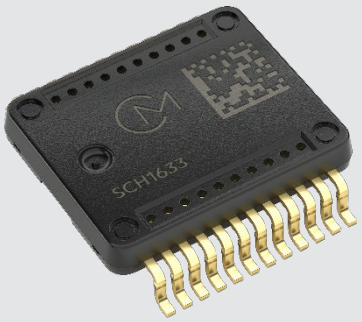
SCH1633-D01

6-DOF XYZ-Axis Gyroscope and XYZ-Axis Accelerometer with Digital SPI Interface for Automotive Applications



Features

- Single package 6DOF component
- ±300 °/s angular rate measurement range
- ±8 g acceleration measurement range with typical default dynamic range up to ±26 g
- –40 °C…+110 °C operating temperature range
- 3.0 V…3.6 V supply voltage
- SafeSPI2.0 interface with 20-bit data frame
- Data ready, timestamp index and SYNC functions for clock domain synchronization
- Cross-axis calibrated output
- Typical Gyro bias instability 0.4 °/h
- Typical Angle random walk over temperature 0.03 °/√Hz
- Stable offset and sensitivity over full temperature range
- Excellent linearity and vibration performance
- Extensive self-diagnostics features utilizing +200 monitoring signals
- RoHS compliant robust 24-pin SOIC housing
- AEC-Q100 Grade 1 qualified, ISO26262 compliant, ASIL-D/B+
- Size: 11.8 mm x 13.4 mm x 2.9 mm (l x w x h)

Applications

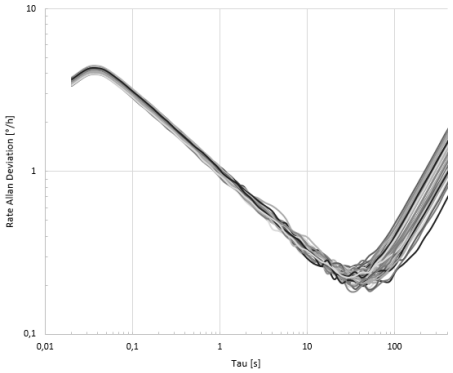
SCH1600 series is targeted as the central vehicle IMU, providing high quality signal for all sub-systems within the vehicle even in the toughest environments.

Typical applications include:

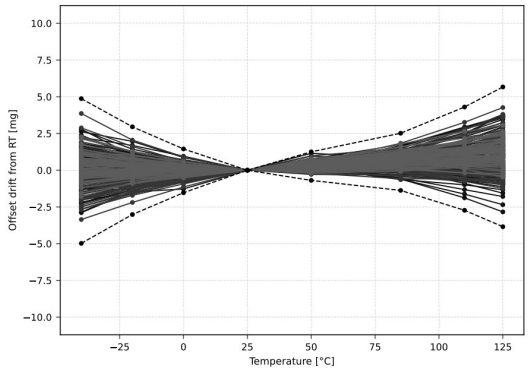
- Autonomous Driving (AD) and short-term dead reckoning (DR)
- Advanced Driver Assistant Systems (ADAS)
- GNSS, Camera and Radar Fusion
- Dynamic and Static Headlight Leveling
- Vehicle stability Control

Measurement characteristics	Ω xyz	Acc xyz
Range	±300 °/s	±8 g
User Selectable Low Pass Filter	13, 30, 68, 235, 280, 370 Hz	
Default Sensitivity	1600 LSB/(°/s) (2.25deg/h)	3200 LSB/(m/s²)
Offset Temperature Dependency –40°C…+110°C (Typ)	XY: ±0.15 °/s Z: ±0.05 °/s	±2 mg
ARW/VRW –40°C…+110°C (Typ)	0.03 °/√Hz	32 mm/s /√Hz
Bias Instability (Typ) Allan deviation minimum divided by 0.664	0.4 °/h	22 µg
Bias stability (Typ) Allan deviation at tau = 10s	0.5 °/h	25 µg

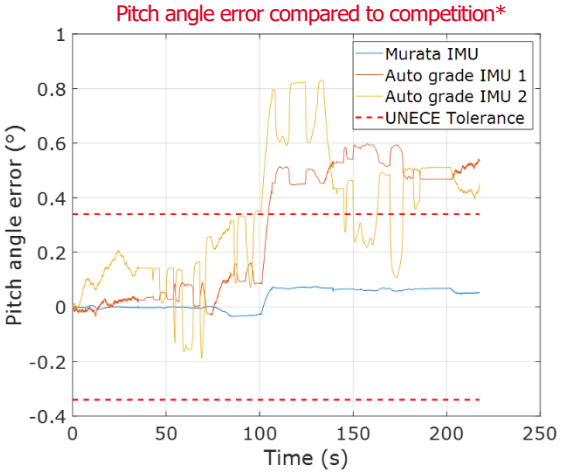
Gyroscope, Allan Deviation in °/h



Accelerometer, Offset Error Over Temperature in mg



Pitch angle error compared to competition*



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*IMU output difference to tactical grade reference. UNECE tolerance is referring to mandatory HLD directive alignment accuracy requirement