

MS1451



- PC Board Mountable Pressure Sensor
- 0-60 mV Output
- Gage and Absolute
- Low Cost



DESCRIPTION

The MS1451 is a piezoresistive silicon pressure sensor packaged in a surface mount configuration. It is intended for high volume applications where small size, light weight, low cost, and compatibility with automated assembly equipment are required.

The pressure sensor is available with a gage or absolute pressure sensing chip that is attached to a surface mountable ceramic substrate. A plastic cap is attached to the ceramic substrate, protecting the chip and providing the pressure port.

The devices are shipped in plastic anti-static shipping tubes for use with automated production equipment. The drawing shows a standard tube version. Ports are also available with a narrow hole or a large hole to interface with the pressure media.

FEATURES

- Surface Mount Package
- $\pm 0.25\%$ Pressure Non Linearity
- 3 Pressure Port Options
- Solid State Reliability
- Low Power

APPLICATIONS

- Altitude Measurement
- Barometric Pressure
- Medical Instrumentation
- Consumer Appliances
- Tire Pressure

STANDARD RANGES

| Range | psia | psig |
|----------|---------|---------|
| 0 to 5 | | W, N, T |
| 0 to 15 | W, N, T | W, N, T |
| 0 to 30 | W, N, T | W, N, T |
| 0 to 50 | W, N, T | W, N, T |
| 0 to 100 | W, N, T | W, N, T |
| 0 to 250 | W, N | |
| 0 to 500 | W, N | |

Port Options:

W = Wide Hole (Gel Fill option available), N = Narrow Hole, T = Tube

PERFORMANCE SPECIFICATIONS

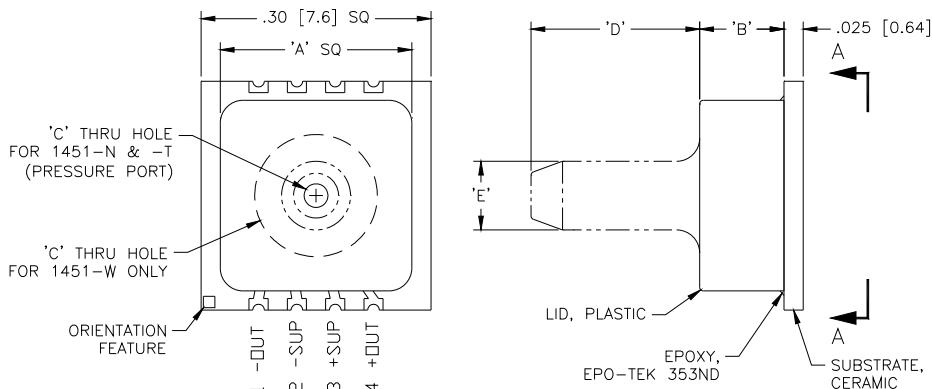
Supply Voltage: 3 Vdc
Ambient Temperature: 25°C (unless otherwise specified)

| PARAMETERS | MIN | TYP | MAX | UNITS | NOTES |
|--------------------------------------|---|-------|------|--------|-------|
| Span | 30 | 60 | 120 | mV | 1 |
| Zero Pressure Output | -25 | | 25 | mV | |
| Pressure Non Linearity | -0.25 | | 0.25 | %Span | 2 |
| Pressure Hysteresis | -0.1 | | 0.1 | %Span | |
| Input & Output Resistance | 3500 | 5000 | 6000 | Ω | |
| Temperature Coefficient – Span | | -0.13 | | %/°C | 3 |
| Temperature Coefficient – Zero | | 0.05 | | %/°C | 3 |
| Temperature Coefficient – Resistance | | 0.15 | | %/°C | 3 |
| Thermal Hysteresis – Zero | -0.2 | | 0.2 | %Span | 3 |
| Supply Voltage | | 3.0 | 12.0 | Vdc | |
| Response Time (10% to 90%) | | 1.0 | | ms | 4 |
| Output Noise (10Hz to 1kHz) | | 1.0 | | µV p-p | |
| Long Term Stability (Offset & Span) | | 0.5 | | %Span | 5 |
| Pressure Overload | | | 3X | Rated | 6 |
| Operating Temperature | -40 | | +125 | °C | |
| Storage Temperature | -50 | | +150 | °C | |
| Weight | | | 0.3 | grams | |
| Soldering Temperature | 250°C Max 5 Sec. | | | | 7 |
| Media | Non-Corrosive Dry Gases Compatible with Silicon, Pyrex, RTV, Gold, LCP (Liquid Crystal Polymer), and Aluminum | | | | |

