

NTC Thermistors, Low Thermal Gradient Lug Sensors



ADDITIONAL RESOURCES



- NTC curve computation:
www.vishay.com/thermistors/ntc-curve-list/

| QUICK REFERENCE DATA | | |
|--|---------------------|-----------------|
| PARAMETER | VALUE | UNIT |
| Resistance value at 25 °C ⁽¹⁾ | 4.7K to 100K | Ω |
| Tolerance on R ₂₅ -value ⁽¹⁾ | ± 1; ± 2; ± 3 | % |
| B _{25/85} value ⁽¹⁾ | 3435 to 4190 | K |
| Tolerance on B _{25/85} -value | ± 0.5; ± 1.0; ± 1.5 | % |
| Operating temperature range at zero power | -55 to +125 | °C |
| Thermal time constant τ | ≈ 5 | s |
| Dissipation factor | 10 | mW/K |
| Thermal gradient ⁽²⁾ | < 0.05 | K/K |
| Min. dielectric withstanding voltage between terminals and lug | 1500 | V _{AC} |
| Climatic category (LCT / UCT / days) | 55 / 125 / 56 | |
| Weight | ≈ 1.0 | g |

Notes

- (1) Other R₂₅-values, B_{25/85}-values, and tolerances are available upon request
- (2) The thermal gradient is the difference per °C between the true temperature of the surface to be sensed and the temperature measured by the sensor

FEATURES

- Low thermal gradient due to the use of nickel conductor and low profile closed ring tongue
- AEC-Q200 qualified (grade 1)
- cULus recognized, file E148885 (UL category XGPU2/XGPU8)
- Mounting: assembly screw mounting
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS COMPLIANT

APPLICATIONS

Thermistors used for accurate surface temperature sensing and control in:

- Computer equipment
- Power electronics, heat-sink temperature control
- Consumer appliances
- Industrial equipment
- Automotive equipment

DESCRIPTION

Vishay thermistor chip NTC with epoxy coating and middle buffer layer mounted in a tin plated copper ring lug with PEEK insulated leads AWG#30 (Ø 0.25 mm), mono-stranded silver-plated nickel.

MOUNTING

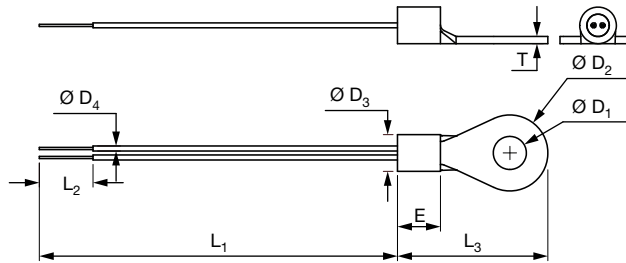
- The device is suitable for screwing e.g. on a metal surface through means of an M3 or M3.5 screw
- The connections are suitable for soldering on a PCB or for connector insertion
- The sensor is not suitable for being in permanent contact with water or liquids
- Other applicable screw hole sizes are available, for example M4 or American Stud #8
- AWG#28 or AWG#26 wires available on request
- Consult Vishay for other cable length, cable section, screw sizes, insulation, connector crimping or other features

