



**THE DATASHEET OF
NTCLE203E3103HB0**



NTC Thermistors, Radial Leaded, Accuracy Line



LINKS TO ADDITIONAL RESOURCES



| QUICK REFERENCE DATA | | |
|--|----------------------|------|
| PARAMETER | VALUE | UNIT |
| Resistance value at 25 °C | 2K to 470K | Ω |
| Tolerance on R_{25} -value | ± 1; ± 2; ± 3; ± 5 | % |
| $B_{25/85}$ -value | 3528 to 4570 | K |
| Tolerance on $B_{25/85}$ -value | ± 0.5 to ± 2.0 | % |
| Operating temperature range at: Zero power dissipation (continuously) Zero power dissipation (for short periods) ⁽²⁾ | -40 to +125 ≤ 150 | °C |
| Maximum power dissipation at 55 °C | 100 | mW |
| Dissipation factor δ in still air (for info) | 2.2 | mW/K |
| Response time ⁽¹⁾ | ≈ 1.7 | s |
| Thermal time constant τ ⁽¹⁾ | 13 | |
| Mass | ≈ 0.11 | g |

Notes

- Response time in silicone oil MS200/50. 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. Thermal time constant by cooling from electrically pre-heated body
- Valid for all types with the exception of the R_{25} values 12 kΩ, 22 kΩ and 470 kΩ

FEATURES

- Accurate over a wide temperature range (tolerance on B-value down to 0.5 %)
- Good stability over a long life
- Excellent price/performance ratio
- Low heat conductivity through 0.4 mm Ni-leads
- cULus recognized, file E148885 (UL category XGPU2/XGPU8)
- Mounting: radial
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

APPLICATIONS

- Temperature measurement, sensing and control in industrial, consumer, and telecom applications. For on-board sensing or accurate remote sensing

DESCRIPTION

These thermistors are made of NTC ceramic material. The device consists of a chip with two tinned nickel leads. The parts are coated and color marked.

PACKAGING

The thermistors are packed in cardboard boxes; the smallest packing quantity is 500 units.

DESIGN-IN SUPPORT

For complete curve computation, please visit: www.vishay.com/en/thermistors/ntc-rt-calculator/.

MARKING

The thermistors are marked with colored dots on a gray epoxy base coating; see Dimensions and “Electrical Data and Ordering Information”.

CAUTIONS AND WARNINGS ON MOUNTING AND HANDLING

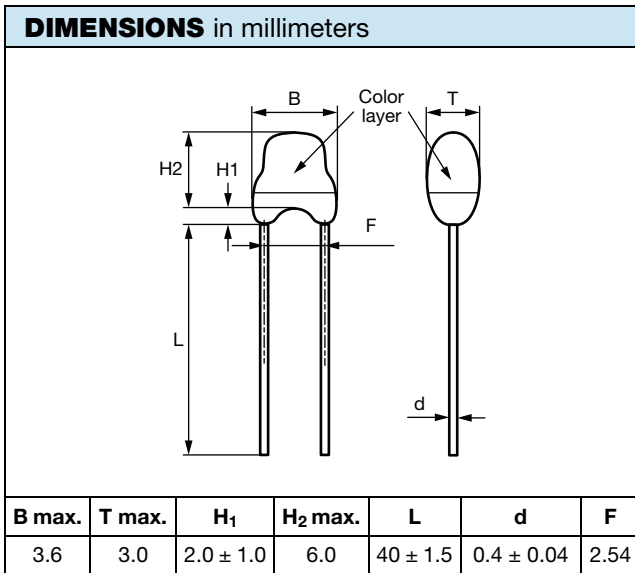
Please read the special instructions: see www.vishay.com/doc?29222.

By soldering in any position. Not intended for potting.

