

NTC Thermistors, Low Thermal Gradient Lug Sensors



QUICK REFERENCE DATA

PARAMETER	VALUE
Resistance value at 25 °C	4.7 kΩ to 10 kΩ
Tolerance on R_{25} - value	± 1 %, ± 2 %
$B_{25/85}$ value	3984K
Tolerance on $B_{25/85}$ - value	± 0.5 %
Maximum dissipation at 25 °C	100 mW
Thermal time constant τ	≈ 5 s
Dissipation factor	10 mW/K
Operating temperature range at zero power	- 55 °C to 125 °C
Min. dielectric withstanding voltage between terminals and lug	1000 V _{AC}
Climatic category (IEC 60539)	55/125/56
Weight	≈ 1.0 g

Note

(1) Consult Vishay for automotive applications

PACKAGING

The thermistors are packed in cardboard boxes; the smallest packaging quantity is 250 units.

MOUNTING

The device is suitable for screwing e.g. on a metal surface through means of an M3 screw. The connections are suitable for soldering on a PCB or for connector insertion. The sensor is not suitable for being in permanent contact with water or liquids.

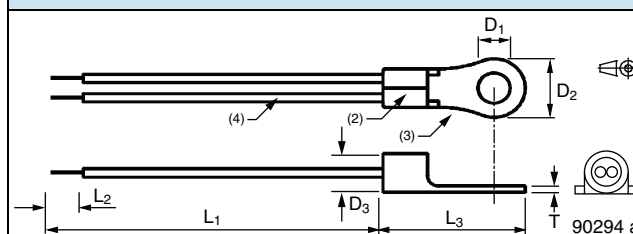
FEATURES

- Thermistor used for surface temperature sensing and control (1)
- Good reduced thermal gradient due to the use of nickel conductor and low profile ring tongue
- AEC-Q200 qualified
- Compliant to RoHS directive 2002/95/EC



RoHS
COMPLIANT

DIMENSIONS in millimeters



L_1	L_2	$\varnothing D_1$	$\varnothing D_2$	$\varnothing D_3$	L_3	T
45 ± 3	6 ± 1	3.7	8.5	4.1	16.8	0.8

Notes

- (2) Vishay thermistor chip NTC with epoxy coating and middle buffer layer
 - (3) Metal ring lug
 - (4) Insulated leads: AWG#30, monostranded, $\varnothing$ 0.254 mm, silver-plated nickel, PEEK insulated (insulation $\varnothing$ 0.56 mm)
- The non dimensioned details do not affect the performance of the device

DESIGNERS TOOL

- NTC thermistor curve computation (Resistance/ Temperature) is available at:
www.vishay.com/thermistors/curve-computation-list/
- Other applicable screw size are available, for example stud size metric 3 mm/American 3 to 4.
- 3D or 2D solid models are available.
Refer to www.vishay.com/doc?29106.
- Other resistance curves and tolerances, e.g. based on 2381 645 2x series, are available on request.
- Other lead length, insulation or connector crimping available on request.
- AWG#28 or AWG#26 wires available on request.

ELECTRICAL DATA AND ORDERING INFORMATION

R_{25} (kΩ)	R_{25} TOL.	$B_{25/85}$ - VALUE (K)	$B_{25/85}$ TOL.	12NC ORDERING CODE	SAP MATERIAL NO.
4.7	± 2 %	3984	± 0.5 %	-	NTCALUG02A472G
4.7	± 1 %	3984	± 0.5 %	-	NTCALUG02A472F
5	± 2 %	3984	± 0.5 %	-	NTCALUG02A502G
10	± 2 %	3984	± 0.5 %	2381 645 90294	NTCALUG02A103G
10	± 1 %	3984	± 0.5 %	-	NTCALUG02A103F

