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CHIP NTC THERMISTOR

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COMPANY PROFILE

E WAY Technology Co., LTD was established in Apr. 2000 at Feng Shan City, Kaohsiung County, has been engaging in production of passive device, concentrating on R&D and manufacturing for NTC thermistors and various NTC temperature sensors. E WAY offers “custom-made” to become the most intimate partner for each client, satisfies high tech industry with precise demand for products, and provides equivalent service in quality and quantity.


NSF International Strategic Registrations

Certificate of Registration

E WAY TECHNOLOGY CO., LTD.

ISO 9001:2008

In accordance with innovation, challenge, unceasing development towards passive devices and sensors, E WAY Tech. expects to offer versatile and various choices for customers.

COMPANY HISTORY

Apr. 2000 E WAY Technology Co., LTD was officially established.

Jun. 2000 The equipments to produce NTC thermistor were installed.

Sep. 2000 The first NTC samples were produced.

Apr. 2001 Start the production of NTC thermistors.

Feb. 2002 ISO 9001-2000 were certificated by NSF. (NSF-ISR No.:0973-01).

Apr. 2002 We had integrated many types of passive components into our product line enabling us to offer our clients unrivaled service.

Oct. 2007 Start to prepare UL1434 certification for TJ/TS/TA4.

Feb. 2008 TJ/TS/TA4 series have passed UL1434 certification.

May 2008 Halogen Free series start to produce.

May 2010 Started to prepare UL1434 certification for SMD NTC.

Nov 2010 SMD NTC series have passed UL1434 certification.

Thermistor is the thermally sensitive resistor whose main function is to exhibit a change in electrical resistance with environmental temperature. Especially, NTC (Negative Temperature Coefficient) thermistor decreases in electrical resistance as temperature increases. With high sensitivity and low price, NTC thermistor has variety of application fields such as home electronice, automobile, mobile telecommunication, computer, medical field and other industrial usage.

Thermistor Resistance Value

In general, resistance value of a NTC thermistor is the zero-power resistance at the standard temperature of 25℃. The zero-power reststance means the value of DC resistance of a thermistor measured at a specified temperature with electric load being kept so small where there is no obvious change in the measured resistance by the influence of the applied electric load.

Temperature Dependence of Resistance

The dependence of the thermistor resistance on temperature can be approximately described by the following equation:

$R_1 = R_0 \ \exp\{B(1/T_1 - 1/T_0)\}$

R_1 : resistance value at absolute temperature T_1(K)

R_0 : resistance value at absolute temperature T_0(K)

B : B constant

T(K) = T(℃)+273.15

From the above equation, B constant can be represented as

$$B = \ln(R_0/R_1)/(1/T_0 - 1/T_1)$$

Without special note, B constant is calculated from the reststance values at 25℃ and 85℃ [$B_{25℃/85℃}$], which is the most common.
The resistance-temperature coefficient is defined as the rate of change of the resistance, which can be described as

$$a = -(B/T^2)X100(\%/℃)$$

Thermal Dissipation constant [δ]

Thermal dissipation constant is defined as the ratio of the power dissipation and the resultant change in the temperature of thermistor body. The unit of δ Thermal dissipation constant is [mW/℃] and the mathematical expression is

$$\delta = P/(T_2 - T_1)$$

where P,T_2,and T_1 are the dissipated power, thermistor temperature, and ambient temperature, respectively.

Maximum Power Rating [P_{max}]

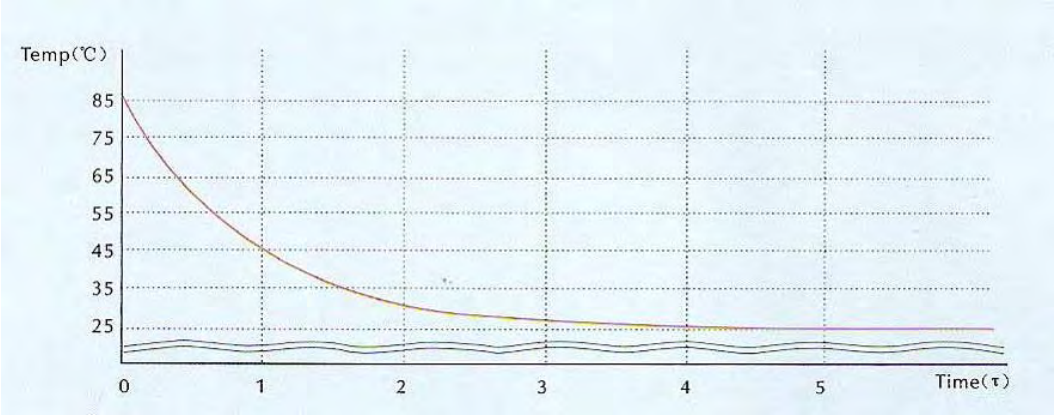
The maximum power rating of a thermistor is the maximum handing power, keeping its temperature not exceeding the allowed maximum temperature for operation. With known Thermal dissipation constant δ, the maximum power can be calculated as

$$P_{max} = \delta (T_{max} - T_a)$$

in this catalog, T_a is selected as 25℃.

Thermal Time Constant [τ]

Thermal time constant means the time necessary for an unloaded thermistor to vary its temperature by 63.2% of the difference between its temperature and the ambient temperature. The values of τ ,specified in this catalog is determined in still air at an ambient temperature of 25℃.



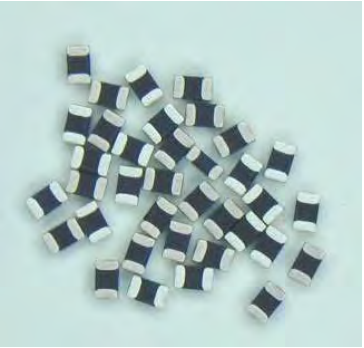
Stability-Reliability

In the view of long time period the resistance value of a thermistor can be shifted. Physical reason of this maybe thermal stress can make a change in concentration of lattice imperfection and diffuse to the contact area of metallized surface; therefore, the stability and reliability tests are very important for NTC thermistors.

High Quality Thermistor

Shows exceptionally low drift of resistant with respect to the long duration period at elevated temperatures. The best ceramic technology of E WAY gives high quality thermistors of various styles and properties.

DESCRIPTION



The thermistor is a thermally sensitive resistor whose primary function is to exhibit a change in electrical resistance as the body temperature changed. NTC thermistor is one whose zero-power resistance will decrease when the body temperature increases.

