

NTC thermistors: HNE series

For temperature sensing/ compensation: $\Phi 3\text{mm}$ disk type



■ Characteristics

1. Comply with RoHS, HF and REACH requirements
2. Body size: $\Phi 3\text{mm}$
3. Radial lead epoxy package
4. Working temperature range: $-40\text{ }^{\circ}\text{C} \sim +125\text{ }^{\circ}\text{C}$
5. Wide resistance range: $0.9\text{K}\Omega \sim 470\text{K}\Omega$
6. High cost performance



Application

1. Household appliances, Audiovisual products
2. Automotive electronics, communication equipment
3. Fire equipment, Industrial equipment
4. Computer and peripheral products
5. Power supply, inverter, UPS
6. Transformer, adapter and charger

Coding

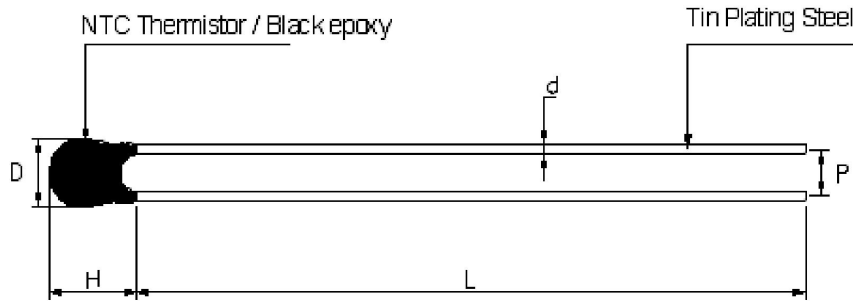
H	N	E	1	0	3	F	A	3	4	3	5	F	S	C	3	5				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Product types		25°C zero power resistance		R ₂₅ Tolerance		B value define		B value			B value tolerance		Lead style		Packing		Cutting lead length		Special control	
HNE series		102	1K Ω	F	$\pm 1\%$	A	B _{25/85}	3435			F	$\pm 1\%$	S; Straight lead	C	Cutting leads	30	3.0mm			
		103	10K Ω	G	$\pm 2\%$	B	B _{25/50}	3950			G	$\pm 2\%$		Blank	Bulk packing	35	3.5mm			
		473	47K Ω	H	$\pm 3\%$							H	$\pm 3\%$							
		224	220K Ω	J	$\pm 5\%$							J	$\pm 5\%$							
		474	470K Ω	K	$\pm 10\%$							K	$\pm 10\%$							

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Structure and dimensions

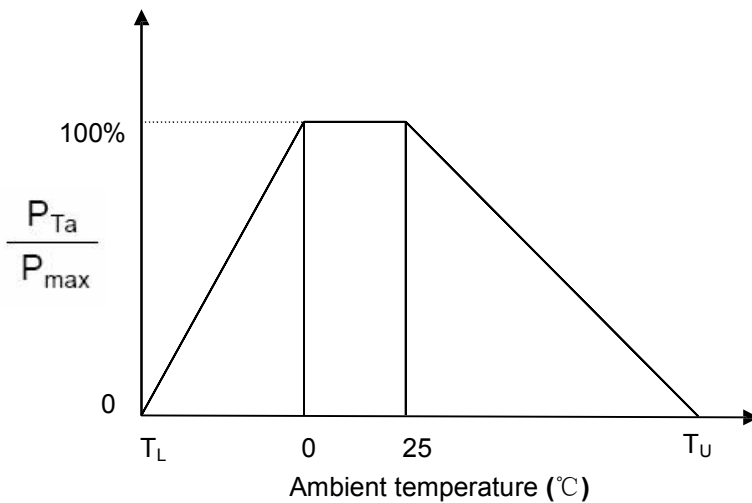


Straight lead

(Unit: mm)

Lead style	P	D _{max.}	H _{max.}	d±0.05	L _{min}
Straight	2.0±0.7	2.6	5.0	0.35	3

Maximum power derating curve



T_U : Upper limit of working temperature ($^{\circ}\text{C}$)

T_L : Lower limit of working temperature ($^{\circ}\text{C}$)

For example:

Ambient temperature (T_a)= 55 $^{\circ}\text{C}$

Upper limit of working temperature (T_u)=125 $^{\circ}\text{C}$

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

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Electrical characteristics

Type	Zero power resistance @25°C	R ₂₅ tolerance	B Value		Max. power @25°C	Dissipation factor	Thermal time constant	Working temperature	R ₂₅ tolerance
	R25(KΩ)		(±%)	(K)	(±%)				
HNE901□A3930*	0.9	1、2、3、5	25/50or 25/85	3930	2、3	150	≧2.5	≧16	-40~+125
HNE102□A3935*	1			3935					
HNE152□A3935*	1.5			3935					
HNE202□B3500*	2			3500					
HNE222□B3950*	2.2			3950					
HNE272□B3950*	2.7			3950					
HNE302□B3950*	3			3950					
HNE332□B3950*	3.3			3950					
HNE472□B3950*	4.7			3950					
HNE482□B3950*	4.8			3950					
HNE502□B3950*	5			3950					
HNE682□B3950*	6.8			3950					
HNE103□A3435*	10			3435					
HNE103□B3720*	10			3720					
HNE103□B3950*	10			3950					
HNE123□B3720*	12			3720					
HNE153□B3720*	15			3720					
HNE203□A3740*	20			3740					
HNE203□A4260*	20			4260					
HNE223□A3740*	22			3740					
HNE333□A4090*	33			4090					
HNE473□A4090*	47			4090					
HNE473□B3950*	47			3950					
HNE503□A3975*	50			3975					
HNE503□A4050*	50			4050					
HNE503□B4400*	50			4400					
HNE683□A4190*	68			4190					
HNE104□B4100*	100			4100					
HNE104□A4360*	100			4360					
HNE154□A4370*	150			4370					
HNE204□A3900*	200			3900					
HNE224□A4370*	220			4370					
HNE334□A4570*	330			4570					
HNE474□A4570*	470	4570							
HNE474□A5200*	470	5200	2						
HNE434□B5070*	430	5070	2						
HNE474□B5200*	470	5200	2						

Remark 1: □=R₂₅ tolerance

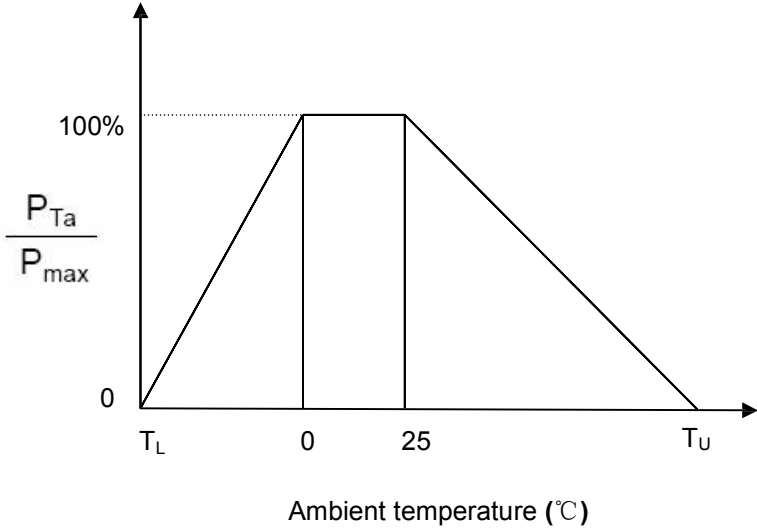
* =B Value tolerance

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Maximum power derating curve

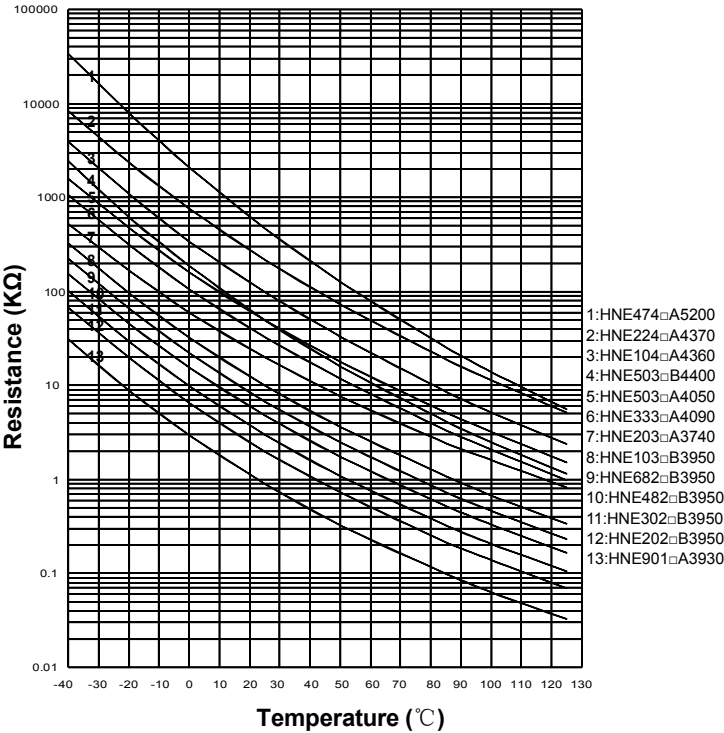


T_U : Upper limit of working temperature ($^{\circ}\text{C}$)
 T_L : Lower limit of working temperature ($^{\circ}\text{C}$)

