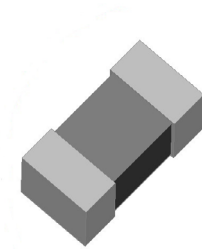


# NT

## Surface mount NTC thermistor



### Product features

- Highly reliable monolithic structure
- Ideal for temperature compensation and sensing applications
- 0402 (1005 metric), 0603 (1608 metric), and 0805 (2012 metric) surface mount package
- Superior heat resistance to reflow soldering and excellent solderability
- Excellent thermal dissipation factor and temperature coefficient
- Moisture sensitivity level (MSL): 1

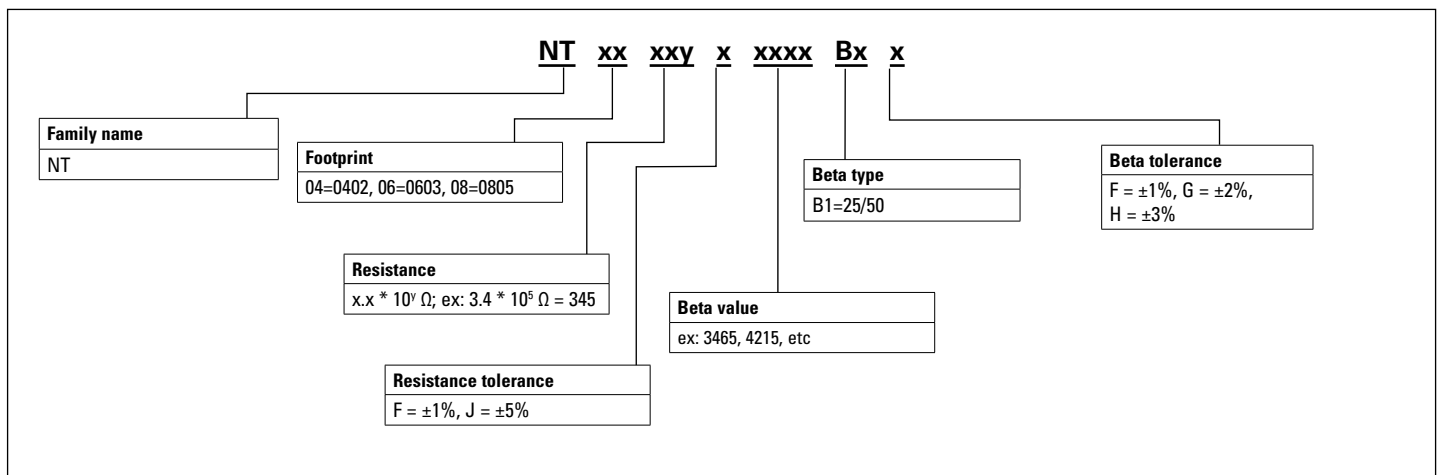
### Applications

- Industrial process control
- Commercial appliances
- Battery, supercapacitor and energy storage systems
- Uninterruptible power supplies
- Consumer appliances
- Medical devices
- Heating, ventilation and air conditioning, refrigeration (HVACR)
- Food service equipment
- IoT

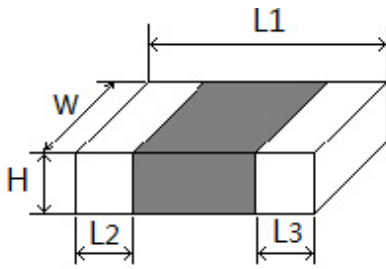
### Environmental compliance and general specifications



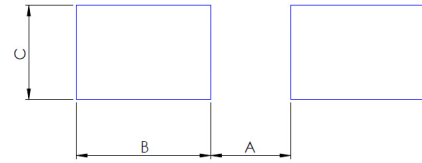
Table 1. Part numbering



**Mechanical parameters- mm [inches]**



**Recommended pad layout**

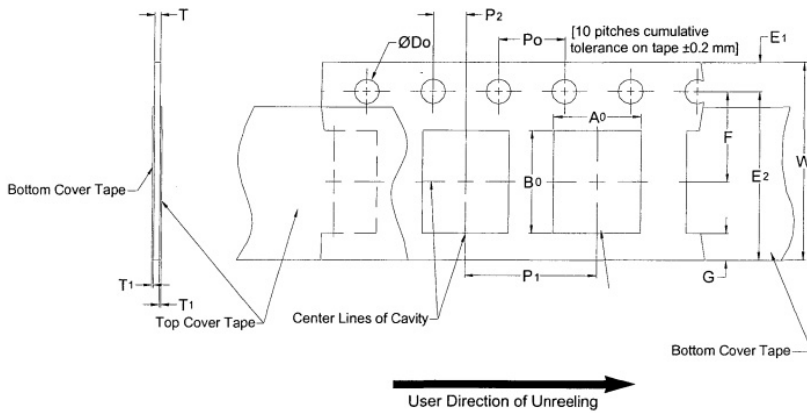


Size	L1	W	H	L2 & L3	A	B	C
1005 [0402]	1.0 ± 0.15 [0.040 ± 0.006]	0.5 ± 0.15 [0.020 ± 0.006]	0.5 ± 0.15 [0.020 ± 0.006]	0.25 ± 0.15 [0.010 ± 0.006]	0.30 ~ 0.50	0.35 ~ 0.45	0.40 ~ 0.60
1608 [0603]	1.6 ± 0.15 [0.063 ± 0.006]	0.8 ± 0.15 [0.031 ± 0.006]	0.7 ± 0.20 [0.028 ± 0.008]	0.40 ± 0.20 [0.016 ± 0.008]	0.60 ~ 0.80	0.60 ~ 0.80	0.60 ~ 0.80
2012 [0805]	2.0 ± 0.20 [0.079 ± 0.008]	1.25 ± 0.20 [0.0409 ± 0.008]	0.7 ± 0.20 [0.031 ± 0.008]	0.50 ± 0.30 [0.020 ± 0.012]	0.80 ~ 1.20	0.80 ~ 1.20	0.90 ~ 1.60

**Packaging information- mm**

Supplied in tape and reel on a 7.0" diameter reel (EIA-481 compliant)

Size	Quantity
0402	10K
0603	4K
0805	4K



Dimension	0402	0603	0805
E1	1.75±0.1	1.75±0.1	1.75±0.1
F	3.5±0.05	3.5±0.05	3.5±0.05
P2	2.0±0.05	2.0±0.05	2.0±0.05
DO	1.5±0.1	1.5±0.1	1.5±0.1
P0	4.0±0.1	4.0±0.1	4.0±0.1
W	8.0±0.3	8.0±0.3	8.0±0.3
P1	4.0±0.1	4.0±0.1	4.0±0.1
A0	0.6±0.2	1.0±0.2	1.4±0.2
B0	1.1±0.2	1.8±0.2	2.2±0.2
T	1.1max	1.1max	1.1max

