

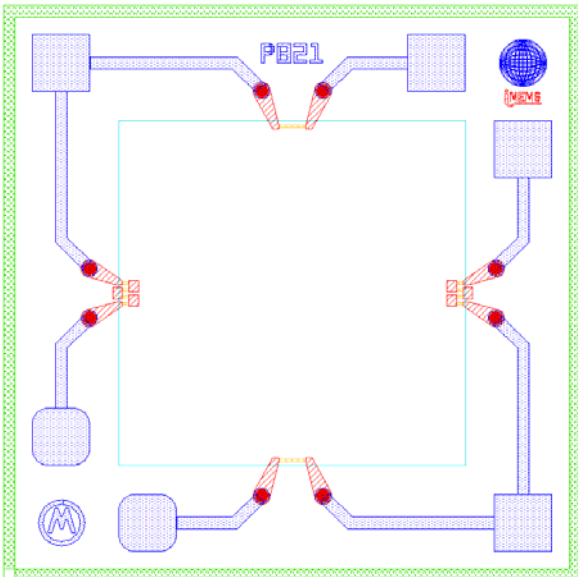
P821 OEM Specification

Rev 1.0

10/15/08

Available Pressure Ranges

Range		Range		Range	
(PSI)	(kPa)	(PSI)	(kPa)	(PSI)	(MPa)
				500	3.5
1	7	30	200	1000	7
5	35	50	350	3000	20
10	70	100	700	5000	35
15	100	300	2000	10000	70



Product Description

The InterMEMS P821 Family of Pressure Sensors incorporates a unique state of the art design utilizing Deep Reactive Ion Etching (DRIE). It is targeted toward OEM applications where accurate and stable measurement of a wide range of pressures is desirable.

It covers full scale pressure ranges from 1 PSI to 10,000 PSI inclusive, in a single chip design. This is accomplished by tailoring the diaphragm size and thickness for each pressure range to yield truly interchangeable sensors with precisely the same electrical performance regardless of pressure range.

This translates to improved ease of calibration, temperature compensation, and improved manufacturability for the Customers end product.

Absolute Maximum Ratings:

Parameter	Min.	Max.	Units
Storage Temperature	-55	150	° C
Operating Temperature	-40	125	° C
Excitation Voltage		10	Volts
Burst Pressure	5X		FS
Proof Pressure		2X	FS
Response Time		1×10^{-3}	Sec.
Warm up time		1	Sec.



Performance Specifications:

Parameter	Minimum	Typical	Maximum	Units
Full Scale Pressure	1		10,000	PSI
Bridge Resistance ¹	4.5	5	5.5	k Ω
Full Scale Span ²	125	150	175	mV
Offset Voltage	-20	± 5	20	mV
Nonlinearity ³		0.05	0.1	%FSS
TCOffset ⁴	-20	± 5	20	$\mu\text{V}/^\circ\text{C}$
TCSpan	-2200	-2000	-1800	ppm / $^\circ\text{C}$
TCSNL ⁵		0.25	1.0	%FSS
TCR	2800	3000	3200	ppm / $^\circ\text{C}$
TCRNL ⁶		0.5	1.0	%FSS
Pressure Hysteresis ⁷	-0.05	± 0.025	0.05	%FSS
Offset Thermal Hysteresis ⁸	-0.1	± 0.05	0.1	%FSS
Noise ⁹	-0.1	± 0.05	0.1	%FSS

¹ A Nominal Bridge Resistance of 5k Ω , 10k Ω , or 15k Ω can be provided on request.

² At reference conditions of 25 $^\circ\text{C}$ and 5V Excitation. All Full Scale Pressure Ranges have the same nominal Span.

³ Terminal Based Nonlinearity (TBNL), which is actually half of the same numerical specification for BFSL.

⁴ Change in Offset voltage over temperature, due to changes in residual stress over temperature.

⁵ Terminal based nonlinearity in TCS curve over operating temperature range.

⁶ Terminal based nonlinearity in TCR curve over operating temperature range.

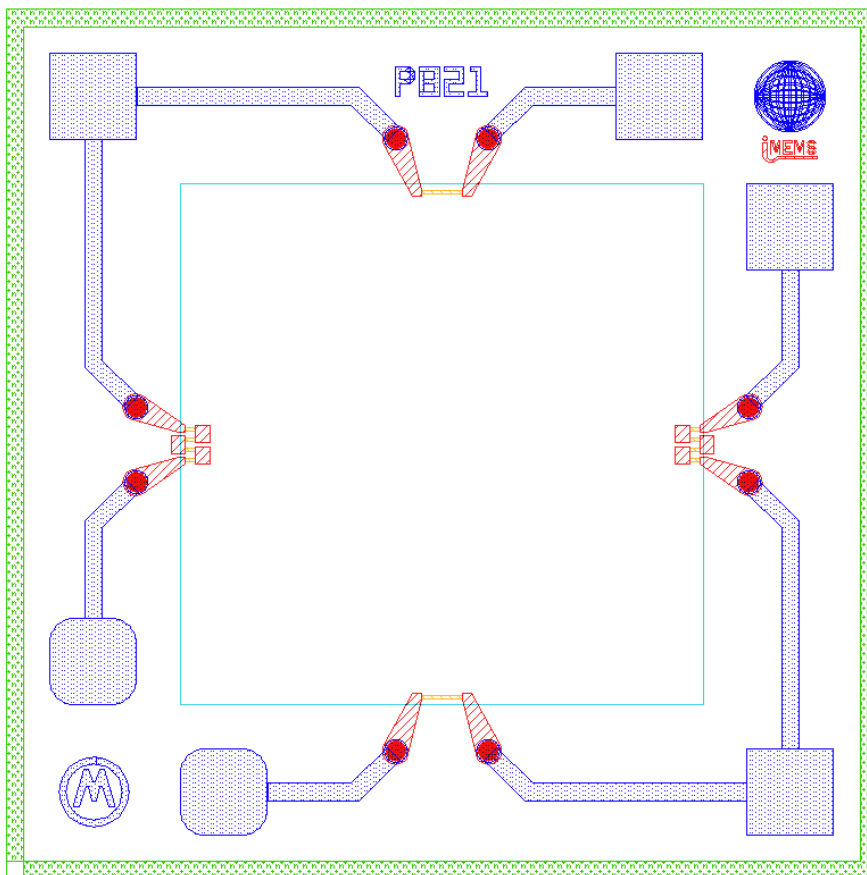
⁷ Measured as the difference (in %FSS) from the initial Offset and the Offset after pressurizing to 0 pressure, Full Pressure and returning to 0 Pressure. The Pressure Hysteresis is the difference between the initial Offset and the Offset after all pressure excursions and returning to 0.

⁸ Measured as the difference in initial, and Final Offset after thermal cycling from 25 $^\circ\text{C}$ to 125 $^\circ\text{C}$ to 25 $^\circ\text{C}$ to -40 $^\circ\text{C}$ and finally returning to 25 $^\circ\text{C}$.

⁹ Based on noise signal in V_{p-p} , measured in controlled Noise environment with no pressure applied.



Chip Layout



2.5mm x 2.5mm x 1mm
0.25 mm Bond Pads
Pad coordinates available on Request
Metallization Options for open,
closed, or 2 Half Bridges are available