Laird TECHNOLOGIES®

global solutions :
local support™

EMI ESSENTIALS

Short Form Catalog

www.lairdtech.com

Laird TECHNOLOGIES®

Laird Technologies is the world-leader in the design and supply of customized performance-critical products for wireless and other advanced electronic applications. Laird Technologies partners with its customers to help find solutions for applications in various industries such as:

Aerospace

Automotive Electronics

Computers

Consumer Electronics

Data Communications

Medical Equipment

Military

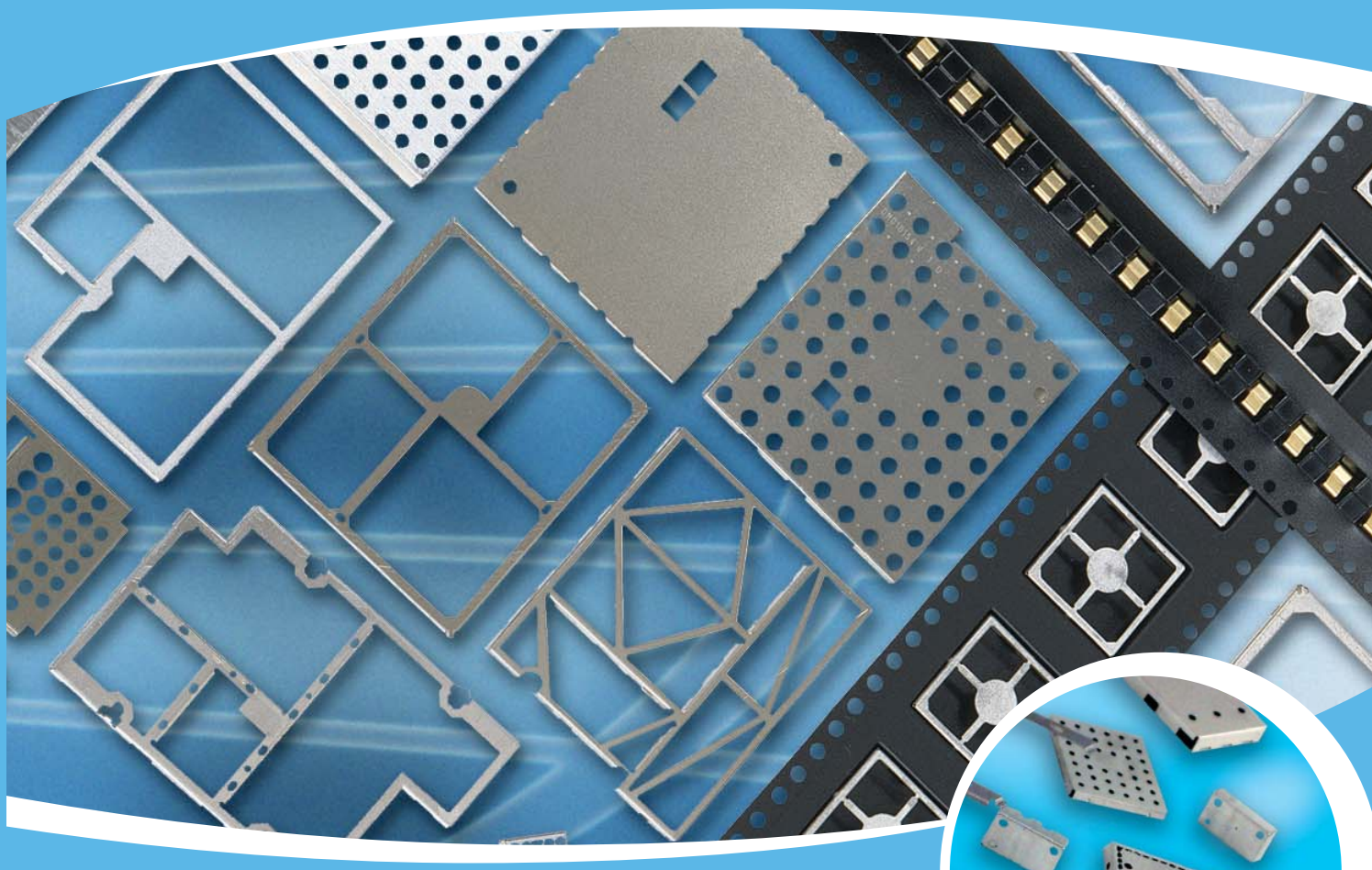
Network Equipment

Telecommunications

Laird Technologies offers its customers unique product solutions, dedication to research and development and a seamless network of manufacturing and customer support facilities located all across the globe.

global solutions : local support™

BOARD LEVEL SHIELDING



Board Level Shielding

Whether it's a one-piece shield, multi-compartmental shield or precision contact, each solution Laird Technologies delivers is designed to provide maximum performance within a minimum timeline.

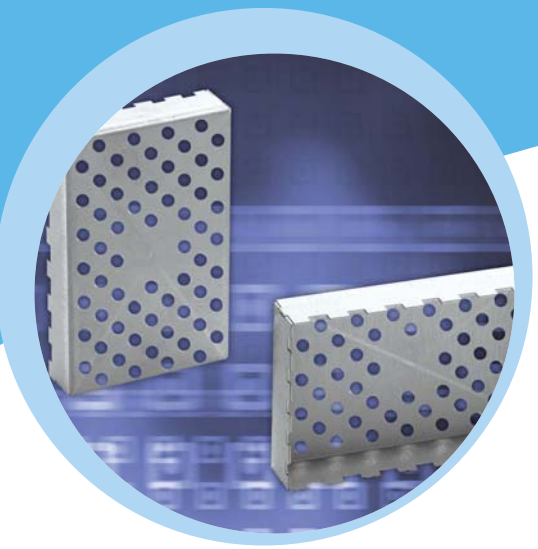
Laird Technologies produces metal electronic components for surface mount applications in a variety of industries.

Laird Technologies' expertise in a number of key areas ensures that the part provided not only performs, but also optimizes applications.

After determining the right board level shield or contact design for an application, Laird Technologies' experts use the latest systems to develop part designs in just hours.

Laird Technologies' experienced engineers and technical specialists look beyond the component to the total application.

They work with you to engineer the ideal finished product at the best value.



Standard Design Shields

ONE-PIECE AND TWO-PIECE AVAILABILITY

STANDARD SURFACE MOUNT SHIELDS — ONE-PIECE

Off the shelf, on spec and on budget

Standard surface mount shields are available in both one-piece and two-piece designs. One-piece shields offer six sides of protection, with the sixth side being the board itself.

One-piece designs offer economical shielding protection where access to covered components is not necessary. There are no tooling costs associated with either the one and/or two-piece standard design.

Features and Benefits:

- Available in both one-piece and two-piece designs
- One-piece designs offer economical shielding protection
- No tooling costs associated with one- or two-piece standard designs

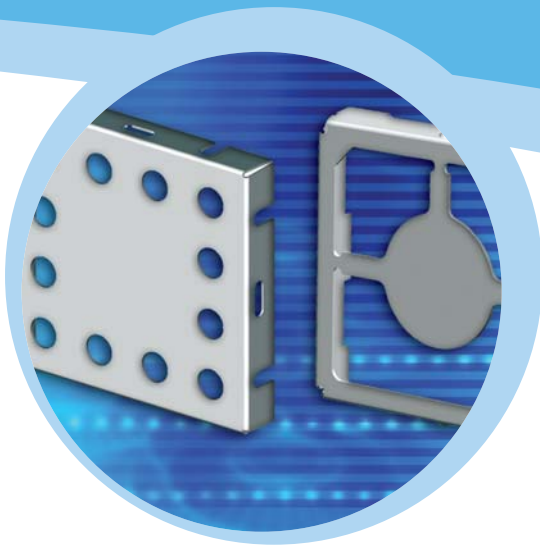
TYPICAL PROPERTIES AND PERFORMANCE ALL PART NUMBERS

PROPERTY	TEST METHOD	RESULT
Co-planarity	LTWI-1119	< 0,10 mm
Solderability	ANSI/JSTD-002	>99%
Solderability	MIL-STD-202 Method 208	>99%
Surface mount solderability	ANSI/EIA 638	Passes
Appearance	LTIES-125	Passes
Adhesion	ASTM B-571	Passes
3 Axis mechanical shock	LTES-461	Passes

STANDARD ONE-PIECE BOARD LEVEL SHIELDS

SHIELD PART NUMBER	SURFACE AREA in (mm)	MAX. OVERALL DIMENSION in (mm)	MAX HEIGHT in (mm)	CARRIER TAPE WIDTH mm	CARRIER TAPE PITCH mm	PARTS PER REEL	WEIGHT grams
BMI-S-101	0.253² (163,10²)	0.538 x 0.476 (13,66 x 12,10)	0.100 (2,54)	24	20	1000	0.4
BMI-S-102	0.402² (259,21²)	0.650 x 0.650 (16,50 x 16,50)	0.142 (3,60)	32	24	700	0.7
BMI-S-103	1.033² (666,16²)	1.032 x 1.032 (26,21 x 26,21)	0.200 (5,08)	44	32	300	1.6
BMI-S-104	1.548² (998,56²)	1.260 x 1.260 (32,00 x 32,00)	0.236 (6,00)	44	36	225	2.4
BMI-S-105	1.461² (942,50²)	1.500 x 1.000 (38,10 x 25,40)	0.236 (6,00)	56	32	250	2.4
BMI-S-106	1.879² (1212,39²)	1.450 x 1.326 (36,83 x 33,68)	0.200 (6,00)	56	40	300	2.5
BMI-S-107	2.997² (1933,36²)	1.747 x 1.747 (44,37 x 44,37)	0.384 (9,75)	56	56	120	6.5

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.



Standard Design Shields

ONE-PIECE AND TWO-PIECE AVAILABILITY

STANDARD SURFACE MOUNT SHIELDS — TWO-PIECE

Reduce board damage from inspection and repairs

Two-piece board level shields offer users the flexibility to inspect or repair shielded components without having to risk board damage by removing the entire shield or incur any tooling costs.

Covers snap on and off with ease, which makes repair of the component under the shield quicker and easier and reduces board re-work.

Two-piece shields are available unassembled* and are designed to survive drop, shock and no-rattle tests.

**Pre-assembly is an option. Consult sales.*

DESIGN PARAMETERS – ALL PART NUMBERS

PICK-UP SPOT DIAMETER MATERIAL	MATERIAL	THICKNESS CARRIER TAPE	MATERIAL
6 mm or greater 0,20 mm	CRS Tin	0,20 mm	LTIMS-LCB
COVER TAPE	**MATERIAL**	**REEL**	**DIAMETER**
LTIMS-PSA	330mm (101, 102, 103, 104, 201, 202, 203, 204) 381mm (105, 106, 107, 205, 206, 207)	Plastic	EIA-481

Features and Benefits:

- Offers flexibility to inspect or repair shield components without risking board damage
- Covers snap on and off with ease

STANDARD TWO-PIECE BOARD LEVEL SHIELDS

SHIELD PART NUMBER	SURFACE AREA in (mm)	MAX. OVERALL DIMENSION in (mm)	MAX HEIGHT in (mm)	CARRIER TAPE WIDTH mm	CARRIER TAPE PITCH mm	PARTS PER REEL	WEIGHT grams
BMI-S-201	0.253² (163,10²)	0.538 x 0.476 (13,66 x 12,10)	0.100 (2,54)	24	20	1000	0.3
BMI-S-202	0.402² (259,21²)	0.650 x 0.650 (16,50 x 16,50)	0.142 (3,60)	32	24	700	0.5
BMI-S-203	1.033² (666,16²)	1.032 x 1.032 (26,21 x 26,21)	0.200 (5,08)	44	32	300	1
BMI-S-204	1.548² (998,56²)	1.260 x 1.260 (32,00 x 32,00)	0.236 (6,00)	44	36	225	1.6
BMI-S-205	1.461² (942,50²)	1.500 x 1.000 (38,10 x 25,40)	0.236 (6,00)	56	32	250	1.6
BMI-S-206	1.879² (1212,39²)	1.450 x 1.326 (36,83 x 33,68)	0.200 (6,00)	56	40	300	1.5
BMI-S-207	2.997² (1933,36²)	1.747 x 1.747 (44,37 x 44,37)	0.384 (9,75)	56	56	120	3.2
BMI-S-208	2.430² (1568,16²)	1.559 x 1.559 (39,60 x39,60)	0.276 (7,00)	56	48	200	3.2
BMI-S-209	0.842² (543,16²)	1.156 x 0.728 (29,36 x 18,50)	0.276 (7,00)	44	28	400	1.2
BMI-S-210	2.080² (1342²)	1.732 x 1.201 (44,02 x 30,50)	0.118 (3,00)	56	40	450	1
BMI-S-226	3.848² (2484²)	1.375 x 2.799 (34,93 x 71,112)	0.40 (10,16)	88	44	100	8.7

3D MODELS OR 2D DRAWINGS ARE READILY AVAILABLE IN ALL CONVENTIONAL CAD FORMATS

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Virtual Design Center
zoom. move. rotate.

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Standard Design Contacts

STANDARD PRECISION ELECTRONIC CONTACTS

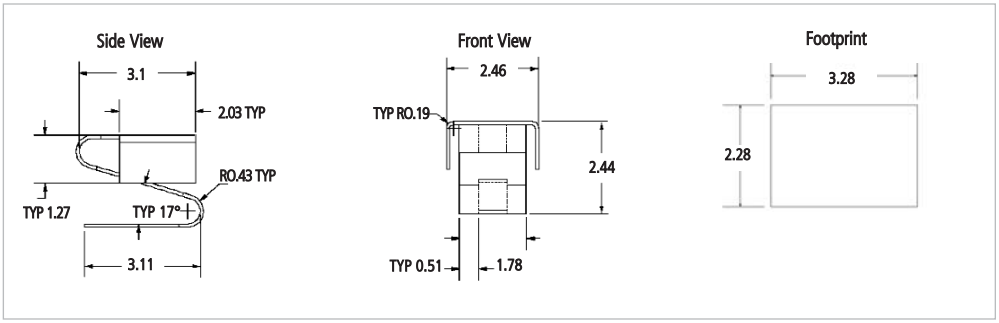
Laird Technologies' standard precision electronic contacts ground, carry current and signals, and interconnect boards and devices.

Laird Technologies offers a wide choice of plating options for maximum electrical current carrying performance.

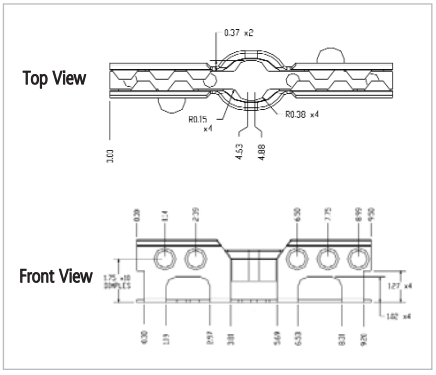
Laird Technologies has a wide array of designs in standard formats that are ready for production. Installation costs are lower with tape and reel packaging.

