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T A B L E O F C O N T E N T S

Thermal Gap Filler High Deflection Tflex Hd300	3
Gap Filler Polyimide Lined Tflex P300	3
Thermal Gap Filler Tflex™ 300 Series	4
Thermal Gap Filler Tflex™ 300TG Series	4
Performance Thermal Gap Filler Tflex™ Hd700	5
Gap Filler Tgard Lined Tflex P100	5
Thin Gap Filler Slim TIM™ 10000	6
Dispensable Gap Filler Tputty 508	6
Thermal Conductive Graphite Sheet Preliminary HTgon™ 9000	7
Thermal Conductive Heat Curable Insulator (Preliminary) Tgard™ TNC-5	7
THERMOELECTRIC MODULES.....	8
Common Mode Choke Broadband Wire Wound Power CMX3016 Series	9
Common Mode ChokesWire-Wound SMD CM7060 Series	9
Common-Mode ChokesWire-Wound DIP Power CMX1616 Series	10
FERRITE EMI SMT BEAD ASSEMBLIES Serie 1612.3312.3318	10
COMMON MODE CHOKE Serie CM	10
SMD Power Inductors Current & Low Profile Serie MGA	11
SMD Power Bead High Current LPB1208 Series	11
Dual Inductors Ferrite Based MCD1010 Series	11
Power Inductors Low DCR & High Current LDZ2817 Series	12
Dual Conductor SMD Power High Current LDP1104 Series	12
Ferrite Sheets Flexible For NFC & Wireless Charging MULL Series	13
Ferrite EMI Cores High Frequency	13
Broadband Split Ferrite Cores for Ribbon & Flex Cables.....	13
EMI Gaskets BOARD LEVEL SHIELDS.....	14
EMI Gaskets STANDARD PRECISION CONTACTS.....	14
EMI Gaskets Soft FR SMD Grounding Contacts.....	14
EMI Gaskets Nickel Taffeta Fabric Hight Resistance 3035-410	15
EMI Gaskets Ripstop Fabric Conductive EcoTouch™ 3050-113	15
EMI Gaskets Polyester Fabric Nickel/Copper 3070-500	15
EMI Gaskets Nonwoven Fab. Nickel/Copper 3027-235	15
EMI Gaskets Fingerstock Gaskets Symmetrical (S3) Slotted Shielding	16
EMI Gaskets Conductive Foam EcoFoam™ CF-500 Series	17
EMI Gaskets Conductive Foam EcoFoam™ UL V0 Rated Grey CF-700 Series	17
EMI Gaskets -Fabric-over-Foam ECOGREEN™ BLACK 56L	18
EMI Tapes Selective Conductive Adhesives - DT06B	18
EMI Tapes Fabric Nickel/Copper- 86750	18
EMI Gasket GEMINI™ COEXTRUSIONS	19
EMI Gasket FABRIC-OVER-FOAM	20-21
EMI Absorber Hybrit Thermal Transfer CoolZorb	22
EMI Absorber Eccosorb LS	22
EMI Absorber Eccosorb AN and HR	23
EMI Absorber Eccosorb MCS,GDS,BSR,FGM,JCS	23

GAP FILLER



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Tflex Hd300

High Deflection Thermal Gap Filler



Laird Tflex HD300 is a 2.7 W/mK gap filling material in our high deflection line of products. Tflex HD300 is an excellent choice when wide manufacturing tolerances occur. These variable gaps can be filled with Tflex HD300 while generating minimal board and component stress. Laird's unique manufacturing capabilities, filler and resin knowledge result in this unique product designed with customer applications in mind. Tflex HD300 is provided in thickness from .5mm (.020") up to 5mm (.200") in .5mm (.020") increments as standard. Non-standard increments of .25mm (.010") are available if required, please contact Laird for information and pricing. In addition, Laird can provide Tflex HD300 in multiple converted formats through approved converters and distribution networks. Also, if your application requires, we can deliver sheets of material as large as 460mm (18") X 460mm (18").



SPECIFICATIONS

CATEGORIES	TYPICAL VALUE	METHOD
Construction	Ceramic filled silicone elastomer	
Color	Pink	Visual
Thermal Conductivity	2.7 W/mK	Hot Disk
Hardness (Shore 00; 3 sec)	30	ASTM D2240
Specific Gravity	3.1	Helium Pycnometer
Flammability	VO	UL 94
Temperature Range	-40C to 200C	
Outgassing TML	0.39%	ASTM E595
Outgassing CVC	0.10%	ASTM E595
Thickness Range	.5mm to 5mm (.020"-.200")	

FEATURES AND BENEFITS

2.7 W/mK thermal conductivity
Low pressure versus deflection characteristics
Excellent surface wetting for low contact resistance
Minimizes board and component stress
Large tolerance applications
Converted parts and sheets available
.5mm (.020") to 5mm (.200) standard
Naturally tacky on both sides, or available with Laird's DC1 option for tack on one side only.
.5mm (.020") and .75mm (.030) use fiberglass (FG) reinforcement.

Tflex P300

Polyimide Lined Gap Filler

Laird Tflex® P300 is a soft and compliant gap filler with an integrated polyimide liner. Laird has leveraged its vast experience and knowledge in the development of thermally conductive materials to develop a soft and compliant gap filler that minimizes contact resistance and board level stresses. In conjunction with these key traits Laird understands that not all applications are the same. As a result P300 comes with a unique and integrated polyimide film on one side. This liner provides numerous application benefits like electrical isolation, placement ease during assembly, tear resistance for applications that require shear, to name a few. Tflex® P300 will be offered in thicknesses that range from .040" (1mm) up to .200" (5mm).



SPECIFICATIONS

CATEGORIES	FEATURES	
Construction		
Color	Purple	Visual
Thermal Conductivity	3.0	Hot Disk
Hardness (Shore 00; 3 sec)	30	ASTM D2240
Specific Gravity	3.10 g/cc	Helium Pycnometer
Flammability	VO	UL 94
Temperature Range	-40C to 125C	
Outgassing TML	0.2%	ASTM E595
Outgassing CVC	0.05%	ASTM E595
Thickness	1mm – 5mm (.040" - .200")	
Breakdown Voltage	>5kV	ASTM D149

FEATURES AND BENEFITS

- ✓ Compliant nature minimizes contact resistance
- ✓ Integrated polyimide film provides dielectric strength
- ✓ Resistance to burrs and mechanical forces
- ✓ Resistant to shear forces.
- ✓ Thermal Conductivity of 3 W/mK
- ✓ Contrasting color allows integration with vision system
- ✓ Low silicone bleed
- ✓ Shore hardness of 30 (Shore 00)

GAP FILLER



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Tflex™ 300 Series

Thermal Gap Filler

UNIQUE SILICONE GEL OFFERS COMPLIANCY, THERMAL RESISTANCE

Tflex™ 300, at pressures of 50psi, will deflect to over 50% the original thickness. This high rate of compliancy allows the material to "totally blanket" the component, enhancing thermal transfer. The material has a very low compression set enabling the pad to be reused many times.

Tflex™ 300, in achieving its stellar compliancy, does not sacrifice thermal performance. With a thermal conductivity of 1.2 W/mK, low thermal resistances can be achieved at low pressures. Tflex™ 300-H is offered with a hard, metallized liner option for easy handling and improved rework. The metallized liner's lower coefficient of friction also allows for easy assembly of parts that must slide together, such as a card into a chassis.

Tflex™ 300-TG is offered with a cut-through resistant Tgard™ silicone liner. The TG liner offers a guaranteed dielectric barrier, and easier part handling for mass production.



TFLEX™ 300 TYPICAL PROPERTIES

	TFLEX™ 300	TEST METHOD
Construction	Filled silicone elastomer	NA
Color	Light green	Visual
Thermal Conductivity	1.2 W/mK	ASTM D5470
Hardness (Shore 00)	27 (at 3 second delay)	ASTM D2240
Density	1.78 g/cc	Helium Pycnometer
Thickness Range	0.020" - .200" (0.5 - 5.0mm)*	
Thickness Tolerance	±10%	
UL Flammability Rating	94 V0	UL
Temperature Range	-40°C to 160°C	NA
Volume Resistivity	10 ¹³ ohm-cm	ASTM D257
Outgassing TML	0.56%	ASTM E595
Outgassing CVC	0.10%	ASTM E595
Coefficient Thermal Expansion (CTE)	600 ppm/C	IPC-TM-650 2.4.24

FEATURES AND BENEFITS

- Extreme compliancy allows material to "totally blanket" component(s)
- Thermal conductivity of 1.2 W/mK
- Available in thicknesses from 0.020" - 0.200" (.5mm – 5.0mm)
- Low compression set enables the pad to be reused many times



Tflex™ 300TG Series

Thermal Gap Filler

UNIQUE SILICONE GEL OFFERS COMPLIANCY, THERMAL RESISTANCE

The high rate of compliancy of Tflex™ 300TG allows the material to "totally blanket" the component, enhancing thermal transfer. The material has a very low compression set enabling the pad to be reused many times. Tflex™ 300TG, in achieving its stellar compliancy, does not sacrifice thermal performance. With a thermal conductivity of 1.2 W/mK, low thermal resistance can be achieved at low pressures.

A Tgard™ silicone liner has been added to the Tflex™ 300TG to offer a guaranteed dielectric barrier. The Tgard™ is cut-through resistant and provides easier part handling in mass production.



Tflex™ 300TG TYPICAL PROPERTIES

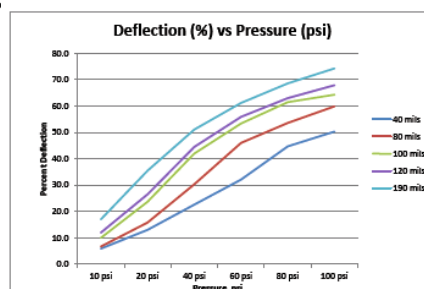
	Tflex™ 300TG	TEST METHOD
Construction	Filled silicone elastomer on carrier line	NA
Color	Light green	Visual
Thickness Range	0.020 - .200 in (0.5 - 5.0 mm), 0.250 in (6.4 mm)	
Thickness Tolerance	±10%	
Surface Adhesion	1 side	
Specific Gravity	1.79	ASTM D792
Hardness (Shore 00)	27	ASTM D2240
Thermal Conductivity	1.2 W/mK	ASTM D5470
Thermal Resistance, 10 psi	1.59 °C in ² /W	ASTM D5470 modified
Coefficient of Thermal Expansion (CTE)	600 ppm/C	IPC-TM-650 2.4.24
Operating Temperature Range	-40°C to 160°C	
Breakdown Voltage	>10,000 VAC	ASTM D149
Flammability Rating	94V0	UL
Outgassing, TML	0.56%	ASTM E595
Outgassing, CVC	0.10%	ASTM E595

FEATURES AND BENEFITS

- Extreme compliancy allows material to "totally blanket" component(s)
- Thermal conductivity of 1.2 W/mK
- Provides a dielectric barrier
- Low compression set enables the pad to be reused many times

APPLICATIONS

- Notebook and desktop computers
- Telecommunication hardware
- Flat panel displays
- Memory modules
- Power conversion equipment
- Set top box
- Lighting ballast
- Automotive electronics
- LED lighting
- Handheld electronics
- Optical disk drives
- Vibration dampening



GAP FILLER



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Tflex™ HD700

Performance Thermal Gap Filler

Laird Tflex™ HD700 is our latest product in our High Deflection series. Tflex™ HD700 combines a 5 W/mK with superior pressure versus deflection characteristics. The combination will allow minimal stress on components while also yielding low thermal resistance. The result will be higher mean time before failure (MTBF) of your device as less mechanical and thermal stresses will be experienced.

Tflex™ HD700 is available in thickness from 0.5mm (0.020") to 5mm (0.200"). Laird can provide material to meet your production needs in any region through our local production facilities. Please contact your local Laird sales or field engineering contact for samples or questions.



