



DESCRIPTION

NTC thermistor is Negative Temperature Coefficient of Thermal resistor.

A thermistor is a thermally sensitive resistor whose primary function is to exhibit a change in electrical resistance with a change in body temperature.

NTC thermistor is one in which the zero-power resistance decreases with an increase in temperature.

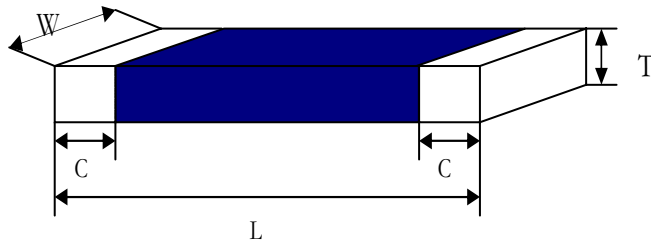
FEATURES

- Small Size, Low Capacitance at 40 MHz (below 3pF)
- Corresponding to the high B value.
- Glass coated perform for long term reliability
- Strong against electrostatic.
- Excellent in cost-performance.
- High Accuracy and High Environmental Resistance are provided due to our original Manufacturing Method.
- All Pb-free product [Pb and Cd are not contained in product]

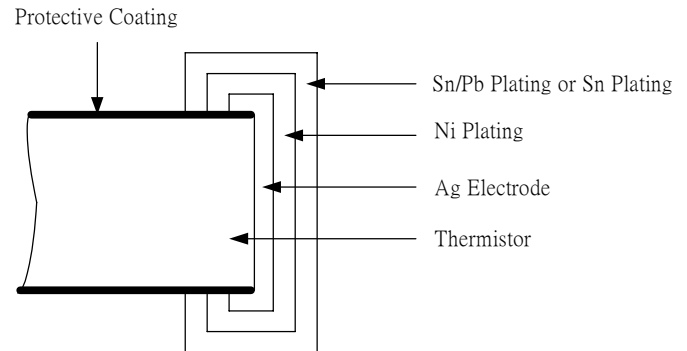
APPLICATIONS

- Mobile Communication related equipment. (TCXO, RF circuit, LCD panel, Battery pack) .
- Computer related equipment.
- Temperature detection for CPU and memory device.
- Video camcorder, car audio related equipment.
- Temperature compensation for contrast of LCD.
- Optical communication equipment.

CHIP DIMENSION

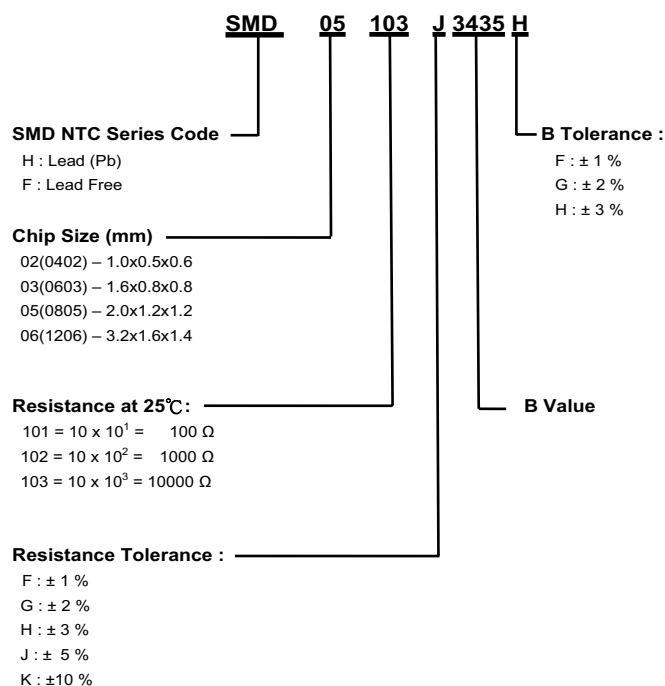


CHIP STRUCTURE



ITEM	L(mm)	W(mm)	T(mm)	C(mm)
1005 (0402)	1.00 ±0.05	0.50 ±0.05	0.50±0.05	0.25±0.10
1608 (0603)	1.60 ±0.10	0.80 ±0.10	0.95 ±0.10	0.40±0.20
2012 (0805)	2.00 ±0.20	1.25 ±0.20	1.20±0.20	0.50±0.20
3216 (1206)	3.20 ±0.20	1.60 ±0.20	1.40 ±0.30	0.25±0.60

