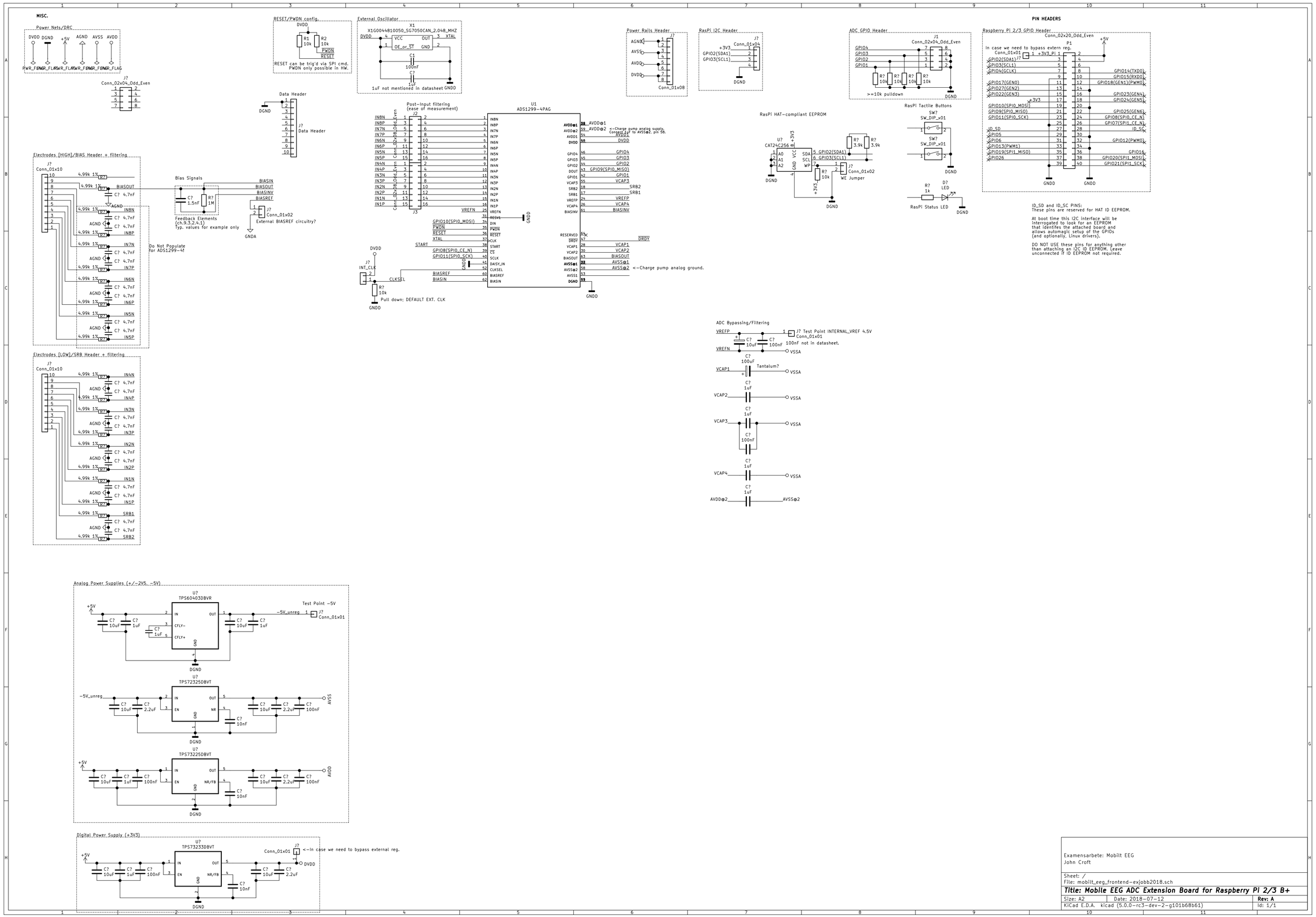
MISC.
Power Nets/DRC
DVDD DGND +5V AGND AVSS AVDD
PWR_FLAG PWR_FLAG PWR_FLAG PWR_FLAG PWR_FLAG PWR_FLAG
J2
Conn_02x04_Odd_Even
RESET/PWDN config.
DVDD
R1 10k
R2 10k
PWDN
RESET
RESET can be trig'd via SPI cmd.
PWDN only possible in HW.
External Oscillator
X1
X1G0044810050_SG7050CAN_2.048_MHZ
DVDD
VCC
OUT
XTAL
OE_or_ST
GND
C1
100nF
C2
1uF
1uF not mentioned in datasheet GNDD
Data Header
DGND
J2
Data Header
Power Rails Header
J2
AGND
AVSS
AVDD
DVDD
Conn_01x08
RasPi I2C Header
J2
Conn_01x04
+3V3
GPIO2(SDA1)
GPIO3(SCL1)
DGND
ADC GPIO Header
J1
Conn_02x04_Odd_Even
GPIO4
GPIO3
GPIO2
GPIO1
R? 10k
>=10k pulldown
DGND
PIN HEADERS
Raspberry Pi 2/3 GPIO Header
Conn_02x20_Odd_Even
P1
In case we need to bypass extern reg.