| ELECTRICAL DATA AND ORDERING INFORMATION | | | | | | SAP MATERIAL AND ORDERING NUMBER | |
|--|-----------------------------|------------------------|--------------------------------|---------------------|-----------------------|--|------------------------|
| R ₂₅ (Ω) | R ₂₅ -TOL. (± %) | B _{25/85} (K) | B _{25/85} -TOL. (± %) | L ₁ (mm) | UL RECOGNIZED (Y / N) | RoHS COMPLIANT WITH EXEMPTION ⁽¹⁾ | RoHS COMPLIANT |
| 4700 | 2 | 3984 | 0.5 | 45 ± 3 | N | NTCALUG02A472G | NTCALUG02A472GA |
| 4700 | 1 | 3984 | 0.5 | 45 ± 3 | N | NTCALUG02A472F | NTCALUG02A472FA |
| 5000 | 2 | 3984 | 0.5 | 45 ± 3 | Y | NTCALUG02A502G | NTCALUG02A502GA |
| 10 000 | 2 | 3984 | 0.5 | 45 ± 3 | Y | NTCALUG02A103G ⁽²⁾ | NTCALUG02A103GA |
| 10 000 | 1 | 3984 | 0.5 | 45 ± 3 | Y | NTCALUG02A103F | NTCALUG02A103FA |
| 10 000 | 1 | 3984 | 0.5 | 80 +5 / -3 | Y | NTCALUG02A103F800 | NTCALUG02A103F800A |
| 10 000 | 1 | 3984 | 0.5 | 160 +5 / -3 | Y | NTCALUG02A103F161 | NTCALUG02A103F161A |
| 10 000 | 1 | 3435 | 1.0 | 45 ± 3 | Y | NTCALUG02A103FL | NTCALUG02A103FLA |
| 10 000 | 1 | 3435 | 1.0 | 80 +5 / -3 | Y | NTCALUG02A103F800L | NTCALUG02A103F804A |
| 10 000 | 1 | 3435 | 1.0 | 160 +5 / -3 | Y | NTCALUG02A103F161L | NTCALUG02A103F165A |
| 100 000 | 3 | 4190 | 1.5 | 45 ± 3 | N | NTCALUG02A104H | NTCALUG02A104HA |

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
- (2) Is also known under material number NTCALUGE4C90294

DIMENSIONS in millimeters



| L_1 | L_2 | L_3 | $\varnothing D_1$ | $\varnothing D_2$ | $\varnothing D_3$ | $\varnothing D_4$ | E | T |
|-----------------------------|-----------|----------------|-------------------|-------------------|---------------------|-------------------|---------------|-----|
| Refer to the ordering table | 6 ± 1 | 16.8 ± 0.3 | $3.7 + 0.2 / - 0$ | 8.5 ± 0.2 | $4.1 + 0.4 / - 0.1$ | 0.56 ± 0.1 | 4.8 ± 0.2 | 0.8 |



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| NTCALUG02A472G* | NTC LUG02A 4.7K 2 % 3984 K 0.5 % |
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| 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 | 33.43 | 157 109 | 3.90 | -6.63 | 0.59 | 150 982 | 163 236 |
| -35 | 24.13 | 113 422 | 3.72 | -6.41 | 0.58 | 109 206 | 117 638 |
| -30 | 17.61 | 82 782 | 3.54 | -6.19 | 0.57 | 79 851 | 85714 |
| -25 | 12.99 | 61 053 | 3.37 | -5.99 | 0.56 | 58 994 | 63 112 |
| -20 | 9.68 | 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 | 0.8056 | 3786 | 2.11 | -4.26 | 0.50 | 3706 | 3866 |
| 35 | 0.6530 | 3069 | 2.22 | -4.14 | 0.54 | 3001 | 3137 |
| 40 | 0.5324 | 2502 | 2.33 | -4.03 | 0.58 | 2444 | 2560 |
| 45 | 0.4365 | 2052 | 2.43 | -3.92 | 0.62 | 2002 | 2102 |
| 50 | 0.3599 | 1691 | 2.53 | -3.81 | 0.66 | 1649 | 1734 |
| 55 | 0.2982 | 1402 | 2.62 | -3.71 | 0.71 | 1365 | 1438 |
| 60 | 0.2484 | 1167 | 2.72 | -3.61 | 0.75 | 1136 | 1199 |
| 65 | 0.2079 | 977.0 | 2.81 | -3.51 | 0.80 | 949.6 | 1004 |
| 70 | 0.1748 | 821.4 | 2.89 | -3.42 | 0.85 | 797.6 | 845.2 |
| 75 | 0.1476 | 693.7 | 2.98 | -3.34 | 0.89 | 673.0 | 714.3 |
| 80 | 0.1252 | 588.3 | 3.06 | -3.25 | 0.94 | 570.3 | 606.4 |
| 85 | 0.1066 | 501.1 | 3.14 | -3.17 | 0.99 | 485.3 | 516.8 |
| 90 | 0.09116 | 428.4 | 3.22 | -3.09 | 1.04 | 414.7 | 442.2 |
| 95 | 0.07825 | 367.8 | 3.30 | -3.02 | 1.09 | 355.6 | 379.9 |
| 100 | 0.06741 | 316.8 | 3.37 | -2.94 | 1.14 | 306.2 | 327.5 |
| 105 | 0.05828 | 273.9 | 3.44 | -2.87 | 1.20 | 264.5 | 283.4 |
| 110 | 0.05057 | 237.7 | 3.51 | -2.81 | 1.25 | 229.3 | 246.0 |
| 115 | 0.04402 | 206.9 | 3.58 | -2.74 | 1.31 | 199.5 | 214.3 |
| 120 | 0.03844 | 180.7 | 3.65 | -2.68 | 1.36 | 174.1 | 187.3 |
| 125 | 0.03367 | 158.3 | 3.71 | -2.62 | 1.42 | 152.4 | 164.1 |



