

Model 357S TO Housing OEM Pressure Sensors



Based on piezoresistive effect, BCM 357S TO housing OEM pressure sensors for PCB mounting are silicon pressure sensors, by a BCM sensor die (model SE103 or SE105) all in one integrated encapsulation with TO pressure inlet(s).

The sensor is made with temperature compensation by means of laser trimmed technologies, feature reliable performance and high accuracy, TO housing makes the 357S sensor suitable for PCB mounting applications, widely used in industrial controls, pressure calibrating instruments, biomedical instruments, auto electronics etc.

Model 357S OEM pressure sensor can be used to measure pressure ranges of 0~0.73 psi to 0~10 bar in gauge, absolute or differential pressure configuration, and posses high accuracy up 0.1%fso (fso = full scale output) in operating temperature ranges of -40~+125 °C. The 357S pressure sensor can be excited either constant current of 1~1.5 mA, or constant voltage of 5~10 V on request.



Features:

TO housing, suitable for PCB mounting applications
for no corrosive gas or fluid medium
temperature compensation by laser trimming
optional accuracy for gauge, absolute and difference pressure
standard 3/16" port, cost-effective and small size

Applications:

- process control systems
- pressure calibrating instruments
- biomedical instruments
- aviation or voyage electronic applications
- auto electronics
- communication system

Reference specifications:

media temperature: 25 ± 1°C
ambient temperature: 25 ± 1°C
vibration: 0.1g (1m/s/s) max
humidity: 50% ± 10%
ambient pressure: 12.47 psi ~ 1.06 bar
excitation source: 1.5 ± 0.0015 mA dc

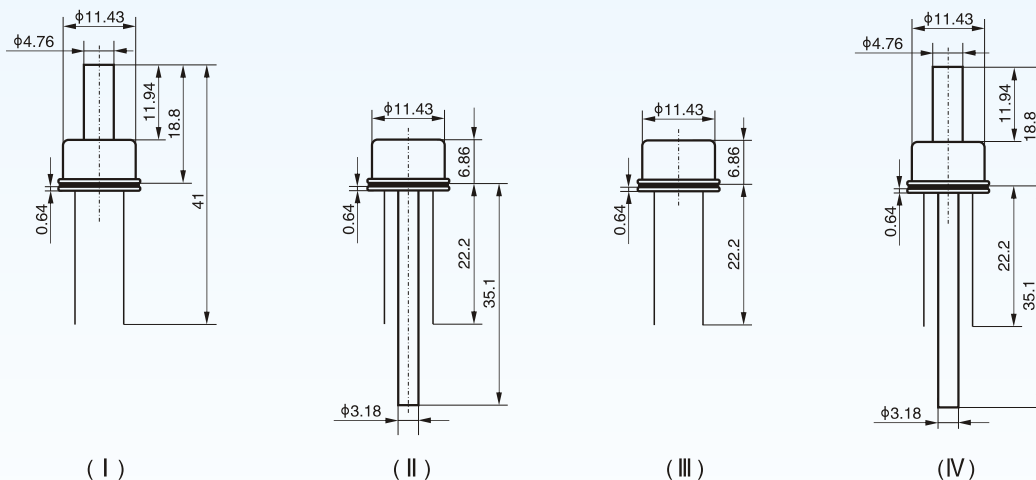
Physical properties:

pressure port: gold-plated kovar
sensor elements: gold, AL, Si, boride-silicon glass
lead: gold-plated kovar
inner soakage element: nickle, silicon, gold (top)
nickle, silicon, RTV (bottom)
weight: 3 g

Environmental conditions:

position effect: <0.05% of zero shift for 90° tilt in any direction
Vibration Effect: no change at 10 g^s RMS, 20 ~ 2000Hz
shock: 100 g, for 11 millisecond
life: 100 million cycles
media compatibility: no conductive and no corrosive gas or fluid which is compatible to nickle and silicon (top), no conductive and no corrosive gas or fluid which is compatible to silicon, boride-silicon glass, RTV and steel (bottom).

Dimensions:



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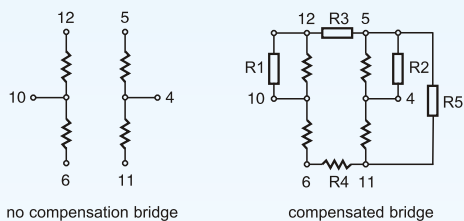
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Specifications:

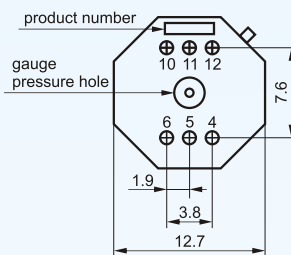
pressure media		non-electroconductive (suggested insulation resistance >20 Mohm) and non-corrosive gas or dilute-liquid
pressure range	psi	0/0.73, 0/1.45, 0/3, 0/3.5, 0/5, 0/6, 0/9, 0/10
	bar	0/1, 0/2, 0/3.5, 0/4, 0/6, 0/7, 0/10
pressure type		gauge (relative) pressure, absolute pressure, differential pressure
overload pressure	%fs	300, not over 50 psi ($P \leq 0 \sim 10$ psi); 200, not over 200 psi ($P \geq 0 \sim 1$ bar)
output signal	mV	≥ 30 (ranges $< 0 \sim 3$ psi), ≥ 50 (ranges of 0/3, 0/3.5 psi); ≥ 70 (range $\geq 0 \sim 5$ psi)
accuracy (NL, HY, RP)	%fso	0.10 (min.), 0.25, 0.5 (typical), 1.0 (max.)
system pressure	psi	5 ($P \leq 0 \sim 10$ psi); 200 ($P \geq 0 \sim 1$ bar)
system pressure effect	%fso	0.10 (min.), 0.25 (typical), 0.5 (max.)
excitation		1 ~ 1.5 mA constant current or 5 ~ 10 V constant voltage
zero offset	mV	2 (range $< 0 \sim 5$ psi), 1 (other ranges);
temperature coefficient of ZERO	%fso	0.75 (min.), 1.0 (typical), 2.0 (max.) for pressure range of $\leq 0 \sim 3$ psi 0.5 (min.), 1.0 (typical), 2.0 (max.) for other pressure ranges
temperature coefficient of SPAN	%fso	1.0 (min.), 1.5 (typical), 2.0 (max.) for pressure range of $\leq 0 \sim 3$ psi 0.5 (min.), 1.0 (typical), 2.0 (max.) for other pressure ranges
compensation temperature range	°C	0~50
media temperature range	°C	-40~120, 0~125 (option)
storage temperature range	°C	-40~120
long-term stability	%fso/year	< 0.2
input resistance	K Ω	2~8, 5 ± 20 % (option)
output resistance	K Ω	3.5~6, 5 ± 20 % (option)
insulation resistance	M Ω	100 @ 100 V dc
response time	ms	< 1 (10% ~ 90% of leading edge)
heat hysteresis	%fso	0.1

The listed specifications are subject to change without prior notice.

Wheatstone-bridge Circuit:

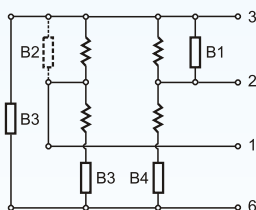


Electric connections:

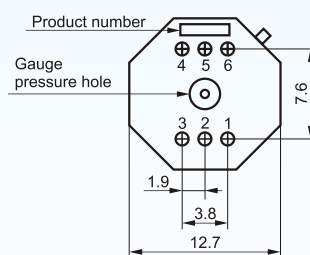


current excitation	positive pressure on top		positive pressure on bottom	
	port	connection	port	connection
laser-trimmed compensation	4	signal +	4	signal -
	5	power +	5	power +
	6	signal -	6	power -
	10	power -	10	signal -
	others are empty	others are empty		
no compensation	4	signal +	4	signal -
	5, 12	power +	5, 12	power +
	6, 11	power -	6, 11	power -
	10	signal -	10	signal +

another compensation circuit:



another electric connections:



- 1: signal -
- 2: signal +
- 3: power +
- 6: power -
- 4, 5: not connection

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Ordering Codes system of 357S Pressure Sensors:

example: 357S - 10 - D - I - mA - L - B - Cxxxx

pressure ranges & available pressure types			
005 = 0 ~ 0.73 psi	G	1 = 0 ~ 1 bar	G, A, D
010 = 0 ~ 1.45 psi	G	2 = 0 ~ 2 bar	G, A, D
020 = 0 ~ 3 psi	G	3.5 = 0 ~ 3.5 bar	G, A, D
025 = 0 ~ 3.5 psi	G	4 = 0 ~ 4 bar	G, A, D
035 = 0 ~ 5 psi	G, A, D	6 = 0 ~ 6 bar	G, A, D
040 = 0 ~ 6 psi	G, A, D	7 = 0 ~ 7 bar	G, A
060 = 0 ~ 9 psi	G, A, D	10 = 0 ~ 10 bar	G, A
070 = 0 ~ 10 psi	G, A, D		

pressure types
G = gauge (relative) pressure
A = absolute pressure
D = differential pressure

pressure connection
I = 3/16" tube (top), open (bottom)
II = open (top), 1/8" tube (bottom)
III = open (top), open (bottom)
IV = 3/16" tube (top), 1/8" tube (bottom)

excitation
mA (standard) = constant current (1 ~ 1.5mA dc)
V = constant voltage (5 ~ 10V dc)

compensation
L = laser trimmed compensation
M = map out compensation resistor values
N = no compensation

combined error
A = 0.1%fso
B = 0.25%fso (standard)
C = 0.5%fso
D = 1.0%fso

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 357S pressure sensors 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 Explanations: 357S - 10 - D - I - mA - L - B - C0116

Model 357S Pressure Sensor for gauge (relative) pressure measurement in 0~10 bar range. The pressure is introduced to the top of sensor through a tube of 3/16" diameter while on the bottom of the sensor there is an open port. The sensor is excited with 1~1.5 mA constant current, and is fully compensated with laser trimmed technology to an accuracy of 0.25%fso. The customer has indicated on January 16th his wished specification on his order sheet for the ordered 357S, and this customer-wished specification has to be confirmed by BCM sales team on <<Order Confirmation>>.

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