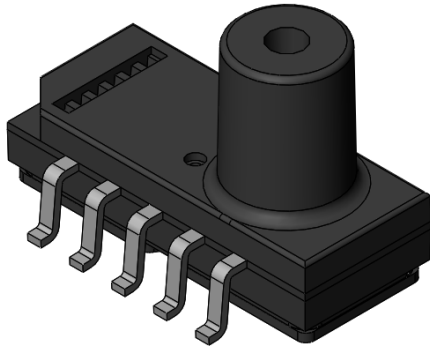


Medium Pressure Digital Sensor

SM4291-HGE-S-500-000 Gauge Pressure Sensor



DESCRIPTION

The SM4291 is a digital, low pressure MEMS sensor offering state-of-the-art pressure transducer technology and CMOS mixed signal processing technology to produce a digital, fully conditioned, pressure and temperature compensated sensor in a JEDEC standard SOIC-10 package with a vertical port. It is a gauge pressure sensor.

FEATURES

- Pressure range of 0 to -500 mBar (0 to -7.3 PSI) gauge output
- Both I²C Digital Interface and analog output
- 16-bit digital, pressure calibrated and temperature compensated output
- Digital accuracy: $\pm 1\%$ full scale ($\pm 1.5\%$ analog accuracy)
- Compensated temperature range: -20 to 85 °C
- Insensitive to mounting orientation
- Robust JEDEC SOIC-10 package for automated assembly
- Manufactured according to ISO9001 and ISO/TS 16949 standards

Combining the pressure sensor with a signal-conditioning ASIC in a single package simplifies the use of advanced silicon micro-machined pressure sensors. The pressure sensor can be mounted directly on a standard printed circuit board and a high level, calibrated pressure signal can be acquired from the digital interface. This eliminates the need for additional circuitry, such as a compensation network or microcontroller containing a custom correction algorithm.

The SM4291 is available for shipment in sticks or tape & reel.

Absolute Maximum Ratings

No.	Characteristic	Symbol	Minimum	Maximum	Units
1	Supply Voltage	V _{DD}	-0.3	6.0	V
2	Compensated Temperature	T _{COMP}	-20	+85	°C
3	Operating Temperature ^(a)	T _{OP}	-20	+85	°C
4	Storage Temperature ^(a)	T _{STG}	-40	+125	°C

No.	Characteristic	Symbol	Minimum
5	Proof Pressure ^(a, b, c)	P _{Proof}	1720 mBar (25 PSI)
6	Burst Pressure ^(a, b, d)	P _{Burst}	2760 mBar (40 PSI)

Notes:

- a. Tested on a sample basis.
- b. Clean, dry gas compatible with wetted materials. Wetted materials include plastic, silicon and RTV.
- c. Proof pressure is defined as the maximum pressure to which the device can be taken and still perform within specifications after returning to the operating pressure range
- d. Burst pressure is the pressure at which the device suffers catastrophic failure resulting in pressure loss through the device.

Operating Characteristics Table

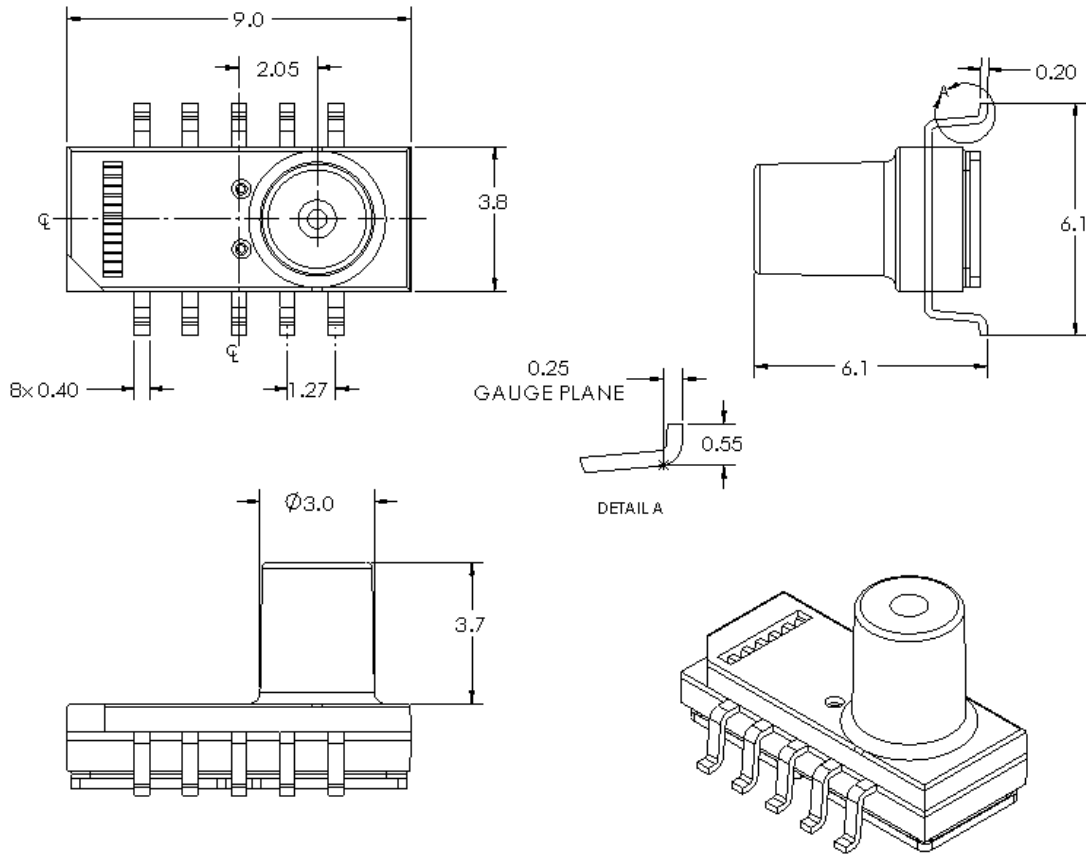
All parameters are specified at V_{DD} = 3.3 V DC supply voltage at 25°C, unless otherwise noted.

