Ultra-Stable Miniature Thermistor

ATH230KR8B4177K

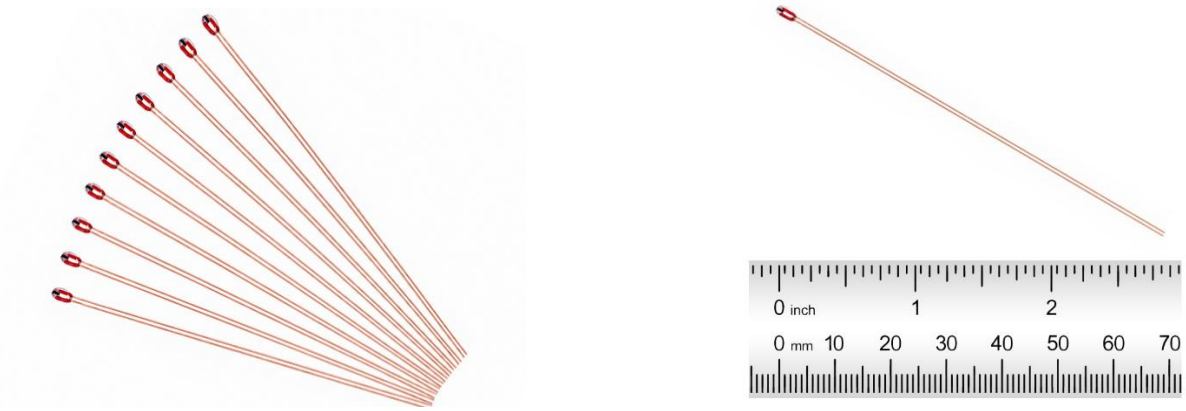


Figure 1. The Physical Photo of ATH230KR8B4177K

MAIN FEATURES

Glass Encapsulated for Long Term Stability & Reliability
High Stability: <0.1°C/year
Small Size: ϕ0.8mm ×1.8mm
High Resistance Accuracy: 1%
Quick Response Time: 2.3s
Wide Temp. Range: –40°C to 300°C
Leads: dumet wires (copper-clad FeNi)
100% Lead (Pb)-free and RoHS Compliant

APPLICATIONS

The ATH230KR8B4177K thermistor is ideal for temperature sensing in high-precision devices such as laser diodes and optical components that require accurate temperature monitoring. In addition, due to its low cost, it is also suitable for use in automotive electronics, industrial electronics, and home appliances where cost-effective temperature sensing is required.

DESCRIPTION

Figure 1 displays the ATH230KR8B4177K thermistor, which boasts high precision and a glass encapsulation design. In contrast to conventional epoxy-encapsulated thermistors, the ATH230KR8B4177K offers superior long-term stability and a wider temperature range. Moreover, it has a compact size and a quick response time.

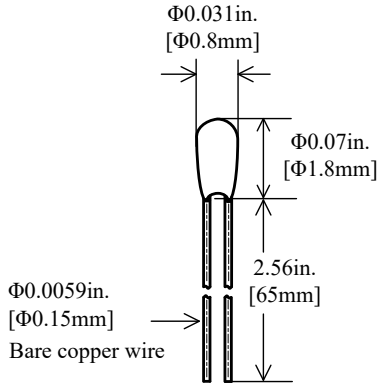


Figure 2. Side View of ATH230KR8B4177K

SPECIFICATIONS

Parameters	Symbol	Value
Nominal Resistance @ 25°C	R_{25}	230K ± 1%
B Value @ 25°C /50°C	$B_{25/50}$	4177K ± 1%
Thermistor Diameter	D_T	0.8 ± 0.2mm
Thermistor Length	L_T	1.8 ± 0.5mm
Lead Diameter	D_L	0.15± 0.05mm
Lead Length	L_L	65 ± 2mm
Dissipation Factor	δ_{th}	0.6mW/°C
Insulation Resistance	R_{is}	≥100MΩ
Maximum Power @ 25°C	P_{max}	50mW
Time Constant	τ_c	2.3s (in still air @5~25°C)

APPLICATION

One common issue encountered when potting the thermistor into a solid object to sense its temperature is the formation of air bubbles within the epoxy between the thermistor bead and the target object. These air bubbles can significantly delay the thermistor's response time. To address this problem, it is recommended to drill a deep counterbore hole and use thermal conductive epoxy to pot the thermistor at the bottom of the hole, as illustrated in Figure 3. This method effectively reduces the formation of air bubbles and enhances the thermistor's overall performance.

To prevent the formation of air bubbles during the potting process, it is recommended to cure the epoxy at the temperature specified by the manufacturer. For optimal results, curing should be conducted in a vacuum environment and/or on top of a vibration platform to eliminate any remaining air pockets. By taking these measures, the potting process can be optimized, resulting in accurate temperature sensing with the shortest possible response time.

TheATH230KR8B4177K thermistor is terminated with leaded bare copper wires. For applications that require

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insulated lead wires, we offer insulation tubing. For more information, please click **HERE**.

