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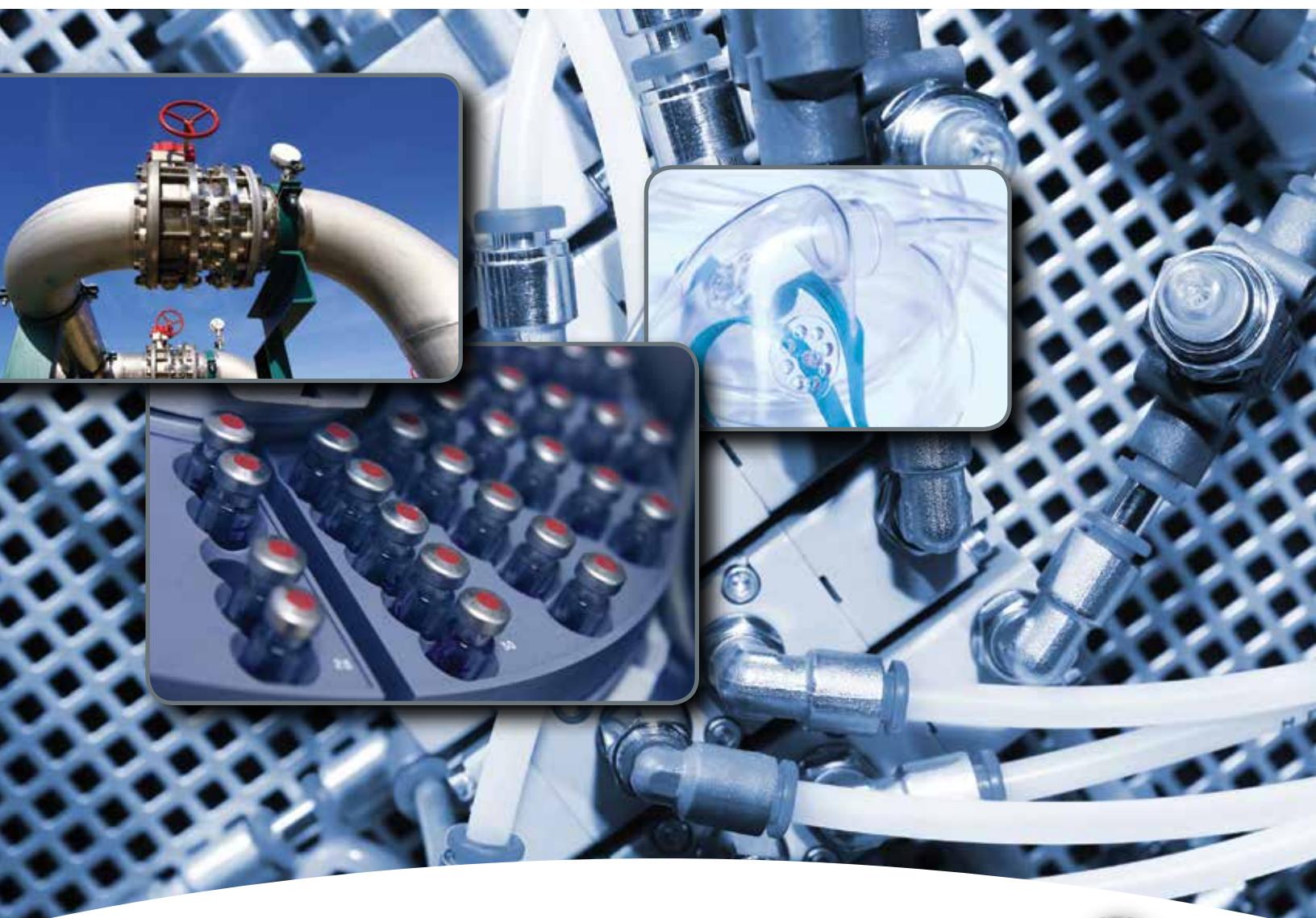


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## TruStability® Board Mount Pressure Sensors

### **TSC Series, Compensated/Unamplified**

±60 mbar to ±10 bar | ±6 kPa to ±1 MPa | ±1 psi to ±150 psi  
Millivolt Analog Output



### **NSC Series, Uncompensated/Unamplified**

±2.5 mbar to ±10 bar | ±250 Pa to ±1 MPa | ±1 inH<sub>2</sub>O to ±150 psi  
Millivolt Analog Output

Datasheet

# TruStability® Board Mount Pressure Sensors

Honeywell's TruStability® TSC Series and NSC Series are piezoresistive silicon pressure sensors offering a ratiometric analog output for reading pressure over the specified full scale pressure span and temperature range.

## TSC Series:

- Temperature compensated and unamplified.
- Compensation makes it easier to integrate the sensor into a system by eliminating the need to calibrate the system over temperature and also offers reduced part-to-part variation.
- Compensated temperature range is 0 °C to 85 °C [-32 °F to 185 °F].
- Operating temperature range is -40 °C to 85 °C [-40 °F to 185 °F].
- Measures differential or gage pressures

## NSC Series:

- Uncompensated and unamplified.
- Allows customers the flexibility of performing their own calibration while still benefiting from the industry-leading stability, accuracy, and repeatability that the Honeywell TruStability® Pressure Sensors provide.
- Operates as specified from -40 °C to 85 °C [-40 °F to 185 °F].
- Measures absolute, differential or gage pressures.

The absolute versions have an internal vacuum reference and an output value proportional to absolute pressure. Differential versions allow measurement of pressure between two pressure ports. Gage versions are referenced to atmospheric pressure and provide an output proportional to pressure variations from atmosphere.

The TSC Series and NSC Series sensors are intended for use with non-corrosive, non-ionic gases, such as air. Port 1 can also be used for non-corrosive, non-ionic liquids on sensors rated above 60 mbar | 6 kPa | 1 psi.

The TSC and NSC Series offer numerous package styles and mounting options, making it easier for device manufacturers to integrate the product into their applications. These sensors offer infinite resolution on the pressure signal. Frequency response is also typically limited only by the end user's system. All products are designed and manufactured according to ISO 9001.

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## What makes our sensors better?

- Stability and reliability you can count on
- Industry-leading accuracy down to ±0.15 %FSS BFSL
- Port and housing options simplify integration
- Wide pressure range from ±2.5 mbar to ±10 bar | ±250 Pa to ±1 MPa | ±1 inH<sub>2</sub>O to ±150 psi
- Small package size
- Low power consumption

STABILITY • ACCURACY • FLEXIBILITY • SMALL SIZE

# Features and Benefits

## INDUSTRY-LEADING LONG-TERM STABILITY

Even after long-term use and thermal extremes, these sensors perform substantially better relative to stability than any other pressure sensor available in the industry today:

- Minimizes system calibration needs and maximizes system performance.
- Helps support system uptime by eliminating the need to service or replace the sensor during its application life.

## INDUSTRY-LEADING ACCURACY

Extremely tight accuracy down to  $\pm 0.15\text{ %FSS BFSL}$ :

- Reduces software needed to correct system inaccuracies, minimizing system design time.
- Supports system accuracy and warranty requirements.

***Minimizes system calibration and design  
needs; supports system uptime.***

## INDUSTRY-LEADING FLEXIBILITY

- Modular, flexible design with numerous package styles, pressure ports, and options simplifies integration into the device manufacturer's application.
- Single side wet media allows the end customer to use one port of the sensor with condensing humidity or directly with non-corrosive liquid media.

***Simplifies product integration.***

## INSENSITIVE TO MOUNTING ORIENTATION

Allows flexibility of use within the application.

## SMALL SIZE

Miniature 10 mm x 10 mm [0.39 in x 0.39 in] package is very small when compared to most board mount pressure sensors:

- Occupies less area on the PCB.
- Typically allows for easy placement on crowded PCBs or in small devices.

## REPEATABILITY

Provides **excellent repeatability, high accuracy and reliability** under many demanding conditions.

## SUPPORTS LEAN MANUFACTURING

- J-STD-020-D MSL 1 unlimited shelf life after packaging is opened.
- System can be calibrated within one hour after reflow solder.
- Compatible with modern lead-free and no-clean solder processes.

## Features and Benefits

### EXTREMELY LOW POWER CONSUMPTION

- Operating supply voltage as low as 1.5 Vdc.
- Reduces power consumption, provides extended battery life, and promotes energy efficiency.

### ABSOLUTE, DIFFERENTIAL AND GAGE TYPES

- Provides flexibility of use within the application.
- Absolute type on NSC Series only.

### PRESSURE RANGES FROM $\pm 2.5$ MBAR TO $\pm 10$ BAR | $\pm 250$ PA TO $\pm 1$ MPa | $\pm 1$ INH<sub>2</sub>O TO $\pm 150$ PSI

Optimizes the customer's system performance by maximizing pressure resolution with more available pressure ranges.

