



## NTC Thermistors, Mini Lug Sensors



### LINKS TO ADDITIONAL RESOURCES



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

### AGENCY APPROVALS

- cUL certificate XGPU8.E148885
- ULus certificate XGPU2.E148885

#### Note

- Agency approval documents, please see:  
[www.vishay.com/ppg?29114&documents](http://www.vishay.com/ppg?29114&documents)

### DESIGN-IN SUPPORT

- Other resistance curves and tolerances are available on request
- Consult Vishay for other lead length, other connector crimping, or other features
- 3D solid models: [www.vishay.com/doc?29147](http://www.vishay.com/doc?29147)
- NTC curve computation:  
[www.vishay.com/thermistors/ntc-rt-calculator/](http://www.vishay.com/thermistors/ntc-rt-calculator/)

### 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
- Optional connector, rated +85 °C, tin plated (e3)
- AEC-Q200 qualified available (grade 1)
- cULus recognized, file E148885 (UL category XGPU2/XGPU8)
- 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 soldered to AWG#32 silver plated nickel and insulated cables, and mounted inside a mini lug tin plated copper barrel.

### PACKAGING

Available in plastic bags.

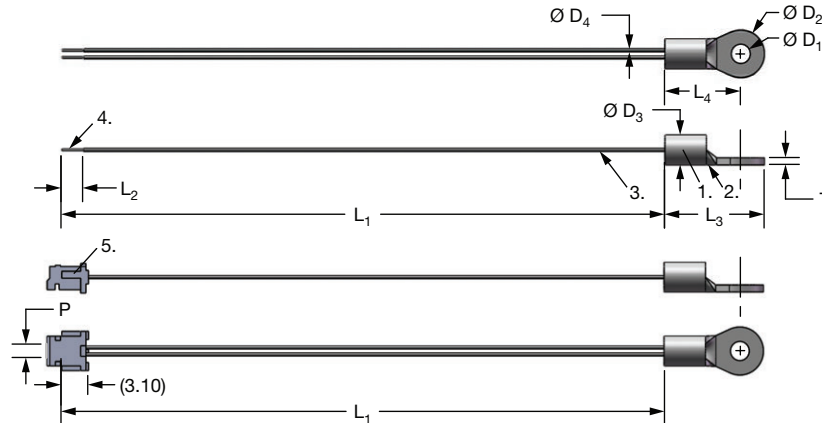
### CAUTIONS AND WARNINGS ON MOUNTING AND HANDLING

Please read the special instructions: see [www.vishay.com/doc?29221](http://www.vishay.com/doc?29221).

- The sensor NTCALUG03A can be mounted by means of a screw M2 (stud #1, #2), or a screw M3 (stud #3, #4) for NTCALUG39A
- For the type without connector, the electrical connection can be made by soldering, crimping, or welding
- For the type with connector, see section Mounting Connector




**DIMENSIONS** in millimeters



MODEL	$L_1$	$L_2$	$L_3$	$L_4$	$L_1 + L_3$ (item without connector)	$\varnothing D_1$	$\varnothing D_2$	$\varnothing D_3$	$\varnothing D_4$	T	PITCH P
NTCALUG03A	$70 \pm 5$	$4 \pm 1$	$11.5 \pm 0.5$	$8.8 \pm 0.3$	$81.5 \pm 5$	$2.2 \pm 0.3$	$5.5 \pm 0.3$	$3.4 \pm 0.3$	$0.35 \pm 0.1$	$0.8 \pm 0.1$	$1.5 \pm 0.3$
NTCALUG39A	$70 \pm 5$	$4 \pm 1$	$11.5 \pm 0.5$	$8.8 \pm 0.3$	$81.5 \pm 5$	$3.2 \pm 0.3$	$5.5 \pm 0.3$	$3.4 \pm 0.3$	$0.35 \pm 0.1$	$0.8 \pm 0.1$	$1.5 \pm 0.3$

**Notes**

1. Vishay thermistor chip NTC, with epoxy coating
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
5. 2-poles JST ZHR-2 connector crimped

ELECTRICAL DATA AND ORDERING INFORMATION											
$R_{25}$ ( $\Omega$ )	$R_{25}$ - TOL. ( $\pm$ %)	$B_{25/85}$ (K)	$B_{25/85}$ - TOL. ( $\pm$ %)	DESCRIPTION	UL RECOG. 	SAP MATERIAL AND ORDERING NUMBER					
						RoHS-COMPLIANT WITH EXEMPTION (1)	RoHS-COMPLIANT				
10 000	2	3984	0.5	NTC Mini Lug M2 10K 2 % 3984 K 0.5 %	✓	NTCALUG03A103G	NTCALUG03A103GA				
10 000	2	3984	0.5	NTC Mini Lug M3 10K 2 % 3984 K 0.5 %	✓	NTCALUG39A103G	NTCALUG39A103GA				
10 000	2	3984	0.5	NTC Mini Lug M2 10K 2 % 3984 K 0.5 % with connector	✓	NTCALUG03A103GC	NTCALUG03A103GCA				
10 000	2	3984	0.5	NTC Mini Lug M3 10K 2 % 3984 K 0.5 % with connector	✓	NTCALUG39A103GC	NTCALUG39A103GCA				
10 000	3	3984	0.5	NTC Mini Lug M2 10K 3 % 3984 K 0.5 %	✓	NTCALUG03A103H	NTCALUG03A103HA				
10 000	3	3984	0.5	NTC Mini Lug M2 10K 3 % 3984 K 0.5 % with connector	✓	NTCALUG03A103HC	NTCALUG03A103HCA				
12 000	3	3740	1.5	NTC Mini Lug M2 12K 3 %		NTCALUG03A123H	NTCALUG03A123HA				
12 000	3	3740	1.5	NTC Mini Lug M2 12K 3 % with connector		NTCALUG03A123HC	NTCALUG03A123HCA				
47 000	3	3740	1.5	NTC Mini Lug M2 47K 3 %		NTCALUG03A473H	NTCALUG03A473HA				
47 000	3	3740	1.5	NTC Mini Lug M2 47 k $\Omega$ 3 % with connector		NTCALUG03A473HC	NTCALUG03A473HCA				

**Notes**

- Preferred versions for new designs
- (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



## MOUNTING CONNECTOR

- **Important mounting and handling instructions:** see [www.vishay.com/doc?29221](http://www.vishay.com/doc?29221)
- For the type with connector, the JST ZHR-2 connector can mate with following counter-connectors <sup>(1)</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

<sup>(1)</sup> Additional details and dimensions can be found in JST ZH and JST ZM datasheets



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