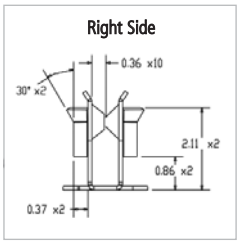
CONTACT PART NUMBER	MATERIAL	PLATING	TYPICAL APPLICATIONS	PARTS PER REEL
BMI-C-001	0,10mm BeCu	Gold Top, Tin foot	Grounding, Carrying Energy	3000
BMI-C-001-SN	0,10mm BeCu	Tin	Grounding, Carrying Energy	3000
BMI-C-002	0,10mm BeCu	Gold	Grounding, Carrying Energy	3500
BMI-C-004	0,10mm BeCu	Gold	Grounding, Carrying Energy	1400
BMI-C-004-SN	0,10mm BeCu	Tin	Grounding, Carrying Energy	1400
BMI-C-006	0,10mm BeCu	Tin	Grounding, Carrying Energy	3500
BMI-C-007-001	0,12mm BeCu	Gold	Grounding, Carrying Energy	2300
BMI-C-007-01	0,12mm BeCu	Tin	Grounding, Carrying Energy	2300
BMI-C-010-0	0,20mm Spring Steel	Tin	Grounding, Carrying Energy	3500
BMI-C-010-1	0,20mm Spring Steel	Tin	Grounding, Carrying Energy	3500
BMI-C-010-2	0,20mm Spring Steel	Tin	Grounding, Carrying Energy	3500
BMI-C-010-3	0,20mm Spring Steel	Tin	Grounding, Carrying Energy	3500

BMI-C-001 and -001-SN



BMI-C-002





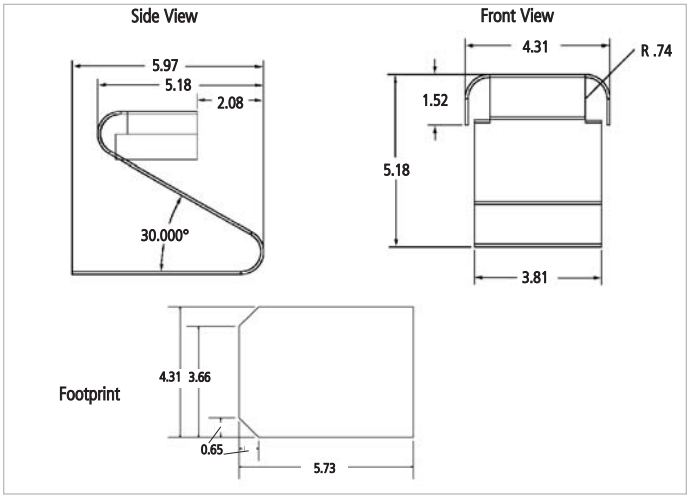
All footprint dimensions are listed in millimeters.

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

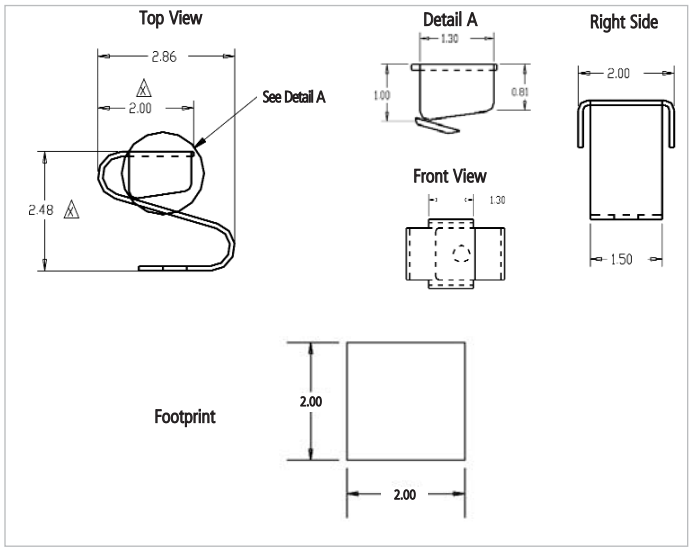
Standard Design Contacts

STANDARD PRECISION ELECTRONIC CONTACTS

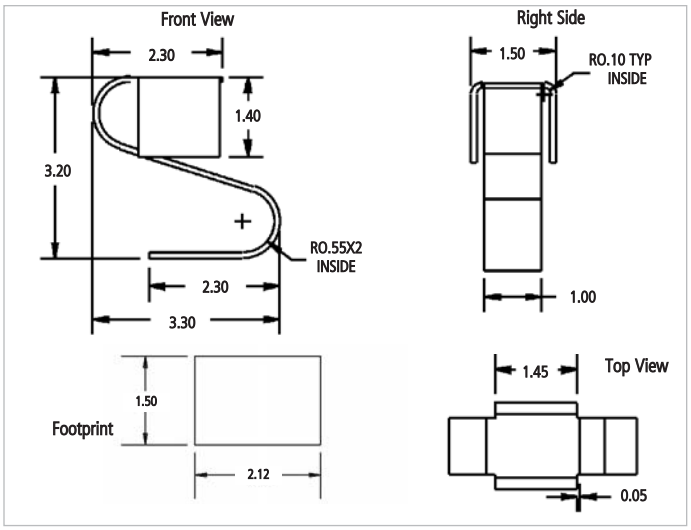
BMI-C-004 and -004-SN



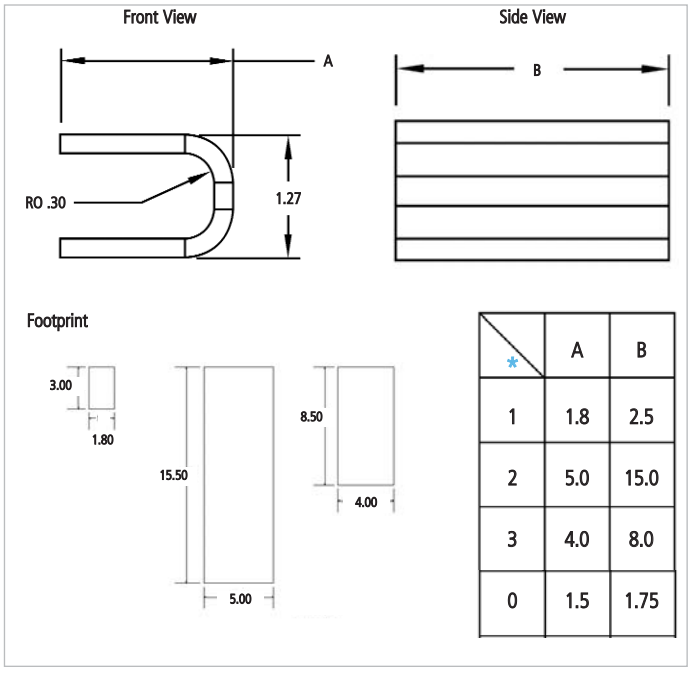
BMI-C-006



BMI-C-007-001 and -01



BMI-C-010-*



*	A	B
1	1.8	2.5
2	5.0	15.0
3	4.0	8.0
0	1.5	1.75

Material properties are for reference only. Product testing by purchaser is recommended to confirm performance. Laird Technologies assumes no liability for product failure unless specifically stated in writing.

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

ELECTRICALLY CONDUCTIVE ELASTOMERS

Electrically Conductive Elastomers

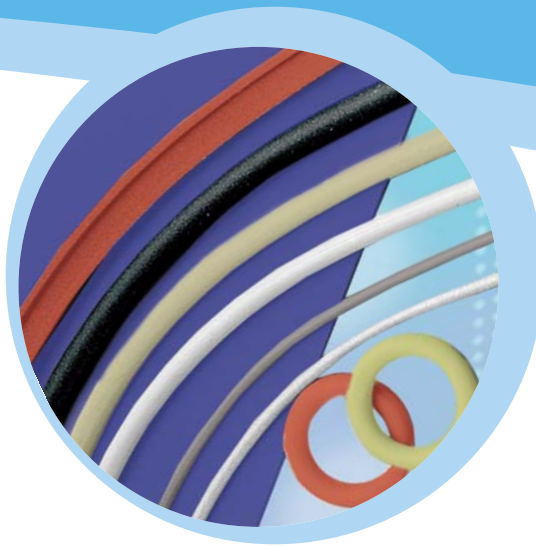
Electrically conductive elastomers are used for shielding electronic enclosures against electromagnetic interference (EMI). They provide environmental sealing, and excellent mechanical and electromagnetic shielding properties. Laird Technologies offers a wide variety of conductive filler materials in extruded, molded die-cut, dispensed Form-In-Place, printed and coated formats.

Usually, the shielding system consists of a conductive gasket sandwiched between a metal housing and lid.

The primary function of these gaskets is providing sufficient electrical conductivity across the enclosure/gasket/lid junction to meet grounding and EMI shielding requirements, as well as preventing fluid intrusion into the electrical components.

Laird Technologies offers conductive elastomers in ElectroSeal™ and ElectroMet™.

ElectroSeal™ are dispersed filler particles in elastomers and ElectroMet™ is an oriented wire in solid and sponge elastomers, and impregnated wire mesh and expanded metals.



Electrically Conductive Elastomers

WIDE VARIETY FITS ALL NEEDS

Compounds can be supplied in custom molded, extruded shapes, sheet stock or die-cut shapes

Laird Technologies' electrically conductive elastomer products are ideal for both military and commercial applications requiring both environmental sealing and EMI shielding. Compounds can be supplied in molded or extruded shapes, sheet stock, custom extruded, or die-cut shapes to meet a wide variety of applications.

Laird Technologies offers a series of products to meet a wide range of customer requirements. The classifications of the most common materials are based on cost and specific applications. There are over 30 compounds available.

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 products. Custom dies can be engineered to accommodate specific designs. Available in a wide variety of conductive filler materials. Shielding effectiveness up to 120 dB at 10 GHz.

TABLE 1: ELECTROSEALS APPLICATIONS COMMERCIAL AND MILITARY

Serial Number			80	81	85	88	89	92	93	96
Elastomer Type: Silicone=SIL, Fluorosilicone=FSIL Ethylene Propylene Diene Monomer=EPDM			SIL	SIL	SIL	FSIL	FSIL	FSIL	SIL	EPDM
Filler Material: Silver=Ag, Copper=Cu, Aluminum=Al Nickel=Ni, Glass=G, Inert Coated Aluminum=IA; Nickel-coated Graphite=Ni/C, Carbon=C			Ag/Cu	Ag/Al	Ag/G	Ag/Cu	Ag/Al	Ni/C	Ni/C	Ag/Al
Color			Tan	Tan	Tan	Tan	Blue	DkGray	Black	Tan
MIL-DTL-83528C MATERIAL TYPE			A	B	M	C	D	–	–	
Electrical Properties	Tol.	Test Method	–	–	–	–	–	–	–	–
Volume Resistivity (ohm-cm) (as supplied)	Max.	MIL-DTL-83528C (PARA 4.5.10)	0.004	0.008	0.006	0.010	0.012	0.100	0.100	0.010
Shielding Effectiveness (dB)	Min.	MIL-DTL-83528C	–	–	–	–	–	–	–	–
10 GHz (Plane Wave)		(PARA 4.5.12)	120	100	100	110	100	100	100	90
Specific Gravity	± 0.25	ASTM D792	3.40	2.00	1.90	4.10	2.20	2.20	1.90	2.20
Hardness (Shore A)	± 7	ASTM D2240	65	65	65	75	70	75	55	80

TABLE 2: SHEET MATERIAL

THICKNESS/TOLERANCE	10 X 10 SHEET	10 X 15 SHEET	15 X 20 SHEET	18 X 18 SHEET
0.020 ± 0.004 (0,5 ± 0,1)	8860-0020-100-XX	8860-0020-150-XX	8860-0020-300-XX	N/A
0.032 ± 0.005 (0,8 ± 0,1)	8860-0032-100-XX	8860-0032-150-XX	8860-0032-300-XX	8860-0032-324-XX
0.045 ± 0.005 (1,1 ± 0,1)	8860-0045-100-XX	8860-0045-150-XX	8860-0045-300-XX	8860-0045-324-XX
0.062 ± 0.007 (1,5 ± 0,2)	8860-0062-100-XX	8860-0062-150-XX	8860-0062-300-XX	8860-0062-324-XX
0.093 ± 0.010 (2,3 ± 0,3)	8860-0093-100-XX	8860-0093-150-XX	8860-0093-300-XX	8860-0093-324-XX
0.100 ± 0.010 (2,5 ± 0,3)	8860-0100-100-XX	8860-0100-150-XX	8860-0100-300-XX	8860-0100-324-XX
0.125 ± 0.010 (3,2 ± 0,3)	8860-0125-100-XX	8860-0125-150-XX	8860-0125-300-XX	8860-0125-324-XX

When ordering:
Decide on molded sheet stock or extruded shapes. Select the desired configuration and dimensions.

Select the desired material.

Insert serial number in place of the letters XX in the Laird Technologies' part number. See Table 1.

This table lists thicknesses and sizes for our molded sheet material.

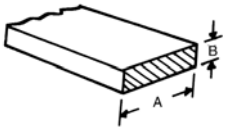
For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

Features and Benefits:

- Ideal for both military and commercial applications
- Wide choice of profiles to fit large range of applications
- Custom dies can be engineered to accommodate specific designs
- Shielding effectiveness up to 120 dB at 10 GHz

RECTANGLE STRIPS

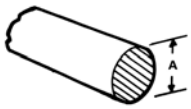
Replace the X in the MIL-DLT part number with the MIL-DTL-83528C Material Type letter. This information can be found on page 8, Table 1. Insert serial number in place of the letters XX in the Laird Technologies' part number. See page 8, Table 1.



MIL-DTL Part Number	Part Number	Nominal Dimensions A in (mm)	B in (mm)
M83528/009X003	8861-0110-XX	0.120 (3,0)	0.075 (1,9)
M83528/009X004	8861-0115-XX	0.125 (3,2)	0.075 (1,9)
——	8861-0121-XX	0.187 (4,8)	0.125 (3,2)
M83528/009X006	8861-0125-XX	0.250 (6,4)	0.062 (1,6)
M83528/009X007	8861-0130-XX	0.500 (12,7)	0.075 (1.9)
M83528/009X008	8861-0135-XX	0.500 (12,7)	0.125 (3,2)
——	8861-0183-XX	0.378 (9,6)	0.063 (1,6)

O-STRIPS

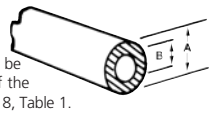
Replace the X in the MIL-DLT part number with the MIL-DTL-83528C Material Type letter. This information can be found on page 8, Table 1. Insert serial number in place of the letters XX in the Laird Technologies' part number. See page 8, Table 1.



MIL-DTL Part Number	Part Number	Recommended Groove Dimensions (±0.002) A	Width in (mm)	Height
M83528/001X001	8863-0100-XX	0.040 (1,0)	0.45 (1,1)	0.032 (0,8)
M83528/001X002	8863-0105-XX	0.053 (1,3)	0.059 (1,5)	0.042 (1,1)
M83528/001X003	8863-0110-XX	0.062 (1,6)	0.066 (1,7)	0.050 (1,3)
M83528/001X004	8863-0115-XX	0.070 (1,8)	0.076 (1,9)	0.056 (1,4)
M83528/001X005	8863-0120-XX	0.080 (2,0)	0.086 (2,2)	0.064 (1,6)
M83528/001X006	8865-0125-XX	0.093 (2,4)	0.100 (2,5)	0.074 (1,9)
M83528/001X007	8863-0130-XX	0.103 (2,6)	0.110 (2,8)	0.082 (2,1)
M83528/001X008	8863-0140-XX	0.119 (3,0)	0.126 (3,2)	0.095 (2,4)
M83528/001X009	8864-0145-XX	0.125 (3,2)	0.133 (3,4)	0.100 (2,5)
M83528/001X010	8863-0160-XX	0.139 (3,5)	0.147 (3,7)	0.111 (2,8)
M83528/001X012	8866-0175-XX	0.216 (5,5)	0.229 (5,8)	0.173 (4,4)
M83528/001X013	8867-0180-XX	0.250 (6,4)	0.267 (6,8)	0.200 (5,1)
M83528/001X011	8868-0183-XX	0.188 (4,8)	0.200 (5,1)	0.150 (3,8)
——	8869-0184-XX	0.032 (0,8)	0.036 (0,9)	0.026 (0,7)
——	8863-0196-XX	0.098 (2,5)	0.105 (2,7)	0.078 (2,0)

O-STRIP TUBING

Replace the X in the MIL-DLT part number with the MIL-DTL-83528C Material Type letter. This information can be found on page 8, Table 1. Insert serial number in place of the letters XX in the Laird Technologies' part number. See page 8, Table 1.