FEATURES

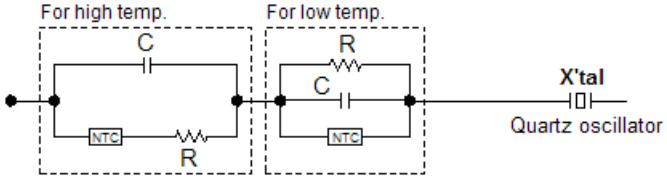
- Multilayer structure allows diverse resistance values in the same B constant.
- Ultra small size, low capacitor, high B value.
- Glass coating performs for long-term reliability.
- Non-polarized for mounting.
- Possibility for Flow/Reflow soldering.

APPLICATIONS

- Temperature compensation for crystal oscillators (TCXO).
- Temperature compensation for personal computers.
- Temperature detection for CPU and memory devices.
- Temperature detection for battery packs.
- Temperature compensation for contrast of LCDs.
- Temperature compensation and sensing of car audio equipments. (CD, MD, tuner).

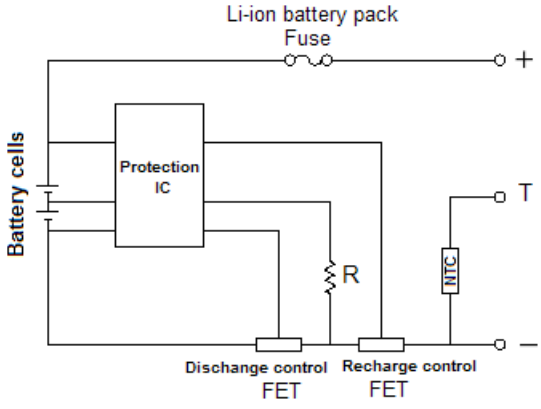
an example

- **Temperture compensated crystal oscillator (TCXO)**
  Chip thermistor is used for temperature compensation of TCXO, which is a key device for mobile phones.



Th1 : TC05-2S400J (40Ω, 2750K)
Th2 : TC05-4C302J (3KΩ, 4100K)

- **Battery pack**
  Chip thermistor with high precision is used for the protection circuit inside the battery pack for mobile electronic devices.



FLYiNG INTERNATIONAL

BASIC CHARACTERISTICS

1. Zero-power Resistance of Thermistor

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

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

R_0 : Resistance in ambient temperature T_0 (K)

B : B-constant of Thermistor

2. B-Constant

As eq. (1)

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

3. Thermal Dissipation Constant

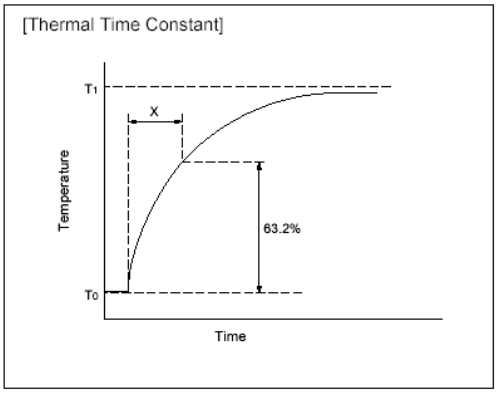
When it spends electric power P (mW) in ambient temperature T_1 and the thermistor temperature rises T_2, there is a relationship as follows

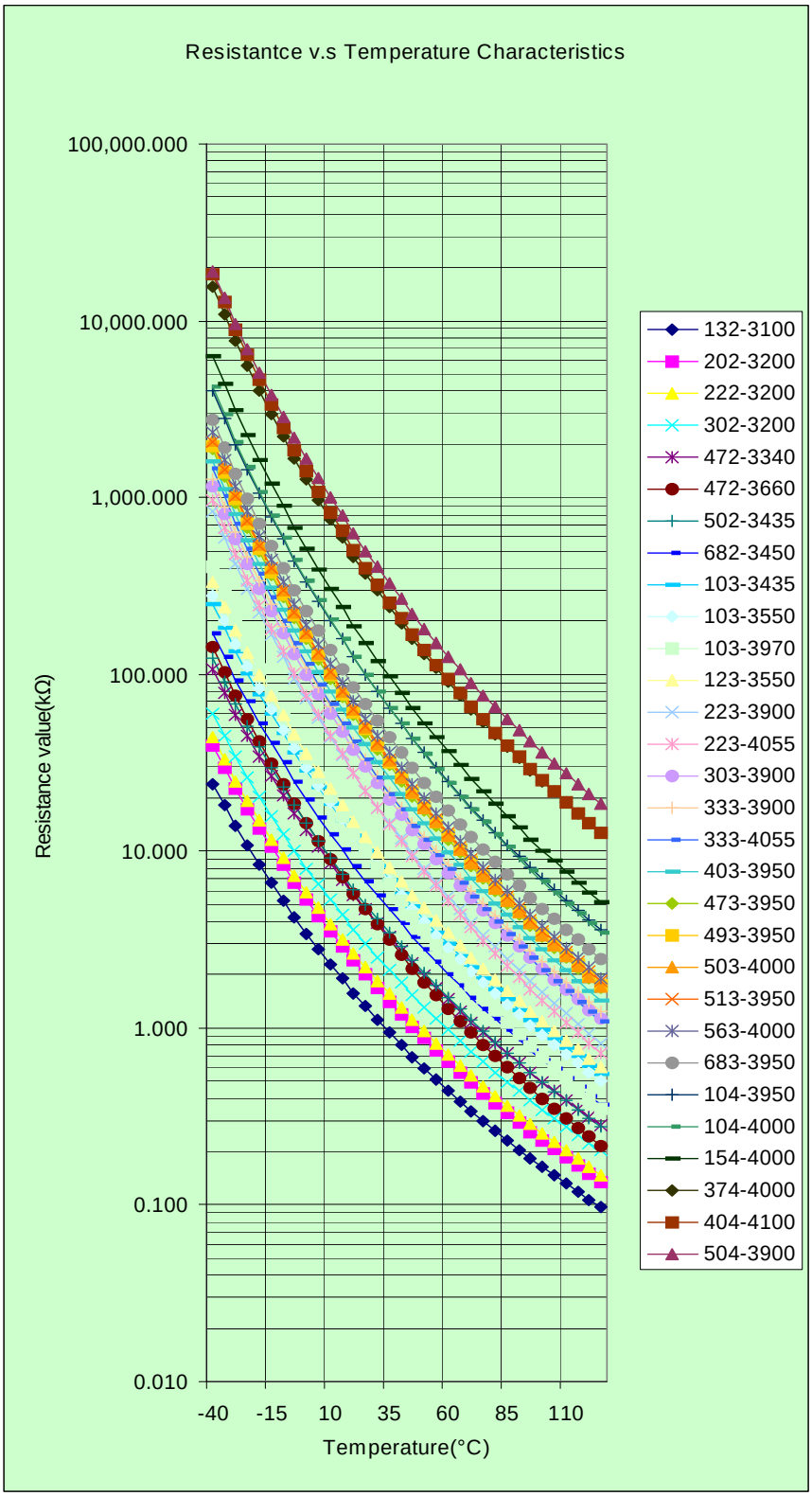
$P = C(T_2 - T_1)$ ---------- (3)

C : Thermal dissipation constant (mW/℃)
Thermal dissipation constant is changed by dimensions, measure, measured condition, etc.

