

Product Overview

Novosense NSP1830 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 NSP1830 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~±100kPa and 0~500kPa, widely used in consumer electronics, medical electronics, industrial controls, automotive electronics etc. The bonded glass substate is optional to improve stability.

The wafer manufactured platform of NSP1830 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~±100kPa, 500kPa
- Operating temperature: -40~125°C
- Die size: 1.8mmx1.8mmx0.4mm
- Accuracy and stability better than 1%FS
- Optional bonded glass substate
- IATF16949 certificated manufactured platform

- AEC-Q103 automotive standards qualified
- ROHS & REACH compliant

Applications

- White Household
- Consumer
- Medical
- Industrial Controls

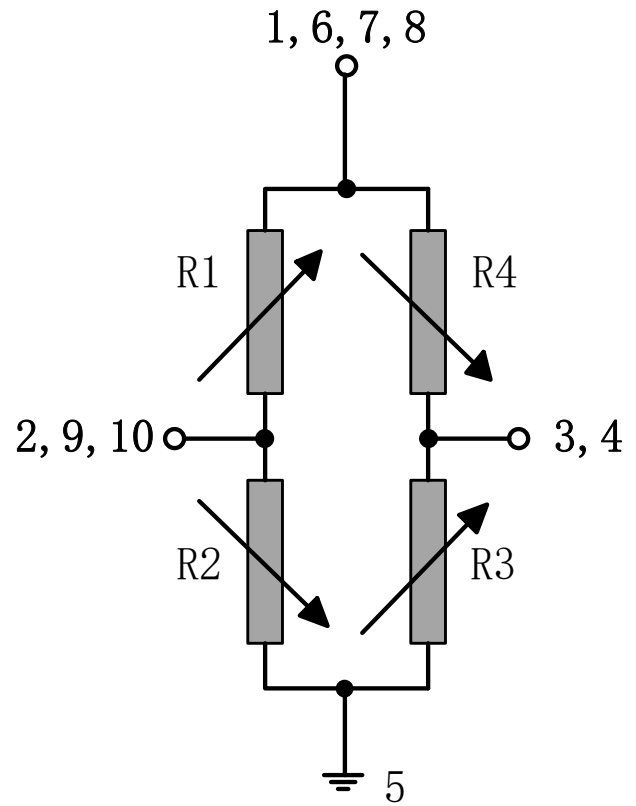
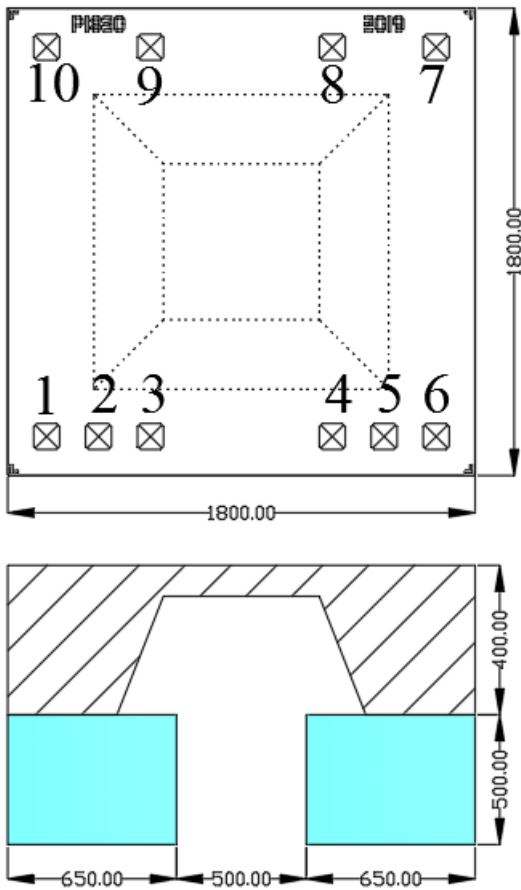
Device Information

Part Number	Span	Die Size
NSP1830-Bxx100	0~±100kPa	1.8mmx1.8mmx0.4mm
NSP1830-Gxx500	0~500kPa	1.8mmx1.8mmx0.9mm

