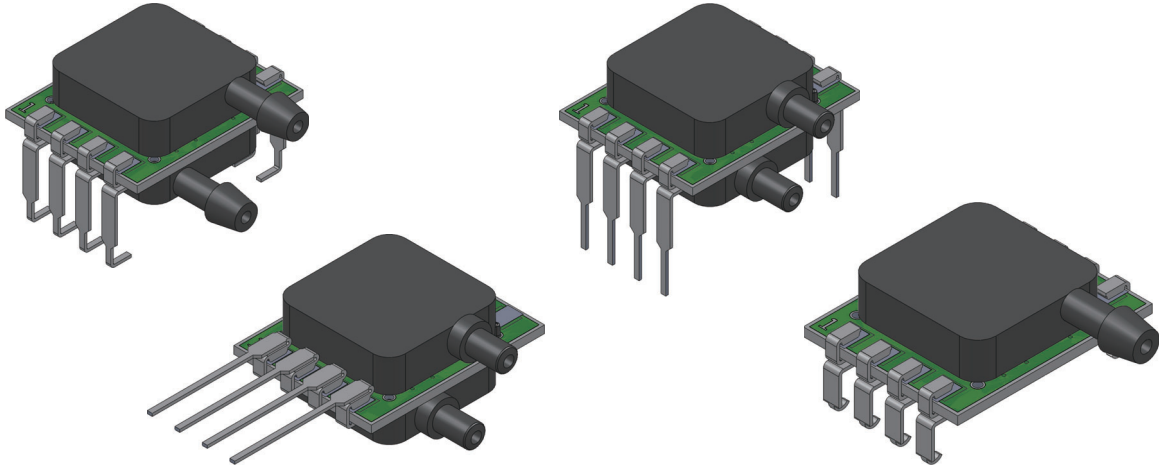


ALL SENSORS®

ELVR - アナログ・デジタル選択式低圧圧力センサー



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Introduction

小型アナログ・デジタル出力センサーELVRはAll Sensors社のCoBeam²™技術を利用しています。この技術によってセンサーパッケージにかかる圧力の影響や時間変化の影響を減らすことができます。そして一般的なシングルダイに比べて優れたデュアルダイ技術によって姿勢特性を向上させています。この技術革新によりピエゾ抵抗型圧力センサーは、従来のシリコンによるゆがみゲージセンサーから大幅に進歩しました。

ELVRシリーズはマイクロコントローラーと直接通信が可能で余計なA/Dコンバーターは不要です。供給電圧は3Vと5Vを選ぶことができます。

ELVRシリーズは高速応答かつ複数の解像度を出力する事が出来ます。

SIP・DIPの様々なパッケージ形状を用意しているので柔軟に省スペース化の手助けをすることが出来ます。

このセンサーは温度補正されているため広い温度範囲に渡って正確に安定した出力を提供します。適応媒体は空気や乾燥したガスなど非腐食性、非イオン性流体を想定しています。パレリンコーティングオプションによる耐水性の向上にも対応しております。

ELVRシリーズはFirst Sensor社のHCLAシリーズの代替品として利用することが出来ます。詳しくは下記URLを参照するかお問い合わせ下さい。

<https://www.allsensors.com/products/elvr-series>



ELVR シリーズアナログ・デジタル出力選択式圧力センサー

特徴

- 圧力レンジ 2.5 ~ 75 mbar(1 ~ 30 inH2O)
- 正確なASIC調整
- アナログ出力と デジタル I2C・SPIインターフェイス
- 供給電圧3Vおよび5V

応用分野

- 医療機器
- 産業分野

標準圧力レンジ

型番	動作範囲 ^A		過負荷耐圧		破壊耐圧	
	mbar	inH2O	mbar	inH2O	mbar	inH2O
ELVR-L01D	± 2.5	± 1	250	100	750	301
ELVR-L05D	± 12.5	± 5	500	201	750	301
ELVR-L10D	± 25	± 10	500	201	750	301
ELVR-L20D	± 50	± 20	500	201	1250	502
ELVR-L30D	± 75	± 30	500	201	2000	803
ELVR-L01G	2.5	1	250	100	750	301
ELVR-L05G	12.5	5	500	201	750	301
ELVR-L10G	25	10	500	201	750	301
ELVR-L20G	50	20	500	201	1250	502
ELVR-L30G	75	30	500	201	2000	803

追記A: 動作圧力範囲inH2Oの値はmbar値を元におおよその値を記載しております。

圧力センサー最大定格	環境条件
供給電圧 2.7 ~ 5.5 Vdc アナログ出力電流 シンク電流 1 mA ソース電流 1 mA コモンモード圧力 2000 mbar / 803 inH2O	温度範囲 補償温度範囲: Commercial 0°C ~ 70°C Industrial -20°C ~ 85°C 動作温度範囲 -25°C ~ 85°C 保存温度範囲 -40°C ~ 125°C 湿度 (非結露) 0 ~ 95% RH
SMT 取り付け仕様	等価回路
平均予熱温度勾配 2.5 K/s ソーク時間 ca. 3 min 217°Cを超える時間 50 s 230°Cを超える時間 40 s 250°Cを超える時間 15 s 温度ピーク 260°C 冷却温度勾配 -3.5 K/s	<p>See package drawings for pinouts.</p>

性能仕様

ELVRシリーズアンプ内蔵圧力センサー

特に記載がなければ供給電圧5V、25°Cで測定した値です。ポートBから正圧加えて測定した値です。

アナログ5V 性能仕様						
パラメーター		最小	通常	最大	単位	追記
フルスケールスパン (FSS)		3.9	4.0	4.1	V	5
フルスケール出力(FSO)						-
	最小圧力		0.25		V	
	最大圧力		4.25		V	
スパン温度シフト						
	L01x	-	-	±2	%FSS	2
	L05x ~ L30x	-	-	±1	%FSS	2
オフセット出力 (差圧0の時)						
	LxxD	2.15	2.25	2.35	V	-
	LxxG	0.15	0.25	0.35	V	-
オフセット温度シフト						
	L01x	-	-	±1.5	%FSS	2
	L05x	-	-	±1	%FSS	2
	L10x ~ L30x	-	-	±0.5	%FSS	2
オフセットウォームアップシフト						
	L01x	-	±10	-	mV	3
	L05x ~ L30x	-	±5	-	mV	3
オフセット長期安定性 (1年間)						
	L01x	-	±15	-	mV	-
	L05x ~ L30x	-	±5	-	mV	-
直線性、ヒステリシス誤差 (全製品)						
		-	±0.05	±0.25	%FSS	4
応答速度						
		-	0.5	-	ms	1
D/A 解像度						
		-	-	11	bit	-
消費電流 (no load)						
		-	5.0	-	mA	6

