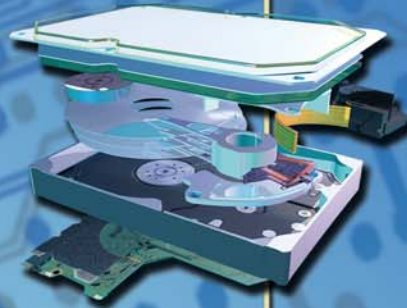




EMI/RFI Shielding & ESD Grounding Solutions



Electrically-Conductive
Adhesive Transfer Tape



EMI/RFI/Shielding,
Thermally Conductive
Cushioning Pads



PCB Ground Plane
Bonding Film

**Get
Connected.**



Get Connected -Stay Connected

The continuing trend toward designing electronic devices with smaller enclosures, denser circuits and higher speeds has made managing electromagnetic/radio frequency interference (EMI/RFI) and electrostatic discharge (ESD) a growing challenge for electronics manufacturers.

3M can help you meet that challenge, with a variety of advanced shielding and grounding solutions designed to help you speed assembly time...reduce weight...save space...control costs...and give you more design flexibility. Let 3M help you get connected!

With 3M Technologies for Shielding and Grounding

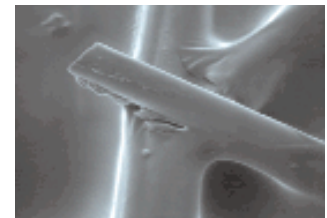
Adhesive Transfer Tapes



3M™ Electrically-Conductive Adhesive Transfer Tapes are designed to help you save time in a variety of specialized electronics assembly operations – from attaching EMI shields and gaskets to grounding and bonding flexible circuits and PCBs – while improving the performance and reliability of your finished products.

These long-lasting adhesive transfer tapes can eliminate the need for screws and mechanical fasteners—while allowing the use of lighter, more compact fabric and layered foil shielding materials.

And, unlike other electrically-conductive adhesives that can be messy and difficult to handle, 3M delivers advanced adhesive and conductive properties in an easy-to-use, pressure-sensitive tape that can be hand or machine applied and die cut to virtually any shape!



In the unique construction of 3M™ XYZ Axis tapes, conductive fibers extend above the adhesive, ensuring a solid electrical connection between substrates. Wiping action creates good electrical contact; spring-loaded tension maintains contact. Plus, the reinforcement provided by the fibers adds excellent handling characteristics.

3 Ways to a Better Connection – with 3M™ Electrically- Conductive Adhesive Tapes

- 1. Improved Adhesion** – Creates a solid bond line with no gaps that might allow EMI emissions. Good initial tack, plus lasting adhesion! Non-corrosive adhesive increases the life of the shield, and allows attachment of dissimilar metals.
- 2. Easy Handling** – Unlike carbon-loaded, semi-liquid adhesives, 3M tape-delivered adhesives stay where you put them, without leaving messy residues behind. Plus, the built-in conductive fibers help reinforce the tape, for excellent handling characteristics. Well-suited for die cutting and automated application.
- 3. Low Electrical Resistance/Good Conductivity** – for increased shielding effectiveness. Solid electrical connection is ensured by means of conductive fibers extending above the adhesive.

3M™ Electrically-Conductive Adhesive Transfer Tapes XYZ-Axis (Isotropic) Conductivity—Scrim Design



Product	Adhesive Type	Contact Resistance (Foil/Rigid Plate)				Applications/Notes
		Alum/Alum	Alum/SS	Copper/SS	Copper/Copper	
9712	Acrylic	< 24 Ω	< 22Ω	--	< .66 Ω	Connect/bond/ground EMI/RFI shields & gaskets to electronic devices. Static dissipation. 3M's most cost-effective solution for applications with moderate electrical requirements.
9713	Acrylic	< 2.5 Ω	< 2.0Ω	<1.0 Ω	<0.5 Ω	Connect/bond/ground EMI/RFI shields & gaskets to electronic devices. Static dissipation. Attaching conductive fabric/foam core EMI gaskets to electronic cabinetry. 3M's highest-performing isotropic electrically conductive tape.
9719	Silicone	< 2.5 Ω	< 2.0Ω	<1.0 Ω	<0.5 Ω	Attaching low surface energy EMI/RFI shields to electronic devices. Suitable for high temp performance (up to 400°F/204°C)

