

Figure 1. The Physical Photo of ATH5K1R8B3950K

MAIN FEATURES

Glass Encapsulated for Long Term Stability & Reliability
 High Stability: $<0.1^{\circ}\text{C}/\text{year}$
 Small Size: $\phi 1.8\text{mm} \times 3.7\text{mm}$
 High Resistance Accuracy: 1%
 Quick Response Time: $\leq 20\text{s}$
 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 ATH5K1R8B3950K thermistor with its dimensions marked. In contrast to conventional epoxy-encapsulated thermistors, the ATH5K1R8B3950K offers superior long-term stability and a wider temperature range. Moreover, it has a compact size and a quick response time.

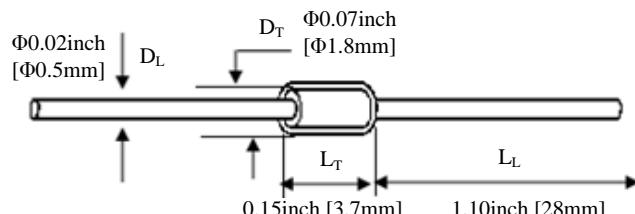


Figure 2. Side View of ATH5K1R8B3950K

SPECIFICATIONS

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

APPLICATION

Comparing with glass encapsulated bead or radial leaded thermistors, this axial leaded thermistor, ATH5K1R8B3950K, 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

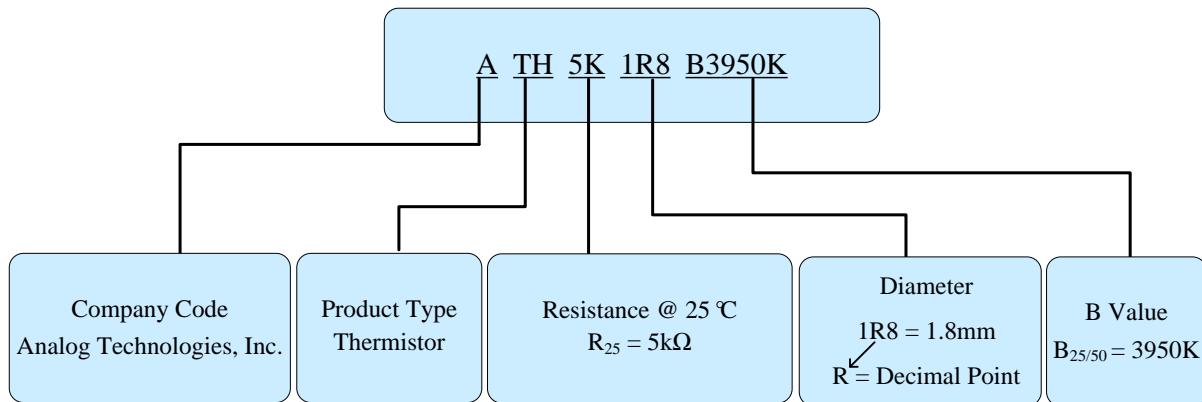


Figure 3. Part Number Convention of ATH5K1R8B3950K

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: $5 \pm 1\text{N}$, Time Duration: $10 \pm 1\text{s}$	No Obvious Appearance Damage $\Delta R_{25}/R_{25} \leq \pm 2\%$
2	Solderability	IEC60068-2-20	Temperature: $245^\circ\text{C} \pm 5^\circ\text{C}$ Time Duration: $2 \sim 3\text{s}$	Coverage area $\geq 95\%$.
3	Withstand Soldering Temperature	IEC60068-2-20	Solder Pot Temperature: $260^\circ\text{C} \pm 5^\circ\text{C}$ Immerse leads 6mm away from thermistor body Time Duration: $5 \pm 1\text{s}$	$\Delta R_{25}/R_{25} \leq \pm 2\%$
4	Humidity and Heat Sustainability	IEC60068-2-78	Temperature: $40^\circ\text{C} \pm 2^\circ\text{C}$ Humidity: $93\% \pm 2\%$ Time Duration: 500hrs	$\Delta R_{25}/R_{25} \leq \pm 2\%$
5	Thermal Cycling Sustainability	IEC60068-2-14	$-55^\circ\text{C} 30\text{min} \rightarrow 25^\circ\text{C} 5\text{min} \rightarrow 250^\circ\text{C} 30\text{min} \rightarrow 25^\circ\text{C} 5\text{min}$, 5 cycles	$\Delta R_{25}/R_{25} \leq \pm 2\%$
6	High Temperature Storage Sustainability	IEC60068-2-2	Temperature: $250^\circ\text{C} \pm 5^\circ\text{C}$ 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	$\Delta R_{25}/R_{25} \leq \pm 2\%$



