NTC Thermistors



for Temperature Compensation 0201 (0603) Size

0201/0402/0603/0805 sized Chip NTC Thermistor have Ni barrier termination and provide excellent solderability and offer high stability in environment by unique inner construction.





■ Features

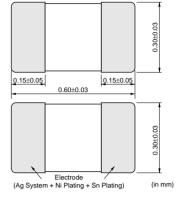
- 1. Excellent solderability and high stability in environment
- 2. Excellent long time aging stability
- 3. High accuracy in resistance and B-constant
- 4. Reflow soldering possible
- 5. Lead is not contained in the product.

■ Applications

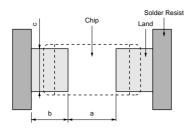
- 1. Temperature compensation of transistor, IC, crystal oscillator of mobile communications equipment
- 2. Temperature sensor for rechargeable batteries
- 3. Temperature compensation of LCD
- 4. Temperature compensation and sensing of car audio equipment (CD, MD, Tuner)
- 5. Temperature compensation of several kinds of circuits

| Part Number | Resistance (25°C) | B-Constant (25-50°C) (K) | Permissive Operating Current (25°C) (mA) | Rated Electric Power (25°C) (mW) | Typical Dissipation Constant (25°C) (mW/°C) | Operating Temperature Range (°C) |
|-----------------|----------------------|--------------------------------|--|--|---|--|
| NCP03YS110□05RL | 11ohm | 2750 ±3% | 9.50 | 100 | 1.0 | -40 to 125 |
| NCP03YS220□05RL | 22ohm | 2750 ±3% | 6.70 | 100 | 1.0 | -40 to 125 |
| NCP03YS330□05RL | 33ohm | 2750 ±3% | 5.50 | 100 | 1.0 | -40 to 125 |
| NCP03YS470□05RL | 47ohm | 2750 ±3% | 4.60 | 100 | 1.0 | -40 to 125 |
| NCP03YS680□05RL | 68ohm | 2750 ±3% | 3.80 | 100 | 1.0 | -40 to 125 |
| NCP03YS101□05RL | 100ohm | 2750 ±3% | 3.10 | 100 | 1.0 | -40 to 125 |
| NCP03XH682□05RL | 6.8k ohm | 3380 ±3% | 0.38 | 100 | 1.0 | -40 to 125 |
| NCP03XH103□05RL | 10k ohm | 3380 ±3% | 0.31 | 100 | 1.0 | -40 to 125 |
| NCP03XH153□05RL | 15k ohm | 3380 ±3% | 0.25 | 100 | 1.0 | -40 to 125 |
| NCP03XH223□05RL | 22k ohm | 3380 ±3% | 0.21 | 100 | 1.0 | -40 to 125 |
| NCP03WF333□05RL | 33k ohm | 4250 ±3% | 0.17 | 100 | 1.0 | -40 to 125 |
| NCP03WB473□05RL | 47k ohm | 4050 ±3% | 0.14 | 100 | 1.0 | -40 to 125 |
| NCP03WL473□05RL | 47k ohm | 4485 ±3% | 0.14 | 100 | 1.0 | -40 to 125 |
| NCP03WF683□05RL | 68k ohm | 4250 ±3% | 0.12 | 100 | 1.0 | -40 to 125 |
| NCP03WL683□05RL | 68k ohm | 4485 ±3% | 0.12 | 100 | 1.0 | -40 to 125 |
| NCP03WF104□05RL | 100k ohm | 4250 ±3% | 0.10 | 100 | 1.0 | -40 to 125 |
| NCP03WL104□05RL | 100k ohm | 4485 ±3% | 0.10 | 100 | 1.0 | -40 to 125 |
| NCP03WL154□05RL | 150k ohm | 4485 ±3% | 0.08 | 100 | 1.0 | -40 to 125 |
| NCP03WL224□05RL | 220k ohm | 4485 ±3% | 0.06 | 100 | 1.0 | -40 to 125 |

A blank column is filled with resistance tolerance codes. (J: $\pm 5\%$, K: $\pm 10\%$)



■ Standard Land Dimensions



| Soldering Methods | а | b | С |
|-------------------|------|------|-----|
| Reflow Soldering | 0.25 | 0.25 | 0.3 |

(in mm)

for Temperature Compensation Temperature Characteristics (Center Value)

