

## Surface Mount, NTC Thermistors



### FEATURES

- TCR from 6 to 2 %/K even at high temperatures
- Tolerance on  $R_{25}$  down to 1 %, and on  $B_{25/85}$  down to 1 %
- Suitable for wave or reflow soldering
- NiSn terminations
- Fully glass coated
- Old part number was 2322 615 5....
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

### APPLICATIONS

- Temperature compensation, sensing and protection in, for example:
  - Battery chargers
  - Consumer equipment
  - Office equipment

### DESCRIPTION

Size 0805 chip thermistors with a negative temperature coefficient. The device has no marking.

### PACKAGING

Available in 8 mm punched paper tape on reel package of 4000 units.

### QUICK REFERENCE DATA

PARAMETER	VALUE
Resistance value at 25 °C	2.2 k $\Omega$ to 680 k $\Omega$
Tolerance on $R_{25}$ - value	$\pm 2$ %; $\pm 3$ %; $\pm 5$ %; $\pm 10$ %
Tolerance on $B_{25/85}$ - value	see table below
Maximum dissipation at 25 °C	210 mW
Thermal time constant $\tau$	$\approx 8$ s
Operating temperature range	- 40 to + 150 °C
R/T values	see tables
Climatic category	40/125/56
Mass	$\approx 0.0095$ g

### ELECTRICAL DATA AND ORDERING INFORMATION

$R_{25}$ - VALUE (k $\Omega$ )	$B_{25/85}$ - VALUE (K)	TOLERANCE ON $B_{25/85}$ (%)	12NC ORDERING CODE 2381 615 5.... <sup>1)</sup>	SAP MATERIAL NO. NTCS0805E3... <sup>2)</sup>
2.2	3600	$\pm 1$	*222	222*MT
4.7	3500	$\pm 1$	*472	472*MT
10	3570	$\pm 3$	*103	103*MT
15	3700	$\pm 1$	*153	153*MT
22	3800	$\pm 1$	*223	223*HT
33	3920	$\pm 1$	*333	333*HT
47	3960	$\pm 1$	*473	473*HT
68	4100	$\pm 1$	*683	683*XT
100	4100	$\pm 1$	*104	104*XT
330	3930	$\pm 1$	*334	334*HT
470	4025	$\pm 1$	*474	474*XT
680	4125	$\pm 1$	*684	684*XT

#### Note

1. replace \* in 12NC by 3 for 5 %, 6 for 3 %, 4 for 2 %
2. replace \* in SAP part no by J for 5 %, H for 3 %, G for 2 %, F for 1 % tolerance on  $R_{25}$  °C

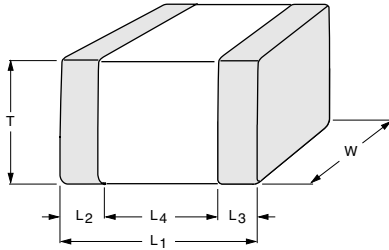
# 2381 615 5..../NTCS0805E3.....T



Vishay BCcomponents

Surface Mount, NTC Thermistors

## DIMENSIONS in millimeters



L <sub>1</sub>	W	T	L <sub>2</sub> and L <sub>3</sub> MIN.	L <sub>4</sub> MIN.
2.0 ± 0.2	1.25 ± 0.15	0.8 ± 0.15	0.2	0.55

RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R <sub>25</sub> AT 2.2 kΩ			
T <sub>OPER</sub> (°C)	CATALOG NUMBER 2381 615 5*222 OR SAP NO. NTCS0805E3222*MT		
	R <sub>T</sub> (Ω)	TCR (%/K)	ΔR/R DUE TO B-TOLERANCE (%)
-40	57 658	- 6.26	7.58
-35	42 410	- 6.03	6.83
-30	31 537	- 5.82	6.13
-25	23 698	- 5.61	5.45
-20	17 986	- 5.42	4.80
-15	13 782	- 5.23	4.18
-10	10 657	- 5.06	3.58
-5	8312	- 4.89	3.01
0	6537	- 4.72	2.46
5	5182	- 4.57	1.93
10	4139	- 4.42	1.42
15	3330	- 4.28	0.93
20	2698	- 4.14	0.46
25	2200	- 4.02	0.00
30	1805	- 3.89	0.22
35	1491	- 3.77	0.43
40	1238	- 3.66	0.64
45	1034	- 3.55	0.84
50	868	- 3.45	1.03
55	732	- 3.35	1.22
60	621.0	- 3.25	1.40
65	529.0	- 3.16	1.58
70	452.7	- 3.07	1.75
75	389.1	- 2.99	1.92
80	335.8	- 2.90	2.08
85	291.0	- 2.83	2.23
90	253.2	- 2.75	2.54
95	221.0	- 2.68	2.85
100	193.7	- 2.61	3.14
105	170.3	- 2.54	3.43
110	150.2	- 2.48	3.71
115	132.9	- 2.41	3.98
120	118.0	- 2.35	4.24
125	105.0	- 2.20	4.50
130	93.80	- 2.24	4.76
135	83.94	- 2.19	5.00
140	75.35	- 2.13	5.25
145	67.81	- 2.08	5.48
150	61.17	- 2.04	5.71

**RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 4.7 kΩ**

T <sub>OPER</sub> (°C)	CATALOG NUMBER 2381 615 5*472 OR SAP NO. NTCS0805E3472*MT		
	R <sub>T</sub> (Ω)	TCR (%/K)	ΔR/R DUE TO B-TOLERANCE (%)
- 40	101 275	- 5.75	7.58
- 35	76 325	- 5.57	6.83
- 30	58 034	- 5.39	6.13
- 25	44 505	- 5.22	5.45
- 20	43 413	- 5.06	4.80
- 15	26 821	- 4.91	4.18
- 10	21 065	- 7.76	3.58
- 5	16 667	- 4.61	3.01
0	13 280	- 4.47	2.46
5	10 654	- 4.34	1.93
10	8603	- 4.21	1.42
15	6991	- 4.09	0.93
20	5716	- 3.97	0.46
25	4700	- 3.86	0.00
30	3887	- 3.75	0.22
35	3231	- 3.64	0.43
40	2700	- 3.54	0.64
45	2268	- 3.44	0.84
50	1914	- 3.35	1.03
55	1623	- 3.26	1.22
60	1381.7	- 3.17	1.40
65	1181.7	- 3.09	1.58
70	1014.7	- 3.01	1.75
75	874.8	- 2.93	1.92
80	757.1	- 2.85	2.08
85	657.7	- 2.78	2.23
90	573.3	- 2.71	2.54
95	501.5	- 2.64	2.85
100	440.1	- 2.58	3.14
105	387.5	- 2.52	3.43
110	342.2	- 2.46	3.71
115	303.1	- 2.40	3.98
120	269.2	- 2.34	4.24
125	239.8	- 2.29	4.50
130	214.2	- 2.23	4.76
135	191.82	- 2.18	5.00
140	172.20	- 2.13	5.25
145	154.96	- 2.09	5.48
150	139.78	- 2.04	5.71

**RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 10 kΩ**

T <sub>OPER</sub> (°C)	CATALOG NUMBER 2381 615 5*103 OR SAP NO. NTCS0805E3103*MT		
	R <sub>T</sub> (Ω)	TCR (%/K)	ΔR/R DUE TO B-TOLERANCE (%)
- 40	232 634	- 5.92	11.22
- 35	173 538	- 5.71	10.14
- 30	130 769	- 5.51	9.10
- 25	99 489	- 5.33	8.11
- 20	76 385	- 5.15	7.15
- 15	59 157	- 4.98	6.24
- 10	46 194	- 4.82	5.35
- 5	36 356	- 4.67	4.50
0	28 829	- 4.52	3.68
5	23 025	- 4.38	2.89
10	18 515	- 4.25	2.13



<b>RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 10 kΩ</b>				
T <sub>OPER</sub> (°C)	CATALOG NUMBER 2381 615 5*103 OR SAP NO. NTCS0805E3103*MT			
	R <sub>T</sub> (Ω)	TCR (%/K)	ΔR/R DUE TO B-TOLERANCE (%)	
15	14 986	- 4.12	1.40	
20	12 205	- 4.00	0.69	
25	10 000	- 3.88	0.00	
30	8240	- 3.77	0.66	
35	6827	- 3.66	1.31	
40	5687	- 3.56	1.93	
45	4760	- 3.46	2.53	
50	4004.16	- 3.37	3.11	
55	3383.77	- 3.28	3.68	
60	2872.26	- 3.19	4.23	
65	2448.52	- 3.11	4.76	
70	2095.90	- 3.03	5.28	
75	1801.17	- 2.95	5.78	
80	1553.80	- 2.88	6.27	
85	1345.33	- 2.81	6.74	
90	1168.95	- 2.74	7.20	
95	1019.16	- 2.67	7.65	
100	891.48	- 2.61	8.09	
105	782.28	- 2.54	8.51	
110	688.56	- 2.48	8.93	
115	607.85	- 2.43	9.33	
120	538.14	- 2.37	9.73	
125	477.73	- 2.32	10.11	
130	425.24	- 2.26	10.48	
135	379.49	- 2.21	10.85	
140	339.51	- 2.17	11.20	
145	304.47	- 2.12	11.55	
150	273.69	- 2.07	11.89	

