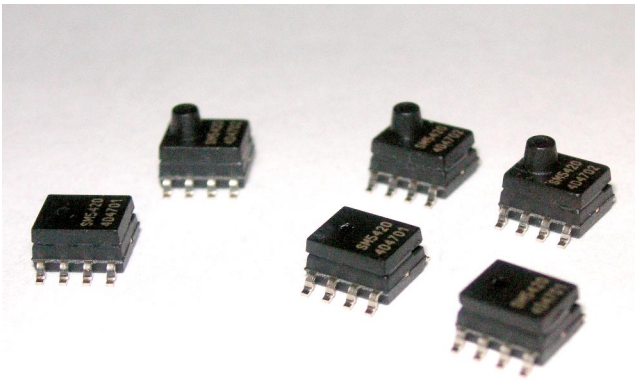
SILICON MICROSTRUCTURES INCORPORATED

SM5420
Low-Cost, SO-8 Packaged Pressure Sensor

- ***For High-Volume Applications***
- ***Ultra-Small, Low Cost OEM Pressure Package***

DESCRIPTION

The SM5420 is a small outline SO-8 packaged pressure sensor. The sensor uses SMI's SM5108 micromachined, piezoresistive pressure sensing chip that has been optimized to provide the highest possible accuracy for a package of this size. This performance is achieved through careful resistor placement and mechanical configuration along with advanced MEMS processing.



This sensor is intended for high volume applications where cost is a critical factor, such as consumer tire pressure gauges or automotive tire pressure monitoring. The SM5420 is available as an absolute pressure sensor in full-scale ranges of 15 PSI, 30 PSI, 60 PSI, and 100 PSI. It is designed to be surface-mounted on ceramic or PC board substrates by high-volume OEM manufacturers.

The SM5420 is available in a ported configuration to allow positive positioning of a pressure source over the inlet or in a non-ported configuration to be used for sensing general environmental pressures or with an o-ring seal. The port position has been chosen to minimize the chance of pressure pulses directly impacting the face of the sensor die for added long-term reliability in hostile environments. The part comes with gel over the die as standard; the part can be ordered without gel in high volumes where the maximum stability is required, such as in barometric, weather station sensing applications. Please contact SMI for more information.

The SM5420 is shipped either in IC tubes or in tape-and-reel.

Custom pressure ranges are available in high-volume applications.

Minimum order quantities apply to this product.

FEATURES

- Available in 15 PSI, 30 PSI, 60 PSI, and 100 PSI ranges
- Wide Temperature range (-40 to +125 ^{o}C)
- Suitable for Automated Assembly
- Extremely Low Cost
- Small foot-print (0.16 in X 0.20 in) package
- Constant Current or Constant Voltage Drive
- High millivolt Output

APPLICATIONS

- Automotive Tire Pressure Monitoring
- Engine Control
- Barometric Sensing
- Altitude Correction Detection
- Pneumatic Gauges
- Hand-held Meters
- Home Appliances

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SM5420

CHARACTERISTICS FOR SM5420 - *SPECIFICATIONS*

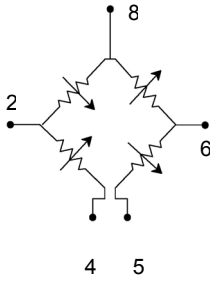
All parameters are measured at 5.000V supply at room temperature, unless otherwise specified.

	Min.	Typ.	Max.	Units	Notes
Excitation Voltage	0	5.0	15	V	1
Excitation Current	0	1.5	2.5	mA	1
Span (FS Range), PSI (kPa)					2
15 (103)	65	100	135	mV	
30 (207)	65	100	135	mV	
60 (414)	65	100	135	mV	
100 (689)	65	100	135	mV	
Offset	-35		35	mV	2
TC Span	-24	-19	-15.5	%FS/100°C	3
TC Offset	-7	-1	+7	%FS/100°C	3
TC Resistance	+24	+27.5	+33	%/100°C	3
Linearity	-0.20	-0.07	+0.20	%FS	4
Bridge Impedance	4	5	6	kΩ	
Input Capacitance		<2		pF	
Proof Pressure	3X			Rated FS	
Burst Pressure	5X			Rated FS	
Operating Temperature	-40		+125	°C	
Storage Temperature	-55		+150	°C	

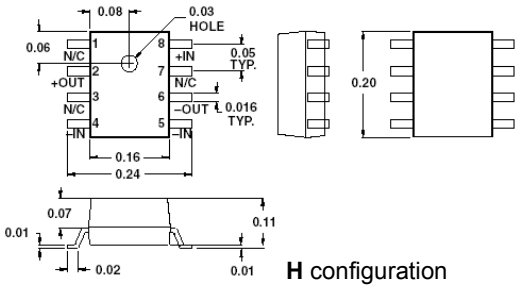
Notes:
1. Bridge may be driven with positive or negative excitation; positive output for positive pressure applied to circuit side of die when bridge is driven with positive voltage.
2. Measured at 5V constant voltage excitation.
3. Measured from 0 to 70 C
4. Defined as best straight line.
5. All parts are gelled unless custom ordered. Consult factory for details.

PIN OUT

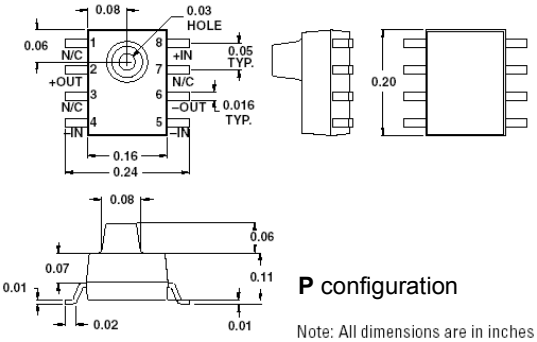
1	**NC**	**8**	**+IN**
2	**Out+**	**7**	**NC**
3	**NC**	**6**	**Out-**
4	**-IN$_1$**	**5**	**-IN$_2$**



SM5420 Pin-out



H configuration



P configuration

Note: All dimensions are in inches

ORDERING INFORMATION:

Model Number — Pressure Type — Shipping

SM5420 - XXX - A - P - T

Pressure Range — Cap Type

Pressure Range = 015, 030, 060, or 100 for 15, 30, 60, or 100 PSI respectively

Pressure Type = A (absolute only)

Cap Type = H (hole) or P (port)

Shipping = T (tape) or S (IC stick)

Pressure Ranges

PSI	5420
15	015
30	030
60	060
100	100

Notice:
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Rev 1.2 4_05

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