GORE® SMT EMI Gaskets and Grounding Pads

Table 1: Environmental Properties

Property	Value
Operating temperatures	-55°C to 125°C
RoHS Status* (lead, cadmium, hexavalent chromium, mercury, bromine)	Pass
Flammability in accordance with UL horizontal burn method	Pass

*W. L. Gore & Associates declares that we do not intentionally add substances listed in EU Directive 2011/65/EU to GORE® SMT EMI Gaskets and Grounding Pads. Independent lab tests have been performed and results are available upon request.

Selection Guidelines

GORE® SMT EMI Gaskets and Grounding Pads are engineered to survive multiple reflow processes. These gaskets and grounding pads maintain conductivity in a wide range of service heights (gap distances). The closure force requirements and broad range of tolerance take-up in these materials results in multiple product options for some gap distances. Selecting the most suitable product for a given application depends on the following:

- Gap distance of interfacing surfaces
- Required compression force to achieve the specified gap distance
- Necessary DC resistance for grounding applications or shielding effectiveness for shielding applications at a specific gap distance

The recommended service height for the various products in GORE® SMT EMI Gaskets and Grounding Pads differs because of their unique constructions (Figures 1 & 2).

Figure 1: Recommended Compressed Part Heights for SMT Supersoft Series

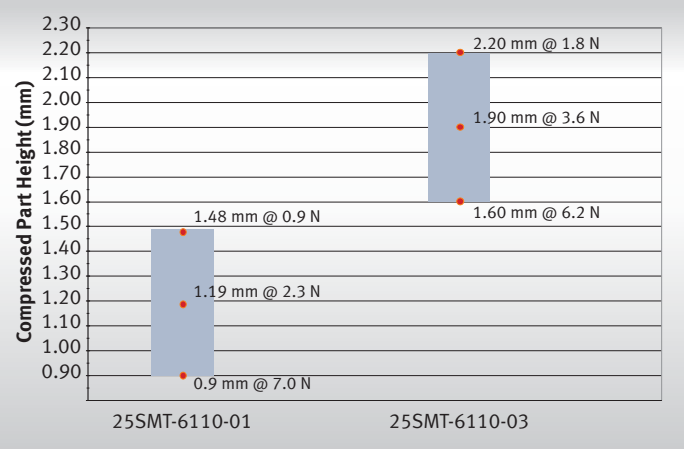
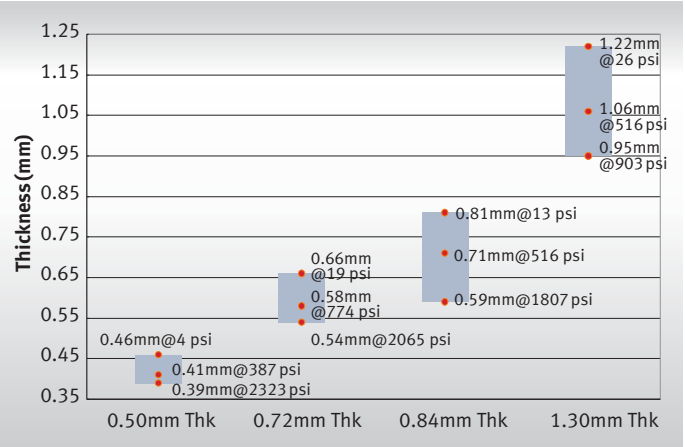


Figure 2: Recommended Service Heights for SMT GS5200 Series



GORE® SMT EMI Gaskets and Grounding Pads — SMT Supersoft Series

The SMT Supersoft Series is highly compressible to ensure consistent electrical performance. These components are conductive on contact and resilient after compression (Table 2). This combination of highly compressible construction and minimal force requirements makes them an excellent choice for use with metallized plastic housings and a variety of components, including LCDs, flexible circuits, antennas, and cameras. In addition, the SMT Supersoft Series protects against harsh conditions like shock and vibration encountered in applications such as handheld scanners. The highly compressible construction also provides consistent contact in housings that have surface variations like those in magnesium as-cast enclosures.

