

## **The introduction of Xi'an Sensecraft Technology Co., Ltd.**

Xi'an Sensecraft Technology Co., Ltd. was established in February 2022 with a registered capital of 6.78 million yuan. It is a comprehensive sensor researching & development and manufacturing enterprise focusing on "core sensitive chips + microsensors + test systems + analysis software".

Thin film temperature sensor is a typical new basic core component, which are widely used in automotive electronics, household electronics, instrumentation, biomedical , aerospace and other fields. Based on the development needs of China's sensor industry, Xi'an Sensecraft Technology Co., Ltd. has overcome the challenges of high-end smart sensor chip processing and manufacturing, such as micro-sensor manufacturing technology, special packaging technology, and multi-sensor integration method, especially in the field of "thin film temperature sensor". It has mastered the core processing technology and formed a preliminary technology group of thin film temperature sensor.

At present, the company has more than 40 production and testing equipment, 280 square meters of clean workshop (1000 grade), and has built a platform for designing, processing, packaging and testing of thin film temperature sensitive chips. It has also built China's first automated production line covering room temperature, high temperature, and ultra-low temperature thin film temperature sensor chips. The company has obtained multiple certifications such as national high-tech enterprise, ISO9001 quality management system, EU RoSH, CE, etc.

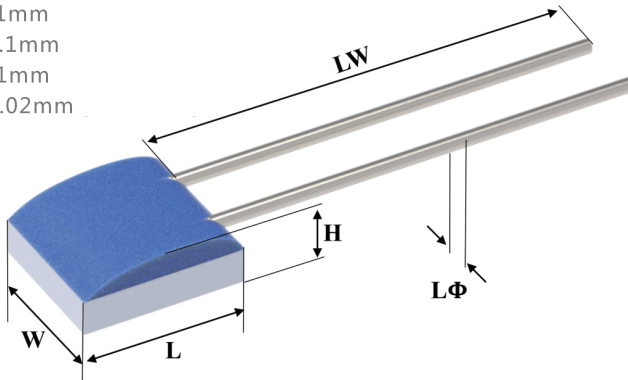




Figure. The company insights

## Size

$H=1.1\pm 0.1\text{mm}$   
 $L=2.3\pm 0.1\text{mm}$   
 $W=2.0\pm 0.1\text{mm}$   
 $LW=10\pm 1\text{mm}$   
 $L\Phi=0.2\pm 0.02\text{mm}$



## Product characteristics

- PT100-2W series thin film platinum resistors have the advantages of small size, high precision and good long-term stability.
- It has the characteristics of anti-vibration and anti-shock.
- The product can be subdivided into regular ultra low and high temperature series, covering the temperature range of -200 to 650
- It can be used in many connection ways, such as resistance welding, argon arc welding, pressure welding, brazing and so on.
- Widely used in automotive, instrumentation, household appliances, new energy and other fields.