SMD CHIP NTC ORDER MAP



1005 (0402) Size

SPECIFICATION

Part Number (SMD)	Resistance (25°C) (Ω)	B-constant (25-85°C) (k)	Maximum Power Rating (25°C) (mW)	Thermal Dissipation Constant (mW/°C)	Operating Temp. Range (°C)
02220□3150□	22	3150	250	2.5	-40 ~ 125
02300□3150□	30	3150			
02470□3150□	47	3150			
02680□3150□	68	3150			
02101□3250□	100	3250			
02151□3250□	150	3250			
02221□3250□	220	3250			
02102□4100□	1.0K	4100			
02152□4100□	1.5K	4100			
02202□4100□	2.0K	4100			
02222□4100□	2.2K	4100			
02332□4100□	3.3K	4100			
02472□4100□	4.7K	4100			
02103□3435□	10K	3435			
02103□3800□	10K	3800			
02103□4100□	10K	4100			
02103□4500□	10K	4500			
02223□3800□	22K	3800			
02333□4050□	33K	4050			
02333□4500□	33K	4500			
02473□4050□	47K	4050			
02683□4050□	68K	4050			
02104□4100□	100K	4100			
02104□4500□	100K	4500			
02154□4100□	150K	4100			
02224□4650□	220K	4650			
02474□4500□	470K	4100			
02474□4750□	470K	4750			

※ Please inquire to our sales for other spec.

BASIC CHARACTERISTICS

1. Zero-power Resistance of Thermistor

$$R = R_0 \exp B (1/T - 1/T_0) \dots\dots\dots(1)$$

R : Resistance in ambient temperature T (K)
(K : absolute temperature)

R₀ : Resistance in ambient temperature T₀ (K)

B : B-constant of Thermistor

2. B-Constant

As (1) formula

$$B = \ln (R/R_0) / (1/T - 1/T_0) \dots\dots\dots(2)$$

3. Thermal Dissipation Constant

When spend electric power P (mW) in ambient temperature T₁, if Thermistor temperature rises T₂, there is a formula as follows

