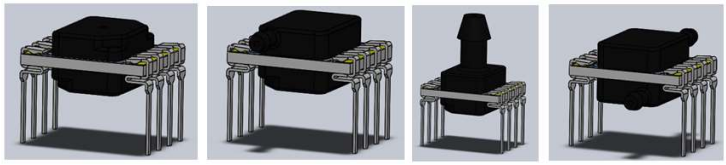
AV Sensors
AdVanced Sensor Design and Manufacture

MCT-4D SERIES



The MCT-4D Series
Dual & Single In Line Package (SIL & DIL)
Digital Temperature & Pressure Outputs
I^2C & SPI Protocols

DESCRIPTION

Advanced Sensors Multi Chip Technology (MCT) 4D Series incorporates the latest mixed signal ASIC (Application Specific Integrated Circuit) with a bonded silicon gage to provide a leading *Digital Output* design for medical, life science and pneumatic control industries.. The MCT 4D Series provides a 14bit digital pressure and 11 bit digital temperature output in SPI and I^2C protocols. The designs superior performance provides 1% Total Error across a wide temperature range of -10 to 85˚C while the ASIC's advanced design sets safety critical operations at the forefront with internal error checking of the sensor's input and output lines. Given these features and an available lower power option; the MCT-4D series is the ideal choice for OEM customers.

APPLICATIONS

- Pneumatic controls
- Automotive diagnostics
- Medical equipment/instrumentation
- Air Speed and Altitude
- Environmental controls
- Barometric pressure measurement
- Factory Automation
- Process Controls

FEATURES

- Digital Temperature & Pressure Output
- Low Power Option
- 3.3 & 5.0Vdc Supply Voltages
- Low Overall Errors, 1%TEB
- I2C & SPI Outputs
- Custom Outputs and Ranges Available

SPECIFICATIONS	Symbol	Min	Typical	Max	Unit	Note
Performance Specifications						
Supply Voltage		2.7V	3.3	5.50	V	
Current Consumption				3	mA	
Standby Current			0.5		µA	-L Option
Pressure Resolution				14	bits	
Temperature Resolution				11	bits	
Output (Type 1) at Pmin			1638		cts	
Output (Type 1) at Pmax			14746		cts	
Output (Type 2) at Pmin			819		cts	
Output (Type 2) at Pmax			15564		cts	
Pressure Accuracy		-0.25		0.25	%FSS	2
Total Error Band, 5inH20 and above	TEB	-1.00		1.00	%FSS	3
Total Error Band, Below 5inH20 to 10mBar	TEB	-1.50		1.50	%FSS	3
Total Error Band, Below 10mBar to 6mBar	TEB	-2.00		2.00	%FSS	3
Total Error Band, Below 6mBar to 1.25mBar	TEB	-3.00		3.00	%FSS	3
Temperature Accuracy			1.5		°C	
Long Term Stability			±0.4		%FSS	
Conversion Time			1.0		mS	4
Power On to Valid Data				<10	mS	5
Weight				3	grams	
Compensated Temperature		-10 to 85			°C	6
Operating Temperature		-40 to 125			°C	6

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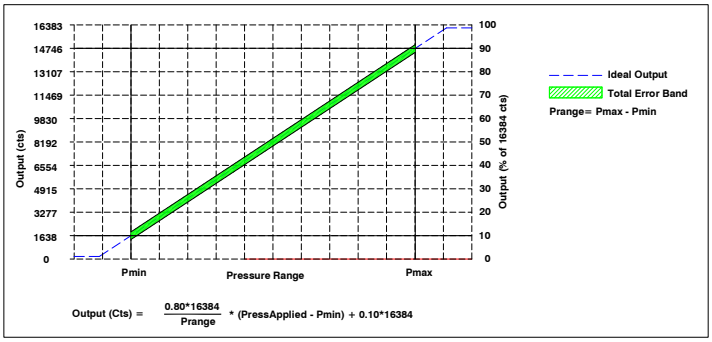
SPECIFICATIONS	Symbol	Min	Typical	Max	Unit	Note
Absolute Maximum Conditions						10
Supply Voltage		-5.0		6	V	
Storage Temperature		-40		125	˚C	6
Package Integrity, Common Mode				300	psi	7
Proof Pressure				3x		8
Burst Pressure				5x		9
Media Compatibility		CDA, Non Ionic, Non Corrosive Gases				
Wetted Materials		Ceramic, RTV, Epoxy, Silicon, Gold, Aluminum, LCP				

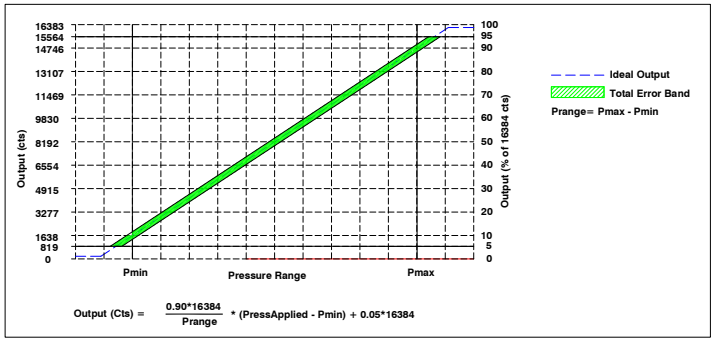
Reference Conditions: Vsupply: 3.30Vdc or 5.00, Ta=25˚C, Positive Pressure Port A

