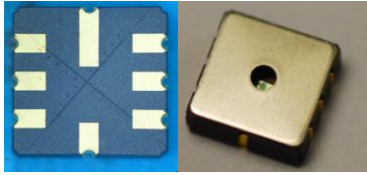


WPS-TP10A1: PIEZO-RESISTIVE PRESSURE SENSOR

FEATURE



- **1 – 11 Bar absolute Pressure Range**
- **Uncompensated temperature**
- **Piezoresistive pressure sensor**
- **High linearity and Low % ERROR**
- **Gel protection humidity and water**

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 with gel protection humidity and water.

Table 1. Maximum Rating

Characteristics	Symbol	Min	Max	Unit
Pressure Range ⁽¹⁾	Pop	1	11	Bar
Temperature Range	T _A	-20	120	°C
Supply Voltage ⁽²⁾	V _S	1.5	15	Vdc

Table 2. Operating Characteristics

All parameter are measured at **5 V** supply at T_A = 25 °C , unless otherwise specified

Characteristics	Symbol	Min	Typ	Max	Unit
Supply Current ⁽³⁾	I _S	-	1	-	mAdc
Full Scale Span ⁽⁴⁾	V _{FSS}	79	80	82	mV
Offset ⁽⁵⁾	V _{off}	-16	0	16	mV
Sensitivity (1 – 16 Bar)	$\Delta V / \Delta P$	7.9	8.05	8.2	mV /Bar
Non Linearity ⁽⁶⁾	N _L	-0.05	-	0.05	%FSO
Pressure Hysteresis ⁽⁷⁾	P _H	-0.42		+0.42	%FSO
Accuracy	-	-0.25		+0.25	%FSO
Resistance Bridge	R _B	4.0	4.5	5.0	kΩ
The Temperature coefficient offset ⁽⁸⁾	TCO	-	±10	-	μV/°C
The Temperature coefficient sensitivity ⁽⁹⁾	TCS	- 0.05	-	0.05	%/°CFSO

APPLICATION

<ul style="list-style-type: none"> • Test Leak system • Tire pressure monitoring systems (TPMS) • Pump Pressure Monitor 	<ul style="list-style-type: none"> • Water Level Measurement • Water pressure test system • Etc.
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PIN CONFIGURATION

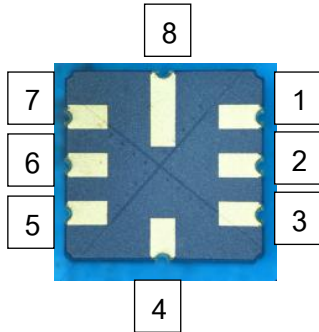


Table 1. Pin connect for pressure sensor

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: WPS-TP10A1

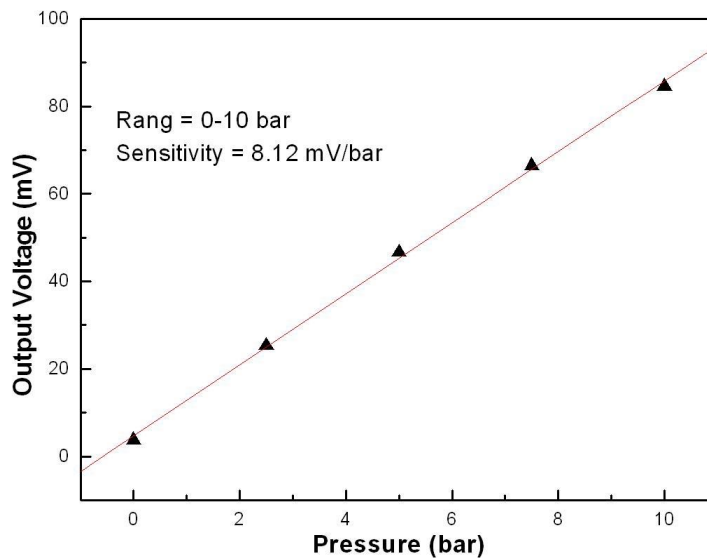


Figure2. Output-Voltage as function of testing pressure gauge at supply voltage of 5V

Sample Circuit :

