



# TU-862 HF

Core: TU-862 HF

Prepreg: TU-86P HF

TU-862 HF/TU-86P HF High Tg halogen free materials are made of epoxy resin and E-glass fabric. Unlike conventional FR-4 material using brominated resin as flame retardant, TU-862 HF/TU-86P HF achieves flammability class of UL94V-0 by incorporating phosphorous and nitrogen compounds in the materials. The materials are compatible with the AOI process and exhibit the UV-block characteristic. TU-86P HF is designed for use with TU-862 HF for making multilayer printed wire boards. TU-862 HF is also available for single/double sided application. This series of green materials are designed to eliminate the use of halogenated resins due to the potential hazardous effects from the environmental concerns. These products are suitable for boards that need to survive severe thermal cycles, or to experience excessive assembly work. TU-862 HF laminates also exhibit superior chemical resistance, thermal stability for lead free soldering assembly and CAF resistance.

## Applications

- Backpanel, High performance computing
- Line cards, Storage
- Servers, Telecom, Base station
- Office Routers

## Performance and Processing Advantages

- Low halogen and environmental friendly materials
- Lead free process compatible
- Compatible to PCB processes
- Very low coefficient of thermal expansion
- Moisture resistance
- Anti-CAF capability
- Higher Tg characteristics

## Industry Approvals

- IPC-4101E Type Designation : /127, /128, /130
- IPC-4101E/130 Validation Services QPL Certified
- UL Designation – ANSI Grade : FR-4.1
- UL File Number: E189572
- Flammability Rating: 94V-0
- Maximum Operating Temperature: 130°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 (HTE) for built-up & double sides and H to 2 oz (MLS)
- Prepregs: Available in roll or panel form
- Glass Styles: 106, 1080, 2113, 2116, 1506 and 7628, etc.





Typical Properties for TU-862 HF Laminate			
	Typical Values	Conditioning	IPC-4101 /130
<b>Thermal</b>			
Tg (DMA)	200°C		> 170°C
Tg (TMA)	170°C	E-2/105	
Td (TGA)	390°C		> 340°C
CTE x-axis	11~15 ppm/°C		N/A
CTE y-axis	11~15 ppm/°C	E-2/105	N/A
CTE z-axis	2.1 %		< 3.0%
Thermal Stress, Solder Float, 288°C	> 60 sec	A	> 10 sec
T260	> 60 min		> 30 min
T288	> 60 min	E-2/105	> 15 min
T300	> 30 min		> 2 min
Flammability	94V-0	E-24/125	94V-0
<b>Electrical</b>			
Permittivity (RC50%)			
1GHz (SPC method/HP4291B)	4.5/4.4		
5GHz (SPC method)	4.5	E-2/105	N/A
10GHz (SPC method)	4.4		
Loss Tangent (RC50%)			
1GHz (SPC method/HP4291B)	0.013/0.010		
5GHz (SPC method)	0.014	E-2/105	N/A
10GHz (SPC method)	0.015		
Volume Resistivity	> 10 <sup>10</sup> MΩ·cm	C-96/35/90	> 10 <sup>6</sup> MΩ·cm
Surface Resistivity	> 10 <sup>8</sup> MΩ	C-96/35/90	> 10 <sup>4</sup> MΩ
Electric Strength	> 40 KV/mm	A	> 30 KV/mm
Dielectric Breakdown	> 50 KV	A	> 40 KV
<b>Mechanical</b>			
Young's Modulus			
Warp Direction	26 GPa		
Fill Direction	24 GPa	A	N/A
Flexural Strength			
Lengthwise	> 60,000 psi	A	> 60,000 psi
Crosswise	> 50,000 psi	A	> 50,000 psi
Peel Strength, 1.0 oz. RTF Cu foil	7~10 lb/in	A	> 4 lb/in
Water Absorption	0.15 %	E-1/105+D-24/23	< 0.8 %

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

