Product Training Module: TI900

Jan 2012

Introduction

- Purpose
  - This training module is used to give an introduction to t-Global Technology's TI900 product range of thermally conductive insulators
- Objectives
  - To identify the key properties of TI900
  - To identify the key design criteria for product selection
  - To identify common applications for the product
- Content
  - Introduction and background to TI900
- Learning time
  - 15 mins

TI900

- TI900 is a thermally conductive insulator from t-Global technology
- TI900 is a highly thermally conductive interface insulator designed for use where the lowest possible thermal impedance is required
- It has a high dielectric breakdown voltage, a high working temperature and a high thermal conductivity
- It can be used for a number of applications and provided in sheet form, on log rolls or as custom die cuts

TI900

- TI900 has a thermal conductivity of 1.8 W/m.k
- It is used where good insulation and the lowest possible thermal impedance is required
- In contrast to conventional insulators the material does not crack, tear or otherwise fail when torqued between mating metal surfaces
- The main applications of TI900 are:
  - To enhance heat flow from the device to the sink
  - To provide electrical isolation
- TI900 provides both functions simultaneously replacing combinations of mica and silicone grease

TI900 – Design Guidelines

- The optimum contact pressure for TI900 is in the range 300 – 500 PSI (2.07×10^6 to 3.45×10^6 N/m^2)
- To convert mounting torque into contact pressure, use the following equation:
- $P = TN/0.2DA$
  - P = Contact Pressure (psi or N/m2)
  - T = Torque (in-lbs or N-m)
  - N = Number of Fasteners
  - (0.2) = Average Friction Factor
  - D = Diameter (in. or m)
  - A = Contact Area (in2 or m2

TI900 – Time Related Properties

- The performance of TI900 can be expected to improve with time
- The thermal impedance characteristics can be expected to improve during use due to stress relaxation of the elastomer and consequent additional filling of the microscopic voids in the interface
- This will lead to a 10 – 12% improvement of performance

Dielectric Breakdown Voltage

- When using an insulator material the key parameter to consider is its dielectric breakdown strength
- Dielectric strength is a measure of how well a material can prevent the voltage on the component case from arcing through the material and allowing an electrical short circuit between the component and the metal mounting surface
- This property is commonly presented is determined by electrical testing of multiple flat sheet samples in accordance with the test procedures detailed in ASTM D149.

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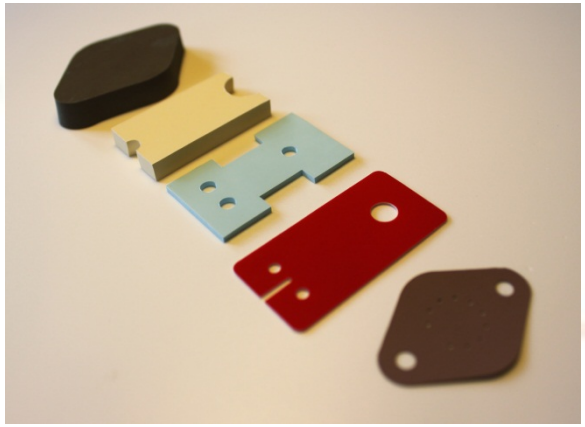
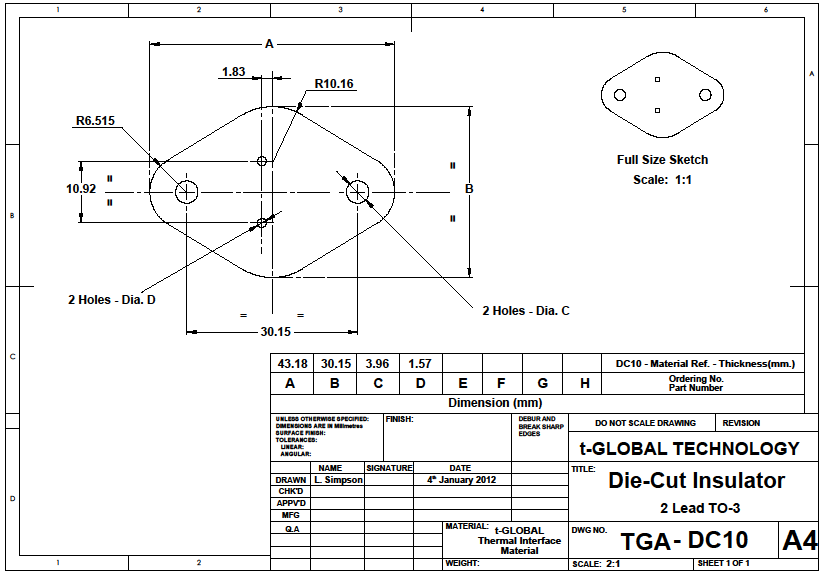
TI 900 Datasheet

Property	Ti900	Test Method
Viscose	One side	ASTM D374
Thickness	0.12	mm
Base	RITF	-
Thermal Conductivity W/m.k *1	1.8	ASTM D5470
Thermal Resistance @10psi (k in²/w)	0.5	ASTM D5470
Thermal Resistance @30psi (k in²/w)	0.42	ASTM D5470
Thermal Resistance @50psi (k in²/w)	0.35	ASTM D5470
Thermal Resistance @100psi (k in²/w)	0.29	ASTM D5470
Thermal Resistance @200psi (k in²/w)	0.28	ASTM D5470
Thermal Resistance @400psi (k in²/w)	0.27	ASTM D5470
Dielectric Breakdown Voltage, V	>6000	ASTM D149
Volume resistance Ohm-cm	$>10^{12}$	ASTM D257
Working Temperature	-50 to 180	℃
Elongation	40%	ASTM D412
Tensile Strength	5000psi	ASTM D412
Flame Rating	Pending(as V-0)	UL94
· **REACH Compliant** · **RoHS Compliant**		

TI 900 Custom Parts

- TI 900 can be custom cut depending on the end use requirements
- For details of this service please contact t-Global directly





Summary

- TI 900 is a thermally conductive electrical insulator from t-Global
- TI900 has a thermal conductivity of 1.8 W/m.k
- It is used where good insulation and the lowest possible thermal impedance is required
- TI 900 can be custom cut depending on the end use requirements