ThunderClad 4N

Core: TU-943N

Prepreg: TU-943P N

ThunderClad 4N (TU-943N) is an advanced resin system designed with low Dk glass fabric for high speed computing, telecommunications, radio frequency super low loss filed applications. ThunderClad 4N electrical performance is competitive with PTFE-based, hydrocarbon-based very low loss materials, but capable for high layer count circuit board design with excellent thermal reliability.

ThunderClad 4N laminates also exhibit excellent moisture resistance, improved CTE, superior chemical resistance, thermal stability, CAF resistance, and also compatible with modified FR-4 processes.

Applications

- Radio frequency
- Backplane, High performance computing
- Line cards, Storage
- Servers, Telecom, Base station
- Super Core Router and Switchers

Performance and Processing Advantages

- Excellent electrical and thermal properties
- Dielectric constant is 3.22 @ 10GHz
- Dissipation factor is 0.0017 @ 10GHz
- Stable and flat Dk/Df performance over frequency and temperature variance.
- Anti-CAF capability
- Improved z-axis thermal expansion
- Superior dimensional stability, thickness uniformity and flatness
- Excellent moisture resistance and Lead Free reflow process compatible
- Compatible with modified FR-4 processes

Industry Approvals

- IPC-4101E Specification Number : /102
- UL File Number: E189572
- ANSI Grade: No-ANSI
- Flammability Rating: 94V-0
- Maximum Operating Temperature: 140°C

Standard Availability

- Thickness: 0.002" [0.05mm] to 0.062" [1.58mm], available in sheet or panel form
- Copper Foil Cladding: 1/3 to 5 oz for built-up & double sides
- Prepregs: Available in roll or panel form
- Glass Styles: 1035, 1078, 2116 and others low Dk glass styles are available upon request.

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Typical Properties

	Typical Values	Conditions
Thermal		
Tg (DMA) Tg (TMA) Td (TGA)	230 °C 190 °C 400 °C	E-2/105
CTE α1 CTE α2 CTE z-axis	30 ppm/°C 230 ppm/°C 2.2 %	E-2/105
Thermal Stress, Solder Float, 288°C	> 120 sec	A
T-260 T-288 T-300	> 60 min > 60 min > 60 min	E-2/105
Flammability	94V-0	E-24/125
Electrical		
Permittivity (RC64%) 10 GHz (SPC method)	3.22	E-2/105
Loss Tangent (RC64%) 10 GHz (SPC method)	0.0017	E-2/105
Volume Resistivity	> 10^{10} MΩ·cm	C-96/35/90
Surface Resistivity	> 10^{8} MΩ	C-96/35/90
Electric Strength	> 40 KV/mm	A
Dielectric Breakdown Voltage	> 50 KV	A
Mechanical		
Young's Modulus Warp Direction Fill Direction	 25 GPa 23 GPa	A
Flexural Strength Lengthwise Crosswise	 > 60,000 psi > 50,000 psi	A
Peel Strength, 1.0 oz. RTF Cu foil	4 lb/in	A
Moisture Absorption	0.06 %	E-1/105 + D-24/23

NOTE:
1. Property values are for information purposes only and not intended for specification.
2. Any sales of these products will be governed by the terms and conditions of the agreement under which they are sold.
3. This product is based on a patent pending technology.

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