Ultra-Stable Axial Leaded Thermistor

ATH100K1R8B3950K

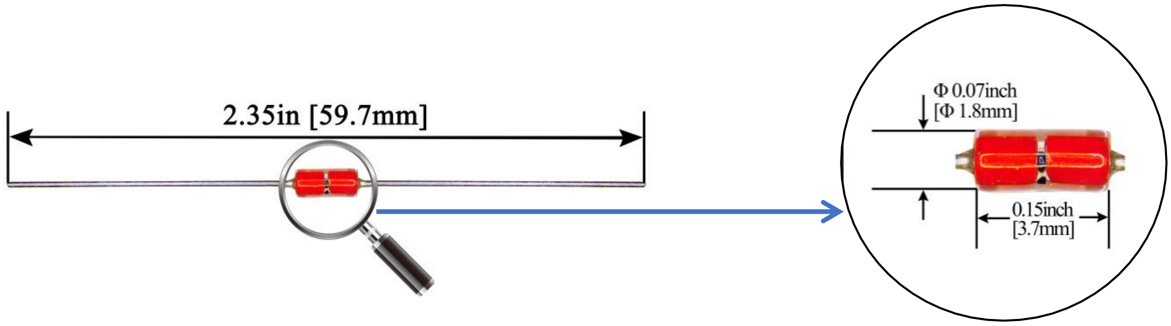

Figure 1. The Physical Photo of ATH100K1R8B3950K

MAIN FEATURES

Glass Encapsulated for Long Term Stability & Reliability
High Stability: <0.1°C/year
Small Size: ϕ1.8mm × 3.7mm
High Resistance Accuracy: 1%
Quick Response Time: ≤20s
Wide Temp. Range: –55°C to 250°C
Leads: Tin-plated Copper- Clad Steel Wire. For maximized strength and conductivity, and optimized thermal expansion matching with glass casing
100% Lead (Pb)-free and RoHS Compliant

DESCRIPTION

Figure 1 shows the ATH100K1R8B3950K thermistor with its dimensions marked. In contrast to conventional epoxy-encapsulated thermistors, the ATH100K1R8B3950K offers superior long-term stability and a wider temperature range. Moreover, it has a compact size and a quick response time.

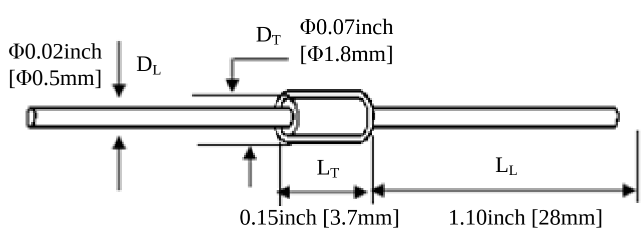

Figure 2. Side View of ATH100K1R8B3950K

SPECIFICATIONS

Parameters	Symbol	Value
Nominal Resistance @ 25°C	R_{25}	100K ± 1%
B Value @ 25°C /50°C	$B_{25/50}$	3950K ± 1%
Thermistor Diameter	D_T	1.8 ± 0.2mm
Thermistor Length	L_T	3.7 ± 0.3mm
Lead Diameter	D_L	0.5± 0.05mm
Lead Length	L_L	28 ± 1mm
Dissipation Factor	δ_{th}	2mW/°C
Insulation Resistance	R_{is}	≥500MΩ
Maximum Power @ 25°C	P_{max}	50mW
Time Constant	τ_c	≤20s (in still air @5~25°C)

APPLICATION

Comparing with glass encapsulated bead or radial leaded thermistors, this axial leaded thermistor, ATH100K1R8B3950K, offers improved mechanical stability, enhanced heat dissipation, and higher power ratings and is suitable for use in automotive electronics, industrial electronics, and home appliances where cost-sensitive temperature sensing is required.

Axial leaded thermistors are widely employed for temperature measurement in electronic circuits, offering accurate and reliable temperature sensing capabilities. They can be seamlessly integrated into temperature measurement systems, digital thermometers, and other devices that require precise temperature readings.

In addition to temperature measurement, axial leaded thermistors find use in temperature compensation applications within electronic circuits. By incorporating them into temperature-sensitive components or circuits, their temperature-dependent resistance changes can be harnessed to adjust and compensate for temperature variations, ensuring stable operation.

Temperature control systems also benefit from the utilization of axial leaded thermistors. These thermistors serve as temperature sensors, providing valuable feedback for regulating heating or cooling elements in diverse applications like thermostats, ovens, incubators, and environmental chambers.

Axial leaded thermistors are indispensable in power electronics, particularly for thermal protection purposes. They monitor the temperature of power devices such as transistors, MOSFETs, and power modules. If the temperature surpasses a predefined threshold, the thermistor's resistance decreases, triggering a protection circuit to limit power or activate cooling mechanisms.

The automotive industry extensively employs axial leaded thermistors for temperature sensing and control. They play a crucial role in engine management systems, climate control systems, and various other automotive applications that demand precise temperature monitoring and regulation.

Battery temperature monitoring is another vital domain where axial leaded thermistors prove their value. Integrated into battery management systems (BMS), they accurately measure the temperature of battery packs. This information aids in monitoring battery health, preventing overheating, and optimizing charging and discharging processes.

Axial leaded thermistors also find widespread use in consumer electronics for temperature sensing and control. They are commonly present in smartphones, laptops, tablets, and other electronic devices that require reliable temperature monitoring to ensure safe and efficient operation.

