

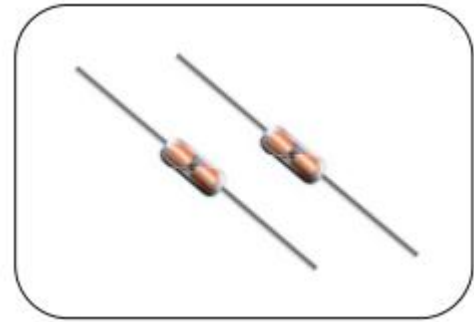
# NTC thermistors: HNG series



For temperature sensing/ compensation: axial type with glass encapsulation

## Characteristics

1. Comply with RoHS, HF and REACH requirements
2. Body size:  $\Phi 2\text{mm} \times 4\text{mm}$
3. Axial type with glass encapsulation
4. Working temperature range:  $-40\text{ }^\circ\text{C} \sim +200\text{ }^\circ\text{C}$
5. Wide resistance range
6. Cost-effective
7. Safety certification: UL, cUL



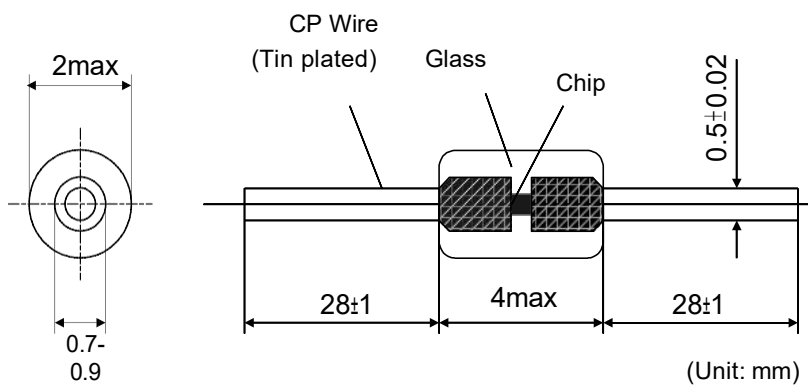
## Application

1. Household appliances (air conditioner, refrigerator, electric fan, rice cooker, washing machine, microwave oven, water dispenser, color TV, radio, etc.)
2. Automotive electronics
3. Heater

## Coding

H	N	G	1	0	3	F	A	3	4	3	5	F	S	R					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	18	19	20	21	
Product types		25°C zero power resistance		R <sub>25</sub> Tolerance		B value define		B value			B value tolerance		Appearance		Packing		Special control		
Thermistor HNG series		502	5K $\Omega$	F	$\pm 1\%$	A	B <sub>25/85</sub>	3435		3435		F	$\pm 1\%$	S: Tin plated CP wire	R	Taping			
		103	10K $\Omega$	G	$\pm 2\%$	B	B <sub>25/50</sub>	3950		3950		G	$\pm 2\%$	N: Nickel plated CP wire	Blank	Bulk			
		473	47K $\Omega$	H	$\pm 3\%$							H	$\pm 3\%$						
		104	100K $\Omega$	J	$\pm 5\%$							J	$\pm 5\%$						
		204	200K $\Omega$	K	$\pm 10\%$							K	$\pm 10\%$						

## Structure and dimensions



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## Electrical characteristics

