



### **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  $2.0^{\circ}\text{C}/\text{watt}$  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  $0.40^{\circ}\text{C}\text{-in}^2/\text{watt}$  @ 50 psi clip pressure
- Thermal resistance of  $0.23^{\circ}\text{C}\text{-in}^2/\text{watt}$  @ 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 50mm probe for 30 sec	ASTM D149	4,500 volts DC	4,500 volts DC
Dielectric breakdown voltage 50mm probe	ASTM D149	Avg >6,000 volts AC	Avg >6,000 volts AC
Volume resistivity	ASTN D257	$10^{12}$ ohm-cm	$10^{12}$ 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 (69)	25 (172)	50 (345)	100 (689)	200 (1379)	400 (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
TO-220	°C/watt	1.31	1.00	0.82	0.65	0.58	0.54

Configurations available:

- Sheet form, roll form and die-cut parts
- Single-side, pressure-sensitive adhesive on request
- Without adhesive (A0): 12 x 18" sheets, 12" x 65M, 12" x 30M roll or custom configuration
- With adhesive (A1): 11.75 x 18" sheets, 11.75" x 30M roll or custom configuration

Standard options:

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

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