Analog Technologies

Ultra-Stable Miniature Thermistor

ATH50K1R3B3950K0.5%

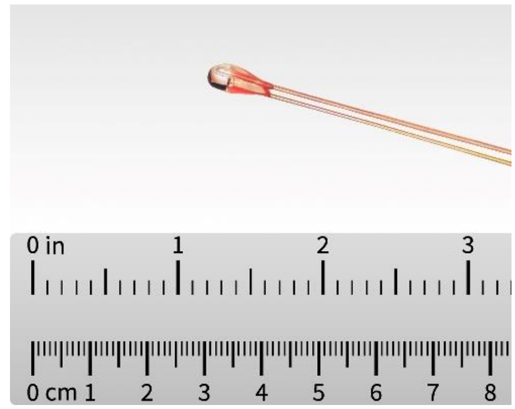

Figure 1. The Physical Photo of ATH50K1R3B3950K0.5%

MAIN FEATURES

Glass Encapsulated for Long Term Stability & Reliability
High Stability: <0.1°C/year
Small Size: ϕ1.3mm ×2.4mm
High Resistance Accuracy: 0.5%
Quick Response Time: 7s
Wide Temp. Range: –55°C to 250°C
Leads: dumet wires (copper-clad FeNi)
100% Lead (Pb)-free and RoHS Compliant

APPLICATIONS

The ATH50K1R3B3950K0.5% 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 ATH50K1R3B3950K0.5% thermistor, which boasts high precision and a glass encapsulation design. In contrast to conventional epoxy-encapsulated thermistors, the ATH50K1R3B3950K0.5% offers superior long-term stability and a wider temperature range. Moreover, it has a compact size and a quick response time.

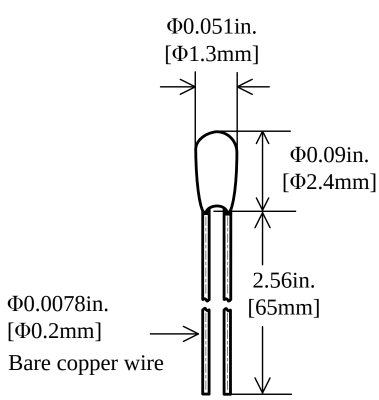

Figure 2. Side View of ATH100K1R3B3950K0.5%

SPECIFICATIONS

Parameters	Symbol	Value
Nominal Resistance @ 25°C	R_{25}	50K ± 0.5%
B Value @ 25°C /50°C	$B_{25/50}$	3950K ± 1%
Thermistor Diameter	D_T	1.3 ± 0.2mm
Thermistor Length	L_T	2.4 ± 0.5mm
Lead Diameter	D_L	0.2± 0.05mm
Lead Length	L_L	65 ± 5mm
Dissipation Factor	δ_{th}	0.9mW/°C
Insulation Resistance	R_{is}	≥100MΩ
Maximum Power @ 25°C	P_{max}	35mW
Time Constant	τ_c	7s (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.

The ATH50K1R3B3950K0.5% thermistor is terminated with leaded bare copper wires. For applications that require 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 ATH50K1R3B3950K0.5% 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.

