

GZP192

Pressure Sensor

Datasheet

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Document Revision History

Revision	Description	Date
V1.0	Initial version	2023.02.09
V1.1	Update template	2023.06.17

The company reserves the right to make changes to the specifications contained herein without further notice.

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1 Product Description

The GZP192 piezoresistive pressure sensor chip is applicable in fields such as biomedicine, industrial control, and the Internet of Things. Its core component is a silicon piezoresistive pressure-sensitive chip processed using MEMS technology. The chip is laser trimmed for precise span and offset calibration and temperature compensation and provide a highly accurate and linear voltage output directly proportional to the applied pressure.

The GZP192 pressure sensor chip is packaged in a standard DIP plug-in form, making it convenient for users to install. The design with a barbed nozzle can prevent the pressurization device from falling off due to excessive pressure.

The measurement medium of the GZP192 pressure sensor chip is limited to air and other non-corrosive gases.

1.1 Feature

- Multiple range:0~10/50/100/200kPa
- MEMS technology
- Differential pressure type
- Calibrated Analog mV signal
- Temperature Compensated
- Barbed Inlet Pipe
- Ratiometric to Supply Voltage



1.2 Applications

- Massage devices, massage chairs, air mattresses, etc. in the sports and fitness equipment field
- Smart fire protection, smart home appliances, etc. in the Internet of Things field
- Surgical hemostasis equipment, ventilators, oxygen generators, monitoring devices, etc. in the medical field
- Pressure gauges, pneumatic components, etc. in the industrial control field .

2 Function Description

This product is manufactured using advanced micro-electromechanical principles. Its core technologies are a MEMS pressure sensor chip based on the silicon piezoresistive effect and a high-performance signal conditioning ASIC chip. The silicon micro-piezoresistive MEMS pressure sensor chip forms a Wheatstone bridge through four strain-sensitive resistors. The output signal is amplified, temperature-compensated, and linearized by the ASIC chip. The linearization and temperature compensation of the transfer function are implemented by the digital processing circuit in the ASIC. Through the polynomial compensation algorithm and multi-point pressure calibration technology at multiple temperatures, high-precision pressure measurement is achieved over the entire operating temperature range.

2.1 Electrical Connections

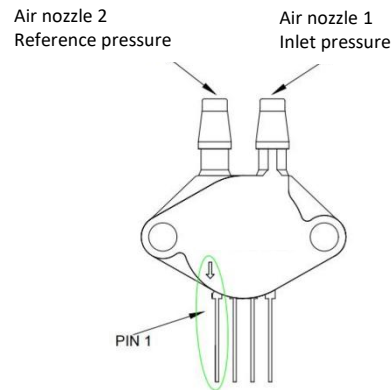


Fig.1 Pin Definition

The pin correspondence is shown in Table 1.

Tab.1 Pin correspondence table

PIN No.	Definition	Description
1	GND	Power input negative
2	VOU+	Output positive
3	VDD	Power iutput positive
4	VOU-	Output negative

3 Technical Indicators

The following indicators of the pressure sensor are measured under the following conditions:

Measuring medium: Air

Medium temperature: (25±1) °C

Ambient temperature: (25±1) °C

Humidity: (50% ± 10%) RH

Power supply: (10 ± 0.005)V DC

3.1 Electrical Performance

The electrical performance of the sensor is shown in Table 2.

Tab.2 Electrical performance table

Parameter	Min.	Typical values	Max.	Unit
Constant voltage power supply		10	16	V
Power supply current (@10V power supply)		0.5	1	mA
Input impedance	12		32	kΩ
Output impedance	4.5		5.5	kΩ

3.2 Temperature Characteristics

The temperature characteristics of the sensor are shown in Table 3.

Tab.3 Temperature characteristics

Parameter	Min.	Typical values	Max.	Unit
Operating temperature	-20		+85	°C
Storage temperature	-30		+125	°C
Zero-point temperature coefficient	-20		+20	uV/°C
Sensitivity temperature coefficient	-26		+20	uV/°C

3.3 Mechanical Properties

The mechanical properties of the sensor are shown in Table 4.

Tab.4 Mechanical properties

Parameter	Min.	Typical values	Max.	Unit
Measuring range	0 ~ 10/0 ~ 50/0 ~ 100/0 ~ 200			kPaG
Zero output	-1	0	1	mV
Full-scale output	38.5	40	41.5	$\mu\text{V/V/mmHg}$
Overload pressure	2X			Rate
Burst pressure	3X			Rate
Nonlinearity	-0.5	± 0.2	+0.5	%FS

4 Appearance Structure

The dimensions of the external shape are shown in Figure 2 (Tolerances not specified are in accordance with GB/T1804-V).

