



Product Number: SM5103

## HIGHLIGHTS

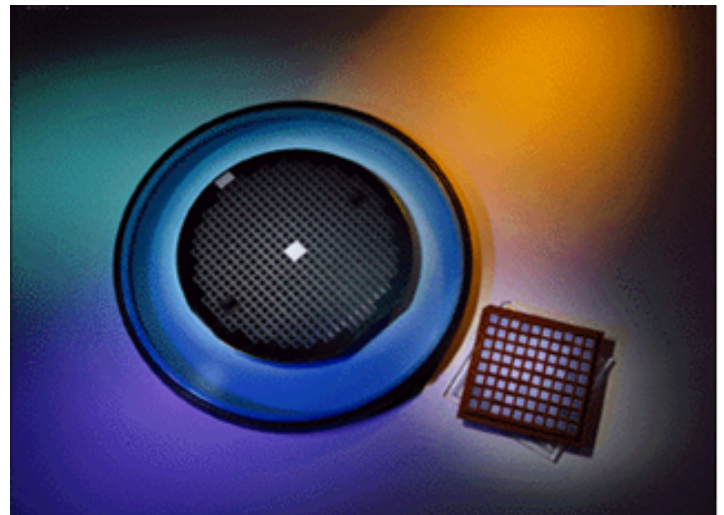
- Small Profile
- High-Volume, Low-cost for OEM use
- Mountable on Ceramic or PCB Substrates
- Available for proprietary and custom packaging

## TYPICAL APPLICATIONS

- Air Flow
- Liquid Level Detection
- HVAC
- Respiratory Equipment
- Gas Analysis
- Engine Control / Exhaust Gas Recirculation (EGR)
- Hospital Beds
- Seat Contour Controls

## FEATURES

- Low Pressure Ranges from 0 - 0.3 PSI to 0 - 1.5 PSI
- High Performance at Low Pressures
- Constant Current or Constant Voltage Drive
- High Sensitivity Output
- Ratiometric with Supply Voltage up to 10 V



## DESCRIPTION

The SM5103 is a silicon micro-machined, piezoresistive pressure sensing chip. These devices are available in full-scale ranges from 0.3 to 1.5 PSI and are ideal for OEM and high-volume applications.

Provided in die form, these sensors can be mounted on ceramic or PC board substrates as part of an OEM system. They also may be packaged into proprietary or application specific sensor lines.

Dies are electrically probed, diced, inspected, and shipped on tape.



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## ABSOLUTE MAXIMUM RATING TABLE FOR SM5103 DIE

All parameters are specified at  $V_{SUPPLY} = 5.00$  V DC supply at room temperature, unless otherwise noted.

No.	Characteristic	Symbol	Minimum	Typical	Maximum	Units
1	Excitation Voltage <sup>(a)</sup>	$V_{SUPPLY}$	—	5	10	V
2	Excitation Current <sup>(a)</sup>	$I_{SUPPLY}$	—	1.5	3	mA
3	Proof Pressure <sup>(b)</sup>	$P_{PROOF}$	10×	—	—	FS $p_{RANGE}$
4	Burst Pressure <sup>(b)</sup>	$P_{BURST}$	15×	—	—	FS $p_{RANGE}$
5	Operating Temperature <sup>(b)</sup>	$T_{OP}$	-40	—	+125	°C
6	Storage Temperature <sup>(b)</sup>	$T_{STG}$	-40	—	+125	°C

### NOTES:

(a) Bridge may be driven with positive or negative voltage as long as  $V_{sub}$  is not connected.

(b) Tested on a sample basis

## OPERATING CHARACTERISTICS FOR SM5103 DIE

All parameters are specified at  $V_{SUPPLY} = 5.00$  V DC supply at room temperature, unless otherwise noted.

No.	Characteristic	Symbol	Minimum	Typical	Maximum	Units
7	FS Span (0.3, 0.8 PSI) <sup>(b, c, e)</sup>	$V_{SPAN}$	25	50	75	mV
8	FS Span (1.5 PSI) <sup>(b, c)</sup>	$V_{SPAN}$	25	50	75	mV
9	Zero Offset	$V_{OFFSET}$	-50	-5	+50	mV
10	TC Span <sup>(b)</sup>	TCS	-24	-19	-15	%FS/100°C
11	TC Zero Offset <sup>(b)</sup>	TCZ	-7	-1	+7	%FS/100°C
12	TC Resistance <sup>(b, c)</sup>	TCR	25	28	33	% $R_B$ /100°C
13	Linearity <sup>(b, d)</sup>	NL	-2.5	±0.15	2.5	%FS
14	Bridge Resistance	$R_B$	2.7	3.4	4.0	kΩ

### NOTES:

(a) Bridge may be driven with positive or negative voltage as long as  $V_{sub}$  is not connected.

(b) Tested on a sample basis.

(c) Determined by measurements taken at 25°C and 75°C.

