

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

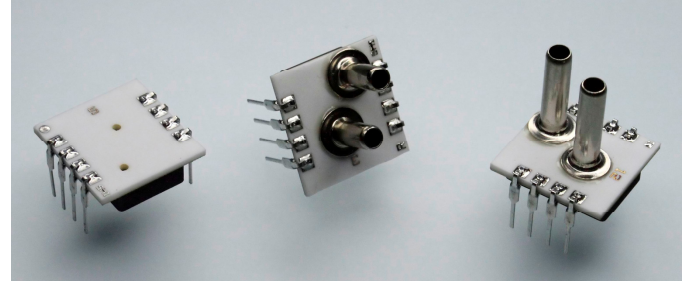
The **SM5650** Series of OEM pressure sensors are fully calibrated, temperature compensated low-pressure sensors in dual in-line packages for printed circuit board mounting. These sensors offer improved performance as well as the option for either constant current or constant voltage excitation.

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 **SM5651**, 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 **SM5652**, a constant voltage supply can be used and the normalized output span of each sensor can then be easily amplified.

The model **SM5651** is designed for constant current excitation.

The model **SM5652** is designed for constant voltage excitation.

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

**FEATURES**

- Low pressure (from 0-0.15 PSI FS to 0-3.0 PSI FS)
- Constant voltage and constant current versions
- Easy to use dual in-line package (DIP)
- Span calibration to  $\pm 2\%$  for low pressure
- Zero offset calibration
- High performance, stable packaged silicon chip
- Gage and differential pressure configurations
- Wide 0-60° C compensated temperature range

**APPLICATIONS**

- Medical equipment
- Respiration
- HVAC
- Level detection
- Flow measurement
- Industrial control

**SM5651/SM5652**  
**Low Pressure, Constant Current DIP**  
**Low Pressure, Constant Voltage DIP**

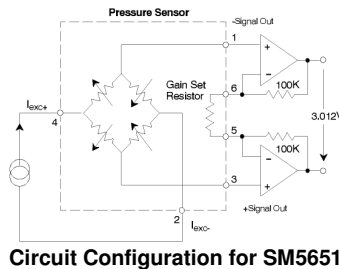
**CHARACTERISTICS FOR SM5651/SM5652 - SPECIFICATIONS**

Test Conditions: Model SM5651 w/excitation = 1.500mA @ 25 °C, Model SM5652 w/excitation = 10.00Vdc @ 25 °C, unless otherwise specified. All parameters below for differential parts are defined for top side only. All parameters below for gage parts are defined for back side only.

	Min.	Typ.	Max.	Units	Notes
<b>Excitation</b>					
Current (SM5651)	>0	1.50	3.00	mA	
Voltage (SM5652)	>0	10.00	20.00	V	
<b>Output</b>					
Span (SM5651)	25.0	45.0	75.0	mV	1
Span (SM5652)	24.5	25.0	25.5	mV	1, 2
Zero Offset	-2.00	+0.20	2.00	mV	
<b>Temperature Performance</b>					
TC Span	-0.65	+0.20	0.65	%FS	3
TC Offset	-1.00	+0.20	1.00	%FS	3
Temp Hysteresis	-0.30	+0.05	0.30	%FS	4, 7
<b>Accuracy</b>					
Linearity	-0.30	+0.05	0.30	%FS	5, 7
Repeatability	-0.30	+0.05	0.30	%FS	7
Pressure Hysteresis	-0.30	+0.05	0.30	%FS	7
Sensitivity Matching	-2.00	-0.20	+2.00	%FS	1, 6, 7
<b>Impedance (SM5651)</b>					
Z Input	1.80	3.00	3.80	kΩ	
Z Output	2.70	3.30	3.80	kΩ	
<b>Impedance (SM5652)</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	3
Operating	-40		+125	°C	7
Storage	-40		+125	°C	7
<b>Dynamic Characteristics</b>					
Die Proof Pressure	10X			FS Pressure	7
Die Burst Pressure	15X			FS Pressure	7

Notes:

- Positive Pressure is defined as entry on the bottom side of the die; gain, during factory calibration, is set using negative pressure
- For the SM5652, 0.15 PSI range, span is 23.75 (min) to 26.25 (max).
- Measured over a temperature range of 22 to 58 °C.  
 For 0.15 PSI, TC Span=±2.0%FS; TC Offset=±2.0%FS; For 0.3 PSI, TC Span=±0.75%FS
- For 0.30 PSI, Hysteresis=±0.45%FS;  
 For 0.15 PSI, Hysteresis=±0.65%FS
- Best fit straight line; measured from top-side of die  
 For 0.30 PSI, Linearity=±0.5%FS;  
 For 0.15 PSI, Linearity=±2.5%FS
- Sensitivity matching relates to part-to-part matching  
 For 0.15 PSI, Sensitivity Matching=5.0%FS
- Tested on a sample basis



**ORDERING INFORMATION:**

Excitation  
 1: Constant Current  
 2: Constant Voltage

Pin Configuration  
 3: Pins opposite direction of tube  
 5: Surface Mountable Pins opposite side of the tube

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

Pressure Type  
 D: Differential (2 Tubes)  
 G: Gage (1 Tube)

Other configurations available on large orders. Consult SMI for details.

Model Number: **SM5652 - 003 - D - 3 - L**

Pin Configuration: Excitation, Pressure range, Pressure Type, Tube Length

**Model 5651 Pin-out**

- 1 -Signal Out
- 2 -Iexc
- 3 +Signal Out\*
- 4 +Iexc
- 5 Gainset Resistor
- 6 Gainset Resistor

**Model 5652 Pin-Out**

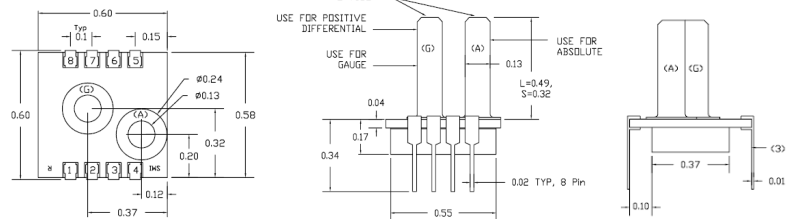
- 1 -Signal Out
- 2 -Vexc
- 3 +Signal Out\*
- 4 +Vexc
- 5
- 6

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

DO NOT connect to unlabeled pins

Pressure Ranges	
PSI	5651/ 5652
0.15	001
0.30	003
0.80	008
1.50	015
3.00	030

Notes: All dimensions are shown in inches



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