



### THERMALLY CONDUCTIVE ELECTRICALLY INSULATIVE MATERIAL

Tgard™ 5000 is an excellent dielectric material with good thermal performance consisting of a polyimide film coated with a ceramic-filled, high-temperature silicone rubber.

Tgard 5000 is ideal for applications that require a delta temperature across the interface of 2.0°C/watt or higher on a TO-220 clip mounted @ 50 psi pressure. Tgard 5000 has high dielectric strength for the AC side of a switching mode power supply. Tgard 5000 is tough resulting in an exceptional cut-through resistant material.

### FEATURES AND BENEFITS

- High dielectric breakdown voltage of 6,000 volts
- Film base resistance cut through
- Thermal resistance of 0.40°C-in<sup>2</sup>/watt @ 50 psi clip pressure
- Thermal resistance of 0.23°C-in<sup>2</sup>/watt @ 400 psi screw pressure

### APPLICATIONS

- Switching mode power supplies
- Electrical power generators
- UPS units

# Tgard™ 5000 Series

## Thermally Conductive Insulators

| PROPERTIES                                            | TEST METHOD | METRIC VALUES           | IMPERIAL VALUES         |
|-------------------------------------------------------|-------------|-------------------------|-------------------------|
| ELECTRICAL PROPERTIES                                 |             |                         |                         |
| Dielectric withstand voltage<br>50mm probe for 30 sec | ASTM D149   | 4,500 volts DC          | 4,500 volts DC          |
| Dielectric breakdown voltage<br>50mm probe            | ASTM D149   | Avg >6,000<br>volts AC  | Avg >6,000<br>volts AC  |
| Volume resistivity                                    | ASTN D257   | 10 <sup>12</sup> ohm-cm | 10 <sup>12</sup> ohm-in |
| Dielectric constant @1Mhz                             | ASTN D257   | 3.4                     | 3.4                     |
| MECHANICAL PROPERTIES                                 |             |                         |                         |
| Thickness                                             |             | 0.127 mm                | 5 mils                  |
| Hardness                                              | ASTM D2240  | 75 Shore A              | 75 Shore A              |
| Tensile strength                                      | ASTM D412   | 33.1 Mpa                | 4.8 Kpsi                |
| Elongation along width or length                      | ASTM D412   | 45%                     | 45%                     |
| Operating temperature range                           |             | -60° to 180°C           | -76° to 356°F           |
| Color                                                 |             | Tan                     | Tan                     |
| UL flammability rating                                | UL 94       | V-0                     | V-0                     |

| PRESSURE                 | UNITS                    | 10<br>(69) | 25<br>(172) | 50<br>(345) | 100<br>(689) | 200<br>(1379) | 400<br>(2758) |
|--------------------------|--------------------------|------------|-------------|-------------|--------------|---------------|---------------|
| TOTAL THERMAL RESISTANCE |                          |            |             |             |              |               |               |
| Modified ASTM D5470      | °C-in <sup>2</sup> /watt | 0.62       | 0.51        | 0.40        | 0.27         | 0.25          | 0.23          |
| Modified ASTM D5470      | °C-cm <sup>2</sup> /watt | 4.0        | 3.29        | 2.58        | 2.06         | 1.61          | 1.48          |
| T0-220                   | °C/watt                  | 1.31       | 1.00        | 0.82        | 0.65         | 0.58          | 0.54          |

|                           |                                                                                                                                                                                                                                                                                                           |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Configurations available: | <ul style="list-style-type: none"> <li>• Sheet form, roll form and die-cut parts</li> </ul>                                                                                                                                                                                                               |
| Standard options:         | <ul style="list-style-type: none"> <li>• Single-side, pressure-sensitive adhesive on request</li> <li>• Without adhesive (A0): 12 x 18" sheets, 12" x 65M, 12" x 30M roll or custom configuration</li> <li>• With adhesive (A1): 11.75 x 18" sheets, 11.75" x 30M roll or custom configuration</li> </ul> |
| Standard die cut parts:   | Standard part 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)                                                                                                                                                 |

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

THR-DS-Tgard-5000\_032515

Any information furnished by Laird and its agents is believed to be accurate and reliable. All specifications are subject to change without notice. Responsibility for the use and application of Laird materials rests with the end user, since Laird and its agents cannot be aware of all potential uses. Laird makes no warranties as to the fitness, merchantability or suitability of any Laird materials or products for any specific or general uses. Laird, Laird Technologies, Inc or any of its affiliates or agents shall not be liable for incidental or consequential damages of any kind. All Laird products are sold pursuant to the Laird Technologies' Terms and Conditions of sale in effect from time to time, a copy of which will be furnished upon request. © Copyright 2015 Laird Technologies, Inc. All Rights Reserved. Laird, Laird Technologies, the Laird Technologies Logo, and other marks are trademarks or registered trademarks of Laird Technologies, Inc. or an affiliate company thereof. Other product or service names may be the property of third parties. Nothing herein provides a license under any Laird or any third party intellectual property rights. Document A 15984-00 03/2015