86BSD

Digital Output

SPECIFICATIONS

- **Stainless steel with O-ring seal**
- **Pressure/temperature read-out**
- **Digital output**
- **ASIC calibrated**
- **Absolute, gage**
- **Cable/connector option**
- **Low power option**
- **16mm diaphragm diameter**

The 86BSD is a small profile, media compatible, piezoresistive silicon pressure sensor packaged in a 316L stainless steel housing. This 14-bit digital output pressure sensor supports I2C and SPI interface protocols, may come in a 3.3 or 5.0Vdc supply voltage and is designed for o-ring mounting. The sensing package utilizes silicone oil to transfer pressure from the 316L stainless steel diaphragm to the sensing element.

The 86BSD is designed for high performance, low pressure applications. A custom ASIC is used for temperature compensation, offset correction, and provides a digital output of 10~90% or 5~95%.

For a similar sensor with stainless steel fittings, refer to the 85BSD digital output pressure sensor.

FEATURES

- Mountable with O-ring seal
- ±0.25% Accuracy
- ±1.0 Total Error Band
- Cable/connector option
- Low power option
- I^2C or SPI Interface protocols

APPLICATIONS

- Level controls
- Tank level measurement
- Corrosive fluids and gas measurement systems
- Sealed systems
- Manifold pressure measurement
- Barometric pressure measurement
- Submersible depth monitoring

STANDARD RANGES

Range	psiG	psiA	Range	BarG	BarA
0 to 001	•		0 to .07	•	
0 to 002	•				
0 to 005	•		0 to .35	•	
0 to 015	•	•	0 to 001	•	•
0 to 030	•	•	0 to 002	•	•
0 to 050	•	•	0 to 005	•	•
0 to 100	•	•	0 to 007	•	•
0 to 150	•	•	0 to 010	•	•
0 to 200	•	•	0 to 014	•	•
0 to 300	•	•	0 to 020	•	•

PERFORMANCE SPECIFICATIONS

Supply Voltage: 3.3V_{DC}

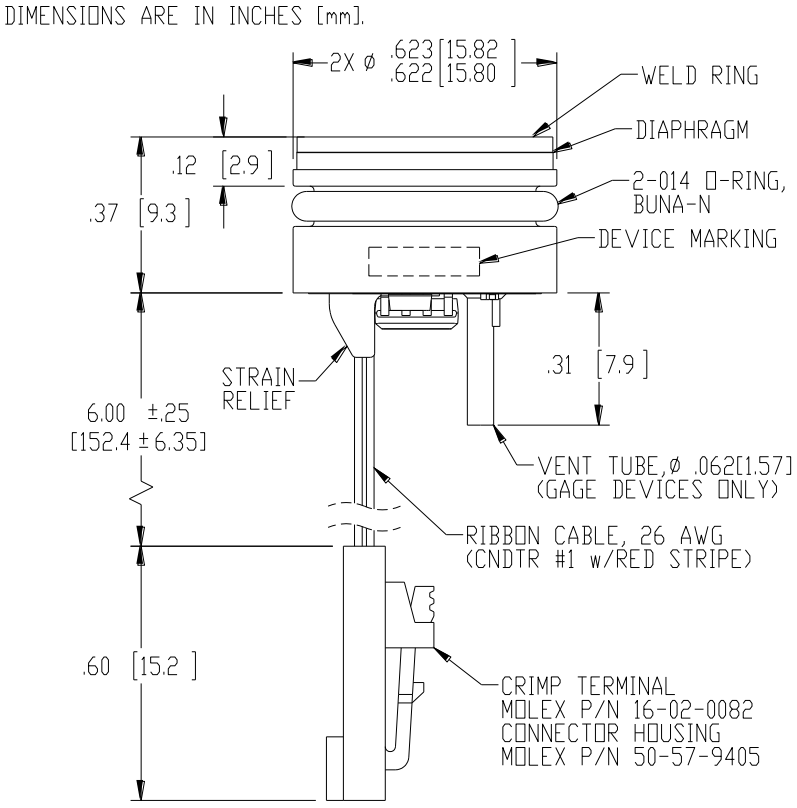
Ambient Temperature: 25°C (unless otherwise specified)