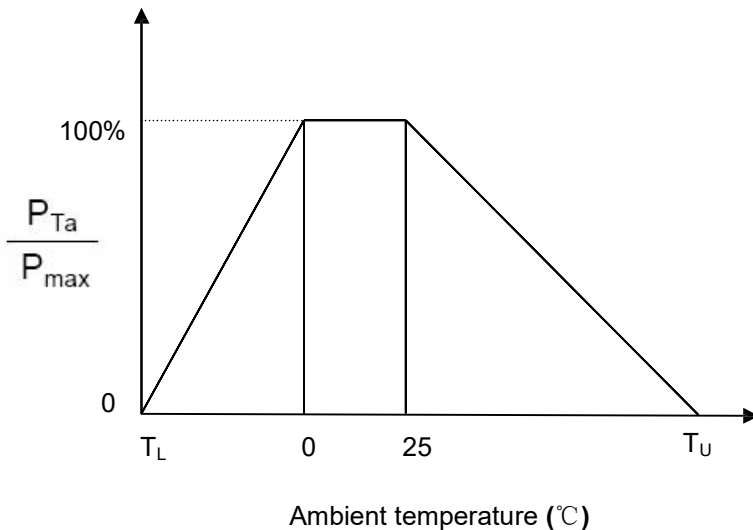
Type	Zero power resistance @25°C	R <sub>25</sub> tolerance	B Value		Max. power @25°C	Dissipation factor	Thermal time constant	Working temperature	R <sub>25</sub> tolerance	Safety Certification	
	R <sub>25</sub> (KΩ)	(±%)	(K)		(±%)	Pmax(mW)	δ(mW/°C)	τ(Sec.)	T <sub>L</sub> ~T <sub>U</sub> (°C)	UL/	cUL
HNG502□A3550*	5	1、2、3、 5、10	25/85	3550	2、3	120	≅ 2	≅ 10	-40~+200	✓	✓
HNG103□B3550*	10		25/50	3550						✓	✓
HNG103□A3435*	10		25/85	3435						✓	✓
HNG103□A3470*	10		25/85	3470						✓	✓
HNG103□A3975*	10		25/85	3975						✓	✓
HNG203□B3950*	20		25/50	3950							
HNG303□B3950*	30		25/50	3950							
HNG473□B3950*	47		25/50	3950							
HNG503□B3950*	50		25/50	3950							
HNG104□B4000*	100		25/50	4000						✓	✓
HNG104□A3975*	100		25/85	3975						✓	✓
HNG104□A4300*	100		25/85	4300						✓	✓
HNG204□B3950*	200		25/50	3950						✓	✓
HNG204□A4000*	200		25/85	4000						✓	✓
HNG204□B4350*	200		25/50	4350						✓	✓
HNG504□B4260*	500		25/50	4260						✓	✓

Remark 1: □=R<sub>25</sub> tolerance

\* =B value tolerance

Remark 2: UL/cUL Certificate No. E477656

## Maximum power derating curve



T<sub>U</sub>: Upper limit of working temperature (°C)

T<sub>L</sub>: Lower limit of working temperature (°C)

For example:

Ambient temperature (T<sub>a</sub>)= 55°C

Upper limit of working temperature (T<sub>u</sub>)=125°C

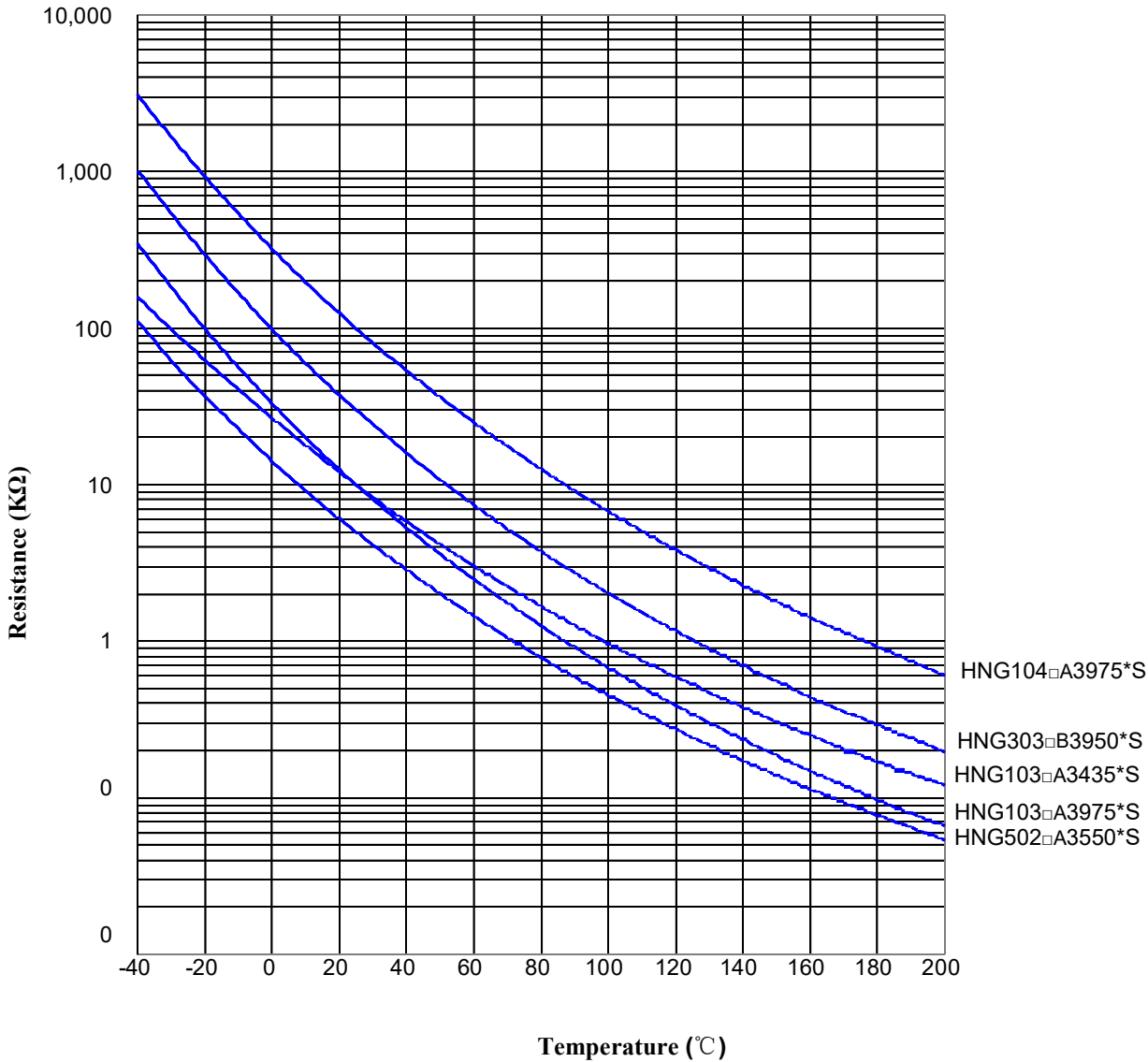
$P_{T_a} = (T_u - T_a) / (T_u - 25) \times P_{max} = 70\% P_{max}$

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## ■ RT curve (typical)



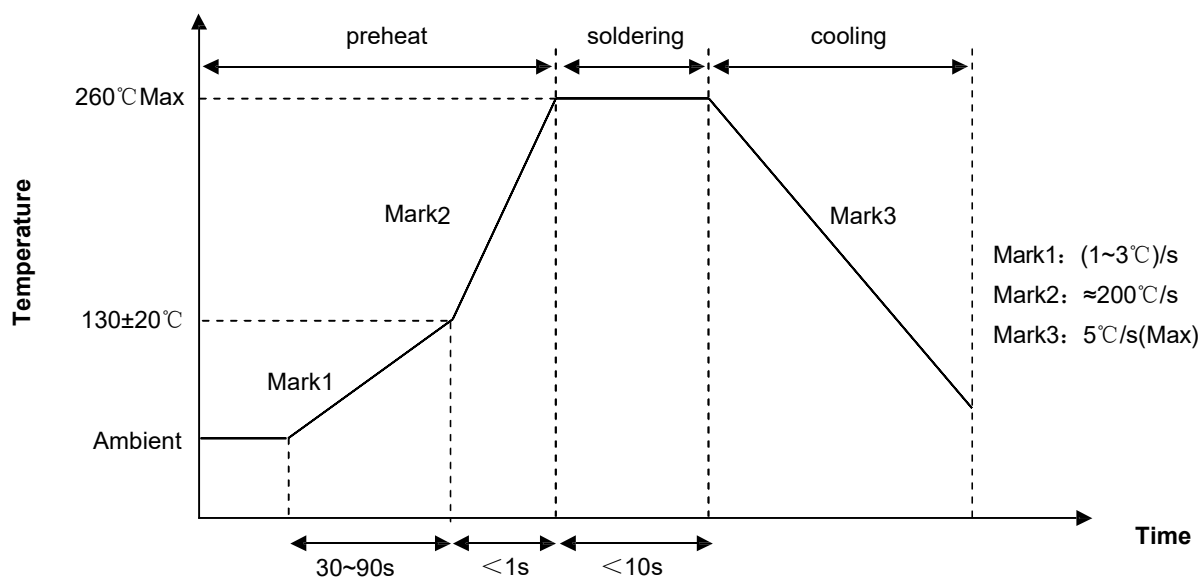
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For temperature sensing/ compensation: axial type with glass encapsulation

