

## FEATURES & BENEFITS

- Thermal resistance, 0.03°C-in<sup>2</sup>/W (0.18°C-cm<sup>2</sup>/W)
  - (4mil thickness)
- Product thermal conductivity of 3.7 W/m-K
  - 2oz Cu x 4 SJR x 1.6mm Al
- High temperature applications
- High voltage applications
- Lead-free solder compatible
- Low Tg, low modulus - improved solder joint reliability
- 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 SJR dielectric. This unique 4mil (102µm) thick dielectric has properties designed to absorb internal stresses related to CTE mismatch, such as a low Tg, 66°C, low modulus 0.6 @ 150°C along with excellent thermal performance of 0.58°C/W.

### Applications

- High watt-density applications where achieving low thermal resistance is required
- Automotive forward lighting
- Industrial lighting
- LED applications

### Base Metals Thicknesses mils (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)
- 4045 Aluminum 59(1.5)

### Copper Foil

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

### General Model\*\*

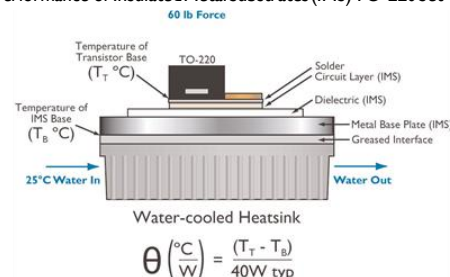
SJR 05804 (4mil)

\* Most common thicknesses

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

	THICKNESS	UNIT	VALUE	TEST METHOD
<b>THERMAL PROPERTIES</b>				
Product Thermal Conductivity		W/m-K	3.7	MET 5.4-01-40000
Dielectric Thermal Conductivity		W/m-K	2.7	ASTM D5470
Thermal Resistance	4mil (102µm)	°C-in <sup>2</sup> /W (°C-cm <sup>2</sup> /W)	0.03 (0.18)	ASTM D5470
Thermal Impedance	4mil (102µm)	°C/W	0.58	MET-5.4-01-40000
<b>ELECTRICAL PROPERTIES</b>				
Dielectric Constant		-	6.3	ASTM D150
Dissipation Factor		1kHz	0.006	ASTM D150
Capacitance	4mil (102µm)	pF/in <sup>2</sup> (pF/cm <sup>2</sup> )	350 (55)	ASTM D150
Volume Resistivity		Ω-m	10 <sup>13</sup>	ASTM D257
Surface Resistivity		Ω/sq	10 <sup>16</sup>	ASTM D257
DBV Breakdown Voltage	4mil (102µm)	kVAC	9.2	ASTM D149
<b>MECHANICAL PROPERTIES</b>				
Color		-	Off-White	Visual
Peel Strength@25°C		lb/in (N/mm)	5.7 (1.0)	ASTM D2861
Glass Transition (Tg)		°C	66	ASTM E1356
CTE in XY/Z Axis <Tg		µm /m°C	55	ASTM D3386
CTE in XY/Z Axis >Tg		µm /m°C	54	ASTM D3386
Storage Modulus (@25°C/150°C)		GPa	17.6 / 0.6	ASTM 4065
<b>CHEMICAL PROPERTIES</b>				
Water Vapor Retention		% Wt.	0.02	ASTM E595
Out-Gassing Total Mass Loss		% Wt.	0.01	ASTM E595
Collect Volatile Condensable Material		% Wt.	<0.01	ASTM E595
<b>AGENCY RATINGS &amp; DURABILITY</b>				
UL Maximum Operating Temperature (MOT)		140°C	TBD	UL 746
UL Flammability		-	V-0	UL 94
UL Comparative Tracking Index		(CTI)	0	ASTM D3638
Solder Limit Rating		°C/ sec	325/60	UL 746

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



# TCLAD Inc

www.tclad.com

### AMERICA

TCLAD INC  
Phone: +1 715-262-5898  
Email: sales.us@tclad.com

### ASIA-PACIFIC

TCLAD TECHNOLOGY CORP.  
Phone: +886 3 5643931  
Email: sales.asia@tclad.com

### EUROPE

TCLAD EUROPE GmbH  
Phone: +49 6352 6788210  
Email: sales.eu@tclad.com

All marks used above are trademarks and/or registered trademarks of TCLAD Inc and its affiliates in the U.S., Germany and elsewhere.

© 2021 TCLAD Inc. All rights reserved.

All statements, technical information and recommendations herein are based on tests we believe to be reliable, and THE FOLLOWING IS MADE IN LIEU OF ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MARKET ABILITY AND FITNESS FOR PURPOSE. Sellers' and manufacturers' only obligation shall be to replace such quantity of the product proved to be defective. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risks and liability whatsoever in connection therewith. NEITHER SELLER NOR MANUFACTURER SHALL BE LIABLE EITHER IN TORT OR IN CONTRACT FOR ANY LOSS OR DAMAGE, DIRECT, INCIDENTAL, OR CONSEQUENTIAL, INCLUDING LOSS OF PROFITS OR REVENUE ARISING OUT OF THE USE OR THE INABILITY TO USE A PRODUCT. No statement, purchase order or recommendations by seller or purchaser not contained herein shall have any force or effect unless in an agreement signed by the officers of the seller and manufacturer. For more detail, please refer to our website <http://www.tclad.com>.

Rev. 2022-D05-006