# Chipsmall

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

# Freescale Semiconductor

# Integrated Silicon Pressure Sensor On-Chip Signal Conditioned, Temperature Compensated and Calibrated

**MPX5100**
**MPXV5100**
**Series**

**0 to 100 kPa (0 to 14.5 psi)**
**15 to 115 kPa (2.2 to 16.7 psi)**
**0.2 to 4.7 V Output**

The MPX5100 series piezoresistive transducer is a state-of-the-art monolithic silicon pressure sensor designed for a wide range of applications, but particularly those employing a microcontroller or microprocessor with A/D inputs. This patented, single element 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.

## Features

- 2.5% Maximum Error over 0° to 85°C
- Ideally suited for Microprocessor or Microcontroller-Based Systems
- Patented Silicon Shear Stress Strain Gauge
- Available in Absolute, Differential and Gauge Configuration
- Durable Epoxy Unibody Element
- Easy-to-Use Chip Carrier Option

## Typical Applications

- Patient Monitoring
- Process Control
- Pump/Motor Control
- Pressure Switching

## ORDERING INFORMATION

| Device Name | Case No. | # of Ports | | | Pressure Type | | | Device Marking |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | None | Single | Dual | Gauge | Differential | Absolute | |
| **Unibody Package (MPX5100 Series)** | | | | | | | | |
| MPX5100A | 867 | • | | | | | • | MPX5100A |
| MPX5100AP | 867B | | • | | | | • | MPX5100AP |
| MPX5100D | 867 | • | | | | • | | MPX5100D |
| MPX5100DP | 867C | | | • | | • | | MPX5100DP |
| MPX5100GP | 867B | | • | | • | | | MPX5100GP |
| **Small Outline Package (MPXV5100 Series)** | | | | | | | | |
| MPXV5100GC6U | 482A | | • | | • | | | MPXV5100G |
| MPXV5100GC7U | 482C | | • | | • | | | MPXV5100G |
| MPXV5100DP | 1351 | | | • | | • | | MPXV5100DP |
| MPXV5100GP | 1369 | | • | | • | | | MPXV5100GP |

*freescale*™
semiconductor

**UNIBODY PACKAGES**
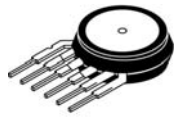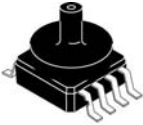


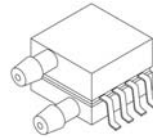MPX5100A/D
CASE 867-08

MPX5100AP/GP
CASE 867B-04
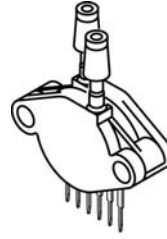
MPX5100DP
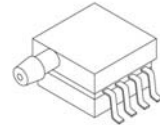CASE 857C-05

**SMALL OUTLINE PACKAGES**



MPXV5100GC6U
CASE 482A-01

MPXV5100GC7U
CASE 482C-03

MPXV5100DP
CASE 1351-01

MPXV5100GP
CASE 1369-01

**MPX5100**

## Operating Characteristics

**Table 1. Operating Characteristics** ($V_S$ = 5.0 Vdc, $T_A$ = 25°C unless otherwise noted, P1 > P2. Decoupling circuit shown in Figure 5 required to meet electrical specifications.)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Pressure Range[1]<br>   Gauge, Differential: MPX5100D/MPX5100G/MPXV5100G<br>   Absolute: MPX5100A | $P_{OP}$ | 0<br>15 | —<br>— | 100<br>115 | kPa |
| Supply Voltage[2] | $V_S$ | 4.75 | 5.0 | 5.25 | $V_{DC}$ |
| Supply Current | $I_O$ | — | 7.0 | 10 | mAdc |
| Minimum Pressure Offset[3]      (0 to 85°C)<br>   @ $V_S$ = 5.0 V | $V_{OFF}$ | 0.088 | 0.20 | 0.313 | $V_{DC}$ |
| Full Scale Output[4]    Differential and Absolute (0 to 85°C)<br>   @ $V_S$ = 5.0 V | $V_{FSO}$ | 4.587 | 4.700 | 4.813 | $V_{DC}$ |
| Full Scale Span[5]    Differential and Absolute (0 to 85°C)<br>   @ $V_S$ = 5.0 V | $V_{FSS}$ | — | 4.500 | — | $V_{DC}$ |
| Accuracy[6] | — | — | — | ±2.5 | %$V_{FSS}$ |
| Sensitivity | V/P | — | 45 | — | mV/kPa |
| Response Time[7] | $t_R$ | — | 1.0 | — | ms |
| Output Source Current at Full Scale Output | $I_{O+}$ | — | 0.1 | — | mAdc |
| Warm-Up Time[8] | — | — | 20 | — | ms |
| Offset Stability[9] | — | — | ±0.5 | — | %$V_{FSS}$ |

1. 1.0 kPa (kiloPascal) equals 0.145 psi.
2. Device is ratiometric within this specified excitation range.
3. Offset ($V_{OFF}$) is defined as the output voltage at the minimum rated pressure.
4. Full Scale Output ($V_{FSO}$) is defined as the output voltage at the maximum or full rated pressure.
5. 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.
6. 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 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.
    * Variation from Nominal: The variation from nominal values, for Offset or Full Scale Span, as a percent of $V_{FSS}$ at 25°C.
7. Response Time is defined as the time for the incremental changed in the output to go from 10% to 90% of its final value when subjected to a specified step change in pressure.
8. Warm-Up Time is defined as the time required for the product to meet the specified output voltage after the Pressure has been stabilized.
9. Offset Stability is the product's output deviation when subjected to 1000 hours of Pulsed Pressure, Temperature Cycling with Bias Test.

