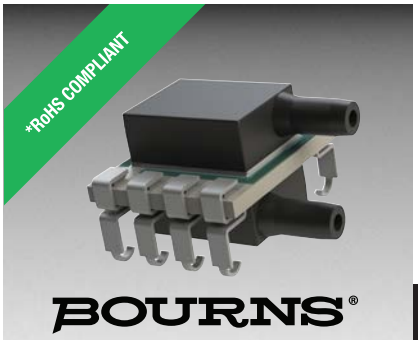


Features

- Compensated digital output
- Ultra-low pressure sensing
- Digital I²C output
- Gauge and differential types
- For use in clean, dry air and non-corrosive gas environments
- RoHS compliant*

Applications

Industrial:
- HVAC systems
- Process monitoring
- Packaging automation

**Medical Devices (low/medium risk):
- Diagnostic equipment
- Analysis equipment

BPS120 Series - 12 mm Digital Low Pressure Sensor

Electrical Characteristics

Supply Voltage (V_S) ..... 2.7 V minimum, 5 V typical, 5.5 V maximum
Supply Current @ 5 V ..... 1.2 mA minimum, 2 mA typical, 3.5 mA maximum

Additional Information

Click these links for more information:

PRODUCT | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

Performance Characteristics

Operating Temperature	-40 °C to +85 °C (-40 °F to +185 °F)
Storage Temperature	-55 °C to +100 °C (-67 °C to +212 °F)
Pressure Range	0.15 to 1.0 psi (10.3 to 68.9 mbar; 1.03 to 6.89 KPa; 4.2 to 27.7 in H2O)
Output	Digital I²C (1)
Effective ADC Resolution	13 bit
Accuracy @ 25 °C	±0.25 % FS
Total Error Band over 0 °C to 60 °C (+32 °F to +140 °F)	± 1.5 % FS
Long Term Stability	± 0.5 % FS
Startup Time	15 ms maximum
Digital Update Time	8.5 ms typical
Proof Pressure	5X full scale pressure
Burst Pressure	10 psi

(1) I²C address is set to (0x28). Alternative addresses are available. Consult the factory for custom options.

Product Characteristics

Media Compatibility	Non-corrosive dry gasses
Moisture Sensitivity Level	2
ESD Classification (HBM)	2 kV
Marking	Partial model number, media compatibility, pressure type, pressure rating, lot code
Standard Packaging	250 pcs./13-inch reel
Weight	1.307 grams (0.046 oz)

Transfer Function Formula

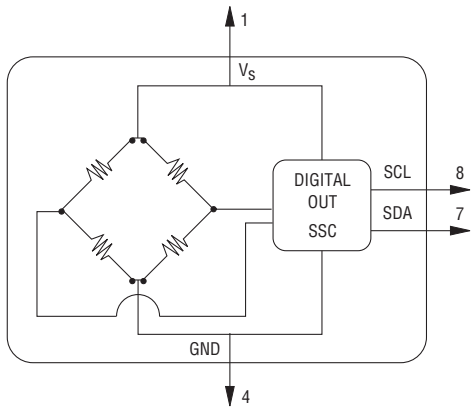
$$P_{psi} = (P_{max} - P_{min}) \cdot \left(\frac{P_{counts} - 0.1 \cdot Max}{0.8 \cdot Max} \right) + P_{min}$$

Where

P_{psi} = Measured Pressure in PSI
P_{counts} = Pressure Counts
P_{min} = Minimum Pressure
P_{max} = Maximum Pressure
Max = 16384 = 14 Bits

Consult factory for custom options such as supply voltage, temperature calibration range, output range accuracy specification, and update rate.

Basic Circuit Schematic



Note: Power supply decoupling included.

