

## RT/duroid® 6202

### High Frequency Laminates



RT/duroid® 6202 high frequency circuit material is a low loss and low dielectric constant laminate offering superior electrical and mechanical properties essential in designing complex microwave structures which are mechanically reliable and electrically stable.

Excellent dimensional stability (0.05 to 0.07 mils/inch) is achieved by the addition of limited woven glass reinforcement. This often eliminates double etching to achieve tight positional tolerances.

½ oz. to 2 oz./ft.<sup>2</sup> electrodeposited and rolled copper foil may be specified as cladding on dielectric thicknesses from 0.005" to 0.060" (0.127 to 1.524 mm).

Applications particularly suited to the unique properties of RT/duroid 6202 material include flat and non-planar structures such as antennas and complex multilayer circuits with interlayer connections.



#### FEATURES AND BENEFITS:

- Low loss for excellent high frequency performance
- Tight  $\epsilon_r$  and thickness control
- Excellent electrical and mechanical properties
- Extremely low thermal coefficient of dielectric constant
- In-plane expansion coefficient matched to copper
- Very low etch shrinkage

#### SOME TYPICAL APPLICATIONS:

- Phased Array Antennas
- Ground Based and Airborne Radar Systems
- Global Positioning System Antennas
- Power Backplanes
- High Reliability Complex Multilayer Circuits
- Commercial Airline Collision Avoidance Systems
- Beam Forming Networks

Property	Typical Value	Direction	Units	Conditions	Test Method
Dielectric Constant $\epsilon_r$	2.90 ± 0.04 [3]	Z	-	10GHz/23°C	IPC-TM-650, 2.5.5.5
Dissipation Factor, TAN $\delta$	0.0015	Z	-	10 GHz/23°C	IPC-TM-650, 2.5.5.5
Thermal Coefficient of $\epsilon_r$	+5	Z	ppm/°C	10 GHz -50 to +150°C	IPC-TM-650, 2.5.5.5
Volume Resistivity	10 <sup>6</sup>	Z	Mohm cm	A	ASTM D257
Surface Resistivity	10 <sup>9</sup>	Z	Mohm	A	ASTM D257
Tensile Modulus	1007 (146)	X, Y	MPa (kpsi)	23°C	ASTM D638
Ultimate Stress	30 (4.3)	X, Y	MPs (kpsi)		
Ultimate Strain	4.9	X, Y	%		
Compressive Modulus	1035 (150)	Z	MPa (kpsi)		ASTM D638
Moisture Absorption	0.1	-	%	D23/24 D48/50	IPC-TM-650, 2.6.2.1 ASTM D570
Thermal Conductivity	0.68	-	W/m/K	80°C	ASTM C518
Coefficient of Thermal Expansion	15 15 30	X Y Z	ppm/°C	(10K/min) TMA	ASTM D3386 IPC-TM-650 2.4.41
Dimensional Stability	0.07	X, Y	mm/m (mil/ inch)	after etch +E/150	IPC-TM-650, 2.4.3.9
Td	500		°C TGA		ASTM D3850
Density	2.1		gm/cm <sup>3</sup>		ASTM D792
Specific Heat	0.93 (0.22)	-	J/g/K (BTU/ lb/°F)	-	Calculated
Copper Peel	9.1 (1.6)		lbs/in (N/mm)		IPC-TM-650 2.4.8
Flammability	V-0				UL 94
Lead-Free Process Compatible	YES				

Typical value are a representation of an average value of the population of the property. For specification values contact Rogers Corporation.

[1] S1 units given first, with other frequently used units in parentheses

[2] References: internal TRs 3824, 5016, 5017, 5035. Tests were at 23°C unless otherwise noted.

[3] Due to construction limitations, the dielectric constant of .0005 thick laminates is 3.06 ± 0.04; 0.010" and 0.015" thick laminates is 3.02 ± 0.04.

STANDARD THICKNESS	STANDARD PANEL SIZE	STANDARD COPPER CLADDING
0.005" (0.127mm) 0.010" (0.254mm) 0.015" (0.381mm) 0.020" (0.508mm) 0.030" (0.762mm) 0.060" (1.524mm)	18" X 12" (457 X 305mm) 18" X 24" (457 X 610mm)	½ oz. (17µm), 1oz. (35µm), 2 oz. (70µm) electrodeposited and rolled copper foil.  RT/duroid 6202 laminates are not available with thick metal cladding. Unclad material 0.020" or greater is available. Non-standard claddings and panel sizes are available. Contact customer service for more information.

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Revised 1112 040915 Publication# 92-116