### ROHS AND ISO9001 COMPLIANCE

# Potential Applications



## MEDICAL

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- NEBULIZERS
- SPIROMETERS
- PATIENT MONITORING EQUIPMENT
- THERAPEUTIC HOSPITAL BEDS
- HOSPITAL GAS SUPPLY
- OXYGEN CONCENTRATORS
- BLOOD ANALYSIS
- GAS CHROMATOGRAPHY
- ANALYTICAL INSTRUMENTS



## INDUSTRIAL

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- VALVES
- PUMPS
- ACTUATORS
- HVAC TRANSMITTERS
- AUTOMATED PNEUMATIC ASSEMBLY EQUIPMENT
- PNEUMATIC OPERATOR CONTROL SYSTEMS
- INDUSTRIAL GAS SUPPLY
- BAROMETRY
- GAS CHROMATOGRAPHY
- ANALYTICAL INSTRUMENT SAMPLING SYSTEMS



# TSC Series and NSC Series General Specifications

**Table 1. Absolute Maximum Ratings<sup>1</sup>**

Characteristic	Min.	Max.	Unit
Supply voltage ( $V_{\text{supply}}$ ) <sup>2</sup> : pressure ranges $\geq$ 60 mbar   6 kPa   1 psi pressure ranges $\leq$ 40 mbar   4 kPa   20 inH <sub>2</sub> O	-12.0 0	12.0 7	Vdc
Storage temperature	-40 [-40]	85 [185]	°C [°F]
Soldering time and temperature: lead solder temperature (SIP, DIP) peak reflow temperature (SMT)		4 s max. at 250 °C [482 °F] 15 s max. at 250 °C [482 °F]	

<sup>1</sup>Absolute maximum ratings are the extreme limits the device will withstand without damage.

<sup>2</sup>Incorrect application of supply voltage or ground to the wrong pin may cause electrical failure.

**Table 2. Operating Specifications**

Characteristic	Min.	Typ.	Max.	Unit
Supply voltage ( $V_{\text{supply}}$ ) <sup>1, 2</sup> : pressure ranges $\geq$ 60 mbar   6 kPa   1 psi pressure ranges $\leq$ 40 mbar   4 kPa   20 inH <sub>2</sub> O	1.5 2.7	5.0 5.0	12.0 6.5	Vdc
Supply current (at 5.0 Vdc supply) TSC Series NSC Series	— —	0.6 1.5	1 2.2	mA
Operating temperature range <sup>3</sup>	-40 [-40]	—	85 [185]	°C [°F]
TSC Series compensated temperature range <sup>4</sup>	0 [32]	—	85 [185]	°C [°F]
Startup time	—	—	5	ms
TSC Series output resistance	—	2.5	—	kOhm

<sup>1</sup>Ratiometricity of the sensor (the ability of the device output to scale to the supply voltage) is achieved within the specified operating voltage.

<sup>2</sup>Incorrect application of supply voltage or ground to the wrong pin may cause electrical failure.

<sup>3</sup>Operating temperature range: The temperature range over which the sensor will produce an output proportional to pressure.

<sup>4</sup>Compensated temperature range: The temperature range over which the sensor will produce an output proportional to pressure within the specified performance limits.

**Table 3. Environmental Specifications**

Characteristic	Parameter
Humidity	0% to 95% RH, non-condensing
Vibration	MIL-STD-202G, Method 204D, Condition B (15 g, 10 Hz to 2 kHz)
Shock	MIL-STD-202G, Method 213B, Condition C (100 g, 6 ms duration)
Life <sup>1</sup>	1 million pressure cycles minimum
Solder reflow	J-STD-020-D MSL1 (unlimited shelf life when stored at less than 30 °C and 85 %RH)

<sup>1</sup>Life may vary depending on the specific application in which the sensor is utilized.

# TSC Series and NSC Series General Specifications

Table 4. Wetted Materials<sup>1</sup>

Component	Port 1 (Pressure Port)	Port 2 (Reference Port)
Ports and covers	high temperature polyamide	high temperature polyamide
Substrate	alumina ceramic	alumina ceramic
Adhesives	epoxy, RTV	epoxy, RTV
Electronic components	silicon	silicon, glass, gold

<sup>1</sup>Contact Honeywell Customer Service for detailed material information.

## CAUTION PRODUCT DAMAGE

- Ensure liquid media is applied to Port 1 only; Port 2 is not compatible with liquids.
- Ensure liquid media contains no particulates. All TruStability® sensors are dead-ended devices. Particulates can accumulate inside the sensor, causing damage or affecting sensor output.
- Recommend that the sensor be positioned with Port 1 facing downwards; any particulates in the system are less likely to enter and settle within the pressure sensor if it is in this position.
- Ensure liquid media does not create a residue when dried; build-up inside the sensor may affect sensor output. Rinsing of a dead-ended sensor is difficult and has limited effectiveness for removing residue.
- Ensure liquid media are compatible with wetted materials. Non-compatible liquid media will degrade sensor performance and may lead to sensor failure.

**Failure to comply with these instructions may result in product damage.**

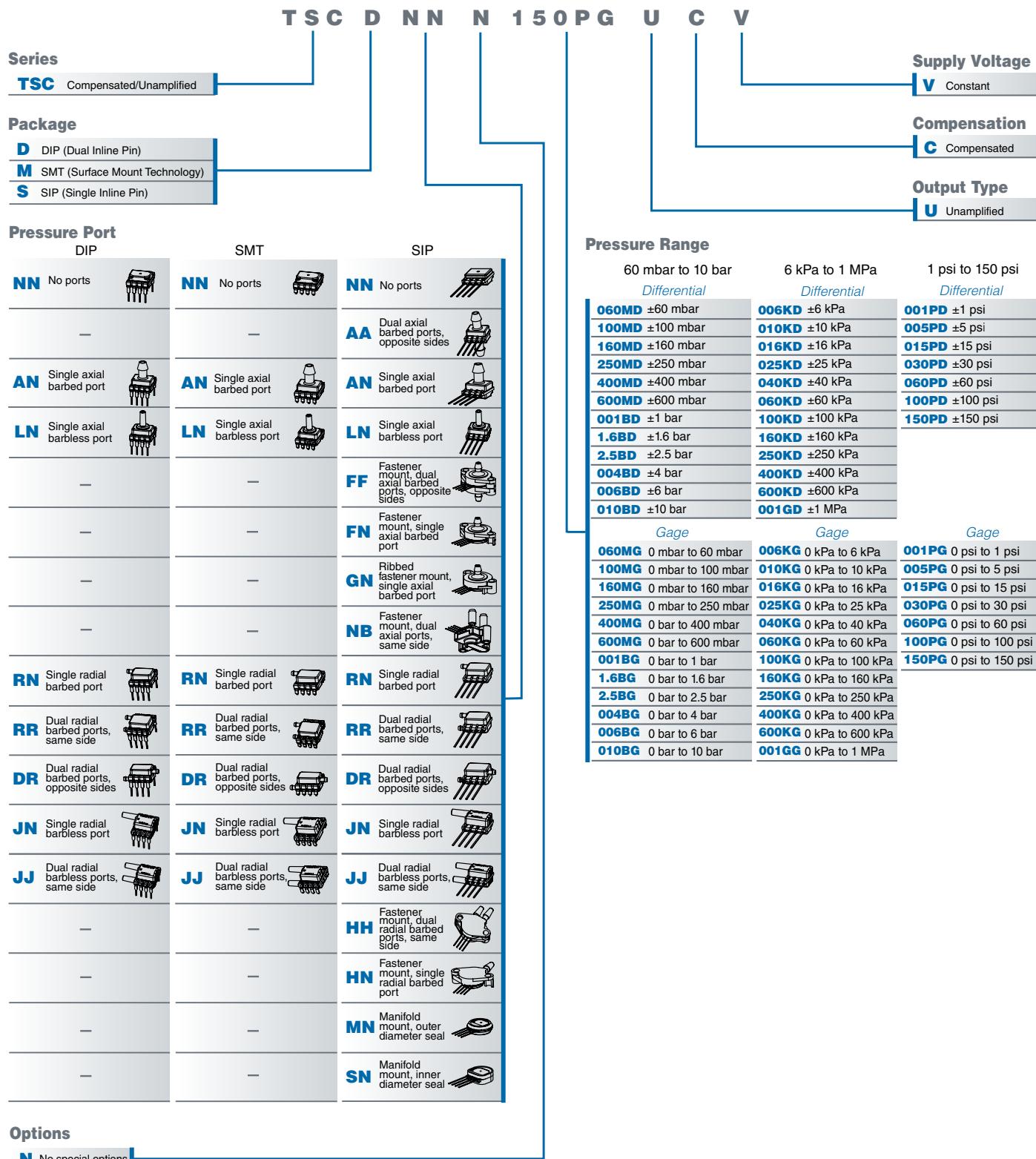
Table 5. Sensor Pressure Types

Pressure Type	Description
Absolute	Output is proportional to the difference between applied pressure and a built-in reference to vacuum.
Differential	Output is proportional to the difference between the pressures applied to each port (Port 1 – Port 2).
Gage	Output is proportional to the difference between applied pressure and atmospheric (ambient) pressure.

