

# VT-447V

UL Approval: E214381 Version: 30/01/2024 /127 /128 /130 /154

## Laminate/Prepreg

### General Information

- > Phenolic Cured System
- > Halogen free
- > High Td & High Tg (190°C)
- > FR15.1 & MOT 150°C
- > CAF Resistance
- > Low Z-CTE
- > Excellent Thermal Reliability



### Application

Automotive, Mobile Phone, Smart Phone, Automotive, High Power Application, Server, Computer, Communication Equipment, Instrumentation, Electronic Game Machine, VCR, etc.

### Availability

- > Core Thickness: 0.002" (0.05mm) to 0.200" (5mm), available in sheet or panel form
- > Copper Foil: 1/4oz to 12oz
- > Prepregs are available in roll or panel form
- > E-Glass styles: 7628, 1506, 2113, 2116, 1080, 1086, 1078, 106,1067,1037 & 1027 etc

**Note:** For cores  $\leq 0.005$ ", it is recommended to use the reverse treated copper due to the low profile. The peel strength for RT foil is  $\approx 1$ -2lbs/in (0.35Kg/m) less than standard foil.

### Storage Condition

Properties		Prepreg		Laminate
Storage Condition	Temperature	Below 23°C (73°F)	Below 5°C (41°F)	Room
	Relative humidity	Below 55% RH	/	/

**Disclaimer:** The information and data contained in this technical literature is based on data and knowledge correct at the time of publishing/printing and is believed to be accurate and is offered in good faith for the benefit of the user. The user should make his own tests to verify the suitability of this product for any application before its use. All data are typical values only and subject to change without notice.

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### IPC-4101E WAM1 /127 /128 /130 /154

Properties		Test Method	Units	Specification	Typical Value
<b>Thermal Properties</b>					
Tg	DSC	IPC-TM-650 2.4.25	°C	–	190
	TMA	IPC-TM-650 2.4.24	°C	170 minimum	180
Td		ASTM D3850	°C	340 minimum	390
T260		IPC-TM-650 2.4.24.1	Minute	30 minimum	>60
T288		IPC-TM-650 2.4.24.1	Minute	15 minimum	>30
Thermal Stress @ 288°C		IPC-TM-650 2.4.13.1	Second	Pass 10s	>600
Z-axis CTE	Before Tg	IPC-TM-650 2.4.24	ppm/°C	60 maximum	40
	After Tg	IPC-TM-650 2.4.24	ppm/°C	300 maximum	165
	Total Expansion (50~260°C)	IPC-TM-650 2.4.24	%	3.0 maximum	1.8
X-Y CTE		IPC-TM-650 2.4.24	ppm/°C	–	11~13
MOT		UL 746E	°C	–	150
<b>Electrical Properties</b>					
DK @ 1GHz RC 50%		IPC-TM-650 2.5.5.9	–	5.4 maximum	4.40
DF @ 1GHz RC 50%		IPC-TM-650 2.5.5.9	–	0.035 maximum	0.012
Volume Resistivity	After Moisture Resistance	IPC-TM-650 2.5.17.1	MΩ-cm	1.0E+4 minimum	5.0E+8
	E-24/125	IPC-TM-650 2.5.17.1	MΩ-cm	1.0E+3 minimum	5.0E+6
Surface Resistivity	After Moisture Resistance	IPC-TM-650 2.5.17.1	MΩ	1.0E+4 minimum	5.0E+7
	E-24/125	IPC-TM-650 2.5.17.1	MΩ	1.0E+3 minimum	5.0E+6
Electrical Strength		IPC-TM-650 2.5.6.2	Volt/mil (KV/mm)	762 (30) minimum	1200~1400 (54)
Dielectric Breakdown		IPC-TM-650 2.5.6	KV	40 minimum	60
Comparative Tracking Index (CTI)		ASTM D3638	Rating (Volt)	–	Grade 3 (175-250)
Arc Resistance		ASTM D495	Second	–	195
<b>Mechanical Properties</b>					
Peel Strength (1oz)	As received	IPC-TM-650 2.4.8	lb/in (N/mm)	–	7~9 (1.2~1.6)
	After thermal stress	IPC-TM-650 2.4.8	lb/in (N/mm)	6 (1.05) minimum	7~9 (1.2~1.6)
Flexural Strength	Warp	IPC-TM-650 2.4.4	KPsi (MPa)	60 (415) minimum	87 (600)
	Fill	IPC-TM-650 2.4.4	KPsi (MPa)	50 (345) minimum	77 (530)
<b>Physical Properties</b>					
Moisture Absorption		IPC-TM-650 2.6.2.1	%	0.80 maximum	0.12
Flammability		UL-94	Rating	V-0 minimum	V-0

Note: All test data provided are typical values and are not intended to be specification values.