4. Thermal Time Constant

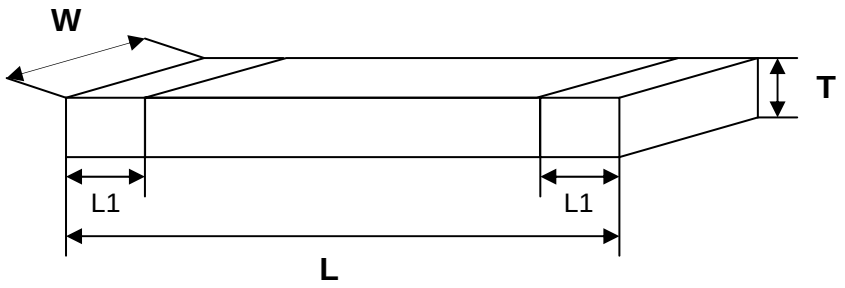
The Thermal Time Constant for a thermistor is the time required for a thermistor to change its body temperature by 63.2% of a specific temperature span from T_0 (℃) to T_1 (℃).





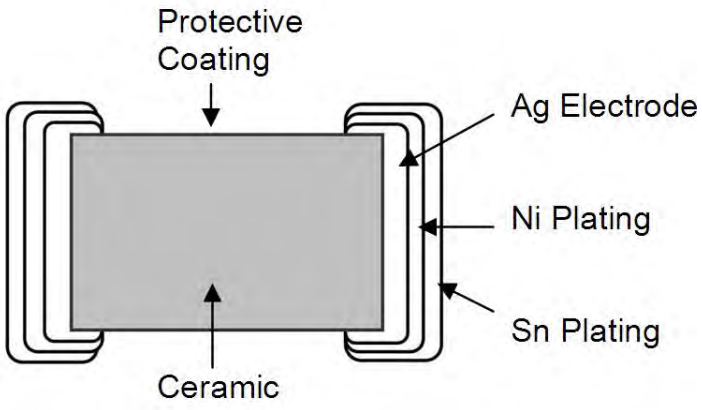
FLYING INTERNATIONAL

SMD CHIP DIMENSION



ITEM	L (mm)	W (mm)	T (mm)	L1 (mm)
0402（1005）	1.00 ± 0.10	0.50 ± 0.10	0.40 ± 0.20	0.15 ~ 0.30
0603（1608）	1.60 ± 0.15	0.80 ± 0.15	0.70 ± 0.25	0.20 ~ 0.50
0805（2012）	2.00 ± 0.20	1.25 ± 0.20	0.90 ± 0.30	0.20 ~ 0.60
1206（3216）	3.20 ± 0.20	1.60 ± 0.20	0.90 ± 0.30	0.25 ~ 0.60

SMD CHIP STRUCTURE



ORDERING INFORMATION

EWTF 03 - 103 J 3I - N

SMD NTC Series Code :
EWTF : Lead Free

Chip Size (L x W) :
02 (0402) – 1.0 x 0.5 mm
03 (0603) – 1.6 x 0.8 mm
05 (0805) – 2.0 x 1.25 mm
06 (1206) – 3.2 x 1.6 mm

Resistance at 25℃ :
102 = 10 x 10^2 = 1,000 Ω
103 = 10 x 10^3 = 10,000 Ω
104 = 10 x 10^4 = 100,000 Ω

Resistance Tolerance :
F=±1% ; G=±2% ; H=±3% ; J =±5 % ; K=±10%

B Value (K) :
3I = 3435 (3000 + 435)

1:1000	C:101~150	I:401~450	O:701~750
2:2000	D:151~200	J:451~500	P:751~800
3:3000	E:201~250	K:501~550	Q:801~850
4:4000	F:251~300	L:551~600	R:851~900
A:0~50	G:301~350	M:601~650	S:901~950
B:51~100	H:351~400	N:651~700	T:951~999

Coating Color :
Blank = Blue
N = New Color (Black)

SPECIFICATION

0402（1005）SIZE

Part Number	Resistance （25℃） （Ω）	B-constant （25℃/85℃） （K）	Maximum Power Rating （mW）	Dissipation Constant （mW/℃）	Operating Temp. Range （℃）
EWTF02-102□4B-N	1,000	4100	250	2.5	- 40 ~ 125
EWTF02-202□4K-N	2,000	4520			
EWTF02-103□3I-N	10,000	3435			
EWTF02-103□3R-N	10,000	3900			
EWTF02-103□4B-N	10,000	4100			
EWTF02-473□4A-N	47,000	4050			
EWTF02-683□4C-N	68,000	4150			
EWTF02-104□4A-N	100,000	4050			
EWTF02-104□4F-N	100,000	4300			
EWTF02-474□4A-N	470,000	4050			

Remark：1. □ - Resistance Tolerance : F=±1% ; G=±2% ; H=±3% ; J =±5 % ; K=±10%.

2. Maximum Power Rating = Dissipation Constant × (Max. Operation Temperature - 25℃).

※ Please inquire to our sales for other specifications.

0603（1608）SIZE

Part Number	Resistance (25℃) (Ω)	B-constant (25℃/85℃) (K)	Maximum Power Rating (mW)	Dissipation Constant (mW/℃)	Operating Temp. Range (℃)
EWTF03-102□2S-N	1,000	2950	350	3.5	- 40 ~ 125
EWTF03-202□4C-N	2,000	4150			
EWTF03-332□3F-N	3,300	3300			
EWTF03-472□3G-N	4,700	3340			
EWTF03-502□3G-N	5,000	3340			
EWTF03-682□3I-N	6,800	3435			
EWTF03-103□3I-N	10,000	3435			
EWTF03-103□3K-N	10,000	3550			
EWTF03-103□3T-N	10,000	3970			
EWTF03-223□3R-N	22,000	3900			
EWTF03-473□3S-N	47,000	3950			
EWTF03-473□4A-N	47,000	4050			
EWTF03-503□4A-N	50,000	4000			
EWTF03-104□3S-N	100,000	3950			
EWTF03-104□4A-N	100,000	4050			
EWTF03-104□4H-N	100,000	4400			
EWTF03-154□4L-N	150,000	4600			
EWTF03-204□4B-N	200,000	4055			
EWTF03-224□4B-N	220,000	4055			
EWTF03-334□4B-N	330,000	4100			
EWTF03-474□4B-N	470,000	4100			
EWTF03-564□4B-N	560,000	4100			

Remark：1. □ - Resistance Tolerance : F=±1% ; G=±2% ; H=±3% ; J =±5 % ; K=±10%.

