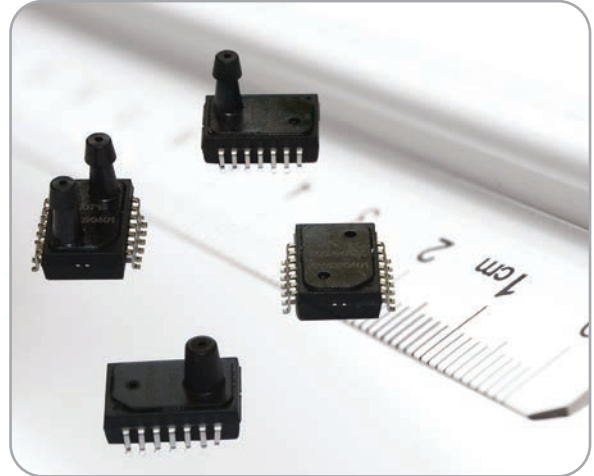


NPA Low Pressure Surface-Mount Pressure Sensor Series



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" H₂O Full Scale
- Output Options: Amplified Analog, Digital Serial (14bit), Digital I²C
- On chip temperature sensor in digital mode
- Operating temperature range of -40 to 125°C
- Total Error Band:
 - +/-1.5% Span at 5"H₂O full scale
 - +/-2.5% Span at 2"H₂O full scale

Low Pressure NPA Specifications

| Parameter | Value | Units | Notes | |
|---|---|---------------------|--|-------------------------------|
| Pressure Range | 2 or 5 | In H ₂ O | 498 or 1245 Pa | |
| Maximum Overpressure | 140 | In H ₂ O | 400 in H ₂ O 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 |
| Total Error Band (TEB) | % Span | -1.5 | 1.5 | 5"H ₂ O Full Scale |
| | | -2.5 | 2.5 | 2"H ₂ O Full Scale |
| Accuracy (Linearity) | % Span | ±0.25 | | Typical (BFSL) |
| Offset Long Term Drift | % Span/year | ±0.15 | | Typical |
| Response Time | ms | | 2 | 0.5 ms Typical |
| Current Consumption | mA | 1.2 | | Typical |

Notes:

1. Total Error Band including all errors by offset, span, non-linearity, hysteresis, repeatability, thermal effect etc.
2. Offset Long Term Drift based on HTOL testing.

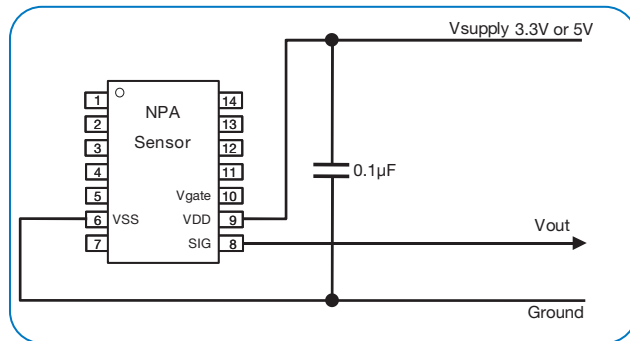
| Series | Excitation Voltage | Min (V) | Max (V) | Notes |
|---------|--------------------|---------|---------|----------------------|
| NPA-300 | 3.3V | 3.28 | 3.32 | NPA amplified analog |
| NPA-500 | 5.0V | 4.97 | 5.03 | NPA amplified analog |
| NPA-730 | 3.3V | 3.28 | 3.32 | NPA digital I2C |
|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

Output Option: Amplified Analog

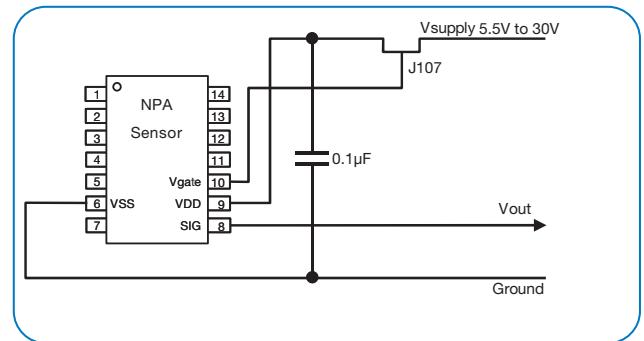
| Analog Performance Parameters 5 volt Excitation | | | | | |
|---|-------|---------|------|---------|------|
| | | 2 inH2O | | 5 inH2O | |
| Parameter | Units | Min | Max | Min | Max |
| Offset | Volts | 0.40 | 0.60 | 0.44 | 0.56 |
| Span | Volts | 4 | | 4 | |

