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Honeywell

SX7 Series

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.

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.

FEATURES

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

POTENTIAL APPLICATIONS

- 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

SX7001D					
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
SX7005D					
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
SX7015D					
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

Table 3. Performance Characteristics (continued)

SX7030D					
Characteristic	**Min.**	**Typ.**	**Max.**	**Unit**	**Note**
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
SX7100D					
Characteristic	**Min.**	**Typ.**	**Max.**	**Unit**	**Note**
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
SX7150D					
Characteristic	**Min.**	**Typ.**	**Max.**	**Unit**	**Note**
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
SX7300D					
Characteristic	**Min.**	**Typ.**	**Max.**	**Unit**	**Note**
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:

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

Figure 1. Equivalent circuit

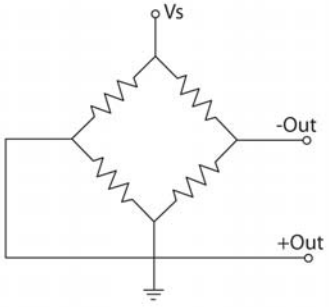


Figure 2. Pinout

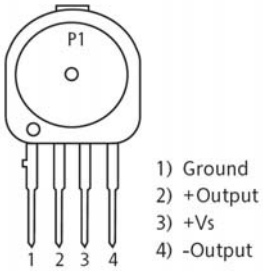
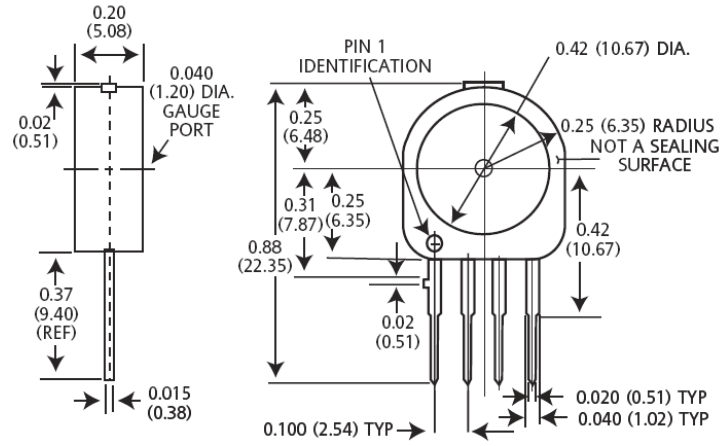


Figure 3. Drawing



⚠ WARNING

PERSONAL INJURY

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

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