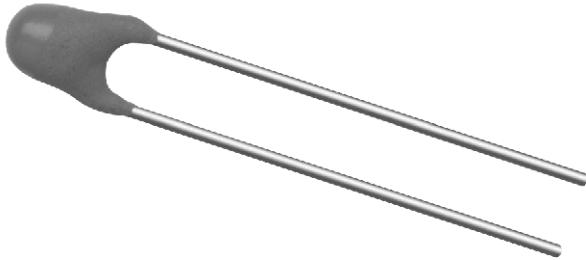


NTC Thermistors, Special Accuracy



| QUICK REFERENCE DATA | |
|--|------------------|
| PARAMETER | VALUE |
| Resistance at 25 °C ¹⁾ | 4.7 to 100 kΩ |
| Temperature measurement accuracy (between 25 °C and 85 °C) | ± 0.5 °C |
| Climatic category | 40/125/56 |
| Maximum dissipation | 250 mW |
| Dissipation factor δ (for information only) | 7 mW/K |
| Response time (for information only) ²⁾ | 1.2 s |
| Thermal time constant τ (for information only) | 11 s |
| Operating temperature range: at zero dissipation (continuously) | - 40 to + 125 °C |
| at maximum dissipation | 0 to + 55 °C |
| Mass | ≈ 0.22 g |

Notes

- For values of nominal resistance value and tolerance at intermediate temperatures; see resistance values tables.
- Response time in silicone oil MS 200/50. 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.

FEATURES

- Excellent accuracy between 25 °C and 85 °C
- High stability over a long life.
- Old part number was 2322 640 10...
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

APPLICATIONS

- Temperature sensing and control.

DESCRIPTION

These thermistors have a negative temperature coefficient. The device consists of a chip with two tin-plated copper leads. It is grey lacquered and not insulated. These thermistors are very accurate (± 0.5 °C) over a trajectory from 25 °C to 85 °C.

PACKAGING

The thermistors are packed in cardboard boxes, each box contains 500 units.

MARKING

Grey lacquered body.

MOUNTING

By soldering in any position.

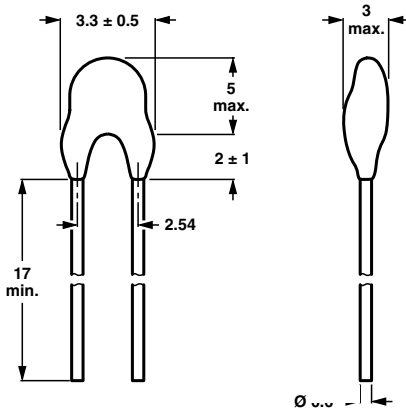
| ELECTRICAL DATA AND ORDERING INFORMATION | | | | | | | |
|--|-------------------------------|------------------------|-------------------------------|---------------------------|---------------------|----------------------------------|-------------------------------------|
| R ₂₅ (Ω) | $\Delta R_{25}/R_{25}$ (%) | R ₈₅ (Ω) | $\Delta R_{85}/R_{85}$ (%) | B _{25/85} (K) | $\Delta B/B$ (%) | CATALOG NUMBER 2381 640 | SAP MATERIAL NO. NTCLE100E3..... |
| 4700 | 2.19 | 503.1 | 1.58 | 3977 | 0.75 | 10472 | 472SB0 |
| 10 000 | 2.19 | 1070 | 1.58 | 3977 | 0.75 | 10103 | 103SB0 |
| 47 000 | 2.23 | 4721 | 1.64 | 4090 | 1.5 | 10473 | 473SB0 |
| 100 000 | 2.29 | 9496 | 1.72 | 4190 | 1.5 | 10104 | 104SB0 |



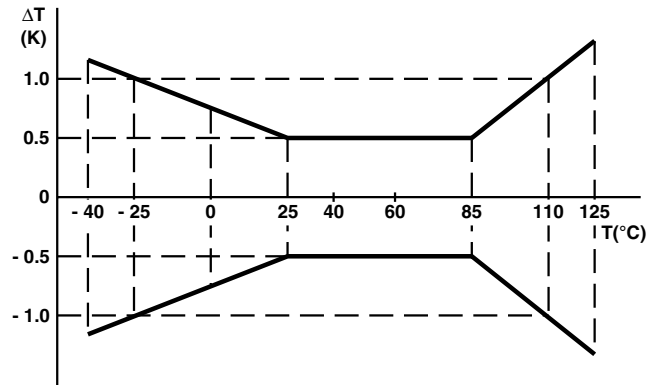
2381 640 10.../NTCLE100E3...SB0

NTC Thermistors, Special Accuracy Vishay BCcomponents

DIMENSIONS in millimeters



TOLERANCE CURVE



RESISTANCE VALUES AT INTERMEDIATE VALUES (2381 640.....)

