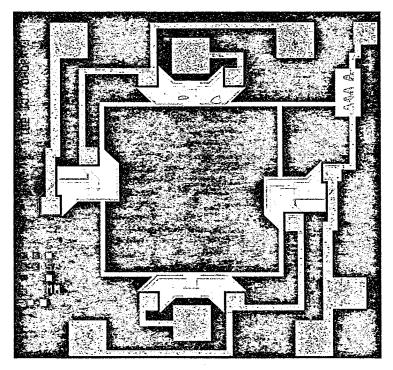
FOXBORO/ICT

Features

- Low pressure 5 PSIG/PSIA devices
- Gage and absolute versions
- Choice of A,B, or C Accuracy Grades
- Constant current excitation

PIEZORESISTIVE . PRESSURE DEVICES

MODEL 2010



The 2010 high performance device family consists of 5 PSI gage and absolute solid state, piezoresistive, semiconductor pressure devices with static accuracies of \pm 0.075%, \pm 0.15% and \pm 0.25% BFSL.

The low pressure Model 2010 is a "raw" sensor device intended for use in OEM and high volume applications where the user designs-in the sensor for economy, and control over all packaging, temperature, media isolation, and electrical and mechanical performance aspects of the system.

The 2010 is best suited for designs requiring high accuracy, repeatability, and low hysteresis. Many such applications exist in medical products, industrial, transportation, and consumer markets.

To achieve high device yields in manufacturing, the 2010 employs a square diaphragm, and ion-implanted resistors. This allows more devices per wafer during fabrication and tighter process control over resistor impedances. Most other aspects of the design are derived from familiar Foxboro/ICT piezoresistive sensor technology to speed user time to market, and to take advantage of known sensor operating parameters.

Users are responsible for packaging, media isolation, and temperature compensation. Customers request unique combinations of accuracy grade, output voltage specifications (for choice excitation). Once ordered, the product is packaged in die containers holding approximately 100 per package and delivered.

The main features of the 2010 family are:

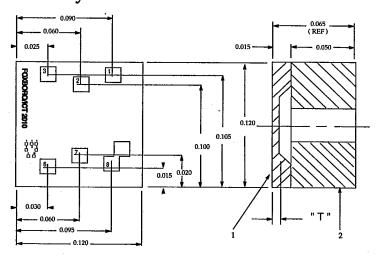
- Low pressure operation
- Millivolt output
- Competitive cost
- Choice of three high accuracy grades



Applications

- OEM high volume applications
- Avionics/aerospace
- Medical
- HVAC
- Transportation

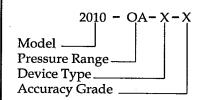
The 2010 Family



All dimensions shown in inches

GAGE MODEL

Ordering Information



Reference Accuracy Grade

A = ± 0.075 % (BFSL) / ± 0.15 % (TB) B = ± 0.125 % (BFSL) / ± 0.25 % (TB) C = ± 0.25 % (BFSL) / ± 0.50 % (TB)

Device Type

G = Gage

A = Absolute Pressure

Pressure Range and Types

0A = 0 to 5 PSI

Warranty

Workmanship

Foxboro/ICT warrants the original purchaser that Foxboro/ICT manufactured Model 2010 devices shall be free from defects in material and workmanship and shall conform to Foxboro/ICT published specifications. The warranty does not apply to any devices which have been subject to modification, additional processing, misuse, neglect or accident.

Installation/Applications

Purchaser retains the responsibility for the applications, corrosion resistance, functional adequacy of the device, and correct installation.