**MPX5100**

## Maximum Ratings

**Table 2. Maximum Ratings**[1]

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Maximum Pressure (P1 > P2) | $P_{max}$ | 400 | kPa |
| Storage Temperature | $T_{stg}$ | -40° to +125° | °C |
| Operating Temperature | $T_A$ | -40° to +125° | °C |

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

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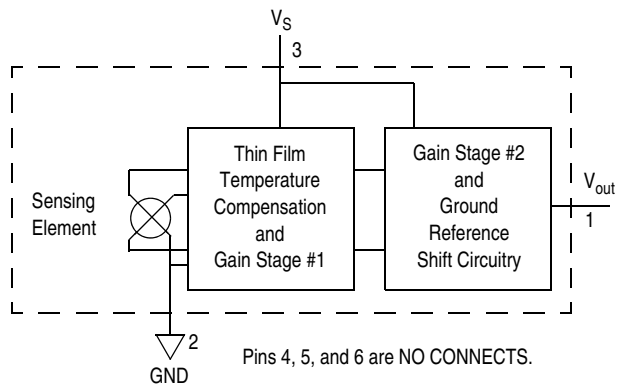


**Figure 1. Fully Integrated Pressure Sensor Schematic for Unibody Package Devices**

Figure 2 shows a block diagram of the internal circuitry integrated on a pressure sensor chip in a Small Outline Package.
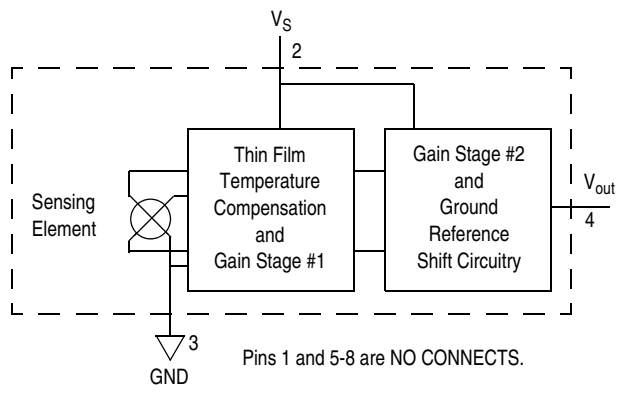


**Figure 2. Fully Integrated Pressure Sensor Schematic for Small Outline Package Devices**

**MPX5100**

## On-chip Temperature Compensation and Calibration

Figure 3 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 5. The output will saturate outside of the specified pressure range.

Figure 4 illustrates both the Differential/Gauge and the Absolute Sensing Chip in the basic chip carrier (Case 867). 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 MPX5100 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.
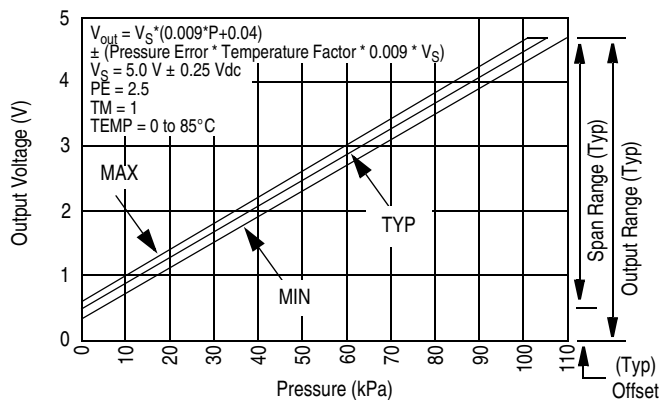
$$V_{out} = V_S*(0.009*P+0.04)$$
$$\pm (\text{Pressure Error} * \text{Temperature Factor} * 0.009 * V_S)$$
$$V_S = 5.0 \text{ V} \pm 0.25 \text{ Vdc}$$
$$PE = 2.5$$
$$TM = 1$$
$$TEMP = 0 \text{ to } 85°C$$

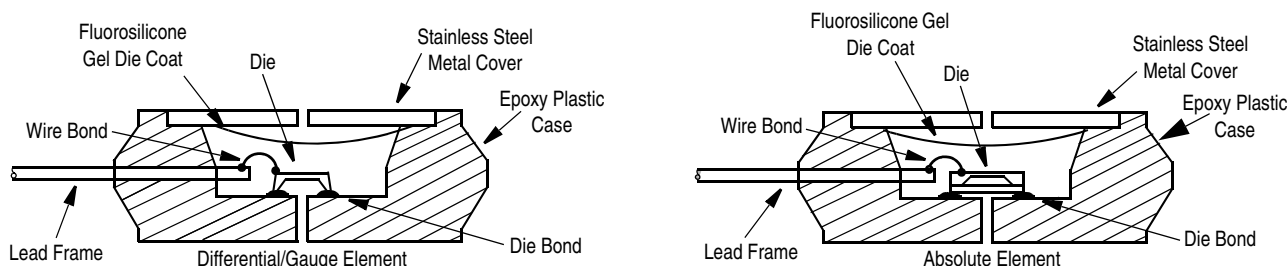**Figure 3. Output vs. Pressure Differential**

