

Search



[Products](#) [Applications](#) [Industries](#) [Partners](#) [Support](#) [About Us](#)

You are here: [Home](#) > [Products](#) > [PTC Thermistor Elements](#) > [Standard PTC Thermistors](#)



## TEMPERATURE PROTECTION DEVICES DISC STYLE

### DISC STYLE

#### Features

- Wide Ohmic Value Range
- Fast Thermal Response Time
- Range of Transition/ Switching Temperature
- High Sensitivity

### STANDARD PTC THERMISTORS

Positive Temperature Coefficient (PTC) thermistors are thermally sensitive semiconductor resistors which exhibit an increase in resistance at a specified temperature. Change in the resistance of a PTC thermistor can be brought about either by a change in the ambient temperature or internally by self heating resulting from current flowing through the device. Most of the practical applications of PTC thermistors are based on these material characteristics.

### PTC DISC STYLE DEVICES

RTI Electronics manufactures and distributes disc style thermistors in resistance values ranging from 1.0 to 1500 ohms @25°C, and switching temperatures (Ts) of 40 to 120°C. The maximum operating voltage (Vmax) available is 350V DC.

### Thermistor Terminology for Temperature Measurement & Control Devices

- **D.C.** - The dissipation constant is the ratio, normally expressed in milliwatts per degree C ( $\text{mW}/^\circ\text{C}$ ) at a specified ambient temperature, of a change in power dissipated in a thermistor to the resultant change in body temperature.
- **T.C.** - The thermal time constant is the time required for a thermistor to change 63.2% of the total difference between its initial and final body temperature when subjected to a step function change in temperature under zero-power conditions and is normally expressed in seconds (S).

### APPLICATIONS

The applications of standard PTC thermistors can be classified in two main groups:

1. Applications where the temperature of the PTC is primarily determined by the temperature of the surrounding environment. The first group includes applications such as temperature measurement, temperature control, temperature compensation and over-temperature protection.
2. Applications where the temperature of the PTC is primarily determined by the electrical power dissipated by the device. The second group includes applications such as over-current protection, liquid level detection and time delay

### Some of the more popular applications of PTC Thermistors include:

- Over-Temperature Protection
- Temperature Compensation Arc Suppression
- Time Delay
- Liquid Level Sensing

NOTE: Do not apply voltage exceeding Vmax to the PTC device. Doing so may destroy the thermistor. Although several PTC's may be connected in series for temperature sensing applications, do not connect PTC thermistors in series to obtain higher voltage ratings. Since no two devices are exactly the same, one would

tend to heat faster than the others thereby limiting the current flow through the other devices and resulting in the entire voltage available being dropped across the single device.

PTC's may, however, be connected in parallel to increase the current ratings in current limiting applications. RTI Electronics' engineers specialize in the development of state-of-the-art devices for the most demanding applications. If you have a unique application which requires a part not listed in this catalog please feel free to contact our applications engineering department. RTI Electronics is capable

- Air Flow Sensing
- Automatic Color TV Degaussing
- Non-Destructive Fusing
- Self Regulating Heaters
- Single Phase Motor Starting

**Other Considerations:**

- Voltage
- Review Thermal time constant
- Determine Operating temperature range

...to contact our applications engineering department. RTI Electronics is capable of producing many custom PTC thermistor designs to meet your critical demands.

**Selection Considerations for PTC Thermistor Disc Devices**

The most important considerations necessary when selecting standard PTC thermistors are resistance at 25°C as well as the transition temperature.

**Base Resistance (R@25°C)** - The first consideration in the selection of a standard PTC disc PTC disc thermistor is the nominal Base Resistance value at 25°C (R@25°C). The available values are tabulated in the Standard PTC Thermistor Specifications table.

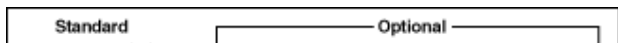
**Switch Temperature (Ts)** - The second consideration is to determine the required Switch Temperature (Ts) (sometimes alternatively identified as the Transition Temperatures or Curie Point). RTI's standard PTC disc thermistors are available with Switch Temperatures ranging from 40°C to 120°C. The Switch Temperatures available for each Base Resistance value are show in the Standard PTC Thermistor Specifications table.

**Maximum Operating Voltage (Vmax)** - Next calculate or estimate the voltage that will be across the tentatively selected thermistor when the device is switched into its high resistance mode (the thermistor's resistance in its high resistance mode will typically be greater by two to three orders of magnitude than its R@25°C value). If the voltage estimated is greater than the Vmax rating of the selected part then another selection with a higher Vmax rating must be made.

