

## NTC Thermistor, Epoxy Coated Mini Sensor



### FEATURES

- Advanced NTC technology
- Temperature range from -55 °C to +150 °C
- Highly resistant to thermal shocks
- Small body diameter of max. 2.5 mm
- AEC-Q200 qualified
- Fast response time
- High sensitivity
- Delivery in bulk or in tape with extra long leads (for automatic mounting)
- Mounting: radial
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### LINKS TO ADDITIONAL RESOURCES



3D Models



Design Tools



Models



Related Documents

### QUICK REFERENCE DATA

| PARAMETER                                                              | VALUE          | UNIT            |
|------------------------------------------------------------------------|----------------|-----------------|
| Resistance value at 25 °C                                              | 2.1K to 100K   | Ω               |
| Tolerance on $R_{25}$ -value                                           | ± 1 to ± 5     | %               |
| $B_{25/85}$ -value                                                     | 3511 to 4190   | K               |
| Tolerance on $B_{25/85}$ -value                                        | ± 0.5 to ± 1.5 | %               |
| Operating temperature range                                            | -55 to +150    | °C              |
| Response time (63.2 % 25 °C to 85 °C stirred air (for info))           | 5              | s               |
| Dissipation factor $\delta$ in still air (for info)                    | 1.8            | mW              |
| Maximum power dissipation at 55 °C                                     | 100            | mW              |
| Min. dielectric withstanding voltage between terminals and coated body | 500            | V <sub>AC</sub> |
| Insulation resistance at 100 V <sub>DC</sub>                           | > 10M          | Ω               |
| Weight                                                                 | ≈ 100          | mg              |

### PACKAGING

- Bulk components are delivered in boxes of 500 components
- Taped components are delivered on a reel of 1500 components (according to IEC 60286-2 but with extra long leads: H0 = 32 mm)

### APPLICATIONS

Temperature sensing, control and compensation. E.g. inlet air temperature sensing thermistors or ECT in automotive applications, sensor elements in industrial and commercial applications, heating systems and industrial systems.

### DESCRIPTION

These negative temperature coefficient thermistors consist of a mini-chip soldered between two tin plated 0.4 mm nickel leads, coated with ocher colored epoxy lacquer and coded with a color dot.

### MOUNTING

**Important mounting and handling instructions: see [www.vishay.com/doc?29222](http://www.vishay.com/doc?29222)**

The thermistors are suitable for all standard assembly processes like crimping, soldering, welding, and potting into epoxy or silicon resins. The parameters and materials of the assembly process should be chosen in accordance with the lead-wire and coated body and validated in the application. The mounting process should be in compliance with the following guidelines and recommendations:

- Peeling forces on the leads should be reduced to a minimum and should never exceed 3 N. A strain relief tool should be used if needed
- Avoid large temperature gradients between the welding region and the sensor

### ELECTRICAL DATA AND ORDERING INFORMATION

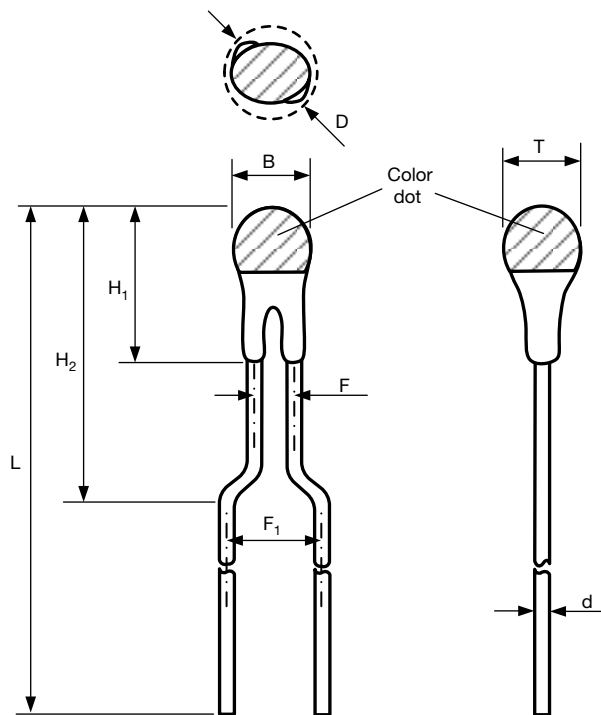
| $R_{25}$<br>(Ω) | $R_{25}$ -TOL.<br>(± %) | $B_{25/85}$<br>(K) | $B_{25/85}$ -TOL.<br>(± %) | COLOR DOT<br>(see next page) | SAP MATERIAL AND ORDERING NUMBER <sup>(1)</sup> |                    |
|-----------------|-------------------------|--------------------|----------------------------|------------------------------|-------------------------------------------------|--------------------|
|                 |                         |                    |                            |                              | RoHS-COMPLIANT<br>WITH EXEMPTION <sup>(2)</sup> | RoHS-COMPLIANT     |
| 2100            | 1, 2, 3, 5              | 3511               | 1                          | Orange                       | NTCLE213E3212xMyy                               | -                  |
| 2100            | 1, 2, 3, 5              | 3528               | 1                          | Orange                       | -                                               | NTCLE213E3212xMyyA |
| 10 000          | 1, 2, 3, 5              | 3435               | 1                          | Red                          | NTCLE213E3103xLyy                               | NTCLE213E3103xLyyA |
| 10 000          | 1, 2, 3, 5              | 3984               | 0.5                        | Blue                         | NTCLE213E3103xHyy                               | NTCLE213E3103xHyyA |
| 12 000          | 1, 2, 3, 5              | 3740               | 1                          | Black                        | NTCLE213E3123xMyy                               | NTCLE213E3123xMyyA |
| 30 000          | 1, 2, 3, 5              | 3935               | 0.75                       | Green                        | NTCLE213E3303xHyy                               | NTCLE213E3303xHyyA |
| 100 000         | 1, 2, 3, 5              | 4190               | 1.5                        | Brown                        | NTCLE213E3104xXyy                               | NTCLE213E3104xXyyA |

### Notes

  Preferred versions for new designs

<sup>(1)</sup> Replace the x-digit by J for  $R_{25}$ -tolerance of 5 %, H for 3 %, G for 2 %, and F for 1 %.  
Replace the y-digits by B0 for bulk delivery and by T1 for tape and reel delivery

<sup>(2)</sup> 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

**DIMENSIONS** in millimeters


| PARAMETER                  | VALUE      |
|----------------------------|------------|
| B max.                     | 2.5        |
| T max.                     | 2.5        |
| F                          | 1.1        |
| F1                         | 2.54       |
| D max. (mounting diameter) | 2.5        |
| d                          | 0.4 ± 10 % |
| H1 max.                    | 5.5        |
| H2 max.                    | 10         |
| L                          | 41 ± 1     |

**Note**

- Non-dimensioned details do not affect the performance of the thermistors



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