

# NTC Sensor

Assembly products

# NTCGP • NTCDP • NTCRP series

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<b>NTCGP</b>	<b>NTC Sensor Assembly (Multilayer element)</b>
<b>NTCDP</b>	<b>NTC Sensor Assembly (Glass-encapsulated Axial Lead)</b>
<b>NTCRP</b>	<b>NTC Sensor Assembly (Glass-encapsulated Radial Lead)</b>

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# NTC Sensor

## Assembly products

Product compatible with RoHS directive  
Compatible with lead-free solders

# Overview of the NTCGP · NTCDP · NTCRP

## PRODUCT LINEUP

### NTCGP Series

Resin DIP type

NTCGP3UH153HCJDAA

Lug terminal type

NTCGP3UG503HCZCCA



### NTCDP Series

Epoxy plastic case type

NTCDP4AG103JCDBBA

Epoxy fastening screw type

NTCDP4AG103HCFBAA

ABS plastic case type

NTCDP3SX202XCBBAA



Plastic case type / Oil temperature sensor

NTCDP3LF720JXHCEA

Plastic case type / ATF oil temperature sensor

NTCDP3LG111XXHBEA



### NTCRP Series

PPS Resin Case Type/ 200°C Heat Resistance

NTCRP3VG332JDGBEA

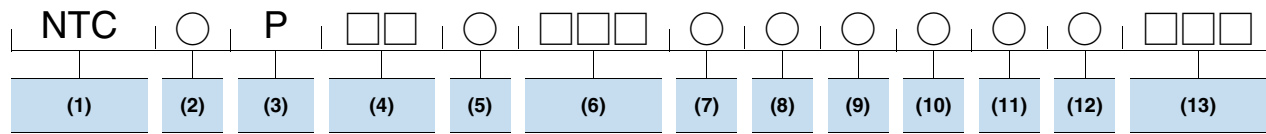


○ RoHS Directive Compliant Product: See the following for more details related to RoHS Directive compliant products. <http://product.tdk.com/en/environment/rohs/>

⚠ Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use.  
Please note that the contents may change without any prior notice due to reasons such as upgrading.

# Overview of the NTCGP · NTCDP · NTCRP

## PART NUMBER CONSTRUCTION



(1) This code denotes NTC Sensor.

(2) Structural classification code

G	Multilayer element
D	Glass-encapsulated axial lead
R	Glass-encapsulated radial lead

(3) Assembly product

(4) B constant (Resistance temperature characteristics)

This code indicates the value of B constant using a combination of one numeric and one alphabetic character.

Numeric code	B constant (K)	Alphabetic code	B constant (K)
1	1000	A	0 to 50
2	2000	B	51 to 100
3	3000	C	101 to 150
4	4000	D	151 to 200
5	5000	E	201 to 250

Note: Although B constants are expressed as 1A, 1B, 2A, 2B, etc. using these two tables, the alphabetic characters do not denote tolerances; they have the meaning shown in the example below.

(Example)

1A=1000 (K)

1A=1050 (K)

That is, the alphabetic character (in this example, A) indicates the range of values that can be specified by the thermistor user.

F	251 to 300
G	301 to 350
H	351 to 400
J	401 to 450
K	451 to 500
L	501 to 550
M	551 to 600
N	601 to 650
P	651 to 700
Q	701 to 750
R	751 to 800
S	801 to 850
T	851 to 900
U	901 to 950
V	951 to 999

(5) B constant tolerance

This code indicates tolerances using the following code.

Code	Tolerance (%)
F	±1
G	±2
H	±3
J	±5
K	±10
X	Others

(6) Nominal resistance

This code indicates the resistance value existing at the specified ambient temperature by two significant digits followed by the digit 0 (zero).

(Example)

470Ω	471
5kΩ	502
10kΩ	103
150kΩ	154

(7) Nominal resistance tolerance

Tolerance is identified by the following codes.

Code	Tolerance (%)
F	±1
G	±2
H	±3
J	±5
K	±10
X	Others

(8) Ambient temperature for nominal resistance

Ambient temperatures for specified nominal-resistance values are indicated using the following codes.