# TSC Series Nomenclature and Order Guide

Figure 1. TSC Series Nomenclature and Order Guide<sup>1</sup>

For example, **TSCDNNN150PGUCV** defines a TSC Series TruStability® Pressure Sensor, DIP package, NN pressure port, no special options, 150 psi gage pressure range, unamplified, compensated, constant supply voltage.

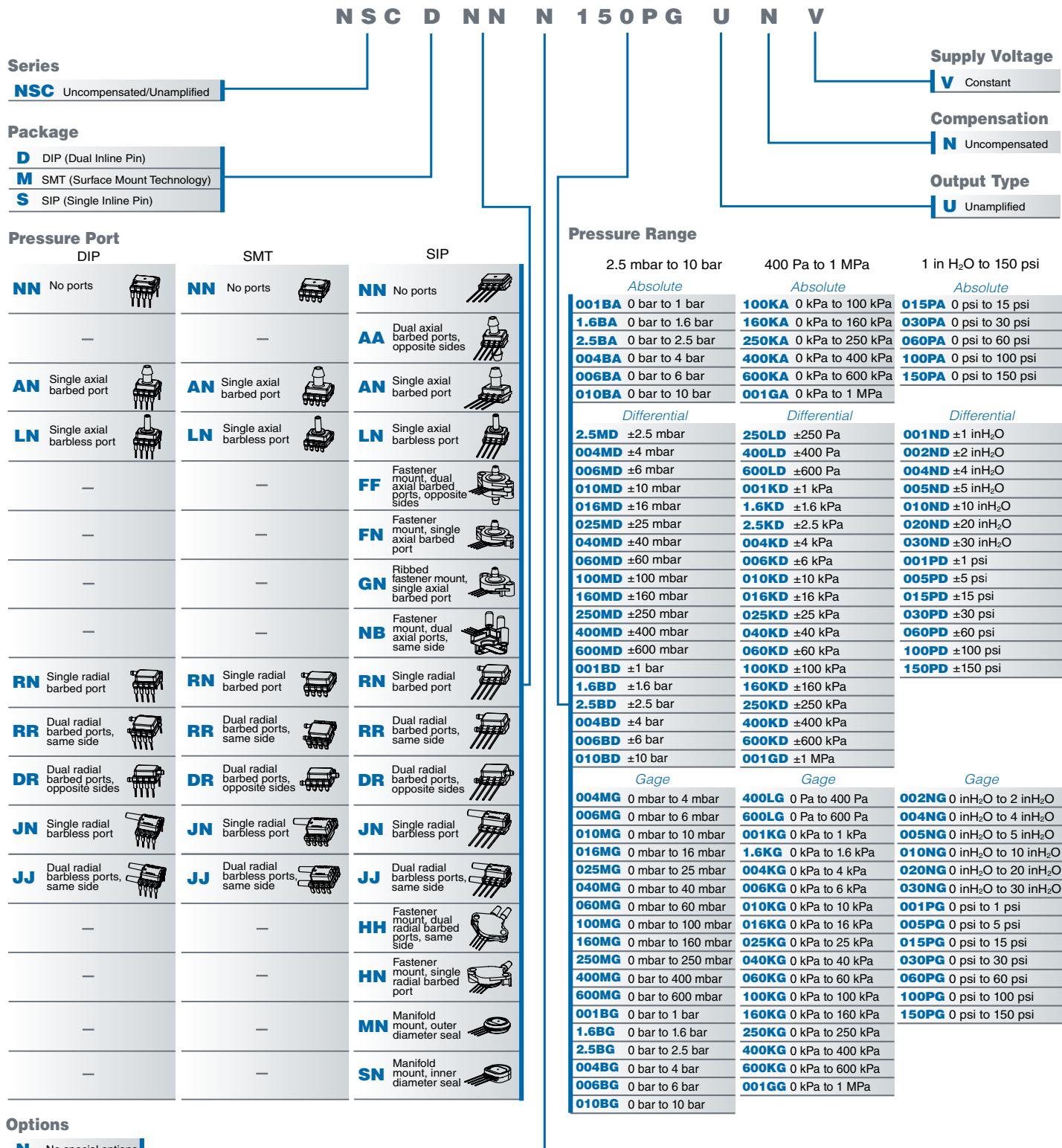


<sup>1</sup>See Table 5 for an explanation of sensor pressure types.

# NSC Series Nomenclature and Order Guide

Figure 2. NSC Series Nomenclature and Order Guide<sup>1</sup>

For example, **NSCDNNN150PGUNV** defines an NSC Series TruStability® Pressure Sensor, DIP package, NN pressure port, no special options, 150 psi gage pressure range, unamplified, uncompensated, constant supply voltage.



<sup>1</sup>See Table 5 for an explanation of sensor pressure types.

# TSC Series Specifications

**±60 mbar to ±10 bar**

Table 6. TSC Series Pressure Range Specifications for ±60 mbar to ±10 bar

Pressure Range Order Code (see Figure 1)	Pressure Range		Unit	Over Pressure	Burst Pressure	Common Mode Pressure	Pressure Accuracy (%FSS)	Offset <sup>1</sup> (mV/V)	Full Scale Span (mV/V)			Thermal Effect on Offset <sup>2</sup> (%FSS)		Thermal Effect on Span <sup>3</sup> (%FSS)		Long-Term Stability 1000 hr, 25 °C (%FSS)	Thermal Hysteresis <sup>4</sup> (%FSS)
	Pmin.	Pmax.							Min.	Nom.	Max.	10 °C to 50 °C	0 °C to 85 °C	10 °C to 50 °C	0 °C to 85 °C		
<b>Differential</b>																	
060MD	-60	60	mbar	872	1370	10,000	±0.20	±0.075	2.46	2.60	2.80	±0.60	±1.15	±1.00	±2.00	±0.15	±0.15
100MD	-100	100	mbar	872	1370	10,000	±0.20	±0.075	4.12	4.40	4.66	±0.35	±0.70	±1.00	±2.00	±0.10	±0.10
160MD	-160	160	mbar	2000	4000	10,000	±0.15	±0.12	4.36	4.60	4.92	±0.80	±1.65	±0.75	±2.00	±0.10	±0.10
250MD	-250	250	mbar	2000	4000	10,000	±0.15	±0.12	6.82	7.30	7.70	±0.55	±1.05	±0.75	±2.00	±0.10	±0.10
400MD	-400	400	mbar	2000	4000	10,000	±0.15	±0.12	10.90	11.60	12.30	±0.35	±0.65	±0.75	±2.00	±0.10	±0.10
600MD	-600	600	mbar	4000	8000	10,000	±0.15	±0.075	5.88	16.10	6.36	±0.40	±0.85	±0.50	±1.25	±0.10	±0.10
001BD	-1	1	bar	4	8	10	±0.15	±0.075	9.80	10.20	10.60	±0.25	±0.50	±0.50	±1.25	±0.10	±0.10
1.6BD	-1.6	1.6	bar	4	8	10	±0.15	±0.075	15.68	16.30	16.96	±0.15	±0.30	±0.50	±1.25	±0.10	±0.10
2.5BD	-2.5	2.5	bar	8	17	10	±0.15	±0.075	12.20	12.70	13.18	±0.20	±0.40	±0.50	±1.50	±0.10	±0.10
004BD	-4	4	bar	10	17	15	±0.15	±0.075	11.14	11.60	12.08	±0.25	±0.50	±0.50	±1.25	±0.10	±0.10
006BD	-6	6	bar	17	17	15	±0.15	±0.075	10.16	10.60	11.08	±0.35	±0.50	±0.50	±1.00	±0.10	±0.10
010BD	-10	10	bar	17	17	15	±0.15	±0.075	16.94	17.70	18.44	±0.20	±0.3	±0.5	±1.00	±0.10	±0.10
<b>Gage</b>																	
060MG	0	60	mbar	872	1370	10,000	±0.20	±0.075	1.23	1.30	1.40	±1.15	±2.35	±1.00	±2.00	±0.30	±0.30
100MG	0	100	mbar	872	1370	10,000	±0.20	±0.075	2.06	2.20	2.33	±0.70	±1.40	±1.00	±2.00	±0.20	±0.20
160MG	0	160	mbar	2000	4000	10,000	±0.15	±0.12	2.18	2.30	2.46	±1.65	±3.30	±0.75	±2.00	±0.20	±0.20
250MG	0	250	mbar	2000	4000	10,000	±0.15	±0.12	3.41	3.65	3.85	±1.05	±2.10	±0.75	±2.00	±0.15	±0.15
400MG	0	400	mbar	2000	4000	10,000	±0.15	±0.12	5.45	5.80	6.15	±0.65	±1.30	±0.75	±2.00	±0.10	±0.10
600MG	0	600	mbar	4000	8000	10,000	±0.15	±0.075	2.94	3.05	3.18	±0.85	±1.65	±0.50	±1.25	±0.15	±0.15
001BG	0	1	bar	4	8	10	±0.15	±0.075	4.90	5.10	5.30	±0.50	±1.00	±0.50	±1.25	±0.10	±0.10
1.6BG	0	1.6	bar	4	8	10	±0.15	±0.075	7.84	8.15	8.48	±0.30	±0.65	±0.50	±1.25	±0.10	±0.10
2.5BG	0	2.5	bar	8	17	10	±0.15	±0.075	6.10	6.35	6.59	±0.40	±0.80	±0.50	±1.50	±0.10	±0.10
004BG	0	4	bar	10	17	15	±0.15	±0.075	5.57	5.80	6.04	±0.50	±1.00	±0.50	±1.25	±0.10	±0.10
006BG	0	6	bar	17	17	15	±0.15	±0.075	5.08	5.30	5.54	±0.65	±1.00	±0.50	±1.00	±0.15	±0.15
010BG	0	10	bar	17	17	15	±0.15	±0.075	8.47	8.85	9.22	±0.40	±0.60	±0.50	±1.00	±0.10	±0.10

