

# METEORWAVE® 8300

## High Speed / Ultra Low Loss ≤3.0 Dk Laminate and Prepreg

### Benefits

- Excellent Electrical Properties utilizing SI® Technology
- Controlled Dk 3.0 +/- 0.05 for all laminate thicknesses.
- Robust Thermal and Mechanical Properties
- Highly CAF Resistant
- High-Tg FR-4 Processing

### Applications

- Automotive Radar and Communications
- Base Station Components and Equipment
- Satellite Communication: LNB/LNA, GPS, Guidance, Radar



Meteorwave® 8300 high speed / ultra-low loss digital and RF electronic material is a controlled ≤Dk 3.0 laminate and prepreg system based on Meteorwave 8000, which has been tailored to meet the needs of the RF and Microwave markets.

The advanced electrical performance and very high reliability of this material is designed for multiple high-temperature lead-free assemblies and high layer count printed circuit board designs used in automotive, base station and satellite communication applications.

#### Excellent Electrical Properties utilizing SI® Technology

- Controlled Dk of 3.0 +/- 0.05 laminate available.
- Very low Df electrical performance
- Stable electrical properties versus frequency when tested over environmental conditions

#### 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, IPC 4103/230 laminate and IPC 4103/530 prepreg specifications  
UL file number: E36295

Properties	Conditions	Typical Value	Unit	Test Method
<b>Electrical Properties</b>				
Dielectric Constant	@ 2 GHz	3.03		IPC-TM-650.2.5.5.5
	@ 10 GHz	3.00		
Dissipation Factor	@ 2 GHz	0.0022		
	@ 10 GHz	0.0025		
Volume Resistivity	C - 96 / 35 / 90	4.2 x 10 <sup>6</sup>	MΩ - cm	IPC-TM-650.2.5.17.1
	E - 24 / 125	8.8 x 10 <sup>7</sup>		
Surface Resistivity	C - 96 / 35 / 90	3.1 x 10 <sup>5</sup>	MΩ	IPC-TM-650.2.5.17.1
	E - 24 / 125	3.6 x 10 <sup>7</sup>		
Electric Strength		5.9x10 <sup>4</sup> (1500)	V/mm (V/mil)	IPC-TM-650.2.5.6.2
<b>Thermal Properties</b>				
*Glass Transition Temperature (Tg)	DMA(°C) (Tan d Peak)	190	°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
Specific Heat		0.943	J/gK	ASTM E1461
<b>Mechanical Properties</b>				
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	33 / 180	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 <sup>2</sup> (psi x10 <sup>6</sup> )	ASTM D3039
Poisson's Ratios (X / Y)		0.177 / 0.163		
Flexural Strength (X / Y)	@ 125°C	0.310 / 0.381 (4.50 / 5.52)	GN/m <sup>2</sup> (psi x10 <sup>6</sup> )	
	@ 150°C	0.234 / 0.151 (3.40 / 2.20)	GN/m <sup>2</sup> (psi x10 <sup>6</sup> )	
<b>Chemical / Physical Properties</b>				
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® 8300 can be manufactured in laminate thickness from 1.2 mil (0.035 mm) and up.
- Meteorwave® 8300 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®