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FEATURES AND BENEFITS

- 5.0 W/mK thermal conductivity
- Low pressure versus deflection
- Excellent surface wetting for low contact resistance
- Minimizes board and component stress
- Large tolerance applications
- Converted parts and sheets available
- .5mm (.020") to 5mm (.200") standard

TYPICAL PROPERTIES

PROPERTY	TYPICAL VALUE	TEST METHOD
Construction	Ceramic filled silicone gap filler	
Color	Pink	Visual
Thermal Conductivity	5.0 W/mK	Hot Disk
Hardness (3 sec)	55 Shore 00 (1-5mm) 66 Shore 00 (0.5-0.75mm)	ASTM D2240
Specific Gravity	3.3	Helium Pycnometer
Flammability	VO - Pending	UL 94
Continuous Use Range	-50 to 200°C	Pending
Outgassing TML	TBD	ASTM E595
Outgassing CVC	TBD	ASTM E595
Thickness Range	.5mm to 5mm (.020"-.200")	

Tflex P100

Tgard Lined Gap Filler

PRODUCT DESCRIPTION

Laird Tflex® P100 is a soft and compliant gap filler with an integrated Tgard liner and adhesive, providing a complementing performance level to the P series product line from Laird. Laird has leveraged its vast experience and knowledge in the development of thermally conductive materials to develop a soft and compliant gap filler that minimizes contact resistance and board level stresses. In conjunction with these key traits Laird understands that not all applications are the same. As a result P100 comes with a unique and Tgard liner on one side. This liner provides numerous application benefits like electrical isolation, placement ease during assembly, tear resistance for applications that require shear, to name a few. Tflex® P100 is offered in thicknesses that range from .5mm (.020") up to 5mm (.200").



TYPICAL PROPERTIES

PROPERTY	TYPICAL VALUES	TEST METHOD
Construction	Tgard Lined Elastomer	
Color	Yellow	Visual
Thermal Conductivity	1.2 W/mK	Hot Disk
Hardness (Shore 00; 3 sec)	13	ASTM D2240
Specific Gravity	2.3	Helium Pycnometer
Flammability	VO	UL 94
Temperature Range	-40C to 180C	
Outgassing TML	0.32%	ASTM E595
Outgassing CVC	0.05%	ASTM E595
Thickness	.5mm - 5mm (.020" - .200")	
Breakdown Voltage	>5kV	ASTM D149

FEATURES AND BENEFITS

- Compliant nature minimizes contact resistance
- Integrated Tgard liner provides dielectric strength
- Resistance to burrs and mechanical forces
- Resistant to shear forces.
- Thermal Conductivity of 1.2 W/mK
- Contrasting color allows integration with vision system
- Shore hardness of 13 (Shore 00)

GAP FILLER



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Slim TIM™ 10000

Thin Gap Filler

HIGH THERMAL CONDUCTIVITY, SILICONE FREE, THIN GAP FILLER

Slim TIM™ 10000 is a non-silicone, high performance thermal interface material designed for thin gap applications. It takes advantage of a novel, new chemistry enabling free standing, high thermal conductivity, thin gap fillers. Slim TIM 10000 is currently available in 0.125, 0.200, and 0.250 mm thicknesses, soon to be available at 0.075 and 0.500 mm.

Slim TIM 10000 utilizes a unique polymer chosen to maximize system performance. The specially designed polymer package:

- Enables free standing, thin films (no carrier film, e.g., PI, fiberglass)
- Minimizes contact thermal resistance while offering high thermal conductivity
- Is silicone free
- Survives multiple solder reflow operations (Pb-free solder reflow profiles)
- Allows easy rework, requiring minimal force to separate components
- Enables pre-application / pre-assembly to heat sinks, BLS or other substrates



FEATURES AND BENEFITS

- Free standing film
- High thermal performance
- Exceptionally low thermal resistance
- Silicone-free
- Solder reflow compatible (3X)
- High reliability
- Easy rework
- Naturally tacky (no PSA needed)

TYPICAL PROPERTIES	Slim TIM 10000	TEST METHOD
Construction	Free Standing Film	
Color	Grey	Visual
Specific Gravity (g/cc)	2.52	Helium Pycnometer
Thermal Conductivity (W/mK)	5.5	Hot disk
Thermal Resistance (cm ² °C/W)		
0.125 mm	0.452	ASTM D5470
0.200 mm	0.516	50°C, 5% deflection
0.250 mm	0.645	
Max Continuous Use Temp (°C)	125	
Solder Reflow Profile	Min 3x	J-STD-020D
Hardness (Shore 00)	80 for 3 seconds, 72 for 30 seconds	ASTM D2240
UL Flammability Rating (UL 94)	V0 (in progress)	UL94

Tputty 508

Dispensable Gap Filler

PRODUCT DESCRIPTION

Laird Tputty™ 508 is a single part dispensable material designed with automation and vertical stability in mind. Laird has leveraged its knowledge of thermally conductive fillers and resin systems to develop a single part dispensable that demonstrates reliability in a variety of application orientations.

Tputty™ 508 is ideal for applications that can benefit from automation, and allows minimization of SKUs in applications with gap variability. In addition to providing application flexibility and variable gap adaptation, Tputty™ 508 will exert minimum stress on your component while maintaining interface contact to maximize thermal transfer. Combined with Laird's global technical support and global footprint, deploying Tputty™ 508 is easier than ever.



SPECIFICATIONS

FEATURES AND BENEFITS

- RoHS Compliant
- Complete Dispensing Solution Options Available
- 3.7 W/mK
- Demonstrated thermal cycling stability
- Low outgassing per ASTM E595

Packaging Size	Fill Volume	Fill Weight
75cc (2.5 oz)	56cc	177g
180cc (6 oz)	159cc	503g
360cc (12 oz)	326cc	1030g
600cc (20 oz)	601cc	1900g
1 gallon	4110cc	13kg
5 gallon	6320cc	20kg

PROPERTY	TYPICAL VALUE	METHOD
Construction	Ceramic filled silicone dispensable	N/A
Color	Green	Visual
Thermal Conductivity (w/mK)	3.7	Hot Disk
Flow Rate (75cc taper tip, 0.125" orifice, 40 psi)	50 g/min	Laird Test Method – A16724-00
Density (g/cc)	3.2	Helium Pycnometer
Flammability	V-0	UL 94
Temperature Range	-40 to 150°C	Laird Test Method
Outgassing TML (weight %)	0.04	ASTM E595
Outgassing CVCN (weight %)	0.01	ASTM E595
Dielectric Breakdown	>3000 VAC	ASTM D149
Dielectric Constant @ 1MHz	8.62	ASTM D150
Minimum Bond line Thickness	0.09 mm (0.0036")	Laird Test Method -A16112-00
Volume Resistivity (ohm-cm)	10 ¹³	ASTM D257

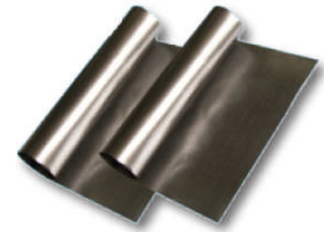
Thermal Materials



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Tgon™ 9000

High Thermal Conductive Graphite Sheet Preliminary


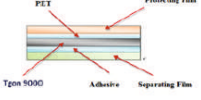


HIGH THERMAL CONDUCTIVE GRAPHITE SHEET

Tgon™ 9000 is a synthetic graphite thermal interface material consisting of carbon in-plane mono-crystal structure. Tgon™ 9000 is ultra-thin, light-weight, flexible and offers excellent in-plane thermal conductivity. Ideal for variety of heat spreading applications where in-plan thermal conductivity dominates and limited spaces.

FEATURES AND BENEFITS

- Thermal Conductivity: 500 to 1900W/mK
- 4 times thermal conductivity than copper
- Reduce hot spots and protect sensitive areas
- Enables slim device designs with ultra-thin of 17µm
- Light weight with density of 2.05~2.25 5g/cm³ for thickness of 17µm
- Flexible (Withstand more than 10,000 times bending with R=5mm)
- Ease of manufacturing for high volume production

Type	Graphite Only	Laminated (Insulation & Adhesive)
	Tgon 9000 series	Tgon 9000PA series
Structure		
Features	Graphite Sheet	With PET film & Adhesive
Thickness	Graphite: 17µm, 25µm, 40µm, 70µm, 100µm	PET film: 5µm, 10µm Adhesive: 5µm, 10µm, 30µm Graphite: 17µm, 25µm, 40µm, 70µm, 100µm
Standard Size	180 x 220mm	180 x 220mm

PRODUCT NAME AND KEY PROPERTIES AS BELOW:

Product Name	Test Method	Tgon 9017	Tgon 9025	Tgon 9040	Tgon 9070	Tgon 9100
Thickness (mm)	ASTM D374	0.017+/-0.005	0.025+/-0.005	0.04+/-0.005	0.07+/-0.01	0.1+/-0.01
Thermal conductivity (W/mK)	X,Y direction	1650~1900	1500~1700	1150~1400	700~1000	500~700
	Z direction	15	15	15	15	15
Thermal diffusivity (cm²/s)	ASTM E1461	9	9	8	7	7
Density (g/cm³)	ASTM D792	2.05~2.25	2.05~2.25	1.65~1.85	1.0~1.3	0.7~1.0
Specific heat (50°C)(J/gK)	ASTM E1269	0.85	0.85	0.85	0.85	0.85
Heat resistance (°C)	Over 100 hours of testing	400	400	400	400	400
Extensional strength (MPa)	X,Y direction	39	28	23	20	19.2
	Z direction	0.1	0.4	0.4	0.4	0.65
Bending test(times) (R5/180°)	ASTM D2176	10,000 or more	10,000 or more	10,000 or more	10,000 or more	10,000 or more
Electric conductivity (S/cm)	ASTM E1269	20000	20000	20000	96000	96000

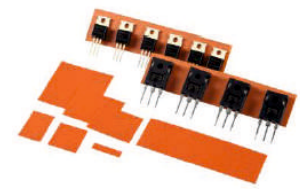
Tgard™ TNC-5

Thermal Conductive Heat Curable Insulator (Preliminary)

Tgard™ TNC-5 is a thermally conductive, electrically insulative, and heat curable adhesive material. It is comprised of thermally conductive polymer composite coated on electrically insulating film to offer thermal, dielectric and mechanical properties.

Tgard™ TNC-5 is specifically designed with simplicity in mind where it tacks the power transistor to the heatsink with a low lamination pressure while it flows to completely wet out between both surfaces during cure process to provide robust adhesion.

Tgard™ TNC-5 is a novel material solution not only to eliminate mechanical attachment of clips and or screws for mounting power transistor on heatsink but also to simplify the entire application process and optimize total cost of ownership (TCO).



FEATURES AND BENEFITS

- Eliminates mechanical fasteners
- Eliminates dielectric failure potential with screw mounted assemblies
- Provides more consistent thermal performance
- Ease of application
- No need fixture when curing
- Allows for tighter component location with power supply
- Non-silicone based
- Converted parts and sheet (9" x 18") available

SPECIFICATIONS

PROPERTIES	TEST METHOD	TYPICAL VALUES
ELECTRICAL PROPERTIES		
Post-Cured Breakdown Voltage	ASTM D149	6,000 volts AC
Volume resistivity	ASTM D257	5.5E10 ^{±5} ohm-cm
Dielectric constant @ 1MHz	ASTM D257	3.8
THERMAL PROPERTIES		
Post-Cured Thermal Resistance	ASTM D5470 (Modified)	0.3 °C-in²/W
MECHANICAL PROPERTIES		
Thickness		0.005inch (0.127mm)
Color	Visual	Brown
Post-Cured Lap Shear	ASTM D3163 (Modified)	>300 psi
Torque Resistance*	ASTM D2063	>2 N.m
UL flammability	UL 94	VO- Pending

*T0-220 (10psi for 10 seconds Post-Cured)

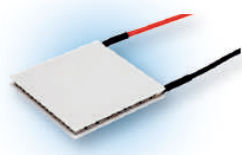
THERMOELECTRIC MODULES



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CP Series

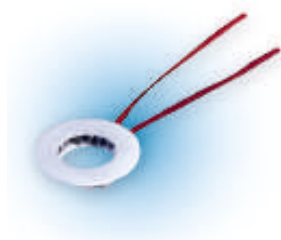
- Designed for high current, large heat pumping applications
- Wide product breadth that covers many form factors, input power requirements and heat pumping capacities
- Ideal for medical diagnostics, analytical instrumentation, photonics laser systems and battery cooling



