

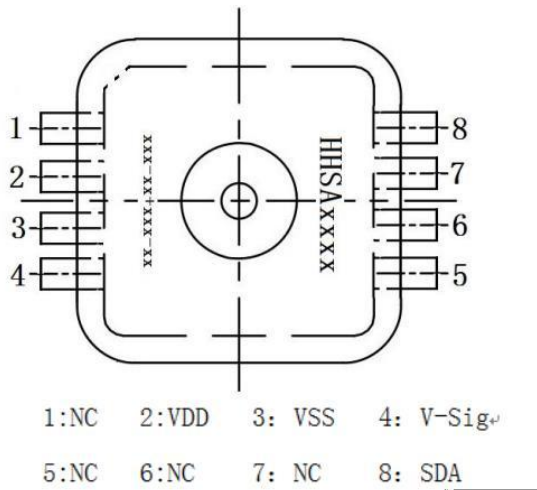
PC28-2400 Pressure Sensor

Features

- 1% maximum error over 0° to 85°C
- Temperature compensated over -40°C to +125°C
- Small size
- High reliability, low drift

Applications

- Automotive pressure monitoring
- Pneumatic gages
- Hand-held meters
- Industrial controls



Overview

PC28-2400 is a ssop-hybrid device consisting of a piezoresistive pressure sensor and a signal conditioning circuit. The series of pressure sensors have the features of small form, high reliability and high accuracy. The temperature compensated and calibrated sensor provides an accurate, high level analog output signal that is proportional to applied pressure. The pressure range of the sensor cell is 20~400kPa absolute pressure. The supply voltage is $5 \pm 0.5V$. The supply current is 2.5mA.

PC28 series pressure sensor can customize the characteristics design according to the requirements of customer.

Operating characteristics ($V_s=5.0V_{dc}$, $T_A=25^\circ C$, $P_1 > P_2$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ.	Max	Unit
Pressure range	Pop	20	---	400	kPa
Supply voltage (1)	V_s	4.5	5.0	5.5	Vdc
Supply current	I_o	---	2.5	3	mAdc
Minimum pressure offset @ $V_s=5.0$ Volts(3) (0 to 85°C)(2)	V_{off}	0.5	0.2	0.25	Vdc
Full scale output @ $V_s=5.0$ Volts(3) (0 to 85°C)	V_{FSO}	4.75	4.8	4.85	Vdc
Full scale span @ $V_s=5.0$ Volts(4) (0 to 85°C)	V_{FSS}	4.5	4.6	4.7	Vdc
Accuracy(5) (0 to 85°C)	---	---	---	± 1	% V_{FSS}
Sensitivity	V/P	---	12.1	---	mV/kPa
Response time (6)	tR	---	2.0	---	mS

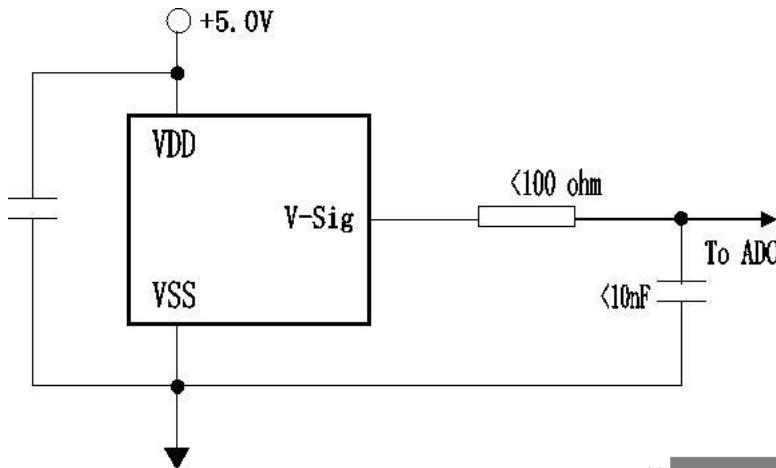


Notes:

1. Device is ratio metric within this specified excitation range.
2. Offset (V_{off}) is defined as the output voltage at the minimum rated pressure.
3. Full Scale Output (V_{FSO}) is defined as the output voltage at the maximum or full rated pressure.
4. Full Scale Span (V_{FSS}) is defined as the algebraic difference between the output voltage at full rated pressure and the output voltage at the minimum rated pressure.
5. Accuracy is the deviation in actual output from nominal output over the entire pressure range and temperature range as a percent of span at 25°C due to all sources of error including the following:
 Linearity: Output deviation from a straight line relationship with pressure over the specified pressure range.
 Temperature Hysteresis: Output deviation at any temperature within the operating temperature range, after the temperature is cycled to and from the minimum or maximum operating temperature points, with zero differential pressure applied.
 Pressure Hysteresis: Output deviation at any pressure within the specified range, when this pressure is cycled to and from the minimum or maximum rated pressure, at 25°C.
 TcSpan: Output deviation over the temperature range of 0 to 85°C, relative to 25°C.
 TcOffset: Output deviation with minimum rated pressure applied, over the temperature range of 0 to 85°C, relative to 25°C.
 Variation from Nominal: The variation from nominal values, for Offset or Full Scale Span, as a percent of VFSS, at 25°C.
6. Response Time is defined as the time for the incremental change in the output to go from 10% to 90% of its final value when subjected to a specified step change in pressure.
7. Perfluoro silicon resin is applied for long time protection of the sensor from the corrosion of the external medium such as LPG, CNG, gasoline, etc.

