3M™ Electrically Conductive Cushioning Gasket Tape
ECG-7033 / ECG-7053 / ECG-7073

Product Description

3M™ Electrically Conductive Cushioning Gasket Tapes ECG-7033 / ECG-7053 / ECG-7073 are electrically conductive compressible gasket tapes in a single coated tapes format with good electrical conductivity and excellent cushion/recovery properties. The 3M ECG-7033 / ECG-7053 / ECG-7073 offer excellent gap filling performance while maintaining good electrical grounding potential. These products offer conductivity through the thickness (Z-axis) and in the plane of the adhesive (X-Y planes) and are ideal for EMI/EMC gasket tape applications between common substrates, such as metal surfaces (including metal plated substrates). These products consist of a soft and conductive polymeric foam gasket and thin electrically conductive adhesive tapes laminated on mesh fabric side (liner side) of the cushion gasket. The conductive adhesive is one of high performance 3M™ Electrically Conductive Adhesive Transfer Tape (ECATT).

The 3M ECG-7033 / ECG-7053 / ECG-7073 Tapes are useful for EMI/RFI shielding and grounding in electronics and electrical devices. The 3M ECG-7033 / ECG-7053 / ECG-7073 may be applied in strips or die cut to specific shapes and sizes. Compared to screws or other mechanical connectors and grounding means, the 3M ECG-7033 / ECG-7053 / ECG-7073 products can provide for reduced assembly time and excellent conformability to the space between substrates, excellent bond line gap filling which will allow for enhanced EMI shielding and reduced EMI emissions. The 3M ECG products are EMI & grounding gaskets and provide for excellent grounding and EMI shielding. The 3M ECG products are of an “open cell” design and thus their “environmental” gasket performance will be limited and must be tested by an end user to see if it meets their environmental sealing requirements (dust, moisture, water, etc.). The 3M ECG products could be used in conjunction with products that are non-conductive and provide for the “Environmental Sealing” if desired (ex: 3M™ VHB™ Tapes).

3M ECG-7033 / ECG-7053 / ECG-7073 are supplied in a 3M logo printed paper liner configuration for easy handling and die-cutting properties. 3M ECG-7033 / ECG-7053 / ECG-7073 are available in standard size and custom sizes (widths and lengths).

Product Construction

![Diagram of Product Construction](image)
3M™ Electrically Conductive Cushioning Gasket Tape ECG-7033 / ECG-7053 / ECG-7073

Product Construction (continued)

<table>
<thead>
<tr>
<th>Product</th>
<th>3M™ Electrically Conductive Cushioning Gasket Tape ECG-7033 / ECG-7053 / ECG-7073</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrier Type</td>
<td>Plated Polyurethane Foam</td>
</tr>
<tr>
<td>Adhesive Type</td>
<td>Soft Acrylic PSA</td>
</tr>
<tr>
<td>Filler Type</td>
<td>Nickel Particles</td>
</tr>
</tbody>
</table>
| Tape Thickness | ECG-7033: 0.32 ± 0.05mm  
EGC-7053: 0.52 ± 0.05mm  
ECG-7073: 0.72 ± 0.05mm |
| Release Liner | PE coated Paper Liner  
(Light grey color 3M logo printed) |
| Roll Length | Standard: 50MT  
Custom size can be supplied by request |

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.

<table>
<thead>
<tr>
<th>Product</th>
<th>3M™ Electrically Conductive Cushioning Gasket Tape ECG-7033 / ECG-7053 / ECG-7073</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical Properties</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z-axis Resistance¹ (1 inch x 1 inch)</td>
<td>&lt; 0.05 Ω</td>
<td>3M TS-EMC-0001</td>
</tr>
<tr>
<td>Z-axis Resistance² (10 mm x 10 mm)</td>
<td>&lt; 0.1 Ω</td>
<td>3M TS-EMC-0001</td>
</tr>
<tr>
<td>Surface Resistance³</td>
<td>&lt; 0.1 Ω / □</td>
<td>3M TS-K0R-939</td>
</tr>
</tbody>
</table>
| Outgassing | Total Mass Loss (TML): 1.0%  
Collected Volatile Condensed Material (CVCM): 0.02%  
Water Vapor Recovered (WVR): 0.25% | ASTM E-595 |
| Minimum Overlap Length | 3.0 mm | |
| Minimum Overlap Width | 3.0 mm |

**Thermal Property**

| Thermal Conductivity | 0.9 W/m-K | QTM-500 |

**Adhesion Properties**

| 180° Peel Adhesion⁴ | 1.2 Kgf / 25mm | 3M TS-EMC-0002 |
Typical Physical Properties and Performance Characteristics (continued)

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

### EMI Shielding Performance

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Effectiveness (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30MHz to 3.0GHz Frequency</td>
<td></td>
</tr>
</tbody>
</table>

![EMI Shielding Performance Graph](image)

### Compression vs. Stress

<table>
<thead>
<tr>
<th>Stress (Kg/cm²)</th>
<th>Compression (%)</th>
</tr>
</thead>
</table>

![Compression vs. Stress Graph](image)

### Operating Temperature Range & Shelf Life

<table>
<thead>
<tr>
<th>Operating Temperature Range &amp; Shelf Life</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Term Exposure (minutes, hours)</td>
<td></td>
</tr>
<tr>
<td>125°C</td>
<td></td>
</tr>
<tr>
<td>Long Term Exposure (days, weeks)</td>
<td></td>
</tr>
<tr>
<td>80°C</td>
<td></td>
</tr>
</tbody>
</table>

Shelf Life of Tape in Roll Form:

- 12 months from date of manufacture when stored in original packaging and stored at 23°C and 50% relative humidity.
Typical Physical Properties and Performance Characteristics (continued)

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

1. **Z-axis Resistance:** Measured between gold plated brass probes with 1 kg load.
   Contact area: 25.4 mm x 25.4 mm, Dwell time: 60 seconds.

