

## **Gem Circuits Standard FR4 Multilayer Builds**

The following pages show some of the standard builds used at Gem Circuits for the manufacture of multilayer printed circuit boards. These standard builds can be changed without prior notice due to material or design limitations, unless the board has been clearly indicated for a specified build in your supplied information (at the time of quotation).

Builds that can be changed (whilst keeping the overall thickness and copper weights in tolerance) are called free-build constructions, and our online pricing is based on this type of multilayer. For alternative specified builds (not free-build) please use our standard quotation service, indicating any build requirements within the data or in the notes.

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**4 Layer, 1.0mm FR4 Standard build**

Layer	Material used	Thickness	Copper
L1 (Top)	Prepreg	0.18mm	35µm
L2 (Inner)			30µm
	FR4 Core	0.51mm	
L3 (Inner)	Prepreg	0.18mm	30µm
L4 (Bottom)			35µm

Finished thickness: 1.0mm ( $\pm 10\%$ )

Material used: ShengYi S1141

Glass Transition Temperature: Tg 140°

Options available for 35µm (1oz), 70µm (2oz), and 105µm (3oz)

**4 Layer, 1.2mm FR4 Standard build**

Layer	Material used	Thickness	Copper
L1 (Top)	Prepreg	0.18mm	35µm
L2 (Inner)			30µm
	FR4 Core	0.71mm	
L3 (Inner)	Prepreg	0.18mm	30µm
L4 (Bottom)			35µm

Finished thickness: 1.2mm ( $\pm 10\%$ )

Material used: ShengYi S1141

Glass Transition Temperature: Tg 140°

Options available for 35µm (1oz), 70µm (2oz), and 105µm (3oz)

**4 Layer, 1.6mm FR4 Standard build**

Layer	Material used	Thickness	Copper
L1 (Top)	Prepreg	0.18mm	35µm
L2 (Inner)			30µm
	FR4 Core	1.12mm	
L3 (Inner)	Prepreg	0.18mm	30µm
L4 (Bottom)			35µm

Finished thickness: 1.6mm ( $\pm 10\%$ )

Material used: ShengYi S1141

Glass Transition Temperature: Tg 140°

Options available for 35µm (1oz), 70µm (2oz), and 105µm (3oz)

**4 Layer, 2.0mm FR4 Standard build**

Layer	Material used	Thickness	Copper
L1 (Top)	Prepreg	0.18mm	35µm
L2 (Inner)			30µm
	FR4 Core	1.50mm	
L3 (Inner)	Prepreg	0.18mm	30µm
L4 (Bottom)			35µm

Finished thickness: 2.0mm ( $\pm 10\%$ )

Material used: ShengYi S1141

Glass Transition Temperature: Tg 140°

Options available for 35µm (1oz), 70µm (2oz), and 105µm (3oz)

**4 Layer, 2.4mm FR4 Standard build**

Layer	Material used	Thickness	Copper
L1 (Top)	Prepreg	0.18mm	35µm
L2 (Inner)			30µm
	FR4 Core	1.88mm	
L3 (Inner)	Prepreg	0.18mm	30µm
L4 (Bottom)			35µm

Finished thickness: 2.4mm ( $\pm 10\%$ )

Material used: ShengYi S1141

Glass Transition Temperature: Tg 140°

Options available for 35µm (1oz), 70µm (2oz), and 105µm (3oz)

**6 Layer, 1.6mm FR4 Standard build**

Layer	Material used	Thickness	Copper
L1 (Top)	Prepreg	0.18mm	35µm
L2 (Inner)	FR4 Core	0.33mm	30µm
L3 (Inner)	Prepreg	0.35mm	30µm
L4 (Inner)	FR4 Core	0.33mm	30µm
L5 (Inner)	Prepreg	0.18mm	30µm
L6 (Bottom)	Prepreg	0.18mm	35µm

Finished thickness: 1.6mm (±10%)

Material used: ShengYi S1141

Glass Transition Temperature: Tg 140°

Options available for 35µm (1oz), 70µm (2oz), and 105µm (3oz)