

## TD instrumentation Caractéristiques des capteurs



L'objet de ce TD est d'extraire de documentations constructeurs des informations utiles pour la mise en œuvre des capteurs.

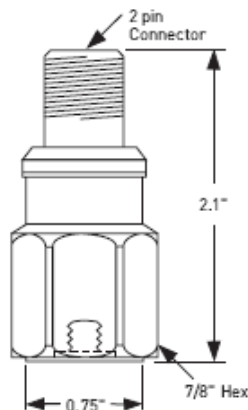
### Etude n°1

#### Common applications

- General purpose
- Moderate industrial environments
- Conveyors and drives
- Bearing monitoring

#### Features

- Corrosion resistant
- Hermetic seal
- Ground isolated
- ESD protection
- Reverse wiring protection



### Model 782A Industrial piezoelectric accelerometer

#### Dynamic

|                                              |                 |
|----------------------------------------------|-----------------|
| Sensitivity, $\pm 15\%$ , $25^\circ\text{C}$ | 100 mV/g        |
| Acceleration range <sup>1</sup>              | 80 g peak       |
| Amplitude nonlinearity                       | 1%              |
| Frequency response:                          |                 |
| $\pm 3\text{ dB}$                            | 0.7 - 12,000 Hz |
| Resonance frequency, mounted, nominal        | 30 kHz          |
| Transverse sensitivity, max                  | 5% of axial     |
| Temperature response:                        |                 |
| $-50^\circ\text{C}$                          | -5%             |
| $+120^\circ\text{C}$                         | +7%             |

#### Electrical

|                                      |                                         |                                    |
|--------------------------------------|-----------------------------------------|------------------------------------|
| Power requirement:                   | voltage source <sup>1</sup>             | 18 - 30 VDC                        |
|                                      | current regulating diode <sup>1,2</sup> | 2 - 10 mA                          |
| Electrical noise, equiv. g, nominal: |                                         |                                    |
| Broadband                            | 2.5 Hz to 25 kHz                        | 700 $\mu\text{g}$                  |
| Spectral                             | 10 Hz                                   | 10 $\mu\text{g}/\sqrt{\text{Hz}}$  |
|                                      | 100 Hz                                  | 5 $\mu\text{g}/\sqrt{\text{Hz}}$   |
|                                      | 1000 Hz                                 | 5 $\mu\text{g}/\sqrt{\text{Hz}}$   |
| Output impedance, max                |                                         | 100 $\Omega$                       |
| Bias output voltage, nominal         |                                         | 12 VDC                             |
| Grounding                            |                                         | case isolated, internally shielded |

#### Environmental

|                                            |                               |
|--------------------------------------------|-------------------------------|
| Temperature range                          | $-50$ to $120^\circ\text{C}$  |
| Vibration limit                            | 500 g                         |
| Shock limit, min                           | 5,000 g                       |
| Electromagnetic sensitivity, equiv. g, max | 70 $\mu\text{g}/\text{gauss}$ |
| Sealing                                    | hermetic                      |
| Base strain sensitivity, max               | 0.0002 g/ $\mu\text{strain}$  |

#### Physical

|                     |                          |
|---------------------|--------------------------|
| Weight              | 90 grams                 |
| Case material       | 316L stainless steel     |
| Mounting            | 1/4 - 28 UNF tapped hole |
| Connector           | 2 pin MIL-C-5015         |
| Connections:        |                          |
| Mating connector    | R6 type                  |
| Recommended cabling | J9T2A                    |

| Connector pin | Function      |
|---------------|---------------|
| A             | power/ signal |
| B             | common        |

Donner pour ce capteur

- . le mesurande et l'unité du mesurande
- . la sensibilité et l'incertitude associée. Comment varie la sensibilité en fonction de la température.
- . le type de la grandeur de sortie,
- . la bande passante à -3db. Quelle est la valeur de la sensibilité pour 0.7Hz, 100Hz et 12KHz ?

Ce capteur est-il passif ou actif ?



