NTC Thermistors, Miniature Immersion Sensor



LINKS TO ADDITIONAL RESOURCES

3D Models Design Tools

QUICK REFERENCE DATA		
PARAMETER	VALUE	UNIT
Resistance value at 25 °C	10K	Ω
Tolerance on R_{25}-value	± 3	%
$B_{25/85}$-value	3984	K
Tolerance on $B_{25/85}$-value	± 0.5	%
Operating temperature range at zero dissipation	-25 to +105	°C
Response time t 63.2 % of ΔT (air 25 °C to water 85 °C)	1.5	s
Dissipation factor δ Mounted in still air In still water	 2.8 5.6	mW/K
Maximum power dissipation at 55 °C	100	mW
Min. dielectric withstanding voltage between terminals and capsule (10 s)	500	V_{AC}
Insulation resistance at 500 V_{DC}	> 100M	Ω
Thermal gradient	< 0.02	K/K
Weight	2.1	g

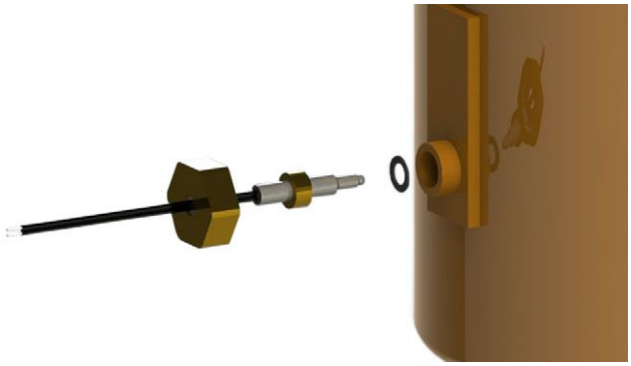

Fig. 1 - Mounting example with sealing ring and screw

FEATURES

- Fast time response for fluid immersion applications
- Reduced thermal gradient, due to the use of small tip dimensions and thin insulated wire
- Sensor for permanent contact with water or other liquids
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

APPLICATIONS

Immersion sensor used for temperature measurement, sensing and control in:

- Water boilers
- Heating systems
- Chiller systems
- Water and used water systems
- Water and oil tanks
- Consumer appliances, coffee machines
- Industrial appliances
- Solar heating systems

DESCRIPTION

Miniature insulated chip NTC thermistor mounted in a SS304 housing with or without brass collar for sealed mounting and twin PVC insulated AWG#30 lead wire connection.

MOUNTING

- The sensor can be mounted by means of a sealing O-ring and screw
- The end wire can be soldered, or crimped to a connector
- Optional connector for Wire-to-Wire or Wire-to-Board connections
- The contact area with the liquid is preferably min 10 mm down from the tip and max to the brass collar location (see Fig. 1 for mounting example)
- Not intended for corrosive or high acidic liquids
- The epoxy lead-wire side can not be in permanent contact with liquids, or water

PACKAGING

Available in plastic bags of 250 pieces.

DESIGN-IN SUPPORT

- Other resistance curves and tolerances are available on request
- Consult Vishay for other lead length or connector options
- For complete RT curve computation, visit: www.vishay.com/thermistors/ntc-rt-calculator/
- Available in high grade stainless steel SS316

ELECTRICAL DATA AND ORDERING INFORMATION					
R_{25} (Ω)	R_{25}-TOL. (%)	$B_{25/85}$ (K)	$B_{25/85}$-TOL. (± %)	DESCRIPTION	SAP MATERIAL AND ORDERING NUMBER
10 000	± 3	3984	0.5	NTC Immersion 10K 3 % 3984K 0.5 %	NTCAIMME3C90373
10 000	± 3	3984	0.5	NTC 10K 3 % 3984K 0.5 % no ring	NTCAIMME3C90686