<b>RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 15 kΩ</b>				
T <sub>OPER</sub> (°C)	CATALOG NUMBER 2381 615 5*153 OR SAP NO. NTCS0805E3153*MT			
	R <sub>T</sub> (Ω)	TCR (%/K)	ΔR/R DUE TO B-TOLERANCE (%)	
- 40	391 251	- 6.14	11.22	
- 35	289 245	- 5.94	10.14	
- 30	215 960	- 5.75	9.10	
- 25	162 779	- 5.56	8.11	
- 20	123 815	- 5.38	7.15	
- 15	95 001	- 5.21	6.24	
- 10	73 505	- 5.05	5.35	
- 5	57 329	- 4.89	4.50	
0	45 058	- 4.74	3.68	
5	35 674	- 4.60	2.89	
10	28 445	- 4.46	2.13	
15	22 834	- 4.33	1.40	
20	18 450	- 4.20	0.69	
25	15 000	- 4.08	0.00	
30	12 268	- 3.96	0.66	
35	10 092	- 3.85	1.31	
40	8347	- 3.74	1.93	
45	6941	- 3.64	2.53	
50	5801.08	- 3.54	3.11	
55	4872.07	- 3.44	3.68	
60	4111.09	- 3.35	4.23	
65	3484.70	- 3.26	4.76	
70	2966.62	- 3.18	5.28	
75	2536.16	- 3.09	5.78	

**RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH  $R_{25}$  AT 15 k $\Omega$** 

$T_{OPER}$ (°C)	CATALOG NUMBER 2381 615 5*153 OR SAP NO. NTCS0805E3153*MT		
	$R_T$ ( $\Omega$ )	TCR (%/K)	$\Delta R/R$ DUE TO B-TOLERANCE (%)
80	2176.92	- 3.02	6.27
85	1875.84	- 2.94	6.74
90	1622.46	- 2.87	7.20
95	1408.39	- 2.79	7.65
100	1226.82	- 2.73	8.09
105	1072.25	- 2.66	8.51
110	940.20	- 2.60	8.93
115	827.00	- 2.54	9.33
120	729.62	- 2.48	9.73
125	645.60	- 2.42	10.11
130	572.86	- 2.36	10.48
135	509.71	- 2.31	10.85
140	454.71	- 2.26	11.20
145	406.69	- 2.21	11.55
150	364.64	- 2.16	11.89

**RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH  $R_{25}$  AT 22 k $\Omega$** 

$T_{OPER}$ (°C)	CATALOG NUMBER 2381 615 5*223 OR SAP NO. NTCS0805E3223*HT		
	$R_T$ ( $\Omega$ )	TCR (%/K)	$\Delta R/R$ DUE TO B-TOLERANCE (%)
- 40	641 004	- 6.40	11.22
- 35	468 038	- 6.18	10.14
- 30	345 469	- 5.97	9.10
- 25	257 644	- 5.77	8.11
- 20	194 045	- 5.57	7.15
- 15	147 521	- 5.39	6.24
- 10	113 159	- 5.22	5.35
- 5	87 544	- 5.05	4.50
0	68 281	- 4.89	3.68
5	53 672	- 4.74	2.89
10	42 503	- 4.59	2.13
15	33 898	- 4.46	1.40
20	27 220	- 4.32	0.69
25	22 000	- 4.20	0.00
30	17 892	- 4.07	0.66
35	14 638	- 3.96	1.31
40	12 045	- 3.84	1.93
45	9965	- 3.74	2.53
50	8288.27	- 3.63	3.11
55	6928.39	- 3.54	3.68
60	5819.79	- 3.44	4.23
65	4911.40	- 3.35	4.76
70	4163.41	- 3.26	5.28
75	3544.57	- 3.18	5.78
80	3030.24	- 3.10	6.27
85	2600.91	- 3.02	6.74
90	2240.99	- 2.94	7.20
95	1938.04	- 2.87	7.65
100	1682.03	- 2.80	8.09
105	1464.87	- 2.73	8.51
110	1279.99	- 2.67	8.93
115	1122.02	- 2.60	9.33
120	986.60	- 2.54	9.73
125	870.11	- 2.48	10.11
130	769.60	- 2.43	10.48
135	682.59	- 2.37	10.85

**RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 22 kΩ**

T <sub>OPER</sub> (°C)	CATALOG NUMBER 2381 615 5*223 OR SAP NO. NTCS0805E3223*HT		
	R <sub>T</sub> (Ω)	TCR (%/K)	ΔR/R DUE TO B-TOLERANCE (%)
140	607.05	- 2.32	11.20
145	541.28	- 2.27	11.55
150	483.86	- 2.22	11.89

**RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 33 kΩ**

T <sub>OPER</sub> (°C)	CATALOG NUMBER 2381 615 5*333 OR SAP NO. NTCS0805E3333*HT		
	R <sub>T</sub> (Ω)	TCR (%/K)	ΔR/R DUE TO B-TOLERANCE (%)
- 40	1 116 205	- 6.79	7.58
- 35	800 263	- 6.53	6.83
- 30	581 009	- 6.28	6.13
- 25	426 845	- 6.05	5.45
- 20	317 101	- 5.84	4.80
- 15	238 064	- 5.63	4.18
- 10	180 512	- 5.44	3.58
- 5	138 166	- 5.26	3.01
0	106 700	- 5.08	2.46
5	83 100	- 4.92	1.93
10	65 241	- 4.76	1.42
15	51 612	- 4.61	0.93
20	41 127	- 4.47	0.46
25	33 000	- 4.34	0.00
30	26 654	- 4.21	0.22
35	21 664	- 4.08	0.43
40	17 714	- 3.97	0.64
45	14 568	- 3.86	0.84
50	12 046	- 3.75	1.03
55	10 014	- 3.65	1.22
60	8365.9	- 3.55	1.40
65	7023.2	- 3.45	1.58
70	5923.3	- 3.36	1.75
75	5018.0	- 3.27	1.92
80	4269.1	- 3.19	2.08
85	3647.0	- 3.11	2.23
90	3127.8	- 3.03	2.54
95	2692.7	- 2.96	2.85
100	2326.6	- 2.89	3.14
105	2017.4	- 2.82	3.43
110	1755.2	- 2.75	3.71
115	1532.1	- 2.69	3.98
120	1341.6	- 2.63	4.24
125	1178.3	- 2.57	4.50
130	1038.0	- 2.51	4.76
135	916.94	- 2.45	5.00
140	812.24	- 2.40	5.25
145	721.40	- 2.35	5.48
150	642.37	- 2.30	5.71

**RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 47 kΩ**

T <sub>OPER</sub> (°C)	CATALOG NUMBER 2381 615 5*473 OR SAP NO. NTCS0805E3473*HT		
	R <sub>T</sub> (Ω)	TCR (%/K)	ΔR/R DUE TO B-TOLERANCE (%)
- 40	1 521 799	- 6.60	7.58
- 35	1 100 680	- 6.37	6.83
- 30	805 081	- 6.15	6.13
- 25	595 168	- 5.94	5.45



<b>RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 47 k<math>\Omega</math></b>			
<b>T<sub>OPER</sub> (°C)</b>	<b>CATALOG NUMBER 2381 615 5*473 OR SAP NO. NTCS0805E3473*HT</b>		
	<b>R<sub>T</sub> (<math>\Omega</math>)</b>	<b>TCR (%/K)</b>	<b><math>\Delta R/R</math> DUE TO B-TOLERANCE (%)</b>
- 20	444 453	- 5.74	4.80
- 15	335 105	- 5.56	4.18
- 10	254 976	- 5.38	3.58
- 5	195 699	- 5.21	3.01
0	151 452	- 5.05	2.46
5	118 137	- 4.89	1.93
10	92 847	- 4.74	1.42
15	73 497	- 4.60	0.93
20	58 581	- 4.47	0.46
25	47 000	- 4.34	0.00
30	37 946	- 4.22	0.22
35	30 822	- 4.10	0.43
40	25 180	- 3.99	0.64
45	20 684	- 3.88	0.84
50	17 082	- 3.78	1.03
55	14 179	- 3.68	1.22
60	11827.4	- 3.58	1.40
65	9912.2	- 3.49	1.58
70	8344.7	- 3.40	1.75
75	7055.8	- 3.31	1.92
80	5990.9	- 3.23	2.08
85	5107.4	- 3.15	2.23
90	4371.0	- 3.08	2.54
95	3754.9	- 3.00	2.85
100	3237.3	- 2.93	3.14
105	2800.8	- 2.86	3.43
110	2431.3	- 2.80	3.71
115	2117.4	- 2.73	3.98
120	1849.8	- 2.67	4.24
125	1620.9	- 2.61	4.50
130	1424.6	- 2.55	4.76
135	1255.53	- 2.50	5.00
140	1109.60	- 2.44	5.25
145	983.22	- 2.39	5.48
150	873.49	- 2.34	5.71

