

Property	Typical Value [1] 4.38 Dk Laminate	Direction	Units	Condition	Test Method
[3] Dielectric Constant, ϵ_r Design	4.38 ⁽²⁾	Z	-	2.5 GHz	Differential Phase Length Method
Dissipation Factor	0.005	Z	-	10 GHz/23°C	IPC-TM-650, 2.5.5.5
Thermal Coefficient of Dielectric Constant	-21	-	ppm/°C	10 GHz (-50 to 150°C)	Modified IPC TM-650 2.5.5.5
Volume Resistivity	2.9×10^9	-	MΩ•cm	COND A	IPC-TM-650, 2.5.17.1
Surface Resistivity	6.2×10^7	-	MΩ	COND A	IPC-TM-650, 2.5.17.1
Electrical Strength (dielectric strength)	675	Z	V/mil	-	IPC-TM-650, 2.5.6.2
Flexural Strength	25 19	MD CMD	kpsi	-	IPC-TM-650, 2.4.4
Tensile Strength	16 12	MD CMD	kpsi	-	ASTM D3039/D3039-14
Dimensional Stability	-0.48 -0.59	MD CMD	mm/m	-	IPC-TM-650, 2.4.39a
Coefficient of Thermal Expansion	13	X	ppm/°C	-55 TO 288°C	IPC-TM-650, 2.4.41
	16	Y			
	42	Z			
Thermal Conductivity	0.64	Z	W/mK°	80°C	ASTM D5470
Time to Delamination(T288)	>60	-	minutes	288°C	IPC TM-650 2.4.24.1
Moisture Absorption	0.07	-	%	24/23	IPC-TM-650 2.6.2.1
Tg	>280	-	°C	-	IPC-TM-650 2.4.41
Td	414	-	°C	-	IPC TM-650 2.3.40
Young's Modulus	2264 2098	MD CMD	kpsi	-	ASTM D3039/D3039-14
Flex Modulus	2337 2123	MD CMD	kpsi	-	IPC-TM-650, 2.4.4
Bow	0.03	-	%	-	IPC-TM-650, 2.4.22C
Twist	0.08	-	%	-	IPC-TM-650, 2.4.22C
Copper Peel Strength After Thermal Stress	5.8	-	lbs/in	1 oz (35 μm) foil	IPC-TM-650 2.4.8
Flammability	V-0	-	-	-	UL94
Specific Gravity	1.99	-	g/cm ³	-	ASTM D792
Lead-Free Process Compatible	Yes	-	-	-	

NOTES:

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

[2] Dielectric Constant using stripline method IPC TM-650 2.5.5.5 at 10 GHz is 4.10 +/- 0.08 for Rogers' internal Q.A. testing

[3] 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.

Standard Thicknesses	Standard Panel Sizes:	Standard Copper Cladding
0.020" (0.508 mm) 0.030" (0.762 mm) 0.040" (1.016 mm) 0.060" (1.524 mm)	24" X 18" (610 X 457 mm) 24.25" X 18.25" (616 X 464 mm) 48" X 36" (1219 X 915 mm) 48.25" X 36.25" (1226 X 921 mm)	½ oz. (17μm) electrodeposited copper foil (5ED/5ED) 1 oz. (35μm) electrodeposited copper foil (1ED/1ED)