2.6	1.40	3.6400
X5	2.6	1.40	3.6400
X8	2.6	2.40	6.2400
X11	2.6	2.40	6.2400
X16	2.6	3.40	8.8400
X22	2.6	4.80	12.4800
X33	2.6	6.80	17.6800
X44	2.6	9.00	23.4000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X1	5.817e-08	1.978e-10
X3	8.324e-08	2.977e-10
X4	1.223e-07	4.060e-10
X5	1.579e-07	4.997e-10
X8	2.461e-07	7.307e-10
X11	3.256e-07	9.306e-10
X16	4.925e-07	1.372e-09
X22	6.515e-07	1.799e-09
X33	9.878e-07	2.654e-09
X44	1.327e-06	3.512e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X1	1.379e-05	2.727e-08
X3	2.174e-05	2.925e-08
X4	3.319e-05	3.136e-08
X5	4.410e-05	3.339e-08
X8	6.799e-05	4.661e-08
X11	9.211e-05	5.058e-08
X16	1.398e-04	6.829e-08
X22	1.842e-04	8.929e-08
X33	2.807e-04	1.242e-07
X44	3.784e-04	1.610e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X1	1.232e-05	2.560e-08
X3	1.921e-05	2.699e-08
X4	2.920e-05	2.850e-08
X5	3.871e-05	2.990e-08
X8	5.981e-05	4.150e-08
X11	8.084e-05	4.428e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

X16	1.227e-04	5.911e-08
X22	1.617e-04	7.717e-08
X33	2.463e-04	1.063e-07
X44	3.321e-04	1.374e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X1	X3	X4	X5	X8
A to Z	3.680e-03	5.492e-03	7.494e-03	9.570e-03	1.473e-02
B to Z	3.271e-03	4.715e-03	6.327e-03	8.006e-03	1.189e-02
C to Z	2.633e-03	3.833e-03	5.187e-03	6.548e-03	9.742e-03
D to Z	2.341e-03	3.274e-03	4.350e-03	5.430e-03	7.566e-03
Pin Cycle (vdd)	X11	X16	X22	X33	X44
A to Z	1.837e-02	2.723e-02	3.652e-02	5.393e-02	7.173e-02
B to Z	1.479e-02	2.204e-02	2.913e-02	4.318e-02	5.756e-02
C to Z	1.204e-02	1.819e-02	2.440e-02	3.607e-02	4.803e-02
D to Z	9.582e-03	1.414e-02	1.853e-02	2.745e-02	3.657e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X1	X3	X4	X5	X8
A to Z	-3.723e-06	-5.770e-06	-8.910e-06	-1.152e-05	-1.678e-05
B to Z	-6.800e-08	8.070e-07	1.530e-06	4.320e-06	5.040e-06
C to Z	-9.267e-07	-1.576e-06	-1.923e-06	-2.823e-06	-4.073e-06
D to Z	-2.147e-07	2.600e-08	1.633e-07	3.933e-07	4.800e-07
Pin Cycle (vdds)	X11	X16	X22	X33	X44
A to Z	-2.151e-05	-3.339e-05	-5.011e-05	-6.840e-05	-8.460e-05
B to Z	6.380e-06	1.248e-05	1.366e-05	1.786e-05	1.967e-05
C to Z	-3.980e-06	-8.023e-06	-1.213e-05	-1.891e-05	-2.064e-05
D to Z	1.107e-06	3.667e-07	1.333e-08	-2.813e-06	-4.867e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X1	X3	X4	X5	X8
A	0.0010	0.0013	0.0016	0.0020	0.0034
B	0.0009	0.0012	0.0016	0.0019	0.0029



Pin Capacitance (pf) at 25C, 1.20V Typ process

C	0.0010	0.0012	0.0017	0.0020	0.0032
D	0.0010	0.0012	0.0016	0.0020	0.0030
Pin	X11	X16	X22	X33	X44
A	0.0042	0.0057	0.0075	0.0112	0.0149
B	0.0036	0.0053	0.0070	0.0104	0.0140
C	0.0040	0.0055	0.0072	0.0108	0.0145
D	0.0037	0.0054	0.0071	0.0106	0.0142

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X5	X8	X1	X3	X4	X5	X8
A to Z↓	0.0368	0.0338	0.0309	0.0298	0.0298	10.1469	5.9026	3.8313	2.8698	1.8584
A to Z↑	0.0393	0.0350	0.0333	0.0330	0.0330	10.8500	6.1122	4.2038	3.2476	2.1209
B to Z↓	0.0334	0.0298	0.0269	0.0257	0.0259	9.9698	5.7467	3.7113	2.7583	1.8854
B to Z↑	0.0370	0.0320	0.0301	0.0295	0.0286	10.8835	6.1257	4.2111	3.2559	2.1263
C to Z↓	0.0306	0.0275	0.0250	0.0238	0.0239	9.7097	5.6090	3.6498	2.7278	1.8025
C to Z↑	0.0205	0.0182	0.0173	0.0169	0.0168	5.6291	3.1306	2.1567	1.6687	1.0913
D to Z↓	0.0278	0.0241	0.0216	0.0204	0.0192	9.7406	5.6195	3.6587	2.7344	1.8070
D to Z↑	0.0192	0.0166	0.0155	0.0150	0.0142	5.6675	3.1465	2.1685	1.6787	1.1144
	X11	X16	X22	X33	X44	X11	X16	X22	X33	X44
A to Z↓	0.0283	0.0291	0.0294	0.0294	0.0297	1.3912	0.9812	0.7460	0.4994	0.3766
A to Z↑	0.0321	0.0324	0.0328	0.0327	0.0330	1.6244	1.1187	0.8447	0.5657	0.4263
B to Z↓	0.0246	0.0249	0.0253	0.0254	0.0258	1.4201	0.9641	0.7452	0.4989	0.3752
B to Z↑	0.0278	0.0284	0.0284	0.0284	0.0286	1.6288	1.1218	0.8465	0.5674	0.4275
C to Z↓	0.0224	0.0230	0.0236	0.0236	0.0238	1.3550	0.9405	0.7196	0.4818	0.3630
C to Z↑	0.0160	0.0162	0.0162	0.0164	0.0167	0.8355	0.5666	0.4257	0.2855	0.2158
D to Z↓	0.0184	0.0189	0.0188	0.0189	0.0191	1.3570	0.9434	0.7216	0.4829	0.3640
D to Z↑	0.0140	0.0139	0.0137	0.0139	0.0142	0.8567	0.5697	0.4272	0.2870	0.2166

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X5	X8	X1	X3	X4	X5	X8
A to Z↓	0.0644	0.0601	0.0541	0.0519	0.0518	17.9643	10.5538	6.7361	4.9952	3.2506
A to Z↑	0.0586	0.0526	0.0504	0.0500	0.0496	16.3420	9.2587	6.3744	4.9294	3.2061
B to Z↓	0.0579	0.0519	0.0462	0.0440	0.0441	17.7342	10.2799	6.5297	4.8124	3.2644
B to Z↑	0.0543	0.0474	0.0449	0.0440	0.0424	16.3447	9.2658	6.3755	4.9335	3.2103
C to Z↓	0.0527	0.0478	0.0430	0.0408	0.0408	17.1259	9.9873	6.3832	4.7218	3.1209
C to Z↑	0.0290	0.0258	0.0246	0.0240	0.0236	7.8561	4.4083	3.0317	2.3439	1.5384
D to Z↓	0.0473	0.0416	0.0370	0.0349	0.0326	17.1428	9.9971	6.3879	4.7264	3.1240
D to Z↑	0.0271	0.0236	0.0221	0.0214	0.0200	7.9387	4.4520	3.0624	2.3684	1.5561
	X11	X16	X22	X33	X44	X11	X16	X22	X33	X44
A to Z↓	0.0489	0.0495	0.0501	0.0496	0.0497	2.4047	1.6535	1.2577	0.8352	0.6262
A to Z↑	0.0483	0.0485	0.0490	0.0487	0.0490	2.4565	1.6714	1.2622	0.8426	0.6332
B to Z↓	0.0415	0.0417	0.0426	0.0424	0.0426	2.4236	1.6215	1.2548	0.8344	0.6246
B to Z↑	0.0413	0.0418	0.0417	0.0416	0.0418	2.4574	1.6732	1.2629	0.8436	0.6337
C to Z↓	0.0381	0.0387	0.0396	0.0393	0.0395	2.3130	1.5742	1.2053	0.8010	0.6000
C to Z↑	0.0227	0.0228	0.0228	0.0229	0.0232	1.1765	0.7900	0.5957	0.3986	0.3003
D to Z↓	0.0310	0.0316	0.0314	0.0313	0.0313	2.3140	1.5758	1.2070	0.8017	0.6007
D to Z↑	0.0196	0.0196	0.0193	0.0195	0.0197	1.1945	0.7965	0.5974	0.3997	0.3011

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X5	X8	X1	X3	X4	X5	X8
A to Z↓	0.0595	0.0553	0.0498	0.0478	0.0477	16.3565	9.5582	6.1036	4.5256	2.9460
A to Z↑	0.0548	0.0491	0.0470	0.0466	0.0463	15.1061	8.5273	5.8639	4.5328	2.9518
B to Z↓	0.0534	0.0478	0.0426	0.0405	0.0407	16.1306	9.3181	5.9174	4.3612	2.9628
B to Z↑	0.0509	0.0444	0.0420	0.0412	0.0397	15.1097	8.5341	5.8686	4.5369	2.9544
C to Z↓	0.0486	0.0440	0.0396	0.0376	0.0376	15.5936	9.0558	5.7840	4.2819	2.8317



Propagation Delay at 125C, 1.15V Worst process

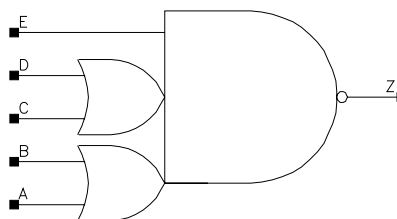
C to Z ↑	0.0276	0.0245	0.0234	0.0228	0.0224	7.3386	4.1076	2.8231	2.1815	1.4321
D to Z ↓	0.0437	0.0384	0.0342	0.0322	0.0302	15.6118	9.0604	5.7889	4.2858	2.8344
D to Z ↑	0.0258	0.0224	0.0210	0.0203	0.0190	7.4106	4.1467	2.8509	2.2040	1.4501
	X11	X16	X22	X33	X44	X11	X16	X22	X33	X44
A to Z ↓	0.0451	0.0457	0.0463	0.0458	0.0460	2.1813	1.5056	1.1452	0.7610	0.5712
A to Z ↑	0.0452	0.0454	0.0459	0.0456	0.0459	2.2588	1.5395	1.1628	0.7768	0.5835
B to Z ↓	0.0384	0.0385	0.0393	0.0392	0.0394	2.2028	1.4769	1.1434	0.7607	0.5696
B to Z ↑	0.0387	0.0392	0.0391	0.0390	0.0393	2.2604	1.5412	1.1639	0.7776	0.5842
C to Z ↓	0.0352	0.0358	0.0367	0.0364	0.0365	2.1008	1.4341	1.0981	0.7303	0.5477
C to Z ↑	0.0215	0.0216	0.0217	0.0218	0.0221	1.0948	0.7361	0.5549	0.3714	0.2799
D to Z ↓	0.0288	0.0293	0.0292	0.0291	0.0292	2.1019	1.4360	1.0996	0.7310	0.5483
D to Z ↑	0.0186	0.0186	0.0183	0.0185	0.0187	1.1132	0.7423	0.5569	0.3726	0.2807

HS65_LS_OAI212

Cell Description

3 wide 1-2-2 OR-AND-INVERT

Logical Symbol



Functions

A	B	C	D	E	Z
1	-	-	1	1	0
-	1	-	1	1	0
1	-	1	-	1	0
-	1	1	-	1	0
0	0	-	-	-	1
-	-	0	0	-	1
-	-	-	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X3	2.6	1.60	4.1600
X5	2.6	1.60	4.1600
X10	2.6	3.20	8.3200
X15	2.6	4.20	10.9200
X20	2.6	5.80	15.0800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X3	1.092e-07	3.820e-10
X5	1.992e-07	6.631e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X10	3.964e-07	1.238e-09
X15	6.202e-07	1.820e-09
X20	8.114e-07	2.417e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X3	2.831e-05	3.293e-08
X5	5.613e-05	3.863e-08
X10	1.114e-04	6.452e-08
X15	1.773e-04	8.555e-08
X20	2.301e-04	1.115e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X3	2.500e-05	3.011e-08
X5	4.925e-05	3.414e-08
X10	9.773e-05	5.605e-08
X15	1.556e-04	7.328e-08
X20	2.019e-04	9.524e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X3	X5	X10	X15	X20
A to Z	6.687e-03	1.143e-02	2.237e-02	3.301e-02	4.472e-02
B to Z	5.929e-03	9.926e-03	1.879e-02	2.781e-02	3.769e-02
C to Z	4.340e-03	7.370e-03	1.483e-02	2.165e-02	2.939e-02
D to Z	3.595e-03	5.914e-03	1.116e-02	1.652e-02	2.220e-02
E to Z	4.982e-03	8.461e-03	1.656e-02	2.411e-02	3.255e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X3	X5	X10	X15	X20
A to Z	-7.957e-06	-1.481e-05	-2.792e-05	-4.222e-05	-5.930e-05
B to Z	-6.140e-07	5.567e-07	1.697e-06	3.297e-06	-1.563e-06
C to Z	-5.527e-06	-9.570e-06	-2.045e-05	-3.012e-05	-4.139e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D to Z	8.007e-07	3.030e-06	6.040e-06	1.061e-05	1.010e-05
E to Z	-3.440e-06	-5.299e-06	-1.294e-05	-1.592e-05	-2.323e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X3	X5	X10	X15	X20
A	0.0013	0.0021	0.0042	0.0057	0.0082
B	0.0013	0.0020	0.0036	0.0054	0.0075
C	0.0013	0.0020	0.0040	0.0055	0.0078
D	0.0012	0.0018	0.0034	0.0051	0.0071
E	0.0013	0.0020	0.0037	0.0056	0.0073

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X5	X10	X15	X20	X3	X5	X10	X15	X20
A to Z↓	0.0385	0.0340	0.0346	0.0335	0.0338	5.5451	2.7588	1.4393	0.9449	0.7085
A to Z↑	0.0395	0.0371	0.0361	0.0368	0.0364	6.0426	3.2505	1.6083	1.1178	0.8166
B to Z↓	0.0345	0.0298	0.0304	0.0293	0.0299	5.3881	2.6429	1.4373	0.9282	0.7165
B to Z↑	0.0367	0.0338	0.0320	0.0329	0.0323	6.0524	3.2576	1.6124	1.1211	0.8185
C to Z↓	0.0273	0.0238	0.0249	0.0242	0.0249	5.4141	2.6688	1.4303	0.9332	0.7144
C to Z↑	0.0282	0.0259	0.0258	0.0260	0.0258	6.0241	3.2353	1.6066	1.1155	0.8147
D to Z↓	0.0247	0.0214	0.0207	0.0206	0.0205	5.5376	2.7598	1.4476	0.9484	0.7129
D to Z↑	0.0252	0.0225	0.0211	0.0216	0.0212	6.0452	3.2482	1.6132	1.1209	0.8178
E to Z↓	0.0307	0.0268	0.0277	0.0265	0.0271	5.1739	2.5630	1.3659	0.8895	0.6771
E to Z↑	0.0202	0.0189	0.0183	0.0184	0.0185	3.0997	1.6656	0.8251	0.5669	0.4233

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X5	X10	X15	X20	X3	X5	X10	X15	X20
A to Z↓	0.0689	0.0598	0.0610	0.0575	0.0585	9.8623	4.7758	2.4826	1.5833	1.1990
A to Z↑	0.0596	0.0567	0.0550	0.0556	0.0552	9.1521	4.9381	2.4346	1.6702	1.2280



Propagation Delay at 125C, 1.10V Worst process

B to Z↓	0.0609	0.0516	0.0522	0.0496	0.0511	9.5908	4.5810	2.4447	1.5524	1.2049
B to Z↑	0.0547	0.0510	0.0481	0.0490	0.0484	9.1572	4.9410	2.4359	1.6717	1.2286
C to Z↓	0.0478	0.0412	0.0431	0.0408	0.0424	9.5944	4.5972	2.4467	1.5524	1.2006
C to Z↑	0.0423	0.0394	0.0392	0.0390	0.0390	9.0877	4.8898	2.4231	1.6595	1.2206
D to Z↓	0.0425	0.0365	0.0349	0.0343	0.0343	9.8039	4.7476	2.4517	1.5780	1.1911
D to Z↑	0.0374	0.0338	0.0315	0.0320	0.0315	9.0991	4.8976	2.4276	1.6631	1.2238
E to Z↓	0.0540	0.0465	0.0478	0.0448	0.0460	9.1513	4.4066	2.3208	1.4776	1.1330
E to Z↑	0.0287	0.0269	0.0260	0.0261	0.0261	4.3594	2.3399	1.1571	0.7893	0.5894

Propagation Delay at 125C, 1.15V Worst process

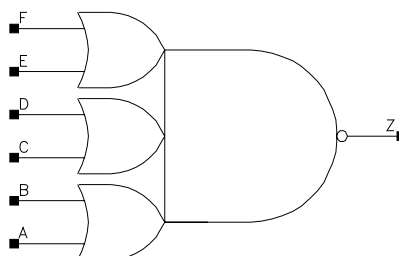
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X5	X10	X15	X20	X3	X5	X10	X15	X20
A to Z↓	0.0632	0.0549	0.0560	0.0530	0.0539	8.9260	4.3279	2.2509	1.4417	1.0907
A to Z↑	0.0557	0.0529	0.0513	0.0519	0.0515	8.4344	4.5408	2.2387	1.5384	1.1302
B to Z↓	0.0559	0.0475	0.0480	0.0458	0.0471	8.6797	4.1539	2.2217	1.4143	1.0969
B to Z↑	0.0512	0.0477	0.0450	0.0459	0.0453	8.4407	4.5427	2.2403	1.5399	1.1311
C to Z↓	0.0441	0.0380	0.0398	0.0379	0.0393	8.6885	4.1695	2.2210	1.4149	1.0930
C to Z↑	0.0395	0.0366	0.0365	0.0364	0.0364	8.3838	4.4981	2.2297	1.5298	1.1244
D to Z↓	0.0393	0.0338	0.0323	0.0319	0.0318	8.8806	4.3075	2.2291	1.4386	1.0857
D to Z↑	0.0350	0.0316	0.0294	0.0299	0.0294	8.3927	4.5062	2.2341	1.5334	1.1266
E to Z↓	0.0496	0.0428	0.0440	0.0414	0.0425	8.2892	3.9969	2.1083	1.3468	1.0320
E to Z↑	0.0272	0.0256	0.0247	0.0248	0.0249	4.0643	2.1777	1.0770	0.7354	0.5493

HS65_LS_OAI222

Cell Description

Triple 2 Input OR into 3 Input NAND

Logical Symbol



Functions

A	B	C	D	E	F	Z
-	1	-	1	1	-	0
-	1	1	-	1	-	0
-	1	-	1	-	1	0
1	-	1	-	1	-	0
-	1	1	-	-	1	0
1	-	-	1	-	1	0
1	-	-	1	1	-	0
1	-	1	-	-	1	0
0	0	-	-	-	-	1
-	-	0	0	-	-	1
-	-	-	-	0	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	2.00	5.2000
X5	2.6	2.20	5.7200
X9	2.6	3.60	9.3600
X14	2.6	5.20	13.5200
X19	2.6	6.80	17.6800



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	1.442e-07	4.700e-10
X5	2.421e-07	8.509e-10
X9	4.978e-07	1.640e-09
X14	7.633e-07	2.434e-09
X19	1.025e-06	3.230e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	3.709e-05	3.937e-08
X5	6.714e-05	4.885e-08
X9	1.396e-04	7.711e-08
X14	2.158e-04	1.084e-07
X19	2.908e-04	1.388e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	3.273e-05	3.574e-08
X5	5.889e-05	4.288e-08
X9	1.224e-04	6.600e-08
X14	1.893e-04	9.199e-08
X19	2.550e-04	1.172e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X5	X9	X14	X19
A to Z	8.078e-03	1.376e-02	2.617e-02	3.872e-02	5.130e-02
B to Z	7.324e-03	1.225e-02	2.267e-02	3.363e-02	4.440e-02
C to Z	6.496e-03	1.130e-02	2.137e-02	3.173e-02	4.192e-02
D to Z	5.750e-03	9.816e-03	1.794e-02	2.676e-02	3.510e-02
E to Z	5.015e-03	8.911e-03	1.615e-02	2.444e-02	3.182e-02
F to Z	4.297e-03	7.398e-03	1.262e-02	1.936e-02	2.463e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X5	X9	X14	X19
A to Z	-6.717e-06	-1.182e-05	-2.677e-05	-4.269e-05	-5.530e-05
B to Z	-9.752e-07	-7.967e-07	5.889e-08	-2.106e-06	-3.682e-06
C to Z	-8.750e-06	-1.654e-05	-3.058e-05	-4.865e-05	-6.500e-05
D to Z	-1.752e-06	-7.822e-07	-1.593e-06	-3.517e-06	-6.526e-06
E to Z	-6.751e-06	-1.235e-05	-2.466e-05	-3.891e-05	-4.815e-05
F to Z	4.147e-07	8.911e-07	2.193e-06	8.556e-07	9.967e-07

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X5	X9	X14	X19
A	0.0013	0.0020	0.0042	0.0056	0.0079
B	0.0013	0.0019	0.0037	0.0054	0.0071
C	0.0014	0.0019	0.0042	0.0055	0.0078
D	0.0015	0.0019	0.0036	0.0052	0.0069
E	0.0013	0.0020	0.0041	0.0055	0.0072
↓	0.0013	0.0019	0.0035	0.0051	0.0067

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X9	X14	X19	X2	X5	X9	X14	X19
A to Z↓	0.0414	0.0384	0.0367	0.0369	0.0364	5.0528	2.6831	1.3303	0.9100	0.6733
A to Z↑	0.0443	0.0411	0.0393	0.0399	0.0395	6.1211	3.2487	1.6307	1.1231	0.8368
B to Z↓	0.0393	0.0344	0.0331	0.0329	0.0327	5.1665	2.6134	1.3495	0.8978	0.6763
B to Z↑	0.0417	0.0379	0.0353	0.0362	0.0356	6.1356	3.2545	1.6348	1.1259	0.8389
C to Z↓	0.0362	0.0344	0.0329	0.0331	0.0326	5.0792	2.7050	1.3442	0.9172	0.6792
C to Z↑	0.0376	0.0350	0.0337	0.0342	0.0339	6.0600	3.1912	1.6138	1.1131	0.8320
D to Z↓	0.0340	0.0303	0.0291	0.0290	0.0288	5.2137	2.6260	1.3583	0.9037	0.6813
D to Z↑	0.0350	0.0318	0.0296	0.0303	0.0298	6.0790	3.2001	1.6193	1.1170	0.8346
E to Z↓	0.0284	0.0271	0.0255	0.0256	0.0250	5.1006	2.6564	1.3492	0.9052	0.6759
E to Z↑	0.0302	0.0282	0.0262	0.0269	0.0267	6.0942	3.2044	1.6200	1.1172	0.8443



Propagation Delay at 25C, 1.20V Typ process

F to Z↓	0.0255	0.0237	0.0211	0.0219	0.0210	5.0977	2.6493	1.3390	0.9067	0.6767
F to Z↑	0.0274	0.0248	0.0216	0.0226	0.0219	6.1206	3.2163	1.6274	1.1227	0.8488

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X9	X14	X19	X2	X5	X9	X14	X19
A to Z↓	0.0737	0.0682	0.0644	0.0639	0.0629	8.9141	4.6692	2.2807	1.5306	1.1310
A to Z↑	0.0670	0.0629	0.0596	0.0602	0.0595	9.2698	4.9316	2.4675	1.6790	1.2530
B to Z↓	0.0695	0.0604	0.0572	0.0562	0.0557	9.1203	4.5333	2.2888	1.5045	1.1278
B to Z↑	0.0624	0.0573	0.0529	0.0538	0.0529	9.2726	4.9338	2.4686	1.6800	1.2536
C to Z↓	0.0640	0.0605	0.0573	0.0568	0.0558	8.9066	4.6859	2.2937	1.5348	1.1355
C to Z↑	0.0570	0.0535	0.0510	0.0516	0.0513	9.1160	4.8216	2.4260	1.6552	1.2430
D to Z↓	0.0597	0.0528	0.0499	0.0491	0.0485	9.1545	4.5355	2.2886	1.5061	1.1289
D to Z↑	0.0523	0.0481	0.0442	0.0451	0.0444	9.1231	4.8256	2.4283	1.6569	1.2442
E to Z↓	0.0496	0.0471	0.0439	0.0434	0.0422	8.9227	4.5918	2.2954	1.5089	1.1234
E to Z↑	0.0457	0.0430	0.0397	0.0405	0.0402	9.1790	4.8488	2.4367	1.6616	1.2578
F to Z↓	0.0440	0.0407	0.0354	0.0366	0.0350	8.9011	4.5676	2.2492	1.5097	1.1226
F to Z↑	0.0410	0.0373	0.0322	0.0335	0.0323	9.1957	4.8563	2.4412	1.6654	1.2606

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X9	X14	X19	X2	X5	X9	X14	X19
A to Z↓	0.0677	0.0626	0.0592	0.0589	0.0580	8.0822	4.2297	2.0703	1.3933	1.0300
A to Z↑	0.0626	0.0587	0.0557	0.0563	0.0557	8.5413	4.5345	2.2697	1.5469	1.1540
B to Z↓	0.0638	0.0555	0.0527	0.0519	0.0515	8.2685	4.1113	2.0814	1.3706	1.0280
B to Z↑	0.0584	0.0535	0.0495	0.0504	0.0496	8.5455	4.5368	2.2709	1.5478	1.1547
C to Z↓	0.0588	0.0556	0.0527	0.0523	0.0515	8.0774	4.2454	2.0826	1.3976	1.0339
C to Z↑	0.0532	0.0498	0.0476	0.0482	0.0479	8.4067	4.4351	2.2331	1.5256	1.1449
D to Z↓	0.0548	0.0486	0.0460	0.0454	0.0449	8.3037	4.1133	2.0822	1.3723	1.0292

Propagation Delay at 125C, 1.15V Worst process

D to Z ↑	0.0490	0.0449	0.0414	0.0423	0.0416	8.4122	4.4388	2.2352	1.5272	1.1461
E to Z ↓	0.0458	0.0435	0.0406	0.0403	0.0391	8.0978	4.1644	2.0863	1.3753	1.0244
E to Z ↑	0.0425	0.0400	0.0370	0.0378	0.0375	8.4635	4.4614	2.2432	1.5318	1.1593
F to Z ↓	0.0407	0.0377	0.0329	0.0340	0.0326	8.0798	4.1445	2.0475	1.3767	1.0240
F to Z ↑	0.0383	0.0348	0.0300	0.0313	0.0303	8.4781	4.4684	2.2477	1.5353	1.1620

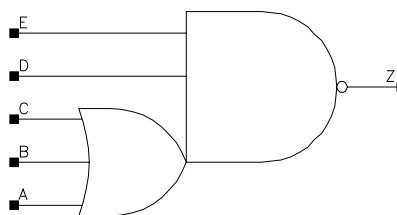


HS65_LS_OAI311

Cell Description

3 Input OR into 3 Input NAND

Logical Symbol



Functions

A	B	C	D	E	Z
1	-	-	1	1	0
-	-	1	1	1	0
-	1	-	1	1	0
0	0	0	-	-	1
-	-	-	0	-	1
-	-	-	-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	1.60	4.1600
X5	2.6	1.60	4.1600
X10	2.6	3.00	7.8000
X15	2.6	4.20	10.9200
X20	2.6	5.80	15.0800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	9.729e-08	3.363e-10
X5	1.721e-07	5.736e-10
X10	3.556e-07	1.062e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X15	5.364e-07	1.548e-09
X20	7.084e-07	2.047e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	2.453e-05	3.182e-08
X5	4.739e-05	3.661e-08
X10	9.937e-05	5.878e-08
X15	1.503e-04	7.968e-08
X20	1.975e-04	1.044e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	2.165e-05	2.932e-08
X5	4.156e-05	3.266e-08
X10	8.713e-05	5.153e-08
X15	1.318e-04	6.912e-08
X20	1.732e-04	9.031e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X5	X10	X15	X20
A to Z	6.504e-03	1.124e-02	2.307e-02	3.383e-02	4.567e-02
B to Z	5.760e-03	9.839e-03	1.988e-02	2.890e-02	3.918e-02
C to Z	4.981e-03	8.260e-03	1.605e-02	2.347e-02	3.190e-02
D to Z	4.123e-03	6.920e-03	1.307e-02	1.965e-02	2.655e-02
E to Z	3.569e-03	5.855e-03	1.059e-02	1.560e-02	2.075e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X5	X10	X15	X20
A to Z	-7.180e-06	-1.612e-05	-3.501e-05	-5.328e-05	-8.090e-05
B to Z	-8.160e-06	-1.605e-05	-3.381e-05	-4.432e-05	-7.067e-05
C to Z	7.700e-07	4.150e-06	8.080e-06	1.507e-05	1.496e-05
D to Z	-3.779e-07	-5.957e-07	3.611e-06	-2.671e-07	-1.697e-06

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

E to Z	-1.497e-07	7.257e-07	5.874e-06	2.761e-06	2.831e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X5	X10	X15	X20
A	0.0013	0.0020	0.0044	0.0057	0.0074
B	0.0013	0.0020	0.0040	0.0055	0.0073
C	0.0013	0.0019	0.0035	0.0053	0.0068
D	0.0014	0.0021	0.0041	0.0057	0.0074
E	0.0013	0.0020	0.0037	0.0055	0.0072

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X10	X15	X20	X2	X5	X10	X15	X20
A to Z↓	0.0362	0.0324	0.0317	0.0323	0.0330	5.7493	2.8831	1.3966	0.9889	0.7553
A to Z↑	0.0526	0.0498	0.0508	0.0513	0.0523	9.0835	4.8754	2.4294	1.6894	1.2877
B to Z↓	0.0336	0.0301	0.0299	0.0301	0.0310	5.6542	2.8319	1.3973	0.9738	0.7439
B to Z↑	0.0503	0.0475	0.0476	0.0482	0.0493	9.0930	4.8784	2.4318	1.6914	1.2890
C to Z↓	0.0300	0.0262	0.0260	0.0260	0.0270	5.5677	2.7483	1.4174	0.9627	0.7463
C to Z↑	0.0439	0.0401	0.0385	0.0394	0.0403	9.1038	4.8850	2.4338	1.6934	1.2896
D to Z↓	0.0269	0.0236	0.0224	0.0231	0.0237	5.1960	2.5933	1.2870	0.8965	0.6881
D to Z↑	0.0181	0.0168	0.0161	0.0163	0.0165	3.1356	1.6678	0.8361	0.5682	0.4300
E to Z↓	0.0239	0.0206	0.0186	0.0192	0.0193	5.2147	2.5996	1.2897	0.8994	0.6904
E to Z↑	0.0166	0.0151	0.0141	0.0140	0.0140	3.1523	1.6777	0.8580	0.5713	0.4318

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X10	X15	X20	X2	X5	X10	X15	X20
A to Z↓	0.0646	0.0569	0.0550	0.0554	0.0566	10.2380	5.0182	2.4108	1.6659	1.2717
A to Z↑	0.0831	0.0797	0.0808	0.0808	0.0823	14.0048	7.5524	3.7524	2.5697	1.9556
B to Z↓	0.0592	0.0520	0.0512	0.0510	0.0525	10.0346	4.8944	2.3909	1.6316	1.2474



Propagation Delay at 125C, 1.10V Worst process

B to Z↑	0.0781	0.0747	0.0745	0.0746	0.0762	14.0051	7.5545	3.7524	2.5702	1.9559
C to Z↓	0.0520	0.0447	0.0437	0.0434	0.0453	9.9229	4.7839	2.4099	1.6159	1.2565
C to Z↑	0.0664	0.0614	0.0584	0.0592	0.0605	14.0132	7.5579	3.7534	2.5717	1.9570
D to Z↓	0.0466	0.0403	0.0380	0.0386	0.0398	9.1587	4.4624	2.1841	1.4916	1.1461
D to Z↑	0.0257	0.0240	0.0228	0.0229	0.0231	4.3789	2.3413	1.1755	0.7906	0.5972
E to Z↓	0.0412	0.0353	0.0314	0.0321	0.0322	9.1663	4.4661	2.1854	1.4934	1.1475
E to Z↑	0.0236	0.0216	0.0198	0.0197	0.0197	4.4216	2.3653	1.1948	0.7973	0.6016

Propagation Delay at 125C, 1.15V Worst process

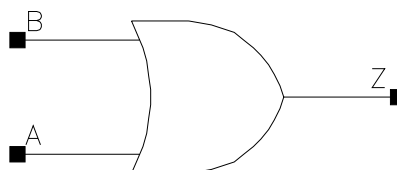
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X2	X5	X10	X15	X20	X2	X5	X10	X15	X20
A to Z↓	0.0594	0.0523	0.0507	0.0511	0.0522	9.2757	4.5492	2.1877	1.5172	1.1583
A to Z↑	0.0771	0.0739	0.0749	0.0750	0.0765	12.8599	6.9146	3.4367	2.3582	1.7949
B to Z↓	0.0545	0.0480	0.0473	0.0472	0.0486	9.0910	4.4404	2.1721	1.4867	1.1369
B to Z↑	0.0724	0.0691	0.0690	0.0692	0.0707	12.8614	6.9132	3.4357	2.3579	1.7957
C to Z↓	0.0479	0.0413	0.0405	0.0402	0.0419	8.9824	4.3363	2.1912	1.4723	1.1449
C to Z↑	0.0617	0.0569	0.0543	0.0551	0.0563	12.8686	6.9189	3.4376	2.3600	1.7963
D to Z↓	0.0428	0.0372	0.0351	0.0358	0.0368	8.3046	4.0496	1.9861	1.3605	1.0449
D to Z↑	0.0245	0.0228	0.0217	0.0218	0.0220	4.0840	2.1792	1.0940	0.7369	0.5567
E to Z↓	0.0380	0.0326	0.0291	0.0298	0.0299	8.3131	4.0538	1.9873	1.3620	1.0465
E to Z↑	0.0223	0.0204	0.0187	0.0187	0.0187	4.1221	2.2013	1.1136	0.7431	0.5609

HS65_LS_OR2

Cell Description

2 Input OR

Logical Symbol



Functions

A	B	Z
0	0	0
-	1	1
1	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.20	3.1200
X9	2.6	1.20	3.1200
X18	2.6	1.40	3.6400
X27	2.6	2.20	5.7200
X35	2.6	2.40	6.2400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.688e-07	2.581e-10
X9	2.717e-07	4.247e-10
X18	5.566e-07	8.660e-10
X27	8.511e-07	1.299e-09
X35	1.154e-06	1.765e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.519e-05	2.901e-08
X9	7.982e-05	3.287e-08
X18	1.703e-04	4.323e-08
X27	2.598e-04	5.885e-08
X35	3.563e-04	6.888e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.977e-05	2.651e-08
X9	6.965e-05	2.925e-08
X18	1.483e-04	3.709e-08
X27	2.264e-04	4.975e-08
X35	3.102e-04	5.718e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	5.931e-03	8.448e-03	1.558e-02	2.351e-02	2.996e-02
B to Z	5.389e-03	7.675e-03	1.412e-02	2.089e-02	2.654e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-4.757e-06	-7.477e-06	-1.282e-05	-2.069e-05	-2.490e-05
B to Z	0.000e+00	-1.400e-07	6.050e-07	-5.000e-09	-5.280e-07

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0011	0.0013	0.0021	0.0035	0.0042
B	0.0011	0.0014	0.0022	0.0032	0.0040

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0552	0.0507	0.0485	0.0470	0.0461	2.3775	1.2242	0.6032	0.3996	0.2995
A to Z↑	0.0355	0.0328	0.0315	0.0313	0.0304	3.0836	1.6159	0.8191	0.5426	0.4063
B to Z↓	0.0525	0.0476	0.0452	0.0431	0.0422	2.3807	1.2249	0.6034	0.3998	0.2995
B to Z↑	0.0334	0.0307	0.0293	0.0291	0.0278	3.0853	1.6148	0.8187	0.5422	0.4056

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0879	0.0809	0.0768	0.0741	0.0725	3.8062	1.9360	0.9372	0.6183	0.4609
A to Z↑	0.0555	0.0514	0.0486	0.0486	0.0468	4.4705	2.3499	1.1794	0.7816	0.5836
B to Z↓	0.0827	0.0753	0.0712	0.0674	0.0658	3.8109	1.9361	0.9378	0.6183	0.4608
B to Z↑	0.0518	0.0480	0.0453	0.0448	0.0423	4.4648	2.3480	1.1781	0.7800	0.5818

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0808	0.0744	0.0706	0.0682	0.0668	3.5201	1.7918	0.8700	0.5741	0.4281
A to Z↑	0.0518	0.0480	0.0454	0.0454	0.0438	4.1546	2.1817	1.0965	0.7264	0.5425
B to Z↓	0.0761	0.0692	0.0655	0.0621	0.0607	3.5254	1.7924	0.8697	0.5741	0.4282
B to Z↑	0.0484	0.0448	0.0422	0.0419	0.0396	4.1523	2.1800	1.0948	0.7253	0.5411

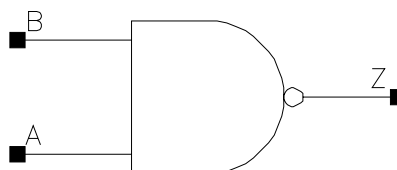


HS65_LS_OR2AB

Cell Description

2 Input OR , A and B Inputs Inverted

Logical Symbol



Functions

A	B	Z
1	1	0
0	-	1
-	0	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X9	2.6	1.40	3.6400
X18	2.6	1.60	4.1600
X27	2.6	2.20	5.7200
X35	2.6	2.20	5.7200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X9	2.764e-07	5.329e-10
X18	5.584e-07	9.659e-10
X27	8.381e-07	1.432e-09
X35	1.169e-06	1.865e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds



Average Leakage Power (mW) at 125C, 1.30V Best process

X9	7.816e-05	3.504e-08
X18	1.682e-04	4.543e-08
X27	2.526e-04	6.029e-08
X35	3.622e-04	6.892e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X9	6.847e-05	3.116e-08
X18	1.467e-04	3.882e-08
X27	2.201e-04	5.079e-08
X35	3.154e-04	5.676e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X9	X18	X27	X35
A to Z	1.050e-02	1.733e-02	2.454e-02	3.215e-02
B to Z	1.021e-02	1.679e-02	2.374e-02	3.105e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X9	X18	X27	X35
A to Z	-8.680e-07	-2.747e-06	-3.000e-06	-5.610e-06
B to Z	-1.002e-06	-2.874e-06	-3.610e-06	-5.480e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X9	X18	X27	X35
A	0.0011	0.0015	0.0019	0.0023
B	0.0011	0.0014	0.0019	0.0023

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X9	X18	X27	X35	X9	X18	X27	X35
A to Z↓	0.0736	0.0651	0.0601	0.0595	1.2348	0.5830	0.3938	0.2923

Propagation Delay at 25C, 1.20V Typ process

A to Z ↑	0.0642	0.0570	0.0531	0.0527	1.6552	0.8163	0.5451	0.4069
B to Z ↓	0.0721	0.0633	0.0583	0.0576	1.2346	0.5828	0.3938	0.2925
B to Z ↑	0.0617	0.0549	0.0506	0.0502	1.6538	0.8158	0.5451	0.4068

Propagation Delay at 125C, 1.10V Worst process

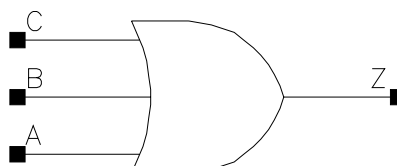
Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X9	X18	X27	X35	X9	X18	X27	X35
A to Z ↓	0.1211	0.1073	0.0988	0.0966	1.9786	0.9058	0.6121	0.4459
A to Z ↑	0.0988	0.0884	0.0822	0.0811	2.4170	1.1812	0.7883	0.5835
B to Z ↓	0.1183	0.1043	0.0958	0.0936	1.9787	0.9056	0.6122	0.4459
B to Z ↑	0.0950	0.0856	0.0787	0.0775	2.4157	1.1812	0.7882	0.5835

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X9	X18	X27	X35	X9	X18	X27	X35
A to Z ↓	0.1111	0.0984	0.0907	0.0888	1.8257	0.8402	0.5678	0.4147
A to Z ↑	0.0917	0.0819	0.0762	0.0752	2.2448	1.0976	0.7326	0.5427
B to Z ↓	0.1087	0.0958	0.0880	0.0861	1.8264	0.8402	0.5679	0.4148
B to Z ↑	0.0881	0.0792	0.0729	0.0718	2.2432	1.0976	0.7325	0.5425



HS65_LS_OR3

Cell Description
 3 Input OR
Logical Symbol**Functions**

A	B	C	Z
0	0	0	0
-	1	-	1
1	-	-	1
-	-	1	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.40	3.6400
X9	2.6	1.40	3.6400
X18	2.6	1.80	4.6800
X27	2.6	2.60	6.7600
X35	2.6	3.00	7.8000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.668e-07	3.331e-10
X9	2.444e-07	4.330e-10
X18	5.362e-07	7.327e-10
X27	8.207e-07	1.082e-09
X35	1.106e-06	1.449e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.494e-05	3.210e-08
X9	7.168e-05	3.352e-08
X18	1.664e-04	4.463e-08
X27	2.573e-04	5.880e-08
X35	3.457e-04	6.942e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.951e-05	2.925e-08
X9	6.254e-05	3.027e-08
X18	1.449e-04	3.914e-08
X27	2.240e-04	5.086e-08
X35	3.010e-04	5.929e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	7.815e-03	1.034e-02	1.772e-02	2.632e-02	3.408e-02
B to Z	7.072e-03	9.607e-03	1.627e-02	2.405e-02	3.112e-02
C to Z	6.225e-03	8.698e-03	1.457e-02	2.148e-02	2.764e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-9.699e-06	-1.160e-05	-2.146e-05	-3.045e-05	-4.294e-05
B to Z	-1.598e-05	-1.887e-05	-3.574e-05	-4.886e-05	-7.186e-05
C to Z	-1.686e-07	-1.600e-08	1.594e-06	5.960e-07	2.466e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0012	0.0014	0.0019	0.0032	0.0039
B	0.0013	0.0014	0.0019	0.0030	0.0038

Pin Capacitance (pf) at 25C, 1.20V Typ process

C	0.0013	0.0013	0.0019	0.0028	0.0036

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0720	0.0782	0.0700	0.0659	0.0656	2.4772	1.3240	0.6273	0.4133	0.3125
A to Z↑	0.0438	0.0458	0.0421	0.0411	0.0402	3.0572	1.6308	0.8279	0.5474	0.4107
B to Z↓	0.0695	0.0760	0.0676	0.0633	0.0631	2.4796	1.3244	0.6277	0.4134	0.3126
B to Z↑	0.0414	0.0438	0.0398	0.0387	0.0375	3.0500	1.6284	0.8259	0.5454	0.4089
C to Z↓	0.0615	0.0679	0.0593	0.0554	0.0548	2.4801	1.3244	0.6278	0.4136	0.3126
C to Z↑	0.0381	0.0406	0.0364	0.0353	0.0337	3.0450	1.6260	0.8245	0.5447	0.4080

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1189	0.1289	0.1150	0.1077	0.1072	3.9940	2.1448	0.9847	0.6440	0.4862
A to Z↑	0.0688	0.0722	0.0657	0.0634	0.0626	4.4329	2.3897	1.1964	0.7908	0.5919
B to Z↓	0.1132	0.1237	0.1094	0.1019	0.1015	3.9980	2.1454	0.9850	0.6440	0.4863
B to Z↑	0.0649	0.0689	0.0620	0.0597	0.0581	4.4131	2.3803	1.1900	0.7866	0.5879
C to Z↓	0.0992	0.1095	0.0950	0.0881	0.0870	3.9987	2.1457	0.9852	0.6440	0.4863
C to Z↑	0.0591	0.0633	0.0565	0.0545	0.0518	4.3984	2.3747	1.1871	0.7850	0.5859

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1087	0.1179	0.1053	0.0988	0.0983	3.6933	1.9784	0.9127	0.5975	0.4511
A to Z↑	0.0642	0.0672	0.0612	0.0592	0.0584	4.1270	2.2185	1.1121	0.7350	0.5503
B to Z↓	0.1035	0.1131	0.1001	0.0934	0.0930	3.6960	1.9791	0.9130	0.5976	0.4512



Propagation Delay at 125C, 1.15V Worst process

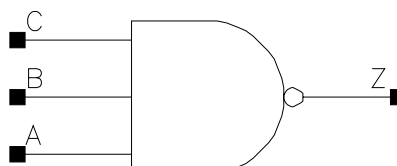
B to Z$\uparrow$	0.0605	0.0641	0.0578	0.0557	0.0543	4.1052	2.2101	1.1068	0.7311	0.5467
C to Z$\downarrow$	0.0905	0.1000	0.0869	0.0807	0.0797	3.6962	1.9796	0.9130	0.5975	0.4512
C to Z$\uparrow$	0.0550	0.0589	0.0526	0.0508	0.0483	4.0930	2.2047	1.1038	0.7293	0.5447

HS65_LS_OR3ABC

Cell Description

3 Input OR , A, B and C Inputs Inverted

Logical Symbol



Functions

A	B	C	Z
1	1	1	0
-	0	-	1
-	-	0	1
0	-	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X9	2.6	1.80	4.6800
X18	2.6	2.00	5.2000
X27	2.6	2.40	6.2400
X35	2.6	2.40	6.2400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X9	2.667e-07	4.163e-10
X18	5.808e-07	7.494e-10
X27	8.440e-07	1.082e-09
X35	1.194e-06	1.465e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X9	7.663e-05	3.664e-08
X18	1.760e-04	4.528e-08
X27	2.582e-04	5.618e-08
X35	3.758e-04	6.309e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X9	6.706e-05	3.322e-08
X18	1.535e-04	3.973e-08
X27	2.249e-04	4.838e-08
X35	3.272e-04	5.327e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X9	X18	X27	X35
A to Z	1.136e-02	1.928e-02	2.641e-02	3.430e-02
B to Z	1.104e-02	1.878e-02	2.566e-02	3.326e-02
C to Z	1.071e-02	1.813e-02	2.477e-02	3.212e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X9	X18	X27	X35
A to Z	-8.760e-07	-2.130e-06	-3.880e-06	-3.260e-06
B to Z	-1.878e-06	-3.740e-06	-6.750e-06	-5.740e-06
C to Z	-1.878e-06	-3.740e-06	-5.620e-06	-7.230e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X9	X18	X27	X35
A	0.0010	0.0014	0.0019	0.0023
B	0.0011	0.0014	0.0019	0.0023
C	0.0011	0.0014	0.0018	0.0023

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X9	X18	X27	X35	X9	X18	X27	X35
A to Z↓	0.0939	0.0872	0.0764	0.0740	1.2409	0.5951	0.3949	0.2916
A to Z↑	0.0691	0.0651	0.0585	0.0575	1.6185	0.8163	0.5449	0.4070
B to Z↓	0.0927	0.0861	0.0751	0.0727	1.2406	0.5952	0.3949	0.2917
B to Z↑	0.0668	0.0631	0.0565	0.0554	1.6191	0.8161	0.5451	0.4069
C to Z↓	0.0895	0.0824	0.0715	0.0693	1.2405	0.5956	0.3949	0.2917
C to Z↑	0.0643	0.0605	0.0540	0.0529	1.6189	0.8157	0.5451	0.4067

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X9	X18	X27	X35	X9	X18	X27	X35
A to Z↓	0.1606	0.1491	0.1300	0.1248	2.0042	0.9241	0.6148	0.4450
A to Z↑	0.1070	0.1006	0.0908	0.0887	2.3689	1.1811	0.7892	0.5839
B to Z↓	0.1578	0.1466	0.1273	0.1221	2.0046	0.9239	0.6149	0.4449
B to Z↑	0.1033	0.0977	0.0877	0.0855	2.3680	1.1807	0.7891	0.5836
C to Z↓	0.1513	0.1393	0.1207	0.1158	2.0046	0.9239	0.6149	0.4450
C to Z↑	0.0997	0.0940	0.0842	0.0820	2.3700	1.1806	0.7889	0.5834

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X9	X18	X27	X35	X9	X18	X27	X35
A to Z↓	0.1466	0.1358	0.1186	0.1140	1.8471	0.8572	0.5704	0.4140
A to Z↑	0.0992	0.0932	0.0842	0.0823	2.1997	1.0980	0.7333	0.5428
B to Z↓	0.1440	0.1335	0.1162	0.1115	1.8477	0.8571	0.5703	0.4139
B to Z↑	0.0958	0.0905	0.0813	0.0793	2.1998	1.0971	0.7332	0.5427
C to Z↓	0.1382	0.1270	0.1102	0.1059	1.8481	0.8574	0.5703	0.4139



Propagation Delay at 125C, 1.15V Worst process

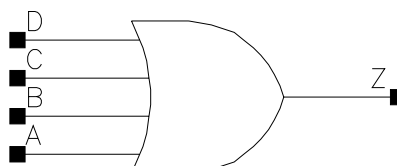
C to Z[↑]	0.0924	0.0870	0.0780	0.0759	2.1983	1.0971	0.7327	0.5427

HS65_LS_OR4

Cell Description

4 Input OR

Logical Symbol



Functions

A	B	C	D	Z
0	0	0	0	0
1	-	-	-	1
-	-	1	-	1
-	-	-	1	1
-	1	-	-	1

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	2.00	5.2000
X7	2.6	2.20	5.7200
X14	2.6	2.80	7.2800
X21	2.6	4.40	11.4400
X29	2.6	5.00	13.0000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.715e-07	3.560e-10
X7	2.574e-07	5.829e-10
X14	4.634e-07	1.157e-09
X21	7.707e-07	1.740e-09
X29	9.883e-07	2.282e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.396e-05	3.887e-08
X7	7.135e-05	4.521e-08
X14	1.343e-04	6.259e-08
X21	2.243e-04	8.815e-08
X29	2.913e-04	1.050e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.898e-05	3.544e-08
X7	6.276e-05	4.044e-08
X14	1.176e-04	5.423e-08
X21	1.967e-04	7.591e-08
X29	2.551e-04	8.915e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X7	X14	X21	X29
A to Z	7.016e-03	1.079e-02	2.006e-02	3.030e-02	3.947e-02
B to Z	6.508e-03	1.006e-02	1.865e-02	2.724e-02	3.577e-02
C to Z	6.885e-03	1.014e-02	1.726e-02	2.628e-02	3.385e-02
D to Z	6.375e-03	9.362e-03	1.580e-02	2.334e-02	2.999e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X7	X14	X21	X29
A to Z	-4.606e-06	-7.621e-06	-1.409e-05	-2.482e-05	-2.829e-05
B to Z	-1.330e-07	-1.000e-08	-1.403e-06	-2.010e-06	-1.530e-06
C to Z	-4.606e-06	-5.595e-06	-1.107e-05	-2.068e-05	-2.702e-05
D to Z	1.002e-06	8.700e-07	1.609e-06	2.350e-06	5.090e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X7	X14	X21	X29

Pin Capacitance (pf) at 25C, 1.20V Typ process

A	0.0011	0.0014	0.0021	0.0034	0.0039
B	0.0012	0.0014	0.0021	0.0032	0.0040
C	0.0011	0.0012	0.0021	0.0032	0.0039
D	0.0011	0.0014	0.0021	0.0032	0.0040

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X7	X14	X21	X29	X4	X7	X14	X21	X29
A to Z↓	0.0637	0.0598	0.0579	0.0577	0.0577	4.0658	2.0324	1.0873	0.6886	0.5259
A to Z↑	0.0392	0.0366	0.0346	0.0344	0.0353	3.0308	1.6314	0.8154	0.5540	0.4151
B to Z↓	0.0609	0.0570	0.0549	0.0529	0.0531	4.0664	2.0338	1.0878	0.6888	0.5259
B to Z↑	0.0367	0.0347	0.0328	0.0315	0.0320	3.0235	1.6299	0.8155	0.5529	0.4143
C to Z↓	0.0636	0.0580	0.0537	0.0536	0.0525	4.0668	2.0298	1.0864	0.6873	0.5244
C to Z↑	0.0406	0.0369	0.0341	0.0330	0.0331	3.0405	1.6148	0.8219	0.5556	0.4158
D to Z↓	0.0609	0.0551	0.0504	0.0486	0.0477	4.0673	2.0304	1.0869	0.6873	0.5244
D to Z↑	0.0380	0.0344	0.0312	0.0299	0.0298	3.0326	1.6126	0.8195	0.5542	0.4146

