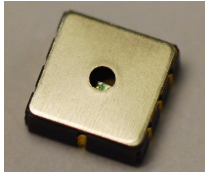
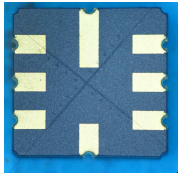


## TMPSI15B: PIEZO-RESISTIVE PRESSURE SENSOR

### FEATURE



- 1 Bar – 16 Bar absolute Pressure Range
- Uncompensated
- Piezoresistive silicon micro-machine sensor
- High linearity and Low % ERROR

### Description and Designed

The pressure sensor is designed for pressure sensor systems with highest linearity and low % error. The device consists of a piezo-resistive micro-machine pressure sensor die mounted on chip Ceramic QFN 5x5mm 8 lead Package type.

**Table 1. Maximum Rating**

Characteristics	Symbol	Min	Max	Unit
Pressure Range <sup>(1)</sup>	Pop	1	16	Bar
Temperature Range <sup>(9)</sup>	T <sub>A</sub>	-20	120	°C
Supply Voltage <sup>(2)</sup>	V <sub>S</sub>	1.5	15	Vdc

**Table 2. Operating Characteristics**

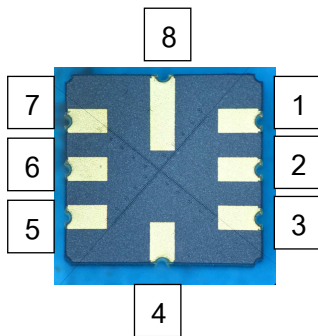
All parameter are measured at **5 V** supply at T<sub>A</sub> = 23 °C , unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Supply Current <sup>(3)</sup>	I <sub>S</sub>	-	0.9	-	mAdc
Full Scale Span <sup>(4)</sup>	V <sub>FSS</sub>	88.5	90.75	93	mV
Offset <sup>(5)</sup>	V <sub>off</sub>	-16	0	16	mV
Sensitivity (1 – 16 Bar )	$\Delta V / \Delta P$	5.9	6.05	6.2	mV /Bar
Non Linearity <sup>(6)</sup>	N <sub>L</sub>	-0.05	-	0.05	%FSO
Pressure Hysteresis <sup>(7)</sup>	P <sub>H</sub>	-0.4		+0.4	%FSO
Accuracy	-	-0.25		+0.25	%FSO
Resistance Bridge <sup>(8)</sup>	R <sub>B</sub>	4.0	4.5	5.0	kΩ
The Temperature coefficient offset <sup>(10)</sup>	TCO	-0.05	-	-0.05	%/°CFSO
The Temperature coefficient sensitivity <sup>(11)</sup>	TCS	- 0.05	-	0.05	%/°CFSO

## APPLICATION

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• Map sensor</li> <li>• Tire pressure monitoring systems (TPMS)</li> <li>• Difference pressure</li> </ul> | <ul style="list-style-type: none"> <li>• Test Leak system</li> <li>• Water pressure test system</li> <li>• Water Level Measurement</li> </ul> |
|--|---|

## PIN CONFIGURATION

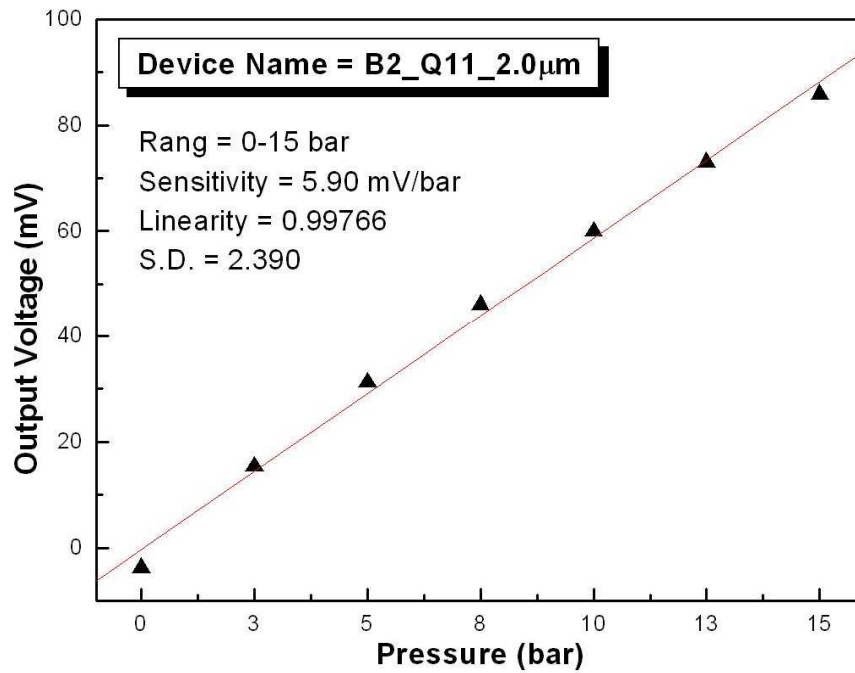


**Table 1.** Pin connect for pressure sensor

Pin NO.	Pin Name	Function
1,7	Vs	Supply voltage of Wheatstone bridge
2	OUT-	Negative output voltage of Wheatstone bridge
6	OUT+	Positive output voltage of Wheatstone bridge
3,5	GND	Ground
8,4	NC	No contract

