NTC Thermistors, Radial Leaded Special Accuracy

FEATURES

- Excellent accuracy between 25 °C and 85 °C
- High stability over a long life
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

RoHS COMPLIANT

APPLICATIONS

- Temperature measurement, sensing, and control

DESCRIPTION

These thermistors have a negative temperature coefficient. The device consists of a chip with two tin-plated copper leads. It is grey lacquered and not insulated. These thermistors are very accurate (± 0.5 °C) over a trajectory from 25 °C to 85 °C.

PACKAGING

The thermistors are packed in cardboard boxes, each box contains 500 units.

MARKING

Grey lacquered body.

MOUNTING

By soldering in any position. Not intended for potted applications.

DESIGN-IN SUPPORT

$R_{(T)}$ table spreadsheet available on request at nlr@vishay.com. Accuracy over the whole temperature range, see at the resistance vs. temperature tables.

QUICK REFERENCE DATA		
PARAMETER	VALUE	UNIT
Resistance value at 25 °C	4.7K to 100K	Ω
Tolerance on R_{25}-value	± 2.19 to ± 2.29	%
$B_{25/85}$-value	3977 to 4190	K
Tolerance on $B_{25/85}$-value	± 0.75; ± 1.5	%
Operating temperature range at zero dissipation	- 40 to + 125	°C
Accuracy for T measured between 25 °C and 85 °C	± 0.5	°C
Maximum power dissipation at 55 °C	250	mW
Dissipation factor δ (for information only)	7	mW/K
Response time (for information only) (1)	1.2	s
Thermal time constant τ (for information only)	11	s
Climatic category (LCT/UCT/days)	40/125/56	
Weight	≈ 0.22	g

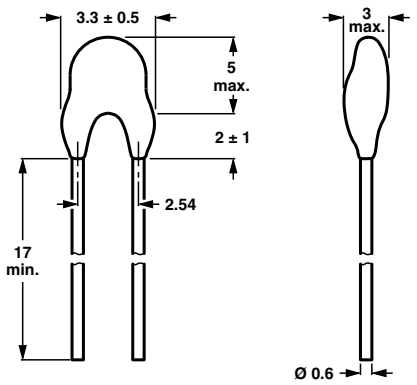
Note

(1) Response time in silicone oil MS 200/50. This is the time needed for the sensor to reach 63.2 % of the total temperature difference when subjected to a temperature change from 25 °C in air to 85 °C in oil.

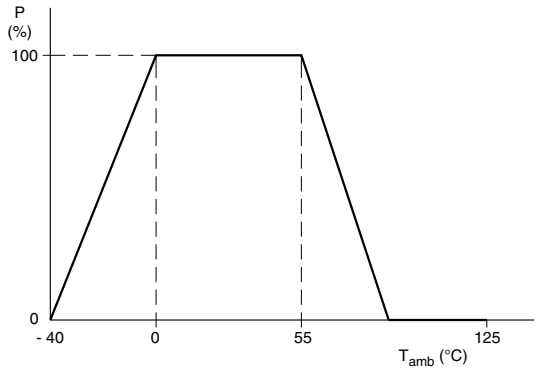
ELECTRICAL DATA AND ORDERING INFORMATION

R_{25} (Ω)	$\Delta R_{25}/R_{25}$ (%)	$B_{25/85}$ (K)	ΔB/B (%)	SAP MATERIAL AND ORDERING NUMBER NTCLE101E3.....	OLD 12NC CODE 2381 640 .....
4700	2.19	3977	0.75	472SB0	10472
10 000	2.19	3977	0.75	103SB0	10103
47 000	2.23	4090	1.5	473SB0	10473
100 000	2.29	4190	1.5	104SB0	10104

