



# GORE® SMT EMI Gaskets and Grounding Pads

Design Guide

## Design Guide

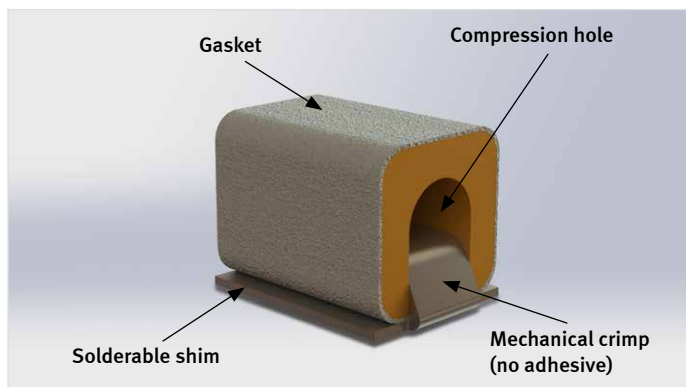
GORE® SMT EMI Gaskets and Grounding Pads combine unsurpassed conductivity with the convenience of SMT-compatible format. Their compatibility with SMT equipment helps reduce total costs because these off-the-shelf components eliminate the need for custom designs that can increase engineering costs. Also, no secondary processing is required, which reduces equipment and labor costs during production. Using precise SMT equipment to incorporate GORE® SMT EMI Gaskets and Grounding Pads improves the consistency and repeatability of printed circuit board (PCB) assembly. When compared to manual installation and dispensing methods typically used for other EMI shielding materials, GORE® SMT EMI Gaskets and Grounding Pads decrease waste.

GORE® SMT EMI Gaskets and Grounding Pads offer a full spectrum of working ranges, making them ideal for use as grounding pads, EMI gaskets, and antenna contacts. Gore offers two types of SMT materials:

- The highly compressible SMT Supersoft Series that requires minimal force for initial conductivity (Figure 1)
- The SMT GS5200 Series that delivers the highest conductivity under compression (Figure 2) in Gore's EMI Shielding product line.

Application engineers are available to help determine the right components for your application and to identify the characteristics for successful integration. To ensure maximum performance of GORE® SMT EMI Gaskets and Grounding Pads, you need to evaluate the constraints of your application during design, start-up, on-going operations, maintenance, and storage.

Figure 1: SMT Supersoft Series



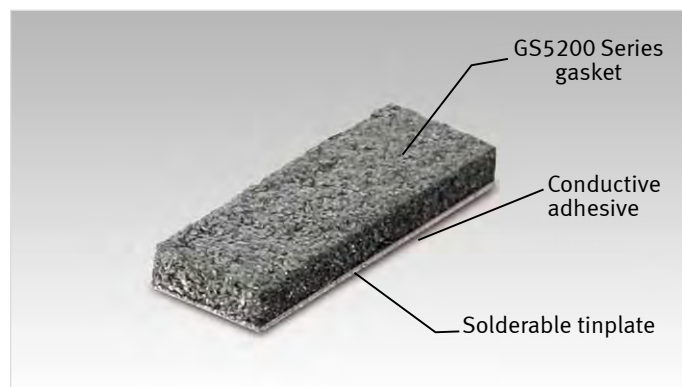
## Design Guidelines

Specific attributes of the gaskets ensure that the SMT process is successful and that the gaskets provide long-lasting, reliable performance. If you are using GORE® SMT EMI Gaskets and Grounding Pads for grounding, the design considerations are the same as for any SMT component. For EMI shielding or grounding, you need to ensure you have a high level of conformance, including sufficient PCB area to accept the component, and whether a standard product will meet the needs of your application. Also, you should review the manufacturing guidelines for SMT, such as available board space, recommended solder mask opening, gap, and compressive force available/required.

