F4BM-1/2 Woven-glass PTFE Copper-clad Substrate with a Wide Range of Dielectric Constant

This product is made from E-grade woven-glass,half solidification piece and TPFE resin with scientific compound by way of strict press processes.It is dielectric constant goes on over a wide range.

※**Technical Specifications:**

1、Exterior Looks:In conformity to the exterior looks,performances of microwave printed-circuit substrate materials specified by both the National and Milirary Standards.

2、Types：F4BM220, F4BM255, F4BM265, F4BM300 and F4BM350 where 220,255,265,300 and 350 indicate the dielectric constants2.20,2.55,2.65,3.0 and 3.50 respectively.

3、Dimensions(mm):300×250,350×380,500×500,600×500,840×840,840×1200

4、Thickness and Tolerance:

Thickness(mm):0.25，0.5，0.8，1.0 Tolerance(mm):±0.02～±0.04

Thickness(mm):1.5，2.0，3.0，4.0，5.0 Tolerance(mm):±0.05～±0.07

5、Mechanical Properties

a. Flexibility Factory:

Thickness(mm)	**Maxi am Flexibility Factor(mm/mm)**		
	Laminate Board With smooth Surfaace	**Single-sided Copper-clad**	**Double-sided Copper-clad**
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

b. Shearing and punching Properties:

Shearing: ＜1mm thickness without burrs after shearing, the minimum separation between two holes punched being 0.55without peeling off.

≥1mm thickness without burrs after，the minimum separation between two holes punched being 1.10 without peeling off.

c.Copper Peel Strength: ≥15N/cm(in normal condition).

≥12N/cm（being Kept in constant damp and hot and 260℃±2℃ solder conditions for 20seconds without blisters and peeling off）

d.Chemical Properties:Printed-circuits made by photo-fabrication with the performance of the dielectric materials of the substrate unchanged and moralizing holes process ability.

e.Physical and Electrical Properties:

Number	**Item**	**Test Condition**	**Unit**	**Target value**
1	Gravity	In normal	g/㎝²	2.2～2.3
2	Water Absorption	Soaking in Distilled water of 20±2℃ for 24 hours.	%	≤0.02
3	Operating Temperature	High AND Low Temperature Oven	℃	-50～+260
4	Heat Conduction Coefficient		Kcal/m.hour℃	0.8
5	Linear Expansion Coefficient	Arise of 96℃ in Temperature/hour	×1	≤5×10-5
6	Shrinkage	To be boiled in Boiling water for 2 hors.	%	0.0002

<table>
<tr><td rowspan="2">7</td><td rowspan="2">Surface Insulation Resistance</td><td rowspan="2">500V direct current</td><td>normal</td><td rowspan="2">M.Ω</td><td>≥1×10-4</td></tr>
<tr><td>const damp and hot</td><td>≥1×10-3</td></tr>
<tr><td rowspan="2">8</td><td rowspan="2">Bulk Resistance</td><td colspan="2">In normal conditio</td><td rowspan="2">MΩ.cm</td><td>≥1×10-6</td></tr>
<tr><td colspan="2">const damp and hot</td><td>≥1×10-5</td></tr>
<tr><td rowspan="2">9</td><td rowspan="2">Resistance Between Plugs</td><td rowspan="2">500V direct current</td><td>In normal conditio</td><td rowspan="2">MΩ</td><td>≥1×10-5</td></tr>
<tr><td>In constant damp condition</td><td>≥1×10-3</td></tr>
<tr><td rowspan="2">10</td><td rowspan="2">Surface Electric Strength</td><td colspan="2">In normal conditio</td><td rowspan="2">δ=1mm(kv/mm)</td><td>≥1.2</td></tr>
<tr><td colspan="2">In constant damp condition</td><td>≥1.1</td></tr>
<tr><td>11</td><td>Dielectric Constant</td><td colspan="2">10GHz</td><td>εr</td><td>2.20
2.55
2.65 (±2%)
3.0
3.5</td></tr>
<tr><td>12</td><td>Dielectric Constant Tangent</td><td colspan="2">10GHz</td><td>tgδ</td><td>≤1×10-3</td></tr>
</table>