

NTC Thermistors, Radial Leaded, Accuracy Line



FEATURES

- Accurate over a wide temperature range (tolerance on B-value down to 0.5 %)
- Good stability over a long life
- Excellent price/performance ratio
- Low heat conductivity through 0.4 mm Ni-leads
- UL recognized, file E148885
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC


RoHS
COMPLIANT

APPLICATIONS

- Temperature measurement, sensing and control in industrial, consumer and telecom applications. For on-board sensing or accurate remote sensing.

DESCRIPTION

These thermistors are made of NTC ceramic material. The device consists of a chip with two tinned nickel leads. The parts are coated and color band marked.

PACKAGING

The thermistors are packed in cardboard boxes; the smallest packing quantity is 500 units.

DESIGN-IN SUPPORT

For complete Curve Computation, visit:
www.vishay.com/resistors-non-linear/curve-computation-list/

MARKING

The thermistors are marked with color bands on a grey epoxy base coating; see Dimensions and “Electrical Data and Ordering Information”.

MOUNTING

By soldering in any position.

| QUICK REFERENCE DATA | | |
|--|--------------------|------|
| PARAMETER | VALUE | UNIT |
| Resistance value at 25 °C | 2K to 470K | Ω |
| Tolerance on R_{25} -value | ± 1; ± 2; ± 3; ± 5 | % |
| $B_{25/85}$ -value | 3528 to 4570 | K |
| Tolerance on $B_{25/85}$ -value | ± 0.5 to ± 2.0 | % |
| Operating temperature range at: Zero dissipation (continuously) | - 40 to + 125 | °C |
| Zero dissipation (for short periods) ⁽²⁾ | ≤ 150 | |
| Maximum power dissipation | 0 to + 55 | |
| Maximum power dissipation | 100 | mW |
| Dissipation factor δ | 2.2 | mW/K |
| Response time ⁽¹⁾ | ≈ 1.7 | s |
| Thermal time constant τ | 13 | |
| Climatic category (LCT/UCT/days) | 40/125/56 | |
| Mass | ≈ 0.11 | g |

Notes

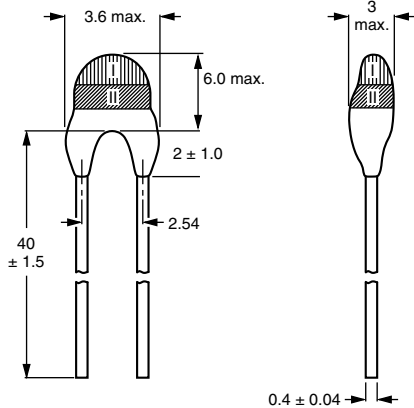
- ⁽¹⁾ Response time in silicone oil MS200/50. This is the time needed for the sensor to reach 63.2 % of the total temperature difference when subjected to a temperature change from 25 °C in air to 85 °C in oil.
- ⁽²⁾ Valid for all types with the exception of the R_{25} values 12 kΩ, 22 kΩ and 470 kΩ.

| ELECTRICAL DATA AND ORDERING INFORMATION | | | | | | | |
|--|---------------------|-------|--|--|-------------|-------------------------|--------|
| R_{25} (kΩ) | $B_{25/85}$ - VALUE | | SAP MATERIAL AND ORDERING NUMBER NTCLE203E3..... ⁽⁴⁾ | OLD 12NC CODE 2381 640 5.... ⁽³⁾ | UL APPROVED | CODING (see dimensions) | |
| | (K) | (± %) | | | | Y/N | I |
| 2 | 3528 | 0.5 | 202*B0 | *202 | N | Orange | Orange |
| 2.7 | 3977 | 0.75 | 272*B0 | *272 | Y | Red | Red |
| 4.7 | 3977 | 0.75 | 472*B0 | *472 | Y | Green | Green |
| 5 | 3977 | 0.75 | 502*B0 | *502 | Y | Black | White |
| 10 | 3977 | 0.75 | 103*B0 | *103 | Y | Blue | Blue |
| 12 | 3740 | 2 | 123*B0 | *123 | Y | Yellow | Yellow |
| 22 | 3740 | 2 | 223*B0 | *223 | Y | White | White |
| 47 | 4090 | 1.5 | 473*B0 | *473 | N | Black | Black |
| 68 | 4190 | 1.5 | 683*B0 | *683 | N | Grey | Grey |
| 100 | 4190 | 1.5 | 104*B0 | *104 | N | Brown | Brown |
| 470 | 4570 | 1.5 | 474*B0 | *474 | N | Violet | Violet |

