

# Small Absolute Pressure Sensor

## SM5420E Series



### FEATURES

- Improved stability with integrated field shields
- Small SO8 surface-mount package
- 95 millivolt span
- Constant current or constant voltage drive
- Ported or non-ported configurations
- Wide operating temperature range (-40° to +125°C)
- Integrated die-level ESD protection
- Qualified using AEC-Q100 Grade 1 standards

### DESCRIPTION

The SM5420E is a small outline SO8 packaged pressure sensor that incorporates SMI's new SM5108E MEMS piezoresistive pressure sensing die. The SM5420E has been optimized to provide the highest possible stability for a package of this size. Performance is achieved through careful resistor placement and mechanical configuration along with advanced MEMS processing.

The packaged sensor is intended for high volume applications where cost is a critical factor, such as consumer and automotive products. The SM5420E is available as an absolute pressure sensor in full-scale ranges of 30, 60 and 100PSI. It is designed to be surface-mounted on substrates by high-volume OEM manufacturers.

The SM5420E is available in a ported and non-ported option. The package is designed to be immersed in the media that is measured. The standard configuration offers a protective gel over the die. The SM5420E is shipped tape & reel.

Automotive	Industrial	Consumer
Tire Pressure Monitoring Systems (TPMS)	Handheld Meters	Sports Equipment
Engine Control	Pneumatic Gauges	Appliances
Barometric Sensing	Pressure Switches	
Altitude Correction Detection		

## ABSOLUTE MAXIMUM RATING TABLE

All parameters are specified at VSUPPLY = 5.00 V DC supply at 25°C, unless otherwise noted. All parts are covered with gel.

No.	Characteristic	Symbol	Minimum	Typical	Maximum	Units
1	Supply Voltage	V <sub>DD</sub>	0.0	-	6.5	V
2	Supply Current <sup>(a)</sup>	I <sub>DD</sub>	0.0	-	0.725	mA
3	Operating Temperature Range	T <sub>OP</sub>	-40	-	+125	°C
4	Storage Temperature Range	T <sub>STG</sub>	-55	-	+150	°C

### Notes:

a. When used in constant current configuration

No.	Product Number	Operating Pressure	Proof Pressure (P <sub>PROOF</sub> ) <sup>(b)</sup>	Burst Pressure (P <sub>BURST</sub> ) <sup>(b)</sup>
5	SM5420E-030-A-H-T	0-30 PSI	90 PSI	150 PSI
6	SM5420E-030-A-P-T			
7	SM5420E-060-A-H-T	0-60 PSI	180 PSI	200 PSI
8	SM5420E-060-A-P-T			
9	SM5420E-100-A-H-T	0-100 PSI	200 PSI	200 PSI
10	SM5420E-100-A-P-T			

### Notes:

b. Tested on a sample basis

## OPERATING CHARACTERISTICS TABLE

All parameters are specified at V<sub>DD</sub> = 5.0 V DC supply at 25°C, unless otherwise noted.

No.	Characteristic	Symbol	Minimum	Typical	Maximum	Units
11	Span <sup>(d)</sup>	V <sub>SPAN</sub>	65	95	135	mV
12	Zero Offset	V <sub>ZERO</sub>	-35	0	35	mV
13	TC Span <sup>(e, f)</sup>	TCS	-0.240	-0.200	-0.155	%FS/°C
14	TC Zero Offset <sup>(e, f)</sup>	TCZ	-0.07		+0.07	%FS/°C
15	TC Resistance <sup>(e, f)</sup>	TCR	+0.15		+0.27	%RB/°C
16	Linearity <sup>(30 PSI)</sup> <sup>(e, g)</sup>	NL	-0.2		+0.2	%FS
17	Bridge Resistance	R <sub>B</sub>	5	6	7	kΩ

### Notes:

d. 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.

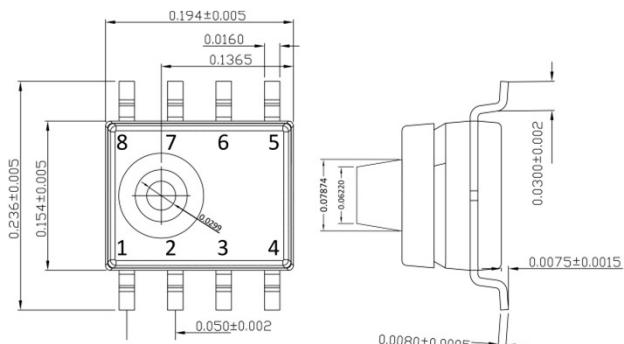
e. Tested on a sample basis.

f. Determined by measurements taken at -40°C and 125°C.