These are just a few examples of the numerous applications where axial leaded thermistors excel. Their compact size, accuracy, and sensitivity to temperature changes make them highly suitable for a broad range of temperature sensing and control needs across various industries.

PART NUMBER CONVENTION

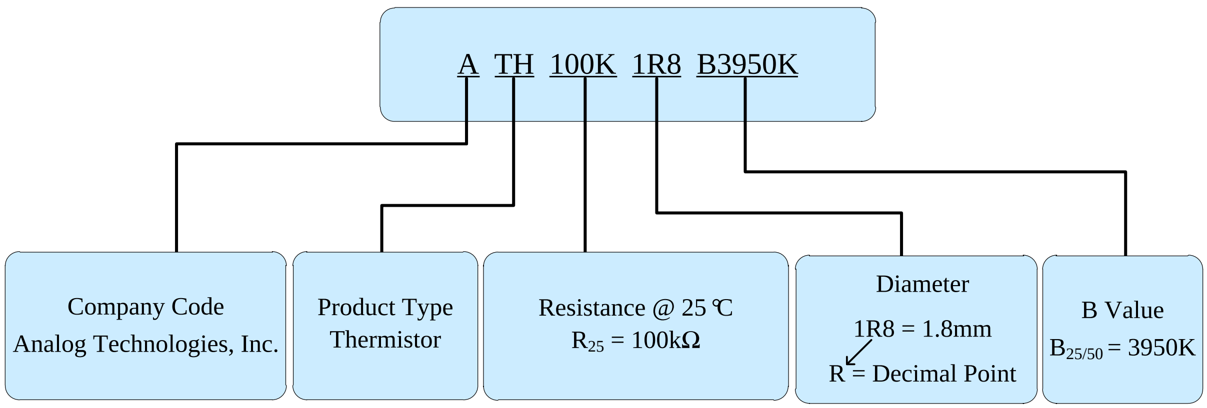

Figure 3. Part Number Convention of ATH100K1R8B3950K

RELIABILITY DATA

No.	Item	Standard	Test conditions and methods	Requirements
1	Terminal Pull Strength and Duration	IEC60068-2-21	Grip thermistor two leads Pull Strength：5±1N, Time Duration: 10±1s	No Obvious Appearance Damage $\Delta R_{25}/R_{25} \leq \pm 2\%$
2	Solderability	IEC60068-2-20	Temperature: 245°C ±5°C Time Duration: 2 ~ 3s	Coverage area ≥ 95%.
3	Withstand Soldering Temperature	IEC60068-2-20	Solder Pot Temperature: 260°C ±5°C Immerse leads 6mm away from thermistor body Time Duration: 5 ±1s	$\Delta R_{25}/R_{25} \leq \pm 2\%$
4	Humidity and Heat Sustainability	IEC60068-2-78	Temperature: 40°C ±2°C Humidity: 93% ±2% Time Duration: 500hrs	$\Delta R_{25}/R_{25} \leq \pm 2\%$
5	Thermal Cycling Sustainability	IEC60068-2-14	−55°C 30min→25°C 5min→250°C 30min→25°C 5min, 5 cycles	$\Delta R_{25}/R_{25} \leq \pm 2\%$
6	High Temperature Storage Sustainability	IEC60068-2-2	Temperature: 250°C ±5°C Time Duration: 1000hrs	$\Delta R_{25}/R_{25} \leq \pm 2\%$
7	Low Temperature Storage Sustainability	IEC60068-2-1	Temperature: −55°C Time Duration: 1000hrs	$\Delta R_{25}/R_{25} \leq \pm 2\%$

