



SM5812/SM5852 Amplified Pressure Sensor

- **Now IN SURFACE-MOUNTABLE PIN CONFIGURATION**
- **READY TO USE WITHOUT ADDITIONAL CIRCUITRY**
- **LOW-COST, FULLY AMPLIFIED, CALIBRATED, AND COMPENSATED IN A SINGLE PACKAGE**
- **AVAILABLE FOR DIFFERENTIAL, GAGE, AND ABSOLUTE APPLICATIONS AS WELL AS A NEW SINGLE-DIRECTION, DIFFERENTIAL DEVICE**
- **MULTIPLE PRESSURE RANGES AVAILABLE TO MEASURE PRESSURE DOWN TO 0.15 PSI FULL-SCALE AND UP TO 100 PSI FULL-SCALE**

DESCRIPTION

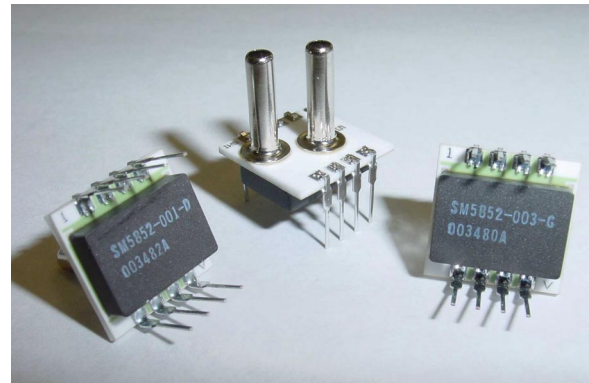
The Silicon Microstructures **SM5800** series of OEM pressure sensors combines state-of-the-art pressure sensor technology with signal conditioning to produce a fully signal conditioned, amplified, temperature compensated sensor in a dual in-line package (DIP) configuration.

Combining the sensor and the signal conditioning circuitry in a single package simplifies the use of advanced silicon micromachined pressure sensors. Now, the pressure sensor can be directly mounted to a standard printed circuit board and no additional components are required for obtaining an amplified high level, calibrated pressure measurement.

The **SM5800** Series pressure sensors are based on SMI's highly stable, piezoresistive pressure sensor chips mounted on a ceramic substrate. An electronically programmable ASIC is contained in the same package to provide calibration and temperature compensation.

The model **SM5812** is designed for operating pressure ranges from 0-5 PSI up to 0-100 PSI.

The model **SM5852** is designed for operating pressure ranges from 0-0.15 PSI up to 0-3 PSI. For both models, the sensor output is ratiometric with the supply voltage.



FEATURES

- Wide selection of full-scale ranges to 100 PSI
- Low pressure (from 0-0.15 PSI FS) based on unique SMI low-pressure die
- Amplified, calibrated, fully signal conditioned amplified output of 4.0 VDC FS span (0.5 to 4.5 V signal)
- Output ratiometric with supply voltage
- Temperature compensation for span and offset
- Gage, differential, and absolute versions
- DIP package for convenient PC board mounting
- Small, lightweight package

TYPICAL APPLICATIONS

- Barometric measurement
- Medical instrumentation
- Pneumatic control
- Gas flow
- Respirators and ventilators
- HVAC

SM5812/SM5852

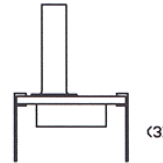
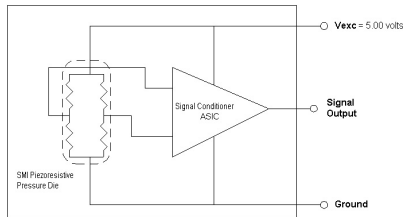
CHARACTERISTICS FOR SM58XX - SPECIFICATIONS

All parameters are measured at 5.000V supply at room temperature, unless otherwise specified.

