

# 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
- Available in bulk or on tape
- Mounting: axial
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

| QUICK REFERENCE DATA                   |                      |          |
|--|----------------------|----------|
| PARAMETER                              | VALUE                | UNIT     |
| Resistance value at 25 °C ( $R_{25}$ ) | 10K to 220K          | $\Omega$ |
| Tolerance on $R_{25}$ -value           | $\pm 5$              | %        |
| $B_{25/85}$ -value                     | 3797 to 3977         | K        |
| Tolerance on $B_{25/85}$ -value        | $\pm 1.3$ to $\pm 3$ | %        |
| 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 $\tau$           | 6                    | s        |
| Climatic category (LCT / UCT / days)   | 40 / 200 / 56        |          |
| Weight                                 | $\approx 0.14$       | g        |

## APPLICATIONS

High temperature measurement, sensing and control:

- Domestic appliances
- Industrial process control

## DESIGN-IN SUPPORT

For complete curve computation, please visit: [www.vishay.com/thermistors/ntc-curve-list/](http://www.vishay.com/thermistors/ntc-curve-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

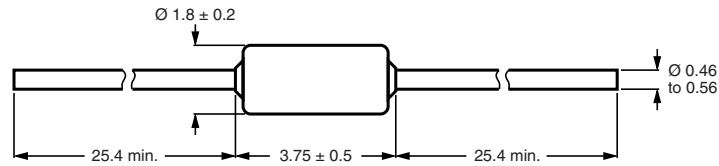
By soldering, clamping or welding. Bending of the leads should be done at least 3 mm from the glass body and without exerting forces on the glass body.

| ELECTRICAL DATA AND ORDERING INFORMATION |                              |                    |                                 |   |
|--|------------------------------|--------------------|---------------------------------|---|
| $R_{25}$<br>( $\Omega$ )                 | $R_{25}$ -TOL.<br>( $\pm$ %) | $B_{25/85}$<br>(K) | $B_{25/85}$ -TOL.<br>( $\pm$ %) | SAP MATERIAL AND ORDERING NUMBER<br>NTCLG100E2... |
| 10 000                                   | 5                            | 3977               | 1.3                             | 103JB   |
| 20 000                                   | 5                            | 3977               | 1.3                             | 203JB   |
| 30 000                                   | 5                            | 3977               | 1.3                             | 303JB   |
| 100 000                                  | 5                            | 3977               | 1.3                             | 104JB   |
| 220 000                                  | 5                            | 3797               | 3.0                             | 224JB   |

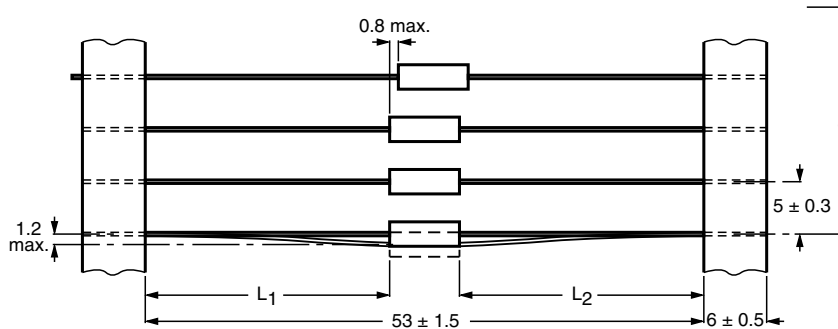
### Note

- In SAP part replace last character by B for bulk and by T for taped components

**DIMENSIONS** in millimeters  
Thermistors in bulk (NTCLG100E2...B)



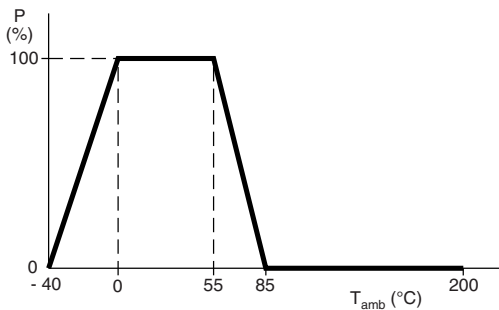
**THERMISTORS ON BANDOLIER (NTCLG100E2...T)**  
Bandolier taped according to IEC 60286-1



The components are centered so that  $|L_1 - L_2| = 1.2 \text{ mm max.}$  The cumulative space (S) measured over 10 spacings =  $50 \text{ mm} \pm 2 \text{ mm}$

**DERATING**

Power derating curve

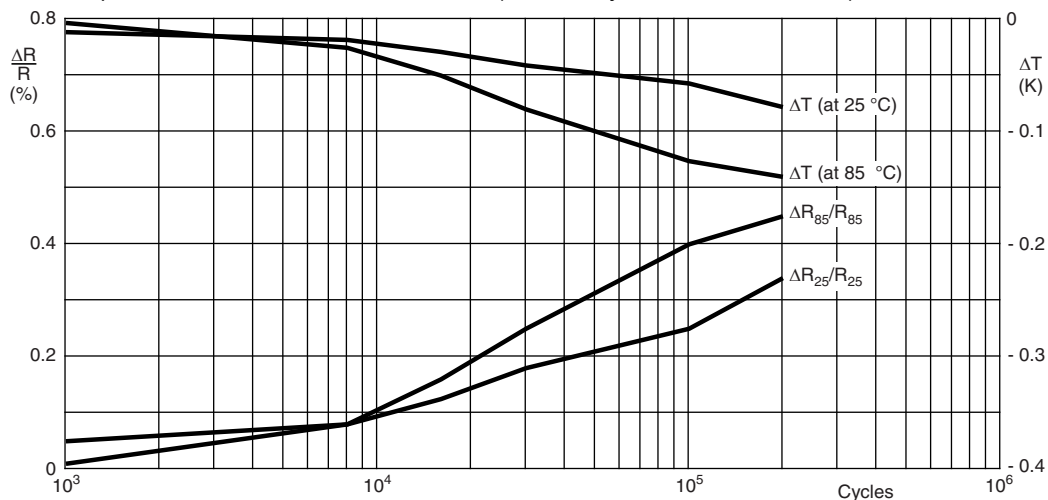


**Note**

- 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)





RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES FOR NTCLG100E2

Table with 9 columns: TEMPERATURE (°C), RT/RT25, RT FOR 10 kΩ, RT FOR 20 kΩ, RT FOR 30 kΩ, RT FOR 100 kΩ, R-TOL. (± %), α (%/K), T-TOL. (± °C). Rows range from -40 to 200 °C.



| RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES FOR NTCLG100E2 |              |                          |                   |                |                    |
|---|--------------|--------------------------|-------------------|----------------|--------------------|
| TEMPERATURE (°C)  | $R_T/R_{25}$ | $R_T$ FOR 220 k $\Omega$ | R-TOL. ( $\pm$ %) | $\alpha$ (%/K) | T-TOL. ( $\pm$ °C) |
| -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              |



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