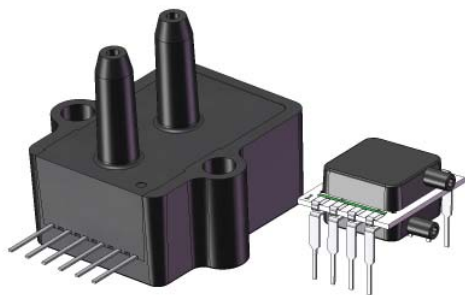


MLV SERIES LOW VOLTAGE PRESSURE SENSORS



Features

- 1 to 30 inH₂O Pressure Ranges
- 5V Operation
- High Output
- Low Power Consumption
- Excellent Position Sensitivity
- Low Warm-Up Shift
- Enhanced Front to Back Linearity
- Protective Parylene Coating Option

Applications

- Medical Breathing
- Environmental Controls
- HVAC
- Industrial Controls
- Portable/Hand-Held Equipment

General Description

The MLV Series Compensated Sensor is based on All Sensors' CoBeam²™ Technology. The device provides a high output signal at a low operating voltage while maintaining comparable output levels to traditional equivalent compensated millivolt sensors operating at higher voltages. This lower supply voltage gives rise to improved warm-up shift while the CoBeam² Technology itself reduces package stress susceptibility resulting in improved overall long term stability. The technology also vastly improves position sensitivity compared to conventional single die devices.

These calibrated and compensated sensors give an accurate and stable output over a wide temperature range. This series is intended for use with non-corrosive, non-ionic working fluids such as air, dry gases and the like. A protective parylene coating is optionally available for moisture/harsh media protection. The output is also ratiometric to the supply voltage and designed to operate at 5.0 volts DC.

Standard Pressure Ranges					Equivalent Circuit
Device	Operating Range	Proof Pressure	Burst Pressure	Nominal Span	
MLV-L01D	±1 inH ₂ O	100 inH ₂ O	300 inH ₂ O	7 mV	
MLV-L02D	±2 inH ₂ O	100 inH ₂ O	300 inH ₂ O	10 mV	
MLV-L05D	±5 inH ₂ O	200 inH ₂ O	300 inH ₂ O	15 mV	
MLV-L10D	±10 inH ₂ O	200 inH ₂ O	300 inH ₂ O	20 mV	
MLV-L20D	±20 inH ₂ O	200 inH ₂ O	500 inH ₂ O	20 mV	
MLV-L30D	±30 inH ₂ O	200 inH ₂ O	800 inH ₂ O	20 mV	

Pressure Sensor Maximum Ratings	Environmental Specifications
Supply Voltage (Vs) 12 Vdc Common Mode Pressure 10 psig Lead Temperature (soldering 2-4 sec.) 270 °C	Temperature Ranges Compensated 0°C to 50°C Operating -25°C to 85 °C Storage -40°C to 125 °C Humidity Limits 0 to 95% RH (non condensing)

Approvals

MKT	DATE	MFG	DATE	ENG	DATE	QA	DATE
<input type="checkbox"/> As Is <input type="checkbox"/> With Change		<input type="checkbox"/> As Is <input type="checkbox"/> With Change		<input type="checkbox"/> As Is <input type="checkbox"/> With Change		<input type="checkbox"/> As Is <input type="checkbox"/> With Change	



Performance Characteristics for MLV Series

ALL PARAMETERS ARE MEASURED AT 5.0 VOLT EXCITATION AND ROOM TEMPERATURE UNLESS OTHERWISE SPECIFIED. PRESSURE MEASUREMENTS ARE WITH POSITIVE PRESSURE APPLIED TO PORT B (THE ONLY PORT FOR THE SINGLE PORT CONFIGURATION PACKAGES).

Parameter	Min	Typ	Max	Units	Notes
Output Span					
L01D @ 1 inH2O	6.0	7.0	8.0	mV	4
L02D @ 2 inH2O	9.0	10.0	11.0	mV	4
L05D @ 5 inH2O	14.0	15.0	16.0	mV	4
L10D @ 10 inH2O	19.0	20.0	21.0	mV	4
L20D @ 20 inH2O	19.0	20.0	21.0	mV	4
L30D @ 30 inH2O	19.0	20.0	21.0	mV	4
Span Temperature Shift (0°C to 50°C)					
	-	-	±250	uV	1
Offset Voltage @ Zero Diff. Pressure					
	-	-	±500	uV	-
Offset Temperature Shift (0°C to 50°C)					
L01D, L02D, L05D	-	-	±250	uV	1
L10D, L20D, L30D	-	-	±200	uV	1
Offset Warm-up Shift					
	-	-	±50.0	uV	2
Offset Position Sensitivity (1g)					
L01D	-	-	±20.0	uV	6
L02D	-	-	±15.0	uV	6
L05D, L10D, L20D, L30D	-	-	±10.0	uV	6
Offset Long Term Drift (One Year)					
L01D, L02D, L05D	-	±150	-	uV	-
L10D, L20D, L30D	-	±100	-	uV	-
Linearity, Hysteresis Error					
	-	0.10	0.30	%FSS	3
Response Time (10% to 90% Pressure Response)					
	-	500	-	uS	-
Front to Back Linearity					
	-	0.75	-	%FSS	5
Input Resistance					
	-	12.0	-	k ohm	-
Output Resistance					
	-	3.0	-	k ohm	-

Specification Notes

NOTE 1: SHIFT IS RELATIVE TO 25°C.

