

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
Electrical Properties				
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 ⁷	MΩ - cm	IPC-TM-650.2.5.17.1
	E - 24 / 125	10 ⁸		
Surface Resistivity	C - 96 / 35 / 90	10 ⁶	MΩ	IPC-TM-650.2.5.17.1
	E - 24 / 125	10 ⁷		
Electric Strength		4.8x10 ⁴ (1900)	V/mm (V/mil)	IPC-TM-650.2.5.6.2
Thermal Properties				
*Glass Transition Temperature (Tg)	DMA(°C) (Tan d Peak)	210	°C	IPC-TM-650.2.4.24.2
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
Mechanical Properties				
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 ² (psi x 10 ⁶)	ASTM D3039
Poisson's Ratios (X / Y)		0.189/0.168		
Chemical / Physical Properties				
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®
- The resistor foil manufacturer covers the warranty for the copper foil that includes the resistor layer, as well as the performance and workability related to the copper foil. Our company does not take responsibility for the processing of resistor layers and the performance or workability of the final products.

