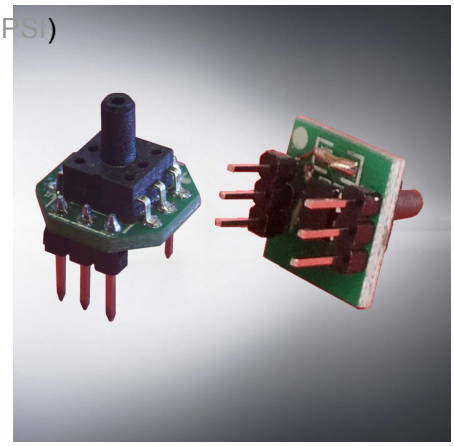
XGZP6867 Pressure Sensor Module

Features



- Ranges: -100kPa～0kPa…1000kPa(-15PSI～0PSI…150PSI)
- Perfect Accuracy(±1.5%) of full scale
- Gage,Vacuum Type
- For Non-corrosive gas or air and liquid
- Calibrated,Amplified I2C Signal output
- Temp. Compensated:0℃～+85℃(32℉～+185℉)
- Direct application,Low Cost.

Applications

■ For Medical equipment field, such as therapy equipment, breathing machine, oxygen generating equipment,monitor,alcohol tester.etc.

■ For Sport and fitness equipment field,such as massage,air spring bed,etc.

■ For Home appliance field, such as washing machine,active oxygen water machine beer machine,coffee machine, etc.

■ For Other fields, such as air pump,emergency lamp, dust collector, HVAC and pneumatic device etc.

Introduction

XGZP6867 is a prefect silicon pressure sensor module offering a I2C digital interface for reading pressure over the specified full scale pressure span and temp.range.

The XGZP6867 incorporates a silicon piezoresistive pressure sensor(XGZP SOP6) and an on-board Application Specific Integrated Circuit(ASIC) under PC board in a DIP8 package.

The XGZP6867 is fully calibrated and temperature compensated for offset,sensitivity, temperature and non-linearity,so XGZP6867 pressure sensor module satisfy the prefect repeatability,linearity, stability and sensibility, which can be applied directly in medical equipment, fitness machine,home electronics,and other pneumatic devices etc.

XGZP6867 pressure sensor module is for high volume application at an affordable cost and perfect performance.

Custom calibrations(excitation voltage and pressure range) are available.

Performance Parameter

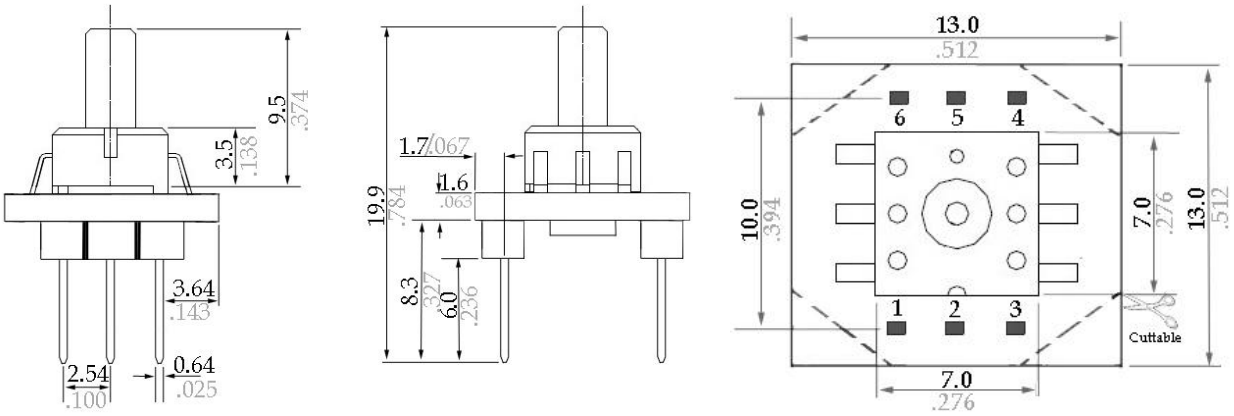
Unless otherwise specified, measurements were taken with a supply voltage of 5 Vdc at a temperature of 25±1℃ and humidity ranging from 25％～85