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X7	X14	X21	X29	X4	X7	X14	X21	X29
A to Z↓	0.1031	0.0967	0.0941	0.0927	0.0927	7.0994	3.4714	1.8510	1.1318	0.8660
A to Z↑	0.0612	0.0574	0.0537	0.0533	0.0548	4.3573	2.3477	1.1666	0.7904	0.5943
B to Z↓	0.0978	0.0914	0.0886	0.0842	0.0847	7.1003	3.4726	1.8514	1.1325	0.8658
B to Z↑	0.0568	0.0541	0.0509	0.0488	0.0493	4.3438	2.3451	1.1650	0.7879	0.5921
C to Z↓	0.1024	0.0936	0.0865	0.0853	0.0836	7.1066	3.4711	1.8501	1.1306	0.8641
C to Z↑	0.0633	0.0580	0.0537	0.0513	0.0512	4.3694	2.3319	1.1755	0.7958	0.5953
D to Z↓	0.0973	0.0882	0.0808	0.0766	0.0753	7.1090	3.4715	1.8508	1.1307	0.8642
D to Z↑	0.0588	0.0537	0.0487	0.0462	0.0459	4.3613	2.3239	1.1706	0.7927	0.5930

Propagation Delay at 125C, 1.15V Worst process

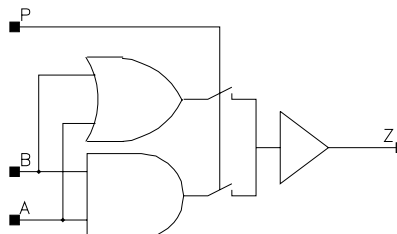
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X7	X14	X21	X29	X4	X7	X14	X21	X29
A to Z↓	0.0944	0.0885	0.0861	0.0850	0.0851	6.4583	3.1619	1.6862	1.0365	0.7925
A to Z↑	0.0572	0.0536	0.0502	0.0499	0.0512	4.0577	2.1828	1.0850	0.7357	0.5529
B to Z↓	0.0896	0.0837	0.0811	0.0772	0.0776	6.4594	3.1621	1.6871	1.0368	0.7925
B to Z↑	0.0530	0.0505	0.0475	0.0456	0.0461	4.0473	2.1802	1.0837	0.7333	0.5509
C to Z↓	0.0941	0.0859	0.0795	0.0787	0.0771	6.4655	3.1604	1.6856	1.0351	0.7910
C to Z↑	0.0590	0.0540	0.0500	0.0479	0.0479	4.0715	2.1671	1.0938	0.7405	0.5538
D to Z↓	0.0895	0.0811	0.0743	0.0706	0.0694	6.4658	3.1616	1.6862	1.0354	0.7909
D to Z↑	0.0548	0.0500	0.0453	0.0431	0.0429	4.0643	2.1601	1.0898	0.7379	0.5517

HS65_LS_PAO2

Cell Description

2 bit programmable and/or (non-inverting majority decoder)

Logical Symbol



Functions

A	B	P	Z
A	-	A	A
A	A	-	A
-	B	B	B

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.80	4.6800
X9	2.6	1.80	4.6800
X18	2.6	2.20	5.7200
X27	2.6	3.80	9.8800
X35	2.6	4.00	10.4000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.698e-07	3.830e-10
X9	2.815e-07	7.827e-10
X18	5.920e-07	1.515e-09
X27	9.044e-07	2.315e-09
X35	1.209e-06	3.048e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.334e-05	3.702e-08
X9	7.768e-05	4.445e-08
X18	1.741e-04	6.215e-08
X27	2.630e-04	9.257e-08
X35	3.580e-04	1.083e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.833e-05	3.351e-08
X9	6.803e-05	3.875e-08
X18	1.520e-04	5.199e-08
X27	2.298e-04	7.728e-08
X35	3.125e-04	8.861e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	7.011e-03	1.047e-02	1.861e-02	2.826e-02	3.752e-02
B to Z	6.821e-03	1.012e-02	1.779e-02	2.678e-02	3.559e-02
P to Z	6.032e-03	9.056e-03	1.610e-02	2.479e-02	3.322e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-7.730e-06	-1.441e-05	-2.857e-05	-3.831e-05	-5.353e-05
B to Z	-5.370e-06	-7.987e-06	-1.586e-05	-2.495e-05	-3.182e-05
P to Z	-1.084e-06	-1.269e-06	-2.397e-06	-3.589e-06	-5.961e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0019	0.0026	0.0041	0.0064	0.0082
B	0.0019	0.0026	0.0043	0.0063	0.0080

Pin Capacitance (pf) at 25C, 1.20V Typ process

P	0.0010	0.0014	0.0022	0.0034	0.0043

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0756	0.0630	0.0587	0.0591	0.0580	2.5492	1.2555	0.6112	0.4152	0.3092
A to Z↑	0.0567	0.0482	0.0431	0.0440	0.0423	3.3081	1.6647	0.8310	0.5626	0.4196
B to Z↓	0.0738	0.0616	0.0559	0.0547	0.0551	2.5643	1.2639	0.6147	0.4184	0.3125
B to Z↑	0.0559	0.0478	0.0412	0.0411	0.0408	3.3085	1.6673	0.8312	0.5640	0.4206
P to Z↓	0.0650	0.0547	0.0510	0.0507	0.0514	2.5658	1.2695	0.6171	0.4215	0.3148
P to Z↑	0.0504	0.0435	0.0387	0.0389	0.0387	3.3059	1.6669	0.8318	0.5641	0.4210

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1200	0.1004	0.0935	0.0928	0.0918	4.1246	2.0078	0.9447	0.6388	0.4741
A to Z↑	0.0944	0.0808	0.0704	0.0712	0.0686	4.8508	2.4381	1.1988	0.8090	0.6021
B to Z↓	0.1167	0.0978	0.0884	0.0860	0.0865	4.1488	2.0242	0.9526	0.6458	0.4808
B to Z↑	0.0928	0.0798	0.0670	0.0670	0.0657	4.8537	2.4427	1.1996	0.8105	0.6037
P to Z↓	0.1030	0.0871	0.0804	0.0797	0.0806	4.1570	2.0340	0.9576	0.6506	0.4844
P to Z↑	0.0831	0.0724	0.0626	0.0630	0.0621	4.8418	2.4390	1.1997	0.8111	0.6039

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1106	0.0924	0.0861	0.0857	0.0846	3.8147	1.8550	0.8774	0.5935	0.4406
A to Z↑	0.0867	0.0741	0.0648	0.0656	0.0631	4.5135	2.2636	1.1144	0.7523	0.5603
B to Z↓	0.1075	0.0900	0.0814	0.0794	0.0798	3.8377	1.8693	0.8842	0.5998	0.4468



Propagation Delay at 125C, 1.15V Worst process

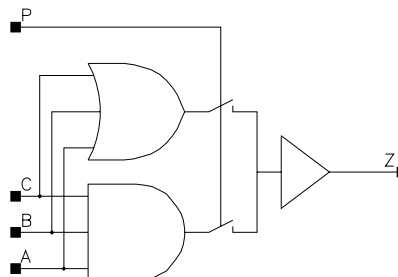
B to Z$\uparrow$	0.0853	0.0732	0.0617	0.0618	0.0607	4.5182	2.2684	1.1153	0.7542	0.5616
P to Z$\downarrow$	0.0948	0.0802	0.0741	0.0736	0.0743	3.8439	1.8787	0.8887	0.6040	0.4500
P to Z$\uparrow$	0.0764	0.0664	0.0577	0.0581	0.0573	4.5083	2.2662	1.1159	0.7542	0.5619

HS65_LS_PAO3

Cell Description

3 bit programmable and/or

Logical Symbol



Functions

A	B	C	P	Z
A	-	-	A	A
A	A	A	-	A
-	B	-	B	B
-	-	C	C	C

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.80	4.6800
X9	2.6	2.40	6.2400
X18	2.6	2.60	6.7600
X27	2.6	4.60	11.9600
X35	2.6	5.20	13.5200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	1.772e-07	4.580e-10
X9	2.887e-07	7.744e-10
X18	5.833e-07	1.532e-09
X27	8.797e-07	2.323e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X35	1.198e-06	3.073e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	4.502e-05	3.792e-08
X9	7.935e-05	5.008e-08
X18	1.686e-04	6.591e-08
X27	2.527e-04	1.002e-07
X35	3.498e-04	1.199e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	3.977e-05	3.418e-08
X9	6.949e-05	4.412e-08
X18	1.472e-04	5.555e-08
X27	2.208e-04	8.458e-08
X35	3.053e-04	9.966e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	8.258e-03	1.129e-02	2.010e-02	3.125e-02	4.172e-02
B to Z	7.866e-03	1.070e-02	1.900e-02	2.959e-02	3.936e-02
C to Z	7.536e-03	1.030e-02	1.810e-02	2.838e-02	3.747e-02
P to Z	6.766e-03	9.178e-03	1.631e-02	2.550e-02	3.415e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-2.124e-05	-2.991e-05	-5.754e-05	-8.659e-05	-1.227e-04
B to Z	-6.206e-06	-8.560e-06	-1.501e-05	-2.370e-05	-3.197e-05
C to Z	-6.080e-06	-7.387e-06	-1.173e-05	-1.614e-05	-2.499e-05
P to Z	1.447e-07	3.815e-07	1.495e-06	1.609e-07	9.165e-07

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0014	0.0024	0.0036	0.0062	0.0075
B	0.0015	0.0023	0.0037	0.0058	0.0076
C	0.0015	0.0025	0.0041	0.0066	0.0082
P	0.0009	0.0013	0.0022	0.0033	0.0041

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0964	0.0814	0.0758	0.0771	0.0770	2.5585	1.2760	0.6324	0.4317	0.3217
A to Z↑	0.0713	0.0612	0.0540	0.0554	0.0545	3.1993	1.6809	0.8418	0.5717	0.4266
B to Z↓	0.0939	0.0790	0.0738	0.0765	0.0745	2.5591	1.2767	0.6327	0.4320	0.3218
B to Z↑	0.0696	0.0596	0.0525	0.0555	0.0530	3.1956	1.6801	0.8408	0.5710	0.4261
C to Z↓	0.0887	0.0742	0.0684	0.0698	0.0689	2.5721	1.2819	0.6352	0.4338	0.3232
C to Z↑	0.0677	0.0576	0.0502	0.0518	0.0504	3.2013	1.6819	0.8411	0.5718	0.4265
P to Z↓	0.0608	0.0505	0.0476	0.0487	0.0488	2.4505	1.2374	0.6141	0.4193	0.3122
P to Z↑	0.0519	0.0443	0.0403	0.0416	0.0413	3.1517	1.6637	0.8339	0.5666	0.4229

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1576	0.1322	0.1233	0.1247	0.1248	4.1258	2.0246	0.9857	0.6690	0.4967
A to Z↑	0.1240	0.1059	0.0914	0.0940	0.0915	4.7053	2.4652	1.2197	0.8266	0.6155
B to Z↓	0.1522	0.1273	0.1191	0.1218	0.1196	4.1250	2.0255	0.9862	0.6693	0.4968
B to Z↑	0.1201	0.1024	0.0885	0.0927	0.0885	4.6953	2.4615	1.2178	0.8255	0.6145
C to Z↓	0.1430	0.1191	0.1095	0.1114	0.1097	4.1487	2.0346	0.9909	0.6729	0.4996
C to Z↑	0.1159	0.0986	0.0842	0.0871	0.0837	4.7078	2.4642	1.2188	0.8266	0.6153
P to Z↓	0.0965	0.0798	0.0746	0.0761	0.0759	3.9356	1.9548	0.9521	0.6460	0.4789
P to Z↑	0.0850	0.0728	0.0648	0.0672	0.0659	4.6033	2.4282	1.2034	0.8158	0.6076



Propagation Delay at 125C, 1.15V Worst process

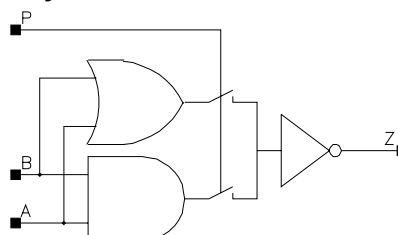
Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1446	0.1215	0.1132	0.1147	0.1147	3.8157	1.8737	0.9145	0.6210	0.4613
A to Z↑	0.1131	0.0966	0.0836	0.0860	0.0838	4.3747	2.2890	1.1336	0.7687	0.5724
B to Z↓	0.1396	0.1169	0.1093	0.1121	0.1100	3.8157	1.8749	0.9150	0.6214	0.4615
B to Z↑	0.1096	0.0935	0.0809	0.0849	0.0811	4.3667	2.2855	1.1322	0.7675	0.5713
C to Z↓	0.1311	0.1093	0.1005	0.1023	0.1008	3.8378	1.8832	0.9193	0.6246	0.4640
C to Z↑	0.1059	0.0900	0.0771	0.0798	0.0768	4.3779	2.2895	1.1333	0.7686	0.5722
P to Z↓	0.0888	0.0736	0.0688	0.0703	0.0702	3.6399	1.8095	0.8836	0.6001	0.4451
P to Z↑	0.0782	0.0670	0.0598	0.0620	0.0609	4.2824	2.2549	1.1191	0.7588	0.5654

HS65_LS_PAOI2

Cell Description

2 bit programmable nand/nor (inverting majority decoder)

Logical Symbol



Functions

A	B	P	Z
A	-	A	!A
A	A	-	!A
-	B	B	!B

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X1	2.6	1.40	3.6400
X3	2.6	1.60	4.1600
X4	2.6	1.60	4.1600
X6	2.6	1.60	4.1600
X8	2.6	3.00	7.8000
X11	2.6	3.00	7.8000
X17	2.6	4.20	10.9200
X22	2.6	5.80	15.0800
X33	2.6	8.40	21.8400
X44	2.6	11.00	28.6000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X1	8.435e-08	2.165e-10



Average Leakage Power (mW) at 25C, 1.20V Typ process

X3	1.251e-07	3.997e-10
X4	1.803e-07	5.496e-10
X6	2.401e-07	7.328e-10
X8	3.767e-07	1.116e-09
X11	4.912e-07	1.449e-09
X17	7.436e-07	2.098e-09
X22	9.736e-07	2.848e-09
X33	1.479e-06	4.230e-09
X44	1.986e-06	5.629e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X1	2.040e-05	2.901e-08
X3	3.322e-05	3.406e-08
X4	5.026e-05	3.751e-08
X6	6.849e-05	4.076e-08
X8	1.053e-04	6.082e-08
X11	1.415e-04	6.740e-08
X17	2.150e-04	9.252e-08
X22	2.793e-04	1.223e-07
X33	4.264e-04	1.740e-07
X44	5.742e-04	2.257e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X1	1.820e-05	2.691e-08
X3	2.932e-05	3.090e-08
X4	4.415e-05	3.336e-08
X6	6.003e-05	3.561e-08
X8	9.256e-05	5.307e-08
X11	1.240e-04	5.773e-08
X17	1.884e-04	7.827e-08
X22	2.449e-04	1.033e-07
X33	3.738e-04	1.459e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

X44	5.034e-04	1.885e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X1	X3	X4	X6	X8
A to Z	2.982e-03	4.670e-03	6.329e-03	8.345e-03	1.264e-02
B to Z	2.953e-03	4.417e-03	5.884e-03	7.530e-03	1.119e-02
P to Z	1.987e-03	3.293e-03	4.416e-03	5.682e-03	9.162e-03
Pin Cycle (vdd)	X11	X17	X22	X33	X44
A to Z	1.639e-02	2.514e-02	3.264e-02	4.821e-02	6.364e-02
B to Z	1.431e-02	2.236e-02	2.840e-02	4.191e-02	5.536e-02
P to Z	1.168e-02	1.801e-02	2.342e-02	3.436e-02	4.536e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X1	X3	X4	X6	X8
A to Z	-7.726e-06	-1.209e-05	-1.780e-05	-2.185e-05	-3.313e-05
B to Z	-5.647e-06	-7.378e-06	-9.477e-06	-1.082e-05	-1.616e-05
P to Z	-5.230e-07	1.070e-06	9.995e-07	2.165e-06	1.795e-06
Pin Cycle (vdds)	X11	X17	X22	X33	X44
A to Z	-4.333e-05	-6.624e-05	-8.441e-05	-1.193e-04	-1.514e-04
B to Z	-1.678e-05	-2.714e-05	-4.635e-05	-7.402e-05	-9.562e-05
P to Z	3.715e-06	4.415e-06	4.885e-06	-2.200e-06	-9.290e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X1	X3	X4	X6	X8
A	0.0013	0.0023	0.0031	0.0040	0.0062
B	0.0016	0.0023	0.0030	0.0038	0.0056
P	0.0009	0.0012	0.0016	0.0019	0.0029
Pin	X11	X17	X22	X33	X44
A	0.0081	0.0119	0.0138	0.0206	0.0276
B	0.0071	0.0114	0.0134	0.0199	0.0268
P	0.0036	0.0058	0.0068	0.0101	0.0136

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X6	X8	X1	X3	X4	X6	X8
A to Z↓	0.0244	0.0233	0.0218	0.0212	0.0232	6.9568	3.9212	2.6133	1.9549	1.2839
A to Z↑	0.0344	0.0317	0.0301	0.0303	0.0321	10.9668	6.1068	4.1762	3.2274	2.0913
B to Z↓	0.0254	0.0233	0.0214	0.0199	0.0193	6.9171	3.9733	2.6569	1.9991	1.2980
B to Z↑	0.0346	0.0309	0.0287	0.0278	0.0266	11.0281	6.1508	4.2185	3.2699	2.1146
P to Z↓	0.0189	0.0184	0.0169	0.0160	0.0165	6.9657	3.9393	2.6574	1.9927	1.3048
P to Z↑	0.0248	0.0240	0.0224	0.0217	0.0224	10.9892	6.1472	4.2234	3.2742	2.1233
	X11	X17	X22	X33	X44	X11	X17	X22	X33	X44
A to Z↓	0.0205	0.0209	0.0220	0.0227	0.0237	0.9655	0.6501	0.5256	0.3535	0.2688
A to Z↑	0.0296	0.0303	0.0313	0.0320	0.0331	1.6083	1.0811	0.8505	0.5712	0.4333
B to Z↓	0.0188	0.0197	0.0209	0.0219	0.0232	0.9830	0.6625	0.5284	0.3548	0.2691
B to Z↑	0.0263	0.0277	0.0283	0.0292	0.0305	1.6336	1.0957	0.8519	0.5712	0.4315
P to Z↓	0.0161	0.0161	0.0167	0.0166	0.0167	0.9890	0.6592	0.5264	0.3535	0.2684
P to Z↑	0.0222	0.0224	0.0229	0.0227	0.0227	1.6408	1.0939	0.8554	0.5744	0.4353

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X6	X8	X1	X3	X4	X6	X8
A to Z↓	0.0404	0.0386	0.0356	0.0348	0.0369	11.8048	6.7496	4.4201	3.2598	2.1454
A to Z↑	0.0521	0.0477	0.0455	0.0461	0.0473	16.5000	9.2394	6.3370	4.8877	3.1552
B to Z↓	0.0425	0.0390	0.0354	0.0331	0.0321	11.7635	6.8241	4.4812	3.3198	2.1498
B to Z↑	0.0515	0.0460	0.0429	0.0419	0.0398	16.5697	9.2962	6.3855	4.9317	3.1692
P to Z↓	0.0313	0.0306	0.0280	0.0263	0.0273	11.7455	6.7105	4.4281	3.2921	2.1555
P to Z↑	0.0361	0.0353	0.0330	0.0321	0.0331	16.4549	9.2437	6.3562	4.9254	3.1758
	X11	X17	X22	X33	X44	X11	X17	X22	X33	X44
A to Z↓	0.0336	0.0340	0.0353	0.0358	0.0368	1.5950	1.0650	0.8497	0.5671	0.4282
A to Z↑	0.0450	0.0457	0.0468	0.0473	0.0482	2.4281	1.6257	1.2638	0.8454	0.6386

Propagation Delay at 125C, 1.10V Worst process

B to Z↓	0.0311	0.0324	0.0335	0.0343	0.0355	1.6018	1.0801	0.8542	0.5685	0.4284
B to Z↑	0.0395	0.0414	0.0415	0.0422	0.0433	2.4444	1.6402	1.2632	0.8442	0.6356
P to Z↓	0.0265	0.0264	0.0272	0.0268	0.0269	1.6072	1.0685	0.8457	0.5639	0.4255
P to Z↑	0.0327	0.0330	0.0336	0.0331	0.0331	2.4501	1.6330	1.2676	0.8478	0.6400

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X3	X4	X6	X8	X1	X3	X4	X6	X8
A to Z↓	0.0376	0.0359	0.0332	0.0323	0.0345	10.7985	6.1419	4.0243	2.9741	1.9573
A to Z↑	0.0486	0.0445	0.0425	0.0429	0.0443	15.2472	8.5076	5.8264	4.4953	2.9046
B to Z↓	0.0396	0.0362	0.0330	0.0309	0.0299	10.7585	6.2120	4.0820	3.0295	1.9637
B to Z↑	0.0480	0.0430	0.0401	0.0391	0.0372	15.3133	8.5640	5.8747	4.5376	2.9199
P to Z↓	0.0292	0.0286	0.0261	0.0246	0.0256	10.7463	6.1130	4.0409	3.0064	1.9693
P to Z↑	0.0339	0.0331	0.0309	0.0300	0.0310	15.2133	8.5197	5.8519	4.5337	2.9263
	X11	X17	X22	X33	X44	X11	X17	X22	X33	X44
A to Z↓	0.0312	0.0316	0.0329	0.0335	0.0345	1.4569	0.9741	0.7791	0.5204	0.3934
A to Z↑	0.0420	0.0427	0.0437	0.0443	0.0452	2.2333	1.4960	1.1652	0.7802	0.5891
B to Z↓	0.0290	0.0302	0.0314	0.0322	0.0335	1.4649	0.9883	0.7829	0.5217	0.3934
B to Z↑	0.0369	0.0387	0.0389	0.0396	0.0408	2.2514	1.5108	1.1649	0.7788	0.5866
P to Z↓	0.0248	0.0248	0.0255	0.0252	0.0252	1.4703	0.9786	0.7757	0.5177	0.3909
P to Z↑	0.0307	0.0310	0.0315	0.0311	0.0311	2.2571	1.5044	1.1691	0.7824	0.5908

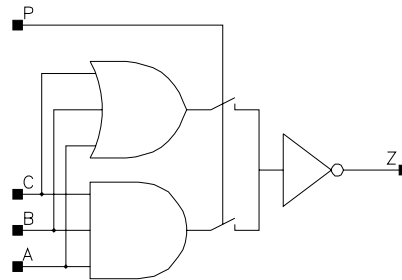


HS65_LS_PAOI3

Cell Description

3 bit programmable nand/nor

Logical Symbol



Functions

A	B	C	P	Z
A	-	-	A	!A
A	A	A	-	!A
-	B	-	B	!B
-	-	C	C	!C

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X1	2.6	1.40	3.6400
X2	2.6	2.00	5.2000
X3	2.6	2.00	5.2000
X4	2.6	2.00	5.2000
X6	2.6	4.20	10.9200
X8	2.6	4.20	10.9200
X12	2.6	6.00	15.6000
X16	2.6	7.80	20.2800
X24	2.6	11.60	30.1600
X33	2.6	15.20	39.5200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X1	9.128e-08	2.748e-10
X2	1.246e-07	4.080e-10
X3	1.779e-07	5.662e-10
X4	2.302e-07	7.578e-10
X6	3.577e-07	1.124e-09
X8	4.584e-07	1.457e-09
X12	7.101e-07	2.157e-09
X16	9.477e-07	2.856e-09
X24	1.438e-06	4.224e-09
X33	1.928e-06	5.629e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X1	2.164e-05	2.970e-08
X2	3.127e-05	3.778e-08
X3	4.762e-05	4.123e-08
X4	6.333e-05	4.453e-08
X6	9.624e-05	7.224e-08
X8	1.249e-04	8.013e-08
X12	1.957e-04	1.100e-07
X16	2.614e-04	1.414e-07
X24	3.987e-04	2.045e-07
X33	5.358e-04	2.657e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X1	1.926e-05	2.738e-08
X2	2.761e-05	3.444e-08
X3	4.184e-05	3.688e-08
X4	5.551e-05	3.920e-08
X6	8.457e-05	6.397e-08
X8	1.095e-04	6.983e-08

Average Leakage Power (mW) at 125C, 1.25V Best process

X12	1.715e-04	9.499e-08
X16	2.291e-04	1.215e-07
X24	3.495e-04	1.751e-07
X33	4.696e-04	2.268e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X1	X2	X3	X4	X6
A to Z	4.177e-03	5.562e-03	7.308e-03	9.952e-03	1.571e-02
B to Z	3.768e-03	4.983e-03	6.460e-03	8.926e-03	1.381e-02
C to Z	3.623e-03	4.667e-03	5.899e-03	8.055e-03	1.145e-02
P to Z	2.504e-03	3.599e-03	4.534e-03	6.490e-03	9.745e-03
Pin Cycle (vdd)	X8	X12	X16	X24	X33
A to Z	2.079e-02	3.005e-02	4.052e-02	6.058e-02	8.019e-02
B to Z	1.831e-02	2.648e-02	3.571e-02	5.332e-02	7.050e-02
C to Z	1.567e-02	2.189e-02	3.029e-02	4.501e-02	5.947e-02
P to Z	1.359e-02	1.916e-02	2.615e-02	3.888e-02	5.134e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X1	X2	X3	X4	X6
A to Z	-1.949e-05	-2.828e-05	-3.827e-05	-5.315e-05	-6.557e-05
B to Z	-4.101e-06	-6.045e-06	-9.692e-06	-1.027e-05	-3.006e-05
C to Z	-4.353e-06	-5.485e-06	-6.923e-06	-6.352e-06	-3.248e-05
P to Z	1.130e-06	1.145e-06	3.996e-06	4.327e-06	9.105e-06
Pin Cycle (vdds)	X8	X12	X16	X24	X33
A to Z	-9.708e-05	-1.417e-04	-2.003e-04	-2.859e-04	-3.865e-04
B to Z	-3.854e-05	-6.682e-05	-8.111e-05	-1.261e-04	-1.672e-04
C to Z	-2.127e-05	-3.972e-05	-4.333e-05	-6.603e-05	-9.323e-05
P to Z	1.239e-05	1.193e-05	2.062e-05	2.434e-05	2.616e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X1	X2	X3	X4	X6
A	0.0014	0.0025	0.0028	0.0035	0.0059
B	0.0014	0.0024	0.0028	0.0037	0.0053



Pin Capacitance (pf) at 25C, 1.20V Typ process

C	0.0016	0.0024	0.0029	0.0037	0.0055
P	0.0009	0.0013	0.0016	0.0019	0.0030
Pin	X8	X12	X16	X24	X33
A	0.0074	0.0108	0.0144	0.0215	0.0287
B	0.0068	0.0101	0.0134	0.0200	0.0266
C	0.0069	0.0104	0.0137	0.0203	0.0270
P	0.0039	0.0056	0.0077	0.0114	0.0151

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X3	X4	X6	X1	X2	X3	X4	X6
A to Z↓	0.0330	0.0316	0.0275	0.0280	0.0300	8.1290	5.3478	3.4846	2.6080	1.7846
A to Z↑	0.0485	0.0434	0.0399	0.0413	0.0438	12.8262	8.1028	5.6223	4.3283	2.8704
B to Z↓	0.0314	0.0300	0.0265	0.0270	0.0274	8.0941	5.3725	3.5058	2.6177	1.7774
B to Z↑	0.0465	0.0412	0.0378	0.0395	0.0404	12.8464	8.1226	5.6310	4.3383	2.8735
C to Z↓	0.0318	0.0293	0.0252	0.0251	0.0254	8.1416	5.3407	3.4947	2.6048	1.7770
C to Z↑	0.0452	0.0379	0.0338	0.0347	0.0338	12.8778	8.1136	5.6157	4.3214	2.8657
P to Z↓	0.0200	0.0197	0.0173	0.0180	0.0174	6.3059	4.1902	2.7793	2.1170	1.4117
P to Z↑	0.0242	0.0227	0.0206	0.0218	0.0209	8.6581	5.4649	3.7986	2.9287	1.9240
	X8	X12	X16	X24	X33	X8	X12	X16	X24	X33
A to Z↓	0.0293	0.0282	0.0285	0.0285	0.0285	1.3740	0.9132	0.6840	0.4569	0.3453
A to Z↑	0.0431	0.0421	0.0424	0.0426	0.0426	2.2244	1.4916	1.1208	0.7505	0.5657
B to Z↓	0.0277	0.0268	0.0270	0.0270	0.0270	1.3667	0.9095	0.6818	0.4564	0.3452
B to Z↑	0.0406	0.0397	0.0401	0.0401	0.0400	2.2258	1.4943	1.1226	0.7526	0.5677
C to Z↓	0.0252	0.0235	0.0243	0.0242	0.0243	1.3641	0.9050	0.6785	0.4529	0.3414
C to Z↑	0.0341	0.0319	0.0334	0.0332	0.0333	2.2151	1.4888	1.1191	0.7485	0.5637
P to Z↓	0.0181	0.0169	0.0174	0.0173	0.0172	1.0837	0.7177	0.5408	0.3624	0.2744
P to Z↑	0.0221	0.0209	0.0215	0.0214	0.0213	1.4846	0.9969	0.7500	0.5029	0.3798

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X3	X4	X6	X1	X2	X3	X4	X6
A to Z↓	0.0578	0.0551	0.0472	0.0476	0.0509	14.2825	9.4637	6.0232	4.4596	3.0590
A to Z↑	0.0755	0.0673	0.0621	0.0645	0.0677	19.6220	12.4100	8.6025	6.6259	4.3712
B to Z↓	0.0544	0.0520	0.0451	0.0459	0.0469	14.2017	9.4992	6.0558	4.4791	3.0388
B to Z↑	0.0712	0.0628	0.0579	0.0609	0.0619	19.6244	12.4309	8.6162	6.6417	4.3734
C to Z↓	0.0549	0.0506	0.0428	0.0426	0.0424	14.2584	9.4341	6.0408	4.4627	3.0457
C to Z↑	0.0679	0.0570	0.0508	0.0525	0.0503	19.6645	12.4033	8.5967	6.6173	4.3621
P to Z↓	0.0329	0.0326	0.0285	0.0294	0.0285	10.5002	7.0458	4.6149	3.4776	2.3226
P to Z↑	0.0353	0.0332	0.0302	0.0319	0.0304	12.8653	8.1148	5.6618	4.3665	2.8501
	X8	X12	X16	X24	X33	X8	X12	X16	X24	X33
A to Z↓	0.0505	0.0480	0.0484	0.0480	0.0478	2.3486	1.5427	1.1497	0.7627	0.5729
A to Z↑	0.0676	0.0658	0.0662	0.0662	0.0661	3.3958	2.2667	1.7002	1.1342	0.8533
B to Z↓	0.0473	0.0453	0.0456	0.0453	0.0451	2.3237	1.5290	1.1407	0.7581	0.5703
B to Z↑	0.0626	0.0609	0.0615	0.0613	0.0611	3.3915	2.2648	1.6993	1.1355	0.8541
C to Z↓	0.0428	0.0398	0.0409	0.0404	0.0403	2.3193	1.5244	1.1358	0.7531	0.5651
C to Z↑	0.0517	0.0481	0.0503	0.0499	0.0497	3.3767	2.2578	1.6941	1.1299	0.8489
P to Z↓	0.0299	0.0276	0.0285	0.0281	0.0280	1.7705	1.1594	0.8712	0.5799	0.4369
P to Z↑	0.0325	0.0305	0.0315	0.0312	0.0310	2.2083	1.4739	1.1072	0.7399	0.5573

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X1	X2	X3	X4	X6	X1	X2	X3	X4	X6
A to Z↓	0.0533	0.0507	0.0435	0.0439	0.0470	12.9972	8.5773	5.4700	4.0530	2.7831
A to Z↑	0.0702	0.0626	0.0577	0.0598	0.0630	18.0619	11.4021	7.8935	6.0763	4.0136
B to Z↓	0.0503	0.0479	0.0417	0.0423	0.0433	12.9193	8.6104	5.4980	4.0702	2.7631
B to Z↑	0.0662	0.0584	0.0538	0.0565	0.0575	18.0702	11.4294	7.9086	6.0876	4.0164
C to Z↓	0.0507	0.0467	0.0397	0.0395	0.0394	12.9802	8.5549	5.4849	4.0535	2.7690



Propagation Delay at 125C, 1.15V Worst process

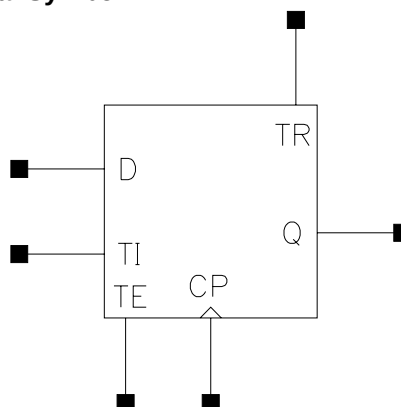
C to Z ↑	0.0631	0.0530	0.0473	0.0487	0.0468	18.1063	11.4023	7.8922	6.0693	4.0056
P to Z ↓	0.0308	0.0305	0.0267	0.0275	0.0267	9.6288	6.4358	4.2166	3.1796	2.1272
P to Z ↑	0.0331	0.0312	0.0284	0.0300	0.0286	11.8958	7.4950	5.2199	4.0238	2.6300
	X8	X12	X16	X24	X33	X8	X12	X16	X24	X33
A to Z ↓	0.0465	0.0443	0.0447	0.0444	0.0442	2.1354	1.4048	1.0478	0.6958	0.5232
A to Z ↑	0.0628	0.0611	0.0615	0.0616	0.0614	3.1162	2.0813	1.5619	1.0427	0.7841
B to Z ↓	0.0436	0.0419	0.0421	0.0419	0.0417	2.1132	1.3931	1.0402	0.6918	0.5209
B to Z ↑	0.0581	0.0566	0.0571	0.0570	0.0568	3.1135	2.0811	1.5621	1.0434	0.7854
C to Z ↓	0.0396	0.0369	0.0380	0.0375	0.0375	2.1096	1.3878	1.0352	0.6869	0.5159
C to Z ↑	0.0480	0.0447	0.0467	0.0464	0.0462	3.0994	2.0735	1.5569	1.0387	0.7804
P to Z ↓	0.0279	0.0258	0.0267	0.0264	0.0262	1.6210	1.0632	0.7993	0.5326	0.4016
P to Z ↑	0.0305	0.0286	0.0295	0.0293	0.0291	2.0359	1.3598	1.0217	0.6830	0.5146

HS65_LS_SDFPBTQ

Cell Description

D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Transparent mode with bypass circuit, Scanable, Q Output Only
The cell has "dont_use" and "dont_touch" attributes set in the Synopsys STF.

Logical Symbol



Functions

D	TI	TE	TR	INTERN	Q
-	TI	1	1	-	TI
1	-	0	-	1	1
-	-	-	0	intern	intern
D	-	0	1	-	D
-	0	-	0	1	1
0	0	-	-	0	0
-	1	1	-	1	1
0	-	-	0	1	1

Functions

D	CP	TI	TE	INTERN	INTERN
-	/	TI	1	-	TI
D	/	-	0	-	D
-	-	-	-	intern	intern

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X9	2.6	5.00	13.0000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X9	8.412e-07	1.894e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X9	2.205e-04	1.001e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X9	1.949e-04	8.635e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X9
CP (stable)	1.380e-02
D (stable)	6.209e-03
TE (stable)	9.164e-03
TI (stable)	6.771e-03
TR (stable)	4.394e-03
CP to Q	2.265e-02
D to Q	1.890e-02
TE to Q	2.254e-02
TI to Q	2.037e-02
TR to Q	8.524e-03

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X9
CP (stable)	-5.165e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	4.122e-06
TE (stable)	-3.312e-05
TI (stable)	-4.783e-05
TR (stable)	4.169e-04
CP to Q	6.125e-05
D to Q	-6.708e-05
TE to Q	-1.623e-04
TI to Q	-7.720e-05
TR to Q	4.274e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X9
CP	0.0010
D	0.0016
TE	0.0020
TI	0.0011
TR	0.0025

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X9	X9
CP to Q↓	0.1054	2.1486
CP to Q↑	0.1094	3.5275
D to Q↓	0.0809	2.1563
D to Q↑	0.0787	3.5345
TE to Q↓	0.1510	2.3037
TE to Q↑	0.1144	3.5631
TI to Q↓	0.1849	2.4250
TI to Q↑	0.1182	3.5835
TR to Q↓	0.0373	2.0862
TR to Q↑	0.0354	3.4900



Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X9	X9
CP to Q↓	0.1734	3.6083
CP to Q↑	0.1773	5.3770
D to Q↓	0.1314	3.6360
D to Q↑	0.1321	5.3988
TE to Q↓	0.2489	3.8680
TE to Q↑	0.1930	5.4544
TI to Q↓	0.3038	4.0636
TI to Q↑	0.2005	5.4930
TR to Q↓	0.0580	3.5054
TR to Q↑	0.0547	5.3170

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)	Kload (ns/pf)
	X9	X9
CP to Q↓	0.1588	3.2926
CP to Q↑	0.1622	4.9471
D to Q↓	0.1200	3.3161
D to Q↑	0.1203	4.9646
TE to Q↓	0.2282	3.5302
TE to Q↑	0.1764	5.0152
TI to Q↓	0.2784	3.7091
TI to Q↑	0.1827	5.0506
TR to Q↓	0.0540	3.1966
TR to Q↑	0.0509	4.8904

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X9
CP	min_pulse_width_high	0.07
CP	min_pulse_width_low	0.115
D↓	hold_rising to CP	-0.0337
D↑	hold_rising to CP	-0.0379
D↓	setup_rising to CP	0.1044
D↑	setup_rising to CP	0.0831
TE↓	hold_rising to CP	-0.0385
TE↑	hold_rising to CP	-0.0786
TE↓	setup_rising to CP	0.1082
TE↑	setup_rising to CP	0.2474
TI↓	hold_rising to CP	-0.1480
TI↑	hold_rising to CP	-0.0768
TI↓	setup_rising to CP	0.2389
TI↑	setup_rising to CP	0.1325

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X9
CP	min_pulse_width_high	0.115
CP	min_pulse_width_low	0.195
D↓	hold_rising to CP	-0.0702
D↑	hold_rising to CP	-0.0853
D↓	setup_rising to CP	0.1705
D↑	setup_rising to CP	0.1405
TE↓	hold_rising to CP	-0.0747
TE↑	hold_rising to CP	-0.1602
TE↓	setup_rising to CP	0.1892
TE↑	setup_rising to CP	0.4052
TI↓	hold_rising to CP	-0.2642
TI↑	hold_rising to CP	-0.1538
TI↓	setup_rising to CP	0.3899
TI↑	setup_rising to CP	0.2345



Timing Constraints (ns) at 125C, 1.15V Worst process

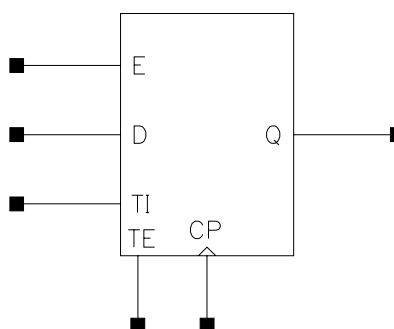
Pin	Constraint	X9
CP	min_pulse_width_high	0.105
CP	min_pulse_width_low	0.175
D↓	hold_rising to CP	-0.0647
D↑	hold_rising to CP	-0.0748
D↓	setup_rising to CP	0.1600
D↑	setup_rising to CP	0.1297
TE↓	hold_rising to CP	-0.0645
TE↑	hold_rising to CP	-0.1447
TE↓	setup_rising to CP	0.1690
TE↑	setup_rising to CP	0.3747
TI↓	hold_rising to CP	-0.2389
TI↑	hold_rising to CP	-0.1383
TI↓	setup_rising to CP	0.3597
TI↑	setup_rising to CP	0.2089

HS65_LS_SDFPHQ

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Active Low Set; Q Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

CP	TE	TI	E	D	IQ	IQ
/	0	-	1	D	-	D
/	0	-	0	-	IQ	IQ
/	1	TI	-	-	-	TI
-	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	5.00	13.0000
X9	2.6	5.00	13.0000
X18	2.6	5.20	13.5200
X27	2.6	5.60	14.5600
X35	2.6	5.80	15.0800



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	6.932e-07	1.534e-09
X9	7.731e-07	1.747e-09
X18	9.509e-07	2.165e-09
X27	1.136e-06	2.604e-09
X35	1.315e-06	3.018e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.775e-04	9.181e-08
X9	2.008e-04	9.602e-08
X18	2.535e-04	1.053e-07
X27	3.089e-04	1.179e-07
X35	3.627e-04	1.270e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.572e-04	8.027e-08
X9	1.774e-04	8.325e-08
X18	2.233e-04	9.007e-08
X27	2.715e-04	9.997e-08
X35	3.184e-04	1.066e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.170e-03	9.293e-03	9.214e-03	9.193e-03	9.198e-03
D (stable)	3.966e-03	3.981e-03	3.968e-03	3.972e-03	3.972e-03
E (stable)	1.951e-02	1.990e-02	1.977e-02	1.983e-02	1.984e-02
TE (stable)	6.800e-03	6.864e-03	6.922e-03	6.820e-03	6.819e-03
TI (stable)	4.581e-03	4.613e-03	4.587e-03	4.594e-03	4.592e-03
CP to Q	2.078e-02	2.306e-02	3.008e-02	3.765e-02	4.794e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	-9.772e-06	-8.917e-06	-1.214e-05	-1.105e-05	-1.625e-05
D (stable)	-2.016e-04	-2.016e-04	-2.012e-04	-2.015e-04	-2.017e-04
E (stable)	-4.570e-05	-4.625e-05	-4.189e-05	-4.625e-05	-4.619e-05
TE (stable)	1.851e-04	1.852e-04	1.848e-04	1.852e-04	1.851e-04
TI (stable)	-3.201e-05	-3.204e-05	-3.210e-05	-3.193e-05	-3.199e-05
CP to Q	-7.535e-06	-1.246e-05	-6.008e-04	-2.340e-06	2.479e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0011	0.0011	0.0010	0.0011
D	0.0014	0.0015	0.0015	0.0015	0.0015
E	0.0021	0.0021	0.0021	0.0021	0.0021
TE	0.0021	0.0022	0.0022	0.0021	0.0021
TI	0.0013	0.0014	0.0014	0.0014	0.0014

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.0909	0.0973	0.1141	0.1307	0.1488	2.6468	1.3645	0.7076	0.4968	0.3953
CP to Q↑	0.0897	0.0923	0.1008	0.1128	0.1238	3.2595	1.6938	0.8605	0.5935	0.4571

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1485	0.1590	0.1874	0.2158	0.2467	4.3242	2.1991	1.1261	0.7845	0.6256
CP to Q↑	0.1437	0.1481	0.1620	0.1818	0.1998	4.7702	2.4932	1.2690	0.8773	0.6810



Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1364	0.1461	0.1722	0.1983	0.2267	3.9897	2.0303	1.0405	0.7258	0.5777
CP to Q↑	0.1319	0.1359	0.1487	0.1670	0.1836	4.4419	2.3158	1.1780	0.8147	0.6306

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.075	0.09	0.12	0.145	0.17
CP	min_pulse_width_low	0.125	0.125	0.115	0.11	0.105
D↓	hold_rising to CP	-0.0627	-0.0627	-0.0627	-0.0627	-0.0627
D↑	hold_rising to CP	-0.0770	-0.0774	-0.0772	-0.0772	-0.0772
D↓	setup_rising to CP	0.1434	0.1430	0.1328	0.1281	0.1278
D↑	setup_rising to CP	0.1277	0.1277	0.1275	0.1275	0.1275
E↓	hold_rising to CP	-0.0727	-0.0727	-0.0724	-0.0727	-0.0727
E↑	hold_rising to CP	-0.0627	-0.0627	-0.0627	-0.0627	-0.0627
E↓	setup_rising to CP	0.1376	0.1382	0.1379	0.1379	0.1379
E↑	setup_rising to CP	0.1576	0.1527	0.1430	0.1427	0.1378
TE↓	hold_rising to CP	-0.0589	-0.0592	-0.0589	-0.0589	-0.0589
TE↑	hold_rising to CP	-0.0377	-0.0426	-0.0426	-0.0426	-0.0426
TE↓	setup_rising to CP	0.1296	0.1298	0.1342	0.1290	0.1290
TE↑	setup_rising to CP	0.1575	0.1574	0.1527	0.1477	0.1425
TI↓	hold_rising to CP	-0.0726	-0.0726	-0.0725	-0.0725	-0.0725
TI↑	hold_rising to CP	-0.0515	-0.0515	-0.0515	-0.0515	-0.0516
TI↓	setup_rising to CP	0.1583	0.1534	0.1434	0.1382	0.1380
TI↑	setup_rising to CP	0.0918	0.0918	0.0918	0.0918	0.0918

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.12	0.145	0.195	0.235	0.28
CP	min_pulse_width_low	0.21	0.205	0.19	0.185	0.175
D↓	hold_rising to CP	-0.1288	-0.1288	-0.1288	-0.1288	-0.1288

Timing Constraints (ns) at 125C, 1.10V Worst process

D↑	hold_rising to CP	-0.1638	-0.1638	-0.1685	-0.1689	-0.1688
D↓	setup_rising to CP	0.2346	0.2347	0.2244	0.2142	0.2092
D↑	setup_rising to CP	0.2339	0.2339	0.2339	0.2339	0.2339
E↓	hold_rising to CP	-0.1391	-0.1391	-0.1388	-0.1388	-0.1388
E↑	hold_rising to CP	-0.1445	-0.1449	-0.1444	-0.1444	-0.1444
E↓	setup_rising to CP	0.2344	0.2399	0.2399	0.2399	0.2399
E↑	setup_rising to CP	0.2552	0.2552	0.2402	0.2347	0.2300
TE↓	hold_rising to CP	-0.0952	-0.0952	-0.0906	-0.0906	-0.0906
TE↑	hold_rising to CP	-0.0897	-0.0897	-0.0897	-0.0944	-0.0948
TE↓	setup_rising to CP	0.2193	0.2193	0.2238	0.2193	0.2193
TE↑	setup_rising to CP	0.2652	0.2648	0.2500	0.2400	0.2345
TI↓	hold_rising to CP	-0.1386	-0.1386	-0.1384	-0.1384	-0.1384
TI↑	hold_rising to CP	-0.1030	-0.1082	-0.1082	-0.1082	-0.1082
TI↓	setup_rising to CP	0.2542	0.2491	0.2392	0.2342	0.2242
TI↑	setup_rising to CP	0.1589	0.1638	0.1589	0.1589	0.1589

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.11	0.135	0.18	0.215	0.255
CP	min_pulse_width_low	0.19	0.185	0.175	0.165	0.16
D↓	hold_rising to CP	-0.1135	-0.1135	-0.1136	-0.1136	-0.1136
D↑	hold_rising to CP	-0.1432	-0.1432	-0.1482	-0.1482	-0.1482
D↓	setup_rising to CP	0.2185	0.2140	0.2037	0.1940	0.1885
D↑	setup_rising to CP	0.2087	0.2086	0.2085	0.2085	0.2085
E↓	hold_rising to CP	-0.1282	-0.1282	-0.1235	-0.1235	-0.1235
E↑	hold_rising to CP	-0.1293	-0.1340	-0.1294	-0.1294	-0.1294
E↓	setup_rising to CP	0.2190	0.2240	0.2240	0.2194	0.2240
E↑	setup_rising to CP	0.2345	0.2347	0.2200	0.2145	0.2095
TE↓	hold_rising to CP	-0.0850	-0.0850	-0.0847	-0.0851	-0.0851
TE↑	hold_rising to CP	-0.0794	-0.0792	-0.0792	-0.0797	-0.0843
TE↓	setup_rising to CP	0.1608	0.1608	0.1606	0.1608	0.1608
TE↑	setup_rising to CP	0.2394	0.2395	0.2347	0.2240	0.2190
TI↓	hold_rising to CP	-0.1233	-0.1233	-0.1233	-0.1233	-0.1233
TI↑	hold_rising to CP	-0.0928	-0.0928	-0.0931	-0.0980	-0.0980
TI↓	setup_rising to CP	0.2337	0.2339	0.2191	0.2089	0.2039



Timing Constraints (ns) at 125C, 1.15V Worst process

TI↑	setup_rising to CP		0.1483	0.1483	0.1483	0.1483	0.1483

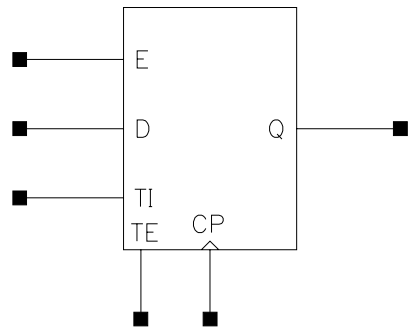
Speed-Optimised

HS65_LSS_SDFPHQ

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Active Low Set; Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

CP	TE	TI	E	D	IQ	IQ
/	0	-	1	D	-	D
/	0	-	0	-	IQ	IQ
/	1	TI	-	-	-	TI
-	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	6.00	15.6000
X27	2.6	6.20	16.1200
X35	2.6	6.60	17.1600



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.093e-06	2.592e-09
X27	1.263e-06	3.018e-09
X35	1.460e-06	3.410e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.944e-04	1.219e-07
X27	3.453e-04	1.323e-07
X35	4.058e-04	1.433e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.589e-04	1.038e-07
X27	3.031e-04	1.117e-07
X35	3.558e-04	1.202e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.160e-03	9.099e-03	9.168e-03
D (stable)	3.960e-03	3.959e-03	3.959e-03
E (stable)	1.973e-02	1.968e-02	1.973e-02
TE (stable)	6.834e-03	6.831e-03	6.837e-03
TI (stable)	4.529e-03	4.529e-03	4.528e-03
CP to Q	3.432e-02	3.977e-02	4.485e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	-7.327e-06	-9.448e-06	-8.167e-06
D (stable)	-2.043e-04	-2.042e-04	-2.042e-04
E (stable)	-3.339e-05	-3.295e-05	-3.265e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

TE (stable)	1.922e-04	1.922e-04	1.921e-04
TI (stable)	-3.197e-05	-3.188e-05	-3.188e-05
CP to Q	-2.647e-05	-1.435e-05	-2.035e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0015	0.0015	0.0015
E	0.0021	0.0021	0.0021
TE	0.0022	0.0022	0.0022
TI	0.0014	0.0014	0.0014

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1519	0.1561	0.1617	0.5856	0.3956	0.2971
CP to Q↑	0.1623	0.1669	0.1713	0.8130	0.5486	0.4126

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2503	0.2571	0.2658	0.9235	0.6190	0.4595
CP to Q↑	0.2629	0.2703	0.2775	1.1839	0.7955	0.5968

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2298	0.2361	0.2442	0.8552	0.5739	0.4265
CP to Q↑	0.2411	0.2480	0.2546	1.1008	0.7396	0.5551



Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.075	0.075	0.075
CP	min_pulse_width_low	0.12	0.115	0.115
D↓	hold_rising to CP	-0.0677	-0.0677	-0.0677
D↑	hold_rising to CP	-0.0772	-0.0772	-0.0772
D↓	setup_rising to CP	0.1381	0.1378	0.1378
D↑	setup_rising to CP	0.1228	0.1228	0.1228
E↓	hold_rising to CP	-0.0727	-0.0727	-0.0727
E↑	hold_rising to CP	-0.0627	-0.0627	-0.0627
E↓	setup_rising to CP	0.1379	0.1379	0.1379
E↑	setup_rising to CP	0.1527	0.1527	0.1480
TE↓	hold_rising to CP	-0.0592	-0.0592	-0.0592
TE↑	hold_rising to CP	-0.0426	-0.0426	-0.0426
TE↓	setup_rising to CP	0.1245	0.1247	0.1247
TE↑	setup_rising to CP	0.1574	0.1574	0.1574
TI↓	hold_rising to CP	-0.0726	-0.0775	-0.0726
TI↑	hold_rising to CP	-0.0515	-0.0515	-0.0515
TI↓	setup_rising to CP	0.1484	0.1482	0.1482
TI↑	setup_rising to CP	0.0868	0.0868	0.0868

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.12	0.12	0.12
CP	min_pulse_width_low	0.195	0.195	0.195
D↓	hold_rising to CP	-0.1339	-0.1339	-0.1339
D↑	hold_rising to CP	-0.1688	-0.1688	-0.1688
D↓	setup_rising to CP	0.2292	0.2292	0.2292
D↑	setup_rising to CP	0.2242	0.2242	0.2242
E↓	hold_rising to CP	-0.1391	-0.1391	-0.1391
E↑	hold_rising to CP	-0.1444	-0.1444	-0.1444
E↓	setup_rising to CP	0.2398	0.2394	0.2398
E↑	setup_rising to CP	0.2450	0.2450	0.2451
TE↓	hold_rising to CP	-0.0956	-0.0956	-0.0956

