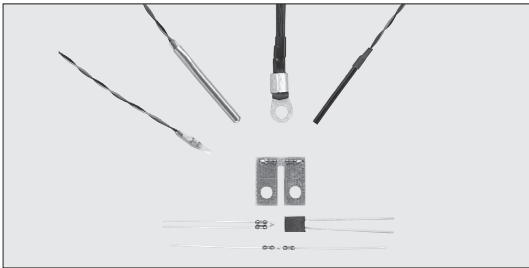


ST Thermal Sensors



■ Features

- All ST-series thermal sensors are custom-made products. ST-series thermal sensors are designed in various shapes in accordance with your application using a platinum thin-film thermal sensor (SDT101 · SDT310series) as an element. Shapes of sensor parts can be designed flexibly to meet your shapes and dimensional needs, from simple resin mold parts to sensor parts sealed in metal protective tubes made of SUS316.
- Products with Pb Free symbol “F” meet EU-RoHS requirements.

■ Applications

- Industrial Equipment : Environment testing machines, Constant-temperature ovens, pH meters, temperature controllers, mass flow meters, etc.
- Service Applications : Vending machines, fryers, steam convection ovens, etc.

■ Type Designation

Example

ST3000 series

ST	31050201	F	A	X	1K	B	D
Product Code	Product No.	Pb Free Symbol	Element Type	Reference Temperature ^{*1}	Nominal Resistance ^{*2}	Resistance Tolerance ^{*2}	T.C.R.Tolerance ^{*2}
			A : SDT101	X : 0°C	100 : 100Ω 500 : 500Ω 1K : 1kΩ	B : ±0.1% C : ±0.2% D : ±0.5% F : ±1%	D : ±0.5% F : ±1% G : ±2%

ST8100 series

ST	8102201	F	B	X	1K	B
Product Code	Product No.	Pb Free Symbol	Element Type	Reference Temperature	Nominal Resistance ^{*2}	Class ^{*2}
			B:SDT310LTC C:SDT310P	X : 0°C	100 : 100Ω 500 : 500Ω 1K : 1kΩ	B:±(0.3+0.005 t)°C C:±(1.0+0.01 t)°C

Full custom products that are not in the catalog have a “-” between the product code and product No.

*1 ST3000 series products with a reference temperature of 25°C(T.C.R. will be calculated between 0°C/100°C) are also available.

Contact us.

*2 These are specified for inner element itself.

Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

■ Specifications

① Elements used for Thermal Sensors ST3000 and ST 8100 Series, and Manufacturing Ranges.

Series	Element	Resistance Value (Ω at 0°C)	Tolerance Class:Tolerance (°C)	Resistance Tolerance (%)	T.C.R. (×10 ⁻⁶ /K)	T.C.R. Tolerance (%)
ST3000 series	SDT101A SDT101B	100 500 1k	—	B : ±0.1 C : ±0.2 D : ±0.5 F : ±1	3500	D : ±0.5 F : ±1 G : ±2
ST8100 series	SDT310LTC SDT310P	100 500 1k	B : ±(0.3+0.005 t) C : ±(1.0+0.01 t)	—	3850	—

ST3000 Series, 1kΩ, resistance tolerance B·C are produced in pair of SDT101 Series.

The combination of ST3000 series, resistance tolerance B-T.C.R. tolerance D is equivalent to class B of SDT310 tolerance to the measuring temperature.

In the above table specification there are restrictions on manufacturing range depending on part number. Please refer to the performance list.

② Shapes of ST3000 and ST8100 series.

ST3000 and ST8100 series are partially presented on the next page.

