

# ULTRA-SMALL PRESSURE SENSOR



Product Number: SM6841

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## HIGHLIGHTS

- Small, low cost, robust SO8 package
- For high-volume applications
- Miniature Form Factor

## TYPICAL APPLICATIONS

- Automotive tire pressure (TPMS)
- Engine control
- Barometric sensing
- Altitude correction detection
- Pneumatic gauges
- Home appliances
- Pressure Switches

## BASICS

- Absolute pressure
- PCB mountable
- Center Hole
- Tape and reel

## FEATURES

- 30 & 100 PSI (200 & 700 kPa)
- Wide temperature range (-40° to +125°C)
- Suitable for automated assembly
- Constant current or constant voltage drive
- High millivolt output
- RoHS & REACH Compliant



SOIC8 Packaged Pressure Sensor

## DESCRIPTION

The SM6841 is a small outline SO-8 packaged pressure sensor that incorporates SMI's SM5108C MEMS piezoresistive pressure sensing die. The SM6841 has been optimized to provide the highest possible accuracy 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 SM6841 is available as an absolute pressure sensor in full-scale range of 30 & 100 PSI (200 & 700 kPa). It is designed to be surface-mounted on ceramic or PC board substrates by high-volume OEM manufacturers.

The SM6841 is available in a non-ported, centered hole, configuration that is designed to be immersed in the media being measured.

The standard configuration offers a protective gel over the die. A non-gel version is also available for high volumes where the maximum stability is required, such as in barometric, weather station sensing applications. The SM6841 is shipped tape & reel.

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### ABSOLUTE MAXIMUM RATING TABLE FOR SM6841 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 <sup>(a)</sup>	$V_{SUPPLY}$	0.0	5.0	10.0	V
2	Excitation Current <sup>(a)</sup>	$I_{SUPPLY}$	0.0	1.0	1.6	mA
3	Proof Pressure <sup>(b, c)</sup>	$p_{PROOF}$	3×	—	—	FS pRANGE
4	Burst Pressure <sup>(b, d)</sup>	$p_{BURST}$	5×	—	—	FS pRANGE
5	Operating Temperature <sup>(b)</sup>	$T_{OP}$	-40	—	+125	°C
6	Storage Temperature <sup>(b)</sup>	$T_{STG}$	-55	—	+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.
- (c) Proof Pressure is 3X or 220 PSI, whichever is less
- (d) Burst Pressure is 5X or 220 PSI, whichever is less

### OPERATING CHARACTERISTICS FOR SM6841 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 (30 & 100 PSI) <sup>(g)</sup>	$V_{SPAN}$	65	100	135	mV
8	Zero Offset	$V_{ZERO}$	-35	0	35	mV
9	TC Span <sup>(b, g)</sup>	TCS	-0.24	-0.19	-0.155	%FS/°C
10	TC Zero Offset <sup>(b, g)</sup>	TCZ	-0.07	-0.01	+0.07	%FS/°C
11	TC Resistance <sup>(b, e, g)</sup>	TCR	0.24	0.275	0.33	% $R_B$ /°C
12	Linearity <sup>(f)</sup>	NL	-0.2	-0.07	0.2	%FS
13	Bridge Resistance	$R_B$	4.0	5.0	6.0	kΩ
14	Input Capacitance <sup>(b)</sup>	$C_{IN}$	—	< 2	—	pF

**NOTES:**

- (e) Determined by measurements taken at 0°C and 70°C.
- (f) Defined as best fit straight line.
- (g) For specifications regarding zero offset and span stability, please contact SMI Sales at +1-(408) 577-0100 or [sales@si-micro.com](mailto:sales@si-micro.com)

### QUALIFICATION STANDARDS

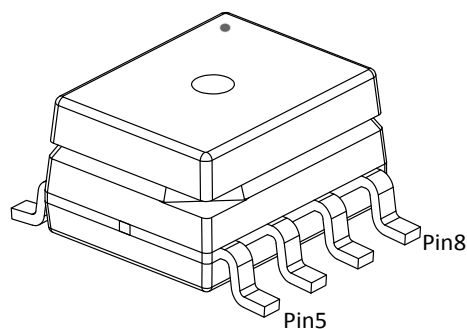
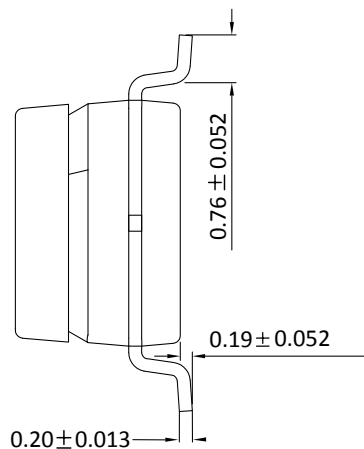
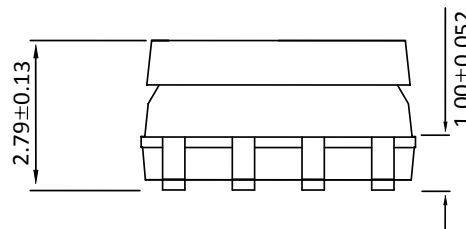
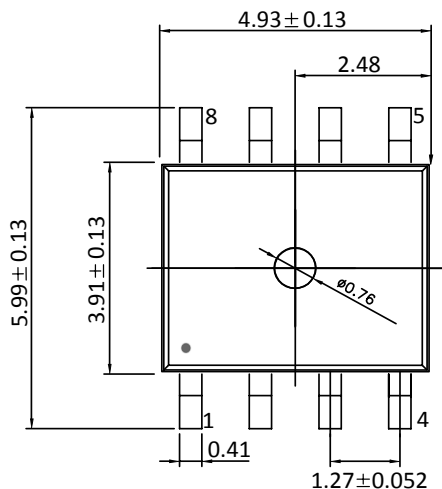
- REACH compliant
- RoHS compliant
- PFOS/PFOA compliant
- For qualification specifications please contact Sales at [sales@si-micro.com](mailto:sales@si-micro.com)



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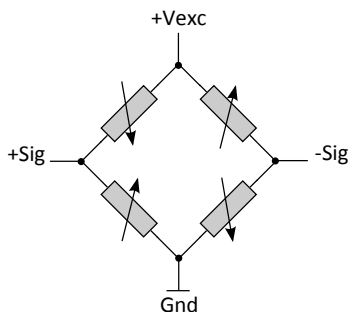
## Diagrams and Dimensions

H(ole) Configuration



Note: • All dimensions in mm  
• 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	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	Full-Scale Pressure Range	Pressure Type	Minimum Order Quantity
SM6841-030-A-H-T	30 PSI / 200 kPa	Absolute	2,000 units
SM6841-100-A-H-T	100 PSI / 700 kPa		

For samples, please contact the Sales Department at: [sales@si-micro.com](mailto:sales@si-micro.com)

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