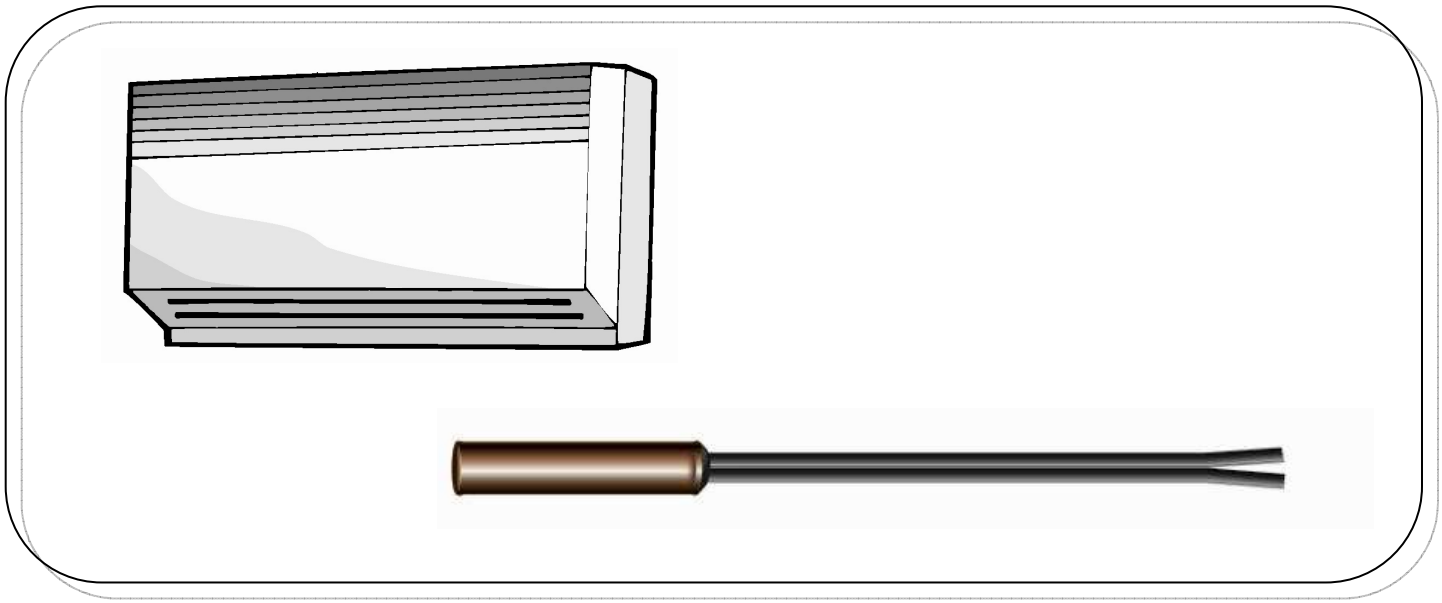
ELITALIA

TKS

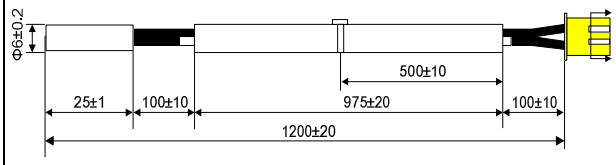
AIRCON
BAKERY
BEVERAGE
BOILER
COOKING
COOLING
DISHWASHING
LAUNDRY
NTSA
NTSE

Temperature Sensor：
Air Conditioning Application



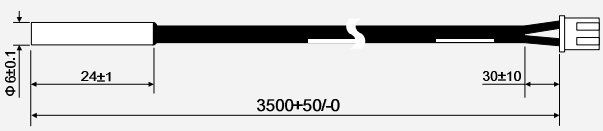
Features	• NTC thermistor immersed into a metal case • Designed for severe environments on the evaporator of HVAC • Customizable design on wire lengths, R/T characteristics, and connectors • Agency recognition: UL /cUL file no. E138827 , VDE file no. 40018581 (partial parts)
Applications	Temperature control for air conditioner
Typical Applications	HVAC

1



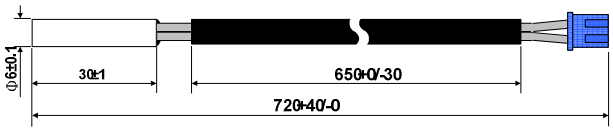
Features	**Φ6×25mm**		
Zero Power Resistance	**R25:10KΩ**	**B25/85**	**3977K**
Thermal Time Constant	**Approx. 10 sec.**	**Power Rating @ 25℃**	**100mW**
Operation Temp. Range	**-30~+100℃**	**Voltage Proof Test**	**1000Vac,1 min**

2

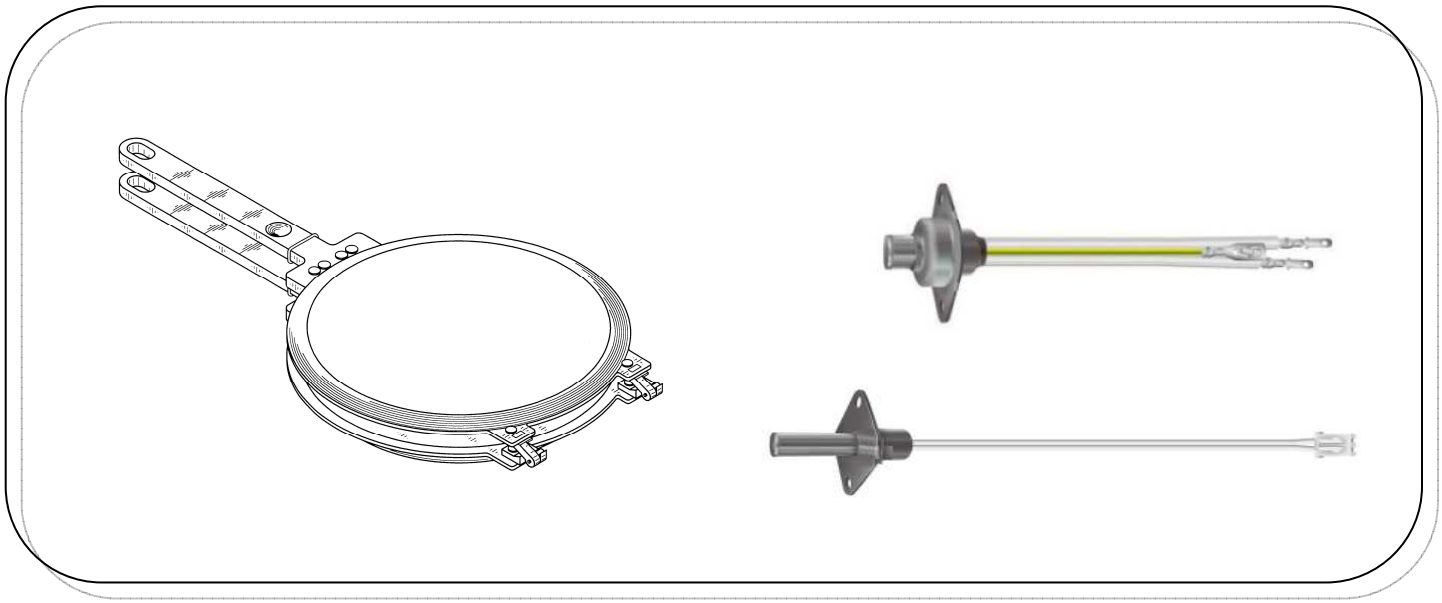


Features	**Φ6×24mm**		
Zero Power Resistance	**R25: 10KΩ**	**B25/50**	**3950K**
Thermal Time Constant	**Approx. 30 sec.**	**Power Rating @ 25℃**	**150mW**
Operation Temp. Range	**-20~+80℃**	**Voltage Proof Test**	**1800Vac, 3sec**