MIL-DTL Part Number	Part Number	Nominal Dimensions A in (mm)	B in (mm)
——	8864-0090-XX	0.090 (2,3)	0.050 (1,3)
M83528/011X007	8864-0095-XX	0.103 (2,6)	0.040 (1,0)
M83528/011X001	8864-0100--XX	0.125 (3,2)	0.045 (1,1)
M83528/011X006	8864-0101-XX	0.125 (3,2)	0.062 (1,6)
M83528/011X002	8864-0105-XX	0.156 (4,0)	0.050 (1,3)
M83528/011X003	8864-0110-XX	0.250 (6,4)	0.125 (3,2)
M83528/011X004	8864-0120-XX	0.312 (7,9)	0.192 (4,9)
M83528/011X008	8864-0143-XX	0.177 (4,5)	0.079 (2,0)
——	8864-0155-XX	0.108 (2,7)	0.05 (1,3)
——	8864-0162-XX	0.156 (4,0)	0.062 (1,6)
——	8864-0173-XX	0.085 (2,2)	0.050 (1,3)
——	8864-0179-XX	0.063 (1,6)	0.0288 (0,7)
——	8864-0190-XX	0.094 (2,4)	0.035 (0,9)
——	8864-0193-XX	0.098 (2,5)	0.039 (1,0)

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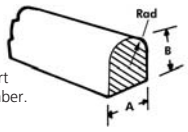
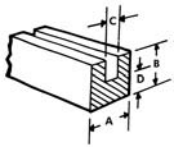
D-STRIPS



Replace the X in the MIL-DLT part number with the MIL-DTL-83528C Material Type letter. This information can be found on page 8, Table 1. Insert serial number in place of the letters XX in the Laird Technologies' part number. See page 8, Table 1.

MIL-DTL-83528 Part Number	Part Number	Dimensions in (mm)			Recommended Dimensions (±0.002) in (mm)	
——	8865-0100-XX	0.055 (1,4)	0.064 (1,6)	0.031 (0,8)	0.067 (1,7)	0.053 (1,3)
MB83528/003X001	8865-0105-XX	0.062 (1,6)	0.068 (1,7)	0.031 (0,8)	0.074 (1,9)	0.057 (1,4)
MB83528/003X002	8865-0110-XX	0.094 (2,4)	0.078 (2,0)	0.047 (1,2)	0.109 (2,8)	0.065 (1,7)
MB83528/003X015	8865-0115-XX	0.178 (4,5)	0.089 (2,3)	0.039 (1,0)	0.182 (4,3)	0.074 (1,9)
MB83528/003X004	8865-0116-XX	0.093 (2,4)	0.093 (2,4)	0.047 (1,2)	0.109 (2,8)	0.077 (2,0)
MB83528/003X005	8865-0120-XX	0.062 (1,6)	0.100 (2,5)	0.031 (0,8)	0.074 (1,9)	0.057 (1,4)
MB83528/003X007	8865-0130-XX	0.122 (3,1)	0.135 (3,4)	0.061 (1,5)	0.141 (3,6)	0.113 (2,9)
MB83528/003X008	8865-0135-XX	0.118 (3,0)	0.156 (4,0)	0.059 (1,5)	0.140 (3,6)	0.131 (3,3)
MB83528/003X010	8865-0140-XX	0.075 (1,9)	0.178 (4,5)	0.089 (2,3)	0.093 (2,4)	0.150 (3,8)

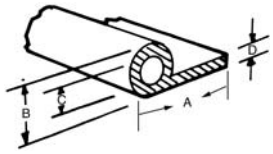
CHANNEL STRIPS



Replace the X in the MIL-DLT part number with the MIL-DTL-83528C Material Type letter. This information can be found on page 8, Table 1. Insert serial number in place of the letters XX in the Laird Technologies' part number. See page 8, Table 1.

MIL-DTL-83528 Part Number	Part Number	Dimensions A	B	C	D
		in (mm)			
M83528/010X001	8868-0100-XX	0.100 (2,5)	0.100 (2,5)	0.034 (0,9)	0.033 (0,8)
M83528/010X002	8868-0105-XX	0.126 (3,2)	0.110 (2,8)	0.025 (0,6)	0.050 (1,3)
M83528/010X003	8868-0110-XX	0.126 (3,2)	0.225 (5,7)	0.020 (0,5)	0.075 (1,9)
M83528/010X004	8868-0115-XX	0.156 (4,0)	0.156 (4,0)	0.062 (1,6)	0.047 (1,2)
M83528/010X005	8868-0120-XX	0.175 (4,4)	0.156 (4,0)	0.047 (1,2)	0.075 (1,9)

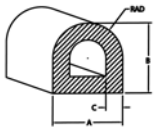
P-STRIPS



Replace the X in the MIL-DLT part number with the MIL-DTL-83528C Material Type letter. This information can be found on page 8, Table 1. Insert serial number in place of the letters XX in the Laird Technologies' part number. See page 8, Table 1.

MIL-DTL-83528 Part Number	Part Number	Dimensions A	B	C	D
		in (mm)			
M83528/008X001	8867-0100-XX	0.850 (21,6)	0.200 (5,1)	0.080 (2,0)	0.062 (1,6)
M83528/008X002	8867-0105-XX	0.500 (12,7)	0.250 (6,4)	0.125 (3,2)	0.062 (1,6)
M83528/008X004	8867-0120-XX	0.625 (15,9)	0.250 (6,4)	0.150 (3,8)	0.062 (1,6)
M83528/008X006	8867-0130-XX	0.780 (19,8)	0.360 (9,1)	0.255 (6,5)	0.070 (1,8)
——	8867-0161-XX	0.626 (15,9)	0.375 (9,5)	0.295 (7,5)	0.055 (1,4)

HOLLOW D-STRIPS



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MIL-DTL-83528 Part Number	Part Number	Dimensions A	B	Rad	C	View
		in (mm)				
M83528/007X001	8866-0100-XX	0.156 (4,0)	0.156 (4,0)	0.078 (2,0)	0.045 (1,1)	A
M83528/007X002	8866-0105-XX	0.187 (4,8)	0.187 (4,8)	0.093 (2,4)	0.050 (1,3)	A
M83528/007X007	8866-0110-XX	0.250 (6,4)	0.250 (6,4)	0.125 (3,2)	0.065 (1,7)	A
M83528/007X004	8866-0116-XX	0.312 (7,9)	0.312 (7,9)	0.156 (4,0)	0.062 (1,6)	B
——	8866-0127-XX	0.325 (8,3)	0.575 (14,6)	0.287 (7,3)	0.080 (2,0)	A
——	8866-0131-XX	0.250 (6,4)	0.145 (3,7)	0.125 (3,2)	0.030 (0,8)	A
——	8866-0135-XX	0.093 (2,4)	0.093 (2,4)	0.046 (1,2)	0.040 (1,0)	A
——	8866-0163-XX	0.146 (3,7)	0.146 (3,7)	0.073 (1,9)	0.016 (0,4)	A
——	8866-0177-XX	0.085 (2,2)	0.095 92,4)	0.043 (1,1)	0.02 (0,5)	B

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

ELECTRICALLY CONDUCTIVE ELASTOMERS
PART NUMBERS

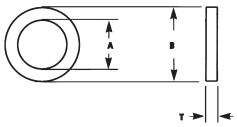
ELECTROSEAL CONDUCTIVE ELASTOMER FABRICATED COMPONENTS

Laird Technologies provides a full line of fabricated conductive elastomers. These products are offered in a wide range of materials to meet your particular application. In addition to the standard components shown, Laird Technologies can supply molded and vulcanized electrically conductive elastomer gaskets to meet custom configurations required to package electronic components in either cast or sheet metal enclosures.

FLAT WASHERS

Standard sizes of flat washers can be die-cut from sheet material. Besides a circular shape, other intricate shapes can be designed and die-cut to meet custom requirements.

Replace the X in the MIL-DLT part number with the MIL-DTL-83528C Material Type letter. This information can be found on page 8, Table 1. Insert serial number in place of the letters XX in the Laird Technologies' part number. See page 8, Table 1.

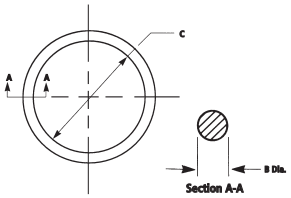


MIL-DTL Part Number	Part Number	Dimensions A	B	T
			in (mm)	
M83528/012X001	8560-0097-XX	0.250 (6,4)	0.625 (15,9)	0.032 (0,8)
M83528/012X003	8560-0098-XX	0.375 (9,5)	0.750 (19,1)	0.031 (0,8)
M83528/012X005	8560-0099-XX	0.500 (12,7)	0.656 (16,7)	0.031 (0,8)
M83528/012X007	8560-0100-XX	0.500 (12,7)	0.875 (22,2)	0.031 (0,8)
M83528/012X002	8560-0142-XX	0.250 (6,4)	0.625 (15,9)	0.062 (1,6)
M83528/012X004	8560-0143-XX	0.375 (9,5)	0.750 (19,1)	0.062 (1,6)
M83528/012X006	8560-0144-XX	0.500 (12,7)	0.656 (16,7)	0.062 (1,6)
M83528/012X008	8560-0145-XX	0.500 (12,7)	0.875 (22,2)	0.062 (1,6)
——	8560-0233-XX	0.218 (5,5)	0.468 (11,9)	0.030 (0,8)
——	8560-0453-XX	0.890 (22,6)	1.250 (31,8)	0.062 (1,6)

MOLDED EMI O-RINGS

O-rings, when installed in a properly designed groove, can provide both an EMI and moisture seal. Custom tools can be fabricated for prototypes and production quantities when diameters are larger than 2.000 in (50,8 mm).

Round strips can also be vulcanized to create O-rings to include parts with diameters larger than 3.000 in (76,2 mm). Consult Laird Technologies sales department for sizes.



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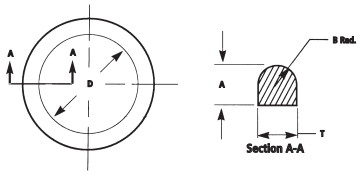
MIL-DTL-83528 Part Number	Part Number	Nominal Dimensions in (mm)	
M83528/002X007	8563-0068-XX	0.145 (3,7)	0.070 (1,8)
M83528/002X020	8563-0077-XX	0.864 (21,9)	0.070 (1,8)
M83528/002X024	8563-0080-XX	1.114 (28,3)	0.070 (1,8)
M83528/002X011	8563-0106-XX	0.301 (7,6)	0.070 (1,8)
M83528/002X016	8563-0116-XX	0.610 (15,5)	0.070 (1,8)

MOLDED D-RINGS

These components, as in the O-rings, can be supplied spliced and vulcanized to dimensions in excess of two inches inner diameter.



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MIL-DTL-83528 Part Number	Part Number	Dimensions A	B	D	T
			in (mm)		
M83528/013X002	8563-0126-XX	0.0556 (1,4)	0.041 (1,0)	0.410 (10,4)	0.082 (2,1)
M83528/013X004	8563-0127-XX	0.048 (1,2)	Full Radius	0.587 (14,9)	0.078 (2,0)
M83528/013X006	8563-0128-XX	0.125 (3,2)	Full Radius	0.885 (22,5)	0.155 (3,9)
M83528/013X008	8563-0129-XX	0.065 (1,7)	0.049 (1,2)	1.122 (28,5)	0.099 (2,5)
M83528/013X012	8563-0130-XX	0.077 (2,0)	Full Radius	1.310 (33,3)	0.115 (2,9)
M83528/013X011	8563-0131-XX	0.088 (2,2)	Full Radius	1.340 (34,0)	0.095 (2,4)
M83528/013X014	8563-0132-XX	0.085 (2,2)	Full Radius	1.392 (35,4)	0.095 (2,4)
M83528/013X017	8563-0133-XX	0.078 (2,0)	Full Radius	1.550 (39,4)	0.105 (2,7)
M83528/013X036	8563-0134-XX	0.188 (4,8)	Full Radius	3.910 (99,3)	0.240 (6,1)

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

Oriented Wire

AVAILABLE IN SHEET OR STRIP FORM

ElectroMet™ oriented wire provides multiple options to suit any application

ELECTROMET™ ORIENTED WIRE

ElectroMet oriented wire gaskets are EMI shielding and sealing composites. Monel® or aluminum wires embedded in the elastomer and oriented perpendicular to the mating surfaces provide EMI sealing. Solid or sponge silicone provides the weather sealing. Solid silicone weather seals are recommended for high-pressure applications. Silicone based oriented wire composites are capable of withstanding temperature ranges from –70°F to 500°F (–56°C to 260°C).

Oriented wire materials are available in sheet or strip form with a minimum thickness of 0.032 in (0,8 mm).

SPLICING TECHNIQUES

Oriented wire can be supplied as a one-piece gasket. Gasket sizes are available up to 9 in (228,6 mm) X 36 in (914,4 mm) frame size. Larger gaskets are normally bonded together using a splicing technique. These splicing methods minimize elastomer waste when compared to jointless gasket design. In preparing drawings, designate the splicing method and locations if splices are permitted. Common splicing methods include skive, miter, butt, and dovetail.

DIE-CUT GASKET

Oriented wire can be supplied as a die-cut gasket in various configurations. Gasket sizes are available up to 9 in (228,6 mm) X 36 in (914,4 mm). Several of the most common die-cut gaskets are for cable connectors and Sub-D connectors.

ELECTROMET IMPREGNATED WOVEN WIRE AND EXPANDED METAL

ElectroMet impregnated wire mesh and expanded metal gaskets are available in thin sheet form. EMI shielding is provided by woven aluminum mesh or expanded metals. Pressure sealing is provided by neoprene or silicone elastomer impregnated in the mesh. Fluorosilicone is also available for specific applications that require resistance to oils, hydraulic fluids and hydrocarbon fuels.

Monel® wire is bonded into a silicone elastomer for uniform surface and multiple "spring" effect with each contact point.

Features and Benefits:

- Ideal for both military and commercial applications
- Wide choice of profiles to fit large range of applications
- Custom dies can be built to accommodate specific designs
- Shielding effectiveness up to 120 dB at 10 GHz