Timing Constraints (ns) at 125C, 1.10V Worst process

TE↑	hold_rising to CP	-0.0897	-0.0897	-0.0897
TE↓	setup_rising to CP	0.1617	0.1617	0.1617
TE↑	setup_rising to CP	0.2547	0.2547	0.2500
TI↓	hold_rising to CP	-0.1386	-0.1386	-0.1386
TI↑	hold_rising to CP	-0.1080	-0.1082	-0.1080
TI↓	setup_rising to CP	0.2391	0.2391	0.2343
TI↑	setup_rising to CP	0.1537	0.1537	0.1537

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.11	0.11	0.11
CP	min_pulse_width_low	0.18	0.175	0.175
D↓	hold_rising to CP	-0.1182	-0.1186	-0.1182
D↑	hold_rising to CP	-0.1482	-0.1482	-0.1482
D↓	setup_rising to CP	0.2085	0.2085	0.2085
D↑	setup_rising to CP	0.2035	0.2035	0.2035
E↓	hold_rising to CP	-0.1286	-0.1286	-0.1286
E↑	hold_rising to CP	-0.1293	-0.1293	-0.1293
E↓	setup_rising to CP	0.2194	0.2194	0.2194
E↑	setup_rising to CP	0.2295	0.2250	0.2250
TE↓	hold_rising to CP	-0.0902	-0.0902	-0.0902
TE↑	hold_rising to CP	-0.0792	-0.0792	-0.0792
TE↓	setup_rising to CP	0.1604	0.1604	0.1604
TE↑	setup_rising to CP	0.2345	0.2345	0.2345
TI↓	hold_rising to CP	-0.1283	-0.1283	-0.1284
TI↑	hold_rising to CP	-0.0928	-0.0928	-0.0928
TI↓	setup_rising to CP	0.2189	0.2189	0.2189
TI↑	setup_rising to CP	0.1433	0.1384	0.1384

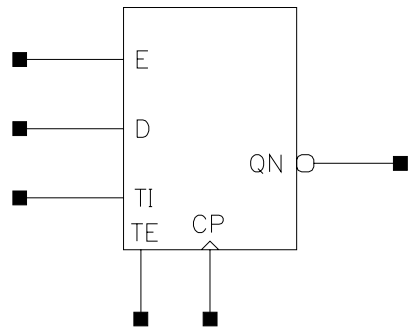


HS65_LS_SDFPHQN

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Active Low Set; QN Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

CP	TE	TI	E	D	IQ	IQ
/	0	-	1	D	-	D
/	0	-	0	-	IQ	IQ
/	1	TI	-	-	-	TI
-	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	5.20	13.5200
X9	2.6	5.20	13.5200
X18	2.6	5.40	14.0400
X27	2.6	5.80	15.0800
X35	2.6	6.00	15.6000



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	6.943e-07	1.565e-09
X9	7.712e-07	1.771e-09
X18	9.470e-07	2.182e-09
X27	1.135e-06	2.598e-09
X35	1.313e-06	3.031e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.783e-04	9.454e-08
X9	2.010e-04	9.871e-08
X18	2.532e-04	1.077e-07
X27	3.098e-04	1.203e-07
X35	3.633e-04	1.294e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.579e-04	8.271e-08
X9	1.775e-04	8.570e-08
X18	2.230e-04	9.230e-08
X27	2.723e-04	1.022e-07
X35	3.189e-04	1.088e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.094e-03	9.249e-03	9.155e-03	9.187e-03	9.190e-03
D (stable)	4.106e-03	4.117e-03	4.115e-03	4.111e-03	4.109e-03
E (stable)	1.934e-02	1.977e-02	1.974e-02	1.972e-02	1.971e-02
TE (stable)	6.904e-03	6.940e-03	6.951e-03	6.930e-03	6.925e-03
TI (stable)	4.576e-03	4.598e-03	4.595e-03	4.587e-03	4.583e-03
CP to QN	2.186e-02	2.420e-02	2.971e-02	3.658e-02	4.445e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	2.713e-06	3.182e-06	3.620e-06	4.288e-06	1.108e-05
D (stable)	-2.773e-04	-2.776e-04	-2.775e-04	-2.778e-04	-2.778e-04
E (stable)	9.017e-05	8.980e-05	9.001e-05	9.017e-05	9.024e-05
TE (stable)	2.561e-04	2.560e-04	2.557e-04	2.555e-04	2.553e-04
TI (stable)	-3.175e-05	-3.172e-05	-3.171e-05	-3.187e-05	-3.172e-05
CP to QN	-3.170e-04	-3.208e-04	-3.218e-04	-3.266e-04	-3.268e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0011	0.0011	0.0011	0.0011
D	0.0014	0.0015	0.0015	0.0015	0.0015
E	0.0021	0.0021	0.0021	0.0021	0.0021
TE	0.0022	0.0022	0.0022	0.0022	0.0022
TI	0.0013	0.0014	0.0014	0.0014	0.0014

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1361	0.1388	0.1495	0.1594	0.1722	2.5626	1.3023	0.6606	0.4508	0.3515
CP to QN↑	0.1278	0.1300	0.1371	0.1486	0.1581	3.2639	1.6918	0.8551	0.5814	0.4440

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.2206	0.2249	0.2404	0.2557	0.2748	4.1559	2.0820	1.0389	0.7024	0.5483
CP to QN↑	0.2089	0.2128	0.2236	0.2420	0.2568	4.7814	2.4873	1.2543	0.8510	0.6527



Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.2024	0.2064	0.2210	0.2355	0.2535	3.8405	1.9239	0.9627	0.6515	0.5079
CP to QN↑	0.1919	0.1954	0.2057	0.2229	0.2369	4.4485	2.3111	1.1639	0.7905	0.6050

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.07	0.075	0.075	0.08	0.085
CP	min_pulse_width_low	0.12	0.125	0.12	0.12	0.12
D↓	hold_rising to CP	-0.0677	-0.0677	-0.0677	-0.0677	-0.0677
D↑	hold_rising to CP	-0.0772	-0.0772	-0.0772	-0.0772	-0.0772
D↓	setup_rising to CP	0.1434	0.1434	0.1434	0.1430	0.1381
D↑	setup_rising to CP	0.1228	0.1228	0.1228	0.1228	0.1225
E↓	hold_rising to CP	-0.0727	-0.0727	-0.0727	-0.0727	-0.0727
E↑	hold_rising to CP	-0.0627	-0.0627	-0.0627	-0.0627	-0.0627
E↓	setup_rising to CP	0.1376	0.1379	0.1379	0.1379	0.1379
E↑	setup_rising to CP	0.1527	0.1527	0.1527	0.1527	0.1480
TE↓	hold_rising to CP	-0.0592	-0.0592	-0.0641	-0.0641	-0.0641
TE↑	hold_rising to CP	-0.0426	-0.0426	-0.0426	-0.0426	-0.0426
TE↓	setup_rising to CP	0.1269	0.1269	0.1269	0.1269	0.1220
TE↑	setup_rising to CP	0.1572	0.1575	0.1572	0.1574	0.1574
TI↓	hold_rising to CP	-0.0775	-0.0775	-0.0776	-0.0776	-0.0776
TI↑	hold_rising to CP	-0.0515	-0.0515	-0.0515	-0.0515	-0.0515
TI↓	setup_rising to CP	0.1532	0.1534	0.1534	0.1532	0.1484
TI↑	setup_rising to CP	0.0867	0.0867	0.0867	0.0866	0.0866

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.115	0.12	0.125	0.135	0.145
CP	min_pulse_width_low	0.2	0.2	0.2	0.195	0.195
D↓	hold_rising to CP	-0.1338	-0.1339	-0.1338	-0.1338	-0.1338

Timing Constraints (ns) at 125C, 1.10V Worst process

D↑	hold_rising to CP	-0.1638	-0.1685	-0.1685	-0.1688	-0.1688
D↓	setup_rising to CP	0.2342	0.2342	0.2342	0.2338	0.2292
D↑	setup_rising to CP	0.2289	0.2294	0.2289	0.2289	0.2242
E↓	hold_rising to CP	-0.1391	-0.1391	-0.1391	-0.1391	-0.1391
E↑	hold_rising to CP	-0.1445	-0.1449	-0.1449	-0.1449	-0.1449
E↓	setup_rising to CP	0.2344	0.2398	0.2394	0.2394	0.2394
E↑	setup_rising to CP	0.2449	0.2505	0.2500	0.2455	0.2450
TE↓	hold_rising to CP	-0.1003	-0.1003	-0.1003	-0.1003	-0.1003
TE↑	hold_rising to CP	-0.0897	-0.0944	-0.0944	-0.0944	-0.0948
TE↓	setup_rising to CP	0.1624	0.2233	0.2233	0.1624	0.1624
TE↑	setup_rising to CP	0.2597	0.2602	0.2602	0.2552	0.2547
TI↓	hold_rising to CP	-0.1386	-0.1386	-0.1386	-0.1386	-0.1386
TI↑	hold_rising to CP	-0.1080	-0.1080	-0.1080	-0.1080	-0.1080
TI↓	setup_rising to CP	0.2443	0.2491	0.2491	0.2441	0.2393
TI↑	setup_rising to CP	0.1587	0.1587	0.1587	0.1587	0.1587

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.105	0.11	0.115	0.125	0.135
CP	min_pulse_width_low	0.18	0.185	0.18	0.18	0.175
D↓	hold_rising to CP	-0.1181	-0.1181	-0.1186	-0.1186	-0.1186
D↑	hold_rising to CP	-0.1482	-0.1482	-0.1482	-0.1482	-0.1482
D↓	setup_rising to CP	0.2135	0.2135	0.2135	0.2089	0.2085
D↑	setup_rising to CP	0.2036	0.2036	0.2036	0.2036	0.2035
E↓	hold_rising to CP	-0.1286	-0.1286	-0.1285	-0.1285	-0.1285
E↑	hold_rising to CP	-0.1293	-0.1340	-0.1340	-0.1293	-0.1293
E↓	setup_rising to CP	0.2144	0.2194	0.2194	0.2194	0.2194
E↑	setup_rising to CP	0.2295	0.2345	0.2345	0.2300	0.2295
TE↓	hold_rising to CP	-0.0901	-0.0902	-0.0901	-0.0901	-0.0901
TE↑	hold_rising to CP	-0.0792	-0.0792	-0.0797	-0.0797	-0.0844
TE↓	setup_rising to CP	0.1609	0.1608	0.1608	0.1609	0.1609
TE↑	setup_rising to CP	0.2349	0.2394	0.2347	0.2344	0.2345
TI↓	hold_rising to CP	-0.1283	-0.1283	-0.1285	-0.1285	-0.1285
TI↑	hold_rising to CP	-0.0980	-0.0980	-0.0980	-0.0980	-0.0980
TI↓	setup_rising to CP	0.2287	0.2289	0.2289	0.2239	0.2237



Timing Constraints (ns) at 125C, 1.15V Worst process

TI↑	setup_rising to CP		0.1435	0.1435	0.1435	0.1435	0.1435

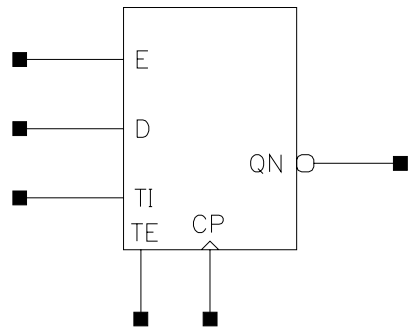
Speed-Optimised

HS65_LSS_SDFPHQN

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Active Low Set; QN Output Only

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

CP	TE	TI	E	D	IQ	IQ
/	0	-	1	D	-	D
/	0	-	0	-	IQ	IQ
/	1	TI	-	-	-	TI
-	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	5.80	15.0800
X27	2.6	6.00	15.6000
X35	2.6	6.40	16.6400



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.096e-06	2.571e-09
X27	1.265e-06	2.985e-09
X35	1.462e-06	3.399e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.950e-04	1.192e-07
X27	3.451e-04	1.296e-07
X35	4.058e-04	1.406e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.594e-04	1.014e-07
X27	3.030e-04	1.092e-07
X35	3.558e-04	1.177e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.187e-03	9.184e-03	9.184e-03
D (stable)	4.102e-03	4.102e-03	4.102e-03
E (stable)	1.974e-02	1.972e-02	1.974e-02
TE (stable)	6.931e-03	6.934e-03	6.931e-03
TI (stable)	4.598e-03	4.598e-03	4.598e-03
CP to QN	3.395e-02	3.947e-02	4.465e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	-1.022e-05	-1.687e-05	-1.144e-05
D (stable)	-2.738e-04	-2.738e-04	-2.737e-04
E (stable)	8.967e-05	8.974e-05	8.967e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

TE (stable)	2.486e-04	2.488e-04	2.487e-04
TI (stable)	-3.175e-05	-3.175e-05	-3.163e-05
CP to QN	-2.385e-04	-2.188e-04	-2.695e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0015	0.0015	0.0015
E	0.0021	0.0021	0.0021
TE	0.0022	0.0022	0.0022
TI	0.0014	0.0014	0.0014

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1142	0.1198	0.1241	0.5859	0.3964	0.2976
CP to QN↑	0.1244	0.1308	0.1352	0.8160	0.5517	0.4152

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1863	0.1952	0.2021	0.9243	0.6206	0.4599
CP to QN↑	0.2039	0.2146	0.2214	1.1879	0.8004	0.6003

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1708	0.1791	0.1855	0.8554	0.5752	0.4272
CP to QN↑	0.1868	0.1967	0.2031	1.1056	0.7447	0.5584



Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.08	0.08	0.085
CP	min_pulse_width_low	0.115	0.115	0.115
D↓	hold_rising to CP	-0.0627	-0.0676	-0.0676
D↑	hold_rising to CP	-0.0774	-0.0774	-0.0774
D↓	setup_rising to CP	0.1331	0.1331	0.1332
D↑	setup_rising to CP	0.1228	0.1228	0.1228
E↓	hold_rising to CP	-0.0727	-0.0727	-0.0727
E↑	hold_rising to CP	-0.0627	-0.0627	-0.0627
E↓	setup_rising to CP	0.1431	0.1382	0.1431
E↑	setup_rising to CP	0.1483	0.1430	0.1430
TE↓	hold_rising to CP	-0.0592	-0.0592	-0.0592
TE↑	hold_rising to CP	-0.0426	-0.0426	-0.0426
TE↓	setup_rising to CP	0.1269	0.1220	0.1220
TE↑	setup_rising to CP	0.1576	0.1527	0.1527
TI↓	hold_rising to CP	-0.0726	-0.0726	-0.0726
TI↑	hold_rising to CP	-0.0515	-0.0515	-0.0515
TI↓	setup_rising to CP	0.1482	0.1482	0.1485
TI↑	setup_rising to CP	0.0869	0.0869	0.0868

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.14	0.14	0.145
CP	min_pulse_width_low	0.195	0.195	0.195
D↓	hold_rising to CP	-0.1288	-0.1288	-0.1288
D↑	hold_rising to CP	-0.1638	-0.1638	-0.1638
D↓	setup_rising to CP	0.2294	0.2242	0.2243
D↑	setup_rising to CP	0.2294	0.2294	0.2294
E↓	hold_rising to CP	-0.1392	-0.1391	-0.1391
E↑	hold_rising to CP	-0.1444	-0.1444	-0.1444
E↓	setup_rising to CP	0.2398	0.2398	0.2398
E↑	setup_rising to CP	0.2452	0.2405	0.2400
TE↓	hold_rising to CP	-0.0952	-0.0952	-0.0952

Timing Constraints (ns) at 125C, 1.10V Worst process

TE↑	hold_rising to CP	-0.0897	-0.0897	-0.0897
TE↓	setup_rising to CP	0.2238	0.2233	0.2233
TE↑	setup_rising to CP	0.2547	0.2547	0.2500
TI↓	hold_rising to CP	-0.1386	-0.1386	-0.1386
TI↑	hold_rising to CP	-0.1082	-0.1082	-0.1082
TI↓	setup_rising to CP	0.2393	0.2392	0.2392
TI↑	setup_rising to CP	0.1587	0.1587	0.1587

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.125	0.125	0.13
CP	min_pulse_width_low	0.175	0.175	0.175
D↓	hold_rising to CP	-0.1135	-0.1135	-0.1182
D↑	hold_rising to CP	-0.1484	-0.1484	-0.1484
D↓	setup_rising to CP	0.2087	0.2035	0.2035
D↑	setup_rising to CP	0.2087	0.2036	0.2036
E↓	hold_rising to CP	-0.1282	-0.1282	-0.1282
E↑	hold_rising to CP	-0.1293	-0.1293	-0.1293
E↓	setup_rising to CP	0.2240	0.2240	0.2240
E↑	setup_rising to CP	0.2250	0.2247	0.2247
TE↓	hold_rising to CP	-0.0850	-0.0850	-0.0850
TE↑	hold_rising to CP	-0.0794	-0.0794	-0.0794
TE↓	setup_rising to CP	0.1614	0.1614	0.1609
TE↑	setup_rising to CP	0.2345	0.2347	0.2342
TI↓	hold_rising to CP	-0.1284	-0.1284	-0.1284
TI↑	hold_rising to CP	-0.0928	-0.0928	-0.0928
TI↓	setup_rising to CP	0.2239	0.2189	0.2189
TI↑	setup_rising to CP	0.1485	0.1485	0.1485

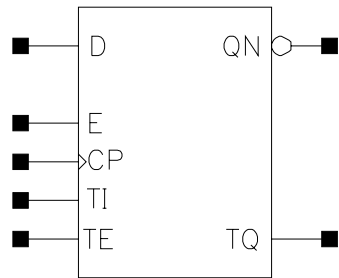


HS65_LS_SDFPHQNT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Data Enable Active High, QN Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

IQ	TQ
IQ	IQ

Functions

CP	TE	TI	E	D	IQ	IQ
/	0	-	1	D	-	D
/	0	-	0	-	IQ	IQ
/	1	TI	-	-	-	TI
-	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	5.40	14.0400
X9	2.6	5.40	14.0400
X18	2.6	5.60	14.5600



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X27	2.6	6.00	15.6000
X35	2.6	6.20	16.1200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	7.554e-07	1.578e-09
X9	8.272e-07	1.799e-09
X18	1.002e-06	2.202e-09
X27	1.189e-06	2.642e-09
X35	1.370e-06	3.070e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.933e-04	9.695e-08
X9	2.151e-04	1.014e-07
X18	2.666e-04	1.104e-07
X27	3.225e-04	1.233e-07
X35	3.773e-04	1.324e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.712e-04	8.496e-08
X9	1.901e-04	8.812e-08
X18	2.349e-04	9.478e-08
X27	2.836e-04	1.049e-07
X35	3.313e-04	1.115e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.333e-03	9.427e-03	9.385e-03	9.391e-03	9.337e-03
D (stable)	4.111e-03	4.116e-03	4.125e-03	4.139e-03	4.136e-03
E (stable)	2.049e-02	2.056e-02	2.059e-02	2.067e-02	2.065e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

TE (stable)	7.053e-03	7.093e-03	7.089e-03	7.115e-03	7.109e-03
TI (stable)	4.754e-03	4.763e-03	4.767e-03	4.798e-03	4.792e-03
CP to QN	1.244e-02	1.368e-02	1.646e-02	2.002e-02	2.381e-02
CP to TQ	1.244e-02	1.367e-02	1.644e-02	2.001e-02	2.381e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.435e-05	1.329e-05	7.431e-06	8.789e-06	9.439e-06
D (stable)	-2.202e-04	-2.205e-04	-2.207e-04	-2.204e-04	-2.202e-04
E (stable)	-2.164e-04	-2.155e-04	-2.155e-04	-2.168e-04	-2.168e-04
TE (stable)	2.069e-04	2.068e-04	2.066e-04	2.068e-04	2.066e-04
TI (stable)	-2.998e-05	-3.031e-05	-3.001e-05	-3.027e-05	-3.015e-05
CP to QN	-1.983e-04	-1.954e-04	-1.813e-04	-1.834e-04	-1.853e-04
CP to TQ	-1.983e-04	-1.954e-04	-1.813e-04	-1.834e-04	-1.853e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0014	0.0015	0.0015	0.0015	0.0015
E	0.0021	0.0021	0.0021	0.0021	0.0021
TE	0.0022	0.0022	0.0022	0.0022	0.0022
TI	0.0013	0.0013	0.0013	0.0013	0.0013

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1514	0.1489	0.1598	0.1648	0.1753	2.3980	1.3082	0.6648	0.4482	0.3464
CP to QN↑	0.1451	0.1435	0.1544	0.1656	0.1746	3.0867	1.6643	0.8477	0.5762	0.4397
CP to TQ↓	0.0933	0.0951	0.0960	0.0973	0.0964	4.8540	4.7279	4.7059	4.6966	4.6887
CP to TQ↑	0.0994	0.1008	0.1013	0.1021	0.1013	8.4250	8.3344	8.3250	8.3331	8.3307



Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.2455	0.2417	0.2576	0.2655	0.2810	3.8180	2.0794	1.0388	0.6945	0.5363
CP to QN↑	0.2359	0.2342	0.2510	0.2692	0.2831	4.5152	2.4472	1.2419	0.8430	0.6434
CP to TQ↓	0.1524	0.1554	0.1569	0.1592	0.1577	7.5634	7.4304	7.4078	7.4018	7.3927
CP to TQ↑	0.1599	0.1619	0.1628	0.1641	0.1628	12.1565	11.9645	11.9358	11.9435	11.9347

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.2248	0.2216	0.2367	0.2441	0.2588	3.5215	1.9218	0.9626	0.6443	0.4971
CP to QN↑	0.2167	0.2150	0.2309	0.2478	0.2610	4.2054	2.2731	1.1520	0.7816	0.5969
CP to TQ↓	0.1401	0.1429	0.1443	0.1463	0.1450	7.0398	6.9103	6.8868	6.8869	6.8747
CP to TQ↑	0.1470	0.1488	0.1496	0.1508	0.1496	11.3468	11.1820	11.1568	11.1641	11.1566

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.075	0.075	0.08	0.09	0.095
CP	min_pulse_width_low	0.15	0.15	0.15	0.15	0.15
D↓	hold_rising to CP	-0.0627	-0.0627	-0.0627	-0.0627	-0.0627
D↑	hold_rising to CP	-0.0818	-0.0818	-0.0772	-0.0820	-0.0820
D↓	setup_rising to CP	0.1381	0.1385	0.1381	0.1381	0.1381
D↑	setup_rising to CP	0.1278	0.1278	0.1278	0.1278	0.1278
E↓	hold_rising to CP	-0.0727	-0.0727	-0.0727	-0.0730	-0.0730
E↑	hold_rising to CP	-0.0676	-0.0676	-0.0627	-0.0676	-0.0676
E↓	setup_rising to CP	0.1429	0.1429	0.1429	0.1429	0.1429
E↑	setup_rising to CP	0.1478	0.1527	0.1527	0.1478	0.1478
TE↓	hold_rising to CP	-0.0537	-0.0537	-0.0537	-0.0537	-0.0537
TE↑	hold_rising to CP	-0.0525	-0.0525	-0.0525	-0.0525	-0.0525

Timing Constraints (ns) at 25C, 1.20V Typ process

TE↓	setup_rising to CP	0.1372	0.1376	0.1372	0.1372	0.1372
TE↑	setup_rising to CP	0.2072	0.2072	0.2072	0.2072	0.2072
TI↓	hold_rising to CP	-0.1229	-0.1229	-0.1229	-0.1229	-0.1229
TI↑	hold_rising to CP	-0.0614	-0.0614	-0.0614	-0.0614	-0.0614
TI↓	setup_rising to CP	0.2032	0.2032	0.2032	0.2033	0.2033
TI↑	setup_rising to CP	0.1018	0.1018	0.1018	0.1018	0.1018

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.125	0.125	0.14	0.15	0.155
CP	min_pulse_width_low	0.24	0.245	0.24	0.24	0.24
D↓	hold_rising to CP	-0.1242	-0.1242	-0.1242	-0.1289	-0.1289
D↑	hold_rising to CP	-0.1733	-0.1733	-0.1686	-0.1733	-0.1733
D↓	setup_rising to CP	0.2342	0.2342	0.2342	0.2342	0.2342
D↑	setup_rising to CP	0.2343	0.2343	0.2338	0.2343	0.2343
E↓	hold_rising to CP	-0.1391	-0.1391	-0.1391	-0.1391	-0.1391
E↑	hold_rising to CP	-0.1502	-0.1502	-0.1502	-0.1502	-0.1502
E↓	setup_rising to CP	0.2494	0.2494	0.2447	0.2494	0.2447
E↑	setup_rising to CP	0.2500	0.2500	0.2500	0.2500	0.2500
TE↓	hold_rising to CP	-0.0902	-0.0902	-0.0902	-0.0902	-0.0902
TE↑	hold_rising to CP	-0.1097	-0.1097	-0.1097	-0.1097	-0.1097
TE↓	setup_rising to CP	0.2341	0.2341	0.2341	0.2341	0.2341
TE↑	setup_rising to CP	0.3397	0.3397	0.3397	0.3397	0.3397
TI↓	hold_rising to CP	-0.2136	-0.2136	-0.2136	-0.2134	-0.2134
TI↑	hold_rising to CP	-0.1232	-0.1232	-0.1232	-0.1282	-0.1232
TI↓	setup_rising to CP	0.3294	0.3294	0.3294	0.3344	0.3344
TI↑	setup_rising to CP	0.1789	0.1789	0.1789	0.1787	0.1787

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.115	0.115	0.125	0.135	0.145
CP	min_pulse_width_low	0.225	0.225	0.225	0.225	0.22
D↓	hold_rising to CP	-0.1137	-0.1132	-0.1137	-0.1136	-0.1136
D↑	hold_rising to CP	-0.1532	-0.1532	-0.1532	-0.1532	-0.1532



Timing Constraints (ns) at 125C, 1.15V Worst process

D↓	setup_rising to CP	0.2135	0.2135	0.2135	0.2135	0.2135
D↑	setup_rising to CP	0.2136	0.2136	0.2136	0.2136	0.2136
E↓	hold_rising to CP	-0.1285	-0.1285	-0.1285	-0.1285	-0.1285
E↑	hold_rising to CP	-0.1397	-0.1397	-0.1392	-0.1397	-0.1397
E↓	setup_rising to CP	0.2295	0.2295	0.2290	0.2295	0.2295
E↑	setup_rising to CP	0.2300	0.2300	0.2300	0.2300	0.2300
TE↓	hold_rising to CP	-0.0847	-0.0847	-0.0847	-0.0847	-0.0847
TE↑	hold_rising to CP	-0.0945	-0.0945	-0.0947	-0.0992	-0.0992
TE↓	setup_rising to CP	0.1628	0.2187	0.1623	0.2187	0.2187
TE↑	setup_rising to CP	0.3094	0.3094	0.3094	0.3094	0.3094
TI↓	hold_rising to CP	-0.1933	-0.1933	-0.1933	-0.1935	-0.1935
TI↑	hold_rising to CP	-0.1081	-0.1081	-0.1130	-0.1130	-0.1130
TI↓	setup_rising to CP	0.3039	0.3039	0.3039	0.3089	0.3089
TI↑	setup_rising to CP	0.1635	0.1635	0.1635	0.1634	0.1634

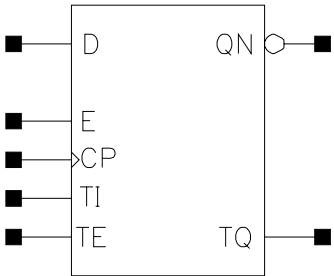
Speed-Optimised

HS65_LSS_SDFPHQNT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Data Enable Active High, QN Output Only

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

IQ	TQ
IQ	IQ

Functions

CP	TE	TI	E	D	IQ	IQ
/	0	-	1	D	-	D
/	0	-	0	-	IQ	IQ
/	1	TI	-	-	-	TI
-	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	6.00	15.6000
X27	2.6	6.20	16.1200
X35	2.6	6.60	17.1600



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.163e-06	2.592e-09
X27	1.340e-06	3.004e-09
X35	1.529e-06	3.420e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	3.150e-04	1.215e-07
X27	3.683e-04	1.318e-07
X35	4.253e-04	1.429e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.771e-04	1.035e-07
X27	3.235e-04	1.112e-07
X35	3.731e-04	1.198e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.132e-03	9.159e-03	9.138e-03
D (stable)	4.083e-03	4.076e-03	4.084e-03
E (stable)	2.047e-02	2.041e-02	2.048e-02
TE (stable)	7.009e-03	6.999e-03	7.011e-03
TI (stable)	4.717e-03	4.695e-03	4.718e-03
CP to QN	1.829e-02	2.116e-02	2.374e-02
CP to TQ	1.827e-02	2.113e-02	2.370e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	-6.124e-06	-1.301e-05	-5.947e-06
D (stable)	-2.159e-04	-2.158e-04	-2.158e-04

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

E (stable)	-2.286e-04	-2.286e-04	-2.291e-04
TE (stable)	2.034e-04	2.031e-04	2.032e-04
TI (stable)	-3.361e-05	-3.371e-05	-3.335e-05
CP to QN	-1.424e-04	-1.244e-04	-1.453e-04
CP to TQ	-1.424e-04	-1.244e-04	-1.453e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0015	0.0015	0.0015
E	0.0020	0.0021	0.0020
TE	0.0022	0.0022	0.0022
TI	0.0013	0.0013	0.0013

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1192	0.1253	0.1294	0.5786	0.3918	0.2968
CP to QN↑	0.1292	0.1360	0.1398	0.8113	0.5470	0.4119
CP to TQ↓	0.1079	0.1087	0.1080	4.8653	4.9001	4.8286
CP to TQ↑	0.1036	0.1045	0.1040	8.3830	8.3860	8.3860

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1942	0.2042	0.2106	0.9025	0.6061	0.4576
CP to QN↑	0.2105	0.2216	0.2274	1.1750	0.7893	0.5941
CP to TQ↓	0.1755	0.1767	0.1757	7.6768	7.7182	7.6506
CP to TQ↑	0.1664	0.1678	0.1671	12.0339	12.0454	12.0358



Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1779	0.1871	0.1931	0.8367	0.5628	0.4248
CP to QN↑	0.1929	0.2030	0.2085	1.0922	0.7342	0.5526
CP to TQ↓	0.1612	0.1623	0.1614	7.1399	7.1746	7.1091
CP to TQ↑	0.1530	0.1543	0.1536	11.2482	11.2552	11.2484

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.085	0.085	0.085
CP	min_pulse_width_low	0.14	0.14	0.14
D↓	hold_rising to CP	-0.0627	-0.0627	-0.0627
D↑	hold_rising to CP	-0.0772	-0.0772	-0.0772
D↓	setup_rising to CP	0.1281	0.1281	0.1281
D↑	setup_rising to CP	0.1278	0.1278	0.1278
E↓	hold_rising to CP	-0.0727	-0.0727	-0.0727
E↑	hold_rising to CP	-0.0627	-0.0627	-0.0627
E↓	setup_rising to CP	0.1429	0.1429	0.1429
E↑	setup_rising to CP	0.1430	0.1427	0.1430
TE↓	hold_rising to CP	-0.0540	-0.0536	-0.0540
TE↑	hold_rising to CP	-0.0477	-0.0477	-0.0477
TE↓	setup_rising to CP	0.1322	0.1225	0.1322
TE↑	setup_rising to CP	0.1972	0.1925	0.1972
TI↓	hold_rising to CP	-0.1177	-0.1177	-0.1177
TI↑	hold_rising to CP	-0.0615	-0.0564	-0.0615
TI↓	setup_rising to CP	0.1883	0.1883	0.1883
TI↑	setup_rising to CP	0.0969	0.0969	0.0969

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.145	0.145	0.145

Timing Constraints (ns) at 125C, 1.10V Worst process

CP	min_pulse_width_low	0.23	0.23	0.23
D↓	hold_rising to CP	-0.1242	-0.1242	-0.1242
D↑	hold_rising to CP	-0.1686	-0.1688	-0.1686
D↓	setup_rising to CP	0.2197	0.2192	0.2197
D↑	setup_rising to CP	0.2338	0.2338	0.2338
E↓	hold_rising to CP	-0.1391	-0.1391	-0.1391
E↑	hold_rising to CP	-0.1497	-0.1497	-0.1497
E↓	setup_rising to CP	0.2494	0.2447	0.2494
E↑	setup_rising to CP	0.2355	0.2350	0.2355
TE↓	hold_rising to CP	-0.0902	-0.0902	-0.0902
TE↑	hold_rising to CP	-0.1047	-0.1047	-0.1047
TE↓	setup_rising to CP	0.2341	0.2341	0.2341
TE↑	setup_rising to CP	0.3245	0.3247	0.3245
TI↓	hold_rising to CP	-0.2086	-0.2034	-0.2086
TI↑	hold_rising to CP	-0.1232	-0.1233	-0.1232
TI↓	setup_rising to CP	0.3143	0.3142	0.3143
TI↑	setup_rising to CP	0.1737	0.1739	0.1737

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.13	0.13	0.13
CP	min_pulse_width_low	0.21	0.21	0.21
D↓	hold_rising to CP	-0.1132	-0.1132	-0.1132
D↑	hold_rising to CP	-0.1532	-0.1532	-0.1532
D↓	setup_rising to CP	0.1990	0.1990	0.1990
D↑	setup_rising to CP	0.2135	0.2135	0.2135
E↓	hold_rising to CP	-0.1286	-0.1286	-0.1286
E↑	hold_rising to CP	-0.1345	-0.1345	-0.1345
E↓	setup_rising to CP	0.2295	0.2290	0.2295
E↑	setup_rising to CP	0.2195	0.2195	0.2195
TE↓	hold_rising to CP	-0.0847	-0.0847	-0.0847
TE↑	hold_rising to CP	-0.0942	-0.0942	-0.0942
TE↓	setup_rising to CP	0.1619	0.1619	0.1619
TE↑	setup_rising to CP	0.2995	0.2992	0.2995
TI↓	hold_rising to CP	-0.1883	-0.1883	-0.1883



Timing Constraints (ns) at 125C, 1.15V Worst process

TI↑	hold_rising to CP	-0.1079	-0.1079	-0.1079
TI↓	setup_rising to CP	0.2889	0.2891	0.2889
TI↑	setup_rising to CP	0.1584	0.1585	0.1584

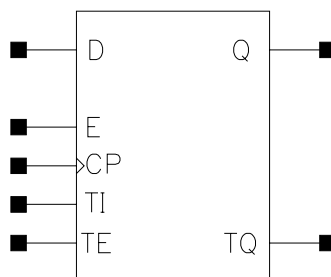
HS65_LS_SDFPHQT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Data Enable Active High, Q Output Only

The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

IQ	TQ
IQ	IQ

Functions

CP	TE	TI	E	D	IQ	IQ
/	0	-	1	D	-	D
/	0	-	0	-	IQ	IQ
/	1	TI	-	-	-	TI
-	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	5.20	13.5200
X9	2.6	5.40	14.0400
X18	2.6	5.60	14.5600



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X27	2.6	6.00	15.6000
X35	2.6	6.20	16.1200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	7.576e-07	1.518e-09
X9	8.116e-07	1.774e-09
X18	9.938e-07	2.167e-09
X27	1.172e-06	2.588e-09
X35	1.350e-06	3.006e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.930e-04	9.359e-08
X9	2.099e-04	1.005e-07
X18	2.640e-04	1.094e-07
X27	3.173e-04	1.218e-07
X35	3.710e-04	1.309e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.710e-04	8.200e-08
X9	1.856e-04	8.739e-08
X18	2.327e-04	9.396e-08
X27	2.791e-04	1.037e-07
X35	3.258e-04	1.104e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.069e-03	9.295e-03	9.239e-03	9.306e-03	9.297e-03
D (stable)	4.039e-03	4.081e-03	4.083e-03	4.084e-03	4.084e-03
E (stable)	1.997e-02	2.053e-02	2.056e-02	2.054e-02	2.055e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

TE (stable)	7.130e-03	7.248e-03	7.204e-03	7.247e-03	7.248e-03
TI (stable)	4.685e-03	4.761e-03	4.765e-03	4.766e-03	4.768e-03
CP to Q	1.117e-02	1.291e-02	1.597e-02	2.073e-02	2.578e-02
CP to TQ	1.117e-02	1.291e-02	1.597e-02	2.075e-02	2.584e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	-1.548e-06	-3.290e-06	7.418e-07	-3.442e-06	-3.072e-06
D (stable)	-2.084e-04	-2.084e-04	-2.086e-04	-2.085e-04	-2.085e-04
E (stable)	-2.094e-04	-2.117e-04	-2.113e-04	-2.108e-04	-2.108e-04
TE (stable)	2.041e-04	2.063e-04	2.063e-04	2.060e-04	2.062e-04
TI (stable)	-3.182e-05	-3.172e-05	-3.169e-05	-3.170e-05	-3.176e-05
CP to Q	-8.937e-05	-8.625e-05	-9.738e-05	-2.064e-04	-8.739e-05
CP to TQ	-8.937e-05	-8.624e-05	-9.735e-05	-2.064e-04	-8.739e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0014	0.0015	0.0015	0.0015	0.0015
E	0.0021	0.0021	0.0021	0.0021	0.0021
TE	0.0021	0.0022	0.0022	0.0022	0.0022
TI	0.0013	0.0013	0.0013	0.0013	0.0013

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.0945	0.1014	0.1170	0.1361	0.1532	2.4186	1.4105	0.7269	0.5128	0.4071
CP to Q↑	0.0916	0.0955	0.1037	0.1157	0.1262	3.1615	1.7112	0.8691	0.5970	0.4591
CP to TQ↓	0.0969	0.1147	0.1448	0.1707	0.1939	4.9787	4.8835	4.9560	5.0671	5.2002
CP to TQ↑	0.0941	0.1103	0.1285	0.1467	0.1640	8.6188	8.4775	8.4735	8.4859	8.5081



Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1539	0.1658	0.1924	0.2260	0.2556	3.9005	2.2955	1.1568	0.8134	0.6462
CP to Q↑	0.1466	0.1532	0.1666	0.1865	0.2037	4.6253	2.5193	1.2829	0.8832	0.6838
CP to TQ↓	0.1568	0.1857	0.2369	0.2823	0.3236	7.8486	7.6181	7.7689	7.9625	8.1786
CP to TQ↑	0.1511	0.1769	0.2075	0.2378	0.2668	12.3578	12.0980	12.0847	12.1116	12.1545

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1413	0.1522	0.1767	0.2073	0.2346	3.6071	2.1148	1.0698	0.7513	0.5964
CP to Q↑	0.1346	0.1405	0.1529	0.1712	0.1872	4.3048	2.3386	1.1901	0.8193	0.6331
CP to TQ↓	0.1442	0.1706	0.2168	0.2575	0.2943	7.3058	7.0968	7.2408	7.4251	7.6349
CP to TQ↑	0.1389	0.1626	0.1905	0.2180	0.2444	11.5541	11.3117	11.3089	11.3393	11.3779

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.075	0.09	0.12	0.15	0.175
CP	min_pulse_width_low	0.145	0.145	0.135	0.13	0.13
D↓	hold_rising to CP	-0.0627	-0.0627	-0.0627	-0.0627	-0.0627
D↑	hold_rising to CP	-0.0772	-0.0820	-0.0820	-0.0822	-0.0822
D↓	setup_rising to CP	0.1381	0.1331	0.1281	0.1231	0.1179
D↑	setup_rising to CP	0.1278	0.1278	0.1278	0.1278	0.1278
E↓	hold_rising to CP	-0.0730	-0.0727	-0.0727	-0.0727	-0.0727
E↑	hold_rising to CP	-0.0627	-0.0676	-0.0674	-0.0676	-0.0676
E↓	setup_rising to CP	0.1377	0.1429	0.1430	0.1429	0.1429
E↑	setup_rising to CP	0.1480	0.1477	0.1378	0.1326	0.1328
TE↓	hold_rising to CP	-0.0540	-0.0536	-0.0536	-0.0536	-0.0536
TE↑	hold_rising to CP	-0.0477	-0.0525	-0.0525	-0.0529	-0.0529

Timing Constraints (ns) at 25C, 1.20V Typ process

TE↓	setup_rising to CP	0.1343	0.1389	0.1333	0.1336	0.1336
TE↑	setup_rising to CP	0.2025	0.2024	0.1922	0.1873	0.1872
TI↓	hold_rising to CP	-0.1177	-0.1177	-0.1177	-0.1177	-0.1177
TI↑	hold_rising to CP	-0.0615	-0.0616	-0.0614	-0.0614	-0.0614
TI↓	setup_rising to CP	0.1983	0.1933	0.1882	0.1833	0.1781
TI↑	setup_rising to CP	0.1018	0.1018	0.1018	0.1018	0.1018

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.125	0.15	0.2	0.25	0.295
CP	min_pulse_width_low	0.24	0.235	0.225	0.22	0.215
D↓	hold_rising to CP	-0.1242	-0.1242	-0.1242	-0.1242	-0.1242
D↑	hold_rising to CP	-0.1688	-0.1733	-0.1738	-0.1738	-0.1738
D↓	setup_rising to CP	0.2342	0.2292	0.2194	0.2092	0.2042
D↑	setup_rising to CP	0.2338	0.2342	0.2388	0.2342	0.2342
E↓	hold_rising to CP	-0.1391	-0.1391	-0.1391	-0.1391	-0.1391
E↑	hold_rising to CP	-0.1498	-0.1502	-0.1502	-0.1502	-0.1502
E↓	setup_rising to CP	0.2444	0.2494	0.2494	0.2494	0.2494
E↑	setup_rising to CP	0.2450	0.2451	0.2348	0.2297	0.2198
TE↓	hold_rising to CP	-0.0902	-0.0902	-0.0902	-0.0902	-0.0902
TE↑	hold_rising to CP	-0.1047	-0.1097	-0.1097	-0.1097	-0.1102
TE↓	setup_rising to CP	0.2289	0.2341	0.2341	0.2294	0.2294
TE↑	setup_rising to CP	0.3398	0.3348	0.3200	0.3145	0.3095
TI↓	hold_rising to CP	-0.2086	-0.2086	-0.2084	-0.2086	-0.2086
TI↑	hold_rising to CP	-0.1232	-0.1232	-0.1234	-0.1283	-0.1282
TI↓	setup_rising to CP	0.3292	0.3242	0.3093	0.3042	0.2992
TI↑	setup_rising to CP	0.1789	0.1790	0.1839	0.1789	0.1789

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.115	0.14	0.18	0.225	0.27
CP	min_pulse_width_low	0.22	0.215	0.205	0.2	0.195
D↓	hold_rising to CP	-0.1136	-0.1132	-0.1132	-0.1132	-0.1132
D↑	hold_rising to CP	-0.1481	-0.1532	-0.1532	-0.1532	-0.1537



Timing Constraints (ns) at 125C, 1.15V Worst process

D↓	setup_rising to CP	0.2135	0.2087	0.1940	0.1885	0.1835
D↑	setup_rising to CP	0.2136	0.2187	0.2187	0.2187	0.2182
E↓	hold_rising to CP	-0.1285	-0.1285	-0.1281	-0.1281	-0.1286
E↑	hold_rising to CP	-0.1345	-0.1392	-0.1397	-0.1397	-0.1392
E↓	setup_rising to CP	0.2240	0.2295	0.2295	0.2295	0.2295
E↑	setup_rising to CP	0.2295	0.2250	0.2143	0.2045	0.1994
TE↓	hold_rising to CP	-0.0847	-0.0847	-0.0847	-0.0847	-0.0847
TE↑	hold_rising to CP	-0.0942	-0.0947	-0.0993	-0.0992	-0.0992
TE↓	setup_rising to CP	0.1619	0.1619	0.1619	0.1619	0.1619
TE↑	setup_rising to CP	0.3095	0.3092	0.2945	0.2895	0.2845
TI↓	hold_rising to CP	-0.1883	-0.1883	-0.1883	-0.1883	-0.1883
TI↑	hold_rising to CP	-0.1079	-0.1081	-0.1130	-0.1130	-0.1132
TI↓	setup_rising to CP	0.3039	0.2989	0.2839	0.2789	0.2739
TI↑	setup_rising to CP	0.1584	0.1635	0.1635	0.1635	0.1635

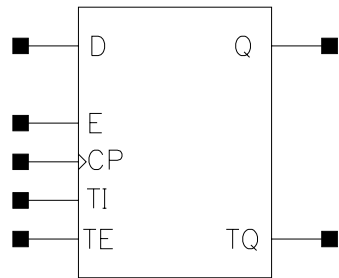
Speed-Optimised

HS65_LSS_SDFPHQT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Data Enable Active High, Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

IQ	TQ
IQ	IQ

Functions

CP	TE	TI	E	D	IQ	IQ
/	0	-	1	D	-	D
/	0	-	0	-	IQ	IQ
/	1	TI	-	-	-	TI
-	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	6.20	16.1200
X27	2.6	6.40	16.6400
X35	2.6	6.60	17.1600



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.150e-06	2.623e-09
X27	1.322e-06	3.043e-09
X35	1.500e-06	3.449e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	3.095e-04	1.245e-07
X27	3.609e-04	1.348e-07
X35	4.149e-04	1.439e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.722e-04	1.061e-07
X27	3.170e-04	1.139e-07
X35	3.640e-04	1.206e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.222e-03	9.210e-03	9.200e-03
D (stable)	4.126e-03	4.125e-03	4.125e-03
E (stable)	2.062e-02	2.060e-02	2.061e-02
TE (stable)	7.274e-03	7.272e-03	7.272e-03
TI (stable)	4.775e-03	4.773e-03	4.773e-03
CP to Q	1.873e-02	2.150e-02	2.406e-02
CP to TQ	1.871e-02	2.147e-02	2.403e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.279e-05	1.313e-05	9.587e-06
D (stable)	-2.049e-04	-2.048e-04	-2.050e-04

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

E (stable)	-2.193e-04	-2.192e-04	-2.207e-04
TE (stable)	2.006e-04	2.006e-04	2.004e-04
TI (stable)	-3.831e-05	-3.826e-05	-3.861e-05
CP to Q	-1.354e-04	-1.354e-04	-1.264e-04
CP to TQ	-1.354e-04	-1.354e-04	-1.264e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0015	0.0015	0.0015
E	0.0021	0.0020	0.0020
TE	0.0023	0.0023	0.0023
TI	0.0013	0.0013	0.0013

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1646	0.1700	0.1740	0.5782	0.3905	0.2952
CP to Q↑	0.1707	0.1762	0.1806	0.8122	0.5487	0.4138
CP to TQ↓	0.0946	0.0939	0.0936	4.7296	4.7392	4.7440
CP to TQ↑	0.1003	0.0998	0.0999	8.3535	8.3618	8.3807

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2705	0.2791	0.2860	0.9091	0.6089	0.4577
CP to Q↑	0.2774	0.2860	0.2931	1.1806	0.7947	0.5973
CP to TQ↓	0.1549	0.1538	0.1531	7.4316	7.4409	7.4410
CP to TQ↑	0.1614	0.1606	0.1608	11.9959	12.0093	12.0580



Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2483	0.2558	0.2626	0.8427	0.5648	0.4248
CP to Q↑	0.2543	0.2623	0.2689	1.0977	0.7385	0.5561
CP to TQ↓	0.1424	0.1414	0.1408	6.9105	6.9209	6.9231
CP to TQ↑	0.1484	0.1477	0.1478	11.2042	11.2166	11.2603

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.075	0.075	0.075
CP	min_pulse_width_low	0.15	0.15	0.15
D↓	hold_rising to CP	-0.0627	-0.0627	-0.0627
D↑	hold_rising to CP	-0.0822	-0.0822	-0.0822
D↓	setup_rising to CP	0.1381	0.1381	0.1381
D↑	setup_rising to CP	0.1276	0.1276	0.1276
E↓	hold_rising to CP	-0.0730	-0.0730	-0.0730
E↑	hold_rising to CP	-0.0677	-0.0677	-0.0677
E↓	setup_rising to CP	0.1479	0.1479	0.1479
E↑	setup_rising to CP	0.1527	0.1527	0.1527
TE↓	hold_rising to CP	-0.0537	-0.0537	-0.0537
TE↑	hold_rising to CP	-0.0477	-0.0477	-0.0477
TE↓	setup_rising to CP	0.1387	0.1387	0.1387
TE↑	setup_rising to CP	0.2072	0.2072	0.2072
TI↓	hold_rising to CP	-0.1227	-0.1227	-0.1227
TI↑	hold_rising to CP	-0.0613	-0.0615	-0.0613
TI↓	setup_rising to CP	0.2033	0.2033	0.2033
TI↑	setup_rising to CP	0.1018	0.1018	0.1018

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.13	0.13	0.13

Timing Constraints (ns) at 125C, 1.10V Worst process

CP	min_pulse_width_low	0.24	0.24	0.24
D↓	hold_rising to CP	-0.1289	-0.1289	-0.1289
D↑	hold_rising to CP	-0.1736	-0.1736	-0.1736
D↓	setup_rising to CP	0.2342	0.2342	0.2342
D↑	setup_rising to CP	0.2341	0.2341	0.2341
E↓	hold_rising to CP	-0.1391	-0.1391	-0.1391
E↑	hold_rising to CP	-0.1548	-0.1502	-0.1548
E↓	setup_rising to CP	0.2544	0.2544	0.2544
E↑	setup_rising to CP	0.2500	0.2500	0.2500
TE↓	hold_rising to CP	-0.0902	-0.0902	-0.0902
TE↑	hold_rising to CP	-0.1046	-0.1046	-0.1046
TE↓	setup_rising to CP	0.2387	0.2387	0.2387
TE↑	setup_rising to CP	0.3397	0.3397	0.3400
TI↓	hold_rising to CP	-0.2134	-0.2134	-0.2134
TI↑	hold_rising to CP	-0.1232	-0.1232	-0.1232
TI↓	setup_rising to CP	0.3342	0.3342	0.3342
TI↑	setup_rising to CP	0.1789	0.1789	0.1789

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.12	0.115	0.115
CP	min_pulse_width_low	0.22	0.22	0.22
D↓	hold_rising to CP	-0.1136	-0.1136	-0.1136
D↑	hold_rising to CP	-0.1531	-0.1531	-0.1531
D↓	setup_rising to CP	0.2135	0.2135	0.2135
D↑	setup_rising to CP	0.2187	0.2187	0.2187
E↓	hold_rising to CP	-0.1285	-0.1285	-0.1285
E↑	hold_rising to CP	-0.1397	-0.1397	-0.1397
E↓	setup_rising to CP	0.2340	0.2340	0.2340
E↑	setup_rising to CP	0.2299	0.2299	0.2299
TE↓	hold_rising to CP	-0.0847	-0.0847	-0.0847
TE↑	hold_rising to CP	-0.0942	-0.0942	-0.0942
TE↓	setup_rising to CP	0.2137	0.2137	0.2137
TE↑	setup_rising to CP	0.3099	0.3099	0.3099
TI↓	hold_rising to CP	-0.1933	-0.1933	-0.1933



Timing Constraints (ns) at 125C, 1.15V Worst process

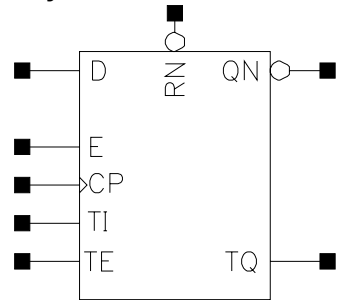
TI↑	hold_rising to CP	-0.1081	-0.1081	-0.1081
TI↓	setup_rising to CP	0.3087	0.3087	0.3087
TI↑	setup_rising to CP	0.1584	0.1584	0.1584

HS65_LS_SDFPHRQNT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Data Enable Active High, QN Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

IQ	TQ
IQ	IQ

Functions

CP	RN	TE	TI	E	D	IQ	IQ
-	0	-	-	-	-	-	0
/	1	0	-	1	D	-	D
/	1	0	-	0	-	IQ	IQ
/	1	1	TI	-	-	-	TI
-	1	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	6.40	16.6400
X9	2.6	6.40	16.6400



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	6.60	17.1600
X27	2.6	7.00	18.2000
X35	2.6	7.20	18.7200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	8.076e-07	1.657e-09
X9	8.889e-07	1.792e-09
X18	1.087e-06	2.072e-09
X27	1.303e-06	2.351e-09
X35	1.507e-06	2.626e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	2.080e-04	1.080e-07
X9	2.335e-04	1.108e-07
X18	2.945e-04	1.174e-07
X27	3.625e-04	1.269e-07
X35	4.267e-04	1.335e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.842e-04	9.518e-08
X9	2.063e-04	9.710e-08
X18	2.594e-04	1.021e-07
X27	3.186e-04	1.098e-07
X35	3.744e-04	1.148e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	1.001e-02	1.005e-02	1.005e-02	1.002e-02	1.003e-02
D (stable)	3.899e-03	3.903e-03	3.897e-03	3.902e-03	3.903e-03

