

NTC Thermistor : TTF Series



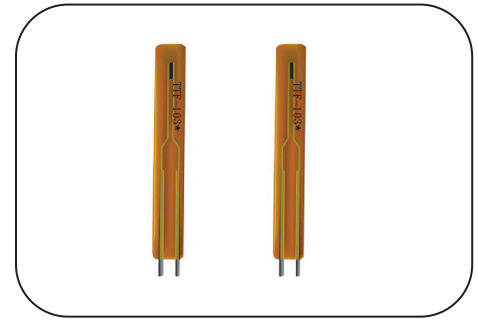
Insulation Film Type for Temperature Sensing/Compensation

■ Features

1. RoHS compliant
2. Halogen-Free (HF) series are available
3. Radial leaded insulation film coated
4. Operating temperature range: $-40^{\circ}\text{C} \sim +100^{\circ}\text{C}$
5. Agency recognition: UL / cUL

■ Recommended Applications

1. Home appliances
2. Computers
3. Battery packs

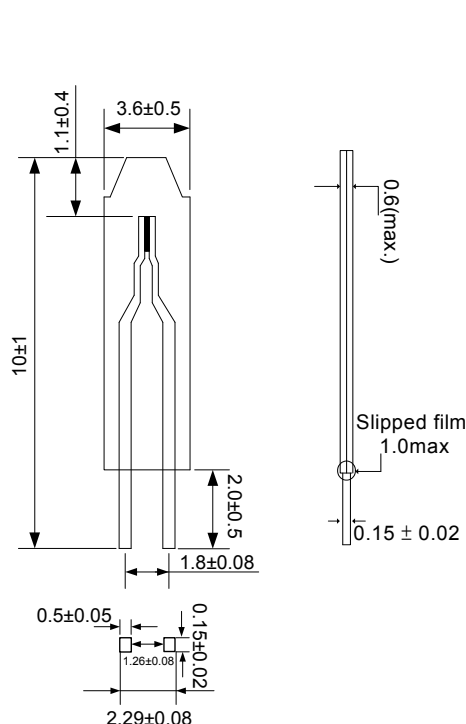


■ Part Number Code

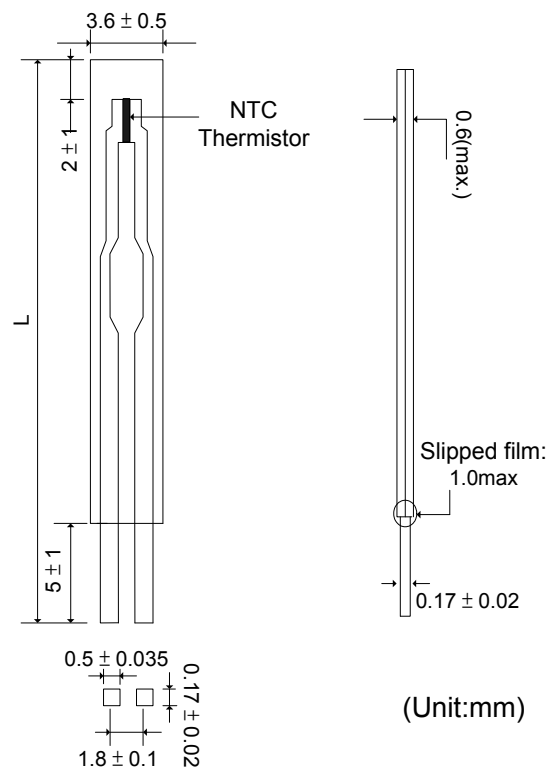
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Product Type		Size		Definition of B Value		Zero Power Resistance at 25°C (R ₂₅)		Tolerance of R ₂₅		B Value		Tolerance of B Value		Optional Suffix		Appearance
TTF	THINKING NTC Thermistor TTF Series	3	W:3.6mm	A	B _{25/85}	102	1KΩ	F	±1%	338	3380	1	±1%	Y	RoHS Compliant	E
				B	B _{25/50}	103	10KΩ	G	±2%	34D	3435	2	±2%	H	RoHS & HF Compliant	A
						473	47KΩ	H	±3%	395	3950	3	±3%			B
								J	±5%	39H	3975					
								K	±10%	405	4050					

■ Structure and Dimensions

For length is 10mm part



For length is 25 or 50mm part



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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
TTF3A502□34D*	5	1, 2, 3, 5	25/85	3435	1, 2, 3	3.5	Approx. 0.7	Approx. 5	-40 ~ +100	✓	✓
TTF3A103□34D*	10			3435						✓	✓
TTF3A203□34D*	20			3435						✓	✓
TTF3A223□34D*	22			3435						✓	✓
TTF3A303□39H*	30			3975						✓	✓
TTF3A503□408*	50			4080						✓	✓
TTF3A104□40H*	100			3435	2,3					✓	✓

