AGC
Your Dreams, Our Challenge

nelco

meteorwave® 3350

Laminate & Prepreg

Laminate Part Number Meteorwave 3000L
Prepreg Part Number Meteorwave 3000P

Meteorwave® 3350 high frequency very low loss digital and RF electronic material is tailored to meet the needs of the RF and Microwave markets. The very advanced electrical performance and very high reliability of Meteorwave® 3350 is designed for multiple high temperature lead-free assemblies and high layer count printed circuit board designs requiring very high levels of reliability. Meteorwave® 3350 laminate and prepreg offers flexibility and freedom to design high performance RF and Microwave printed wiring boards and antennae.

Key Features

Excellent Electrical Properties

- Controlled Dk/Df electrical performance for both laminate and prepreg
- Stable electrical properties versus frequency when tested over environmental conditions

RF Substrate Technology

- Single and double sided
- Mixed hybrid designs
- Mutilayer capability
- Low insertion loss - Low passive intermodulation

Lead-Free Compatibility

- Designed to withstand multiple lead-free assembly reflow cycles at 260°C

Highly CAF Resistant

- Highest quality and purest materials used to insure consisant CAF resistance.

Thermal and Mechanical Properties

- Very low Z-axis expansion for high reliability
- Good peel strength
- Excellent IST performance
- High Tg material

High-Tg FR-4 Processing

- Processes similar to other high-Tg materials
- 30 min press at 177°C plus 60 min press at 216°C and 250-350 psi

Available in a variety of constructions

- Available in a wide variety of constructions, copper weights and glass styles including ultra low profile copper, standard copper, double treat and RTFOIL®
- Available as a 2 mil core product meeting the specifications of a capacitive laminate
- Meets UL 94V-0 and IPC-4101/102 specifications
- All of AGC Nelco's PCB materials are RoHS compliant

UL file number: E36295

Applications

Base Station Equipment

- •Filters, combiners and components

Automotive

- •Radar
- •Broadband communication
- •Road tolling

Satellite Communication

- •LNB's / LNA's
- •GPSMilitary
- •High reliability communications
- •Guidance
- •Radar

meteorwave® 3350

High Speed/Ultra Low Loss Laminate and Prepreg

Mechanical Properties	Meteorwave® 3350	U.S. Units	Meteorwave® 3350	Metric Units	Test Method
Peel Strength - 1 oz. (35 micron) Cu					
After Solder Float	4.9	lb / inch	0.86	N / mm	IPC-TM-650.2.4.8
At Elevated Temperature	4.4	lb / inch	0.77	N / mm	IPC-TM-650.2.4.8.2a
After Exposure to Process Solutions	5.0	lb / inch	0.88	N / mm	IPC-TM-650.2.4.8
X / Y CTE [-40°C to +125°C]	10-14	ppm / °C	10-14	ppm / °C	IPC-TM-650.2.4.41
Z Axis CTE Alpha 1 [50°C to Tg]	36	ppm / °C	36	ppm / °C	IPC-TM-650.2.4.24
Z Axis CTE Alpha 2 [Tg to 260°C]	200	ppm / °C	200	ppm / °C	IPC-TM-650.2.4.24
Z Axis Expansion [50°C to 260°C] 43% RC	2.1	%	2.1	%	IPC-TM-650.2.4.24
Z Axis Expansion [50°C to 260°C] 55% RC	2.6	%	2.6	%	IPC-TM-650.2.4.24
Young's Modulus (X / Y)	3.9 / 3.5	psi x 10^6	26.9 / 24.1	GN / m^2	ASTM D3039
Poisson's Ratios (X / Y)	.163 / .146		.163 / .146		ASTM D3039
Thermal Conductivity	.47	W / mK	.47	W / mK	ASTM E1461
Specific Heat	.82	J / gK	.82	J / gK	ASTM E1461
Flexural Strength					
@125°C (W/F)	56.3 / 47.0	psi x 106	388 / 214	GN / m2	IPC-TM-650.2.4.4.1
@150°F (W/F)	51.8 / 44.5	psi x 106	357 / 307	GN / m2	IPC-TM-650.2.4.4.1
Fracture Toughness (K1c)	1.06	(MPa √m)	1.06	(MPa √m)	IPC-TM-650.2.4.52
Electrical Properties					
Dielectric Constant (Typical)					
@ 2 GHz (Stripline)	3.5		3.5		IPC-TM-650.2.5.5.5
@ 10 GHz (Stripline)	3.5		3.5		IPC-TM-650.2.5.5.5
Dissipation Factor (Typical)					
@ 2 GHz (Split Post Cavity)	0.0032		0.0032		
@ 10 GHz (Split Post Cavity)	0.0038		0.0038		
Volume Resistivity					
C - 96 / 35 / 90	$3.00x10^7$	MΩ - cm	$3.00x10^7$	MΩ - cm	IPC-TM-650.2.5.17.1
E - 24 / 125	$5.20x10^8$	MΩ - cm	$5.20x10^8$	MΩ - cm	IPC-TM-650.2.5.17.1
Surface Resistivity					
C - 96 / 35 / 90	$7.60x10^6$	MΩ	$7.60x10^6$	MΩ	IPC-TM-650.2.5.17.1
E - 24 / 125	$1.20x10^8$	MΩ	$1.20x10^8$	MΩ	IPC-TM-650.2.5.17.1
Electric Strength	1300	V / mil	$3.3x10^4$	V / mm	IPC-TM-650.2.5.6.2
Dielectric Breakdown	>50	kV	>50	kV	IPC-TM-650.2.5.6
Arc Resistance	210	seconds	210	seconds	IPC-TM-650.2.5.1
Thermal Properties					
*Glass Transition Temperature (Tg)					
TMA (°C)	170	°C	170	°C	IPC-TM-650.2.4.24c
DMA (°C) (Tan d Peak)	200	°C	200	°C	IPC-TM-650.2.4.24.3
Degradation Temp (TGA) (5% wt. loss)	390	°C	390	°C	IPC-TM-650.2.3.40
Pressure Cooker-60 min then solder dip	pass		pass		IPC-TM-650.2.6.16
@288°C until failure (max 10 min.)					(modified)
T300	>120	minutes	>120	minutes	IPC-TM-650.2.4.24.1
Chemical / Physical Properties					
Moisture Absorption	0.12	wt. %	0.12	wt. %	IPC-TM-650.2.6.2.1
Density [50% resin content]	2.08	g / cm^3	2.08	g / cm^3	

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.

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

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