2. Maximum Power Rating = Dissipation Constant ×(Max. Operation Temperature - 25℃).

※ Please inquire to our sales for other specifications.

0805（2012）SIZE

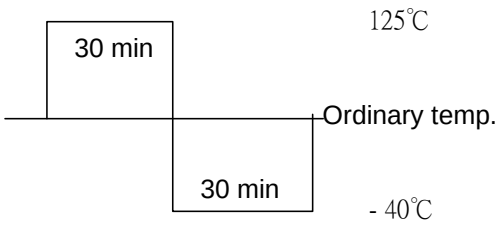
Part Number	Resistance (25℃) (Ω)	B-constant (25℃/85℃) (K)	Maximum Power Rating (mW)	Dissipation Constant (mW/℃)	Operating Temp. Range (℃)
EWTF05-472□3I-N	4,700	3435	400	4	- 40 ~ 125
EWTF05-502□3I-N	5,000	3435			
EWTF05-103□3I-N	10,000	3435			
EWTF05-103□3K-N	10,000	3550			
EWTF05-103□3T-N	10,000	3970			
EWTF05-223□3R-N	22,000	3900			
EWTF05-473□4A-N	47,000	4000			
EWTF05-503□4A-N	50,000	4000			
EWTF05-104□4A-N	100,000	4000			
EWTF05-204□4B-N	200,000	4100			

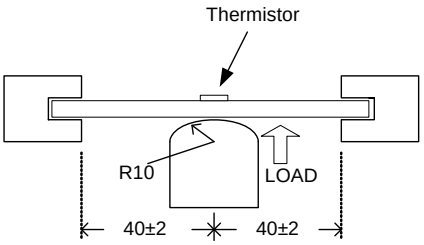
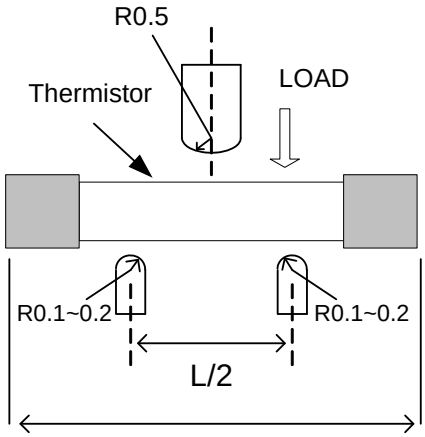
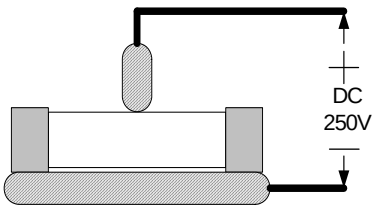
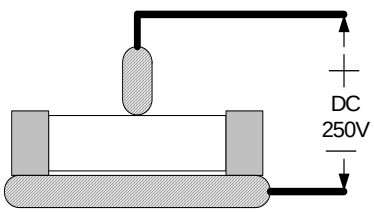
Remark： 1. □ - Resistance Tolerance : F=±1% ; G=±2% ; H=±3% ; J =±5 % ; K=±10%.

2. Maximum Power Rating = Dissipation Constant ×(Max. Operation Temperature - 25℃).

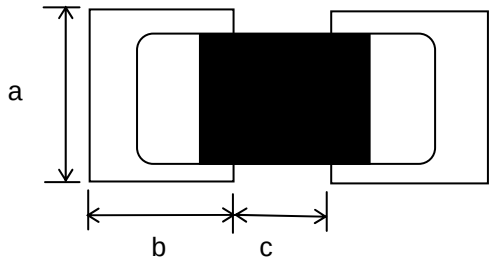
※ Please inquire to our sales for other specifications.

Reliability Test

Test Item		Standard	Test Method	$\triangle R_{25} / R_{25}$
Environmental test	Life	MIL-STD-202F Method 108A	Test temperature：70 ℃. 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 ℃. Test humidity：95 % RH. 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 ℃ and 125 ℃. 	Max. ± 3%
	High temp. storage	IEC 68-2-2	Test temperature：125 ℃. Test duration：1000 hrs.	Max. ± 3%
Mechanical Performance test	Solderability	MIL-STD-202F Method 208 H	Soldering temperature：235 ℃. Duration of immersion：2 seconds.	Min. 95% coverage
	Resistance to soldering heat	MIL-R-55342D PARA 4.7.7	Soldering temperature：260 ℃. Duration of immersion：10 seconds.	Max. ± 3%

Test Item		Standard	Test Method	$\triangle R_{25} / R_{25}$
Mechanical Performance test	Bending strength	JIS C 5202 6.1.4	Pressurizing rod at a rate of 1 mm/sec. Bending distance：1 mm. Maintenance time：5 seconds.  Unit : mm	No visible damage
	Resistance to flexure of substrate	JIS C 5202 6.2.1	Pressurizing force shall be Over 3 Kg.  Unit : mm	Min. 3 Kg
Electrical Performance test	Insulation resistance	MIL-STD-202F Method 302	DC 250V For 10 seconds. 	Min. 1000MΩ
	Dielectric withstand voltage	MIL-STD-202F Method 301	DC 250V For 10 seconds. 	Not Short

