

P123 NovaSensor Pressure Sensor Die



The P123 is a miniature 0.1 in (2.5 mm) square piezoresistive pressure sensor die. When excited with 0.5 mA constant current, the P123 produces a millivolt output that is proportional to input pressure. The P123 is available as an absolute pressure sensor, where the applied pressure is referenced to a fixed pressure sealed within the die. The P123 may be compensated using constant current or constant voltage excitations. With NovaSensor's Senstable[®] process, the P123 will provide very low long-term stability errors and excellent repeatability.

Applications

- Process control systems
- Pneumatic controls
- Biomedical instruments
- Hydraulic systems

Features

- High reliability, solid-state piezoresistive silicone sensors
- Standard pressure ranges: 300, 500, 1000 psig; Absolute: 300, 500, 1000, 2000, 3000, 5000, 7500 and 10,150 psia (21, 34, 69, 138, 207, 345, 517 and 700 barA) Gauge: 300, 500, 1000 psig (21, 34, 69 barG)
- Nonlinearity <0.35% Full Scale Output (FSO)
- Higher bridge temperature coefficient allows constant voltage and current compensation
- 2X overpressure limit

Amphenol Advanced Sensors

P123 Specifications

Parameter	Value	Units	Notes			
Electrical @ 22° C unless noted						
Excitation	0.5	mA	10 VDC maximum			
Input impedance Output impedance	5000 ±20% 5000 ±20%	Ohms Ohms				
Environmental						
Operating temperature range	-40° to 125°	°C	-40°F to 257°F			
Storage temperature range	-55° to 150°	°C	-67°F to 302°F			
Maximum overpressure	2X		Rated pressure, Note 8			
Mechanical						
Weight	0.04	Grams	.001 oz			
Media compatibility	Clean dry air, non-corrosive					

Performance Parameters

Parameter	Value (5)	Units	Notes
Zero offset	±30	mV	1
Full scale output (FSO)	106 ±21	mV	6.9
Pressure linearity	±0.35	%FSO	2, 7, 9
Pressure hysteresis	±0.05	%FSO	9
Temperature coefficient of zero	±30	μ V/V/°C	3, 9
Temperature coefficient of resistance	0.38 ± 0.1	%/°C	3, 9
Temperature coefficient of sensitivity	-0.19 ± 0.05	%/°C	3, 9
Thermal hysteresis of zero	±0.2	%FSO	3, 9
Long term stability of FSO	0.2	%FSO	4

1. 0 kPaA for absolute sensors and 0 kPaG for gauge sensors. For 51232, ±50 m.V at 1 mA.

2. Best fit straight line

- 3. Typical values between 0°C to 70°C (32°F to 158°F)
- 3. Typical values between 0°C to 70°C (32°)
- 4. Typical value over one year
- 5. All values measured at 25°C (77°F) and 0.5 mA excitation, unless otherwise noted.
- 6. For 51232, FSO range 200 to 280 mV at 1 milliamp excitation.
- 7. For 51232, linearity ±0.5% FSO BFSL.
- 8. 1.7x for 7500 psi range. 1.3x for 10,150 psi range.
- 9. Not fully tested in production.



Die dimensions: 0.1 x 0.1 x 0.08 in (2.5 mm x 2.5 mm x 2.0 mm)

Ordering Information

Part number	Description
51161	300 psig (21 bar)
51213	500 psig (34 bar)
51165	1000 psig (69 bar)
51162	300 psia (21 bar)
51163	500 psia (34 bar)
51164	1000 psia (69 bar)
51165	2000 psia (138 bar)
51166	3000 psia (204 bar)
51167	5000 psia (344 bar)
51168	7500 psia (517 bar)
51232	10150 psia (700 bar)

Minimum order: 1 wafer or 550 sensor die

Shipping and Handling

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

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 makes no warranty, representation or guarantee regarding the suitability of its products from 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 without limitation of 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.

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