ROGERS CORPORATION

Data Sheet

ULTRALAM® 3908 Bondply

ULTRALAM 3000 Series

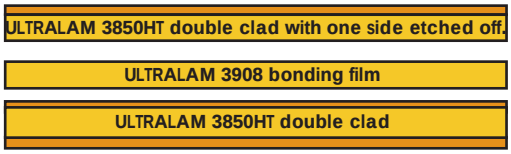
Liquid Crystalline Polymer Circuit Materials

ULTRALAM® 3908 bondply from Rogers Corporation, is used as a bonding medium (adhesive layer) between copper and the dielectric material. This product was developed specifically for multi-layer substrate constructions. This adhesiveless film is well suited for high speed and high frequency applications in telecommunication network equipment, high-speed computer data links and other high performance applications.

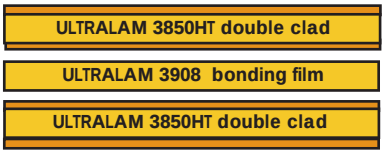
ULTRALAM 3908 bondply is characterized by low and stable dielectric constant, which is required for high frequency, high-speed products. This product can be used for multilayer constructions with other Rogers ULTRALAM 3000 family of LCP circuit materials such as ULTRALAM 3850HT double clad laminate.

ULTRALAM 3850HT circuit materials can be used in combination with ULTRALAM 3908 bonding films to create truly adhesiveless all-LCP multi-layer circuit constructions:

3 Layer Build

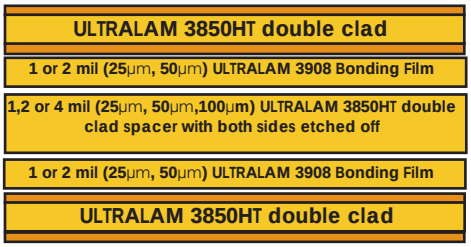


4 or More Layer Build



ULTRALAM 3908 bondply should never be stacked together in a design in order to increase the bondply thickness. In designs where a bondply spacing greater than 0.002" (.0508mm) is required, it is recommended to use the following multi-layer bondply approach to achieve the desired dielectric thickness.

4 or More Layer Build with ULTRALAM 3850HT / ULTRALAM 3908 Bondply Spacers



ULTRALAM 3000 circuit materials can also be combined with RO4450B™ prepreg and R/flex CRYSTAL® 7200 adhesive or other types of epoxy, acrylic, cyanate ester, or PTFE resin systems to enhance the properties of a multi-layer design as needed.

Features and Benefits:

Excellent electrical properties
- Stable dielectric constant for minimal cross talk between signal layers
- Allows use of thinner bonding film with minimal signal losses

Low modulus
- Bends easily for flex applications
- Offers design flexibility and minimizes space requirements

Extremely low moisture absorption
- Maintains stable electrical, mechanical and dimensional properties

Flame resistant
- Halogen-free
- UL94VTM/0 - meets requirement for consumer products

Some Typical Applications:

All LCP flex interconnections
- High speed switches and routers
- Backplane-to-backplane
- Data links
- Card-to-card

Hybrid substrates
- Handheld and RF devices

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PROPERTY	TYPICAL VALUE (ULTRALAM 3908)		UNITS	TEST METHODS
Mechanical Properties				
Dimensional Stability	MD: <0.1	CMD: <0.1	%	IPC 2.2.4 method A
Initiation Tear Strength, min	1.4 (3.1)		Kg (lbs)	IPC 2.4.16
Tensile Strength	216 (31)		MPa (Kpsi)	IPC 2.4.19
Tensile Modulus	2450 (355)		MPa (Kpsi)	IPC 2.4.19
Thickness Variation	<±10		%	ASTM-D374
Thermal Properties				
Coefficient of Thermal Expansion, CTE (30°D to 150°C)	X:17 Y:17 Z:150		ppm/°C	IPC 2.4.41.3
Solder Float, Method B (288°C)	PASS			IPC 2.4.13
Thermal Conductivity @ 50°C	0.20		W/m°K	ASTM D5470
Melting Temperature	280		°C	DSC
Relative Thermal Index (RTI)				
mechanical	190		°C	
electrical	240		°C	
Electrical Properties				
Dielectric Constant (10 GHz, 23°C)	2.9			IPC 2.5.5.5.1
Dissipation Factor (10 GHz, 23°C)	0.0025			IPC 2.5.5.5.1
Surface Resistivity	1.2×10^{12}		Mega Ohms	IPC 2.5.17
Volume Resistivity	2.6×10^{14}		Mega Ohms-cm	IPC 2.5.17
Dielectric Breakdown Strength	118 (3000)		KV/cm (V/mil)	ASTM-D-149
Environmental Properties				
Chemical Resistance	98.7		%	IPC 2.3.4.2
Water Absorption (23°C, 24 hrs)	0.04		%	IPC 2.6.2
Coefficient of Hydroscopic Expansion, CHE (60°C)	4		ppm/%RH	60°C
Flammability	VTM-0			UL-94

Standard Thickness	Standard Size	Storage/Shelf Life
0.001", 0.002" (25µm, 50µm)	18" X 12" (457mm X 305mm) 18" X 24" (457mm X 610mm) up to 20.48" (520mm X 150m) rolls. Custom sizes available upon request.	No special storage requirements. No shelf life limit.

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