



IS400 High Performance Laminate and Prepreg

IS400 is a temperature-resistant base material with low Z-axis expansion. This product is based on a proprietary filled epoxy-system with a nominal glass transition temperature of approximately 150°C and a delamination time at 260°C of about 60 minutes. The Coefficient of Thermal Expansion (CTE) in the Z-axis lies between room temperature and 120°C at 30-40 ppm/K compared to unfilled systems at 60-70 ppm/K.

www.isola-group.com/products/IS400

ORDERING INFORMATION:

Contact your local sales representative or visit www.isola-group.com for further information.

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High Performance

IS400 Data Sheet

Tg 150, Td 330
Dk 3.90, Df 0.022
/21 /24 /97 /99 /101

Features

- High Thermal Performance
 - ▶ Tg: 150°C (DSC)
 - ▶ Td: 330°C (TGA @ 5% wt loss)
- T260: >60 minutes
- T288: >10 minutes
- RoHS Compliant
- CAF Resistant
 - ▶ CTE 35-40 ppm/K, RT: 150°C
- Core Material Standard Availability
 - ▶ Thickness: 0.002" (0.05 mm) to 0.093" (2.4 mm)
 - ▶ Available in full size sheet or panel form
- Prepreg Standard Availability
 - ▶ Roll or panel form
 - ▶ Tooling of prepreg panels available
- Copper Foil Type Availability
 - ▶ Standard HTE Grade 3
 - ▶ RTF (Reverse Treat Foil)
- Copper Weights
 - ▶ ½, 1 and 2 oz (18, 38 and 70 µm) available
 - ▶ Heavier copper available upon request
 - ▶ Thinner copper foil available upon request
- Glass Fabric Availability
 - ▶ Standard E-glass
 - ▶ Square weave glass fabric available
- Industry Approvals
 - ▶ IPC-4101C /21 /24 /97 /99 /101
 - ▶ UL – File Number E41625

IS400 Specifications

Property		Typical Values				
		Typical Value	Specification	Units	Test Method	
				Metric (English)	IPC-TM-650 (or as noted)	
Glass Transition Temperature (Tg) by DSC		150	110-150	°C	2.4.25	
Decomposition Temperature (Td) by TGA @ 5% weight loss		330	–	°C	ASTM D3850	
T260		>60	–	Minutes	2.4.25	
T288		>10	–	Minutes	2.4.25	
CTE, Z-axis	A. Pre-Tg	50	AABUS	ppm/°C	2.4.24	
	B. Post-Tg	250	–			
CTE, X-, Y-axes	A. Pre-Tg	13	AABUS	ppm/°C	2.4.24	
	B. Post-Tg	14	–			
Z-axis Expansion (50-260°C)		3.30	AABUS	%	2.4.24	
Thermal Conductivity		0.36	–	W/mK	ASTM D5930	
Thermal Stress 10 sec @ 288°C (550.4°F)	A. Unetched	Pass	Pass Visual	Rating	2.4.13.1	
	B. Etched					
Dk, Permittivity (Laminate & prepreg as laminated) Tested at 50% resin	A. @ 1 MHz (Fluid cell)	4.00	5.40	–	2.5.5.3	
	B. @ 500 MHz (HP4291)	3.90	–		2.5.5.9	
	C. @ 1 GHz (HP4291)	–	–		2.5.5.5	
Df, Loss Tangent (Laminate & prepreg as laminated) Tested at 50% resin	A. @ 1 MHz (Fluid cell)	0.020	0.035	–	2.5.5.3	
	B. @ 500 MHz (HP4291)	0.022	–		2.5.5.9	
	C. @ 1 GHz (HP4291)	–	–		2.5.5.5	
Volume Resistivity	A. 96/35/90	4.0x10 ⁸	1.0x10 ⁴	MΩ-cm	2.5.17.1	
	B. After moisture resistance	–	–			
	C. At elevated temperature	7.0x10 ⁷	1.0x10 ³			
Surface Resistivity	A. 96/35/90	3.0x10 ⁶	1.0x10 ⁴	MΩ	2.5.17.1	
	B. After moisture resistance	–	–			
	C. At elevated temperature	5.4x10 ⁶	1.0x10 ³			
Dielectric Breakdown		>50	–	kV	2.5.6	
Arc Resistance		120	60	Seconds	2.5.1	
Electric Strength (Laminate & prepreg as laminated)		48 (1100)	29 (736)	kV/mm V/mil	2.5.6.2	
Comparative Tracking Index (CTI)		3 (175-249)	–	Class (Volts)	–	
Peel Strength	A. Low profile copper foil and very low profile – all copper weights >17 microns	1.05 (8.0)	0.70 (4.0)	N/mm (lb/inch)	2.4.8	
	B. Standard profile copper	1.45 (9.0)	1.05 (6.0)		2.4.8.2	
	1. After thermal stress				0.70 (4.0)	2.4.8.3
	2. At 125°C (257°F)				–	–
	3. After process solutions	1.45 (9.0)	0.80 (4.5)	–	–	
Flexural Strength	A. Lengthwise direction	82,000	–	lb/inch ²	2.4.4	
	B. Crosswise direction	66,600				
Tensile Strength	A. Lengthwise direction	51,213	–	lb/inch ²	–	
	B. Crosswise direction	41,675				
Young's Modulus	A. Grain direction	3663	–	ksi	ww	
	B. Fill direction	3328				
Poisson's Ratio	A. Grain direction	0.183	–	–	xx	
	B. Fill direction	0.151				
Moisture Absorption		0.18	0.8	%	2.6.2.1	
Flammability (Laminate & prepreg as laminated)		V-0	V-0	Rating	UL 94	
Max Operating Temperature		130	–	°C	–	

The data, while believed to be accurate and based on analytical methods considered to be reliable, is for information purposes only. Any sales of these products will be governed by the terms and conditions of the agreement under which they are sold.

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