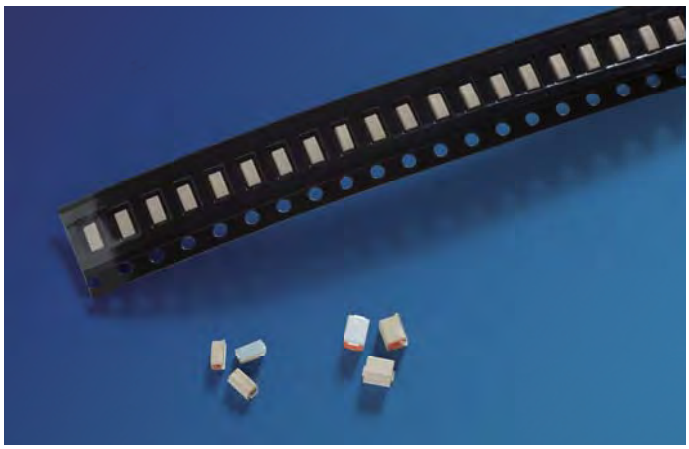


Table 2: SMT Supersoft Series Typical Performance[1]

Gore Part Number	Thickness (mm)	Length (mm)	Width (mm)	Weight (g)	Low Compression			Recommended Compression			High Compression		
					Compressed Part Height (mm)	DC Resistance (ohms)	Force to Achieve Compression (N)	Compressed Part Height (mm)	DC Resistance (ohms)	Force to Achieve Compression (N)	Compressed Part Height (mm)	DC Resistance (ohms)	Force to Achieve Compression (N)
25SMT-6110-01	1.66	3.56	1.79	0.020	1.48	0.008	0.9	1.19	0.006	2.3	0.90	0.009	7.0
25SMT-6110-03	2.42	3.58	2.57	0.037	2.20	0.012	1.8	1.90	0.011	3.6	1.60	0.011	6.2

[1] Values are for reference only and are not intended for specification purposes.

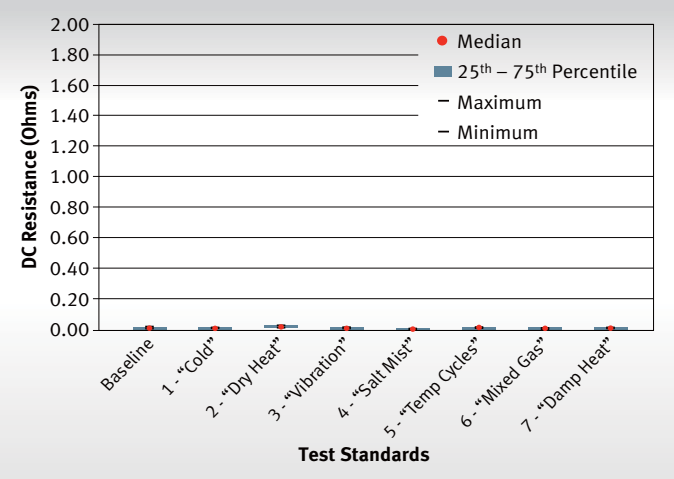
Accelerated Life Testing for SMT Supersoft Series

A crucial factor in assessing the acceptability of gaskets or grounding pads is their performance over time — performance that can be evaluated only through accelerated life testing. To evaluate durability of the SMT Supersoft Series, industry testing was performed at various conditions (Table 3) with parts soldered to a test board. Figure 3 shows the changes in DC resistance following exposure to the outlined conditions. The minimal amount of change in DC resistance for the SMT Supersoft Series demonstrates consistent and reliable performance in demanding environments.