Item	Data	Unit
Power Supply	5	V
Max. Excitation current	3	mA
Output Resolution	24	Bit
Accuracy	±1.5	%Span
Response Time	2.5ms@OSR_P=1024X	Ms
SDA/SCL pull up resistor	4.7	Kohm
ESD HBM	4000	V
TCO(Temp. Coefficient of Offset)	±0.03	%FS/℃
TCS(Temp. Coefficient of Span)	±0.03	%FS/℃
Long Term Stability(1year)	±2	%Span
Over Pressure	2X (≤500kPa)	Rated
	1.5X(≥500kPa)	
Compensation Temp.	0 ～ 85/32 ～ 176	℃/℉
Ambient Temp.	-20 ～ 100/-4 ～ 212	℃/℉
Storage Temp.	-40 ～ 125/-40 ～ 257	℃/℉
TSO(Temp. Coefficient of Offset)	±0.03	%FS/℃

Pressure Range (100kPa=0.1MPa=1bar≈14.5PSI)

Pressure Range（kPa）	Model
-100 ～ 0	XGZP6867100KPGN
-40 ～ 0	XGZP6867040KPGN
-20 ～ 0	XGZP6867020KPGN
0 ～ 20	XGZP6867020KPG
0 ～ 40	XGZP6867040KPG
0 ～ 100	XGZP6867100KPG
0 ～ 200	XGZP6867200KPG
0 ～ 350	XGZP6867350KPG
-40 ～ 40	XGZP6867040KPGPN
-100 ～ 100	XGZP6867100KPGPN
-100 ～ 300	XGZP6867300KPGPN
-100 ～ 0	XGZP6867100KPGN
-40 ～ 0	XGZP6867040KPGN
-20 ～ 0	XGZP6867020KPGN
Available for more custom pressure range	

Dimension (Unit:mm/Inch)



Electric Connection

1	2	3	4	5	6
SCL	NC	GND	VDD	SDA	NC

NOTE:

1,N/C Pins must be left floating

2,Soldering of lead Pins:250'C for 5 sec max.

Order Guide

XGZP6867 100 KP G

- G — Pressure Type(G:Gauge GN:Negative GPN:P+N)
- KP — Pressure Unit(MP：MPa KP：kPa)
- 100 — Pressure Range(000-999)
- XGZP6867 — Model

I2C INTERFACE:

2C bus uses SCL and SDA as signal lines. Both lines are connected to VDDIO externally via pull-up resistors so that they are pulled high when the bus is free. The I2C device address ofNSA2300 is shown below. The LSB bit ofthe 7bits device address is configured via SDO/ADDR pin.

I2C Address

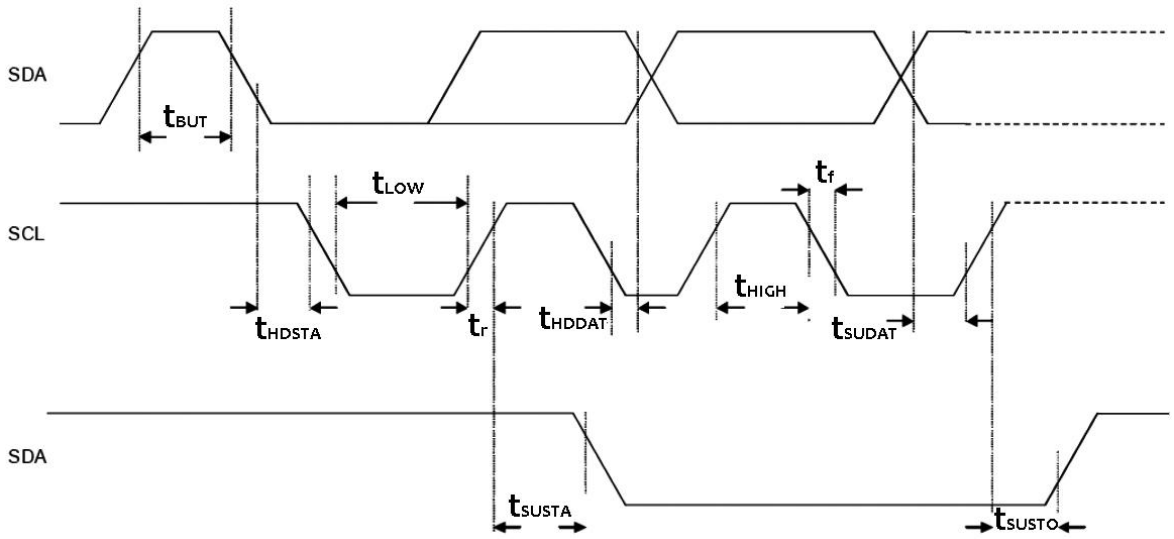
A7	A6	A5	A4	A3	A2	A1	W/R
1	1	0	1	1	0	SDA/ADDR	0/1

