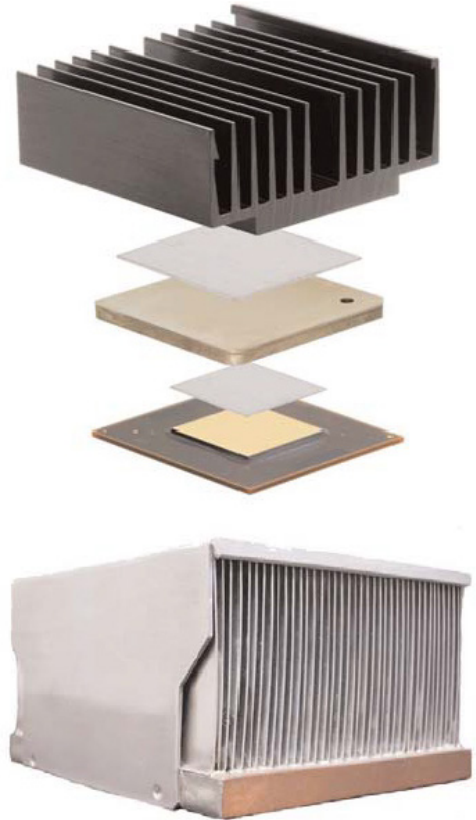


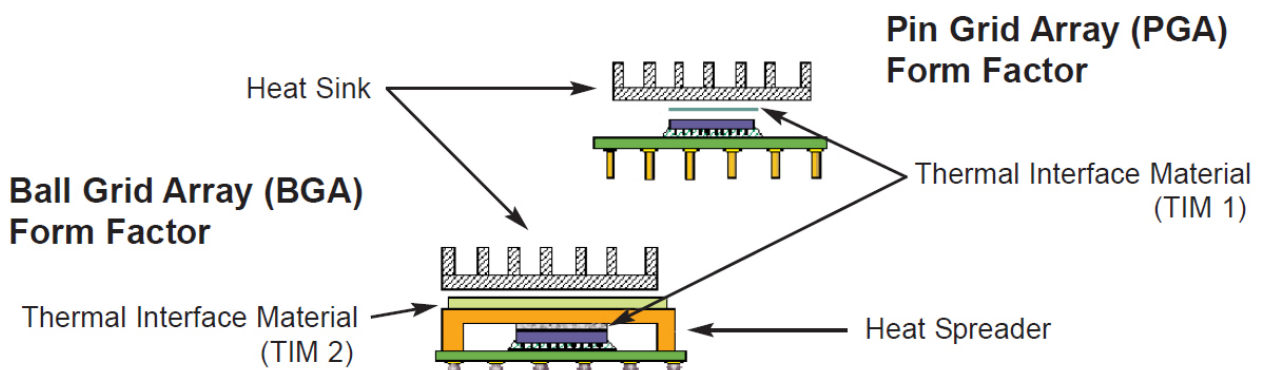
Non-Adhesive or Non-Organic Interconnect Solutions in Support of Revolutionary Improvements in Thermal Dissipation

As junction resistance values steadily decrease, high-performance power applications that use traditional organic-based TIMs are quickly approaching their limitations. Solder-based TIMs have the high thermal conductivity properties for the next significant TIM interconnect solutions.

Whether your thermal dissipation improvements focus at the die level (TIM1) or at the interface between the heat spreader/lid to the active or passive heat sink (TIM2), Kester has created interconnect solutions to enable your next-generation applications. MacDermid Alpha is a global solutions supplier to the Semiconductor Packaging Sector and has recently been a recipient of Intel's prestigious Supplier Continuous Quality Improvement (SCQI) award for thermal interface materials.



Common Microprocessor Package Types



Material Selection Aids

Table 1 is a listing of the thermal conductivity of a variety of common materials used in the microelectronic and electronic assembly industries. Metal or solder based interconnect materials are currently being utilized in the most demanding thermal interface applications.

Material	Thermal Conductivity (Wmk-1)
In	82
Pd	72
In90 Ag10	67
Sn	66
Au80 Sn20	57
Sn63 Pb37	50.9
Sn60 Pb40	49.8
Sn50 Pb50	46.7
Sn62 Pb36 Ag2	49
Sn40 Pb60	43.6
Sn30 Pb70	40.5
Sn20 Pb80	37.4
Sn10 Pb90	35.8
Pb	35
Al2O3 (96%)	35
Sn96.5 Ag3.5	33
Sn95 Sb5	28
Alloy 42	15.6
Silver Filled Phase Change	3 - 8
Boron Nitride Filled Silicone	6
Ag - Filled Die Attach	1.3 - 5

Table 1 Thermal Conductivities of Materials (Wmk-1)

Typical Materials For TIM1 and TIM2

Melt Range		Alloy	
°F	°C	Pb-Containing	Pb-Free
450 - 464	232 - 240		Sn95 Sb5
430	221		Sn96.5 Ag3.5
354 - 372	179 - 189	Sn62 Pb36 Ag02	
361	183	Sn63 Pb37	
313	156		In99

