InvenSense

ICM-20603

High Performance 6-Axis MEMS MotionTracking™ Device for AR/VR Applications with 1KHz 9-axis Sensor Fusion Library

GENERAL DESCRIPTION

The ICM-20603 is a 6-axis MotionTracking device for Augmented Reality / Virtual Reality applications that combines a 3-axis gyroscope, 3-axis accelerometer, in a small 3x3x0.75mm (16-pin LGA) package. In addition, the ICM-20603 comes with a compatible 1KHz 9-axis low latency and accurate heading sensor fusion library to create a platform for compelling new sensor-rich VR devices.

- High performance specs
  - Gyroscope sensitivity error: ±1%
  - Gyroscope noise: ±4mdps/√Hz
  - Accelerometer noise: 100μg/√Hz
- Includes 1K-byte FIFO to reduce traffic on the serial bus interface, and reduce power consumption by allowing the system processor to burst read sensor data and then go into a low-power mode
- EIS FSYNC support

ICM-20603 includes on-chip 16-bit ADCs, programmable digital filters, an embedded temperature sensor, and programmable interrupts. The device features an operating voltage range down to 1.71V. Communication ports include I^{2}C and high speed SPI at 10MHz.

ORDERING INFORMATION

PART	TEMP RANGE	PACKAGE
ICM-20603†	−40°C to +85°C	16-Pin LGA

†Denotes RoHS and Green-Compliant Package

BLOCK DIAGRAM
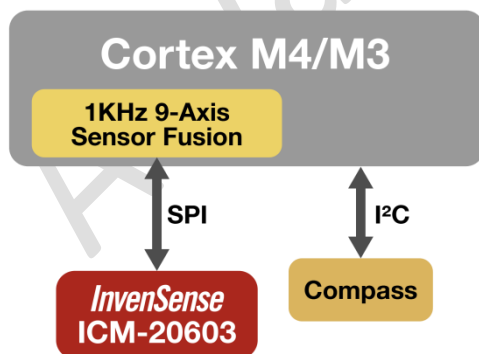
APPLICATIONS

- Augmented Reality / Virtual Reality Applications
- HMD

FEATURES

- 1KHz 9-aixs Sensor Fusion Library for Cortex M4/M3 Platforms
- 3-Axis Gyroscope with Programmable FSR of ±250dps, ±500dps, ±1000dps and ±2000dps
- 3-Axis Accelerometer with Programmable FSR of ±2g, ±4g, ±8g and ±16g
- User-programmable interrupts
- Wake-on-motion interrupt for low power operation of applications processor
- 1K byte FIFO buffer enables the applications processor to read the data in bursts
- On-Chip 16-bit ADCs and Programmable Filters
- Host interface: 10MHz SPI or 400kHz Fast Mode I2C
- Digital-output temperature sensor
- VDD operating range of 1.71 to 3.45V
- MEMS structure hermetically sealed and bonded at wafer level
- RoHS and Green compliant

TYPICAL OPERATING CIRCUIT