TCLAD

Technical Data

SFL-3 Dielectric

Features & Benefits

- Thermal resistance 100µm, 0.12°C-in²/W
- Product Thermal conductivity of 3 W/m-K
  - (2oz Cu x 100µm SFL-3 x 1.5 Al)
- High Voltage Strength
- Lead-free solder compatible
- RoHS compliant and environmentally green
- ***Available as laminated panels, RCC and Prepreg***
- ***Available on aluminum and copper base substrates***
- SFL-3 provides the advantages of high thermal conductivity, reliability, and low thermal resistance.
- SFL is a 3-layer structure, which includes layers of copper foil, ceramic filled polymer, and base metal.
- The insulator is made by a unique polymer composite that combines epoxy resin and high thermal conductivity filler, and the thermal conductivity is much higher than the traditional epoxy filled glass fiber system.
- Thermal Clad SFL-3 Laminates and prepregs are specifically designed for mid performance applications where cost control is a major factor.

Applications

- LED headlight & foglamps
- Other applications where ceramic based components are used where improved solder joint reliability is required.

Configurations

Base Metal	Thickness 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	8oz (280), 10oz (350)

* Most common thicknesses

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

We provide custom solutions for your applications. For Further questions, please contact your local sales agent or directly TCLAD sales in your region.

Item	Thickness	Unit	Value (Typ.)	Method
Thermal Properties				
Product Thermal Conductivity		W/m-K	3	TO-220
Dielectric Thermal Conductivity		W/m-K	1.7	ASTM D5470
Thermal Resistance	100µm (4mil)	°C-in²/W	<0.12	ASTM D5470
Thermal Impedance	100µm (4mil)	°C/W	0.33	TO-220
Electrical Properties				
Dielectric Constant		-	4.4	IPC-TM-650 2.5.5.3
Dissipation Factor	100µm (4mil)	1MHz	0.171	IPC-TM-650 2.5.5.3
Capacitance	100µm (4mil)	pF	28.1	IPC-TM-650 2.5.5.3
Volume Resistivity		Ω-cm	10^{15}	IPC-TM-650 2.5.17.1
Surface Resistivity		Ω/sq	10^{13}	IPC-TM-650 2.5.17.1
Breakdown Voltage	80µm (3.2mil) 100µm (4mil) 150µm (6mil)	KVAC	5 6 8	ASTM D149
Mechanical Properties				
Color		-	Off-white	Visual
Peel Strength @ 25°C		Kg/cm	>1.4	IPC TM-650 2.4.8
Glass Transition (Tg)		°C	140	IPC TN-650 2.4.25
CTE in X,Y/Z Axis <Tg		µm/m°C	25	IPC TM-650 2.4.24.5
CTE in X,Y/Z Axis >Tg		µm/m°C	32	IPC TM-650 2.4.24.5
Decomposition Temperature (2% loss)		°C	350	IPC TM-650 2.4.24.6
Decomposition Temperature (5% loss)		°C	380	IPC TM-650 2.4.24.6
Chemical Properties				
Water Absorption		% Wt.	<0.5	ASTM E595
Out-Gassing Total Mass Loss		% Wt.	<0.1	ASTM E595
Collect Volatile Condensable Material		% Wt.	< 0.1	ASTM E595
Agency Ratings & Durability (UL: E121882)				
UL Maximum Operating Temperature (MOT)		°C	130	UL 746
UL Flammability		-	V-0	UL 94
UL Comparative Tracking Index		(CTI)	0/600	ASTM D3638/ IEC 60112
Solder Limit Rating		°C	300	UL 746

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RoHS compliant

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