PART NO.	QMAX ⁽¹⁾ (WATTS)	IMAX (AMPS)	VMAX (VOLTS)	ΔTMAX (°C)	DIM A (mm)	DIM B (mm)	DIM C (mm)	DIM D (mm)	Wire (AWG)
CP08,127,05,L1,W4.5	22.4	2.6	15.4	67	25	25	25	3.1	26
CP08,127,06,L1,W4.5	18.1	2.1	15.4	67	25	25	25	3.4	26
CP08,31,06,L1,W4.5	4.4	2.1	3.8	67	12	12	12	3.4	26
CP08,63,06,L1,W4.5	9	2.1	7.6	67	12	25	12	3.4	26
CP08,71,06,L1,W4.5	10.1	2.1	8.6	67	18	18	18	3.4	26
CP085,127,06,L1,W4.5	20.2	2.7	15.3	66	30	30	30	3.6	26
CP10,127,05,L1,W4.5	33.4	3.9	15.4	67	30	30	30	3.2	24
CP10,127,06,L1,W4.5	25.7	3	15.4	67	30	30	30	3.6	24
CP10,127,08,L1,W4.5	21.4	2.5	15.4	67	30	30	30	4	24
CP10,131,04,L1,W4.5	54.1	6.1	14.9	67	40	23	40	3	24
CP10,254,06,L1,W4.5	51.4	3.0/6.0	30.8/15.4	67	60	30	30	3.6	24
CP10,31,05,L1,W4.5	8.2	3.9	3.8	67	15	15	15	3.2	24
CP10,31,06,L1,W4.5	6.3	3	3.75	67	15	15	15	3.6	24
CP10,31,08,L1,W4.5	5.3	2.5	3.8	67	15	15	15	4	24
CP10,63,05,L1,W4.5	16.6	3.9	7.6	67	15	30	15	3.2	24
CP10,63,06,L1,W4.5	12.7	3	7.6	67	15	30	15	3.6	24
CP10,71,05,L1,W4.4	18.7	3.9	8.6	67	23	23	23	3.2	24
CP10,71,06,L1,W4.5	14.4	3	8.6	67	23	23	23	3.6	24
CP12,161,04,L1,W4.5	69.3	6.4	18.3	67	40	40	40	3.3	22
CP12,161,06,L1,W4.5	52.2	4.8	18.3	67	40	40	40	3.6	22
CP14,127,045,L1,W4.5	72	8.5	15.4	65	40	40	40	3.3	18
CP14,127,06,L1,W4.5	51.4	6	15.4	67	40	40	40	3.8	18
CP14,127,10,L1,W4.5	33.4	3.9	15.4	68	40	40	40	4.7	18
CP14,17,06,L1,W4.5	6.9	6	2.06	67	15	15	15	3.8	18
CP14,17,10,L1,W4.5	4.5	3.9	2.06	68	15	15	15	4.7	18
CP14,199,045,L1,W4.5	115.7	8.5	22.4	65	40	40	40	3.3	18
CP14,199,06,L1,W4.5	80.9	6	22.7	67	40	40	40	3.81	18
CP14,31,045,L1,W4.5	20.4	8.7	4.0	68	15	30	15	3.32	18
CP14,31,10,L1,W4.5	8.2	3.9	3.75	68	20	20	20	4.7	18
CP14,35,045,L1,W4.5	19	8.5	4.2	65	15	30	15	3.3	18
CP14,63,045,L1,W4.4	36.6	8.5	7.1	65	20	40	20	3.31	18
CP14,63,06,L1,W4.5	25.4	6	7.1	67	20	40	20	3.81	18
CP14,63,10,L1,W4.5	16.6	3.9	7.1	67	20	40	20	4.7	18
CP14,71,045,L1,W4.5	38.5	8.5	8.6	65	30	30	30	3.3	18
CP14,71,06,L1,W4.5	28.7	6	8.6	67	30	30	30	3.8	18
CP14,71,10,L1,W4.5	18.7	3.9	8.6	68	30	30	30	4.7	18
CP2,127,06,L1,W4.5	120	14	15.4	67	62	62	62	4.6	18
CP2,127,10,L1,W4.5	77.1	9	15.4	68	62	62	62	5.6	18
CP2,31,06,L1,W4.5	29.3	14	3.8	67	30	30	30	4.6	18
CP2,31,10,L1,W4.5	18.8	9	3.8	68	30	30	30	5.6	18
CP2,71,06,L1,W4.5	67	14	8.6	68	44	44	44	4.6	18

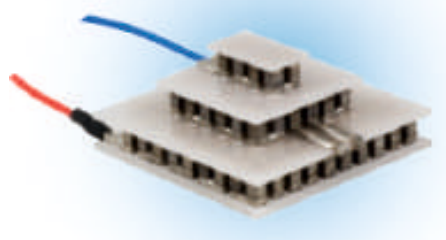
Annular Series

- Features center hole for transmission of light, wires, probes or mounting hardware
- Round or square hole configurations available
- Rapid prototyping available to accommodate unique shape requirements



Multi-stage

- Designed for large temperature differential applications
- Custom designs available to meet unique cooling capacity or temp differential requirements
- Ideal for CCD cameras, IR Detectors and Industrial Sensing Instrumentation



Laird
TECHNOLOGIES®

Power Common Mode Choke



ELEKTRONICKÉ SOUČÁSTKY

Broadband Wire Wound Power Common Mode Choke CMX3016 Series



ELECTRICAL SPECIFICATIONS

PART NUMBER	INDUCTANCE 1-4/2-3 L@ 10KHz/100mV (uH)			LEAKAGE INDUCTANCE @ 100KHz/100mv Max (uH)	DCR 1-4/2-3 Max (mΩ)	RATED CURRENT Max (A)	RATED VOLTAGE (Vrms)
	MIN	NOM	MAX				
CMX3016Z102B-10	700	1000	1500	5.0	2.2	20	250
CMX3016Y152B-10	1050	1500	2250	5.0	2.7	18	250
CMX3016Y202B-10	1400	2000	3000	5.0	4.2	15	250
CMX3016X402B-10	2800	4000	6000	5.0	6.9	11	250
CMX3016V702B-10	4900	7000	10500	5.0	12.0	8	250

FEATURES

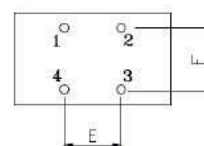
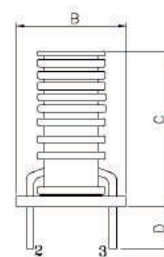
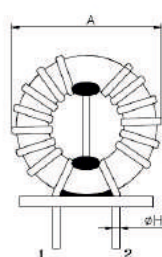


- Power common mode choke for large current up to 20A
- Built with nanocrystalline core
- Excellent impedance for broadband noise suppression up to 300MHz
- Through hole installation
- Operating temperature -40°C to 125°C (Including self-heating)
- Sectional winding construction with spacer to improve isolation

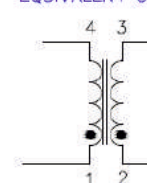
SHAPES AND DIMENSIONS

Unit:mm

A	B	C	D	E	F	G
30.00 Max.	16.00 Max.	30.00 Max.	5.00±0.50	10.00±0.50	12.00±0.50	17.50±0.10



EQUIVALENT CIRCUIT



Wire-Wound SMD Power Common Mode Chokes CM7060 Series



ELECTRICAL SPECIFICATIONS

PART NUMBER	IMPEDANCE Z@ 100 MHz (Ω)		INSULATION RESISTANCE MIN (MΩ)	DCR 1 line (Ω)	RATING CURRENT (A)	RATING VOLTAGE (V)
	MIN	NOM				
CM7060M132R-10	910	1300	10.0	0.025	2.5	80
CM7060N102R-10	800	1020	10.0	0.017	3.0	80
CM7060P701R-10	500	700	10.0	0.015	4.0	80
CM7060R301R-10	225	300	10.0	0.010	5.0	80
CM7060R501R-10	275	350	10.0	0.010	5.0	80
CM7060W101R-10	100	140	10.0	0.010	9.0	80

FEATURES

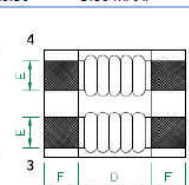
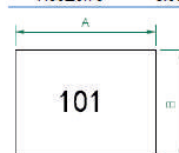


- Common mode filter for large current up to 9A
- Excellent common mode impedance and noise suppression
- Compact size
- Operating temperature -40°C to 125°C (Including self-heating)
- AEC-Q200 qualified

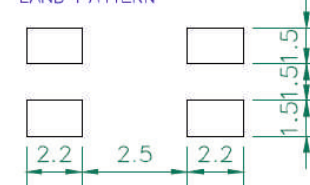
SHAPES AND DIMENSIONS

Unit:mm

A	B	C	D	E	F
7.00±0.70	6.00±0.50	3.80 MAX.	3.50 REF.	1.50±0.40	1.75±0.30



LAND PATTERN



Power Common Mode Choke



ELEKTRONICKÉ SOUČÁSTKY

Wire-Wound DIP Power Common-Mode Chokes

CMX1616 Series



40x40x15mm

ELECTRICAL SPECIFICATIONS

PART NO.	INDUCTANCE @ 100 KHZ / 100 mV (uH)			DCR MAX (mΩ)	CURRENT RATING MAX (A)	RATING VOLTAGE MAX (Vrms)	HIPOT COIL - COIL (VAC)
	NOM	MIN	MAX				
CMX1616X282B-10	2816	1689	3802	11.0	14	250	1500
CMX1616Y222B-10	2156	1293	2911	6.0	19	250	1500
CMX1616Z112B-10	1000	600	1350	2.8	30	250	1500
CMX1616Z162B-10	1584	950	2138	4.1	24	250	1500
CMX1616Z171B-10	176	105	238	0.65	62	250	1500
CMX1616Z401B-10	396	237	535	1.15	46	250	1500
CMX1616Z701B-10	704	422	951	2.3	33	250	1500

FERRITE EMI SMT BEAD ASSEMBLIES

SMT BEAD ASSEMBLIES - POWER LINE



EIA PKG. SIZE	Metric Pkg. Size	Part Number	Typical Impedance (Ω)				Typical Peak Impedance (Ω)	Peak Impedance Frequency (MHz)	DCR MAX (Ω)	RATED I MAX (continuous) mA
			Z @ MHz	Z @ 100 MHz	Z @ 500 MHz	Z @ 1 GHz				
1612	4131	28F0121-0SR-10	30	48	53	53	54	800	0.00075	10,000
3312	8531	28F0121-1SR-10	60	96	115	114	117	833	0.001	10,000
3318	8545	28F0181-1SR-10	72	115	123	123	125	900	0.001	10,000

LOW FREQUENCY BEAD ASSEMBLIES - POWER LINE

EIA PKG. SIZE	Metric Pkg. Size	Part Number	Typical Impedance (Ω)				Typical Peak Impedance (Ω)	Peak Impedance Frequency (MHz)	DCR MAX (Ω)	RATED I MAX (continuous) mA
			Z @ MHz	Z @ 100 MHz	Z @ 500 MHz	Z @ 1 GHz				
1612	4131	35F0121-0SR-10	17	41	48	47	49	13	0.00075	10,000
3312	8531	35F0121-1SR-10	35	82	102	90	104	17	0.001	10,000

COMMON MODE CHOKE



PART SERIES	SPECIAL FEATURES	EIA PACKAGE SIZE	IMPEDANCE (Z) Ω @ 100 MHz	RATED I MAX (CONTINUOUS) mA	PEAK IMPEDANCE (Z) FREQUENCY	# OF SINGLE LINE PAIRS OR CHOKES
CM 05	USB 2.0, Low Normal Mode Z	0805	90-370	100-400	1 GHz - 1.4 GHz	1
CH 05	HDMI High Speed Signal	0805	90	400	2000	1
CF Beads	Normal Signal, Small Package	0504-0805	67-220	300-400	180-583	1
CM 21	High Current, Low Profile	2021-3421	33-60	15,000	1GHz	1
CM 22 Array	Firewire, Gigabit Ethernet	2722-5022	45-200	5,000	200 MHz - 3 GHz	2,3,4
CM 32 Array	High Current, High Frequency	3032- 6032	120-300	8,000	150 MHz - 2 GHz	2,3,4
CM 40 Array	High Current, Low to High Frequency	3440-5740	170	20,000	1 GHz	1,2
CM 41	Ultra High Current, Low to High Frequency	5441	90-160	75,000	600 MHz - 700 MHz	1
CM 44	3 Line Power	4440	110	20,000	500 MHz	3
CM 45	2 & 4 Line Power	2545-4545	130-170	10,000	500 MHz - 1 GHz	1,2
LF CM	Low Frequency	1812-5740	100-3500	200-20,000	3 MHz - 80 MHz	1

