# MPX5010xx, MPXV5010xx, MPVZ5010xxx

Datasheet

## Integrated silicon pressure sensor on-chip signal conditioned, temperature compensated and calibrated

### Features

- 5.0% maximum error over 0° to 85°C
- Ideally suited for microprocessor or microcontroller-based systems
- Durable epoxy unibody and thermoplastic (PPS) surface mount package
- Temperature compensated over –40° to +125°C
- Patented silicon shear stress strain gauge
- Available in differential and gauge configurations
- Available in surface mount (SMT) or through-hole (DIP) configurations

### Applications

- Hospital beds
- Respiratory systems
- Process control
- Washing machine water level measurement (Reference AN1950)
- Ideally suited for microprocessor or microcontroller-based systems
- Appliance liquid level and pressure measurement

### Description

The MPxx5010 series piezoresistive transducers are state-of-the-art monolithic silicon pressure sensors designed for a wide range of applications, but particularly those employing a microcontroller or microprocessor with A/D inputs. This transducer combines advanced micromachining techniques, thin-film metallization, and bipolar processing to provide an accurate, high level analog output signal that is proportional to the applied pressure. The axial port has been modified to accommodate industrial grade tubing.

# 1 Ordering information

Table 1. **Ordering information**

| Type number | Package | | |
|---|---|---|---|
| | Name | Description | Version |
| **Unibody package (MPX5010 series)** | | | |
| MPX5010DP | SENSOR4F | sensor package, 6 terminals, 2.54 mm pitch, 17.78 mm x 29.48 mm x 10.67 body | SOT1756-1 |
| MPX5010GP | SENSOR6F | sensor package, 6 terminals, 2.54 mm pitch, 17.78 mm x 29.47 mm x 8.01 mm body | SOT1852-1 |
| **Small outline package (MPXV5010 series)** | | | |
| MPXV5010DP | S08 | plastic, small outline package, 8 terminals, 2.54 mm pitch, 12.06. mm x 12.06 mm x 7.62 mm body | SOT1693-1 |
| MPXV5010GC6T1 | S08 | plastic, small outline package, 8 terminals, 2.54 mm pitch, 10.67. mm x 10.67 mm x 12.96 mm body | SOT1854-1 |
| MPXV5010GC7U | S08 | plastic, small outline package, 8 terminals, 2.54 mm pitch, 10.67. mm x 10.67 mm x 12.96 mm body | SOT1863-1 |
| MPXV5010GP | S08 | plastic, small outline package, 8 terminals, 2.54 mm pitch, 12.06. mm x 12.06 mm x 7.62 mm body | SOT1693-3 |
| **Small outline package (Media resistant gel) (MPVZ5010 series)** | | | |
| MPVZ5010GW6U | S08 | plastic, small outline package, 8 terminals, 2.54 mm pitch, 1.07 mm x 1.07 mm x 1.99 mm body | SOT1691-2 |
| MPVZ5010GW7U | S08 | plastic, small outline package, 8 terminals, 2.54 mm pitch, 1.07 mm x 1.07 mm x 1.99 mm body | SOT1691-1 |

## 1.1 Ordering options

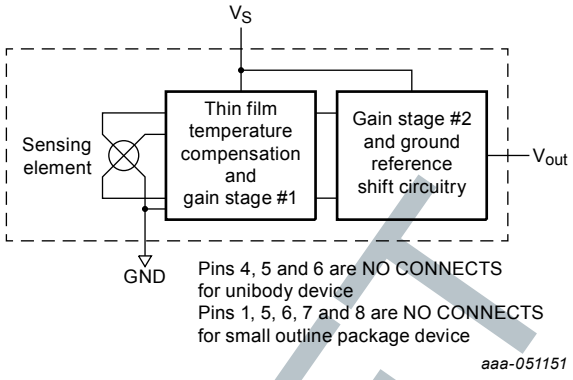
Table 2. **Ordering options**

| ORDERING INFORMATION | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Device Name | Case No. | None | Single | Dual | Gauge | Differential | Absolute | Device Marking |
| | | # of Ports | | | Pressure Type | | | |
| **Unibody Package (MPX5010 Series)** | | | | | | | | |
| MPX5010DP | 867C | | | • | | • | | MPX5010DP |
| MPX5010GP | 867B | | • | | • | | | MPX5010GP |
| **Small Outline Package (MPXV5010 Series)** | | | | | | | | |
| MPXV5010DP | 1351 | | | • | | • | | MPXV5010DP |
| MPXV5010GC6T1 | 482A | | • | | • | | | MPXV5010G |
| MPXV5010GC7U | 482C | | • | | • | | | MPXV5010G |
| MPXV5010GP | 1369 | | • | | • | | | MPXV5010GP |
| **Small Outline Package (Media Resistant Gel) (MPVZ5010 Series)** | | | | | | | | |
| MPVZ5010GW6U | 1735 | | • | | • | | | MZ5010GW |
| MPVZ5010GW7U | 1560 | | • | | • | | | MZ5010GW |

## 2 Block diagram

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

**Figure 1. Fully Integrated Pressure Sensor Schematic**



# 3 Pinning information

## 3.1 Pinning - Unibody packages

Figure 2. **MPX5010DP - SOT1756-1 - Case 867C-05**

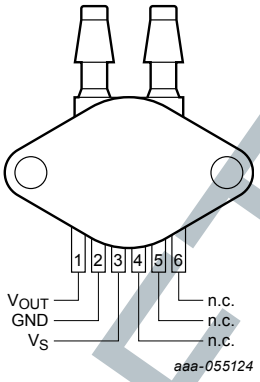
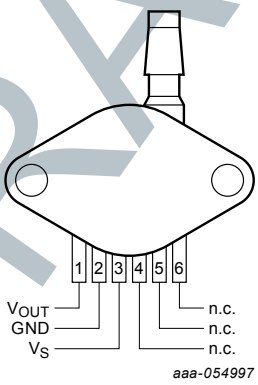



Figure 3. **MPX5010GP - SOT1852-1 - Case 867B-04**




## 3.2 Pin description - Unibody packages

This table defines the pin configuration for the Unibody packages identified in Table 1.

Table 3. **Pin descriptions - Unibody pacakages**

| Symbol | Pin | Description |
|---|---|---|
| VOUT | 1 | VOUT |
| GND | 2 | Ground |
| $V_S$ | 3 | Supply voltage |
| N.C. | 4 | No connect |
| N.C. | 5 | No connect |
| N.C. | 6 | No connect |

## 3.3 Pinning - Small Outline packages

Figure 4. MPXV5010DP - SOT1693-1 - Case 1351-01

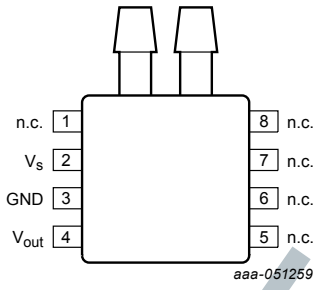



Figure 5. MPXV5010GC6T1- SOT1854-1 - Case 482A-01

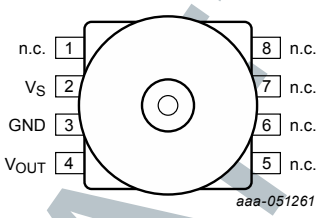



Figure 6. MPXV5010GC7U - SOT1863-1 - Case 482C-03

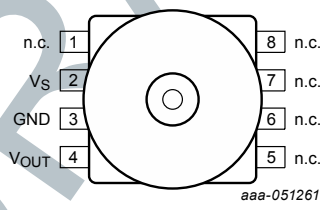



Figure 7. MPXV5010GP - SOT1693-3 - Case 1369-01

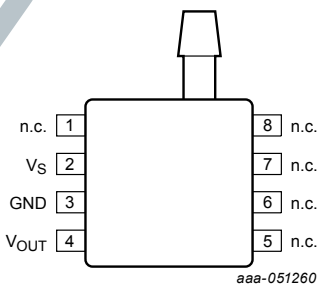



Figure 8. MPVZ5010GW6U - SOT1691-2 - Case 1735-01

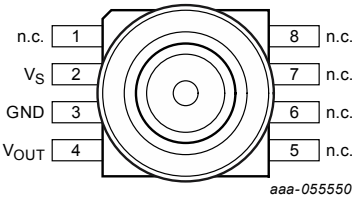
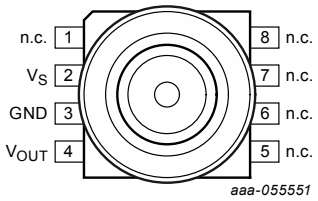


Figure 9. **MPVZ5010GW7U - SOT1691-1 - Case 1560-02**




## 3.4 Pin description - Small Outline packages

This table defines the pin configuration for the Small Outline packages identified in Table 1.