NOTE 2: SHIFT IS WITHIN THE FIRST HOUR OF EXCITATION APPLIED TO THE DEVICE.

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.

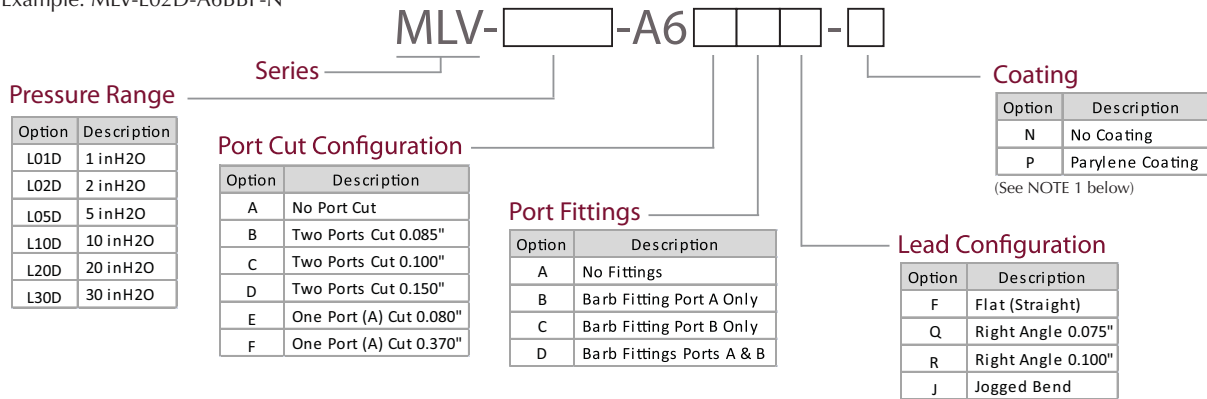
NOTE 5: FRONT-BACK LINERITY COMPUTED AS:
$$\text{Lin}_{FB} = \left(\frac{\text{Span}_{\text{Front}}}{\text{Span}_{\text{Back}}} - 1 \right) \cdot 100\%$$

NOTE 6: PARAMETER IS CHARACTERIZED AND NOT 100% TESTED.

How To Order

A Package

Example: MLV-L02D-A6BBF-N



E Package

Example: MLV-L02D-E1ND-N

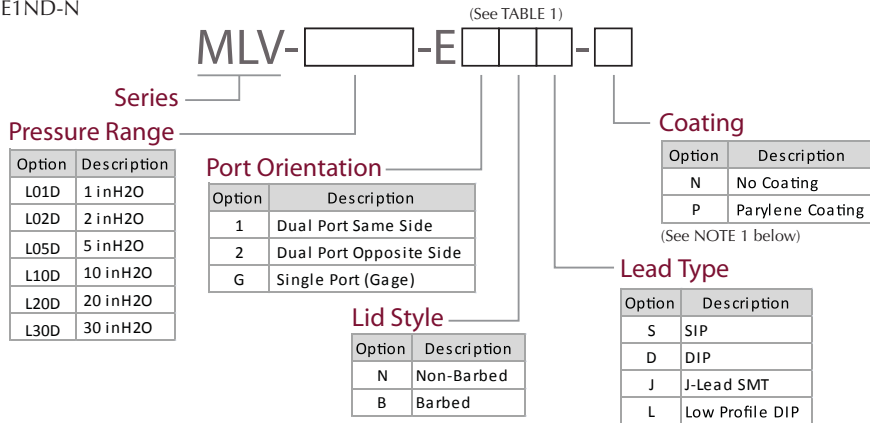
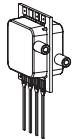

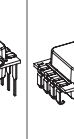
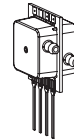

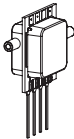
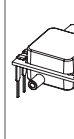
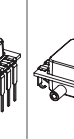
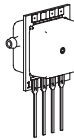
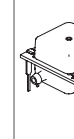
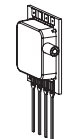

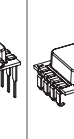

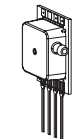
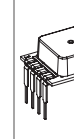
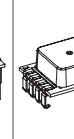
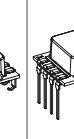


