MS5525ASO (Analog Small Outline)

- **PCB Mountable Pressure Transducers**
- **Amplified Ratiometric Analog Output**
- **Differential, Gage, Absolute & Compound**
- **Temperature Compensated**
- **2.75 to 5.5 Vdc Supply Voltage**
- **Pressure Range: 1 to 30PSI**

RoHS

Preliminary

DESCRIPTION

The MS5525ASO is a small SOIC packaged, PCB mountable pressure transducer from Measurement Specialties for high volume OEM users. The transducer is built using Measurement Specialties' proprietary UltraStable process and the latest CMOS sensor conditioning circuitry to create a low cost, high performance transducer designed to meet the strictest requirements from customers.

The MS5525ASO is fully calibrated and temperature compensated with a total error band (TEB) of less than 2.5% over the compensated range. The sensor operates from a single supply of 5.0Vdc and requires a single external component for proper operation.

The small transducer is available in top straight port, top barb port and manifold mount and can measure absolute, gage, differential, or compound pressure from 1 to 30psi. The 1/10" barbed pressure ports mate securely with 3/32" ID x 7/32" OD x 1/16'' wall thickness tubing.

FEATURES

- PSI Pressure Ranges
- PCB Mountable, Small Outline IC Package
- High Level Analog Output
- Barbed Pressure Ports

APPLICATIONS

- Factory Automation
- Altitude and Airspeed Measurements
- Medical Instruments
- Leak Detection

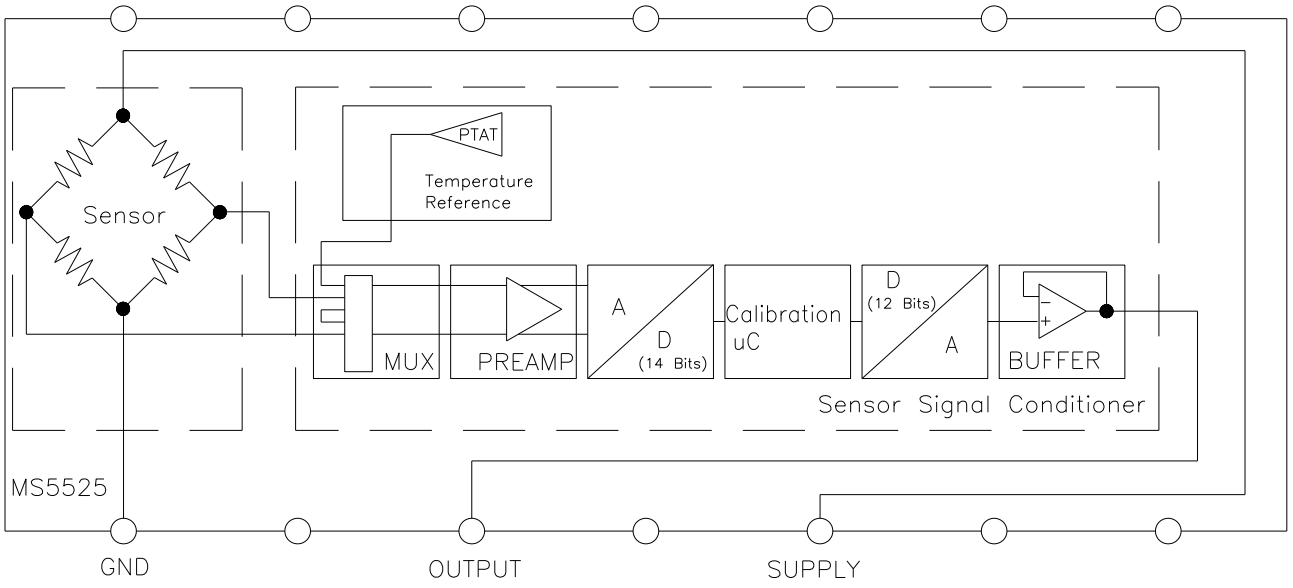
STANDARD RANGES (PSI)

Pressure	Absolute	Gage	Differential	Compound
1		DB, SB, ST, DH	DB, DH	
2		DB, SB, ST, DH	DB, DH	
5		DB, SB, ST, DH	DB, DH	
15	SB, ST	DB, SB, ST, DH	DB, DH	SB, ST
30	SB, ST	DB, SB, ST, DH		

