



# TU-865

**Core: TU-865****Prepreg: TU-865P**

TU-865 Tg200 material is made of epoxy resin and E-glass fabric. It's a halogen free material and design to have both features for harsh environment, high reliability application and superior electrical performance at the same time. TU-865 achieves flammability class of UL94V-0 by incorporating phosphorous and nitrogen compounds. The material is compatible with the AOI process and exhibit the UV-block characteristic. TU-865P is prepreg designed for use with TU-865 laminate for making multilayer printed wire boards. TU-865 is also available for single/double sided application. This series of green materials eliminate the use of halogenated resins with excellent performance due to the potential hazardous effects from the environmental concerns. These products are suitable for boards that need to survive severe thermal cycling, or to experience excessive assembly work. TU-865 laminates also exhibit superior chemical resistance, dimensional stability and moisture resistivity for lead free soldering assembly and CAF resistance.

## Applications

- Automotives, Harsh environments
- Servers, Telecom, Base station

## Performance and Processing Advantages

- Halogen, antimony, and red phosphorous free
- High Tg characteristics
- Mid-loss performance category material
- Low coefficient of thermal expansion
- Excellent moisture resistance
- Lead free processing compatible
- Anti-CAF capability
- Environmental friendly materials

## 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 12 oz
- Prepregs: Available in roll or panel form
- Glass Styles: 106, 1080, 2113, 2116, 1506 and 7628 etc.





Typical Properties for TU-865 Laminate			
	Typical Values	Test Condition	SPEC
<b>Thermal</b>			
Tg (DMA)	220 °C	E-2/105+des	N/A
Tg (DSC)	200 °C		
Tg (TMA)	185 °C		
Td (TGA)	370 °C		
CTE x-axis	11~15 ppm/°C	Ambient to Tg	N/A
CTE y-axis	11~15 ppm/°C	Ambient to Tg	N/A
CTE z-axis	1.8 %	50 to 260°C	< 3.0%
Thermal Stress, Solder Float, 288°C	> 60 sec	A	> 10 sec
T-260	> 60 min	E-2/105+des	> 30 min
T-288	> 60 min		> 15 min
Flammability	94V-0	E-24/125+des	94V-0
<b>Electrical</b>			
Permittivity (RC50%)		C-24/23/50	N/A
1 GHz (SPC method/HP4291B)	4.6/4.3		
10GHz (SPC method)	4.4		
Loss Tangent (RC50%)		C-24/23/50	N/A
1 GHz (SPC method/HP4291B)	0.013/0.010		
10GHz (SPC method)	0.014		
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	-	> 30 kV/mm
Dielectric Breakdown Voltage	> 50 KV	-	> 40 KV
<b>Mechanical</b>			
Flexural Strength		A	> 60,000 psi
Lengthwise	> 60,000 psi		
Crosswise	> 50,000 psi	A	> 50,000 psi
Peel Strength, 1.0 oz. Cu foil	6~9 lb/in	A	> 4 lb/in
Water Absorption	0.13 %	E-1/105+des+D-24/23	< 0.8 %

## NOTE:

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

