



## MS5201-XD

### SMD Gage Pressure Sensor

#### SPECIFICATIONS

- ◆ 1 bar gage pressure range
- ◆ Uncompensated
- ◆ Piezoresistive silicon micromachined sensor
- ◆ Miniature surface mount 7.6 x 7.6 mm
- ◆ Low noise, high sensitivity, high linearity

The MS5201-XD is a gage type SMD pressure sensor, suitable for applications which require relative (gage) pressure measurements. The device consists of a silicon micromachined pressure sensor die mounted on a 7.6 x 7.6 mm ceramic carrier protected by a plastic cap with a port to connect plastic tube. The MS5201-XD can be delivered in a highly sensitive version giving a maximal output voltage or in a highly linear version giving a linear output voltage directly proportional to the applied pressure.

Full scale pressure	High Sensitivity Version			High Linearity Version		
	Product code	Full scale span	Linearity	Product code	Full scale span	Linearity
1 bar	MS5201-AD	240 mV	±0.20 % FS	MS5201-BD	150 mV	±0.05 % FS

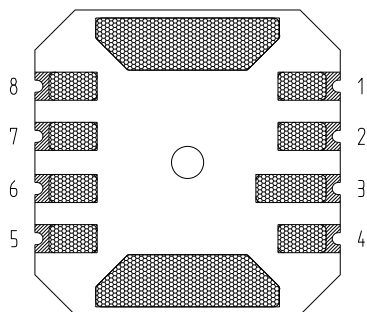
#### FEATURES

- ◆ Low cost SMD ceramic package
- ◆ High reliability, low drift
- ◆ -40 °C to +125 °C operation range
- ◆ Gel protection

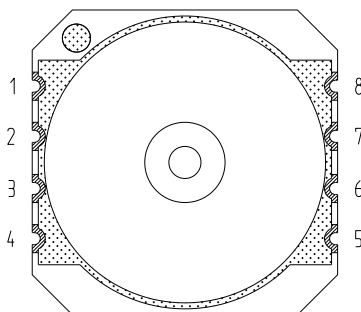
#### APPLICATIONS

- ◆ Medical instrumentation
- ◆ Pneumatic controls

## PIN CONFIGURATION

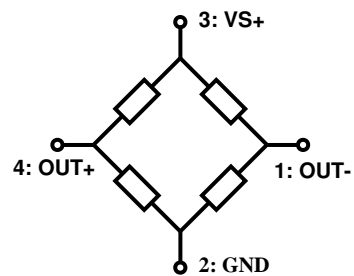


Bottom



Top

(Pressure to be applied from the top)



## PIN DESCRIPTION

Pin Name	Pin No	Function
OUT-	1	Negative output voltage of Wheatstone bridge
GND	2	Ground
VS+	3	Supply voltage of Wheatstone bridge
OUT+	4	Positive output voltage of Wheatstone bridge

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Conditions	Min	Max	Unit
Supply voltage	VS+	Ta = 25 °C	-	20	V
Storage temperature	Ts		-40	+125	°C
Overpressure MS5201-AD MS5201-BD	P	Ta = 25 °C	-	5 10	bar

**ELECTRICAL CHARACTERISTICS**

(Vs+ = 5 V; Ta = 25 °C)

	Parameter	Min	Typ	Max	Unit	Notes
MS5201-AD High Sensitivity	Operating pressure range	0	-	1	bar	
	Full-scale span (FS)	190	240	290	mV	
	Sensitivity	190	240	290	mV/bar	
	Linearity	-	±0.15	±0.40	% FS	1, 6
MS5201-BD High Linearity	Operating pressure range	0	-	1	bar	
	Full-scale span (FS)	120	150	180	mV	
	Sensitivity	120	150	180	mV/bar	
	Linearity	-	±0.05	±0.20	% FS	1, 6
All Types	Operating temperature range	-40	-	125	°C	
	Zero pressure offset	-40	0	40	mV	
	Pressure hysteresis	-	±0.05	±0.15	% FS	2, 6
	Temperature hysteresis	-	-	0.3	% FS	3, 6
	Repeatability	-	±0.05	±0.15	% FS	4, 6
	Bridge resistance	3.0	3.4	3.8	kΩ	
	Temperature coefficient of resistance	+2'400	2'900	+3'300	ppm/°C	5, 6
	Temperature coefficient of span	-1'500	-1'900	-2'300	ppm/°C	5, 6
	Temperature coefficient of offset	-80	-	+80	μV/°C	5, 6

**NOTES**

- 1) Deviation at one half full-scale pressure from the least squares best line fit over pressure range.
- 2) Maximum difference of output voltage after 1 pressure cycle at any pressure within the operating pressure range.
- 3) Maximum difference in offset after one thermal cycle from -40°C to +125°C.
- 4) Same as 2) after 10 pressure cycles.
- 5) Slope of the end-point straight line from 25°C to 60°C.
- 6) Not 100% tested.