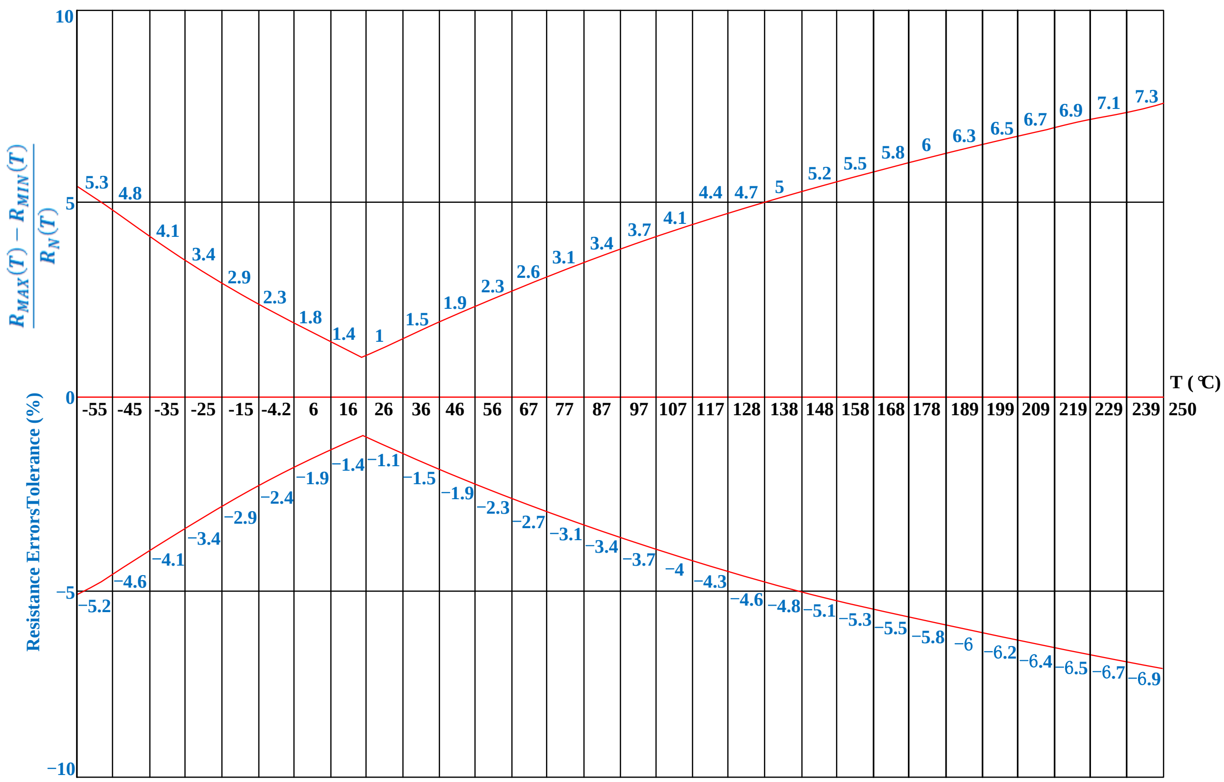

Figure 4. Resistance Tolerance vs. Temperature

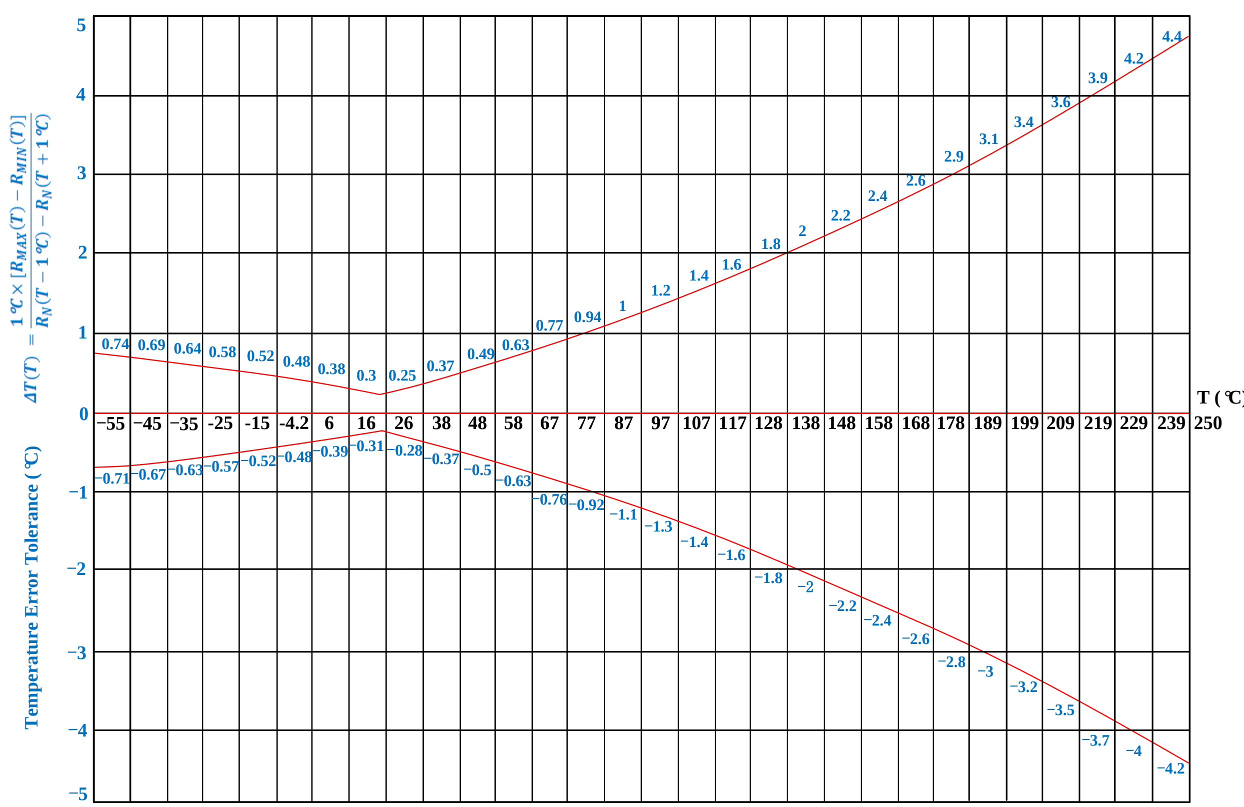

Figure 5. Temperature Tolerance vs. Temperature

RESISTANCE TEMPERATURE CHARACTERISTICS

$B_{25/50}$ = ln[R_N(25)/ R_N(50)]/[1/(25+273.15)-1/(50+273.15)]= 3950K, R_N(25) = 100kΩ, $\left|\frac{R_{MAX}(25)-R_{MIN}(25)}{R_N(25)}\right| \le \pm 1\%$,