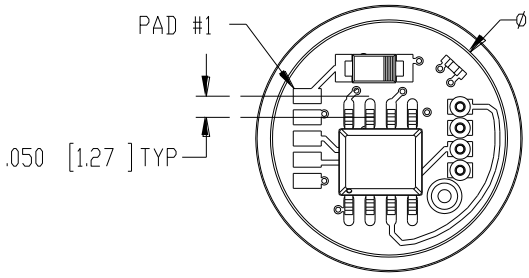
PARAMETERS	MIN	TYP	MAX	UNITS	NOTES
Zero Pressure Output (10% ~ 90%)		666		Count Hex	1
Zero Pressure Output (5% ~ 95%)		333		Count Hex	1
Full Scale Pressure Output (10% ~ 90%)		399A		Count Hex	1
Full Scale Pressure Output (5% ~ 95%)		3CCB		Count Hex	1
Accuracy	-0.25		0.25	%Span	2
Total Error Band	-1		1	%Span	3
Pressure Resolution	0.008			%Span	
Temperature Accuracy	-1.5		1.5	°C	4
Resolution – Temperature		0.1		°C	
Input Voltage Range	2.7	3.3	5.5	V	1
Supply Current		3		mA	
Insulation Resistance (50V_{DC})	50			MΩ	5
Overpressure			2X	Rated	6
Burst Pressure			3X	Rated	7
Load Resistance (R_L)	10			kΩ	
Long Term Stability (Offset & Span)		±0.5		%Span/Year	
Compensated Temperature (≤5psi)	0		50	°C	
Compensated Temperature (≥15psi)	-20		+85	°C	
Operating Temperature	-40		+125	°C	
Storage Temperature	-40		+125	°C	8
Output Pressure Resolution			14	Bits	
Output Temperature Resolution	8		11	Bits	
Start Time to Data Ready			8.4	ms	9
Output Type	10% to 90% or 5% to 95%				
Interface Type	I^2C (ADDR, 0x28H) I^2C (ADDR, 0X36H) I^2C (ADDR, 0x46H) SPI				
Media – Pressure	Liquids and gases compatible with 316/316L Stainless Steel				

Notes

1. Measured at vacuum for absolute (A), ambient for gage (G) and sealed gage(S). Output is not ratiometric to supply voltage.
2. Accuracy: combined linearity, hysteresis and repeatability.
3. Total Error Band: includes calibration errors and temperature effects over the compensated range. See Figure 3.
4. The deviation from a best fit straight line (BFSL) fitted to the output measured over the compensated temperature range. For errors beyond the compensated temperature range, see Figure 2.
5. Between case and sensing element.
6. 2X or 400psi, whichever is less. The maximum pressure that can be applied to a transducer without changing the transducer's performance or accuracy.
7. 3X or 600psi, whichever is less. The maximum pressure that can be applied to a transducer without rupture of either the sensing element or transducer.
8. Maximum temperature range for product with standard cable and connector is -20°C to +105°C.
9. Start time to data ready is the time to get valid data after POR (Power on Reset). The time to get subsequent valid data is then specified by the response time specification.
10. Device marking:
    Each part shall be identified with model number, pressure range, type ('A' for absolute or 'G' Gage), Lot Number, Serial Number, and Date Code
11. Shipping/Packaging requirements:
    Each unit will be packaged individually in a plastic vial with anti-static foam. The stainless steel diaphragm is protected by a static dissipative cap.
12. Direct mechanical contact with diaphragm is prohibited. Diaphragm surface must remain free of defects (scratches, punctures, dents, fingerprints, etc) for device to operate properly. Caution is advised when handling parts with exposed diaphragms. Use protective cap whenever devices are not in use.

