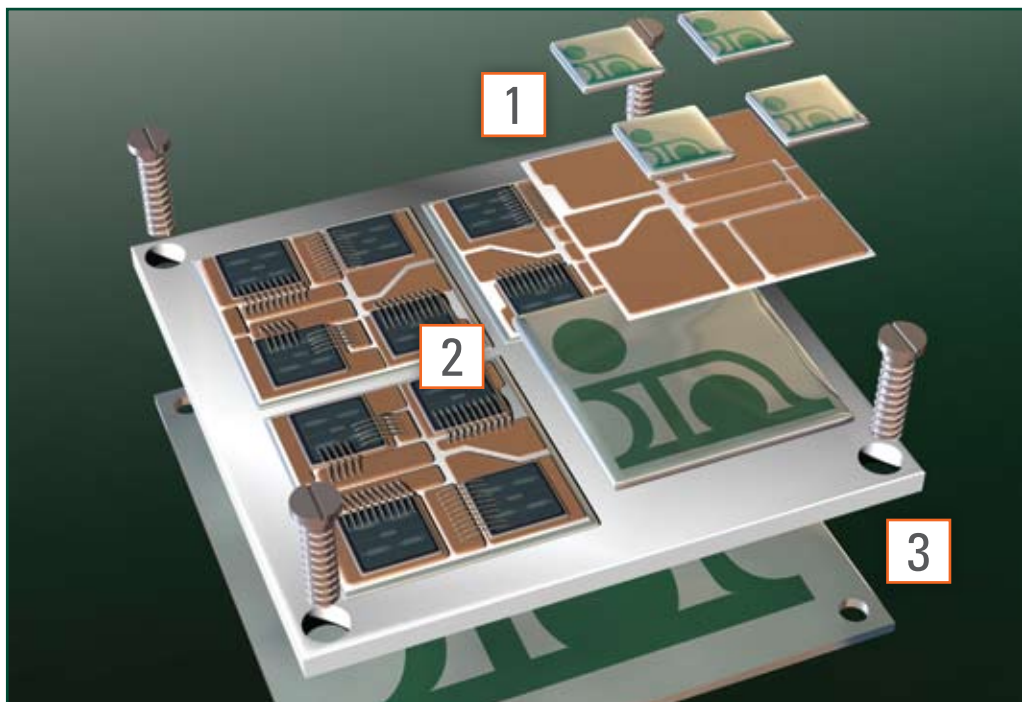


Materials for IGBT / Power Module Interconnect and Thermal Transfer



Indium Corporation sells and manufacturers metal thermal interface materials (TIMs) for various markets and applications. The 100% Metal TIMs are divided into two categories: reflowable and non-reflowable. Reflow TIMs include preforms, InFORMS[®], wire, and paste. Non-Reflow TIMs include compressible metals, Heat-Springs[®], and metals that change phase or are liquid at room temperature.

Indium Corporation's strength in thermal applications is our depth of knowledge of materials and the applications where they are utilized.



1. DIE-ATTACH

Indium Corporation manufactures die-attach solder paste, such as Indium8.9-LDA, for vacuum soldering. Indium's IGBT die-attach solder paste can be screen printed or stencil printed and is easy to clean.

Indium Corporation also provides solder ribbon and solder preforms for die-attach applications. Tape & reel packaging allows preforms to be advanced and placed with speed and accuracy. Semiconductor-grade ribbon and preforms come in ultra-pure alloys and adaptable packaging, such as tape & reel, custom spools, and cartridge packs to increase productivity, performance, and efficiencies.

All material is recyclable and reclaimable.

Materials for Vacuum Soldering

- IGBT solder paste
- Solder wire
- Solder preforms
- Solder ribbon

2. DIRECT BONDED COPPER (DBC) OR SUBSTRATE ATTACH

Indium Corporation's soldering materials for DBC attach include solder ribbon and solder preforms. Manufactured for purity, they offer low voiding when reflowed in air or vacuum.

InFORMS[®] were developed to solve the non-planar solder joint issue common in substrate bonding. InFORMS are reinforced solder alloy fabrications that ensure parallel soldering at a predetermined bondline thickness.

NanoFoil[®] solders a component in nanoseconds without using a reflow oven. NanoFoil provides a localized heat source that enables high strength, high conductivity bonding between most combinations of materials. NanoFoil emits enough energy to solder 25-150+ micron bondlines. In addition, tin-plated NanoFoil has been used to solder gold-plated substrates together without the need for a reflow oven or any plating. For more information, visit www.indium.com/nanofoil.

Materials for Substrate Attach

- Solder preforms
- InFORMS[®]
- Solder ribbon
- Solder paste
- NanoFoil[®]

3. HEAT-SINK OR BASEPLATE ATTACH

Removing heat from a power module is important for ensuring interconnect reliability. Indium Corporation's Heat-Spring[®] material is a non-reflow compressible metal pad with a thermal conductivity of 86W/mK. Unlike some of the more typical thermal interface materials, such as thermal grease, Heat-Springs do not pump out or bake out.

Heat-Springs can be engineered and optimized for difficult applications and a wide variety of surface conditions. Minimum pressure required is 25-45psi and minimum thickness is 75 microns. Custom packaging includes tape & reel and tray packs.

Liquid metal is another material that can be used as a thermal interface. Liquid metal is RoHS-compliant and has a thermal conductivity of 40W/mK and a contact resistance of virtually zero.

Materials for Heat-Sink or Baseplate Attach

- Heat-Spring[®] - Type D (for flat surfaces)
- Liquid metal

From One Engineer To Another[®]

Form No. 98719 (A4) R0

www.indium.com

askus@indium.com

ASIA: Singapore, Cheongju: +65 6268 8678
CHINA: Suzhou, Shenzhen, Liuzhou: +86 (0)512 628 34900
EUROPE: Milton Keynes, Torino: +44 (0)1908 580400
USA: Utica, Clinton, Chicago: +1 315 853 4900



©2011 Indium Corporation