For technical questions, contact: nlr@vishay.com

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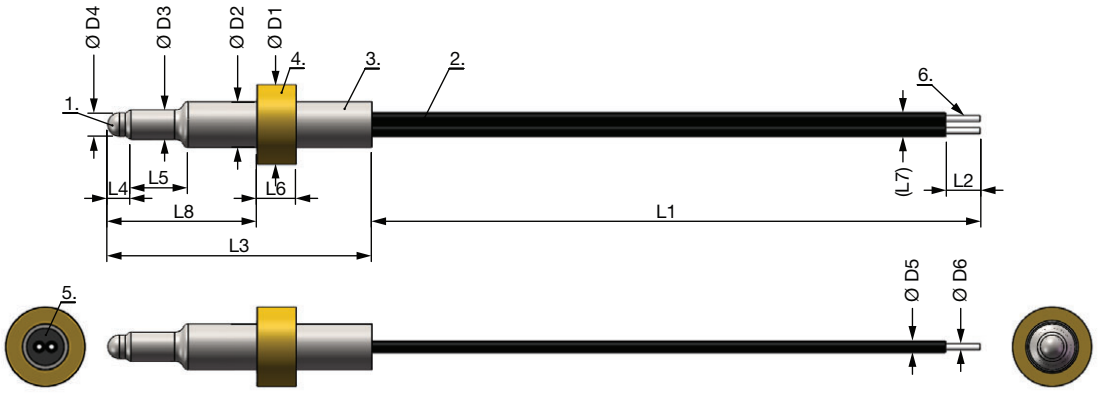
DIMENSIONS in millimeters



L1	L2	L3	L4	L5	L6	L7	L8	Ø D1	Ø D2	Ø D3	Ø D4	Ø D5	Ø D6
200 ± 20	4 ± 1	23 ± 0.5	2 ± 0.5	5 ± 0.5	3.4 ± 0.2	2.05	13 ± 0.5	6.8 ± 0.1	3.9 ± 0.1	2.5 ± 0.2	2 ± 0.2	1	0.3

Notes

1. Vishay Thermistor chip NTC, epoxy insulated
2. PVC cable, single insulated 105 °C, 300 V rated, AWG#30 multi-stranded twin
3. Stainless steel (SS304) housing
4. Brass collar (not present on the NTCAIMME3C90686 type)
5. Epoxy potting resin
6. Pre-tinned end wire stripped

For complete Curve Computation, visit: www.vishay.com/thermistors/ntc-rt-calculator/

RESISTANCE TEMPERATURE CHARACTERISTICS

TEMP. (°C)	$R_{(T)}/R_{25}$	RESISTANCE (Ω)	$\Delta R/R$ (%)	α (%/K)	ΔT (K)	$R_{MIN.}$ (Ω)	$R_{MAX.}$ (Ω)
-25	12.990	129 900	4.39	-5.99	0.73	124 202	135 598
-20	9.676	96 761	4.22	-5.79	0.73	92 675	100 848
-15	7.276	72 765	4.07	-5.61	0.73	69 806	75 723
-10	5.522	55 218	3.92	-5.43	0.72	53 056	57 380
-5	4.227	42 268	3.77	-5.26	0.72	40 674	43 861
0	3.262	32 624	3.63	-5.10	0.71	31 440	33 808
5	2.538	25 381	3.49	-4.94	0.71	24 494	26 268
10	1.990	19 897	3.36	-4.80	0.70	19 227	20 566
15	1.571	15 711	3.24	-4.65	0.70	15 202	16 220
20	1.249	12 493	3.12	-4.52	0.69	12 103	12 882
25	1.000	10 000	3.00	-4.39	0.68	9700.0	10 300
30	0.8056	8056.0	3.11	-4.26	0.73	7805.1	8306.8
35	0.6530	6529.7	3.22	-4.14	0.78	6319.3	6740.2
40	0.5324	5323.9	3.33	-4.03	0.83	5146.6	5501.1
45	0.4365	4365.3	3.43	-3.92	0.88	4215.4	4515.1
50	0.3599	3598.7	3.53	-3.81	0.93	3471.6	3725.8
55	0.2982	2982.3	3.63	-3.71	0.98	2874.0	3090.5
60	0.2484	2483.8	3.72	-3.61	1.03	2391.3	2576.3
65	0.2079	2078.7	3.81	-3.51	1.09	1999.4	2157.9
70	0.1748	1747.7	3.90	-3.42	1.14	1679.5	1815.9
75	0.1476	1475.9	3.99	-3.34	1.20	1417.1	1534.8
80	0.1252	1251.8	4.07	-3.25	1.25	1200.8	1302.8
85	0.1066	1066.1	4.15	-3.17	1.31	1021.8	1110.4
90	0.09116	911.59	4.23	-3.09	1.37	873.01	950.16
95	0.07825	782.46	4.31	-3.02	1.43	748.75	816.17
100	0.06741	674.11	4.38	-2.94	1.49	644.56	703.66
105	0.05828	582.84	4.46	-2.87	1.55	556.87	608.82

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