

SPL-15 HT Dielectric

Features & Benefits

- Very low thermal resistance 100μm, <0.015 °C-in²/W
- Product Thermal conductivity of 15 W/m-K
 - o (2oz Cu x 100μm SPL-15 HT x 1.5 Al)
- Dielectric Thermal Conductivity 10 W/m-K
- High operating temperature, ~ 200°C
- Lead-free solder compatible
- RoHS compliant and environmentally green
- Available as a laminated panel, RCC or prepreg
- Available on aluminum and copper base substrates
- Other substrates materials may be available.
- TCLAD Metal Core PCB's (MCPCB's) minimize thermal impedance and conducts 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 TCLAD SPL-15 HT.

Applications

- High power density applications where achieving low thermal resistance is required
- Power conversion, Inverter, DC/DC etc.
- · Industrial motor drives
- High temperature SiC IGBT modules

Configurations

Base Metal	I hickness mm (mil)			
• 5052 Aluminum	0.8 (32), 1.0 (40)*, 1.5 (59)*, 2.0 (80)			
• 6061 Aluminum	0.8 (32), 1.0 (40)*, 1.5 (59)*, 2.0 (80)			
• 1050 Aluminum	0.8 (32), 1.0 (40)*, 1.5 (59)*, 2.0 (80)			
• 4045 Aluminum	1.5 (59), 2.0 (80)			
• Copper C1100	1.0 (40)*, 1.5 (59)*, 2.0 (80)			
Copper Foil	Weight oz (thickness μm)			

• ED Copper: 1oz (35), 2oz (70), 3oz (105), 4oz (140), 6oz (210)

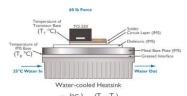
RA Copper: 8oz (280), 10oz (350), higher

Most common thicknesses

** Other thicknesses and alloys may be available. Please contact TCLAD sales department for more information.

ltem	Thickness	Unit	Value	Method		
Thermal Properties						
Product Thermal Conductivity		W/m-K	15	TO-220		
Dielectric Thermal Conductivity		W/m-K	10	ASTM D5470		
Thermal Resistance	I 00μm (4mil)	°C-in²/W	<0.015	ASTM D5470		
Electrical Properties						
Dielectric Constant		-	8.4	IPC-TM-650 2.5.5.3		
Dissipation Factor	100μm (4mil)	1MHz	0.018	IPC-TM-650 2.5.5.3		
Capacitance	100μm (4mil)	pF/cm²	110	IPC-TM-650 2.5.5.3		
Volume Resistivity		Ω-cm	1013	IPC-TM-650 2.5.17.1		
Surface Resistivity		Ω/sq	1013	IPC-TM-650 2.5.17.1		
Breakdown Voltage	80µm (3.2mil) 100µm (4mil) 150µm (6mil)	KVAC	3 4 6	ASTM D149		
Mechanical Properties						
Color		-	Light brown	Visual		
Peel Strength @ 25°C		Kg/cm	>1.0	IPC TM-650 2.4.8		
Glass Transition (Tg)		°C	270	IPC TM-650 2.4.25		
CTE in X,Y/Z Axis <tg< td=""><td>μm/m°C</td><td>11.7</td><td>IPC TM-650 2.4.24.5</td></tg<>		μm/m°C	11.7	IPC TM-650 2.4.24.5		
CTE in X,Y/Z Axis >Tg		μm/m°C	24.3	IPC TM-650 2.4.24.5		
Youngs Modulus		GPa	30	ASTM D638		
Solder Heat Resistance (min)		°C	>60	IPC-TM-650 2.4.24.1		
Chemical Properties						
Water Vapor Retention		%	< 0.5	IPC TM-650 2.6.2.1		
Out-Gassing Total Mass Loss		%	< 0.1	ASTM E595		
Collect Volatile Condensable Material		%	< 0.1	ASTM E595		
Agency Ratings & Durability						
UL Maximum Operating Temperature (MOT)		°C	TBD expect 200C	UL 746		
UL Flammability		-	TBD expect V-0	UL 94		
UL Comparative Tracking Index		(CTI)	TBD expect 600	UL 746E		

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



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