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

E (stable)	2.121e-02	2.128e-02	2.122e-02	2.125e-02	2.127e-02
RN (stable)	9.119e-03	9.175e-03	9.122e-03	9.139e-03	9.162e-03
TE (stable)	6.538e-03	6.587e-03	6.549e-03	6.564e-03	6.567e-03
TI (stable)	4.414e-03	4.423e-03	4.417e-03	4.420e-03	4.423e-03
CP to QN	1.327e-02	1.442e-02	1.721e-02	2.083e-02	2.488e-02
CP to TQ	1.327e-02	1.441e-02	1.720e-02	2.082e-02	2.489e-02
RN to QN	1.265e-02	1.329e-02	1.468e-02	1.658e-02	1.839e-02
RN to TQ	1.265e-02	1.329e-02	1.467e-02	1.657e-02	1.837e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.032e-05	8.834e-06	1.098e-05	7.310e-06	7.214e-06
D (stable)	-1.694e-04	-1.695e-04	-1.696e-04	-1.696e-04	-1.695e-04
E (stable)	-2.449e-04	-2.449e-04	-2.458e-04	-2.458e-04	-2.459e-04
RN (stable)	2.131e-06	2.261e-06	2.391e-06	2.391e-06	2.261e-06
TE (stable)	1.397e-04	1.395e-04	1.393e-04	1.391e-04	1.391e-04
TI (stable)	-1.680e-05	-1.679e-05	-1.687e-05	-1.692e-05	-1.688e-05
CP to QN	-2.512e-04	-2.454e-04	-2.534e-04	-2.384e-04	-2.383e-04
CP to TQ	-2.512e-04	-2.454e-04	-2.534e-04	-2.383e-04	-2.382e-04
RN to QN	-1.271e-03	-1.396e-03	-1.477e-03	-1.763e-03	-1.815e-03
RN to TQ	-1.271e-03	-1.396e-03	-1.477e-03	-1.763e-03	-1.815e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0017	0.0017	0.0017	0.0017	0.0017
E	0.0023	0.0023	0.0023	0.0023	0.0023
RN	0.0014	0.0014	0.0014	0.0014	0.0014
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1599	0.1579	0.1686	0.1819	0.1948	2.5586	1.3186	0.6763	0.4700	0.3643
CP to QN↑	0.1479	0.1484	0.1631	0.1673	0.1769	3.6682	1.6653	0.8629	0.5894	0.4496
CP to TQ↓	0.0961	0.0960	0.0962	0.0957	0.0958	4.9458	4.7479	4.7199	4.7056	4.7023
CP to TQ↑	0.1050	0.1047	0.1048	0.1044	0.1046	8.8826	8.3474	8.3408	8.3281	8.3278
RN to QN↑	0.1337	0.1304	0.1430	0.1472	0.1563	3.7030	1.6827	0.8744	0.5968	0.4556
RN to TQ↓	0.0901	0.0868	0.0866	0.0865	0.0867	4.8105	4.6064	4.5841	4.5691	4.5678

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.2595	0.2564	0.2723	0.2928	0.3127	4.0634	2.0857	1.0538	0.7258	0.5654
CP to QN↑	0.2407	0.2419	0.2643	0.2715	0.2864	5.3706	2.4523	1.2642	0.8571	0.6560
CP to TQ↓	0.1567	0.1567	0.1571	0.1563	0.1564	7.7200	7.4620	7.4323	7.4186	7.4171
CP to TQ↑	0.1692	0.1688	0.1689	0.1683	0.1686	12.7916	11.9993	11.9806	11.9465	11.9411
RN to QN↑	0.2091	0.2040	0.2232	0.2302	0.2440	5.4235	2.4735	1.2801	0.8677	0.6651
RN to TQ↓	0.1394	0.1341	0.1338	0.1337	0.1340	7.4790	7.2164	7.1914	7.1768	7.1731

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.2384	0.2350	0.2501	0.2693	0.2882	3.7771	1.9306	0.9766	0.6730	0.5240
CP to QN↑	0.2209	0.2219	0.2431	0.2498	0.2639	5.0192	2.2775	1.1747	0.7967	0.6093
CP to TQ↓	0.1439	0.1439	0.1442	0.1435	0.1436	7.1879	6.9393	6.9134	6.8988	6.8958
CP to TQ↑	0.1554	0.1550	0.1551	0.1545	0.1548	11.9748	11.2134	11.1963	11.1680	11.1638
RN to QN↑	0.1932	0.1882	0.2063	0.2129	0.2260	5.0652	2.2965	1.1892	0.8060	0.6175

Propagation Delay at 125C, 1.15V Worst process

RN to TQ↓	0.1292	0.1242	0.1239	0.1238	0.1240	6.9606	6.7135	6.6868	6.6759	6.6715

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.08	0.08	0.09	0.09	0.095
CP	min_pulse_width_low	0.155	0.155	0.155	0.155	0.155
D↓	hold_rising to CP	-0.0630	-0.0630	-0.0630	-0.0630	-0.0630
D↑	hold_rising to CP	-0.0872	-0.0872	-0.0872	-0.0872	-0.0872
D↓	setup_rising to CP	0.1431	0.1480	0.1433	0.1431	0.1480
D↑	setup_rising to CP	0.1529	0.1529	0.1529	0.1529	0.1529
E↓	hold_rising to CP	-0.0777	-0.0777	-0.0777	-0.0777	-0.0777
E↑	hold_rising to CP	-0.0824	-0.0824	-0.0824	-0.0824	-0.0824
E↓	setup_rising to CP	0.1529	0.1529	0.1529	0.1529	0.1529
E↑	setup_rising to CP	0.1577	0.1577	0.1577	0.1577	0.1577
RN	min_pulse_width_low	0.08	0.08	0.09	0.09	0.1
RN↑	recovery_rising to CP	0.0477	0.0477	0.0477	0.0477	0.0477
RN↑	removal_rising to CP	0.0024	0.0024	0.0024	0.0024	0.0024
TE↓	hold_rising to CP	-0.0589	-0.0589	-0.0589	-0.0589	-0.0589
TE↑	hold_rising to CP	-0.0577	-0.0577	-0.0577	-0.0577	-0.0577
TE↓	setup_rising to CP	0.1577	0.1577	0.1577	0.1577	0.1577
TE↑	setup_rising to CP	0.2122	0.2122	0.2122	0.2122	0.2122
TI↓	hold_rising to CP	-0.1279	-0.1279	-0.1279	-0.1279	-0.1279
TI↑	hold_rising to CP	-0.0666	-0.0666	-0.0666	-0.0666	-0.0666
TI↓	setup_rising to CP	0.2133	0.2133	0.2134	0.2133	0.2133
TI↑	setup_rising to CP	0.1273	0.1273	0.1273	0.1273	0.1273

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.135	0.135	0.15	0.15	0.16
CP	min_pulse_width_low	0.26	0.26	0.26	0.26	0.26
D↓	hold_rising to CP	-0.1292	-0.1292	-0.1292	-0.1292	-0.1292
D↑	hold_rising to CP	-0.1837	-0.1883	-0.1837	-0.1837	-0.1883
D↓	setup_rising to CP	0.2391	0.2391	0.2391	0.2391	0.2391



Timing Constraints (ns) at 125C, 1.10V Worst process

D↑	setup_rising to CP	0.2797	0.2797	0.2797	0.2797	0.2797
E↓	hold_rising to CP	-0.1438	-0.1438	-0.1438	-0.1438	-0.1438
E↑	hold_rising to CP	-0.1598	-0.1598	-0.1598	-0.1598	-0.1598
E↓	setup_rising to CP	0.2649	0.2649	0.2644	0.2649	0.2644
E↑	setup_rising to CP	0.2600	0.2600	0.2600	0.2600	0.2600
RN	min_pulse_width_low	0.13	0.125	0.14	0.145	0.15
RN↑	recovery_rising to CP	0.0752	0.0803	0.0752	0.0752	0.0803
RN↑	removal_rising to CP	0.0002	0.0002	0.0001	0.0002	0.0002
TE↓	hold_rising to CP	-0.0952	-0.0952	-0.0952	-0.0952	-0.0952
TE↑	hold_rising to CP	-0.1248	-0.1248	-0.1248	-0.1248	-0.1248
TE↓	setup_rising to CP	0.2761	0.2808	0.2761	0.2808	0.2808
TE↑	setup_rising to CP	0.3547	0.3547	0.3548	0.3547	0.3547
TI↓	hold_rising to CP	-0.2136	-0.2136	-0.2136	-0.2136	-0.2136
TI↑	hold_rising to CP	-0.1384	-0.1384	-0.1384	-0.1384	-0.1384
TI↓	setup_rising to CP	0.3494	0.3494	0.3444	0.3494	0.3494
TI↑	setup_rising to CP	0.2241	0.2243	0.2241	0.2243	0.2243

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.12	0.125	0.135	0.14	0.15
CP	min_pulse_width_low	0.235	0.235	0.235	0.235	0.235
D↓	hold_rising to CP	-0.1182	-0.1182	-0.1135	-0.1182	-0.1182
D↑	hold_rising to CP	-0.1636	-0.1682	-0.1636	-0.1682	-0.1682
D↓	setup_rising to CP	0.2235	0.2235	0.2190	0.2235	0.2235
D↑	setup_rising to CP	0.2542	0.2542	0.2542	0.2542	0.2542
E↓	hold_rising to CP	-0.1335	-0.1335	-0.1335	-0.1335	-0.1335
E↑	hold_rising to CP	-0.1397	-0.1397	-0.1397	-0.1397	-0.1397
E↓	setup_rising to CP	0.2394	0.2394	0.2394	0.2394	0.2394
E↑	setup_rising to CP	0.2347	0.2347	0.2347	0.2347	0.2347
RN	min_pulse_width_low	0.12	0.115	0.13	0.135	0.145
RN↑	recovery_rising to CP	0.0700	0.0700	0.0700	0.0700	0.0700
RN↑	removal_rising to CP	0.0007	0.0008	0.0007	0.0007	0.0007
TE↓	hold_rising to CP	-0.0850	-0.0850	-0.0850	-0.0850	-0.0850
TE↑	hold_rising to CP	-0.1097	-0.1097	-0.1097	-0.1097	-0.1097
TE↓	setup_rising to CP	0.2533	0.2533	0.2533	0.2533	0.2533

Timing Constraints (ns) at 125C, 1.15V Worst process

TE↑	setup_rising to CP	0.3195	0.3242	0.3195	0.3242	0.3242
TI↓	hold_rising to CP	-0.1983	-0.1983	-0.1985	-0.1983	-0.1983
TI↑	hold_rising to CP	-0.1232	-0.1232	-0.1232	-0.1232	-0.1232
TI↓	setup_rising to CP	0.3138	0.3138	0.3138	0.3138	0.3138
TI↑	setup_rising to CP	0.2040	0.2040	0.2040	0.2040	0.2040



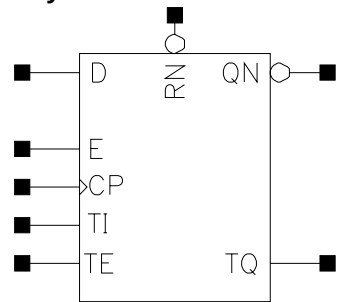
Speed-Optimised

HS65_LSS_SDFPHRQNT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Data Enable Active High, QN Output Only

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

IQ	TQ
IQ	IQ

Functions

CP	RN	TE	TI	E	D	IQ	IQ
-	0	-	-	-	-	-	0
/	1	0	-	1	D	-	D
/	1	0	-	0	-	IQ	IQ
/	1	1	TI	-	-	-	TI
-	1	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	7.20	18.7200
X27	2.6	7.40	19.2400



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X35	2.6	7.60	19.7600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.209e-06	2.577e-09
X27	1.410e-06	2.849e-09
X35	1.614e-06	3.128e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	3.271e-04	1.330e-07
X27	3.896e-04	1.405e-07
X35	4.538e-04	1.471e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.878e-04	1.145e-07
X27	3.422e-04	1.203e-07
X35	3.980e-04	1.252e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.647e-03	9.657e-03	9.651e-03
D (stable)	3.862e-03	3.865e-03	3.865e-03
E (stable)	2.097e-02	2.099e-02	2.099e-02
RN (stable)	9.120e-03	9.137e-03	9.142e-03
TE (stable)	6.498e-03	6.501e-03	6.502e-03
TI (stable)	4.348e-03	4.355e-03	4.355e-03
CP to QN	1.866e-02	2.154e-02	2.418e-02
CP to TQ	1.864e-02	2.150e-02	2.415e-02
RN to QN	1.504e-02	1.671e-02	1.807e-02
RN to TQ	1.503e-02	1.668e-02	1.804e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	-1.686e-07	-3.415e-07	-3.905e-07
D (stable)	-1.697e-04	-1.698e-04	-1.696e-04
E (stable)	-2.319e-04	-2.315e-04	-2.315e-04
RN (stable)	1.900e-05	1.913e-05	1.826e-05
TE (stable)	1.414e-04	1.414e-04	1.413e-04
TI (stable)	-1.639e-05	-1.643e-05	-1.647e-05
CP to QN	-1.864e-04	-1.873e-04	-1.865e-04
CP to TQ	-1.864e-04	-1.873e-04	-1.865e-04
RN to QN	-1.143e-03	-1.384e-03	-1.467e-03
RN to TQ	-1.143e-03	-1.384e-03	-1.467e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0017	0.0017	0.0017
E	0.0023	0.0023	0.0023
RN	0.0015	0.0015	0.0015
TE	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1246	0.1308	0.1358	0.5872	0.3963	0.2995
CP to QN↑	0.1376	0.1445	0.1503	0.8213	0.5540	0.4176
CP to TQ↓	0.1184	0.1182	0.1188	4.8954	4.8985	4.9348
CP to TQ↑	0.1129	0.1130	0.1134	8.3382	8.3489	8.3653
RN to QN↑	0.1061	0.1123	0.1177	0.8206	0.5532	0.4170
RN to TQ↓	0.0897	0.0895	0.0901	4.7388	4.7375	4.7765



Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.2041	0.2142	0.2224	0.9259	0.6191	0.4662
CP to QN↑	0.2262	0.2374	0.2470	1.1933	0.8015	0.6041
CP to TQ↓	0.1934	0.1931	0.1940	7.7038	7.7083	7.7511
CP to TQ↑	0.1817	0.1818	0.1825	11.9811	11.9989	12.0343
RN to QN↑	0.1644	0.1744	0.1829	1.1913	0.8000	0.6024
RN to TQ↓	0.1368	0.1367	0.1375	7.4190	7.4169	7.4562

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1869	0.1962	0.2038	0.8568	0.5741	0.4320
CP to QN↑	0.2069	0.2172	0.2261	1.1090	0.7451	0.5610
CP to TQ↓	0.1774	0.1772	0.1780	7.1690	7.1726	7.2145
CP to TQ↑	0.1671	0.1672	0.1678	11.1977	11.2133	11.2408
RN to QN↑	0.1518	0.1610	0.1689	1.1062	0.7433	0.5598
RN to TQ↓	0.1270	0.1268	0.1276	6.9037	6.9057	6.9407

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.095	0.09	0.095
CP	min_pulse_width_low	0.145	0.145	0.145
D↓	hold_rising to CP	-0.0630	-0.0630	-0.0630
D↑	hold_rising to CP	-0.0872	-0.0872	-0.0872
D↓	setup_rising to CP	0.1331	0.1331	0.1331
D↑	setup_rising to CP	0.1477	0.1477	0.1477
E↓	hold_rising to CP	-0.0730	-0.0730	-0.0730
E↑	hold_rising to CP	-0.0824	-0.0824	-0.0824

Timing Constraints (ns) at 25C, 1.20V Typ process

E↓	setup_rising to CP	0.1532	0.1532	0.1532
E↑	setup_rising to CP	0.1431	0.1431	0.1431
RN	min_pulse_width_low	0.085	0.085	0.085
RN↑	recovery_rising to CP	0.0428	0.0428	0.0428
RN↑	removal_rising to CP	0.0022	0.0022	0.0022
TE↓	hold_rising to CP	-0.0589	-0.0589	-0.0589
TE↑	hold_rising to CP	-0.0579	-0.0579	-0.0579
TE↓	setup_rising to CP	0.1524	0.1524	0.1524
TE↑	setup_rising to CP	0.2022	0.2022	0.2022
TI↓	hold_rising to CP	-0.1227	-0.1227	-0.1227
TI↑	hold_rising to CP	-0.0615	-0.0615	-0.0615
TI↓	setup_rising to CP	0.1984	0.1982	0.1982
TI↑	setup_rising to CP	0.1222	0.1223	0.1223

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.15	0.15	0.155
CP	min_pulse_width_low	0.24	0.24	0.24
D↓	hold_rising to CP	-0.1288	-0.1288	-0.1288
D↑	hold_rising to CP	-0.1838	-0.1838	-0.1838
D↓	setup_rising to CP	0.2294	0.2294	0.2294
D↑	setup_rising to CP	0.2696	0.2696	0.2696
E↓	hold_rising to CP	-0.1438	-0.1438	-0.1438
E↑	hold_rising to CP	-0.1598	-0.1598	-0.1598
E↓	setup_rising to CP	0.2648	0.2648	0.2648
E↑	setup_rising to CP	0.2448	0.2448	0.2448
RN	min_pulse_width_low	0.13	0.13	0.135
RN↑	recovery_rising to CP	0.0706	0.0706	0.0706
RN↑	removal_rising to CP	0.0052	0.0052	0.0052
TE↓	hold_rising to CP	-0.0952	-0.0953	-0.0953
TE↑	hold_rising to CP	-0.1198	-0.1198	-0.1198
TE↓	setup_rising to CP	0.2668	0.2668	0.2668
TE↑	setup_rising to CP	0.3353	0.3352	0.3352
TI↓	hold_rising to CP	-0.2134	-0.2134	-0.2134
TI↑	hold_rising to CP	-0.1383	-0.1383	-0.1383



Timing Constraints (ns) at 125C, 1.10V Worst process

TI↓	setup_rising to CP	0.3244	0.3243	0.3243
TI↑	setup_rising to CP	0.2143	0.2142	0.2142

Timing Constraints (ns) at 125C, 1.15V Worst process

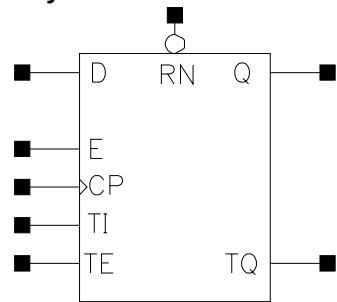
Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.145	0.14	0.145
CP	min_pulse_width_low	0.22	0.22	0.22
D↓	hold_rising to CP	-0.1135	-0.1135	-0.1135
D↑	hold_rising to CP	-0.1632	-0.1632	-0.1632
D↓	setup_rising to CP	0.2040	0.2040	0.2040
D↑	setup_rising to CP	0.2440	0.2440	0.2440
E↓	hold_rising to CP	-0.1332	-0.1332	-0.1332
E↑	hold_rising to CP	-0.1397	-0.1397	-0.1397
E↓	setup_rising to CP	0.2394	0.2394	0.2394
E↑	setup_rising to CP	0.2245	0.2245	0.2245
RN	min_pulse_width_low	0.12	0.12	0.125
RN↑	recovery_rising to CP	0.0650	0.0650	0.0650
RN↑	removal_rising to CP	0.0053	0.0053	0.0053
TE↓	hold_rising to CP	-0.0847	-0.0847	-0.0847
TE↑	hold_rising to CP	-0.1094	-0.1094	-0.1094
TE↓	setup_rising to CP	0.2347	0.2440	0.2440
TE↑	setup_rising to CP	0.3097	0.3097	0.3097
TI↓	hold_rising to CP	-0.1933	-0.1933	-0.1933
TI↑	hold_rising to CP	-0.1232	-0.1232	-0.1232
TI↓	setup_rising to CP	0.2991	0.2989	0.2989
TI↑	setup_rising to CP	0.1939	0.1941	0.1941

HS65_LS_SDFPHRQT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Data Enable Active High, Q Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

IQ	TQ
IQ	IQ

Functions

CP	RN	TE	TI	E	D	IQ	IQ
-	0	-	-	-	-	-	0
/	1	0	-	1	D	-	D
/	1	0	-	0	-	IQ	IQ
/	1	1	TI	-	-	-	TI
-	1	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	6.40	16.6400
X9	2.6	6.40	16.6400



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	6.60	17.1600
X27	2.6	7.00	18.2000
X35	2.6	7.20	18.7200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	7.902e-07	1.767e-09
X9	8.489e-07	2.040e-09
X18	1.004e-06	2.588e-09
X27	1.162e-06	3.143e-09
X35	1.314e-06	3.698e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	2.006e-04	1.098e-07
X9	2.175e-04	1.152e-07
X18	2.608e-04	1.269e-07
X27	3.059e-04	1.421e-07
X35	3.492e-04	1.535e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.778e-04	9.634e-08
X9	1.924e-04	1.002e-07
X18	2.302e-04	1.086e-07
X27	2.695e-04	1.204e-07
X35	3.073e-04	1.286e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.797e-03	9.781e-03	9.791e-03	9.806e-03	9.839e-03
D (stable)	3.858e-03	3.857e-03	3.854e-03	3.854e-03	3.856e-03

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

E (stable)	2.060e-02	2.082e-02	2.077e-02	2.079e-02	2.079e-02
RN (stable)	8.946e-03	9.177e-03	8.935e-03	8.926e-03	8.927e-03
TE (stable)	6.533e-03	6.540e-03	6.531e-03	6.552e-03	6.544e-03
TI (stable)	4.356e-03	4.355e-03	4.352e-03	4.353e-03	4.356e-03
CP to Q	1.221e-02	1.334e-02	1.667e-02	2.100e-02	2.672e-02
CP to TQ	1.221e-02	1.333e-02	1.667e-02	2.102e-02	2.678e-02
RN to Q	1.155e-02	1.202e-02	1.310e-02	1.445e-02	1.615e-02
RN to TQ	1.155e-02	1.201e-02	1.310e-02	1.445e-02	1.616e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	-2.460e-06	2.199e-06	1.095e-07	8.749e-07	8.496e-07
D (stable)	-1.735e-04	-1.735e-04	-1.730e-04	-1.730e-04	-1.731e-04
E (stable)	8.541e-05	8.192e-05	8.504e-05	8.548e-05	8.504e-05
RN (stable)	1.513e-05	1.513e-05	1.426e-05	1.426e-05	1.426e-05
TE (stable)	2.177e-04	2.169e-04	2.169e-04	2.167e-04	2.168e-04
TI (stable)	-1.873e-05	-1.929e-05	-1.875e-05	-1.876e-05	-1.882e-05
CP to Q	-1.633e-04	-1.823e-04	-1.693e-04	-4.039e-05	-2.129e-04
CP to TQ	-1.633e-04	-1.823e-04	-1.693e-04	-4.037e-05	-2.129e-04
RN to Q	-9.548e-04	-8.167e-04	-7.267e-04	-4.487e-04	-3.997e-04
RN to TQ	-9.548e-04	-8.168e-04	-7.267e-04	-4.488e-04	-3.998e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0017	0.0017	0.0017	0.0017	0.0017
E	0.0023	0.0023	0.0023	0.0023	0.0023
RN	0.0015	0.0015	0.0015	0.0015	0.0015
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0010	0.0011	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1013	0.1073	0.1231	0.1411	0.1580	2.6725	1.4056	0.7414	0.5274	0.4181
CP to Q↑	0.0973	0.1000	0.1088	0.1205	0.1311	3.3005	1.7248	0.8853	0.6118	0.4696
CP to TQ↓	0.1084	0.1199	0.1471	0.1732	0.1955	4.8349	4.9543	5.0526	5.1574	5.2953
CP to TQ↑	0.1065	0.1131	0.1308	0.1492	0.1661	8.5169	8.5031	8.5157	8.5262	8.5543
RN to Q↓	0.0746	0.0780	0.0964	0.1160	0.1343	2.5669	1.3377	0.6927	0.4833	0.3763
RN to TQ↓	0.0827	0.0911	0.1195	0.1459	0.1696	4.7349	4.8151	4.8433	4.8617	4.9083

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1656	0.1763	0.2036	0.2352	0.2643	4.3133	2.2527	1.1788	0.8315	0.6611
CP to Q↑	0.1563	0.1609	0.1752	0.1947	0.2121	4.8587	2.5555	1.3098	0.9039	0.6996
CP to TQ↓	0.1762	0.1954	0.2420	0.2876	0.3274	7.5737	7.7433	7.9389	8.1238	8.3487
CP to TQ↑	0.1711	0.1822	0.2118	0.2427	0.2712	12.1892	12.1398	12.1661	12.1905	12.2391
RN to Q↓	0.1146	0.1194	0.1464	0.1757	0.2029	4.1188	2.1275	1.0894	0.7531	0.5879
RN to TQ↓	0.1262	0.1387	0.1818	0.2224	0.2594	7.3862	7.4939	7.5757	7.6287	7.7050

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1518	0.1616	0.1866	0.2155	0.2423	3.9885	2.0819	1.0892	0.7687	0.6103
CP to Q↑	0.1433	0.1476	0.1608	0.1788	0.1949	4.5198	2.3719	1.2155	0.8380	0.6478
CP to TQ↓	0.1617	0.1793	0.2212	0.2621	0.2976	7.0495	7.2124	7.3950	7.5727	7.7884
CP to TQ↑	0.1572	0.1674	0.1944	0.2225	0.2484	11.4035	11.3564	11.3836	11.4052	11.4551
RN to Q↓	0.1062	0.1108	0.1363	0.1639	0.1897	3.8080	1.9661	1.0077	0.6970	0.5434

Propagation Delay at 125C, 1.15V Worst process

RN to TQ↓	0.1171	0.1287	0.1685	0.2059	0.2398	6.8785	6.9834	7.0565	7.1085	7.1838

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.08	0.1	0.125	0.15	0.175
CP	min_pulse_width_low	0.15	0.145	0.14	0.14	0.135
D↓	hold_rising to CP	-0.0630	-0.0627	-0.0627	-0.0627	-0.0627
D↑	hold_rising to CP	-0.0872	-0.0872	-0.0872	-0.0872	-0.0872
D↓	setup_rising to CP	0.1434	0.1335	0.1281	0.1281	0.1231
D↑	setup_rising to CP	0.1529	0.1529	0.1529	0.1529	0.1529
E↓	hold_rising to CP	-0.0730	-0.0730	-0.0730	-0.0730	-0.0730
E↑	hold_rising to CP	-0.0824	-0.0824	-0.0824	-0.0824	-0.0824
E↓	setup_rising to CP	0.1479	0.1529	0.1529	0.1529	0.1529
E↑	setup_rising to CP	0.1527	0.1480	0.1431	0.1382	0.1382
RN	min_pulse_width_low	0.08	0.09	0.12	0.145	0.17
RN↑	recovery_rising to CP	0.0428	0.0480	0.0477	0.0477	0.0428
RN↑	removal_rising to CP	0.0025	0.0022	0.0025	0.0025	0.0025
TE↓	hold_rising to CP	-0.0589	-0.0589	-0.0589	-0.0540	-0.0540
TE↑	hold_rising to CP	-0.0579	-0.0579	-0.0579	-0.0579	-0.0577
TE↓	setup_rising to CP	0.1588	0.1588	0.1588	0.1584	0.1584
TE↑	setup_rising to CP	0.2075	0.2025	0.1975	0.1923	0.1922
TI↓	hold_rising to CP	-0.1229	-0.1228	-0.1177	-0.1177	-0.1177
TI↑	hold_rising to CP	-0.0615	-0.0615	-0.0615	-0.0615	-0.0666
TI↓	setup_rising to CP	0.2035	0.1983	0.1933	0.1883	0.1882
TI↑	setup_rising to CP	0.1223	0.1274	0.1274	0.1274	0.1223

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.135	0.16	0.21	0.25	0.3
CP	min_pulse_width_low	0.25	0.245	0.235	0.225	0.225
D↓	hold_rising to CP	-0.1288	-0.1288	-0.1288	-0.1289	-0.1242
D↑	hold_rising to CP	-0.1838	-0.1838	-0.1838	-0.1838	-0.1889
D↓	setup_rising to CP	0.2347	0.2344	0.2244	0.2142	0.2092



Timing Constraints (ns) at 125C, 1.10V Worst process

D↑	setup_rising to CP	0.2747	0.2747	0.2747	0.2747	0.2747
E↓	hold_rising to CP	-0.1438	-0.1438	-0.1391	-0.1391	-0.1391
E↑	hold_rising to CP	-0.1548	-0.1598	-0.1598	-0.1552	-0.1553
E↓	setup_rising to CP	0.2594	0.2644	0.2645	0.2645	0.2645
E↑	setup_rising to CP	0.2500	0.2453	0.2453	0.2453	0.2453
RN	min_pulse_width_low	0.12	0.135	0.18	0.22	0.255
RN↑	recovery_rising to CP	0.0753	0.0756	0.0753	0.0753	0.0753
RN↑	removal_rising to CP	0.0051	0.0052	0.0050	0.0050	0.0050
TE↓	hold_rising to CP	-0.0952	-0.0906	-0.0901	-0.0902	-0.0902
TE↑	hold_rising to CP	-0.1198	-0.1198	-0.1203	-0.1250	-0.1250
TE↓	setup_rising to CP	0.2621	0.2621	0.2621	0.2621	0.2621
TE↑	setup_rising to CP	0.3452	0.3398	0.3297	0.3200	0.3150
TI↓	hold_rising to CP	-0.2136	-0.2084	-0.2084	-0.2084	-0.2084
TI↑	hold_rising to CP	-0.1334	-0.1383	-0.1383	-0.1384	-0.1384
TI↓	setup_rising to CP	0.3346	0.3294	0.3192	0.3093	0.3092
TI↑	setup_rising to CP	0.2191	0.2191	0.2193	0.2193	0.2191

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.125	0.15	0.19	0.23	0.27
CP	min_pulse_width_low	0.225	0.225	0.215	0.21	0.205
D↓	hold_rising to CP	-0.1135	-0.1135	-0.1136	-0.1136	-0.1136
D↑	hold_rising to CP	-0.1632	-0.1632	-0.1632	-0.1637	-0.1684
D↓	setup_rising to CP	0.2140	0.2090	0.1990	0.1935	0.1885
D↑	setup_rising to CP	0.2492	0.2492	0.2492	0.2492	0.2492
E↓	hold_rising to CP	-0.1332	-0.1285	-0.1285	-0.1285	-0.1285
E↑	hold_rising to CP	-0.1397	-0.1397	-0.1397	-0.1397	-0.1397
E↓	setup_rising to CP	0.2344	0.2394	0.2394	0.2394	0.2394
E↑	setup_rising to CP	0.2343	0.2297	0.2297	0.2297	0.2245
RN	min_pulse_width_low	0.11	0.125	0.165	0.205	0.235
RN↑	recovery_rising to CP	0.0697	0.0700	0.0697	0.0697	0.0697
RN↑	removal_rising to CP	0.0058	0.0053	0.0057	0.0057	0.0057
TE↓	hold_rising to CP	-0.0850	-0.0847	-0.0847	-0.0847	-0.0847
TE↑	hold_rising to CP	-0.1047	-0.1094	-0.1092	-0.1097	-0.1097
TE↓	setup_rising to CP	0.2393	0.2393	0.2393	0.2393	0.2393

Timing Constraints (ns) at 125C, 1.15V Worst process

TE↑	setup_rising to CP	0.3145	0.3095	0.3042	0.2945	0.2895
TI↓	hold_rising to CP	-0.1933	-0.1883	-0.1881	-0.1882	-0.1882
TI↑	hold_rising to CP	-0.1232	-0.1230	-0.1232	-0.1232	-0.1232
TI↓	setup_rising to CP	0.3089	0.3041	0.2941	0.2839	0.2789
TI↑	setup_rising to CP	0.1990	0.1990	0.1989	0.1989	0.1990



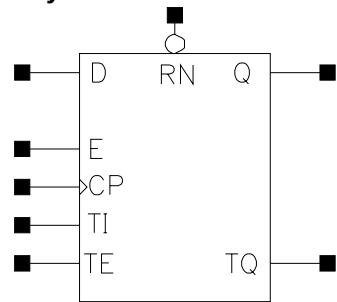
Speed-Optimised

HS65_LSS_SDFPHRQT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Data Enable Active High, Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

IQ	TQ
IQ	IQ

Functions

CP	RN	TE	TI	E	D	IQ	IQ
-	0	-	-	-	-	-	0
/	1	0	-	1	D	-	D
/	1	0	-	0	-	IQ	IQ
/	1	1	TI	-	-	-	TI
-	1	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	7.20	18.7200
X27	2.6	7.40	19.2400



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X35	2.6	7.60	19.7600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.170e-06	2.906e-09
X27	1.316e-06	3.456e-09
X35	1.464e-06	4.009e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	3.112e-04	1.392e-07
X27	3.523e-04	1.524e-07
X35	3.943e-04	1.639e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.740e-04	1.189e-07
X27	3.098e-04	1.287e-07
X35	3.464e-04	1.370e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.910e-03	9.905e-03	9.893e-03
D (stable)	3.912e-03	3.912e-03	3.913e-03
E (stable)	2.111e-02	2.111e-02	2.112e-02
RN (stable)	9.110e-03	9.107e-03	9.037e-03
TE (stable)	6.630e-03	6.630e-03	6.612e-03
TI (stable)	4.463e-03	4.463e-03	4.463e-03
CP to Q	1.933e-02	2.210e-02	2.484e-02
CP to TQ	1.931e-02	2.208e-02	2.480e-02
RN to Q	1.543e-02	1.653e-02	1.764e-02
RN to TQ	1.543e-02	1.652e-02	1.763e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	-7.059e-06	-7.053e-06	-6.812e-06
D (stable)	-1.714e-04	-1.714e-04	-1.714e-04
E (stable)	7.528e-05	7.498e-05	7.535e-05
RN (stable)	1.426e-05	1.426e-05	1.413e-05
TE (stable)	2.098e-04	2.098e-04	2.101e-04
TI (stable)	-2.187e-05	-2.183e-05	-2.187e-05
CP to Q	-1.444e-04	-1.453e-04	-1.862e-04
CP to TQ	-1.444e-04	-1.453e-04	-1.862e-04
RN to Q	-1.079e-03	-8.097e-04	-7.287e-04
RN to TQ	-1.079e-03	-8.098e-04	-7.288e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0017	0.0017	0.0017
E	0.0023	0.0023	0.0023
RN	0.0014	0.0014	0.0014
TE	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1722	0.1786	0.1834	0.5820	0.3929	0.2972
CP to Q↑	0.1820	0.1882	0.1929	0.8145	0.5496	0.4145
CP to TQ↓	0.0970	0.0969	0.0970	4.7641	4.7798	4.7873
CP to TQ↑	0.1054	0.1054	0.1057	8.3604	8.3700	8.3992
RN to Q↓	0.1521	0.1580	0.1622	0.5848	0.3950	0.2990
RN to TQ↓	0.0869	0.0868	0.0864	4.6054	4.6203	4.6299



Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2832	0.2930	0.3006	0.9165	0.6124	0.4613
CP to Q↑	0.2964	0.3064	0.3143	1.1834	0.7955	0.5998
CP to TQ↓	0.1587	0.1586	0.1586	7.4888	7.5037	7.5101
CP to TQ↑	0.1703	0.1702	0.1707	12.0207	12.0329	12.0947
RN to Q↓	0.2413	0.2510	0.2576	0.9214	0.6165	0.4648
RN to TQ↓	0.1342	0.1342	0.1337	7.2126	7.2272	7.2376

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2598	0.2689	0.2759	0.8488	0.5685	0.4285
CP to Q↑	0.2717	0.2809	0.2881	1.1005	0.7394	0.5576
CP to TQ↓	0.1457	0.1456	0.1457	6.9665	6.9795	6.9856
CP to TQ↑	0.1564	0.1563	0.1567	11.2269	11.2471	11.2944
RN to Q↓	0.2224	0.2311	0.2375	0.8530	0.5715	0.4311
RN to TQ↓	0.1243	0.1243	0.1238	6.7107	6.7261	6.7352

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.085	0.085	0.085
CP	min_pulse_width_low	0.155	0.155	0.155
D↓	hold_rising to CP	-0.0630	-0.0630	-0.0630
D↑	hold_rising to CP	-0.0920	-0.0920	-0.0920
D↓	setup_rising to CP	0.1431	0.1431	0.1480
D↑	setup_rising to CP	0.1579	0.1579	0.1579
E↓	hold_rising to CP	-0.0777	-0.0777	-0.0777
E↑	hold_rising to CP	-0.0873	-0.0873	-0.0873

Timing Constraints (ns) at 25C, 1.20V Typ process

E↓	setup_rising to CP	0.1581	0.1581	0.1581
E↑	setup_rising to CP	0.1577	0.1577	0.1577
RN	min_pulse_width_low	0.08	0.08	0.08
RN↑	recovery_rising to CP	0.0477	0.0477	0.0477
RN↑	removal_rising to CP	0.0024	0.0024	0.0024
TE↓	hold_rising to CP	-0.0589	-0.0589	-0.0589
TE↑	hold_rising to CP	-0.0577	-0.0577	-0.0577
TE↓	setup_rising to CP	0.1592	0.1592	0.1592
TE↑	setup_rising to CP	0.2174	0.2174	0.2174
TI↓	hold_rising to CP	-0.1279	-0.1279	-0.1279
TI↑	hold_rising to CP	-0.0666	-0.0666	-0.0666
TI↓	setup_rising to CP	0.2133	0.2133	0.2133
TI↑	setup_rising to CP	0.1273	0.1273	0.1273

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.145	0.145	0.145
CP	min_pulse_width_low	0.26	0.26	0.26
D↓	hold_rising to CP	-0.1288	-0.1288	-0.1288
D↑	hold_rising to CP	-0.1888	-0.1888	-0.1888
D↓	setup_rising to CP	0.2391	0.2391	0.2391
D↑	setup_rising to CP	0.2847	0.2847	0.2847
E↓	hold_rising to CP	-0.1438	-0.1438	-0.1438
E↑	hold_rising to CP	-0.1598	-0.1598	-0.1598
E↓	setup_rising to CP	0.2694	0.2694	0.2694
E↑	setup_rising to CP	0.2598	0.2598	0.2598
RN	min_pulse_width_low	0.13	0.13	0.13
RN↑	recovery_rising to CP	0.0803	0.0803	0.0798
RN↑	removal_rising to CP	0.0002	0.0002	0.0006
TE↓	hold_rising to CP	-0.0952	-0.0952	-0.0952
TE↑	hold_rising to CP	-0.1248	-0.1248	-0.1248
TE↓	setup_rising to CP	0.2761	0.2761	0.2761
TE↑	setup_rising to CP	0.3547	0.3547	0.3547
TI↓	hold_rising to CP	-0.2136	-0.2136	-0.2136
TI↑	hold_rising to CP	-0.1384	-0.1384	-0.1384



Timing Constraints (ns) at 125C, 1.10V Worst process

TI↓	setup_rising to CP	0.3494	0.3494	0.3494
TI↑	setup_rising to CP	0.2243	0.2243	0.2243

Timing Constraints (ns) at 125C, 1.15V Worst process

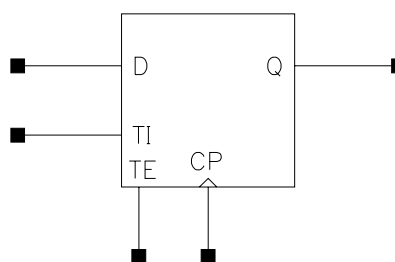
Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.13	0.13	0.13
CP	min_pulse_width_low	0.235	0.235	0.235
D↓	hold_rising to CP	-0.1135	-0.1135	-0.1135
D↑	hold_rising to CP	-0.1682	-0.1682	-0.1682
D↓	setup_rising to CP	0.2235	0.2235	0.2235
D↑	setup_rising to CP	0.2540	0.2540	0.2540
E↓	hold_rising to CP	-0.1331	-0.1331	-0.1331
E↑	hold_rising to CP	-0.1397	-0.1397	-0.1397
E↓	setup_rising to CP	0.2444	0.2444	0.2444
E↑	setup_rising to CP	0.2347	0.2347	0.2347
RN	min_pulse_width_low	0.12	0.12	0.12
RN↑	recovery_rising to CP	0.0747	0.0747	0.0700
RN↑	removal_rising to CP	0.0007	0.0007	0.0053
TE↓	hold_rising to CP	-0.0845	-0.0845	-0.0845
TE↑	hold_rising to CP	-0.1097	-0.1097	-0.1097
TE↓	setup_rising to CP	0.2486	0.2486	0.2486
TE↑	setup_rising to CP	0.3240	0.3240	0.3240
TI↓	hold_rising to CP	-0.1983	-0.1983	-0.1983
TI↑	hold_rising to CP	-0.1232	-0.1232	-0.1232
TI↓	setup_rising to CP	0.3189	0.3189	0.3189
TI↑	setup_rising to CP	0.2040	0.2040	0.2040

HS65_LS_SDFPQ

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Q Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	CP	TI	TE	IQ	IQ
D	/	-	0	-	D
-	/	TI	1	-	TI
-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	3.80	9.8800
X9	2.6	3.80	9.8800
X18	2.6	4.00	10.4000
X27	2.6	4.40	11.4400
X35	2.6	4.60	11.9600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X4	5.681e-07	1.174e-09
X9	6.477e-07	1.378e-09
X18	8.244e-07	1.815e-09
X27	1.014e-06	2.265e-09
X35	1.194e-06	2.690e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.459e-04	7.329e-08
X9	1.691e-04	7.742e-08
X18	2.217e-04	8.676e-08
X27	2.780e-04	1.000e-07
X35	3.323e-04	1.090e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.292e-04	6.428e-08
X9	1.493e-04	6.726e-08
X18	1.951e-04	7.412e-08
X27	2.441e-04	8.445e-08
X35	2.914e-04	9.106e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.546e-03	9.684e-03	9.678e-03	9.687e-03	9.724e-03
D (stable)	3.202e-03	3.240e-03	3.293e-03	3.255e-03	3.263e-03
TE (stable)	5.985e-03	6.150e-03	6.208e-03	6.185e-03	6.197e-03
TI (stable)	3.653e-03	3.695e-03	3.746e-03	3.708e-03	3.714e-03
CP to Q	1.652e-02	1.876e-02	2.534e-02	3.345e-02	4.336e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.632e-04	1.622e-04	1.457e-04	1.541e-04	1.580e-04

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	-7.450e-05	-7.396e-05	-6.547e-05	-6.577e-05	-6.527e-05
TE (stable)	-1.178e-04	-1.160e-04	-1.180e-04	-1.157e-04	-1.119e-04
TI (stable)	-1.438e-04	-1.424e-04	-1.443e-04	-1.440e-04	-1.435e-04
CP to Q	3.920e-05	3.522e-05	8.822e-05	5.210e-05	6.009e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0016	0.0016	0.0016	0.0016	0.0016
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.0906	0.0970	0.1145	0.1256	0.1422	2.6396	1.3635	0.7091	0.4872	0.3860
CP to Q↑	0.0885	0.0911	0.1004	0.1104	0.1207	3.2564	1.6914	0.8597	0.5910	0.4551

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1478	0.1584	0.1882	0.2068	0.2354	4.3089	2.1953	1.1276	0.7694	0.6106
CP to Q↑	0.1416	0.1461	0.1613	0.1779	0.1947	4.7737	2.4898	1.2686	0.8735	0.6772

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1357	0.1455	0.1728	0.1900	0.2162	3.9766	2.0273	1.0428	0.7117	0.5641
CP to Q↑	0.1300	0.1340	0.1480	0.1632	0.1789	4.4399	2.3115	1.1774	0.8102	0.6271



Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.065	0.075	0.105	0.115	0.14
CP	min_pulse_width_low	0.2	0.2	0.195	0.185	0.185
D↓	hold_rising to CP	-0.0129	-0.0129	-0.0129	-0.0129	-0.0129
D↑	hold_rising to CP	-0.0270	-0.0269	-0.0267	-0.0269	-0.0267
D↓	setup_rising to CP	0.0934	0.0934	0.0882	0.0832	0.0833
D↑	setup_rising to CP	0.0672	0.0673	0.0722	0.0673	0.0673
TE↓	hold_rising to CP	-0.0126	-0.0126	-0.0126	-0.0128	-0.0126
TE↑	hold_rising to CP	-0.0526	-0.0526	-0.0576	-0.0526	-0.0524
TE↓	setup_rising to CP	0.0929	0.0929	0.0930	0.0927	0.0927
TE↑	setup_rising to CP	0.2029	0.2029	0.1979	0.1929	0.1879
TI↓	hold_rising to CP	-0.1026	-0.1026	-0.1028	-0.1029	-0.1029
TI↑	hold_rising to CP	-0.0561	-0.0561	-0.0560	-0.0561	-0.0561
TI↓	setup_rising to CP	0.1981	0.1982	0.1882	0.1831	0.1781
TI↑	setup_rising to CP	0.1016	0.1015	0.1015	0.0964	0.1014

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.105	0.125	0.17	0.195	0.23
CP	min_pulse_width_low	0.325	0.325	0.315	0.305	0.3
D↓	hold_rising to CP	-0.0391	-0.0391	-0.0391	-0.0391	-0.0391
D↑	hold_rising to CP	-0.0633	-0.0633	-0.0685	-0.0633	-0.0633
D↓	setup_rising to CP	0.1594	0.1595	0.1497	0.1397	0.1341
D↑	setup_rising to CP	0.1136	0.1188	0.1191	0.1188	0.1188
TE↓	hold_rising to CP	-0.0386	-0.0391	-0.0391	-0.0341	-0.0339
TE↑	hold_rising to CP	-0.1093	-0.1144	-0.1189	-0.1144	-0.1143
TE↓	setup_rising to CP	0.1592	0.1596	0.1642	0.1595	0.1596
TE↑	setup_rising to CP	0.3303	0.3305	0.3251	0.3151	0.3101
TI↓	hold_rising to CP	-0.1839	-0.1888	-0.1890	-0.1840	-0.1837
TI↑	hold_rising to CP	-0.1177	-0.1177	-0.1228	-0.1178	-0.1228
TI↓	setup_rising to CP	0.3242	0.3244	0.3192	0.3091	0.3042
TI↑	setup_rising to CP	0.1783	0.1835	0.1885	0.1835	0.1831

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.095	0.115	0.155	0.175	0.21
CP	min_pulse_width_low	0.3	0.3	0.295	0.28	0.275
D↓	hold_rising to CP	-0.0334	-0.0339	-0.0334	-0.0334	-0.0334
D↑	hold_rising to CP	-0.0584	-0.0631	-0.0629	-0.0631	-0.0629
D↓	setup_rising to CP	0.1442	0.1439	0.1339	0.1244	0.1189
D↑	setup_rising to CP	0.1036	0.1036	0.1086	0.1036	0.1034
TE↓	hold_rising to CP	-0.0334	-0.0334	-0.0334	-0.0289	-0.0287
TE↑	hold_rising to CP	-0.0987	-0.0992	-0.1037	-0.1039	-0.1037
TE↓	setup_rising to CP	0.1442	0.1492	0.1543	0.1492	0.1492
TE↑	setup_rising to CP	0.3100	0.3100	0.3000	0.2900	0.2850
TI↓	hold_rising to CP	-0.1687	-0.1685	-0.1685	-0.1685	-0.1685
TI↑	hold_rising to CP	-0.1024	-0.1074	-0.1074	-0.1076	-0.1073
TI↓	setup_rising to CP	0.3039	0.2989	0.2940	0.2838	0.2739
TI↑	setup_rising to CP	0.1629	0.1630	0.1679	0.1631	0.1628



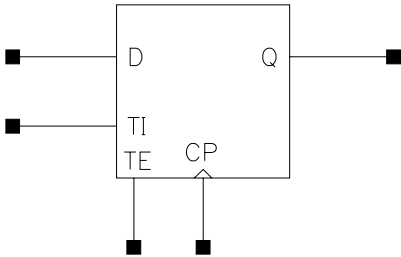
Speed-Optimised

HS65_LSS_SDFPQ

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	CP	TI	TE	IQ	IQ
D	/	-	0	-	D
-	/	TI	1	-	TI
-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	4.80	12.4800
X27	2.6	5.00	13.0000
X35	2.6	5.20	13.5200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	9.558e-07	2.240e-09
X27	1.127e-06	2.656e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X35	1.304e-06	3.077e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.585e-04	1.032e-07
X27	3.096e-04	1.136e-07
X35	3.629e-04	1.227e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.272e-04	8.769e-08
X27	2.717e-04	9.557e-08
X35	3.180e-04	1.022e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.314e-03	9.220e-03	9.179e-03
D (stable)	3.170e-03	3.156e-03	3.163e-03
TE (stable)	6.118e-03	6.115e-03	6.114e-03
TI (stable)	3.626e-03	3.613e-03	3.617e-03
CP to Q	2.981e-02	3.492e-02	3.989e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.919e-04	1.906e-04	1.932e-04
D (stable)	-7.747e-05	-6.638e-05	-7.644e-05
TE (stable)	-1.188e-04	-1.186e-04	-1.177e-04
TI (stable)	-1.473e-04	-1.472e-04	-1.463e-04
CP to Q	-1.409e-04	-1.272e-04	-1.508e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

CP	0.0010	0.0010	0.0010
D	0.0016	0.0016	0.0016
TE	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1242	0.1282	0.1322	0.5857	0.3950	0.2998
CP to Q↑	0.1407	0.1443	0.1478	0.8102	0.5466	0.4141

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2036	0.2101	0.2163	0.9263	0.6176	0.4658
CP to Q↑	0.2282	0.2344	0.2400	1.1799	0.7928	0.5995

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1871	0.1931	0.1989	0.8566	0.5723	0.4320
CP to Q↑	0.2094	0.2151	0.2203	1.0960	0.7362	0.5570

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.06	0.06	0.06
CP	min_pulse_width_low	0.195	0.19	0.19
D↓	hold_rising to CP	-0.0181	-0.0181	-0.0179
D↑	hold_rising to CP	-0.0270	-0.0267	-0.0268



Timing Constraints (ns) at 25C, 1.20V Typ process

D↓	setup_rising to CP	0.0934	0.0930	0.0930
D↑	setup_rising to CP	0.0670	0.0670	0.0670
TE↓	hold_rising to CP	-0.0129	-0.0129	-0.0129
TE↑	hold_rising to CP	-0.0524	-0.0524	-0.0524
TE↓	setup_rising to CP	0.0927	0.0927	0.0927
TE↑	setup_rising to CP	0.2029	0.2026	0.2026
TI↓	hold_rising to CP	-0.1079	-0.1079	-0.1079
TI↑	hold_rising to CP	-0.0559	-0.0559	-0.0559
TI↓	setup_rising to CP	0.1930	0.1930	0.1930
TI↑	setup_rising to CP	0.0964	0.1014	0.1014

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.09	0.09	0.09
CP	min_pulse_width_low	0.31	0.31	0.31
D↓	hold_rising to CP	-0.0441	-0.0441	-0.0440
D↑	hold_rising to CP	-0.0633	-0.0633	-0.0633
D↓	setup_rising to CP	0.1541	0.1494	0.1494
D↑	setup_rising to CP	0.1136	0.1136	0.1136
TE↓	hold_rising to CP	-0.0391	-0.0436	-0.0436
TE↑	hold_rising to CP	-0.1143	-0.1143	-0.1143
TE↓	setup_rising to CP	0.1591	0.1591	0.1591
TE↑	setup_rising to CP	0.3253	0.3253	0.3248
TI↓	hold_rising to CP	-0.1940	-0.1940	-0.1938
TI↑	hold_rising to CP	-0.1228	-0.1228	-0.1226
TI↓	setup_rising to CP	0.3141	0.3141	0.3139
TI↑	setup_rising to CP	0.1783	0.1782	0.1782

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.085	0.085	0.085
CP	min_pulse_width_low	0.29	0.285	0.285
D↓	hold_rising to CP	-0.0384	-0.0384	-0.0384
D↑	hold_rising to CP	-0.0584	-0.0629	-0.0629

Timing Constraints (ns) at 125C, 1.15V Worst process

D↓	setup_rising to CP	0.1387	0.1387	0.1387
D↑	setup_rising to CP	0.1031	0.1031	0.1031
TE↓	hold_rising to CP	-0.0339	-0.0337	-0.0384
TE↑	hold_rising to CP	-0.1039	-0.1039	-0.1037
TE↓	setup_rising to CP	0.1492	0.1492	0.1492
TE↑	setup_rising to CP	0.3048	0.3043	0.2997
TI↓	hold_rising to CP	-0.1737	-0.1737	-0.1733
TI↑	hold_rising to CP	-0.1074	-0.1074	-0.1073
TI↓	setup_rising to CP	0.2937	0.2937	0.2937
TI↑	setup_rising to CP	0.1628	0.1628	0.1628

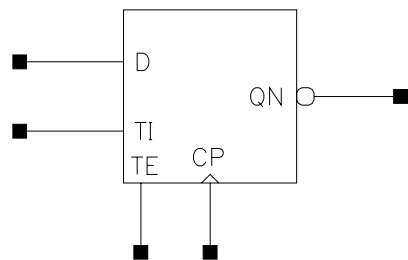


HS65_LS_SDFPQN

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; QN Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

