

## SCC SMT Series

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### Microstructure Pressure Sensors 0 psi to 5 psi through 0 psi to 100 psi



The SCC SMT Series offers an extremely low-cost sensor element with a temperature-stable output when driven with a constant current source. These integrated circuit sensors were designed for extremely cost-sensitive applications where precise accuracy over a wide temperature range is not required.

The standard surface mount package includes an optional ported lid to fit in a variety of applications.

#### FEATURES

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- Low cost
- Small size
- Internal temperature compensation
- Absolute or gage pressures
- High-impedance bridge
- Low power consumption

The absolute devices have an internal vacuum reference and an output voltage proportional to absolute pressure. The differential devices allow application of pressure to either side of the sensing diaphragm and can be used for gage or differential measurements.

The 4-pin closed bridge configuration allows electrical connection with additional pads provided for mechanical support. Pulsed power is recommended to achieve maximum accuracy and conserve battery power in portable applications.

#### POTENTIAL APPLICATIONS

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- Pneumatic controls
- Automotive diagnostics
- Medical equipment/instrumentation
- Dental equipment
- Environmental controls
- Barometric pressure measurement
- Altimeters
- Pneumatic controls
- Battery powered equipment

# SCC SMT Series

## PRESSURE SENSOR SPECIFICATIONS <sup>(1)</sup>

| Characteristic                          | Maximum Rating                      |
|---|-------------------------------------|
| Supply current, $I_s$                   | 1.5 mA                              |
| Compensated temperature                 | 0 °C to 50 °C [32 °F to 122 °F]     |
| Operating temperature                   | -40 °C to 125 °C [-40 °F to 257 °F] |
| Storage temperature                     | -55 °C to 125 °C [-67 °F to 257 °F] |
| Humidity                                | 0% to 100% RH                       |
| Lead temperature (soldering 2 s to 4 s) | 250 °C [482 °F]                     |

## STANDARD PRESSURE RANGES <sup>(1)</sup>

| Operating Pressure | Maximum <sup>(2)</sup> Pressure | Sensitivity <sup>(3)</sup> |           | Unit      |
|--------------------|---------------------------------|----------------------------|-----------|-----------|
|                    |                                 | Nominal                    | Std. Dev. |           |
| 0 psi to 5 psi     | 20 psi                          | 7.50                       | ±0.68     | mV/mA/psi |
| 0 psi to 15 psi    | 30 psi                          | 4.30                       | ±0.37     | mV/mA/psi |
| 0 psi to 30 psi    | 60 psi                          | 2.90                       | ±0.57     | mV/mA/psi |
| 0 psi to 100 psi   | 150 psi                         | 1.30                       | ±0.20     | mV/mA/psi |

## PERFORMANCE SPECIFICATIONS <sup>(1)</sup>

| Characteristic  | Min.  | Typ.  | Max. | Unit       |
|---|-------|-------|------|------------|
| Zero pressure offset ( $T_A = 25\text{ °C}$ )         | -30.0 | -10.0 | 20.0 | mV         |
| Linearity, hysteresis, repeatability <sup>(4)</sup>   | -1.0  | 0.2   | 1.0  | % FSS      |
| Temperature effect on span <sup>(5)</sup>             | -1.5  | 0.25  | 1.5  | % FSS      |
| Temperature effect on offset <sup>(5)</sup>           | -2.0  | .5    | 2.0  | % FSS      |
| Long-term stability of offset and span <sup>(6)</sup> | –     | 0.1   | –    | % FSS      |
| Response time (10% to 90%) <sup>(7)</sup>             | –     | 0.1   | –    | ms         |
| Input resistance ( $T_A = 25\text{ °C}$ )             | 4.00  | 5.00  | 6.50 | k $\Omega$ |
| Output impedance                                      | 4.00  | 5.00  | 6.50 | k $\Omega$ |