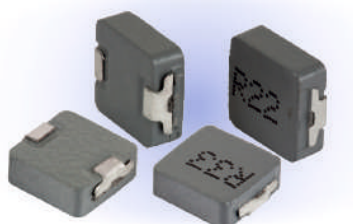
SMD Power inductors



ELEKTRONICKÉ SOUČÁSTKY

MGA High Current & Low Profile

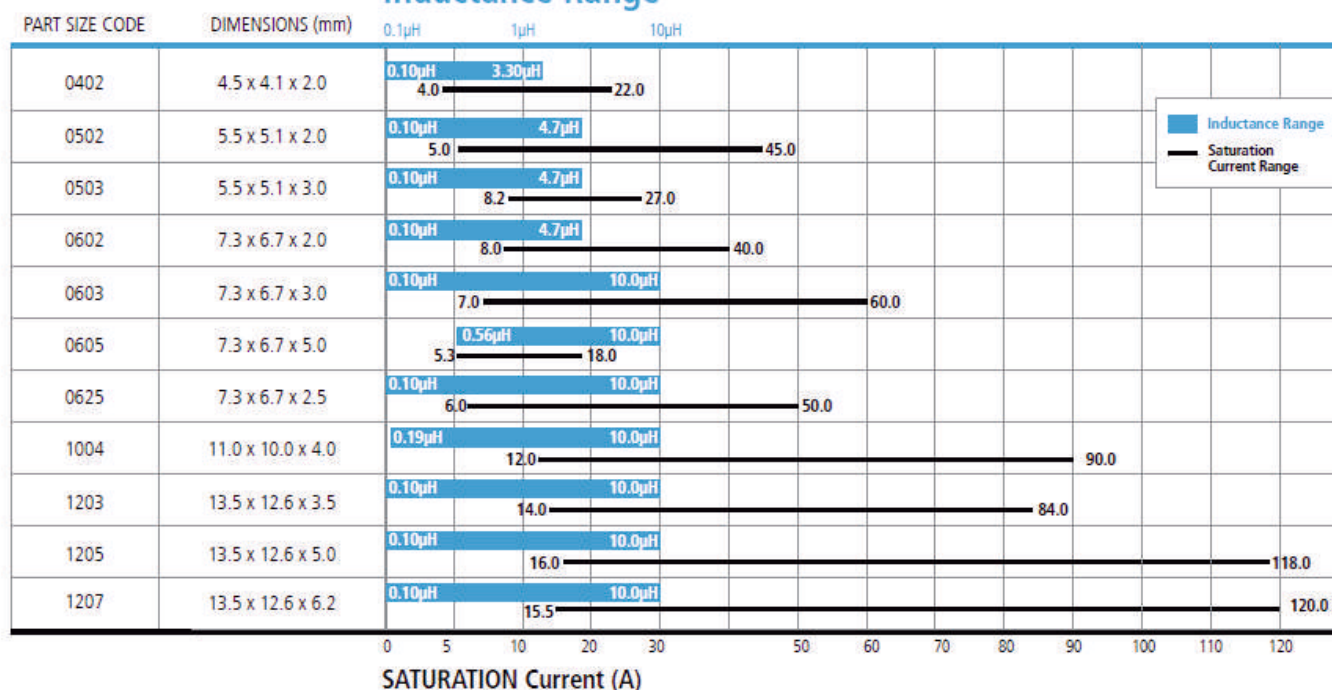
SMD Power Inductors



FEATURES

- Magnetic shielded structure
- Low DCR and high efficiency
- Low profile and small size
- High reliability
- AEC-Q200 qualified

Inductance Range



High Current SMD Power Bead LPB1208 Series



ELECTRICAL SPECIFICATIONS

PART NUMBER	OCL@550KHz, 0.25Vrms (nH) ±10%	FLL@550KHz, 0.25Vrms (nH) Min.	Isat@ 25±5°C (Adc)	DCR(mΩ) ±5%	Irms (Adc)
LPB1208R340M-10	340	214	35	0.41	45

Ferrite Based Dual Inductors MCD1010 Series



ELECTRICAL SPECIFICATIONS

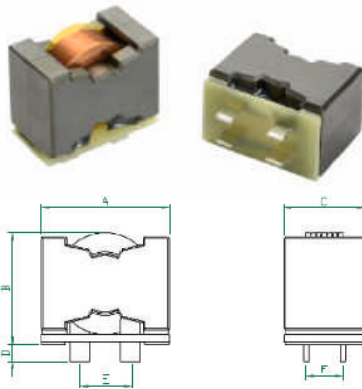
PART NUMBER	Inductance (μH) @ 100 KHz/0.1V, ±20%			DCR MAX (mΩ)	Saturation Current(A)	Temperature Rise Current(A)
	MIN	NOM	MAX			
MCD1010100M-10	8.00	10.00	12.00	14.50	6.5	5.3
MCD1010150M-10	12.00	15.00	18.00	23.65	5.4	4.5
MCD1010180M-10	14.40	18.00	21.60	31.35	4.6	3.8

Power inductors



ELEKTRONICKÉ SOUČÁSTKY

Low DCR & High Current Power Inductors LDZ2817 Series



ELECTRICAL SPECIFICATIONS

PART NUMBER	Inductance (μH) @ 300 KHz/0.1V, ±10%			DCR MAX (Ω)	Saturation Current(A) Max	Temperature Rise Current(A) Max
	MIN	NOM	MAX			
LDZ28176R8K-10	6.12	6.80	7.48	0.003	56.0	26
LDZ2817220K-10	19.80	22.0	24.20	0.003	16.4	26
LDZ2817330K-10	29.70	33.0	36.30	0.003	10.3	26

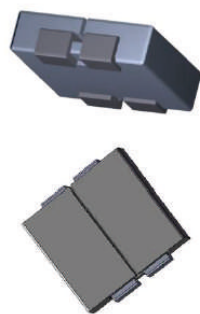
SHAPES AND DIMENSIONS

Unit:mm

A	B	C	D	E	F	G	H
27.00±0.50	23.00 Max	17.00 Max	3.50±0.30	10.50±0.50	7.10±0.50	3.81±0.30	0.80±0.15

High Current Dual Conductor SMD Power LDP1104 Series

DUAL (TWO) CONDUCTOR MODE



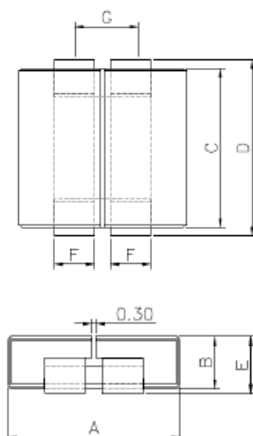
PART NUMBER	INDUCTANCE (nH) ±15%	FLL (nH) Min	ISAT (A)	IRMS (A) 40°C	DCR (mΩ) ±10%
LDP1104R044M-10	44	29.92	68.0	38.2	0.206
LDP1104R050M-10	50	34.00	58.0	38.2	0.206
LDP1104R064M-10	64	43.52	50.0	38.2	0.206
LDP1104R070M-10	70	47.60	47.5	38.2	0.206
LDP1104R082M-10	82	55.76	45.5	38.2	0.206
LDP1104R100M-10	100	68.00	40.0	38.2	0.206
LDP1104R120M-10	120	81.60	30.0	38.2	0.206
LDP1104R150M-10	150	102.00	24.0	38.2	0.206

PARALLEL MODE

PART NUMBER	INDUCTANCE (nH) ±15%	FLL (nH) Min	ISAT (A)	IRMS (A) 40°C	DCR (mΩ) ±10%
LDP1104R044M-10	44	29.92	68.0	54.0	0.103
LDP1104R050M-10	50	34.00	58.0	54.0	0.103
LDP1104R064M-10	64	43.52	50.0	54.0	0.103
LDP1104R070M-10	70	47.60	47.5	54.0	0.103
LDP1104R082M-10	82	55.76	45.5	54.0	0.103
LDP1104R100M-10	100	68.00	40.0	54.0	0.103
LDP1104R120M-10	120	81.60	30.0	54.0	0.103
LDP1104R150M-10	150	102.00	24.0	54.0	0.103

SERIES MODE

PART NUMBER	INDUCTANCE (nH) ±20%	FLL (nH) Min	ISAT (A)	IRMS (A) 40°C	DCR (mΩ) Max
LDP1104R044M-10	150	96.00	42.67	24.5	0.50
LDP1104R050M-10	180	115.20	35.50	24.5	0.50
LDP1104R064M-10	270	172.80	23.70	24.5	0.50
LDP1104R070M-10	300	192.00	21.30	24.5	0.50
LDP1104R082M-10	350	224.00	18.28	24.5	0.50
LDP1104R100M-10	400	256.00	16.00	24.5	0.50
LDP1104R120M-10	480	307.20	13.30	24.5	0.50
LDP1104R150M-10	600	384.00	10.60	24.5	0.50



Unit:mm

A	B	C
10.50±0.30	3.00±0.15	9.50±0.15

D	E	F
10.50±0.30	3.50±0.30	2.50 Ref.

GAP FILLER

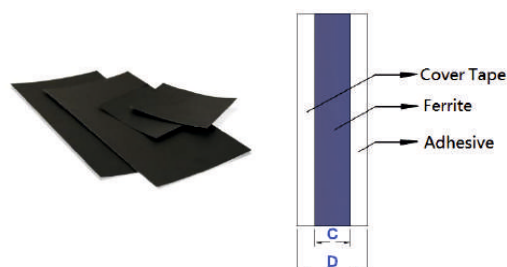


ELEKTRONICKÉ SOUČÁSTKY

Flexible Ferrite Sheets For NFC & Wireless Charging

MULL Series

SHAPES AND DIMENSIONS



PART NUMBER	A mm (inches)	B mm (inches)	C mm (inches)	D mm MAX (inches)
MULL5040-000	50 (1.969)	40 (1.575)	0.20 (0.008)	0.35 (0.014)
MULL5040-200	50 (1.969)	40 (1.575)	0.10 (0.004)	0.20 (0.008)
MULL6060-300	60 (2.362)	60 (2.362)	0.05 (0.002)	0.09 (0.004)
MULL12060-000	120 (4.724)	60 (2.362)	0.20 (0.008)	0.35 (0.014)
MULL12060-200	120 (4.724)	60 (2.362)	0.10 (0.004)	0.20 (0.008)

Flexible ferrite sheets for 13.56 MHz NFC, RFID application & wireless

High Frequency Ferrite EMI Cores



Split, Snap-On Ferrite Cores in Plastic Cases 300 MHz to 2GHz Optimized



Figure 1

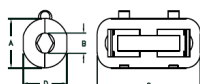
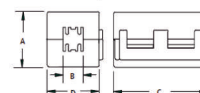
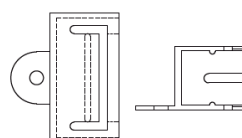


Figure 2



Part Number	Fig #	PLASTIC CASE DIMENSIONS mm (inches)				Maximum Cable Diameter mm (inches)	Net Impedance (Z) in Ohms (Ω)				Laird Technologies' Solid Cylindrical Core Similar Parts (for reference)
		A	B	C	D		@ 300 MHz	@ 500 MHz	@ 800 MHz	@ 1 GHz	
HFA100049-0A2	1	13.72 (0.540)	5.44 (0.214)	30.56 (1.203)	13.72 (0.540)	4.88 (0.192)	133	152	168	162	HFB095051-200
HFA150066-0A2	2	18.15 (0.715)	7.05 (0.278)	32.50 (1.280)	18.90 (0.744)	6.60 (0.260)	274	350	340	256	HFB143064-300
HFA150068-0A2	1	21.00 (0.827)	6.80 (0.268)	41.70 (1.642)	21.00 (0.827)	6.76 (0.266)	275	340	281	200	HFB150070-200
HFA163090-0A2	1	19.10 (0.752)	9.09 (0.358)	40.36 (1.589)	20.80 (0.819)	9.01 (0.355)	210	260	262	200	HFB160093-300
HFA187102-0A2	2	22.88 (0.877)	10.00 (0.394)	32.77 (1.290)	21.84 (0.860)	10.16 (0.400)	220	290	281	210	HFB187102-100
HFA259131-0A2	2	29.00 (1.142)	13.00 (0.512)	32.50 (1.280)	29.62 (1.166)	13.06 (0.514)	250	315	272	200	HFB259128-100

