

## NTC Thermistor, Epoxy Coated Mini Sensor


**RoHS**  
COMPLIANT

### 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
- Fast response time
- High sensitivity
- Delivery in bulk or in tape with extra long leads (for automatic mounting)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

### 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.

### MOUNTING

The thermistors are suitable for all standard assembly processes like crimping, soldering, welding. The parameters of the assembly process should be chosen in accordance with the lead-wire material (tinned nickel) and validated in 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
- Avoid large temperature gradients between the welding region and the sensor

### 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)

### DESIGN IN SUPPORT

R(T) tables spreadsheet available on request at [nlr@vishay.com](mailto:nlr@vishay.com) or to download at:

[www.vishay.com/resistors-non-linear/curve-computation-list](http://www.vishay.com/resistors-non-linear/curve-computation-list)

| 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 %)<br>25 °C to 85 °C still air (for info)                | 5              | s               |
| Dissipation factor $\delta$ in still air<br>(for info)                       | 1.8            | mW              |
| Maximum power dissipation  | 100            | mW              |
| Min. dielectric withstanding<br>voltage between terminals<br>and coated body | 500            | V <sub>AC</sub> |
| Insulation resistance at 100 V <sub>DC</sub>                                 | > 10M          | Ω               |
| Weight   | approx. 100    | mg              |

| ELECTRICAL DATA AND ORDERING INFORMATION  |                      |                    |                        |                       |                           |
|---|----------------------|--------------------|------------------------|-----------------------|---------------------------|
| VISHAY SAP ORDERING NUMBER <sup>(1)</sup> | $R_{25}$ -VALUE (kΩ) | $R_{25}$ -TOL. (%) | $B_{25/85}$ -VALUE (K) | $B_{25/85}$ -TOL. (%) | COLOR DOT (see next page) |
| NTCLE213E3212xMyy                         | 2.1                  | 1, 2, 3, 5         | 3511                   | 1                     | Orange                    |
| NTCLE213E3103xLyy                         | 10                   | 1, 2, 3, 5         | 3435                   | 1                     | Red                       |
| NTCLE213E3103xHyy                         | 10                   | 1, 2, 3, 5         | 3984                   | 0.5                   | Blue                      |
| NTCLE213E3123xMyy                         | 12                   | 1, 2, 3, 5         | 3740                   | 1                     | Black                     |
| NTCLE213E3303xHyy                         | 30                   | 1, 2, 3, 5         | 3935                   | 0.75                  | Green                     |
| NTCLE213E3104xXyy                         | 100                  | 1, 2, 3, 5         | 4190                   | 1.5                   | Brown                     |

#### Note

- <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.

**DIMENSIONS** in millimeters


| PARAMETER | VALUE       |
|-----------|-------------|
| B         | 2.5 max.    |
| T         | 2.5 max.    |
| P         | 1.1 nominal |
| P1        | 2.54        |
| d         | 0.4 ± 10 %  |
| H1        | 5.5 max.    |
| H2        | 10 max.     |
| L         | 41 ± 1      |

**Note**

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



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