DIMENSIONS in millimeters

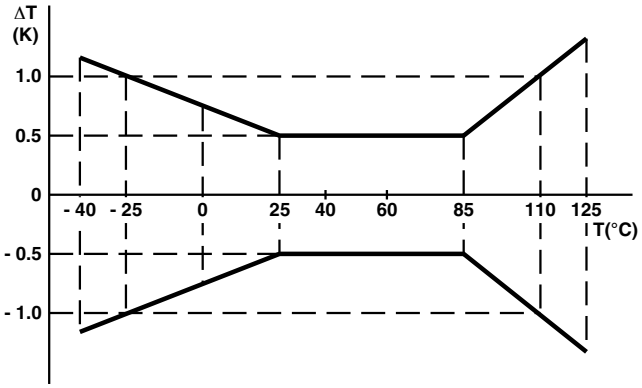


DERATING



Power derating curve

TOLERANCE CURVE



Note

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

RESISTANCE VALUES AT INTERMEDIATE VALUES WITH R_{25} AT 4.7 kΩ AND 10 kΩ						
TEMPERATURE (°C)	R/R_{25}	$\Delta R/R$ (%)	α (%/K)	$\Delta T_{MAX.}$ (± °C)	R_T (Ω)	
					NTCLE101E3472SB0	NTCLE101E3103SB0
- 40	33.21	5.04	- 6.62	0.76	156 084	332 094
- 35	23.99	4.76	- 6.39	0.75	112 753	239 900
- 30	17.52	4.50	- 6.18	0.73	82 344	175 200
- 25	12.93	4.25	- 5.98	0.71	60 765	129 287
- 20	9.636	4.01	- 5.78	0.69	45 288	96 358
- 15	7.250	3.77	- 5.60	0.67	34 075	72 500
- 10	5.505	3.55	- 5.42	0.65	25 872	55 046
- 5	4.216	3.33	- 5.25	0.63	19 814	42 157
0	3.255	3.12	- 5.09	0.61	15 300	32 554
5	2.534	2.92	- 4.93	0.59	11 909	25 339
10	1.987	2.73	- 4.79	0.57	9340	19 872
15	1.570	2.54	- 4.64	0.55	7378	15 698
20	1.249	2.36	- 4.51	0.52	5869	12 488
25	1.000	2.19	- 4.38	0.50	4700	10 000
30	0.8059	2.13	- 4.25	0.50	3788	8059
35	0.6535	2.07	- 4.13	0.50	3071	6535
40	0.5330	2.01	- 4.02	0.50	2505	5330
45	0.4372	1.95	- 3.91	0.50	2055	4372
50	0.3605	1.90	- 3.80	0.50	1694	3605
55	0.2989	1.85	- 3.70	0.50	1405	2989
60	0.2490	1.80	- 3.60	0.50	1170	2490
65	0.2084	1.75	- 3.51	0.50	979.7	2084
70	0.1753	1.71	- 3.42	0.50	823.9	1753
75	0.1481	1.67	- 3.33	0.50	696.0	1481
80	0.1256	1.62	- 3.25	0.50	590.5	1256
85	0.1070	1.58	- 3.17	0.50	503.0	1070
90	0.09154	1.70	- 3.09	0.55	430.2	915.4
95	0.07860	1.81	- 3.01	0.60	369.4	786.0
100	0.06773	1.92	- 2.94	0.65	318.3	677.3
105	0.05857	2.03	- 2.87	0.71	275.3	585.7
110	0.05083	2.13	- 2.80	0.76	238.9	508.3
115	0.04426	2.24	- 2.74	0.82	208.0	442.6
120	0.03866	2.34	- 2.67	0.87	181.7	386.6
125	0.03387	2.43	- 2.61	0.93	159.2	338.7

