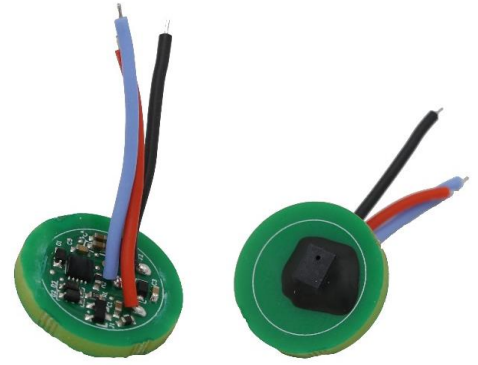


Pressure Sensor XY-SC0157PA

Typical Feature

- ❑ Small Size $\phi 19.93\text{mm}$
- ❑ Modular Product with digital output
- ❑ High Stability and Performance long term
- ❑ 101 ~ 1571KPa (14.6~ 227.8psi) or customized
- ❑ Maximum error of 1.5 % in the range of 0 ~ 85°C.
- ❑ Temperature compensation range -40 °C to 125°C
- ❑ Resistant silicon resistance Technology



Pressure Sensor XY-SC0157PA is a silicon resistance sensor for general auto applications, with small size diameter $\Phi 19.93$ with 2.4mm thickness FR4 PCB base; height is upon pressure range, pressure measure ranges 101 ~ 1571KPa and other extensive range options, the advantages of rich range option, small size ; It has the characteristics of small waveform coefficient and high reliability. The module takes the supply voltage as reference and generates a verified, temperature-compensated voltage signal proportional to the input pressure. the supply voltage is $5\pm 0.25\text{V}$, and the typical current is 2.5mA.

Besides the multiple standard products, Xuyan also provide customized adaptations for customers requirement. XY-S18C Ceramic Capacitive Pressure Sensor incorporates the latest generation sensing elements. Design and manufacture withstand harsh environments, with excellent performance for EMI protection, outstanding shock and vibration, after test case by case successfully, its longevity and lifetime performance and high quality are recognized in the market.

Suggested Applications

- ✚ Auto pressure sensor
- ✚ Air pressure gauge
- ✚ Pressure transmitter
- ✚ Customized Applications

More details for XY-SC0157PA, please contact us.

Specification (VS=5 Vdc, TA=25°C, P1>P2 or others explain)

Parameter	Minmum	Typical	Maximun	Unit
Pressure Range(PoP)	101	---	1571	KPa
Work Voltage (1)VS	4.75	5	5.25	Vdc
Work Current IO	---	2	14	mAdc
Minimum pressure offset (0 to 85°C) @ VS=5V (2) VOff	0.44	0.5	0.560	Vdc
Full Scale Output(0 to 85°C) @ VS=5V (3) VFSSO	4.440	4.5	4.560	Vdc
Full Scale Span (0 to 85°C) @ VS=5V (4)	3.880	4.000	4.120	Vdc
Accuracv (5) (0 to 85°C)	---	---	± 1.5	% VFSS
Sensitivity V/P	---	2.7	---	mV/KPa
Pesponse time (6) tR	---	1.0	---	mS
Preprocess Time(7)	---	10	---	mS
Migration stability (8)	---	± 0.5	---	% VFSS

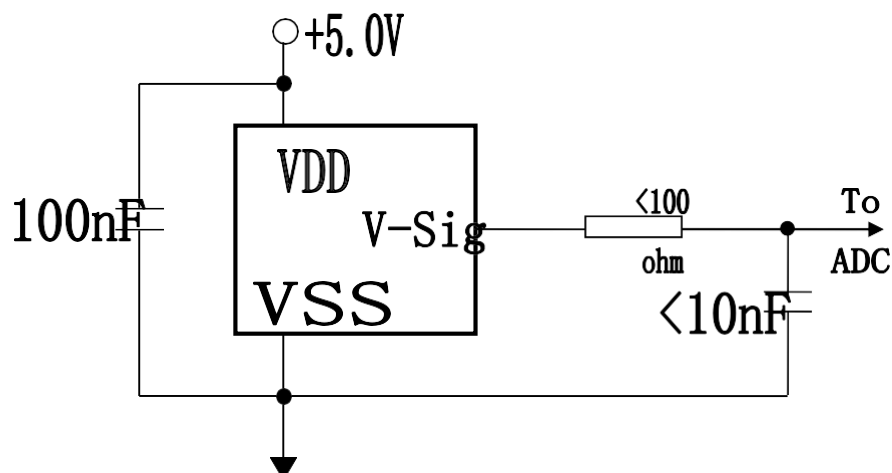
Current RiseTime tpon	---	---	100	mS
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1. The output is proportional and linear over this operating voltage range.
2. Minimum pressure offset: Sensor output voltage value under minimum pressure in the pressure range.
3. Full range output: Sensor output voltage value under maximum pressure in the pressure range.
4. Full scale span: the algebraic difference between the output value at the maximum pressure and the output value at the minimum pressure in the pressure range.
5. Accuracy includes: linear error, temperature hysteresis error, pressure hysteresis error, full temperature error, zero temperature error and other errors.
6. Response time: the time required from 10% of the output to 90% of the theoretical value.
7. Preprocess time: after the pressure is stabilized, the output needs time to stabilize.
8. Offset stability: Output offset of the module after 1000 hours of pulse pressure and temperature cycle.

