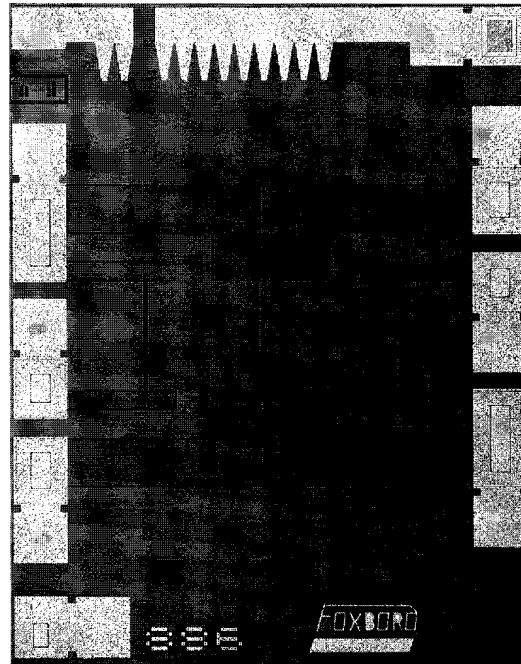


FOXBORO/ICT

PIEZORESISTIVE
PRESSURE DEVICES

MODEL 886

- Multiple pressure ranges
- Gage and absolute versions
- Choice of A,B, or C Accuracy Grades
- Constant current excitation



The 886 high performance device family consists of several pressure ranges, gage and absolute solid state, piezoresistive, semiconductor pressure devices with static accuracies of $\pm 0.05\%$, $\pm 0.125\%$ and $\pm 0.25\%$ BFSL.

The Model 886 is a "raw" sensor device intended for use in OEM and high volume applications where the user designs-in the device for economy, and control over all packaging, temperature, media isolation, and electrical and mechanical performance aspects of the system.

The 886 is best suited for designs requiring high accuracy, repeatability, and low hysteresis. Many such applications exist in medical products, consumer and transportation markets.

To achieve high device yields in manufacturing, the 886 employs a rectangular diaphragm and diffused resistors. 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.

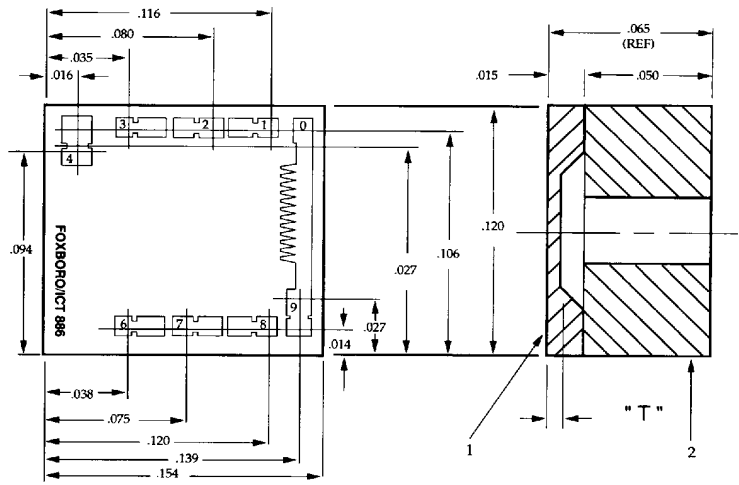
Users are responsible for packaging, media isolation, and temperature compensation. Customers request unique combinations of accuracy grade, output voltage specifications (for choice excitation). Once ordered, the product is packaged in die containers holding approximately 100 per package and delivered.