**Figure 4. Cross Sectional Diagrams (not to scale)**

Figure 5 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.
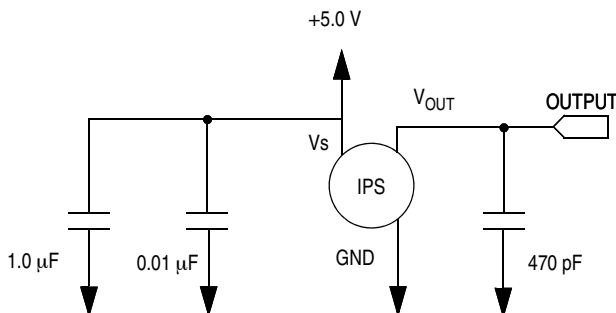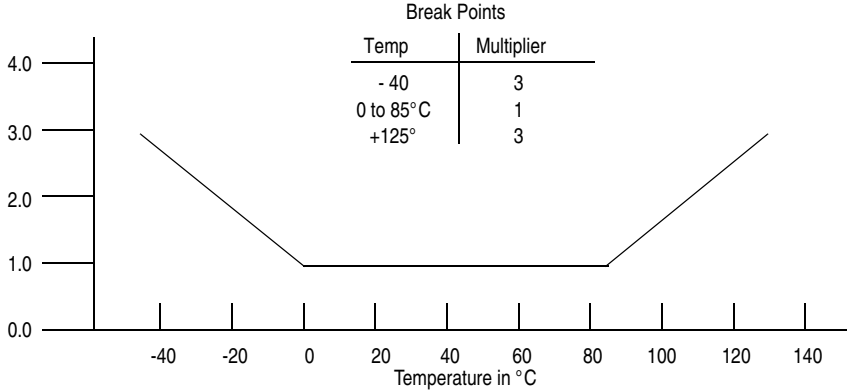
**Figure 5. Recommended Power Supply Decoupling and Output Filtering**
(For additional output filtering, please refer to Application Note AN1646.)

**MPX5100**

## Transfer Function (MPX5100D, MPX5100G, MPXV5100G

**Nominal Transfer Value:** $V_{OUT} = V_S$ (P x 0.009 + 0.04)

$\pm$ (Pressure Error x Temp. Mult. x 0.009 x $V_S$)

$V_S$ = 5.0 V $\pm$ 0.25 V

## Temperature Error Multiplier

### MPX5100D/MPX5100G/MPXV5100G Series

Break Points

| Temp | Multiplier |
|------|-----------|
| - 40 | 3 |
| 0 to 85°C | 1 |
| +125° | 3 |



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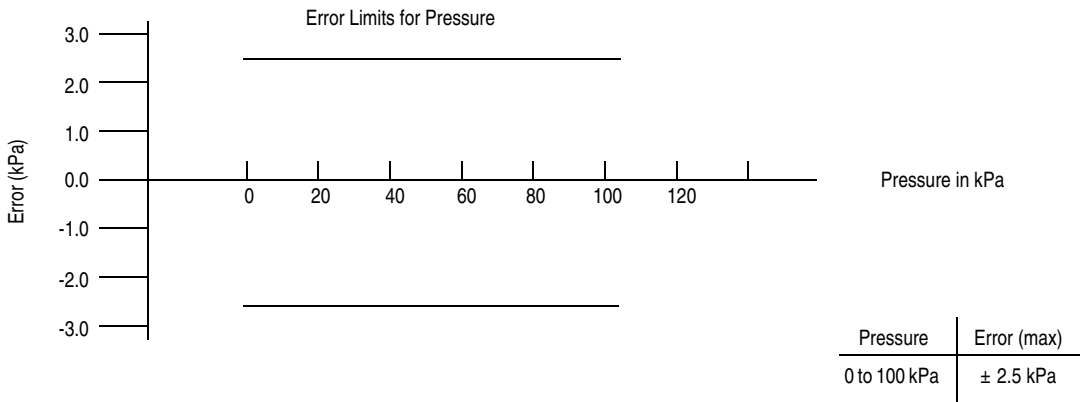
Note: The Temperature Multiplier is a linear response from 0° to -40°C and from 85° to 125°C.

## Pressure Error Band

### MPX5100D/MPX5100G/MPXV5100G Series
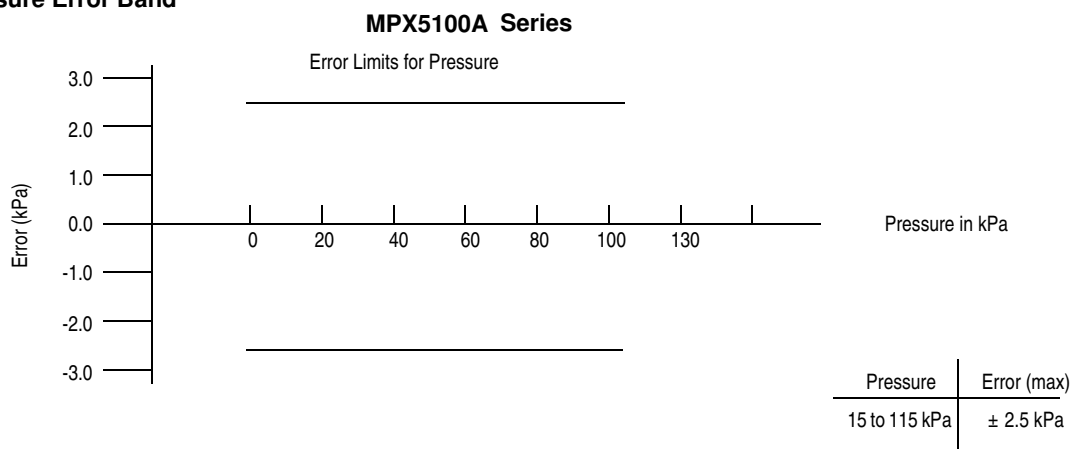
Error Limits for Pressure



Pressure in kPa

| Pressure | Error (max) |
|----------|-------------|
| 0 to 100 kPa | $\pm$ 2.5 kPa |

