



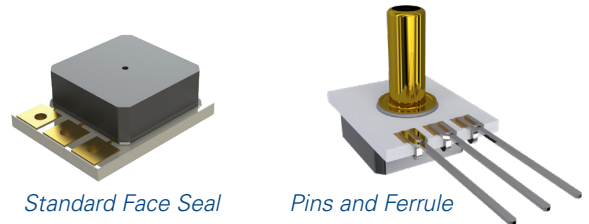
Fully Compensated TR Series

The TR Series pressure transducer is a rugged, direct-media pressure monitoring solution designed for today's toughest pressure sensing environments.

The TR Series pressure transducer is a fully compensated, amplified output pressure sensor package combining Merit Sensor's Sentium process harsh media MEMS piezoresistive die with state-of-the-art pressure sensor ASIC signal management.

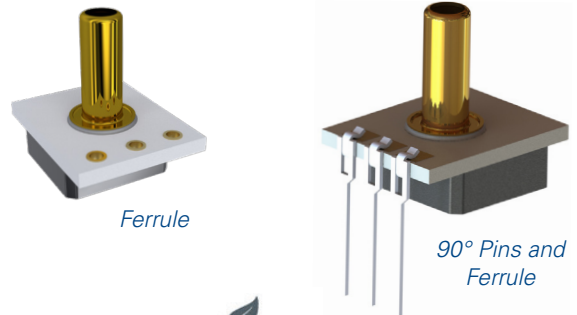
The TR Series "plug and play" design isolates onboard electronics from system media through an inert eutectic alloy solder bond of the MEMS pressure element to a ceramic PCB substrate. Direct media pressure sensing translates into excellent system design flexibility leading to lower cost and ease of manufacture.

The TR Series is designed for air, liquid and gas harsh media compatibility over a broad temperature range from -40°C (-40°F) to 150°C (302°F) with a total error band of less than 2.5%. The design includes a 4.7kohm pull-up resistor, operates on a single 5.0VDC supply, and requires no external components for proper operation. Both gage and absolute pressure reference designs up to 500 psi (34.5 bar) operating range are available.



Standard Face Seal

Pins and Ferrule



Ferrule

90° Pins and Ferrule



TYPICAL APPLICATIONS

- Industrial
 - HVAC system monitoring
 - Industrial automation
 - Process monitoring
 - Air-conditioning (refrigerant systems)
 - Portable measurement and analysis instrumentation
 - Water level and pressure monitoring
- Automotive
 - Transmission fluid pressure
 - Fuel system pressure
 - Oil system pressure
 - EGR system pressure
 - DEF system
 - Manifold absolute pressure
 - Fuel Rail system pressure
- Medical
 - Diagnostics and analysis equipment

TR Series Part Number Configurator

TR1-XXXXX-XXX

| | | |
|---|---|---|
| <p>Full-Scale Pressure</p> <p>0015 = 15 psi 0030 = 30 psi 0100 = 100 psi 0300 = 300 psi 0500 = 500 psi</p> | <p>Pressure Type</p> <p>A = Absolute G = Gage</p> | <p>Calibration</p> <p>1 = Standard 2.5% Cal. 2 = 1% Accuracy Cal.</p> |
| | | <p>0 = No pins; with holes 1 = Pins: no holes 2 = No pins; no holes 4 = 90° pins</p> |
| | | <p>Port</p> <p>0 = Standard Face Seal 1 = Ferrule</p> |

