MS4515



- **PCB Mounted Pressure Transducers**
- **Pressure Ranges from 2 to 30inH_2O**
- **Amplified Ratiometric Analog Output**
- **Differential & Gage**
- **Temperature Compensated**
- **3.3V or 5.0 Vdc Supply Voltage**

RoHS

DESCRIPTION

The MS4515 is a small, ceramic based, PCB mounted pressure transducer from Measurement Specialties. 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 OEM customers.

The MS4515 is fully calibrated and temperature compensated with a total error band (TEB) of less than 1.0% over the compensated range. The sensor operates from single supply of either 3.3 or 5.0Vdc and requires a single external component for proper operation.

The rugged ceramic transducer is available in side port, top port, and manifold mount versions and can measure gauge or differential pressure from 2 to 30 inH20. The 1/8" barbed pressure ports mate securely with 3/32" ID tubing.

FEATURES

- inH_2O Pressure Ranges
- PCB Mountable
- High Level Analog Output
- Barbed Pressure Ports

APPLICATIONS

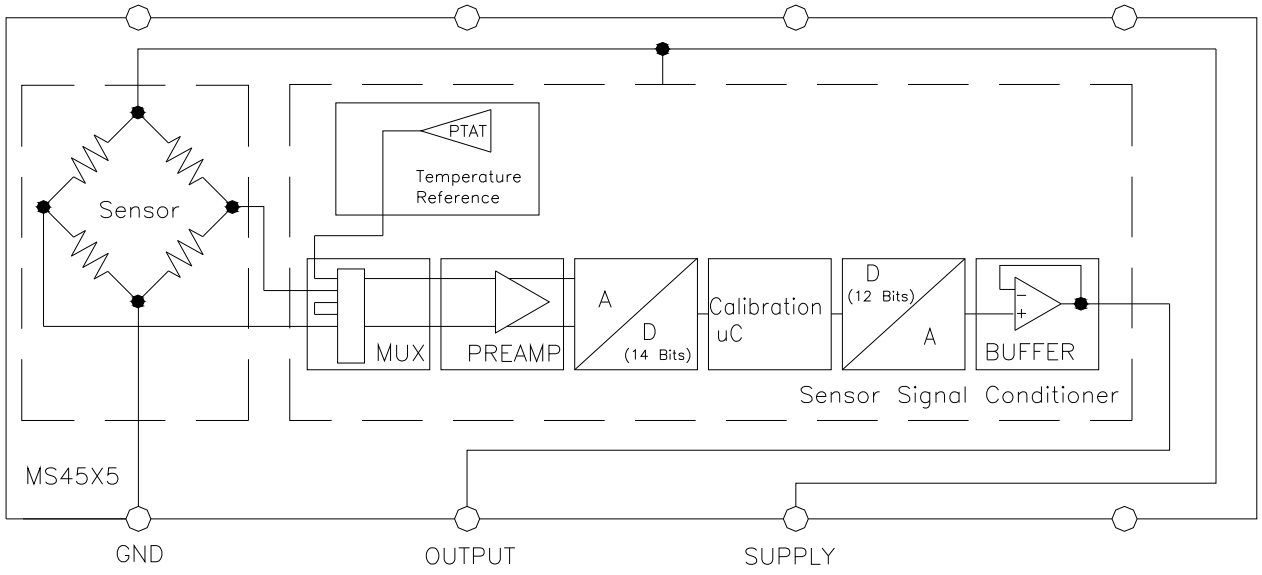
- Blocked Filter Detection
- Altitude and Airspeed Measurements
- Medical Instruments
- Fire Suppression System
- Panel Meter

STANDARD RANGES (IN H_2O)

Range	Gauge	Differential	Option Availability
2		DS, SS, TP, MM	
4	DS, SS, TP, MM	DS, SS, TP, MM	
5	DS, SS, TP, MM	DS, SS, TP, MM	
10	DS, SS, TP, MM	DS, SS, TP, MM	-F
20	DS, SS, TP, MM	DS, SS, TP, MM	-F
30	DS, SS, TP, MM	DS, SS, TP, MM	-F

See Package Configurations: DS= Dual Side Port, SS= Single Side Port, TP= Top Port, MM= Manifold Mount
Pin Style "L" is only available SS and MM port types.

