

# THERMISTOR TERMINOLOGY

## Definitions

**Thermistor.** A thermistor is a thermally sensitive resistor whose primary function is to exhibit a change in electrical resistance with a change in body temperature.

**Standard reference temperature.** The standard reference temperature is the thermistor body temperature at which nominal zero-power resistance is specified (25°C).

**Zero-power resistance.** The zero-power resistance is the dc resistance value of a thermistor measured at a specified temperature with a power dissipation by the thermistor low enough that any further decrease in power will result in not more than 0.1 percent (or 11/10 of the specified measurement tolerance, whichever is smaller) change in resistance.

**Resistance ratio characteristic.** The resistance ratio characteristic identifies the ratio of the zero-power resistance of a thermistor measured at 25°C to that resistance measured at 125°C.

**Zero-power temperature coefficient of resistance (alpha T).** The zero-power temperature coefficient of resistance is the ratio at a specified temperature (T), of the rate of change of zero-power resistance of the thermistor.

**Negative temperature coefficient (NTC).** A NTC thermistor is one in which the zero-power resistance decreases with an increase in temperature.

**Positive temperature coefficient (PTC).** A PTC thermistor is one in which the zero-power resistance increases with an increase in temperature.

**Maximum operating temperature.** The maximum operating temperature is the maximum body temperature at which the thermistor will operate for an extended period of time with acceptable stability of its characteristics. This temperature is the result of internal or external heating, or both, and should not exceed the maximum value specified.

**Maximum power rating.** The maximum power rating of a thermistor is the maximum power which a thermistor will dissipate for an extended period of time with acceptable stability of its characteristics.

**Dissipation constant.** The dissipation constant is the ratio, (in milliwatts per degree C) at a specified ambient temperature, of a change in power dissipation in a thermistor to the resultant body temperature change.

**Thermal time constant.** The thermal time constant is the time required for a thermistor to change 63.2 percent of the total difference between its initial and final body temperature when subjected to a step function change in temperature under zero-power conditions.

**Resistance-temperature characteristic.** The resistance-temperature characteristic is the relationship between the zero-power resistance of a thermistor and its body temperature.

**Temperature-Wattage Characteristic.** The temperature-wattage characteristic of a thermistor is the relationship at a specified ambient temperature between the thermistor temperature and the applied steady-state wattage.

**Current-time characteristic.** The current-time characteristic is the relationship at a specified ambient temperature between the current through a thermistor and time, upon application or interruption of voltage to it.

**Stability.** Stability of a thermistor is the ability of a thermistor to retain specified characteristics after being subjected to designated environmental or electrical test conditions.

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