TABLE 1: Available E-Series Package Configurations

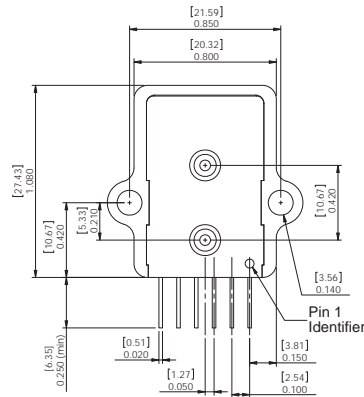
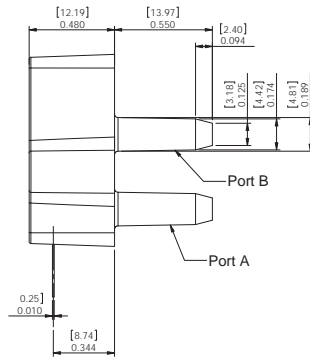
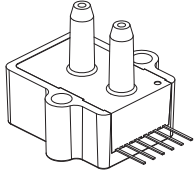
Port Orientation	Non-Barbed Lid Lead Style				Barbed Lid Lead Style			
	SIP	DIP	J Lead SMT	Low Profile DIP	SIP	DIP	J Lead SMT	Low Profile DIP
Dual Port Same Side	 E1NS	 E1ND	 E1NJ	N/A	 E1BS	 E1BD	N/A	N/A
Dual Port Opposite Side	 E2NS	 E2ND	 E2NJ	N/A	 E2BS	 E2BD	N/A	N/A
Single Port (Gage)	 EGNS	 EGND	 EGNJ	 EGNL	 EGBS	 EGBD	 EGBJ	 EGBL

NOTE 1) Parylene Coating: Parylene coating provides a moisture barrier and protection from some harsh media. Consult factory for applicability of Parylene for the target application and sensor type.



Package Drawings

A6 Package (Without Options)



Pinout

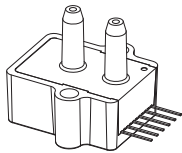
- 1) N/C
- 2) Vs
- 3) +Out
- 4) Gnd
- 5) -Out
- 6) N/C

NOTES
 1) Dimensions are in inches [mm].
 2) For suggested pad layout, see drawing: PAD-09

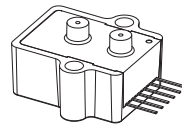
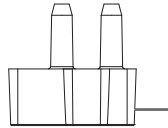
A-Package: Port Cut Options

Example: MLV-L10D-A6xAF-N

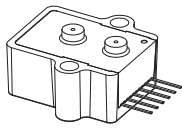
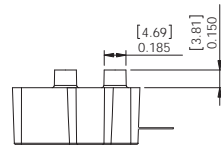
Port Cut Options



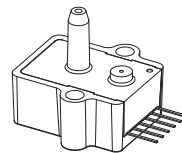
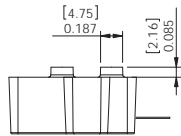
A- No Port Cut Configuration



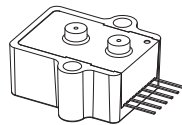
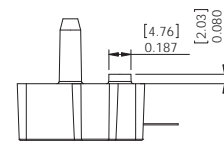
D- Two Ports Cut 0.150" Configuration



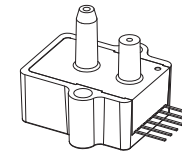
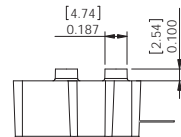
B- Two Ports Cut 0.085" Configuration



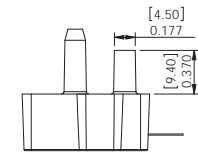
E- Port A cut 0.080" Configuration



C- Two Ports Cut 0.100" Configuration



F- Port A Cut 0.370" Configuration

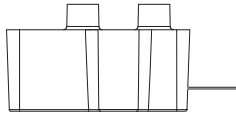
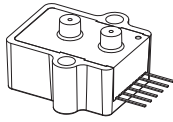


A-Package: Port Fitting Options

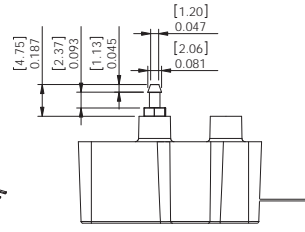
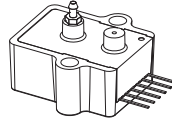
Example: MLV-L10D-A6DxF-N

Port Fitting Options

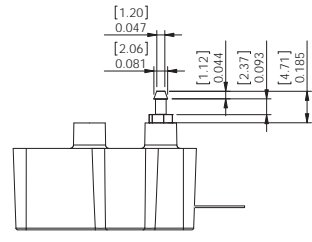
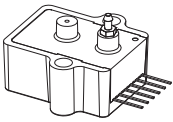
NOTE: Port Cut Configuration "D" Shown As Reference.



