MPX5050

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

Rev. 12 — 9 June 2023 Product data sheet

1 General description

The MPXx5050 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.

2 Feature and benefits

- 2.5 % Maximum Error over 0 ° to 85 °C
- Ideally suited for Microprocessor or Microcontroller-based systems
- Temperature compensated over –40 ° to +125 °C
- Patented silicon shear stress strain gauge
- Durable epoxy unibody element
- Easy-to-use chip carrier option

3 Ordering information

Table 1. Ordering information

Type number	Package		
	Name	Description	Version
MPX5050DP	SENSOR4F	Pressure sensor, 5 V, 0/50 kPa, Port; Unibody package, 4 terminals; 2.54 mm pitch; 17.78 mm x 29.48 mm x 10.67 mm body	SOT1756-1
MPXV5050DP	SENSOR6F	Pressure sensor, 5 V, 0/50 kPa, Port, SO8, plastic, small outline package; 8 terminals; 2.54 mm pitch; 12.06 mm x 12.06 mm x 7.62 mm body	SOT1693-1
MPXV5050GP	SO8	Pressure sensor, 5 V, 0/50 kPa, Port, 8 terminals; 2.54 mm pitch; 12.06 mm x 12.06 mm x 3.38 mm body body	SOT1693-3
MPXV5050GC6T1	SO8	Pressure sensor, 5 V, 0/540 kPa, small outline package, Port, 8 terminals; 2.54 mm pitch; 10.67 mm x 10.67 mm x 12.96 mm body	SOT18454-1

3.1 Ordering options

Table 2. Ordering options

ORDERING INFORMATION								
Device Name	Case No.	# of Ports			Pressure Type			Device Marking
		None	Single	Dual	Gauge	Differential	Absolute	
Unibody Package (MPX5050 Series)								
MPX5050DP	867C			•		•		MPX5050DP
Small Outline Package (MPXV5050 Series)								
MPXV5050GP	1369		•		•			MPXV5050GP
MPXV5050DP	1351			•		•		MPXV5050DP
MPXV5050GC6T1	482A		•		•			MPXV5050G

4 Pinning information

4.1 Pinning

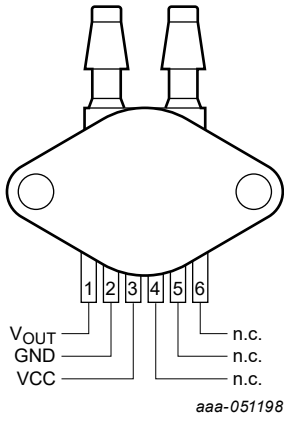


Figure 1. MPX5050DP - SOT1756-1 - Case 867C-05

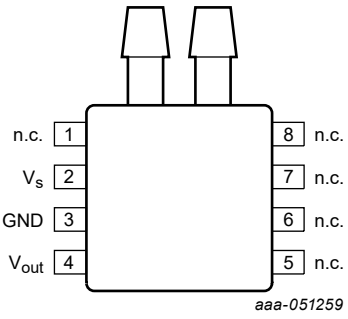


Figure 2. MPXV5050DP Case 1351-01 [1]

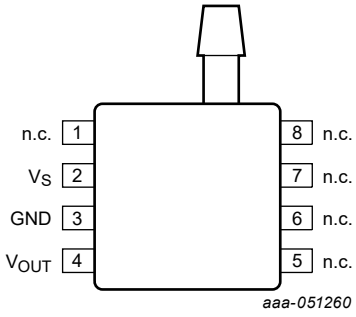


Figure 3. MPXV5050GP Case 1369-01

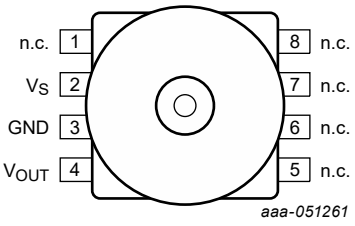


Figure 4. MPXV5050GC6T1 – Case 482A-01

[1] Refer to Table 4 and style 2 in Figure 13 in Section 7 "Package outline"

4.2 Pin description

Table 3. Pin descriptions - MPX5050DP

Symbol	Pin	Description
V_{OUT}	1	V_{OUT}
Ground	2	Ground
V_{CC}	3	Supply voltage
N.C.	4	No connection.
N.C.	5	No connection.
N.C.	6	No connection.

