



NTC thermistors for temperature measurement

NTC Probes

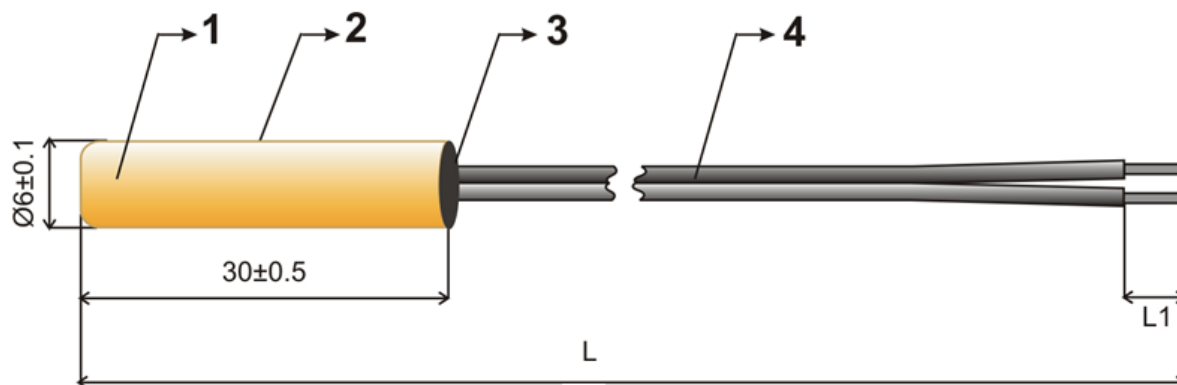
Series/Type: K800/10k/A1
Ordering code: B57800K0103A001
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Version: 2

Application

Temperature sensor for heat pumps

Version

NTC-thermistor soldered to black PVC-insulated twin wire AWG22 (12x Ø0.18 mm, heat proof up to 105°C) and coated with epoxy resin



L = 870 ± 10 mm

dimensions in mm

L1 = 4 ± 1 mm

No.	Item	Material	Property	Remarks
1	Thermistor	Ceramic	EPCOS NTC-wafer	coated
2	casing	copper	Ø6 x 30 mm	
3	casting	epoxy resin	flexible	black
4	Cable	PVC insulation	2x AWG 22 (12xØ0.18 mm)	black

Ratings and characteristics

Climatic category (IEC 60068-1)

Lower category temperature

Upper category temperature

Rated resistance R_N // Tolerance

Rated temperature

B-value : $B_{(25/100)}$ // Tolerance

R/T-Curve no. // R_{25}

Max power rating at 25°C

Thermal time constant (25°C → 85°C water)

Dissipation factor (in air)

Thermal cooling time constant (in air)

Heat capacity

Insulation resistance

Voltage proof

			: 30 / 100 / 56
		[°C]:	-30
		[°C]:	100
R_N	[Ω // %]:		10000 // 1
T_N	[°C]:		25
B_N	[K//%]:		3988 // 1
	[n//Ω]:		8016
P_{25}	[mW]:		60 mW
τ_a	[s]:		approx. 8*
δ_{th}	[mW/K]:		approx. 5*
τ_C	[s]:		approx. 50*
C_{th}	[mJ/K]:		approx. 250*
R_{is}	[MΩ]:		> 100 MΩ
V_{is}	[V _{AC}]:		1500

*typical values

Remarks: --

NTC-RESISTANCE-TEMPERATURE-CURVE

R/T-Curve = 8016 / A01
R_N at 25 °C = 10000 Ω ± 1.0 %
R at 25°C = 10000 Ω
B(25/100) = 3988 K ± 1.0 %