NTCALUG02A472G	NTC LUG02A 4.7K 2 % 3984K 0.5 %
----------------	---------------------------------

RESISTANCE TEMPERATURE CHARACTERISTICS							
TEMP. [°C]	$R_{(T)}/R_{25}$	RESISTANCE [Ω]	$\Delta R/R$ [%]	α [%/K]	ΔT [K]	$R_{min.}$ [Ω]	$R_{max.}$ [Ω]
- 40	33.427	157 109	3.90	- 6.63	0.59	150 982	163 236
- 35	24.132	113 422	3.72	- 6.41	0.58	109 206	117 638
- 30	17.613	82 782	3.54	- 6.19	0.57	79 851	85714
- 25	12.990	61 053	3.37	- 5.99	0.56	58 994	63 112
- 20	9.676	45 478	3.21	- 5.79	0.55	44 017	46 938
- 15	7.276	34 199	3.06	- 5.61	0.54	33 154	35 244
- 10	5.522	25 953	2.91	- 5.43	0.54	25 198	26 707
- 5	4.227	19 866	2.76	- 5.26	0.53	19 317	20 415
0	3.262	15 333	2.62	- 5.10	0.51	14 931	15 736
5	2.538	11 929	2.49	- 4.94	0.50	11 632	12 226
10	1.990	9352	2.36	- 4.80	0.49	9131	9572
15	1.571	7384	2.24	- 4.65	0.48	7219	7549
20	1.249	5872	2.12	- 4.52	0.47	5747	5996
25	1.000	4700	2.00	- 4.39	0.46	4606	4794
30	0.806	3786	2.11	- 4.26	0.50	3706	3866
35	0.653	3069	2.22	- 4.14	0.54	3001	3137
40	0.532	2502	2.33	- 4.03	0.58	2444	2560
45	0.437	2052	2.43	- 3.92	0.62	2002	2102
50	0.360	1691	2.53	- 3.81	0.66	1649	1734
55	0.298	1402	2.62	- 3.71	0.71	1365	1438
60	0.248	1167	2.72	- 3.61	0.75	1136	1199
65	0.208	977.0	2.81	- 3.51	0.80	949.6	1004
70	0.175	821.4	2.89	- 3.42	0.85	797.6	845.2
75	0.148	693.7	2.98	- 3.34	0.89	673.0	714.3
80	0.125	588.3	3.06	- 3.25	0.94	570.3	606.4
85	0.107	501.1	3.14	- 3.17	0.99	485.3	516.8
90	0.091	428.4	3.22	- 3.09	1.04	414.7	442.2
95	0.078	367.8	3.30	- 3.02	1.09	355.6	379.9
100	0.067	316.8	3.37	- 2.94	1.14	306.2	327.5
105	0.058	273.9	3.44	- 2.87	1.20	264.5	283.4
110	0.051	237.7	3.51	- 2.81	1.25	229.3	246.0
115	0.044	206.9	3.58	- 2.74	1.31	199.5	214.3
120	0.038	180.7	3.65	- 2.68	1.36	174.1	187.3
125	0.034	158.3	3.71	- 2.62	1.42	152.4	164.1