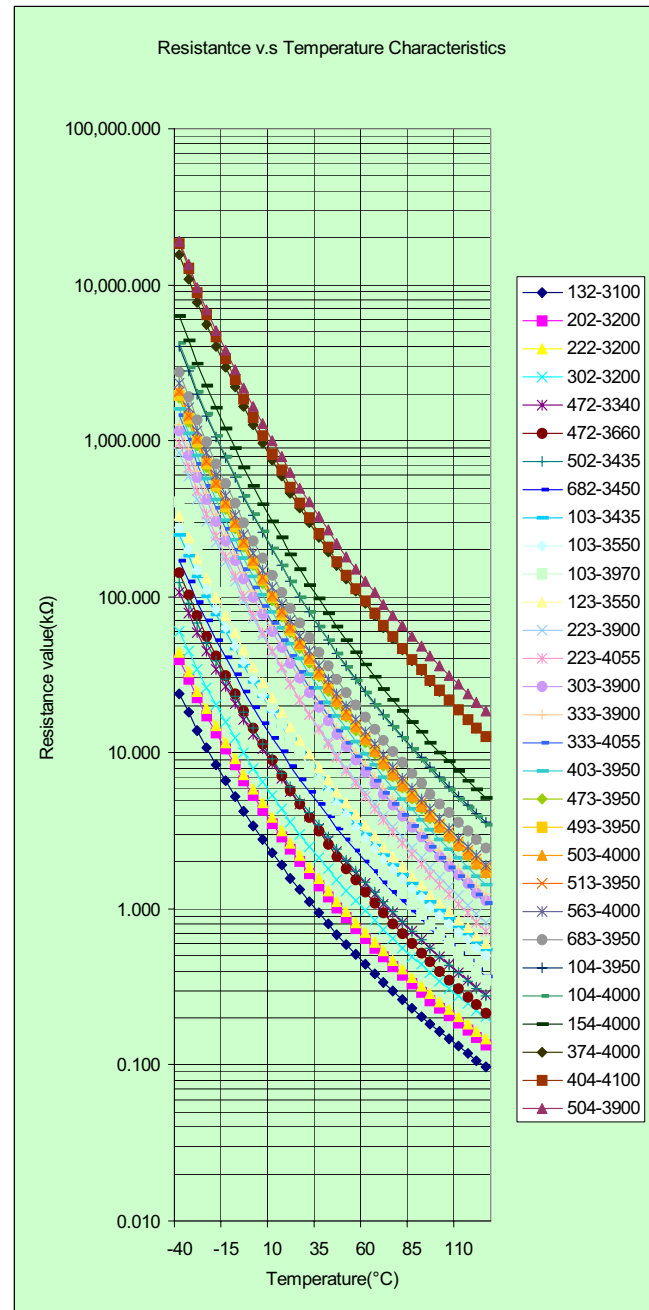
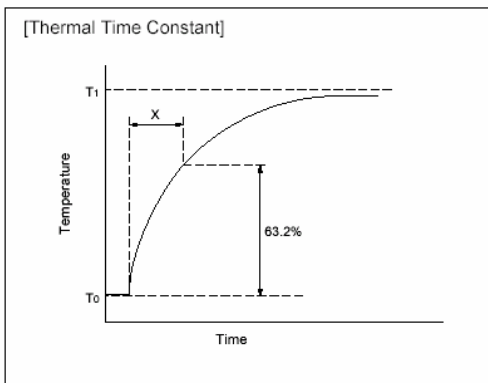
$$P = C (T_2 - T_1) \dots\dots\dots(3)$$

C : Thermal dissipation constant (mW/°C)

Thermal dissipation constant change by dimensions, measure, measured condition etc.

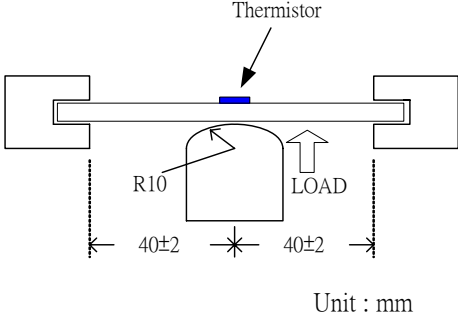
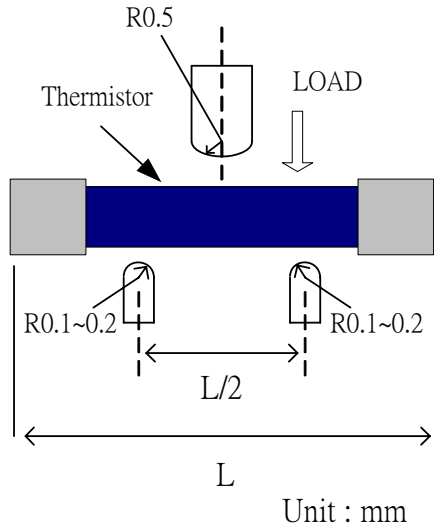
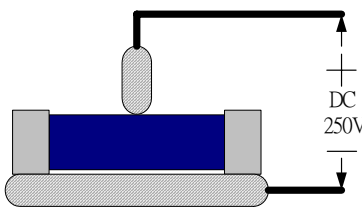
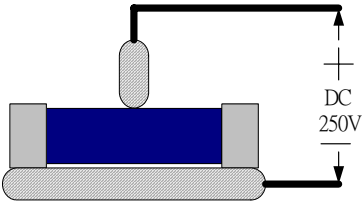
4. Thermal Time Constant

Period in which Thermistor temperature will change 63.2% of its temperature difference from ambient temperature T₀ (°C) to T₁ (°C).