Table 3: IEC Test Standards for Accelerated Life Testing (ALT) Conditions

	International Electromechanical Commission (IEC) Test Standard	IEC Standard No.	Test Conditions
1	Cold	60068-2-1	-65°C, 96 hours
2	Dry Heat	60068-2-2	+85°C, 96 hours
3	Vibration	60068-2-6	Sinusoidal 5 Hz to 100 Hz, 5g max. acceleration, 90 min. on each of the 3 axes
4	Salt Mist	60068-2-11	+35°C, 5 parts by weight NaCl and 95 parts by weight H_2O, 24 hours
5	Change of Temperature	60068-2-14	-40°C to +125°C, 30 min. @ extremes, 15 min. @ 25°C, 90 min. per cycle, 25 cycles
6	Mixed Flowing Gas	60068-2-60	Hydrogen sulfide (H2S) @ 100 PPB, sulfur dioxide (SO2) @ 500 PPB, 96 hours
7	Damp Heat	60068-2-78	+65°C, 100% humidity, 96 hours

Figure 3: DC Resistance through ALT for 25SMT-6110-01



Force Displacement Resistance of SMT Supersoft Series

The SMT Supersoft Series provides conductivity on contact; however, the amount of force and DC resistance differs for each variant as seen in Table 2 and Figures 4-5.

Figure 4: Force Displacement Resistance for 25SMT-6110-01

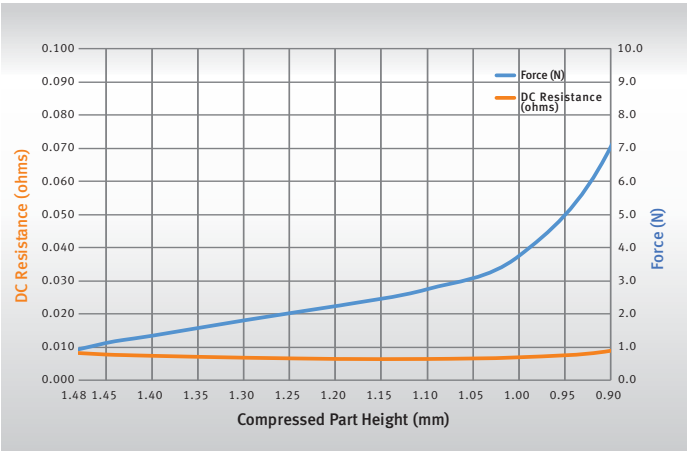
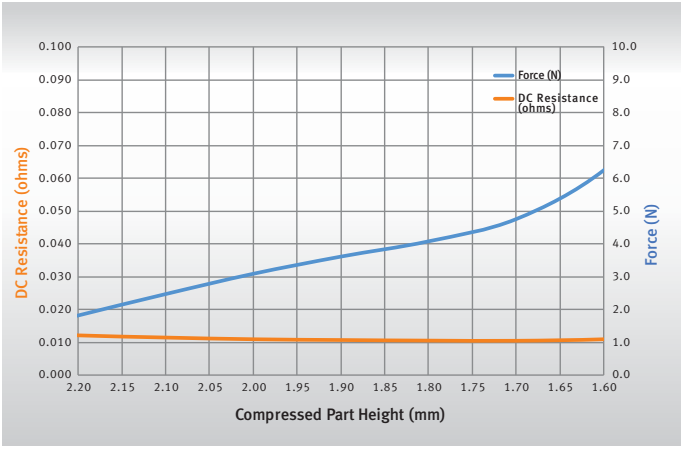


Figure 5: Force Displacement Resistance for 25SMT-6110-03



Recoverability

Recoverability is the inverse of compression set. If a device will be opened for modifications during initial production, hardware upgrades, or field repairs, the shielding materials must be able to rebound and create a consistent connection. Recoverability measures the gasket's ability to maintain some level of gap-filling following a release of a compression load. Using ASTM D395 B, Standard Test Methods for Rubber Property, Test Method B: Compression Set under Constant Deflection in Air, the SMT Supersoft Series has demonstrated recoverability between 96 and 97 percent (Table 4). This high level of recoverability ensures that the electrical path is maintained when compression is removed and then reestablished.

Table 4: Recoverability of SMT Supersoft Series

Gore Part Number	Recoverability After 22 Hours of Compression	Recoverability After 70 Hours of Compression
25SMT-6110-01	96%	96%
25SMT-6110-03	97%	97%

GORE® SMT EMI Gaskets and Grounding Pads — SMT GS5200 Series

The SMT GS5200 Series offers the highest conductivity under compression in Gore's EMI Shielding product line (Table 5). The durability of these components extends their service life in challenging environments such as ruggedized scanners/readers, gaming devices, and wireless infrastructure. These highly conductive components recover easily after compression. Ideal for small footprint applications and for metal housings, the SMT GS5200 Series provides high performance and excellent reliability.

