

FR-4 PCB Materials

Most printed circuit boards are manufactured using glass-reinforced epoxy laminate as the substrate. While there are a wide variety of laminates available on the market, FR-4 is both versatile and well-accepted as a standard material for PCB manufacture. FR-4 functions well as an electrical insulator, and has a good strength-to-weight ratio, and is flame resistant.

The standard FR-4 material that is used in our PCBExpress® Quickturn, ValueProto® and the default material for our PCBpro® Full Feature products is a high temperature, high T_d , low CTE $150T_g$ material.

If a higher T_g material is required, we do stock a $170T_g$ version of our standard FR-4 material as well, that can be substituted in our PCBpro Full Feature and Custom Quote products (provide a readme file or a print note specifying the $170 T_g$ material). There may be a material lead time for some specific sizes or thickness, and may impact due date.

Sunstone's Standard FR-4 Material Properties

- High Glass Transition Temperature (T_g) ($150T_g$)
- High Decomposition Temperature (T_d) ($> 325^\circ C$)
- Low Coefficient of Thermal Expansion (CTE) ((3.0%-3.8%))
- Dielectric Constant (@1 GHz): 4.25-4.55
- Dissipation Factor (@ 1 GHz): 0.016
- UL rated (94V-0, CTI = 4)
- Compatible with standard and lead-free assembly.
- Laminate thickness 0.062"
- Finished Copper 1.0 oz.
- Min Trace or Space .006 in.

$150 T_g$ FR-4 material is used on all standard PCBExpress Quickturn, ValueProto and all PCBpro Full Feature orders unless another specific material or T_g is called out (PCBpro Full Feature or Custom Quote).

For more information on FR-4:

<http://en.wikipedia.org/wiki/FR-4>