Temperature Sensor：
Air Conditioning Application

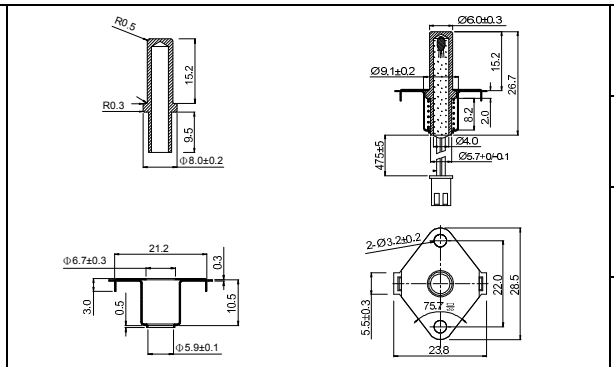
3		Features	Φ6×30mm		
		Zero Power Resistance	R0: 5.9KΩ	B0/50	3400K
		Thermal Time Constant	Approx. 90 sec.	Power Rating @ 25℃	150mW
		Operation Temp. Range	-20~+80℃	Voltage Proof Test	1800Vac,1 sec

Temperature Sensor：
Bakery Appliance



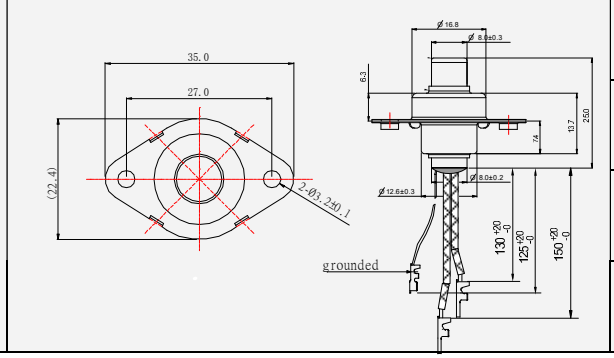
Features	• Pushbutton like design to integrate two functions into one device: temperature detection and heat-up switch. • Durable for high temperature • Short thermal response time • Customizable sensor design of wire lengths, R/T characteristics, and connectors • Agency recognition: UL /cUL file no. E138827
Applications	Surface temperature measurement of small food processing machine heating area
Typical Applications	Waffle maker , bread maker

1



Features	**Screw-on and flatly attach on the surface of heating plate**		
Zero Power Resistance	**R30: 40.118KΩ**	**B0/100**	**3970K**
Thermal Time Constant	**10 sec. (in water)**	**Power Rating @ 25℃**	**40mW**
Operation Temp. Range	**-40~+220℃ (only head)**	**Voltage Proof Test**	**1500Vac ,1sec**

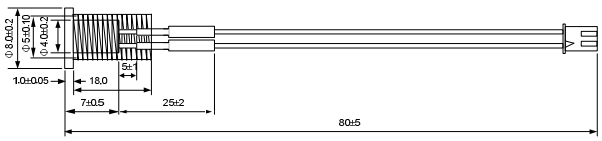
2



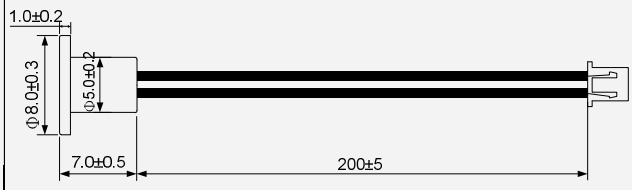
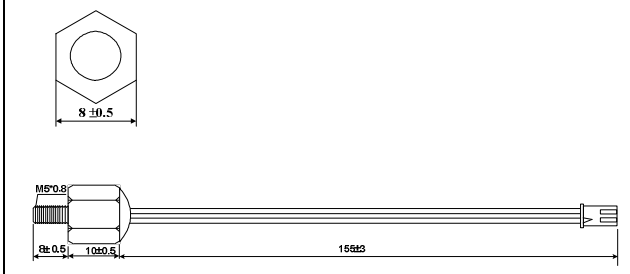
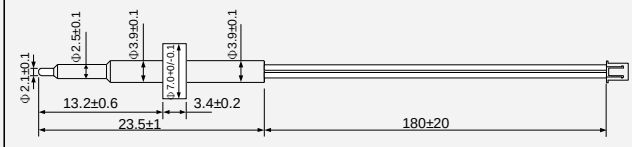
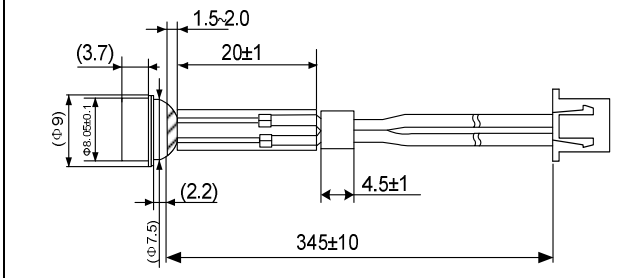
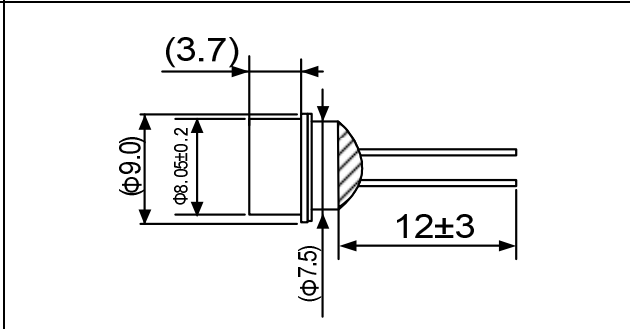
Features	**Screw-on and flatly attach on the surface of heating plate**		
Zero Power Resistance	**R200: 1KΩ**	**B100/200**	**4600K**
Thermal Time Constant	**5 sec.(in water) (From 100 to 200℃)**	**Power Rating @ 25℃**	**70mW**
Operation Temp. Range	**-40~+250℃ (only head)**	**Voltage Proof Test**	**1250Vac ,1sec**

