

## Data Sheet

**Customer:**

**Product:** SMD NTC Thermistor

**Part No.:** NTC03T224J430H

**Issued Date:** 24-Nov-17

**Edition:** REV.A-43



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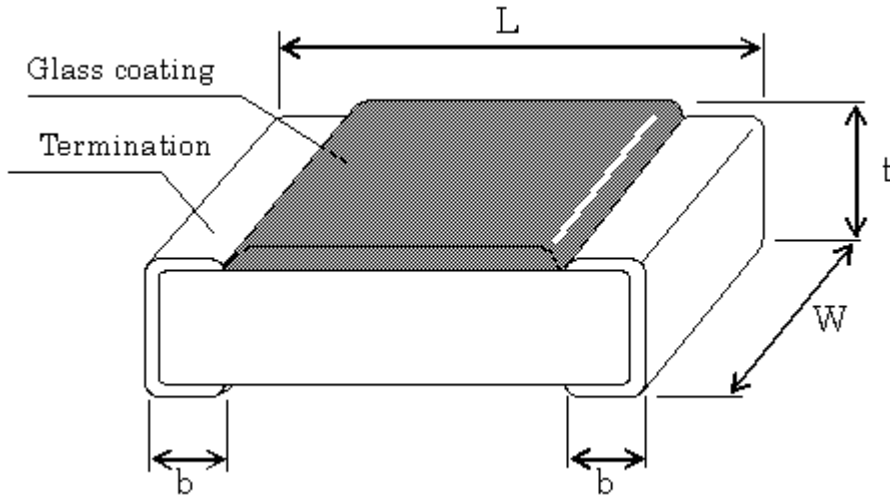
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24-Nov-17	24-Nov-17	24-Nov-17	24-Nov-17	
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### SMD NTC Thermistor

#### ■ Dimensions



Unit: mm

Type	Size	L	W	t	b
NTC03	0603	1.6±0.15	0.8±0.15	0.5±0.10	0.3±0.20

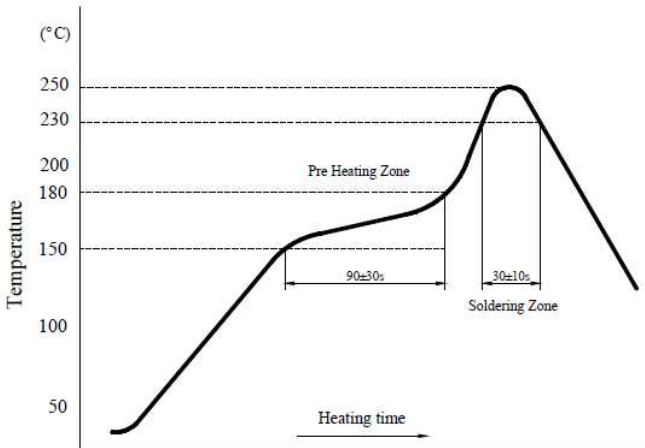
#### ■ Part Numbering

NTC	03	T	224	J	430	H
Product Type	Dimensions (L×W)	Packaging Code	Resistance (25°C)	Resistance Tolerance	B-Constant	B-Constant Tolerance
	03: 0603	T: Taping Reel	224: 220KΩ	J: ±5%	430: 4300K	H: 3%

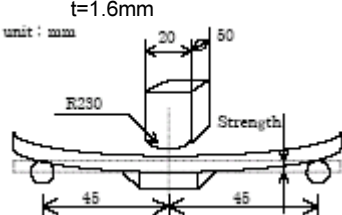
**■ Electrical Characteristics**

Item	Specification
Rated Zero-power Resistance	R=220KΩ±5% (at 25°C)
B Constant	B <sub>25/85</sub> =4300K±3%
	The B constant is calculated using the zero-power resistance values measured at 25°C and 85°C
Dissipation Constant	1.2 mW/°C (in air)
Thermal Time Constant	≤2.0 sec (in still air)
Rated Power	5 mW
	The maximum power that can be continuously applied at stable temperature
Operating Temperature	-40°C ~ 125°C

