Surface temperature

SHIBAURA NTC Thermistor

Ceramic casing: fast response

Parts name

PT3M-51F-KN3

Features High insulation property and excellent resistance to pressure
A ceramic case provides high insulation and a shape securing mountability

Applications IH cooking devices

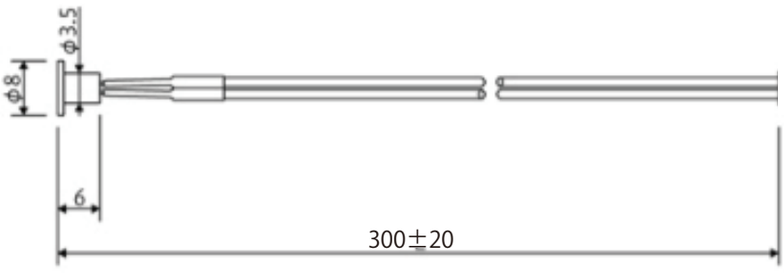
Specifications

Resistance Value	R(100)=3.3KΩ±2.5%	
B Constant	B(0/100) = 3970K±2.5%	
Insulation resistance	Over 100MΩ by DC500V.	
Withstand Voltage	5000VAC for 1 sec.	
Thermal time constant	τ ≒ 1.2 sec	on aluminium plate at 100 ℃
Thermal dissipation constant	δ≒2.0mW/℃	
Operating temperature	-20～300℃	only for the sensing surface

This product is compliant with RoHS directive.

Shape and dimensions

Unit : mm



No	Description	Material
1	Thermistor	PT-51F
2	Protection pipe	Ceramic
3	Insulation tube	Cross linked polvorefin Black
4	Lead wire	Cross linked polyethylene Black (7/0.16)

IMPORTANT SAFETY INFORMATION OF THERMISTORS IN USE

■WARNING

Following instructions must be followed strictly to minimize the risk of burn injury, personal injury or electric shock caused by intense heat, heat evolution or explosion. (Except when such countermeasures as explosion protection or etc are taken.)

Do not touch thermistors by hand or human body when they are self-heated.

Do not use thermistors in the atmosphere of flammable liquid or gas or mist when they are self-heated.

■CAUTION

Following instructions must be strictly observed to minimize the risk of malfunction or damage of equipment in-use, or destruction of NTC thermistors themselves.

Do not use thermistors for any applications other than specified by our product specification, catalogs or instructions at the original design-in meeting, as thermistors are specifically designed for the designated application.

Contact us and ask for instruction by our qualified engineers when you need to re-work thermistors.

Before applying any treatment like resin molding etc around thermistors, be sure to eliminate the risk of thermistors breaking caused by expansion stress of constructional materials.

After thermistors are installed in the equipment at design stage for equipment, be sure nothing abnormal detected in thermistors during reliability evaluation tests to be performed under operation of equipment.

Be careful not to apply any exceeding voltage onto thermistors, which may cause functional failures of equipment due to decreasing of resistance value by self-heating.

Be sure not to exceed the regulated specifications when the type of load generating inrush current is selected and the conditions of time and volume of inrush current is set.

Do not use thermistors beyond the specified operating temperature range.

Do not provide thermistors with the intensive temperature change exceeding the upper limit or lower limit of specified operating temperature range.

Take every possible safety measure such as setting of safety circuit, parallel use of equivalent sensing devise etc to avoid any accidents, when using thermistors as a sensor.

Take following measures under the conditions that some noise may affect.

+ Setting of protection circuit
+ Shield of thermistors (including wires)

When any sealing is applied onto thermistors, apply it after confirming reliability of sealing material by studying kind of sealing material (physical property, chemical property, and weatherproof), applied quantity, hardening condition, adhesive property and etc.

Do not apply any voltage over rated value of withstand voltage between insulated parts and electrodes of thermistors.

Do not use thermistors beyond any range of rated electric power and maximum allowed electric power.

Do not apply onto thermistors with any vibration, shock (dropping etc), pressure over specified values.

Do not repeat bending of electric wires beyond regulations of the specification.

Do not apply any force onto electric wires beyond regulations of the specification.

As for thermistor sensors using PVC caps and PVC electric wires, keep material causing flexible PVC to harden, away from PVC caps and PVC electric wires. Such materials include PS, ABS, silicon, rubber and etc in which plasticizer in PVC migrates over to such PVC caps and PVC electric wires.

Do not pull electric wires and do only pull connector housing or protecting tube portion when either connector or sensor is detached.

Splice connecting parts of electric wires after keeping them in clean condition like contamination-free and rust-free which will cause imperfect electrical contact or loose electrical connection.

Be careful not to melt solder and insulation material making up thermistors, when connecting thermistors with soldering.

Be careful not to contact melted solder or soldering iron onto thermistor elements bodies and insulating parts of electric wires.

As for thermistor sensors with threaded protecting tubes, do not squeeze them at over specified torque.

Do not bend strongly or apply external force near neck of thermistors.

Fix firmly electric wires connected with thermistor elements, when bending or cutting electric wires of thermistors.

Do not use thermistors for longtime in an atmosphere at over 85% relative humidity. (except when such countermeasures as waterproof or etc are taken.)

Enforce fully warning not to touch thermistors to consumers regarding any equipment installing thermistors in touchable condition.

Do not use thermistors in the following atmosphere. (except when such countermeasures as chemical proof or etc are taken.)

+ corrosive gas (Cl2, NH3, SOX, NOX)
+ high conductive atmosphere (electrolyte, water, salt water etc.)
+ acid, alkali, organic solvent
+ concentrated dusty place

■ CAUTION

When using thermisors, the following safety precautions should be taken.

When installing thermistors into equipment, the following precautions should be taken to avoid possibility of malfunction of equipment caused by incorrect temperature detection.

・Install thermistor sensors into equipment in the correct position so that detecting parts of thermistors can measure surrounding temperature precisely without influence by any heating elements or any condensers when thermistor sensors detect temperature of gas, liquid and solid interior.

・When detecting surface temperature of any solid substance, be careful not to get influenced by ambient air or wind by making detecting parts and thermistors stick tightly with the use of good thermally-conductive grease or adhesive. thermistor sensors with threaded protecting tubes.

Take material quality and structure into consideration to avoid creation of contact potential difference between thermistor sensors with threaded protecting tubes and fixing plates, as there is a possibility that function failure of equipment occurs due to corrosion of metal.

Consult with us about installing condition such as mechanical strength in order to prevent thermistor sensors from defectiveness when fixing thermistor sensors by pressing, or squeezing or insertion.

Do not fix other components near self-heating thermistors as there is a possibility to generate malfunction of other components.

Store packed thermistors under condition of ambient temperature 10 ～+40℃、 at under 75℃ relative humidity, avoiding atmosphere with drastic temperature change, direct sunlight, corrosive gas, dust and not to apply any load stress as there is a possibility to generate deterioration and damage to thermistors.

How to handle thermistor elements after unpacking:

Reseal a minimum-lot pack after unpacking a minimum-lot pack for thermistor elements or keep unpacked minimum-lot in a sealed container with drying agent.

If you have any other question on our thermistors for your actual application and operation, please do not hesitate to contact sales staffs of Shibaura Electronics Co., Ltd. □