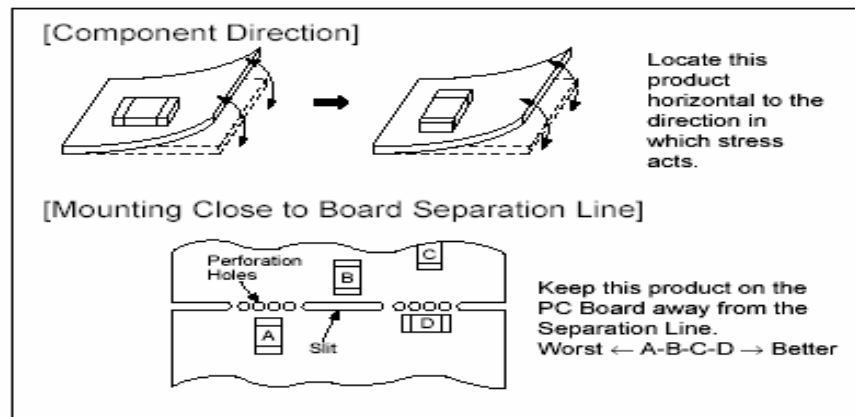


RELIABILITY TEST

Test Item		Standard	Test Method	$\Delta R_{25} / R_{25}$
Environmental test	Life	MIL-STD-202F Method 108A	Test temperature : 70°C Test duration : 1000 hrs Load power : 1206 – 6.5 mW , 0805 – 5.0 mW , 0603 – 4.5 mW , 0402 – 3.5 mW °	MAX. $\pm 3\%$
	Humidity	MIL-STD-202F Method 103B	Test temperature : 40°C Test humidity : 95% Test duration : 1000 hrs Load power : 1206 – 6.5 mW , 0805 – 5.0 mW , 0603 – 4.5 mW , 0402 – 3.5 mW °	MAX. $\pm 3\%$
	Thermal shock	MIL-STD-202F Method 107G	Test cycle : 10 times Test temperature : - 40°C & 125°C 30 min 125°C Ordinary temp. 30 min -40°C	MAX. $\pm 3\%$
	Storage in dry heat	IEC 68-2-2	Test temperature : 125°C Test duration : 1000 hrs	MAX. $\pm 3\%$
Mechanical Performance test	Solderability	MIL-STD-202F Method 208 H	Soldering temperature : 235°C Duration of immersion : 2 seconds	95 % min. coverage
	Resistance to soldering heat	MIL-R-55342D PARA 4.7.7	Soldering temperature : 260°C Duration of immersion : 10 seconds	MAX. $\pm 3\%$

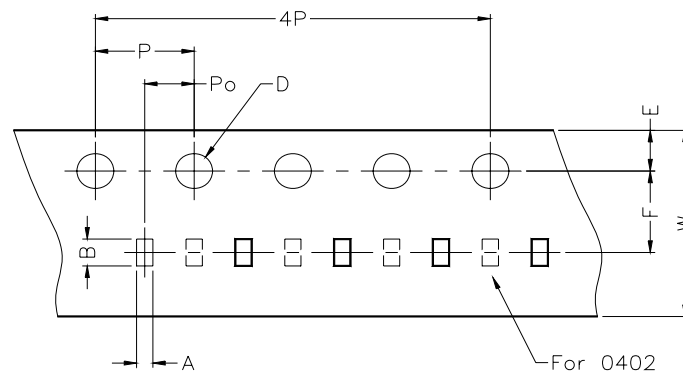
Mechanical Performance test	Bending strength	JIS C 5202 6.1.4	Pressurizing rod at a rate of 1mm/sec Maintenance time : 5 sec Bending distance : 1 mm (min.)  Unit : mm	Visual : No mechanical damage
	Resistance to flexure of substrate	JIS C 5202 6.2.1	Pressurizing force shall be 3kg  Unit : mm	MIN. 3Kg
Electrical Performance test	Insulation resistance	MIL-STD-202F Method 302	DC 250V For 10 seconds 	Over 1000MΩ
	Dielectric withstand voltage	MIL-STD-202F Method 301	DC 250V For 10 seconds 	NOT Short