RECOMMENDED LAND DIMENSIONS

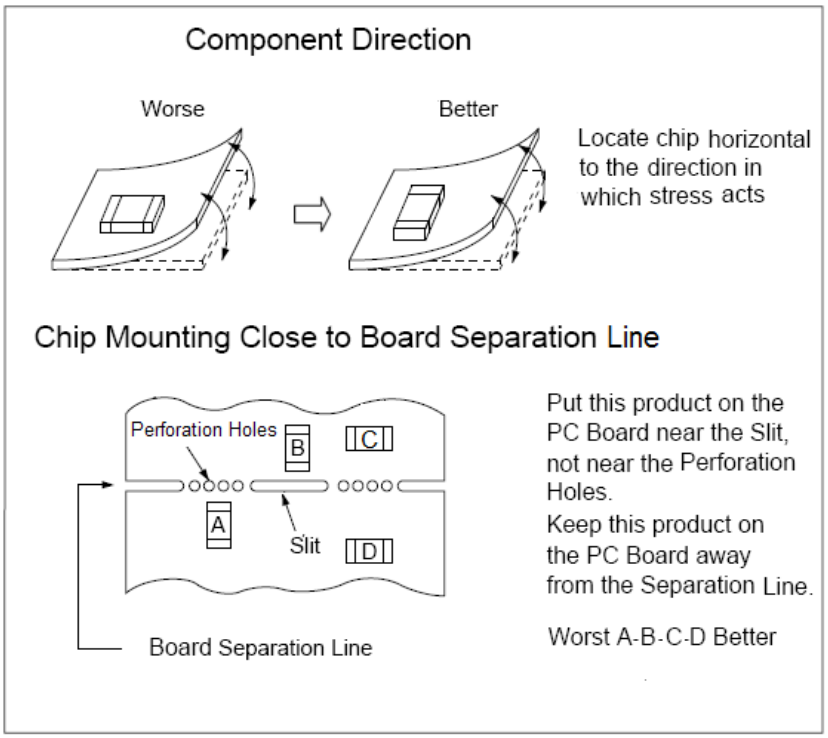


Unit: mm

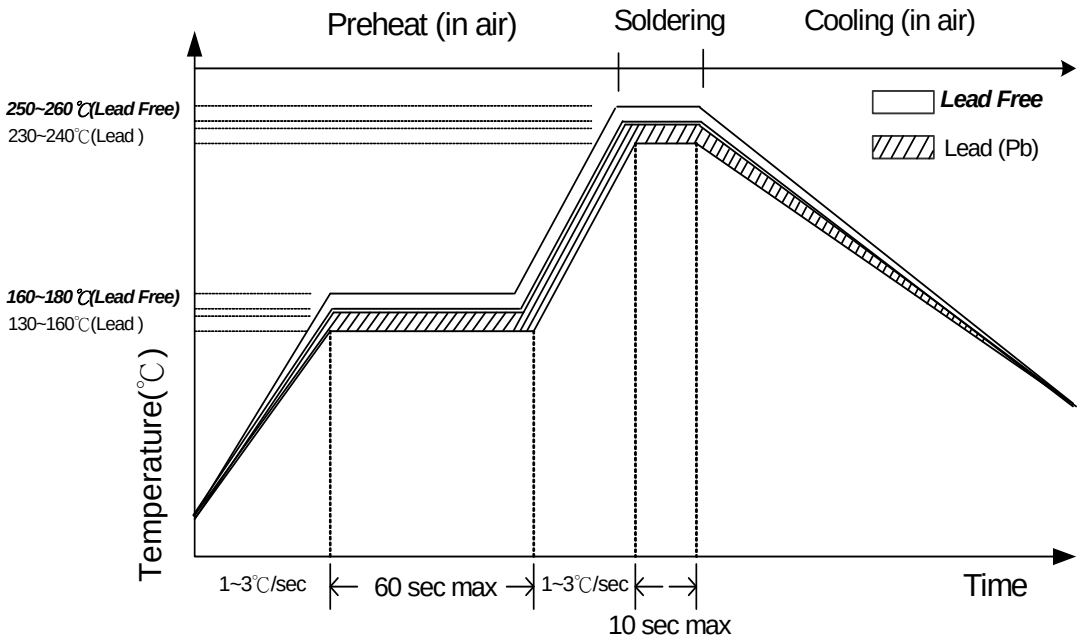
Type	a	b	c
0402 (1005)	0.6 ~ 0.7	0.8 ~ 0.9	0.4 ~ 0.5
0603 (1608)	0.9 ~ 1.0	1.0 ~ 1.1	0.6 ~ 0.7
0805 (2012)	1.4 ~ 1.5	1.2 ~ 1.3	0.7 ~ 0.8
1206 (3216)	1.7 ~ 1.8	1.5 ~1.6	1.3 ~ 1.4

MOUNTING POSITION

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



REFLOW SOLDERING PROFILE



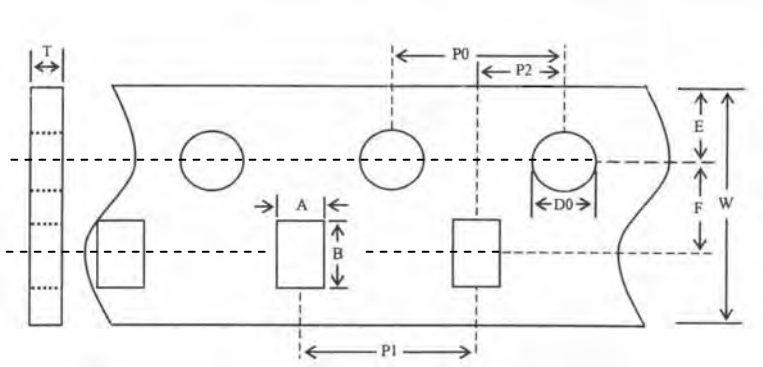
HAND SOLDERING IRON

Item	Condition
Temperature of Soldering Iron-tip	360 ℃ max.
Diameter of Soldering Iron-tip	Ø 3 mm max.
Soldering Iron Wattage	30 W max.
Soldering Time	5 seconds max.

STORAGE CONDITIONS

1. Storage Temperature : - 10 ℃ ~ + 40 ℃
2. Relative humidity : 30 ~ 75 % RH
3. Thermistor must be kept away from sunshine and stored in a non-corrosive atmosphere.
4. Period of Storage : 1 year

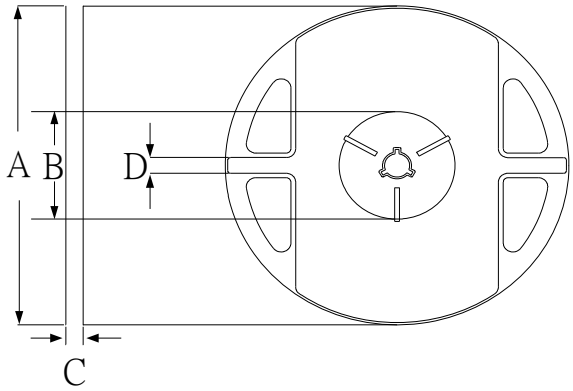
TAPE DIMENSIONS



Unit：mm

Dimension	0402	0603	0805	1206
A	0.65 ± 0.10	1.10 ± 0.10	1.50 ± 0.10	2.00 ± 0.10
B	1.15 ± 0.10	1.90 ± 0.10	2.30 ± 0.10	3.57 ± 0.10
W	8.00 ± 0.20	8.00 ± 0.20	8.00 ± 0.20	8.00 ± 0.20
D0	1.50 ± 0.25	1.50 ± 0.25	1.50 ± 0.25	1.55 ± 0.25
E	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10
F	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05
P0	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10
P1	2.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10
P2	2.00 ± 0.10	2.00 ± 0.10	2.00 ± 0.10	2.00 ± 0.10
T	1.10 Max.	1.10 Max.	1.10 Max.	1.10 Max.