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	Not to Exceed 300		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
002	10	10	psi
004	10	10	psi
005	10	10	psi
010	10	10	psi
020	20	20	psi
030	20	20	psi

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, 70 ºC, 10 Million Pressure Cycles, 120%FS Pressure

PERFORMANCE SPECIFICATIONS

Supply Voltage[1]: 5.0V or 3.3 Vdc

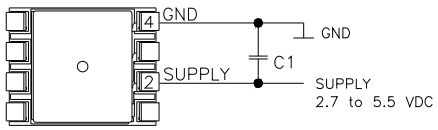
Ambient Temperature: 25°C (unless otherwise specified)

PARAMETERS	MIN	TYP	MAX	UNITS	NOTES
Accuracy	-0.25		0.25	%Span	2
Total Error Band (TEB)	-1.0		1.0	%Span	3,5
Total Error Band (TEB) 4inH_2O and Below	-2.0		2.0	%Span	3,5
Supply Current		3		mA	5
Compensated Temperature	0		+60	ºC	4
Operating Temperature	-10		+85	ºC	
Response Time		1		mS	5
Weight		3		grams	
Media	Non-Corrosive Dry Gases Compatible with Ceramic, Silicon, Pyrex, 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%.
2. Accuracy: 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.
3. 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.
4. For errors beyond the compensated temperature range, see Extended Temperature Multiplier chart below.
5. This product can be configured for custom OEM requirements, contact factory for lower power consumption or higher accuracy.

CONNECTION DIAGRAM

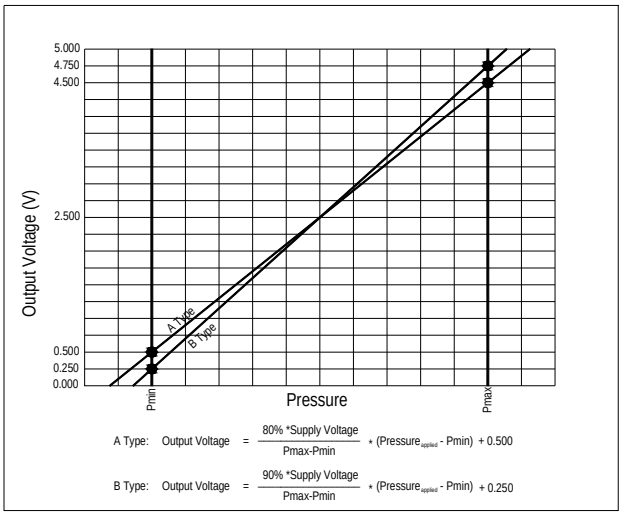


Notes

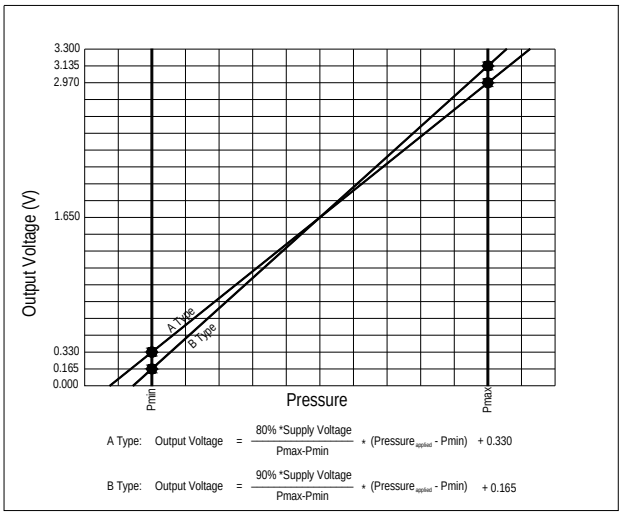
1. Place 100nF capacitor between Supply and GND to within 2 cm of sensor.