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| NTCALUG02A472F* | NTC LUG02A 4.7K 1 % 3984 K 0.5 % |
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| 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 | 33.43 | 157 109 | 2.88 | -6.63 | 0.43 | 152 582 | 161 636 |
| -35 | 24.13 | 113 422 | 2.70 | -6.41 | 0.42 | 110 359 | 116 484 |
| -30 | 17.61 | 82 782 | 2.53 | -6.19 | 0.41 | 80 691 | 84 874 |
| -25 | 12.99 | 61 053 | 2.36 | -5.99 | 0.39 | 59 612 | 62 494 |
| -20 | 9.68 | 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 | 0.8056 | 3786 | 1.11 | -4.26 | 0.26 | 3744 | 3828 |
| 35 | 0.6530 | 3069 | 1.22 | -4.14 | 0.29 | 3032 | 3106 |
| 40 | 0.5324 | 2502 | 1.32 | -4.03 | 0.33 | 2469 | 2535 |
| 45 | 0.4365 | 2052 | 1.42 | -3.92 | 0.36 | 2022 | 2081 |
| 50 | 0.3599 | 1691 | 1.52 | -3.81 | 0.40 | 1666 | 1717 |
| 55 | 0.2982 | 1402 | 1.62 | -3.71 | 0.44 | 1379 | 1424 |
| 60 | 0.2484 | 1167 | 1.71 | -3.61 | 0.47 | 1147 | 1187 |
| 65 | 0.2079 | 977.0 | 1.80 | -3.51 | 0.51 | 959.4 | 994.5 |
| 70 | 0.1748 | 821.4 | 1.88 | -3.42 | 0.55 | 805.9 | 836.9 |
| 75 | 0.1476 | 693.7 | 1.97 | -3.34 | 0.59 | 680.0 | 707.3 |
| 80 | 0.1252 | 588.3 | 2.05 | -3.25 | 0.63 | 576.3 | 600.4 |
| 85 | 0.1066 | 501.1 | 2.13 | -3.17 | 0.67 | 490.4 | 511.7 |
| 90 | 0.09116 | 428.4 | 2.21 | -3.09 | 0.71 | 419.0 | 437.9 |
| 95 | 0.07825 | 367.8 | 2.28 | -3.02 | 0.76 | 359.4 | 376.2 |
| 100 | 0.06741 | 316.8 | 2.36 | -2.94 | 0.80 | 309.4 | 324.3 |
| 105 | 0.05828 | 273.9 | 2.43 | -2.87 | 0.84 | 267.3 | 280.6 |
| 110 | 0.05057 | 237.7 | 2.50 | -2.81 | 0.89 | 231.7 | 243.6 |
| 115 | 0.04402 | 206.9 | 2.56 | -2.74 | 0.94 | 201.6 | 212.2 |
| 120 | 0.03844 | 180.7 | 2.63 | -2.68 | 0.98 | 175.9 | 185.4 |
| 125 | 0.03367 | 158.3 | 2.69 | -2.62 | 1.03 | 154.0 | 162.5 |