REEL DIMENSIONS

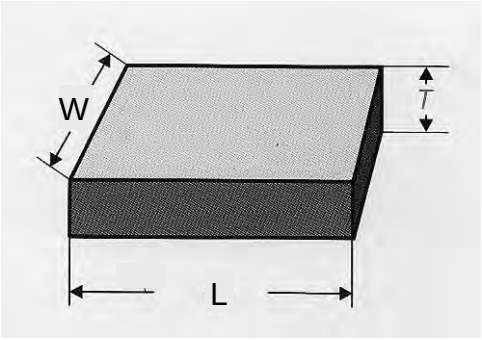


Unit：mm

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

ITEM	0402	0603	0805	1206
Qty. / Reel	10000 pcs	4000 pcs	4000 pcs	3000 pcs

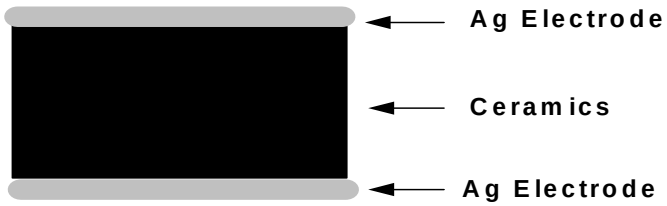
BARE CHIP DIMENSION



ITEM	L (mm)	W (mm)	T (mm)
EWTC-080805	0.80 ± 0.10	0.80 ± 0.10	0.50 ± 0.05
EWTC-121210	1.20 ± 0.10	1.20 ± 0.10	1.00 ± 0.05

※ Please inquire to our sales for other specifications.

BARE CHIP STRUCTURE



SPECIFICATIONS

R_{25} (KΩ)	R Tolerance (%)	$B_{(25℃/85℃)}$ (K)	B Tolerance (%)
10	1、2、3、5	3435	1、2、3

ORDERING INFORMATION

EWTC 08 08 05 - 103 H 3I

Bare Chip Series Code

EWTC – Oblong shape
EWTR – Round shape

Chip Length (L) :

08 = 0.8 mm
12 = 1.2 mm

Chip Width (W) :

08 = 0.8 mm
12 = 1.2 mm

Chip Thickness (T) :

05 = 0.5 mm
10 = 1.0 mm

Resistance at 25℃ :

103 = 10 x 10^3 = 10000 Ω

Resistance Tolerance :

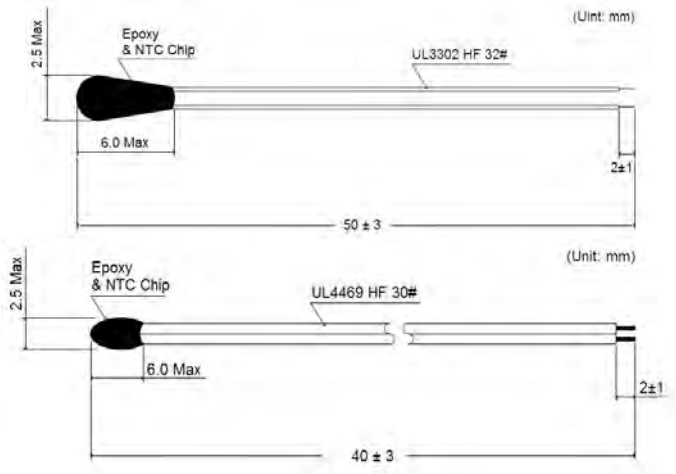
F=±1% ; G=±2% ; H=±3% ; J=±5% ; K=±10

B Value (K) :

3I = 3435 (3000 + 435)

1:1000	C:101~150	I:401~450	O:701~750
2:2000	D:151~200	J:451~500	P:751~800
3:3000	E:201~250	K:501~550	Q:801~850
4:4000	F:251~300	L:551~600	R:851~900
A:0~50	G:301~350	M:601~650	S:901~950
B:51~100	H:351~400	N:651~700	T:951~999

TA4 Series



FEATURES

- Low cost
- High stability
- Small size and fast thermal response

The TA4 thermistor is a high-precision thermal sensing device which is similar to HT thermistor but different with flexible lead-wires.

SPECIFICATIONS

Item	Symbol	Conditions	Specification	Unit
Resistance at Ta	R_{25}	Ta = 25℃	1,000 ~ 100,000	Ω
B constant	B	25℃ / 85℃	3100 ~ 4665	K
Thermal dissipation constant	C	Ta = 25℃	2.5	mW/℃
Thermal time constant	T	Ta = 25℃	15	sec
Operating temp. range	---	---	- 30 ~ 105	℃

ORDERING INFORMATION

ES TA4 103 H 3435 F - 30 050 21 S C

E WAY Sensor

TA4 Series Thermistor

Resistance at 25℃ :

102 = 10 x 10^2 = 1,000 Ω
103 = 10 x 10^3 = 10,000 Ω
104 = 10 x 10^4 = 100,000 Ω

R Tolerance :

F:±1% ; G:±2% ; H:±3% ; J:±5% ; K:±10%

B Value (K) :

B Tolerance :

F:±1% ; G:±2% ; H:±3% ; J:±5%

Wire Gauge :

30 = 30 AWG

Length (all) :

050 = 50 mm
400 = 400 mm
1400 = 1400 mm (when length> 999 mm)

Solder Length and Tolerance :

21 = 2 ± 1 mm

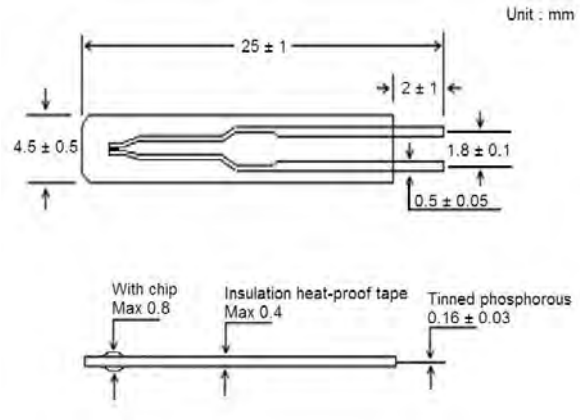
Wire Type :

S : Separate 
C : Connect 
D : Differ

Wire UL Type :

A	UL1430
B	UL1571
C	UL3302 HF
D	UL2468
E	UL2651
F	UL1332 Teflon
G	UL10362 Teflon
H	UL 4469 HF
I	200℃ Teflon
J	Alloy 180
K	UL1685
L	UL3302 HF(twist)
M	UL4469 HF(twist)
P	UL2651(twist)
O	Others

TJ Series



FEATURES

- Suitable for narrow space
- Fast thermal response
- Elastic and solder easily

The TJ thermistor possesses ultra thinness of 500μm and superior electrical insulation. It is possible to use with safety in ambience where might contact with electrodes.

