

## FEATURES & BENEFITS

- Thermal resistance 3mil, 0.05°C-in²/W (0.32°C-cm²/W)
- Product Thermal conductivity of 4.1 W/m-K
- High Voltage Strength
- High temperature applications
- Lead-free solder compatible
- Eutectic AuSn compatible
- RoHS compliant and environmentally green
- Available on aluminum and copper base substrates
  - Other substrates materials may be available

Thermal Clad Metal Core PCB's (MCPCB's) minimize thermal impedance and conducts heat more efficiently than standard printed wiring boards (PWB's). These substrates are more mechanically robust than Direct Bond Copper (DBC) construction.

The differentiating technology of Thermal Clad resides in the dielectric. This datasheet highlights the performance characteristics of Thermal Clad HT dielectric.

### Applications

- High power density applications where achieving low thermal resistance is required
- Power conversion
- Heat Rails
- Solid state relays
- Motor drives
- LED Lighting

### Base Metals Thicknesses mil (mm)

- 5052 Aluminum 32(0.8), 40(1.0)\*, 63(1.6)\*, 80(2.0), 125(3.2)
- 6061 Aluminum 32(0.8), 40(1.0)\*, 63(1.6)\*, 80(2.0), 125(3.2)
- Copper C1100 20(0.5), 32(0.8), 40(1.0)\*, 60(1.5)\*, 125(3.2)

### Copper Foil

- ED copper 1oz, 2oz, 3oz, 4oz, 6oz
- RA 8oz, 10oz

### General Model\*\*

HT 04503 (3mil)<sup>A</sup>, HT 07006 (6mil)<sup>B</sup>, HT 09009 (9mil)<sup>C</sup>

\* most common thicknesses

\*\* If there is any specific inquiry other than standard specification, please contact us.

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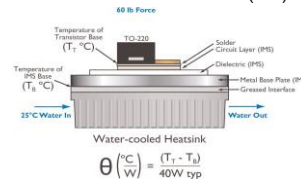
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THICKNESS		UNIT	VALUE	TEST METHOD
THERMAL PROPERTIES				
Product Thermal Conductivity		W/m-K	4.1	MET 5.4-01-40000
Dielectric Thermal Conductivity		W/m-K	2.2	ASTM D5470
Thermal Resistance	3mil(76μm) <sup>A</sup>	°C-in <sup>2</sup> /W (°C-cm <sup>2</sup> /W)	0.05 (0.32)	ASTM D5470
	6mi(152μm) <sup>B</sup>		0.11 (0.71)	
	9mil(225μm) <sup>C</sup>		0.16 (1.03)	
Thermal Impedance	3mil(76μm) <sup>A</sup>	°C/W	0.45	MET-5.4-01-40000
	6mi(152μm) <sup>B</sup>		0.70	
	9mil(225μm) <sup>C</sup>		0.90	
ELECTRICAL PROPERTIES				
Dielectric Constant		-	7	ASTM D150
Dissipation Factor	3mil(76μm) <sup>A</sup>	1KHz/1MHz	0.0033/0.0148	ASTM D150
	6mi(152μm) <sup>B</sup>		0.0038/0.0129	
	9mil(225μm) <sup>C</sup>		0.0040/0.0130	
Capacitance	3mil(76μm) <sup>A</sup>	pF/in <sup>2</sup> (pF/cm <sup>2</sup> )	540 (85)	ASTM D150
	6mi(152μm) <sup>B</sup>		270 (43)	
	9mil(225μm) <sup>C</sup>		160 (25)	
Volume Resistivity		Ω-m	10 <sup>14</sup>	ASTM D257
Surface Resistivity		Ω/sq	10 <sup>13</sup>	ASTM D257
Breakdown Voltage	3mil (76μm) <sup>A</sup>	KVAC	8.5	ASTM D149
	6mil (152μm) <sup>B</sup>		11.0	
	9mil (225μm) <sup>C</sup>		20.0	
MECHANICAL PROPERTIES				
Color		-	White	Visual
Peel Strength@25°C		lb/ in (N/mm)	6 (1.1)	ASTM D2861
Glass Transition (Tg)		°C	150	ASTM E1356
CTE in XY/Z Axis <Tg		μm /m°C	25	ASTM D3386
CTE in XY/Z Axis >Tg		μm /m°C	95	ASTM D3386
Storage Modulus (@25°C/150°C)		GPa	16 / 7	ASTM 4065
CHEMICAL PROPERTIES				
Water Vapor Retention		% Wt.	0.24	ASTM E595
Out-Gassing Total Mass Loss		% Wt.	0.28	ASTM E595
Collect Volatile Condensable Material		% Wt.	0.01	ASTM E595
AGENCY RATINGS & DURABILITY				
UL Maximum Operating Temperature (MOT)		°C	140	UL 746
UL Flammability		-	V-0	UL 94
UL Comparative Tracking Index		(CTI)	0/ 600	ASTM D3638/ IEC 60112
Solder Limit Rating (60sec)		°C	325	UL 746

Test Thermal Performance of Insulated Metal Substrates (IMS) TO-220 Set-up



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