

RESISTIVE SOLUTIONS FOR **TRANSPORTATION**

CUSTOM RESISTORS ▶

CUSTOM THERMAL ▶

STANDARD SOLUTIONS ▶

OHMITE®

www.ohmite.com

CUSTOM RESISTORS FOR TRANSPORTATION/ EV APPLICATIONS

From motor controls to high-current braking; from charging stations to circuit breakers: Ohmite's power resistors cover a wide range of transportation and EV needs. These power resistors feature custom dielectrics and internal constructions, specialized material compositions for insulation and thermal transfer, as well as specialized material options for high voltage and high energy applications. Popular applications include variable speed drives, power supplies, control devices, motor controls, and other switching designs. Ohmite's offerings include the TAP series designed for low inductance and capacitance; the TGH Series designed for high-frequency and pulse-load applications; and our series of wirewound resistors in ceramic cases for pre-charge and dis-charge applications.



CUSTOM CAPABILITIES

Ohmite's power resistors can be customized to your transportation/EV application needs. Options include terminal construction, mounting options, dielectrics, and coatings. Several of our resistors and their customization options are highlighted below.

TAP Series Planar Resistors

Ohmite's TAP series dissipates 600, 800, 1000, or 2000 watts of power when used with a liquid or air-cooled heat sink system. The resistive element of the series is specially designed for low inductance and capacitance, providing stable performance in addition to high wattage and pulse loading capability. Use with Ohmite's TAP-TP1 pre-cut, high performance thermal pads for a complete thermal solution.

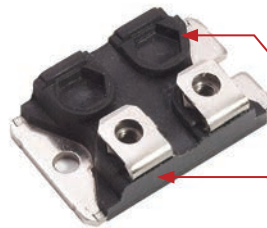


The TAP series offer the following points of customization:

- Terminal constructions for increased creepage
- Custom high and low value constructions
- Custom dielectrics and internal constructions

TGH Series

Their non-inductive design makes these resistors ideally suited for high-frequency and pulse-load applications. Available in 120- or 200-watt sizes, this resistor is designed for direct mounting onto a heatsink. For a complete thermal solution, combine with Ohmite's TGH-TP1 pre-cut, high performance thermal pads.



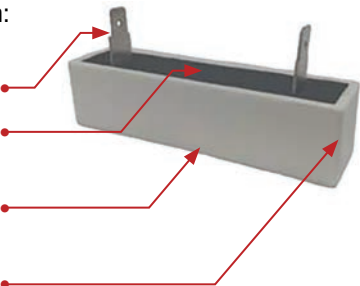
The TGH series offers the following points of customization:

- Choice between two or four terminals
- Multiple resistor configurations in multiple values
- Custom dielectrics and internal constructions



The DCRW & PCRW Series offers the following points of customization:

- Multiple terminations for easy connections
- Specialized material options for high voltage and high energy
- Body materials and mounting tabs can be customized
- Filling options for solvent protection and dielectric withstand



DCRW & PCRW Series

These series of Wirewound Resistors in Ceramic Cases are flameproof and inorganic featuring high performance and high thermal conductivity ideal for demanding EV operating environments. The DCRW is fast on terminals for quick connect and offers a PCB mounting terminal. The PCRW are AEC-Q200 compliant with excellent pulse load capability.

The Ceramic Composition Resistors offers the following points of customization:

- Specialized material compositions for high voltage and high energy
- Multiple termination and mounting options
- Coating options for Dielectric and oil resistance
- Ceramic geometry options include:
 - Oval slabs
 - Tubular
 - Axial



Ceramic Composition Resistors

These ceramic-based resistors can range from, 1/2 watt to a 1000 watts in a single component, and are compatible with a wide array of end products across transportation/EV applications including rail charging stations, switchgear, motor controls, accelerators, circuit breakers, high voltage power supplies, etc.

CUSTOM THERMAL MANAGEMENT FOR TRANSPORTATION/ EV APPLICATIONS

Ohmite strives to be the number one provider of thermal solutions for high power EV applications. We offer an array of heatsinks to meet the needs of not only power resistors, but of all active devices as well. Many of the heatsinks offered by Ohmite are fitted with a patented clip system, eliminating the use of screws and tools for installation.

The goal of this innovative clipping system is to provide users with an easier, more streamlined assembly process for transportation/EV product designers. Our heatsinks include Aluminum Alloy 6063-T5 or equivalent materials and are ROHS compliant. Ohmite's also offers Thermal Interface Material (TIM) solutions for heat sinkable devices. Our TIM's are specifically cut to device footprints with no messy grease or paste.

