SMD CHIP PTC THIMSTOR

FEATURES

- **Main composition.**

☐ Ceramic material :BaTio3

- **Semi-conductive property**

☐ Its resistance value rises sharply with increasing temperature has been exceeded.

☐ This feature makes it use in many applications of electronic devices as resettable fuse against current overload.

TEMPERATURE DEPENDENCE OF RESISTANCE

- The zero-power resistance value R (T) is the resistance value measured at a given temperature T with the electrical load kept so small that there is noticeable change in the resistance value if the load is further reduced.
- For test voltages, please refer to the individual type(mostly ±1,5V).
- Figure shows the typical dependence of the zero-power resistance on temperature. Because of the abrupt rise in resistance (the resistance value increases by several powers of ten) the resistance value is plotted on a logarithmic scale (ordinate)against a linear temperature scale(abscissa).

SMD CHIP PTC ORDER MAP

SMDPTC □ 1608 221 N 070 T

SMD PTC Series Code
- H : Lead (Pb)
- F : Lead Free

Chip Size (mm)
- 1608 –1.6 x 0.80 x 0.80
- 2012– 2.0 x 1.25 x 0.80
- 3225– 3.2 x 2.50 x 1.15
- 4532– 4.5 x 3.20 x 1.15

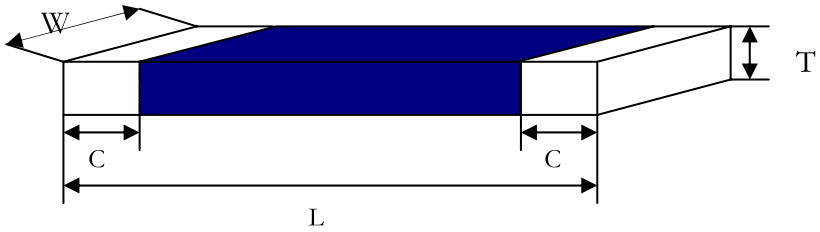
Resistance at 25 :
- 101 = 10 x 10^1 = 100 Ω
- 102 = 10 x 10^2 = 1000 Ω
- 103 = 10 x 10^3 = 10000 Ω

Resistance Tolerance :
- K : ±10 %
- L : ±15 %
- M: ±20 %
- N : ±30 %

Switching Temperature

Reel Taping

CHIP DIMENSION



ITEM	L(mm)	W(mm)	T(mm)	C(mm)
1608	1.60 ±0.10	0.80 ±0.10	0.95 ±0.10	0.40±0.20
2012	2.00 ±0.20	1.25 ±0.20	0.80±0.10	0.40±0.20
3225	3.20 ±0.20	2.50 ±0.20	1.15±0.30	0.60±0.20
4532	4.50 ±0.40	3.20 ±0.30	1.15±0.30	0.60±0.20

SPECIFICATIONS

Part Number	Resistance（25℃）（Ω）	Sensing Temp	Maximum Voltage	Operating Temp. Range（℃）
PTC□1608 221N070T	220Ω±30%	70±5℃	32Vdc.	-30℃~125℃
PTC□1608 151N070T	150Ω±30%	70±5℃	27Vdc.	-30℃~125℃
PTC□2012 101N070T	100Ω±30%	70±5℃	24Vdc.	-30℃~125℃
PTC□2012 471N070T	100Ω±30%	100±5℃	16Vdc.	-30℃~125℃
PTC□3225 500N070T	50Ω±30%	70±5℃	12Vdc.	-30℃~125℃
PTC□4532 220N070T	22Ω±30%	70±5℃	6Vd	-30℃~125℃

BASIC CHARACTERISTICS

1. Typical resistance/temperature characteristic

R PTC = f (T PTC)

R N Rated PTC resistance (resistance Value at **T**N)

R min Minimum resistance (resistance Value at **T**Rmin)

R Rmin Temperature at Rmin (α becomes positive)

R Ref Reference resistance at **R** Ref =2 **R** Rmin
(resistance Value at **T**Ref)

T Ref Reference Temperature (resistance rises sharply)

Certain parameters have tolerances.
These are specified in the table in the data sheet section.

2. Rated resistance RN

The rated resistance **R** N. is the resistance value at temperature **T**N . PTC thermistor are classified according to this resistance value.
The temperature **T**N is 25℃,unless otherwise specified.