Table 4. **Pin descriptions - Small Outline packages**

| Symbol | Pin | Description |
|---|---|---|
| N.C. | 1 | No connect |
| $V_S$ | 2 | Supply voltage |
| GND | 3 | Ground |
| VOUT | 4 | VOUT |
| N.C. | 5 | No connect |
| N.C. | 6 | No connect |
| N.C. | 7 | No connect |
| N.C. | 8 | No connect |

# 4 Limiting values

**Table 5. Limiting values**

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Maximum Pressure (P1 > P2) | $P_{max}$ | 40 | kPa |
| Storage Temperature | $T_{stg}$ | –40 to +125 | °C |
| Operating Temperature | $T_A$ | –40 to +125 | °C |

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

# 5 Recommended operating conditions

$V_S$ = 5.0 Vdc, $T_A$ = 25°C unless otherwise noted, P1 > P2. Decoupling circuit shown in Figure 11 required to meet specification.

**Table 6. Recommended operating conditions**

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Pressure Range | $P_{OP}$ | 0 | — | 10<br>1019.78 | kPa<br>mm $H_2O$ |
| Supply Voltage(1) | $V_S$ | 4.75 | 5.0 | 5.25 | Vdc |
| Supply Current | $I_o$ | — | 5.0 | 10 | mAdc |
| Minimum Pressure Offset(2) (0 to 85°C)<br>@$V_S$=5.0 Volts | $V_{off}$ | 0 | 0.2 | 0.425 | Vdc |
| Full Scale Output(3)(0 to 85°C)<br>@$V_S$=5.0 Volts | $V_{FSO}$ | 4.475 | 4.7 | 4.925 | Vdc |
| Full Scale Span(4) (0 to85°C)<br>@$V_S$=5.0 Volts | $V_{FSS}$ | 4.275 | 4.5 | 4.725 | Vdc |
| Accuracy(5) (0 to85°C) | — | — | — | ±5.0 | %$V_{FSS}$ |
| Sensitivity | V/P | — | 450<br>4.413 | — | mV/kPa<br>mV/kPA $H_2O$ |
| Response Time(6) | $t_R$ | — | 1.0 | — | ms |
| Output Source Current at Full Scale Output | $I_{O+}$ | — | 0.1 | — | mAdc |
| Warm-Up Time(7) | — | — | 20 | — | ms |
| Offset Stability(8) | — | — | ± 0.5 | — | %$V_{FSS}$ |

1. *Device is ratiometric within this specified excitation range.*
2. *Offset ($V_{off}$) is defined as the output voltage at the minimum rated pressure.*
3. *Full Scale Output ($V_{FSO}$) is defined as the output voltage at the maximum or full rated pressure.*
4. *Full Scale Span ($V_{FSS}$) 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 (error budget) consists of 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 the 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 rated pressure applied, over the temperature range of 0° to 85°C, relative to 25°C.*

   *Variation from Nominal:The variation from nominal values, for Offset or Full Scale Span, as a percent of $V_{FSS}$, at 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 hours of Pulsed Pressure, Temperature Cycling with Bias Test.*

# 6 On-chip temperature compensation and calibration

The performance over temperature is achieved by integrating the shear-stress strain gauge, temperature compensation, calibration and signal conditioning circuitry onto a single monolithic chip.

Figure 10 illustrates the differential or gauge configuration in the basic chip carrier (Case 482). A fluorosilicone gel isolates the die surface and wire bonds from the environment, while allowing the pressure signal to be transmitted to the sensor diaphragm.

The MPxx5010G series pressure sensor operating characteristics, and 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.

Figure 11 shows the recommended decoupling circuit for interfacing the integrated sensor to the A/D input of a microprocessor or microcontroller. Proper decoupling of the power supply is recommended.

Figure 12 shows the sensor output signal relative to pressure input. Typical, minimum, and maximum output curves are shown for operation over a temperature range of 0° to 85°C using the decoupling circuit shown in Figure 11. The output will saturate outside of the specified pressure range.

**Figure 10. Cross-sectional diagram SOP (not to scale)**

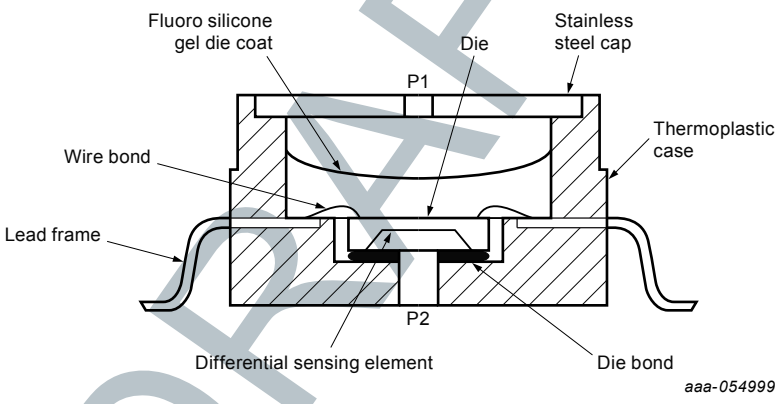
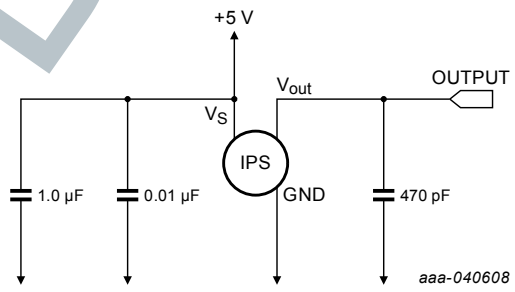
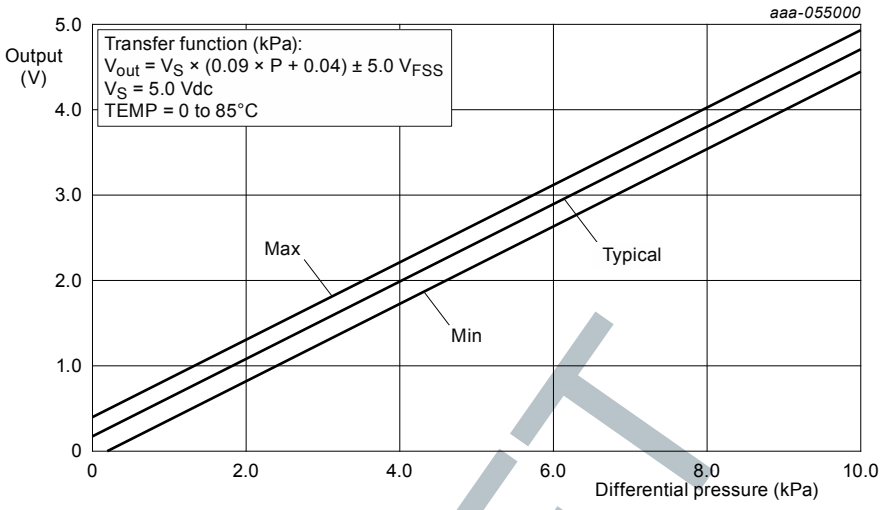



