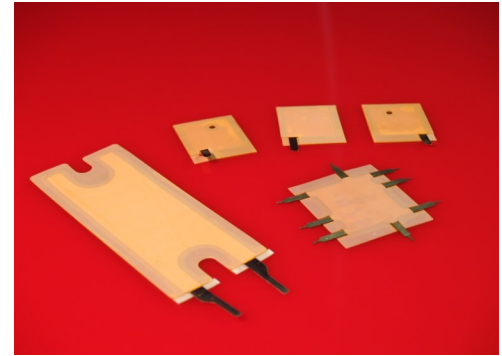


Fully Customizable to Meet a Range of Component Configurations

EMI-Phase utilizes the benefits of phase change technology combined in a multi-layer construction. Through the use of a foil copper insert and exposed ground connection configuration on the exterior or interior of the pad, EMI-Phase suppresses radiated emissions generated in high frequency transistor applications in addition to providing the low interface surface resistance provided by the phase change compound system.

EMI-Phase is a fully customizable multi-layer product offering a range of dielectric layer and copper insert material types and thicknesses. EMI-Phase can be completely tailored to a specific application requirement or configuration using low cost tooling.

- Controls Radiated Emissions
- High Dielectric Strength
- Fully Customizable Configuration
- Efficient Thermal Transfer
- Effective Shielding Performance
- Multiple Layer Construction



Stock tooling for TO-218, TO-220 and TO-247 Type Packages Available

Dielectric Layer Options (PSA Backed)

- * UltraPhase 60A (0.0025" to 0.0035" thick)
- * DiaPhase 60A (0.0025" to 0.0045" thick)
- * EcoPhase 60A (0.0025" to 0.0065" thick)

Dielectric layers are for top and bottom (outside) layers. Choice of dielectric layer are dependent on dielectric strength, thermal performance and cost targets required. Please reference technical data sheets for the above products for more specific information on dielectric strength and thermal performance specifications.

Visit www.timtelthermal.com to review data sheets for the products above

Copper Foil Insert Options

- * Standard Thicknesses: 0.002", 0.005", 0.010"
- Copper type 110-ANN is dead soft copper temper.

Typical Ground Connection Lead Configurations

- * Flat Lead (outside of dielectric layers)
- * Formed Lead (outside of dielectric layers)
- * Interior Contact (exposed within the interior of the dielectric layer).

Standard lead configuration is natural copper. Tin coated ground connection options available.

EMI-Phase Thermal Compound Coating

- * Phase Change Temp.....60°C
- * Compound Flow Design.....Thixotropic
- * Volumetric Expansion.....15%

Phase Change compound is a solvent free / silicon free compound design and present on the top and bottom of the complete thermal pad only. Optional multi-layer pads with no phase change compound available.

EMI-Phase Thermal Impedance

- * Due to the number of potential multi-layer material combinations available with this product, thermal impedance testing will only be available after customer designates desired material construction.
- * Testing is performed within ASTM D-5470. Specimens are tested within a 2.00" x 2.00" pad size only.

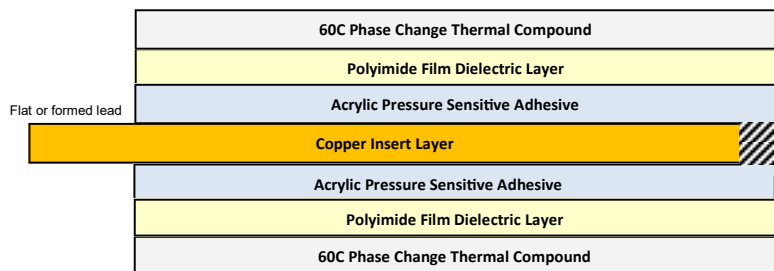
EMI-Phase Delivery Formats

- * Due to the fully customizable nature of the EMI-Phase, this product is available in a die cut individual thermal pad format only (no bulk sheets or rolls).
- * Typical Die Cut Dimensional Tolerance: +/- 0.010"

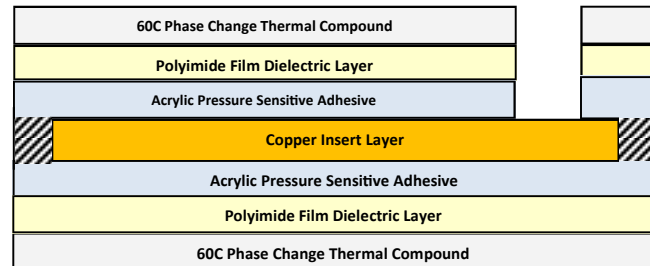
Dimensional tolerances are based upon overall pad complexity and ultimately determined during quoting and/or at design review.

Typical EMI-Phase Constructions (not to scale)

Construction Type 1 (exposed flat or formed ground contact lead)



Construction Type 2 (interior ground contact exposure)



Perimeter ends of dielectric layers outside of copper area are delivered standard where they are self attached to each other. PET Film frame to offset copper thickness available.

EMI-Phase Thermal pads can be available with or without mounting through holes.

Typical Ground Connection Lead Types



Incorporating Phase Change into EMI-Shielding

Since EMI-Phase is manufactured with a specific thickness and die cut configuration, it can be placed instantly and immediately ready for component mounting. Due to its thixotropic compound design, compound is held within the interface with no worries of run-out into unwanted areas during normal device/component operation. Upon initial phase-change of the EMI-Phase compound, it begins its wetting out process allowing it to fill in any microscopic surface imperfections or uneven surface conditions across the interface as well as drive out any trapped air leading to increased thermal transfer performance keeping the device/component cool and reliable.

EMI-Phase pre-formed pads are shipped in clean sizable packs and instantly ready for cost effective installation and reliable thermal performance.

EMI-Phase Sample Prototypes

Thermal material evaluation is always critical when designing in a new thermal material. Razor plotter formed prototypes are available for testing. Nominal sample charge may apply depending on part detail and prototype quantity needed.