

Materials for IGBT/ Power Module Interconnect and Thermal Transfer

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

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.

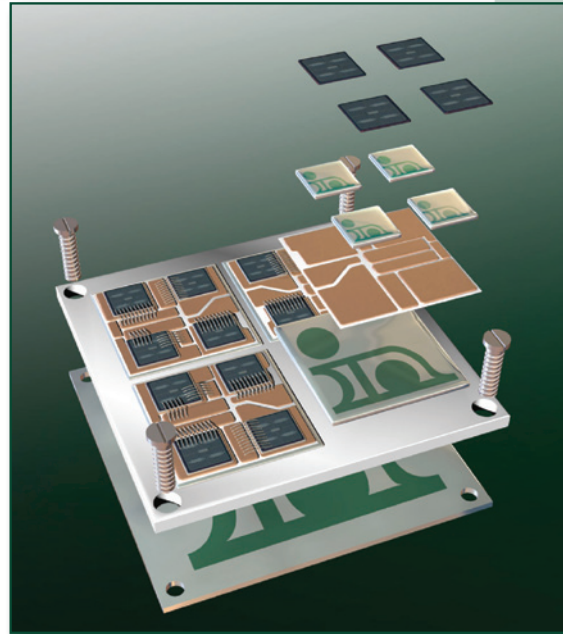


InFORMS® were developed to solve the non-planar solder joint issue common in substrate bonding. InFORMS are reinforced solder alloy fabrications that ensure parallel soldering at a predetermined bondline thickness.

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.

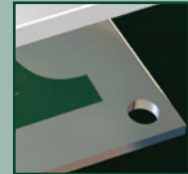
Materials for Substrate Attach

- Solder Preforms
- Solder Ribbon
- NanoFoil
- InFORMS
- Solder Paste



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. See our application note entitled "Heat-Spring Metallic Thermal Interface Materials for Application to Infineon Technologies AG PrimePACK IGBT Modules" for information on how Indium Corporation's Heat-Springs performed in testing against a comparable flat indium shim and two typical silicone-based thermal grease materials.

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

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