## Selection

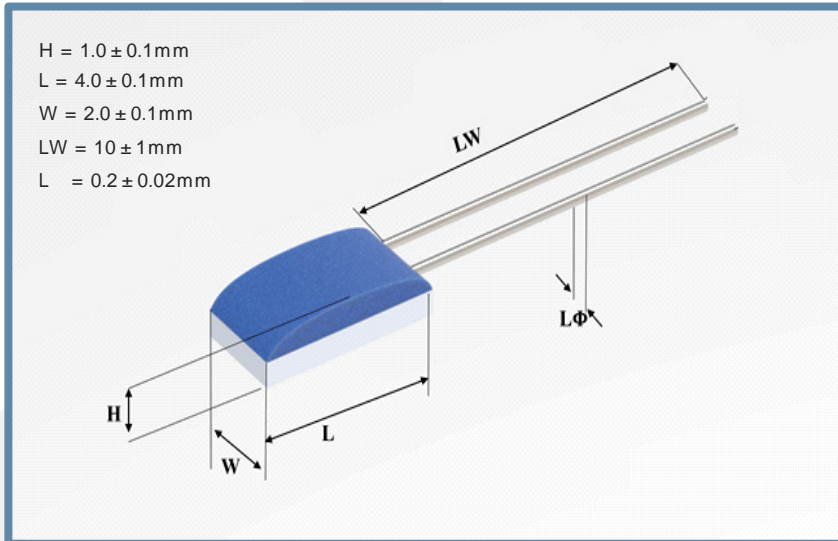
Type temperature criteria	Range of application	Classes	$R_0$ ( $\Omega$ )	Temperature range	Deviation
Pt 100-2W	-70~ + 500°C	1/3B	100±0.04	0 ~ + 150°C	±(0.1+0.0017 T)
		A	100±0.06	-50~ + 300°C	±(0.15+0.002 T)
		B	100±0.12	-70 ~ + 500°C	±(0.3+0.005 T)
		2B	100±0.24	-70 ~ + 500°C	±(0.6+0.01 T)
Pt 100-2W -H650	-50~ + 650°C	B	100±0.12	-50~ + 650°C	±(0.3+0.005 T)
		2B	100±0.24	-50 ~ + 650°C	±(0.6+0.01 T)
Pt 100-2W -L200	-200~ + 150°C	B	100±0.12	-200~ + 150°C	±(0.3+0.005 T)
		2B	100±0.24	-200~ + 150°C	±(0.6+0.01 T)

Note \* : the marked classes and temperature measurement accuracy refer to the IEC60751 standard. T is the measured temperature.

## General features

Performance parameters	Description
Type of components	Thin film platinum resistance
Component size	2.0mm×2.3mm×1.1mm 1.6mm×2.3mm×1.1mm 1.2mm×5.0mm×1.1mm
Lead specifications	Length: 10mm; diameter: 0.2mm
Lead material	Platinum-nickel wire ; Silver target Pure Platinum ; Sterling silver
Lead tension	≥ 9N
Insulation impedance	> 100M $\Omega$ at 20°C > 2M $\Omega$ at 500°C
TCR	3850ppm/°C
Working current	0.3 ~ 1mA
Long-term stability	After 1000 hours at 500 °C, the resistance shift of R(0 °C) is less than 0.04%
Response time	water current v=0.4m/s $\tau_{0.5}=0.05\text{s}$ $\tau_{0.9}=0.15\text{s}$
	air current v=2m/s $\tau_{0.5}=3\text{s}$ $\tau_{0.9}=10\text{s}$
Self-heating coefficient	0°C 0.4°C/mW
Anti-vibration	Frequency acceleration 40g from 10 to 2000Hz
Impact resistant	8ms half sine wave acceleration 100g
Package	Vacuum plastic packaging
Customizable	Substrate size, base resistance , lead specifications, can be provided on request

## Size



## General features

Performance parameters	Description
Type of components	Thin film platinum resistance
Component size	2.0mmx4.0mmx1.0mm 2.0mm*2.3mm*1.0mm
Lead specifications	Length:10mm diameter:0.2mm
Lead material	Platinum-nickel wire ; Silver target Pure Platinum ; Sterling silver
Lead tension	9N
Insulation impedance	>100M at20 ° C,>2M at500 ° C
TCR	3850ppm/ ° C
Workingcurrent	0.3~1mA
Long-term stability	After 1000 hours at 500 ° C, the resistance shift of R(0 ° C) is less than 0.04%
Response time	water current(v=0.4m/s) $\tau$ 0.5=0.05s $\tau$ 0.9=0.15s
	air current(v=2m/s) $\tau$ 0.5=3s $\tau$ 0.9=10s
Self-heating coefficient	0 ° C 0.4 ° C/mW
Anti-vibration	Frequency acceleration 40g from 10 to 2000Hz
Impact resistant	8ms half sine wave acceleration 100g
Package	Vacuum plastic packaging
Customizable	Substrate size, baseresistance lead specifications, canbe providedonrequest

## Product characteristics

- PT1000-2W series thin film platinum resistors have the advantages of small size, high precision and good long-term stability.
- It has the characteristics of anti-vibration and anti-shock. The product can be subdivided into regular ultra low and high 1
- temperature series, covering the temperature range of -200 to 650 ° C.
- It can be used in many connection ways, such as resistance welding, argon arc welding, pressure welding, brazing and so on.
- Widely used in automotive, instrumentation, household appliances, new energy and other fields.