Temperature Sensor：
Beverage Heating Appliances

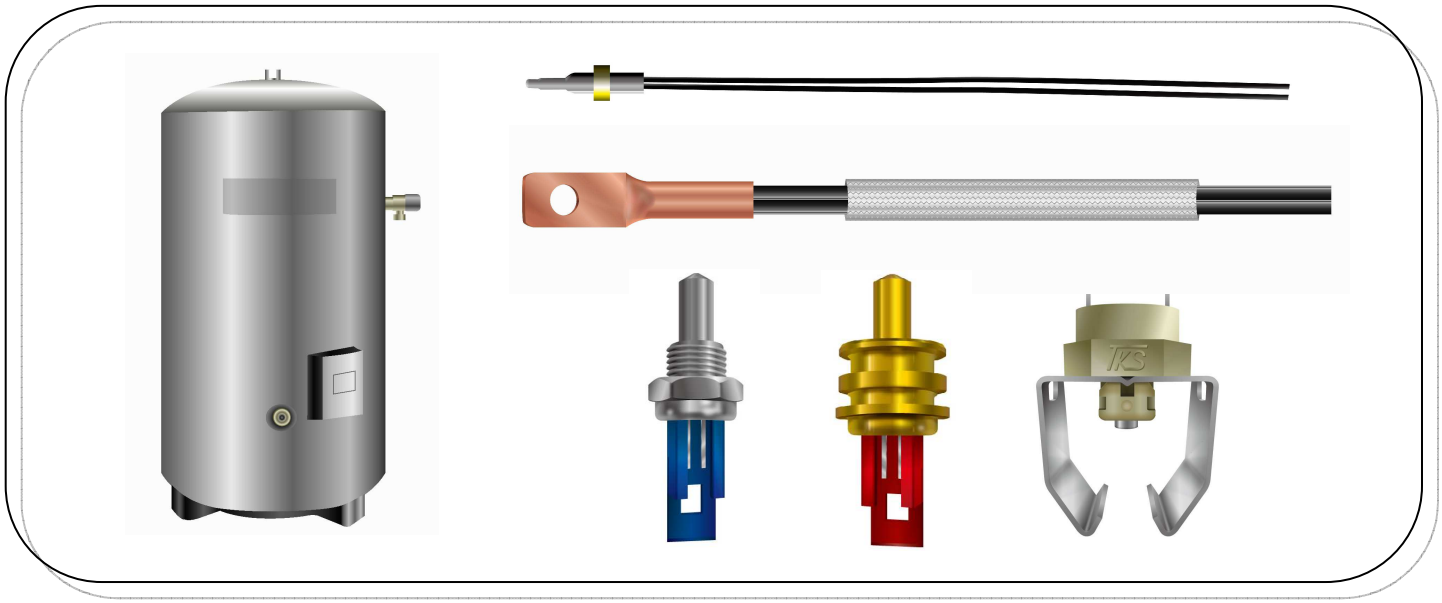
Features	• NTC thermistor potted into a metal case • Designed to be quick responded for high temperature environment • Customizable sensor design of wire lengths, R/T characteristics, and connectors • Agency recognition: UL /cUL file no. E138827 , VDE file no. 40025693 (partial parts)
Applications	Temperature control for various drink related equipments
Typical Applications	Coffee machine , Electric hot-water pot, Milk warmer

1		**Features**	**Flat surface of sensor top with the spring measures temperature**		
		Zero Power Resistance	**R75: 14KΩ**	**B100/200**	**4300K**
		Thermal Time Constant	**Approx. 5 sec.** (From room temp. to 100℃ metal plate)	**Power Rating @ 25℃**	**50mW**
		Operation Temp. Range	**-20~+200℃ (only head)**	**Voltage Proof Test**	**1500Vac, 1 sec**

Temperature Sensor：
Beverage Heating Appliances

2		Features	Flatly attach on heating surface		
		Zero Power Resistance	R25: 100KΩ	B25/85	4085K
		Thermal Time Constant	Approx. 5 sec. (From room temp. to 100℃metal plate)	Power Rating @ 25℃	210mW
		Operation Temp. Range	-40~+150℃	Voltage Proof Test	1500Vac, 1sec
3		Features	Screw-in design for easy installation		
		Zero Power Resistance	R100:6.1828 KΩ	B100/200	4300K
		Thermal Time Constant	Approx. 2 sec. (in water)	Power Rating @ 25℃	75mW
		Operation Temp. Range	-10~+200℃ (only head)	Voltage Proof Test	1500Vac, 1sec
4		Features	Sensor can be soaked directly in the water to measure water (liquid) temperature		
		Zero Power Resistance	R100: 3.3KΩ	B0/100	3970K
		Thermal Time Constant	Approx. 2 sec. (in water)	Power Rating @ 25℃	40mW
		Operation Temp. Range	-20~+120℃	Voltage Proof Test	1500Vac, 1sec
5		Features	Flatly attach on heating surface and suitable for use in steamy environment		
		Zero Power Resistance	R100: 3.3KΩ	B0/100	3970K
		Thermal Time Constant	Approx. 3 sec. (in water)	Power Rating @ 25℃	70mW
		Operation Temp. Range	-20~+180℃	Voltage Proof Test	1500Vac, 1 sec
6		Features	Flatly attach on heating surface and suitable for use in steamy environment		
		Zero Power Resistance	R100: 3.3KΩ	B0/100	3970K
		Thermal Time Constant	Approx. 5 sec. (From room temp. to 100℃metal plate)	Power Rating @ 25℃	40mW
		Operation Temp. Range	-20~+180℃	Voltage Proof Test	1500Vac, 1 sec

Temperature Sensor：
Water Heater Applications

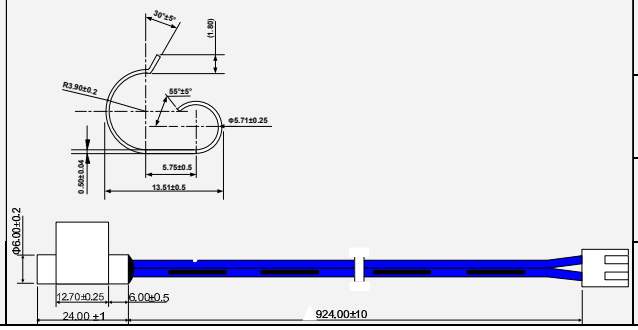


Features	• NTC thermistor potted into a metal case • Resistant to higher temperature and humid environments • Short thermal response time • Customizable sensor design of cable lengths, R/T characteristics, and connectors • Agency recognition: UL /cUL file no. E138827 , VDE file no. 40018581 (partial parts)
Applications	Water temperature measurement
Typical Applications	Electric water heater, gas water boiler in HVAC or domestic

