

IPC-4101 /21 /24 /26 /121 /124 /129 UL - File Number E41625

IS410 is a high-performance FR-4 epoxy laminate and prepreg system designed to support the printed circuit board industry's requirements for higher levels of reliability and the trend to use lead-free solder.

PRODUCT FEATURES

Industry Recognition

- UL File Number: E41625
- RoHS Compliant

Performance Attributes

- Lead-free assembly compatible
- 6x 288°C solder float capable

Processing Advantages

- FR-4 process compatible

PRODUCT AVAILABILITY

Standard Material Offering: Laminate

- 2 to 125 mil (0.05 to 3.2 mm)

Copper Foil Type

- HTE Grade 3
- RTF (Reverse Treat Foil)

Copper Weight

- ½, 1 and 2 oz (18, 35 and 70 µm) available
- Thinner copper foil available

Standard Material Offering: Prepreg

- Tooling of prepreg panels

Glass Fabric Availability

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

Isola's IS410 has a glass transition temperature (Tg) of 180°C and is specially formulated for superior performance through multiple thermal excursions, passing 6X solder tests at 288°C. IS410 is optimized for enhanced drilling performance allowing high aspect ratio holes of ≤10 mils. Its unique resin chemistry provides CAF resistance with the benefit of long-term reliability of boards built with small feature designs.

PRODUCT ATTRIBUTES



TYPICAL MARKET APPLICATIONS



ORDERING INFORMATION:

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

Isola Group

6565 West Frye Road Chandler, AZ 85226
Phone: 480-893-6527
Fax: 480-893-1409

Isola Asia Pacific

(Hong Kong) Ltd. 12/F, Kin Sang Commercial Centre, 49 King Yip Street, Kwun Tong, Kowloon,
Hong Kong
Phone: 852-2418-1318
Fax: 852-2418-1533

Isola GmbH

Isola Strasse 2 D-52348 Düren, Germany
Phone: 49-2421-8080
Fax: 49-2421-808164

Typical Values Table

Property	Typical Value	Units		Test Method
		Metric (English)	IPC-TM-650 (or as noted)	
Glass Transition Temperature (Tg) by DSC	180	°C	2.4.25C	
Decomposition Temperature (Td) by TGA @ 5% weight loss	350	°C	2.4.24.6	
Time to Delaminate by TMA (Copper removed)	A. T260 B. T288	50 10	Minutes 2.4.24.1	
Z-Axis CTE	A. Pre-Tg B. Post-Tg C. 50 to 260°C, (Total Expansion)	55 250 3.5	ppm/°C ppm/°C % 2.4.24C 2.4.24C	
X/Y-Axis CTE	Pre-Tg	11	ppm/°C 2.4.24C	
Thermal Conductivity		0.5	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	3.96 3.90 3.97 3.87 3.87	— 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	0.0149 0.0189 0.0200 0.0230 0.0230	— 2.5.5.3 2.5.5.9 Bereskin Stripline Bereskin Stripline Bereskin Stripline	
Volume Resistivity	A. After moisture resistance B. At elevated temperature	8.0×10^8 3.6×10^8	MΩ-cm 2.5.17.1	
Surface Resistivity	A. After moisture resistance B. At elevated temperature	8.0×10^6 $4.5 \times 10(8)$	MΩ 2.5.17.1	
Dielectric Breakdown		>50	kV —	
Arc Resistance		129	Seconds —	
Electric Strength (Laminate & laminated prepreg)		44 (1100)	kV/mm (V/mil) —	
Comparative Tracking Index (CTI)		3 (175-249)	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	570 (82.6) 458 (66.4)	MPa (kpsi) 2.4.4B	
Tensile Strength	A. Length direction B. Cross direction	420 (60.9) 316 (45.8)	MPa (kpsi) ASTM D3039	
Poisson's Ratio	A. Length direction B. Cross direction	0.175 0.143	— ASTM D3039	
Moisture Absorption		0.20	% 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: Removed Asia as Production site 9/24

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