Maximum ratings (1)			
Rating	Symbol	Value	Unit
Maximum pressure	P_{MAX}	1200	kPa
Maximum supply voltage	V_{max}	-0.3 to 11	Vdc
Maximum supply current	I_{max}	14	mAdc
ESD (MIL 883, Method 3015.7)		±4	kV
Storage temp.	T_{STG}	-40°C to 135°C	°C
Operating temp.	T_A	-40°C to 125°C	°C

Note. Exposure beyond the specified limits may cause permanent damage or degradation to the device.



Transfer function and characteristic curve

1) Transfer Function

$$V_{OUT} = V_S \times (0.002421 \times P_{IN} - 0.008421) \pm (\text{Pressure Error} \times \text{Temp. Factor} \times 0.002421 \times V_S)$$

V_S is the supply power, Volts.

P_{IN} is the pressure, kPa.

2) Output vs. Absolute Pressure ($V_S=5\text{ Vdc}$, $T=0\text{ to }85^\circ\text{C}$)

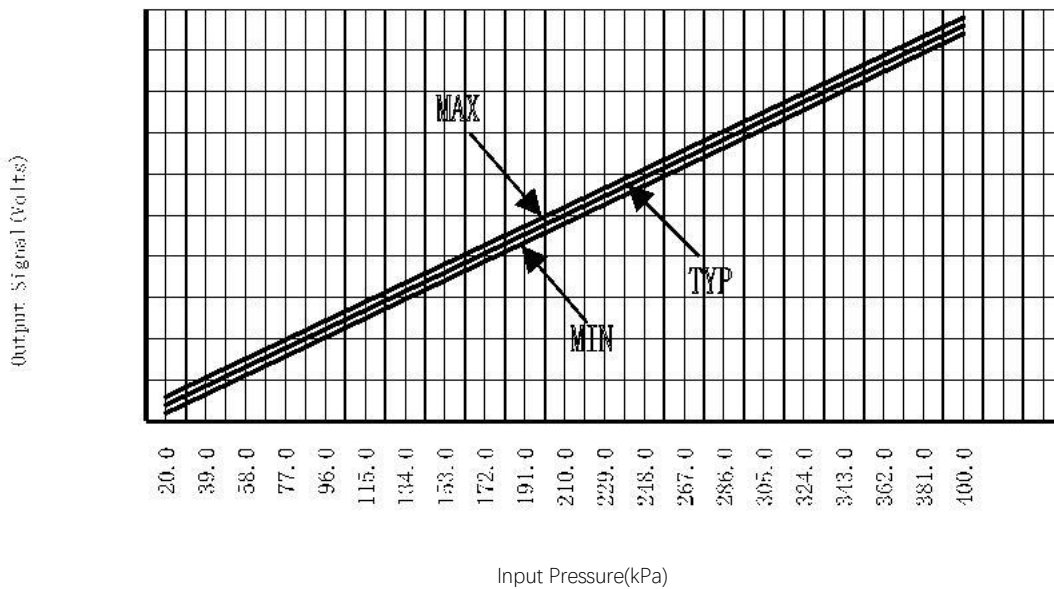
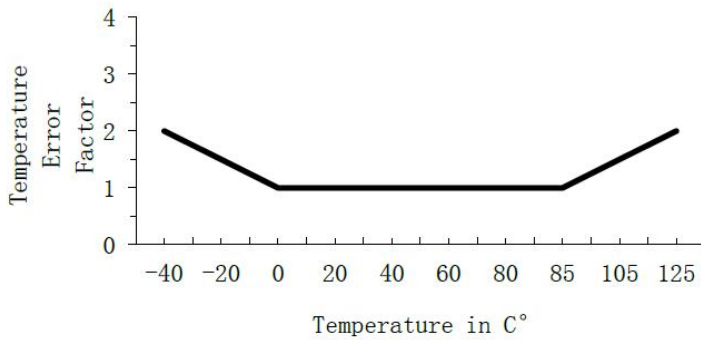


Figure 3. shows the sensor output signal relative to pressure input. Typical minimum and maximum output curves are shown for operation over 0 to 85 °C temperature range. The output will saturate outside of the rated pressure range.

