

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
- Compliant to RoHS Directive 2002/95/EC and in accordance to 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/resistors-non-linear/curve-computation-list/

DESCRIPTION

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

NTCLG100E2...B (SOD27) with tinned copper-clad steel leads in bulk

NTCLG100E2...T is the taped on bandolier version

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	UNIT
Resistance value at 25 °C (R_{25})	10K to 220K	Ω
Tolerance on R_{25} -value	± 5	%
$B_{25/85}$ -value	3797 to 3977	K
Tolerance on $B_{25/85}$ -value	± 1.3 to ± 3	%
Operating temperature range	- 40 to + 200	°C
Maximum power dissipation at 55 °C	100	mW
Dissipation factor	2.5	mW/K
Response time	0.9	s
Thermal time constant τ	6	s
Climatic category (LCT/UCT/days)	40/200/56	
Weight	≈ 0.14	g

ELECTRICAL DATA AND ORDERING INFORMATION

R_{25} (k Ω)	$B_{25/85}$ -VALUE		SAP MATERIAL AND ORDERING NUMBER NTCLG100E2...	OLD 12NC CODE 2381 633 3/8...
	(K)	($\pm$ %)		
10	3977	1.3	103JB	3103
20	3977	1.3	203JB	3203
30	3977	1.3	303JB	3303
100	3977	1.3	104JB	3104
220	3797	3.0	224JB	3224

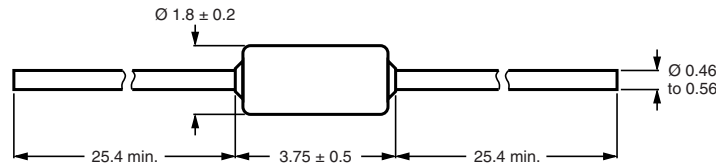
Notes

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

NTC Thermistors, Glass Encapsulated Vishay BCcomponents High Temperature Sensors

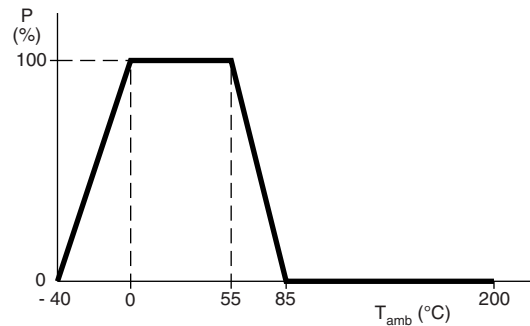
DIMENSIONS in millimeters

Component outline (SOD27)



DERATING

Power derating curve

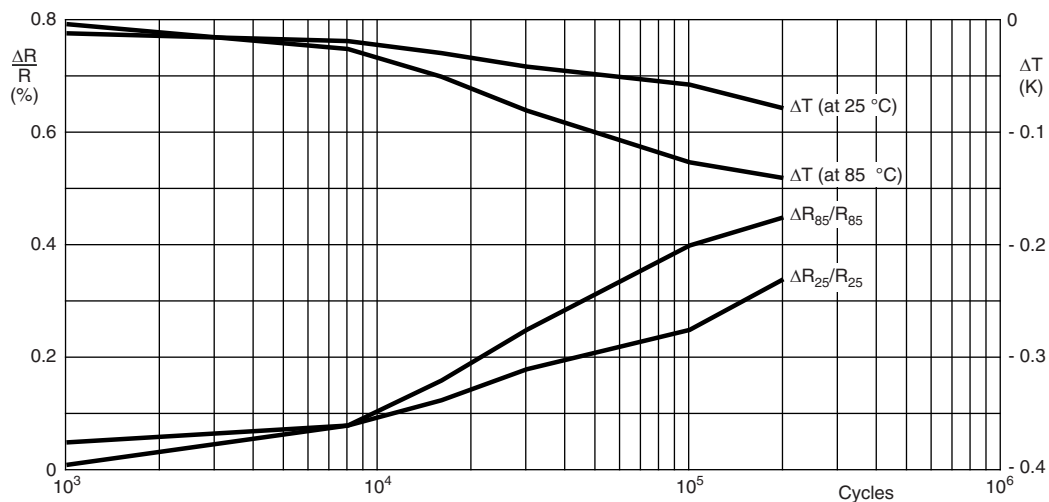


Note

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

STABILITY CHARACTERISTICS

Stability of glass encapsulated NTCs in thermal shock test (200 000 cycles - 40 °C/+ 200 °C)



Vishay BCcomponents NTC Thermistors, Glass Encapsulated High Temperature Sensors

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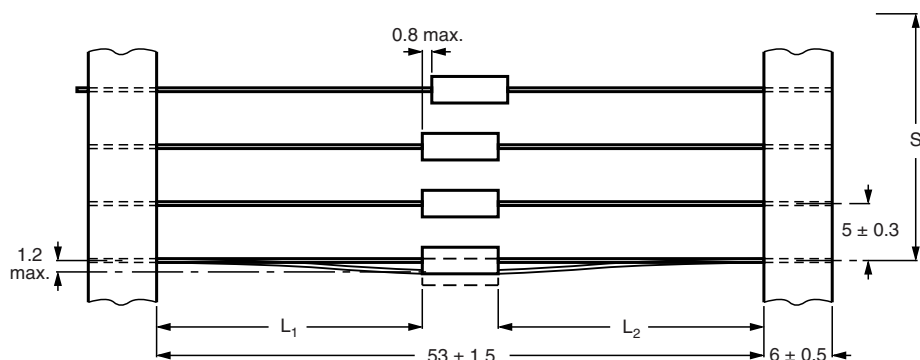
RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES FOR NTCLG100E2								
TEMPERATURE (°C)	R_T/R_{25}	R FOR 10 kΩ	R FOR 20 kΩ	R FOR 30 kΩ	R FOR 100 kΩ	$\Delta R/R$ (± %)	α (%/K)	ΔT (± K)
- 40	33.21	332 094	664 187	996 281	3 320 936	10.08	- 6.62	1.52
- 35	23.99	239 900	479 799	719 699	2 398 996	9.59	- 6.39	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	7.25	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	1.57	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	16 118	24 177	80 591	5.30	- 4.25	1.25
35	0.6535	6535	13 069	19 604	65 347	5.59	- 4.13	1.35
40	0.5330	5330	10 660	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	29 887	6.66	- 3.70	1.80
60	0.2490	2490	4980	7470	24 900	6.91	- 3.60	1.92
65	0.2084	2084	4169	6253	20 844	7.15	- 3.51	2.04
70	0.1753	1753	3506	5259	17 530	7.39	- 3.42	2.16
75	0.1481	1481	2962	4443	14 809	7.61	- 3.33	2.29
80	0.1256	1256	2513	3769	12 564	7.84	- 3.25	2.41
85	0.1070	1070	2141	3211	10 703	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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TEMPERATURE (°C)	R_T/R_{25}	R FOR 220 kΩ	$\Delta R/R$ (± %)	α (%/K)	ΔT (± 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	0.817	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 (NTCLG100E2...T)

Bandolier taped according to IEC 60286-1



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

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



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