| Part Number | NCP□□YS110 | NCDDDDVS330 | NCP□□XC220 | NCD VS330 | NCP□□XC330 | NCP□□YS470 | NCD XC470 | NCP□□YS680 |
|---|---|--|---|---|---|--|--|--|
| Resistance | 11Ω | 22Ω | 22Ω | 33Ω | 33Ω | 47Ω | 47Ω | 68Ω |
| B-Constant | 2750K | 2750K | 3100K | 2750K | 3100K | 2750K | 3100K | 2750K |
| Temp. (°C) | Resistance (Ω) | Resistance (Ω) | Resistance (Ω) | Resistance (Ω) | Resistance (Ω) | Resistance (Ω) | Resistance (Ω) | Resistance (Ω) |
| -40 | 127.366 | 254.732 | 355.823 | 382.098 | 533.734 | 544.201 | 760.166 | 787.354 |
| | 101.662 | 203.325 | 273.975 | 304.987 | 410.962 | 434.376 | 585.310 | 628.459 |
| <u>-30</u> | 81.726 | 163.452 | 213.003 | 245.178 | 319.504 | 349.193 | 455.051 | 505.215 |
| | 66.148 | 132.296 | 166.943 | 198.444 | 250.415 | 282.633 | 356.652 | 408.915 |
| | 53.946 44.273 | 107.893 88.546 | 131.997 105.318 | 161.839 132.819 | 197.996 157.978 | 230.498 189.167 | 281.994 224.998 | 333.487 273.688 |
| -15 | 36.494 | 72.987 | 84.670 | 109.481 | 127.005 | 155.927 | 180.886 | 225.597 |
| 5 | 30.262 | 60.523 | 68.628 | 90.785 | 102.942 | 129.299 | 146.614 | 187.071 |
| 0 | 25.226 | 50.451 | 55.981 | 75.677 | 83.972 | 107.782 | 119.596 | 155.940 |
| 5 | 21.150 | 42.300 | 45.859 | 63.449 | 68.789 | 90.367 | 97.972 | 130.744 |
| 10 | 17.828 | 35.657 | 37.819 | 53.485 | 56.728 | 76.176 | 80.794 | 110.212 |
| 15 | 15.103 | 30.205 | 31.396 | 45.308 | 47.094 | 64.529 | 67.073 | 93.361 |
| 20 | 12.859 | 25.719 | 26.211 | 38.578 | 39.317 | 54.944 | 55.997 | 79.494 |
| 25 | 11.000 | 22.000 | 22.000 | 33.000 | 33.000 | 47.000 | 47.000 | 68.000 |
| 30 | 9.452 | 18.904 | 18.560 | 28.356 | 27.840 | 40.386 | 39.651 | 58.430 |
| <u>35</u> 40 | 8.162 7.077 | 16.323 14.155 | 15.735 13.403 | 24.485 21.232 | 23.603 20.104 | 34.872 30.239 | 33.616 28.633 | 50.454 43.750 |
| 45 | 6.161 | 12.323 | 11.462 | 18.484 | 17.193 | 26.326 | 24.487 | 38.089 |
| 50 | 5.389 | 10.778 | 9.842 | 16.167 | 14.763 | 23.025 | 21.026 | 33.313 |
| 55 | 4.731 | 9.461 | 8.488 | 14.192 | 12.732 | 20.213 | 18.133 | 29.244 |
| 60 | 4.168 | 8.336 | 7.348 | 12.504 | 11.022 | 17.809 | 15.698 | 25.766 |
| 65 | 3.687 | 7.374 | 6.399 | 11.061 | 9.598 | 15.753 | 13.670 | 22.792 |
| 70 | 3.273 | 6.545 | 5.595 | 9.817 | 8.392 | 13.982 | 11.952 | 20.230 |
| 75 | 2.915 | 5.830 | 4.896 | 8.744 | 7.345 | 12.454 | 10.461 | 18.019 |
| 80 | 2.605 | 5.210 | 4.299 | 7.814 | 6.448 | 11.130 | 9.184 | 16.102 |
| 85 | 2.335 | 4.671 | 3.795 | 7.006 | 5.692 | 9.979 | 8.107 | 14.437 |
| 90 95 | 2.100 1.894 | 4.201 3.789 | 3.360 2.983 | 6.301 5.683 | 5.040 4.474 | 8.974 8.094 | 7.179 6.373 | 12.984 11.710 |
| 100 | 1.713 | 3.427 | 2.656 | 5.140 | 3.983 | 7.320 | 5.673 | 10.591 |
| 105 | 1.554 | 3.107 | 2.367 | 4.661 | 3.551 | 6.638 | 5.057 | 9.604 |
| 110 | 1.412 | 2.825 | 2.116 | 4.237 | 3.173 | 6.035 | 4.520 | 8.731 |
| 115 | 1.287 | 2.574 | 1.901 | 3.862 | 2.851 | 5.500 | 4.060 | 7.957 |
| 120 | 1.176 | 2.252 | 4 740 | 3.528 | 2.568 | 5.024 | 3.657 | 7.269 |
| | | 2.352 | 1.712 | | | | | |
| 125 | 1.077 | 2.352 | 1.543 | 3.230 | 2.314 | 4.600 | 3.296 | 6.655 |
| 125 | 1.077 | 2.153 | 1.543 | 3.230 | 2.314 | 4.600 | 3.296 | 6.655 |
| 125 | | 2.153 | | 3.230 | | 4.600 | 3.296 | |
| 125 Part Number | 1.077 NCP□□XC680 | 2.153 NCP□□YS101 | 1.543 NCP□□XF101 | 3.230 NCP□□XF151 | 2.314 NCP□□XM221 | 4.600 NCP□□XM331 | 3.296 NCP□□XQ471 | 6.655 NCP□□XQ681 |
| Part Number Resistance B-Constant Temp. (°C) | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) |
| Part Number Resistance B-Constant Temp. (°C) | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 | 6.655 NCP□XQ681 680Ω 3650K Resistance (Ω) 17104.854 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 | 3.296 NCP□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 | 6.655 NCP□XQ681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 | 3.296 NCP□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 | 6.655 NCP□XQ681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 | 1.543 NCP□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 | 3.296 NCP□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 | 1.543 NCP□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 | 3.296 NCP□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 | 1.543 NCP□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 | 3.296 NCP□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 | 3.230 NCP□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 | 3.296 NCP□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 | 6.655 NCP□□XO681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 4229.599 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 | 3.230 NCP□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 | 6.655 NCP□□XO681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 | 3.230 NCP□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 68.000 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 100.000 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 100.000 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 150.000 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 220.000 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 330.000 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 470.000 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 680.000 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 68.000 57.368 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 100.000 85.927 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 100.000 83.669 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 150.000 125.503 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 220.000 181.576 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 330.000 272.365 | 3.296 NCP□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 470.000 384.800 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 680.000 556.733 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 68.000 57.368 48.636 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 100.000 85.927 74.197 64.339 56.013 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 100.000 83.669 70.361 59.456 50.470 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 150.000 125.503 105.541 89.184 75.705 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 220.000 181.576 150.668 125.681 105.336 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 330.000 272.365 226.002 188.521 158.004 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 470.000 384.800 316.757 262.177 218.069 | 6.655 NCP□□XO681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 680.000 556.733 458.287 379.320 315.504 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 68.000 57.368 48.636 41.426 35.428 30.421 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 100.000 85.927 74.197 64.339 56.013 48.989 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 100.000 83.669 70.361 59.456 50.470 43.029 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 150.000 125.503 105.541 89.184 75.705 64.543 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 220.000 181.576 150.668 125.681 105.336 88.717 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 330.000 272.365 226.002 188.521 158.004 133.076 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 470.000 384.800 316.757 262.177 218.069 182.297 | 6.655 NCP□□XO681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 680.000 556.733 458.287 379.320 315.504 263.749 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 68.000 57.368 48.636 41.426 35.428 30.421 26.235 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 100.000 85.927 74.197 64.339 56.013 48.989 43.006 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 100.000 83.669 70.361 59.456 50.470 43.029 36.830 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 150.000 125.503 105.541 89.184 75.705 64.543 55.246 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 220.000 181.576 150.668 125.681 105.336 88.717 75.059 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 330.000 272.365 226.002 188.521 158.004 133.076 112.588 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 470.000 384.800 316.757 262.177 218.069 182.297 153.150 | 6.655 NCP□□XO681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 680.000 556.733 458.287 379.320 315.504 263.749 221.579 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 68.000 57.368 48.636 41.426 35.428 30.421 26.235 22.712 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 100.000 85.927 74.197 64.339 56.013 48.989 43.006 37.891 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 100.000 83.669 70.361 59.456 50.470 43.029 36.830 31.649 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 150.000 125.503 105.541 89.184 75.705 64.543 55.246 47.473 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 220.000 181.576 150.668 125.681 105.336 88.717 75.059 63.777 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 330.000 272.365 226.002 188.521 158.004 133.076 112.588 95.666 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 470.000 384.800 316.757 262.177 218.069 182.297 153.150 129.249 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 680.000 556.733 458.287 379.320 315.504 263.749 221.579 186.998 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 68.000 57.368 48.636 41.426 35.428 30.421 26.235 22.712 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 100.000 85.927 74.197 64.339 56.013 48.989 43.006 37.891 33.517 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 100.000 83.669 70.361 59.456 50.470 43.029 36.830 31.649 27.364 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 150.000 125.503 105.541 89.184 75.705 64.543 55.246 47.473 41.045 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 220.000 181.576 150.668 125.681 105.336 88.717 75.059 63.777 54.415 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 330.000 272.365 226.002 188.521 158.004 133.076 112.588 95.666 81.622 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 470.000 384.800 316.757 262.177 218.069 182.297 153.150 129.249 109.551 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 12685.248 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 680.000 556.733 458.287 379.320 315.504 263.749 221.579 186.998 158.499 |