## Humidity Sensor



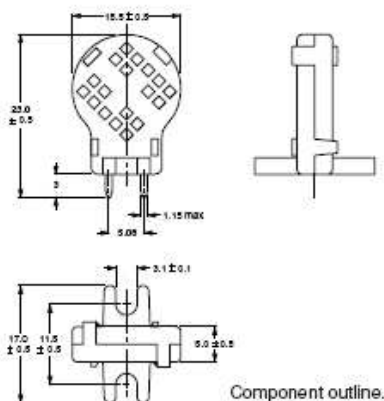
### QUICK REFERENCE DATA

| PARAMETER                                                                                     | VALUE     | UNIT  |
|-----------------------------------------------------------------------------------------------|-----------|-------|
| Humidity range (RH)                                                                           | 10 to 90  | %     |
| Capacitance at +25 °C; 43% RH; 100 kHz                                                        | 122 ±15%  | PF    |
| Tan δ at +25 °C; 100 kHz; 43% RH                                                              | ≤0.035    |       |
| Sensitivity between 12 and 75% RH                                                             | 0.4 ±0.05 | PF/%R |
| Frequency                                                                                     | 1 to 1000 | kHz   |
| Temperature dependence                                                                        | 0.1       | %RH/K |
| Response time in minutes<br>(to 90% of indicated RH change at<br>+25 °C, in circulating air): |           |       |
| between 10 and 43% RH                                                                         | <3        |       |
| between 43 and 90% RH                                                                         | <5        |       |
| Hysteresis (for RH excursion of<br>10 to 90 to 10%)                                           | ≈3        | %     |
| Maximum AC or DC voltage                                                                      | 15        | V     |
| Storage humidity range (RH)                                                                   | 0 to 100  | %     |
| Ambient temperature range:                                                                    |           |       |
| operating                                                                                     | 0 to +85  | °C    |
| storage                                                                                       | -25 to +8 | °C    |
| Drop test:                                                                                    |           |       |
| height of free fall                                                                           | 1         | M     |
| Mass                                                                                          | ≈1.3      | G     |

#### Note

Unless otherwise stated, measurements are in accordance with "IEC publication 60539".  
Stability is in accordance with "CECC 43000" and "IEC 60068-2".

### DIMENSIONS in millimeters



### APPLICATIONS

- Humidity measurements in electronic hygrometers for domestic use
- Self-regulating air humidifiers, etc.

### DESCRIPTION

This capacitive atmospheric humidity sensor consists of a non-conductive foil, which is covered on both sides with a layer of gold. The dielectric constant of the foil changes as a function of the relative humidity of the ambient atmosphere and, accordingly, the capacitance value of the sensor is a measure for relative humidity. The foil is clamped between contact springs and assembled in a plastic housing. It is provided with two connecting pins which fit printed-circuit boards with a grid pitch of 2.54 mm, provision is also made for fastening with 3 mm bolts. The characteristics are not affected by incidental water condensation on the sensor foil. It should not be exposed to either acetone or chlorine vapours.

### MOUNTING

The device can be soldered directly on to a printed-circuit board or fastened with 3 mm bolts.

### SOLDERING

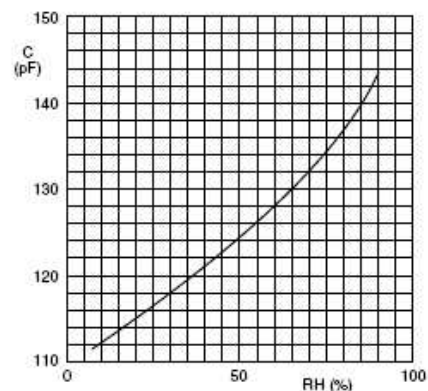
Solderability: ≤240 °C; ≤4 s.

Resistance to heat: ≤240 °C; ≤4 s.

### ROBUSTNESS OF TERMINATIONS

Tensile strength: 10 N.

### ELECTRICAL CHARACTERISTICS



Typical capacitance as a function of relative humidity.

Donner pour ce capteur

- . le mesurande et l'unité du mesurande
- . la valeur nominal, maximum et minimum de la grandeur de sortie pour une humidité de 65%
- . la sensibilité et l'incertitude associée. Ce capteur est-il linéaire ?
- . le type de la grandeur de sortie.

- . que signifie la référence « Frequency » dans le tableau « Quick reference data » ?
- . le temps de réponse

Ce capteur est –il actif ou passif ?

### Etude n°3



## DS600 ±0.5 Accurate Analog-Output Temperature Sensor

[www.maxim-ic.com](http://www.maxim-ic.com)

### GENERAL DESCRIPTION

The DS600 is a  $\pm 0.5^{\circ}\text{C}$  accurate analog-output temperature sensor. This accuracy is valid over its entire operating voltage range of 2.7V to 5.5V and the wide temperature range of  $-20^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$ . The DS600 can also act as a thermostat, with user-programmable trip points. A shutdown mode enables the DS600 to be placed in a low-power standby state. The DS600 is available in an 8-pin  $\mu\text{SOP}$  package.

