

Product Overview

Novosense NSP1832 series MEMS pressure sensors are high-performance and high-reliability MEMS differential pressure sensor dies, based on the principle of mono-crystalline silicon high sensitivity piezoresistive effect, and manufactured by the advanced MEMS technology. The NSP1832 series MEMS differential pressure sensors are qualified according to AEC-Q103 and guaranteed the accuracy and stability better than 1% FS in overall lifetime, the typical pressure ranges are $0 \sim \pm 5\text{kPa}$, $0 \sim \pm 35\text{kPa}$ and $0 \sim \pm 100\text{kPa}$, widely used in automotive electronics, industrial controls, etc. The corrosion-resistant Pt metal bond pads make NSP1832 series pressure sensors to be suitable for harsh environment applications such as DPF, GPF, EVAP etc. especially.

The wafer manufactured platform of NSP1832 series MEMS differential pressure sensors is verified to fulfill the International Automotive Standard IATF16949:2016. Each wafer is inspected both in backside and frontside by 100% AOI and the electronic AOI wafer map is provided for each wafer. For additional shipping options, please contact Novosense sales.

Key Features

- Pressure range: $0 \sim \pm 5\text{kPa}$, $\pm 35\text{kPa}$, $\pm 100\text{kPa}$
- Operating temperature: $-40 \sim 150^\circ\text{C}$
- Die size: $1.65\text{mm} \times 1.65\text{mm} \times 0.4\text{mm}$
- Accuracy and Stability better than 1%FS

- Corrosion-resistant Pt metal bond pad structure
- Enhanced reliability with the double bond pad design
- IATF16949 certificated manufactured platform
- AEC-Q103 automotive standards qualified
- ROHS & REACH compliant

Applications

- Gasoline Particulate Filter
- Diesel Particulate Filter
- EVAP Evaporative System
- Industrial Controls

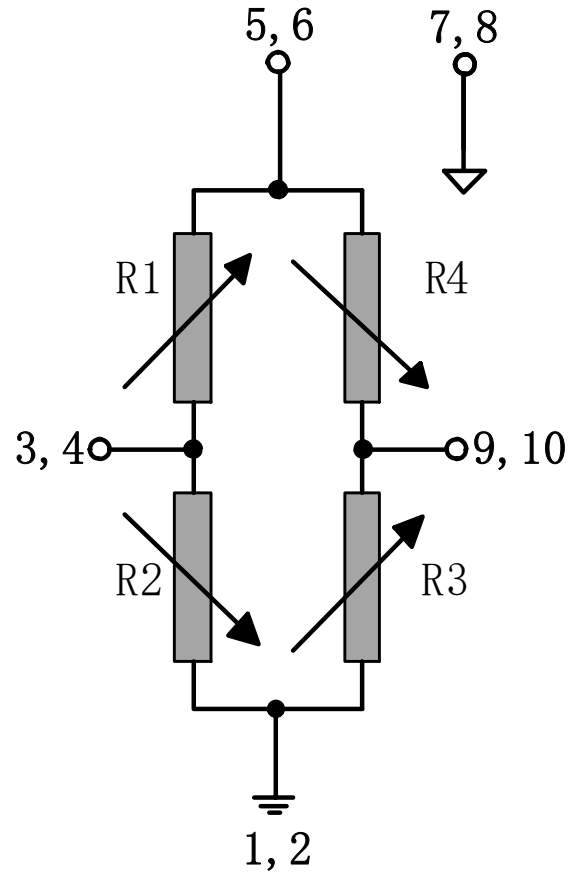
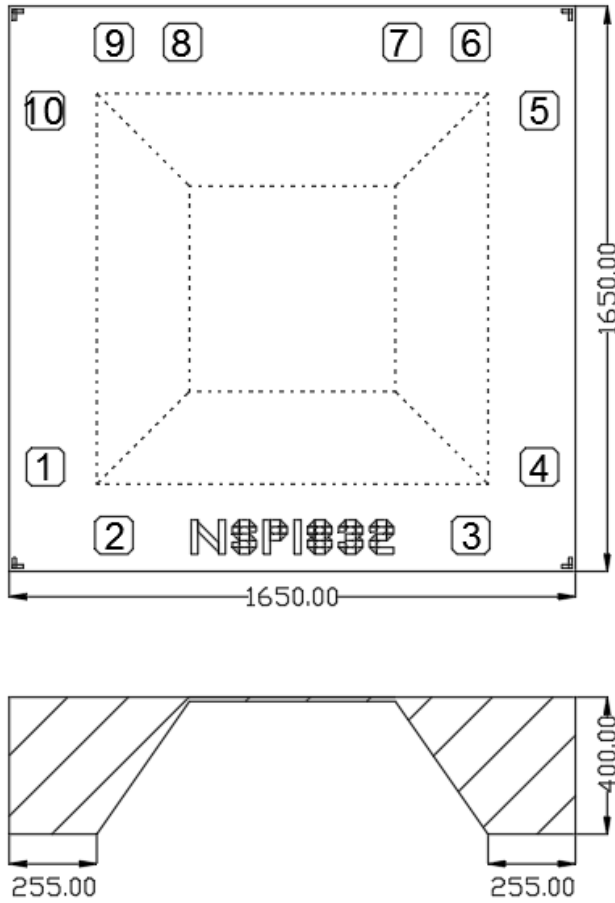
Device Information