See Package Configurations: DB= Dual Barb Port, SB= Single Barb Port, ST= Single Tube Port, DH= Dual Hole
Contact factory for higher pressure ranges

MS5525ASO (Analog Small Outline)

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Parameter	Conditions	Min	Max	Unit	Notes
Supply Voltage	T_A = 25 °C	2.7	5.5	V	
Output Current	T_A = 25°C		3	mA	
Load Resistance (R_L)	T_A = 25°C	10		kΩ	
Storage Temperature		-40	+125	°C	
Humidity	T_A = 25°C		95	%RH	Non Condensing
Overpressure	T_A = 25 °C, both Ports		60	psi	
Burst Pressure	T_A = 25 °C, Port 1			psi	See Table 1
ESD	HBM	-4	+4	kV	EN 61000-4-2
Solder Temperature	250°C, 5 sec max.				

TABLE 1- BURST PRESSURE BY RANGE AND PACKAGE STYLE

Range	DS	TP, SS, MM	Unit
001	20	20	psi
002	20	20	psi
005	15	20	psi
015	60	60	psi
030	60	60	psi

MS5525ASO (Analog Small Outline)

ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions
Mechanical Shock	Mil Spec 202F, Method 213B, Condition C, 3 Drops
Mechanical Vibration	Mil Spec 202F, Method 214A, Condition 1E, 1Hr Each Axis
Thermal Shock	100 Cycles over Storage Temperature, 30 minute dwell
Life	1 Million FS Cycles
MTTF	>10Yrs, 70ºC, 10 Million Pressure Cycles, 120 %FS Pressure

PERFORMANCE SPECIFICATIONS

Supply Voltage[1]: 5.0V

Reference Temperature: 25°C (unless otherwise specified)

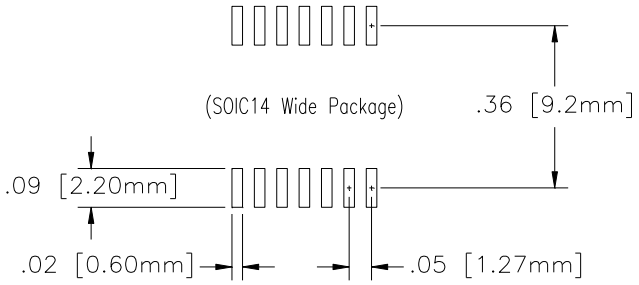
PARAMETERS	MIN	TYP	MAX	UNITS	NOTES
Accuracy	-0.5		0.5	%Span	1, 2
Total Error Band (TEB)	-2.5		2.5	%Span	2, 5
Supply Current		3		mA	6
Compensated Temperature	-10		+85	ºC	3
Operating Temperature	-25		+105	ºC	
Update Time		1		mS	6
Weight		3		grams	
Media	Non-Corrosive Dry Gases Compatible with Ceramic, Silicon, Borosilicate Glass, PPS, RTV, Gold, Aluminum and Epoxy. See “Wetted Material by Port Designation” chart below.				

Notes

1. Proper operation requires an external capacitor placed as shown in Connection Diagram. Output is ratiometric to supply voltage variations of less than 10%. The maximum deviation from a best fit straight line (BFSL) fitted to the output measured over the pressure range at 25°C. Includes all errors due to pressure non linearity, hysteresis, and non repeatability.
2. Total error band includes all accuracy errors, thermal errors over the compensated temperature range, and span and offset calibration tolerances. For ideal sensor output with respect to input pressure, reference Pressure Transfer Function charts below. TEB values are valid only at the calibrated supply voltage.
3. For errors beyond the compensated temperature range, see Extended Temperature Multiplier chart below.
4. Long term stability over a one year period with constant voltage and temperature
5. Device Marking : Each device is marked complete with model number ,lot number and serial number (LLLL SSSS), and date code(YYWW)
6. This product can be configured for custom OEM requirements, contact factory for higher accuracy range or for lower power consumption.

