

METEORWAVE® 8000

High Speed / Extremely Low Loss Laminate & Prepreg

Benefits

- Excellent Electrical Properties utilizing SI® Technology
- Robust Thermal and Mechanical Properties
- Highly CAF Resistant
- High-Tg FR-4 Processing

Applications

- Telecommunications
- High Speed Services
- High Speed Storage Networks
- Internet Switching / Routing Systems
- Wireless Communications Backplanes



Meteorwave® 8000 high speed / extremely low loss digital electronic materials offer very advanced electrical performance.

Meteorwave® 8000 is designed for high layer count printed circuit boards which require high levels of reliability. It is intended for use in 100Gbs core routers, high speed switches, supercomputers and applications where low signal attenuation, high reliability and high data transfer rates are critical.

Excellent Electrical Properties utilizing SI® Technology

- Low Dk electrical performance
- Extremely low Df electrical performance
- Stable electrical properties versus frequency when tested over environmental conditions
- Designed for 100 Gbs applications

Thermal and Mechanical Properties

- Good peel strength on ultra-smooth copper
- Outstanding thermal reliability
- Time to Delamination $T_{300} > 40$ minutes
- Meets NASA outgassing specification

Highly CAF Resistant

- All constructions utilize super spread weaves and fiberglass finishes optimized for CAF performance.

High-Tg FR-4 Processing

- Processes similar to other high-Tg materials
- 90 minutes cure at 216°C and 400-500 psi

Meets UL 94V-0 and IPC4101 /102 specifications
UL file number: E36295

| Properties | Conditions | Typical Value | Unit | Test Method |
|---------------------------------------|---|--------------------------------|--|---------------------|
| Electrical Properties | | | | |
| Dielectric Constant | @ 2 GHz | 3.29 | | IPC-TM-650.2.5.5.5 |
| | @ 10 GHz | 3.28 | | |
| Dissipation Factor | @ 2 GHz | 0.0012 | | |
| | @ 10 GHz | 0.0016 | | |
| Volume Resistivity | C - 96 / 35 / 90 | 4.2 x 10 ⁶ | MΩ - cm | IPC-TM-650.2.5.17.1 |
| | E - 24 / 125 | 8.8 x 10 ⁷ | | |
| Surface Resistivity | C - 96 / 35 / 90 | 3.1 x 10 ⁵ | MΩ | IPC-TM-650.2.5.17.1 |
| | E - 24 / 125 | 3.6 x 10 ⁷ | | |
| Electric Strength | | 5.9x10 ⁴ (1500) | V/mm (V/mil) | IPC-TM-650.2.5.6.2 |
| Thermal Properties | | | | |
| *Glass Transition Temperature (Tg) | TMA(°C) | 165 | °C | IPC-TM-650.2.4.24c |
| | DMA(°C) (Tan d Peak) | 185 | °C | IPC-TM-650.2.4.24.3 |
| Degradation Temp (TGA) | Degradation Temp (TGA) (5% wt. loss) | 376 | °C | IPC-TM-650.2.3.40 |
| T-300 | Time to delamination @ 300°C | 40 | minutes | IPC-TM-650.2.4.24.1 |
| Thermal Conductivity | | 0.51 | W/mK | ASTM E1461 |
| Mechanical Properties | | | | |
| Peel Strength | 1 oz (35μ) Cu | 0.91 (5.2) | N/mm (lbf/inch) | IPC-TM-650.2.4.8 |
| | After Solder Float | 0.86 (4.9) | N/mm (lbf/inch) | IPC-TM-650.2.4.8 |
| X / Y CTE | -40°C to + 125°C | 14 / 16 | ppm/°C | IPC-TM-650.2.4.41 |
| Z Axis CTE Alpha 1 / Alpha 2 | 50°C to Tg / Tg to 260°C | 35 / 185 | ppm/°C | IPC-TM-650.2.4.24 |
| Z Axis Expansion | 50°C to 260°C | 2.5 | % | IPC-TM-650.2.4.24 |
| Young's Modulus (X / Y) | | 19.9 / 18.6 (2.9 / 2.7) | GN/m ² (psi x10 ⁶) | ASTM D3039 |
| Poisson's Ratios (X / Y) | | 0.177 / 0.163 | | |
| Flexural Strength (X / Y) | @ 125°C | 0.31 / 0.381 (4.50 / 5.52) | GN/m ² (psi x10 ⁶) | |
| | @ 150°C | 0.234 / 0.151 (3.40 / 2.20) | GN/m ² (psi x10 ⁶) | |
| Chemical / Physical Properties | | | | |
| Moisture Absorption | | 0.01 | wt. % | IPC-TM-650.2.6.2.1 |

* DMA is the preferred method for measuring Tg - other methods may be less accurate.

- All test data provided are typical values and not intended to be specification values. For review of critical specification tolerances, please contact a company representative directly
- Meteorwave® 8000 series can be manufactured in laminate thickness from 1.2 mil (0.031 mm) and up.
- Meteorwave® 8000 series is available in most common panel sizes.
- Please contact AGC for availability of any other constructions, copper weights and glass styles including ultra-low profile copper and RTFOIL®