| T _{OPER} (°C) | R _T /R ₂₅ | TCR (%/K) | R ₂₅ (kΩ) | |
|---------------------------|---------------------------------|--------------|-------------------------|----------|
| | | | 2381 640 | 10103 |
| -40 | 33.21 | 6.57 | 156.1 | 332.1000 |
| -35 | 23.99 | 6.36 | 112.8 | 240.0 |
| -30 | 17.52 | 6.15 | 82.35 | 175.2 |
| -25 | 12.93 | 5.95 | 60.77 | 129.3 |
| -20 | 9.636 | 5.76 | 45.30 | 96.36 |
| -15 | 7.250 | 5.58 | 34.08 | 72.50 |
| -10 | 5.505 | 5.40 | 25.87 | 55.05 |
| -5 | 4.216 | 5.24 | 19.81 | 42.16 |
| 0 | 3.255 | 5.08 | 15.30 | 32.56 |
| 5 | 2.534 | 4.92 | 11.91 | 25.34 |
| 10 | 1.987 | 4.78 | 9.340 | 19.87 |
| 15 | 1.570 | 4.64 | 7.378 | 15.70 |
| 20 | 1.249 | 4.50 | 5.869 | 12.49 |
| 25 | 1.000 | 4.37 | 4.700 | 10.00 |
| 30 | 0.8059 | 4.25 | 3.788 | 8.059 |
| 35 | 0.6535 | 4.13 | 3.072 | 6.535 |
| 40 | 0.5330 | 4.02 | 2.505 | 5.330 |
| 45 | 0.4372 | 3.91 | 2.055 | 4.372 |
| 50 | 0.3605 | 3.80 | 1.694 | 3.606 |
| 55 | 0.2989 | 3.70 | 1.405 | 2.989 |
| 60 | 0.2490 | 3.60 | 1.170 | 2.490 |
| 65 | 0.2084 | 3.51 | 0.9797 | 2.084 |
| 70 | 0.1753 | 3.42 | 0.8239 | 1.753 |
| 75 | 0.1481 | 3.33 | 0.6960 | 1.481 |
| 80 | 0.1256 | 3.25 | 0.5905 | 1.256 |
| 85 | 0.1070 | 3.16 | 0.5031 | 1.070 |
| 90 | 0.09154 | 3.09 | 0.4303 | 0.9154 |
| 95 | 0.07860 | 3.01 | 0.3694 | 0.7860 |
| 100 | 0.06773 | 2.94 | 0.3183 | 0.6773 |
| 105 | 0.05858 | 2.87 | 0.2753 | 0.5858 |
| 110 | 0.05083 | 2.80 | 0.2389 | 0.5083 |
| 115 | 0.04426 | 2.73 | 0.2080 | 0.4426 |
| 120 | 0.03866 | 2.67 | 0.1817 | 0.3866 |
| 125 | 0.03387 | 2.61 | 0.1592 | 0.3387 |

2381 640 10.../NTCLE100E3...SB0



Vishay BCcomponents NTC Thermistors, Special Accuracy

| RESISTANCE VALUES AT INTERMEDIATE VALUES (2381 640.....) | | | | |
|---|---------------------------------|--------------|-------------------------|--------|
| T _{OPER} (°C) | R _T /R ₂₅ | TCR (%/K) | R ₂₅ (kΩ) | |
| | | | 2381 640 | |
| | | | 10472 | 10103 |
| 130 | 0.02977 | 2.55 | 0.1399 | 0.2977 |
| 135 | 0.02624 | 2.49 | 0.1233 | 0.2624 |
| 140 | 0.02319 | 2.43 | 0.1090 | 0.2319 |
| 145 | 0.02055 | 2.38 | 0.0966 | 0.2055 |
| 150 | 0.01826 | 2.33 | 0.0858 | 0.1826 |

