

## SX7 Series

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### 1 psig to 300 psig Button Package Plastic Silicon Pressure Sensors



#### DESCRIPTION

The SX7 Series sensors offer a high pressure sensor in a very small “button” style package.

These special devices use an RTV 730 for die attach to allow measurement of gauge pressures of 1 psi (SX7001D) to 300 psi (SX7300D) with pressure applied to the backside of the sensor chip (Port P2) only. The output voltage is proportional to pressure.

#### FEATURES

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- Button package
- High pressure
- Small size
- Low noise
- RTV 730 Die Attach

The output of the bridge is ratiometric to the supply voltage and operation from any dc supply voltage up to +12V is acceptable.

This series is intended for use with non-corrosive, non-ionic working fluids such as air, dry gases, and the like.

#### POTENTIAL APPLICATIONS

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- Medical equipment
- Computer peripherals
- Pneumatic controls
- HVAC

# SX7 Series Plastic Silicon Pressure Sensors

**Table 1. Maximum Ratings for All Devices**

Characteristic	Parameter	Unit
Supply voltage, VS	+12	Vdc
Maximum pressure on any port	200	psig
Temperature ranges: Operating Storage	-40 to 85 -55 to 125	°C [°F]
Humidity limits	0% to 100%	RH
Lead temperature	250	°C [°F]
Soldering duration	3	s

**Table 2. Standard Pressure Ranges**

Catalog Listing	Operating Pressure	Proof Pressure	Maximum Pressure	Full Scale Span*		
				Min.	Typ.	Max.
SX7001D	1 psi	–	20 psid	15 mV	20 mV	25 mV
SX7005D	5 psi	–	20 psid	50 mV	75 mV	100 mV
SX7015D	15 psi	–	30 psid	75 mV	110 mV	150 mV
SX7030D	30 psi	–	60 psid	75 mV	110 mV	150 mV
SX7100D	100 psi	–	150 psid	100 mV	150 mV	200 mV
SX7150D	150 psi	–	200 psid	75 mV	110 mV	150 mV
SX7300D	0 psi to 300 psi	350 psi	300 psid	100 mV	150 mV	200 mV

\*Full-Scale Span is the algebraic difference between the output voltage at full-scale pressure and the output at zero pressure. Full-Scale Span is ratiometric to the supply voltage.

**Table 3. Performance Characteristics**

<b>SX7001D</b>					
Characteristic	Min.	Typ.	Max.	Unit	Note
Sensitivity	3.0	4.0	5.0	mV/V/psi	–
Temperature coefficient of span	-2550	-2300	-2050	ppm/°C	4
Zero pressure offset	-35	-20	0	mV	–
Temperature coefficient of offset	–	+4	–	µV/V/°C	4
Combined pressure non-linearity and pressure hysteresis	–	0.2	±0.5	%FS	3
Long-term stability of offset and sensitivity	–	0.1	–	%FS	9
Response time (10% to 90%)	–	100	–	µs	8
Input resistance	–	4.1	–	kOhm	6
Temperature coefficient of resistance	+690	+750	+810	ppm/°C	–
Output resistance	–	4.1	–	kOhm	7
Repeatability	–	0.5	–	%FS	5
<b>SX7005D</b>					
Characteristic	Min.	Typ.	Max.	Unit	Note
Sensitivity	2.0	3.0	4.0	mV/V/psi	–
Temperature coefficient of span	-2550	-2300	-2050	ppm/°C	4
Zero pressure offset	-35	-20	0	mV	–
Temperature coefficient of offset	–	+4	–	µV/V/°C	4
Combined pressure Non-linearity and pressure hysteresis	–	0.2	±0.5	%FS	3
Long-term stability of offset and sensitivity	–	0.1	–	%FS	9
Response time (10% to 90%)	–	100	–	µs	8
Input resistance	–	4.1	–	kOhm	6
Temperature coefficient of resistance	+690	+750	+810	ppm/°C	–
Output resistance	–	4.1	–	kOhm	7
Repeatability	–	0.5	–	%FS	5
<b>SX7015D</b>					
Characteristic	Min.	Typ.	Max.	Unit	Note
Sensitivity	1.0	1.5	2.0	mV/V/psi	–
Temperature coefficient of span	-2400	-2150	-1900	ppm/°C	4
Zero pressure offset	-35	-20	0	mV	–
Temperature coefficient of offset	–	+4	–	µV/V/°C	4
Combined pressure Non-linearity and pressure hysteresis	–	0.2	±0.5	%FS	3
Long-term stability of offset and sensitivity	–	0.1	–	%FS	9
Response time (10% to 90%)	–	100	–	µs	8
Input resistance	–	4.1	–	kOhm	6
Temperature coefficient of resistance	+690	+750	+810	ppm/°C	–
Output resistance	–	4.1	–	kOhm	7
Repeatability	–	0.5	–	%FS	5