<b>RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 68 k<math>\Omega</math></b>			
<b>T<sub>OPER</sub> (°C)</b>	<b>CATALOG NUMBER 2381 615 5*683 OR SAP NO. NTCS0805E3683*XT</b>		
	<b>R<sub>T</sub> (<math>\Omega</math>)</b>	<b>TCR (%/K)</b>	<b><math>\Delta R/R</math> DUE TO B-TOLERANCE (%)</b>
- 40	2 596 437	- 6.92	7.58
- 35	1 848 208	- 6.68	6.83
- 30	1 331 164	- 6.45	6.13
- 25	969 559	- 6.23	5.45
- 20	713 753	- 6.02	4.80
- 15	530 805	- 5.82	4.18
- 10	398 593	- 5.64	3.58
- 5	302 091	- 5.45	3.01
0	230 981	- 5.28	2.46
5	178 104	- 5.12	1.93
10	138 441	- 4.96	1.42
15	108 442	- 4.81	0.93
20	85 571	- 4.67	0.46
25	68 000	- 4.53	0.00
30	54 403	- 4.40	0.22
35	43 806	- 4.27	0.43
40	35 493	- 4.15	0.64



<b>RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 68 kΩ</b>			
T <sub>OPER</sub> (°C)	CATALOG NUMBER 2381 615 5*683 OR SAP NO. NTCS0805E3683*XT		
	R <sub>T</sub> (Ω)	TCR (%/K)	ΔR/R DUE TO B-TOLERANCE (%)
45	28 928	- 4.03	0.84
50	23 712.10	- 3.92	1.03
55	19 543.12	- 3.81	1.22
60	16 191.85	- 3.71	1.40
65	13 483.03	- 3.61	1.58
70	11 281.91	- 3.52	1.75
75	9484.20	- 3.43	1.92
80	8008.76	- 3.34	2.08
85	6792.08	- 3.25	2.23
90	5784.22	- 3.17	2.54
95	4945.65	- 3.09	2.85
100	4244.99	- 3.02	3.14
105	3657.17	- 2.94	3.43
110	3162.06	- 2.87	3.71
115	2743.45	- 2.81	3.98
120	2388.22	- 2.74	4.24
125	2085.71	- 2.68	4.50
130	1827.19	- 2.62	4.76
135	1605.54	- 2.56	5.00
140	1414.89	- 2.50	5.25
145	1250.39	- 2.44	5.48
150	1108.03	- 2.39	5.71

<b>RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 100 kΩ</b>			
T <sub>OPER</sub> (°C)	CATALOG NUMBER 2381 615 5*104 OR SAP NO. NTCS0805E3104*XT		
	R <sub>T</sub> (Ω)	TCR (%/K)	ΔR/R DUE TO B-TOLERANCE (%)
- 40	3 833 689	- 6.96	7.58
- 35	2 724 206	- 6.71	6.83
- 30	1 959 612	- 6.47	6.13
- 25	1 426 014	- 6.25	5.45
- 20	1 049 150	- 6.03	4.80
- 15	779 950	- 5.83	4.18
- 10	585 575	- 5.64	3.58
- 5	443 786	- 5.45	3.01
0	339 343	- 5.28	2.46
5	261 695	- 5.11	1.93
10	203 455	- 4.96	1.42
15	159 402	- 4.81	0.93
20	125 811	- 4.66	0.46
25	100 000	- 4.52	0.00
30	80 021	- 4.39	0.22
35	64 447	- 4.27	0.43
40	52 224	- 4.15	0.64
45	42 570	- 4.03	0.84
50	34 897	- 3.92	1.03
55	28 763	- 3.81	1.22
60	23 830	- 3.71	1.40
65	19 842.4	- 3.61	1.58
70	16 601.3	- 3.52	1.75
75	13 953.8	- 3.43	1.92
80	11 780.6	- 3.34	2.08
85	9988.4	- 3.26	2.23
90	8503.6	- 3.18	2.54
95	7268.2	- 3.10	2.85
100	6236.0	- 3.03	3.14
105	5370.1	- 2.95	3.43