RESISTANCE VALUES AT INTERMEDIATE VALUES WITH R_{25} AT 47 kΩ					
TEMPERATURE (°C)	R/R_{25}	$\Delta R/R$ (%)	α (%/K)	$\Delta T_{MAX.}$ (± °C)	R_T (Ω)
					NTCLE101E3473SB0
- 40	33.81	8.10	- 6.54	1.24	1 589 068
- 35	24.50	7.53	- 6.34	1.19	1 151 627
- 30	17.93	6.99	- 6.15	1.14	842 790
- 25	13.25	6.47	- 5.96	1.09	622 597
- 20	9.875	5.97	- 5.79	1.03	464 110
- 15	7.425	5.49	- 5.62	0.98	348 989
- 10	5.630	5.03	- 5.45	0.92	264 628
- 5	4.304	4.59	- 5.30	0.87	202 280
0	3.315	4.16	- 5.14	0.81	155 823
5	2.573	3.75	- 5.00	0.75	120 932
10	2.011	3.35	- 4.86	0.69	94 528
15	1.583	2.96	- 4.72	0.63	74 399
20	1.254	2.59	- 4.59	0.56	58 945
25	1.000	2.23	- 4.47	0.50	47 000
30	0.8023	2.17	- 4.35	0.50	37 706
35	0.6474	2.12	- 4.23	0.50	30 429
40	0.5255	2.06	- 4.12	0.50	24 696
45	0.4288	2.01	- 4.01	0.50	20 154
50	0.3518	1.95	- 3.91	0.50	16 534
55	0.2901	1.90	- 3.81	0.50	13 633
60	0.2403	1.86	- 3.71	0.50	11 296
65	0.2001	1.81	- 3.62	0.50	9404
70	0.1673	1.77	- 3.53	0.50	7865
75	0.1406	1.72	- 3.44	0.50	6607
80	0.1186	1.68	- 3.36	0.50	5573
85	0.1004	1.64	- 3.28	0.50	4721
90	0.08542	1.88	- 3.20	0.59	4015
95	0.07292	2.11	- 3.13	0.68	3427
100	0.06248	2.34	- 3.05	0.77	2936
105	0.05372	2.56	- 2.98	0.86	2525
110	0.04635	2.78	- 2.92	0.95	2179
115	0.04013	2.99	- 2.85	1.05	1886
120	0.03485	3.19	- 2.79	1.14	1638
125	0.03037	3.39	- 2.73	1.24	1427

RESISTANCE VALUES AT INTERMEDIATE VALUES WITH R_{25} AT 100 kΩ					
TEMPERATURE (°C)	R/R_{25}	$\Delta R/R$ (%)	α (%/K)	$\Delta T_{MAX.}$ (± °C)	R_T (Ω)
					NTCLE101E3104SB0
- 40	36.66	8.30	- 6.69	1.24	3 666 299
- 35	26.38	7.72	- 6.49	1.19	2 637 588
- 30	19.17	7.16	- 6.29	1.14	1 916 576
- 25	14.06	6.63	- 6.10	1.09	1 406 111
- 20	10.41	6.12	- 5.92	1.03	1 041 184
- 15	7.778	5.63	- 5.75	0.98	777 846
- 10	5.861	5.15	- 5.58	0.92	586 097
- 5	4.453	4.70	- 5.42	0.87	445 257
0	3.409	4.26	- 5.26	0.81	340 942
5	2.631	3.84	- 5.11	0.75	263 054
10	2.044	3.43	- 4.97	0.69	204 446
15	1.600	3.03	- 4.83	0.63	160 014
20	1.261	2.65	- 4.70	0.56	126 087
25	1.000	2.29	- 4.57	0.50	100 000
30	0.7981	2.23	- 4.45	0.50	79 808
35	0.6408	2.17	- 4.33	0.50	64 077
40	0.5175	2.11	- 4.22	0.50	51 745
45	0.4202	2.05	- 4.11	0.50	42 021
50	0.3431	2.00	- 4.00	0.50	34 308
55	0.2816	1.95	- 3.90	0.50	28 156
60	0.2322	1.90	- 3.80	0.50	23 222
65	0.1925	1.85	- 3.71	0.50	19 246
70	0.1602	1.81	- 3.62	0.50	16 025
75	0.1340	1.77	- 3.53	0.50	13 402
80	0.1126	1.72	- 3.45	0.50	11 258
85	0.09496	1.68	- 3.36	0.50	9496
90	0.08042	1.93	- 3.28	0.59	8042
95	0.06837	2.17	- 3.21	0.68	6837
100	0.05835	2.40	- 3.13	0.77	5835
105	0.04998	2.63	- 3.06	0.86	4998
110	0.04296	2.85	- 2.99	0.95	4296
115	0.03705	3.06	- 2.93	1.05	3705
120	0.03206	3.27	- 2.86	1.14	3206
125	0.02783	3.47	- 2.80	1.24	2783

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