

## 3M™ Electrically Conductive Gasket Tape MSG6000F Series

### Product Description

3M™ Electrically Conductive Gasket Tape MSG6000F Series consists of a conductive fabric, highly conductive grey foam and black pressure sensitive adhesive (PSA). It offers excellent grounding performance between substrates and also has high EMI shielding performance. The PSA tack properties make 3M tape MSG6000F series easy to use in assembly operations and offers good adhesion to common metal such as copper, aluminum, stainless steel and smooth conductive substrates.

3M tape MSG6000F series is typically used in applications that require good conductivity, compressibility and resilience. This tape series will help secure a reliable conductive connection for ESD grounding or form a close conductive enclosure to achieve good EMI shielding performance.

3M tape MSG6000F series is effective for EMI shielding over a wide range of frequencies from several tens of megahertz to tens of gigahertz. This tape series is a great solution for many mobile handheld devices, including mobile phones, portable digital cameras, and laptops, that need grounding reinforcement or better shielding.

3M™ Electrically Conductive Gasket Tape MSG6000F Series has three thickness options. The standard width is 400mm. Please contact 3M to review custom width and length options.

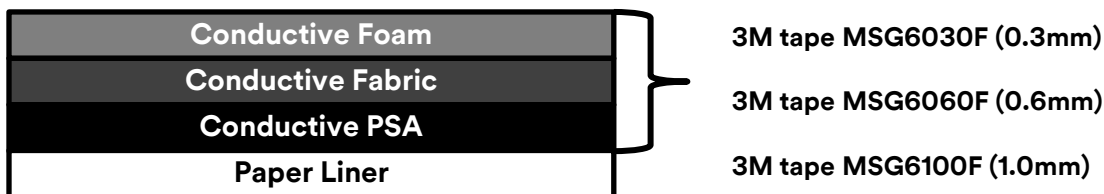
| 3M™ Electrically Conductive Gasket Tape MSG6000F Series |                |
|---|----------------|
| Product Number  | Thickness (mm) |
| 3M Electrically Conductive Gasket Tape MSG6030F         | 0.3            |
| 3M Electrically Conductive Gasket Tape MSG6060F         | 0.6            |
| 3M Electrically Conductive Gasket Tape MSG6100F         | 1.0            |

### Key Features

- Conductive Foam laminated with fabric gets large compression for wide gap range use
- 3M Conductive acrylic pressure sensitive adhesive has high adhesion and good XYZ-axis conductivity
- 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/or maximum 1500 ppm total bromine and chlorine, per IEC 61249-2-21.

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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 MSG6000F Series |   |
|---|---|
| Property  | Value   |
| Adhesive Type   | Black Conductive Acrylic Pressure Sensitive Adhesive  |
| Carrier Type  | Conductive Foam Laminated with Conductive Fabric  |
| Foam Type   | Polyurethane Plated with Cu/Ni  |
| Tape Thickness  | 3M tape MSG6030F: 0.3mm nominal (typical thickness tolerance 0.2mm-0.4mm)<br>3M tape MSG6060F: 0.6mm nominal (typical thickness tolerance 0.45mm-0.8mm)<br>3M tape MSG6100F: 1.0mm nominal (typical thickness tolerance 0.85mm-1.2mm) |
| Liner Type & Color                                      | White PCK with “3M Electronics” logo in red and transparent PET liner   |

## Applications

- Applications that require a good conductivity, compressibility and resilience to secure a reliable conductive connection
- For ESD grounding or form a close conductive enclosure to achieve a good EMI shielding performance
- Mobile handheld devices including mobile phones, portable digital cameras, and laptops

## Typical Physical Properties and Performance Characteristics

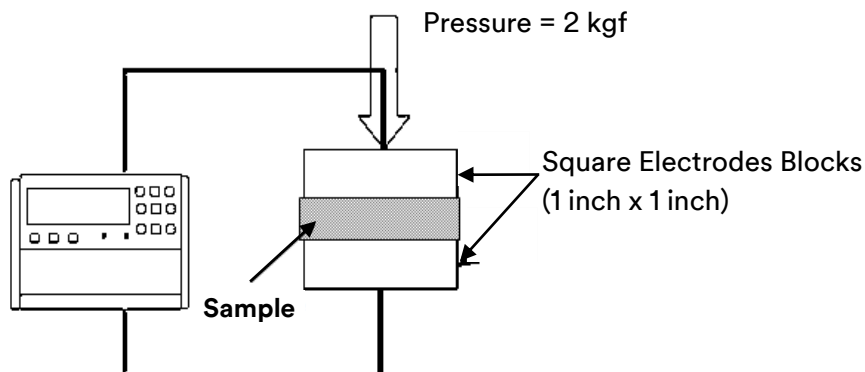
**Note:** The following technical information and data should be considered representative or typical only and should not be used for specification purposes. Final product specifications and testing methods will be outlined in the products Certificate of Analysis (COA) that is provided once the product is approved by 3M for general commercialization and development work is completed.