### APPLICATIONS

Cold-Junction Thermocouple Compensation  
Portable Medical Equipment  
Thermally Sensitive Systems that Require a High-Accuracy Analog-Output Temperature Sensor

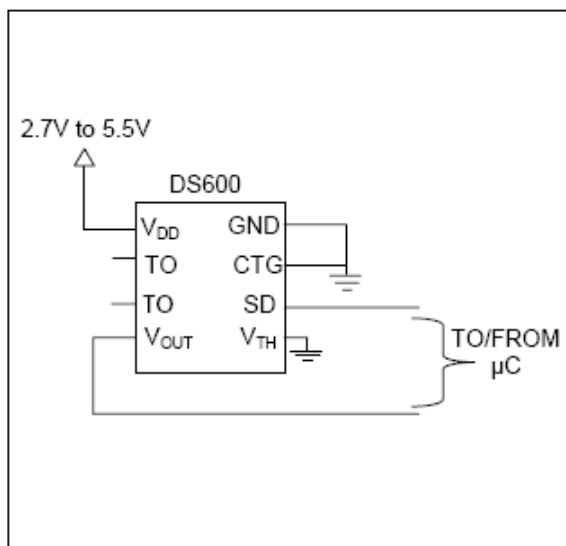
### FEATURES

- $\pm 0.5^{\circ}\text{C}$  Accuracy ( $-20^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$ )
- $\pm 0.75^{\circ}\text{C}$  Accuracy Over Entire Temperature Range of ( $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ )
- Requires No External Components
- $6.45\text{mV}/^{\circ}\text{C}$  Output Gain with 509mV Offset at  $0^{\circ}\text{C}$
- 2.7V to 5.5V Supply Voltage Range
- User-Programmable Thermostat Function
- Shutdown Function Puts Device into a Low-Power Standby Mode
- Exposed Pad 8-Pin  $\mu\text{SOP}$  Package for Quick Thermal Response

### ORDERING INFORMATION

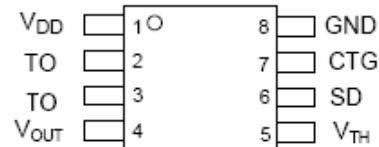
| PART       | TEMP RANGE                                      | PIN-PACKAGE                        |
|------------|-------------------------------------------------|------------------------------------|
| DS600U     | $-40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$ | 8 $\mu\text{SOP}$                  |
| DS600U/T&R | $-40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$ | 8 $\mu\text{SOP}$<br>Tape-and-Reel |

### TYPICAL OPERATING CIRCUIT



### PIN CONFIGURATION

TOP VIEW



EXPOSED PAD  $\mu\text{SOP}$

**ABSOLUTE MAXIMUM RATINGS**

|                                                          |                                   |
|----------------------------------------------------------|-----------------------------------|
| Voltage Range on Any Pin (except CTG) Relative to Ground | -0.5V to +6.0V                    |
| Voltage Range on CTG Relative to Ground                  | -0.5 to +0.5V                     |
| Operating Temperature Range                              | -40°C to +125°C                   |
| Storage Temperature Range                                | -55°C to +125°C                   |
| Soldering Temperature (10s)                              | +260°C (See IPC/JEDEC J-STD-020A) |
| Reflow Oven Temperature                                  | +220°C                            |

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to the absolute maximum rating conditions for extended periods may affect device reliability.

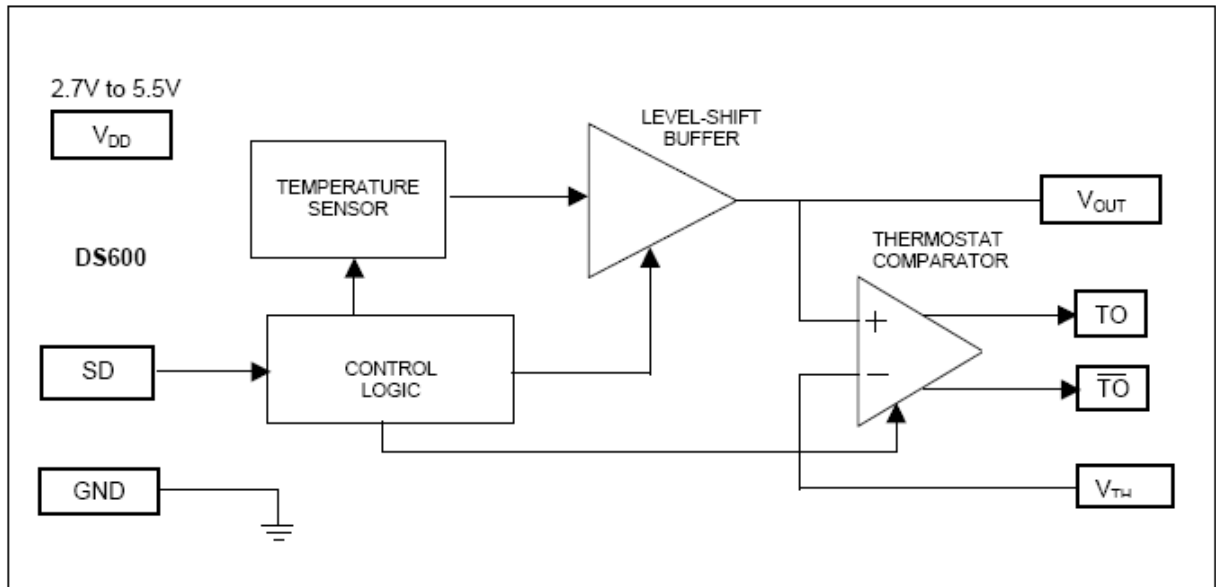
**DC ELECTRICAL CHARACTERISTICS**

( $V_{CC} = 2.7\text{V}$  to  $5.5\text{V}$ ,  $T_A = -40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ .)

