

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 REFERENCE DATA	
PARAMETER	VALUE
Temperature range	- 40 °C to + 200 °C
Resistance value at 25 °C (R_{25})	10 k Ω to 220 k Ω
Tolerance on R_{25} - value	$\pm 5 \%$
$B_{25/85}$ - value	3797K to 3977K
Tolerance on $B_{25/85}$ - value	$\pm 1.3 \%$ to $\pm 3 \%$
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

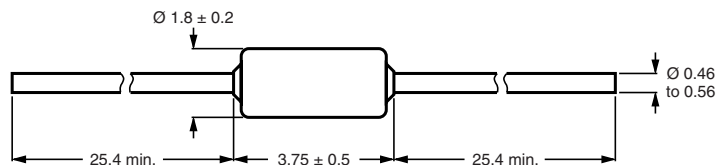
ELECTRICAL DATA AND ORDERING INFORMATION			
R_{25} (k Ω)	$B_{25/85}$ - VALUE	12NC ORDERING CODE 2381 633 3/8....	SAP MATERIAL NO. NTCLG100E2...
10	3977K $\pm 1.3 \%$	3103	103JB
20	3977K $\pm 1.3 \%$	3203	203JB
30	3977K $\pm 1.3 \%$	3303	303JB
100	3977K $\pm 1.3 \%$	3104	104JB
220	3797K $\pm 3.0 \%$	3224	224JB

Notes

- In 12NC the 8th digit stands for packing: 8 for bulk and 3 for taped components
- In SAP part replace last character by B for bulk and by T for taped components

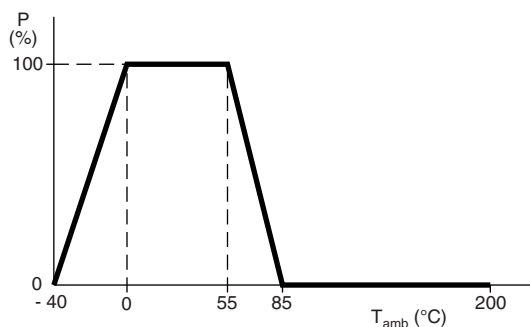
DIMENSIONS in millimeters

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



DERATING

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

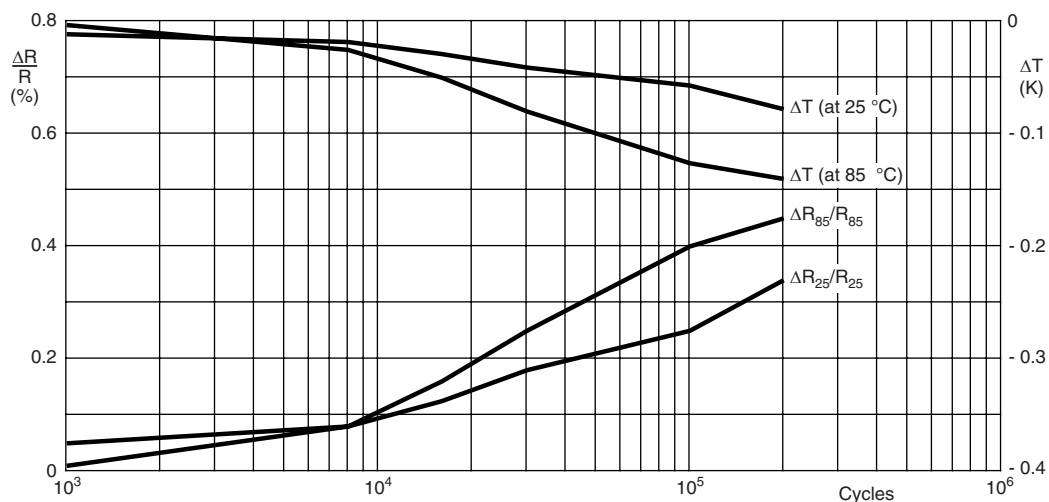


Note

- 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)





2381 633 3/8..../NTCLG100E2.....