T (°C)	Thermistor Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature $\frac{\Delta R_T(T)}{R_N(T)}$ (±%)	Temperature Measurement Error at a Specific Temperature $\Delta T(T)$ (±°C)	Temperature Coefficient α (%/°C)
	Minimum Value $R_{MIN}(T)$	Nominal Value $R_N(T)$	Maximum Value $R_{MAX}(T)$	$\frac{R_{MAX}(T)-R_{MIN}(T)}{R_N(T)}$	$\Delta T(T) = \frac{1℃ \times [R_{MAX}(T)-R_{MIN}(T)]}{R_N(T-1℃)-R_N(T+1℃)}$	$\alpha = \frac{R_N(T+1℃)-R_N(T-1℃)}{2℃ \times R_N(T)}$
−55	6652.891	7011.861	7389.461	5.25	0.52	5.06
−54	6331.971	6670.291	7025.991	5.20	0.51	5.07
−53	6017.191	6335.441	6669.841	5.15	0.49	5.22
−52	5709.961	6008.771	6322.581	5.10	0.48	5.36
−51	5411.411	5691.511	5985.511	5.04	0.46	5.48
−50	5122.501	5384.661	5659.681	4.99	0.45	5.59
−49	4843.951	5088.981	5345.871	4.93	0.43	5.70
−48	4576.291	4805.021	5044.681	4.87	0.42	5.78
−47	4319.891	4533.161	4756.491	4.82	0.41	5.86
−46	4074.951	4273.611	4481.511	4.76	0.40	5.93
−45	3841.551	4026.431	4219.791	4.70	0.39	5.99
−44	3619.651	3791.581	3971.271	4.64	0.38	6.03
−43	3409.121	3568.881	3735.761	4.58	0.38	6.07
−42	3209.731	3358.101	3512.991	4.52	0.37	6.10
−41	3021.201	3158.931	3302.611	4.45	0.36	6.13
−40	2843.201	2971.001	3104.221	4.39	0.36	6.14
−39	2675.361	2793.891	2917.381	4.33	0.35	6.15
−38	2517.271	2627.181	2741.611	4.27	0.35	6.16
−37	2368.511	2470.401	2576.421	4.21	0.34	6.15
−36	2228.641	2323.091	2421.301	4.15	0.34	6.15
−35	2097.241	2184.771	2275.741	4.09	0.33	6.14
−34	1973.851	2054.981	2139.231	4.02	0.33	6.12
−33	1858.061	1933.241	2011.271	3.96	0.32	6.10
−32	1749.431	1819.111	1891.381	3.90	0.32	6.08
−31	1647.551	1712.141	1779.081	3.84	0.32	6.05
−30	1552.031	1611.901	1673.911	3.78	0.31	6.02
−29	1462.481	1517.981	1575.431	3.72	0.31	5.99
−28	1378.531	1430.001	1483.231	3.66	0.31	5.96
−27	1299.841	1347.571	1396.911	3.60	0.30	5.92
−26	1226.081	1270.351	1316.081	3.54	0.30	5.89
−25	1156.931	1198.001	1240.401	3.48	0.30	5.85
−24	1092.091	1130.191	1169.521	3.43	0.29	5.81
−23	1031.281	1066.651	1103.121	3.37	0.29	5.77
−22	974.245	1007.071	1040.911	3.31	0.29	5.73
−21	920.730	951.218	982.617	3.25	0.29	5.69
−20	870.506	898.821	927.964	3.20	0.28	5.65
−19	823.355	849.658	876.714	3.14	0.28	5.61
−18	779.075	803.515	828.639	3.08	0.28	5.57
−17	737.477	760.190	783.525	3.03	0.27	5.53
−16	698.382	719.496	741.173	2.97	0.27	5.49
−15	661.627	681.257	701.400	2.92	0.27	5.44
−14	627.057	645.312	664.031	2.86	0.27	5.40

$B_{25/50}$ = ln[R_N(25)/ R_N(50)]/[1/(25+273.15)-1/(50+273.15)]= 3950K, R_N(25) = 100kΩ, $\left|\frac{R_{MAX}(25)-R_{MIN}(25)}{R_N(25)}\right| \le \pm 1\%$,

