BERGQUIST

Technical Data Sheet

Bond-Ply® LMS-HD

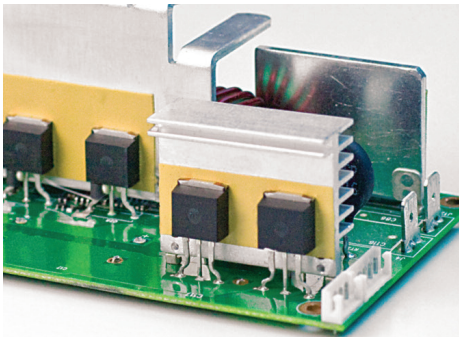
October 2014

PRODUCT DESCRIPTION

Laminate Material - Silicone, High Durability, Optional Lamination Methods

FEATURES AND BENEFITS

- TO-220 Thermal performance: 2.3°C/W, initial pressure only lamination
- Exceptional dielectric strength
- Very low interfacial resistance
- 200 psi adhesion strength
- Continuous use of -60 to 180°C
- Eliminates mechanical fasteners



Bond-Ply® LMS-HD is a thermally conductive heat curable laminate material. The product consists of a high performance thermally conductive low modulus silicone compound coated on a cured core, and double lined with protective films. The low modulus silicone design effectively absorbs mechanical stresses induced by assembly-level CTE mismatch, shock and vibration while providing exceptional thermal performance (vs PSA technologies) and long-term integrity. Bond-Ply® LMS-HD will typically be used for structurally adhering power components and PCBs to a heat sink.

Shelf Life: Bond-Ply® LMS-HD is a heat-cured material and should be stored in temperature controlled conditions. The recommended storage temperature range of 5-25°C should be used to maintain optimum characteristics for a 5-month shelf life.

Note: To build a part number, visit our website at www.bergquistcompany.com.

TYPICAL PROPERTIES OF BOND-PLY LMS-HD

PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD
Color	Yellow	Yellow	Visual
Reinforcement Carrier	Fiberglass	Fiberglass	—
Thickness (inch) / (mm)	0.010, 0.012	0.254, 0.305	ASTM D374
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—
ADHESION			
Lap Shear @ RT (psi) / (MPa)	200	1.4	ASTM D1002
ELECTRICAL		**VALUE**	**TEST METHOD**
Breakdown Voltage, Sheet (Vac) (1)		5000	ASTM D149
Breakdown Voltage, Laminated (Vac) (2)		4000	ASTM D149
Dielectric Constant (1000 Hz)		5.0	ASTM D150
Volume Resistivity (Ohm-meter)		10^{11}	ASTM D257
Flame Rating		V-O	U.L. 94
THERMAL			
Post-Cured Thermal Conductivity (W/m-K) (3)		1.4	ASTM D5470
THERMAL IMPEDANCE vs LAMINATION METHOD			
Lamination Pressure (75 psi) (4)		**Constant**	**IPO**
TO-220 Thermal Performance (°C/W)		2.1	2.3
CURE SCHEDULE			
Cure @ 125°C (minutes) (5)		30	30
Cure @ 160°C (minutes) (5)		6	6

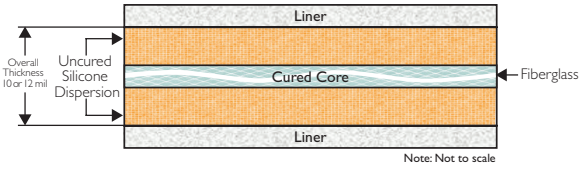
1) The ASTM D149 test method on cured LMS-HD material. No pressure was applied to the LMS-HD during the cure cycle.
2) A 1/2" diameter probe was laminated with LMS-HD to a 2" X 2" plate at 200 psi for 30 seconds, then cured with no pressure at 160°C for 6 minutes. The cured assembly was then tested per ASTM D149. This LMS-HD sample resembles a typical lamination application.
3). The ASTM D5470 (Bergquist Modified) test procedure was used on post-cured LMS-HD material. The recorded value includes interfacial thermal resistance. These values are given for customer reference only.
4). TO-220 Thermal Performance testing, per The Bergquist RD2010 specification for Laminates, was completed on laminated TO-220 assemblies. Lamination was completed at 75 psi for 30 seconds for "IPO" (Initial Pressure Only) and at a constant 75 psi during the lamination and curing process for "Constant". No additional pressure was applied during TO-220 thermal performance testing.
5). Cure Schedule – time after cure temperature is achieved at the interface. Ramp time is application dependent.

TYPICAL APPLICATIONS INCLUDE

- Discrete semi-conductor packages bonded to heat spreader or heat sink

CONFIGURATIONS AVAILABLE

- Roll form
- Sheet form
- Die-cut parts



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