



NTC thermistors for temperature measurement

Miniature NTC

Series/Type: S861/10k/A50
Ordering code: B57861S0103A050
Date: 2010-10-12
Version: 2

Application

- Heating systems
- Industrial electronics
- Automotive electronics

Version

NTC soldered to wire and coated with Epoxy.

Wire: AWG 28, Cu-wire, Ag-plated, 19x0.07mm; Insulated, color blue

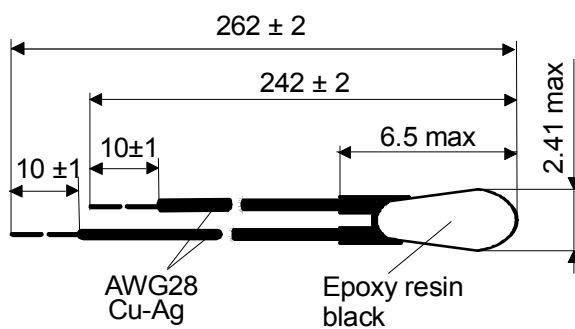
Coating: Epoxy resin, color black

Head diameter: 2.41 mm max

Head length: 6.5 mm max

Stripped length: 10 ± 1 mm

Length of leads: 242 mm / 262 mm \pm 2 mm



Dimensions in mm

Ratings and characteristics

Climatic Category (IEC 60068-1)
(test without voltage)

: **55/155/56**

Lower category temperature

[°C]: **-55**

Upper category temperature

[°C]: **155**

Rated resistance // Tolerance

$R_N // \Delta R$

[$\Omega // \%$]: **5553 // \pm 1**

Rated temperature

T_N

[°C]: **40**

B-value : $B_{(25/100)}$ // Tolerance
R/T-Curve no. // R_{25}

$B_{(25/100)} // \Delta B$

[K // %]: **3760 // \pm 0.5**

[- // Ω]: **2901 // 10001**

Max. power rating at 25°C

P_{25}

[mW]: **60**

Dissipation factor (in air)

δ_{th}

[mW/K]: **approx. 3**

Thermal cooling time constant (in air)

τ_C

[s]: **approx. 15**

Heat capacity

C_{th}

[mJ/K]: **approx. 45**

Remarks



NTC Resistance Temperature Curve

R/T-Curve 2901 / A01 **B(25/100)** 3760 [K] ± 0.5 [%]
 R at 25°C 10001 [Ω] **RN at 40 °C** 5553 [Ω] ± 1.0 [%]

Temp. [°C]	R_nom [Ω]	R_min [Ω]	R_max [Ω]	ΔR [±%]
-55	639720	616278	663162	3,7
-50	461811	445780	477841	3,5
-45	337395	326306	348484	3,3
-40	249279	241527	257031	3,1
-35	186119	180646	191593	2,9
-30	140341	136441	144240	2,8
-25	106797	103996	109598	2,6
-20	81984	79957	84012	2,5
-15	63126	61656	64597	2,3
-10	49016	47942	50090	2,2
-5	38212	37426	38998	2,1
0	30029	29449	30608	1,9
5	23803	23373	24232	1,8
10	19001	18680	19321	1,7
15	15258	15018	15497	1,6
20	12331	12151	12511	1,5
25	10001	9865	10136	1,4
30	8168	8066	8270	1,2
35	6717	6640	6794	1,1
40	5553	5497	5609	1,0
45	4610	4557	4663	1,1
50	3846	3799	3894	1,2
55	3219	3176	3261	1,3
60	2707	2669	2745	1,4
65	2291	2257	2325	1,5
70	1947	1916	1978	1,6
75	1661	1633	1688	1,7
80	1422	1398	1447	1,7
85	1222	1200	1244	1,8
90	1053	1034	1073	1,9
95	912,4	894,6	930,1	1,9
100	792,9	776,9	808,9	2,0
105	690,7	676,3	705,0	2,1
110	603,4	590,5	616,4	2,1
115	528,9	517,2	540,6	2,2
120	464,8	454,3	475,4	2,3
125	409,9	400,3	419,4	2,3
130	362,4	353,7	371,0	2,4
135	321,0	313,2	328,9	2,4
140	285,1	278,0	292,2	2,5
145	253,7	247,3	260,2	2,6
150	226,3	220,4	232,2	2,6
155	202,3	196,9	207,7	2,7

Cautions and warnings

Storage

- Store thermistors only in original packaging. Do not open the package before 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 SMDs where they are exposed to heat or direct sunlight. Otherwise, the packing material may be deformed or SMDs may stick together, causing problems during mounting.
- Avoid contamination of thermistors surface during storage, handling and processing.
- Avoid storage of thermistor in harmful environments like corrosive gases (Sox, Cl etc.)
- After opening the factory seals, such as polyvinyl-sealed packages, use the SMDs as soon as possible.
- Solder thermistors after shipment from EPCOS within the time specified:
SMDs: 12 months
Leaded components: 24 months

Handling

- NTC thermistors must not be dropped. Chip-offs must not be caused during handling of NTCs.
- Components must not be touched 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.

Mounting

- When NTC thermistors are encapsulated with sealing material or overmolded with plastic material, the precautions given in chapter “Mounting instructions”, “Sealing, potting and overmolding” must be observed.
- Electrode must not be scratched before/during/after the mounting process.
- Contacts and housing used for assembly with thermistor have to be clean before mounting.
- During operation, the thermistor’s surface temperature can be very high (ICL). Ensure that adjacent components are placed at a sufficient distance from the thermistor to allow for proper cooling of the thermistors.
- Ensure that adjacent materials are designed for operation at temperatures comparable to the surface temperature of the thermistor. Be sure that surrounding parts and materials can withstand the temperature.
- Make sure that thermistors (ICLs) are adequately ventilated to avoid overheating.
- Avoid contamination of thermistor surface during processing.

Operation

- Use thermistors only within the specified operating temperature range.
- Use thermistors only within the specified voltage and current ranges (ICLs).
- Environmental conditions must not harm the thermistors. Use thermistors only in normal atmospheric conditions.
- Contact of NTC thermistors with any liquids and solvents should be prevented. It must be ensured that no water enters the NTC thermistors (e.g. through plug terminals). For measurement purposes (checking the specified resistance vs. temperature), the component must not be immersed in water but in suitable liquids (e.g. Galden).
- Avoid dewing and condensation.
- Be sure to provide an appropriate fail-safe function to prevent secondary product damage caused by malfunction (e.g. use VDR for limitation of overvoltage condition).

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