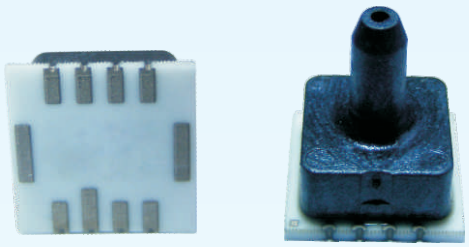
Model 113S
Plastic Housing Pressure Sensors

Description

The 113S pressure sensor is design for pneumatic pressure measurements. The sensor features a low profile which can be easily integrated on a printed circuit boards (PCB) by surface mount technology.

The BCM piezoresistive pressure sensor die is bonded on a ceramic substrate and packaged in a plastic housing. For the plastic housing, there are two different types which refer to two types of process connection. One (type I) has a tube at the top of the housing while the other (type II & type III) has a circular vent at the top of the housing. There are 10 metal pads on the backside of the ceramic substrate. Four of them are used for electrical connection and the rest for mechanical fixing.

The 113S is designed to measure low gauge or absolute pressure with non-linearity of 0.5%fs (full scale) and without temperature compensation.

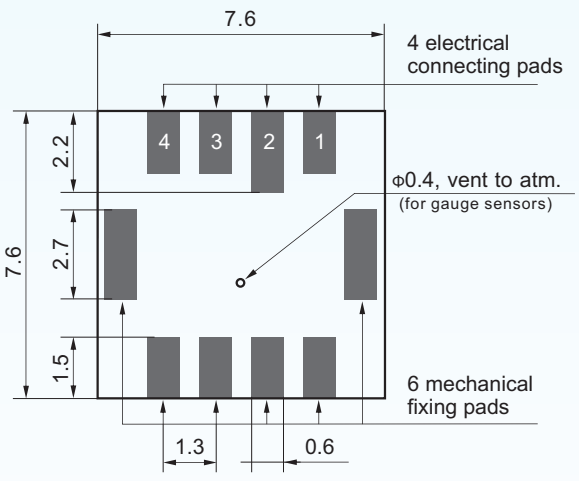


Features

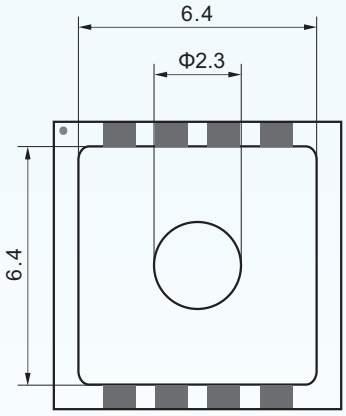
- surface mount technology (SMT)
- small size, light weight and low cost
- measuring ranges & pressure types:
  gauge pressure: -0.7~+0.7psi, ..., 0~5psi, ..., 0~100psi
  absolute pressure: 0~15psi, ..., 0~150psi
- typical output signal about 60mV
- non-linearity of 0.5%fs
- temperature non-compensated
- operating temperature range: -40~+125°C
- constant voltage excitation