Electrical specification of the I2C interface pins

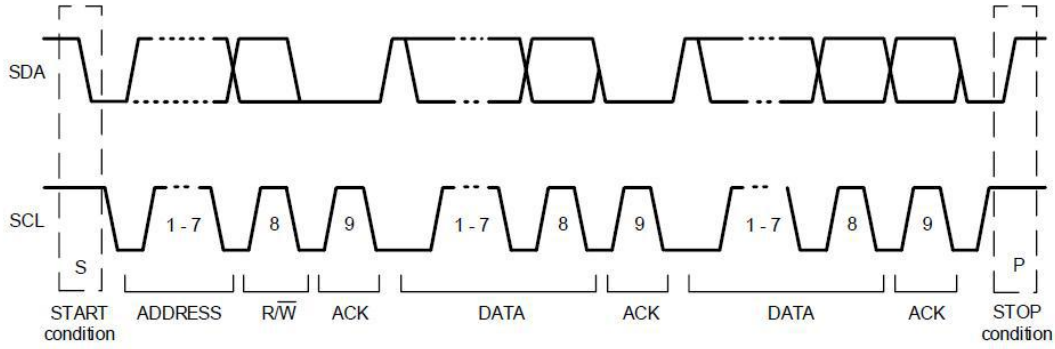
Symbol	Parameter	Condition	Min	Max	Unit
f_{scl}	Clock frequency			400	KHz
t_{LOW}	SCL low pulse		1.3		us
t_{HIGH}	SCL high pulse		0.6		us
t_{SUDAT}	SDA setup time		0.1		us
t_{HDDAT}	SDA hold time		0.0		us
t_{SUSTA}	Setup Time for a repeated start		0.6		us
t_{HDSTA}	Hold time for a start condition		0.6		us
t_{SUSTO}	Setup Time for a stop condition		0.6		us
t_{BUF}	Time before a new transmission		1.3		us

The I2C interface protocol has special bus signal conditions. Start (S), stop (P) and binary data conditions are shown below. At start condition, SCL is high and SDAhas a falling edge. Then the slave address is sent. Afterthe 7 address bits, the direction control bit R/W selects the read or write operation. When a slave device recognizes that it is being addressed, it should acknowledge by pulling SDA low in the ninth SCL (ACK) cycle.

At stop condition, SCL is also high, but SDAhas a rising edge. Data must be held stable at SDAwhen SCL is high. Data can change value at SDA only when SCL is low.



I2C Time Diagram



I2C Protocol

Correspondence of sensor output and AD value

Output of sensor(after calibration)=AD value/2^23*FULL_scal

Note:

Output：Unit:KPa

AD value：Read AD value by program（Between -8388608~8388607）

Full_scal:The difference value of Max pressure and Min pressure.e.g：-100~200KPa，Full_scal= Max - Min=200-（-100）=300KPa.

Notes:

■ **Mounting**

Adopting land on the PC board for ensuring the sensor is securely fixed.

■ **Soldering**

Due to its small size, the thermal capacity of the pressure sensor is low.Therefore, take steps to minimize the effects of external heat.

Damage and changes to characteristics may occur due to heat deformation.

Use a non-corrosive resin type of flux.

