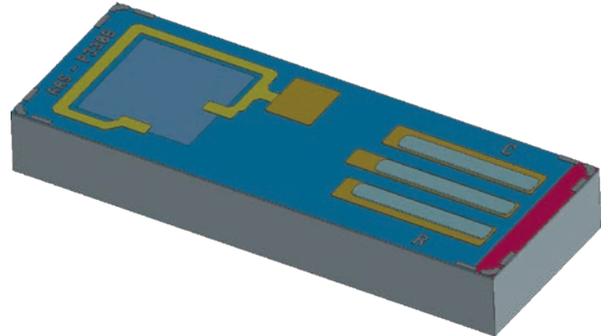




P330B

1F (330 μm) Absolute Pressure Sensor Die



NovaSensor P330B Piezoresistive (PRT) Pressure Sensor Die offers the same superior stability and sensitivity as larger chips, but in an extremely small footprint for invasive applications where small size is critical. It has excellent measurement accuracy, which is ideal for demanding applications with restricted dimensional profiles, such as medical catheters and IC packages. NovaSensor's proprietary SenStable[®] process provides excellent long-term stability and repeatability.

When excited with a DC voltage source, the P330B produces an mV output that is proportional to applied pressure. The P330B employs a half-bridge circuit, which requires two external resistors to complete a full-bridge configuration. Additional components may be added to calibrate the output of the sensor.

Applications

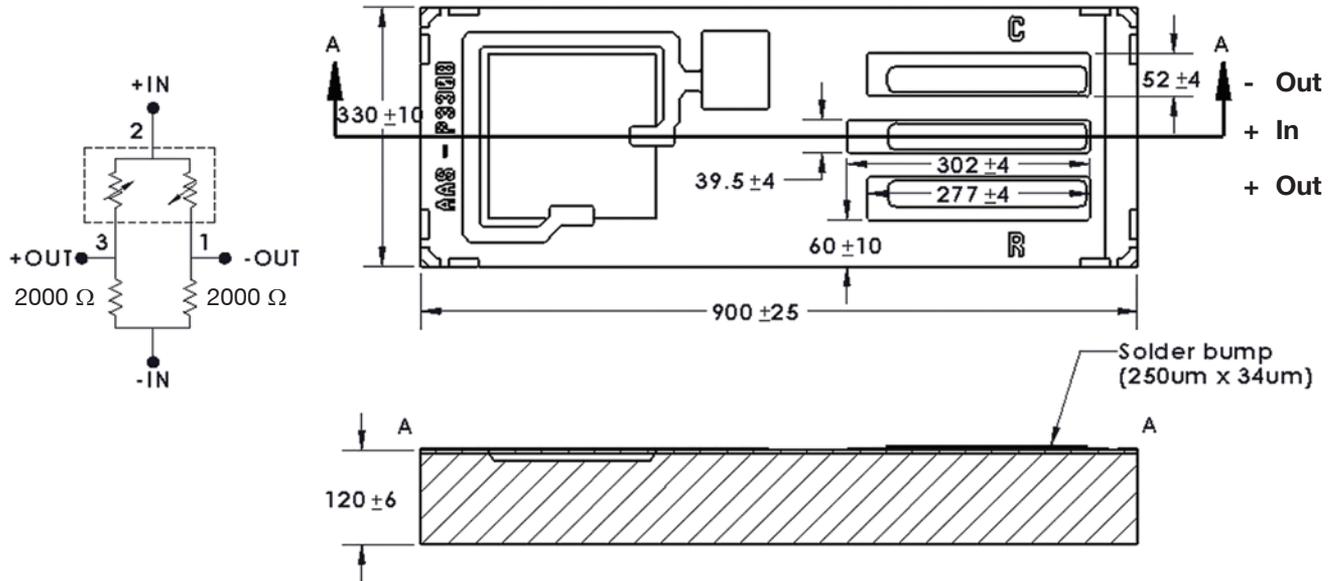
- Cardiovascular
- Respiratory
- Intracranial
- Urological-Rectal
- Ablation
- Body Cavity
- Research

Features

- Extremely small size: 330 x 120 μm cross-section
- Stable and accurate pressure measurement
- Low power consumption
- Absolute pressure sensing
- Standard pressure range of 450 to 1050 mmHgA
- 4200 mmHgA burst pressure
- Gold-bond pads metallization and gold-tin solder bumps

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P330B Specifications



Schematic Diagram

Complete the full bridge by inserting two 2000 Ω external resistors. Match resistors closely to minimize offset error.

