

**All-in-one****TU-722****TU-72P****Tg=175 °C**  
**EPOXY MULTILAYER**  
**LAMINATE AND PREPREG**

TU-722 epoxy laminates offer enhanced thermal resistance due to a high Tg of 175 °C. TU-722 laminates also provide UV-block characteristic and compatibility with AOI process. These products are suitable for boards that need to survive severe thermal cycles, or to experience excessive assembly work. The lower Z-axis thermal expansion also minimizes the problems, such as lifted pads and barrel cracks. TU-722 laminates also exhibit superior chemical resistance, thermal stability and anti-CAF resistance.

**PERFORMANCE AND PROCESSING ADVANTAGES**

- Excellent anti-CAF capability
- Superior dimensional stability, thickness uniformity and flatness
- Good drilling processability
- Excellent through-hole and soldering reliability
- High interlayer bonding strength with optimum resin flow
- Superior dielectric thickness control
- Wide processing window for maximum lamination performance
- Excellent thermal and chemical resistance
- Compatible with automated optical inspection process
- Optical characteristics provide UV-block property
- Higher Tg characteristics
- Reduced Z-axis thermal expansion

**GENERAL INFORMATION****Industry Approvals**

IPC-4101A (MIL-S-13949) Type Designation	GFN/ PGFN
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 8oz (HTE ) and H to 2oz (RSTF)

**Prepregs** : Available in roll or panel form

**Glass Styles** : 106, 1080, 2113, 2116, 1506 and 7628, etc.

**TYPICAL PROPERTY VALUES FOR TU-722 EPOXY LAMINATES**

PROPERTY	UNIT	CONDITION	SPEC	TYPICAL VALUES
<b>► Thermal</b>				
T <sub>g</sub> (DSC)	°C	E-2/105+des	N/A	175°C
CTE x-axis	ppm/°C	Ambient to T <sub>g</sub>	–	12~16
CTE y-axis	ppm/°C	Ambient to T <sub>g</sub>	–	12~16
CTE z-axis	%	25 to 260°C	–	3.5
Thermal Stress, Solder Float , 288°C	sec.	A	> 10	> 60
T-260	min	E-2/105+des	N/A	> 30
Flammability	–	E-24/125+des	94V-0	94V-0
<b>► Electrical</b>				
<b>Permittivity</b>				
1MHz	–	C-24/23/50	< 5.4	4.7
1GHz	–	C-24/23/50	–	4.4
<b>Loss Tangent</b>				
1MHz	–	C-24/23/50	< 0.035	0.023
1GHz	–	C-24/23/50	–	0.014
Volume Resistivity	MΩ•cm	C-96/35/90	> 10 <sup>6</sup>	>10 <sup>10</sup>
Surface Resistivity	MΩ	C-96/35/90	> 10 <sup>4</sup>	>10 <sup>8</sup>
<b>► Physical</b>				
Peel Strength, 1.0 oz. Cu foil	lb/inch	A	> 6	8~11
<b>Flexural Strength</b>				
Lengthwise	psi	A	> 60,000	>70,000
Crosswise	psi	A	> 50,000	>55,000
<b>Bow and Twist</b>				
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	0.18

1. The above testing results are based on 1.0mm (0.039") laminates.
2. All tests were performed according to IPC test method TM-650, except the flammability test was performed following UL-94.
3. The Specification is according to IPC-4101A.
4. Property values are for information purposes only and are not guaranteed.
5. Any sales of these products will be governed by the terms and conditions of the agreement under which they are sold.

► Contact your local sales representative or the Technical Service Dept.

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