Temp. [°C]	R Nom [Ω]	R Min [Ω]	R Max [Ω]	ΔR [±%]	ΔT [±°C]	α [%/K]
-40	336500	320419	352582	4,8	0,7	6,7
-35	242589	231867	253311	4,4	0,7	6,4
-30	177000	169786	184214	4,1	0,7	6,2
-25	130370	125487	135252	3,7	0,6	6,0
-20	97070	93743	100397	3,4	0,6	5,8
-15	72929	70652	75206	3,1	0,6	5,6
-10	55330	53765	56895	2,8	0,5	5,4
-5	42315	41237	43393	2,5	0,5	5,3
0	32650	31907	33393	2,3	0,4	5,1
5	25388	24877	25898	2,0	0,4	5,0
10	19900	19550	20250	1,8	0,4	4,8
15	15708	15470	15946	1,5	0,3	4,7
20	12490	12330	12650	1,3	0,3	4,5
25	10000	9900	10100	1,0	0,2	4,4
30	8057	7955	8159	1,3	0,3	4,3
35	6531	6434	6628	1,5	0,4	4,1
40	5327	5237	5417	1,7	0,4	4,0
45	4369	4286	4451	1,9	0,5	3,9
50	3603	3528	3678	2,1	0,5	3,8
55	2986	2918	3054	2,3	0,6	3,7
60	2488	2427	2549	2,5	0,7	3,6
65	2083	2028	2138	2,6	0,8	3,5
70	1752	1703	1801	2,8	0,8	3,4
75	1481	1437	1525	3,0	0,9	3,3
80	1258	1219	1297	3,1	1,0	3,2
85	1072	1037	1108	3,3	1,0	3,2
90	917,7	886,1	949,3	3,4	1,1	3,1
95	788,5	760,2	816,9	3,6	1,2	3,0
100	680,0	654,6	705,4	3,7	1,3	2,9
105	588,6	565,8	611,4	3,9	1,4	2,9
110	511,2	490,7	531,7	4,0	1,4	2,8
115	445,4	426,9	463,9	4,2	1,5	2,7
120	389,3	372,6	406,0	4,3	1,6	2,7
125	341,7	326,6	356,8	4,4	1,7	2,6

RELIABILITY DATA :

Test	Test conditions	$\Delta R_{25}/R_{25}$ (typical)	Remarks
Storage in dry heat IEC 60068-2-2	Storage at upper category temperature in air; temperature: 100°C; duration: 1000 h	< 2 %	No visible damage
Storage in coldness	Storage at lower category temperature in air; temperature: -30°C; duration: 1000 h	< 2 %	No visible damage
Storage in damp heat, steady state IEC 60068-2-78	Temperature of air: 40°C Relative humidity of air: 93 %; duration: 56 days	< 3 %	No visible damage
Rapid temperature cycling in air IEC 60068-2-14	Lower test temperature: -30°C Upper test temperature: 100°C Dwelling time: 15 minutes Number of cycles: 1000	< 3 %	No visible damage
Storage in water	Storage in water with total immersed head temperature: 80°C; duration: 1000 h	< 3%	No visible damage
Vibration test IEC 60068-2-6	Frequency range: 5 Hz to 500 Hz Amplitude: 7.5 mm / 2 g Linear sweep; X,Y and Z direction for 8 h each	< 3 %	No visible damage
Voltage proof	1500 V _{AC} , 50 Hz, 1 sec	--	No flashover
Insulation test	The sensors are placed in a vessel containing metallic balls of 1 mm diameter (with total immersed head) The applied voltage is 500 V _{DC}	--	ABOVE 100 MΩ

Cautions and warnings

Storage

- Store thermistors in original packaging only. Do not open the package prior to storage.
- Storage conditions in original packaging: storage temperature $-25^{\circ}\text{C} \dots +45^{\circ}\text{C}$, relative humidity $\leq 75\%$ annual mean, maximum 95%, dew precipitation is inadmissible.
- Do not store thermistors where they are exposed to heat or direct sunlight. Otherwise, the packing material may be deformed or components may stick together, causing problems during mounting.
- Avoid contamination of thermistor surface during storage, handling and processing.
- Avoid storage of thermistors in harmful environments like corrosive gases (SO_x , Cl etc.)
- Use the components as soon as possible after opening the factory seals, i.e. the polyvinyl-sealed packages.
- Solder thermistors within the time specified after shipment from EPCOS.
For leaded components this is 24 months.

Handling

- NTC thermistors must not be dropped. Chip-offs or any other damage must not be caused during handling of NTCs.
- Do not touch components with bare hands. Gloves are recommended.
- Avoid contamination of thermistor surface during handling.

Soldering

- Use resin-type flux or non-activated flux.
- Insufficient preheating may cause ceramic cracks.
- Rapid cooling by dipping in solvent is not recommended.
- Complete removal of flux is recommended.