

# Conductive Grounding Tabs

Adequate EMI protection often can be achieved by establishing low impedance ground paths between electrically conductive elements in the chassis and components.

## Conductive Grounding Tabs

Electromagnetic interference (EMI) is frequently induced by surface currents exciting metal components to create "phantom" fields. As a generality, all metal elements should be bonded to a common ground.

In some cases, conductive "tabs" provide the required grounding paths at lower costs than modifying a design or installing enclosure shielding.

For example, slot length in enclosure seams can be reduced effectively using conductive tabs at appropriate intervals. With wavelength the determining factor, the smaller slot size may limit leakage sufficiently to circumvent continuous gasketing. This will provide a cost savings.

Within enclosures, grounding tabs may reduce radiated EMI levels from a PCB ground plane saturated with signals. Board-mounted component shields, such as metal cans, can be grounded with conductive tabs inserted between the shield and enclosure wall.

## MATERIALS AND FORMS

Virtually any suitable Chomerics EMI shielding material used in continuous lengths can be cut-to-length as grounding tabs. These include different profile conductive elastomers, conductively jacketed foam, knitted wire mesh and springfinger strips.

Pressure-sensitive adhesive (PSA) is standard on many of these, and generally available on any material and configuration other than an O-profile.

Elastomer and foam strips are supplied as continuous lengths, cut-to-length pieces, or kiss-cut parts on tape or film release sheets. Kiss-cut parts abut each other, while individual pieces can be spaced on film sheets in specified intervals for "pick and place" application.

Individual springfingers can be supplied on film sheets, or as manually snapped off individual lengths.

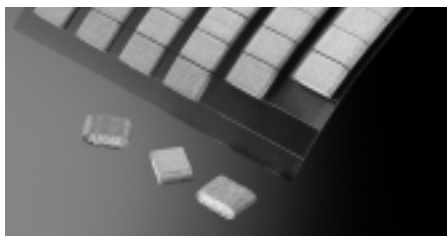
## SELECTING THE SOLUTION

Choosing a material typically relates more to physical suitability than to grounding performance. Since various materials offer comparable grounding, but differ widely in composition and construction, material selection should consider:

- Compression/deflection
- Compression set
- Friction/shear forces
- Flammability
- Durability, abrasion, closure cycles
- Corrosion

More than one material may provide a cost-effective grounding solution. A typical scenario is the identification of radiated EMI during certification testing of a device, with on-the-spot resolution using available samples.

Many commercial test laboratories use samples supplied by Chomerics for expedient problem solving. Customers preparing for product testing are welcome to request grounding tab samples. Contact our Applications Engineering Department.



## SOFT-SHIELD® 5000 Series Conductive Fabric-Wrapped Foam

Nickel-plated silver imparts conductivity to the self-terminating, nylon rip-stop jacket of this highly compressible foam gasket. Closure force of <1 lb/inch (0.175 N/mm) makes it ideal for use in laptop computers and portable telecommunications devices.

Dozens of standard configurations include rectangular, D, C, P and V profiles. Standard sizes start as small as a 0.060 x 0.150 inch (1.5 x 3.8 mm) solid D profile, and all offer optional pressure-sensitive adhesive. Choose general-duty or UL 94V-0 rated versions.

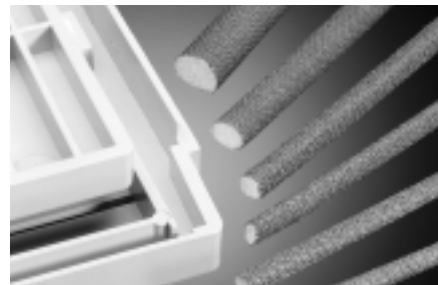
Pre-cut lengths as small as 0.25 inch (6.35 mm) minimize waste. Parts are kiss-cut on polyester film release backers.



## SOFT-SHIELD® 4000 Series Foil/Fabric Wrapped Foam

Closed cell urethane foam is machine-wrapped in fabric-reinforced aluminum foil, with conductive pressure-sensitive adhesive on one side for mounting. Low compression set, excellent conductivity and durability make these materials cost-effective as grounding pads.

Choices include UL 94V-0 or 94HB-rated compositions and three grades of softness. Numerous standard thicknesses range from 0.048 to 0.279 inch (1.2 to 7.1 mm), up to 6.0 inches (152 mm) wide. For rapid peel and stick applications, kiss-cut parts are supplied on polyester film release sheets. Custom die-cutting is also available.

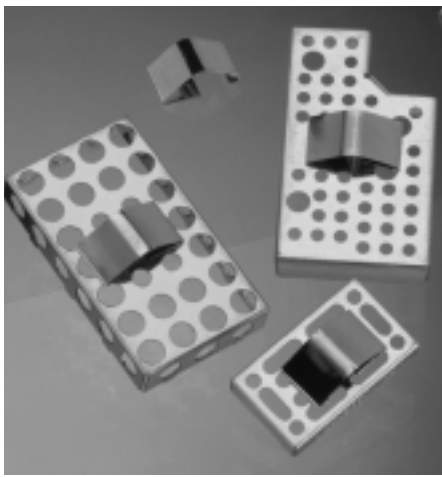


## SOFT-SHIELD® 2000 Series Conductive Yarn over Foam

This configuration features silver-plated nylon yarn knitted over highly compressible, thermoplastic EPDM foam and securely bonded to the core.