Code	Ambient temperature (°C)
A	-20
B	0
C	25
D	100
E	200
F	300
G	20
X	Others

(9) Envelope structural code

A	ABS resin case ø8.0mm	J	Dipping type
B	ABS resin case ø6.8mm	K	Polyester resin mold
C	ABS resin case ø6.0mm	L	Copper case ø6.0mm
D	Epoxy resin case ø5.5mm	M	Copper case ø5.0mm
E	Epoxy resin case ø6.0mm	N	Composite type
F	Epoxy resin case with screw hole	Z	Lug terminal type
G	PPS resin case	X	Others
H	PPS resin mold		

(10) Dimensional code of length

A	150mm max.	D	501 to 800mm
B	151 to 300mm	E	801 to 1000mm
C	301 to 500mm	F	1000mm min.

(11) Insulation material code of lead wire

A	Vinyl chloride (Heat resistance: 105°C)
B	Cross-link vinyl chloride (Heat resistance: 105°C)
C	Cross-link polyethylene (Heat resistance: 125°C)
D	Silicone
E	Fluorocarbon polymer
F	Cross-link polyethylene (Heat resistance: 150°C)
Z	Others

(12) Terminal shape's code

A	Strip wire	C	With connector
B	With terminal	Z	Others

(13) TDK internal code

# NTCGP Series (Multilayer element)

## Resin DIP type NTCGP3UH153HCJDAA

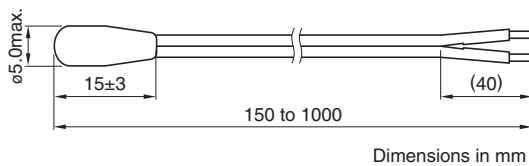
### FEATURES

- Adopts a multilayer element type NTC thermistor.
- Fast heat responsiveness due to its small size.
- Lead-free product.

### APPLICATION

- Room temperature detection (air conditioners, fan heaters etc.)
- Temperature control (surface of toilet seats with warm water washing feature, etc.)
- Water temperature detection (hot water pots etc.)
- Temperature detection (refrigerator compartments, heated carpets etc.)

### SHAPE & DIMENSIONS



### CHARACTERISTICS

Nominal resistance	$R_{25}=15k\Omega/20k\Omega/50k\Omega\pm 3\%$
B constant	$B_{25/50}=3950K\pm 3\%$
Operating temperature range	-20 to +80°C
Thermal time constant	6s max.[in still water]
Heat dissipation constant	2.8mW/°C[in still air]

- Contact us for the other specification product about nominal resistance value and B constant.

### SPECIFICATIONS

Thermistor	Multilayer element type
Resin	Epoxy resin
Wires	AWG26 (Sn-plated $\phi 0.16\text{mm} \times 7$ ) parallel cable with vinyl chloride sheath (heat proof 105°C)
End finish	Different specifications available including stripped, crimped and connector fitted.

# NTCGP Series (Multilayer element)

## Lug terminal type NTCGP3UG503HCZCCA

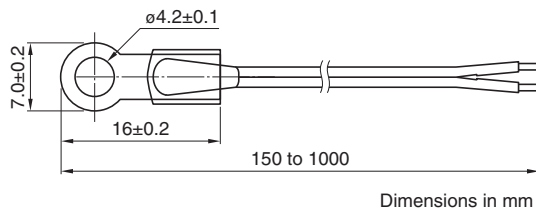
### FEATURES

- Possible to affix using a fastening screw and to perform stable temperature detection of the mounting surface.
- Can be used for a wide temperature range (−40°C to +150°C).
- Can be installed in vehicles.

### APPLICATION

- Temperature detection (Inverters for solar power generation and projectors)
- Substrate temperature detection (Converters for HEVs and EVs)

### SHAPE & DIMENSIONS



### CHARACTERISTICS

Nominal resistance*1	R <sub>25</sub> =50kΩ±3%
B constant*1	B <sub>25/50</sub> =3950K±2%
Operating temperature range*2	−40 to +125°C
Thermal time constant	6s max.[in still water]
Heat dissipation constant	3mW/°C[in still air]

• Contact us for the other specification product about nominal resistance value and B constant.

\*1 R<sub>25</sub>: Compatible with the 5kΩ to 50kΩ range, B<sub>25/50</sub>: Compatible with the 3400K to 4100K range

\*2 Can be compatible with a heat resistance of +150°C

### SPECIFICATIONS

Thermistor	Multilayer element type
Resin	Epoxy resin
Wires	Seven AWG26 parallel lines with polyethylene (125°C) vinyl chloride/0.16 mm, Sn-plated
End finish	Different specifications available including stripped, crimped and connector fitted.