The radial glass bead encapsulation NTC thermistor exhibits superior resistance to heat and climatic conditions and have a long lifetime compared to resin-coated thermistors. It is made of bonding lead wire, gold/silver electrodes and qualified ceramic thermistor chip, which makes it keep stable characteristics. It features long-term stability, reliability, wide temperature range and fast thermal response time. Multiple bead diameters and sensor spec. are available. And they can be easily incorporated into various housing options because of their small size.

Please note that the ATH230KR8B4177K thermistor is not designed for direct immersion in water or other electrically conductive or corrosive liquids, due to the non-isolated nature of its leads. Doing so may result in inaccurate resistance readings, damage to the thermistor's leads, or pose a safety hazard.

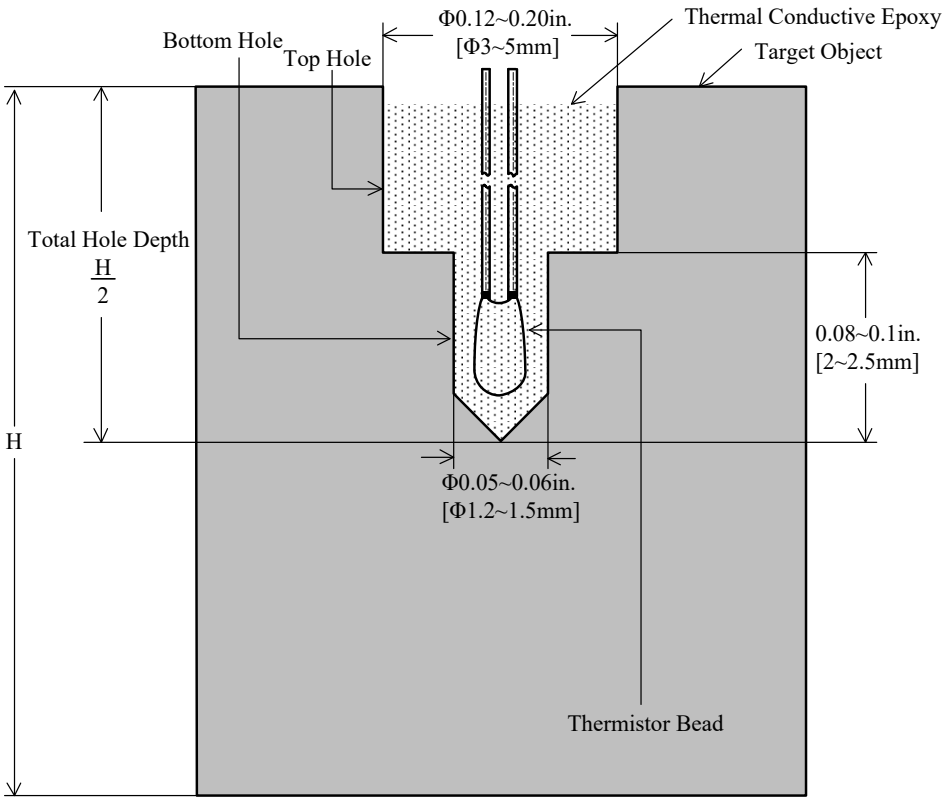


Figure 3. Section View of Recommended Counterbore Hole

PART NUMBER CONVENTION

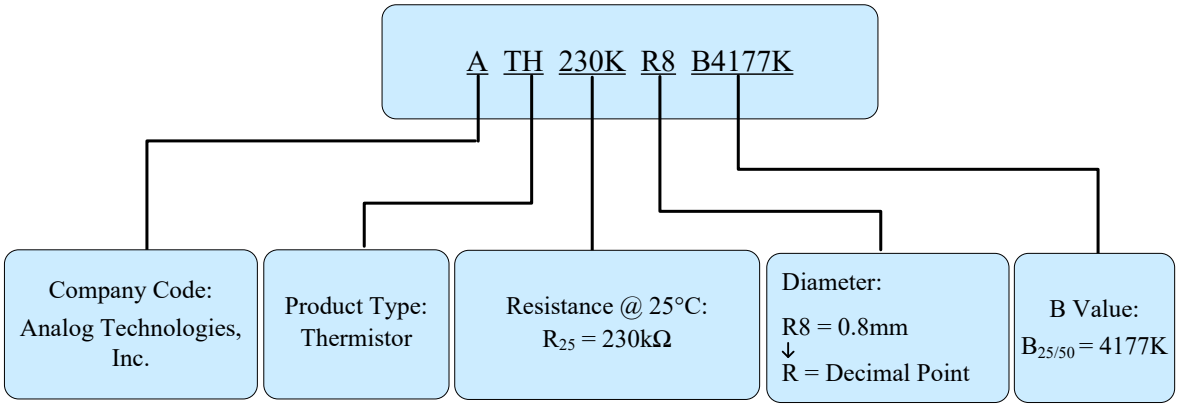


Figure 4. Part Number Convention of ATH230KR8B4177K

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RESISTANCE TEMPERATURE CHARACTERISTICS

$B_{25/50}$ = 4177K, R_{25} = 230kΩ, T_R = 25°C, $\frac{\Delta R_T}{R_T}$: ± 1%,

T (°C)	Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature (±%)	Temperature Measurement Error at a Specific Temperature (±°C)	Temperature Coefficient (%/°C)
	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
−50	17921.191	18667.911	19414.621	4.00	0.27	7.33
−49	16659.451	17346.361	18033.281	3.96	0.27	7.33
−48	15494.251	16126.401	16758.561	3.92	0.27	7.28
−47	14417.661	14999.641	15581.631	3.88	0.27	7.23
−46	13422.421	13958.431	14494.431	3.84	0.27	7.18
−45	12501.941	12995.781	13489.611	3.80	0.27	7.13
−44	11650.161	12105.321	12560.481	3.76	0.27	7.08
−43	10861.571	11281.231	11700.891	3.72	0.26	7.03
−42	10131.121	10518.181	10905.251	3.68	0.26	6.99
−41	9454.191	9811.321	10168.461	3.64	0.26	6.94
−40	8826.571	9156.191	9485.811	3.60	0.26	6.89
−39	8244.851	8549.201	8853.551	3.56	0.26	6.85
−38	7704.331	7985.421	8266.511	3.52	0.26	6.81
−37	7202.501	7462.181	7721.861	3.48	0.26	6.76
−36	6736.341	6976.331	7216.321	3.44	0.26	6.72
−35	6303.141	6524.991	6746.841	3.40	0.25	6.67
−34	5900.371	6105.521	6310.671	3.36	0.25	6.63