追記

追記 1: すべての圧力範囲における90%の範囲でこちらの応答速度が適応されます。

追記 2: 温度シフトは25°C~補償温度範囲の最大値まで比例して起こります。

追記 3: ウォームアップシフトは電流を流してから1時間以内の間発生する値です。

追記 4: ベストフィットストレートライン(BFSL)法によって測定した値です。

追記 5: スパンはフルスケール出力電圧からオフセット電圧を引いて求めた値です。

追記 6: 100%テストした値ではありません。

性能仕様ELVRシリーズアンプ内蔵圧力センサー

特に記載がなければ供給電圧3V、25°Cで測定した値です。ポートBから正圧加えて測定した値です。

アナログ3V 性能仕様						
パラメーター		最小	通常	最大	単位	追記
フルスケールスパン (FSS)		1.9	2.0	2.1	V	5
フルスケール出力(FSO)						-
	最小圧力		0.25		V	
	最大圧力		2.25		V	
スパン温度シフト						
	L01x	-	-	±2	%FSS	2
	L05x ~ L30x	-	-	±1	%FSS	2
オフセット出力 (差圧0の時)						
	LxxD	1.15	1.25	1.35	V	-
	LxxG	0.15	0.25	0.35	V	-
オフセット温度シフト						
	L01x	-	-	±1.5	%FSS	2
	L05x	-	-	±1	%FSS	2
	L10x ~ L30x	-	-	±0.5	%FSS	2
オフセットウォームアップシフト						
	L01x	-	±10	-	mV	3
	L05x ~ L30x	-	±5	-	mV	3
オフセット長期安定性 (1年間)						
	L01x	-	±5	-	mV	-
	L05x ~ L30x	-	±5	-	mV	-
直線性、ヒステリシス誤差 (全製品)		-	±0.05	±0.25	%FSS	4
応答速度		-	0.5	-	ms	1
D/A 解像度		-	-	11	bit	-
消費電流 (no load)		-	5.0	-	mA	6

追記

追記 1: すべての圧力範囲における90%の範囲でこちらの応答速度が適応されます。

追記 2: 温度シフトは25°C~補償温度範囲の最大値まで比例して起こります。

追記 3: ウォームアップシフトは電流を流してから1時間以内の間発生する値です。

追記 4: ベストフィットストレートライン(BFSL)法によって測定した値です。

追記 5: スパンはフルスケール出力電圧からオフセット電圧を引いて求めた値です。

追記 6: 100%テストした値ではありません。

性能仕様

ELVRシリーズアンブ内蔵圧力センサー

特に記載がなければ供給電圧5V、25°Cで測定した値です。ポートBから正圧加えて測定した値です。

デジタル5V 性能仕様

パラメーター	最小	通常	最大	単位	追記
フルスケールスパン (FSS)	-	26214	-	Decimal	2
フルスケール出力 (FSO)					
最小圧力		1638		Decimal	5
最大圧力		27852		Decimal	5
スパン温度シフト					
L01x	-	-	±2	%FSS	2
L05x ~ L30x	-	-	±1	%FSS	2
オフセット出力 (差圧0の時)					
LxxD	14090	14745	15400	Decimal	-
LxxG	983	1638	2294	Decimal	-
オフセット温度シフト					
L01x	-	-	±1.5	%FSS	2
L05x	-	-	±1	%FSS	2
L10x ~ L30x	-	-	±0.5	%FSS	2
オフセットウォームアップシフト					
L01x	-	66	-	Decimal	3
L05x ~ L30x	-	33	-	Decimal	3
オフセット姿勢特性 (±1 g)					
L01x	-	99	-	Decimal	-
L05x ~ L30x	-	33	-	Decimal	-
オフセット長期安定性 (1年間)					
L01x	-	66	-	Decimal	-
L05x ~ L30x	-	33	-	Decimal	-
直線性、ヒステリシス誤差 (全製品)	-	±0.05	±0.25	%FSS	4
応答速度		0.5		ms	1
A/D 解像度	-	12	-	bit	-
消費電流	-	5	-	mA	6

性能仕様

ELVRシリーズアンプ内蔵圧力センサー

特に記載がなければ供給電圧3V、25°Cで測定した値です。ポートBから正圧加えて測定した値です。

デジタル3V 性能仕様

パラメーター		最小	通常	最大	単位	追記
フルスケールスパン (FSS)		21299	21845	22391	Decimal	2
フルスケール出力 (FSO)						
	Min Pressure	-	2731	-	Decimal	5
	Max Pressure	-	24576	-	Decimal	5
スパン温度シフト						
	L01x	-	-	±2	%FSS	2
	L05x through L30x	-	-	±1	%FSS	2
オフセット出力 (差圧0の時)						
	LxxD	12561	13653	14745	Decimal	-
	LxxG	1638	2731	3823	Decimal	-
オフセット温度シフト						
	L01x	-	-	±1.5	%FSS	2
	L05x	-	-	±1	%FSS	2
	L10x through L30x	-	-	±0.5	%FSS	2
オフセットウォームアップシフト						
	L01x	-	66	-	Decimal	3
	L05x through L30x	-	33	-	Decimal	3
オフセット姿勢特性 (±1 g)						
	L01x	-	99	-	Decimal	-
	L05x through L30x	-	33	-	Decimal	-
オフセット長期安定性 (1年間)						
	L01x	-	66	-	Decimal	-
	L05x through L30x	-	33	-	Decimal	-
直線性、ヒステリシス誤差 (全製品)		-	±0.05	±0.25	%FSS	4
応答速度		-	0.5	-	ms	1
A/D 解像度		-	12 or 14	-	bit	-
消費電流		-	5	-	mA	6

Device Options

The following is a list of factory programmable options. Consult the factory to learn more about the options.

Interface

I2C and SPI interfaces are available with eight (8) lead packages only.

Supply Voltage

Devices are characterized at either 3.0V or 5.0V depending on the options selected. It is suggested to select the option that most closely matches the application supply voltage for best possible performance.

Speed/Power

There are two options of Speed/Power. These are Fast(F) and High Resolution(H).

Fast Mode(F) Is the fastest operating mode where the device operates with continuous sampling at the fastest internal speed 12 bit resolution, 0.5ms update rate.

High Resolution(H): Also operates with continuous samples however the ADC is set for longer duration for higher resolution. The conversion times are resultantly longer than the Fast(F) mode with 1 ms update rate.

Coating

Parylene Coating: Parylene coating provides a moisture barrier and protection form some harsh media. Consult factory for applicability of Parylene for the target application and sensor type. This option is not available for pressure ranges below 10 inH₂O.

I2C Interface

Introduction

The ELVR is capable of producing a digital output signal. The device runs a cyclic program, which will store a corrected pressure value with 12 or 13 bit resolution about every 250µs within the output registers of the internal ASIC. In order to use the sensor for digital signal readout, it should be connected to a bidirectional I2C-bus.

According to the I2C-bus specification, the bus is controlled by a master device, which generates the clock signal, controls the bus access and generates START and STOP conditions. The ELVR is designed to work as a slave, hence it will only respond to requests from a master device.

Digital I2C interface

The ELVR complies with the following protocol in Figure 1.

Bus not busy : During idle periods both data line (SDA) and clock line (SCL) remain HIGH.

START condition (S) : HIGH to LOW transition of SDA line while clock (SCL) is HIGH is interpreted as START condition. START conditions are always generated by the master. Each initial request for a pressure value has to begin with a START condition.

STOP condition (P) : LOW to HIGH transition of SDA line while clock (SCL) is HIGH determines STOP condition. STOP conditions are always generated by the master. More than one request for the current pressure value can be transmitted without generation of intermediate STOP condition.

DATA valid (D): State of data line represents valid data when, after START condition, data line is stable for duration of HIGH period of clock signal. Data on line must be changed during LOW period of clock signal. There is one clock pulse per bit of data.

Acknowledge (A): Data is transferred in pieces of 8 bits (1 byte) on serial bus, MSB first. After each byte the receiving device – whether master or slave – is obliged to pull data line LOW as acknowledge for reception of data. Master must generate an extra clock pulse for this purpose. When acknowledge is missed, slave transmitter becomes inactive. Master must then either send last command again or generate STOP condition in that case.

Slave address: The I2C-bus master-slave concept requires a unique address for each device. The ELVR has a preconfigured slave address, see table 2. The sensor will then listen to both slave addresses. After generating a START condition the master sends the address byte containing a 7 bit address followed by a data direction bit (R/W). A "0" indicates a transmission from master to slave (WRITE), a "1" indicates a data request (READ).