## ■ Recommended soldering conditions

- Wave soldering curve



Note: PCB surface should be at least 6 cm distance from the thermistor body to prevent parts damage

## Iron soldering conditions

Item	Conditions
Temperature	360°C(max.)
Soldering time	3 sec.(max.)
Distance between soldering position and coating	2mm(min.)

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## ■ Reliability

Test Item	Standard	Test condition/method	Requirement															
Tensile strength of terminals	IEC60068-2-21	Gradually applying the force specified and duration 10±1s <table style="width: 100%; border: none;"> <tr> <td style="text-align: center; border-bottom: 1px solid black;">Wire diameter (mm)</td> <td style="text-align: center; border-bottom: 1px solid black;">Pulling Force (Kg)</td> </tr> <tr> <td style="text-align: center;">0.3&lt;d≤0.5</td> <td style="text-align: center;">0.5</td> </tr> </table>	Wire diameter (mm)	Pulling Force (Kg)	0.3<d≤0.5	0.5	No visible damage											
Wire diameter (mm)	Pulling Force (Kg)																	
0.3<d≤0.5	0.5																	
Bending of terminals	IEC60068-2-21	Add the specified weight to one lead of the sample, bend it 90 ° in one direction, and then returned to its original position. Then bend 90 ° in the opposite direction in the same way. <table style="width: 100%; border: none;"> <tr> <td style="text-align: center; border-bottom: 1px solid black;">Wire diameter (mm)</td> <td style="text-align: center; border-bottom: 1px solid black;">Bending force (Kg)</td> </tr> <tr> <td style="text-align: center;">0.3&lt;d≤0.5</td> <td style="text-align: center;">0.25</td> </tr> </table>	Wire diameter (mm)	Bending force (Kg)	0.3<d≤0.5	0.25	No visible damage											
Wire diameter (mm)	Bending force (Kg)																	
0.3<d≤0.5	0.25																	
Solderability	IEC60068-2-20	245 ± 3°C, 3 ± 0.3s	Tin area ≥ 95%															
Solder resistance	IEC60068-2-20	260 ± 3°C, 10 ± 1s	No visible damage   ΔR <sub>25</sub> /R <sub>25</sub>   ≤ 3%															
High temperature storage	IEC600068-2-2	125 ± 5°C, 1000 ± 24h	No visible damage   ΔR <sub>25</sub> /R <sub>25</sub>   ≤ 5%															
Steady state damp heat	IEC60068-2-78	40 ± 2°C, 90~95%RH, 1000 ± 24h	No visible damage   ΔR <sub>25</sub> /R <sub>25</sub>   ≤ 3%															
Thermal shock	IEC60068-2-14	Temperature changes rapidly acc. conditions as below table, 5 cycles <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Cycle (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40 ± 5</td> <td>30 ± 3</td> </tr> <tr> <td>2</td> <td>Room temp.</td> <td>5 ± 3</td> </tr> <tr> <td>3</td> <td>200 ± 5</td> <td>30 ± 3</td> </tr> <tr> <td>4</td> <td>Room temp.</td> <td>5 ± 3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Cycle (min.)	1	-40 ± 5	30 ± 3	2	Room temp.	5 ± 3	3	200 ± 5	30 ± 3	4	Room temp.	5 ± 3	No visible damage   ΔR <sub>25</sub> /R <sub>25</sub>   ≤ 3%
Step	Temperature (°C)	Cycle (min.)																
1	-40 ± 5	30 ± 3																
2	Room temp.	5 ± 3																
3	200 ± 5	30 ± 3																
4	Room temp.	5 ± 3																
Max. power	IEC60539-1 4.26.3	25 ± 5°C, Pmax., 1000 ± 24h	No visible damage   ΔR <sub>25</sub> /R <sub>25</sub>   ≤ 5%															