−33	5525.751	5715.501	5905.251	3.32	0.25	6.59
−32	5177.111	5352.681	5528.251	3.28	0.25	6.54
−31	4852.541	5015.031	5177.521	3.24	0.25	6.50
−30	4550.231	4700.651	4851.071	3.20	0.25	6.46
−29	4268.541	4407.831	4547.121	3.16	0.25	6.42
−28	4005.941	4134.951	4263.961	3.12	0.24	6.38
−27	3761.031	3880.551	4000.071	3.08	0.24	6.33
−26	3532.531	3643.291	3754.051	3.04	0.24	6.29
−25	3319.251	3421.911	3524.571	3.00	0.24	6.25
−24	3120.091	3215.261	3310.431	2.96	0.24	6.21
−23	2934.031	3022.281	3110.531	2.92	0.24	6.18
−22	2760.151	2842.001	2923.851	2.88	0.23	6.14
−21	2597.581	2673.511	2749.441	2.84	0.23	6.10
−20	2445.521	2515.971	2586.421	2.80	0.23	6.06

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T (°C)	Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature (±%)	Temperature Measurement Error at a Specific Temperature (±°C)	Temperature Coefficient (%/°C)
	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
−19	2303.251	2368.621	2433.991	2.76	0.23	6.02
−18	2170.051	2230.731	2291.411	2.72	0.23	5.98
−17	2045.351	2101.671	2157.991	2.68	0.23	5.95
−16	1928.511	1980.801	2033.091	2.64	0.22	5.91
−15	1819.011	1867.571	1916.131	2.60	0.22	5.87
−14	1716.361	1761.451	1806.541	2.56	0.22	5.84
−13	1620.081	1661.961	1703.841	2.52	0.22	5.80
−12	1529.751	1568.651	1607.551	2.48	0.22	5.76
−11	1444.971	1481.111	1517.251	2.44	0.21	5.73
−10	1365.371	1398.941	1432.511	2.40	0.21	5.69
−9	1290.601	1321.791	1352.981	2.36	0.21	5.66
−8	1220.341	1249.321	1278.301	2.32	0.21	5.63
−7	1154.311	1181.241	1208.171	2.28	0.20	5.59
−6	1092.211	1117.241	1142.271	2.24	0.20	5.56
−5	1033.801	1057.061	1080.321	2.20	0.20	5.52
−4	978.851	1000.461	1022.071	2.16	0.20	5.49
−3	927.120	947.201	967.282	2.12	0.19	5.46
−2	878.412	897.071	915.730	2.08	0.19	5.42
−1	832.534	849.871	867.208	2.04	0.19	5.33
0	790.371	806.501	822.631	2.00	0.19	5.28
1	749.673	764.660	779.647	1.96	0.18	5.32
2	711.216	725.138	739.061	1.92	0.18	5.30
3	674.886	687.817	700.748	1.88	0.18	5.27
4	640.570	652.578	664.585	1.84	0.18	5.25
5	608.160	619.308	630.455	1.80	0.17	5.22
6	577.550	587.897	598.244	1.76	0.17	5.19
7	548.638	558.240	567.841	1.72	0.17	5.16
8	521.326	530.234	539.142	1.68	0.16	5.13
9	495.523	503.785	512.047	1.64	0.16	5.10
10	471.140	478.801	486.462	1.60	0.16	5.07
11	448.094	455.195	462.296	1.56	0.15	5.04
12	426.306	432.886	439.466	1.52	0.15	5.01