Analog Technologies

Ultra-Stable Axial Leaded Thermistor

ATH5K1R8B3950K

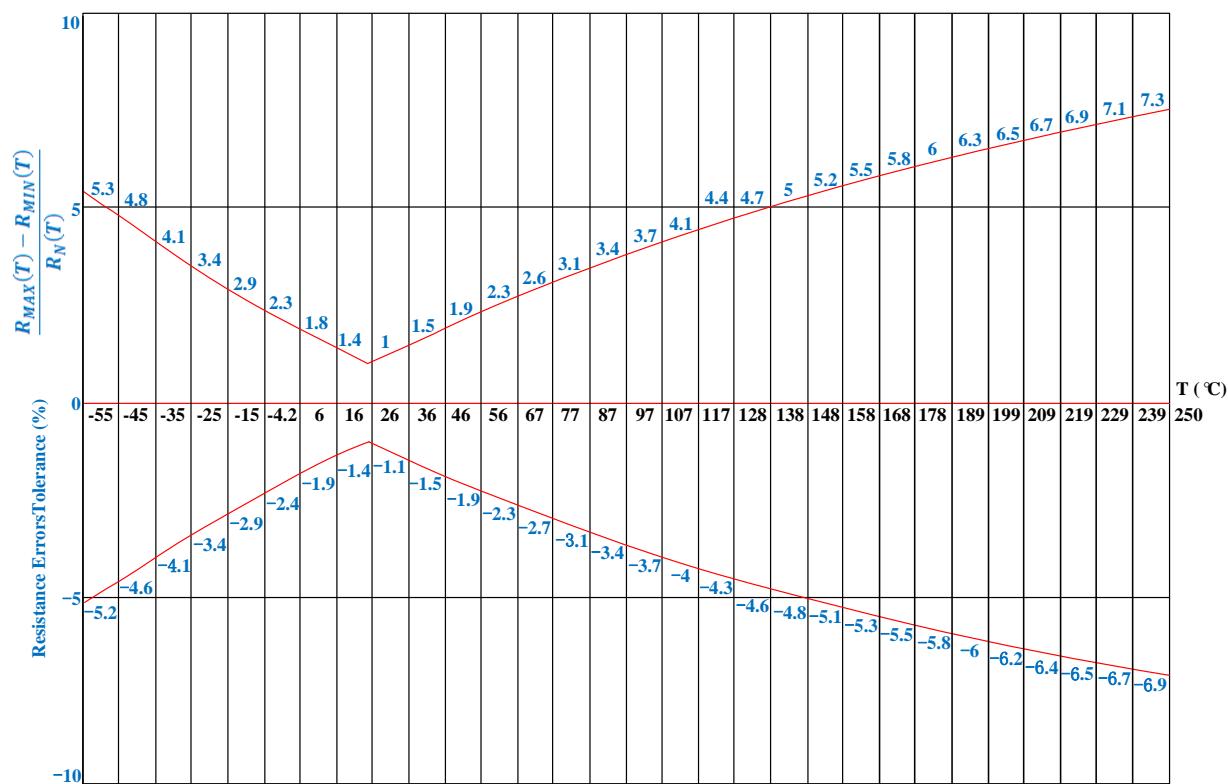


Figure 4. Resistance Tolerance vs. Temperature

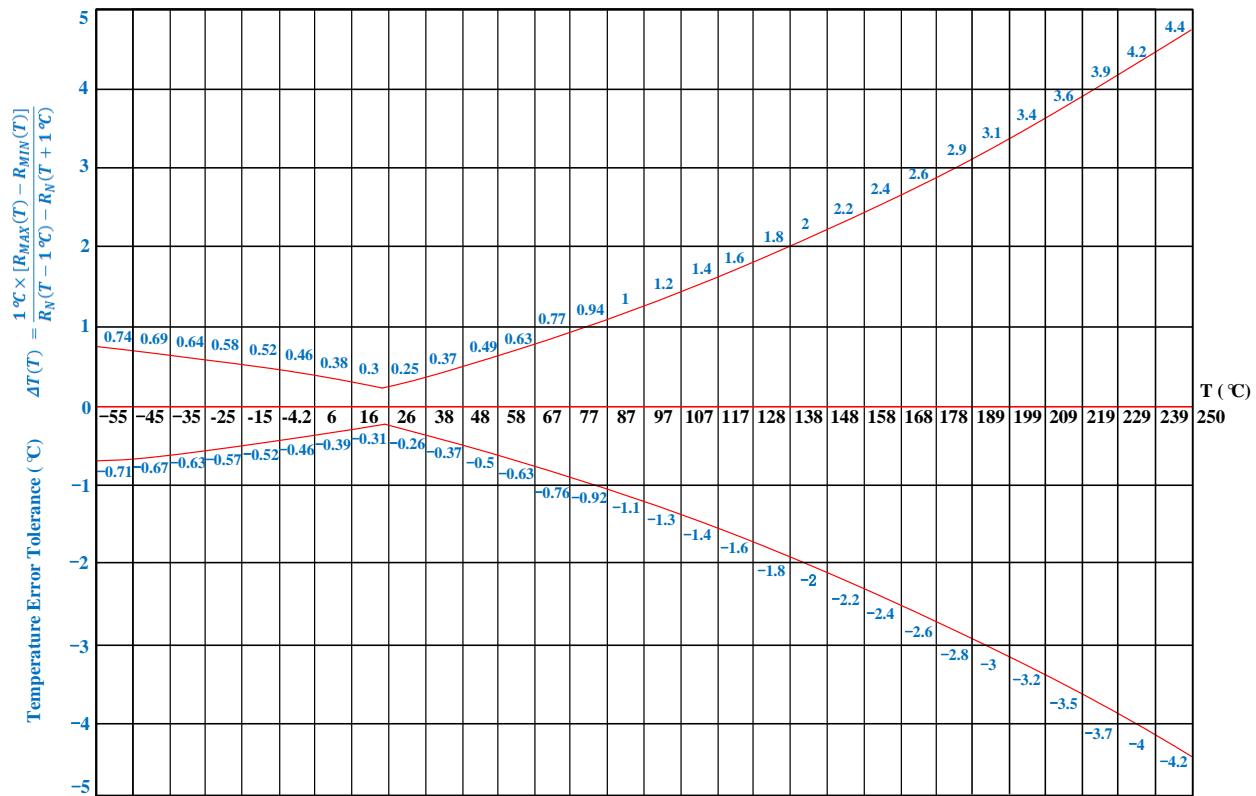


Figure 5. Temperature Tolerance vs. Temperature

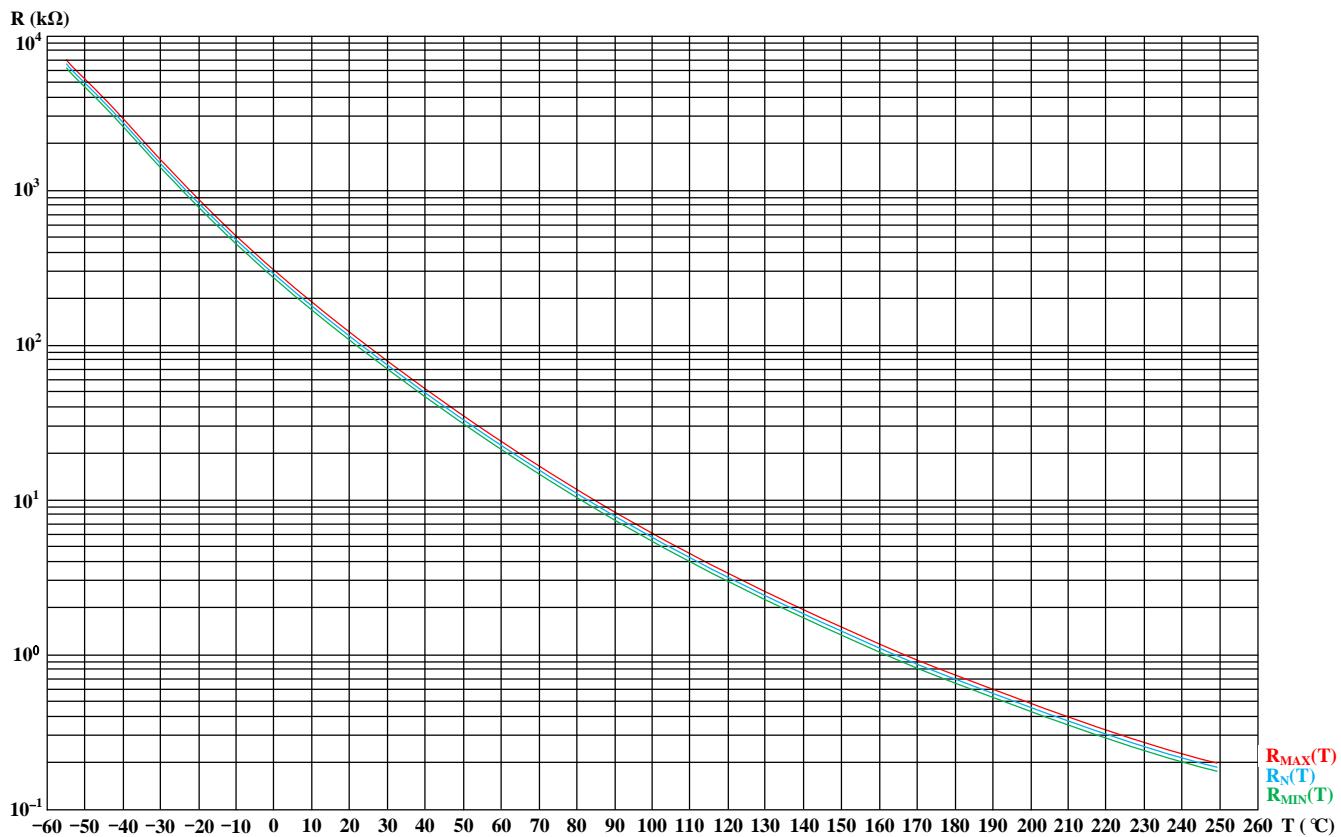


Figure 6. Resistance Tolerance vs. Temperature



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RESISTANCE TEMPERATURE CHARACTERISTICS

$$B_{25/50} = \ln[R_N(25)/R_N(50)]/[1/(25+273.15)-1/(50+273.15)] = 3950\text{K}, R_N(25) = 5\text{k}\Omega, \left| \frac{R_{MAX}(25)-R_{MIN}(25)}{R_N(25)} \right| \leq \pm 1\%,$$

