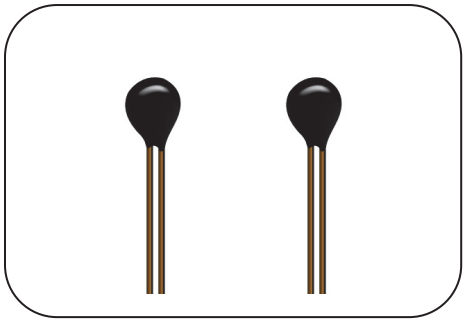
NTC Thermistor：TTS Series

Epoxy Bead Type for Temperature Sensing/Compensation

Features

1. RoHS compliant
2. Halogen-Free (HF) series are available
3. Body size: Φ1.8mm, Φ2.6mm
4. Radial lead resin coated
5. Long leads for easy sensor placement
6. Operating temperature range: -40℃~+100℃
7. Wide resistance range
8. Agency recognition: UL / cUL



Recommended Applications

1. Home appliances
2. Computers
3. Battery packs
4. Thermometers

Part Number Code

1	2	3	.4	5	6	7	8	9	10	11	12	13	14	15	16

Product Type	
TTS	THINKING NTC Thermistor TTS Series

Size	
1	Φ1.8mm x 6.0 mm (max.)
2	Φ2.6mm x 6.0mm (max.)

Definition of B Value	
A	$B_{25/85}$
B	$B_{25/50}$

Zero Power Resistance at 25℃ (R_{25})	
102	1KΩ
103	10KΩ
473	47KΩ

Tolerance of R_{25}	
F	±1%
G	±2%
H	±3%
J	±5%
K	±10%

B Value	
338	3380
34D	3435
395	3950
39H	3975
405	4050

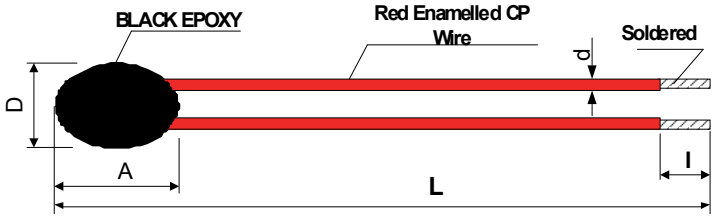
Tolerance of B Value	
1	±1%
2	±2%
3	±3%

Optional Suffix	
Y	RoHS Compliant
H	RoHS + HF Compliant

Appearance	
R	Φ0.30mm Red Enamelled CP Wire
G	Φ0.30mm Sn Plated CP Wire
T	Φ0.30mm Blue Teflon CP Wire

Structure and Dimensions

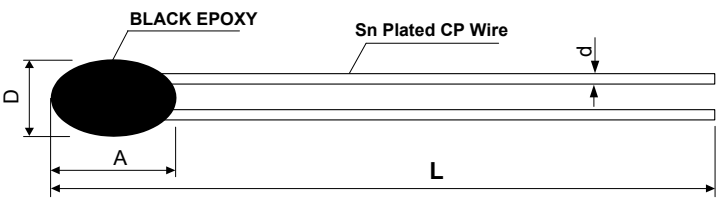
R Type



(Unit: mm)

Series	Dmax.	Amax.	d	L	l
TTS1	1.8	6.0	0.30±0.02	70±5	2±0.5
TTS2	2.6	6.0			

G Type



(Unit: mm)

Series	Dmax.	Amax.	d	L
TTS1	1.8	6.0	0.30±0.02	70±5
TTS2	2.6	6.0		

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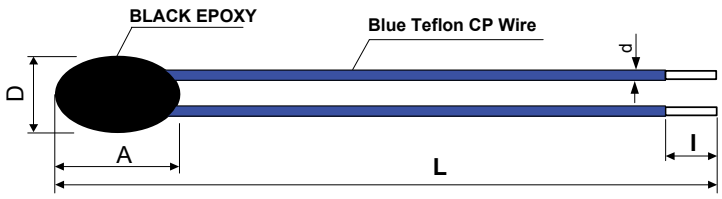
Epoxy Bead Type for Temperature Sensing/Compensation

T Type



(Unit: mm)