1. All specification at reference conditions unless otherwise noted.
2. Maximum deviation from a Best Fit Straight Line through Pmin and Pmax measured at 25˚C. Errors included Pressure Non Linearity, Pressure Hysteresis and Repeatability.
3. Maximum deviation from the Ideal Transfer Function expressed as a percentage of the %FSS over the compensated temperature range. Includes calibration errors (Offset & Span), temperature errors (Offset & Span), pressure non-linearity, pressure and thermal hysteresis.
4. The time for the output register to be updated with new data.
5. The time for the output register to have valid data after a power on reset.
6. Compensated, operating and storage temperatures for mBar/inH20 ranges are 0˚C to 60˚C, -10˚C to 85˚C, and -20˚C to 105˚C respectively.
7. Maximum pressure the sensor package can withstand without rupture.
8. Maximum pressure without degrading sensor's performance specifications.
9. Maximum pressure the silicon diaphragm can withstand without rupture.
10. Exceeding Absolute Maximum Specification may damage the device. Extended exposure beyond the operating conditions may affect device reliability.

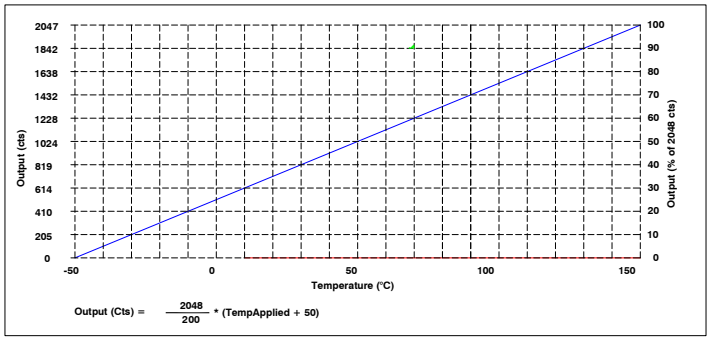
PRESSURE AND TEMPERATURE TRANSFER FUNCTIONS



Type 1, 10-90%, Pressure Transfer Function



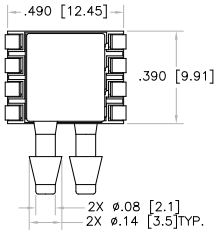
Type 2, 5-95%, Pressure Transfer Function



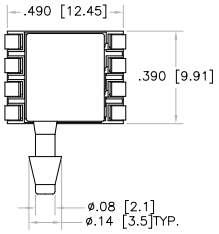
Temperature Transfer Function

MECHANICAL DIMENSIONS in [mm]

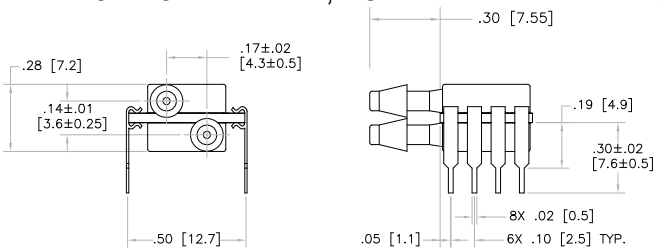
DUAL IN LINE, THRU HOLE

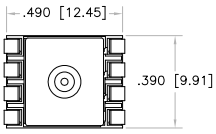


HORIZONTAL BARB, DUAL

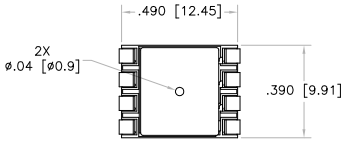


HORIZONTAL BARB, TOP

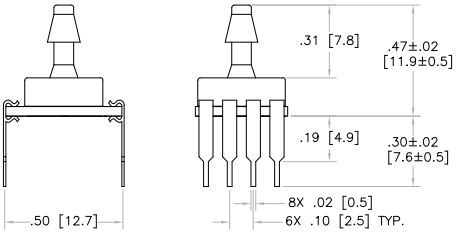




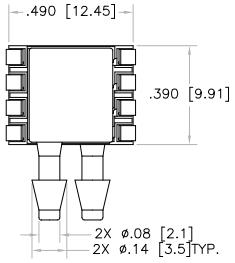
VERTICAL BARB, TOP



VERTICAL HOLE, DUAL



DUAL IN LINE, J LEAD SMT



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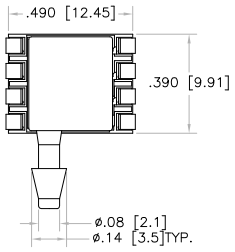

