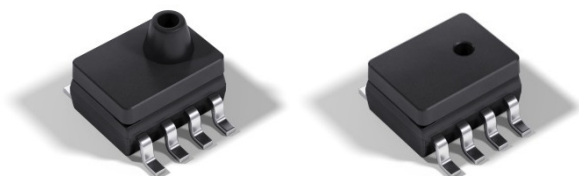


### FEATURES

- Improved stability with integrated field shields
- Small SO8 surface-mount package
- 95 millivolt span
- Constant current or constant voltage drive
- Ported or non-porting 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 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.

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.

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  $V_{SUPPLY} = 5.00$  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	$V_{DD}$	0.0	-	6.5	V
2	Supply Current <sup>(a)</sup>	$I_{DD}$	0.0	-	0.725	mA
3	Operating Temperature Range	$T_{OP}$	-40	-	+125	°C
4	Storage Temperature Range	$T_{STG}$	-55	-	+150	°C

### Notes:

a. When used in constant current configuration

No.	Product Number	Operating Pressure	Proof Pressure ( $P_{PROOF}$ ) <sup>(b)</sup>	Burst Pressure ( $P_{BURST}$ ) <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  $V_{DD} = 5.0$  V DC supply at 25°C, unless otherwise noted.

No.	Characteristic	Symbol	Minimum	Typical	Maximum	Units
11	Span <sup>(d)</sup>	$V_{SPAN}$	65	95	135	mV
12	Zero Offset	$V_{ZERO}$	-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> (e, g)	NL	-0.2		+0.2	%FS
17	Bridge Resistance	$R_B$	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.

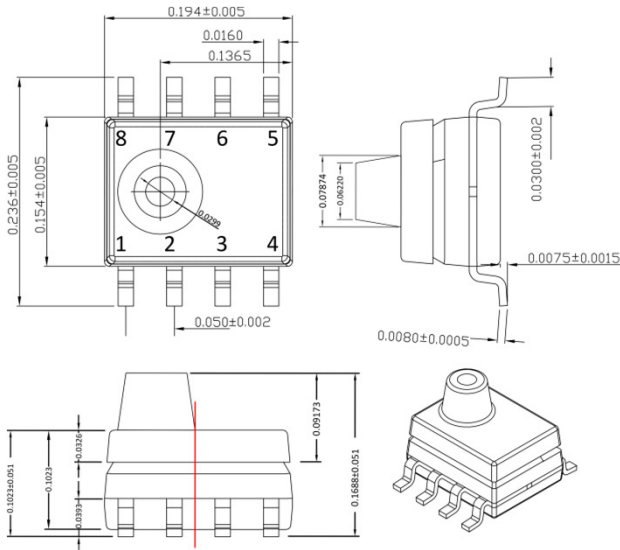
e. Tested on a sample basis.

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

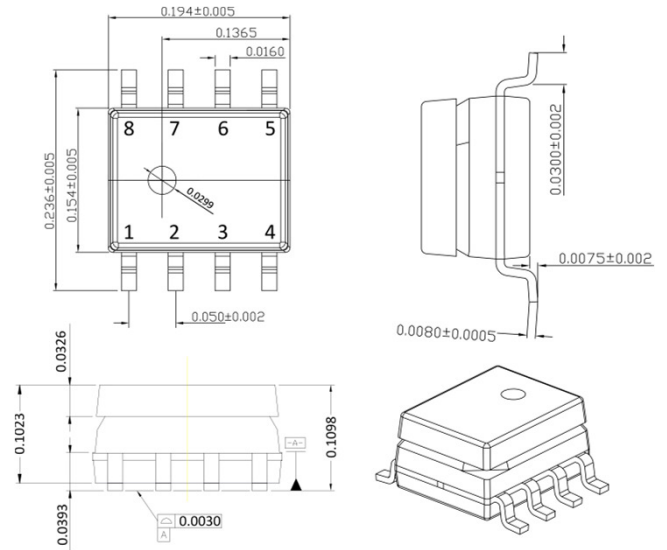
g. Defined as best fit straight line.

