

3M™ Thermally Conductive Heat Spreading Tape

9876B-05 • 9876B-08 • 9876-10 • 9876-15

Product Description

3M™ Thermally Conductive Heat Spreading Tape (TCoHST) 9876 is designed to provide excellent heat spreading performance on plane direction for stimulation of quick heat dissipation with a preferential heat-transfer path between heat-generating components and designated cooling devices (e.g., heat sink, fans, heat pipes and metal frame).

3M tapes 9876B-05 and 9876B-08 have a black top coated polymeric layer for color matching appearance. 3M tapes 9876-10 and 9876-15 have a copper color top side appearance.

Generally, heat spreaders conduct to distribute thermal energy from a heat-generating component to another location where the heat can be removed through a heat dissipation mechanism. Focused on increasing the X-Y direction thermal conductivity to enhance heat spreading, 3M tape 9876 is designated to solve the limitation of existing products. The multi layered metal heat spreader provides following benefits;

1. Preferential X-Y thermal conductivity – 3M tape 9876 promotes heat spreading on plane direction and minimizes effective total heat conduction on Z-axis.
2. Good adhesion performance – The 3M tape 9876/9876B uses a high performance acrylic PSA for excellent adhesion to many substrates.
3. High thermal conductivity in X-Y direction – The thermal conductivity is proportionate to the effective thermal heat spreading performance of the metal foil layer(s).
4. Flexibility – The pressure sensitive adhesive layers provide flexibility to the laminate and improves the workability.
5. Excellent electrical insulation – 3M tape 9876 has a thin, permanent polymeric cover film that provides for electrical isolation to the heat spreading metal top surface, provides for easier handling of the 3M tape 9876 and reduces product deformation during handling. 3M tape 9876B-08 has a black ink coated polymeric film to provide excellent electrical insulation and handling.
6. No debris, No need for sealing, 3M tape 9876 can be die cut with no loose debris or potential for burrs or slivers.

This product does not contain any banned chemical, heavy metal, halogen compounds or other restricted materials.

There are four thicknesses available. 3M tape 9876-10 is 100μm, 3M tape 9876-15 is 150μm, 9876B-05 is 50μm and 3M tape 9876B-08 is 80μm thickness.



Product Construction

Product	3M™ Thermally Conductive Heat Spreading Tape (TCoHST)			
	9876B-05	9876B-08	9876-10	9876-15
Adhesive Type	Acrylic Adhesive	Acrylic Adhesive	Acrylic Adhesive	Acrylic Adhesive
Thickness (mm)	0.050	0.080	0.100	0.150
Density (g/cm³)	3.0	4.1	5.2	5.4
Base Material	Copper	Copper / Aluminum	Copper	Copper
Product Liner	Release Coated PET Film	Release Coated PET Film	Release Coated White Paper Liner	3M Logo Printed Film Liner
Roll Length	Standard: 50MT (Custom size can be supplied by request)			

Features and Benefits

- Excellent thermal conductivity on plane direction (>200W/m-K).
- Selective thermal spreading path for uniform heat distribution.
- Excellent flexibility without any wrinkle and bending by fold.
- Good light shielding property.
- Low thermal impedance.
- Good and reliable adhesion performance against Al and SUS.
- Easy workability and handling convenience (easy die cut).

Applications

- Heat spreading sheet on FPD (Flat Panel Display) for thin, space constrained devices.
 - LCD with LED BLU
 - PEP Module
 - OLED Module
- Thermal spreading/conduction on Lighting, ECU, Solar Cell, 2nd Battery and Electrical Recharger Module
- Heat Distribution on LED module/ board
- Small display for MHH as LCD and OLED
- COF Chip Thermal Management for Uniform Temperature

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.

Product	3M™ Thermally Conductive Heat Spreading Tape (TCoHST)			
	9876B-05	9876B-08	9876-10	9876-15
90 Angle Peel Adhesion (3M Test Method) Crosshead speed: 508mm/min Initial (15min dwell at RT) Heat aging (72 hr dwell at 70°C) SUS 304 test substrate	Unit: Kg/12.7 mm width			
	> 0.7	> 0.7	> 1.0	> 1.2
	> 1.6	> 1.7	> 2.5	> 2.5
Static Shear (3M Test Method) 500 gram/inch ² at RT 250 gram/inch ² at 70°C) (holding for 10,000 min)	PASS PASS	PASS PASS	PASS PASS	PASS PASS
Thermal Conductivity (3M Test Method) (X-Y / Z-axis; W/m-K)	> 200 / 2.6	> 230 / 1.40	> 250 / 0.80	> 270 / 0.80
Thermal Impedance (3M Test Method) (°C-inch ² /W)	0.13	0.19	0.3	0.45
Dielectric Strength (kV) (3M Test Method)	2.6 kV/0.05mm	2.7 kV/0.08mm	2.9 kV/0.1mm	3.6 kV/0.15mm

Application Techniques

- 3M tape 9876 should be applied in a manner to minimize wrinkles, bubbles and folds as to maximize the heat spreading performance of the product along the desired XY plane.
- Bonding strength is dependent upon the amount of adhesive to surface contact developed. Firm application pressure helps to develop better adhesive contact and improve bonding strength.
- To obtain optimum adhesion, the bonding surfaces must be clean, dry and well unified. Typical surface cleaning solvents are isopropyl alcohol and water (rubbing alcohol) or heptane. **Note:** Be sure to follow manufacturer's safety precautions and directions for use when using solvents.
- Ideal tape application temperature range is 21°C to 38°C (70°F to 100°F). Initial tape application to surfaces at temperatures below 10°C (50°F) is not recommended because the adhesive becomes too firm to adhere readily. However, once properly applied, low temperature holding is generally satisfactory.

Shelf Life and Storage

Tape in roll form: Shelf life is 24 months from the date of manufacture when stored in original cartons at 21°C (70°F) and 50% relative humidity.

Regulatory

For regulatory information about this product, refer to our website at 3M.com.

For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-800-251-8634. Address correspondence to: 3M, Electronics Markets Materials Division, 3M Center, Building 225-3S-06, St. Paul, MN 55144-1000. Our fax number is 651-778-4244 or 1-877-369-2923. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

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Electronics Markets Materials Division

3M Center, Building 225-3S-06
St. Paul, MN 55144-1000
1-800-251-8634 phone
651-778-4244 fax
www.3M.com/electronics

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