**Figure 11. Recommended power supply decoupling and output filtering**




*Note: For additional output filtering, please refer to Application Note AN1646.*

Figure 12. **Output vs. Pressure Differential**




**Nominal Transfer Value:**

$V_{OUT} = V_S \times (0.09 \times P + 0.04) \pm (Pressure\ error \times Temp.\ factor \times 0.09\ V_S)$

$V_S = 5.5V \pm 0.25Vdc$

Figure 13. **Temperature error band**

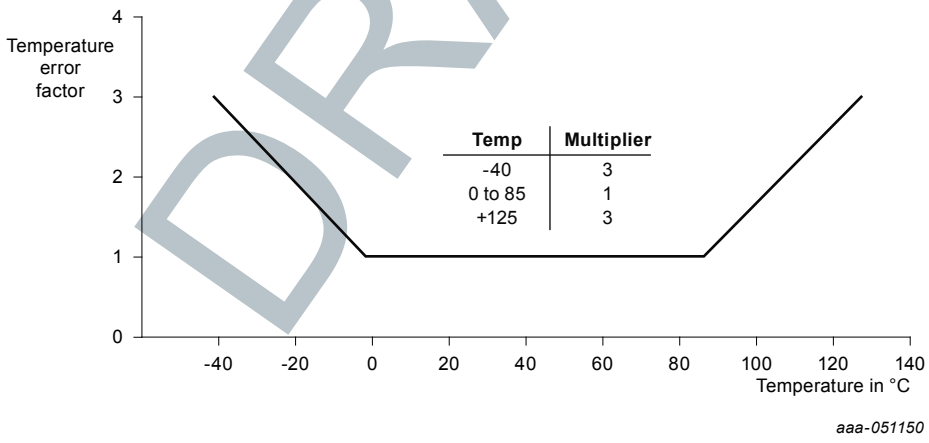
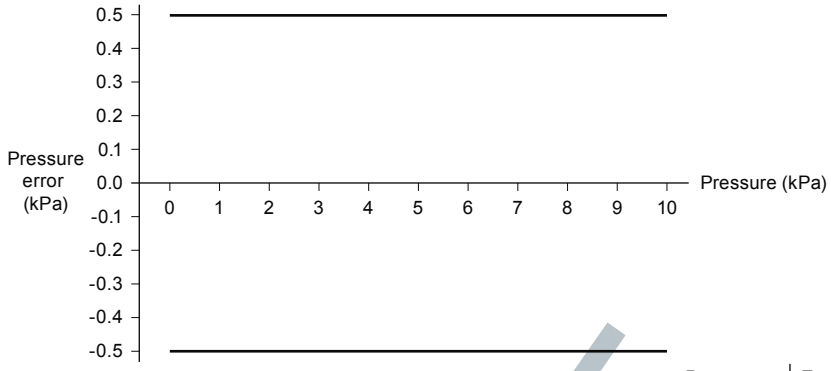


**Figure 14. Pressure error band**




| Pressure | Error (max) |
|---|---|
| 0 to 10 (kPa) | ± 0.5 (kPa) |

*aaa-055001*

# 7 Pressure (P1) / Vacuum (P2) side identification table

ST designates the two sides of the pressure sensor as the Pressure (P1) side and the Vacuum (P2) side. The Pressure (P1) side is the side containing fluorosilicone gel which protects the die from harsh media. The MPX pressure sensor is designed to operate with positive differential pressure applied, P1 > P2.

The Pressure (P1) side may be identified by using Table 7.

**Table 7. Pressure(P1) side identification**

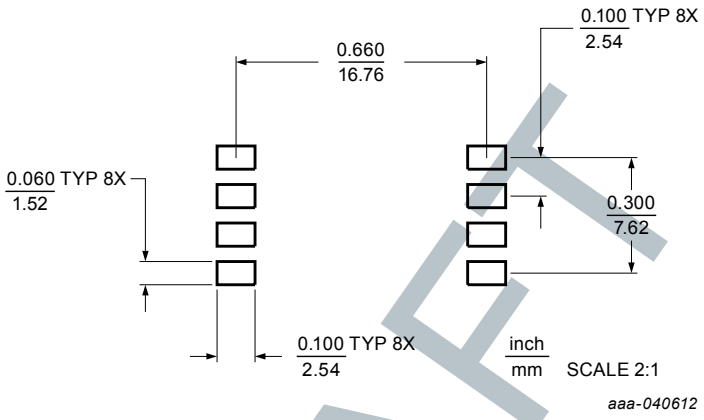
| Part Number | Case Type | Pressure (P1) Side Identifier |
|---|---|---|
| MPX5010DP | 867C | Side with Part Marking |
| MPX5010GP | 867B | Side with Port Attached |
| MPXV5010DP | 1351 | Side with Part Marking |
| MPXV5010GC6T1 | 482A | Side with Port Attached |
| MPXV5010GC7U | 482C | Side with Port Attached |
| MPXV5010GP | 1369 | Side with Port Attached |
| MPVZ5010GW6U | 1735 | Vertical Port Attached |
| MPVZ5010GW7U | 1560 | Vertical Port Attached |

# 8 Minimum recommended footprint for surface mounted applications

Surface mount board layout is a critical portion of the total design. The footprint for the surface mount packages must be the correct size to ensure proper solder connection interface between the board and the package.

With the correct footprint, the packages will self align when subjected to a solder reflow process. It is always recommended to design boards with a solder mask layer to avoid bridging and shorting between solder pads.

