



I-Tera[®] MT RF Very Low-loss Laminate Material

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

I-Tera MT RF laminate materials are designed for double-sided, multilayer and hybrid-multilayer applications. I-Tera MT RF is easy to process, including short lamination cycles, easy drill parameters and it does not require plasma desmear or any special through hole treatments commonly needed when processing PTFE-based laminate materials.

I-Tera MT RF materials have been used for base station, power amplifier, small cell antenna, DAS antenna, CPE antenna, military and automotive radar applications operating at 24 GHz.

www.isola-group.com/products/i-tera-mt-rf/

ORDERING INFORMATION:

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

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High Performance

I-Tera[®] MT RF Data Sheet

Tg 200, Td 360
Dk 3.38, 3.45 3.50 & 3.80
Df 0.0028 - 0.0038

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: 3.38, 3.45, 3.50 & 3.80
 - ▶ Df: 0.0028 to 0.0038
 - ▶ Typical electrical properties over a broad frequency and temperature range per IPC-TM-650-2.5.5.5
- Core Material Standard Availability
 - ▶ Thickness: 0.010", 0.020" & 0.030"
 - ▶ Available in full size sheet or panel form
- Copper Foil Type Availability
 - ▶ Standard HTE Grade 3
 - ▶ RTF (Reverse Treat Foil)
 - ▶ VLP-2 (2 micron)
- Copper Weights
 - ▶ ½, 1 and 2 oz (18, 35 and 70 µm) available
 - ▶ Heavier copper available upon request
 - ▶ Thinner copper foil available upon request
- Industry Approvals
 - ▶ UL 94 V-0
 - ▶ UL Qualified - 130 MOT
 - ▶ Non-ANSI
 - ▶ IPC-4103 /17

I-Tera[®] MT RF Specifications

Property		Typical Values			
		Typical Value	Specification	Units	Test Method
				Metric (English)	IPC-TM-650 (or as noted)
Glass Transition Temperature (Tg) by DSC		200	170-200	°C	2.4.24
Decomposition Temperature (Td) by TGA @ 5% weight loss		360	–	°C	ASTM D3850
T260		>60	–	Minutes	–
T288		>60	–	Minutes	–
CTE, X-, Y-axes	A. Pre-Tg	12	AABUS	ppm/°C	2.4.41
	B. Post-Tg	13	–		
Z-axis Expansion (50-260°C)		2.8	–	%	2.4.41
Thermal Conductivity (-100-250°C)		0.61	–	W/mK	ASTM 1952
Thermal Stress 10 sec @ 288°C (550.4°F)	A. Unetched	Pass	Pass Visual	Rating	2.4.13.1
	B. Etched				
Dk, Permittivity / Df, Loss Tangent (Core thickness 0.010)	@ 10 GHz	3.38 / 0.0028	±0.05 / ±0.0005	–	2.5.5.5 / Bereskin Stripline
		3.45 / 0.0031			
		3.50 / 0.0032			
		3.80 / 0.0038			
Dk, Permittivity / Df, Loss Tangent (Core thickness 0.020)	@ 10 GHz	3.38 / 0.0028	±0.05 / ±0.0005	–	2.5.5.5 / Bereskin Stripline
		3.45 / 0.0031			
		3.50 / 0.0032			
		3.80 / 0.0038			
Dk, Permittivity / Df, Loss Tangent (Core thickness 0.030)	@ 10 GHz	3.38 / 0.0028	±0.05 / ±0.0005	–	2.5.5.5 / Bereskin Stripline
		3.45 / 0.0031			
		3.50 / 0.0032			
		3.80 / 0.0038			
Volume Resistivity	96/35/90	1.33x10 ⁷	1.0x10 ⁶	MΩ-cm	2.5.17.1
Surface Resistivity	96/35/90	1.33x10 ⁵	1.0x10 ⁴	MΩ	2.5.17.1
Dielectric Breakdown		45.4	–	kV	2.5.6
Arc Resistance		139	60	Seconds	2.5.1
Electric Strength		45 (1133)	30 (750)	kV/mm (V/mil)	2.5.6.2
Comparative Tracking Index (CTI)		2	–	Class (Volts)	UL-746A ASTM D3638
Peel Strength	1 oz. (38µm) EDC foil	1.0 (5.7)	0.53 (3.0)	N/mm (lb/inch)	2.4.8.3
Flexural Strength	A. Lengthwise direction	TBD	–	lb/inch ²	2.4.4
	B. Crosswise direction	TBD			
Tensile Strength	A. Lengthwise direction	TBD	–	lb/inch ²	–
	B. Crosswise direction	TBD			
Young's Modulus	A. Grain direction	TBD	–	ksi	ww
	B. Fill direction	TBD			
Poisson's Ratio	A. Grain direction	TBD	–	–	xx
	B. Fill direction	TBD			
Moisture Absorption		0.01	–	%	2.6.2.1
Flammability		V-0	–	Rating	UL 94
Max Operating Temperature		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.

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