T (°C)	Thermistor Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature $\frac{\Delta R_T(T)}{R_N(T)}$ (±%)	Temperature Measurement Error at a Specific Temperature $\Delta T(T)$ (±°C)	Temperature Coefficient α (%/°C)
	Minimum Value $R_{MIN}(T)$	Nominal Value $R_N(T)$	Maximum Value $R_{MAX}(T)$	$\frac{R_{MAX}(T)-R_{MIN}(T)}{R_N(T)}$	$\Delta T(T) = \frac{1℃ \times [R_{MAX}(T)-R_{MIN}(T)]}{R_N(T-1℃)-R_N(T+1℃)}$	$\alpha = \frac{R_N(T+1℃)-R_N(T-1℃)}{2℃ \times R_N(T)}$
−13	594.529	611.508	628.908	2.81	0.26	5.36
−12	563.909	579.704	595.881	2.76	0.26	5.33
−11	535.074	549.769	564.811	2.70	0.26	5.29
−10	507.906	521.580	535.569	2.65	0.25	5.25
−9	482.299	495.025	508.036	2.60	0.25	5.21
−8	458.151	469.996	482.100	2.55	0.25	5.17
−7	435.371	446.397	457.657	2.50	0.24	5.14
−6	413.870	424.135	434.610	2.44	0.24	5.10
−5	393.568	403.124	412.871	2.39	0.24	5.07
−4	374.390	383.287	392.356	2.34	0.23	5.03
−3	356.265	364.549	372.988	2.29	0.23	5.00
−2	339.129	346.841	354.694	2.24	0.23	4.97
−1	322.920	330.100	337.407	2.19	0.23	4.72
0	308.952	315.681	322.524	2.15	0.22	4.88
1	293.061	299.284	305.609	2.10	0.21	5.11
2	279.309	285.102	290.986	2.05	0.21	4.84
3	266.280	271.672	277.145	2.00	0.21	4.81
4	253.931	258.948	264.038	1.95	0.20	4.79
5	242.222	246.890	251.623	1.90	0.20	4.76
6	231.115	235.458	239.857	1.86	0.20	4.73
7	220.576	224.615	228.704	1.81	0.19	4.70
8	210.572	214.327	218.126	1.76	0.19	4.68
9	201.072	204.562	208.091	1.72	0.18	4.65
10	192.048	195.291	198.568	1.67	0.18	4.63
11	183.473	186.485	189.527	1.62	0.18	4.60
12	175.322	178.118	180.941	1.58	0.17	4.58
13	167.572	170.166	172.784	1.53	0.17	4.56
14	160.200	162.606	165.033	1.49	0.16	4.54
15	153.186	155.417	157.665	1.44	0.16	4.51
16	146.511	148.578	150.659	1.40	0.16	4.49
17	140.156	142.069	143.995	1.35	0.15	4.47
18	134.104	135.875	137.655	1.31	0.15	4.45
19	128.340	129.977	131.621	1.26	0.14	4.43
20	122.848	124.359	125.877	1.22	0.14	4.41
21	117.614	119.009	120.408	1.17	0.13	4.39
22	112.624	113.910	115.199	1.13	0.13	4.37
23	107.866	109.050	110.236	1.09	0.12	4.35
24	103.329	104.418	105.508	1.04	0.12	4.33
25	99.001	100.001	101.001	1.00	0.12	4.32
26	94.789	95.787	96.787	1.04	0.12	4.30
27	90.773	91.768	92.766	1.09	0.13	4.28
28	86.942	87.933	88.927	1.13	0.13	4.26
29	83.288	84.273	85.262	1.17	0.14	4.24

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30	79.801	80.780	81.762	1.21	0.14	4.23
31	76.474	77.444	78.419	1.26	0.15	4.21
32	73.298	74.259	75.225	1.30	0.15	4.19
33	70.265	71.216	72.173	1.34	0.16	4.18
34	67.369	68.310	69.256	1.38	0.17	4.16
35	64.604	65.533	66.468	1.42	0.17	4.14
36	61.962	62.879	63.803	1.46	0.18	4.13
37	59.438	60.342	61.254	1.50	0.18	4.11
38	57.025	57.917	58.816	1.55	0.19	4.10
39	54.720	55.598	56.485	1.59	0.19	4.08
40	52.516	53.381	54.254	1.63	0.20	4.06
41	50.409	51.260	52.120	1.67	0.21	4.05
42	48.395	49.231	50.077	1.71	0.21	4.03
43	46.468	47.290	48.122	1.75	0.22	4.02
44	44.625	45.433	46.251	1.79	0.22	4.00
45	42.862	43.655	44.459	1.83	0.23	3.99
46	41.175	41.953	42.743	1.87	0.24	3.97
47	39.560	40.324	41.099	1.91	0.24	3.95
48	38.015	38.765	39.525	1.95	0.25	3.94
49	36.536	37.271	38.017	1.99	0.25	3.92
50	35.120	35.841	36.572	2.03	0.26	3.91
51	33.764	34.470	35.188	2.07	0.27	3.89
52	32.465	33.157	33.861	2.11	0.27	3.88
53	31.222	31.899	32.589	2.14	0.28	3.86
54	30.030	30.694	31.369	2.18	0.28	3.84
55	28.889	29.539	30.200	2.22	0.29	3.83
56	27.795	28.431	29.079	2.26	0.30	3.82
57	26.747	27.369	28.003	2.29	0.30	3.80
58	25.742	26.351	26.972	2.33	0.31	3.78
59	24.779	25.375	25.982	2.37	0.31	3.77
60	23.856	24.438	25.033	2.41	0.32	3.75
61	22.970	23.540	24.122	2.45	0.33	3.74
62	22.121	22.679	23.248	2.48	0.33	3.72
63	21.307	21.852	22.409	2.52	0.34	3.71
64	20.526	21.058	21.603	2.56	0.35	3.69
65	19.776	20.297	20.829	2.59	0.35	3.68
66	19.057	19.566	20.087	2.63	0.36	3.66
67	18.367	18.864	19.373	2.67	0.37	3.65
68	17.704	18.190	18.688	2.70	0.37	3.63
69	17.068	17.543	18.030	2.74	0.38	3.61
70	16.458	16.922	17.398	2.78	0.39	3.60
71	15.872	16.325	16.790	2.81	0.39	3.58
72	15.309	15.752	16.206	2.85	0.40	3.57

