Thermally Conductive Hardware and Ceramics

Reduce Thermal Resistance

eliminates air between surfaces with higher conductivity materials

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Improved Performance

improved thermal conductivity between joined surfaces

Easy Assembly

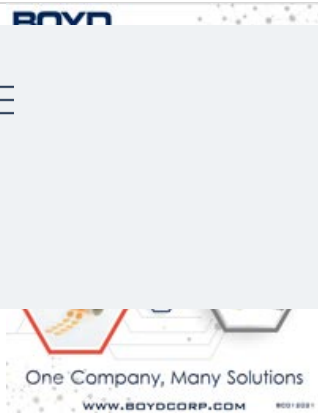
naturally tacky on at least one side

Overview (/thermal/conduction-cooling/hardware-interface-materials.html#overview)

Product Details (/thermal/conduction-cooling/hardware-interface-materials.html#menu1)

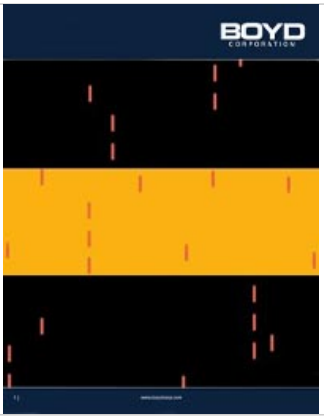
Product Tables (/thermal/conduction-cooling/hardware-interface-materials.html#menu2)

Resources and Downloads



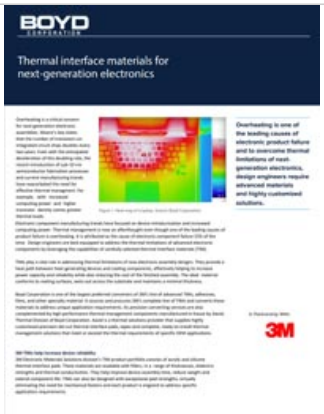
Catalog.pdf)

Thermal Interface Materials Catalog (https://info.boydcorp.com/hubfs/Thermal/Conduction-Cooling/Boyd-Thermal-Interface-Materials-Catalog.pdf)



(https://www.boydcorp.com/resources/resource-center/blog/interface-material-types.html)

Thermal Interface Material Types Blog (/resources/resource-center/blog/interface-material-types.html)



(https://info.boydcorp.com/hubfs/Resources/Resource-Center/Boyd-TIMS-Next-Level-Electronics-

Technical-Paper.pdf)

Thermal Interface Materials for Next-Generation Electronics Paper (https://info.boydcorp.com/hubfs/Resources/Resource-Center/Boyd-TIMS-Next-Level-Electronics-Technical-Paper.pdf)

The ion (/resources/temperature-control/thermal-interface-material-introduction.html)
(/resources/temperature-control/how-thermal-interface-material-works.html)

How Thermal Interface Material Works (/resources/temperature-control/how-thermal-interface-material-works.html)

Thermally Conductive Hardware in the form of liners, washers, bushings, and mounting pads help electrically isolate devices while still maintaining high thermal conductivity. This hardware enables specific passthroughs for cables, electrical leads, and mechanical attachment hardware like screws. By using hard materials like specialized polymers, natural materials, and ceramics, thermal energy can still pass through the material and protect against electrical shock while maintaining high dimensional stability.

Electrically insulating liners enable electrical connectors to pass through grounded barriers, especially enclosures. Transistor Mounting Pads prevent heat damage during solder assembly and facilitate board clean-up, prevent solder bridges, and assure uniform device height after soldering.

Hard plastic covers designed to screw or snap enable easy installation to protect devices from electrical shock during field service and repair. Bushings and Shoulder Washers are utilized in mounting assemblies to evenly distribute the load generated by a spring or insulate pass through cables.

Thermally conductive electrical insulators made from polymers are chosen for their excellent flammability ratings, resistance to a broad range of chemicals, and dimensional stability at high continuous use temperatures.

Ceramics like Aluminum Oxide and Beryllium Oxide have high compressive strengths, dielectric strength, and thermal conductivity with low thermal expansion. These properties make ceramics ideal for high voltage electrical isolation.

