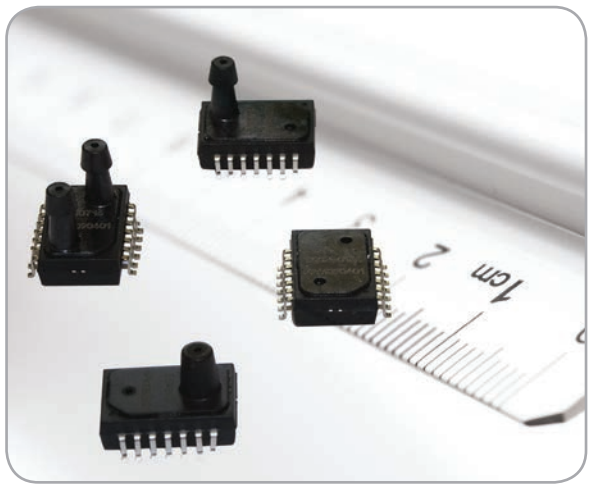
NOVA SENSOR

NPA Low Pressure

Surface-Mount Pressure Sensor Series



The NPA product series is provided in a miniature size as a cost effective solution for applications that require calibrated performance. Packaged in a SOIC14 pin surface mount, the NPA-Low Pressure Series is available in Gauge or Differential pressure ranges with either amplified analog or digital outputs. The sensor is intended for printed circuit board mounting and delivered in tape and reel form to simplify manufacturing handling.

Features

- Surface Mountable
- Differential, Gauge, Low Pressure
- 2” and 5” H_2O Full Scale
- Output Options: Amplified Analog, Digital Serial (14bit), Digital I^2C
- On chip temperature sensor in digital mode
- Operating temperature range of -40 to 125°C
- Total Error Band:
  +/-1.5% Span at 5”H_2O full scale
  +/-2.5% Span at 2”H_2O full scale

Amphenol

Advanced Sensors

Low Pressure NPA Specifications

Parameter	Value	Units	Notes
Pressure Range	2 or 5	In H_2O	498 or 1245 Pa
Maximum Overpressure	140	In H_2O	400 in H_2O Package Overpressure
Electrical @ 25°C (77°F) unless otherwise stated			
Input Excitation	3.3 or 5.0	VDC	
Environmental			
Temperature Range			
Operating	-40 to +125	°C	-40 to +257°F
Compensated	0 to +60	°C	+32 to +140°F
Storage	-40 to +125	°C	-40 to +257°F
Mechanical/Package			
Weight	~1	grams	
Media Compatibility			
Positive differential and gage ports	Media compatible with thermoset plastic, silicon, epoxy, RTV, Pyrex, and silicone gel		
Negative differential ports	Dry gasses only		

Performance Parameters	Units	Minimum	Maximum	Notes
Accuracy (Total Error Band)	% Span	-1.5	1.5	5"H_2O Full Scale
		-2.5	2.5	2"H_2O Full Scale
Response Time	ms		2	0.5 ms Typical
Current Consumption	mA	1.2		Typical

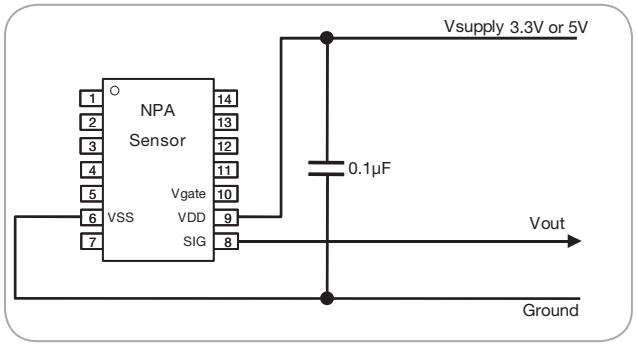
Series	Excitation Voltage	Min (V)	Max (V)	Notes
NPA-300	3.3V	3.28	3.32	NPA amplified analog
NPA-500	5.0V	4.97	5.03	NPA amplified analog
NPA-730	3.3V	3.28	3.32	NPA digital I2C
NPA-700	5.0V	4.97	5.03	NPA digital I2C

Output Option: Amplified Analog

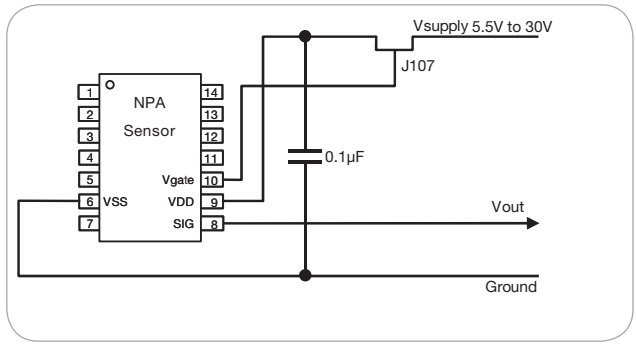
Analog Performance Parameters 5 volt Excitation					
		2 inH2O		5 inH2O	
Parameter	Units	Min	Max	Min	Max
Offset	Volts	0.40	0.60	0.44	0.56
Span	Volts	4		4	

