

### KB-6167F (ANSI: FR-4)

### 覆铜箔环氧玻纤布层压板

#### General Properties 一般特性

| Test Item<br>测试项目                 | Unit<br>单位        | Test Method<br>(IPC-TM-650)<br>测试方法 | Test Condition<br>处理条件           | Specification<br>(IPC-4101C/126)<br>规格值 |                      | Typical Value<br>典型值 |                     |
|-----------------------------------|-------------------|-------------------------------------|----------------------------------|---|----------------------|----------------------|---------------------|
|                                   |                   |                                     |                                  | Thk < 0.51mm                            | Thk ≥ 0.51mm         | Thk < 0.51mm         | Thk ≥ 0.51mm        |
| Peel Strength (1 oz.)<br>铜箔剥离强度   | N/mm              | 2.4.8                               | 125°C                            | ≥0.70                                   | ≥0.70                | 1.05                 | 1.13                |
|                                   |                   |                                     | Float 288°C/ 10 Sec              | ≥0.80                                   | ≥1.05                | 1.22                 | 1.39                |
|                                   |                   |                                     | After process solution           | ≥0.55                                   | ≥0.80                | 0.87                 | 0.96                |
| Flammability<br>燃烧性               | Rating            | UL94                                | E-24/23                          | UL94 V-0                                |                      | V-0                  |                     |
| Thermal stress<br>热应力             | Cycles            | 2.4.13.1                            | Float 288°C/10Sec unetched       | ≥3                                      |                      | 15                   |                     |
| Glass Transition (Tg)<br>玻璃化转变温度  | °C                | 2.4.25                              | E-2/105 DSC                      | ≥170                                    |                      | —                    | 174.5               |
| Surface Resistivity<br>表面电阻       | MΩ                | 2.5.17.1                            | C-96/35/90                       | ≥1.0×10 <sup>4</sup>                    | —                    | 2.9×10 <sup>7</sup>  | —                   |
|                                   |                   |                                     | After moisture resistance        | —                                       | ≥1.0×10 <sup>4</sup> | —                    | 3.0×10 <sup>7</sup> |
|                                   |                   |                                     | At elevated temperature E-24/125 | ≥1.0×10 <sup>3</sup>                    | ≥1.0×10 <sup>3</sup> | 4.8×10 <sup>7</sup>  | 4.1×10 <sup>7</sup> |
| Volume Resistivity<br>体积电阻        | MΩ-cm             | 2.5.17.1                            | C-96/35/90                       | ≥1.0×10 <sup>6</sup>                    | —                    | 3.0×10 <sup>10</sup> | —                   |
|                                   |                   |                                     | After moisture resistance        | —                                       | ≥1.0×10 <sup>4</sup> | —                    | 3.4×10 <sup>7</sup> |
|                                   |                   |                                     | At elevated temperature E-24/125 | ≥1.0×10 <sup>3</sup>                    | ≥1.0×10 <sup>3</sup> | 5.1×10 <sup>10</sup> | 1.3×10 <sup>8</sup> |
| Flexural Strength<br>抗弯强度         | N/mm <sup>2</sup> | 2.4.4                               | Warp                             | —                                       | ≥415                 | —                    | 575                 |
|                                   |                   |                                     | Fill                             | —                                       | ≥345                 | —                    | 450                 |
| Dielectric Breakdown<br>介电击穿      | kV                | 2.5.6                               | D-48/50+D0.5/23                  | —                                       | ≥40                  | —                    | 60                  |
| Dielectric Strength<br>介电强度       | kV/mm             | 2.5.6.2                             | D-48/50+D0.5/23                  | ≥29                                     | —                    | 45                   | —                   |
| Dielectric Constant<br>介电常数       | —                 | 2.5.5.2                             | Etched/@1 MHZ                    | ≤5.4                                    |                      | 4.5                  | 4.8~5.0             |
| Loss Tangent<br>介电损耗              | —                 | 2.5.5.2                             | Etched/@1 MHZ                    | ≤0.035                                  |                      | 0.017                |                     |
| Arc Resistance<br>耐电弧性            | Sec               | 2.5.1                               | D-48/50+D-0.5/23                 | ≥60                                     |                      | 125                  |                     |
| Water Absorption<br>吸水率           | %                 | 2.6.2.1                             | D-24/23                          | —                                       | ≤0.5                 | 0.080                | 0.082               |
| CTE/ Z-Axis Expansion<br>Z-轴热膨胀系数 | ppm/°C            | 2.4.24                              | Alpha 1                          | —                                       | ≤60                  | —                    | 49                  |
|                                   |                   |                                     | Alpha 2                          | —                                       | ≤300                 | —                    | 208                 |
|                                   | %                 |                                     | 50-260°C                         | —                                       | ≤3.0                 | —                    | 2.7                 |
| T-260                             | min               | 2.4.24.1                            | TMA                              | —                                       | ≥30                  | —                    | >60                 |
| T-288                             | min               | 2.4.24.1                            | TMA                              | —                                       | ≥15                  | —                    | 24.83               |
| T-300                             | min               | 2.4.24.1                            | TMA                              | —                                       | ≥2                   | —                    | 14.62               |
| TD                                | °C                | 2.4.24.6                            | TGA                              | —                                       | 340                  | —                    | 350                 |