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73	14.768	15.201	15.645	2.88	0.41	3.55
74	14.249	14.672	15.105	2.92	0.41	3.54
75	13.750	14.163	14.587	2.95	0.42	3.52
76	13.270	13.674	14.088	2.99	0.43	3.51
77	12.810	13.204	13.609	3.03	0.43	3.49
78	12.367	12.752	13.147	3.06	0.44	3.48
79	11.941	12.317	12.704	3.10	0.45	3.46
80	11.532	11.899	12.277	3.13	0.45	3.45
81	11.139	11.497	11.866	3.16	0.46	3.43
82	10.760	11.110	11.471	3.20	0.47	3.42
83	10.396	10.738	11.090	3.23	0.48	3.40
84	10.046	10.380	10.724	3.27	0.48	3.38
85	9.709	10.036	10.372	3.30	0.49	3.37
86	9.385	9.704	10.032	3.33	0.50	3.36
87	9.073	9.384	9.705	3.37	0.50	3.34
88	8.773	9.077	9.390	3.40	0.51	3.32
89	8.484	8.781	9.087	3.43	0.52	3.31
90	8.206	8.496	8.795	3.47	0.53	3.30
91	7.938	8.221	8.514	3.50	0.53	3.28
92	7.680	7.957	8.242	3.53	0.54	3.26
93	7.432	7.702	7.981	3.56	0.55	3.25
94	7.193	7.456	7.729	3.59	0.56	3.23
95	6.962	7.220	7.486	3.63	0.56	3.22
96	6.740	6.991	7.252	3.66	0.57	3.21
97	6.526	6.771	7.026	3.69	0.58	3.19
98	6.319	6.559	6.808	3.73	0.59	3.17
99	6.120	6.355	6.598	3.76	0.62	3.03
100	5.944	6.174	6.411	3.78	0.60	3.14
101	5.744	5.967	6.199	3.81	0.58	3.27
102	5.565	5.784	6.011	3.86	0.62	3.11
103	5.393	5.607	5.828	3.88	0.62	3.10
104	5.227	5.436	5.653	3.92	0.63	3.09
105	5.067	5.271	5.483	3.95	0.64	3.07
106	4.912	5.112	5.319	3.98	0.65	3.06
107	4.763	4.958	5.160	4.00	0.66	3.05
108	4.619	4.810	5.008	4.04	0.67	3.02
109	4.480	4.667	4.860	4.07	0.67	3.02
110	4.346	4.528	4.717	4.10	0.68	3.00
111	4.217	4.395	4.579	4.12	0.69	2.99
112	4.092	4.265	4.446	4.15	0.70	2.98
113	3.971	4.141	4.317	4.18	0.71	2.96
114	3.854	4.020	4.193	4.22	0.72	2.95
115	3.741	3.904	4.073	4.25	0.72	2.93

$B_{25/50} = \ln[R_N(25)/ R_N(50)]/[1/(25+273.15)-1/(50+273.15)] = 3950K$, $R_N(25) = 100k\Omega$, $\left|\frac{R_{MAX}(25)-R_{MIN}(25)}{R_N(25)}\right| \leq \pm 1\%$,

T (°C)	Thermistor Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature $\frac{\Delta R_T(T)}{R_N(T)}$ (±%)	Temperature Measurement Error at a Specific Temperature $\Delta T(T)$ (±°C)	Temperature Coefficient α (%/°C)
	Minimum Value $R_{MIN}(T)$	Nominal Value $R_N(T)$	Maximum Value $R_{MAX}(T)$	$\frac{R_{MAX}(T)-R_{MIN}(T)}{R_N(T)}$	$\Delta T(T) = \frac{1℃ \times [R_{MAX}(T)-R_{MIN}(T)]}{R_N(T-1℃)-R_N(T+1℃)}$	$\alpha = \frac{R_N(T+1℃)-R_N(T-1℃)}{2℃ \times R_N(T)}$
116	3.632	3.791	3.956	4.27	0.73	2.93
117	3.527	3.682	3.844	4.30	0.74	2.91
118	3.425	3.577	3.735	4.33	0.75	2.89
119	3.327	3.475	3.630	4.36	0.76	2.88
120	3.231	3.377	3.528	4.40	0.77	2.87
121	3.139	3.281	3.429	4.42	0.77	2.86
122	3.050	3.189	3.334	4.45	0.78	2.84
123	2.964	3.100	3.242	4.48	0.79	2.82
124	2.881	3.014	3.152	4.50	0.80	2.82
125	2.800	2.930	3.066	4.54	0.81	2.80
126	2.722	2.850	2.982	4.56	0.82	2.79
127	2.647	2.771	2.901	4.58	0.82	2.78
128	2.574	2.696	2.823	4.62	0.84	2.76
129	2.503	2.622	2.747	4.65	0.84	2.77
130	2.435	2.551	2.673	4.66	0.85	2.74
131	2.368	2.482	2.602	4.71	0.87	2.72
132	2.304	2.416	2.533	4.74	0.87	2.71
133	2.242	2.351	2.465	4.74	0.88	2.70
134	2.182	2.289	2.401	4.78	0.89	2.69
135	2.123	2.228	2.338	4.82	0.90	2.69
136	2.067	2.169	2.277	4.84	0.91	2.67
137	2.012	2.112	2.217	4.85	0.92	2.65
138	1.959	2.057	2.160	4.89	0.93	2.63
139	1.908	2.004	2.104	4.89	0.93	2.62
140	1.858	1.952	2.050	4.92	0.93	2.64
141	1.809	1.901	1.998	4.97	0.95	2.60
142	1.762	1.853	1.947	4.99	0.96	2.59
143	1.717	1.805	1.898	5.01	0.96	2.60
144	1.673	1.759	1.850	5.03	0.98	2.56
145	1.630	1.715	1.804	5.07	0.99	2.57
146	1.588	1.671	1.758	5.09	0.99	2.57
147	1.548	1.629	1.715	5.13	1.02	2.52
148	1.509	1.589	1.672	5.13	1.02	2.52
149	1.471	1.549	1.631	5.16	1.03	2.52
150	1.434	1.511	1.591	5.20	1.03	2.51
151	1.398	1.473	1.552	5.23	1.04	2.51
152	1.363	1.437	1.514	5.25	1.06	2.47
153	1.330	1.402	1.477	5.24	1.07	2.46
154	1.297	1.368	1.442	5.30	1.07	2.49
155	1.265	1.334	1.407	5.32	1.08	2.47
156	1.234	1.302	1.373	5.34	1.10	2.42
157	1.204	1.271	1.341	5.39	1.10	2.44
158	1.175	1.240	1.309	5.40	1.12	2.42