DATA operation : The sensor starts to send 2 data bytes containing the current pressure value as a 15 bit value placed in the output registers.

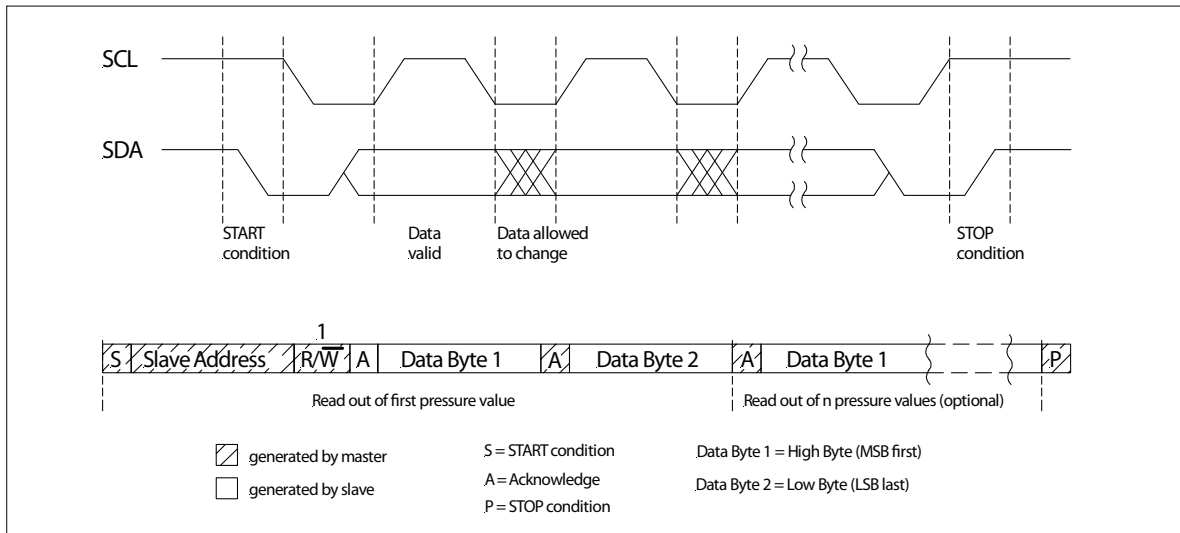


Figure 1: I²C bus protocol

I²C BUS INTERFACE (Cont'd)

I²C Interface Parameters

Parameter	Symbol	Minimum	Nominal	Maximum	Unit
Input High Level	-	90	-	100	% of V _s
Input Low Level	-	0	-	10	% of V _s
Output Low Level	-	-	-	10	% of V _s
Pull-Up Resistor	-	500	-	-	Ω
Load Capacitance @ SDA	C _{SDA}	-	-	400	pF
Input Capacitance @ SDA/SCL	C _{I2C_IN}	-	-	10	pF
Signal Clock Frequency	F _{SCL}	100*	-	400	kHZ
Bus Free Time Between STOP and START Condition	t _{BUF}	1.3	-	-	μs
Hold Time (Repeated) START Condition, to First Clock Pulse	t _{HD,STA}	0.8	-	-	μs
Low Period of SCL	t _{Low}	1.3	-	-	μs
High Period of SCL	t _{High}	0.6	-	-	μs
Setup Time Repeated START Condition	t _{SU,STA}	1	-	-	μs

Note: All Sensors recommends communication speeds of at least 100 kHz (max. 640 kHz). Please contact your nearest All Sensors sales office for further information.

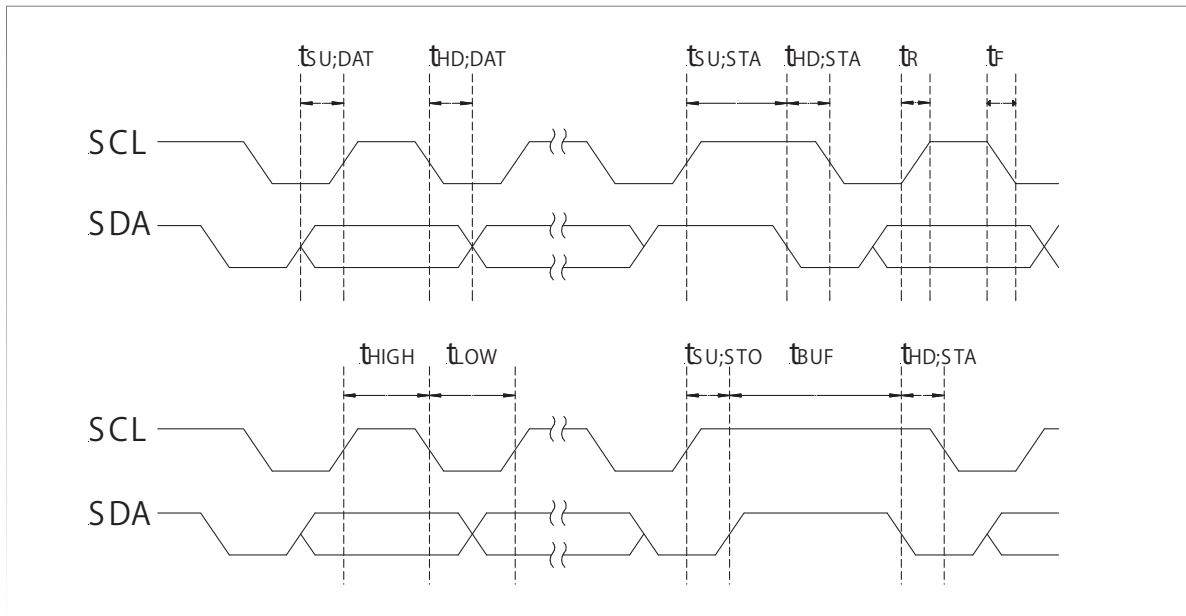


Figure 2. Timing Characteristics

SPI - SERIAL PERIPHERAL INTERFACE

Introduction

The ELVR series is capable of producing a digital output signal. The device runs a cyclic program, which will store a corrected sensor value with 12 or 13 bit resolution about every 9 ms within the output registers of the internal ASIC. This cyclic program runs independent from the bus communication. In order to use the pressure sensor for digital signal readout, it should be connected to a SPI Master device.

SPI specifies four signals: The clock (CLK) is generated by the master and input to all slaves. MOSI carries data from master to slave. MISO carries data from slave back to master. A slave select line (SS) allows individual selection of a slave device.

SPI Modes

A pair of parameters called clock polarity (CPOL) and clock phase (CPHA) determine the edges of the clock signal on which the data are driven and sampled. Each of the two parameters has two possible states, which allows for four possible combinations, all of which are incompatible with one another.

The ELVR series supports all clock phase (CPHA)=0 and polarity (CPOL)=0. CPOL which means that data transmission starts with the rising first clock edge (see Figure 3).

Slave select

The falling edge of the SS line indicates the beginning of the transfer. Additionally the SS line must not be negated and reasserted between the three bytes to be transmitted.

Data operation

The MOSI line should always be set to high level. So there is no data transmission from master to slave. Because of internal configuration the slave will answer the first byte with an FFxh. The second and third byte contain the 15 bit pressure information (see Figure 4).