# NTCDP Series (Glass-encapsulated Axial Lead)

## Epoxy plastic case type NTCDP4AG103JCDBBA

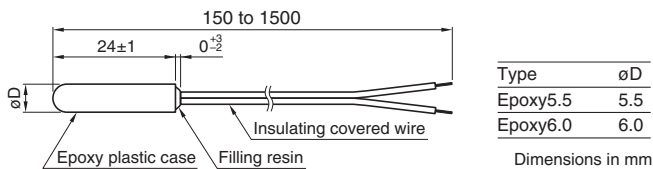
### FEATURES

- Excellent in high reliability, high responsiveness, high heat resistance.
- Two types are available.
  - Epoxy (ø5.5mm) type: Priority given to heat responsiveness
  - Epoxy (ø6.0mm) type: Compatible with copper case type of ø6.0mm

### APPLICATION

Temperature detection of refrigerator and vending machine compartments  
(Air conditioners, refrigerators, vending machines, dishwashers, etc.)

### SHAPE & DIMENSIONS



### CHARACTERISTICS

<b>Nominal resistance</b>	$R_{25}=10k\Omega \pm 5\%$
<b>B constant</b>	$B_{25/85}=4000K \pm 2\%$
<b>Operating temperature range</b>	$-40$ to $+150^{\circ}C$
<b>Thermal time constant</b>	15s max.[in still water]
<b>Heat dissipation constant</b>	$3.3mW/^{\circ}C$ [in still air]

- Contact us for the other specification product about nominal resistance value and B constant.

# NTCDP Series (Glass-encapsulated Axial Lead)

## Epoxy fastening screw type NTCDP4AG103HCFCBA

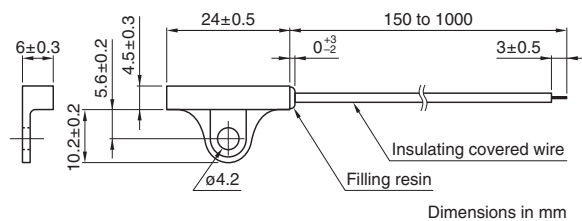
### FEATURES

- Excellent in high reliability, high responsiveness, high heat resistance.
- Fastening screw type; Superior surface temperature detection.

### APPLICATION

Temperature detection of refrigerator and vending machine compartments  
(Air conditioners, refrigerators, vending machines, dishwashers, etc.)

### SHAPE & DIMENSIONS



### CHARACTERISTICS

Nominal resistance	$R_{25}=10k\Omega \pm 3\%$
B constant	$B_{25/85}=4000K \pm 2\%$
Operating temperature range	-40 to +150°C
Thermal time constant	15s max.[in still water]
Heat dissipation constant	3.3mW/°C[in still air]

- Contact us for the other specification product about nominal resistance value and B constant.

# NTCDP Series (Glass-encapsulated Axial Lead)

## ABS plastic case type NTCDP3SX202XCBBA

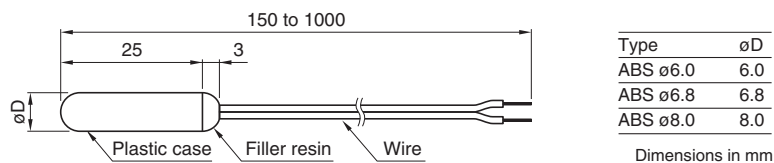
### FEATURES

- Uses a plastic case that is compliant to Food Hygiene Act.
- Highly water-proof.
- Inexpensive.

### APPLICATION

Refrigerators, automatic vending machines, air-conditioners.

### SHAPE & DIMENSIONS



### CHARACTERISTICS

<b>Nominal resistance</b>	$R_3=5.6k\Omega \pm 0.2k\Omega [3^\circ\text{C}]$
<b>B constant</b>	$B_{3/50}=3850K \pm 100K$
<b>Operating temperature range</b>	$-40$ to $+85^\circ\text{C}$
<b>Thermal time constant</b>	30s max.[in still water]
<b>Heat dissipation constant</b>	$2.5\text{mW}/^\circ\text{C}$ [in still air]

- Contact us for the other specification product about nominal resistance value and B constant.



