

VT-441C

Laminate/Prepreg

UL Approval: E214381 Version: B1 /127 /128

General Information

- > Phenolic Cured System
- > Halogen Free & Mid-Tg FR4.1
- > CT 400V
- > UV Blocking
- > CAF Resistance
- > Low Z-CTE
- > Excellent Thermal Reliability

Application

Automotive, Instrumentation, Communication Equipment, Electronic Game Machine, White Goods, etc.

Availability

- > Core Thickness: 0.004" (0.1mm) to 0.200" (5mm), available in sheet or panel form
- > Copper Foil: 1/2oz to 12oz
- > Prepregs are available in roll or panel form
- > E-Glass styles: 7628, etc.

Properties		Prepreg		Laminate
Storage Condition	Temperature	Below 23°C (73°F)	Below 5°C (41°F)	Room
	Relative humidity	Below 55% RH	/	/
Shelf Life		3 months	6 months	24 months (airproof)

The prepreg exceeding shelf life should be retested.

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Properties Sheet IPC-4101E /127 /128

Properties		Test Method	Units	Specification	Typical Value
Thermal Properties					
Tg		IPC-TM-650 2.4.25	°C	145 minimum	150
Td		ASTM D3850	°C	325 minimum	385
T260		IPC-TM-650 2.4.24.1	Minute	30 minimum	>40
T288		IPC-TM-650 2.4.24.1	Minute	5 minimum	>10
Thermal Stress @ 288°C		IPC-TM-650 2.4.13.1	Second	Pass 10s	>200
Z-axis CTE	Before Tg	IPC-TM-650 2.4.24	ppm/°C	60 maximum	35
	After Tg	IPC-TM-650 2.4.24	ppm/°C	300 maximum	185
	Total Expansion (50~260°C)	IPC-TM-650 2.4.24	%	3.5 maximum	2.1
MOT		UL 94	°C	–	130
Electrical Properties					
DK @ 1GHz RC 50%		IPC-TM-650 2.5.5.9	–	5.4 maximum	4.4
DF @ 1GHz RC 50%		IPC-TM-650 2.5.5.9	–	0.035 minimum	0.014
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 1 (400~600)
Arc Resistance		ASTM D495	Second	–	187
Mechanical Properties					
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	72 (500)
	Fill	IPC-TM-650 2.4.4	Kpsi (MPa)	50 (345) minimum	58 (400)
Physical Properties					
Moisture Absorption		IPC-TM-650 2.6.2.1	%	0.80 maximum	0.18
Flammability		UL-94	Rating	V0 minimum	V0

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

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