

Model 357S

TO Housing Pressure Sensors



Based on piezo resistive 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 0~0.05bar to 0~16bar in gauge, absolute or differential pressure configuration, and posses high accuracy up to 0.1%fs (fso = full scale output) in operating temperature ranges of -40~+125°C. The 357S pressure sensor can be excited either constant current of 1~1.5mA, or constant voltage of 5~10V 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: $25 \pm 1^\circ\text{C}$
- ambient temperature: $25 \pm 1^\circ\text{C}$
- vibration: 0.1g (1m/s/s) max
- humidity: $50\% \pm 10\%$
- ambient pressure: 12.47 psi ~ 1.06 bar
- excitation source: $1.5 \pm 0.0015 \text{ mA dc}$

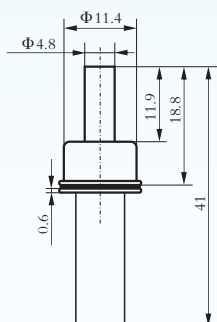
Physical properties:

- 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 gram

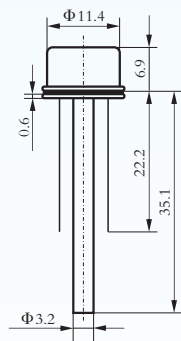
Environmental conditions:

- position effect: <0.05% of zero shift for 90° tilt in any direction
- Vibration Effect: no change at 10 gs' 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 compatable to nickle and silicon (top), no conductive and no corrosive gas or fluid which is compatable to silicon, boride-silicon glass, RTV and steel (bottom).

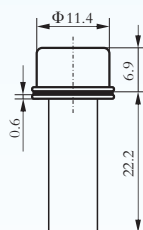
Dimensions:



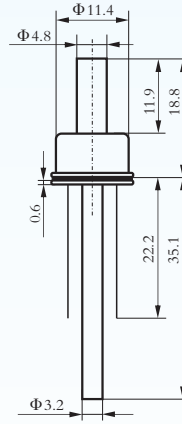
(I)



(II)



(III)



(IV)

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Model 357S

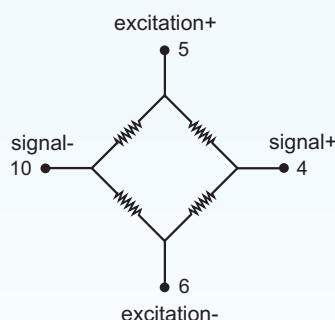
TO Housing Pressure Sensors

Specifications:

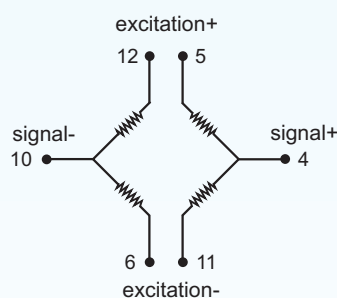
pressure medium		non-electroconductive (suggested insulation resistance >20Mohm) and non-corrosive gas or dilute-liquid
measuring ranges	bar	0~0.05, ~0.1, ~0.2, ~0.25, ~0.35, ~0.4, ~0.6, ~0.7, ~1, ~2, ~3.5, ~4, ~6, ~7, ~10
pressure type		absolute (A), gauge(G), differential pressure (D)
overload pressure	%fs	300, not over 3.5bar (ranges \leq 0.7bar); 200, not over 13.5bar (ranges \geq 1bar)
full scale output	mV	\geq 15 (range of 0.05bar), \geq 30 (ranges of 0.1bar), \geq 50 (ranges of 0.2bar and 0.25bar), \geq 70 (ranges \geq 0.35bar)
excitation		1~1.5mA for constant current source, 5~10V for constant voltage source
zero offset	mV	\pm 2 (ranges < 0.35bar), \pm 1 (other ranges)
accuracy	%fs	\pm 0.1, \pm 0.25, \pm 0.5 (standard)
system pressure	bar	0.35 (ranges \leq 0.7bar), 13.5bar (ranges \geq 1bar)
system pressure effect	%fso	\pm 0.1, \pm 0.25 (standard), \pm 0.5
long-term stability	%fso/year	\pm 0.2
input resistance	k Ω	2~8 (standard), 5 \pm 20%
output resistance	k Ω	3.5~6 (standard), 5 \pm 20%
insulation resistance	M Ω	100 @100Vdc
operating temperature range	$^{\circ}$ C	-40 ~ +120
storage temperature range	$^{\circ}$ C	-40 ~ +120
compensated temperature range	$^{\circ}$ C	0~50
temperature coefficient of zero	%fso	0.75 (min.), 1.0 (standard), 2.0 (max.) for ranges \leq 0.2bar 0.5 (min.), 1.0 (standard), 2.0 (max.) for other ranges
temperature coefficient of span	%fso	1.0 (min.), 1.5 (standard), 2.0 (max.) for range \leq 0.2bar 0.5 (min.), 1.0 (standard), 2.0 (max.) for other pressure ranges
life time	cycles	10 ⁸
response time	ms	\geq 1 (10%~90% of leading edge)
heat hysteresis	%fso	0.1
pressure interface		Refer to Dimensions.
electrical interface		standard TO-8 , 6 inlets 6P (6 gold-plated kovar pins, Φ 0.45);
pressure port material		gold-plated kovar
net weight	gram	3

The listed specifications are subject to change without prior notice.

Wheatstone-bridge Circuit:

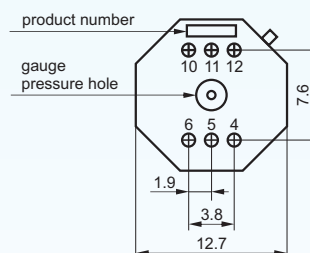


compensated bridge



no compensated bridge

Electric connections:



electrical configuration
for compensated circuit

pin	connection
4	signal +
5	excitation +
6	excitation -
10	signal -
11	not connected
12	not connected

electrical configuration
for no compensated circuit

pin	connection
4	signal +
5	excitation +
6	excitation -
10	signal -
11	excitation -
12	excitation +

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Ordering Codes system of 357S Pressure Sensors:

example: 357S - 10bar - D - I - c - L - B - (*)

pressure ranges & available pressure types			
0.05bar	G	1bar	G, A, D
0.1bar	G	2bar	G, A, D
0.2bar	G	3.5bar	G, A, D
0.25bar	G	4bar	G, A, D
0.35bar	G, A, D	6bar	G, A, D
0.4bar	G, A, D	7bar	G, A
0.6bar	G, A, D	10bar	G, A
0.7bar	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
c = constant current (1~1.5mA) (standard)
v = constant voltage (5~10Vdc)

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

accuracy
A = 0.1%fs
B = 0.25%fs (standard)
C = 0.5%fs
D = 1.0%fs

"(*)" is necessary only if any customized parameter is required, otherwise it is neglectable.

Examples of Ordering Code

- standard sensor:

357S-1bar-G-I-c-L-B

- customized sensor:

357S-10bar-D-III-v-N-B-(*)

(*) : - Excitation = constant voltage
- No temperature compensation.

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