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Technical Data | October 2024

3M™ Electrically Conductive Gasket Tape MSG7000SDX Series

Product Description

3M™ Electrically Conductive Gasket Tape MSG7000SDX Series consists of a conductive fabric, a grey highly conductive foam, and conductive pressure sensitive adhesive (CPSA). It offers excellent grounding performance between substrates and has high EMI shielding performance. 3M tape MSG7000SDX series offers very small contact resistance even at a slight compression rate, and / or with a small die-cut size.

3M tape MSG7000SDX series is available in standard and custom widths and lengths. Standard width is 500mm. Please contact 3M to review custom width and length options.

Key Features

- Highly compressible foam structure for wide range gap filling capability
- Reliable adhesion with a 3M conductive PSA
- Multiple thicknesses
- Low resistance with a small die-cut size
- Supplied on a removable liner for easy handling and die-cutting
- *Halogen-free

*Halogen Free is defined as having maximum 900 ppm bromine, maximum 900 ppm chlorine, and/ maximum 1500 ppm total bromine and chlorine, per IEC 61249-2-21.

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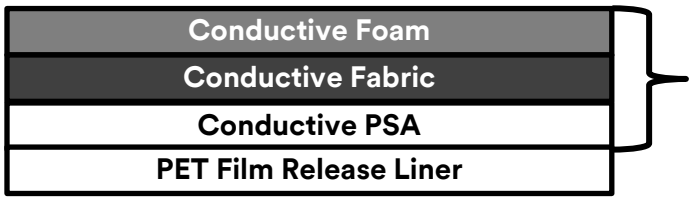

3M tape MSG7030SDX (0.3 mm)
3M tape MSG7045SDX (0.45 mm)
3M tape MSG7060SDX (0.6 mm)
3M tape MSG7080SDX (0.8 mm)
3M tape MSG7100SDX (1.0 mm)
3M tape MSG7150SDX (1.5 mm)
3M tape MSG7200SDX (2.0 mm)
3M tape MSG7250SDX (2.5 mm)
3M tape MSG7300SDX (3.0 mm)

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Product Construction/Material Description

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

3M™ Electrically Conductive Gasket Tape MSG7000SDX Series Property	Value
Adhesive Type	Transparent Conductive Acrylic Pressure Sensitive Adhesive
Carrier Type	Conductive Foam Laminated with Conductive Fabric
Foam Type	Polyurethane Plated with Cu/Ni
Tape Thickness	3M tape MSG7030SDX 0.3 mm nominal 3M tape MSG7045SDX 0.45 mm nominal 3M tape MSG7060SDX 0.6 mm nominal 3M tape MSG7080SDX 0.8 mm nominal 3M tape MSG7100SDX 1.0 mm nominal 3M tape MSG7150SDX 1.5 mm nominal 3M tape MSG7200SDX 2.0 mm nominal 3M tape MSG7250SDX 2.5 mm nominal 3M tape MSG7300SDX 3.0 mm nominal
Liner Type & Color	Transparent PET Liner 0.075 mm typical

Applications

- Applications that require better conductivity to secure a very reliable conductive connection
- ESD grounding or forming a close conductive enclosure to achieve excellent EMI shielding performance
- Applications with small die-cut sizes and big gap tolerance

Application Techniques

The bond strength of 3M™ Electrically Conductive Gasket Tape MSG7000SDX Series depends on the amount of adhesive-to-surface contact developed during application and substrate type and surface conditions.

1. Firm application pressure helps develop better wet-out and adhesive contact and may lead to improved bond strength. Pressure must be applied to the bond area after assembly to ensure sufficient wet-out of the adhesive to the substrates. Mechanical pressure (roller, metal bar) or finger pressure at 5-15 psi. Optimally the application conditions are determined via a set of Design of Experiments (DOE) using a range of application pressure, dwell time and temperatures (suggested initial range might include 5-15psi, 2-5 seconds, 21°C-38°C).

