



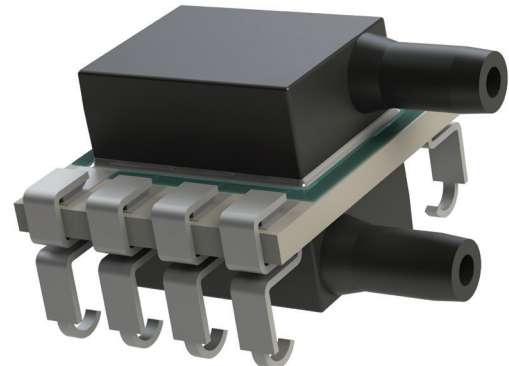
LP Series - Analog is a surface mountable pressure sensor package with a compensated analog output suitable for ultra-low pressure sensing applications.

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

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

BENEFITS

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

1410 Family Part Number Configurator

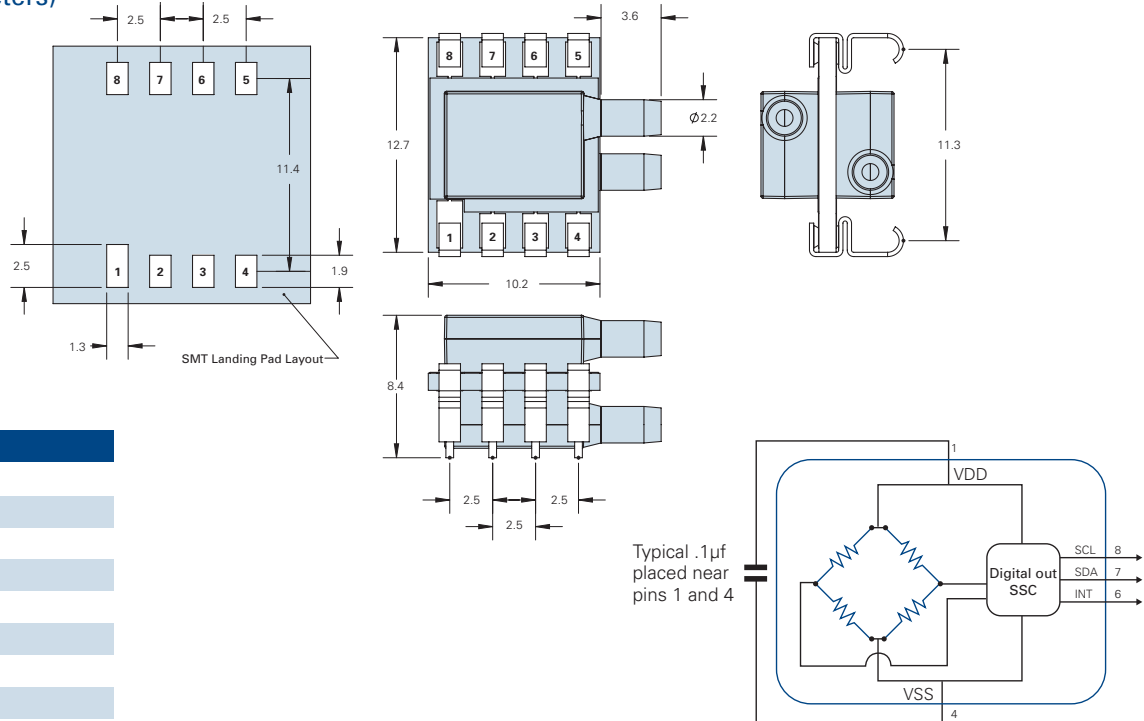
1410-XXXXX-XXX-XX

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

Parameter	Minimum	Typical	Maximum	Units	Notes
Electrical					
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	
Performance					
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)
Transfer Function Formula					
$P_{psi} = (P_{max} - P_{min}) \cdot \left(\frac{V_{out} - V_{minCompV}}{V_{maxCompV} - V_{minCompV}} \right) + P_{min}$			Where <i>P_{psi}</i> = Measured Pressure in PSI <i>P_{Max}</i> = Maximum Calibrated Pressure <i>P_{Min}</i> = Minimum Calibrated Pressure <i>V_{minCompV}</i> = Minimum Compesated Volatage (Usually 0.5V) <i>V_{maxCompV}</i> = Maximum Compesated Volatage (Usually 4.5V) <i>V_{out}</i> = Output voltage (pin 6)		
Media Compatibility					
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	
P1	= Vdd
P2	= N/C
P3	= N/C
P4	= VSS - Ground
P5	= N/C
P6	= Analog output
P7	= N/C
P8	= N/C

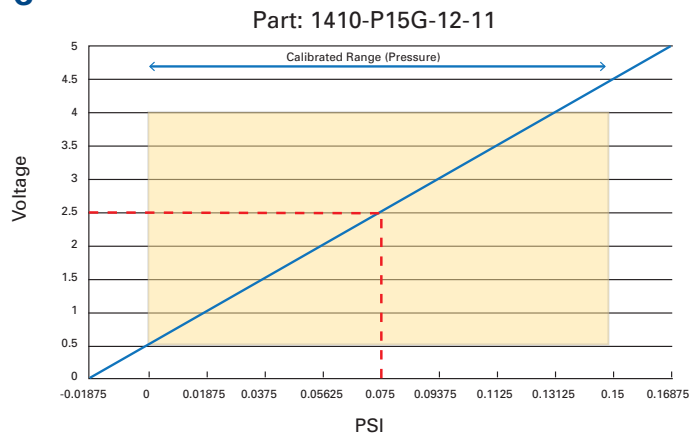
Example 1: 0.0 to 0.15 PSI Gage 0-60°C

Part: 1410-P15G-12-11

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

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

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

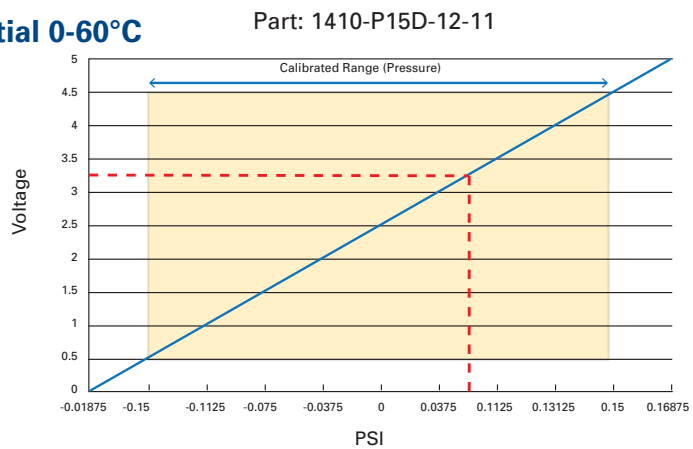
 $PSI = .075$

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

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

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

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

 $PSI = 0.4$