Electrical specifications

Part number	Resistance (k $\Omega$ )	Beta value (K)	Beta type	Thermal dissipation constant $\delta$ (mw/ $^{\circ}$ C)	Rated power (mw)	Thermal time constant $\tau$ (sec)
NT04473?3380B1*	4.7	3380	B25/50	> 1.0	100	$\leq 3$
NT04104?3435B1*	10	3435	B25/50	> 1.0	100	$\leq 3$
NT04104?3950B1*	10	3950	B25/50	> 1.0	100	$\leq 3$
NT04154?3950B1*	15	3950	B25/50	> 1.0	100	$\leq 3$
NT04224?3950B1*	22	3950	B25/50	> 1.0	100	$\leq 3$
NT04474?4050B1*	47	4050	B25/50	> 1.0	100	$\leq 3$
NT04684?4000B1*	68	4000	B25/50	> 1.0	100	$\leq 3$
NT04105?3950B1*	100	3950	B25/50	> 1.0	100	$\leq 3$
NT04105?4250B1*	100	4250	B25/50	> 1.0	100	$\leq 3$
NT04225?4200B1*	220	4200	B25/50	> 1.0	100	$\leq 3$
NT04475?3950B1*	470	3950	B25/50	> 1.0	100	$\leq 3$
NT06223?3350B1*	2.2	3350	B25/50	> 2.0	200	$\leq 3$
NT06333?3380B1*	3.3	3380	B25/50	> 2.0	200	$\leq 5$
NT06473?3400B1*	4.7	3400	B25/50	> 2.0	200	$\leq 5$
NT06683?3435B1*	6.8	3435	B25/50	> 2.0	200	$\leq 5$
NT06104?3435B1*	10	3435	B25/50	> 2.0	200	$\leq 5$
NT06104?3600B1*	10	3600	B25/50	> 2.0	200	$\leq 5$
NT06104?3950B1*	10	3950	B25/50	> 2.0	200	$\leq 5$
NT06154?3950B1*	15	3950	B25/50	> 2.0	200	$\leq 5$
NT06224?3950B1*	22	3950	B25/50	> 2.0	200	$\leq 5$
NT06334?4000B1*	33	4000	B25/50	> 2.0	200	$\leq 5$
NT06474?4050B1*	47	4050	B25/50	> 2.0	200	$\leq 5$
NT06684?4000B1*	68	4000	B25/50	> 2.0	200	$\leq 5$
NT06105?4000B1*	100	4000	B25/50	> 2.0	200	$\leq 5$
NT06105?4250B1*	100	4250	B25/50	> 2.0	200	$\leq 5$
NT06155?4050B1*	150	4050	B25/50	> 2.0	200	$\leq 5$
NT06155?4600B1*	150	4600	B25/50	> 2.0	200	$\leq 5$
NT06225?4200B1*	220	4200	B25/50	> 2.0	200	$\leq 5$
NT06335?3950B1*	330	3950	B25/50	> 2.0	200	$\leq 5$
NT06475?3950B1*	470	3950	B25/50	> 2.0	200	$\leq 5$
NT06565?4050B1*	560	4050	B25/50	> 2.0	200	$\leq 5$
NT08223?3380B1*	2.2	3380	B25/50	> 2.5	250	$\leq 8$
NT08473?3400B1*	4.7	3400	B25/50	> 2.5	250	$\leq 8$
NT08683?3435B1*	6.8	3435	B25/50	> 2.5	250	$\leq 8$
NT08104?3435B1*	10	3435	B25/50	> 2.5	250	$\leq 8$
NT08104?3600B1*	10	3600	B25/50	> 2.5	250	$\leq 8$
NT08104?3950B1*	10	3950	B25/50	> 2.5	250	$\leq 8$
NT08154?3950B1*	15	3950	B25/50	> 2.5	250	$\leq 8$
NT08224?3950B1*	22	3950	B25/50	> 2.5	250	$\leq 8$
NT08334?4000B1*	33	4000	B25/50	> 2.5	250	$\leq 8$
NT08474?4050B1*	47	4050	B25/50	> 2.5	250	$\leq 8$
NT08684?4000B1*	68	4000	B25/50	> 2.5	250	$\leq 8$
NT08105?4050B1*	100	4050	B25/50	> 2.5	250	$\leq 8$

**Electrical specifications**

Part number	Resistance (kΩ)	Beta value (K)	Beta type	Thermal dissipation constant $\delta$ (mw/°C)	Rated power (mw)	Thermal time constant $\tau$ (sec)
NT08105?4250B1*	100	4250	B25/50	> 2.5	250	≤ 8
NT08225?4200B1*	220	4200	B25/50	> 2.5	250	≤ 8
NT08335?3950B1*	330	3950	B25/50	> 2.5	250	≤ 8
NT08475?3950B1*	470	3950	B25/50	> 2.5	250	≤ 8
NT08475?4500B1*	470	4500	B25/50	> 2.5	250	≤ 8
NT08565?4050B1*	560	4050	B25/50	> 2.5	250	≤ 8

?= Enter resistance tolerance codes (F = ±1%, J = ±5%)

\*= Enter Beta tolerance codes (F = ±1%, G = ±2%, H = ±3%)

Operation temperature: -40 °C to +125 °C

NT  
Surface mount NTC thermistor

Temperature characteristics

@= size code

Part number	NT0622373350	NT0822373380	NT0633373380	NT0447373380	NT0@47373400
Resistance	2.2kΩ	2.2kΩ	3.3kΩ	4.7kΩ	4.7kΩ
Beta Value	3350	3380	3380	3380	3400
Temperature (°C)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)
-40	41.45	41.53	62.3	93.67	95.44
-39	39.26	39.36	59.04	88.65	90.3
-38	37.21	37.31	55.97	83.93	85.46
-37	35.27	35.38	53.08	79.49	80.9
-36	33.44	33.56	50.35	75.3	76.62
-35	31.72	31.84	47.77	71.36	72.58
-34	30.1	30.22	45.35	67.64	68.78
-33	28.57	28.69	43.05	64.14	65.19
-32	27.12	27.25	40.89	60.84	61.82
-31	25.76	25.89	38.85	57.72	58.63
-30	24.47	24.6	36.92	54.79	55.63
-29	23.26	23.38	35.09	52.01	52.79
-28	22.11	22.23	33.37	49.39	50.12
-27	21.03	21.15	31.74	46.92	47.6
-26	20	20.12	30.2	44.59	45.21
-25	19.03	19.15	28.74	42.38	42.96
-24	18.11	18.23	27.36	40.29	40.83
-23	17.25	17.36	26.05	38.32	38.82
-22	16.42	16.53	24.81	36.45	36.92
-21	15.65	15.75	23.64	34.69	35.12
-20	14.91	15.01	22.53	33.02	33.42
-19	14.21	14.31	21.48	31.44	31.81
-18	13.55	13.65	20.48	29.94	30.28
-17	12.93	13.02	19.54	28.52	28.83
-16	12.33	12.42	18.64	27.17	27.47
-15	11.77	11.86	17.79	25.9	26.17
-14	11.24	11.32	16.99	24.69	24.94
-13	10.73	10.81	16.22	23.55	23.78
-12	10.25	10.32	15.49	22.46	22.68
-11	9.79	9.86	14.8	21.43	21.63
-10	9.35	9.42	14.14	20.46	20.64
-9	8.94	9.01	13.52	19.53	19.7
-8	8.55	8.61	12.92	18.65	18.81
-7	8.17	8.23	12.36	17.81	17.96
-6	7.82	7.88	11.82	17.02	17.15
-5	7.48	7.53	11.31	16.27	16.39
-4	7.16	7.21	10.82	15.55	15.66
-3	6.85	6.9	10.36	14.87	14.97
-2	6.56	6.61	9.91	14.22	14.32
-1	6.28	6.33	9.49	13.61	13.69
0	6.02	6.06	9.09	13.02	13.1
1	5.77	5.8	8.71	12.46	12.54
2	5.53	5.56	8.34	11.93	12
3	5.29	5.33	7.99	11.43	11.49
4	5.08	5.1	7.66	10.95	11
5	4.87	4.89	7.34	10.49	10.54
6	4.67	4.69	7.04	10.05	10.1
7	4.48	4.5	6.75	9.64	9.68
8	4.3	4.32	6.48	9.24	9.28
9	4.12	4.14	6.21	8.86	8.9
10	3.96	3.97	5.96	8.5	8.53
11	3.8	3.82	5.72	8.16	8.19
12	3.65	3.66	5.49	7.83	7.86
13	3.5	3.52	5.28	7.52	7.54
14	3.37	3.38	5.07	7.22	7.24
15	3.24	3.25	4.87	6.94	6.95
16	3.11	3.12	4.68	6.67	6.68
17	2.99	3	4.5	6.41	6.42
18	2.88	2.88	4.32	6.16	6.17
19	2.77	2.77	4.16	5.92	5.93
20	2.66	2.67	4	5.69	5.7