2. Heat may be applied simultaneously with pressure to improve wetting and final bond. Suggested temperature range to evaluate is in the 38°C - 60°C range.

3. To obtain optimum adhesion, the bonding surfaces must be clean, dry and well unified. Typical surface cleaning solvents* include isopropyl alcohol or heptane.

4. Adhesion builds with time. Up to 24 to 72 hours may be required to reach final adhesion values.

*Carefully read and follow the manufacturer's precautions and directions for use when working with solvents. Tape application below 10°C (50°F) is not suggested. Once properly applied, low temperature holding power is generally satisfactory.

Operating Temperature Range

Long term (days - weeks) -40°C ~80°C; short term (minutes - hours): -40°C~105°C

*At extremally low temperatures, the foam hardens and becomes unsuitable for repeated compressions.

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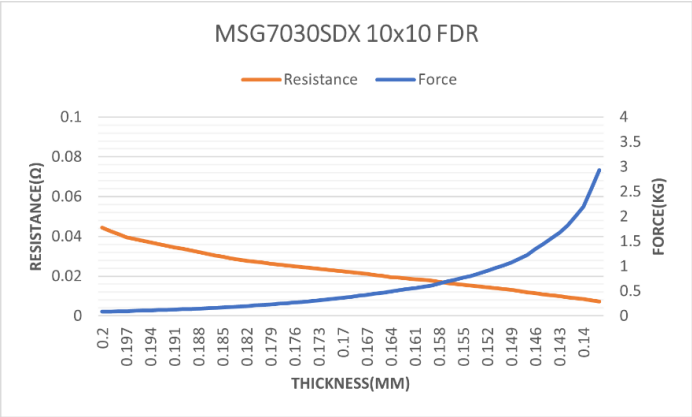
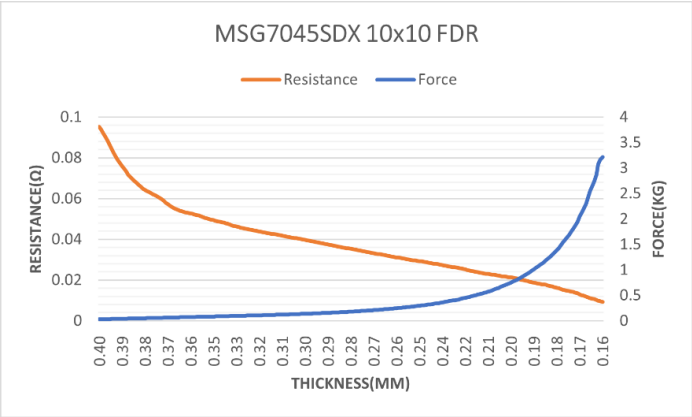
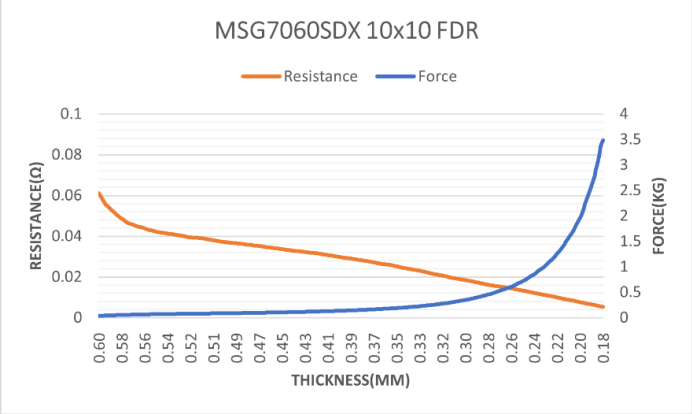
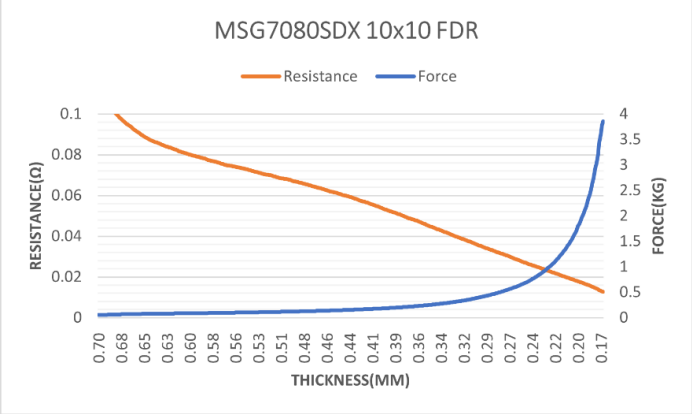
Force-Displacement-Resistance (FDR) Curves