PRESSURE AND TEMPERATURE TRANSFER FUNCTION

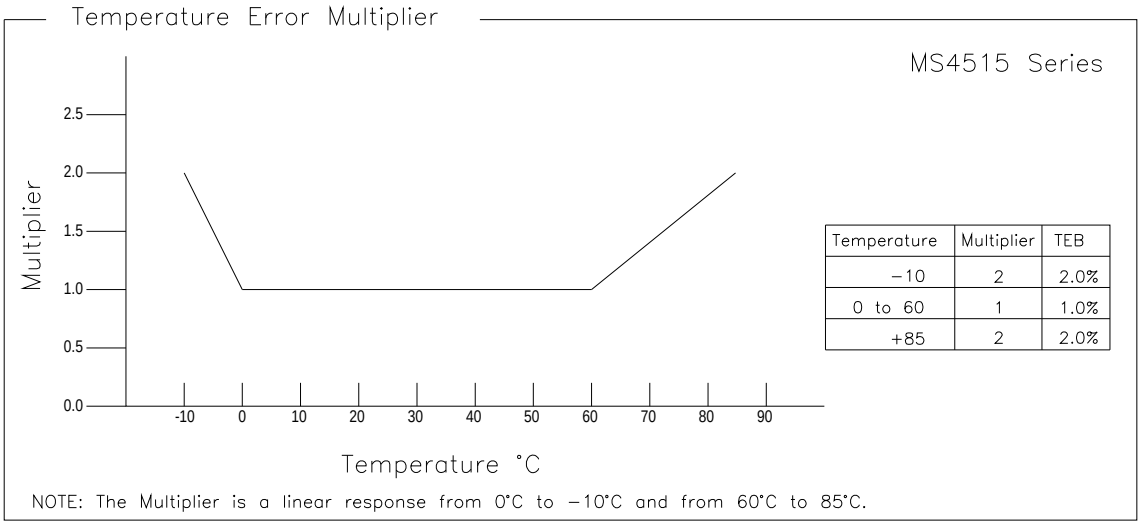
Pressure Transfer Functions, Supply=5V



Pressure Transfer Functions, Supply=3.3V



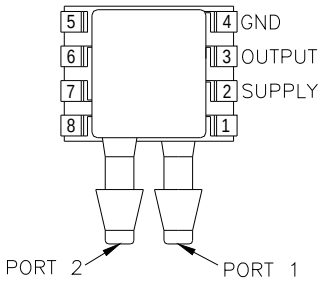
EXTENDED TEMPERATURE MULTIPLIER CHART



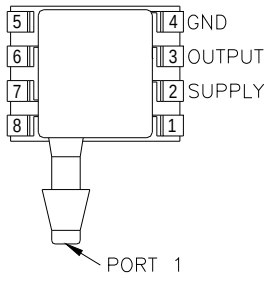
Temperature	Multiplier	TEB
−10	2	2.0%
0 to 60	1	1.0%
+85	2	2.0%

NOTE: The Multiplier is a linear response from 0°C to −10°C and from 60°C to 85°C.

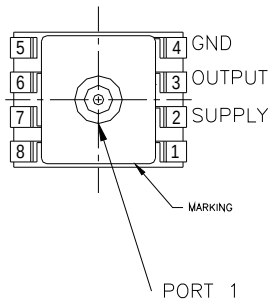
PACKAGE, PINOUT & PRESSURE TYPE CONFIGURATION



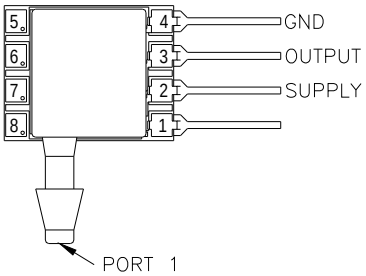
MS4515−DSvoxxxyP



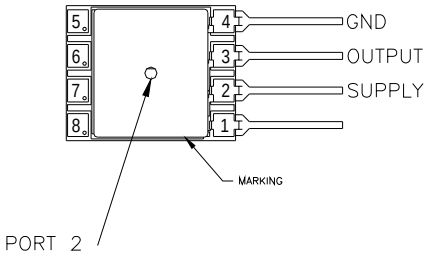
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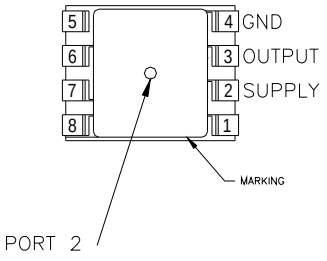
MS4515−TPvoxxxyP



MS4515−SSvoxxxyL



MS4515−MMvoxxxyL



MS4515−MMvoxxxyP

Pin Name	Pin	Function
SUPPLY	2	Positive Supply Voltage
OUTPUT	3	Analog Output
GND	4	Ground
	1, 5-8	No Connection

Pressure Type	Pmin	Pmax	Description
Differential/ Bidirectional	-Prange	+Prange	Output is proportional to the difference between Port 1 and Port 2. Output swings positive when Port 1> Port 2. 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 1> Port 2.

