

NTC SMD Thermistors



With Nickel Barrier Termination NB 12 - NB 20

Chip thermistors are high quality and low cost devices especially developed for surface mounting applications. They are widely used for temperature compensation but can also achieve temperature control of printed circuits.

A nickel barrier metallization provides outstanding qualities of solderability and enables this chip to meet the requirements of the most severe soldering processes.

| Types | NB 12 IEC SIZE : 0805 | NB 20 IEC SIZE : 1206 |
|--|--------------------------|--------------------------|
| DIMENSIONS: millimeters (inches) | | |
| Terminations | Nickel Barrier | |
| Marking | On packaging only | |
| Climatic category | 40/125/56 | |
| Operating temperature | -55°C to +150°C | |
| Tolerance on R _n (25°C) | ±5%, ±10%, ±20% | |
| Maximum dissipation at 25°C | 0.12 W | 0.24 W |
| Thermal dissipation factor | 2 mW/°C | 4 mW/°C |
| Thermal time constant | 5 s | 7s |

Resistance - Temperature characteristics: pages 36 to 40.

APPLICATIONS

- LCD compensation
- Battery packs
- Mobile phones
- CD players
- Heating systems
- Air-conditioning systems
- Temperature control of Switch Mode Power Supplies
- Compensation of pressure sensors
- Protection of power transistors in various electronic circuits

HOW TO ORDER

NB 20

Type

K 0

Material Code

K
(See tables page 13)

0103

Resistance
10,000 Ω

M

Tolerance
M (±20%)
J (±5%)
K (±10%)

BA

Suffix: Packaging
--: Bulk
BA: Plastic tape
(180mm diam. reel)
BE: Plastic tape (1/2 reel)
BC: Plastic tape
(330mm diam. reel)
BB: Cardboard tape
(180mm diam. reel)
BF: Cardboard tape (1/2 reel)
BD: Cardboard tape
(330mm diam. reel)



