

Temperature sensor (NTC)
 NTC sensor assembly / systems



NTCGP, NTCRP, NTCDP series

PRODUCT LINEUP

NTCGP series Resin dipping multilayer element

Resin dipping type

Lug terminal type



NTCRP series Glass-encapsulated radial lead

PPS resin case type / 200°C heat resistance



NTCDP series Glass-encapsulated axial lead

PPS resin molding type oil temperature sensor with bracket

PPS resin molding type oil temperature sensor with O-ring

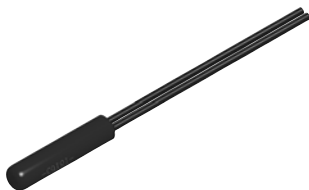


NTCDP series Glass-encapsulated axial lead / for home appliances and industrial machinery

Epoxy resin case type

Epoxy resin case fasten screw type

ABS resin case type

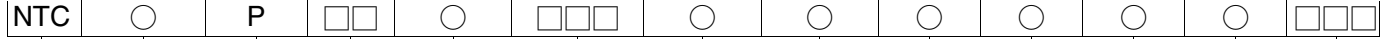


⚠ Please be sure to request delivery specifications that provide further details on the features and specifications of the products for proper and safe use. (1/9)
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Temperature sensor (NTC)
NTC sensor assembly / systems

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PART NUMBER CONSTRUCTION



Series name	Structural classification	Assembly product	B constant (K)	B constant tolerance (%)	Nominal resistance (W)	Resistance tolerance (%)	Standard temperature (°C)	Envelope structural	Dimension of length	Insulation material of lead wire	Wire tip processing	Internal code																															
NTC sensor				<table border="1"> <tr><td>F</td><td>±1</td></tr> <tr><td>G</td><td>±2</td></tr> <tr><td>H</td><td>±3</td></tr> <tr><td>J</td><td>±5</td></tr> <tr><td>K</td><td>±10</td></tr> <tr><td>X</td><td>Others</td></tr> </table>	F	±1	G	±2	H	±3	J	±5	K	±10	X	Others	2 significant digits + power of 10	<table border="1"> <tr><td>F</td><td>±1</td></tr> <tr><td>G</td><td>±2</td></tr> <tr><td>H</td><td>±3</td></tr> <tr><td>J</td><td>±5</td></tr> <tr><td>K</td><td>±10</td></tr> <tr><td>X</td><td>Others</td></tr> </table>	F	±1	G	±2	H	±3	J	±5	K	±10	X	Others	<table border="1"> <tr><td>A</td><td>-20</td></tr> <tr><td>B</td><td>0</td></tr> <tr><td>C</td><td>25</td></tr> <tr><td>D</td><td>100</td></tr> </table>	A	-20	B	0	C	25	D	100				
F	±1																																										
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K	±10																																										
X	Others																																										
A	-20																																										
B	0																																										
C	25																																										
D	100																																										

Structural classification	
G	Multilayer element NTC thermistor
D	Glass-encapsulated axial lead NTC thermistor
R	Glass-encapsulated radial lead NTC thermistor

Envelope structural	
A	ABS resin case type ø8.0mm
B	ABS resin case type ø6.8mm
C	ABS resin case type ø6.0mm
D	Epoxy resin case type ø5.5mm
E	Epoxy resin case type ø6.0mm
F	Epoxy resin case fasten screw type
G	PPS resin case type
H	PPS resin molding type / oil temperature sensor
J	Resin dipping type
N	Composite type
Z	Lug terminal type
X	Others

Wire tip processing	
A	Strip wire
B	With terminal
C	With connector
Z	Others

Insulation material of wire	
A	Vinyl chloride (Heat resistance 105°C)
B	Cross-link vinyl chloride (Heat resistance 105°C)
C	Polyethylene (Heat resistance 125°C)
D	Silicone
E	Fluorocarbon polymer
F	Polyethylene (Heat resistance 150°C)
Z	Others