**■ IR Reflow**



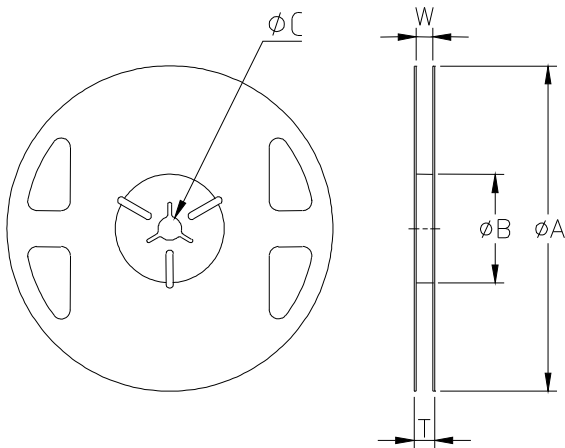
**■Environmental Characteristics**

Item	Conditions	Performances
Stability	(125±3°C) × (1000+48)hrs	R <sub>25</sub> :within±3% B <sub>25/85</sub> : within ±2%
Low Temperature	(-40±3°C) × (1000+48)hrs	R <sub>25</sub> :within±3% B <sub>25/85</sub> : within ±2%
Humidity	85±2°C, 85±5%RH × (1000+48) hrs	R <sub>25</sub> :within±3% B <sub>25/85</sub> : within ±2%
Thermal Shock Test	-40±3°C×30(min)→25±3°C×3(min) →125±3°C×30(min)→25±3°C×3(min) 100cycles	R <sub>25</sub> :within±3% B <sub>25/85</sub> : within ±2%
Load Humidity	85±2°C, 85±5%RH, rated power 90 mins on, 30 mins off for (1000+48) hrs	R <sub>25</sub> :within±3% B <sub>25/85</sub> : within ±2%
Resistance to Soldering Heat Test	Soldering temperature : 260±5°C Duration of immersion : 10 ± 1 sec.	R <sub>25</sub> :within±3% No mechanical damage
Solderability Test	Soldering temperature : 245±5°C Duration of immersion : 3 ± 0.5 sec. Preparation : Immersion in flux for 1~2 secs. Flux : rosin : methanol = 25wt% : 75wt% Solder : Sn-3.0Ag-0.5Cu	At least 95% of the electrode on each end of the ceramic chip must be covered with new solder
Substrate Bending	Applied bending : 5mm Holding time : 10±1 secs Substrate : glass fiber base epoxy resin t=1.6mm unit : mm 	R <sub>25</sub> :within±3% No mechanical damage
Vibration	Applied frequency : 10~55~10Hz / 1min Amplitude : 1.5mm in each X,Y,Z directions Applied time : 2 hrs in each X,Y,Z directions	R <sub>25</sub> :within±3% No mechanical damage

**■Storage Temperature: 15~35°C; Humidity 25%~85%RH**

**■Packaging**

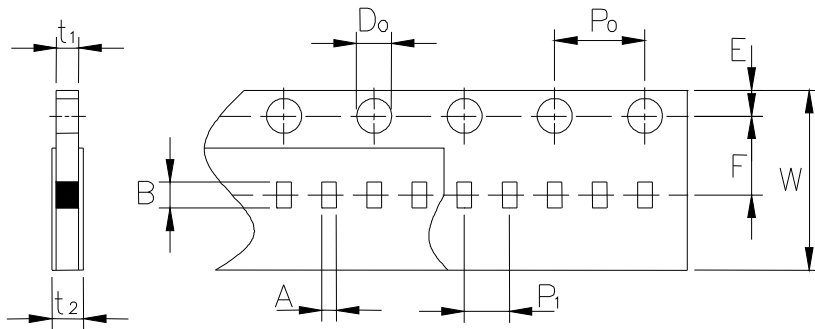
Reel Specifications & Packaging Quantity



Unit: mm

Type	$\Phi A$	$\Phi B$	$\Phi C$	W	T	Packaging
						Quality
NTC03	180+0/-3	60+1/-0	13.0±0.2	9.0±0.3	11.4±1.0	5K

