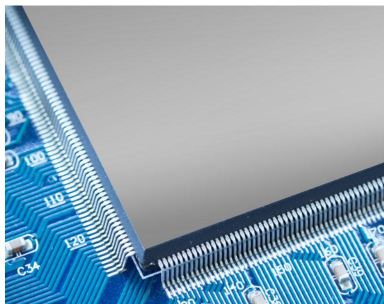
# LT Product Profile 00415

LEADER TECH a HEICO company
The Leading Edge in EMI Shielding Technology

## THERMAL GAP FILLER PADS



Thermal Gap Filler Pads are high heat transfer media which conform to surface irregularities and adhere to a wide range of shapes and sizes of components; in particular, recessed areas and protrusions.

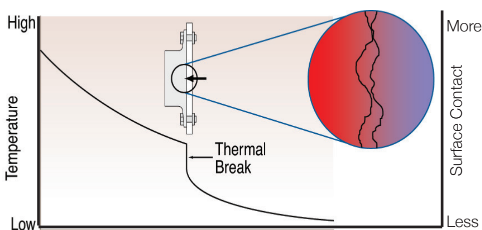
Where space between mating surfaces varies or is uneven, and where surface textures are normally a thermal transfer concern, the very pliable conformity of the pads is excellent for filling air gaps and minute variations.

A widely recognized axiom of chemical engineering and stress analysis states that, for every 10°C change in temperature, the reaction is a factor of 2; i.e., mean-time-to-failure of a device can be reduced by a factor of 2 for every 10°C temperature rise.

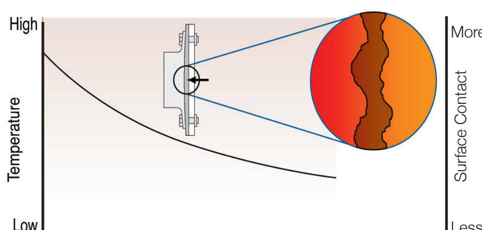
Four grades, each with a cost-effective formulation suitable for the thermal conductivity needed on a given application, accommodate most demanding situations. Convenient sheet configurations are suitable for die-cutting, or easy hand-slitting operations.

As shown in the drawings below, even the most highly polished mating surfaces do not make reliable contact surfaces. Complete physical contact is necessary to minimize the resistance to heat flow for the best thermally conductive path. All such surface voids, when properly filled with a conformable, thermally conductive gap filler pad, will in most cases exhibit close to the continuous characteristics of a solid metal of the same dimensions.

### THERMAL IMPEDANCE VERSUS SURFACE CONTACT

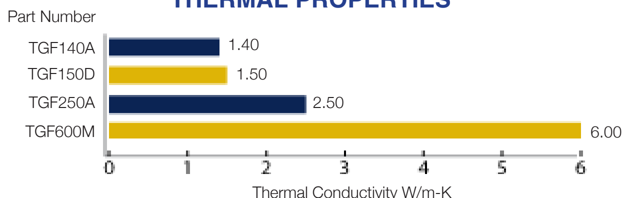



Thermal impendance of semiconductor mounted to substrate is appreciably increased at junction of porous surfaces due to lack of surface-to-surface contact.




Thermal impendance of semiconductor mounted to substrate with gap filler is eliminated yielding higher temperature gradient.

### THERMAL PROPERTIES




| Description | Unit | Part Number TGF140A | TGF150D | TGF250A | TGF600M |
|---|---|---|---|---|---|
| Color | visual | gray | light gray | gray | brown |
| Thermal Conductivity | W/m-K | 1.40 | 1.50 | 2.50 | 6.00 |
| Volume Resistivity | MΩ•m | 2.7x10$^5$ | 1.0x10$^8$ | 3.6x10$^4$ | 1.3x10$^6$ |
| Withstand Voltage | KV/mm•AC | 11 | 14 | 9 | 13 |
| Specific Gravity | gr/cm$^2$ | 1.97 | 2.60 | 2.58 | 3.20 |
| Hardness | Shore 00 | 25 | 49 | 50 | 52 |
| Elongation | % | 200 | 100 | 197 | 80 |
| Compression | KgF @ 10%<br>@ 50% sustain | 7.6<br>30.9 | 12.5<br>39.2 | 17.5<br>42.0 | 10.7<br>50.6 |

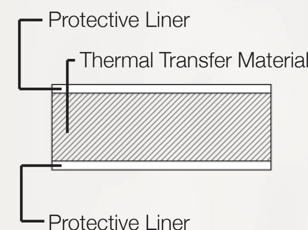
Sheet Size L x W x T: 11.75" x 7.875" x .039" (300mm x 200mm x 1mm) +/- 1.6% or +/- .005" (0,13mm) minimum

## MATERIAL CHARACTERISTICS

| Material Characteristics | Measure |
|---|---|
| Material | silicone compound |
| Extractable Volatiles | content % cyclodimethyl siloxane @ D4 - D10 < 0.0010 wt % |
| Continuous Use Temperature | -60° to 200° C |
| Flammability | UL94 V-0 |
| Thermal Conductivity | up to 6.00 W/m-K; 4 formulas |

## HANDLING AND INSTALLATION

Each sheet is covered on both top and bottom with a protective plastic liner (as shown below) for ease of handling, hand-cutting or die-cutting. Simply peel away the liners to install. The gap filler material is self-adhering and has a slight tack, holding it in place easily until clamped into position.



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