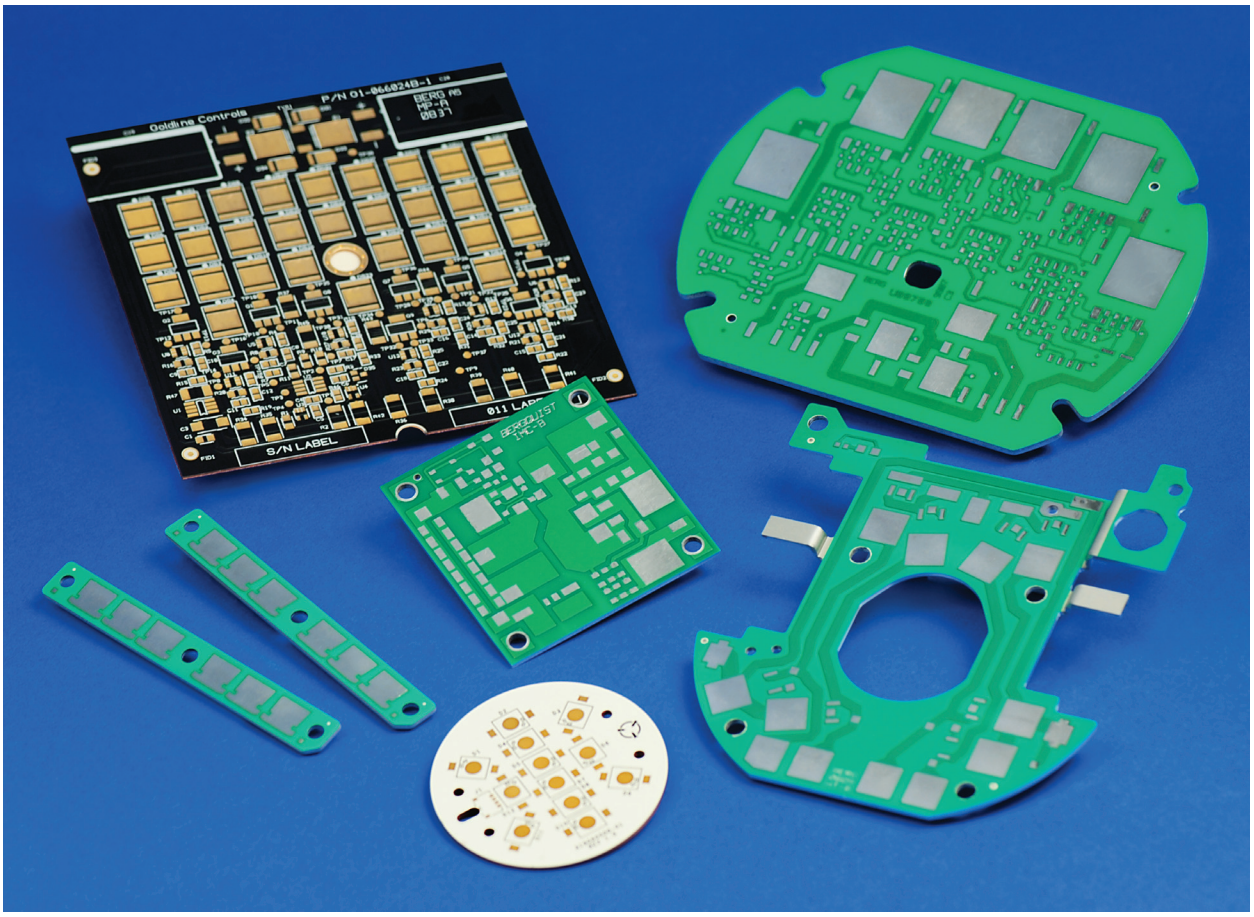
Bergquist Thermal Clad®

Technical Data

HT-07006 (HIGH TEMPERATURE)



Benefits

- Very low thermal resistance of 0.11°Cin^2/W (0.71°Ccm^2/W)
- High thermal conductivity of 4.1 W/m-K
- High temperature applications
- Lead-free solder compatible
- Eutectic AuSn compatible
- RoHS compliant and environmentally green
- Available on all aluminum and copper metal substrates

Thermal Clad Metal Core PCB's (MCPCB's) minimize thermal impedance and conduct heat more effectively than standard printed wiring boards (PWB's). These substrates are more mechanically robust than thick-film ceramic and direct bond copper construction.

Thermal Clad is a cost-effective solution which can eliminate components, allow for simplified designs, smaller devices and an overall less complicated production process. Additional benefits of Thermal Clad include lower operating temperatures, resulting in longer component life and increased durability.

The technology of Thermal Clad resides in the dielectric. This datasheet highlights the performance characteristics of Thermal Clad HT 6 mils (High Temperature) a dielectric resistant to degradation from high temperature exposure and features even higher dielectric breakdown characteristics than its 3 mil counterpart. This dielectric is proven in applications such as LED, Power Conversion, Heat-Rails, Solid State Relays and Motor Drives.