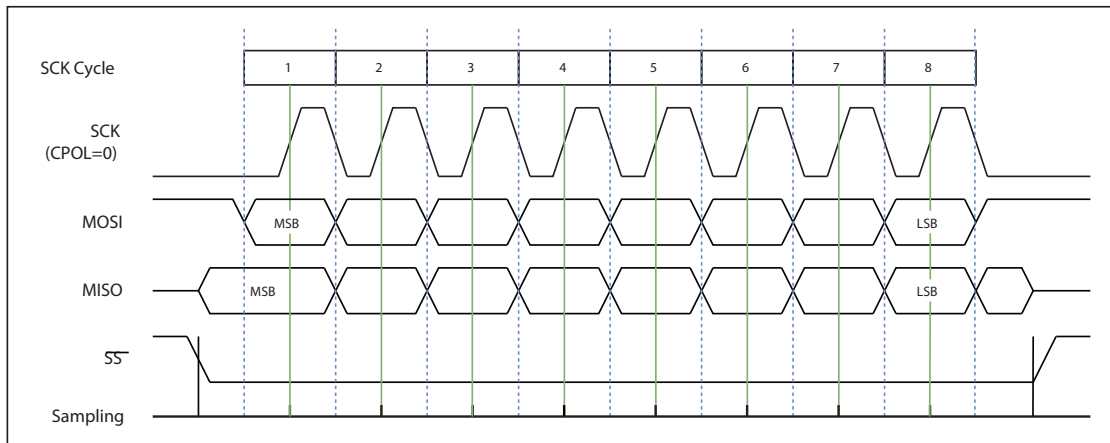


Figure 3: Example of a standard 1 byte SPI data transfer for CPHA=0 and CPOL=0

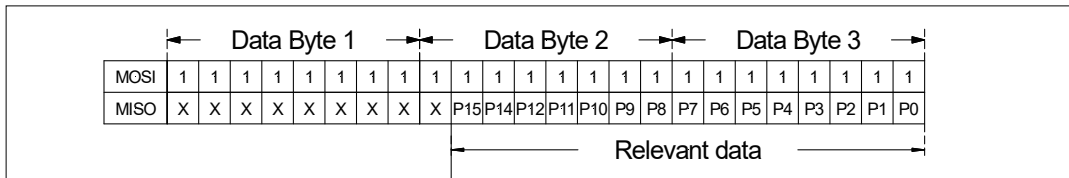


Figure 4: 3 byte data stream between ELVR sensor and master containing the pressure value as a 15 bit value.

SPI - SERIAL PERIPHERAL INTERFACE (Cont'd)

Interface Parameters

Parameter	Symbol	Minimum	Nominal	Maximum	Unit
Input High Level	-	90	-	100	% of V_s
Input Low Level	-	0	-	10	% of V_s
Output Low Level	-	-	-	10	% of V_s
Pull-Up Resistor	-	500	-	-	Ω
Load Capacitance @ MISO	C_{MISO}	-	-	400	pF
Input Capacitance @ Each Pin	C_{SPL_IN}	-	-	10	pF
Signal Clock Frequency	f_{SCK}	100*	-	640	kHZ
MISO Hold Time after SCK Sample Slope	$t_{SPL_HD_MISO}$	200	-	-	ns
MOSI Setup Time Before SCK Sample Slope	$t_{SPL_SU_MOSI}$	$2/f_{CLK}$	-	-	-
/SS Setup Time Before SCK Sample Slope	$t_{SPL_SU_SS}$	10	-	-	ns
/SS Hold Time After SCK Sample Slope	$t_{SPL_HD_SS}$	$1/f_{CLK}$	-	-	-

Note: All Sensors recommends communication speeds of at least 100 kHz (max. 640 kHz). Please contact your nearest All Sensors sales office for further information.

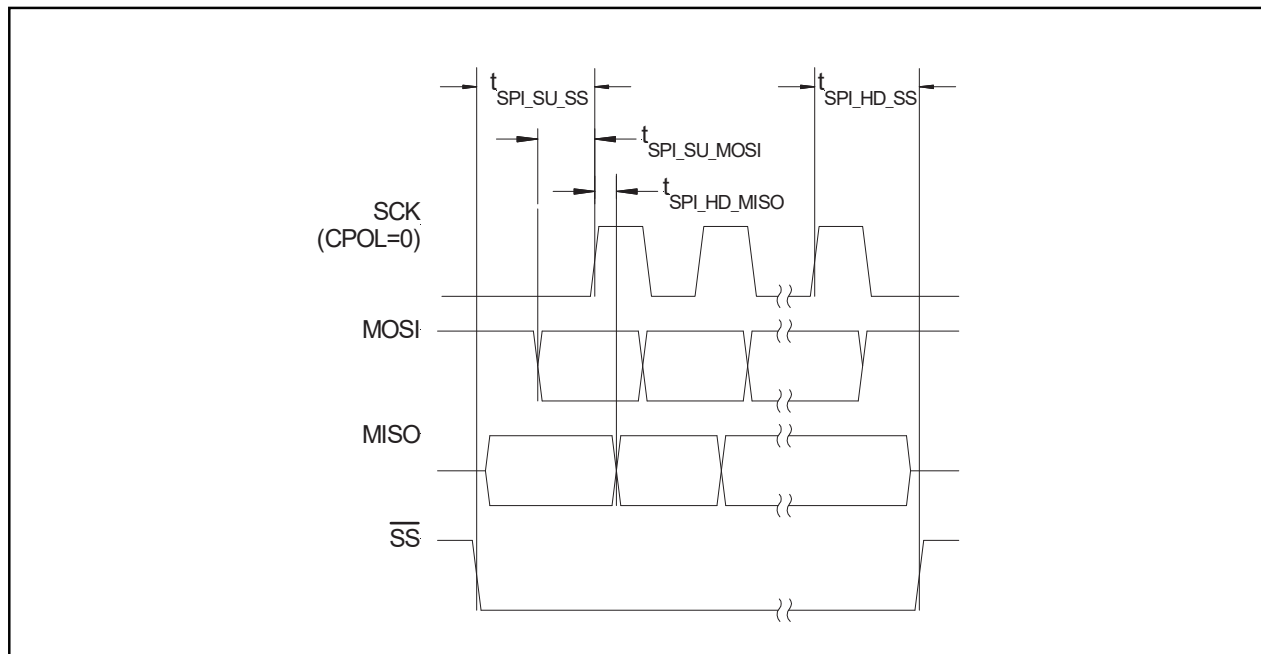


Figure 5: Timing characteristics

How to Order

Refer to Table 1 for configuring a standard base part number which includes the pressure range, package and temperature range. Table 2 shows the available configuring options. The option identifier is required to complete the device part number. Refer to Table 3 for the available device package options.

Example P/N with options: ELVR-L01D-F1RS-C-NI3F



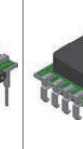

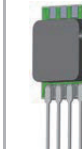
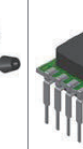
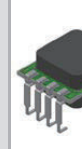
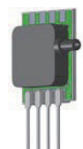
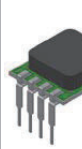
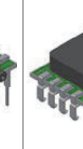
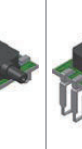
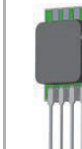
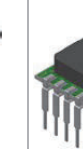
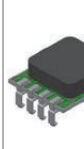
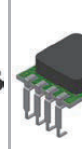
Table 1 - How to configure a base part number