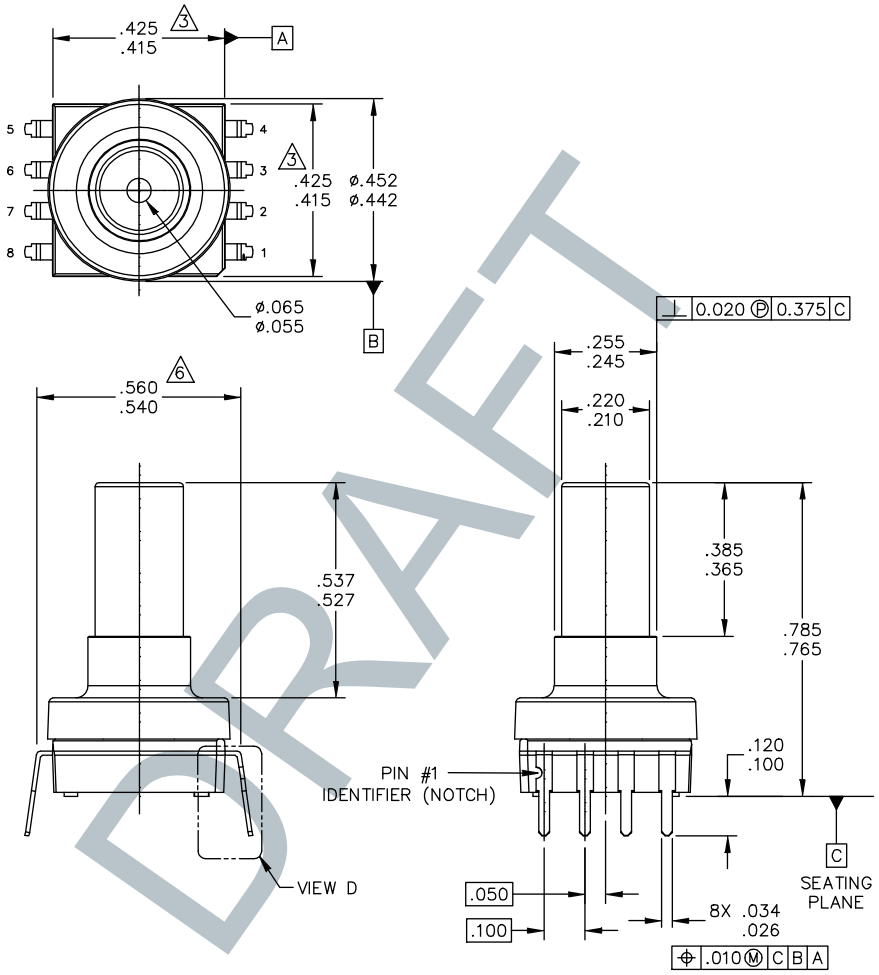
**Figure 15. SOP Footprint (Case 482)**



# 9 Package outline

*Note: Trademark property of NXP, used by STMicroelectronics under license*

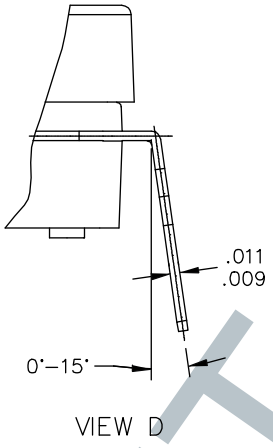
**Figure 16. SOT1691-1 Package Outline**






| © NXP SEMICONDUCTORS N.V. ALL RIGHTS RESERVED | MECHANICAL OUTLINE | PRINT VERSION NOT TO SCALE |
|---|---|---|
| TITLE: SO, 8 I/O, .420 X .420 PKG, .100 IN PITCH | DOCUMENT NO: 98ASA10611D | REV: E |
| | STANDARD: NON–JEDEC | |
| | SOT1691–1 | 15 JAN 2016 |

Figure 17. **SOT1691-1 Package Outline Detail**

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|---|---|---|
| TITLE: SO, 8 I/O, .420 X .420 PKG, .100 IN PITCH | DOCUMENT NO: 98ASA10611D | REV: E |
| | STANDARD: NON–JEDEC | |
| | SOT1691–1 | 15 JAN 2016 |

Figure 18. **SOT1691-1 Package Outline Notes**

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M – 1994.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSIONS DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION IS .006.
5. ALL VERTICAL SURFACES 5° TYPICAL DRAFT.
6. DIMENSION TO CENTER OF LEAD WHEN FORMED PARALLEL.



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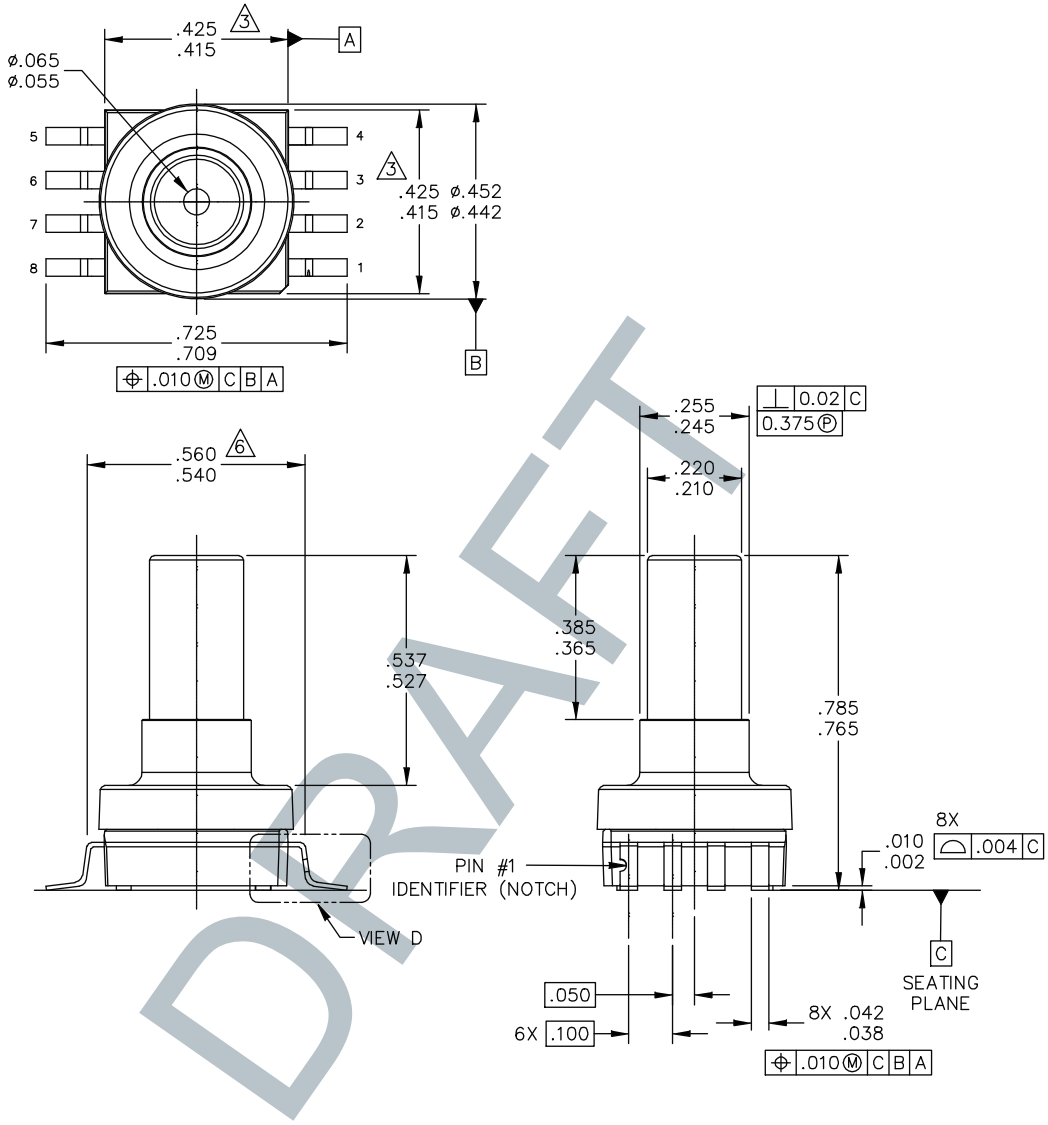
|---|---|---|
| TITLE: SO, 8 I/O, .420 X .420 PKG, .100 IN PITCH | DOCUMENT NO: 98ASA10611D | REV: E |
| | STANDARD: NON–JEDEC | |
| | SOT1691–1 | 15 JAN 2016 |

Figure 19. **SOT1691-2 Package Outline**



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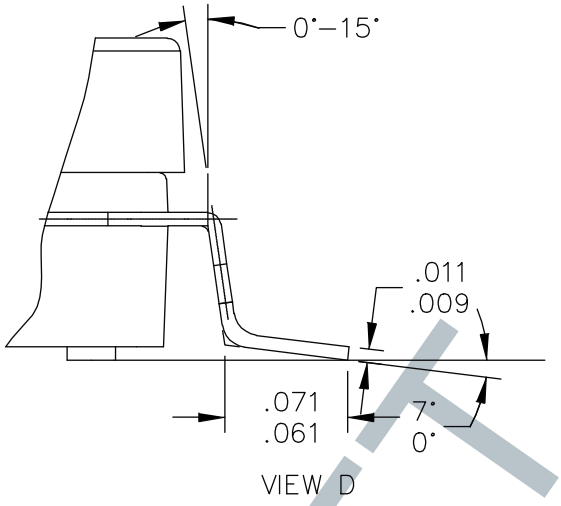
|---|---|---|
| TITLE: SO, 8 I/O, .420 X .420 PKG, .100 IN PITCH | DOCUMENT NO: 98ASA10686D | REV: C |
| | STANDARD: NON-JEDEC | |
| | SOT1691-2 | 15 JAN 2016 |

Figure 20. **SOT1691-2 Package Outline Detail**

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|---|---|---|
| TITLE: SO, 8 I/O, .420 X .420 PKG, .100 IN PITCH | DOCUMENT NO: 98ASA10686D | REV: C |
| | STANDARD: NON–JEDEC | |
| | SOT1691–2 | 15 JAN 2016 |

**Figure 21. SOT1691-2 Package Outline Notes**

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M – 1994.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSIONS DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION IS .006.
5. ALL VERTICAL SURFACES 5° TYPICAL DRAFT.
6. DIMENSION TO CENTER OF LEAD WHEN FORMED PARALLEL.