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| NTCALUG02A502G* | NTC LUG02A 5K 2 % 3984 K 0.5 % |
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| 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 | 33.43 | 167 137 | 3.90 | -6.63 | 0.59 | 160 619 | 173 655 |
| -35 | 24.13 | 120 661 | 3.72 | -6.41 | 0.58 | 116 177 | 125 146 |
| -30 | 17.61 | 88 066 | 3.54 | -6.19 | 0.57 | 84 947 | 91 185 |
| -25 | 12.99 | 64 950 | 3.37 | -5.99 | 0.56 | 62 759 | 67 141 |
| -20 | 9.68 | 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 | 0.8056 | 4028 | 2.11 | -4.26 | 0.50 | 3943 | 4113 |
| 35 | 0.6530 | 3265 | 2.22 | -4.14 | 0.54 | 3192 | 3337 |
| 40 | 0.5324 | 2662 | 2.33 | -4.03 | 0.58 | 2600 | 2724 |
| 45 | 0.4365 | 2183 | 2.43 | -3.92 | 0.62 | 2130 | 2236 |
| 50 | 0.3599 | 1799 | 2.53 | -3.81 | 0.66 | 1754 | 1845 |
| 55 | 0.2982 | 1491 | 2.62 | -3.71 | 0.71 | 1452 | 1530 |
| 60 | 0.2484 | 1242 | 2.72 | -3.61 | 0.75 | 1208 | 1276 |
| 65 | 0.2079 | 1039 | 2.81 | -3.51 | 0.80 | 1010 | 1068 |
| 70 | 0.1748 | 873.8 | 2.89 | -3.42 | 0.85 | 848.5 | 899.1 |
| 75 | 0.1476 | 738.0 | 2.98 | -3.34 | 0.89 | 716.0 | 759.9 |
| 80 | 0.1252 | 625.9 | 3.06 | -3.25 | 0.94 | 606.7 | 645.1 |
| 85 | 0.1066 | 533.1 | 3.14 | -3.17 | 0.99 | 516.3 | 549.8 |
| 90 | 0.09116 | 455.8 | 3.22 | -3.09 | 1.04 | 441.1 | 470.5 |
| 95 | 0.07825 | 391.2 | 3.30 | -3.02 | 1.09 | 378.3 | 404.1 |
| 100 | 0.06741 | 337.1 | 3.37 | -2.94 | 1.14 | 325.7 | 348.4 |
| 105 | 0.05828 | 291.4 | 3.44 | -2.87 | 1.20 | 281.4 | 301.5 |
| 110 | 0.05057 | 252.8 | 3.51 | -2.81 | 1.25 | 244.0 | 261.7 |
| 115 | 0.04402 | 220.1 | 3.58 | -2.74 | 1.31 | 212.2 | 228.0 |
| 120 | 0.03844 | 192.2 | 3.65 | -2.68 | 1.36 | 185.2 | 199.2 |
| 125 | 0.03367 | 168.4 | 3.71 | -2.62 | 1.42 | 162.1 | 174.6 |



