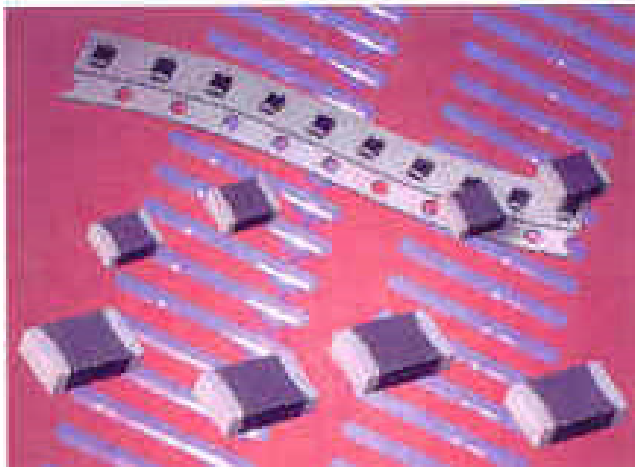
Multilayer Chip NTC Thermistor



SAMWHA CAPACITOR Co., Ltd.

Tel. : 82-31-332-6441
Fax. : 82-31-332-7661
E-mail : thermistor@samwha.com

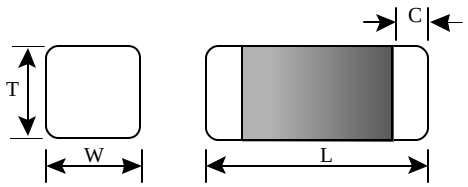
Introduction

Chip NTC thermistors are broadly used in various electronic products ranging from telecommunication to OA electronic equipment. Our products have high sensitive resistance value as a function of temperature, and are applied on a wide range of temperature condition. We provide a series of Chip NTC thermistors which have the high accuracy and the good reliablity.

Features

- Reliable multi-layer structure
- Small products of 1005, 1608 and 2012 size
- Wide applied range with the resistance value
- Tight tolerance in the constant B

Configurations



Dimensions in mm

TYPE	L	W	T	C
2012	2.0 ¡ Æ0.2	1.25 ¡ Æ0.2	1.2 ¡ Æ0.1	0.2 min.
1608	1.6 ¡ Æ0.15	0.8 ¡ Æ0.15	0.8 ¡ Æ0.1	0.2 min.
1005	1.0 ¡ Æ0.05	0.5 ¡ Æ0.05	0.5 ¡ Æ0.05	0.15 min.

Applications

- Telecommunication equipment
  - TCXO (Temperature Compensation Crystal (X) Oscillator)
  - Battery pack temperature compensation circuits
  - LCD temperature compensation for back light
- Note-book computers
- Car tuner
- Printer/Fax
- Camcorder

▪ Production Identifications

103 KTM 1608 H 410 H

. Resistance (at 25?)

The resistance is expressed in three digit codes and in units of ?.
The first and second digits are effec-tive numbers.
The third digit is exponential index number of 10 , which is following the effective number

Digits	Resistance
220	22+
101	100+
102	1000+ (1+)
103	10000+ (10+)
104	100000+ (100+)

. Series Code

KTM : Chip NTC Thermistor

. Dimensions Code

2012 : 2.0(L) x 1.2(T) x 1.2(W)
1608 : 1.6(L) x 0.8(T) x 0.8(W)
1005 : 1.0(L) x 0.5(T) x 0.5(W)

. Resistance Tolerance

Texts	Tolerance(%)
F	± 1
H	± 3
J	± 5
K	± 10

. Constant B

Digits	Constant B
275	2750K
325	3250K
343	3435K
365	3650K
396	3960K
410	4100K
420	4200K