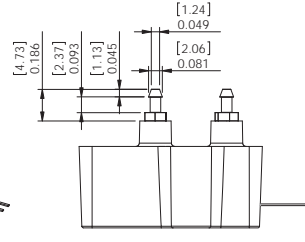
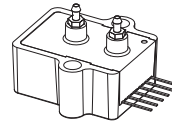
A- No Fittings Configuration



C- Barb Fitting Port B Only Configuration



B- Barb Fitting Port A Only Configuration

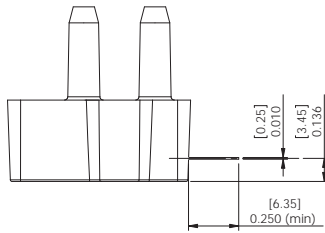
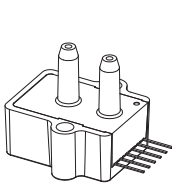


D- Barb Fitting Ports A and B Configuration

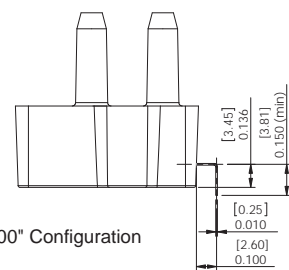
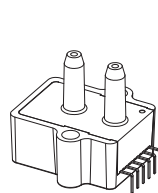
A-Package: Lead Bend Options

Example: MLV-L10D-A6AAx-N

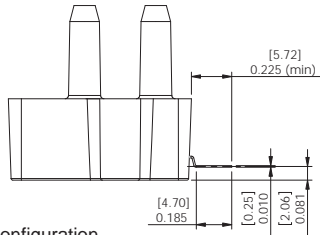
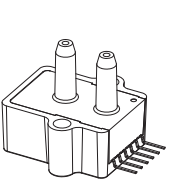
Lead Bend Options



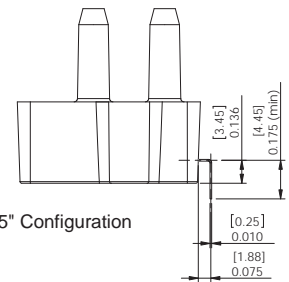
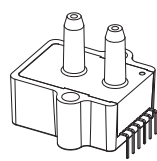
F- Flat (Straight) Configuration



R- Right Angle 0.100" Configuration



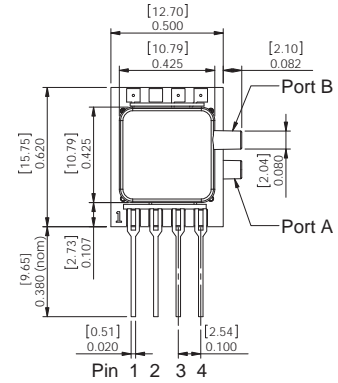
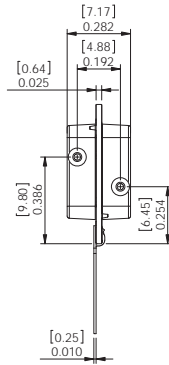
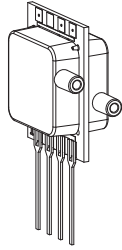
J- Jogged Bend Configuration



Q- Right Angle 0.075" Configuration



E1NS Package



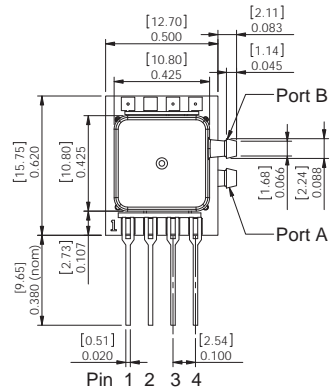
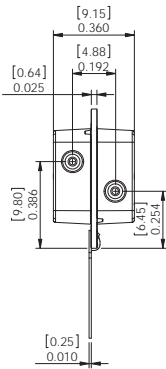
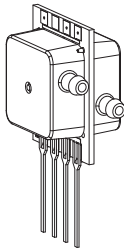
Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out

NOTES

- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-01

E1BS Package



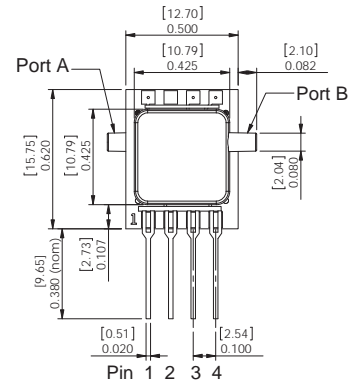
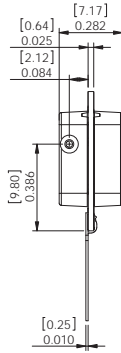
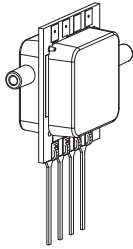
Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out

NOTES

- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-01

E2NS Package



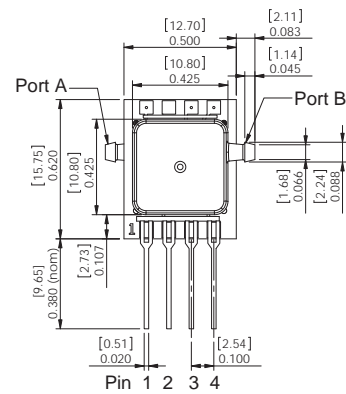
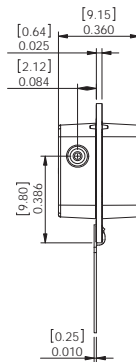
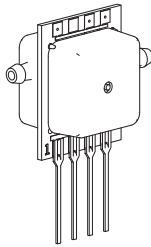
Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out

