

### SFRG-8 Solvent Free Resin Coated Copper

## Features & Benefits

- SFRG-8 (Solvent Free Resin Glass-Fiber Reinforced Coated Copper) is a kind of resin coated copper which provides the advantage of high thermal conductivity and reliability. This Semi-finished material is good for single and multilayer thermal conductive printed circuit board applications.
- SFRG-8 is a sandwich structure, which includes a layer of copper, prepreg, and lower release film
- Excellent thermal conductivity
- High Electrical Strength
- Lead-free solder compatible
- RoHS compliant and environmentally green
- Available in rolls
- TCLAD SFRG-8 minimizes thermal impedance and conducts heat more efficiently than standard FR-4 PCB printed wiring boards (PWB's) or IMS.
- The differentiating technology of Thermal Clad resides in the dielectric. This datasheet highlights the performance characteristics of TCLAD SFRG-8.

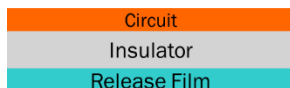
\*Product thermal conductivity is based on 2oz cu x 100µm SFRG-8 x 1.5mm Al

## Applications

- Traditional multilayer PCBs that have hot spots that need to be dissipated
- High power density applications which required low thermal resistance
- Power conversion, Inverter, DC/DC, AC/DC
- Industrial motor drives
- Solid State Relays

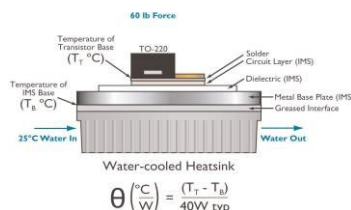
## Configurations

| Characteristics        | SFRG-8             |
|------------------------|--------------------|
| Panel Size [mm]        | 500 x 600 etc.     |
| Prepreg Thickness [µm] | 50,80,100,150 etc. |
| Circuit [oz]           | 1,2,3 etc.         |



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

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



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Rev 2025 D95-001

| Item  | Thickness    | Unit           | Value (Typ.)     | Method              |
|---|--------------|----------------|------------------|---------------------|
| <b>Thermal Properties</b>                           |              |                |                  |                     |
| Product Thermal Conductivity                        |              | W/m-K          | 7.6 *            | TO-220 Method       |
| Dielectric Thermal Conductivity                     |              | W/m-K          | 1.85             | ASTM D5470          |
| Thermal Resistance                                  | 100µm (4mil) | °C/W           | 0.09             | ASTM D5470          |
| Thermal Impedance                                   | 100µm (4mil) | °C/W           | 0.15             | TO-220 Method       |
| <b>Electrical Properties</b>                        |              |                |                  |                     |
| Dielectric Constant                                 |              | -              | 6.1              | IPC-TM-650 2.5.5.9  |
| Dissipation Factor                                  | 100µm (4mil) | 1MHz           | 0.016            | IPC-TM-650 2.5.5.9  |
| Capacitance   | 100µm (4mil) | pF             | 20.8             | IPC-TM-650 2.5.5.9  |
| Volume Resistivity                                  |              | Ω-cm           | 10 <sup>13</sup> | IPC-TM-650 2.5.17.1 |
| Surface Resistivity                                 |              | Ω/sq           | 10 <sup>15</sup> | IPC-TM-650 2.5.17.1 |
| Breakdown Voltage                                   |              | AC KV/mm       | >30              | ASTM D149           |
| <b>Mechanical Properties</b>                        |              |                |                  |                     |
| Color   |              | -              | Off-White        | Visual              |
| Peel Strength @ 25°C                                |              | Kg/cm (lbf/in) | 1.4 (7.8)        | ASTM D286           |
| Glass Transition (Tg)                               |              | °C             | 150              | ASTM E1356          |
| CTE in X,Y/Z Axis <Tg                               |              | µm/m°C         | 28               | ASTM D3386          |
| CTE in X,Y/Z Axis >Tg                               |              | µm/m°C         | 35               | ASTM D3386          |
| Youngs Modulus                                      |              | GPa            | 30               | ASTM D638           |
| Decomposition Temperature (2% loss)                 |              | °C             | 350              | IPC TM-650 2.4.24.6 |
| Decomposition Temperature (5% loss) °C              |              | °C             | 400              | IPC TM-650 2.4.24.6 |
| <b>Chemical Properties</b>                          |              |                |                  |                     |
| Water Vapor Retention                               |              | %              | < 0.5            | ASTM E595           |
| Out-Gassing Total Mass Loss                         |              | %              | < 0.1            | ASTM E595           |
| Collect Volatile Condensable Material               |              | %              | < 0.1            | ASTM E595           |
| <b>Agency Ratings &amp; Durability- UL: E121882</b> |              |                |                  |                     |
| UL Flammability                                     |              | -              | V-0              | UL 94               |