$B_{25/50}$ = ln[R_N(25)/ R_N(50)]/[1/(25+273.15)-1/(50+273.15)]= 3950K, R_N(25) = 100kΩ, $\left|\frac{R_{MAX}(25)-R_{MIN}(25)}{R_N(25)}\right| \le \pm 1\%$,

T (°C)	Thermistor Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature $\frac{\Delta R_T(T)}{R_N(T)}$ (±%)	Temperature Measurement Error at a Specific Temperature $\Delta T(T)$ (±°C)	Temperature Coefficient α (%/°C)
	Minimum Value $R_{MIN}(T)$	Nominal Value $R_N(T)$	Maximum Value $R_{MAX}(T)$	$\frac{R_{MAX}(T)-R_{MIN}(T)}{R_N(T)}$	$\Delta T(T) = \frac{1℃ \times [R_{MAX}(T)-R_{MIN}(T)]}{R_N(T-1℃)-R_N(T+1℃)}$	$\alpha = \frac{R_N(T+1℃)-R_N(T-1℃)}{2℃ \times R_N(T)}$
159	1.147	1.211	1.278	5.41	1.13	2.39
160	1.119	1.182	1.248	5.46	1.13	2.41
161	1.092	1.154	1.219	5.50	1.15	2.38
162	1.066	1.127	1.190	5.50	1.15	2.40
163	1.041	1.100	1.162	5.50	1.14	2.41
164	1.017	1.074	1.135	5.49	1.16	2.37
165	0.993	1.049	1.109	5.53	1.18	2.34
166	0.969	1.025	1.084	5.61	1.20	2.34
167	0.947	1.001	1.059	5.59	1.19	2.35
168	0.925	0.978	1.035	5.62	1.22	2.30
169	0.903	0.956	1.011	5.65	1.23	2.30
170	0.883	0.934	0.989	5.67	1.23	2.30
171	0.862	0.913	0.966	5.70	1.24	2.30
172	0.843	0.892	0.945	5.72	1.24	2.30
173	0.823	0.872	0.924	5.79	1.29	2.24
174	0.805	0.853	0.903	5.74	1.26	2.29
175	0.787	0.833	0.883	5.76	1.26	2.28
176	0.769	0.815	0.864	5.83	1.32	2.21
177	0.752	0.797	0.845	5.83	1.29	2.26
178	0.735	0.779	0.826	5.84	1.30	2.25
179	0.719	0.762	0.808	5.84	1.31	2.23
180	0.703	0.745	0.791	5.91	1.33	2.21
181	0.687	0.729	0.774	5.97	1.36	2.19
182	0.672	0.713	0.757	5.96	1.37	2.17
183	0.657	0.698	0.741	6.02	1.40	2.15
184	0.643	0.683	0.725	6.00	1.37	2.20
185	0.629	0.668	0.709	5.99	1.38	2.17
186	0.616	0.654	0.694	5.96	1.39	2.14
187	0.602	0.640	0.680	6.09	1.39	2.19
188	0.589	0.626	0.666	6.15	1.43	2.16
189	0.577	0.613	0.652	6.12	1.44	2.12
190	0.565	0.600	0.638	6.08	1.46	2.08
191	0.553	0.588	0.625	6.12	1.44	2.13
192	0.541	0.575	0.612	6.17	1.42	2.17
193	0.530	0.563	0.599	6.13	1.50	2.04
194	0.519	0.552	0.587	6.16	1.48	2.08
195	0.508	0.540	0.575	6.20	1.46	2.13
196	0.497	0.529	0.563	6.24	1.50	2.08
197	0.487	0.518	0.552	6.27	1.55	2.03
198	0.477	0.508	0.541	6.30	1.60	1.97
199	0.467	0.498	0.530	6.33	1.58	2.01
200	0.458	0.488	0.519	6.25	1.53	2.05
201	0.448	0.478	0.509	6.38	1.53	2.09

$B_{25/50}$ = ln[R_N(25)/ R_N(50)]/[1/(25+273.15)-1/(50+273.15)]= 3950K, R_N(25) = 100kΩ, $\left|\frac{R_{MAX}(25)-R_{MIN}(25)}{R_N(25)}\right| \le \pm 1\%$,

