

IPC-4101 /40 /41 UL - File Number E41625

Isola offers a product line of polyimide-based prepreg (P26) and core material (P96) for high temperature printed circuit applications.

PRODUCT FEATURES

Industry Recognition

- UL File Number: E41625
- RoHS Compliant

Performance Attributes

- Lead-free assembly compatible

Processing Advantages

- Good flow and fill
- Multiple reflow capable

PRODUCT AVAILABILITY

Standard Material Offering: Laminate

- 2 to 125 mil (0.05 to 3.2 mm)

Copper Foil Type

- HTE Grade 3

Copper Weight

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

Standard Material Offering: Prepreg

- Tooling of prepreg panels
- Moisture barrier packaging

Glass Fabric Availability

- E-glass

These products consist of a flame resistant, polyimide resin system suitable for military, commercial or industrial electronic applications requiring superior performance and the utmost in thermal properties. These products utilize a polyimide and thermoplastic blend resin, fully cured without the use of MDA (Methylenedianiline). This results in a polymer with a high Tg without the characteristic difficulties of brittleness and low initial bond strength associated with traditional thermoset polyimides.

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 | | 260 | °C | | 2.4.25C | |
| Decomposition Temperature (Td) by TGA @ 5% weight loss | | 396 | °C | | 2.4.24.6 | |
| Time to Delaminate by TMA (Copper removed) | A. T260 B. T288 | 60 | Minutes | | 2.4.24.1 | |
| Z-Axis CTE | A. Pre-Tg B. 50 to 260°C, (Total Expansion) | 55 1.5 | ppm/°C % | | 2.4.24C | |
| X/Y-Axis CTE | Pre-Tg | 13/14 | 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 | 3.83 | — | | 2.5.5.9 | |
| | B. @ 500 MHz | 3.80 | | | 2.5.5.9 | |
| | C. @ 1 GHz | 3.78 | | | 2.5.5.9 | |
| | D. @ 2 GHz | 3.76 | | | Bereskin Stripline | |
| | E. @ 5 GHz | 3.73 | | | Bereskin Stripline | |
| | F. @ 10 GHz | 3.73 | | | Bereskin Stripline | |
| Df, Loss Tangent | A. @ 100 MHz | 0.0135 | — | | 2.5.5.9 | |
| | B. @ 500 MHz | 0.0151 | | | 2.5.5.9 | |
| | C. @ 1 GHz | 0.0172 | | | 2.5.5.9 | |
| | D. @ 2 GHz | 0.0179 | | | Bereskin Stripline | |
| | E. @ 5 GHz | 0.0188 | | | Bereskin Stripline | |
| | F. @ 10 GHz | 0.021 | | | Bereskin Stripline | |
| Volume Resistivity | A. After moisture resistance | 3.0×10^8 | MΩ-cm | | 2.5.17.1 | |
| | B. At elevated temperature | 7.0×10^8 | | | | |
| Surface Resistivity | A. After moisture resistance | 3×10^6 | MΩ | | 2.5.17.1 | |
| | B. At elevated temperature | 2×10^8 | | | | |
| Dielectric Breakdown | | >55 | kV | | 2.5.6B | |
| Arc Resistance | | 130 | Seconds | | 2.5.1B | |
| Electric Strength (Laminate & laminated prepreg) | | 44 (1100) | kV/mm (V/mil) | | 2.5.6.2A | |
| Comparative Tracking Index (CTI) | | 4 (100-174) | 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] | 1.14 (6.5) | N/mm (lb/inch) | | 2.4.8C | |
| | B. Standard profile copper | 1.25 (7.0) | | | 2.4.8.2A | |
| | 1. After thermal stress | 1.25 (7.0) | | | 2.4.8.3 | |
| | 2. At 125°C (257°F) | 1.14 (6.5) | | | 2.4.8.3 | |
| Flexural Strength | A. Length direction | 576 (83.6) | MPa (kpsi) | | 2.4.4B | |
| | B. Cross direction | 383 (55.5) | | | | |
| Tensile Strength | A. Length direction | 383 (55.5) | MPa (kpsi) | | ASTM D3039 | |
| | B. Cross direction | 238 (35.4) | | | | |
| Young's Modulus | A. Length direction | 3958 | ksi | | ASTM D790-15e2 | |
| | B. Cross direction | 3530 | | | | |
| Poisson's Ratio | A. Length direction | 0.189 | — | | ASTM D3039 | |
| | B. Cross direction | 0.154 | | | | |
| Moisture Absorption | | 0.5 | % | | 2.6.2.1A | |
| Flammability (Laminate & laminated prepreg) | | V-0 | Rating | | UL 94 | |
| Relative Thermal Index (RTI) | | 170 | °C | | UL 746 | |

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: Corrected MOT value to match UL file - 11/18

F: Updated RTI from 140 to 170 per UL rating - 3/24

Isola, the Isola logo, Astra, Chronon, GETEK, I-Fill, IsoDesign, IsoStack, I-Speed, I-Tera, Polyclad, Stratus, TerraGreen, and The Base for Innovation are registered trademarks or trademarks of ISOLA USA Corp. in the United States and in other countries. Copyright © 2021 Isola Group. All rights reserved.