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

WETTED MATERIAL BY PORT DESIGNATION

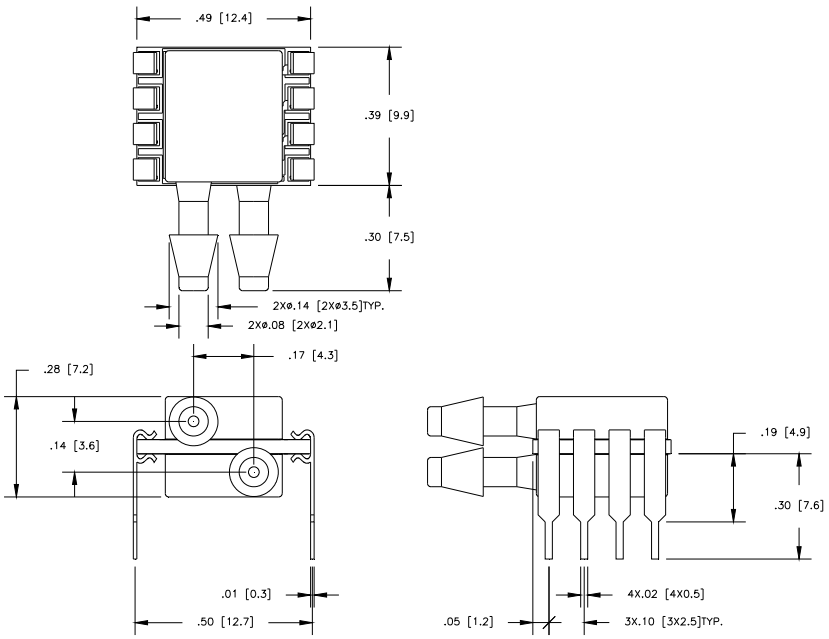
		Material							
Style	Port	PPS	Ceramic	Silicon	Pyrex	RTV	Gold	Aluminum	Epoxy
DS, MM	Port 1	X	X	X	X	X			X
	Port 2	X	X	X	X	X	X	X	X
SS, TP	Port 1	X	X	X	X	X	X	X	X

"X" Indicates Wetted Material

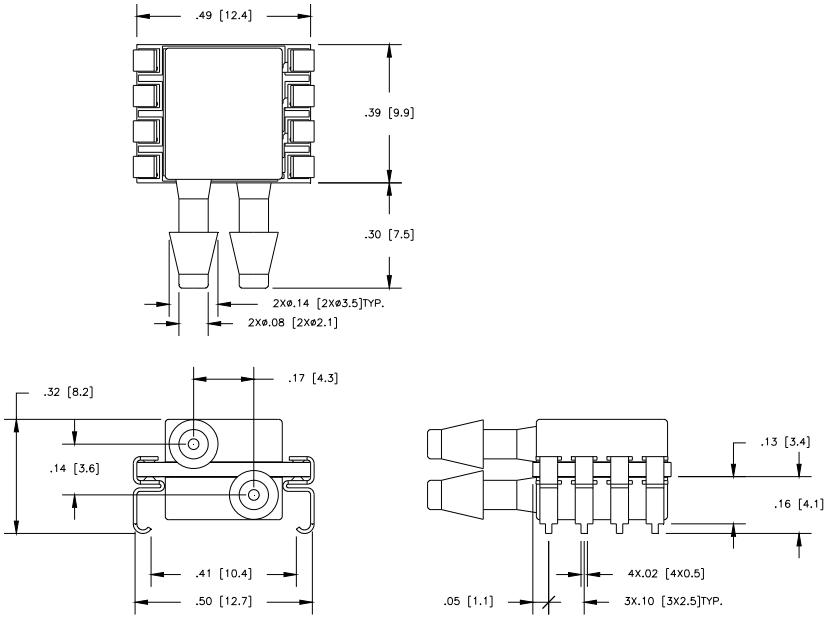
DIMENSIONS

DIMENSIONS ARE IN INCHES [mm]