T (°C)	Thermistor Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature $\frac{\Delta R_T(T)}{R_N(T)} (\pm\%)$	Temperature Measurement Error at a Specific Temperature $\Delta T(T) (\pm^\circ\text{C})$	Temperature Coefficient α (%/°C)
	Minimum Value	Nominal Value	Maximum Value			
	R _{MIN} (T)	R _N (T)	R _{MAX} (T)			
-50	271.047	285.081	299.813	5.05	0.78	3.32
-49	263.338	276.892	291.116	5.02	0.77	3.25
-48	254.122	267.106	280.726	4.98	0.64	3.88
-47	243.835	256.187	269.137	4.94	0.56	4.41
-46	232.851	244.533	256.775	4.89	0.50	4.85
-45	221.483	232.477	243.992	4.84	0.46	5.21
-44	209.983	220.287	231.074	4.79	0.43	5.52
-43	198.550	208.175	218.245	4.73	0.41	5.76
-42	187.337	196.303	205.678	4.67	0.39	5.96
-41	176.457	184.791	193.499	4.61	0.38	6.11
-40	165.988	173.721	181.795	4.55	0.37	6.23
-39	155.985	163.149	170.624	4.49	0.36	6.32
-38	146.478	153.108	160.022	4.42	0.35	6.38
-37	137.483	143.614	150.003	4.36	0.34	6.42
-36	129.001	134.667	140.568	4.29	0.33	6.44
-35	121.026	126.260	131.708	4.23	0.33	6.45
-34	113.544	118.378	123.406	4.17	0.32	6.45
-33	106.535	111.000	115.640	4.10	0.32	6.43
-32	99.979	104.102	108.384	4.04	0.32	6.41
-31	93.852	97.659	101.612	3.97	0.31	6.38
-30	88.129	91.646	95.294	3.91	0.31	6.34
-29	82.785	86.035	89.403	3.85	0.31	6.30
-28	77.797	80.800	83.911	3.78	0.30	6.26
-27	73.141	75.917	78.791	3.72	0.30	6.22
-26	68.795	71.362	74.017	3.66	0.30	6.17
-25	64.736	67.111	69.565	3.60	0.29	6.12
-24	60.945	63.142	65.411	3.54	0.29	6.08
-23	57.403	59.436	61.535	3.48	0.29	6.03
-22	54.092	55.974	57.916	3.42	0.29	5.98
-21	50.996	52.739	54.536	3.36	0.28	5.94
-20	48.098	49.713	51.376	3.30	0.28	5.89
-19	45.385	46.882	48.422	3.24	0.28	5.85
-18	42.845	44.231	45.658	3.18	0.27	5.80
-17	40.463	41.749	43.071	3.12	0.27	5.76
-16	38.230	39.422	40.647	3.07	0.27	5.72



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T (°C)	Thermistor Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature $\frac{\Delta R_T(T)}{R_N(T)} (\pm\%)$	Temperature Measurement Error at a Specific Temperature $\Delta T(T) (\pm^\circ\text{C})$	Temperature Coefficient α (%/°C)
	Minimum Value	Nominal Value	Maximum Value			
	R _{MIN} (T)	R _N (T)	R _{MAX} (T)			
-15	36.136	37.241	38.376	3.01	0.26	5.68
-14	34.169	35.194	36.247	2.95	0.26	5.64
-13	32.322	33.273	34.249	2.90	0.26	5.60
-12	30.587	31.469	32.374	2.84	0.26	5.56
-11	28.955	29.774	30.613	2.78	0.25	5.52
-10	27.420	28.181	28.959	2.73	0.25	5.49
-9	25.976	26.682	27.404	2.68	0.25	5.45
-8	24.617	25.272	25.941	2.62	0.24	5.42
-7	23.336	23.944	24.565	2.57	0.24	5.38
-6	22.130	22.694	23.270	2.51	0.23	5.35
-5	20.992	21.516	22.051	2.46	0.23	5.32
-4	19.920	20.406	20.902	2.41	0.23	5.28
-3	18.908	19.360	19.820	2.36	0.22	5.25
-2	17.954	18.373	18.799	2.30	0.22	5.22
-1	17.052	17.441	17.837	2.25	0.21	5.34
0	16.150	16.510	16.875	2.20	0.21	5.18
1	15.397	15.732	16.073	2.15	0.22	4.96
2	14.638	14.948	15.264	2.09	0.21	5.10
3	13.920	14.208	14.500	2.04	0.20	5.07
4	13.241	13.508	13.779	1.99	0.20	5.04
5	12.598	12.846	13.098	1.95	0.19	5.01
6	11.991	12.221	12.454	1.89	0.19	4.98
7	11.416	11.629	11.845	1.84	0.19	4.95
8	10.872	11.069	11.269	1.79	0.18	4.92
9	10.357	10.540	10.725	1.75	0.17	5.05
10	9.835	10.004	10.174	1.69	0.17	4.88
11	9.406	9.563	9.722	1.65	0.18	4.66
12	8.968	9.113	9.260	1.60	0.17	4.81
13	8.553	8.687	8.823	1.55	0.16	4.78
14	8.159	8.283	8.409	1.51	0.16	4.74
15	7.786	7.901	8.016	1.46	0.15	4.71
16	7.432	7.538	7.644	1.41	0.15	4.69
17	7.096	7.194	7.292	1.36	0.15	4.66
18	6.777	6.867	6.958	1.32	0.14	4.64
19	6.474	6.557	6.641	1.27	0.14	4.61
20	6.187	6.263	6.340	1.22	0.13	4.57
21	5.914	5.984	6.055	1.18	0.13	4.55
22	5.654	5.719	5.784	1.14	0.13	4.52
23	5.408	5.467	5.527	1.09	0.12	4.49
24	5.173	5.228	5.282	1.04	0.12	4.46