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T (°C)	Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature (±%)	Temperature Measurement Error at a Specific Temperature (±°C)	Temperature Coefficient (%/°C)
	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
13	405.702	411.796	417.891	1.48	0.15	4.98
14	386.211	391.854	397.496	1.44	0.15	4.95
15	367.768	372.990	378.212	1.40	0.14	4.92
16	350.312	355.142	359.972	1.36	0.14	4.89
17	333.783	338.248	342.713	1.32	0.14	4.86
18	318.128	322.253	326.378	1.28	0.13	4.83
19	303.295	307.103	310.911	1.24	0.13	4.80
20	289.237	292.750	296.263	1.20	0.13	4.77
21	275.908	279.146	282.384	1.16	0.12	4.75
22	263.267	266.249	269.231	1.12	0.12	4.72
23	251.274	254.017	256.761	1.08	0.12	4.69
24	239.892	242.413	244.934	1.04	0.11	4.66
25	229.087	231.401	233.715	1.00	0.11	4.64
26	218.679	220.947	223.216	1.03	0.11	4.61
27	208.797	211.020	213.243	1.05	0.11	4.59
28	199.414	201.591	203.768	1.08	0.12	4.56
29	190.500	192.632	194.764	1.11	0.12	4.54
30	182.029	184.116	186.203	1.13	0.13	4.51
31	173.979	176.021	178.063	1.16	0.13	4.49
32	166.325	168.323	170.320	1.19	0.13	4.46
33	159.046	161.000	162.953	1.21	0.14	4.44
34	152.122	154.032	155.943	1.24	0.14	4.41
35	145.533	147.401	149.269	1.27	0.14	4.39
36	139.263	141.088	142.914	1.29	0.15	4.37
37	133.294	135.078	136.861	1.32	0.15	4.34
38	127.610	129.353	131.095	1.35	0.16	4.32
39	122.197	123.899	125.601	1.37	0.16	4.30
40	117.040	118.703	120.365	1.40	0.16	4.28
41	112.126	113.750	115.373	1.43	0.17	4.25
42	107.443	109.028	110.613	1.45	0.17	4.23
43	102.978	104.526	106.073	1.48	0.18	4.21
44	98.721	100.232	101.743	1.51	0.18	4.19

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	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
45	94.661	96.136	97.610	1.53	0.18	4.16
46	90.788	92.227	93.667	1.56	0.19	4.14
47	87.093	88.497	89.902	1.59	0.19	4.12
48	83.566	84.937	86.308	1.61	0.20	4.10
49	80.200	81.537	82.875	1.64	0.20	4.08
50	76.986	78.291	79.596	1.67	0.21	4.05
51	73.916	75.190	76.464	1.69	0.21	4.03
52	70.984	72.227	73.470	1.72	0.21	4.01
53	68.184	69.396	70.609	1.75	0.22	3.99
54	65.507	66.690	67.874	1.77	0.22	3.97
55	62.949	64.103	65.258	1.80	0.23	3.95
56	60.503	61.630	62.756	1.83	0.23	3.93
57	58.165	59.264	60.363	1.85	0.24	3.91
58	55.928	57.000	58.072	1.88	0.24	3.89
59	53.788	54.834	55.880	1.91	0.25	3.87
60	51.740	52.761	53.782	1.93	0.25	3.85
61	49.781	50.776	51.772	1.96	0.26	3.83
62	47.904	48.876	49.848	1.99	0.26	3.81
63	46.108	47.056	48.004	2.01	0.27	3.79
64	44.387	45.312	46.237	2.04	0.27	3.77
65	42.738	43.641	44.543	2.07	0.28	3.75
66	41.158	42.039	42.919	2.09	0.28	3.73
67	39.644	40.503	41.362	2.12	0.29	3.71
68	38.191	39.030	39.868	2.15	0.29	3.70
69	36.799	37.617	38.435	2.17	0.30	3.68
70	35.463	36.261	37.059	2.20	0.30	3.66
71	34.186	34.965	35.744	2.23	0.31	3.63
72	32.960	33.721	34.481	2.25	0.31	3.62
73	31.784	32.526	33.268	2.28	0.32	3.60
74	30.654	31.378	32.102	2.31	0.32	3.59
75	29.569	30.276	30.983	2.33	0.33	3.57
76	28.527	29.217	29.907	2.36	0.33	3.55