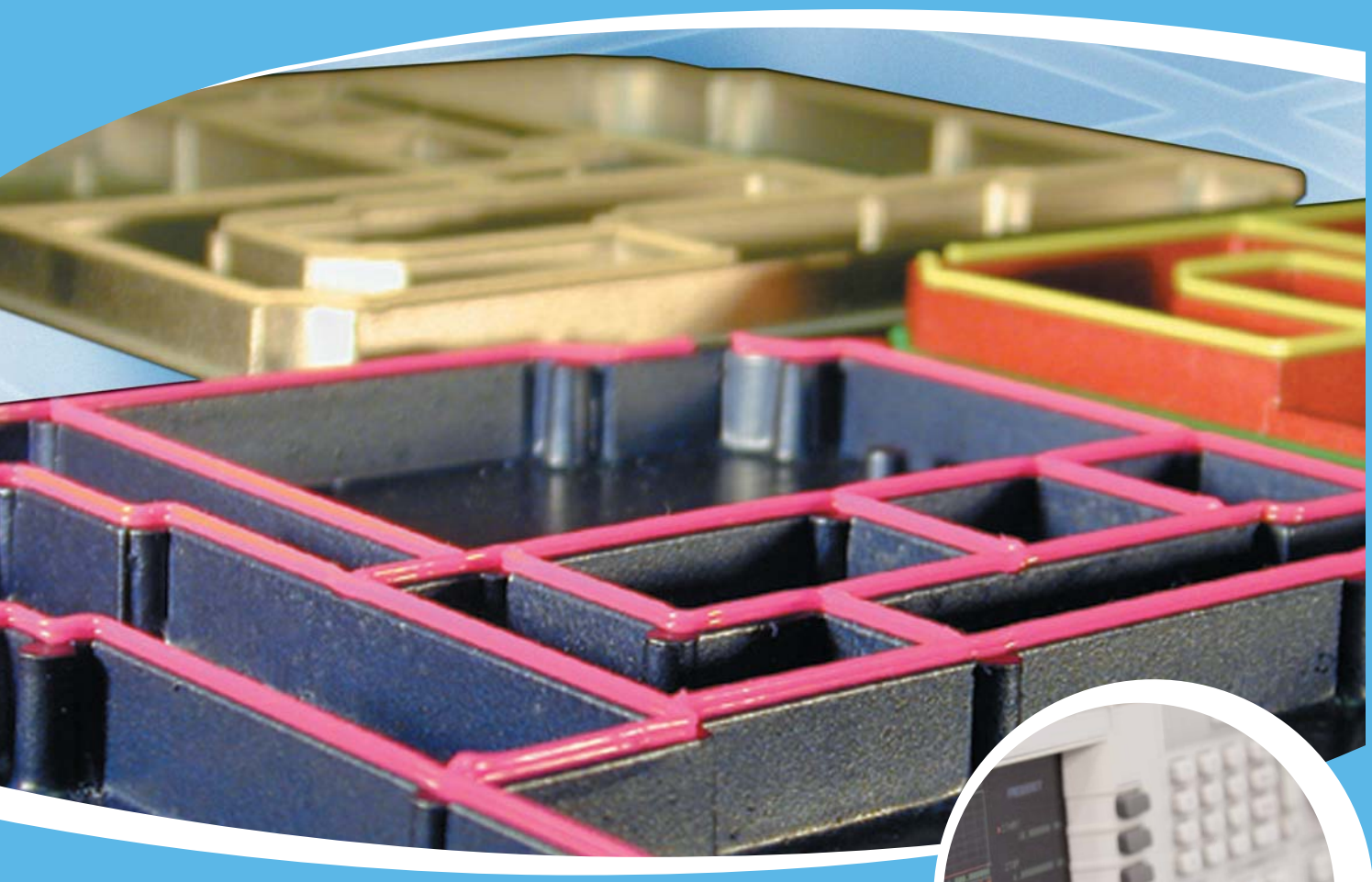
MATERIAL SELECTION

Part Number	Thickness	Width	Material Description	Material Specifications		
				Metal Filler	Elastomer Filler	Color
8416-0120-57	0.020 ± 0.004 (0,5 ± 0,1)	8.0 (203,2)	Woven Wire Neoprene Impregnated	Aluminum 5056 alloy per AMS 4182	Neoprene per AMS 3222	Black
8416-0120-23	0.020 ± 0.004 (0,5 ± 0,1)	8.0 (203,2)	Woven Wire Silicone Impregnated	Aluminum 5056 alloy per AMS 4182	Silicone per ZZR 765, Class 2B, Grade 50	Gray
8416-0320-21	0.020 ± 0.004 (0,5 ± 0,1)	8.0 (203,2)	Expanded Metal with Elastomer	Aluminum alloy QQ-A-250	Silicone per ZZR 765, Class 2B, Grade 50	Gray
8416-0330-21	0.030 ± 0.004 (0,8 ± 0,1)					
8416-0320-22	0.020 ± 0.004 (0,5 ± 0,1)	8.0 (203,2)	Expanded Metal with Elastomer	Monel® per QQ-N-281B	Silicone per ZZR 765, Class 2B, Grade 50	Gray
8416-0330-22	0.030 ± 0.004 (0,8 ± 0,1)					

Material Code	Elastomer	Wire Specification
55	Silicone sponge per AMS 3195	Monel®: alloy per QQ N281 dia. 0.0045 (0,114)
56	Silicone solid per A-A-59588 class 2b grade 40	Monel®: alloy per QQ N281 dia. 0.0045 (0,114)
58	Silicone sponge per AMS 3195	Aluminum: alloy 5056 per AMS 4182 dia. 0.005 (0,127)
59	Silicone solid per A-A-59588 class 2b grade 40	Aluminum: alloy 5056 per AMS 4182 dia. 0.005 (0,127)

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

FORM-IN-PLACE



Form-In-Place

Laird Technologies' Form-In-Place is an automated system for dispensing conductive elastomer EMI shielding and grounding gaskets onto metal or plastic substrates. This product is particularly ideal for mobile phones, PDAs, PC cards, radios and many other cast or plastic enclosures and packaged electronic assemblies.

FORM-IN-PLACE PROPERTIES

Compound	Test Method	Units	SNN45-SP	SNL55-SP	SNC50-SP
Elastomer			silicone	silicone	silicone
Filler			silver/nickel	silver/Al	Ni/graphite
Color			beige	tan	dark gray
Electrical Properties	**Test Method**	**Units**	**SNN45-SP**	**SNL55-SP**	**SNC50-SP**
Volume Resistivity		ohm-cm	0.002	0.004	0.015
Shielding Effectiveness	MIL-DTL-83528C				
200 MHz to 10 GHz	para 4.5.12	dB	> 90 dB	See Note 3	See Note 3
Physical Properties	**Test Method**	**Units**	**SNN45-SP**	**SNL55-SP**	**SNC50-SP**
Hardness	ASTM D2240	Shore A	70	65 IRHD	53
Density	ASTM D792	g/cm3	3.7	1.9	2
Compression set	ASTM D575	%	<20%	<20%	<20%
Adhesion strength (Al)		N/cm2 (psi)	>130 (>190)	>100 (>150)	See Note 3
Compression-deflection					
at 20% compression		N/cm (lb/in)	1.6 (0.9)	See Note 3	See Note 3
at 40% compression		N/cm (lb/in)	6.1 (3.5)	See Note 3	
Temperature Range		^{0}C	-50 to 85C	-50 to 85C	-50 to 125C
Flammability Rating	UL 94		V0	V0	TBD
Curing Requirements	**Test Method**	**Units**	**SNN45-SP**	**SNL55-SP**	**SNC50-SP**
Cure Conditions					
Time Before Handling			1 hour	1 hour	1 hour
98% Cure			6 hours	6 hours	6 hours

Features and Benefits:

- Small consistent bead can be applied to thin walls, saving labor and eliminating material waste
- Soft compressible materials
- Dispense on metal or plastic
- Automated process capable of irregular shapes and tight tolerances

Applications:

- Cell phones
- Cellular base stations
- Hand held devices
- Electromedical devices

Notes:

1. Compression/deflection bead size 0.5 mm x 0.6 mm
2. The results are typical for known applications. Please check with Laird Application Engineering for specific customer applications.
3. Contact Laird Application Engineering for test data.

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

FABRIC-OVER-FOAM

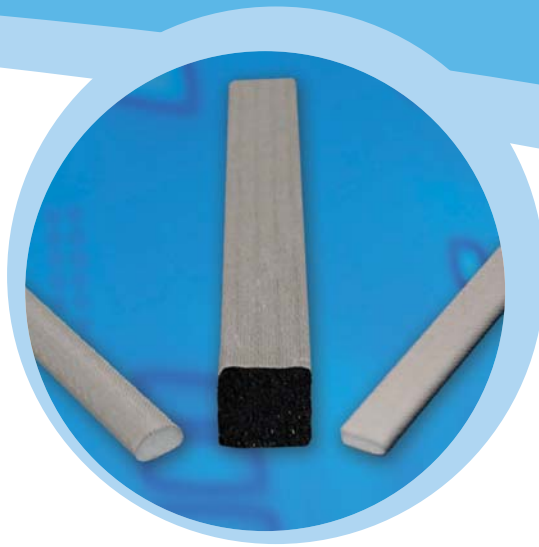
Fabric-Over-Foam

Laird Technologies is a fully integrated manufacturer of profile EMI shielding gaskets.

The Metallized Fabric-Over-Foam product line has been expanded greatly due to committed efforts in new product development and meeting or surpassing regulatory requirements such as RoHS and WEEE initiatives. Laird Technologies offers an EcoGreen™ product which is both UL 94 V0 as well as halogen-free.

Laird Technologies specializes in quick turnaround of custom shapes and sizes.

Laird Technologies' engineers help design the right solution to any shielding problem.



MULTIPLE STANDARD PROFILES AVAILABLE

Flexible design options

Laird Technologies Fabric-Over-Foam products are available in a wide range of shapes and sizes offering a diverse selection when addressing your EMI concerns. Fabric-Over-Foam gaskets are available in profiles that are cut to length.

FABRIC

Fabric Types	Metal Coating	Conductivity (ASTM F390*)	Application	Benefits
Taffeta	Ni/Cu	< 0.07 ohms/square	Profile gaskets	Complex shapes, Flame retardant, Shear resistance

FOAM

Foam Types	Compression Set (ASTM D 3574*)	Color	Application	Benefits
Urethane (Polyester)	5 to 10%	Charcoal	Profile or I/O gaskets	Simple-moderate shapes, Low compression gasket, Flame retardant
Sculpted Urethane (Polyether)	5 to 10%	Tan	Complex profile gaskets	Complex shapes, Low compression gasket, Flame retardant

PRESSURE SENSITIVE ADHESIVE

Pressure Sensitive Adhesive	Thickness	Benefits
Acrylic Non-conductive	0.005"	High Peel Strength, Temperature Resistant
Acrylic Conductive	0.004"	Electrically Conductive in Z-Axis Direction

Diverse Assembly Options

A sampling for standard profiles are shown on the following pages; custom configurations and sizes can be designed to meet your specific requirements.

Pressure sensitive adhesive (PSA) can be complemented with the Easy Peel® release liner.

Part Number Example:

Digits: 1 2 3 4 5 6 7 8 9 10 11 12 13 14

4 6 9 3 - P A - 5 1 H - 0 1 2 0 0

- **Profile Shape & Size**
- **Attachment & Part Specific Details**: AA = No PSA; PA = With PSA
- **Core Materials**: H = Sculpted Urethane; 5 = Soft Urethane
- **Flame Rating**: 1 = UL94 V0
- **Fabric Cover**: H= Ni/Cu Taffeta
- **Part Length**

See back cover for contact information.

Digits 1 through 4

Designate profile number.

Digits 5 through 6

Designate pressure sensitive adhesive (PSA) attributes of the product.

Digits 7 through 9

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

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 (304,8mm) long gasket).

*Modified

Features and Benefits:

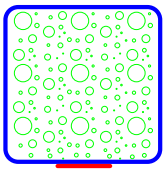
- Shielding effectiveness of >100dB across a wide spectrum of frequencies
- Extremely low compression forces allow for use of lighter materials
- Low surface resistivity of <0.07ohms/square (ASTM F390*)
- Wide range of flame retardant gaskets available (UL recognized per UL94 V0). UL yellow cards available on request
- Abrasion resistant metallized fabric shows virtually no degradation in shielding performance after 800,000 cycles (ASTM D3886*)
- Urethane foam core provides low compression set ensuring long-term reliable gasket performance
- Service temperatures from -40°F to 158°F (-40°C to 70°C)
- Customer supplied drawings in all conventional CAD formats via the virtual design tool at www.lairdtech.com to ensure to ensure quick design evaluation

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

MULTIPLE STANDARD PROFILES AVAILABLE

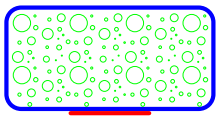
A list of standard profiles is shown on the following pages. Custom configurations and sizes can be designed to meet your non-standard applications.

SQUARE SHAPE



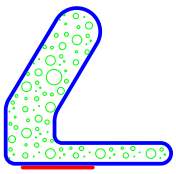
Laird Technologies Part Number	UL 94 Rating	Shape	Height IN (mm)	Width IN (mm)	Pressure sensitive adhesive (PSA) in (mm)
4046-PA-51H	V0	Square	0.118 (3,00)	0.118 (3,00)	0.050 (1,27)
4522-PA-51H	V0	Square	0.157 (3,99)	0.157 (3,99)	0.075 (1,91)
4212-PA-51H	V0	Square	0.195 (4,95)	0.195 (4,95)	0.075 (1,91)
4049-PA-51H	V0	Square	0.250 (6,35)	0.250 (6,35)	0.100 (2,54)
4695-PA-51H	V0	Square	0.375 (9,52)	0.375 (9,52)	0.125 (3,18)
4206-PA-51H	V0	Square	0.395 (10,03)	0.395 (10,03)	0.187 (4,75)
4084-PA-51H	V0	Square	0.500 (12,70)	0.500 (12,70)	0.250 (6,35)

RECTANGLE SHAPE



4245-PA-51H	V0	Rectangle	0.040 (1,02)	0.120 (3,05)	0.050 (1,27)
4223-PA-51H	V0	Rectangle	0.040 (1,02)	0.157 (3,99)	0.075 (1,91)
4220-PA-51H	V0	Rectangle	0.040 (1,02)	0.200 (5,08)	0.100 (2,54)
4208-PA-51H	V0	Rectangle	0.040 (1,02)	0.395 (10,03)	0.187 (4,75)
4056-PA-51H	V0	Rectangle	0.060 (1,52)	0.200 (5,08)	0.075 (1,91)
4164-PA-51H	V0	Rectangle	0.060 (1,52)	0.750 (19,05)	0.050 (1,27) x 2
4688-PA-51H	V0	Rectangle	0.079 (2,01)	0.118 (3,00)	0.050 (1,27)
4094-PA-51H	V0	Rectangle	0.080 (2,03)	0.160 (4,06)	0.075 (1,91)
4186-PA-51H	V0	Rectangle	0.080 (2,03)	0.200 (5,08)	0.075 (1,91)
4096-PA-51H	V0	Rectangle	0.080 (2,03)	0.275 (6,99)	0.100 (2,54)
4357-PA-51H	V0	Rectangle	0.080 (2,03)	0.394 (10,01)	0.125 (3,18)
4286-PA-51H	V0	Rectangle	0.118 (3,00)	0.394 (10,01)	0.187 (4,75)
4209-PA-51H	V0	Rectangle	0.120 (3,05)	0.155 (3,94)	0.075 (1,91)
4788-PA-51H	V0	Rectangle	0.125 (3,18)	0.250 (6,35)	0.125 (3,18)
4694-PA-51H	V0	Rectangle	0.125 (3,18)	0.500 (12,70)	0.250 (6,35)
4239-PA-51H	V0	Rectangle	0.125 (3,18)	1.615 (41,02)	0.125 (3,18) x 2
4693-PA-51H	V0	Rectangle	0.130 (3,30)	0.190 (4,83)	0.100 (2,54)
4701-PA-51H	V0	Rectangle	0.250 (6,35)	0.375 (9,52)	0.125 (3,18)
4795-PA-51H	V0	Rectangle	0.250 (6,35)	0.500 (12,70)	0.187 (4,75)
4081-PA-51H	V0	Rectangle	0.375 (9,52)	0.500 (12,70)	0.250 (6,35)

C-FOLD SHAPE



4593-PA-H1K	V0	C-Fold	0.250 (6,35)	0.280 (7,11)	0.125 (3,18)
4168-PA-H1K	V0	C-Fold	0.315 (8,00)	0.315 (8,00)	0.125 (3,18)
4198-PA-H1K	V0	C-Fold	0.385 (9,78)	0.420 (10,67)	0.125 (3,18)
4243-PA-H1K	V0	C-Fold	0.400 (10,16)	0.430 (10,92)	0.187 (4,75)
4600-PA-H1K	V0	C-Fold	0.415 (10,54)	0.450 (11,43)	0.187 (4,75)
4529-PA-H1K	V0	C-Fold	0.465 (11,81)	0.420 (10,67)	0.187 (4,75)
4697-PA-H1K	V0	C-Fold	0.675 (17,15)	0.590 (14,99)	0.250 (6,35)

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

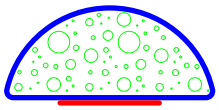
Virtual Design Center
zoom. move. rotate.

3D MODELS OR 2D DRAWINGS ARE READILY AVAILABLE IN ALL CONVENTIONAL CAD FORMATS

Visit www.lairdtech.com to configure and download a 3D model or 2D drawing of any Fabric-over-Foam (FoF) EMI gasket listed in this catalog into your application today.