**MPX5100**

## Transfer Function (MPX5100A)

**Nominal Transfer Value:** $V_{OUT} = V_S$ (P x 0.009 - 0.095)

$\pm$ (Pressure Error x Temp. Mult. x 0.009 x $V_S$)
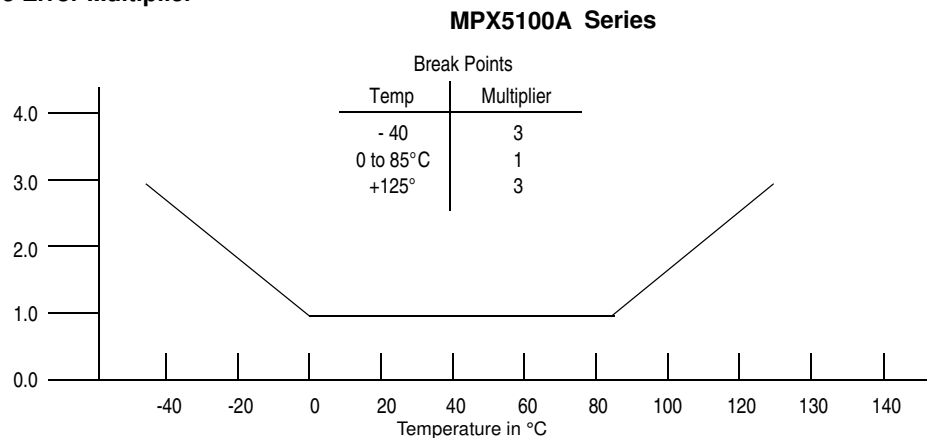
$V_S$ = 5.0 V $\pm$ 0.25 V

## Temperature Error Multiplier

### MPX5100A Series

Break Points

| Temp | Multiplier |
|---|---|
| - 40 | 3 |
| 0 to 85°C | 1 |
| +125° | 3 |

Temperature in °C

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

## Pressure Error Band

### MPX5100A Series

Error Limits for Pressure

Error (kPa)

Pressure in kPa

| Pressure | Error (max) |
|---|---|
| 15 to 115 kPa | $\pm$ 2.5 kPa |

**MPX5100**

## PRESSURE (P1)/VACUUM (P2) SIDE IDENTIFICATION TABLE

Freescale 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 fluoro silicone 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 the table below.

| Part Number | Case Type | Pressure (P1) Side Identifier |
|---|---|---|
| MPX5100A, MPX5100D | 867 | Stainless Steel Cap |
| MPX5100DP | 867C | Side with Part Marking |
| MPX5100AP, MPX5100GP | 867B | Side with Port Attached |
| MPXV5100GC6U | 482A | Side with Port Attached |
| MPXV5100GC7U | 482C | Side with Port Attached |
| MPXV5100DP | 1351 | Side with Part Marking |
| MPXV5100GP | 1369 | Side with Port Attached |

## SURFACE MOUNTING INFORMATION

### 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
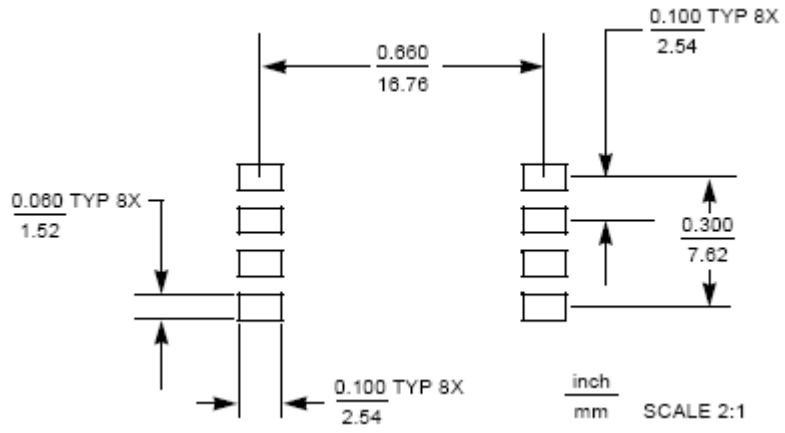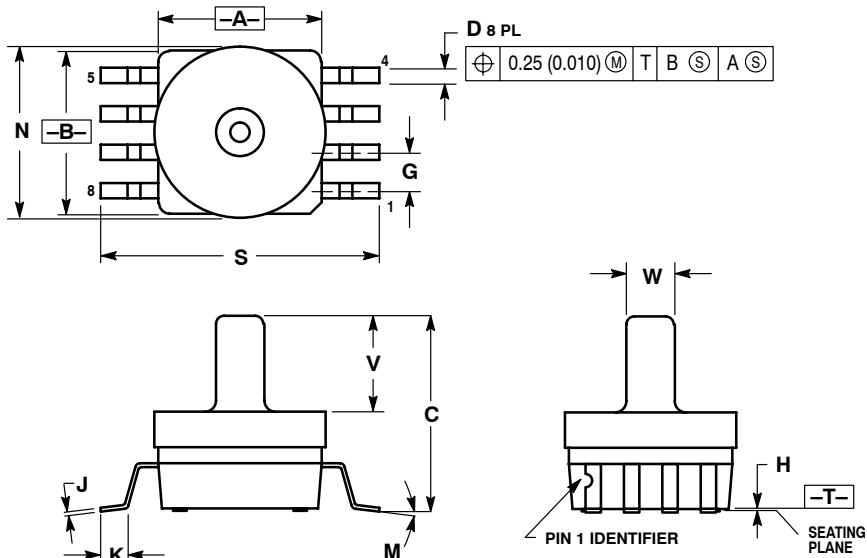


