



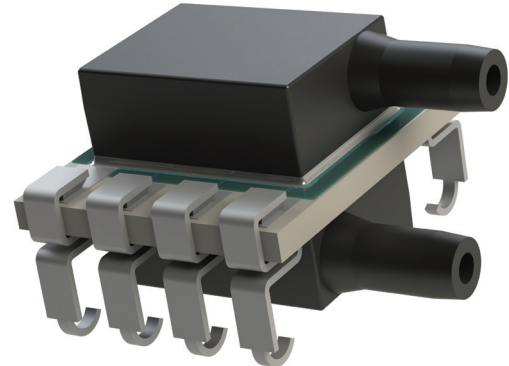
**LP Series - Analog** is a surface mountable pressure sensor package with a compensated analog output suitable for ultra-low pressure sensing applications.

**COMPANY:** Merit Sensor is a leader in piezoresistive pressure sensing and partners with clients to create high performing solutions for a variety of applications and industries.

**SENTIUM:** Merit Sensor products incorporate a proprietary Sentium® technology developed to provide a best-in-class operating temperature range (-40°C to 85°C) and superior stability.

**TECHNOLOGY:** Merit Sensor utilizes a piezoresistive Wheatstone bridge in a design that anodically bonds glass to a chemically etched silicon diaphragm. All products are RoHS compliant.

**CAPABILITIES:** Merit Sensor designs, engineers, fabricates, dices, assembles, tests, sells and services die and packaged products from a state-of-the-art facility near Salt Lake City, Utah



**FEATURES**

<b>Pressure Range</b>	0.15 to 1 psi (10.3 to 68.9 mbar; 1.03 to 6.89 KPa; 4.2 to 27.7 in H <sub>2</sub> O)
<b>Output</b>	Amplified Analog
<b>Type</b>	Gage and Differential
<b>Media</b>	Clean, Dry Air and Non-corrosive Gases
<b>Packaging</b>	Tape and Reel
<b>Customization</b>	Sensitivity, Resistance, Bridge, Constraint, etc.

**BENEFITS**

<b>Performance</b>	Enjoy best-in-class performance due to Merit's proprietary Sentium technology
<b>Cost</b>	Save money over time with high-performing die
<b>Security</b>	Feel confident doing business with an experienced company backed by a solid parent company (NASDAQ: MMSI)
<b>Speed</b>	Get to market quickly with creative and flexible solutions
<b>Service</b>	Experience prompt, personal and professional support