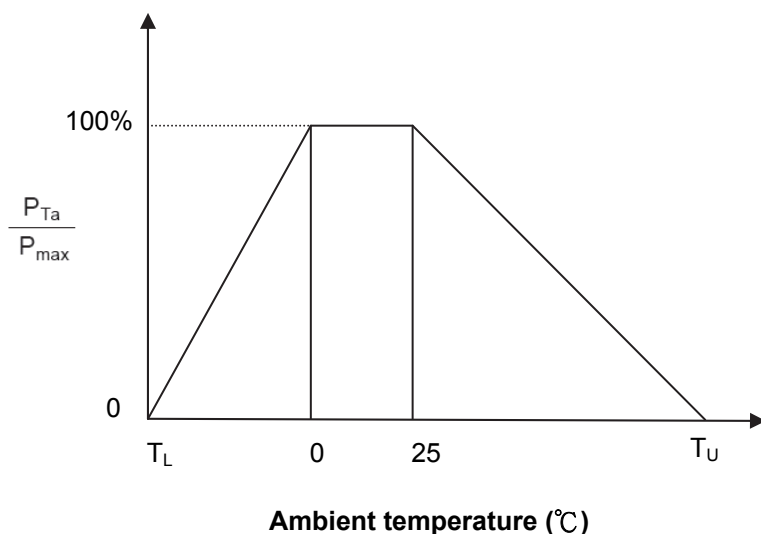
Note 1: □ = Tolerance of R₂₅

* = 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 (°C)

T_L: Minimum operating temperature (°C)

For example:

Ambient temperature(T_a) = 55°C

Maximum operating temperature(T_U) = 100°C

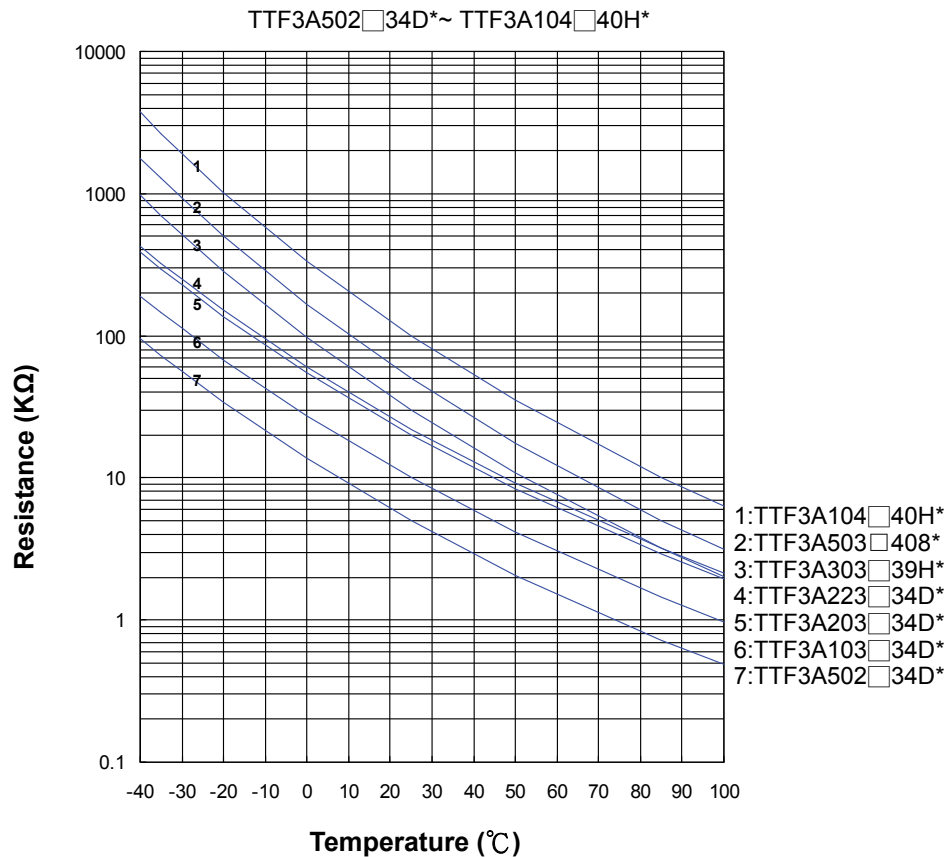
$P_{Ta} = (T_U - T_a) / (T_U - 25) \times P_{max} = 60\% P_{max}$