**Temperature characteristics, cont.**

21	2.56	2.56	3.85	5.48	5.48
22	2.46	2.47	3.7	5.27	5.27
23	2.37	2.37	3.56	5.07	5.07
24	2.28	2.29	3.43	4.88	4.88
25	2.2	2.2	3.3	4.7	4.7
26	2.12	2.12	3.18	4.53	4.53
27	2.04	2.04	3.06	4.36	4.36
28	1.97	1.97	2.95	4.2	4.2
29	1.9	1.9	2.84	4.05	4.05
30	1.83	1.83	2.74	3.9	3.9
31	1.77	1.76	2.64	3.76	3.76
32	1.7	1.7	2.55	3.63	3.62
33	1.64	1.64	2.46	3.5	3.5
34	1.59	1.58	2.37	3.38	3.37
35	1.53	1.53	2.29	3.26	3.25
36	1.48	1.47	2.21	3.14	3.14
37	1.43	1.42	2.13	3.04	3.03
38	1.38	1.37	2.06	2.93	2.92
39	1.33	1.33	1.99	2.83	2.82
40	1.29	1.28	1.92	2.73	2.73
41	1.24	1.24	1.86	2.64	2.63
42	1.2	1.2	1.79	2.55	2.55
43	1.16	1.16	1.73	2.47	2.46
44	1.12	1.12	1.68	2.39	2.38
45	1.09	1.08	1.62	2.31	2.3
46	1.05	1.04	1.57	2.23	2.22
47	1.02	1.01	1.52	2.16	2.15
48	0.984	0.9771	1.47	2.09	2.08
49	0.9524	0.9455	1.42	2.02	2.01
50	0.922	0.915	1.37	1.96	1.95
51	0.8929	0.8858	1.33	1.89	1.88
52	0.8649	0.8577	1.29	1.83	1.82
53	0.8379	0.8306	1.25	1.78	1.76
54	0.8118	0.8045	1.21	1.72	1.71
55	0.7867	0.7793	1.17	1.67	1.65
56	0.7625	0.7551	1.13	1.62	1.6
57	0.7392	0.7318	1.1	1.57	1.55
58	0.7167	0.7093	1.07	1.52	1.5
59	0.695	0.6876	1.03	1.47	1.46
60	0.674	0.6667	1	1.43	1.41
61	0.6538	0.6465	0.9707	1.39	1.37
62	0.6343	0.627	0.9415	1.35	1.33
63	0.6155	0.6082	0.9134	1.31	1.29
64	0.5973	0.5901	0.8863	1.27	1.25
65	0.5797	0.5726	0.8601	1.23	1.21
66	0.5628	0.5558	0.8349	1.19	1.17
67	0.5464	0.5395	0.8105	1.16	1.14
68	0.5306	0.5237	0.7869	1.12	1.11
69	0.5153	0.5085	0.7642	1.09	1.07
70	0.5005	0.4939	0.7422	1.06	1.04
71	0.4862	0.4797	0.721	1.03	1.01
72	0.4724	0.466	0.7005	1	0.9822
73	0.4591	0.4527	0.6807	0.972	0.9541
74	0.4462	0.4399	0.6615	0.9445	0.927
75	0.4337	0.4276	0.643	0.9179	0.9008
76	0.4216	0.4156	0.6251	0.8922	0.8754
77	0.4099	0.404	0.6078	0.8673	0.851
78	0.3986	0.3928	0.591	0.8433	0.8273
79	0.3877	0.382	0.5748	0.82	0.8044
80	0.3771	0.3715	0.5591	0.7974	0.7823

**Temperature characteristics, cont.**

81	0.3668	0.3614	0.544	0.7756	0.7609
82	0.3569	0.3516	0.5293	0.7545	0.7402
83	0.3473	0.3421	0.5151	0.734	0.7201
84	0.338	0.3329	0.5013	0.7142	0.7008
85	0.329	0.324	0.488	0.695	0.682
86	0.3201	0.3153	0.4751	0.676	0.6641
87	0.3116	0.3069	0.4625	0.6575	0.6468
88	0.3033	0.2988	0.4504	0.6397	0.63
89	0.2952	0.2909	0.4387	0.6225	0.6137
90	0.2875	0.2833	0.4273	0.6058	0.5979
91	0.2799	0.2759	0.4163	0.5896	0.5826
92	0.2727	0.2687	0.4056	0.574	0.5677
93	0.2656	0.2618	0.3952	0.5589	0.5534
94	0.2588	0.2551	0.3852	0.5442	0.5394
95	0.2521	0.2486	0.3754	0.53	0.5259
96	0.2457	0.2423	0.366	0.5163	0.5127
97	0.2395	0.2362	0.3569	0.5029	0.5
98	0.2335	0.2303	0.348	0.49	0.4876
99	0.2277	0.2246	0.3394	0.4775	0.4756
100	0.222	0.219	0.331	0.4654	0.464
101	0.2166	0.2136	0.3229	0.4538	0.4526
102	0.2113	0.2085	0.315	0.4426	0.4416
103	0.2062	0.2034	0.3074	0.4317	0.4308
104	0.2013	0.1985	0.3	0.4211	0.4204
105	0.1965	0.1938	0.2928	0.4109	0.4103
106	0.1918	0.1892	0.2859	0.401	0.4004
107	0.1873	0.1848	0.2791	0.3914	0.3908
108	0.183	0.1805	0.2725	0.3821	0.3815
109	0.1787	0.1763	0.2661	0.3731	0.3725
110	0.1746	0.1722	0.2599	0.3644	0.3637
111	0.1706	0.1683	0.2539	0.3559	0.3551
112	0.1667	0.1644	0.248	0.3476	0.3468
113	0.163	0.1607	0.2423	0.3396	0.3387
114	0.1593	0.1571	0.2368	0.3319	0.3308
115	0.1558	0.1536	0.2314	0.3244	0.3232
116	0.1523	0.1501	0.2261	0.3171	0.3157
117	0.149	0.1468	0.221	0.31	0.3085
118	0.1457	0.1436	0.2161	0.3031	0.3014
119	0.1426	0.1405	0.2113	0.2964	0.2945
120	0.1395	0.1374	0.2066	0.2899	0.2879
121	0.1365	0.1345	0.202	0.2836	0.2814
122	0.1336	0.1316	0.1976	0.2774	0.275
123	0.1308	0.1288	0.1933	0.2714	0.2689
124	0.1281	0.1261	0.1891	0.2656	0.2628
125	0.1254	0.1234	0.185	0.26	0.257