3. Minimum resistance R min

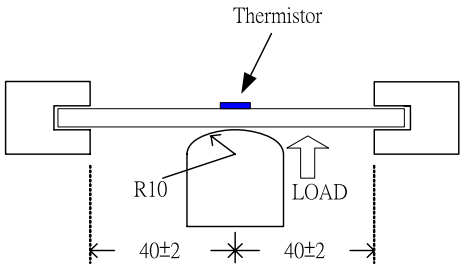
The beginning of the temperature range with a positive temperature coefficient is specified by the temperature **R** Rmin. The value of the PTC resistance at this temperature is designated as **R** min.
This is the lowest zero-power resistance value which the PTC thermistor is able to assume.
R min is often given as calculable magnitude without stating the corresponding temperature. The **R** min values specified in this Data book allow for the **R** tolerance range of the individual types and Represent lower limit. Exceptions are PTC heaters, where the **R** min value given in the data sheet section are measured at the rated voltage.

4. Reference resistance R Ref at reference temperature T Ref

The start of the steep rise in resistance, marked by the reference temperature **T** Ref which corresponds approximately to the ferroelectric Curie point, is significant for the application. For the individual type of PTC thermistor it is defined as the temperature at which the zero-power resistance is equal to the value **R** Ref =2 **R** Rmin In the data sheet section we specify typical values of **T** Ref.

RELIABILITY TEST

No	Test Item	Requirements	Test Conditions
1.	Operating	Within the specification	
2.	Resistance	Within tolerance of resistance	Measured at25 ℃ in silicon oil Bath
3.	B Value	Within tolerance of B value	B25 ℃/85 ℃[K]=(R25 ℃/R85 ℃)(1/T(R25 ℃-1/ R85 ℃T)
4.	Maximum rated wattage [mW]	1. SMD Type :240~500 2. Lead wire type:50~200	Measured in the still air *SMD Type: which is soldered on a glass Epoxy board t =1.6mm
5.	Dissipation constant [mW.℃]	1. SMD Type :2.4~5.0 2 .Lead wire type:0.05~2.0	Measured in the still air *SMD Type: which is soldered on a solder coated copper wire ϕ=0.25
6.	Solderability	More than 90 % of the terminal Electrode shall be covered with new solder.	1. Type of solder :H63A 2. Soldering Temp &Time :230±5℃,5±1 Sec
7.	Resistance to Solder heat	1. No serious mechanical damage. 2.ΔR≦±3%(Ref. To initial value) *SMD Chip Type	1. Type of solder :H63A 2. Soldering Temp &Time :260±5℃,5±1 Sec in solder pot 3. Preheat the part at 120~150℃,1 min. Let it sit at R.T, for 24Hrs then Measure
8.	Moisture Resistance	1. No serious mechanical damage. 2 .ΔR≦±3%(Ref. To initial value) 3. ΔB≦±3%(Ref. To initial value)	1. Test Temp.& Relative Humidity&Time:85℃±5℃:RH±5℃,500=±24Hrs. 2. Applied Load :50 % of max power rating. 3. Let it sit at R.T, 24Hrs then Measure.

9.	Thermal Shock	1. No serious mechanical damage. 2 .ΔR≦±3% 3. ΔB≦±3%	1. Cycle : min T±5℃ (3min)→ ±25℃±5℃(5min) →max T±5℃ (3min)→ ±25℃±5℃(5min) 2. The cycles is repeated 100 times.
10.	High Temp. Storage	1. No serious mechanical damage. 2 .ΔR≦±3% 3. ΔB≦±3%	1. Temp. :max T±2℃ 2.Time :1000 Hrs ±2Hrs Let it sit at R.T, for 24 Hrs the Measure
11.	Low Temp. Storage	1. No serious mechanical damage. 2 .ΔR≦±3% 3. ΔB≦±3%	1. Temp. :max T±2℃ 2.Time :1000 Hrs ±12Hrs Let it sit at R.T, for 24 Hrs the Measure
12.	Bending Strength	1. No serious mechanical damage. *SMD Chip Type Only	Add load at 0.5mm/sec until glass epoxy Board bends up to 1 mm [=Bending Dept]  Unit : mm

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