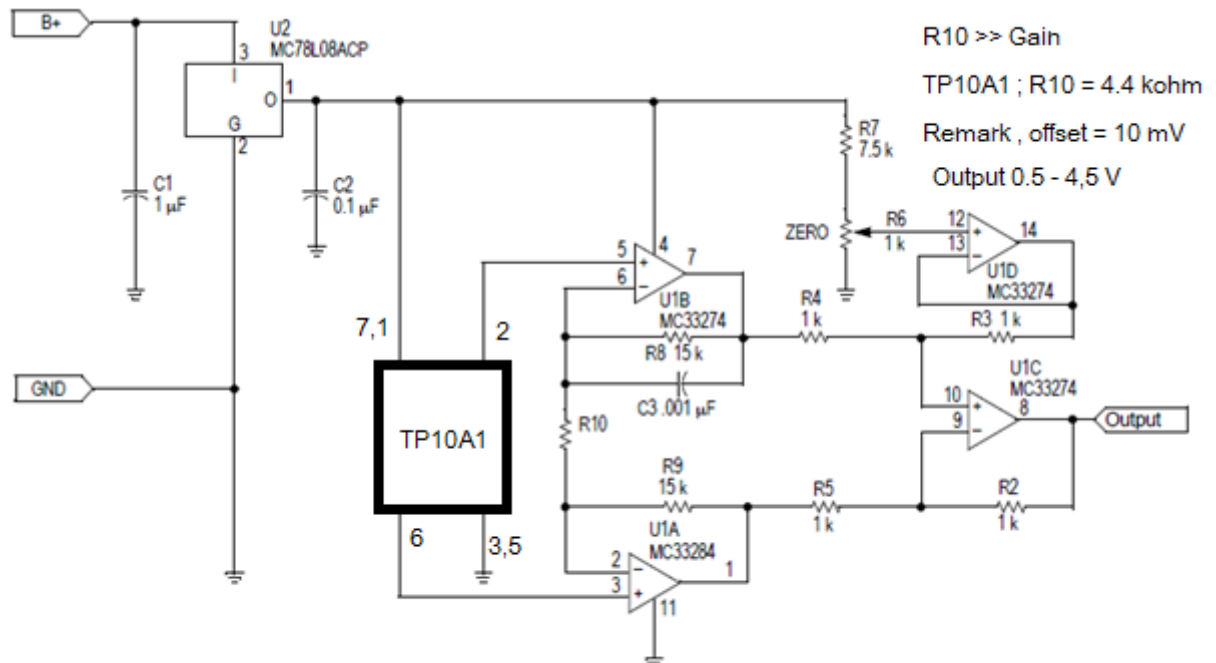
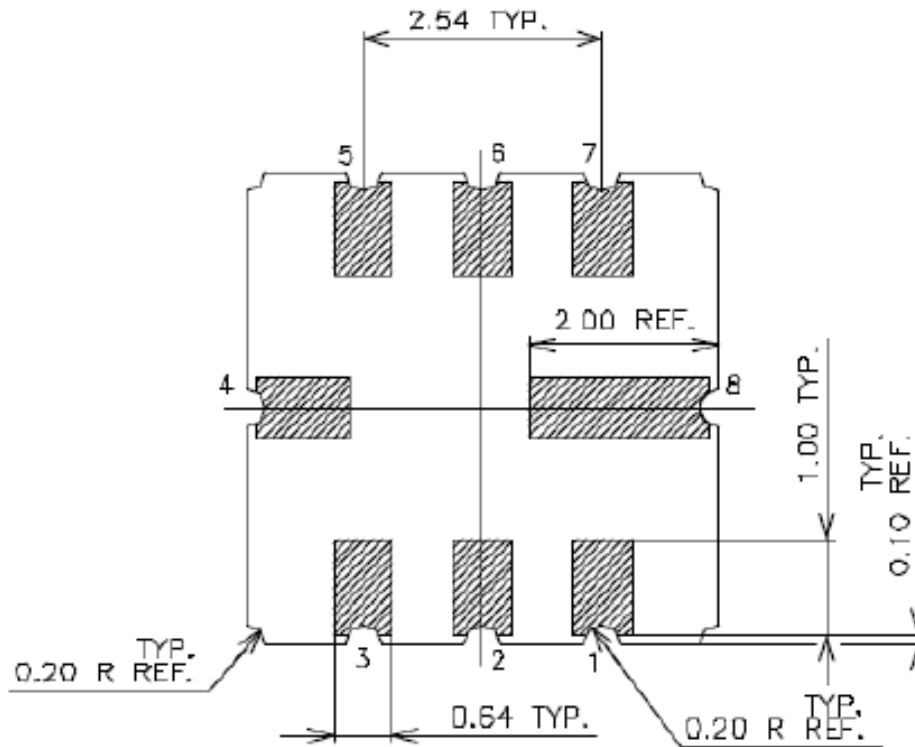


Figure 3 Sample circuit for application of the pressure sensor with 0.5 -4.5 volt output

NOTES

1. 1 Bar equals 14.5 psi
2. The Constance supply voltage is biased in Whetstones bridge configuration.
3. The total current using whetstones 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.

Packaging layout of WPS-TP10A1



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

Figure 4 Packaging layout of WPS-TP10A1