<b>RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 100 k<math>\Omega</math></b>			
<b>T<sub>OPER</sub> (°C)</b>	<b>CATALOG NUMBER 2381 615 5*104 OR SAP NO. NTCS0805E3104*XT</b>		
	<b>R<sub>T</sub> (<math>\Omega</math>)</b>	<b>TCR (%/K)</b>	<b><math>\Delta R/R</math> DUE TO B-TOLERANCE (%)</b>
110	4640.8	- 2.88	3.71
115	4024.3	- 2.82	3.98
120	3501.2	- 2.75	4.24
125	3055.8	- 2.69	4.50
130	2675.3	- 2.63	4.76
135	2349.16	- 2.57	5.00
140	2068.70	- 2.51	5.25
145	1826.80	- 2.46	5.48
150	1617.53	- 2.41	5.71

<b>RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 330 k<math>\Omega</math></b>			
<b>T<sub>OPER</sub> (°C)</b>	<b>CATALOG NUMBER 2381 615 5*334 OR SAP NO. NTCS0805E3334*HT</b>		
	<b>R<sub>T</sub> (<math>\Omega</math>)</b>	<b>TCR (%/K)</b>	<b><math>\Delta R/R</math> DUE TO B-TOLERANCE (%)</b>
- 40	10 487 886	- 6.53	7.58
- 35	7 608 431	- 6.31	6.83
- 30	5 579 063	- 6.10	6.13
- 25	4 133 083	- 5.90	5.45
- 20	3 091 952	- 5.71	4.80
- 15	2 334 781	- 5.53	4.18
- 10	1 778 826	- 5.35	3.58
- 5	1 366 860	- 5.19	3.01
0	1 058 900	- 5.03	2.46
5	826 748	- 4.87	1.93
10	650 328	- 4.73	1.42
15	515 223	- 4.59	0.93
20	410 989	- 4.45	0.46
25	330 000	- 4.33	0.00
30	266 642	- 4.20	0.22
35	216 752	- 4.08	0.43
40	177 219	- 3.97	0.64
45	145 704	- 3.86	0.84
50	120 433.64	- 3.76	1.03
55	100 058.09	- 3.66	1.22
60	83 540.50	- 3.56	1.40
65	70 081.02	- 3.47	1.58
70	59 058.74	- 3.38	1.75
75	49 988.97	- 3.29	1.92
80	42 491.26	- 3.21	2.08
85	36 265.45	- 3.13	2.23
90	31 073.52	- 3.05	2.54
95	26 725.79	- 2.98	2.85
100	23 070.38	- 2.91	3.14
105	19 985.16	- 2.84	3.43
110	17 371.44	- 2.77	3.71
115	15 149.15	- 2.71	3.98
120	13 253.08	- 2.64	4.24
125	11 629.86	- 2.58	4.50
130	10 235.70	- 2.52	4.76
135	9034.48	- 2.47	5.00
140	7996.32	- 2.41	5.25
145	7096.44	- 2.36	5.48
150	6314.17	- 2.31	5.71

**RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 470 kΩ**

T <sub>OPER</sub> (°C)	CATALOG NUMBER 2381 615 5*474 OR SAP NO. NTCS0805E3474*XT		
	R <sub>T</sub> (Ω)	TCR (%/K)	ΔR/R DUE TO B-TOLERANCE (%)
- 40	16 324 913	- 6.70	7.58
- 35	11 742 019	- 6.48	6.83
- 30	8 539 774	- 6.26	6.13
- 25	6 276 830	- 6.05	5.45
- 20	4 660 312	- 5.86	4.80
- 15	3 493 589	- 5.67	4.18
- 10	2 643 155	- 5.49	3.58
- 5	2 017 389	- 5.32	3.01
0	1 552 759	- 5.15	2.46
5	1 204 778	- 5.00	1.93
10	941 992	- 4.85	1.42
15	741 961	- 4.70	0.93
20	588 538	- 4.56	0.46
25	470 000	- 4.43	0.00
30	377 772	- 4.31	0.22
35	305 531	- 4.18	0.43
40	248 579	- 4.07	0.64
45	203 402	- 3.96	0.84
50	167 350.17	- 3.85	1.03
55	138 415.65	- 3.75	1.22
60	115 064.97	- 3.65	1.40
65	96 120.34	- 3.55	1.58
70	80 671.71	- 3.46	1.75
75	68 011.83	- 3.37	1.92
80	57 588.01	- 3.29	2.08
85	48 965.99	- 3.20	2.23
90	41 802.84	- 3.12	2.54
95	35 826.37	- 3.05	2.85
100	30 819.49	- 2.97	3.14
105	26 608.25	- 2.90	3.43
110	23 052.64	- 2.83	3.71
115	20 039.47	- 2.77	3.98
120	17 476.84	- 2.70	4.24
125	15 289.84	- 2.64	4.50
130	13 417.16	- 2.58	4.76
135	11 808.44	- 2.53	5.00
140	10 422.13	- 2.47	5.25
145	9223.86	- 2.42	5.48
150	8185.07	- 2.36	5.71

**RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R<sub>25</sub> AT 680 kΩ**

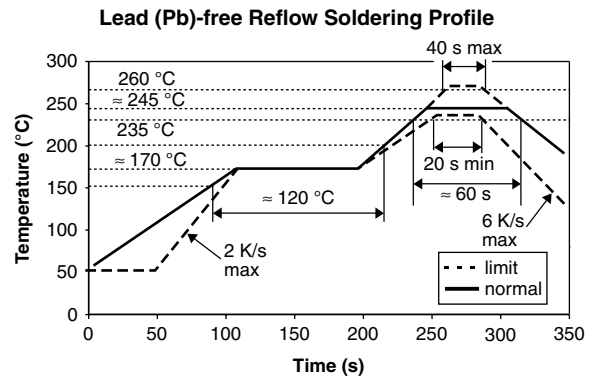
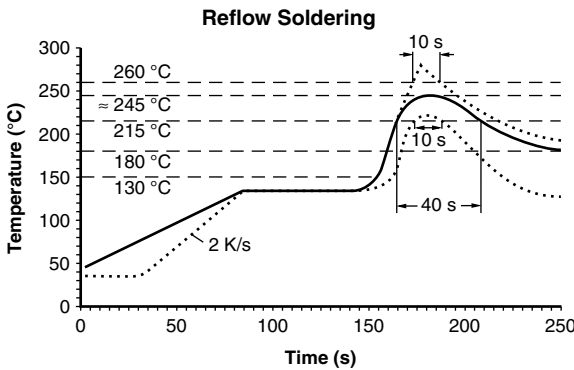
T <sub>OPER</sub> (°C)	CATALOG NUMBER 2381 615 5*684 OR SAP NO. NTCS0805E3684*XT		
	R <sub>T</sub> (Ω)	TCR (%/K)	ΔR/R DUE TO B-TOLERANCE (%)
- 40	23 477 070.48	- 6.58	7.58
- 35	16 980 387.40	- 6.38	6.83
- 30	12 403 723.50	- 6.18	6.13
- 25	9 147 128.87	- 6.00	5.45
- 20	6 807 381.82	- 5.82	4.80
- 15	5 110 686.48	- 5.65	4.18
- 10	3 869 280.20	- 5.48	3.58
- 5	2 953 163.91	- 5.33	3.01
0	2 271 498.26	- 5.17	2.46
5	1 760 240.58	- 5.03	1.93
10	1 373 851.20	- 4.89	1.42
15	1 079 678.54	- 4.75	0.93
20	854 123.99	- 4.62	0.46

RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R <sub>25</sub> AT 680 kΩ			
CATALOG NUMBER 2381 615 5*684 OR SAP NO. NTCS0805E3684*XT			
T <sub>OPER</sub> (°C)	R <sub>T</sub> (Ω)	TCR (%/K)	ΔR/R DUE TO B-TOLERANCE (%)
25	680 000.00	- 4.50	0.00
30	544 694.97	- 4.38	0.22
35	438 888.31	- 4.26	0.43
40	355 643.75	- 4.15	0.64
45	289 764.74	- 4.04	0.84
50	237 332.90	- 3.94	1.03
55	195 375.08	- 3.84	1.22
60	161 621.74	- 3.75	1.40
65	134 330.27	- 3.65	1.58
70	112 155.08	- 3.56	1.75
75	94 051.50	- 3.48	1.92
80	79 204.16	- 3.39	2.08
85	66 973.40	- 3.31	2.23
90	56 854.96	- 3.24	2.54
95	48 449.34	- 3.16	2.85
100	41 438.65	- 3.09	3.14
105	35 568.72	- 3.02	3.43
110	30 635.51	- 2.95	3.71
115	26 474.48	- 2.89	3.98
120	22 952.42	- 2.82	4.24
125	19 961.06	- 2.76	4.50
130	17 412.04	- 2.70	4.76
135	15 233.00	- 2.65	5.00
140	13 364.46	- 2.59	5.25
145	11 757.37	- 2.54	5.48
150	10 371.09	- 2.48	5.71

