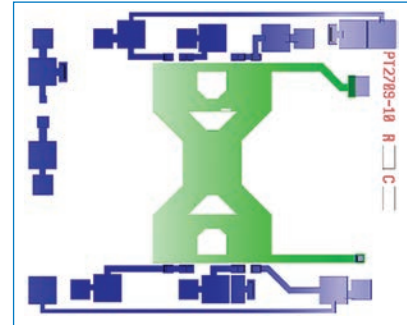


# PT2710

## Pressure & Temperature Sensor Die



The PT2710 piezoresistive sensor die is designed for pressure and temperature measurements using a single chip. When excited by either constant voltage or constant current, a PT2710 pressure sensor produces a differential millivolt output signal directly proportional to the applied pressure. With NovaSensor's SenStable<sup>®</sup> process, PT2710 die features excellent long-term stability and repeatability (< 0.1% / year typical). The on-chip temperature sensor powered by constant current allows for high accuracy measurement of temperature and for improvement of pressure measurement accuracy.

### Applications

- Process control systems
- Pneumatic Controls
- Hydraulic Systems
- Biomedical Controls

### Features

- Highly reliable, solid state silicon pressure and temperature sensor die
- Available in Absolute and Gauge versions
- Pressure ranges: 0.36 to 5 psi
- Temperature range: -40...150°C
- On-chip temperature sensor
- Die dimensions (L x W x H):
  - 1.96 mm x 1.63 mm x 0.95 mm with glass pedestal
  - 2.07 mm x 1.72 mm x 0.38 mm without glass pedestal
- Flexible bond pads configuration supports multiple wire bonding options
- Media Compatibility – Clean dry air, noncorrosive gases and liquids, other fluids compatible with silicon and borosilicate glass

# PT2710 Pressure Sensor Specifications

| Parameter                         | Value           | Units       | Notes                       |
|-----------------------------------|-----------------|-------------|-----------------------------|
| <b>General</b>                    |                 |             |                             |
| Pressure                          | 0.36, 1, 2.5, 5 | psig / psia | Gauge and absolute pressure |
| Maximum Pressure (Proof pressure) | 10X             | -           | 1                           |

| <b>Environmental</b>               |           |            |                         |
|------------------------------------|-----------|------------|-------------------------|
| Electrostatic damage (ESD) Class 2 |           |            | MIL-STD 883 method 3015 |
| Temperature Range                  | Operating | -40 to 150 | °C                      |
|                                    | Storage   | -55 to 160 | °C                      |

| <b>Mechanical</b>                      |  |
|--|--|
| Die Dimensions: With glass (L x W x H) | 2.0 mm x 1.6 mm x 0.95 mm (0.56 mm thick glass), 2.1 mm x 1.7 mm x 0.38 mm (no glass)                      |
| Weight                                 | 0.005 grams with glass, 0.002 grams without glass  |
| Metallization                          | Titanium-Aluminum  |
| Media Compatibility                    | Clean dry air, noncorrosive gases and liquids, other fluids compatible with silicon and borosilicate glass |