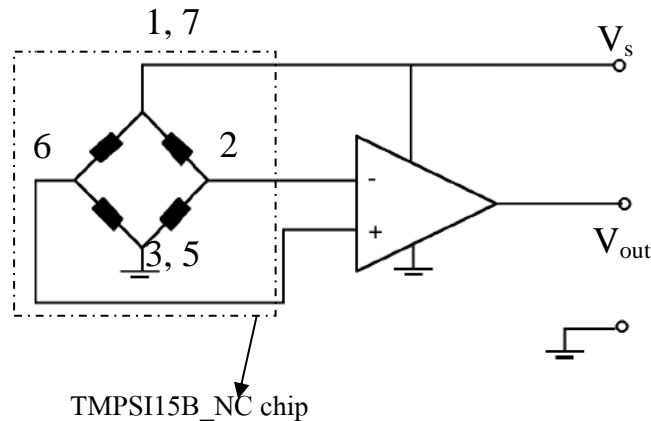
**Figure 1.** pressure sensor Schematic

## TYPICAL CHARACTERISTICS: TMPSI15B\_NC



**Figure2.** Output-Voltage as function of testing pressure at supply voltage of 5V

**Sample Circuit :**



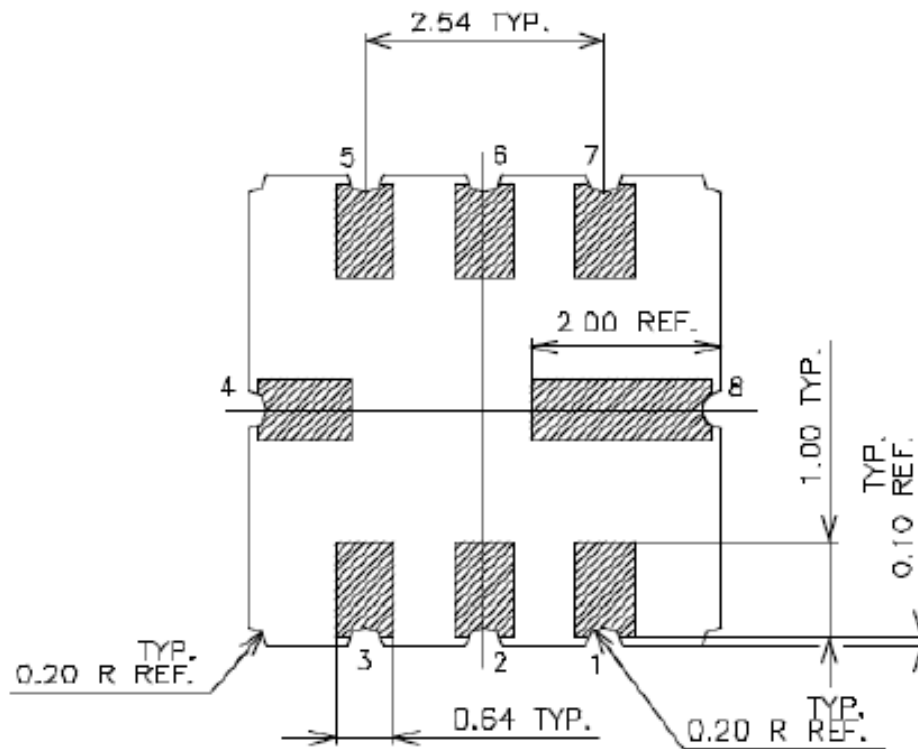
**Figure 3** Sample circuit for application of the pressure sensor

**NOTES**

1. 1 Bar equals 14.5 psi
2. The Constant supply voltage is biased in Wheatstones bridge configuration.
3. The total current using wheatstones bridge configuration.
4. Full Scale Span ( $V_{FSS}$ ) is defined as the algebraic difference between the output voltage at full rated pressure and the output voltage at the minimum rated pressure.
5. Offset ( $V_{off}$ ) is defined as the output voltage at the minimum rated pressure.
6. Error value of end point line fit between output minimum rated pressure and maximum rate pressure.
7. Pressure Hysteresis: Output deviation at any pressure within the specified range, when this pressure is cycled to and from the minimum or maximum rated pressure, at 25°C.
8. Output deviation with minimum rated pressure applied, over the temperature range of 25 to 120°C, relative to 25°C.
9. Difference output deviation with minimum rated pressure applied and maximum applied pressure, relative to the temperature range of 25 to 120°C with temperature is 25°C.

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## Packaging layout of TMPSI15B



- Note : 1. Drawing Unit : mm  
2. Plating Thickness  
NICKEL: 1.27-8.89 um  
GOLD : 0.5-1.5um

Figure 4 Packaging layout of TMPSI15B