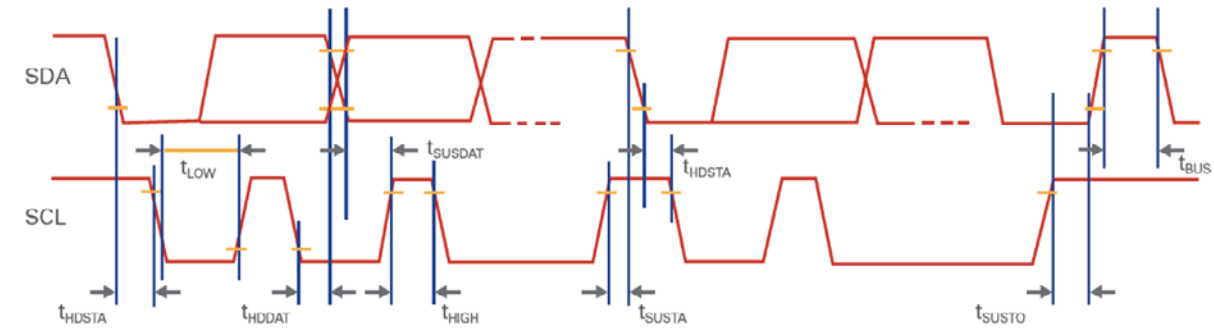
* RoHS3 Directive 2015/863 Amendments of Annex II on March 31, 2015
** Bourns® products have not been designed for and are not intended for use in "lifesaving," "life-critical" or "life-sustaining" applications nor any other applications where failure or malfunction of the Bourns® product may result in personal injury or death. See Legal Disclaimer Notice on the last page of this document, and at www.bourns.com/docs/legal/disclaimer.pdf.

I²C Parameters

SCL Clock Frequency f_{SCL}	100 to 400 kHz
Start Condition Hold Time Relative to SCL Edge t_{HDSTA}	0.1 µs
Minimum SCL Clock Low Width[1] t_{LOW}	0.6 µs
Minimum SCL Clock High Width[1] t_{HIGH}	0.6 µs
Start Condition Setup Time Relative to SCL Edge t_{SUSTA}	0.1 µs
Data Hold Time on SDA Relative to SCL Edge t_{HDDAT}	0.0 µs
Data Setup Time on SDA Relative to SCL Edge t_{SUDAT}	0.1 µs
Stop Condition Setup Time on SCL t_{SUSTO}	0.1 µs
Bus Free Time Between Stop Condition and Start Condition t_{BUS}	2 µs

[1] Combined low and high widths must equal or exceed minimum SCLK period.

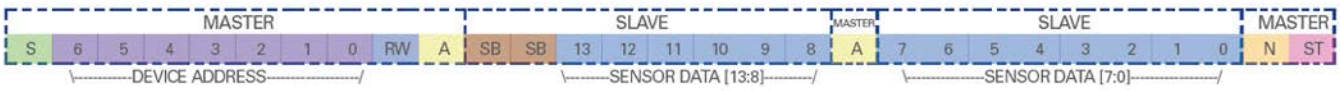
I²C Parameters



Used by permission, ZMDI

I²C Communication

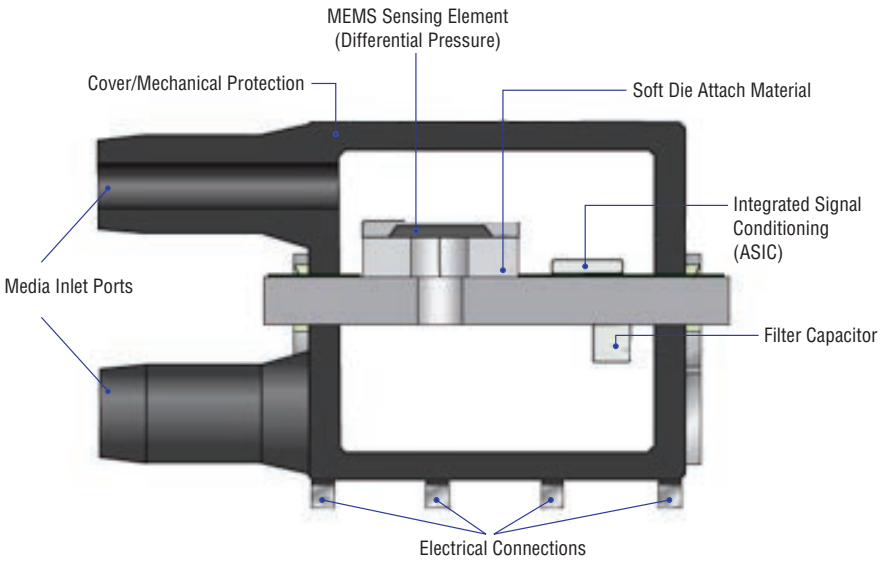
Communication to the Model BPS120 is read only. To read the pressure counts, the master performs a read request by asserting a start condition, sending the 7-bit address of the part (0x28), and sets the read/write bit. The master then waits for an acknowledgement. The acknowledgement is sent by the pressure sensor along with 2 bits of status and bits 13:8 of the pressure counts, the master acknowledges the first 8 bits, and the pressure sensor sends the remaining 8 bits of data. The master then does not acknowledge and sends a stop condition, signaling the end of the transaction.