<sup>1</sup>Offset: The output signal obtained when the reference pressure is applied to all available pressure ports. Also known as "null" or "zero".

<sup>2</sup>Thermal effect on offset: The deviation in offset due to changes in temperature over the compensated temperature range, relative to offset measured at 25 °C.

<sup>3</sup>Thermal effect on span: The deviation in full scale span due to changes in temperature over the compensated temperature range, relative to full scale span measured at 25 °C.

<sup>4</sup>Thermal hysteresis: The maximum difference between output readings when the same temperature is reached consecutively, under the same operating conditions, with temperature approaching from opposite directions within the operating temperature range. Validated over the full operating temperature and pressure ranges using a ~5 °C/minute ramp and 30 minute dwell. Application performance may be affected by the thermal mass of the end user system.



# TSC Series Specifications

$\pm 1$  psi to  $\pm 150$  psi

Table 8. TSC Series Pressure Range Specifications for  $\pm 1$  psi to  $\pm 150$  psi

Pressure Range Order Code (see Figure 1)	Pressure Range		Unit	Over Pressure	Burst Pressure	Common Mode Pressure	Pressure Accuracy (%FSS)	Offset <sup>1</sup> (mV/V)	Full Scale Span (mV/V)			Thermal Effect on Offset <sup>2</sup> (%FSS)		Thermal Effect on Span <sup>3</sup> (%FSS)		Long-Term Stability 1000 hr, 25°C (%FSS)	Thermal Hysteresis <sup>4</sup> (%FSS)
	Pmin.	Pmax.							Min.	Nom.	Max.	10 °C to 50 °C	0 °C to 85 °C	10 °C to 50 °C	0 °C to 85 °C		
<b>Differential</b>																	
001PD	-1	1	psi	12.5	20	145	$\pm 0.20$	$\pm 0.075$	2.84	3.00	3.22	$\pm 0.50$	$\pm 1.00$	$\pm 1.00$	$\pm 2.00$	$\pm 0.15$	$\pm 0.15$
005PD	-5	5	psi	30	60	145	$\pm 0.15$	$\pm 0.12$	9.40	10.00	10.60	$\pm 0.40$	$\pm 0.75$	$\pm 0.75$	$\pm 2.00$	$\pm 0.10$	$\pm 0.10$
015PD	-15	15	psi	60	115	145	$\pm 0.15$	$\pm 0.075$	10.12	10.50	10.98	$\pm 0.25$	$\pm 0.50$	$\pm 0.50$	$\pm 1.25$	$\pm 0.10$	$\pm 0.10$
030PD	-30	30	psi	115	245	145	$\pm 0.15$	$\pm 0.075$	10.10	10.50	10.90	$\pm 0.25$	$\pm 0.50$	$\pm 0.50$	$\pm 1.50$	$\pm 0.10$	$\pm 0.10$
060PD	-60	60	psi	145	245	230	$\pm 0.15$	$\pm 0.075$	11.52	12.00	12.48	$\pm 0.25$	$\pm 0.50$	$\pm 0.50$	$\pm 1.25$	$\pm 0.10$	$\pm 0.10$
100PD	-100	100	psi	245	245	245	$\pm 0.15$	$\pm 0.075$	11.66	12.00	12.72	$\pm 0.30$	$\pm 0.45$	$\pm 0.50$	$\pm 1.00$	$\pm 0.10$	$\pm 0.10$
150PD	-150	150	psi	245	245	245	$\pm 0.15$	$\pm 0.075$	17.50	18.30	19.08	$\pm 0.20$	$\pm 0.30$	$\pm 0.50$	$\pm 1.00$	$\pm 0.10$	$\pm 0.10$
<b>Gage</b>																	
001PG	0	1	psi	12.7	20	145	$\pm 0.20$	$\pm 0.075$	1.42	1.50	1.61	$\pm 1.00$	$\pm 2.05$	$\pm 1.00$	$\pm 2.00$	$\pm 0.25$	$\pm 0.25$
005PG	0	5	psi	30	60	145	$\pm 0.15$	$\pm 0.12$	4.70	5.00	5.30	$\pm 0.75$	$\pm 1.50$	$\pm 0.75$	$\pm 2.00$	$\pm 0.10$	$\pm 0.10$
015PG	0	15	psi	60	115	145	$\pm 0.15$	$\pm 0.075$	5.06	5.25	5.49	$\pm 0.50$	$\pm 0.95$	$\pm 0.50$	$\pm 1.25$	$\pm 0.10$	$\pm 0.10$
030PG	0	30	psi	115	245	145	$\pm 0.15$	$\pm 0.075$	5.05	5.25	5.45	$\pm 0.50$	$\pm 0.95$	$\pm 0.50$	$\pm 1.50$	$\pm 0.10$	$\pm 0.10$
060PG	0	60	psi	145	245	230	$\pm 0.15$	$\pm 0.075$	5.76	6.00	6.24	$\pm 0.50$	$\pm 0.95$	$\pm 0.50$	$\pm 1.25$	$\pm 0.10$	$\pm 0.10$
100PG	0	100	psi	245	245	245	$\pm 0.15$	$\pm 0.075$	5.83	6.10	6.36	$\pm 0.60$	$\pm 0.85$	$\pm 0.50$	$\pm 1.00$	$\pm 0.10$	$\pm 0.10$
150PG	0	150	psi	245	245	245	$\pm 0.15$	$\pm 0.075$	8.75	9.15	9.54	$\pm 0.40$	$\pm 0.60$	$\pm 0.50$	$\pm 1.00$	$\pm 0.10$	$\pm 0.10$

<sup>1</sup>Offset: The output signal obtained when the reference pressure is applied to all available pressure ports. Also known as “null” or “zero”.

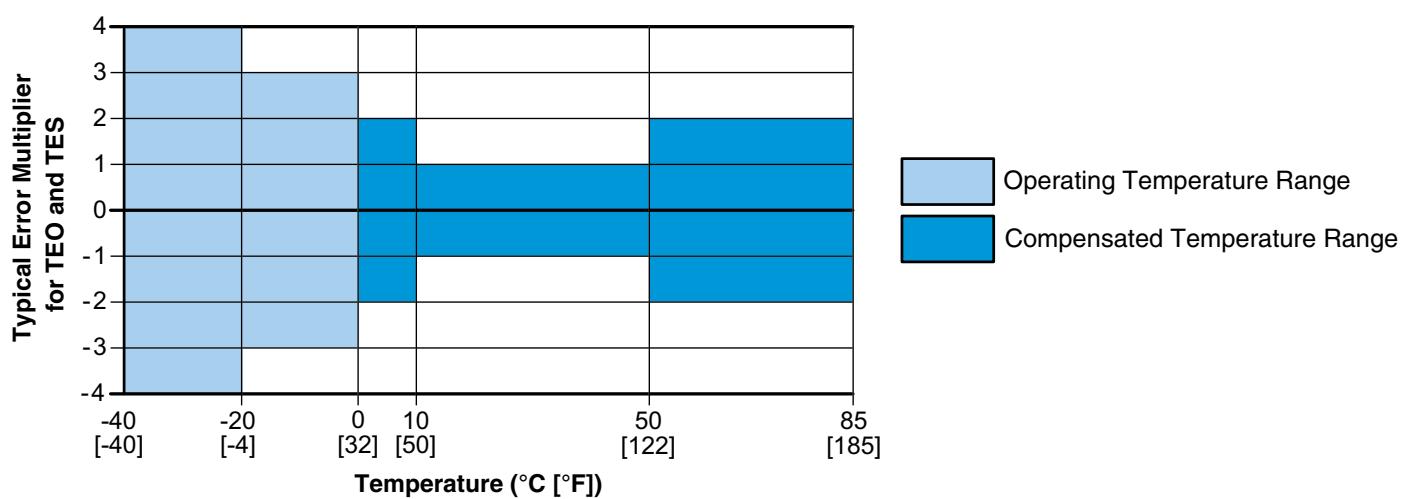
<sup>2</sup>Thermal Effect on Offset: The deviation in offset due to changes in temperature over the compensated temperature range, relative to offset measured at 25 °C.

