

CRH03 (OEM)



High Performance Unhoused Single Axis Gyroscope

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.

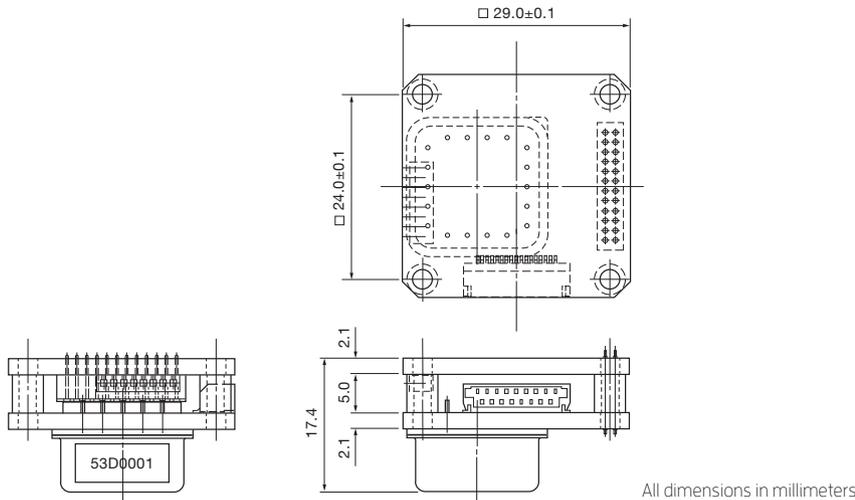
KEY FEATURES

- Proven and robust silicon MEMS vibrating ring structure
- Two rate ranges available: $\pm 10^\circ/s$ and $\pm 200^\circ/s$
- FOG-like performance
- Low Bias instability - $0.04^\circ/hr$ ($100^\circ/s$)
- Excellent angle random walk - $0.006^\circ/\sqrt{hr}$ ($100^\circ/s$)
- Low noise - $0.12^\circ/s$ rms ($100^\circ/s$)
- Precision analogue output
- High shock and vibration rejection
- $-40^\circ C$ to $+85^\circ C$ 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)

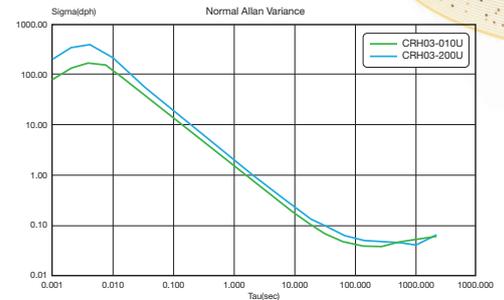
CRH03 (OEM)



Typical Data

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

Allan Variance CRH03 (OEM)



Part Number	Rate Range
CRH03-010U	$\pm 10^\circ/s$
CRH03-200U	$\pm 200^\circ/s$

Ordering Information: Other variants available upon request. Please contact the sales team for details.

Pin Connections

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

For full technical datasheets please visit:
www.siliconsensing.com



Specification subject to change without notice. © Copyright 2020 Silicon Sensing Systems Limited. All rights reserved. Printed in England 09/20

Silicon Sensing Systems Limited Registered in England & Wales
 No. 3635234 Clifton Road, Southway, Plymouth, Devon PL6 6DE
 The device mark Silicon Sensing is a registered trademark of Silicon Sensing Systems Community Trademark 003587664.

CRH03-01-0100-131 Rev 1 DCR No. 710018172