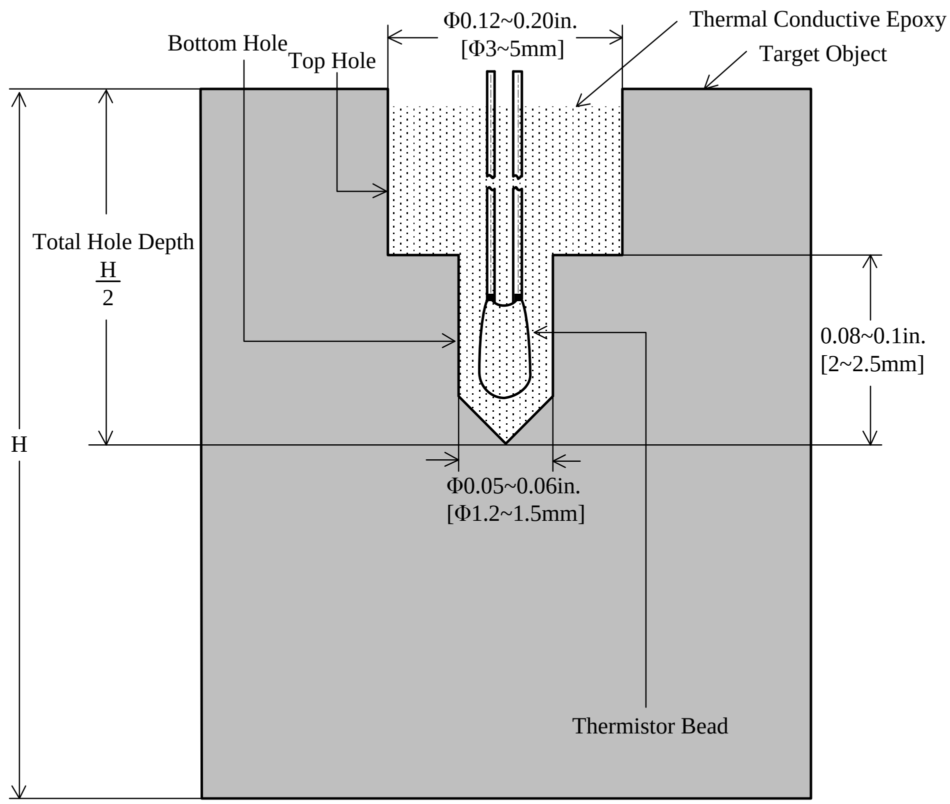

Figure 3. Section View of Recommended Counterbore Hole

PART NUMBER CONVENTION

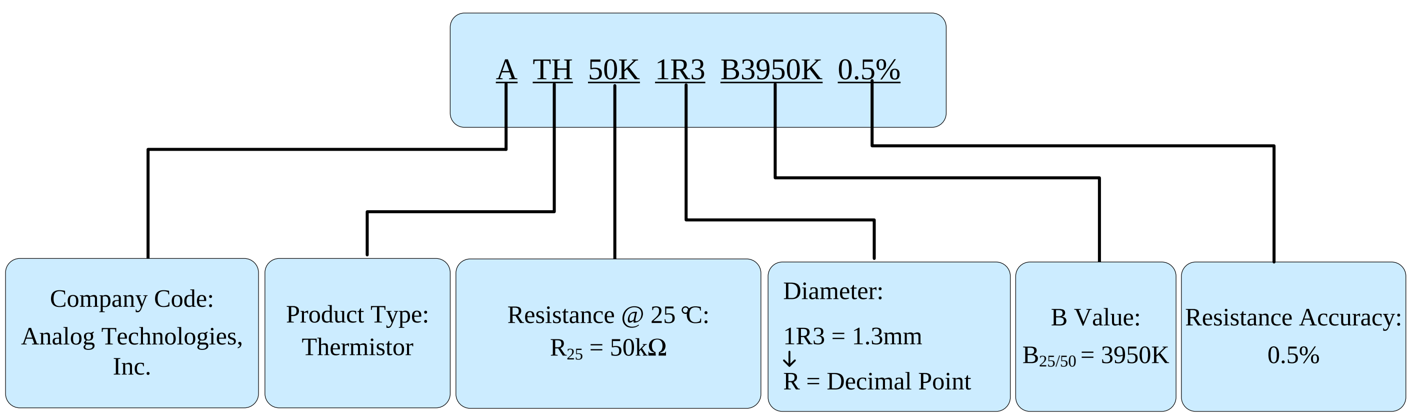

Figure 4. Part Number Convention of ATH100K1R3B3950K0.5%

RESISTANCE TEMPERATURE CHARACTERISTICS

$B_{25/50}$ = 3950K, R_{25} = 50kΩ, T_R = 25°C, $\frac{\Delta R_T}{R_T}$: ± 0.5%,

