

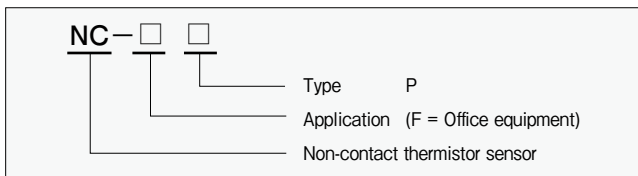
■ Non-contact (IR) temperature sensor

NC Sensor

The NC Sensor uses SEMITEC's extremely small FT thermistors as temperature sensing elements to create a robust IR sensor that can be used in many different locations and formerly impossible environments.



■ Product number explanation



■ Applications

- Office automation fuser roller applications such as LBP, PPC etc.
- Rotating parts in automotive applications
- Rotating motor parts
- Temperature measurement in high pressure environments
- Temperature measurement of drugs and chemicals

■ Specifications

| Parameter | Value | Conditions |
|-----------------------------|-------------------|--|
| Measurement center | 180 °C ± 3 °C | Blackbody temp.: 180 °C; sensor body temp.: 100 °C Roller diameter: 40 mm; distance: 5 mm |
| Responsivity | 1.3 s ± 0.5 s | Time required to reach 63.2% of temperature difference between blackbody and sensor body. |
| Operating temp. range | - 10 °C to 150 °C | — |
| Measuring temp. range | - 20 °C to 260 °C | — |
| Thermistor resistance value | 7 kΩ ± 3% | Rated zero-power resistance at 180 °C |
| Thermistor B value | 3370 K ± 1% | B value determined by rated zero-power resistance at 25 °C and 85 °C |

■ Reliability data

| Item | Test conditions | Criteria |
|-----------------------------------|---|---|
| Dry heat | 1000 hours at 150 °C | Measurement center within ± 5 °C of initial value |
| Dry heat under electrical load | 1000 hours at 150 °C, 5 V load | |
| Temperature cycle (thermal shock) | 5 cycles as below: 1. - 20 °C for 30 minutes 2. Room temperature for 5 minutes 3. 150 °C for 30 minutes 4. Room temperature for 5 minutes | |
| Insulation resistance | 500 V DC (between aluminium case and connections) | Over 100 MΩ |
| Voltage proof | 500 V AC for one minute (between aluminium case and connections) | Less than 1 mA |

■ Data table (approx.)