Model MS4515-DSvoxxxyP

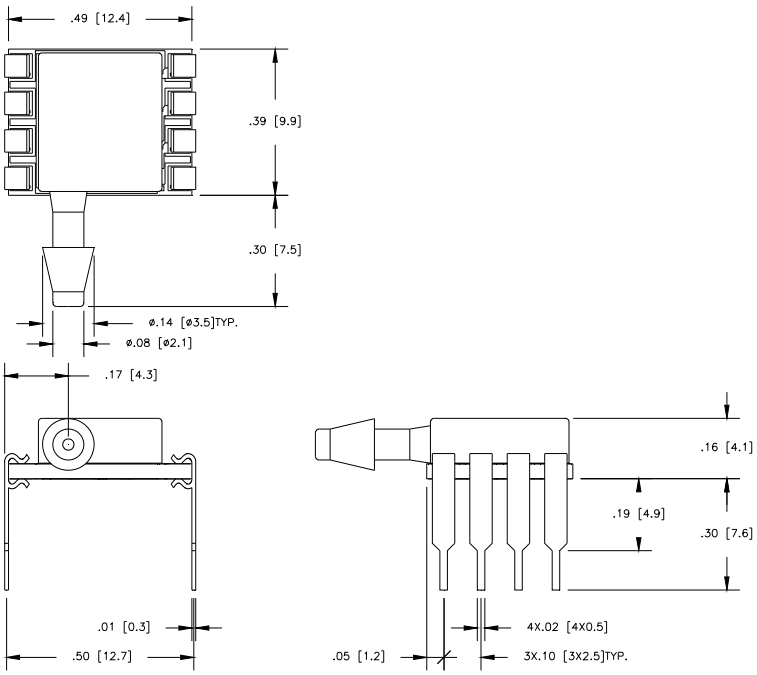


Model MS4515-DSvoxxxyS

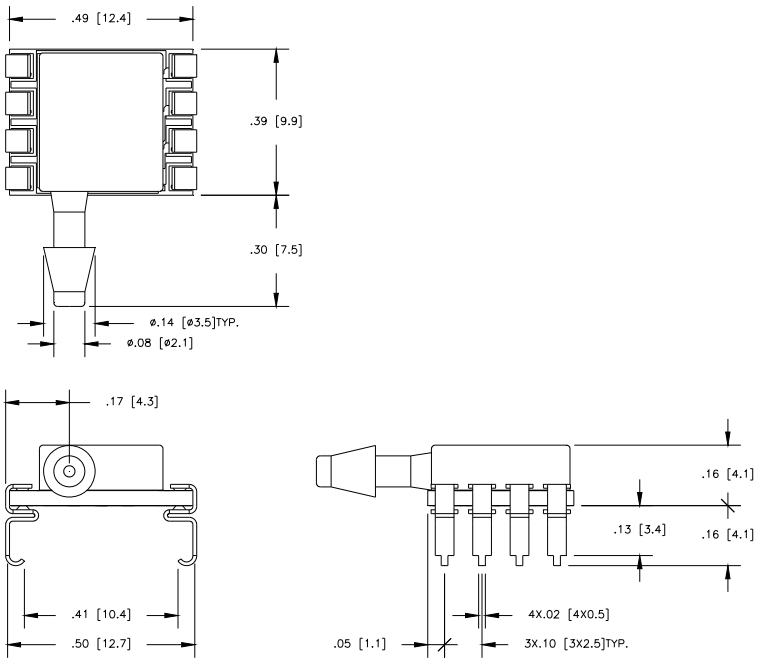


DIMENSIONS ARE IN INCHES [mm]