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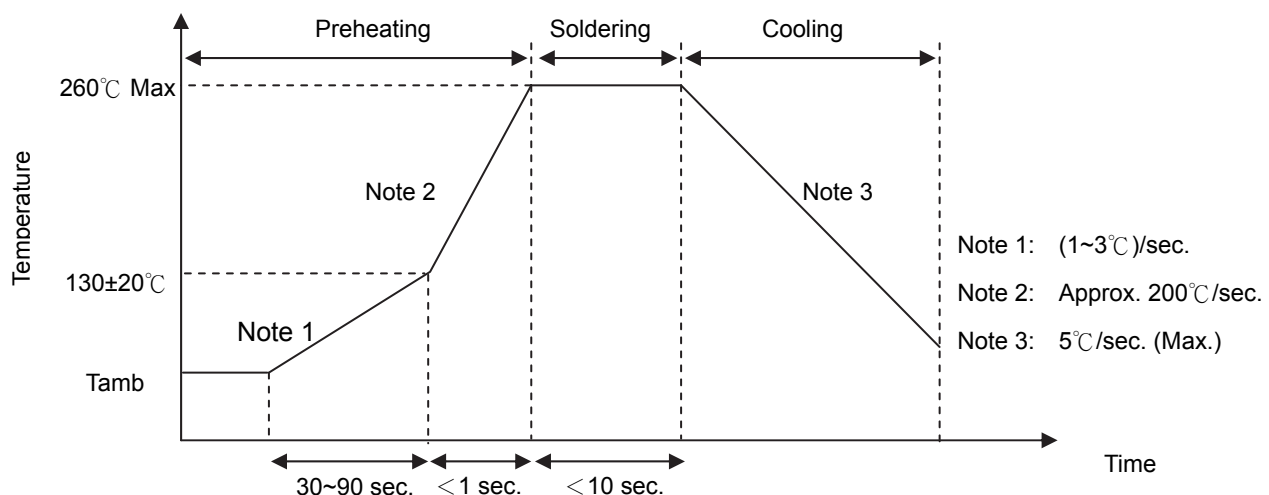


■ R-T Characteristic Curves



■ Soldering Recommendation

● Wave Soldering Profile



● Recommended Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360°C (max.)
Soldering Time	3 sec. (max.)
Distance from Coating	Do not touch film bottom

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■ Reliability

Item	Standard	Test conditions / Methods		Specifications															
Tensile Strength of Terminals	IEC 60068-2-21	Gradually apply the specified force and keep the unit fixed for 10±1 sec. Terminal cross-sectional area (mm²) 0.05<S≤0.1 Force (Kg) 0.25		No visible damage															
Bending Strength of Terminals	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 cross-sectional area (mm²) 0.05<S≤0.1 Force (Kg) 0.125		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 ΔR ₂₅ /R ₂₅ ≤ 3 %															
High Temperature Storage	IEC 60068-2-2	100 ± 5℃, 1000 ± 24 hrs		No visible damage ΔR ₂₅ /R ₂₅ ≤ 5 %															
Damp Heat, Steady State	IEC 60068-2-78	40 ± 2℃, 90~95% RH, 1000 ± 24 hrs		No visible damage ΔR ₂₅ /R ₂₅ ≤ 3 %															
Rapid Change of Temperature	IEC 60068-2-14	The conditions shown below shall be repeated 5 cycles. <table><tr><th>Step</th><th>Temperature (℃)</th><th>Period (minutes)</th></tr><tr><td>1</td><td>-40 ± 5</td><td>30 ± 3</td></tr><tr><td>2</td><td>Room temperature</td><td>5 ± 3</td></tr><tr><td>3</td><td>100 ± 5</td><td>30 ± 3</td></tr><tr><td>4</td><td>Room temperature</td><td>5 ± 3</td></tr></table>		Step	Temperature (℃)	Period (minutes)	1	-40 ± 5	30 ± 3	2	Room temperature	5 ± 3	3	100 ± 5	30 ± 3	4	Room temperature	5 ± 3	No visible damage ΔR ₂₅ /R ₂₅ ≤ 3 %
Step	Temperature (℃)	Period (minutes)																	
1	-40 ± 5	30 ± 3																	
2	Room temperature	5 ± 3																	
3	100 ± 5	30 ± 3																	
4	Room temperature	5 ± 3																	
Max. Power Dissipation	IEC 60539-1 4.26.3	25 ± 5℃, Pmax. , 1000 ± 24 hrs		No visible damage ΔR ₂₅ /R ₂₅ ≤ 5 %															

■ Packaging

- Bulk Packing: 500 pcs/ bag

■ Warehouse Storage Conditions of Products

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