<sup>3</sup>Thermal Effect on Span: The deviation in full scale span due to changes in temperature over the compensated temperature range, relative to full scale span measured at 25 °C.

<sup>4</sup>Thermal Hysteresis: The maximum difference between output readings when the same temperature is reached consecutively, under the same operating conditions, with temperature approaching from opposite directions within the operating temperature range. Validated over the full operating temperature and pressure ranges using a ~5 °C/minute ramp and 30 minute dwell. Application performance may be affected by the thermal mass of the end user system.

Figure 3. TSC Series Typical Temperature Performance

The graph below indicates typical error multipliers for Thermal Effect on Offset (TEO) and Thermal Effect on Span (TES) outside the Compensated Temperature Range. See Tables 6-8 for details of the specified maximum errors within the Compensated Temperature Range.



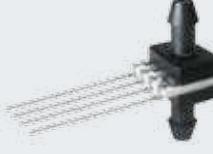






# Available Standard Configurations

Figure 4. All Available Standard Configurations (Dimensional drawings on pages noted below.)

Package Code	Pressure Port		
	DIP	SMT	SIP
NN			
AA	—	—	
AN			
LN			
FF	—	—	
FN	—	—	
GN	—	—	
NB	—	—	
RN			

## Available Standard Configurations

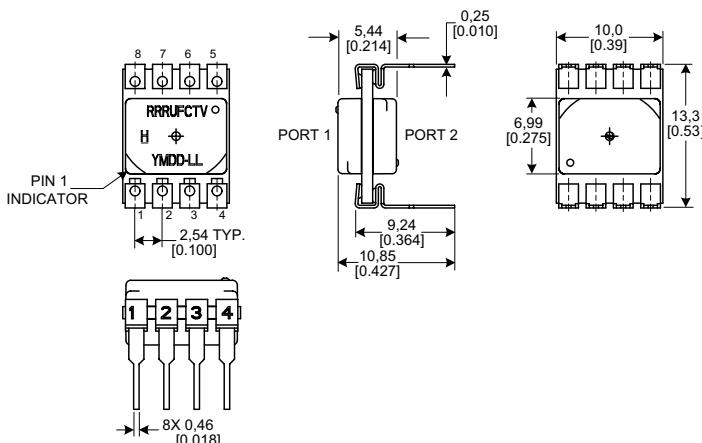
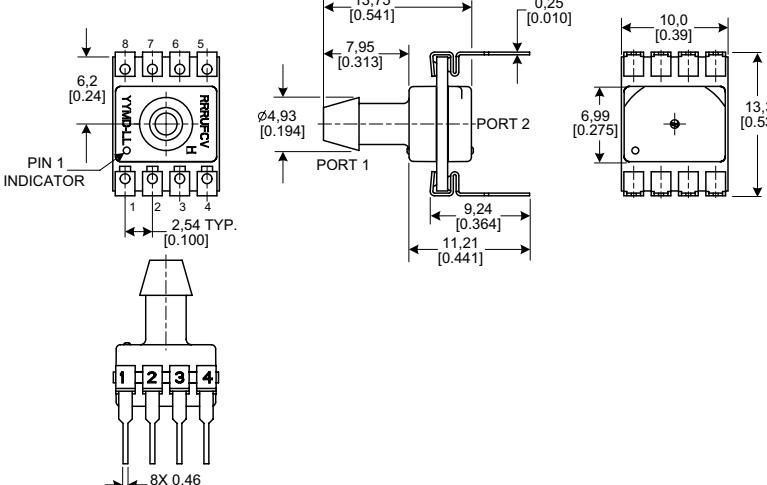
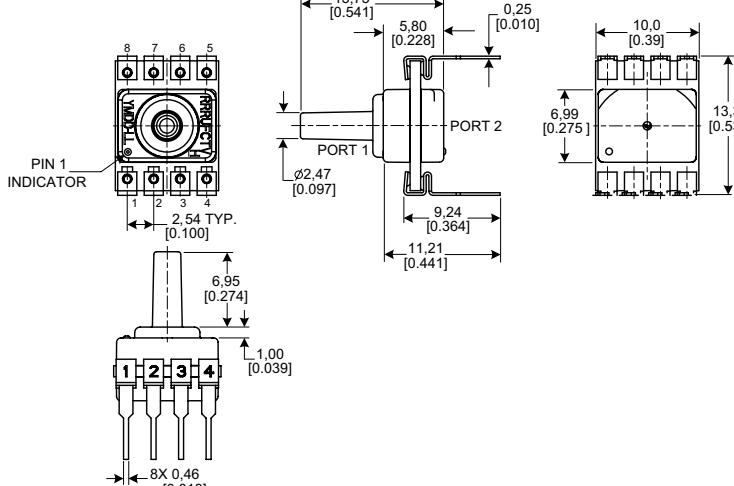
Figure 4. All Available Standard Configurations (Continued; dimensional drawings on pages noted below.)

Package Code	Pressure Port		
	DIP	SMT	SIP
RR			
DR			
JN			
JJ			
HH	—	—	
HN	—	—	
MN	—	—	
SN	—	—	

# Dimensional Drawings

## DIP Packages

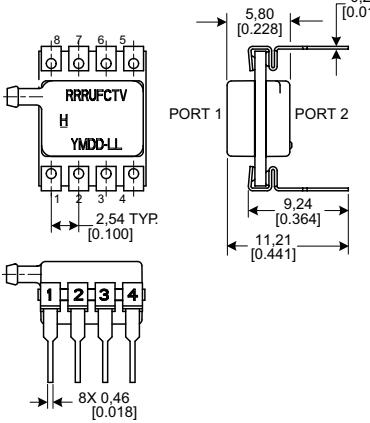
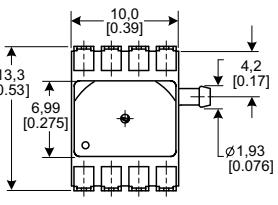
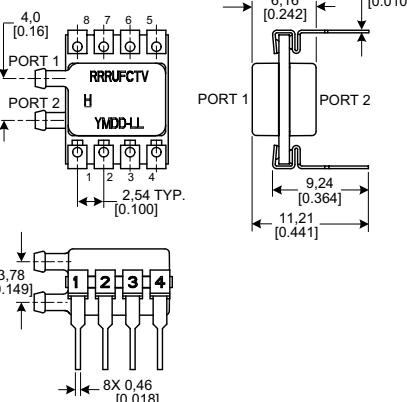
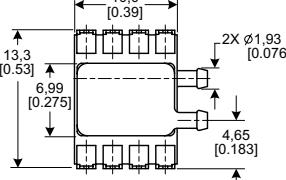
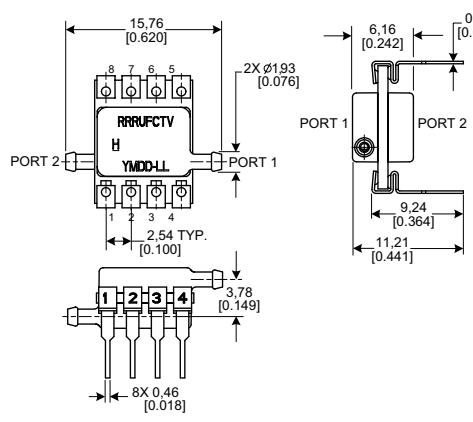
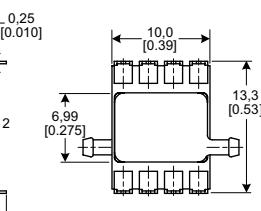
Figure 5. DIP Package Dimensional Drawings (For reference only: mm [in])