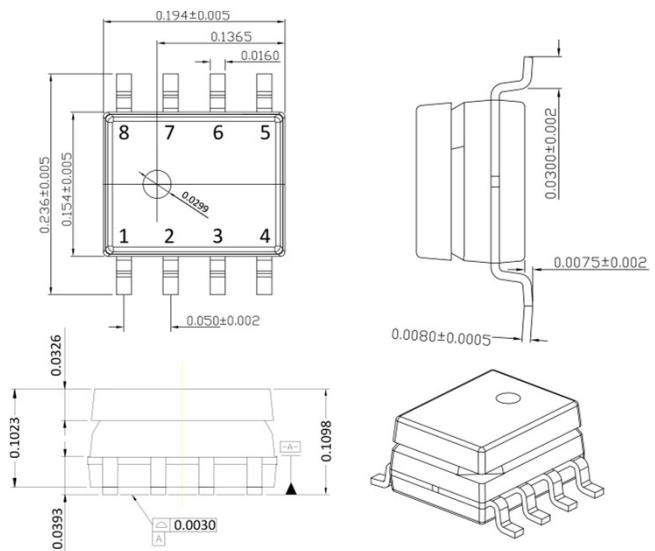
g. Defined as best fit straight line.

## Diagrams & Dimensions

### Port (P) Configuration



### Hole (H) Configuration



#### NOTES:

- All dimensions are in inches
- MSL = 3

Pin-Out		PIN	Description
		1	NC
		2	+Sig
		3	NC
		4	Gnd
		5	NC
		6	-Sig
		7	NC
		8	+Vexc

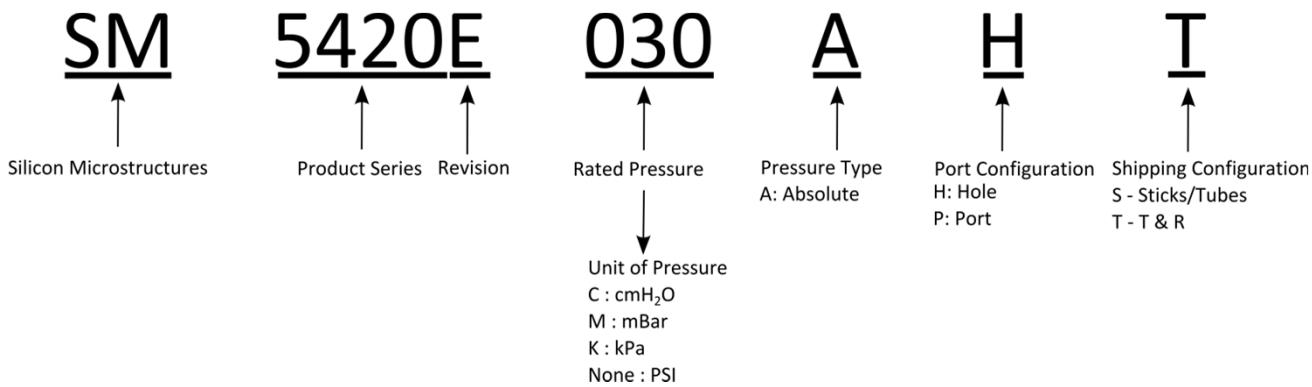
### Typical Operation

Pin No.	Description	Type	Value
2	+Sig	Analog Out	-
4	Gnd	Gnd	0 V
6	-Sig	Analog Out	-
8	+Vexc	Power	+5 V

## Ordering Information

Order Code	Pressure Type	Full-Scale Pressure Range	Cap Configuration	Shipping Configuration
5420E-030-A-H-T	Absolute	30 PSI	Hole	Tape & Reel (1,500 QTY for Ported Type) (2,000 QTY for Hole Type)
5420E-030-A-P-T			Ported	
5420E-060-A-H-T		60 PSI	Hole	
5420E-060-A-P-T			Ported	
5420E-100-A-H-T		100 PSI	Hole	
5420E-100-A-P-T			Ported	

## Part Number Legend



## Qualification Standards

- REACH compliant
- RoHS compliant
- PFOS/PFOA compliant
- Qualified to meet AEC-Q100 Grade 1 standards
- For qualification specifications please contact Sales at [sales@si-micro.com](mailto:sales@si-micro.com)



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