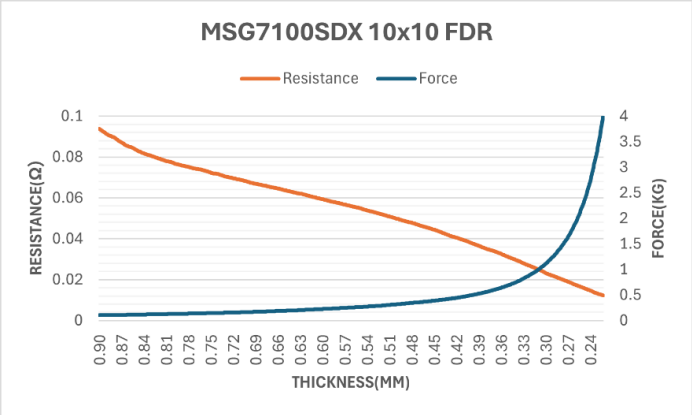
FDR analysis using FDR tester to generate resistance-displacement and force-displacement curves with 10 mm x 10 mm samples.

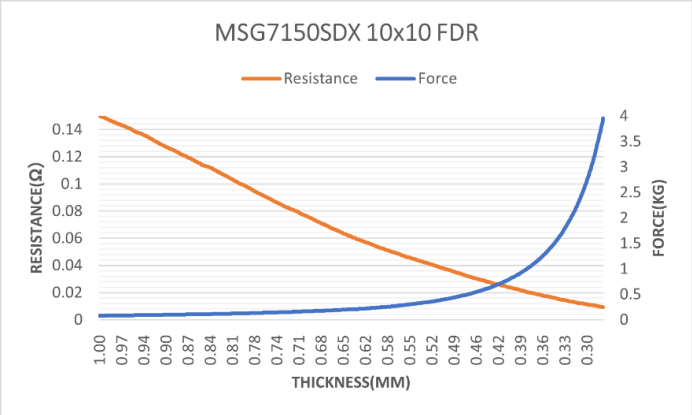












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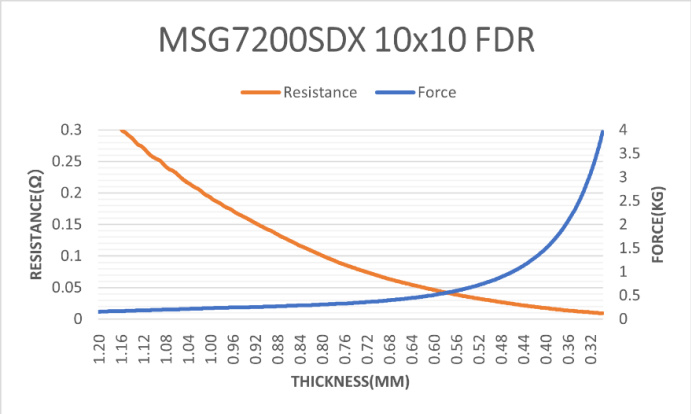
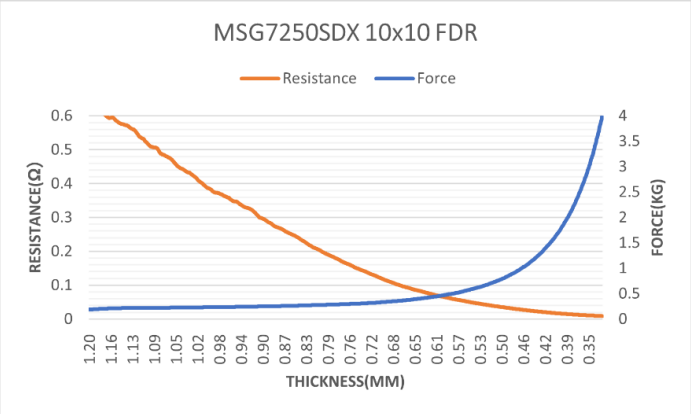