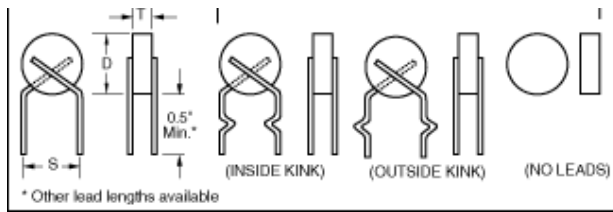
Note: Consult RTI's Application Engineering Department for technical assistance in selecting devices with requirements that cannot be found in the Standard PTC Thermistor Specification table.

Standard PTC Thermistor Specifications

Part Number	Base Resistance	Switch Temp.	Max. Operating	Dissipation	Time	Heat Capacity	Reference Dimensions			
	R <sub>o@25°C</sub> (ohm) ±30%	T <sub>s</sub> (°C) ±6°C	Voltage V <sub>max</sub>	Constant Dc (mW/°C)	Constant (Sec.)	Hc (Watt-Sec/°C)	D	T	S	Lead Dia. (in.)
SL5504D-1R0-120	1	120	15	15	50	0.48	0.55	0.04	0.30	0.032
SL5003D-1R8-120	1.8	120	20	12	50	0.29	0.50	0.03	0.30	0.025
SL5004D-2R0-120	2	120	25	14	50	0.39	0.50	0.04	0.30	0.032
SL4005D-5R0-110	5	110	25	10	45	0.31	0.40	0.05	0.30	0.025
SL3505D-7R5-120	7.5	120	50	9	40	0.24	0.35	0.05	0.25	0.020
SL5510D-100-110	10	110	132	16	90	1.19	0.55	0.10	0.30	0.025
SL3005D-100-120	10	120	50	7	35	0.18	0.30	0.05	0.25	0.020
SL5510D-100-120	10	120	132	16	90	1.19	0.55	0.10	0.30	0.025
SL2505D-200-120	20	120	50	7	30	0.12	0.25	0.05	0.20	0.020
SL5010D-250-065	25	65	132	15	80	0.98	0.50	0.10	0.30	0.025
SL3006D-250-120	25	120	50	7	35	0.21	0.30	0.06	0.25	0.020
SL3010D-400-110	40	110	132	8	45	0.35	0.30	0.10	0.25	0.020
SL5510D-500-065	50	65	265	16	90	1.19	0.55	0.10	0.30	0.032
SL4010D-500-110	50	110	132	12	60	0.63	0.40	0.10	0.30	0.025
SL2005D-101-040	100	40	50	6	30	0.08	0.20	0.05	0.20	0.020
SL2005D-101-050	100	50	50	6	30	0.08	0.20	0.05	0.20	0.020
SL2005D-101-060	100	60	50	6	30	0.08	0.20	0.05	0.20	0.020
SL2005D-101-070	100	70	50	6	30	0.08	0.20	0.05	0.20	0.020
SL2005D-101-080	100	80	50	6	30	0.08	0.20	0.05	0.20	0.020
SL2005D-101-090	100	90	50	6	30	0.08	0.20	0.05	0.20	0.020
SL2005D-101-100	100	100	50	6	30	0.08	0.20	0.05	0.20	0.020
SL2005D-101-110	100	110	50	6	30	0.08	0.20	0.05	0.20	0.020
SL2005D-101-120	100	120	50	6	30	0.08	0.20	0.05	0.20	0.020
SL3010D-101-110	100	110	132	8	45	0.35	0.30	0.10	0.25	0.020
SL5010D-101-120	100	120	265	15	80	0.98	0.50	0.10	0.30	0.025
SL2008D-251-120	250	120	150	6	30	0.13	0.20	0.08	0.20	0.020
SL2010D-501-120	500	120	250	6	30	0.16	0.20	0.10	0.20	0.020
SL2010D-102-110	1000	110	300	6	30	0.16	0.20	0.10	0.20	0.020
SL2012D-152-110	1500	110	350	6	30	0.19	0.20	0.12	0.20	0.020



Options:  
Standard devices may be modified to best suit a



The values for dissipation constant and time constant are for reference only. Mounting method and environmental conditions can affect these parameters.

particular application by specifying any of the following options.

- Non-standard resistance values and tolerances at 25°C or other temperatures
- Non-standard switch temperature
- Encapsulation (epoxy or silicone resin)
- Special lead material
- Special lead configuration

**RTI ELECTRONICS**

RTI Electronics  
P: 814.474.1571  
F: 814.474.3110

[HOME >](#)

[About Us >](#)

[Contact Us >](#)

[Privacy Policy >](#)

[Terms & Conditions >](#)

**Tools & Services**

[Request Quote >](#)

[Browse Products >](#)

[Find Distributors >](#)

[Customer Support >](#)

**Explore Our Full Line of API T**

[RF & Microwave Solutions >](#)

[Microelectronics & Hybrids >](#)

[EMI Filters, Magnetics & Component](#)

[Power Products >](#)

© 2012 API Technologies Corp. All Rights Reserved. | Corporate Home: [www.apitech.com](http://www.apitech.com) | Powered by [Volusion](#)