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ROGERS CORPORATION
Advanced Circuit Materials

LONGLITE™ Flex 300 Series
Adhesiveless Flexible Copper Laminate Material

Double-clad Laminate

Description:

LONGLITE™ Flex 300 thin dielectric materials available from Rogers Corporation are double-clad adhesiveless laminates designed to meet today's high performance interconnection requirements. Through the use of leading-edge technology, thermoplastic polyimide (TPI) replaces the traditional adhesives present in 3-layer laminates leading to thinner high performance materials.

The LONGLITE FLex 300 ultra-thin flexible circuit materials are available in a broad range of copper foil and dielectric film thicknesses, including the thinner copper foils (in both ED and RA) required in high-density circuit patterns. High thermal resistance, good dimension stability, exceptional electrical properties, and superior flexibility allow Rogers' LONGLITE Flex 300 adhesiveless circuit materials to excel in your most demanding flexible interconnect applications.

LONGLITE Flex 300 double-sided adhesiveless laminates are manufactured in rolls and are available in standard widths of 250mm and 500mm.

Product Features:

- Excellent dimensional stability, for use in making fine line flexible circuit designs and assemblies.
- Superior solder resistance, ideal for lead-free soldering temperatures.
- Thinner cross-section than laminates with adhesives, allowing more design freedom in flexing assemblies.
- Halogen-free (green) and inherently flame-resistant with flammability rating of UL 94VTM-0.

Applications:

The double-sided adhesiveless laminate series is suitable for ultra fine pattern flexible printed circuit applications requiring high thermal durability, high insulation resistance, and flexibility.

Some application examples include:

- COF (Chip on Flex), multi layer board in cellular phones
- FPC (Flexible Printed Circuit) in hard disk suspensions and digital still cameras
- Medical, defense and aerospace high-reliability FPC applications
- FRPC (Flexible Rigid Printed Circuit) in demanding flexing parts
- LCD (Liquid Crystal Display) interconnections

Environmental Standards:

LONGLITE™ Flex 300 products contain no cadmium, lead, mercury, hexavalent chromium compounds, PBBs, PBDE's and meet or exceed the following industry standards:

- IEC and JPCA halogen-free requirements

Product Offerings:

PRODUCT NUMBER: LONGLITE Flex	CONSTRUCTION INFORMATION				
	Copper			Polyimide Core	
	Cu Type	microns	oz	microns	mils
309L818	RA	18	½	25	1
309L878	RA	18	½	18	0.7
309L868	RA	18	½	14	0.6
30HLT1T	HA RA	12	⅓	25	1
30HLT7T	HA RA	12	⅓	18	0.7
30HL818	HA RA	18	½	25	1
30HL878	HA RA	18	½	18	0.7
30HL868	HA RA	18	½	14	0.6
303L818	ED	18	½	25	1
305LT1T	ED	12	⅓	25	1

Available Configurations:
Many additional configurations are available as non-standards. Please check with your Rogers representative.

Part Number and Descriptions:

Laminate (L) Designations **30 X 00L X X X**

Copper Type
9=RA, H-Flex Fatigue Resistant RA (HA RA), 3=ED copper, 5=ED copper
Copper Thickness, oz (μm)
T= ⅓ (12), 8= ½ (18)
Polyimide Film Thickness, mil (μm)
6=0.6 (14), 7=0.7 (18), 1=1(25)
Copper Thickness, oz (μm)
T= ⅓ (12), 8= ½ (18)

Storage Conditions:

LONGLITE Flex 300 laminates will retain their original properties for a minimum of one year from the date of manufacture when stored at 4-29°C and 70% RH in the original packaging.

Typical Values

LONGLITE™ Flex 300

Property		Test	Details	Units	Double-sided Copper Clad Laminates	
					18/25/18 RA	12/25/12 ED
Mechanical Properties						
Peel Strength		IPC-TM-650, method 2.4.9	Method A	kgf/cm	1.3	1.4
			After 150°C - 200 hr		1.4	1.4
Dimensional Stability		IPC-TM-650, method 2.2.4	Method B (MD)	%	-0.03	-0.02
			250°C-30min (MD)		-0.048	0.01
Flexural Endurance		JIS C 6471	MIT Test R=0.38mm Load=500g (MD)	Cycles	212	262
Electrical Properties						
Dielectric Constant		IPC-TM-650 method 2.5.5.3	@1MHz	-	3.26	
Dissipation Factor		IPC-TM-650 method 2.5.5.3	@1MHz	-	0.0099	
Surface Resistance		ASTM D-257	23°C/50% RH	MOhms	1.3×10^{10}	
Volume Resistance			23°C/50% RH	MOhms cm	1.4×10^{9}	
Insulation Resistance		IPC-TM-650, method 2.6.3.2	500V, 60 seconds	MOhms	2.8×10^{5}	
Dielectric Strength		ASTM D-149	23°C/50% RH	V/mil	5200	
Physical Properties						
Polyimide Performance	Tensile Modulus	ASTM D-882		Gpa	5	5
	Elongation	JIS C 2318		%	32	32
	CTE	TMA method	100-250°C	ppm	21	21
	CHE		32°C/0-80 %RH	ppm	9.2	9.2
	Moisture Absorption	IPC-TM-650 method 2.6.2	23°C/50%	%	1.1	1.1
Themal Properties						
Solder Resistance		JIS C 6471	85°C/85% 48 Hours 10 sec float	°C	340	340
Flammability		UL94	File Number: E108591	-	VTM-0	VTM-0

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

LONGLITE Flex 300 adhesiveless laminates are compatible with R/flex JADE™ series coverfilms and bonding films:

R/flex JADE™ is a halogen-free, flame retardant epoxy adhesive system specially formulated to meet the unique requirements of emerging commercial applications worldwide. The product's proprietary formulation is designed to deliver uncompromising performance in an environmentally friendly package. For innovative flexible circuit designs and creative engineering challenges, specify Rogers.

R/flex JADE halogen-free epoxy system delivers:

- *Superior thermal stability to withstand multiple passes through lead-free soldering*
- *Transparent adhesive system*

World Class Performance

Rogers Corporation (NYSE:ROG), headquartered in Rogers, Conn., is a global technology leader in the development and manufacture of high performance, specialty material-based products for a variety of applications in diverse markets including: portable communications, communications infrastructure, computer and office equipment, consumer products, ground transportation, aerospace and defense. In an ever-changing world, where product design and manufacturing often take place on different sides of the planet, Rogers has the global reach to meet customer needs. Rogers operates facilities in the United States, Europe and Asia. The world runs better with Rogers.®

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