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Astra® MT77

Very Low Loss Laminate and Prepreg Materials

Astra® MT77 materials are a breakthrough, very low-loss dielectric constant (Dk) product for millimeter wave frequencies and beyond.

Astra MT77 laminate materials exhibit exceptional electrical properties which are very stable over a broad frequency and temperature range. Astra MT77 is suitable for many of today's commercial RF/microwave printed circuit designs. It features a dielectric constant (Dk) that is stable between -40°C and +140°C at up to W-band frequencies. In addition, Astra MT77 offers an ultra-low dissipation factor (Df) of 0.0017, making it a cost-effective alternative to PTFE and other commercial microwave laminate materials.

Key applications include long antennas and radar applications for automobiles, such as adaptive cruise control, pre-crash, blind spot detection, lane departure warning and stop and go systems.

Product Attributes

RF/Microwave , High Thermal Reliability

Typical Market Applications

Aerospace & Defense , RF / Microwave , Automotive & Transportation

ORDERING INFORMATION:

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

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RF/Microwave

Data Sheet

Tg 200°C

Td 360°C

Dk 3.00

Df 0.0017

IPC-4103 - / 17

UL - File Number E41625

Last Updated June 22, 2020
Revision No: C

Product Features

- Industry Recognition
 - UL File Number: E41625
 - RoHS Compliant
- Performance Attributes
 - Lead-free assembly compatible
- Processing Advantages
 - FR-4 process compatible
 - Short lamination cycle
 - Reduced drill wear
 - No plasma desmear required
 - Good flow and fill
 - Dimensional stability
 - Multiple lamination cycles
 - Any layer technology compatible
 - HDI technology compatible
 - VIPPO design compatible

Product Availability

- Standard Material Offering: Laminate
 - 2.5, 5, 7.5, 10, 12.5, 15, 20, 30, 60 mil (0.0635, 0.127, 0.1905, 0.254, 0.3175, 0.381, 0.510, 0.760, 1.50 mm)
- Copper Foil Type
 - VLP-2 (2 micron), 1 oz and below
- Copper Weight
 - 1/3, 1/2, 1 oz (12, 18 and 35 µm) available
 - Heavier copper available
 - Thinner copper foil available
- Standard Material Offering: Prepreg
 - Roll or panel form
 - Tooling of prepreg panels

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
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	50 - 70 250 - 350	ppm/°C	2.4.24C
X/Y-Axis CTE	Pre-Tg	12	ppm/°C	2.4.24C
Thermal Conductivity		0.45	W/mK	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. @ 10 GHz	3.00	—	2.5.5.5
Df, Loss Tangent	A. @ 2 GHz B. @ 10 GHz	0.0017	—	Bereskin Stripline
Volume Resistivity	C-96/35/90	1.33 x 10 ⁷	MΩ-cm	2.5.17.1
Surface Resistivity	C-96/35/90	1.33 x 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)	2.4.8.3
Flexural Strength	A. Length direction B. Cross direction	49.0 39.0	ksi	2.4.4B
Tensile Strength	A. Length direction B. Cross direction	31.0 24.0	ksi	ASTM D3039
Poisson's Ratio	A. Length direction B. Cross direction	0.183 0.182	—	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

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.

<https://www.isola-group.com/products/all-printed-circuit-materials/astra-mt77-1/>

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NOTE

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Revisions:

A: Initial release - 4/17

B: Corrected units for Flexural and Tensile Strength - 8/18

C: Change MOT to RTI 5/19