

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)
- 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
- HVLP (VLP2) ≤2.5 micron Rz JIS, 1 oz and below is standard
- 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

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](mailto: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		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		0.61	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	$1.33 \times 10^7$	MΩ-cm		2.5.17.1
Surface Resistivity	C-96/35/90	$1.33 \times 10^5$	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

## 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

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.