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	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
−55	3627.351	3807.001	3995.441	4.83	0.05	9.28
−54	3294.611	3454.421	3621.891	4.74	0.26	9.26
−53	3023.041	3166.921	3317.571	4.65	0.28	8.32
−52	2796.621	2927.421	3064.271	4.57	0.30	7.57
−51	2603.821	2723.641	2848.911	4.50	0.32	6.99
−50	2436.281	2546.681	2662.011	4.43	0.34	6.55
−49	2287.861	2390.021	2496.671	4.37	0.35	6.23
−48	2154.091	2248.911	2347.831	4.31	0.36	6.01
−47	2031.711	2119.881	2211.831	4.25	0.36	5.86
−46	1918.341	2000.431	2085.991	4.19	0.36	5.78
−45	1812.281	1888.751	1968.401	4.13	0.36	5.74
−44	1712.351	1783.581	1857.721	4.08	0.36	5.74
−43	1617.691	1684.021	1753.021	4.02	0.35	5.76
−42	1527.761	1589.481	1653.651	3.96	0.34	5.80
−41	1442.171	1499.561	1559.191	3.90	0.33	5.85
−40	1360.681	1414.001	1469.361	3.84	0.33	5.90
−39	1283.131	1332.611	1383.971	3.78	0.32	5.95
−38	1209.401	1255.291	1302.891	3.72	0.31	6.00
−37	1139.411	1181.941	1226.021	3.66	0.30	6.04
−36	1073.091	1112.461	1153.251	3.60	0.30	6.07
−35	1010.351	1046.791	1084.511	3.54	0.29	6.10
−34	951.121	984.820	1019.681	3.48	0.28	6.11
−33	895.287	926.441	958.655	3.42	0.28	6.11
−32	842.745	871.538	901.292	3.36	0.27	6.11
−31	793.374	819.980	847.457	3.30	0.27	6.09
−30	747.041	771.624	796.996	3.24	0.27	6.07
−29	703.608	726.322	749.750	3.18	0.26	6.04
−28	662.927	683.916	705.552	3.12	0.26	6.00
−27	624.851	644.250	664.234	3.06	0.26	5.96
−26	589.231	607.164	625.626	3.00	0.25	5.91
−25	555.918	572.501	589.563	2.94	0.25	5.86

$B_{25/50}$ = 3950K, R_{25} = 50kΩ, T_R = 25°C, $\frac{\Delta R_T}{R_T}$: ± 0.5%,						
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	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
−24	524.768	540.106	555.879	2.88	0.25	5.80
−23	495.638	509.831	524.417	2.82	0.25	5.74
−22	468.394	481.532	495.026	2.77	0.24	5.69
−21	442.906	455.071	467.559	2.71	0.24	5.63
−20	419.050	430.319	441.881	2.65	0.24	5.57
−19	396.711	407.154	417.862	2.60	0.24	5.51
−18	375.779	385.460	395.380	2.54	0.23	5.45
−17	356.152	365.130	374.324	2.49	0.23	5.39
−16	337.736	346.064	354.588	2.43	0.23	5.34
−15	320.443	328.170	336.075	2.38	0.23	5.29
−14	304.191	311.362	318.694	2.33	0.22	5.24
−13	288.904	295.561	302.364	2.28	0.22	5.19
−12	274.514	280.694	287.007	2.23	0.22	5.14
−11	260.956	266.695	272.553	2.17	0.21	5.10
−10	248.171	253.501	258.937	2.12	0.21	5.06
−9	236.107	241.055	246.102	2.07	0.21	5.02
−8	224.713	229.308	233.991	2.02	0.20	4.98
−7	213.943	218.210	222.556	1.97	0.20	4.95
−6	203.757	207.718	211.751	1.92	0.20	4.91
−5	194.115	197.792	201.533	1.88	0.19	4.88
−4	184.983	188.395	191.866	1.83	0.19	4.86
−3	176.329	179.494	182.712	1.78	0.18	4.83
−2	168.122	171.058	174.041	1.73	0.18	4.80
−1	160.335	163.057	165.821	1.68	0.18	4.78
0	152.944	155.467	158.026	1.63	0.17	4.76
1	145.925	148.261	150.631	1.59	0.17	4.74
2	139.256	141.419	143.611	1.54	0.16	4.72
3	132.918	134.919	136.946	1.49	0.16	4.70
4	126.892	128.741	130.614	1.45	0.15	4.68
5	121.160	122.869	124.599	1.40	0.15	4.66
6	115.708	117.285	118.881	1.35	0.15	4.64
7	110.520	111.974	113.445	1.31	0.14	4.63

