

# N4800-20 SI

## High-Speed Multifunctional Epoxy Laminate & Prepreg



### Benefits

- Low Df and DK
- Stable electrical properties versus frequency
- Designed for high layer count multilayers
- Available in a variety of constructions

### Applications

- High Speed Storage Networks
- Internet Switches / Routing Systems
- Wireless Communication Infrastructure
- Backplanes



N4800-20 SI® is a high-performance enhanced epoxy systems for multilayer PCBs requiring maximum thermal and stable electrical performance. It is designed to be lead-free assembly compatible and CAF resistant. N4800-20 SI®, with SI glass provides optimal signal integrity and impedance control.

### Excellent Electrical Properties

- Low Df electrical performance
- Stable electrical properties versus frequency when tested over environmental conditions
- SI® glass for low-loss applications and enhanced performance

### Thermal and Mechanical Properties

- Formulated to withstand multiple 260°C lead-free excursions
- Very low Z-axis expansion for high reliability
- Excellent performance in fine pitch designs with small material webs between through holes
- Excellent peel strength
- Designed for high layer count multilayers

### Excellent CAF Performance

- Provides excellent CAF resistance even after multiple lead-free assembly exposures

### High-Tg FR-4 Processing

- Processes similar to traditional high Tg FR-4 materials
- 90 mins press at 193°C and 275-350 psi

Meets UL 94V-0 and IPC-4101/72 and /73 Specifications

UL file number: E36295

Properties	Conditions	Typical Value	Unit	Test Method
<b>Electrical Properties</b>				
Dielectric Constant (50% resin content)	@ 2.5 GHz (Split Post Cavity)	3.3		
	@ 10 GHz (Stripline)	3.25		IPC-TM-650.2.5.5.5
Dissipation Factor (50% resin content)	@ 2.5 GHz (Spilt Post Cavity)	0.006		
	@ 10 GHz (Stripline)	0.0065		IPC-TM-650.2.5.5.5
Volume Resistivity	C - 96 / 35 / 90	10 <sup>7</sup>	MΩ - cm	IPC-TM-650.2.5.17.1
	E - 24 / 125	10 <sup>8</sup>		
Surface Resistivity	C - 96 / 35 / 90	10 <sup>6</sup>	MΩ	IPC-TM-650.2.5.17.1
	E - 24 / 125	10 <sup>7</sup>		
Electric Strength		4.8x10 <sup>4</sup> (1900)	V/mm (V/mil)	IPC-TM-650.2.5.6.2
<b>Thermal Properties</b>				
*Glass Transition Temperature (Tg)	DMA(°C) (Tan d Peak)	210	°C	IPC-TM-650.2.4.24.3
Degradation Temperature (TGA)	Degradation Temp (TGA) (5% wt. loss)	360	°C	IPC-TM-650.2.4.24.6
T-288	Time to delamination @ 288°C	40+	minutes	IPC-TM-650.2.4.24.1
Thermal Conductivity		0.47	W/mK	ASTM E1461
<b>Mechanical Properties</b>				
Peel Strength	1 oz (35μ) Cu After Solder Float	1.31 (7.5)	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 (50°C to Tg)		31	ppm/°C	IPC-TM-650.2.4.24
Z Axis CTE Alpha 2 (Tg to 260°C)		210	ppm/°C	IPC-TM-650.2.4.24
Z Axis Expansion	50°C to 260°C	2.0	%	IPC-TM-650.2.4.24
Young's Modulus (X / Y)		22.1 / 20.0 (3.2 / 2.9)	GN/m <sup>2</sup> (psi x 10 <sup>6</sup> )	ASTM D3039
Poisson's Ratios (X / Y)		0.189/0.168		
<b>Chemical / Physical Properties</b>				
Moisture Absorption		0.07	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
- N4000-20 SI® can be manufactured in laminate thickness from 2 mil (0.05 mm) and up.
- N4000-20 SI® is available in most common panel sizes.
- Please contact AGC for availability of any other constructions, copper weights glass styles including very low profile copper and RTFOIL®



