

THERMISTORS



WHAT IS A THERMISTOR?

A thermistor is a temperature sensor whose electrical resistance changes in response to a change in body temperature. Though the initial concept of an NTC thermistor was first reported in 1833 by Michael Faraday, when he discovered the effect of temperature on silver sulfide, it wasn't until the 1930's when the first commercial thermistors were produced. From that time on, countless improvements have been made in thermistor technology resulting in very rugged, extremely stable, highly accurate devices.

What types of thermistors are available?

NTC thermistors (Negative Temperature Coefficient thermistors) exhibit a decrease in resistance as body temperature increases. NTC thermistors are produced using powdered metal oxides and the exact composition of those oxides as well as stabilizing agents determines the electrical characteristics of the thermistor. NTC thermistor sensors have a non-linear temperature vs resistance relationship and can with-stand temperatures ranging from -55°C to +300°C.

EI Sensor Technologies offers a wide range of NTC [thermistors](#) for temperature measurement, control and compensation applications. Thermistor elements include [Glass Body](#), [Epoxy Coated](#), [End-Banded Surface Mount Chips](#) and [Surface Mount MELF](#) style. We also offer [Inrush Current Limiters](#), which are specially processed thermistors used for suppressing high inrush currents in switching mode power supplies.

To better allow thermistors to be used in harsh environments, EI Sensor offers a wide range of Probe Assemblies. The sensor elements are mounted into a thermowell or housing made out of various materials such as Stainless Steel, Brass, Copper and Plastic. EI Sensor has a variety of thermistor probe styles to choose from including threaded, ring lug, pipe clip-on, straight and flanged. An insulated lead wire will be selected based upon the application needs. Some common choices include Teflon, Kynar, XLPE, PVC and Glass Braid. Is moisture a concern in your application? We offer moisture resistant designs using proprietary techniques to withstand this condition. Please visit our [Thermistor Probes](#) section to learn more

PTC thermistors (Positive Temperature Coefficient thermistors) experience an increase in resistance as body temperature increases. The two main types of PTC thermistors include the Ceramic Switching PTC, which is a non-linear device, and the Silicon PTC, which is highly linear. The transition temperature of switching PTCs is typically between 60°C and 120°C. Silicon PTC thermistors are typically rated up to 150°C, if used above this temperature they may exhibit a negative temperature coefficient. Silicon-based PTC thermistors have a much smaller drift than an NTC thermistor. They are inherently stable devices which are hermetically sealed in an axial leaded glass encapsulated package. The Silicon PTC thermistor is extremely reliable with a very long operational life. EI Sensor's [ED35S series](#) is hermetically sealed in a glass package which results in excellent reliability and stability while maintaining a nearly linear positive temperature coefficient.

Our design engineers are available at sales@ei-sensor.com for assistance in selecting an appropriate NTC or PTC thermistor or thermistor probe assembly for testing in your unique application.



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