| 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

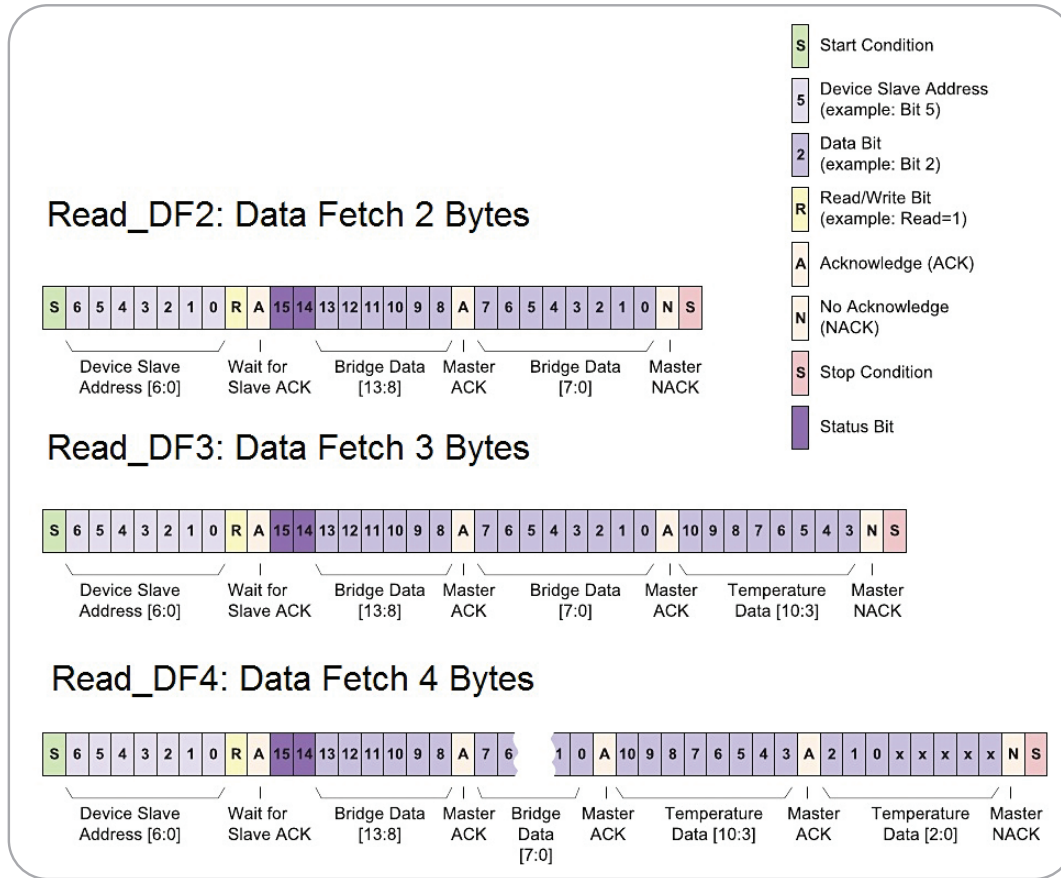
| Pin # | Amplified Analog | Function Notes |
|-------|------------------|-----------------------------------|
| 1 | - | - |
| 2 | - | - |
| 3 | NC | Do Not Connect |
| 4 | NC | Do Not Connect |
| 5 | - | - |
| 6 | VSS | Ground Supply |
| 7 | - | - |
| 8 | SIG | Analog Out, Calibration Interface |
|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

Output Option: Digital I²C

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

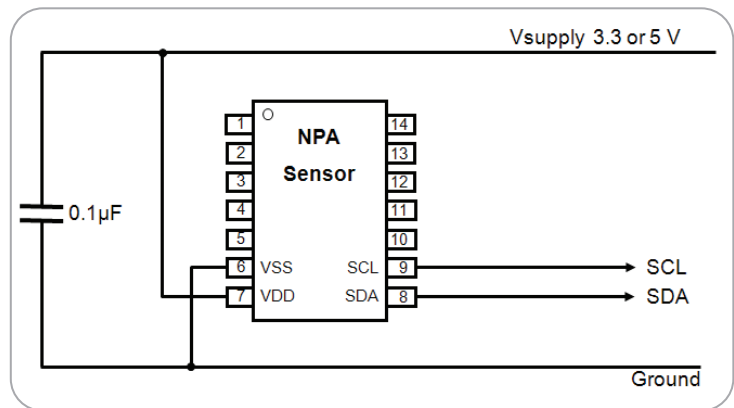
| Digital Performance Parameters 3.3 and 5 volt Excitation | | | | | |
|--|--------|----------------------|------|----------------------|------|
| | | 2 inH ₂ O | | 5 inH ₂ O | |
| Parameter | Units | Min | Max | Min | Max |
| Offset | Counts | 1311 | 1966 | 1442 | 1835 |
| Span | Counts | 13106 | |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