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	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
77	27.526	28.200	28.873	2.39	0.34	3.54
78	26.565	27.223	27.880	2.41	0.34	3.52
79	25.642	26.284	26.925	2.44	0.35	3.50
80	24.755	25.381	26.008	2.47	0.35	3.49
81	23.902	24.514	25.125	2.49	0.36	3.47
82	23.083	23.680	24.277	2.52	0.37	3.45
83	22.295	22.878	23.461	2.55	0.37	3.44
84	21.538	22.107	22.677	2.58	0.38	3.42
85	20.810	21.366	21.922	2.60	0.38	3.40
86	20.110	20.653	21.196	2.63	0.39	3.39
87	19.437	19.967	20.497	2.66	0.39	3.37
88	18.790	19.307	19.825	2.68	0.40	3.35
89	18.166	18.672	19.178	2.71	0.41	3.34
90	17.567	18.061	18.555	2.74	0.41	3.32
91	16.990	17.473	17.955	2.76	0.42	3.30
92	16.435	16.906	17.378	2.79	0.42	3.29
93	15.900	16.361	16.821	2.82	0.43	3.27
94	15.385	15.835	16.285	2.84	0.44	3.26
95	14.889	15.329	15.769	2.87	0.44	3.24
96	14.412	14.841	15.271	2.90	0.45	3.23
97	13.952	14.372	14.792	2.92	0.46	3.21
98	13.508	13.919	14.329	2.95	0.46	3.20
99	13.081	13.482	13.883	2.98	0.47	3.18
100	12.669	13.061	13.453	3.00	0.47	3.17
101	12.273	12.655	13.038	3.02	0.48	3.15
102	11.890	12.264	12.637	3.04	0.48	3.14
103	11.522	11.886	12.250	3.06	0.49	3.12
104	11.166	11.521	11.877	3.08	0.50	3.11
105	10.823	11.170	11.516	3.10	0.50	3.09
106	10.492	10.830	11.168	3.12	0.51	3.08
107	10.173	10.503	10.833	3.14	0.51	3.07
108	9.864	10.186	10.509	3.16	0.52	3.05

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	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
109	9.567	9.881	10.195	3.18	0.52	3.04
110	9.279	9.586	9.893	3.20	0.53	3.02
111	9.001	9.301	9.601	3.22	0.54	3.01
112	8.733	9.026	9.319	3.24	0.54	3.00
113	8.474	8.760	9.046	3.26	0.55	2.98
114	8.224	8.503	8.782	3.28	0.55	2.97
115	7.982	8.255	8.527	3.30	0.56	2.96
116	7.748	8.015	8.281	3.32	0.56	2.94
117	7.523	7.783	8.043	3.34	0.57	2.93
118	7.304	7.559	7.813	3.36	0.58	2.92
119	7.093	7.342	7.590	3.38	0.58	2.90
120	6.889	7.132	7.375	3.40	0.59	2.89
121	6.693	6.930	7.167	3.42	0.60	2.87
122	6.502	6.734	6.965	3.44	0.60	2.86
123	6.317	6.544	6.770	3.46	0.61	2.85
124	6.139	6.360	6.582	3.48	0.61	2.84
125	5.966	6.183	6.399	3.50	0.62	2.83
126	5.799	6.010	6.222	3.52	0.63	2.82
127	5.637	5.844	6.051	3.54	0.63	2.81
128	5.480	5.683	5.885	3.56	0.64	2.79
129	5.328	5.526	5.724	3.58	0.64	2.78
130	5.181	5.375	5.569	3.60	0.65	2.77
131	5.039	5.229	5.418	3.62	0.66	2.76
132	4.901	5.087	5.272	3.64	0.66	2.75
133	4.768	4.949	5.130	3.66	0.67	2.73
134	4.639	4.816	4.993	3.68	0.68	2.72
135	4.513	4.687	4.860	3.70	0.68	2.71
136	4.392	4.562	4.732	3.72	0.69	2.70
137	4.275	4.441	4.607	3.74	0.70	2.69
138	4.161	4.323	4.486	3.76	0.70	2.68
139	4.050	4.209	4.369	3.78	0.71	2.66
140	3.943	4.099	4.255	3.80	0.72	2.65

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$B_{25/50}$ = 4177K, R_{25} = 230kΩ, T_R = 25°C, $\frac{\Delta R_T}{R_T}$: ± 1%,

T (°C)	Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature (±%)	Temperature Measurement Error at a Specific Temperature (±°C)	Temperature Coefficient (%/°C)
	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
141	3.839	3.992	4.145	3.82	0.72	2.64
142	3.739	3.888	4.038	3.84	0.73	2.63
143	3.641	3.788	3.934	3.86	0.74	2.62
144	3.547	3.690	3.833	3.88	0.74	2.61
145	3.455	3.595	3.736	3.90	0.75	2.60
146	3.366	3.503	3.641	3.92	0.76	2.58
147	3.280	3.414	3.549	3.94	0.77	2.57
148	3.196	3.328	3.459	3.96	0.77	2.56
149	3.115	3.244	3.373	3.98	0.78	2.55
150	3.036	3.162	3.289	4.00	0.79	2.54
151	2.959	3.083	3.207	4.02	0.79	2.53
152	2.884	3.006	3.127	4.04	0.80	2.52
153	2.812	2.931	3.050	4.06	0.81	2.51
154	2.742	2.859	2.975	4.08	0.82	2.50
155	2.674	2.788	2.903	4.10	0.82	2.49
156	2.608	2.720	2.832	4.12	0.83	2.48
157	2.544	2.653	2.763	4.14	0.84	2.47
158	2.481	2.589	2.697	4.16	0.85	2.46
159	2.420	2.526	2.632	4.18	0.85	2.45
160	2.362	2.465	2.569	4.20	0.86	2.44
161	2.304	2.406	0.001	-47.87	-9.85	2.43
162	2.249	2.348	2.448	4.24	0.88	2.42
163	2.194	2.292	2.390	4.26	0.88	2.41
164	2.142	2.238	2.333	4.28	0.89	2.40
165	2.091	2.185	2.279	4.30	0.90	2.39
166	2.041	2.133	2.225	4.32	0.91	2.38
167	1.993	2.083	2.174	4.34	0.92	2.37
168	1.946	2.034	2.123	4.36	0.92	2.36
169	1.900	1.987	2.074	4.38	0.93	2.35
170	1.856	1.941	2.026	4.40	0.93	2.36
171	1.812	1.896	1.979	4.42	0.94	2.36
172	1.770	1.852	1.934	4.44	0.95	2.32

