



## Astra<sup>®</sup> MT77 Very Low-loss Laminate Material

**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 -55°C and +125°C up to W-band frequencies. In addition, Astra MT77 offers a 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.

[www.isola-group.com/products/AstraMT](http://www.isola-group.com/products/AstraMT)

### 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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RF/Microwave

## Astra<sup>®</sup> MT77 Data Sheet

Tg 200, Td 360  
Dk 3.00, Df 0.0017  
/17

### Features

- High Thermal Performance
  - ▶ Tg: 200°C (DSC)
  - ▶ Td: 360°C (TGA @ 5% wt loss)
- T260: >60 minutes
- T288: >60 minutes
- RoHS Compliant
- Electrical Properties
  - ▶ Dk: 3.00
  - ▶ Df: 0.0017
  - ▶ Exceptional dielectric properties over a broad frequency and temperature range per IPC-TM-650-2.5.5.5
- Core Material Standard Availability
  - ▶ Thickness: 0.0025", 0.005", 0.0075", 0.010", 0.0125", 0.015", 0.020", 0.030" & 0.060" (0.0635 mm, 0.127 mm, 0.1905 mm, 0.254 mm, 0.3175mm, 0.381mm, 0.510 mm, 0.760 mm & 1.50 mm)
  - ▶ Available in full size sheet or panel form
- Copper Foil Type Availability
  - ▶ VLP-2 (Rz = 2 micron)
- Copper Weights
  - ▶ 1/3, 1/2 and 1 oz (12, 18 and 35 µm) available
  - ▶ Heavier copper available upon request
- Industry Approvals
  - ▶ IPC 4103 /17
  - ▶ UL – File Number E41625
  - ▶ UL 94 V-0 130 MOT

# Astra® MT77 Typical Values

Property		Typical Values		
		Typical Value	Units	Test Method
			Metric (English)	IPC-TM-650 (or as noted)
<b>Glass Transition Temperature (Tg) by DSC</b>		190-200	°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, Z-axis</b>	A. Pre-Tg	50-70	ppm/°C	2.4.41
	B. Post-Tg	250-350		
<b>CTE, X-, Y-axes</b>	A. Pre-Tg	12	ppm/°C	2.4.41
	B. Post-Tg	13		
<b>Z-axis Expansion (-55 to 260°C)</b>		2.9	%	2.4.41
<b>Thermal Conductivity (-100 to 250°C)</b>		0.45	W/mK	ASTM F433
<b>Thermal Stress 10 sec @ 288°C (550.4°F)</b>	A. Unetched	Pass	Rating	2.4.13.1
	B. Etched			
<b>Dk, Permittivity</b>	A. @ 2 GHz	3.00	–	Bereskin Stripline
	B. @ 10 GHz	3.00		
<b>Df, Permittivity</b>	A. @ 2 GHz	0.0017	–	Bereskin Stripline
	B. @ 10 GHz	0.0017		
<b>Volume Resistivity</b>	96/35/90	1.33x10 <sup>7</sup>	MΩ-cm	2.5.17.1
<b>Surface Resistivity</b>	96/35/90	1.33x10 <sup>5</sup>	MΩ	2.5.17.1
<b>Dielectric Breakdown (0.060)</b>		45.4	kV	2.5.6
<b>Arc Resistance</b>		139	Seconds	2.5.1
<b>Electric Strength</b>		45 (1133)	kV/mm (V/mil)	2.5.6.2
<b>Comparative Tracking Index (CTI)</b>		3	Class (Volts)	UL-746A ASTM D3638
<b>Peel Strength</b>	1 oz. EDC foil	1.0 (5.7)	N/mm (lb/inch)	2.4.8.3
<b>Tensile Strength</b>	A. Lengthwise direction	31	ksi	ASTM D3039-095a
	B. Crosswise direction	24		
<b>Tensile Modulus/Young's Modulus</b>	A. Lengthwise direction	2,784	ksi	ASTM D3039-095a
	B. Crosswise direction	2,526		
<b>Flexural Strength</b>	A. Lengthwise direction	49	ksi	ASTM D790-10
	B. Crosswise direction	38		
<b>Flexural Modulus/Taylor's Modulus</b>	A. Lengthwise direction	2,701	ksi	ASTM D790-10
	B. Crosswise direction	2,529		
<b>Poisson's Ratio</b>	A. Lengthwise direction	0.183	–	ASTM D3039-095a
	B. Crosswise direction	0.182		
<b>Moisture Absorption</b>		0.1	%	2.6.2.1
<b>Flammability</b>		V-0	Rating	UL 94
<b>Max Operating Temperature</b>		130	°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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