

RO4830™ Plus Circuit Materials

Thermoset Laminates

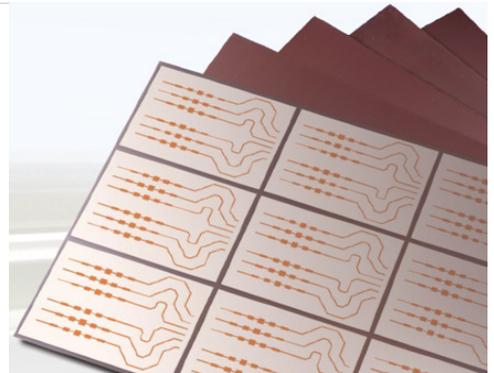
RO4830™ Plus Circuit Materials, Rogers' latest innovation in dielectric materials, are well suited for cost-sensitive millimeter wave PCB applications, such as 76-81 GHz automotive corner radar sensors.

Electrical performance optimized for 76-81 GHz automotive radar applications:

RO4830 Plus laminates are woven glass free thermoset dielectric materials with a stable dielectric constant and low insertion loss, as required by RF designers for millimeter wave automotive radar sensors. The design dielectric constant of RO4830 Plus laminates is approximately 3.03 at 77GHz (microstrip differential phase length method). The combination of Rogers' low loss thermoset resin system and very low profile electrodeposited copper foil translates to a very low insertion loss of 1.5 dB/inch for 5mil laminates, as measured by the microstrip differential phase length method.

PCB fabrication characteristics which reduce overall PCB manufacturing costs:

RO4830™ Plus laminates are engineered for the cap layer on FR-4 multi-layer board designs, which are commonly used for 76- 81 GHz automotive radar sensor PCB applications. These thermoset laminates are free of woven glass, contributing to good laser drilling performance, and CAF resistance. RO4830 Plus laminates can be fabricated using standard epoxy/glass (FR-4) processes and are compatible with RO4400™ bondply. These PFAS-free laminates have the UL-V0 flame retardant rating and are lead free solder process compatible.



!!! Features and Benefits:

Innovative thermoset resin platform with VLP copper foil

Optimized electrical performance at 77 GHz

- Consistent within sheet dielectric constant
- Excellent insertion loss

Reduced overall cost of PCB

- Excellent laser drilling performance
- Excellent CAF resistance

PFAS Free

!!! Typical Applications:

76-81 GHz Automotive Radar Sensors and related applications

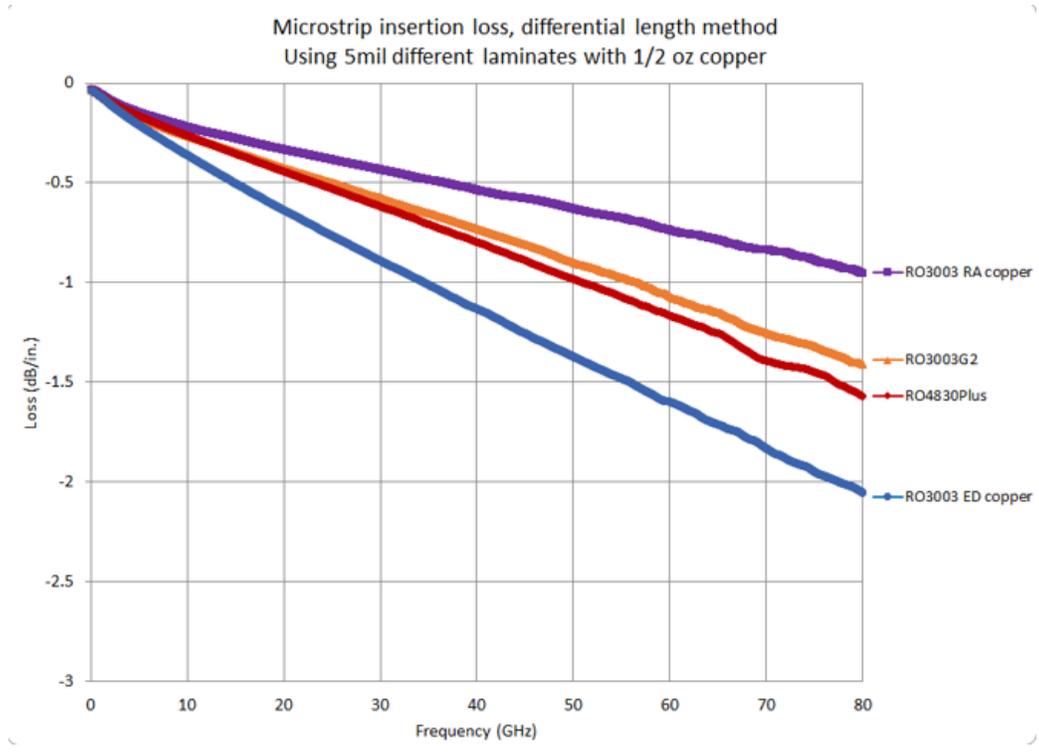
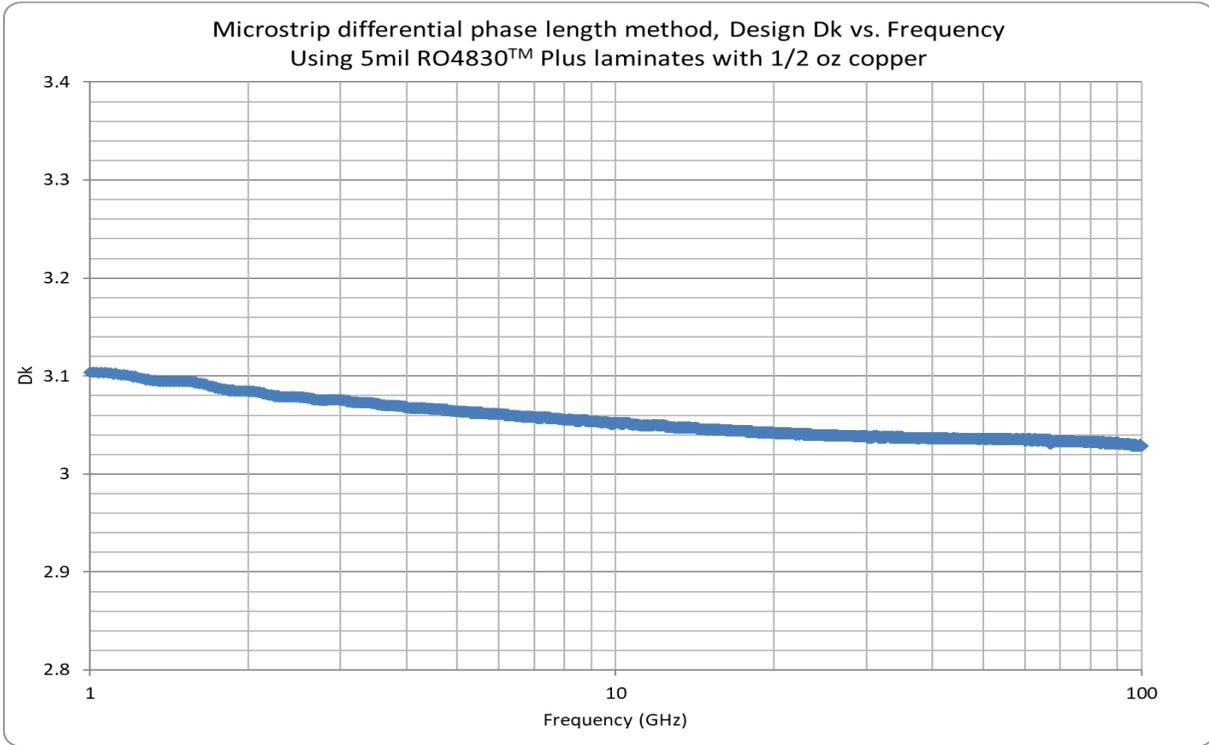
- PCB patch antennas for mm-wave radar sensors
- RF feed network for wave guide antennas
- RF intermediate frequency (IF) layer for multi-chip radar designs