| RESISTANCE VALUES AT INTERMEDIATE VALUES (2381 640 10473) | | | | |
|--|---------------------------------|--------------|-------------------------|--------|
| T _{OPER} (°C) | R _T /R ₂₅ | TCR (%/K) | R ₂₅ (kΩ) | |
| | | | 2381 640 10473 | |
| | | | | |
| - 40 | 33.81 | 6.55 | | 1589 |
| - 35 | 24.50 | 6.34 | | 1151 |
| - 30 | 17.93 | 6.15 | | 842.8 |
| - 25 | 13.25 | 5.96 | | 622.6 |
| - 20 | 9.875 | 5.78 | | 464.1 |
| - 15 | 7.425 | 5.61 | | 349.0 |
| - 10 | 5.630 | 5.45 | | 264.6 |
| - 5 | 4.304 | 5.29 | | 202.3 |
| 0 | 3.315 | 5.14 | | 155.8 |
| 5 | 2.573 | 4.99 | | 120.9 |
| 10 | 2.011 | 4.85 | | 94.53 |
| 15 | 1.583 | 4.72 | | 74.40 |
| 20 | 1.254 | 4.59 | | 58.95 |
| 25 | 1.000 | 4.46 | | 47.00 |
| 30 | 0.8024 | 4.34 | | 37.71 |
| 35 | 0.6474 | 4.23 | | 30.43 |
| 40 | 0.5255 | 4.12 | | 24.70 |
| 45 | 0.4288 | 4.01 | | 20.15 |
| 50 | 0.3518 | 3.91 | | 16.53 |
| 55 | 0.2901 | 3.81 | | 13.63 |
| 60 | 0.2403 | 3.71 | | 11.30 |
| 65 | 0.2001 | 3.62 | | 9.404 |
| 70 | 0.1674 | 3.53 | | 7.865 |
| 75 | 0.1406 | 3.44 | | 6.607 |
| 80 | 0.1186 | 3.36 | | 5.573 |
| 85 | 0.1004 | 3.28 | | 4.721 |
| 90 | 0.08542 | 3.20 | | 4.015 |
| 95 | 0.07292 | 3.13 | | 3.427 |
| 100 | 0.06248 | 3.06 | | 2.936 |
| 105 | 0.05372 | 2.98 | | 2.525 |
| 110 | 0.04635 | 2.92 | | 2.179 |
| 115 | 0.04013 | 2.85 | | 1.886 |
| 120 | 0.03485 | 2.79 | | 1.638 |
| 125 | 0.03037 | 2.73 | | 1.427 |
| 130 | 0.02654 | 2.67 | | 1.247 |
| 135 | 0.02326 | 2.61 | | 1.093 |
| 140 | 0.02044 | 2.55 | | 0.9608 |
| 145 | 0.01802 | 2.50 | | 0.8468 |
| 150 | 0.01592 | 2.44 | | 0.7483 |



2381 640 10.../NTCLE100E3...SB0

NTC Thermistors, Special Accuracy Vishay BCcomponents

| RESISTANCE VALUES AT INTERMEDIATE VALUES (2381 640 10104) | | | |
|--|-------------------------------------|----------------------------|--------------------------------------|
| T_{OPER} (°C) | R_T/R₂₅ | TCR (%/K) | R₂₅ (kΩ) |
| | | | 2381 640 10104 |
| - 40 | 36.66 | 6.70 | 3666 |
| - 35 | 26.38 | 6.49 | 2638 |
| - 30 | 19.17 | 6.29 | 1917 |
| - 25 | 14.06 | 6.10 | 1406 |
| - 20 | 10.41 | 5.92 | 1041 |
| - 15 | 7.779 | 5.74 | 777.9 |
| - 10 | 5.861 | 5.57 | 586.1 |
| - 5 | 4.453 | 5.41 | 445.3 |
| 0 | 3.409 | 5.26 | 340.9 |
| 5 | 2.631 | 5.11 | 263.1 |
| 10 | 2.044 | 4.97 | 204.4 |
| 15 | 1.600 | 4.83 | 160.0 |
| 20 | 1.261 | 4.70 | 126.1 |
| 25 | 1.000 | 4.57 | 100.0 |
| 30 | 0.7981 | 4.45 | 79.81 |
| 35 | 0.6408 | 4.35 | 64.08 |
| 40 | 0.5175 | 4.22 | 51.74 |
| 45 | 0.4202 | 4.11 | 42.02 |
| 50 | 0.3431 | 4.00 | 34.31 |
| 55 | 0.2816 | 3.90 | 28.16 |
| 60 | 0.2322 | 3.80 | 23.22 |
| 65 | 0.1925 | 3.71 | 19.25 |
| 70 | 0.1602 | 3.62 | 16.03 |
| 75 | 0.1340 | 3.53 | 13.40 |
| 80 | 0.1126 | 3.45 | 11.26 |
| 85 | 0.09496 | 3.36 | 9.496 |
| 90 | 0.08042 | 3.28 | 8.042 |
| 95 | 0.06837 | 3.21 | 6.837 |
| 100 | 0.05835 | 3.13 | 5.835 |
| 105 | 0.04998 | 3.06 | 4.998 |
| 110 | 0.04296 | 2.99 | 4.296 |
| 115 | 0.03705 | 2.92 | 3.705 |
| 120 | 0.03206 | 2.86 | 3.206 |
| 125 | 0.02783 | 2.80 | 2.783 |



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