

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.

Isola Group
3100 West Ray Road
Suite 301
Chandler, AZ 85226
Phone: 480-893-6527
Fax: 480-893-1409
info@isola-group.com

Isola Asia Pacific (Hong Kong) Ltd.
Unit 3512 - 3522, 35/F
No. 1 Hung To Road, Kwun Tong,
Kowloon, Hong Kong
Phone: 852-2418-1318
Fax: 852-2418-1533
info.hkg@isola-group.com

Isola GmbH
Isola Strasse 2
D-52348 Düren,
Germany
Phone: 49-2421-8080
Fax: 49-2421-808164
info-dur@isola-group.com

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 May 17, 2019
Revision No: C

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	1.33 x 10 ⁷	MΩ-cm
Surface Resistivity	C-96/35/90	1.33 x 10 ⁵	MΩ
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	0.88 (5.0)	N/mm (lb/inch)
Flexural Strength	A. Length direction B. Cross direction	75.5 60.0	ksi
Tensile Strength	A. Length direction B. Cross direction	40.0 39.0	ksi
Young's Modulus	A. Length direction B. Cross direction	3125 2745	ksi
Poisson's Ratio	A. Length direction B. Cross direction	0.238 0.231	—
Moisture Absorption	0.05	%	2.6.2.1A
Flammability (Laminate & laminated prepreg)	V-0	Rating	UL 94
Relative Thermal Index (RTI)	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.

Revisions:

A: Initial release - 4/17

B: Corrected units for Flexural and Tensile Strength - 8/18

C: Change MOT to RTI 5/19