

IPC-4103 /17 IPC-4101 /102 UL - File Number E41625

I-Tera® MT40 laminate materials exhibit exceptional electrical properties which are very stable over a broad frequency and temperature range.

PRODUCT FEATURES

Industry Recognition

- UL File Number: E41625
- RoHS Compliant

Performance Attributes

- CAF resistant
- Lead-free assembly compatible

Processing Advantages

- FR-4 process compatible
- Multiple reflow capable
- Multiple lamination cycles

PRODUCT AVAILABILITY

Standard Material Offering: Laminate

- 2 to 18 mil (0.05 to 0.46 mm)

Copper Foil Type

- HVLP (VLP2) ≤2.5 micron Rz JIS
- RTF (Reverse Treat Foil)
- Embedded resistor foil

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
- Square weave glass
- Mechanically spread glass

I-Tera MT40 is suitable for many of today's high speed digital and RF/microwave printed circuit designs. I-Tera MT40 features a dielectric constant (DK) that is stable between - 55°C and +125°C up to W-band frequencies. In addition, I-Tera MT40 offers a lower dissipation factor (Df) of 0.0031 making it a cost effective alternative to PTFE and other commercial microwave and high-speed digital laminate materials.

I-Tera MT40 laminate materials are currently being offered in both laminate and prepreg form in typical thicknesses and standard panel sizes. This provides a complete materials solution package for high-speed digital multilayer, hybrid, RF/microwave, multilayer and double-sided printed circuit designs. I-Tera MT40 does not require any special through hole treatments commonly needed when processing PTFE-based laminate materials.

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 | 215 | °C | | 2.4.25C |
| Glass Transition Temperature (Tg) by DMA | 230 | °C | | 2.4.24.4 |
| Glass Transition Temperature (Tg) by TMA | 210 | °C | | 2.4.24C |
| Decomposition Temperature (Td) by TGA @ 5% weight loss | 360 | °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. Post-Tg C. 50 to 260°C, (Total Expansion) | 55 290 2.8 | ppm/°C ppm/°C % | 2.4.24C |
| X/Y-Axis CTE | Pre-Tg | 12 | ppm/°C | 2.4.24C |
| Thermal Conductivity | | 0.61 | 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. @ 2 GHz B. @ 5 GHz C. @ 10 GHz | 3.45 | — | 2.5.5.5 |
| Df, Loss Tangent | A. @ 2 GHz B. @ 5 GHz C. @ 10 GHz | 0.0031 | — | Bereskin Stripline |
| Volume Resistivity | C-96/35/90 | 1.33×10^7 | MΩ-cm | 2.5.17.1 |
| Surface Resistivity | C-96/35/90 | 1.33×10^5 | MΩ | 2.5.17.1 |
| Dielectric Breakdown | | 45.4 | kV | 2.5.6B |
| Arc Resistance | | 139 | Seconds | 2.5.1B |
| Electric Strength (Laminate & laminated prepreg) | | 45 (1133) | kV/mm (V/mil) | 2.5.6.2A |
| Comparative Tracking Index (CTI) | | 3 | Class (Volts) | UL 746A ASTM D3638 |
| Peel Strength | 1 oz. EDC foil | 1.0 (5.7) | N/mm (lb/inch) | 2.4.8C |
| Flexural Strength | A. Length direction B. Cross direction | 490 (71.0) 400 (58.0) | MPa (kpsi) | 2.4.4B |
| Tensile Strength | A. Length direction B. Cross direction | 269 (39.0) 241 (35.0) | MPa (kpsi) | ASTM D3039 |
| Young's Modulus | A. Length direction B. Cross direction | 3060 2784 | ksi | ASTM D790-15e2 |
| Poisson's Ratio | A. Length direction B. Cross direction | 0.234 0.222 | — | ASTM D3039 |
| Moisture Absorption | | 0.1 | % | 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: Changed VLP2 to HVLP to align with common industry terms 4/21

E: Changed TMA Tg to 210C, DSC Tg to 215C and added DMA at 230C based on long term data 9/22

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.