SILICON MICROSTRUCTURES INCORPORATED

SM5551/SM5552
Low Pressure, Constant Current
Low Pressure, Constant Voltage

- *LOW PRESSURE TRANSDUCER FULLY TEMPERATURE COMPENSATED AND CALIBRATED*

DESCRIPTION

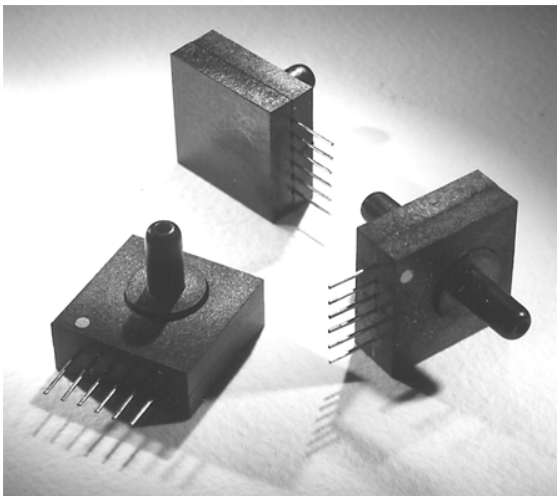
Pressure sensor models **SM5551** and **SM5552** are fully temperature-compensated and calibrated. Each sensor is housed in a rugged plastic enclosure.

Silicon Microstructures uses a unique silicon sensor chip structure to optimize low-pressure performance and to provide a true low-pressure sensor – not merely a derated high-pressure part. The result is a device that provides the performance necessary for low-pressure applications. Both constant current (model **SM5551**) and constant voltage (model **SM5552**) are available.

Factory calibration provides either a gain-set resistor (model **SM5551**) or a fixed 25mV full-scale output (model **SM5552**). By eliminating the need for customer gain adjustments, these parts are truly interchangeable and offer remarkable assembly-cost savings for a wide variety of OEM industrial, medical, and consumer products.

Rugged pins, sealed into the package to prevent breakage, allow simple placement in PC boards using standard 0.1 inch center-to center pin spacing. Full high-temperature plastic enclosure prevents substrate drift and eases handling.

Custom pressure ranges available in high-volume applications.



FEATURES

- Low pressure (from 0-0.15 PSI FS to 0-3.0 PSI FS)
- Differential or Gage Measurement
- Fully-enclosed, rugged plastic housing
- Fully Temperature-compensated
- Thoroughly Calibrated and Interchangeable
- Both Constant Voltage or Constant Current Drive Configuration Available
- Calibrated to Better than 2%

APPLICATIONS

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

SM5551/SM5552

CHARACTERISTICS FOR SM5551/SM5552 - *SPECIFICATIONS*

Test Conditions: Model SM5501 w/excitation = 1.500mA @ 25 °C, Model SM5502 w/excitation = 10.00Vdc @ 25 °C, unless otherwise specified.

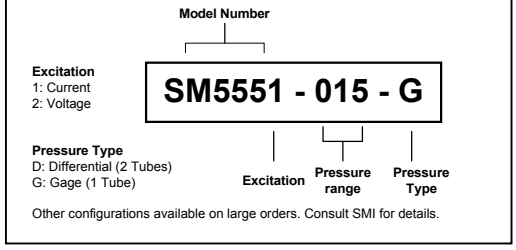
	Min.	Typ.	Max.	Units	Notes
Excitation					
Current (SM5551)	0.00	1.50	3.00	mA	
Voltage (SM5552)	0.00	10.00	20.00	V	
Output					
Span (SM5551)	25.0	45.0	75.0	mV	
Span (SM5552)	24.5	25.0	25.5	mV	1
Offset	-2.00	±0.20	2.00	mV	
Temperature Performance					
TC Span	-1.20	±0.20	1.20	%FS/100°C	2
TC Offset	-2.40	±0.20	2.40	%FS/100°C	2
Temp Hysteresis	-0.30	±0.05	0.30	%FS	3
Accuracy					
Linearity	-0.30	±0.05	0.30	%FS	4
Repeatability	-0.30	±0.05	0.30	%FS	
Pressure Hysteresis	-0.30	±0.05	0.30	%FS	
Sensitivity Matching	-2.00	±0.20	+2.00	%FS	5
Impedance (SM5501)					
Z Input	2.20	3.00	3.80	kΩ	
Z Output	2.90	3.30	3.80	kΩ	
Impedance (SM5502)					
Z Input	4.50	8.00	25.00	kΩ	
Z Output	2.00	2.50	3.80	kΩ	
Temperature Range					
Calibration	0		70	°C	
Operating	-40		125	°C	
Storage	-55		125	°C	
Dynamic Characteristics					
Proof Pressure	10X			FS Pressure	
Burst Pressure	15X			FS Pressure	

Notes:
1. For the SM5552, 0.15 PSI range, span is 23.75 (min) to 26.25 (max).
2. Measured over a temperature range of 0 to 70 °C. For explanation of RMS error, see application note AN5500.
   For 0.15 PSI, TC Span=±3%FS/100 °C; TC Offset=±2.5%FS/100 °C
3. For 0.30 PSI, Hysteresis=±0.45%FS;
   For 0.15 PSI, Hysteresis=±0.65%FS
4. Best fit straight line
   For 0.30 PSI, Linearity=±0.5%FS;
   For 0.15 PSI, Linearity=±2.5%FS
5. Sensitivity matching relates to part-to-part matching
   For 0.15 PSI, Sensitivity Matching=5.0%FS

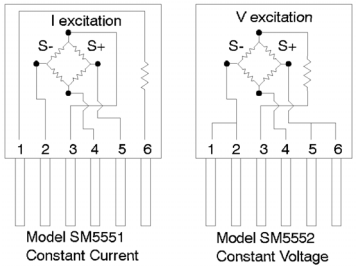
Pressure Ranges

PSI	5551/ 5552
0.15	001
0.30	003
0.80	008
1.50	015
3.00	030

ORDERING INFORMATION:



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



1 Rs (Span Cal)	**1 -Signal Out**
2 -Signal Out	**2 -Signal Out**
3 I excitation	**3 V excitation**
4 Ground	**4 Ground**
5 +Signal Out*	**5 +Signal Out***
6 Rs (Span Cal)	**6 +Signal Out***

*Output increases as top-port pressure is increased

Notes:
- All dimensions are shown in inches
- Tolerance on all dimensions ± 0.005" unless otherwise specified.
- Side view for gage/absolute parts is same as the differential without the bottom port