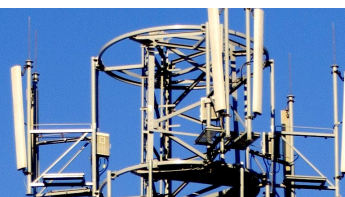


### TL255产品手册 高频碳氢覆铜板

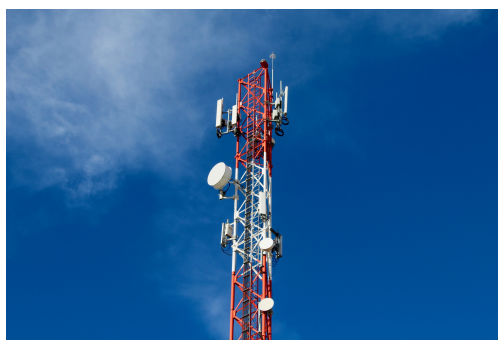


#### Features and benefits 特性与优势

- TL255碳氢树脂-陶瓷-玻纤复合层压板材料主要面向通信与天线等高频应用
- 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
- 配合低轮廓铜箔使用，拥有低的插入损耗和优良的PIM性能
- 稳定的介电常数，具备较低的介电常数温漂系数
- 极高的玻璃态转化温度， $T_g > 280^\circ\text{C}$
- 低密度，比同样介电常数的PTFE/编织玻纤材料轻30%
- 环境友好，兼容无铅焊接工艺，材料符合RoHS标准
- 可加工超薄、超厚及异形板材

#### Areas of application 典型应用

- 基站天线
- 导航天线
- 射频电路



| 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                                  |
|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------|
| 10.8 mil (0.274 mm)<br>20.8 mil (0.528 mm)<br>30.8 mil (0.782 mm)<br>40.8 mil (1.036 mm)<br>60.8 mil (1.544 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 457 mm) | RTF 铜箔<br>1/2 oz. (18 $\mu\text{m}$ )<br>1 oz. (35 $\mu\text{m}$ ) |

| 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                   | —                 | 2.55 ± 0.05          |
|          | 介电常数 10 GHz<br>Permittivity at 10 GHz                     |              | IPC Modified        | 23°C                   | —                 | 2.60 ± 0.05          |
| 2        | 损耗角正切值 10 GHz<br>Loss Tangent at 10 GHz                   |              | IPC TM-650 2.5.5.5  | 23°C                   | —                 | 0.0027               |
| 3        | 剥离强度<br>Peel Strength                                     |              | IPC TM-650 2.4.8    | 1 oz. 涂胶铜箔,<br>热应力后    | N/mm<br>(lbs/in)  | 1.1<br>(6.3)         |
| 4        | 热膨胀系数CTE<br>Coefficient of<br>Thermal Expansion           | X轴<br>X-Axis | IPC TM-650 2.4.41   | 0-250°C                | ppm/°C            | 10                   |
|          |                                                           | Y轴<br>Y-Axis |                     |                        |                   | 11                   |
|          |                                                           | Z轴<br>Z-Axis |                     |                        |                   | 41                   |
| 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                | 488                  |
| 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            | -9                   |
| 8        | 热导率<br>Thermal Conductivity                               |              | ASTM D5470          | 70°C                   | W/(m·K)           | 0.30                 |
| 9        | 表面电阻率<br>Surface Resistivity                              |              | IPC TM-650 2.5.17.1 | C-96/35/95             | MΩ                | 1.5×10 <sup>10</sup> |
| 10       | 体积电阻率<br>Volume Resistivity                               |              | IPC TM-650 2.5.17.1 | C-96/35/95             | MΩ·cm             | 2.5×10 <sup>10</sup> |
| 11       | 吸水率<br>Moisture Absorption                                |              | IPC TM-650 2.6.2.1  | D-48/50                | %                 | 0.04                 |
| 12       | 弯曲强度<br>Flexural Strength                                 |              | IPC TM-650 2.4.4    | 23°C                   | MPa               | 151                  |
| 13       | 弯曲模量<br>Flexural Modulus                                  |              | ASTM D790           | 23°C                   | MPa               | 3252                 |
| 14       | 拉伸强度<br>Tensile Strength                                  |              | GB/T1040.4-2006     | 23°C                   | MPa               | 110                  |
| 15       | 拉伸模量<br>Tensile Modulus                                   |              | GB/T1040.4-2006     | 23°C                   | MPa               | 2732                 |
| 16       | 密度<br>Density                                             |              | ASTM D792 Method A  | 23°C                   | g/cm <sup>3</sup> | 1.2                  |
| 17       | 尺寸稳定性<br>Dimensional Stability                            |              | IPC-TM-650 2.4.39A  | 蚀刻后+E2/150°C           | mm/m              | 0.5                  |
| 18       | 耐燃性<br>Flammability                                       |              | UL94 Vertical Burn  | —                      | —                 | 非阻燃                  |
| 19       | 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.