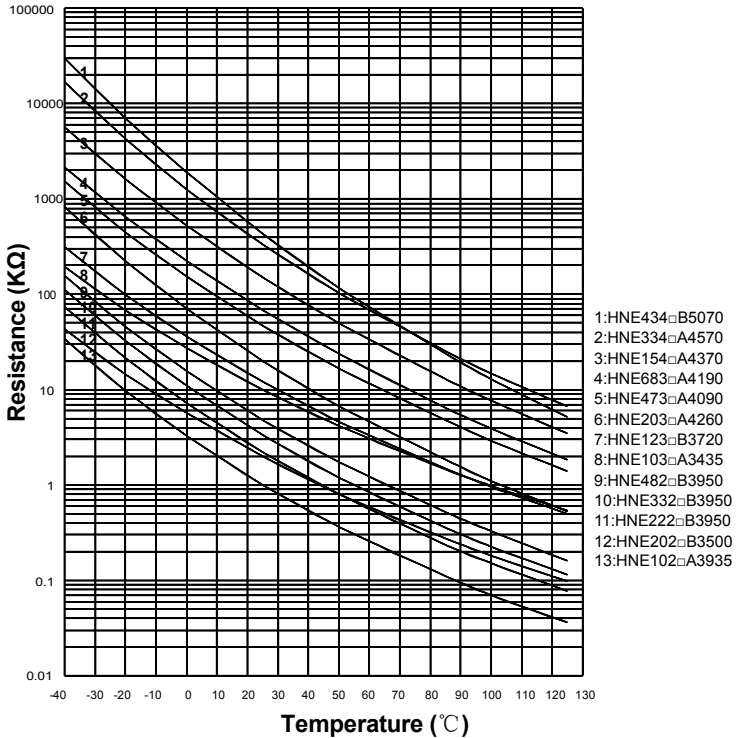
For example:
 Ambient temperature (T_a)= 55°C
 Upper limit of working temperature (T_u)= 125°C
 $P_{Ta} = (T_u - T_a) / (T_u - 25) \times P_{max} = 70\% P_{max}$

RT curve (typical)