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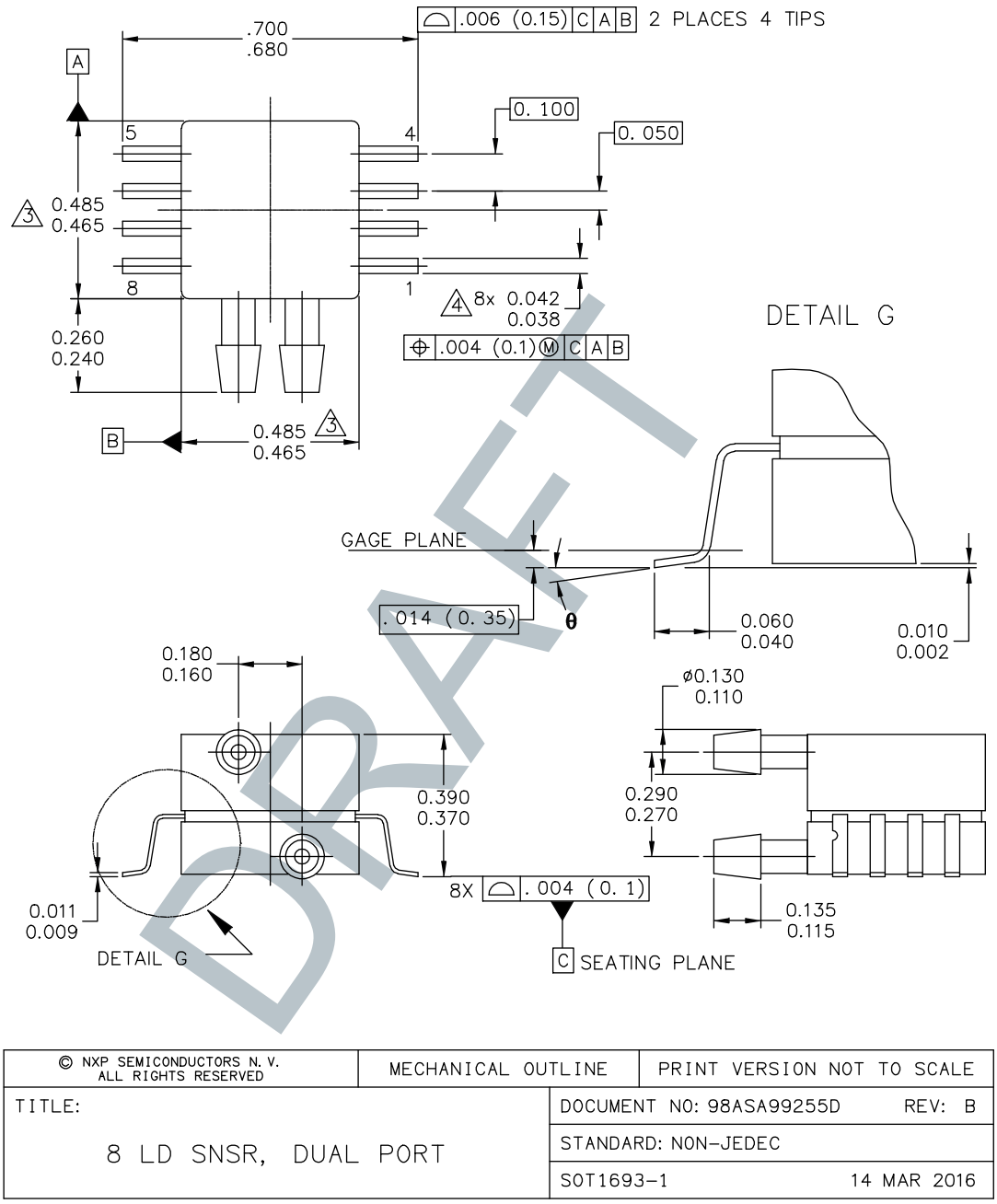
|---|---|---|
| TITLE: SO, 8 I/O, .420 X .420 PKG, .100 IN PITCH | DOCUMENT NO: 98ASA10686D | REV: C |
| | STANDARD: NON–JEDEC | |
| | SOT1691–2 | 15 JAN 2016 |

Figure 22. **SOT1693-1 Package Outline**



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|---|---|---|
| TITLE: 8 LD SNSR, DUAL PORT | DOCUMENT NO: 98ASA99255D | REV: B |
| | STANDARD: NON-JEDEC | |
| | SOT1693-1 | 14 MAR 2016 |

**Figure 23. SOT1693-1 Package Outline Notes**

NOTES:

1. CONTROLLING DIMENSION: INCH

2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994.

3. DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PPROTRUSIONS.
MOLD FLASH AND PROTRUSIONS SHALL NOT EXCEED .006 PER SIDE.

4. DIMENSION DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE .008 MAXIMUM.

| STYLE 1: | STYLE 2: |
|---|---|
| PIN 1: GND | PIN 1: N/C |
| PIN 2: +Vout | PIN 2: Vs |
| PIN 3: Vs | PIN 3: GND |
| PIN 4: –Vout | PIN 4: Vout |
| PIN 5: N/C | PIN 5: N/C |
| PIN 6: N/C | PIN 6: N/C |
| PIN 7: N/C | PIN 7: N/C |
| PIN 8: N/C | PIN 8: N/C |



