

### FEATURES

- 0...1 to 0...150 psi
- Low cost
- Precision temperature compensation
- Calibrated zero and span
- Small size
- Low noise
- High impedance for low power applications

### APPLICATIONS

- Medical Equipment
- Computer Peripherals
- Pneumatic Control
- HVAC

### GENERAL DESCRIPTION

The SCX...C series sensors will provide a very cost effective solution for pressure applications that require operation over a wide temperature range. These internally calibrated and temperature compensated sensors give an accurate and stable output over a 0°C to 70°C temperature range. This series is intended for use with non-corrosive, non-ionic working fluids such as air, dry gases, and the like.

Devices are available to measure absolute, differential, and gage pressures from 1 psi (SCX01) up to 150 psi (SCX150). The absolute (A) devices have an internal vacuum reference and an output voltage proportional to absolute pressure. The differential (D) devices allow application of pressure to either side of the pressure sensing diaphragm and can be used for gage or differential pressure measurements.

The SCX devices feature an integrated circuit sensor element and laser trimmed thick film ceramic housed in a compact nylon case. This package provides excellent corrosion resistance and provides isolation to external package stresses. The package has convenient mounting holes and pressure ports for ease of use with standard plastic tubing for pressure connection.

All SCX devices are calibrated for span to within  $\pm 5\%$  and provide an offset (zero pressure output) of  $\pm 1$  mV maximum. These parts were designed for low cost applications where the user can typically provide fine adjustment of zero and span in external



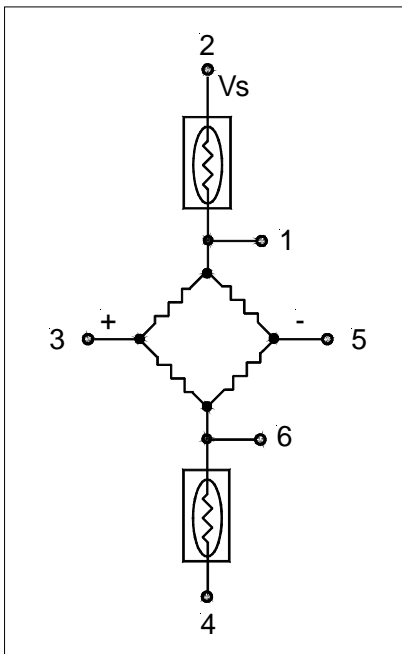
Scale:  $\overline{\hspace{1cm}}$  1 cm  
 $\overline{\hspace{0.5cm}}$  1/2 inch

circuitry. For higher accuracies, refer to the standard SCX series datasheet. If the application requires extended temperature range operation, beyond 0 to 70°C, two pins which provide an output voltage proportional to temperature are available for use with external circuitry.

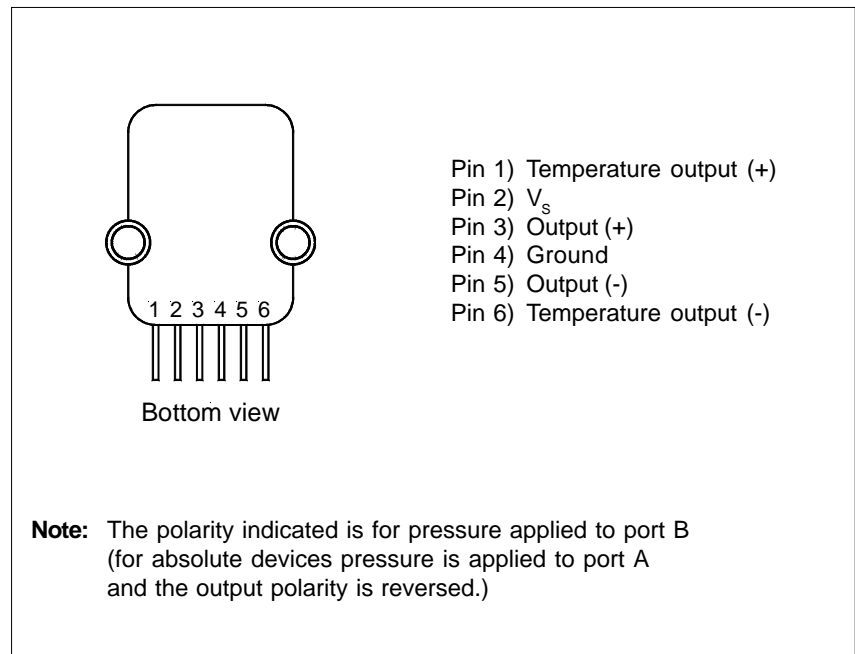
The output of the bridge is ratiometric to the supply voltage and operation from any D.C. supply voltage up to +20 V is acceptable.

