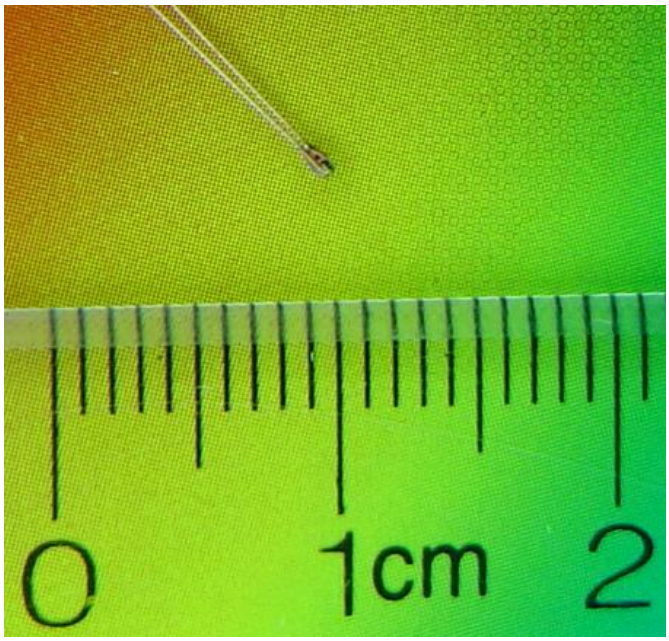
Analog Technologies

High Stability Miniature Thermistor

ATH10KR8



MAIN FEATURES

Glass Encapsulated for Long Term Stability & Reliability
High Stability: <0.1°C/Y
Small Size: ϕ0.8mm×1.4mm
High Resistance Accuracy: 1%
Quick Response Time: 3s
Wide Temp. Range: –55°C to 250°C

APPLICATIONS

Temperature sensing for laser diodes, optical components, etc.

DESCRIPTION

The ATH10KR8 is a high precision glass encapsulated thermistor. Comparing with conventional epoxy encapsulated thermistors, ATH10KR8 presents higher long term stability and wider temperature range. In addition, it has a small size and short response time.

The ATH10KR8 can be used to measure the temperatures for laser diodes, optical components, etc., with high accuracy and long term stability.

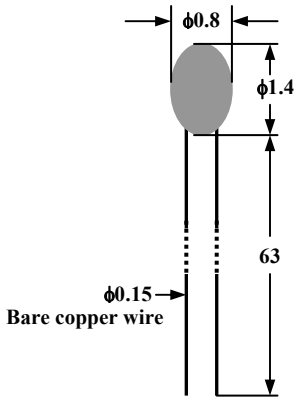


Figure 1 Side View of ATH10KR8

SPECIFICATIONS

Nominal Resistance @ 25°C:	10K ± 1%
B Value @ 25°C /85°C:	3480K ± 1%
B Value @ 0°C /100°C:	3450K ± 1%
B Value @ 25°C /100°C:	3497K ± 1%
Thermistor Diameter:	0.8 ± 0.1mm
Thermistor Length:	1.4 ± 0.4mm
Lead Diameter:	0.15mm
Lead Length:	63 ± 3mm
Dissipation Factor:	0.4mW/K
Heat Capacity:	1.3mJ/K
Maximum Power @ 25°C:	18mW

APPLICATION

Drill a hole on the object for which the temperature needs to be measured and use thermally conductive epoxy to pot the thermistor inside the hole. The hole diameter should be between 1.2 to 1.4mm and the depth should between 2 to 2.5mm. When a deeper hole is needed, drill a 2 stage hole to prevent mounting epoxy bobbles trapped inside which would cause temperature measurement errors. Figure 2 shows the section view of the 2 stage hole.