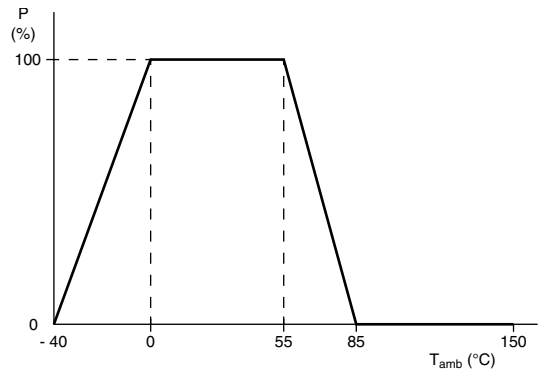
Notes

- ⁽³⁾ Replace * in 12NC by 3 for ± 5 %, 6 for ± 3 %, 4 for ± 2 %, 5 for ± 1 %
- ⁽⁴⁾ Replace * in SAP by J for ± 5 %, H for ± 3 %, G for ± 2 %, F for ± 1 %

DIMENSIONS in millimeters



DERATING AND LONG TERM STABILITY

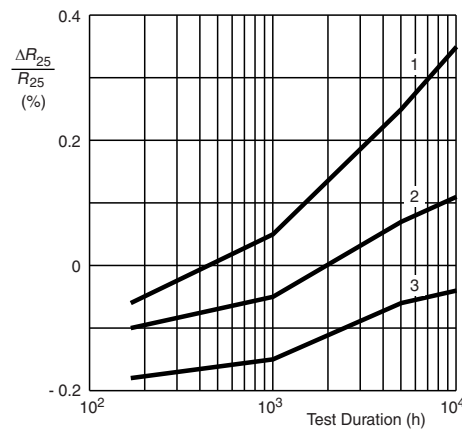


Power derating curve

Note

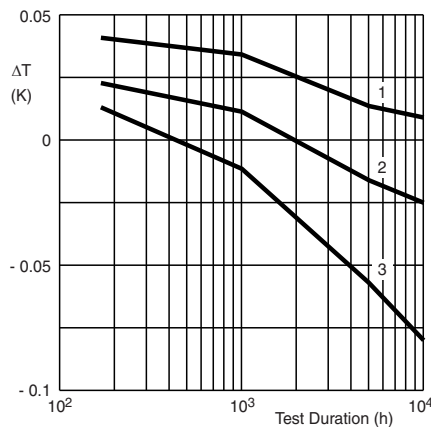
- Zero power is considered as measuring power max. 1 % of max. power

LONG TERM STABILITY OF R_{25} AS A FUNCTION OF TEST DURATION AT MAXIMUM TEMPERATURE (150 °C)



Curves valid for 2.2 kΩ to 10 kΩ. Curve 1: Maximum deviation. Curve 2: Average deviation. Curve 3: Minimum deviation

LONG TERM STABILITY OF T AS A FUNCTION OF TEST DURATION AT MAXIMUM TEMPERATURE (150 °C)



Curves valid for 2.2 kΩ to 10 kΩ. Curve 1: Minimum deviation. Curve 2: Average deviation.