**1410 Family Part Number Configurator**

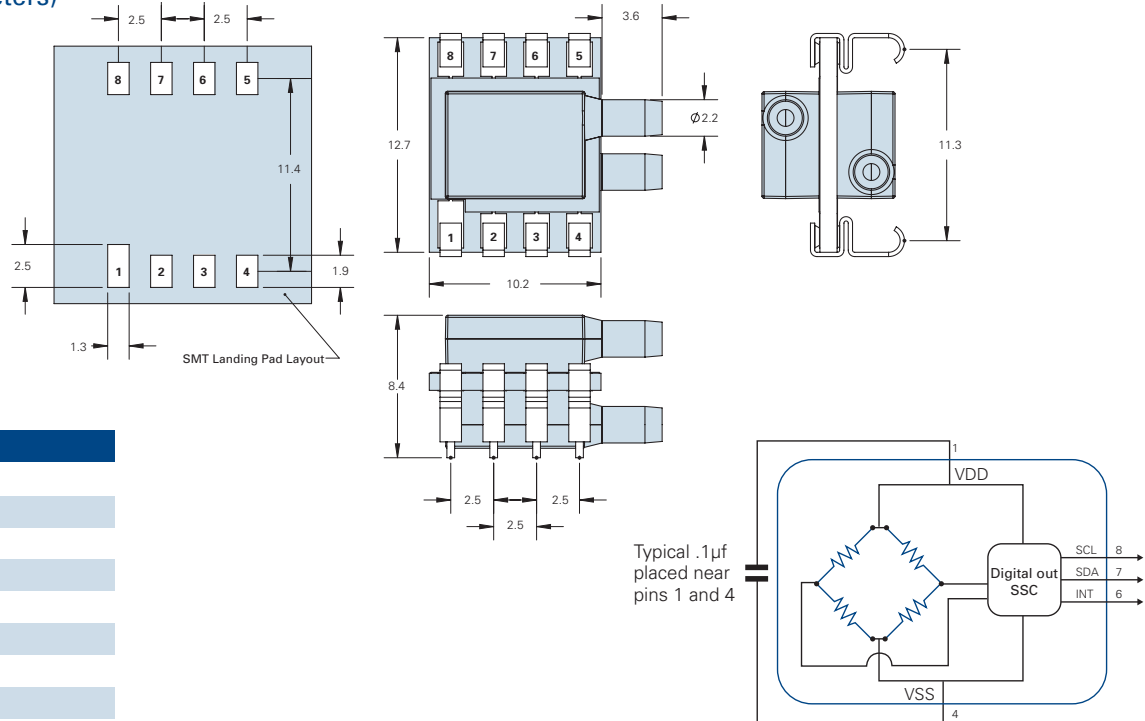
1410-XXXXX-XX-XX

<b>Pressure</b>				
P15 = .15psi				
P30 = .30psi				
P50 = .50psi				
<b>Reference</b>				
D = Differential				
G = Gage				
<b>Supply Voltage</b>				
1 = 5.0V				
<b>Output Range</b>				
2 = 0.5V to 4.5V				
				<b>Pin Type</b>
				1 = J-lead
				<b>Port</b>
				1 = Dual
				horizontal, facing
				same direction

**SPECIFICATIONS**

Parameter	Minimum	Typical	Maximum	Units	Notes
<b>Electrical</b>					
Supply Voltage (Vdd)	4.75	5	5.25	V	
Supply Current	0.25	1	1.4	mA	(1)
Output Current	2.2			mA	
Operating Temperature	-40		85	°C	
Storage Temperature	-55		100	°C	
Min Output Load Resistance	5			kΩ	(2)
Recommended Input Capacitance		0.1		μF	
<b>Performance</b>					
ADC Resolution			12	Bit	
Ratiometric output voltage	.5V		4.5	V	(1)
Accuracy	-1.5		1.5	% FSO	(3) (4)
Startup time			8	ms	
Analog update time		5		ms	
Sampling range			200	Hz	
Proof Pressure	5X				(5)
Burst Pressure	10psi				(5)
<b>Transfer Function Formula</b>					
$P_{psi} = (P_{max} - P_{min}) \cdot \left( \frac{V_{out} - V_{minCompV}}{V_{maxCompV} - V_{minCompV}} \right) + P_{min}$			<b>Where</b> <i>P<sub>psi</sub></i> = Measured Pressure in PSI <i>P<sub>Max</sub></i> = Maximum Calibrated Pressure <i>P<sub>Min</sub></i> = Minimum Calibrated Pressure <i>V<sub>minCompV</sub></i> = Minimum Compesated Volatage (Usually 0.5V) <i>V<sub>maxCompV</sub></i> = Maximum Compesated Volatage (Usually 4.5V) <i>V<sub>out</sub></i> = Output voltage (pin 6)		
<b>Media Compatibility</b>					
For Use With Non-corrosive Dry Gasses					
Solder temperature: max 250 °C, 5 seconds max					

**Notes:**  
 (1) @5V input voltage  
 (2) Must be added at the point of use  
 (3) Over 0°C to 60°C  
 (4) Applicable if Vdd = 4.75V to 5.25V  
 (5) Full scale pressure

**DIMENSIONS (millimeters)**


Device Pinout	
<b>P1</b>	= Vdd
<b>P2</b>	= N/C
<b>P3</b>	= N/C
<b>P4</b>	= VSS - Ground
<b>P5</b>	= N/C
<b>P6</b>	= Analog output
<b>P7</b>	= N/C
<b>P8</b>	= N/C

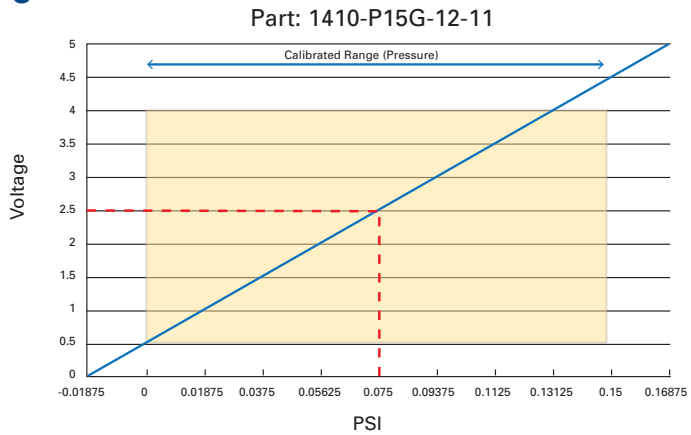
**Example 1: 0.0 to 0.15 PSI Gage 0-60°C**