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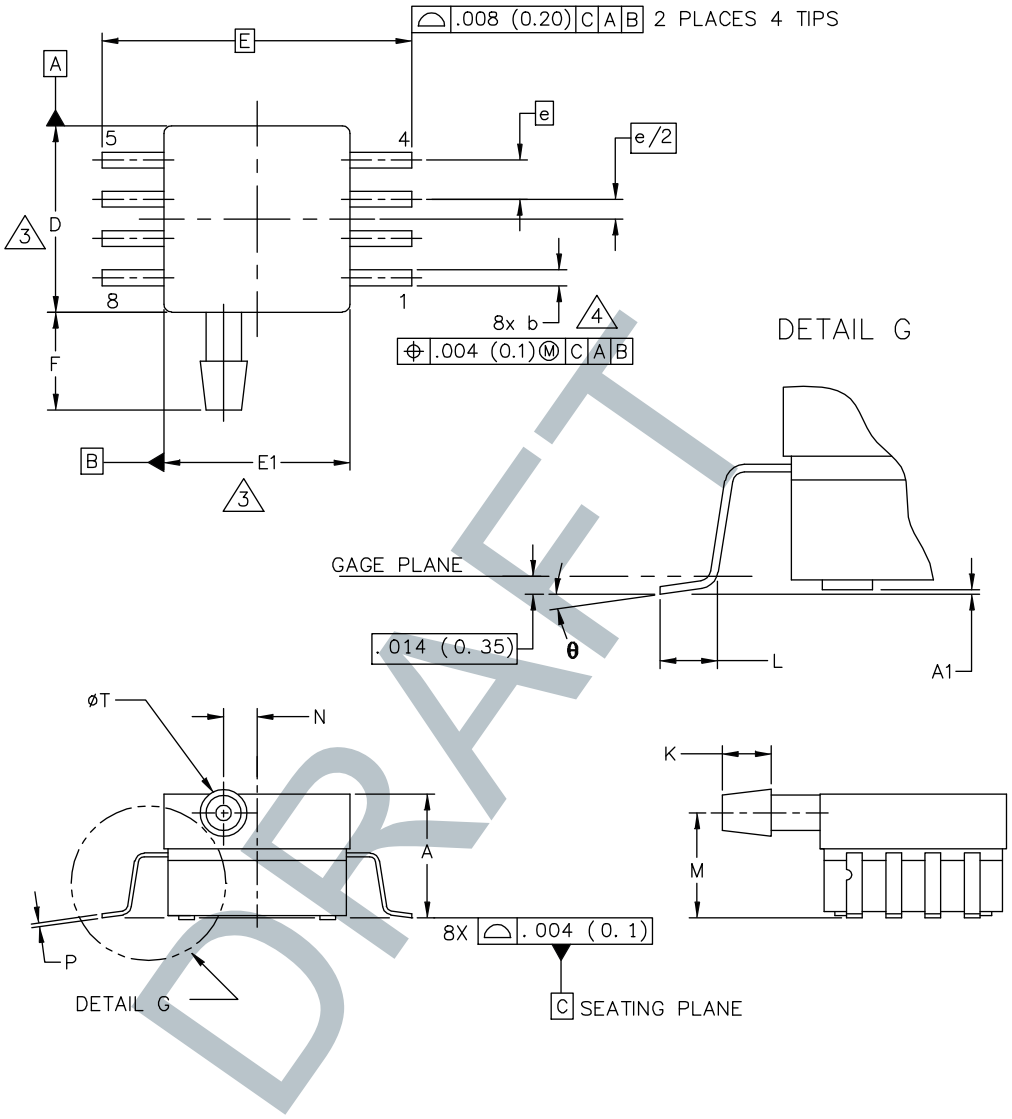
|---|---|---|
| TITLE: 8 LD SNSR, DUAL PORT | DOCUMENT NO: 98ASA99255D | REV: B |
| | STANDARD: NON–JEDEC | |
| | SOT1693–1 | 14 MAR 2016 |

Figure 24. **SOT1693-3 Package Outline**

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|---|---|---|
| TITLE: 8 LD SOP, SIDE PORT | DOCUMENT NO: 98ASA99303D | REV: E |
| | STANDARD: NON-JEDEC | |
| | SOT1693-3 | 14 MAR 2016 |

**Figure 25. SOT1693-3 Package Outline Notes**

NOTES:
1. CONTROLLING DIMENSION: INCH

2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994.

3. DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PPROTRUSIONS.
MOLD FLASH AND PROTRUSIONS SHALL NOT EXCEED .006 (0.152) PER SIDE.

4. DIMENSION DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE .008 (0.203) MAXIMUM.

| DIM | INCHES MIN | INCHES MAX | MILLIMETERS MIN | MILLIMETERS MAX | DIM | INCHES MIN | INCHES MAX | MILLIMETERS MIN | MILLIMETERS MAX |
|---|---|---|---|---|---|---|---|---|---|
| A | .300 | .330 | 7.62 | 8.38 | θ | 0° | 7° | 0° | 7° |
| A1 | .002 | .010 | 0.05 | 0.25 | – | --- | --- | --- | --- |
| b | .038 | .042 | 0.96 | 1.07 | – | --- | --- | --- | --- |
| D | .465 | .485 | 11.81 | 12.32 | – | --- | --- | --- | --- |
| E | .717 BSC | | 18.21 BSC | | – | --- | --- | --- | --- |
| E1 | .465 | .485 | 11.81 | 12.32 | – | --- | --- | --- | --- |
| e | .100 BSC | | 2.54 BSC | | – | --- | --- | --- | --- |
| F | .245 | .255 | 6.22 | 6.47 | – | --- | --- | --- | --- |
| K | .120 | .130 | 3.05 | 3.30 | – | --- | --- | --- | --- |
| L | .061 | .071 | 1.55 | 1.80 | – | --- | --- | --- | --- |
| M | .270 | .290 | 6.86 | 7.36 | – | --- | --- | --- | --- |
| N | .080 | .090 | 2.03 | 2.28 | – | --- | --- | --- | --- |
| P | .009 | .011 | 0.23 | 0.28 | – | --- | --- | --- | --- |
| T | .115 | .125 | 2.92 | 3.17 | – | --- | --- | --- | --- |

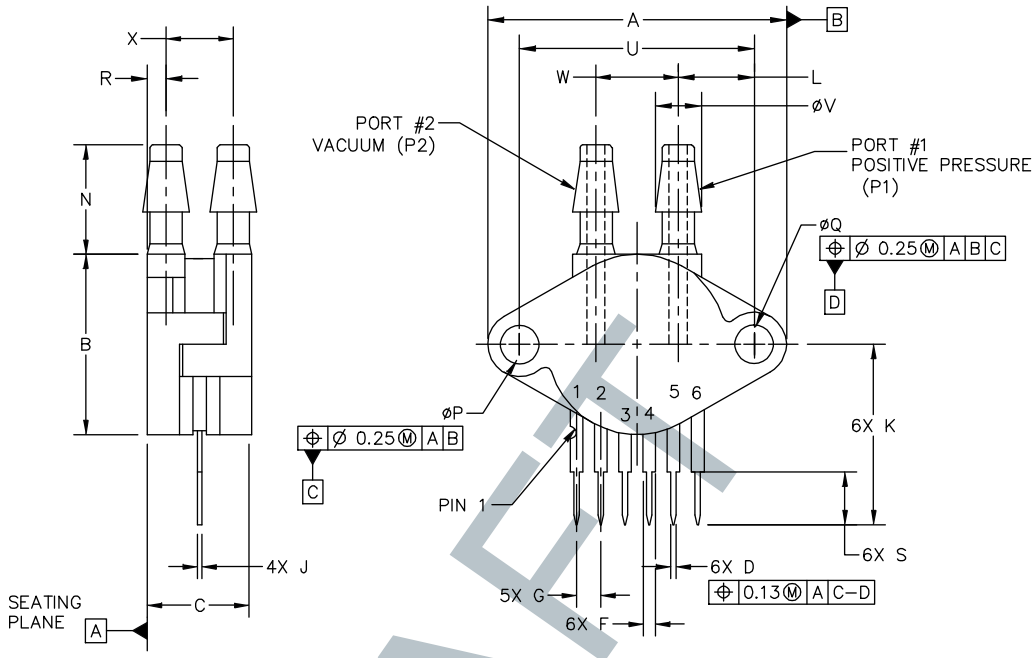


MECHANICAL OUTLINE | PRINT VERSION NOT TO SCALE

TITLE:
8 LD SOP, SIDE PORT

DOCUMENT NO: 98ASA99303D REV: E
STANDARD: NON–JEDEC
SOT1693–3 14 MAR 2016

Figure 26. **SOT1756-1 Package Outline**




| DIM | MILLIMETERS MIN | MAX | DIM | MILLIMETERS MIN | MAX |
|---|---|---|---|---|---|
| A | 29.08 | 29.85 | P | ø3.89 | ø4.04 |
| B | 17.40 | 18.16 | Q | ø3.89 | ø4.04 |
| C | 10.29 | 11.05 | R | 1.60 | 2.11 |
| D | 0.68 | 0.84 | S | 5.59 | 6.10 |
| F | 1.22 | 1.63 | U | 23.11 BSC | |
| G | 2.54 BSC | | V | 4.62 | 4.93 |
| J | 0.36 | 0.41 | W | 7.87 | 8.38 |
| K | 17.65 | 18.42 | X | 6.30 | 7.06 |
| L | 7.37 | 7.62 | | | |
| N | 10.67 | 11.18 | | | |

