Park Electrochemical Nelco® N4000-12 SI® High Speed/Low Loss, CAF Resistant Laminate and Prepreg

Category : Polymer , Thermoset , Epoxy

Material Notes:

The Nelco® N4000-12 series is an enhanced epoxy resin system designed for use in high speed, low loss applications requiring thermal stability, excellent signal speed and CAF resistance.Key Features and Benefits:Lead-Free Assembly CompatibleTg >190ºC, robust thermal stabilityHigh Speed and Low Loss PropertiesCAF ResistantSI (Signal Integrity) optionHigh-Tg FR-4 processingApplications/Qualifications:Lead-Free AssembliesFine-Line MultilayersBackplanesSurface-Mount MultilayersBGA MultilayersSIPsMCM-LsDirect Chip AttachNetwork StorageWireless Communications InfrastructureHigh Speed ComputingInformation provided by Park Electrochemical Corp.

Order this product through the following link:
http://www.lookpolymers.com/polymer_Park-Electrochemical-Nelco-N4000-12-SI-High-SpeedLow-Loss-CAF-Resistant-Laminate-and-Prepreg.php

Physical Properties	Metric	English	Comments
Density	1.78 g/cc	0.0643 lb/in³	50% Resin Content; Internal Method
Water Absorption	0.090 %	0.090 %	IPC-TM-650.2.6.2.1

Mechanical Properties	Metric	English	Comments
Peel Strength	1.53 kN/m	8.70 pli	at elevated temperature; IPC-TM-650.2.4.8.2a
	1.61 kN/m	9.20 pli	after solder float; IPC-TM-650.2.4.8
	1.63 kN/m	9.30 pli	after exposure to process solutions; IPC-TM-650.2.4.8

Thermal Properties	Metric	English	Comments
CTE, linear	12.0 - 15.5 µm/m-°C @Temperature -40.0 - 125 °C	6.67 - 8.62 µin/in-°F @Temperature -40.0 - 257 °F	X/Y; IPC-TM-650.2.4.41
	60.05 µm/m-°C @Temperature 50.0 - 190 °C	33.36 µin/in-°F @Temperature 122 - 374 °F	Z-Axis Alpha 1; IPC-TM-650.2.4.41
	260.21 µm/m-°C @Temperature 190 - 260 °C	144.56 µin/in-°F @Temperature 374 - 500 °F	Z-Axis Alpha 2; IPC-TM-650.2.4.41
Specific Heat Capacity	1.13 J/g-°C	0.270 BTU/lb-°F	ASTM E1461
Thermal Conductivity	0.290 W/m-K	2.01 BTU-in/hr-ft²-°F	ASTM E1461

Thermal Properties	Metric	English	Comments
Glass Transition Temp, Tg	180 °C	356 °F	TMA; IPC-TM-650.2.4.24c
	190 °C	374 °F	DSC; IPC-TM-650.2.4.25c
	210 °C	410 °F	DMA (Tan d Peak); IPC-TM-650.2.4.24.3
Decomposition Temperature	370 °C	698 °F	5% weight loss; TGA; IPC-TM-650.2.4.24.6
Flammability, UL94	V-0	V-0	

Electrical Properties	Metric	English	Comments
Volume Resistivity	1.00e+14 ohm-cm	1.00e+14 ohm-cm	E - 24/125; IPC-TM-650.2.5.17.1
	1.00e+14 ohm-cm	1.00e+14 ohm-cm	C - 96/35/90; IPC-TM-650.2.5.17.1
Surface Resistance	1.00e+12 ohm	1.00e+12 ohm	E - 24/125; IPC-TM-650.2.5.17.1
	1.00e+14 ohm	1.00e+14 ohm	C - 96/35/90; IPC-TM-650.2.5.17.1
Dielectric Constant	3.3 @Frequency 1.00e+10 Hz	3.3 @Frequency 1.00e+10 Hz	Split Post Cavity
	3.3 @Frequency 1.00e+10 Hz	3.3 @Frequency 1.00e+10 Hz	Stripline; IPC-TM-650.2.5.5.5
	3.4 @Frequency 1.00e+9 Hz	3.4 @Frequency 1.00e+9 Hz	RF Impedance; IPC-TM-650.2.5.5.9
Dielectric Breakdown	>= 50000 V	>= 50000 V	IPC-TM-650.2.5.6
Dissipation Factor	0.0060 @Frequency 2.50e+9 Hz	0.0060 @Frequency 2.50e+9 Hz	Split Post Cavity
	0.0070 @Frequency 1.00e+10 Hz	0.0070 @Frequency 1.00e+10 Hz	Split Post Cavity
Arc Resistance	65 sec	65 sec	IPC-TM-650.2.5.1

Descriptive Properties	Value	Comments
Methylene Chloride Resistance (% Weight Change)	1	IPC-TM-650.2.3.4.3
Pressure Cooker	Pass	60 min then solder dip @288°C until failure (max 10 min.); IPC-TM-650.2.6.16 (modified)

Descriptive Properties	Value	Comments
T260 (minutes)	>60	IPC-TM-650.2.4.24.1
Z Axis Expansion (%)	3.6	50°C to 260°C; IPC-TM-650.2.4.41

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