B constant			
3A	3000 to 3050	4A	4000 to 4050
3B	3051 to 3100	4B	4051 to 4100
3C	3101 to 3150	4C	4101 to 4150
3D	3151 to 3200	4D	4151 to 4200
3E	3201 to 3250	4E	4201 to 4250
3F	3251 to 3300	4F	4251 to 4300
3G	3301 to 3350	4G	4301 to 4350
3H	3351 to 3400	4H	4351 to 4400
3J	3401 to 3450	4J	4401 to 4450
3K	3451 to 3500	4K	4451 to 4500
3L	3501 to 3550	4L	4501 to 4550
3M	3551 to 3600	4M	4551 to 4600
3N	3601 to 3650	4N	4601 to 4650
3P	3651 to 3700	4P	4651 to 4700
3Q	3701 to 3750	4Q	4701 to 4750
3R	3751 to 3800	4R	4751 to 4800
3S	3801 to 3850	4S	4801 to 4850
3T	3851 to 3900	4T	4851 to 4900
3U	3901 to 3950	4U	4901 to 4950
3V	3951 to 3999	4V	4951 to 4999

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

Resin dipping type is the full length of the product.
Others are length of lead wire

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NTCGP series(Resin dipping multilayer element)

Resin dipping type

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.)



SPECIFICATIONS

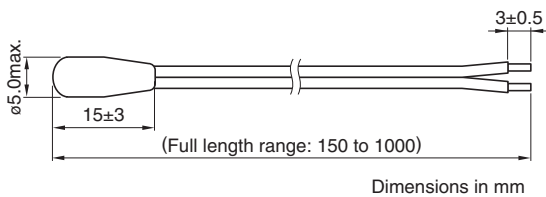
Thermistor	Resin dipping multilayer element type
Wires	AWG26 (Sn-plated 0.16mmx7) parallel cable with vinyl chloride sheath (heat proof 105°C)
Wire tip	Wire strips, crimp terminals, and connectors are available.
Operating temperature range	-40 to +105°C
Heating time constant	6s max. (in still oil)
Heat dissipation constant	2.8mW/°C (in still air)

CHARACTERISTICS SPECIFICATION

Part No.	B constant	Resistance R25	Overall length dimensions	Wire tip
NTCGP3JH103HCJBAA	B25/85 : 3435K±3%	R25 : 10kΩ ±3%	300±10mm	Strip wire
NTCGP3UH153HCJBAA	B25/50 : 3950K±3%	R25 : 15kΩ ±3%	300±10mm	Strip wire
NTCGP3UH503HCJBAA	B25/50 : 3950K±3%	R25 : 50kΩ ±3%	300±10mm	Strip wire

- Contact us for other nominal resistance values and B constants.
- Contact us for other overall length dimensions and tolerances. (Full length range: 150 to 1000 mm)
- Contact us for other tip processing.

SHAPE & DIMENSIONS



Temperature sensor (NTC)
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NTCGP series(Resin dipping multilayer element)

Lug terminal type

FEATURES

- Possible to affix using a fasten screw and to perform stable temperature detection of the mounting surface.
- Can be used for a wide temperature range (-40°C to +125°C).
- Can be installed in vehicles.

APPLICATION

- Temperature detection (inverters for solar power generation and projectors)
- Substrate temperature detection (converters for HEVs and EVs)



SPECIFICATIONS

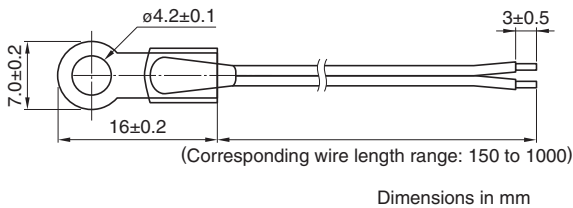
Thermistor	Resin dipping multilayer element type
Wires	AWG26 (Sn-plated 0.16mmx7) parallel cable with polyethylene (heat proof 125°C)
Wire tip	Wire strips, crimp terminals, and connectors are available.
Operating temperature range	-40 to +125°C
Heating time constant	6s max. (in still oil)
Heat dissipation constant	3mW/°C (in still air)