Broadband Split Ferrite Cores for Ribbon & Flex Cables



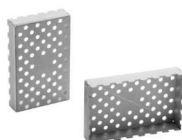
Part Number	Figure # on Page 19	*Available End Clip Types	DIMENSIONS mm (inches)					Typical Impedance (Z) in Ohms (Ω)		
			A	B	C*	D	E	@ 25 MHz	@ 100 MHz	@ 300 MHz
28S0670-000	2	NA	17.02 (0.670)	12.50 (0.492)	14.99 (0.590)	3.40 (0.134)	0.51 (0.020)	60	150	310
28S2001-0*0	1	M, P	63.50 (2.500)	52.07 (2.050)	28.58 (1.125)	6.35 (0.250)	0.84 (0.033)	100	280	590
28S2001-2A2	3	Hinged Case	67.08 (2.641)	53.75 (2.116)	27.53 (1.084)	16.66 (0.656)	1.91 (0.075)	80	230	480
28S2011-0*0	1	M, P	76.20 (3.000)	65.28 (2.570)	28.58 (1.125)	6.35 (0.250)	0.84 (0.033)	100	280	600
28S2012-0M0	1	M	88.90 (3.500)	78.23 (3.080)	28.58 (1.125)	6.48 (0.255)	0.84 (0.033)	80	240	630
28S2022-0*0	1	M, P	45.09 (1.775)	34.42 (1.355)	28.58 (1.125)	6.35 (0.250)	0.84 (0.033)	100	250	550
28S2023-0M0	1	M	38.10 (1.500)	26.67 (1.050)	25.40 (1.000)	6.35 (0.250)	0.84 (0.033)	115	250	520
28S2827-210	1	NA	21.00 (0.827)	17.00 (0.669)	12.01 (0.473)	3.99 (0.157)	0.94 (0.037)	43	120	270

BOARD LEVEL SHIELD

BOARD LEVEL SHIELDS

STANDARD DESIGN SHIELDS

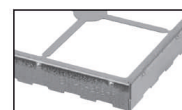
- ONE PIESE



STANDARD ONE-PIECE BOARD LEVEL SHIELDS

PART NUMBER	MAXIMUM OVERALL LENGTH in (mm)	MAXIMUM OVERALL WIDTH in (mm)	MAXIMUM OVERALL HEIGHT in (mm)	PARTS PER REEL
BMI-S-101	.538 (13,66)	.476 (12,10)	.100 (2,54)	1000
BMI-S-102	.650 (16,50)	.650 (16,50)	.142 (3,60)	700
BMI-S-103	1.032 (26,21)	1.032 (26,21)	.200 (5,08)	300
BMI-S-104	1.260 (32,00)	1.260 (32,00)	.236 (6,00)	225
BMI-S-105	1.500 (38,10)	1.000 (25,40)	.236 (6,00)	250
BMI-S-106	1.450 (36,83)	1.326 (33,68)	.200 (5,08)	300
BMI-S-107	1.747 (44,37)	1.747 (44,37)	.384 (9,75)	120
BMI-S-111	1.032 (26,21)	1.032 (26,21)	.079 (2,00)	625

- TWO-PIECE



STANDARD TWO-PIECE BOARD LEVEL SHIELDS

PART NUMBER	OVERALL LENGTH in (mm)	OVERALL WIDTH in (mm)	OVERALL HEIGHT in (mm)	PARTS PER REEL
BMI-S-201-F	.538 (13,66)	.476 (12,10)	.100 (2,54)	1000
BMI-S-202-F	.650 (16,50)	.650 (16,50)	.142 (3,60)	700
BMI-S-203-F	1.032 (26,21)	1.032 (26,21)	.200 (5,08)	300
BMI-S-204-F	1.260 (32,00)	1.260 (32,00)	.236 (6,00)	225
BMI-S-205-F	1.500 (38,10)	1.000 (25,40)	.236 (6,00)	250
BMI-S-206-F	1.450 (36,83)	1.326 (33,68)	.200 (5,08)	300
BMI-S-207-F	1.747 (44,37)	1.747 (44,37)	.384 (9,75)	120
BMI-S-209-F	1.156 (29,36)	0.728 (18,50)	.275 (7,00)	400
BMI-S-210-F	1.732 (44,02)	1.201 (30,50)	.118 (3,00)	370
BMI-S-230-F	1.500 (38,10)	2.000 (50,80)	.200 (5,08)	250
BMI-S-230-F-R	1.500 (38,10)	2.000 (50,80)	.200 (5,08)	250
BMI-S-305	1.500 (38,10)	1.000 (25,40)	.236 (6,00)	250

STANDARD PRECISION CONTACTS

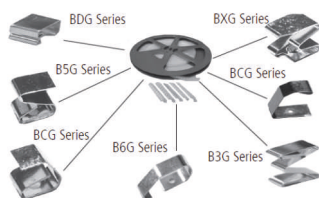
BMI-C-001 SMT



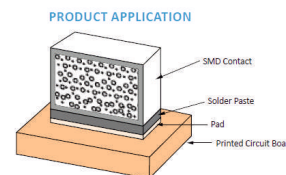
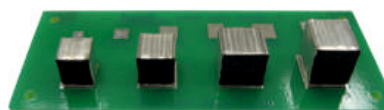
BMI-C-004 SMT



SMD CONTACTS



Soft FR SMD Grounding Contacts Metallized Film-over-Foam



Part Numbering

1 **2** **3** - **4** X **5** X **6**

- 1 material code B:BeCu T:TiCu S:stainless P:Phosphor Bronze
 2 shape code C-type 5-type D-type 3-type
 3 electroplate code G:Au S:Sn N:Ni A:Ag
 4 size code (width) □□ → □.□mm ex. 25 → 2.5 mm
 5 size code (length) □□ → □.□mm ex. 40 → 4.0 mm
 6 size code (high) □□□ → □□.□mm ex. 100 → 10.0 mm

example: BCG-20x30x040

Laird's SMD (Surface Mount Device) Grounding Contact is a foam cored contact with a metallized polyimide film outer covering. It is used for circuit grounding of SMT (Surface Mount Technology) devices. These contacts are designed to be solder reflow compatible, and are suitable for automatic processing.

- Reflow tunnel compatible to 260° C
- UL94 V0 Flammability Rating (Pending)
- Halogen-free per IEC-61249-2-21 standard

Taffeta Fabric



ELEKTRONICKÉ SOUČÁSTKY

Nickel Taffeta Fabric High Resistance 3035-410



NICKEL POLYESTER TAFFETA FABRIC WITH ANTI-FRAY

Laird's Electron® Nickel Polyester Taffeta is a unique fabric manufactured using a patented, proprietary technology. This technology combines corrosion resistant nickel with the lightweight, flexibility, conformability, strength and uniform appearance of a woven. Nickel Polyester Taffeta offers a lower surface conductivity, shielding effectiveness, and reflectivity for specialized applications.

PHYSICAL PROPERTIES

Item	Unit	Value	Advantage
Substrate	Polyester Taffeta		Strong, Flexible, Conformable
Metal	Nickel		Corrosion Resistant
Fabric Weight (nominal)	oz/yd ² (g/m ²)	1.75 (59.3)	Light Weight
Thickness (nominal)	inch (mm)	0.004 (0.1)	Thin and Flexible
Max Short Duration Temperature	°C	210	Allows Thermal Processing
Max Long Term Temperature	°C	155	

ELECTRICAL PROPERTIES

Item	Unit	Value
Surface Resistivity (ASTM F390)	ohms/square	5-20

MECHANICAL PROPERTIES

Item	Unit	Value ^a
Tensile Strength, MD (ASTM D5035)	(N/cm)	>50



Ripstop Fabric EcoTouch™ Conductive 3050-113

COPPER PLATED NYLON RIPSTOP FABRIC WITH ANTI-TARNISH COATING

Laird's Electron® Conductive Nylon Ripstop is a unique fabric manufactured using a patent pending, proprietary technology. This technology combines highly conductive copper with a corrosion resistant coating. Copper Nylon Ripstop offers excellent shielding effectiveness for a variety of applications without the risk of an allergy issue that could be caused by Nickel metal. Electron® Copper Nylon Ripstop can be used in many different configurations to protect against EMI/RFI and to prevent unauthorized access to sensitive information.

- Halogen-free per IEC-61249-2-21 standard
- Low surface resistivity of $< 0.07 \Omega/\square$ provides excellent conductivity
- Shielding effectiveness of >60 dB across a wide spectrum of frequencies

PHYSICAL PROPERTIES

Item	Unit	Value	Advantage
Substrate	Nylon Ripstop		Strong, Flexible, Conformable
Metal	Cu		Highly Conductive
Total Weight	oz/yd ² (g/m ²)	1.6 – 2.3 (54 – 78)	Light Weight
Thickness, (nominal)	inches (microns)	0.005 (127)	Thin and Flexible
Max Short Duration Temperature	°C	200	Allows Thermal Processing

ELECTRICAL PROPERTIES

Item	Unit	Value
Surface Resistivity (ASTM F390)	ohms/square	≤ 0.07
Far-field Shielding	effectiveness	(typical)
	30 MHz to 300 MHz	dB 71
	300 MHz to 3 GHz	dB 72
	3 GHz to 30 GHz	dB 61

Polyester Fabric Nickel/Copper 3070-500

Low surface resistivity of $\leq 0.10 \Omega/\square$ provides excellent conductivity



Nonwoven Fab. Nickel/Copper 3027-235

- Low surface resistivity of $< 0.07 \Omega/\square$ provides excellent conductivity
- Shielding effectiveness of >90 dB across a wide spectrum of frequencies



Fingerstock Gaskets



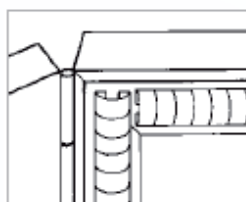
ELEKTRONICKÉ SOUČÁSTKY

Fingerstock Gaskets

Symmetrical (S3) Slotted Shielding



Strips with Sticky Fingers® and Rivet Mounts exhibit typical attenuation >100 dB



STICKY FINGERS

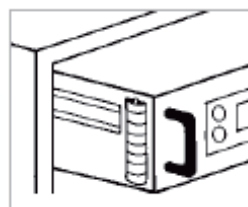
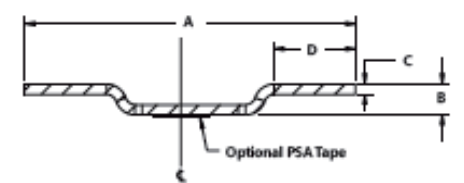
Series 97-951/954/957 are low compression, adhesive mounted beryllium copper shielding strips. Designed as a continuous band, the strip is slotted to permit spring contact throughout its length.

A wide radius profile creates the greatest contact for maximum conductivity with minimum compression requirements. As with all Sticky Fingers shielding strips, a self-adhesive tape makes mounting easy and secure. All are available in your choice of finishes.

S³ SERIES

SERIES	A	B	C	D
95-901	0.284 (7.214)	0.030 (0.762)	0.010 (0.254)	0.068 (1.727)
95-902	0.325 (8.255)	0.030 (0.762)	0.010 (0.254)	0.080 (2.032)

95-901-902



BI-DIRECTIONAL RIVET MOUNT

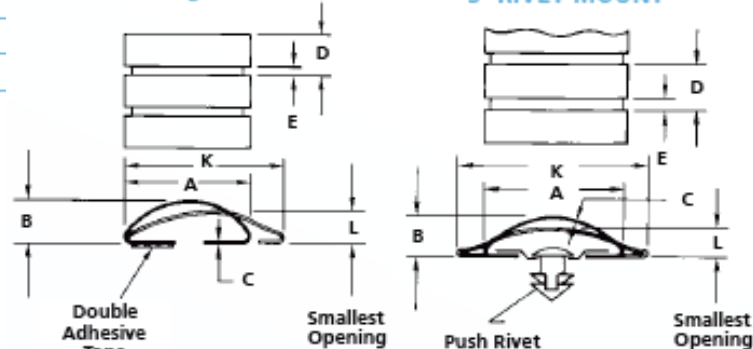
Series 97-952/955/958 are as described above, but with the addition of an integral pierced brass track to provide plastic push rivet mounting in a 0.125 in. (3.175 mm) diameter hole.

