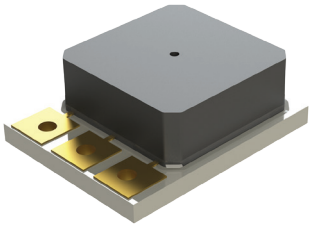
Fully Compensated TR Series

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

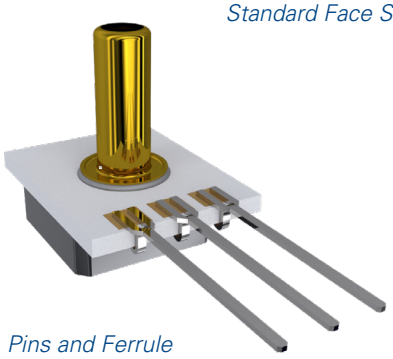
The TR Series pressure transducer is a fully compensated, amplified output pressure sensor package combining Merit Sensor's Sentium process harsh media MEMS piezoresistive die with state-of-the-art pressure sensor ASIC signal management.

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.

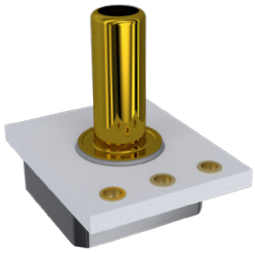
The TR Series is designed for air, liquid and gas harsh media compatibility over a broad temperature range from -40°C (-40°F) to 150°C (302°F) with a total error band of less than 2.5%. The design includes a 4.7kohm pull-up resistor, operates on a single 5.0VDC supply, and requires no external components 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

RoHS Compliant

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

Full-Scale Pressure
- 0015 = 15 psi
- 0030 = 30 psi
- 0100 = 100 psi
- 0300 = 300 psi
- 0500 = 500 psi

Pressure Type
- A = Absolute
- G = Gage

Calibration
- 1 = Standard 2.5% Cal.
- 2 = 1% Accuracy Cal.

Port
- 0 = Standard Face Seal
- 1 = Ferrule

Pins
- 0 = No pins; with holes
- 1 = Pins: no holes
- 2 = No pins; no holes

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MERIT SENSOR™

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 model1.5kOhm/100pF.
Performance					
Output Range (Vout)	10		90	%Vs	
Output Clipping Limit (Vout)	5		95	%Vs	
Resolution			0.02	%FS	>12 bit DAC
Accuracy Standard High Performance	 -2.5 -1.0	 0 0	 2.5 1.0	%FS	Accuracy includes all error for hysteresis and linearity over the entire operating temperature range. It does not include lifetime drift. -40°C to150°C.
Startup Time		3.5		msec	
Analog Update Time		2		msec	
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

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

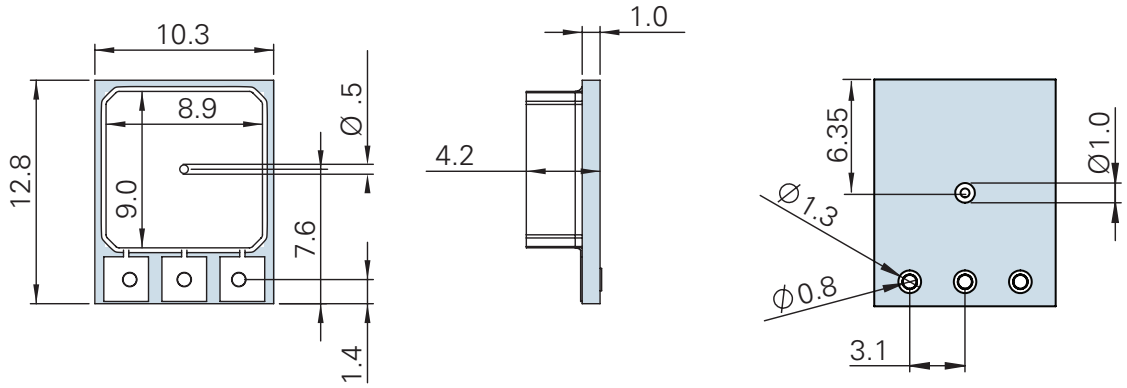
Where

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

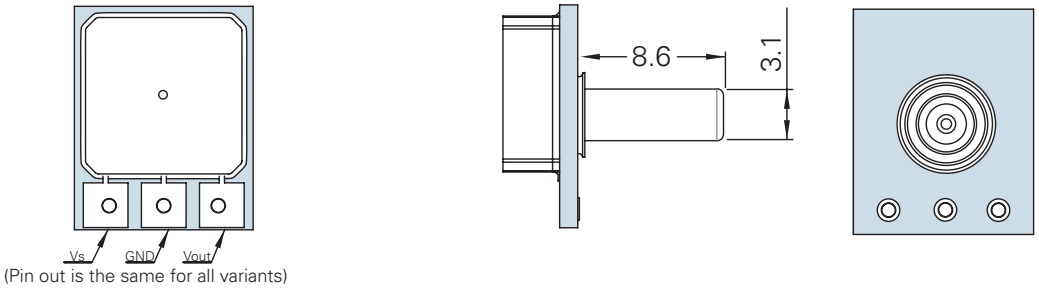
DIMENSIONS FOR STANDARD OPTIONS (in millimeters)

