

## Teflon woven glass fabric with ceramic membrane copper-clad laminates F4BM-2-A

F4BM-2-A is laminated by laying up of the imported varnished glass cloth with the Nano-ceramic membrane and Teflon resin , according to the scientific formulation and strict technology process. This product takes advantages over F4BM series in the electrical performance and the surface insulation resistance stability.

Technical Specifications :

Appearance	Meet the specification requirements for the laminate of microwave PCB by National and Military Standards.					
Types	F4BM-2-A255	F4BM-2-A262	F4BM-2-A275	F4BM-2-A285	F4BM-2-A294	F4BM-2-A300
Dimension ( mm )	550×440	500×500	600×500	650×500		
	1000×850	1100×1000	1220×1000	1500×1000		
	For special dimension , customized laminates is available.					
Thickness and	Laminate thickness	0.254	0.508	0.762	0.787	1.016
Tolerance( mm )	Tolerance	±0.025	±0.05	±0.05	±0.05	±0.05

	Laminate thickness	1.27	1.524	2.0	3.0	4.0
	Tolerance	±0.05	±0.05	±0.075	±0.09	±0.1
	Laminate thickness	5.0	6.0	9.0	10.0	12.0
	Tolerance	±0.1	±0.12	±0.18	±0.18	±0.2
Mechanical Strength	Cutting/punching	Thickness□1mm , no burrs after cutting , minimum space between two punching holes is 0.55mm , no delamination.				
	Strength	Thickness□1mm , no burrs after cutting , minimum space between two punching holes is 1.10mm , no delamination.				
	Peel strength ( 1oz copper )	Normal state : ≥16N/cm ; No bubble、delamination、 peel strength≥12N/cm ( in the constant humidity and temperature、 and keep in the melting solder of 265°C±2°C 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.					
	Name	Test condition		Unit	Value	

Electrical Property	Density	Normal state	g/ cm <sup>3</sup>	2.1 ~ 2.35
	Moisture Absorption	Dip in the distilled water of 20±2°C for 24 hours	%	≤0.07
	Operating Temperature	High-low temperature chamber	°C	-50°C ~ +260°C
	Thermal Conductivity		W/m/k	0.45~0.55
	CTE ( typical )	-55 ~ 288°C ( ε <sub>r</sub> : 2.5~2.9 )	ppm/°C	16 ( x )
				20 ( y )
				170 ( z )
	CTE ( typical )	-55 ~ 288°C ( ε <sub>r</sub> : 2.9~3.0 )	ppm/°C	12 ( x )
				15 ( y )
				90 ( z )
Shrinkage Factor	2 hours in boiling water	%	□ 0.0002	

Surface Resistivity	500V DC	Normal state	M·Ω	≥4×10 <sup>5</sup>
		Constant humidity and temperature		≥6×10 <sup>4</sup>
Volume Resistivity	Normal state		MΩ.cm	≥6×10 <sup>6</sup>
	Constant humidity and temperature			≥1×10 <sup>5</sup>
Surface dielectric strength	Normal state		d=1mm ( Kv/mm )	≥1.2
	Constant humidity and temperature			≥1.1
Dielectric Constant	10GHZ		ε <sub>r</sub>	2.55±0.05、2.62±0.05
				2.75±0.05、2.85±0.05
				2.94±0.05、3.0±0.05
Thermal Coefficient of ε <sub>r</sub> ( PPM/°C )	ε <sub>r</sub>		Value	
-50□150°C	2.55		-100	
	2.62		-90	
	2.75		-90	

		2.85	-85		
		2.94	-85		
		3.0	-75		
	Dissipation Factor	10GHZ	tgδ	2.55□2.85	≤1.5×10-3
			2.94□3.0	≤2.0×10-3	
UL Flammability Rating	94 V-0				



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