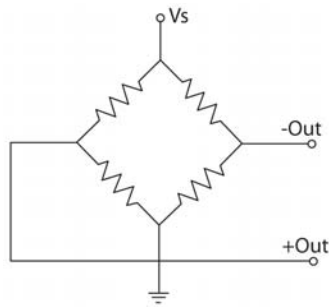
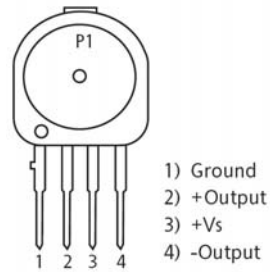
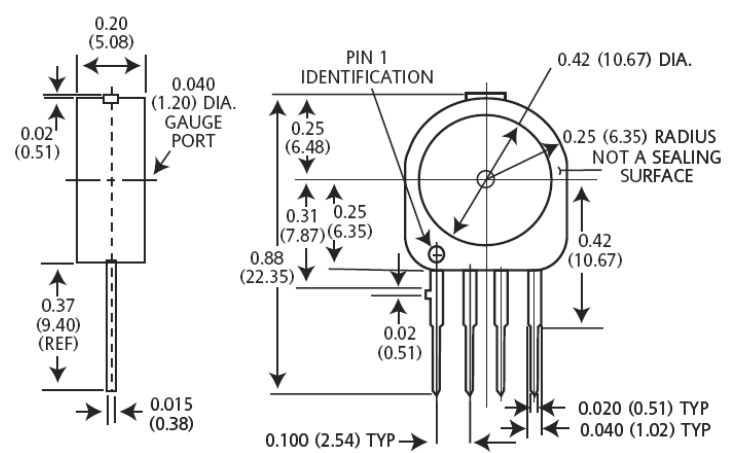
## 1 psi to 300 psi, Button Package

Table 3. Performance Characteristics (continued)

<b>SX7030D</b>					
<b>Characteristic</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>	<b>Note</b>
Sensitivity	0.5	0.75	1.0	mV/V/psi	–
Temperature coefficient of span	-2400	-2150	-1900	ppm/°C	4
Zero pressure offset	-35	-20	0	mV	–
Temperature coefficient of offset	–	+4	–	μV/V/°C	4
Combined pressure Non-linearity and pressure hysteresis	–	0.2	±0.5	%FS	3
Long-term stability of offset and sensitivity	–	0.1	–	%FS	9
Response time (10% to 90%)	–	100	–	μs	8
Input resistance	–	4.1	–	kOhm	6
Temperature coefficient of resistance	+690	+750	+810	ppm/°C	–
Output resistance	–	4.1	–	kOhm	7
Repeatability	–	0.5	–	%FS	5
<b>SX7100D</b>					
<b>Characteristic</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>	<b>Note</b>
Sensitivity	0.2	0.3	0.4	mV/V/psi	–
Temperature coefficient of span	-2400	-2150	-1900	ppm/°C	4
Zero pressure offset	-35	-20	0	mV	–
Temperature coefficient of offset	–	+4	–	μV/V/°C	4
Combined pressure Non-linearity and pressure hysteresis	–	0.2	±0.5	%FS	3
Long-term stability of offset and sensitivity	–	0.1	–	%FS	9
Response time (10% to 90%)	–	100	–	μs	8
Input resistance	–	4.1	–	kOhm	6
Temperature coefficient of resistance	+690	+750	+810	ppm/°C	–
Output resistance	–	4.1	–	kOhm	7
Repeatability	–	0.5	–	%FS	5
<b>SX7150D</b>					
<b>Characteristic</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>	<b>Note</b>
Sensitivity	0.1	0.15	0.2	mV/V/psi	–
Temperature coefficient of span	-2400	-2150	-1900	ppm/°C	4
Zero pressure offset	-35	-20	0	mV	–
Temperature coefficient of offset	–	+4	–	μV/V/°C	4
Combined pressure Non-linearity and pressure hysteresis	–	0.2	±0.5	%FS	3
Long-term stability of offset and sensitivity	–	0.1	–	%FS	9
Response time (10% to 90%)	–	100	–	μs	8
Input resistance	–	4.1	–	kOhm	6
Temperature coefficient of resistance	+690	+750	+810	ppm/°C	–
Output resistance	–	4.1	–	kOhm	7
Repeatability	–	0.5	–	%FS	5
<b>SX7300D</b>					
<b>Characteristic</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>	<b>Note</b>
Sensitivity	0.033	0.04	0.06	mV/V/psi	–
Temperature coefficient of span	-2400	-2150	-1900	ppm/°C	4
Zero pressure offset	-16	0	16	mV	–
Temperature coefficient of offset	–	+4	–	μV/V/°C	4
Combined pressure Non-linearity and pressure hysteresis	–	0.2	±0.5	%FS	3
Long-term stability of offset and sensitivity	–	0.1	–	%FS	9
Response time (10% to 90%)	–	100	–	μs	8
Input resistance	–	4.1	–	kOhm	6
Temperature coefficient of resistance	+690	+750	+810	ppm/°C	–
Output resistance	–	4.1	–	kOhm	7
Repeatability	–	0.5	–	%FS	5

**Notes:**

- Reference Conditions: TA = 25°C Supply VS = 5 Vdc Common Mode Line Pressure = 0 psig Pressure applied to Port 2 only.
- Pressure Hysteresis is the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.
- Slope of the best straight line from 0 °C to 70 °C.
- Maximum difference in output at any pressure with the operating pressure range and the temperature range within 0 °C to 70 °C after:
  - 100 temperature cycles, 0 °C to 70 °C
  - 1.0 million pressure cycles, 0 psi to Full-Scale Span
- Input resistance is the impedance between Vs and ground.
- Output resistance is the impedance between + and - outputs.
- Response time for a 0 psi to Full-Scale Span pressure step change, 10% to 90% rise time.
- Long-term stability over a one year period.

**Figure 1. Equivalent circuit****Figure 2. Pinout****Figure 3. Drawing****WARNING****PERSONAL INJURY**

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

**WARNING****MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

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