

## 1800/1805 Series

### TO-8, 0 psi to 3 psi, 0 psi to 150 psi Silicon Pressure Sensors



#### DESCRIPTION

The 1800/1805 Series sensors are high performance TO-8 pressure transducers specifically designed to address a variety of both low and medium pressure original equipment manufacture applications.

The transducers offer two performance grades and a variety of compensation options, including span and calibration to within  $\pm 2$  mV (normalized output). The 1800/1805 Series can operate with either constant current or voltage excitation.

#### FEATURES

- Standard pressure ranges from 0 psi to 3 psi, 0 psi to 150 psi
- Gauge, absolute or differential models
- Voltage or constant current excitation
- Choice of temperature compensation options
  - Laser trim, normalized output
  - Laser trim, standard output
  - Resistor compensation
- Uncompensated version available for microprocessor-based designs

The 1800/1805 Series contains a solid state piezoresistive pressure sensor mounted in a standard TO-8 package. They are printed circuit board and pin-for-pin compatible with other TO-8 pressure sensors.

#### POTENTIAL APPLICATIONS

- Instrumentation calibration
- Avionics/aerospace
- Medical equipment
- HVAC
- Pneumatic controls

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## TO-8, 0 psi to 3 psi, 0 psi to 150 psi

### ENVIRONMENTAL SPECIFICATIONS (All devices)

Characteristic	Parameter	Characteristic	Parameter
Supply voltage, $V_s$	10 Vdc	Insulation resistance	100 MOhm at 50 Vdc
Compensated temperature range	-1 °C to 54 °C [34 °F to 129 °F]	Humidity	50 % $\pm$ 10 %
Operating temperature range	-40 °C to 121 °C [-40 °F to 257 °F]	Common-mode pressure	150 psig
Vibration	10 g rms at 20 Hz to 200 Hz	Max. soldering temperature	260 °C [500 °F] 10 s max.
Shock	100 g for 11 ms	Excitation voltage $V_s$	Supply voltage $V_s = 15$ Vdc max.
Life	100 million cycles	Excitation current	Supply current $I_s = 2$ mA max.

### PERFORMANCE CHARACTERISTICS<sup>(1)</sup>

Characteristic	Min.	Typ.	Max.	Unit
Zero pressure offset <sup>(1)</sup>	–	–	$\pm 0.5$	mV
Zero pressure offset (3 psi to 5 psi only) <sup>(1)</sup>	–	–	$\pm 1$	mV
Full-scale span <sup>(2)</sup>				
Standard output–current excitation	75	–	150	mV
Standard output–voltage excitation	40	–	120	mV
Normalized output–current excitation	98	–	102	mV
Normalized output–current excitation (3 psi only)	73	–	77	mV
Normalized output–voltage excitation	38	–	42	mV
Pressure non-linearity <sup>(3)</sup>	–	$\pm 0.15$	$\pm 0.20$	%FSS
Pressure hysteresis <sup>(3)</sup>	–	–	$\pm 0.0125$	%FSS
Repeatability	–	–	$\pm 0.0125$	%FSS
Temperature effect on offset <sup>(4)</sup>	–	–	$\pm 0.5$	mV
Temperature effect on offset (3 psi and 5 psi only) <sup>(4)</sup>	–	–	$\pm 1$	mV
Temperature effect on span	–	–	$\pm 0.5$	mV
Temperature effect on span (3 psi and 5 psi only) <sup>(4)</sup>	–	–	$\pm 1$	mV
Thermal hysteresis	–	$\pm 0.1$	–	%FSS
Response time <sup>(5)</sup>	–	–	1	ms
Long term stability of offset and span <sup>(6)</sup>	–	–	$\pm 0.2$	%FSS
Common mode voltage <sup>(7)</sup>				
Standard output–current excitation	–	50 %	–	input
Standard output–voltage excitation	–	50 %	–	input
Normalized output–current excitation	–	35 %	–	input
Normalized output–voltage excitation	–	25 %	–	input
Input resistance	–	–	–	–
Current excitation	2.0	–	8.0	k $\Omega$
Voltage excitation	8.0	–	40	k $\Omega$
Output resistance	3.5	–	6.0	k $\Omega$