Diagrams & Dimensions

Port (P) Configuration



Hole (H) Configuration



NOTES:

- All dimensions are in inches
- MSL = 3

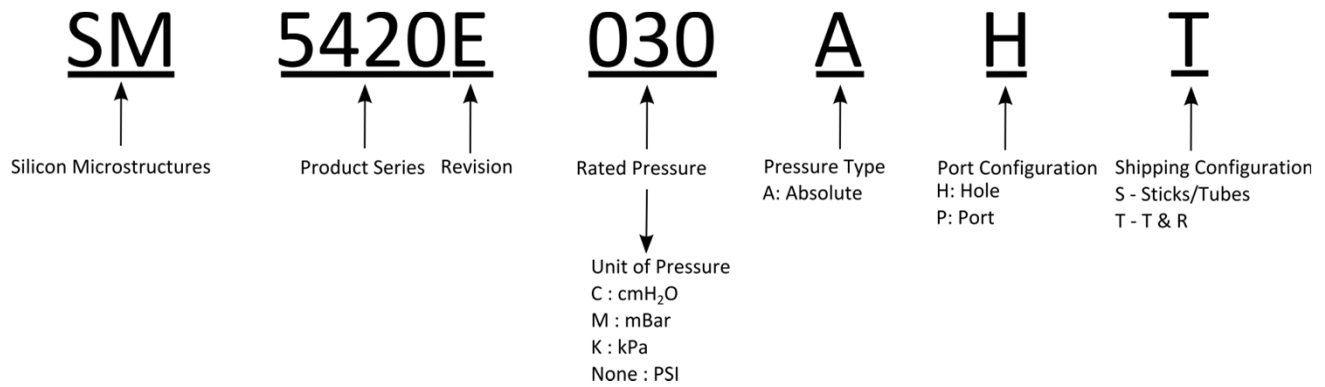
Pin-Out	PIN	Description
	1	NC
	2	+Sig
	3	NC
	4	Gnd
	5	NC
	6	-Sig
	7	NC
	8	+Vexc

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



## Silicon Microstructures Warranty and Disclaimer:

Silicon Microstructures, Inc. reserves the right to make changes without further notice to any products herein and to amend the contents of this data sheet at any time and at its sole discretion.

Information in this document is provided solely to enable software and system implementers to use Silicon Microstructures, Inc. products and/or services. No express or implied copyright licenses are granted hereunder to design or fabricate any silicon-based microstructures based on the information in this document.

Silicon Microstructures, Inc. makes no warranty, representation, or guarantee regarding the suitability of its products for any particular purpose, nor does Silicon Microstructures, Inc. assume any liability arising out of the application or use of any product or silicon-based microstructure, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Silicon Microstructure's data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals", must be validated for each customer application by customer's technical experts. Silicon Microstructures, Inc. does not convey any license under its patent rights nor the rights of others. Silicon Microstructures, Inc. makes no representation that the circuits are free of patent infringement. Silicon Microstructures, Inc. products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Silicon Microstructures, Inc. product could create a situation where personal injury or death may occur. Should Buyer purchase or use Silicon Microstructures, Inc. products for any such unintended or unauthorized application, Buyer shall indemnify and hold Silicon Microstructures, Inc. and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Silicon Microstructures, Inc. was negligent regarding the design or manufacture of the part.

Silicon Microstructures, Inc. warrants goods of its manufacture as being free of defective materials and faulty workmanship. Silicon Microstructures, Inc. standard product warranty applies unless agreed to otherwise by Silicon Microstructures, Inc. in writing; please refer to your order acknowledgement or contact Silicon Microstructures, Inc. directly for specific warranty details. If warranted goods are returned to Silicon Microstructures, Inc. during the period of coverage, Silicon Microstructures, Inc. will repair or replace, at its option, without charge those items it finds defective. The foregoing is buyer's sole remedy and is in lieu of all warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Silicon Microstructures, Inc. be liable for consequential, special, or indirect damages.

While Silicon Microstructures, Inc. provides application assistance personally, through its literature and the Silicon Microstructures, Inc. website, it is up to the customer to determine the suitability of the product for its specific application. The information supplied by Silicon Microstructures, Inc. is believed to be accurate and reliable as of this printing. However, Silicon Microstructures, Inc. assumes no responsibility for its use. Silicon Microstructures, Inc. assumes no responsibility for any inaccuracies and/or errors in this publication and reserves the right to make changes without further notice to any products or specifications herein

Silicon Microstructures, Inc.™ and the Silicon Microstructures, Inc. logo are trademarks of Silicon Microstructures, Inc. All other service or product names are the property of their respective owners.

© Silicon Microstructures, Inc. 2001-2016. All rights reserved.