NTCALUG02A103G*

NTC LUG02A 10K 2 % 3984 K 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 | 33.43 | 334 274 | 3.90 | -6.63 | 0.59 | 321 238 | 347 311 |
| -35 | 24.13 | 241 323 | 3.72 | -6.41 | 0.58 | 232 353 | 250 293 |
| -30 | 17.61 | 176 133 | 3.54 | -6.19 | 0.57 | 169 895 | 182 370 |
| -25 | 12.99 | 129 900 | 3.37 | -5.99 | 0.56 | 125 518 | 134 282 |
| -20 | 9.68 | 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 | 0.8056 | 8056 | 2.11 | -4.26 | 0.50 | 7886 | 8226 |
| 35 | 0.6530 | 6530 | 2.22 | -4.14 | 0.54 | 6385 | 6675 |
| 40 | 0.5324 | 5324 | 2.33 | -4.03 | 0.58 | 5200 | 5448 |
| 45 | 0.4365 | 4365 | 2.43 | -3.92 | 0.62 | 4259 | 4471 |
| 50 | 0.3599 | 3599 | 2.53 | -3.81 | 0.66 | 3508 | 3690 |
| 55 | 0.2982 | 2982 | 2.62 | -3.71 | 0.71 | 2904 | 3060 |
| 60 | 0.2484 | 2484 | 2.72 | -3.61 | 0.75 | 2416 | 2551 |
| 65 | 0.2079 | 2079 | 2.81 | -3.51 | 0.80 | 2020 | 2137 |
| 70 | 0.1748 | 1748 | 2.89 | -3.42 | 0.85 | 1697 | 1798 |
| 75 | 0.1476 | 1476 | 2.98 | -3.34 | 0.89 | 1432 | 1520 |
| 80 | 0.1252 | 1252 | 3.06 | -3.25 | 0.94 | 1213 | 1290 |
| 85 | 0.1066 | 1066 | 3.14 | -3.17 | 0.99 | 1033 | 1100 |
| 90 | 0.09116 | 911.6 | 3.22 | -3.09 | 1.04 | 882.2 | 940.9 |
| 95 | 0.07825 | 782.5 | 3.30 | -3.02 | 1.09 | 756.7 | 808.2 |
| 100 | 0.06741 | 674.1 | 3.37 | -2.94 | 1.14 | 651.4 | 696.8 |
| 105 | 0.05828 | 582.8 | 3.44 | -2.87 | 1.20 | 562.8 | 602.9 |
| 110 | 0.05057 | 505.7 | 3.51 | -2.81 | 1.25 | 487.9 | 523.4 |
| 115 | 0.04402 | 440.2 | 3.58 | -2.74 | 1.31 | 424.4 | 455.9 |
| 120 | 0.03844 | 384.4 | 3.65 | -2.68 | 1.36 | 370.4 | 398.4 |
| 125 | 0.03367 | 336.7 | 3.71 | -2.62 | 1.42 | 324.2 | 349.2 |