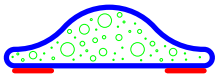
Laird Technologies Part Number	UL 94 Rating	Shape	Height IN (m,m)	Width IN (mm)	Pressure sensitive adhesive (PSA) in (mm)
4184-PA-51H	V0	D-Shape	0.060 (1,52)	0.150 (3,81)	0.075 (1,91)
4283-PA-51H	V0	D-Shape	0.079 (2,01)	0.157 (3,99)	0.075 (1,91)
4053-PA-51H	V0	D-Shape	0.090 (2,29)	0.090 (2,29)	0.050 (1,27)
4912-PA-51H	V0	D-Shape	0.090 (2,29)	0.150 (3,81)	0.075 (1,91)
4742-PA-51H	V0	D-Shape	0.120 (3,05)	0.150 (3,81)	0.075 (1,91)
4202-PA-51H	V0	D-Shape	0.120 (3,05)	0.250 (6,35)	0.100 (2,54)
4078-PA-51H	V0	D-Shape	0.120 (3,05)	0.360 (9,14)	0.187 (4,75)
4692-PA-51H	V0	D-Shape	0.140 (3,56)	0.250 (6,35)	0.100 (2,54)
4228-PA-51H	V0	D-Shape	0.150 (3,81)	0.150 (3,81)	0.075 (1,91)
4123-PA-51H	V0	D-Shape	0.150 (3,81)	0.354 (8,99)	0.075 (1,91)
4609-PA-51H	V0	D-Shape	0.180 (4,57)	0.400 (10,16)	0.187 (4,75)
4787-PA-51H	V0	D-Shape	0.200 (5,08)	0.250 (6,35)	0.075 (1,91)
4242-PA-51H	V0	D-Shape	0.250 (6,35)	0.250 (6,35)	0.100 (2,54)
4789-PA-51H	V0	D-Shape	0.250 (6,35)	0.375 (9,52)	0.187 (4,75)
4105-PA-51H	V0	D-Shape	0.375 (9,52)	0.500 (12,70)	0.250 (6,35)
4060-PA-51H	V0	D-Shape	0.500 (12,70)	0.500 (12,70)	0.250 (6,35)

D- SHAPE



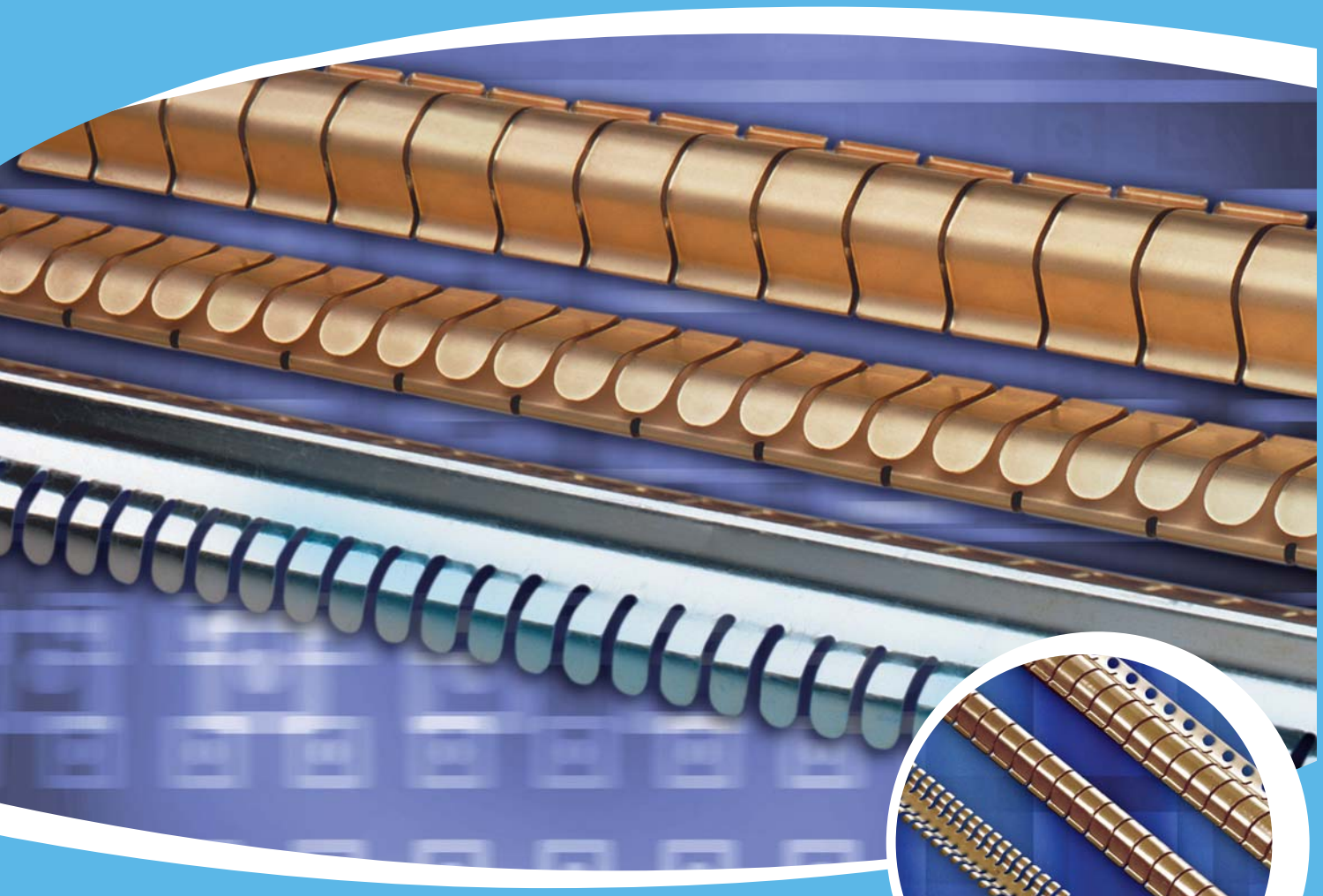
4630-PA-51H	V0	Bell	0.070 (1,78)	0.180 (4,57)	0.075 (1,91)
4633-PA-51H	V0	Bell	0.100 (2,54)	0.300 (7,62)	0.075 (1,91) x 2
4379-PA-51H	V0	Bell	0.069 (1,75)	0.564 (14,33)	0.075 (1,91) x 2
4A58-PA-51H	V0	Bell	0.152 (3,86)	0.235 (5,97)	0.100 (2,54)
4B88-PA-51H	V0	Bell	0.090 (2,29)	0.315 (8,00)	0.075 x 2 (1,91)
4882-PA-51H	V0	Bell	0.120 (3,05)	0.600 (15,24)	0.100 (2,54) x 2
4131-PA-51H	V0	Bell	0.140 (3,56)	0.500 (12,70)	0.100 (2,54) x 2

BELL SHAPE



For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

FINGERSTOCK



Fingerstock

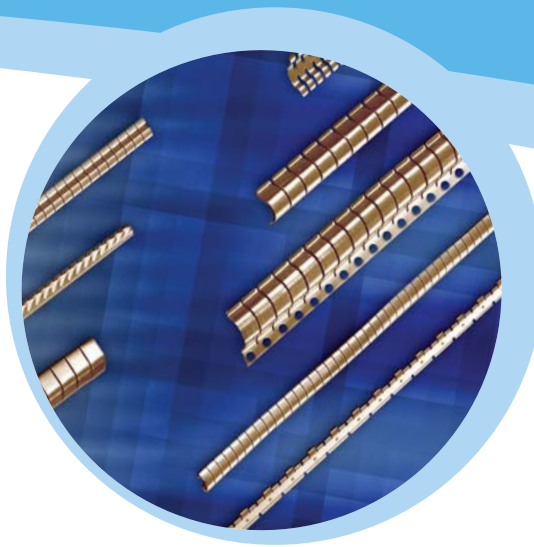
Engineered metal Fingerstock solutions from Laird Technologies dates from 1938. Laird Technologies specializes in designing miniature parts of thin strip metal in quantities ranging from thousands of pieces to millions of pieces.

With over 3,400 standard parts, Laird Technologies probably already has an off-the-shelf solution that meets your application's requirements.

When custom designs are needed, Laird Technologies' engineering staff helps construct efficiencies in performance, cost and manufacturability from the very beginning stages of the application.

Laird Technologies' specialized capabilities:

- Assembly *(both hand and automatic)*
- Heat treating
- Multislide equipment
- Plating
- Prototype fabrication
- Riveting
- Wire EDM
- Heat staking
- In-house die and fixture manufacturing
- Photoetching
- Progressive die stamping
- Resistance welding
- Secondary fabrication



Ultrasoft® Series

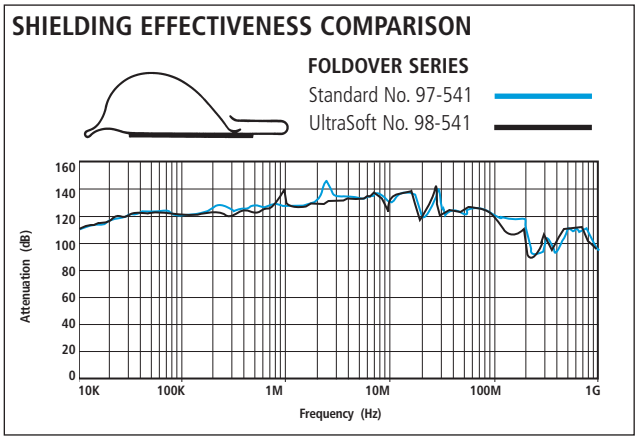
UltraSoft® fingers have been designed for communications, computers and electronic systems designers concerned with EMI compliance and lightweight enclosure designs. Available in the same full range of standard configurations, UltraSoft fingers offer designers greater flexibility and versatility than ever before —permitting more extensive use of lighter, thinner construction materials to help cut costs and/or enhance system performance.

The unique advantages of UltraSoft (98-Series) fingers include:

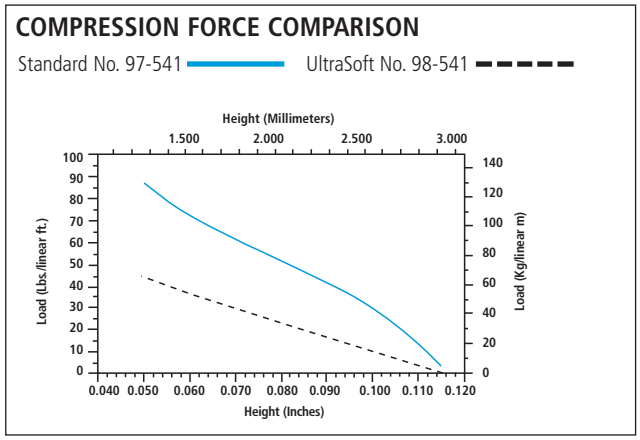
- The lowest compression forces in the industry
- Increased life cycle
- Shielding effectiveness comparable to similarly configured standard 97-Series parts
- Wide selection of sizes and configurations
- Low compression force version available for virtually every standard shielding product

UltraSoft (98-Series) products are available in the same lengths as the standard (97-Series) products. Please refer to the appropriate standard product pages for specific information. All UltraSoft products are also available in your choice of finishes.

SHIELDING EFFECTIVENESS COMPARISON



COMPRESSION FORCE COMPARISON



Recyclable Clean Copper™

Recyclable Clean Copper products meld strong stability and tensile strength with high levels of thermal and electrical conductivity making it suitable for utilization in both grounding and shielding applications at a cost that is comparable with traditional metal EMI shields. Shielding effectiveness is similar to other copper alloys with values over 100 dB shielding effectiveness readily achieved.

Recyclable Clean Copper is fully compliant to EU Directive 2002/95/EC and alleviates the environmental, safety and segregation concerns associated with the traditional use and recycling of beryllium-based copper alloys.

This alternative material exhibits excellent corrosion resistance, platability, solderability and stress relaxation properties. It is characterized by superior yield strength (around 1000 MPa), and excellent elastic resilience compared to other common copper alloys.

The product is targeted at high volume designs. Custom stampings are available upon customer request. As with all of Laird Technologies metal fingerstock gaskets, Recyclable Clean Copper is completely flameproof. This preliminary catalog presents some typical RCC products. For mounting methods and other specific product information, please see Laird Technologies catalog "Fingerstock, Gaskets and Metal Grounding Products".

Recyclable Clean Copper (RCC) beryllium-free EMI shielding offers customers an excellent alternative to beryllium containing alloys (BeCu) in a wide range of slotted applications. The conversion of part number (Stock Item) of BeCu to RCC:

BeCu	RCC
0077-	0067-
0c77-	0c67-
0097-	0087-
0c97-	0c87-
0078-	0068-
0c78-	0c68-
0098-	0088-
0c98-	0c88-

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

Fingerstock gaskets and metal grounding products

Symmetrical (S^3) Slotted Shielding

Slot Mount Series

Dual Slot Mount Series

Alternate Slot Mount

Variable Slot Mount

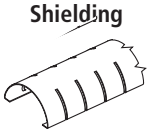
All-Purpose Series

Low Profile Hook-On Gasket

Low Profile Gasket

Large Enclosure Series

Solid Top (S^3) Symmetrical Slotted Shielding



Twist Series

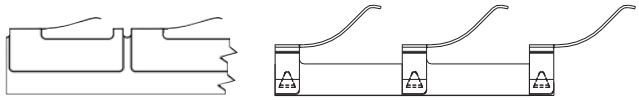
Flexible Low Compression Series

Foldover Series

Clip-On Series

Card Guide Clip-On

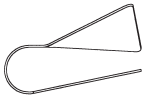
Divider Edge Shield



Mini-Longitudinal Grounding Gasket

Longitudinal Grounding Series

Clip-On Twist Series



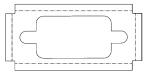
Contact Strips

Clip-On Perpendicular Grounding Strip

Clip-On Perpendicular Shielding

Metal Connector Shields

"D" Connector Series



USB Connector

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

Part No.	Product	Height IN (m,m)	Width IN (m,m)	Length IN (m,m)
77-010	SLOT MOUNT SERIES	0.320 (8,128)	0.100 (2,794)	16 (406,400)
77-012	NO SNAG GASKET	0.320 (8,128)	0.100 (2,794)	24 (609,600)
77-015	SLOT MOUNT SERIES	0.600 (15,240)	0.220 (5,588)	0.250 (6,350) SINGLE FINGER
77-016	SLOT MOUNT SERIES	0.320 (8,128)	0.100 (2,794)	0.169 (4,293) SINGLE FINGER
77-017	SLOT MOUNT SERIES	0.320 (8,128)	0.100 (2,794)	0.356 (9,042) TWO FINGERS
77-018	SLOT MOUNT SERIES	0.320 (8,128)	0.100 (2,794)	0.543 (13,792) THREE FINGERS
77-033	NO SNAG GASKET	0.370 (9,398)	0.130 (3,302)	16 (406,400)
77-043	LOW PROFILE GASKET	0.450 (11,430)	0.080 (2,032)	16 (406,400)
77-056	VARIABLE SLOT MOUNT	0.320 (8,128)	0.110 (2,794)	16 (406,400)
77-057	VARIABLE SLOT MOUNT	0.600 (15,240)	0.220 (5,588)	16 (406,400)
77-066	VARIABLE SLOT MOUNT	0.320 (8,128)	0.110 (2,794)	16 (406,400)
77-072	LOW PROFILE HOOK-ON	0.600 (15,240)	0.090 (2,286)	16.2 (411,5)
77-098	ALTERNATE SLOT SERIES	0.320 (8,128)	0.110 (2,794)	14.590 (370,586)
97-221	CONTACT STRIPS	0.130 (3,302)	0.070 (1,778)	12 (305)
97-310	CONTACT STRIPS	0.480 (12,192)	0.070 (1,778)	15 (381)
97-380	CONTACT STRIPS	0.190 (4,826)	0.090 (2,286)	16 (406) LENGTH
97-381	FEMALE CONTACT RING	0.190 (4,826)	0.090 (2,286)	O.D. 1.210 (30.734)
97-438	LARGE ENCLOSURE SERIES	1.090 (27,686)	0.250 (6,350)	25' (7.6 m) COILS
97-500	ALL-PURPOSE GASKET	0.600 (15,240)	0.230 (5,842)	24 (610)
97-505	ALL-PURPOSE GASKET	0.600 (15,240)	0.230 (5,842)	24 (610)
97-515	FOLDOVER SERIES	0.760 (19,304)	0.230 (5,842)	24 (610)
97-520	ALL-PURPOSE GASKET	0.370 (9,398)	0.140 (3,556)	16 (406)
97-521	FOLDOVER SERIES	0.510 (12,954)	0.140 (3,556)	16 (406)
97-536	ALL-PURPOSE GASKET	0.670 (17,018)	0.310 (7,874)	24 (610)
97-537	ALL-PURPOSE GASKET	1.130 (28,702)	0.410 (10,414)	12 (305)
97-538	ALL-PURPOSE GASKET	0.780 (19,812)	0.250 (6,350)	24 (610)
97-540	ALL-PURPOSE GASKET	0.280 (7,112)	0.110 (2,794)	16 (406)
97-542	FOLDOVER SERIES	0.250 (7,112)	0.110 (2,794)	16 (406)
97-550	TWIST SERIES	0.230 (6,350)	0.080 (2,032)	24 (610)
97-551	TWIST SERIES	0.160 (4,064)	0.030 (0,762)	24 (610)
97-552	CLIP-ON TWIST SERIES	0.150 (3,810)	0.030 (0,762)	16 (406)
97-555	TWIST SERIES	0.340 (8,636)	0.030 (0,762)	24 (610)
97-558	TWIST SERIES	0.200 (5,080)	0.070 (1,778)	24 (610)
97-559	TWIST SERIES	0.300 (7,620)	0.070 (1,778)	24 (610)
97-560	TWIST SERIES	0.500 (12,700)	0.070 (1,778)	24 (610)
97-563	CLIP-ON TWIST SERIES	0.210 (5,334)	0.070 (1,778)	16 (406)
97-606	CLIP-ON GASKET	0.380 (9,652)	0.200 (5,080)	16 (406)
97-607	CLIP-ON GASKET	0.330 (8,382)	0.280 (7,112)	16 (406)
97-612	CLIP-ON GASKET	0.440 (11,176)	0.100 (2,540)	16 (406)
97-613	CLIP-ON GASKET	0.300 (7,620)	0.100 (2,540)	16 (406)
97-645	CLIP-ON GASKET	0.210 (5,334)	0.070 (1,778)	24 (609)
97-654	DIVIDER EDGE SHIELD	0.183 (4,648)	0.064 (1,626)	12 (305)
97-655	CLIP-ON PERPENDICULAR GROUNDING STRIP	0.305 (7,747)	0.070 (1,778)	12 (305)
97-656	CLIP-ON PERPENDICULAR SHIELDING	0.544 (13,818)	0.250 (6,350)	16 (406)