ORDERING INFORMATION	SERIES		PRESSURE RANGE		PACKAGE						TEMPERATURE RANGE															
	ID	Description	ID	Description	Base	Port Orientation		Lid Style		Lead Type		ID	Description													
					ID	ID	Description	ID	Description	ID	Description															
ORDERING INFORMATION	ELVR	L01D	±1 inH2O	F	1	Dual Port Same Side	R	Long Non-Barbed	T	SIL (see note 7)	C	Commercial														
		L05D	±5 inH2O										N	Single Port	S	Long Barbed	D	DIP	I	Industrial						
		L10D	±10 inH2O		J	J-Lead SMT																				
		L20D	±20 inH2O				L	L-Lead SMT																		
		L30D	±30 inH2O																							
		L01G	0 to 1 inH2O																							
		L05G	0 to 5 inH2O																							
		L10G	0 to 10 inH2O																							
		L20G	0 to 20 inH2O																							
		L30G	0 to 30 inH2O																							
		Example	ELVR		-	L01D	-	F	1													R		T	-	C

Table 2 - How to configure an option identifier

ORDERING INFORMATION	COATING		INTERFACE			SUPPLY VOLTAGE		DIGITAL RESOLUTION, UPDATE RATE	
	ID	Description	ID	Description	Address	ID	Description	ID	Description
ORDERING INFORMATION	N	No Coating	A	Analog Only (see note 7)	N/A	3	3.0V	F	Fast Mode (12bit, 0.5ms)
	P	Parylene Coating (see note 8)	I	I2C & Analog	0x78	5	5.0V	H	High Resolution (14bit, 1ms)
			T	Option- SPI & Analog	N/A				
			2	Option- I2C & Analog	0x28				
			3	Option- I2C & Analog	0x38				
			4	Option- I2C & Analog	0x48				
			5	Option- I2C & Analog	0x58				
6	Option- I2C & Analog	0x68							
Example	N		I			3		F	

TABLE 3: Available F-Series Package Configurations

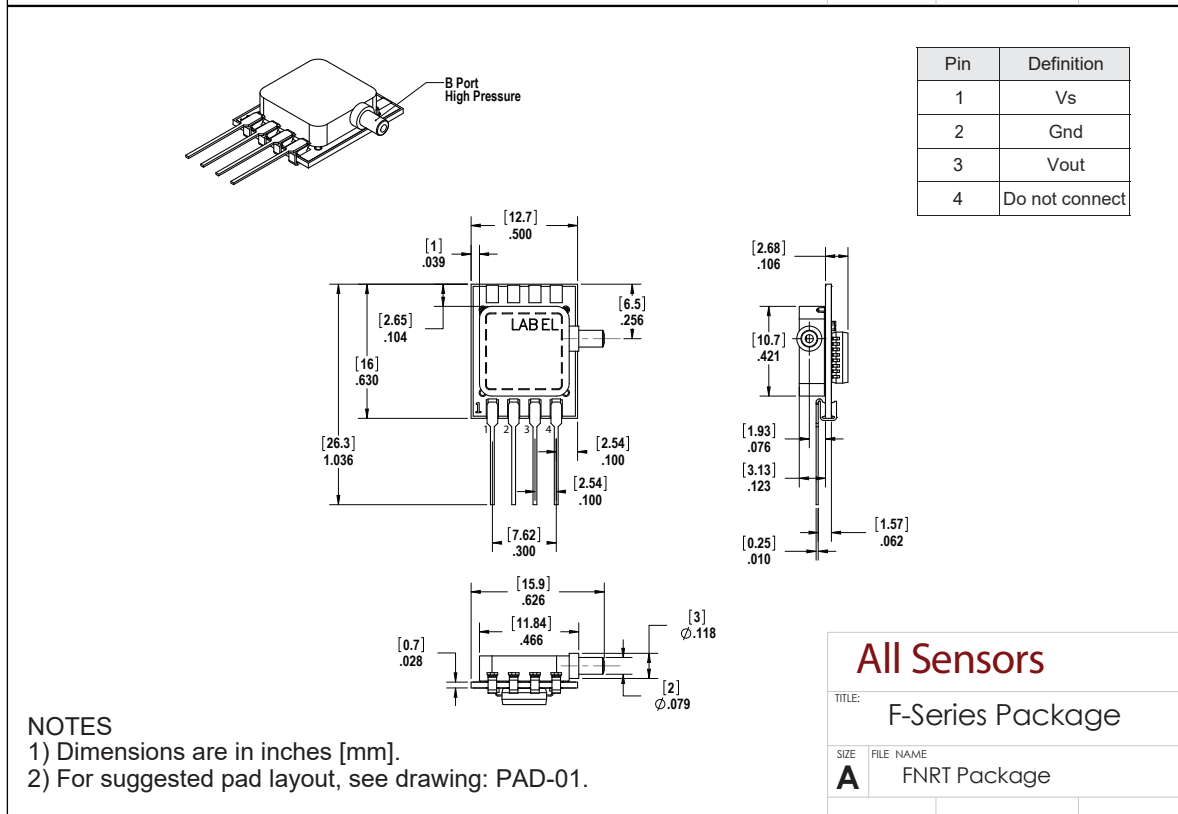
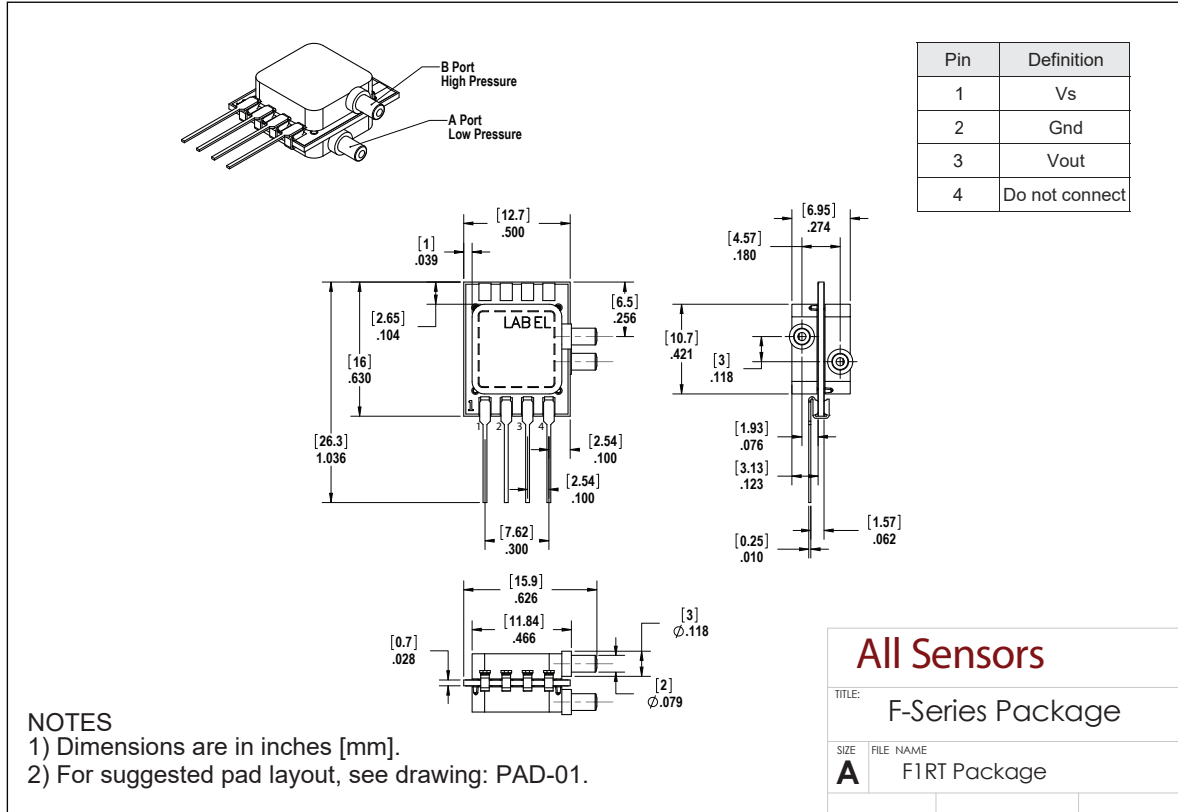
Port Orientation	Non-Barbed Lid Lead Style				Barbed Lid Lead Style			
	SIL	DIP	SMT-J	SMT-L	SIL	DIP	SMT-J	SMT-L
Dual Port Same Side	 F1RT	 F1RD	 F1RJ	 F1RL	 F1ST	 F1SD	NOT OFFERED	 F1SL
Single Port	 FNRT	 FNRD	 FNRJ	 FNRL	 FNST	 FNSD	 FNSJ	 FNLS

Specification Notes (Cont.)

