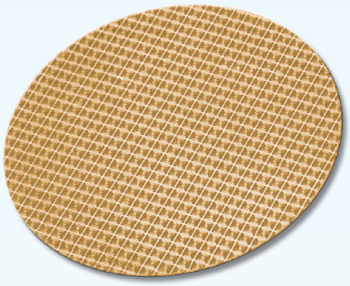
Model SE101
Absolute Pressure Sensor Dies

Featured in small size, BCM's model SE101 absolute pressure sensor dies are designed for absolute pressure measurement, and these sensor dies are manufactured in silicon-silicon structure through MEMS Technology.

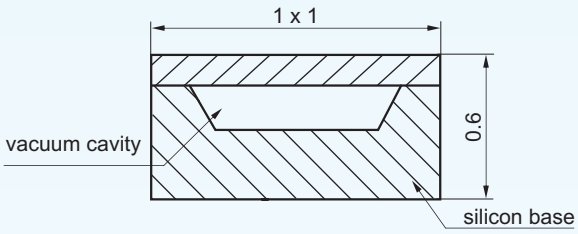
As the structure of model SE101 sensor dies is uniquely designed and developed through a novel MEMS manufacturing approach, the pressure membrane of the SE101 sensor dies possesses a high sensitivity and ultra-overload pressure capability. Model SE101 sensor dies are made in pressure range from 0 ~ 1 barA to 0 ~ 35 barA. On the top surface of the SE101 sensor dies the bridge circuit is configured in half-open circuitry with 5 solder pads for additional adjustment and temperature compensation of offset. The non-linearity of the sensor dies is guaranteed to less than +/- 0.5%FSO (FSO = full scale output), and the long-term stability is qualified to maximum +/- 0.2%FSO/year.

Thanks to BCM's modern MEMS fabrication facilities, model SE101 absolute pressure sensor dies are in mass production and qualified to a precision pressure sensing element for integration in many systems, such as TPMS (tire pressure monitoring system), portable blood pressure gage, and barometers. In addition, the SE101 absolute pressure sensor dies are suitable for many low-cost and high-performance OEM applications. These sensor dies can be delivered either on sawed silicon wafer or in a vacuumed package of separated visual dies. Before package, each SE101 sensor die is tested and visually inspected.

For high volume OEM application, the SE101 sensor dies can be manufactured to customer tailored



SE101 absolute pressure sensor die wafer



sketch of cross-section of SE101

Features:

- silicon-silicon structure for absolute pressure application
- small size and high reliability in mass production
- limited membrane deformation for high overload pressure
- identical footprint 1 mm x 1 mm x 0.6 mm for all pressure ranges
- suitable for either constant current or voltage excitation

Typical Applications:

- engine control
- tire pressure monitoring
- consumer electronics
- medical instrumentation
- industrial pressure sensors

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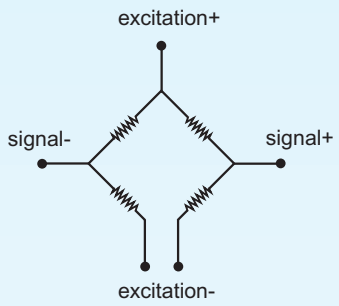
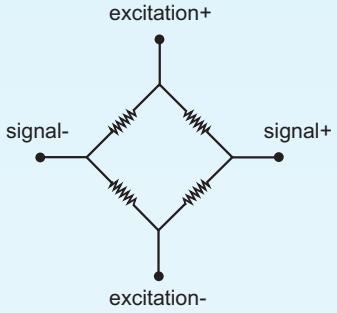
Wheatstone bridge circuit:



open bridge circuit (standard)



closed-bridge circuit (option only for size order)

Specifications:

parameters		units	specifications
pressure range & type		barA	0~1, 0~1.5, 0~3, 0~7, 0~17, 0~35
overload pressure		%fs	450 (for 0~1 barA range), 300 (for other ranges)
burst pressure		%fs	750 (for 0~1 barA range), 500 (for other ranges)
full scale output		mV	100 (typical), 60~140
excitation	current (recommended)	mA	1 (1.5 for 0~1 barA range) recommended, 0.5, ..., 2
	voltage	Vdc	5 (7.5 for 0~1 barA range) recommended, 2, ..., 10
ZERO offset		mV	± 40
non-linearity (NL)		%fso	± 0.5
hysteresis		%fso	± 0.1
repeatability		%fso	± 0.1
bridge resistance		kΩ	5 ± 2
storage temperature		°C	-50 ~ +150
operating temperature		°C	-40 ~ +125
TC of bridge resistance		%/°C	0.30 ± 0.05
TC of ZERO		mV/°C	± 0.06
TC of SPAN*	if excited by current	%fso/°C	0.05
	if excited by voltage	%fso/°C	-0.22 ± 0.03
thermal hysteresis of offset		%fso/°C	± 0.1
PN junction break down voltage		V (@ 10 μA)	⩾ 20

The listed specifications and dimensions are subject to change without prior notice.
Reference of test conditions: excitation = 1 mA (1.5 mA for 0~1 barA range), T = 25 °C, humidity = 40 %RH.
NL is calculated using best fit straight line.

*: Before compensation.

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ordering code:

example: SE101 - 7 - c - o - Cxxxx

absolute pressure ranges	
1 = 0 ~ 1 barA	7 = 0 ~ 7 barA
1.5 = 0 ~ 1.5 barA	17 = 0 ~ 17 barA
3 = 0 ~ 3 barA	35 = 0 ~ 35 barA

excitation
c = 1 (1.5 for 0~1 barA range) recommended, 0.5, ..., 2 (mA)
v = 5 (7.5 for 0~1 barA range) recommended, 2, ..., 10 (Vdc)

bridge configuration
o = open bridge circuit (standard)
cl = close bridge circuit (only for size order)

Cxxxx: This code starts with a “C” and is followed by 4 digits, this is a customized code given by the customer who will indicate, by using this code, his desired or wished specification requested to the die SE101 on his order sheet. The customer can use the 4 digits to indicate the month and date when he requests this customized specification. The sales team of BCM will confirm this customized specification when sending BCM's <<Order Confirmation>>.

ordering code explanation: SE101 - 7 - c - o - C0116

Model SE101 silicon absolute pressure sensor die, the absolute pressure range is 0 ~ 7 bar, current excitation, and with open bridge circuit. The customer has indicated on January 16th his wished specification on his order sheet for the ordered die Se101, and this customer-wished specification has to be confirmed by BCM sales team on <<Order Confirmation>>.

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