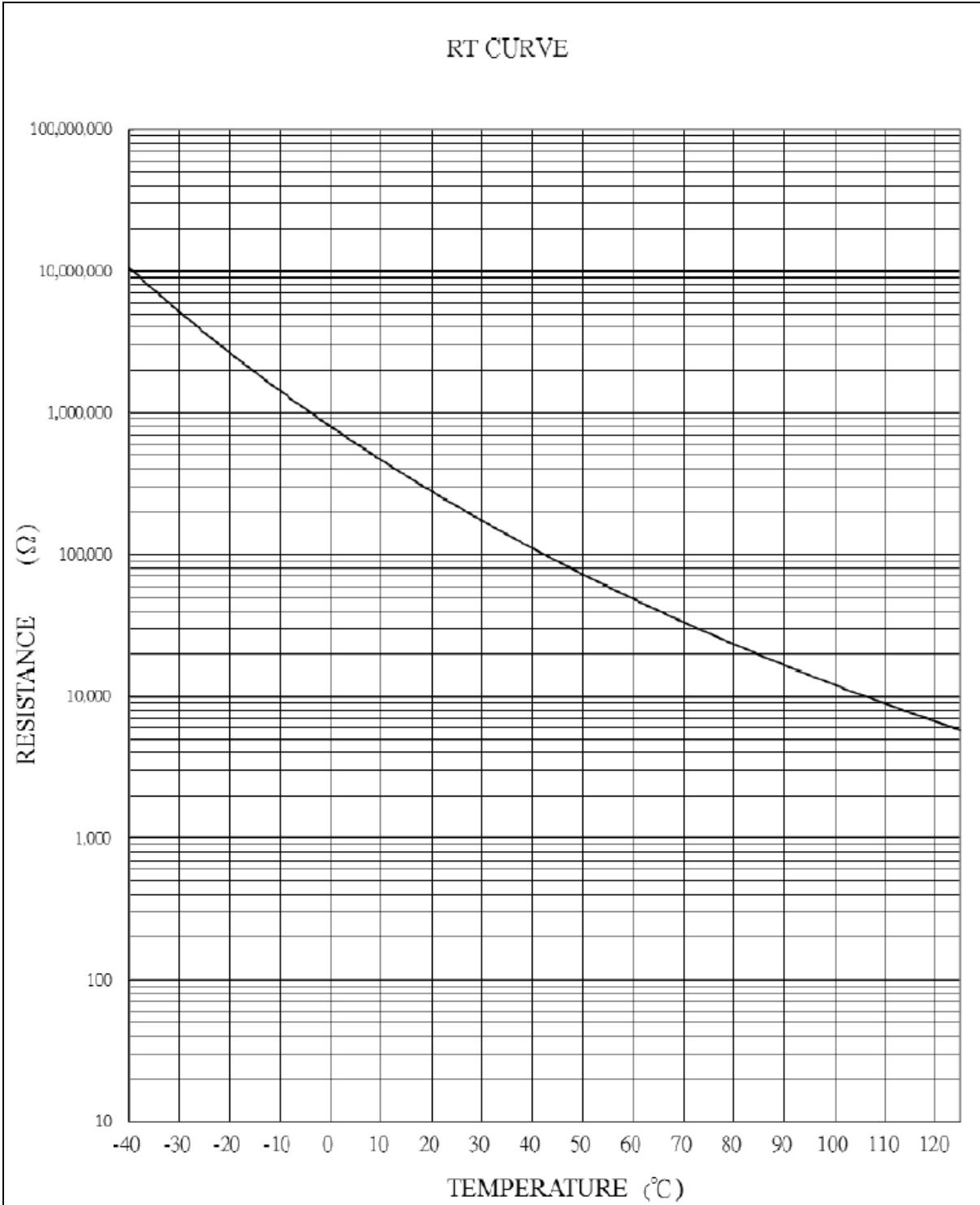
Paper Tape Specifications



Unit: mm

Type	A	B	W	F	E	$P_1$	$P_2$	$P_0$	$\psi D_0$	t1	t2
NTC03	1.1±0.2	1.9±0.2	8.0±0.20	3.5±0.05	1.75±0.1	4.00±0.1	2.00±0.05	4.00±0.1	1.55±0.05	1.0 <sup>+0</sup>	1.4 <sup>+0</sup>