First Name*

Last Name*

Email*

Phone number

Company*

Industry*

Please select your closest indu

Quote Request*

Please provide as much detail as possible

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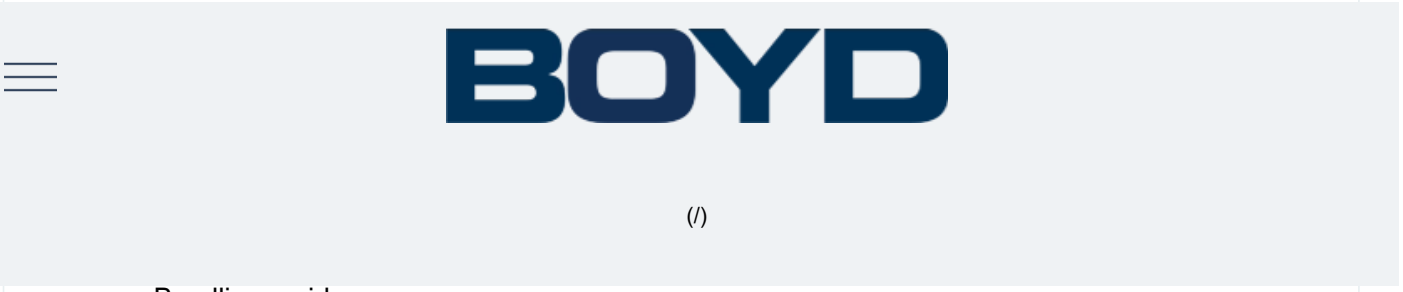
Product Details

To learn more about Materials and Solutions please click the arrows below

Thermally Conductive Hardware Materials

- **Polymers:**
  - Thermoplastic Polyester
    - Rated UL 94 V-O
    - Resistance to most Chemicals
    - Heat Deflection Temperature to 215.6°C (420°F)
    - Continuous Use Temperature: 130 °C (266 °F)
  - Acetal with Teflon Filler
  - Teflon (PTFE)
  - Nylon
    - Maximum Temperature: 260°C
  - Nylon Based Resin
    - (per ASTM STD D4066-82 PA111)
    - Maximum Continuous Use Temperature: 121°C (250 °F)
  - Diallyl Phthalate
    - (per MIL-M-14G Type SDG)
    - Maximum Continuous Use Temperature: 204.4°C (400 °F)



- **Ceramics:**
  - Aluminum Oxide
    - Thermal Conductivity (W/mK): 15.06
  - Beryllium oxide
    - Thermal Conductivity (W/mK):
    - 285 (20°C)
    - T251 (25°C)
    - 186 (100°C)
    - 147 (150°C)
  - Maximum Temperature: 2149°C
  - High Dielectric Strength, which allows safe operating voltages of 1500 volts or more.
  - Inherent Low Electrical Capacitance
  - Grinding, sanding, and pulverizing the material should be avoided.
- **Mica:**
  - Mica
    - Thermal Conductivity: 0.528 W/mK
    - Maximum Temperature: 550°C

Thermally Conductive Hardware Solutions

- Solutions focused on the product itself
- Protect from electrical shock during field service and repair
- Evenly distribute loads from springs or the weight of cables
- Prevent damage during solder assembly of sensitive devices

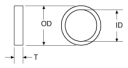
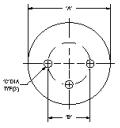
- Integration options with other products
- IIntegrate with enclosures for isolated products

Standard Thermally Conductive Hardware

Search: **Show** 10 **entries**

Part Numb	Drawing	Drawing Details	Device Type	Length (mm)	Width (mm)	Thickness (mm)	Material	Part Chang
103G				9.53	9.53	5.54	Acetal with Teflon Filler	PCN (/file documentation/ 036253
110700F00000G				10.31	10.31	14.17	Teflon	N/A

(/)

Part Numb	Drawing	Drawing Details	Device Type	Length (mm)	Width (mm)	Thickness (mm)	Material	Part Chang
114G		4.50 / 4.63 (0.177 / 0.182) B Dim: 3.56 / 3.81 (0.140 / 0.150) C Dim: 1.40 / 1.66 (0.055 / 0.065)		4.56	4.57	1.53	Nylon 6/6	N/A
4003-1G			TO-3	39.65	26.67	0.81	Beryllium Oxide Ceramic	(/files/part-doc
4003G			TO-3	39.65	26.67	1.57	Beryllium Oxide Ceramic	(/files/p documentation/P
4005G			TO-5	9.14	9.14	0.76	Beryllium Oxide Ceramic	N/A
4018G		A Dim 5.59 (0.220) B Dim 2.54 (0.100) C Dim 1.02 (0.040) Thickness 0.76 (0.030)	TO-18	5.59	5.59	0.76	Beryllium Oxide Ceramic	N/A
4103G			TO-3	39.7	26.67	1.90	Aluminum Oxide Ceramic	N/A