Table 4. Pin descriptions - MPXV5050GC6T1, MPXV5050DP, and MPXV5050GP

Symbol	Pin	Description
N.C.	1	No connect
V_S	2	Supply voltage
Ground	3	Ground
V_{OUT}	4	V_{OUT}
N.C.	5	No connect
N.C.	6	No connect
N.C.	7	No connect
N.C.	8	No connect

5 Limiting values

Table 5. Limiting values [1]

Rating	Symbol	Value	Unit
Maximum pressure (P1 > P2)	P_{max}	200	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 5 shows a block diagram of the internal circuitry integrated on a pressure sensor chip.

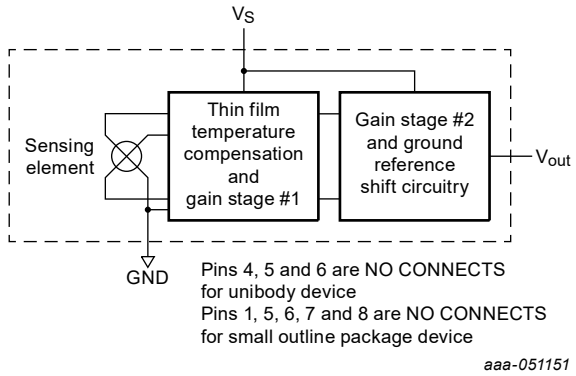


Figure 5. Fully Integrated Pressure Sensor Schematic

6 Recommended operating conditions

Table 6. Recommended operating conditions

(V_S = 5.0 Vdc, T_A = 25 °C unless otherwise noted, P1 > P2. Decoupling circuit shown in Figure 8 required to meet electrical specifications.)

Characteristic	Symbol	Min	Typ	Max	Unit
Pressure Range[1]	P_{OP}	0	—	50	kPa
Supply Voltage[2]	V_S	4.75	5.0	5.25	Vdc
Supply Current	I_o	—	7.0	10	mAdc
Minimum Pressure Offset[3] (0 °C to 85 °C) @ V_S = 5.0 Volts	V_{off}	0.088	0.2	0.313	Vdc
Full Scale Output[4] (0 °C to 85 °C) @ V_S = 5.0 Volts	V_{FSO}	4.587	4.7	4.813	Vdc
Full Scale Span[5] (0 °C to 85 °C) @ V_S = 5.0 Volts	V_{FSS}	—	4.5	—	Vdc
Accuracy[6] (0 °C to 85 °C)	—	—	—	±2.5	$\%V_{FSS}$
Sensitivity	V/P	—	90	—	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 the minimum or maximum rated pressure at 25 °C.
TcSpan: Output deviation over the temperature range of 0 °C to 85 °C, relative to 25 °C.
TcOffset: Output deviation with minimum pressure applied, over the temperature range of 0 °C 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 change 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.

6.1 On-chip Temperature Compensation and Calibration

Figure 7 illustrates the Differential/Gauge 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 MPX5050/MPXV5050G 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 6 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 °C to 85 °C using the decoupling circuit shown in Figure 8. The output will saturate outside of the specified pressure range.

Figure 8 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.