■ RT-Curve



**■RT-Table**

**RESISTANCE-TEMPERATURE CHARACTERISTICS**

**$R_{25} = 220000 \Omega \pm 5\%$**

**$B_{25/85} = 4300 K \pm 3\%$**

Temp. (°C)	Resistance ( $\Omega$ )			Temp. Coef. (%/°C)	Resist. Tolerance (%)		Temp. Tolerance (°C)	
	MIN.	CENTER	MAX.		MIN.	MAX.	MIN.	MAX.
-40	8638725	10590000	12541275	-7.45	-18.43	18.43	-2.47	2.47
-39	8046575	9832387	11618200	-7.39	-18.16	18.16	-2.46	2.46
-38	7499006	9134180	10769354	-7.34	-17.90	17.90	-2.44	2.44
-37	6992378	8490333	9988289	-7.28	-17.64	17.64	-2.42	2.42
-36	6523370	7896263	9269157	-7.22	-17.39	17.39	-2.41	2.41
-35	6088952	7347801	8606650	-7.17	-17.13	17.13	-2.39	2.39
-34	5686355	6841151	7995948	-7.12	-16.88	16.88	-2.37	2.37
-33	5313047	6372859	7432670	-7.06	-16.63	16.63	-2.35	2.35
-32	4966716	5939775	6912834	-7.01	-16.38	16.38	-2.34	2.34
-31	4645243	5539029	6432814	-6.96	-16.14	16.14	-2.32	2.32
-30	4346691	5168000	5989309	-6.91	-15.89	15.89	-2.30	2.30
-29	4069438	4824492	5579545	-6.85	-15.65	15.65	-2.28	2.28
-28	3811682	4506100	5200517	-6.80	-15.41	15.41	-2.26	2.26
-27	3571931	4210830	4849728	-6.75	-15.17	15.17	-2.25	2.25
-26	3348817	3936858	4524899	-6.70	-14.94	14.94	-2.23	2.23
-25	3141084	3682516	4223948	-6.66	-14.70	14.70	-2.21	2.21
-24	2947577	3446274	3944972	-6.61	-14.47	14.47	-2.19	2.19
-23	2767236	3226733	3686231	-6.56	-14.24	14.24	-2.17	2.17
-22	2599086	3022610	3446134	-6.51	-14.01	14.01	-2.15	2.15
-21	2442228	2832725	3223222	-6.47	-13.79	13.79	-2.13	2.13
-20	2295837	2656000	3016163	-6.42	-13.56	13.56	-2.11	2.11
-19	2159138	2491426	2823713	-6.38	-13.34	13.34	-2.09	2.09
-18	2031445	2338108	2644771	-6.33	-13.12	13.12	-2.07	2.07
-17	1912110	2195209	2478309	-6.29	-12.90	12.90	-2.05	2.05
-16	1800537	2061958	2323379	-6.24	-12.68	12.68	-2.03	2.03
-15	1696174	1937645	2179115	-6.20	-12.46	12.46	-2.01	2.01
-14	1598514	1821616	2044719	-6.15	-12.25	12.25	-1.99	1.99
-13	1507086	1713271	1919456	-6.11	-12.03	12.03	-1.97	1.97
-12	1421456	1612054	1802652	-6.07	-11.82	11.82	-1.95	1.95
-11	1341223	1517455	1693686	-6.03	-11.61	11.61	-1.93	1.93
-10	1266015	1429000	1591985	-5.99	-11.41	11.41	-1.91	1.91

