Technical Data

SFL-8 Dielectric

Features & Benefits

- Thermal resistance 100µm, 0.08 °C-in²/W
- Product Thermal Conductivity of 8 W/m-K
  - (2oz Cu x 100µm SFL-8 x 1.5 Al)
- High Electrical Strength
- 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 SFL-8 dielectric.

Applications

- High power density applications where achieving low thermal resistance is required, such as:
- LED Lighting
- Power conversion
- Motor drives
- Solid state relays

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)

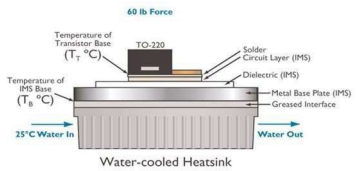
* Most common thicknesses

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

We provide custom solutions for your applications. For Further inquiries, please contact your local sales agent or directly to TCLAD sales sales@tclad.com

Item	Thickness	Unit	Value (Typ.)	Method
Thermal Properties				
Product Thermal Conductivity		W/m-K	8	TO220
Dielectric Thermal Conductivity		W/m-K	2.75	ASTM D5470
Thermal Resistance	100µm (4mil)	°C-in²/W	0.08	ASTM D5470
Thermal Impedance	100µm (4mil)	°C/W	0.09	TO-220
Electrical Properties				
Dielectric Constant		-	4.9	IPC-TM-650 2.5.5.3
Dissipation		1MHz	0.012	IPC-TM-650 2.5.5.3
Capacitance	100µm (4mil)	pF	48.6	IPC-TM-650 2.5.5.3
Volume Resistivity		Ω-cm	10^{13}	IPC-TM-650 2.5.17.1
Surface Resistivity		Ω/sq	10^{15}	IPC-TM-650 2.5.17.1
Breakdown Voltage	80µm (3.2mil)	KVAC	4	ASTM D149
	100µm (4mil)		5	
	150µm (6mil)		7	
Mechanical Properties				
Color		-	Off-white	Visual
Peel Strength @ 25°C		Kg/cm	>1.4	IPC TM-650 2.4.8
Glass Transition (Tg)		°C	150	IPC TM-650 2.4.25
CTE in X,Y/Z Axis <Tg		µm/m°C	28	IPC TM-650 2.4.24.5
CTE in X,Y/Z Axis >Tg		µm/m°C	35	IPC TM-650 2.4.24.5
Youngs Modulus		GPa	30	ASTM D638
Decomposition Temperature (2% loss)		°C	350	IPC TM-650 2.4.24.6
Decomposition Temperature (5% loss)		°C	400	IPC TM-650 2.4.24.6
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: E121882				
UL Maximum Operating Temperature (MOT)		°C	140	UL 746
UL Flammability		-	V-0	UL 94
UL Comparative Tracking Index		(CTI)	600	UL 746E

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



$$\theta\left(\frac{°C}{W}\right) = \frac{(T_T - T_B)}{40W\ typ}$$

TCLAD

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