S³ SERIES – STICKY FINGERS

SERIES	A MIN	B	C	D	E	K	L	LENGTH APPROX
97-951	0.620 (15.748)	0.220 (5.588)	0.004 (0.102)	0.375 (9.525)	0.030 (0.762)	0.760 (19.304)	0.100 (2.540)	15.000 (381.000)
97-954	0.450 (11.430)	0.140 (3.556)	0.003 (0.076)	0.250 (6.350)	0.022 (0.559)	0.510 (12.954)	0.070 (1.778)	15.000 (381.000)
97-957	0.350 (8.890)	0.110 (2.794)	0.003 (0.076)	0.187 (4.750)	0.018 (0.457)	0.380 (9.652)	0.055 (1.397)	15.000 (381.000)

S³

S³ RIVET MOUNT

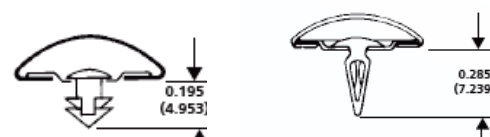


S³ SERIES – RIVET MOUNT

SERIES	A	B MIN	C	D	E	K	L	LENGTH APPROX	M	N	NO. OF RIVETS
97-952	0.620 (15.748)	0.220 (5.588)	0.004 (0.102)	0.375 (9.525)	0.030 (0.762)	0.760 (19.304)	0.100 (2.540)	15.000 (381.000)	0.560 (14.224)	0.940 (23.876)	10
97-955	0.450 (11.430)	0.140 (3.556)	0.003 (0.076)	0.250 (6.350)	0.022 (0.559)	0.510 (12.954)	0.070 (1.778)	15.000 (381.000)	0.630 (16.002)	0.880 (22.352)	10
97-958	0.350 (8.890)	0.110 (2.794)	0.003 (0.076)	0.187 (4.750)	0.018 (0.457)	0.380 (9.652)	0.070 (1.778)	15.000 (381.000)	0.660 (16.764)	0.840 (21.336)	10

RATCHET TYPE
97-944
STANDARD

TAPERED TYPE 97-950 OPTIONAL
97-945 WHITE RIVET AVAILABLE
ONLY ON PART # 97-958



www.atd-elektronik.cz

EMI GASKETS



ELEKTRONICKÉ SOUČÁSTKY

Conductive Foam EcoFoam™ CF-500 Series



Laird's Ecofoam™ offers an innovative approach to traditional shielding and grounding by providing X, Y and Z-axis conductivity, enhancing the shielding effectiveness required to meet the increasing microprocessor speeds of today's computer, telecommunications and other electronic equipment.

Excellent z-axis conductivity to provide effective EMI shielding and grounding



EcoFoam™ 500-Series with CPSA

ECOFOAM™ 500-SERIES (WITH CPSA TAPE)	
Thickness	Designation
0.3 mm	CF503
0.5 mm	CF505
0.7 mm	CF507
1.0 mm	CF510
1.5 mm	CF515
2.0 mm	CF520
2.5 mm	CF525
3.0 mm	CF530
3.5 mm	CF535
4.0 mm	CF540

ITEM	UNIT	VALUE	TEST METHOD
Thickness	mm (±0.2 mm) mm (±0.5 mm)	0.3, 0.5, 0.7 1.0, 1.5, 2.0, 2.5, 3.0, 4.0	-
Z-Axis Resistance*	Ω	<0.2	Laird Internal
Shielding Effectiveness			MIL-DTL-83528C (modified)
300 MHz	dB	87 average	
3 GHz	dB	108 average	
18 GHz	dB	78 average	
Compression Set	%	< 30	ASTM D3574
Foam Density	kg/m³	30 ±5	-
Operation Temperature	°C	-40 to 70	
Hazardous Substance		Compliant with RoHS (Directive 2011/65/EU)	
		Halogen-free per IEC-61249-2-21 Standard	
Shelf Life		12 months at 23°C/ 60% R.H.	

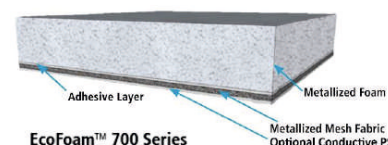
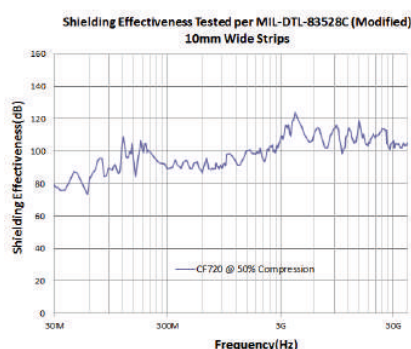
*25mm x 25mm Test Sample, 1000 gf loading

Conductive Foam EcoFoam™ UL V0 Rated Grey CF-700 Series

ECOFOAM™ 700-SERIES

THICKNESS	DESIGNATION
0.5 mm	CF705
1.0 mm	CF710
1.5 mm	CF715
2.0 mm	CF720

SHIELDING EFFECTIVENESS



EcoFoam™ 700 Series

ITEM	UNIT	VALUE	TEST METHOD
Thickness (Foam w/o CPSA)	mm (±0.2 mm) mm (±0.5 mm)	0.5 1.0, 1.5, 2.0	-
Z-Axis Resistance*	Ω	<0.2	Laird Internal
Shielding Effectiveness (CF720)			MIL-DTL-83528C (modified)
300 MHz	dB	89	
3 GHz	dB	109	
30 GHz	dB	106	
Operation Temperature	°C	-40 to 70	-
Color		Grey to Dark Grey	
Hazardous Substance		Compliant with RoHS (Directive 2011/65/EU)	
		Halogen-free per IEC-61249-2-21 Standard	
Shelf Life		12 months at 23°C/ 60% R.H.	

*1.0 in² sample size, 1000gf loading

EMI GASKETS



ELEKTRONICKÉ SOUČÁSTKY

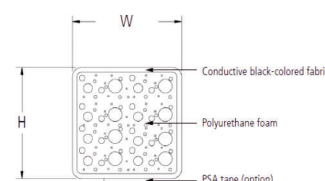
EMI Gaskets -Fabric-over-Foam ECOGREEN™ BLACK 56L



BLACK COLOR UL 94V0 RATED NI/CU POLYESTER TAFFETA FABRIC-OVER-FOAM

Laird's Fabric-over-Foam (FoF) 56L EMI gaskets consist of a black color and provide excellent EMI shielding performance for customers where EMI issues occur. The 56L series EMI gaskets are composed of electrically conductive fabric wrapped around a soft urethane foam core. They are supplied with either a conductive or non-conductive pressure sensitive adhesive (PSA), and can be equipped with an Extended Release Liner (ERL) on the adhesive. The 56L is a halogen-free, UL 94V0 rated product that can be created with cross-section profiles such as rectangle, D, C, P, T, knife, bell shapes, and others. The 56L EMI gaskets can be further customized to an application by die-cutting, hole punching, notching, etc.

- Low surface resistivity of $< 0.07 \Omega/\square$ provides excellent conductivity
- Shielding effectiveness of >85 dB across a wide spectrum of frequencies
- Many cross-section profiles available such as rectangle, D, C, P, T, knife, bell and more



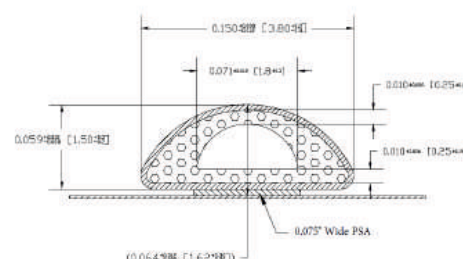
Fabric Over Silicone EMI Gasket 4184AJ611 FABRIC OVER SILICONE (611) EMI GASKET

Laird is excited to introduce our newest product offering, an EMI gasket comprised of a metalized fabric conductive outer layer wrapped around a silicone elastomer core. This gasket is ideal for higher temperature applications where compression set of the gasket may be an issue.

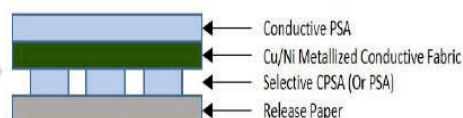
- Halogen-free per the IEC-61249-2-21 standard
- High-temperature performance
- Flame Retardant, UL94 V0 Rating (File # E170327, V0 049)



ITEM	VALUE	UNIT	TEST METHOD
Z-Axial resistance @ 2.2 lbf	<0.02	Ω per inch length	Laird Internal
Fabric Surface Resistance	<0.07	Ω/\square	ASTM F390
Operating Temperature	-40° to 85°	Degrees C.	Laird Internal
Compression Set @ 85° C	<20	%	ASTM D3574 (mod)



Selective Conductive Adhesives - DT06B



Increased design versatility, improved visual appearance
Laird Technologies' DT06B double-sided conductive fabric tape is constructed of 1.4 mil (0.035 mm) nickel/copper metallized fabric with black conductive pressure sensitive adhesives (CPSA) on both sides. DT06B offers an innovative approach to shielding by providing X-Y-Z axis conductivity while providing an improved visual appearance.

Fabric Tape - 86750 Nickel/Copper



NI/CU POLYESTER CONDUCTIVE FABRIC TAPE

Laird Technologies' Conductive Fabric Tape 86750 product is made of metallized fabric (polyester Ni/Cu) coated with a pressure sensitive adhesive. These products can be used as EMI/RFI shielding and grounding tape, which would meet market requirements.

- Low surface resistivity of $< 0.03 \Omega/\square$ provides excellent conductivity
- Shielding effectiveness of 70 dB across a wide spectrum of frequencies

EMI GASKETS



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GEMINI™ COEXTRUSIONS

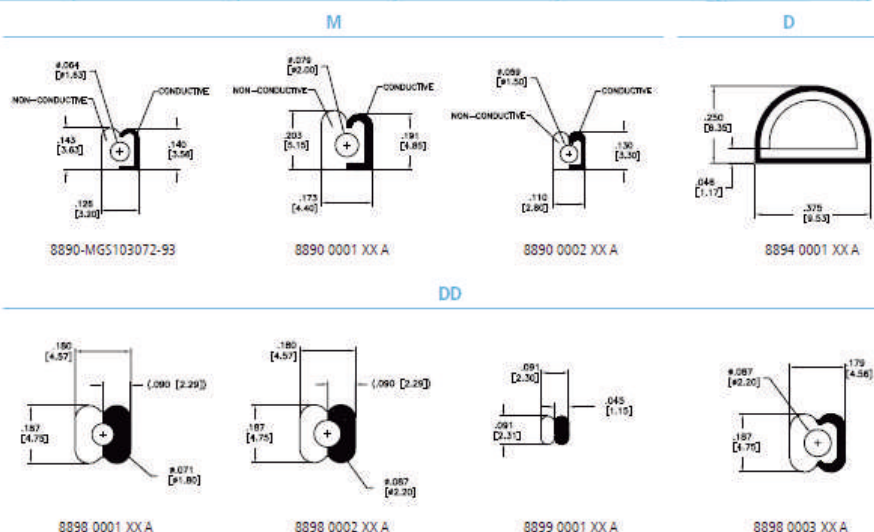
Laird Gemini™ product line is a high-performance gasket solution that combines a reliable environmental silicone elastomer seal with an electrically conductive elastomer. Conductive particle filler results in a product with lower material cost and an improved environmental seal against water, moisture, dust and mildly corrosive atmospheric conditions due to smog.

Our conductive extrusions offer a wide choice of profiles to fit a large range of applications. The cross-sections shown on the following pages are offered as standard. Custom dies can be built to accommodate your specific design.

NAME OF MATERIAL	TEST METHOD	NONCONDUCTIVE ELASTOMER		CONDUCTIVE ELASTOMER		TYPICAL CO-GASKET DESIGN	
		NCE220	NCE221	ECE93	ECE81A	NCE220/ECE93, CO-ECE	NCE221/ECE81A, CO-ECE
Polymer matrix		Silicone rubber	Silicone rubber	Silicone rubber	Silicone rubber	Silicone rubber	Silicone rubber
Filler		Alumina	NA	Nickel/graphite (Ni/C)	Ag/Al Compound	Alumina/Ni/C	Ag/Al Compound
Flammability UL94	file E203070	HB	V1(Pending)	HB	Not tested	HB	V1(Pending)
Color	visual	Blue	Orange	Black	Tan	Black & Blue	Tan & Orange
Hardness	ASTM D2240	70 Shore A	60 Shore A	55 Shore A	65 Shore A	NA	NA
Specific gravity	ASTM D792	1.2	1.5	1.9	1.9	NA	NA
Tensile strength	ASTM D412 (modified)	2.8 MPa	3.4 MPa	1.0 MPa	1.7 MPa	NA	NA
Tear strength	GB/T529-91 (modified)		60 ppl, min	30 ppl, min	30 ppl, min	NA	NA
Elongation to break	ASTM D412	100 to 400%	300% ,min	100 to 300%	100 to 300%	100 to 300%	300% ,min
Working temperature range	ASTM D1329	-50 to 150°C	-50 to 150°C	-50 to 150°C	-50 to 150°C	-50 to 150°C	-50 to 150°C
Environmental	EU directive 94/62/EC, Dec 20, 1994	RoHS Compliant	RoHS Compliant	RoHS Compliant	RoHS Compliant	RoHS Compliant	RoHS Compliant
Volume resistivity (max value)	MIL-DTL-83528C (PARA 4.5.10)	Insulator	Insulator	0.100 ohm-cm	0.006 ohm-cm	NA	NA
Aging volume resistivity (max value)	Laird aging test - MIL-DTL-83528C (PARA 4.5.10)	Insulator	Insulator	<0.2 ohm-cm	<0.015 ohm-cm	NA	NA
Mold growth	ASTM G21	0	Not Tested	2	Not Tested	NA	Not Tested
Shielding effectiveness (dB)*							
100 MHz (E-field)	MIL-DTL-83528C (PARA 4.5.12) MIL-STD 285	NA	NA	100 dB	100 dB	90 dB	100 dB
500 MHz (E-field)		NA	NA	100 dB	100 dB	90 dB	100 dB
2 GHz (Plane Wave)		NA	NA	100 dB	100 dB	80 dB	95 dB
10 GHz (Plane Wave)		NA	NA	100 dB	100 dB	80 dB	90 dB