For complete Curve Computation, visit: www.vishay.com/resistors-non-linear/curve-computation-list/

| RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R_{25} AT 2 k Ω | | | |
|--|---------------------------------|--------------|---------------------------------------|
| T_{OPER} (°C) | PART NUMBER NTCLE203E3202*B0 | TCR (%/K) | $\Delta R/R$ DUE TO $B_{Tot.}$ (%) |
| | R_T (Ω) | | |
| - 40 | 46 684 | - 6.06 | 1.65 |
| - 35 | 34 672 | - 5.84 | 1.49 |
| - 30 | 26 035 | - 5.62 | 1.34 |
| - 25 | 19 754 | - 5.42 | 1.19 |
| - 20 | 15 138 | - 5.23 | 1.05 |
| - 15 | 11 709 | - 5.05 | 0.92 |
| - 10 | 9138 | - 4.87 | 0.79 |
| - 5 | 7193 | - 4.71 | 0.66 |
| 0 | 5707 | - 4.55 | 0.54 |
| 5 | 4563 | - 4.40 | 0.43 |
| 10 | 3675 | - 4.26 | 0.31 |
| 15 | 2981 | - 4.12 | 0.21 |
| 20 | 2434 | - 3.99 | 0.10 |
| 25 | 2000 | - 3.87 | 0.00 |
| 30 | 1653 | - 3.75 | 0.10 |
| 35 | 1375 | - 3.63 | 0.19 |
| 40 | 1149 | - 3.53 | 0.28 |
| 45 | 965.4 | - 3.42 | 0.37 |
| 50 | 814.7 | - 3.32 | 0.46 |
| 55 | 690.5 | - 3.23 | 0.54 |
| 60 | 587.4 | - 3.14 | 0.62 |
| 65 | 501.6 | - 3.05 | 0.70 |
| 70 | 429.8 | - 2.97 | 0.78 |
| 75 | 369.5 | - 2.89 | 0.86 |
| 80 | 318.6 | - 2.81 | 0.93 |
| 85 | 275.5 | - 2.73 | 1.01 |
| 90 | 238.8 | - 2.66 | 1.08 |
| 95 | 207.6 | - 2.59 | 1.15 |
| 100 | 180.9 | - 2.53 | 1.22 |
| 105 | 158.0 | - 2.46 | 1.29 |
| 110 | 138.3 | - 2.40 | 1.35 |
| 115 | 121.3 | - 2.34 | 1.42 |
| 120 | 106.6 | - 2.29 | 1.48 |
| 125 | 93.92 | - 2.23 | 1.55 |
| 130 | 82.87 | - 2.18 | 1.61 |
| 135 | 73.25 | - 2.13 | 1.67 |
| 140 | 64.87 | - 2.08 | 1.73 |
| 145 | 57.54 | - 2.03 | 1.79 |
| 150 | 51.12 | - 1.98 | 1.85 |



For complete Curve Computation, visit: www.vishay.com/resistors-non-linear/curve-computation-list/

| RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R_{25} AT 2.7 kΩ, 4.7 kΩ, 5.0 kΩ, AND 10 kΩ | | | | | | |
|---|---------------------------------|---------------------------------|---------------------------------|---------------------------------|--------------|--|
| T_{OPER} (°C) | PART NUMBER NTCLE203E3272*B0 | PART NUMBER NTCLE203E3472*B0 | PART NUMBER NTCLE203E3502*B0 | PART NUMBER NTCLE203E3103*B0 | TCR (%/K) | $\Delta R/R$ DUE TO $B_{Tot.}$ (%) |
| | R_T (Ω) | R_T (Ω) | R_T (Ω) | R_T (Ω) | | |
| - 40 | 89 665 | 156 084 | 166 047 | 332 094 | - 6.62 | 2.79 |
| - 35 | 64 773 | 112 753 | 119 950 | 239 900 | - 6.39 | 2.52 |
| - 30 | 47 304 | 82 344 | 87 600 | 175 200 | - 6.18 | 2.26 |
| - 25 | 34 907 | 60 765 | 64 643 | 129 287 | - 5.98 | 2.02 |
| - 20 | 26 017 | 45 288 | 48 179 | 96 358 | - 5.78 | 1.78 |
| - 15 | 19 575 | 34 075 | 36 250 | 72 500 | - 5.60 | 1.55 |
| - 10 | 14 862 | 25 872 | 27 523 | 55 046 | - 5.42 | 1.33 |
| - 5 | 11 382 | 19 814 | 21 078 | 42 157 | - 5.25 | 1.12 |
| 0 | 8790 | 15 300 | 16 277 | 32 554 | - 5.09 | 0.92 |
| 5 | 6841 | 11 909 | 12 669 | 25 339 | - 4.93 | 0.72 |
| 10 | 5365 | 9340 | 9936 | 19 872 | - 4.79 | 0.53 |
| 15 | 4239 | 7378 | 7849 | 15 698 | - 4.64 | 0.35 |
| 20 | 3372 | 5869 | 6244 | 12 488 | - 4.51 | 0.17 |
| 25 | 2700 | 4700 | 5000 | 10 000 | - 4.38 | 0.00 |
| 30 | 2176 | 3788 | 4030 | 8059 | - 4.25 | 0.17 |
| 35 | 1764 | 3071 | 3267 | 6535 | - 4.13 | 0.32 |
| 40 | 1439 | 2505 | 2665 | 5330 | - 4.02 | 0.48 |
| 45 | 1180 | 2055 | 2186 | 4372 | - 3.91 | 0.63 |
| 50 | 973.4 | 1694 | 1803 | 3605 | - 3.80 | 0.77 |
| 55 | 806.9 | 1405 | 1494 | 2989 | - 3.70 | 0.91 |
| 60 | 672.3 | 1170 | 1245 | 2490 | - 3.60 | 1.05 |
| 65 | 562.8 | 979.7 | 1042 | 2084 | - 3.51 | 1.18 |
| 70 | 473.3 | 823.9 | 876.5 | 1753 | - 3.42 | 1.31 |
| 75 | 399.8 | 696.0 | 740.5 | 1481 | - 3.33 | 1.44 |
| 80 | 339.2 | 590.5 | 628.2 | 1256 | - 3.25 | 1.56 |
| 85 | 289.0 | 503.0 | 535.2 | 1070 | - 3.17 | 1.68 |
| 90 | 247.2 | 430.2 | 457.7 | 915.4 | - 3.09 | 1.79 |
| 95 | 212.2 | 369.4 | 393.0 | 786.0 | - 3.01 | 1.90 |
| 100 | 182.9 | 318.3 | 338.6 | 677.3 | - 2.94 | 2.01 |
| 105 | 158.2 | 275.3 | 292.9 | 585.7 | - 2.87 | 2.12 |
| 110 | 137.2 | 238.9 | 254.2 | 508.3 | - 2.80 | 2.22 |
| 115 | 119.5 | 208.0 | 221.3 | 442.6 | - 2.74 | 2.32 |
| 120 | 104.4 | 181.7 | 193.3 | 386.6 | - 2.67 | 2.42 |
| 125 | 91.46 | 159.2 | 169.4 | 338.7 | - 2.61 | 2.51 |
| 130 | 80.38 | 139.9 | 148.8 | 297.7 | - 2.55 | 2.61 |
| 135 | 70.84 | 123.3 | 131.2 | 262.4 | - 2.50 | 2.70 |
| 140 | 62.62 | 109.0 | 116.0 | 231.9 | - 2.44 | 2.78 |
| 145 | 55.49 | 96.60 | 102.8 | 205.5 | - 2.39 | 2.87 |
| 150 | 49.31 | 85.84 | 91.32 | 182.6 | - 2.34 | 2.96 |