Temperature characteristics

Part number	NT@68373435	NT@10473435	NT@10473600	NT@10473950	NT@15473950
Resistance	6.8kΩ	10kΩ	10kΩ	10kΩ	15kΩ
Beta Value	3435	3435	3600	3950	3950
Temperature (°C)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)
-40	133.1	201.2	251.8	347.6	519
-39	125.97	190.4	236.95	324.98	485.68
-38	119.27	180.2	223.07	303.98	454.7
-37	112.97	170.6	210.09	284.47	425.87
-36	107.03	161.6	197.95	266.34	399.05
-35	101.44	153.1	186.59	249.49	374.07
-34	96.18	145.1	175.95	233.81	350.8
-33	91.22	137.5	165.99	219.21	329.12
-32	86.55	130.4	156.65	205.63	308.91
-31	82.14	123.7	147.9	192.97	290.05
-30	77.98	117.4	139.69	181.17	272.46
-29	74.06	111.4	131.99	170.16	256.03
-28	70.36	105.8	124.76	159.9	240.7
-27	66.86	100.5	117.98	150.32	226.37
-26	63.56	95.49	111.6	141.38	212.97
-25	60.44	90.75	105.61	133.02	200.45
-24	57.49	86.28	99.98	125.21	188.74
-23	54.7	82.04	94.68	117.91	177.78
-22	52.06	78.04	89.7	111.08	167.51
-21	49.57	74.26	85.01	104.68	157.9
-20	47.21	70.68	80.59	98.7	148.9
-19	44.98	67.29	76.44	93.1	140.44
-18	42.88	64.09	72.52	87.85	132.52
-17	40.88	61.05	68.83	82.92	125.09
-16	38.98	58.17	65.35	78.31	118.12
-15	37.19	55.45	62.07	73.98	111.58
-14	35.48	52.87	58.97	69.91	105.44
-13	33.86	50.42	56.04	66.09	99.67
-12	32.33	48.09	53.27	62.51	94.25
-11	30.87	45.89	50.66	59.14	89.16
-10	29.48	43.8	48.19	55.97	84.38
-9	28.17	41.82	45.86	53	79.87
-8	26.92	39.93	43.65	50.19	75.64
-7	25.73	38.15	41.56	47.56	71.65
-6	24.6	36.45	39.59	45.07	67.9
-5	23.53	34.83	37.72	42.74	64.36
-4	22.51	33.3	35.94	40.53	61.03
-3	21.53	31.84	34.27	38.46	57.9
-2	20.61	30.45	32.68	36.5	54.94
-1	19.73	29.14	31.17	34.65	52.14
0	18.89	27.88	29.74	32.91	49.51
1	18.09	26.68	28.38	31.26	47.03
2	17.32	25.54	27.09	29.71	44.68
3	16.59	24.46	25.86	28.24	42.47
4	15.89	23.43	24.7	26.85	40.38
5	15.23	22.45	23.59	25.54	38.4
6	14.6	21.51	22.54	24.3	36.54
7	13.99	20.62	21.55	23.13	34.77
8	13.42	19.77	20.6	22.02	33.1
9	12.87	18.95	19.7	20.98	31.52
10	12.35	18.18	18.85	19.98	30.03
11	11.85	17.44	18.04	19.04	28.61
12	11.37	16.74	17.26	18.15	27.27
13	10.92	16.07	16.53	17.31	26
14	10.48	15.43	15.83	16.51	24.8
15	10.07	14.81	15.16	15.75	23.65
16	9.67	14.23	14.53	15.03	22.57
17	9.29	13.67	13.92	14.35	21.55
18	8.93	13.14	13.35	13.7	20.57
19	8.58	12.63	12.8	13.09	19.65
20	8.25	12.14	12.28	12.51	18.77



**Temperature characteristics, cont.**

21	7.94	11.67	11.78	11.95	17.94
22	7.63	11.23	11.3	11.43	17.15
23	7.34	10.8	10.85	10.93	16.39
24	7.07	10.39	10.41	10.45	15.68
25	6.8	10	10	10	15
26	6.55	9.63	9.61	9.57	14.35
27	6.3	9.27	9.23	9.16	13.74
28	6.07	8.92	8.87	8.77	13.15
29	5.85	8.6	8.53	8.4	12.6
30	5.63	8.28	8.2	8.05	12.07
31	5.43	7.98	7.89	7.71	11.56
32	5.23	7.69	7.59	7.39	11.08
33	5.04	7.41	7.3	7.09	10.62
34	4.86	7.15	7.03	6.8	10.19
35	4.69	6.9	6.77	6.52	9.77
36	4.52	6.65	6.52	6.26	9.38
37	4.36	6.42	6.28	6	9
38	4.21	6.19	6.05	5.76	8.64
39	4.07	5.98	5.83	5.54	8.29
40	3.92	5.77	5.62	5.32	7.96
41	3.79	5.57	5.41	5.11	7.65
42	3.66	5.38	5.22	4.91	7.35
43	3.54	5.2	5.03	4.72	7.06
44	3.42	5.02	4.86	4.54	6.79
45	3.3	4.85	4.69	4.36	6.53
46	3.19	4.69	4.52	4.19	6.28
47	3.08	4.53	4.36	4.04	6.04
48	2.98	4.38	4.21	3.88	5.81
49	2.88	4.24	4.07	3.74	5.59
50	2.79	4.1	3.93	3.6	5.38
51	2.7	3.97	3.8	3.47	5.18
52	2.61	3.84	3.67	3.34	4.99
53	2.53	3.72	3.55	3.22	4.81
54	2.45	3.6	3.43	3.1	4.63
55	2.37	3.49	3.31	2.99	4.46
56	2.3	3.38	3.2	2.88	4.3
57	2.22	3.27	3.1	2.78	4.15
58	2.16	3.17	3	2.68	4
59	2.09	3.07	2.9	2.58	3.86
60	2.02	2.98	2.81	2.49	3.72
61	1.96	2.89	2.72	2.41	3.59
62	1.9	2.8	2.63	2.32	3.46
63	1.84	2.71	2.55	2.24	3.34
64	1.79	2.63	2.47	2.17	3.23
65	1.74	2.55	2.39	2.09	3.12
66	1.68	2.48	2.31	2.02	3.01
67	1.63	2.4	2.24	1.95	2.91
68	1.59	2.33	2.17	1.89	2.81
69	1.54	2.26	2.1	1.82	2.72
70	1.49	2.2	2.04	1.76	2.62
71	1.45	2.13	1.98	1.71	2.54
72	1.41	2.07	1.92	1.65	2.45
73	1.37	2.01	1.86	1.6	2.37
74	1.33	1.95	1.8	1.54	2.29
75	1.29	1.9	1.75	1.49	2.22
76	1.25	1.84	1.7	1.45	2.15
77	1.22	1.79	1.65	1.4	2.08
78	1.18	1.74	1.6	1.36	2.01
79	1.15	1.69	1.55	1.31	1.95
80	1.12	1.65	1.51	1.27	1.89

**Temperature characteristics, cont.**

81	1.09	1.6	1.46	1.23	1.83
82	1.06	1.56	1.42	1.19	1.77
83	1.03	1.51	1.38	1.16	1.71
84	1	1.47	1.34	1.12	1.66
85	0.973	1.43	1.3	1.09	1.61
86	0.9463	1.39	1.26	1.05	1.56
87	0.9205	1.35	1.23	1.02	1.51
88	0.8956	1.32	1.19	0.9898	1.47
89	0.8714	1.28	1.16	0.96	1.42
90	0.848	1.25	1.13	0.9313	1.38
91	0.8254	1.21	1.09	0.9035	1.34
92	0.8035	1.18	1.06	0.8767	1.3
93	0.7822	1.15	1.03	0.8509	1.26
94	0.7617	1.12	1.01	0.8259	1.22
95	0.7418	1.09	0.9787	0.8018	1.19
96	0.7225	1.06	0.9521	0.7785	1.15
97	0.7038	1.04	0.9264	0.756	1.12
98	0.6857	1.01	0.9015	0.7343	1.09
99	0.6681	0.9825	0.8773	0.7133	1.06
100	0.6511	0.9575	0.854	0.693	1.03
101	0.6347	0.9334	0.8316	0.6734	0.996
102	0.6188	0.91	0.81	0.6545	0.968
103	0.6034	0.8874	0.789	0.6361	0.9409
104	0.5885	0.8655	0.7687	0.6184	0.9147
105	0.574	0.8442	0.7491	0.6013	0.8894
106	0.5599	0.8236	0.7301	0.5847	0.8649
107	0.5463	0.8036	0.7117	0.5687	0.8413
108	0.5331	0.7842	0.6939	0.5532	0.8184
109	0.5203	0.7653	0.6766	0.5382	0.7963
110	0.5079	0.7471	0.6599	0.5236	0.7749
111	0.4958	0.7294	0.6437	0.5096	0.7541
112	0.4841	0.7122	0.628	0.4959	0.7341
113	0.4727	0.6954	0.6128	0.4828	0.7147
114	0.4616	0.6792	0.598	0.47	0.6959
115	0.4509	0.6635	0.5837	0.4576	0.6777
116	0.4405	0.6482	0.5698	0.4456	0.66
117	0.4304	0.6333	0.5564	0.434	0.643
118	0.4205	0.6189	0.5433	0.4227	0.6264
119	0.411	0.6049	0.5306	0.4118	0.6104
120	0.4017	0.5913	0.5183	0.4013	0.5948
121	0.3927	0.578	0.5064	0.391	0.5798
122	0.3839	0.5651	0.4948	0.3811	0.5652
123	0.3754	0.5526	0.4836	0.3714	0.551
124	0.3671	0.5404	0.4726	0.3621	0.5373
125	0.359	0.5286	0.462	0.353	0.524