NOTES

- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-01

E2BS Package



Pinout

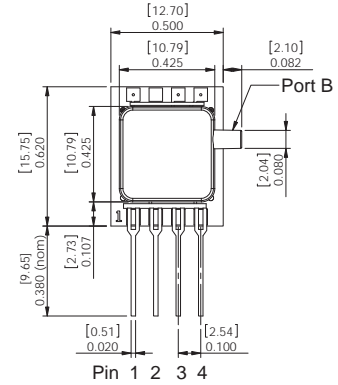
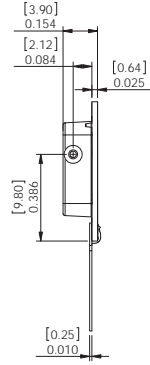
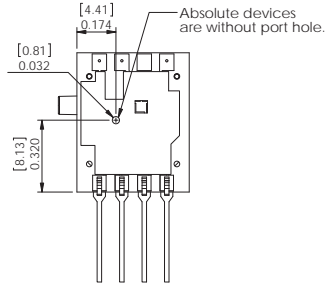
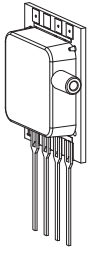
- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out

NOTES

- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-01



EGNS Package



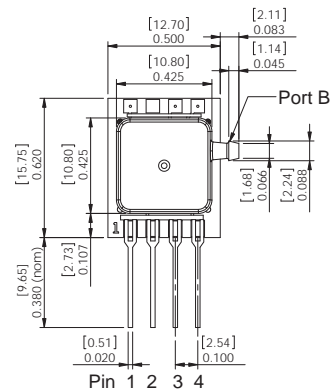
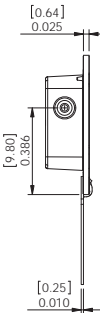
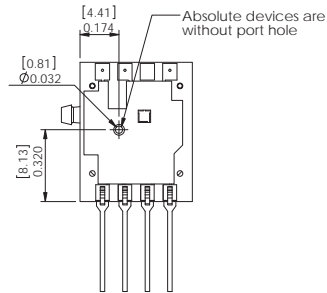
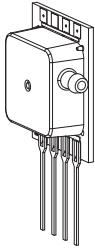
Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out

NOTES

- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-01

EGBS Package



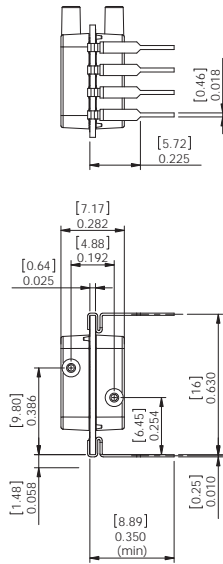
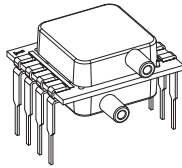
Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out

NOTES

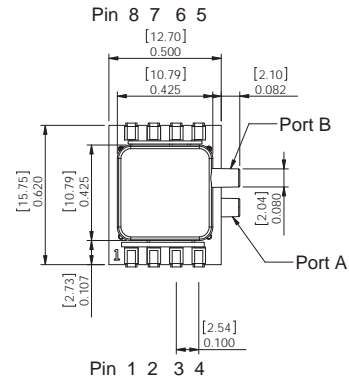
- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-01

E1ND Package



Pinout

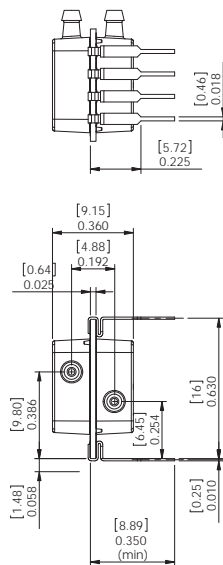
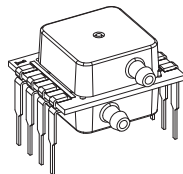
- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out
- 5) Do Not Connect
- 6) Do Not Connect
- 7) Do Not Connect
- 8) Do Not Connect



NOTES

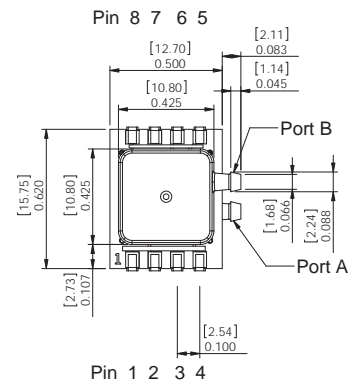
- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-03

E1BD Package



Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out
- 5) Do Not Connect
- 6) Do Not Connect
- 7) Do Not Connect
- 8) Do Not Connect