| Part Number Resistance B-Constant Temp. (°C) -40 -40 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 68.000 57.368 48.636 41.426 35.428 30.421 26.235 22.712 19.778 17.293 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 100.000 85.927 74.197 64.339 56.013 48.989 43.006 37.891 33.517 29.750 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 100.000 83.669 70.361 59.456 50.470 43.029 36.830 31.649 27.364 23.756 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 150.000 125.503 105.541 89.184 75.705 64.543 55.246 47.473 41.045 35.634 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 220.000 181.576 150.668 125.681 105.336 88.717 75.059 63.777 54.415 46.631 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 330.000 272.365 226.002 188.521 158.004 133.076 112.588 95.666 81.622 69.946 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 470.000 384.800 316.757 262.177 218.069 182.297 153.150 129.249 109.551 93.281 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 680.000 556.733 458.287 379.320 315.504 263.749 221.579 186.998 158.499 134.960 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 68.000 57.368 48.636 41.426 35.428 30.421 26.235 22.712 19.778 17.293 15.134 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 100.000 85.927 74.197 64.339 56.013 48.989 43.006 37.891 33.517 29.750 26.498 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 100.000 83.669 70.361 59.456 50.470 43.029 36.830 31.649 27.364 23.756 20.651 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 150.000 125.503 105.541 89.184 75.705 64.543 55.246 47.473 41.045 35.634 30.976 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 220.000 181.576 150.668 125.681 105.336 88.717 75.059 63.777 54.415 46.631 40.115 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 330.000 272.365 226.002 188.521 158.004 133.076 112.588 95.666 81.622 69.946 60.172 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 470.000 384.800 316.757 262.177 218.069 182.297 153.150 129.249 109.551 93.281 79.750 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 680.000 556.733 458.287 379.320 315.504 263.749 221.579 186.998 158.499 134.960 115.383 |
| Part Number Resistance B-Constant Temp. (°C) -40 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 60 65 70 75 80 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 68.000 57.368 48.636 41.426 35.428 30.421 26.235 22.712 19.778 17.293 15.134 13.288 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 100.000 85.927 74.197 64.339 56.013 48.989 43.006 37.891 33.517 29.750 26.498 23.680 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 100.000 83.669 70.361 59.456 50.470 43.029 36.830 31.649 27.364 23.756 20.651 18.011 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 150.000 125.503 105.541 89.184 75.705 64.543 55.246 47.473 41.045 35.634 30.976 27.016 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 220.000 181.576 150.668 125.681 105.336 88.717 75.059 63.777 54.415 46.631 40.115 34.637 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 330.000 272.365 226.002 188.521 158.004 133.076 112.588 95.666 81.622 69.946 60.172 51.955 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 470.000 384.800 316.757 262.177 218.069 182.297 153.150 129.249 109.551 93.281 79.750 68.446 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 680.000 556.733 458.287 379.320 315.504 263.749 221.579 186.998 158.499 134.960 115.383 99.029 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 68.000 57.368 48.636 41.426 35.428 30.421 26.235 22.712 19.778 17.293 15.134 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 100.000 85.927 74.197 64.339 56.013 48.989 43.006 37.891 33.517 29.750 26.498 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 100.000 83.669 70.361 59.456 50.470 43.029 36.830 31.649 27.364 23.756 20.651 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 150.000 125.503 105.541 89.184 75.705 64.543 55.246 47.473 41.045 35.634 30.976 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 220.000 181.576 150.668 125.681 105.336 88.717 75.059 63.777 54.415 46.631 40.115 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 330.000 272.365 226.002 188.521 158.004 133.076 112.588 95.666 81.622 69.946 60.172 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 470.000 384.800 316.757 262.177 218.069 182.297 153.150 129.249 109.551 93.281 79.750 | 6.655 NCP□□XQ681 680Ω 3650K Resistance (Ω) 17104.854 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 680.000 556.733 458.287 379.320 315.504 263.749 221.579 186.998 158.499 134.960 115.383 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 68.000 57.368 48.636 41.426 35.428 30.421 26.235 22.712 19.778 17.293 15.134 13.288 11.729 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 100.000 85.927 74.197 64.339 56.013 48.989 43.006 37.891 33.517 29.750 26.498 23.680 21.231 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 100.000 83.669 70.361 59.456 50.470 43.029 36.830 31.649 27.364 23.756 20.651 18.011 15.800 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 150.000 125.503 105.541 89.184 75.705 64.543 55.246 47.473 41.045 35.634 30.976 27.016 23.700 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 220.000 181.576 150.668 125.681 105.336 88.717 75.059 63.777 54.415 46.631 40.115 34.637 30.013 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 330.000 272.365 226.002 188.521 158.004 133.076 112.588 95.666 81.622 69.946 60.172 51.955 45.019 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 470.000 384.800 316.757 262.177 218.069 182.297 153.150 129.249 109.551 93.281 79.750 68.446 58.996 | 6.655 NCP□□XO681 680Ω 3650K Resistance (Ω) 17104.854 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 680.000 556.733 458.287 379.320 315.504 263.749 221.579 186.998 158.499 134.960 115.383 99.029 85.356 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 65 60 65 70 75 80 85 | 1.077 NCP□□XC680 68Ω 3100K Resistance (Ω) 1099.815 846.832 658.372 516.007 407.991 325.529 261.707 212.123 173.033 141.747 116.894 97.042 81.016 68.000 57.368 48.636 41.426 35.428 30.421 26.235 22.712 19.778 17.293 15.134 13.288 11.729 10.386 | 2.153 NCP□□YS101 100Ω 2750K Resistance (Ω) 1157.874 924.204 742.963 601.346 490.422 402.482 331.760 275.105 229.324 192.270 162.076 137.296 116.902 100.000 85.927 74.197 64.339 56.013 48.989 43.006 37.891 33.517 29.750 26.498 23.680 21.231 19.094 | 1.543 NCP□□XF101 100Ω 3250K Resistance (Ω) 1824.175 1390.685 1070.653 831.138 650.960 514.441 409.700 328.877 265.759 215.785 176.395 145.161 120.152 100.000 83.669 70.361 59.456 50.470 43.029 36.830 31.649 27.364 23.756 20.651 18.011 15.800 13.908 | 3.230 NCP□□XF151 150Ω 3250K Resistance (Ω) 2736.262 2086.028 1605.979 1246.708 976.440 771.661 614.550 493.315 398.639 323.677 264.592 217.742 180.228 150.000 125.503 105.541 89.184 75.705 64.543 55.246 47.473 41.045 35.634 30.976 27.016 23.700 20.862 | 2.314 NCP□□XM221 220Ω 3500K Resistance (Ω) 4947.904 3703.755 2798.873 2135.887 1645.037 1278.034 1000.620 789.612 627.752 502.474 405.010 328.480 268.044 220.000 181.576 150.668 125.681 105.336 88.717 75.059 63.777 54.415 46.631 40.115 34.637 30.013 26.110 | 4.600 NCP□□XM331 330Ω 3500K Resistance (Ω) 7421.856 5555.632 4198.309 3203.831 2467.555 1917.051 1500.930 1184.418 941.628 753.711 607.514 492.720 402.066 330.000 272.365 226.002 188.521 158.004 133.076 112.588 95.666 81.622 69.946 60.172 51.955 45.019 39.165 | 3.296 NCP□□XQ471 470Ω 3650K Resistance (Ω) 11822.473 8767.745 6570.224 4971.784 3796.933 2923.400 2269.599 1775.225 1399.050 1110.220 887.257 713.463 577.375 470.000 384.800 316.757 262.177 218.069 182.297 153.150 129.249 109.551 93.281 79.750 68.446 58.996 51.036 | 6.655 NCP□□XC681 680Ω 3650K Resistance (Ω) 17104.854 9505.855 7193.219 5493.436 4229.599 3283.675 2568.411 2024.158 1606.275 1283.691 1032.245 835.351 680.000 556.733 458.287 379.320 315.504 263.749 221.579 186.998 158.499 134.960 115.383 99.029 85.356 73.839 |

