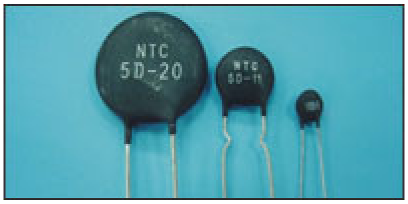
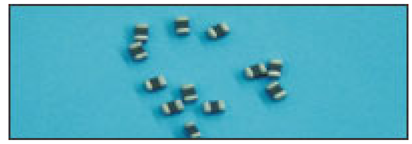
NTC SERIES SPECIFICATION

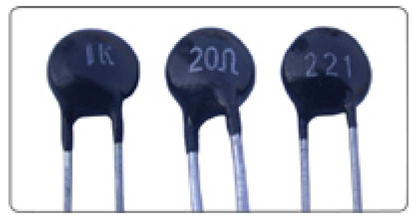


NTC Thermistor of NSP Power-type

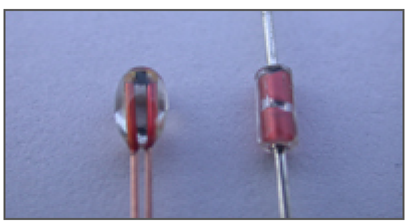


NTC Thermistor of SMD-type

NTC Thermistor of MF52-type



NTC Thermistor of MF11, 12-type



NTC High-precision Thermistor of MF58-type

ZT

* Outline：

The NTC thermistor is a semi-conductive ceramic component made from a transitional metal oxide as a major material. It is featured with its fine response to the temperature changes; i.e. the resistance decreases when the temperature increases. And owing to this, The NTC thermistor and the thermal sensor are employed to test and control the temperature. Thus, setting the temperature on the basis of the resistance can carry out the control over temperature.

*Critical Technical Parameters of NTC Thermistor

1、Rt---Resistance Value at Zero-power
It is resistance which is got at a fixed temperature on a basis of a testing power which causes resistance to vary in a range which can be ignored in relation to the total testing error.
2、R25---Resistance Value at Rated Zero-power
The design resistance of the thermistor usually refers to the resistance value got at Zero-power at 25℃,which is usually indicated on the thermistor.
3、B-Value
B value stands for the thermal exponent at a negative temperature coefficient. It is defined as a ratio of the balance between the natural logarithms of resistance values at zero-power to the balance between the reciprocals of the two temperatures. The formula is as below:

$$B = \ln\frac{R_{T1}}{R_{T2}} \Big/ \left(\frac{1}{T_1} - \frac{1}{T_2}\right) = \frac{T_1 T_2}{T_2 - T_1} \ln\frac{R_{T1}}{R_{T2}}$$

In this formula：

- R_{T1}-is the resistance at zero-power when the temperature is T_1
- R_{T2}-is the resistance at zero-power when the temperature is T_2.

unless otherwise specified，B-Value is got by calculating the zero-power resistance at25oC（298.15K）&50oC（323.15K）.It is not a firm constant within the range of working temperature
4、Resistance-to-Temperature Coefficient at Zero-power
It refers to the ratio of a thermistor, resistance value at Zero-power, in a pre-set temperature, to the resistance value at zero-power. The f formula is as below：

$$\alpha_T = \frac{1}{R_T}\frac{dR_T}{dT} = -\frac{B}{T^2}$$

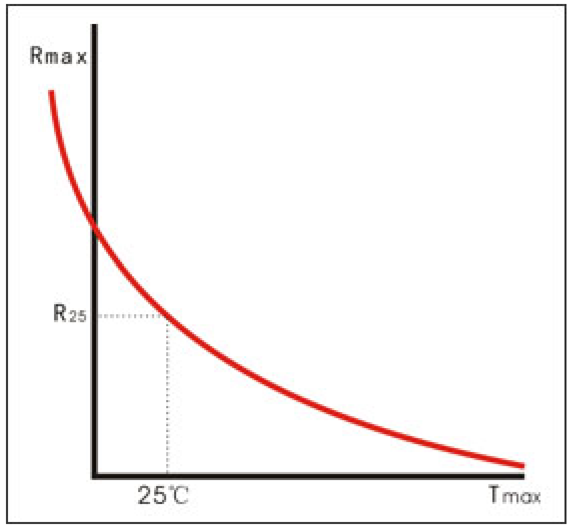
In this formula:

- α_T-stands for the resistance-temperature coefficient at zero-power when the temperature is T
- R_T-stands for the resistance value at zero-power when the temperature is T
- T-stands for the temperature(in K)
- B-stands for B-Value

5、Dissipation Coefficient δ

It is the ratio of the changes with a thermistor dissipation power, in a pre-set normal temperature environment, to the changes with the temperature. The formula is as below： $\delta = \Delta P / \Delta T$.

δ changes in response when the ambient temperature changes, within the ranges of the working temperature.



6、Heat Time Constant

At zero-power and when a mutation occurs with the temperature, the time "t",which is spent for finishing 63.2%of the gap between the beginning temperature and the ending temperature in the thermistor,is directly proportional to "C",the heat capacity of the thermistor,and is inversely proportional toδ,the dissipationconstant.that is ： $\tau=C/\delta$ The NTC thermistor and the thermal sensor used for the purpose of temperature's testing and controlling, have some characteristics by comparison with thermal sensors used for other purposes, as below.

(1) Good Stability and Reliability in performance;

(2) High Precision, good interconvertibility and good consistency;

(3)Great resistance-to-temperature ratio and high sensibility;

(4) Low in costs and especially suitable for testing of low or medium temperature.