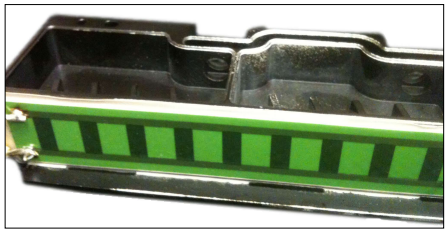
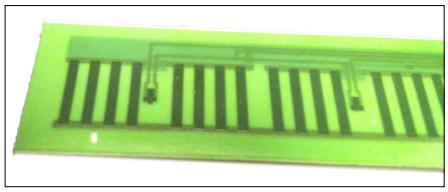
Thick Film Heaters

Ohmite Thick Film technology has been used for over 50 years in power and high voltage resistor solutions. Now, Ohmite's extensive capabilities have been expanded to offer a wide range of heater design options for OEM applications. Heaters fabricated in thick film technology have increased in popularity in the commercial, industrial and household applications because of a number of advantages in comparison to conventional metal-wire resistance elements. Screen printed thick film technology spreads heat across a variety of surface substrates uniformly, predictably, and at cost competitive prices. By using resistive ink as a heat source, and automated screen printing, a variety of design solutions can be provided. Thick film thermistors NTC or PTC can be built into the design for temperature sensitivity and control.

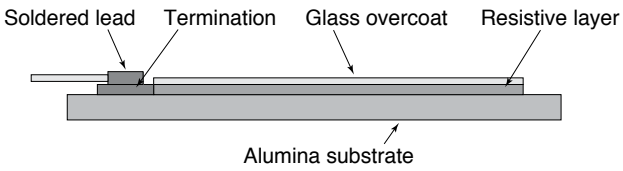
APPLICATIONS

- Food and Beverage Warmers
- Personal Hair Products (straighteners and curlers)
- Deposition Chambers (to dry out laboratory samples for microscopic examination)
- Ink Cartridges (to heat powdered ink in copiers)
- Security Cameras (for lens defogging)
- Battery Warmers
- Mirror Heaters/Defrosters
- Outdoor Enclosure Warmers
- LED Light Bars





CONSTRUCTION



Conductive and resistive inks are printed on a substrate layer, such as ceramic, stainless steel, or aluminum and then covered with layers of protective dielectric glass. When using conductive metal substrates a layer of dielectric is applied first, to isolate the substrate from the circuit. Depending on operating voltage and safety considerations, several layers of protective overcoat can be added to meet customer requirements. Substrate Material, Size and Heat patterns are Custom made to a specific application. Multiple heating elements can be incorporated to achieve uniform heat over a large surface area. Various laminates, such Alumina, AIN and Aluminum, copper and steel can be applied to further enhance thermal efficiency. Printed thick film heaters offer a cost effective and thermally efficient method of delivering heat to your product. The element's adaptability to the many challenges of effectively delivering heat makes it an ideal solution for many thermal problems. Connections with Fast-on terminals and Wire-leads are available.

Thermistor Ink Features

Significant advances in Thermistor Inks allow Ohmite to directly screen print Thermistors onto the desired circuit, allowing the shutdown of the circuit when a predetermined surface temperature is reached.

Voltage

Either AC or DC variable input voltages up to 240 VAC

Thick Film Heaters

TYPICAL SUBSTRATE SPECIFICATIONS

Substrate size: minimum 1" x 1"
Substrate thickness: minimum 0.025"
Dielectric strength layer: 1250VAC

	Thermal Conductivity	Dielectric Strength
Alumina	35 W/m-K	9,000 V/mm
Aluminum Nitride (AlN)	170 W/m-K	15,000 V/mm
Stainless Steel (SAE Grade 430)	26 W/m-K	—
Aluminum	167 W/m-K	—
Polyimide (Kapton®)	0.12 W/m-K	154,000 V/mm

ORDERING INFORMATION

Thick Film Heaters are designed to meet Customer's specific application requirements. Contact Ohmite with the information listed to the right for a proper quote.

- Name
- Company
- Address
- Phone/fax
- E-mail
- Drawing
- Application information
- Detailed description
- Maximum temperature
- Ambient temperature
- Quantity
- Watts
- Volts
- Substrate material
- Maximum thickness
- Maximum size
- UL required (Y/N)
- Any additional information