### BOARD LAYOUT

GORE® SMT EMI Gaskets and Grounding Pads can be used for grounding in discrete locations. The amount of space available on the board and the requirements of the mating surface determine the x/y dimensions of the gasket and its location on the board in reference to the interfacing surface. Because GORE® SMT EMI Gaskets and Grounding Pads can be configured with one another like building blocks, they are easy to incorporate onto a board without requiring a custom-configured gaskets. GORE® SMT EMI Gaskets and Grounding Pads can also be used to create a Faraday cage by enclosing a component or board section. For detailed information about the recommended pad size and physical characteristics for each SMT Series part, see the Ordering Information sheet with this document.

Figure 2: SMT GS5200 Series



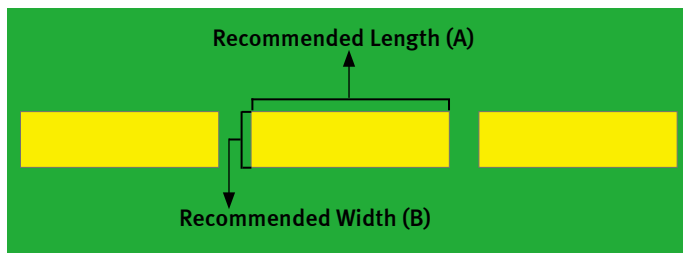


# GORE® SMT EMI Gaskets and Grounding Pads

## RECOMMENDED SOLDER MASK OPENING

The recommended width for the solder mask opening is approximately ten percent greater than the width of the SMT part itself (Figure 3). For example, a part that is 1.25 mm wide should have a solder mask opening of 1.375 mm. This allows for a small solder fillet to form between the ground trace and the shim. For recommended length and width of solder mask openings for specific SMT Series parts, see the Ordering Information sheet with this document.

Figure 3: Recommended Solder Mask Opening



## COMPRESSIVE FORCE

The amount of force available to initiate contact, the physical properties of the housing, and the necessary DC resistance required will determine the type of GORE® SMT EMI Gaskets and Grounding Pads to use (Table 1).

Table 1: Recommended SMT Components for Typical Applications

Sample Application	SMT Supersoft Series	SMT GS5200 Series
Interface between PCB and metallized housing or shield can	Yes	Yes
Ground for flexible circuit	Yes	No
Camera module grounding	Yes	No
LCD display grounding	Yes	No

## GAP

The amount of space you are trying to fill (the gap) determines the configuration and the working range that will be required from the gaskets. Gore recommends integrating a compression stop to ensure consistent levels of compression. The recommended service height for the various products in the SMT Series differs because of their unique constructions (Figures 4 and 5).

Figure 4: Recommended Service Heights for SMT Supersoft Series

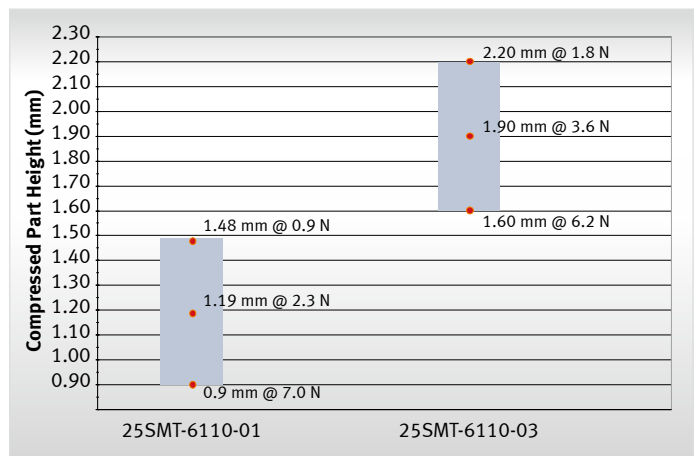
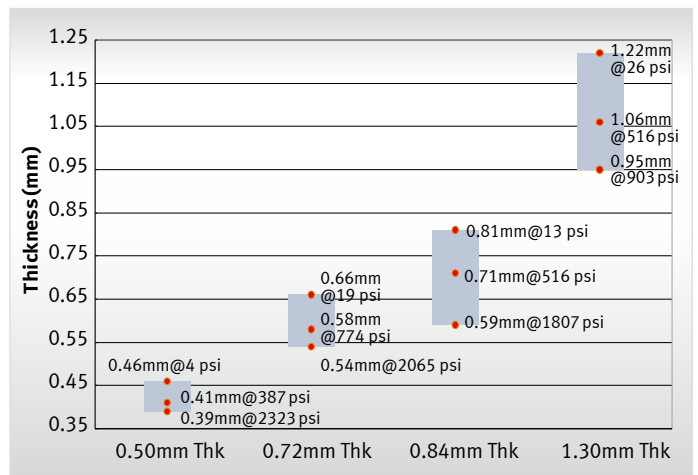