MS5525ASO (Analog Small Outline)

SUGGESTED PCB LAND PATTERN



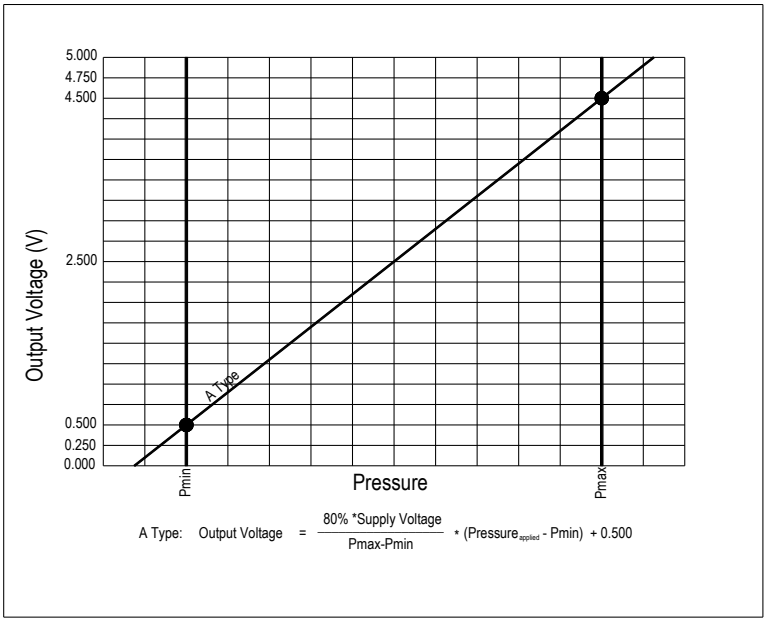
Notes

1. Place 100nF capacitor between Supply and GND to within 2 cm of sensor.

PRESSURE AND TEMPERATURE TRANSFER FUNCTION

Gage, Differential and Compound Pressure Types

Pressure Transfer Functions, Supply=5V

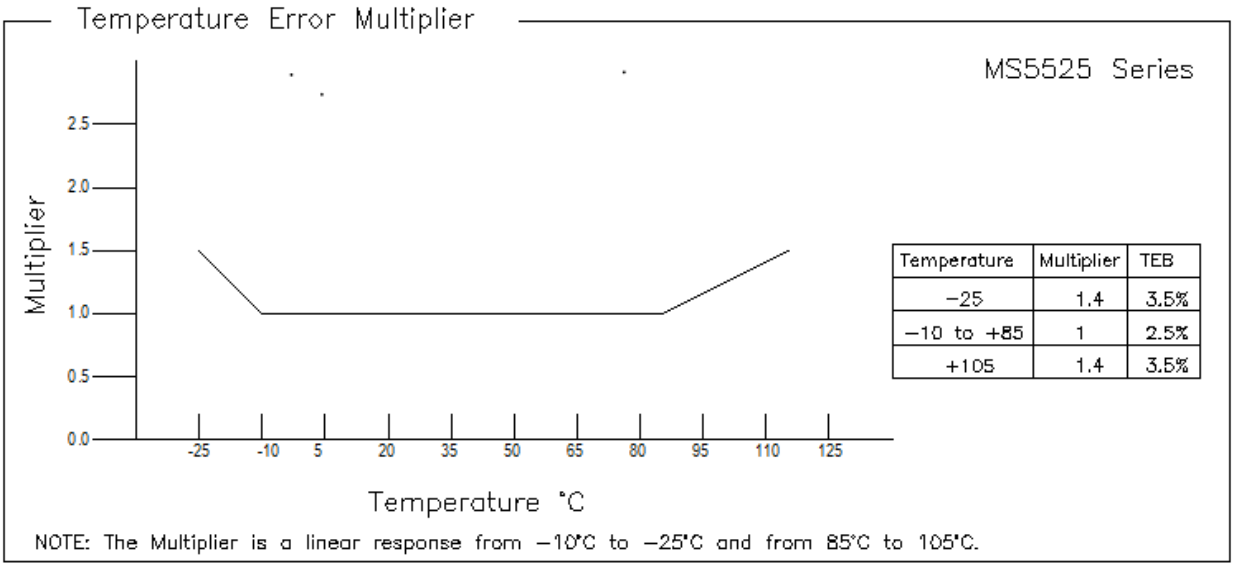


Sensor Output at Significant Percentages (Supply=5.000V)

