

METEORWAVE® 2000

Ultra Low Loss Materials Laminate & Prepreg



Benefits

- Advanced Electrical Performance
- Stable dielectric performance over a wide frequency range
- High Conductive Anodic Filament (CAF) resistance
- Available in a variety of constructions

Applications

- 25 GHz and above, Infrastructure
- Core Routers
- High Speed Switches
- Cloud Storage



Meteorwave® 2000 high speed / very low loss materials offer advanced electric performance and high reliability for use in the next generation. It is designed for use in core routers, high speed switches, supercomputers and applications where low signal attenuation and high data transfer rates are critical.

Excellent Electrical Properties

- Ultra low loss
- Stable Dk/Df versus frequency when tested over various environmental conditions
- Low DK

Thermal and Mechanical Properties

- Very low Z-axis expansion for high reliability
- Lead-free assembly compatibility
- Good Peel Strength
- Excellent IST performance

Excellent CAF Performance

- CAF resistant materials after high temperature reflow

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 IPC-4101/102 Specifications
UL file number: E36295

Properties	Conditions	Typical Value	Unit	Test Method
Electrical Properties				
Dielectric Constant	@ 2 GHz	3.3		IPC-TM-650.2.5.5.5
	@ 10 GHz	3.2		
Dissipation Factor	@ 2 GHz	0.0027		
	@ 10 GHz	0.0034		
Volume Resistivity	C - 96 / 35 / 90	3.60 x 10 ⁷	MΩ - cm	IPC-TM-650.2.5.17.1
	E - 24 / 125	2.60 X 10 ⁸		
Surface Resistivity	C - 96 / 35 / 90	2.10 X 10 ⁶	MΩ	IPC-TM-650.2.5.17.1
	E - 24 / 125	1.10 x 10 ⁸		
Electric Strength		4.6x10 ⁴ (1800)	V/mm (V/mil)	IPC-TM-650.2.5.6.2
Thermal Properties				
*Glass Transition Temperature (Tg)	DMA(°C) (Tan d Peak)	240	°C	IPC-TM-650.2.4.24.3
Degradation Temperature (TGA)	Degradation Temp (TGA) (5% wt. loss)	390	°C	IPC-TM-650.2.3.40
T-300	Time to delamination @ 300°C	>120	minutes	IPC-TM-650.2.4.24.1
Thermal Conductivity		0.43	W/mK	ASTM E1461
Mechanical Properties				
Peel Strength	1 oz (35μ) Cu	1.05 (6.0)	N/mm (lbf/inch)	IPC-TM-650.2.4.8
	After Solder Float	1.16 (6.6)	N/mm (lbf/inch)	IPC-TM-650.2.4.8
X / Y CTE	-40°C to + 125°C	10 - 14	ppm/°C	IPC-TM-650.2.4.41
Z Axis CTE Alpha 1 / Alpha 2 (55% RC)	50°C to Tg / Tg to 260°C	55 / 260	ppm/°C	IPC-TM-650.2.4.24
Z Axis Expansion (43% RC)	50°C to 260°C	1.5	%	IPC-TM-650.2.4.24
Young's Modulus (X / Y)		18.3 / 17.0 (2.7 / 2.5)	GN/m ² (psi x 10 ⁶)	ASTM D3039
Poisson's Ratios (X / Y)		0.166 / 0.169		
Chemical / Physical Properties				
Moisture Absorption		0.12	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® 2000 can be manufactured in laminate thickness from 2.0 mil (0.05 mm) and up.
- Meteorwave® 2000 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®

