

## Differential Pressure Sensors (DPS) for Smart Valve Applications

### 101B(a19D) DPS

for Low Static Pressure Application



- piezoresistive effect
- 316L SS diaphragm
- temperature compensated
- O-ring sealing (weldable)

**diff. pressure ranges:** 0~0.1 bar, ..., ~35 bar  
**static pressure:** 10 x full scale (max. 100 bar)  
**full scale output:**  $\geq 20$  mV @ 5 Vdc  
**accuracy:** 0.5 %fs, 1 %fs  
**other specifications:** refer to 101B(a19G)  
**electrical interface:** 4-color flying PVC wires

### 115C DPS

for High Static Pressure Application



- metal capacitive technology
- low differential pressure ranges
- fully welded, 316L SS diaphragm

**diff. pressure ranges:** 0~15 mbar, ..., ~69 bar  
**static pressure:** 150 bar, 312 bar  
**zero offset:** 120±40 pF  
**output:** 90±20 pF  
**accuracy:** 0.2 %fs, 0.5 %fs  
**operating temp.:** -40 ~ +105 °C, -40 ~ +130 °C

## Assembly of Transducers with Flanges



On request the 157M, 315M, and 160M transducers can be supplied with flanges.

## Differential Pressure Transducers for Differential Pressure Transmitter Applications

### 157M DPTd



- silicon capacitive technology
- fully welded construction
- conditioned output signal available on request

**diff. pressure ranges:** 0~60 mbar, ..., ~5 bar  
**static pressure:** 32 bar (for 60 mbar only), 100 bar  
**zero offset:** 5 pF  
**output:** 10 pF  
 (option: 4~20 mA or 1~5 Vdc output signal available via signal conditioning module, with supply 12, ..., 32 Vdc)  
**accuracy:** 0.25 %fs, 0.5 %fs  
**operating temp.:** -40 ~ +85 °C

### 315M DPTd



- metal capacitive technology
- integrated with 115C diff. pressure sensor
- specifications: refer to 115C (option: 4~20 mA or 1~5 Vdc, output signal available via signal conditioning module, with supply 12, ..., 32 Vdc)

## Diff. Pressure & Temperature Transducers for Flow Meter Application

### 160M DPTd



- piezoresistive technology
- integrated with SE106 sensor dies
- diff. and static pressure measurement
- temperature measurement
- fully welded construction

**diff. pressure ranges:** 0~0.2 bar, ~0.4 bar, ~1 bar, ~4 bar, ~10 bar  
**static pressure:** 40 bar, 100 bar  
**full scale output:** 50 mV @ 5 Vdc  
**accuracy:** 0.25 %fs, 0.5 %fs  
**excitation:** 5 Vdc or 1 mA  
**temp. compensation range:** -30 ~ +80 °C  
**other specifications:** refer to SE106 Sensor Die  
 (option: 4~20 mA or 1~5 Vdc output signal available via signal conditioning module, with supply 12, ..., 32 Vdc)

# BCM Sensor Dies, Pressure Sensors, Differential Pressure Sensors & Transducers

## Product Overview



The listed specifications are subject to change without prior notice.



**BCM SENSOR TECHNOLOGIES bvba**  
 Industriepark Zone 4, Brechtsebaan 2  
 B-2900 Schoten – Antwerp  
 BELGIUM  
 Tel.: +32-3-238 6469  
 Fax: +32-3-238 4171  
 website: [www.bcmsensor.com](http://www.bcmsensor.com)  
 email: [sales@bcmsensor.com](mailto:sales@bcmsensor.com)

Your Local Distributor:



**BCM SENSOR TECHNOLOGIES bvba**

## Pressure Sensor Dies (PSD) and Pressure Sensors (PS)

Made from high quality monocrystalline silicon wafer, the SE100-series are piezoresistive pressure sensor dies (PSD) manufactured by MEMS technology. The SE101, SE102, SE103 and SE105 PSD are designed for single-working pressure (either absolute- or/and gauge-pressure) applications, while the SE106 is designed for differential pressure application with both static-pressure and temperature measuring functions.

