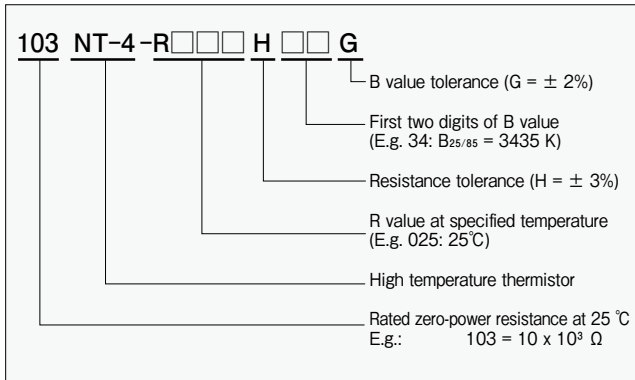


High temperature, high sensitivity, glass encapsulated thermistor

NT Thermistor

Semitec's glass encapsulated NT-4 series thermistor features high heat resistance and high sensitivity. Compared with conventional thermistors, the NT-4 thermistors are smaller, faster in response, and more reliable which makes them suitable for various applications.

Product number explanation



Dimensions



Applications

3D printers, HVAC equipment, water heaters, microwave ovens, home appliances, hybrid vehicles, fuel cell vehicles, automotive, medical, disaster prevention, security, office automation

Specifications

| Product number | Rated zero-power resistance ¹ | | | B value temperature C _(100,000) | B value ² | Operating temperature range (°C) |
|------------------|--|------------|----------------------|--|----------------------|----------------------------------|
| | Temperature | Resistance | Resistance tolerance | | | |
| 502NT-4-R025H39G | 25 °C | 5 kΩ | ± 3% ³ | 25/85 | 3964 K ± 2% | - 50 to 300 |
| 852NT-4-R050H34G | 50 °C | 3.485 kΩ | | 0/100 | 3450 K ± 2% | |
| 103NT-4-R025H34G | 25 °C | 10 kΩ | | 25/85 | 3435 K ± 2% | |
| 103NT-4-R025H41G | 25 °C | 10 kΩ | | 25/85 | 4126 K ± 2% | |
| 203NT-4-R025H42G | 25 °C | 20 kΩ | | 25/85 | 4282 K ± 2% | |
| 493NT-4-R100H40G | 100 °C | 3.3 kΩ | | 0/100 | 3970 K ± 2% | |
| 503NT-4-R025H42G | 25 °C | 50 kΩ | | 25/85 | 4288 K ± 2% | |
| 104NT-4-R025H42G | 25 °C | 100 kΩ | | 25/85 | 4267 K ± 2% | |
| 104NT-4-R025H43G | 25 °C | 100 kΩ | | 25/85 | 4390 K ± 2% | |
| 204NT-4-R025H43G | 25 °C | 200 kΩ | | 25/85 | 4338 K ± 2% | |
| 234NT-4-R200H42G | 200 °C | 1 kΩ | | 100/200 | 4537 K ± 2% | |
| 504NT-4-R025H45G | 25 °C | 500 kΩ | | 25/85 | 4526 K ± 2% | |
| 105NT-4-R025H46G | 25 °C | 1000 kΩ | | 25/85 | 4608 K ± 2% | |

* Dissipation factor: 0.8 mw / °C • Thermal time constant⁴: approx. 6 s • Rated power at 25 °C: 4 mW
¹: Rated zero-power resistance at each temperature
²: B value calculated from rated zero-power resistance at each temperature
³: If your application requires other tolerance values please contact SEMITEC sales staff.
⁴: Time required to reach 63.2% of temperature difference. Measured with sensor suspended in mid-air.

Reliability data

| Item | Test conditions | Criteria |
|-----------------------------------|---|--|
| Resistance to soldering heat | 10 s at 260 °C (wave soldering) | ΔR ± 3%, ΔB ± 1% and visual inspection |
| | 3.5 s at 350 °C (soldering iron) | |
| Solderability | 2 s at 245 °C Flux material: Rosin 25%, ethyl alcohol 75% | More than 90% soldered |
| Tensile strength (lead wire) | 10 s at 1 N (horizontal pull) | ΔR ± 3%, ΔB ± 1% and visual inspection |
| Termination bending | 0.5 N, two times, 90° | |
| Free fall | Three times natural fall to a maple board from 1 m height. | |
| Voltage proof | 500 V AC for one minute | Less than 1 mA |
| Insulation resistance | 500 V DC | Over 100 MΩ |
| Dry heat | 1000 hours at 300 °C | ΔR ± 3%, ΔB ± 1% |
| Damp heat (under electrical load) | 1000 hours at 85 °C and 85% humidity Electrical load: 0.1 mA DC | |
| Temperature cycle (thermal shock) | 100 cycles as below: 1. - 30 °C for 3 minutes in fluid 2. 150 °C for 3 minutes in fluid | |