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T (°C)	Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature (±%)	Temperature Measurement Error at a Specific Temperature (±°C)	Temperature Coefficient (%/°C)
	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
173	1.729	1.809	1.890	4.46	0.96	2.32
174	1.689	1.768	1.847	4.48	0.97	2.30
175	1.650	1.728	1.806	4.50	0.98	2.29
176	1.612	1.689	1.765	4.52	0.99	2.29
177	1.576	1.651	1.726	4.54	1.00	2.26
178	1.540	1.614	1.688	4.56	1.01	2.26
179	1.506	1.578	1.650	4.58	1.02	2.26
180	1.472	1.543	1.614	4.60	1.03	2.24
181	1.439	1.509	1.578	4.62	1.03	2.23
182	1.407	1.475	1.544	4.64	1.04	2.23
183	1.376	1.443	1.510	4.66	1.05	2.21
184	1.346	1.412	1.478	4.68	1.06	2.21
185	1.316	1.380	1.445	4.70	1.06	2.21
186	1.287	1.351	1.414	4.72	1.08	2.19
187	1.259	1.321	1.384	4.74	1.08	2.19
188	1.231	1.293	1.354	4.76	1.09	2.18
189	1.205	1.265	1.325	4.78	1.10	2.17
190	1.178	1.238	1.297	4.80	1.11	2.17
191	1.153	1.211	1.270	4.82	1.12	2.15
192	1.128	1.186	1.243	4.84	1.13	2.14
193	1.104	1.160	1.217	4.86	1.13	2.15
194	1.080	1.136	1.191	4.88	1.14	2.14
195	1.057	1.112	1.166	4.90	1.15	2.14
196	1.035	1.088	1.142	4.92	1.16	2.11
197	1.013	1.066	1.118	4.94	1.18	2.10
198	0.992	1.044	1.095	4.95	1.18	2.10
199	0.971	1.022	1.073	4.98	1.19	2.08
200	0.951	1.001	1.051	5.00	1.19	2.09
201	0.931	0.980	1.029	5.02	1.20	2.10
202	0.912	0.960	1.008	5.04	1.23	2.05
203	0.893	0.941	0.988	5.06	1.23	2.06
204	0.874	0.921	0.968	5.08	1.23	2.06

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T (°C)	Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature (±%)	Temperature Measurement Error at a Specific Temperature (±°C)	Temperature Coefficient (%/°C)
	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
205	0.857	0.903	0.949	5.10	1.25	2.04
206	0.839	0.884	0.930	5.11	1.26	2.04
207	0.822	0.867	0.911	5.13	1.28	2.01
208	0.806	0.849	0.893	5.16	1.28	2.02
209	0.789	0.832	0.876	5.18	1.29	2.01
210	0.774	0.816	0.858	5.20	1.30	2.00
211	0.758	0.800	0.841	5.21	1.30	2.01
212	0.743	0.784	0.825	5.23	1.32	1.98
213	0.728	0.769	0.809	5.26	1.34	1.96
214	0.714	0.754	0.794	5.28	1.34	1.97
215	0.700	0.739	0.778	5.29	1.35	1.96
216	0.686	0.725	0.763	5.31	1.36	1.95
217	0.673	0.711	0.749	5.33	1.37	1.94
218	0.660	0.697	0.734	5.35	1.38	1.94
219	0.647	0.684	0.720	5.37	1.38	1.95
220	0.634	0.671	0.707	5.40	1.39	1.94
221	0.622	0.658	0.693	5.41	1.38	1.96
222	0.610	0.645	0.680	5.43	1.40	1.94
223	0.598	0.633	0.667	5.45	1.43	1.90
224	0.587	0.621	0.655	5.48	1.43	1.91
225	0.576	0.609	0.642	5.49	1.45	1.90
226	0.565	0.598	0.630	5.51	1.46	1.88
227	0.554	0.586	0.619	5.53	1.45	1.90
228	0.543	0.575	0.607	5.55	1.48	1.87
229	0.533	0.565	0.596	5.58	1.51	1.84
230	0.523	0.554	0.585	5.59	1.50	1.86
231	0.514	0.544	0.575	5.60	1.52	1.85
232	0.504	0.534	0.564	5.63	1.56	1.81
233	0.495	0.525	0.555	5.66	1.55	1.82
234	0.486	0.515	0.544	5.67	1.52	1.86
235	0.477	0.506	0.535	5.69	1.58	1.80
236	0.469	0.497	0.525	5.71	1.59	1.80