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T (°C)	Thermistor Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature $\frac{\Delta R_T(T)}{R_N(T)} (\pm\%)$	Temperature Measurement Error at a Specific Temperature $\Delta T(T) (\pm^\circ\text{C})$	Temperature Coefficient α (%/°C)
	Minimum Value	Nominal Value	Maximum Value			
	R _{MIN} (T)	R _N (T)	R _{MAX} (T)			
25	4.951	5.001	5.051	1.00	0.11	4.44
26	4.734	4.784	4.834	1.05	0.12	4.41
27	4.529	4.579	4.629	1.09	0.12	4.38
28	4.334	4.383	4.433	1.13	0.13	4.36
29	4.148	4.197	4.247	1.18	0.14	4.32
30	3.972	4.020	4.069	1.21	0.14	4.29
31	3.803	3.852	3.901	1.27	0.15	4.26
32	3.644	3.692	3.740	1.30	0.15	4.24
33	3.491	3.539	3.587	1.36	0.16	4.22
34	3.346	3.393	3.440	1.39	0.17	4.19
35	3.208	3.255	3.301	1.43	0.17	4.16
36	3.077	3.122	3.168	1.46	0.18	4.15
37	2.951	2.996	3.042	1.52	0.18	4.11
38	2.832	2.876	2.921	1.55	0.19	4.09
39	2.718	2.761	2.806	1.59	0.20	4.06
40	2.609	2.652	2.696	1.64	0.20	4.02
41	2.505	2.548	2.591	1.69	0.21	4.00
42	2.406	2.448	2.490	1.72	0.22	3.98
43	2.312	2.353	2.394	1.74	0.22	3.95
44	2.222	2.262	2.303	1.79	0.23	3.93
45	2.135	2.175	2.215	1.84	0.24	3.91
46	2.053	2.092	2.131	1.86	0.24	3.90
47	1.974	2.012	2.051	1.91	0.25	3.85
48	1.899	1.937	1.975	1.96	0.26	3.82
49	1.827	1.864	1.901	1.98	0.26	3.81
50	1.758	1.795	1.831	2.03	0.27	3.79
51	1.693	1.728	1.764	2.05	0.27	3.79
52	1.630	1.664	1.700	2.10	0.28	3.76
53	1.569	1.603	1.638	2.15	0.29	3.71
54	1.512	1.545	1.579	2.17	0.29	3.69
55	1.457	1.489	1.522	2.18	0.30	3.66
56	1.404	1.436	1.468	2.23	0.30	3.66
57	1.353	1.384	1.416	2.28	0.31	3.65
58	1.304	1.335	1.366	2.32	0.32	3.60
59	1.258	1.288	1.319	2.37	0.33	3.57
60	1.213	1.243	1.273	2.41	0.34	3.58
61	1.170	1.199	1.229	2.46	0.35	3.54
62	1.129	1.158	1.186	2.46	0.35	3.50
63	1.090	1.118	1.146	2.50	0.35	3.53
64	1.052	1.079	1.107	2.55	0.36	3.52
65	1.016	1.042	1.069	2.54	0.37	3.45
66	0.981	1.007	1.033	2.58	0.38	3.43
67	0.947	0.973	0.999	2.67	0.39	3.44



