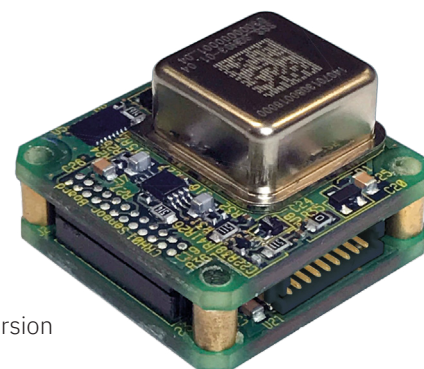




CRH03 OEM

High Performance Unhoused Single Axis Gyroscope



CRH03
OEM Version

CRH03 (OEM) is a class leading high performance standalone gyroscope utilising the latest iteration of Silicon Sensing's resonating ring gyroscope which is driven using discrete electronics to achieve a viable, cost effective alternative to Fibre Optic Gyro (FOG) and Dynamically Tuned Gyro (DTG) performance.

CRH03 (OEM) offers the pinnacle of Silicon MEMS gyroscope technology. The sensing ring represents decades of refinement, offering ultra-high reliability alongside industry leading performance. An on-board temperature sensor allows the performance to be further tuned based on the operating environment. The resonant frequency of the ring is also taken into consideration to maintain optimisation with aging, temperature and shock effects with respect to the host environment, leading to an ultimate product where performance in bias instability, angle random walk and low noise are of critical importance.

For endless applications, the unique and patented silicon ring technology gives advanced and stable performance over time and temperature, overcoming mount sensitivity problems associated with simple beam or tuning fork based sensors. Silicon Sensing Systems is a market leader in silicon MEMS gyroscopes, accelerometers and inertial measurement systems, specialising in high performance, reliability and affordability. With a strong heritage in inertial sensing that can be traced back over 100 years, all sensors are based on in-house patented designs which are produced in its own state of the art MEMS foundry. Silicon Sensing has delivered over 40 million sensors to thousands of satisfied customers worldwide, and continues to drive performance through technical expertise and continuous innovation.

FEATURES

- Proven and robust silicon MEMS vibrating ring structure
- Five rate ranges available: $\pm 10^\circ/\text{s}$, $\pm 25^\circ/\text{s}$, $\pm 100^\circ/\text{s}$, $\pm 200^\circ/\text{s}$ and $\pm 400^\circ/\text{s}$
- FOG-like performance
- Low Bias instability - $0.04^\circ/\text{hr}$ ($100^\circ/\text{s}$)
- Excellent angle random walk - $0.006^\circ/\sqrt{\text{hr}}$ ($100^\circ/\text{s}$)
- Low noise - $0.12^\circ/\text{s rms}$ ($100^\circ/\text{s}$)
- Precision analogue output
- High shock and vibration rejection
- -40°C to $+85^\circ\text{C}$ operating temperature range
- Temperature sensor output for precise thermal compensation
- MEMS frequency output for precise thermal compensation
- RoHS compliant

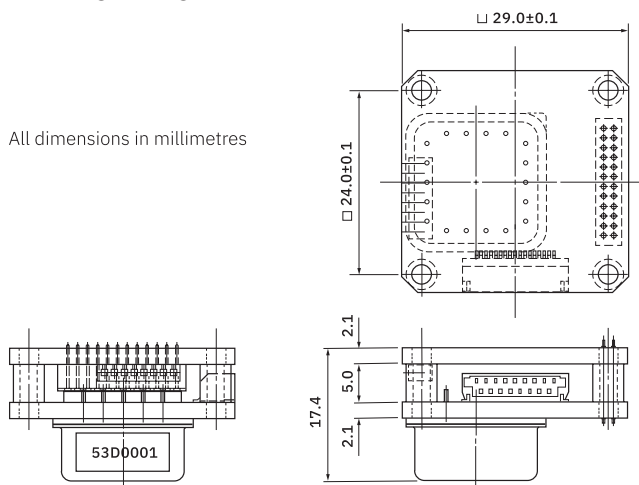
APPLICATIONS

- Aerospace applications
- Platform stabilisation
- Precision surveying and north finding
- Maritime guidance and control
- Gyro compassing and heading control
- Autonomous vehicles, UAVs and ROVs
- Rail track monitoring
- Robotics
- Drilling equipment and guidance
- Inertial measurement units
- AHRS (Attitude and Heading Reference System)

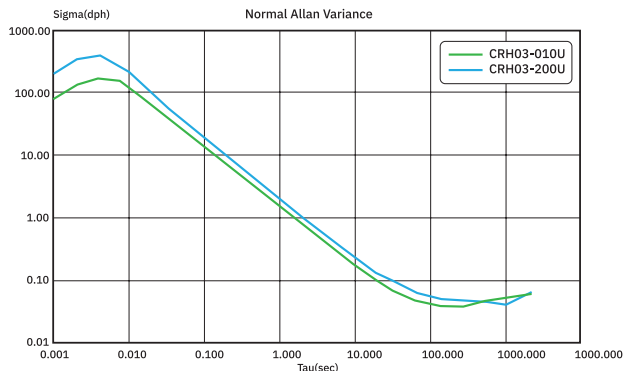


MECHANICAL DETAIL

All dimensions in millimetres



ALLAN VARIANCE CRH03 (OEM)



TYPICAL DATA

Parameter	Specification				
Part Number	-010U	-025U	-100U	-200U	-400U
Output	Analogue (non-ratiometric)				
Rate range	±10°/s	±25°/s	±100°/s	±200°/s	±400°/s
Scale Factor					
Nominal	200mV/°/s	80mV/°/s	20mV/°/s	10mV/°/s	5mV/°/s
Tolerance at 25°C (1σ)	0.17%				
Variation over temperature	±0.15%		±0.3%		
Non-linearity	±0.02%				
Bias					
Tolerance at 25°C (1σ)	0.017°/s	0.042°/s	0.167°/s	0.333°/s	0.667°/s
Variation over temperature	±0.1°/s	±0.1°/s	±0.15°/s	±0.15°/s	±0.15°/s
Bias instability	0.03°/hr	0.04°/hr	0.04°/hr	0.05°/hr	0.10°/hr
Bandwidth and Noise					
Bandwidth (nominal)	50Hz	50Hz	100Hz	100Hz	100Hz
Wideband noise	0.050°/s rms	0.050°/s rms	0.12°/s rms	0.12°/s rms	0.12°/s rms
Angle random walk	0.005°/√hr	0.006°/√hr	0.006°/√hr	0.008°/√hr	0.010°/√hr
Misalignment					
Cross-axis sensitivity (1σ)	1%				
Environmental Properties					
Temperature range	-40 °C to +85 °C				
Operational shock	95g x 6ms				
Shock (powered survival)	1,000g x 1ms				
Linear Accel	0.027s/g				
Properties					
Start-up time	750ms (max)				
Supply voltage	+4.85 to 5.25 Volts				
Power	0.15W				
Mass	30 grams				

PART NUMBER / RATE RANGE

CRH03-010U	±10°/s
CRH03-025U	±25°/s
CRH03-100U	±100°/s
CRH03-200U	±200°/s
CRH03-400U	±400°/s

PIN CONNECTIONS

3 FRQ	15 GND
8 Temp Output	16 +5V (4.9 to 5.25)
9 REFL	
10 Ref	
12 Rate Output	