33.790

29.664

26.123

23.091

20.472

48.888

42.918

37.795

33.409

29.618

105

110

115

120

125

7.317

6.539

5.874

5.291

4.768

14.434

12.844

11.472

10.275

9.243

17.541

15.453

13.663

12.114

10.778

26.312

23.180

20.494

18.171

16.168

9.622

8.563

7.648

6.850

6.162

14.124

12.840

11.702

10.690

9.787

for Temperature Compensation Temperature Characteristics (Center Value)

125

0.358

0.796

0.511

| ☐ Continued f | rom the preceding | page. | | | | | | |
|---|--|--|---|---|---|---|--|---|
| Part Number | NCP XO102 | NCP XW152 | NCP XW222 | NCP XW332 | NCP XM472 | NCP□□XH682 | NCP□□XW682 | NCP□□XH103 |
| Resistance | 1kΩ | 1.5kΩ | 2.2kΩ | 3.3kΩ | 4.7kΩ | 6.8kΩ | 6.8kΩ | 10kΩ |
| B-Constant | 3650K | 3950K | 3950K | 3950K | 3500K | 3380K | 3950K | 3380K |
| Temp. (°C) | Resistance (kΩ) | Resistance (kΩ) | Resistance (kΩ) | Resistance (kΩ) | Resistance (kΩ) | Resistance (kΩ) | Resistance (kΩ) | Resistance (kΩ) |
| -40 | 25.154 | 51.791 | 75.961 | 113.941 | 105.705 | 133.122 | 234.787 | 195.652 |
| -35 | 18.655 | 37.172 | 54.520 | 81.779 | 79.126 | 100.810 | 168.515 | 148.171 |
| -30 | 13.979 | 27.005 | 39.607 | 59.411 | 59.794 | 77.113 | 122.422 | 113.347 |
| -25 | 10.578 | 19.843 | 29.103 | 43.654 | 45.630 | 59.566 | 89.953 | 87.559 |
| -20 | 8.079 | 14.728 | 21.601 | 32.401 | 35.144 | 46.419 | 66.766 | 68.237 |
| -15 | 6.220 | 11.044 | 16.198 | 24.297 | 27.303 | 36.494 | 50.066 | 53.650 |
| -10 | 4.829 | 8.362 | 12.264 | 18.396 | 21.377 | 28.913 | 37.906 | 42.506 |
| - 5 | 3.777 | 6.389 | 9.370 | 14.055 | 16.869 | 23.052 | 28.963 | 33.892 |
| 0 | 2.977 | 4.922 | 7.219 | 10.829 | 13.411 | 18.512 | 22.313 | 27.219 |
| 5 | 2.362 | 3.825 | 5.609 | 8.414 | 10.735 | 14.977 | 17.338 | 22.021 |
| 10 | 1.888 | 2.994 | 4.391 | 6.586 | 8.653 | 12.191 | 13.571 | 17.926 |
| 15 | 1.518 | 2.361 | 3.463 | 5.195 | 7.018 | 9.979 | 10.705 | 14.674 |
| 20 | 1.229 | 1.876 | 2.751 | 4.126 | 5.726 | 8.215 | 8.503 | 12.081 |
| 25 | 1.000 | 1.500 | 2.200 | 3.300 | 4.700 | 6.800 | 6.800 | 10.000 |
| 30 | 0.819 | 1.207 | 1.771 | 2.656 | 3.879 | 5.654 | 5.474 | 8.315 |
| 35 | 0.674 | 0.978 | 1.434 | 2.152 | 3.219 | 4.724 | 4.434 | 6.948 |
| 40 | 0.558 | 0.797 | 1.169 | 1.753 | 2.685 | 3.967 | 3.613 | 5.834 |
| 45 | 0.464 | 0.653 | 0.958 | 1.437 | 2.250 | 3.343 | 2.961 | 4.917 |
| 50 | 0.388 | 0.538 | 0.789 | 1.184 | 1.895 | 2.829 | 2.440 | 4.161 |
| 55 | 0.326 | 0.446 | 0.654 | 0.981 | 1.604 | 2.403 | 2.022 | 3.535 |
| 60 | 0.275 | 0.371 | 0.545 | 0.817 | 1.363 | 2.049 | 1.683 | 3.014 |
| 65 | 0.233 | 0.311 | 0.456 | 0.684 | 1.163 | 1.758 | 1.409 | 2.586 |
| 70 | 0.199 | 0.261 | 0.383 | 0.575 | 0.996 | 1.514 | 1.185 | 2.228 |
| 75 | 0.170 | 0.221 | 0.324 | 0.486 | 0.857 | 1.308 | 1.001 | 1.925 |
| 80 | 0.146 | 0.187 | 0.275 | 0.412 | 0.740 | 1.134 | 0.849 | 1.669 |
| 85 | 0.126 | 0.160 | 0.234 | 0.351 | 0.641 | 0.987 | 0.724 | 1.452 |
| 90 | 0.109 | 0.137 | 0.200 | 0.301 | 0.558 | 0.862 | 0.620 | 1.268 |
| 95 | 0.094 | 0.117 | 0.172 | 0.258 | 0.487 | 0.754 | 0.532 | 1.110 |
| 100 | 0.082 | 0.101 | 0.149 | 0.223 | 0.426 | 0.662 | 0.459 | 0.974 |
| 105 | 0.072 | 0.088 | 0.129 | 0.193 | 0.375 | 0.583 | 0.398 | 0.858 |
| 110 | 0.063 | 0.076 | 0.112 | 0.168 | 0.330 | 0.515 | 0.346 | 0.758 |
| 115 | 0.056 | 0.067 | 0.098 | 0.146 | 0.292 | 0.456 | 0.302 | 0.672 |
| 120 | 0.049 | 0.058 | 0.085 | 0.128 | 0.259 | 0.405 | 0.264 | 0.596 |
| 125 | 0.044 | | | | 0.200 | | | |
| | U.U44 | 0.051 | 0.075 | 0.113 | 0.230 | 0.361 | 0.232 | 0.531 |
| | | 0.051 | 0.075 | 0.113 | 0.230 | 0.361 | 0.232 | 0.531 |
| Part Number | NCP□□XV103 | NCP□□XH153 | NCP□□XW153 | NCP□□XH223 | NCP□□XW223 | NCP□□WL223 | NCP□□WB333 | NCP□□WF333 |
| Part Number Resistance | NCP□□XV103 10kΩ | NCP□□XH153 15kΩ | NCP□□XW153 | NCP□□XH223 22kΩ | NCP□□XW223 22kΩ | NCP□□WL223 22kΩ | NCP□□WB333 | NCP□□WF333 |
| Part Number Resistance B-Constant | NCP□□XV103 10kΩ 3900K | NCP□□XH153 15kΩ 3380K | NCP□□XW153 15kΩ 3950K | NCP□□XH223 22kΩ 3380K | NCP□□XW223 22kΩ 3950K | NCP□□WL223 22kΩ 4485K | NCP□□WB333 33kΩ 4050K | NCP□□WF333 33kΩ 4250K |
| Part Number Resistance B-Constant Temp. (°C) | NCP \square XV103 10kΩ 3900K Resistance (kΩ) | NCP \square XH153 15k Ω 3380K Resistance (k Ω) | NCP \square XW153 15k Ω 3950K Resistance (k Ω) | NCP□□XH223 22kΩ 3380K Resistance (kΩ) | NCP \square XW223 22k Ω 3950K Resistance (k Ω) | NCP \square WL223 22k Ω 4485K Resistance (k Ω) | NCP \square WB333 33k Ω 4050K Resistance (k Ω) | NCP \square WF333 33k Ω 4250K Resistance (k Ω) |
| Part Number Resistance B-Constant Temp. (°C) -40 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 | NCP□□XH223 | NCP□□XW223 | NCP□□WL223 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 | NCP□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 | NCP□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 | NCP□□WL223 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 | NCP□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 | NCP□□WL223 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 | NCP□□WL223 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 10 15 20 | NCP \square XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 | NCP \square XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 15 20 25 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 15 20 25 30 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 17.709 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 17.214 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 17.709 14.344 | NCP□□WL223 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 | NCP□□XV103 10kΩ 3990K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 12.833 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 17.709 14.344 11.688 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 17.214 13.557 10.744 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 | NCP□□XV103 10kΩ 3990K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 12.833 10.816 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 17.709 14.344 11.688 9.578 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 17.214 13.557 10.744 8.566 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 12.833 10.816 9.152 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 17.709 14.344 11.688 9.578 7.894 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 17.214 13.557 10.744 8.566 6.871 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 12.833 10.816 9.152 7.775 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 17.709 14.344 11.688 9.578 7.894 6.540 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 17.214 13.557 10.744 8.566 6.871 5.543 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 9.506 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 2.521 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 4.520 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 3.713 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 12.833 10.816 9.152 7.775 6.630 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 17.709 14.344 11.688 9.578 7.894 6.540 5.446 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 17.214 13.557 10.744 8.566 6.871 5.543 4.497 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 9.506 7.870 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 7.334 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 5 10 15 20 25 30 35 40 45 50 55 60 65 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 2.521 2.115 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 4.520 3.878 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 3.713 3.108 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 12.833 10.816 9.152 7.775 6.630 5.688 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 17.709 14.344 11.688 9.578 7.894 6.540 5.446 4.559 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 17.214 13.557 10.744 8.566 6.871 5.543 4.497 3.669 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 9.506 7.870 6.549 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 7.334 6.046 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 15 20 25 30 35 40 45 50 55 60 65 70 | NCP \square XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 2.521 2.115 1.781 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 4.520 3.878 3.340 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 3.713 3.108 2.613 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 12.833 10.816 9.152 7.775 6.630 5.688 4.899 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 17.709 14.344 11.688 9.578 7.894 6.540 5.446 4.559 3.832 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 17.214 13.557 10.744 8.566 6.871 5.543 4.497 3.669 3.009 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 9.506 7.870 6.549 