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T (°C)	Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature (±%)	Temperature Measurement Error at a Specific Temperature (±°C)	Temperature Coefficient (%/°C)
	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
237	0.460	0.488	0.516	5.74	1.57	1.82
238	0.452	0.479	0.507	5.76	1.61	1.78
239	0.444	0.471	0.498	5.78	1.62	1.78
240	0.436	0.462	0.489	5.80	1.61	1.79
241	0.428	0.454	0.481	5.81	1.62	1.79
242	0.420	0.446	0.472	5.83	1.64	1.78
243	0.413	0.438	0.464	5.84	1.65	1.77
244	0.405	0.431	0.456	5.88	1.65	1.78
245	0.398	0.423	0.448	5.89	1.66	1.77
246	0.391	0.416	0.440	5.92	1.67	1.77
247	0.384	0.408	0.433	5.93	1.69	1.75
248	0.377	0.401	0.425	5.96	1.73	1.72
249	0.371	0.395	0.418	5.96	1.72	1.74
250	0.364	0.388	0.411	5.99	1.72	1.74
251	0.358	0.381	0.404	6.01	1.75	1.72
252	0.352	0.375	0.397	6.03	1.75	1.72
253	0.346	0.368	0.390	6.06	1.76	1.73
254	0.340	0.362	0.384	6.05	1.75	1.73
255	0.334	0.356	0.377	6.07	1.77	1.72
256	0.328	0.350	0.371	6.09	1.81	1.69
257	0.323	0.344	0.365	6.14	1.82	1.69
258	0.317	0.338	0.359	6.15	1.81	1.70
259	0.312	0.332	0.353	6.17	1.81	1.70
260	0.307	0.327	0.347	6.18	1.85	1.67
261	0.302	0.321	0.341	6.19	1.86	1.66
262	0.296	0.316	0.336	6.23	1.88	1.66
263	0.292	0.311	0.330	6.24	1.90	1.64
264	0.287	0.306	0.325	6.25	1.91	1.64
265	0.282	0.301	0.320	6.28	1.89	1.66
266	0.277	0.296	0.314	6.29	1.90	1.66
267	0.273	0.291	0.310	6.32	1.98	1.60
268	0.268	0.287	0.305	6.35	1.98	1.61

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T (°C)	Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature (±%)	Temperature Measurement Error at a Specific Temperature (±°C)	Temperature Coefficient (%/°C)
	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
269	0.264	0.282	0.300	6.35	1.97	1.61
270	0.260	0.277	0.295	6.38	1.99	1.60
271	0.256	0.273	0.291	6.41	1.99	1.61
272	0.251	0.269	0.286	6.40	1.98	1.62
273	0.247	0.264	0.281	6.43	2.00	1.61
274	0.243	0.260	0.277	6.46	2.05	1.58
275	0.240	0.256	0.273	6.48	2.05	1.58
276	0.236	0.252	0.268	6.51	2.05	1.59
277	0.232	0.248	0.264	6.53	2.08	1.57
278	0.228	0.244	0.260	6.55	2.08	1.58
279	0.225	0.240	0.256	6.57	2.11	1.56
280	0.221	0.237	0.252	6.59	2.11	1.56
281	0.218	0.233	0.248	6.61	2.11	1.57
282	0.214	0.229	0.245	6.63	2.14	1.55
283	0.211	0.226	0.241	6.64	2.14	1.55
284	0.208	0.222	0.237	6.65	2.14	1.55
285	0.204	0.219	0.234	6.67	2.18	1.53
286	0.201	0.216	0.230	6.68	2.18	1.53
287	0.198	0.212	0.227	6.73	2.20	1.53
288	0.195	0.209	0.223	6.74	2.24	1.51
289	0.192	0.206	0.220	6.74	2.21	1.53
290	0.189	0.203	0.217	6.75	2.21	1.53
291	0.186	0.200	0.214	6.80	2.27	1.50
292	0.184	0.197	0.210	6.81	2.27	1.50
293	0.181	0.194	0.207	6.80	2.28	1.49
294	0.178	0.191	0.204	6.86	2.30	1.49
295	0.175	0.188	0.201	6.85	2.30	1.49
296	0.173	0.186	0.198	6.90	2.33	1.48
297	0.170	0.183	0.195	6.89	2.33	1.48
298	0.168	0.180	0.193	6.94	2.27	1.53
299	0.165	0.177	0.190	6.94	2.37	1.47
300	0.163	0.175	0.187	6.98	2.54	1.37

