

# S7439G

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### HALOGEN-FREE LOW LOSS LAMINATES AND PREPREGS

S7439G is a proprietary halogen-free high performance 180 °C (DSC) glass transition temperature (Tg) FR-4 system for multilayer Printed Wiring Board (PWB) engineered for applications that require excellent electrical, thermal and reliability performance.

S7439G has a Dielectric Constant (Dk) and Dissipation Factor (Df) of 3.86 and 0.0070 at 10 GHz using the IPC 2.5.5.5 test method. The system also exhibits a stable Dk & Df over a wide range of frequencies (1 GHz to 20 GHz ) and temperatures (-40 °C to +125 °C). It is also compatible with high layer count applications that require multiple 2 oz. copper layers and that have 0.8mm pitch. It also has demonstrated excellent CAF resistance down to 0.7mm pitch when tested using industry standard CAF TVs across multiple OEMs.

The S7439G system is available in spread and standard E-Glass. It is supplied with a 3um Rz roughness VLP copper as the default offering. A 2um VLP copper is also available if additional electrical bandwidth is needed.

## APPLICATIONS

- High Speed Servers
- High Speed SANs
- Switches & Routers
- High Layer Count Backplanes
- High Layer Count Line Cards
- Multiple 2 oz. Copper Layers
- 0.8mm Pitch
- Burn-in Boards
- HDI Builds
- Hybrid Builds

## FEATURES

- Excellent Thermal Performance
- High Tg: 180 °C (DSC)
- Low CTE @ 50/240 ppm/°C
- High Td: 404 °C (TGA @ 5% wt loss)
- Excellent Electrical Performance
- 3.86 Dk & 0.0070 Df @ 10 GHz (IPC 2.5.5.5)
- Stable Dk/Df over Frequency and Temperature
- Superior CAF Performance
- UL 94 V-0 Flame Rating
- Standard FR-4 PCB processes

## PRODUCT CONTACTS

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## GENERAL PROPERTIES

| PROPERTY                                     | TYPICAL VALUE          | UNITS         | CONDITION                                   | TEST METHOD   |
|--|------------------------|---------------|---|---|
| Glass Transition Temperature, T <sub>g</sub> | 190<br>180             | °C            | A   | DMA IPC-TM-650 2.4.24.2<br>DSC IPC-TM-650 2.4.25                                      |
| Thermal Expansion, Z-CTE                     | 50<br>240              | ppm/°C        | A   | Before T <sub>g</sub> , IPC-TM-650 2.4.24<br>After T <sub>g</sub> , IPC-TM-650 2.4.24 |
| Decomposition Temperature, T <sub>d</sub>    | 404                    | °C            | A   | TMA IPC-TM650 2.4.24.6  |
| Delamination Time, T <sub>288</sub>          | 60                     | minutes       | A   | TMA IPC-TM650 2.4.24  |
| Delamination Time, T <sub>300</sub>          | 60                     | minutes       | A   | TMA IPC-TM650 2.4.24  |
| Humidity Resistance                          | > 10                   | cycles        | 85°C/85%RH/168 Hours<br>288°C/10sec Dipping | -   |
| Dielectric Constant (D <sub>k</sub> )        | 3.93<br>3.86           | -             | 1 GHz<br>10 GHz                             | IPC-TM-650 2.5.5.9<br>IPC-TM-650 2.5.5.5  |
| Dissipation Factor (D <sub>f</sub> )         | 0.0043<br>0.0070       | -             | 1 GHz<br>10 GHz                             | IPC-TM-650 2.5.5.9<br>IPC-TM-650 2.5.5.5  |
| Volume Resistivity                           | 1.15 × 10 <sup>8</sup> | MΩ•cm         | A   | IPC-TM-650 2.5.17.1   |
| Surface Resistivity                          | 8.50 × 10 <sup>6</sup> | MΩ            | A   | IPC-TM-650 2.5.17.1   |
| Electrical Strength                          | 34.5                   | kV/mm         | 0.51mm (0.020")                             | IPC-TM-650 2.5.6.2  |
| Thermal Conductivity                         | 0.57                   | W/m•K         | 100 °C                                      | ASTM D5470  |
| Water Absorption                             | 0.12                   | %             | D-24/23                                     | IPC-TM-650 2.6.2.1  |
| Copper Peel Strength                         | 1.3(7.4)               | N/mm (lb/in.) | after solder float 1 oz.<br>EDC Foil        | IPC-TM-650 2.4.8  |
| Flammability                                 | 94V-0                  | Rating        | A   | UL  |

## PRODUCT SPECIFICATION

| PRODUCT | STANDARD OFFERINGS  | STANDARD PANEL SIZE  |
|---------|---|--|
| S7439G  | Thickness - 0.002"(0.05mm) to 0.060" (1.5mm)<br>Copper - VLP with 3um Rz<br>E-Glass - Spread & Standard | 18" x 24", 21"x24" & 27" x 24"<br>Additional panel sizes may be available upon request. For most application the standard EDC foil should be used. When PIM and insertion loss is critic the RTF low profile copper foil should be considered. |

<sup>(1)</sup>Typical values are a representation of an average value for the population of the property. For specification values contact SYTECH Corporation. The information in this data sheet is intended to assist you in designing with SYTECH's circuit materials. It is not intended to and does not create any warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose or that any results shown in this data sheet will be achieved by a user for a particular purpose. The user is responsible for determining the suitability of SYTECH's circuit materials for each application.