



PRESSURE SENSORS

Product Number: SM5108C

HIGHLIGHTS

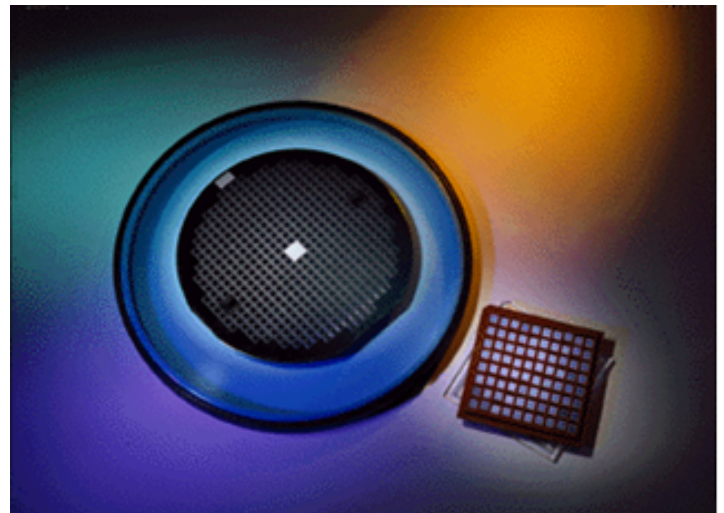
- High performance absolute pressure sensor die
- Ultra-small size
- Available for proprietary packaging
- Good fit for application specific sensor lines

TYPICAL APPLICATIONS

- Automotive Tire Pressure Monitoring Systems (TPMS)
- Barometric Sensing
- Pneumatic Gauges
- Weather Stations
- Hard Disk Drives (HDD)
- Engine Controls
 - Manifold Absolute Pressure (MAP)
 - Barometric Absolute Pressure (BAP)

FEATURES

- Remains stable after autoclave
- Constant Current or Constant Voltage Drive
- High millivolt output
- High volume, cost effective



DESCRIPTION

The SM5108C is a silicon micro-machined, piezoresistive pressure sensing die.

The die is extremely small (0.65 mm x 0.65 mm) and has been optimized to provide the highest possible accuracy for a die of this size. Performance is achieved through careful resistor placement and mechanical configuration. The small die results in a significant cost saving when compared to larger sensor die.

This sensor is intended for high volume, cost sensitive applications, such as consumer tire pressure gauges or robust stable performance disposable pressure gauges. The SM5108C is available as an absolute pressure sensor in full-scale ranges of 15, 30, 60, and 150 PSI. It is designed to be mounted on ceramic or PC board substrates by high-volume OEM manufacturers.

Wafers are electrically probed and visually inspected.

Minimum order quantities apply to this product.



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ABSOLUTE MAXIMUM RATING TABLE FOR SM5108C 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 ^(a)	V_{SUPPLY}	—	5	10	V
2	Excitation Current ^(a)	I_{SUPPLY}	—	1.5	2.5	mA
3	Proof Pressure ^(b)	P_{PROOF}	3×	—	—	FS p_{RANGE}
4	Burst Pressure ^(b)	P_{BURST}	5×	—	—	FS p_{RANGE}
5	Operating Temperature ^(b)	T_{OP}	-40	—	+125	°C
6	Storage Temperature ^(b)	T_{STG}	-40	—	+150	°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 SM5108C 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 (15 PSI) ^(b)	V_{SPAN}	95	127	160	mV
8	FS Span (30, 60 PSI) ^(b)	V_{SPAN}	65	100	135	mV
9	FS Span (150 PSI) ^(b)	V_{SPAN}	100	150	200	mV
10	Zero Offset	V_{OFFSET}	-35		+35	mV
11	TC Span ^(b, c)	TCS	-24	-19	-15.5	%FS/100°C
12	TC Zero Offset ^(b, c)	TCZ	-7	-1	+7	%FS/100°C
13	TC Resistance ^(b, c)	TCR	+24	+27.5	+33	% R_B /100°C
14	Linearity ^(b, d)	NL	-0.2	-0.07	+0.2	%FS
15	Bridge Resistance	R_B	4	5	6	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.

