

**FEATURES & BENEFITS**

- Thermal resistance 3mil, 0.15°C-in<sup>2</sup>/W (0.97°C-cm<sup>2</sup>/W)
- Product Thermal conductivity of 1.5 W/m-K
- High voltage strength
- Lead-free solder compatible
- RoHS compliant and environmentally green
- Available with aluminum or copper base
  - Other base materials may be available

Thermal Clad Metal Core PCB's (MCPCB's) minimize thermal impedance and conduct heat more efficiently than standard printed wiring boards (PWB's).

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

**Applications**

- LED Lighting
- Power conversion
- Heat rails
- Solid state relays

**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 Foil**

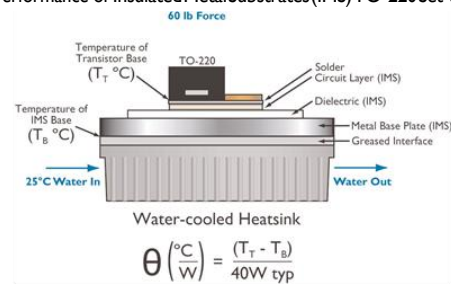
- ED copper 1oz, 2oz, 3oz, 4oz, 6oz
- RA 8oz, 10oz

**General Model\*\***

HR T30.20 (3mil)

	THICKNESS	UNIT	VALUE	TEST METHOD
<b>THERMAL PROPERTIES</b>				
Product Thermal Conductivity		W/m-K	1.5	MET 5.4-01-40000
Dielectric Thermal Conductivity		W/m-K	0.8	ASTM D5470
Thermal Resistance	3mil (76µm)	°C-in <sup>2</sup> /W (°C-cm <sup>2</sup> /W)	0.15 (0.97)	ASTM D5470
Thermal Impedance	3mil (76µm)	°C/W	0.9	MET-5.4-01-40000
<b>ELECTRICAL PROPERTIES</b>				
Dielectric Constant		-	7	ASTM D150
Dissipation Factor		12Hz	0.005	ASTM D150
Capacitance	3mil (76µm)	pF/in <sup>2</sup> (pF/cm <sup>2</sup> )	450 (70)	ASTM D150
Volume Resistivity		Ω-m	10 <sup>15</sup>	ASTM D257
Surface Resistivity		Ω/sq	10 <sup>14</sup>	ASTM D257
Dielectric Breakdown Voltage	3mil (76µm)	kVAC	7.5	ASTM D149
<b>MECHANICAL PROPERTIES</b>				
Color		-	Light Green	Visual
Peel Strength@25°C		lb/in (N/mm)	9 (1.6)	ASTM D2861
Glass Transition (T <sub>g</sub> )		°C	90	ASTM E1356
CTE in XY/Z Axis <T <sub>g</sub>		µm /m°C	25	ASTM D3386
CTE in XY/Z Axis >T <sub>g</sub>		µm /m°C	95	ASTM D3386
Storage Modulus (@25°C/150°C)		GPa	14 / 0.3	ASTM 4065
<b>CHEMICAL PROPERTIES</b>				
Water Vapor Retention		% Wt.	0.13	ASTM E595
Out-Gassing Total Mass Loss		% Wt.	0.31	ASTM E595
Collect Volatile Condensable Material		% Wt.	<0.01	ASTM E595
<b>AGENCY RATINGS &amp; DURABILITY</b>				
UL Maximum Operating Temperature (MOT)		°C	150	UL 746
UL Flammability		-	V-0	UL 94
UL Comparative Tracking Index		(CTI)	>600	ASTM D3638/ IEC 60112
Solder Limit Rating		300°C/60 sec	Pass	UL 746

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



\* most common thicknesses

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