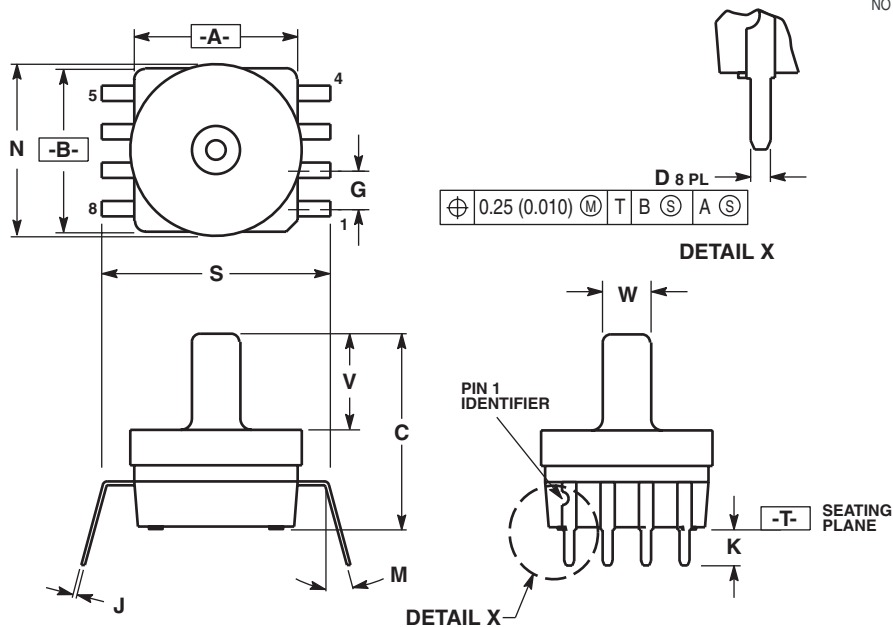**Figure 6. Small Outline Package Footprint**

**MPX5100**

## PACKAGE DIMENSIONS



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

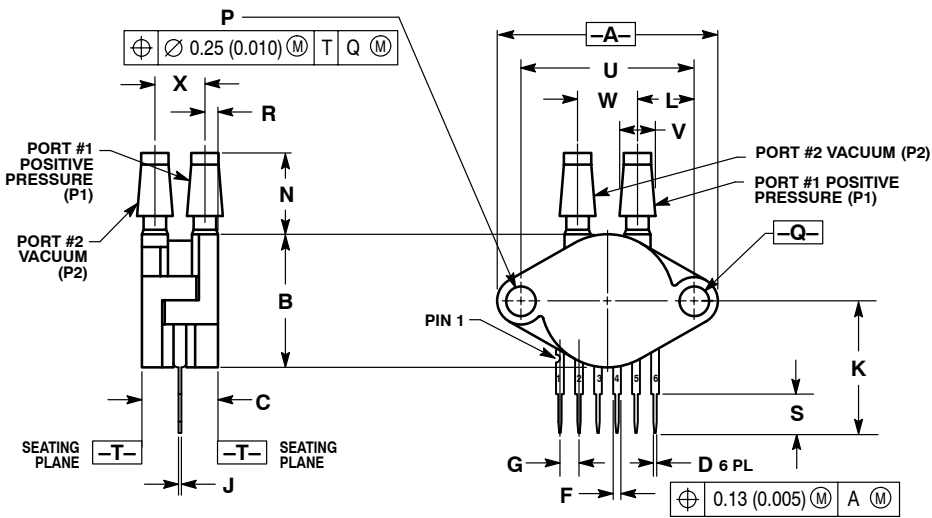| DIM | INCHES | | MILLIMETERS | |
| --- | MIN | MAX | MIN | MAX |
| A | 0.415 | 0.425 | 10.54 | 10.79 |
| B | 0.415 | 0.425 | 10.54 | 10.79 |
| C | 0.500 | 0.520 | 12.70 | 13.21 |
| D | 0.038 | 0.042 | 0.96 | 1.07 |
| G | 0.100 BSC | | 2.54 BSC | |
| H | 0.002 | 0.010 | 0.05 | 0.25 |
| J | 0.009 | 0.011 | 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 |

**CASE 482A-01**
**ISSUE A**
**SMALL OUTLINE PACKAGE**



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
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.

