

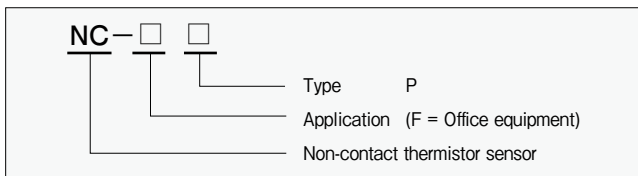
## ■ Non-contact (IR) temperature sensor

# 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.)

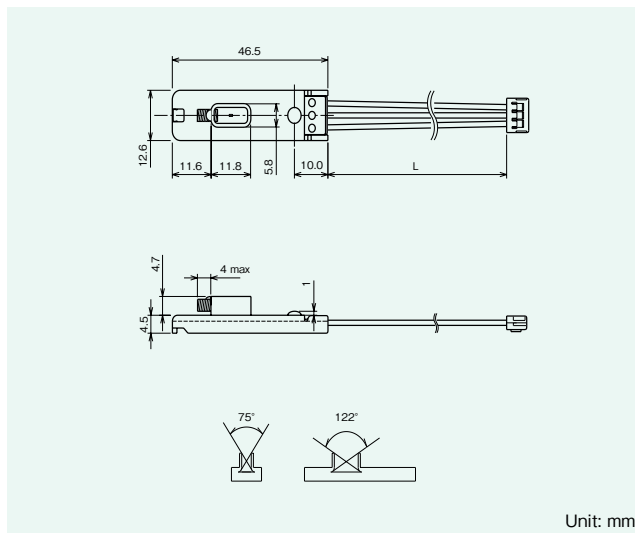
Compensation temperature (°C)	Compensation output (Vc)	Roller temperature (°C)																		
		0	20	40	60	80	100	120	140	160	180	200	220	240	260					
		Measurement output (Vd)																		
0	4.838	4.838	4.836	4.834	4.831	4.827	4.823	4.818	4.812	4.805	4.797	4.787	4.775	4.760	4.741					
10	4.758		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

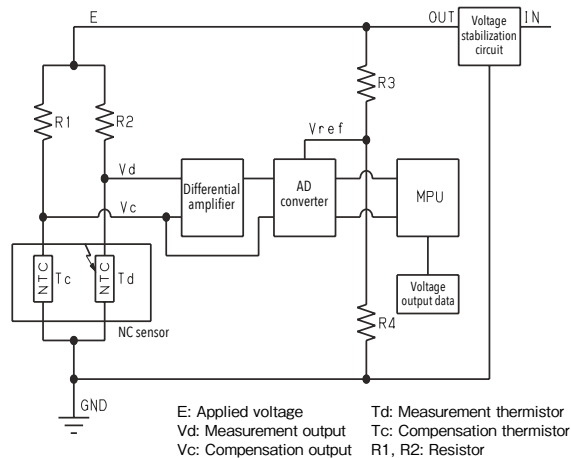
Unit: V

### ■ 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