

THERMISTOR

"Thermistor" is the generic name given to thermally sensitive resistors.

Negative temperature coefficient thermistor is generally called as thermistor. Thermistor is a semiconducting ceramic resistor produced by sintering the materials at high temperature and made mainly from metal oxide.

Depending on the manufacturing method and the structure, there are many shapes and characteristics for various purposes such as temperature measurement, temperature compensation and etc.

The thermistor resistance values, unless otherwise specified, are classified at a standard temperature of 25°C.

B constant is calculated from the resistance values at 25°C and 85°C.

Resistance - Temperature Characteristics

The resistance of a temperature is solely a function of its absolute temperature. Since electrical power being dissipated within a temperature might heat above its ambient temperature and thereby reduce its resistance, it is necessary to test for resistance with temperature. The resistance so measured is called R_T , which means the resistance at essentially zero-power.

The mathematical expression which relates the resistance and the absolute temperature of a thermistor is as follows:

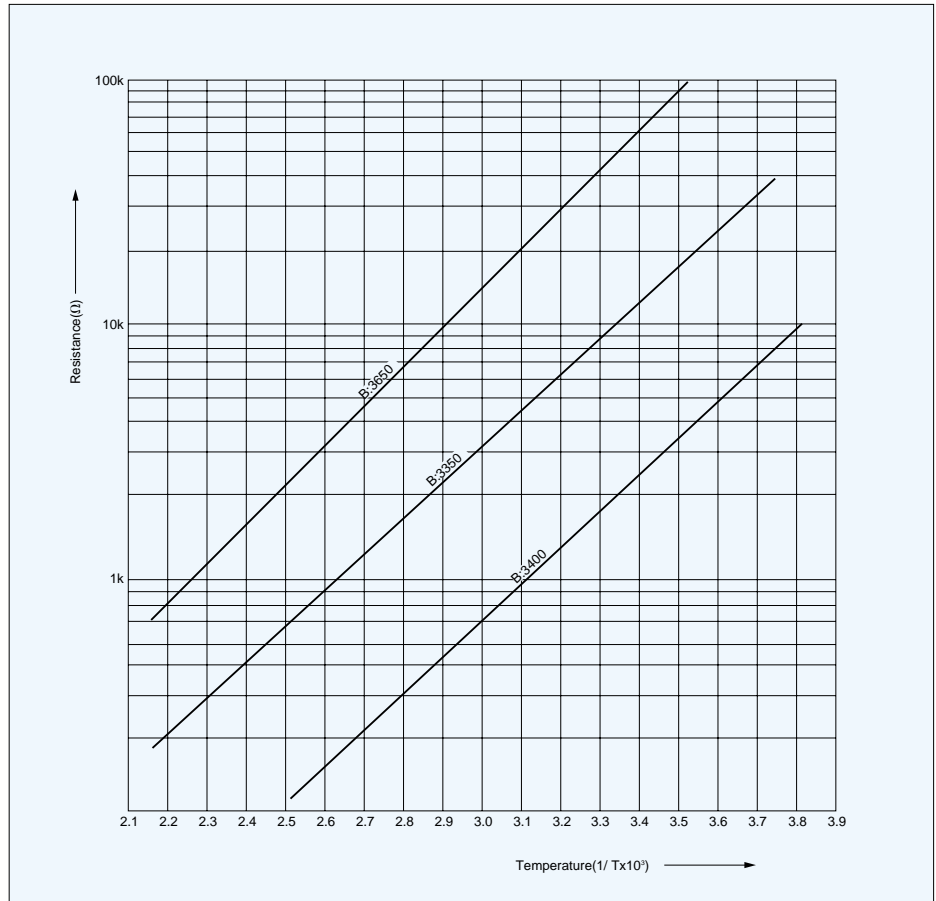
$$R_a = R_b \exp \left[B \left(\frac{1}{T_1} - \frac{1}{T_2} \right) \right]$$

Where: R_a is the resistance at absolute temperature T_1
 R_b is the resistance at absolute temperature T_2
 B is a constant which depends on the material of the thermistor

Unless otherwise specified, all values of B are determined from measurements made at 25°C and 85°C.

The temperature coefficient of resistance α is expressed in the following equation:

$$\alpha = - \frac{B}{T^2} \times 100 (\%/^{\circ}\text{C})$$



Dissipation factor

Dissipation factor (δ) is power in milliwatts required to raise thermistor temperature 1°C. Measured with thermistor suspended by its leads in a specified environment.