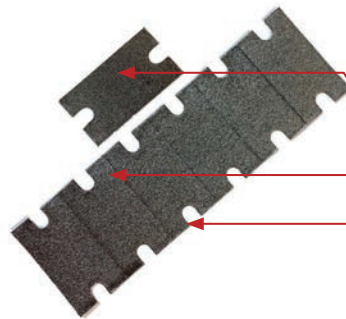


CUSTOM CAPABILITIES

Ohmite's entire line of heatsinks can be customized to your transportation/EV application needs. Options include extrusion lengths, clip type, and more. Several of our heatsinks and their customization options are highlighted below.

Thermal Interface Materials (TIM) HS Thermal Pad and SOT/TAP pads

There are multiple high power heatsinkable devices on the market. Most if not all require pastes, materials, or grease between the heatsink and the device to meet its full potential. Turn to Ohmite for your Thermal Interface Material (TIM) solutions. Ohmite offers TIM's specifically cut to device footprints with no messy grease or paste. The Ohmite TIM's fill air voids and do not require a re-torque creating a quicker assembly process.

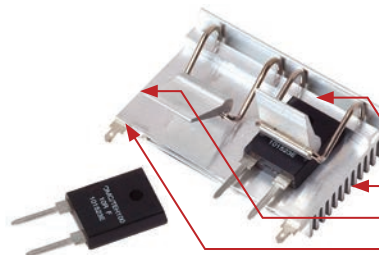


The Thermal Interface Materials (TIM) offers the following points of customization:

- Die cut for specific land patterns
- Packaging options for assembly process needs
- Specialized material compositions for insulation and thermal transfer

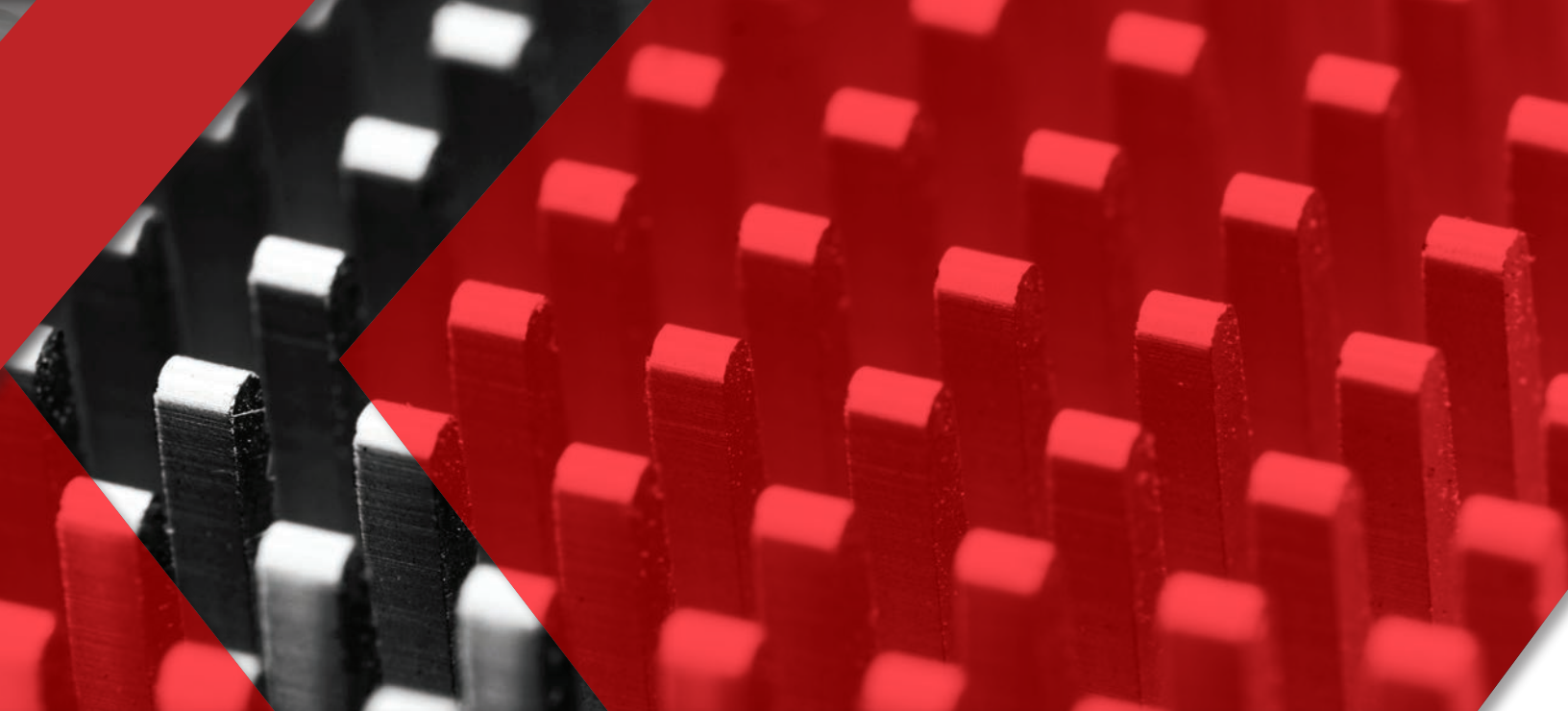
C Series

This series offers high performance, low cost and a compact heat sink with an integrated camming clip system for TO-126, TO-220, TO-247 and TO-264 devices. This powerful heat sink provides tool and fixture free assembly operation, largest surface areas and smallest space occupation. Ideal for high power density and small size (1U or 2U) electronic packaging with forced convection cooling.



