

IPC-4101 /98 /99 /101 /126 UL - File Number E41625

IS415 sets the industry standard for high thermal performance epoxy materials and is ideally suited for designs requiring high signal integrity.

PRODUCT FEATURES

Industry Recognition

- UL File Number: E41625
- Qualified to UL's MCIL Program
- RoHS Compliant

Performance Attributes

- CAF resistant

Processing Advantages

- FR-4 process compatible
- UV blocking and AOI fluorescence
- No post bake after pressing

PRODUCT AVAILABILITY

Standard Material Offering: Laminate

- 2 to 125 mil (0.05 to 3.2 mm)
- Available in full size sheet or panel form

Copper Foil Type

- HTE Grade 3
- RTF (Reverse Treat Foil)

Copper Weight

- ½ to 2 oz (18 to 70 µm) available
- Heavier copper available
- Thinner copper foil available

Standard Material Offering: Prepreg

- Roll or panel form
- Tooling of prepreg panels

Glass Fabric Availability

- E-glass
- Square weave glass
- Mechanically spread glass

This product is engineered to meet the demands of Lead (Pb) free multilayer printed circuit assembly, deliver CAF resistance with strong IST results and maintain FR-4 processing. IS415 offers good electrical performance, superior chemical and thermal performance and product consistency.

PRODUCT ATTRIBUTES



HIGH DENSITY
INTERCONNECT



HIGH SPEED
DIGITAL



HIGH THERMAL
RELIABILITY

TYPICAL MARKET APPLICATIONS



COMPUTING, STORAGE
& PERIPHERALS

ORDERING INFORMATION:

Contact your local sales representative or contact info@isola-group.com for further information.

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Typical Values Table

Property	Typical Value	Units		Test Method
		Metric (English)		IPC-TM-650 (or as noted)
Glass Transition Temperature (Tg) by DSC	200		°C	2.4.25C
Decomposition Temperature (Td) by TGA @ 5% weight loss	370		°C	2.4.24.6
Time to Delaminate by TMA (Copper removed)	A. T260 B. T288	60 >20	Minutes	2.4.24.1
Z-Axis CTE	A. Pre-Tg B. Post-Tg C. 50 to 260°C, (Total Expansion)	45 240 2.8	ppm/°C ppm/°C %	2.4.24C
X/Y-Axis CTE	Pre-Tg	13	ppm/°C	2.4.24C
Thermal Conductivity		0.4	W/m-K	ASTM E1952
Thermal Stress 10 sec @ 288°C (550.4°F)	A. Unetched B. Etched	Pass	Pass Visual	2.4.13.1
Dk, Permittivity	A. @ 100 MHz B. @ 1 GHz C. @ 2 GHz D. @ 5 GHz E. @ 10 GHz	3.75 3.71 3.72 3.71 3.71	—	2.5.5.3 2.5.5.9 Bereskin Stripline Bereskin Stripline Bereskin Stripline
Df, Loss Tangent	A. @ 100 MHz B. @ 1 GHz C. @ 2 GHz D. @ 5 GHz E. @ 10 GHz	0.0107 0.0131 0.0120 0.0127 0.0125	—	2.5.5.3 2.5.5.9 Bereskin Stripline Bereskin Stripline Bereskin Stripline
Volume Resistivity	A. After moisture resistance B. At elevated temperature	3.81×10^8 3.90×10^8	MΩ-cm	2.5.17.1
Surface Resistivity	A. After moisture resistance B. At elevated temperature	2.81×10^6 2.64×10^8	MΩ	2.5.17.1
Dielectric Breakdown		>50	kV	2.5.6B
Arc Resistance		120	Seconds	2.5.1B
Electric Strength (Laminate & laminated prepreg)		40 (1100)	kV/mm (V/mil)	2.5.6.2A
Comparative Tracking Index (CTI)		1 (400-600)	Class (Volts)	UL 746A ASTM D3638
Peel Strength	A. Low profile copper foil and very low profile copper foil all copper foil >17 μm [0.669 mil] B. Standard profile copper 1. After thermal stress 2. At 125°C (257°F) 3. After process solutions	1.14 (6.5) 1.225 (7.0) 1.14 (6.5) 0.90 (5.1)	N/mm (lb/inch)	2.4.8C 2.4.8.2A 2.4.8.3 2.4.8.3
Flexural Strength	A. Length direction B. Cross direction	74.2 51.6	ksi	2.4.4B
Tensile Strength	A. Length direction B. Cross direction	43.8 31.5	ksi	ASTM D3039
Young's Modulus	A. Length direction B. Cross direction	3530 3200	ksi	ASTM D790-15e2
Poisson's Ratio	A. Length direction B. Cross direction	0.158 0.138	—	ASTM D3039
Moisture Absorption		0.15	%	2.6.2.1A
Flammability (Laminate & laminated prepreg)		V-0	Rating	UL 94
Relative Thermal Index (RTI)		130	°C	UL 796

NOTES

Visit our site <http://www.isola-group.com> for more details.

Revisions:

A: Initial release - 4/17

B: Corrected units for Flexural and Tensile Strength - 8/18

C: Change MOT to RTI 5/19

D: Corrected CTI from 3 to 1 2/20

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