D	CP	TI	TE	IQ	IQ
D	/	-	0	-	D
-	/	TI	1	-	TI
-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	4.00	10.4000
X9	2.6	4.00	10.4000
X18	2.6	4.20	10.9200
X27	2.6	4.60	11.9600
X35	2.6	4.80	12.4800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds



Average Leakage Power (mW) at 25C, 1.20V Typ process

X4	5.558e-07	1.178e-09
X9	6.362e-07	1.416e-09
X18	8.167e-07	1.890e-09
X27	1.001e-06	2.340e-09
X35	1.179e-06	2.694e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.419e-04	7.548e-08
X9	1.656e-04	8.006e-08
X18	2.189e-04	9.010e-08
X27	2.739e-04	1.030e-07
X35	3.278e-04	1.113e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.258e-04	6.633e-08
X9	1.463e-04	6.961e-08
X18	1.927e-04	7.693e-08
X27	2.406e-04	8.707e-08
X35	2.875e-04	9.314e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.210e-03	9.369e-03	9.299e-03	9.382e-03	9.325e-03
D (stable)	3.152e-03	3.180e-03	3.206e-03	3.201e-03	3.165e-03
TE (stable)	5.944e-03	6.155e-03	6.167e-03	6.174e-03	6.137e-03
TI (stable)	3.583e-03	3.612e-03	3.641e-03	3.633e-03	3.597e-03
CP to QN	1.674e-02	1.904e-02	2.438e-02	3.084e-02	3.794e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.925e-04	1.921e-04	1.864e-04	1.887e-04	1.906e-04

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	-6.976e-05	-6.990e-05	-6.961e-05	-6.961e-05	-7.010e-05
TE (stable)	-1.166e-04	-1.170e-04	-1.165e-04	-1.161e-04	-1.115e-04
TI (stable)	-1.399e-04	-1.402e-04	-1.395e-04	-1.395e-04	-1.415e-04
CP to QN	-1.649e-04	-1.629e-04	-1.378e-04	-1.429e-04	-1.469e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0016	0.0016	0.0016	0.0016	0.0016
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1195	0.1199	0.1269	0.1363	0.1478	2.4904	1.2447	0.6208	0.4235	0.3279
CP to QN↑	0.0987	0.1037	0.1107	0.1231	0.1372	3.1658	1.6647	0.8355	0.5697	0.4346

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1939	0.1945	0.2052	0.2198	0.2370	4.0530	1.9891	0.9768	0.6602	0.5105
CP to QN↑	0.1603	0.1688	0.1796	0.1994	0.2218	4.6273	2.4371	1.2204	0.8307	0.6367

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1781	0.1785	0.1885	0.2020	0.2183	3.7422	1.8378	0.9049	0.6122	0.4731
CP to QN↑	0.1475	0.1552	0.1653	0.1838	0.2047	4.3029	2.2625	1.1335	0.7715	0.5906



Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.055	0.055	0.06	0.065	0.075
CP	min_pulse_width_low	0.195	0.195	0.195	0.195	0.19
D↓	hold_rising to CP	-0.0181	-0.0181	-0.0181	-0.0181	-0.0178
D↑	hold_rising to CP	-0.0270	-0.0270	-0.0267	-0.0270	-0.0270
D↓	setup_rising to CP	0.0931	0.0931	0.0931	0.0930	0.0881
D↑	setup_rising to CP	0.0672	0.0672	0.0670	0.0672	0.0672
TE↓	hold_rising to CP	-0.0126	-0.0126	-0.0129	-0.0126	-0.0126
TE↑	hold_rising to CP	-0.0526	-0.0526	-0.0524	-0.0526	-0.0524
TE↓	setup_rising to CP	0.0926	0.0927	0.0927	0.0929	0.0927
TE↑	setup_rising to CP	0.2027	0.2027	0.2027	0.2029	0.1977
TI↓	hold_rising to CP	-0.1079	-0.1079	-0.1079	-0.1079	-0.1079
TI↑	hold_rising to CP	-0.0561	-0.0561	-0.0559	-0.0561	-0.0559
TI↓	setup_rising to CP	0.1979	0.1979	0.1980	0.1932	0.1880
TI↑	setup_rising to CP	0.0964	0.1014	0.1015	0.0964	0.0963

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.085	0.09	0.09	0.1	0.12
CP	min_pulse_width_low	0.315	0.32	0.32	0.315	0.31
D↓	hold_rising to CP	-0.0441	-0.0441	-0.0441	-0.0441	-0.0441
D↑	hold_rising to CP	-0.0633	-0.0633	-0.0633	-0.0633	-0.0633
D↓	setup_rising to CP	0.1589	0.1589	0.1589	0.1541	0.1494
D↑	setup_rising to CP	0.1137	0.1136	0.1141	0.1137	0.1137
TE↓	hold_rising to CP	-0.0391	-0.0391	-0.0436	-0.0391	-0.0390
TE↑	hold_rising to CP	-0.1139	-0.1144	-0.1143	-0.1144	-0.1143
TE↓	setup_rising to CP	0.1592	0.1596	0.1595	0.1592	0.1591
TE↑	setup_rising to CP	0.3298	0.3303	0.3303	0.3253	0.3203
TI↓	hold_rising to CP	-0.1890	-0.1890	-0.1940	-0.1890	-0.1889
TI↑	hold_rising to CP	-0.1177	-0.1177	-0.1178	-0.1178	-0.1177
TI↓	setup_rising to CP	0.3189	0.3191	0.3191	0.3141	0.3140
TI↑	setup_rising to CP	0.1783	0.1833	0.1833	0.1783	0.1781

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.075	0.08	0.085	0.09	0.11
CP	min_pulse_width_low	0.295	0.295	0.295	0.29	0.29
D↓	hold_rising to CP	-0.0384	-0.0384	-0.0384	-0.0384	-0.0384
D↑	hold_rising to CP	-0.0579	-0.0579	-0.0583	-0.0584	-0.0583
D↓	setup_rising to CP	0.1437	0.1437	0.1437	0.1387	0.1387
D↑	setup_rising to CP	0.1031	0.1031	0.1034	0.1031	0.1031
TE↓	hold_rising to CP	-0.0339	-0.0339	-0.0385	-0.0339	-0.0337
TE↑	hold_rising to CP	-0.0987	-0.0992	-0.1037	-0.1039	-0.1037
TE↓	setup_rising to CP	0.1442	0.1492	0.1492	0.1492	0.1445
TE↑	setup_rising to CP	0.3048	0.3098	0.3098	0.3043	0.2998
TI↓	hold_rising to CP	-0.1735	-0.1735	-0.1737	-0.1735	-0.1735
TI↑	hold_rising to CP	-0.1025	-0.1074	-0.1074	-0.1074	-0.1072
TI↓	setup_rising to CP	0.2987	0.2989	0.2987	0.2939	0.2887
TI↑	setup_rising to CP	0.1629	0.1629	0.1679	0.1629	0.1629



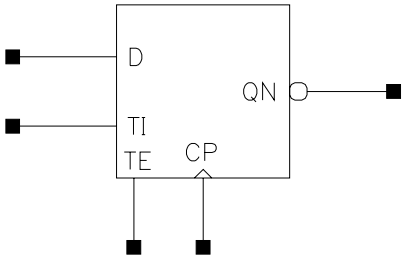
Speed-Optimised

HS65_LSS_SDFPQN

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; QN Output Only

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

D	CP	TI	TE	IQ	IQ
D	/	-	0	-	D
-	/	TI	1	-	TI
-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	4.60	11.9600
X27	2.6	4.80	12.4800
X35	2.6	5.20	13.5200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	9.691e-07	2.207e-09
X27	1.141e-06	2.623e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X35	1.336e-06	3.039e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.630e-04	1.006e-07
X27	3.142e-04	1.110e-07
X35	3.740e-04	1.220e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.311e-04	8.534e-08
X27	2.757e-04	9.320e-08
X35	3.277e-04	1.017e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.657e-03	9.651e-03	9.655e-03
D (stable)	3.236e-03	3.234e-03	3.237e-03
TE (stable)	6.117e-03	6.116e-03	6.129e-03
TI (stable)	3.688e-03	3.687e-03	3.689e-03
CP to QN	2.947e-02	3.514e-02	4.034e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.663e-04	1.657e-04	1.647e-04
D (stable)	-7.238e-05	-7.226e-05	-7.244e-05
TE (stable)	-1.106e-04	-1.108e-04	-1.153e-04
TI (stable)	-1.430e-04	-1.432e-04	-1.417e-04
CP to QN	3.822e-05	4.009e-05	4.883e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35

Pin Capacitance (pf) at 25C, 1.20V Typ process

CP	0.0010	0.0010	0.0010
D	0.0016	0.0016	0.0016
TE	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1133	0.1191	0.1234	0.5856	0.3953	0.2976
CP to QN↑	0.1247	0.1315	0.1350	0.8149	0.5498	0.4148

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1845	0.1941	0.2007	0.9238	0.6182	0.4611
CP to QN↑	0.2039	0.2152	0.2206	1.1872	0.7986	0.5999

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1691	0.1779	0.1841	0.8549	0.5728	0.4281
CP to QN↑	0.1869	0.1972	0.2023	1.1028	0.7418	0.5581

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.075	0.08	0.08
CP	min_pulse_width_low	0.19	0.19	0.19
D↓	hold_rising to CP	-0.0129	-0.0178	-0.0178
D↑	hold_rising to CP	-0.0269	-0.0269	-0.0269



Timing Constraints (ns) at 25C, 1.20V Typ process

D↓	setup_rising to CP	0.0886	0.0882	0.0834
D↑	setup_rising to CP	0.0672	0.0672	0.0672
TE↓	hold_rising to CP	-0.0126	-0.0126	-0.0126
TE↑	hold_rising to CP	-0.0526	-0.0526	-0.0526
TE↓	setup_rising to CP	0.0929	0.0929	0.0929
TE↑	setup_rising to CP	0.1979	0.1981	0.1979
TI↓	hold_rising to CP	-0.1079	-0.1079	-0.1079
TI↑	hold_rising to CP	-0.0561	-0.0561	-0.0559
TI↓	setup_rising to CP	0.1882	0.1882	0.1882
TI↑	setup_rising to CP	0.1014	0.1014	0.1014

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.13	0.135	0.14
CP	min_pulse_width_low	0.315	0.31	0.31
D↓	hold_rising to CP	-0.0390	-0.0436	-0.0436
D↑	hold_rising to CP	-0.0633	-0.0633	-0.0633
D↓	setup_rising to CP	0.1495	0.1492	0.1444
D↑	setup_rising to CP	0.1136	0.1136	0.1136
TE↓	hold_rising to CP	-0.0391	-0.0391	-0.0391
TE↑	hold_rising to CP	-0.1144	-0.1144	-0.1143
TE↓	setup_rising to CP	0.1592	0.1592	0.1591
TE↑	setup_rising to CP	0.3251	0.3205	0.3205
TI↓	hold_rising to CP	-0.1938	-0.1938	-0.1938
TI↑	hold_rising to CP	-0.1228	-0.1228	-0.1228
TI↓	setup_rising to CP	0.3192	0.3142	0.3140
TI↑	setup_rising to CP	0.1783	0.1783	0.1783

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.12	0.125	0.125
CP	min_pulse_width_low	0.29	0.29	0.29
D↓	hold_rising to CP	-0.0339	-0.0385	-0.0384
D↑	hold_rising to CP	-0.0631	-0.0631	-0.0629

Timing Constraints (ns) at 125C, 1.15V Worst process

D↓	setup_rising to CP	0.1344	0.1339	0.1339
D↑	setup_rising to CP	0.1036	0.1031	0.1031
TE↓	hold_rising to CP	-0.0334	-0.0334	-0.0334
TE↑	hold_rising to CP	-0.0992	-0.1039	-0.1039
TE↓	setup_rising to CP	0.1492	0.1445	0.1440
TE↑	setup_rising to CP	0.3000	0.3000	0.2995
TI↓	hold_rising to CP	-0.1737	-0.1737	-0.1733
TI↑	hold_rising to CP	-0.1074	-0.1074	-0.1074
TI↓	setup_rising to CP	0.2940	0.2938	0.2889
TI↑	setup_rising to CP	0.1629	0.1629	0.1628

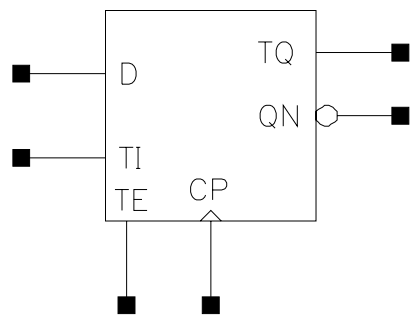


HS65_LS_SDFPQNT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, QN Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

IQ	TQ
IQ	IQ

Functions

D	CP	TI	TE	IQ	IQ
D	/	-	0	-	D
-	/	TI	1	-	TI
-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	4.40	11.4400
X9	2.6	4.40	11.4400



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	4.60	11.9600
X27	2.6	5.00	13.0000
X35	2.6	5.20	13.5200

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	6.190e-07	1.257e-09
X9	6.764e-07	1.482e-09
X18	8.543e-07	1.990e-09
X27	1.037e-06	2.406e-09
X35	1.214e-06	2.773e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.571e-04	8.047e-08
X9	1.745e-04	8.515e-08
X18	2.269e-04	9.591e-08
X27	2.815e-04	1.079e-07
X35	3.349e-04	1.160e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.393e-04	7.076e-08
X9	1.543e-04	7.406e-08
X18	2.000e-04	8.193e-08
X27	2.475e-04	9.141e-08
X35	2.940e-04	9.732e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.123e-03	9.420e-03	9.447e-03	9.497e-03	9.288e-03
D (stable)	3.132e-03	3.172e-03	3.182e-03	3.224e-03	3.159e-03

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

TE (stable)	5.928e-03	6.178e-03	6.151e-03	6.204e-03	6.190e-03
TI (stable)	3.557e-03	3.591e-03	3.604e-03	3.644e-03	3.579e-03
CP to QN	9.291e-03	1.052e-02	1.325e-02	1.586e-02	1.996e-02
CP to TQ	9.291e-03	1.051e-02	1.323e-02	1.584e-02	1.996e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.567e-04	1.484e-04	1.447e-04	1.436e-04	1.562e-04
D (stable)	-5.764e-05	-5.933e-05	-5.823e-05	-5.780e-05	-5.765e-05
TE (stable)	-1.073e-04	-1.089e-04	-1.082e-04	-1.079e-04	-1.074e-04
TI (stable)	-1.346e-04	-1.360e-04	-1.347e-04	-1.347e-04	-1.342e-04
CP to QN	1.372e-05	4.461e-05	4.561e-05	4.561e-05	1.948e-05
CP to TQ	1.372e-05	4.461e-05	4.561e-05	4.559e-05	1.950e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0016	0.0017	0.0016	0.0017	0.0016
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0010	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1250	0.1251	0.1280	0.1417	0.1549	2.3642	1.2885	0.6222	0.4392	0.3323
CP to QN↑	0.1099	0.1161	0.1272	0.1318	0.1494	3.0994	1.6856	0.8477	0.5850	0.4379
CP to TQ↓	0.0826	0.0817	0.0803	0.0786	0.0821	4.8787	4.8393	4.8419	4.8239	4.8433
CP to TQ↑	0.0928	0.0921	0.0929	0.0921	0.0915	8.3638	8.3608	8.4259	8.3634	8.2873

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.2029	0.2037	0.2078	0.2293	0.2497	3.7787	2.0958	0.9858	0.6839	0.5194
CP to QN↑	0.1787	0.1886	0.2057	0.2129	0.2409	4.5270	2.4741	1.2387	0.8484	0.6393
CP to TQ↓	0.1342	0.1325	0.1299	0.1272	0.1331	7.7196	7.5208	7.5216	7.4951	7.5265
CP to TQ↑	0.1490	0.1480	0.1492	0.1480	0.1469	12.0230	12.0198	12.1391	12.0417	11.8593

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1862	0.1868	0.1905	0.2107	0.2299	3.4989	1.9303	0.9119	0.6339	0.4811
CP to QN↑	0.1642	0.1733	0.1894	0.1962	0.2223	4.2083	2.2984	1.1498	0.7900	0.5939
CP to TQ↓	0.1235	0.1219	0.1196	0.1171	0.1225	7.1894	7.0030	7.0040	6.9770	7.0070
CP to TQ↑	0.1369	0.1360	0.1370	0.1359	0.1350	11.2306	11.2299	11.3335	11.2433	11.0894

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.065	0.065	0.07	0.075	0.08
CP	min_pulse_width_low	0.21	0.21	0.21	0.215	0.21
D↓	hold_rising to CP	-0.0178	-0.0129	-0.0129	-0.0178	-0.0129
D↑	hold_rising to CP	-0.0266	-0.0266	-0.0266	-0.0264	-0.0266
D↓	setup_rising to CP	0.0980	0.0984	0.0980	0.0981	0.0980
D↑	setup_rising to CP	0.0670	0.0673	0.0670	0.0673	0.0670
TE↓	hold_rising to CP	-0.0126	-0.0126	-0.0126	-0.0126	-0.0126
TE↑	hold_rising to CP	-0.0577	-0.0577	-0.0577	-0.0577	-0.0574
TE↓	setup_rising to CP	0.0929	0.0979	0.0927	0.0979	0.0930
TE↑	setup_rising to CP	0.2229	0.2279	0.2276	0.2279	0.2278
TI↓	hold_rising to CP	-0.1229	-0.1229	-0.1229	-0.1229	-0.1227
TI↑	hold_rising to CP	-0.0610	-0.0610	-0.0611	-0.0611	-0.0609

Timing Constraints (ns) at 25C, 1.20V Typ process

TI↓	setup_rising to CP	0.2130	0.2181	0.2179	0.2179	0.2130
TI↑	setup_rising to CP	0.1117	0.1117	0.1115	0.1115	0.1117

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.1	0.105	0.115	0.115	0.14
CP	min_pulse_width_low	0.335	0.345	0.345	0.35	0.34
D↓	hold_rising to CP	-0.0436	-0.0391	-0.0389	-0.0436	-0.0389
D↑	hold_rising to CP	-0.0633	-0.0633	-0.0633	-0.0633	-0.0633
D↓	setup_rising to CP	0.1594	0.1592	0.1593	0.1592	0.1593
D↑	setup_rising to CP	0.1136	0.1188	0.1187	0.1187	0.1136
TE↓	hold_rising to CP	-0.0391	-0.0391	-0.0391	-0.0390	-0.0391
TE↑	hold_rising to CP	-0.1244	-0.1244	-0.1244	-0.1243	-0.1244
TE↓	setup_rising to CP	0.1592	0.1595	0.1595	0.1642	0.1595
TE↑	setup_rising to CP	0.3600	0.3653	0.3653	0.3700	0.3650
TI↓	hold_rising to CP	-0.2138	-0.2138	-0.2135	-0.2137	-0.2135
TI↑	hold_rising to CP	-0.1278	-0.1328	-0.1327	-0.1327	-0.1275
TI↓	setup_rising to CP	0.3492	0.3542	0.3540	0.3540	0.3540
TI↑	setup_rising to CP	0.1983	0.1985	0.2033	0.2035	0.1983

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.09	0.095	0.105	0.105	0.125
CP	min_pulse_width_low	0.31	0.315	0.315	0.315	0.31
D↓	hold_rising to CP	-0.0384	-0.0339	-0.0332	-0.0384	-0.0332
D↑	hold_rising to CP	-0.0579	-0.0579	-0.0579	-0.0578	-0.0579
D↓	setup_rising to CP	0.1487	0.1487	0.1487	0.1485	0.1487
D↑	setup_rising to CP	0.1036	0.1036	0.1034	0.1081	0.1034
TE↓	hold_rising to CP	-0.0334	-0.0334	-0.0334	-0.0334	-0.0334
TE↑	hold_rising to CP	-0.1139	-0.1139	-0.1139	-0.1139	-0.1139
TE↓	setup_rising to CP	0.1487	0.1497	0.1492	0.1542	0.1492
TE↑	setup_rising to CP	0.3297	0.3347	0.3347	0.3398	0.3348
TI↓	hold_rising to CP	-0.1985	-0.1935	-0.1933	-0.1983	-0.1933
TI↑	hold_rising to CP	-0.1176	-0.1176	-0.1174	-0.1176	-0.1174



Timing Constraints (ns) at 125C, 1.15V Worst process

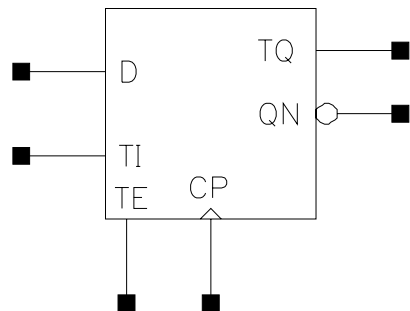
TI↓	setup_rising to CP	0.3237	0.3237	0.3237	0.3285	0.3235
TI↑	setup_rising to CP	0.1831	0.1829	0.1829	0.1829	0.1829

Speed-Optimised

HS65_LSS_SDFPQNT

Cell Description
Scan-out D Flip-Flop with 1 Phase Positive Edge
Triggered Clock, QN Output Only

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

IQ	TQ
IQ	IQ

Functions

D	CP	TI	TE	IQ	IQ
D	/	-	0	-	D
-	/	TI	1	-	TI
-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	4.80	12.4800
X27	2.6	5.20	13.5200



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X35	2.6	5.40	14.0400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.034e-06	2.257e-09
X27	1.227e-06	2.685e-09
X35	1.400e-06	3.110e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.829e-04	1.046e-07
X27	3.411e-04	1.169e-07
X35	3.935e-04	1.260e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.487e-04	8.880e-08
X27	2.993e-04	9.851e-08
X35	3.449e-04	1.051e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.487e-03	9.501e-03	9.498e-03
D (stable)	3.186e-03	3.182e-03	3.186e-03
TE (stable)	6.064e-03	6.058e-03	6.065e-03
TI (stable)	3.606e-03	3.602e-03	3.606e-03
CP to QN	1.628e-02	1.914e-02	2.167e-02
CP to TQ	1.626e-02	1.911e-02	2.163e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

CP (stable)	1.710e-04	1.688e-04	1.698e-04
D (stable)	-5.927e-05	-5.935e-05	-5.946e-05
TE (stable)	-1.081e-04	-1.082e-04	-1.081e-04
TI (stable)	-1.360e-04	-1.359e-04	-1.358e-04
CP to QN	-6.260e-06	-1.388e-06	-7.520e-06
CP to TQ	-6.258e-06	-1.371e-06	-7.507e-06

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0016	0.0016	0.0016
TE	0.0018	0.0018	0.0018
TI	0.0010	0.0010	0.0010

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN ↓	0.1196	0.1253	0.1297	0.5774	0.3902	0.2958
CP to QN ↑	0.1347	0.1406	0.1452	0.8096	0.5452	0.4106
CP to TQ ↓	0.1147	0.1148	0.1141	4.9423	4.8894	4.9076
CP to TQ ↑	0.1068	0.1072	0.1068	8.4149	8.3957	8.4099

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN ↓	0.1951	0.2043	0.2113	0.8989	0.6012	0.4562
CP to QN ↑	0.2202	0.2294	0.2368	1.1740	0.7858	0.5927
CP to TQ ↓	0.1872	0.1874	0.1863	7.7814	7.7315	7.7538
CP to TQ ↑	0.1717	0.1722	0.1716	12.1575	12.1099	12.1393



Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1786	0.1871	0.1936	0.8347	0.5581	0.4239
CP to QN↑	0.2015	0.2101	0.2169	1.0907	0.7311	0.5509
CP to TQ↓	0.1717	0.1719	0.1709	7.2385	7.1901	7.2097
CP to TQ↑	0.1577	0.1583	0.1577	11.3445	11.3035	11.3287

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.085	0.09	0.095
CP	min_pulse_width_low	0.2	0.2	0.2
D↓	hold_rising to CP	-0.0129	-0.0129	-0.0129
D↑	hold_rising to CP	-0.0270	-0.0270	-0.0270
D↓	setup_rising to CP	0.0834	0.0834	0.0834
D↑	setup_rising to CP	0.0672	0.0672	0.0672
TE↓	hold_rising to CP	-0.0126	-0.0126	-0.0126
TE↑	hold_rising to CP	-0.0577	-0.0577	-0.0577
TE↓	setup_rising to CP	0.0929	0.0929	0.0929
TE↑	setup_rising to CP	0.2129	0.2129	0.2129
TI↓	hold_rising to CP	-0.1229	-0.1229	-0.1229
TI↑	hold_rising to CP	-0.0611	-0.0611	-0.0611
TI↓	setup_rising to CP	0.2032	0.2032	0.2032
TI↑	setup_rising to CP	0.1065	0.1065	0.1065

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.15	0.15	0.155
CP	min_pulse_width_low	0.325	0.325	0.325
D↓	hold_rising to CP	-0.0389	-0.0389	-0.0389
D↑	hold_rising to CP	-0.0633	-0.0633	-0.0633
D↓	setup_rising to CP	0.1445	0.1445	0.1445

Timing Constraints (ns) at 125C, 1.10V Worst process

D↑	setup_rising to CP	0.1136	0.1136	0.1136
TE↓	hold_rising to CP	-0.0391	-0.0391	-0.0391
TE↑	hold_rising to CP	-0.1244	-0.1244	-0.1244
TE↓	setup_rising to CP	0.1592	0.1592	0.1592
TE↑	setup_rising to CP	0.3455	0.3455	0.3455
TI↓	hold_rising to CP	-0.2135	-0.2135	-0.2135
TI↑	hold_rising to CP	-0.1328	-0.1328	-0.1328
TI↓	setup_rising to CP	0.3340	0.3392	0.3392
TI↑	setup_rising to CP	0.1833	0.1933	0.1933

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.135	0.14	0.145
CP	min_pulse_width_low	0.3	0.3	0.3
D↓	hold_rising to CP	-0.0337	-0.0337	-0.0337
D↑	hold_rising to CP	-0.0583	-0.0583	-0.0583
D↓	setup_rising to CP	0.1339	0.1292	0.1339
D↑	setup_rising to CP	0.1031	0.1031	0.1031
TE↓	hold_rising to CP	-0.0334	-0.0334	-0.0334
TE↑	hold_rising to CP	-0.1139	-0.1139	-0.1139
TE↓	setup_rising to CP	0.1440	0.1440	0.1440
TE↑	setup_rising to CP	0.3147	0.3147	0.3193
TI↓	hold_rising to CP	-0.1983	-0.1983	-0.1983
TI↑	hold_rising to CP	-0.1174	-0.1174	-0.1174
TI↓	setup_rising to CP	0.3087	0.3087	0.3087
TI↑	setup_rising to CP	0.1779	0.1728	0.1779

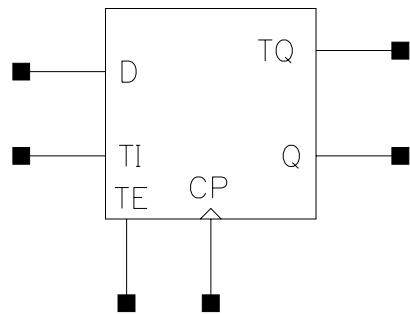


HS65_LS_SDFPQT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Q Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

IQ	TQ
IQ	IQ

Functions

CP	TE	TI	E	D	IQ	IQ
/	0	-	1	D	-	D
/	0	-	0	-	IQ	IQ
/	1	TI	-	-	-	TI
-	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	4.00	10.4000



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X9	2.6	4.20	10.9200
X18	2.6	4.40	11.4400
X27	2.6	4.80	12.4800
X35	2.6	5.00	13.0000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	6.401e-07	1.232e-09
X9	7.004e-07	1.457e-09
X18	8.801e-07	1.878e-09
X27	1.068e-06	2.352e-09
X35	1.248e-06	2.739e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.630e-04	7.686e-08
X9	1.819e-04	8.277e-08
X18	2.353e-04	9.220e-08
X27	2.912e-04	1.053e-07
X35	3.457e-04	1.143e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.444e-04	6.732e-08
X9	1.608e-04	7.200e-08
X18	2.072e-04	7.893e-08
X27	2.559e-04	8.914e-08
X35	3.033e-04	9.580e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	9.606e-03	9.619e-03	9.800e-03	9.799e-03	9.799e-03

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	3.241e-03	3.248e-03	3.331e-03	3.287e-03	3.283e-03
TE (stable)	6.091e-03	6.151e-03	6.252e-03	6.195e-03	6.171e-03
TI (stable)	3.616e-03	3.626e-03	3.714e-03	3.665e-03	3.660e-03
CP to Q	9.151e-03	1.060e-02	1.423e-02	1.834e-02	2.351e-02
CP to TQ	9.151e-03	1.060e-02	1.423e-02	1.835e-02	2.356e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.694e-04	1.673e-04	1.605e-04	1.663e-04	1.615e-04
D (stable)	-8.324e-05	-8.063e-05	-8.346e-05	-8.389e-05	-8.265e-05
TE (stable)	-1.167e-04	-1.136e-04	-1.169e-04	-1.156e-04	-1.156e-04
TI (stable)	-1.345e-04	-1.320e-04	-1.352e-04	-1.348e-04	-1.341e-04
CP to Q	1.074e-05	8.477e-06	2.661e-05	2.048e-05	2.574e-05
CP to TQ	1.074e-05	8.475e-06	2.661e-05	2.050e-05	2.576e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0016	0.0017	0.0017	0.0016	0.0016
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0010	0.0010	0.0011	0.0010	0.0010

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.0952	0.1034	0.1206	0.1312	0.1477	2.5847	1.3764	0.7233	0.4973	0.3934
CP to Q↑	0.0907	0.0948	0.1044	0.1141	0.1245	3.1527	1.6874	0.8690	0.5955	0.4587
CP to TQ↓	0.1001	0.1174	0.1466	0.1647	0.1877	4.9217	4.8718	4.9425	4.9521	5.0527
CP to TQ↑	0.0962	0.1090	0.1270	0.1448	0.1621	8.5769	8.3679	8.4764	8.3802	8.4019



Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1551	0.1693	0.1987	0.2166	0.2445	4.1445	2.2151	1.1516	0.7866	0.6229
CP to Q↑	0.1451	0.1521	0.1677	0.1839	0.2008	4.5921	2.4930	1.2831	0.8825	0.6837
CP to TQ↓	0.1622	0.1909	0.2400	0.2707	0.3109	7.7578	7.6293	7.7797	7.8048	7.9754
CP to TQ↑	0.1545	0.1750	0.2050	0.2347	0.2638	12.2468	11.9720	12.0932	11.9989	12.0465

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1425	0.1554	0.1824	0.1989	0.2247	3.8358	2.0458	1.0644	0.7269	0.5750
CP to Q↑	0.1333	0.1396	0.1539	0.1687	0.1845	4.2707	2.3147	1.1907	0.8179	0.6332
CP to TQ↓	0.1492	0.1752	0.2196	0.2472	0.2832	7.2220	7.1042	7.2469	7.2728	7.4392
CP to TQ↑	0.1420	0.1609	0.1882	0.2151	0.2415	11.4641	11.1942	11.3155	11.2275	11.2724

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.075	0.085	0.115	0.135	0.155
CP	min_pulse_width_low	0.21	0.205	0.205	0.195	0.195
D↓	hold_rising to CP	-0.0129	-0.0129	-0.0129	-0.0129	-0.0129
D↑	hold_rising to CP	-0.0270	-0.0269	-0.0269	-0.0270	-0.0270
D↓	setup_rising to CP	0.0934	0.0884	0.0834	0.0832	0.0831
D↑	setup_rising to CP	0.0672	0.0675	0.0673	0.0672	0.0672
TE↓	hold_rising to CP	-0.0126	-0.0126	-0.0128	-0.0128	-0.0128
TE↑	hold_rising to CP	-0.0577	-0.0626	-0.0626	-0.0626	-0.0626
TE↓	setup_rising to CP	0.0929	0.0929	0.0927	0.0927	0.0929
TE↑	setup_rising to CP	0.2228	0.2178	0.2129	0.2079	0.2029
TI↓	hold_rising to CP	-0.1229	-0.1178	-0.1229	-0.1176	-0.1176
TI↑	hold_rising to CP	-0.0611	-0.0610	-0.0612	-0.0611	-0.0611

Timing Constraints (ns) at 25C, 1.20V Typ process

TI↓	setup_rising to CP	0.2134	0.2084	0.2084	0.1981	0.1981
TI↑	setup_rising to CP	0.1067	0.1117	0.1115	0.1117	0.1065

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.12	0.145	0.195	0.225	0.26
CP	min_pulse_width_low	0.34	0.335	0.335	0.32	0.315
D↓	hold_rising to CP	-0.0391	-0.0391	-0.0391	-0.0386	-0.0386
D↑	hold_rising to CP	-0.0633	-0.0633	-0.0633	-0.0633	-0.0633
D↓	setup_rising to CP	0.1544	0.1495	0.1441	0.1345	0.1291
D↑	setup_rising to CP	0.1136	0.1141	0.1187	0.1136	0.1136
TE↓	hold_rising to CP	-0.0340	-0.0339	-0.0340	-0.0340	-0.0340
TE↑	hold_rising to CP	-0.1244	-0.1291	-0.1341	-0.1291	-0.1295
TE↓	setup_rising to CP	0.1592	0.1596	0.1595	0.1596	0.1592
TE↑	setup_rising to CP	0.3606	0.3556	0.3502	0.3400	0.3305
TI↓	hold_rising to CP	-0.2138	-0.2087	-0.2137	-0.2085	-0.2085
TI↑	hold_rising to CP	-0.1278	-0.1328	-0.1380	-0.1327	-0.1327
TI↓	setup_rising to CP	0.3493	0.3444	0.3442	0.3290	0.3242
TI↑	setup_rising to CP	0.1935	0.1985	0.2033	0.1985	0.1983

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.105	0.135	0.175	0.2	0.235
CP	min_pulse_width_low	0.31	0.305	0.305	0.295	0.29
D↓	hold_rising to CP	-0.0334	-0.0334	-0.0334	-0.0334	-0.0334
D↑	hold_rising to CP	-0.0584	-0.0584	-0.0629	-0.0629	-0.0629
D↓	setup_rising to CP	0.1439	0.1389	0.1289	0.1239	0.1189
D↑	setup_rising to CP	0.1031	0.1036	0.1081	0.1036	0.1036
TE↓	hold_rising to CP	-0.0287	-0.0287	-0.0287	-0.0282	-0.0282
TE↑	hold_rising to CP	-0.1139	-0.1139	-0.1189	-0.1139	-0.1139
TE↓	setup_rising to CP	0.1445	0.1492	0.1492	0.1492	0.1492
TE↑	setup_rising to CP	0.3298	0.3248	0.3198	0.3103	0.3100
TI↓	hold_rising to CP	-0.1937	-0.1935	-0.1985	-0.1933	-0.1883
TI↑	hold_rising to CP	-0.1178	-0.1176	-0.1226	-0.1176	-0.1176



Timing Constraints (ns) at 125C, 1.15V Worst process

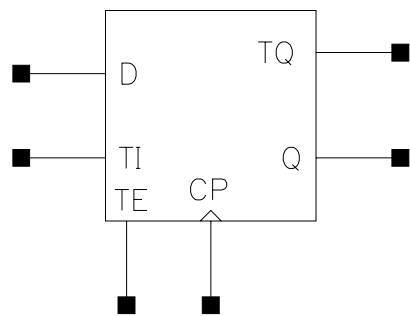
TI↓	setup_rising to CP	0.3187	0.3137	0.3137	0.3038	0.2989
TI↑	setup_rising to CP	0.1779	0.1781	0.1831	0.1779	0.1779

Speed-Optimised

HS65_LSS_SDFPQT

Cell Description
Scan-out D Flip-Flop with 1 Phase Positive Edge
Triggered Clock, Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

IQ	TQ
IQ	IQ

Functions

CP	TE	TI	E	D	IQ	IQ
/	0	-	1	D	-	D
/	0	-	0	-	IQ	IQ
/	1	TI	-	-	-	TI
-	-	-	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	5.00	13.0000



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X27	2.6	5.20	13.5200
X35	2.6	5.40	14.0400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.037e-06	2.331e-09
X27	1.213e-06	2.744e-09
X35	1.386e-06	3.177e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.828e-04	1.065e-07
X27	3.355e-04	1.169e-07
X35	3.876e-04	1.259e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.486e-04	9.036e-08
X27	2.945e-04	9.820e-08
X35	3.398e-04	1.048e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	9.441e-03	9.441e-03	9.440e-03
D (stable)	3.187e-03	3.187e-03	3.187e-03
TE (stable)	6.111e-03	6.111e-03	6.113e-03
TI (stable)	3.562e-03	3.562e-03	3.563e-03
CP to Q	1.613e-02	1.885e-02	2.121e-02
CP to TQ	1.611e-02	1.882e-02	2.118e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.542e-04	1.543e-04	1.544e-04
D (stable)	-8.655e-05	-8.656e-05	-8.656e-05
TE (stable)	-1.190e-04	-1.190e-04	-1.198e-04
TI (stable)	-1.379e-04	-1.378e-04	-1.379e-04
CP to Q	4.573e-05	4.648e-05	4.648e-05
CP to TQ	4.572e-05	4.647e-05	4.646e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0016	0.0016	0.0016
TE	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1390	0.1431	0.1462	0.5819	0.3930	0.2975
CP to Q↑	0.1454	0.1493	0.1522	0.8163	0.5497	0.4137
CP to TQ↓	0.0823	0.0817	0.0812	4.7877	4.7871	4.7863
CP to TQ↑	0.0921	0.0917	0.0914	8.3850	8.3875	8.4078

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2267	0.2332	0.2381	0.9032	0.6068	0.4576
CP to Q↑	0.2357	0.2419	0.2469	1.1800	0.7919	0.5969
CP to TQ↓	0.1335	0.1326	0.1317	7.4592	7.4544	7.4537



Propagation Delay at 125C, 1.10V Worst process

CP to TQ↑	0.1481	0.1474	0.1470	12.0548	12.0555	12.1073

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2083	0.2143	0.2189	0.8388	0.5631	0.4254
CP to Q↑	0.2162	0.2219	0.2265	1.0974	0.7364	0.5549
CP to TQ↓	0.1229	0.1220	0.1212	6.9405	6.9389	6.9368
CP to TQ↑	0.1360	0.1355	0.1350	11.2635	11.2613	11.3082

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.07	0.07	0.07
CP	min_pulse_width_low	0.21	0.21	0.21
D↓	hold_rising to CP	-0.0129	-0.0129	-0.0129
D↑	hold_rising to CP	-0.0266	-0.0266	-0.0266
D↓	setup_rising to CP	0.0980	0.0980	0.0980
D↑	setup_rising to CP	0.0670	0.0670	0.0670
TE↓	hold_rising to CP	-0.0126	-0.0126	-0.0126
TE↑	hold_rising to CP	-0.0574	-0.0574	-0.0574
TE↓	setup_rising to CP	0.0927	0.0927	0.0927
TE↑	setup_rising to CP	0.2229	0.2229	0.2229
TI↓	hold_rising to CP	-0.1176	-0.1176	-0.1176
TI↑	hold_rising to CP	-0.0609	-0.0609	-0.0609
TI↓	setup_rising to CP	0.2130	0.2130	0.2130
TI↑	setup_rising to CP	0.1117	0.1117	0.1117

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.11	0.11	0.11
CP	min_pulse_width_low	0.34	0.34	0.34

Timing Constraints (ns) at 125C, 1.10V Worst process

D↓	hold_rising to CP	-0.0390	-0.0390	-0.0390
D↑	hold_rising to CP	-0.0633	-0.0633	-0.0633
D↓	setup_rising to CP	0.1594	0.1593	0.1593
D↑	setup_rising to CP	0.1136	0.1136	0.1136
TE↓	hold_rising to CP	-0.0339	-0.0386	-0.0386
TE↑	hold_rising to CP	-0.1244	-0.1244	-0.1244
TE↓	setup_rising to CP	0.1596	0.1596	0.1596
TE↑	setup_rising to CP	0.3650	0.3650	0.3650
TI↓	hold_rising to CP	-0.2137	-0.2137	-0.2137
TI↑	hold_rising to CP	-0.1275	-0.1275	-0.1275
TI↓	setup_rising to CP	0.3490	0.3490	0.3540
TI↑	setup_rising to CP	0.1883	0.1883	0.1983

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.1	0.1	0.1
CP	min_pulse_width_low	0.31	0.31	0.31
D↓	hold_rising to CP	-0.0332	-0.0332	-0.0332
D↑	hold_rising to CP	-0.0579	-0.0579	-0.0579
D↓	setup_rising to CP	0.1487	0.1487	0.1487
D↑	setup_rising to CP	0.1031	0.1031	0.1031
TE↓	hold_rising to CP	-0.0334	-0.0334	-0.0334
TE↑	hold_rising to CP	-0.1087	-0.1087	-0.1087
TE↓	setup_rising to CP	0.1492	0.1492	0.1492
TE↑	setup_rising to CP	0.3343	0.3343	0.3343
TI↓	hold_rising to CP	-0.1935	-0.1933	-0.1933
TI↑	hold_rising to CP	-0.1174	-0.1174	-0.1174
TI↓	setup_rising to CP	0.3183	0.3235	0.3183
TI↑	setup_rising to CP	0.1729	0.1780	0.1729

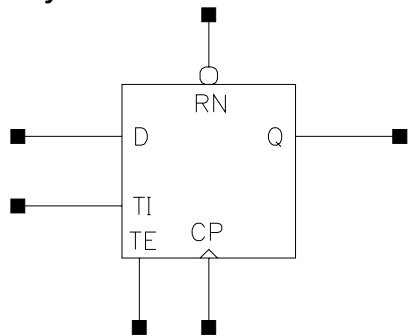


HS65_LS_SDFPRQ

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Active Low Reset; Q Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	CP	RN	TI	TE	IQ	IQ
-	-	0	-	-	-	0
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	4.80	12.4800
X9	2.6	4.80	12.4800
X18	2.6	5.00	13.0000
X27	2.6	5.40	14.0400
X35	2.6	5.60	14.5600



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	6.239e-07	1.393e-09
X9	6.869e-07	1.668e-09
X18	8.359e-07	2.237e-09
X27	9.902e-07	2.795e-09
X35	1.143e-06	3.336e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.603e-04	8.707e-08
X9	1.778e-04	9.258e-08
X18	2.198e-04	1.042e-07
X27	2.626e-04	1.194e-07
X35	3.063e-04	1.310e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.420e-04	7.641e-08
X9	1.571e-04	8.033e-08
X18	1.937e-04	8.870e-08
X27	2.311e-04	1.005e-07
X35	2.692e-04	1.088e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	1.019e-02	1.018e-02	1.014e-02	1.014e-02	1.014e-02
D (stable)	2.882e-03	2.885e-03	2.886e-03	2.858e-03	2.850e-03
RN (stable)	8.629e-03	8.651e-03	8.729e-03	8.625e-03	8.607e-03
TE (stable)	5.767e-03	5.821e-03	5.797e-03	5.787e-03	5.786e-03
TI (stable)	3.306e-03	3.296e-03	3.295e-03	3.272e-03	3.272e-03
CP to Q	1.721e-02	1.938e-02	2.574e-02	3.472e-02	4.537e-02
RN to Q	1.550e-02	1.625e-02	1.848e-02	2.106e-02	2.431e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.444e-04	1.400e-04	1.393e-04	1.397e-04	1.410e-04
D (stable)	-3.210e-05	-3.201e-05	-3.256e-05	-3.285e-05	-3.219e-05
RN (stable)	0.000e+00	0.000e+00	-8.696e-07	0.000e+00	-8.696e-07
TE (stable)	-5.956e-05	-5.857e-05	-5.834e-05	-5.842e-05	-5.852e-05
TI (stable)	-1.215e-04	-1.206e-04	-1.206e-04	-1.205e-04	-1.204e-04
CP to Q	7.709e-05	9.123e-05	9.722e-05	9.635e-05	8.822e-05
RN to Q	-6.502e-04	-3.744e-04	-2.474e-04	2.855e-04	4.298e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0016	0.0016	0.0016	0.0016	0.0016
RN	0.0016	0.0016	0.0016	0.0016	0.0016
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0010	0.0010	0.0010	0.0010	0.0010

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.0915	0.0972	0.1157	0.1328	0.1507	2.6614	1.3815	0.7205	0.5044	0.4001
CP to Q↑	0.0892	0.0910	0.1005	0.1161	0.1279	3.2133	1.7018	0.8639	0.6031	0.4654
RN to Q↓	0.0664	0.0701	0.0875	0.1063	0.1243	2.5500	1.3150	0.6632	0.4569	0.3542

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1494	0.1594	0.1912	0.2199	0.2503	4.3233	2.2349	1.1496	0.7982	0.6344
CP to Q↑	0.1430	0.1462	0.1617	0.1873	0.2066	4.7263	2.5125	1.2785	0.8959	0.6955



Propagation Delay at 125C, 1.10V Worst process

RN to Q↓	0.1245	0.1079	0.1330	0.1610	0.1876	3.9879	2.1120	1.0478	0.7156	0.5551

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1372	0.1462	0.1754	0.2018	0.2299	3.9972	2.0615	1.0627	0.7378	0.5856
CP to Q↑	0.1313	0.1342	0.1484	0.1720	0.1900	4.3929	2.3325	1.1859	0.8309	0.6442
RN to Q↓	0.1154	0.1001	0.1238	0.1502	0.1754	3.6830	1.9492	0.9685	0.6621	0.5129

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.07	0.075	0.105	0.13	0.15
CP	min_pulse_width_low	0.215	0.21	0.2	0.2	0.195
D↓	hold_rising to CP	-0.0228	-0.0229	-0.0231	-0.0183	-0.0183
D↑	hold_rising to CP	-0.0271	-0.0271	-0.0271	-0.0319	-0.0319
D↓	setup_rising to CP	0.1034	0.1034	0.0934	0.0934	0.0884
D↑	setup_rising to CP	0.0827	0.0825	0.0874	0.0874	0.0874
RN	min_pulse_width_low	0.065	0.07	0.09	0.115	0.14
RN↑	recovery_rising to CP	0.0475	0.0475	0.0524	0.0527	0.0527
RN↑	removal_rising to CP	0.0027	0.0027	-0.0022	-0.0022	-0.0022
TE↓	hold_rising to CP	-0.0176	-0.0179	-0.0176	-0.0176	-0.0176
TE↑	hold_rising to CP	-0.0576	-0.0576	-0.0576	-0.0576	-0.0576
TE↓	setup_rising to CP	0.1131	0.1184	0.1184	0.1184	0.1184
TE↑	setup_rising to CP	0.2226	0.2179	0.2079	0.2079	0.2029
TI↓	hold_rising to CP	-0.1126	-0.1126	-0.1078	-0.1078	-0.1078
TI↑	hold_rising to CP	-0.0610	-0.0610	-0.0610	-0.0612	-0.0612
TI↓	setup_rising to CP	0.2080	0.2081	0.1982	0.1930	0.1931
TI↑	setup_rising to CP	0.1268	0.1268	0.1270	0.1270	0.1270

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35

Timing Constraints (ns) at 125C, 1.10V Worst process

CP	min_pulse_width_high	0.105	0.125	0.175	0.215	0.255
CP	min_pulse_width_low	0.35	0.35	0.335	0.33	0.32
D↓	hold_rising to CP	-0.0490	-0.0541	-0.0489	-0.0489	-0.0489
D↑	hold_rising to CP	-0.0683	-0.0683	-0.0683	-0.0683	-0.0688
D↓	setup_rising to CP	0.1692	0.1693	0.1594	0.1545	0.1495
D↑	setup_rising to CP	0.1496	0.1543	0.1543	0.1547	0.1547
RN	min_pulse_width_low	0.1	0.1	0.14	0.17	0.205
RN↑	recovery_rising to CP	0.0798	0.0798	0.0848	0.0848	0.0848
RN↑	removal_rising to CP	0.0006	0.0006	0.0006	0.0006	0.0006
TE↓	hold_rising to CP	-0.0439	-0.0490	-0.0439	-0.0439	-0.0439
TE↑	hold_rising to CP	-0.1194	-0.1194	-0.1241	-0.1245	-0.1244
TE↓	setup_rising to CP	0.1950	0.2002	0.2002	0.2002	0.2002
TE↑	setup_rising to CP	0.3605	0.3601	0.3452	0.3353	0.3305
TI↓	hold_rising to CP	-0.1987	-0.1987	-0.1937	-0.1937	-0.1937
TI↑	hold_rising to CP	-0.1278	-0.1278	-0.1328	-0.1330	-0.1328
TI↓	setup_rising to CP	0.3492	0.3390	0.3290	0.3190	0.3140
TI↑	setup_rising to CP	0.2288	0.2288	0.2288	0.2288	0.2288

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.095	0.115	0.16	0.195	0.23
CP	min_pulse_width_low	0.32	0.32	0.305	0.3	0.295
D↓	hold_rising to CP	-0.0434	-0.0484	-0.0434	-0.0434	-0.0434
D↑	hold_rising to CP	-0.0632	-0.0632	-0.0632	-0.0632	-0.0632
D↓	setup_rising to CP	0.1587	0.1587	0.1489	0.1439	0.1342
D↑	setup_rising to CP	0.1386	0.1391	0.1391	0.1437	0.1390
RN	min_pulse_width_low	0.09	0.095	0.13	0.16	0.19
RN↑	recovery_rising to CP	0.0695	0.0747	0.0745	0.0797	0.0745
RN↑	removal_rising to CP	0.0008	0.0008	0.0008	0.0008	0.0008
TE↓	hold_rising to CP	-0.0387	-0.0434	-0.0387	-0.0387	-0.0382
TE↑	hold_rising to CP	-0.1087	-0.1087	-0.1087	-0.1139	-0.1139
TE↓	setup_rising to CP	0.1795	0.1795	0.1847	0.1847	0.1847
TE↑	setup_rising to CP	0.3298	0.3293	0.3148	0.3098	0.3048
TI↓	hold_rising to CP	-0.1833	-0.1833	-0.1783	-0.1781	-0.1733
TI↑	hold_rising to CP	-0.1176	-0.1176	-0.1176	-0.1176	-0.1228



Timing Constraints (ns) at 125C, 1.15V Worst process

TI↓	setup_rising to CP	0.3185	0.3088	0.3037	0.2987	0.2887
TI↑	setup_rising to CP	0.2035	0.2084	0.2084	0.2084	0.2084

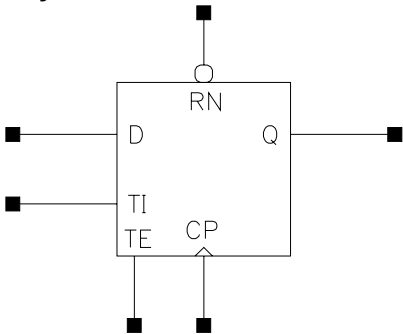
Speed-Optimised

HS65_LSS_SDFPRQ

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Active Low Reset; Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	CP	RN	TI	TE	IQ	IQ
-	-	0	-	-	-	0
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	5.40	14.0400
X27	2.6	5.60	14.5600
X35	2.6	5.80	15.0800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.024e-06	2.537e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X27	1.178e-06	3.095e-09
X35	1.333e-06	3.647e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.779e-04	1.141e-07
X27	3.216e-04	1.273e-07
X35	3.661e-04	1.388e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.443e-04	9.670e-08
X27	2.823e-04	1.065e-07
X35	3.212e-04	1.148e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	1.011e-02	1.013e-02	1.013e-02
D (stable)	2.825e-03	2.832e-03	2.832e-03
RN (stable)	8.543e-03	8.567e-03	8.558e-03
TE (stable)	5.672e-03	5.684e-03	5.684e-03
TI (stable)	3.240e-03	3.248e-03	3.247e-03
CP to Q	3.114e-02	3.666e-02	4.170e-02
RN to Q	2.282e-02	2.509e-02	2.743e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.515e-04	1.524e-04	1.524e-04
D (stable)	-3.029e-05	-3.034e-05	-3.030e-05
RN (stable)	-1.870e-06	-1.739e-06	-1.870e-06
TE (stable)	-5.747e-05	-5.751e-05	-5.741e-05
TI (stable)	-1.188e-04	-1.189e-04	-1.188e-04
CP to Q	1.234e-05	6.217e-06	7.087e-06

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

RN to Q	-6.064e-04	-1.695e-04	4.252e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0016	0.0016	0.0016
RN	0.0014	0.0014	0.0014
TE	0.0018	0.0018	0.0018
TI	0.0010	0.0010	0.0010

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1307	0.1355	0.1393	0.5766	0.3908	0.2956
CP to Q↑	0.1418	0.1461	0.1494	0.8092	0.5460	0.4105
RN to Q↓	0.1222	0.1272	0.1309	0.5748	0.3898	0.2951

