NOVA® SENSOR
AN AMPHENOL COMPANY

P1301

Low Pressure Silicon Pressure Sensor Die

The **NovaSensor P1301 Low Pressure Die** is a piezoresistive sensing element measuring 2.7mm x 3.2mm (0.11in x 0.13 in). When excited with constant voltage or constant current, it produces a millivolt output proportional to input pressure. Manufactured with NovaSensor's SenStable® process, the P1301 die provides excellent long-term stability and repeatability. The die can be used for differential and gauge pressure sensors.

Features

- High pressure sensitivity
- High stability
- High linearity
- Available Versions: Gauge / Absolute
- Pressure ranges: from 0.36 psi to 5 psi (2.5 kPa to 34.5 kPa)

Applications

- Smart building & HVACR
- Home Safety & Security
- Advanced Monitoring Systems
- Medical & Clinical Instrumentation
- Automotive & EV Systems
- Aerospace and Defense

Amphenol
Sensors

P1301 Low Pressure Sensor Die Specifications

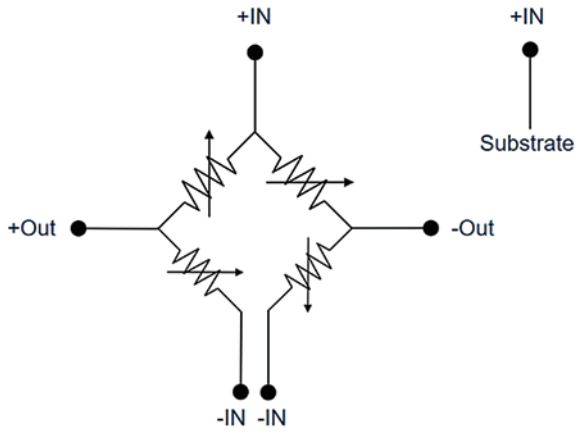
Parameter		Value	Units	Notes
General				
Pressure Range	Absolute	5	psi	-
	Gauge	0.36, 1, 2.5, 5	psi	-
Proof Pressure		5X rated pressure	-	2
Backside Burst Pressure		35	psi	3
Environmental				
Temperature Range	Operating	–40 to 150	°C	4
	Storage	–55 to 150	°C	-
Mechanical				
Die Dimensions (L x W x H)	With 63 mil glass	3.2 mm x 2.7 mm x 2.0 mm	-	-
	With 93 mil glass	3.2 mm x 2.7 mm x 2.8 mm	-	-
Wire Bond Pad Dimension		0.15 mm x 0.15mm	-	-
Metallization		Pure aluminum	-	-
Media Compatibility		Clean dry air, media compatible with silicon and boron-silicate glass		

Electrical Performance [1]						
Parameter		**Min**	**Typical**	**Max**	**Units**	**Notes**
Recommended Excitation	Current	0.5	1.5	1.8	mA	-
	Voltage	2.5	8	10	V	-
Input and Output Impedance		4000	5300	6000	Ohm	-
Zero Offset		-10	within ±5	+10	mV/V	5
Full Scale Output (FSO or Span) and Pressure Sensitivity		See P1301 Ordering Information Table				4
Linearity (Best Fit Straight Line)						
Zero Pressure Repeatability	0.36 psi	-0.2	within ± 0.1	+0.2	%FSO	4
	1 to 5 psi	-0.1	within ± 0.05	+0.1		
Temperature Coefficients	Zero (TCO)	-15	within ± 5	15	µV/V/°C	4, 6
	Resistance (TCR)	0.32	0.36	0.45	%/°C	4
	Sensitivity (TCS)	-0.29	-0.23	-0.18	%/°C	4
Zero Thermal Hysteresis	0.36 psi	-0.5	within ±0.1	+0.5	%FSO	4, 6
	1 to 5 psi	-0.25	within ±0.1	+0.25		
FSO Thermal Hysteresis		-0.25	within ±0.1	+0.25	%FSO	4, 6

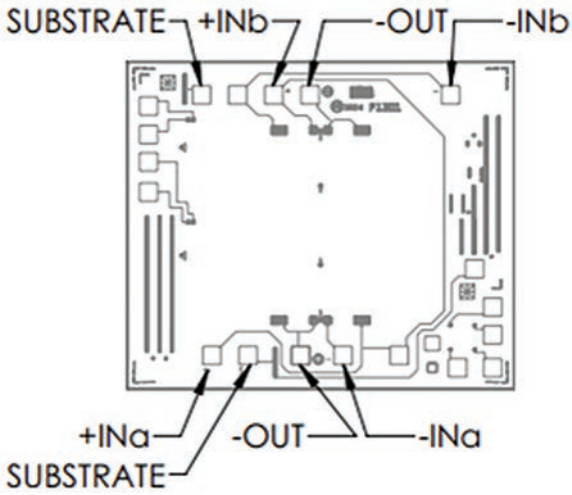
Notes:

1. All values measured at 25°C and 1.5 mA excitation, unless otherwise noted.
2. Proof pressure is the maximum pressure die occasionally can be exposed to without causing permanent damage or performance change. Die performance cannot be guaranteed after exposure to a pressure that exceeds the proof pressure.
3. Burst pressure is a pressure causing permanent structural damage of die. Front side burst pressure is higher than back side burst pressure. Die products can be qualified for a higher burst pressure with additional testing in customer package.
4. Samples from each wafer are used to verify bridge resistance, offset, span, linearity and temperature characteristics in the temperature range between 0°C and 70°C.
5. Measured at 0 kPaG for differential or gauge sensors
6. Die packaging may have a large impact on die stability, pressure hysteresis, thermal hysteresis, and TCO.

