

SINLOON®

貼片型熱敏電阻
Chip NTC Thermistor

Type: 0603 (1608)

Resistance Range: 1K ~ 560K ohm

FEATURE

- ◆ Small size, Low capacitance at 40 MHz (below 3 pF)
- ◆ Resistance Range: (0603) 1K ~ 560K ohm
- ◆ Corresponding to 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 original manufacturing method.
- ◆ All Pb-free product [Pd and Cd are not contained in product]

Figure:



APPLICATIONS

- ◆ Mobile communication related equipment. (TCXO, RF circuit, LCD panel, Battery pack).
- ◆ Computer related equipment.
- ◆ Temperature detection for CPU and memory equipment.
- ◆ Temperature compensation for contrast of LCD.
- ◆ Optical communication equipment.

DESCRIPTION:

- ◆ NTC thermistor is Negative Temperature Coefficient of Thermistor 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.

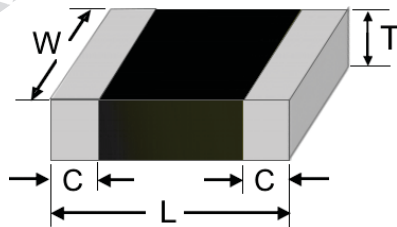
ORDERING PROCEDURE:

Example: SMD03472F3IH-T (0603-4.7K ±1% B-3435 ±3% T/Reel)

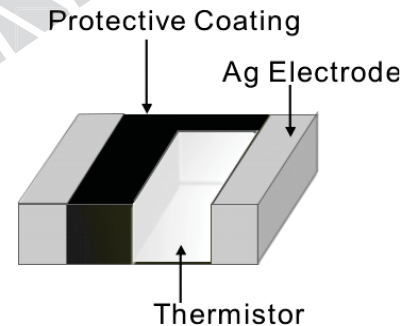
Type	Chip Size	Resistance	Tolerance	B-constant								B-tolerance	Package
SMD02	1005(0402)	102=1KΩ	K = ±10%	1 : 1000	C: 101~150	I: 401 ~ 450	O: 701 ~ 750	K = ±10%	T = Reel (7")				
SMD03	1608(0603)	103=10KΩ	J = ±5%	2 : 2000	D: 151 ~ 200	J: 451 ~ 500	P: 751 ~ 800	J = ±5%	SMD02: 10Kp				
SMD05	2012(0805)	104=100KΩ	H = ±3%	3 : 3000	E: 201 ~ 250	K: 501 ~ 550	Q: 801 ~ 850	H = ±3%	SMD03: 4Kp				
			G = ±2%	4 : 4000	F: 251 ~ 300	L: 551 ~ 600	R: 851 ~ 900	G = ±2%	SMD05: 4Kp				
			F = ±1%	A: 0 ~ 50	G: 301 ~ 350	M: 601 ~ 650	S: 901 ~ 950	F = ±1%					
				B: 51~100	H: 351 ~ 400	N: 651 ~ 700	T: 951 ~ 999						

DIMENSION:

Type	Chip Size	L (mm)	W (mm)	T (mm)	C (mm)
SMD02	1005(0402)	1.00±0.05	0.50±0.05	0.50±0.05	0.25±0.10
SMD03	1608(0603)	1.60±0.10	0.80±0.10	0.95±0.10	0.40±0.20
SMD05	2012(0805)	2.00±0.20	1.25±0.20	1.20±0.20	0.50±0.20



Bare Chip Structure



* 電阻 Resistor - 溫度 Temperature 特性利用:

NTC 熱敏電阻隨環境溫度(T)升高,電阻值'(R)會下降,反之,當溫度(T)下降,電阻值'(R)會上升(R25°C),其對溫度感測非常靈敏,適用於各種溫度的感測與補償電路。

SINLOON®

貼片型熱敏電阻
Chip NTC Thermistor

Type: 0603 (1608)