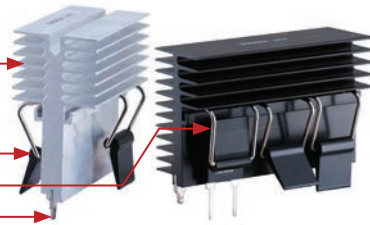
The C series offers the following points of customization:

- Removal or addition of fins
- Extrusion lengths
- Number and clip type
- Mounting foot length or spacers



The CR series offers the following points of customization:

- Removal or addition of fins
- Extrusion lengths
- Number and clip type
- Mounting foot length or spacers



CR Series

The CR-series are configurable and patented (Pat. Pending) high performance, heatsinks with universal cam-clip for TO-247, TO-264, and other packages. This proprietary heat sink provides tool and fixture free assembly operation with its Pat Pending cam clip system. The CR series heatsinks are comparable to some AAVID popular MAX-clip heat sinks in footprint and thermal performance. It is the ideal type of heat sink for high power density and small size electronic packaging with forced convection cooling.



STANDARD PRODUCTS FOR TRANSPORTATION/EV APPLICATIONS

In addition to Ohmite's customizable products, we offer a range of standard products for the transportation and EV markets. Suited for battery management systems, motor controls, and many other applications.



SHA Series Precision Shunts

Ohmite precision shunts are ideal for EV battery management systems, motor controls or other applications requiring current handling up to 1000 amps. Special process, construction, and materials creates a precision product that performs at many levels.



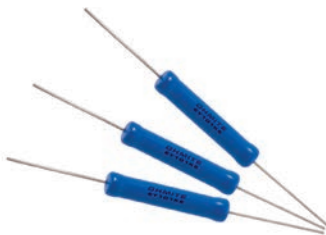
30 Series High Energy Wirewound

Ohmite Manufacturing's family of High Energy Wirewound Resistors employ special winding techniques to maximize the effective joule rating of each resistor. These High Energy Wirewounds are wound so as to maintain the tightest possible pitch (space between windings) and thereby maximize the mass.



AZ Series

The "A" Series non-inductive, ceramic composite resistors are designed for transportation and EV applications where high energy handling capabilities are crucial – ideal for any application which is subject to surges, high peak power, or impulse energy. Their unique design allows uniform distribution of energy throughout their structure which results in low thermal stress. The high-temperature, solvent-resistant epoxy coating carries a UL94V0 flammability rating which is suitable for almost any environment.



EY Series

EY series ceramic composition construction is ideal for high energy/high peak power applications. The EY series is capable of absorbing 400 joules of energy in a single impulse. The increased cross section allows for more energy in a smaller package. Suitable for EV applications utilizing automatic machine insertion, the EY series has higher reliability against disconnection compared to wirewound resistors and film resistors.


ABOUT OHMITE

The Ohmite logo consists of the word "OHMITE" in a bold, black, sans-serif font. A red diagonal line cuts through the letters from the bottom left to the top right, creating a stylized effect.

Ohmite Manufacturing Company has been the leading provider of resistive products for high current, high voltage, and high energy applications for nearly 100 years.

Operations began in a small shop in Chicago in 1925 with carbon and wirewound 'lug' resistors for Chicago's growing radio manufacturing industry. As the needs of the electronics industry evolved, Ohmite has evolved along with it to serve additional industries and aspects of electronic design.

We are dedicated to providing solutions to common design complications with our proven resistive and thermal technology, including a broad selection of resistors, EMI filters, capacitors, power controls, and heat-sinks suited for transportation and electric vehicle (EV) applications. Our portfolio is rounded out by extensive customization capabilities that ensure a tailored, effective solution to each unique design challenge.

A close-up photograph of a printed circuit board (PCB) showing various electronic components. The board is populated with numerous resistors, capacitors, and integrated circuits. The lighting is dramatic, with a strong red and orange glow from the top right, highlighting the metallic surfaces and the intricate layout of the board.

We aim to enable the resistive and thermal engineering community to design end-products that make the world better.



CUSTOM RESISTORS | CUSTOM THERMAL | STANDARD SOLUTIONS

OHMITE®

HEADQUARTERS

27501 Bella Vista Parkway,
Warrenville IL, 60555 - USA

| 1-866-9-OHMITE (Toll Free)

| 1-847-258-0300 (International)

| info@ohmite.com

| www.ohmite.com