## Selection

Type temperature criteria	Range of application	Classes	$R_0$ ( $\Omega$ )	Temperature range	Deviation
Pt1000-2W	-70 ~ +500°C	A	1000 ± 0.6	-50 ~+300°C	$\pm(0.15+0.002 T )$
		B	1000 ± 1.2	-70 ~+500°C	$\pm(0.3+0.005 T )$
		2B	1000 ± 2.4	-70 ~+500°C	$\pm(0.6+0.01 T )$

Note : the marked classes and temperature measurement accuracy refer to the IEC60751 standard

T is the measured temperature.

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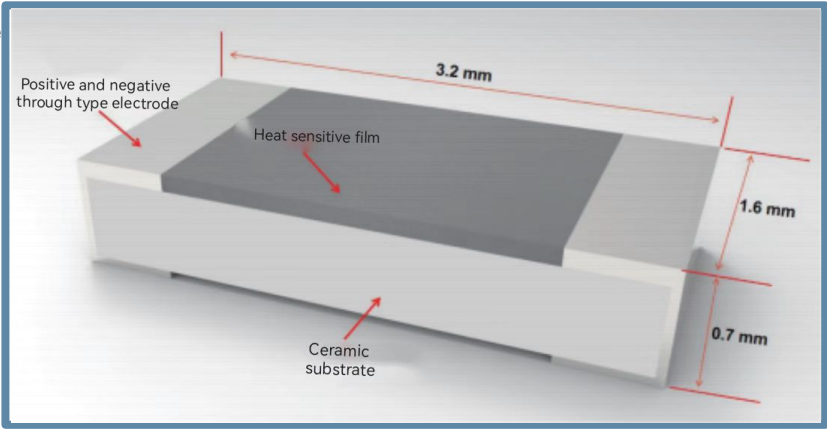
# SMD thin film platinum resistance

## Product description

SMD platinum resistance is a universal temperature sensor element which has the advantages of small size, wide temperature measuring range, good long-term stability and high structural strength. It can be widely used in instrumentation, home appliances, new energy vehicles and electronic equipment and other fields. Compared with wire-lead thin film platinum resistance, the cost is significantly lower, SMD platinum resistance can be welded, reflow welded, wave soldered and other welding processes.

Compared with NTC products, SMD platinum resistance has the advantages of high structural strength, high output linearity, good repeatability and high temperature measurement accuracy. Therefore, the SMD thin film platinum resistor is an excellent temperature measurement device suitable for middle and low temperature, large batch and high integration.

## Appearance size



## Basic parameters

Performance parameters	Description
Size of equipment	3.2mm × 1.6mm × 0.7mm
R0 Resistance	100 Ω
TCR	3850 ppm/°C
Temperature range	-50°C ~ 200°C
Long-term stability	200 , within 1000 hours, R <sub>0</sub> drift 0.04%
Welding terminals	Lead-tin alloy terminal
Welding method	Reflow soldering or wave soldering, high temperature solder paste containing lead is recommended, soldering temperature 230-240 ;
Accuracy of temperature measurement	± (0.6 + 0.01 T ); Note T is the actual temperature, unit

## Temperature measurement deviation

$$T_{\text{Error}} = \pm (0.6 + 0.01|T|) \quad T: \text{Measured temp}$$

## Resistance-temperature characteristic value

Temp( )	R( )	Temp( )	R( )
-20	92.16	100	138.51
0	100.00	120	146.07
20	107.79	140	153.58
40	115.54	160	161.05
60	123.24	180	168.48
80	130.90	200	175.86

## The resistance curve

$$T = \frac{-A + \sqrt{A^2 - 4B\left(1 - \frac{R_t}{100}\right)}}{2B}$$

T: Measured temp

R<sub>t</sub>: Measured resistance

A = 3.9083 × 10

B = -5.775 × 10<sup>-7</sup>