Standard Properties Table

Properties	Typical Value	Units	Test Conditions		Test Method
Electrical Properties					
Dielectric Constant	3.00 ±0.04		23°C @ 50% RH	10 GHz	IPC TM-650 2.5.5.5
Dissipation Factor	0.0015		23°C @ 50% RH	10 GHz	IPC TM-650 2.5.5.5
Dielectric Constant (design)	3.03		C-24/23/50	77 GHz	Microstrip Differential Phase Length
Thermal Coefficient of Dielectric Constant	-54	ppm/°C	-50°C to 150°C	10 GHz	IPC TM-650 2.5.5.5
Volume Resistivity	1.1 x 10 ¹³	Mohm-cm	C-96/35/90		IPC TM-650 2.5.17.1
Surface Resistivity	4.1 x 10 ¹¹	Mohm	C-96/35/90		IPC TM-650 2.5.17.1
Thermal Properties					
Decomposition Temperature (Td)	357	°C TGA			ASTM D3850
Coefficient of Thermal Expansion - x	46	ppm/°C		-40°C to 140°C	IPC TM-650 2.4.41
Coefficient of Thermal Expansion - y	47	ppm/°C		-40°C to 140°C	IPC TM-650 2.4.41
Coefficient of Thermal Expansion - z	56	ppm/°C		-40°C to 140°C	IPC TM-650 2.4.41
Thermal Conductivity	0.5	W/(m·K)		z direction	ASTM D5470
Glass Transition Temp (Tg)	285	°C TGA			
Mechanical Properties					
Copper Peel Strength after Thermal Stress	4.5	lbs/in	18 µm foil	After Solder Float	IPC TM-650 2.4.8
Tensile Modulus (X, Y)	540, 580	ksi	23°C		ASTM D638
Flexural Modulus (X, Y)	340, 340	ksi	23°C		IPC-TM-650 2.4.4
Dimensional Stability (X, Y)	(-0.67, -0.68)	mm/m	Method C		IPC-TM-650 2.2.4
Physical Properties					
Flammability	V-0	-	-	-	UL 94
Moisture Absorption	0.02	%	D48/50		IPC TM-650 2.6.2.1
Density	1.64	g/cm ³	C-24/23/50		ASTM D792
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 Corp.

Property Charts



Standard Offerings

Standard Thicknesses	Standard Panel Sizes	Standard Copper Cladding
0.005" (0.13 mm) ± 0.0005"	24" X 18" (610 X 457 mm) 24" X 20" (610 X 508mm) 24" X 21" (610 X 533mm)	½ oz (18µm) VLP ED

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