

Lead free compatible**Mid-Tg high thermal reliability for Lead free compatible laminate and prepreg**

TU-668, TU-668P

TU-668/ TU-668P laminate/ prepreg are made of high quality woven E-glass coated with the epoxy resin system, which provides the laminates UV-block characteristic, and compatibility with automated optical inspection (AOI) process. These products are suitable for boards that need to survive severe thermal cycles, or to experience excessive assembly work. TU-668 laminates exhibit excellent CTE, superior chemical resistance, and thermal stability for lead free soldering assembly with general CAF resistance.

PERFORMANCE AND PROCESSING ADVANTAGES

- Lead Free compatible
- Excellent coefficient of thermal expansion
- anti-CAF property
- Use friendly FR-4 processing conditions such as oxide, press, drilling and desmear
- Superior chemical and thermal resistance
- Fluorescence for AOI
- Optical characteristics provide UV-block property
- High interlayer bonding strength with optimum resin flow
- Low moisture absorption

GENERAL INFORMATION

- **Industry Approvals**

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 6oz (HTE) for built-up; 1/3 to 3oz (HTE) for double sides 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-668 LAMINATES

PROPERTY	IPC-4101	SPEC	TYPICAL VALUES
Thermal			
Tg (DMA)			160 °C
Tg (DSC)			150 °C
Tg (TMA)	E-2/105+des	N/A	140 °C
Td (TGA)			340 °C
CTE x-axis	Ambient to Tg	-	11~15 ppm/°C
CTE y-axis	Ambient to Tg	-	11~15 ppm/°C
CTE z-axis	25 to 260°C	-	3.4 %
Thermal Stress, Solder Float , 288°C	A	> 10	> 60 sec
T-260	E-2/105+des	N/A	> 60 min
T-288			> 10 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 (HP4291B)	C-24/23/50	-	4.3
Loss Tangent (RC 50%)			
1MHz (LCR meter)	C-24/23/50	< 0.035	0.016
1GHz (HP4291B)	C-24/23/50	-	0.014
Volume Resistivity	C-96/35/90	> 10 ⁶	> 10 ¹⁰ MΩ·cm
Surface Resistivity	C-96/35/90	> 10 ⁴	> 10 ⁸ MΩ
Electric Strength		> 30 kV/mm	> 40 kV/mm
Dielectric Breakdown Voltage		> 40 kV	> 50 kV
Physical			
Peel Strength, 1.0 oz. Cu foil	A	> 6	8~11 lb/inch
Flexural Strength			
Lengthwise	A	> 60,000	> 75,000 psi
Crosswise	A	> 50,000	> 65,000 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 %
Dimensional Stability	E-4/105+E-2/150	< 0.03	< 0.03 %
Water Absorption	E-1/105+des+D-24/23	< 0.8	0.13 %

NOTE:

- Property values are for information purposes only and are not guaranteed.
- Any sales of these products will be governed by the terms and conditions of the agreement under which they are sold.