Figure 5: Recommended Service Heights for SMT GS5200 Series





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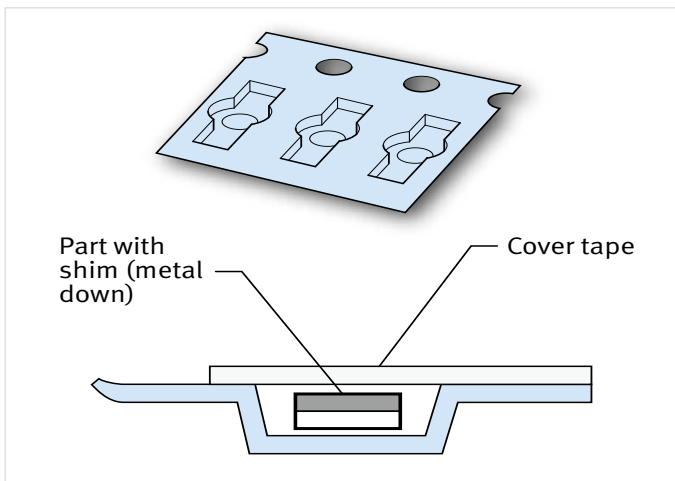
## Production Design Guidelines

When integrating GORE® SMT EMI Gaskets and Grounding Pads into a manufacturing production line, several factors are key to ensuring maximum performance of the individual parts.

### PART ORIENTATION

GORE® SMT EMI Gaskets and Grounding Pads are placed in the carrier tape with the metal shim at the bottom of the pocket (Figure 6). Therefore, reorientation is not needed before picking the part to place on the printed circuit board (PCB).

Figure 6: Part Orientation in Carrier Tape Pocket



### PICK-AND-PLACE GUIDELINES

GORE® SMT EMI Gaskets and Grounding Pads are designed to be installed by standard SMT equipment for easy integration into OEM's manufacturing lines. These parts can be installed on turret-style chip shooters, rotary-style chip shooters, or fine-place equipment. Gore has successfully tested the placement of the parts with tack times as low as 0.1 seconds. To ensure reliable vacuum, the nozzle's inner diameter cannot exceed the width of the SMT part. A standard nozzle with one opening is recommended over a custom nozzle with multiple openings.

Feeders that have very small clearances are also recommended for use with the SMT parts. If the openings or clearances are too large, the carrier tape can vibrate and move, causing the parts to move inside the pockets after the cover tape is removed. See the Ordering Information sheet for pocket dimensions for each SMT part.

### RECOMMENDED SOLDER PASTE PAD DIMENSIONS

The recommended solder pattern for GORE® SMT EMI Gaskets and Grounding Pads contains circles evenly distributed under the part, with a different pattern for rectangular versus square parts (Figures 7 and 8). The geometry of the specific part determines the pattern of circles. See the Ordering Information sheet for the number of circles, the diameter, and the layout configuration for each SMT part. Each pattern allows for a sufficient volume of solder without flooding the ground trace with excess solder. This also minimizes rotation or lateral movements of the SMT parts during reflow on wider-than-recommended ground traces.