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T (°C)	Thermistor Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature $\frac{\Delta R_T(T)}{R_N(T)} (\pm\%)$	Temperature Measurement Error at a Specific Temperature $\Delta T(T) (\pm^\circ\text{C})$	Temperature Coefficient α (%/°C)
	Minimum Value	Nominal Value	Maximum Value			
	$R_{MIN}(T)$	$R_N(T)$	$R_{MAX}(T)$			
68	0.915	0.940	0.966	2.71	0.40	3.40
69	0.884	0.909	0.934	2.75	0.41	3.36
70	0.855	0.879	0.903	2.73	0.41	3.36
71	0.826	0.850	0.873	2.76	0.41	3.35
72	0.799	0.822	0.845	2.80	0.42	3.35
73	0.772	0.795	0.818	2.89	0.43	3.33
74	0.747	0.769	0.791	2.86	0.43	3.32
75	0.723	0.744	0.766	2.89	0.44	3.29
76	0.699	0.720	0.742	2.99	0.46	3.26
77	0.677	0.697	0.718	2.94	0.46	3.23
78	0.655	0.675	0.695	2.96	0.45	3.26
79	0.634	0.653	0.674	3.06	0.48	3.22
80	0.614	0.633	0.653	3.08	0.49	3.16
81	0.594	0.613	0.632	3.10	0.49	3.18
82	0.576	0.594	0.613	3.11	0.50	3.11
83	0.558	0.576	0.594	3.12	0.50	3.12
84	0.540	0.558	0.576	3.23	0.47	3.41
85	0.520	0.538	0.555	3.25	0.51	3.16
86	0.507	0.524	0.542	3.34	0.58	2.86
87	0.492	0.508	0.525	3.25	0.53	3.05
88	0.477	0.493	0.510	3.35	0.55	3.04
89	0.462	0.478	0.494	3.35	0.55	3.03
90	0.448	0.464	0.480	3.45	0.57	3.02
91	0.435	0.450	0.466	3.44	0.57	3.00
92	0.422	0.437	0.452	3.43	0.58	2.97
93	0.409	0.424	0.439	3.54	0.58	3.07
94	0.397	0.411	0.426	3.53	0.58	3.04
95	0.386	0.399	0.414	3.51	0.61	2.88
96	0.374	0.388	0.402	3.61	0.64	2.84
97	0.363	0.377	0.390	3.58	0.61	2.92
98	0.353	0.366	0.379	3.55	0.59	3.01
99	0.343	0.355	0.369	3.66	0.62	2.96
100	0.332	0.345	0.357	3.62	0.66	2.75
101	0.323	0.336	0.348	3.72	0.66	2.83
102	0.314	0.326	0.339	3.83	0.66	2.91
103	0.305	0.317	0.329	3.79	0.67	2.84
104	0.297	0.308	0.320	3.73	0.68	2.76
105	0.289	0.300	0.311	3.67	0.69	2.67
106	0.281	0.292	0.303	3.77	0.69	2.74
107	0.273	0.284	0.295	3.87	0.69	2.82
108	0.265	0.276	0.287	3.99	0.69	2.90
109	0.258	0.268	0.279	3.92	0.70	2.80
110	0.251	0.261	0.272	4.02	0.75	2.68



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	Minimum Value	Nominal Value	Maximum Value			
	R _{MIN} (T)	R _N (T)	R _{MAX} (T)			
111	0.244	0.254	0.264	3.94	0.71	2.76
112	0.238	0.247	0.257	3.85	0.73	2.63
113	0.231	0.241	0.251	4.15	0.83	2.49
114	0.225	0.235	0.244	4.04	0.73	2.77
115	0.219	0.228	0.238	4.17	0.73	2.85
116	0.213	0.222	0.232	4.28	0.86	2.48
117	0.208	0.217	0.226	4.15	0.82	2.53
118	0.202	0.211	0.220	4.27	0.82	2.61
119	0.197	0.206	0.214	4.13	0.77	2.67
120	0.192	0.200	0.209	4.25	0.77	2.75
121	0.187	0.195	0.204	4.36	0.85	2.56
122	0.182	0.190	0.199	4.47	0.94	2.37
123	0.178	0.186	0.194	4.30	0.89	2.42
124	0.173	0.181	0.189	4.42	0.89	2.49
125	0.169	0.177	0.184	4.24	0.83	2.54
126	0.165	0.172	0.180	4.36	0.83	2.62
127	0.161	0.168	0.175	4.17	0.87	2.38
128	0.157	0.164	0.171	4.27	0.88	2.44
129	0.153	0.160	0.167	4.38	0.88	2.50
130	0.149	0.156	0.163	4.49	0.88	2.56
131	0.146	0.152	0.159	4.28	0.93	2.30
132	0.142	0.149	0.155	4.36	0.93	2.35
133	0.139	0.145	0.152	4.48	0.93	2.41
134	0.135	0.142	0.148	4.58	0.93	2.46
135	0.132	0.138	0.145	4.71	0.93	2.54
136	0.129	0.135	0.141	4.44	1.00	2.22
137	0.126	0.132	0.138	4.55	1.00	2.27
138	0.123	0.129	0.135	4.65	1.00	2.33
139	0.120	0.126	0.132	4.76	1.00	2.38
140	0.117	0.123	0.129	4.88	1.00	2.44
141	0.115	0.120	0.126	4.58	1.10	2.08
142	0.112	0.118	0.123	4.66	1.10	2.12
143	0.110	0.115	0.121	4.78	0.92	2.61
144	0.107	0.112	0.118	4.91	1.10	2.23
145	0.105	0.110	0.115	4.55	1.25	1.82
146	0.102	0.108	0.113	5.09	1.10	2.31
147	0.100	0.105	0.110	4.76	1.00	2.38
148	0.098	0.103	0.108	4.85	1.25	1.94
149	0.096	0.101	0.106	4.95	1.25	1.98
150	0.094	0.099	0.103	4.55	0.90	2.53
151	0.092	0.096	0.101	4.69	0.90	2.60
152	0.090	0.094	0.099	4.79	1.13	2.13
153	0.088	0.092	0.097	4.89	1.13	2.17



