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：

- The operating temperature is much higher than TP-series. It is applicable to long-term operation within temperature ranger of -80℃～+200℃， and can be used for wave-welding and melt-back welding.
- Used for the manufacturing of the microwave and millimeter wave printed circuit board.
- Better radiation performance，30min20rad/cm^2.
- Dielectric property is stable and has a slight variation with the rise of temperature and frequency.(ε r=3.0, 6.0, 9.2, 9.6, 10.2, 16, 20, 22)

<table>
<tr><td>Appearance</td><td colspan="4">Meet the general requirement for laminate of microwave PCB.</td></tr>
<tr><td>Dimension（mm）</td><td colspan="4">150×150　250×250</td></tr>
<tr><td rowspan="5">Mechanical Strength

Chemical Property

Electrical Property</td><td colspan="4">Thickness and tolerance are same as TP-series. For special dimension，customized laminates is available.</td></tr>
<tr><td colspan="2">Peel strength</td><td colspan="2">≥ 8N/cm</td></tr>
<tr><td colspan="2">Warp</td><td colspan="2">Same as TP-series.</td></tr>
<tr><td colspan="2">Cutting/punching

Strength</td><td colspan="2">No burrs after cutting，minimum space between two punching holes is 0.55mm.</td></tr>
<tr><td colspan="4">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.</td></tr>
<tr><td></td><td>Name</td><td>Test condition</td><td>Unit</td><td>Value</td></tr>
<tr><td></td><td>Density</td><td>Normal state</td><td>g/ cm3</td><td>2.0～3.5</td></tr>
<tr><td></td><td>Moisture Absorption</td><td>Dip in the distilled water of 20±2℃ for24 hours</td><td>%</td><td>≤0.02</td></tr>
<tr><td></td><td>Operating Temperature</td><td>High-low temperature chamber</td><td>℃</td><td>-80℃～+260℃</td></tr>
<tr><td></td><td>Thermal Conductivity</td><td></td><td>W/m/k</td><td>0.5</td></tr>
<tr><td rowspan="2"></td><td rowspan="2">CTE</td><td rowspan="2">-55~288℃</td><td rowspan="2">ppm/℃</td><td>50（x）</td></tr>
<tr><td>50（y）</td></tr>
</table>

					60（z）
	Shrinkage Factor	2 hours in boiling water		%	0.0001
	Surface Resistivity	500V DC	Normal state	M・Ω	≥1×105
			Constant humidity and temperature		≥1×103
	Volume Resistivity	Normal state		MΩ.cm	≥1×105
		Constant humidity and temperature			≥1×104
	Pin Resistance	500VDC	Normal state	MΩ	≥1×106
			Constant humidity and temperature		≥1×104
	Surface dielectric strength	Normal state		d=1mm （Kv/mm）	≥1.6
		Constant humidity and temperature			≥1.4
	Dielectric Constant	10GHZ		ε r	3.0；6.0；9.2 ；9.6 ； 10.2； 16；20；22（±2%）（can be customized）
	Dissipation	10GHZ		tg δ （3~11）	