P1301 Low Pressure Sensor Die Specifications



P1301 Schematic Diagram



P1301 Wire Bond Diagram

Note: *Both +IN and SUBSTRATE need to be connected to the highest potential in the circuitry*

P1301 Ordering Information:

63 mil (1.60 mm) Thick Glass										
PN	Range		Gage/ Absolute	Pressure Sensitivity (mV/V/KPa)	FSO at 1.5 mA excitation (mV)			Linearity (BFSL) (%/FSO)		
	PSI	kPa			Min	Typical	Max	Min	Typical	Max
71316	5	34.5	G	0.5 – 1.1	150	200	270	-0.25	± 0.2	0.25
71315	2.5	17.2	G	1.0 – 2.1	140	190	270	-0.5	± 0.2	0.5
71626	1	6.9	G	1.3 – 2.6	75	90	130	-0.2	± 0.15	0.2
71882	0.36	2.5	G	2.0 – 4.0	40	60	80	-0.5	± 0.1	0.5

93 mil (2.36 mm) Thick Glass										
PN	Range		Gage/ Absolute	Pressure Sensitivity (mV/V/KPa)	FSO at 1.5 mA excitation (mV)			Linearity (BFSL)(%/FSO)		
	PSI	kPa			Min	Typical	Max	Min	Typical	Max
71864	5	34.5	A	0.5 – 1.1	150	200	270	-0.25	± 0.2	0.25
71865	5	34.5	G	0.5 – 1.1	150	200	270	-0.25	± 0.2	0.25
71874	2.5	17.2	G	1.0 – 2.1	140	190	270	-0.5	± 0.2	0.5
71873	1	6.9	G	1.3 – 2.6	75	90	130	-0.25	± 0.2	0.25
71883	0.36	2.5	G	2.0 – 4.0	40	60	80	-0.5	± 0.1	0.5

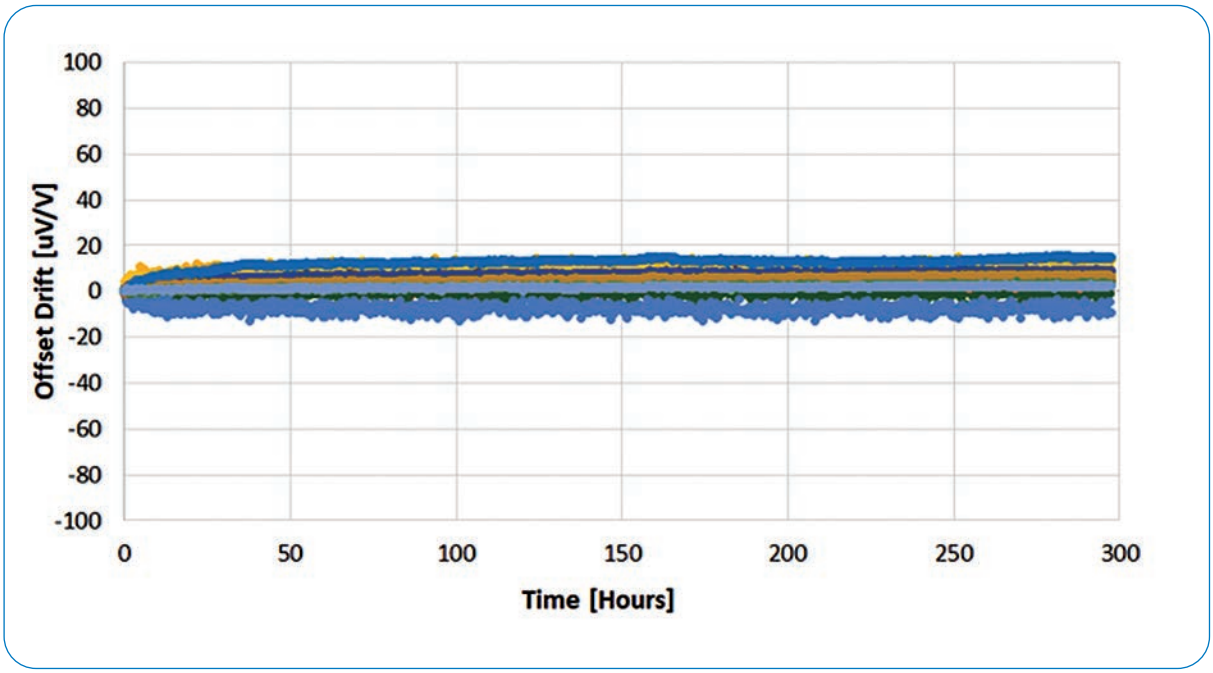
- All products are supplied either as sawn 6” wafers on tape or as die in Gel-Paks.
- Minimum release quantity:1200 (sawn wafer on tape), 100 (die in Gel-Pak).

The product part number to be ordered may be specified as follows:

Part number

71XXX	Sawn wafer on tape
71XXX-GP	Die in Gel-Pak

Stability of 71316 Die (P1301 5 PSIG) tested at 125 C with 8.0 V excitation:



Typical drift of output signal in 300 hrs test is below 40 uV at 8 V supply (0.02% of sensor span).

Shipping and Handling

The standard products are available on tape with metal frame after dicing and are shipped in protective plastic containers. Electrical rejects and visual rejects are inked. Each wafer will have the following information: Lot #, Wafer #, Part #, and the number of good (yielded) die.

Warranty

NovaSensor warrants its products against defects in material and workmanship for 12 months from date of shipment. Products not subject to misuse will be repaired or replaced. THE FOREGOING IS IN LIEU OF ANY OTHER EXPRESSED OR IMPLIED WARRANTIES. NovaSensor reserves the right to make changes without further notice to any products herein. NovaSensor makes no warranty, representation or guarantee regarding the suitability of its products for any particular application, nor does NovaSensor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims and all liability, including without limitation consequential or incidental damages.

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