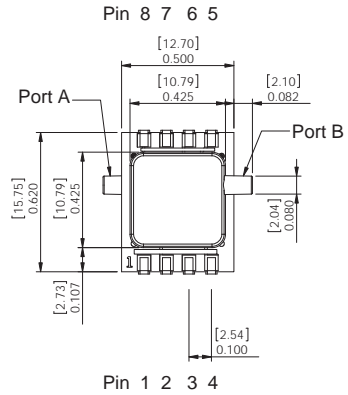
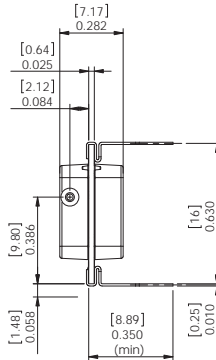
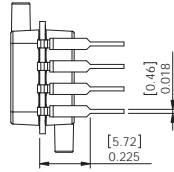
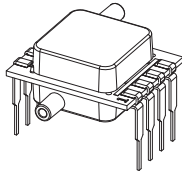


NOTES

- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-03



E2ND Package



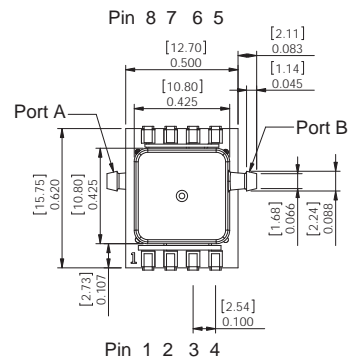
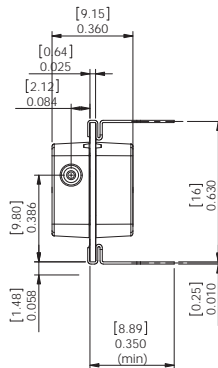
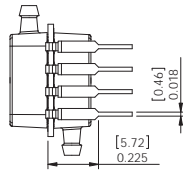
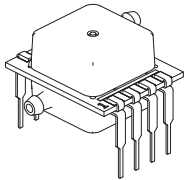
Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out
- 5) Do Not Connect
- 6) Do Not Connect
- 7) Do Not Connect
- 8) Do Not Connect

NOTES

- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-03

E2BD Package



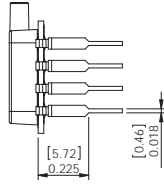
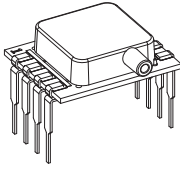
Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out
- 5) Do Not Connect
- 6) Do Not Connect
- 7) Do Not Connect
- 8) Do Not Connect

NOTES

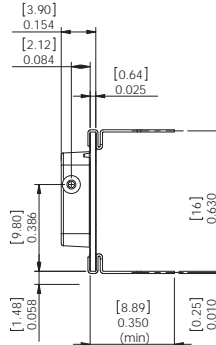
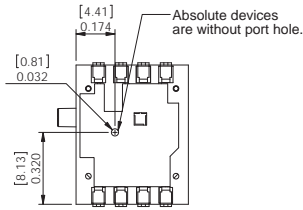
- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-03

EGND Package

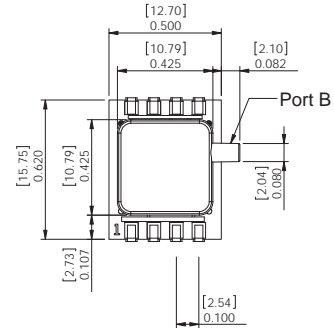


Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out
- 5) Do Not Connect
- 6) Do Not Connect
- 7) Do Not Connect
- 8) Do Not Connect



Pin 8 7 6 5

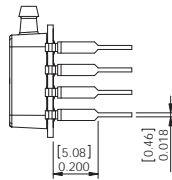
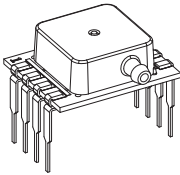


Pin 1 2 3 4

NOTES

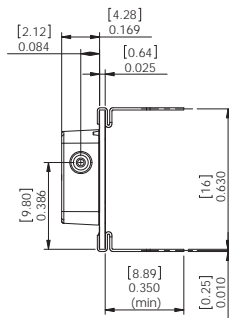
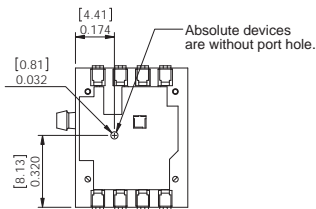
- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-03

EGBD Package

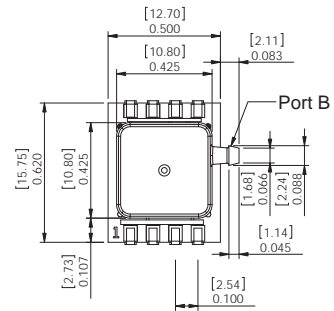


Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out
- 5) Do Not Connect
- 6) Do Not Connect
- 7) Do Not Connect
- 8) Do Not Connect



Pin 8 7 6 5



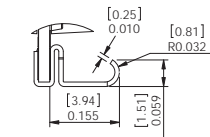
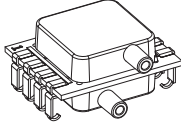
Pin 1 2 3 4

NOTES

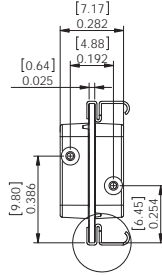
- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-03