5.475 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 7.334 6.046 5.011 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 15 20 25 30 35 40 45 50 65 60 65 70 75 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 2.521 2.115 1.781 1.509 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 4.520 3.878 3.340 2.886 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 3.713 3.108 2.613 2.208 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 12.833 10.816 9.152 7.775 6.630 5.688 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 17.709 14.344 11.688 9.578 7.894 6.540 5.446 4.559 3.832 3.239 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 17.214 13.557 10.744 8.566 6.871 5.543 4.497 3.669 3.009 2.481 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 111.538 9.506 7.870 6.549 5.475 4.595 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 7.334 6.046 5.011 4.170 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 15 20 25 30 35 40 45 50 55 60 65 70 | NCP \square XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 2.521 2.115 1.781 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 4.520 3.878 3.340 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 3.713 3.108 2.613 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 12.833 10.816 9.152 7.775 6.630 5.688 4.899 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 17.709 14.344 11.688 9.578 7.894 6.540 5.446 4.559 3.832 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 17.214 13.557 10.744 8.566 6.871 5.543 4.497 3.669 3.009 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 9.506 7.870 6.549 5.475 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 7.334 6.046 5.011 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 15 20 25 30 35 40 45 50 65 60 65 70 75 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 2.521 2.115 1.781 1.509 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 4.520 3.878 3.340 2.886 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 3.713 3.108 2.613 2.208 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 32.284 26.578 22.000 18.291 15.284 12.833 10.816 9.152 7.775 6.630 5.688 4.899 4.233 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 17.709 14.344 11.688 9.578 7.894 6.540 5.446 4.559 3.832 3.239 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 17.214 13.557 10.744 8.566 6.871 5.543 4.497 3.669 3.009 2.481 2.056 1.713 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 9.506 7.870 6.549 5.475 4.595 3.874 3.282 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 7.334 6.046 5.011 4.170 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 65 70 75 80 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 2.521 2.115 1.781 1.509 1.284 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 4.520 3.878 3.340 2.886 2.502 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 3.713 3.108 2.613 2.208 1.873 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 12.833 10.816 9.152 7.775 6.630 5.688 4.899 4.233 3.669 | NCP□□XW223 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 17.214 13.557 10.744 8.566 6.871 5.543 4.497 3.669 3.009 2.481 2.056 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 9.506 7.870 6.549 5.475 4.595 3.874 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 7.334 6.046 5.011 4.170 3.487 |
| Part Number Resistance B-Constant Temp. (°C) -40 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 2.521 2.115 1.781 1.509 1.284 1.097 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 4.520 3.878 3.340 2.886 2.502 2.177 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 3.713 3.108 2.613 2.208 1.873 1.597 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 12.833 10.816 9.152 7.775 6.630 5.688 4.899 4.233 3.669 3.194 | NCP□□XW223 | NCP□□WL223 22kΩ 4485K Resistance (kΩ) 1073.436 753.900 535.073 383.590 277.643 202.813 149.462 111.082 83.233 62.858 47.831 36.664 28.304 22.000 17.214 13.557 10.744 8.566 6.871 5.543 4.497 3.669 3.009 2.481 2.056 1.713 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 9.506 7.870 6.549 5.475 4.595 3.874 3.282 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 7.334 6.046 5.011 4.170 3.487 2.928 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 2.521 2.115 1.781 1.509 1.284 1.097 0.941 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 4.520 3.878 3.340 2.886 2.502 2.177 1.901 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 3.713 3.108 2.613 2.208 1.873 1.597 1.367 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 12.833 10.816 9.152 7.775 6.630 5.688 4.899 4.233 3.669 3.194 2.788 | NCP□□XW223 | NCP□□WL223 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 9.506 7.870 6.549 5.475 4.595 3.874 3.282 2.789 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 7.334 6.046 5.011 4.170 3.487 2.928 2.469 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 | NCP□□XV103 10kΩ 3990K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 2.521 2.115 1.781 1.509 1.284 1.097 0.941 0.810 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 4.520 3.878 3.340 2.886 2.502 2.177 1.901 1.664 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 3.713 3.108 2.613 2.208 1.873 1.597 1.367 | NCP□□XH223 | NCP□□XW223 | NCP□□WL223 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 9.506 7.870 6.549 5.475 4.595 3.874 3.282 2.789 2.379 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 7.334 6.046 5.011 4.170 3.487 2.928 2.469 2.091 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 70 75 80 85 90 95 | NCP□□XV103 10kΩ 3990K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 2.521 2.115 1.781 1.509 1.284 1.097 0.941 0.810 0.701 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 4.520 3.878 3.340 2.886 2.502 2.177 1.901 1.664 1.460 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 3.713 3.108 2.613 2.208 1.873 1.597 1.367 1.174 1.013 | NCP□□XH223 | NCP□□XW223 | NCP□□WL223 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 9.506 7.870 6.549 5.475 4.595 3.874 3.282 2.789 2.379 2.038 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 7.334 6.046 5.011 4.170 3.487 2.928 2.469 2.091 1.777 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 | NCP□□XV103 10kΩ 3990K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 2.521 2.115 1.781 1.509 1.284 1.097 0.941 0.810 0.701 0.608 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 4.520 3.878 3.340 2.886 2.502 2.177 1.901 1.664 1.460 1.286 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 3.713 3.108 2.613 2.208 1.873 1.597 1.367 1.174 1.013 0.878 | NCP□□XH223 | NCP□□XW223 | NCP□□WL223 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 9.506 7.870 6.549 5.475 4.595 3.874 3.282 2.789 2.379 2.038 1.751 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 7.334 6.046 5.011 4.170 3.487 2.928 2.469 2.091 1.777 1.516 |
| Part Number Resistance B-Constant Temp. (°C) -40 -35 -30 -25 -20 -15 -10 -5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 | NCP□□XV103 10kΩ 3900K Resistance (kΩ) 328.996 237.387 173.185 127.773 95.327 71.746 54.564 41.813 32.330 25.194 19.785 15.651 12.468 10.000 8.072 6.556 5.356 4.401 3.635 3.019 2.521 2.115 1.781 1.509 1.284 1.097 0.941 0.810 0.701 0.608 0.530 | NCP□□XH153 15kΩ 3380K Resistance (kΩ) 293.651 222.375 170.103 131.395 102.394 80.501 63.778 50.851 40.836 33.037 26.891 22.012 18.122 15.000 12.471 10.421 8.750 7.374 6.240 5.301 4.520 3.878 3.340 2.886 2.502 2.177 1.901 1.664 1.460 1.286 1.136 | NCP□□XW153 15kΩ 3950K Resistance (kΩ) 517.912 371.724 270.048 198.426 147.278 110.439 83.617 63.888 49.221 38.245 29.936 23.613 18.756 15.000 12.074 9.780 7.969 6.531 5.382 4.459 3.713 3.108 2.613 2.208 1.873 1.597 1.174 1.013 0.878 0.763 | NCP□□XH223 22kΩ 3380K Resistance (kΩ) 430.688 326.150 249.484 192.712 150.178 118.068 93.540 74.581 59.893 48.454 39.441 32.284 26.578 22.000 18.291 15.284 12.833 10.816 9.152 7.775 6.630 5.688 4.899 4.233 3.669 3.194 2.788 2.440 2.141 1.887 1.667 | NCP□□XW223 22kΩ 3950K Resistance (kΩ) 759.605 545.196 396.070 291.025 216.008 161.977 122.638 93.702 72.191 56.093 43.907 34.633 27.509 22.000 17.709 14.344 11.688 9.578 7.894 6.540 5.446 4.559 3.832 3.239 2.748 2.342 2.004 1.722 1.486 1.287 1.119 | NCP□□WL223 | NCP□□WB333 33kΩ 4050K Resistance (kΩ) 1227.263 874.449 630.851 460.457 339.797 253.363 190.766 144.964 111.087 85.842 66.861 52.470 41.471 33.000 26.430 21.298 17.266 14.076 11.538 9.506 7.870 6.549 5.475 4.595 3.874 3.282 2.789 2.379 2.038 1.751 1.509 | NCP□□WF333 33kΩ 4250K Resistance (kΩ) 1451.049 1019.238 725.084 522.021 379.842 279.371 207.566 155.639 117.814 89.925 69.204 53.675 41.937 33.000 26.143 20.845 16.723 13.498 10.954 8.940 7.334 6.046 5.011 4.170 3.487 2.928 2.469 2.091 1.777 1.516 1.298 |