| PARAMETER                              | SYMBOL              | CONDITIONS       | MIN                 | TYP  | MAX                 | UNITS |
|----------------------------------------|---------------------|------------------|---------------------|------|---------------------|-------|
| Supply Voltage                         | $V_{DD}$            |                  | 2.7                 |      | 5.5                 | V     |
| Thermometer Error                      | $T_{ERR}$           | -20°C to +100°C  |                     |      | $\pm 0.5$           | °C    |
|                                        |                     | -40°C to +125°C  |                     |      | $\pm 0.75$          |       |
| Output Gain                            | $\Delta V/\Delta T$ |                  |                     | 6.45 |                     | mV/°C |
| $V_{OUT}$ DC Offset                    | $V_{OS}$            | 0°C              |                     | 509  |                     | mV    |
| Low-Level Input Voltage (SD)           | $V_{IL}$            |                  | -0.5                |      | $0.3 \times V_{DD}$ | V     |
| High-Level Input Voltage (SD)          | $V_{IH}$            |                  | $0.7 \times V_{DD}$ |      | $V_{DD} + 0.5$      | V     |
| SD Input Capacitance                   | $C_{SD}$            |                  |                     | 5    |                     | pF    |
| VTH Input Capacitance                  | $C_{VTH}$           |                  |                     | 5    |                     | pF    |
| Low-Level Output Voltage (TO, TO)      | $V_{OL}$            | 4mA sink current | 0                   |      | 0.4                 | V     |
| Supply Current                         | $I_{DD}$            |                  |                     |      | 140                 | μA    |
| Shutdown Current                       | $I_{SD}$            |                  |                     |      | 2.5                 | μA    |
| Input Current ( $V_{TH}$ )             | $I_{TH}$            |                  |                     | 0.01 | 1                   | μA    |
| Input Resistance ( $V_{TH}$ )          | $R_{TH}$            |                  | 5                   |      |                     | MΩ    |
| Leakage Current (SD)                   | $I_L$               |                  |                     | 0.01 | 1                   | μA    |
| External Load Capacitance on $V_{OUT}$ | $C_{EL}$            |                  |                     |      | 50                  | pF    |
| $V_{OUT}$ Source Current               | $I_{OSO}$           |                  | 10                  |      |                     | μA    |
| $V_{OUT}$ Sink Current                 | $I_{OSI}$           |                  | 10                  |      |                     | μA    |
| Output Impedance ( $V_{OUT}$ )         | $R_{OUT}$           |                  |                     |      | 100                 | Ω     |
| Power-Up Time                          | $t_{POWERUP}$       |                  |                     |      | 10                  | ms    |
| Nonlinearity                           |                     |                  |                     |      | $\pm 0.2$           | °C    |
| Comparator Offset                      |                     |                  |                     |      | $\pm 3$             | mV    |
| Comparator Response Time               | $t_{COMP}$          |                  |                     |      | 20                  | ms    |

