

### TLX1000产品手册 高介电高频覆铜板

#### Features and benefits 特性与优势

- TLX1000是无玻纤增强的碳氢树脂-陶瓷复合型超高介电常数高频覆铜板
- 低损耗正切角
- 各向同性材料，适合加工有立体结构的高频电路
- 高于280°C的玻璃态转化温度，对高温加工过程耐候性更好
- 低Z轴热膨胀系数
- 接近FR-4的机械和加工性能，可以使用传统的FR-4覆铜板的PCB工艺进行加工

#### Areas of application 典型应用

- 卫星通信系统
- 全球定位系统天线
- 贴片天线
- 电桥
- 微波透镜



| 标准厚度<br>Standard thickness                                                        | 板材标准尺寸<br>Standard size of plate                                                 | 标准铜厚<br>Standard copper thickness               |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------|
| 10.0 mil (0.254 mm)<br>20.0 mil (0.508 mm)<br>30.0 mil (0.762 mm)<br>*如需更大厚度需咨询厂家 | 12" X 18" (305 X 457 mm)<br>24" X 18" (610 X 457 mm)<br>24" X 20" (610 X 508 mm) | ED / RTF 铜箔<br>1/2 oz. (18 μm)<br>1 oz. (35 μm) |

| 序号<br>No | 性能<br>Property                                            |              | 测试方法<br>Test Method | 测试条件<br>Test Condition | 单位<br>Unit        | 典型值<br>Typical Value |
|----------|-----------------------------------------------------------|--------------|---------------------|------------------------|-------------------|----------------------|
| 1        | 介电常数 10 GHz<br>Permittivity at 10 GHz                     |              | IPC TM-650 2.5.5.5  | 23°C                   | —                 | 10.0± 0.3            |
|          | 介电常数 10 GHz<br>Permittivity at 10 GHz                     |              | IPC Modified        | 23°C                   | —                 | 10.0± 0.3            |
| 2        | 损耗角正切值 10 GHz<br>Loss Tangent at 10 GHz                   |              | IPC TM-650 2.5.5.5  | 23°C                   | —                 | 0.0024               |
| 3        | 剥离强度<br>Peel Strength                                     |              | IPC TM-650 2.4.8    | 1 oz. 电解铜箔,<br>热应力后    | N/mm (lbs/in)     | 0.93<br>(5.3)        |
| 4        | 热膨胀系数CTE<br>Coefficient of<br>Thermal Expansion           | X轴<br>X-Axis | IPC TM-650 2.4.41   | 0-150°C                | ppm/°C            | 26                   |
|          |                                                           | Y轴<br>Y-Axis |                     |                        |                   | 26                   |
|          |                                                           | Z轴<br>Z-Axis |                     |                        |                   | 28                   |
| 5        | 玻璃态转化温度<br>Tg                                             |              | IPC TM-650 2.4.24   | —                      | °C                | >280                 |
| 6        | 热失重分解温度<br>Td                                             |              | ASTM D3850          | —                      | °C                | 453                  |
| 7        | 介电常数温度系数<br>Thermal Coefficient<br>of Dielectric Constant |              | IPC TM-650 2.5.5.5  | -30-150°C              | ppm/°C            | -411                 |
| 8        | 热导率<br>Thermal Conductivity                               |              | ASTM D5470          | 70°C                   | W/(m·K)           | 0.91                 |
| 9        | 表面电阻率<br>Surface Resistivity                              |              | IPC TM-650 2.5.17.1 | C-96/35/95             | MΩ                | 2.8*10 <sup>9</sup>  |
| 10       | 体积电阻率<br>Volume Resistivity                               |              | IPC TM-650 2.5.17.1 | C-96/35/95             | MΩ·cm             | 1.6*10 <sup>10</sup> |
| 11       | 吸水率<br>Moisture Absorption                                |              | IPC TM-650 2.6.2.1  | D-48/50                | %                 | 0.13                 |
| 12       | 弯曲强度<br>Flexural Strength                                 |              | IPC TM-650 2.4.4    | 23°C                   | MPa               | 63                   |
| 13       | 弯曲模量<br>Flexural Modulus                                  |              | ASTM D790           | 23°C                   | MPa               | 2331                 |
| 14       | 密度<br>Density                                             |              | ASTM D792 Method A  | 23°C                   | g/cm <sup>3</sup> | 2.3                  |
| 15       | 耐燃性<br>Flammability                                       |              | UL94 Vertical Burn  | —                      | —                 | 非阻燃                  |
| 16       | 无铅兼容性<br>Lead-Free Process Compatible                     |              | —                   | —                      | —                 | Yes                  |

说明1：典型值表示通常厚度情况下的多次测量不同批次产品性能指标的平均数值。如果对参数有特殊需求或疑问，请联系湍流电子公司。

Remark1: Typical value represent an average value from a population of tested material and on the most common thickness. For any specific requirement or question, please contact Tuanliu Electric Co.