



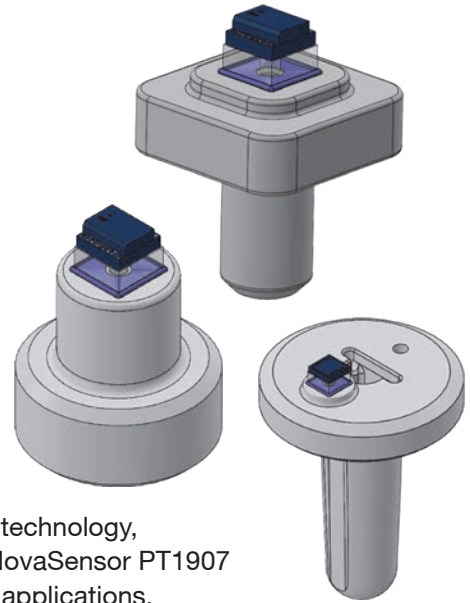
NPR-40X Series

Pressure & Temperature Subassembly

NovaSensor NPR-40X Series of Pressure & Temperature Sensor Subassemblies is a cost-effective solution for applications that require measurement of backside absolute pressure in aggressive media that cannot touch other electronics in the system. NPR-40X is designed for easy integration with the metal housing via crimping or attachment to the printed circuit board and is available in three different ceramic port options.

Based on NovaSensor's advanced SenStable® piezoresistive sensing technology, NPR-40X employs the backside absolute pressure technology of the NovaSensor PT1907 Pressure Die, which is very popular in automotive and process control applications.

Because it comes into direct contact with the media, the sensor is more accurately calibrated, allowing the NPR-40X Series to provide superior pressure and temperature readings. Additionally, NPR-40X is available in pressure ranges from 0 psi to 60 psi (0 bar to 4.137 bar) through 0 psi to 300 psi (0 bar to 20.68 bar). Please contact NovaSensor for other pressure ranges.



Applications

- Engine Oil
- Transmission Oil
- HVAC
- Industrial Automation
- Pressure and Temperature Measurement in Aggressive Media
- Process Control systems

Features

- Harsh media compatibility
- Highly reliable, solid state silicon pressure sensor die subassembly pressurized from backside (cavity)
- Variety of pressure ranges and types available
- Temperature Range: -40°C to 150°C
- On-chip temperature sensor
- Easy integration into metal housing or PCBA attachment
- Three ceramic button options available; customized ceramic option available upon request

NPR-40X Specifications

Pressure Ranges:

Gauge and Absolute: 60, and 300 psi (4.137 and 20.68 bar)

For other pressure ranges, please contact NovaSensor.

Pressure Sensor

General Parameters	Value	Notes
Operating Temp	-40°F to 302°F	(-40°C to 150°C)
Storage Temp	-67°F to 320°F	(-55°C to 160 °C)
Media Compatibility	Compatible with harsh media oil	

Performance Parameters ⁽¹⁾	Min	Typical	Max	Units	Notes
FS Output (FSO)	115	160	205	mV	
Zero Pressure Output	-50	—	50	mV	
Pressure Linearity	-0.1	—	0.1	%FSO	2, 4
Pressure Hysteresis	-10	—	10	μV/V	3,4
Input Impedance	4000	5000	6000	Ω	3
Output Impedance	4000	5000	6000	Ω	3
Thermal Coefficient–Zero	-5	—	5	μV/V/°C	3,4
Thermal Coefficient–Sensitivity	—	-0.19	—	%/°C	3,4
Temperature Coefficient–Resistance	—	0.27	—	%/°C	3,4
Thermal Hysteresis–Zero	-25	—	25	μV/V	3,4
Proof Pressure	—	—	2X	Rated	
Burst Pressure	—	—	10X	Rated	

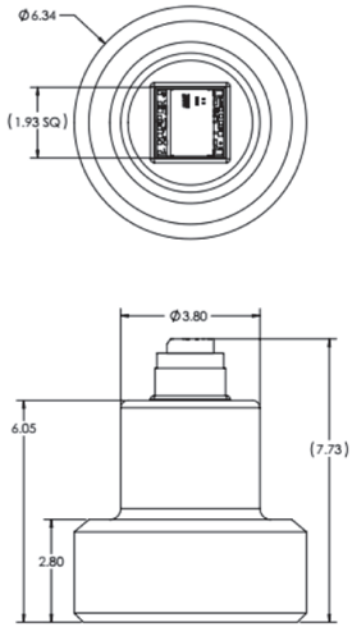
Temperature Sensor

General Parameter	Value	Units	Notes
Temperature Range	-40...150	°C	
Electrical Parameter	Value	Units	Notes
Excitation (DC)	10-100	μA	5
Performance Parameter ⁽⁶⁾	Value	Units	Notes
Zero	0.625	V	6, 7
Sensitivity	-2.15 ± 0.15	mV/°C	4,8
FSO	405 ± 25	mV	4,8
Linearity	0.6	%FSO	4,8
Zero Pressure Sensitivity	<0.2	%FSO	4, 6

