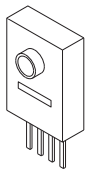
MPX2300D

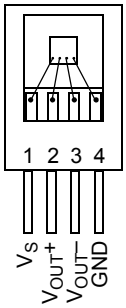
Datasheet

0 to 40 kPa, differential compensated pressure sensor

Chip Pak package
Back view



Front view



Pinout

Features

- Integrated temperature compensation and calibration
- Ratiometric to supply voltage
- Polysulfone case material (ISO 10993)
- Provided in easy-to-use tape and reel

Applications

- Medical diagnostics
- Infusion pumps
- Blood pressure monitors
- Pressure catheter applications
- Patient monitoring

Description

The MPX2300D is a high volume, miniature pressure sensor package, which is ideal as a submodule component or a disposable unit.

The unique concept of the Chip Pak allows great flexibility in system design while providing an economic solution for the designer. This new chip carrier package uses a unique sensor die with piezoresistive technology, along with the added feature of on-chip, thin-film temperature compensation and calibration.

Note: The die and wire bonds are exposed on the front side of the chip pak (pressure is applied to the back side of the device). Front side die and wire protection must be provided in the customer's housing. Use caution when handling the devices during all processes.

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1 Ordering information

Ordering information						
Device name	Shipping	Package	Pressure type			Device marking
			Gauge	Differential	Absolute	
MPX2300DT1	Tape and reel	Chip Pak		•		XXXX= Device code XXX = Trace code

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2 General description

The MPX2300DT1 pressure sensor has been designed for medical usage by combining the performance of ST's shear stress pressure sensor design and the use of biomedically approved materials. Materials with a proven history in medical situations have been chosen to provide a sensor that can be used with confidence in applications, such as invasive blood pressure monitoring. It can be sterilized using ethylene oxide. The portions of the pressure sensor that are required to be biomedically approved are the rigid housing and the gel coating.

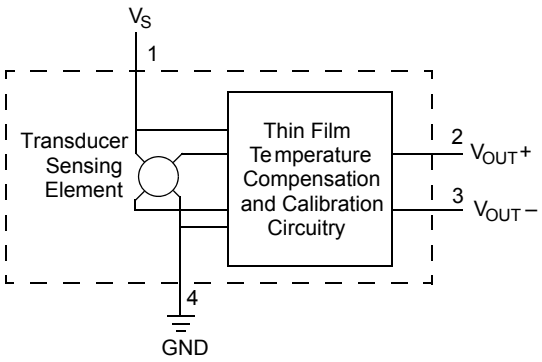
The rigid housing is molded from a white, medical grade polysulfone that has passed extensive biological testing including: ISO 10993-5:1999, ISO 10993-10:2002, and ISO 10993-11:1993.

A silicone dielectric gel covers the silicon piezoresistive sensing element. The gel is a nontoxic, nonallergenic elastomer system, which meets all USP XX Biological Testing Class V requirements. The properties of the gel allow it to transmit pressure uniformly to the diaphragm surface, while isolating the internal electrical connections from the corrosive effects of fluids, such as saline solution. The gel provides electrical isolation sufficient to withstand defibrillation testing, as specified in the proposed Association for the Advancement of Medical Instrumentation (AAMI) Standard for blood pressure transducers. A biomedically approved opaque filler in the gel prevents bright operating room lights from affecting the performance of the sensor.

2.1 Block diagram

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

Figure 1. Block diagram



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2.2 Pinout

Figure 2. **Device pinout**

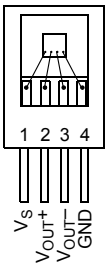


Table 1. **Pin functions**

Pin	Name	Function
1	V_S	Voltage supply
2	V_{OUT+}	Output voltage
3	$V_{OUT–}$	Output voltage
4	GND	Ground

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3 Mechanical and electrical specifications

3.1 Maximum ratings

Table 2. Maximum ratings(1)

Rating	Symbol	Value	Unit
Maximum pressure (backside)	P_{max}	125	PSI
Storage temperature	T_{stg}	-25 to +85	°C
Operating temperature	T_A	+15 to +40	°C

Note: (1) Exposure beyond the specified limits may cause permanent damage or degradation to the device.