Series	Dmax.	Amax.	d	L	l
TTS1	1.8	6.0	0.30±0.02	70±5	2±0.5

■ Electrical Characteristics

Part No.	Zero Power Resistance at 25°C	Tolerance of R_{25}	B Value		Tolerance of B value	Max. Power Dissipation at 25°C	Dissipation Factor	Thermal Time Constant	Operating Temperature Range	Safety Approvals	
	R_{25} (KΩ)	(±%)	(K)		(±%)	P_{max}(mW)	δ(mW/°C)	τ (Sec.)	T_L~T_U(°C)	UL	cUL
TTS1A103□34D*	10	1, 2, 3, 5	25/85	3435	1, 2, 3	45	≧1	≦10	-40 ~ +100	√	√
TTS1A103□395*	10			3950						√	√
TTS1A103□39H*	10			3975						√	√
TTS1A103□425*	10			4250	2, 3					√	√
TTS1A223□370*	22			3700						√	√
TTS1A333□405*	33			4050	1, 2, 3					√	√
TTS1A104□436*	100			4360	2, 3					√	√
TTS1B104□410*	100		25/50	4100	1, 2, 3					√	√
TTS2A502□39H*	5	1, 2, 3, 5	25/85	3975	1, 2, 3					√	√
TTS2A103□34D*	10			3435						√	√
TTS2A103□396*	10			3960						√	√
TTS2A103□39H*	10			3975						√	√
TTS2A203□34D*	20			3435						√	√
TTS2A104□436*	100			4360	2, 3					√	√
TTS2B102□392*	1		25/50	3920	1, 2, 3					√	√
TTS2B502□39D*	5			3935						√	√
TTS2B104□410*	100			4100						√	√
TTS2B104□419*	100			4190	2, 3					√	√
TTS2B474□439*	470			4390						√	√

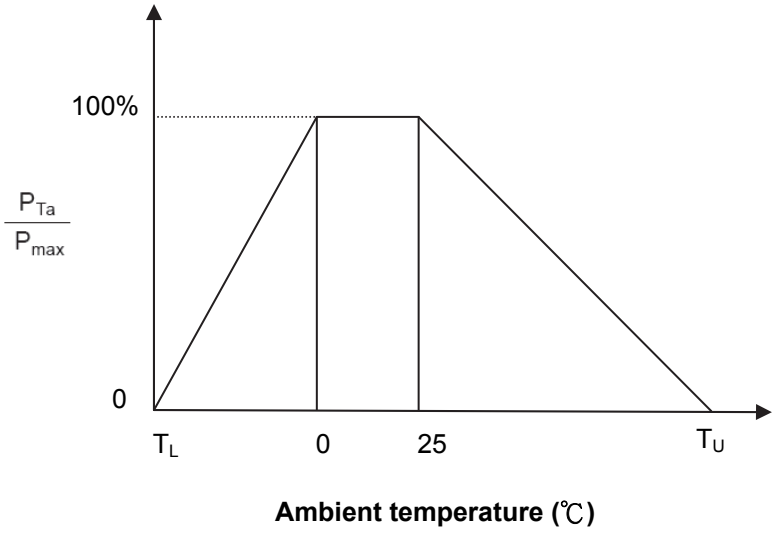
Note 1: □ = Tolerance of R_{25}

* = Tolerance of B value

Note 2: UL/cUL File No: E138827

Note 3: Special specifications are available upon request.

■ Max. Power Dissipation Derating Curve



T_U : Maximum operating temperature (℃)

T_L : Minimum operating temperature (℃)

For example:

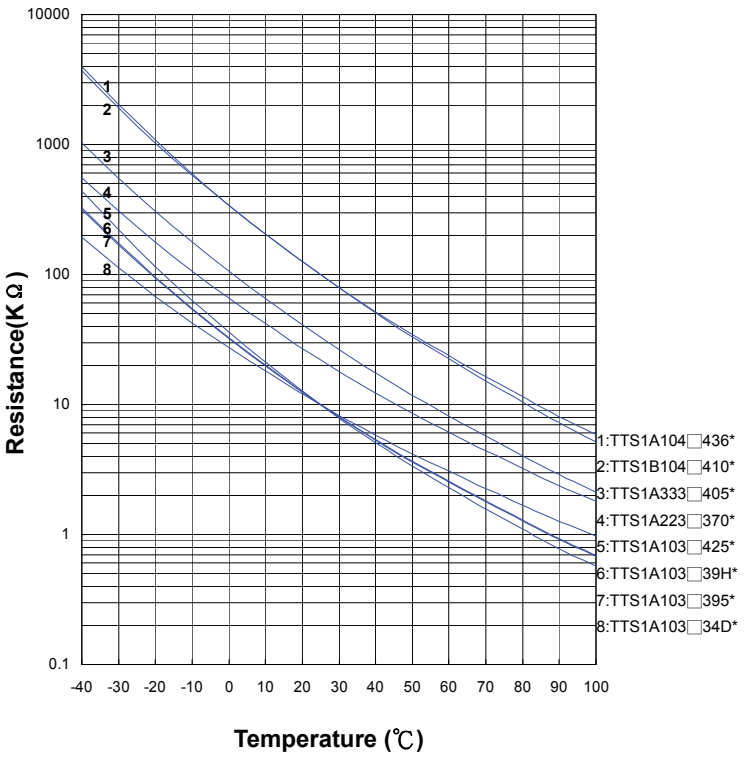
Ambient temperature(Ta) = 55℃

Maximum operating temperature(T_U) = 100℃

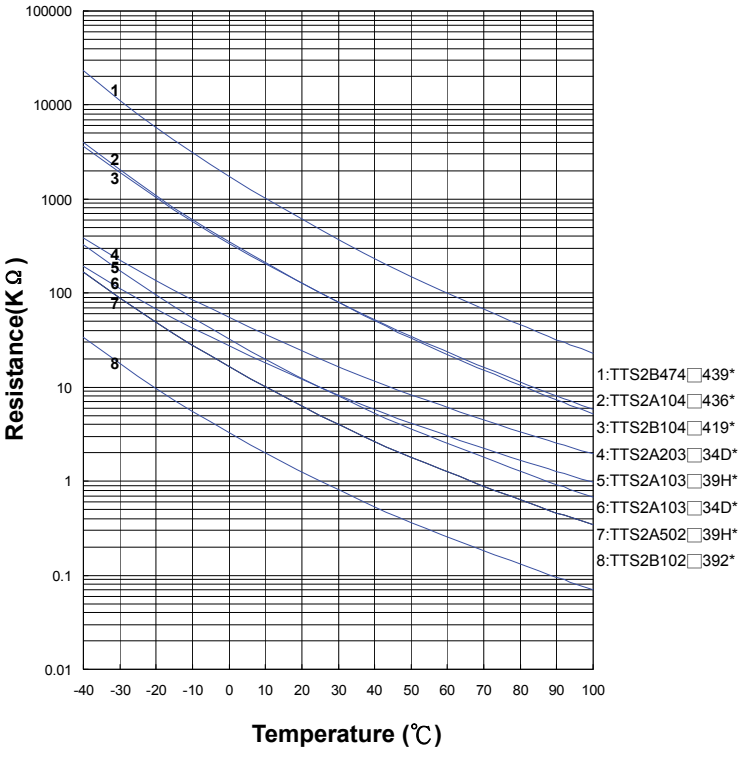
$P_{Ta}=(T_U-Ta)/(T_U-25)\times Pmax$ = 60% Pmax

