

## Rogers Corporation RO4003C Glass-Reinforced Hydrocarbon and Ceramic Laminate with Thin Film Resistor Foil

Category : Ceramic , Ceramic Matrix Composite

### Material Notes:

RO4000® Series High Frequency Circuit Materials are glass-reinforced hydrocarbon and ceramic (not PTFE) laminates with TIGER™ TCR® Thin Film Resistor Foils. These laminates are designed for performance sensitive, high volume commercial applications. RO4000 laminates are designed to offer superior high frequency performance and low-cost circuit fabrication. The result is a low loss material which can be fabricated using standard epoxy/glass (FR4) processes. Features and Benefits: Glass-reinforced hydrocarbon and ceramic dielectric Volume manufacturing process Excellent high-frequency performance Low Z-axis expansion, excellent dimensional stability Integrated thin film resistor benefits Foils available in 25, 50 and 100 OPS NiCr Foils offered in 1/2 ounce copper weight Lead-Free process compatible Typical Applications: Global communications systems High reliability and complex multilayer circuits Wireless communication devices Information provided by Rogers Corporation.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Rogers-Corporation-RO4003C-Glass-Reinforced-Hydrocarbon-and-Ceramic-Laminate-with-Thin-Film-Resistor-Foil.php](http://www.lookpolymers.com/polymer_Rogers-Corporation-RO4003C-Glass-Reinforced-Hydrocarbon-and-Ceramic-Laminate-with-Thin-Film-Resistor-Foil.php)

Physical Properties	Metric	English	Comments
Density	1.79 g/cc	0.0647 lb/in <sup>3</sup>	ASTM D792
Moisture Absorption at Equilibrium	0.060 % @Temperature 50.0 °C, Time 173000 sec	0.060 % @Temperature 122 °F, Time 48.0 hour	Immersion; 0.06 in thick; ASTM D570
Thickness	203 - 1520 microns	8.00 - 60.0 mil	Range of Thicknesses Available

Mechanical Properties	Metric	English	Comments
Tensile Strength	141 MPa	20400 psi	RT, Y direction; ASTM D638
Tensile Modulus	26.9 GPa	3900 ksi	RT, Y direction; ASTM D638
Flexural Strength	276 MPa	40000 psi	IPC-TM-650, 2.4.4
Peel Strength	1.05 kN/m	6.00 pli	Copper, After Solder Float, 1/2 ounce TCR Foil; IPC-TM-650 2.4.8

Thermal Properties	Metric	English	Comments
CTE, linear	11.0 µm/m-°C @Temperature -55.0 - 288 °C	6.11 µin/in-°F @Temperature -67.0 - 550 °F	X-Direction; IPC-TM-650 2.4.41
	14.0 µm/m-°C @Temperature -55.0 - 288 °C	7.78 µin/in-°F @Temperature -67.0 - 550 °F	Y-Direction; IPC-TM-650 2.4.41

Thermal Properties	Metric	English	Comments
	@Temperature -55.0 - 288 °C	@Temperature -67.0 - 550 °F	Z-Direction, IPC-TM-650 2.4.41
Thermal Conductivity	0.710 W/m-K @Temperature 80.0 °C	4.93 BTU-in/hr-ft <sup>2</sup> -°F @Temperature 176 °F	ASTM C518
Glass Transition Temp, Tg	>= 280 °C	>= 536 °F	Condition A; IPC-TM-650 2.4.24
Decomposition Temperature	425 °C	797 °F	TGA; ASTM D3850

Electrical Properties	Metric	English	Comments
Volume Resistivity	1.70e+16 ohm-cm	1.70e+16 ohm-cm	Cond. A; IPC 2.5.17.1
Surface Resistance	4.20e+15 ohm	4.20e+15 ohm	Cond. A; IPC 2.5.17.1
Dielectric Constant	3.55	3.55	Design Spec., FSR, Z-direction; IPC-TM-650 2.5.5.6
	3.33 - 3.43 @Frequency 1.00e+10 Hz	3.33 - 3.43 @Frequency 1.00e+10 Hz	Process, Clamped stripline, Z-direction; IPC-TM-650 2.5.5.5
Dielectric Strength	30.7 kV/mm @Thickness 0.510 mm	780 kV/in @Thickness 0.0201 in	Z Direction; IPC-TM-650 2.5.6.2
Dissipation Factor	0.0021 @Frequency 2.50e+9 Hz	0.0021 @Frequency 2.50e+9 Hz	IPC-TM-650 2.5.5.5
	0.0027 @Frequency 1.00e+10 Hz	0.0027 @Frequency 1.00e+10 Hz	IPC-TM-650 2.5.5.5

Descriptive Properties	Value	Comments
Dimensional Stability	< 0.3 mm/m	X, Y direction; IPC-TM-650, 2.4.39A; after etch; +E2/150°C
Thermal Coefficient of Dielectric Constant	40 ppm/°C	IPC-TM-650 2.5.5.5; -50°C to 150°C; Z-Direction

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