$B_{25/50}$ = 3950K, R_{25} = 50kΩ, T_R = 25°C, $\frac{\Delta R_T}{R_T}$: ± 0.5%,						
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	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
8	105.581	106.921	108.276	1.26	0.14	4.61
9	100.880	102.113	103.359	1.21	0.13	4.71
10	96.174	97.303	98.442	1.17	0.13	4.59
11	92.140	93.181	94.232	1.12	0.13	4.44
12	88.079	89.034	89.996	1.08	0.12	4.55
13	84.210	85.084	85.966	1.03	0.11	4.53
14	80.524	81.323	82.128	0.99	0.11	4.51
15	77.012	77.741	78.475	0.94	0.10	4.50
16	73.664	74.329	74.997	0.90	0.10	4.48
17	70.474	71.077	71.684	0.85	0.10	4.47
18	67.432	67.980	68.530	0.81	0.09	4.45
19	64.533	65.028	65.525	0.76	0.09	4.43
20	61.768	62.214	62.662	0.72	0.08	4.42
21	59.132	59.533	59.935	0.67	0.08	4.40
22	56.618	56.977	57.337	0.63	0.07	4.38
23	54.220	54.540	54.860	0.59	0.07	4.36
24	51.933	52.216	52.500	0.54	0.06	4.35
25	49.751	50.001	50.250	0.50	0.06	4.33
26	47.627	47.887	48.147	0.54	0.06	4.31
27	45.603	45.872	46.141	0.59	0.07	4.29
28	43.672	43.949	44.225	0.63	0.07	4.28
29	41.831	42.114	42.397	0.67	0.08	4.26
30	40.075	40.363	40.652	0.71	0.08	4.24
31	38.400	38.692	38.986	0.76	0.09	4.22
32	36.802	37.097	37.394	0.80	0.09	4.20
33	35.277	35.575	35.875	0.84	0.10	4.18
34	33.821	34.121	34.423	0.88	0.11	4.16
35	32.431	32.733	33.036	0.92	0.11	4.15
36	31.104	31.406	31.711	0.97	0.12	4.13
37	29.837	30.140	30.444	1.01	0.12	4.11
38	28.627	28.929	29.233	1.05	0.13	4.09
39	27.472	27.772	28.076	1.09	0.13	4.07

$B_{25/50}$ = 3950K, R_{25} = 50kΩ, T_R = 25°C, $\frac{\Delta R_T}{R_T}$: ± 0.5%,						
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	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
40	26.367	26.667	26.969	1.13	0.14	4.05
41	25.312	25.610	25.911	1.17	0.14	4.04
42	24.303	24.599	24.898	1.21	0.15	4.02
43	23.339	23.633	23.930	1.25	0.16	4.00
44	22.417	22.708	23.003	1.29	0.16	3.98
45	21.536	21.824	22.116	1.33	0.17	3.96
46	20.693	20.978	21.267	1.37	0.17	3.95
47	19.886	20.168	20.454	1.41	0.18	3.93
48	19.114	19.393	19.675	1.45	0.18	3.91
49	18.376	18.651	18.930	1.49	0.19	3.89
50	17.669	17.941	18.216	1.52	0.20	3.88
51	16.992	17.260	17.532	1.56	0.20	3.86
52	16.344	16.608	16.876	1.60	0.21	3.84
53	15.724	15.984	16.248	1.64	0.21	3.82
54	15.129	15.386	15.646	1.68	0.22	3.81
55	14.560	14.812	15.068	1.71	0.23	3.79
56	14.014	14.263	14.515	1.76	0.23	3.77
57	13.492	13.736	13.984	1.79	0.24	3.76
58	12.990	13.230	13.475	1.83	0.24	3.74
59	12.510	12.746	12.986	1.87	0.25	3.72
60	12.050	12.281	12.517	1.90	0.26	3.70
61	11.608	11.836	12.067	1.94	0.26	3.69
62	11.184	11.408	11.636	1.98	0.27	3.67
63	10.778	10.998	11.221	2.01	0.28	3.66
64	10.388	10.604	10.823	2.05	0.28	3.64
65	10.014	10.226	10.441	2.09	0.29	3.62
66	9.655	9.863	10.074	2.12	0.29	3.61
67	9.311	9.514	9.722	2.16	0.30	3.59
68	8.980	9.180	9.383	2.19	0.31	3.57
69	8.663	8.858	9.058	2.23	0.31	3.56
70	8.358	8.550	8.745	2.26	0.32	3.54
71	8.065	8.253	8.445	2.30	0.33	3.53