| Features | Min. | Typ. | Max. | Unit | Notes |
|------------------------------|------|-------|------|-------|---|
| Electrical | | | | | |
| Supply Voltage (Vs) | 4.5 | 5 | 5.5 | Volts | |
| Supply Current | | | 10 | mA | |
| Output Current | | | 2.5 | mA | |
| Short Circuit Current | -25 | | 25 | mA | |
| Reverse Polarity Protection | -33 | | | Volts | Device will cease operation during supply voltage fault. |
| Overvoltage Protection | | | 33 | Volts | Device will cease operation during supply voltage fault. |
| ESD | >4 | | | kV | Human body model 1.5kOhm/100pF |
| Performance | | | | | |
| Output Range (Vout) | 10 | | 90 | %Vs | |
| Output Clipping Limit (Vout) | 5 | | 95 | %Vs | |
| Resolution | | | 0.02 | %FS | >12 bit DAC |
| Accuracy | | | | | Accuracy includes all error for hysteresis and linearity over the entire operating temperature range. It does not include lifetime drift. -40°C to 150°C. |
| Standard | -2.5 | 0 | 2.5 | %FS | |
| High Performance | -1.0 | 0 | 1.0 | %FS | |
| Startup Time | | 3.5 | | ms | |
| Analog Update Time | | 2 | | ms | |
| Static Proof Pressure | | 2X FS | | PSIA | |
| Burst Pressure | | 3X FS | | PSIA | |
| Lifetime Drift | -0.5 | | 0.5 | %FS | 1000 HRS. @ 150°C |
| Environmental | | | | | |
| Operating Temperature | -40 | | 150 | °C | |
| Storage Temperature | -55 | | 150 | °C | |
| Weight | | 1.08 | | Grams | Face Seal |
| | | 1.306 | | Grams | Ferrule |
| | | 1.179 | | Grams | Face Seal w/pins |
| | | 1.397 | | Grams | Ferrule w/pins |

Transfer Function Formula

$$P_{psi} = (P_{max} - P_{min}) \cdot \left(\frac{V_{out} - V_{min}}{V_{max} - V_{min}} \right) + P_{min}$$

Where

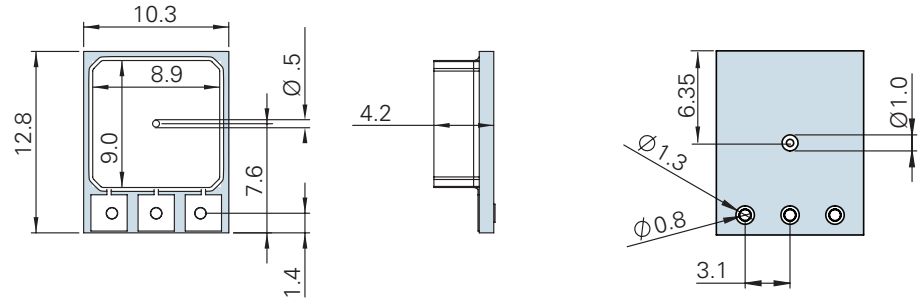
- P_{psi} = Measured Pressure in PSI
- P_{Max} = Maximum Pressure
- P_{Min} = Minimum Pressure
- V_{min} = Minimum Volatage (Usually 0.5V)
- V_{max} = Maximum Volatage (Usually 4.5V)
- V_{out} = Output voltage

Fully Compensated TR Series

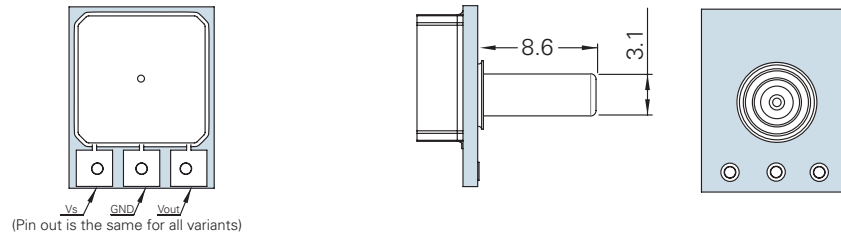
DIMENSIONS FOR STANDARD OPTIONS (in millimeters)

Dimensions for reference only.
Engineering drawings (with tolerance) available upon order.

