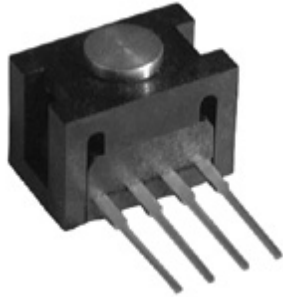




FSG15N1A



Actual product appearance may vary.

FSG Series force sensor, non-compensated, 0 g to 1500 g force range

Features

- Compact commercial grade package
- Robust performance characteristics
- Adaptable product design
- Precision force sensing
- Electrically ratiometric output
- Extremely low deflection (30 microns typ. at Full Scale)
- High ESD resistance 10 kV
- Available signal conditioning
- Optional terminal configurations

Potential Applications

- Medical infusion pumps
- Ambulatory non-invasive pump pressure
- Occlusion detection
- Kidney dialysis machines
- Load and compression sensing
- Variable tension control
- Robotic end-effectors
- Wire bonder equipment

Description

The FS Series Sensors provide precise, reliable force sensing performance in a compact commercial grade package. The sensor features a proven sensing technology that utilizes a specialized piezoresistive micro-machined silicon sensing element. The low power, unamplified, noncompensated Wheatstone bridge circuit design provides inherently stable mV outputs over the force range. Force sensors operate on the principle that the resistance of silicon implanted piezoresistors will increase when the resistors flex under any applied force. The sensor concentrates force from the application, through the stainless steel plunger, directly to the silicon sensing element. The amount of resistance changes in proportion to the amount of force being applied. This change in circuit resistance results in a corresponding mV output level.

The sensor package design incorporates a patented modular construction. The use of innovative elastomeric technology and engineered molded plastics results in load capacities of 4.5/5.5 kg over-force. The stainless steel plunger provides excellent mechanical stability and is adaptable to a variety of applications. Various electric interconnects can accept prewired connectors, printed circuit board mounting, and surface mounting. The unique sensor design also provides a variety of mounting options including mounting brackets, as well as application specific mounting requirements.

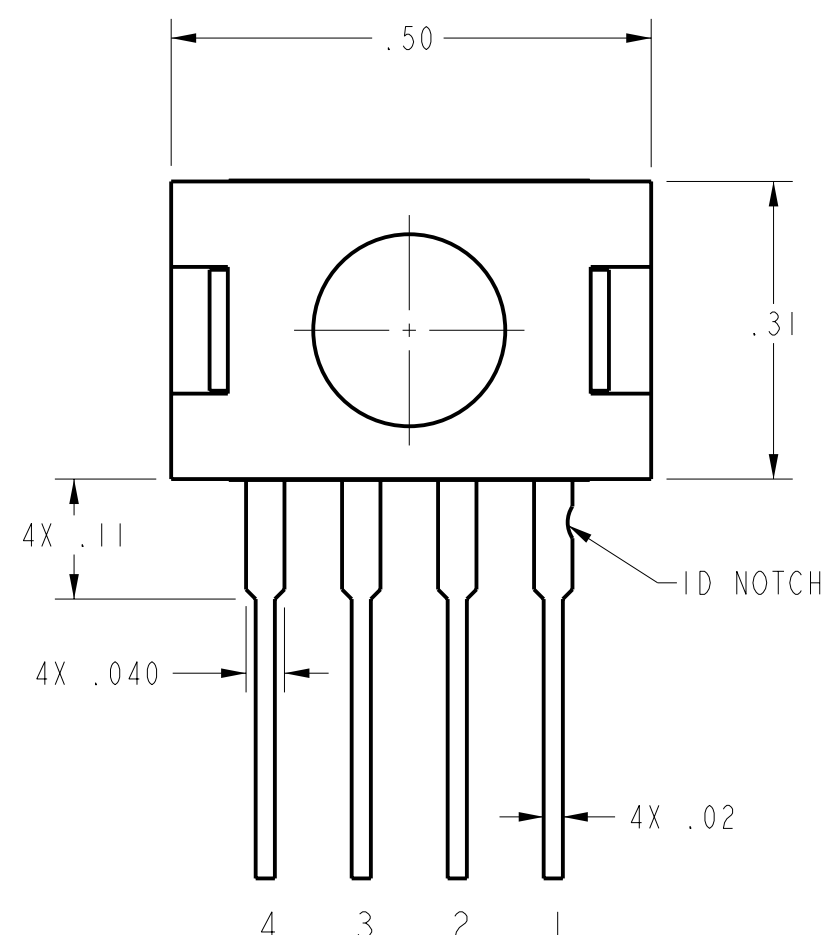
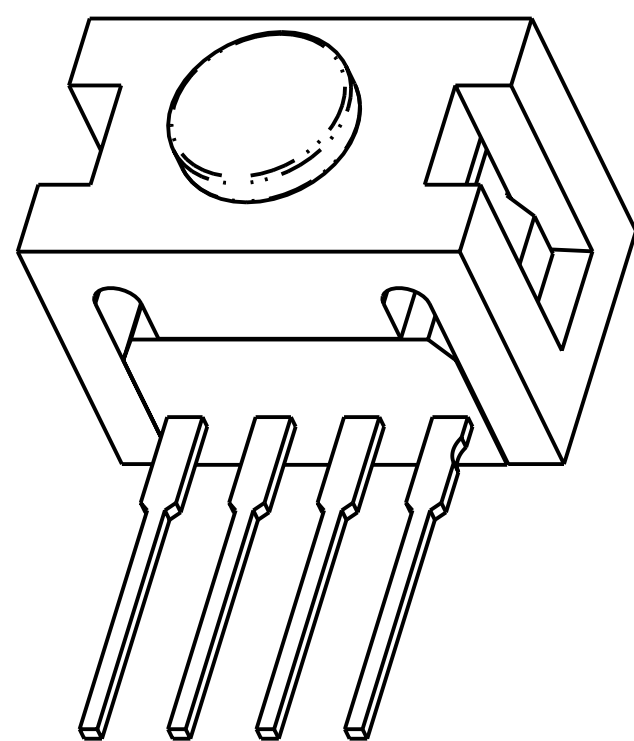
Mounting