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Vishay BCcomponents

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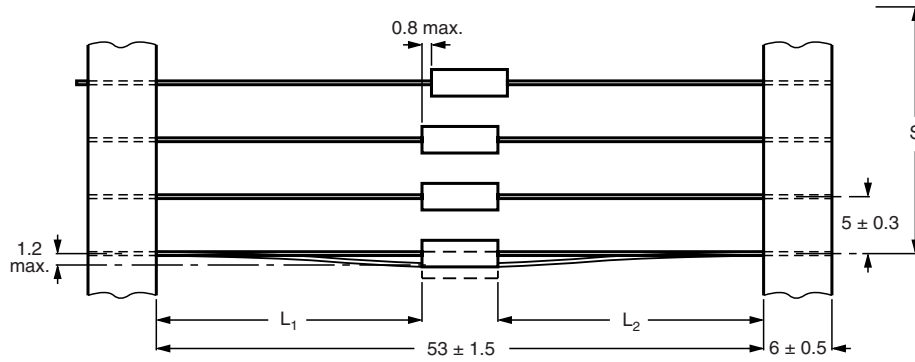
RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES FOR 2381 633 3/8..../NTCLG100E2.....								
TEMPERATURE (°C)	R_T/R_{25}	R for 10 kΩ	R for 20 kΩ	R for 30 kΩ	R for 100 kΩ	$\Delta R/R$ (± %)	α (%/K)	ΔT (± K)
- 40	33.21	332 094	664 187	996 281	3 320 936	10.08	- 6.62	1.52
- 35	23.99	239 900	479 799	719 699	2 398 996	9.59	- 6.39	1.50
- 30	17.52	175 200	350 399	525 599	1 751 996	9.12	- 6.18	1.48
- 25	12.93	129 287	258 574	387 861	1 292 869	8.67	- 5.98	1.45
- 20	9.636	96 358	192 716	289 074	963 582	8.24	- 5.78	1.42
- 15	7.250	72 500	145 001	217 501	725 004	7.82	- 5.60	1.40
- 10	5.505	55 046	110 092	165 138	550 459	7.42	- 5.42	1.37
- 5	4.216	42 157	84 314	126 471	421 570	7.04	- 5.25	1.34
0	3.255	32 554	65 108	97 663	325 542	6.67	- 5.09	1.31
5	2.534	25 339	50 677	76 016	253 386	6.31	- 4.93	1.28
10	1.987	19 872	39 744	59 617	198 722	5.96	- 4.79	1.25
15	1.570	15 698	31 397	47 095	156 985	5.63	- 4.64	1.21
20	1.249	12 488	24 975	37 463	124 877	5.31	- 4.51	1.18
25	1.000	10 000	20 000	30 000	100 000	5.00	- 4.38	1.14
30	0.8059	8059	16118	24 177	80 591	5.30	- 4.25	1.25
35	0.6535	6535	13069	19 604	65 347	5.59	- 4.13	1.35
40	0.5330	5330	10660	15 990	53 299	5.87	- 4.02	1.46
45	0.4372	4372	8743	13 115	43 717	6.14	- 3.91	1.57
50	0.3605	3605	7211	10 816	36 053	6.41	- 3.80	1.69
55	0.2989	2989	5977	8966	29887	6.66	- 3.70	1.80
60	0.2490	2490	4980	7470	24900	6.91	- 3.60	1.92
65	0.2084	2084	4169	6253	20844	7.15	- 3.51	2.04
70	0.1753	1753	3506	5259	17530	7.39	- 3.42	2.16
75	0.1481	1481	2962	4443	14809	7.61	- 3.33	2.29
80	0.1256	1256	2513	3769	12564	7.84	- 3.25	2.41
85	0.1070	1070	2141	3211	10703	8.05	- 3.17	2.54
90	0.09154	915.4	1831	2746	9154	8.26	- 3.09	2.67
95	0.07860	786.0	1572	2358	7860	8.46	- 3.01	2.81
100	0.06773	677.3	1355	2032	6773	8.66	- 2.94	2.95
105	0.05857	585.7	1171	1757	5857	8.85	- 2.87	3.08
110	0.05083	508.3	1017	1525	5083	9.04	- 2.80	3.23
115	0.04426	442.6	885.2	1328	4426	9.22	- 2.74	3.37
120	0.03866	386.6	773.2	1160	3866	9.40	- 2.67	3.52
125	0.03387	338.7	677.5	1016	3387	9.57	- 2.61	3.66
130	0.02977	297.7	595.4	893.1	2977	9.74	- 2.55	3.81
135	0.02624	262.4	524.8	787.2	2624	9.91	- 2.50	3.97
140	0.02319	231.9	463.8	695.7	2319	10.07	- 2.44	4.12
145	0.02055	205.5	411.1	616.6	2055	10.23	- 2.39	4.28
150	0.01826	182.6	365.3	547.9	1826	10.38	- 2.34	4.44
155	0.01627	162.7	325.4	488.1	1627	10.53	- 2.29	4.60
160	0.01453	145.3	290.6	435.9	1453	10.67	- 2.24	4.77
165	0.01301	130.1	260.1	390.2	1301	10.82	- 2.19	4.94
170	0.01167	116.7	233.4	350.1	1167	10.96	- 2.15	5.11
175	0.01049	104.9	209.9	314.8	1049	11.09	- 2.10	5.28
180	0.009457	94.57	189.1	283.7	945.7	11.23	- 2.06	5.45
185	0.008541	85.41	170.8	256.2	854.1	11.36	-2.02	5.63
190	0.007729	77.29	154.6	231.9	772.9	11.49	- 1.98	5.81
195	0.007009	70.09	140.2	210.3	700.9	11.61	- 1.94	5.99
200	0.006367	63.67	127.3	191.0	636.7	11.73	- 1.90	6.17