Since the pressure sensor is exposed to the atmosphere, do not allow flux to enter inside.

▼ Manual soldering

⊙Set the soldering tip from 260 to 300°C (30W), and solder for no more than 5 seconds.

⊙Please note that output may change if the pressure is applied on the terminals when the soldering.

⊙Thoroughly clean the soldering iron.

▼ SMD soldering

⊙Please keep the SMD solder bath temperature no higher than 260°C/500°F. When soldering, heat should be applied no longer than five seconds.

⊙When mounting onto a PCB of low thermal capacity, please avoid SMD soldering as this may cause heat deformity.

▼ Solder reworking
⊙Finish reworking in one operation.
⊙For reworking of the solder bridge, use a soldering iron with a flat tip. Please do not add more flux when reworking.
⊙Please use a soldering iron that is below the temperature given in the specifications in order to maintain the correct temperature at the tip of the soldering iron.
⊙Too much force on the terminals will cause deformation and loss in effectiveness of the solder. Therefore, please avoid dropping and careless handling of the product.
⊙Please control warping of the PCB within 0.05 mm of the sensor width.
⊙When cut folding the PCB after mounting the sensor, take measures to prevent stress to the soldered parts.
⊙The sensor terminals are designed to be exposed, so contact of the terminals with metal shards and the like will cause output errors. Therefore, please be careful and prevent things such as metal shards and hands from contacting the terminals.
⊙To prevent degradation of the PCB insulation after soldering, please be careful not to get chemicals on the sensor when coating.
⊙Please consult us regarding the use of lead-free solder.

■ **Cleaning**
▼ Since the pressure sensor chip is exposed to the atmosphere, do not allow cleaning fluid to enter inside.
▼ Avoid ultrasonic cleaning since this may cause breaks or disconnections in the wiring.

■ **Environment**
▼Please avoid using or storing the pressure sensor chip in a place exposed to corrosive gases (such as the gases given off by organic solvents, sulfurous acid gas, hydrogen sulfides, etc.) which will adversely affect the performance of the pressure sensor chip.
▼Since this pressure sensor chip does not have a water-proof construction, please do not use the sensor in a location where it may be sprayed with water, etc.
▼Avoid using the pressure sensors chip in an environment where condensation may form. Furthermore, its output may fluctuate if any moisture adhering to it freezes.
▼The pressure sensor chip is constructed in such a way that its output will fluctuate when it is exposed to light. Especially when pressure is to be applied by means of a transparent tube, take steps to prevent the pressure sensor chip from being exposed to light.
▼Avoid using the pressure sensor chip where it will be susceptible to ultrasonic or other high-frequency vibration.

■ **Quality check under actual loading conditions**
To assure reliability, check the sensor under actual loading conditions. Avoid any situation that may adversely affect its performance.

■ **Other handling precautions**
▼That using the wrong pressure range or mounting method may result in accidents.

▼The only direct pressure medium you can use is dry air. The use of other media, in particular, corrosive gases (organic solvent based gases, sulfurous acid based gases, and hydrogen sulfide based gases, etc.) and media that contains moisture or foreign substances will cause malfunction and damage. Please do not use them.

▼The pressure sensor chip is positioned inside the pressure inlet. Never poke wires or other foreign matter through the pressure inlet since they may damage the chip or block the inlet. Avoid use when the atmospheric pressure inlet is blocked.

▼Use an operating pressure which is within the rated pressure range. Using a pressure beyond this range may cause damage.

▼Since static charge can damage the pressure sensor chip, bear in mind the following handling precautions.

⊙When storing the pressure sensor chips, use a conductive material to short the pins or wrap the entire chip in aluminum foil. Plastic containers should not be used to store or transport the chips since they readily become charged.

⊙ When using the pressure sensor chips, all the charged articles on the bench surface and the work personnel should be grounded so that any ambient static will be safely discharged.

▼Based on the pressure involved, give due consideration to the securing of the pressure sensor DIP type and to the securing and selection of the inlet tube.

Any more question,please contact CFSensor(Email:Sales@CFSensor.com)

The listed specifications and dimensions are subject to change without prior notice.