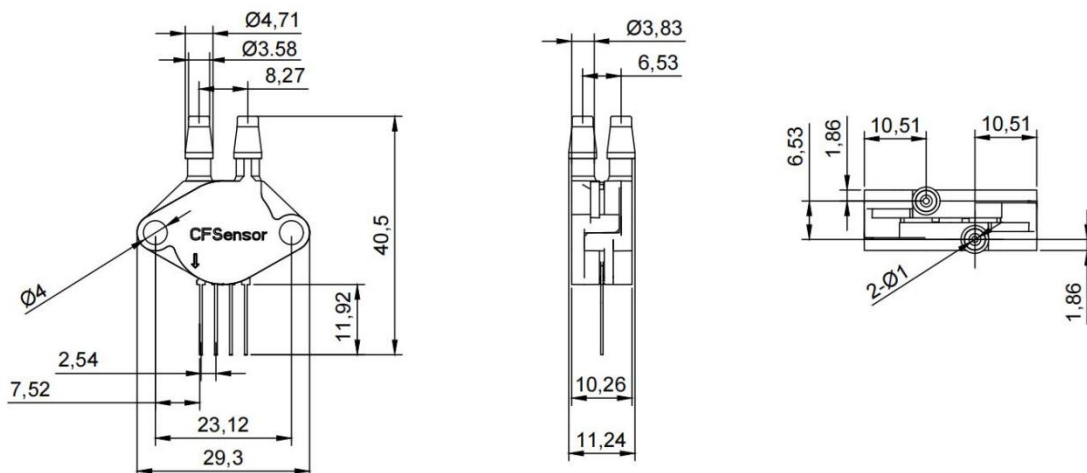


Fig.2 Appearance structure

5 Order Guide

GZP 192 - 010 G B02 - WX

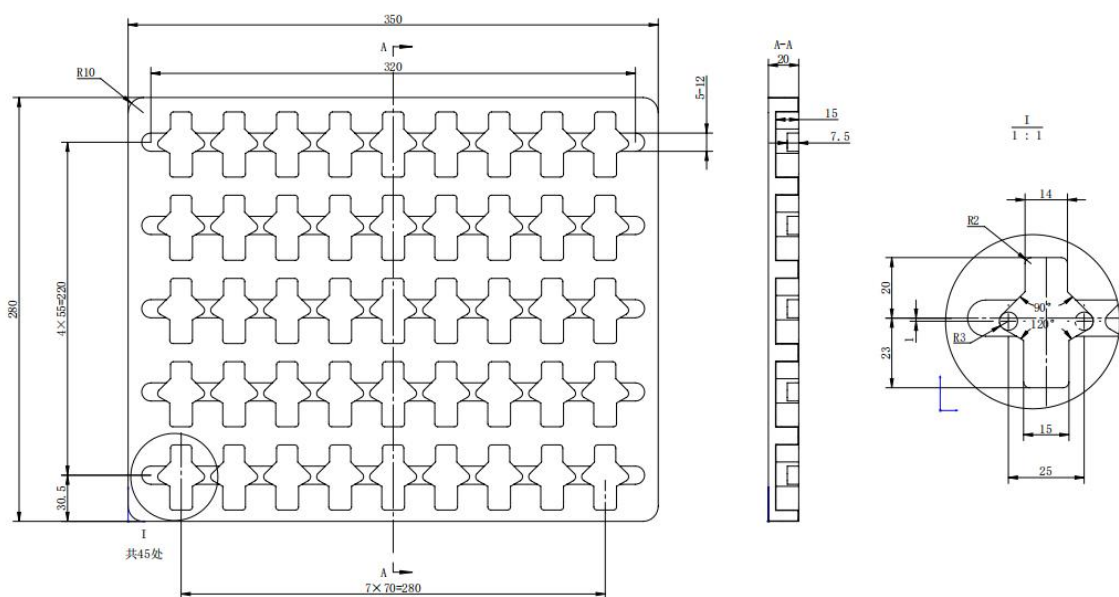
GZP	Pressure Sensor Series
192	Product Series
010	Pressure range 010: 10kPa; 050: 50kPa; 101: 100kPa; 201: 200kPa
G	Pressure Type: G :Gauge Pressure
L (optional)	Customized full scale output is 25mV(Only for 0~10kPa)
B02	Packaging method B02: tray
WX	Company interior code

Order Tips

- Some models do not include all the ranges mentioned above.
- For more information, please contact Sencoch.

6 Packaging information

Blister tray (unit: mm), quantity per box: 45 PCS.



(350mm x 280mm x20mm, 45PCS)

Fig.3 Tray schematic diagram

7 Precautions for Use

7.1 Soldering

Because this product has a small structure with low heat capacity, please minimize the effects of external heat. Failure to do so may cause damage due to thermal deformation and change in characteristics. Please use non-corrosive rosin-based flux. Also, since the product is exposed to the outside, be careful not to allow flux to penetrate the interior.

(1) Manual welding

- Use a soldering iron with a head temperature between 260 and 300°C (30 W) and perform the work within 5 seconds.
- Please note that the output may change when soldering with a load applied to the terminals.
- Please keep the soldering iron tip clean.