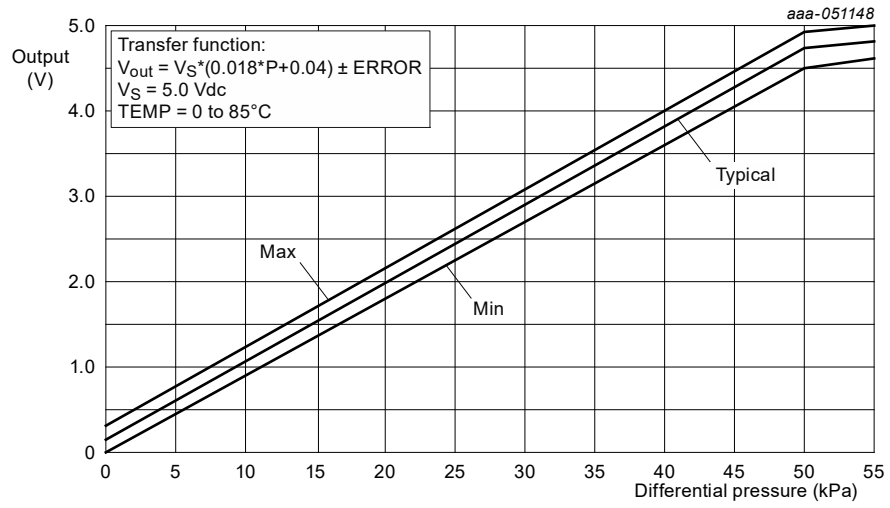


Figure 6. Output vs. pressure differential

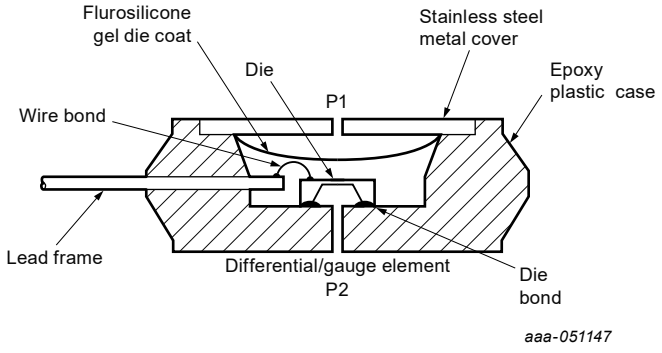
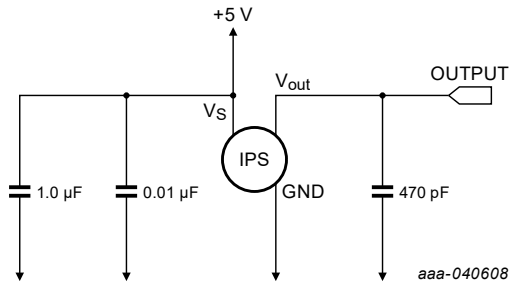


Figure 7. Cross-sectional diagram (not to scale)

Nominal Transfer Value:

$$V_{OUT} = V_S\ (P\ \times 0.018 + 0.04)$$
$$\pm(Pressure\ \ Error\ \times Temp.\ Factor\ \times 0.018\ \ V_S\ )$$
$$V_S\ = 5.0\ V\ \pm 0.25\ Vdc$$



(For additional output filtering, refer to application note AN1646)