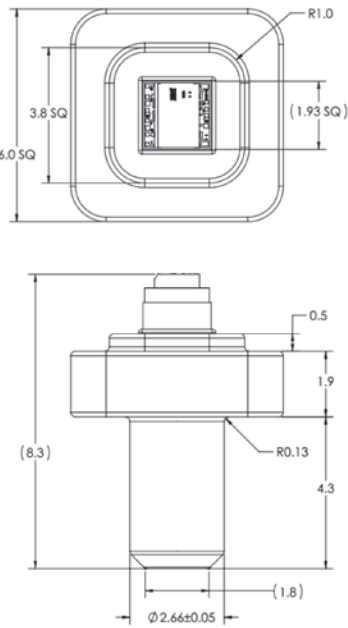
- All values measured at 25°C and 5V excitation, unless otherwise noted. Samples from each wafer are used to verify bridge resistance, offset, span, linearity and die performance in the temperature range between 0°C and 70°C
- Best fit straight line
- Between 0°C and 70°C
- Typical value
- 10-25 μA excitation is recommended.
- All values measured at 25°C and 20 μA excitation, unless otherwise noted.
- 100% Probed for zero output at 25°C.
- Samples from each wafer are tested to verify sensitivity, FSO and linearity in the temperature range between 0°C and 70°C.

NPR-40X Dimensions

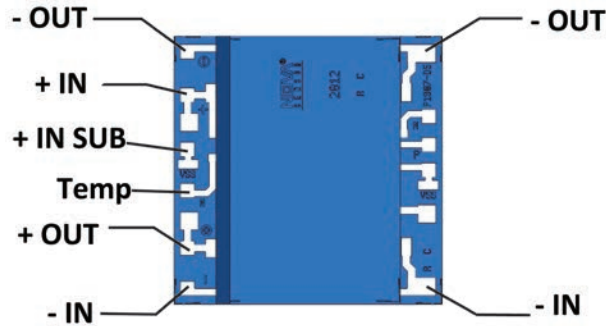
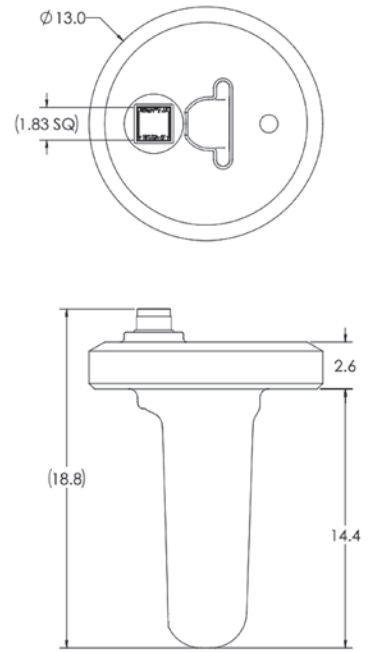
NPR-401



NPR-402



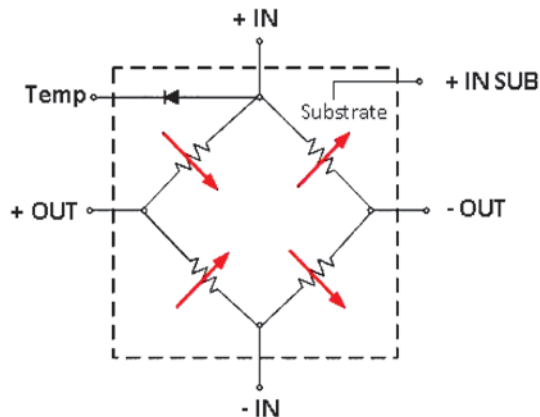
NPR-403



PT1907 Wire Bond Diagram

Note:

- (a) 6 wires bonds are required when using temp sensor, 5 wires when not using temp sensor
- (b) Both +IN and +IN SUB need to be connected to the highest potential in the circuitry

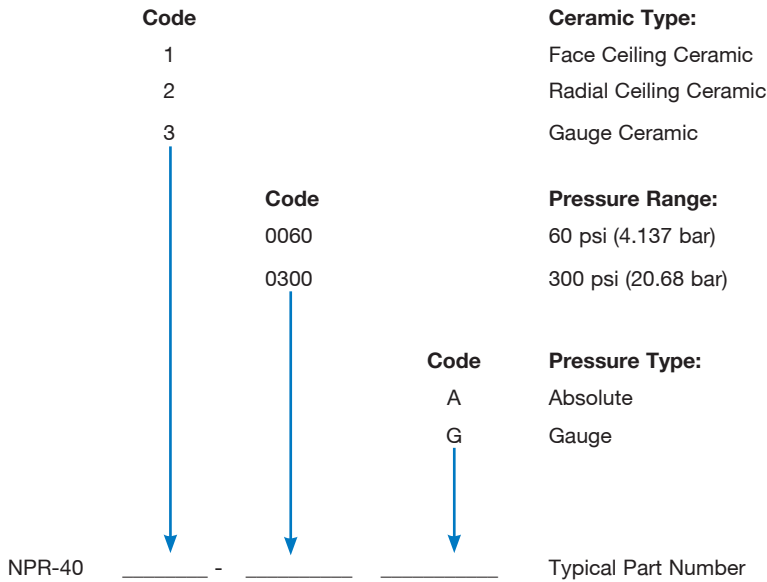


PT1907 Schematic

Ordering Information

The code number to be ordered may be specified as follows:

NPR-40X-XXXXX



Example: NPR-401-0060A, NPR-40X with Face Ceiling Ceramic and 60psi A Pressure Range.

* NPR-403 assembly can only be used in gauge type pressure.

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 merchantability or fitness for particular purpose shall apply.