No.	Characteristic	Symbol	Minimum	Typical	Maximum	Units
7	Supply Voltage	V _{DD}	3.0	3.3	3.6	V
8	Current Consumption	I _{VDD}	TBD	4.5	TBD	mA
9	Pressure Output @ P _{MIN} = 0 mBar	OUT _{MIN}		-26,214		Counts
				10%		V _{DD}
10	Pressure Output @ P _{MAX} = -500 mBar	OUT _{MAX}		+26,214		Counts
				90%		V _{DD}
11	Full Scale Span	FSS		52,428		Counts
				80%		V _{DD}
12	Resolution			16		Bits
13	Update Rate			2000		Hz
14	Bandwidth			10		Hz
15	Accuracy ^(e)	D ACC		1		%FS
16	Accuracy ^(e)	A ACC		1.5		%FS

Notes:

- e. The accuracy specification applies over all operating conditions. This specification includes the combination of linearity, repeatability, and hysteresis errors over pressure, temperature, and voltage.

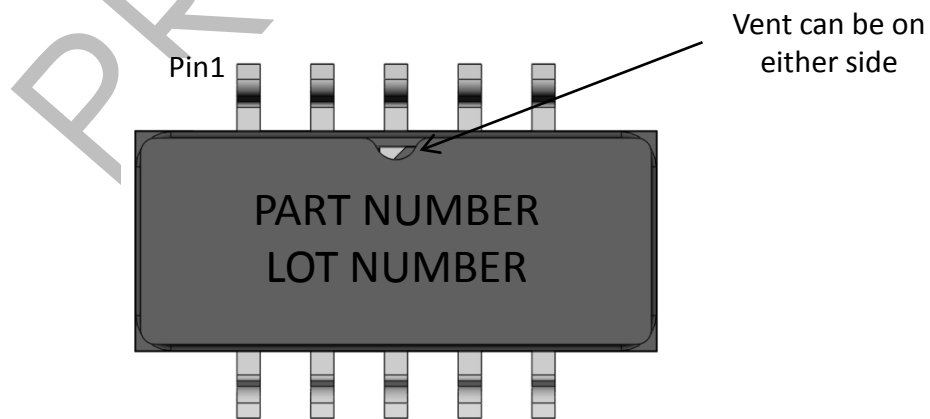
SM4291 Package Dimensions



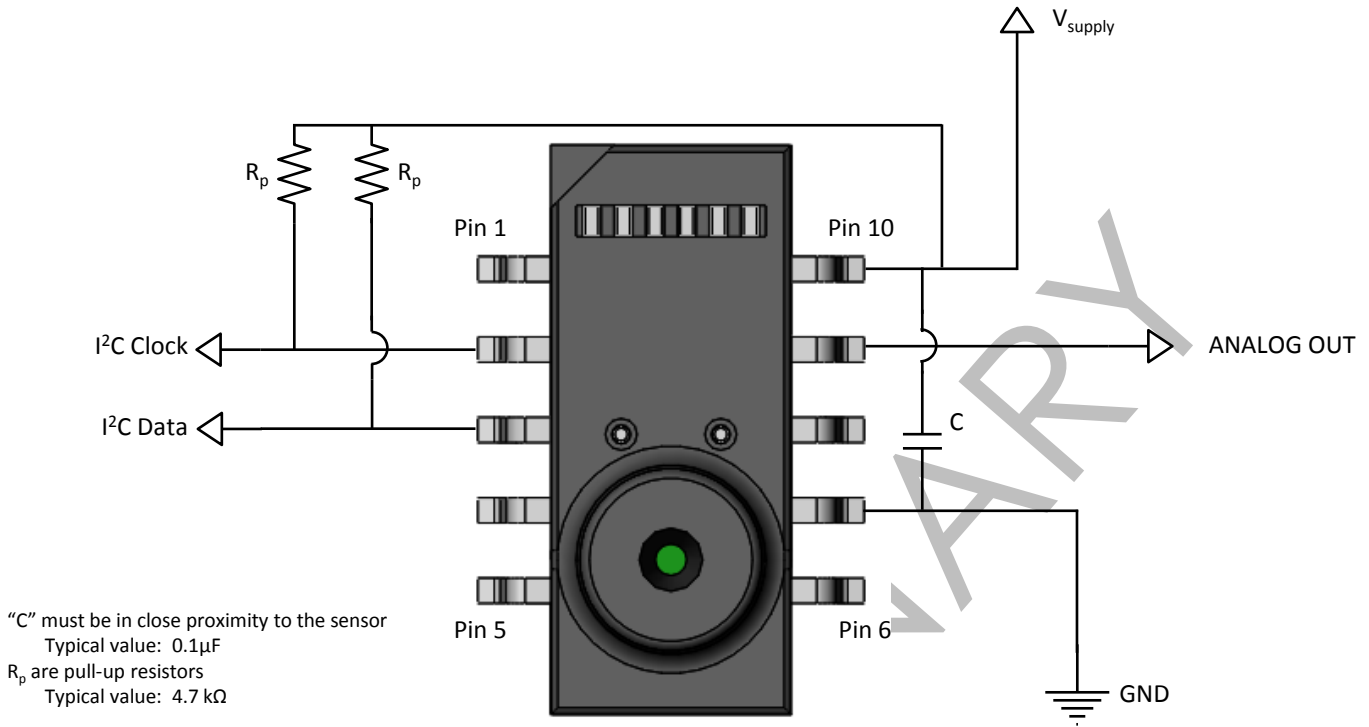
Notes:

- All dimensions in units of [mm]
- Moisture Sensitivity Level (MSL): Level 1
- Wetted materials: Silicon, RTV, Plastic

Part & Lot Number Identification



SM4291 pin out diagram

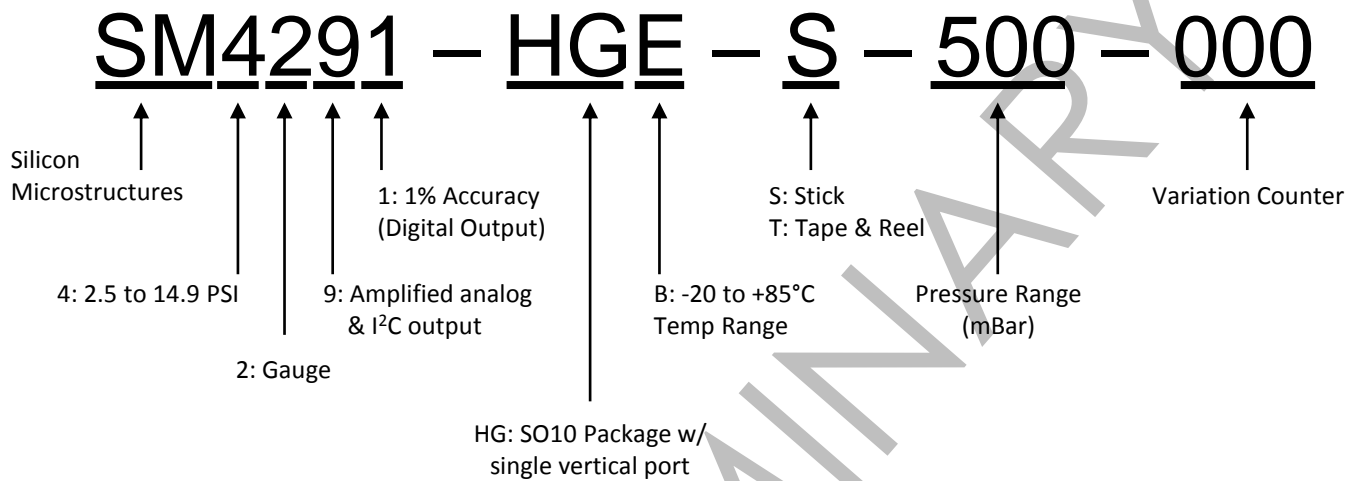


Pin No.	Pin Function
1	NC
2	SCL
3	SDA
4	NC
5	NC
6	NC
7	GND
8	NC
9	Analog Out
10	Power

NOTES:

- Do not connect to NC pins

Part Number Legend



PRELIMINARY

Qualification Standards

REACH Compliant
 RoHS Compliant
 PFOS/PFOA Compliant
 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.TM 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. 2001-2018. All rights reserved.