

General properties of Phenolic Resin Copper-clad Laminates SUMILITE®

Test Item		Measuring Method		Unit	Paper Phenolic Single/Double Side Materials for PCB					
					PLC-2147 AQ type	PLC-2147 SQ type	PLC-2147 GSSM type	PLC-2147 RH type	PLC-2147 RF type	PLC-2147 GF type
Coefficient of thermal expansion	CTE X (α1)	TMA	Machine Direction	ppm/°C	15	15	15	15	15	15
	CTE Y (α1)		Cross Direction		21	21	21	22	22	22
	CTE Z (α1)	TMA		ppm/°C	240	240	240	240	230	230
	CTE Z (α2)				-	-	-	-	-	-
Solder heat resistance		S-260 float		sec	30	30	30	50	60	60
Peel strength		A	Copper	kN/m	2.0	2.0	2.0	2.0	2.0	2.0
Flexural strength		A	Machine Direction	MPa	160	160	150	160	170	170
			Cross Direction		150	150	140	150	160	160
Flexural modulus		A	Machine Direction	GPa	9	9	9	9	9	9
			Cross Direction		7	7	7	8	8	8
Tensile strength		A	Machine Direction	MPa	110	110	110	120	120	120
			Cross Direction		90	90	90	110	110	110
Tensile modulus		A	Machine Direction	GPa	9	9	9	9	9	9
			Cross Direction		7	7	7	8	8	8
Dielectric constant (1MHz)		A		-	4.5	4.5	4.7	4.6	4.6	4.6
Dissipation factor (1MHz)		A		-	0.038	0.038	0.038	0.036	0.036	0.036
Volume resistivity		A		Ω•cm	1E+13	1E+13	1E+13	5E+13	5E+13	5E+13
Surface resistivity		A		Ω	5E+12	5E+12	5E+12	1E+13	1E+13	1E+13
Surface resistance		A		Ω	1E+12	1E+12	1E+12	1E+12	1E+12	1E+12
Water absorption		E-24/50 +D-24/23		%	1.00	1.00	1.00	0.65	0.45	0.45
Flame resistance properties	UL-94V	-		-	94V-0	94V-0	94V-0	94V-0	94V-0	94V-0
Thermal conductivity	Laser flash method	-		W/mK	0.25	0.25	0.25	0.25	0.25	0.25

Remark

- The data mentioned above is not guaranteed value but representative one.
- Test piece: 1.6mmt