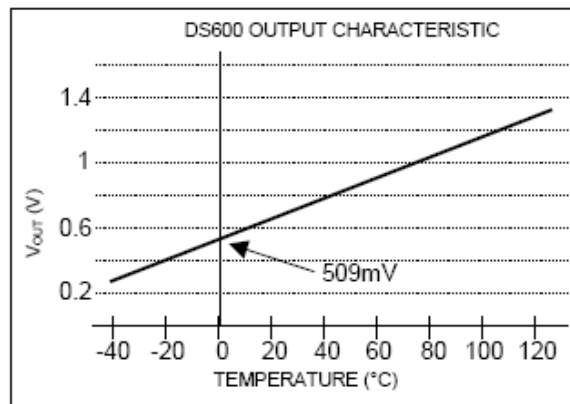
**PIN DESCRIPTION**

| PIN | NAME                   | FUNCTION                                                                                                                                                                                                                               |
|-----|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | V <sub>DD</sub>        | <b>Supply Voltage.</b> 2.7V to 5.5V                                                                                                                                                                                                    |
| 2   | TO                     | <b>Active-High Thermostat Output.</b> Open-drain output transitions from low to high when the output voltage exceeds V <sub>TH</sub> . In shutdown mode, (SD = 1), TO is low.                                                          |
| 3   | $\overline{\text{TO}}$ | <b>Active-Low Thermostat Output.</b> Open-drain output transitions from high to low when the output voltage exceeds V <sub>TH</sub> . In shutdown mode, (SD = 1), $\overline{\text{TO}}$ is high.                                      |
| 4   | V <sub>OUT</sub>       | <b>Temperature Output.</b> Outputs a voltage that is proportional to the die temperature in degrees centigrade. In shutdown mode, this pin goes high-Z.                                                                                |
| 5   | V <sub>TH</sub>        | <b>Thermostat Trip Voltage.</b> User-selectable voltage that sets the thermostat trip-point temperature. TO and $\overline{\text{TO}}$ are asserted when V <sub>OUT</sub> crosses this voltage. (No on-chip hysteresis is present).    |
| 6   | SD                     | <b>Shutdown.</b> Power consumption and thermal sensor function are controlled through SD. This pin functions as an active-high input pin. Driving this pin high puts the device in a low-power state and discontinues thermal sensing. |
| 7   | CTG                    | Must be connected to GND.                                                                                                                                                                                                              |
| 8   | GND                    | Ground.                                                                                                                                                                                                                                |

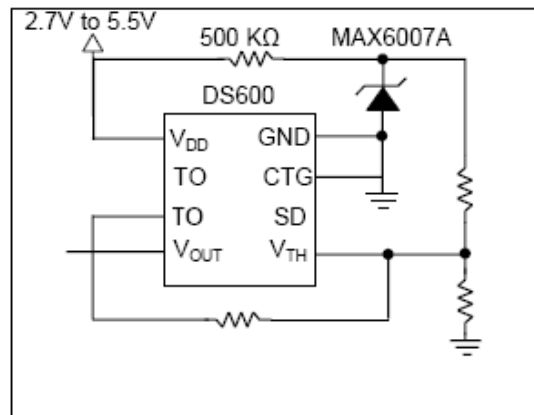
**Figure 1. Block Diagram****TEMPERATURE MEASUREMENT**

The DS600 analog temperature sensor measures its own temperature and provides these measurements to the user in the form of an output voltage, V<sub>OUT</sub>, that is proportional to degrees centigrade. The output voltage characteristic is factory-calibrated for a typical output gain ( $\Delta V/\Delta T$ ) of +6.45mV/ $^{\circ}\text{C}$  and a DC offset (V<sub>OS</sub>) of 509mV. Its operating temperature range is  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ , corresponding to an output voltage range of 251mV to 1315mV. ( $V_{\text{OUT}} = \text{Device Temperature } (^{\circ}\text{C}) \times \Delta V/\Delta T + V_{\text{OS}}$ ). The DS600 has  $\pm 0.5^{\circ}\text{C}$  accuracy over a  $-20^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$  temperature range and over the full 2.7V to 5.5V voltage range. Because the output voltage is positive for the entire temperature range, there is no need for a negative supply.

Figure 2 shows the output voltage characteristic for the DS600.

**Figure 2. Output Voltage Characteristic****THERMOSTAT OPERATION**

The DS600 can also be used as a thermostat with either an active-high (TO) or active-low (TO) output. To function as a thermostat, a precise voltage reference equal to the desired threshold must be applied to the  $V_{\text{TH}}$  pin. When the temperature with the equivalent voltage value is reached (voltage on  $V_{\text{OUT}}$  = voltage on  $V_{\text{TH}}$ ), thermostat outputs TO and TO become active. Figure 3 shows an example thermostat application circuit.

**Figure 3. Thermostat Application Circuit**

Donner pour ce capteur

- . le mesurande et l'unité du mesurande
- . la sensibilité et l'incertitude associée.
- . le type de la grandeur de sortie,
- . le domaine d'emploi de ce capteur

Ce capteur est-il passif ou actif ?

Ce capteur est-il linéaire ?

# Integrated Silicon Pressure Sensor for Manifold Absolute Pressure, Altimeter or Barometer Applications On-Chip Signal Conditioned, Temperature Compensated and Calibrated

Motorola's MPX4115A/MPXA4115A series sensor integrates on-chip, bipolar op amp circuitry and thin film resistor networks to provide a high output signal and temperature compensation. The small form factor and high reliability of on-chip integration make the Motorola pressure sensor a logical and economical choice for the system designer.

The MPX4115A/MPXA4115A series piezoresistive transducer is a state-of-the-art, monolithic, signal conditioned, silicon pressure sensor. This sensor combines advanced micromachining techniques, thin film metallization, and bipolar semiconductor processing to provide an accurate, high level analog output signal that is proportional to applied pressure.

Figure 1 shows a block diagram of the internal circuitry integrated on a pressure sensor chip.