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	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
72	7.784	7.968	8.156	2.33	0.33	3.51
73	7.514	7.694	7.879	2.37	0.34	3.49
74	7.254	7.431	7.612	2.41	0.35	3.47
75	7.005	7.178	7.355	2.44	0.35	3.46
76	6.765	6.935	7.108	2.47	0.36	3.44
77	6.535	6.701	6.871	2.51	0.37	3.42
78	6.313	6.476	6.643	2.55	0.37	3.40
79	6.100	6.260	6.423	2.58	0.38	3.39
80	5.896	6.052	6.212	2.61	0.39	3.37
81	5.699	5.852	6.008	2.64	0.39	3.36
82	5.509	5.659	5.812	2.68	0.40	3.34
83	5.327	5.474	5.624	2.71	0.41	3.32
84	5.152	5.295	5.443	2.75	0.42	3.31
85	4.983	5.124	5.268	2.78	0.42	3.29
86	4.821	4.958	5.099	2.80	0.43	3.28
87	4.664	4.799	4.937	2.84	0.44	3.25
88	4.514	4.646	4.781	2.87	0.44	3.24
89	4.369	4.498	4.631	2.91	0.45	3.22
90	4.230	4.356	4.486	2.94	0.46	3.20
91	4.095	4.219	4.346	2.97	0.47	3.19
92	3.966	4.087	4.211	3.00	0.47	3.17
93	3.841	3.960	4.082	3.04	0.48	3.16
94	3.721	3.837	3.956	3.06	0.49	3.14
95	3.605	3.719	3.836	3.11	0.50	3.12
96	3.493	3.605	3.719	3.13	0.50	3.11
97	3.386	3.495	3.607	3.16	0.51	3.09
98	3.282	3.389	3.498	3.19	0.52	3.08
99	3.182	3.286	3.394	3.23	0.53	3.06
100	3.085	3.188	3.293	3.26	0.54	3.04
101	2.992	3.092	3.195	3.28	0.54	3.04
102	2.902	3.000	3.101	3.32	0.55	3.02
103	2.816	2.911	3.010	3.33	0.56	2.99

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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	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
104	2.732	2.826	2.923	3.38	0.57	2.97
105	2.651	2.743	2.838	3.41	0.57	2.97
106	2.573	2.663	2.756	3.44	0.58	2.95
107	2.498	2.586	2.677	3.46	0.59	2.94
108	2.425	2.511	2.600	3.48	0.60	2.93
109	2.355	2.439	2.526	3.51	0.60	2.91
110	2.287	2.369	2.455	3.55	0.61	2.89
111	2.221	2.302	2.386	3.58	0.63	2.87
112	2.158	2.237	2.319	3.60	0.63	2.86
113	2.096	2.174	2.254	3.63	0.64	2.85
114	2.037	2.113	2.192	3.67	0.65	2.84
115	1.979	2.054	2.131	3.70	0.66	2.82
116	1.924	1.997	2.073	3.73	0.67	2.80
117	1.870	1.942	2.016	3.76	0.67	2.81
118	1.818	1.888	1.961	3.79	0.68	2.78
119	1.768	1.837	1.908	3.81	0.69	2.78
120	1.719	1.786	1.856	3.84	0.69	2.77
121	1.672	1.738	1.806	3.86	0.71	2.73
122	1.626	1.691	1.758	3.90	0.71	2.75
123	1.582	1.645	1.711	3.92	0.72	2.74
124	1.539	1.601	1.666	3.97	0.74	2.69
125	1.498	1.559	1.622	3.98	0.74	2.69
126	1.458	1.517	1.579	3.99	0.74	2.70
127	1.419	1.477	1.537	3.99	0.75	2.67
128	1.381	1.438	1.497	4.03	0.75	2.68
129	1.344	1.400	1.458	4.07	0.77	2.64
130	1.309	1.364	1.421	4.11	0.78	2.64
131	1.274	1.328	1.384	4.14	0.77	2.67
132	1.241	1.293	1.348	4.14	0.79	2.63
133	1.208	1.260	1.314	4.21	0.82	2.58
134	1.177	1.228	1.280	4.19	0.80	2.61
135	1.146	1.196	1.248	4.26	0.81	2.63