BCM pressure sensors (PS) are classified into a number of series according to the technology the PS is made by:

- 100B-series PS: oil-filled technology integrated with PSD;
- 300B-series PS: thick-film technology on ceramic or stainless steel (SS) sensor body;
- 500G-series PS: glass-bonding technology using semiconductor strain gauges;
- 600F-series PS: strain gauge technology bonding metal foil strain gauges.

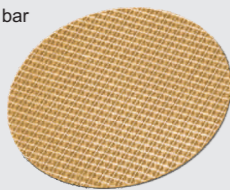
Besides the PS as mentioned above, we offer piezoresistive differential pressure transducers (218D-series) and the differential pressure transducers integrated with both static-pressure and medium-temperature measuring functions (160M-series).

In BCM capacitive differential pressure product line, 115C-series are differential pressure sensors (DPS) which are oil-filled and are made of differential capacitor structure, while both 315M-series and 157M-series are differential pressure transducers (DPTd). In this product category, the DPTd (315M-series) is integrated with a DPS (115C-series) which is based on metal capacitive technology, while the DPTd (157M-series) is developed on silicon capacitive technology.

All the PS, DPS and DPTd as mentioned above are 100% tested and calibrated by BCM SENSOR, and are delivered with an individual calibration certificate. These products are available in mass production.

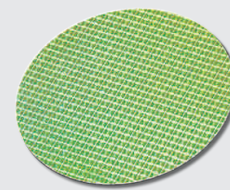
### SE101 1 mm by 1 mm Absolute Pressure Sensor Dies

ranges: 0~1 bar, ~4 bar, ~10 bar, ~20 bar, ~30 bar  
**pressure type:** absolute  
**proof pressure:** 700 %fs, 1000 %fs  
**full scale output:**  $\geq 70$  mV  
**accuracy:** 0.25 %fs  
**excitation:** 5 Vdc or 1 mA  
**input/output resistance:**  $5\pm 1$  k $\Omega$   
**operating temperature:** -40 ~ +125 °C



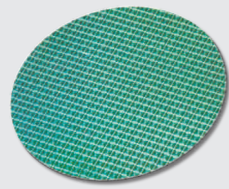
### SE102 High-Overload Pressure Sensor Dies

ranges: 0~0.4 bar, ~1 bar, ~2.5 bar, ~8 bar  
**pressure types:** gauge, absolute  
**proof pressure:** 1500 %fs  
**full scale output:**  $\geq 80$  mV  
**accuracy:** 0.15 %fs  
**excitation:** 5 Vdc or 1 mA  
**input/output resistance:**  $6\pm 1$  k $\Omega$   
**operating temperature:** -40 ~ +125 °C



### SE103 Pressure Sensor Dies for General Purpose

ranges: 0~0.1 bar, ..., ~600 bar  
**pressure types:** gauge, absolute, sealed gauge  
**overload pressure:** 300 %fs  
**full scale output:**  $\geq 60$  mV  
**accuracy:** 0.25 %fs  
**excitation:** 5 Vdc or 1 mA  
**input/output resistance:**  $5\pm 1$  k $\Omega$   
**operating temperature:** -40 ~ +125 °C



## Oil-filled Pressure Sensors (PS) Integrated with PSD piezoresistive effect, higher sensitivity

- excitation: voltage (5 Vdc) or current (1 mA)
- compensated temperature range: 0 ~ 70 °C
- operating temperatures range: -40 ~ +125 °C
- 316L stainless steel

### 101B(a19G) PS for General Purpose

19 mm diameter, O-ring sealing weldable via surface welding

ranges: -1 ~ +0.1 bar, ..., ~600 bar  
**pressure types:** gauge, absolute, sealed gauge  
**full scale output:**  $\geq 60$  mV  
 (option: 10%~90%Vs ratiometric, 4~20 mA, I<sup>2</sup>C)  
**accuracy:** 0.25 %fs, 0.5 %fs  
**input/output resistance:**  $5\pm 1$  k $\Omega$