T (°C)	Thermistor Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature $\frac{\Delta R_T(T)}{R_N(T)}$ (±%)	Temperature Measurement Error at a Specific Temperature $\Delta T(T)$ (±°C)	Temperature Coefficient α (%/°C)
	Minimum Value $R_{MIN}(T)$	Nominal Value $R_N(T)$	Maximum Value $R_{MAX}(T)$	$\frac{R_{MAX}(T)-R_{MIN}(T)}{R_N(T)}$	$\Delta T(T) = \frac{1℃ \times [R_{MAX}(T)-R_{MIN}(T)]}{R_N(T-1℃)-R_N(T+1℃)}$	$\alpha = \frac{R_N(T+1℃)-R_N(T-1℃)}{2℃ \times R_N(T)}$
202	0.439	0.468	0.499	6.41	1.58	2.03
203	0.430	0.459	0.489	6.43	1.64	1.96
204	0.422	0.450	0.479	6.33	1.58	2.00
205	0.413	0.441	0.470	6.46	1.58	2.04
206	0.405	0.432	0.461	6.48	1.65	1.97
207	0.397	0.424	0.452	6.49	1.62	2.00
208	0.389	0.415	0.443	6.51	1.59	2.05
209	0.382	0.407	0.434	6.39	1.63	1.97
210	0.374	0.399	0.426	6.52	1.73	1.88
211	0.367	0.392	0.418	6.51	1.70	1.91
212	0.360	0.384	0.410	6.51	1.67	1.95
213	0.353	0.377	0.402	6.50	1.63	1.99
214	0.346	0.369	0.395	6.64	1.63	2.03
215	0.339	0.362	0.387	6.63	1.85	1.80
216	0.333	0.356	0.380	6.60	1.81	1.83
217	0.326	0.349	0.373	6.73	1.68	2.01
218	0.320	0.342	0.366	6.73	1.77	1.90
219	0.314	0.336	0.359	6.70	1.88	1.79
220	0.308	0.330	0.352	6.67	1.83	1.82
221	0.302	0.324	0.346	6.79	1.83	1.85
222	0.297	0.318	0.340	6.76	1.79	1.89
223	0.291	0.312	0.333	6.73	1.75	1.92
224	0.286	0.306	0.327	6.70	1.71	1.96
225	0.281	0.300	0.322	6.83	1.86	1.83
226	0.275	0.295	0.316	6.95	2.05	1.69
227	0.270	0.290	0.310	6.90	1.82	1.90
228	0.266	0.284	0.305	6.87	1.77	1.94
229	0.261	0.279	0.299	6.81	1.90	1.79
230	0.256	0.274	0.294	6.93	1.90	1.82
231	0.251	0.269	0.289	7.06	2.11	1.67
232	0.247	0.265	0.284	6.98	2.06	1.70
233	0.243	0.260	0.279	6.92	1.80	1.92
234	0.238	0.255	0.274	7.06	2.00	1.76
235	0.234	0.251	0.269	6.97	2.19	1.59
236	0.230	0.247	0.264	6.88	1.89	1.82
237	0.226	0.242	0.260	7.02	1.89	1.86
238	0.222	0.238	0.255	6.93	2.06	1.68
239	0.218	0.234	0.251	7.05	2.06	1.71
240	0.214	0.230	0.247	7.17	2.06	1.74
241	0.211	0.226	0.243	7.08	2.00	1.77
242	0.207	0.222	0.239	7.21	2.29	1.58
243	0.204	0.219	0.235	7.08	2.21	1.60
244	0.200	0.215	0.231	7.21	1.94	1.86

$B_{25/50}$ = ln[R_N(25)/ R_N(50)]/[1/(25+273.15)-1/(50+273.15)]= 3950K, R_N(25) = 100kΩ, $\left|\frac{R_{MAX}(25)-R_{MIN}(25)}{R_N(25)}\right| \le \pm 1\%$,

T (°C)	Thermistor Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature $\frac{\Delta R_T(T)}{R_N(T)}$ (±%)	Temperature Measurement Error at a Specific Temperature $\Delta T(T)$ (±°C)	Temperature Coefficient α (%/°C)
	Minimum Value	Nominal Value	Maximum Value	$\frac{R_{MAX}(T)-R_{MIN}(T)}{R_N(T)}$	$\Delta T(T) = \frac{1℃\times[R_{MAX}(T)-R_{MIN}(T)]}{R_N(T-1℃)-R_N(T+1℃)}$	$\alpha = \frac{R_N(T+1℃)-R_N(T-1℃)}{2℃\times R_N(T)}$
	$R_{MIN}(T)$	$R_N(T)$	$R_{MAX}(T)$			
245	0.197	0.211	0.227	7.11	2.14	1.66
246	0.193	0.208	0.223	7.21	2.14	1.68
247	0.190	0.204	0.220	7.35	2.14	1.72
248	0.187	0.201	0.216	7.21	2.42	1.49
249	0.184	0.198	0.212	7.07	2.33	1.52
250	0.181	0.195	0.209	7.18	2.33	1.52

To ensure optimal performance and reliability, it is recommended to follow proper storage procedures for the ATH100K1R8B3950K 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 ℃ to +45 ℃, 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.

When soldering the ATH100K1R8B3950K 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.
2. Please note that the products and specifications described in this publication are subject to change without prior notice as we continuously improve our products. Therefore, we recommend checking the product descriptions and specifications before placing an order to ensure that they are still applicable. We also reserve the right to discontinue the production and delivery of certain products, which means that not all products named in this publication may always be available.
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9. ATI retains ownership of all rights for special technologies, techniques, and designs for its products and projects, as well as any modifications, improvements, and inventions made by ATI.

10. Please note that despite operating the passive electronic components as specified, malfunctions or failures before the end of their usual service life may still occur in individual cases due to the current state of the art. Therefore, in customer applications that require a high level of operational safety, especially those in which the malfunction or failure of a passive electronic component could pose a threat to human life or health (such as in accident prevention or life-saving systems), it is essential to ensure through suitable design of the customer application or other measures taken by the customer (such as the installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of a passive electronic component malfunction or failure.