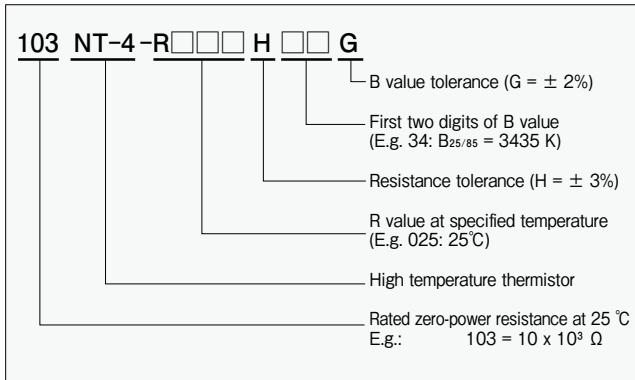


■ High temperature, high sensitivity, glass encapsulated thermistor

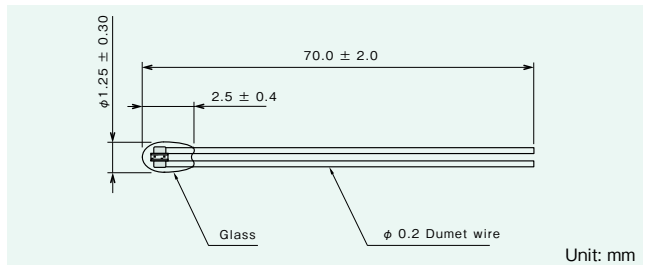
NT Thermistor

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 _(x/xxx) | 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