1

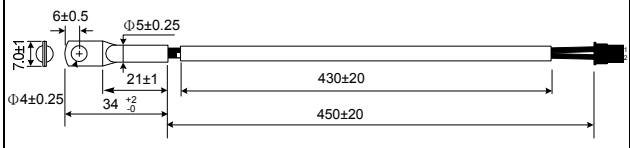
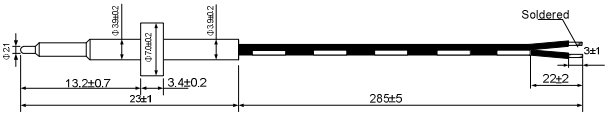
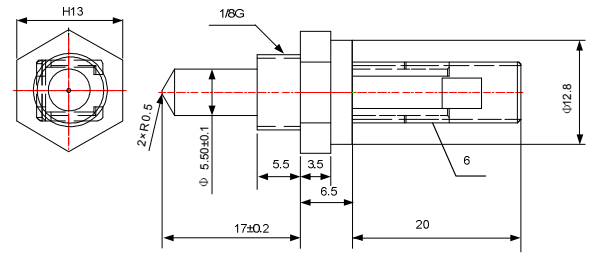
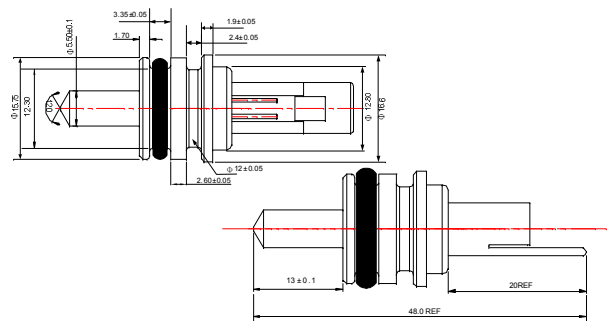
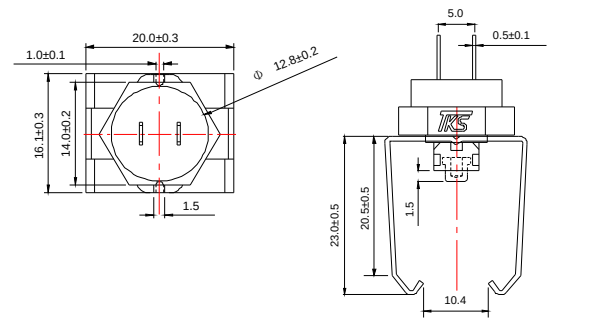
Features	mounted on the pipe to measure fluid temperature		
Zero Power Resistance	R25:10KΩ	B25/85	3975K
Thermal Time Constant	10 sec. (in water)	Power Rating @ 25℃	100mW
Operation Temp. Range	-40~+105℃	Voltage Proof Test	1250Vac,3 sec

2

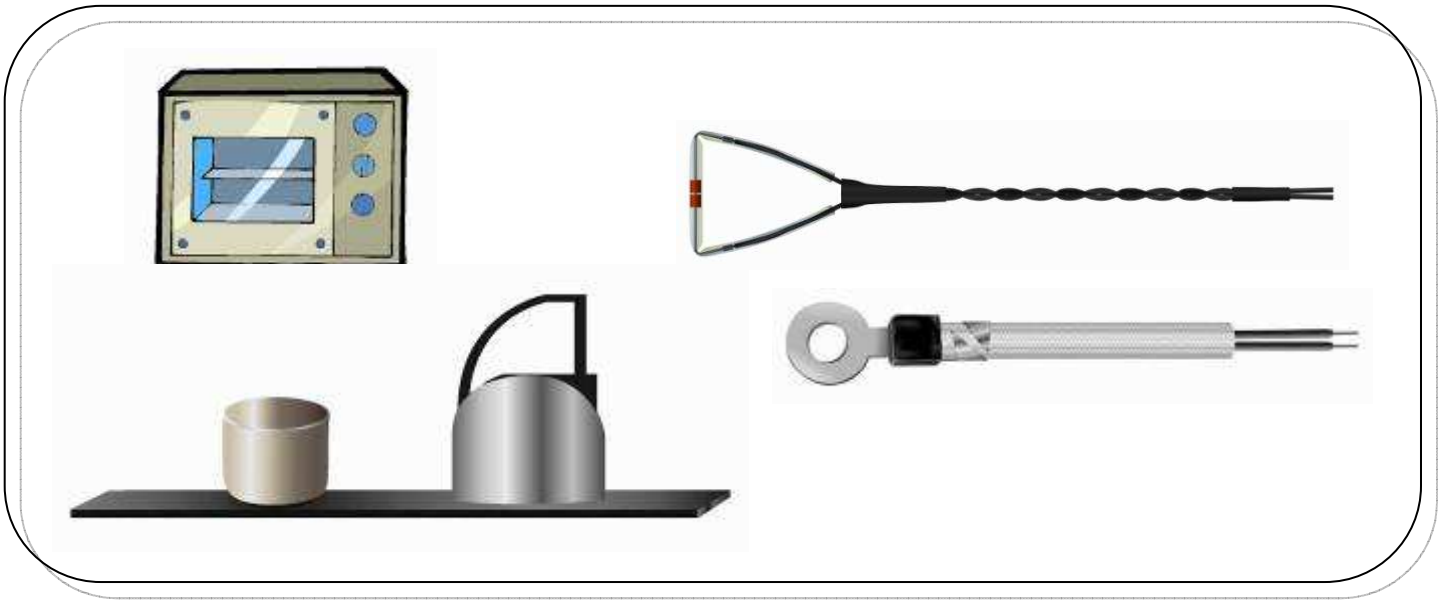


Features	mounted on the pipe to measure fluid temperature		
Zero Power Resistance	R25: 30KΩ	B25/85	3900K
Thermal Time Constant	10 sec. (in water)	Power Rating @ 25℃	240mW
Operation Temp. Range	-40~+105℃	Voltage Proof Test	1250Vac,3sec

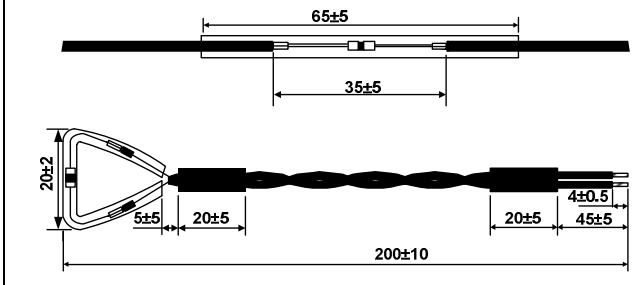
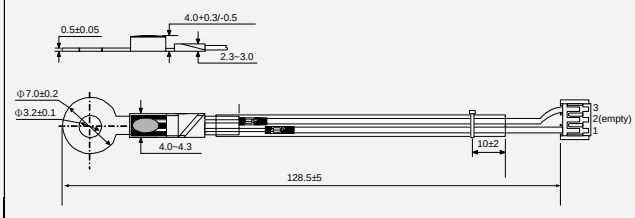
Temperature Sensor：
Water Heater Applications