Model MS4515-SSvoxxxyP

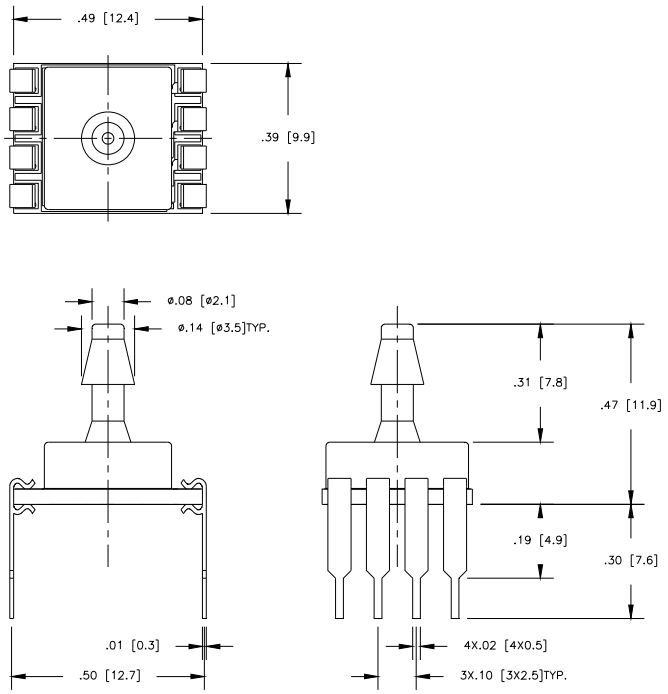


Model MS4515-SSvoxxxyS

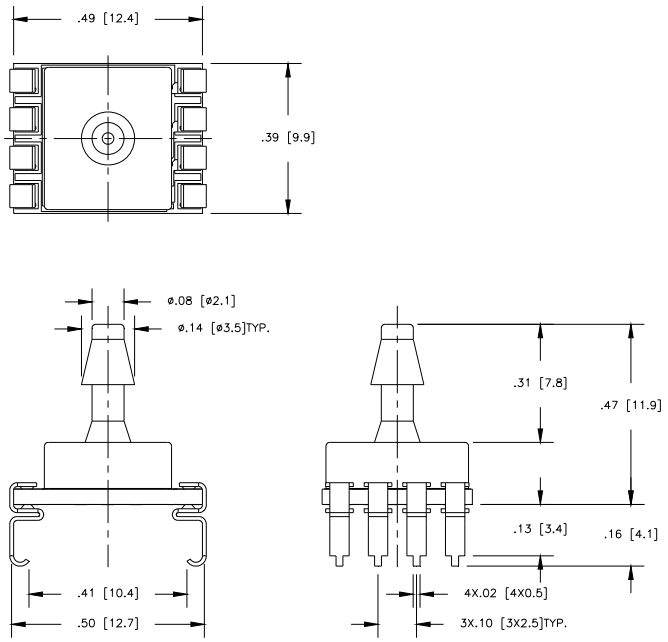


DIMENSIONS ARE IN INCHES [mm]

