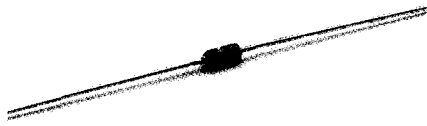


# TEMPSISTOR® TEMPERATURE COMPENSATOR



The leading SMS™ Tempsistor® is designed for applications where surface mounting is required. The Tempsistor is a temperature compensator designed to offset the temperature drift of metallic and silicon-based semi-conductors. Applications include pressure transducers, opto amplifiers, inductive motor controllers, and automatic gain controls. Small size can replace 1/8 watt or larger resistor. The leadless SMS Series is also available on tape and reel for automatic surface mounting.

## Tempsistor Specifications

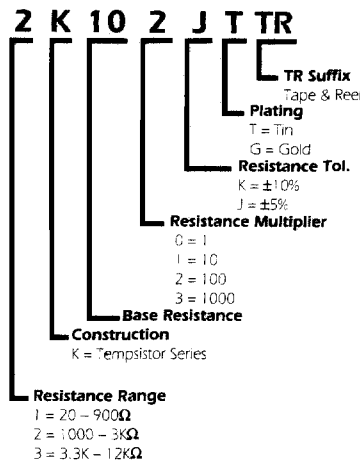
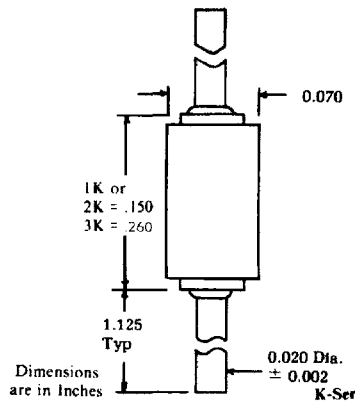
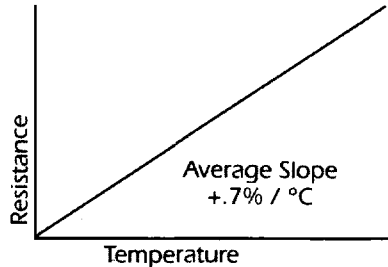
DISSIPATION CONSTANT - (Design circuit so that this value is not exceeded.)

Style 1K and 2K = 2.5 MW/°C  
Style 3K = 5 MW/°C

TIME CONSTANT - \*

Style 1K and 2K = 8 sec. in still air, 1 sec. in rapidly stirred oil.  
Style 3K = 19 sec. in still air, 2.2 sec. in rapidly stirred oil.

\*Time required for a Thermistor to change 63.2% of the temperature difference between its initial and final body temperature, when subjected to a step function change in temperature under zero-power conditions.



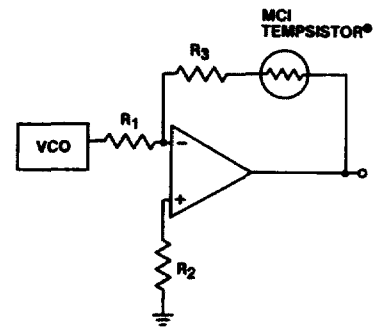
The Tempsistor is a new concept for providing temperature compensation of sensitive components and integrated circuits. Its average temperature coefficient of 0.7% / °C is a good complement for most silicon-based semiconductors.

The Tempsistor is made from specialty P-doped silicon. The doping level is varied to achieve different resistivity levels. The element is then hermetically sealed in a glass capsule designed to meet or exceed the requirements of MIL-T-23648.

The circuits discussed in this application note are provided for informational purposes only and are not meant to convey ownership of possible patented or copyrighted circuit designs.

## Degradation of Outputs Due to Temperature

Many integrated circuit outputs, including VCOs are sensitive to change in temperature. The amplitude of the output signal may diminish somewhat with an increasing temperature. A Therm-O-Disc Tempsistor can be used in the feedback network of an operational amp to minimize this effect.



Temperature Compensation of Output Amplitude

# HERMODYSC®