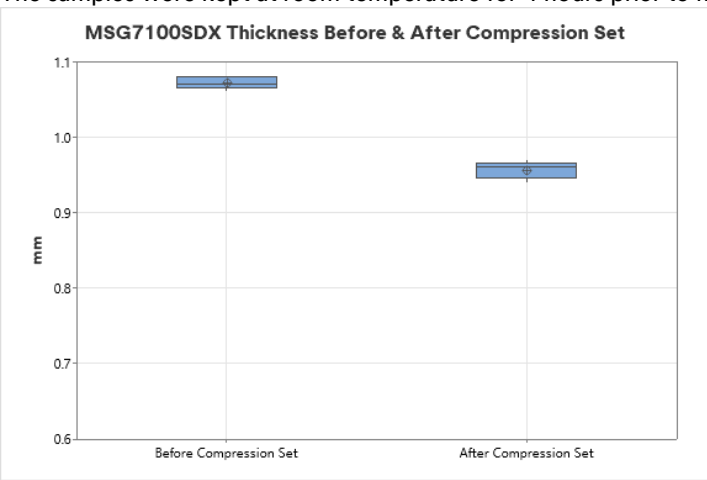
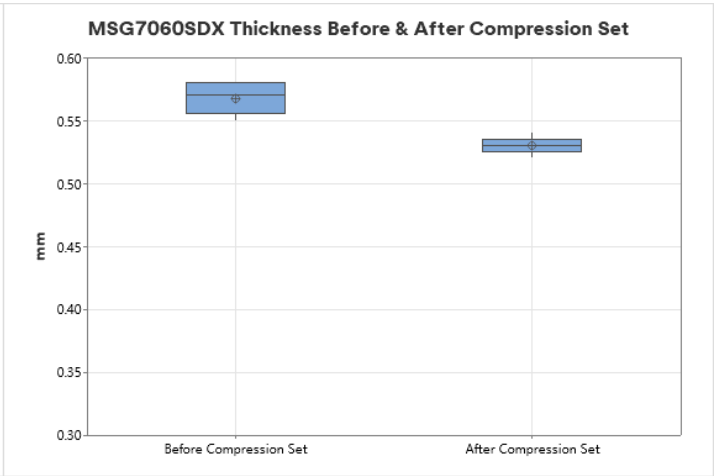




Thickness After Compression Set

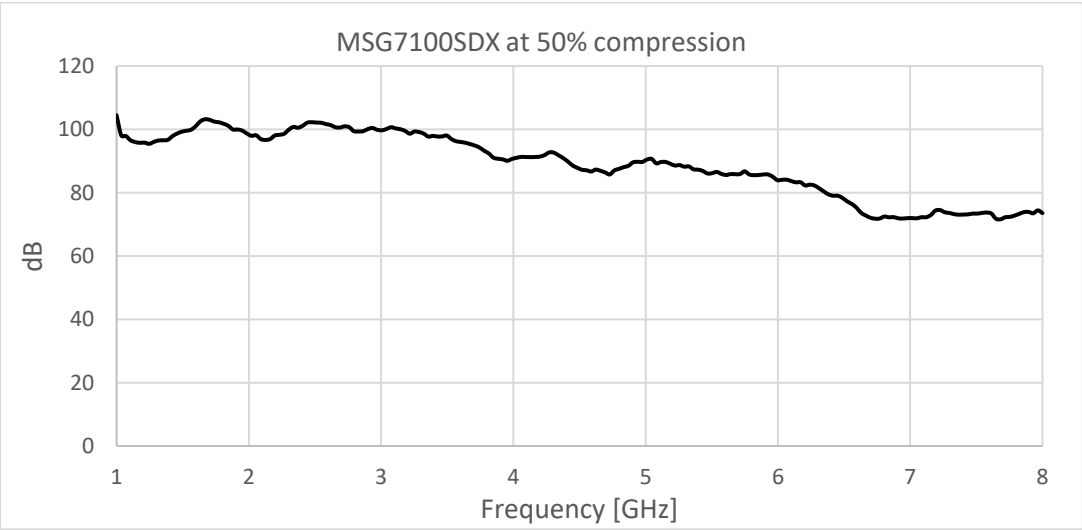
The thickness was measured following a 50% compression set at 70°C for 24 hours for 3M tape MSG7100SDX and 3M tape MSG7060SDX.
The samples were kept at room temperature for 4 hours prior to measurement.