| 3M™ Electrically Conductive Gasket Tape MSG6000F Series |                              |                                 |                                 |                                 |
|---|------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Property  | Test Method*                 | MSG6030F                        | MSG6060F                        | MSG6100F                        |
| 90° Peel Adhesion (dwell 20 min @ RT)                   | ASTM D3330 (Adhesion to SUS) | 0.3N/mm                         | 0.3N/mm                         | 0.3N/mm                         |
| Shielding Effectiveness                                 | ASTM D4935                   | 80dB                            | 80dB                            | 80dB                            |
| Contact Resistance through Adhesive                     | ETM-11                       | $\leq 0.03\Omega/\text{inch}^2$ | $\leq 0.03\Omega/\text{inch}^2$ | $\leq 0.03\Omega/\text{inch}^2$ |

\*Methods listed as ASTM are tested in accordance with the ASTM method noted; 3M test method ETM-11 as described below

## 3M Test Method ETM-11 - Contact Electrical Resistance Test

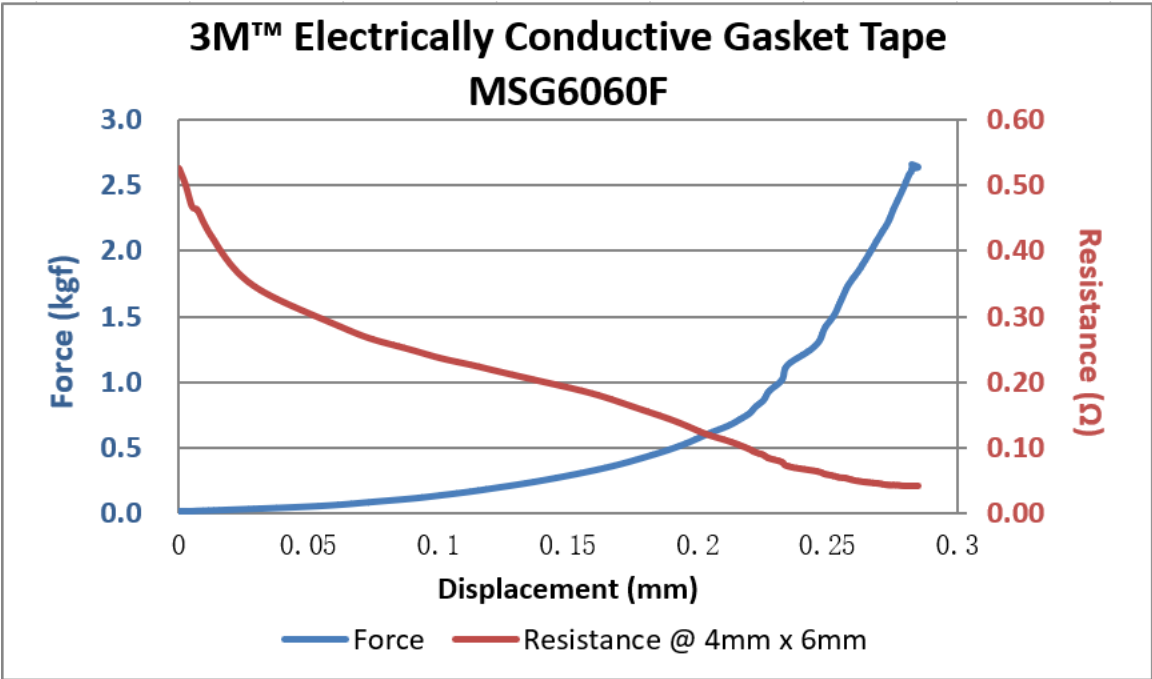
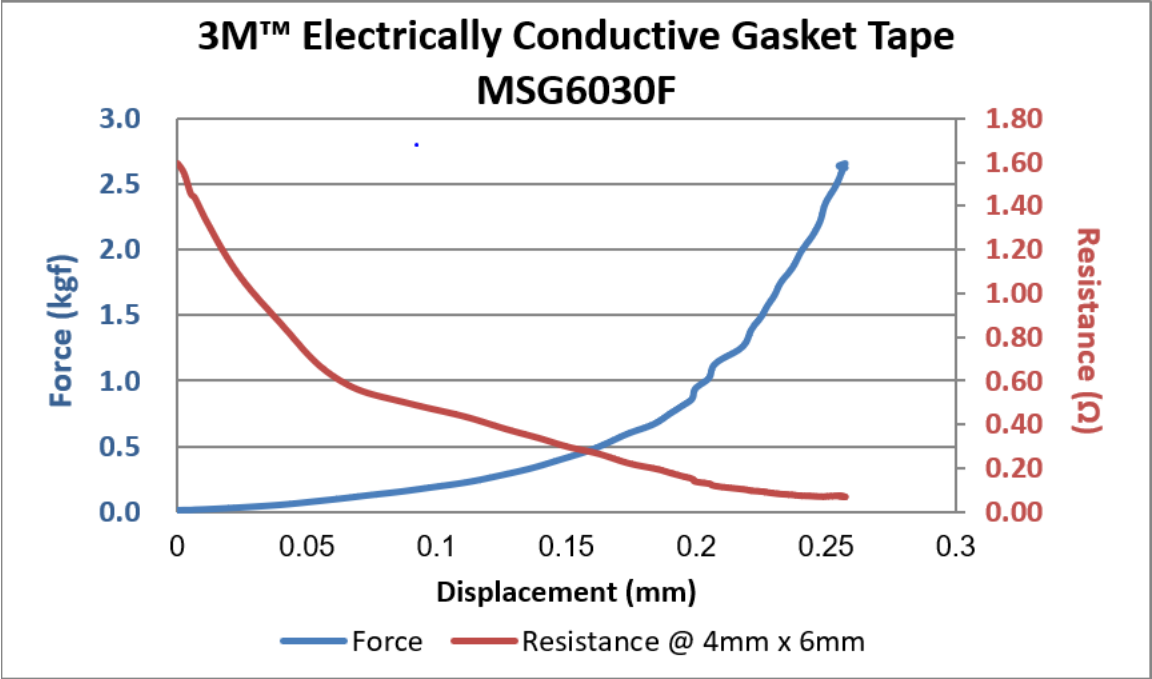
ETM-11, maintained at 5 psi (3.4N/cm<sup>2</sup>) measured on 1 square inch surface area, CR Unit:  $\Omega/\text{inch}^2$