3.2 Operating characteristics

Note: V_S = 6 V_{DC}, T_A = 25°C unless otherwise noted

Table 3. Operating characteristics

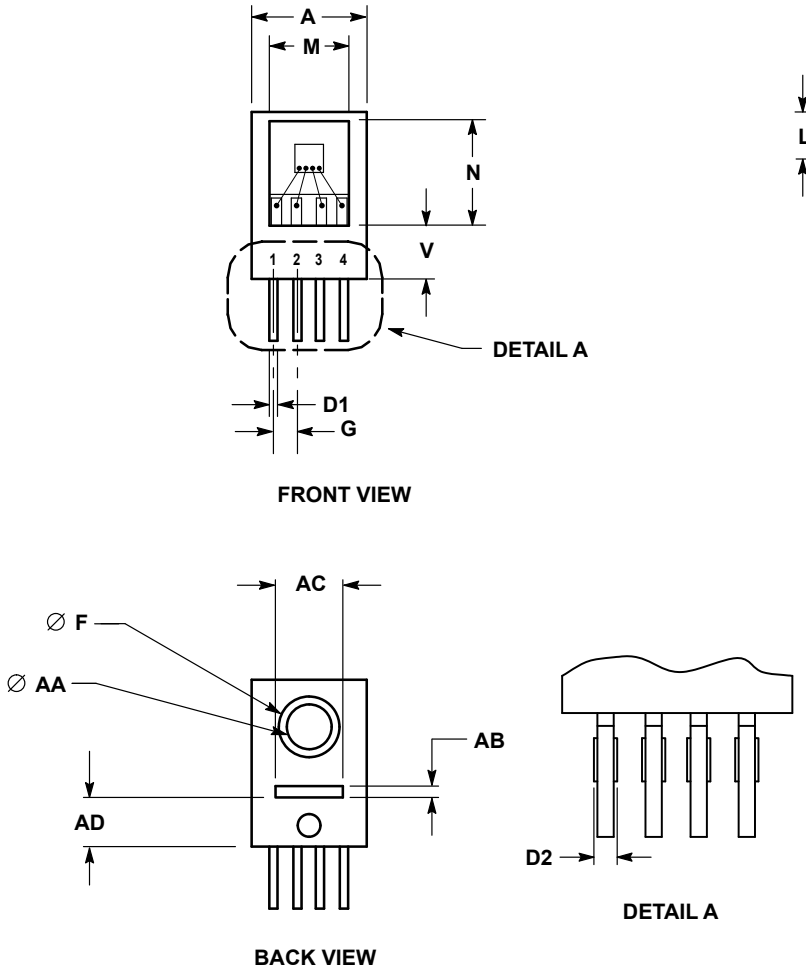
Characteristics	Symbol	Min	Typ	Max	Unit
Pressure range	P_{OP}	0	—	300	mmHg
Supply voltage(1)	V_S	—	6.0	10	VDC
Supply current	I_O	—	1.0	—	mAdc
Zero pressure offset	V_{OFF}	-0.75	—	0.75	mV
Sensitivity	—	4.95	5.0	5.05	µV/V/mmHg
Full-scale span(2)	V_{FSS}	2.976	3.006	3.036	mV
Linearity + Hysteresis(3)	—	-1.5	—	1.5	%V_{FSS}
Accuracy V_S = 6 V, P = 101 to 200 mmHg	—	-1.5	—	1.5	%
Accuracy V_S = 6 V, P = 201 to 300 mmHg	—	-3.0	—	3.0	%
Temperature effect on sensitivity	T_{CS}	-0.1	—	+0.1	%/°C
Temperature effect on full-scale span(4)	TCV_{FSS}	-0.1	—	+0.1	%/°C
Temperature effect on offset(5)	TCV_{OFF}	-9.0	—	+9.0	µV/°C
Input impedance	Z_{IN}	1800	—	4500	Ω
Output impedance	Z_{OUT}	270	—	330	Ω
R_{CAL} (150 kΩ)(6)	R_{CAL}	97	100	103	mmHg
Response time(7) (10% to 90%)	t_R	—	1.0	—	ms

1. *Recommended voltage supply: 6 V ± 0.2 V, regulated. Sensor output is ratiometric to the voltage supply. Supply voltages above +10 V may induce additional error due to device self-heating.*
2. *Measured at 6.0 V_{DC} excitationfor 100 mmHg pressure differential. V_{FSS} and FSS are like terms representing the algebraic difference between full scale output and zero pressure offset.*
3. *Maximum deviation from end-point straight line fit at 0 and 200 mmHg.*
4. *Slope of end-point straight line fit to full-scale span at 15°C and +40°C relative to +25°C.*
5. *Slope of end-point straight line fit to zero pressure offset at 15°C and +40°C relative to +25°C.*
6. *Offset measurement with respect to the measured sensitivity when a 150 kΩ resistor is connected to V_S and V_{OUT}+ output.*
7. *For a 0 to 300 mmHg pressure step change.*

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4 Package dimensions

Figure 3. Chip Pak package



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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.240	0.260	6.10	6.60
B	0.350	0.370	8.89	9.40
C	0.140	0.150	3.56	3.81
D1	0.012	0.020	0.30	0.51
D2	0.014	0.022	0.36	0.56
E	0.088	0.102	2.24	2.59
F	0.123	0.128	3.12	3.25
G	0.045	0.055	1.14	1.40
H	0.037	0.047	0.94	1.19
J	0.007	0.011	0.18	0.28
K	0.120	0.140	3.05	3.56
L	0.095	0.105	2.41	2.67
M	0.165	0.175	4.19	4.45
N	0.223	0.239	5.66	6.07
V	0.105	0.115	2.67	2.92
AA	0.095	0.107	2.41	2.72
AB	0.015	0.035	0.38	0.89
AC	0.120	0.175	3.05	4.45
AD	0.100	0.115	2.54	2.92

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Revision history

Table 4. **Document revision history**

Date	Version	Changes
09-Jul-2026	1	Initial release from ST, rebranded NXP document
25-Sep-2026	2	Updated sensitivity and temperature effect on offset (unit) in Table 3. Operating characteristics

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