

## NTC Thermistors, Mini Lug Sensors



QUICK REFERENCE DATA		
PARAMETER	VALUE	UNIT
Resistance value at 25 °C	10K to 47K	Ω
Tolerance on $R_{25}$ -value	± 2 to ± 3	%
$B_{25/85}$ -value	3740 to 3984	K
Tolerance on $B_{25/85}$ -value	± 0.5 to ± 1.5	%
Operating temperature range: At zero dissipation	-40 to +125	°C
Response time	3.5	s
Thermal time constant $\tau$	≈ 5	s
Dissipation factor $\delta$	10	mW/K
Min. dielectric withstanding voltage between terminals and lug	1000	V <sub>AC</sub>
Climatic category (LCT / UCT / days)	40 / 125 / 56	-
Weight		
without connector	~ 0.5	g
with connector	~ 0.6	g

**Note**

- Other  $R_{25}$  values and tolerances available upon request

**FEATURES**

- Fast time response for surface applications compared to industry standard NTC lug sensors
- Reduced thermal gradient, due to the use of small dimensions and nickel conductor, allowing for an accurate surface temperature measurement
- The sensor is not suitable for being permanently in contact with water or liquids
- Small size connector and small lug ring tongue terminal, allowing for temperature sensing at locations where only limited space is available
- Mounting: assembly screw mounting
- Connector ZHR-2 (optional)
- AEC-Q200 qualified available (grade 1)
- UL recognized, file E148885 (UL category XGPU2)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



RoHS COMPLIANT

**APPLICATIONS**

Thermistors used for surface temperature sensing and control in:

- Computer equipment
- MOSFETS, IC's, Power Electronics, heatsink temperature control, LED emitter heat-sink control
- Consumer appliances
- Industrial equipment
- Automotive equipment

**DESCRIPTION**

Miniature insulated chip thermistor with a negative temperature coefficient mounted inside a mini lug barrel. The device has no marking.

**MOUNTING**

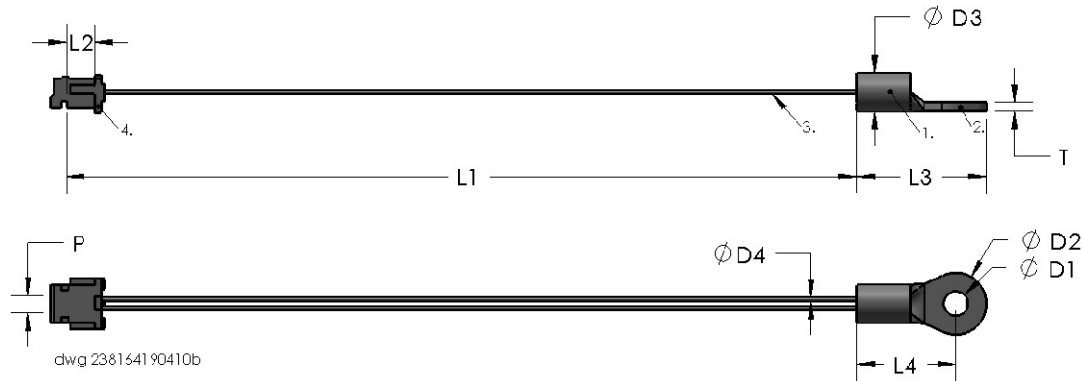
- The sensor can be mounted by means of a screw. For stud size, metric 2 mm M2/American stud #1-2
- The end wire can be soldered, welded or crimped to a connector
- Optional connector for Wire-to-Wire or Wire-to-Board connections