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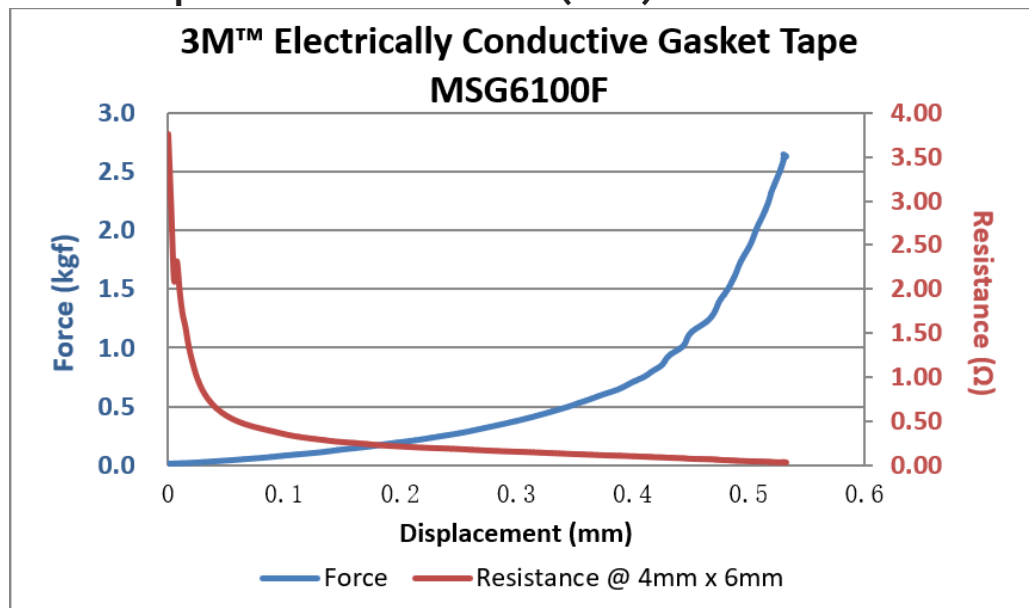
\*\*It is not suggested for excessive high or low temperature excursions where the application performance might be compromised. The user is recommended to conduct application evaluation to determine the fit-for-purpose of tape in their design.

## Force-Displacement-Resistance (FDR) Measurement Curves



## 3M™ Electrically Conductive Gasket Tape MSG6000F Series

### Force-Displacement-Resistance (FDR) Measurement Curves (Continued)



### Application Guide

The bond strength of 3M™ Electrically Conductive Gasket Tape MSG6000F Series depends on the amount of adhesive-to-surface contact developed during application and substrate type and surface conditions.

Note\*: 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.

- 1) Firm application pressure helps develop better wet-out and adhesive contact and may lead to improved bond strength as well as electrical conductivity. Pressure must be applied to the bond area after assembly to ensure sufficient wet-out of the adhesive to the substrates and to engage the conductive acrylic adhesive fillers with the substrates to make electrical connection. 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, final bond strength and electrical conductivity. 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. Some typical surface cleaning solvents are isopropyl alcohol or heptane.
- 4) Adhesion builds with time, up to 24 to 72 hours may be required to reach final adhesion values.

### Storage and Shelf Life

The shelf life of 3M™ Electrically Conductive Gasket Tape MSG6000F 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 is deemed commercially available from 3M. The COA contains the 3M specifications, test methods 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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