Accuracy Grade

38E D

Performance Specifications

| Performance | | Α | That, | | В | | | С | | Units |
|--------------------------------------|------|-------|-------|------|---------|------|------|------|------|------------------------------------|
| | Max | Тур. | Min | Max | Тур. | Min | Max | Тур. | Min | |
| NL: Non-linearity | | | | | | | | | | |
| * 0-5 PSIG/A BFSL | | 0.075 | | | 0.125 | | | 0.25 | | ± % of Span, BFSL |
| ** 0-5 PSIG/A Terminal Based | | 0.15 | | | 0.25 | | | 0.5 | | ±% of Span, BFSL |
| SPU: Uncomp'd. Span Output: | | 100 | | | 100 | | | 100 | | mVdc; 1 mAdc Excitation, Uncomped. |
| Z: Bridge Impedance | 5500 | | 4000 | 5500 | | 4000 | 5500 | | 4000 | Ohms |
| TCR: Temp Coef. of Cold Impedance | | 20 | | | 20 | | 1 | 20 | | % per 100° F |
| TCRNL: Temp. Coef. Non-Linearity | | -2 | | | -2 | | | -2 | | % over 160° F |
| ZU: Uncomp. Bridge Offset | 50 | | -50 | 50 | | -50 | 50 | | -50 | mVdc; 1 mAdc Excitation, Uncomped. |
| TCZU: Temp. Coef. of Offset | 10 | | -10 | 10 | | -10 | 10 | | -10 | % of Span per 100° F |
| TCZUNL: Temp. Coef. Non-linearity | 1.4 | | -1.4 | 1.4 | Orpova. | -1.4 | 1.4 | | -1.4 | % of Span per 160° F |
| TCGF: Temp. Coef. of Hot Gage Factor | T | -15 | | | -15 | | | -15 | | % of Span per 100° F |
| TCGFNL: Temp. Coef. Non-Linearity | | 2 | | | 2 | | | 2 | | % of Span per 160° F |
| TCSPAN: Temp. Coef. of Span | | 5 | | | 5 | | | 5 | | % of Span per 100° F |

Input excitation:

Current - Limit: Voltage - Limit: ≤ 2.0 mAdc ≤ 15 Vdc

Effect of excitation change:

Response time:

Output is ratiometric to input excitation. When excited by an 80% (10% to 90%) input

pressure change, the maximum time for the output to reach 90% of the final steady-state

value is 100 microseconds.

Pin 8, the chip substrate, to be connected

by user to highest potential applied

to the sensor.

Output Common Mode Voltage: 50% of

Bridge Voltage

Physical Specifications

Overrange protection:

Will withstand pressure overranges up to the

following span rating:

5X front side 3X back side

Die size:

Materials of construction:

Sensor:

Silicon

Sensor base:

Pyrex

Interconnection pads: Aluminum (thickness - 10,000 Angstroms)

0.120" X 0.120" X 0.070" Max

(size - 0.010" X 0.010")

Performance Conditions

Operating

temperature range: Media temperature - 50° to 120° C (-65° to 250° F) Ambient temperature - 50° to 120° C (-65° to 250° F)

Overrange effect:

Permanent zero shift is less than ± 0.05%

Life:

of span after applying 2X upper range value.

100 million pressure cycles

Reference Conditions

Media temperature:

Ambient temperature:

Vibration:

Humidity:

Ambient pressure: Supply voltage:

27° ± 2°C (80° ± 4° F) $27^{\circ} \pm 2^{\circ} \text{C} (80^{\circ} \pm 4^{\circ} \text{ F})$

< 1 m/s/s (0.1 "g") maximum

50% ± 10%

860 to 1060 millibar 1.000 + 0.001 mA

Notes

- 1. Specifications are at Reference Temperature (80° F) and over 0-160° F unless otherwise noted.
- 2. Specifications apply with 1.0 mAdc constant current excitation applied to the full sensor bridge.
- 3. Gage devices fully functional to 5 PSIG when pressure applied to the bottom.
- 4. Non-linearity specifications apply with pressure applied to the top (Resistor) side of the sensor: specifications degraded with positive bottom pressure or top side vacuum.
- PSIG = Pound Per Square Inch Gage
- ** PSIA = Pound Per Square Inch Absolute