



- ***OEM PRESSURE TRANSDUCER FULLY TEMPERATURE COMPENSATED AND CALIBRATED DUAL-IN-LINE PACKAGE***

## DESCRIPTION

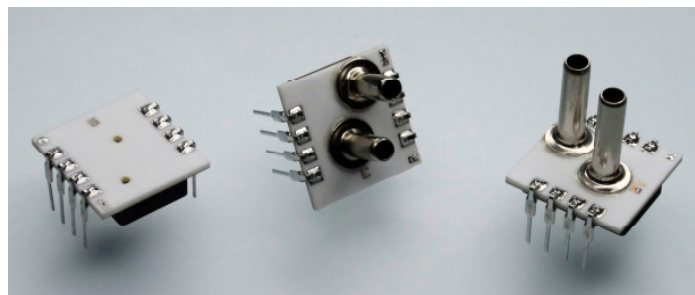
The **SM5600** Series of OEM pressure sensors are fully calibrated, temperature compensated pressure sensors in dual in-line packages for printed circuit board mounting. These sensors offer improved performance as well as the option for either constant current or constant voltage excitation. Ultra-low pressure ranges are also available (see **SM5651/SM5652** datasheet), resulting in the broadest selection of standard pressure ranges in the industry.

The **SM5600** Series pressure sensors are constructed by attaching a highly stable piezoresistive pressure sensor chip to a ceramic substrate. Thick film resistors on the ceramic are laser trimmed during manufacturing to provide zero offset calibration, temperature compensation for zero offset, and temperature compensation for sensitivity. In the Model **SM5611**, an additional resistor is trimmed to normalize the output of an external differential amplifier to provide span calibration when the sensor is driven by a constant current supply. In the Model **SM5612**, a constant voltage supply can be used and the normalized output span of each sensor can then be easily amplified.

The model **SM5611** is designed for constant current excitation.

The model **SM5612** is designed for constant voltage excitation.

Various electrical pin and pressure port configurations are available for flexibility in matching this product to specific applications.



## FEATURES

- 15, 30, 60, and 100 PSI FS Ranges Available
- Constant voltage and constant current versions
- Easy to use dual in-line package (DIP)
- Wide 0-60°C compensated temperature range
- Span calibration to  $\pm 2\%$
- Zero offset calibration
- High performance, stable packaged silicon chip
- Gage, differential, and absolute pressure configurations

## APPLICATIONS

- Barometric Pressure
- Medical Instrumentation
- Environmental Control
- Altimeters
- Automotive Diagnostics
- Appliances



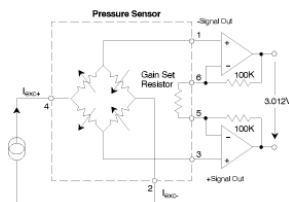
### CHARACTERISTICS FOR SM5611/SM5612 - SPECIFICATIONS

Test Conditions: Model SM5611 w/excitation = 1.500mA @ 25 °C, Model SM5612 w/excitation = 10.00Vdc @ 25 °C, unless otherwise specified.

