NTC Thermistors, Insulated Leads for 185 °C Applications

LINKS TO ADDITIONAL RESOURCES

3D Models | Design Tools | Related Documents

QUICK REFERENCE DATA		
PARAMETER	VALUE	UNIT
Resistance value at 25 °C	2.1K to 30K	Ω
Tolerance on R_{25}-value	1, 2, 3, 5	%
$B_{25/85}$-value	3435 to 3984	K
Tolerance on $B_{25/85}$-value	± 0.5 to ± 1	%
Operating temperature range	-55 to +185	°C
Response time (63.2 %) in stirred air 25 °C to 85 °C (for information only)	6	s
Dissipation factor δ in still air (for information only)	1.0	mW/K
Maximum power dissipation at 55 °C	100	mW
Minimum dielectric withstanding voltage (RMS) between terminals and coated body	1000	V_{AC}
Minimum insulation resistance between terminals and coated body at 500 V_{DC}	100M	Ω
Weight	30	mg

DESIGN-IN SUPPORT

Not intended for fluid immersed applications or continuous contact with water or conducting liquids. See also Environmental Conditions. Can be potted in suitable resins.

For complete curve computation, please visit: www.vishay.com/thermistors/ntc-curve-list/

Consult Vishay for specific applications, mounting, alternative RT curves, or wire length.

FEATURES

- Advanced NTC ceramic technology
- Wide temperature range from -55 °C to +185 °C
- Cost efficient thermistor design
- Small body diameter of maximum 2.4 mm
- Fast response time and high sensitivity
- Improved noxious gas and acid resistance
- Insulated Ag-plated NiFe alloy leads
- Mounting: radial
- AEC-Q200 qualified (rev. D)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

APPLICATIONS

NTCLE350 can be processed by potting or molding into sensors for electric traction motors, for example in the sensing and protection of high current connectors.

NTCLE350 is suitable for EGR applications (exhaust gas recirculation) for steady state temperatures going up to 185 °C.

This series is also intended for oil temperatures sensors (OTS), in for example transmission systems and liquid cooled starter/generator systems.

The AEC-Q200 qualification (between -55 °C and 185 °C) enables this series to be used for classical motor thermal sensing applications (engine coolant, fuel sensor, TMAP for manifold air pressure) as well as in HVAC applications.

DESCRIPTION

These negative temperature coefficient thermistors consist of a mini-chip soldered between two AWG #32 PEEK insulated silver plated NiFe alloy leads and coated with black colored epoxy lacquer. High adhesive strength between PEEK wire and encapsulating lacquer.

MOUNTING

Important mounting and handling instructions: see www.vishay.com/doc?29222

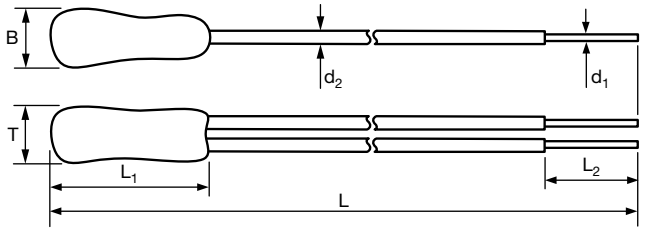
ELECTRICAL DATA AND ORDERING INFORMATION				
R_{25} (Ω)	R_{25}-TOL. (± %)	$B_{25/85}$ (K)	$B_{25/85}$-TOL. (± %)	SAP MATERIAL AND ORDERING NUMBER (1) RoHS COMPLIANT
2100	1, 2, 3, 5	3511	1	NTCLE350E4212xMB0
5000	1, 2, 3, 5	3435	1	NTCLE350E4502xLB0
10 000	1, 2, 3, 5	3984	0.5	NTCLE350E4103xHB0
10 000	1, 2, 3, 5	3435	1	NTCLE350E4103xLB0
30 000	1, 2, 3, 5	3935	1	NTCLE350E4303xHB0

Note

(1) Replace the x-digit by J for R_{25}-tolerance of 5 %, H for 3 %, G for 2 %, and F for 1 %

For technical questions, contact: nlr@vishay.com

DIMENSIONS in millimeters



T	B	L	L_1	L_2	Ø $d_{2\ MAX.}$	Ø d_1
2.4 max.	2.4 max.	40 ± 1	6 ± 1	5 ± 1	0.4	0.2 ± 0.02

MOUNTING

The thermistors are suitable for all standard assembly processes like crimping, brazing, and welding (laser, ultrasonic, or resistance). The parameters of the assembly process should be chosen in accordance with the lead-wire material (silver plated Ni-Fe alloy) and validated in application.

Different conductor, insulation material, and dimensions are available on request.

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
- After complete assembly it is recommended to fix the leads in the welding region with a strain relief

If using a ceramic adhesive / potting or filling material avoid phosphate-based binders. Always follow the supplier's curing specifications fully including bringing the part up to operating temperature for a short time to ensure good moisture resistance and electrical performance of the total sensor.

ENVIRONMENTAL CONDITIONS

The thermistor should not be placed in a reducing atmosphere or be subjected to corrosive substances (e.g. phosphates) which could affect the functionality or the lifetime of the thermistor. Always maintain a sufficient partial oxygen pressure to avoid abnormal electrical drift and / or a reduced "life time".

The thermistor design can withstand conditions with low concentrations of H_2S, NO_2, Cl_2, and SO_2 according to DIN EN 60068-2-60, test Ke, method 4. Additionally it can withstand FOS90 testing according to ASTM B 809-95 (1000 hours / 90 °C / 76 % to 95 % RH / sulfur flowers) and 12 hours immersion (at 50 °C) in low concentrations of HCl, H_2SO_4, and acetic acid without functional or visual damage.

The thermistor was qualified according to AEC-Q200 rev. D with top temperature of 185 °C to assure best performance in today's most challenging environments.

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