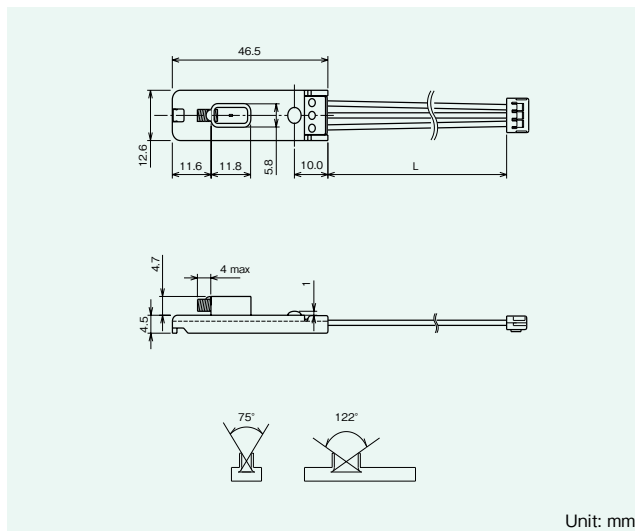
| Compensation temperature (°C) | Compensation output (Vc) | Roller temperature (°C) | | | | | | | | | | | | | | | | | | | |
|-------------------------------|--------------------------|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 0 | 20 | 40 | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | | | | | | |
| | | Measurement output (Vd) | | | | | | | | | | | | | | | | | | | |
| 0 | 4.838 | 4.838 | 4.836 | 4.834 | 4.831 | 4.827 | 4.823 | 4.818 | 4.812 | 4.805 | 4.797 | 4.787 | 4.775 | 4.760 | 4.741 | | | | | | |
| 10 | 4.758 | | 4.757 | 4.754 | 4.750 | 4.745 | 4.740 | 4.733 | 4.726 | 4.716 | 4.706 | 4.692 | 4.677 | 4.658 | 4.634 | | | | | | |
| 20 | 4.651 | | 4.651 | 4.646 | 4.641 | 4.635 | 4.628 | 4.620 | 4.610 | 4.599 | 4.585 | 4.569 | 4.549 | 4.525 | 4.496 | | | | | | |
| 30 | 4.509 | | | 4.506 | 4.500 | 4.493 | 4.484 | 4.474 | 4.462 | 4.448 | 4.431 | 4.411 | 4.388 | 4.359 | 4.325 | | | | | | |
| 40 | 4.331 | | | 4.331 | 4.323 | 4.315 | 4.304 | 4.292 | 4.278 | 4.262 | 4.242 | 4.219 | 4.191 | 4.158 | 4.119 | | | | | | |
| 50 | 4.115 | | | | 4.110 | 4.100 | 4.088 | 4.075 | 4.059 | 4.040 | 4.018 | 3.992 | 3.961 | 3.925 | 3.881 | | | | | | |
| 60 | 3.863 | | | | | 3.863 | 3.852 | 3.839 | 3.824 | 3.806 | 3.786 | 3.762 | 3.734 | 3.701 | 3.662 | 3.615 | | | | | |
| 70 | 3.581 | | | | | | 3.574 | 3.561 | 3.545 | 3.527 | 3.505 | 3.481 | 3.452 | 3.418 | 3.377 | 3.329 | | | | | |
| 80 | 3.277 | | | | | | | 3.277 | 3.263 | 3.247 | 3.228 | 3.207 | 3.183 | 3.154 | 3.120 | 3.079 | 3.032 | | | | |
| 90 | 2.962 | | | | | | | | 2.955 | 2.939 | 2.922 | 2.901 | 2.877 | 2.849 | 2.816 | 2.778 | 2.732 | | | | |
| 100 | 2.648 | | | | | | | | | 2.648 | 2.633 | 2.616 | 2.597 | 2.575 | 2.549 | 2.518 | 2.482 | 2.440 | | | |
| 110 | 2.344 | | | | | | | | | | 2.337 | 2.322 | 2.304 | 2.284 | 2.260 | 2.233 | 2.200 | 2.162 | | | |
| 120 | 2.058 | | | | | | | | | | | 2.058 | 2.045 | 2.029 | 2.011 | 1.991 | 1.966 | 1.938 | 1.904 | | |
| 130 | 1.796 | | | | | | | | | | | | 1.790 | 1.777 | 1.761 | 1.743 | 1.723 | 1.698 | 1.669 | | |
| 140 | 1.560 | | | | | | | | | | | | | 1.560 | 1.549 | 1.536 | 1.521 | 1.503 | 1.482 | 1.458 | |
| 150 | 1.352 | | | | | | | | | | | | | | | 1.347 | 1.336 | 1.323 | 1.309 | 1.291 | 1.271 |

Measurement conditions

Applied voltage (E): 5 V Resistor resistance (R1, R2): 33 kΩ Blackbody roller: φ 40 mm Installation distance: 5 mm

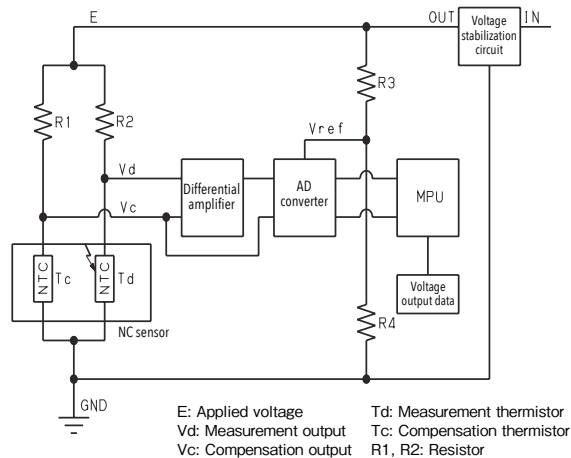
Unit: V

■ Dimensions



Unit: mm

■ Temperature conversion circuit example



E: Applied voltage
Vd: Measurement output
Vc: Compensation output
Td: Measurement thermistor
Tc: Compensation thermistor
R1, R2: Resistor