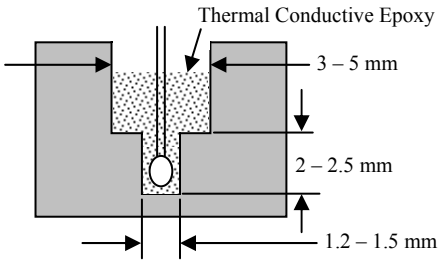


Figure 2 Section View of the 2 Stage Hole

The worst mounting result is that there are air bubbles trapped inside the thermistor mounting hole. These bubbles cause thermal sensing time delay and sensing temperature errors. To avoid the bubbles, use thin epoxy, vibrate the assembly before curing, and cure the epoxy inside the mounting hole at high temperature, 80°C to 150°C, depending on the epoxy used and the maximum temperature assembly components allow.

The thermistor lead wires are made of plain copper and there is no insulation coating on them, please make sure that they do not touch each other after mounting the thermistor.

Some thermal conductive epoxies are also electrically conductive and such epoxies should not be used for mounting the thermistors, since the lead wires are conductive.

ORDERING INFORMATION

Part number: ATH10KR8

Quantity	1 - 9	10 - 49	50 - 249	≥250
Price	$6.4	$5.2	$3.8	$2.4

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Resistance Temperature Characteristics

T [°C]	R_nom [Ω]	R_min [Ω]	R_max [Ω]	$\Delta R/R_N$ [±%]
-55	519911	491950	547873	5,4
-50	379894	360878	398909	5,0
-45	280697	267644	293750	4,7
-40	209603	200566	218639	4,3
-35	158088	151784	164393	4,0
-30	120372	115944	124800	3,7
-25	92484	89355	95612	3,4
-20	71668	69447	73889	3,1
-15	55993	54410	57576	2,8
-10	44087	42955	45218	2,6
-5	34971	34161	35780	2,3
0	27936	27356	28516	2,1
5	22468	22054	22882	1,8
10	18187	17892	18482	1,6
15	14813	14605	15021	1,4
20	12136	11991	12282	1,2
25	**10000**	**9900**	**10100**	**1,0**
30	8284	8186	8383	1,2
35	6899	6804	6994	1,4
40	5774	5684	5864	1,6
45	4856	4772	4940	1,7
50	4103	4024	4181	1,9
55	3482	3409	3554	2,1
60	2967	2901	3034	2,2
65	2539	2479	2600	2,4
70	2182	2126	2237	2,5
75	1882	1831	1932	2,7
80	1629	1583	1675	2,8
85	1415	1373	1457	3,0
90	1234	1195	1272	3,1
95	1079	1044	1114	3,2
100	946,6	914,6	978,6	3,4
105	833,1	803,9	862,3	3,5
110	735,5	708,8	762,1	3,6
115	651,1	626,7	675,5	3,7
120	578,1	555,8	600,4	3,9

T [°C]	R_nom [Ω]	R_min [Ω]	R_max [Ω]	$\Delta R/R_N$ [±%]
125	514,6	494,2	535,1	4,0
130	459,4	440,6	478,1	4,1
135	411,1	393,8	428,3	4,2
140	368,8	352,9	384,6	4,3
145	331,6	317,0	346,2	4,4
150	298,9	285,4	312,3	4,5
155	270,0	257,5	282,4	4,6
160	244,4	232,9	255,9	4,7
165	221,7	211,1	232,4	4,8
170	201,6	191,7	211,5	4,9
175	183,6	174,5	192,8	5,0
180	167,6	159,1	176,1	5,1
185	153,3	145,4	161,2	5,2
190	140,4	133,1	147,8	5,3
195	128,9	122,0	135,8	5,3
200	118,5	112,1	124,9	5,4
205	109,1	103,1	115,1	5,5
210	100,7	95,05	106,3	5,6
215	93,01	87,76	98,27	5,7
220	86,08	81,14	91,01	5,7
225	79,78	75,15	84,41	5,8
230	74,05	69,70	78,40	5,9
235	68,83	64,74	72,93	5,9
240	64,08	60,22	67,93	6,0
245	59,73	56,09	63,36	6,1
250	55,75	52,32	59,18	6,2

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