Part: 1410-P15G-12-11

 $P_{min}=0.0 \text{ psi}, P_{max}=0.15 \text{ psi}$ 
 $V_{out}=2.5 \text{ V}$ 
 $V_{minCompV}=0.5 \text{ V}, V_{maxCompV}=4.5 \text{ V}$ 

$$P_{psi} = (P_{max} - P_{min}) \cdot \left( \frac{V_{out} - V_{minCompV}}{V_{maxCompV} - V_{minCompV}} \right) + P_{min}$$

$$PSI = (0.15 - 0.0) \cdot \left( \frac{2.5 - 0.5}{4.5 - 0.5} \right) + 0$$

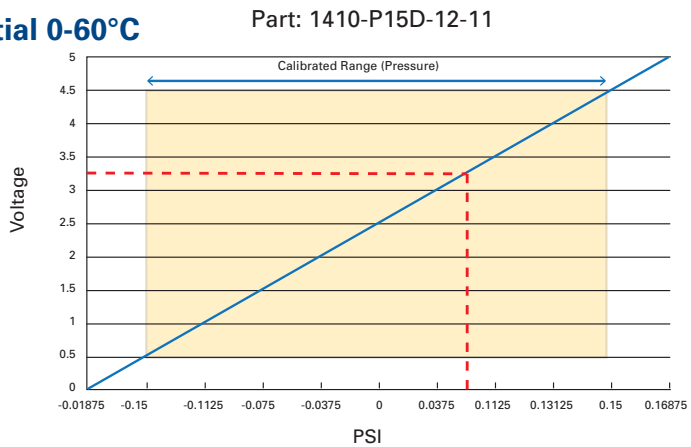
 $PSI = .075$ 

**Example 2: -0.15 to 0.15 PSI Differential 0-60°C**

Part: 1410-P15D-12-11

 $P_{min}=-0.15 \text{ psi}, P_{max}=0.15 \text{ psi}$ 
 $V_{out}=3.25 \text{ V}$ 
 $V_{minCompV}=0.5 \text{ V}, V_{maxCompV}=4.5 \text{ V}$ 

$$P_{psi} = (P_{max} - P_{min}) \cdot \left( \frac{V_{out} - V_{minCompV}}{V_{maxCompV} - V_{minCompV}} \right) + P_{min}$$

$$PSI = (0.15 - (-0.15)) \cdot \left( \frac{3.25 - 0.5}{4.5 - 0.5} \right) + (-0.15)$$

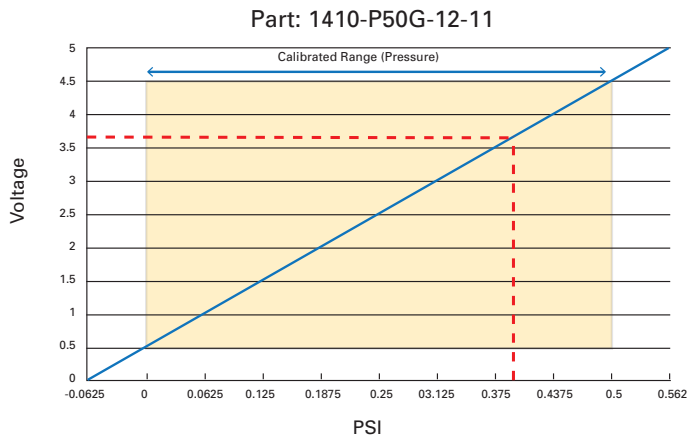
 $PSI = .05625$ 

**Example 3: 0.0 to .5 PSI Gage 0-60°C**

Part: 1410-P50G-12-11

 $P_{min}=-0.0 \text{ psi}, P_{max}=0.15 \text{ psi}$ 
 $V_{out}=3.70 \text{ V}$ 
 $V_{minCompV}=0.5 \text{ V}, V_{maxCompV}=4.5 \text{ V}$ 

$$P_{psi} = (P_{max} - P_{min}) \cdot \left( \frac{V_{out} - V_{minCompV}}{V_{maxCompV} - V_{minCompV}} \right) + P_{min}$$

$$PSI = (0.5 - 0) \cdot \left( \frac{3.70 - 0.5}{4.5 - 0.5} \right) + (0)$$

 $PSI = 0.4$ 


# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Merit Sensor:](#)

[1410-1P0D-12-11](#) [1410-1P0G-12-11](#) [1410-P30G-12-11](#) [1410-P30D-12-11](#)