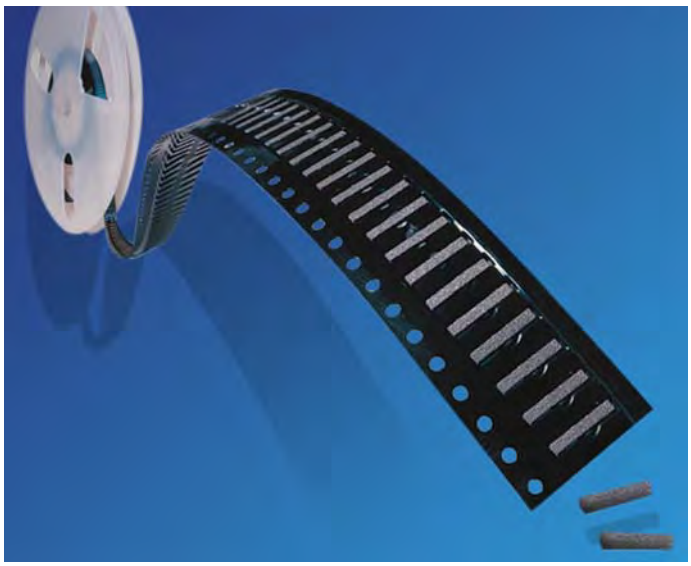


Table 5: SMT GS5200 Series Typical Performance[1]

Gore Part Number	Thickness (mm)	Length (mm)	Width (mm)	Weight (g)	Low Compression			Recommended Compression			High Compression		
					Stop Height (mm)	DC Resistance (ohms)	Pressure to Achieve Compression (psi)	Stop Height (mm)	DC Resistance (ohms)	Pressure to Achieve Compression (psi)	Stop Height (mm)	DC Resistance (ohms)	Pressure to Achieve Compression (psi)
25SMT-3645-21	0.50	5.50	1.10	0.0115	0.46	1.952	3.9	0.41	0.014	387.1	0.39	0.001	2,322.5
25SMT-3645-22	0.50	8.00	1.10	0.0160	0.46	1.952	3.9	0.41	0.014	387.1	0.39	0.001	2,322.5
25SMT-3645-34	0.50	5.50	0.90	0.0088	0.46	1.952	3.9	0.41	0.014	387.1	0.39	0.001	2,322.5
25SMT-3645-9	0.72	5.50	1.25	0.0158	0.66	0.492	19.3	0.58	0.003	774.2	0.54	0.001	2,064.5
25SMT-3645-10	0.72	8.00	1.25	0.0230	0.66	0.492	19.3	0.58	0.003	774.2	0.54	0.001	2,064.5
25SMT-3645-11	0.72	12.00	1.25	0.0339	0.66	0.492	19.3	0.58	0.003	774.2	0.54	0.001	2,064.5
25SMT-3645-17	0.72	5.50	1.10	0.0142	0.66	0.492	19.3	0.58	0.003	774.2	0.54	0.001	2,064.5
25SMT-3645-25	0.72	12.00	2.00	0.0500	0.66	0.492	19.3	0.58	0.003	774.2	0.54	0.001	2,064.5
25SMT-3645-26	0.72	8.00	2.00	0.0400	0.66	0.492	19.3	0.58	0.003	774.2	0.54	0.001	2,064.5
25SMT-3645-27	0.72	5.50	2.00	0.0240	0.66	0.492	19.3	0.58	0.003	774.2	0.54	0.001	2,064.5
25SMT-3645-33	0.72	3.20	1.10	0.0078	0.66	0.492	19.3	0.58	0.003	774.2	0.54	0.001	2,064.5
25SMT-3645-40	0.84	5.50	1.25	0.0110	0.81	1.939	12.9	0.71	0.028	516.1	0.59	0.001	1,806.5
25SMT-3645-41	0.84	3.20	1.25	0.0100	0.81	1.939	12.9	0.71	0.028	516.1	0.59	0.001	1,806.5
25SMT-3645-43	1.30	3.20	3.20	0.0370	1.22	0.322	25.8	1.06	0.003	516.1	0.95	0.001	903.2
25SMT-3645-44	1.30	8.00	2.00	0.0580	1.22	0.322	25.8	1.06	0.003	516.1	0.95	0.001	903.2

[1] Values are for reference only and are not intended for specification purposes.