Temperature characteristics

Part number	NT@22473950	NT@33474000	NT@47474050	NT@68474000	NT0410573950
Resistance	22kΩ	33kΩ	47kΩ	68kΩ	100kΩ
Beta Value	3950	4000	4050	4000	3950
Temperature (°C)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)
-40	768.4	1152	1802	2488.7	3364
-39	718.45	1077.57	1681.82	2324.84	3151
-38	672.07	1008.43	1570.43	2172.83	2953
-37	628.98	944.16	1467.14	2031.74	2768
-36	588.94	884.4	1371.32	1900.73	2596
-35	551.7	828.8	1282.37	1779	2436
-34	517.06	777.05	1199.77	1665.86	2286
-33	484.81	728.85	1123.01	1560.63	2147
-32	454.78	683.95	1051.66	1462.72	2017
-31	426.81	642.1	985.29	1371.58	1895
-30	400.73	603.06	923.54	1286.7	1782
-29	376.41	566.65	866.05	1207.61	1676
-28	353.72	532.66	812.51	1133.88	1577
-27	332.54	500.92	762.61	1065.11	1484
-26	312.77	471.27	716.09	1000.95	1397
-25	294.29	443.56	672.7	941.06	1316
-24	277.02	417.65	632.22	885.12	1240
-23	260.88	393.41	594.42	832.86	1169
-22	245.77	370.73	559.12	784.02	1102
-21	231.64	349.49	526.13	738.34	1040
-20	218.4	329.6	495.3	695.6	981.1
-19	206.02	311.03	466.5	655.65	926.1
-18	194.42	293.61	439.56	618.24	874.6
-17	183.54	277.27	414.33	583.19	826.1
-16	173.33	261.93	390.7	550.33	780.7
-15	163.75	247.52	368.56	519.52	738
-14	154.76	233.99	347.81	490.63	697.8
-13	146.32	221.27	328.35	463.51	660.1
-12	138.39	209.32	310.09	438.05	624.6
-11	130.93	198.08	292.96	414.14	591.3
-10	123.92	187.51	276.87	391.68	559.9
-9	117.33	177.56	261.77	370.57	530.3
-8	111.12	168.19	247.57	350.72	502.4
-7	105.29	159.38	234.23	332.05	476.2
-6	99.79	151.07	221.69	314.49	451.5
-5	94.61	143.24	209.89	297.95	428.2
-4	89.73	135.86	198.79	282.38	406.2
-3	85.13	128.9	188.34	267.72	385.5
-2	80.79	122.34	178.5	253.9	366
-1	76.7	116.15	169.23	240.88	347.5
0	72.84	110.3	160.5	228.6	330.1
1	69.17	104.73	152.23	216.97	313.6
2	65.71	99.47	144.44	205.99	298
3	62.45	94.51	137.09	195.64	283.3
4	59.36	89.82	130.16	185.87	269.3
5	56.45	85.39	123.62	176.64	256.2
6	53.7	81.21	117.45	167.92	243.7
7	51.1	77.25	111.62	159.69	232
8	48.63	73.51	106.11	151.91	220.8
9	46.31	69.97	100.91	144.55	210.3
10	44.1	66.62	95.99	137.59	200.3
11	42.02	63.45	91.34	131.01	190.9
12	40.05	60.44	86.94	124.78	182
13	38.18	57.6	82.78	118.88	173.5
14	36.4	54.9	78.84	113.29	165.4
15	34.73	52.35	75.11	108	157.8
16	33.13	49.93	71.58	102.99	150.6
17	31.62	47.63	68.23	98.23	143.7
18	30.19	45.45	65.06	93.73	137.2
19	28.83	43.39	62.06	89.45	131.1
20	27.54	41.42	59.21	85.4	125.2

**Temperature characteristics, cont.**

21	26.32	39.56	56.5	81.55	119.6
22	25.15	37.79	53.94	77.9	114.3
23	24.05	36.11	51.5	74.43	109.3
24	23	34.52	49.19	71.13	104.5
25	22	33	47	68	100
26	21.05	31.56	44.92	65.03	95.7
27	20.15	30.2	42.95	62.21	91.62
28	19.3	28.9	41.07	59.53	87.72
29	18.48	27.67	39.29	56.98	84.02
30	17.71	26.49	37.6	54.55	80.49
31	16.97	25.37	35.98	52.24	77.13
32	16.27	24.31	34.45	50.04	73.93
33	15.6	23.29	32.99	47.95	70.88
34	14.96	22.33	31.6	45.95	67.97
35	14.35	21.41	30.27	44.05	65.2
36	13.77	20.53	29.01	42.24	62.55
37	13.22	19.69	27.81	40.52	60.03
38	12.69	18.89	26.66	38.87	57.62
39	12.19	18.13	25.57	37.3	55.32
40	11.71	17.41	24.53	35.81	53.13
41	11.25	16.71	23.53	34.38	51.03
42	10.81	16.05	22.58	33.01	49.03
43	10.4	15.42	21.68	31.71	47.12
44	10	14.82	20.82	30.47	45.29
45	9.61	14.24	19.99	29.28	43.54
46	9.25	13.69	19.2	28.15	41.87
47	8.9	13.16	18.45	27.06	40.27
48	8.57	12.66	17.73	26.02	38.74
49	8.25	12.18	17.05	25.03	37.28
50	7.94	11.72	16.39	24.09	35.88
51	7.65	11.28	15.76	23.18	34.53
52	7.37	10.86	15.15	22.31	33.24
53	7.11	10.46	14.57	21.48	32.01
54	6.85	10.07	14.02	20.69	30.82
55	6.61	9.7	13.49	19.93	29.69
56	6.37	9.35	12.99	19.2	28.6
57	6.15	9.01	12.5	18.5	27.56
58	5.93	8.69	12.04	17.84	26.57
59	5.72	8.37	11.59	17.2	25.61
60	5.53	8.08	11.17	16.58	24.7
61	5.33	7.79	10.76	15.99	23.82
62	5.15	7.51	10.37	15.43	22.98
63	4.97	7.25	10	14.88	22.17
64	4.81	7	9.64	14.36	21.39
65	4.64	6.76	9.3	13.86	20.65
66	4.49	6.52	8.97	13.39	19.93
67	4.34	6.3	8.65	12.92	19.25
68	4.19	6.08	8.35	12.48	18.59
69	4.05	5.88	8.06	12.06	17.95
70	3.92	5.68	7.78	11.65	17.35
71	3.79	5.49	7.51	11.26	16.76
72	3.67	5.3	7.26	10.88	16.2
73	3.55	5.13	7.01	10.52	15.66
74	3.43	4.96	6.77	10.17	15.14
75	3.32	4.8	6.54	9.84	14.64
76	3.22	4.64	6.32	9.51	14.16
77	3.11	4.49	6.11	9.2	13.7
78	3.01	4.34	5.91	8.9	13.25
79	2.92	4.2	5.72	8.62	12.82
80	2.83	4.07	5.53	8.34	12.41

Temperature characteristics, cont.