For complete Curve Computation, visit: www.vishay.com/resistors-non-linear/curve-computation-list/

| RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R_{25} AT 12 k Ω AND 22 k Ω | | | | |
|---|---------------------------------|---------------------------------|--------------|---------------------------------------|
| T_{OPER} (°C) | PART NUMBER NTCLE203E3123*B0 | PART NUMBER NTCLE203E3223*B0 | TCR (%/K) | $\Delta R/R$ DUE TO $B_{Tot.}$ (%) |
| | R_T (k Ω) | R_T (k Ω) | | |
| - 40 | 309.4 | 567.2 | - 6.07 | 7.00 |
| - 35 | 229.5 | 420.8 | - 5.88 | 6.32 |
| - 30 | 171.8 | 315.0 | - 5.70 | 5.68 |
| - 25 | 129.8 | 238.0 | - 5.52 | 5.06 |
| - 20 | 98.93 | 181.4 | - 5.35 | 4.46 |
| - 15 | 76.02 | 139.4 | - 5.19 | 3.89 |
| - 10 | 58.88 | 107.9 | - 5.03 | 3.34 |
| - 5 | 45.95 | 84.25 | - 4.88 | 2.81 |
| 0 | 36.13 | 66.24 | - 4.74 | 2.30 |
| 5 | 28.61 | 52.45 | - 4.60 | 1.80 |
| 10 | 22.80 | 41.81 | - 4.47 | 1.33 |
| 15 | 18.30 | 33.55 | - 4.34 | 0.87 |
| 20 | 14.77 | 27.08 | - 4.22 | 0.43 |
| 25 | 12.00 | 22.00 | - 4.10 | 0.00 |
| 30 | 9.804 | 17.97 | - 3.99 | 0.41 |
| 35 | 8.054 | 14.77 | - 3.88 | 0.81 |
| 40 | 6.652 | 12.20 | - 3.77 | 1.20 |
| 45 | 5.522 | 10.12 | - 3.67 | 1.58 |
| 50 | 4.607 | 8.447 | - 3.58 | 1.94 |
| 55 | 3.862 | 7.081 | - 3.48 | 2.29 |
| 60 | 3.252 | 5.963 | - 3.39 | 2.64 |
| 65 | 2.751 | 5.044 | - 3.30 | 2.97 |
| 70 | 2.337 | 4.284 | - 3.22 | 3.29 |
| 75 | 1.993 | 3.654 | - 3.14 | 3.60 |
| 80 | 1.707 | 3.129 | - 3.06 | 3.91 |
| 85 | 1.467 | 2.690 | - 2.99 | 4.20 |
| 90 | 1.266 | 2.321 | - 2.92 | 4.49 |
| 95 | 1.096 | 2.010 | - 2.85 | 4.77 |
| 100 | 0.9524 | 1.746 | - 2.78 | 5.04 |
| 105 | 0.8302 | 1.522 | - 2.71 | 5.31 |
| 110 | 0.7260 | 1.331 | - 2.65 | 5.56 |
| 115 | 0.6369 | 1.168 | - 2.59 | 5.82 |
| 120 | 0.5604 | 1.027 | - 2.53 | 6.06 |
| 125 | 0.4945 | 0.9065 | - 2.47 | 6.30 |



For complete Curve Computation, visit: www.vishay.com/resistors-non-linear/curve-computation-list/

| RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R_{25} AT 47 kΩ | | | |
|---|---------------------------------|--------------|---------------------------------------|
| T_{OPER} (°C) | PART NUMBER NTCLE203E3473*B0 | TCR (%/K) | $\Delta R/R$ DUE TO $B_{Tot.}$ (%) |
| | R_T (k Ω) | | |
| - 40 | 1589 | - 6.54 | 5.74 |
| - 35 | 1152 | - 6.34 | 5.19 |
| - 30 | 842.8 | - 6.15 | 4.66 |
| - 25 | 622.6 | - 5.96 | 4.15 |
| - 20 | 464.1 | - 5.79 | 3.66 |
| - 15 | 349.0 | - 5.62 | 3.19 |
| - 10 | 264.6 | - 5.45 | 2.74 |
| - 5 | 202.3 | - 5.30 | 2.30 |
| 0 | 155.8 | - 5.14 | 1.88 |
| 5 | 120.9 | - 5.00 | 1.48 |
| 10 | 94.53 | - 4.86 | 1.09 |
| 15 | 74.40 | - 4.72 | 0.71 |
| 20 | 58.95 | - 4.59 | 0.35 |
| 25 | 47.00 | - 4.47 | 0.00 |
| 30 | 37.71 | - 4.35 | 0.34 |
| 35 | 30.43 | - 4.23 | 0.67 |
| 40 | 24.70 | - 4.12 | 0.99 |
| 45 | 20.15 | - 4.01 | 1.29 |
| 50 | 16.53 | - 3.91 | 1.59 |
| 55 | 13.63 | - 3.81 | 1.88 |
| 60 | 11.30 | - 3.71 | 2.16 |
| 65 | 9.404 | - 3.62 | 2.43 |
| 70 | 7.865 | - 3.53 | 2.70 |
| 75 | 6.607 | - 3.44 | 2.95 |
| 80 | 5.573 | - 3.36 | 3.20 |
| 85 | 4.721 | - 3.28 | 3.45 |
| 90 | 4.015 | - 3.20 | 3.68 |
| 95 | 3.427 | - 3.13 | 3.91 |
| 100 | 2.936 | - 3.05 | 4.13 |
| 105 | 2.525 | - 2.98 | 4.35 |
| 110 | 2.179 | - 2.92 | 4.56 |
| 115 | 1.886 | - 2.85 | 4.77 |
| 120 | 1.638 | - 2.79 | 4.97 |
| 125 | 1.427 | - 2.73 | 5.17 |
| 130 | 1.247 | - 2.67 | 5.36 |
| 135 | 1.093 | - 2.61 | 5.54 |
| 140 | 0.9608 | - 2.55 | 5.73 |
| 145 | 0.8468 | - 2.50 | 5.90 |
| 150 | 0.7483 | - 2.45 | 6.08 |



For complete Curve Computation, visit: www.vishay.com/resistors-non-linear/curve-computation-list/

| RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R_{25} AT 68 k Ω AND 100 k Ω | | | | |
|--|---------------------------------|---------------------------------|--------------|---------------------------------------|
| T_{OPER} (°C) | PART NUMBER NTCLE203E3683*B0 | PART NUMBER NTCLE203E3104*B0 | TCR (%/K) | $\Delta R/R$ DUE TO $B_{Tot.}$ (%) |
| | R_T (k Ω) | R_T (k Ω) | | |
| - 40 | 2493 | 3666 | - 6.69 | 5.88 |
| - 35 | 1794 | 2638 | - 6.49 | 5.31 |
| - 30 | 1303 | 1917 | - 6.29 | 4.77 |
| - 25 | 956.2 | 1406 | - 6.10 | 4.25 |
| - 20 | 708.0 | 1041 | - 5.92 | 3.75 |
| - 15 | 528.9 | 777.8 | - 5.75 | 3.27 |
| - 10 | 398.5 | 586.1 | - 5.58 | 2.80 |
| - 5 | 302.8 | 445.3 | - 5.42 | 2.36 |
| 0 | 231.8 | 340.9 | - 5.26 | 1.93 |
| 5 | 178.9 | 263.1 | - 5.11 | 1.52 |
| 10 | 139.0 | 204.4 | - 4.97 | 1.12 |
| 15 | 108.8 | 160.0 | - 4.83 | 0.73 |
| 20 | 85.74 | 126.1 | - 4.70 | 0.36 |
| 25 | 68.00 | 100.0 | - 4.57 | 0.00 |
| 30 | 54.27 | 79.81 | - 4.45 | 0.35 |
| 35 | 43.57 | 64.08 | - 4.33 | 0.68 |
| 40 | 35.19 | 51.75 | - 4.22 | 1.01 |
| 45 | 28.57 | 42.02 | - 4.11 | 1.33 |
| 50 | 23.33 | 34.31 | - 4.00 | 1.63 |
| 55 | 19.15 | 28.16 | - 3.90 | 1.93 |
| 60 | 15.79 | 23.22 | - 3.80 | 2.21 |
| 65 | 13.09 | 19.25 | - 3.71 | 2.49 |
| 70 | 10.90 | 16.02 | - 3.62 | 2.76 |
| 75 | 9.114 | 13.40 | - 3.53 | 3.03 |
| 80 | 7.655 | 11.26 | - 3.45 | 3.28 |
| 85 | 6.457 | 9.496 | - 3.36 | 3.53 |
| 90 | 5.469 | 8.042 | - 3.28 | 3.77 |
| 95 | 4.649 | 6.837 | - 3.21 | 4.01 |
| 100 | 3.968 | 5.835 | - 3.13 | 4.24 |
| 105 | 3.399 | 4.998 | - 3.06 | 4.46 |
| 110 | 2.921 | 4.296 | - 2.99 | 4.68 |
| 115 | 2.519 | 3.705 | - 2.93 | 4.89 |
| 120 | 2.180 | 3.206 | - 2.86 | 5.09 |
| 125 | 1.892 | 2.783 | - 2.80 | 5.29 |
| 130 | 1.648 | 2.423 | - 2.74 | 5.49 |
| 135 | 1.439 | 2.116 | - 2.68 | 5.68 |
| 140 | 1.261 | 1.854 | - 2.62 | 5.87 |
| 145 | 1.107 | 1.628 | - 2.57 | 6.05 |
| 150 | 0.9752 | 1.434 | - 2.51 | 6.23 |