Accelerated Life Testing for SMT GS5200 Series

A crucial factor in assessing the acceptability of gaskets or grounding pads is their performance over time — performance that can be evaluated only through accelerated life testing. To evaluate durability of the SMT GS5200 Series, industry testing was performed at various conditions (Table 6) with parts soldered to a test board. Figures 6-9 show the changes in DC resistance following exposure to the outlined conditions. The minimal amount of change in DC resistance for the SMT GS5200 Series demonstrates consistent and reliable performance in demanding environments.

Table 6: IEC Test Standards for Accelerated Life Testing (ALT) Conditions

	International Electromechanical Commission (IEC) Test Standard	IEC Standard No.	Test Conditions
1	Cold	60068-2-1	-65°C, 96 hours
2	Dry Heat	60068-2-2	+85°C, 96 hours
3	Vibration	60068-2-6	Sinusoidal 5 Hz to 100 Hz, 5g max. acceleration, 90 min. on each of the 3 axes
4	Salt Mist	60068-2-11	+35°C, 5 parts by weight NaCl and 95 parts by weight H_2O, 24 hours
5	Change of Temperature	60068-2-14	-40°C to +125°C, 30 min. @ extremes, 15 min. @ 25°C, 90 min. per cycle, 25 cycles
6	Mixed Flowing Gas	60068-2-60	Hydrogen sulfide (H2S) @ 100 PPB, sulfur dioxide (SO2) @ 500 PPB, 96 hours
7	Damp Heat	60068-2-78	+65°C, 100% humidity, 96 hours

