

# NTC Thermistors, SMD 0402, 0603, 0805, 1206 Chip



## ADDITIONAL RESOURCES



| QUICK REFERENCE DATA                                        |                                      |          |
|-------------------------------------------------------------|--------------------------------------|----------|
| PARAMETER                                                   | VALUE                                | UNIT     |
| Resistance value at 25 °C                                   | 4.7K to 350K                         | $\Omega$ |
| Tolerance on $R_{25}$ -value                                | $\pm 1, \pm 2, \pm 3, \pm 5, \pm 10$ | %        |
| $B_{25/75}$ -value                                          | 3477 to 4064                         | K        |
| $B_{25/85}$ -value                                          | 3486 to 4073                         | K        |
| Tolerance on $B_{25/85}$ -value,<br>$B_{25/75}$ -value      | $\pm 3$                              | %        |
| Operating temperature range<br>at zero power (intermittent) | -40 to +125 (150)                    | °C       |

## FEATURES

- Extended resistance values available in standard sizes
- Wraparound Ni barrier terminations with 100 % Sn
- NTHS1206 curve 1 is AEC-Q200 qualified
- High-density monolithic construction with glass overcoat
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

## APPLICATIONS

Temperature sensing, protection and compensation in industrial, telecom and consumer applications.

Examples are:

- Battery chargers
- Power suppliers
- Office equipment
- LCD compensation
- In-car entertainment

## DESIGN-IN SUPPORT

For complete curve computation please visit the “My Vishay NTC curve” at: [www.vishay.com/thermistors/ntc-curve-list/](http://www.vishay.com/thermistors/ntc-curve-list/) or send your part number to [thermistor1@vishay.com](mailto:thermistor1@vishay.com) to obtain a calculation spreadsheet.

| NTHS PRODUCT DATA AND $R_{25}$ RESISTANCE RANGE AVAILABILITY |                 |                 |           |                          |                        |                        |                                       |                                |
|--------------------------------------------------------------|-----------------|-----------------|-----------|--------------------------|------------------------|------------------------|---------------------------------------|--------------------------------|
| CURVE                                                        | $B_{25/75}$ (K) | $B_{25/85}$ (K) | TCR (%/K) | NTHS0402 (k $\Omega$ )   | NTHS0603 (k $\Omega$ ) | NTHS0805 (k $\Omega$ ) | NTHS1206 <sup>(2)</sup> (k $\Omega$ ) | $R_{25} \pm$ TOL. AVAILABILITY |
| 2                                                            | 3477            | 3486            | -3.84     | 10 to 12                 | 6.8 to 12              | 4.7 to 10              | 6 to 10                               | 3, 5, 10                       |
| 11                                                           | 3691            | 3715            | -4.13     | 30 to 34                 | 22 to 32               | 15 to 30               | 20 to 33                              | 3, 5, 10                       |
| 1                                                            | 3964            | 3974            | -4.39     | 68 to 100 <sup>(1)</sup> | 50 to 100              | 33 to 78               | 38 to 100 <sup>(2)</sup>              | 1, 2, 3, 5, 10                 |
| 5                                                            | 3964            | 3974            | -4.39     | 47 to 50                 | 40 to 50               | 25 to 47               | 30 to 44                              | 3, 5, 10                       |
| 17                                                           | 4064            | 4073            | -4.50     | 250                      | 150 to 220             | 100 to 200             | 100 to 220                            | 3, 5, 10                       |
| Maximum dissipation at 25 °C in mW                           |                 |                 |           | 80                       | 125                    | 210                    | 280                                   |                                |
| Dissipation factor in mW/K                                   |                 |                 |           | 2.0                      | 3.0                    | 3.5                    | 4.0                                   |                                |
| Thermal time constant in s                                   |                 |                 |           | 5                        | 8                      | 10                     | 13                                    |                                |

### Notes

<sup>(1)</sup> Only  $R_{25}$  tolerance values  $\pm 3$  %,  $\pm 5$  %, and  $\pm 10$  % are available for NTSH0402N01N types

<sup>(2)</sup> NTSH1206 curve 1 parts are AEC-Q200 qualified

| STANDARD RESISTANCE VALUES at 25 °C in $\Omega$ |      |     |     |     |     |      |      |      |      |
|-------------------------------------------------|------|-----|-----|-----|-----|------|------|------|------|
| 4.7K                                            | 6.8K | 12K | 20K | 30K | 47K | 68K  | 150K | 220K | 330K |
| 5.0K                                            | 10K  | 15K | 22K | 33K | 50K | 100K | 200K | 250K |      |

### Note

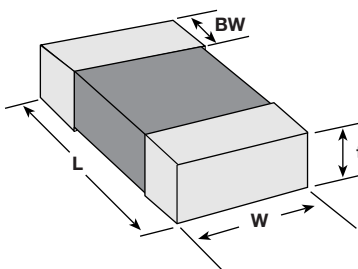
- Most popular and available values

**GLOBAL PART NUMBER INFORMATION**

Global Part Numbering: NTHS1206N02N1002JE (preferred part number format)

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | T | H | S | 1 | 2 | 0 | 6 | N | 0 | 2 | N | 1 | 0 | 0 | 2 | J | E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| GLOBAL MODEL                                 | CONDUCTOR TYPE | CURVE                      | CHARACTERISTIC | RESISTANCE VALUE | TOLERANCE CODE                                                 | PACKAGING                                                                                    |
|----------------------------------------------|----------------|----------------------------|----------------|------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| NTHS0402<br>NTHS0603<br>NTHS0805<br>NTHS1206 | Nickel barrier | 01<br>02<br>05<br>11<br>17 | N              | 1002 = 10K       | F = ± 1 %<br>G = ± 2 %<br>H = ± 3 %<br>J = ± 5 %<br>K = ± 10 % | E = lead (Pb)-free,<br>T/R (2K pieces, full)<br>U = lead (Pb)-free,<br>T/R (5K pieces, full) |

**DIMENSIONS** in inches (millimeters)


| PART NUMBER | L                              | W                              | BW                             | t <sub>max.</sub> |
|-------------|--------------------------------|--------------------------------|--------------------------------|-------------------|
| NTHS0402    | 0.040 ± 0.004<br>(1.02 ± 0.10) | 0.022 ± 0.006<br>(0.56 ± 0.15) | 0.010 ± 0.004<br>(0.25 ± 0.10) | 0.028<br>(0.71)   |
| NTHS0603    | 0.063 ± 0.008<br>(1.60 ± 0.20) | 0.031 ± 0.008<br>(0.80 ± 0.20) | 0.010 ± 0.006<br>(0.25 ± 0.15) | 0.039<br>(1.00)   |
| NTHS0805    | 0.079 ± 0.008<br>(2.01 ± 0.20) | 0.049 ± 0.008<br>(1.25 ± 0.20) | 0.012 ± 0.006<br>(0.30 ± 0.15) | 0.057<br>(1.45)   |
| NTHS1206    | 0.126 ± 0.008<br>(3.20 ± 0.20) | 0.063 ± 0.008<br>(1.60 ± 0.20) | 0.018 ± 0.008<br>(0.46 ± 0.20) | 0.071<br>(1.80)   |

**Note**

- Thickness of the part is depending on the resistance value and curve



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.