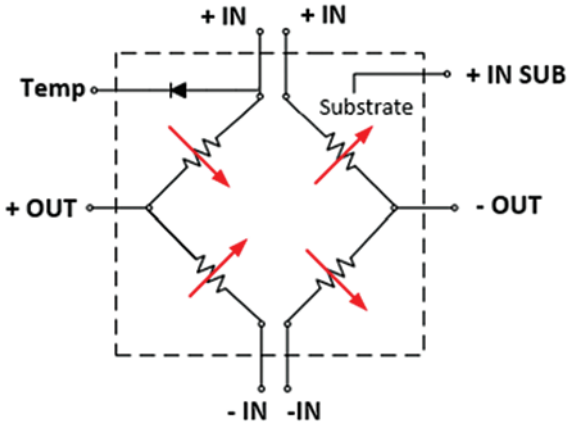
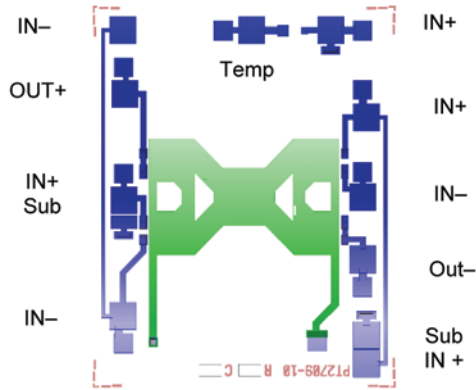
| <b>Electrical Performance – Pressure Sensor</b> |                                       |       |               |       |         |       |
|---|---------------------------------------|-------|---------------|-------|---------|-------|
| Parameter                                       | Range                                 | Min   | Typical       | Max   | Units   | Notes |
| Recommended Current Excitation Voltage          |                                       | -     | 1.5           | 1.6   | mA      | -     |
|   |                                       | -     | 5             | 8     | V       | -     |
| Input and Output Impedance                      |                                       | 4000  | 4800          | 6000  | Ohm     | 2     |
| Zero Offset                                     |                                       | -10   | -             | +10   | mV/V    | 2, 3  |
| Sensitivity & Full Scale Output (FSO or Span)   | See PT2710 Ordering Information Table |       |               |       |         | 2     |
| Linearity<br>(Best Fit Straight)                | 0.36 psi                              | -0.5  | within ±0.25  | +0.5  | %FSO    | 2, 4  |
|   | 1 to 5 psi                            | -0.25 | within ±0.10  | +0.25 |         |       |
| Zero Pressure Repeatability                     |                                       | -0.2  | within ±0.1   | +0.2  | %FSO    | 2     |
| Thermal Coefficient of Zero (TCO)               |                                       | -30   | within ±20    | +30   | µV/V/°C | 5, 6  |
|   |                                       | -10   | within ±5     | +10   |         |       |
| Thermal Coefficient of Resistance (TCR)         |                                       | 0.29  | 0.33          | 0.38  | %/°C    | 5, 6  |
| Thermal Coefficient of Sensitivity (TCS)        |                                       | -0.18 | -0.16...-0.13 | 0.11  | %/°C    | 5, 6  |
| Zero Thermal Hysteresis                         |                                       | -0.25 | within ±0.1   | +0.25 | %FSO    | 5, 6  |
| FSO Thermal Hysteresis                          |                                       | -0.25 | within ±0.1   | +0.25 | %FSO    | 5, 6  |

| <b>Electrical Performance – Temperature Sensor</b> |  |     |     |     |       |  |
|--|--|-----|-----|-----|-------|--|
| Recommended excitation                             |  | 10  | 20  | 100 | µA    | 7  |
| Temperature Range                                  |  | -40 | -   | 150 | °C    | -  |
| Output at 25°C                                     |  | 580 | 602 | 625 | mV    | 8  |
| Sensitivity  |  | -   | -   | -   | mV/°C | Please contact your local Amphenol representative for information on these parameters. |
| FSO  |  | -   | -   | -   | mV    |  |
| Linearity  |  | -   | -   | -   | %     |  |
| Pressure Sensitivity                               |  | -   | -   | -   | %FSO  |  |

## Notes:

1. Proof Pressure: The maximum pressure which the sensor may be subjected to, as an uncommon occurrence & for a short duration of time, without permanent damage & without performance degradation. Die can be used in applications requiring higher overpressure rating after additional characterization. Burst pressure is typically higher than proof pressure
2. Tested using 1.5 mA excitation at 25°C.
3. 0 kPaA for absolute sensors, 0 kPaG for differential or gage sensors.
4. Pressure nonlinearity is typically higher when pressure is applied to the back side than when pressure is applied to the front side of the die.
5. Parameters are evaluated between 0°C and 70°C by testing samples from each wafer, typical range.
6. Between 0°C and 70°C with respect to 25°C, typical range.
7. 20 µA constant current excitation is recommended.
8. Tested using 20 µA excitation at 25°C.