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| NTCALUG02A103F* | NTC LUG02A 10K 1 % 3984 K 0.5 % |
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| 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 | 33.43 | 334 274 | 2.88 | -6.63 | 0.43 | 324 643 | 343 906 |
| -35 | 24.13 | 241 323 | 2.70 | -6.41 | 0.42 | 234 807 | 247 839 |
| -30 | 17.61 | 176 133 | 2.53 | -6.19 | 0.41 | 171 683 | 180 582 |
| -25 | 12.99 | 129 900 | 2.36 | -5.99 | 0.39 | 126 835 | 132 965 |
| -20 | 9.68 | 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 | 0.8056 | 8056 | 1.11 | -4.26 | 0.26 | 7966 | 8145 |
| 35 | 0.6530 | 6530 | 1.22 | -4.14 | 0.29 | 6450 | 6609 |
| 40 | 0.5324 | 5324 | 1.32 | -4.03 | 0.33 | 5253 | 5394 |
| 45 | 0.4365 | 4365 | 1.42 | -3.92 | 0.36 | 4303 | 4427 |
| 50 | 0.3599 | 3599 | 1.52 | -3.81 | 0.40 | 3544 | 3653 |
| 55 | 0.2982 | 2982 | 1.62 | -3.71 | 0.44 | 2934 | 3030 |
| 60 | 0.2484 | 2484 | 1.71 | -3.61 | 0.47 | 2441 | 2526 |
| 65 | 0.2079 | 2079 | 1.80 | -3.51 | 0.51 | 2041 | 2116 |
| 70 | 0.1748 | 1748 | 1.88 | -3.42 | 0.55 | 1715 | 1781 |
| 75 | 0.1476 | 1476 | 1.97 | -3.34 | 0.59 | 1447 | 1505 |
| 80 | 0.1252 | 1252 | 2.05 | -3.25 | 0.63 | 1226 | 1277 |
| 85 | 0.1066 | 1066 | 2.13 | -3.17 | 0.67 | 1043 | 1089 |
| 90 | 0.09116 | 911.6 | 2.21 | -3.09 | 0.71 | 891.5 | 931.7 |
| 95 | 0.07825 | 782.5 | 2.28 | -3.02 | 0.76 | 764.6 | 800.3 |
| 100 | 0.06741 | 674.1 | 2.36 | -2.94 | 0.80 | 658.2 | 690.0 |
| 105 | 0.05828 | 582.8 | 2.43 | -2.87 | 0.84 | 568.7 | 597.0 |
| 110 | 0.05057 | 505.7 | 2.50 | -2.81 | 0.89 | 493.0 | 518.3 |
| 115 | 0.04402 | 440.2 | 2.56 | -2.74 | 0.94 | 428.9 | 451.5 |
| 120 | 0.03844 | 384.4 | 2.63 | -2.68 | 0.98 | 374.3 | 394.5 |
| 125 | 0.03367 | 336.7 | 2.69 | -2.62 | 1.03 | 327.7 | 345.8 |



NTCALUG02A103FL*

NTC LUG02A 10K 1 % 3435 K 1 %

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 | 19.10 | 190 953 | 4.24 | -5.46 | 0.78 | 182 848 | 199 057 |
| -35 | 14.60 | 145 953 | 3.93 | -5.30 | 0.74 | 140 213 | 151 693 |
| -30 | 11.24 | 112 440 | 3.63 | -5.14 | 0.71 | 108 354 | 116 526 |
| -25 | 8.729 | 87 285 | 3.35 | -4.99 | 0.67 | 84 364 | 90 206 |
| -20 | 6.826 | 68 260 | 3.07 | -4.85 | 0.63 | 66 164 | 70 355 |
| -15 | 5.376 | 53 762 | 2.80 | -4.71 | 0.60 | 52 254 | 55 270 |
| -10 | 4.264 | 42 636 | 2.55 | -4.57 | 0.56 | 41 549 | 43 723 |
| -5 | 3.404 | 34 038 | 2.30 | -4.44 | 0.52 | 33 254 | 34 822 |
| 0 | 2.735 | 27 348 | 2.07 | -4.31 | 0.48 | 26 783 | 27 913 |
| 5 | 2.211 | 22 108 | 1.84 | -4.19 | 0.44 | 21 702 | 22 515 |
| 10 | 1.798 | 17 979 | 1.62 | -4.08 | 0.40 | 17 689 | 18 270 |
| 15 | 1.471 | 14 706 | 1.40 | -3.96 | 0.35 | 14 499 | 14 912 |
| 20 | 1.209 | 12 094 | 1.20 | -3.86 | 0.31 | 11 949 | 12 239 |
| 25 | 1.000 | 10 000 | 1.00 | -3.75 | 0.27 | 9900 | 10 100 |
| 30 | 0.8311 | 8311 | 1.19 | -3.65 | 0.33 | 8212 | 8410 |
| 35 | 0.6941 | 6941 | 1.38 | -3.55 | 0.39 | 6845 | 7037 |
| 40 | 0.5825 | 5825 | 1.56 | -3.46 | 0.45 | 5734 | 5916 |
| 45 | 0.4911 | 4911 | 1.73 | -3.37 | 0.51 | 4826 | 4996 |
| 50 | 0.4158 | 4158 | 1.90 | -3.28 | 0.58 | 4079 | 4237 |
| 55 | 0.3536 | 3536 | 2.06 | -3.20 | 0.65 | 3463 | 3609 |
| 60 | 0.3020 | 3020 | 2.22 | -3.12 | 0.71 | 2953 | 3087 |
| 65 | 0.2589 | 2589 | 2.38 | -3.04 | 0.78 | 2527 | 2650 |
| 70 | 0.2228 | 2228 | 2.53 | -2.96 | 0.85 | 2172 | 2284 |
| 75 | 0.1925 | 1925 | 2.67 | -2.89 | 0.92 | 1873 | 1976 |
| 80 | 0.1668 | 1668 | 2.81 | -2.82 | 1.00 | 1621 | 1715 |
| 85 | 0.1451 | 1451 | 2.95 | -2.75 | 1.07 | 1409 | 1494 |
| 90 | 0.1267 | 1267 | 3.08 | -2.69 | 1.15 | 1228 | 1306 |
| 95 | 0.1109 | 1109 | 3.21 | -2.62 | 1.22 | 1074 | 1145 |
| 100 | 0.09743 | 974.3 | 3.34 | -2.56 | 1.30 | 941.7 | 1007 |
| 105 | 0.08583 | 858.3 | 3.46 | -2.50 | 1.38 | 828.6 | 888.0 |
| 110 | 0.07584 | 758.4 | 3.58 | -2.45 | 1.46 | 731.2 | 785.6 |
| 115 | 0.06720 | 672.0 | 3.70 | -2.39 | 1.55 | 647.1 | 696.8 |
| 120 | 0.05971 | 597.1 | 3.81 | -2.34 | 1.63 | 574.3 | 619.8 |
| 125 | 0.05319 | 531.9 | 3.92 | -2.29 | 1.72 | 511.0 | 552.7 |



