



PegaClad 1 (TU-1300E)

Core : TU-1300E
Prepreg : TU-1300P E

PegaClad 1 is an advanced material designed for high frequency very low loss field applications. PegaClad 1's electrical performance is competitive with hydrocarbon-based very low loss materials, but capable for multi-layer count circuit board design with excellent thermal reliability. PegaClad 1 is suitable for RF/microwave printed circuit board designs.

PegaClad 1 laminates also exhibit excellent moisture resistance, improved CTE, superior chemical resistance, thermal stability, and also compatible with modified FR-4 processes.

Applications

- Radio frequency
- mmWave
- Automotive radars and sensors
- Base Station Antenna

Performance and Processing Advantages

- Excellent electrical and thermal properties
- Dielectric constant is 3.44 @ 10GHz
- Dissipation factor is 0.0034 @ 10GHz
- Stable and flat Dk/Df performance over frequency and temperature variance.
- Compatible with modified FR-4 processes
- Excellent moisture resistance and Lead Free reflow process compatible
- Improved z-axis thermal expansion
- Superior dimensional stability, thickness uniformity and flatness
- Excellent through-hole and soldering reliability

Industry Approvals

- IPC-4103 Specification Number :/17
- IPC-4103/17 Validation Services QPL Certified
- UL File Number: E189572
- ANSI Grade: non-ANSI
- Flammability Rating: 94V-0
- Maximum Operating Temperature: 140°C

Standard Availability

- Thickness: 0.004" [0.1mm] to 0.030" [0.762mm], available in sheet or panel form
- Copper Foil Cladding: 1/2 to 2 oz for built-up & double sides
- Prepregs: Available in panel form





Typical Properties				
	Typical Values	Units	Test Condition	Test Method
Electrical				
Permittivity (4 mil core) 10 GHz / SCR method	3.44		E-2/105+des	IPC-2.5.5.13
Loss Tangent (4 mil core) 10 GHz / SCR method	0.0034		C-24/23/50	IPC-2.5.5.13
Thermal Coefficient of Dk	+30	ppm/°C	-40°C to 140°C	IPC-2.5.5.13
Volume Resistivity	1.3x10 ¹¹	MΩ·cm	C-96/35/90	IPC-2.5.17.1
Surface Resistivity	4.3x10 ⁹	MΩ	C-96/35/90	IPC-2.5.17.1
Electric Strength	> 40 KV/mm		-	ASTM D149
Thermal				
Tg / DMA Tg / TMA	220 180	°C	E-2/105+des	IPC-2.4.24.2 IPC-2.4.24.3
Td / TGA	390	°C		IPC-2.4.24.6
Thermal Conductivity	0.48	W/m.K	RT	ASTM-5470
CTE-x,y, α1 CTE-z, α1 CTE-z, α2 CTE z-axis	15-17 35 250 2.5	ppm/°C ppm/°C ppm/°C %	Pre-Tg Pre-Tg Post-Tg -50 to 260°C	IPC-2.4.24C
Dimensional Stability	<0.3	mm/m	After etch +E-2/150°C	IPC-2.4.4
Thermal Stress, Solder Float, 288°C	> 120 sec		A	IPC-2.6.8.1 IPC-2.6.16
T-260 T-288 T-300	> 60 min > 60 min > 60 min		E-2/105+des	IPC-2.4.24.1
Flammability	94V-0		E-24/125+des	UL 94
Mechanical				
Young's Modulus Warp Direction Fill Direction	23 GPa 21 GPa		A	ASTM D3039
Flexural Strength Lengthwise Crosswise	> 60,000 psi > 50,000 psi		A	IPC-2.4.4
Copper Peel Strength (1.0 oz. Cu foil)	4~7	lb/in	A	IPC-2.4.8
Water Absorption	<0.06	%	E-1/105+des+D-24/23	IPC-2.6.2.1
Density	1.4	gm/cm ³	23°C	ASTMD792
Frequency Drift				
Frequency Drift @ 28GHz	<40	MHz	-40 °C ~140°C	Ref.: AEC-Q100 Grade 1

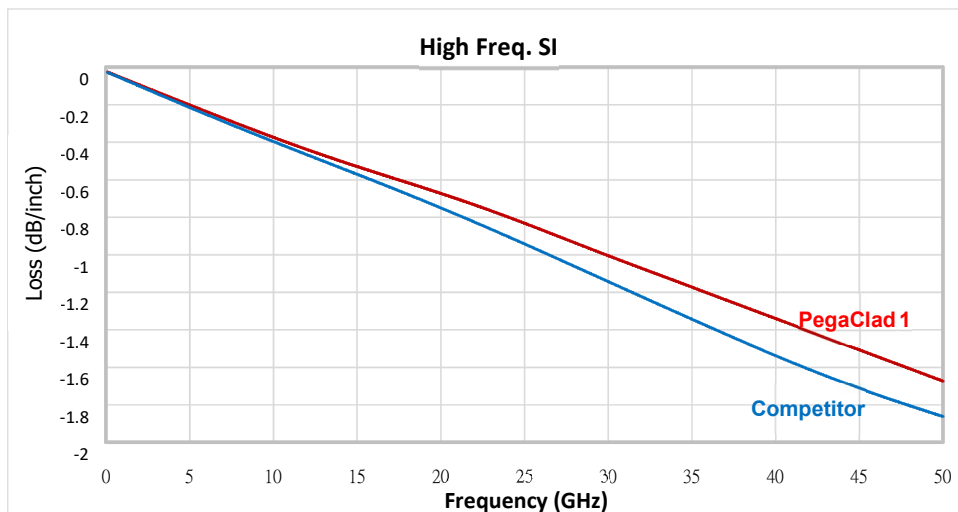
NOTE:

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.





Insertion loss chart of PegaClad 1 (TU-1300E) over Frequency



Method:

Double side with microstripline



- Instrument: Agilent PNA 67GHz
- Probe: GSG 600um by GGB
- Frequency: 100MHz~50GHz