NOTE 7: LEADFRAME "T" HAS ONLY ANALOG OUTPUT CAPABILITY. ALL LEAD TYPES EXCEPT FOR "T" HAVE SIMULTANEOUS DIGITAL AND ANALOG OUTPUT CAPABILITY.

NOTE 8: PARYLENE COATING NOT OFFERED IN J-LEAD SMT CONFIGURATION. PARYLENE COATING IS NOT OFFERED FOR PRESSURE RANGES BELOW 10 INH2O.

Package Drawings



Package Drawings (Cont'd)

	I2C	SPI
Pin	Definition	Definition
1	Vs	Vs
2	Gnd	Gnd
3	Vout	Vout
4	Do not Connect	MISO
5	SCL	CLK
6	Do not Connect	SS
7	Do not Connect	Do not Connect
8	SDA	MOSI

NOTES
 1) Dimensions are in inches [mm].
 2) For suggested pad layout, see drawing: PAD-27.

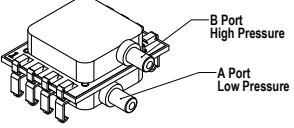
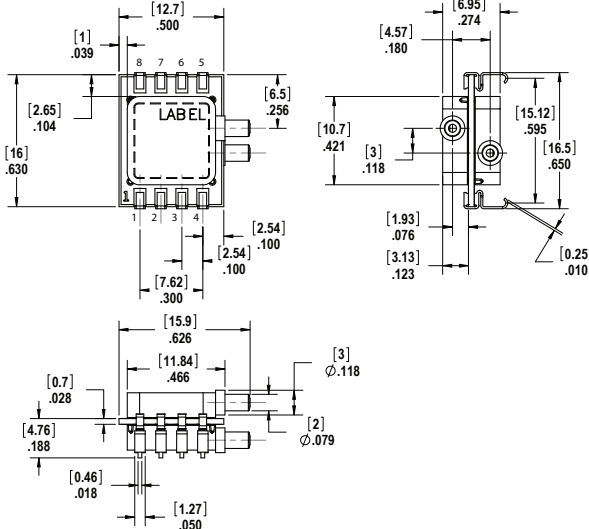
All Sensors	
TITLE:	F-Series Package
SIZE	FILE NAME
A	FIRD Package

	I2C	SPI
Pin	Definition	Definition
1	Vs	Vs
2	Gnd	Gnd
3	Vout	Vout
4	Do not Connect	MISO
5	SCL	CLK
6	Do not Connect	SS
7	Do not Connect	Do not Connect
8	SDA	MOSI

NOTES
 1) Dimensions are in inches [mm].
 2) For suggested pad layout, see drawing: PAD-27.

All Sensors	
TITLE:	F-Series Package
SIZE	FILE NAME
A	FNRD Package

Package Drawings (Cont'd)

NOTES

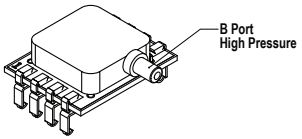
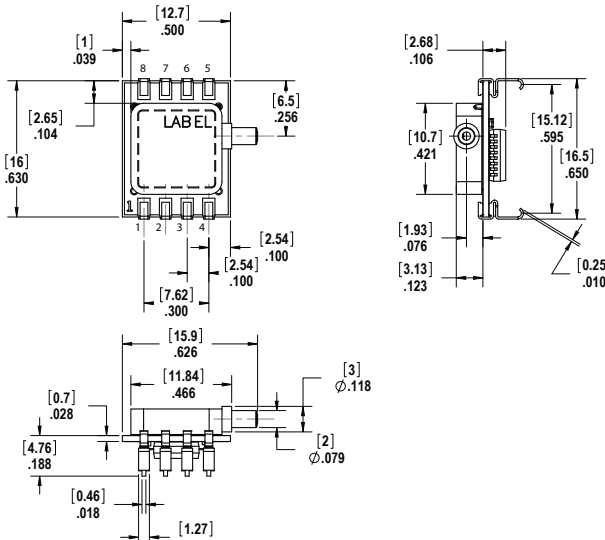
- 1) Dimensions are in inches [mm].
- 2) For suggested pad layout, see drawing: PAD-28.

	I2C	SPI
Pin	Definition	Definition
1	Vs	Vs
2	Gnd	Gnd
3	Vout	Vout
4	Do not Connect	MISO
5	SCL	CLK
6	Do not Connect	SS
7	Do not Connect	Do not Connect
8	SDA	MOSI

All Sensors

TITLE: F-Series Package

SIZE: FILE NAME
A FIRJ Package

NOTES

- 1) Dimensions are in inches [mm].
- 2) For suggested pad layout, see drawing: PAD-28.

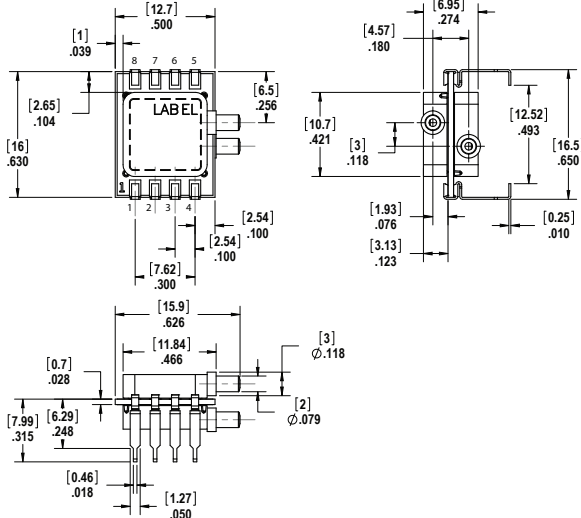
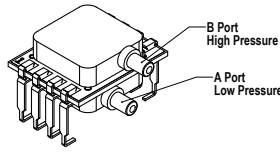
	I2C	SPI
Pin	Definition	Definition
1	Vs	Vs
2	Gnd	Gnd
3	Vout	Vout
4	Do not Connect	MISO
5	SCL	CLK
6	Do not Connect	SS
7	Do not Connect	Do not Connect
8	SDA	MOSI

All Sensors

TITLE: F-Series Package

SIZE: FILE NAME
A FNRJ Package

Package Drawings (Cont'd)



NOTES

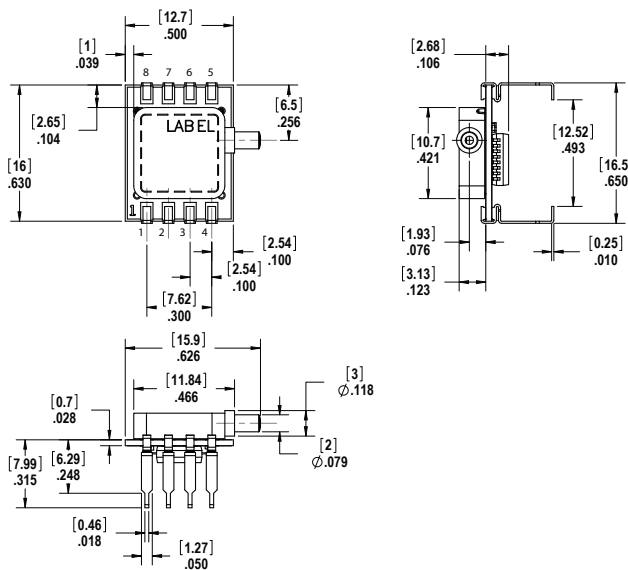
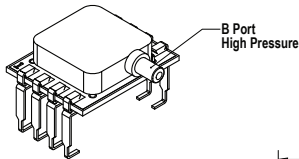
- 1) Dimensions are in inches [mm].
- 2) For suggested pad layout, see drawing: PAD-29.

