PRESSURE SENSORS

Small, Gauge Pressure Sensor

SM5G-GG Series

FEATURES

- Improved stability with integrated field shields
- Small SO8 surface-mount package
- 90 millivolt output
- Constant current or constant voltage drive
- Ported configuration
- Wide operating temperature range (-40° to +125°C)

DESCRIPTION

The SM5G-GG Series is a small outline SO8 packaged pressure sensor that incorporates SMI's new SM30G MEMS piezoresistive pressure sensing die. The SM5G-GG Series 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 industrial and medical products. Samples of the SM5G-GG Series are available as a gauge pressure sensors in several pressure ranges. It is designed to be surface-mounted on ceramic or PC board substrates by high-volume OEM manufacturers.

The SM5G-GG Series is in a ported package. It can be used to sense pressure in a manifold configuration with an O-ring seal.

The SM5G-GG Series is available in sticks or in tape & reel.

Industrial	Consumer	Medical
Handheld Meters	Sports Equipment	Wound Therapy
Pneumatic Gauges	Appliances	Health Monitoring
Pressure Switches		Blood Pressure
		Bioreactors

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ABSOLUTE MAXIMUM RATING TABLE

All parameters are specified at V_{DD} = 5.00 V DC SUPPLY at 25°C, unless otherwise noted.

No.	Characteristic	Symbol	Minimum	Typical	Maximum	Units
1	Supply Voltage[a]	V_{DD}	0.0		10	V
2	Operating Temperature Range	T_{OP}	-40		+125	°C
3	Storage Temperature Range	T_{STG}	-40	-	+125	°C

Notes:

a. If driven with constant current, the maximum supply voltage must not exceed 10 V.

No.	Product	Operating Pressure	Proof Pressure (P_{PROOF})	Burst Pressure (P_{BURST})
4a	SM5G-005S	0-5 PSI	15 PSI	25 PSI
4b	SM5G-015S	0-15 PSI	45 PSI	75 PSI
4c	SM5G-030S[b]	0-30 PSI	TBD	TBD
4d	SM5G-080S[b]	0-80 PSI	TBD	TBD

Notes:

b. This product is in development

OPERATING CHARACTERISTICS TABLE

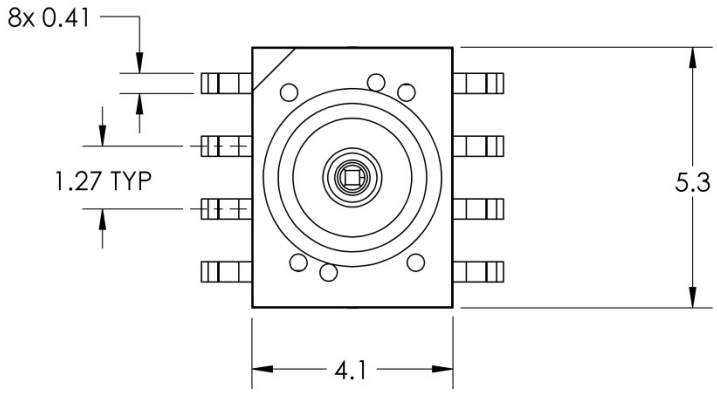
All parameters are specified at V_{DD} = 5.0 V DC SUPPLY at 25°C, unless otherwise noted.

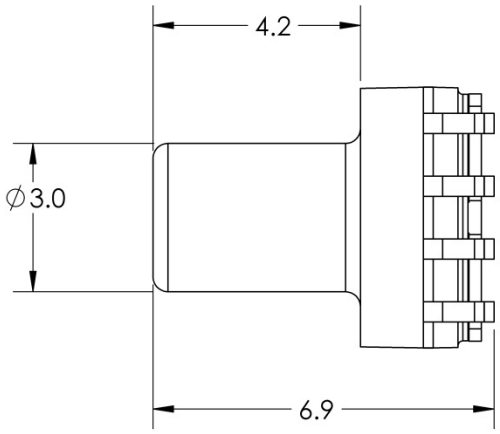
No.	Characteristic		Symbol	Minimum	Typical	Maximum	Units
5	Span [c, d]	5, 15, 80[b] PSI	V_{SPAN}	60	90	120	mV
		30[b] PSI		55	80	105	mV
6	Zero Offset		V_{ZERO}	-25	10	45	mV
7	TC Span [c, e, f]		TCS	-0.240	-0.19	-0.155	%FS/°C
8	TC Zero Offset [c, e, f]		TCZ	-75	-	75	µV/°C
9	TC Resistance [c, e, f]		TCR	0.24	0.275	0.33	$\%R_B$/°C
10	Linearity [c, f]	5 PSI	NL	-0.35	-	0.35	%FS
		15, 30[b], 80[b] PSI		-0.2	-	0.2	
11	Bridge Resistance		R_B	4.0	5.0	6.0	kOhm
12	Pressure Hysteresis[g]		Phys		0.1		%FS
13	Thermal Hysteresis[h]		Thys		0.15		%FS