0.832

0.987

1.168

0.750

0.471

for Temperature Compensation Temperature Characteristics (Center Value)

\(\) Continued from the preceding page.

| Part Number NCP□ | | | | | | | | |
|-------------------|--------------------|-----------------|----------|----------|-----------------|----------|----------|-----------------|
| | 3kΩ | 47kΩ | 47kΩ | 68kΩ | 68kΩ | 68kΩ | 100kΩ | 100kΩ |
| | 485K | 4050K | 4485K | 4150K | 4250K | 4485K | 4250K* | 4485K |
| | ance (k Ω) | Resistance (kΩ) | . , | . , | Resistance (kΩ) | . , | . , | Resistance (kΩ) |
| | 10.154 | 1747.920 | 2293.249 | 2735.359 | 2990.041 | 3317.893 | 4397.119 | 4879.254 |
| | 30.850 | 1245.428 | 1610.605 | 1937.391 | 2100.247 | 2330.237 | 3088.599 | 3426.818 |
| | 2.609 | 898.485 | 1143.110 | 1389.345 | 1494.113 | 1653.862 | 2197.225 | 2432.149 |
| -25 57 | 5.385 | 655.802 | 819.487 | 1008.014 | 1075.679 | 1185.641 | 1581.881 | 1743.590 |
| | 6.464 | 483.954 | 593.146 | 738.978 | 782.705 | 858.168 | 1151.037 | 1262.012 |
| -15 30 | 4.219 | 360.850 | 433.281 | 547.456 | 575.674 | 626.875 | 846.579 | 921.875 |
| | 4.193 | 271.697 | 319.305 | 409.600 | 427.712 | 461.974 | 628.988 | 679.373 |
| | 6.623 | 206.463 | 237.312 | 309.217 | 320.710 | 343.345 | 471.632 | 504.919 |
| | 4.850 | 158.214 | 177.816 | 235.606 | 242.768 | 257.266 | 357.012 | 378.333 |
| 5 94 | 1.287 | 122.259 | 134.287 | 180.980 | 185.300 | 194.287 | 272.500 | 285.717 |
| 10 7 | 1.747 | 95.227 | 102.184 | 140.139 | 142.603 | 147.841 | 209.710 | 217.414 |
| 15 54 | 1.996 | 74.730 | 78.327 | 109.344 | 110.602 | 113.325 | 162.651 | 166.654 |
| 20 42 | 2.455 | 59.065 | 60.467 | 85.929 | 86.415 | 87.484 | 127.080 | 128.653 |
| 25 33 | 3.000 | 47.000 | 47.000 | 68.000 | 68.000 | 68.000 | 100.000 | 100.000 |
| 30 25 | 5.822 | 37.643 | 36.776 | 54.167 | 53.871 | 53.208 | 79.222 | 78.247 |
| 35 20 | 0.335 | 30.334 | 28.962 | 43.421 | 42.954 | 41.903 | 63.167 | 61.622 |
| 40 16 | 5.115 | 24.591 | 22.952 | 35.016 | 34.460 | 33.208 | 50.677 | 48.835 |
| 45 12 | 2.849 | 20.048 | 18.301 | 28.406 | 27.814 | 26.477 | 40.904 | 38.937 |
| 50 10 | 0.306 | 16.433 | 14.679 | 23.166 | 22.572 | 21.237 | 33.195 | 31.231 |
| 55 8 | .314 | 13.539 | 11.842 | 18.997 | 18.422 | 17.133 | 27.091 | 25.195 |
| 60 6 | .746 | 11.209 | 9.607 | 15.657 | 15.113 | 13.900 | 22.224 | 20.441 |
| 65 5 | .503 | 9.328 | 7.837 | 12.967 | 12.459 | 11.339 | 18.323 | 16.675 |
| 70 4 | .513 | 7.798 | 6.428 | 10.794 | 10.325 | 9.300 | 15.184 | 13.677 |
| 75 3 | .721 | 6.544 | 5.300 | 9.021 | 8.592 | 7.668 | 12.635 | 11.277 |
| 80 3 | .084 | 5.518 | 4.393 | 7.575 | 7.185 | 6.356 | 10.566 | 9.346 |
| 85 2 | .569 | 4.674 | 3.659 | 6.387 | 6.033 | 5.294 | 8.873 | 7.785 |
| 90 2 | .151 | 3.972 | 3.063 | 5.407 | 5.087 | 4.432 | 7.481 | 6.517 |
| 95 1 | .809 | 3.388 | 2.577 | 4.598 | 4.309 | 3.728 | 6.337 | 5.482 |
| 100 1 | .529 | 2.902 | 2.178 | 3.922 | 3.661 | 3.151 | 5.384 | 4.634 |
| 105 1 | .299 | 2.494 | 1.849 | 3.359 | 3.124 | 2.676 | 4.594 | 3.935 |
| 110 1 | .108 | 2.150 | 1.578 | 2.887 | 2.675 | 2.283 | 3.934 | 3.357 |
| | .949 | 1.860 | 1.352 | 2.489 | 2.299 | 1.956 | 3.380 | 2.877 |
| | .817 | 1.615 | 1.164 | 2.155 | 1.983 | 1.684 | 2.916 | 2.476 |
| 125 0 | .707 | 1.406 | 1.006 | 1.870 | 1.715 | 1.456 | 2.522 | 2.141 |