## Features

- 1.5% Maximum Error over 0° to 85°C
- Ideally suited for Microprocessor or Microcontroller-Based Systems
- Temperature Compensated from -40° to +125°C
- Durable Epoxy Unibody Element or Thermoplastic (PPS) Surface Mount Package

## Application Examples

- Aviation Altimeters
- Industrial Controls
- Engine Control
- Weather Stations and Weather Reporting Devices

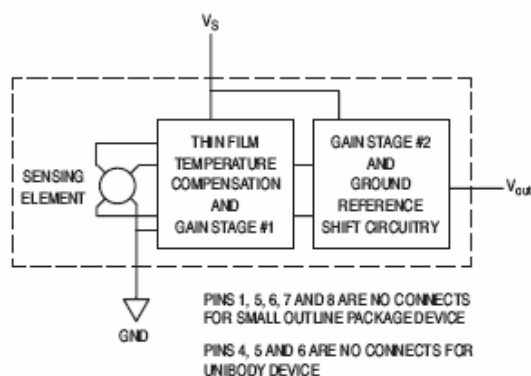
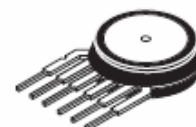


Figure 1. Fully Integrated Pressure Sensor Schematic

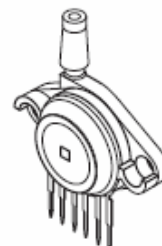
## MPX4115A MPXA4115A SERIES

INTEGRATED  
PRESSURE SENSOR  
15 to 115 kPa (2.2 to 16.7 psi)  
0.2 to 4.8 Volts Output

### UNIBODY PACKAGE



MPX4115A  
CASE 867

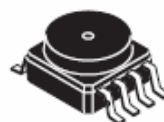


MPX4115AP  
CASE 867B

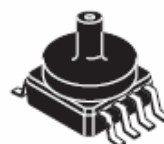


MPX4115AS  
CASE 867E

### SMALL OUTLINE PACKAGE



MPXA4115A6U  
CASE 482



MPXA4115AC6U  
CASE 482A

### PIN NUMBER

|   |                  |   |     |
|---|------------------|---|-----|
| 1 | N/C              | 5 | N/C |
| 2 | V <sub>S</sub>   | 6 | N/C |
| 3 | Gnd              | 7 | N/C |
| 4 | V <sub>out</sub> | 8 | N/C |

NOTE: Pins 1, 5, 6, 7, and 8 are internal device connections. Do not connect to external circuitry or ground. Pin 1 is noted by the notch in the lead.

### PIN NUMBER

|   |                  |   |     |
|---|------------------|---|-----|
| 1 | V <sub>out</sub> | 4 | N/C |
| 2 | Gnd              | 5 | N/C |
| 3 | V <sub>S</sub>   | 6 | N/C |

NOTE: Pins 4, 5, and 6 are internal device connections. Do not connect to external circuitry or ground. Pin 1 is noted by the notch in the lead.



**MAXIMUM RATINGS(NOTE)**

| Parameters                 |                  |               | Units |
|----------------------------|------------------|---------------|-------|
| Maximum Pressure (P1 > P2) | P <sub>max</sub> | 400           | kPa   |
| Storage Temperature        | T <sub>stg</sub> | -40° to +125° | °C    |
| Operating Temperature      | T <sub>A</sub>   | -40° to +125° | °C    |

NOTE: Exposure beyond the specified limits may cause permanent damage or degradation to the device.

**OPERATING CHARACTERISTICS** (V<sub>S</sub> = 5.1 Vdc, T<sub>A</sub> = 25°C unless otherwise noted, P1 > P2. Decoupling circuit shown in Figure 3 required to meet Electrical Specifications.)

| Characteristic                                                         | Symbol           | Min   | Typ   | Max   | Unit              |
|------------------------------------------------------------------------|------------------|-------|-------|-------|-------------------|
| Pressure Range                                                         | P <sub>OP</sub>  | 15    | —     | 115   | kPa               |
| Supply Voltage <sup>(1)</sup>                                          | V <sub>S</sub>   | 4.85  | 5.1   | 5.35  | Vdc               |
| Supply Current                                                         | I <sub>o</sub>   | —     | 7.0   | 10    | mAdc              |
| Minimum Pressure Offset <sup>(2)</sup><br>@ V <sub>S</sub> = 5.1 Volts | V <sub>off</sub> | 0.135 | 0.204 | 0.273 | Vdc               |
| Full Scale Output <sup>(3)</sup><br>@ V <sub>S</sub> = 5.1 Volts       | V <sub>FSO</sub> | 4.725 | 4.794 | 4.863 | Vdc               |
| Full Scale Span <sup>(4)</sup><br>@ V <sub>S</sub> = 5.1 Volts         | V <sub>FSS</sub> | 4.521 | 4.590 | 4.659 | Vdc               |
| Accuracy <sup>(5)</sup><br>(0 to 85°C)                                 | —                | —     | —     | ±1.5  | %V <sub>FSS</sub> |
| Sensitivity                                                            | V/P              | —     | 45.9  | —     | mV/kPa            |
| Response Time <sup>(6)</sup>                                           | t <sub>R</sub>   | —     | 1.0   | —     | ms                |
| Output Source Current at Full Scale Output                             | I <sub>o+</sub>  | —     | 0.1   | —     | mAdc              |
| Warm-Up Time <sup>(7)</sup>                                            | —                | —     | 20    | —     | ms                |
| Offset Stability <sup>(8)</sup>                                        | —                | —     | ±0.5  | —     | %V <sub>FSS</sub> |

