

# Application Note

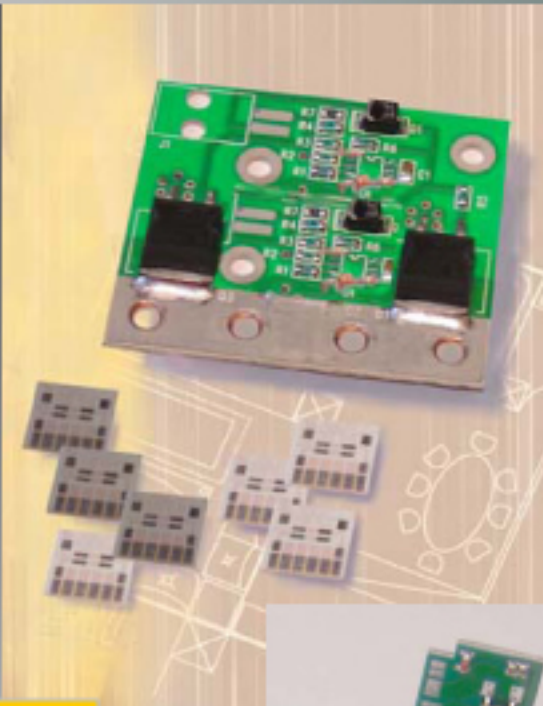
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## APPLICATION: Thermal Insulated Metal Substrates

### Overview

Thermal Insulated Metal Substrates (TIMS) were developed as a means to increase thermal dissipation in high watt surface mount applications. TIMS may be viewed as a printed circuit board using metal instead of a conventional glass epoxy base such as FR-4. Using the metal substrate as the base allows it to perform as a heatsink. This eliminates the complications and cost of attaching heatsinks to the power components, without the fragility of ceramic, or the high cost of bonding to copper. TIMS technology from ThermTec achieves high performance and high reliability at the same time as high density.



### Applications

Typical applications among others:

- **Power Converter/Inverters**
- **Automotive**
- **Audio**
- **Electrical motor controls**
- **Solid-state switching/relays**

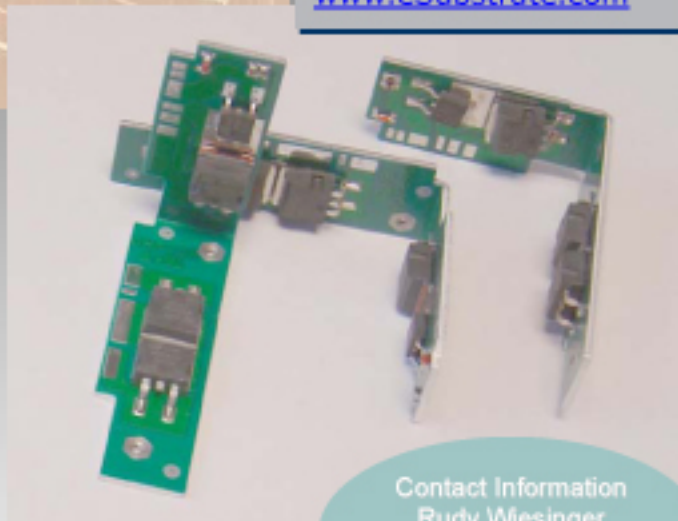
More Info:

[www.eSubstrate.com](http://www.eSubstrate.com)

### ThermTec Solution

Thermal Insulated Metal Substrates consist of three basic layers. The base layer is aluminum (or copper), ranging in thickness from .040" to .125". This gives the assembly its heat dissipation abilities. The next layer is the dielectric layer of ceramic polymer, chosen for high electrical isolation along with minimum thermal resistance. The third layer is the printed circuit foil ranging from 1oz. to 4oz. copper. Combination of multiple layers is used as well.

Unlike printed circuit boards, the metal substrate can be bent into a three dimensional assembly. This saves space and even more money by combining the capabilities of a PCB and heatsink along with structural components. To continue cost saving, ThermTec can provide the TIMS fully assembled, tested, and ready for installation.



### TIMS Benefits

- High quality with cost effective pricing
- Reduced hardware and assembly costs
- Use of surface mount designs
- Management of heat dissipation in circuit board designs
- Improve product reliability
- Replace fragile ceramic components
- Parts manufactured per customer requirements

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### About ThermTec

ThermTec is a Segue company with worldwide headquarter in Los Angeles and operations in Asia. [www.SegueElectronics.com](http://www.SegueElectronics.com)



ThermTec provides custom solutions in metal, whether it is an aluminum extrusion, stamped and formed metal, busbar, or insulated metal substrate. With three plants and over 500,000 square feet of combined manufacturing capability, ThermTec has the ability to cut costs from products while maintaining the highest quality and on time delivery.