Figure 7: Solder Paste Pattern for Linear Configuration

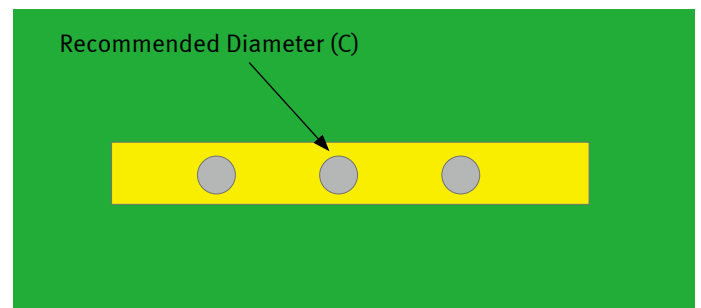
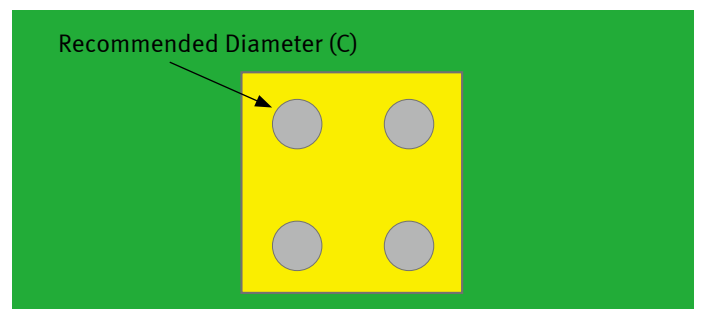


Figure 8: Solder Paste Pattern for Square Configuration



### SOLDER REFLOW

Excellent solder reflow results have been obtained using a variety of solder paste compositions. Gore recommends using a no-clean paste. The SMT parts are compatible with both tin-lead and lead-free solder alloys and their associated processes. Like any stock component, GORE® SMT EMI Gaskets and Grounding Pads can be easily integrated into the solder reflow profile without special considerations.



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## **Storage Guidelines**

GORE® SMT EMI Gaskets and Grounding Pads are rated MSL 1 components. Gore recommends storage of these components in a controlled environment with ambient conditions of less than 25°C and 50 percent relative humidity. Long-term storage in uncontrolled conditions may affect the solderability of parts.

## **Cleaning Guidelines**

Gore recommends the use of a no-clean paste and process. If cleaning is required, GORE® SMT EMI Gaskets and Grounding Pads are not affected by water and most cleaning solvents. Gore does not recommend using high-pressure cleaning processes, angular jets imparting lateral forces to the components, or aggressive cleaning solvents. Please consult a Gore application engineer for specific details about your cleaning operation and its compatibility with these parts.

## **Rework/Repair Guidelines**

### **MANUAL SOLDERING/DESOLDERING**

Since GORE® SMT EMI Gaskets and Grounding Pads are compatible with high-temperature reflow processes, they can be manually soldered to the ground trace if necessary. Gore offers the following guidelines to ensure successful placement:

- Avoid direct contact of the gaskets with the soldering iron (or heat source).
- Be sure to ventilate the area properly.
- Use the manual process in post-reflow operations only when pick-and-place problems may have caused alignment, orientation, or placement error of soldered SMT parts.

### **PEEL-AND-STICK REPAIR KIT**

Peel-and-stick repair kits may be purchased for the SMT GS5200 Series part sizes and are typically used when the gasket section of a soldered SMT part gets damaged. These kits come in pre-cut pieces on a polyester liner in sheet or roll form. Repair kits can be ordered by adding “-R” to the end of the part number (e.g., 25SMT-3645-25-R). Gore offers the following guidelines to replace a single part:

1. Wear latex gloves to prevent contaminating the adhesive with oils and dirt.
2. Remove the damaged section of gasket with a sharp instrument, such as a pick, pair of tweezers, or scalpel.
3. Clean all adhesive and gasket residues from the soldered shim. Isopropyl alcohol (IPA) or other solvents can be used to soften the adhesive.
4. Allow the solvents to dry completely.
5. Peel an appropriately sized part from the release backer, and place it onto the bare soldered shim. Be careful not to touch the exposed adhesive.
6. Press firmly on the gasket section to ensure that the pressure-sensitive adhesive is activated. No heat or curing is required, and the bond strength should be sufficient to immediately proceed with subsequent PCB board processing.

**NOTICE — USE RESTRICTIONS APPLY**

Not for use in food, drug, cosmetic or medical device manufacturing, processing, or packaging operations.