Shielding Effectiveness

Test method: MIL-DTL 83528



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Typical Physical Properties and Performance Characteristics

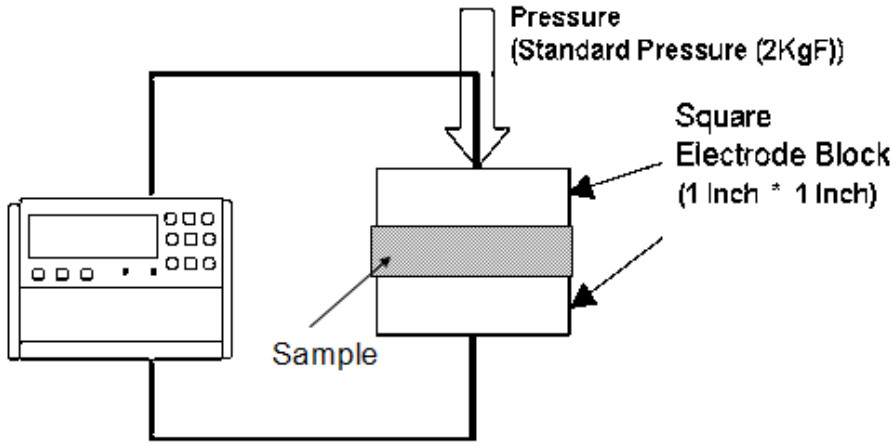
Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes. Final product specifications and testing methods will be outlined in the product's Certificate of Analysis (COA) that is shipped with the commercialized product.

3M™ Electrically Conductive Gasket Tape MSG7000SDX Series		
Property	**Test Method**	
90° Peel Adhesion (dwell 20 min @ RT)	ASTM D3330* (Adhesion to SUS)	0.25N/mm
Resistance though adhesive	ETM-11**	≤ 0.02Ω
Shielding effectiveness	MIL-DTL-83528	80db typical 1 – 6 GHz

*Methods listed as ASTM are tested in accordance with the ASTM method noted
**3M test method notes attached

3M ETM-11: Contact Resistance Test Method

Place 1 square inch of conductive tape on the bottom of the gold-plated electrode and get 2Kg rubber roller to shuttle once on the electrode, then place the 2Kg gold plated electrode onto the tape and start measuring the DC resistance between the electrodes with micro-meter and record the resistance after 30 seconds (Refer to and modified MIL-STD-202 Method 307).



Storage and Shelf Life

The shelf life of 3M™ Electrically Conductive Gasket Tape MSG7000SDX Series is 12 months from the date of manufacture when stored in the original packaging materials and stored at 21°C (70°F) and 50% relative humidity.

Certificate of Analysis (COA)

The 3M Certificate of Analysis (COA) for this product is established when the product is manufactured and deemed commercially available from 3M. The COA contains the 3M test methods, specifications limits and test results for the product's performance attributes that the product will be supplied against. Contact your local 3M representative for this product's COA.

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Regulatory: For regulatory information about this product, contact your 3M representative.

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