

Vishay BCcomponents

# NTC Thermistor Sensors - Pipe Type with Fast Time Response



### **DESIGN SUPPORT TOOLS AVAILABLE**

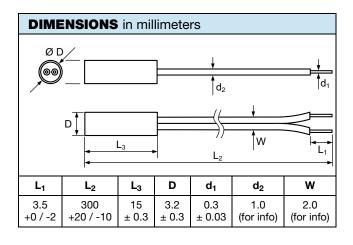




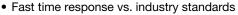
QUICK REFERENCE DATA				
PARAMETER	VALUE	UNIT		
Resistance value at 25 °C	100K	Ω		
Tolerance on R <sub>25</sub> -value	± 3	%		
B <sub>25/85</sub> -value	4190	K		
Tolerance on B <sub>25/85</sub> -value	± 1.5	%		
Operating temperature range	-40 to +105	°C		
Response time in oil (typical) (1)	$t_{0.63} = 3.5$ $t_{0.90} = 9.5$	S		
Minimum dielectric withstanding voltage	1500 V <sub>RMS</sub>			
Maximum power dissipation at 55 °C	250 mW			
Mass	≈ 1.6	g		

#### Note

(1) Response time in silicone oil MS 200/50. This is the time needed for the sensor to reach 63.2 % or 90 % of the total temperature difference when subjected to a temperature change from 25 °C in air to 85 °C in oil



#### **FEATURES**





- High stability
- High resistance to humidity
- Accurate over wide temperature range

RoHS

- High encapsulating strength between the PVC wire and the encapsulated lacquer
- Material categorization: for definitions of compliance please see <a href="https://www.vishav.com/doc?99912"><u>www.vishav.com/doc?99912</u></a>

## **APPLICATIONS**

Temperature measurement, sensing and control in remote locations and for various environmental conditions, indoor or outdoor.

Typical applications include, for example:

- Air-conditioning sensors
- Evaporator sensors
- Industrial sensors
- · Heating systems sensors

## **DESCRIPTION**

These negative temperature coefficient thermistors consist of a mini-chip soldered to a twin stranded tin plated copper AWG #30, 105 °C resistant, PVC (UL2651) wire and potted in a nickel plated brass pipe. Terminations are tin solder dipped.

#### **MOUNTING**

By soldering or clamping the wire ends, in any position. Body can be inserted, glued or taped attached to a surface, pipe or mounting hole. Not intended for fluid immersed applications.

## **DESIGN-IN SUPPORT**

- Other R/T curves available on request
- The lead length can be customized
- · Connectors or ferrules can be added to the wire end

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

ELECTRICAL DATA AND ORDERING INFORMATION					
<b>R</b> <sub>25</sub> (Ω)	R <sub>25</sub> -TOL. (± %)	B <sub>25/85</sub> (K)	B <sub>25/85</sub> -TOL. (± %)	SAP MATERIAL AND ORDERING NUMBER	
100 000	3	4190	1.5	NTCLP450E3104H (1)	