**NOTES:**

1. Device is ratiometric within this specified excitation range.
2. Offset (V<sub>off</sub>) is defined as the output voltage at the minimum rated pressure.
3. Full Scale Output (V<sub>FSO</sub>) is defined as the output voltage at the maximum or full rated pressure.
4. Full Scale Span (V<sub>FSS</sub>) is defined as the algebraic difference between the output voltage at full rated pressure and the output voltage at the minimum rated pressure.
5. Accuracy is the deviation in actual output from nominal output over the entire pressure range and temperature range as a percent of span at 25°C due to all sources of error including the following:
  - Linearity: Output deviation from a straight line relationship with pressure over the specified pressure range.
  - Temperature Hysteresis: Output deviation at any temperature within the operating temperature range, after the temperature is cycled to and from the minimum or maximum operating temperature points, with zero differential pressure applied.
  - Pressure Hysteresis: Output deviation at any pressure within the specified range, when this pressure is cycled to and from minimum or maximum rated pressure at 25°C.
  - TcSpan: Output deviation over the temperature range of 0° to 85°C, relative to 25°C.
  - TcOffset: Output deviation with minimum pressure applied, over the temperature range of 0° to 85°C, relative to 25°C.
6. Response Time is defined as the time for the incremental change in the output to go from 10% to 90% of its final value when subjected to a specified step change in pressure.
7. Warm-up Time is defined as the time required for the product to meet the specified output voltage after the pressure has been stabilized.
8. Offset Stability is the product's output deviation when subjected to 1000 cycles of Pulsed Pressure, Temperature Cycling with Bias Test.

**MECHANICAL CHARACTERISTICS**

| Characteristics                          | Typ | Unit  |
|------------------------------------------|-----|-------|
| Weight, Basic Element (Case 887)         | 4.0 | grams |
| Weight, Small Outline Package (Case 482) | 1.5 | grams |



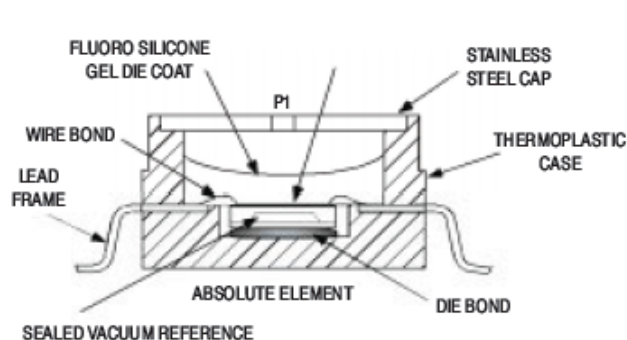


Figure 2. Cross Sectional Diagram SOP  
(not to scale)

Figure 2 illustrates the absolute sensing chip in the basic chip carrier (Case 482).

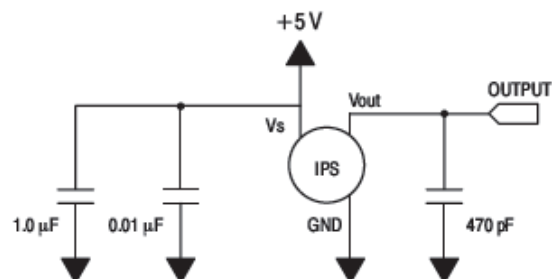


Figure 3. Recommended power supply decoupling  
and output filtering.  
For additional output filtering, please refer to  
Application Note AN1646.

Figure 3 shows the recommended decoupling circuit for interfacing the output of the integrated sensor to the A/D input of a microprocessor or microcontroller. Proper decoupling of the power supply is recommended.

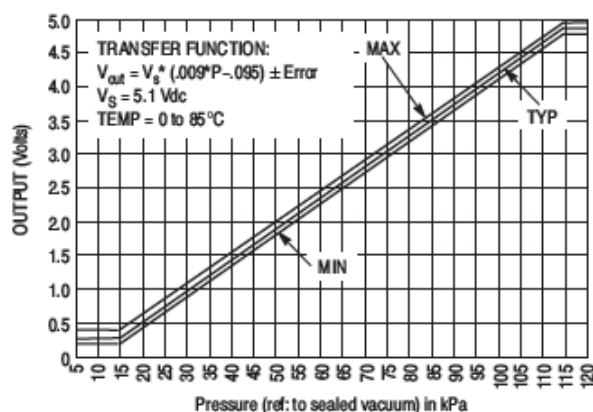


Figure 4. Output versus Absolute Pressure

Figure 4 shows the sensor output signal relative to pressure input. Typical minimum and maximum output curves are shown for operation over 0 to 85°C temperature range. The output will saturate outside of the rated pressure range.