Part Number	Span	Bond Pad Metal
NSP1832-Axx005	$0 \sim \pm 5\text{kPa}$	Pt Metal
NSP1832-Axx035	$0 \sim \pm 35\text{kPa}$	Pt Metal
NSP1832-Axx100	$0 \sim \pm 100\text{kPa}$	Pt Metal

INDEX

1. DIMENSIONS AND DIAGRAM	3
2. ABSOLUTE MAXIMUM RATINGS	4
3. CHARACTERISTIC	5
4. ORDER INFORMATION	6
5. REVISION HISTORY	7

1. Dimensions And Diagram



Pad NO.	Pad description	Symbol	Value	Coordinate X-Axis (μm)	Coordinate Y-Axis (μm)
1	Negative Supply Voltage	GND	0V	105	305
2	Negative Supply Voltage	GND	0V	305	105
3	Negative Sensor Output	Vout-	-	1345	105
4	Negative Sensor Output	Vout-	-	1545	305
5	Positive Supply Voltage	VDD	+5V	1545	1345
6	Positive Supply Voltage	VDD	+5V	1345	1545
7	Substrate Supply Voltage	VSUB	+5V	1145	1545
8	Substrate Supply Voltage	VSUB	+5V	505	1545
9	Positive Sensor Output	Vout+	-	305	1545
10	Positive Sensor Output	Vout+	-	105	1345

Notes:

1. All dimensions are in micron.
2. Bond pad opening size: 110x110um.
3. Bond pad metal: Pt, Thickness: 200nm.

2. Absolute Maximum Ratings

NO.	Parameters	Symbol	Min	Typ	Max	Unit
1	Supply voltage	VDD			12	V
2	Operating temperature	T _{OP}	-40		150	°C
3	Storage temperature	T _{STG}	-40		150	°C
4	Proof pressure	P _{proof}	3x			FS
5	Burst pressure	P _{Burst}	5x			FS

3. Characteristic

Measured at 5V supply and 25 °C , unless otherwise specified.

