

MacroFab Stackup Report

This document contains the PCB stackups that MacroFab offers through the online platform

Board Thickness Tolerance

Thickness < 1.0mm	± 15%
1.0mm ≤ Thickness ≤ 1.6mm	± 0.15mm
Thickness > 1.6mm	± 10%

PCB FR4 Material Specifications

Board Material	TG-170
Loss Tangent @ 1MHz	0.016 - 0.020
Loss Tangent @ 1GHz	0.012 - 0.014
Dielectric constant permittivity @ 1MHz	4.3 - 4.5
Dielectric constant permittivity @ 1GHz	3.8 - 4.0
Lead Free	Yes

Soldermask Material Specifications

Type	2 Component Liquid Photoimageable Soldermask
Insulation Resistance (Initial)	2.8 x 10 ¹³ Ω
Insulation Resistance (Conditioned)	2.5 x 10 ¹² Ω

2-Layer Stackup

Outer Copper Weight	1oz (35µm)	Board Thickness	1.6	1.2	1.0	0.8
Inner Copper Weight	N/A	Soldermask	0.010			
		Copper Plating	0.025			
		Copper Foil (Layer 1)	0.018			
		Core	1.5	1.07	0.9	0.7
		Copper Foil (Layer 2)	0.018			
		Copper plating	0.025			
		Soldermask	0.010			

Outer Copper Weight	2oz (70µm)	Board Thickness	1.6	1.2	1.0	0.8
Inner Copper Weight	N/A	Soldermask	0.010			
		Copper Plating	0.025			
		Copper Foil (Layer 1)	0.045			
		Core	1.5	1.07	0.8	0.64
		Copper Foil (Layer 2)	0.045			
		Copper plating	0.025			
		Soldermask	0.010			

4-Layer Stackup

Outer Copper Weight	1oz (35µm)	Board Thickness	1.6	1.2	1.0	0.8
Inner Copper Weight	1oz (35µm)	Soldermask	0.010			
		Copper Plating	0.025			
		Copper Foil (Layer 1)	0.018			
		Pre Preg	0.23	0.15	0.23	0.13
		Copper Foil (Layer 2)	0.035			
		Core	0.93	0.7	0.38	0.38
		Copper Foil (Layer 3)	0.035			
		Pre Preg	0.23	0.15	0.23	0.13
		Copper Foil (Layer 4)	0.018			
		Copper plating	0.025			
		Soldermask	0.010			

Outer Copper Weight	2oz (70µm)	Board Thickness	1.6	1.2	1.0	0.8
Inner Copper Weight	1oz (35µm)	Soldermask	0.010			
		Copper Plating	0.025			
		Copper Foil (Layer 1)	0.045			
		Pre Preg	0.23	0.15	0.23	0.13
		Copper Foil (Layer 2)	0.035			
		Core	0.93	0.7	0.38	0.3
		Copper Foil (Layer 3)	0.035			
		Pre Preg	0.23	0.15	0.23	0.13
		Copper Foil (Layer 4)	0.045			
		Copper plating	0.025			
		Soldermask	0.010			