Dimensions

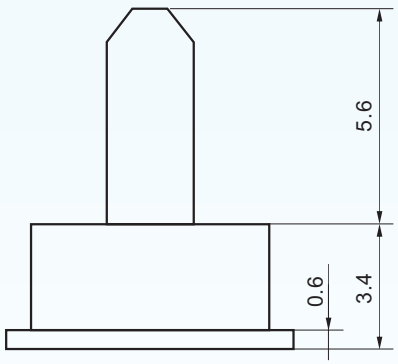
type I, ranges ⩽ 0~100 psi



bottom view



top view



side view

Note: all dimensions are in mm

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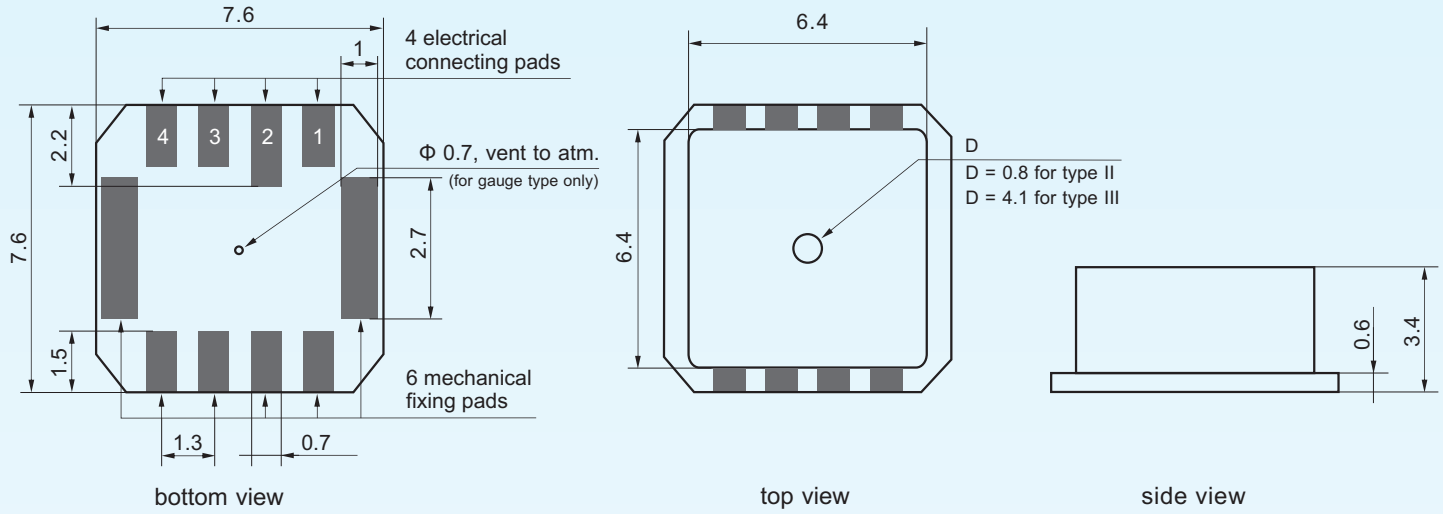
type II and type III



Note: all dimensions are in mm

Electrical Interface

pad 1: output + pad 2: excitation + pad 3: excitation - pad 4: output -

Technical Data

Parameter		Units	Specifications	Notes
pressure medium			non-electronic conductive and non-corrosive gas or dilute-liquid compatible with wetted parts materials	
pressure ranges and types	gauge for vacuum	psi	-0.7~+0.7, -1.4~+1.4, -3.6~+3.6, -7.3~+7.3, -13~+15,	1
	gauge	psi	0~5, 0~15, 0~30, 0~50, 0~100	1
	absolute	psi	0~15, 0~30, 0~50, 0~100, 0~150	1 & 2
overload pressure		%fs	300	
excitation			5Vdc (max. 10 Vdc), 1mA (max. 2mA)	
full scale output (fso)		mV	60 (for range ⩾ 1.4psi)	3
zero offset		mV	±25	
non-linearity		%fs	±0.5	4
hysteresis		%fs	±0.1	
repeatability		%fs	⩽ 0.2	
long-term stability		%fs/year	±0.5	
response time		ms	1 (front edge 10%~90%)	
noise in output (10Hz ~ 1kHz)		μV p-p	1	
bridge resistance		kΩ	4.5 ±30%	
storage temperature		°C	- 50 ~ +150	
operating temperature		°C	- 40 ~ +125	5
temperature coefficient of zero		%fso/°C	±0.05	5
temperature coefficient of span		%fso/°C	- 0.2	5
thermal hysteresis of zero		%fso	±0.2	
temperature coefficient of bridge resistance		%/°C	0.2	
weight		g	~ 0.3	

General conditions for measurements: excitation = 3Vdc, ambient temperature = 25°C, humidity = 40%RH.

Notes: 1. For customized pressure ranges, consult BCM.
2. For absolute pressure ranges > 100psi, only type II and type III are available.
3. Measured at 5Vdc excitation. Fso = 23mV for range of -0.7~+0.7psi.
4. Non-linearity is calculated using the “best fit straight line” method.
5. Calculated as a rate of output change between 0°C and 50°C, and normalized by the output at 25°C.

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

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Ordering Information

example: 113S(type II)-100-G-(*)

types
type I
type II
type III

pressure ranges			
(-0.7/+0.7) = -0.7~+0.7 psi	G	30 = 0~30 psi	G, A
(-1.4/+1.4) = -1.4~+1.4 psi	G	50 = 0~50 psi	G, A
(-3.6/+3.6) = -3.6~+3.6 psi	G	100 = 0~100 psi	G, A
(-7.3/+7.3) = -7.3~+7.3 psi	G	150 = 0~150 psi	A
(-13/+14.5) = -13~+14.5 psi	G	customized range available as an option	
5 = 0~5 psi	G		
15 = 0~15 psi	G, A		

pressure types
G = gauge pressure
A = absolute pressure

customized parameter
"(*)" is necessary only if any customized parameter is required, otherwise it is neglectable.

Examples of Ordering Code

- standard sensor:

  model(type)-pressure range-pressure type

  113S(type I)-50-G

- customized sensor:

  model(type)-pressure range-pressure type-customized parameter

  113S(type II)-100-A-(*)

  (*): Customized pressure range = 0~100 psi.

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