NTC SMD Thermistors



With Nickel Barrier Termination NB 12 – NB 20

TABLE OF VALUES

| NB 12 IEC SIZE : 0805 | | | | |
|--------------------------|-------------------|------------------|--|----------------------------|
| Types | Rn at 25°C (Ω) | Material Code | B (K) ($\Delta B/B$ (1) $\pm 5\%$ (2) $\pm 3\%$) | α at 25°C (%/°C) |
| NB 12 KC 0 180 | 18 | KC | 3470 $\pm 5\%$ | - 3.9 |
| NB 12 KC 0 220 | 22 | | | |
| NB 12 KC 0 270 | 27 | | | |
| NB 12 KC 0 330 | 33 | | | |
| NB 12 KC 0 390 | 39 | | | |
| NB 12 KC 0 470 | 47 | | | |
| NB 12 KC 0 560 | 56 | | | |
| NB 12 KC 0 680 | 68 | | | |
| NB 12 KC 0 820 | 82 | | | |
| NB 12 KC 0 101 | 100 | | | |
| NB 12 MC 0 121 | 120 | MC | 3910 $\pm 3\%$ | - 4.4 |
| NB 12 MC 0 151 | 150 | | | |
| NB 12 MC 0 181 | 180 | | | |
| NB 12 MC 0 221 | 220 | | | |
| NB 12 MC 0 271 | 270 | | | |
| NB 12 MC 0 331 | 330 | | | |
| NB 12 MC 0 391 | 390 | | | |
| NB 12 MC 0 471 | 470 | | | |
| NB 12 MC 0 561 | 560 | | | |
| NB 12 MC 0 681 | 680 | | | |
| NB 12 MC 0 821 | 820 | | | |
| NB 12 MC 0 102 | 1,000 | | | |
| NB 12 MC 0 122 | 1,200 | | | |
| NB 12 MC 0 152 | 1,500 | | | |
| NB 12 MC 0 182 | 1,800 | | | |
| NB 12 MC 0 222 | 2,200 | | | |
| NB 12 MC 0 272 | 2,700 | | | |
| NB 12 MC 0 332 | 3,300 | | | |
| NB 12 J 0 0332 | 3,300 | J | 3480 $\pm 3\%$ | - 3.9 |
| NB 12 J 0 0392 | 3,900 | | | |
| NB 12 J 0 0472 | 4,700 | | | |
| NB 12 J 0 0562 | 5,600 | | | |
| NB 12 K 0 0682 | 6,800 | K | 3630 $\pm 3\%$ | - 4.0 |
| NB 12 K 0 0822 | 8,200 | | | |
| NB 12 K 0 0103 | 10,000 | | | |
| NB 12 L 0 0123 | 12,000 | L | 3790 $\pm 3\%$ | - 4.2 |
| NB 12 L 0 0153 | 15,000 | | | |
| NB 12 M 0 0183 | 18,000 | M | 3950 $\pm 3\%$ | - 4.4 |
| NB 12 M 0 0223 | 22,000 | | | |
| NB 12 M 0 0273 | 27,000 | | | |
| NB 12 M 0 0333 | 33,000 | | | |
| NB 12 N 0 0393 | 39,000 | N | 4080 $\pm 3\%$ | - 4.6 |
| NB 12 N 0 0473 | 47,000 | | | |
| NB 12 N 0 0563 | 56,000 | | | |
| NB 12 L 2 0683 | 68,000 | L2 | 3805 $\pm 3\%$ | - 4.1 |
| NB 12 N 5 0683 | 68,000 | N5 | 4160 $\pm 3\%$ | - 4.7 |
| NB 12 N 5 0823 | 82,000 | | | |
| NB 12 P 0 0104 | 100,000 | P | 4220 $\pm 3\%$ | - 4.7 |
| NB 12 SC 0104 | 100,000 | SC | 4500 $\pm 3\%$ | - 4.8 |
| NB 12 P 0 0124 | 120,000 | P | 4220 $\pm 3\%$ | - 4.7 |
| NB 12 P 0 0154 | 150,000 | | | |
| NB 12 P 0 0184 | 180,000 | | | |
| NB 12 Q 0 0224 | 220,000 | Q | 4300 $\pm 3\%$ | - 4.7 |
| NB 12 Q 0 0274 | 270,000 | | | |
| NB 12 R 0 0105 | 1,000,000 | R | 4400 $\pm 3\%$ | - 4.8 |

| NB 20 IEC SIZE : 1206 | | | | |
|--------------------------|-------------------|------------------|--|----------------------------|
| Types | Rn at 25°C (Ω) | Material Code | B (K) ($\Delta B/B$ (1) $\pm 5\%$ (2) $\pm 3\%$) | α at 25°C (%/°C) |
| NB 20 MC 0 221 | 220 | MC | 3910 $\pm 3\%$ | - 4.4 |
| NB 20 MC 0 102 | 1,000 | MC | 3910 $\pm 3\%$ | - 4.4 |
| NB 20 J 0 0472 | 4,700 | J | 3480 $\pm 3\%$ | - 3.9 |
| NB 20 J 0 0562 | 5,600 | | | |
| NB 20 J 0 0682 | 6,800 | | | |
| NB 20 J 5 0822 | 8,200 | J5 | 3480 $\pm 3\%$ | - 3.9 |
| NB 20 K 0 0103 | 10,000 | K | 3630 $\pm 3\%$ | - 4.0 |
| NB 20 K 0 0123 | 12,000 | | | |
| NB 20 L 0 0153 | 15,000 | L | 3790 $\pm 3\%$ | - 4.2 |
| NB 20 L 0 0183 | 18,000 | | | |
| NB 20 L 0 0223 | 22,000 | | | |
| NB 20 M 0 0273 | 27,000 | M | 3950 $\pm 3\%$ | - 4.4 |
| NB 20 M 0 0333 | 33,000 | | | |
| NB 20 M 0 0393 | 39,000 | | | |
| NB 20 M 0 0473 | 47,000 | | | |
| NB 20 N 0 0563 | 56,000 | N | 4080 $\pm 3\%$ | - 4.6 |
| NB 20 N 0 0683 | 68,000 | | | |
| NB 20 N 0 0823 | 82,000 | | | |
| NB 20 N 5 0104 | 100,000 | N5 | 4160 $\pm 3\%$ | - 4.7 |
| NB 20 P 0 0124 | 120,000 | P | 4220 $\pm 3\%$ | - 4.7 |
| NB 20 P 0 0154 | 150,000 | | | |
| NB 20 P 0 0184 | 180,000 | | | |
| NB 20 P 0 0224 | 220,000 | | | |
| NB 20 Q 0 0274 | 270,000 | Q | 4300 $\pm 3\%$ | - 4.7 |
| NB 20 Q 0 0334 | 330,000 | | | |
| NB 20 Q 0 0394 | 390,000 | | | |
| NB 20 Q 0 0474 | 470,000 | | | |
| NB 20 Q 0 0564 | 560,000 | | | |
| NB 20 R 0 0684 | 680,000 | R | 4400 $\pm 3\%$ | - 4.8 |
| NB 20 R 0 0824 | 820,000 | | | |
| NB 20 R 0 0105 | 1,000,000 | | | |