S	Start Conditioning	#	Device Slave Address	#	Data Bit
RW	Read/Write Bit	A	Acknowledge Bit	N	No Acknowledge Bit
ST	Stop Condition	SB	Status Bits		

Status Bits	
0 0	Normal Operation, Good Packet
0 1	Device in Command Mode
1 0	Stale Data
1 1	Diagnostic Condition Exsists

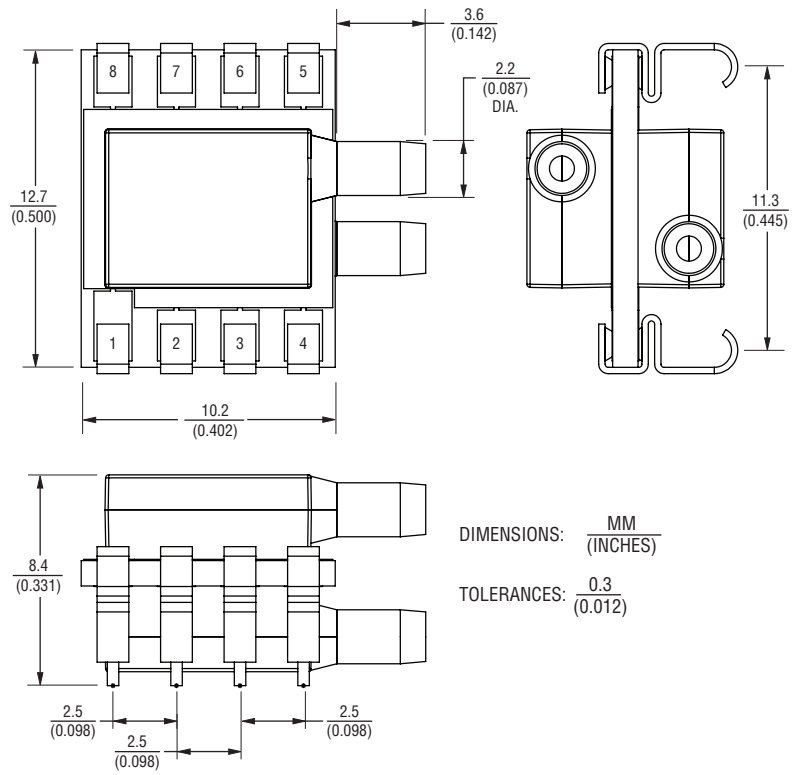
Cross Section



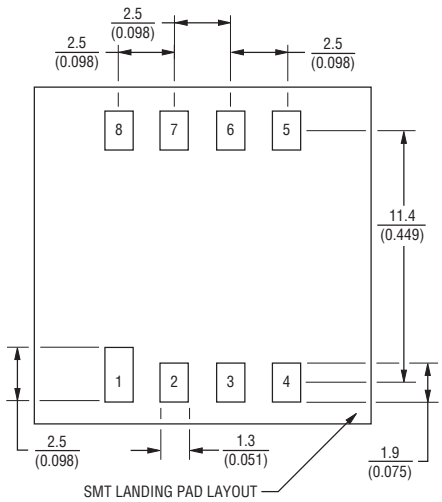
Terminal Assignment

DEVICE PINOUT	
P1	V_S
P2	N/C
P3	N/C
P4	VSS - Ground
P5	N/C
P6	N/C
P7	SDA - I²C Data
P8	SCL - I²C Clock