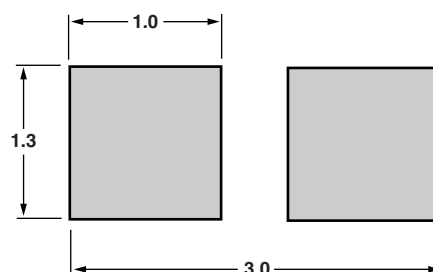
### SOLDERING CONDITIONS

This SMD thermistor is only suitable for wave or reflow soldering, in accordance with "CECC 00802". The maximum temperature of 260 °C during 40 s should not be exceeded.

Typical examples of a soldering processes that will provide reliable joints without damage, are shown below.



Dimensions of the solder lands

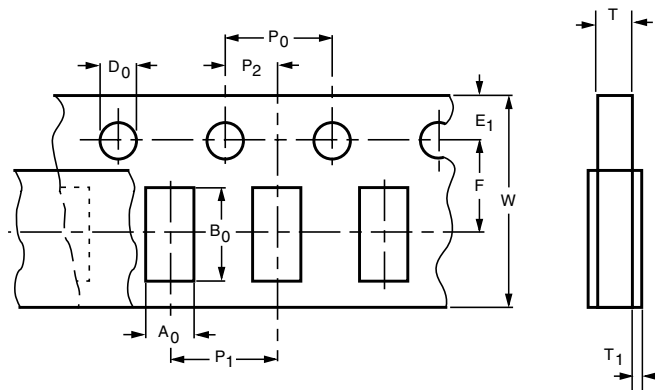


**PACKAGING**

**TAPE SPECIFICATIONS**

All tape specifications are in accordance with "IEC 60286-3". Basic dimensions are given below. Carrier tape material is paper.

**PAPER TAPE**

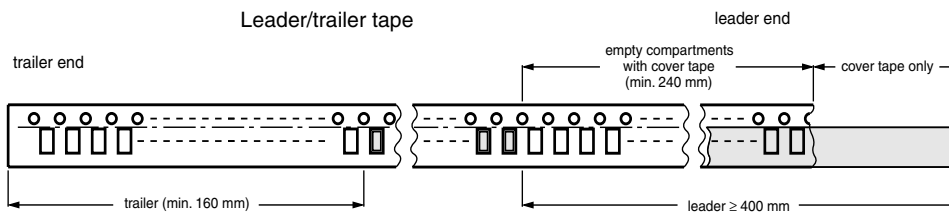


PAPER TAPE DIMENSIONS IN MILLIMETERS		
PARAMETER	DIMENSION	TOLERANCE
A <sub>0</sub> ; note 1	1.7	± 0.2
B <sub>0</sub> ; note 1	2.35	± 0.1
W	8.0	± 0.2
E <sub>1</sub>	1.75	± 0.1
F	3.5	± 0.05
D <sub>0</sub>	1.55	± 0.05
P <sub>0</sub> ; note 2	4.0	± 0.1
P <sub>1</sub>	4.0	± 0.1
P <sub>2</sub>	2.0	± 0.05
T tape thickness	1.1	max
T <sub>1</sub> cover tape	< 0.1	-

**Note**

1. Measured 0.3 mm above base pocket
2. P<sub>0</sub> pitch cumulative error over any 10 pitches ± 1.0 mm

**LEADER/TRAILER TAPE SPECIFICATION**



**TAPING PACKAGE REQUIREMENTS**

Component is free and not sticking to top and/or bottom tape.  
 Component should be easy to remove from carrier tape.

**TESTS AND REQUIREMENTS**

SOLDERABILITY AND RESISTANCE TO SOLDERING HEAT				
IEC 60068-2-58	TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
6	Tc	solderability	2 s at 235 °C	min. 95 % of surface wetted
		resistance to soldering heat	10 s at 260 °C	ΔR/R < 5 %



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