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1. Dimensions And Diagram



NO.	Pad description	Symbol	Value	Coordinate X-Axis (μm)	Coordinate Y-Axis (μm)
1	Negative Supply Voltage	GND	0V	150	150
2	Negative Supply Voltage	GND	0V	350	150
3	Negative Sensor Output	Vout-	-	550	150
4	Negative Sensor Output	Vout-	-	1250	150
5	Positive Supply Voltage	VDD	+5V	1450	150
6	Positive Supply Voltage	VDD	+5V	1650	150
7	Substrate Supply Voltage	VSUB	+5V	1650	1650
8	Substrate Supply Voltage	VSUB	+5V	1250	1650
9	Positive Sensor Output	Vout+	-	550	1650
10	Positive Sensor Output	Vout+	-	150	1650

Notes:

1. All dimensions are in micron.
2. Bond pad opening size: 100x100um.
3. Bond pad metal: Al, Thickness: 1um.
4. The thickness of die without glass is 400um and with bonded glass is 900um.

2. Absolute Maximum Ratings

NO.	Parameters	Symbol	Min	Typ	Max	Unit
1	Supply voltage	VDD			12	V
2	Operating temperature	T _{OP}	-40		125	°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.

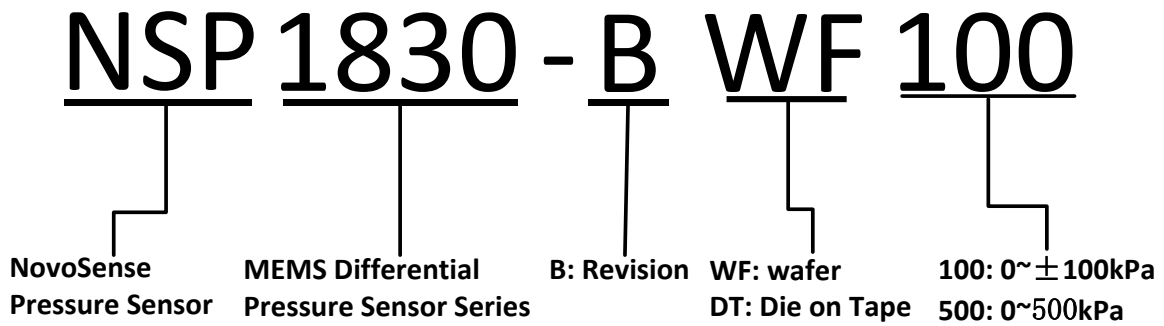
NO.	Parameters	Symbol	Min ³	Typ ^{1, 2}	Max ³	Unit	
1	Pressure range ^{3, 7}	Span	-100	±100, ±500	1000	kPa	
2	Full span output	Vout	100kPa	35	65	95	mV
			500kPa	65	85	115	
3	Offset Voltage ⁴	Offset	-30	±10	30	mV	
4	Temperature coefficient of span ⁵	TCS	-0.28	-0.22	-0.16	%FS/	
5	Temperature coefficient of offset ⁵	TCO	-80	±10	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	±0.2	0.3	%FS	
8	Bridge resistance	R _B	5.3	6.3	7.3	kΩ	
9	Pressure hysteresis ⁷	P _{HYS}	-0.2	±0.05	0.2	%FS	
10	Temperature hysteresis ⁵	T _{HYS}	-0.2	±0.1	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 assemble process.
2. Measured at 0~±100kPa pressure range and for the other pressure ranges, please contact Novosense sales.
3. Referring to the atmosphere pressure.
4. Output voltage at zero pressure.
5. Measured from -40°C to 125°C;
6. Defined as 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	NSP1830-BWF100	0~±100kPa	Wafer
2	NSP1830-BDT100	0~±100kPa	Die on Tape
3	NSP1830-GWF500	0~500kPa	Wafer
4	NSP1830-GDT500	0~500kPa	Die on Tape



5. Revision History

Revision	Description	Date
0.1	Initial Version	2022/5/16
1.0	Formal Version	2022/6/6

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