## APPLICATION INFORMATION

### GENERAL

The MS5201-XD is a miniaturized gage pressure sensor series which has been designed for surface mounting applications. Its main advantages are the high reliability of the semiconductor sensor and a design which makes it suitable for applications requiring small-scale and cost-efficient solutions.

The sensor element of the MS5201-XD consists of a silicon micromachined membrane with a borosilicate glass and a backside vent hole. Implanted resistors make use of the piezo-resistive effect. The sensor is mounted in a special process allowing best-offset stability making the part suitable for direct PCB assembly.

Typical applications for this miniaturized pressure sensor MS5201-XD are blood pressure monitors or vacuum measurement equipment.

### CONNECTION TO PCB

The package outline of the module allows the use of a flexible PCB to connect it. This can be important for applications in watches and other special devices, and will also reduce mechanical stress on the device.

For applications subjected to mechanical shock, it is recommended to enhance the mechanical reliability of the solder junctions by covering the rim or the corners of MS5201-XD ceramic substrate with glue or Globtop-like material.

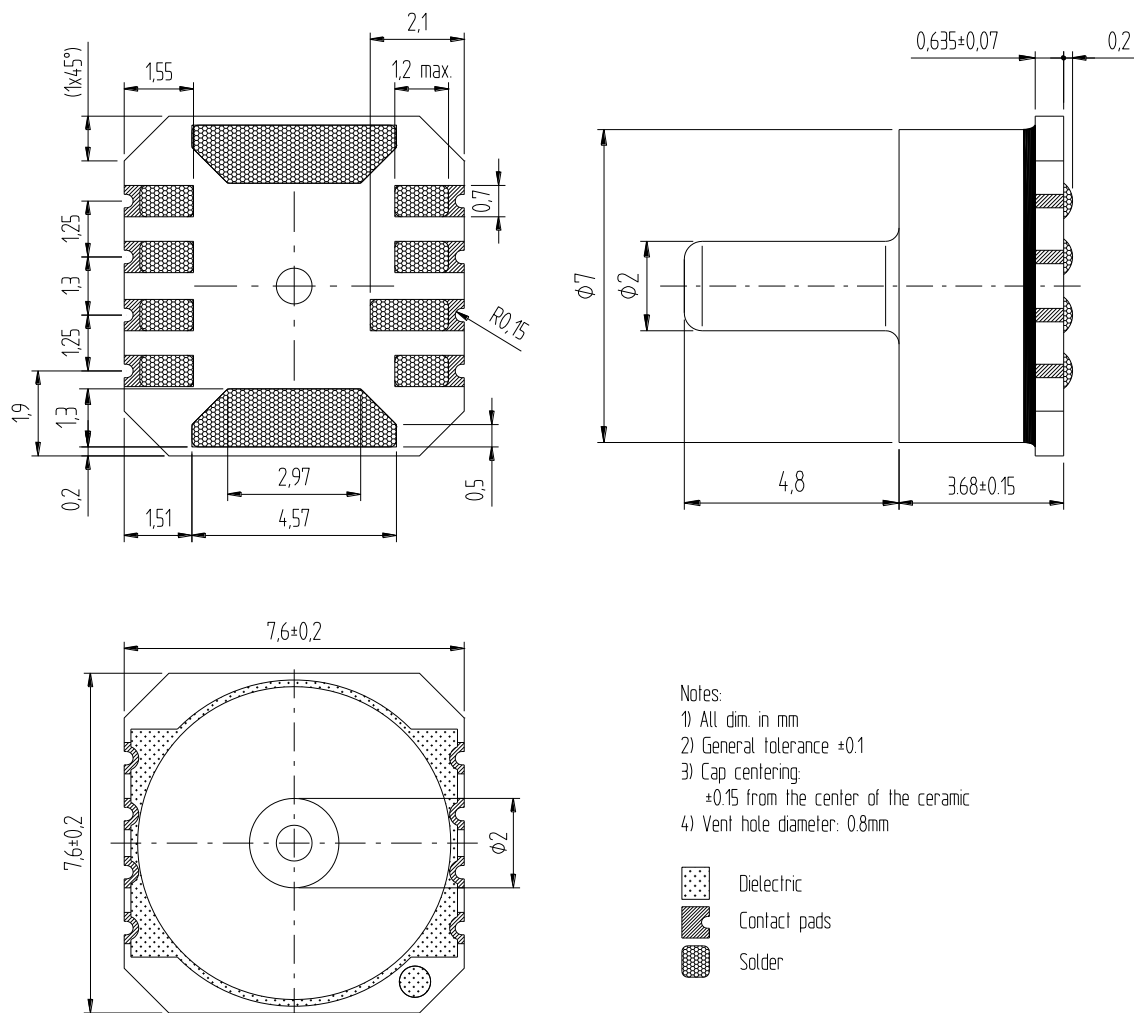
### SOLDERING

Please refer to the application note AN808 for all soldering issues.

### CLEANING

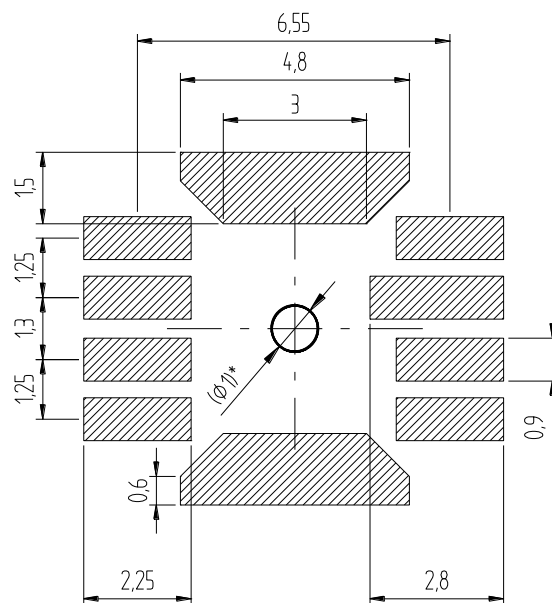
The MS5201-XD has been manufactured under cleanroom conditions. Each device has been inspected for the homogeneity and the cleanness of the silicone gel. It is therefore recommended to assemble the sensor under class 10'000 or better conditions. Should this not be possible, it is recommended to protect the sensor opening during assembly from entering particles and dust. To avoid cleaning of the PCB, solder paste of type "no-clean" shall be used. **Cleaning might damage the sensor.**