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2143	0.2220	0.2279	0.8975	0.6041	0.4558
CP to Q↑	0.2295	0.2362	0.2414	1.1709	0.7876	0.5922
RN to Q↓	0.1933	0.2009	0.2068	0.8948	0.6030	0.4549

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1967	0.2038	0.2092	0.8320	0.5605	0.4235
CP to Q↑	0.2106	0.2168	0.2217	1.0875	0.7313	0.5510



Propagation Delay at 125C, 1.15V Worst process

RN to Q↓	0.1783	0.1855	0.1912	0.8297	0.5594	0.4228

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.065	0.065	0.065
CP	min_pulse_width_low	0.21	0.21	0.21
D↓	hold_rising to CP	-0.0229	-0.0229	-0.0229
D↑	hold_rising to CP	-0.0319	-0.0319	-0.0319
D↓	setup_rising to CP	0.1034	0.1034	0.1034
D↑	setup_rising to CP	0.0824	0.0824	0.0824
RN	min_pulse_width_low	0.065	0.065	0.065
RN↑	recovery_rising to CP	0.0425	0.0425	0.0422
RN↑	removal_rising to CP	-0.0022	-0.0022	-0.0022
TE↓	hold_rising to CP	-0.0228	-0.0228	-0.0228
TE↑	hold_rising to CP	-0.0576	-0.0576	-0.0576
TE↓	setup_rising to CP	0.1081	0.1081	0.1081
TE↑	setup_rising to CP	0.2176	0.2176	0.2127
TI↓	hold_rising to CP	-0.1179	-0.1179	-0.1179
TI↑	hold_rising to CP	-0.0610	-0.0610	-0.0612
TI↓	setup_rising to CP	0.2030	0.2030	0.2029
TI↑	setup_rising to CP	0.1168	0.1168	0.1218

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.1	0.105	0.1
CP	min_pulse_width_low	0.345	0.345	0.345
D↓	hold_rising to CP	-0.0540	-0.0586	-0.0586
D↑	hold_rising to CP	-0.0688	-0.0688	-0.0735
D↓	setup_rising to CP	0.1642	0.1642	0.1643
D↑	setup_rising to CP	0.1441	0.1441	0.1441
RN	min_pulse_width_low	0.095	0.095	0.095
RN↑	recovery_rising to CP	0.0652	0.0652	0.0652
RN↑	removal_rising to CP	0.0006	0.0006	0.0006

Timing Constraints (ns) at 125C, 1.10V Worst process

TE↓	hold_rising to CP	-0.0536	-0.0541	-0.0541
TE↑	hold_rising to CP	-0.1245	-0.1245	-0.1245
TE↓	setup_rising to CP	0.1849	0.1849	0.1849
TE↑	setup_rising to CP	0.3500	0.3500	0.3500
TI↓	hold_rising to CP	-0.2035	-0.2087	-0.2087
TI↑	hold_rising to CP	-0.1330	-0.1330	-0.1330
TI↓	setup_rising to CP	0.3340	0.3340	0.3340
TI↑	setup_rising to CP	0.2136	0.2136	0.2136

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.095	0.095	0.095
CP	min_pulse_width_low	0.315	0.315	0.31
D↓	hold_rising to CP	-0.0484	-0.0484	-0.0489
D↑	hold_rising to CP	-0.0632	-0.0632	-0.0632
D↓	setup_rising to CP	0.1589	0.1542	0.1537
D↑	setup_rising to CP	0.1289	0.1289	0.1289
RN	min_pulse_width_low	0.09	0.09	0.09
RN↑	recovery_rising to CP	0.0642	0.0595	0.0595
RN↑	removal_rising to CP	0.0008	0.0008	0.0008
TE↓	hold_rising to CP	-0.0439	-0.0439	-0.0439
TE↑	hold_rising to CP	-0.1087	-0.1092	-0.1092
TE↓	setup_rising to CP	0.1694	0.1694	0.1694
TE↑	setup_rising to CP	0.3197	0.3197	0.3192
TI↓	hold_rising to CP	-0.1885	-0.1885	-0.1885
TI↑	hold_rising to CP	-0.1176	-0.1176	-0.1176
TI↓	setup_rising to CP	0.3087	0.3087	0.3087
TI↑	setup_rising to CP	0.1933	0.1983	0.1933

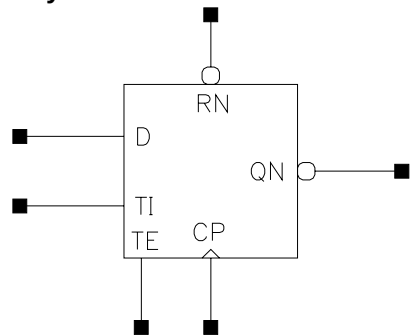


HS65_LS_SDFPRQN

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Active Low Reset; QN Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

D	CP	RN	TI	TE	IQ	IQ
-	-	0	-	-	-	0
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	4.80	12.4800
X9	2.6	4.80	12.4800
X18	2.6	5.00	13.0000
X27	2.6	5.40	14.0400
X35	2.6	5.60	14.5600



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	6.521e-07	1.282e-09
X9	7.229e-07	1.424e-09
X18	9.210e-07	1.699e-09
X27	1.129e-06	1.987e-09
X35	1.337e-06	2.284e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.691e-04	8.453e-08
X9	1.917e-04	8.730e-08
X18	2.530e-04	9.398e-08
X27	3.178e-04	1.034e-07
X35	3.832e-04	1.105e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.496e-04	7.455e-08
X9	1.692e-04	7.648e-08
X18	2.225e-04	8.152e-08
X27	2.789e-04	8.913e-08
X35	3.358e-04	9.447e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	1.013e-02	1.017e-02	1.017e-02	1.019e-02	1.017e-02
D (stable)	2.862e-03	2.874e-03	2.886e-03	2.879e-03	2.878e-03
RN (stable)	8.545e-03	8.594e-03	8.702e-03	8.605e-03	8.571e-03
TE (stable)	5.712e-03	5.776e-03	5.791e-03	5.792e-03	5.790e-03
TI (stable)	3.245e-03	3.252e-03	3.264e-03	3.250e-03	3.253e-03
CP to QN	1.828e-02	2.028e-02	2.565e-02	3.201e-02	3.892e-02
RN to QN	1.648e-02	1.776e-02	2.047e-02	2.407e-02	2.729e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.633e-04	1.645e-04	1.626e-04	1.624e-04	1.647e-04
D (stable)	-4.848e-05	-4.958e-05	-4.889e-05	-4.995e-05	-4.915e-05
RN (stable)	5.130e-06	5.000e-06	5.130e-06	5.000e-06	5.000e-06
TE (stable)	-5.289e-05	-5.140e-05	-5.091e-05	-5.672e-05	-5.273e-05
TI (stable)	-1.243e-04	-1.239e-04	-1.232e-04	-1.238e-04	-1.243e-04
CP to QN	7.424e-05	6.996e-05	7.095e-05	7.909e-05	6.796e-05
RN to QN	-1.082e-03	-1.343e-03	-1.494e-03	-2.029e-03	-2.164e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0016	0.0016	0.0016	0.0016	0.0016
RN	0.0014	0.0015	0.0015	0.0015	0.0015
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0010	0.0010	0.0010	0.0010	0.0010

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1190	0.1225	0.1350	0.1469	0.1537	2.4200	1.2482	0.6304	0.4339	0.3314
CP to QN↑	0.1068	0.1124	0.1214	0.1320	0.1416	3.0903	1.6660	0.8352	0.5688	0.4323
RN to QN↑	0.0986	0.1029	0.1115	0.1213	0.1296	3.0794	1.6601	0.8330	0.5668	0.4320

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1930	0.1985	0.2175	0.2357	0.2458	3.8929	1.9985	0.9929	0.6773	0.5165
CP to QN↑	0.1741	0.1831	0.1973	0.2141	0.2291	4.5102	2.4434	1.2220	0.8288	0.6323



Propagation Delay at 125C, 1.10V Worst process

RN to QN↑	0.1537	0.1605	0.1737	0.1890	0.2021	4.4858	2.4337	1.2174	0.8263	0.6309

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1771	0.1822	0.2000	0.2170	0.2266	3.6016	1.8456	0.9197	0.6281	0.4788
CP to QN↑	0.1599	0.1681	0.1813	0.1970	0.2112	4.1924	2.2708	1.1344	0.7695	0.5866
RN to QN↑	0.1421	0.1484	0.1608	0.1750	0.1874	4.1725	2.2615	1.1304	0.7671	0.5856

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.06	0.065	0.07	0.075	0.075
CP	min_pulse_width_low	0.215	0.215	0.215	0.21	0.21
D↓	hold_rising to CP	-0.0229	-0.0229	-0.0229	-0.0229	-0.0229
D↑	hold_rising to CP	-0.0271	-0.0271	-0.0271	-0.0319	-0.0319
D↓	setup_rising to CP	0.1084	0.1084	0.1031	0.1034	0.1034
D↑	setup_rising to CP	0.0824	0.0824	0.0824	0.0824	0.0824
RN	min_pulse_width_low	0.065	0.065	0.07	0.07	0.075
RN↑	recovery_rising to CP	0.0425	0.0425	0.0425	0.0425	0.0375
RN↑	removal_rising to CP	-0.0022	0.0027	-0.0022	-0.0022	0.0027
TE↓	hold_rising to CP	-0.0228	-0.0228	-0.0228	-0.0228	-0.0228
TE↑	hold_rising to CP	-0.0576	-0.0576	-0.0576	-0.0576	-0.0576
TE↓	setup_rising to CP	0.1134	0.1131	0.1133	0.1085	0.1081
TE↑	setup_rising to CP	0.2226	0.2229	0.2177	0.2177	0.2179
TI↓	hold_rising to CP	-0.1126	-0.1126	-0.1179	-0.1179	-0.1179
TI↑	hold_rising to CP	-0.0610	-0.0610	-0.0610	-0.0610	-0.0612
TI↓	setup_rising to CP	0.2079	0.2079	0.2081	0.2030	0.2032
TI↑	setup_rising to CP	0.1218	0.1218	0.1218	0.1218	0.1168

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35

Timing Constraints (ns) at 125C, 1.10V Worst process

CP	min_pulse_width_high	0.095	0.105	0.11	0.12	0.125
CP	min_pulse_width_low	0.35	0.35	0.35	0.345	0.345
D↓	hold_rising to CP	-0.0540	-0.0540	-0.0540	-0.0586	-0.0586
D↑	hold_rising to CP	-0.0683	-0.0683	-0.0683	-0.0683	-0.0688
D↓	setup_rising to CP	0.1738	0.1692	0.1692	0.1688	0.1643
D↑	setup_rising to CP	0.1441	0.1441	0.1441	0.1394	0.1394
RN	min_pulse_width_low	0.095	0.1	0.1	0.105	0.115
RN↑	recovery_rising to CP	0.0702	0.0702	0.0702	0.0652	0.0652
RN↑	removal_rising to CP	0.0006	0.0006	0.0006	0.0006	0.0006
TE↓	hold_rising to CP	-0.0489	-0.0489	-0.0536	-0.0541	-0.0541
TE↑	hold_rising to CP	-0.1194	-0.1194	-0.1241	-0.1245	-0.1245
TE↓	setup_rising to CP	0.1900	0.1900	0.1900	0.1895	0.1848
TE↑	setup_rising to CP	0.3553	0.3600	0.3553	0.3550	0.3505
TI↓	hold_rising to CP	-0.2037	-0.2035	-0.2035	-0.2087	-0.2087
TI↑	hold_rising to CP	-0.1278	-0.1278	-0.1278	-0.1328	-0.1330
TI↓	setup_rising to CP	0.3390	0.3390	0.3390	0.3392	0.3340
TI↑	setup_rising to CP	0.2186	0.2186	0.2186	0.2134	0.2134

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.09	0.095	0.1	0.11	0.115
CP	min_pulse_width_low	0.32	0.32	0.32	0.315	0.31
D↓	hold_rising to CP	-0.0484	-0.0484	-0.0484	-0.0489	-0.0489
D↑	hold_rising to CP	-0.0634	-0.0634	-0.0634	-0.0632	-0.0632
D↓	setup_rising to CP	0.1590	0.1590	0.1587	0.1587	0.1537
D↑	setup_rising to CP	0.1335	0.1335	0.1336	0.1289	0.1284
RN	min_pulse_width_low	0.09	0.09	0.09	0.1	0.105
RN↑	recovery_rising to CP	0.0645	0.0645	0.0645	0.0642	0.0595
RN↑	removal_rising to CP	0.0008	0.0008	0.0008	0.0008	0.0008
TE↓	hold_rising to CP	-0.0434	-0.0439	-0.0439	-0.0437	-0.0437
TE↑	hold_rising to CP	-0.1087	-0.1087	-0.1087	-0.1087	-0.1092
TE↓	setup_rising to CP	0.1745	0.1745	0.1745	0.1694	0.1694
TE↑	setup_rising to CP	0.3247	0.3293	0.3247	0.3247	0.3197
TI↓	hold_rising to CP	-0.1833	-0.1833	-0.1885	-0.1885	-0.1885
TI↑	hold_rising to CP	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176



Timing Constraints (ns) at 125C, 1.15V Worst process

TI↓	setup_rising to CP	0.3137	0.3137	0.3087	0.3087	0.3087
TI↑	setup_rising to CP	0.1983	0.1983	0.1983	0.1933	0.1935

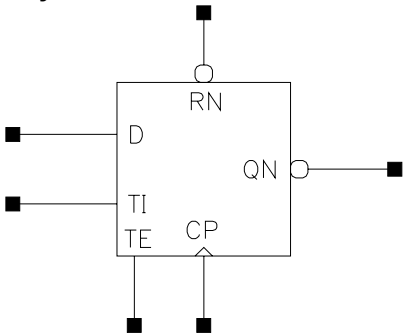
Speed-Optimised

HS65_LSS_SDFPRQN

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Active Low Reset; QN Output Only

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

D	CP	RN	TI	TE	IQ	IQ
-	-	0	-	-	-	0
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	5.40	14.0400
X27	2.6	5.60	14.5600
X35	2.6	5.80	15.0800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.080e-06	2.220e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X27	1.282e-06	2.501e-09
X35	1.487e-06	2.770e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.993e-04	1.088e-07
X27	3.626e-04	1.163e-07
X35	4.270e-04	1.229e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.629e-04	9.309e-08
X27	3.179e-04	9.895e-08
X35	3.739e-04	1.039e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	1.028e-02	1.029e-02	1.029e-02
D (stable)	2.926e-03	2.925e-03	2.925e-03
RN (stable)	8.696e-03	8.698e-03	8.706e-03
TE (stable)	5.750e-03	5.748e-03	5.751e-03
TI (stable)	3.293e-03	3.290e-03	3.292e-03
CP to QN	3.117e-02	3.661e-02	4.173e-02
RN to QN	2.232e-02	2.552e-02	2.813e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.608e-04	1.610e-04	1.615e-04
D (stable)	-4.738e-05	-4.772e-05	-4.394e-05
RN (stable)	5.130e-06	5.130e-06	2.130e-06
TE (stable)	-5.226e-05	-5.063e-05	-4.968e-05
TI (stable)	-1.236e-04	-1.232e-04	-1.232e-04
CP to QN	7.822e-05	7.622e-05	7.336e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

RN to QN	-9.395e-04	-1.429e-03	-1.636e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0017	0.0017	0.0017
RN	0.0014	0.0014	0.0014
TE	0.0018	0.0018	0.0018
TI	0.0010	0.0010	0.0010

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1162	0.1215	0.1266	0.5783	0.3924	0.2971
CP to QN↑	0.1274	0.1329	0.1377	0.8131	0.5497	0.4144
RN to QN↑	0.0991	0.1042	0.1086	0.8116	0.5471	0.4124

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1895	0.1980	0.2062	0.9012	0.6065	0.4588
CP to QN↑	0.2084	0.2174	0.2251	1.1784	0.7940	0.5993
RN to QN↑	0.1538	0.1619	0.1688	1.1760	0.7901	0.5944

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1736	0.1815	0.1892	0.8362	0.5634	0.4260
CP to QN↑	0.1908	0.1991	0.2062	1.0957	0.7380	0.5567



Propagation Delay at 125C, 1.15V Worst process

RN to QN $\uparrow$	0.1420	0.1495	0.1559	1.0920	0.7342	0.5531

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.08	0.085	0.085
CP	min_pulse_width_low	0.205	0.205	0.205
D $\downarrow$	hold_rising to CP	-0.0229	-0.0229	-0.0229
D $\uparrow$	hold_rising to CP	-0.0319	-0.0319	-0.0319
D $\downarrow$	setup_rising to CP	0.0986	0.0986	0.0934
D $\uparrow$	setup_rising to CP	0.0827	0.0824	0.0824
RN	min_pulse_width_low	0.075	0.075	0.075
RN $\uparrow$	recovery_rising to CP	0.0425	0.0425	0.0425
RN $\uparrow$	removal_rising to CP	0.0027	0.0027	0.0027
TE $\downarrow$	hold_rising to CP	-0.0176	-0.0179	-0.0179
TE $\uparrow$	hold_rising to CP	-0.0576	-0.0576	-0.0576
TE $\downarrow$	setup_rising to CP	0.1131	0.1131	0.1131
TE $\uparrow$	setup_rising to CP	0.2126	0.2128	0.2079
TI $\downarrow$	hold_rising to CP	-0.1126	-0.1126	-0.1126
TI $\uparrow$	hold_rising to CP	-0.0612	-0.0612	-0.0612
TI $\downarrow$	setup_rising to CP	0.1982	0.1981	0.1981
TI $\uparrow$	setup_rising to CP	0.1270	0.1220	0.1220

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.135	0.14	0.145
CP	min_pulse_width_low	0.34	0.34	0.34
D $\downarrow$	hold_rising to CP	-0.0541	-0.0541	-0.0541
D $\uparrow$	hold_rising to CP	-0.0688	-0.0688	-0.0735
D $\downarrow$	setup_rising to CP	0.1599	0.1599	0.1594
D $\uparrow$	setup_rising to CP	0.1496	0.1491	0.1491
RN	min_pulse_width_low	0.11	0.115	0.12
RN $\uparrow$	recovery_rising to CP	0.0748	0.0702	0.0702
RN $\uparrow$	removal_rising to CP	0.0053	0.0053	0.0053

Timing Constraints (ns) at 125C, 1.10V Worst process

TE↓	hold_rising to CP	-0.0491	-0.0491	-0.0491
TE↑	hold_rising to CP	-0.1245	-0.1245	-0.1245
TE↓	setup_rising to CP	0.1952	0.1947	0.1947
TE↑	setup_rising to CP	0.3455	0.3451	0.3452
TI↓	hold_rising to CP	-0.1987	-0.1987	-0.2037
TI↑	hold_rising to CP	-0.1330	-0.1330	-0.1328
TI↓	setup_rising to CP	0.3290	0.3290	0.3290
TI↑	setup_rising to CP	0.2236	0.2236	0.2236

Timing Constraints (ns) at 125C, 1.15V Worst process

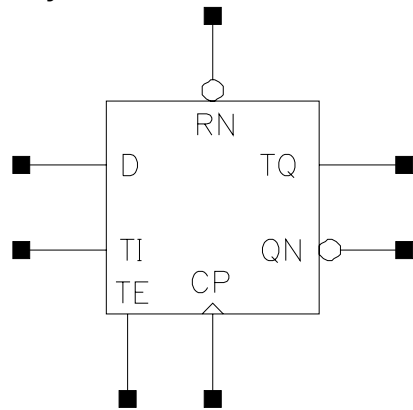
Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.125	0.13	0.13
CP	min_pulse_width_low	0.31	0.31	0.31
D↓	hold_rising to CP	-0.0484	-0.0484	-0.0484
D↑	hold_rising to CP	-0.0632	-0.0632	-0.0632
D↓	setup_rising to CP	0.1492	0.1489	0.1489
D↑	setup_rising to CP	0.1339	0.1340	0.1340
RN	min_pulse_width_low	0.105	0.105	0.11
RN↑	recovery_rising to CP	0.0692	0.0645	0.0645
RN↑	removal_rising to CP	0.0013	0.0013	0.0013
TE↓	hold_rising to CP	-0.0434	-0.0434	-0.0434
TE↑	hold_rising to CP	-0.1092	-0.1092	-0.1139
TE↓	setup_rising to CP	0.1745	0.1745	0.1745
TE↑	setup_rising to CP	0.3147	0.3148	0.3148
TI↓	hold_rising to CP	-0.1835	-0.1835	-0.1835
TI↑	hold_rising to CP	-0.1176	-0.1176	-0.1178
TI↓	setup_rising to CP	0.3037	0.3038	0.3038
TI↑	setup_rising to CP	0.2034	0.2034	0.2034



HS65_LS_SDFPRQNT

Cell Description
Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Clear Active Low, QN Output Only, 35x Drive
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

IQ	TQ
IQ	IQ

Functions

D	CP	RN	TI	TE	IQ	IQ
-	-	0	-	-	-	0
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	5.00	13.0000



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X9	2.6	5.00	13.0000
X18	2.6	5.20	13.5200
X27	2.6	5.60	14.5600
X35	2.6	5.80	15.0800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	6.917e-07	1.402e-09
X9	7.808e-07	1.535e-09
X18	9.811e-07	1.796e-09
X27	1.191e-06	2.082e-09
X35	1.399e-06	2.365e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.787e-04	8.863e-08
X9	2.071e-04	9.155e-08
X18	2.692e-04	9.814e-08
X27	3.348e-04	1.074e-07
X35	4.002e-04	1.145e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.582e-04	7.797e-08
X9	1.828e-04	8.008e-08
X18	2.368e-04	8.502e-08
X27	2.939e-04	9.257e-08
X35	3.508e-04	9.788e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	1.009e-02	1.013e-02	1.011e-02	1.017e-02	1.010e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	2.908e-03	2.925e-03	2.929e-03	2.930e-03	2.924e-03
RN (stable)	8.643e-03	8.581e-03	8.709e-03	8.629e-03	8.609e-03
TE (stable)	5.771e-03	5.801e-03	5.813e-03	5.824e-03	5.809e-03
TI (stable)	3.194e-03	3.201e-03	3.203e-03	3.205e-03	3.200e-03
CP to QN	1.024e-02	1.113e-02	1.391e-02	1.721e-02	2.069e-02
CP to TQ	1.024e-02	1.112e-02	1.390e-02	1.720e-02	2.069e-02
RN to QN	8.690e-03	9.254e-03	1.078e-02	1.248e-02	1.407e-02
RN to TQ	8.690e-03	9.249e-03	1.077e-02	1.247e-02	1.406e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.472e-04	1.492e-04	1.461e-04	1.467e-04	1.470e-04
D (stable)	-4.874e-05	-4.861e-05	-4.792e-05	-4.825e-05	-4.756e-05
RN (stable)	5.261e-06	5.261e-06	4.261e-06	5.000e-06	5.130e-06
TE (stable)	-6.279e-05	-6.379e-05	-6.028e-05	-6.354e-05	-6.277e-05
TI (stable)	-9.152e-05	-9.124e-05	-9.075e-05	-9.091e-05	-9.052e-05
CP to QN	3.161e-05	2.562e-05	3.248e-05	3.048e-05	2.548e-05
CP to TQ	3.161e-05	2.563e-05	3.250e-05	3.048e-05	2.550e-05
RN to QN	-5.206e-04	-6.147e-04	-7.637e-04	-1.003e-03	-1.067e-03
RN to TQ	-5.206e-04	-6.147e-04	-7.638e-04	-1.003e-03	-1.067e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0011
D	0.0016	0.0016	0.0016	0.0016	0.0016
RN	0.0014	0.0015	0.0015	0.0015	0.0015
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0010	0.0010	0.0010	0.0010	0.0010

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35



Propagation Delay at 25C, 1.20V Typ process

CP to QN↓	0.1242	0.1261	0.1394	0.1524	0.1590	2.3777	1.2277	0.6278	0.4322	0.3311
CP to QN↑	0.1167	0.1209	0.1323	0.1446	0.1547	3.1127	1.6696	0.8363	0.5661	0.4306
CP to TQ↓	0.0923	0.0910	0.0919	0.0916	0.0920	4.7590	4.7737	4.7616	4.7506	4.7552
CP to TQ↑	0.0977	0.0963	0.0966	0.0968	0.0970	8.4137	8.3203	8.3021	8.3049	8.3010
RN to QN↑	0.1030	0.1059	0.1152	0.1258	0.1343	3.1146	1.6684	0.8376	0.5689	0.4341
RN to TQ↓	0.0830	0.0817	0.0826	0.0824	0.0825	4.6108	4.6333	4.6163	4.6102	4.6132

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.2018	0.2045	0.2250	0.2451	0.2551	3.8088	1.9264	0.9786	0.6691	0.5121
CP to QN↑	0.1903	0.1971	0.2150	0.2346	0.2506	4.5277	2.4369	1.2168	0.8215	0.6265
CP to TQ↓	0.1500	0.1479	0.1492	0.1489	0.1496	7.4933	7.5222	7.5112	7.5074	7.5065
CP to TQ↑	0.1565	0.1544	0.1547	0.1550	0.1554	12.0719	11.9295	11.8839	11.8794	11.8718
RN to QN↑	0.1601	0.1650	0.1796	0.1959	0.2094	4.5246	2.4339	1.2179	0.8252	0.6309
RN to TQ↓	0.1274	0.1253	0.1267	0.1262	0.1265	7.2363	7.2858	7.2638	7.2643	7.2677

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1850	0.1876	0.2067	0.2255	0.2350	3.5211	1.7850	0.9082	0.6212	0.4752
CP to QN↑	0.1744	0.1808	0.1975	0.2158	0.2308	4.2133	2.2618	1.1308	0.7636	0.5821
CP to TQ↓	0.1378	0.1359	0.1371	0.1368	0.1375	6.9690	7.0050	6.9931	6.9869	6.9867
CP to TQ↑	0.1439	0.1419	0.1422	0.1425	0.1429	11.2844	11.1491	11.1115	11.1076	11.1013
RN to QN↑	0.1481	0.1526	0.1661	0.1814	0.1940	4.2094	2.2615	1.1327	0.7680	0.5866
RN to TQ↓	0.1182	0.1163	0.1176	0.1172	0.1174	6.7369	6.7777	6.7612	6.7625	6.7613

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.07	0.075	0.075	0.085	0.09
CP	min_pulse_width_low	0.225	0.225	0.225	0.225	0.225
D↓	hold_rising to CP	-0.0229	-0.0229	-0.0229	-0.0229	-0.0229
D↑	hold_rising to CP	-0.0271	-0.0271	-0.0271	-0.0271	-0.0271
D↓	setup_rising to CP	0.1084	0.1084	0.1084	0.1081	0.1084
D↑	setup_rising to CP	0.0827	0.0827	0.0827	0.0827	0.0827
RN	min_pulse_width_low	0.07	0.07	0.075	0.075	0.085
RN↑	recovery_rising to CP	0.0475	0.0477	0.0475	0.0475	0.0475
RN↑	removal_rising to CP	-0.0022	0.0027	0.0027	0.0027	0.0027
TE↓	hold_rising to CP	-0.0179	-0.0228	-0.0228	-0.0228	-0.0228
TE↑	hold_rising to CP	-0.0627	-0.0627	-0.0627	-0.0627	-0.0627
TE↓	setup_rising to CP	0.1135	0.1135	0.1184	0.1135	0.1135
TE↑	setup_rising to CP	0.2377	0.2426	0.2377	0.2429	0.2377
TI↓	hold_rising to CP	-0.1329	-0.1329	-0.1329	-0.1329	-0.1329
TI↑	hold_rising to CP	-0.0662	-0.0662	-0.0662	-0.0663	-0.0663
TI↓	setup_rising to CP	0.2282	0.2333	0.2332	0.2332	0.2332
TI↑	setup_rising to CP	0.1372	0.1372	0.1372	0.1322	0.1322

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.115	0.115	0.13	0.14	0.15
CP	min_pulse_width_low	0.37	0.375	0.375	0.375	0.375
D↓	hold_rising to CP	-0.0540	-0.0539	-0.0539	-0.0539	-0.0539
D↑	hold_rising to CP	-0.0683	-0.0683	-0.0683	-0.0683	-0.0683
D↓	setup_rising to CP	0.1742	0.1742	0.1742	0.1788	0.1742
D↑	setup_rising to CP	0.1496	0.1496	0.1543	0.1496	0.1496
RN	min_pulse_width_low	0.105	0.105	0.11	0.12	0.13
RN↑	recovery_rising to CP	0.0798	0.0752	0.0798	0.0752	0.0752
RN↑	removal_rising to CP	0.0006	0.0006	0.0006	0.0006	0.0006
TE↓	hold_rising to CP	-0.0489	-0.0489	-0.0489	-0.0489	-0.0489
TE↑	hold_rising to CP	-0.1339	-0.1339	-0.1339	-0.1339	-0.1339
TE↓	setup_rising to CP	0.1950	0.1950	0.2002	0.1997	0.1997



Timing Constraints (ns) at 125C, 1.10V Worst process

TE↑	setup_rising to CP	0.3898	0.3948	0.3902	0.3948	0.3948
TI↓	hold_rising to CP	-0.2287	-0.2286	-0.2286	-0.2286	-0.2286
TI↑	hold_rising to CP	-0.1379	-0.1379	-0.1379	-0.1379	-0.1379
TI↓	setup_rising to CP	0.3790	0.3788	0.3788	0.3788	0.3788
TI↑	setup_rising to CP	0.2388	0.2388	0.2390	0.2390	0.2390

Timing Constraints (ns) at 125C, 1.15V Worst process

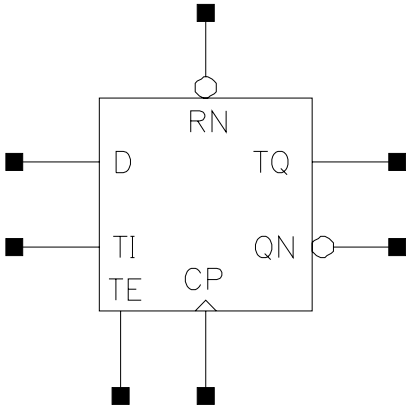
Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.105	0.105	0.115	0.13	0.14
CP	min_pulse_width_low	0.34	0.345	0.345	0.345	0.345
D↓	hold_rising to CP	-0.0484	-0.0484	-0.0484	-0.0484	-0.0484
D↑	hold_rising to CP	-0.0633	-0.0632	-0.0634	-0.0632	-0.0632
D↓	setup_rising to CP	0.1590	0.1595	0.1595	0.1640	0.1595
D↑	setup_rising to CP	0.1386	0.1386	0.1386	0.1390	0.1391
RN	min_pulse_width_low	0.095	0.095	0.1	0.115	0.12
RN↑	recovery_rising to CP	0.0742	0.0695	0.0747	0.0695	0.0695
RN↑	removal_rising to CP	0.0008	0.0013	0.0008	0.0008	0.0008
TE↓	hold_rising to CP	-0.0434	-0.0439	-0.0434	-0.0437	-0.0434
TE↑	hold_rising to CP	-0.1239	-0.1239	-0.1240	-0.1239	-0.1239
TE↓	setup_rising to CP	0.1795	0.1795	0.1795	0.1795	0.1795
TE↑	setup_rising to CP	0.3597	0.3648	0.3648	0.3648	0.3648
TI↓	hold_rising to CP	-0.2135	-0.2133	-0.2133	-0.2133	-0.2133
TI↑	hold_rising to CP	-0.1326	-0.1326	-0.1278	-0.1326	-0.1326
TI↓	setup_rising to CP	0.3437	0.3487	0.3487	0.3487	0.3487
TI↑	setup_rising to CP	0.2234	0.2234	0.2234	0.2234	0.2234

Speed-Optimised

HS65_LSS_SDFPRQNT

Cell Description
Scan-out D Flip-Flop with 1 Phase Positive Edge
Triggered Clock, Clear Active Low, QN Output
Only, 35x Drive

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

IQ	TQ
IQ	IQ

Functions

D	CP	RN	TI	TE	IQ	IQ
-	-	0	-	-	-	0
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	5.60	14.5600



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X27	2.6	5.80	15.0800
X35	2.6	6.00	15.6000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.086e-06	2.304e-09
X27	1.276e-06	2.598e-09
X35	1.480e-06	2.878e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.966e-04	1.121e-07
X27	3.555e-04	1.196e-07
X35	4.195e-04	1.263e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.608e-04	9.582e-08
X27	3.120e-04	1.017e-07
X35	3.676e-04	1.067e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	1.012e-02	1.010e-02	1.010e-02
D (stable)	2.928e-03	2.940e-03	2.937e-03
RN (stable)	8.701e-03	8.680e-03	8.720e-03
TE (stable)	5.768e-03	5.788e-03	5.785e-03
TI (stable)	3.205e-03	3.210e-03	3.207e-03
CP to QN	1.619e-02	1.885e-02	2.151e-02
CP to TQ	1.617e-02	1.882e-02	2.147e-02
RN to QN	1.149e-02	1.308e-02	1.442e-02
RN to TQ	1.147e-02	1.306e-02	1.440e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.401e-04	1.456e-04	1.411e-04
D (stable)	-4.571e-05	-4.555e-05	-4.563e-05
RN (stable)	4.261e-06	5.000e-06	8.261e-06
TE (stable)	-6.415e-05	-6.403e-05	-6.205e-05
TI (stable)	-8.961e-05	-8.942e-05	-8.958e-05
CP to QN	3.574e-05	2.148e-05	3.661e-05
CP to TQ	3.572e-05	2.150e-05	3.661e-05
RN to QN	-5.067e-04	-7.647e-04	-8.337e-04
RN to TQ	-5.067e-04	-7.647e-04	-8.337e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0011	0.0011	0.0011
D	0.0017	0.0017	0.0017
RN	0.0015	0.0015	0.0015
TE	0.0018	0.0018	0.0018
TI	0.0010	0.0010	0.0010

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1195	0.1248	0.1299	0.5896	0.4006	0.3019
CP to QN↑	0.1341	0.1412	0.1467	0.8182	0.5526	0.4157
CP to TQ↓	0.1120	0.1109	0.1107	4.9473	4.9647	4.9930
CP to TQ↑	0.1052	0.1043	0.1042	8.4338	8.4436	8.4485
RN to QN↑	0.1053	0.1119	0.1167	0.8166	0.5513	0.4148
RN to TQ↓	0.0856	0.0849	0.0848	4.7451	4.7570	4.7891



Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1953	0.2041	0.2123	0.9327	0.6269	0.4699
CP to QN↑	0.2204	0.2327	0.2416	1.1917	0.8000	0.6023
CP to TQ↓	0.1827	0.1809	0.1806	7.7944	7.8173	7.8481
CP to TQ↑	0.1691	0.1678	0.1675	12.1492	12.1646	12.1699
RN to QN↑	0.1638	0.1752	0.1829	1.1877	0.7982	0.5997
RN to TQ↓	0.1310	0.1302	0.1301	7.4305	7.4550	7.4864

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1788	0.1870	0.1947	0.8625	0.5802	0.4362
CP to QN↑	0.2016	0.2128	0.2210	1.1072	0.7437	0.5594
CP to TQ↓	0.1676	0.1660	0.1657	7.2495	7.2674	7.3002
CP to TQ↑	0.1555	0.1542	0.1540	11.3482	11.3614	11.3670
RN to QN↑	0.1511	0.1615	0.1687	1.1033	0.7410	0.5575
RN to TQ↓	0.1215	0.1207	0.1207	6.9139	6.9290	6.9661

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.085	0.09	0.095
CP	min_pulse_width_low	0.22	0.22	0.22
D↓	hold_rising to CP	-0.0229	-0.0229	-0.0229
D↑	hold_rising to CP	-0.0319	-0.0319	-0.0319
D↓	setup_rising to CP	0.0986	0.0984	0.0984
D↑	setup_rising to CP	0.0827	0.0827	0.0827
RN	min_pulse_width_low	0.075	0.08	0.08
RN↑	recovery_rising to CP	0.0475	0.0477	0.0475

Timing Constraints (ns) at 25C, 1.20V Typ process

RN↑	removal_rising to CP	-0.0022	-0.0022	-0.0022
TE↓	hold_rising to CP	-0.0176	-0.0176	-0.0176
TE↑	hold_rising to CP	-0.0627	-0.0627	-0.0627
TE↓	setup_rising to CP	0.1131	0.1131	0.1131
TE↑	setup_rising to CP	0.2281	0.2328	0.2328
TI↓	hold_rising to CP	-0.1280	-0.1331	-0.1331
TI↑	hold_rising to CP	-0.0661	-0.0661	-0.0661
TI↓	setup_rising to CP	0.2181	0.2180	0.2182
TI↑	setup_rising to CP	0.1372	0.1372	0.1372

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.145	0.15	0.155
CP	min_pulse_width_low	0.36	0.36	0.36
D↓	hold_rising to CP	-0.0536	-0.0536	-0.0536
D↑	hold_rising to CP	-0.0688	-0.0688	-0.0688
D↓	setup_rising to CP	0.1599	0.1597	0.1644
D↑	setup_rising to CP	0.1496	0.1496	0.1496
RN	min_pulse_width_low	0.12	0.125	0.13
RN↑	recovery_rising to CP	0.0752	0.0752	0.0752
RN↑	removal_rising to CP	0.0006	0.0006	0.0006
TE↓	hold_rising to CP	-0.0491	-0.0491	-0.0491
TE↑	hold_rising to CP	-0.1391	-0.1391	-0.1391
TE↓	setup_rising to CP	0.1950	0.1950	0.1950
TE↑	setup_rising to CP	0.3756	0.3802	0.3802
TI↓	hold_rising to CP	-0.2236	-0.2236	-0.2236
TI↑	hold_rising to CP	-0.1429	-0.1429	-0.1429
TI↓	setup_rising to CP	0.3642	0.3642	0.3642
TI↑	setup_rising to CP	0.2388	0.2390	0.2388

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.135	0.14	0.145
CP	min_pulse_width_low	0.33	0.33	0.33



Timing Constraints (ns) at 125C, 1.15V Worst process

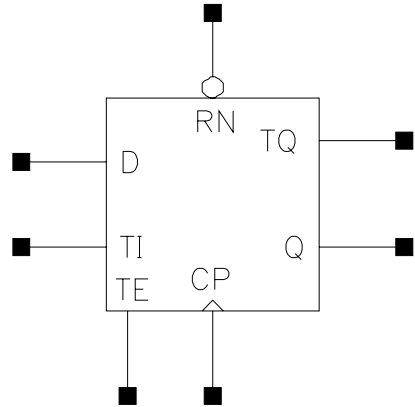
D↓	hold_rising to CP	-0.0437	-0.0437	-0.0437
D↑	hold_rising to CP	-0.0632	-0.0632	-0.0632
D↓	setup_rising to CP	0.1487	0.1539	0.1539
D↑	setup_rising to CP	0.1386	0.1386	0.1386
RN	min_pulse_width_low	0.11	0.115	0.12
RN↑	recovery_rising to CP	0.0695	0.0695	0.0695
RN↑	removal_rising to CP	0.0008	0.0008	0.0008
TE↓	hold_rising to CP	-0.0434	-0.0387	-0.0434
TE↑	hold_rising to CP	-0.1244	-0.1244	-0.1244
TE↓	setup_rising to CP	0.1749	0.1795	0.1795
TE↑	setup_rising to CP	0.3450	0.3450	0.3450
TI↓	hold_rising to CP	-0.2083	-0.2083	-0.2083
TI↑	hold_rising to CP	-0.1326	-0.1326	-0.1326
TI↓	setup_rising to CP	0.3287	0.3287	0.3287
TI↑	setup_rising to CP	0.2185	0.2234	0.2234

HS65_LS_SDFPRQT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Clear Active Low, Q Output Only, 35x Drive
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

IQ	TQ
IQ	IQ

Functions

D	CP	RN	TI	TE	IQ	IQ
-	-	0	-	-	-	0
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	5.00	13.0000



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X9	2.6	5.00	13.0000
X18	2.6	5.20	13.5200
X27	2.6	5.60	14.5600
X35	2.6	5.80	15.0800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	6.670e-07	1.493e-09
X9	7.365e-07	1.760e-09
X18	8.863e-07	2.309e-09
X27	1.040e-06	2.878e-09
X35	1.193e-06	3.417e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.709e-04	9.139e-08
X9	1.904e-04	9.630e-08
X18	2.326e-04	1.078e-07
X27	2.753e-04	1.232e-07
X35	3.189e-04	1.347e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.515e-04	8.006e-08
X9	1.683e-04	8.343e-08
X18	2.051e-04	9.170e-08
X27	2.424e-04	1.036e-07
X35	2.804e-04	1.119e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	1.021e-02	1.017e-02	1.017e-02	1.015e-02	1.016e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	2.936e-03	2.897e-03	2.910e-03	2.888e-03	2.887e-03
RN (stable)	8.700e-03	8.687e-03	8.728e-03	8.633e-03	8.621e-03
TE (stable)	5.837e-03	5.803e-03	5.810e-03	5.793e-03	5.794e-03
TI (stable)	3.295e-03	3.246e-03	3.254e-03	3.236e-03	3.236e-03
CP to Q	9.532e-03	1.082e-02	1.391e-02	1.824e-02	2.446e-02
CP to TQ	9.532e-03	1.082e-02	1.390e-02	1.826e-02	2.453e-02
RN to Q	8.025e-03	8.522e-03	9.645e-03	1.077e-02	1.272e-02
RN to TQ	8.025e-03	8.520e-03	9.642e-03	1.077e-02	1.272e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.429e-04	1.681e-04	1.678e-04	1.681e-04	1.682e-04
D (stable)	-6.196e-05	-6.085e-05	-6.383e-05	-6.073e-05	-6.094e-05
RN (stable)	-1.304e-07	-8.695e-07	-8.695e-07	-7.391e-07	-7.391e-07
TE (stable)	-6.381e-05	-6.360e-05	-6.205e-05	-6.350e-05	-6.329e-05
TI (stable)	-1.107e-04	-1.071e-04	-1.073e-04	-1.071e-04	-1.071e-04
CP to Q	2.048e-05	3.049e-05	3.148e-05	3.048e-05	2.948e-05
CP to TQ	2.048e-05	3.050e-05	3.148e-05	3.050e-05	2.952e-05
RN to Q	-1.768e-04	-1.737e-04	-1.277e-04	1.644e-04	2.273e-04
RN to TQ	-1.768e-04	-1.737e-04	-1.278e-04	1.644e-04	2.272e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0011	0.0011	0.0011	0.0011
D	0.0016	0.0016	0.0016	0.0016	0.0016
RN	0.0017	0.0015	0.0015	0.0015	0.0015
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0010	0.0010	0.0010	0.0010	0.0010

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35



Propagation Delay at 25C, 1.20V Typ process

CP to Q↓	0.0965	0.1032	0.1189	0.1348	0.1559	2.6530	1.3880	0.7395	0.5194	0.4116
CP to Q↑	0.0920	0.0946	0.1024	0.1175	0.1315	3.3675	1.7198	0.8822	0.6177	0.4752
CP to TQ↓	0.1018	0.1166	0.1445	0.1647	0.1917	4.9550	4.9670	5.0606	5.1261	5.2739
CP to TQ↑	0.0981	0.1078	0.1243	0.1460	0.1673	8.4243	8.5506	8.5436	8.5983	8.6389
RN to Q↓	0.0711	0.0759	0.0912	0.1089	0.1302	2.5240	1.3068	0.6776	0.4708	0.3634
RN to TQ↓	0.0765	0.0892	0.1153	0.1375	0.1650	4.8207	4.7850	4.7829	4.7819	4.8060

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1578	0.1695	0.1966	0.2233	0.2588	4.2645	2.2075	1.1686	0.8150	0.6491
CP to Q↑	0.1475	0.1521	0.1648	0.1895	0.2124	4.9388	2.5428	1.3011	0.9139	0.7088
CP to TQ↓	0.1654	0.1903	0.2382	0.2723	0.3194	7.7174	7.7841	7.9654	8.0882	8.3327
CP to TQ↑	0.1578	0.1734	0.2012	0.2373	0.2730	12.0750	12.2214	12.2109	12.3228	12.3993
RN to Q↓	0.1093	0.1163	0.1386	0.1651	0.1967	4.0351	2.0592	1.0590	0.7294	0.5664
RN to TQ↓	0.1167	0.1361	0.1760	0.2098	0.2527	7.4835	7.4656	7.4969	7.5134	7.5646

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1448	0.1554	0.1803	0.2050	0.2378	3.9481	2.0408	1.0806	0.7541	0.5995
CP to Q↑	0.1354	0.1395	0.1513	0.1741	0.1953	4.6007	2.3588	1.2077	0.8480	0.6562
CP to TQ↓	0.1519	0.1745	0.2176	0.2485	0.2906	7.1920	7.2438	7.4165	7.5367	7.7709
CP to TQ↑	0.1450	0.1594	0.1847	0.2175	0.2500	11.2857	11.4315	11.4277	11.5301	11.6013
RN to Q↓	0.1014	0.1080	0.1291	0.1540	0.1839	3.7331	1.9059	0.9803	0.6755	0.5236
RN to TQ↓	0.1229	0.1263	0.1630	0.1943	0.2335	6.8842	6.9485	6.9787	6.9975	7.0485

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.075	0.085	0.115	0.135	0.16
CP	min_pulse_width_low	0.225	0.22	0.215	0.21	0.21
D↓	hold_rising to CP	-0.0231	-0.0229	-0.0229	-0.0179	-0.0179
D↑	hold_rising to CP	-0.0271	-0.0271	-0.0319	-0.0319	-0.0319
D↓	setup_rising to CP	0.1034	0.0984	0.0934	0.0936	0.0884
D↑	setup_rising to CP	0.0825	0.0827	0.0825	0.0874	0.0874
RN	min_pulse_width_low	0.07	0.075	0.1	0.125	0.15
RN↑	recovery_rising to CP	0.0475	0.0475	0.0524	0.0527	0.0524
RN↑	removal_rising to CP	0.0027	0.0027	0.0027	0.0027	0.0027
TE↓	hold_rising to CP	-0.0176	-0.0176	-0.0176	-0.0176	-0.0176
TE↑	hold_rising to CP	-0.0627	-0.0627	-0.0627	-0.0627	-0.0630
TE↓	setup_rising to CP	0.1184	0.1135	0.1184	0.1184	0.1184
TE↑	setup_rising to CP	0.2379	0.2328	0.2281	0.2278	0.2229
TI↓	hold_rising to CP	-0.1329	-0.1280	-0.1280	-0.1279	-0.1280
TI↑	hold_rising to CP	-0.0661	-0.0663	-0.0661	-0.0661	-0.0661
TI↓	setup_rising to CP	0.2282	0.2232	0.2182	0.2132	0.2082
TI↑	setup_rising to CP	0.1372	0.1372	0.1372	0.1372	0.1372

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.12	0.145	0.19	0.225	0.27
CP	min_pulse_width_low	0.37	0.365	0.355	0.345	0.34
D↓	hold_rising to CP	-0.0489	-0.0489	-0.0489	-0.0489	-0.0489
D↑	hold_rising to CP	-0.0683	-0.0683	-0.0683	-0.0683	-0.0735
D↓	setup_rising to CP	0.1694	0.1644	0.1595	0.1545	0.1444
D↑	setup_rising to CP	0.1542	0.1496	0.1543	0.1547	0.1542
RN	min_pulse_width_low	0.105	0.115	0.15	0.185	0.225
RN↑	recovery_rising to CP	0.0798	0.0798	0.0802	0.0848	0.0802
RN↑	removal_rising to CP	0.0006	0.0006	0.0006	0.0006	0.0006
TE↓	hold_rising to CP	-0.0439	-0.0491	-0.0439	-0.0439	-0.0439
TE↑	hold_rising to CP	-0.1391	-0.1339	-0.1391	-0.1391	-0.1394
TE↓	setup_rising to CP	0.1997	0.1997	0.2002	0.2002	0.2002



Timing Constraints (ns) at 125C, 1.10V Worst process

TE↑	setup_rising to CP	0.3900	0.3852	0.3752	0.3655	0.3601
TI↓	hold_rising to CP	-0.2286	-0.2186	-0.2186	-0.2186	-0.2186
TI↑	hold_rising to CP	-0.1430	-0.1379	-0.1430	-0.1430	-0.1429
TI↓	setup_rising to CP	0.3790	0.3644	0.3544	0.3493	0.3442
TI↑	setup_rising to CP	0.2439	0.2388	0.2390	0.2439	0.2390

Timing Constraints (ns) at 125C, 1.15V Worst process

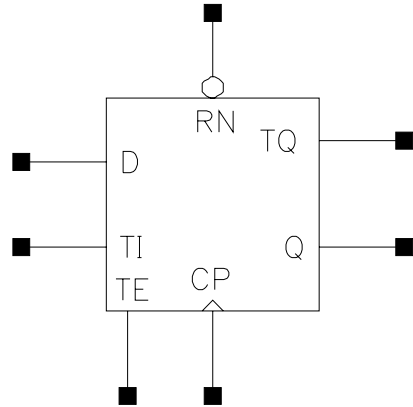
Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.11	0.13	0.17	0.205	0.245
CP	min_pulse_width_low	0.34	0.33	0.32	0.315	0.31
D↓	hold_rising to CP	-0.0432	-0.0437	-0.0432	-0.0434	-0.0434
D↑	hold_rising to CP	-0.0632	-0.0634	-0.0632	-0.0632	-0.0632
D↓	setup_rising to CP	0.1589	0.1539	0.1439	0.1389	0.1339
D↑	setup_rising to CP	0.1390	0.1385	0.1390	0.1391	0.1390
RN	min_pulse_width_low	0.095	0.11	0.145	0.17	0.21
RN↑	recovery_rising to CP	0.0742	0.0747	0.0745	0.0745	0.0745
RN↑	removal_rising to CP	0.0008	0.0008	0.0008	0.0008	0.0008
TE↓	hold_rising to CP	-0.0387	-0.0434	-0.0387	-0.0382	-0.0382
TE↑	hold_rising to CP	-0.1239	-0.1239	-0.1244	-0.1244	-0.1290
TE↓	setup_rising to CP	0.1795	0.1795	0.1795	0.1847	0.1795
TE↑	setup_rising to CP	0.3598	0.3500	0.3399	0.3348	0.3298
TI↓	hold_rising to CP	-0.2133	-0.2083	-0.2033	-0.2033	-0.2033
TI↑	hold_rising to CP	-0.1326	-0.1328	-0.1326	-0.1326	-0.1328
TI↓	setup_rising to CP	0.3439	0.3338	0.3237	0.3187	0.3137
TI↑	setup_rising to CP	0.2236	0.2234	0.2236	0.2236	0.2236

Speed-Optimised

HS65_LSS_SDFPRQT

Cell Description
Scan-out D Flip-Flop with 1 Phase Positive Edge
Triggered Clock, Clear Active Low, Q Output
Only, 35x Drive

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

IQ	TQ
IQ	IQ

Functions

D	CP	RN	TI	TE	IQ	IQ
-	-	0	-	-	-	0
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	5.60	14.5600



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X27	2.6	5.80	15.0800
X35	2.6	6.00	15.6000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.044e-06	2.623e-09
X27	1.189e-06	3.178e-09
X35	1.334e-06	3.747e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.792e-04	1.177e-07
X27	3.196e-04	1.309e-07
X35	3.605e-04	1.424e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.456e-04	9.960e-08
X27	2.808e-04	1.095e-07
X35	3.165e-04	1.178e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	1.018e-02	1.016e-02	1.019e-02
D (stable)	2.856e-03	2.856e-03	2.864e-03
RN (stable)	8.624e-03	8.607e-03	8.607e-03
TE (stable)	5.706e-03	5.700e-03	5.709e-03
TI (stable)	3.199e-03	3.199e-03	3.202e-03
CP to Q	1.621e-02	1.890e-02	2.139e-02
CP to TQ	1.619e-02	1.887e-02	2.135e-02
RN to Q	1.147e-02	1.244e-02	1.369e-02
RN to TQ	1.147e-02	1.243e-02	1.368e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.791e-04	1.791e-04	1.797e-04
D (stable)	-5.778e-05	-5.762e-05	-6.042e-05
RN (stable)	-1.000e-06	-8.696e-07	-8.696e-07
TE (stable)	-6.470e-05	-6.459e-05	-6.324e-05
TI (stable)	-1.029e-04	-1.029e-04	-1.030e-04
CP to Q	-1.026e-05	-1.226e-05	-1.226e-05
CP to TQ	-1.026e-05	-1.228e-05	-1.228e-05
RN to Q	-3.277e-04	-7.742e-06	2.613e-05
RN to TQ	-3.278e-04	-7.757e-06	2.611e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0016	0.0016	0.0016
RN	0.0015	0.0015	0.0015
TE	0.0017	0.0017	0.0017
TI	0.0010	0.0010	0.0010

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1384	0.1433	0.1480	0.5823	0.3967	0.2986
CP to Q↑	0.1459	0.1505	0.1550	0.8129	0.5479	0.4132
CP to TQ↓	0.0880	0.0880	0.0882	4.7114	4.7109	4.7200
CP to TQ↑	0.0943	0.0942	0.0943	8.3664	8.3737	8.3825
RN to Q↓	0.1249	0.1296	0.1339	0.5848	0.3978	0.3001
RN to TQ↓	0.0810	0.0809	0.0809	4.5765	4.5793	4.5849



Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2269	0.2347	0.2424	0.9214	0.6200	0.4651
CP to Q↑	0.2365	0.2440	0.2517	1.1838	0.7935	0.5995
CP to TQ↓	0.1429	0.1428	0.1430	7.3910	7.3964	7.4015
CP to TQ↑	0.1512	0.1511	0.1513	12.0209	12.0267	12.0478
RN to Q↓	0.1972	0.2051	0.2122	0.9240	0.6222	0.4667
RN to TQ↓	0.1244	0.1243	0.1242	7.1670	7.1732	7.1771

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2081	0.2154	0.2224	0.8527	0.5747	0.4311
CP to Q↑	0.2170	0.2239	0.2310	1.0995	0.7386	0.5568
CP to TQ↓	0.1314	0.1313	0.1315	6.8773	6.8797	6.8886
CP to TQ↑	0.1390	0.1389	0.1391	11.2302	11.2372	11.2536
RN to Q↓	0.1823	0.1891	0.1956	0.8555	0.5764	0.4329
RN to TQ↓	0.1154	0.1153	0.1152	6.6678	6.6719	6.6767

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.075	0.075	0.075
CP	min_pulse_width_low	0.225	0.225	0.225
D↓	hold_rising to CP	-0.0229	-0.0229	-0.0229
D↑	hold_rising to CP	-0.0271	-0.0271	-0.0271
D↓	setup_rising to CP	0.1084	0.1084	0.1084
D↑	setup_rising to CP	0.0827	0.0824	0.0827
RN	min_pulse_width_low	0.07	0.07	0.07
RN↑	recovery_rising to CP	0.0477	0.0477	0.0477

Timing Constraints (ns) at 25C, 1.20V Typ process

RN↑	removal_rising to CP	-0.0022	-0.0022	0.0027
TE↓	hold_rising to CP	-0.0179	-0.0179	-0.0179
TE↑	hold_rising to CP	-0.0627	-0.0627	-0.0627
TE↓	setup_rising to CP	0.1134	0.1134	0.1134
TE↑	setup_rising to CP	0.2327	0.2327	0.2327
TI↓	hold_rising to CP	-0.1331	-0.1331	-0.1331
TI↑	hold_rising to CP	-0.0662	-0.0662	-0.0662
TI↓	setup_rising to CP	0.2281	0.2281	0.2281
TI↑	setup_rising to CP	0.1322	0.1322	0.1322

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.115	0.115	0.12
CP	min_pulse_width_low	0.375	0.375	0.375
D↓	hold_rising to CP	-0.0536	-0.0536	-0.0536
D↑	hold_rising to CP	-0.0683	-0.0683	-0.0683
D↓	setup_rising to CP	0.1742	0.1742	0.1742
D↑	setup_rising to CP	0.1492	0.1491	0.1491
RN	min_pulse_width_low	0.1	0.1	0.1
RN↑	recovery_rising to CP	0.0752	0.0752	0.0752
RN↑	removal_rising to CP	0.0006	0.0006	0.0006
TE↓	hold_rising to CP	-0.0491	-0.0491	-0.0491
TE↑	hold_rising to CP	-0.1339	-0.1339	-0.1339
TE↓	setup_rising to CP	0.1947	0.1947	0.1947
TE↑	setup_rising to CP	0.3848	0.3848	0.3848
TI↓	hold_rising to CP	-0.2237	-0.2237	-0.2237
TI↑	hold_rising to CP	-0.1379	-0.1379	-0.1379
TI↓	setup_rising to CP	0.3739	0.3738	0.3738
TI↑	setup_rising to CP	0.2338	0.2338	0.2338

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.105	0.105	0.105
CP	min_pulse_width_low	0.345	0.345	0.345



Timing Constraints (ns) at 125C, 1.15V Worst process

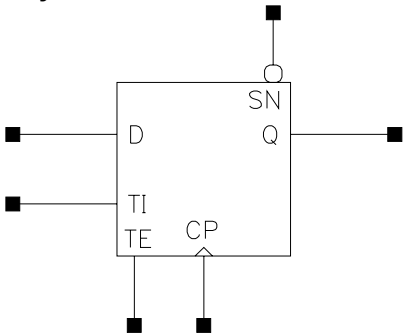
D↓	hold_rising to CP	-0.0437	-0.0437	-0.0437
D↑	hold_rising to CP	-0.0634	-0.0634	-0.0634
D↓	setup_rising to CP	0.1590	0.1590	0.1590
D↑	setup_rising to CP	0.1340	0.1340	0.1340
RN	min_pulse_width_low	0.095	0.095	0.095
RN↑	recovery_rising to CP	0.0695	0.0695	0.0695
RN↑	removal_rising to CP	0.0008	0.0008	0.0008
TE↓	hold_rising to CP	-0.0434	-0.0434	-0.0434
TE↑	hold_rising to CP	-0.1194	-0.1194	-0.1194
TE↓	setup_rising to CP	0.1745	0.1745	0.1745
TE↑	setup_rising to CP	0.3547	0.3547	0.3547
TI↓	hold_rising to CP	-0.2083	-0.2083	-0.2083
TI↑	hold_rising to CP	-0.1276	-0.1276	-0.1276
TI↓	setup_rising to CP	0.3435	0.3435	0.3435
TI↑	setup_rising to CP	0.2186	0.2186	0.2186

HS65_LS_SDFPSQ

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Active Low Set; Q Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	CP	SN	TI	TE	IQ	IQ
-	-	0	-	-	-	1
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	5.00	13.0000
X9	2.6	5.00	13.0000
X18	2.6	5.20	13.5200
X27	2.6	5.60	14.5600
X35	2.6	5.80	15.0800



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	6.293e-07	1.379e-09
X9	7.158e-07	1.507e-09
X18	9.124e-07	1.801e-09
X27	1.129e-06	2.134e-09
X35	1.334e-06	2.393e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.620e-04	8.848e-08
X9	1.877e-04	9.123e-08
X18	2.484e-04	9.825e-08
X27	3.159e-04	1.085e-07
X35	3.803e-04	1.151e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.435e-04	7.790e-08
X9	1.657e-04	7.986e-08
X18	2.185e-04	8.513e-08
X27	2.772e-04	9.333e-08
X35	3.333e-04	9.833e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	1.069e-02	1.084e-02	1.073e-02	1.072e-02	1.073e-02
D (stable)	3.015e-03	3.031e-03	3.020e-03	3.037e-03	3.036e-03
SN (stable)	9.372e-03	9.475e-03	9.478e-03	9.597e-03	9.600e-03
TE (stable)	5.811e-03	5.945e-03	5.923e-03	5.990e-03	5.989e-03
TI (stable)	3.439e-03	3.460e-03	3.437e-03	3.449e-03	3.450e-03
CP to Q	1.790e-02	2.057e-02	2.637e-02	3.472e-02	4.442e-02
SN to Q	1.307e-02	1.469e-02	1.703e-02	2.064e-02	2.346e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.665e-04	1.669e-04	1.624e-04	1.685e-04	1.687e-04
D (stable)	-5.538e-05	-5.513e-05	-4.783e-05	-5.542e-05	-4.750e-05
SN (stable)	-1.359e-04	-1.359e-04	-1.350e-04	-1.360e-04	-1.359e-04
TE (stable)	-7.263e-05	-7.258e-05	-7.252e-05	-7.294e-05	-7.296e-05
TI (stable)	-1.206e-04	-1.195e-04	-1.190e-04	-1.196e-04	-1.196e-04
CP to Q	4.409e-05	4.310e-05	7.136e-05	3.322e-05	3.635e-05
SN to Q	-5.494e-05	-3.406e-04	-4.337e-04	-9.705e-04	-1.111e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0011	0.0011	0.0011	0.0011	0.0011
D	0.0012	0.0012	0.0012	0.0012	0.0012
SN	0.0016	0.0016	0.0016	0.0016	0.0016
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.0943	0.1019	0.1163	0.1289	0.1453	2.7255	1.3926	0.7177	0.4952	0.3921
CP to Q↑	0.0915	0.0947	0.1018	0.1112	0.1209	3.2206	1.6893	0.8613	0.5911	0.4544
SN to Q↑	0.0696	0.0727	0.0813	0.0920	0.1015	3.1978	1.6719	0.8463	0.5751	0.4374

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1542	0.1668	0.1910	0.2127	0.2408	4.4701	2.2649	1.1474	0.7843	0.6215
CP to Q↑	0.1464	0.1518	0.1633	0.1790	0.1949	4.7165	2.4858	1.2701	0.8725	0.6754



Propagation Delay at 125C, 1.10V Worst process

SN to Q↑	0.1083	0.1132	0.1263	0.1433	0.1579	4.6667	2.4491	1.2401	0.8395	0.6409

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1415	0.1531	0.1754	0.1953	0.2212	4.1280	2.0893	1.0602	0.7252	0.5739
CP to Q↑	0.1343	0.1392	0.1498	0.1642	0.1790	4.3938	2.3098	1.1788	0.8097	0.6258
SN to Q↑	0.1003	0.1047	0.1170	0.1328	0.1466	4.3435	2.2757	1.1498	0.7800	0.5952

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.07	0.08	0.105	0.125	0.145
CP	min_pulse_width_low	0.235	0.235	0.23	0.225	0.225
D↓	hold_rising to CP	-0.0229	-0.0229	-0.0229	-0.0229	-0.0229
D↑	hold_rising to CP	-0.0321	-0.0369	-0.0369	-0.0369	-0.0369
D↓	setup_rising to CP	0.1234	0.1232	0.1182	0.1134	0.1084
D↑	setup_rising to CP	0.0825	0.0825	0.0825	0.0825	0.0825
SN	min_pulse_width_low	0.065	0.065	0.075	0.085	0.095
SN↑	recovery_rising to CP	0.0434	0.0384	0.0334	0.0284	0.0284
SN↑	removal_rising to CP	0.0437	0.0437	0.0437	0.0433	0.0433
TE↓	hold_rising to CP	-0.0179	-0.0176	-0.0179	-0.0176	-0.0176
TE↑	hold_rising to CP	-0.0626	-0.0626	-0.0626	-0.0626	-0.0626
TE↓	setup_rising to CP	0.1229	0.1180	0.1131	0.1181	0.1181
TE↑	setup_rising to CP	0.2426	0.2377	0.2326	0.2326	0.2328
TI↓	hold_rising to CP	-0.1229	-0.1178	-0.1176	-0.1176	-0.1176
TI↑	hold_rising to CP	-0.0612	-0.0612	-0.0612	-0.0612	-0.0612
TI↓	setup_rising to CP	0.2333	0.2333	0.2282	0.2231	0.2232
TI↑	setup_rising to CP	0.1217	0.1268	0.1268	0.1268	0.1218

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35

Timing Constraints (ns) at 125C, 1.10V Worst process

CP	min_pulse_width_high	0.11	0.135	0.17	0.205	0.24
CP	min_pulse_width_low	0.39	0.39	0.38	0.38	0.375
D↓	hold_rising to CP	-0.0541	-0.0536	-0.0541	-0.0489	-0.0489
D↑	hold_rising to CP	-0.0783	-0.0783	-0.0783	-0.0783	-0.0788
D↓	setup_rising to CP	0.2044	0.2041	0.1945	0.1895	0.1793
D↑	setup_rising to CP	0.1494	0.1494	0.1541	0.1541	0.1541
SN	min_pulse_width_low	0.09	0.095	0.11	0.135	0.15
SN↑	recovery_rising to CP	0.0703	0.0653	0.0605	0.0555	0.0453
SN↑	removal_rising to CP	0.0664	0.0664	0.0664	0.0665	0.0665
TE↓	hold_rising to CP	-0.0490	-0.0491	-0.0489	-0.0491	-0.0486
TE↑	hold_rising to CP	-0.1291	-0.1294	-0.1295	-0.1295	-0.1294
TE↓	setup_rising to CP	0.1992	0.1995	0.1949	0.2000	0.1995
TE↑	setup_rising to CP	0.3998	0.3953	0.3853	0.3850	0.3801
TI↓	hold_rising to CP	-0.2137	-0.2135	-0.2085	-0.2036	-0.2037
TI↑	hold_rising to CP	-0.1328	-0.1378	-0.1328	-0.1328	-0.1378
TI↓	setup_rising to CP	0.3892	0.3890	0.3790	0.3740	0.3692
TI↑	setup_rising to CP	0.2236	0.2234	0.2236	0.2234	0.2234

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.1	0.125	0.155	0.185	0.225
CP	min_pulse_width_low	0.36	0.36	0.35	0.35	0.34
D↓	hold_rising to CP	-0.0484	-0.0484	-0.0484	-0.0437	-0.0432
D↑	hold_rising to CP	-0.0682	-0.0682	-0.0682	-0.0682	-0.0682
D↓	setup_rising to CP	0.1889	0.1838	0.1789	0.1737	0.1640
D↑	setup_rising to CP	0.1337	0.1384	0.1389	0.1389	0.1389
SN	min_pulse_width_low	0.085	0.085	0.105	0.125	0.145
SN↑	recovery_rising to CP	0.0647	0.0602	0.0548	0.0498	0.0402
SN↑	removal_rising to CP	0.0663	0.0663	0.0663	0.0663	0.0663
TE↓	hold_rising to CP	-0.0434	-0.0434	-0.0434	-0.0434	-0.0387
TE↑	hold_rising to CP	-0.1139	-0.1139	-0.1139	-0.1144	-0.1190
TE↓	setup_rising to CP	0.1837	0.1794	0.1794	0.1794	0.1794
TE↑	setup_rising to CP	0.3693	0.3648	0.3548	0.3498	0.3448
TI↓	hold_rising to CP	-0.1935	-0.1933	-0.1883	-0.1883	-0.1883
TI↑	hold_rising to CP	-0.1228	-0.1226	-0.1228	-0.1228	-0.1228



Timing Constraints (ns) at 125C, 1.15V Worst process

TI↓	setup_rising to CP	0.3587	0.3589	0.3439	0.3387	0.3339
TI↑	setup_rising to CP	0.2033	0.2033	0.2033	0.2035	0.2035

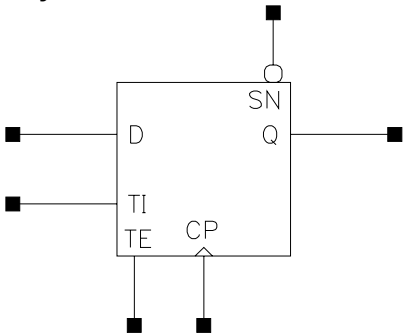
Speed-Optimised

HS65_LSS_SDFPSQ

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Active Low Set; Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

D	CP	SN	TI	TE	IQ	IQ
-	-	0	-	-	-	1
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	5.60	14.5600
X27	2.6	5.80	15.0800
X35	2.6	6.00	15.6000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.035e-06	2.356e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X27	1.236e-06	2.620e-09
X35	1.431e-06	2.887e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.830e-04	1.127e-07
X27	3.459e-04	1.202e-07
X35	4.065e-04	1.269e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.487e-04	9.630e-08
X27	3.034e-04	1.021e-07
X35	3.561e-04	1.072e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	1.062e-02	1.062e-02	1.063e-02
D (stable)	2.939e-03	2.938e-03	2.940e-03
SN (stable)	9.381e-03	9.380e-03	9.433e-03
TE (stable)	5.883e-03	5.883e-03	5.883e-03
TI (stable)	3.350e-03	3.350e-03	3.352e-03
CP to Q	3.063e-02	3.612e-02	4.106e-02
SN to Q	1.903e-02	2.230e-02	2.497e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.764e-04	1.758e-04	1.779e-04
D (stable)	-5.004e-05	-5.004e-05	-5.001e-05
SN (stable)	-1.299e-04	-1.299e-04	-1.300e-04
TE (stable)	-6.994e-05	-7.001e-05	-6.991e-05
TI (stable)	-1.159e-04	-1.160e-04	-1.160e-04
CP to Q	-8.578e-05	-8.152e-05	-9.752e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

SN to Q	1.345e-04	-3.635e-04	-5.695e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0011	0.0011	0.0011
D	0.0012	0.0012	0.0012
SN	0.0017	0.0017	0.0017
TE	0.0018	0.0018	0.0018
TI	0.0012	0.0012	0.0012

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1325	0.1377	0.1424	0.5856	0.3948	0.3003
CP to Q↑	0.1499	0.1550	0.1600	0.8115	0.5479	0.4146
SN to Q↑	0.1303	0.1354	0.1410	0.8124	0.5477	0.4149

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2174	0.2258	0.2332	0.9262	0.6160	0.4672
CP to Q↑	0.2421	0.2504	0.2586	1.1835	0.7940	0.6007
SN to Q↑	0.2074	0.2156	0.2248	1.1838	0.7935	0.6010

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1997	0.2074	0.2143	0.8566	0.5715	0.4335
CP to Q↑	0.2223	0.2300	0.2375	1.0985	0.7372	0.5584



Propagation Delay at 125C, 1.15V Worst process

SN to Q↑	0.1913	0.1989	0.2073	1.0994	0.7373	0.5580

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.065	0.065	0.065
CP	min_pulse_width_low	0.235	0.235	0.23
D↓	hold_rising to CP	-0.0229	-0.0229	-0.0229
D↑	hold_rising to CP	-0.0321	-0.0369	-0.0369
D↓	setup_rising to CP	0.1184	0.1184	0.1184
D↑	setup_rising to CP	0.0824	0.0824	0.0824
SN	min_pulse_width_low	0.065	0.065	0.065
SN↑	recovery_rising to CP	0.0384	0.0384	0.0384
SN↑	removal_rising to CP	0.0433	0.0433	0.0433
TE↓	hold_rising to CP	-0.0228	-0.0228	-0.0228
TE↑	hold_rising to CP	-0.0626	-0.0626	-0.0626
TE↓	setup_rising to CP	0.1177	0.1128	0.1128
TE↑	setup_rising to CP	0.2327	0.2327	0.2327
TI↓	hold_rising to CP	-0.1229	-0.1229	-0.1229
TI↑	hold_rising to CP	-0.0612	-0.0612	-0.0612
TI↓	setup_rising to CP	0.2332	0.2334	0.2283
TI↑	setup_rising to CP	0.1166	0.1166	0.1166

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.105	0.105	0.105
CP	min_pulse_width_low	0.385	0.38	0.38
D↓	hold_rising to CP	-0.0541	-0.0541	-0.0588
D↑	hold_rising to CP	-0.0785	-0.0785	-0.0783
D↓	setup_rising to CP	0.1944	0.1939	0.1939
D↑	setup_rising to CP	0.1388	0.1388	0.1388
SN	min_pulse_width_low	0.09	0.09	0.09
SN↑	recovery_rising to CP	0.0653	0.0602	0.0602
SN↑	removal_rising to CP	0.0664	0.0664	0.0664

Timing Constraints (ns) at 125C, 1.10V Worst process

TE↓	hold_rising to CP	-0.0491	-0.0491	-0.0536
TE↑	hold_rising to CP	-0.1291	-0.1291	-0.1296
TE↓	setup_rising to CP	0.1895	0.1895	0.1891
TE↑	setup_rising to CP	0.3853	0.3848	0.3848
TI↓	hold_rising to CP	-0.2137	-0.2137	-0.2137
TI↑	hold_rising to CP	-0.1330	-0.1328	-0.1328
TI↓	setup_rising to CP	0.3788	0.3788	0.3790
TI↑	setup_rising to CP	0.2083	0.2083	0.2083

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.095	0.095	0.095
CP	min_pulse_width_low	0.355	0.355	0.355
D↓	hold_rising to CP	-0.0484	-0.0484	-0.0484
D↑	hold_rising to CP	-0.0682	-0.0682	-0.0682
D↓	setup_rising to CP	0.1787	0.1787	0.1737
D↑	setup_rising to CP	0.1237	0.1237	0.1237
SN	min_pulse_width_low	0.085	0.085	0.085
SN↑	recovery_rising to CP	0.0597	0.0597	0.0550
SN↑	removal_rising to CP	0.0663	0.0663	0.0663
TE↓	hold_rising to CP	-0.0434	-0.0439	-0.0439
TE↑	hold_rising to CP	-0.1139	-0.1139	-0.1139
TE↓	setup_rising to CP	0.1739	0.1740	0.1735
TE↑	setup_rising to CP	0.3547	0.3547	0.3548
TI↓	hold_rising to CP	-0.1985	-0.1985	-0.1985
TI↑	hold_rising to CP	-0.1176	-0.1226	-0.1228
TI↓	setup_rising to CP	0.3487	0.3437	0.3437
TI↑	setup_rising to CP	0.1883	0.1881	0.1881

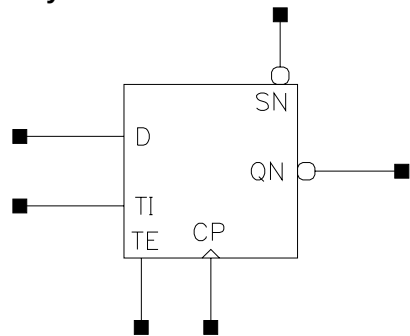


HS65_LS_SDFPSQN

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Active Low Set; QN Output Only
The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

D	CP	SN	TI	TE	IQ	IQ
-	-	0	-	-	-	1
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	5.00	13.0000
X9	2.6	5.00	13.0000
X18	2.6	5.20	13.5200
X27	2.6	5.60	14.5600
X35	2.6	5.80	15.0800



Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	6.151e-07	1.515e-09
X9	6.807e-07	1.774e-09
X18	8.420e-07	2.365e-09
X27	1.010e-06	2.920e-09
X35	1.165e-06	3.478e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.564e-04	9.134e-08
X9	1.750e-04	9.686e-08
X18	2.212e-04	1.088e-07
X27	2.698e-04	1.241e-07
X35	3.140e-04	1.357e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.386e-04	7.990e-08
X9	1.547e-04	8.383e-08
X18	1.949e-04	9.251e-08
X27	2.372e-04	1.043e-07
X35	2.757e-04	1.126e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	1.060e-02	1.067e-02	1.062e-02	1.056e-02	1.055e-02
D (stable)	2.962e-03	2.985e-03	2.978e-03	2.975e-03	2.975e-03
SN (stable)	9.435e-03	9.330e-03	9.470e-03	9.259e-03	9.447e-03
TE (stable)	5.787e-03	5.911e-03	5.923e-03	5.939e-03	5.969e-03
TI (stable)	3.370e-03	3.391e-03	3.388e-03	3.382e-03	3.381e-03
CP to QN	1.863e-02	2.046e-02	2.589e-02	3.225e-02	3.906e-02
SN to QN	1.236e-02	1.313e-02	1.591e-02	1.864e-02	2.240e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.896e-04	1.918e-04	1.852e-04	1.868e-04	1.906e-04
D (stable)	-2.960e-05	-3.401e-05	-3.617e-05	-3.456e-05	-3.605e-05
SN (stable)	-1.343e-04	-7.087e-06	-1.346e-04	-1.996e-05	-1.347e-04
TE (stable)	-7.224e-05	-6.234e-05	-7.515e-05	-6.285e-05	-7.517e-05
TI (stable)	-9.574e-05	-9.579e-05	-9.526e-05	-9.629e-05	-9.484e-05
CP to QN	-1.149e-04	-1.109e-04	-6.903e-05	-6.491e-05	-1.020e-04
SN to QN	5.272e-04	7.794e-04	8.815e-04	1.458e-03	1.567e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0011	0.0011	0.0011	0.0011	0.0011
D	0.0012	0.0012	0.0012	0.0012	0.0012
SN	0.0015	0.0016	0.0015	0.0016	0.0016
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1252	0.1285	0.1351	0.1415	0.1534	2.4877	1.2433	0.6268	0.4256	0.3306
CP to QN↑	0.1121	0.1134	0.1189	0.1241	0.1314	3.1051	1.6398	0.8259	0.5587	0.4241
SN to QN↓	0.1063	0.1101	0.1165	0.1231	0.1347	2.4869	1.2440	0.6264	0.4256	0.3302

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.2025	0.2076	0.2176	0.2275	0.2455	4.0311	1.9864	0.9854	0.6616	0.5139
CP to QN↑	0.1828	0.1851	0.1945	0.2031	0.2147	4.5479	2.4092	1.2076	0.8119	0.6168



Propagation Delay at 125C, 1.10V Worst process

SN to QN↓	0.1692	0.1750	0.1846	0.1948	0.2125	4.0286	1.9860	0.9844	0.6613	0.5135

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1859	0.1906	0.2000	0.2092	0.2262	3.7276	1.8364	0.9125	0.6138	0.4765
CP to QN↑	0.1679	0.1701	0.1786	0.1866	0.1974	4.2263	2.2370	1.1223	0.7539	0.5728
SN to QN↓	0.1562	0.1616	0.1706	0.1801	0.1967	3.7247	1.8343	0.9116	0.6135	0.4763

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.065	0.065	0.07	0.07	0.075
CP	min_pulse_width_low	0.235	0.235	0.235	0.235	0.235
D↓	hold_rising to CP	-0.0278	-0.0281	-0.0281	-0.0281	-0.0281
D↑	hold_rising to CP	-0.0369	-0.0369	-0.0369	-0.0369	-0.0369
D↓	setup_rising to CP	0.1234	0.1231	0.1231	0.1234	0.1234
D↑	setup_rising to CP	0.0822	0.0822	0.0822	0.0822	0.0822
SN	min_pulse_width_low	0.065	0.065	0.065	0.065	0.065
SN↑	recovery_rising to CP	0.0430	0.0430	0.0430	0.0381	0.0381
SN↑	removal_rising to CP	0.0433	0.0437	0.0437	0.0437	0.0434
TE↓	hold_rising to CP	-0.0228	-0.0226	-0.0226	-0.0226	-0.0226
TE↑	hold_rising to CP	-0.0626	-0.0626	-0.0626	-0.0626	-0.0626
TE↓	setup_rising to CP	0.1226	0.1229	0.1229	0.1180	0.1180
TE↑	setup_rising to CP	0.2377	0.2427	0.2427	0.2427	0.2377
TI↓	hold_rising to CP	-0.1230	-0.1281	-0.1281	-0.1281	-0.1279
TI↑	hold_rising to CP	-0.0612	-0.0610	-0.0612	-0.0612	-0.0612
TI↓	setup_rising to CP	0.2331	0.2331	0.2331	0.2331	0.2331
TI↑	setup_rising to CP	0.1216	0.1216	0.1216	0.1216	0.1165

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35

Timing Constraints (ns) at 125C, 1.10V Worst process

CP	min_pulse_width_high	0.1	0.105	0.11	0.115	0.125
CP	min_pulse_width_low	0.385	0.39	0.39	0.385	0.385
D↓	hold_rising to CP	-0.0591	-0.0591	-0.0591	-0.0591	-0.0591
D↑	hold_rising to CP	-0.0788	-0.0788	-0.0788	-0.0788	-0.0788
D↓	setup_rising to CP	0.2039	0.2044	0.2039	0.1993	0.1994
D↑	setup_rising to CP	0.1438	0.1443	0.1443	0.1438	0.1438
SN	min_pulse_width_low	0.09	0.095	0.095	0.095	0.1
SN↑	recovery_rising to CP	0.0703	0.0703	0.0703	0.0652	0.0652
SN↑	removal_rising to CP	0.0665	0.0665	0.0665	0.0665	0.0665
TE↓	hold_rising to CP	-0.0541	-0.0541	-0.0541	-0.0541	-0.0540
TE↑	hold_rising to CP	-0.1295	-0.1294	-0.1294	-0.1294	-0.1294
TE↓	setup_rising to CP	0.1988	0.1991	0.1992	0.1991	0.1941
TE↑	setup_rising to CP	0.3947	0.3998	0.3952	0.3952	0.3953
TI↓	hold_rising to CP	-0.2139	-0.2187	-0.2186	-0.2187	-0.2187
TI↑	hold_rising to CP	-0.1378	-0.1377	-0.1378	-0.1378	-0.1378
TI↓	setup_rising to CP	0.3841	0.3889	0.3889	0.3841	0.3839
TI↑	setup_rising to CP	0.2135	0.2184	0.2184	0.2133	0.2133

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.09	0.095	0.1	0.105	0.11
CP	min_pulse_width_low	0.36	0.36	0.36	0.355	0.355
D↓	hold_rising to CP	-0.0534	-0.0534	-0.0534	-0.0534	-0.0534
D↑	hold_rising to CP	-0.0682	-0.0682	-0.0682	-0.0682	-0.0682
D↓	setup_rising to CP	0.1837	0.1887	0.1837	0.1837	0.1837
D↑	setup_rising to CP	0.1287	0.1332	0.1334	0.1287	0.1287
SN	min_pulse_width_low	0.085	0.085	0.085	0.09	0.095
SN↑	recovery_rising to CP	0.0647	0.0647	0.0647	0.0600	0.0595
SN↑	removal_rising to CP	0.0616	0.0663	0.0663	0.0663	0.0616
TE↓	hold_rising to CP	-0.0484	-0.0484	-0.0484	-0.0484	-0.0484
TE↑	hold_rising to CP	-0.1139	-0.1190	-0.1190	-0.1190	-0.1190
TE↓	setup_rising to CP	0.1832	0.1835	0.1832	0.1790	0.1785
TE↑	setup_rising to CP	0.3647	0.3697	0.3698	0.3647	0.3647
TI↓	hold_rising to CP	-0.2035	-0.2033	-0.2033	-0.2033	-0.2033
TI↑	hold_rising to CP	-0.1228	-0.1226	-0.1226	-0.1226	-0.1226



Timing Constraints (ns) at 125C, 1.15V Worst process

TI↓	setup_rising to CP	0.3589	0.3587	0.3587	0.3587	0.3537
TI↑	setup_rising to CP	0.1981	0.1981	0.1981	0.1931	0.1931

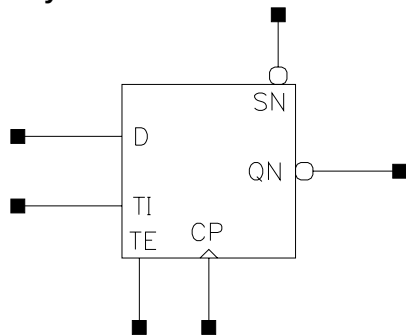
Speed-Optimised

HS65_LSS_SDFPSQN

Cell Description

Scan D-Type Flipflop; 1 Phase Positive Edge Triggered; Active Low Set; QN Output Only

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

D	CP	SN	TI	TE	IQ	IQ
-	-	0	-	-	-	1
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	5.40	14.0400
X27	2.6	5.60	14.5600
X35	2.6	6.00	15.6000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.021e-06	2.612e-09



Average Leakage Power (mW) at 25C, 1.20V Typ process

X27	1.174e-06	3.172e-09
X35	1.336e-06	3.725e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.753e-04	1.156e-07
X27	3.193e-04	1.288e-07
X35	3.657e-04	1.422e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.420e-04	9.767e-08
X27	2.803e-04	1.075e-07
X35	3.208e-04	1.177e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	1.094e-02	1.090e-02	1.091e-02
D (stable)	2.915e-03	2.915e-03	2.915e-03
SN (stable)	9.306e-03	9.114e-03	9.290e-03
TE (stable)	5.828e-03	5.802e-03	5.828e-03
TI (stable)	3.316e-03	3.316e-03	3.316e-03
CP to QN	3.190e-02	3.754e-02	4.257e-02
SN to QN	1.989e-02	2.216e-02	2.443e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.537e-04	1.537e-04	1.536e-04
D (stable)	-3.330e-05	-3.127e-05	-3.338e-05
SN (stable)	-1.336e-04	-5.087e-06	-1.336e-04
TE (stable)	-7.159e-05	-6.036e-05	-7.159e-05
TI (stable)	-9.305e-05	-9.354e-05	-9.293e-05
CP to QN	6.434e-05	6.435e-05	6.334e-05

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

SN to QN	3.754e-04	8.914e-04	1.090e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0011	0.0011	0.0011
D	0.0012	0.0012	0.0012
SN	0.0017	0.0017	0.0017
TE	0.0018	0.0018	0.0018
TI	0.0012	0.0012	0.0012

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1196	0.1250	0.1293	0.5844	0.3952	0.2981
CP to QN↑	0.1304	0.1360	0.1403	0.8129	0.5499	0.4143
SN to QN↓	0.0963	0.1013	0.1054	0.5834	0.3940	0.2973

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1947	0.2033	0.2102	0.9113	0.6111	0.4595
CP to QN↑	0.2127	0.2217	0.2285	1.1805	0.7934	0.5984
SN to QN↓	0.1529	0.1611	0.1674	0.9083	0.6087	0.4571

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1783	0.1863	0.1927	0.8444	0.5672	0.4268
CP to QN↑	0.1949	0.2032	0.2095	1.0962	0.7379	0.5559



Propagation Delay at 125C, 1.15V Worst process

SN to QN↓	0.1411	0.1486	0.1545	0.8425	0.5650	0.4253

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.08	0.085	0.085
CP	min_pulse_width_low	0.23	0.23	0.225
D↓	hold_rising to CP	-0.0179	-0.0179	-0.0228
D↑	hold_rising to CP	-0.0321	-0.0321	-0.0321
D↓	setup_rising to CP	0.1134	0.1132	0.1132
D↑	setup_rising to CP	0.0824	0.0824	0.0824
SN	min_pulse_width_low	0.065	0.065	0.07
SN↑	recovery_rising to CP	0.0334	0.0332	0.0284
SN↑	removal_rising to CP	0.0484	0.0435	0.0484
TE↓	hold_rising to CP	-0.0176	-0.0176	-0.0176
TE↑	hold_rising to CP	-0.0626	-0.0626	-0.0626
TE↓	setup_rising to CP	0.1079	0.1079	0.1079
TE↑	setup_rising to CP	0.2328	0.2328	0.2328
TI↓	hold_rising to CP	-0.1179	-0.1179	-0.1179
TI↑	hold_rising to CP	-0.0612	-0.0612	-0.0612
TI↓	setup_rising to CP	0.2284	0.2182	0.2232
TI↑	setup_rising to CP	0.1218	0.1167	0.1167

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.14	0.145	0.145
CP	min_pulse_width_low	0.38	0.38	0.38
D↓	hold_rising to CP	-0.0486	-0.0491	-0.0491
D↑	hold_rising to CP	-0.0785	-0.0785	-0.0785
D↓	setup_rising to CP	0.1891	0.1891	0.1844
D↑	setup_rising to CP	0.1439	0.1439	0.1439
SN	min_pulse_width_low	0.1	0.1	0.105
SN↑	recovery_rising to CP	0.0553	0.0553	0.0555
SN↑	removal_rising to CP	0.0710	0.0710	0.0710

Timing Constraints (ns) at 125C, 1.10V Worst process

TE↓	hold_rising to CP	-0.0441	-0.0440	-0.0440
TE↑	hold_rising to CP	-0.1291	-0.1291	-0.1291
TE↓	setup_rising to CP	0.1895	0.1847	0.1848
TE↑	setup_rising to CP	0.3851	0.3805	0.3805
TI↓	hold_rising to CP	-0.2037	-0.2087	-0.2087
TI↑	hold_rising to CP	-0.1330	-0.1330	-0.1330
TI↓	setup_rising to CP	0.3740	0.3740	0.3643
TI↑	setup_rising to CP	0.2134	0.2134	0.2036

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.125	0.13	0.135
CP	min_pulse_width_low	0.35	0.35	0.35
D↓	hold_rising to CP	-0.0434	-0.0434	-0.0434
D↑	hold_rising to CP	-0.0684	-0.0684	-0.0684
D↓	setup_rising to CP	0.1690	0.1692	0.1692
D↑	setup_rising to CP	0.1287	0.1287	0.1287
SN	min_pulse_width_low	0.09	0.09	0.095
SN↑	recovery_rising to CP	0.0502	0.0497	0.0498
SN↑	removal_rising to CP	0.0668	0.0668	0.0668
TE↓	hold_rising to CP	-0.0384	-0.0384	-0.0384
TE↑	hold_rising to CP	-0.1139	-0.1139	-0.1139
TE↓	setup_rising to CP	0.1692	0.1692	0.1694
TE↑	setup_rising to CP	0.3498	0.3500	0.3495
TI↓	hold_rising to CP	-0.1885	-0.1883	-0.1883
TI↑	hold_rising to CP	-0.1176	-0.1176	-0.1176
TI↓	setup_rising to CP	0.3438	0.3389	0.3389
TI↑	setup_rising to CP	0.1933	0.1933	0.1931



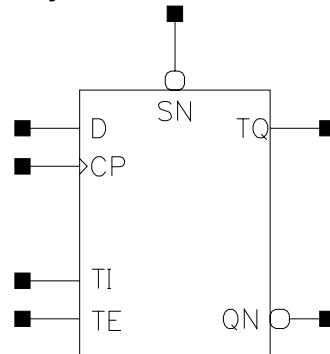
HS65_LS_SDFPSQNT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Preset Active Low, QN Output Only

The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

IQ	TQ
IQ	IQ

Functions

D	CP	SN	TI	TE	IQ	IQ
-	-	0	-	-	-	1
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	5.00	13.0000



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X9	2.6	5.00	13.0000
X18	2.6	5.40	14.0400
X27	2.6	5.80	15.0800
X35	2.6	6.00	15.6000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	5.905e-07	1.518e-09
X9	6.526e-07	1.787e-09
X18	8.882e-07	2.387e-09
X27	1.050e-06	2.931e-09
X35	1.203e-06	3.486e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.491e-04	9.058e-08
X9	1.661e-04	9.610e-08
X18	2.303e-04	1.116e-07
X27	2.762e-04	1.268e-07
X35	3.196e-04	1.383e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.322e-04	7.925e-08
X9	1.470e-04	8.318e-08
X18	2.032e-04	9.497e-08
X27	2.432e-04	1.068e-07
X35	2.811e-04	1.150e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	1.068e-02	1.072e-02	1.044e-02	1.041e-02	1.041e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	3.080e-03	3.077e-03	2.987e-03	2.984e-03	2.984e-03
SN (stable)	6.250e-03	6.253e-03	9.154e-03	9.147e-03	9.147e-03
TE (stable)	6.063e-03	6.051e-03	5.979e-03	5.976e-03	5.976e-03
TI (stable)	3.477e-03	3.474e-03	3.424e-03	3.420e-03	3.420e-03
CP to QN	1.031e-02	1.136e-02	1.429e-02	1.813e-02	2.253e-02
CP to TQ	1.031e-02	1.135e-02	1.427e-02	1.813e-02	2.255e-02
SN to QN	5.716e-03	6.080e-03	8.497e-03	1.036e-02	1.288e-02
SN to TQ	5.716e-03	6.077e-03	8.495e-03	1.037e-02	1.291e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.929e-04	1.935e-04	2.265e-04	2.264e-04	2.262e-04
D (stable)	-2.603e-05	-2.603e-05	-2.614e-05	-2.619e-05	-2.622e-05
SN (stable)	1.304e-07	2.609e-07	9.130e-06	1.000e-05	1.000e-05
TE (stable)	-9.028e-05	-8.919e-05	-8.657e-05	-8.665e-05	-8.662e-05
TI (stable)	-1.074e-04	-1.074e-04	-1.092e-04	-1.093e-04	-1.092e-04
CP to QN	-4.826e-05	-4.826e-05	-1.675e-04	-1.715e-04	-1.723e-04
CP to TQ	-4.826e-05	-4.826e-05	-1.675e-04	-1.715e-04	-1.722e-04
SN to QN	3.354e-04	4.685e-04	3.825e-04	6.604e-04	6.965e-04
SN to TQ	3.354e-04	4.685e-04	3.825e-04	6.604e-04	6.965e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0011	0.0011	0.0011
D	0.0012	0.0012	0.0012	0.0012	0.0012
SN	0.0018	0.0018	0.0016	0.0016	0.0016
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35



Propagation Delay at 25C, 1.20V Typ process

CP to QN↓	0.1329	0.1363	0.1480	0.1664	0.1845	2.4646	1.2985	0.6575	0.4632	0.3639
CP to QN↑	0.1322	0.1366	0.1384	0.1512	0.1630	3.5332	1.6724	0.8449	0.5794	0.4422
CP to TQ↓	0.0867	0.0872	0.0908	0.0903	0.0903	4.6213	4.6192	4.6321	4.6146	4.6077
CP to TQ↑	0.0968	0.0968	0.0949	0.0946	0.0946	8.6904	8.2743	8.2487	8.2183	8.2168
SN to QN↓	0.0617	0.0641	0.1321	0.1507	0.1687	2.4676	1.3000	0.6581	0.4638	0.3642
SN to TQ↑	0.1286	0.1378	0.0792	0.0791	0.0791	8.6458	8.1767	8.2351	8.2070	8.2070

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.2145	0.2199	0.2380	0.2658	0.2929	3.9760	2.0987	1.0320	0.7188	0.5662
CP to QN↑	0.2171	0.2251	0.2250	0.2455	0.2640	5.1881	2.4799	1.2314	0.8399	0.6443
CP to TQ↓	0.1405	0.1412	0.1480	0.1472	0.1471	7.2444	7.2447	7.2536	7.2380	7.2331
CP to TQ↑	0.1545	0.1546	0.1519	0.1512	0.1512	12.4663	11.8481	11.7905	11.7246	11.7171
SN to QN↓	0.0940	0.0975	0.2089	0.2373	0.2643	3.9863	2.1002	1.0338	0.7197	0.5670
SN to TQ↑	0.2045	0.2180	0.1236	0.1235	0.1234	12.4277	11.7407	11.7671	11.7058	11.6993

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to QN↓	0.1969	0.2019	0.2189	0.2451	0.2707	3.6736	1.9349	0.9565	0.6667	0.5247
CP to QN↑	0.1990	0.2064	0.2069	0.2261	0.2436	4.8410	2.3011	1.1444	0.7805	0.5984
CP to TQ↓	0.1292	0.1299	0.1360	0.1353	0.1352	6.7456	6.7446	6.7549	6.7360	6.7324
CP to TQ↑	0.1420	0.1421	0.1396	0.1390	0.1390	11.6713	11.0746	11.0259	10.9695	10.9639
SN to QN↓	0.0873	0.0904	0.1933	0.2199	0.2454	3.6800	1.9363	0.9573	0.6678	0.5253
SN to TQ↑	0.1885	0.2009	0.1146	0.1145	0.1145	11.6369	10.9763	11.0048	10.9527	10.9481

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.07	0.07	0.08	0.085	0.095
CP	min_pulse_width_low	0.27	0.27	0.24	0.24	0.24
D↓	hold_rising to CP	-0.0229	-0.0229	-0.0278	-0.0278	-0.0278
D↑	hold_rising to CP	-0.0274	-0.0271	-0.0369	-0.0369	-0.0369
D↓	setup_rising to CP	0.1284	0.1235	0.1284	0.1284	0.1284
D↑	setup_rising to CP	0.0725	0.0725	0.0825	0.0825	0.0825
SN	min_pulse_width_low	0.075	0.08	0.075	0.075	0.085
SN↑	recovery_rising to CP	0.0381	0.0381	0.0431	0.0431	0.0431
SN↑	removal_rising to CP	0.0537	0.0537	0.0433	0.0433	0.0433
TE↓	hold_rising to CP	-0.0179	-0.0179	-0.0226	-0.0226	-0.0226
TE↑	hold_rising to CP	-0.0630	-0.0630	-0.0626	-0.0626	-0.0626
TE↓	setup_rising to CP	0.1230	0.1230	0.1227	0.1227	0.1227
TE↑	setup_rising to CP	0.2677	0.2677	0.2477	0.2477	0.2477
TI↓	hold_rising to CP	-0.1431	-0.1431	-0.1230	-0.1281	-0.1281
TI↑	hold_rising to CP	-0.0662	-0.0662	-0.0610	-0.0612	-0.0612
TI↓	setup_rising to CP	0.2630	0.2579	0.2381	0.2381	0.2383
TI↑	setup_rising to CP	0.1217	0.1217	0.1217	0.1217	0.1166

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.11	0.115	0.135	0.145	0.155
CP	min_pulse_width_low	0.45	0.445	0.395	0.395	0.395
D↓	hold_rising to CP	-0.0541	-0.0541	-0.0591	-0.0591	-0.0591
D↑	hold_rising to CP	-0.0688	-0.0688	-0.0783	-0.0783	-0.0783
D↓	setup_rising to CP	0.2094	0.2094	0.2094	0.2094	0.2094
D↑	setup_rising to CP	0.1292	0.1293	0.1494	0.1494	0.1494
SN	min_pulse_width_low	0.115	0.13	0.11	0.125	0.135
SN↑	recovery_rising to CP	0.0698	0.0698	0.0753	0.0753	0.0753
SN↑	removal_rising to CP	0.0815	0.0815	0.0665	0.0665	0.0665
TE↓	hold_rising to CP	-0.0489	-0.0489	-0.0541	-0.0541	-0.0541
TE↑	hold_rising to CP	-0.1344	-0.1339	-0.1294	-0.1294	-0.1294
TE↓	setup_rising to CP	0.2042	0.2042	0.2042	0.2042	0.2042



Timing Constraints (ns) at 125C, 1.10V Worst process

TE↑	setup_rising to CP	0.4453	0.4450	0.4052	0.4052	0.4052
TI↓	hold_rising to CP	-0.2538	-0.2489	-0.2137	-0.2137	-0.2137
TI↑	hold_rising to CP	-0.1380	-0.1380	-0.1378	-0.1378	-0.1378
TI↓	setup_rising to CP	0.4340	0.4342	0.3939	0.3939	0.3939
TI↑	setup_rising to CP	0.2185	0.2186	0.2234	0.2234	0.2234

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.1	0.105	0.12	0.135	0.145
CP	min_pulse_width_low	0.41	0.41	0.365	0.365	0.365
D↓	hold_rising to CP	-0.0489	-0.0484	-0.0534	-0.0534	-0.0534
D↑	hold_rising to CP	-0.0639	-0.0639	-0.0682	-0.0682	-0.0682
D↓	setup_rising to CP	0.1892	0.1887	0.1890	0.1890	0.1890
D↑	setup_rising to CP	0.1141	0.1141	0.1337	0.1337	0.1337
SN	min_pulse_width_low	0.105	0.12	0.105	0.115	0.125
SN↑	recovery_rising to CP	0.0647	0.0647	0.0697	0.0697	0.0697
SN↑	removal_rising to CP	0.0721	0.0721	0.0616	0.0616	0.0616
TE↓	hold_rising to CP	-0.0439	-0.0439	-0.0484	-0.0484	-0.0484
TE↑	hold_rising to CP	-0.1240	-0.1194	-0.1139	-0.1139	-0.1139
TE↓	setup_rising to CP	0.1840	0.1840	0.1887	0.1887	0.1887
TE↑	setup_rising to CP	0.4093	0.4047	0.3747	0.3747	0.3747
TI↓	hold_rising to CP	-0.2285	-0.2285	-0.1982	-0.1982	-0.1982
TI↑	hold_rising to CP	-0.1278	-0.1278	-0.1226	-0.1226	-0.1226
TI↓	setup_rising to CP	0.3985	0.3935	0.3637	0.3637	0.3637
TI↑	setup_rising to CP	0.1983	0.1983	0.2033	0.2033	0.2033

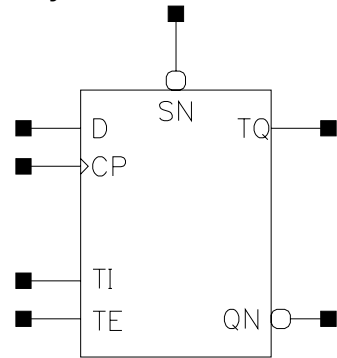
Speed-Optimised

HS65_LSS_SDFPSQNT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Preset Active Low, QN Output Only

Logical Symbol



Functions

IQ	QN
IQ	!IQ

Functions

IQ	TQ
IQ	IQ

Functions

D	CP	SN	TI	TE	IQ	IQ
-	-	0	-	-	-	1
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	5.40	14.0400



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X27	2.6	5.80	15.0800
X35	2.6	6.00	15.6000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	1.003e-06	2.551e-09
X27	1.114e-06	3.114e-09
X35	1.261e-06	3.661e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.709e-04	1.142e-07
X27	2.976e-04	1.294e-07
X35	3.390e-04	1.409e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.382e-04	9.663e-08
X27	2.615e-04	1.083e-07
X35	2.976e-04	1.167e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	1.047e-02	1.045e-02	1.045e-02
D (stable)	2.982e-03	2.986e-03	2.988e-03
SN (stable)	6.025e-03	6.031e-03	6.030e-03
TE (stable)	5.921e-03	5.919e-03	5.921e-03
TI (stable)	3.395e-03	3.397e-03	3.399e-03
CP to QN	1.625e-02	1.876e-02	2.137e-02
CP to TQ	1.623e-02	1.873e-02	2.133e-02
SN to QN	8.858e-03	9.777e-03	1.100e-02
SN to TQ	8.852e-03	9.767e-03	1.099e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.911e-04	1.867e-04	1.868e-04
D (stable)	-2.526e-05	-2.549e-05	-2.545e-05
SN (stable)	2.609e-07	2.609e-07	2.609e-07
TE (stable)	-8.294e-05	-8.189e-05	-8.188e-05
TI (stable)	-1.070e-04	-1.070e-04	-1.070e-04
CP to QN	-5.726e-05	-4.213e-05	-4.226e-05
CP to TQ	-5.726e-05	-4.213e-05	-4.226e-05
SN to QN	3.164e-04	5.594e-04	6.435e-04
SN to TQ	3.164e-04	5.594e-04	6.435e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0012	0.0012	0.0012
SN	0.0019	0.0019	0.0019
TE	0.0018	0.0018	0.0018
TI	0.0012	0.0012	0.0012

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1184	0.1235	0.1286	0.5843	0.4006	0.3024
CP to QN↑	0.1268	0.1345	0.1409	0.8162	0.5483	0.4138
CP to TQ↓	0.1068	0.1071	0.1075	4.2395	4.2429	4.2539
CP to TQ↑	0.1035	0.1044	0.1047	7.3207	7.2655	7.2708
SN to QN↓	0.1381	0.1422	0.1480	0.5862	0.4019	0.3035
SN to TQ↑	0.1246	0.1242	0.1247	7.3877	7.3185	7.3254



Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1924	0.2012	0.2093	0.9078	0.6268	0.4709
CP to QN↑	0.2058	0.2201	0.2309	1.1805	0.7963	0.6006
CP to TQ↓	0.1735	0.1741	0.1749	6.6810	6.6851	6.6966
CP to TQ↑	0.1663	0.1673	0.1677	10.5923	10.4150	10.4221
SN to QN↓	0.2276	0.2354	0.2449	0.9128	0.6303	0.4730
SN to TQ↑	0.2030	0.2024	0.2031	10.7246	10.5308	10.5409

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to QN↓	0.1763	0.1843	0.1919	0.8420	0.5803	0.4366
CP to QN↑	0.1887	0.2016	0.2116	1.0987	0.7396	0.5575
CP to TQ↓	0.1595	0.1600	0.1608	6.2103	6.2170	6.2255
CP to TQ↑	0.1528	0.1538	0.1542	9.8773	9.7307	9.7384
SN to QN↓	0.2086	0.2158	0.2246	0.8463	0.5830	0.4384
SN to TQ↑	0.1868	0.1863	0.1870	10.0017	9.8381	9.8470

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.075	0.08	0.085
CP	min_pulse_width_low	0.24	0.24	0.24
D↓	hold_rising to CP	-0.0183	-0.0183	-0.0183
D↑	hold_rising to CP	-0.0271	-0.0271	-0.0274
D↓	setup_rising to CP	0.1084	0.1136	0.1136
D↑	setup_rising to CP	0.0725	0.0725	0.0725
SN	min_pulse_width_low	0.065	0.065	0.065
SN↑	recovery_rising to CP	0.0282	0.0282	0.0282

Timing Constraints (ns) at 25C, 1.20V Typ process

SN↑	removal_rising to CP	0.0537	0.0537	0.0537
TE↓	hold_rising to CP	-0.0178	-0.0178	-0.0176
TE↑	hold_rising to CP	-0.0576	-0.0576	-0.0576
TE↓	setup_rising to CP	0.1081	0.1081	0.1081
TE↑	setup_rising to CP	0.2328	0.2328	0.2328
TI↓	hold_rising to CP	-0.1179	-0.1178	-0.1178
TI↑	hold_rising to CP	-0.0613	-0.0613	-0.0613
TI↓	setup_rising to CP	0.2233	0.2233	0.2233
TI↑	setup_rising to CP	0.1117	0.1117	0.1067

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.125	0.135	0.14
CP	min_pulse_width_low	0.395	0.395	0.395
D↓	hold_rising to CP	-0.0491	-0.0491	-0.0491
D↑	hold_rising to CP	-0.0688	-0.0688	-0.0688
D↓	setup_rising to CP	0.1844	0.1844	0.1844
D↑	setup_rising to CP	0.1292	0.1292	0.1292
SN	min_pulse_width_low	0.095	0.095	0.095
SN↑	recovery_rising to CP	0.0453	0.0500	0.0500
SN↑	removal_rising to CP	0.0820	0.0768	0.0820
TE↓	hold_rising to CP	-0.0441	-0.0441	-0.0441
TE↑	hold_rising to CP	-0.1194	-0.1194	-0.1194
TE↓	setup_rising to CP	0.1797	0.1797	0.1797
TE↑	setup_rising to CP	0.3805	0.3851	0.3851
TI↓	hold_rising to CP	-0.2087	-0.2087	-0.2087
TI↑	hold_rising to CP	-0.1228	-0.1228	-0.1228
TI↓	setup_rising to CP	0.3740	0.3740	0.3740
TI↑	setup_rising to CP	0.1987	0.1987	0.1987

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.115	0.125	0.13
CP	min_pulse_width_low	0.365	0.365	0.365



Timing Constraints (ns) at 125C, 1.15V Worst process

D↓	hold_rising to CP	-0.0434	-0.0434	-0.0434
D↑	hold_rising to CP	-0.0634	-0.0639	-0.0639
D↓	setup_rising to CP	0.1692	0.1692	0.1692
D↑	setup_rising to CP	0.1187	0.1187	0.1187
SN	min_pulse_width_low	0.09	0.085	0.085
SN↑	recovery_rising to CP	0.0443	0.0448	0.0448
SN↑	removal_rising to CP	0.0721	0.0721	0.0721
TE↓	hold_rising to CP	-0.0384	-0.0384	-0.0384
TE↑	hold_rising to CP	-0.1042	-0.1042	-0.1042
TE↓	setup_rising to CP	0.1642	0.1642	0.1642
TE↑	setup_rising to CP	0.3498	0.3498	0.3498
TI↓	hold_rising to CP	-0.1885	-0.1935	-0.1935
TI↑	hold_rising to CP	-0.1126	-0.1126	-0.1126
TI↓	setup_rising to CP	0.3389	0.3389	0.3389
TI↑	setup_rising to CP	0.1783	0.1781	0.1781

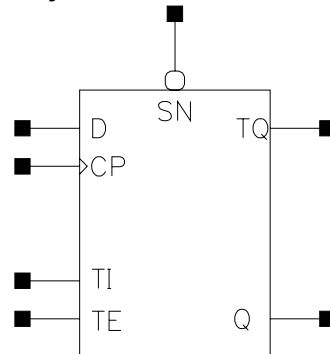
HS65_LS_SDFPSQT

Cell Description

Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Preset Active Low, Q Output Only

The cell has "dont_use" attribute set in the Synopsys STF.