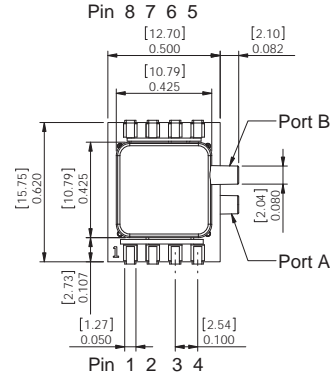
E1NJ Package



DETAIL A
SCALE 4 : 1



A



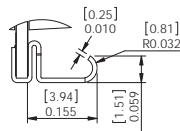
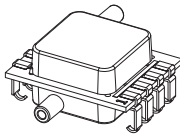
Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out
- 5) Do Not Connect
- 6) Do Not Connect
- 7) Do Not Connect
- 8) Do Not Connect

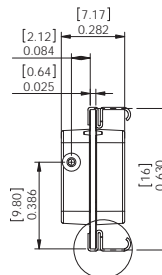
NOTES

- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-10

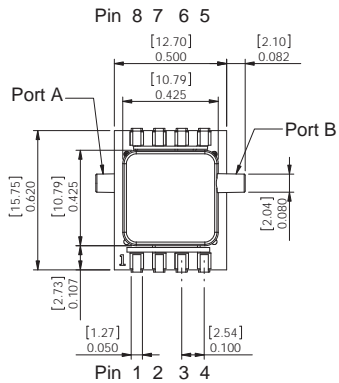
E2NJ Package



DETAIL A
SCALE 4 : 1



A



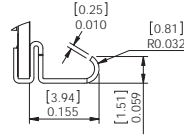
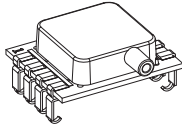
Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out
- 5) Do Not Connect
- 6) Do Not Connect
- 7) Do Not Connect
- 8) Do Not Connect

NOTES

- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-10

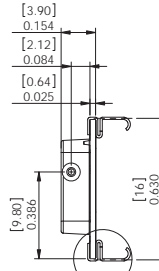
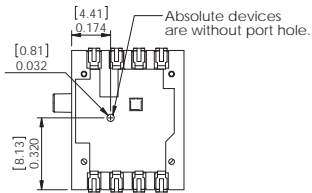
EGNJ Package



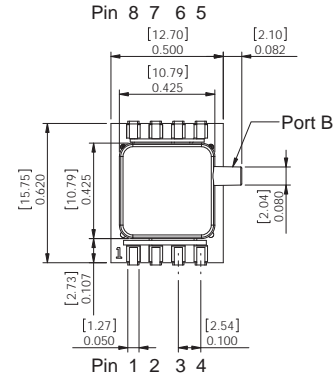
Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out
- 5) Do Not Connect
- 6) Do Not Connect
- 7) Do Not Connect
- 8) Do Not Connect

DETAIL A
SCALE 4 : 1



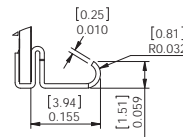
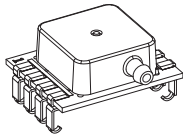
A



NOTES

- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-10

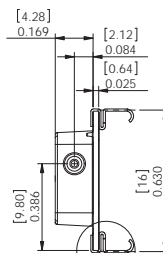
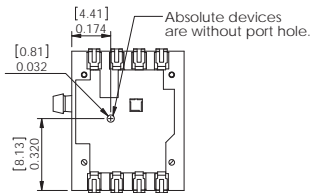
EGBJ Package



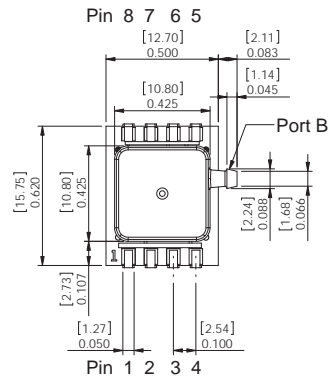
Pinout

- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out
- 5) Do Not Connect
- 6) Do Not Connect
- 7) Do Not Connect
- 8) Do Not Connect

DETAIL A
SCALE 4 : 1



A

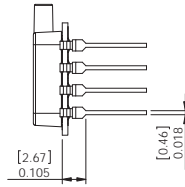
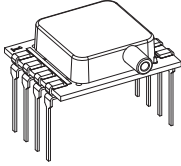


NOTES

- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-10

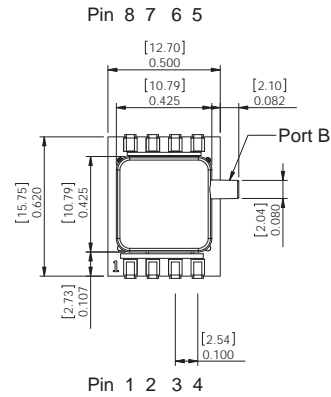
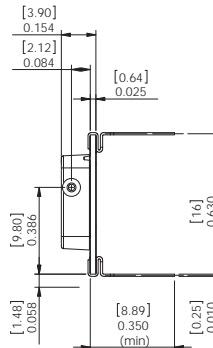
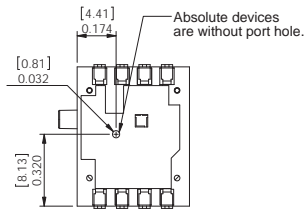