| Part Number | NCP□□WL154 | NCP□□WM154 | NCP□□WL224 | NCP□□WM224 | NCP□□WM474 |
|-------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Resistance | 150kΩ | 150kΩ | 220kΩ | 220kΩ | 470kΩ |
| B-Constant | 4485K | 4500K | 4485K | 4500K | 4500K |
| Temp. (°C) | Resistance (kΩ) |
| -40 | 7318.881 | 7899.466 | 10734.358 | 11585.884 | 24751.661 |
| -35 | 5140.228 | 5466.118 | 7539.001 | 8016.973 | 17127.169 |
| -30 | 3648.224 | 3834.499 | 5350.729 | 5623.931 | 12014.762 |
| -25 | 2615.385 | 2720.523 | 3835.898 | 3990.100 | 8524.305 |
| -20 | 1893.018 | 1951.216 | 2776.427 | 2861.784 | 6113.811 |
| -15 | 1382.813 | 1415.565 | 2028.126 | 2076.162 | 4435.437 |
| -10 | 1019.059 | 1036.984 | 1494.620 | 1520.909 | 3249.216 |
| — 5 | 757.379 | 767.079 | 1110.822 | 1125.049 | 2403.515 |
| 0 | 567.499 | 572.667 | 832.332 | 839.912 | 1794.358 |
| 5 | 428.575 | 431.264 | 628.577 | 632.521 | 1351.294 |
| 10 | 326.121 | 327.405 | 478.310 | 480.194 | 1025.870 |
| 15 | 249.981 | 250.538 | 366.639 | 367.455 | 785.018 |
| 20 | 192.979 | 193.166 | 283.036 | 283.310 | 605.252 |
| 25 | 150.000 | 150.000 | 220.000 | 220.000 | 470.000 |
| 30 | 117.370 | 117.281 | 172.143 | 172.012 | 367.480 |
| 35 | 92.433 | 92.293 | 135.569 | 135.364 | 289.186 |
| 40 | 73.252 | 73.090 | 107.436 | 107.198 | 229.014 |
| 45 | 58.406 | 58.240 | 85.662 | 85.419 | 182.485 |
| 50 | 46.846 | 46.665 | 68.708 | 68.441 | 146.215 |
| 55 | 37.793 | 37.605 | 55.429 | 55.153 | 117.828 |
| 60 | 30.661 | 30.453 | 44.970 | 44.665 | 95.420 |
| 65 | 25.013 | 24.804 | 36.686 | 36.379 | 77.718 |
| 70 | 20.516 | 20.293 | 30.090 | 29.763 | 63.584 |
| 75 | 16.916 | 16.679 | 24.810 | 24.462 | 52.260 |
| 80 | 14.019 | 13.776 | 20.562 | 20.205 | 43.166 |
| 85 | 11.678 | 11.428 | 17.128 | 16.761 | 35.808 |
| 90 | 9.776 | 9.520 | 14.338 | 13.962 | 29.828 |
| 95 | 8.223 | 7.966 | 12.061 | 11.684 | 24.961 |
| 100 | 6.951 | 6.688 | 10.194 | 9.809 | 20.955 |
| 105 | 5.902 | 5.639 | 8.657 | 8.270 | 17.668 |
| 110 | 5.035 | 4.772 | 7.385 | 6.998 | 14.951 |
| 115 | 4.315 | 4.052 | 6.329 | 5.942 | 12.695 |
| 120 | 3.714 | 3.454 | 5.448 | 5.067 | 10.824 |
| 125 | 3.211 | 2.955 | 4.710 | 4.334 | 9.259 |

^{*} B-Constant of NCP18WF104F type is 4200K. Please contact us for the detail data.

Chip Type **(1)** Caution/Notice

■ ① Caution (Storage and Operating Conditions)

This product is designed for application in an ordinary environment (normal room temperature, humidity and atmospheric pressure).

Do not use under the following conditions because all these factors can deteriorate the product characteristics or cause failures and burn-out.

- Corrosive gas or deoxidizing gas
 (Chlorine gas, Hydrogen sulfide gas, Ammonia gas, Sulfuric acid gas, Nitric oxide gas, etc.)
- 2. Volatile or flammable gas
- 3. Dusty conditions
- 4. Under high or low pressure
- 5. Wet or humid locations
- Places with salt water, oils, chemical liquids or organic solvents
- 7. Strong vibrations
- 8. Other places where similar hazardous conditions exist

■ ①Caution (Others)

Be sure to provide an appropriate fail-safe function on your product to prevent secondary damages that may be caused by the abnormal function or the failure of our product.

■ Notice (Storage and Operating Conditions)

To keep solderability of product from declining, the following storage condition is recommended.

- Storage condition:
 Temperature -10 to +40 degree C
 Humidity less than 75%RH (not dewing condition)
- Storage term: Use this product within 6 months after delivery by first-in and first-out stocking system.

■ Notice (Rating)

Use this product within the specified temperature range.

Higher temperature may cause deterioration of the characteristics or the material quality of this product.

■ Notice (Handling)

The ceramic of this product is fragile, and care must be taken not to load a excessive press-force or not to give a shock at handling.

Such forces may cause cracking or chipping.

- Handling after unpacking:
 After unpacking, reseal product promptly or store it in a sealed container with a drying agent.
- Storage place:
 Do not store this product in corrosive gas (sulfuric acid gas, chlorine gas, etc.) or in direct sunlight.

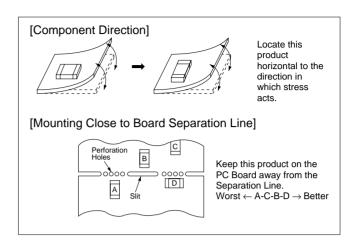


Chip Type **(A)** Caution/Notice

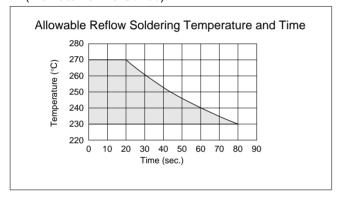
■ Notice (Soldering and Mounting)

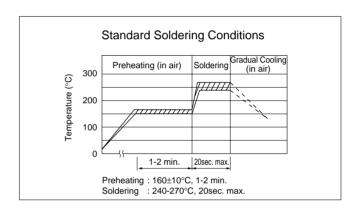
1. Mounting Position

Choose a mounting position that minimizes the stress imposed on the chip during flexing or bending of the board.