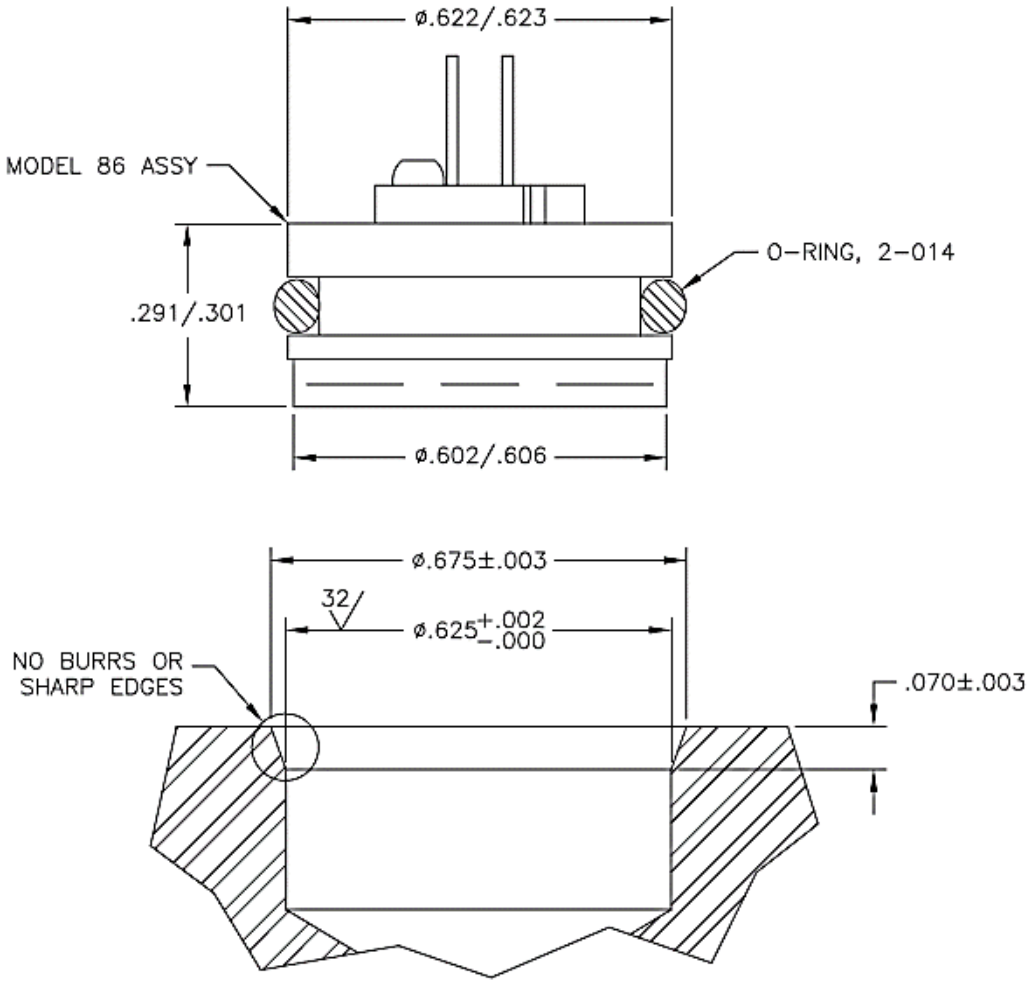
DIMENSIONS





PAD/CNDTR	FUNCTION
1	VDD
2	GND
3	SCL/SCLK
4	SDA/MISO
5	INT/SS

VIEW SHOWN w/o
CABLE AND CONNECTOR FOR CLARITY


ø.622/.623
MODEL 86 ASSY
O-RING, 2-014
.291/.301
ø.602/.606
ø.675±.003
32
ø.625 +.002 -.000
NO BURRS OR SHARP EDGES
.070±.003