The main features of the 886 family are:

- Several pressure ranges
- Millivolt output
- Competitive cost
- Choice of three high accuracy grades

FOXBORO[®]
Confidence under pressure

The 886 Family



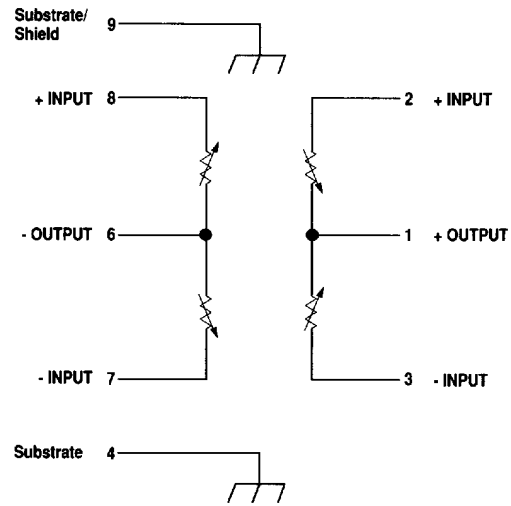
All dimensions shown in inches

GAGE MODEL

Applications

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

Schematic



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Performance Specifications

Accuracy Grade

PERFORMANCE	A			B			C			UNITS
	Max	Typ.	Min	Max	Typ.	Min	Max	Typ.	Min	
NL: Non-linearity										
0-10 to 0-100 PSIG/A BFSL		0.05			0.125			0.25		± % of Span, BFSL
SPU: Uncomp'd. Span Output:		100			100			100		mVdc; 1 mAdc Excitation, Uncomped.
Z: Bridge Impedance	5500		4000	5500		4000	5500			Ohms
TCR: Temp Coef. of Cold Impedance		20			20			20	4000	% per 100° F
TCRNL: Temp. Coef. Non-Linearity		-2			-2			-2		% over 160° F
ZU: Uncomp. Bridge Offset	30		-30	30		-30	30			mVdc; 1 mAdc Excitation, Uncomped.
TCZU: Temp. Coef. of Offset	10		-10	10		-10	10		-30	% of Span per 100° F
TCZUNL: Temp. Coef. Non-linearity	1.4		-1.4	1.4		-1.4	1.4		-10	% of Span per 160° F
TCGF: Temp. Coef. of Hot Gage Factor		14			-14			14	-1.4	% 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

Notes

Wafer Evaluation:

- Individual die are assigned accuracy grades by sampling each production wafer:
 - The sample die are packaged, then tested for rated performance.
 - Grades are assigned based on the maximum non-linearity of the samples tested.
- ICT warrants that die graded using this method will typically meet stated specifications.

Electrical Specifications

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

Response time: 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 micro-seconds.
 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:
 2X front side
 2X back side

Die size: 0.120" X 0.154" X 0.070" Max

Materials of construction
 Sensor: Silicon
 Sensor base: Pyrex
 Interconnection pads: Aluminum (thickness - 10,000 Angstroms) (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% of span after applying 2X upper range value.

Life: 100 million pressure cycles

Reference Conditions

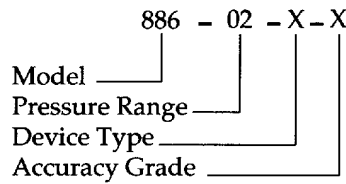
Media temperature: 27° ± 2° C (80° ± 4° F)
 Ambient temperature: 27° ± 2° C (80° ± 4° F)
 Vibration: < 1 m/s/s (0.1"g) maximum
 Humidity: 50% ± 10%
 Ambient pressure: 860 to 1060 millibar
 Supply voltage: 1.000 ± 0.001 mA

Notes

- Specifications are at Reference Temperature (80° F) and over 0-160° F unless otherwise noted.
- Specifications apply with 1.0 mAdc constant current excitation applied to the full sensor bridge.
- Gage devices fully functional when pressure applied to the bottom.
- 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.

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Ordering Information



Reference Accuracy Grade

- A = ± 0.05 % (BFSL) / ± 0.10 % (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 Type

- 02 = 0 to 10 PSI
- 03 = 0 to 15 PSI
- 05 = 0 to 25 PSI
- 07 = 0 to 30 PSI
- 08 = 0 to 50 PSI
- 09 = 0 to 100 PSI

Warranty

Workmanship

Foxboro/ICT warrants the original purchaser that Foxboro/ICT manufactured Model 886 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.

ICT does not warrant performance of the customers finished product.

Installation/Applications

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



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