

eGraf™ Anisotropic Thermal Interface Provides Unique Heat Dissipation

eGraf™ Thermal Interface Products are the only interface materials available that provide the unique benefits of anisotropic, or directional, heat transfer. The thermal conductivity of eGraf products along the length and width can be up to 200 W/m°C, approximately 20 to 30 times greater than through the thickness. Because of this anisotropy, eGraf products dissipate the heat along the entire surface of the heat sink, even in systems with uneven loading or surface distortion. The maximum benefit of the heat sink is obtained, and the temperature of the point source is substantially reduced (Figure B). The end result of using an eGraf anisotropic interface is a cooler running point source and fewer heat related failures.

eGraf materials are available with through-thickness conductivity of 7 W/m°C (Class 700) or 12 W/m°C (Class 1200).

Figure A: Heat Channeling of Conventional Isotropic Materials

Simulation depicts heat transfer from a 5 W source through a conventional interface with isotropic (equal) conductivity of 7 W/m°C in all directions. Note the poor dissipation along the interface, and the high resulting temperature of the source (40°C). This characteristic is typical of isotropic materials, including “conductor filled” silicone, polyester, acrylic and thermally conductive greases.

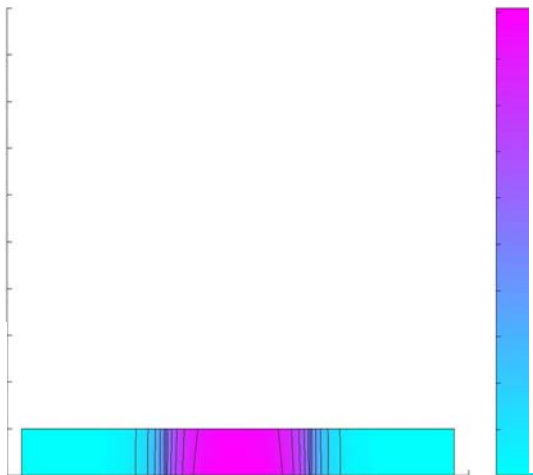
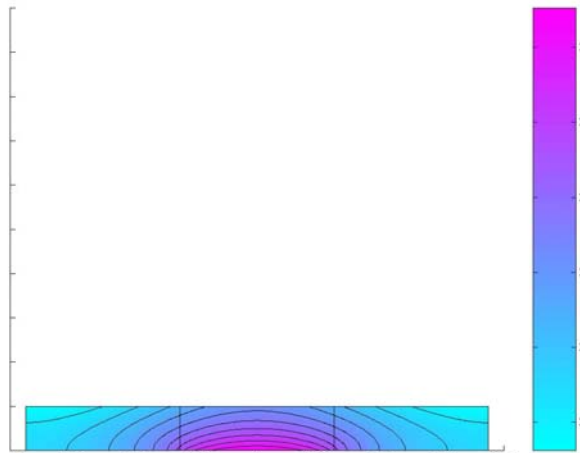


Figure B: Heat Spreading of Anisotropic eGraf Thermal Interface Products

Simulation depicts heat transfer from a 5 W source through an anisotropic eGraf interface, with conductivities of 7 W/m°C through the thickness and 150 W/m°C along the length and width. eGraf Thermal Interface Products spread heat away from the point source, dramatically reducing the source temperature (33.5°C) and eliminating hot spots. The heat spreading characteristic enhances the effective heat transfer area of the heat sink.



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