

Green material Lead free compatible
Halogen free laminate and prepreg

TU-747 HF, 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.

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

GENERAL INFORMATION

- Industry Approvals

UL Designation – ANSI Grade	FR-4
UL File Number	E189572
Flammability Rating	94V-0
Maximum Operating Temperature	130°C

- Standard Available

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: 106, 1080, 2113, 2116, 1506 and 7628 etc.

TYPICAL PROPERTIES FOR TU-747 HF LAMINATES

PROPERTY	IPC-4101	SPEC	TYPICAL VALUES
Thermal			
Tg (TMA)			150 °C
Td (TGA)	E-2/105+des	N/A	360 °C
CTE x-axis	Ambient to Tg	-	11~15 ppm/°C
CTE y-axis	Ambient to Tg	-	11~15 ppm/°C
CTE z-axis	50 to 260°C	-	2.9 %
Thermal Stress,			
Solder Float , 288°C	A	> 10	> 60 sec
T-288	E-2/105+des	N/A	> 60 min
Flammability	E-24/125+des	94V-0	94V-0
Electrical			
Permittivity (RC 50%)			
1MHz (LCR meter)	C-24/23/50	< 5.4	4.7
1GHz (SPC method)	C-24/23/50		4.6
Loss Tangent (RC 50%)			
1MHz (LCR meter)	C-24/23/50	< 0.035	0.006
1GHz (SPC method)	C-24/23/50	-	0.011
Volume Resistivity	C-96/35/90	> 10 ⁶	> 10 ¹⁰ MΩ·cm
Surface Resistivity	C-96/35/90	> 10 ⁴	> 10 ⁸ MΩ
Mechanical			
Peel Strength			
1.0 oz. Cu foil	A	> 6	8~11 lb/inch
Flexural Strength			
Lengthwise	A	> 60,000	> 60,000 psi
Crosswise	A	> 50,000	> 50,000 psi
Bow and Twist			
0.020"~0.031"		Max 1.5	< 0.8 %
0.032:~0.065:		Max 1.0	< 0.8 %
>0.066"		Max 1.0	< 0.8 %
Water Absorption	E-1/105+des+D-24/23	< 0.8	0.08 %

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.