BLOCK DIAGRAM

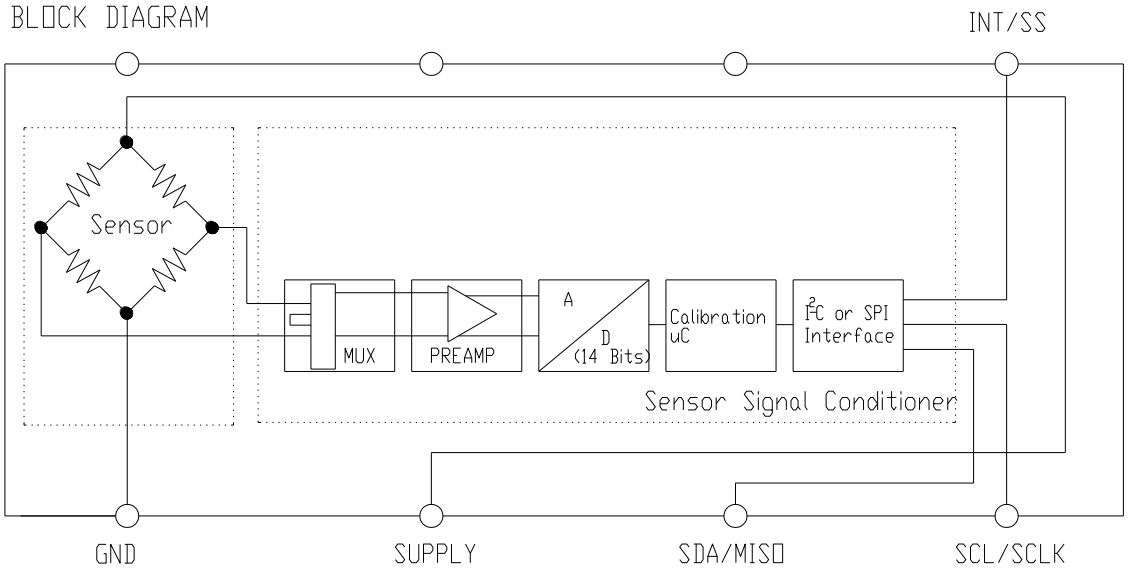


Fig 1

I2C INTERFACE PRRAMETERS

PARAMETERS	SYMBOL	MIN	TYP	MAX	UNITS
SCLK CLOCK FREQUENCY	FSCL	100		400	KHz
START CONDITION HOLD TIME RELATIVE TO SCL EDGE	tHDSTA	0.1			us
MINIMUM SCL CLOCK LOW WIDTH @1	tLOW	0.6			us
MINIMUM SCL CLOCK HIGH WIDTH @1	tHIGH	0.6			us
START CONDITION SETUP TIME RELATIVE TO SCL EDGE	tSUSTA	0.1			us
DATA HOLD TIME ON SDA RELATIVE TO SCL EDGE	tHDDAT	0			us
DATA SETUP TIME ON SDA RELATIVE TO SCL EDGE	tSUDAT	0.1			us
STOP CONDITION SETUP TIME ON SCL	tSUSTO	0.1			us
BUS FREE TIME BETWEEN STOP AND START CONDITION	tBUS	2			us

SPI INTERFACE PARAMETERS

PARAMETERS	SYMBOL	MIN	TYP	MAX	UNITS
SCLK CLOCK FREQUENCY	FSCL	50		800	KHz
SS DROP TO FIRST CLOCK EDGE	tHDSS	2.5			uS
MINIMUM SCL CLOCK LOW WIDTH @1	tLOW	0.6			uS
MINIMUM SCL CLOCK HIGH WIDTH @1	tHIGH	0.6			uS
CLOCK EDGE TO DATA TRANSITION	tCLKD	0		0.1	uS
RISE OF SS RELATIVE TO LAST CLOCK EDGE	tSUSS	0.1			uS
BUS FREE TIME BETWEEN RISE AND FALL OF SS	tBUS	2			uS

@1 COMBINED LOW AND HIGH WIDTHS MUST EQUAL OR EXCEED MINIMUM SCL PERIOD.