Showing 1 to 10 of total 82 entries

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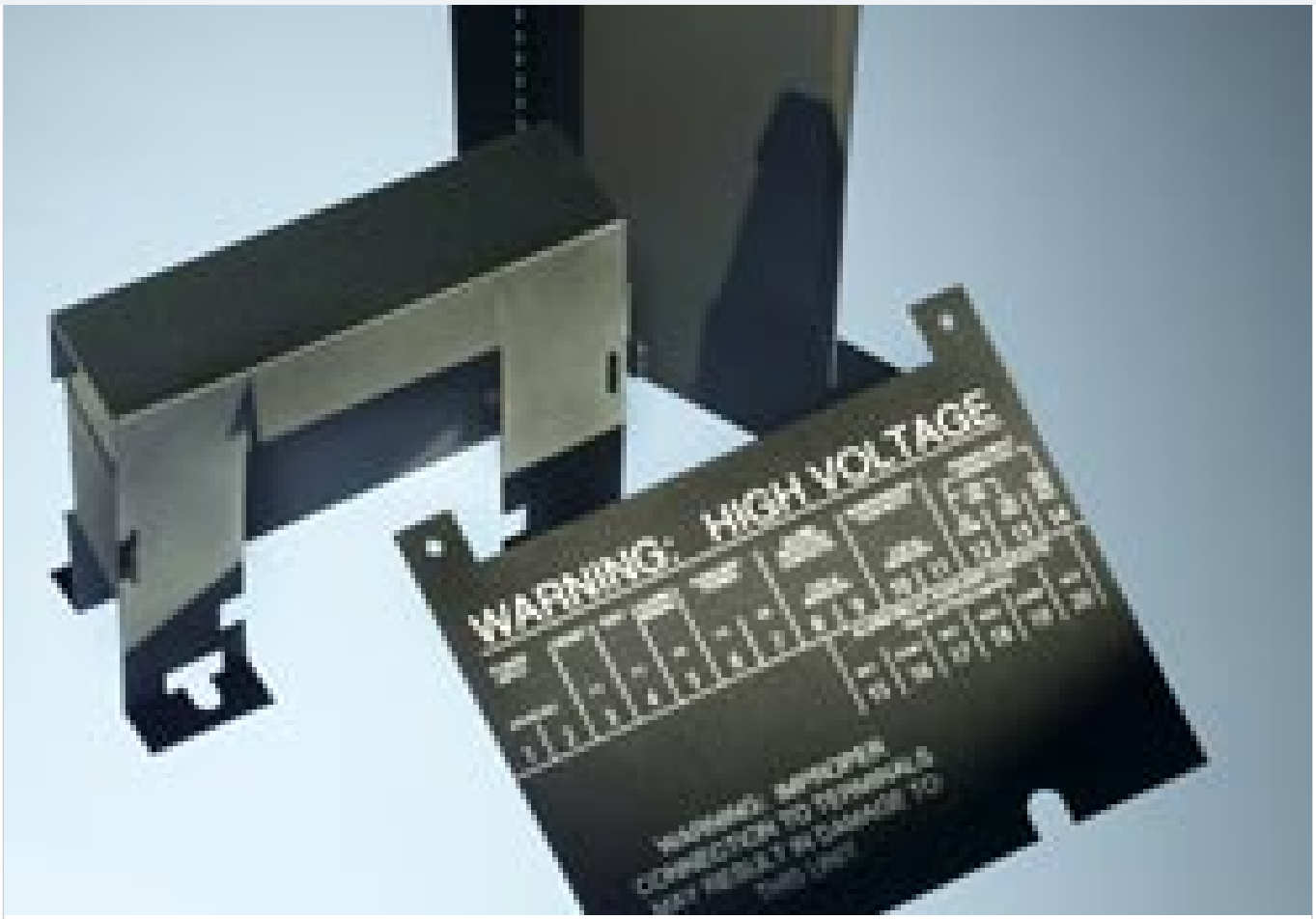
Help Center (/Help-Center.Html)

(/thermal/air-cooling/air-cooled-chassis-enclosures.html)

Chassis & Enclosures (/thermal/air-cooling/air-cooled-chassis-enclosures.html)

(/protection/insulation-shielding/polymeric-film-electrical-insulation.html)

Polymeric Film Electrical Insulators (/protection/insulation-shielding/polymeric-film-electrical-insulation.html)



(/engineered-materials/insulation-shielding/electrical-insulation/lectroshield-electrical-insulation.html)

LectroShield Electrical Insulation (/engineered-materials/insulation-shielding/electrical-insulation/lectroshield-electrical-insulation.html)

(/thermal/air-cooling/board-level-stamped.html)

Stamped Heat Sinks (/thermal/air-cooling/board-level-stamped.html)

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