Dimensions	
<b>DIP NN:</b> No ports	 <p><b>DIP NN:</b> No ports</p> <p>Pin 1 Indicator: Located at the bottom left of the package.</p> <p>PORT 1 Dimensions:</p> <ul style="list-style-type: none"> <li>Width: 5.44 [0.214]</li> <li>Height: 0.25 [0.010]</li> <li>Length: 9.24 [0.364]</li> <li>Total width including lead: 10.0 [0.39]</li> <li>Total height including lead: 6.99 [0.275]</li> <li>Total length including lead: 13.3 [0.53]</li> </ul> <p>PORT 2 Dimensions:</p> <ul style="list-style-type: none"> <li>Width: 5.44 [0.214]</li> <li>Height: 0.25 [0.010]</li> <li>Length: 9.24 [0.364]</li> <li>Total width including lead: 10.0 [0.39]</li> <li>Total height including lead: 6.99 [0.275]</li> <li>Total length including lead: 13.3 [0.53]</li> </ul> <p>Pin Layout:</p> <ul style="list-style-type: none"> <li>Top row: Pin 8, Pin 7, Pin 6, Pin 5</li> <li>Bottom row: Pin 1, Pin 2, Pin 3, Pin 4</li> <li>Side view: 8X 0.46 [0.018]</li> </ul>
<b>DIP AN:</b> Single axial barbed port	 <p><b>DIP AN:</b> Single axial barbed port</p> <p>Pin 1 Indicator: Located at the bottom left of the package.</p> <p>PORT 1 Dimensions:</p> <ul style="list-style-type: none"> <li>Width: 6.2 [0.24]</li> <li>Height: 0.25 [0.010]</li> <li>Length: 9.24 [0.364]</li> <li>Total width including lead: 13.75 [0.541]</li> <li>Total height including lead: 6.99 [0.275]</li> <li>Total length including lead: 13.3 [0.53]</li> </ul> <p>PORT 2 Dimensions:</p> <ul style="list-style-type: none"> <li>Width: 7.95 [0.313]</li> <li>Height: 0.25 [0.010]</li> <li>Length: 11.21 [0.441]</li> <li>Total width including lead: 13.75 [0.541]</li> <li>Total height including lead: 6.99 [0.275]</li> <li>Total length including lead: 13.3 [0.53]</li> </ul> <p>Pin Layout:</p> <ul style="list-style-type: none"> <li>Top row: Pin 8, Pin 7, Pin 6, Pin 5</li> <li>Bottom row: Pin 1, Pin 2, Pin 3, Pin 4</li> <li>Side view: 8X 0.46 [0.018]</li> </ul>
<b>DIP LN:</b> Single axial barbless port	 <p><b>DIP LN:</b> Single axial barbless port</p> <p>Pin 1 Indicator: Located at the bottom left of the package.</p> <p>PORT 1 Dimensions:</p> <ul style="list-style-type: none"> <li>Width: 6.95 [0.274]</li> <li>Height: 0.25 [0.010]</li> <li>Length: 9.24 [0.364]</li> <li>Total width including lead: 13.75 [0.541]</li> <li>Total height including lead: 6.99 [0.275]</li> <li>Total length including lead: 13.3 [0.53]</li> </ul> <p>PORT 2 Dimensions:</p> <ul style="list-style-type: none"> <li>Width: 5.80 [0.228]</li> <li>Height: 0.25 [0.010]</li> <li>Length: 11.21 [0.441]</li> <li>Total width including lead: 13.75 [0.541]</li> <li>Total height including lead: 6.99 [0.275]</li> <li>Total length including lead: 13.3 [0.53]</li> </ul> <p>Pin Layout:</p> <ul style="list-style-type: none"> <li>Top row: Pin 8, Pin 7, Pin 6, Pin 5</li> <li>Bottom row: Pin 1, Pin 2, Pin 3, Pin 4</li> <li>Side view: 8X 0.46 [0.018]</li> </ul>

# Dimensional Drawings

## DIP Packages

Figure 5. DIP Package Dimensional Drawings (continued)

	Dimensions
<b>DIP RN:</b> Single radial barbed port	 
<b>DIP RR:</b> Dual radial barbed ports, same side	 
<b>DIP DR:</b> Dual radial barbed ports, opposite sides	 

# Dimensional Drawings

## DIP and SMT Packages

Figure 5. DIP Package Dimensional Drawings (continued)

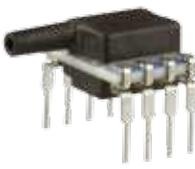
Dimensions
<b>DIP JN:</b> Single radial barbless port 


Figure 6. SMT Package Dimensional Drawings (For reference only: mm [in])

Dimensions
<b>SMT NN:</b> No ports 

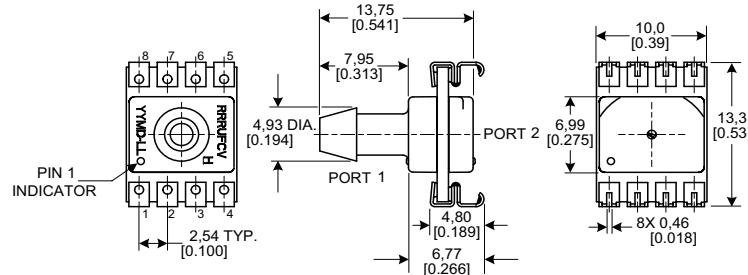
# Dimensional Drawings

## SMT Packages

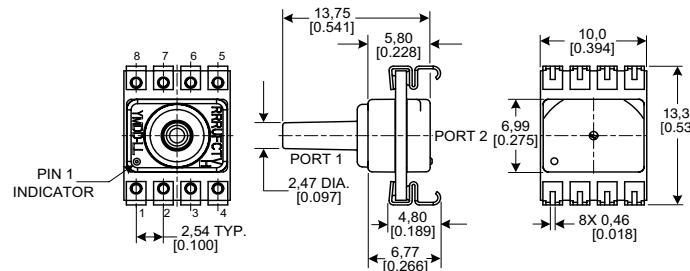
Figure 6. SMT Package Dimensional Drawings (continued)

### Dimensions

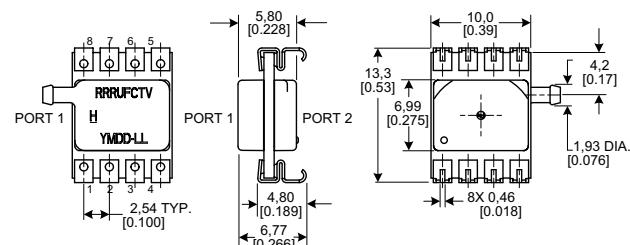
**SMT AN:** Single axial barbless port



**SMT LN:** Single axial barbless port



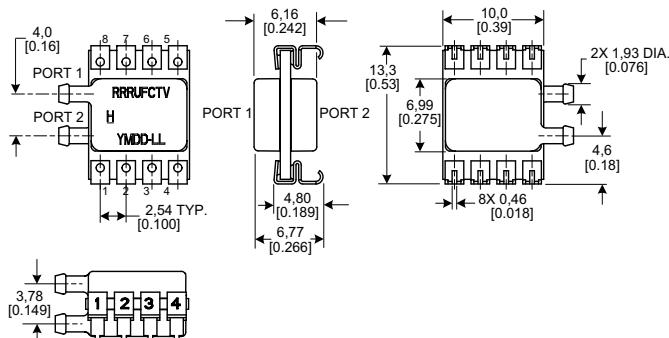
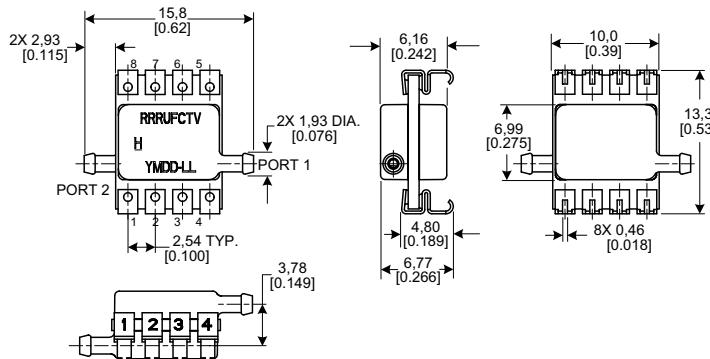
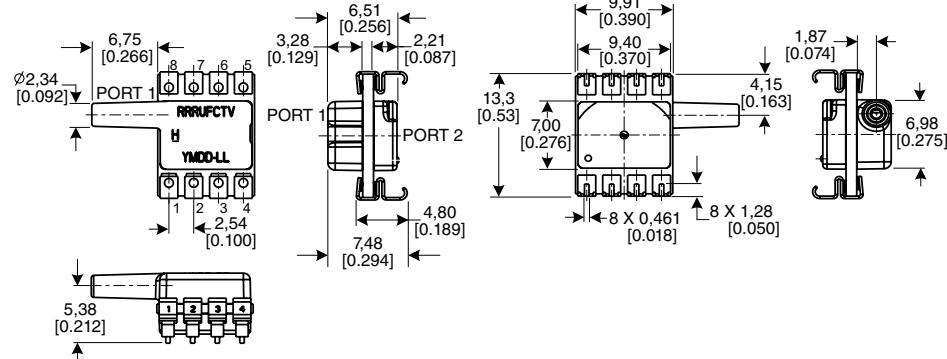
**SMT RN:** Single radial barbed port