Figure 6: DC Resistance through ALT for 0.50 mm SMT GS5200 Series Parts

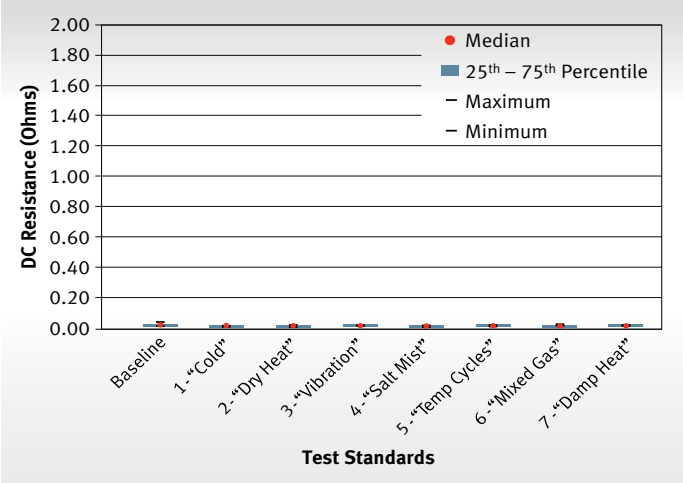


Figure 7: DC Resistance through ALT for 0.72 mm SMT GS5200 Series Parts

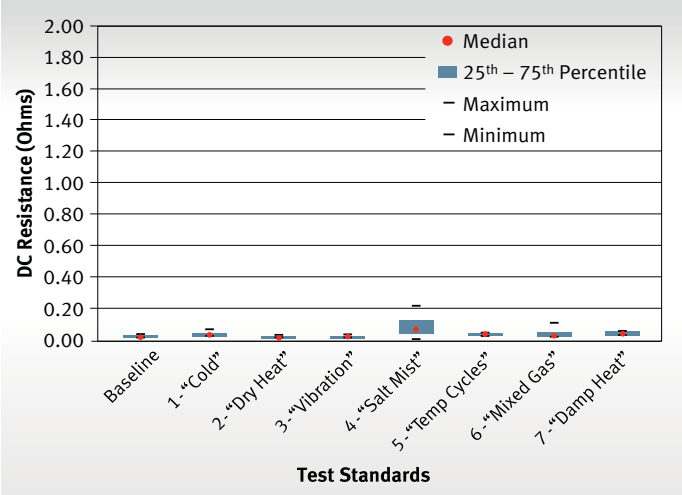


Figure 8: DC Resistance through ALT for 0.84 mm SMT GS5200 Series Parts

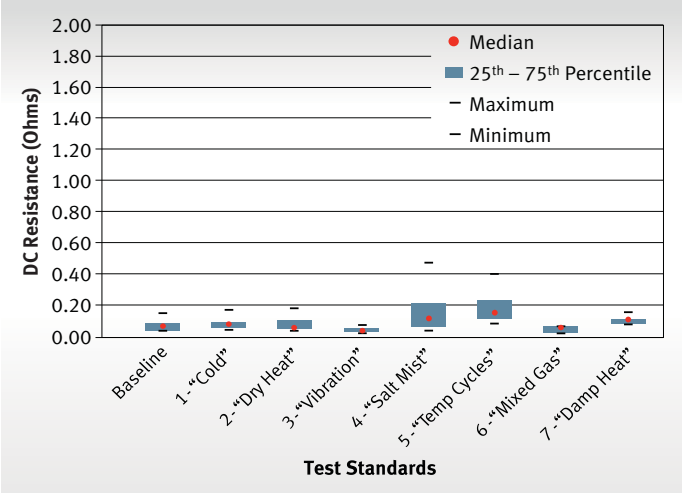
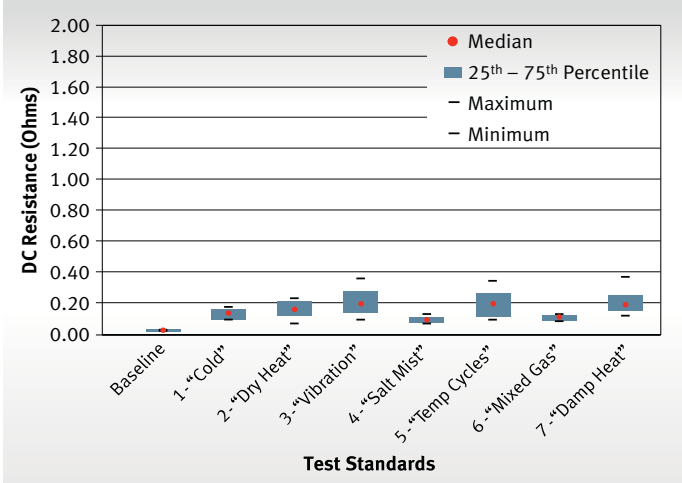


Figure 9: DC Resistance through ALT for 1.30 mm SMT GS5200 Series Parts



Force Displacement Resistance of SMT GS5200 Series

The SMT GS5200 Series provides conductivity when compressed approximately ten percent of the initial height; however, the amount of force and DC resistance differs for each variant as seen in Table 7 and Figures 10-13.