Figure 8. Recommended power supply decoupling and output filtering

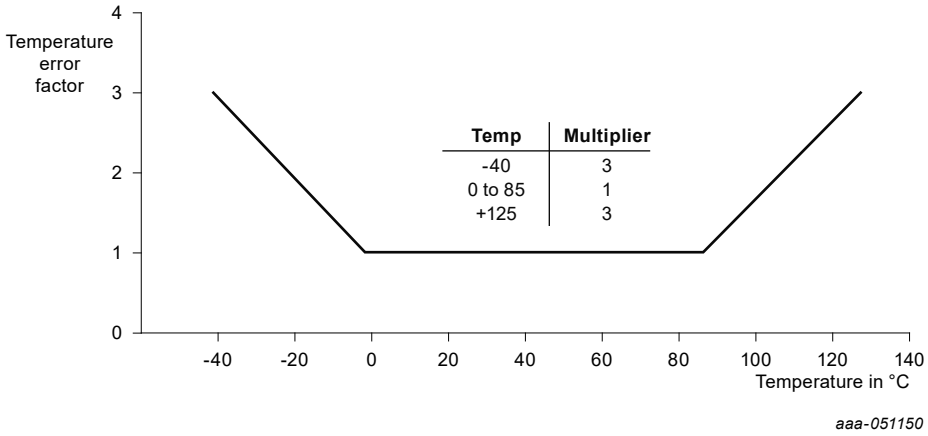


Figure 9. Temperature error band

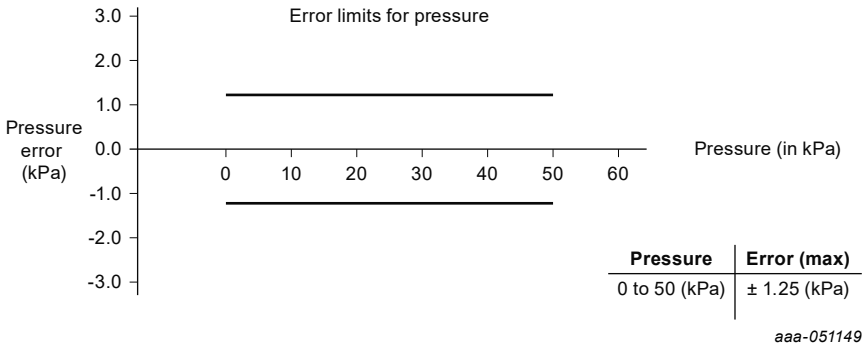


Figure 10. Pressure error band

6.2 Pressure (P1)/Vacuum (P2) side identification table

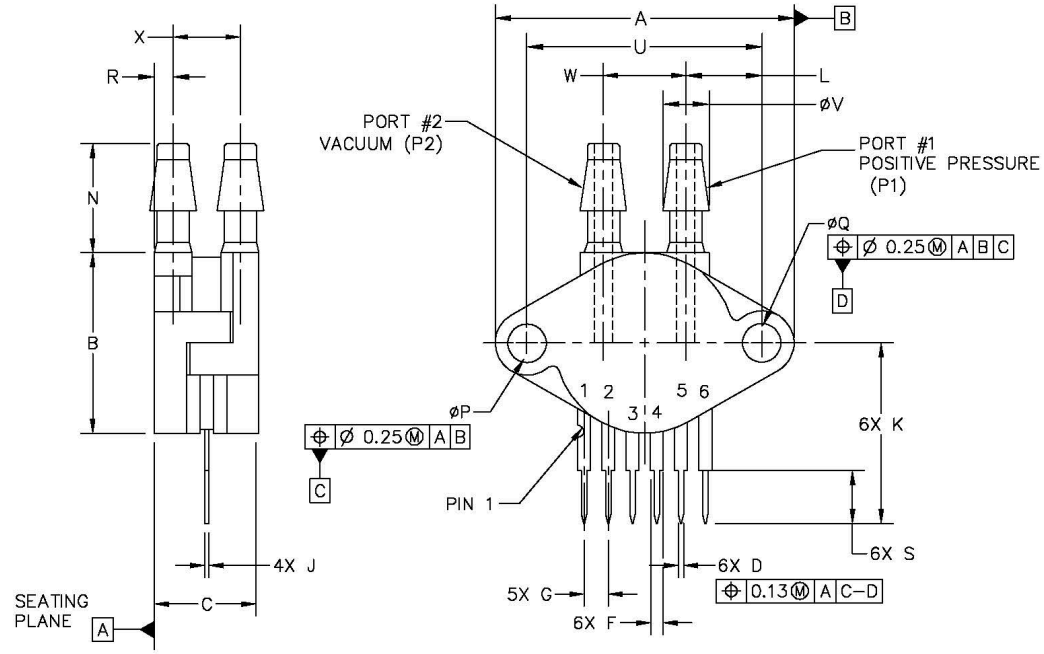
NXP Semiconductors designates the two sides of the pressure sensor as the Pressure (P1) side and the Vacuum (P2) side. The Pressure (P1) side is the side containing fluorosilicone gel which protects the die from harsh media. The MPX pressure sensor is designed to operate with positive differential pressure 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
MPX5050DP	867C	Side with Part Marking
MPXV5050GP	1369	Side with Port Attached
MPXV5050DP	1351	Side with Part Marking
MPXV5050GC6/T1	482A	Vertical Port Attached

7 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 11. MPX5050DP - SOT17560-1 - Case 867C package outline [1]