Packaging for Automatic Insertion



NTC Chip Thermistors / NC/NB Series

AUTOMATIC INSERTION

Super 8 Plastic Tape Packaging:

The mechanical and dimensional reel characteristics are in accordance with the IEC publication 286-3.



| Designation | Symbol | Value | Tolerance | |
|--------------------------------|--------------|-----------|-----------|---|
| Tape width | W | 8 | ±0.2 | |
| Tape thickness | T | 0.4 max. | | |
| Pitch of the sprocket holes | P0 | 4 | ±0.1 | |
| Diameter of the sprocket holes | D0 | 1.5 -0 | ±0.1 | |
| Distance | E | 1.75 | ±0.1 | |
| Distance (center to center) | F | 3.5 | ±0.05 | |
| Distance (center to center) | P2 | 2 | ±0.1 | |
| Sizes of the cavities | NC 12 (0805) | A0 | 1.5 | ±0.1 |
| | | B0 | 2.4 | ±0.1 |
| | | K | 1.4 max. | K ±0.1 (size is adjustable) (K = t1 +0.2) |
| NC 20 (1206) | | A0 | 1.95 | ±0.1 |
| | | B0 | 3.55 | ±0.1 |
| | | K | 1.5 max. | K ±0.1 (size is adjustable) (K = t1 +0.2) |



QUANTITY PER REEL

| Type | Suffix | Qty Per Reel |
|---------------|--------|--------------|
| NC - NB 12 | BA | 4000 |
| | BE | 2000 |
| NC 20 - NB 20 | BA | 3000 |
| | BE | 1500 |

Packaging for Automatic Insertion



NTC Chip Thermistors / NC/NB Series

AUTOMATIC INSERTION

8mm Paper Tape Packaging:

The mechanical and dimensional reel characteristics are in accordance with the IEC publication 286-3.



| Designation | Symbol | Value | Tolerance |
|--------------------------------|--------|-------------------|--------------|
| Tape width | W | 8 | $-.0.1/+0.3$ |
| Tape thickness | T | 1.1 max. | |
| Pitch of the sprocket holes | P_0 | 4 | ± 0.1 |
| Diameter of the sprocket holes | D_0 | 1.5 $-0/+0.1$ | ± 0.1 |
| Distance | E_1 | 1.75 | ± 0.1 |
| Distance (center to center) | F | 3.5 | ± 0.05 |
| Distance (center to center) | P_2 | 2 | ± 0.05 |
| Cover tape thickness | T_1 | 0.10 max. | |
| Distance | E_2 | 6.25 min. | |
| Distance | G | 0.75 min. | |
| Component pitch | P_1 | 0805/0603 0402 | ± 0.1 |
| | | | ± 0.1 |



QUANTITY PER REEL

| Type | Suffix | Qty Per Reel |
|------------|--------|--------------|
| NB - NC 12 | BB | 4000 |
| NB 21 | BF | 2000 |
| NB 23 | BB | 10000 |
| | BF | 5000 |