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ATH5K1R8B3950K

$$B_{25/50} = \ln[R_N(25)/R_N(50)]/[1/(25+273.15)-1/(50+273.15)] = 3950\text{K}, R_N(25) = 5\text{k}\Omega, \left| \frac{R_{MAX}(25) - R_{MIN}(25)}{R_N(25)} \right| \leq \pm 1\%,$$

T (°C)	Thermistor Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature $\frac{\Delta R_T(T)}{R_N(T)} (\pm\%)$	Temperature Measurement Error at a Specific Temperature $\Delta T(T) (\pm^\circ\text{C})$	Temperature Coefficient α (%/°C)
	Minimum Value	Nominal Value	Maximum Value			
	R _{MIN} (T)	R _N (T)	R _{MAX} (T)			
154	0.086	0.090	0.095	5.00	1.50	1.67
155	0.084	0.089	0.093	5.06	1.50	1.69
156	0.082	0.087	0.091	5.17	1.13	2.30
157	0.081	0.085	0.089	4.71	1.00	2.35
158	0.079	0.083	0.087	4.82	1.00	2.41
159	0.077	0.081	0.086	5.56	1.50	1.85
160	0.076	0.080	0.084	5.00	1.33	1.88
161	0.074	0.078	0.082	5.13	1.33	1.92
162	0.073	0.077	0.081	5.19	1.33	1.95
163	0.071	0.075	0.079	5.33	1.33	2.00
164	0.070	0.074	0.078	5.41	1.33	2.03
165	0.068	0.072	0.076	5.56	1.33	2.08
166	0.067	0.071	0.075	5.63	1.33	2.11
167	0.066	0.069	0.073	5.07	1.17	2.17
168	0.065	0.068	0.072	5.15	1.75	1.47
169	0.063	0.067	0.070	5.22	1.17	2.24
170	0.062	0.065	0.069	5.38	1.17	2.31
171	0.061	0.064	0.068	5.47	1.75	1.56
172	0.060	0.063	0.066	4.76	1.50	1.59
173	0.059	0.062	0.065	4.84	1.50	1.61
174	0.057	0.061	0.064	5.74	1.17	2.46
175	0.056	0.059	0.063	5.93	1.17	2.54
176	0.055	0.058	0.062	6.03	1.75	1.72
177	0.054	0.057	0.060	5.26	1.50	1.75
178	0.053	0.056	0.059	5.36	1.50	1.79
179	0.052	0.055	0.058	5.45	1.50	1.82
180	0.051	0.054	0.057	5.56	1.50	1.85
181	0.050	0.053	0.056	5.66	1.50	1.89
182	0.049	0.052	0.055	5.77	1.50	1.92
183	0.049	0.051	0.054	4.90	1.25	1.96
184	0.048	0.050	0.053	5.00	2.50	1.00
185	0.047	0.050	0.052	5.00	2.50	1.00
186	0.046	0.049	0.051	5.10	1.25	2.04
187	0.045	0.048	0.051	6.25	1.50	2.08
188	0.044	0.047	0.050	6.38	1.50	2.13
189	0.044	0.046	0.049	5.43	1.25	2.17
190	0.043	0.045	0.048	5.56	2.50	1.11
191	0.042	0.045	0.047	5.56	2.50	1.11
192	0.041	0.044	0.046	5.68	1.25	2.27
193	0.041	0.043	0.046	5.81	1.25	2.33
194	0.040	0.042	0.045	5.95	2.50	1.19
195	0.039	0.042	0.044	5.95	2.50	1.19
196	0.039	0.041	0.043	4.88	1.00	2.44



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ATH5K1R8B3950K

$$B_{25/50} = \ln[R_N(25)/R_N(50)]/[1/(25+273.15)-1/(50+273.15)] = 3950\text{K}, R_N(25) = 5\text{k}\Omega, \left| \frac{R_{MAX}(25) - R_{MIN}(25)}{R_N(25)} \right| \leq \pm 1\%,$$

