



# TU-747 HF

Core: TU-747 HF

Prepreg: TU-747P HF

TU-747 HF/TU-747P HF halogen free materials are formulated with epoxy resin, non-PN (free phenolic group containing) curing agent and impregnated onto standard E-glass fabric. Unlike conventional FR-4 materials where brominated resin is used as flame retardant, TU-747 HF/TU-747P HF achieves the flammability class of UL94V-0 by incorporating nitrogen compounds into the resin formulation. This series of green materials are designed to eliminate the use of halogenated resins due to the potential hazardous effects from the environmental concerns. The UV-block characteristic of the materials is compatible with the standard AOI process. TU-747P HF is used with TU-747 HF for making multilayer printed wire boards. TU-747 HF is also available for single/double sided application. TU-747 HF laminates also exhibit superior chemical resistance, thermal stability and CAF resistance.

## Applications

- NB, Consumer
- Server, Office Routers
- Cellular phone, Mobile Communication

## Performance and Processing Advantages

- Halogen, antimony, PN (phenolic group) resin and red phosphorous free
- Environmental friendly materials
- Compatible to PCB processes
- Low coefficient of thermal expansion
- Lower Df, better stability of Dk & Df
- Lower moisture absorption
- Excellent thermal resistant for lead-free process
- Anti-CAF capability

## Industry Approvals

- IPC-4101 Type Designation : /127, /128
- 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
- Prepregs: Available in roll or panel form
- Glass Styles: 1027, 1037, 1067, 1078, 106, 1080, 2113 and 2116 etc.





Typical Properties for TU-747 HF Laminate			
	Typical Values	Test Condition	SPEC
<b>Thermal</b>			
Tg (TMA)	150 °C		N/A
Td (TGA)	360 °C	E-2/105+des	> 325°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	2.9 %	50 to 260°C	< 3.5%
Thermal Stress, Solder Float, 288°C	> 60 sec	A	> 10 sec
T-288	> 60 min	E-2/105+des	> 5 min
Flammability	94V-0	E-24/125+des	94V-0
<b>Electrical</b>			
Permittivity (RC75%) 1MHz (LCR meter)	4.2		< 5.4
1GHz (SPC method/4291B)	3.8/3.6	C-24/23/50	N/A
Loss Tangent (RC75%) 1MHz (LCR meter)	0.007		< 0.035
1GHz (SPC method/4291B)	0.014/0.012	C-24/23/50	N/A
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
<b>Mechanical</b>			
Flexural Strength Lengthwise	> 60,000 psi	A	> 60,000 psi
Crosswise	> 50,000 psi	A	> 50,000 psi
Peel Strength, 1.0 oz. Cu foil	8~11 lb/in	A	> 4 lb/in
Bow and Twist 0.020" ~ 0.031"	< 0.8%		Max 1.5
0.032" ~ 0.065"	< 0.8%	A	Max 1.0
> 0.066"	< 0.8%		Max 1.0
Water Absorption	0.08 %	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.

