



GREEN MATERIAL

TU-862 HF

Hi-Tg Halogen free laminate and prepreg

TU-86P HF

TU-862 HF/86P HF Hi-Tg halogen free composite materials are made of epoxy resin and E-glass fabric. Unlike conventional FR-4 material using brominated resin as flame retardant, TU-862 HF/86P HF achieve flammability class of UL94V-0 by incorporating 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 anti-CAF resistance.

PERFORMANCE AND PROCESSING ADVANTAGES

- Halogen, antimony, and red phosphorous free
- Lead Free compatible
- Environmental friendly materials
- Compatible processing characteristics
- Very low coefficient of thermal expansion.
- Low moisture absorption
- Excellent anti-CAF capability
- Higher Tg characteristics

GENERAL INFORMATION

- Industry Approvals

IPC-4101B Type Designation	/92, /94
UL Designation - ANSI Grade	FR-4
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 5oz (HTE) for built-up; 1/3 to 3oz (HTE) for double side and H to 2oz (MLS)
Prepregs : Available in roll or panel form
Glass Styles : 106, 1080, 2113, 2116, 1506 and 7628, etc.



TYPICAL PROPERTY VALUES FOR TU-862 HF EPOXY LAMINATES

PROPERTY	UNIT	IPC-4101A	SPEC	TYPICAL VALUES
▶ Thermal				
Tg (DSC)	°C	E-2/105+des	N/A	180°C
Td(TGA)		–		390°C
CTE x-axis	ppm/°C	Ambient to Tg	–	11~15
CTE y-axis	ppm/°C	Ambient to Tg	–	11~15
CTE z-axis	%	25 to 260°C	–	2.1
Thermal Stress, Solder Float , 288°C	sec.	A	> 10	> 60
T-260	min	E-2/105+des	N/A	>60
T-288				>60
Flammability	–	E-24/125+des	94V-0	94V-0
▶ Electrical				
Permittivity (RC 50%)				
1MHz	–	C-24/23/50	< 5.4	4.5
1GHz	–	C-24/23/50	–	4.3
Loss Tangent (RC 50%)				
1MHz	–	C-24/23/50	< 0.035	0.011
1GHz	–	C-24/23/50	–	0.010
Volume Resistivity	MΩ•cm	C-96/35/90	> 10 ⁶	>10 ¹⁰
Surface Resistivity	MΩ	C-96/35/90	> 10 ⁴	>10 ⁸
▶ Physical				
Peel Strength, 1.0 oz. Cu foil	lb/inch	A	> 6	9~12
Flexural Strength				
Lengthwise	psi	A	> 60,000	>75,000
Crosswise	psi	A	> 50,000	>65,000
Bow and Twist				
0.020"~0.031"	%	A	Max 1.5	< 0.8
0.032"~0.065"			Max 1.0	< 0.8
>0.066"			Max 1.0	< 0.8
Dimensional Stability	%	E-4/105+E-2/150	< 0.03	< 0.03
Water Absorption	%	E-1/105+des+D-24/23	< 0.8	0.15

NOTE: 1.The above testing results are based on 1.0mm (0.039") laminates.

2.Property values are for information purposes only and are not guaranteed.

3. Any sales of these products will be governed by the terms and conditions of the agreement under which they are sold.