F4BTMS-2 Modified woven fabric glass Teflon copper-clad laminates with ceramic filler

F4BTMS-2 is the PTFE composites ，laminated by the Nano-ceramic filled reinforced with the ultra thin woven fiberglass，according to the scientific formulation and strict process control. On the basis of the original PTFE copper-clad laminates，the material formula and manufacturing process were improved. The content of fiberglass is very small ,which can replace the same type of foreign high frequency circuit materials.

Appearance	Meet the specification requirements for the laminate of microwave PCB by National and Military Standards.							
Types	F4BTMS-2							
Dielectric Constant	2.2±0.03 2.65±0.04 2.94±0.04 3.0±0.04							
Dimension(mm)	305X460 460X610 500X600 460X1220							
	For special dimension，customized laminates is available.							
Thickness and Tolerance(mm)	Dielectric thickness	0.127	0.254	0.508	0.762	1.016	1.524	2.29
	Tolerance	±0.015	±0.02	±0.03	±0.04	±0.05	±0.05	±0.08
	Special thickness can be customized.							
Optional copper foil	Thickness: 0.5 OZ 、1OZ							
	Type: ED、VLP foil、HVLP foil、50 Ωresistive foil							

Mechanical Strength	Peel strength (1oz copper) >15N/cm
Thermal stress	After tin dipping, 280°C, 10s, ≧3times，no de-lamination and blister.
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.

Electrical Property	Name	Test condition		Unit	Value		
	Density	DK2.2	Normal atmospheric temperature	g/ cm3	2.18		
		DK2.65	Normal atmospheric temperature	g/ cm3	2.25		
		DK2.94、3.0	Normal atmospheric temperature	g/ cm3	2.3		
	Moisture Absorption	Dip in the distilled water of 20±2°C for 24 hours		%	0.02		
	Operating Temperature	High-low temperature chamber		°C	-50~+260		
	Thermal Conductivity			W/m/k	0.72		
	CTE (typical)	-55 o~288oC DK2.2		ppm/oC	X	Y	Z
					15	16	35
		-55 o~288oC DK2.65		ppm/oC	X	Y	Z

					12	13	25
		-55 o~288oC DK2.94、3.0		ppm/oC	X	Y	Z
					10	11	22
	Shrinkage Factor	2 hours in boiling water		%	<0.0002		
	Surface Resistivity	500V DC	Normal state	M.Ω	≥1×107		
			Constant humidity and temperature		≥1×106		
	Volume Resistivity	Normal state		MΩ.cm	≥1×108		
		Constant humidity and temperature			≥1×107		
	Thermal Coefficient of εr	-50 o~150oC		PPM/ oC	-20		
	Dissipation Factor DK2.2/2.65/2.94/3.0	10GHZ		Df	0.0011		
	UL Flammability Rating	94V-0					

Features:

1. Excellent dielectric constant tolerance and consistency，low dissipation factor;

2. The coefficient of dielectric constant and dielectric loss changing with temperature is smaller ，and the frequency stability is better.

3. The coefficient of thermal expansion in X / Y / Z direction is reduced， and the coefficient of thermal expansion in X / Y direction is consistent.

4. The thermal conductivity is increasing;

5. Good dimensional stability;

6. Good appearance and smooth surface;

7. Suitable for high frequency multilayer lamination; 8. Excellent heat resistance and adhesion.

Application:

Aerospace devices、High reliability equipment、 Military radar、 Phased array antenna、 Feed network antenna、Satellite communication equipment、Passive components、Base station antennas、Ground and air radar systems、GPS antenna、Power backplane、Multilayer PCB、and Bunching network.