

QRS116

MEMS Quartz Angular Rate Sensor

Ideal for High-Precision Military Applications:

- Stabilization
- Flight Control
- Ground & Marine Vehicle Control
- Guidance
- Navigation
- Instrumentation



Key Performance Features:

- **DC Input/High Level DC Output**
- **Extremely Low Noise**
- **Outstanding Bias Stability**
- **Internal Electronics**
- **High MTBF**
- **Fast Start-Up**
- **Unprecedented Low Angle Random Walk**

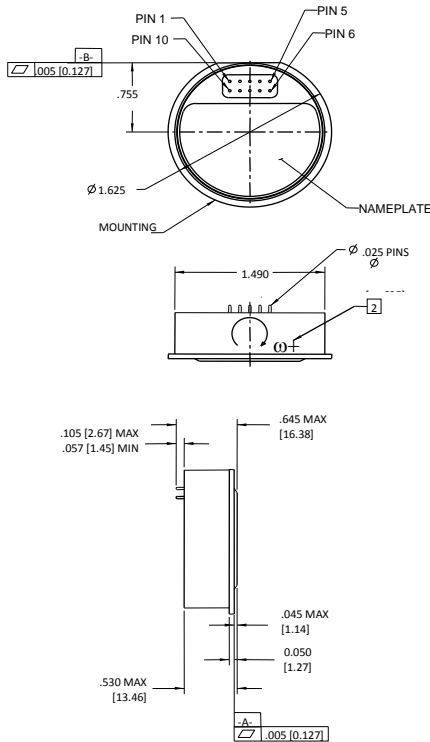


The QRS116 meets state-of-the-art systems requirements for very high accuracy, very low noise angular rate sensing. The QRS116 is a form, fit and function-enhanced alternative to the popular, highly-reliable QRS11. Using a next generation version of Systron Donner's unique quartz micro-machined sensing element, the QRS116 delivers excellent bias stability, signal to noise ratio and vibration performance characteristics in a small, lightweight package. With no moving parts and no scheduled maintenance, the QRS116 provides reliable service and low total cost of ownership.

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Notes:

- QRS116 is supplied with two mounting rings, mounting screws & mating test connector.
- Angular rate applied as shown will produce a more positive output (not marked on unit)
- Unit of measure is inches/[mm]
- Initiated BIT - Grounding Self Test Input produces a step change of +1.0 to +1.5 VDC @ Rate Output
- BIT Output > +2.4 Vdc when "ready"
- Allan Variance 100 second correlation time

* Performance levels indicated are "Typical" unless otherwise noted

** Other rate ranges available, consult factory

*** Consult factory for other vibration level requirements, and see user's guide for more information regarding vibration tolerance and sensitivity.

QRS116 INPUTS/OUTPUTS

Self Test Input (see Note 4)

+Vdc Input

Power Ground

BIT Output (see Note 5)

Internal Temperature Sensor

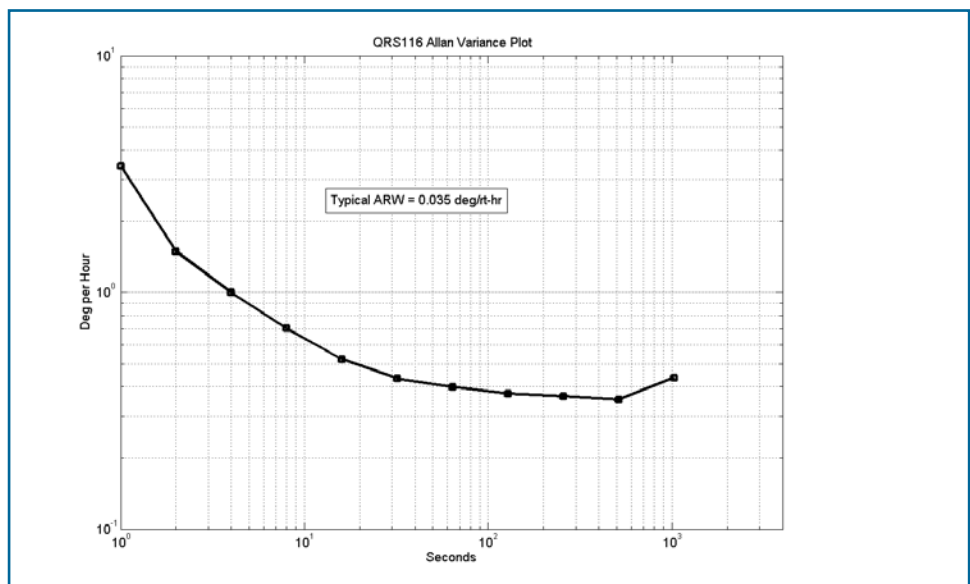
Rate Output

Signal Ground

-Vdc Input

Case Ground

| QRS116-0100-200 | |
|--|--|
| Power Requirements | |
| Input Voltage | + and - 5 Vdc ± 5 % regulation |
| Input Current | < 20 mA (each supply) |
| Performance | |
| Standard Range Full Scale** | ± 100°/sec. |
| Full Scale Output | ± 2.5 Vdc |
| Scale Factor Calibration (at 22°C) | ≤ 1% of value |
| Scale Factor over Temperature (Dev. from 22°C) | ≤ 0.03%/°C |
| Bias Variation with Temperature (Modeled with 3rd order polynomial 1σ) | 20 deg/hr. |
| Short Term Bias Stability - Note 6 | 3 deg/hr |
| G Sensitivity | < 0.02°/sec/g |
| Start-Up Time | < 1.5 sec. |
| Bandwidth (-90° Phase Shift) | > 60 Hz |
| Non-Linearity (% Full Range) | < 0.05% |
| Threshold/Resolution | < 0.004°/sec. |
| Output Noise (DC to 100Hz) | ≤ 0.002 °/sec./√Hz |
| Environments | |
| Operating Temperature | -55°C to +85°C |
| Storage Temperature | -55°C to +100°C |
| Vibration Operating*** | 10 g _{rms} 20 Hz to 2 kHz Random - flat |
| Vibration Survival | 20 g _{rms} 20 Hz to 2 kHz random |
| Shock | 1,000g, any axis |
| Weight | ≤ 60 grams |
| Temperature Sensor | |
| Temp. Sensor (Offset @ +22°C) | 0 ± 0.5 Vdc @ 22°C |
| Scale Factor | 0.007 to 0.012 V/°C |



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