AV Sensors
AdVanced Sensor Design and Manufacture

# MCT-ASCX SERIES

The MCT-ASCX Series
Sensym ASCX Pin Compatibility
High Level Analog Output

## DESCRIPTION

Advanced Sensors Multi Chip Technology (MCT) ASCX Series incorporates a bonded silicon gage to the latest mixed signal ASIC (Application Specific Integrated Circuit) Designed as pin to pin compatible design for Sensym's Iconic ASCX series, the AVSensors MCT-ASCX series is designed with latest mixed signal ASIC providing a superior performance provides 1.5% Total Error across a wide temperature range of 0 to 70˚C. The ASIC's advanced design allows for the sensor output to be limited for safety critical operations with internal error checking of the sensor's input and output lines.

## APPLICATIONS

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

## FEATURES

- Ratiometric, Analog Voltage Output
- Low Power Option
- 3.3 & 5.0Vdc Supply Voltages
- Low Overall Errors, 1.5%TEB
- ASDX Port Configurations
- Custom Outputs and Ranges Available

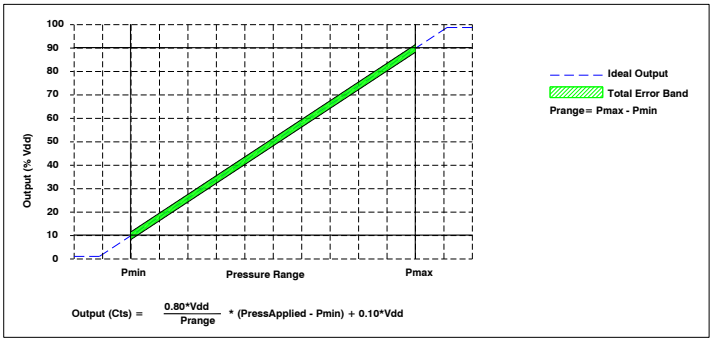
| SPECIFICATIONS | Symbol | Min | Typical | Max | Unit | Note |
|---|---|---|---|---|---|---|
| **Performance Specifications** | | | | | | |
| Supply Voltage | | 2.7V | 3.3 | 5.50 | V | |
| Current Consumption | | | | 3 | mA | |
| Current Consumption, -L Option | | | 0.25 | | mA | |
| Pressure Accuracy | | -0.25 | | 0.25 | mA | 2 |
| Total Error Band | TEB | -1.50 | | 1.50 | %FSS | 3 |
| Output DAC Resolution | | | | 12 | bits | |
| Output (Type 1) at Pmin | | | 10 | | %Vdd | |
| Output (Type 1) at Pmax | | | 90 | | %Vdd | |
| Output (Type 2) at Pmin | | | 5 | | %Vdd | |
| Output (Type 2) at Pmax | | | 95 | | %Vdd | |
| Conversion Time | | | 1.0 | | mS | 4 |
| Power On to Valid Data | | | | <10 | mS | 5 |
| Weight | | | | 3 | grams | |
| Compensated Temperature | | 0 to 70 | | | °C | 6 |
| Operating Temperature | | -25 to 105 | | | °C | 6 |

| 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 | | | | 150 | 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, LCP | | | | |

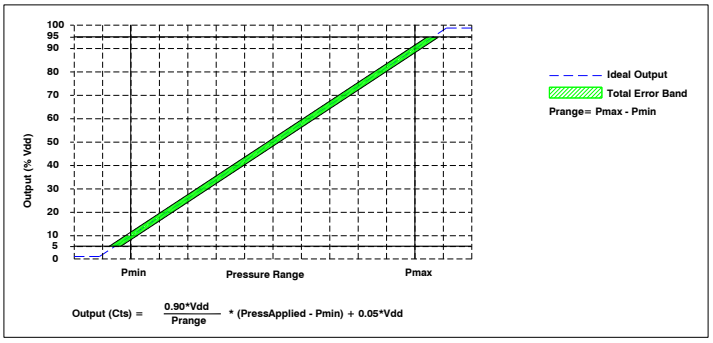
**Reference Conditions**: Vsupply: 3.30Vdc or 5.00, Ta=25˚C, Positive Output with Pressure applied to Port 2. Absolute Deices are with Pressure Applied to Port 1

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 DAC to be updated with new data.
5. The time for the output DAC 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.
11. Enabled Diagnostic option will clip the output voltage at 5% and 95% of supply voltage. Output will remain within 2.5% of the supply rails when the diagnostic is triggered.