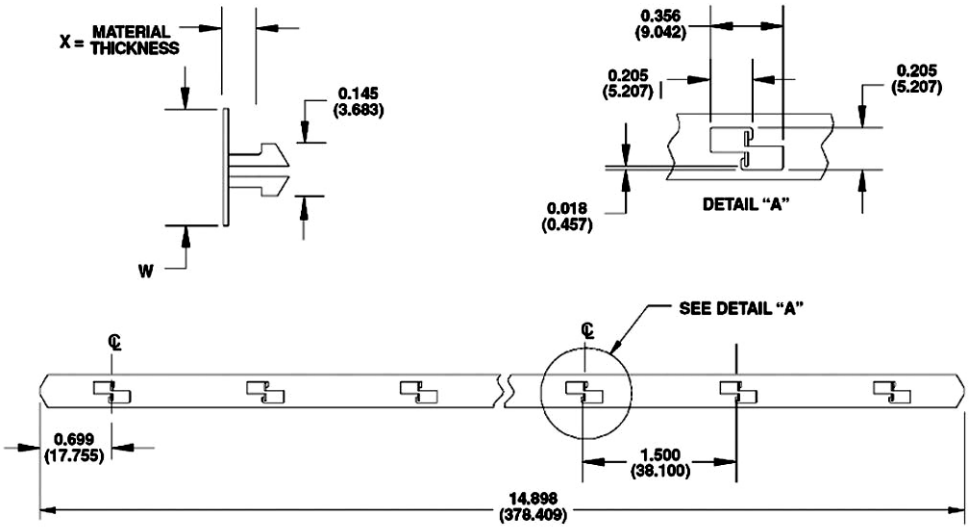
For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

Part No.	Product	Height IN (m,m)	Width IN (m,m)	Length IN (m,m)
97-728	USB CONNECTOR GASKET	0.511 (12,979)	0.448 (11,379)	
97-770	D CONNECTOR SERIES	0.690 (17,526)	0.025 (0,635)	25 PIN STAINLESS STEEL
97-771	D CONNECTOR SERIES	0.690 (17,526)	0.025 (0,635)	37 PIN STAINLESS STEEL
97-780	D CONNECTOR SERIES	0.690 (17,526)	0.025 (0,635)	PIN BERYLLIUM COPPER
97-913	SOLID TOP SYMMETRICAL SLOTTED SHIELDING	0.620 (15,748)	0.220 (5,588)	15 (381)
97-915	SOLID TOP SYMMETRICAL SLOTTED SHIELDING	0.450 (11,430)	0.140 (3,556)	15 (381)
97-918	SOLID TOP SYMMETRICAL SLOTTED SHIELDING	0.350 (8,890)	0.110 (2,794)	15 (381)
97-941	FLEXIBLE LOW COMPRESSION SERIES	0.200 (5,080)	0.170 (4,318)	24 (610)
97-954	SYMMETRICAL SLOTTED SHIELDING	0.450 (11,430)	0.140 (3,556)	15 (381)
97-955	SYMMETRICAL SLOTTED SHIELDING	0.450 (11,430)	0.140 (3,556)	15 (381)
97-957	SYMMETRICAL SLOTTED SHIELDING	0.350 (8,890)	0.110 (2,794)	15 (381)
97-974	MINI-LONGITUDINAL GROUNDING GASKET	0.180 (4,572)	0.145 (3,683)	16 (406)
97-975	LONGITUDINAL GROUNDING SERIES	0.600 (15,240)	0.300 (7,620)	18.75 (476)
97-983	CARD GUIDE CLIP-ON	0.080 (2,032)	0.256 (6,502)	

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

Universal Mounting

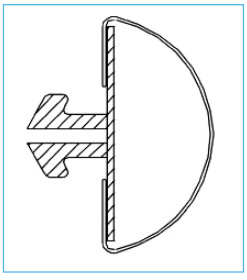
A stainless steel mounting track is available for use with our full line of gasketing materials. Its unique design offers a secure mounting option versatile enough for use with Fingerstock, ElectroNit® mesh, ElectroSeal elastomers, UltraSoft® Knit and Fabric-Over-Foam products.



To identify proper mounting track, select width and corresponding part number from the above chart. Replace the "X" with required material thickness.

PART NUMBER	WIDTH IN (MM)
0095-X996-00	0.310 (7,874)
0095-X997-00	0.430 (10,922)
0095-X998-00	0.600 (15,240)

MATERIAL THICKNESS IN (MM)
A = 0.030 (0,762)
B = 0.045 (1,143)
C = 0.060 (1,524)
D = 0.090 (2,286)
E = 0.150 (3,810)



UNIVERSAL MOUNTING

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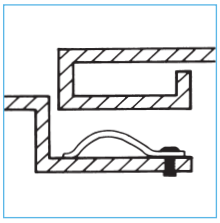
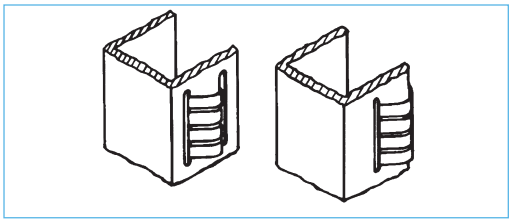
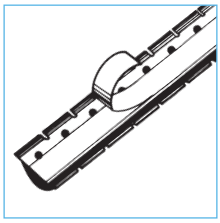


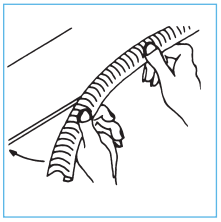
RIVET MOUNT



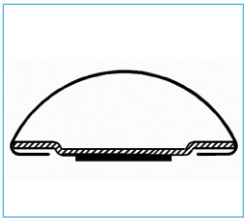
SLOT MOUNT



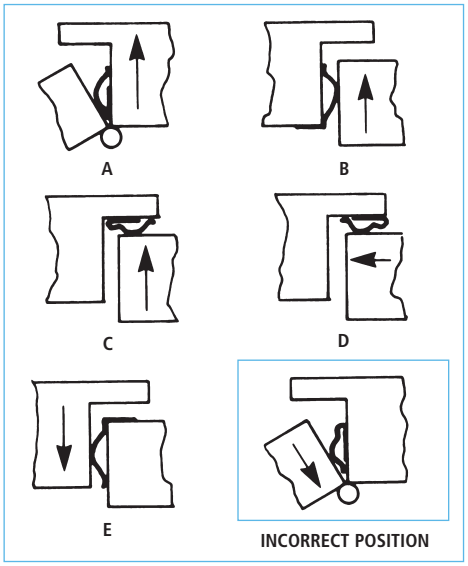
STICKY FINGERS®



CLIP-ON MOUNTING



BI-DIRECTIONAL
ADHESIVE MOUNTING



^ Shielding gaskets may be mounted for either wiping or compression closing applications. Proper positioning of the shielding gasket must take into consideration the closing design and the configuration of the mounting surface.

Laird Technologies' shielding devices may be mounted quickly and easily using any of several different methods. Each installation method is described in the text that follows. However, if you run into a unique situation not resolved by any of these methods, contact Laird Technologies. More than likely Laird Technologies can provide the exact answer you need.

RIVET MOUNT
Riveting produces a tight, long-lasting installation. Either plastic or metal rivets may be used.

SLOT MOUNT
Slot mounted parts are easily installed using slots where bi-directional movement is required. Simply install part into one slot and snap it into the second slot or over the edge of the frame.

ADHESIVE MOUNTING
Sticky Fingers® is an instant, pressure-sensitive adhesive bonding system, ideal for all-purpose contact strips for metal cabinets and electronic enclosures, and is unaffected by temperatures from -67 to 250°F (-55 to121°C).

Simply follow these four easy steps:

1. Remove all grease and oily residue with solvent. Smooth the mounting surface with emery cloth.
2. Peel off protective paper backing.
3. Place gasket in correct position. (See mounting methods diagrams A through E.) Press firmly to ensure a good adhesive bond. Avoid repositioning, which might impair the effectiveness of the adhesive or may bend or kink the strip.

NOTE: On items where fingers cover the solid portion of the gasket, pressure may be applied by inserting a mandrel in the strip and pressing down. For contact strips with Magnefil® insert, simply press down on the fingers.

4. Allow 24 hours minimum curing time.

Standard parts are supplied with nonconductive tape. For rough surface applications, such as flame-sprayed surfaces, 0.010 in (0,254 mm) thick nonconductive tape is recommended. Optional conductive tape is also available. Contact a sales department representative for additional ordering information.

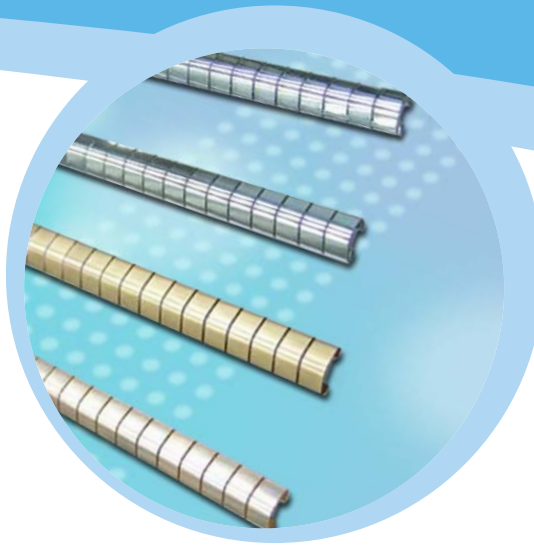
CLIP-ON MOUNTING
Clip-on gaskets hold firmly in place due to their own spring characteristics. Simply push the strips onto the edge or flange of the door or enclosure.

Also available are clip-on gaskets with either "T" or "D" lances.

WELDING
Welded mounting requires simple, traditional welding techniques.

SOLDERING
Solder mounting requires normal low temperature soldering techniques, including cleaning and fluxing of parts with common copper flux materials.

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.



Available plating finishes pictured above (from top to bottom): Tin Plating, Nickel Plating, Ultra-Soft and HT.

REQUIRED FINISH	FINISH	SPECIFICATIONS	I.D.#
Bright Finish	——	——	02
Solderable Unplated	——	——	21
Gold	Gold	ASTM B-488/SAE AMS 2422	03
	Nickel underplate	QQ-N-290 / ASTM B-488	10
Silver	Silver	ASTM B-700	04
Nickel	Dull	QQ-N-290	09
	Bright	QQ-N-290	19
	Engineering (Sulfamate)	SAE AMS 2424	24
Electroless Nickel	Mid Phos Electroless Nickel	MIL-C-26074	18
Tin	Satin/Matte	ASTM B-545	08
	Bright	ASTM< B-545	17
ZInc	Yellow Chromate	SAE AMS 2402	16
	Clear Chromate	SAE AMS 2402	15

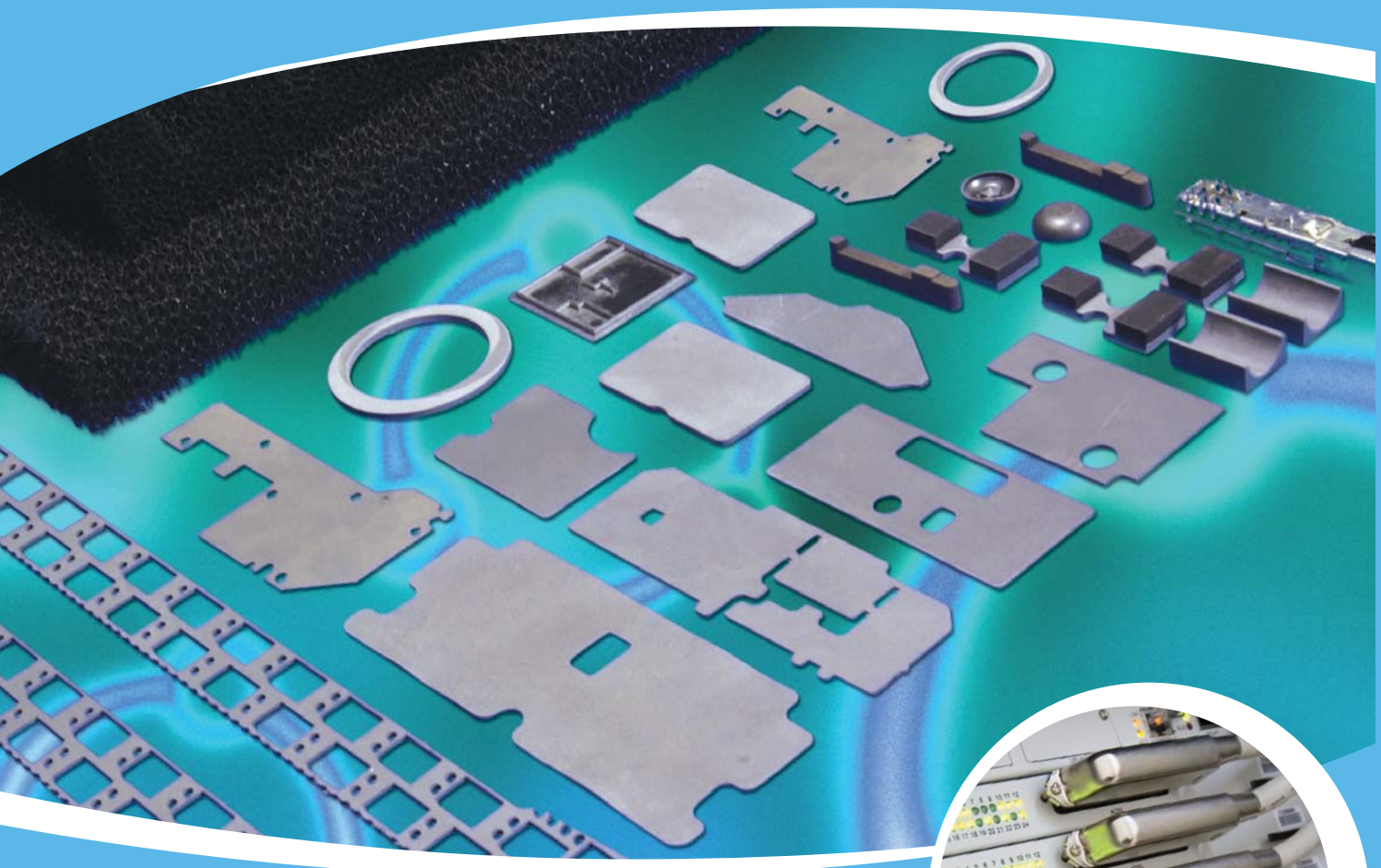
**Not recommended for Foldover Series*

GROUP NUMBER	COMMON METAL SURFACES METALLURGICAL CATEGORY	ANODIC INDEX,V
1	Gold; Au-Pt alloys; wrought platinum; graphite carbon	0.00
2		0.05
3	Rhodium plating	0.10
4	Silver; high-silver alloys	0.15
5		0.20
6		0.25
7	Nickel; nickel-copper alloys; titanium, titanium alloys; Monel	0.30
8	Beryllium copper; low brasses or bronzes; silver solder; copper; Ni-Cr alloys; austenitic corrosion-resistant steels; most chrome-moly steels; specialty high-temp stainless steels	0.35
9	Commercial yellow brasses and bronzes	0.40
10	High brasses and bronzes; naval brass; Muntz metal	0.45
11	18% Cr type corrosion resistant steels; common 300 series stainless steels	0.50
12		0.55
13	Chromium or tin plating; 12% Cr type corrosion resistant steels; most 400 series stainless steels, i.e., 410 and some cast stainless steels	0.60
14	Terneplate; tin-lead solder	0.65
15	Lead; high-lead alloys	0.70
16	Wrought 2000 series aluminum alloys	0.75
17		0.80
18	Wrought gray or malleable iron; plain carbon and low-alloy steels; armco iron; cold-rolled steel	0.85