% Output	Output Type A (PSI)	Voltage (V)
0	Pmin−(Pmax−Pmin) * 10/80	0.000
5		0.250
10	Pmin	0.500
50		2.500
90	Pmax	4.500
95		4.750
100	Pmax+(Pmax−Pmin) * 10/80	5.000

MS5525ASO (Analog Small Outline)

EXTENDED TEMPERATURE MULTIPLIER CHART

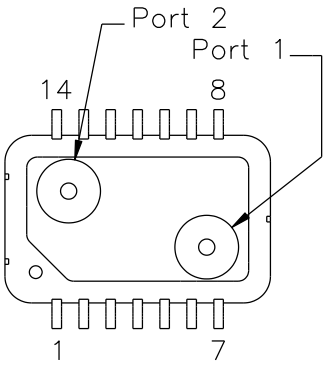


Temperature	Multiplier	TEB
−25	1.4	3.5%
−10 to +85	1	2.5%
+105	1.4	3.5%

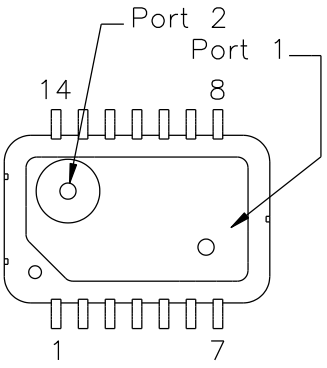
NOTE: The Multiplier is a linear response from −10°C to −25°C and from 85°C to 105°C.

PACKAGE, PINOUT & PRESSURE TYPE CONFIGURATION

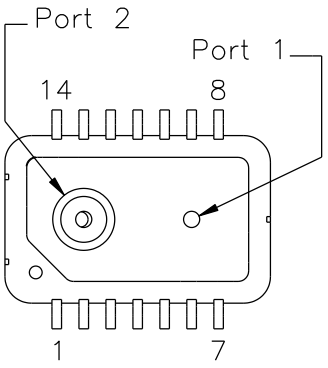
Model MS5525ASO−DBxxxyS



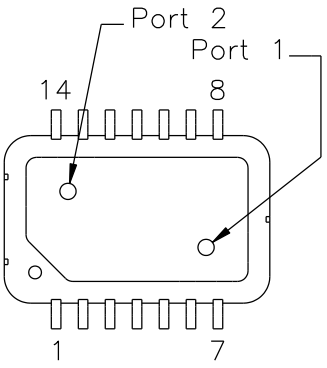
Model MS5525ASO−SBxxxyS



Model MS5525ASO−STxxxyS



Model MS5525ASO−MMxxxyS



MS5525ASO (Analog Small Outline)

Pin Name	Pin	Function
GND	1	Ground
SOUT-	2	mV Signal Output Negative
N/A	3	No Connection
N/A	4	No Connection
SOUT-	5	mV Signal Output Negative
GND	6	Ground
N/A	7	No Connection
VOUT	8	Analog Output
VDD	9	Positive Supply Voltage
N/A	10	No Connection
SOUT+	11	mV Signal Output Positive
N/A	12	No Connection
VDD	13	Positive Supply Voltage
SOUT+	14	mV Signal Output Positive

Notes:
Function pins that share the same name (SOUT+, SOUT-, VDD, GND) must be connected together on PCB for proper operation.

Pressure Type	Pmin	Pmax	Description
Absolute	0psiA	+Prange	Output is proportional to the difference between 0psiA (Pmin) and pressure applied to Port 2.
Differential/ Bidirectional	-Prange	+Prange	Output is proportional to the difference between Port 1 and Port 2. Output swings positive when Port 2> Port 1. Output is 50% of supply voltage when Port 1=Port 2.
Gauge	0psiG	+Prange	Output is proportional to the difference between 0psiG (Pmin) and Port 1. Output swings positive when Port 2> Port 1.
Compound	-15psiG	+Prange	Output is proportional to the difference between -15psiG pressure (Pmin) and pressure applied to Port 2.

Prange is equal to the maximum full scale pressure specified in the ordering information.

