### MINIATURE BASIC PRESSURE SENSORS

Offset Compensated Pressure Sensors



#### **Features**

- 0 to 1 "H2O to 0 to 30 "H2O Pressure Ranges
- 0.5 % linearity
- Offset Compensated

### **Applications**

- Medical Instrumentation
- Environmental Controls
- HVAC

### **General Description**

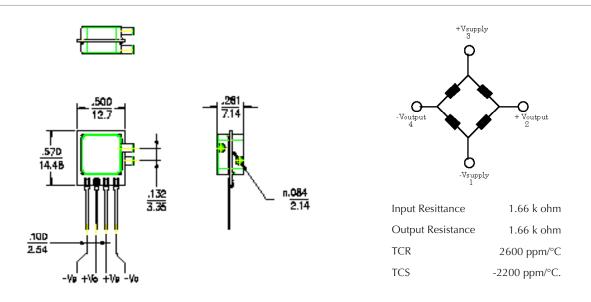
The Miniature BASIC series pressure sensors are based upon a proprietary technology to reduce the size of the sensor and yet maintain a high level of performance. The technology is currently being patented. Output offset errors due to change in temperature, stability to warm-up, stability to long time period, and position sensitivity are all significantly reduced when compared to conventional compensation methods. In addition the sensor utilizes a silicon, micromachined, stress concentration enhanced structure to provide a very linear output to measured pressure.

These offset compensated sensors give an accurate and stable output over a wide temperature range. This series is intended for use with non-corrosive, non-ionic working fluids such as air, dry gases and the like.

The output of the device is ratiometric to the supply voltage and operation from any D.C. supply voltage up to +6V is acceptable.

### **Physical Dimensions**

## **Equivalent Circuit**



### **Approvals**

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Pressure Sensor Characteristics	Maximum Ratings	<b>Environmental Specifications</b>		
Supply Supply Voltage VS	6 Vdc	Temperature Ranges		
Common-mode pressure	5 psig	Compensated	0 to 70° C	
ead Temperature coldering 2-4 sec.)	250°C	250°C <b>Operating</b>	-25 to 85° C	
(soldering 2-4 sec.)		Storage	-40 to 125° C	
		<b>Humidity Limits</b>	0 to 95% RH	
			(non condensing)	

# **Standard Pressure Ranges**

# Single in Line Packages-SIP

One Port		Two Ports Same Side	Two Ports Opposite Side  Part Number	
Part Number	<b>Operating Pressure</b>	Part Number		
1 INCH-G-BASIC	0 - 1 "H2O	1 INCH-D1-BASIC	1 INCH-D2-BASIC	
5 INCH-G-BASIC	0 - 5 "H2O	5 INCH-D1-BASIC	5 INCH-D2-BASIC	
10 INCH-G-BASIC	0 - 10 "H2O	10 INCH-D1-BASIC	10 INCH-D2-BASIC	
20 INCH-G-BASIC	0 - 20 "H2O	20 INCH-D1-BASIC	20 INCH-D2-BASIC	
30 INCH-G-BASIC	0 - 30 "H2O	30 INCH-D1-BASIC	30 INCH-D2-BASIC	

### **Performance Characteristics for 1 INCH-x-BASIC**

Parameter, note 1	Minimum	Nominal	Maximum	Units	
Operating Range, differential pressure		1.0		"H2O	
Output Span, @ 1 "H2O, note 5	4.0	7.0	14.0	mV	
Offset Voltage @ zero differential pressure			±10	mV	
Offset Temperature Shift (0°C-70°C), note 2		±0.1		mV	
Offset Warm-up Shift, note 3		±10		uV	
Offset Position Sensitivity (1g)		±15		uV	
Offset Long Term Drift (one year)		±80		uV	
Linearity, hysteresis error, note 4		0.1	±0.5	%fs	

### **Performance Characteristics for 5 INCH-x-BASIC**

Parameter, note 1	Minimum	Nominal	Maximum	Units	
Operating Range, differential pressure		5.0		"H2O	
Output Span, @ 5 "H2O, note 5	15	22.5	30	mV	
Offset Voltage @ zero differential pressure			±10	mV	
Offset Temperature Shift (0°C-70°C), note 2		±0.1		mV	
Offset Warm-up Shift, note 3		±10		uV	
Offset Position Sensitivity (1g)		±15		uV	
Offset Long Term Drift (one year)		±80		uV	
Linearity, hysteresis error, note 4		0.1	±0.5	%fs	

# Performance Characteristics for 10 INCH-x-BASIC

Parameter, note 1	Minimum	Nominal	Maximum	Units	
Operating Range, differential pressure		10.0		"H2O	
Output Span, @ 10 "H2O, note 5	15	30	45	mV	
Offset Voltage @ zero differential pressure			±10	mV	
Offset Temperature Shift (0°C-70°C), note 2		±0.1		mV	
Offset Warm-up Shift, note 3		±10		uV	
Offset Position Sensitivity (1g)		±10		uV	
Offset Long Term Drift (one year)		±80		uV	
Linearity, hysteresis error, note 4		0.1	±0.5	%fs	

#### Performance Characteristics for 20 INCH-x-BASIC

Parameter, note 1	Minimum	Nominal	Maximum	Units	
Operating Range, differential pressure		20.0		"H2O	
Output Span, @ 20 "H2O, note 5	15	30	45	mV	
Offset Voltage @ zero differential pressure			±10	mV	
Offset Temperature Shift (0°C-70°C), note 2		±0.1		mV	
Offset Warm-up Shift, note 3		±10		uV	
Offset Position Sensitivity (1g)		±5		uV	
Offset Long Term Drift (one year)		±80		uV	
Linearity, hysteresis error, note 4		0.1	±0.5	%fs	

#### Performance Characteristics for 30 INCH-x-BASIC

Parameter, note 1	Minimum	Nominal	Maximum	Units	
Operating Range, differential pressure		30.0		"H2O	
Output Span, @ 30 "H2O, note 5	15	30	45	mV	
Offset Voltage @ zero differential pressure			±10	mV	
Offset Temperature Shift (0°C-70°C), note 2		±0.1		mV	
Offset Warm-up Shift, note 3		±10		uV	
Offset Position Sensitivity (1g)		±5		uV	
Offset Long Term Drift (one year)		±80		uV	
Linearity, hysteresis error, note 4		0.05	±0.5	%fs	

#### Specification Notes

- NOTE 1: ALL PARAMETERS ARE MEASURED AT 4.5 VOLT EXCITATION, FOR THE NOMINAL FULL SCALE PRESSURE AND ROOM TEMPERATURE UNLESS OTHERWISE SPECIFIED. PRESSURE MEASUREMENTS ARE WITH NEGATIVE PRESSURE APPLIED TO THE TOP-PORT (THE ONLY PORT FOR THE SINGLE PORT) CONFIGURATION.
- NOTE 2: SHIFT IS RELATIVE TO 25°C.
- NOTE 3: SHIFT IS WITHIN THE FIRST HOUR OF EXCITATION APPLIED TO THE DEVICE.
- NOTE 4: MEASURED AT ONE-HALF FULL SCALE RATED PRESSURE USING BEST STRAIGHT LINE CURVE FIT.
- NOTE 5: THE VOLTAGE ADDED TO THE OFFSET VOLTAGE AT FULL SCALE PRESSURE.

 $Pressure\ Response:\ for\ any\ pressure\ applied\ the\ response\ time\ to\ get\ to\ 90\%\ of\ pressure\ applied\ is\ typically\ less$ 

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