Parameter	Rated Value	Unit
Overload Pressure	3400	KPa
Burst Pressure P _{MAX}	6800	KPa
Maximum Voltage V _{max}	-30 to 30	V _{dc}
Maximum Current (V _{max} = 32V) I _{max}	/	mA _{dc}
ESD Protection (MIL 883, Method 3015.7.)	±4	kV
Storage temperature T _{STG}	-50 to 135	°C
Operation temperature T _A	-40 to 125	°C
Maximum Output Current (2) I _{O+}	2.0	mA _{dc}
Maximum Input Current (2) I _{O-}	-2.0	mA _{dc}

1. Exceeding the maximum rating may result in performance degradation or device damage.
2. The maximum input/output current is controlled by the impedance between the output to ground and the output to the power supply in the actual circuit.

Typical Design



Transfer function and output diagram

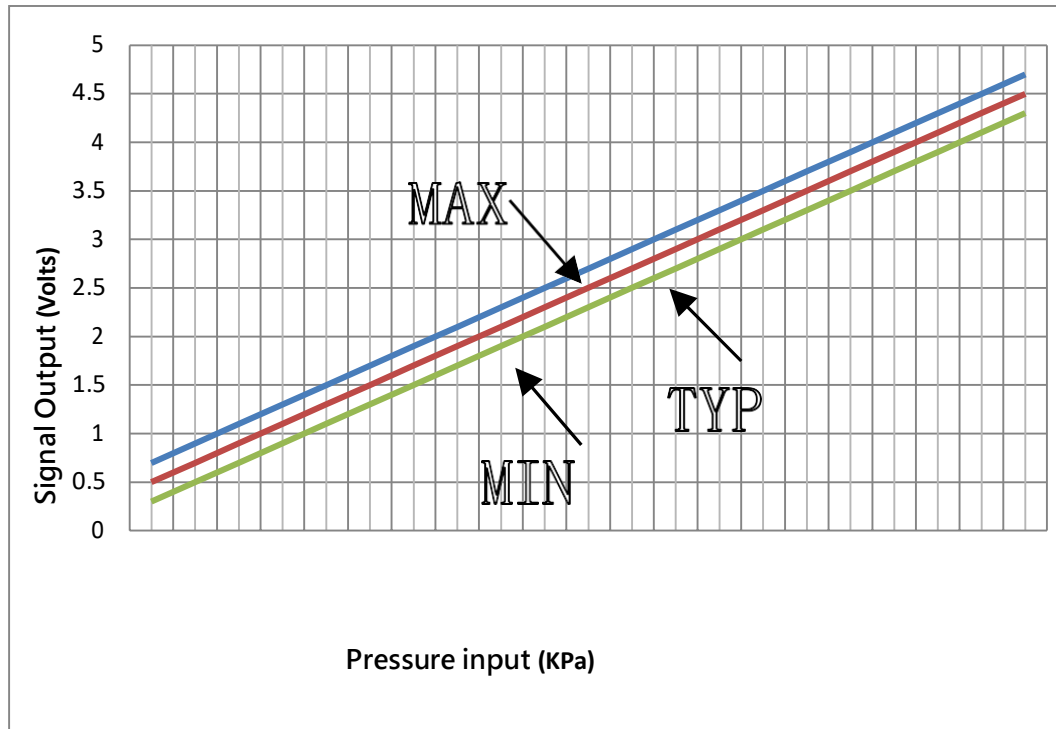
1) Transfer function

$$V_{OUT} = V_s \times (0.000544 \times P_{IN} + 0.045) \pm (\text{Pressure error} \times \text{Temperature error factor} \times 0.000544 \times V_s)$$