SPECIFICATIONS

Item	Symbol	Conditions	Specification	Unit
Resistance at Ta	R_{25}	Ta = 25 ℃	1,000 ~ 100,000	Ω
B constant	B	25℃ / 85℃	3100 ~ 4665	K
Thermal dissipation constant	C	Ta = 25 ℃	0.7	mW/℃
Thermal time constant	T	Ta = 25℃	5	sec
Operating temp. range	---	---	- 40 ~ 100	℃

ORDERING INFORMATION

ES TJ 103 H 3435 F - 025 HF

E WAY Sensor

Thin-Film Thermistor

Resistance at 25℃ :

102 = 10 x 10^2 = 1,000 Ω
103 = 10 x 10^3 = 10,000 Ω
104 = 10 x 10^4 = 100,000 Ω

R Tolerance :

F:±1% ; G:±2% ; H:±3% ; J:±5% ; K:±10%

B Value (K) :

B Tolerance :

F:±1% ; G:±2% ; H:±3% ; J:±5%

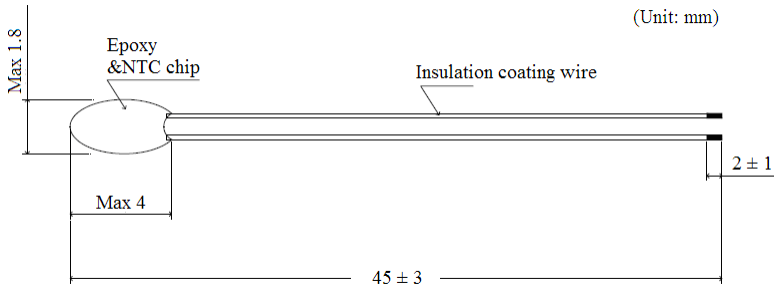
Length (all) :

025 = 25 mm
032 = 32 mm
050 = 50 mm

Halogen Type :

Blank = Not Halogen Free
HF = Halogen Free

TS Series



FEATURES

- Fast response
- Excellent thermal cycle endurance
- Small size and high reliability

The TS thermistor is smaller than the HT thermistor. Its rapid response time and high reliability make it suitable for use in medical equipments and thermometers.

SPECIFICATIONS

Item	Symbol	Conditions	Specification	Unit
Resistance at Ta	R_{25}	Ta = 25 ℃	1,000 ~ 100,000	Ω
B constant	B	25℃ / 85℃	3100 ~ 4665	K
Thermal dissipation constant	C	Ta = 25 ℃	0.7	mW/℃
Thermal time constant	T	Ta = 25 ℃	3.2	sec
Operating temp. range	---	---	- 30 ~ 100	℃

ORDERING INFORMATION

ES TS 103 H 3435 F - 26 020 21

E WAY Sensor

Temperature Sensing Thermistor

Resistance at 25℃ :

102 = 10 x 10^2 = 1,000 Ω
103 = 10 x 10^3 = 10,000 Ω
104 = 10 x 10^4 = 100,000 Ω

R Tolerance :

F:±1% ; G:±2% ; H:±3% ; J:±5% ; K:±10%

B Value (K) :

B Tolerance :

F:±1% ; G:±2% ; H:±3% ; J:±5%

Wire Gauge :

15 = ø 0.15 mm
26 = ø 0.26 mm

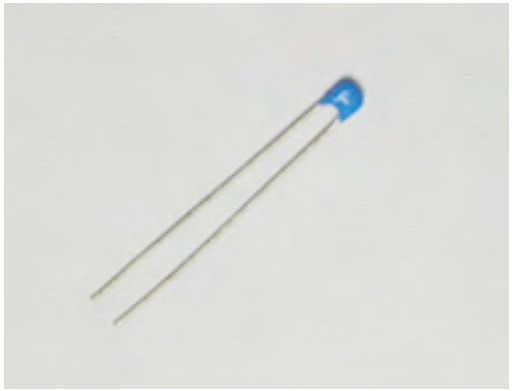
Length (all) :

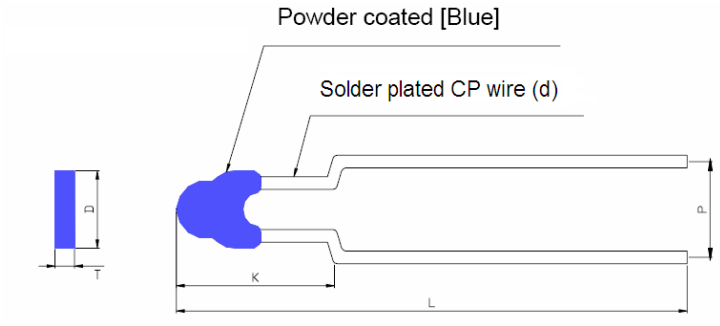
020 = 20 mm
150 = 150 mm

Solder Length and Tolerance :

21 = 2 ± 1 mm
31 = 3 ± 1 mm

HT Series





unit: mm

Type	D	K	L	P	T	d
L	4.0 max	6.5 max	32	2.5	3.0 max	0.45

FEATURES

- Low cost
- High stability
- Temperature sensing and control, compensation, measurement

The HT thermistor is a high-performance thermal sensing device which has small B-value tolerance and resistance. They insure temperature precision of ± 0.1°C and can be applied for very accurate temperature control compensation.

SPECIFICATIONS

Item	Symbol	Conditions	Specification	Unit
Resistance at Ta	R_{25}	Ta = 25 ℃	1,000 ~ 100,000	Ω
B constant	B	25℃ / 85℃	3100 ~ 4665	K
Thermal dissipation constant	C	Ta = 25 ℃	0.5 ~ 2.0	mW/℃
Thermal time constant	T	Ta = 25 ℃	15	sec
Operating temp. range	---	---	- 40 ~ 125	℃

ORDERING INFORMATION

ENR HT 3 103 H 3435 F L B 32

E WAY Radial NTC

High-precision Disc Thermistor

Disk Size (dimmeter) :

2 (2ø)、3 (3ø)、5 (5ø)

Resistance at 25℃ :

101 = 10 x 10^1 = 100 Ω
102 = 10 x 10^2 = 1,000 Ω
103 = 10 x 10^3 = 10,000 Ω

R Tolerance :

F:±1% ; G:±2% ; H:±3% ; J:±5% ; K:±10%

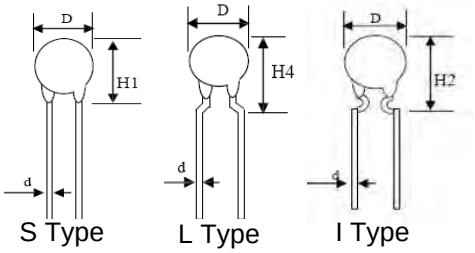
B value (K) :

