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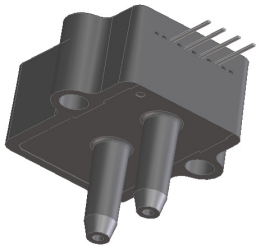
Amplified Middle Pressure Sensors

Industrial Temperature Grade



Features

- 0 to 0.3 psi to 0 to 100 psi Pressure Ranges
- Ratiometric 4V Output
- Temperature Compensated (-25C to 85C)
- Calibrated Zero and Span

Applications

- Medical Instrumentation
- Environmental Controls
- HVAC

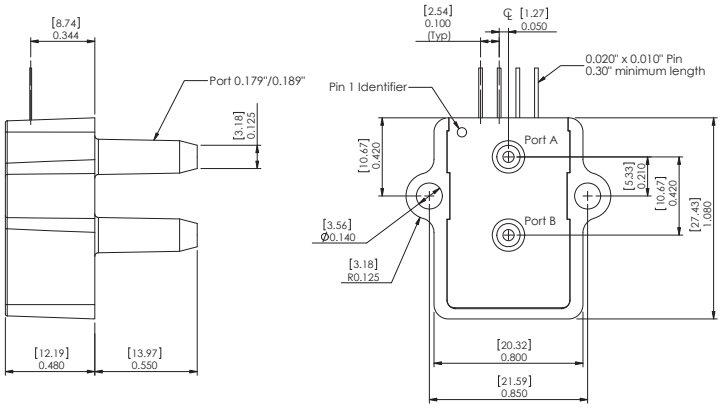
General Description

The Amplified line of middle pressure sensors is based upon a proprietary package technology to reduce errors. This model provides a ratiometric 4-volt output with superior output characteristics. The sensor housing has been designed specifically to reduce package induced parasitic stress and strain. In addition the sensor utilizes a silicon, micromachined, stress concentration enhanced structure to provide a very linear output to measured pressure.

These calibrated and temperature compensated sensors give an accurate and stable output over a wide temperature range. Each sensor is internally compensated using an ASIC compensation technique. This series is intended for use with non-corrosive, non-ionic working fluids such as air, dry gases and the like.

The output of the device is ratiometric to the supply voltage over a supply voltage range of 4.5 to 5.5 volts.

Physical Dimensions



pin 1: Vs

pin 2: Gnd

pin 3: Vout

pin 4: do not connect

Approvals

MKT	DATE	MFG	DATE	ENG	DATE	QA	DATE
☐ As Is ☐ With Change		☐ As Is ☐ With Change		☐ As Is ☐ With Change		☐ As Is ☐ With Change	

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Pressure Sensor Ratings

Supply Supply Voltage VS	+4.5 to +5.5 Vdc
Common-mode pressure	-10 to +10 psig
Lead Temperature, max (soldering 2-4 sec.)	250°C

Environmental Specifications

Temperature Ranges	
Compensated	-25 to 85° C
Operating	-40 to 125° C
Storage	-40 to 125° C
Humidity Limits	0 to 95% RH (non condensing)

Standard Pressure Ranges

Part Number	Operating Pressure	Nominal Span	Proof Pressure	Burst Pressure
0.3 PSI-D-4V-PRIME	±0.3 PSI	4 V	5 PSI	10 PSI
0.3 PSI-G-4V-PRIME	0 - 0.3 PSI	4 V	5 PSI	10 PSI
1 PSI-D-4V-PRIME	±1 PSI	4 V	5 PSI	10 PSI
1 PSI-G-4V-PRIME	0 - 1 PSI	4 V	5 PSI	10 PSI
5 PSI-D-4V-PRIME	± 5 PSI	4 V	15 PSI	30 PSI
5 PSI-G-4V-PRIME	0 - 5 PSI	4 V	15 PSI	30 PSI
15 PSI-A-4V-PRIME	0 - 15 PSIA	4 V	45 PSI	60 PSI
15 PSI-D-4V-PRIME	±15 PSI	4 V	45 PSI	60 PSI
15 PSI-G-4V-PRIME	0 - 15 PSI	4 V	45 PSI	60 PSI
30 PSI-A-4V-PRIME	0 - 30 PSIA	4V	90 PSI	150 PSI
30 PSI-D-4V-PRIME	±30 PSI	4 V	90 PSI	150 PSI
30 PSI-G-4V-PRIME	0 - 30 PSI	4 V	90 PSI	150 PSI
100 PSI-A-4V-PRIME	0 - 100 PSIA	4V	150 PSI	150 PSI
100 PSI-D-4V-PRIME	±100 PSI	4V	150 PSI	150 PSI
100 PSI-G-4V-PRIME	0 - 100 PSI	4V	150 PSI	150 PSI

Performance Characteristics for 0.3 PSI-D-4V-PRIME

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure	--	±0.3	--	PSI
Output Span, note 4	±1.90	±2.0	±2.10	V
Offset Voltage @ zero differential pressure	2.15	2.25	2.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±40	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±2	%FSS

