

THERMISTOR APPLICATIONS

Applications

- PTC thermistors can be used as current-limiting devices for circuit protection, as replacements for fuses. Current through the device causes a small amount of resistive heating. If the current is large enough to generate more heat than the device can lose to its surroundings, the device heats up, causing its resistance to increase, and therefore causing even more heating. This creates a self-reinforcing effect that drives the resistance upwards, reducing the current and voltage available to the device.
- PTC thermistors can be used as heating elements in small temperature-controlled ovens. As the temperature rises, resistance increases, decreasing the current and the heating. The result is a steady state. A typical application is a crystal oven controlling the temperature of the crystal of a high-precision crystal oscillator.

Crystal ovens are usually set at the upper limit of the equipment's temperature specification, so they can maintain the temperature by heating.

- NTC thermistors are used as resistance thermometers in low-temperature measurements of the order of 10 K.
- NTC thermistors can be used as inrush-current limiting devices in power supply circuits. They present a higher resistance initially which prevents large currents from flowing at turn-on, and then heat up and become much lower resistance to allow higher current flow during normal operation. These thermistors are usually much larger than measuring type thermistors, and are purpose designed for this application.
- Thermistors are also commonly used in modern digital thermostats and to monitor the temperature of battery packs while charging.