81	2.74	3.94	5.35	8.07	12.01
82	2.65	3.81	5.18	7.82	11.63
83	2.57	3.69	5.01	7.57	11.26
84	2.49	3.58	4.85	7.33	10.91
85	2.42	3.47	4.7	7.1	10.57
86	2.34	3.36	4.55	6.88	10.24
87	2.27	3.25	4.41	6.67	9.92
88	2.2	3.15	4.27	6.46	9.62
89	2.13	3.06	4.14	6.26	9.32
90	2.07	2.96	4.01	6.07	9.04
91	2.01	2.87	3.89	5.89	8.77
92	1.95	2.79	3.77	5.71	8.5
93	1.89	2.7	3.66	5.54	8.25
94	1.83	2.62	3.55	5.37	8
95	1.78	2.55	3.44	5.21	7.77
96	1.73	2.47	3.34	5.06	7.54
97	1.68	2.4	3.24	4.91	7.32
98	1.63	2.33	3.14	4.77	7.1
99	1.58	2.26	3.05	4.63	6.9
100	1.53	2.2	2.96	4.49	6.7
101	1.49	2.13	2.88	4.37	6.51
102	1.45	2.07	2.79	4.24	6.32
103	1.41	2.01	2.71	4.12	6.14
104	1.37	1.96	2.63	4	5.97
105	1.33	1.9	2.56	3.89	5.8
106	1.3	1.85	2.48	3.78	5.64
107	1.26	1.8	2.41	3.68	5.48
108	1.23	1.75	2.34	3.58	5.33
109	1.19	1.7	2.28	3.48	5.19
110	1.16	1.66	2.21	3.39	5.04
111	1.13	1.61	2.15	3.29	4.91
112	1.1	1.57	2.09	3.21	4.77
113	1.07	1.53	2.03	3.12	4.64
114	1.04	1.49	1.98	3.04	4.52
115	1.02	1.45	1.92	2.96	4.4
116	0.9908	1.41	1.87	2.88	4.28
117	0.9655	1.37	1.82	2.8	4.17
118	0.9409	1.34	1.77	2.73	4.06
119	0.9172	1.3	1.72	2.66	3.95
120	0.8942	1.27	1.67	2.59	3.85
121	0.8719	1.24	1.63	2.53	3.75
122	0.8503	1.2	1.58	2.46	3.66
123	0.8294	1.17	1.54	2.4	3.56
124	0.8091	1.14	1.5	2.34	3.47
125	0.7894	1.12	1.46	2.28	3.38

**Temperature characteristics**

Part number	NT0610574000	NT0810574050	NT@10574250	NT0615574050	NT0615574600
Resistance	100kΩ	100kΩ	100kΩ	150kΩ	150kΩ
Beta Value	4000	4050	4250	4050	4600
Temperature (°C)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)
-40	3492.7	3660	4018	5753	8206.9
-39	3268.81	3418.98	3755.77	5372.81	7628.28
-38	3060.61	3195.4	3512.03	5020.02	7093.47
-37	2866.92	2987.89	3285.39	4692.5	6598.95
-36	2686.65	2795.2	3074.56	4388.29	6141.47
-35	2518.78	2616.17	2878.37	4105.6	5718.09
-34	2362.41	2449.76	2695.72	3842.81	5326.1
-33	2216.67	2295.01	2525.62	3598.38	4963.02
-32	2080.78	2151.02	2367.14	3370.95	4626.57
-31	1954.03	2016.98	2219.44	3159.23	4314.68
-30	1835.75	1892.14	2081.72	2962.05	4025.44
-29	1725.33	1775.83	1953.27	2778.34	3757.08
-28	1622.2	1667.4	1833.41	2607.1	3508.01
-27	1525.84	1566.28	1721.54	2447.41	3276.73
-26	1435.76	1471.93	1617.07	2298.44	3061.9
-25	1351.53	1383.85	1519.49	2159.4	2862.27
-24	1272.74	1301.6	1428.3	2029.58	2676.68
-23	1199	1224.75	1343.06	1908.32	2504.08
-22	1129.95	1152.92	1263.35	1795	2343.51
-21	1065.29	1085.74	1188.78	1689.07	2194.05
-20	1004.7	1022.9	1119	1590	2054.9
-19	948.02	964.16	1053.83	1497.12	1925.63
-18	894.85	909.15	992.78	1410.23	1805.12
-17	844.96	857.61	935.56	1328.89	1692.74
-16	798.12	809.3	881.93	1252.73	1587.9
-15	754.14	764	831.63	1181.38	1490.06
-14	712.83	721.51	784.44	1114.52	1398.72
-13	674.01	681.63	740.17	1051.84	1313.43
-12	637.51	644.2	698.61	993.05	1233.74
-11	603.19	609.04	659.59	937.89	1159.28
-10	570.91	576.01	622.93	886.11	1089.67
-9	540.53	544.97	588.5	837.5	1024.58
-8	511.94	515.78	556.13	791.84	963.69
-7	485.01	488.33	525.71	748.93	906.71
-6	459.65	462.5	497.09	708.6	853.37
-5	435.75	438.18	470.18	670.67	803.43
-4	413.22	415.29	444.85	634.99	756.65
-3	391.98	393.73	421.01	601.41	712.82
-2	371.94	373.41	398.56	569.81	671.74
-1	353.04	354.26	377.42	540.04	633.22
0	335.2	336.2	357.5	512	597.1
1	318.24	319.14	338.57	485.59	562.89
2	302.23	303.05	320.74	460.7	530.81
3	287.11	287.86	303.95	437.23	500.73
4	272.84	273.51	288.11	415.11	472.5
5	259.35	259.96	273.19	394.23	446.01
6	246.61	247.16	259.11	374.53	421.14
7	234.56	235.06	245.83	355.92	397.79
8	223.17	223.62	233.3	338.36	375.85
9	212.4	212.79	221.47	321.76	355.22
10	202.2	202.56	210.3	306.08	335.84
11	192.56	192.87	199.75	291.25	317.61
12	183.42	183.69	189.79	277.23	300.46
13	174.77	175.01	180.37	263.96	284.33
14	166.57	166.78	171.46	251.41	269.14
15	158.8	158.99	163.04	239.53	254.84
16	151.44	151.6	155.08	228.27	241.37
17	144.46	144.59	147.54	217.61	228.68
18	137.84	137.95	140.41	207.52	216.72
19	131.56	131.65	133.66	197.94	205.45
20	125.6	125.67	127.27	188.87	194.82

**Temperature characteristics, cont.**

21	119.94	119.99	121.21	180.26	184.79
22	114.56	114.6	115.48	172.09	175.33
23	109.46	109.48	110.04	164.34	166.39
24	104.61	104.62	104.89	156.99	157.96
25	100	100	100	150	150
26	95.64	95.6	95.39	143.38	142.53
27	91.5	91.42	91.02	137.09	135.47
28	87.56	87.44	86.87	131.11	128.8
29	83.81	83.66	82.94	125.42	122.49
30	80.24	80.07	79.2	120.02	116.52
31	76.85	76.64	75.65	114.88	110.88
32	73.61	73.38	72.28	109.98	105.54
33	70.54	70.28	69.08	105.33	100.49
34	67.6	67.33	66.03	100.89	95.7
35	64.81	64.51	63.14	96.67	91.17
36	62.15	61.83	60.39	92.65	86.88
37	59.61	59.27	57.77	88.82	82.81
38	57.19	56.84	55.28	85.17	78.96
39	54.88	54.51	52.91	81.69	75.3
40	52.68	52.3	50.65	78.37	71.83
41	50.57	50.18	48.5	75.2	68.54
42	48.57	48.16	46.46	72.18	65.42
43	46.65	46.24	44.51	69.3	62.46
44	44.82	44.4	42.65	66.55	59.64
45	43.07	42.64	40.88	63.92	56.97
46	41.4	40.96	39.2	61.41	54.43
47	39.8	39.36	37.59	59.01	52.02
48	38.28	37.83	36.05	56.72	49.72
49	36.82	36.36	34.59	54.53	47.54
50	35.42	34.96	33.19	52.44	45.47
51	34.09	33.62	31.85	50.45	43.51
52	32.82	32.34	30.56	48.54	41.64
53	31.6	31.11	29.34	46.71	39.86
54	30.43	29.94	28.17	44.97	38.17
55	29.31	28.82	27.06	43.29	36.55
56	28.24	27.74	25.99	41.69	35.02
57	27.21	26.71	24.97	40.16	33.55
58	26.23	25.73	24	38.69	32.15
59	25.28	24.78	23.07	37.28	30.82
60	24.38	23.88	22.19	35.93	29.55
61	23.51	23.01	21.34	34.63	28.33
62	22.68	22.18	20.53	33.39	27.18
63	21.88	21.39	19.75	32.2	26.07
64	21.11	20.62	19.01	31.05	25.02
65	20.37	19.89	18.3	29.96	24.01
66	19.67	19.19	17.62	28.9	23.05
67	18.99	18.52	16.97	27.89	22.13
68	18.33	17.87	16.35	26.92	21.25
69	17.71	17.25	15.75	25.99	20.41
70	17.1	16.65	15.18	25.1	19.61
71	16.53	16.08	14.63	24.24	18.85
72	15.97	15.53	14.1	23.41	18.11
73	15.43	15	13.6	22.62	17.41
74	14.92	14.49	13.12	21.85	16.74
75	14.42	14.01	12.65	21.12	16.1
76	13.95	13.54	12.21	20.41	15.48
77	13.49	13.09	11.78	19.74	14.9
78	13.05	12.65	11.37	19.08	14.33
79	12.62	12.24	10.98	18.45	13.79
80	12.22	11.84	10.6	17.85	13.28