Resistance Range: 1K ~ 560K ohm

DATA SPECIFICATION

Part Number (0603)	Resistance 25°C (Ω)	B-constance 25°C/85°C K	Maximum Power Rating	Dissipation Constant	Operating Temp.(°C)	Size (mm)
SMD03-102□2S ■	1K	2950	350 mW	3.5 mW/°C	-40~125	1.6x0.8
SMD03-202□4C ■	2K	4150	350 mW	3.5 mW/°C		
SMD03-332□3C ■	3.3K	3150	350 mW	3.5 mW/°C		
SMD03-332□3F ■	3.3K	3300	350 mW	3.5 mW/°C		
SMD03-472□3G ■	4.7K	3340	350 mW	3.5 mW/°C		
SMD03-502□3G ■	5K	3340	350 mW	3.5 mW/°C		
SMD03-682□3I ■	6.8K	3435	350 mW	3.5 mW/°C		
SMD03-103□3I ■	10K	3435	350 mW	3.5 mW/°C		
SMD03-103□3K ■	10K	3550	350 mW	3.5 mW/°C		
SMD03-103□3T ■	10K	3970	350 mW	3.5 mW/°C		
SMD03-223□3R ■	22K	3900	350 mW	3.5 mW/°C		
SMD03-473□3S ■	47K	3950	350 mW	3.5 mW/°C		
SMD03-473□4A ■	47K	4050	350 mW	3.5 mW/°C		
SMD03-503□4A ■	50K	4050	350 mW	3.5 mW/°C		
SMD03-104□3S ■	100K	3950	350 mW	3.5 mW/°C		
SMD03-104□4A ■	100K	4050	350 mW	3.5 mW/°C		
SMD03-104□4H ■	100K	4400	350 mW	3.5 mW/°C		
SMD03-154□4L ■	150K	4600	350 mW	3.5 mW/°C		
SMD03-204□4B ■	200K	4055	350 mW	3.5 mW/°C		
SMD03-224□4B ■	220K	4055	350 mW	3.5 mW/°C		
SMD03-334□4B ■	330K	4100	350 mW	3.5 mW/°C		
SMD03-474□4B ■	470K	4100	350 mW	3.5 mW/°C		
SMD03-564□4B ■	560K	4100	350 mW	3.5 mW/°C		

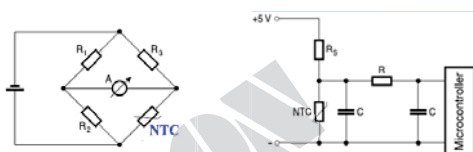
Remark: □ Resistance tolerance

■ B-constance tolerance

※ Maximum Power Rating = Dissipation Constant x (Max. Operation Temperature - 25°C).

* Please inquire to contact us for others specification.

典型應用: 將NTC熱敏電阻置於惠斯登電橋(Wheatstone bridge, 如下圖所示)其中一邊電路上即可用於感測溫度。當電橋達到平衡時, 任何溫度變化會使NTC熱敏電阻的電阻值馬上跟著改變, 因此就會有明顯的電流通過安培計。NTC熱敏電阻與微控制器實際應用電路, 如下圖所示。



※美隆公司產品規格及其特性參數的改變或更新恕不另行通知。

※Mayloon characteristic parameters of electronic product specification changes or updates without notice to improve.

□ 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's temperature rises T₂, there is a formula as follows