1 Refer to Section 4.2 "Pin description", Table 3

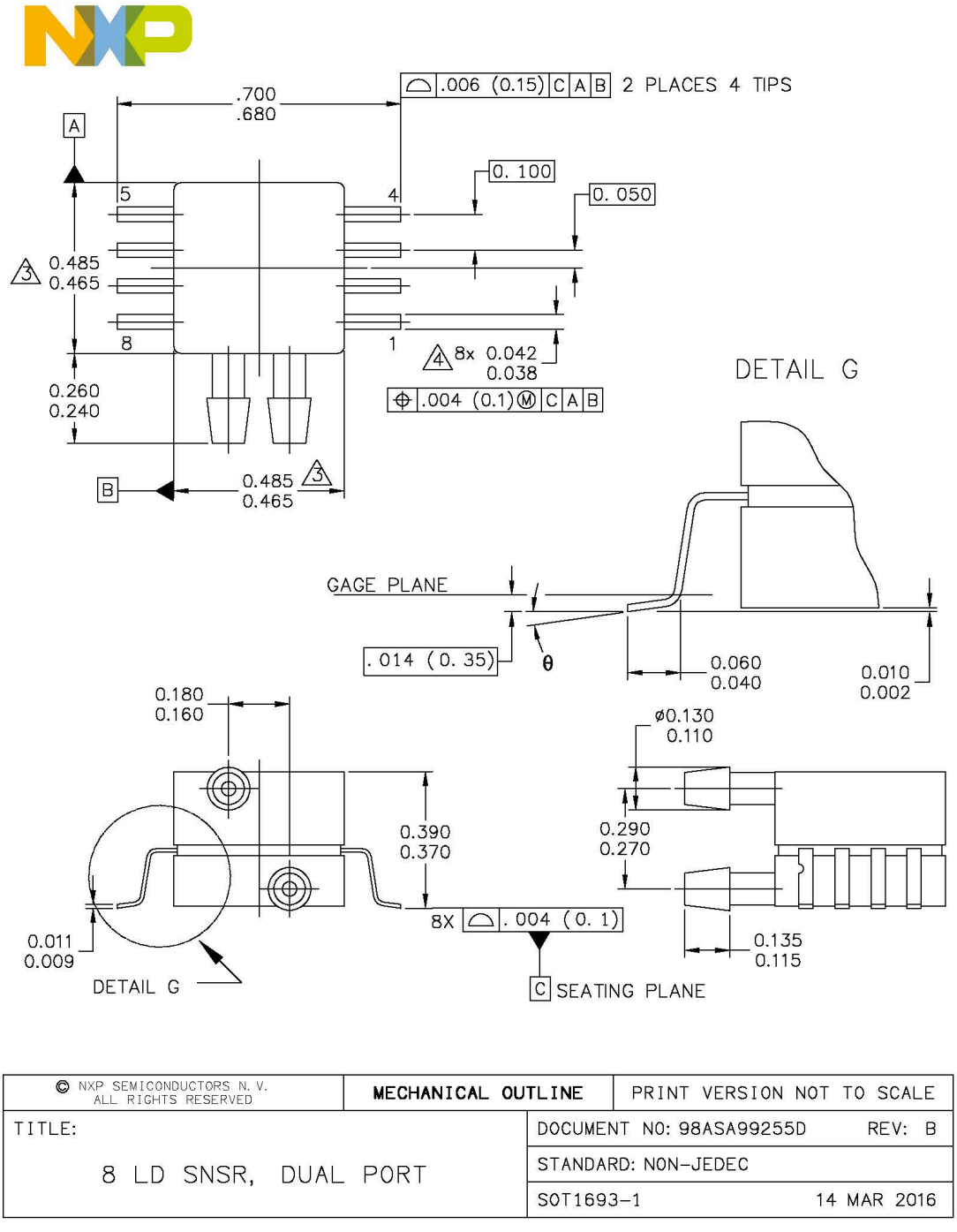


Figure 12. MPX5050DP - SOT1693-1 - Case 1351-01 package outline

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.

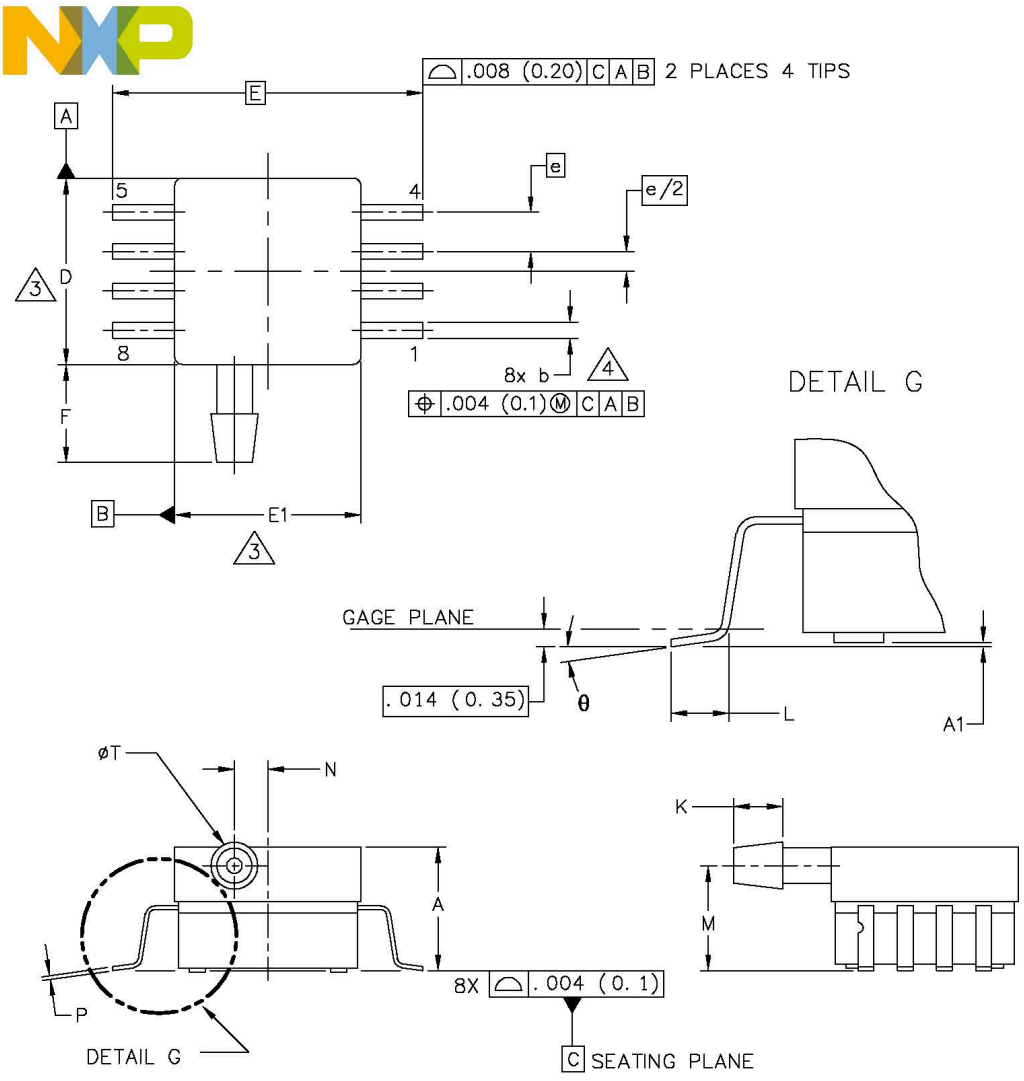
4. DIMENSION DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE .008 MAXIMUM.