Sensor output characteristics do not change with respect to mounting orientation. Care should be taken not to obstruct the vent hole in the bottom of the housing. Improper venting may result in unstable output.

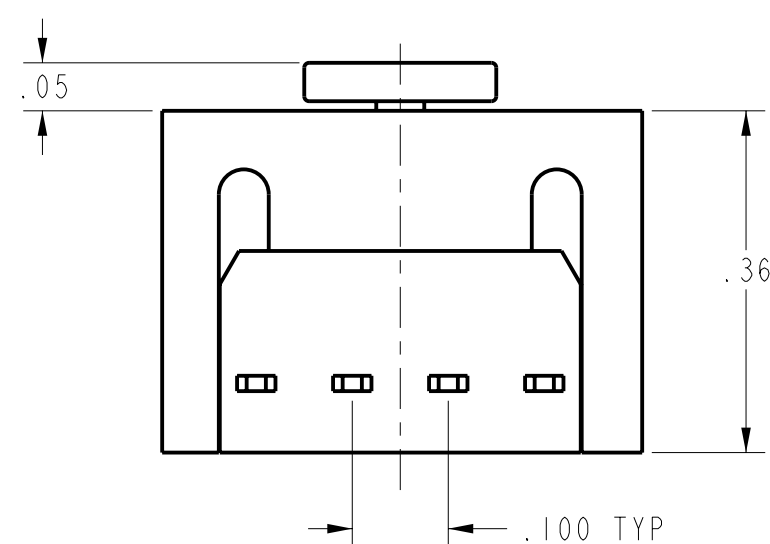
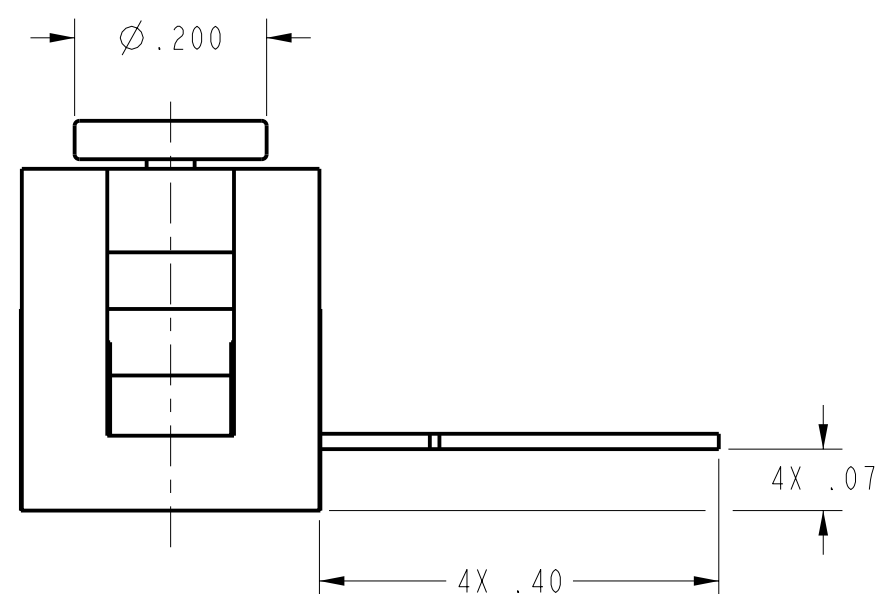
Applying Force