NOTES:

1. DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994.
3. 867C–01 THRU –04 OBSOLATE, NEW STANDARD 867C–05.
3. STYLE 1:

PIN 1: V OUT
2: GROUND
3: VCC
4: V1
5: V2
6: V EX

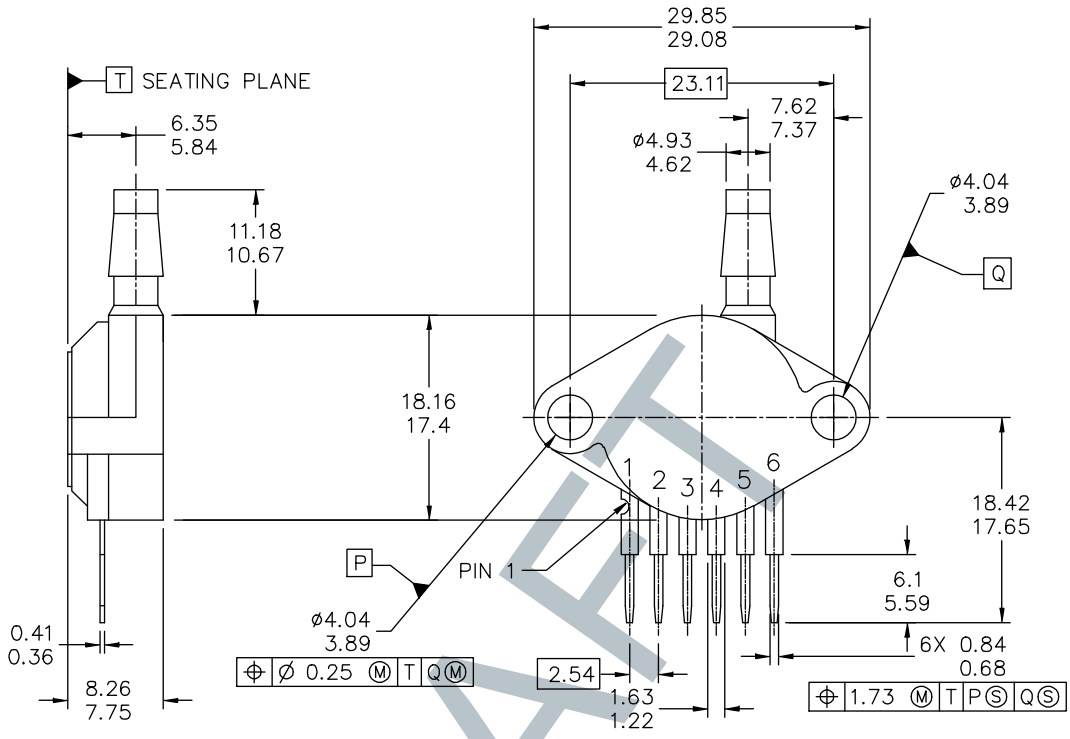


MECHANICAL OUTLINE | PRINT VERSION NOT TO SCALE

TITLE: SENSOR, 4 LEAD UNIBODY

DOCUMENT NO: 98ASB42797B REV: H
STANDARD: NON–JEDEC
SOT1756–1 29 JAN 2016

Figure 27. **SOT1852-1 Package Outline**

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|---|---|---|
| TITLE: SENSOR, 6 LEAD UNIBODY CELL, AP & GP 01ASB09087B | DOCUMENT NO: 98ASB42796B | REV: J |
| | STANDARD: NON-JEDEC | |
| | SOT1852-1 | 15 MAR 2016 |

**Figure 28. SOT1852-1 Package Outline Notes**

NOTES:

1. DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994.
3. 867B–01 THRU –3 OBSOLETE, NEW STANDARD 867B–04.

STYLE 1:

PIN 1: V OUT
2: GROUND
3: VCC
4: V1
5: V2
6: V EX



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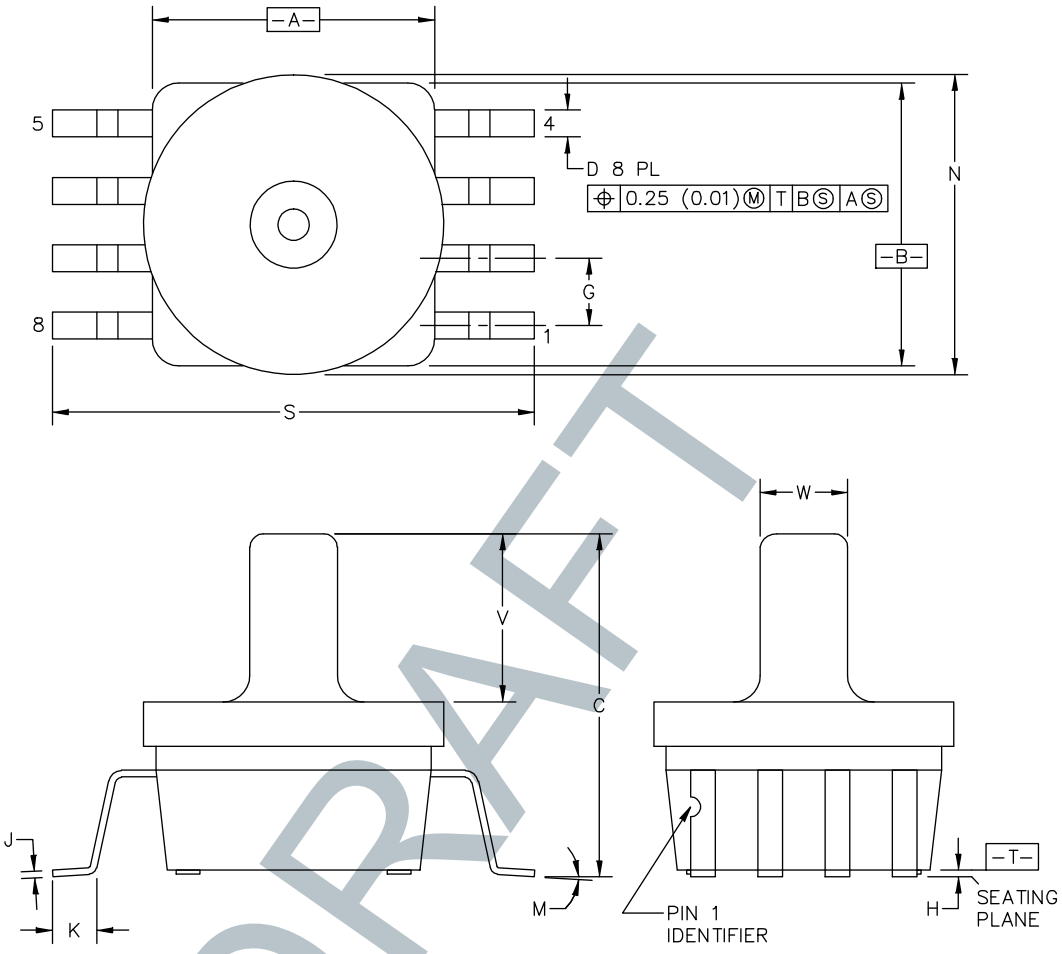
|---|---|---|
| TITLE: SENSOR, 6 LEAD UNIBODY CELL, AP & GP 01ASB09087B | DOCUMENT NO: 98ASB42796B | REV: J |
| | STANDARD: NON–JEDEC | |
| | SOT1852–1 | 15 MAR 2016 |

Figure 29. **SOT1854-1 Package Outline**

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|---|---|---|
| TITLE: SENSOR UNIBODY, 11.33 X 11.33 X 12.955 PKG, 2.54 PITCH, 8 I/O | DOCUMENT NO: 98ASB17757C | REV: C |
| | STANDARD: NON-JEDEC | |
| | SOT1854-1 | 13 JUL 2017 |

**Figure 30. SOT1854-1 Package Outline Notes**

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M–1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION 'A' AND 'B' DO NOT INCLUDE MOLD PROTUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006).
5. ALL VERTICAL SURFACES 5° TYPICAL DRAFT.