GROUP NUMBER	COMMON METAL SURFACES METALLURGICAL CATEGORY	ANODIC INDEX,V
19	Wrought aluminum alloys except 2000 series cast Al-Si alloys; 6000 series aluminum	0.90
20	Cast aluminum alloys other than Al-Si; cadmium plating	0.95
21		1.00
22		1.05
23		1.10
24		1.15
25	Hot-dip galvanized or electrogalvanized steel	1.20
26	Wrought zinc; zinc die casting alloys	1.25
27		1.30
28		1.35
29		1.40
30		1.45
31		1.50
32		1.55
33		1.60
34		1.65
35		1.70
36	Wrought and cast magnesium alloys	1.75
37		1.80
38	Beryllium	1.85

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

MICROWAVE ABSORBERS



Microwave Absorbers

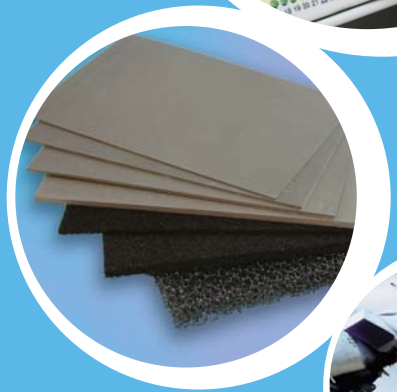
Microwave Absorbers are increasingly being used to enhance shielding performance at higher frequencies. Laird Technologies offers a wide product range for the EMC design engineer.

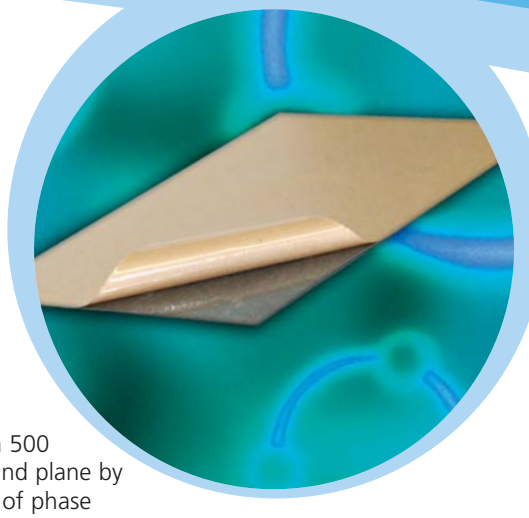
Die-cut elastomers, foams, thermoplastics and custom solutions can aid in a wide variety of problems such as internal cavity resonances, antenna pattern shaping and high-frequency interference.

Where there's a problem, Laird Technologies designs a solution.

Microwave-absorbing material technology is experiencing a growing and widespread interest among design engineers. As the name implies, microwave-absorbing materials are coatings whose electrical and/or magnetic properties have been altered to allow absorption of microwave energy at discrete or broadband frequencies. Several techniques are used to achieve these properties.

Laird Technologies' goal as the absorber manufacturer is balancing electrical performance, thickness, weight, mechanical properties and cost.





Q-ZORB™

RFSB – SINGLE BAND

DISCRETE FREQUENCIES, REDUCED ENERGY REFLECTIONS

Durable, available in variety of dimensions

Typical applications for the Q-ZORB RFSB – Single Band are WLAN, basestations, point to point antenna systems, automotive radars, optical communication equipment, high speed switches, servers, wireless PC cards, wireless antenna cross talk, cellular phones, digital cameras, notebook PCs, amplifiers, oscillators and board level interference issues.

Q-ZORB RFSB – Single Band absorbers are resonantly tuned to discrete frequencies between 500 MHz and 100 GHz. They are designed to reduce energy reflections off of a conductive ground plane by > 99% (-20dB) at normal angles of incidence. The performance is based upon the principle of phase cancellation by the incident energy reflection being out of phase with the ground plane reflection.

Q-ZORB RFSB – Single Band lowers the noise or cavity Q in microwave components. Made from flexible elastomeric material, Q-ZORB RFSB – Single Band will not crack or break yet very thin for compact applications. Pressure sensitive adhesive (PSA) backing can be supplied. Q-ZORB RFSB – Single Band material can be sold as sheet material, can easily be die cut or supplied in kiss cut pads. Typically tooling costs are inexpensive steel ruled dies on this product. UL V0 flame rating available. Environmentally safe: Lead/Halogen-free, RoHS compliant.

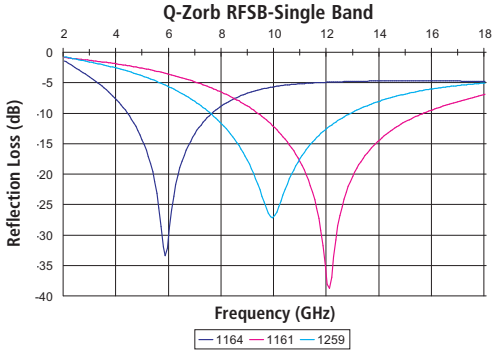
Product Category	Elastomer Type	P/N	Thickness in (mm)	Frequency (GHz)	Other
RFSB	Silicone	1236	0.132 (3,4)	2.0	PSA
RFSB	Silicone	1267	0.105 (2,7)	3.0	PSA
RFSB	Silicone	1167	0.078 (2,0)	4.0	PSA
RFSB	Silicone	1268	0.095 (2,4)	5.0	PSA
RFSB	Silicone	1164	0.082 (2,1)	6.0	PSA
RFSB	Silicone	1269	0.070 (1,8)	7.0	PSA
RFSB	Silicone	1270	0.070 (1,8)	8.0	PSA
RFSB	Silicone	1271	0.068 (1,7)	9.0	PSA
RFSB	Silicone	1259	0.060 (1,5)	10.0	PSA
RFSB	Silicone	1161	0.052 (1,3)	12.0	PSA
RFSB	Silicone	1168	0.045 (1,1)	14.0	PSA
RFSB	Silicone	1160	0.040 (1,0)	16.0	PSA
RFSB	Silicone	1272	0.045 (1,1)	18.0	PSA
RFSB	Silicone	1117	0.045 (1,1)	22.0	PSA
RFSB	Silicone	1273	0.035 (0,9)	24.0	PSA
RFSB	Silicone	1274	0.030 (0,8)	38.0	PSA

** Other: PSA-Pressure Sensitive Adhesive, FR-Fire Retardancy (UL-V0) rated*

Features and Benefits:

- Typical applications: WLAN, basestations, point to point antenna systems, automotive radars, optical communication equipment, high speed switches, servers, wireless PC cards, wireless antenna cross talk, cellular phones, digital cameras, notebook PCs, amplifiers, oscillators, board level interference issues
- Lowers the noise or cavity Q in microwave components
- Flexible elastomeric material will not crack or break
- Very thin for compact applications
- Can be supplied with pressure sensitive adhesive (PSA) backing
- Available in a wide variety of dimensions and can easily be die cut or supplied in kiss cut pads
- Supports a narrow frequency range with excellent reflection loss performance (better than - 20dB). Typical performance bandwidth is +/-5% of designed frequency
- UL V0 flame rating available
- Environmentally safe: Lead/Halogen-free, RoHS compliant

Typical Reflection Loss Properties of Q-Zorb RFSB-Single Band



For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

Q-ZORB™

RFSW – SURFACE WAVE

BROADBAND PERFORMANCE, SURFACE WAVE ATTENUATION

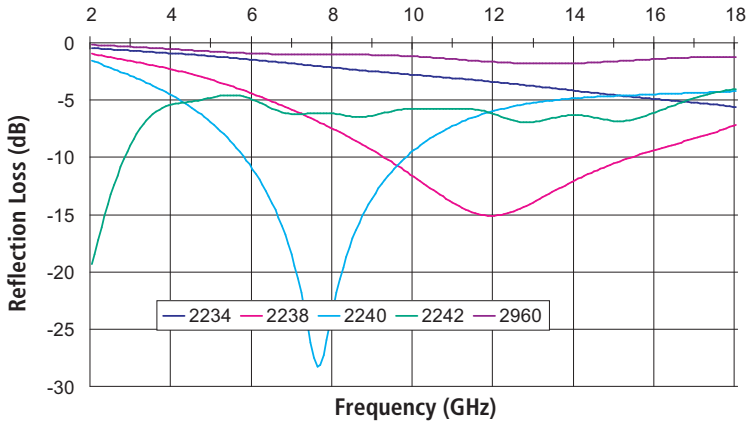
Durable, available in a variety of dimensions

Q-ZORB RFSW surface wave absorbers are thin, magnetically loaded elastomeric sheets designed to provide attenuation at high angles of incidence for surface wave attenuation. They are nominally manufactured in the thickness range of 0.010 in to 0.125 in (0,3mm to 3,2mm).

Several magnetic fillers are available; carbonyl iron powder is standard, but other materials such as iron silicide (FeSi) are used for corrosion resistant applications.

The materials are available in UL fire retardant versions for use in commercial devices. Laird Technologies can provide the material die-cut and with a pressure-sensitive adhesive for ease of installations. Sheets are offered in nominal sizes of 24 in x 24 in (609,6 mm x 609,6 mm), although custom sizes and molded components are available.

Typical Reflection Loss Properties of Q-Zorb RFSW-Surface Wave



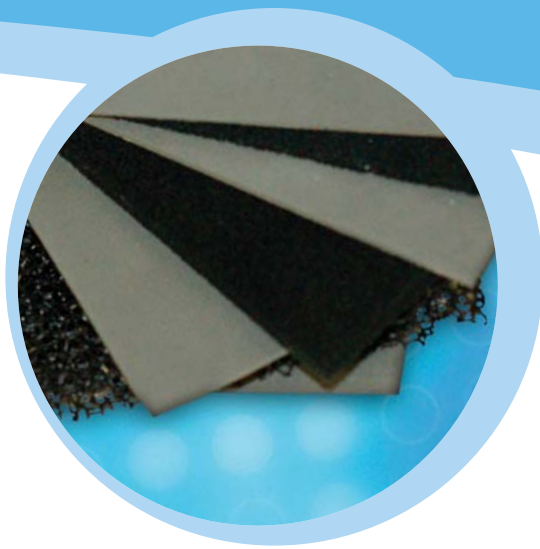
Features and Benefits:

- Typical applications: WLAN, basestations, point to point antenna systems, automotive radars, optical communication equipment, high speed switches, servers, wireless PC cards, wireless antenna cross talk, cellular phones, digital cameras, notebook PCs, amplifiers, oscillators, board level interference issues
- Lowers the noise or cavity Q in microwave components
- Flexible elastomeric material will not crack or break
- Very thin for compact applications
- Can be supplied with pressure sensitive adhesive (PSA) backing
- Available in a wide variety of dimensions and can easily be die cut or supplied in kiss cut pads
- Supports a broad frequency range
- UL V0 flame rating is standard
- Environmentally safe:Lead/Halogen-free, RoHS certified
- Excellent performance at frequencies between 500 MHz and 40 GHz
- Silicone elastomer offers a wide temperature range (-60°F – 350°F)

Product Category	Elastomer Type	P/N	Thickness in (mm)	Frequency (GHz)	Other
RFSW	Silicone	2960	0.010 (0,3)	12-18	PSA
RFSW	Silicone	2234	0.020 (0,5)	12-18	FR, PSA
RFSW	Silicone	2236	0.030 (0,8)	12-18	FR, PSA
RFSW	Silicone	2238	0.040 (1,0)	8-12	FR, PSA
RFSW	Silicone	2296	0.050 (1,3)	8-12	FR, PSA
RFSW	Silicone	2240	0.060 (1,5)	8-12	FR, PSA
RFSW	Silicone	2257	0.080 (2,0)	4-8	FR, PSA
RFSW	Silicone	2272	0.100 (2,5)	2-4	FR, PSA
RFSW	Silicone	2242	0.125 (3,2)	2-4	FR, PSA

** Other: PSA-Pressure Sensitive Adhesive, FR-Fire Retardancy (UL-V0) rated*

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.



Microwave Absorbing Foam

PROVIDES ISOLATION OR SIDE LOBE REDUCTION

Available in different dimensions and die-cuts

Microwave absorbing foam is commonly used around antennas and wireless devices to provide isolation or side lobe reduction.

It can be die-cut into components for EMI reduction inside microwave cavities and is used to manufacture antenna hats and test boxes. It can be encapsulated into a textile cover for use outdoors and fabricated into blankets, covers and other components. Recently, it has been used for a combination air/EMI filter in networking equipment.

The product can be made UL94 HF1 for such applications.

RFRET – Reticulated Foam Absorbers

RFRET is a urethane-based reticulated foam absorber. RFRET is offered with a graded carbon coating providing excellent broadband reflectivity reduction. RFRET with constant carbon loading provides excellent insertion loss. RFRET is useful for antenna sidelobe reduction and pattern enhancement.

RFRET/CV– Convoluted Reticulated Foam Absorbers

RFRET/CV is a convoluted (egg-crate) shaped foam. This shape allows for graded impedance which provides broadband reflectivity. RFRET/CV is useful for shielding enclosures and antenna testing.

RFLS-Lossy Foam Absorbers

RFLS is a single layer "lossy" sheet produced by dipping lightweight open-celled urethane foam into a resistive solution. The end product is a uniform lightweight, loaded sheet material with a specified insertion loss at a given frequency. RFLS offers the lowest cost in microwave absorber products.

RFML – Multilayer Foam Absorbers

RFML is a multilayer foam absorber consisting of three sheets of RFLS material. The layers vary in insertion loss from the front to the back of the material, offering excellent broadband performance.

RFRIGID – Structural Microwave Absorbing Foam

RFRIGID is structural foam with microwave absorbing properties. It is based on the RFRET absorber and is filled with closed-celled structural foam. RFRIGID is an excellent broadband absorber with great toughness and environmental resistance.