WETTED MATERIAL BY PORT DESIGNATION

Style	Port	LCP	EPOXY RESIN	CuFe	SILICON	BOROSILICATE GLASS	RTV	GOLD
DB, DH	Port 1	X	X	X	X	X	X	X
	Port 2	X	X		X	X	X	
ST, SB	Port 1	X	X		X	X	X	

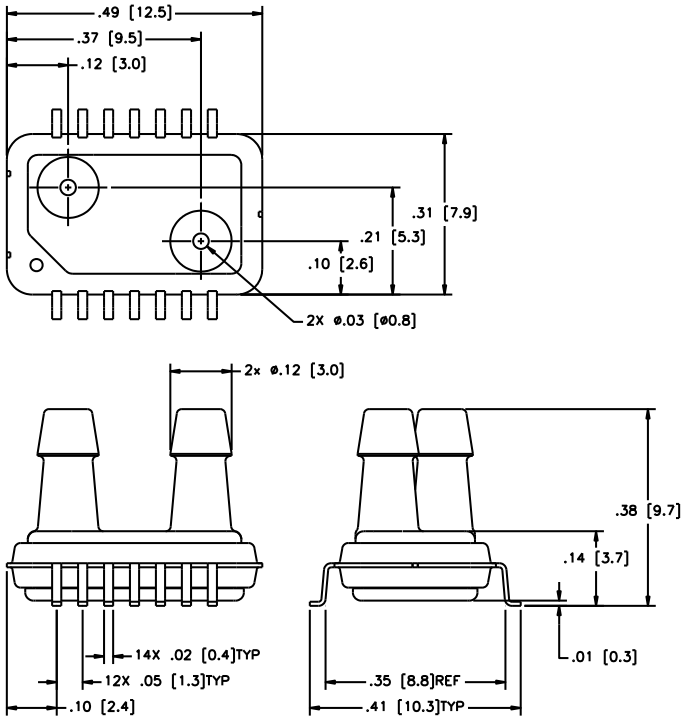
"X" Indicates Wetted Material

MS5525ASO (Analog Small Outline)

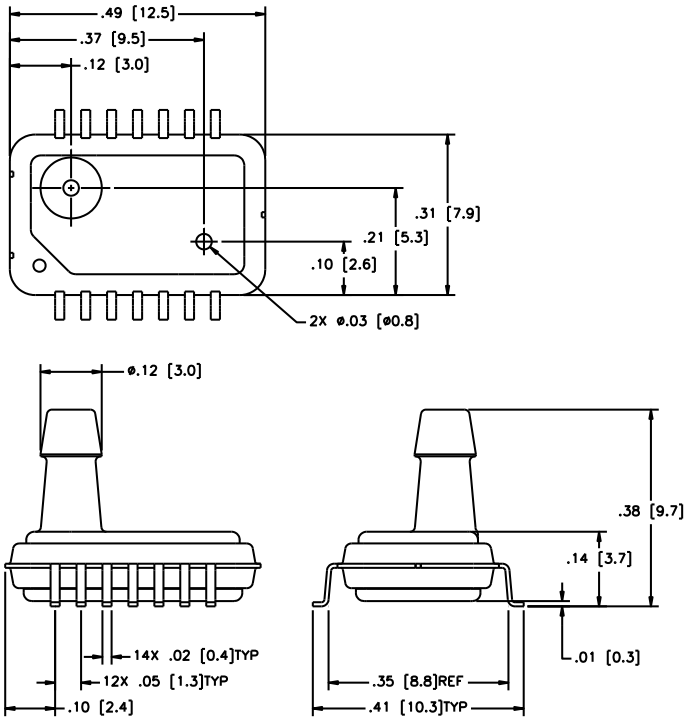
DIMENSIONS

DIMENSIONS ARE IN INCHES [mm]