Remarks: Typical values for reference only 注: 典型值只作参考

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

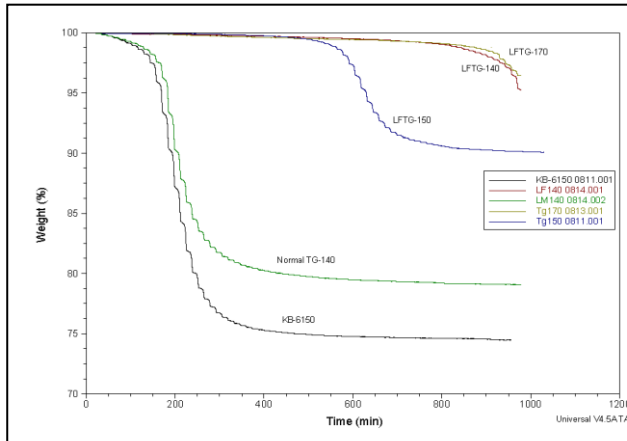
E=Temperature conditioning 在恒温的空气中处理

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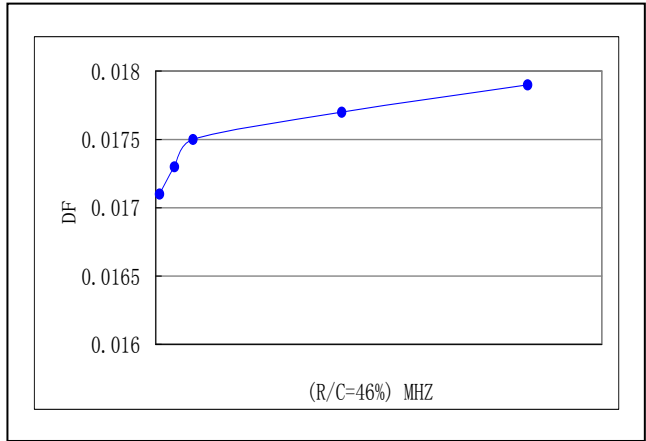
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#### Speciality Chart 板材特性图

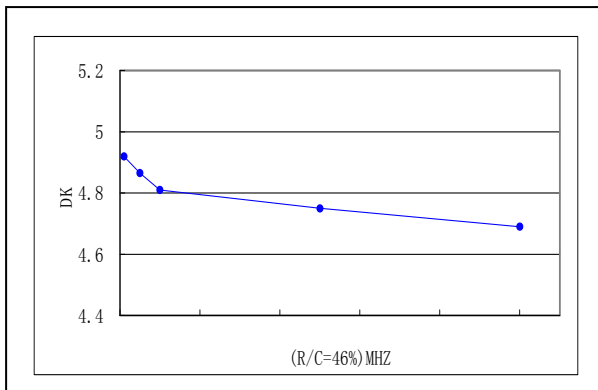
Thermal Cycling Test on Various Materials 各种材料热循环  
(TGA: Temp. was raised to 260°C at 10°C/min, then dropped to 200°C, and raised to 260°C, until delamination)



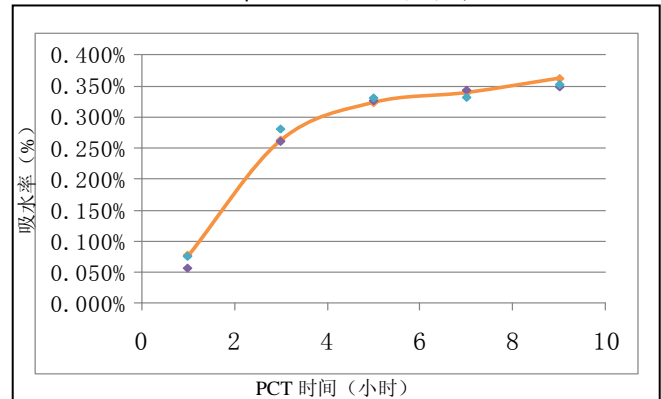
Loss Tangent  
介质损耗



Dielectric constant 介质常数



Water absorption after PCT 吸水率 (%)



### Purchasing Information 采购信息

| Base Color<br>基板颜色 | Thickness<br>厚度 | Copper Cladding<br>铜箔厚度  | Regular Size (mm)<br>常规尺寸  | CTI Value |
|--------------------|-----------------|--------------------------|--|-----------|
| 黄色<br>Yellow       | 0.05mm ~ 3.5mm  | 18μ m<br>35μ m<br>70μ m. | 915*1220mm (36"*48")<br>1020*1220mm (40"*48")<br>1067*1220mm (42"*48") | 175V      |

Note: 1) 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;

2) Speciality chart for reference only. 以上图表仅供参考;

3) Version updates without notice. 版本更新恕不另行通知。