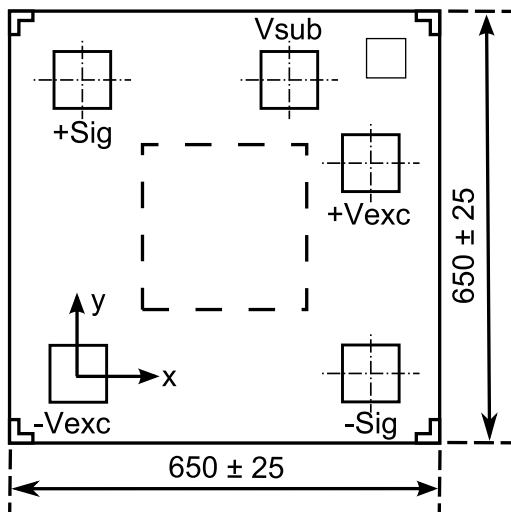
QUALIFICATION STANDARDS

→ Automotive Qualified to AECQ-100

→ For qualification specifications, please contact Sales at sales@si-micro.com

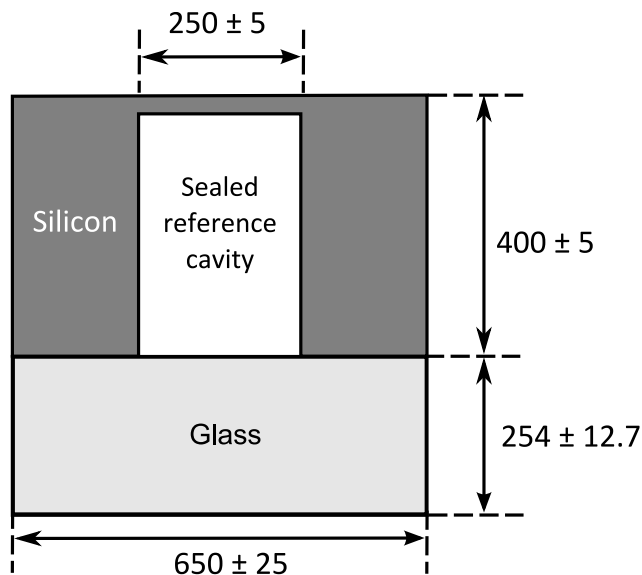
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SM5108C Diagrams and Dimensions

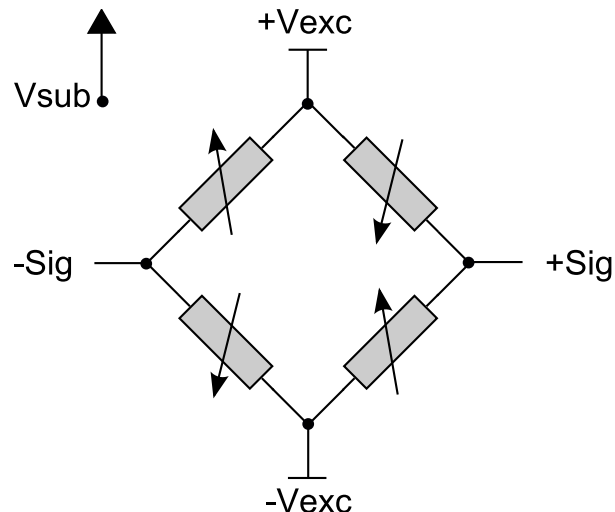


Top-View of SM5108C

(650 micron square as sawn) Total Thickness = 650 micron
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SM5108C Pad-Out



Typical Operation

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

Pad Size = 90 x 90
Coordinates: (x, y)

-Vexc (0, 0)
-Sig (450, 0)
+Sig (0, 450)
+Vexc (450, 335)
Vsub (325, 450)

All dimensions are in MICRON

Ordering information

Order Code	Full-Scale Pressure Range	Pressure Type	Minimum Order Quantity
SM5108C-015-AX	15 PSI / 103.4 kPa	Absolute	2 Wafers ≈ 20,000 Die Per Wafer (Actual die quantity subject to +/- 10% yield variance)
SM5108C-030-AX	30 PSI / 206.8 kPa		
SM5108C-060-AX	60 PSI / 413.6 kPa		
SM5108C-150-AX	150 PSI / 1034 kPa		

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

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