(2) DIP soldering (DIP terminal type)

■ The operation can be carried out within 5 seconds in the DIP solder bath with a temperature below 260 °C.

■ When installed on a substrate with a smaller heat capacity, due to the possibility of thermal deformation, please be aware of the temperature for DIP soldering.

(3) Reflow soldering (SMD terminal type)

- The recommended reflow oven temperature setting conditions are shown in Figure 3.

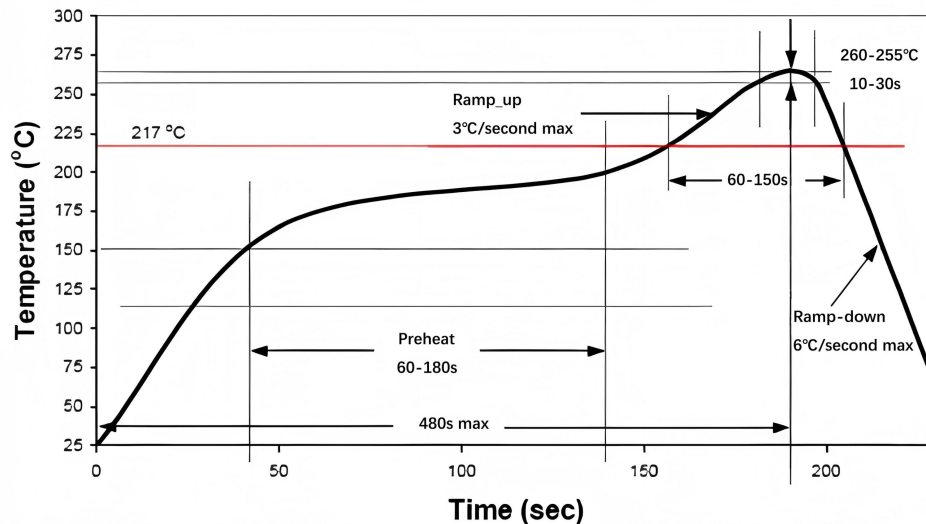


Fig.3 Reflow soldering temperature setting conditions

(4) The warping of the printed circuit board relative to the entire sensor should be kept below 0.05mm. Please manage this.

(5) After installing the sensor, be careful not to generate stress on the solder joint when cutting and bending the substrate .

(6) Since the sensor terminals are exposed, contact with metal pieces or other objects may cause abnormal output. Be careful not to touch the terminals with metal pieces or your hands.

(7) After soldering, when applying coating to prevent deterioration of the insulation of the substrate, be careful not to allow chemicals to adhere to the sensor.

7.2 Cleaning requirements

(1) Since the product is open type, please be careful not to allow cleaning fluid to enter the interior.

(2) Please avoid using ultrasonic cleaning as it may cause product failure.

7.3 Storage and transportation

(1) Due to the structure of the pressure sensor chip, the output will fluctuate when it is exposed to light. Especially when applying pressure through a transparent cover, etc., please avoid light from reaching the sensor chip.

(2) Normally packaged pressure sensors can be transported by ordinary transportation vehicles. Please note: The product must be protected from moisture, shock, sunburn and pressure during transportation.

7.4 Other precautions for use

(1) If the installation method is incorrect, it may cause an accident, so please be careful.

(2) Avoid using the product in a manner that applies high-frequency vibrations, such as ultrasonic waves.

(3) The only pressure media that can be used directly are air and non-corrosive gases. Other media, especially corrosive media or media containing foreign matter, may cause malfunction and damage. Therefore, please avoid using it in the above environments .

(4) A pressure sensor chip is located inside the pressure inlet. Inserting a needle or other foreign object into the pressure inlet can damage the chip and clog the inlet , so please avoid such an operation.

(5) Please use the product within the rated pressure range. Using the product outside the rated pressure range may cause damage.

(6) Since static electricity may cause damage, please be careful to ground charged objects on the table and operators when using it to allow the surrounding static electricity to discharge safely.

(7) Depending on the pressure used, please pay full attention to the fixing and selection of the product, sleeve, and introduction tube.

If you have any questions, please feel free to ask.

- Please confirm under actual usage conditions

Since this specification is for a single product, please confirm the performance and quality under actual usage conditions to improve reliability.

Safety Precautions

This product is made of semiconductor components for general electronic equipment (communication equipment, measuring equipment, working machinery, etc.). Products using these semiconductor components may malfunction and fail due to external interference and surges, so please confirm the performance and quality under actual use. To be on the safe side, please perform safety design on the device (setting of protection circuits such as fuses and circuit breakers, multiple devices, etc.) so that life, body, property, etc. will not be harmed in the event of a malfunction. To prevent injuries and accidents, please be sure to comply with the following matters:

- The driving current and voltage should be used below the rated values.

Please wire according to the electrical definition . In particular, reverse connection of the power supply may cause accidents due to circuit damage such as heat, smoke, and fire, so please be careful.

- Be careful when fixing the product and connecting the pressure inlet .

Warranty and Disclaimer

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