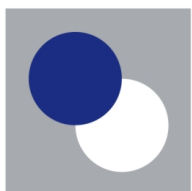


ULTRA-SMALL PRESSURE SENSOR



**SILICON
MICROSTRUCTURES
INCORPORATED**
Member of the ELMOS Group

Product Number: SM5420

HIGHLIGHTS

- For high-volume applications
- Ultra-small
- Low-cost OEM pressure package

TYPICAL APPLICATIONS

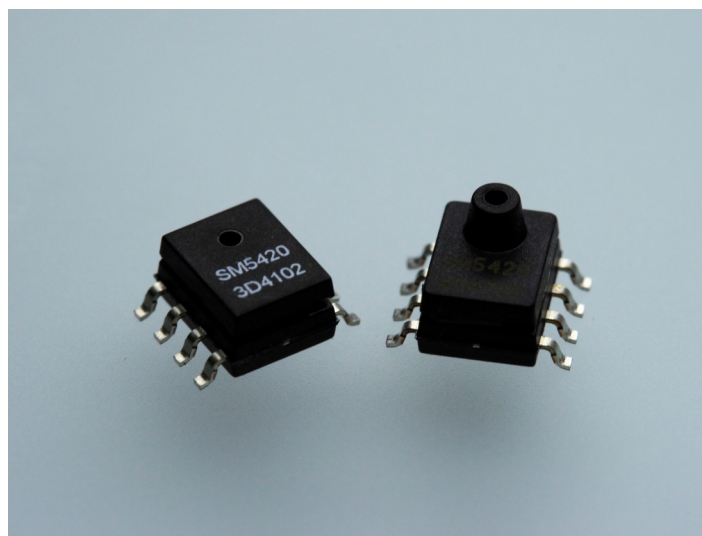
- Automotive tire pressure (TPMS)
- Engine control
- Barometric sensing
- Altitude correction detection
- Pneumatic gauges
- Hand-held meters
- Home appliances

BASICS

- Absolute pressure
- PCB mountable
- Ported or non-port configuration
- Tape and reel

FEATURES

- 15, 30, 60 & 100 PSI (103, 207, 414 & 689 kPa)
(additional pressure ranges available on request)
- Wide temperature range (-40° to +125°C)
- Suitable for automated assembly
- Extremely low cost
- Constant current or constant voltage drive
- High millivolt output



SOIC8 Packaged Pressure Sensor

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 (103, 207, 414 and 689 kPa). 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-port 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. The SM5420 is shipped tape-and-reel.



Product Number: SM5420

ABSOLUTE MAXIMUM RATING TABLE FOR SM5420 SENSOR

All parameters are specified at $V_{SUPPLY} = 5.00$ V DC supply at room temperature, unless otherwise noted. All parts are covered with gel.

No.	Characteristic	Symbol	Minimum	Typical	Maximum	Units
1	Excitation Voltage ^(a)	V_{SUPPLY}	0.0	5.0	10.0	V
2	Excitation Current ^(a)	I_{SUPPLY}	0.0	1.0	1.6	mA
3	Proof Pressure ^(b)	P_{PROOF}	3×	—	—	FS pRANGE
4	Burst Pressure ^(b)	P_{BURST}	5×	—	—	FS pRANGE
5	Operating Temperature ^(b)	T_{OP}	-40	—	+125	°C
6	Storage Temperature ^(b)	T_{STG}	-40	—	+150	°C

NOTES:

(a) The device can only be driven with the supply voltage connected to the pins as shown. The positive output will increase with increasing pressure applied to the package.

(b) Tested on a sample basis.

OPERATING CHARACTERISTICS FOR SM5420 SENSOR - SPECIFICATIONS

All parameters are specified at $V_{SUPPLY} = 5.00$ V DC supply at room temperature, unless otherwise noted. All parts are covered with gel.

No.	Characteristic	Symbol	Minimum	Typical	Maximum	Units
7	Span (15 PSI) ^(e)	V_{SPAN}	95	127	160	mV
8	Span (30 PSI) ^(e)	V_{SPAN}	65	100	135	mV
9	Span (60 PSI) ^(e)	V_{SPAN}	65	100	135	mV
10	Span (100 PSI) ^(e)	V_{SPAN}	65	100	135	mV
11	Zero Offset ^(e)	V_{ZERO}	-35	0	35	mV
12	TC Span ^(b)	TCS	-0.24	-0.19	-0.155	%FS/°C
13	TC Zero Offset ^(b)	TCZ	-0.07	-0.01	+0.07	%FS/°C
14	TC Resistance ^{(b),(c)}	TCR	0.24	0.275	0.33	%RB/°C
15	Linearity ^(d)	NL	-0.2	-0.07	0.2	%FS
16	Bridge Resistance	R_B	4.0	5.0	6.0	kΩ
17	Input Capacitance ^(b)	C_{IN}	-	< 2	-	pF

NOTES:

(c) Determined by measurements taken at 0°C and 70°C.

