# NTC Thermistors, Glass Encapsulated Miniature Bead

## FEATURES

- Small diameter
- Quick response to changes in temperature
- Very high long term stability
- High temperature operation
- Resistant to agressive environments

## APPLICATIONS

Temperature measurement.

Bead thermistor with negative temperature coefficient, in a glass envelope with two tinned durnet (CuNiFe) wires. The device is non-flammable.

## MARKING

The thermistors are marked with four coloured dots on the glass envelope; see Component Outline drawing and Electrical Data and Ordering Information table.

## MOUNTING

By soldering in any position.

## PACKAGING

The thermistors are packed in cardboard boxes; the smallest packaging quantity is 100 units.

## QUICK REFERENCE DATA

| PARAMETER | VALUE |
|---|---|
| Resistance value at 25 °C | 1 kΩ to 1 MΩ |
| Tolerance on R25-value | ±5%; ±10% |
| B25/85-value | 2075 to 4100 K |
| Tolerance on B25/85-value | ±5% |
| Maximum dissipation at 55 °C | 60 mW |
| Response time; note 1 | ≈6 s |
| Operating temperature range:<br>at zero dissipation<br>at maximum dissipation | <br>–55 to +200 °C<br>0 to 55 °C |
| Dielectric withstanding voltage (RMS) between terminals and glass envelope | min. 1500 V |
| Insulation resistance between terminals and glass envelope at 100 V (DC) | min. 100 MΩ |
| Mass | ≈0.1 g |

**Note**

1. 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.

## ELECTRICAL DATA AND ORDERING INFORMATION

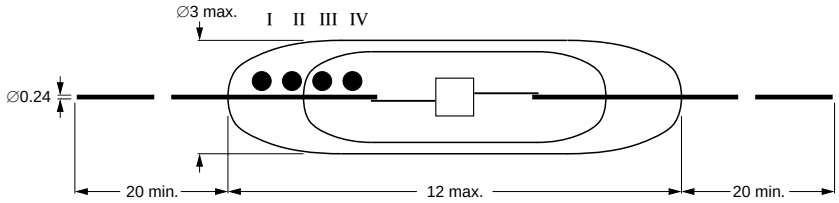
| $R_{25}$ (kΩ) | $B_{25/85}$-VALUE | TC (%/K) | CATALOG NUMBER 2322 633 2.... | | COLOUR CODE (see Component outline Drawing and note 1) | | |
|---|---|---|---|---|---|---|---|
| | | | $R_{25}$ ±5% | $R_{25}$ ±10% | I | II | III |
| 1 | 2075 K ±5% | –2.3 | 3102 | 2102 | brown | black | red |
| 2.2 | 2285 K ±5% | –2.6 | 3222 | 2222 | red | red | red |
| 4.7 | 2485 K ±5% | –2.8 | 3472 | 2472 | yellow | violet | red |
| 10 | 3750 K ±5% | –4.2 | 3103 | 2103 | brown | black | orange |
| 22 | 3560 K ±5% | –4.0 | 3223 | 2223 | red | red | orange |
| 47 | 3750 K ±5% | –4.2 | 3473 | 2473 | yellow | violet | orange |
| 100 | 3900 K ±5% | –4.4 | 3104 | 2104 | brown | black | yellow |
| 220 | 3860 K ±5% | –4.3 | 3224 | 2224 | red | red | yellow |
| 470 | 3950 K ±5% | –4.5 | 3474 | 2474 | yellow | violet | yellow |
| 1000 | 4100 K ±5% | –4.6 | 3105 | 2105 | brown | black | green |

**Note**

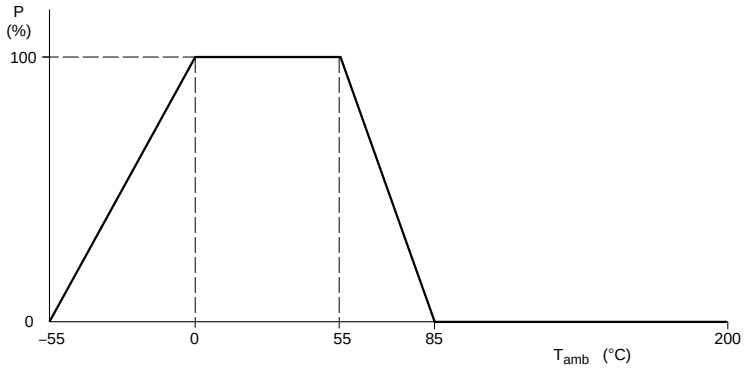
1. Dependent upon $R_{25}$-tolerance, the dot IV is coloured as follows:
   a) for $R_{25}$ ±5%, dot IV is coloured gold;
   b) for $R_{25}$ ±10%, dot IV is coloured silver.
2. $R_{25}$-values, temperature coefficients, catalog numbers and coding.
3. The thermisters have a 12-digit catalog number starting with 2322 633 2. The subsequent 4 digits indicate the resistance value and tolerance.

## DIMENSIONS in millimeters

Component outline.




## DERATING




Power derating curve.