

isola

TerraGreen®

Halogen-free, Very Low Loss Material

TerraGreen® laminate materials exhibit exceptional electrical properties which are very stable over a broad frequency and temperature range.

TerraGreen® is engineered for such highperformance applications as power amplifier boards for LTE base stations, internet infrastructure and cloud computing. TerraGreen® features a Dielectric Constant (Dk) that is stable between -55°C and 125°C, up to 20 GHz.

TerraGreen® is a lead-free assembly material and is easy to process. This high-performance material utilizes a short-lamination cycle; the product is easy to drill, does not require plasma desmear, and the prepreg shelf life is similar to FR-4 materials. TerraGreen® is suitable for high-layer count, high-speed digital backplanes and is compatible with Isola's FR-4 materials for hybrid designs.

TerraGreen® meets UL 94 V-0 and is halogen free.

Product Attributes

High Thermal Reliability , High Speed Digital , Halogen Free

Typical Market Applications

Computing, Storage & Peripherals , Networking & Communication Systems

ORDERING INFORMATION:

Contact your local sales representative or visit www.isola-group.com for further information.

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High Thermal Reliability

Data Sheet

Tg 200°C

Td 390°C

Dk 3.44

Df 0.0039

IPC-4103 - / 17

UL - File Number E41625

Last Updated October 8, 2018
Revision No: B

Product Features

- Industry Recognition
 - RoHS Compliant
- Performance Attributes
 - Lead-free assembly compatible
- Processing Advantages
 - FR-4 process compatible
 - UV blocking and AOI fluorescence

Product Availability

- Standard Material Offering: Laminate
 - Available in full size sheet or panel form
- Copper Foil Type
 - VLP-2 (2 micron), 1 oz and below
- 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

| 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 | 390 | °C | 2.4.24.6 |
| Time to Delaminate by TMA (Copper removed) | A. T260 B. T288 | Minutes | 2.4.24.1 |
| Z-Axis CTE | 50 to 260°C, (Total Expansion) | % | 2.4.24C |
| X/Y-Axis CTE | Pre-Tg | ppm/°C | 2.4.24C |
| Thermal Conductivity | 0.32 | W/mK | ASTM E1952 |
| Thermal Stress 10 sec @ 288°C (550.4°F) | A. Unetched B. Etched | Pass Visual | 2.4.13.1 |
| Dk, Permittivity | A. @ 2 GHz B. @ 5 GHz C. @ 10 GHz | — | 2.5.5.5 |
| Df, Loss Tangent | A. @ 2 GHz B. @ 5 GHz C. @ 10 GHz | — | Bereskin Stripline |
| Volume Resistivity | C-96/35/90 | MΩ-cm | 2.5.17.1 |
| Surface Resistivity | C-96/35/90 | 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) | In Testing | Class (Volts) | UL 746A ASTM D3638 |
| Peel Strength | A. 0.5 oz. EDC foil B. 1 oz. EDC foil | N/mm (lb/inch) | 2.4.8C |
| Flexural Strength | A. Length direction B. Cross direction | ksi | 2.4.4B |
| Tensile Strength | A. Length direction B. Cross direction | ksi | ASTM D3039 |
| Young's Modulus | A. Length direction B. Cross direction | ksi | ASTM D790-15e2 |
| Poisson's Ratio | A. Length direction B. Cross direction | — | ASTM D3039 |
| Moisture Absorption | 0.05 | % | 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.

<https://www.isola-group.com/products/all-printed-circuit-materials/terragreen/>

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NOTE

Visit our site <http://www.isola-group.com> for more details.
Revision B: Corrected units for Flexural and Tensile Strength