Performance Characteristics for 0.3 PSI-G-4V-PRIME

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	--	0.3	--	PSI
Output Span, note 4	3.90	4.0	4.10	V
Offset Voltage @ zero pressure	0.15	0.25	0.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±40	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±2	%FSS

Performance Characteristics for 1 PSI-D-4V-PRIME

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure	--	±1.0	--	PSI
Output Span, note 4	±1.90	±2.0	±2.10	V
Offset Voltage @ zero differential pressure	2.15	2.25	2.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±40	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±1	%FSS

Performance Characteristics for: 1 PSI-G-4V-PRIME

Parameter, NOTE 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	--	1.0	--	PSI
Output Span, NOTE 4	3.90	4.0	4.10	V
Offset Voltage @ zero pressure	0.15	0.25	0.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±40	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±1	%FSS

Performance Characteristics for: 5 PSI-D-4V-PRIME

Parameter, NOTE 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure	--	±5.0	--	PSI
Output Span, NOTE 4	±1.90	±2.0	±2.10	V
Offset Voltage @ zero differential pressure	2.15	2.25	2.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±20	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±1	%FSS

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Performance Characteristics for: 5 PSI-G-4V-PRIME

Parameter, NOTE 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	--	5.0	--	PSI
Output Span, NOTE 4	3.90	4.0	4.10	V
Offset Voltage @ zero pressure	0.15	0.25	0.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±20	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±1	%FSS

Performance Characteristics for 15 PSI-A-4V-PRIME

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, absolute pressure	--	15.0	--	PSI
Output Span, note 4	3.90	4.0	4.10	V
Offset Voltage @ zero pressure	0.15	0.25	0.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±20	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±1	%FSS

Performance Characteristics for 15 PSI-D-4V-PRIME

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure	--	±15.0	--	PSI
Output Span, note 4	±1.90	±2.0	±2.10	V
Offset Voltage @ zero differential pressure	2.15	2.25	2.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±20	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±1	%FSS

Performance Characteristics for 15 PSI-G-4V-PRIME

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	--	15.0	--	PSI
Output Span, note 4	3.90	4.0	4.10	V
Offset Voltage @ zero pressure	0.15	0.25	0.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±20	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±1	%FSS

Performance Characteristics for 30 PSI-A-4V-PRIME

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, absolute pressure	--	30.0	--	PSI
Output Span, note 4	3.90	4.0	4.10	V
Offset Voltage @ zero pressure	0.15	0.25	0.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±20	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±1	%FSS

Performance Characteristics for 30 PSI-D-4V-PRIME

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure	--	±30.0	--	PSI
Output Span, note 4	±1.90	±2.0	±2.10	V
Offset Voltage @ zero differential pressure	2.15	2.25	2.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±20	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±1	%FSS

Performance Characteristics for 30 PSI-G-4V-PRIME

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	--	30.0	--	PSI
Output Span, note 4	3.90	4.0	4.10	V
Offset Voltage @ zero pressure	0.15	0.25	0.35	V
Offset Temperature Shift (-25°C to 85°C, note 2	--	--	±20	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±1	%FSS

Performance Characteristics for 100 PSI-A-4V-PRIME

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, absolute pressure	--	100.0	--	PSI
Output Span, note 4	3.90	4.0	4.10	V
Offset Voltage @ zero pressure	0.15	0.25	0.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±20	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±1	%FSS

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Performance Characteristics for 100 PSI-D-4V-PRIME

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, differential pressure	--	100	--	PSI
Output Span, note 4	±1.90	±2.0	±2.10	V
Offset Voltage @ zero differential pressure	0.15	0.25	0.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±20	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±1	%FSS

Performance Characteristics for 100 PSI-G-4V-PRIME

Parameter, note 1	Minimum	Nominal	Maximum	Units
Operating Range, gage pressure	--	100	--	PSI
Output Span, note 4	3.90	4.0	4.10	V
Offset Voltage @ zero pressure	0.15	0.25	0.35	V
Offset Temperature Shift (-25°C to 85°C), note 2	--	--	±20	mV
Linearity, hysteresis error, note 3	--	--	±0.5	%FSS
Span Shift (-25°C to 85°C), note 2	--	--	±1	%FSS

Pressure Response: for any pressure applied the response time to get to 90% of pressure applied is typically less than 500 useconds.

Specification Notes

NOTE 1: ALL PARAMETERS ARE MEASURED AT 5.0 VOLT EXCITATION, FOR THE NOMINAL FULL SCALE PRESSURE AND ROOM TEMPERATURE UNLESS OTHERWISE SPECIFIED. PRESSURE MEASUREMENTS ARE WITH POSITIVE PRESSURE APPLIED TO PORT B. ABSOLUTE DEVICES REQUIRE PRESSURE TO BE APPLIED TO PORT A.

NOTE 2: SHIFT IS RELATIVE TO 25°C.

NOTE 3: MEASURED AT ONE-HALF FULL SCALE RATED PRESSURE USING BEST STRAIGHT LINE CURVE FIT.

NOTE 4: THE SPAN IS THE ALGEBRAIC DIFFERENCE BETWEEN FULL SCALE OUTPUT VOLTAGE AND THE OFFSET VOLTAGE

Equivalent Circuit