(d) Defined as best fit straight line.

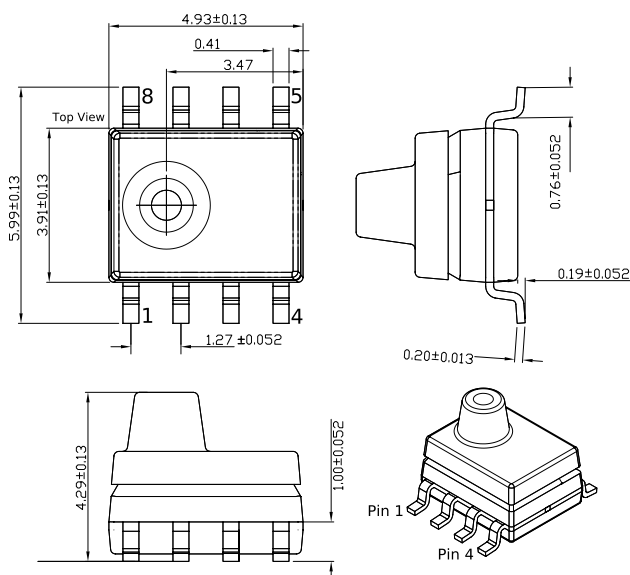
(e) For specifications regarding zero offset and span stability, please contact SMI sales at +1-(408) 577-0100 or sales@si-micro.com.

QUALIFICATION STANDARDS

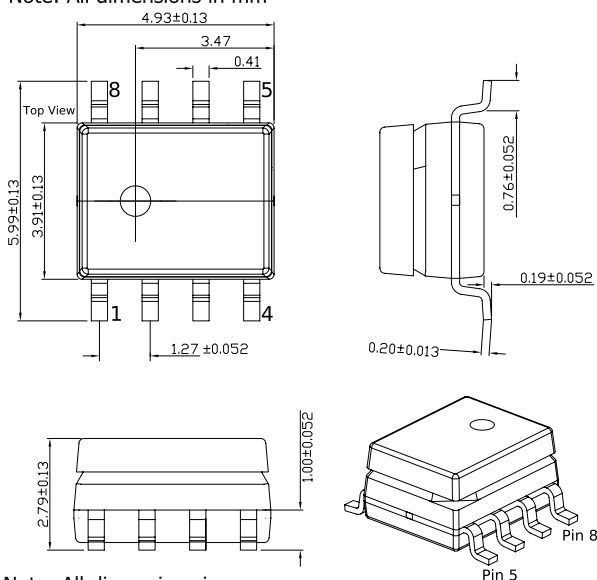
- REACH compliant
- RoHS compliant
- PFOS/PFOA compliant
- Qualified along AEC Q100 standards
- For qualification specifications please contact Sales at sales@si-micro.com

Product Number: SM5420

SM5420 Diagrams and Dimensions



Note: All dimensions in mm



Note: All dimensions in mm

Ordering information

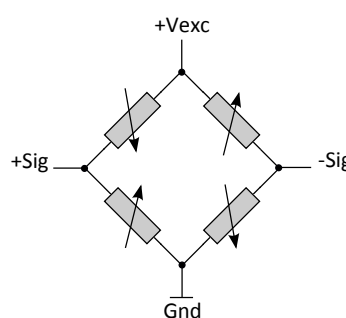
Order Code	Full-Scale Pressure Range	Pressure Type	Minimum Order Quantity
5420C-015-A-H-T	15 PSI / 103.4 kPa	Absolute	2,000 units
5420C-015-A-P-T	15 PSI / 103.4 kPa	Absolute	1,500 units
5420C-030-A-H-T	30 PSI / 206.8 kPa	Absolute	2,000 units
5420C-030-A-P-T	30 PSI / 206.8 kPa	Absolute	1,500 units
5420C-060-A-H-T	60 PSI / 413.6 kPa	Absolute	2,000 units
5420C-060-A-P-T	60 PSI / 413.6 kPa	Absolute	1,500 units
5420C-100-A-H-T	100 PSI / 689.5 kPa	Absolute	2,000 units
5420C-100-A-P-T	100 PSI / 689.5 kPa	Absolute	1,500 units

For samples, please contact the Sales Department at: sales@si-micro.com

DOC#: 40SP3551.05

Silicon Microstructures, Inc. is an ISO/TS 16949:2009 certified company.

SM5420 Pin-Out



PIN	DESCRIPTION
1	NC
2	+Sig
3	NC
4	Gnd
5	NC
6	-Sig
7	NC
8	+Vexc

Typical Operation

PIN	DESCRIPTION	TYPE	VALUE
2	+Sig	Analog Out	—
4	Gnd	Power	0 V
6	-Sig	Analog Out	—
8	+Vexc	Power	+5 V

Product Number: SM5420

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