Temp. (°C)	Resistance ( $\Omega$ )			Temp. Coef. (%/°C)	Resist. Tolerance (%)		Temp. Tolerance (°C)	
	MIN.	CENTER	MAX.		MIN.	MAX.	MIN.	MAX.
-9	1195450	1346211	1496972	-5.95	-11.20	11.20	-1.88	1.88
-8	1129252	1268735	1408217	-5.91	-10.99	10.99	-1.86	1.86
-7	1067125	1196199	1325272	-5.87	-10.79	10.79	-1.84	1.84
-6	1008796	1128259	1247723	-5.83	-10.59	10.59	-1.82	1.82
-5	954010	1064599	1175187	-5.79	-10.39	10.39	-1.80	1.80
-4	902532	1004922	1107311	-5.75	-10.19	10.19	-1.77	1.77
-3	854144	948957	1043770	-5.71	-9.99	9.99	-1.75	1.75
-2	808642	896451	984260	-5.67	-9.80	9.80	-1.73	1.73
-1	765838	847171	928504	-5.63	-9.60	9.60	-1.70	1.70
0	725557	800900	876243	-5.60	-9.41	9.41	-1.68	1.68
1	687642	757445	827248	-5.56	-9.22	9.22	-1.66	1.66
2	651936	716611	781287	-5.52	-9.03	9.03	-1.63	1.63
3	618296	678225	738155	-5.49	-8.84	8.84	-1.61	1.61
4	586591	642126	697661	-5.45	-8.65	8.65	-1.59	1.59
5	556700	608165	659630	-5.42	-8.46	8.46	-1.56	1.56
6	528508	576203	623897	-5.38	-8.28	8.28	-1.54	1.54
7	501910	546111	590312	-5.35	-8.09	8.09	-1.51	1.51
8	476807	517770	558733	-5.31	-7.91	7.91	-1.49	1.49
9	453106	491067	529029	-5.28	-7.73	7.73	-1.46	1.46
10	430722	465900	501078	-5.24	-7.55	7.55	-1.44	1.44
11	409581	442180	474778	-5.21	-7.37	7.37	-1.42	1.42
12	389601	419807	450012	-5.18	-7.20	7.20	-1.39	1.39
13	370711	398697	426682	-5.14	-7.02	7.02	-1.36	1.36
14	352847	378772	404696	-5.11	-6.84	6.84	-1.34	1.34
15	335946	359958	383971	-5.08	-6.67	6.67	-1.31	1.31
16	319951	342189	364427	-5.05	-6.50	6.50	-1.29	1.29
17	304810	325400	345990	-5.02	-6.33	6.33	-1.26	1.26
18	290472	309531	328591	-4.99	-6.16	6.16	-1.24	1.24
19	276889	294528	312167	-4.95	-5.99	5.99	-1.21	1.21
20	264019	280339	296658	-4.92	-5.82	5.82	-1.18	1.18
21	251820	266914	282007	-4.89	-5.65	5.65	-1.16	1.16
22	240254	254209	268164	-4.86	-5.49	5.49	-1.13	1.13
23	229284	242181	255078	-4.83	-5.33	5.33	-1.10	1.10
24	218876	230790	242704	-4.80	-5.16	5.16	-1.07	1.07
25	209000	220000	231000	-4.77	-5.00	5.00	-1.05	1.05
26	198965	209794	220622	-4.74	-5.16	5.16	-1.09	1.09



