



# P161

## 3F Gauge Pressure Sensor Die

NovaSensor's P161 piezoresistive pressure sensor die are offered in a miniature 1150 x 725  $\mu\text{m}$  die that is small enough for three French catheters.

The small die size is made possible by NovaSensor's proprietary Silicon Fusion Bonding (SFB) process. When excited with an AC or DC voltage source, the P161 produces a mV output that is proportional to input pressure.

The P161 is in a half-bridge design, where external resistors are needed to complete a full bridge configuration.

### Features

- Very small size
- Gauge pressure sensing
- Standard pressure range -50 to 300 mmHg Gauge
- AC or DC excitation
- 4000 mmHg burst limit

### Applications

- Intracranial
- Urology
- Rectal
- Body Cavity
- Research

# P161 Specification

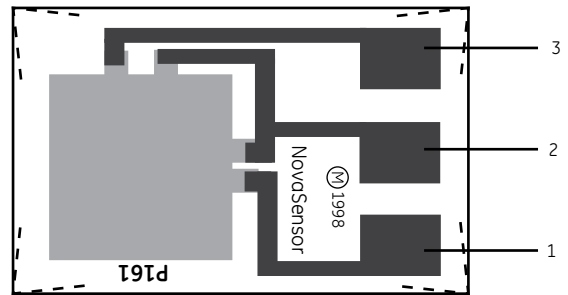
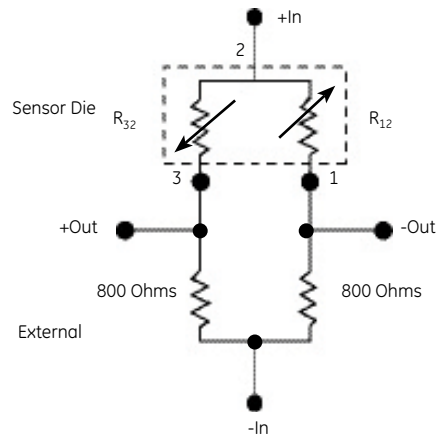
Parameter <sup>(1)</sup>	Unit	Value <sup>(4)</sup>	Note(s)
Pressure Range	mmHg	-50 to 300	Gauge
Operating Temperature	°F	50 to 122	(10°C to 50°C)
Excitation	Volts	1 to 8	AC or DC
Zero Offset	mV/V	±12.5	
Sensitivity	μV/V/ mmHg	12 to 24	2
Linearity and Pressure Hysteresis		+/- 1 mmHg or 2% of reading, whichever is greater	3, 4
Temperature Coefficient of Zero	μV/V / °C	±40	Typical
Temperature Coefficient of Resistance	% / °C	0.15	Typical
Temperature Coefficient of Sensitivity	%FSO/°C	-0.2	Typical
Bridge Resistance	Ω	800 ± 20%	
Symmetry	±5	%	5
Burst Pressure	mmHg	4000	Gauge
Media Compatibility		Clean, dry, and non-corrosive gases	6

- Values measured at 0.6 mA and 71.6°F (22 °C) unless noted with 800 Ω resistor between +Out and -IN, and -Out and -IN. Die performance will vary depending on die attach material. The die attach material should be chosen to minimize package stress transmitted to the sensor die.
- Sensitivity at 100 mmHg.
- Extrapolated error at 300 mmHg by straight line through 0 and 100 mmHg pressure readings.
- Topside pressure.
- Symmetry is the difference between the two bridge resistor values compared to the average of the two bridge resistors:  $R_{\text{symm}} = 2 \cdot (R_{32} - R_{12}) / (R_{32} + R_{12}) \cdot 100\%$
- A protective coating must cover the sensor die for use with saline and other fluids.

NovaSensor policy is that all products implanted into the human body must be in for less than 29 days.

## Shipping And Handling

Wafers are shipped in protective plastic containers. The wafers are sawn on sticky tape with rings. All sensor wafers are electrically probed, visually inspected. All rejects are marked by an ink dot. Each wafer will be labeled with the lot number wafer number, device number and the number of available sensor die.



Die dimensions (l x w x h): 1150 μm x 725 μm x 170 μm

**P161 schematic diagrams:** Complete the full bridge by inserting two 800 Ω external resistors, closely matched to minimize Offset error.

## 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 particular purpose shall apply.

## Ordering Information

Part Number	Description
51186	3F, 300 mmHg Gauge

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