**Temperature characteristics, cont.**

81	11.82	11.45	10.24	17.27	12.78
82	11.44	11.08	9.89	16.71	12.31
83	11.08	10.72	9.56	16.17	11.85
84	10.73	10.38	9.24	15.65	11.42
85	10.39	10.05	8.93	15.15	11
86	10.06	9.73	8.64	14.66	10.6
87	9.74	9.42	8.36	14.19	10.21
88	9.44	9.12	8.09	13.74	9.84
89	9.14	8.84	7.83	13.31	9.48
90	8.86	8.56	7.58	12.89	9.14
91	8.58	8.3	7.33	12.49	8.81
92	8.32	8.04	7.1	12.1	8.5
93	8.07	7.8	6.88	11.72	8.19
94	7.82	7.56	6.66	11.36	7.9
95	7.58	7.33	6.45	11.02	7.63
96	7.36	7.11	6.25	10.68	7.36
97	7.14	6.9	6.05	10.36	7.1
98	6.92	6.69	5.87	10.05	6.86
99	6.72	6.5	5.68	9.75	6.62
100	6.52	6.3	5.51	9.46	6.4
101	6.33	6.12	5.34	9.18	6.18
102	6.15	5.94	5.17	8.91	5.97
103	5.97	5.77	5.01	8.65	5.77
104	5.8	5.6	4.86	8.4	5.58
105	5.63	5.44	4.71	8.16	5.39
106	5.48	5.29	4.56	7.93	5.22
107	5.32	5.14	4.42	7.71	5.05
108	5.17	4.99	4.29	7.49	4.88
109	5.03	4.85	4.16	7.28	4.72
110	4.89	4.72	4.03	7.08	4.57
111	4.75	4.58	3.91	6.89	4.43
112	4.62	4.46	3.79	6.7	4.29
113	4.5	4.34	3.68	6.52	4.15
114	4.38	4.22	3.57	6.34	4.02
115	4.26	4.1	3.46	6.17	3.89
116	4.15	3.99	3.36	6.01	3.77
117	4.04	3.88	3.26	5.85	3.66
118	3.93	3.78	3.16	5.69	3.54
119	3.83	3.68	3.06	5.54	3.44
120	3.73	3.58	2.97	5.4	3.33
121	3.63	3.49	2.89	5.26	3.23
122	3.54	3.39	2.8	5.12	3.13
123	3.44	3.31	2.72	4.99	3.04
124	3.36	3.22	2.64	4.87	2.95
125	3.27	3.14	2.56	4.74	2.86



Temperature characteristics

Part number	NT@22574200	NT@33573950	NT@47573950	NT0847574500	NT@56574050
Resistance	220kΩ	330kΩ	470kΩ	470kΩ	560kΩ
Beta Value	4200	3950	3950	4500	4050
Temperature (°C)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)
-40	9264	10695	16228	26695	19377
-39	8638.76	10035.85	15172.46	24737.93	18158
-38	8059.48	9420.68	14192.53	22936.46	17021
-37	7522.53	8846.37	13282.32	21277.3	15962
-36	7024.58	8310	12436.45	19748.39	14975
-35	6562.57	7808.89	11649.98	18338.75	14053
-34	6133.71	7340.56	10918.36	17038.37	13194
-33	5735.43	6902.71	10237.45	15838.17	12391
-32	5365.39	6493.2	9603.41	14729.85	11642
-31	5021.42	6110.08	9012.74	13705.84	10942
-30	4701.54	5751.52	8462.21	12759.25	10287
-29	4403.93	5415.82	7948.86	11883.79	9675
-28	4126.92	5101.43	7469.93	11073.7	9103
-27	3868.97	4806.89	7022.93	10323.72	8568
-26	3628.65	4530.86	6605.53	9629.06	8067
-25	3404.68	4272.08	6215.59	8985.33	7598
-24	3195.84	4029.4	5851.15	8388.49	7158
-23	3001.04	3801.73	5510.39	7834.88	6747
-22	2819.24	3588.09	5191.62	7321.11	6361
-21	2649.52	3387.53	4893.3	6844.09	5999
-20	2491	3199.2	4614	6401	5660
-19	2343.13	3022.07	4352.5	5989.13	5342
-18	2204.87	2855.67	4107.44	5606.2	5043
-17	2075.54	2699.29	3877.7	5250.04	4763
-16	1954.52	2552.29	3662.23	4918.61	4500
-15	1841.24	2414.05	3460.06	4610.06	4252
-14	1735.15	2284.02	3270.29	4322.69	4020
-13	1635.76	2161.67	3092.09	4054.92	3801
-12	1542.62	2046.5	2924.69	3805.31	3595
-11	1455.29	1938.06	2767.38	3572.53	3402
-10	1373.4	1835.92	2619.48	3355.35	3220
-9	1296.56	1739.7	2480.39	3152.63	3049
-8	1224.45	1649.01	2349.52	2963.35	2887
-7	1156.74	1563.51	2226.35	2786.52	2735
-6	1093.15	1482.88	2110.38	2621.27	2592
-5	1033.4	1406.83	2001.14	2466.78	2457
-4	977.24	1335.06	1898.21	2322.28	2330
-3	924.45	1267.32	1801.2	2187.08	2210
-2	874.79	1203.37	1709.71	2060.52	2096
-1	828.07	1142.96	1623.42	1942.02	1989
0	784.1	1085.9	1542	1831	1889
1	742.46	1031.81	1465.13	1726.83	1793
2	703.26	980.71	1392.53	1629.19	1702
3	666.35	932.43	1323.96	1537.64	1617
4	631.58	886.79	1259.16	1451.77	1536
5	598.82	843.64	1197.91	1371.19	1460
6	567.94	802.82	1140	1295.55	1388
7	538.83	764.21	1085.22	1224.52	1320
8	511.37	727.66	1033.38	1157.79	1256
9	485.46	693.07	984.32	1095.08	1195
10	461.01	660.3	937.87	1036.13	1137
11	437.92	629.27	893.88	980.69	1083
12	416.12	599.86	852.2	928.53	1031
13	395.52	571.98	812.7	879.44	982.4
14	376.05	545.56	775.26	833.23	936.1
15	357.65	520.49	739.76	789.7	892.2
16	340.25	496.72	706.08	748.7	850.6
17	323.79	474.15	674.12	710.05	811.2
18	308.22	452.74	643.79	673.62	773.7
19	293.47	432.4	615	639.26	738.2
20	279.52	413.09	587.65	606.84	704.6