Conn_01x01
+3V3_PI
+5V
GPIO2(SDA1)
GPIO3(SCL1)
GPIO4(GCLK)
GPIO17(GEN0)
GPIO27(GEN2)
GPIO22(GEN3)
GPIO10(SPI0_MOSI)
GPIO9(SPI0_MISO)
GPIO11(SPI0_SCK)
ID_SD
GPIO5
GPIO6
GPIO13(PWM1)
GPIO19(SPI1_MISO)
GPIO26
GPIO14(TXD0)
GPIO15(RXD0)
GPIO18(GEN1)(PWM0)
GPIO23(GEN4)
GPIO24(GEN5)
GPIO25(GEN6)
GPIO8(SPI0_CE_N)
GPIO7(SPI1_CE_N)
ID_SC
GPIO12(PWM0)
GPIO16
GPIO20(SPI1_MOSI)
GPIO21(SPI1_SCK)
GNDD
ID_SD and ID_SC PINS:
These pins are reserved for HAT ID EEPROM.
At boot time this I2C interface will be interrogated to look for an EEPROM that identifies the attached board and allows automagic setup of the GPIOs (and optionally, Linux drivers).
DO NOT USE these pins for anything other than attaching an I2C ID EEPROM. Leave unconnected if ID EEPROM not required.
RasPi HAT-compliant EEPROM
U?
CAT24C256
A0 A1 A2 GND VCC SDA SCL WP
GPIO2(SDA1)
GPIO3(SCL1)
R? 3.9k
R? 3.9k
R? 10k
+3V3
DGND
J?
Conn_01x02
WE Jumper
RasPi Tactile Buttons
SW?
SW_DIP_x01
DGND
D?
LED
R? 1k
RasPi Status LED
DGND
Electrodes [HIGH]/BIAS Header + filtering
J?
Conn_01x10
4.99k 1%
R?
BIASOUT
C? 4.7nF
AGND
IN8N
IN8P
IN7N
IN7P
IN6N
IN6P
IN5N
IN5P
Do Not Populate
for ADS1299-4!
Bias Signals
BIASIN
BIASOUT
BIASINV
BIASREF
C? 1.5nF
R? 1M
Feedback Elements
(ch.9.3.2.4.1)
Typ. values for example only
J?
Conn_01x02
External BIASREF circuitry?
GNDA
Post-Input filtering
(ease of measurement)
J2
J3
Conn_02x20_Odd_Even
IN8N
IN8P
IN7N
IN7P
IN6N
IN6P
IN5N
IN5P
IN4N
IN4P
IN3N
IN3P
IN2N
IN2P
IN1N
IN1P
U1
ADS1299-4PAG
AVDD@1
AVDD@2
AVDD1
DVDD
GPIO4
GPIO3
GPIO2
DOUT
GPIO1
VCAP3
SRB2
SRB1
VREFP
VCAP4
BIASINV
RESERVED
DRDY
VCAP1
VCAP2
BIASOUT
AVSS@1
AVSS@2
DGND
<-Charge pump analog supply.
Connect 4.7uF to AVSS@2, pin 58.
<-Charge pump analog ground.
VREFN
RESV1
DIN
PWDN
RESET
CLK
START
CS
SCLK
DAISY_IN
CLKSEL
BIASREF
BIASIN
GPIO10(SPI0_MOSI)
GPIO8(SPI0_CE_N)
GPIO11(SPI0_SCK)
GNDD
J?
INT_CLK
DVDD
CLKSEL
R? 10k
Pull down: DEFAULT EXT. CLK
Electrodes [LOW]/SRB Header + filtering
IN4N
IN4P
IN3N
IN3P
IN2N
IN2P
IN1N
IN1P
SRB1
SRB2
ADC Bypassing/Filtering
VREFP
VREFN
C? 10uF
C? 100nF
J? Test Point INTERNAL_VREF 4.5V
Conn_01x01
100nF not in datasheet.
VSSA
VCAP1
C? 100uF
Tantalum?
VCAP2
VCAP3
VCAP4
C? 1uF
AVDD@2
AVSS@2
Analog Power Supplies (+/-2V5, -5V)
U?
TPS60403DBVR
+5V
IN
OUT
CFLY-
CFLY+
GND
C? 10uF
C? 1uF
-5V_unreg
Test Point -5V
J?
Conn_01x01
DGND
U?
TPS72325DBVT
EN
NR
C? 2.2uF
C? 100nF
C? 10nF
AVSS
U?
TPS73225DBVT
NR/FB
AVDD
Digital Power Supply (+3V3)
U?
TPS73233DBVT
Conn_01x01
J?
<-In case we need to bypass external reg.
DVDD
Examensarbete: Mobilt EEG
John Croft
Sheet: /
File: mobilt_eeg_frontend-exjobb2018.sch
Title: Mobile EEG ADC Extension Board for Raspberry Pi 2/3 B+
Size: A2
Date: 2018-07-12
Rev: A
KiCad E.D.A. kicad (5.0.0-rc3-dev-2-g101b68b61)
Id: 1/1