

Model 7293A Variable capacitance accelerometer

Features

- DC response
- Special EMI/RFI shield & filtering
- 2 to 100 g full scale
- Motion, low frequency, tilt
- Gas damping
- 10 kg shock survivability



Description

The Endevco® model 7293A Microtron® accelerometer family utilizes unique variable capacitance microsensors. The accelerometers are designed for measurement of steady-state or low frequency, low level accelerations in aerospace and factory environments where EMI and RFI are a particular concern.

The 7293A incorporates special filtering and shielding for EMI and RFI exposure. Internal overrange stops on the sensor enable the anisotropically-etched silicon microsensors to withstand high shock and acceleration loads. Frequency response is controlled by the near-critically damped sensors. The use of gas damping results in very small thermally-induced changes of frequency response.

The model 7293A can operate from 9.5 V to 18.0 V and provide a high level, low impedance output. The ± 2 volt differential output is dc coupled at a DC bias of approximately 3.6 V

Endevco three-channel systems, model 136 or 436 are recommended as signal conditioner and power supply.

北京汇润科贸有限公司

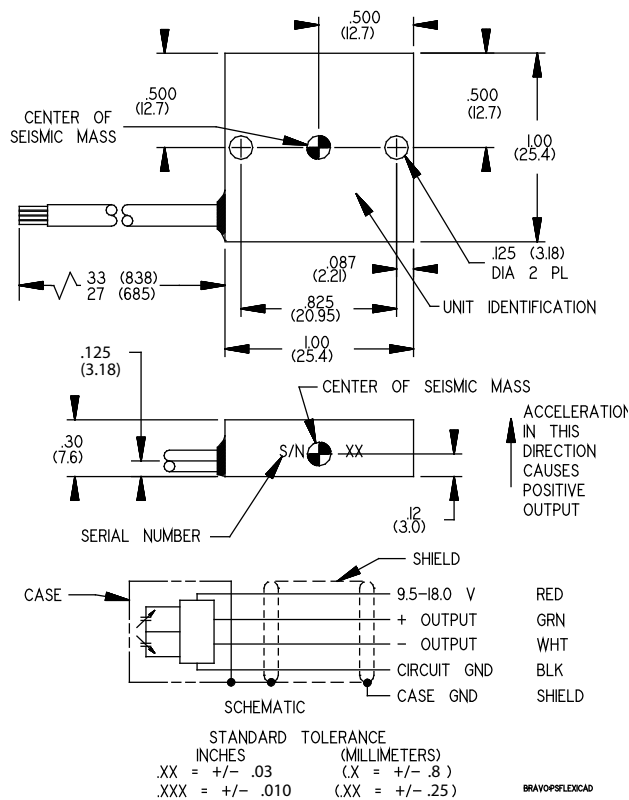
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Model 7293A

Variable capacitance accelerometer

Endevco

Specifications

The following performance specifications conform to ISA-RP-37.2 and are typical values, referenced at +75°F (+24°C) and 15 Vdc excitation unless otherwise noted. Calibration data, traceable to National Institute of Standards and Technology (NIST), is supplied.