③ Example of Processing Protective Tubes

Material
PPS
Epoxy Resin Coating
Fluorine Resin Shrinkage Tube
Polyimide
SUS304
SUS316
Cu
Processing of Fitting Terminals

⑤ Example of Processing of Terminals

Processing of Connecting Terminals

④ Example of Processing External Conductors

Material
Polyurethane Coated Wire
Parallel Heat-Resistant Vinyl Chloride Wire
Fluorine Resin Coated Wire
Form
2-Wire System
3-Wire · 4-Wire System
Shielded Wire

⑥ Others

Mounting on Printed Circuit Board

Performance

ST3000 series

Shape	Unit : mm	Product No.	L (mm)	ℓ (m)	Measurement Temperature Range (°C)
		31011 ● Lead wire without solder plating	—	—	-50~+300
		31012 ● Lead wire with solder plating	—	—	-40~+120
		31021 ● Lead wire without solder plating	—	—	-50~+300
		31022 ● Lead wire with solder plating	—	—	-40~+120
		31030201	max.30	0.1	-40~+100
		31030205		0.5	
		31030210		1.0	
		31030230		3.0	
		31040301	35	0.1	-40~+100
		31040305		0.5	
		31040310		1.0	
		31040330		3.0	
		31050201	max.23	0.1	-40~+220
		31050205		0.5	
		31050210		1.0	
		31050230		3.0	
<p>* For product of resistance 1kΩ or product of resistance tolerance B, C, only L=50mm is available.</p>		31060301	30	0.1	-40~+220
		31060501	50	0.1	
		31060505		0.5	
		3201	—	—	-20~+120
		3202	—	—	-40~+140
<p>* With the round terminals fixed, handle the wire without applying tensile stress or bending stress.</p>		32050001	—	0.1	-20~+80
		32050005		0.5	
		32050010		1.0	
		32050030		3.0	
		32090201	24	0.1	-40~+120
		32090205		0.5	
		32090210		1.0	
		32090230		3.0	
		32120907	90	0.07	-40~+300 Only top of protective tubes
		32121207	120		
		32121707	175		
		32121202	120		

ST3000 series

Shape	Unit : mm	Product No.	L (mm)	ℓ (m)	Measurement Temperature Range (°C)
		33060001	-	0.1	-20~+120
		33060005		0.5	
		33060010		1.0	
		33060030		3.0	
		33110305	30	0.5	-40~+220
		33110310		1.0	
		33110330		3.0	

ST8100 series

Shape	Unit : mm	Product No.	Lead Wire Number	ℓ (m)	Measurement Temperature Range (°C)
		8102201	2	0.1	SDT310LTC : -40~+105 SDT310P : -40~+200
		8102205		0.5	
		8102210		1	
		8102301	3	0.1	
		8102305		0.5	
		8103201	2	0.1	SDT310LTC : -40~+105 SDT310P : -40~+200
		8103205		0.5	
		8103210		1	
		8103301	3	0.1	
		8103305		0.5	
		8104201	2	0.1	SDT310LTC Only : -40~+105
		8104205		0.5	
		8104210		1	
		8104301	3	0.1	
		8104305		0.5	
		8106201	2	0.1	SDT310LTC Only : -40~+125
		8106205		0.5	
		8106210		1	
		8107301	3	0.1	SDT310LTC Only : -40~+150
		8107305		0.5	
		8107310		1	

Do not pull or rock a covered wire or sensor part in ST8100 series.

■ Instructions in Selection

- Sensor resistance values described are specified by resistance values of the elements (SDT101,SDT310) used in the sensors. The resistance of the external conductor is added to the resistance value of element, impacting errors in temperature measurement. For this reason, the shorter the conductor is, the smaller the errors will be. For example, when a ST using element of SDT101 a 100Ω, a 2.9°C detection error will result, assuming that the resistance of the external conductor is 1Ω. Select 3-wire or 4-wire system so that a measurement error by the resistance of an outer lead wire can be eliminated.
- Sensor elements have a sufficient heat resistance characteristic. Nevertheless, the operating temperature range will differ depending on the materials used in the external conductor and filler. Select an appropriate standard sensor in accordance with the operating temperature range and operating environment.
- This catalogue shows the specification of the element used in this product series.

The specification of this product series may vary depending on processing or the combination of elements.
Please ask us for details. We ensure the quality of the element itself.

■ Guarantee of product

The guaranteed term of the product is one year after delivery. However, when trouble occurs during the guaranteed term because of our responsibility, the product is exchanged or is repaired. We guarantee the product itself, any damages caused by this product shall be excused.