Resistance / temperature characteristics

| Temperature (°C) | 502NT-4-R025H39G | 852NT-4-R050H34G | 103NT-4-R025H34G | 103NT-4-R025H41G | 203NT-4-R025H42G | 493NT-4-R100H40G | 503NT-4-R025H42G | 104NT-4-R025H42G | 104NT-4-R025H43G | 204NT-4-R025H43G | 234NT-4-R200H42G | 504NT-4-R025H45G | 105NT-4-R025H46G |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| -50 | 339.5 | 346.8 | 394.7 | 830.9 | 1931 | 3376 | 3576 | 8887 | 10090 | 19040 | 17900 | 52600 | 110900 |
| -30 | 92.34 | 106.1 | 122.0 | 207.7 | 459.2 | 885.4 | 965.0 | 2156 | 2353 | 4524.0 | 4633.0 | 12290 | 25610 |
| -10 | 28.48 | 38.02 | 44.09 | 60.87 | 129.3 | 275.5 | 302.8 | 623.2 | 657.0 | 1284.0 | 1393.0 | 3396 | 6979 |
| 0 | 16.64 | 23.92 | 27.86 | 34.85 | 72.67 | 162.2 | 175.2 | 354.6 | 368.1 | 724.5 | 804.8 | 1887 | 3849 |
| 10 | 10.06 | 15.49 | 18.13 | 20.65 | 42.33 | 98.65 | 104.0 | 208.8 | 213.5 | 423.0 | 479.2 | 1084 | 2195 |
| 25 | 5.000 | 8.487 | 10.00 | 10.00 | 20.00 | 49.41 | 50.00 | 100.0 | 100.0 | 200.0 | 232.1 | 500.0 | 1000 |
| 40 | 2.649 | 4.899 | 5.806 | 5.166 | 10.10 | 26.23 | 25.42 | 50.90 | 49.90 | 100.6 | 119.0 | 245.2 | 484.7 |
| 50 | 1.790 | 3.485 | 4.144 | 3.437 | 6.613 | 17.70 | 16.69 | 33.45 | 32.42 | 65.72 | 78.46 | 157.3 | 308.4 |
| 60 | 1.238 | 2.524 | 3.011 | 2.341 | 4.440 | 12.20 | 11.19 | 22.48 | 21.54 | 43.89 | 52.84 | 103.1 | 200.7 |
| 80 | 0.6306 | 1.391 | 1.668 | 1.159 | 2.138 | 6.134 | 5.343 | 10.80 | 10.13 | 20.81 | 25.39 | 47.24 | 90.54 |
| 85 | 0.3591 | 1.209 | 1.451 | 0.9843 | 1.803 | 5.222 | 4.494 | 9.094 | 8.486 | 17.48 | 21.38 | 39.31 | 75.08 |
| 100 | 0.3455 | 0.8104 | 0.9754 | 0.6189 | 1.112 | 3.300 | 2.741 | 5.569 | 5.122 | 10.61 | 13.06 | 23.27 | 43.96 |
| 120 | 0.2014 | 0.4952 | 0.5920 | 0.3525 | 0.6175 | 1.882 | 1.498 | 3.058 | 2.763 | 5.759 | 7.130 | 12.23 | 22.78 |
| 140 | 0.1238 | 0.3108 | 0.3679 | 0.2121 | 0.3631 | 1.127 | 0.8635 | 1.770 | 1.574 | 3.301 | 4.098 | 6.787 | 12.48 |
| 160 | 0.07968 | 0.2000 | 0.2365 | 0.1339 | 0.2245 | 0.7057 | 0.5225 | 1.074 | 0.9414 | 1.985 | 2.466 | 3.957 | 7.188 |
| 180 | 0.05341 | 0.1325 | 0.1568 | 0.08811 | 0.1448 | 0.4592 | 0.3296 | 0.6793 | 0.5873 | 1.244 | 1.544 | 2.406 | 4.322 |
| 200 | 0.03708 | 0.09036 | 0.1068 | 0.06015 | 0.09698 | 0.3092 | 0.2158 | 0.4452 | 0.3804 | 0.8098 | 1.000 | 1.519 | 2.703 |
| 220 | 0.02656 | 0.06329 | 0.07467 | 0.04239 | 0.06713 | 0.2145 | 0.1459 | 0.3016 | 0.2549 | 0.5442 | 0.6674 | 0.9937 | 1.750 |
| 240 | 0.01956 | 0.04543 | 0.05345 | 0.03072 | 0.04784 | 0.1529 | 0.1016 | 0.2104 | 0.1760 | 0.3765 | 0.4574 | 0.6712 | 1.168 |
| 260 | 0.01477 | 0.03337 | 0.03907 | 0.02285 | 0.03499 | 0.1117 | 0.07261 | 0.1507 | 0.1250 | 0.2676 | 0.3210 | 0.4663 | 0.8019 |
| 280 | 0.01141 | 0.02506 | 0.02912 | 0.01743 | 0.02619 | 0.08336 | 0.05319 | 0.1105 | 0.09101 | 0.1950 | 0.2302 | 0.3317 | 0.5651 |
| 300 | 0.00900 | 0.01919 | 0.02209 | 0.01361 | 0.02003 | 0.06345 | 0.03981 | 0.08278 | 0.06772 | 0.1452 | 0.1683 | 0.2410 | 0.4074 |

Caution

- When soldering make sure to have a minimum distance from the glass encapsulated sensor head of 5 mm.
- When working the lead wire make sure to fix the wire at a minimum distance from the glass encapsulated sensor head of 5 mm.

Unit: kΩ