B Tolerance :

F:±1% ; G:±2% ; H:±3% ; J:±5%

Wire Type :

S	S Type
L	L Type
I	I Type



Package :

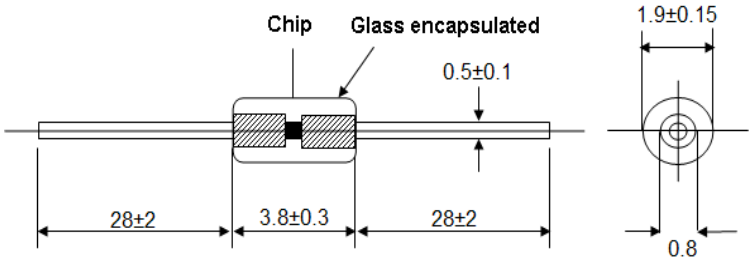
B : Bulk ; T : Taping

Length (wire) :

32 = 32 mm

FLYiNG INTERNATIONAL

DT Series



FEATURES

- Low cost
- High stability
- Glass sealed body for high reliability

The DT series thermistor is a thermistor sensor with a DO35 package, which possesses highly reliable and offers a wide operating range of – 30 ℃ to 250 ℃. They can be employed for home electric appliances and high temperature applications.

SPECIFICATIONS

Item	Symbol	Conditions	Specification	Unit
Resistance at Ta	R_{25}	Ta = 25 ℃	1,000 ~ 100,000	Ω
B constant	B	25℃ / 85℃	3100 ~ 4665	K
Thermal dissipation constant	C	Ta = 25 ℃	2	mW/℃
Thermal time constant	T	Ta = 25 ℃	20	sec
Operating temp. range	---	---	- 30 ~ 250	℃

ORDERING INFORMATION

ES DT 103 H 3435 F

E WAY Sensor

Diode Type Thermistor

Resistance at 25℃ :

102 = 10 x 10^2 = 1,000 Ω
103 = 10 x 10^3 = 10,000 Ω
104 = 10 x 10^4 = 100,000 Ω

R Tolerance :

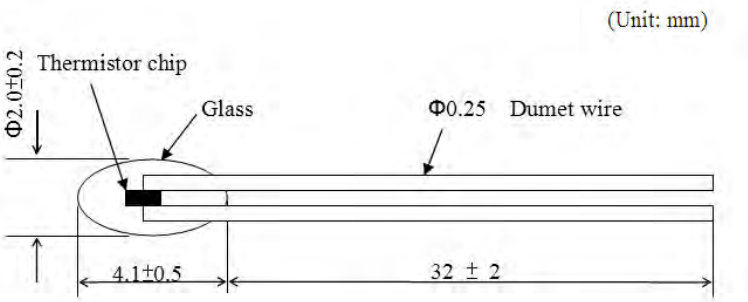
F:±1% ; G:±2% ; H:±3% ; J:±5% ; K:±10%

B Value (K) :

B Tolerance :

F:±1% ; G:±2% ; H:±3% ; J:±5%

GS Series



FEATURES

- Low cost
- High stability
- Glass sealed body for high reliability

The GS series thermistor is a thermistor sensor with a glass sealed package, which possesses highly reliable and offers a wide operating range of -30 ℃ to 250 ℃. They can be employed for home electric appliances and high temperature applications.

SPECIFICATIONS

Item	Symbol	Conditions	Specification	Unit
Resistance at Ta	R_{25}	Ta = 25 ℃	1,000 ~ 100,000	Ω
B constant	B	25℃ / 85℃	3100 ~ 4665	K
Thermal dissipation constant	C	Ta = 25 ℃	1	mW/℃
Thermal time constant	T	Ta = 25 ℃	12	sec
Operating temp. range	---	---	- 30 ~ 250	℃

ORDERING INFORMATION

ES GS 103 H 3435 F - 25 32

E WAY Sensor

Glass Sealed Thermistor

Resistance at 25℃ :

102 = 10 x 10^2 = 1,000 Ω
103 = 10 x 10^3 = 10,000 Ω
104 = 10 x 10^4 = 100,000 Ω

R Tolerance :

F:±1% ; G:±2% ; H:±3% ; J:±5% ; K:±10%

B Value (K) :

B Tolerance :

F:±1% ; G:±2% ; H:±3% ; J:±5%

Wire Gauge :

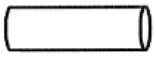
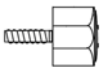
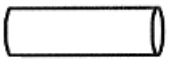
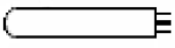
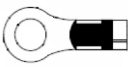
25 = ø 0.25 mm

Length (wire) :

32 = 32 mm

Other Series

E WAY's NTC thermistors with R-T curves accurately matched are interchangeable thermistors precisely designed for high quality to provide accurate and stable temperature sensing capability for temperature measurement and/or compensation. They are presented in small, epoxy encapsulated radial leaded assemblies, with various wires and housings for different applications.

Housing	Material	Appearance
AB	ABS	
AL	Aluminum	
BR	Brass	
ER	Epoxy Resin	
NP	Nickle Plate	
PS	Polyacetal Sleeve	
SR	Silicon Resin	
SS	Stainless Steel	
TC	Tin Copper	

ORDERING INFORMATION

ES ER 103 H 3435 F - 30 040 S C

E WAY Sensor

Housing Type :

AB	ABS
AL	Aluminum
BR	Brass
ER	Epoxy Resin
NP	Nickel Plate
PH	Phenolic
PS	Polyacetal Sleeve
SR	Silicon Resin
SS	Stainless Steel
TC	Tin Copper
TF	Thin Film
OT	Other

Resistance at 25℃ :

102 = 10 x 10^2 = 1,000 Ω
103 = 10 x 10^3 = 10,000 Ω
104 = 10 x 10^4 = 100,000 Ω

R Tolerance :

F:±1% ; G:±2% ; H:±3% ; J:±5% ; K:±10%

B Value (K) :

B Tolerance :

F:±1% ; G:±2% ; H:±3% ; J:±5%

Wire Gauge :

30 = 30 AWG

Length (wire) :

040 = 40 mm
110 = 110 mm

Wire type :

S : Separate
C : Connect
D : Differ

Wire UL Type :

A	UL1430
B	UL1571
C	UL3302 HF
D	UL2468
E	UL2651
F	UL1332 Teflon
G	UL10362 Teflon
H	UL 4469 HF
I	200℃ Teflon
J	Alloy 180
K	UL1685
L	UL3302 HF(twist)
M	UL4469 HF(twist)
P	UL2651(twist)
O	Others