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| NTCALUG02A104H* | NTC LUG02A 100K 3 % 4190 K 1.50 % |
|-----------------|-----------------------------------|

| 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 | 36.66 | 3 666 299 | 9.05 | -6.69 | 1.35 | 3 334 354 | 3 998 244 |
| -35 | 26.38 | 2 637 588 | 8.47 | -6.49 | 1.31 | 2 414 139 | 2 861 036 |
| -30 | 19.17 | 1 916 576 | 7.91 | -6.29 | 1.26 | 1 764 917 | 2 068 236 |
| -25 | 14.06 | 1 406 111 | 7.38 | -6.10 | 1.21 | 1 302 387 | 1 509 836 |
| -20 | 10.41 | 1 041 184 | 6.86 | -5.92 | 1.16 | 969 745 | 1 112 622 |
| -15 | 7.778 | 777 846 | 6.37 | -5.75 | 1.11 | 728 330 | 827 362 |
| -10 | 5.861 | 586 097 | 5.89 | -5.58 | 1.06 | 551 581 | 620 613 |
| -5 | 4.453 | 445 257 | 5.43 | -5.42 | 1.00 | 421 079 | 469 435 |
| 0 | 3.409 | 340 942 | 4.99 | -5.26 | 0.95 | 323 936 | 357 948 |
| 5 | 2.631 | 263 054 | 4.56 | -5.11 | 0.89 | 251 054 | 275 054 |
| 10 | 2.044 | 204 446 | 4.15 | -4.97 | 0.84 | 195 960 | 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 | 0.1602 | 16 025 | 5.85 | -3.62 | 1.62 | 15 088 | 16 961 |
| 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 |
| 110 | 0.04296 | 4296 | 7.82 | -2.99 | 2.61 | 3960 | 4632 |
| 115 | 0.03705 | 3705 | 8.03 | -2.93 | 2.75 | 3407 | 4003 |
| 120 | 0.03206 | 3206 | 8.25 | -2.86 | 2.88 | 2942 | 3470 |
| 125 | 0.02783 | 2783 | 8.45 | -2.80 | 3.02 | 2548 | 3018 |



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