

# RT/duroid® 6202PR

## High Frequency Laminates

RT/duroid® 6202PR 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 and used for planar resistor applications.

Excellent dimensional stability (0.05 to 0.07 mils/inch) is achieved by the addition of limited woven glass reinforcement. This enables the manufacture of tight tolerance planar resistors.

¼ oz. to 2 oz./ft.<sup>2</sup> electrodeposited copper foil, ½ oz., 1 oz. and 2 oz. rolled copper foil, ½ oz., 1oz. and 2 oz. reverse treated foil and ½ oz. and 1 oz. electrodeposited copper foil with a resistive layer, may be specified as cladding on 0.005" (0.127mm), 0.010" (0.254mm), 0.015" (0.381mm), & 0.020" (0.508mm) standard dielectric thicknesses. RT/duroid 6002PR (non-reinforced) available in 0.020 and 0.030 dielectric thicknesses.

Applications particularly suited to the unique properties of RT/duroid 6202PR material include flat and non-planar structures such as antennas and complex multi-layer circuits with inter-layer connections



### Data Sheet



#### Features and Benefits

##### Low Loss

- Excellent high frequency performance

##### Excellent mechanical and electrical properties

- Reliable multi-layer board constructions

##### Tight dielectric constant and thickness controls

##### Extremely low thermal coefficient of dielectric constant

- Excellent dimensional stability

##### In-plane expansion coefficient matched to copper

- Allows for more reliable surface mounted assemblies
- Ideal for applications sensitive to temperature change
- Excellent dimensional stability

#### Some Typical Applications:

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

PROPERTY	VALUE		DIRECTION	UNITS <sup>[1]</sup>	CONDITION	TEST METHOD
	RT/duroid 6202PR					
	Thickness	Tolerance				
Dielectric Constant, $\epsilon_r$ <i>Process and Design [2]</i>	0.005"	2.90 ± 0.04	Z		10 GHz/23°C	IPC-TM-650, 2.5.5.5
	0.010"	2.98 ± 0.04				
	0.020"	2.90 ± 0.04				
Dissipation Factor, Tan $\delta$	0.0020		Z		10 GHz/23°C	IPC-TM-650, 2.5.5.5
Thermal Coefficient of $\epsilon_r$	+13			ppm/°C	10 GHz /0-100°C	IPC-TM-650, 2.5.5.5
Volume Resistivity	10 <sup>10</sup>		Z	Mohm•cm	A	ASTM D257
Surface Resistivity	10 <sup>9</sup>		X,Y,Z	Mohm	A	ASTM D257
Tensile Modulus	1007 (146)		X,Y	MPa (kpsi)	23°C	ASTM D638
Ultimate Stress	4.3			%		
Ultimate Strain	4.9					
Compressive Modulus	1035 (150)		Z	MPa (kpsi)		ASTM D638
Moisture Absorption	0.1		-	%	D24/23	IPC-TM-650, 2.6.2.1
Thermal Conductivity	0.68		-	W/mK	80°C	ASTM C518
Coefficient of Thermal Expansion	15		X,Y	ppm/°C	23°C/ 50% RH	IPC-TM-650 2.4.41
	30		Z			
Td	500			°C TGA		ASTM D3850
Initial Design Values for Resistive Foil	Foil Nominal	Laminate Nominal		ohms/square		
	25	27				
	50	60				
	100 [3]	157				
Density	2.1			gm/cm <sup>3</sup>		ASTM D792
Specific Heat	0.93 (0.22)			J/g/K (BTU/lb/°F)		Calculated
Dimensional Stability	0.07		X,Y	mm/m (mil/inch)	after etch +E2/150	IPC-TM-650 2.4.3.9
Flammability	V-0					UL94
Lead Free Process Compatible	Yes					

**NOTES:** Typical values 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] The design DK is an average number from several different tested lots of material and on the most common thickness/s. If more detailed information is required please contact Rogers Corporation or refer to Roger's technical reports on the Rogers Technology Support Hub at <http://www.rogerscorp.com>.

[3] 100 ohm - contact customer service for availability

Standard Thicknesses	Standard Panel Sizes	Standard Claddings	
0.010" (0.252mm) +/- 0.0007" 0.020" (0.508mm) +/- 0.0015"	12" X 18" (305mm X 457mm) 24" X 18" (610mm X 457mm)	<u>Electrodeposited Copper Foil</u> ½ oz. (18µm) HH/HH 1 oz. (35µm) H1/H1	<u>Rolled Copper Foil</u> ½ oz. (18µm) 5R/5R 1 oz. (35µm) 1R/1R
*Additional non-standard thicknesses 0.005" and 0.015" are available	*Additional panel sizes available	*Additional claddings, such as resistive foil and unclad are available	

\*Contact Customer Service or Sales Engineering to inquire about additional available product configurations

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