NTCALUG02 Series



Vishay BC Components 供应商 NTC Thermistors, Low Thermal Gradient Lug Sensors

NTCALUG02A472F	NTC LUG02A 4.7K 1 % 3984K 0.5 %
----------------	---------------------------------

RESISTANCE TEMPERATURE CHARACTERISTICS							
TEMP. [°C]	$R_{(T)}/R_{25}$	RESISTANCE [Ω]	$\Delta R/R$ [%]	α [%/K]	ΔT [K]	$R_{min.}$ [Ω]	$R_{max.}$ [Ω]
- 40	33.427	157 109	2.88	- 6.63	0.43	152 582	161 636
- 35	24.132	113 422	2.70	- 6.41	0.42	110 359	116 484
- 30	17.613	82 782	2.53	- 6.19	0.41	80 691	84 874
- 25	12.990	61 053	2.36	- 5.99	0.39	59 612	62 494
- 20	9.676	45 478	2.20	- 5.79	0.38	44 477	46 478
- 15	7.276	34 199	2.05	- 5.61	0.36	33 500	34 899
- 10	5.522	25 953	1.90	- 5.43	0.35	25 460	26 445
- 5	4.227	19 866	1.75	- 5.26	0.33	19 517	20 215
0	3.262	15 333	1.62	- 5.10	0.32	15 085	15 581
5	2.538	11 929	1.49	- 4.94	0.30	11 752	12 106
10	1.990	9352	1.36	- 4.80	0.28	9225	9478
15	1.571	7384	1.23	- 4.65	0.27	7293	7475
20	1.249	5872	1.12	- 4.52	0.25	5806	5937
25	1.000	4700	1.00	- 4.39	0.23	4653	4747
30	0.806	3786	1.11	- 4.26	0.26	3744	3828
35	0.653	3069	1.22	- 4.14	0.29	3032	3106
40	0.532	2502	1.32	- 4.03	0.33	2469	2535
45	0.437	2052	1.42	- 3.92	0.36	2022	2081
50	0.360	1691	1.52	- 3.81	0.40	1666	1717
55	0.298	1402	1.62	- 3.71	0.44	1379	1424
60	0.248	1167	1.71	- 3.61	0.47	1147	1187
65	0.208	977.0	1.80	- 3.51	0.51	959.4	994.5
70	0.175	821.4	1.88	- 3.42	0.55	805.9	836.9
75	0.148	693.7	1.97	- 3.34	0.59	680.0	707.3
80	0.125	588.3	2.05	- 3.25	0.63	576.3	600.4
85	0.107	501.1	2.13	- 3.17	0.67	490.4	511.7
90	0.091	428.4	2.21	- 3.09	0.71	419.0	437.9
95	0.078	367.8	2.28	- 3.02	0.76	359.4	376.2
100	0.067	316.8	2.36	- 2.94	0.80	309.4	324.3
105	0.058	273.9	2.43	- 2.87	0.84	267.3	280.6
110	0.051	237.7	2.50	- 2.81	0.89	231.7	243.6
115	0.044	206.9	2.56	- 2.74	0.94	201.6	212.2
120	0.038	180.7	2.63	- 2.68	0.98	175.9	185.4
125	0.034	158.3	2.69	- 2.62	1.03	154.0	162.5

NTCALUG02A502G	NTC LUG02A 5K 2 % 3984K 0.5 %
----------------	-------------------------------

RESISTANCE TEMPERATURE CHARACTERISTICS							
TEMP. [°C]	$R_{(T)}/R_{25}$	RESISTANCE [Ω]	$\Delta R/R$ [%]	α [%/K]	ΔT [K]	$R_{min.}$ [Ω]	$R_{max.}$ [Ω]
- 40	33.427	167 137	3.90	- 6.63	0.59	160 619	173 655
- 35	24.132	120 661	3.72	- 6.41	0.58	116 177	125 146
- 30	17.613	88 066	3.54	- 6.19	0.57	84 947	91 185
- 25	12.990	64 950	3.37	- 5.99	0.56	62 759	67 141
- 20	9.676	48 381	3.21	- 5.79	0.55	46 827	49 934
- 15	7.276	36 382	3.06	- 5.61	0.54	35 270	37 494
- 10	5.522	27 609	2.91	- 5.43	0.54	26 807	28 411
- 5	4.227	21 134	2.76	- 5.26	0.53	20 550	21 718
0	3.262	16 312	2.62	- 5.10	0.51	15 884	16 740
5	2.538	12 691	2.49	- 4.94	0.50	12 375	13 007
10	1.990	9948	2.36	- 4.80	0.49	9714	10 183
15	1.571	7856	2.24	- 4.65	0.48	7680	8031
20	1.249	6246	2.12	- 4.52	0.47	6114	6379
25	1.000	5000	2.00	- 4.39	0.46	4900	5100
30	0.806	4028	2.11	- 4.26	0.50	3943	4113
35	0.653	3265	2.22	- 4.14	0.54	3192	3337
40	0.532	2662	2.33	- 4.03	0.58	2600	2724
45	0.437	2183	2.43	- 3.92	0.62	2130	2236
50	0.360	1799	2.53	- 3.81	0.66	1754	1845
55	0.298	1491	2.62	- 3.71	0.71	1452	1530
60	0.248	1242	2.72	- 3.61	0.75	1208	1276
65	0.208	1039	2.81	- 3.51	0.80	1010	1068
70	0.175	873.8	2.89	- 3.42	0.85	848.5	899.1
75	0.148	738.0	2.98	- 3.34	0.89	716.0	759.9
80	0.125	625.9	3.06	- 3.25	0.94	606.7	645.1
85	0.107	533.1	3.14	- 3.17	0.99	516.3	549.8
90	0.091	455.8	3.22	- 3.09	1.04	441.1	470.5
95	0.078	391.2	3.30	- 3.02	1.09	378.3	404.1
100	0.067	337.1	3.37	- 2.94	1.14	325.7	348.4
105	0.058	291.4	3.44	- 2.87	1.20	281.4	301.5
110	0.051	252.8	3.51	- 2.81	1.25	244.0	261.7
115	0.044	220.1	3.58	- 2.74	1.31	212.2	228.0
120	0.038	192.2	3.65	- 2.68	1.36	185.2	199.2
125	0.034	168.4	3.71	- 2.62	1.42	162.1	174.6