Evaluation of the sensor is to be performed using deadweight or compliance force. Application of a rigid, immobile force will result in output drift (decrease) as elastomeric seals relax.

Product Specifications	
Sensitivity	0.20 mV/g min., 0.24 mV/g typ., 0.28 mV/g max.
Operating Force (O.F.)	0 g to 1500 g
Supply Voltage	10.0 Vdc typ., 12.0 Vdc max.
Null Offset	± 30 mV
Linearity	0.5% Span Typ., Best Fit Straight Line
Null Shift over Temperature	± 1.0 mV
Sensitivity Shift over Temperature	+0.012 mV/g / -0.012 mV/g
Input Resistance	4.0 kOhm min., 5.0 kOhm typ., 6.0 kOhm max.
Output Resistance	4 kOhm min., 5 kOhm typ., 6 kOhm max.
Overforce	5,500 g
ESD	10 kV
Operating Temperature Range	-40 °C to 85 °C [-40 °F to 185 °F]
Storage Temperature Range	-55 °C to 105 °C [-67 °F to 221 °F]
Vibration	10 Hz to 2 kHz, 20 g, sine
Shock	150 g, 6 ms, half sine
Solderability	5 s at 315 °C per lead
Availability	Global
Comment	MCTF 20 million at 50 °C
UNSPSC Code	411121
UNSPSC Commodity	411121 Transducers
Packing Style	Blister pack
Series Name	FSG



PIN 1 = V_s
 PIN 2 = V_{+0}
 PIN 3 = V_g
 PIN 4 = V_{-0}



FORCE SENSOR				
(at 10.00±.01 VDC Excitation, 25° C)				
PARAMETER	MIN	NOM	MAX	UNITS
NULL OFFSET	-30	0	+30	mV
SPAN (at 1500 gms, dead weight)	290	360	430	mV
	MIN	TYP	MAX	UNITS
LINEARITY		±0.5		% SPAN
NULL SHIFT (25° to 0°, 25° to 50° C)		±1.0		mV
SPAN SHIFT (25° to 0°, 25° to 50° C)		±5.0		% SPAN
INPUT RESISTANCE		5.0K		OHMS
OUTPUT RESISTANCE		5.0K		OHMS
EXCITATION VOLTAGE	RATIOMETRIC	10	12	VDC
OPERATING FORCE	0		1500	GRAMS
OVER FORCE			5500	GRAMS
OPERATING TEMPERATURE (-40° to +90°C)				
STORAGE TEMPERATURE (-55° to +105°C)				
VIBRATION 0 to 2KHz, 20g SINE				
SHOCK TESTED TO 150g				

NOTES

- 1 - DEVICE IS ELECTRICALLY RATIOMETRIC
- 2 - DEVICE CAN OPERATE WITH CURRENT EXCITATION
- 3 - ALL FORCE RELATED SPECIFICATIONS ESTABLISHED BY USING DEAD WEIGHT OR COMPLIANT FORCE
- 4 - TYPICAL FULL SCALE DEFLECTION .03 MM

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MICRO SWITCH a Honeywell Division	FORCE SENSOR	CATALOG LISTING FSG15N1A
FED. MFG. CODE 91929		

THIRD ANGLE PROJECTION		
SCALE 5 : 1		
DO NOT SCALE PRINT		
UNLESS OTHERWISE SPECIFIED TOLERANCES ARE		
ONE PLACE	(.0)	±.030
TWO PLACES	(.00)	±.015
THREE PLACES	(.000)	±.005
ANGLES		±
WEIGHT		