|                                | Min.                             | Typ.  | Max.  | Units       | Notes |
|--------------------------------|----------------------------------|-------|-------|-------------|-------|
| <b>Excitation</b>              |                                  |       |       |             |       |
| Current (SM5611)               | 0.00                             | 1.50  | 3.00  | mA          |       |
| Voltage (SM5612)               | 0.00                             | 10.00 | 20.00 | V           |       |
| <b>Output</b>                  |                                  |       |       |             |       |
| Span (SM5611)                  | 75.0                             | 105.0 | 150.0 | mV          | 1     |
| Span (SM5612)                  | 39.5                             | 40.0  | 40.5  | mV          | 2     |
| Offset                         | -2.00                            | ±0.20 | 2.00  | mV          |       |
| <b>Temperature Performance</b> |                                  |       |       |             |       |
| TC Span                        | -0.5                             | ±0.2  | 0.5   | %FS         | 3     |
| TC Offset                      | -0.5                             | ±0.2  | 0.5   | %FS         | 3     |
| Temp Hysteresis                |                                  | ±0.1  |       | %FS         |       |
| <b>Accuracy</b>                |                                  |       |       |             |       |
| Linearity                      | -0.10                            | ±0.05 | 0.10  | %FS         | 4     |
| Repeatability                  | -0.10                            | ±0.05 | 0.10  | %FS         |       |
| Pressure Hysteresis            | -0.10                            | ±0.05 | 0.10  | %FS         |       |
| Sensitivity Matching           | -2.00                            | ±0.20 | +2.00 | %FS         | 1, 5  |
| <b>Impedance (SM5611)</b>      |                                  |       |       |             |       |
| Z Input                        | 1.80                             | 3.00  | 3.80  | kΩ          |       |
| Z Output                       | 2.70                             | 3.30  | 3.80  | kΩ          |       |
| <b>Impedance (SM5612)</b>      |                                  |       |       |             |       |
| Z Input                        | 4.50                             | 8.00  | 25.00 | kΩ          |       |
| Z Output                       | 2.00                             | 2.50  | 3.80  | kΩ          |       |
| <b>Temperature Range</b>       |                                  |       |       |             |       |
| Calibration                    | 0                                |       | 60    | °C          |       |
| Operating                      | -40                              |       | 125   | °C          |       |
| Storage                        | -55                              |       | 125   | °C          |       |
| <b>Dynamic Characteristics</b> |                                  |       |       |             |       |
| Proof Pressure                 | 3X or 225 PSI, whichever is less |       |       | FS Pressure |       |
| Burst Pressure                 | 5X or 225 PSI, whichever is less |       |       | FS Pressure |       |

Notes:

1. Positive Pressure is defined as entry on the bottom side of the die; gain, during factory calibration, is set using negative pressure
2. Output span of unamplified sensor
3. Measured over a temperature range of 0 to 60 °C.
4. Best fit straight line
5. Sensitivity matching relates to part-to-part matching



**Circuit Configuration for SM5611**

**Model 5611 Pin-out**  
1 -Signal Out  
2 -I<sub>exc</sub>  
3 +Signal Out\*  
4 +I<sub>exc</sub>  
5 Gainset Resistor  
6 Gainset Resistor

**Model 5612 Pin-Out**  
1 -Signal Out  
2 -V<sub>exc</sub>  
3 +Signal Out\*  
4 +V<sub>exc</sub>  
5  
6

\*Output increases as pressure is increased on Positive Differential Tube or Absolute Tube

**DO NOT connect to unlabeled pins**

### ORDERING INFORMATION:

Excitation  
1: Constant Current  
2: Constant Voltage

Pin Configuration  
3: Pins opposite direction of tube  
5: Surface mountable Pins opposite side of tubes

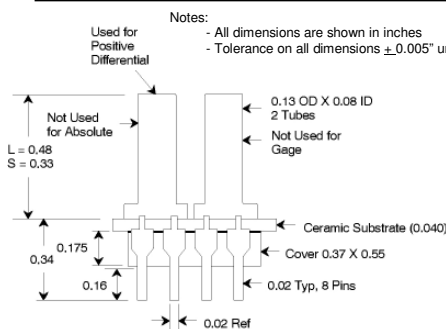
Tube Length  
L: Long (0.480" ± 0.005")  
N: No Tube  
S: Short Tube (0.330" ± 0.005")

Pressure Type  
A: Absolute (1 Tube)  
D: Differential (2 Tubes)  
G: Gauge (1 Tube)

Model Number  
**SM5612 - 005 - D - 3 - L**  
Pin Configuration  
Excitation Pressure range Pressure Type Tube Length

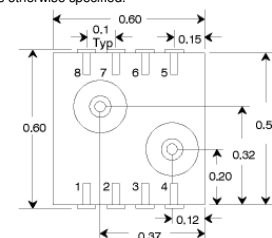
### Pressure Ranges

| PSI | 5611/ 5612 |
|-----|------------|
| 15  | 015        |
| 30  | 030        |
| 60  | 060        |
| 100 | 100        |



Notes:

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



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