Temp. (°C)	Resistance ( $\Omega$ )			Temp. Coef. (%/°C)	Resist. Tolerance (%)		Temp. Tolerance (°C)	
	MIN.	CENTER	MAX.		MIN.	MAX.	MIN.	MAX.
27	189466	200117	210767	-4.71	-5.32	5.32	-1.13	1.13
28	180472	190939	201406	-4.68	-5.48	5.48	-1.17	1.17
29	171953	182232	192511	-4.65	-5.64	5.64	-1.21	1.21
30	163883	173970	184058	-4.63	-5.80	5.80	-1.25	1.25
31	156234	166128	176022	-4.60	-5.96	5.96	-1.30	1.30
32	148984	158682	168380	-4.57	-6.11	6.11	-1.34	1.34
33	142109	151610	161111	-4.54	-6.27	6.27	-1.38	1.38
34	135589	144892	154195	-4.52	-6.42	6.42	-1.42	1.42
35	129402	138508	147614	-4.49	-6.57	6.57	-1.46	1.46
36	123532	132440	141349	-4.47	-6.73	6.73	-1.51	1.51
37	117959	126671	135384	-4.44	-6.88	6.88	-1.55	1.55
38	112667	121185	129703	-4.41	-7.03	7.03	-1.59	1.59
39	107641	115966	124291	-4.39	-7.18	7.18	-1.64	1.64
40	102866	111000	119134	-4.36	-7.33	7.33	-1.68	1.68
41	98330	106275	114220	-4.34	-7.48	7.48	-1.72	1.72
42	94018	101776	109535	-4.31	-7.62	7.62	-1.77	1.77
43	89919	97493	105067	-4.29	-7.77	7.77	-1.81	1.81
44	86020	93413	100806	-4.26	-7.91	7.91	-1.86	1.86
45	82310	89525	96740	-4.24	-8.06	8.06	-1.90	1.90
46	78781	85820	92860	-4.21	-8.20	8.20	-1.95	1.95
47	75421	82289	89157	-4.19	-8.35	8.35	-1.99	1.99
48	72223	78922	85621	-4.17	-8.49	8.49	-2.04	2.04
49	69177	75711	82244	-4.14	-8.63	8.63	-2.08	2.08
50	66276	72647	79018	-4.12	-8.77	8.77	-2.13	2.13
51	63512	69724	75937	-4.10	-8.91	8.91	-2.18	2.18
52	60878	66935	72991	-4.07	-9.05	9.05	-2.22	2.22
53	58367	64272	70176	-4.05	-9.19	9.19	-2.27	2.27
54	55973	61729	67484	-4.03	-9.32	9.32	-2.32	2.32
55	53690	59300	64910	-4.00	-9.46	9.46	-2.36	2.36
56	51513	56981	62448	-3.98	-9.60	9.60	-2.41	2.41
57	49435	54764	60093	-3.96	-9.73	9.73	-2.46	2.46
58	47452	52646	57840	-3.94	-9.87	9.87	-2.51	2.51
59	45560	50621	55682	-3.91	-10.00	10.00	-2.56	2.56
60	43752	48684	53617	-3.89	-10.13	10.13	-2.60	2.60
61	42026	46832	51639	-3.87	-10.26	10.26	-2.65	2.65
62	40377	45061	49744	-3.85	-10.39	10.39	-2.70	2.70

Temp. (°C)	Resistance (Ω)			Temp. Coef. (%/°C)	Resist. Tolerance (%)		Temp. Tolerance (°C)	
	MIN.	CENTER	MAX.		MIN.	MAX.	MIN.	MAX.
63	38801	43365	47929	-3.83	-10.52	10.52	-2.75	2.75
64	37295	41742	46190	-3.80	-10.65	10.65	-2.80	2.80
65	35855	40189	44523	-3.78	-10.78	10.78	-2.85	2.85
66	34479	38702	42925	-3.76	-10.91	10.91	-2.90	2.90
67	33162	37277	41392	-3.74	-11.04	11.04	-2.95	2.95
68	31903	35913	39923	-3.72	-11.17	11.17	-3.00	3.00
69	30698	34605	38513	-3.70	-11.29	11.29	-3.05	3.05
70	29544	33352	37160	-3.68	-11.42	11.42	-3.10	3.10
71	28440	32151	35862	-3.66	-11.54	11.54	-3.15	3.15
72	27383	31000	34616	-3.64	-11.67	11.67	-3.21	3.21
73	26371	29895	33420	-3.62	-11.79	11.79	-3.26	3.26
74	25401	28836	32271	-3.60	-11.91	11.91	-3.31	3.31
75	24472	27820	31168	-3.58	-12.03	12.03	-3.36	3.36
76	23581	26844	30107	-3.56	-12.16	12.16	-3.41	3.41
77	22727	25907	29088	-3.54	-12.28	12.28	-3.47	3.47
78	21908	25008	28109	-3.52	-12.40	12.40	-3.52	3.52
79	21123	24145	27167	-3.50	-12.52	12.52	-3.57	3.57
80	20370	23316	26262	-3.48	-12.64	12.64	-3.63	3.63
81	19648	22520	25392	-3.46	-12.75	12.75	-3.68	3.68
82	18955	21755	24555	-3.44	-12.87	12.87	-3.74	3.74
83	18290	21020	23750	-3.43	-12.99	12.99	-3.79	3.79
84	17651	20313	22975	-3.41	-13.10	13.10	-3.85	3.85
85	17039	19634	22230	-3.39	-13.22	13.22	-3.90	3.90
86	16450	18982	21513	-3.37	-13.34	13.34	-3.96	3.96
87	15885	18354	20822	-3.35	-13.45	13.45	-4.01	4.01
88	15342	17750	20157	-3.33	-13.56	13.56	-4.07	4.07
89	14821	17169	19517	-3.32	-13.68	13.68	-4.12	4.12
90	14320	16610	18900	-3.30	-13.79	13.79	-4.18	4.18
91	13838	16072	18306	-3.28	-13.90	13.90	-4.24	4.24
92	13375	15554	17734	-3.26	-14.01	14.01	-4.29	4.29
93	12929	15056	17182	-3.25	-14.12	14.12	-4.35	4.35
94	12501	14576	16651	-3.23	-14.23	14.23	-4.41	4.41
95	12089	14114	16138	-3.21	-14.34	14.34	-4.47	4.47
96	11693	13668	15644	-3.20	-14.45	14.45	-4.52	4.52
97	11312	13240	15167	-3.18	-14.56	14.56	-4.58	4.58
98	10945	12826	14708	-3.16	-14.67	14.67	-4.64	4.64