| DIM | INCHES | | MILLIMETERS | |
| --- | 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 | 0.026 | 0.034 | 0.66 | 0.864 |
| G | 0.100 BSC | | 2.54 BSC | |
| J | 0.009 | 0.011 | 0.23 | 0.28 |
| K | 0.100 | 0.120 | 2.54 | 3.05 |
| M | 0˚ | 15˚ | 0˚ | 15˚ |
| N | 0.444 | 0.448 | 11.28 | 11.38 |
| S | 0.540 | 0.560 | 13.72 | 14.22 |
| V | 0.245 | 0.255 | 6.22 | 6.48 |
| W | 0.115 | 0.125 | 2.92 | 3.17 |

**CASE 482C-03**
**ISSUE B**
**SMALL OUTLINE PACKAGE**

**MPX5100**
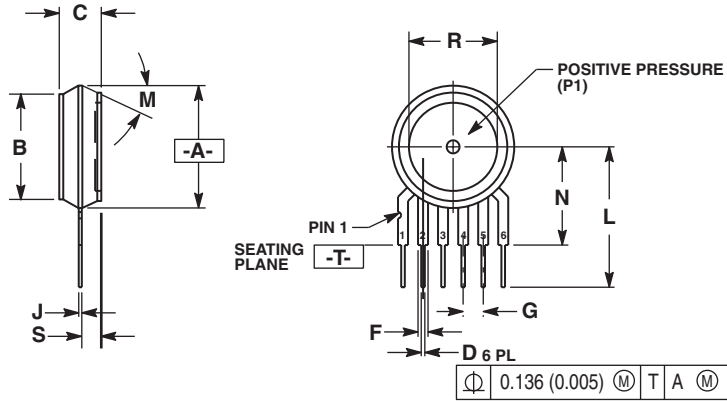
NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES | | MILLIMETERS | |
|-----|------|------|------|------|
| | MIN | MAX | MIN | MAX |
| A | 1.145 | 1.175 | 29.08 | 29.85 |
| B | 0.685 | 0.715 | 17.40 | 18.16 |
| C | 0.405 | 0.435 | 10.29 | 11.05 |
| D | 0.027 | 0.033 | 0.68 | 0.84 |
| F | 0.048 | 0.064 | 1.22 | 1.63 |
| G | 0.100 BSC | | 2.54 BSC | |
| J | 0.014 | 0.016 | 0.36 | 0.41 |
| K | 0.695 | 0.725 | 17.65 | 18.42 |
| L | 0.290 | 0.300 | 7.37 | 7.62 |
| N | 0.420 | 0.440 | 10.67 | 11.18 |
| P | 0.153 | 0.159 | 3.89 | 4.04 |
| Q | 0.153 | 0.159 | 3.89 | 4.04 |
| R | 0.063 | 0.083 | 1.60 | 2.11 |
| S | 0.220 | 0.240 | 5.59 | 6.10 |
| U | 0.910 BSC | | 23.11 BSC | |
| V | 0.182 | 0.194 | 4.62 | 4.93 |
| W | 0.310 | 0.330 | 7.87 | 8.38 |
| X | 0.248 | 0.278 | 6.30 | 7.06 |

STYLE 1:
PIN 1. $V_{OUT}$
2. GROUND
3. $V_{CC}$
4. V1
5. V2
6. $V_{EX}$

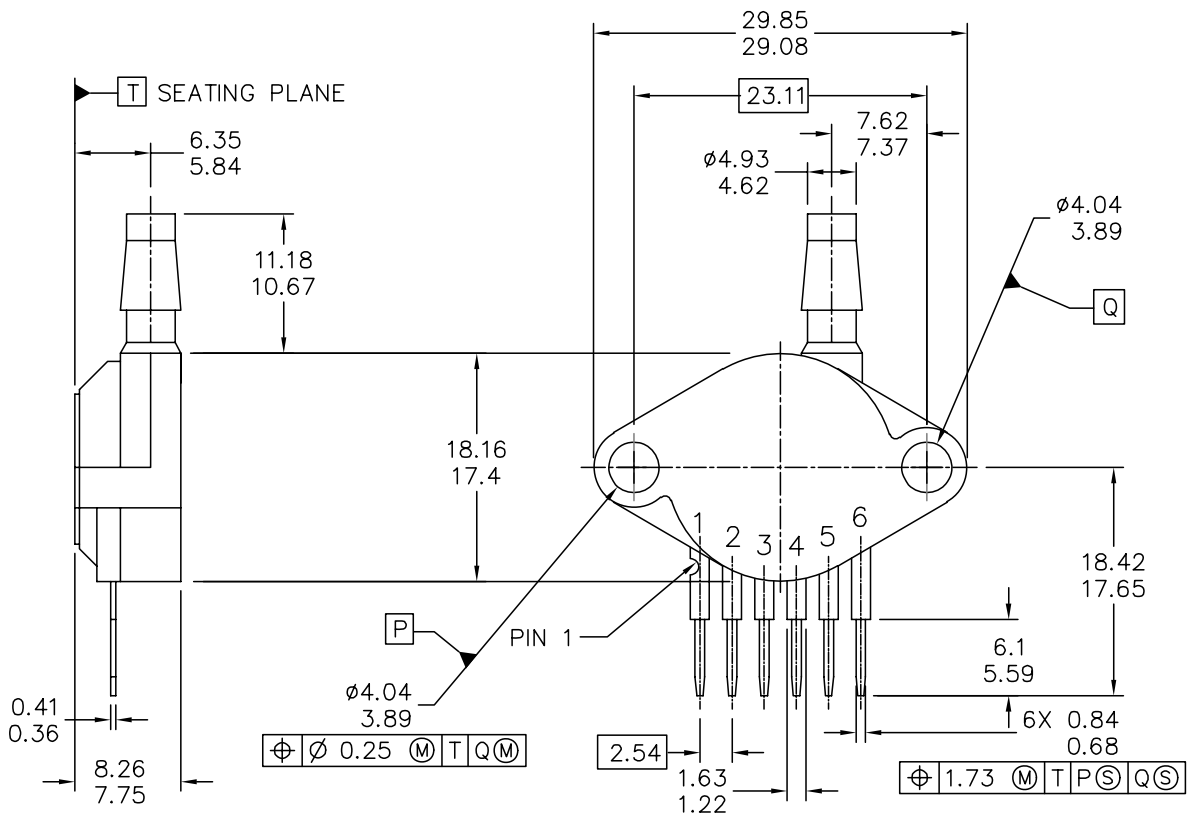**CASE 867-08**
**ISSUE N**
**UNIBODY PACKAGE**