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	Minimum	Nominal	Maximum	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
136	1.117	1.165	1.216	4.25	0.82	2.58
137	1.088	1.136	1.185	4.27	0.84	2.55
138	1.060	1.107	1.156	4.34	0.84	2.57
139	1.033	1.079	1.127	4.36	0.85	2.55
140	1.007	1.052	1.098	4.33	0.84	2.57
141	0.981	1.025	1.071	4.39	0.87	2.54
142	0.956	1.000	1.045	4.45	0.89	2.50
143	0.932	0.975	1.019	4.46	0.87	2.56
144	0.909	0.950	0.994	4.47	0.89	2.53
145	0.886	0.927	0.969	4.48	0.90	2.48
146	0.864	0.904	0.946	4.54	0.91	2.49
147	0.842	0.882	0.923	4.59	0.92	2.49
148	0.822	0.860	0.900	4.53	0.91	2.50
149	0.801	0.839	0.878	4.59	0.94	2.44
150	0.782	0.819	0.857	4.58	0.94	2.44
151	0.762	0.799	0.836	4.63	0.93	2.50
152	0.744	0.779	0.816	4.62	0.95	2.44
153	0.726	0.761	0.797	4.66	0.96	2.43
154	0.708	0.742	0.778	4.72	0.95	2.49
155	0.691	0.724	0.760	4.77	0.99	2.42
156	0.674	0.707	0.742	4.81	1.00	2.40
157	0.658	0.690	0.724	4.78	1.00	2.39
158	0.642	0.674	0.707	4.82	1.02	2.37
159	0.627	0.658	0.691	4.86	1.03	2.36
160	0.612	0.643	0.675	4.90	1.05	2.33
161	0.598	0.628	0.659	4.86	1.02	2.39
162	0.584	0.613	0.644	4.89	1.03	2.37
163	0.570	0.599	0.629	4.92	1.05	2.34
164	0.557	0.585	0.614	4.87	1.02	2.39
165	0.544	0.571	0.600	4.90	1.04	2.36
166	0.531	0.558	0.587	5.02	1.08	2.33
167	0.519	0.545	0.573	4.95	1.08	2.29

$B_{25/50}$ = 3950K, R_{25} = 50kΩ, T_R = 25°C, $\frac{\Delta R_T}{R_T}$: ± 0.5%,						
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	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
168	0.507	0.533	0.561	5.07	1.13	2.25
169	0.495	0.521	0.548	5.09	1.10	2.30
170	0.484	0.509	0.536	5.11	1.13	2.26
171	0.473	0.498	0.524	5.12	1.16	2.21
172	0.462	0.487	0.512	5.13	1.14	2.26
173	0.452	0.476	0.501	5.15	1.11	2.31
174	0.442	0.465	0.490	5.16	1.14	2.26
175	0.432	0.455	0.479	5.16	1.18	2.20
176	0.422	0.445	0.469	5.28	1.18	2.25
177	0.413	0.435	0.459	5.29	1.21	2.18
178	0.404	0.426	0.449	5.28	1.25	2.11
179	0.395	0.417	0.439	5.28	1.22	2.16
180	0.387	0.408	0.430	5.27	1.19	2.21
181	0.378	0.399	0.421	5.39	1.26	2.13
182	0.370	0.391	0.412	5.37	1.24	2.17
183	0.362	0.382	0.403	5.37	1.21	2.23
184	0.355	0.374	0.395	5.35	1.33	2.01
185	0.347	0.367	0.387	5.45	1.33	2.04
186	0.340	0.359	0.379	5.43	1.30	2.09
187	0.333	0.352	0.371	5.40	1.27	2.13
188	0.326	0.344	0.364	5.52	1.27	2.18
189	0.319	0.337	0.356	5.49	1.42	1.93
190	0.313	0.331	0.349	5.44	1.38	1.96
191	0.306	0.324	0.342	5.56	1.29	2.16
192	0.300	0.317	0.336	5.68	1.38	2.05
193	0.294	0.311	0.329	5.63	1.46	1.93
194	0.288	0.305	0.323	5.74	1.46	1.97
195	0.283	0.299	0.316	5.52	1.38	2.01
196	0.277	0.293	0.310	5.63	1.50	1.88
197	0.272	0.288	0.304	5.56	1.45	1.91
198	0.267	0.282	0.299	5.67	1.45	1.95
199	0.261	0.277	0.293	5.78	1.60	1.81

