

\\ Datasheet

RT/duroid® 6010.2LM High Frequency Laminates

RT/duroid® 6010.2LM microwave laminates are ceramic-PTFE composites designed for electronic and microwave circuit applications requiring a high dielectric constant. RT/duroid 6010.2LM laminates have a dielectric constant of 10.2.

RT/duroid 6010.2LM microwave laminates feature ease of fabrication and stability in use. They have a tight dielectric constant and thickness control, low moisture absorption, and good thermal mechanical stability.

RT/duroid 6010.2LM laminates are supplied clad both sides with 1/2 oz. to 2 oz./ft² (18 to 70 mm) standard and reverse treated electrodeposited copper foil. Thick aluminum, brass, or copper plate on one side may be specified.

Standard tolerance dielectric thicknesses of 0.010", 0.025", 0.050", 0.075", and 0.100" (0.254, 0.635, 1.270, 1.905, 2.54 mm) are available. When ordering RT/duroid 6010.2LM laminates, it is important to specify dielectric thickness and weight of copper foil required.

\\ Features and Benefits:

- High dielectric constant for circuit size reduction
- Low loss. Ideal for operating at X-band or below
- Low Z-axis expansion for RT/duroid 6010.2LM. Provides reliable plated through holes in multilayer boards
- Low moisture absorption for RT/duroid 6010.2LM. Reduces effects of moisture on electrical loss
- Tight ϵ_r and thickness control for repeatable circuit performance

\\ Typical Applications:

- Patch Antennas
- Satellite Communications Systems
- Power Amplifiers
- Aircraft Collision Avoidance Systems
- Ground Radar Warning Systems

\\ Standard Offerings

Standard Thicknesses	Standard Panel Sizes	Standard Cladding
0.025" (0.625mm) $\pm$ 0.0015" 0.050" (1.270mm) $\pm$ 0.0020" 0.075" (1.900mm) $\pm$ 0.0030"	10"X10" (254mmX254mm) 10" X 20" (254mmX508 mm) 18" X 12" (457mmX305mm)	Electrodeposited Copper Foil 1/2 oz. (18 μ m) HH/HH 1 oz. (35 μ m) H1/H1
*Additional non-standard thicknesses available from 0.005" - 0.200" in increments of 0.005"	*Additional panel sizes available	*Additional claddings, such as heavy metal, resistive foil and unclad are available

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

Standard Properties Table

Properties	Typical Value	Direction	SI grq	Test Conditions	Test Method
Electrical Properties					
Dielectric Constant	10.20 +/- 0.25	Z		10 GHz 23°C	IPC TM-650 2.5.5.5
Dissipation Factor	0.0025	Z		10 GHz 23°C	IPC TM-650 2.5.5.5
Thermal Coefficient of Dielectric Constant	-375	Z	ppm/°C	10 GHz (-50°C to 150°C)	IPC TM-650 2.5.5.5
Volume Resistivity	2.55x10 ⁵		Mohm-cm	E-24/125	IPC TM-650 2.5.17.1
Surface Resistivity	2.13x10 ⁵		Mohm	E-24/125	IPC TM-650 2.5.17.1
Dielectric Strength	725		V/mil		IPC TM-650 2.5.6.2
Dielectric Breakdown	49.8		kV		IPC TM-650 2.5.6
Thermal Properties					
Decomposition Temperature (Td)	544		°C	20°C/min	ASTM D3850
Coefficient of Thermal Expansion	25, 25, 41	X, Y, Z	ppm/°C	-55°C to 288°C	IPC TM-650 2.4.24
Thermal Conductivity	0.86	Z	W/mK		ASTM D5470
Mechanical Properties					
Copper Peel Strength after Thermal Stress	11.1		pli	10 sec 288°C	IPC TM-650 2.4.8
Tensile Modulus	840,814	X,Y	ksi	23°C	ASTM D-790
Flexural Modulus (X, Y)	475,426	X,Y	ksi	23°C	ASTM D-790
Tensile Elongation	21.2, 21.5	MD, CMD	%	23°C	ASTM D-638
Compressive Strength	3.25x10 ⁴	Z	PSI	23°C	ASTM D-695-02a
Dimensional Stability	-0.31, -0.27	MD, CMD	%	Method C	IPC-TM-650 2.2.4
Physical Properties					
Flammability	V-0				UL 94
Moisture Absorption	0.05		%	D48/50	IPC TM-650 2.6.2.1
Density	3.1		g/cm ³		ASTM D792
Lead-Free Process Compatible	Yes				

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