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

© NXP SEMICONDUCTORS N. V. ALL RIGHTS RESERVED	MECHANICAL OUTLINE	PRINT VERSION NOT TO SCALE
TITLE: 8 LD SNSR, DUAL PORT	DOCUMENT NO: 98ASA99255D	REV: B
	STANDARD: NON–JEDEC	
	SOT1693–1	14 MAR 2016

Figure 13. MPX5050DP - SOT1693-1 - Case 1351-01 package outline notes [2]

2 Style 1 is not applicable for the parts covered by this data sheet.



© NXP SEMICONDUCTORS N. V. ALL RIGHTS RESERVED	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 14. MPX5050GP - SOT1693-3 - Case 1369-01 package outline

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.

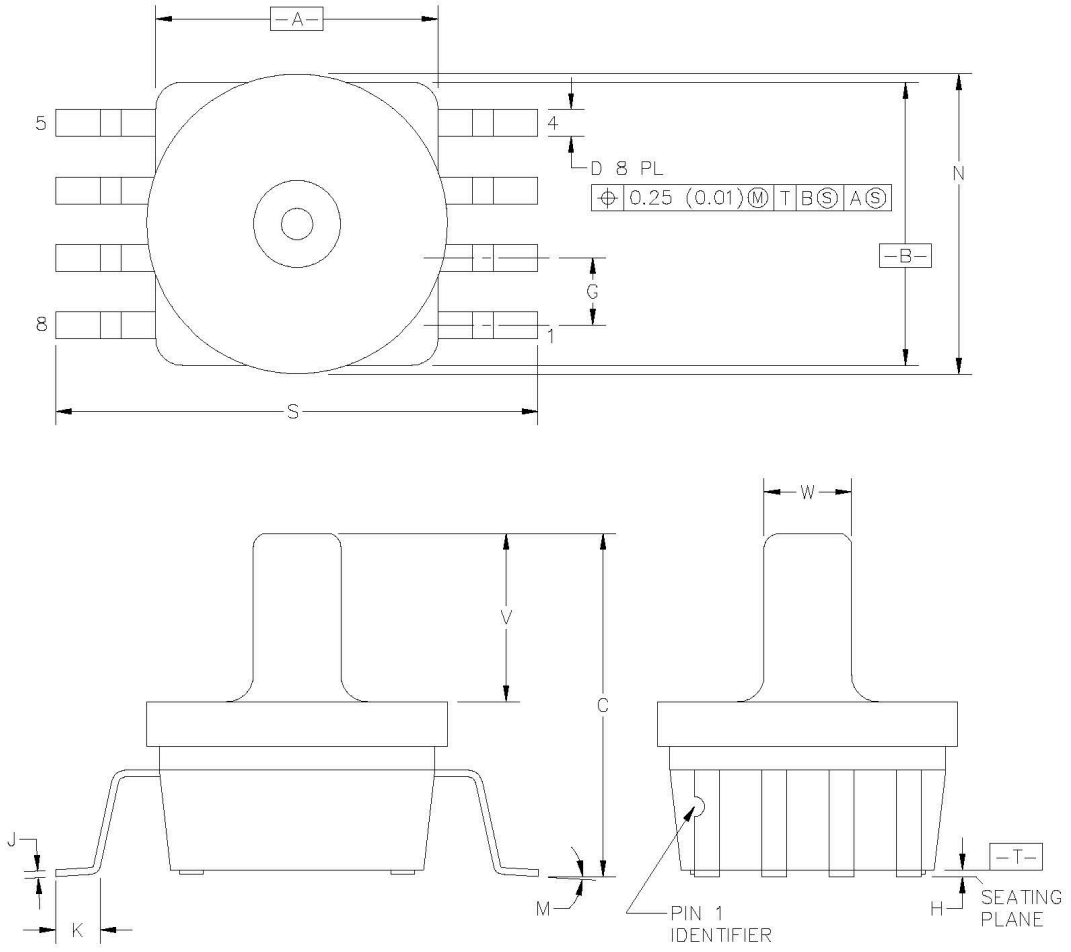
DIM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX	DIM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.300	.330	7.62	8.38	θ	0°	7°	0°	7°
A1	.002	.010	0.05	0.25	–	---	---	---	---
b	.038	.042	0.96	1.07	–	---	---	---	---
D	.465	.485	11.81	12.32	–	---	---	---	---
E	.717 BSC		18.21 BSC		–	---	---	---	---
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 15. MPX5050GP - SOT1693-3 - Case 1369-01 package outline notes



