NTC Thermistors, Glass Encapsulated High Temperature Sensors

FEATURES

- Small diameter down to 1.8 mm
- Quick response time down to 0.9 s
- Wide temperature range from - 40 °C to + 200 °C
- Resistant to corrosive atmospheres and harsh environments
- Old part number was 2322 633 3/8....
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC
- Available in bulk or on tape

RoHS COMPLIANT

APPLICATIONS

High temperature measurement, sensing and control:

- Domestic appliances
- Automotive systems
- Industrial process control

DESIGN-IN SUPPORT

For complete Curve Computation, visit:
www.vishay.com/thermistors/curve-computation-list/

DESCRIPTION

These thermistors have a negative temperature coefficient and are mounted in a glass envelope:

2381 633 8.... (SOD27) with tinned copper-clad steel leads in bulk
2381 633 3.... is the taped bandolier version of 2381 633 8.... series

MOUNTING

By soldering, clamping or welding. Bending of the leads should be done at least 3 mm from the glass body and without exerting forces on the glass body.

QUICK REFERANCE DATA	
PARAMETER	**VALUE**
Temperature range	- 40 °C to + 200 °C
Resistance value at 25 °C (R_{25})	10 kΩ to 220 kΩ
Tolerance on R_{25} - value	± 5 % and ± 10 %
$B_{25/85}$ - value	3797K to 3977K
Tolerance on $B_{25/85}$ - value	± 1.3 % to ± 3 %
Deviation in resistance value due to B-tolerance	See Resistance Values at Intermediate Temperatures table for 2381 633 8.... series
Ratio R_T/R_{25}	
Rated dissipation	100 mW
Dissipation factor	2.5 mW/K
Response time	0.9 s
Thermal time constant τ	6 s
Temperature coefficient	See Resistance Values at Intermediate Temperatures table
Climatic category	40/200/56
Weight	≈ 0.14 g

ELECTRICAL DATA AND ORDERING INFORMATION

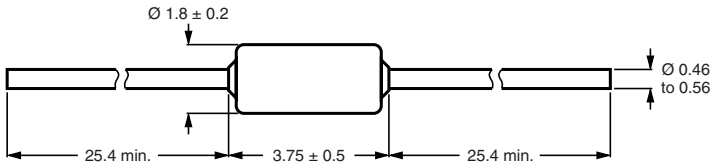
R_{25} (kΩ)	$B_{25/85}$ - VALUE	12NC ORDERING CODE 2381 633 3/8... (1)	SAP MATERIAL NO. NTCLG100E2... (2)
10	3977K ± 1.3 %	*103	103*B
20	3977K ± 1.3 %	*203	203*B
30	3977K ± 1.3 %	*303	303*B
100	3977K ± 1.3 %	*104	104*B
220	3797K ± 3.0 %	*224	224*B

Notes

- Replace * in 12NC by 3 for 5 %, 2 for 10 % tolerance on R_{25} °C, the 8th digit stands for packing: 8 for bulk and 3 for taped components
- Replace * in SAP part no by J for 5 %, K for 10 % tolerance on R_{25} °C, for NTCLG100E2 parts, replace last character by B for bulk and by T for taped components

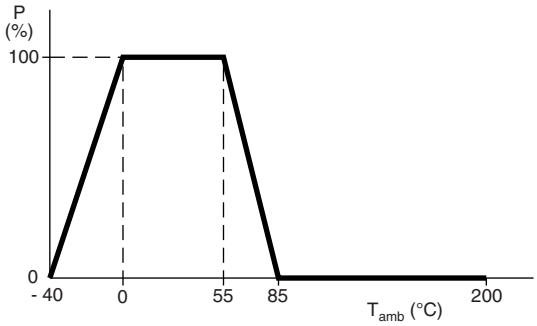
DIMENSIONS in millimeters

Component outline for 2381 633 8/3.... (SOD27)