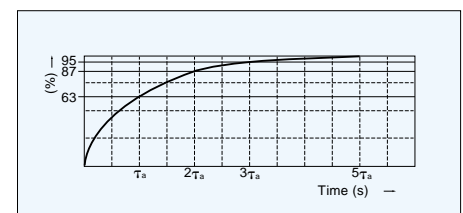
$$\delta = \frac{P}{\Delta t} (\text{mW}/^{\circ}\text{C})$$

P : Power (mW)

Δt : Raise temperature (°C)

Thermal time constant

Thermal time constant (τ_a) is the time required by a thermistor to change 63% of the difference between its initial and final temperature. Measured with thermistor suspended by its leads in specified environment.



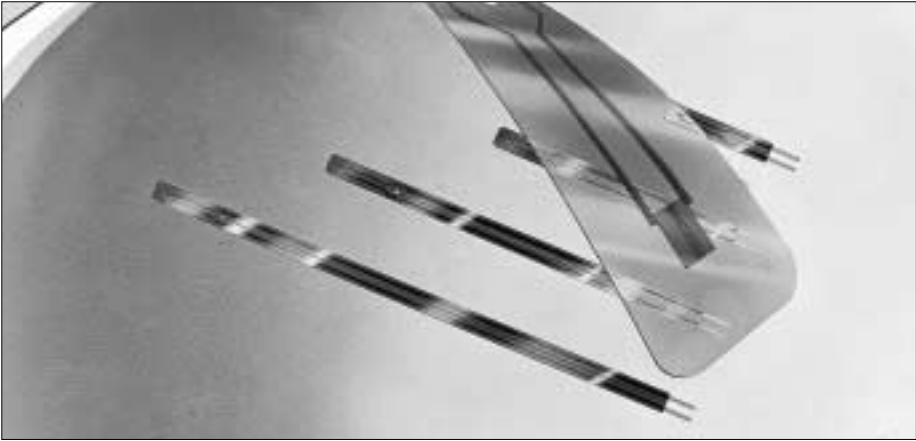
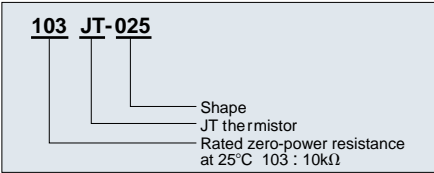
ULTIMATE THINNESS, JT THERMISTOR

500μm only

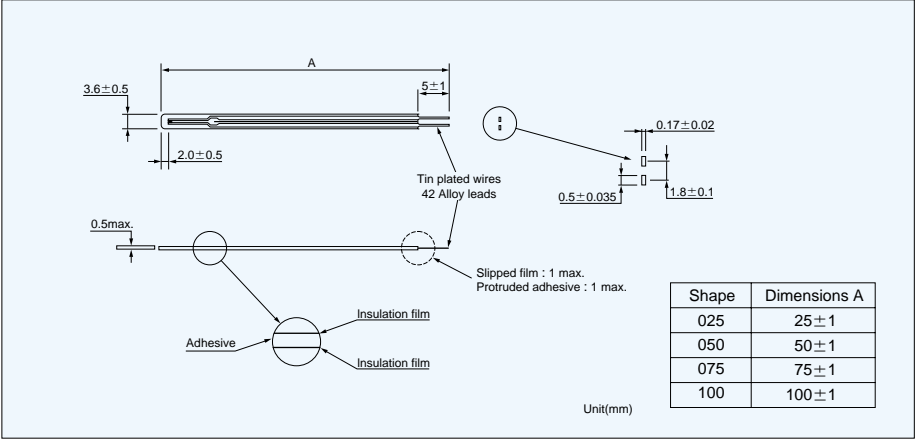
JT THERMISTOR

JT thermistors feature ultra thinness of 500μm and superior electrical insulation.
It is possible to use with safety in ambience that might contact with electrodes.

Part number



Dimensions



Resistance-Temperature

Temperature (°C)	Type	
	103JT	104JT
-50	367.7	9584
-40	204.7	4572
-30	118.5	2282
-20	71.02	1191
-10	43.67	647.2
0	27.70	365.0
10	18.07	212.5
20	12.11	127.7
30	8.301	78.88
40	5.811	50.03
50	4.147	32.51
60	3.011	21.61
70	2.224	14.66
80	1.668	10.13
90	1.267	7.135
100		5.111
110		3.720
120		2.746
125		2.371

Unit(kΩ)

Specifications

Part No.	R ₂₅ *1	B value*2	Dissipation factor (mW/°C)	Thermal time constant(s)*3	Rated power at 25°C(mW)	Operating temp. range(°C)
103JT-□□□	10kΩ±1%	3435K±1%	0.7	5	3.5	-50~90
104JT-□□□	100kΩ±1%	4390K±1%	0.7	5	3.5	-50~125

*1 R₂₅ : Rated zero-power resistance value at 25°C, ±2% and 3% are also available.
*2 B value : determined by rated zero-power resistance at 25°C and 85°C.
*3 Time when thermistor temperature reaches 63.2% of the temperature difference. The value is measured in the air.