Because these devices have very low noise and 100 microsecond response time they are an excellent choice for medical equipment, computer peripherals, and pneumatic control applications.

### EQUIVALENT CIRCUIT



### ELECTRICAL CONNECTION



### PRESSURE SENSOR CHARACTERISTICS<sup>1</sup>

#### Standard pressure ranges

Part number	Operating pressure	Proof pressure <sup>2</sup>	Full-scale span <sup>1,3</sup>		
			Min.	Typ.	Max.
SCX01DNC	0 - 1 psid	20 psid	17 mV	18 mV	19 mV
SCX05DNC	0 - 5 psid	20 psid	57.5 mV	60 mV	62.5 mV
SCX15ANC	0 - 15 psia	30 psia	85 mV	90 mV	95 mV
SCX15DNC	0 - 15 psid	30 psid	85 mV	90 mV	95 mV
SCX30ANC	0 - 30 psia	60 psia	85 mV	90 mV	95 mV
SCX30DNC	0 - 30 psid	60 psid	85 mV	90 mV	95 mV
SCX100ANC	0 - 100 psia	150 psia	95 mV	100 mV	105 mV
SCX100DNC	0 - 100 psid	150 psid	95 mV	100 mV	105 mV
SCX150DNC	0 - 150 psid	150 psid	85 mV	90 mV	95 mV

#### Maximum ratings (for all devices)

Supply voltage $V_s$	+20 $V_{DC}$
Common-mode pressure	50 psig
Lead temperature (soldering, 4 seconds)	250°C

#### Environmental specifications (for all devices)

Temperature range	0 to 70°C
Compensated	-40°C to +85°C
Operating	-55°C to +125°C
Storage	-55°C to +125°C
Humidity limits (non-condensing)	0 to 99 %RH

