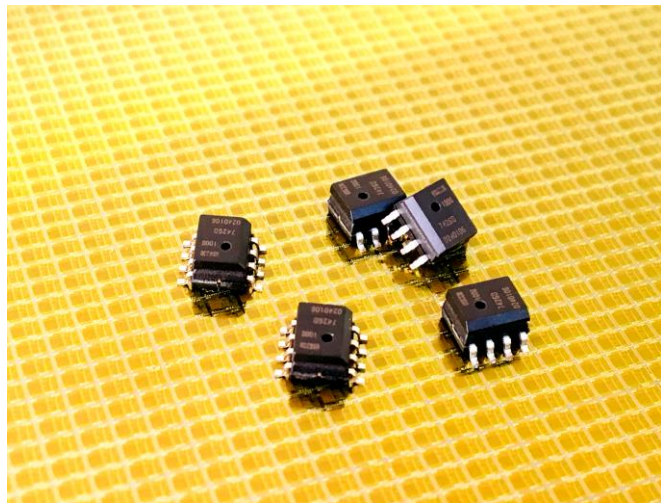


Solid State Pressure Sensor

SOP Series – Model 30D

FEATURES

- Digital Output
- Miniature SMD
- Absolute Pressure
- High Sensitivity
- Low Cost



APPLICATIONS

- Barometric
- Altimeter
- Process Control
- Pressure Gauges

DESCRIPTION

The Series SOP 30D is a smart pressure sensor with digital output via I²C or SPI chosen by user. Digital compensation of sensor offset, sensitivity, temperature drift and nonlinearity is accomplished in factory via an internal DSP running a correction algorithm with calibration coefficients stored in on-chip EEPROM.

A variety of output configuration, including resolution, sampling rate, output interface are available to provide simple and ready-to-use solution for a wide range of application. It can be operated in supply voltage of 1.68 to 3.6 V with sleep mode to save power consumption.

The Series CCD including Model 53 and 54, which are available for pressure range from 1 bar to 10 bar. Custom range and calibration are available. Please contact factory for detail.

Sold in North America by:
Servoflo Corporation
75 Allen Street Lexington, MA 02421
Tel: 781-862-9572
www.servoflo.com / info@servoflo.com


Sensormate Enterprise Co., Ltd.

Specification

Unless otherwise specified, all parameters are measured at 25 °C and excitation of 3 Vdc

Parameters	Min	Typ	Max	Unit
Supply ¹	1.68	3.0	3.6	V
Operating Current		1	1.5	mA
Pressure Range		100		psia
Resolution ²		16		Bit
Accuracy @25°C		0.3		%FS
Accuracy @0~50°C		1.0		%FS
ADC Conversion Rate ³			2.3	KHz
Rate of Measurement			60	Hz
Start-up Time - Communication ⁴			1	ms
Start-up Time - analog ⁵			2.5	ms
System Frequency	3.6	4	4.4	MHz
SPI clocking		1	20	MHz
I ² C Clocking			3.4	MHz
Temperature Resolution ⁸		0.7		mK/LSB
Temp - Compensating	0		50	°C
Temp - Operating	-20		+85	°C
Temp - Storage	-40		+125	°C
Over pressure			200	psia

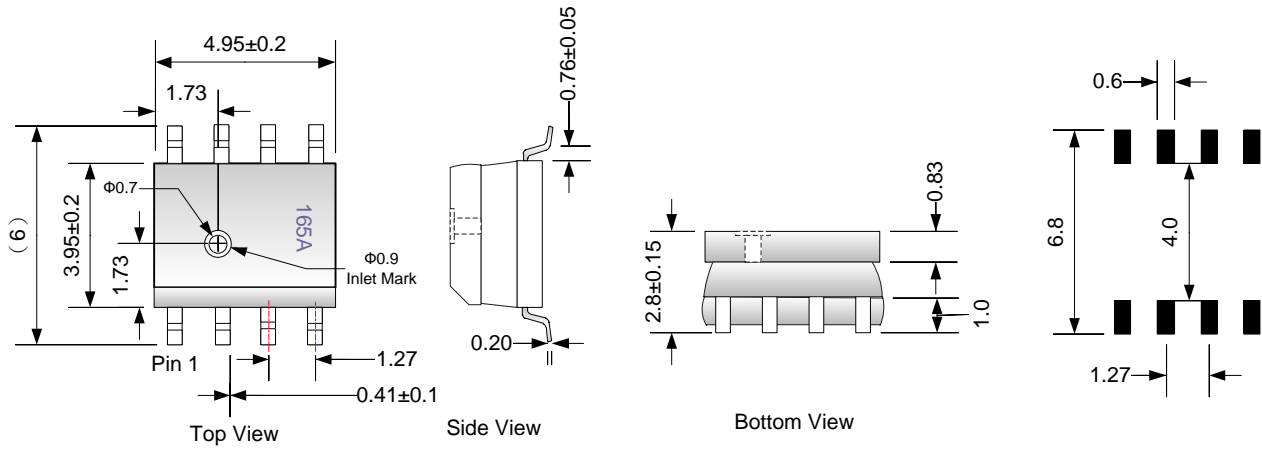
Notes:

1. Power supply rejection 65 dB typ.
2. Different resolution is applicable upon request.
3. Without auto-zero measurement inside of sensor
4. On power-up, the sensor communication interface is able to receive the first command after the time from when the VDD supply is within operating specifications.
5. The sensor can begin the first measurement after the time, from when the VDD supply is operational.
6. Instead of a power-on reset, a reset and new power-up sequence can be triggered by an IC-reset signal (high low) at the Reset pin.
7. -40 to 85°C
8. Wetted material contains Nickel, RTV, ceramic, gold and silicon
9. Minimum pull-up on SDA and SCL is 1KΩ
10. Factory setting for I2C slave address is 0x28.

Additional Products

- Pressure Transmitters
- Pressure Meters

Dimension



Pinout Assignment

Pin #	Name	I/O	Description
1	V _{DD}	IN	Positive Supply
2	Reset	IN	System Reset
3	N/C	N/C	No Connection
4	MISO	Out	Data output for SPI mode
5	SCL / SCLK	IN	Clock input for I ² C or SPI
6	SDA / SDI	IN / OUT	Data output for I ² C or Data input for SPI
7	SS	IN	Interface type select for I ² C or SPI
8	V _{SS}	IN	Negative supply

Notes:

The sensor can communicate with user's communication master or computer via an SPI or I2C interface.

The interface type is selectable with the first activity at the interface after power-up or reset:

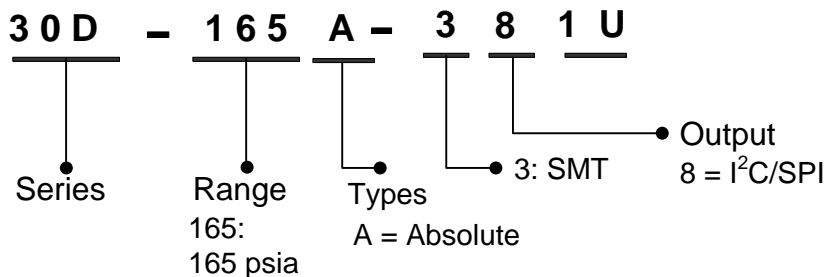
a.) If the first command is an I2C™ command and the SS pin has been inactive until receiving this command, the sensor enters I2C™ Mode.

b.) If the first interface action is the SS pin being set to active (LOW-active), then the sensor enters SPI Mode.

During the initiation sequence (after power-up or reset), any potential transition on SS is ignored. Switching to the SPI

Mode is only possible after the power-up sequence. If SS is not connected, the SS pin internal pull-up keeps the sensor in I2C™ Mode.

Ordering Information



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Programming Example

```
void main()
{
SYSTEM_INITIAL(); // IO(I2C Mode: SS Pin Output High) , LCM Display, Memory Initail
ms_DELAY(5); // Delay 5ms
while (1) // Read pressure loop in force mode
{
CMD_WRITE(0x98,0x0aa); // Force Mode & Full Measurement.
ms_DELAY(10); // ADC Conversion Time Delay 10ms
IIC_read_pressure(0x99); // Read Pressure data
}
}
//*****Sub-Program *****/
void CMD_WRITE(uint16_t sub_address,uint16_t wr_data)
{
//===== Slave Address + Bit 0 (write=0) =====
start();
if((sub_address >>7) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((sub_address >>6) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((sub_address >>5) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((sub_address >>4) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((sub_address >>3) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((sub_address >>2) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((sub_address >>1) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((sub_address >>0) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
SACK();
//=====write data=====
if((wr_data >>7) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((wr_data >>6) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((wr_data >>5) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((wr_data >>4) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((wr_data >>3) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((wr_data >>2) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((wr_data >>1) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
if((wr_data >>0) & 0x01) {SDA_DOUTSET;}
else {SDA_DOUTCLR;} ; clock();
SACK();
stop();
}
//=====//
```