Pin	I2C	SPI
	Definition	Definition
1	Vs	Vs
2	Gnd	Gnd
3	Vout	Vout
4	Do not Connect	MISO
5	SCL	CLK
6	Do not Connect	SS
7	Do not Connect	Do not Connect
8	SDA	MOSI

All Sensors

TITLE: F-Series Package

SIZE FILE NAME
A F1RL Package



NOTES

- 1) Dimensions are in inches [mm].
- 2) For suggested pad layout, see drawing: PAD-29.

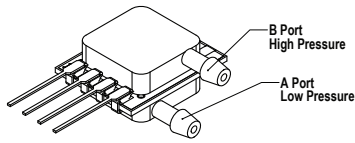
Pin	I2C	SPI
	Definition	Definition
1	Vs	Vs
2	Gnd	Gnd
3	Vout	Vout
4	Do not Connect	MISO
5	SCL	CLK
6	Do not Connect	SS
7	Do not Connect	Do not Connect
8	SDA	MOSI

All Sensors

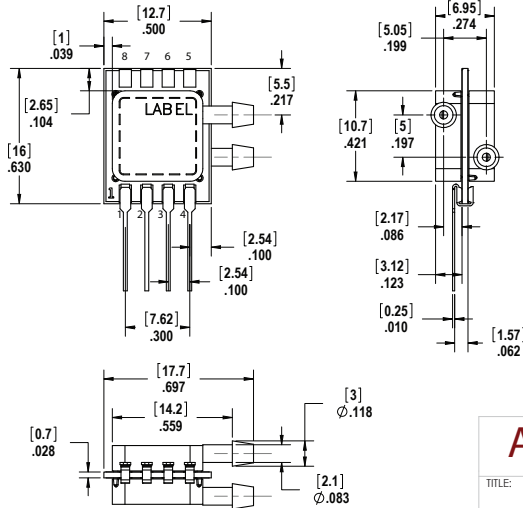
TITLE: F-Series Package

SIZE FILE NAME
A FNRL Package

Package Drawings (Cont'd)



Pin	Definition
1	Vs
2	Gnd
3	Vout
4	Do not connect



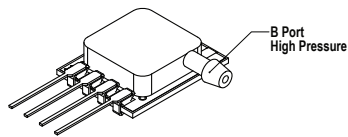
NOTES

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

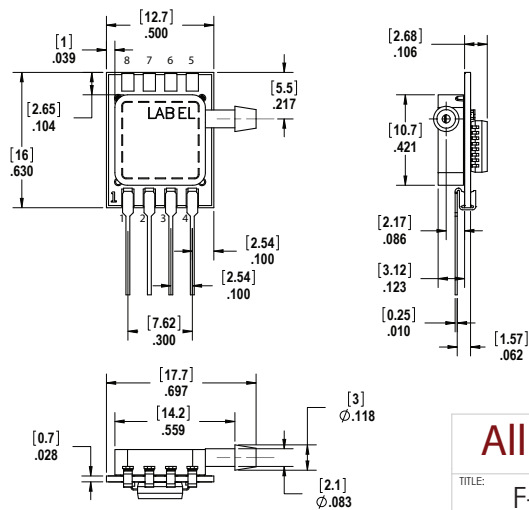
All Sensors

TITLE: F-Series Package

SIZE FILE NAME
A F1ST Package



Pin	Definition
1	Vs
2	Gnd
3	Vout
4	Do not connect



NOTES

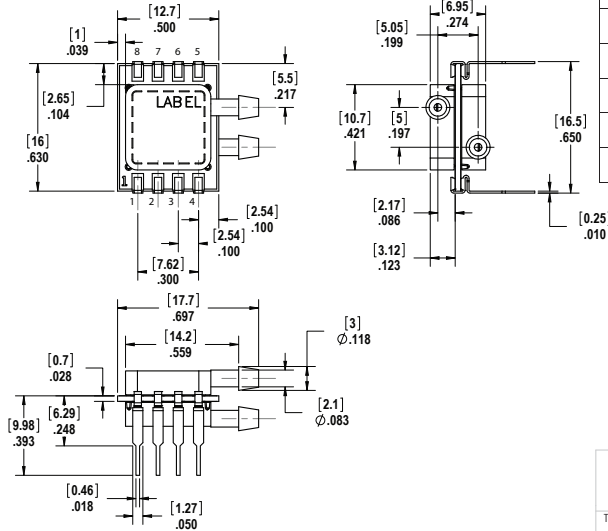
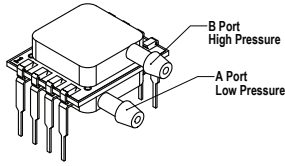
- 1) Dimensions are in inches [mm].
- 2) For suggested pad layout, see drawing: PAD-01.

All Sensors

TITLE: F-Series Package

SIZE FILE NAME
A FNST Package

Package Drawings (Cont'd)



Pin	I2C	SPI
	Definition	Definition
1	Vs	Vs
2	Gnd	Gnd
3	Vout	Vout
4	Do not Connect	MISO
5	SCL	CLK
6	Do not Connect	SS
7	Do not Connect	Do not Connect
8	SDA	MOSI

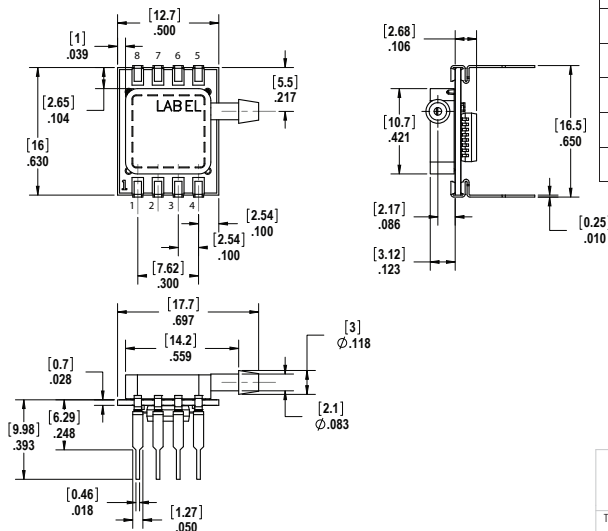
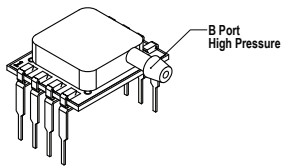
NOTES

- 1) Dimensions are in inches [mm].
- 2) For suggested pad layout, see drawing: PAD-27.