Model MS4515-TPvoxxxyP

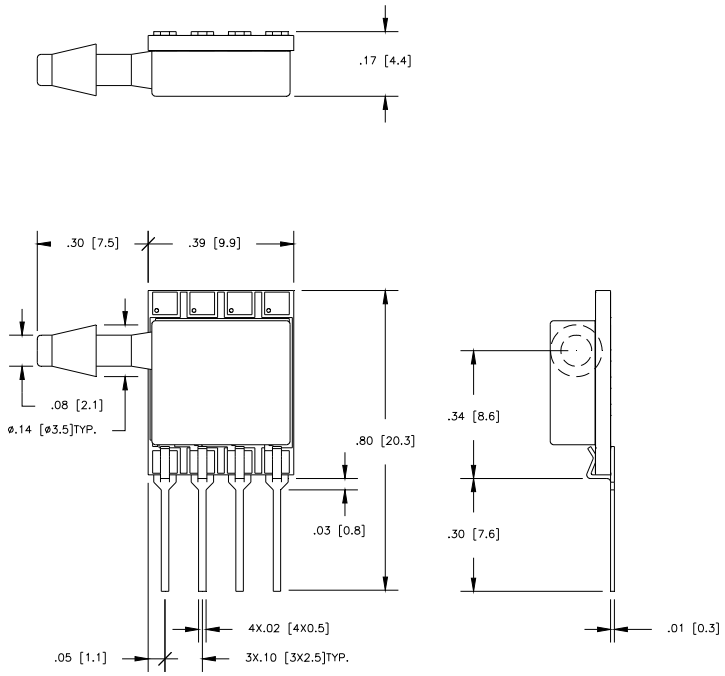


Model MS4515-TPvoxxxyS

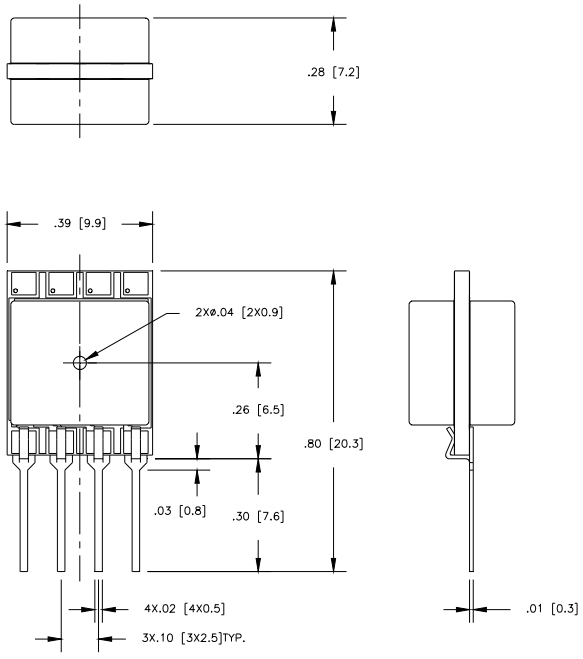


DIMENSIONS ARE IN INCHES [mm]

Model MS4515-SSvoxxxyL

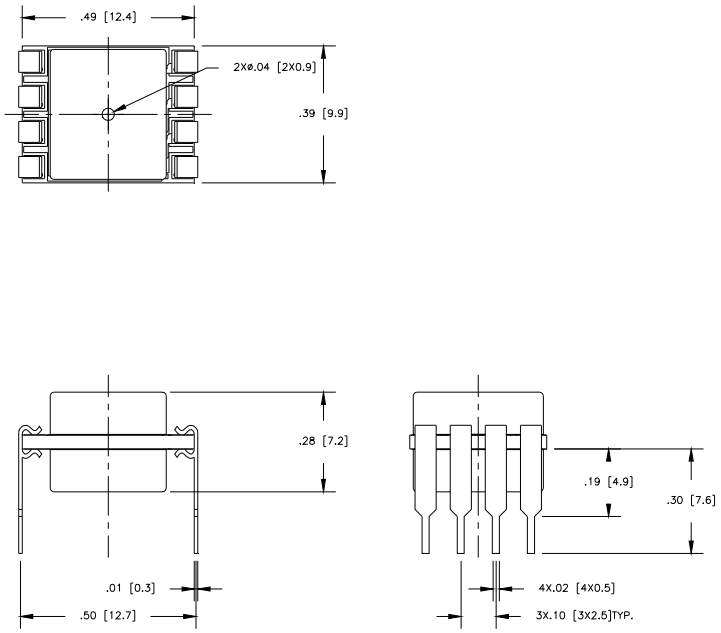


Model MS4515-MMvoxxxyL



DIMENSIONS ARE IN INCHES [mm]