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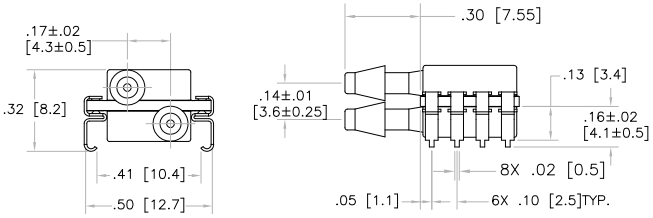
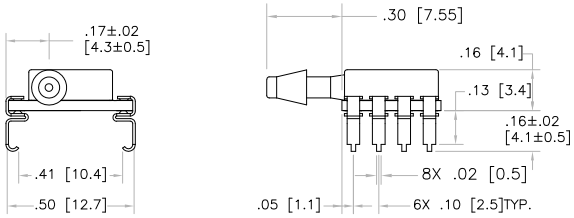
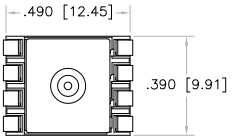
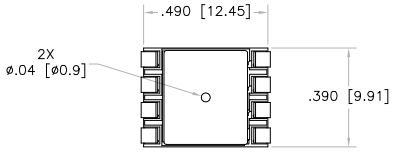


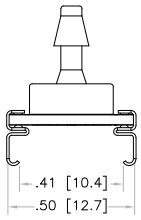


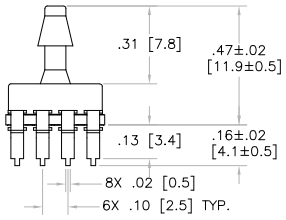


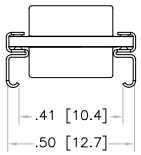
VERTICAL BARB, TOP

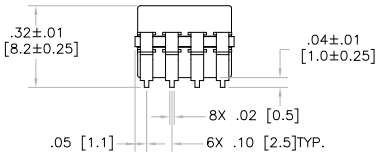


VERTICAL HOLE, DUAL









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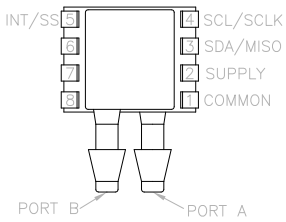
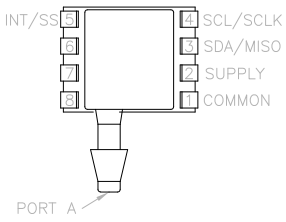
PORT DESIGNATION

HORIZONTAL BARB, DUAL



HORIZONTAL BARB, TOP



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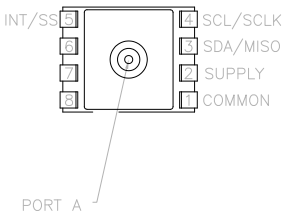
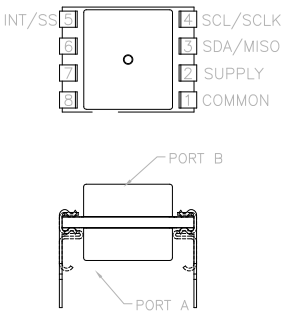


VERTICAL HOLE, DUAL



PART NUMBERING FOR ORDERS

Series	Port Type	Package Style	Pressure Range	Pressure Units	Pressure Type (Range Availability) [Package Availability]	Calibrated Voltage	Output Type	Digital Protocol	Options
MCT-4D	VHD=Vertical Hole, Dual HBD=Horizontal Barb, Dual VBT=Vertical Barb, Top HBO=Horizontal Barb, Opposing HBT=Horizontal Barb, Top	J= J lead SMT T= DIL Thru Hole S=SIL	005 010 020 050 100 200	M=mBar	G= Gage (All Ranges) [All Port Types] A=Absolute (All Ranges) [All Port Types] B=Bidirectional (All Ranges) [All Port Types]	3=3.3Vdc 5-5.0Vdc	Type1= 10 -90% of Supply Voltage Type2= 5 -95% of Supply Voltage	I1=I2C, 0x28H I2=I2C, 0x38H I3=I2C, 0x48H [All Packages] S1=SPI [All Packages]	-L Low Power -G Gel Coat -PG Potted Gel;
			001 002 005 015 030 050 100 150	P=PSI					
			001 002 003 006	B=Bar					
			0.5 001 002 004	I=inH20					

Part Number Example: MCT-4D VBTJ005PB31S1 **Vertical Barbed Top Port, J Leaded SMT Package, -5 to +5 PSI Range, 3.3Vdc Supply, SPI Protocol, Pmin=-5, Pmax=+ 5 PSI**

WARRANTY

Pressure sensors have a limited one-year warranty to the original purchaser. AVSensors will repair or replace, at its option, without charge those items it finds defective. This is the buyer s sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall AVSensors be liable for consequential, special, or indirect damages. This warranty does not apply to units that have been modified, misused, neglected or installed where the application exceeds published ratings. Specifications may change without notice. The information supplied is believed to be accurate and reliable as of this printing, however, we assume no responsibility for its use.