

Temperature Compensation/Sensing KNS Series (Bead Type)

Features

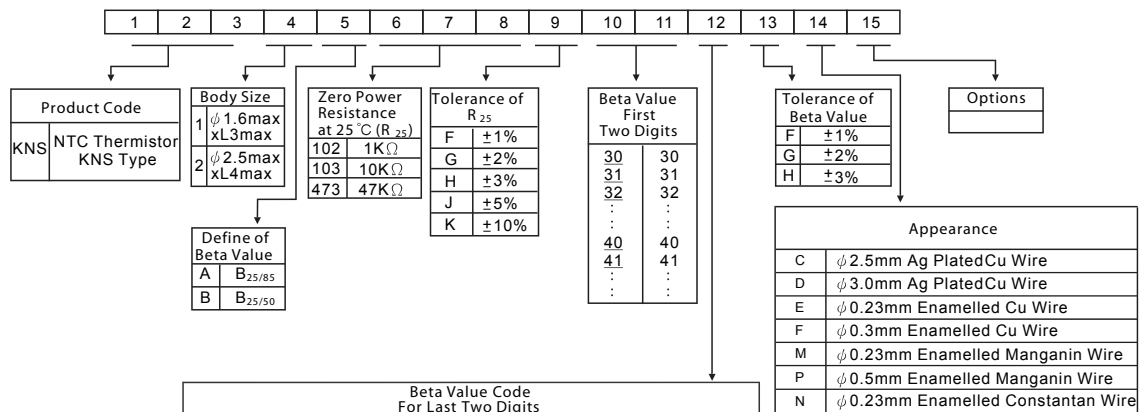
1. Body size ϕ 1.6mm~ ϕ 2.5mm
2. Radial lead resin coated
3. Long leads for easy sensor placement
4. -40 ~ +125°C operating temperature range
5. Wide resistance range

Recommended applications

1. Home appliances (air conditioner, refrigerator, electric fan, electric cooker, washing machine, microwave oven, drinking machine, CTV, radio.)
2. Thermometer

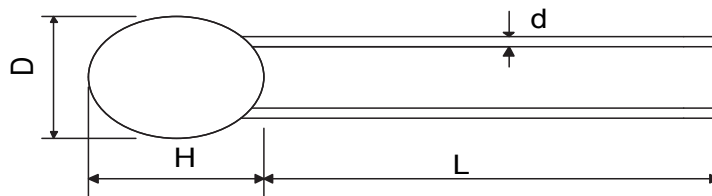


Part number code



Code	Beta Value Last Two Digits	Code	Beta Value Last Two Digits	Code	Beta Value Last Two Digits	Code	Beta Value Last Two Digits	Code	Beta Value Last Two Digits
0	98	2	18	4	38	6	58	8	78
	99		19		39		59		79
	00		20		40		60		80
	01		21		41		61		81
	02		22		42		62		82
A	03	C	23	E	43	G	63	J	83
	04		24		44		64		84
	05		25		45		65		85
	06		26		46		66		86
	07		27		47		67		87
1	08	3	28	5	48	7	68	9	88
	09		29		49		69		89
	10		30		50		70		90
	11		31		51		71		91
	12		32		52		72		92
B	13	D	33	F	53	H	73	K	93
	14		34		54		74		94
	15		35		55		75		95
	16		36		56		76		96
	17		37		57		77		97

Dimensions



(Unit: mm)

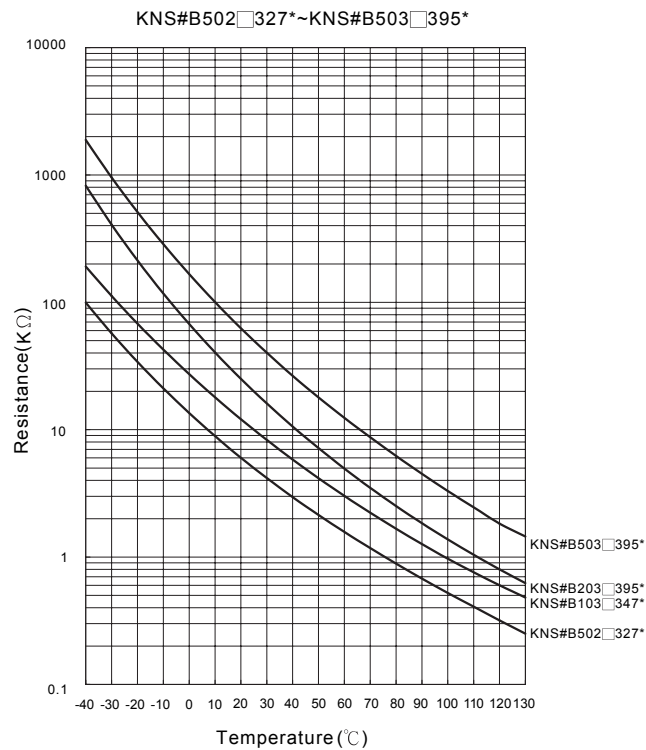
Part no.	Dmax.	dnor.	Hmax.	Lmin.
KNS1	1.6	0.23	3	80
KNS2	2.5	0.23	3	80

