

ULTRALAM® 3908 Bondply

ULTRALAM 3000 Series

Liquid Crystalline Polymer Circuit Materials

Features and Benefits

Excellent electrical properties

- Stable dielectric constant for minimal cross talk between signal layers
- Allows use of thinner bonding film with very 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

Typical Applications

All LCP flex interconnections

- High speed switches and routers
- Backplane-to-backplane
- Data links
- Card-to-card

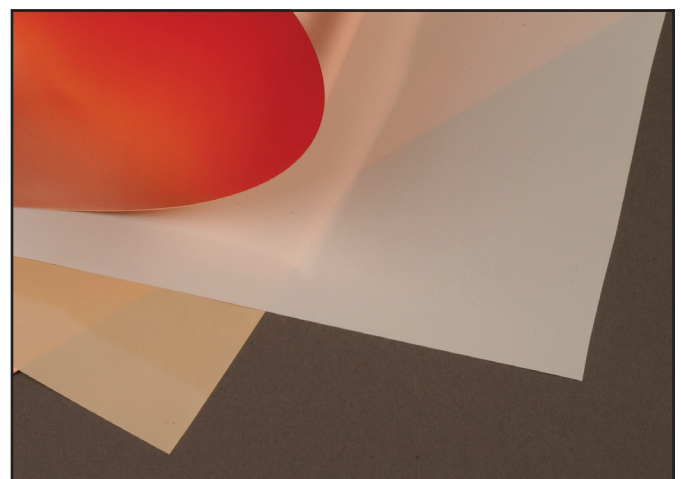
Hybrid substrates

- Handheld and RF devices

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 3850 double clad laminate.

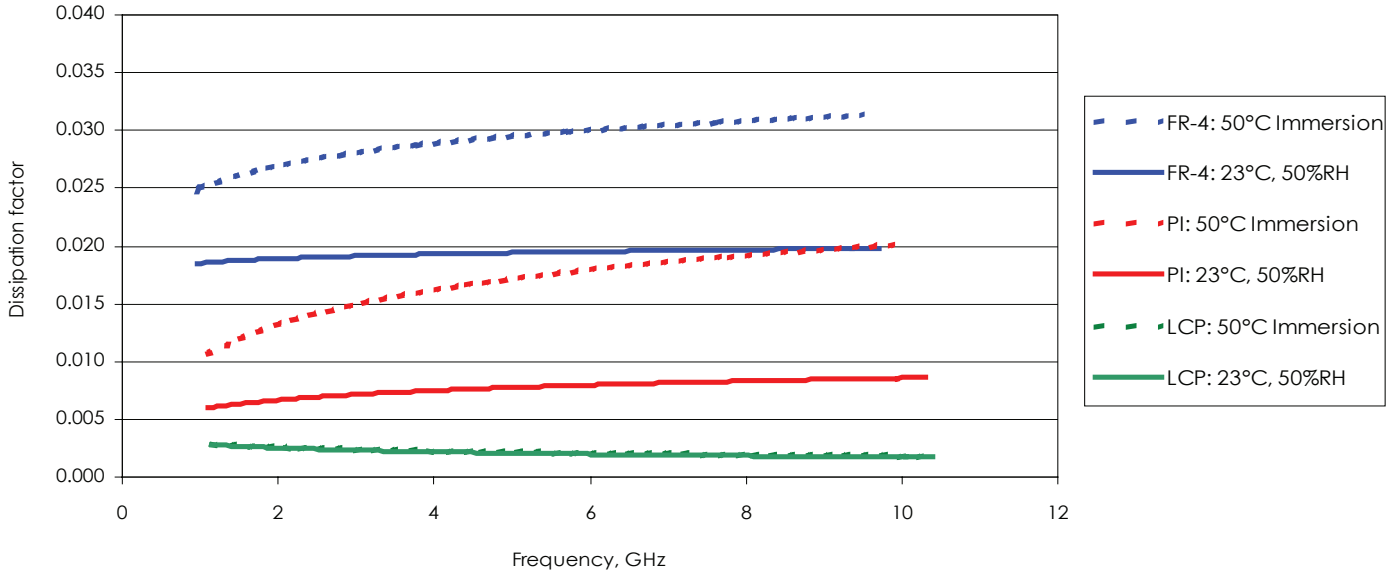
ULTRALAM 3908 bondply materials conform to the requirements of IPC 4203/TBD. The UL file number is E122972.