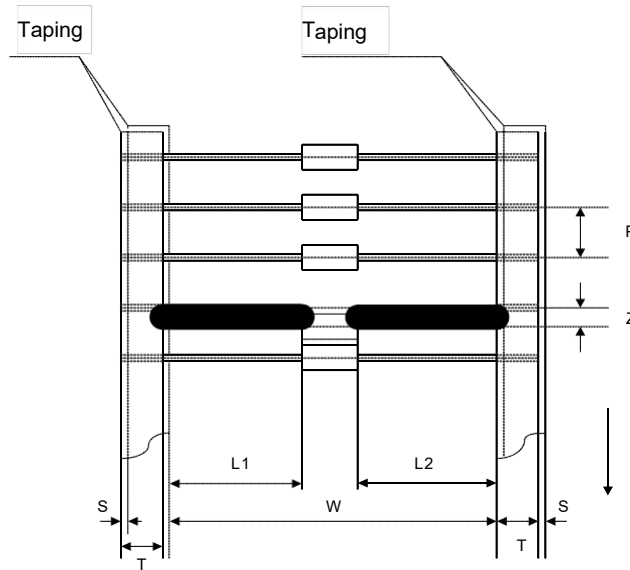
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## ■ Packing

### ● Taping



(Unit: mm)

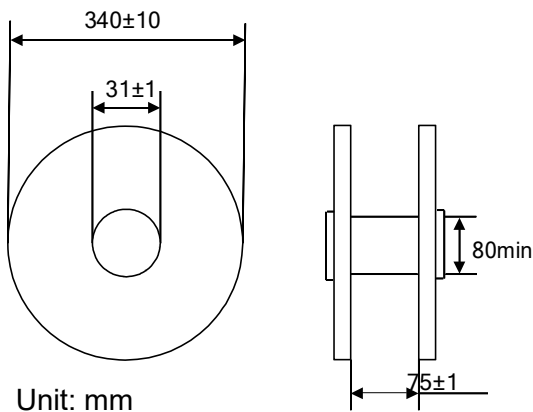
Item	W	P	L1-L2	T	Z	S
Max.	27	5.5	1	7	1.2	0.8
Min.	25	4.5	0	5	0	0
Max.	53	5.5	1	7	1.2	0.8
Min.	51	4.5	0	5	0	0

## ■ Packing quantity

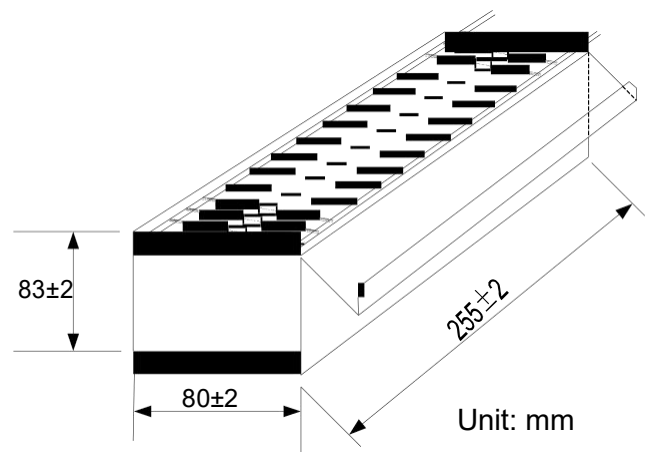
● Bulk packing: 500 pcs/bag

Reel packing: 5,000 pcs/reel

● Box packing: 5,000 pcs/box



Unit: mm



Unit: mm

## ■ Warehouse storage conditions

Storage conditions:

1. Storage temperature:  $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
2. Relative humidity:  $\leq 75\% \text{RH}$
3. Do not store products in an environment with corrosive gas or direct sunlight

Storage period: 1 year