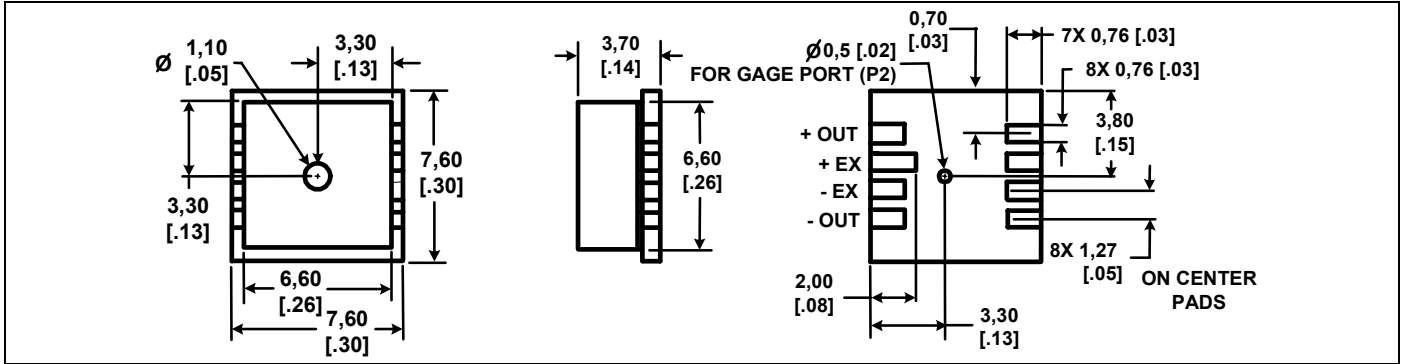
### NOTES

- Note 1: Reference conditions: Supply current,  $I_s = 1.0\text{ mA}$ ,  $T_A = 25\text{ °C}$  to  $70\text{ °C}$  [32 °F to 158 °F], common-mode Line pressure = 0 psig, pressure applied to P1 unless otherwise noted.
- Note 2: If the maximum pressure is exceeded, even momentarily, the package may leak or burst, or the pressure sensing die may fracture.
- Note 3: Sensitivity is the ratio of the output signal voltage change to the corresponding input pressure change. The sensitivity is characterized by design and periodic production testing. This parameter is not 100 % tested in production.
- Note 4: Linearity is based on best straight line fit. Hysteresis is the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.
- Note 5: Maximum error band of the offset voltage and the error of the band of the span over the compensated temperature range, relative to the 25 °C reading. Typical temperature coefficients for span and resistance are -2200 ppm/°C and 2200 ppm/°C, respectively. Temperature effects on offset and span are guaranteed by design. These parameters are not 100 % tested in production.
- Note 6: Long term stability over a one year period.
- Note 7: Response time for 0 psi to full scale span pressure step change.