. Constant B Tolerance

Texts	Tolerance(%)
F	± 1
H	± 3
J	± 5
K	± 10

■ Product Specifications

Size	Part No.	R_{25}*4	R_{25} Tolerance	B constant*5	B constant tolerance	Heat dissipation coefficient	Heating time constant*	Maximum operating power at 25°C	Operating temperature range
1608	220K1W1608?275H	22?	±1%, ±2%, ±3%, ±5%, ±10%	B2750K	±1%, ±3%	0.9mW/°C	2.2s	90mW	-40°C~+125°C
	330K1W1608?275H	33?							
	470K1W1608?275H	47?							
	680K1W1608?275H	68?							
	101K1W1608?275H	100?							
	220K1W1608?325H	22?		B3250K					
	330K1W1608?325H	30?							
	470K1W1608?325H	47?							
	680K1W1608?325H	68?							
	101K1W1608?325H	100?							
	151K1W1608?325H	150?							
	502K1W1608?343H	5.0.		B3435K					
	103K1W1608?343H	10.							
	221K1W1608?365H	2.2.		B3650K					
	331K1W1608?365H	3.3.							
	471K1W1608?365H	4.7.							
	681K1W1608?365H	6.8.							
	502K1W1608?396H	5.		B3960K					
	103K1W1608?396H	10.							
	102K1W1608?410H	1.0.		B4100K					
	152K1W1608?410H	1.5.							
	222K1W1608?410H	2.2.							
	332K1W1608?410H	3.3.							
	472K1W1608?410H	4.7.							
	682K1W1608?410H	6.8.							
	103K1W1608?410H	10.							
	153K1W1608?410H	15.							
	303K1W1608?410H	30.							
	473K1W1608?410H	47.							
	153K1W1608?420H	15.		B4200K					
	303K1W1608?420H	30.							
	473K1W1608?420H	47.							
	683K1W1608?420H	68.							
	104K1W1608?420H	100.							
	154K1W1608?420H	150.							
	204K1W1608?420H	200.							

Size	Part No.	R_{25}*4	R_{25} Tolerance	B constant*5	B constant tolerance	Heat dissipation coefficient	Heating time constant*	Maximum operating power at 25°C	Operating temperature range
1005	220K1W1005?275H	22?	±1%, ±2%, ±3%, ±5%, ±10%	B2750K	±1%, ±3%	0.7mW/°C	2.2s	70mW	-40°C~+125°C
	330K1W1005?275H	33?							
	470K1W1005?275H	47?							
	680K1W1005?275H	68?							
	101K1W1005?275H	100?							
	220K1W1005?325H	22?		B3250K					
	330K1W1005?325H	30?							
	470K1W1005?325H	47?							
	680K1W1005?325H	68?							
	101K1W1005?325H	100?							
	151K1W1005?325H	150?							
	502K1W1005?343H	5.0.		B3435K					
	103K1W1005?343H	10.							
	221K1W1005?365H	2.2.		B3650K					
	331K1W1005?365H	3.3.							
	471K1W1005?365H	4.7.							
	681K1W1005?365H	6.8.							
	502K1W1005?396H	5.		B3960K					
	103K1W1005?396H	10.							
	102K1W1005?410H	1.0.		B4100K					
	152K1W1005?410H	1.5.							
	202K1W1005?410H	2.0.							
	222K1W1005?410H	2.2.							
	302K1W1005?410H	3.0.							
	332K1W1005?410H	3.3.							
	472K1W1005?410H	4.7.							
	682K1W1005?410H	6.8.							
	103K1W1005?410H	10.							
	153K1W1005?410H	15.							
	303K1W1005?410H	30.							
	473K1W1005?410H	47.							
	153K1W1005?420H	15.		B4200K					
	303K1W1005?420H	30.							
	473K1W1005?420H	47.							
	683K1W1005?420H	68.							
	104K1W1005?420H	100.							
	154K1W1005?420H	150.							
	204K1W1005?420H	200.							

▪ Reliability & Test Conditions

Items	Requirements	Test Conditions
Operating Temp.Range	-40℃ ~ +125℃	-
Storage Temp. & Humidity Range	40℃ max, 70% RH max.	At packing condition
Solderability	More than 90% of the terminal electrode shall be covered with new solder	Preheat temperature : 100~ 150℃ Preheat time : 60 sec. Solder temperature : 230℃ 10℃ Soldering time : 3 sec
Resistance to Soldering Heat	1. No damages such as cracks should be caused in chip element. 2. More than 75% of the terminal electrode shall be covered with new solder	Preheat temperature :100~150℃ Preheat time : 60 sec. Solder temperature : 260℃ 10℃ Soldering time : 3 sec
High Temperature Resistance	1. No mechanical damage 2. Resistance of R_{25} shall not change more than ℃ 3% 3. Constant B shall not change more than ℃ 3%	Temperature : 125℃ 3℃ Time : 1000 ℃ 12hours Measurement at room temperature after placing for 24 hours
Low Temperature Resistance		Temperature : -40℃ 3℃ Time : 1000 ℃ 12hours Measurement at room temperature after placing for 24 hours
Humidity Resistance		Temperature : 40℃ 2℃ Humidity : 90~95% RH Time : 1000 ℃ 12hours Measurement at room temperture after placing for 24 hours
Humidity Load Resistance		Temperature : 40℃ 2℃ Humidity : 90~95% RH Test Condition : DC Power10mW Time : 1000 ℃ 12hours Measurement at room temperature after placing for 24 hours
Temperature Cycle		-25℃ ℃ 3℃ (in air) 30min., Room Temp. 3~15min., 100℃ ℃ 2℃ (in air) 30min., Room Temp. 3~15min. 50 times. Measurement at room temperature after placing for 24 hours