■ R-T Characteristic Curves

TTS1A103□34D*~ TTS1B104□436*

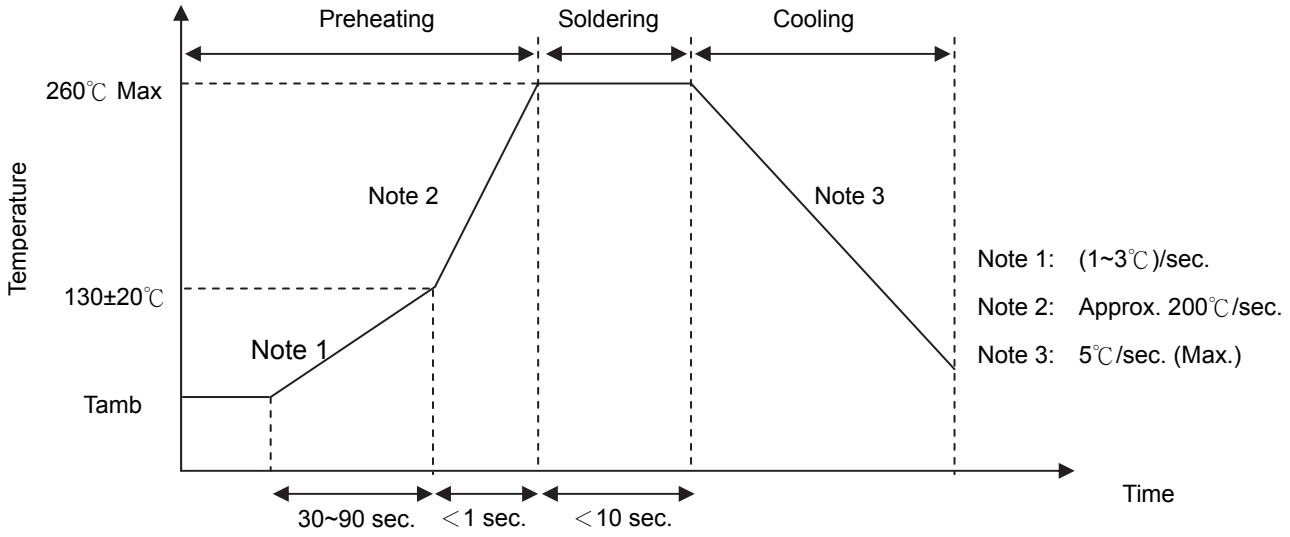


TTS2B102□392*~ TTS2B474□439*



■ Soldering Recommendation

● Wave Soldering Profile



● Recommended Reworking Conditions With Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360℃ (max.)
Soldering Time	3 sec. (max.)
Distance from Thermistor	10 mm (min.)

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■ Reliability

Item	Standard	Test conditions / Methods	Specifications
Tensile Strength of Terminations	IEC 60068-2-21	Gradually apply the specified force and keep the unit fixed for 10±1 sec. Terminal diameter (mm) / Force (Kg) d≦0.25 — 0.10 0.25<d≦0.3 — 0.25 0.3<d≦0.5 — 0.5	No visible damage
Bending Strength of Terminations	IEC 60068-2-21	Hold specimen and apply the force specified below to each lead. Bend the specimen to 90°, and then return to the original position. Repeat the procedure in the opposite direction. Terminal diameter (mm) / Force (Kg) d≦0.25 — 0.05 0.25<d≦0.3 — 0.125 0.3<d≦0.5 — 0.25	No visible damage
Solderability	IEC 60068-2-20	245 ± 3℃, 3 ± 0.3 sec.	At least 95% of terminal electrode is covered by new solder
Resistance to Soldering Heat	IEC 60068-2-20	260 ± 3℃, 10 ± 1 sec.	No visible damage $\lvert \triangle R_{25}/R_{25} \rvert \leqq 3\ \%$
High Temperature Storage	IEC 60068-2-2	100 ± 5℃ , 1000 ± 24 hrs	No visible damage $\lvert \triangle R_{25}/R_{25} \rvert \leqq 5\ \%$
Damp Heat, Steady State	IEC 60068-2-78	40 ± 2℃, 90~95% RH, 1000 ± 24 hrs	No visible damage $\lvert \triangle R_{25}/R_{25} \rvert \leqq 3\ \%$
Rapid Change of Temperature	IEC 60068-2-14	The conditions shown below shall be repeated 5 cycles. Step 1: -40 ± 5, 30 ± 3 Step 2: Room temperature, 5 ± 3 Step 3: 100 ± 5, 30 ± 3 Step 4: Room temperature, 5 ± 3	No visible damage $\lvert \triangle R_{25}/R_{25} \rvert \leqq 3\ \%$
Max. Power Dissipation	IEC 60539-1	25 ± 5℃, Pmax. , 1000 ± 24 hrs	No visible damage $\lvert \triangle R_{25}/R_{25} \rvert \leqq 5\ \%$

■ Packaging

- Bulk Packing: 500 pcs/bag

■ Warehouse Storage Conditions of Products

- Storage Conditions :
  1. Storage Temperature: -10℃~+40℃
  2. Relative Humidity: ≦75%RH
  3. Keep away from corrosive atmosphere and sunlight.
- Period of Storage : 1 year

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