T (°C)	Thermistor Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature $\frac{\Delta R_T(T)}{R_N(T)} (\pm\%)$	Temperature Measurement Error at a Specific Temperature $\Delta T(T) (\pm^\circ\text{C})$	Temperature Coefficient α (%/°C)
	Minimum Value	Nominal Value	Maximum Value			
	$R_{MIN}(T)$	$R_N(T)$	$R_{MAX}(T)$			
197	0.038	0.040	0.043	6.25	2.50	1.25
198	0.037	0.040	0.042	6.25	2.50	1.25
199	0.037	0.039	0.041	5.13	1.00	2.56
200	0.036	0.038	0.040	5.26	2.00	1.32
201	0.035	0.038	0.040	6.58	2.50	1.32
202	0.035	0.037	0.039	5.41	1.00	2.70
203	0.034	0.036	0.039	6.94	2.50	1.39
204	0.034	0.036	0.038	5.56	2.00	1.39
205	0.033	0.035	0.037	5.71	2.00	1.43
206	0.033	0.035	0.037	5.71	2.00	1.43
207	0.032	0.034	0.036	5.88	1.00	2.94
208	0.032	0.033	0.035	4.55	1.50	1.52
209	0.031	0.033	0.035	6.06	2.00	1.52
210	0.031	0.032	0.034	4.69	1.50	1.56
211	0.030	0.032	0.034	6.25	2.00	1.56
212	0.030	0.031	0.033	4.84	1.50	1.61
213	0.029	0.031	0.033	6.45	2.00	1.61
214	0.029	0.030	0.032	5.00	1.50	1.67
215	0.028	0.030	0.032	6.67	2.00	1.67
216	0.028	0.029	0.031	5.17	1.50	1.72
217	0.027	0.029	0.031	6.90	2.00	1.72
218	0.027	0.028	0.030	5.36	1.50	1.79
219	0.026	0.028	0.030	7.14	1.50	1.79
220	0.026	0.028	0.029	5.36	1.50	1.79
221	0.025	0.027	0.029	7.41	2.00	1.85
222	0.025	0.027	0.028	5.56	1.50	1.85
223	0.025	0.026	0.028	5.77	1.50	1.92
224	0.024	0.026	0.027	5.77	1.50	1.92
225	0.024	0.025	0.027	6.00	1.50	2.00
226	0.024	0.025	0.027	6.00	1.50	2.00
227	0.023	0.025	0.026	6.00	1.50	2.00
228	0.023	0.024	0.026	6.25	1.50	2.08
229	0.022	0.024	0.025	6.25	1.50	2.08
230	0.022	0.023	0.025	6.52	1.50	2.17
231	0.022	0.023	0.025	6.52	1.50	2.17
232	0.021	0.023	0.024	6.52	1.50	2.17
233	0.021	0.022	0.024	6.82	1.50	2.27
234	0.021	0.022	0.023	4.55	1.50	2.27
235	0.020	0.022	0.023	6.82	1.50	2.27
236	0.020	0.021	0.023	7.14	1.50	2.38
237	0.020	0.021	0.022	4.76	1.50	2.38
238	0.019	0.021	0.022	7.14	1.50	2.38
239	0.019	0.020	0.022	7.50	1.50	2.50



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ATH5K1R8B3950K

$$B_{25/50} = \ln[R_N(25)/R_N(50)]/[1/(25+273.15)-1/(50+273.15)] = 3950\text{K}, R_N(25) = 5\text{k}\Omega, \left| \frac{R_{MAX}(25) - R_{MIN}(25)}{R_N(25)} \right| \leq \pm 1\%,$$

T (°C)	Thermistor Resistance (kΩ)			Relative Resistance Variation at a Specific Temperature $\frac{\Delta R_T(T)}{R_N(T)} (\pm\%)$	Temperature Measurement Error at a Specific Temperature $\Delta T(T) (\pm^\circ\text{C})$	Temperature Coefficient α (%/°C)
	Minimum Value	Nominal Value	Maximum Value			
	$R_{MIN}(T)$	$R_N(T)$	$R_{MAX}(T)$			
240	0.019	0.020	0.021	5.00	1.50	2.50
241	0.018	0.020	0.021	7.50	1.50	2.50
242	0.018	0.019	0.021	7.89	1.50	2.63
243	0.018	0.019	0.020	5.26	1.50	2.63
244	0.018	0.019	0.020	5.26	1.00	2.63
245	0.017	0.018	0.020	8.33	1.50	2.78
246	0.017	0.018	0.019	5.56	1.50	2.78
247	0.017	0.018	0.019	5.56	1.50	2.78
248	0.016	0.018	0.019	8.33	1.50	2.78
249	0.016	0.017	0.018	5.88	1.00	2.94
250	0.016	0.017	0.018	5.88	1.00	2.94



To ensure optimal performance and reliability, it is recommended to follow proper storage procedures for the ATH5K1R8B3950K 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 $+45^{\circ}\text{C}$, 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 SO_x, 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 ATH5K1R8B3950K 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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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.