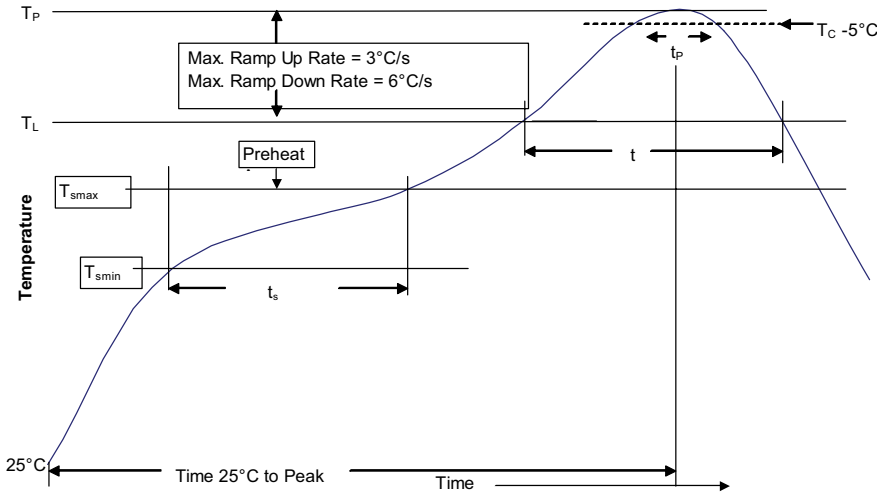
**Temperature characteristics, cont.**

21	266.3	394.74	561.67	576.25	672.6
22	253.78	377.31	536.99	547.37	642.2
23	241.91	360.74	513.52	520.1	613.4
24	230.66	344.98	491.22	494.34	586
25	220	330	470	470	560
26	209.93	315.82	449.8	446.97	535.3
27	200.38	302.32	430.57	425.21	511.9
28	191.32	289.48	412.28	404.63	489.6
29	182.72	277.25	394.86	385.16	468.4
30	174.55	265.61	378.28	366.75	448.3
31	166.79	254.52	362.48	349.32	429.1
32	159.42	243.95	347.43	332.82	410.8
33	152.42	233.89	333.09	317.19	393.4
34	145.76	224.29	319.41	302.39	376.9
35	139.43	215.13	306.38	288.36	361.1
36	133.41	206.41	293.94	275.06	346.1
37	127.68	198.08	282.08	262.45	331.8
38	122.23	190.13	270.76	250.49	318.2
39	117.04	182.55	259.96	239.15	305.2
40	112.1	175.3	249.64	228.38	292.8
41	107.39	168.39	239.79	218.15	280.9
42	102.91	161.78	230.38	208.44	269.6
43	98.64	155.47	221.39	199.22	258.9
44	94.57	149.44	212.8	190.46	248.6
45	90.69	143.68	204.59	182.13	238.7
46	86.98	138.17	196.74	174.21	229.4
47	83.45	132.89	189.23	166.68	220.4
48	80.08	127.85	182.05	159.51	211.8
49	76.87	123.03	175.18	152.7	203.6
50	73.8	118.41	168.6	146.21	195.8
51	70.88	113.98	162.3	140.1	188.4
52	68.08	109.73	156.28	134.27	181.2
53	65.41	105.67	150.5	128.71	174.4
54	62.86	101.78	144.98	123.42	167.9
55	60.42	98.05	139.68	118.37	161.7
56	58.09	94.48	134.61	113.55	155.7
57	55.86	91.06	129.75	108.95	149.9
58	53.73	87.78	125.08	104.56	144.5
59	51.69	84.64	120.62	100.37	139.2
60	49.73	81.63	116.33	96.37	134.1
61	47.86	78.73	112.22	92.55	129.3
62	46.07	75.96	108.27	88.9	124.7
63	44.36	73.3	104.49	85.42	120.2
64	42.72	70.75	100.85	82.08	116
65	41.14	68.29	97.37	78.9	111.9
66	39.64	65.94	94.02	75.85	107.9
67	38.19	63.68	90.8	72.94	104.2
68	36.81	61.51	87.71	70.15	100.5
69	35.48	59.42	84.74	67.48	97.05
70	34.2	57.42	81.89	64.93	93.71
71	32.98	55.49	79.14	62.49	90.5
72	31.81	53.64	76.51	60.15	87.42
73	30.68	51.86	73.97	57.91	84.45
74	29.6	50.14	71.53	55.76	81.6
75	28.57	48.5	69.19	53.71	78.86
76	27.57	46.91	66.93	51.74	76.23
77	26.62	45.39	64.76	49.85	73.69
78	25.7	43.92	62.66	48.04	71.26
79	24.82	42.51	60.65	46.31	68.91
80	23.97	41.15	58.71	44.64	66.65

**Temperature characteristics, cont.**

81	23.16	39.84	56.85	43.05	64.48
82	22.37	38.57	55.05	41.51	62.39
83	21.62	37.36	53.32	40.04	60.38
84	20.9	36.19	51.65	38.63	58.44
85	20.2	35.06	50.04	37.28	56.57
86	19.53	33.97	48.49	35.97	54.76
87	18.88	32.93	47	34.7	53.01
88	18.25	31.92	45.56	33.49	51.33
89	17.65	30.95	44.17	32.33	49.71
90	17.08	30.01	42.83	31.21	48.15
91	16.52	29.11	41.53	30.14	46.64
92	15.99	28.23	40.29	29.11	45.19
93	15.47	27.39	39.08	28.12	43.79
94	14.98	26.58	37.92	27.16	42.45
95	14.5	25.8	36.8	26.25	41.15
96	14.04	25.04	35.72	25.37	39.89
97	13.6	24.31	34.68	24.52	38.68
98	13.18	23.6	33.67	23.71	37.51
99	12.77	22.92	32.69	22.92	36.39
100	12.37	22.26	31.75	22.17	35.3
101	11.99	21.62	30.84	21.45	34.25
102	11.62	21.01	29.96	20.75	33.24
103	11.27	20.41	29.11	20.08	32.27
104	10.93	19.84	28.29	19.44	31.33
105	10.61	19.28	27.5	18.82	30.42
106	10.29	18.75	26.73	18.22	29.54
107	9.98	18.23	25.99	17.64	28.69
108	9.69	17.73	25.27	17.09	27.87
109	9.41	17.24	24.58	16.56	27.08
110	9.13	16.77	23.91	16.04	26.31
111	8.87	16.31	23.26	15.54	25.57
112	8.61	15.87	22.63	15.07	24.86
113	8.37	15.45	22.02	14.6	24.16
114	8.13	15.03	21.43	14.16	23.49
115	7.9	14.63	20.86	13.73	22.85
116	7.68	14.25	20.31	13.32	22.22
117	7.46	13.87	19.77	12.92	21.61
118	7.25	13.51	19.25	12.53	21.03
119	7.05	13.16	18.75	12.16	20.46
120	6.86	12.82	18.26	11.8	19.91
121	6.67	12.49	17.79	11.45	19.38
122	6.49	12.16	17.33	11.12	18.86
123	6.31	11.85	16.89	10.79	18.36
124	6.14	11.55	16.46	10.48	17.88
125	5.98	11.26	16.04	10.18	17.41

### Solder reflow profile



**Table 1 - Standard SnPb solder ( $T_c$ )**

Package thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

**Table 2 - Lead (Pb) free solder ( $T_c$ )**

Package thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

### Reference J-STD-020

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak		
• Temperature min. ( $T_{smin}$ )	100 °C	150 °C
• Temperature max. ( $T_{smax}$ )	150 °C	200 °C
• Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	60-120 seconds	60-120 seconds
Ramp up rate $T_L$ to $T_p$	3 °C/ second max.	3 °C/ second max.
Liquidous temperature ( $T_L$ )	183 °C	217 °C
Time ( $t_L$ ) maintained above $T_L$	60-150 seconds	60-150 seconds
Peak package body temperature ( $T_p$ )*	Table 1	Table 2
Time ( $t_p$ )* within 5 °C of the specified classification temperature ( $T_c$ )	20 seconds*	30 seconds*
Ramp-down rate ( $T_p$ to $T_L$ )	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

\* Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

### Manual solder

Soldering iron power 30 W max., pre-heating: +150°C/60 sec, soldering tip temperature: +350 °C max for 3 sec max.1 time solder iron max. Generally manual soldering is not recommended.

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