ELECTRICAL DATA AND ORDERING INFORMATION						
$R_{25}$ (Ω)	$R_{25}$ -TOL. (± %)	$B_{25/85}$ (K)	$B_{25/85}$ -TOL. (± %)	DESCRIPTION	UL RECOGNIZED (Y / N)	SAP MATERIAL AND ORDERING NUMBER
10 000	2	3984	0.5	NTC Mini Lug 10K 2 % 3984 K 0.5 %	Y	NTCALUG03A103G
10 000	2	3984	0.5	NTC Mini Lug 10K 2 % 3984 K 0.5 % with connector	Y	NTCALUG03A103GC
10 000	3	3984	0.5	NTC Mini Lug 10K 3 % 3984 K 0.5 %	Y	NTCALUG03A103H
10 000	3	3984	0.5	NTC Mini Lug 10K 3 % 3984 K 0.5 % with connector	Y	NTCALUG03A103HC
12 000	3	3740	1.5	NTC Mini Lug 12K 3 %	N	NTCALUG03A123H
12 000	3	3740	1.5	NTC Mini Lug 12K 3 % with connector	N	NTCALUG03A123HC
47 000	3	3740	1.5	NTC Mini Lug 47K 3 %	N	NTCALUG03A473H
47 000	3	3740	1.5	NTC Mini Lug 47 kΩ 3 % with connector	N	NTCALUG03A473HC

**Note**

- Ordering information can be found on: [www.vishay.com/doc?33036](http://www.vishay.com/doc?33036)

## DIMENSIONS in millimeters



L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>1</sub> + L <sub>3</sub> (item without connector)	Ø D <sub>1</sub>	Ø D <sub>2</sub>	Ø D <sub>3</sub>	Ø D <sub>4</sub>	T	Pitch P
70 ± 5	4 ± 1	11.5 ± 0.3	8.8 ± 0.3	81.5 ± 5	2.2 ± 0.3	5.5 ± 0.3	3.4 ± 0.3	0.35 ± 0.1	0.8 ± 0.1	1.5 ± 0.3

### Notes

- (1) Vishay Thermistor chip NTC, with epoxy coating and middle buffer layer
- (2) Metal ring lug, tin plated
- (3) Insulated leads: AWG#32, monostranded, diam 0.20 mm, silver plated Nickel, ETFE insulated, diameter 0.35 mm
- (4) End wire stripped or 2-poles connector crimped (optional)

## MOUNTING

- With screw size metric M2, or American stud 1-2
- For the type without connector, the electrical connection can be made by soldering, crimping or welding.
- For the type with connector, the connector can mate with following counter-connectors <sup>(5)</sup>:
  - A. One of the PCB connector - Through Hole:
    - JST B 2B-ZR (top entry)
    - JST S 2B-ZR (side entry)
    - JST B 2B-ZR-3.4 (top entry, for 1.6 mm board)
    - JST S 2B-ZR-3.4 (side entry, for 1.6 mm board)
  - B. One of the PCB Board connector - SMT Surface Mount:
    - JST S 2B-ZR-SM2-TF (SM2 side entry)
    - JST B 2B-ZR-SM3-TF (SM3 top entry)
    - JST S 2B-ZR-SM3A-TF (SM3 side entry)
    - JST B 2B-ZR-SM4-TF (SM4 top entry)
    - JST S 2B-ZR-SM4A-TF (SM4 side entry)
  - C. The Wire-to-wire connector:
    - JST ZMR-02 housing (x 1) + JST SMM-003T-P0.5 terminals (x 2)

### Note

- (5) Additional details and dimensions can be found in JST ZH and JST ZM datasheets.

## PACKAGING

Available in plastic bags of 250 pieces. SPQ = 2000 pieces

## DESIGN-IN SUPPORT

- Other resistance curves and tolerances are available on request
- Consult Vishay for other lead length, other connector crimping or other features
- Other applicable screw size are available, for example M3 (American Stud #3-4)
- 3D solid models: [www.vishay.com/doc?29106](http://www.vishay.com/doc?29106)
- NTC curve computation: [www.vishay.com/thermistors/ntc-curve-list/](http://www.vishay.com/thermistors/ntc-curve-list/)
- For M3 (American Stud #3/4) size, series NTCALUG39 is available for limited R<sub>25</sub> values.



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