3M™ Electrically-Conductive Adhesive Transfer Tapes XYZ-Axis (Isotropic) Conductivity—Particle Design



3M™ Electrically
Conductive Adhesive
Transfer Tape

Product	Adhesive Type	Contact Resistance (1 Hour Dwell at Room Temperature)		Applications/Notes
		Gold Flex to Gold Plated PCB Trace (2 mm x 5 mm Overlap Area)		
9708	Acrylic	0.3Ω		Pressure sensitive adhesive (PSA) transfer tape with XYZ isotropic electrical conductivity. Best 3M isotropic offering for XYZ conductivity with good adhesion. Best 3M offering for inherent EMI shielding effectiveness. Excellent choice for EMI shield and gasket attachment and grounding applications, plus can provide excellent interconnection of circuits. Good adhesion to common substrates such as aluminum, gold, stainless steel, FR-4 epoxy, Kapton™ polyimide and polyester films. No thermal bonding. Easy to apply.
9709	Acrylic	0.5Ω		Pressure sensitive adhesive (PSA) transfer tape with XYZ isotropic electrical conductivity. Best 3M isotropic offering for adhesion with good XYZ conductivity. Inherent EMI shielding effectiveness. Excellent choice for EMI shield and gasket attachment and grounding applications, plus can provide excellent electrical interconnection of circuits. Good adhesion to common substrates such as aluminum, gold, stainless steel, FR-4 epoxy, Kapton™ polyimide and polyester films. No thermal bonding. Easy to apply.

3M™ Electrically-Conductive Adhesive Transfer Tapes Z Axis (Anisotropic) Conductivity



An easy-to-use, pressure sensitive tape designed for connecting, bonding and grounding flex circuits, PCBs and EMI/RFI shields and gaskets. Applied at room temperature – no thermal bonding required! Not recommended for extreme high or low temperatures.



Product	Adhesive Type	Contact Resistance (Flex/Flex)		Applications/Notes
		50 Mil Wide, Silver Ink Traces on PET (2,500 Mil² Overlap Area)		
9703 Low Outgassing	Acrylic	0.5Ω		Good adhesion; reworkable. For connection/bonding/grounding flex circuits, printed circuits boards, EMI/RFI shields & gaskets; PSA attachments, at room temp. Not recommended for extreme high or low temps. Tape 9703 is the low outgassing version of Tape 9705.
9705	Acrylic	0.5Ω		

Specialty Products for Thermal Management Applications

EMI/RFI/Shielding, Thermally Conductive Cushioning Pads

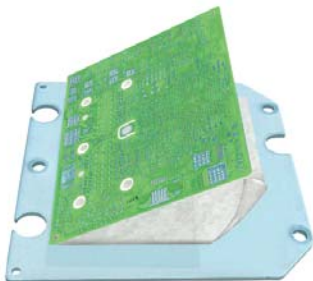
3M™ Hyper-Soft Thermally-Conductive Interface Pads 5503 and 5503S are derived from a new class of hybrid conductive and flame retardant materials, used to augment the heat dissipation effect of conventional heat sinks and other passive devices. Silicone-free to eliminate polysiloxane outgassing! The non-metallic, electromagnetic absorbing particles built in to 3M Hyper-Soft Thermally-Conductive Interface pads offer improved shielding over regular type pads. Helps prevent device malfunctions caused by electromagnetic noise. These incredibly soft and flexible pads are highly conformable, for more efficient heat transfer. S-type pad conforms to UL Flammability Rating UL94V-0.



Product	Adhesive Type	Volume Resistivity	Thermal Conductivity
5503	Silicone	$1.7 \times 10^{12} \Omega \text{ cm.}$	1.7 W/mK

PCB Ground Plane Bonding Film

3M™ Grounded Heat Sink Bonding Film 7373 is an anisotropic electrically-conductive thermoset adhesive film, ideal for bonding and grounding high frequency printed circuit boards, such as cellular base station amplifiers, to heat sinks and heat spreaders. Eliminates the need for mechanical fasteners!



Product	Adhesive Type	Contact Resistance	Thermal Impedence
7373	Epoxy/acrylate	$1.0 \text{ m}\Omega\text{-cm}^2$	$0.5^\circ\text{C-in}^2/\text{W}$

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Issued: 11/06

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5488(HB)
60-5002-0051-8