

## KB-6150 / 6160 (ANSI: FR-4)

## Unclad Laminates / 环氧玻纤布无铜板

## Features 特点

- 无覆铜 FR-4 纤维布板 (光板)  
FR-4 without copper foil cladding
- 良好的厚度均匀性  
Excellent thickness uniformity
- 兼容紫外光阻挡及光学自动检查功能 (有要求时)  
UV Blocking and AOI compatible (while having requirements)
- 耐热性能和机械性能与普通 FR-4 相同  
Heat resistance and mechanical properties are similar to normal FR-4
- 符合 IPC-4101C 的规范要求  
IPC-4101C specification is applicable

## 应用领域

## Applications

- 补强板、电位器、电阻片等
- Reinforcement laminate, Potentiometer, Resistance etc

## General Properties 一般特性

Test Item 测试项目	Unit 单位	Test Method (IPC-TM-650) 测试方法	Test Condition 处理条件	Specification (IPC-4101C) 规格值	Typical Value 典型值
Bow / Twist 弯弓度/翘曲度	%	2.4.22.1	A	≤ 1.0	0.12 / 0.15
Flexural Strength 抗弯强度	N/mm <sup>2</sup>	2.4.4	Warp	≥415	565
			Fill	≥345	415
Flammability 燃烧性	Rating	UL94	UL94	UL94 V-0	V-0
Glass Transition (Tg) 玻璃化转变温度	°C	2.4.25	E-2/105 DSC	≥130	134
Surface Resistivity 表面电阻	MΩ	2.5.17.1	C-96/35/90	≥1.0×10 <sup>4</sup>	1.0×10 <sup>6</sup>
Volume Resistivity 体积电阻	MΩ-cm	2.5.17.1	C-96/35/90	≥1.0×10 <sup>6</sup>	1.0×10 <sup>8</sup>
Dielectric Constant 介电常数	—	2.5.5.2	Etched/@1 MHZ	≤5.4	4.58
Loss Tangent 介质损耗	—	2.5.5.2	Etched/@1 MHZ	≤0.035	0.022
Arc Resistance 耐电弧性	Sec	2.5.1	D-48/50+D-0.5/23	≥60	125
Moisture Absorption 吸水率	%	2.6.2.1	D-24/23	≤0.35(min0.51)	0.21
				≤0.80(max0.51)	0.23

Remarks: Specimen Thickness: 1.6 mm 样品厚度: 1.6 mm

A = Keep the specimen originally without any process 保持原样,不作处理

C = Temperature and humidity conditioning 在恒温恒湿的空气中处理

D = Immersing in distilled water with temperature control 浸在恒温的水中处理

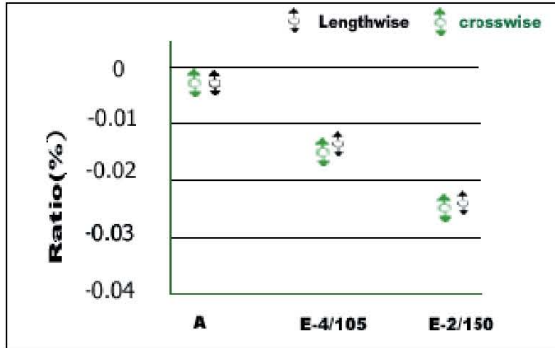
E = Temperature conditioning 在恒温的空气中处理

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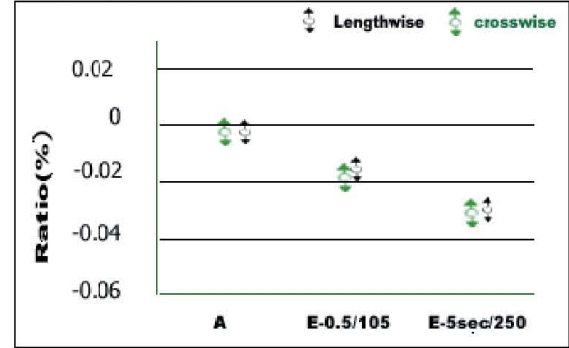
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#### Speciality Chart 板材特性图

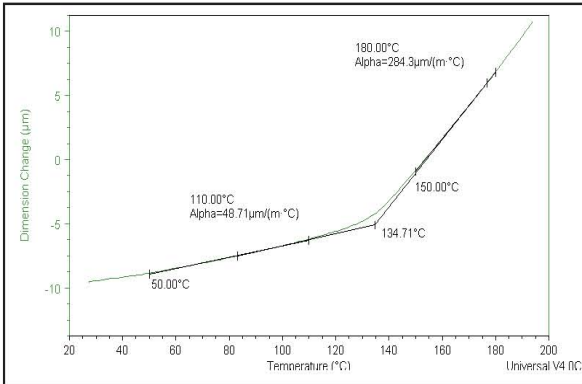
##### Dimensional stability 尺寸稳定性



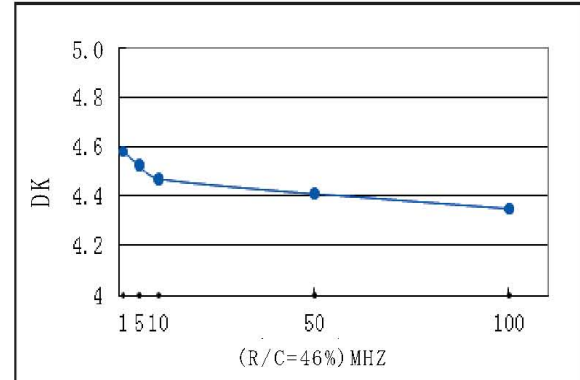
##### Dimensional stability-PCB process (size:360\*310mm)



##### Thermal expansion of Z-direction (test by TMA)



##### Dielectric constant 介电常数



#### Purchasing Information 采购信息

Base Color 基材颜色	Thickness 厚度	Regular Size (mm) 常规尺寸
Nature 自然色 Blue 蓝色 Black 黑色 Yellow 黄色	0.1mm ~ 3.2mm	915*1220mm (36" * 48") 1020*1220mm (40" * 48") 1067*1220mm (42" * 48")

Note: Other sheet size and thickness could be available upon request.

可根据客户要求提供其它尺寸和厚度。