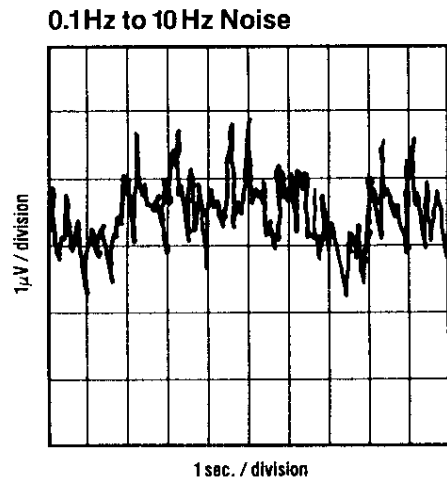
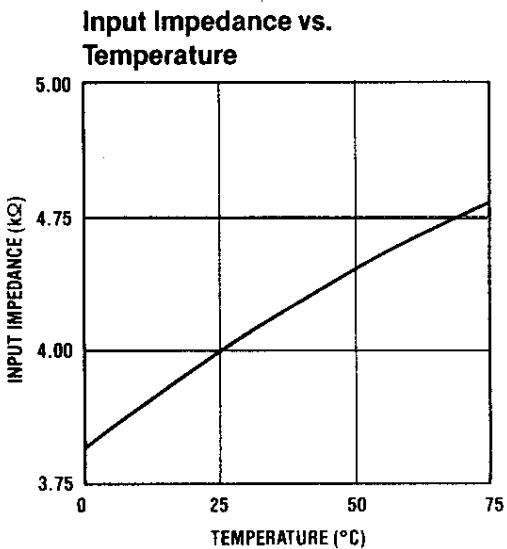
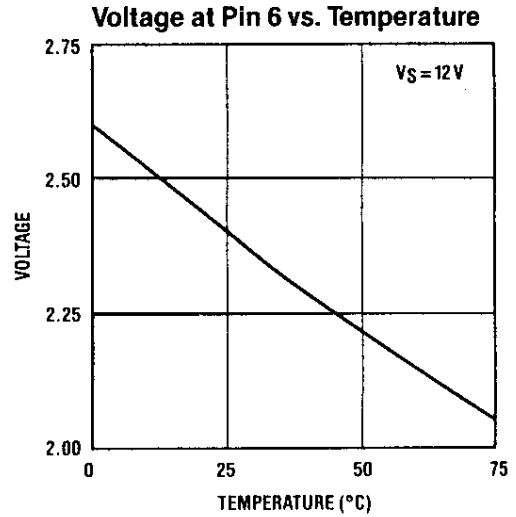
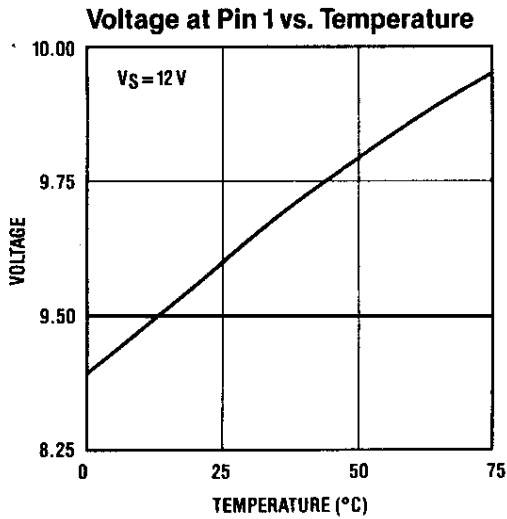
### COMMON PERFORMANCE CHARACTERISTICS<sup>1</sup>

Characteristic	Min.	Typ.	Max.	Unit
Zero pressure offset	-1.0	0	+1.0	mV
Combined linearity and hysteresis <sup>4</sup>	---	±0.2	±1.0	%FSO
Temperature effect on span (0 to 70°C) <sup>5</sup>	---	±0.4	±2.0	%FSO
Temperature effect on offset (0 to 70°C) <sup>5</sup>	---	±0.20	±1.0	mV
Repeatability <sup>6</sup>	---	±0.2	±0.5	%FSO
Input impedance <sup>7</sup>	---	4.0	---	k $\Omega$
Output impedance <sup>8</sup>	---	4.0	---	k $\Omega$
Common-mode voltage <sup>9</sup>	5.7	6.0	6.3	$V_{DC}$
Response time <sup>10</sup>	---	100	---	$\mu$ sec
Long term stability of offset and span <sup>11</sup>	---	±0.1	---	mV

#### Specification notes:

- Reference conditions: Unless otherwise noted: supply voltage,  $V_s = 12 V$ ,  $T_A = 25^\circ C$ , common-mode line pressure = 0 psig, pressure applied to port B. For absolute devices only, pressure is applied to port A and the output polarity is reversed.
- Maximum pressure above which causes permanent sensor failure.
- Span is the algebraic difference between the output voltage at full-scale pressure and the output at zero pressure. Span is ratiometric to the supply voltage.
- See Definition of Terms. Hysteresis - the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.
- Maximum error band of the offset voltage and the error band of the span, relative to the 25°C reading.
- Maximum difference in output at any pressure with the operating pressure range and temperature within 0°C to +50°C after:
  - 1,000 temperature cycles, 0°C to +70°C
  - 1.5 million pressure cycles, 0 psi to full-scale span
- Input impedance is the impedance between pins 2 and 4.
- Output impedance is the impedance between pins 3 and 5.
- This is the common-mode voltage of the output arms (pins 3 and 5) for  $V_s = 12 V_{DC}$ .
- Response time for a 0 psi to full-scale span pressure step change, 10 % to 90 % rise time.
- Long term stability over a one year period.