For Additional Info (800) 347-4572
www.bergquistcompany.com

THE BERGQUIST COMPANY

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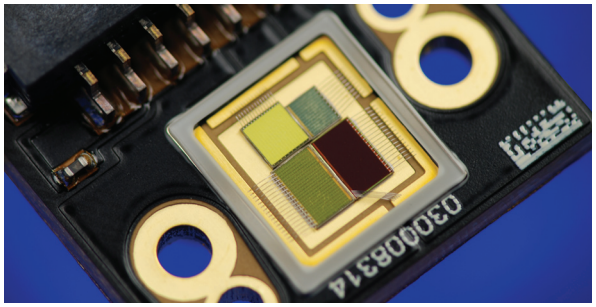
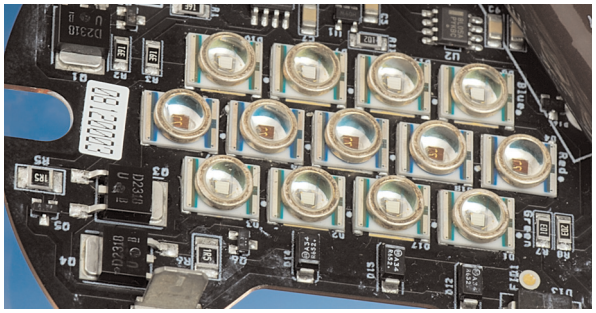
HT Typical Values		
HT-07006	VALUE	TEST METHOD
THERMAL PROPERTIES		
Product Thermal Conductivity	4.1 W/m-K	MET 5.4-01-40000
Dielectric Thermal Conductivity	2.2 W/m-K	ASTM D5470
Thermal Resistance	0.11°C-in²/W (0.71°C-cm²/W)	ASTM D5470
Thermal Impedance	0.70°C/W	MET-5.4-01-40000
Glass Transition	150°C	ASTM E1356
Max Operating Temp.	140°C	U.L. 796
Max Soldering Temp.	325°C	U.L. 796
ELECTRICAL PROPERTIES		
Dielectric Constant	7	ASTM D150
Dissipation Factor	0.0038/0.0129 (@1KHz/1MHz)	ASTM D150
Capacitance	270 pF/in² (43pF/cm²)	ASTM D150
Volume Resistivity	1^{14} Ω-m	ASTM D257
Surface Resistivity	1^{13} Ω/sq	ASTM D257
Dielectric Strength	1800 V/mil (70 kV/mm)	ASTM D149
Breakdown Voltage	11 kVAC	ASTM D149
MECHANICAL PROPERTIES		
Color	White	Visual
Dielectric Thickness	0.006" (152 µm)	Visual
Peel Strength@25C	6 lb/in (1.1 N/mm)	ASTM D2861
CTE in XY/Z Axis <Tg	25 µm/m°C	ASTM D3386
CTE in XY/Z Axis >Tg	95 µm/m°C	ASTM D3386
Storage Modulus	16/7 GPa (@25°C/150°C)	ASTM 4065
CHEMICAL PROPERTIES		
Water Vapor Retention	0.21% wt.	ASTM E595
Out-Gassing Total Mass Loss	0.23% wt.	ASTM E595
Collect Volatile Condensable Material	<0.01% wt.	ASTM E595
AGENCY RATINGS & DURABILITY		
U.L. Maximum Operating Temperature	140°C	U.L. 746B
U.L. Flammability	V-0	U.L. 94
Comparative Tracking Index (CTI)	0/600	ASTM D3638/ IEC60112
Solder Limit Rating	325°C/60 seconds	U.L. 796

Please test this material in your application. Bergquist provides this engineering data for design guidance only. Depending upon your application, the observed material performance may vary.



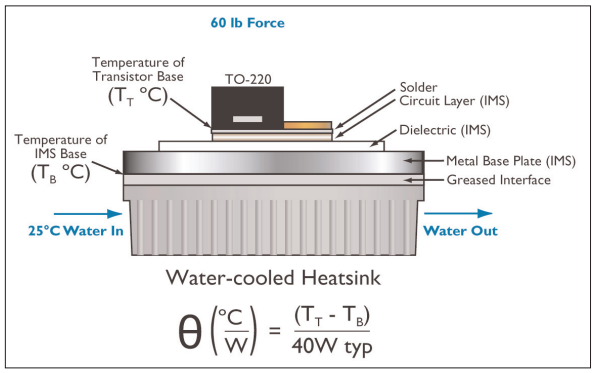


High Power LED applications using Thermal Clad.

Applications

- High watt-density applications where achieving low thermal resistance is required
- Power conversion
- Heat-rails
- Solid state relays
- Motor drives
- LED applications
- Solar receivers

MET-4.5-01-40000 Test Thermal Performance of Insulated Metal Substrates (IMS) TO-220 Set-up



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