



NTC thermistors for temperature measurement

NTC Probes

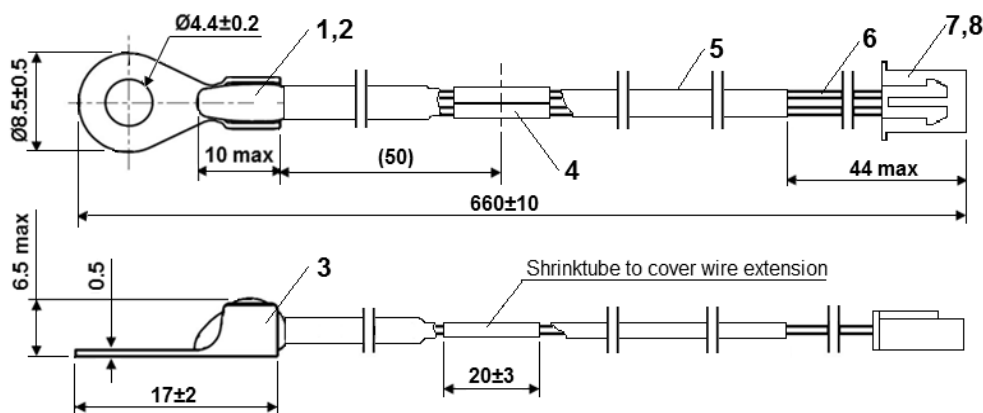
Series/Type: M703/10k/A47
Ordering code: B57703M0103A047
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Application

High accuracy surface temperature measurement e.g heatsink



Dimensions in mm

Materials:

No.	Item	Material	Property	Remarks
1	Thermistor	Ceramic	EPCOS NTC	
2	Potting	Epoxy		Black
3	Ring Tongue	Brass with tinned plated		
4	Shrinktube	Polyolefin		Black
5	Shrinktube	Polyolefin		Black
6	Wire	Stranded copper with silver plated, PTFE insulation	AWG 28 (19x0.07)	Blue
7	Crimp contact	Phosphor bronze with tin plated	JST SXH-002T-P0.6	
8	Plug Housing	PA 6	JST XHP-2	Natural

JST connector is specified for a maximum temperature of 85°C

Ratings and characteristics

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

: **25/125/56**

Lower category temperature

[°C] : **-25**

Upper category temperature

[°C] : **125 ***

Rated resistance R_N // Tolerance

R_N [Ω // %] : **10000 // ± 3**

Rated temperature

T_N [°C] : **25**

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

B_N [K // %] : **3988 // ± 1**

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

[n // Ω] : **8016 // 10000**

Max. power rating at 25 °C	P_{25}	[mW] : 150
Dissipation factor (in air)	δ_{th}	[mW/K] : approx. 3 **
Thermal time constant (in air)	τ_a	[s] : approx. 50 **
Heat capacity	C_{th}	[mJ/K] : approx. 150 **
Voltage proof // Time	V_{is}	[Vac] : 2700 // 1sec

Remark:

* Up to 150 °C for max 30 minutes

** Typical values, depends on mounting situation

Delivery mode

Bulk

NTC Resistance Temperature Curve

R/T-Curve	8016 / A01	B(25/100)	3988[K] ± 1 [%]
R at 25 °C	10000 [Ohm]	Rn at 25 °C	10000 [Ohm] ± 3 [%]

Temp. [°C]	R Nom [Ω]	R Min [Ω]	R Max [Ω]	ΔR [±%]
-20	97070	91801	102339	5.4
-15	72929	69193	76665	5.1
-10	55330	52658	58002	4.8
-5	42315	40391	44239	4.5
0	32650	31254	34046	4.3
5	25388	24369	26406	4.0
10	19900	19152	20648	3.8
15	15708	15156	16260	3.5
20	12490	12081	12899	3.3
25	10000	9700	10300	3.0
30	8057	7793	8321	3.3
35	6531	6304	6759	3.5
40	5327	5130	5524	3.7
45	4369	4199	4539	3.9
50	3603	3456	3750	4.1
55	2986	2859	3114	4.3
60	2488	2377	2599	4.5
65	2083	1987	2180	4.6

70	1752	1668	1836	4.8
75	1481	1408	1555	5.0
80	1258	1193	1323	5.1
85	1072	1016	1129	5.3
90	917.7	867.7	967.7	5.4
95	788.5	744.4	832.6	5.6
100	680.0	641.0	719.0	5.7
105	588.6	554.0	623.2	5.9
110	511.2	480.4	542.0	6.0
115	445.4	418.0	472.8	6.2
120	389.3	364.8	413.8	6.3
125	341.7	319.8	363.6	6.4
130	300.9	281.2	320.6	6.5
135	265.4	247.8	283.1	6.7
140	234.8	218.9	250.7	6.8
145	208.3	194.0	222.7	6.9
150	185.3	172.3	198.3	7.0

Reliability Data

Test	Test conditions	$\Delta R_{25}/R_{25}$ (typical)	Remarks
Storage in dry Heat	Storage at upper category temperature Temperature: 125 °C; Duration: 1000 h	< 3 %	No visible damage
Storage in coldness	Storage at upper category temperature Temperature: -20 °C; Duration: 1000 h	< 3 %	No visible damage
Storage in damp, heat, steady state	Temperature of air: 40 °C Relative humidity: 93 % Duration: 56 days	< 3 %	No visible damage
Rapid temperature cycling	Lower test temperature: -20 °C Upper test temperature: +125 °C Number of cycles : 100 Medium: Air Dwell time: 10 minutes with travel time 30 s	< 3 %	No visible damage

Cautions and warnings

Storage

- Store thermistors only in original packaging. Do not open the package prior to storage.
- Storage conditions in original packaging: storage temperature $-25\text{ °C} \dots +45\text{ °C}$, relative humidity $\leq 75\%$ annual mean, $< 95\%$ maximum 30 days per annum, 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.
- Washing processes may damage the product due to the possible static or cyclic mechanical loads (e.g. ultrasonic cleaning). They may cause cracks to develop on the product and its parts, which might lead to reduced reliability or lifetime.

Bending/ twisting leads

- A lead (wire) may be bent at a minimum distance of twice the wire's diameter plus 4 mm from the component head or housing. When bending ensure the wire is mechanically relieved at the component head or housing. The bending radius should be at least 0.75 mm.

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.