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T (°C)	Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature (±%)	Temperature Measurement Error at a Specific Temperature (±°C)	Temperature Coefficient (%/°C)
	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
301	0.160	0.173	0.185	6.99	2.46	1.42
302	0.158	0.170	0.182	7.00	2.43	1.44
303	0.156	0.168	0.179	7.01	2.40	1.46
304	0.154	0.165	0.177	7.06	2.43	1.45
305	0.151	0.163	0.174	7.06	2.50	1.41
306	0.149	0.161	0.172	7.07	2.47	1.43
307	0.147	0.158	0.169	7.08	2.49	1.42
308	0.145	0.156	0.167	7.08	2.51	1.41
309	0.143	0.154	0.165	7.12	2.49	1.43
310	0.141	0.152	0.162	7.16	2.52	1.42
311	0.139	0.150	0.160	7.19	2.56	1.40
312	0.137	0.147	0.158	7.19	2.52	1.42
313	0.135	0.145	0.156	7.23	2.56	1.41
314	0.133	0.143	0.154	7.26	2.60	1.40
315	0.131	0.141	0.152	7.25	2.63	1.38
316	0.129	0.139	0.150	7.28	2.67	1.36
317	0.127	0.138	0.148	7.31	2.64	1.38
318	0.126	0.136	0.146	7.30	2.61	1.40
319	0.124	0.134	0.144	7.33	2.65	1.38
320	0.122	0.132	0.142	7.35	2.69	1.36
321	0.121	0.130	0.140	7.38	2.67	1.38
322	0.119	0.128	0.138	7.37	2.70	1.36
323	0.117	0.127	0.136	7.42	2.76	1.34
324	0.116	0.125	0.134	7.45	2.74	1.36
325	0.114	0.123	0.132	7.43	2.77	1.34
326	0.113	0.122	0.131	7.48	2.84	1.32
327	0.111	0.120	0.129	7.46	2.80	1.33
328	0.110	0.118	0.127	7.52	2.78	1.35
329	0.108	0.117	0.126	7.53	2.84	1.33
330	0.107	0.115	0.124	7.55	2.90	1.30
331	0.105	0.114	0.122	7.51	2.85	1.32
332	0.104	0.112	0.121	7.57	2.83	1.34

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T (°C)	Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature (±%)	Temperature Measurement Error at a Specific Temperature (±°C)	Temperature Coefficient (%/°C)
	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
333	0.102	0.111	0.119	7.58	2.90	1.31
334	0.101	0.109	0.118	7.63	2.88	1.33
335	0.100	0.108	0.116	7.65	2.84	1.34
336	0.098	0.107	0.115	7.65	3.02	1.27
337	0.097	0.105	0.113	7.65	2.98	1.28
338	0.096	0.104	0.112	7.71	2.96	1.30
339	0.095	0.103	0.110	7.71	3.04	1.27
340	0.093	0.101	0.109	7.76	3.02	1.28
341	0.092	0.100	0.108	7.76	2.98	1.30
342	0.091	0.099	0.106	7.81	3.08	1.27
343	0.090	0.097	0.105	7.75	3.02	1.28
344	0.089	0.096	0.104	7.80	3.00	1.30
345	0.088	0.095	0.102	7.80	3.08	1.26
346	0.086	0.094	0.101	7.84	3.20	1.23
347	0.085	0.093	0.100	7.83	3.15	1.24
348	0.084	0.091	0.099	7.88	3.13	1.26
349	0.083	0.090	0.097	7.92	3.11	1.27
350	0.082	0.089	0.096	7.91	3.11	1.27

To ensure optimal performance and reliability, it is recommended to follow proper storage procedures for the ATH230KR8B4177K thermistor. Here are some guidelines:

1. Store the thermistors only in their original packaging and do not open the package before storage.
2. The recommended storage temperature is between −25°C to +45°C, with a relative humidity of less than 75% on average and a maximum of 95%. Dew precipitation is not allowed.
3. Do not expose the thermistors to heat or direct sunlight during storage as this may cause deformation of the packing material or sticking of the thermistors, leading to difficulties during mounting.
4. Avoid contamination of the thermistor's surface during storage, handling, and processing.
5. Do not store the thermistor in harmful environments containing corrosive gases like SOx, Cl, etc.
6. After opening the factory seals, such as polyvinyl-sealed packages, it is recommended to use the thermistors as soon as possible.
7. For optimal soldering performance, it is recommended to solder the thermistors within 12 months for SMDs and 24 months for leaded components after shipment from the manufacturer, ATI.

When handling NTC thermistors, it is important to prevent them from being dropped, as this could cause chip-offs and damage to the components. To avoid any damage, components should not be touched with bare hands, and gloves are recommended. It is also important to prevent any contamination of the thermistor surface during handling to ensure accurate readings.

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When soldering the ATH230KR8B4177K thermistor, it is important to use a resin-type or non-activated flux. Insufficient preheating can cause ceramic cracks, so proper preheating is recommended. Rapid cooling by dipping in solvent is not recommended. It is also recommended to completely remove any flux residue after soldering to prevent contamination or damage to the thermistor.

NOTICE

1. It is important to carefully read and follow the warnings, cautions, and product-specific notes provided with electronic components. These instructions are designed to ensure the safe and proper use of the component and to prevent damage to the component or surrounding equipment. Failure to follow these instructions could result in malfunction or failure of the component, damage to surrounding equipment, or even injury or harm to individuals. Always take the necessary precautions and seek professional assistance if unsure about proper use or handling of electronic components.
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