### PRESSURE RANGE SPECIFICATIONS

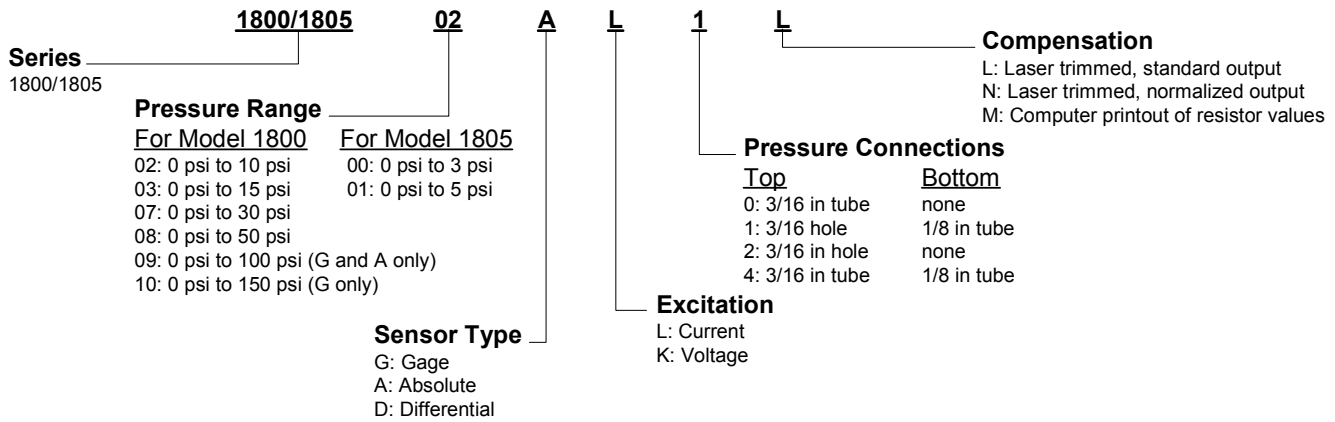
Catalog Listing	Pressure Range	Top Side Overpressure <sup>(8)</sup>	Bottom Side Overpressure <sup>(9)</sup>
1805-00 (G,D) - (K,L) (0..4) (M,L,N)	0 psi to 3 psi	15 psi	9 psi
1805-01 (G,D) - (K,L) (0..4) (M,L,N)	0 psi to 5 psi	25 psi	15 psi
1800-02 (G,D) - (K,L) (0..4) (M,L,N)	0 psi to 10 psi	50 psi	30 psi
1800-03 (G,D) - (K,L) (0..4) (M,L,N)	0 psi to 15 psi	65 psi	45 psi
1800-07 (G,D) - (K,L) (0..4) (M,L,N)	0 psi to 30 psi	250 psi	50 psi
1800-08 (G,D) - (K,L) (0..4) (M,L,N)	0 psi to 50 psi	350 psi	50 psi
1800-09 (G,D) - (K,L) (0..4) (M,L,N)	0 psi to 100 psi	350 psi	50 psi
1800-10 (G,D) - (K,L) (0..4) (M,L,N)	0 psi to 150 psi	350 psi	50 psi

#### Notes:

- Reference conditions (unless otherwise noted);  $T_a = 25$  °C [77 °F], Supply  $V_s = 10$  Vdc  $\pm 0.01$  Vdc or  $I_s = 1.5$  mA  $\pm 0.0015$  mA.
- Full-scale span (FSS) is the algebraic difference between the output voltage at full-scale pressure and the output at zero pressure. FFS is ratiometric to the supply voltage.
- Pressure non-linearity is based on best-fit straight line from the zero to the full-scale pressure. Pressure hysteresis is the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.
- Maximum error band of the offset voltage or span over the compensated temperature range, relative to the 25 °C [77 °F] reading.
- Response time for a 0 psi to full-scale span pressure step change, 10 % to 90 % rise time.
- Long term stability over a six month period.
- Common mode voltage as measured from output to ground. For higher levels of common mode voltage, contact the factory.
- Pressure overrange: Top: 5 x full-scale pressure or  $\leq 350$  psi, whichever is less.
- Pressure overrange: Bottom: 3 x full-scale or  $\leq 50$  psi, whichever is less.



**ORDER GUIDE**



**Note:**  
 Transducer recommended for use with non-corrosive, non-condensing gases.

**⚠ WARNING**  
**PERSONAL INJURY**  
 DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.  
**Failure to comply with these instructions could result in death or serious injury.**

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**⚠ WARNING**  
**MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

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- Phone and Fax:
- Asia Pacific +65 6355-2828  
+65 6445-3033 Fax
- Europe +44 (0) 1698 481481  
+44 (0) 1698 481676 Fax
- Latin America +1-305-805-8188  
+1-305-883-8257 Fax
- USA/Canada +1-800-537-6945  
+1-815-235-6847  
+1-815-235-6545 Fax

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 Honeywell  
 11 West Spring Street  
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Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

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### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

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