

## MS1451

### SPECIFICATIONS

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

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  
±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

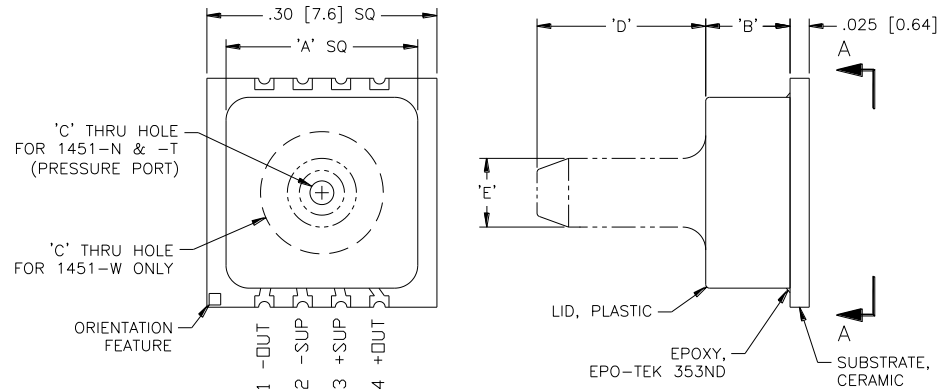
Ambient Temperature: 25°C (unless otherwise specified)

| 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

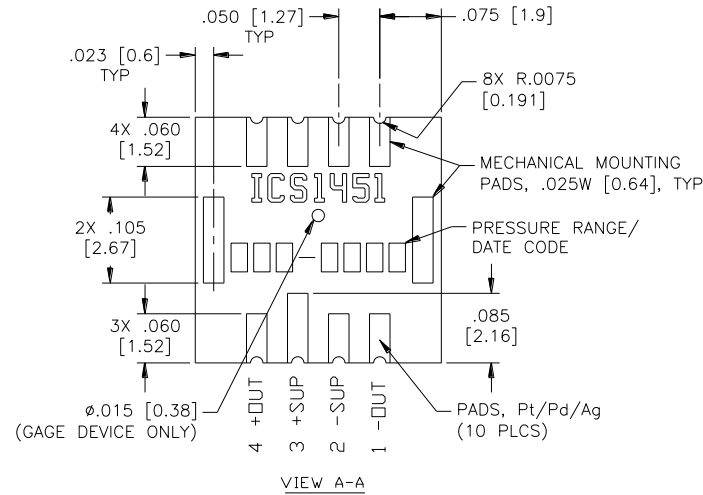
1. Ratiometric to supply voltage.
2. Best fit straight line.
3. Over the temperature range 0-50°C with respect to 25°C.
4. For a zero-to-full scale pressure step change.
5. Long term stability over a one year period with constant voltage and temperature.
6. For sensors above 100 psi, the entire sensor 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

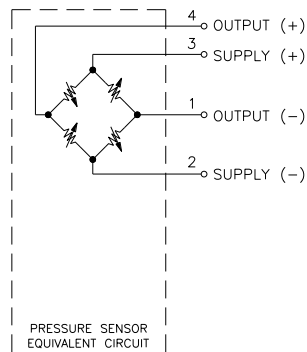


| MODEL 1451 LID TABULATION |                     |                       |                  |
|---------------------------|---------------------|-----------------------|------------------|
|                           | 1451-N<br>(NO TUBE) | 1451-W<br>(WIDE HOLE) | 1451-T<br>(TUBE) |
| 'A'                       | .25 [6.4]           | .25 [6.4]             | .25 [6.4]        |
| 'B'                       | .110 [2.79]         | .110 [2.79]           | .110 [2.79]      |
| 'C'                       | Ø.031 [0.78]        | Ø.160 [4.06]          | Ø.031 [0.78]     |
| 'D'                       |                     |                       | .220 [5.59]      |
| 'E'                       |                     |                       | Ø.090 [2.29]     |

ALL DIMENSIONS ARE IN INCHES [mm]

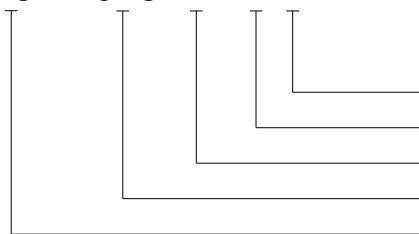


CONNECTIONS



## 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

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