Model MS5525ASO–DBxxxyS



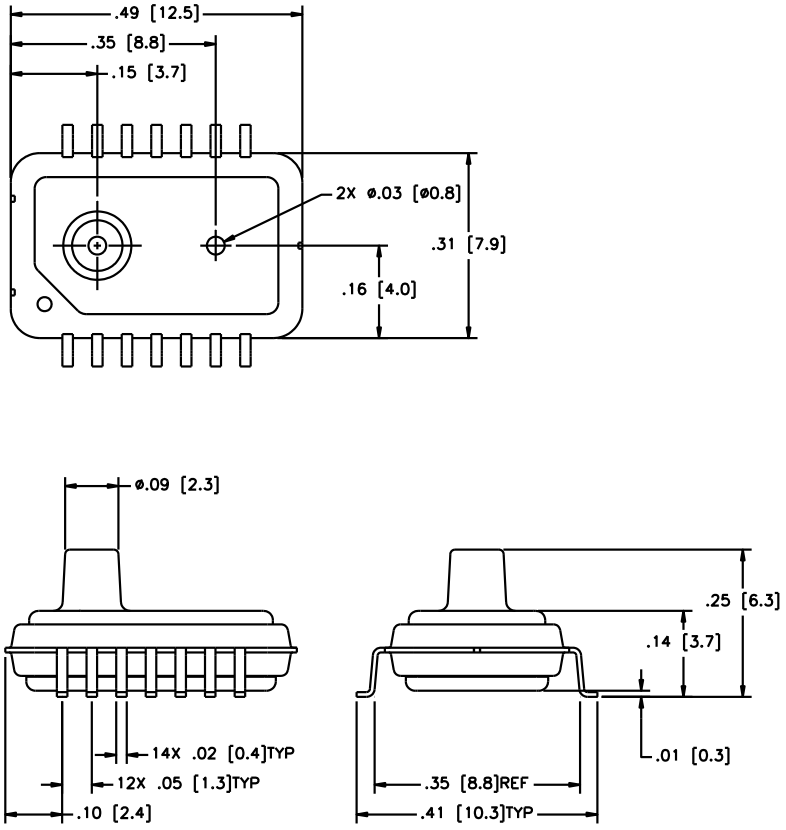
Model MS5525ASO–SBxxxyS



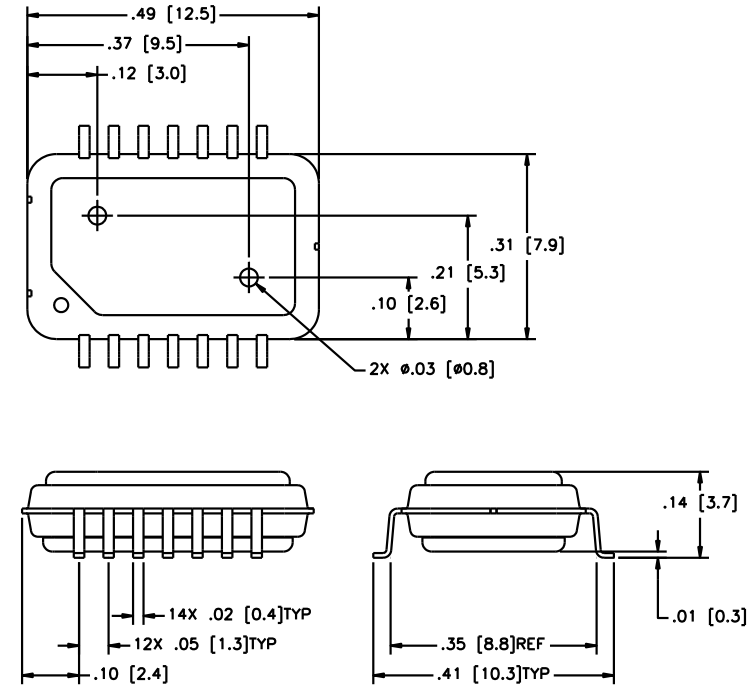
MS5525ASO (Analog Small Outline)

DIMENSIONS ARE IN INCHES [mm]

Model MS5525ASO−STxxxyS



Model MS5525ASO−MMxxxyS



MS5525ASO (Analog Small Outline)

ORDERING INFORMATION

5525ASO	-	DB	5	A	002	G	P
Model	**-**	**Package Style**	**Supply Voltage**	**Output Type**	**Pressure Range (psi)**	**Pressure Type**	**Pin Style**
MS5525ASO	-	**DB** = Dual Barb **SB** = Single Barb **ST** = Single Tube **DH** = Dual Hole	**5** = 5.0 Vdc	**A** = 10% to 90%	***001** ***002** ***005** **015** ****030**	**A** = Absolute **D** = Differential **G** = Gage **C** = Compound	**S** = Gull Wing

Notes: * = Differential and Gage only
** = Absolute and Gage only