Teflon woven glass fabric copper-clad laminates (F4B-1/2)

F4B-1/2 is laminated with excellent material according to the requirements of microwave circuit in electrical performance. It is a kind of laminate of microwave PCB due to its excellent electrical performance and higher mechanical strength.

Technical Specifications :

Appearance	Meet the specification requirements for the laminate of microwave PCB by National and Military Standards.				
Types	F4B255	F4B265			
Dielectric Constant	2.55	2.65			
Dimension （mm）	300×250 380×350 440×550 500×500 460×610 600×500 840×840 1200×1000 1500×1000				
	For special dimension，customized laminates is available.				
Copper	0.035μm，0.018μm				

thickness						
Thickness and Tolerance(mm)	Laminate thickness	0.17、0.25	0.5、0.8、1.0	1.5、2.0	3.0、4.0、5.0	
	Tolerance	±0.025	±0.05	±0.05	±0.09	
	The laminate thickness includes the copper thickness. For special dimension，customized laminates is available.					

Mechanical Strength	Warp	Thickness（mm）	Maximum Warp		
			Original board	Single side	Double side
		0.25～0.5	0.030	0.050	0.025
		0.8～1.0	0.025	0.030	0.020
		1.5～2.0	0.020	0.025	0.015
		3.0～5.0	0.015	0.020	0.010
	Cutting/punching Strength	Thickness□1mm，no burrs after cutting，minimum space between two punching holes is 0.55mm，no delamination.			
		Thickness□1mm，no burrs after cutting，minimum space between two punching holes is 1.10mm，no delamination.			

	Peel strength (1oz copper)	Normal state : ≥15N/cm ; No bubble、delamination、peel strength≥12N/cm (in the constant humidity and temperature、and keep in the melting solder of 260℃±2℃ for 20 seconds) .
Chemical Property	According to the properties of laminate , the chemical etching method for PCB can be used. The dielectric properties of laminate are not changed. The plating through hole can be done ,but the sodium treatment or the plasma treatment must be used.	

Electrical Property	Name	Test condition	Unit	Value
	Density	Normal state	g/ cm3	2.2 ~ 2.3
	Moisture Absorption	Dip in the distilled water of 20±2℃ for24 hours	%	≤0.1
	Operating Temperature	High-low temperature chamber	℃	-50℃ ~ +260℃
	Thermal Conductivity		W/m/k	0.3
	CTE	0 ~ 100℃	ppm/℃	16 (x)

	(typical)				21 (y)
					186 (z)
	Shrinkage Factor	2 hours in boiling water		%	☐ 0.0002
	Surface Resistivity	500V DC	Normal state	M·Ω	≥1×104
			Constant humidity and temperature		≥5×103
	Volume Resistivity	Normal state		MΩ.cm	≥1×106
		Constant humidity and temperature			≥9×104
	Pin Resistance	500VDC	Normal state	MΩ	≥5×104
			Constant humidity and temperature		≥5×102
	Surface dielectric strength	Normal state		d=1mm (Kv/mm)	≥1.2
		Constant humidity and temperature			≥1.1
	Dielectric	10GHZ		εr	2.55，2.65

	Constant			(±2%)
	Dissipation Factor	10GHZ	tgδ	≤1×10-3

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