3		Features	Screw-on design for easy installation		
		Zero Power Resistance	R50:16.83~ 18.55KΩ	B25/85	3417K
		Thermal Time Constant	2 sec. (in water)	Power Rating @ 25℃	50mW
		Operation Temp. Range	-40~+105℃	Voltage Proof Test	1250Vac,3sec
4		Features	Sensor can be soaked directly in the water to measure water (liquid) temperature		
		Zero Power Resistance	R50:3.485KΩ	B0/100	3970K
		Thermal Time Constant	2 sec. (in water)	Power Rating @ 25℃	40mW
		Operation Temp. Range	-20~+120℃	Voltage Proof Test	1500Vac,1sec
5		Features	Sensor can be soaked directly in the water to measure water (liquid) temperature		
		Zero Power Resistance	R25: 10KΩ	B25/85	3435K
		Thermal Time Constant	3 sec. (in water)	Power Rating @ 25℃	45mW
		Operation Temp. Range	-40~+125℃	Voltage Proof Test	2000Vac,2 sec
6		Features	Sensor can be soaked directly in the water to measure water (liquid) temperature		
		Zero Power Resistance	R25: 10KΩ	B25/85	3435K
		Thermal Time Constant	3 sec. (in water)	Power Rating @ 25℃	40mW
		Operation Temp. Range	-20~+110℃	Voltage Proof Test	2000Vac,2 sec
7		Features	Simple clip design for pipe mounting and easy installation		
		Zero Power Resistance	R25: 10KΩ	B25/85	3435K
		Thermal Time Constant	2 sec. (in water)	Power Rating @ 25℃	40mW
		Operation Temp. Range	-20~+120℃	Voltage Proof Test	1000Vac, 1 sec

Temperature Sensor：
Electric Cooking Appliances

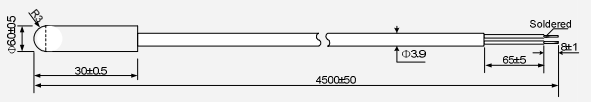


Features	• Durable solution for high temperature • Short thermal response time • Customizable sensor design of wire lengths, R/T characteristics, and connectors • Agency recognition: UL /cUL file no. E138827
Applications	Temperature detection and control for electronic cooking appliances
Typical Applications	Induction oven and stove, microwave oven

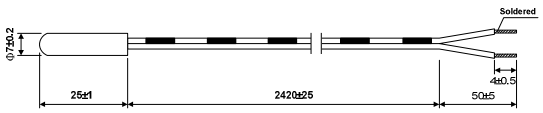
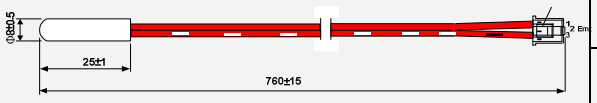
1		**Features**	**Simple installation on the holder**		
		Zero Power Resistance	**R200: 0.55KΩ**	**B100/200**	**4300K**
		Thermal Time Constant	**11 sec. (in air)**	**Power Rating @ 25℃**	**100mW**
		Operation Temp. Range	**-10~+200℃**	**Voltage Proof Test**	**1800Vac, 1sec**
2		**Features**	**screw-on design for easy installation**		
		Zero Power Resistance	**R100: 3.3KΩ**	**B0/100**	**3970K**
		Thermal Time Constant	**Approx. 6 sec. (From room temp. to 100℃ metal**	**Power Rating @ 25℃**	**70mW**
		Operation Temp. Range	**-20~+150℃**	**Voltage Proof Test**	**1800Vac, 1sec**

Temperature Sensor：
Cooling and Freezing Applications

Features	• NTC thermistor in molded plastic case • Highly resistant to water and moisture in cooling and freezing application • Customizable sensor design of wire lengths, R/T characteristics, and connectors • Agency recognition: UL /cUL file no. E138827 , VDE file no. 40018581
Applications	Temperature control for refrigeration equipments
Typical Applications	Refrigerator, freezer

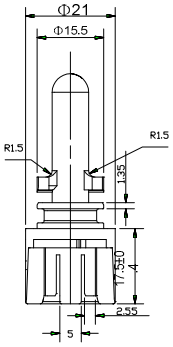
1		**Features**	**Φ5×24mm**		
		Zero Power Resistance	**R20: 19.09KΩ**	**B0/50**	**3850K**
		Thermal Time Constant	**15 sec. (in water)**	**Power Rating @ 25℃**	**150mW**
		Operation Temp. Range	**-40~+85℃**	**Voltage Proof Test**	**1800Vac,1sec**
2		**Features**	**Φ6×30mm**		
		Zero Power Resistance	**R25: 10KΩ**	**B25/80**	**3975K**
		Thermal Time Constant	**20 sec. (in water)**	**Power Rating @ 25℃**	**150mW**
		Operation Temp. Range	**-10~+80℃**	**Voltage Proof Test**	**1800Vac,1sec**

Temperature Sensor：
Cooling and Freezing Applications

3		Features	Φ7×25mm		
		Zero Power Resistance	R-20:19.09KΩ	B0/50	3850K
		Thermal Time Constant	25 sec. (in water)	Power Rating @ 25℃	150mW
		Operation Temp. Range	-40~+85℃	Voltage Proof Test	1800Vac,1 sec
4		Features	Φ8×25mm		
		Zero Power Resistance	R-20:72.54KΩ R-5:33.81KΩ R7:19.28KΩ	B0/100	3670K
		Thermal Time Constant	30 sec. (in water)	Power Rating @ 25℃	150mW
		Operation Temp. Range	-20~+105℃	Voltage Proof Test	1800Vac, 3sec

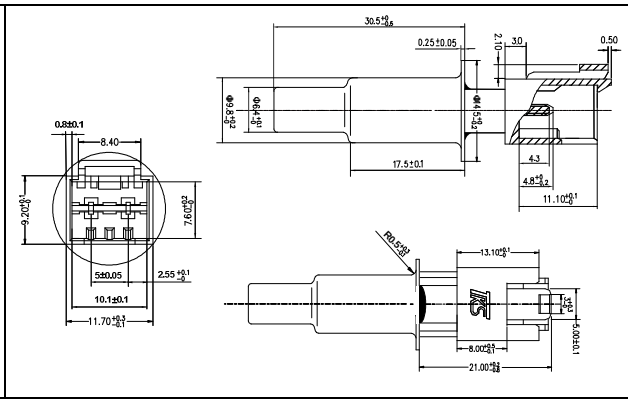
Temperature Sensor：
Dish Washer Applications

Features	• NTC thermistor potted into a plastic case • Fast and easy installation by bayonet mounting • Customizable sensor design of wire lengths, R/T characteristics, and connectors • Agency recognition: UL /cUL file no. E138827
Applications	Water temperature detection and control for dish washer
Typical Applications	Dish washer