TEMPERATURE/PRESSURE ACCURACY

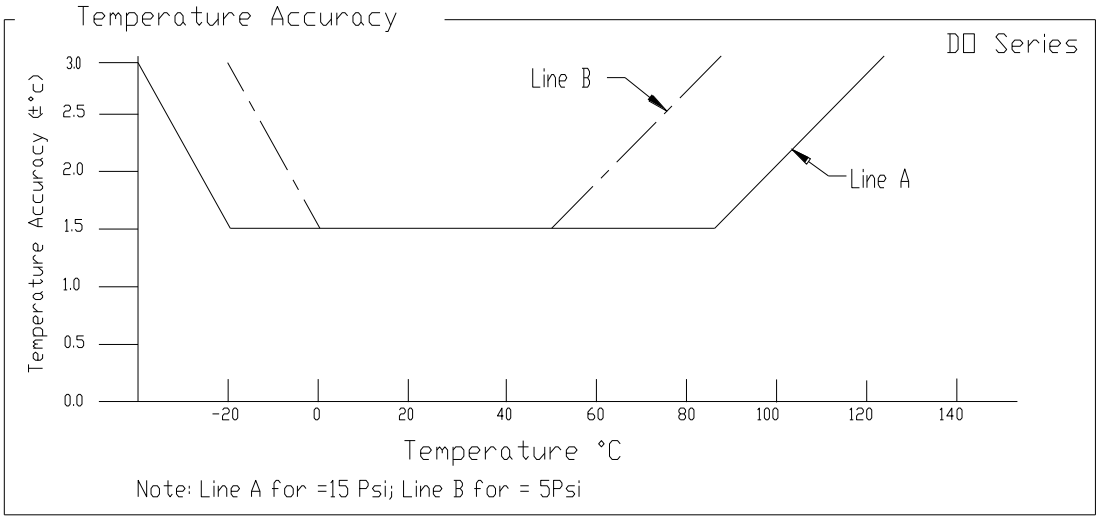


Fig 2

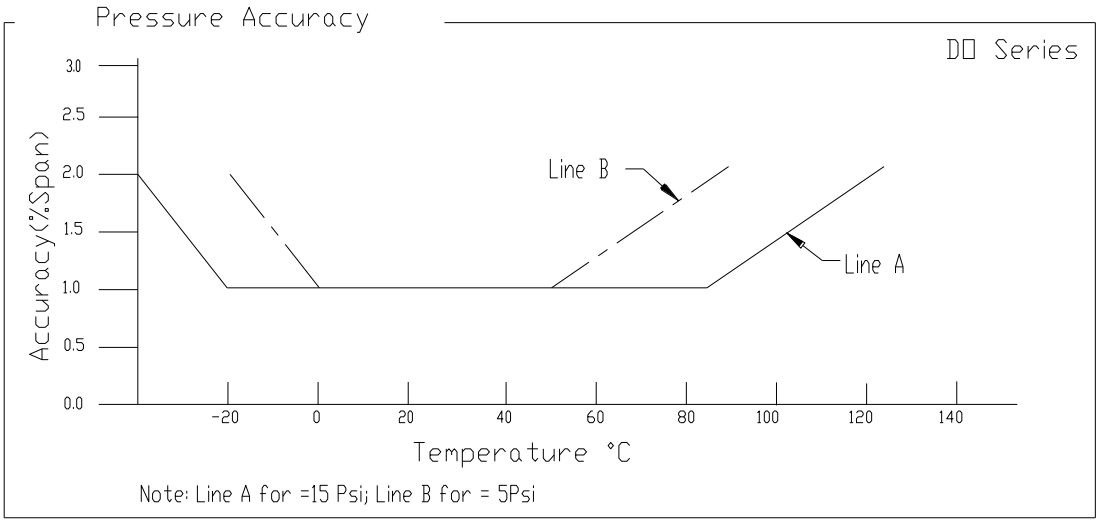


Fig 3

PRESSURE TRANSFER FUNCTIONS

Pressure Transfer Functions

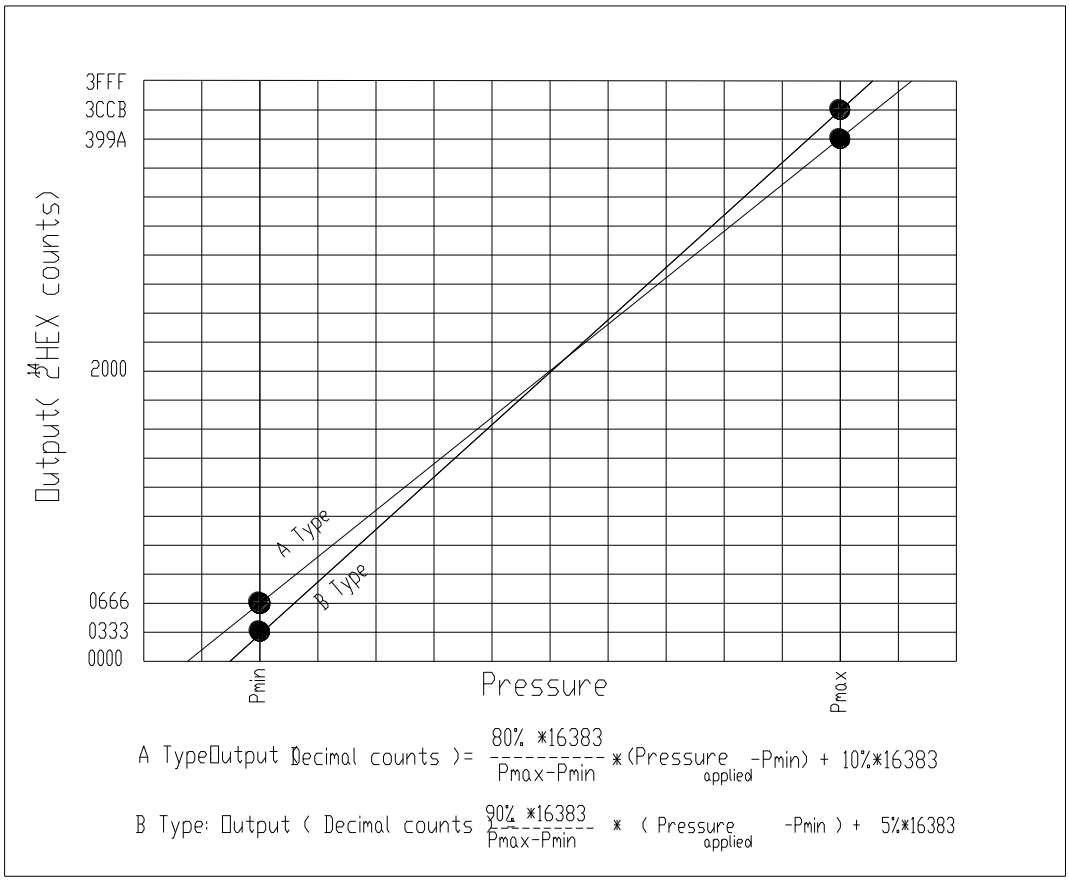


Fig 4

Sensor Output at Significant Percentages

% Output	Digital Counts (decimal)	Digital Counts (hex)
0	0	0 X 0000
5	819	0 X 0333
10	1638	0 X 0666
50	8192	0 X 2000
90	14746	0 X 399A
95	15563	0 X 3CCB
100	16383	0 X 3FFF

