

F4BK Woven-glass PTFE Copper-clad Substrate with a Wide Range of Dielectric Constant

This product is made from E-grade woven-glass and TPF E 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 Military Standards.
2. Types : F4BK225, F4BK265 and F4BK350 where 225, 265 and 350 indicate the dielectric constants 2.25, 2.65 and 3.50 respectively.
3. Dimensions(mm): 300×250, 350×380, 500×500, 600×500, 840×840
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 Factor:

Thickness(mm)	Maximum Flexibility Factor(mm/mm)		
	Laminate Board With smooth Surface	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 0.55 without peeling off.

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

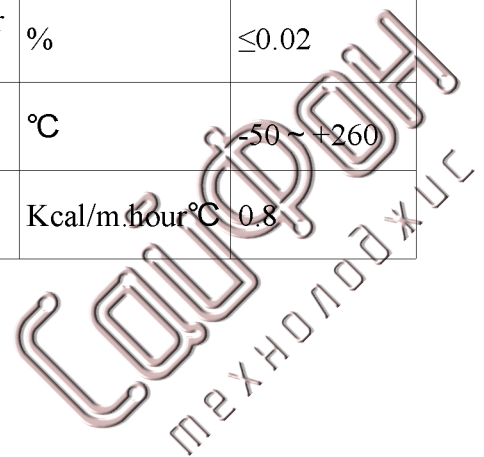
c. Copper Peel Strength: ≥15N/cm (in normal condition).

≥12N/cm (being Kept in constant damp and hot and 260°C±2°C 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/cm ²	2.2 ~ 2.3
2	Water Absorption	Soaking in Distilled water of 20±2°C for 24 hours.	%	≤0.02
3	Operating Temperature	High AND Low Temperature Oven	°C	-50 ~ +260
4	Heat Conduction Coefficient		Kcal/m.hour°C	0.8



5	Linear Expansion Coefficient	Arise of 96°C in Temperature/hour		×1	$\leq 5 \times 10^{-5}$
6	Shrinkage	To be boiled in Boiling water for 2 hors.		%	0.0002
7	Surface Insulation Resistance	500V direct current	normal	M.Ω	$\geq 1 \times 10^{-4}$
			const damp and hot		$\geq 1 \times 10^{-3}$
8	Bulk Resistance	In normal conditio		MΩ.cm	$\geq 1 \times 10^{-6}$
		const damp and hot			$\geq 1 \times 10^{-5}$
9	Resistance Between Plugs	500V direct current	In normal conditio	MΩ	$\geq 1 \times 10^{-5}$
			In constant damp condition		$\geq 1 \times 10^{-3}$
10	Surface Electric Strength	In normal conditio		$\delta = 1 \text{ mm (kv/m m)}$	≥ 1.2
		In constant damp condition			≥ 1.1
11	Dielectric Constant	10GHz		ϵ_r	2.55 2.65 3.0 3.5 (±2%)
12	Dielectric Constant Tangent	10GHz		tgδ	$\leq 1 \times 10^{-3}$