### 101B(a19L) PS for Low Pressure Applications

19 mm diameter, O-ring sealing weldable via surface welding

ranges: 0~0.2 bar, ..., ~25 bar  
**pressure types:** gauge, absolute, sealed gauge  
**full scale output:**  $\geq 50$  mV  
 (option: 10%~90%Vs ratiometric, 4~20 mA, I<sup>2</sup>C)  
**accuracy:** 0.25 %fs, 0.5 %fs  
**input/output resistance:**  $5\pm 1$  k $\Omega$



### 101B(a12.6H) PS for High Pressure Applications

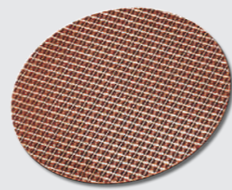
12.6 mm diameter, O-ring sealing weldable via surface welding

ranges: 0~10 bar, ..., ~1000 bar  
**pressure types:** gauge, absolute, sealed gauge  
**full scale output:**  $\geq 60$  mV  
 (option: 10%~90%Vs ratiometric, 4~20 mA, I<sup>2</sup>C)  
**accuracy:** 0.25 %fs, 0.5 %fs  
**input/output resistance:**  $5\pm 3$  k $\Omega$



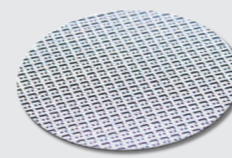
### SE105 Flip-Chip Pressure Sensor Dies

ranges: 0~1 bar, ~7 bar, ~10 bar  
**pressure types:** gauge, absolute  
**proof pressure:** 300 %fs  
 (200 %fs in case of 10 bar range)  
**full scale output:**  $\geq 80$  mV  
**accuracy:** 0.2 %fs  
**excitation:** 5 Vdc or 1 mA  
**input/output resistance:**  $4.5\pm 0.5$  k $\Omega$   
**operating temperature:** -40 ~ +125 °C



### SE106 Differential Pressure & Temperature Sensor Dies

diff. pressure ranges: 0~0.2 bar, ~0.4 bar, ~1 bar, ~4 bar, ~10 bar  
**static pressure:** 40 bar, 100 bar, 160 bar  
**full scale output:** 50 mV  
**accuracy:** 0.25 %fs  
**excitation:** 5 Vdc or 1 mA  
**input/output resistance:**  
 $5\pm 1$  k $\Omega$  (for diff. pressure)  
 $10\pm 2$  k $\Omega$  (for static pressure)  
**temperature sensor:**  $25\pm 5$  k $\Omega$   
**temp. measuring range:** -30 ~ +80 °C  
**output of temp. meas.:**  $15 \Omega/^\circ\text{C}$  @ 5 Vdc  
**accuracy of temp. meas.:** 0.5 °C  
**operating temperature:** -40 ~ +125 °C



- electrical interface:
- 5 or 6 gold plated pins of 0.45 mm diameter
- 4 color PVC flying wires of 100 mm length
- 4 conductor flat-cable of 100 mm length

### 101B(f) PS of Flush-Diaphragm Integrated with Housing

fully welded construction

ranges: 0~200 mbar, ..., ~100 bar  
**pressure types:** gauge, absolute, sealed gauge  
**full scale output:**  $\geq 60$  mV  
 (option: 10%~90%Vs ratiometric, 4~20 mA, I<sup>2</sup>C)  
**accuracy:** 0.25 %fs, 0.5 %fs  
**input/output resistance:**  $5\pm 1$  k $\Omega$   
**process connection:** G1/2" male  
**thread for housing:** M24x1 male



### 101B(c) PS of Inner-Cavity with Customized Housing

integrated with 101B(a19G)

**specifications:** refer to 101B(a19G)  
**process connection:**  
 G1/2" male (other thread types on request)  
**thread for housing:**  
 M24x1 male (other thread types on request)

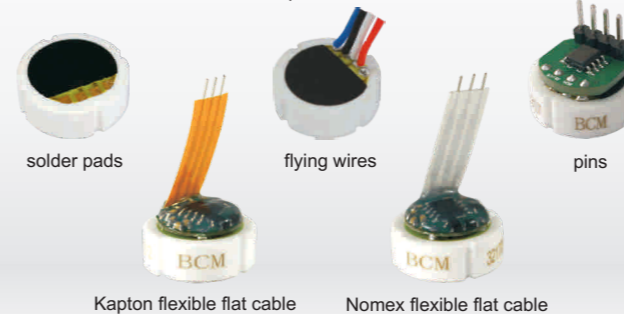


## Thick-film Pressure Sensors (PS) of Ceramic or SS Sensor Body cost effective

- resistive effect
- high input & output resistance: 11 k $\Omega$
- excitation: 5, ..., 25 Vdc
- compensated temperature range: 0 ~ +70 °C
- operating temperatures range: -40 ~ +135 °C