© NXP SEMICONDUCTORS N.V. ALL RIGHTS RESERVED	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 16. MPXV5050GC6T1 - SOT1854-1, Case 482-A package outline

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 17. MPXV5050GC6T1 - SOT1854-1, Case 482-A package outline notes

8 Revision history

Table 8. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
MPX5050 v.12	20230609	Product data sheet	—	MPX5050 v.11
Modifications	• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. Legal texts have been adapted to the new company name where appropriate. • Revised all images to conform to NXP Semiconductor image guidelines. • Section 3, removed MPX505D, MPX505GP, MPX505GP1, MPXV5050GC6U and MPVZ5050GW7U from the table. • Section 3.1, inserted new table. • Section 4, Section 4.1, and Section 4.2, inserted new sections. • Section 5, renamed "Maximum ratings" section to "Limiting values" to conform to NXP Semiconductors document heirarchy for data sheets. • Section 6, renamed "Operating characteristics" to "Recommended operating conditions". • Section 6.2, Table 7, removed MPX5050D and MPX5050GP from the table. • Section 7, updated the package outline images.			

9 Legal information

9.1 Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.
[2] The term 'short data sheet' is explained in section "Definitions".
[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

9.2 Definitions

Draft — A draft status on a document indicates that the content is still under internal review and subject to formal approval, which may result in modifications or additions. NXP Semiconductors does not give any representations or warranties as to the accuracy or completeness of information included in a draft version of a document and shall have no liability for the consequences of use of such information.

Short data sheet — A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local NXP Semiconductors sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

Product specification — The information and data provided in a Product data sheet shall define the specification of the product as agreed between NXP Semiconductors and its customer, unless NXP Semiconductors and customer have explicitly agreed otherwise in writing. In no event however, shall an agreement be valid in which the NXP Semiconductors product is deemed to offer functions and qualities beyond those described in the Product data sheet.

9.3 Disclaimers

Limited warranty and liability — Information in this document is believed to be accurate and reliable. However, NXP Semiconductors does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information. NXP Semiconductors takes no responsibility for the content in this document if provided by an information source outside of NXP Semiconductors.

In no event shall NXP Semiconductors be liable for any indirect, incidental, punitive, special or consequential damages (including - without limitation - lost profits, lost savings, business interruption, costs related to the removal or replacement of any products or rework charges) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory.

Notwithstanding any damages that customer might incur for any reason whatsoever, NXP Semiconductors' aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms and conditions of commercial sale of NXP Semiconductors.

Right to make changes — NXP Semiconductors reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

Applications — Applications that are described herein for any of these products are for illustrative purposes only. NXP Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Customers are responsible for the design and operation of their applications and products using NXP Semiconductors products, and NXP Semiconductors accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the NXP Semiconductors product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products.

NXP Semiconductors does not accept any liability related to any default, damage, costs or problem which is based on any weakness or default in the customer's applications or products, or the application or use by customer's third party customer(s). Customer is responsible for doing all necessary testing for the customer's applications and products using NXP Semiconductors products in order to avoid a default of the applications and the products or of the application or use by customer's third party customer(s). NXP does not accept any liability in this respect.

Limiting values — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) will cause permanent damage to the device. Limiting values are stress ratings only and (proper) operation of the device at these or any other conditions above those given in the Recommended operating conditions section (if present) or the Characteristics sections of this document is not warranted. Constant or repeated exposure to limiting values will permanently and irreversibly affect the quality and reliability of the device.

Terms and conditions of commercial sale — NXP Semiconductors products are sold subject to the general terms and conditions of commercial sale, as published at http://www.nxp.com/profile/terms, unless otherwise agreed in a valid written individual agreement. In case an individual agreement is concluded only the terms and conditions of the respective agreement shall apply. NXP Semiconductors hereby expressly objects to applying the customer's general terms and conditions with regard to the purchase of NXP Semiconductors products by customer.

