

isola

I-Tera[®] MT40

Very Low-Loss Laminate Material

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

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

High Speed Digital , High Thermal Reliability , High Density Interconnect

Typical Market Applications

Medical, Industrial & Instrumentation , Aerospace & Defense , Computing, Storage & Peripherals , Networking & Communication Systems , Automotive & Transportation

ORDERING INFORMATION:

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

Isola Group
6565 West Frye Road
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 Speed Digital

Data Sheet

Tg 200°C

Td 360°C

Dk 3.45

Df 0.0031

IPC-4103 - / 17

IPC-4101 - / 102

UL - File Number E41625

Last Updated March 4, 2020
Revision No: C

Product Features

- Industry Recognition
 - UL File Number: E41625
 - RoHS Compliant
- Performance Attributes
 - CAF resistant
 - Lead-free assembly compatible
- Processing Advantages
 - FR-4 process compatible
 - Dimensional stability
 - Multiple reflow capable
 - Multiple lamination cycles

Product Availability

- Standard Material Offering: Laminate
 - 2 to 18 mil (0.05 to 0.46 mm)
 - 10, 20, 30, 60 mil (0.25, 0.51, 0.76, 1.5 mm)
 - Available in full size sheet or panel form
- Copper Foil Type
 - HTE Grade 3
 - VLP-2 (2 micron), 1 oz and below
 - RTF (Reverse Treat Foil)
- 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	
Glass Transition Temperature (Tg) by TMA	205	°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		0.41	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. @ 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 x 10 ⁷	MΩ-cm	2.5.17.1
Surface Resistivity	C-96/35/90	1.33 x 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	71.0 58.0	ksi	2.4.4B
Tensile Strength	A. Length direction B. Cross direction	39.0 35.0	ksi	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

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/i-tera-mt40/>

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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, Corrected Typo for Thermal Conductivity value - 8/18

C: Change MOT to RTI 5/19