## PRESSURE TRANSFER FUNCTIONS



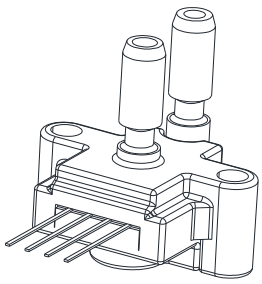

Type 1, 10-90%, Pressure Transfer Function

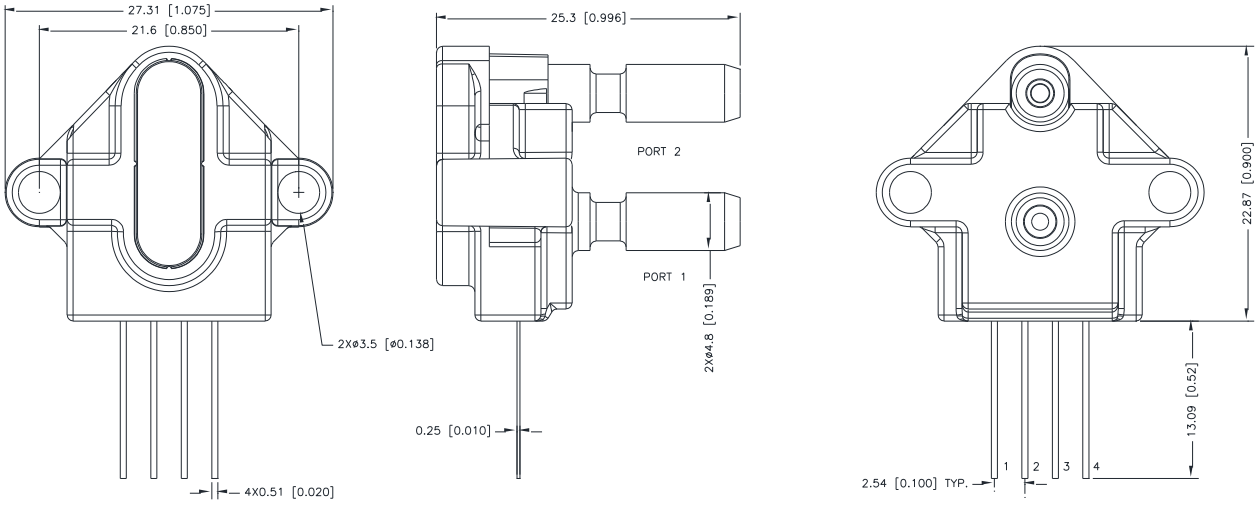



Type 2, 5-95%, Pressure Transfer Function

## MECHANICAL DIMENSIONS

SIP NB






## CONNECTION DIAGRAM

| | Pin | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| | | N/C | Vout | Common | Vsupply |

Port 2: Positive Output for Gage & Bi-Directional

Port 1: Positive Output for Absolute

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## PART NUMBERING FOR ORDERS

| Series | Port Type | Pressure Range | Pressure Units | Pressure Type | Calibrated Voltage | Output Type | Media |
|---|---|---|---|---|---|---|---|
| MCT-ASCX | NB | 001<br>002<br>005<br>015<br>030<br>050<br>100 | P=PSI | G= Gage<br><br>A=Absolute<br><br>B=Bidirectional | 3=3.3Vdc<br><br>5=5.0Vdc | Type 1=<br>10 -90% of Vdd<br><br>Type 2=<br>5 -95% of Vdd<br><br>Type 3=<br>5 -85% of Vdd<br><br>Type 4=<br>4 -94% of Vdd | N = Non Ionic Dry Gases<br><br>D=Non Ionic gas with Humidity<br><br>T= Liquid Media, Silicone Gel<br><br>V=Liquid Media, Parylene Coating |

**Part Number Example: MCT-ASCX DSJ 005PB31S1N**

**Dual Side Port Barbed , J Leaded SMT Package, -5 to +5 PSI Range, 3.3Vdc Supply, SPI Protocol, Pmin=-5, Pmax=+ 5 PSI, 10-90% Output, Dry Non Ionic Gases**

## 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 buyers 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.