ROGERS CORPORATION
Advanced Circuit Materials

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Data Sheet
1.3035

RO3035™ High Frequency Circuit Materials

Features and Benefits:

- Low dielectric loss for high frequency performance. Laminate can be used in applications up to 30-40 GHz.
- Excellent mechanical properties versus temperature for reliable stripline and multilayer board constructions.
- Uniform mechanical properties for a range of dielectric constants. Ideal for multilayer board designs with a range of dielectric constants. Suitable for use with epoxy glass multilayer board hybrid designs.
- Stable dielectric constant versus temperature and frequency. Ideal for band pass filters, microstrip patch antennas, and voltage controlled oscillators.
- Low in-plane expansion coefficient (matched to copper). Allows for more reliable surface mounted assemblies. Ideal for applications sensitive to temperature change and excellent dimensional stability.
- High thermal conductivity for lower operating temperature and increased reliability in Power Amplifier applications.

RO3000® high frequency circuit materials are ceramic- filled PTFE composites intended for use in commercial microwave and RF applications. This family of products was designed to offer exceptional electrical and mechanical stability at competitive prices.

RO3000 series laminates are ceramic-filled PTFE based circuit materials with mechanical properties that are consistent regardless of the dielectric constant selected. This allows the designer to develop multilayer board designs that use different dielectric constant materials for individual layers, without encountering warpage or reliability problems.

The dielectric constant versus temperature of RO3000 series materials is very stable . These materials exhibit a coefficient of thermal expansion (CTE) in the X and Y axis of 17 ppm/°C. This expansion coefficient is matched to that of copper, which allows the material to exhibit excellent dimensional stability and minimizes the tendency for bow and twist. This matched expansion coefficient also eliminates the tendency for delamination for thick metal cladding. The Z-axis CTE is 24 ppm/ C, which provides exceptional plated through-hole reliability, even in severe thermal environments.

RO3000 series laminates can be fabricated into printed circuit boards using standard PTFE circuit board processing techniques, with minor modifications as described in the application note "Fabrication Guidelines for RO3000 Series High Frequency Circuit Materials."

Available claddings are 1/2, 1, 2 copper foil and custom thick metal plates per customer specifications.

RO3000 laminates are manufactured under an ISO 9002 certified system.

Property	Typical Value (1)	Direction	Unit	Condition	Test Method
Dielectric Constant, ε_r	3.50 ± 0.05	Z	-	10 GHz 23°C	IPC-TM-650 2.5.5.5
Dissipation Factor	.0018	Z	-	10 GHz 23°C	IPC-TM-650 2.5.5.5
Volume Resistivity	10^7		MΩ•cm	COND A	IPC 2.5.17.1
Surface Resistivity	10^7		MΩ	COND A	IPC 2.5.17.1
Water Absorption	<0.1	-	%	D24/23	IPC-TM-650 2.6.2.1
Specific Heat	0.93 (0.22)		J/g/K (BTU/lb/°F)		Calculated
Thermal Conductivity	0.50	-	W/m/K	100°C	ASTM C518
Coefficient of Thermal Expansion	17 24	X,Y Z	ppm/°C	-55 to 288°C	ASTM D3386-94
Color	Tan				
Density	2.1		gm/cm^3		
Copper Peel Strength	1.6 (9.1)	N/mm (lb/in)	After solder float	20 sec. @ 288°C	IPC-TM-2.4.8
Flammability	94V-0				UL
Lead-free Process Compatible	Yes				

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

STANDARD THICKNESS:	STANDARD PANEL SIZE:	STANDARD COPPER CLADDING:
0.005" (0.13 mm) 0.010" (0.25 mm) 0.020" (0.50 mm) 0.030" (0.75 mm) 0.060" (1.52 mm)	18" X 12" (457 X 305mm) 18" X 24" (457 X 610mm) 18" X 36" (457 X 915mm) 18" X 48" (457 X 1.224m)	½ oz. (17µm), 1 oz. (35µm), 2 oz. (70µm) electrodeposited copper foil. Additional claddings: Available with thick copper

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