# Dimensional Drawings

## SMT Packages

Figure 6. SMT Package Dimensional Drawings (continued)

	Dimensions
<b>SMT RR:</b> Dual radial barbed ports, same side	 
<b>SMT DR:</b> Dual radial barbed ports, opposite sides	 
<b>SMT JN:</b> Single radial barbless port	 

# Dimensional Drawings

## SMT and SIP Packages

Figure 6. SMT Package Dimensional Drawings (continued)

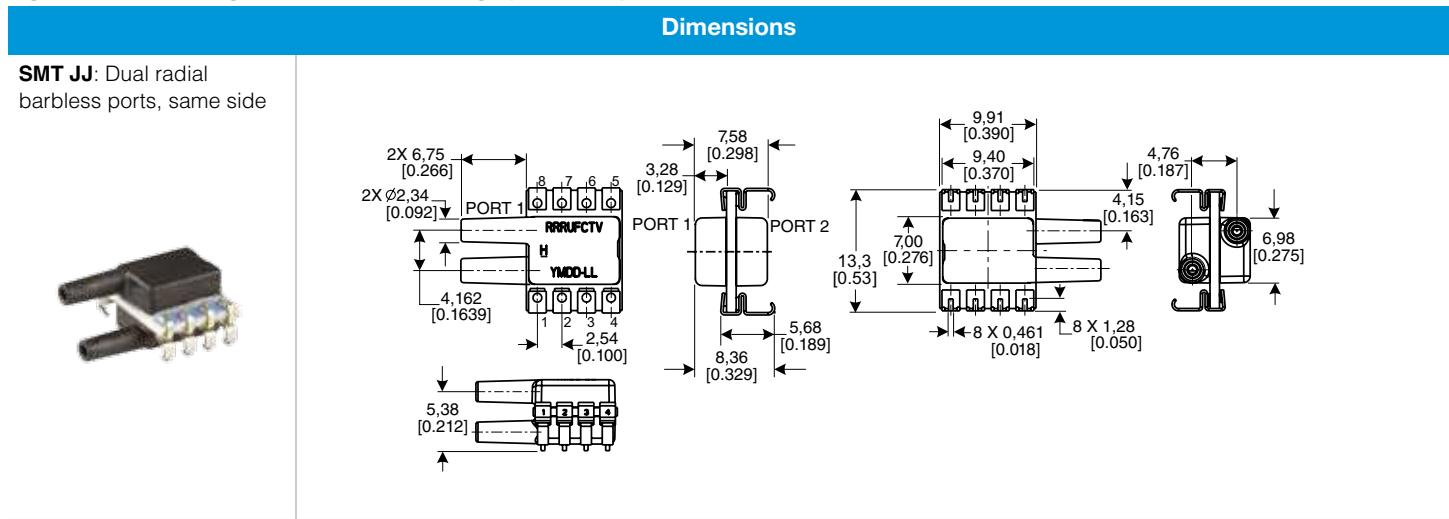
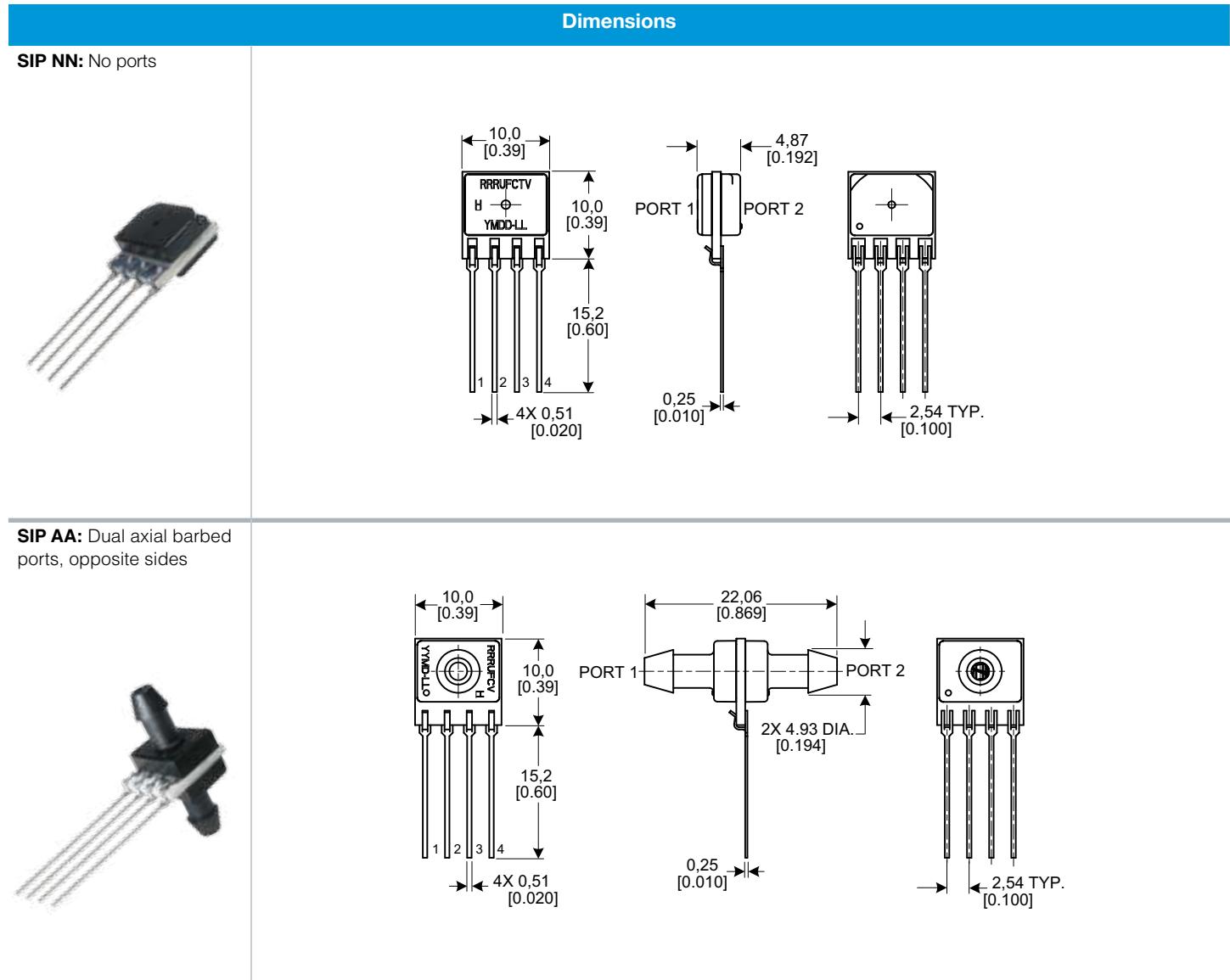


Figure 7. SIP Package Dimensional Drawings (For reference only: mm [in].)



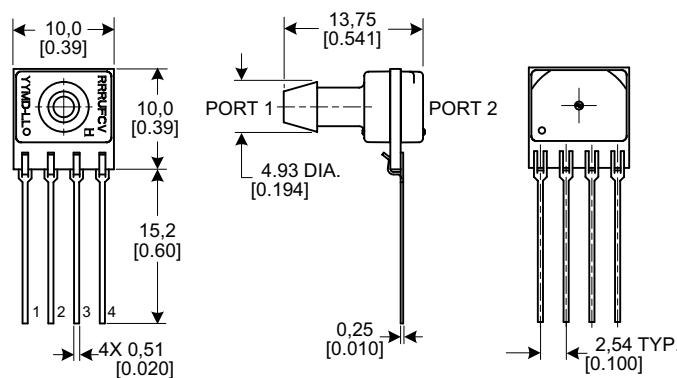
# Dimensional Drawings

## SIP Packages

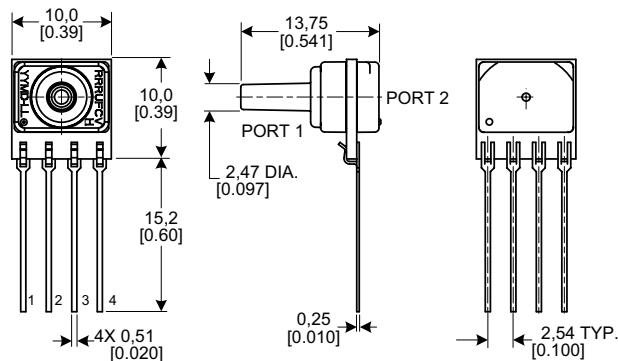
Figure 7. SIP Package Dimensional Drawings (continued)