(d) Defined as best fit straight line.

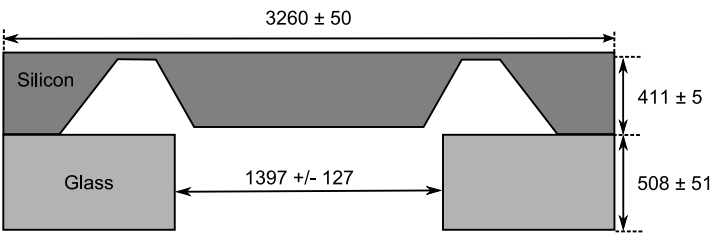
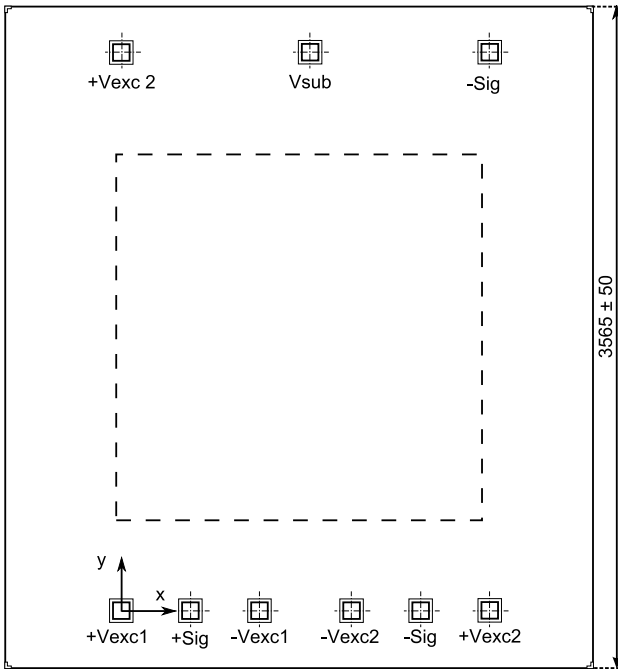
(e) Higher sensitivity offered. Please contact Sales @ [sales@si-micro.com](mailto:sales@si-micro.com)

## QUALIFICATION STANDARDS

→ For qualification specifications, please contact Sales at [sales@si-micro.com](mailto:sales@si-micro.com)

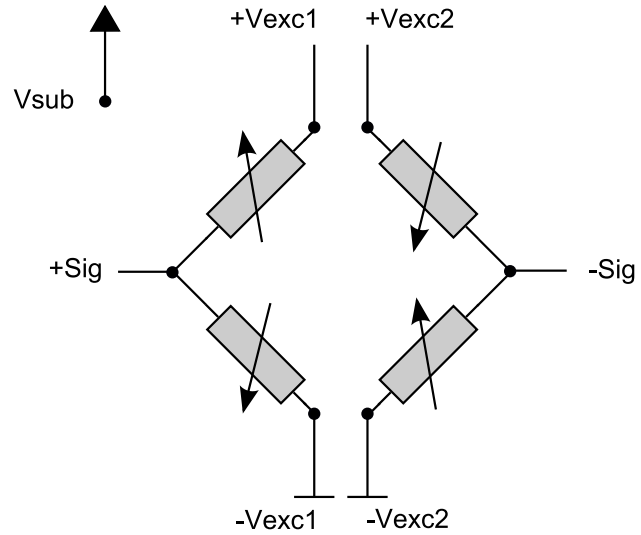
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## SM5103 Diagrams and Dimensions



All dimensions are in micron

## SM5103 Pad-Out



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### Typical Operation

PAD DESCRIPTION	TYPE	VALUE
-Vexc1	Power	0 V
-Vexc2	Power	0 V
+Vexc1	Power	+5 V
+Vexc2	Power	+5 V
-Sig	Analog Out	-
+Sig	Analog Out	-
Vsub	Power	+5 V

Pad Sizes: 100 x 100  
Coordinates: (x, y)

#### Top Pads

+Vexc2: (0, 3000)  
Vsub: (1000, 3000)  
-Sig: (2000, 3000)

#### Bottom Pads

+Vexc1: (0, 0)  
+Sig: (375, 0)  
-Vexc1: (750, 0)  
-Vexc2: (1250, 0)  
-Sig: (1625, 0)  
+Vexc2: (2000, 0)

## Ordering information

Order Code	Full-Scale Pressure Range	Pressure Type	Minimum Order Quantity (MOQ)
SM5103-003-GX	0.3 PSI / 2.068 kPa	Gage	2 Wafers ≈ 850 Die Per Wafer (Actual die quantity subject to +/- 10% yield variance)
SM5103-008-GX	0.8 PSI / 5.515 kPa		
SM5103-015-GX	1.5 PSI / 10.34 kPa		

For samples, please contact the Sales Department @ sales@si-micro.com

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