**TYPICAL PERFORMANCE CHARACTERISTICS**

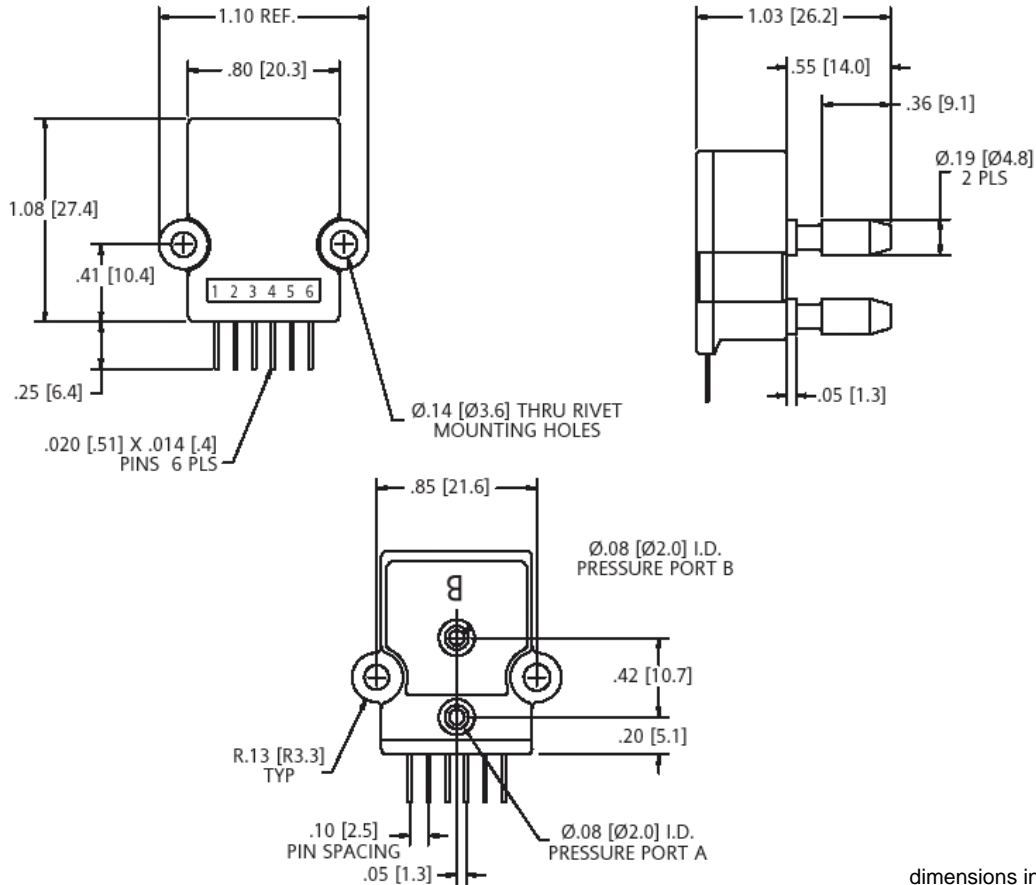


# SCX...C Series

## Low cost compensated pressure sensors



### PHYSICAL DIMENSIONS



mass: 10 g

dimensions in inches (mm)

### ORDERING INFORMATION

To order, use the following part number(s)

Description	Part Number
0 to 1 psi differential/gage	SCX01DNC
0 to 5 psi differential/gage	SCX05DNC
0 to 15 psi absolute	SCX15ANC
0 to 15 psi differential/gage	SCX15DNC
0 to 30 psi absolute	SCX30ANC
0 to 30 psi differential/gage	SCX30DNC
0 to 100 psi absolute	SCX100ANC
0 to 100 psi differential/gage	SCX100DNC
0 to 150 psi differential/gage	SCX150DNC

### Mounting Accessories

Description	Part number
Xmas tree clip	SCXCLIP
6-pin right angle socket	SCXCNCT
Pressure tubing clamp	SCXSNP1

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