No offer to sell or license — Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

Suitability for use in automotive applications — This NXP product has been qualified for use in automotive applications. If this product is used by customer in the development of, or for incorporation into, products or services (a) used in safety critical applications or (b) in which failure could lead to death, personal injury, or severe physical or environmental damage (such products and services hereinafter referred to as “Critical Applications”), then customer makes the ultimate design decisions regarding its products and is solely responsible for compliance with all legal, regulatory, safety, and security related requirements concerning its products, regardless of any information or support that may be provided by NXP. As such, customer assumes all risk related to use of any products in Critical Applications and NXP and its suppliers shall not be liable for any such use by customer. Accordingly, customer will indemnify and hold NXP harmless from any claims, liabilities, damages and associated costs and expenses (including attorneys’ fees) that NXP may incur related to customer’s incorporation of any product in a Critical Application.

Quick reference data — The Quick reference data is an extract of the product data given in the Limiting values and Characteristics sections of this document, and as such is not complete, exhaustive or legally binding.

Export control — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from competent authorities.

Translations — A non-English (translated) version of a document, including the legal information in that document, is for reference only. The English version shall prevail in case of any discrepancy between the translated and English versions.

Security — Customer understands that all NXP products may be subject to unidentified vulnerabilities or may support established security standards or specifications with known limitations. Customer is responsible for the design and operation of its applications and products throughout their lifecycles to reduce the effect of these vulnerabilities on customer’s applications and products. Customer’s responsibility also extends to other open and/or proprietary technologies supported by NXP products for use in customer’s applications. NXP accepts no liability for any vulnerability. Customer should regularly check security updates from NXP and follow up appropriately.

Customer shall select products with security features that best meet rules, regulations, and standards of the intended application and make the ultimate design decisions regarding its products and is solely responsible for compliance with all legal, regulatory, and security related requirements concerning its products, regardless of any information or support that may be provided by NXP.

NXP has a Product Security Incident Response Team (PSIRT) (reachable at PSIRT@nxp.com) that manages the investigation, reporting, and solution release to security vulnerabilities of NXP products.

9.4 Trademarks

Notice: All referenced brands, product names, service names, and trademarks are the property of their respective owners.

NXP — wordmark and logo are trademarks of NXP B.V.

Tables

Tab. 1. Ordering information 1
Tab. 2. Ordering options 2
Tab. 3. Pin descriptions - MPX5050DP 3
Tab. 4. Pin descriptions - MPXV5050GC6T1, MPXV5050DP, and MPXV5050GP 3
Tab. 5. Limiting values 3
Tab. 6. Recommended operating conditions 4
Tab. 7. Pressure (P1) side identification 7
Tab. 8. Revision history 15

Figures

Fig. 1. MPX5050DP - SOT1756-1 - Case 867C-05 2
Fig. 2. MPXV5050DP Case 1351-01 2
Fig. 3. MPXV5050GP Case 1369-01 2
Fig. 4. MPXV5050GC6T1 – Case 482A-01 2
Fig. 5. Fully Integrated Pressure Sensor Schematic 4
Fig. 6. Output vs. pressure differential 5
Fig. 7. Cross-sectional diagram (not to scale) 5
Fig. 8. Recommended power supply decoupling and output filtering 6
Fig. 9. Temperature error band 6
Fig. 10. Pressure error band 6
Fig. 11. MPX5050DP - SOT17560-1 - Case 867C package outline 8
Fig. 12. MPX5050DP - SOT1693-1 - Case 1351-01 package outline 9
Fig. 13. MPX5050DP - SOT1693-1 - Case 1351-01 package outline notes 10
Fig. 14. MPX5050GP - SOT1693-3 - Case 1369-01 package outline 11
Fig. 15. MPX5050GP - SOT1693-3 - Case 1369-01 package outline notes 12
Fig. 16. MPXV5050GC6T1 - SOT1854-1, Case 482-A package outline 13
Fig. 17. MPXV5050GC6T1 - SOT1854-1, Case 482-A package outline notes 14

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

Contents

1 General description 1
2 Feature and benefits 1
3 Ordering information 1
3.1 Ordering options 2
4 Pinning information 2
4.1 Pinning 2
4.2 Pin description 3
5 Limiting values 3
6 Recommended operating conditions 4
6.1 On-chip Temperature Compensation and Calibration 5
6.2 Pressure (P1)/Vacuum (P2) side identification table 6
7 Package outline 8
8 Revision history 15
9 Legal information 16

For more information, please visit: http://www.nxp.com

Date of release: 9 June 2023
Document identifier: MPX5050

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

NXP:

MPXV5050DP MPX5050GP1 MPXV5050GP MPX5050GP MPX5050DP MPX5050D MPVZ5050GW7U MPXV5050GC6T1 MPXV5050GC6U