



IS410

Lead-free Epoxy Laminate and Prepreg

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.

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

Legacy Materials

Typical Market Applications

Aerospace & Defense , Consumer Electronics , Networking & Communication Systems , Medical, Industrial & Instrumentation , Automotive & Transportation

Data Sheet

Tg 180°C

Td 350°C

Dk 3.97

Df 0.02

IPC-4101/21 /24 /26 /121 /124 /129

UL - File Number E41625

Last Updated December 7, 2017
Revision No: 9

Product Features

Product Availability

| 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/mK | 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 x 10 ⁸ 3.6 x 10 ⁸ | MΩ-cm | 2.5.17.1 |
| Surface Resistivity | A. After moisture resistance B. At elevated temperature | 8.0 x 10 ⁶ 4.5 x 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 | 82,600 66,400 | | 2.4.4B |
| Tensile Strength | A. Length direction B. Cross direction | 60,890 45,750 | | 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 |
| Max Operating Temperature | | 130 | °C | UL 796 |

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.