# PT2710 Diagram and Schematic



PT2710 Schematic Diagram

1. Both +IN and SUB need to be connected
2. to the highest potential in the circuitry.

PT2710 bond pads

## PT2710 Ordering Information

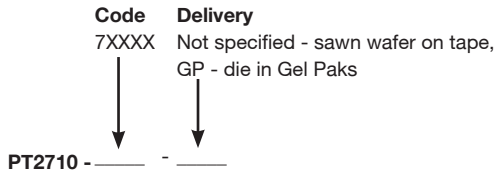
(with cross reference to P1300, P1301 and P112 pressure sensor die)

| PN    | Range |      | Gage/<br>Absolute | Sensitivity<br>(mV/V/KPa) | FSO at 1.5 mA excitation (mV) |           |     | P1300, P1301, P112 Ref | FSO<br>(mV) |
|-------|-------|------|-------------------|---------------------------|-------------------------------|-----------|-----|------------------------|-------------|
|       | PSI   | kPa  |                   |                           | Min                           | Typical   | Max |                        |             |
| 71829 | 0.36  | 2.5  | G                 | 2.4 - 3.6                 | 45                            | 49 - 60   | 75  | 51313                  | 45-150      |
| 71830 | 0.36  | 2.5  | G                 | 2.4 - 3.6                 | 45                            | 49 - 60   | 75  | 51391                  | 45 - 150    |
| 71831 | 1.02  | 7    | G                 | 1.5 - 2.5                 | 75                            | 99 - 113  | 135 | 51314                  | 75 - 200    |
| 71832 | 1.02  | 7    | G                 | 1.5 - 2.5                 | 75                            | 84 - 111  | 120 | 51367, 51392, 51626    | 50 - 130    |
| 71833 | 2.5   | 17.2 | G                 | 1.05 - 1.75               | 140                           | 159 - 195 | 220 | 51315, 51446           | 140 - 300   |
| 71834 | 5     | 34.5 | G                 | 0.5 - 1.0                 | 135                           | 155 - 217 | 260 | 51316, 51447, 51246    | 150 - 300   |
| 71809 | 5     | 34.5 | A                 | 0.5 - 0.9                 | 165                           | 174 - 203 | 220 | 51248                  | 165 - 240   |

All products are supplied either on 6" wafers or in Gel-Paks.

Minimum release quantity: 3250 (sawn wafer on tape), 100 (die in Gel-Paks).

The product part number to be ordered may be specified as follows:



## Shipping and Handling

The standard products are available on tape with metal frame and shipped in protective plastic containers. Electrical rejects and visual rejects are inked. Each wafer will have the following information: Lot #, Wafer #, Part #, and the number of good (yielded) die.

## Warranty

NovaSensor warrants its products against defects in material and workmanship for 12 months from date of shipment. Products not subject to misuse will be repaired or replaced. THE FOREGOING IS IN LIEU OF ANY OTHER EXPRESSED OR IMPLIED WARRANTIES. 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, nor does NovaSensor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims and all liability, including without limitation consequential or incidental damages.

**DISCLAIMER:** The information in this document is summary in nature and the characteristics and specifications are subject to change with or without notice. The appearance of the final delivered product may vary from the photographs, schematics or diagrams shown herein. Amphenol (AS) assumes no obligation regarding future manufacture unless otherwise agreed to in writing. All product related documentation, technical assistance and all AS products are subject to AS Standard Terms and Conditions.

**Amphenol**  
**Sensors**

[www.amphenol-sensors.com](http://www.amphenol-sensors.com)

© 2024 Amphenol Corporation. All Rights Reserved. Specifications are subject to change without notice.  
Other company names and product names used in this document are the registered trademarks or trademarks of their respective owners.

AS-920-815A - 12/2024