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

Standard Face Seal

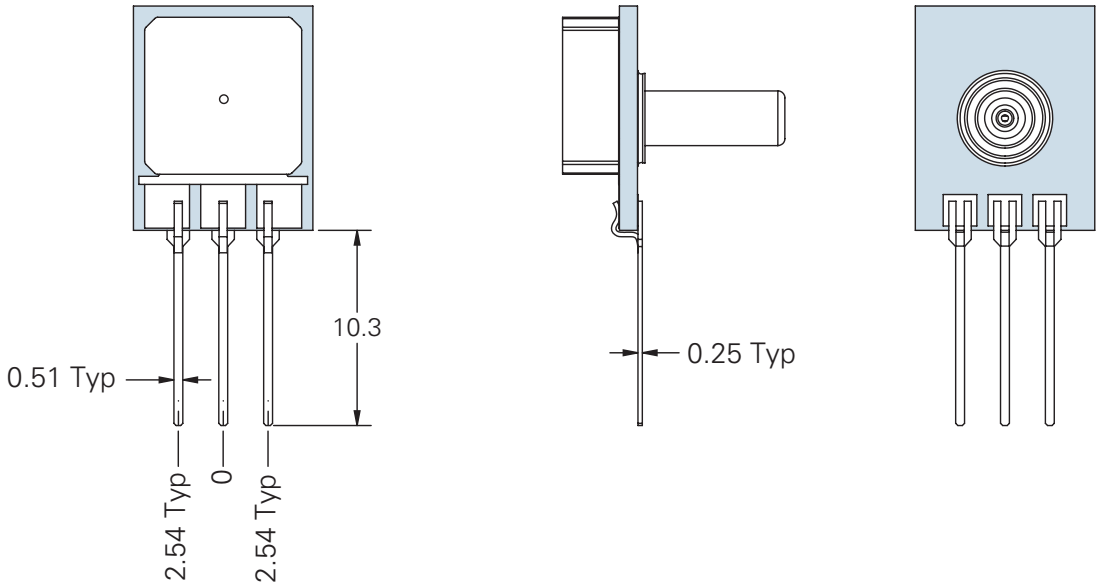


Ferrule

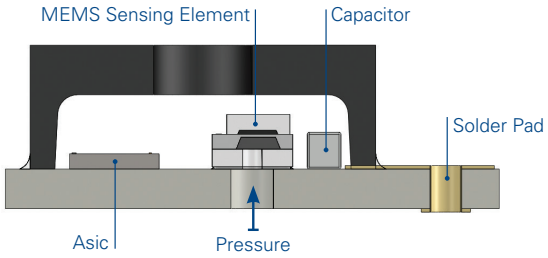


(Pin out is the same for all variants)

Pins and Ferrule

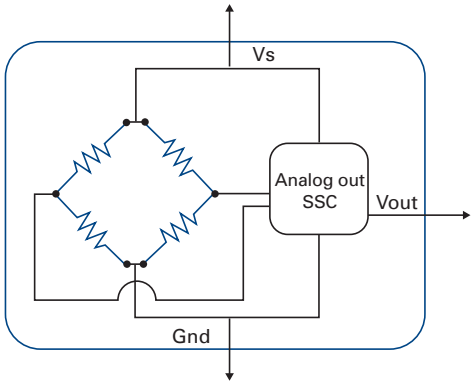


CROSS SECTION

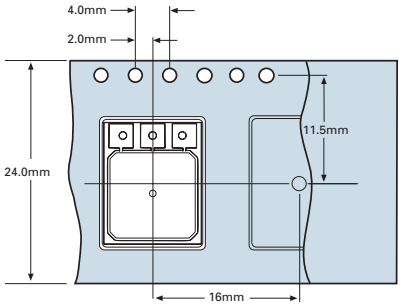


ELECTRICAL

Note: Power supply decoupling and output filtering included



PACKAGING AND SHIPPING



Merit Sensor is based in Salt Lake City, Utah

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