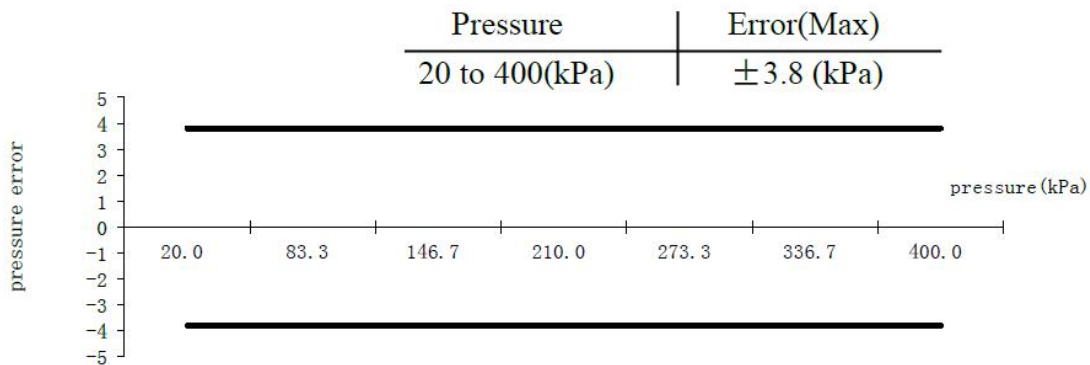
3) Temperature Error Band



temperature	Multiplier
-40	2
0 to 85	1
125	2

NOTE: The Temperature Multiplier is a linear response from 0°C to -40°C and from 85°C to 125°C

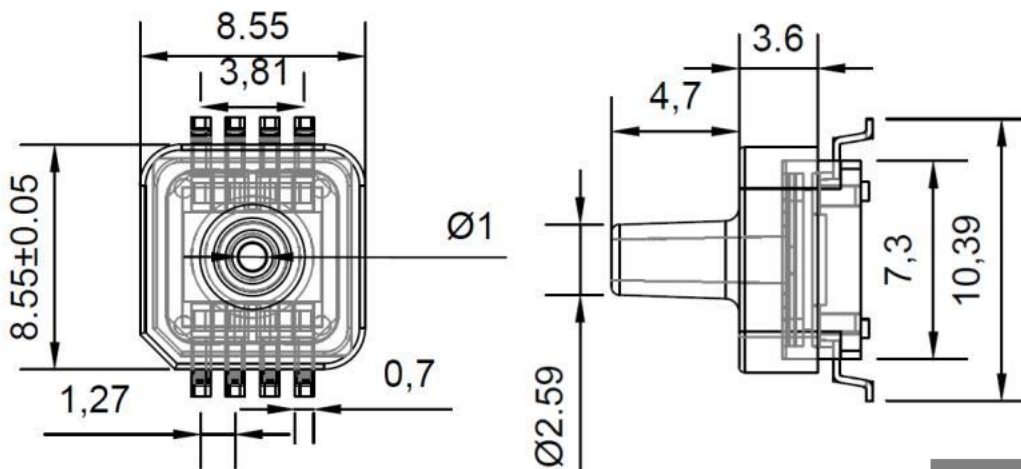
4) Pressure Error Band

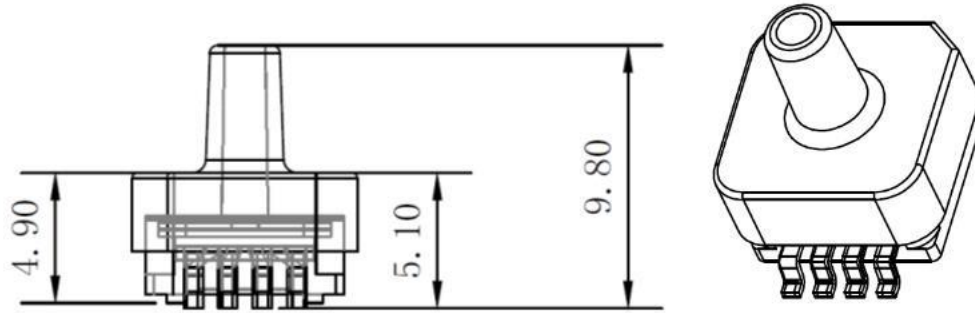


Note: The series pressure sensor operating characteristics, internal reliability and qualification tests are based on use of dry air as the pressure media. Media other than dry air may have adverse effects on sensor performance and long-term reliability. Contact the factory for information regarding media compatibility in your application.

Package dimensions (Unit: mm)

Sensor device packaged by SSOP8, dimensional drawings as follows:





Precautions

1. It is essential to ground machines properly during assembly and handling of the device.
2. The sensor device is shipped in antistatic transport boxes.
3. Any test adapters or production transport boxes used during the assembly of the sensor shall be of an equivalent antistatic material.
4. Do not use ultrasonic welding process to package electronics module.
5. Do not block up the hole on the pressure sensor device.

Wotian reserves the right to make any change in this publication without notice. The information provided is believed to be accurate and reliable as of this product sheet.

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