NTCALUG02 Series



Vishay BC Components 供应商 NTC Thermistors, Low Thermal Gradient Lug Sensors

NTCALUG02A103G	NTC LUG02A 10K 2 % 3984K 0.5 %
----------------	--------------------------------

RESISTANCE TEMPERATURE CHARACTERISTICS							
TEMP. [°C]	$R_{(T)}/R_{25}$	RESISTANCE [Ω]	$\Delta R/R$ [%]	α [%/K]	ΔT [K]	$R_{min.}$ [Ω]	$R_{max.}$ [Ω]
- 40	33.427	334 274	3.90	- 6.63	0.59	321 238	347 311
- 35	24.132	241 323	3.72	- 6.41	0.58	232 353	250 293
- 30	17.613	176 133	3.54	- 6.19	0.57	169 895	182 370
- 25	12.990	129 900	3.37	- 5.99	0.56	125 518	134 282
- 20	9.676	96 761	3.21	- 5.79	0.55	93 654	99 869
- 15	7.276	72 765	3.06	- 5.61	0.54	70 541	74 988
- 10	5.522	55 218	2.91	- 5.43	0.54	53 613	56 823
- 5	4.227	42 268	2.76	- 5.26	0.53	41 100	43 435
0	3.262	32 624	2.62	- 5.10	0.51	31 768	33 480
5	2.538	25 381	2.49	- 4.94	0.50	24 749	26 013
10	1.990	19 897	2.36	- 4.80	0.49	19 427	20 367
15	1.571	15 711	2.24	- 4.65	0.48	15 360	16 063
20	1.249	12 493	2.12	- 4.52	0.47	12 228	12 757
25	1.000	10 000	2.00	- 4.39	0.46	9800	10 200
30	0.806	8056	2.11	- 4.26	0.50	7886	8226
35	0.653	6530	2.22	- 4.14	0.54	6385	6675
40	0.532	5324	2.33	- 4.03	0.58	5200	5448
45	0.437	4365	2.43	- 3.92	0.62	4259	4471
50	0.360	3599	2.53	- 3.81	0.66	3508	3690
55	0.298	2982	2.62	- 3.71	0.71	2904	3060
60	0.248	2484	2.72	- 3.61	0.75	2416	2551
65	0.208	2079	2.81	- 3.51	0.80	2020	2137
70	0.175	1748	2.89	- 3.42	0.85	1697	1798
75	0.148	1476	2.98	- 3.34	0.89	1432	1520
80	0.125	1252	3.06	- 3.25	0.94	1213	1290
85	0.107	1066	3.14	- 3.17	0.99	1033	1100
90	0.091	911.6	3.22	- 3.09	1.04	882.2	940.9
95	0.078	782.5	3.30	- 3.02	1.09	756.7	808.2
100	0.067	674.1	3.37	- 2.94	1.14	651.4	696.8
105	0.058	582.8	3.44	- 2.87	1.20	562.8	602.9
110	0.051	505.7	3.51	- 2.81	1.25	487.9	523.4
115	0.044	440.2	3.58	- 2.74	1.31	424.4	455.9
120	0.038	384.4	3.65	- 2.68	1.36	370.4	398.4
125	0.034	336.7	3.71	- 2.62	1.42	324.2	349.2