## PACKAGE OUTLINES



Device package outlines of MS5201-XD (plastic cap, gel protection of bonding wires)

## RECOMMENDED PAD LAYOUT



\*Recommended vent hole diameter

Recommended pad layout for soldering of the MS5201-XD on a printed circuit board

## ORDERING INFORMATION

Product code	Product	Art. No	Package	Comments
MS5201-AD	Pressure sensor 1 bar, High sensitivity	325201001	SMD hybrid with solder bumps, plastic cap, drop of gel on sensor, no gel protection of the bonding wires	
MS5201-BD	Pressure sensor 1 bar, High linearity	325201003		



株式会社 クローネ

■ カタログに掲載してある製品の色は印刷インキの関係上、実際とは異なる場合があります。  
■ 製品のデザイン、仕様等などは、予告なく変更する場合があります。

本 社：〒124-0023 東京都葛飾区東新小岩3丁目9番6号 TEL: (03) 3695-5431 / FAX: (03) 3695-5698  
大阪支店：〒530-0054 大阪市北区南森町2-2-9(南森町八千代ビル7F) TEL: (06) 6361-4831 / FAX: (06) 6361-9360  
e-mail: sales-tokyo@krone.co.jp URL: <https://www.krone.co.jp>

#### TE.com/sensorsolutions

Measurement Specialties, Inc., a TE Connectivity company.

Measurement Specialties, TE Connectivity, TE Connectivity (logo) and EVERY CONNECTION COUNTS are trademarks. All other logos, products and/or company names referred to herein might be trademarks of their respective owners.

The information given herein, including drawings, illustrations and schematics which are intended for illustration purposes only, is believed to be reliable. However, TE Connectivity makes no warranties as to its accuracy or completeness and disclaims any liability in connection with its use. TE Connectivity's obligations shall only be as set forth in TE Connectivity's Standard Terms and Conditions of Sale for this product and in no case will TE Connectivity be liable for any incidental, indirect or consequential damages arising out of the sale, resale, use or misuse of the product. Users of TE Connectivity products should make their own evaluation to determine the suitability of each such product for the specific application.

© 2015 TE Connectivity Ltd. family of companies All Rights Reserved.