Analog Performance Parameters 3.3 volt Excitation					
		2 inH2O		5 inH2O	
Parameter	Units	Min	Max	Min	Max
Offset	Volts	0.44	0.56	0.46	0.54
Span	Volts	2.5		2.5	

Typical Analog Circuits - Circuit layout same as “Ratiometric Voltage Output”



Ratiometric Voltage Output - Standard NPA



Ratiometric Voltage Output with Over-Voltage Protection - Request Required

NPA Amplified Output Pinout

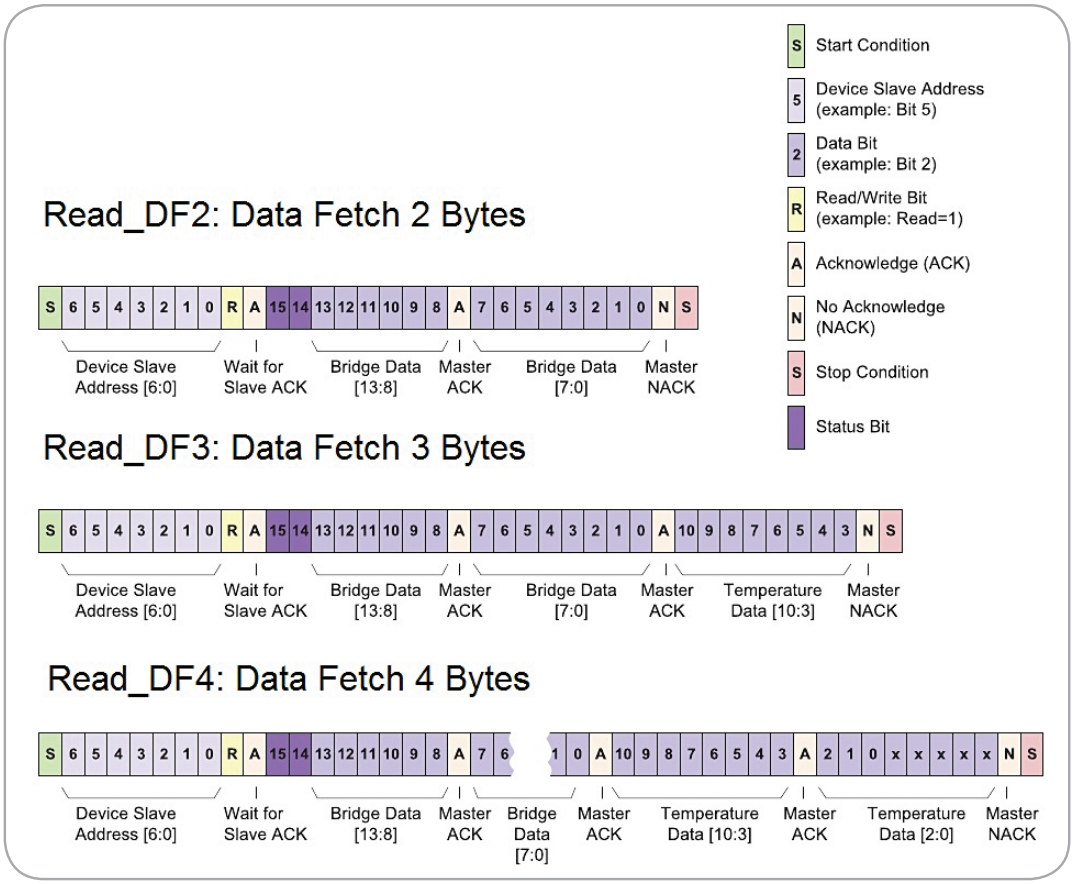
Pin #	**Amplified** Analog	**Function Notes**
1	--	
2	--	
3	NC	Do Not Connect
4	NC	Do Not Connect
5	--	
6	VSS	Ground Supply
7	--	
8	SIG	Analog Out, Calibration Interface
9	VDD	Supply Voltage
10	--	
11	NC	Do Not Connect
12	NC	Do Not Connect
13	--	
14	--	

Output Option: Digital I^2C

Parameter	Units	Min	Typ	Max	Notes
Digital Performance					
Resolution (ADC)	bit		14		16383 steps
I^2C Slave Address			0x28		
Sampling Rate	kHz		2		
I^2C Bit Rate	kbits/s	100		400	
I^2C Mode			Update		

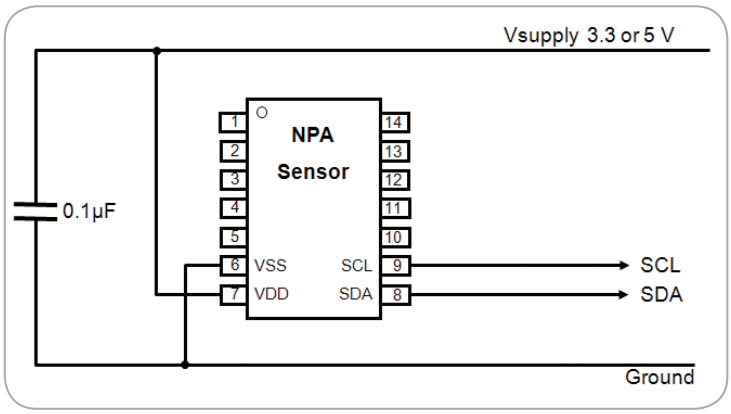
Digital Performance Parameters 3.3 and 5 volt Excitation					
		2 inH2O		5 inH2O	
Parameter	Units	Min	Max	Min	Max
Offset	Counts	1311	1966	1442	1835
Span	Counts	13106		13106	