Notes

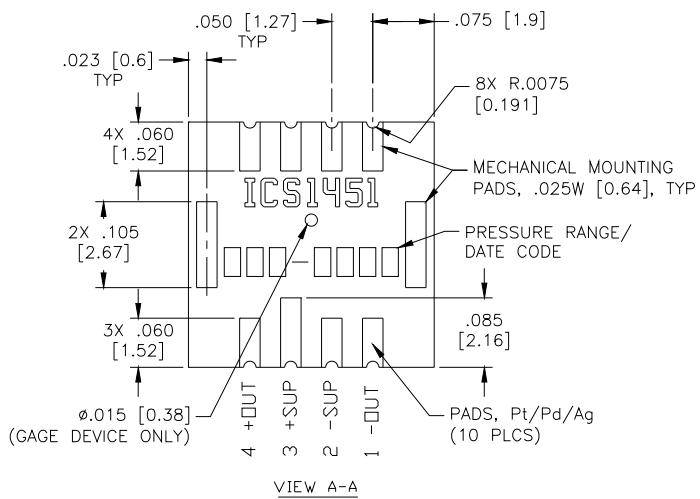
1. Ratiometric to supply voltage.
2. Best fit straight line.
3. Over the temperature range 0-50°C with respect to 25°C.
4. For a zero-to-full scale pressure step change.
5. Long term stability over a one year period with constant voltage and temperature.
6. For sensors above 100 psi, the entire sensor is required to be inside the pressure chamber.
7. For mounting instructions, please refer to the application note "Mounting Instructions for SMT Pressure Sensors."

DIMENSIONS

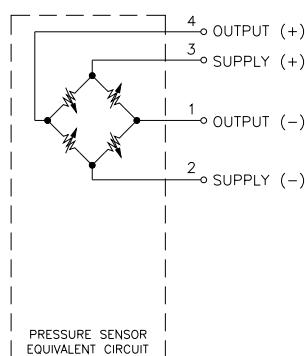


| MODEL 1451 LID TABULATION | | |
|---------------------------|---------------------------|---------------------------|
| | 1451-N (NO TUBE) | 1451-W (WIDE HOLE) |
| | 1451-T (TUBE) | |
| 'A' | .25 [6.4] | .25 [6.4] |
| 'B' | .10 [2.79] | .10 [2.79] |
| 'C' | \varnothing .031 [0.78] | \varnothing .160 [4.06] |
| 'D' | | .220 [5.59] |
| 'E' | | .090 [2.29] |

ALL DIMENSIONS ARE IN INCHES [mm]



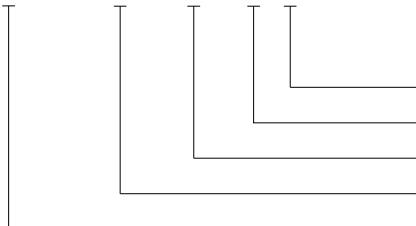
CONNECTIONS



1451

ORDERING INFORMATION

1451 - 015 A - T F



Coating (F = Gel Fill, Blank = No Coating)

Port (T = Tube, N = Narrow Hole, W = Wide Hole)

Type (A = Absolute, G = Gage)

Pressure Range

Model

NORTH AMERICA

Measurement Specialties
45738 Northport Loop West
Fremont, CA 94538
Tel: 1-800-767-1888
Fax: 1-510-498-1578
Sales: pfg.cs.amer@meas-spec.com

EUROPE

Measurement Specialties
(Europe), Ltd.
26 Rue des Dames
78340 Les Clayes-sous-Bois, France
Tel: +33 (0) 130 79 33 00
Fax: +33 (0) 134 81 03 59
Sales: pfg.cs.emea@meas-spec.com

ASIA

Measurement Specialties
(China), Ltd.
No. 26 Langshan Road
Shenzhen High-Tech Park (North)
Nanshan District, Shenzhen 518057
China
Tel: +86 755 3330 5088
Fax: +86 755 3330 5099
Sales: pfg.cs.asia@meas-spec.com

The information in this sheet has been carefully reviewed and is believed to be accurate; however, no responsibility is assumed for inaccuracies. Furthermore, this information does not convey to the purchaser of such devices any license under the patent rights to the manufacturer. Measurement Specialties, Inc. reserves the right to make changes without further notice to any product herein. Measurement Specialties, Inc. makes no warranty, representation or guarantee regarding the suitability of its product for any particular purpose, nor does Measurement Specialties, Inc. assume any liability arising out of the application or use of any product or circuit and specifically disclaims any and all liability, including without limitation consequential or incidental damages. Typical parameters can and do vary in different applications. All operating parameters must be validated for each customer application by customer's technical experts. Measurement Specialties, Inc. does not convey any license under its patent rights nor the rights of others.