



NTC Thermistors, Mini Lug Sensors



DESIGN SUPPORT TOOLS

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- SPICE models available: www.vishay.com/doc?29176

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 τ	≈ 5	s
Dissipation factor δ	10	mW/K
Min. dielectric withstanding voltage between terminals and lug	1000	V _{AC}
Climatic category (LCT / UCT / days)	40 / 125 / 56	-
Weight		
without connector	~ 0.5	g
with connector	~ 0.6	g

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)
- UL recognized, file E148885 (UL category XGPU2)
- Material categorization: for definitions of compliance please see 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.

MOUNTING

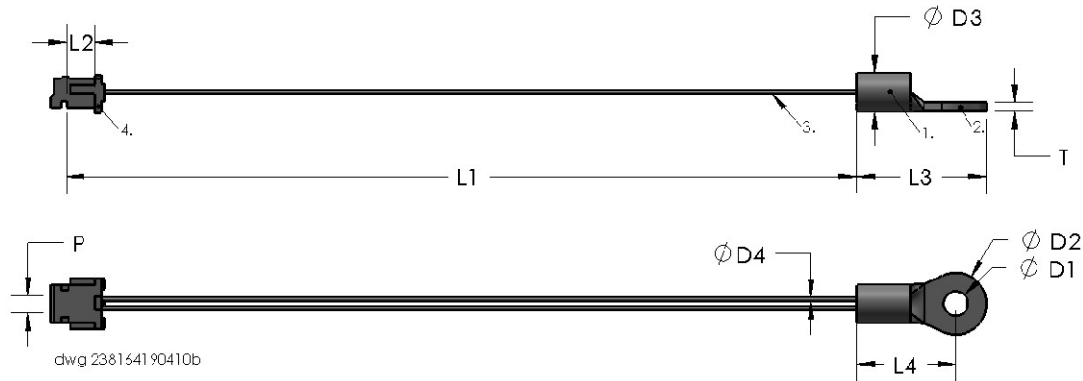
- The sensor NTCALUG03A can be mounted by means of a screw M2 (Stud #1, #2), or a screw M3 (Stud #3, #4) for NTCALUG39A
- The end wire can be soldered, welded or crimped to a connector
- Optional connector for Wire-to-Wire or Wire-to-Board connections

ELECTRICAL DATA AND ORDERING INFORMATION							
R ₂₅ (Ω)	R ₂₅ - TOL. (± %)	B _{25/8} (K)	B _{25/85} - TOL. (± %)	DESCRIPTION	SAP MATERIAL AND ORDERING NUMBER		UL RECOGNIZED (Y / N)
					with RoHS exemption (1)	without RoHS exemption (1)	
10 000	2	3984	0.5	NTC Mini Lug M2 10K 2 % 3984 K 0.5 %	NTCALUG03A103G	NTCALUG03A103GA	Y
10 000	2	3984	0.5	NTC Mini Lug M3 10K 2 % 3984 K 0.5 %	NTCALUG39A103G	NTCALUG39A103GA	Y
10 000	2	3984	0.5	NTC Mini Lug M2 10K 2 % 3984 K 0.5 % with connector	NTCALUG03A103GC	NTCALUG03A103GCA	N
10 000	2	3984	0.5	NTC Mini Lug M3 10K 2 % 3984 K 0.5 % with connector	NTCALUG39A103GC	NTCALUG39A103GCA	N
10 000	3	3984	0.5	NTC Mini Lug M2 10K 3 % 3984 K 0.5 %	NTCALUG03A103H	NTCALUG03A103HA	Y
10 000	3	3984	0.5	NTC Mini Lug M2 10K 3 % 3984 K 0.5 % with connector	NTCALUG03A103HC	NTCALUG03A103HCA	N
12 000	3	3740	1.5	NTC Mini Lug M2 12K 3 %	NTCALUG03A123H	NTCALUG03A123HA	N
12 000	3	3740	1.5	NTC Mini Lug M2 12K 3 % with connector	NTCALUG03A123HC	NTCALUG03A123HCA	N
47 000	3	3740	1.5	NTC Mini Lug M2 47K 3 %	NTCALUG03A473H	NTCALUG03A473HA	N
47 000	3	3740	1.5	NTC Mini Lug M2 47 kΩ 3 % with connector	NTCALUG03A473HC	NTCALUG03A473HCA	N

Notes

(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

DIMENSIONS in millimeters



MODEL	L ₁	L ₂	L ₃	L ₄	L ₁ + L ₃ (item without connector)	Ø D ₁	Ø D ₂	Ø D ₃	Ø D ₄	T	Pitch P
NTCALUG03A	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
NTCALUG39A	70 ± 5	4 ± 1	11.5 ± 0.3	8.8 ± 0.3	81.5 ± 5	3.2 ± 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
- (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

- 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 ⁽¹⁾:
 - 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

- (1) 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
- 3D solid models: www.vishay.com/doc?29147
- NTC curve computation: www.vishay.com/thermistors/ntc-curve-list/



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