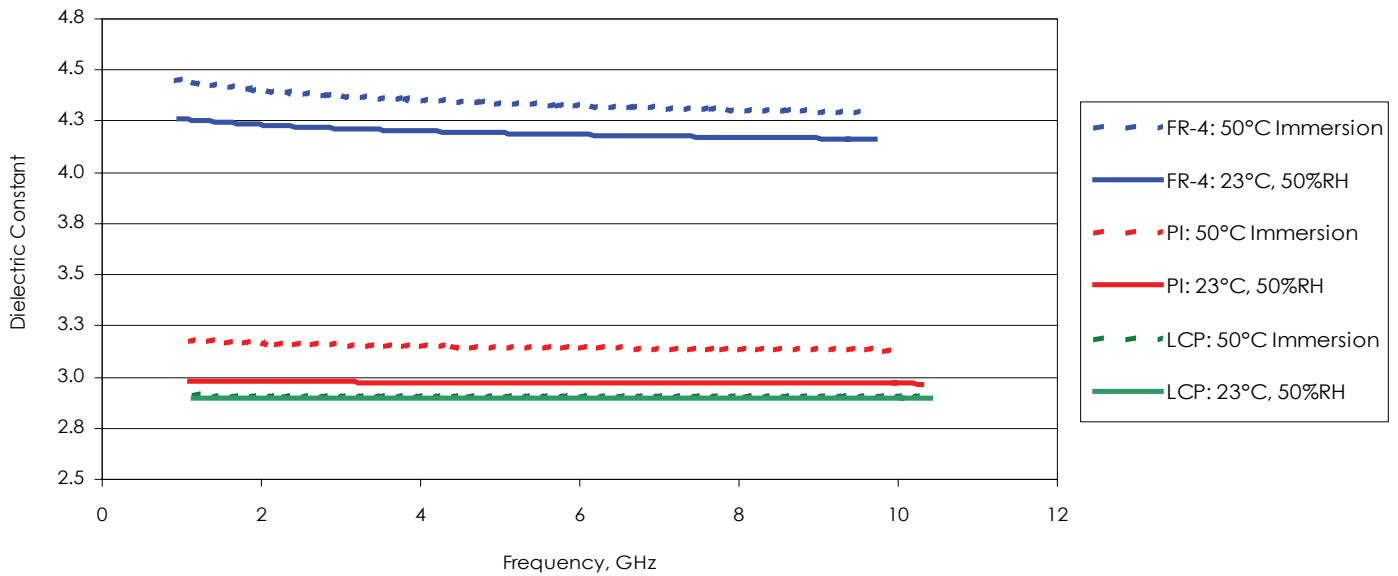
The information contained in this data sheet is intended to assist you in designing with Rogers' liquid crystalline polymer circuit materials. It is not intended to and does not create any warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose or that the results shown on this datasheet will be achieved by a user for a particular purpose. The user is responsible for determining the suitability of Rogers' liquid crystalline polymer circuit materials for each application.

The world runs better with Rogers.®

Dielectric Constant Variation: LCP, All Polyimide, and FR-4 laminates



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Data obtained from cast all polyimide and high Tg FR-4 laminate materials.

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Typical Values

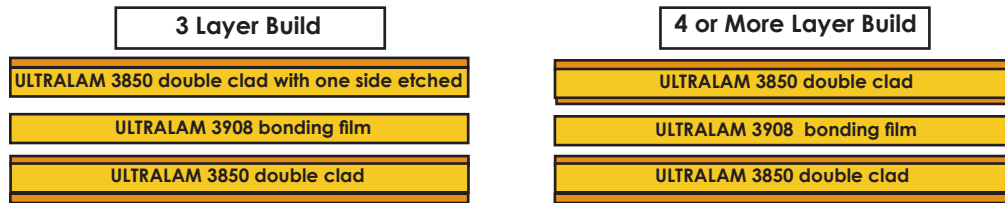
ULTRALAM® 3908 Bondply

Property	Value	Unit	Test Conditions
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
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 X 10 ¹²	Mega Ohms	IPC 2.5.17
Volume Resistivity	2.6 X 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 Hygroscopic Expansion, CHE (60°C)	4	ppm/%RH	60°C
Flammability	VTM-O		UL-94

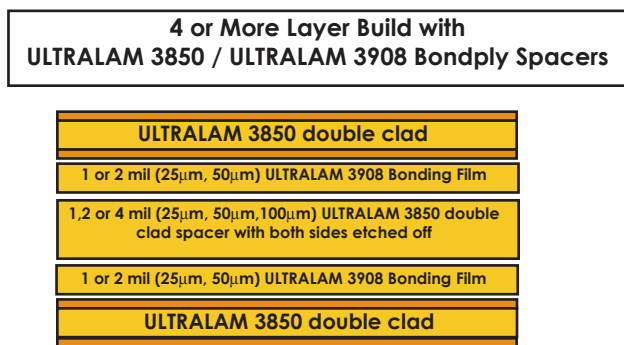
Standard Thickness	Standard Size	Storage/Shelf Life
0.001", 0.002" (25µm, 50µm)	18" X 12" (457mm X 305mm) 18" X 24" (457mm X 610mm) up to 20.48" (520mm X 150m) rolls. Custom sizes available upon request.	No special storage requirements. No shelf life limit

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



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.



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

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