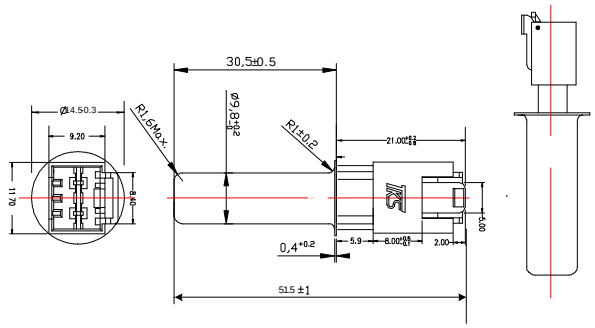
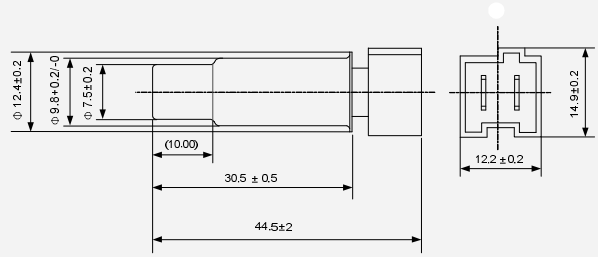
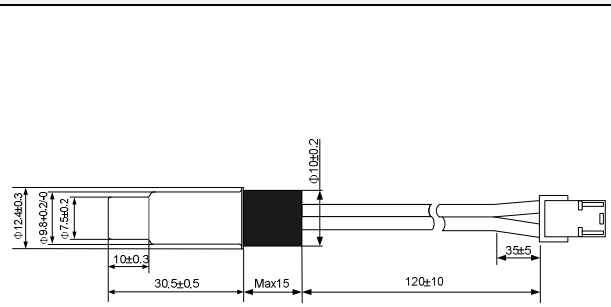
1		**Features**	**Simple screw installation, sensor be soaked directly in the water to measure temperature.**		
		Zero Power Resistance	**R50: 17KΩ**	**B25/50**	**3935K**
		Thermal Time Constant	**60 sec. (in water)**	**Power Rating @ 25℃**	**150mW**
		Operation Temp. Range	**-0~+100℃**	**Voltage Proof Test**	**3750Vac,1min**

Temperature Sensor：
Laundry Applications

Features	• NTC thermistor potted into a metal case • Designed to work under humid and corrosive environments (suds, water) • Fast response time • Customizable sensor design of wire lengths, R/T characteristics, and connectors • Agency recognition: UL /cUL file no. E138827 , VDE file no. 40018581,40034106
Applications	Temperature control for laundry device
Typical Applications	Washing machine

1		**Features**	**RAST 2.5, hook protection, fast response type**	
		Zero Power Resistance	**R60:2.486KΩ**	**B25/85**	**3960K**
		Thermal Time Constant	**6 sec. (in liquid)**	**Power Rating @ 25℃**	**100mW**
		Operation Temp. Range	**-10~+130℃**	**Voltage Proof Test**	**3750Vac,1 min**

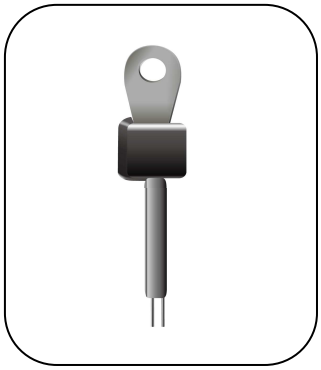
Temperature Sensor：
Laundry Applications

2		Features	RAST 2.5 , hook protection		
		Zero Power Resistance	R25: 4.5872~4.9778KΩ R60: 1.190KΩ	B25/100	3980K
		Thermal Time Constant	18 sec. (in liquid))	Power Rating @ 25℃	150mW@25℃
		Operation Temp. Range	-10~+110℃	Voltage Proof Test	3750Vac,1 sec
3		Features	RAST 5.0		
		Zero Power Resistance	R70: 8.514KΩ	B0/100	3970K
		Thermal Time Constant	13 sec. (in liquid)	Power Rating @ 25℃	150mW
		Operation Temp. Range	-20~+100℃	Voltage Proof Test	1800Vac,3 sec
4		Features	Wired		
		Zero Power Resistance	R60: 3.243KΩ	B25/100	3760K
		Thermal Time Constant	20 sec. (in liquid)	Power Rating @ 25℃	150mW
		Operation Temp. Range	-10~+100℃	Voltage Proof Test	1800Vac,1 sec.

NTC Thermistor Sensor: NTSA Series

Screw-On Type

Feature



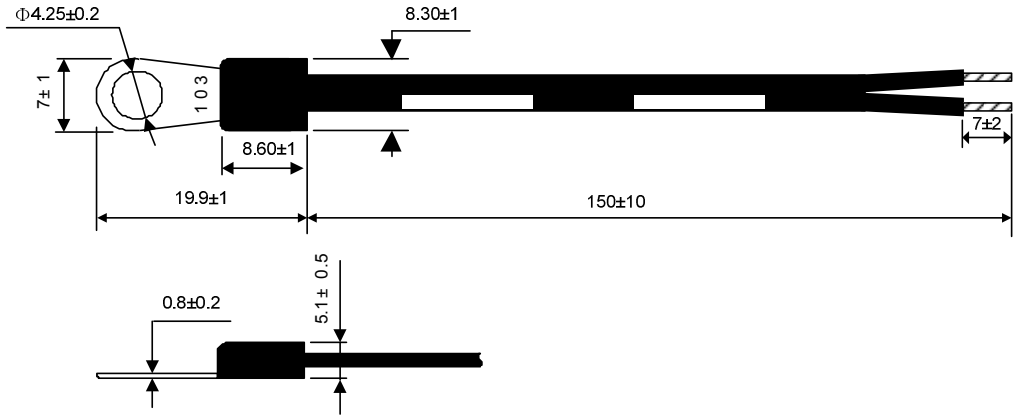
1. Fast and simple screw-on installation
2. RoHS compliant
3. Customizable design (cable lengths, R/T characteristic and connector) is available
4. Agency recognition:
   UL /cUL File no: E138827
   VDE file no: 40025693 (partial parts)

Recommended Applications

1. Power supply
2. UPS
3. Electronic devices

Structure and Dimensions

Type1: M4 terminal

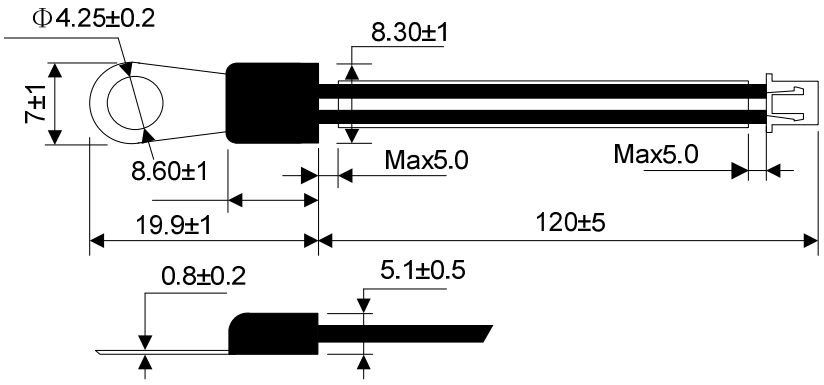


Lead Material	Lead Length	Zero Power Resistance at 25℃ (R_{25})	B25/50	Thermal Time Constant	Power Rating at 25℃	Operation Temp. Range
	(mm)	(KΩ)	(K)	(sec)	(mw)	(℃)
UL4413 #26x2C TS Black	150±10	10	4050	Approx. 30 (on metal plate)	150	-40~125

NTC Thermistor Sensor: NTSA Series

Screw-On Type

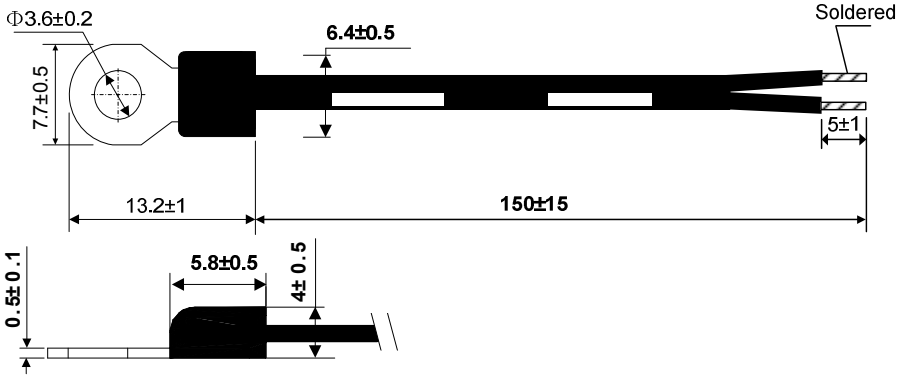
Type 2: M4 terminal + connector



Connector pitch is 2.5mm.