Digital I2C Update Mode Output Options



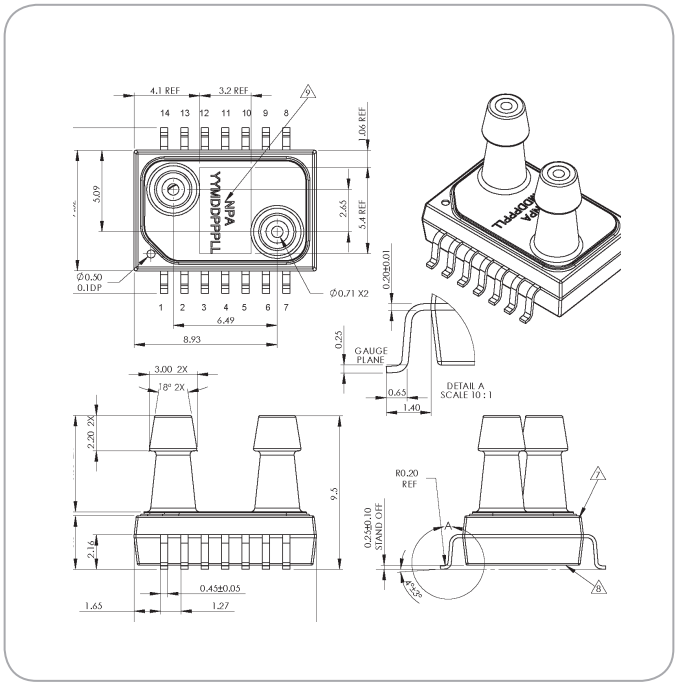
NPA I²C Pinout

Pin #	Digital I²C	Function Notes
1	--	
2	--	
3	NC	Do Not Connect
4	NC	Do Not Connect
5	--	
6	VSS	Ground Supply
7	VDD	Supply Voltage
8	SDA	Serial Data, Calibration Interface
9	SCL	Serial Clock, Calibration Interface
10	--	
11	NC	Do Not Connect
12	NC	Do Not Connect
13	--	
14	--	

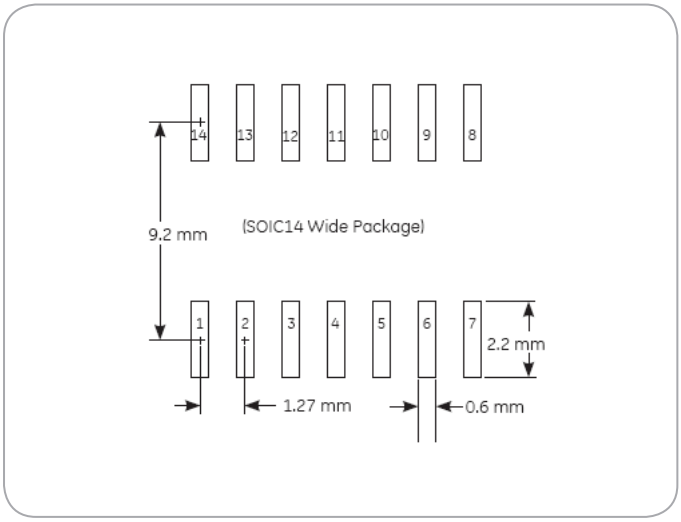


Barbed Design

Recommended tubing size of 3/32” ID, 7/32” OD, 1/16” wall thickness (All measurements given in mm)



Suggested PCB Land Pattern



Package Leadframe Material: Alloy 194, NiPdAu

Ordering Information

Model
NPA

Code	Description
300	Analog Amplified Output, 3.3Vdc Excitation, Calibrated sensor
500	Analog Amplified Output, 5Vdc Excitation, Calibrated sensor
700	I^2C - Digital output, Calibrated Sensor, 2 byte, 5Vdc Excitation
730	I^2C - Digital output, Calibrated Sensor, 2 byte, 3.3Vdc Excitation

Code	Port Type
B	2 barbed ports for Gauge and Differential pressure types

Code	Pressure Range	
02W	2”H20	(0.5 KPa)
05W	5”H20	(1.24 KPa)

Code	Pressure Type
G	Gauge
D	Differential

NPA - 700 B - 02W D EXAMPLE

- *Contact NovaSensor for custom port options.*
- *Refer to application guide 910-289 for more information.*
- *Product is RoHS:2010 compliant.*
- *For standard pressure version see datasheet AAS-920-477J*

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 or merchantability or fitness for particular purpose shall apply.

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