

Teflon ceramic dielectric substrate TF-1/2

TF-1/2 is a kind of circuit laminate based on the Teflon (which have excellent microwave and temperature resistance performance) compound with ceramic. This kind of laminate can be comparable with the products (such as RT/duroid 6006/6010/TMM10) from Rogers Corporation in United State of America.

The advantage of design for microwave circuit using TF-1/2 here :

(1) The operating temperature is much higher than TP-series. It is applicable to long-term operation within temperature ranger of $-80^{\circ}\text{C} \sim +200^{\circ}\text{C}$, and can be used for wave-welding and melt-back welding.

(2) Used for the manufacturing of the microwave and millimeter wave printed circuit board .

(3) Better radiation performance , $30\text{min}20\text{rad}/\text{cm}^2$.

(4) Dielectric property is stable and has a slight variation with the rise of temperature and frequency. ($\epsilon_r=3.0 ; 6.0 ; 9.2 ; 9.6 ; 10.2 ; 16 ; 20 ;$

22)

Technical Specifications :

Appe	Meet the general requirement for laminate of microwave PCB.
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aran	150×150 250×250			
ce	Thickness and tolerance are same as TP-series. For special dimension , customized laminates is available.			
Dime	Peel strength	≥ 8N/cm		
nsio	Warp	Same as TP-series.		
n	Cutting/punching	No burrs after cutting , minimum space between two punching holes is 0.55mm.		
(m	Strength			
m)	According to the properties of laminate ,the chemical etching method for PCB can be used. The dielectric properties of laminate are			
Mec	not changed. The plating through hole can be done.			
hani	Name	Test condition	Unit	Value
cal	Density	Normal state	g/ cm ³	2.0 ~ 3.5
Stre	Moisture Absorption	Dip in the distilled water of 20±2°C for24 hours	%	≤0.02
ngth	Operating Temperature	High-low temperature chamber	°C	-80 °C ~
Che				+260°C
mical	Thermal Conductivity		W/m/k	0.5

Property	CTE	-55~288°C		ppm/°C	50 (x)
					50 (y)
					60 (z)
Electrical	Shrinkage Factor	2 hours in boiling water		%	0.0001
Property	Surface Resistivity	50	Normal state	M·Ω	≥1×10 ⁵
		0	Constant humidity and temperature		≥1×10 ³
	Volume Resistivity	Normal state		MΩ.cm	≥1×10 ⁵
		Constant humidity and temperature			≥1×10 ⁴
	Pin Resistance	50	Normal state	MΩ	≥1×10 ⁶
		0	Constant humidity and temperature		≥1×10 ⁴
		V			

		D			
		C			
	Surface dielectric strength	Normal state		d=1mm	≥1.6
		Constant humidity and temperature		(Kv/m m)	≥1.4
	Dielectric Constant	10GHZ		εr	3.0 ; 6.0 ; 9.2 ; 9.6 ; 10.2 ; 16 ; 20 ; 22 (±2%) (can be customized)

	Dissipation Factor	10GHZ	tg δ (3~11)	$\leq 1 \times 10^{-3}$
			tg δ (12~2)	$\leq 1.5 \times 10^{-3}$



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