DERATING

Power derating curve for 2381 633 8/3.... series

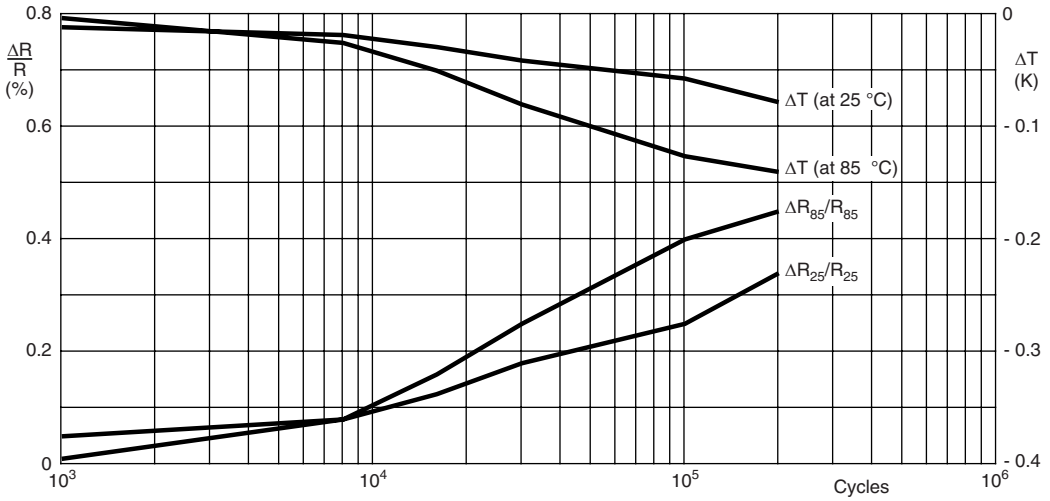


Note

- Zero power is considered as measuring power max. 1 % of rated power

STABILITY CHARACTERISTICS

Stability of glass encapsulated NTCs in thermal shock test (200 kcycles - 40 °C/+ 200 °C)



For complete Curve Computation, visit: www.vishay.com/thermistors/curve-computation-list/

RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES FOR 10 kΩ, 20 kΩ, 30 kΩ AND 100 kΩ

T_{OPER} (°C)	R_T/R_{25}	ΔR DUE TO B-TOLERANCE (%)	TCR (%/K)	R (kΩ) for 2381 633/NTCLG100E2			
				..103/103..	..203/203..	..303/303..	..104/104..
- 40	33.06	4.65	6.59	330.6	661.2	991.8	3306
- 35	23.90	4.21	6.37	239.0	478.1	717.1	2390
- 30	17.47	3.79	6.16	174.7	349.4	524.1	1747
- 25	12.90	3.38	5.96	129.0	258.0	387.0	1290
- 20	9.621	2.99	5.77	96.21	192.4	288.6	962.1
- 15	7.242	2.61	5.59	72.42	144.8	217.3	724.2
- 10	5.501	2.24	5.41	55.01	110.0	165.0	550.1
- 5	4.214	1.89	5.24	42.14	84.28	126.4	421.4
0	3.255	1.55	5.08	32.55	65.09	97.64	325.5
5	2.534	1.22	4.93	25.34	50.67	76.01	253.4
10	1.987	0.90	4.78	19.87	39.74	59.62	198.7
15	1.570	0.59	4.64	15.70	31.40	47.10	157.0
20	1.249	0.29	4.51	12.49	24.98	37.46	124.9
25	1.000	0.00	4.38	10.00	20.00	30.00	100.0
30	0.8059	0.28	4.25	8.059	16.12	24.18	80.59
35	0.6534	0.55	4.13	6.534	13.07	19.60	65.34
40	0.5329	0.82	4.02	5.329	10.66	15.99	53.29
45	0.4371	1.08	3.91	4.371	8.742	13.11	43.71
50	0.3604	1.34	3.80	3.604	7.209	10.81	36.04
55	0.2988	1.58	3.70	2.988	5.976	8.963	29.88
60	0.2489	1.82	3.60	2.489	4.978	7.467	24.89
65	0.2084	2.06	3.51	2.084	4.168	6.251	20.84
70	0.1753	2.29	3.42	1.753	3.505	5.258	17.53
75	0.1481	2.51	3.33	1.481	2.961	4.442	14.81
80	0.1256	2.73	3.24	1.256	2.512	3.769	12.56
85	0.1070	2.95	3.16	1.070	2.141	3.211	10.70
90	0.09156	3.16	3.08	0.9156	1.831	2.747	9.156
95	0.07862	3.36	3.01	0.7862	1.572	2.359	7.862
100	0.06777	3.56	2.93	0.6777	1.355	2.033	6.777
105	0.05863	3.76	2.86	0.5863	1.173	1.759	5.863
110	0.05089	3.95	2.79	0.5089	1.018	1.527	5.089
115	0.04433	4.13	2.73	0.4433	0.8865	1.330	4.433
120	0.03873	4.32	2.66	0.3873	0.7747	1.162	3.873
125	0.03395	4.50	2.60	0.3395	0.6791	1.019	3.395
130	0.02985	4.67	2.54	0.2985	0.5971	0.8956	2.985
135	0.02633	4.84	2.49	0.2633	0.5265	0.7898	2.633
140	0.02328	5.01	2.43	0.2328	0.4656	0.6984	2.328
145	0.02065	5.17	2.38	0.2065	0.4129	0.6194	2.065
150	0.01836	5.33	2.32	0.1836	0.3671	0.5507	1.836
155	0.01636	5.49	2.27	0.1636	0.3273	0.4909	1.636
160	0.01455	5.65	2.23	0.1455	0.2910	0.4365	1.455
165	0.01303	5.80	2.18	0.1303	0.2606	0.3909	1.303
170	0.01169	5.95	2.14	0.1169	0.2339	0.3508	1.169
175	0.01052	6.10	2.09	0.1052	0.2104	0.3156	1.052
180	0.009484	6.24	2.05	0.09484	0.1897	0.2845	0.9484
185	0.008569	6.38	2.01	0.08569	0.1714	0.2571	0.8569
190	0.007757	6.52	1.97	0.07757	0.1551	0.2327	0.7757
195	0.007037	6.66	1.93	0.07037	0.1407	0.2111	0.7037
200	0.006396	6.79	1.89	0.06396	0.1279	0.1919	0.6396