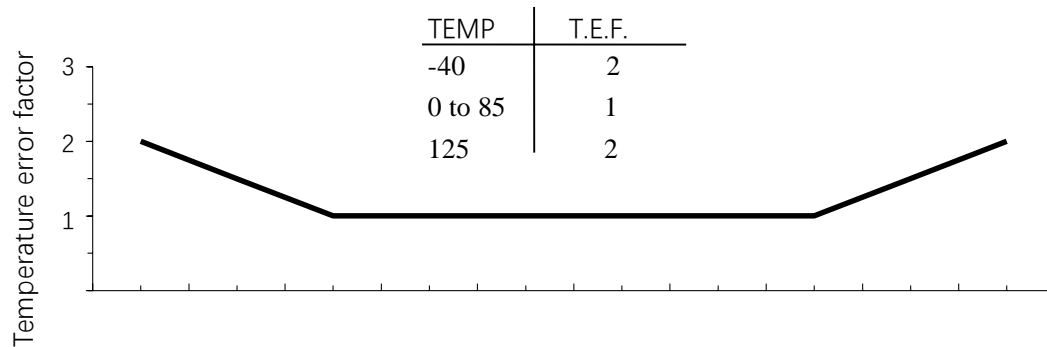
In the formula, V_s is the power supply voltage of the module (unit: Volts).

P_{IN} is the intake pressure in KPa.

2) Transfer function ($V_s=5\text{ Vdc}$, $T=0\text{ to }85\text{ }^\circ\text{C}$)



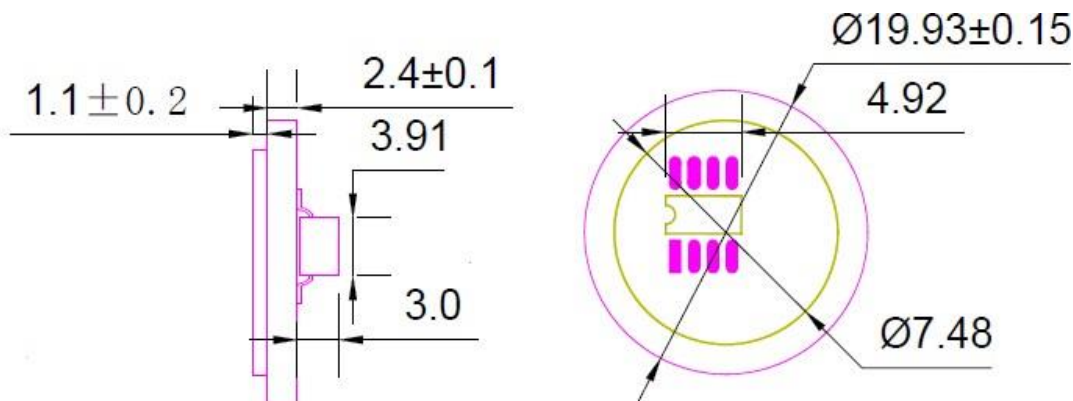
3) Temperature error factor



Note: Characteristics, internal reliability parameters and quality parameters are tested using dry air as Pressure medium. Other pressure medium may affect the performance parameters and long-term reliability of the sensor.

If you need more medium affection please Contact Xuyan .

Size



2) Notice for chip usage:

Due to the uniqueness of the manufacturing process of the chip's conditioning circuit and the sensor package, in order to avoid the chip being damaged by various high static electricity in the process of your product processing, the following points should be paid special attention to in the process of use:

- A) ESD workbench, including ESD table mat, floor mat, and operator wrist strap;
- B) Grounding of tools and equipment. For example, it is recommended to use antistatic soldering iron for manual welding;
- C) anti-static transfer box (note: common plastic and metal containers are not anti-static);
- D) Because of the encapsulation characteristics of the sensor chip, it is not recommended to use ultrasonic welding process to process your product;
- E) When processing your products, pay attention not to plug the air inlet on the chip.

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