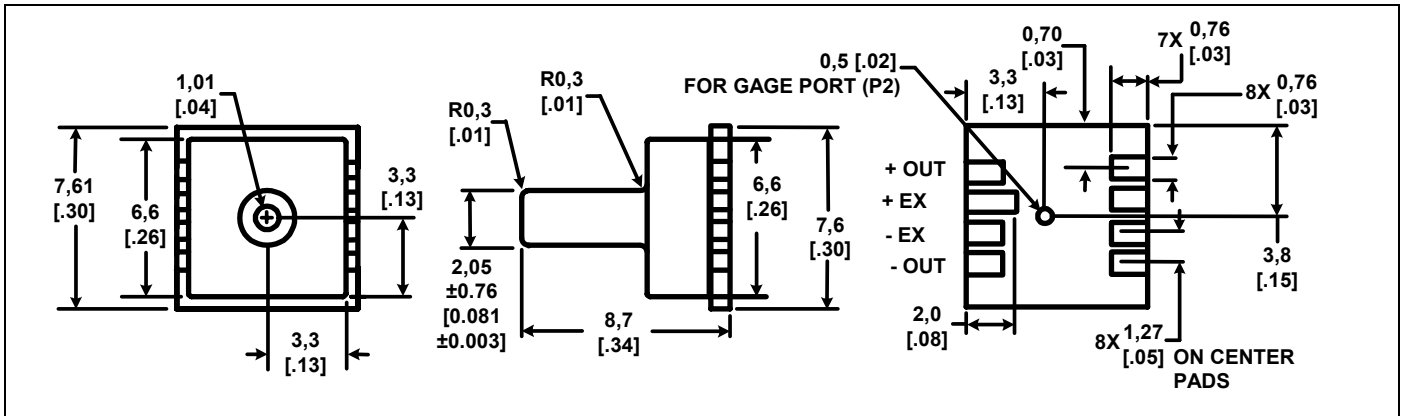
# Microstructure Pressure Sensors

## DIMENSIONAL DRAWINGS (For reference only. mm [in])

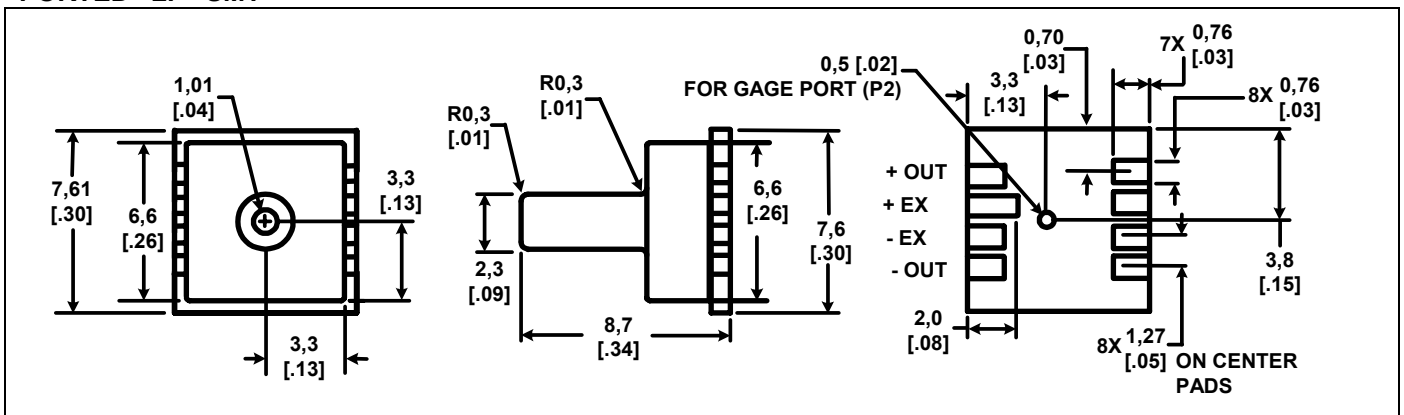
### LOW PROFILE SMT



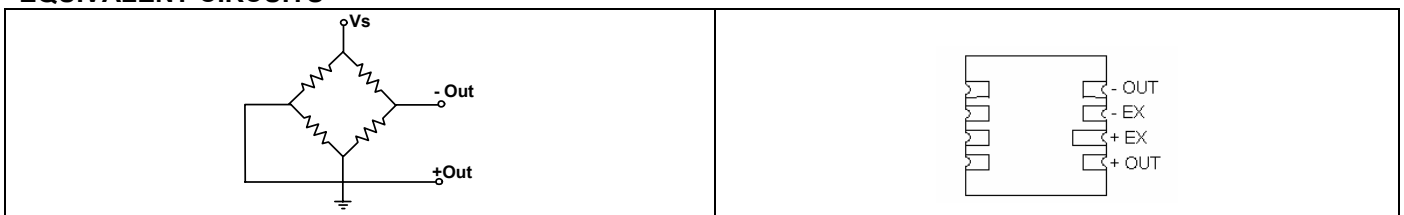
### PORTED "P" SMT



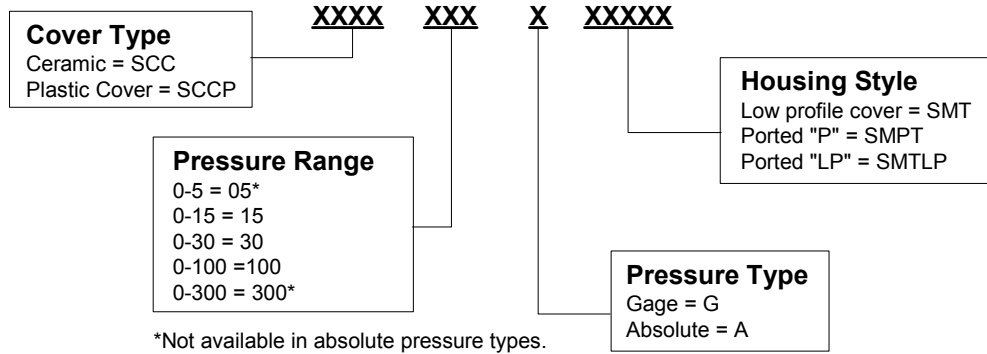
### PORTED "LP" SMT



### EQUIVALENT CIRCUITS



## SCC SMT ORDER GUIDE



### **WARNING**

#### **MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

### **WARNING**

#### **PERSONAL INJURY**

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

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