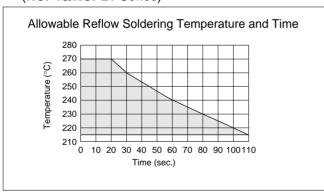


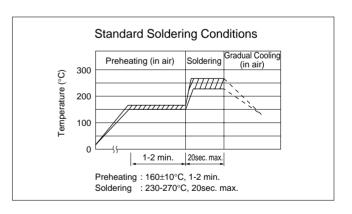
2. Reflow Soldering Conditions (NCP03/NCP15 Series)



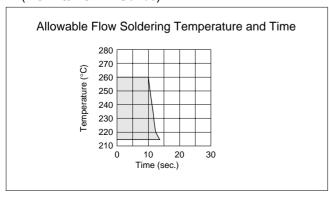


(NCP18/NCP21 Series)

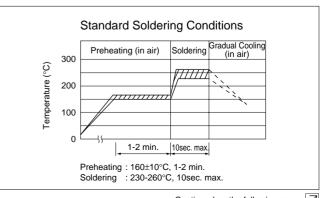




3. Flow Soldering Conditions (NCP18/NCP21 Series)



muRata



Chip Type **(1)** Caution/Notice

Continued from the preceding page.

4. Solder and Flux

(1) Solder and Paste

(a) Reflow Soldering: NCP03/15/18/21 Series Use RA/RMA type or equivalent type of solder paste. For your reference, we are using the solder paste below for any internal tests of this product.

•RMA9086 90-4-M20 (Sn:Pb=63wt%:37wt%) (Manufactured by Alpha Metals Japan Ltd.)

•M705-221BM5-42-11 (Sn:Ag:Cu=96.5wt%:3.0wt%:0.5wt%) (Manufactured by Senju Metal Industry Co., Ltd.)

(b) Flow Soldering: NCP18/21 Series

We are using the solder paste below. For any internal tests of this product.

•Sn: Pb=63wt%:37wt%

•Sn: Ag: Cu=96.5wt%: 3.0wt%: 0.5wt%

(2) Flux

Use Rosin-based flux.

Do not use strong acidic flux (with halide content exceeding 0.2wt%)

5. Cleaning Conditions

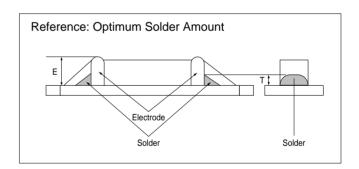
For removing the flux after soldering, observe the following points in order to avoid deterioration of the characteristics or any change of the external electrodes' quality.

| | NCP03/15 | NCP18/21 |
|---------------------|--------------------------|-----------------------------|
| Solvent | Isopropyl Alcohol | Isopropyl Alcohol |
| | Less than 5min. at room | Less than 5min. at room |
| Dipping Cleaning | temp. or less than 2min. | temp. or less than 2min. |
| | at 40°C max. | at 40°C max. |
| | Less than 5min. 20W/ ℓ | Less than 1min. 20W/ ℓ |
| Ultrasonic Cleaning | Frequency of 28 to | Frequency of several |
| | 40kHz. | 10kHz to 100kHz. |

6. Drying

After cleaning, promptly dry this product.

- 7. Printing Conditions of Solder Paste
- The amount of solder is critical. Standard height of fillet is shown in the table below.
- Too much soldering may cause mechanical stress, resulting in cracking, mechanical and/or electronic damage.



| Part Number | The solder paste thickness | Т |
|-------------|----------------------------|-----------|
| NCP03 | 100μm | 1/3E≦T≦E |
| NCP15 | 100μm | 1/3E≦T≦E |
| NCP18/NCP21 | 150μm | 0.2mm≦T≦E |

- 8. Adhesive Application and Curing
- Thin or insufficient adhesive may result in loose component contact with land during flow soldering.
- Low viscosity adhesive causes chips to slip after mounting.



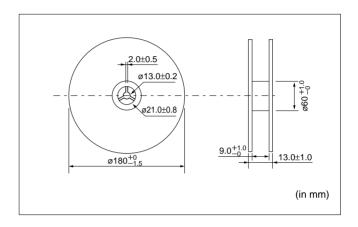
Chip Type Package

■ Minimum Quantity Guide

| Don't November | Quantity (pcs.) | | | | |
|----------------|-----------------|--------------|--|--|--|
| Part Number | Paper Tape | Plastic Tape | | | |
| NCP03 | 15000 | | | | |
| NCP15 | 10000 | - | | | |
| NCP18 | 4000 | | | | |
| NCP21 | - | 4000 | | | |

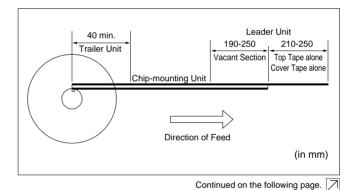
■ Tape Carrier Packaging

1. Dimensions of Reel



2. Taping Method

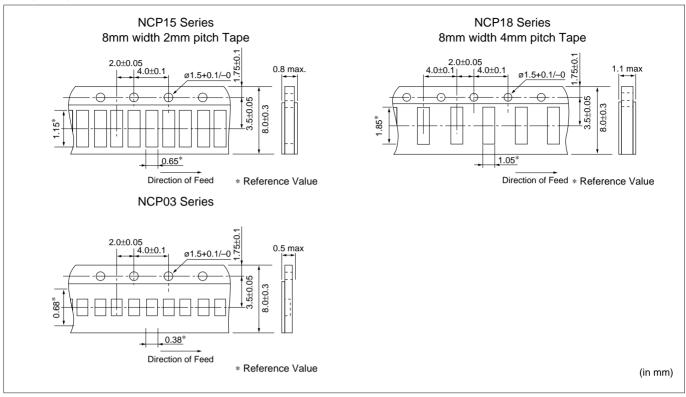
- (1) A tape in a reel contains Leader unit and Trailer unit where products are not packed. (Please refer to the figure right.)
- (2) The top and base tapes or, plastic and cover tape are not stuck at the first five pitches minimum.
- (3) A label should be attached on the reel. (MURATA's part number, inspection number and quantity should be marked on the label.)
- (4) Taping reels are packed in a package.



Chip Type Package

Continued from the preceding page.

3. Paper Tape (NCP03/15/18 Series)



(1) Other Conditions

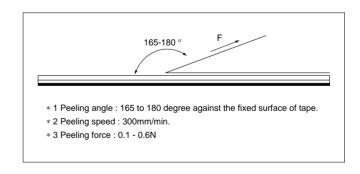
(a) Packaging

Products are packaged in the cavity of the base tape and sealed by top tape and bottom tape.

(b) Tape

Top tape and bottom tape have no joints and products are packaged and sealed in the cavity of the base tape, continuously.

(2) Peeling force of top tape



(3) Pull Strength

Pull strength of top tape is specified at 10N minimum. Pull strength of bottom tape are specified 5N minimum.

Continued on the following page.