Digital I2C Update Mode Output Options



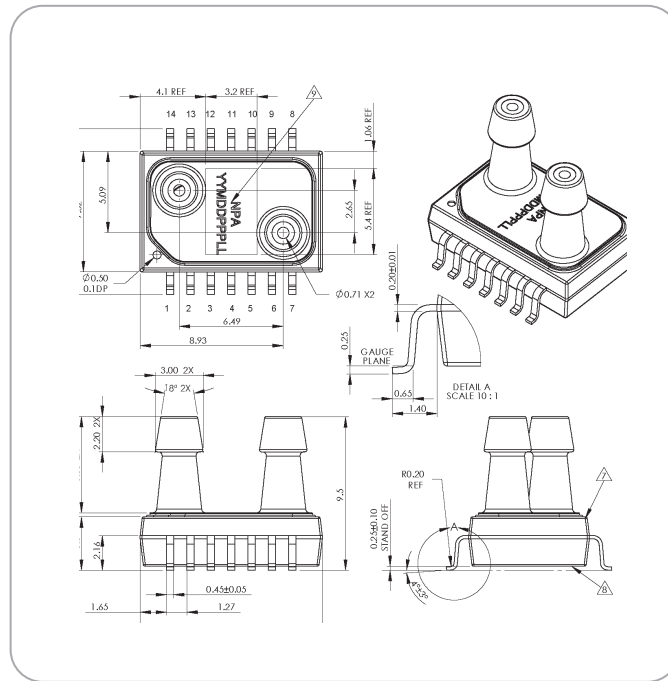
NPA I²C Pinout

| Pin # | Digital I ² C | 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 | - | - |

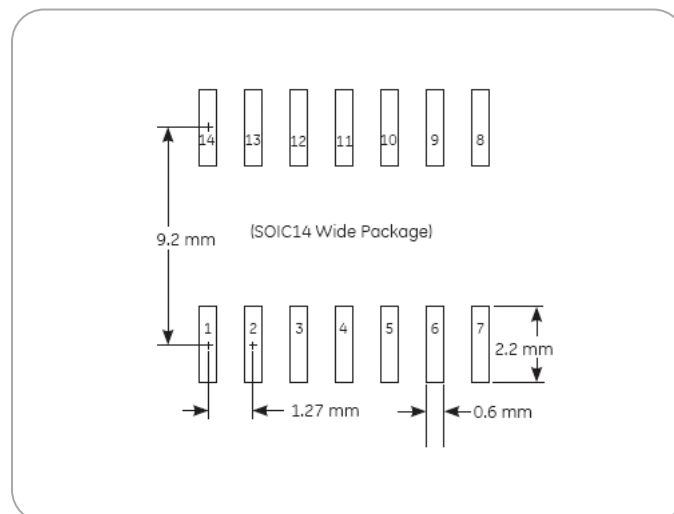


Barbed Design

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

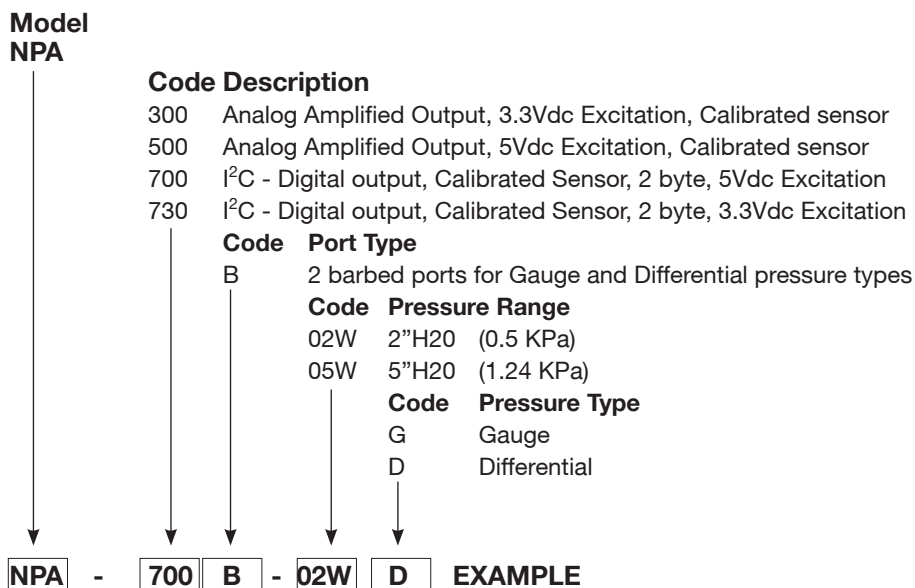


Suggested PCB Land Pattern



Package Leadframe Material: Alloy 194, NiPdAu

Ordering Information



- 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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