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION -A- IS INCLUSIVE OF THE MOLD STOP RING. MOLD STOP RING NOT TO EXCEED 16.00 (0.630).

| DIM | INCHES | | MILLIMETERS | |
|-----|------|------|------|------|
| | MIN | MAX | MIN | MAX |
| A | 0.595 | 0.630 | 15.11 | 16.00 |
| B | 0.514 | 0.534 | 13.06 | 13.56 |
| C | 0.200 | 0.220 | 5.08 | 5.59 |
| D | 0.027 | 0.033 | 0.68 | 0.84 |
| F | 0.048 | 0.064 | 1.22 | 1.63 |
| G | 0.100 BSC | | 2.54 BSC | |
| J | 0.014 | 0.016 | 0.36 | 0.40 |
| L | 0.695 | 0.725 | 17.65 | 18.42 |
| M | 30° NOM | | 30° NOM | |
| N | 0.475 | 0.495 | 12.07 | 12.57 |
| R | 0.430 | 0.450 | 10.92 | 11.43 |
| S | 0.090 | 0.105 | 2.29 | 2.66 |

STYLE 1:
PIN 1. VOUT
2. GROUND
3. VCC
4. V1
5. V2
6. VEX

**CASE 867C-05**
**ISSUE F**
**UNIBODY PACKAGE**

**MPX5100**

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|---|---|---|---|
| TITLE: SENSOR, 6 LEAD UNIBODY CELL, AP & GP 01ASB09087B | DOCUMENT NO: 98ASB42796B | REV: G | |
| | CASE NUMBER: 867B-04 | 28 JUL 2005 | |
| | STANDARD: NON-JEDEC | | |

PAGE 1 OF 2

**CASE 867B-04
ISSUE G
UNIBODY PACKAGE**

MPX5100

**PACKAGE DIMENSIONS**

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

| Ⓒ FREESCALE SEMICONDUCTOR, INC.<br>ALL RIGHTS RESERVED. | **MECHANICAL OUTLINE** | PRINT VERSION NOT TO SCALE | |
|---|---|---|---|
| TITLE:<br><br>SENSOR, 6 LEAD UNIBODY CELL,<br>AP & GP 01ASB09087B | DOCUMENT NO: 98ASB42796B | | REV: G |
| | CASE NUMBER: 867B−04 | | 28 JUL 2005 |
| | STANDARD: NON−JEDEC | | |

PAGE 2 OF 2

**CASE 867B-04**
**ISSUE G**
**UNIBODY PACKAGE**

**MPX5100**

# PACKAGE DIMENSIONS

.006 (0.15) C A B  2 PLACES 4 TIPS

A

.700
.680

5          4

0.485
0.465

8          1

0.100

0.050

4  8x 0.042
      0.038

.004 (0.1) M C A B

0.260
0.240

B    0.485  3
     0.465

DETAIL G

GAGE PLANE

.014 (0.35)    θ

0.060
0.040

0.010
0.002

0.180
0.160

0.390
0.370

8X  .004 (0.1)

C SEATING PLANE

0.011
0.009

DETAIL G

Ø0.130
  0.110

0.290
0.270

0.135
0.115

MECHANICAL OUTLINE | PRINT VERSION NOT TO SCALE

TITLE:

8 LD SNSR, DUAL PORT

DOCUMENT NO: 98ASA99255D | REV: A
CASE NUMBER: 1351-01 | 27 JUL 2005
STANDARD: NON-JEDEC

PAGE 1 OF 2

**CASE 1351-01
ISSUE A
SMALL OUTLINE PACKAGE**

**MPX5100**

# PACKAGE DIMENSIONS

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
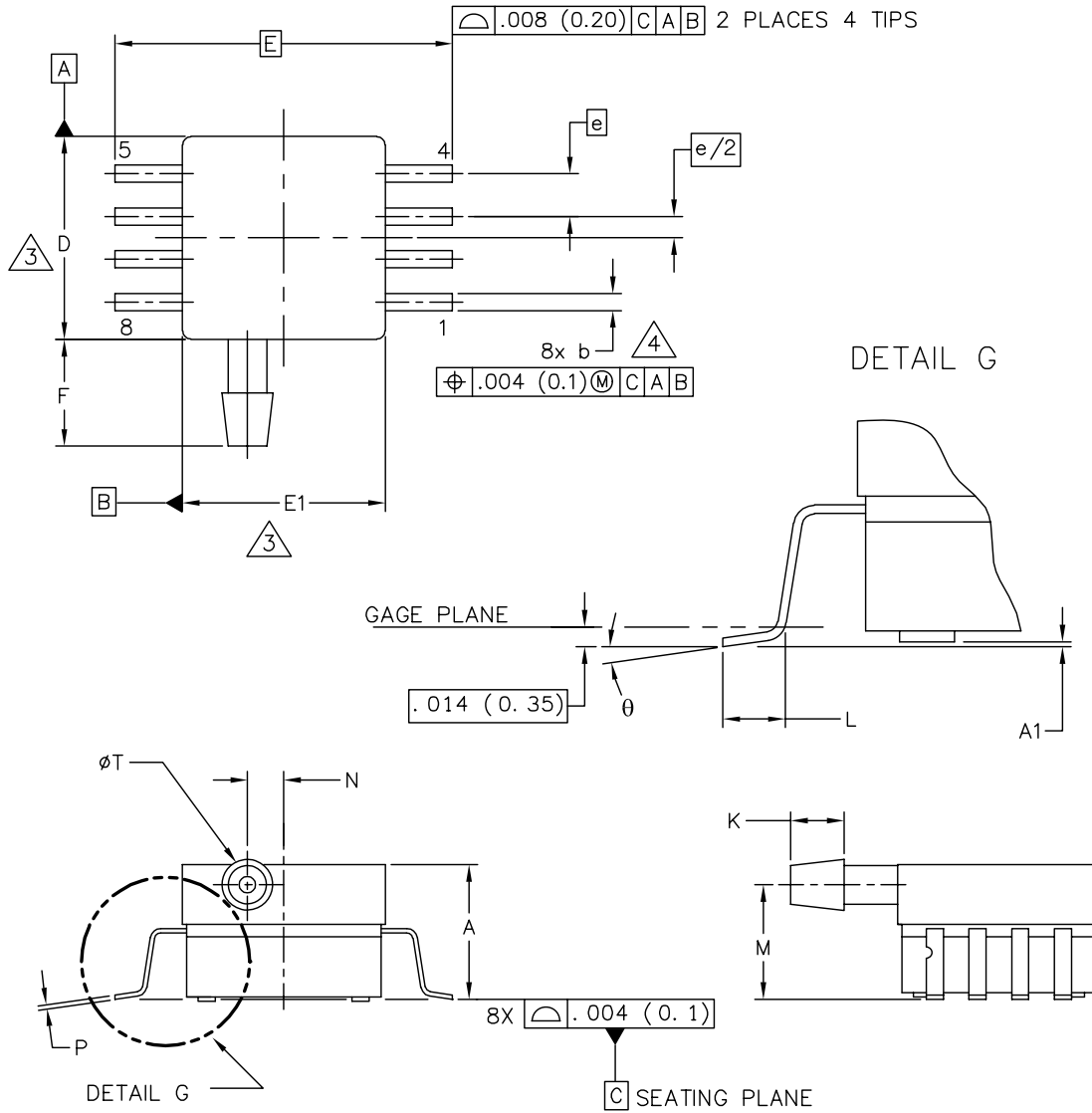    PROTRUSION SHALL BE .008 MAXIMUM.

```
STYLE 2:
        PIN 1:  N/C
        PIN 2:  Vs
        PIN 3:  GND
        PIN 4:  Vout
        PIN 5:  N/C
        PIN 6:  N/C
        PIN 7:  N/C
        PIN 8:  N/C
```

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|---|---|---|---|
| TITLE:<br><br>8 LD SNSR, DUAL PORT | DOCUMENT NO: 98ASA99255D | REV: A | |
| | CASE NUMBER: 1351—01 | 27 JUL 2005 | |
| | STANDARD: NON—JEDEC | | |

PAGE 2 OF 2

**CASE 1351-01**
**ISSUE A**
**SMALL OUTLINE PACKAGE**

**MPX5100**

# PACKAGE DIMENSIONS



DETAIL G

GAGE PLANE

.014 (0.35)

θ

L

A1

.008 (0.20) | C | A | B  2 PLACES 4 TIPS

e

e/2

8x b  △4

⊕ .004 (0.1) M | C | A | B

øT

N

A

P

DETAIL G

8X  .004 (0.1)

C SEATING PLANE

K

M

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|---|---|---|---|
| TITLE:<br><br>8 LD SOP, SIDE PORT | DOCUMENT NO: 98ASA99303D | | REV: B |
| | CASE NUMBER: 1369-01 | | 24 MAY 2005 |
| | STANDARD: NON-JEDEC | | |

PAGE 1 OF 2

**CASE 1369-01**
**ISSUE B**
**SMALL OUTLINE PACKAGE**

**MPX5100**

# PACKAGE DIMENSIONS

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 | 7.11 | 7.62 | 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 | – | --- | --- | --- | --- |

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|---|---|---|
| TITLE: 8 LD SOP, SIDE PORT | DOCUMENT NO: 98ASA99303D | REV: B |
| | CASE NUMBER: 1369−01 | 24 MAY 2005 |
| | STANDARD: NON−JEDEC | |

**CASE 1369-01
ISSUE B
SMALL OUTLINE PACKAGE**

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