Tgard™ K52
Thermally Conductive Insulators

HIGH THERMAL AND DIELECTRIC PERFORMANCE INSULATOR PAD

Tgard™ K52 is a high thermal and dielectric performance insulator pad consisting of a ceramic filled phase change compound coated on PI film. Tgard™ 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.

Product Description

Tgard™ K52-1 is ideal for applications requiring the best thermal performing insulator material.

Tgard™ K52-2 has the best balance of thermal, dielectric, and cut through performance.

Tgard™ K52-3 is a 3mil PI film that provides the best crush, cut, and tear resistance available with thermal properties that are still in the high performance category.

Tgard™ K52-X (X = 1, 2, 3)-05A1-1 is a newest offering in Tgard K52 product line. It has one side phase change compound coated on PI film with thin adhesive layer to obtain good attachment on electronic devices. It has better thermal performance thanks to lower surface contact resistance on the interface with power components and enhanced cut -through resistance through this new design.

FEATURES AND BENEFITS

- High breakdown voltage of 4,000 - 9,000 VAC
- Resistant to tears and cut through
- Superior thermal performance at low pressure resistance.

APPLICATIONS

- Audio amps
- Power modules
- Switching mode power supplies
- Power semiconductors (to packages, MOSFETs and IGBTs)

		Tgard K52-1	Tgard K52-2	Tgard K52-3	Tgard K52-1-05A1-1	Tgard K52-2-05A1-1	Tgard K52-3-05A1-1
Electrical							
Dielectric Breakdown Voltage (DC) 6.3mm probe for 30 sec	ASTM D149	3000	6000	7500	3200	6000	7500
Dielectric Breakdown Voltage (AC) 6.3mm probe	ASTM D149	4200	7800	9000	4800	7800	9000
Dielectric Constant @1MHz	ASTM D257	1.8	1.8	1.8	-	3.6 (1GHZ)	-
Volume Resistivity	ASTM D257	$4X10^{14}$	$4X10^{14}$	$4X10^{14}$	$6X10^{11}$	$1X10^{12}$	$2X10^{12}$
Typical Properties							
Thermal Resistance (°C-in²/W)	ASTM D5470	0.14 (50psi)	0.22 (50psi)	0.31 (50psi)	0.13 (50psi)	0.21 (50psi)	0.25 (50psi)
Composition Thickness mil (mm)	ASTM D374	2 (0.051)	3(0.076)	4(0.102)	1.8(0.045)	2.8(0.071)	3.8(0.096)
PI Film thickness	ASTM D374	1(0.025)	2(0.051)	3(0.076)	1(0.025)	2(0.051)	3(0.076)
Tensile Strength Kpsi (mPa)	ASTM D412	13.5(9.3)	18(124)	20(139)	13.5(139)	18(139)	20(139)
Elongation MD	ASTM D412	80%	80%	80%	80%	80%	80%
Operation temperature range		-60 to 150°C	-60 to 150°C	-60 to 150°C	-60 to 150°C	-60 to 150°C	-60 to 150°C
Flame Rating	UL 94Vo	V0	V0	V0	V0*	V0*	V0*

*Laird Lab test for A1 version

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

Configurations Available:
Sheets and standard die cut availability
Custom configurations available with standard tolerance of 0.5mm (0.020”) and contact factory if any special shape need.

Standard Options:
Request no adhesive with “A0” suffix. Request adhesive on with “A1 “suffix. Please note this adhesive is intended to be a mounting aid and not for permanent bonding. Thermal resistance will slightly increase in comparison to material without adhesive.

Storage Conditions:
Store at 10ºC -35ºC and maximum 75%RH; Should avoid elevated temperature (>40ºC) exposure during shipping.

Shelf-life:
Product without adhesive is two years from date of shipment ; With adhesive (A1) is one year from date of shipment when store at above conditions.

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