2. **Z-axis Resistance:** Measured between gold plated brass probes without load.
   Contact area: 10 mm x 10 mm, Dwell time: 60 seconds.

3. **Surface Resistance:** Cu Plate size 25 mm x 25 mm. Dwell time: 10 seconds.

4. **180° Peel Adhesion:** 25 mm W x 200 mm L size sample, SUS substrate, Cross-head speed - 305 mm/min.
   Test after 1 day dwelling at RT.

**Application Techniques**

- To obtain maximum adhesion, the bonding surfaces must be clean and dry. Isopropyl alcohol is recommended as a cleaning solvent.*

- Bond strength is dependent upon the amount of adhesive-to-surface contact developed during application. The wetted contact area can be increased by applying 3M™ Electrically Conductive Cushioning Gasket Tapes ECG-7033 / ECG-7053 / ECG-7073 firmly with a roller or finger pressure to exclude air entrapment. Adhesion is optimized when the substrates are flat or conformable substrates.

- Electrical performance is dependent upon the nature of the substrate surface finish and surface type (Stainless steel, Aluminum, etc.). Most metal surfaces give enhanced electrical performance with 3M ECG-7033 / ECG-7053 / ECG-7073 when the surface has been lightly abraded and cleaned. Scotch-Brite™ Pads are suggested for preparing the metal surface.

- 3M ECG-7033 / ECG-7053 / ECG-7073 should be applied between 17°C - 35°C. Tape application below 10°C is not suggested because the adhesive will be too firm to wet the substrates, resulting in low adhesion. Warming the substrates to 38°C facilitates adhesion. Once properly applied, low temperature holding power is generally satisfactory.

- 3M ECG-7033 / ECG-7053 / ECG-7073 can be removed by separating the parts using torque for rigid parts or peel for flexible ones. Remove the adhesive by pulling off as much as possible by hand is suggested. Residual adhesive may be removed by rubbing with your finger or by application of 3M™ Packaging Tape over the residual adhesive followed by removal of the packaging tape. The surfaces should be cleaned again before applying a new piece of 3M ECG-7033 / ECG-7053 / ECG-7073. The force required to separate the parts and/or remove the adhesive can be reduced by softening the adhesive by heating to 70°C - 100°C or using solvents such as acetone.*

*Note: Carefully read and follow the manufacturer’s precautions and directions for use when handling cleaning solvents.
3M™ Electrically Conductive Cushioning Gasket Tape ECG-7033 / ECG-7053 / ECG-7073

General Information
3M™ Electrically Conductive Cushioning Gasket Tapes ECG-7033 / ECG-7053 / ECG-7073 provide good adhesion to many metal surfaces and provides good electrical resistance to many substrates. The pressure sensitive nature and fiber reinforcement of 3M ECG-7033 / ECG-7053 / ECG-7073 make this product convenient to use and 3M ECG-7033 / ECG-7053 / ECG-7073 also have very good handling properties including good liner release.

Application Ideas
• 3M™ Electrically Conductive Cushioning Gasket Tapes ECG-7033 / ECG-7053 / ECG-7073 are typically used for applications requiring excellent EMI shielding, flexibility/gap filling in applied space, contact grounding and a mechanical cushion to protect from mechanical shock/vibration in the electronic devices.
• Grounding Mobile Hand Held and Flat Panel Display
• Key pads and display modules in Mobile Hand Held devices and Flat panel display as LCD and PDP need to be electrically attached to the grounding mechanism.
• Assembly of EMI Cage, Metal Case and Frame in Modern Electronic Devices and High Speed Telecommunication Equipment.
• Assembly of cover case and main frame parts
• EMI cage to PCB (printed circuit board). The EMI cages are typically constructed from aluminum frames and lids to protect components on the PCB from EMI/RFI. 3M ECG-7033 / ECG-7053 / ECG-7073 are applied as a die cut in the shape of the perimeter.
Certification/Recognition

**MSDS:** 3M has not prepared a MSDS for this product which is not subject to the MSDS requirements of the Occupational Safety and Health Administration’s Hazard Communication Standard, 29 C.F.R. 1910.1200(b)(6)(v). When used under reasonable conditions or in accordance with the 3M directions for use, the product should not present a health and safety hazard. However, use or processing of the product in a manner not in accordance with the directions for use may affect its performance and present potential health and safety hazards.

**TSCA:** This product is defined as an article under the Toxic Substances Control Act and therefore, it is exempt from inventory listing requirements.

**RoHs Complaint/REACH Compliant:** 3M™ Electrically Conductive Cushioning Gasket Tapes ECG-7033 / ECG-7053 / ECG-7073 comply with the European Union’s “Restriction of Hazardous Substances” (RoHs) initiative and with European REACH regulations 2002/95/EC and 2005/618/EC.

For Additional Information


Important Notice

All statements, technical information, and recommendations related to 3M’s products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product which are not contained in 3M’s current publications, or any contrary statements contained on your purchase order shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of 3M.

Warranty; Limited Remedy; Limited Liability.

This product will be free from defects in material and manufacture at the time of purchase. 3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M’s option, to replace or repair the 3M product or refund the purchase price of the 3M product. Except where prohibited by law, 3M will not be liable for any indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.