



## I-Tera<sup>®</sup> MT Very Low-loss Laminate Material

**I-Tera<sup>®</sup> MT** laminate materials exhibit exceptional electrical properties which are very stable over a broad frequency and temperature range. I-Tera MT is suitable for many of today's high speed digital and RF/microwave printed circuit designs. I-Tera MT features a dielectric constant (Dk) that is stable between -55°C and +125°C up to 20 GHz. In addition, I-Tera MT offers a lower dissipation factor (Df) of 0.0035 making it a cost effective alternative to PTFE and other commercial microwave and high-speed digital laminate materials.

I-Tera MT 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 MT does not require any special through hole treatments commonly needed when processing PTFE-based laminate materials.

[www.isola-group.com/products/i-tera-mt/](http://www.isola-group.com/products/i-tera-mt/)

### ORDERING INFORMATION:

Contact your local sales representative or visit [www.isola-group.com](http://www.isola-group.com) for further information.

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## High Performance

# I-Tera<sup>®</sup> MT Data Sheet

**Tg 200, Td 360  
Dk 3.00, Df 0.0035**

### Features

- High Thermal Performance
  - ▶ Tg: 200°C (DSC)
  - ▶ Td: 360°C (TGA @ 5% wt loss)
  - ▶ Low CTE in the Z-axis – 2.8% (50-260°C)
- T260: >60 minutes
- T288: >60 minutes
- RoHS Compliant
- Electrical Properties
  - ▶ Dk: 3.00
  - ▶ Df: 0.0035
  - ▶ Typical electrical properties over a broad frequency and temperature range per IPC-TM-650-2.5.5.5
- Core Material Standard Availability
  - ▶ Thickness: 0.0025"-0.018", 0.020", 0.030" and 0.060"
  - ▶ Available in full size sheet or panel form
- Prepreg Standard Availability
  - ▶ Roll or panel form
  - ▶ Tooling of prepreg panels available
- Copper Foil Type Availability
  - ▶ Standard HTE Grade 3
  - ▶ RTF (Reverse Treat Foil)
  - ▶ VLP-2 (2 micron)
- Copper Weights
  - ▶ ½, 1 and 2 oz (18, 38 and 70 µm) available
  - ▶ Heavier copper available upon request
  - ▶ Thinner copper foil available upon request
- Glass Fabric Availability
  - ▶ Standard E-glass
  - ▶ Square weave glass fabric available
  - ▶ Spread glass fabric available
- Industry Approvals
  - ▶ UL 94 V-0
  - ▶ UL Qualified - 130 MOT
  - ▶ Non-ANSI
  - ▶ IPC-4103 /17

# I-Tera<sup>®</sup> MT Specifications

Property		Typical Values			
		Typical Value	Specification	Units	Test Method
				Metric (English)	IPC-TM-650 (or as noted)
<b>Glass Transition Temperature (Tg) by DSC</b>		200	170-200	°C	2.4.24
<b>Decomposition Temperature (Td) by TGA @ 5% weight loss</b>		360	–	°C	ASTM D3850
<b>T260</b>		60+	–	Minutes	–
<b>T288</b>		60+	–	Minutes	–
<b>CTE, X-, Y-axes</b>	A. Pre-Tg	12	AABUS	ppm/°C	2.4.41
	B. Post-Tg	13	–		
<b>Z-axis Expansion (50-260°C)</b>		2.8	–	%	2.4.41
<b>Thermal Conductivity (-100-250°C)</b>		0.32	–	W/mK	ASTM F433
<b>Thermal Stress 10 sec @ 288°C (550.4°F)</b>	A. Unetched	Pass	Pass Visual	Rating	2.4.13.1
	B. Etched				
<b>Dk, Permittivity (Laminate &amp; prepreg as laminated) Tested at 56% resin</b>	A. @ 2 GHz	3.00	±0.05	–	2.5.5.3
	B. @ 5 GHz	3.00	–		2.5.5.9
	C. @ 10 GHz	3.00	–		2.5.5.5
<b>Df, Loss Tangent (Laminate &amp; prepreg as laminated) Tested at 56% resin</b>	A. @ 2 GHz (Bereskin Stripline)	0.0035	Nominal ±0.0005	–	2.5.5.3
	B. @ 5 GHz (Bereskin Stripline)	0.0035	–		2.5.5.9
	C. @ 10 GHz (Bereskin Stripline)	0.0035	–		2.5.5.5
<b>Volume Resistivity</b>	96/35/90	1.33x10 <sup>7</sup>	1.0x10 <sup>6</sup>	MΩ-cm	2.5.17.1
<b>Surface Resistivity</b>	96/35/90	1.33x10 <sup>5</sup>	1.0x10 <sup>4</sup>	MΩ	2.5.17.1
<b>Dielectric Breakdown</b>		45.4	–	kV	2.5.6
<b>Arc Resistance</b>		139	60	Seconds	2.5.1
<b>Electric Strength (Laminate &amp; prepreg as laminated)</b>		45 (1133)	30 (750)	kV/mm (V/mil)	2.5.6.2
<b>Comparative Tracking Index (CTI)</b>		2	–	Class (Volts)	UL-746A ASTM D3638
<b>Peel Strength</b>	1 oz. (38µm) EDC foil	0.70 (4.01)	0.53 (3.0)	N/mm (lb/inch)	2.4.8.3
<b>Flexural Strength</b>	A. Lengthwise direction	TBD	–	lb/inch <sup>2</sup>	2.4.4
	B. Crosswise direction	TBD			
<b>Tensile Strength</b>	A. Lengthwise direction	TBD	–	lb/inch <sup>2</sup>	–
	B. Crosswise direction	TBD			
<b>Young's Modulus</b>	A. Grain direction	TBD	–	ksi	ww
	B. Fill direction	TBD			
<b>Poisson's Ratio</b>	A. Grain direction	TBD	–	–	xx
	B. Fill direction	TBD			
<b>Moisture Absorption</b>		0.01	–	%	2.6.2.1
<b>Flammability (Laminate &amp; prepreg as laminated)</b>		V-0	–	Rating	UL 94
<b>Max Operating Temperature</b>		130	UL Cert	°C	–

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.

[www.isola-group.com/products/i-tera-mt/](http://www.isola-group.com/products/i-tera-mt/)

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