Dynamic characteristics	Units	7293A-2	-10	-30	-50	-100
Range [1]	g	±2	±10	±30	±50	±100
Sensitivity	mV/g	1000 ±50	200 ±10	66 ±4	40 ±2	20 ±1
Frequency response [2]						
±5% max	Hz	0 to 15	0 to 500	0 to 800	0 to 1000	0 to 1000
Mounted resonance frequency	Hz	1300	3000	5500	6000	6000
Non-linearity and hysteresis	% FSO (typ)	±0.2	±0.2	±0.2	±0.2	±1.0
	% FSO (max)	±0.5	±0.5	±0.5	±0.5	±2.0
Transverse sensitivity [3]	% max	2.0	2.0	2.0	2.0	2.0
Zero measurand output	mV	±50	±50	±50	±50	±50
Damping ratio		4.0	0.7	0.7	0.6	0.6
Damping ratio change						
From -65°F to +250°F (-55°C to +121°C)	% / °C	+0.08	+0.08	+0.08	+0.08	+0.08
Thermal zero shift (max)						
From 32°F to 122°F (0°C to 50°C)	% FSO [4]	±1.0	±1.0	±1.0	±1.0	±1.0
From -13°F to +167°F (-25°C to +75°C)	% FSO	±2.0	±2.0	±2.0	±2.0	±2.0
Thermal sensitivity shift (max)						
From 32°F to 122°F (0°C to 50°C)	% (max)	±2.0	±2.0	±2.0	±2.0	±2.0
From -13°F to +167°F (-25°C to +75°C)	% (max)	±3.0	±3.0	±3.0	±3.0	±3.0
Thermal transient error (per ISA RP 37.2)	equiv g/°C	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Overrange (determined by electrical clipping or mechanical stops, whichever is smaller)						
Electrical clipping	volts	-3.5 / +3.8	-3.5 / +3.8	-3.5 / +3.8	-3.5 / +3.8	-3.5 / +3.8
Mechanical stops, typ/min	g	±4	±30	±90	±150	±150
Recovery time	µs	< 10	< 10	< 10	< 10	< 10
Threshold (resolution) [5]	equiv g's	0.0005	0.0025	0.0075	0.013	0.025
Base strain sensitivity (max)	Equiv. g	0.01	0.01	0.01	0.01	0.01
Magnetic susceptibility	Equiv. g G					
	100 gauss, 60 Hz	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Warm-up time (to within 1%)	ms	1	1	1	1	1

Electrical characteristics

Excitation	9.5 to 18.0 Vdc
Current drain	8.5 mA typ, 10 mA max
Output impedance/load	500 ohms max / 10 K ohms resistance minimum, 0.1 µF capacitance maximum
Residual noise	100 µVrms typ, 0.5 to 100 Hz. 500 µVrms typ, 0.5 to 10 kHz

Physical characteristics

Case material	Nickel plated aluminum alloy
Electrical connections	Integral cable, four conductor No. 28 AWG, Teflon® insulated leads, braided shield, Hyperflex jacket
Mounting/torque	Two holes for 4-40 or M3 mounting screws / 6 lbf-in (0.68 Nm)
Weight	14 grams (cable weighs 9 grams/meter)

Environmental characteristics

Acceleration limits (in any direction)	
Static	20 000 g
Vibration	100 g sinusoidal 20-2000 Hz 40 g rms random 20-2000 Hz
Shock	5000 g (150 µs haversine pulse) for the -2 and -10; 10 000 g (80 µs haversine pulse) for the -30, -50 and -100
Zero shift	0.1% FSO typical at 5000 g
Temperature	
Operating	-65°F to +250°F (-55°C to +121°C)
Storage	-100°F to +300°F (-73°C to +150°C)
Humidity/altitude	Unaffected. Unit is epoxy sealed.
ESD sensitivity	Unit meets Class 3 requirements of MIL-STD-883 method 3015

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Calibration

Sensitivity	Measured at 1g and 5 Hz for -2 Measured at 10g and 100 Hz for -10, -30, -50, and -100
Frequency response	Measured at 1g, 2 to 100 Hz for -2 Measured at 10g, 20 to 10 kHz for -10, -30, -50, and -100
Zero measurand output	Measured at room temperature
Transverse sensitivity	Measured at 1 g

Accessories

EHW265	(2) flat washers, size 4
EH702	(2) 4-40 x 7/16 inch cap screws
EHM464	(1) wrench, hex key

Notes:

1. Customized range, 7293A-XXM30, available on special order. FSO is nominally 4 volts.
2. Extended frequency response available on special order to extend to 0-900 Hz for 7293A-10, 0-1500 Hz for 7293A-30, and 0-2000 Hz for 7293A-50 and 7293A-100.
3. 1% maximum available on special order.
4. Full scale output (FSO) is nominally 4 volts.
5. Threshold = (max residual noise; 0.5 to 100 Hz) / sensitivity
6. Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco's inside sales force at 800-982-6732 for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.



APPLIES TO CALIFORNIA FACILITY

Continued product improvement necessitates that Endevco reserve the right to modify these specifications without notice. Endevco maintains a program of constant surveillance over all products to ensure a high level of reliability. This program includes attention to reliability factors during product design, the support of stringent Quality Control requirements, and compulsory corrective action procedures. These measures, together with conservative specifications have made the name Endevco synonymous with reliability.

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