#### Note

(1) This part was formerly known as NTCAPIPE3104H101



# www.vishay.com Vishay BCcomponents

TEMP. (°C)	R <sub>T</sub> /R <sub>25</sub>	RESISTANCE (ω)	<i>R-</i> TOL. (± %)	α <b>(%/K)</b>	T-TOL. (± °C)	<b>R<sub>min.</sub></b> (ω)	R <sub>max.</sub> (ω)
-40	36.663	3 666 299	9.05	-6.69	1.35	3 334 382	3 998 217
-35	26.376	2 637 588	8.47	-6.49	1.31	2 414 177	2 860 998
-30	19.166	1 916 576	7.91	-6.29	1.26	1 764 950	2 068 202
-25	14.061	1 406 111	7.37	-6.10	1.21	1 302 413	1 509 810
-20	10.412	1 041 184	6.86	-5.92	1.16	969 762	1 112 605
-15	7.778	77 7846	6.36	-5.75	1.11	728 341	827 350
-10	5.861	586 097	5.89	-5.58	1.06	551 588	620 605
-5	4.453	445 257	5.43	-5.42	1.00	421 083	469 431
0	3.409	340 942	4.99	-5.26	0.95	323 938	357 945
5	2.631	263 054	4.56	-5.11	0.89	251 055	275 052
10	2.044	204 446	4.15	-4.97	0.84	195 961	212 931
15	1.600	160 014	3.75	-4.83	0.78	154 008	166 020
20	1.261	126 087	3.37	-4.70	0.72	121 837	130 336
25	1.000	100 000	3.00	-4.57	0.66	97 000	103 000
30	0.7981	79 808	3.36	-4.45	0.75	77 128	82 488
35	0.6408	64 077	3.70	-4.33	0.86	61 703	66 451
40	0.5175	51 745	4.04	-4.22	0.96	49 655	53 836
45	0.4202	42 021	4.36	-4.11	1.06	40 187	43 855
50	0.3431	34 308	4.68	-4.00	1.17	32 702	35 913
55	0.2816	28 156	4.98	-3.90	1.28	26 752	29 559
60	0.2322	23 222	5.28	-3.80	1.39	21 996	24 449
65	0.1925	19 246	5.57	-3.71	1.50	18 174	20 318
70	0.1603	16 025	5.85	-3.62	1.62	15 088	16 962
75	0.1340	13 402	6.12	-3.53	1.73	12 582	14 222
80	0.1126	11 258	6.38	-3.45	1.85	10 539	11 976
85	0.09496	9496	6.64	-3.36	1.97	8866	10 126
90	0.08042	8042	6.89	-3.28	2.10	7488	8596
95	0.06837	6837	7.13	-3.21	2.22	6350	7325
100	0.05835	5835	7.36	-3.13	2.35	5405	6265
105	0.04998	4998	7.59	-3.06	2.48	4618	5377

## **TESTS AND REQUIREMENTS**

STABILITY TESTS					
TEST	PROCEDURE	I∆R <sub>25</sub> /R <sub>25</sub> I			
Endurance at UCT	+105 °C; 1000 h	< 5 %			
Endurance at LCT	-40 °C; 1000 h	< 5 %			
Endurance, max. power dissipation	250 mW; 55 °C; 1000 h	< 5 %			
Damp heat, steady state	56 days at 40 °C; 90 % to 95 % RH	< 7 %			
Rapid change of temperature	-40 °C to +105 °C; 500 cycles	< 5 %			



# **Legal Disclaimer Notice**

Vishay

# **Disclaimer**

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

# **X-ON Electronics**

Largest Supplier of Electrical and Electronic Components

Click to view similar products for NTC (Negative Temperature Coefficient) Thermistors category:

Click to view products by Vishay manufacturer:

Other Similar products are found below:

118-253FAJ-P01 121-202EAC-P01 123-802EAJ-P01 128-105NDP-Q02 129-202VME-S01 135-503LAD-J01 B57250V2473F560

B57620C472K962 B57620C5103J062 B57621C5102J062 A1004SG22P0 192-103LPR-A01 199-303KAF-A02 30054-4 B57471V2474H062

B57620C5102J062 B57620C5223J062 500-52AA04-101 526-31AA19-104 526-31AN12-202 103AT-5-1P-FT 10K3A542I 111-802EAJ-901

112-103FAG-H02 112-104KAG-B01 11028414-00 111-182CAG-H01 112-103FAF-H01 112-104KBF-F01 118-202CAJ-P01 526-31AA79-102 B57442V5103J62 517-59CL01-202 B57401V2103H62 B57621C5472J62 11032565-00 194303KEVA01 NTCACAPE3C90193

B57359V2224J260 B57343V5103J360 NXRT15WB473FA1B040 50070974-003-01 189-602LDR-A01 B57621C5472K062 135-105QAF-J02 B57421V2153J062 B57471V2684H062 B57471V2333H062 126-153YJC-B01 NTCS0603E3333FHT