Features and Benefits:

- Typical applications: antennas, amplifiers, oscillators, computer housings and wireless equipment
- Lowers the noise or cavity Q in microwave components
- Can be supplied with PSA backing
- Available in a wide variety of dimensions and can easily be die cut
- Excellent performance at low frequencies (>100 MHz)

Product Category	P/N	Thickness (in)	Frequency	Performance	Other
RFLS-22	5163	0.125	3.0 GHz	-10 dB/in I/L	PSA
RFLS-26	5099	0.125	3.0 GHz	-46 dB/in I/L	PSA
RFLS-22	5164	0.250	3.0 GHz	-10 dB/in I/L	PSA
RFLS-26	5102	0.250	3.0 GHz	-46 dB/in I/L	PSA
RFLS-22	5162	0.500	3.0 GHz	-10 dB/in I/L	PSA
RFLS-26	5041	0.500	3.0 GHz	-46 dB/in I/L	PSA
RFRET	4001	0.500	8-18 GHz	-20dB R/L	–
RFRET	4002	0.750	6-18 GHz	-20dB R/L	–
RFRET	4062	1.000	5-18 GHz	-20dB R/L	–
RFRET	4029	1.250	4-18 GHz	-20dB R/L	–
RFCV	4506	1.500	4-18 GHz	-20dB R/L	–
RFCV	4501	3.000	2-18 GHz	-20dB R/L	–

** Other: PSA-Pressure Sensitive Adhesive, FR-Fire Retardancy (UL-V0) rated. R/L-Reflection Loss, I/L-Insertion Loss.*

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

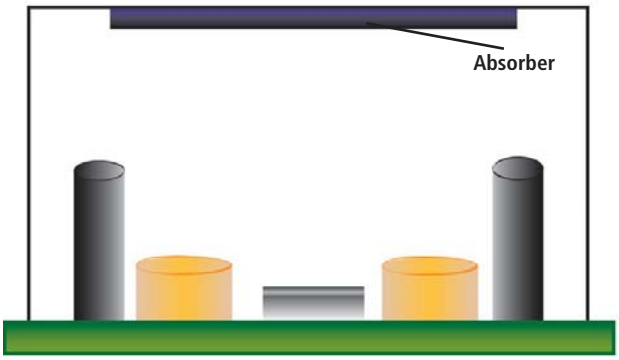
AVAILABLE IN MULTIPLE WAYS TO FIT INDIVIDUAL APPLICATIONS

APPLICATION NOTES

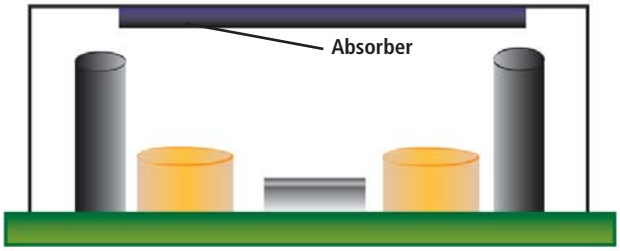
- Inside a shielded box:
  Internal EMI reduction, cavity resonance reduction, used in conjunction with a board level shield
- Applied directly to the top of high speed CPUs, LSIs and Ics
- Suppress surface currents on the rear of an LCD
- Surface wave suppression
- Crosstalk suppression
- Improves antenna gain in RFID applications
- To avoid re-spinning a PCB due to EMI issues
- To absorb noise generated between PC boards
- To absorb noise radiated through openings in shielded cavities

APPLICATION METHODS

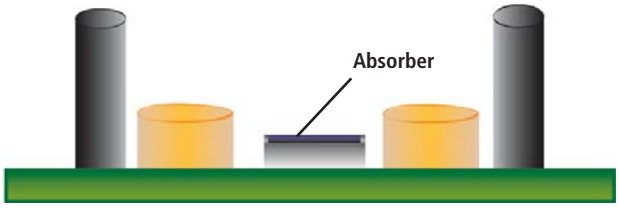
- Microwave Absorbers are most commonly appliedusing pressure sensitive adhesive (PSA).
- RFSW materials are most effective when used in conjunction with a reflective ground plane. This ground plane can be a metal shield, housing, or chassis. Laird Technologies can also provide these materials with an integral ground plane.
- RFLS materials are commonly used in applications where space is limited. These materials are most effective when used in conjunction with a reflective ground plane, but may also be effective when used in a plastic housing.



Inside a shielded box

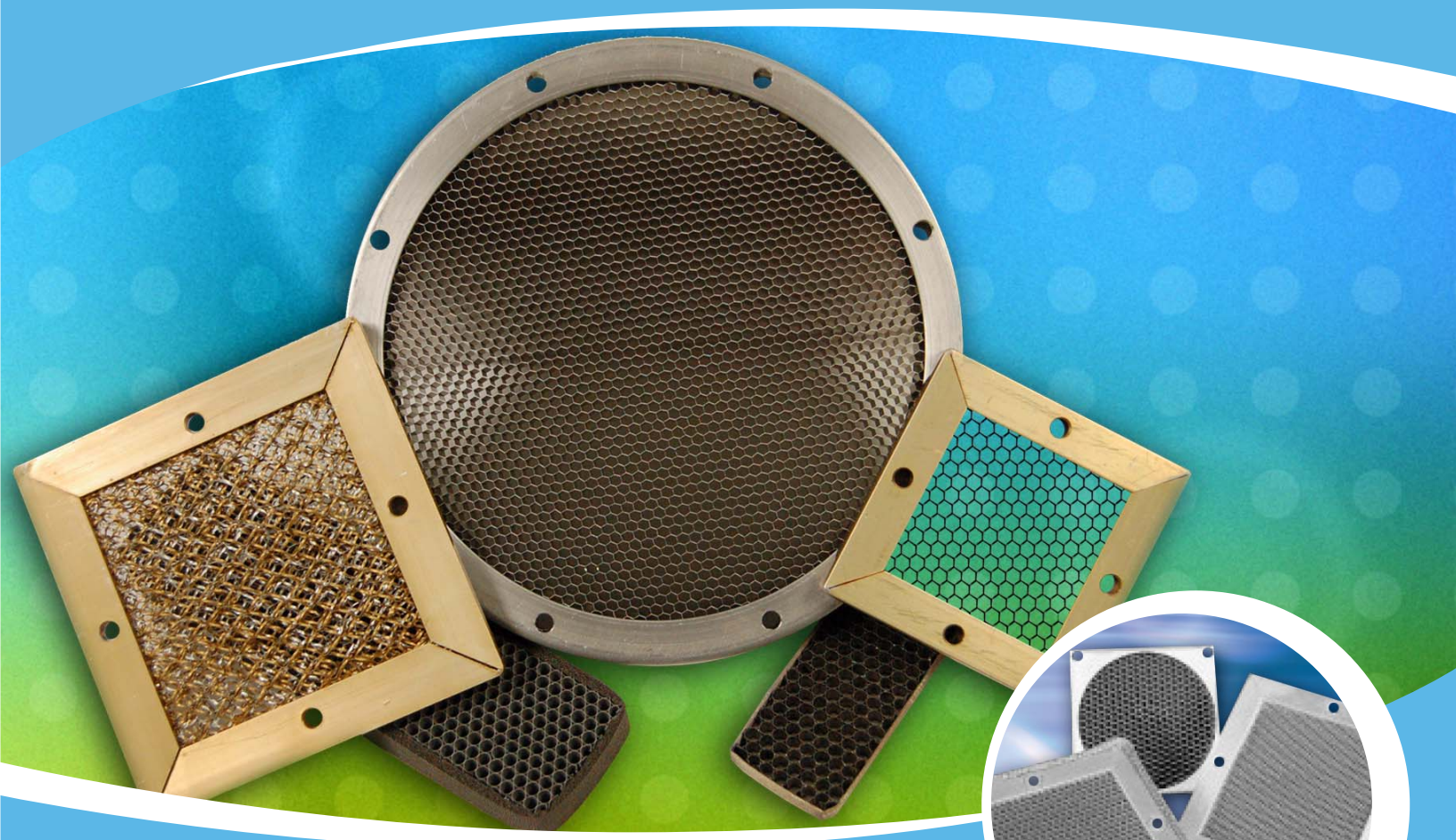


Inside a board level shield



Applied directly to the top of an IC

For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.



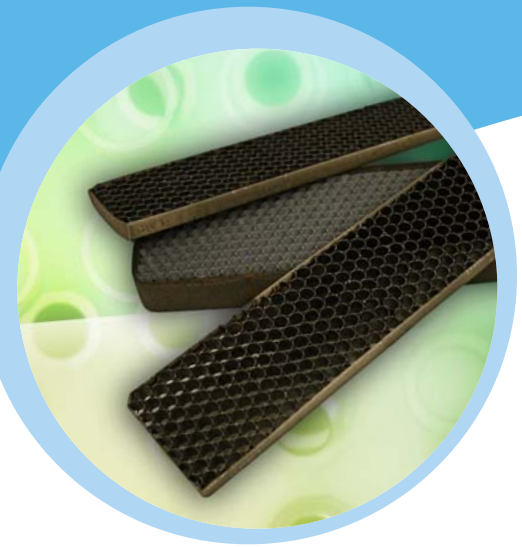
Vent Panels

Laird Technologies has various vent panels to fit specific application needs.

Laird Technologies' shielding ventilation panels are available in a wide array of materials, platings and mounting configurations.

Vent panels offer designers new versatility to meet EMI, environmental and mechanical system requirements.

When custom designs are needed, Laird Technologies' engineering staff helps construct efficiencies in performance, cost and manufacturability from the very beginning stages of the application.



MaxAir™

A DENT RESISTANT VENT PANEL

COMBINING EMI INNOVATION AND COST EFFICIENCY

Laird Technologies' new patented MaxAir vent panel product line provides an innovative cost effective approach for providing increased airflow and EMI protection for telecommunications hardware equipment such as fans and server racks.

This nickel copper plated polycarbonate honeycomb material provides a rigid medium eliminating the need for costly frame designs. This frameless design allows greater airflow through the entire honeycomb surface and ease of installation through its press-to-fit assembly. The MaxAir vent panel provides greater durability and flexibility than traditional aluminum vent panels.

Varying densities of material are available to meet specific levels of rigidity requirements. The honeycomb cell size can be 0.125 in (3,18mm) or 0.250 in (6,35mm) in standard thicknesses of 0.250 in (6,35mm) and 0.500 in (12,70mm).

Features and Benefits:

- Metallized polymeric honeycomb provides excellent product rigidity and dent resistance
- Eliminates frames, rivets and costly labor to install
- UL 94 V0 rated versions available for flame resistance
- Increases useable air flow area by 10% to 20% compared to framed aluminum vent panels
- Special features can be machined into honeycomb, such as recesses and rabbet cuts to customize panel
- Half the weight of traditional aluminum honeycomb vent panels
- Compressible conductive perimeter gasket provides extensive tolerance to accommodate variations in shelf widths or vent panel opening dimensions
- Can be manually inserted with slide-in motion or by compression fit utilizing compression stops and minimal hardware
- Applications include: telecommunications hardware equipment, fans, military applications, server racks and shielded rooms

SPECIFICATION TABLE:

PROPERTIES	MaxAir™
ELECTRICAL SHIELDING EFFECTIVENESS*	
Plane Wave (1 GHz)	40 -50 dB
Plane Wave (10 GHz)	40 -50 dB
Plane Wave (18 GHz)	40 -50 dB
MECHANICAL	
Thickness Size Range	0.250" - 0.500"
Cell Sizes	0.125"; 0.250"
Frame Material	Frameless
Honeycomb Core Material	Nickel/Copper-plated Polycarbonate
Protective Grille	Not required - Dent resistant
Gasket Types	Conductive Foam; Fabric-Over-Foam
Temperature Range	-40° to 158° F
Mounting Methods	Press or interference fit
Shapes	Square; Rectangle; Custom Shapes
Flammability Rating	UL94 V0
Intumescent Fire Resistant	Not available
ENVIRONMENTAL	
Fluid Seal	Not available
Air	80% open area for minimal pressure drop
Dust	Polyurethane foam filter can be added
Galvanic Compatibility	Gasket materials compatible with a wide variety of surfaces
Plating Options	Not required - Nickel plated

* Shielding Effectiveness is dependent on cell size of honeycomb core, thickness of honeycomb core, type of plating and type of EMI gasket.

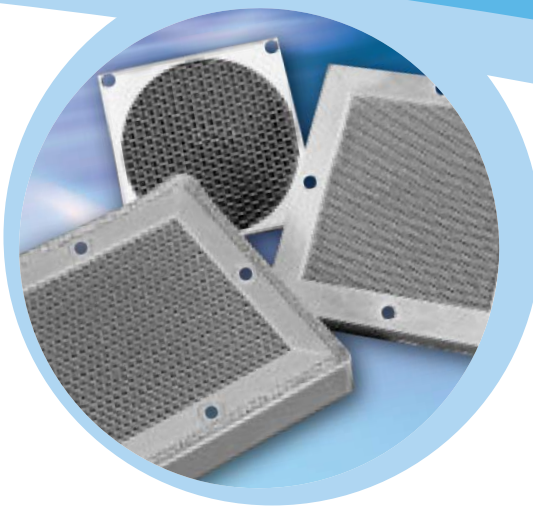
For additional information on any of the other products available, please contact sales for assistance or visit www.lairdtech.com.

ElectroVent™

Laird Technologies offers ElectroVent EMI shielding ventilation panels. Available in a wide choice of materials, platings, and mounting configurations, ElectroVent offers the designer new versatility to meet EMI, environmental and mechanical system requirements.

AVAILABLE PROTECTIVE GRILLE

For high traffic areas, all EMI ventilation panels are available with grille installed to protect honeycomb from damage that could impede airflow or shielding effectiveness.



PROPERTIES	ElectroVent™
ELECTRICAL SHIELDING EFFECTIVENESS*	
Plane Wave (1 GHz)	40 - 110 dB
Plane Wave (10 GHz)	40 - 90 dB
Plane Wave (18 GHz)	40 - 80 dB
MECHANICAL	
Thickness Size Range	0.250" - 0.500"
Cell Sizes	0.062"; 0.125"; 0.250"
Frame Material	Aluminum is typical; frameless available
Honeycomb Core Material	Aluminum
Protective Grille	Available
Gasket Types	Fabric-Over-Foam; Conductive Foam; Recyclable Clean Copper Fingerstock; Berylium/Copper Fingerstock; Knits; Wire Mesh
Temperature Range	Gasket type dependent
Mounting Methods	Captive fasteners; Through holes Press or interference fit
Shapes	square; rectangle; custom shapes
Flammability Rating	UL94 V0
Intumescent Fire Resistant	coating available
ENVIRONMENTAL	
Fluid Seal	Drip proof versions available
Air	95% open area for minimal pressure drop
Dust	Polyurethane foam filter can be added
Galvanic Compatibility	Gasket materials compatible with a wide variety of surfaces
Plating Options	Tin is typical; others available

Vent panels range from 3 in. (76,2 mm) to 18 in. (457,2 mm) square in standard sizes, and can be ordered with either 0.500 in. (12,7 mm) thick or space-saving 0.250 in. (6,4 mm) thick honeycombs.

Features and Benefits:

- Wide choice of materials and finishes to meet a broad range of shielding effectiveness requirements
- Varied mounting configurations to meet environmental and space considerations
- Protective grille can be supplied
- Panel supplied with 0.250 in (6,4 mm) thick or 0.500 in (12,7 mm) thick honeycomb
- Available honeycomb cell sizes of 0.062 in (1,6 mm), 0.125 in (3,2 mm), and 0.250 in (6,35 mm)
- Full EMI test of panel to MIL-STD-285 to aid in the early stages of equipment panel design
- Frameless options available with a compressible conductive perimeter EMI gasket for a press-to-fit assembly

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global solutions : local support™

Laird Technologies is the world-leader in the design of and supply of customized performance-critical products for wireless and other advanced electronic applications. Laird Technologies partners with its customers to help find solutions for applications in various industries such as Aerospace, Automotive Electronics, Computer, Consumer Electronics, Data Communications, Medical Equipment, Military, Network Equipment, and Telecommunications industries.

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