● Characteristics

Part no.	Zero power resistance at 25°C (KΩ)	Tolerance of resistance (±%)	B value (K)		Tolerance of B value (±%)	Max. power rating at 25°C (mW)	Thermal dissipation constant (mW/°C)	Thermal time constant (Sec.)	Operating temperature range (°C)
KNS#B502□327*	5	1、2、3、5、10	25/50	3270	1、2、3	45	≥1	≤10	-40 ~ +100
KNS#B502□347*	5		25/50	3470					
KNS#B502□365*	5		25/50	3650					
KNS#B502□395*	5		25/50	3950					
KNS#B103□338*	10		25/50	3380					
KNS#B103□347*	10		25/50	3470					
KNS#B103□395*	10		25/50	3950					
KNS#A103□34D*	10		25/85	3435					
KNS#A103□39H*	10		25/85	3975					
KNS#B203□395*	20		25/50	3950					
KNS#A203□34D*	20		25/85	3435					
KNS#B303□385*	30		25/50	3850					
KNS#A303□395*	30		25/85	3950					
KNS#B503□395*	50		25/50	3950					
KNS#A503□34D*	50		25/85	3435					
KNS#A833□40B*	83		25/85	4015					
KNS#B104□410*	100		25/50	4100					
KNS#A504□427*	500		25/85	4270					

* = Tolerance of B value
 □ = Tolerance of resistance
 # = Body size

● R-T characteristic curve (representative)



● Reliability test

Item	Test Conditions/Methods	Specifications															
Tensile Strength of Terminations	<p>Gradually applying the force specified below to each terminal and keeping the unit fixed for 10 ± 1 sec.</p> <table border="1"> <thead> <tr> <th>Terminal diameter (mm)</th> <th>Force (Kg)</th> </tr> </thead> <tbody> <tr> <td>$d \leq 0.25$</td> <td>0.10</td> </tr> <tr> <td>$0.25 < d \leq 0.3$</td> <td>0.25</td> </tr> <tr> <td>$0.3 < d \leq 0.5$</td> <td>0.5</td> </tr> </tbody> </table>	Terminal diameter (mm)	Force (Kg)	$d \leq 0.25$	0.10	$0.25 < d \leq 0.3$	0.25	$0.3 < d \leq 0.5$	0.5	No visible damage							
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$0.3 < d \leq 0.5$	0.5																
Bending Strength of Terminations	<p>Hanging the force specified below to each terminal and gradually bending each terminal by 90° in one direction, then 90° in the opposite direction, and again back to the origin.</p> <table border="1"> <thead> <tr> <th>Terminal diameter (mm)</th> <th>Force (Kg)</th> </tr> </thead> <tbody> <tr> <td>$d \leq 0.25$</td> <td>0.05</td> </tr> <tr> <td>$0.25 < d \leq 0.3$</td> <td>0.125</td> </tr> <tr> <td>$0.3 < d \leq 0.5$</td> <td>0.25</td> </tr> </tbody> </table>	Terminal diameter (mm)	Force (Kg)	$d \leq 0.25$	0.05	$0.25 < d \leq 0.3$	0.125	$0.3 < d \leq 0.5$	0.25	No visible damage							
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$0.3 < d \leq 0.5$	0.25																
Solderability	$235 \pm 5^\circ\text{C}$, 2 ± 0.5 sec	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat	$260 \pm 5^\circ\text{C}$, 10 ± 1 sec	No visible damage $\Delta R/R$ $\leq 3\%$															
High Temperature Storage	$125 \pm 5^\circ\text{C} \times 1000\text{HRS}$	No visible damage $\Delta R/R$ $\leq 5\%$															
Damp Heat	$40 \pm 2^\circ\text{C}$, $90 \sim 95\% \text{RH}$, $1000 \pm 24\text{HRS}$	No visible damage $\Delta R/R$ $\leq 3\%$															
Thermal Shock	<p>The thermal shock conditions shown below shall be repeated 5 cycles</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature ($^\circ\text{C}$)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <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> </tbody> </table>	Step	Temperature ($^\circ\text{C}$)	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 $\Delta R/R$ $\leq 3\%$
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2	Room temperature	5 ± 3															
3	100 ± 5	30 ± 3															
4	Room temperature	5 ± 3															
Life Test	$25 \pm 5^\circ\text{C}$, $P_{\text{max}} \times 1000 \text{HRS}$	No visible damage $\Delta R/R$ $\leq 5\%$															