

### Conventional FR-4/Normal Tg

#### 特性 (Feature)

- 兼容紫外光阻挡及光学自动检查功能  
UV Blocking and AOI (automatic optical inspection) compatible
- 优异的尺寸稳定性  
Excellent dimensional stability
- 优良的耐热性能和机械性能  
Excellent heat resistance and mechanical properties
- 符合IPC-4101E/21的规范要求  
IPC-4101E/21 specification is applicable

#### 应用 (Application)

- 计算机及外围设备  
Computer and peripheral
- 通讯设备  
Communication equipment
- 仪器仪表  
Instrument
- 办公自动设备等  
OA equipment, etc.

#### 板材性能 (Laminate Properties)

| Test Item<br>测试项目          |                                   | Test Method<br>(IPC-TM- 650)<br>测试方法 | Test Condition<br>处理条件 | Unit<br>单位        | Specification<br>规格值<br>( IPC-4101E/21 ) | Typical Value<br>典型值 |       |
|----------------------------|-----------------------------------|--------------------------------------|------------------------|-------------------|--|----------------------|-------|
| Thermal<br>热性能             | Thermal Stress<br>热应力             | 2.4.13.1                             | Float 288 °C/ Unetched | Sec               | ≥10                                      | ≥180                 |       |
|                            | Glass Transition (Tg)<br>玻璃化转变温度  | 2.4.25                               | E-2/105 DSC            | °C                | ≥130                                     | 135                  |       |
|                            | CTE/ Z-Axis Expansion<br>Z-轴热膨胀系数 | 2.4.24                               | Alpha 1                | ppm/°C            | —  | 60                   |       |
|                            |                                   |                                      | Alpha 2                |                   | —  | 300                  |       |
|                            | T-260                             | 2.4.24.1                             | 50 - 260 °C            | %                 | —  | 4.3                  |       |
|                            | TD(5% weight loss)                | 2.4.24.6                             | TMA                    | min               | —  | > 10                 |       |
|                            | Flammability<br>燃烧性               | UL94                                 | TGA                    | °C                | —  | 305                  |       |
| Electrical<br>电性能          | Surface Resistivity<br>表面电阻       | 2.5.17.1                             | C-96/35/90             | MΩ                | ≥10 <sup>4</sup>                         | 1.0×10 <sup>6</sup>  |       |
|                            | Volume Resistivity<br>体积电阻        | 2.5.17.1                             | C-96/35/90             | MΩ-cm             | ≥10 <sup>6</sup>                         | 1.0×10 <sup>8</sup>  |       |
|                            | Dielectric Breakdown<br>击穿电压      | 2.5.6                                | D-48/ 50+D-0.5/ 23     | kV                | ≥40                                      | ≥45                  |       |
|                            | Dielectric Constant<br>介电常数       | 2.5.5.2                              | Etched<br>(RC50%)      | @ 1 MHz           | —  | ≤5.4                 | 4.35  |
|                            |                                   |                                      |                        | @ 1 GHz           |  |                      | 4.25  |
|                            | Loss Tangent<br>介质损耗              | 2.5.5.2                              | Etched<br>(RC50%)      | @ 1 MHz           | —  | ≤0.035               | 0.017 |
|                            |                                   |                                      |                        | @ 1 GHz           |  |                      | 0.018 |
| CTI<br>相对漏电起痕指数            | IEC60112                          | A                                    | V                      | —                 | ≥175                                     |                      |       |
| Arc Resistance<br>耐电弧性     | 2.5.1                             | D-48/ 50+D-0.5/ 23                   | Sec                    | ≥60               | 125                                      |                      |       |
| Mechanical<br>机械性能         | Peel Strength (1 oz.)<br>铜箔剥离强度   | 2.4.8                                | 125 °C                 | N/mm              | ≥0.70                                    | 1.70                 |       |
|                            |                                   |                                      | Float 288 °C/ 10 Sec   |                   | ≥1.05                                    | 1.75                 |       |
|                            |                                   |                                      | After Process Solution |                   | ≥0.80                                    | 1.30                 |       |
|                            | Flexural Strength<br>抗弯强度         | 2.4.4                                | Length Direction       | N/mm <sup>2</sup> | ≥415                                     | 565                  |       |
|                            |                                   |                                      | Cross Direction        |                   | ≥345                                     | 446                  |       |
| Moisture Absorption<br>吸水率 | 2.6.2.1                           | D-24/23                              | %                      | ≤0.5              | 0.19                                     |                      |       |

Remarks:

- Typical Values for reference only.
- Standard Values according to IPC-4101E/ 21
- Typical Value of Specimen thickness is 1.6mm (8\*7628)

注:

- 典型值只供参考
- 规格值参照 IPC-4101E/ 21
- 样品的厚度为 1.6mm (8\*7628)



### KB-6160 板材清单 (Laminate List)

| Thickness<br>厚度 (mm) | Size<br>尺寸 (Inch)  | Copper foil Type<br>铜箔类型   |
|----------------------|--|--|
| 0.05-3.20            | 37" ×49" , 41" ×49" , 43" ×49"<br>74" ×49" , 82" ×49" , 86" ×49" | Reverse treated copper foil<br>RTF铜箔: 1/3OZ—3OZ<br>HTE copper foil<br>HTE铜箔: 1/3OZ—3OZ |

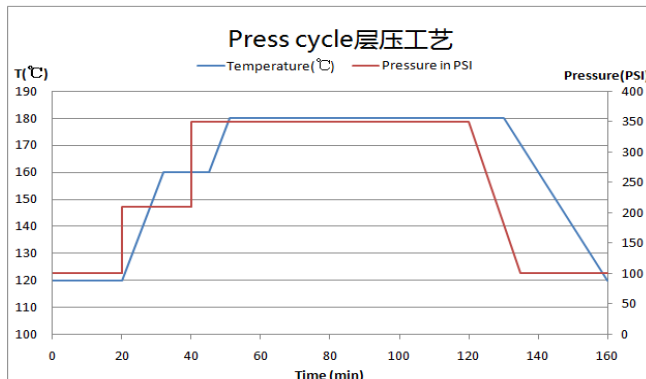
### KB-6060 半固化片清单 (Prepreg List)

| UL Designation<br>UL型号 | PP style<br>类型 | R/C(%)<br>树脂含量 | Dk±0.2(1GHz)<br>介电常数 | Df±10%(1GHz)<br>介质损耗 | Thickness(mil)<br>压合厚度 |
|------------------------|----------------|----------------|----------------------|----------------------|------------------------|
| KB-6060                | 1080           | 63±2           | 3.9                  | 0.018                | 3.1±0.4                |
|                        |                | 65±2           | 3.9                  | 0.019                | 3.3±0.4                |
|                        |                | 68±2           | 3.8                  | 0.019                | 3.7±0.5                |
|                        | 3313           | 50±2           | 4.1                  | 0.018                | 3.6±0.4                |
|                        |                | 52±2           | 4.0                  | 0.018                | 3.8±0.4                |
|                        | 2116           | 50±2           | 4.3                  | 0.017                | 4.7±0.4                |
|                        |                | 53±2           | 4.2                  | 0.019                | 5.0±0.4                |
|                        |                | 55±2           | 4.2                  | 0.019                | 5.3±0.5                |
|                        |                | 57±2           | 4.2                  | 0.019                | 5.6±0.5                |
|                        | 1506           | 45±3           | 4.4                  | 0.016                | 6.4±0.4                |
|                        |                | 48±3           | 4.4                  | 0.016                | 6.9±0.5                |
|                        |                | 50±3           | 4.4                  | 0.016                | 7.3±0.5                |
|                        | 7628           | 43±3           | 4.5                  | 0.015                | 7.8±0.5                |
|                        |                | 45±3           | 4.5                  | 0.016                | 8.2±0.5                |
|                        |                | 47±3           | 4.4                  | 0.016                | 8.6±0.6                |

### KB-6060 半固化片储存 (Prepreg Storage)

| 储存条件(Condition)  | 有效期(Shelf Life) |
|--|-----------------|
| Max. 50%RH & Max. 23°C 湿度 < 50% 及 温度 < 23°C  | 90 days         |
| Max. 5°C(Normal in room temperature for at least 4h before using)<br>温度 < 5°C (拆包装前需在室温下回温至少4小时) | 180 days        |

### 压合参数 (Recommended Process)



- Heat-up rate: 1.5-2.5 °C/ min (80 °C-140 °C)  
热压升温速率: 1.5-2.5 °C/ min (80 °C-140 °C)
- Curing time: >45min(>175 °C)  
固化时间: >45min(>175 °C)
- Curing pressure: 350±50 PSI  
(Vacuum Hydraulic Press)  
固化压力: 350±50 PSI  
(真空热油压机)

Remarks:  
This Technical Information only lists the typical values of particular specification. If the customer needs other specifications, please contact your sales representative for more information.

注:  
本产品技术资料只列出指定规格的典型值, 如客户需要其他规格的资料, 请与您的销售代表联系