6-Layer Stackup							
Outer Copper Weight	1oz (35µm)		Board Thickness	1.6	1.2	1.0	0.8
Inner Copper Weight	1oz (35µm)		Soldermask	0.010			
			Copper Plating	0.025			
			Copper Foil (Layer 1)	0.018			
			Pre Preg	0.23	0.13	0.1	0.1
			Copper Foil (Layer 2)	0.035			
			Core	0.38	0.25	0.2	0.13
			Copper Foil (Layer 3)	0.035			
			Pre Preg	0.15	0.2	0.15	0.13
			Copper Foil (Layer 4)	0.035			
			Core	0.38	0.25	0.2	0.13
			Copper Foil (Layer 5)	0.035			
			Pre Preg	0.23	0.13	0.1	0.1
			Copper Foil (Layer 6)	0.018			
			Copper plating	0.025			
			Soldermask	0.010			
Outer Copper Weight	2oz (70µm)		Board Thickness	1.6	1.2	1.0	0.8
Inner Copper Weight	1oz (35µm)		Soldermask	0.010			
			Copper Plating	0.025			
			Copper Foil (Layer 1)	0.045			
			Pre Preg	0.23	0.13	0.1	0.1
			Copper Foil (Layer 2)	0.035			
			Core	0.38	0.25	0.2	0.13
			Copper Foil (Layer 3)	0.035			
			Pre Preg	0.15	0.15	0.15	0.13
			Copper Foil (Layer 4)	0.035			
			Core	0.38	0.25	0.2	0.13
			Copper Foil (Layer 5)	0.035			
			Pre Preg	0.23	0.13	0.1	0.1
			Copper Foil (Layer 6)	0.045			
			Copper plating	0.025			
			Soldermask	0.010			
8-Layer Stackup							
Outer Copper Weight	1oz (35µm)		Board Thickness	1.6	1.2	1.0	0.8
Inner Copper Weight	1oz (35µm)		Soldermask	0.010			
			Copper Plating	0.025			
			Copper Foil (Layer 1)	0.018			
			Pre Preg	0.15	0.1	0.1	0.05
			Copper Foil (Layer 2)	0.035			
			Core	0.25	0.15	0.1	0.08
			Copper Foil (Layer 3)	0.035			
			Pre Preg	0.15	0.13	0.1	0.1
			Copper Foil (Layer 4)	0.035			
			Core	0.25	0.15	0.1	0.08
			Copper Foil (Layer 5)	0.035			
			Pre Preg	0.15	0.13	0.1	0.1
			Copper Foil (Layer 6)	0.035			
			Core	0.25	0.15	0.1	0.08
			Copper Foil (Layer 7)	0.035			
			Pre Preg	0.15	0.1	0.1	0.05
			Copper Foil (Layer 8)	0.018			
			Copper plating	0.025			
			Soldermask	0.010			
Outer Copper Weight	2oz (70µm)		Board Thickness	1.6	1.2	1.0	0.8
Inner Copper Weight	1oz (35µm)		Soldermask	0.010			
			Copper Plating	0.025			
			Copper Foil (Layer 1)	0.045			
			Pre Preg	0.15	0.1	0.1	0.05
			Copper Foil (Layer 2)	0.035			
			Core	0.2	0.15	0.1	0.08
			Copper Foil (Layer 3)	0.035			
			Pre Preg	0.15	0.13	0.1	0.05
			Copper Foil (Layer 4)	0.035			

		Core	0.25	0.15	0.1	0.08
		Copper Foil (Layer 5)	0.035			
		Pre Preg	0.15	0.13	0.1	0.05
		Copper Foil (Layer 6)	0.035			
		Core	0.2	0.15	0.1	0.08
		Copper Foil (Layer 7)	0.035			
		Pre Preg	0.15	0.1	0.1	0.05
		Copper Foil (Layer 8)	0.045			
		Copper plating	0.025			
		Soldermask	0.010			
10-Layer Stackup						
Outer Copper Weight	1oz (35µm)	Board Thickness	1.6			
Inner Copper Weight	1oz (35µm)	Soldermask	0.010			
		Copper Plating	0.025			
		Copper Foil (Layer 1)	0.018			
		Pre Preg	0.127			
		Copper Foil (Layer 2)	0.035			
		Core	0.15			
		Copper Foil (Layer 3)	0.035			
		Pre Preg	0.127			
		Copper Foil (Layer 4)	0.035			
		Core	0.15			
		Copper Foil (Layer 5)	0.035			
		Pre Preg	0.127			
		Copper Foil (Layer 6)	0.035			
		Core	0.15			
		Copper Foil (Layer 7)	0.035			
		Pre Preg	0.127			
		Copper Foil (Layer 8)	0.035			
		Core	0.15			
		Copper Foil (Layer 9)	0.035			
		Pre Preg	0.127			
		Copper Foil (Layer 10)	0.018			
		Copper plating	0.025			
		Soldermask	0.010			