EGNL Package



Pinout

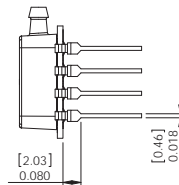
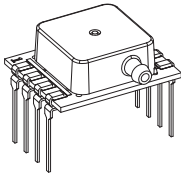
- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out
- 5) Do Not Connect
- 6) Do Not Connect
- 7) Do Not Connect
- 8) Do Not Connect



NOTES

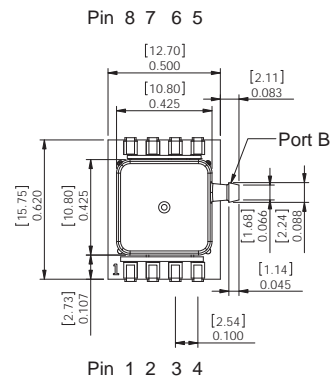
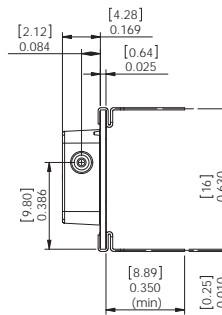
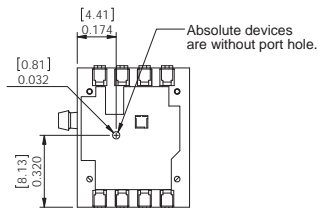
- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-03

EGBL Package



Pinout

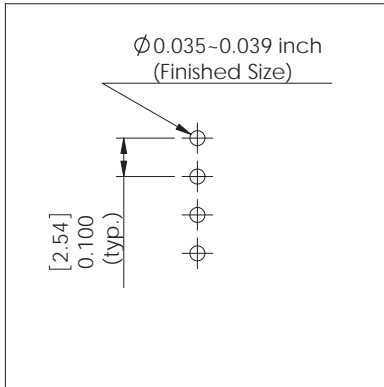
- 1) Gnd
- 2) +Out
- 3) Vs
- 4) -Out
- 5) Do Not Connect
- 6) Do Not Connect
- 7) Do Not Connect
- 8) Do Not Connect



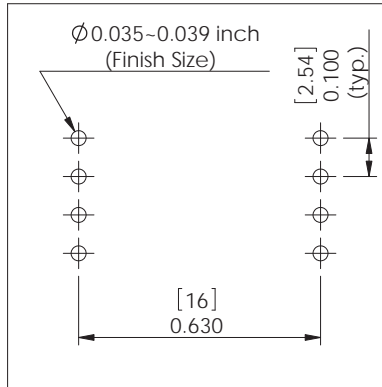
NOTES

- 1) Dimensions are in inches [mm]
- 2) For suggested pad layout, see drawing: PAD-03

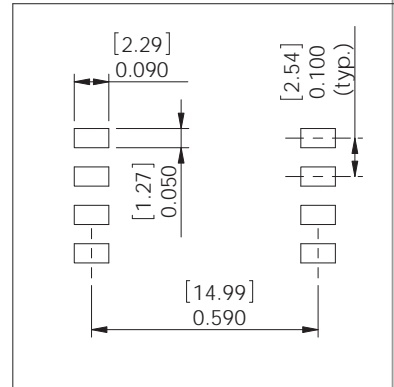
Suggested Pad Layout



PAD-01



PAD-03



PAD-10

Package Characteristics

Approximate Port Volume

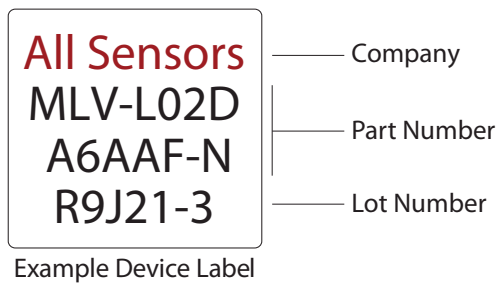
Package ID	Port A	Port B	Units	Notes	Weight	Units	Notes
A6AAx	132	33.6	mm ³	1	9.3	Grams	2
A6BAx	119	20.3	mm ³	1	8.7	Grams	2
A6CAx	119	20.5	mm ³	1	8.8	Grams	2
A6DAx	120	21.3	mm ³	1	8.8	Grams	2
A6EAx	119	33.6	mm ³	1	8.9	Grams	2
A6FAx	125	33.6	mm ³	1	9.2	Grams	2
E1Nx	174	168	mm ³	-	1.2	Grams	-
E2Nx	174	168	mm ³	-	1.2	Grams	-
EGNx	1.4	168	mm ³	-	0.9	Grams	-

Package Notes

Note 1: Add 4.5 mm³ per port with barb fitting.

Note 2: Add 0.15 gram per barb fitting.

Product Labeling



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