Secondary termination is not required, and closure force is <1 lb/inch (0.175 N/mm).

Ten standard D and rectangular profiles range from 0.140 x 0.100 inch (3.56 x 2.54 mm) to 0.500 x 0.375 inch (12.70 x 9.53 mm), with pressure-sensitive adhesive standard. Pre-cut pieces can be supplied for rapid application.

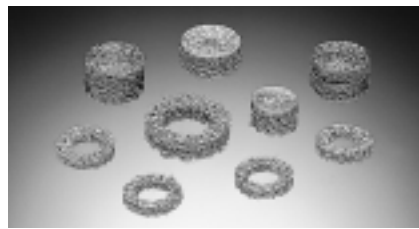


**SPRING-LINE®**  
"Pick and Stick" Springfingers

Highly resilient, 0.002 inch (0.051 mm) thin fingers compress under low closure force. Their tin-plated beryllium copper construction provides excellent conductivity and galvanic corrosion resistance.

In a typical application, springfinger tabs affixed to metal cans soldered over board components establish contact between adjacent PCBs, simplifying grounding to the housing. Tight compression does not affect resilience or electrical performance.

Parts include high-tack pressure-sensitive adhesive on the mounting surface, and are supplied in strips for snap-off application, as individual pieces, or spaced on film reels for "pick-and-stick" application.



**SHIELD MESH™**  
Compressed Mesh Buttons

Knitted wire mesh that has been die-compressed into cylindrical configurations exhibits significant resilience when compressed under load and released. Mesh buttons provide a low impedance ground contact in applications such as slide-out drawers in an enclosure rack. Integral compression stops can be included.

Since the material compresses under load, no allowance is required for lateral deflection.

Standard wires include aluminum, monel (nickel-copper alloy) or Chomerics' Ferrex tin-plated-copper clad steel.

continuous conductive gasketing in flange joints. When spaced at 4 to 8 inch (102 to 203 mm) intervals, >40 dB shielding effectiveness is achieved between 20 and 200 MHz. Their design, resilience and flexibility accommodate wide joint gap tolerances, even under low closure forces.

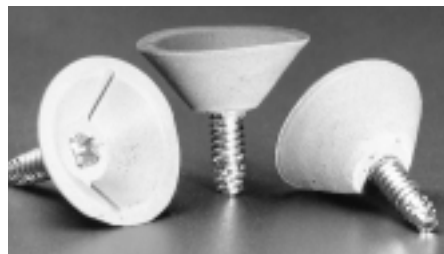


**CHO-SEAL® and CHO-SIL®**  
Conductive Elastomer "Peel and Stick" Tabs

With many standard sizes and material choices, conductive elastomer extrusions afford real design flexibility for grounding applications when supplied kiss-cut on PSA mounting tape. Hollow D profiles, available as small as 0.125 (3.18 mm) wide, are typically chosen, but others may be used, including custom profiles.

Cost and performance options include a choice of conductive particle fillers in silicone or fluorosilicone binders. All offer excellent resistance to compression set over a wide temperature range.

Grounding tabs can also be produced using molding techniques that accommodate special design features or geometries.



**CHO-BUTTON™**  
EMI Grounding Contacts

Consisting of a molded CHO-SEAL conductive elastomer cap and integral thread-cutting screw, CHO-BUTTON contacts can provide an alternative to

PRODUCT	SOFT-SHIELD 5000 Series Foam	SOFT-SHIELD 4000 Series Foam	SOFT-SHIELD 2000 Series Foam	SPRING-LINE Springfingers	SHIELD MESH Buttons	CHO-SEAL & CHO-SIL Conductive Elastomers
Standard Profiles	Rectangular, D, V, C, P and others	Flat rectangular, die-cut shapes	Rectangular, D	Various	Cylindrical	Solid and hollow O, D, P, rectangular
Custom Profiles	Yes	Yes	Yes	Yes	Yes	Yes
Construction/Composition	Nickel-plated silver nylon ripstop fabric over urethane	Fabric-reinforced aluminum foil over urethane	Silver-plated yarn over thermoplastic EPDM foam	Beryllium-Copper	Knitted monel or Ferrex® wire	Conductive particle filled silicone or fluorosilicone extrusion
Attachment	Non-conductive PSA	Conductive PSA	Non-conductive PSA	Non-conductive PSA	Friction Fit	Non-conductive PSA
Continuous Lengths	Yes	Yes	Yes	Yes	Supplied as individual parts	Yes
Kiss-cut, Tape	Yes	Yes	—	Yes		Yes
Kiss-cut, Film Sheet	Yes	Yes	—	Yes		Yes
Cut-to-Length Pieces	Yes	Yes	Yes	Yes		Yes
Grounding Effectiveness (1 = highest)	2	2	3	1	2	2