CHARACTERISTICS SPECIFICATION

Part No.	B constant	Resistance R25	Overall length dimensions	Wire tip
NTCGP3JH103HCZCCA	B25/85 : 3435K±3%	R25 : 10kΩ ±3%	400±10mm	Strip wire
NTCGP3UH153HCZCCA	B25/50 : 3950K±3%	R25 : 15kΩ ±3%	400±10mm	Strip wire
NTCGP3UH503HCZCCA	B25/50 : 3950K±3%	R25 : 50kΩ ±3%	400±10mm	Strip wire

- Contact us for other nominal resistance values and B constants.
- Contact us for other wire length dimensions and tolerances. (Corresponding wire length range: 150 to 1000 mm)
- Contact us for other tip processing.

SHAPE & DIMENSIONS



Temperature sensor (NTC)
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NTCRP series(Glass-encapsulated radial lead)

PPS resin case type / 200°C heat resistance

FEATURES

- Excellent ATF resistance.
- Operating temperature range: -40°C to +200°C
- Fast heat responsiveness due to its small size.

APPLICATION

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



SPECIFICATIONS

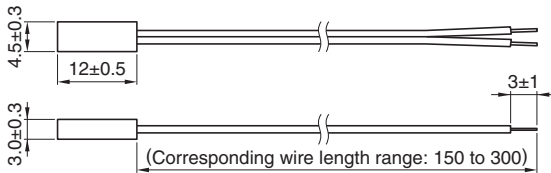
Thermistor	Glass-encapsulated radial lead
Wires	Fluorinated wire
Wire tip	Wire strips, crimp terminals, and connectors are available.
Operating temperature range	-40 to +200°C
Heating time constant	10s max. (in still oil)
Heat dissipation constant	1.9mW/°C (in still air)

CHARACTERISTICS SPECIFICATION

Part No.	B constant	Resistance	Wire length dimension	Wire tip
NTCRP3VG332JDGBEA	B0/100 : 3970K±2%	R100 : 3.3kΩ ±5%	300±10mm	Strip wire

- Contact us for other nominal resistance values and B constants.
- Contact us for other wire length dimensions and tolerances. (Corresponding wire length range: 150 to 300 mm)
- Contact us for other tip processing.

SHAPE & DIMENSIONS



Dimensions in mm

Temperature sensor (NTC)
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NTCDP series(Glass-encapsulated axial lead)

PPS resin molding type oil temperature sensor with brackets

FEATURES

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



APPLICATION

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

SPECIFICATIONS

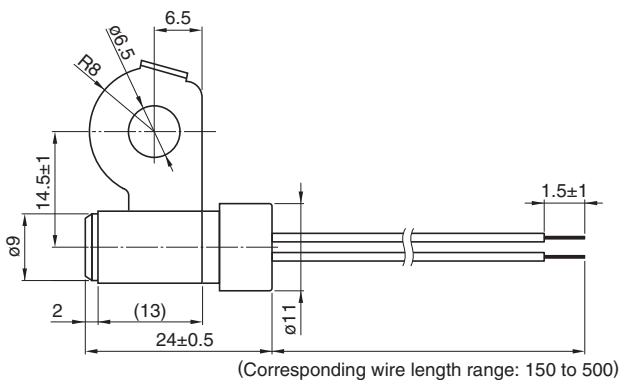
Thermistor	Glass-encapsulated axial lead
Wires	Fluorinated wire
Wire tip	Wire strips, crimp terminals, and connectors are available.
Operating temperature range	-40 to +150°C
Heating time constant	30s max. (in still oil)
Heat dissipation constant	5mW/°C (in still air)

CHARACTERISTICS SPECIFICATION

Part No.	B constant	Resistance	Wire length dimension	Wire tip
NTCDP3LG720JXHCEA	B20/80 : 3520K±2%	R140 : 0.072kΩ ±5%	445±10mm	Strip wire

- Contact us for other nominal resistance values and B constants.
- Contact us for other wire length dimensions and tolerances. (Corresponding wire length range: 150 to 500 mm)
- Contact us for other tip processing.
- Consult with you when you request a change in the dimensions of the bracket to which the sensor is fixed.