TEMPERATURE TRANSFER FUNCTIONS

Temperature Transfer Functions

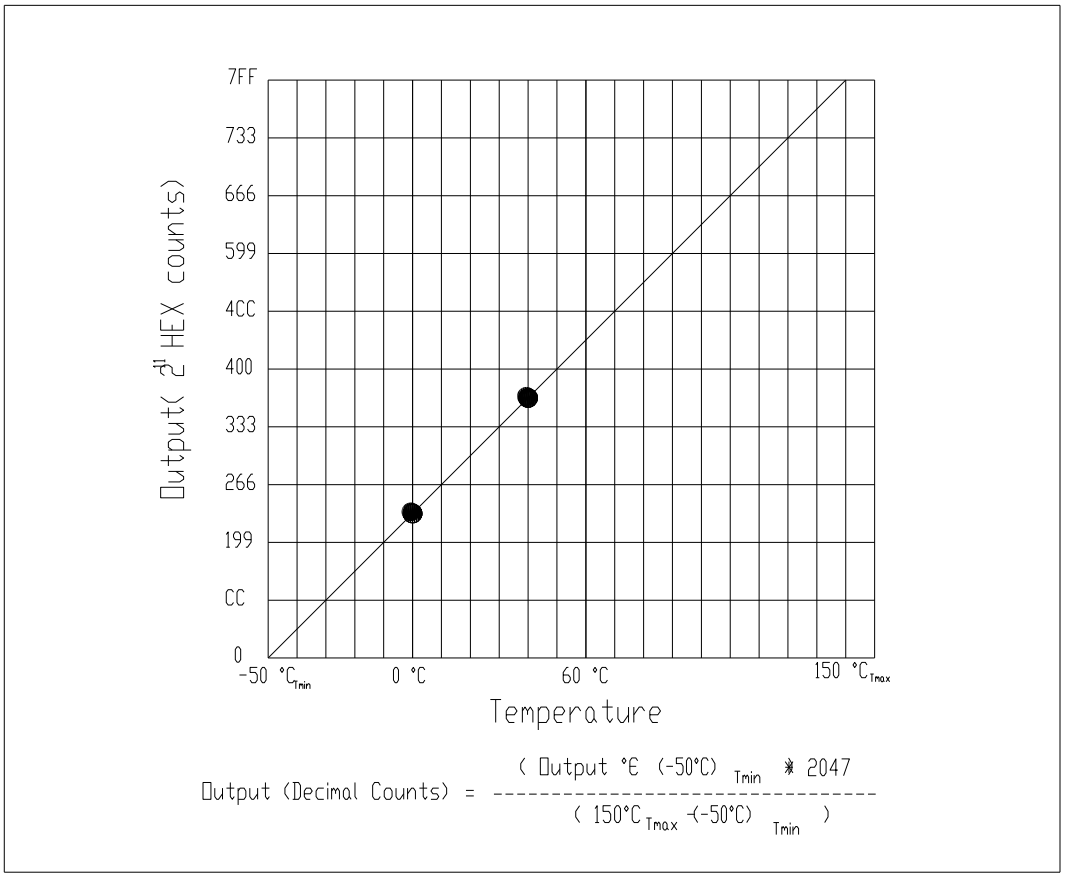


Fig 5

Temperature Output vs Counts

Output °C	Digital Counts (decimal)	Digital Counts (hex)
-50	0	0 X 0000
0	512	0 X 0200
10	614	0 X 0266
25	767	0 X 02FF
40	921	0 X 0399
85	1381	0 X 0565
150	2047	0 X 07FF

ORDERING INFORMATION

86BSD Model Name	100P	G	—	3	A	I	C	LT

Pressure Range
See Pressure Range table

Pressure Type
A = Absolute **G** = Gage

Supply Voltage
3 = 3.3V_{DC} **5** = 5.0V_{DC}

Output
A = 10 to 90% **B** = 5 to 95%

Interface
I = I2C (Addr. 0x28H)
J = I2C (Addr 0x36H) **S** = SPI **K** = I2C (Addr 0x46H)

Connection
P = Pads **R** = Ribbon Cable **C** = Cable with Connector

Power Mode/Vent Tube
[Blank] = Standard **T** = Standard with Tube
L = Low Power without Tube **LT** = Low power with Tube

Pressure Range		
psi	bar	
001P	.07B	Gage only
002P		
005P	.35B	
015P	001B	Absolute and Gage
030P	002B	
050P	005B	
100P	007B	
150P	010B	
200P	014B	
300P	020B	

Note: Intermediate Pressure Ranges Available

NORTH AMERICA
Measurement Specialties, Inc.,
a TE Connectivity Company
Tel: 800-522-6752
Email: customercare.frmt@te.com

EUROPE
Measurement Specialties (Europe), Ltd.,
a TE Connectivity Company
Tel: 800-440-5100
Email: customercare.lcsb@te.com

ASIA
Measurement Specialties (China), Ltd.,
a TE Connectivity Company
Tel: 0400-820-6015
Email: customercare.shzn@te.com

TE.com/sensorsolutions

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Board Mount Pressure Sensors ***category:***

Click to view products by TE Connectivity ***manufacturer:***

Other Similar products are found below :

6407-249V-17343P 6407-250V-09273P 6407-250V-09343P 80527-25.0H2-05 80541-B00000150-01 80541-B00000200-05 80554-00700100-05 80568-00300050-01 93.631.4253.0 93.731.4353.0 93.932.4553.0 136PC15A1 142PC95AW71 142PC05DW70 15PSI-G-4V 1805-01A-L0N-B 26PCBKT 26PCCFA6D26 26PCCFS2G 26PCCVA6D 93.632.7353.0 93.731.3653.0 93.931.4853.0 93.932.4853.0 SDP510-500PA 185PC30DH 20INCH-G-MV-MINI 26PCAFJ3G 26PCCEP5G24 26PCCFJ3G 26PCDFA3G 26PCJEU5G19 30INCH-D1-MV-MINI ASCX15AN-90 ASCX15AN/SZ76114 4426-015G 4525-DS5A030DP DCAL401DN DCAL401GN 4515-DS5A020DP XZ202798SSC XZ203676HSC 6407-249V-09273P 6407-249V-09343P 6407-249V-17273P 6407-250V-17273P 6407-250V-17343P 81717-00000050-05 81794-B00001200-01 82681-B00000100-01