MOUNTING POSITION



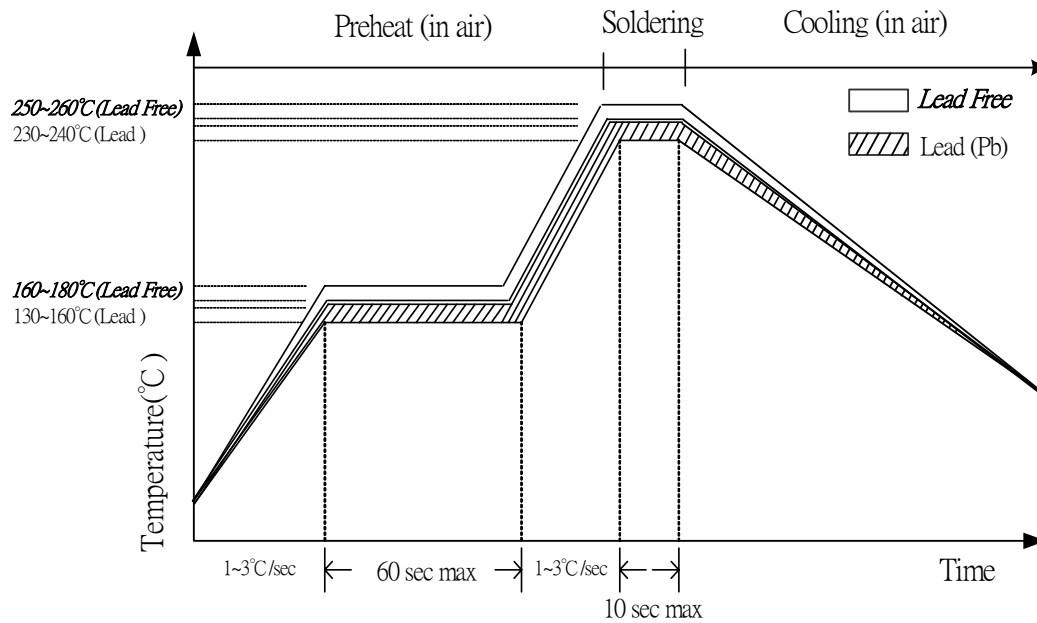
Choose a mounting position that minimize the stress imposed on the chip during flexing or bending of the board

TAPE DIMENSIONS



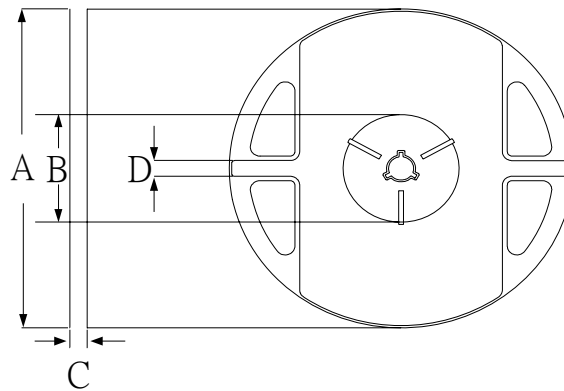
Dimension	1206	0805	0603	0402
A	2.00 ± 0.05	1.50 ± 0.05	1.08 ± 0.05	0.66 ± 0.03
B	3.57 ± 0.05	2.30 ± 0.05	1.85 ± 0.05	1.15 ± 0.03
W	8.00 ± 0.02	8.00 ± 0.05	8.00 ± 0.05	8.00 ± 0.05
D	1.55 ± 0.05	1.50 ± 0.10	1.50 ± 0.10	1.50 ± 0.10
E	1.75 ± 0.10	1.75 ± 0.05	1.75 ± 0.05	1.75 ± 0.05
F	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05
P	4.00 ± 0.10	4.00 ± 0.05	4.00 ± 0.05	4.00 ± 0.05
P ₀	2.00 ± 0.05	2.00 ± 0.05	2.00 ± 0.05	2.00 ± 0.05
4P	16.00 ± 0.05	16.00 ± 0.05	16.00 ± 0.05	16.00 ± 0.05

REFLOW SOLDERING PROFILE



REEL DIMENSIONS

Unit : mm



Unit : mm

ITEM	A	B	C	D
Dimension	178.0 ± 1.0	60.0 ± 1.0	9.0 ± 0.1	13.0 ± 0.1