### 301B Mono-Block Ceramic PS

ranges: 0~2 bar, ..., ~400 bar  
**pressure type:** gauge  
**output sensitivity:**  $\geq 2.5$  mV/V  
 (option: 10%~90%Vs ratiometric, 4~20 mA, I<sup>2</sup>C)  
**accuracy:** 0.5 %fs  
**electrical interface:** various options as shown below.



### 330B Mono-Block Stainless Steel PS

ranges: 0~250 bar, ..., ~2000 bar  
**pressure type:** gauge  
**output sensitivity:** 2.5 mV/V  
 (option: 10%~90%Vs ratiometric, 4~20 mA, I<sup>2</sup>C)  
**accuracy:** 0.5 %fs, 1 %fs



## Glass-bonding Pressure Sensors (PS) with Semiconductor Strain Gauges High Pressure and High Overload Capability

- piezoresistive effect
- high proof & burst pressure
- voltage excitation: 3~10 Vdc
- input/output resistance:  $5\pm 2$  k $\Omega$
- compensated temperature range: -20 ~ +85 °C
- operating temperatures range: -40 ~ +125 °C

### 500G Mono-Block Gauge Pressure PS of Inner-Cavity

17-4PH mono-block with inner-cavity

ranges: 0~5 bar, ..., ~8000 bar  
**pressure type:** gauge  
**proof pressure:** 200 %fs  
**burst pressure:** 300 %fs  
**output sensitivity:**  $\geq 5$  mV/V  
 (option: 10%~90%Vs ratiometric, 4~20 mA, I<sup>2</sup>C)  
**accuracy:** 0.5 %fs  
**process connection:** G1/4", male  
**thread for housing:** M24x1, male  
**electrical interface:**  
 solder-pads, or  
 4-color PVC flying wires of 100 mm length



## Pressure Sensors (PS) Made with Metal Foil Strain Gauges High Precision and Low Thermal Effect

- metallic resistive effect
- voltage excitation: 5~12 Vdc
- input/output resistance: 350  $\Omega$ , 700  $\Omega$ , 1 k $\Omega$ , 2 k $\Omega$
- compensated temperature range: -20 ~ +85 °C
- operating temperatures range: -40 ~ +125 °C
- 17-4PH or 316L stainless steel diaphragm

### 664F(l) Mono-Block Gauge Pressure PS of Inner-Cavity

**diaphragm:** 17-4PH  
**ranges and type:** 0~16 bar, ..., ~400 bar, gauge  
**output sensitivity:** 1.2 mV/V, ..., 2 mV/V  
 (option: 10%~90%Vs ratiometric, 4~20 mA, I<sup>2</sup>C)  
**accuracy:** 0.05 %fs (for 1.2 mV/V),  
 0.1 %fs, 0.25 %fs, 0.5 %fs  
**process connection:** G1/4", male  
**thread for housing:** M24x1, male  
**electrical interface:**  
 4-color PVC flying wires of 100 mm length



### 664F(f) Mono-Block Gauge Pressure PS of Flush-Diaphragm

**diaphragm:** 17-4PH  
**ranges and type:** 0~16 bar, ..., ~400 bar, gauge  
**output sensitivity:** 1.2 mV/V, ..., 2 mV/V  
 (option: 10%~90%Vs ratiometric, 4~20 mA, I<sup>2</sup>C)  
**accuracy:** 0.05 %fs (output 1.2 mV/V),  
 0.1 %fs, 0.25 %fs, 0.5 %fs  
**process connection:** G1/2", male  
**thread for housing:** M24x1, male  
**electrical interface:**  
 4-color PVC flying wires of 100 mm length