Model MS4515-MMvoxxxyP

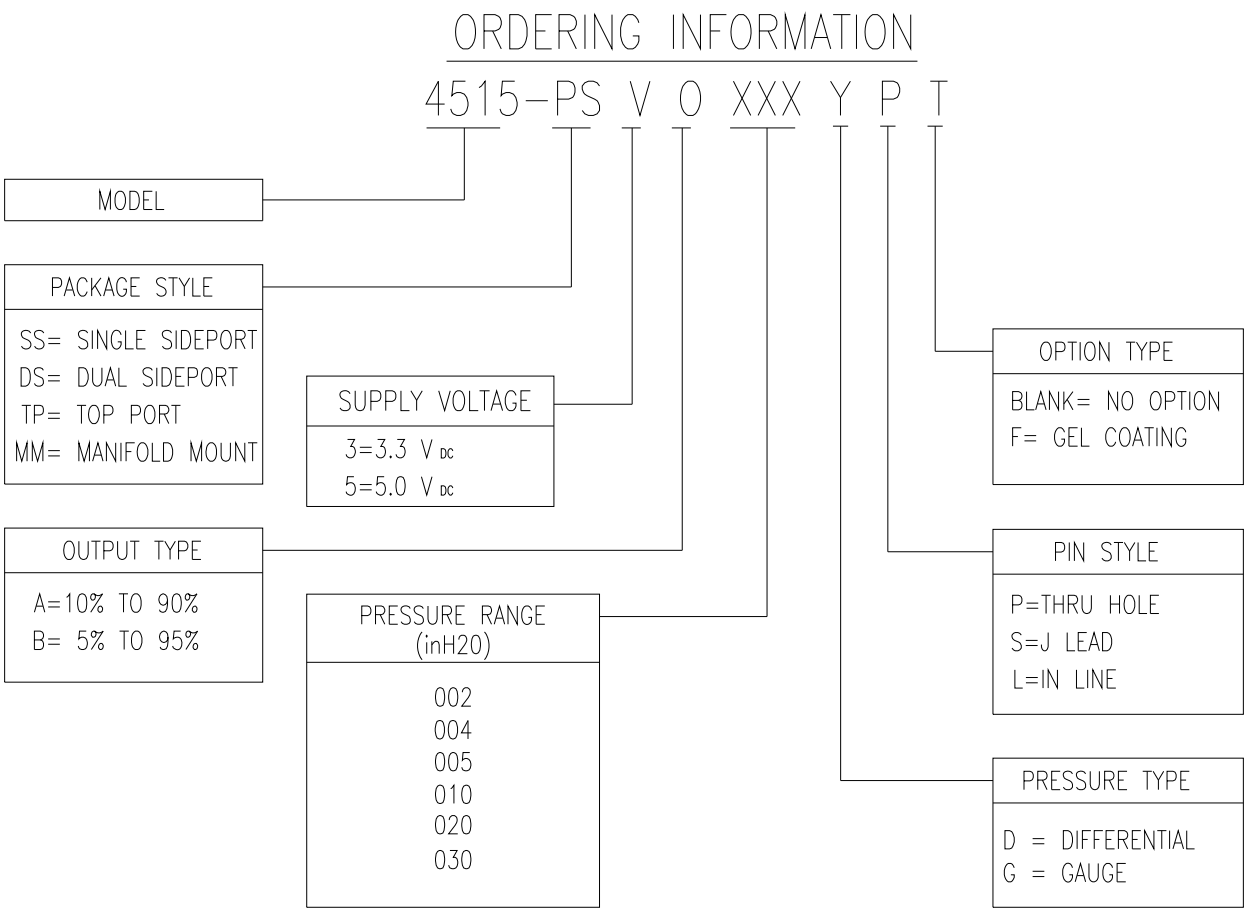


AVAILABLE OPTIONS

Gel Coat (-F Option)

The MS45x5 is designed for non ionic and clean dry air applications. Select this option for added protection in high humidity or slightly corrosive environments with the application of a silicone gel elastomer to sensor and ASIC. For questions concerning media compatibility, contact the factory.

ORDERING INFORMATION



NORTH AMERICA

Measurement Specialties
45738 Northport Loop West
Fremont, CA 94538
Tel: 1-800-767-1888
Fax: 1-510-498-1578
Sales: pfg.cs.amer@meas-spec.com

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Measurement Specialties
(Europe), Ltd.
26 Rue des Dames
78340 Les Clayes-sous-Bois, France
Tel: +33 (0) 130 79 33 00
Fax: +33 (0) 134 81 03 59
Sales: pfg.cs.emea@meas-spec.com

ASIA

Measurement Specialties
(China), Ltd.
No. 26 Langshan Road
Shenzhen High-Tech Park (North)
Nanshan District, Shenzhen 518057
China
Tel: +86 755 3330 5088
Fax: +86 755 3330 5099
Sales: pfg.cs.asia@meas-spec.com

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