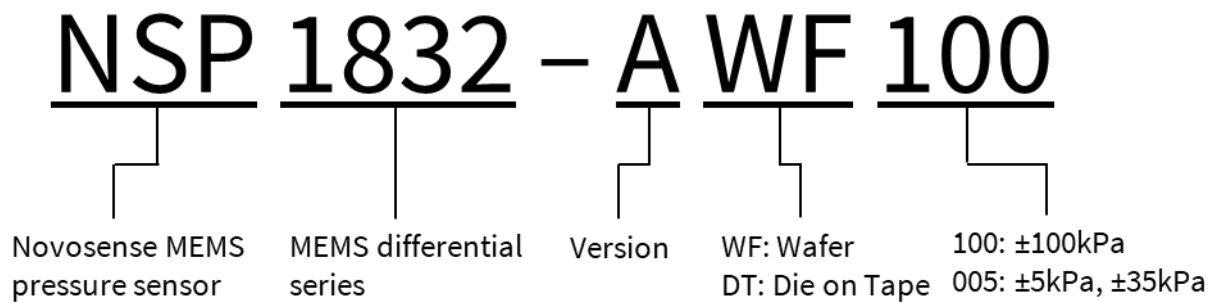
NO.	Parameters	Symbol	Min ³	Typ ^{1, 2}	Max ³	Unit	
1	Pressure range ^{3, 7}	Span	-100	±5, ±35, ±100	100	kPa	
2	Full span output	Vout	5kPa	5	15	25	mV
			35kPa	70	100	130	
			100kPa	55	85	115	
3	Offset Voltage ⁴	Offset	-30	±10	30	mV	
4	Temperature coefficient of span ⁵	TCS	-0.28	-0.22	-0.16	%FS/	
5	Temperature coefficient of offset ⁵	TCO	-80	±20	80	μV/°C	
6	Temperature coefficient of bridge resistance ⁵	TCR	0.04	0.08	0.12	%FS/	
7	Non-linearity ⁶	NL _{TS}	-0.3	±0.1	0.3	%FS	
		NL _{BS}	-0.3	±0.1	0.3	%FS	
8	Bridge resistance	R _B	4.3	5.3	6.3	kΩ	
9	Pressure hysteresis	P _{HYS}	-0.1	±0.05	0.1	%FS	
10	Temperature hysteresis ⁵	T _{HYS}	-0.2	±0.05	0.2	%FS	

Notes:

1. Measured on a sample basis and based on special MEMS only package. The sensor performance may change depending on the die attach material and the assembly process.
2. Measured at 0~±100kPa pressure range and for the other pressure ranges, please contact Novosense sales.
3. Referring to atmosphere pressure.
4. Output voltage at zero pressure.
5. Measured from -40°C to 150°C.
6. Defined as the best fit straight line, TS: pressure applied onto the front side of the die and BS: pressure applied onto the back side of the die.
7. Dry non-corrosive and pollution-free gas.

4. Order Information

NO.	Order NO.	Span	Comment
1	NSP1832-AWF100	0~±100kPa	Wafer
2	NSP1832-ADT100	0~±100kPa	Die on Tape
3	NSP1832-AWF005	0~±5kPa, ±35kPa	Wafer
4	NSP1832-ADT005	0~±5kPa, ±35kPa	Die on Tape



5. Revision History

Revision	Description	Date
0.1	Initial Version.	2022/6/1
1.0	Formal Version.	2022/6/6

IMPORTANT NOTICE

The information given in this document shall in no event be regarded as any warranty or authorization of, express or implied, including but not limited to accuracy, completeness, merchantability, fitness for a particular purpose or infringement of any third party's intellectual property rights.

You are solely responsible for your use of Novosense' products and applications, and for the safety thereof. You shall comply with all laws, regulations and requirements related to Novosense's products and applications, although information or support related to any application may still be provided by Novosense.

The resources are intended only for skilled developers designing with Novosense' products. Novosense reserves the rights to make corrections, modifications, enhancements, improvements or other changes to the products and services provided. Novosense authorizes you to use these resources exclusively for the development of relevant applications designed to integrate Novosense's products. Using these resources for any other purpose, or any unauthorized reproduction or display of these resources is strictly prohibited. Novosense shall not be liable for any claims, damages, costs, losses or liabilities arising out of the use of these resources.

For further information on applications, products and technologies, please contact Novosense (www.novosns.com).

Suzhou Novosense Microelectronics Co., Ltd