$B_{25/50}$ = 3950K, R_{25} = 50kΩ, T_R = 25°C, $\frac{\Delta R_T}{R_T}$: ± 0.5%,						
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	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
200	0.256	0.272	0.287	5.70	1.41	2.02
201	0.252	0.266	0.282	5.64	1.36	2.07
202	0.247	0.261	0.277	5.75	1.67	1.72
203	0.242	0.257	0.272	5.84	1.67	1.75
204	0.238	0.252	0.267	5.75	1.45	1.98
205	0.233	0.247	0.262	5.87	1.61	1.82
206	0.229	0.243	0.257	5.76	1.56	1.85
207	0.225	0.238	0.253	5.88	1.56	1.89
208	0.221	0.234	0.248	5.77	1.69	1.71
209	0.217	0.230	0.244	5.87	1.69	1.74
210	0.213	0.226	0.240	5.97	1.69	1.77
211	0.209	0.222	0.235	5.86	1.63	1.80
212	0.206	0.218	0.231	5.73	1.56	1.83
213	0.202	0.214	0.227	5.84	1.79	1.64
214	0.198	0.211	0.224	6.16	1.86	1.66
215	0.195	0.207	0.220	6.04	1.56	1.93
216	0.192	0.203	0.216	5.91	1.71	1.72
217	0.188	0.200	0.212	6.00	2.00	1.50
218	0.185	0.197	0.209	6.09	1.71	1.78
219	0.182	0.193	0.205	5.96	1.64	1.81
220	0.179	0.190	0.202	6.05	1.92	1.58
221	0.176	0.187	0.199	6.15	1.92	1.60
222	0.173	0.184	0.195	5.98	1.83	1.63
223	0.170	0.181	0.192	6.08	1.83	1.66
224	0.167	0.178	0.189	6.18	1.83	1.69
225	0.164	0.175	0.186	6.29	1.83	1.71
226	0.161	0.172	0.183	6.40	1.83	1.74
227	0.159	0.169	0.180	6.21	1.75	1.78
228	0.156	0.166	0.177	6.33	1.75	1.81
229	0.153	0.163	0.174	6.44	2.10	1.53
230	0.151	0.161	0.171	6.21	2.00	1.55
231	0.148	0.158	0.168	6.33	1.67	1.90

$B_{25/50}$ = 3950K, R_{25} = 50kΩ, T_R = 25°C, $\frac{\Delta R_T}{R_T}$: ± 0.5%,						
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	$\frac{\Delta R_T}{R_T}$	$\Delta T_N = \frac{\Delta R_N}{R_{N+1} - R_{N-1}}$	$\alpha = \frac{R_{N-1} - R_{N+1}}{2 \times R_N}$
232	0.146	0.155	0.165	6.13	1.58	1.94
233	0.143	0.152	0.162	6.25	1.90	1.64
235	0.138	0.147	0.157	6.46	1.90	1.70
236	0.136	0.145	0.154	6.21	1.80	1.72
237	0.133	0.142	0.152	6.69	1.90	1.76
238	0.131	0.140	0.149	6.43	1.80	1.79
239	0.129	0.137	0.146	6.20	1.70	1.82
240	0.126	0.135	0.144	6.67	1.80	1.85
241	0.124	0.132	0.141	6.44	1.70	1.89
242	0.122	0.130	0.138	6.15	1.60	1.92
243	0.119	0.127	0.136	6.69	1.70	1.97
244	0.117	0.125	0.133	6.40	1.70	1.60
245	0.115	0.123	0.131	6.50	1.60	2.03
246	0.113	0.120	0.128	6.25	1.50	2.08
247	0.110	0.118	0.126	6.78	1.60	2.12
248	0.108	0.115	0.123	6.52	1.50	2.17
249	0.106	0.113	0.121	6.64	1.88	1.77
250	0.103	0.111	0.118	6.76	1.88	1.77

To ensure optimal performance and reliability, it is recommended to follow proper storage procedures for the ATH50K1R3B3950K0.5% 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 ATH50K1R3B3950K0.5% 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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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.