

IPC-4103 /17 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
- Dimensional stability
- Multiple reflow capable
- Multiple lamination cycles

PRODUCT AVAILABILITY

Standard Material Offering: Laminate

- 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
- Thinner copper foil available

Standard Material Offering: Prepreg

- Roll or panel form
- Tooling of prepreg panels

Glass Fabric Availability

- 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 -40°C and +140°C up to W-band frequencies. In addition, I-Tera MT40 offers a very low dissipation factor (Df) of 0.0028 - 0.0035 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 THERMAL RELIABILITY



RADIO FREQUENCY & MICROWAVE

TYPICAL MARKET APPLICATIONS



AUTOMOTIVE & TRANSPORTATION



RADIO FREQUENCY & MICROWAVE



AEROSPACE & DEFENSE



MEDICAL, INDUSTRIAL & INSTRUMENTATION

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	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. @ 10 GHz B. @ 10 GHz C. @ 10 GHz D. @ 10 GHz	3.38 3.45 3.60 3.75	–	2.5.5.5
Df, Loss Tangent	A. @ 10 GHz B. @ 10 GHz C. @ 10 GHz D. @ 10 GHz	0.0028 0.0031 0.0035 0.0035	–	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 (175-249)	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
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

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