All Sensors

TITLE: F-Series Package

SIZE FILE NAME
A F1SD Package



Pin	I2C	SPI
	Definition	Definition
1	Vs	Vs
2	Gnd	Gnd
3	Vout	Vout
4	Do not Connect	MISO
5	SCL	CLK
6	Do not Connect	SS
7	Do not Connect	Do not Connect
8	SDA	MOSI

NOTES

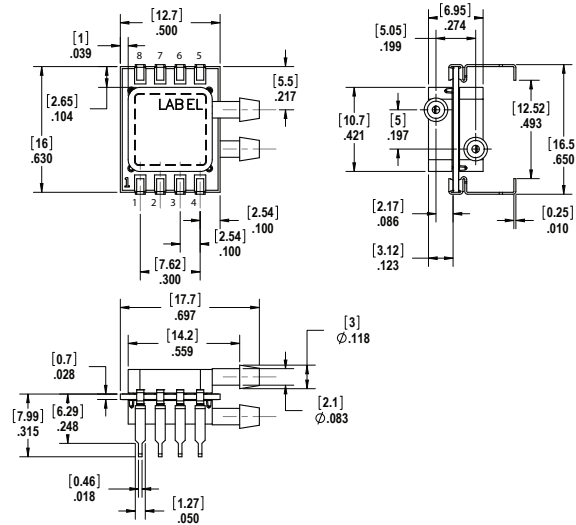
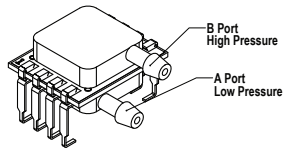
- 1) Dimensions are in inches [mm].
- 2) For suggested pad layout, see drawing: PAD-27.

All Sensors

TITLE: F-Series Package

SIZE FILE NAME
A FN5D Package

Package Drawings (Cont'd)



NOTES

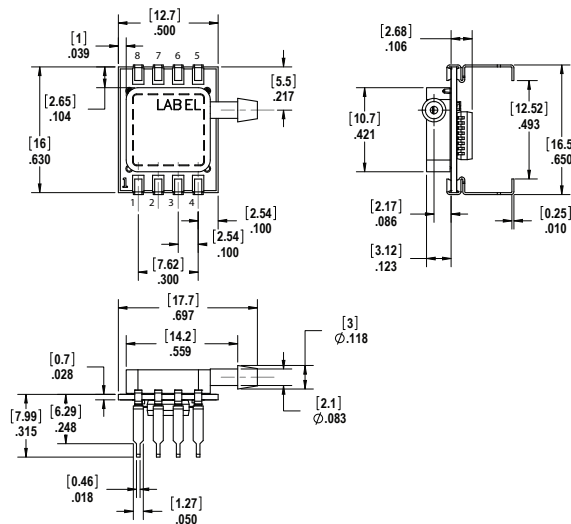
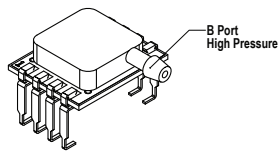
- 1) Dimensions are in inches [mm].
- 2) For suggested pad layout, see drawing: PAD-29.

Pin	I2C	SPI
	Definition	Definition
1	Vs	Vs
2	Gnd	Gnd
3	Vout	Vout
4	Do not Connect	MISO
5	SCL	CLK
6	Do not Connect	SS
7	Do not Connect	Do not Connect
8	SDA	MOSI

All Sensors

TITLE: F-Series Package

SIZE FILE NAME
A FISL Package



NOTES

- 1) Dimensions are in inches [mm].
- 2) For suggested pad layout, see drawing: PAD-29.

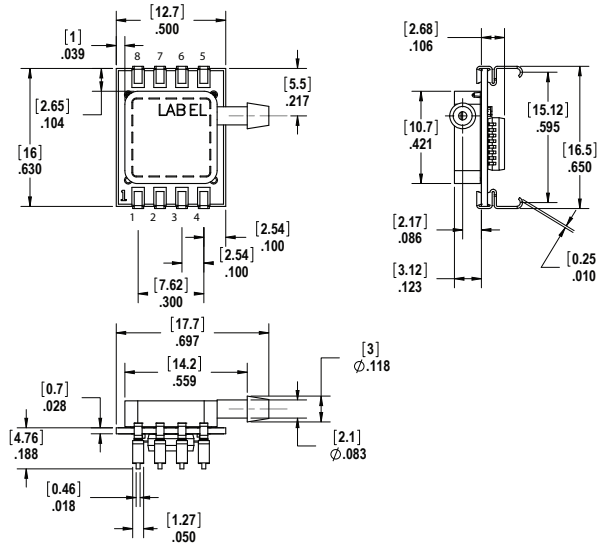
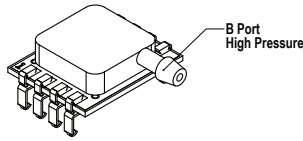
Pin	I2C	SPI
	Definition	Definition
1	Vs	Vs
2	Gnd	Gnd
3	Vout	Vout
4	Do not Connect	MISO
5	SCL	CLK
6	Do not Connect	SS
7	Do not Connect	Do not Connect
8	SDA	MOSI

All Sensors

TITLE: F-Series Package

SIZE FILE NAME
A FNLS Package

Package Drawings (Cont'd)



Pin	I2C	SPI
	Definition	Definition
1	Vs	Vs
2	Gnd	Gnd
3	Vout	Vout
4	Do not Connect	MISO
5	SCL	CLK
6	Do not Connect	SS
7	Do not Connect	Do not Connect
8	SDA	MOSI

NOTES

- 1) Dimensions are in inches [mm].
- 2) For suggested pad layout, see drawing: PAD-28.

All Sensors

TITLE: F-Series Package

SIZE FILE NAME
A FNSJ Package

ALL SENSORS

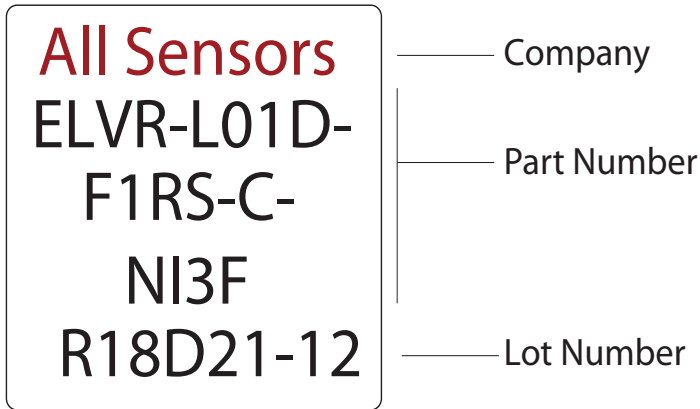
E www.allsensors.com

F 408 225 2079

P 408 225 4314

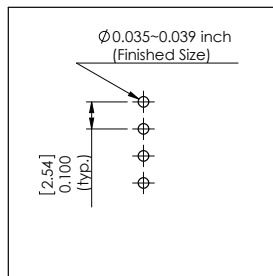
A 16035 Vineyard Blvd. Morgan Hill, CA 95037

Product Labeling

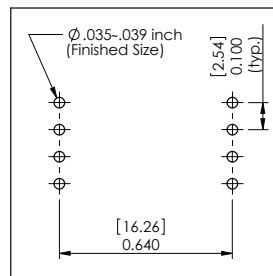


Example Device Label

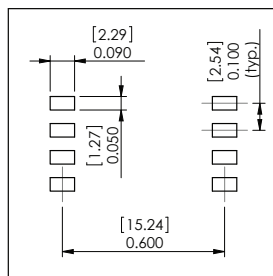
Suggested Pad Layouts



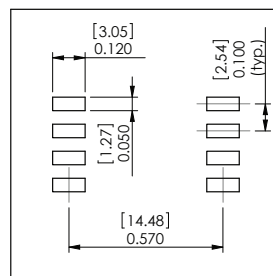
PAD-01



PAD-27



PAD-28



PAD-29

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