# NTCDP Series (Glass-encapsulated Axial Lead)

## Plastic case type/ Oil temperature sensor NTCDP3LF720JXHCEA

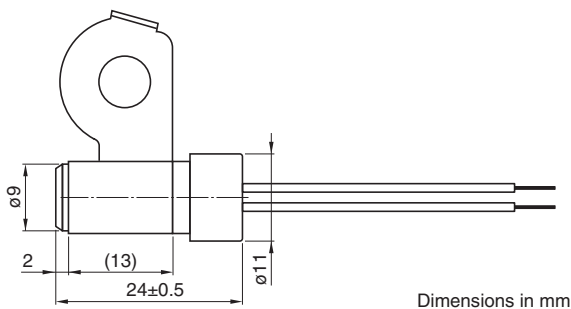
### FEATURES

- High heat resistance.
- Excellent oil resistance and ATF resistance.

### APPLICATION

Oil temperature detection for ATF, transmission oil, oil heaters, etc.

### SHAPE & DIMENSIONS



### CHARACTERISTICS

Nominal resistance	$R_{140}=0.072k\Omega \pm 5\% [140^{\circ}\text{C}]$
B constant	$B_{20/80}=3520K \pm 2\%$
Operating temperature range	$-40$ to $+150^{\circ}\text{C}$
Thermal time constant	60s max.[in still oil]
Heat dissipation constant	$5\text{mW}/^{\circ}\text{C}$ [in still air]

- Contact us for the other specification product about nominal resistance value and B constant.
- When requesting the bracket on which a sensor is fixed, please contact us.

# NTCDP Series (Glass-encapsulated Axial Lead)

## Plastic case type/ ATF oil temperature sensor NTCDP3LG111XXHBEA

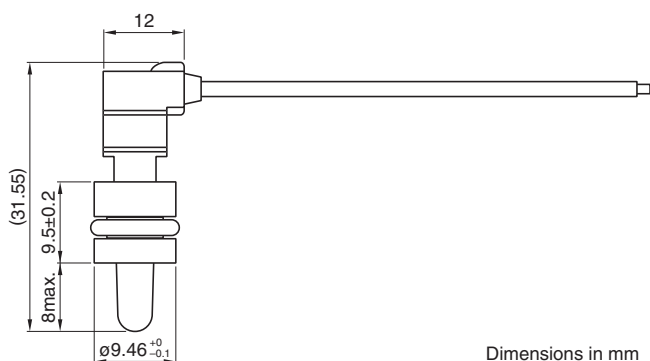
### FEATURES

- High heat resistance.
- Excellent oil resistance and ATF resistance.
- Detection portion is sealed by an O-ring allowing for direct detection of oil temperature.

### APPLICATION

Oil temperature detection for ATF, transmission oil, oil heaters, etc.

### SHAPE & DIMENSIONS



Dimensions in mm



### CHARACTERISTICS

<b>Nominal resistance</b>	$R_{145}=0.111\text{k}\Omega\pm 2.5\%$
<b>B constant</b>	$B_{25/85}=3528\text{K}\pm 2\%$
<b>Operating temperature range</b>	-40 to +150°C
<b>Thermal time constant</b>	15s max.[in still oil]
<b>Heat dissipation constant</b>	3.5mW/°C[in still air]

- Contact us for the other specification product about nominal resistance value and B constant.

# NTCRP Series (Glass-encapsulated Radial Lead)

PPS Resin Case Type/ 200°C Heat Resistance NTCRP3VG332JDGBEA

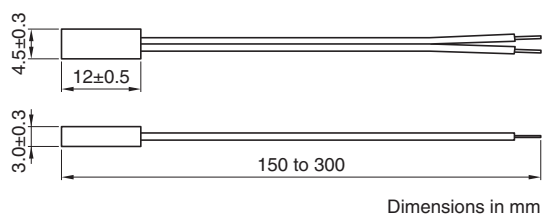
## FEATURES

- Excellent ATF resistance.
- Operating temperature range: -40 to +200°C
- Fast heat responsiveness due to its small size.  
Heating time constant  $\approx$  3.3 seconds (25°C→85°C/1 $\tau$  in oil)

## APPLICATION

Coil temperature detection for EV, HEV and PHEV drive motor  
Inner temperature detection for the servomotor used for various industries

## SHAPE & DIMENSIONS



## CHARACTERISTICS

<b>Nominal resistance</b>	$R_{100}=3.3k\Omega\pm 5\%$
<b>B constant</b>	$B_{0/100}=3970K\pm 2\%$
<b>Operating temperature range</b>	-40 to +200°C
<b>Thermal time constant</b>	10s max.[in still oil]
<b>Heat dissipation constant</b>	1.9mW/°C[25°C in still air]

- Contact us for the other specification product about nominal resistance value and B constant.