HNE901□A3930~HNE474□A5200

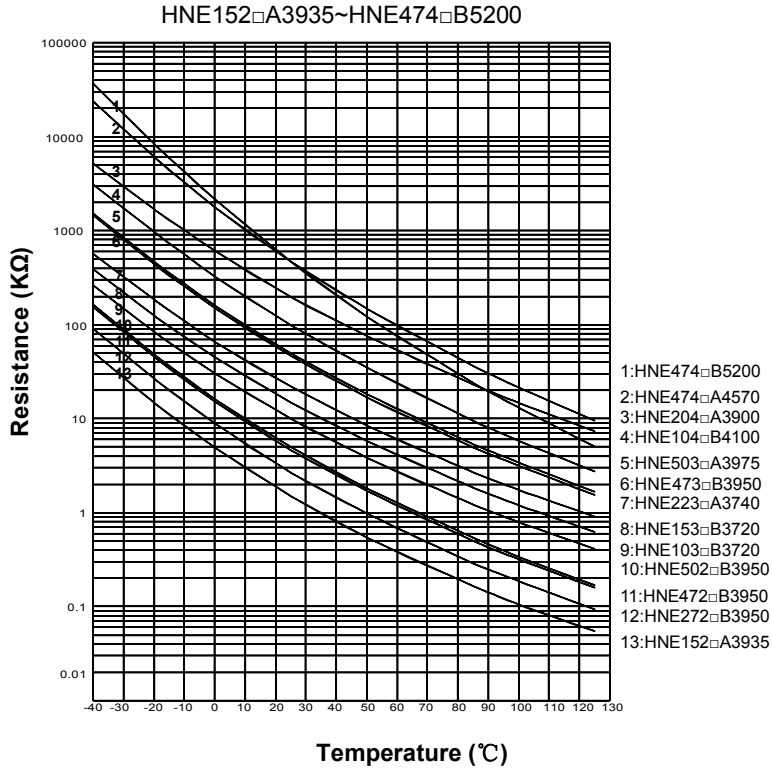


HNE102□A3935~HNE434□B5070



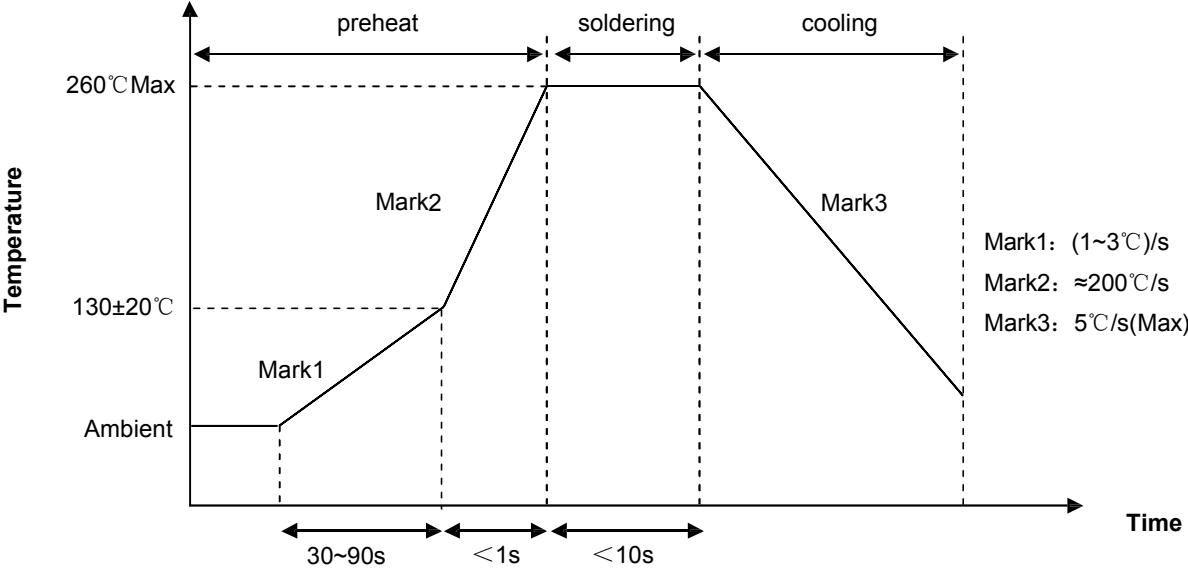
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Recommended soldering conditions

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	2.5 sec.(max.)
Distance between soldering position and coating	2.5mm(min.)

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Reliability

Test Item	Standard	Testcondition/met hod	Requirement
Temperature cycle	IEC60068-2-21	$-30\pm 5^{\circ}\text{C} * 30\pm 3$ minutes \rightarrow Room temperature $* 5\pm 3$ minutes $\rightarrow 125\pm 5^{\circ}\text{C} * 30\pm 3$ mins \rightarrow Room temperature $* 5\pm 3$ mins, 5cycles	$ \Delta R_{25} / R_{25} \leq 3\%$ No visible damage to appearance
Solder adhesion	IEC60068-2-20	$245^{\circ}\text{C} \pm 3^{\circ}\text{C}$ $3 \pm 0.3\text{S}$	Solder adhesion surface $\geq 95\%$
Heat resistance of solder	IEC60068-2-20	$260 \pm 3^{\circ}\text{C}$ $10 \pm 1\text{Sec}$	$ \Delta R_{25} / R_{25} \leq 3\%$ No visible damage to appearance
Tensile strength	IEC60068-2-21	$0.5\text{kg} 10 \pm 1\text{Sec}$	No visible damage to appearance
Bending strength	IEC60068-2-21	$0.25 \text{ kg } 90^{\circ}$ twice	No visible damage to appearance
High temperature storage	IEC60068-2-2	$125 \pm 5^{\circ}\text{C}$ $1000 \pm 24\text{hrs}$	$ \Delta R_{25} / R_{25} \leq 5\%$ No visible damage to appearance
The steady state hot and humid	IEC60068-2-78	$40 \pm 2^{\circ}\text{C}$ $90-95\% \text{RH}$ $1000 \pm 24\text{hrs}$	$ \Delta R_{25} / R_{25} \leq 3\%$ No visible damage to appearance
Load life	IEC60068-2-2	$25 \pm 5^{\circ}\text{C}$ 150mW $1000 \pm 24\text{hrs}$	$ \Delta R_{25} / R_{25} \leq 5\%$ No visible damage to appearance
Insulation resistance	IEC60068-2-2	1000V_{DC} , 1min	$\geq 500\text{M}\Omega$

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Packing quantity

Bulk packing

Series	Quantity (pcs/bag)
HNE	1000

Warehouse storage conditions

Storage conditions:

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

Storage period: 1 year

Revision record

Revision date	Edition	Revised content
2022.4.8	2.0	1、 Coding principle, delete tape packing description.
		2、 Product size, foot length L changed from 3 ~ 23mm to lmin3mm.
		3、 Reliability, revise test items.
		4、 Package item, delete braid description.