

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 |

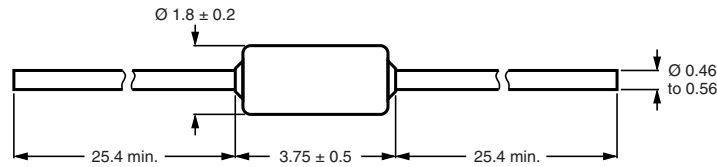
Notes

- 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

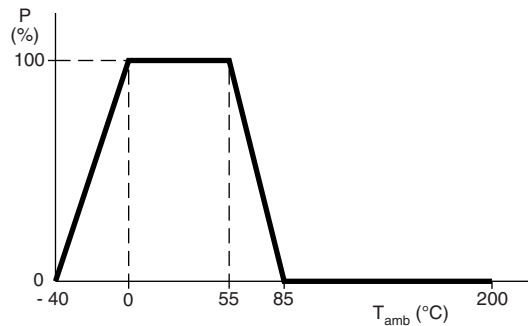
DIMENSIONS in millimeters

Component outline (SOD27)



DERATING

Power derating curve

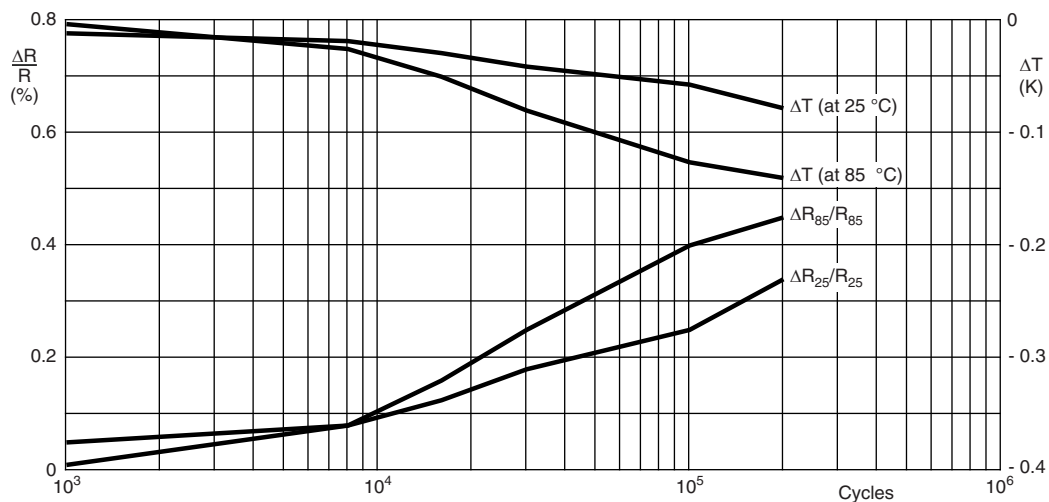


Note

- 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)



NTCLG100E2



Vishay BCcomponents NTC Thermistors, Glass Encapsulated High Temperature Sensors

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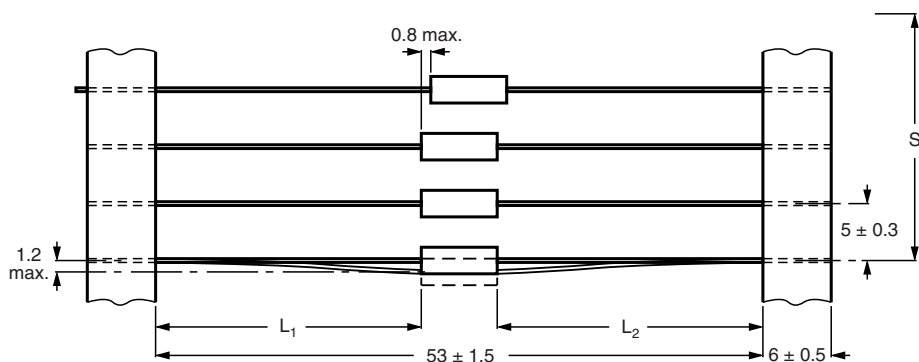
| RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES FOR NTCLG100E2 | | | | | | | | |
|---|--------------|-------------|-------------|-------------|--------------|--------------------|----------------|------------------|
| TEMPERATURE (°C) | R_T/R_{25} | R FOR 10 kΩ | R FOR 20 kΩ | R FOR 30 kΩ | R FOR 100 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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High Temperature Sensors**For complete Curve Computation, visit: www.vishay.com/resistors-non-linear/curve-computation-list/

| RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES FOR NTCLG100E2 | | | | | |
|--|--------------------------------|---------------------|--|--------------------------------------|--|
| 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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JONHON

«JONHON» (основан в 1970 г.)

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