FEATURES

- Combines the strength of silicone rubber with Laird proprietary conductive elastomer EMI shielding materials and knowledge
- Improved environmental seal
- Improved EMI performance over lifetime
- Cost-effective
- Available in both standard and custom profiles
- Ability to use finite element analysis to design the best custom gasket for your application

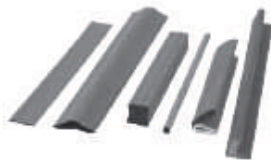


GAP FILLER



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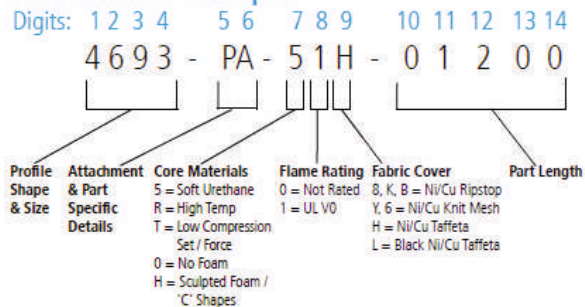
FABRIC-OVER-FOAM I/O GASKET SELECTION GUIDE



BENEFITS OF FABRIC-OVER-FOAM GASKETS

- Shielding effectiveness of >100 dB across a wide spectrum of frequencies (see figure 2).
- Extremely low compression forces allow for use of lighter materials (see figure 1).
- Low Surface Resistivity as low as 0.07 ohms/square dependent on the fabric. Fabric-Over-Foam gaskets provide improved conductivity (ASTM F390).
- A wide range of flame retardant gaskets are available (UL recognized per UL94 V0 or UL94 HB). More information is available at ul.com.
- Abrasion resistant metallized fabrics show virtually no degradation in shielding performance.
- Urethane core provide low compression set ensuring long-term reliability of gasket performance. Contact Engineering for profile specific data.

Part Number Example:



DIGITS 1 THROUGH 4

Designate profile number. Select profile or I/O and sizes from next page

DIGITS 5 THROUGH 6

Designate part-specific attributes of the product including cutouts, notches, tape and a variety of other customized details.

PA STD PSA / PB STD PSA W/ ERL / PC STD CPSPA

DIGITS 7 THROUGH 9

Designate the core materials, flame rating and fabric cover combinations.

Select these options from the recommended list in the table below.

DIGITS 10 THROUGH 14

Designate the part length in inches to two decimal places.

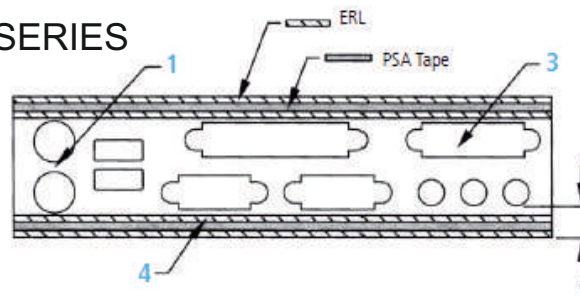
For the example shown above, the "01200" denotes a 12.00 inch (304,8 mm) long gasket).

Fabric	Non-Rated RoHS Compliant	UL94-V0 Rated RoHS Compliant	UL94-V0 Rated RoHS Compliant Halogen-Free EcoGreen™	Typical Apps	Shielding
Ni/Cu Mesh	506		51N	Compos Only	Medium
Ni/Cu Taffeta	501		51H	Comp/Shear	High
Ni/Cu NRS	508		51G	Comp/Shear	High
Ni/Cu NRS		H1K		C-Fold Only	High
Sn/Cu NRS			51S	Comp/Shear Harsh Environment	High
Ni/Cu NRS			T1G	Low Compression Set / Force	High
Ni/Cu NRS			R1G	85°C Applications	High
Ni/Cu Black Taffeta			51L	Visible Applications	High



FABRIC-OVER-FOAM

D-SUB CONNECTOR SERIES



BASIC I/O GASKET DESIGN

1. Space between required cutouts should match or exceed 0.060" (1,5 mm).
2. Distance from the edge of a cutout should be at least 0.060" (1,5 mm) from the edge of the gasket. In most cases, a slot can be used in place of a hole that is positioned too close to the gasket edge.
3. All cutouts and locations are designed customer specifications.
4. Pressure Sensitive Adhesive (PSA) and Extended Release Liner (ERL) can be applied in parallel with the long edge of the gasket.

D-SUB CONNECTOR SERIES

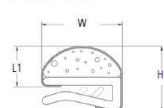
Laird Part number	D-Sub Pins	D-Sub Design	PSA
4N64EA51N00138	9	Female	No
4N64EB51N00138	9	Male	No
4N64EC51N00171	15	Female	No
4N64ED51N00171	15	Male	No
4N64EE51N00225	25	Female	No
4N64EF51N00225	25	Male	No
4N64EG51N00290	37	Female	No
4N64EH51N00290	37	Male	No
4N64EJ51N00281	50	Female	No
4N64EK51N00281	50	Male	No
4N64EL51N00138	9	Female	Yes
4N64EM51N00138	9	Male	Yes
4N64EN51N00171	15	Female	Yes
4N64EP51N00171	15	Male	Yes
4N64ER51N00225	25	Female	Yes
4N64ES51N00225	25	Male	Yes
4N64ET51N00290	37	Female	Yes
4N64EU51N00290	37	Male	Yes
4N64EV51N00281	50	Female	Yes
4N64EW51N00281	50	Male	Yes

GAP FILLER



ELEKTRONICKÉ SOUČÁSTKY

D-SHAPED CLIP



Profile Number	Inches (mm) H	Inches (mm) W	Inches (mm) L1
4110	0.203(5.2)	0.250(6.4)	0.125(3.2)
4111	0.243(6.2)	0.250(6.4)	0.165(4.2)
4039	0.304(7.7)	0.480(12.2)	0.195(5.0)
4033	0.35(8.9)	0.480(12.2)	0.240(6.1)
4121	0.358(9.1)	0.250(6.4)	0.280(7.1)
4040	0.41(10.4)	0.480(12.2)	0.300(7.6)
4038	0.43(10.9)	0.490(12.4)	0.310(7.9)
4043	0.43(10.9)	0.490(12.4)	0.310(7.9)
4085	0.43(10.9)	0.490(12.4)	0.310(7.9)
4041	0.568(14.4)	0.480(12.2)	0.458(11.6)

RECTANGLE SHAPED



Profile Number	Inches (mm) H	Inches (mm) W
*4570	0.015(0.4)	0.200(5.1)
*4577	0.015(0.4)	0.276(7.0)
*4572	0.015(0.4)	0.394(10.0)
*4300	0.017(0.4)	0.826(21.0)
*4058	0.020(0.5)	0.157(4.0)
*4569	0.020(0.5)	0.196(5.0)
*4500	0.020(0.5)	1.217(30.9)
*4501	0.020(0.5)	1.970(50.0)
*4850	0.030(0.8)	0.900(22.9)
4245	0.040(1.0)	0.120(3.0)
4223	0.040(1.0)	0.157(4.0)
4220	0.040(1.0)	0.200(5.1)
4404	0.040(1.0)	0.236(6.0)
4215	0.040(1.0)	0.275(7.0)

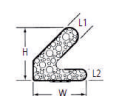
4173	0.413(10.5)	0.512(13.0)
4524	0.452(11.5)	0.472(12.0)
4391	0.500(13.0)	0.984(25.0)
4172	0.591(15.0)	0.394(10.0)
4233	0.600(15.2)	1.000(25.4)
4136	0.670(17.0)	0.591(15.0)
4900	0.700(17.8)	0.500(12.7)
4686	0.709(18.0)	0.394(10.0)
4744	0.787(20.0)	0.580(14.7)

SQUARE SHAPED



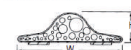
Profile Number	Inches (mm) H	Inches (mm) W
4520	0.080(2.0)	0.080(2.0)
4046	0.118(3.0)	0.118(3.0)
4522	0.157(4.0)	0.157(4.0)
4212	0.195(5.0)	0.195(5.0)
4048	0.236(6.0)	0.236(6.0)
4049	0.250(6.4)	0.250(6.4)
4695	0.375(9.5)	0.375(9.5)
4206	0.395(10.0)	0.395(10.0)
4084	0.500(12.7)	0.500(12.7)
4204	0.670(17.0)	0.670(17.0)
4517	0.750(19.1)	0.750(19.1)
4089	0.787(20.0)	0.787(20.0)

C-FOLD SHAPED



Profile Number	Inches (mm) H	Inches (mm) W	Inches (mm) L1	Inches (mm) L2
4593	0.250(6.4)	0.280(7.1)	0.125(3.2)	0.060(1.5)
4168	0.315(8.0)	0.315(8.0)	0.080(2.0)	0.080(2.0)
4198	0.385(9.8)	0.420(10.7)	0.115(2.9)	0.060(1.5)
4243	0.400(10.2)	0.430(10.9)	0.125(3.2)	0.060(1.5)
4600	0.415(10.5)	0.450(11.4)	0.135(3.4)	0.650(1.7)
4529	0.465(11.8)	0.420(10.7)	0.115(2.9)	0.060(1.5)
4697	0.675(17.1)	0.590(15.0)	0.165(4.2)	0.156(4.0)
4703	0.947(24.1)	0.550(14.0)	0.157(4.0)	0.170(4.3)

BELL SHAPED

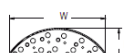


Profile Number	Inches (mm) H	Inches (mm) W
4630	0.070(1.8)	0.180(4.6)
4379	0.070(1.8)	0.564(14.3)
4387	0.080(2.0)	0.675(17.1)
4633	0.100(2.5)	0.300(7.6)
4131	0.140(3.6)	0.500(12.7)

KNIFE SHAPED



Profile Number	Inches (mm) H	Inches (mm) W
4797	0.106(2.7)	0.445(11.3)
4097	0.106(2.7)	0.315(8.0)
4796	0.110(2.8)	0.450(11.4)
4205	0.250(6.4)	0.750(19.1)
4106	0.312(7.9)	0.707(18.0)
4189	0.350(8.9)	0.750(19.1)

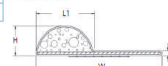


D-SHAPED

Profile Number	Inches (mm) H	Inches (mm) W
4584	0.040(1.0)	0.150(3.8)
4320	0.050(1.3)	0.140(3.6)
4541	0.050(1.3)	0.250(6.4)
4358	0.060(1.5)	0.098(2.5)
4184	0.060(1.5)	0.150(3.8)
4548	0.060(1.5)	0.250(6.4)
4356	0.070(1.8)	0.180(4.6)
4052	0.080(2.0)	0.080(2.0)
4283	0.080(2.0)	0.157(4.0)
4181	0.080(2.0)	0.394(10.0)
4053	0.090(2.3)	0.090(2.3)
4912	0.090(2.3)	0.150(3.8)
4375	0.094(2.4)	0.200(5.1)
4240	0.100(2.5)	0.300(7.6)
4742	0.120(3.0)	0.150(3.8)
4202	0.120(3.0)	0.250(6.4)
4078	0.120(3.0)	0.360(9.1)
4090	0.125(3.2)	0.090(2.3)

Profile Number	H inches (mm) H	W inches (mm) W
4906	0.130(3.3)	0.188(4.8)
4692	0.140(3.6)	0.250(6.4)
4228	0.150(3.8)	0.150(3.8)
4123	0.150(3.8)	0.354(9.0)
4112	0.158(4.0)	0.433(11.0)
4120	0.160(4.1)	0.240(6.1)
4295	0.170(4.3)	0.250(6.4)
4609	0.180(4.6)	0.400(10.2)
4787	0.200(5.1)	0.250(6.4)
4134	0.197(5.0)	0.394(10.0)
4607	0.200(5.1)	0.480(12.2)
4242	0.250(6.4)	0.250(6.4)
4542	0.248(6.3)	0.291(7.4)
4789	0.250(6.4)	0.375(9.5)
4368	0.299(7.6)	0.272(6.9)
4105	0.375(9.5)	0.500(12.7)
4060	0.500(12.7)	0.500(12.7)