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RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES FOR 2381 633 3/8..../NTCLG100E2.....					
TEMPERATURE (°C)	R_T/R_{25}	R for 220 k Ω	$\Delta R/R$ (\pm %)	α (%/K)	ΔT (\pm K)
- 40	25.78	5 672 264	16.18	- 6.07	2.67
- 35	19.13	4 207 576	15.11	- 5.88	2.57
- 30	14.32	3 150 400	14.07	- 5.70	2.47
- 25	10.82	2 380 124	13.08	- 5.52	2.37
- 20	8.244	1 813 764	12.13	- 5.35	2.27
- 15	6.335	1 393 675	11.22	- 5.19	2.16
- 10	4.907	1 079 442	10.34	- 5.03	2.05
- 5	3.829	842 474	9.49	- 4.88	1.94
0	3.011	662 373	8.67	- 4.74	1.83
5	2.384	524 457	7.88	- 4.60	1.71
10	1.900	418 080	7.13	- 4.47	1.59
15	1.525	335 455	6.39	- 4.34	1.47
20	1.231	270 847	5.68	- 4.22	1.35
25	1.000	220 000	5.00	- 4.10	1.22
30	0.8170	179 734	5.66	- 3.99	1.42
35	0.6712	147 656	6.30	- 3.88	1.63
40	0.5543	121 952	6.92	- 3.77	1.83
45	0.4602	101 242	7.52	- 3.67	2.05
50	0.3839	84 466	8.10	- 3.58	2.27
55	0.3218	70 806	8.67	- 3.48	2.49
60	0.2710	59 627	9.21	- 3.39	2.72
65	0.2293	50 436	9.75	- 3.30	2.95
70	0.1947	42 844	10.26	- 3.22	3.19
75	0.1661	36 544	10.76	- 3.14	3.43
80	0.1422	31 294	11.25	- 3.06	3.67
85	0.1223	26 901	11.72	- 2.99	3.92
90	0.1055	23 210	12.18	- 2.92	4.18
95	0.09135	20 096	12.63	- 2.85	4.44
100	0.07936	17 460	13.06	- 2.78	4.70
105	0.06918	15 220	13.49	- 2.71	4.97
110	0.06050	13 310	13.90	- 2.65	5.24
115	0.05307	11 676	14.30	- 2.59	5.52
120	0.04670	10 273	14.69	- 2.53	5.81
125	0.04121	9065	15.08	- 2.47	6.09
130	0.03646	8022	15.45	- 2.42	6.39
135	0.03235	7117	15.81	- 2.37	6.68
140	0.02878	6332	16.17	- 2.31	6.99
145	0.02567	5647	16.51	- 2.26	7.29
150	0.02295	5049	16.85	- 2.22	7.61
155	0.02057	4525	17.18	- 2.17	7.92
160	0.01847	4064	17.50	- 2.12	8.24
165	0.01663	3659	17.82	- 2.08	8.57
170	0.01501	3301	18.13	- 2.04	8.90
175	0.01357	2985	18.43	- 2.00	9.24
180	0.01229	2704	18.72	- 1.95	9.58
185	0.01116	2455	19.01	- 1.92	9.92
190	0.01015	2233	19.29	- 1.88	10.27
195	0.009247	2034	19.57	- 1.84	10.63
200	0.008442	1857	19.84	- 1.81	10.99

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

Bandolier taped according to IEC60286-1



The components are centred so that $|L_1 - L_2| = 1.2 \text{ mm max}$

The cumulative space (S) measured over 10 spacings = $50 \pm 2 \text{ mm}$



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