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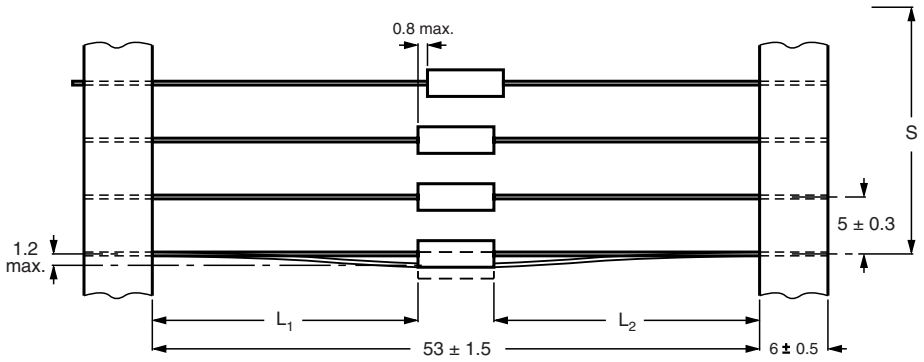
RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES FOR 220 kΩ				
T_{OPER} (°C)	R_T/R_{25}	ΔR DUE TO B-TOLERANCE (%)	TCR (%/K)	RESISTANCE (Ω)
- 40	25.7830	10.49	- 6.07	5 672 263.60
- 35	19.1253	9.48	- 5.88	4 207 576.09
- 30	14.3200	8.51	- 5.70	3 150 399.51
- 25	10.8187	7.58	- 5.52	2 380 123.99
- 20	8.2444	6.69	- 5.35	1 813 764.23
- 15	6.3349	5.83	- 5.19	1 393 675.05
- 10	4.9066	5.01	- 5.03	1 079 441.58
- 5	3.8294	4.21	- 4.88	842 474.22
0	3.0108	3.44	- 4.74	662 372.59
5	2.3839	2.71	- 4.60	524 457.34
10	1.9004	1.99	- 4.47	418 079.84
15	1.5248	1.31	- 4.34	335 454.71
20	1.2311	0.64	- 4.22	270 846.73
25	1.0000	0.00	- 4.10	220 000.00
30	0.8170	0.62	- 3.99	179 733.97
35	0.6712	1.22	- 3.88	147 655.51
40	0.5543	1.80	- 3.77	121 952.04
45	0.4602	2.37	- 3.67	101 241.94
50	0.3839	2.91	- 3.58	84 465.62
55	0.3218	3.44	- 3.48	70 805.57
60	0.2710	3.95	- 3.39	59 627.46
65	0.2293	4.45	- 3.30	50 436.33
70	0.1947	4.93	- 3.22	42 843.93
75	0.1661	5.40	- 3.14	36 544.07
80	0.1422	5.86	- 3.06	31 294.12
85	0.1223	6.30	- 2.99	26 900.84
90	0.1055	6.74	- 2.92	23 209.62
95	0.09135	7.16	- 2.85	20 096.19
100	0.07936	7.56	-2.78	17 460.22
105	0.06918	7.96	- 2.71	15 220.36
110	0.06050	8.35	- 2.65	13 310.39
115	0.05307	8.73	- 2.59	11 676.18
120	0.04670	9.09	- 2.53	10 273.29
125	0.04121	9.45	- 2.47	9065.15
130	0.03646	9.80	- 2.42	8021.51
135	0.03235	10.14	- 2.37	7117.27
140	0.02878	10.47	- 2.31	6331.54
145	0.02567	10.80	- 2.26	5646.86
150	0.02295	11.12	- 2.22	5048.62
155	0.02057	11.43	- 2.17	4524.53
160	0.01847	11.73	- 2.12	4064.21
165	0.01663	12.02	- 2.08	3658.90
170	0.01501	12.31	- 2.04	3301.16
175	0.01357	12.60	- 2.00	2984.68
180	0.01229	12.87	- 1.95	2704.05
185	0.01116	13.14	- 1.92	2454.67
190	0.01015	13.41	- 1.88	2232.58
195	0.009247	13.67	- 1.84	2034.38
200	0.008442	13.92	- 1.81	1857.14

THERMISTORS ON BANDOLIER (2381 633 3....)

Bandolier taped according to IEC60286-1



The components are centred so that $|L_1 - L_2| = 1.2$ mm max.

The cumulative space (S) measured over 10 spacings = 50 ± 2 mm.

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