Temp. (°C)	Resistance ( $\Omega$ )			Temp. Coef. (%/°C)	Resist. Tolerance (%)		Temp. Tolerance (°C)	
	MIN.	CENTER	MAX.		MIN.	MAX.	MIN.	MAX.
99	10591	12428	14264	-3.14	-14.78	14.78	-4.70	4.70
100	10251	12044	13836	-3.13	-14.88	14.88	-4.76	4.76
101	9924	11674	13424	-3.11	-14.99	14.99	-4.82	4.82
102	9608	11317	13025	-3.10	-15.10	15.10	-4.88	4.88
103	9305	10972	12640	-3.08	-15.20	15.20	-4.94	4.94
104	9012	10640	12269	-3.06	-15.31	15.31	-5.00	5.00
105	8730	10320	11910	-3.05	-15.41	15.41	-5.06	5.06
106	8458	10011	11564	-3.03	-15.51	15.51	-5.12	5.12
107	8196	9713	11230	-3.02	-15.62	15.62	-5.18	5.18
108	7944	9425	10907	-3.00	-15.72	15.72	-5.24	5.24
109	7701	9148	10595	-2.98	-15.82	15.82	-5.30	5.30
110	7466	8880	10293	-2.97	-15.92	15.92	-5.36	5.36
111	7239	8621	10002	-2.95	-16.02	16.02	-5.42	5.42
112	7021	8370	9720	-2.94	-16.12	16.12	-5.49	5.49
113	6810	8129	9447	-2.92	-16.22	16.22	-5.55	5.55
114	6607	7895	9184	-2.91	-16.32	16.32	-5.61	5.61
115	6410	7670	8929	-2.89	-16.42	16.42	-5.67	5.67
116	6221	7451	8682	-2.88	-16.52	16.52	-5.74	5.74
117	6038	7241	8444	-2.86	-16.61	16.61	-5.80	5.80
118	5861	7037	8213	-2.85	-16.71	16.71	-5.86	5.86
119	5690	6840	7989	-2.84	-16.81	16.81	-5.93	5.93
120	5525	6649	7773	-2.82	-16.90	16.90	-5.99	5.99
121	5366	6465	7564	-2.81	-17.00	17.00	-6.06	6.06
122	5212	6286	7361	-2.79	-17.10	17.10	-6.12	6.12
123	5063	6114	7165	-2.78	-17.19	17.19	-6.19	6.19
124	4919	5947	6974	-2.76	-17.28	17.28	-6.25	6.25
125	4780	5785	6790	-2.75	-17.38	17.38	-6.32	6.32