Lead Material	Lead Length	Zero Power Resistance at 25℃ (R_{25})	B25/50	Thermal Time Constant	Power Rating at 25℃	Operation Temp. Range
	(mm)	(KΩ)	(K)	(sec)	(mw)	(℃)
UL1332 # 28 TS Black	120±5	10	3975	Approx. 20 (on metal plate)	240	-20~+150

Type 3: M3 terminal

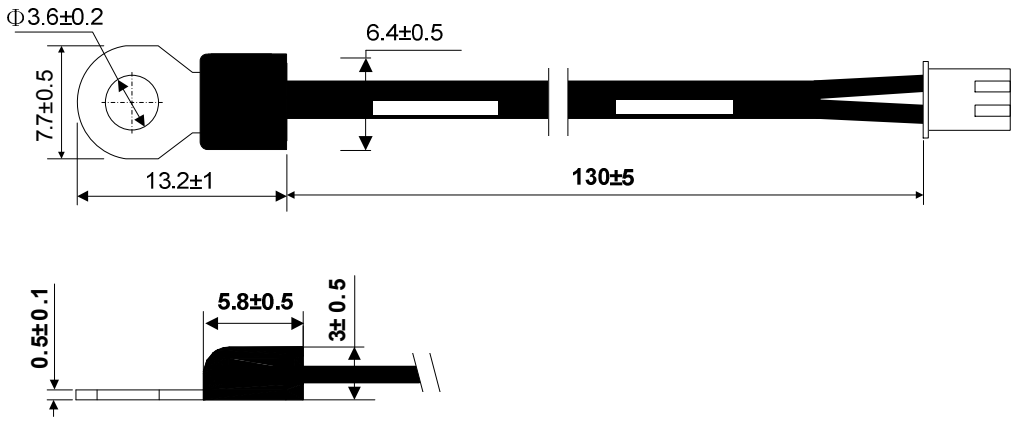


Lead Material	Lead Length	Zero Power Resistance at 25℃ (R_{25})	B25/50	Thermal Time Constant	Power Rating at 25℃	Operation Temp. Range
	(mm)	(KΩ)	(K)	(sec)	(mw)	(℃)
UL4413 #26x2C TS Black	150±15	100	4400	Approx. 30 (on metal plate)	150	-20~+125

NTC Thermistor Sensor: NTSA Series

Screw-On Type

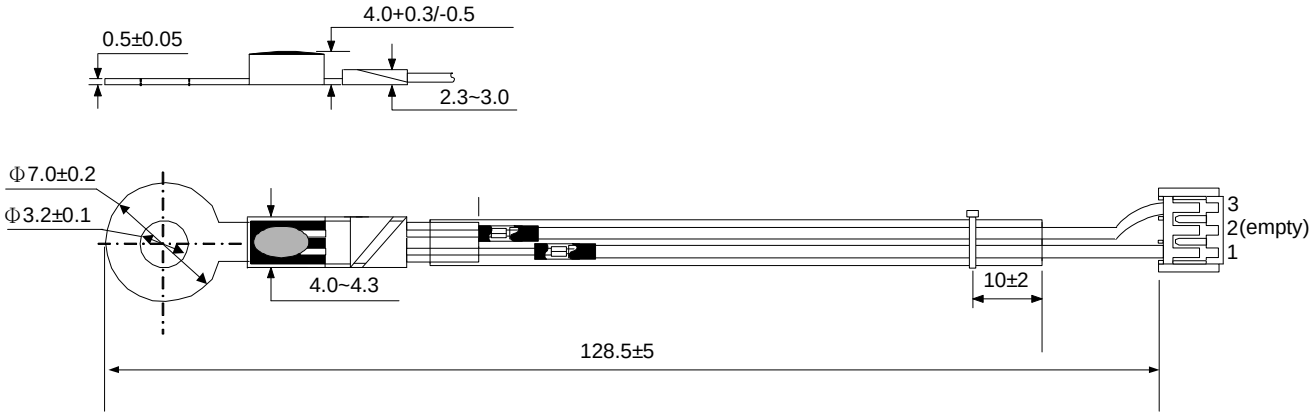
Type 4: M3 terminal + connector



Connector pitch is 2.5mm

Lead Material	Lead Length	Zero Power Resistance at 25℃ (R_{25})	B25/50	Thermal Time Constant	Power Rating at 25℃	Operation Temp. Range
	(mm)	(KΩ)	(K)	(sec)	(mw)	(℃)
UL2651 #28x2C TS Black	130±5	100	4050	Approx. 30 (on metal plate)	210	-20~+105

Type 5: High temp.



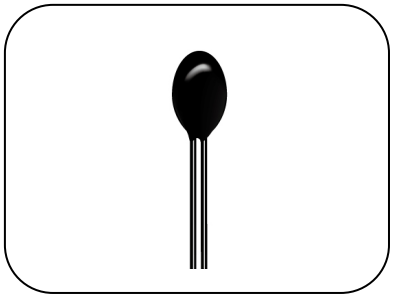
Lead Material	Lead Length	Zero Power Resistance at 25℃ (R_{25})	B25/50	Thermal Time Constant	Power Rating at 25℃	Operation Temp. Range
	(mm)	(KΩ)	(K)	(sec)	(mw)	(℃)
AWG 22 White (Glass Braid Reinforced Silicone Rubber)	128.5±5	3.3	3970	Approx. 6 (on 100℃ metal plate)	70	-20~+150

NTC Thermistor Sensor: NTSE Series

Epoxy Coating Type

Features

1. Small size and short response time
2. Cost effective
3. RoHS compliant
4. Halogen-free series are available
5. Customized cable lengths, R/T characteristic and connector is on demand
6. Agency recognition: UL /cUL, File no :E138827



Recommended Applications

1. Battery
2. Notebook, PCs
3. Fan
4. Electronic devices

Part Number Code

1	2	3	4	5	6	7	8	9	10	11	12	13

Product Type	
NTS	Thinking NTC Sensor NTS type

Series	
E0	Epoxy Coating structure
E1	Epoxy coating Structure& High Temp.