Overall Dimensions:

330 μm x 900 μm x 120 μm

General Specifications

Parameter ^(1, 2)	Value	Unit	Comment
Pressure Range	450 to 1050	mmHgA	Absolute Pressure
Proof Pressure ³	2100	mmHgA	
Burst Pressure ⁴	4200	mmHgA	
Excitation	0 to 5	Volts	DC Voltage, 3V Typical
Bridge Resistance ⁵	2.0 \pm 0.6	k Ω	
Symmetry ⁶	\pm 5	%	
Offset Voltage ⁷	\pm 3	mV/V	
Output Voltage	9	mV/V	Typical @ 750 mmHg
Sensitivity ⁷	16	$\mu\text{V/V/mmHg}$	Typical
Pressure Non Linearity ⁷	\pm 1	mmHg	Typical BFSL, 300 mmHg Range
TC Offset ⁷	\pm 2	mmHg/ $^{\circ}\text{C}$	Maximum
TC Sensitivity ⁷	-0.19	%/ $^{\circ}\text{C}$	Typical
TC Resistance ⁷	0.055	%/ $^{\circ}\text{C}$	Typical
Operating Temperature ⁸	15 to 45	$^{\circ}\text{C}$	59 $^{\circ}\text{F}$ to 113 $^{\circ}\text{F}$
Storage Temperature	-40 to +85	$^{\circ}\text{C}$	-40 $^{\circ}\text{F}$ to 185 $^{\circ}\text{F}$

Media Compatibility 9, 10

Clean, dry and non-corrosive gases

Notes

- Values measured at room temperature unless noted with 2000 Ω resistors completing the bridge.
- Pressure sensor performance can be affected by die mounting. Packaging stress should be minimized to achieve the specified performance.
- Proof Pressure: The maximum pressure at which the sensor may be subjected as an uncommon event and for a short duration of time without permanent damage or performance degradation. If the Proof Pressure is exceeded, the die performance is no longer guaranteed.
- Burst Pressure: The pressure at which permanent damage to the sensor may occur. Specification is for quasi-static pressure in an oil medium applied to the diaphragm side of the die.
- Parameter is measured at the wafer-level 100% at room temperature, atmospheric pressure and 3V.
- Symmetry is calculated as $2*(r1 - r2)/(r1 + r2)$, where r1 and r2 are two piezoresistors measured separately.

P330B Specifications (cont.)

Notes (cont.)

- Parameters marked "Typical" are verified by testing samples from each wafer. TCR of sensor resistors only. TCR of bridge circuit will be affected by the resistor values completing the bridge.
- Die may be used beyond this range with additional validation.
- Die with protective layers has been successfully used in various medical and biological applications.
- If the sensor is to be exposed to radiation, it is recommended to shield the die from radiation and implement auto-zeroing.

Ordering Information

Part Number	Description
51587	1F 300 mmHg Absolute Pressure Sensor Die with Solder Bumps.
Minimum Release Quantity 100 Die (1 Gel-Pak)	

Safety

The product shall be used only within power supply and electrical input and output limits as specified by the datasheet. Improper use of the product may result in product damage and property loss and/or personal injury. In use of the product, the customer has sole responsibility for designing and implementing a solution, which will ensure safe operation (including review of appropriate reliability or required redundancy, mitigation of failure modes, and/or meeting appropriate standards). The customer is responsible for review of any special conditions for use including, but not limited to, environmental conditions, electrical supply, residual risk, etc. Amphenol makes no warranty, representation or guarantee regarding the suitability of this product for any particular application, including safety critical applications. Nor does Amphenol assume any liability arising out of the application or use in any product or circuit. Amphenol specifically disclaims all liability without limitation consequential or incidental damages.

Shipping and Handling

Wafers are shipped on sticky tape with rings in protective plastic containers or die in gel paks. All wafers are 100% electrically probed and visually inspected. Rejects are marked by ink dots.

Warranty

NovaSensor warrants its products against defects in material and workmanship for 12 months from the date of shipment. Products not subjected to misuse will be repaired or replaced. 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.

NovaSensor does not assume any liability arising out of the application or use of any product or circuit and specifically disclaims, and all liability, without limitation consequential or incidental damages. The foregoing warranties are exclusive and in lieu of all other warranties, whether written, oral, implied or statutory. No implied statutory warranty of merchantability or fitness for a particular purpose shall apply.

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