VT-47 LT

UL Approval: E214381 Version: 25/02/2025

IPC4101 / 126 high Tg, Low CTE, high thermal reliability prepreg

General Information

- High Tg, Low CTE
- High Reliability for HDI Designs
- Better Dimensional Stability

Application

- Any-layer HDI Designs
- Sequential Laminations
- Automotive
- Power System
- Server

Availability

- Prepregs are available in roll or panel form
- E-Glass styles: 1078, 1067 and 1037

Glass Type	R/C (%)	Pressed Thickness		Dk				Df			
		mil	µm	@ 1GHz	@ 2GHz	@ 5GHz	@ 10GHz	@ 1GHz	@ 2GHz	@ 5GHz	@ 10GHz
1037	70	1.7	43	4.00	3.95	3.90	3.79	0.013	0.015	0.016	0.017
1037	72	1.8	46	3.96	3.91	3.86	3.75	0.014	0.016	0.017	0.018
*** 1037**	**74**	**2.0**	**51**	**3.92**	**3.87**	**3.82**	**3.71**	**0.014**	**0.016**	**0.017**	**0.018**
1037	76	2.2	56	3.88	3.83	3.78	3.67	0.014	0.016	0.017	0.018
1037	78	2.3	58	3.84	3.79	3.74	3.63	0.014	0.016	0.017	0.018
1067	70	2.2	56	4.00	3.95	3.90	3.79	0.013	0.015	0.016	0.017
1067	72	2.4	61	3.96	3.91	3.86	3.75	0.014	0.016	0.017	0.018
*** 1067**	**74**	**2.5**	**64**	**3.92**	**3.87**	**3.82**	**3.71**	**0.014**	**0.016**	**0.017**	**0.018**
1067	76	2.8	71	3.88	3.83	3.78	3.67	0.0014	0.016	0.017	0.018
1067	78	2.9	74	3.84	3.79	3.74	3.63	0.014	0.016	0.017	0.018
*** 1078**	**66**	**3.0**	**76**	**4.08**	**4.03**	**3.98**	**3.87**	**0.013**	**0.015**	**0.016**	**0.017**
1078	68	3.2	81	4.04	3.99	3.94	3.83	0.013	0.015	0.016	0.017
1078	70	3.4	86	4.00	3.95	3.90	3.79	0.013	0.015	0.016	0.017
1078	72	3.6	91	3.96	3.91	3.86	3.75	0.014	0.016	0.017	0.018

***Standard Availability**

Storage Condition

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

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Properties Sheet

Properties		Test Method	Units	Specification	Typical Value
Thermal Properties					
Tg	DMA	IPC-TM-650 2.4.24.4	°C	170 minimum	215
	DSC	**IPC-TM-650 2.4.25**	**°C**	**170 minimum**	**195**
	TMA	IPC-TM-650 2.4.24	°C	170 minimum	185
Td @5%weight loss		ASTM D3850	°C	340 minimum	360
T288		IPC-TM-650 2.4.24.1	Minute	15 minimum	>60
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**	**25**
	After Tg	**IPC-TM-650 2.4.24**	**ppm/°C**	**300 maximum**	**130**
	Total Expansion (50~260°C)	**IPC-TM-650 2.4.24**	**%**	**3.0 maximum**	**1.5**
XY-axis CTE		IPC-TM-650 2.4.24.5	ppm/°C	–	10/12
Electrical Properties					
Dk (RC 50%)	@ 1GHz	Cavity Resonator	–	5.2 maximum	4.4
	@ 10GHz	Cavity Resonator	–	5.2 maximum	4.2
Df (RC 50%)	@ 1GHz	Cavity Resonator	–	0.035 maximum	0.011
	@ 10GHz	Cavity Resonator	–	0.035 maximum	0.015
Volume Resistivity	After Moisture Resistance	IPC-TM-650 2.5.17.1	MΩ-cm	1.0E+4 minimum	7.0E+8
	E-24/125	IPC-TM-650 2.5.17.1	MΩ-cm	1.0E+3 minimum	8.0E+6
Surface Resistivity	After Moisture Resistance	IPC-TM-650 2.5.17.1	MΩ	1.0E+4 minimum	7.0E+7
	E-24/125	IPC-TM-650 2.5.17.1	MΩ	1.0E+3 minimum	8.0E+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	60 minimum	195
Mechanical Properties					
Peel Strength (1oz)	As received	IPC-TM-650 2.4.8	lb/in (N/mm)	–	8.0 (1.4)
	After thermal stress	IPC-TM-650 2.4.8	lb/in (N/mm)	6.0 (1.05) minimum	8.0 (1.4)
Flexural Modulus	Warp	IPC-TM-650 2.4.2.4	MPa	–	650
	Fill	IPC-TM-650 2.4.2.4	MPa	–	550
Physical Properties					
Moisture Absorption		IPC-TM-650 2.6.2.1	%	0.80 maximum	0.10
Flammability		UL-94	Rating	V-0 minimum	V-0

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