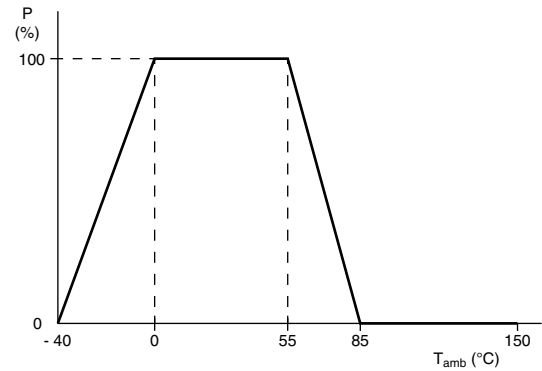
| ELECTRICAL DATA AND ORDERING INFORMATION | | | | | | | |
|--|-------------------------|--------------------|----------------------------|------------------|---------------|---|-------------------|
| R_{25} (Ω) | R_{25} -TOL. (± %) | $B_{25/85}$ (K) | $B_{25/85}$ -TOL. (± %) | COLOR MARKING | UL RECOG. | SAP MATERIAL AND ORDERING NUMBER ⁽¹⁾ | |
| | | | | | | RoHS-COMPLIANT WITH EXEMPTION ⁽²⁾ | RoHS-COMPLIANT |
| 2000 | 1, 2, 3, 5 | 3528 | 0.5 | Orange | ✓ | NTCLE203E3202*B0 | NTCLE203E3202*B0A |
| 2700 | 1, 2, 3, 5 | 3977 | 0.75 | Red | ✓ | NTCLE203E3272*B0 | NTCLE203E3272*B0A |
| 4700 | 1, 2, 3, 5 | 3977 | 0.75 | Green | ✓ | NTCLE203E3472*B0 | NTCLE203E3472*B0A |
| 5000 | 1, 2, 3, 5 | 3977 | 0.75 | Pink | ✓ | NTCLE203E3502*B0 | NTCLE203E3502*B0A |
| 10 000 | 1, 2, 3, 5 | 3977 | 0.75 | Blue | ✓ | NTCLE203E3103*B0 | NTCLE203E3103*B0A |
| 12 000 | 1, 2, 3, 5 | 3740 | 2 | Yellow | ✓ | NTCLE203E3123*B0 | NTCLE203E3123*B0A |
| 22 000 | 1, 2, 3, 5 | 3740 | 2 | White | ✓ | NTCLE203E3223*B0 | NTCLE203E3223*B0A |
| 47 000 | 1, 2, 3, 5 | 4090 | 1.5 | Black | ✓ | NTCLE203E3473*B0 | NTCLE203E3473*B0A |
| 68 000 | 1, 2, 3, 5 | 4190 | 1.5 | Grey | ✓ | NTCLE203E3683*B0 | NTCLE203E3683*B0A |
| 100 000 | 1, 2, 3, 5 | 4190 | 1.5 | Brown | ✓ | NTCLE203E3104*B0 | NTCLE203E3104*B0A |
| 470 000 | 2, 3, 5 | 4570 | 1.5 | Violet | ✓ | NTCLE203E3474*B0 | NTCLE203E3474*B0A |

Notes

- Preferred versions for new designs
- Replace * in SAP by J for ± 5 %, H for ± 3 %, G for ± 2 %, F for ± 1 %
- RoHS exemption 7(c)-I: electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezo-electronic devices, or in a glass or ceramic matrix compound



DERATING



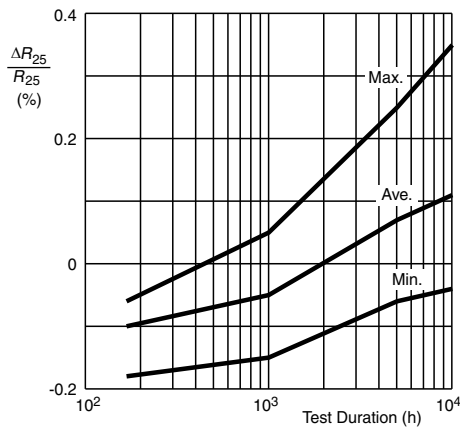
Power derating curve

Note

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

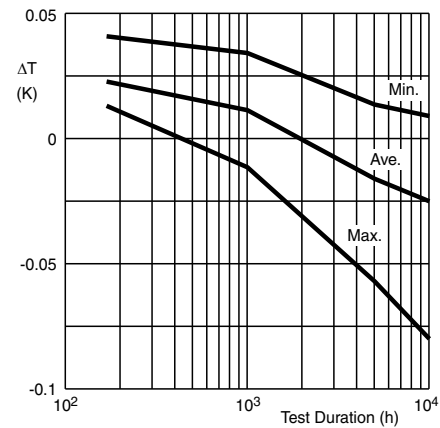
LONG TERM STABILITY AS A FUNCTION OF TEST DURATION AT MAXIMUM TEMPERATURE (150 °C)

TYPICAL R₂₅ STABILITY



Typical curves valid for 2.2 kΩ to 10 kΩ

TYPICAL ROOM TEMPERATURE STABILITY



Typical curves valid for 2.2 kΩ to 10 kΩ



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