SHAPE & DIMENSIONS



Dimensions in mm

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Temperature sensor (NTC)
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NTCDP series(Glass-encapsulated axial lead)

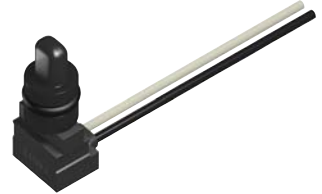
PPS resin molding type oil temperature sensor with O-ring

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.



SPECIFICATIONS

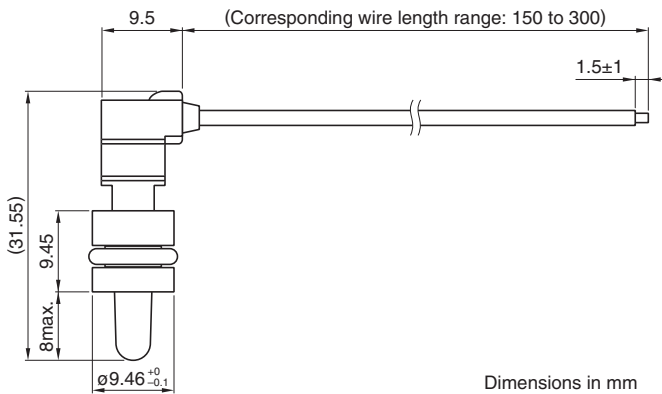
Thermistor	Glass-encapsulated axial lead
Wires	Fluorinated wire
Wire tip	Wire strips, crimp terminals, and connectors are available.
Operating temperature range	-40 to +150°C
Heating time constant	15s max. (in still oil)
Heat dissipation constant	3.5mW/°C (in still air)

CHARACTERISTICS SPECIFICATION

Part No.	B constant	Resistance	Wire length dimension	Wire tip
NTCDP3LG111XXHBEA	B25/85 : 3528K±2%	R145 : 0.111kΩ ±2.5%	210±10mm	Strip wire

- Contact us for other nominal resistance values and B constants.
- Contact us for other wire length dimensions and tolerances. (Corresponding wire length range: 150 to 300 mm)
- Contact us for other tip processing.

SHAPE & DIMENSIONS



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Temperature sensor (NTC)
NTC sensor assembly / systems

NTCDP series(Glass-encapsulated axial lead)

Resin case type for home appliances and industrial machinery

FEATURES

- Excellent in high responsiveness, high heat resistance.
- High reliability with glass-sealed axial lead thermistors.



APPLICATION

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

SPECIFICATIONS

	Thermistor	Wires	Wire tip	Operating temperature range	Heating time constant	Heat dissipation constant
Epoxy resin case type	Glass-encapsulated axial lead	Cross-link vinyl chloride (Heat resistance 105°C)	Strip wire(*1)	-40 to 105°C (*2)	15s max. (in still oil)	3.3mW/°C (in still air)
Epoxy resin case fasten screw type						
ABS resin case type	Glass-encapsulated axial lead	Vinyl chloride (Heat resistance 105°C)	Strip wire(*1)	-40 to 85°C	30s max. (in still oil)	2.5mW/°C (in still air)

(*1) Compatible with crimp terminal and connector.

(*2) Up to 150°C can be supported by changing the wire material.

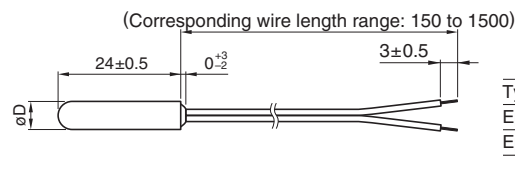
CHARACTERISTICS SPECIFICATION

	Part No.	B constant B25/85	Resistance R20	Wire length dimension	Wire tip
Epoxy resin case type (ø5.5)	NTCDP4AG103JCDBBA	B25/85 : 4000K±2%	R25 : 10kΩ±5%	300±10mm	Strip wire
Epoxy resin case fasten screw type	NTCDP4AG103HCFCBA	B25/85 : 4000K±2%	R25 : 10kΩ±3%	400±10mm	Strip wire
ABS resin case type (ø6.8)	NTCDP3SG562HXBBAA	B3/50 : 3850K±2%	R3 : 5.6kΩ±3%	300±10mm	Strip wire

