

# A40 MEMS ACCELEROMETER



The advertisement graphic features a green-tinted background with a grid pattern. On the left is a close-up of the A40 accelerometer unit, a cylindrical component with a black anodized case and four pins. On the right is a high-speed train in motion, blurred to suggest speed. The text 'High Performance MEMS Accelerometer' is prominently displayed at the top. Below the train, the text 'Low Noise - Excellent Bias' is written in a stylized font. At the bottom right, 'A40 ACCEL' is written in large, bold letters.

- **Low Cost & High Performance MEMS Single Axis Accelerometer**
- **Wide G Range Options** 2g to 15g
- **Low Noise** 0.025mg/√Hz for 2g
- **Excellent Bias**  $\leq 0.25\text{mg}$  for 2g  $2\sigma$
- **Bias Repeatability** 0.5mg for 2g
- **Axis Alignment**  $< 8\text{mrad}$
- **Low Power**  $< 8\text{ mA Typical}$
- **Light Weight**  $< 15\text{ grams}$
- **Low Voltage** +5V (single sided power)
- **Bandwidth** 450Hz (-3db point)
- **Voltage Output**  $0 \pm 4.5\text{V}$
- **Reference Voltage** 2.5V
- **Rugged EMI Resistant Packaging**
- **Internal Temperature Sensor**
- **Self Test**
- **Shock Resistant** 500g
- **Vibration** 6gRMS (15g unit)
- **Long Life**

**Low Noise, Excellent Bias,  
Light Weight and Low Power**

Export Classification: Commerce ECCN7A994

The all new A40 MEMS High Performance Single Axis Accelerometer offers both low noise and excellent bias with a small light weight form factor and low power. Designed for commercial stabilization and aircraft applications that require high performance, the unit utilizes standard +5V DC power and the voltage output is non-ratiometric to power.

The signature features of the A40 are our low noise, impressive bias over temperature performance, low power consumption, light weight and easy pinout interface. The unit is highly durable and can withstand environmental vibration and shock typically associated with commercial aircraft requirements. The unit has no inherent wear-out modes for long life. In addition, the A40 has a rugged black anodized case for environmental sealing. The MEMS A40 offers standard g ranges of  $\pm 2\text{g}$ ,  $\pm 6\text{g}$ ,  $\pm 10\text{g}$  and  $\pm 15\text{g}$ . The A40 is designed for seismic monitoring, automotive crash testing, commercial aircraft applications, platform and antenna stabilization and pointing, general aviation as well as laboratory use where high g input ranges due to vibration are required. The A40 is ideal where excellent bias over temperature performance, low power consumption, light weight, high g range and rugged durability are desired for commercial environments and applications. Thermal model available - consult factory.



**QMS**

AS9100 Rev B &  
ISO 9001:2000  
Cert# FM 509639



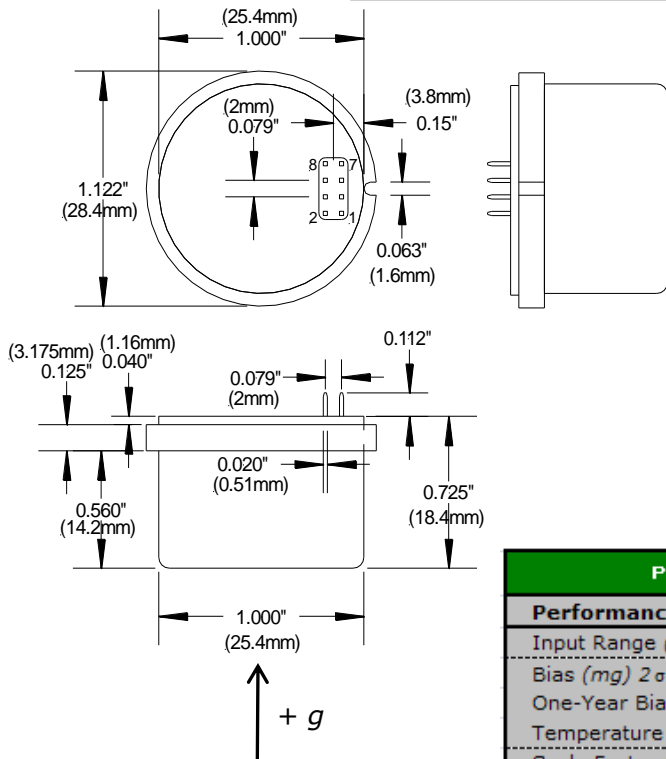
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# A40 MEMS ACCELEROMETER



A40 Accel Std. Part Numbers
A40-02-200
A40-06-200
A40-10-200
A40-15-200

## Preliminary Specification

Pin No.	Pin Assignment
1	Accel Output Voltage 0V Nominal
2	Temperature +2.5V @ 25°C
3	Power Ground
4	+2.5V Reference Voltage Output
5	+4.75V to +5.25V DC Input
6	Signal Ground
7	Self Test Input
8	BIT Out

Accel output is Pin 1 with respect to Pin 6. Temperature is Pin 2 with respect to Pin 6. Self Test On is 4V to 5V on Pin 7. Self Test Off is open or < 1V. Accel Load: <100pf >5kΩ Vref and Temp < 500pf >5kΩ

BIT Conditions	Self Test Input	BIT Output
Normal	0 or open	1
Fail (during operation)	0 or open	0
Fail (during Self Test)	1	1
Pass	1	0

PARAMETER	A40-02-200	A40-06-200	A40-10-200	A40-15-200
<b>Performance</b>				
Input Range (g)	2	6	10	15
Bias (mg) 2σ	0.25	0.5	1	1.5
One-Year Bias Repeatability (mg)	0.5	1.5	2	2.5
Temperature Sensitivity (μg/°C)	80	80	100	150
Scale Factor (mV/g)	2250	750	450	300
One-Year Scale Factor Stability (ppm)	<1000	<1000	<1000	<1000
Temperature Sensitivity (ppm/°C)	<250	<250	<250	<250
Axis Alignment (mrad)	8	8	8	8
Vibration Rectification (mg/g <sup>2</sup> rms)	1	0.5	0.15	0.2
Intrinsic Noise (mg/√Hz)	0.025	0.05	0.075	0.1
Resolution/Threshold (mg) @ 1Hz	0.01	0.02	0.025	0.03
Bandwidth (Hz)	450	450	450	450
Self Test (logic "1" applied) delta g	0.2 ± 0.1g	0.6 ± 0.3g	1 ± 0.5g	1.5 ± 0.5g
<b>Environments</b>				
Operating Temperature	- 40°C to + 85°C			
Storage Temperature	- 55°C to + 100°C			
Vibration Operating	6gRMS (10g and up)			
Shock	500g, any axis			
<b>Thermal Modeling</b>				
	Available			
<b>Electrical</b>				
Input Voltage	+5V ±0.25V (not ratiometric)			
Power Consumption	8mA typical 10mA maximum			
<b>Physical</b>				
Weight (grams)	< 20 grams			
Size (less flange)	1" Diameter X 0.725" (25.4mm Dia. X 18.4mm)			
Case Material	Anodized Aluminum			

Specification subject to change without notice



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