

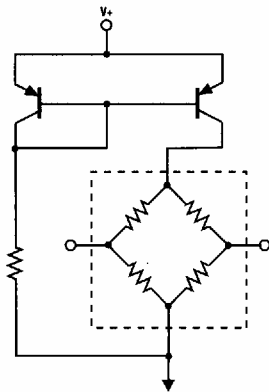
**FEATURES**

- Button and DIP Packages
- Extremely Small Size
- On-Chip Temperature Compensation
- On-Chip Calibrated Zero and Span
- Low Noise
- High Impedance

**APPLICATIONS**

- Medical Equipment
- Barometry
- Computer Peripherals
- Pneumatic Controls
- HVAC

**EQUIVALENT CIRCUIT**

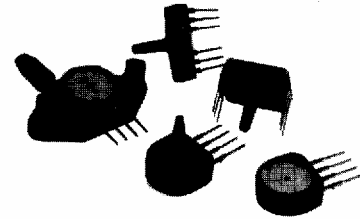


**GENERAL DESCRIPTION**

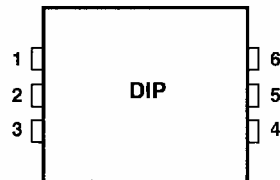
The SOC Series parts are designed for applications where an accurate, fully calibrated and compensated sensor is needed in a very small package. These devices feature thin-film, on-chip, laser trimmed, pressure sensors housed in a small DIP or "button" package. Devices provide an accurate and stable output over 0°C to 70°C. This series is intended for use with non-corrosive, non-ionic working fluids such as air, dry gases, and the like.

This design supports a family of sensors for measuring absolute, gage, and differential pressures from 0 to 1 psi up through 0 to 100 psi.

These sensors are designed to be used with 5 volt supplies. Because the devices have very low noise and excellent temperature compensation, they are ideal for medical and other high performance applications. The high impedance and small size makes this part an ideal choice for portable and battery operated applications.

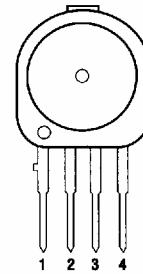


**ELECTRICAL CONNECTIONS**



- |                      |               |
|----------------------|---------------|
| 1) -V <sub>OUT</sub> | 2) GROUND     |
| 3) +V <sub>OUT</sub> | 4) No Connect |
| 5) V <sub>S</sub>    | 6) No Connect |

**DIP PACKAGE**



- |                    |                      |
|--------------------|----------------------|
| 1) GROUND          | 2) -V <sub>OUT</sub> |
| 3) -V <sub>S</sub> | 4) +V <sub>OUT</sub> |

**BUTTON PACKAGE**

**PHYSICAL CHARACTERISTICS** (For All Devices)**OPERATING CONDITIONS**

Supply Voltage, $V_S$	4.75 to 5.25V <sub>DC</sub>
Supply Current (Max.)	2.0mA

**ENVIRONMENTAL SPECIFICATIONS****Temperature Ranges**

Compensated	0°C to +70°C
Operating	-40°C to +85°C
Storage	-55°C to +125°C

**Humidity Limits**

0 to 100% RH

**Maximum Pressure at any Port** 150 psig**STANDARD PRESSURE RANGES**

Part Number	Operating Pressure	Proof Pressure*	Sensitivity
SOC01Dxx	0-1 psid	20 psid	25mV/psid
SOC05Dxx	0-5 psid	20 psid	10mV/psid
SOC15Axx	0-15 psia	30 psia	3.33mV/psia
SOC15Dxx	0-15 psid	30 psid	3.33mV/psid
SOC30Axx	0-30 psia	60 psia	1.67mV/psia
SOC30Dxx	0-30 psid	60 psid	1.67mV/psid
SOC100Axx	0-100 psia	150 psia	0.50mV/psia
SOC100Dxx	0-100 psid	150 psid	0.50mV/psid

\* Maximum pressure above which causes permanent sensor failure.

**PERFORMANCE CHARACTERISTICS** (1)

Characteristic	Min.	Typ.	Max.	Unit
Full-Scale Span (2,9)	49.5	50.0	50.5	mV
Zero Pressure Offset	-500	0	+500	μV
Combined Linearity & Hysteresis (3)	—	±0.1	±0.5	%FSO
Temperature Effect on Span (0°C to 70°C) (4)	—	±0.2	±1.0	%FSO
Temperature Effect on Offset (0°C to 70°C) (4)	—	±100	±500	μV
Repeatability (5)	—	±0.2	±0.5	%FSO
Output Impedance	—	—	5.0	KΩ
Common-Mode Voltage (6)	—	1.5	—	V <sub>DC</sub>
Response Time (7)	—	100	—	μsec
Long Term Stability of Offset and Span (8)	—	±0.1	—	%FSO

**SPECIFICATION NOTES: (For All Devices)**

Note 1: Reference Conditions: Supply Voltage,  $V_S = 5V_{DC}$ ,  $T_A = 25^\circ C$  Common-Mode Line Pressure = 0 psig, Pressure Applied to Port B for gauge pressures and Port A for absolute, unless otherwise noted.

Note 2: Span is the algebraic difference between the output voltage at full-scale pressure and the output at zero pressure.

Note 3: See Definition of Terms.

Hysteresis: The maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.

Note 4: Maximum error band of the offset voltage and the error band of the span, relative to the 25°C reading.

Note 5: Maximum difference in output at any pressure within the operating pressure range and temperature within +0°C to +70°C after:

1) 100 temperature cycles, 0°C to +70°C.

2) 1.0 million pressure cycles, 0 psi to full-scale span.

Note 6: This is the common-mode voltage of the output arms for  $V_S = 5V_{DC}$ .

Note 7: Response time for a 0 psi to full-scale span pressure step change.

Note 8: Long term stability over a one year period.

Note 9: Full-scale output for the SOC01 devices will be 25mV ± 0.5mV.

**PART NUMBERS**

Pressure Range	Package Options			
	DIP Package	Button	Single Port	Dual Ported (N)
0 to 1 psid	SOC01DD1,2,3	SOC01D	SOC01DP1,2	SOC01DN
0 to 5 psid	SOC05DD1,2,3	SOC05D	SOC05DP1,2	SOC05DN
0 to 15 psia	SOC15AD1,2,3	SOC15A	SOC15AP1,2	SOC15AN
0 to 15 psid	SOC15DD1,2,3	SOC15D	SOC15DP1,2	SOC15DN
0 to 30 psia	SOC30AD1,2,3	SOC30A	SOC30AP1,2	SOC30AN
0 to 30 psid	SOC30DD1,2,3	SOC30D	SOC30DP1,2	SOC30DN
0 to 100 psia	SOC100AD1,2,3	SOC100A	SOC100AP1,2	SOC100AN
0 to 100 psid	SOC100DD1,2,3	SOC100D	SOC100DP1,2	SOC100DN

**A**

**See Section 9 for Package Styles and Dimensions**

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