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | MIN | MAX | MIN | MAX |
| A | 0.415 | 0.425 | 10.54 | 10.79 |
| B | 0.415 | 0.425 | 10.54 | 10.79 |
| C | 0.500 | 0.520 | 12.70 | 13.21 |
| D | 0.038 | 0.042 | 0.96 | 1.07 |
| G | 0.100 BSC | | 2.54 BSC | |
| H | 0.002 | 0.010 | 0.05 | 0.25 |
| J | 0.009 | 0.011 | 0.23 | 0.28 |
| K | 0.061 | 0.071 | 1.55 | 1.80 |
| M | 0° | 7° | 0° | 7° |
| N | 0.444 | 0.448 | 11.28 | 11.38 |
| S | 0.709 | 0.725 | 18.01 | 18.41 |
| V | 0.245 | 0.255 | 6.22 | 6.48 |
| W | 0.115 | 0.125 | 2.92 | 3.17 |



MECHANICAL OUTLINE | PRINT VERSION NOT TO SCALE

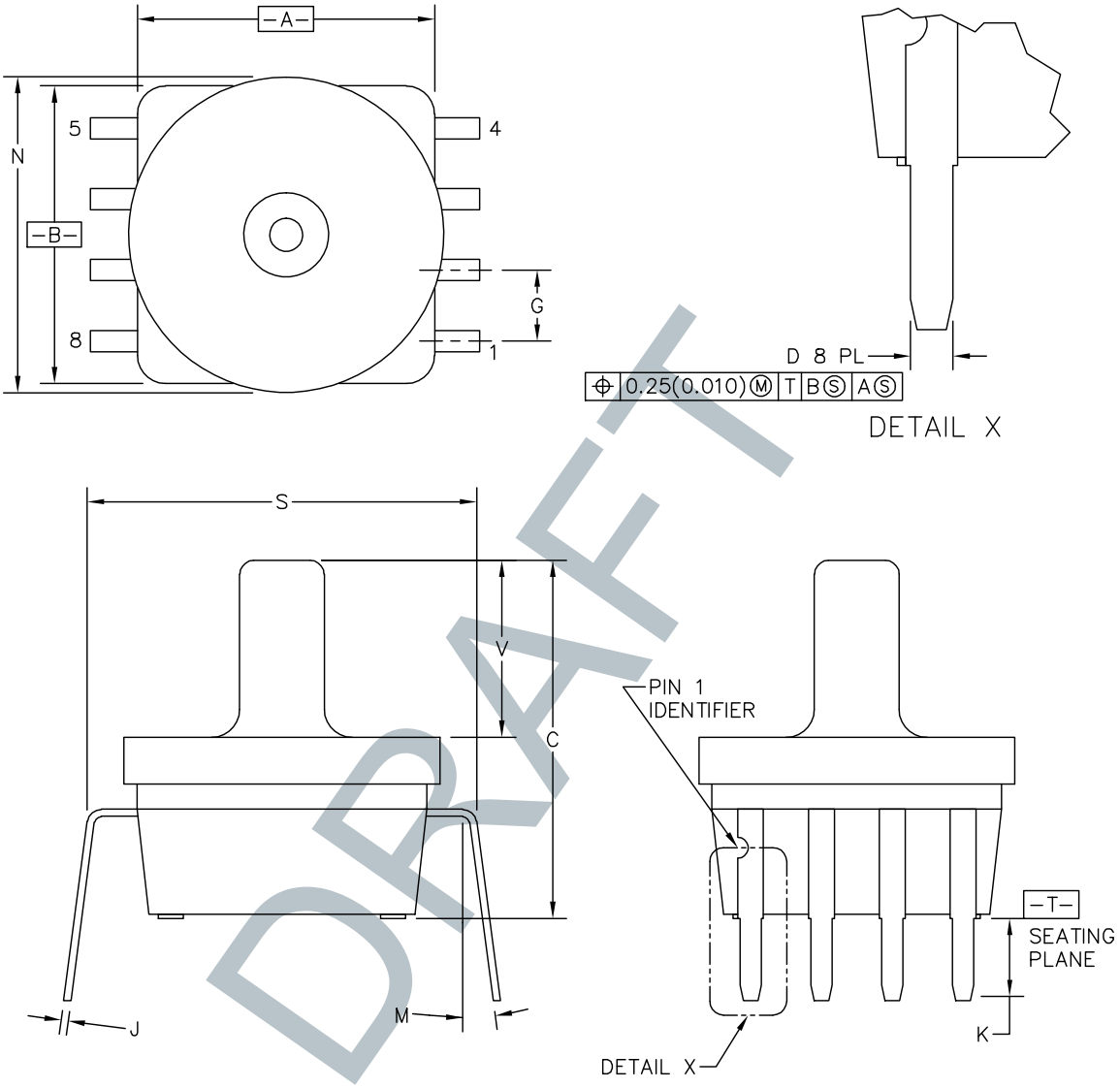
TITLE: SENSOR UNIBODY, 11.33 X 11.33 X 12.955 PKG, 2.54 PITCH, 8 I/O

DOCUMENT NO: 98ASB17757C REV: C

STANDARD: NON–JEDEC

SOT1854–1 13 JUL 2017

Figure 31. **SOT1863-1 Package Outline**

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|---|---|---|
| TITLE: SENSOR UNIBODY, 11.33 X 11.33 X 12.955 PKG, 2.54 PITCH, 8 I/O | DOCUMENT NO: 98ASB17759C | REV: F |
| | STANDARD: NON-JEDEC | |
| | SOT1863-1 | 24 OCT 2017 |

**Figure 32. SOT1863-1 Package Outline Notes**

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M–1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION 'A' AND 'B' DO NOT INCLUDE MOLD PROTUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006).
5. ALL VERTICAL SURFACES 5° TYPICAL DRAFT.
6. DIMENSION 'S' TO CENTER OF LEAD WHEN FORMED PARALLEL.
7. 482C–01 AND –02 OBSOLETE. NEW STANDARD 482C–03.

| | MILLIMETERS | | INCHES | |
|---|---|---|---|---|
| DIM | MIN | MAX | MIN | MAX |
| A | 10.54 | 10.79 | 0.415 | 0.425 |
| B | 10.54 | 10.79 | 0.415 | 0.425 |
| C | 12.70 | 13.21 | 0.500 | 0.520 |
| D | 0.66 | 0.864 | 0.026 | 0.034 |
| G | 2.54 | BSC | 0.100 | BSC |
| J | 0.23 | 0.28 | 0.009 | 0.011 |
| K | 2.54 | 3.05 | 0.100 | 0.120 |
| M | 0° | 15° | 0° | 15° |
| N | 11.28 | 11.38 | 0.444 | 0.448 |
| S | 13.72 | 14.22 | 0.540 | 0.560 |
| V | 6.22 | 6.48 | 0.245 | 0.255 |
| W | 2.92 | 3.17 | 0.115 | 0.125 |



| | | |
|---|---|---|
| | MECHANICAL OUTLINE | PRINT VERSION NOT TO SCALE |
| TITLE: SENSOR UNIBODY, 11.33 X 11.33 X 12.955 PKG, 2.54 PITCH, 8 I/O | DOCUMENT NO: 98ASB17759C | REV: F |
| | STANDARD: NON–JEDEC | |
| | SOT1863–1 | 24 OCT 2017 |

## Revision history

Table 8. **Document revision history**

| Date | Version | Changes |
|---|---|---|
| 20-May-2026 | 1 | Initial release from ST, rebranded NXP document |

# Contents

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