Zero Power Resistance at 25℃ (R_{25})	
102	1KΩ
103	10KΩ
473	47KΩ

Tolerance of R_{25}	
F	±1%
G	±2%
H	±3%
J	±5%
K	±10%

Optional Suffix	
Z	RoHS Compliant
H	RoHS & HF Compliant

No. of Drawing
001~ZZZ

Structure and Dimensions

Type 1: Single wire

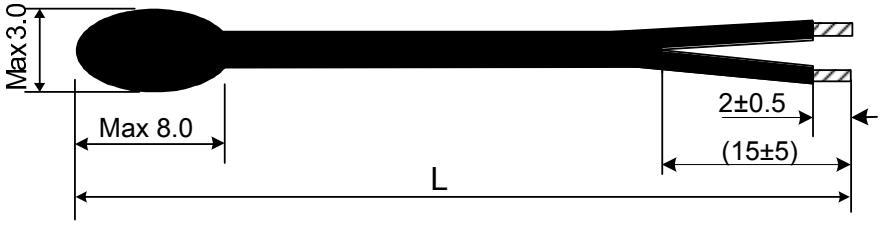
Lead Material	Head Size (W*L1)	Lead Length (L)	Zero Power Resistance at 25℃ (R25)	B25/85 Value	Thermal Time Constant	Power Rating at 25℃	Operation Temp. Range
	(mm)	(mm)	(KΩ)	(K)	(sec)	(mw)	(℃)
UL3302 #28 TS Black	3.0*8.0	25±3	10	3435	Approx. 10 (in water)	210	-10~+105
		30±3					
		35±3					
		40±3					
		45±3					
		50±3					
		130±5					

NTC Thermistor Sensor: NTSE Series

Epoxy Coating Type

Lead Material	Head Size (W*L1)	Lead Length (L)	Zero Power Resistance at 25℃ (R25)	B25/85 Value	Thermal Time Constant	Power Rating at 25℃	Operation Temp. Range
	(mm)	(mm)	(KΩ)	(K)	(sec)	(mw)	(℃)
UL3302 #30 TS Grey	2.6*6.0	25±3	100	4360	Approx. 10 (in water)	210	-10~+105
		40±5					
		50±3					
UL3302 #30 TS Black	2.6*6.0	25±3	10	3435	Approx. 10 (in water)	210	-10~+105
		30±3					
		40±3					
		45±3					
		50±3					
		55±3					
		60±3					
		70±3					
		75±3					
		80±3					
		100±3					
		110±3					
		120±3					
		150±3					
UL3302 #32 TS Black	2.2*6.0	30±3	10	3435	Approx. 10 (in water)	210	-10~+105
		40±3					
		50±3					
		60±3					
		100±3					

Type 2: Parallel wire

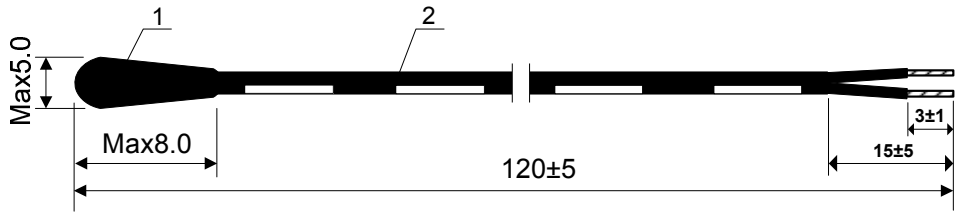


Lead Material	Head Size (W*L1)	Lead Length (L)	Zero Power Resistance at 25℃ (R25)	B25/85 Value	Thermal Time Constant	Power Rating at 25℃	Operation Temp. Range
	(mm)	(mm)	(KΩ)	(K)	(sec)	(mw)	(℃)
UL4469 #30*2C TS Black	2.6*6.0	102±3	10	3435	Approx. 10 (in water)	45	-10~+105
		60±3					

NTC Thermistor Sensor: NTSE Series

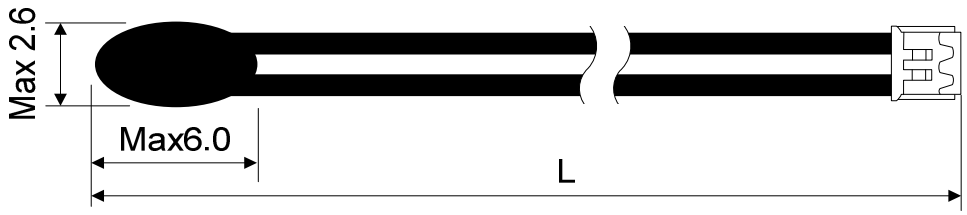
Epoxy Coating Type

Lead Material	Head Size (W*L1)	Lead Length (L)	Zero Power Resistance at 25℃ (R25)	B25/85 Value	Thermal Time Constant	Power Rating at 25℃	Operation Temp. Range
	(mm)	(mm)	(KΩ)	(K)	(sec)	(mw)	(℃)
UL4469 #28*2C TS Black	3.0*8.0	53±2	10	3435	Approx. 10 (in water)	45	-10~+105



Lead Material	Head Size (W*L1)	Lead Length (L)	Zero Power Resistance at 25℃ (R25)	B25/85 Value	Thermal Time Constant	Power Rating at 25℃	Operation Temp. Range
	(mm)	(mm)	(KΩ)	(K)	(sec)	(mw)	(℃)
UL2651 #26 TS Black	5.0*8.0	120±5	6.8	3888	Approx. 15 (in water)	240	-30~+100

Type 3: Single wire with connector



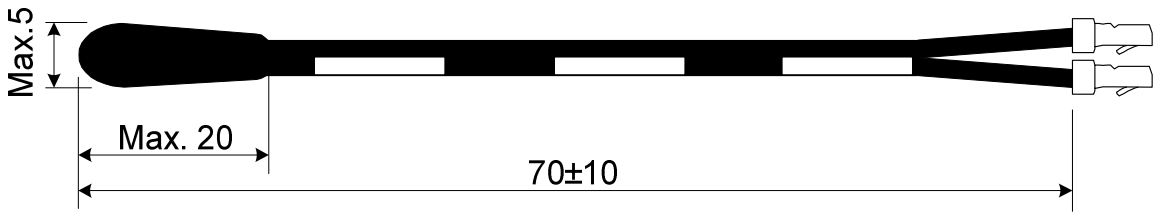
Connector Pitch 1.25mm

Lead Material	Head Size (W*L1)	Lead Length (L)	Zero Power Resistance at 25℃ (R25)	B25/85 Value	Thermal Time Constant	Power Rating at 25℃	Operation Temp. Range
	(mm)	(mm)	(KΩ)	(K)	(sec)	(mw)	(℃)
UL3302 #30 TS Black	2.6*6.0	110±5	100	4360	Approx. 10 (in water)	210	-10~+105

NTC Thermistor Sensor: NTSE Series

Epoxy Coating Type

Type 4: High temperature



Terminal is suitable for Φ1.2mm PCB

Lead Material	Head Size (W*L1)	Lead Length (L)	Zero Power Resistance at 25℃ (R25)	B25/85 Value	Thermal Time Constant	Power Rating at 25℃	Operation Temp. Range
	(mm)	(mm)	(KΩ)	(K)	(sec)	(mw)	(℃)
UL4413 #26*2C TS Black	5*20	70±10	10	3435	Approx. 11 (in water)	240	-40~+150