Figure 10: Force Displacement Resistance for 0.50 mm SMT GS5200 Series Parts

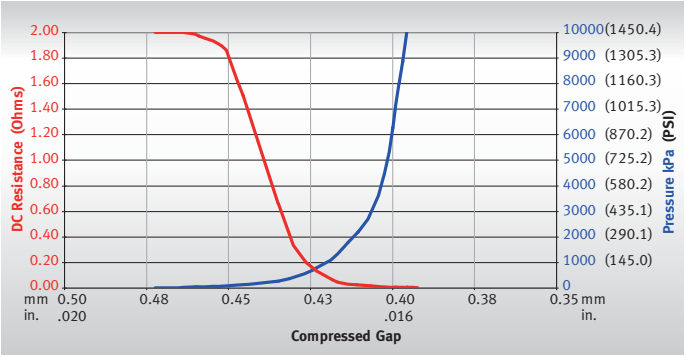


Figure 11: Force Displacement Resistance for 0.72 mm SMT GS5200 Series Parts

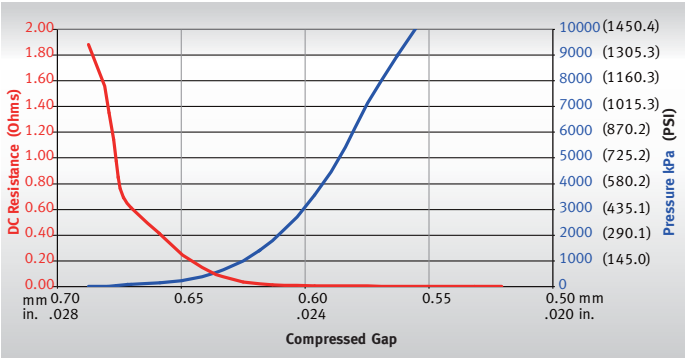


Figure 12: Force Displacement Resistance for 0.84 mm SMT GS5200 Series Parts

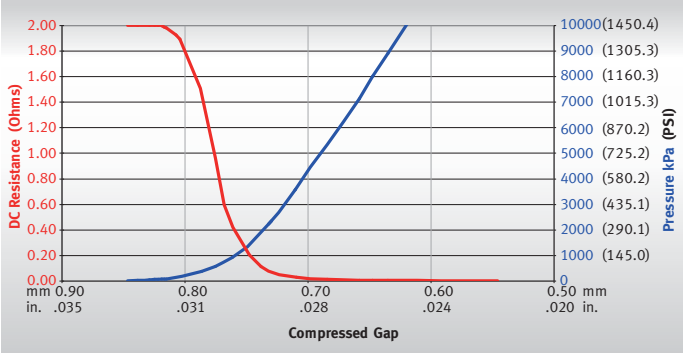
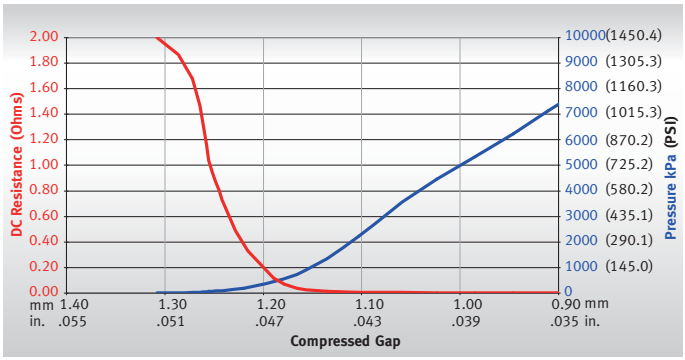


Figure 13: Force Displacement Resistance for 1.30 mm SMT GS5200 Series Parts



Recoverability

Recoverability is the inverse of compression set. If a device will be opened for modifications during initial production, hardware upgrades, or field repairs, the shielding materials must be able to rebound and create a consistent connection. Recoverability measures the gasket's ability to maintain some level of gap-filling following a release of a compression load. Using ASTM D395 B, Standard Test Methods for Rubber Property, Test Method B: Compression Set under Constant Deflection in Air, the SMT GS5200 Series has demonstrated recoverability between 84 and 92 percent (Table 7). This high level of recoverability ensures that the electrical path is maintained when compression is removed and then reestablished.

Table 7: Recoverability of SMT GS5200 Series

Gore Part Thickness (mm)	Recoverability After 22 Hours of Compression	Recoverability After 70 Hours of Compression
0.50	88.4%	88.5%
0.72	91.0%	92.2%
0.84	91.9%	87.8%
1.30	84.2%	86.0%

GORE® SMT EMI Gaskets and Grounding Pads

Ordering Information for GORE® SMT EMI Gaskets and Grounding Pads

GORE® SMT EMI Gaskets and Grounding Pads are available in standard sizes of lengths, widths, and thickness. For assistance in selecting the right components for your application, please contact Gore sales.

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25SMT-6110-01 25SMT-6110-03