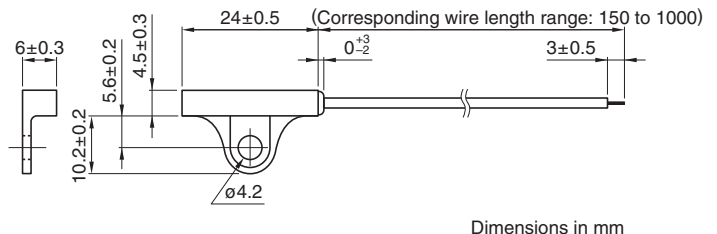
- Contact us for other nominal resistance values and B constants.
- Contact us for other wire length dimensions and tolerances. (Corresponding wire length range: 150 to 1500 mm (Epoxy resin case fasten screw type is 150 to 1000 mm))
- Contact us for other tip processing.

SHAPE & DIMENSIONS

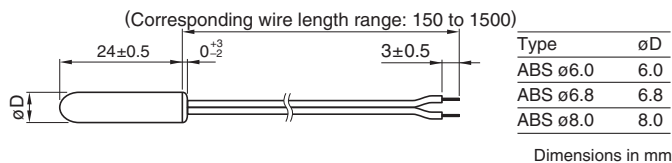
Epoxy resin case type



Epoxy resin case fasten screw type



ABS resin case type



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REMINDER FOR USING

Be sure to request specification sheet before using.

SAFETY WARNING

Pay careful attention to all warnings and operate only in accordance with safety specifications.
Incorrect usage may lead to destroyed NTC thermistors and damages or malfunctions with the devices used.

CAUTION

- Ensure to use thermistors under proper operating and mounting condition and only as specified in a product catalogue or final specification.
- This thermistor is designed for the intended purpose. Do not use for any other purposes.
- Use thermistors only within the specified operating temperature range.
- Use thermistors only within the specified power range.
- The specified dissipation factor of the thermistor must not be exceeded. Exceeding this limit may cause fire through temperature increase with the resistance change of the NTC thermistor.
- Alert consumers that the thermistor in the application must not be touched by bare hands directly.
- The thermistor should be stored in original packaging under the following environment : Temperature: -10°C to $+40^{\circ}\text{C}$
Relative humidity: less than 75%
Avoid rapid temperature change, direct sunshine, corrosive gas, dust, mechanical stress or pressure.
- During design process, be sure to test the application reliability after the thermistor assembly to confirm there is no abnormality.
- Be sure to design safety circuit or prepare same functional sensor to prevent accident when the thermistor is used as sensor.
- Avoid to apply vibration, mechanical shock (drop), or pressure more than specified.
- Avoid to repeat bending the thermistor more than specified.
- Avoid to apply force more than specified.
- Avoid to bend strongly or make external force for outlet of the thermistor of the product is with terminal.
- Fix thermistor head side to bend or cut the lead wire.
- Contacts on lead wire surface should be clean without any stain and rust to avoid contact failure.
- Prepare following countermeasure to prevent the influence of noise.
 - Protection circuit
 - Shield of thermistor (include lead wire).
- Pay attention following items to install the thermistor to prevent malfunction caused by incorrect measurement of thermistor.
 - Prevent the influence of heating element or cooling device so that the thermistor element part
 - When detecting object surface, fix between thermistor and the object by high conductive
- Please take consideration an appropriate fail-safe function in customer application which requires a very high level of operational safety and reliability or could endanger society or human life. Please contact us before using the NTC thermistor assembled for the following application if those malfunction of failure might have serious damage to human life, health or one's property and severe influence on society. Application : cars, aerospace/aviation equipment, medical equipment, nuclear power plant equipment