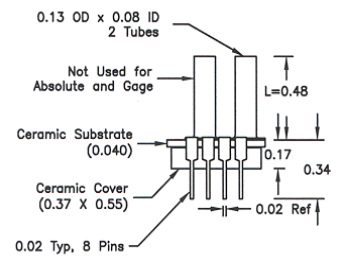
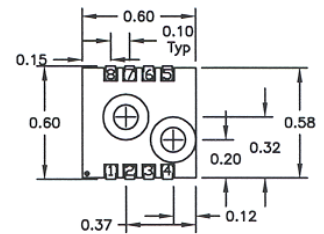
	Absolute ¹ , Gage, Single ¹			Differential			Units	Notes
	Min	Typ	Max	Min	Typ	Max		
Zero output (absolute and gauge)	0.42	0.50	0.58				V	2
Zero output (differential)				2.42	2.50	2.58	V	2
Output Span	3.92	4.00	4.08	1.96	2.00	2.04	V FS	2, 3
0.15 PSI	3.80	4.00	4.20	1.90	2.00	2.10	V FS	2, 3
Linearity	-0.5		+0.5	-0.5		+0.5	%FS	4
0.15 PSI	-2.5		+2.5	-2.5		+2.5	%FS	4
Pressure hysteresis	5812	-0.1	+0.1	-0.1		+0.1	%FS	
5852	-0.3		+0.3	-0.3		+0.3	%FS	
Temperature coefficient – Zero	-1.0		+1.0	-1.0		+1.0	%FS	
0.15 PSI	-2.5		+2.5	-2.5		+2.5	%FS	
Temperature coefficient –Span	-1.0		+1.0	-1.0		+1.0	%FS	
0.15 PSI	-2.0		+2.0	-2.0		+2.0	%FS	
Thermal hysteresis	-0.1		+0.1	-0.1		+0.1	%FS	
Supply voltage	4.75	5.00	5.25	4.75	5.00	5.25	V	2
Current consumption			10			10	mA	
Overpressure	5812	3X		3X		+0.1	%FS	5
5852	15X			15X			%FS	5
Operating temperature range	-40	25	+125	-40	25	+125	°C	
Compensated temperature range	0	25	+70	0	25	+70	°C	
Storage temperature range	-55	25	+135	-55	25	+135	°C	
Media compatibility								6
Weight		3			3		grams	

Notes:

1. Absolute Parts are only offered in the SM5812 Series; Singles (Pressure Type - S) have 2 ports but with the nominal output at 0.50 v and a nominal span of 4.00 V
2. Sensor output is ratiometric to supply
3. Full scale (FS) is defined as zero pressure to rated pressure; differential parts can be used $\pm$ FS. Absolute and Gauge zero output is 0.5 V typical and full-scale output is 4.5 V. Span is the difference between Full-scale output and zero output, (4 V). For Differential parts, the negative full-scale is typically at 0.5 V, zero is typically 2.5 V, and positive full-scale is 4.5 volts to give a span of $\pm$ 2.0 V.
4. Defined as best fit straight line for positive pressure applied to the part.
5. Or 225 PSI, whichever is less. Output amplifier will saturate at about 0.25 V for low pressure and about 4.75 V for high pressure.
6. Clean, dry gas compatible with wetted materials.
Wetted materials include Pyrex glass, silicon, alumina ceramic, epoxy, RTV, gold, aluminum, and nickel.



Pin Configuration (3)
For Surface Mount (5), see separate datasheet.



- Notes:
- All dimensions are shown in inches
 - Tolerance on all dimensions ± 0.005 unless otherwise specified.

Pressure Ranges

PSI	5812	PSI	5852
5	005	0.15	001
15	015	0.30	003
30	030	0.80	008
60	060	1.50	015
100	100	3.00	030

58XX Series Pin-Out

- 1 N/C
- 2 Ground
- 3 N/C
- 4 N/C
- 5 N/C
- 6 N/C
- 7 $V_{exc} = 5.000$ Volts
- 8 Signal Output

Do **not** connect to pins labeled with N/C Pins are NOT floating and connection to N/C pins may cause malfunctions.

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传真：0755-83376182 (0) 13902971329 MSN: SUNS8888@hotmail.com

邮编：518033 E-mail:szss20@163.com QQ: 195847376

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西安分公司：西安高新开发区 20 所(中国电子科技集团导航技术研究所)

西安劳动南路 88 号电子商城二楼 D23 号

TEL: 029-81022619 13072977981 FAX:029-88789382