Innovative Technology for a Connected World

Tgard™ 3000
Thermally Conductive Insulators

ELECTRICALLY INSULATING, THERMALLY CONDUCTIVE MATERIAL
The Tgard™ 3000 is specifically designed to solve overheating issues such as lower component efficiency, premature component failures, size limitations and other performance problems for today’s power component assemblies. The need to remove unwanted heat to ambient temperatures becomes more important as electronic systems pack more power into smaller spaces.

The Tgard™ 3000 is a film-based product that is designed to resist cut through in screw mounting applications while providing a more consistent breakdown voltage over other insulator constructions.

The soft conformal coating on the film core provides an excellent mating surface for low pressure clip mounting applications.

PERFORMANCE CAPABILITIES
- High dielectric breakdown of 6,000 volts
- Film base resistant to cut through
- Thermal resistance of 0.45 °C-in2/watt @ 50 psi pressure
- Thermal resistance of 0.35 °C-in2/watt @ 400 psi pressure

APPLICATIONS
- Switching mode power supplies for:
  - Communications
  - Computers
  - Consumer electronics
  - Industrial
  - Instrumentation
  - Medical
- Electrical power generators
- UPS units

FEATURES AND BENEFITS
- Designed for switch mode power supply applications
- Reinforced with high temperature resistant film
- High voltage resistant film
- Total thermal resistance of 2.4 °C/watt on TO-220
- Non-blocking for ease of use

global solutions: local support
Americas: +1.800.843.4556
Europe: +49.8031.2460.0
Asia: +86.755.2714.1166
CLV-customerservice@lairdtech.com
www.lairdtech.com/thermal
## Tgard™ 3000

Thermally Conductive Insulators

### Electrical Properties

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>TEST METHOD</th>
<th>METRIC VALUES</th>
<th>IMPERIAL VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dielectric With Standard Voltage</td>
<td>ASTM D149</td>
<td>4,500 volts AC</td>
<td>4,500 volts AC</td>
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<tr>
<td>Dielectric Breakdown Voltage</td>
<td>ASTM D149</td>
<td>&gt;6,000 volts AC</td>
<td>&gt;6,000 volts AC</td>
</tr>
<tr>
<td>Volume Resistivity</td>
<td>ASTM D257</td>
<td>&gt;10^12 ohm-cm</td>
<td>&gt;10^12 ohm-in</td>
</tr>
<tr>
<td>Dielectric Constant @ 1 MHz</td>
<td>ASTM D257</td>
<td>3.3</td>
<td>3.3</td>
</tr>
</tbody>
</table>

### Mechanical Properties

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>METRIC VALUES</th>
<th>IMPERIAL VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness</td>
<td>0.13 mm</td>
<td>0.005 inch</td>
</tr>
<tr>
<td>Hardness</td>
<td>85 Shore A</td>
<td>85 Shore A</td>
</tr>
<tr>
<td>Tensile Strength</td>
<td>52.4 MPa</td>
<td>7.6 kpsi</td>
</tr>
<tr>
<td>Elongation</td>
<td>85%</td>
<td>85%</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>-60 - 180°C</td>
<td>-76 - 356°F</td>
</tr>
<tr>
<td>Color</td>
<td>Brown</td>
<td>Brown</td>
</tr>
<tr>
<td>UL Flammability Rating</td>
<td>UL 94 V-0</td>
<td>V-0</td>
</tr>
</tbody>
</table>

### Pressure, PSI (KPA)

<table>
<thead>
<tr>
<th>PRESSURE, PSI (KPA)</th>
<th>UNITS</th>
<th>10 (69)</th>
<th>25 (172)</th>
<th>50 (345)</th>
<th>100 (689)</th>
<th>200 (1379)</th>
<th>400 (2758)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified ASTM D5470</td>
<td>°C·in²/watt</td>
<td>0.55</td>
<td>0.50</td>
<td>0.45</td>
<td>0.40</td>
<td>0.35</td>
<td>0.35</td>
</tr>
<tr>
<td>Modified ASTM D5470</td>
<td>°C·cm²/watt</td>
<td>3.55</td>
<td>3.22</td>
<td>2.90</td>
<td>2.60</td>
<td>2.30</td>
<td>2.30</td>
</tr>
<tr>
<td>TO-220</td>
<td>°C/watt</td>
<td>2.9</td>
<td>2.6</td>
<td>2.4</td>
<td>2.3</td>
<td>2.2</td>
<td>2.2</td>
</tr>
</tbody>
</table>

### Standard Die Cut Parts

- Standard sizes for TO-220, TO-247, TO-3P, TO-3PL, and TO-264

### Custom Die Cut Parts

- Custom configurations available with standard tolerance of 0.5mm (0.020“)
- Ability to handle drawings in multiple file formats. (.DXF and .DWG preferred)

### Pressure Sensitive Adhesive

- Single side adhesive available on request

Data for design engineer guidance only. Observed performance varies in application. Engineers are reminded to test the material in application.