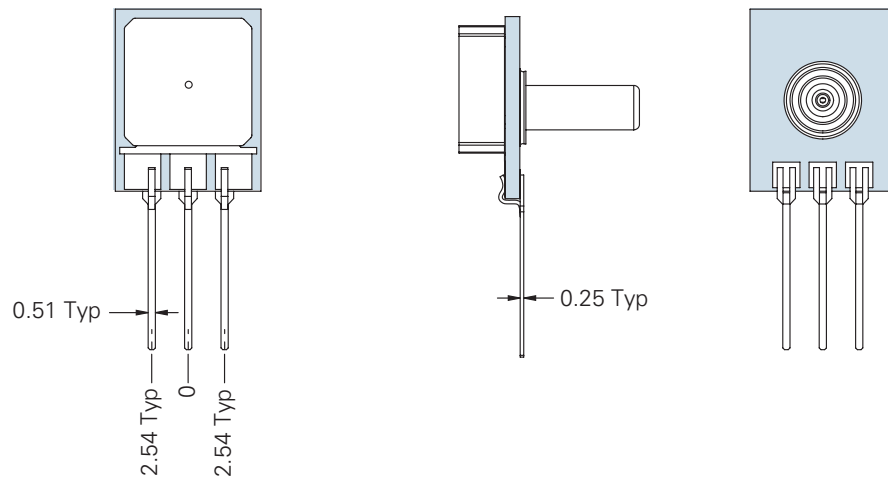
Standard Face Seal



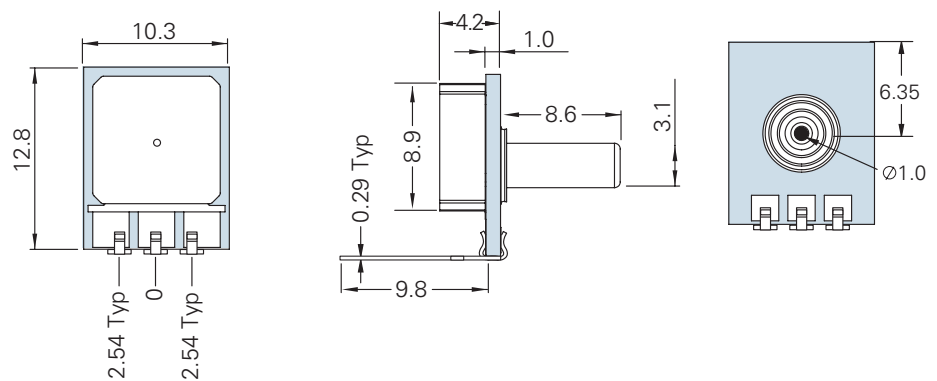
Ferrule



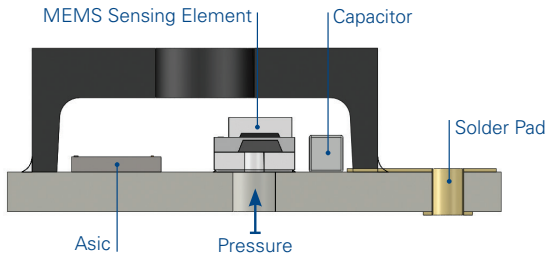
Pins and Ferrule



90° Pins and Ferrule

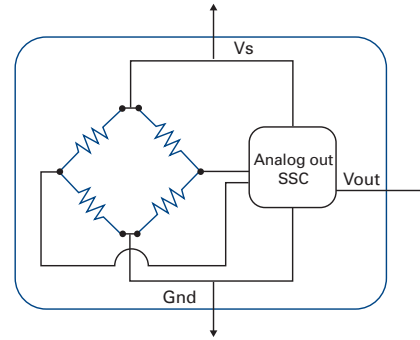


CROSS SECTION

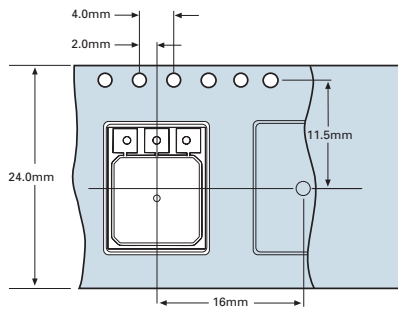


ELECTRICAL

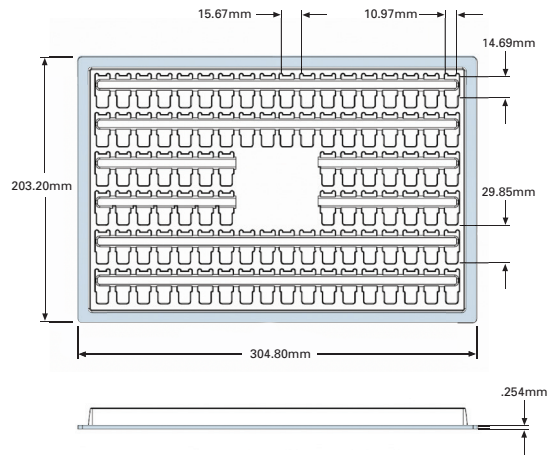
Note: Power supply decoupling and output filtering included



PACKAGING AND SHIPPING (Tape and Reel)



PACKAGING AND SHIPPING (Tray)



Merit Sensor is based in Salt Lake City, Utah



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