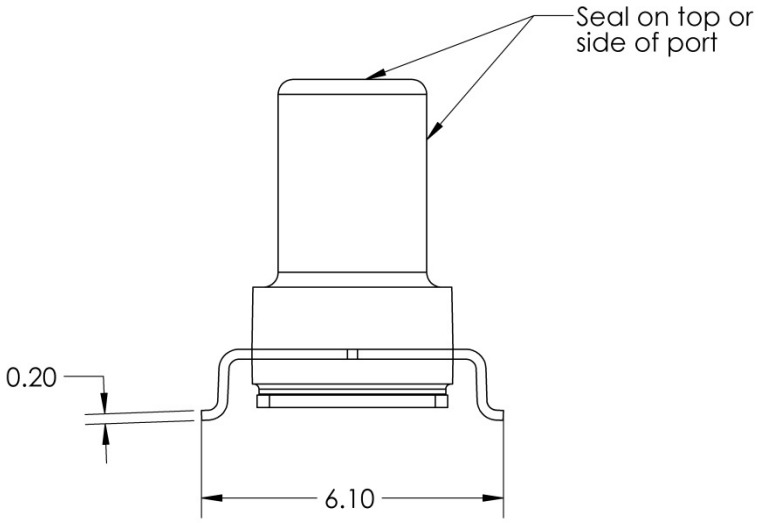
Notes:

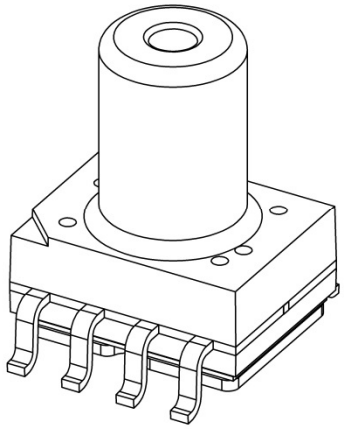
b. This product is in development.
c. Tested on a sample basis.
d. The device can only be driven with the supply voltage connected to the pins as shown.
e. Determined by measurements taken at -40°C and 125°C.
f. Defined using best fit straight line.
g. Pressure hysteresis describes a phenomenon whereby the same applied pressure results in different output signals, depending upon whether the pressure is approached from a lower or higher pressure. The values shown represent the maximum values over the specified operating pressure and temperature range.
h. Temperature hysteresis describes a phenomenon whereby the same applied temperature results in different output signals depending upon whether the temperature is approached from a lower or higher temperature. The values shown represent the maximum change of zero offset at 25°C when the device is cycled over the specified operating temperature range.

Diagrams & Dimensions

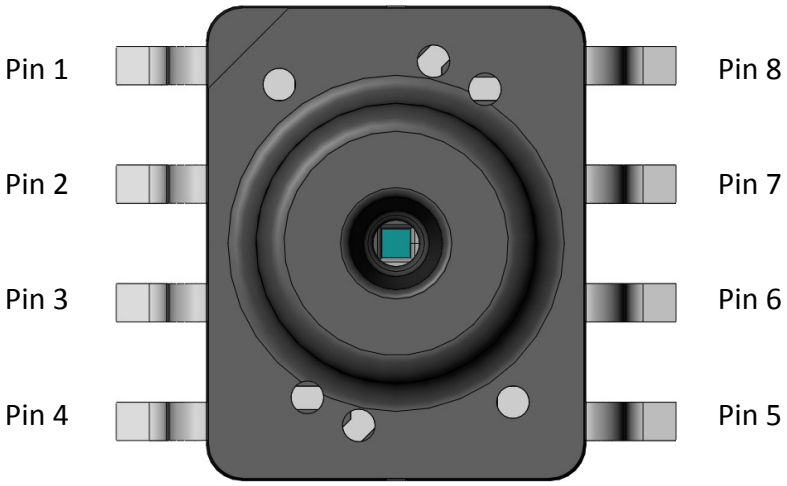


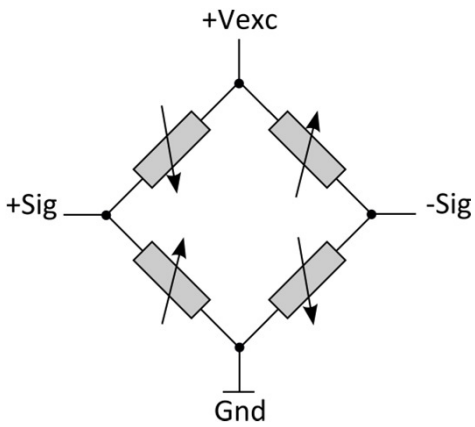






- All dimensions are for reference only
- All dimensions are in mm



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

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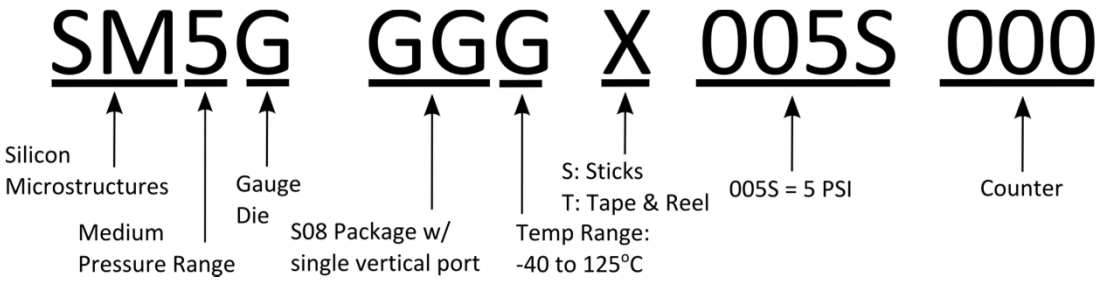
Ordering Information

Order Code	Pressure Type	Full-Scale Pressure Range	Cap Configuration	Shipping Configuration
SM5G-GGG-T-005S-000	Gauge	5 PSI	Port	Sticks or Tape & Reel
SM5G-GGG-T-015S-000		15 PSI		

Part Number Legend



Qualification Standards

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

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