NTCALUG02A103F	NTC LUG02A 10K 1 % 3984K 0.5 %
----------------	--------------------------------

RESISTANCE TEMPERATURE CHARACTERISTICS							
TEMP. [°C]	$R_{(T)}/R_{25}$	RESISTANCE [Ω]	$\Delta R/R$ [%]	α [%/K]	ΔT [K]	$R_{min.}$ [Ω]	$R_{max.}$ [Ω]
- 40	33.427	334 274	2.88	- 6.63	0.43	324 643	343 906
- 35	24.132	241 323	2.70	- 6.41	0.42	234 807	247 839
- 30	17.613	176 133	2.53	- 6.19	0.41	171 683	180 582
- 25	12.990	129 900	2.36	- 5.99	0.39	126 835	132 965
- 20	9.676	96 761	2.20	- 5.79	0.38	94 633	98 889
- 15	7.276	72 765	2.05	- 5.61	0.36	71 276	74 253
- 10	5.522	55 218	1.90	- 5.43	0.35	54 170	56 266
- 5	4.227	42 268	1.75	- 5.26	0.33	41 526	43 010
0	3.262	32 624	1.62	- 5.10	0.32	32 096	33 152
5	2.538	25 381	1.49	- 4.94	0.30	25 004	25 758
10	1.990	19 897	1.36	- 4.80	0.28	19 627	20 167
15	1.571	15 711	1.23	- 4.65	0.27	15 517	15 905
20	1.249	12 493	1.12	- 4.52	0.25	12 353	12 632
25	1.000	10 000	1.00	- 4.39	0.23	9900	10 100
30	0.806	8056	1.11	- 4.26	0.26	7966	8145
35	0.653	6530	1.22	- 4.14	0.29	6450	6609
40	0.532	5324	1.32	- 4.03	0.33	5253	5394
45	0.437	4365	1.42	- 3.92	0.36	4303	4427
50	0.360	3599	1.52	- 3.81	0.40	3544	3653
55	0.298	2982	1.62	- 3.71	0.44	2934	3030
60	0.248	2484	1.71	- 3.61	0.47	2441	2526
65	0.208	2079	1.80	- 3.51	0.51	2041	2116
70	0.175	1748	1.88	- 3.42	0.55	1715	1781
75	0.148	1476	1.97	- 3.34	0.59	1447	1505
80	0.125	1252	2.05	- 3.25	0.63	1226	1277
85	0.107	1066	2.13	- 3.17	0.67	1043	1089
90	0.091	911.6	2.21	- 3.09	0.71	891.5	931.7
95	0.078	782.5	2.28	- 3.02	0.76	764.6	800.3
100	0.067	674.1	2.36	- 2.94	0.80	658.2	690.0
105	0.058	582.8	2.43	- 2.87	0.84	568.7	597.0
110	0.051	505.7	2.50	- 2.81	0.89	493.0	518.3
115	0.044	440.2	2.56	- 2.74	0.94	428.9	451.5
120	0.038	384.4	2.63	- 2.68	0.98	374.3	394.5
125	0.034	336.7	2.69	- 2.62	1.03	327.7	345.8



Disclaimer

All product specifications and data are subject to change without notice.

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 herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

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.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.