Product Dimensions



Recommended PCB Layout

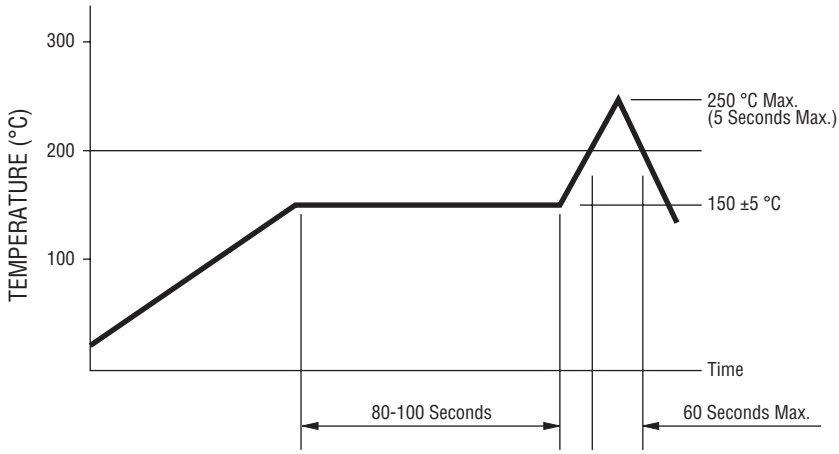


How To Order

BPS120 - A D 0P30 - 2 D G

Model Series
Digital
Media Compatibility
A = Air/Gas
Pressure Type
G = Gauge
D = Differential
Pressure (psi)
0P15 = 0.15
0P30 = 0.30
01P0 = 1.0
Terminal Pins
2 = Surface Mount Terminals
Port Style
D = Dual Port, Horizontal
Packaging Designator
G = 250 pcs. per 13-inch Reel

Solder Profile



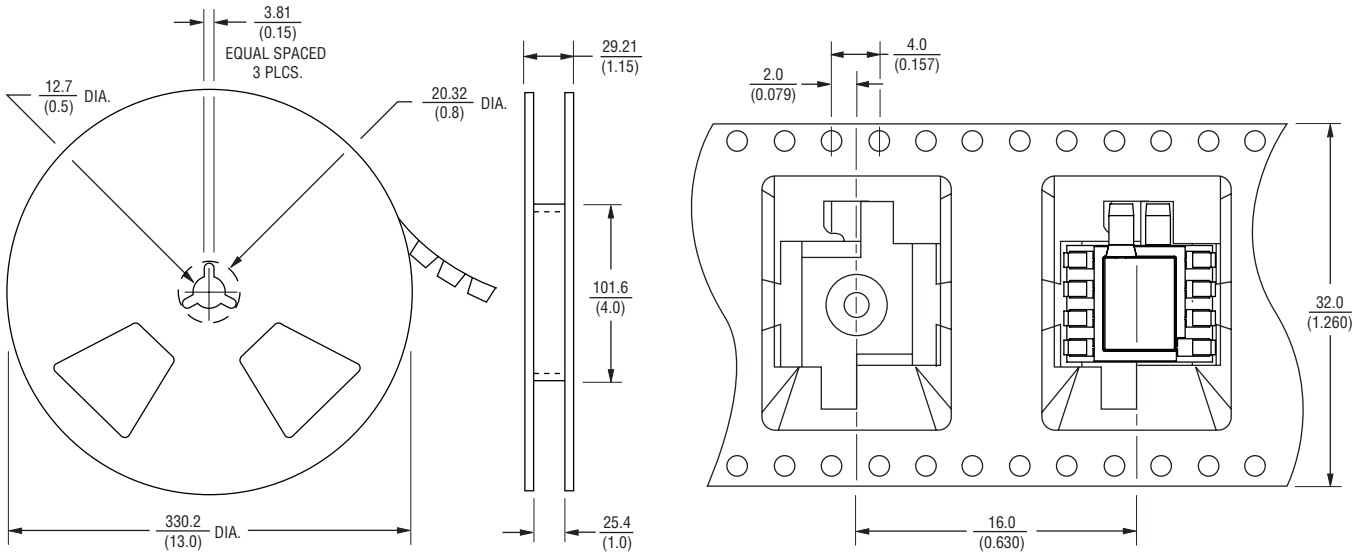
Processing Method: Reflow soldering with infrared heat or forced air convection (only once).

Notes:

1. No clean solder paste is recommended.
2. Aqueous wash is not recommended.
3. Use of water soluble soldering flux should be avoided due to possible corrosion.
4. Multiple passes through the soldering process is not recommended.
5. Other SMD processes and profiles should be verified by the customer.

Packaging Specification

250 pieces per 13-inch reel.
Meets specifications of EIA-481-1 or EIA-481-2.



DIMENSIONS: MM (INCHES) TOLERANCES: 0.25 (0.010)

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