P-SHAPED



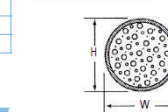
Profile Number	Inches (mm) H	Inches (mm) W	Inches (mm) L1	Inches (mm) L2
4150	0.118(3.0)	0.520(13.2)	0.242(6.1)	0.020(0.50)
4699	0.145(3.7)	0.520(13.2)	0.150(3.8)	0.020(0.50)
4792	0.200(5.1)	0.480(12.2)	0.170(4.3)	0.090(2.3)
4537	0.374(9.5)	0.887(22.5)	0.500(13.0)	0.051(1.0)

J-SHAPED



Profile Number	Inches (mm) H	Inches (mm) W	Inches (mm) L1	Inches (mm) L2
4117	0.130(3.3)	0.130(3.3)	0.060(1.5)	0.065(1.7)
4054	0.209(5.3)	0.130(3.3)	0.063(1.6)	0.071(1.8)
4502	0.400(10.2)	0.300(7.6)	0.175(4.4)	0.140(3.6)

ROUND SHAPED



Profile Number	Inches (mm) H	Inches (mm) W
4201	0.100(2.5)	0.100(2.5)
4372	0.125(3.2)	0.125(3.2)

DOUBLE D-SHAPED



Profile Number	Inches (mm) H	Inches (mm) W
4299	0.110(2.8)	0.382(9.7)

ABSORBER



ELEKTRONICKÉ SOUČÁSTKY

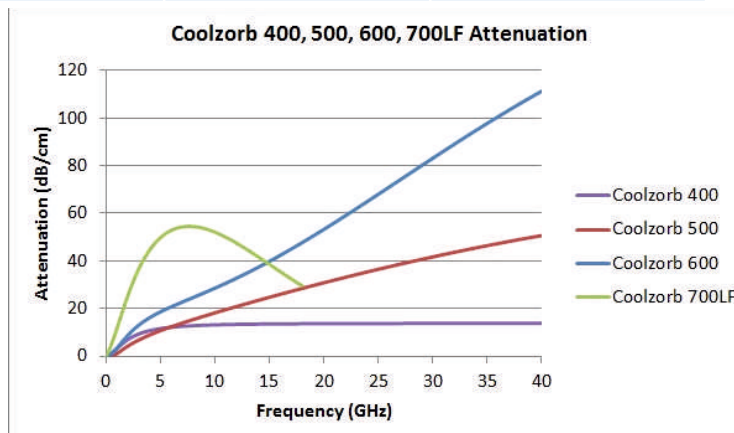
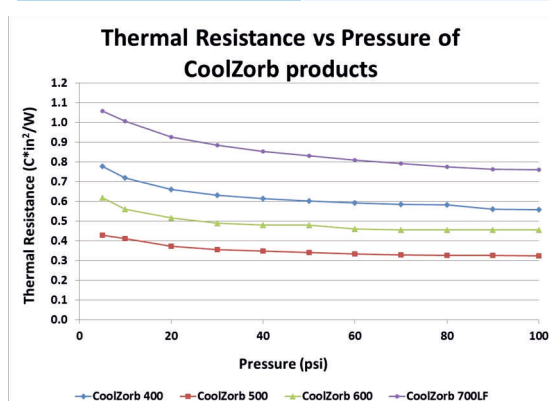
EMI Absorber / Hybrit Thermal Transfer

CoolZorb



CoolZorb is a hybrid absorber/thermal management material that is used for EMI mitigation. Product is used like a traditional thermal interface material between heat source such as an IC and heat sink or other heat transfer device or metal chassis.

Typical Properties	Coolzorb 400	Coolzorb 500	Coolzorb 600	Coolzorb 700LF
Thermal Conductivity	2.0 W/m-K	4.0 W/m-K	3.0 W/m-K	1.9 W/m-K
Hardness	56 Shore 00 for 3 seconds	55 Shore 00 for 3 seconds	60 Shore 00 for 3 seconds	53 Shore 00 for 3 seconds
Temperature Range	-20°C to 100°C	-40°C to 175°C	-40°C to 175°C	-40°C to 175°C
UL Flammability	UL94V0	UL94V0	UL94V0	UL94V0
Attenuation Frequency	5 GHz & higher	5 GHz & higher	3 GHz & higher	500 MHz & higher



- Standard gap fillers have thermal conductivity range of 1-9 W/mk
- CoolZorb products are 2.0 W/mK – 4.0 W/mK range and covers low to mid range in thermal performance
- Product is typically used like standard gap filler between IC and heat sink
- Suitable for low to mid power ICs
- Performance advantage comes from dual functional properties of thermal conductivity and EMI attenuation

Eccosorb LS



Eccosorb LS is the most widely known, used, and recommended polyurethane foam absorber. Eccosorb LS obtains its microwave properties via impregnation with a carbon black dispersion and is therefore electrically conductive. It is a very low cost solution for many applications over the thinner, more expensive rubber absorbers.

- Lossy, flexible broadband foam absorber
- Frequency range is ≥ 1 GHz
- Available in 24" X 24" sheets (61 cm X 61 cm) or custom cut parts to drawing
- Thickness range is 1/8" (0.3 cm) to 3" (1.8 cm)
- Available in many carbon loading levels from LS-14 to LS-30
- LS-26 and LS 30 are most common
- Available with a peel and stick adhesive (SS3) or without
- Main advantage is lower cost but gives lower performance in cavity resonance applications compared to magnetic absorbers
- Available with anti-dust coating (UMSEAL)
- QR-13AF is UL rated version of LS-26
- Most common applications are for free space isolation by insertion loss and cavity resonance reduction
- Insertion loss properties improve with increased thickness and/or higher loading levels

	Attenuation (dB/cm)		Relative Impedance ($ Z /Z_0$)	
	3 GHz	10 GHz	3 GHz	10 GHz
LS-14	1.0	1.7	0.83	0.89
LS-16	1.5	2.3	0.78	0.87
LS-18	3.2	4.7	0.69	0.82
LS-20	4.2	7.0	0.61	0.78
LS-22	7.4	14.9	0.55	0.74
LS-24	11	24	0.25	0.44
LS-26	16	34	0.18	0.31
LS-28	20	40	0.16	0.27
LS-30	24	46	0.13	0.22

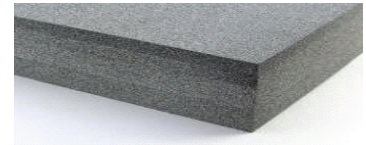
ABSORBER



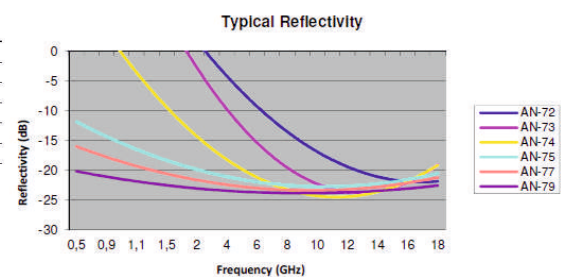
ELEKTRONICKÉ SOUČÁSTKY

ECCOSORB AN

Eccosorb AN is a lightweight, flexible, polyurethane foam sheet broadband microwave absorber.



- Lossy, flexible multilayer broadband foam gradient absorber
 - Thickness range is 0.24" to 4.5" (0.6 cm to 11.4 cm)
 - Reflectivity reduction is a minimum of -17 dB of normal incident energy above specified frequency (depends on thickness)
 - Available products and operation frequencies:
- | | Reflectivity range
(>17 dB) | Nominal Thickness
cm (inch) | Nominal Weight
kg/piece (lb/piece) |
|-------|--------------------------------|--------------------------------|---------------------------------------|
| AN-72 | >20 GHz | 0.6 (0.24) | 0.25 (0.6) |
| AN-73 | >7.5 GHz | 1.0 (0.39) | 0.50 (1.1) |
| AN-74 | >3.5 GHz | 1.9 (0.75) | 0.70 (1.5) |
| AN-75 | >2.4 GHz | 2.9 (1.14) | 0.80 (1.8) |
| AN-77 | >1.2 GHz | 5.7 (2.24) | 1.50 (3.3) |
| AN-79 | >600 MHz | 11.4 (4.49) | 2.95 (6.5) |
- Design is available with protective covering (ANW)
 - Recommended adhesive is 13-111-NF
 - Typical applications are:
 - lining small test chambers to reduce reflections
 - reducing cross talk between adjacent antennas by isolation
 - shrouding antennas to improve performance by reducing side/back lobes

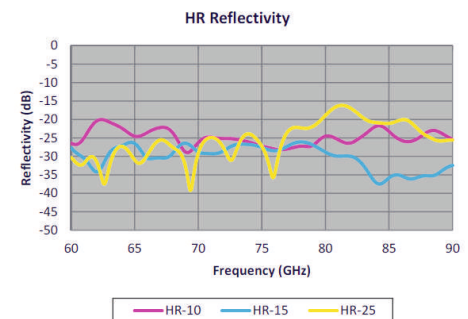


ECCOSORB HR

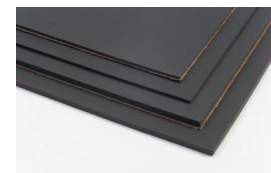
Eccosorb HR is a lightweight, flexible, flat-sheet, broadband absorber based on a reticulated (open-cell) polyurethane foam material impregnated with carbon black dispersions with controlled conductivity.



- Lightweight open-cell broadband foam gradient absorber
- Available in 24" X 24" sheets (61 cm X 61 cm)
- Reflectivity -20 dB or better between 5 - 70 GHz depending upon thickness
- Standard products are HR-10 (10 mm) and HR-25 (25 mm)
- Best performance for HR-10 is from 12-70 GHz and for HR-25 is from 5-27 GHz
- Back surface is marked HR-XX BACK and must be mounted against metal surface for best results
- Available with metal back foil (ML) if mounted against non-metal surface
- Recommended adhesive is 13-111-NF
- Typical application is microwave dish antenna to reduce side lobes



ECCOSORB MCS, GDS, BSR, FGM, JCS



- Thin, flexible magnetically loaded silicone elastomer absorbers (except JCS which is carbon loaded)
- Electrically non-conductive
- Frequency range starts at 800 MHz and beyond 26 GHz into the millimeter wave range depending upon product selected
- MCS, GDS and BSR are used for damping cavity resonances, reduction of surface currents or coupling between components
- Standard thicknesses: MCS (1.0 mm) .040", GDS (0.75mm) .030" and BSR (0.25 & 0.50 mm) .010" & .020"
- FGM and JCS are typically used as free space reflectivity absorbers but can be used in cavity resonance reduction
- Standard thicknesses:
 - FGM-40 (1.0 mm) .040"
 - FGM-125 (3.2 mm) .125"
 - JCS (0.5, 1.0 and 1.5 mm) .020", .040", .060"
- All are available with a peel and stick adhesive (SS6M)
- Urethane absorbers available

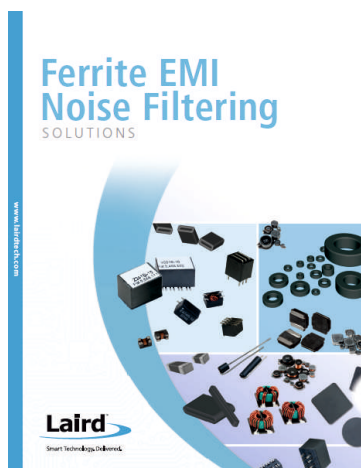
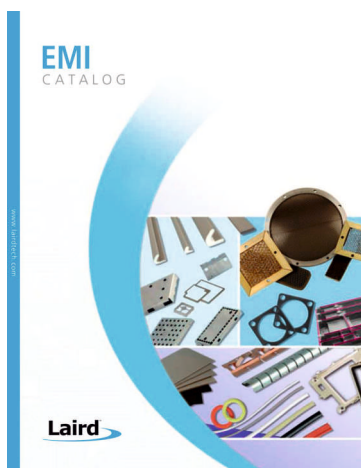


LAIRD CATALOGS



ELEKTRONICKÉ SOUČÁSTKY

You can download Laird catalogs at the following address:
<http://www.atd-elektronik.cz/ke-stazeni.html>



We will be happy to sample you.



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