



### HIGH THERMAL AND DIELECTRIC PERFORMANCE INSULATOR PAD

Tgard<sup>™</sup> K52 is a high thermal and dielectric performance insulator pad consisting of a ceramic filled phase change compound coated on MT Kapton film.

Tgard<sup>™</sup> K52 phase change coating all but eliminates contact thermal resistance. The phase change coating melts at 52°C and replaces all contact areas that contain air. Tgard<sup>™</sup> K52-1 is ideal for applications requiring the best thermal performing insulator material.

Tgard<sup>™</sup> K52-2 has the best balance of thermal, dielectric and cut through performance. Tgard<sup>™</sup> K52-3 is a 3 mil MT Kapton film that provides the best crush and cut and tear resistance available with thermal properties that are still in the high performance category.

### FEATURES AND BENEFITS

- High breakdown voltage of 4,000 – 9,000 range VAC
- Resistant to tears and cut through
- Total thermal resistance of 0.13 - 0.30 range °C-in<sup>2</sup>/watt at 20 psi clip force

### APPLICATIONS

- Audio amps
- Power modules
- Switching mode power supplies

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# Thermally Conductive Insulators

| PROPERTY  | TEST METHOD | K52-1                | K52-2                | K52-3                |
|---|-------------|----------------------|----------------------|----------------------|
| <b>ELECTRICAL PROPERTIES</b>                            |             |                      |                      |                      |
| Dielectric Withstand Voltage<br>6.4mm probe for 30 sec. | ASTM D149   | 3,000 volts DC       | 6,000 volts DC       | 7,500 volts DC       |
| Dielectric Breakdown Voltage<br>6.4mm probe             | ASTM D149   | 4,200 volts AC       | 7,800 volts AC       | 9,000 volts AC       |
| Volume Resistivity                                      | ASTM D257   | 4 x 10 <sup>14</sup> | 4 x 10 <sup>14</sup> | 4 x 10 <sup>14</sup> |
| Dielectric Constant @ 1 MHz                             | ASTM D257   | 1.8                  | 1.8                  | 1.8                  |
| <b>MECHANICAL PROPERTIES</b>                            |             |                      |                      |                      |
| Composite Thickness                                     | ASTM D374   | 2 mil (0.051mm)      | 3 mil (0.076mm)      | 4 mil (0.102mm)      |
| MT Kapton® Thickness                                    | ASTM D374   | 1 mil (0.025mm)      | 2 mil (0.051mm)      | 3 mil (0.076mm)      |
| Tensile Strength  | ASTM D412   | 13.5 kpsi (93 mPa)   | 18 kpsi (124 mPa)    | 20 kpsi (139 mPa)    |
| Elongation MD   | ASTM D412   | 80%                  | 80%                  | 80%                  |
| Operating Temperature Range                             |             | -60 - 150°C          | -60 - 150°C          | -60 - 150°C          |
| Color   |             | Light amber          | Light amber          | Medium amber         |

| PRESSURE, PSI (KPA)  | 10 (69)     | 20 (138)    | 50 (345)    | 100 (689)   | 200 (1379)  | 400 (2758)  |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>TOTAL THERMAL RESISTANCE</b><br>°C-in <sup>2</sup> /watt (°C-cm <sup>2</sup> /watt) |             |             |             |             |             |             |
| K52-1  | 0.14 (0.90) | 0.14 (0.90) | 0.13 (0.84) | 0.13 (0.84) | 0.13 (0.84) | 0.13 (0.84) |
| K52-2  | 0.23 (1.48) | 0.23 (1.48) | 0.22 (1.42) | 0.22 (1.42) | 0.22 (1.42) | 0.22 (1.42) |
| K52-3  | 0.33 (2.13) | 0.32 (2.06) | 0.31 (2.00) | 0.30 (1.94) | 0.30 (1.94) | 0.30 (1.94) |

**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)

**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.

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