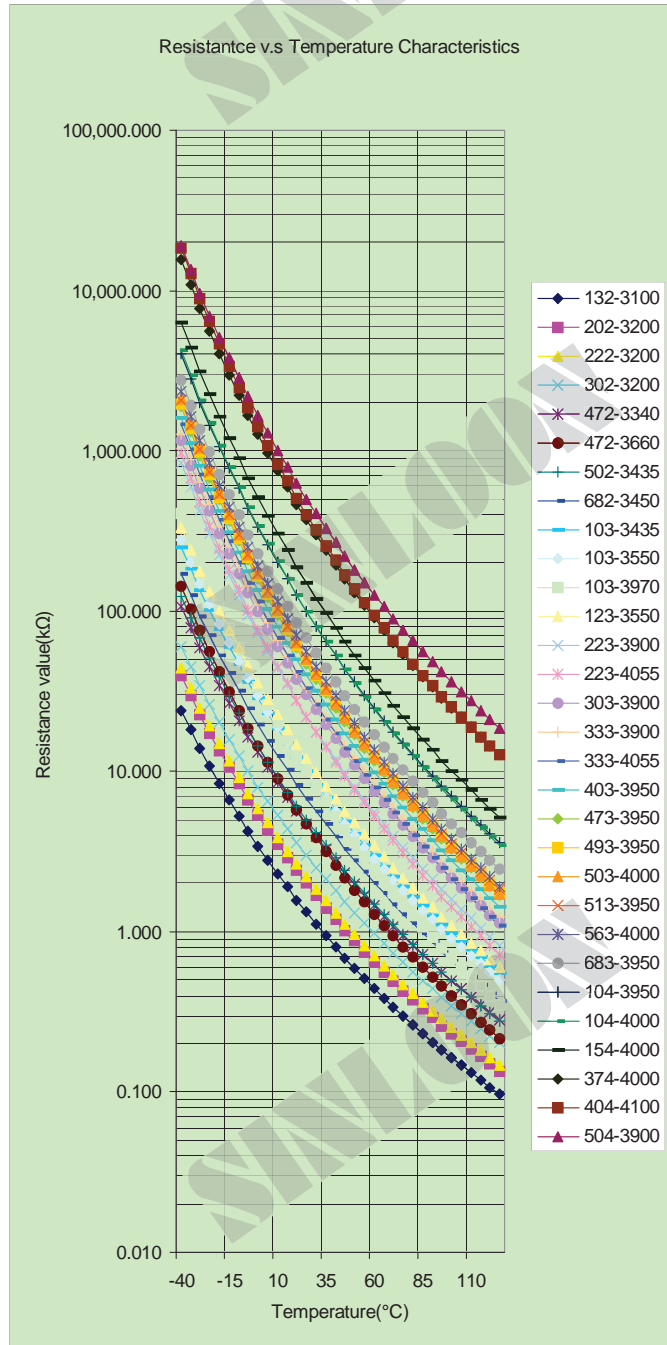
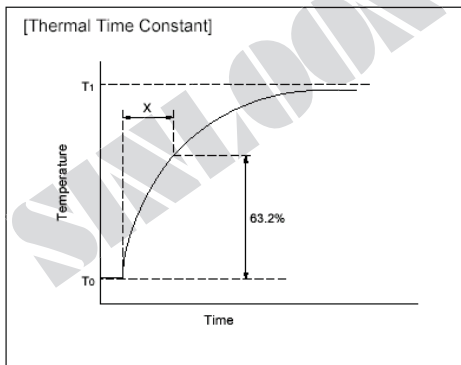
$$P=C (T_2-T_1) \dots\dots\dots (3)$$

C : Thermal dissipation constant (mW/°C)

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

4. Thermal Time Constant

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



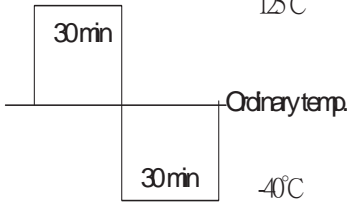
SINLOON®

貼片型熱敏電阻
Chip NTC Thermistor

Type: 0603 (1608)

Resistance Range: 1K ~ 560K ohm

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. ± 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. ± 3 %
	Thermal shock	MIL-STD-202F Method 107G	Test cycle : 10 times Test temperature : - 40°C & 125°C 	MAX. ± 3 %
	Storage in dry heat	IEC 68-2-2	Test temperature : 125°C Test duration : 1000 hrs	MAX. ± 3 %
Mechanical 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. ± 3 %

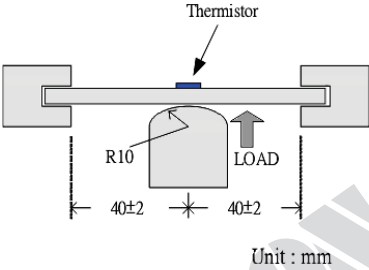
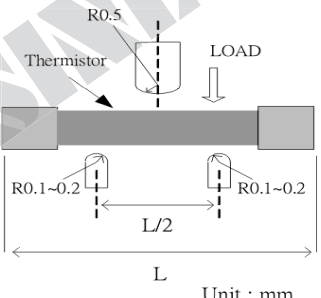
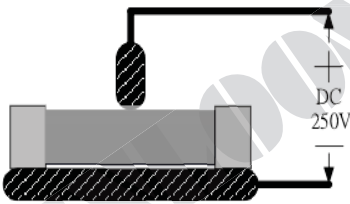
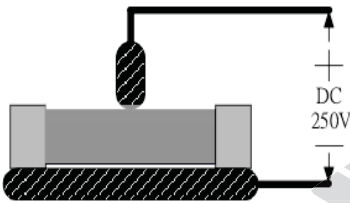
SINLOON®

貼片型熱敏電阻
Chip NTC Thermistor

Type: 0603 (1608)

Resistance Range: 1K ~ 560K ohm

Reliability Test

Test Item	Standard	Test Method	$\Delta R_{25} / R_{25}$
Mechanical Performance test	Bending strength	JIS C 5202 6.1.4 	Visual : No mechanical damage
	Resistance to flexure of substrate	JIS C 5202 6.2.1 	MIN. 3 Kg
Electrical Performance test	Insulation resistance	MIL-STD-202F Method 302 	Over 1000MΩ
	Dielectric withstand voltage	MIL-STD-202F Method 302 	NOT Short