### Dimensions

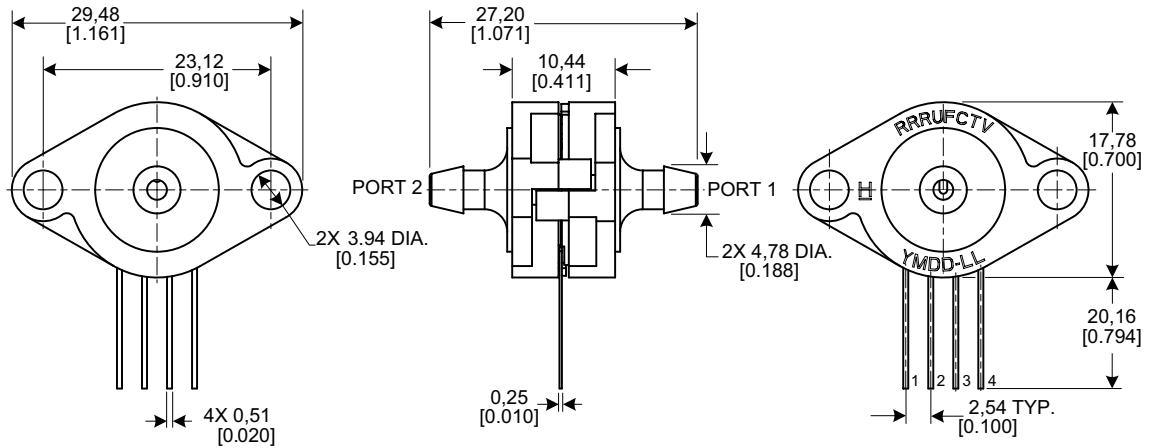
**SIP AN:** Single axial barbed port



**SIP LN:** Single axial barbless port



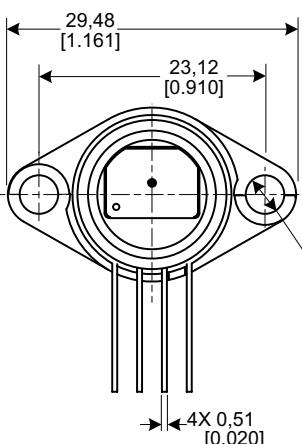
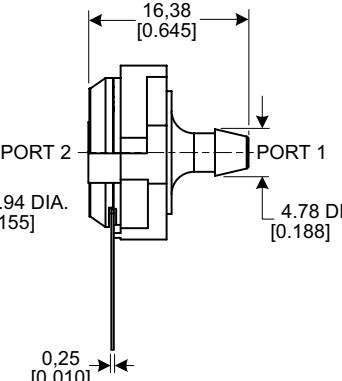
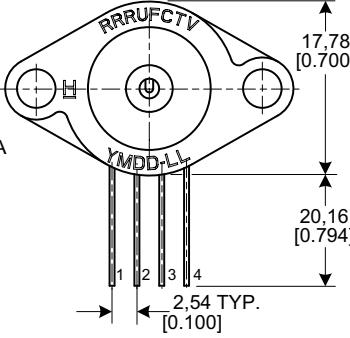
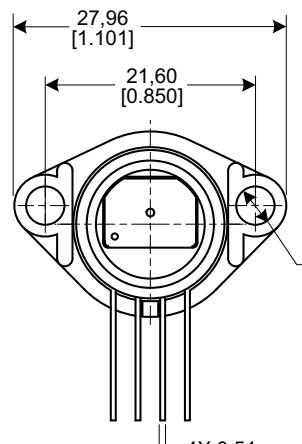
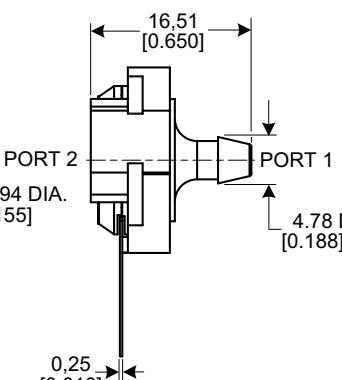
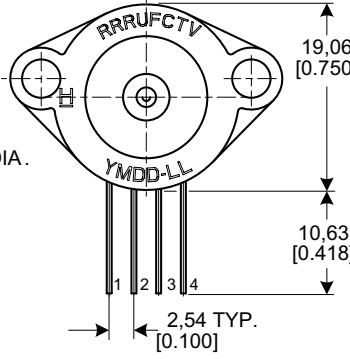
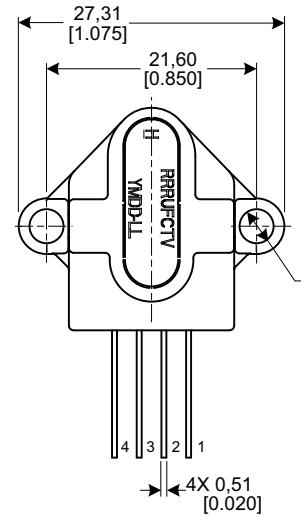
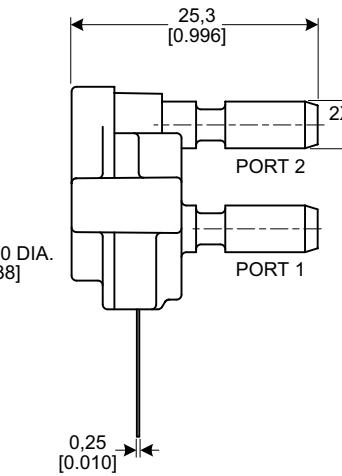
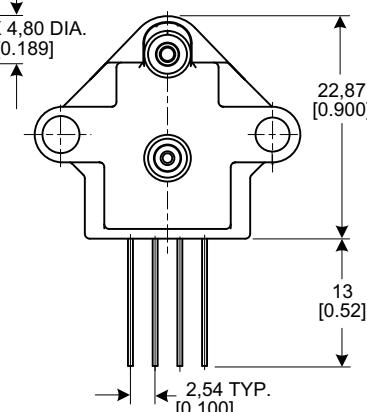
**SIP FF:** Fastener mount, dual axial barbed ports, opposite sides



# Dimensional Drawings

## SIP Packages

Figure 7. SIP Package Dimensional Drawings (continued)

	Dimensions
<b>SIP FN:</b> Fastener mount, single axial barbed port	    <p><b>Dimensions:</b></p> <ul style="list-style-type: none"> <li>Overall width: 29.48 [1.161]</li> <li>Width between ports: 23.12 [0.910]</li> <li>Port 1 diameter: 4.78 DIA. [0.188]</li> <li>Port 2 diameter: 2X 3.94 DIA. [0.155]</li> <li>Port height: 0.25 [0.010]</li> <li>Lead pitch: 4X 0.51 [0.020]</li> <li>Total height: 20.16 [0.794]</li> <li>Bottom plate thickness: 2.54 TYP. [0.100]</li> <li>Top plate thickness: 17.78 [0.700]</li> </ul>
<b>SIP GN:</b> Ribbed fastener mount, single axial barbed port	    <p><b>Dimensions:</b></p> <ul style="list-style-type: none"> <li>Overall width: 27.96 [1.101]</li> <li>Width between ports: 21.60 [0.850]</li> <li>Port 1 diameter: 4.78 DIA. [0.188]</li> <li>Port 2 diameter: 2X 3.94 DIA. [0.155]</li> <li>Port height: 0.25 [0.010]</li> <li>Lead pitch: 4X 0.51 [0.020]</li> <li>Total height: 19.06 [0.750]</li> <li>Bottom plate thickness: 2.54 TYP. [0.100]</li> <li>Top plate thickness: 10.63 [0.418]</li> </ul>
<b>SIP NB:</b> Fastener mount, dual axial ports, same side	    <p><b>Dimensions:</b></p> <ul style="list-style-type: none"> <li>Overall width: 27.31 [1.075]</li> <li>Width between ports: 21.60 [0.850]</li> <li>Port 1 diameter: 2X 4.80 DIA. [0.189]</li> <li>Port 2 diameter: 2X 3.50 DIA. [0.138]</li> <li>Port height: 0.25 [0.010]</li> <li>Lead pitch: 4X 0.51 [0.020]</li> <li>Total height: 22.87 [0.900]</li> <li>Bottom plate thickness: 2.54 TYP. [0.100]</li> <li>Top plate thickness: 13 [0.52]</li> </ul>