



Flexible Copper Laminates Single-Sided Laminates

PROPERTY	UNIT	RNS22S58	RAR32S58	RNS32S58	RAR33S58	RNS33S58	RAR34S58	RAR44S58	TEST METHOD
Product Composition		Apical-NPI	Kapton-H	Apical-NPI	Kapton-H	Apical-NPI	Kapton-H	Kapton-H	
Polyimide Film	-	1/2 mil	1 mil	1 mil	1 mil	1 mil	1 mil	2 mil	
Copper Foil	-	1/2 oz-RA(Black)	1/2 oz - RA(Red)	1/2 oz-RA(Black)	1 oz - RA(Red)	1 oz-RA(Black)	2 oz - RA(Red)	2 oz - RA(Red)	-
Adhesive	µm	10	10	10	10	10	10	10	
No. of sides of foil	-	1	1	1	1	1	1	1	
Thickness	µm	41	53	53	70	70	105	130	-
Peel Strength	N/cm	6.9	7.4	9.8	8.8	12.7	13.2	13.2	JIS C 6471
Resistance to soldering heat	°C	330	310	330	310	330	310	310	JIS C 6471
Volume Resistivity	Ω·cm	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	JIS C 6481
Surface Resistance	Ω	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	JIS C 6481
Insulation Resistance	Ω	1x10 ¹³	1x10 ¹³	1x10 ¹³	1x10 ¹³	1x10 ¹³	1x10 ¹³	1x10 ¹³	IPC FC 241
Dielectric Constant	-	3.2	3.2	3.2	3.2	3.2	3.2	3.2	JIS C 6481
Dielectric Dissipation Factor	-	0.03	0.03	0.03	0.03	0.03	0.03	0.03	JIS C 6481
Dimensional Stability	%	MD -0.14 TD +0.02	MD -0.14 TD -0.03	MD -0.03 TD +0.07	MD -0.14 TD -0.05	MD -0.05 TD +0.07	MD -0.16 TD -0.04	MD -0.17 TD -0.05	IPC FC 241
Flexural Fatigue MIT*	times	MD 1520 TD 1440	MD 670 TD 620	MD 620 TD 530	MD 540 TD 600	MD 400 TD 480	MD 160 TD 180	MD 120 TD 130	JIS C 6471
Chemical Resistance**									
Acetone	-	Good	Good	Good	Good	Good	Good	Good	JIS C 6481
Toluene									
MEK									
Flame Retardancy UL94									
File No: E98177	-	V-0	V-0	V-0	V-0	V-0	V-0	V-0	UL 94
(Designation)		(RBF-5)	(RBF-5)	(RBF-5)	(RBF-5)	(RBF-5)	(RBF-5)	(RBF-5)	

* Radius = 0.8mm, Tension = 4.9N in case of more than 1mil, and 2.45N in case of 1/2mil.

** Dipped for 15 minutes at room temperature

The above figures are typical data, but not assured by us.

Double-Sided Laminates

PROPERTY	UNIT	RNS22D58	RAR32D58	RNS32D58	RAR33D58	RNS33D58	TEST METHOD
Product Composition		Apical-NPI	Kapton-H	Apical-NPI	Kapton-H	Apical-NPI	
Polyimide Film	-	1/2 mil	1 mil	1 mil	1 mil	1 mil	
Copper Foil	-	1/2 oz-RA(Black)	1/2 oz-RA(Red)	1/2 oz-RA(Black)	1 oz-RA(Red)	1 oz-RA(Black)	-
Adhesive	µm	10	10	10	10	10	
No. of sides of foil	-	2	2	2	2	2	
Thickness	µm	69	81	81	115	115	-
Peel Strength	N/cm	9.8	10.3	10.8	11.8	11.8	JIS C 6471
Resistance to soldering heat	°C	330	320	330	320	330	JIS C 6471
Volume Resistivity	Ω·cm	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	JIS C 6481
Surface Resistance	Ω	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	2x10 ¹⁶	JIS C 6481
Insulation Resistance	Ω	1x10 ¹³	1x10 ¹³	1x10 ¹³	1x10 ¹³	1x10 ¹³	IPC FC 241
Dielectric Constant	-	3.3	3.3	3.3	3.3	3.3	JIS C 6481
Dielectric Dissipation Factor	-	0.03	0.03	0.03	0.03	0.03	JIS C 6481
Dimensional Stability	%	MD -0.13 TD +0.07	MD -0.15 TD -0.03	MD -0.05 TD +0.09	MD -0.14 TD -0.01	MD -0.08 TD +0.08	IPC FC 241
Flexural Fatigue MIT*	times	MD 1360 TD 1350	MD 390 TD 400	MD 400 TD 350	MD 510 TD 550	MD 340 TD 440	JIS C 6471
Chemical Resistance**							
Acetone	-	Good	Good	Good	Good	Good	JIS C 6481
Toluene							
MEK							
Flame Retardancy UL94							
File No: E98177	-	V-0	V-0	V-0	V-0	V-0	UL 94
(Designation)		(RBF-5)	(RBF-5)	(RBF-5)	(RBF-5)	(RBF-5)	

* Radius = 0.8mm, Tension = 4.9N in case of more than 1mil, and 2.45N in case of 1/2mil.

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