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

IQ	TQ
IQ	IQ

Functions

D	CP	SN	TI	TE	IQ	IQ
-	-	0	-	-	-	1
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	5.00	13.0000



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X9	2.6	5.00	13.0000
X18	2.6	5.20	13.5200
X27	2.6	5.60	14.5600
X35	2.6	5.80	15.0800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	6.162e-07	1.310e-09
X9	6.873e-07	1.457e-09
X18	8.858e-07	1.729e-09
X27	1.096e-06	2.023e-09
X35	1.302e-06	2.290e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	1.569e-04	8.691e-08
X9	1.787e-04	8.965e-08
X18	2.400e-04	9.631e-08
X27	3.058e-04	1.057e-07
X35	3.706e-04	1.124e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	1.390e-04	7.667e-08
X9	1.579e-04	7.862e-08
X18	2.112e-04	8.364e-08
X27	2.685e-04	9.127e-08
X35	3.249e-04	9.630e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
CP (stable)	1.071e-02	1.082e-02	1.080e-02	1.083e-02	1.083e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

D (stable)	3.037e-03	3.058e-03	3.045e-03	3.065e-03	3.066e-03
SN (stable)	6.220e-03	6.343e-03	6.345e-03	6.343e-03	6.342e-03
TE (stable)	5.853e-03	6.021e-03	6.022e-03	6.033e-03	6.033e-03
TI (stable)	3.403e-03	3.426e-03	3.417e-03	3.427e-03	3.427e-03
CP to Q	9.596e-03	1.094e-02	1.399e-02	1.830e-02	2.333e-02
CP to TQ	9.596e-03	1.093e-02	1.399e-02	1.832e-02	2.338e-02
SN to Q	5.797e-03	6.569e-03	7.956e-03	9.996e-03	1.196e-02
SN to TQ	5.797e-03	6.564e-03	7.948e-03	9.986e-03	1.196e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
CP (stable)	1.815e-04	1.827e-04	1.838e-04	1.829e-04	1.828e-04
D (stable)	-3.773e-05	-3.973e-05	-3.766e-05	-3.962e-05	-3.966e-05
SN (stable)	-1.097e-04	-1.099e-04	-1.089e-04	-1.099e-04	-1.099e-04
TE (stable)	-8.842e-05	-8.593e-05	-8.796e-05	-8.586e-05	-8.569e-05
TI (stable)	-9.033e-05	-9.027e-05	-9.019e-05	-9.023e-05	-9.011e-05
CP to Q	-3.326e-05	-3.713e-05	-4.026e-05	-3.626e-05	-3.526e-05
CP to TQ	-3.326e-05	-3.713e-05	-4.026e-05	-3.624e-05	-3.524e-05
SN to Q	9.150e-05	-3.474e-05	-1.295e-04	-3.895e-04	-4.377e-04
SN to TQ	9.150e-05	-3.474e-05	-1.295e-04	-3.895e-04	-4.377e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
CP	0.0010	0.0010	0.0010	0.0010	0.0010
D	0.0012	0.0012	0.0012	0.0012	0.0012
SN	0.0019	0.0019	0.0019	0.0019	0.0019
TE	0.0018	0.0018	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35



Propagation Delay at 25C, 1.20V Typ process

CP to Q↓	0.0934	0.1017	0.1181	0.1349	0.1509	2.6426	1.4038	0.7280	0.5144	0.4062
CP to Q↑	0.0927	0.0961	0.1039	0.1143	0.1237	3.2452	1.7065	0.8714	0.6011	0.4599
CP to TQ↓	0.0978	0.1102	0.1384	0.1626	0.1840	4.1221	4.1747	4.2821	4.3744	4.4944
CP to TQ↑	0.0995	0.1062	0.1224	0.1388	0.1540	7.3459	7.3954	7.3926	7.4012	7.4156
SN to Q↑	0.1044	0.1110	0.1274	0.1474	0.1660	3.3097	1.7490	0.9063	0.6320	0.4895
SN to TQ↑	0.1155	0.1271	0.1556	0.1845	0.2107	7.3675	7.4218	7.4300	7.4547	7.4978

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1517	0.1660	0.1937	0.2231	0.2509	4.3010	2.2981	1.1640	0.8135	0.6427
CP to Q↑	0.1480	0.1538	0.1664	0.1837	0.1991	4.7613	2.5149	1.2832	0.8827	0.6810
CP to TQ↓	0.1583	0.1787	0.2267	0.2691	0.3075	6.4797	6.5700	6.7570	6.9124	7.1023
CP to TQ↑	0.1593	0.1703	0.1973	0.2247	0.2502	10.5464	10.5350	10.5304	10.5491	10.5841
SN to Q↑	0.1697	0.1813	0.2089	0.2428	0.2741	4.8872	2.5993	1.3511	0.9438	0.7368
SN to TQ↑	0.1883	0.2078	0.2564	0.3054	0.3502	10.6055	10.6033	10.6319	10.6868	10.7698

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
CP to Q↓	0.1394	0.1524	0.1780	0.2048	0.2305	3.9730	2.1163	1.0755	0.7519	0.5936
CP to Q↑	0.1358	0.1410	0.1527	0.1687	0.1829	4.4245	2.3352	1.1904	0.8199	0.6310
CP to TQ↓	0.1456	0.1643	0.2077	0.2458	0.2800	6.0284	6.1147	6.2908	6.4385	6.6234
CP to TQ↑	0.1464	0.1565	0.1812	0.2061	0.2293	9.8445	9.8493	9.8526	9.8700	9.9024
SN to Q↑	0.1559	0.1664	0.1921	0.2235	0.2527	4.5497	2.4142	1.2523	0.8740	0.6819
SN to TQ↑	0.1732	0.1912	0.2357	0.2805	0.3215	9.8988	9.9113	9.9409	9.9950	10.0716

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.07	0.075	0.11	0.13	0.15
CP	min_pulse_width_low	0.25	0.245	0.24	0.235	0.23
D↓	hold_rising to CP	-0.0231	-0.0231	-0.0183	-0.0179	-0.0179
D↑	hold_rising to CP	-0.0274	-0.0274	-0.0274	-0.0323	-0.0323
D↓	setup_rising to CP	0.1184	0.1134	0.1086	0.1036	0.0986
D↑	setup_rising to CP	0.0774	0.0777	0.0777	0.0777	0.0777
SN	min_pulse_width_low	0.06	0.065	0.075	0.085	0.1
SN↑	recovery_rising to CP	0.0330	0.0284	0.0184	0.0134	0.0130
SN↑	removal_rising to CP	0.0537	0.0537	0.0537	0.0537	0.0537
TE↓	hold_rising to CP	-0.0179	-0.0176	-0.0176	-0.0176	-0.0178
TE↑	hold_rising to CP	-0.0579	-0.0579	-0.0579	-0.0579	-0.0579
TE↓	setup_rising to CP	0.1179	0.1133	0.1085	0.1083	0.1083
TE↑	setup_rising to CP	0.2376	0.2329	0.2328	0.2281	0.2229
TI↓	hold_rising to CP	-0.1230	-0.1230	-0.1178	-0.1178	-0.1178
TI↑	hold_rising to CP	-0.0613	-0.0614	-0.0614	-0.0614	-0.0614
TI↓	setup_rising to CP	0.2333	0.2334	0.2233	0.2182	0.2131
TI↑	setup_rising to CP	0.1117	0.1117	0.1117	0.1119	0.1117

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.105	0.13	0.18	0.22	0.26
CP	min_pulse_width_low	0.41	0.41	0.395	0.39	0.38
D↓	hold_rising to CP	-0.0541	-0.0489	-0.0491	-0.0491	-0.0491
D↑	hold_rising to CP	-0.0688	-0.0688	-0.0688	-0.0688	-0.0739
D↓	setup_rising to CP	0.1944	0.1945	0.1794	0.1694	0.1644
D↑	setup_rising to CP	0.1297	0.1344	0.1344	0.1344	0.1344
SN	min_pulse_width_low	0.09	0.095	0.115	0.14	0.16
SN↑	recovery_rising to CP	0.0553	0.0503	0.0405	0.0303	0.0248
SN↑	removal_rising to CP	0.0820	0.0818	0.0820	0.0818	0.0818
TE↓	hold_rising to CP	-0.0491	-0.0491	-0.0440	-0.0441	-0.0441
TE↑	hold_rising to CP	-0.1194	-0.1199	-0.1245	-0.1245	-0.1245
TE↓	setup_rising to CP	0.1937	0.1895	0.1848	0.1848	0.1848



Timing Constraints (ns) at 125C, 1.10V Worst process

TE↑	setup_rising to CP	0.3902	0.3903	0.3805	0.3751	0.3655
TI↓	hold_rising to CP	-0.2137	-0.2137	-0.2087	-0.2087	-0.2087
TI↑	hold_rising to CP	-0.1280	-0.1280	-0.1280	-0.1278	-0.1280
TI↓	setup_rising to CP	0.3840	0.3842	0.3692	0.3643	0.3544
TI↑	setup_rising to CP	0.2036	0.2035	0.2035	0.2035	0.2035

Timing Constraints (ns) at 125C, 1.15V Worst process

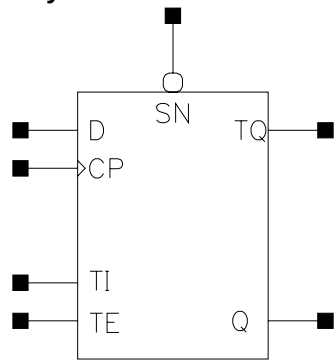
Pin	Constraint	X4	X9	X18	X27	X35
CP	min_pulse_width_high	0.1	0.12	0.165	0.2	0.235
CP	min_pulse_width_low	0.375	0.375	0.365	0.36	0.355
D↓	hold_rising to CP	-0.0437	-0.0439	-0.0434	-0.0434	-0.0434
D↑	hold_rising to CP	-0.0639	-0.0639	-0.0639	-0.0639	-0.0639
D↓	setup_rising to CP	0.1787	0.1742	0.1642	0.1589	0.1539
D↑	setup_rising to CP	0.1187	0.1192	0.1192	0.1192	0.1192
SN	min_pulse_width_low	0.085	0.09	0.11	0.13	0.15
SN↑	recovery_rising to CP	0.0497	0.0447	0.0347	0.0252	0.0195
SN↑	removal_rising to CP	0.0726	0.0726	0.0726	0.0726	0.0726
TE↓	hold_rising to CP	-0.0434	-0.0387	-0.0384	-0.0384	-0.0384
TE↑	hold_rising to CP	-0.1089	-0.1087	-0.1092	-0.1092	-0.1139
TE↓	setup_rising to CP	0.1735	0.1740	0.1647	0.1693	0.1647
TE↑	setup_rising to CP	0.3643	0.3598	0.3500	0.3398	0.3350
TI↓	hold_rising to CP	-0.1985	-0.1985	-0.1935	-0.1935	-0.1935
TI↑	hold_rising to CP	-0.1126	-0.1126	-0.1128	-0.1178	-0.1178
TI↓	setup_rising to CP	0.3539	0.3489	0.3389	0.3289	0.3237
TI↑	setup_rising to CP	0.1833	0.1835	0.1833	0.1835	0.1835

Speed-Optimised

HS65_LSS_SDFPSQT

Cell Description
Scan-out D Flip-Flop with 1 Phase Positive Edge Triggered Clock, Preset Active Low, Q Output Only

Logical Symbol



Functions

IQ	Q
IQ	IQ

Functions

IQ	TQ
IQ	IQ

Functions

D	CP	SN	TI	TE	IQ	IQ
-	-	0	-	-	-	1
D	/	1	-	0	-	D
-	/	1	TI	1	-	TI
-	-	1	-	-	IQ	IQ

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X18	2.6	5.40	14.0400



Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X27	2.6	5.60	14.5600
X35	2.6	5.80	15.0800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X18	9.951e-07	2.326e-09
X27	1.193e-06	2.612e-09
X35	1.398e-06	2.870e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X18	2.704e-04	1.103e-07
X27	3.319e-04	1.179e-07
X35	3.965e-04	1.245e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X18	2.377e-04	9.402e-08
X27	2.912e-04	9.991e-08
X35	3.474e-04	1.049e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X18	X27	X35
CP (stable)	1.045e-02	1.045e-02	1.042e-02
D (stable)	3.000e-03	2.994e-03	2.974e-03
SN (stable)	6.256e-03	6.241e-03	6.195e-03
TE (stable)	5.967e-03	5.974e-03	5.956e-03
TI (stable)	3.341e-03	3.339e-03	3.318e-03
CP to Q	1.623e-02	1.903e-02	2.148e-02
CP to TQ	1.621e-02	1.900e-02	2.144e-02
SN to Q	8.940e-03	1.059e-02	1.192e-02
SN to TQ	8.928e-03	1.057e-02	1.190e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X18	X27	X35
CP (stable)	1.686e-04	1.680e-04	1.709e-04
D (stable)	-3.559e-05	-3.330e-05	-3.229e-05
SN (stable)	-1.117e-04	-1.117e-04	-9.374e-05
TE (stable)	-8.572e-05	-8.797e-05	-8.596e-05
TI (stable)	-8.345e-05	-8.350e-05	-8.213e-05
CP to Q	-2.126e-05	-2.026e-05	-3.626e-05
CP to TQ	-2.126e-05	-2.028e-05	-3.626e-05
SN to Q	1.144e-04	-1.236e-04	-2.316e-04
SN to TQ	1.144e-04	-1.236e-04	-2.316e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X18	X27	X35
CP	0.0010	0.0010	0.0010
D	0.0012	0.0012	0.0012
SN	0.0018	0.0018	0.0018
TE	0.0018	0.0018	0.0018
TI	0.0011	0.0011	0.0011

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.1578	0.1643	0.1693	0.5882	0.3984	0.3000
CP to Q↑	0.1566	0.1621	0.1663	0.8149	0.5497	0.4146
CP to TQ↓	0.0848	0.0850	0.0853	4.6541	4.6554	4.6533
CP to TQ↑	0.0944	0.0946	0.0948	8.2838	8.2853	8.2865
SN to Q↑	0.0869	0.0926	0.0971	0.8153	0.5490	0.4142
SN to TQ↑	0.1303	0.1301	0.1300	8.3045	8.3099	8.3065



Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2622	0.2728	0.2808	0.9345	0.6254	0.4682
CP to Q↑	0.2534	0.2625	0.2692	1.1897	0.7973	0.6016
CP to TQ↓	0.1372	0.1376	0.1381	7.2776	7.2829	7.2742
CP to TQ↑	0.1509	0.1512	0.1516	11.8645	11.8786	11.8727
SN to Q↑	0.1346	0.1439	0.1511	1.1877	0.7971	0.6004
SN to TQ↑	0.2070	0.2069	0.2068	11.9221	11.9307	11.9222

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)			Kload (ns/pf)		
	X18	X27	X35	X18	X27	X35
CP to Q↓	0.2402	0.2500	0.2574	0.8637	0.5791	0.4343
CP to Q↑	0.2325	0.2409	0.2471	1.1043	0.7416	0.5593
CP to TQ↓	0.1263	0.1266	0.1271	6.7785	6.7800	6.7738
CP to TQ↑	0.1387	0.1389	0.1393	11.0884	11.0980	11.0961
SN to Q↑	0.1243	0.1329	0.1395	1.1040	0.7409	0.5583
SN to TQ↑	0.1907	0.1905	0.1904	11.1424	11.1474	11.1437

Timing Constraints (ns) at 25C, 1.20V Typ process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.07	0.07	0.07
CP	min_pulse_width_low	0.265	0.265	0.26
D↓	hold_rising to CP	-0.0231	-0.0231	-0.0231
D↑	hold_rising to CP	-0.0271	-0.0271	-0.0273
D↓	setup_rising to CP	0.1234	0.1233	0.1234
D↑	setup_rising to CP	0.0722	0.0725	0.0722
SN	min_pulse_width_low	0.075	0.075	0.075
SN↑	recovery_rising to CP	0.0381	0.0430	0.0381

Timing Constraints (ns) at 25C, 1.20V Typ process

SN↑	removal_rising to CP	0.0487	0.0487	0.0485
TE↓	hold_rising to CP	-0.0176	-0.0176	-0.0176
TE↑	hold_rising to CP	-0.0629	-0.0629	-0.0629
TE↓	setup_rising to CP	0.1181	0.1181	0.1178
TE↑	setup_rising to CP	0.2627	0.2627	0.2627
TI↓	hold_rising to CP	-0.1381	-0.1380	-0.1380
TI↑	hold_rising to CP	-0.0611	-0.0611	-0.0613
TI↓	setup_rising to CP	0.2529	0.2529	0.2530
TI↑	setup_rising to CP	0.1167	0.1167	0.1167

Timing Constraints (ns) at 125C, 1.10V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.115	0.115	0.115
CP	min_pulse_width_low	0.435	0.435	0.43
D↓	hold_rising to CP	-0.0494	-0.0494	-0.0489
D↑	hold_rising to CP	-0.0688	-0.0688	-0.0685
D↓	setup_rising to CP	0.2044	0.2044	0.1992
D↑	setup_rising to CP	0.1243	0.1243	0.1243
SN	min_pulse_width_low	0.12	0.12	0.115
SN↑	recovery_rising to CP	0.0698	0.0698	0.0698
SN↑	removal_rising to CP	0.0770	0.0770	0.0768
TE↓	hold_rising to CP	-0.0491	-0.0491	-0.0439
TE↑	hold_rising to CP	-0.1294	-0.1294	-0.1294
TE↓	setup_rising to CP	0.1992	0.1992	0.1992
TE↑	setup_rising to CP	0.4303	0.4350	0.4298
TI↓	hold_rising to CP	-0.2438	-0.2438	-0.2389
TI↑	hold_rising to CP	-0.1378	-0.1378	-0.1328
TI↓	setup_rising to CP	0.4240	0.4240	0.4190
TI↑	setup_rising to CP	0.2083	0.2083	0.2085

Timing Constraints (ns) at 125C, 1.15V Worst process

Pin	Constraint	X18	X27	X35
CP	min_pulse_width_high	0.105	0.105	0.105
CP	min_pulse_width_low	0.395	0.395	0.395



Timing Constraints (ns) at 125C, 1.15V Worst process

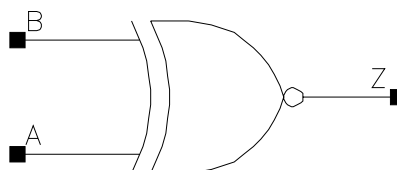
D↓	hold_rising to CP	-0.0437	-0.0437	-0.0439
D↑	hold_rising to CP	-0.0634	-0.0634	-0.0634
D↓	setup_rising to CP	0.1840	0.1840	0.1837
D↑	setup_rising to CP	0.1137	0.1137	0.1091
SN	min_pulse_width_low	0.11	0.11	0.11
SN↑	recovery_rising to CP	0.0647	0.0647	0.0647
SN↑	removal_rising to CP	0.0722	0.0722	0.0722
TE↓	hold_rising to CP	-0.0434	-0.0434	-0.0387
TE↑	hold_rising to CP	-0.1190	-0.1189	-0.1144
TE↓	setup_rising to CP	0.1837	0.1836	0.1790
TE↑	setup_rising to CP	0.3945	0.3945	0.3945
TI↓	hold_rising to CP	-0.2233	-0.2233	-0.2233
TI↑	hold_rising to CP	-0.1226	-0.1226	-0.1226
TI↓	setup_rising to CP	0.3837	0.3835	0.3837
TI↑	setup_rising to CP	0.1933	0.1933	0.1881

HS65_LS_XNOR2

Cell Description

2 Input Exclusive NOR, 9x Drive

Logical Symbol



Functions

A	B	Z
0	B	!B
1	B	B

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.80	4.6800
X9	2.6	2.00	5.2000
X18	2.6	2.60	6.7600
X27	2.6	4.00	10.4000
X35	2.6	4.40	11.4400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	3.758e-07	7.327e-10
X9	5.782e-07	1.366e-09
X18	1.164e-06	2.665e-09
X27	1.742e-06	4.063e-09
X35	2.316e-06	5.396e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	9.603e-05	4.528e-08
X9	1.606e-04	5.842e-08
X18	3.460e-04	8.876e-08
X27	5.044e-04	1.288e-07
X35	6.883e-04	1.572e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	8.497e-05	3.959e-08
X9	1.407e-04	4.916e-08
X18	3.014e-04	7.164e-08
X27	4.403e-04	1.033e-07
X35	5.997e-04	1.239e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	1.049e-02	1.475e-02	2.574e-02	3.995e-02	5.146e-02
B to Z	8.873e-03	1.185e-02	1.979e-02	2.971e-02	3.889e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-1.463e-06	-2.313e-06	-3.378e-06	-5.247e-06	-7.487e-06
B to Z	-1.823e-06	-3.559e-06	-4.354e-06	-7.572e-06	-1.047e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0010	0.0014	0.0021	0.0033	0.0039
B	0.0015	0.0025	0.0038	0.0054	0.0066

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0818	0.0687	0.0626	0.0638	0.0626	2.5797	1.2569	0.6161	0.4241	0.3157
A to Z↑	0.0744	0.0632	0.0574	0.0594	0.0575	3.1892	1.6651	0.8318	0.5670	0.4247
B to Z↓	0.0617	0.0504	0.0447	0.0465	0.0458	2.5733	1.2547	0.6165	0.4241	0.3159
B to Z↑	0.0565	0.0467	0.0406	0.0424	0.0417	3.1887	1.6644	0.8317	0.5668	0.4246

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1341	0.1121	0.1011	0.1032	0.1008	4.1568	1.9896	0.9521	0.6531	0.4848
A to Z↑	0.1204	0.1024	0.0914	0.0948	0.0912	4.6976	2.4381	1.2006	0.8165	0.6105
B to Z↓	0.1025	0.0835	0.0736	0.0762	0.0749	4.1654	1.9927	0.9538	0.6539	0.4854
B to Z↑	0.0898	0.0741	0.0638	0.0664	0.0649	4.6976	2.4358	1.2002	0.8160	0.6099

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1227	0.1027	0.0927	0.0946	0.0925	3.8443	1.8417	0.8842	0.6068	0.4507
A to Z↑	0.1105	0.0940	0.0841	0.0872	0.0839	4.3678	2.2636	1.1161	0.7597	0.5678
B to Z↓	0.0937	0.0765	0.0674	0.0699	0.0687	3.8518	1.8437	0.8858	0.6073	0.4511
B to Z↑	0.0825	0.0681	0.0588	0.0612	0.0598	4.3665	2.2621	1.1161	0.7591	0.5676





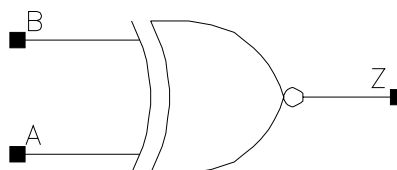
Speed-Optimised

HS65_LSS_XNOR2

Cell Description

2 Input Exclusive NOR, 9x Drive

Logical Symbol



Functions

A	B	Z
0	B	!B
1	B	B

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X3	2.6	1.60	4.1600
X6	2.6	1.60	4.1600
X12	2.6	2.60	6.7600
X18	2.6	4.00	10.4000
X24	2.6	4.80	12.4800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X3	1.910e-07	4.913e-10
X6	3.430e-07	8.910e-10
X12	6.754e-07	1.790e-09
X18	1.058e-06	2.690e-09
X24	1.405e-06	3.589e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X3	5.017e-05	3.619e-08
X6	9.712e-05	4.402e-08
X12	1.941e-04	7.090e-08
X18	3.055e-04	1.007e-07
X24	4.095e-04	1.251e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X3	4.426e-05	3.244e-08
X6	8.496e-05	3.785e-08
X12	1.695e-04	5.922e-08
X18	2.670e-04	8.323e-08
X24	3.577e-04	1.023e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X3	X6	X12	X18	X24
A to Z	5.912e-03	9.551e-03	1.987e-02	2.803e-02	3.781e-02
B to Z	5.268e-03	8.333e-03	1.703e-02	2.396e-02	3.276e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X3	X6	X12	X18	X24
A to Z	-1.314e-04	-2.886e-04	-7.532e-04	-8.964e-04	-1.165e-03
B to Z	1.216e-04	2.689e-04	7.117e-04	8.372e-04	1.088e-03

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X3	X6	X12	X18	X24
A	0.0020	0.0030	0.0052	0.0080	0.0104
B	0.0021	0.0027	0.0044	0.0066	0.0088

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X12	X18	X24	X3	X6	X12	X18	X24
A to Z↓	0.0416	0.0343	0.0352	0.0336	0.0341	3.9283	1.9733	1.0325	0.6753	0.5146
A to Z↑	0.0451	0.0385	0.0381	0.0380	0.0378	5.0785	2.6399	1.3531	0.9068	0.6728
B to Z↓	0.0401	0.0331	0.0343	0.0316	0.0323	3.9492	1.9936	1.0277	0.6766	0.5108
B to Z↑	0.0431	0.0358	0.0351	0.0344	0.0342	5.0678	2.6396	1.3516	0.9074	0.6740

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X12	X18	X24	X3	X6	X12	X18	X24
A to Z↓	0.0662	0.0541	0.0557	0.0523	0.0531	6.7762	3.3144	1.7174	1.0990	0.8369
A to Z↑	0.0731	0.0623	0.0609	0.0607	0.0597	7.5734	3.9445	2.0091	1.3329	0.9911
B to Z↓	0.0639	0.0526	0.0545	0.0495	0.0507	6.8115	3.3451	1.7079	1.1017	0.8318
B to Z↑	0.0692	0.0578	0.0560	0.0545	0.0539	7.5426	3.9354	2.0035	1.3323	0.9910

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X12	X18	X24	X3	X6	X12	X18	X24
A to Z↓	0.0612	0.0502	0.0516	0.0486	0.0494	6.1688	3.0225	1.5683	1.0072	0.7666
A to Z↑	0.0674	0.0574	0.0562	0.0561	0.0553	6.9959	3.6365	1.8535	1.2311	0.9151
B to Z↓	0.0592	0.0488	0.0504	0.0460	0.0471	6.1990	3.0507	1.5597	1.0092	0.7620
B to Z↑	0.0640	0.0534	0.0518	0.0505	0.0499	6.9679	3.6280	1.8488	1.2309	0.9153

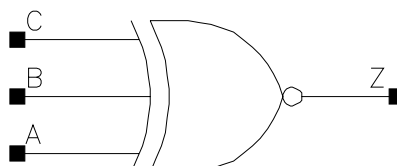


HS65_LS_XNOR3

Cell Description

3 Input Exclusive NOR

Logical Symbol



Functions

A	B	C	Z
A	A	C	!C
A	!A	C	C

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	4.00	10.4000
X9	2.6	4.40	11.4400
X18	2.6	4.60	11.9600
X27	2.6	6.60	17.1600

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	3.582e-07	6.994e-10
X9	4.717e-07	1.032e-09
X18	8.826e-07	1.998e-09
X27	1.302e-06	3.014e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	8.884e-05	6.390e-08



Average Leakage Power (mW) at 125C, 1.30V Best process

X9	1.234e-04	7.444e-08
X18	2.527e-04	9.475e-08
X27	3.705e-04	1.332e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	7.874e-05	5.773e-08
X9	1.086e-04	6.614e-08
X18	2.210e-04	8.080e-08
X27	3.240e-04	1.127e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27
A to Z	1.011e-02	1.381e-02	2.320e-02	3.461e-02
B to Z	1.002e-02	1.365e-02	2.275e-02	3.388e-02
C to Z	1.497e-02	1.892e-02	3.167e-02	4.581e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27
A to Z	-6.059e-05	-9.202e-05	-1.824e-04	-2.391e-04
B to Z	-5.371e-05	-4.421e-05	-4.161e-05	-1.083e-04
C to Z	7.680e-05	8.000e-05	1.188e-04	1.742e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27
A	0.0036	0.0044	0.0066	0.0089
B	0.0035	0.0042	0.0059	0.0081
C	0.0009	0.0010	0.0013	0.0017

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X4	X9	X18	X27	X4	X9	X18	X27
A to Z↓	0.1045	0.0945	0.0853	0.0841	2.5780	1.3110	0.6253	0.4319
A to Z↑	0.1022	0.0997	0.0864	0.0865	3.2103	1.6979	0.8399	0.5740
B to Z↓	0.1024	0.0955	0.0842	0.0842	2.5769	1.3064	0.6241	0.4319
B to Z↑	0.0999	0.1002	0.0848	0.0864	3.2154	1.6989	0.8408	0.5749
C to Z↓	0.1365	0.1302	0.1229	0.1179	2.5433	1.3030	0.6234	0.4282
C to Z↑	0.1294	0.1303	0.1192	0.1163	3.2116	1.6973	0.8401	0.5739

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X4	X9	X18	X27	X4	X9	X18	X27
A to Z↓	0.1713	0.1575	0.1415	0.1381	4.1746	2.1144	0.9689	0.6702
A to Z↑	0.1684	0.1652	0.1412	0.1421	4.7262	2.5086	1.2142	0.8301
B to Z↓	0.1677	0.1576	0.1396	0.1364	4.1730	2.1072	0.9664	0.6695
B to Z↑	0.1653	0.1657	0.1392	0.1411	4.7328	2.5125	1.2161	0.8313
C to Z↓	0.2214	0.2123	0.2000	0.1903	4.1229	2.1051	0.9657	0.6649
C to Z↑	0.2126	0.2141	0.1939	0.1895	4.7282	2.5106	1.2157	0.8296

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X4	X9	X18	X27	X4	X9	X18	X27
A to Z↓	0.1572	0.1443	0.1297	0.1267	3.8574	1.9512	0.8995	0.6221
A to Z↑	0.1545	0.1513	0.1296	0.1304	4.3931	2.3276	1.1287	0.7721
B to Z↓	0.1538	0.1445	0.1279	0.1254	3.8560	1.9448	0.8975	0.6214
B to Z↑	0.1516	0.1518	0.1277	0.1295	4.4011	2.3320	1.1307	0.7730
C to Z↓	0.2034	0.1949	0.1836	0.1749	3.8095	1.9427	0.8969	0.6171



Propagation Delay at 125C, 1.15V Worst process

C to Z[↑]	0.1951	0.1965	0.1781	0.1741	4.3972	2.3307	1.1301	0.7716

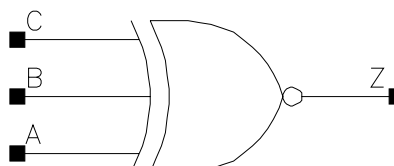
Speed-Optimised

HS65_LSS_XNOR3

Cell Description

3 Input Exclusive NOR

Logical Symbol



Functions

A	B	C	Z
A	A	C	!C
A	!A	C	C

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	3.20	8.3200
X4	2.6	3.80	9.8800
X8	2.6	7.20	18.7200
X12	2.6	9.40	24.4400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	2.614e-07	5.121e-10
X4	4.557e-07	9.617e-10
X8	8.257e-07	1.994e-09
X12	1.336e-06	2.943e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	6.561e-05	5.234e-08



Average Leakage Power (mW) at 125C, 1.30V Best process

X4	1.258e-04	6.728e-08
X8	2.285e-04	1.213e-07
X12	3.765e-04	1.591e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	5.806e-05	4.764e-08
X4	1.103e-04	5.959e-08
X8	2.000e-04	1.064e-07
X12	3.298e-04	1.379e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X4	X8	X12
A to Z	7.373e-03	1.251e-02	2.849e-02	3.873e-02
B to Z	7.052e-03	1.178e-02	2.646e-02	3.611e-02
C to Z	6.446e-03	1.096e-02	2.435e-02	3.329e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X4	X8	X12
A to Z	-1.827e-04	-3.448e-04	-8.017e-04	-1.073e-03
B to Z	-1.523e-05	-8.303e-06	-6.370e-05	-9.449e-05
C to Z	1.480e-04	2.650e-04	6.649e-04	8.981e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X4	X8	X12
A	0.0042	0.0066	0.0118	0.0178
B	0.0041	0.0061	0.0108	0.0161
C	0.0032	0.0049	0.0089	0.0129

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X2	X4	X8	X12	X2	X4	X8	X12
A to Z↓	0.0655	0.0573	0.0628	0.0618	4.8863	2.4330	1.2834	0.8400
A to Z↑	0.0570	0.0520	0.0585	0.0568	7.2330	3.8648	2.0177	1.3446
B to Z↓	0.0652	0.0558	0.0610	0.0556	4.8634	2.4285	1.2833	0.8392
B to Z↑	0.0562	0.0512	0.0572	0.0521	7.2218	3.8513	2.0070	1.3328
C to Z↓	0.0587	0.0518	0.0576	0.0527	4.8494	2.4208	1.2799	0.8352
C to Z↑	0.0503	0.0469	0.0527	0.0475	7.1751	3.8299	1.9884	1.3218

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X2	X4	X8	X12	X2	X4	X8	X12
A to Z↓	0.1065	0.0931	0.1040	0.0972	8.4320	4.0761	2.1725	1.3814
A to Z↑	0.0919	0.0849	0.0960	0.0891	10.9940	5.8811	3.0475	2.0145
B to Z↓	0.1061	0.0913	0.1016	0.0903	8.4041	4.0738	2.1638	1.3804
B to Z↑	0.0898	0.0833	0.0933	0.0829	10.9677	5.8509	3.0284	1.9972
C to Z↓	0.0964	0.0847	0.0954	0.0853	8.3539	4.0488	2.1612	1.3727
C to Z↑	0.0809	0.0763	0.0859	0.0759	10.8782	5.8143	2.9967	1.9768

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X2	X4	X8	X12	X2	X4	X8	X12
A to Z↓	0.0983	0.0859	0.0956	0.0899	7.6862	3.7234	1.9780	1.2649
A to Z↑	0.0849	0.0783	0.0882	0.0824	10.1194	5.4001	2.8031	1.8543
B to Z↓	0.0978	0.0841	0.0933	0.0833	7.6597	3.7207	1.9716	1.2642
B to Z↑	0.0830	0.0767	0.0857	0.0765	10.0919	5.3745	2.7851	1.8381
C to Z↓	0.0887	0.0780	0.0877	0.0787	7.6140	3.6980	1.9690	1.2552



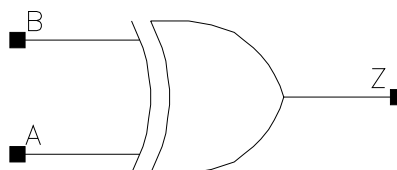
Propagation Delay at 125C, 1.15V Worst process

C to Z[↑]	0.0747	0.0702	0.0790	0.0701	10.0137	5.3399	2.7558	1.8194

HS65_LS_XOR2

Cell Description
2 Input Exclusive OR

Logical Symbol



Functions

A	B	Z
1	B	!B
0	B	B

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	1.80	4.6800
X9	2.6	2.00	5.2000
X18	2.6	2.60	6.7600
X27	2.6	4.00	10.4000
X35	2.6	4.40	11.4400

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	3.749e-07	7.994e-10
X9	5.835e-07	1.399e-09
X18	1.164e-06	2.665e-09
X27	1.740e-06	3.964e-09
X35	2.327e-06	5.362e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	9.575e-05	4.507e-08
X9	1.606e-04	5.874e-08
X18	3.462e-04	8.876e-08
X27	5.064e-04	1.289e-07
X35	6.921e-04	1.575e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	8.473e-05	3.938e-08
X9	1.407e-04	4.947e-08
X18	3.016e-04	7.171e-08
X27	4.420e-04	1.034e-07
X35	6.030e-04	1.241e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27	X35
A to Z	1.047e-02	1.486e-02	2.551e-02	4.117e-02	5.108e-02
B to Z	8.721e-03	1.172e-02	2.002e-02	3.021e-02	3.871e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27	X35
A to Z	-1.832e-06	-2.452e-06	-3.617e-06	-5.615e-06	-7.421e-06
B to Z	-2.711e-06	-3.117e-06	-4.723e-06	-8.443e-06	-1.083e-05

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27	X35
A	0.0010	0.0014	0.0021	0.0032	0.0039
B	0.0016	0.0025	0.0038	0.0055	0.0066

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.0815	0.0691	0.0628	0.0661	0.0624	2.5170	1.2586	0.6178	0.4256	0.3148
A to Z↑	0.0740	0.0640	0.0568	0.0600	0.0562	3.2290	1.6668	0.8324	0.5686	0.4225
B to Z↓	0.0595	0.0498	0.0456	0.0491	0.0459	2.5005	1.2524	0.6169	0.4255	0.3146
B to Z↑	0.0556	0.0465	0.0412	0.0448	0.0414	3.2315	1.6679	0.8327	0.5679	0.4225

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1326	0.1123	0.1017	0.1068	0.1005	4.0683	1.9939	0.9556	0.6559	0.4830
A to Z↑	0.1192	0.1035	0.0906	0.0957	0.0891	4.7195	2.4416	1.2008	0.8184	0.6069
B to Z↓	0.0985	0.0822	0.0747	0.0792	0.0748	4.0566	1.9897	0.9546	0.6548	0.4824
B to Z↑	0.0880	0.0737	0.0647	0.0693	0.0644	4.7223	2.4435	1.2020	0.8177	0.6070

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X4	X9	X18	X27	X35	X4	X9	X18	X27	X35
A to Z↓	0.1214	0.1029	0.0932	0.0979	0.0922	3.7601	1.8447	0.8874	0.6092	0.4489
A to Z↑	0.1095	0.0950	0.0834	0.0880	0.0820	4.3905	2.2669	1.1170	0.7610	0.5643
B to Z↓	0.0902	0.0753	0.0684	0.0727	0.0686	3.7470	1.8401	0.8863	0.6082	0.4485
B to Z↑	0.0808	0.0678	0.0596	0.0639	0.0594	4.3941	2.2691	1.1172	0.7606	0.5646



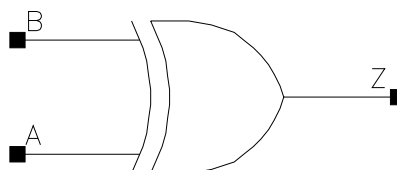


Speed-Optimised

HS65_LSS_XOR2

Cell Description
2 Input Exclusive OR

Logical Symbol



Functions

A	B	Z
1	B	!B
0	B	B

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X3	2.6	1.60	4.1600
X6	2.6	1.60	4.1600
X12	2.6	2.40	6.2400
X17	2.6	3.80	9.8800
X23	2.6	4.80	12.4800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X3	2.079e-07	3.914e-10
X6	3.444e-07	7.244e-10
X12	7.173e-07	1.432e-09
X17	1.096e-06	2.132e-09
X23	1.481e-06	2.864e-09



Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X3	5.497e-05	3.587e-08
X6	9.868e-05	4.236e-08
X12	2.114e-04	6.426e-08
X17	3.236e-04	9.125e-08
X23	4.404e-04	1.158e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X3	4.846e-05	3.237e-08
X6	8.627e-05	3.698e-08
X12	1.845e-04	5.447e-08
X17	2.826e-04	7.667e-08
X23	3.844e-04	9.666e-08

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X3	X6	X12	X17	X23
A to Z	5.889e-03	9.482e-03	1.848e-02	2.703e-02	3.595e-02
B to Z	5.315e-03	8.694e-03	1.715e-02	2.452e-02	3.294e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X3	X6	X12	X17	X23
A to Z	-1.132e-04	-1.765e-04	-3.372e-04	-5.327e-04	-6.733e-04
B to Z	8.496e-05	1.196e-04	2.522e-04	4.027e-04	5.094e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X3	X6	X12	X17	X23
A	0.0021	0.0029	0.0049	0.0081	0.0103
B	0.0020	0.0027	0.0048	0.0068	0.0087

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X12	X17	X23	X3	X6	X12	X17	X23
A to Z↓	0.0479	0.0451	0.0450	0.0416	0.0414	3.3397	1.6811	0.8274	0.5557	0.4138
A to Z↑	0.0404	0.0383	0.0373	0.0363	0.0362	6.0389	3.2374	1.6205	1.1074	0.8345
B to Z↓	0.0450	0.0420	0.0417	0.0381	0.0379	3.3581	1.6880	0.8320	0.5585	0.4162
B to Z↑	0.0394	0.0371	0.0366	0.0349	0.0348	6.0574	3.2514	1.6280	1.1062	0.8310

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X12	X17	X23	X3	X6	X12	X17	X23
A to Z↓	0.0771	0.0729	0.0725	0.0667	0.0662	5.6725	2.7882	1.3359	0.8948	0.6637
A to Z↑	0.0632	0.0604	0.0580	0.0565	0.0562	9.1451	4.9133	2.4448	1.6536	1.2480
B to Z↓	0.0720	0.0675	0.0669	0.0606	0.0602	5.6950	2.7987	1.3427	0.8988	0.6671
B to Z↑	0.0614	0.0587	0.0574	0.0543	0.0540	9.1561	4.9252	2.4494	1.6511	1.2428

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)					Kload (ns/pf)				
	X3	X6	X12	X17	X23	X3	X6	X12	X17	X23
A to Z↓	0.0712	0.0672	0.0668	0.0616	0.0612	5.1838	2.5492	1.2265	0.8220	0.6102
A to Z↑	0.0587	0.0560	0.0539	0.0525	0.0522	8.4296	4.5182	2.2505	1.5241	1.1498
B to Z↓	0.0665	0.0623	0.0617	0.0561	0.0557	5.2057	2.5591	1.2328	0.8255	0.6132
B to Z↑	0.0572	0.0545	0.0533	0.0505	0.0503	8.4396	4.5308	2.2546	1.5215	1.1450



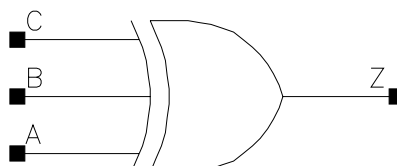


HS65_LS_XOR3

Cell Description

3 Input Exclusive OR, 9x Drive

Logical Symbol



Functions

A	B	C	Z
A	!A	C	!C
A	A	C	C

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X4	2.6	3.60	9.3600
X9	2.6	3.60	9.3600
X18	2.6	4.40	11.4400
X27	2.6	6.00	15.6000

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X4	3.059e-07	5.995e-10
X9	4.240e-07	9.326e-10
X18	8.082e-07	1.832e-09
X27	1.201e-06	2.748e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X4	7.561e-05	5.798e-08



Average Leakage Power (mW) at 125C, 1.30V Best process

X9	1.123e-04	6.448e-08
X18	2.332e-04	8.974e-08
X27	3.439e-04	1.220e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X4	6.700e-05	5.260e-08
X9	9.876e-05	5.716e-08
X18	2.039e-04	7.707e-08
X27	3.008e-04	1.034e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X4	X9	X18	X27
A to Z	9.625e-03	1.314e-02	2.310e-02	3.521e-02
B to Z	9.309e-03	1.275e-02	2.228e-02	3.419e-02
C to Z	8.772e-03	1.213e-02	2.112e-02	3.201e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X4	X9	X18	X27
A to Z	-1.193e-04	-1.729e-04	-3.653e-04	-5.460e-04
B to Z	-7.398e-06	-5.551e-06	-1.064e-05	-1.233e-04
C to Z	9.036e-05	1.297e-04	2.810e-04	5.289e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X4	X9	X18	X27
A	0.0034	0.0041	0.0062	0.0086
B	0.0034	0.0038	0.0068	0.0081
C	0.0026	0.0031	0.0049	0.0069

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X4	X9	X18	X27	X4	X9	X18	X27
A to Z↓	0.0965	0.0907	0.0823	0.0854	2.5149	1.2725	0.6239	0.4288
A to Z↑	0.0945	0.0940	0.0832	0.0878	3.1662	1.6803	0.8398	0.5714
B to Z↓	0.0946	0.0888	0.0807	0.0812	2.5183	1.2741	0.6225	0.4267
B to Z↑	0.0926	0.0924	0.0818	0.0834	3.1698	1.6826	0.8410	0.5720
C to Z↓	0.0881	0.0823	0.0754	0.0770	2.5249	1.2746	0.6231	0.4245
C to Z↑	0.0874	0.0865	0.0777	0.0813	3.1698	1.6822	0.8408	0.5717

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X4	X9	X18	X27	X4	X9	X18	X27
A to Z↓	0.1590	0.1498	0.1366	0.1384	4.0526	2.0326	0.9626	0.6638
A to Z↑	0.1557	0.1542	0.1362	0.1420	4.6413	2.4629	1.2143	0.8252
B to Z↓	0.1556	0.1466	0.1334	0.1323	4.0531	2.0335	0.9601	0.6611
B to Z↑	0.1533	0.1522	0.1343	0.1371	4.6482	2.4659	1.2162	0.8260
C to Z↓	0.1454	0.1363	0.1248	0.1246	4.0574	2.0278	0.9590	0.6570
C to Z↑	0.1448	0.1431	0.1274	0.1319	4.6456	2.4647	1.2157	0.8258

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X4	X9	X18	X27	X4	X9	X18	X27
A to Z↓	0.1459	0.1375	0.1253	0.1272	3.7464	1.8791	0.8944	0.6159
A to Z↑	0.1429	0.1416	0.1251	0.1305	4.3148	2.2871	1.1290	0.7674
B to Z↓	0.1428	0.1344	0.1223	0.1215	3.7477	1.8804	0.8923	0.6136
B to Z↑	0.1407	0.1397	0.1233	0.1258	4.3219	2.2904	1.1309	0.7683
C to Z↓	0.1334	0.1250	0.1144	0.1146	3.7512	1.8751	0.8913	0.6098



Propagation Delay at 125C, 1.15V Worst process

C to Z[↑]	0.1328	0.1311	0.1169	0.1211	4.3212	2.2897	1.1305	0.7680

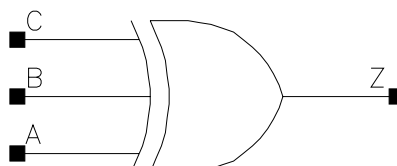
Speed-Optimised

HS65_LSS_XOR3

Cell Description

3 Input Exclusive OR, 9x Drive

Logical Symbol



Functions

A	B	C	Z
A	!A	C	!C
A	A	C	C

Cell Size

Drive Strength	Height (um)	Width (um)	Area (um2)
X2	2.6	3.00	7.8000
X4	2.6	4.00	10.4000
X8	2.6	7.60	19.7600
X12	2.6	9.80	25.4800

Average Leakage Power (mW) at 25C, 1.20V Typ process

	vdd	vdds
X2	3.090e-07	5.829e-10
X4	5.427e-07	1.149e-09
X8	9.823e-07	2.315e-09
X12	1.580e-06	3.481e-09

Average Leakage Power (mW) at 125C, 1.30V Best process

	vdd	vdds
X2	7.839e-05	5.281e-08



Average Leakage Power (mW) at 125C, 1.30V Best process

X4	1.493e-04	7.299e-08
X8	2.742e-04	1.327e-07
X12	4.451e-04	1.735e-07

Average Leakage Power (mW) at 125C, 1.25V Best process

	vdd	vdds
X2	6.940e-05	4.750e-08
X4	1.310e-04	6.410e-08
X8	2.399e-04	1.154e-07
X12	3.897e-04	1.488e-07

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdd)	X2	X4	X8	X12
A to Z	6.966e-03	1.230e-02	2.771e-02	3.734e-02
B to Z	6.740e-03	1.204e-02	2.654e-02	3.573e-02
C to Z	1.201e-02	2.069e-02	4.059e-02	5.619e-02

Internal Energy (uW/MHz) at Minimum Output Load, 25C, 1.20V Typ process

Pin Cycle (vdds)	X2	X4	X8	X12
A to Z	-8.966e-05	-1.755e-04	-3.683e-04	-5.130e-04
B to Z	-3.157e-05	-4.715e-05	-9.290e-05	-7.098e-05
C to Z	7.193e-05	1.277e-04	2.470e-04	2.980e-04

Pin Capacitance (pf) at 25C, 1.20V Typ process

Pin	X2	X4	X8	X12
A	0.0036	0.0067	0.0118	0.0179
B	0.0037	0.0059	0.0107	0.0160
C	0.0012	0.0013	0.0022	0.0033

Propagation Delay at 25C, 1.20V Typ process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X2	X4	X8	X12	X2	X4	X8	X12
A to Z↓	0.0626	0.0567	0.0637	0.0620	5.0702	2.4104	1.2853	0.8418
A to Z↑	0.0552	0.0521	0.0590	0.0569	7.3489	3.8832	2.0199	1.3469
B to Z↓	0.0617	0.0543	0.0619	0.0558	5.0598	2.4129	1.2849	0.8408
B to Z↑	0.0546	0.0502	0.0579	0.0524	7.3239	3.8639	2.0065	1.3324
C to Z↓	0.0945	0.0873	0.0898	0.0826	5.0176	2.4339	1.2975	0.8436
C to Z↑	0.0915	0.0878	0.0903	0.0823	7.2522	3.8252	1.9836	1.3189

Propagation Delay at 125C, 1.10V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X2	X4	X8	X12	X2	X4	X8	X12
A to Z↓	0.1027	0.0920	0.1055	0.0977	8.7588	4.0384	2.1749	1.3832
A to Z↑	0.0900	0.0847	0.0965	0.0895	11.1622	5.9019	3.0511	2.0171
B to Z↓	0.1008	0.0885	0.1028	0.0906	8.7357	4.0402	2.1666	1.3809
B to Z↑	0.0876	0.0813	0.0945	0.0836	11.1123	5.8730	3.0268	1.9964
C to Z↓	0.1530	0.1410	0.1468	0.1331	8.7494	4.1216	2.1991	1.3961
C to Z↑	0.1448	0.1397	0.1449	0.1303	11.0445	5.8336	2.9989	1.9806

Propagation Delay at 125C, 1.15V Worst process

Description	Intrinsic Delay (ns)				Kload (ns/pf)			
	X2	X4	X8	X12	X2	X4	X8	X12
A to Z↓	0.0947	0.0849	0.0970	0.0903	7.9970	3.6875	1.9805	1.2669
A to Z↑	0.0830	0.0780	0.0887	0.0828	10.2729	5.4204	2.8062	1.8572
B to Z↓	0.0930	0.0816	0.0944	0.0835	7.9767	3.6909	1.9742	1.2649
B to Z↑	0.0809	0.0749	0.0868	0.0772	10.2261	5.3947	2.7841	1.8372
C to Z↓	0.1412	0.1300	0.1351	0.1229	7.9703	3.7578	2.0039	1.2769



Propagation Delay at 125C, 1.15V Worst process

C to Z[↑]	0.1337	0.1288	0.1334	0.1203	10.1697	5.3596	2.7589	1.8229