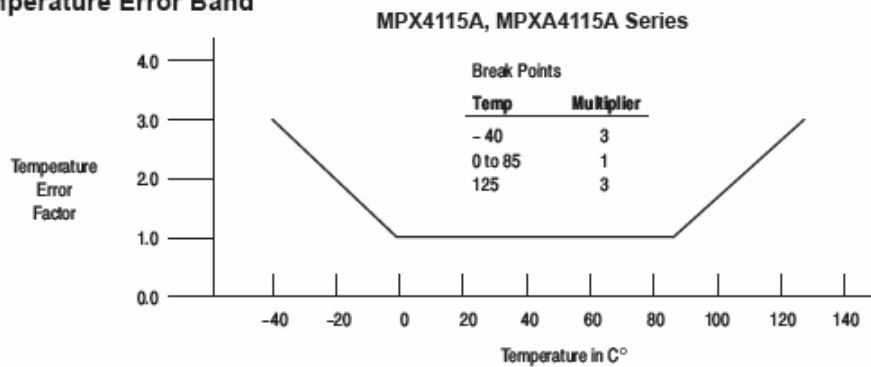
A fluorosilicone gel isolates the die surface and wire bonds from the environment, while allowing the pressure signal to be transmitted to the silicon diaphragm. The

MPX4115A/MPXA4115A series pressure sensor operating characteristics, internal reliability and qualification tests are based on use of dry air as the pressure media. Media other than dry air may have adverse effects on sensor performance and long-term reliability. Contact the factory for information regarding media compatibility in your application.

### Transfer Function (MPX4115A, MPXA4115A)

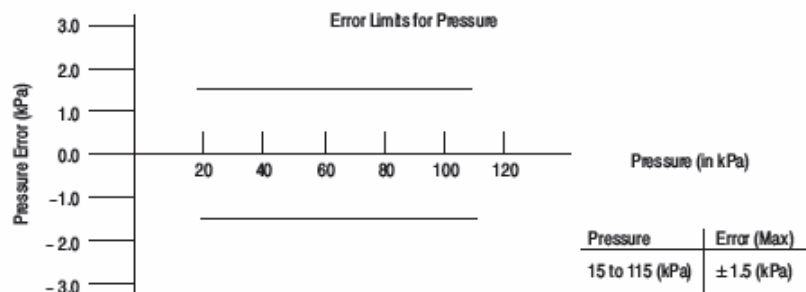
Nominal Transfer Value:  $V_{out} = V_S \times (0.009 \times P - 0.095)$   
 $\pm (\text{Pressure Error} \times \text{Temp. Factor} \times 0.009 \times V_S)$   
 $V_S = 5.1 \pm 0.25 \text{ Vdc}$

### Temperature Error Band



NOTE: The Temperature Multiplier is a linear response from 0°C to -40°C and from 85°C to 125°C

### Pressure Error Band



### ORDERING INFORMATION — UNIBODY PACKAGE

| Device Type     | Options                   | Case No. | MPX Series Order No. | Marking   |
|-----------------|---------------------------|----------|----------------------|-----------|
| Basic Element   | Absolute, Element Only    | 867      | MPX4115A             | MPX4115A  |
| Ported Elements | Absolute, Ported          | 867B     | MPX4115AP            | MPX4115AP |
|                 | Absolute, Stove Pipe Port | 867E     | MPX4115AS            | MPX4115A  |

### ORDERING INFORMATION — SMALL OUTLINE PACKAGE

| Device Type    | Options                | Case No. | MPX Series Order No. | Packing Options | Marking   |
|----------------|------------------------|----------|----------------------|-----------------|-----------|
| Basic Element  | Absolute, Element Only | 482      | MPXA4115A8U          | Rails           | MPXA4115A |
|                | Absolute, Element Only | 482      | MPXA4115A8T1         | Tape and Reel   | MPXA4115A |
| Ported Element | Absolute, Axial Port   | 482A     | MPXA4115AC8U         | Rails           | MPXA4115A |
|                | Absolute, Axial Port   | 482A     | MPXA4115AC8T1        | Tape and Reel   | MPXA4115A |

Donner pour ce capteur

- . le mesurande et l'unité du mesurande
- . la sensibilité et l'incertitude associée.
- . le type de la grandeur de sortie,
- . le domaine d'emploi de ce capteur
- . le temps de réponse

Ce capteur est-il passif ou actif ?

Ce capteur est-il linéaire ?