

Teflon woven glass fabric copper-clad laminates with high permittivity F4BMX-1/2

This product is formulated with varnished glass cloth, prepreg and Teflon resin through scientific formulation and strict technology procedures. It takes some advantages over F4B series in electrical performance, including wider range of dielectric constant, low dielectric loss angle tangent, increased resistance and more stable in performance. Compared with the F4BM, using the pure imported woven glass as the main material of the PTFE microwave laminates, the consistency of the laminate various properties can be insured

Technical Specifications

Appearance	Meet the specification requirements for microwave PCB baseplate specified in National and Military Standards.					
Dimensions (mm)	F ₄ BMX217	F ₄ BMX220	F ₄ BMX245	F ₄ BMX255	F ₄ BMX265	F ₄ BMX275
	F ₄ BMX285	F ₄ BMX295	F ₄ BMX300	F ₄ BMX320	F ₄ BMX338	F ₄ BMX350
	For special dimensions, customized lamination is available.					
Thickness and tolerance (mm)	Plate thickness	0.25	0.5	0.8	1.0	
	Tolerance	±0.02~±0.04				
	Plate thickness	1.5	2.0	3.0	4.0	5.0
	Tolerance	±0.05~±0.07				
	Plate thickness includes the copper thickness. For special dimensions, customized lamination is available.					

Electrical properties

Names	Test conditions	Unit	Specifications
Gravity	Normal state	g/cm ³	2.2~2.3
Water absorption rate	Dip in distilled water of 20±2°C for 24 hours.	%	≤0.02
Operating temperature	high-low temperature chamber	°C	-50~+260
Thermal conductivity coefficient		Kcal /m .h.°C	0.8
Coefficient of thermal expansion	Temperature rise of 90°C per hour	Coefficient of thermal expansion×1	≤5×10 ⁻⁵
Shrinkage factor	Two hours in boiling water	%	0.0002
Surface insulation resistance	500V DC	Normal state	≥1×10 ⁵
		Constant humidity and temperature	≥1×10 ³
volume resistance		Normal state	≥1×10 ⁶
		Constant humidity and temperature	≥1×10 ⁵
Pin resistance	500V DC	Normal state	M.Ω

		Constant humidity and temperature		$\geq 1 \times 10^3$
Surface dielectric strength	Normal state		$\delta=1\text{mm(kV/mm)}$	≥ 1.2
	Constant humidity and temperature			≥ 1.1
Permittivity	10GHz		ϵ_r	2.17,2.20,2.45, 2.55,2.65,2.75, ($\pm 2\%$) 2.85,2.95,3.00, 3.20,3.38,3.50.
Dielectric loss angle tangent	10GHz		$\text{tg}\delta$	$\leq 7 \times 10^{-4}$

		Plate thickness (mm)	Maximum angularity mm/mm		
			Original board	Single-sided board	Double-sided board
Angularity		0.25~0.5	0.03	0.05	0.025
		0.8~1.0	0.025	0.03	0.020
		1.5~2.0	0.020	0.025	0.015
		3.0~5.0	0.015	0.020	0.010
	Cutting/ punching property	For the plate of <1mm, no burrs after cutting, minimum space between two punching holes is 0.55mm, no separation. For the plate of $\geq 1\text{mm}$, no burrs after cutting, minimum space between two punching holes is 1.10mm, no separation.			
Mechanical properties	Peel strength	In normal state: $\geq 18\text{N/cm}$; No bubbling, no separation and peel strength $\geq 15\text{N/cm}$ when in the environment of constant humidity and temperature and kept in the melting solder of $260^\circ\text{C} \pm 2^\circ\text{C}$ for 20 seconds.			
Chemical properties	According to different properties of baseplates, the chemical etching method for PCB can be used for the circuit processing, the dielectric properties of materials are not changed and the holes can be metallized.				

