NOVA SENSOR

P592

Pressure Sensor Die

Description

The P592 piezoresistive pressure sensors are offered in a miniature 0.04 in x 0.04 in (1 mm x 1 mm) die. When excited with 1 mA constant current , the P592 produces a millivolt output that is proportional to input pressure. The P592 is available as an absolute pressure sensor, where the applied pressure is referenced to an internal vacuum sealed within the die. With NovaSensor's SenStable® process, the P592 will provide very low long-term stability errors and excellent repeatability.

Applications

- Consumer: Portable tire gauges, altimeters, and barometers
- Industrial: Pneumatic controls, leak detection, manometers, portable pressure gauges, pressure switches, and controllers
- Automotive: Tire pressure, diagnostics, engine, and suspension control, MAP sensors
- Medical: Patient monitoring and clinical instrumentation

Features

- Solid state, high reliability
- Low-cost , miniature size
- Standard pressure ranges: 100, 200, 350, 700 kPaA
- Nonlinearity < 0.2 %FSO
- SenStable , silicon fusion bonded sensor die

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P592 Specifications

Parameter	Value	Units	Notes
Electrical @ 71.6°F (22°C) unless noted			
Excitation	1.00	mA	10 VDC maximum
Input Impedance	5000 ±20%	Ω	
Output Impedance	5000 ±20%	Ω	
Environmental			
Operating Temperature	-40 to 257	°F	(-40°C to 125°C)
Storage Temperature	-67 to 302	°F	(-55°C to 150°C) (undiced)
Maximum Overpressure	6X		Rated pressure
	2X		3
Mechanical			
Weight	0.02	Grams	xx lb
Media Compatibility	Clean dry air, non-corrosive gases		
Performance Parameters (1)			
	Value (6)	**Units**	**Notes**
Zero Offset	±8	mV/V	
	±10	mV/V	2
Full-scale (FS) Output	65 to 115	mV	2
	75 to 125	mV	
	170 to 280	mV	3
Linearity	±0.2	%FSO	4
	±0.25	%FSO	3, 4
Pressure Hysteresis	±0.1	%FSO	
Temperature Coefficient of Zero	±30	µV/V/°C	5
Temperature Coefficient of Resistance	0.3	% /°C	5
Temperature Coefficient of Sensitivity	-0.2	%/°C	5
Thermal Hysteresis of Zero	±0.1	%FSO	6
Long Term Stability of FSO	0.2	%FSO	7

1. Values measured at 1.0 mA and 71.6°F (22°C) unless noted.
2. 100 Kpa pressure range.
3. 4295 psia (296.12 bar) pressure range.
4. Best fit straight line.
5. Between 32°F and 158°F (0°C and 70°C). Temperature coefficients are typical values.
6. Between 32°F and 158°F (0°C and 70°C).
7. Typical over one year.

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.

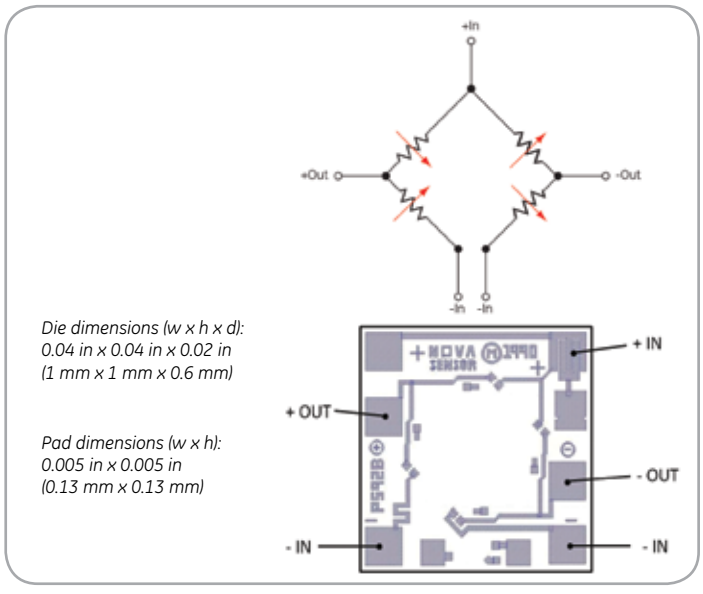
Warranty

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 merchantabilility or fitness for particular purpose shall apply.

Ordering Information

Part Number	Description
51171	15 psia (1 bar); ≈100 kPaA
51172	30 psia (2.06 bar); ≈200 kPaA
51173	50 psia (3.44 bar); ≈350 kPaA
51174	100 psia (6.89 bar); ≈700 kPaA
51207	150 psia (10.34 bar); ≈1035 kPaA
51204	300 psia (20.68 bar); ≈2070 kPaA
51175	500 psia (34.47 bar); ≈3450 kPaA
51252	4295 psia (296.12 bar); ≈30,000 kPaA

Minimum Release Quantity:
2 wafers per pressure range or approximately 10,000 sensor die.



P592 schematic and dimensions

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