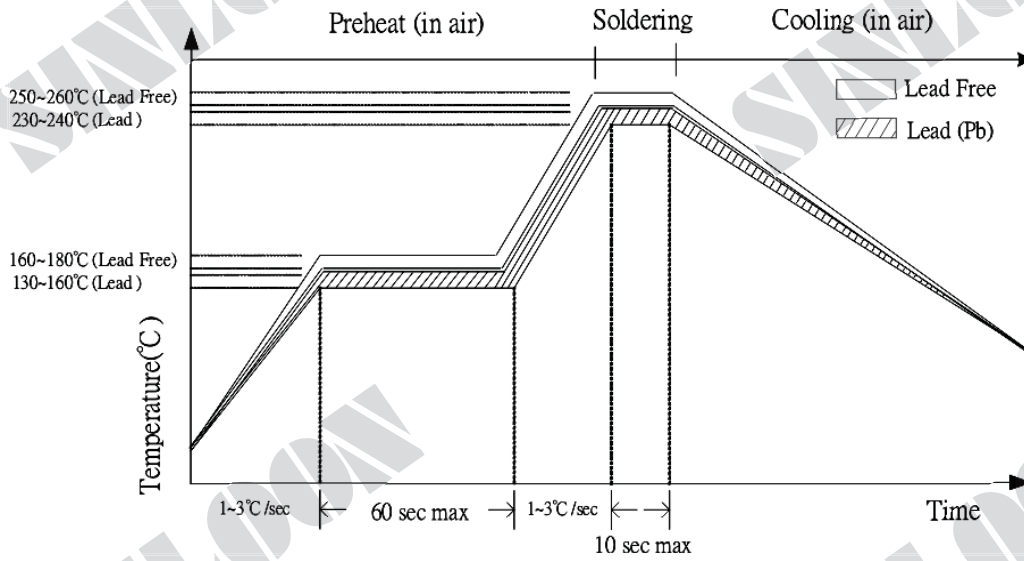
SINLOON®

貼片型熱敏電阻
Chip NTC Thermistor

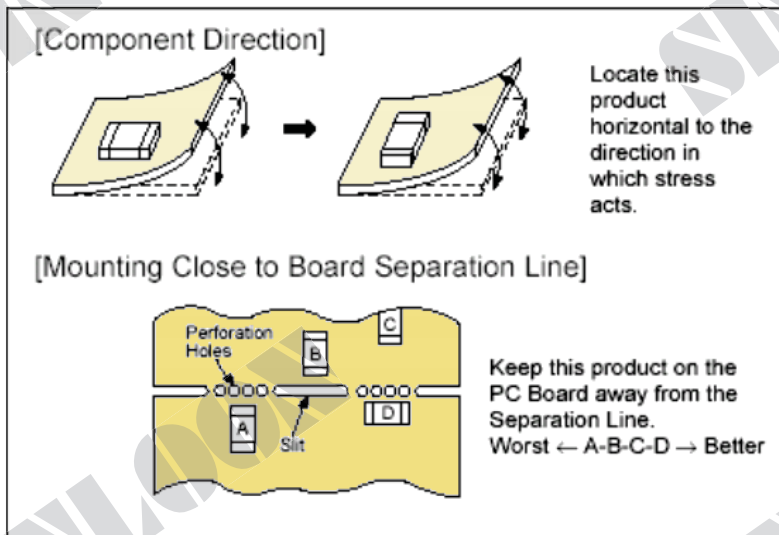
Type: 0603 (1608)

Resistance Range: 1K ~ 560K ohm

REFLOW SOLDERING PROFILE



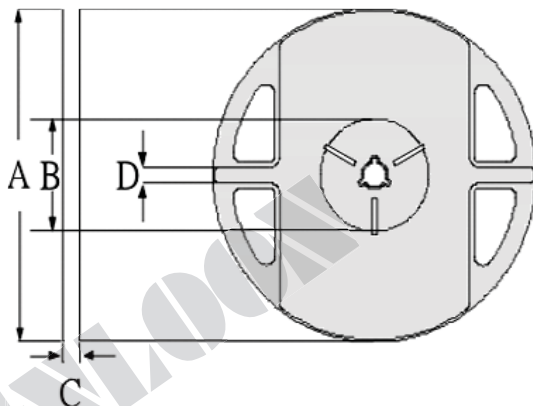
MOUNTING POSITION



PACKING REEL DIMENSIONS

Unit: mm

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



7" Plastic Reel

