I-Tera® MT40 (RF/MW)

Very Low-Loss Laminate

Tg 215°C Td 360°C Dk 3.38 / 3.45 / 3.60 / 3.75
Df 0.0028 - 0.0035

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)

Copper Foil Type

- HTE Grade 3
- HVLP (VLP2) ≤2.5 micron Rz JIS
- RTF (Reverse Treat Foil)
- Embedded resistor foil

Copper Weight

- ½, 1 and 2 oz (18, 35 and 70 µm) available
- Thinner copper foil available

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

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TYPICAL MARKET APPLICATIONS

AUTOMOTIVE & TRANSPORTATION

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AEROSPACE & DEFENSE

MEDICAL, INDUSTRIAL & INSTRUMENTATION

ORDERING INFORMATION:

Contact your local sales representative or contact info@isola-group.com for further information.

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Typical Values Table

Property		Typical Value	Units	Test Method
			Metric (English)	IPC-TM-650 (or as noted)
Glass Transition Temperature (Tg) by DSC		215	°C	2.4.25C
Glass Transition Temperature (Tg) by DMA		230	°C	2.4.24.4
Glass Transition Temperature (Tg) by TMA		210	°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 @ 288ºC (550.4ºF)	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	490 (71.0) 400 (58.0)	MPa (kpsi)	2.4.4B
Tensile Strength	A. Length direction B. Cross direction	269 (39.0) 241 (35.0)	MPa (kpsi)	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

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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
E: Changed TMA Tg to 210C, DSC Tg to 215C and added DMA at 230C based on long term data 9/22

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