For complete Curve Computation, visit: www.vishay.com/resistors-non-linear/curve-computation-list/

| RESISTANCE VALUES AT INTERMEDIATE TEMPERATURES WITH R_{25} AT 470 k Ω | | | |
|--|---------------------------------|--------------|---------------------------------------|
| T_{OPER} (°C) | PART NUMBER NTCLE203E3474*B0 | TCR (%/K) | $\Delta R/R$ DUE TO $B_{Tot.}$ (%) |
| | R_T (k Ω) | | |
| - 40 | 22 850 | - 7.14 | 6.41 |
| - 35 | 16 068 | - 6.94 | 5.80 |
| - 30 | 11 413 | - 6.74 | 5.20 |
| - 25 | 8185 | - 6.55 | 4.64 |
| - 20 | 5926 | - 6.37 | 4.09 |
| - 15 | 4329 | - 6.19 | 3.57 |
| - 10 | 3190 | - 6.02 | 3.06 |
| - 5 | 2371 | - 5.85 | 2.57 |
| 0 | 1777 | - 5.69 | 2.11 |
| 5 | 1342 | - 5.54 | 1.65 |
| 10 | 1021 | - 5.39 | 1.22 |
| 15 | 783.0 | - 5.24 | 0.80 |
| 20 | 604.6 | - 5.10 | 0.39 |
| 25 | 470.0 | - 4.97 | 0.00 |
| 30 | 367.8 | - 4.84 | 0.38 |
| 35 | 289.6 | - 4.72 | 0.75 |
| 40 | 229.5 | - 4.59 | 1.10 |
| 45 | 182.9 | - 4.48 | 1.45 |
| 50 | 146.7 | - 4.37 | 1.78 |
| 55 | 118.2 | - 4.26 | 2.10 |
| 60 | 95.80 | - 4.15 | 2.41 |
| 65 | 78.04 | - 4.05 | 2.72 |
| 70 | 63.88 | - 3.95 | 3.01 |
| 75 | 52.55 | - 3.86 | 3.30 |
| 80 | 43.43 | - 3.77 | 3.58 |
| 85 | 36.05 | - 3.68 | 3.85 |
| 90 | 30.06 | - 3.59 | 4.11 |
| 95 | 25.16 | - 3.51 | 4.37 |
| 100 | 21.15 | - 3.43 | 4.62 |
| 105 | 17.85 | - 3.35 | 4.86 |
| 110 | 15.12 | - 3.28 | 5.10 |
| 115 | 12.86 | - 3.21 | 5.33 |
| 120 | 10.97 | - 3.14 | 5.55 |
| 125 | 9.396 | - 3.07 | 5.77 |



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Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.