

LSM6DS3

iNEMO[®] always-on 6-axis inertial module



3D accelerometer and gyroscope in small package with enhanced embedded features

The new LSM6DS3 iNEMO module offers best-in-class accuracy and efficiency as well as always-on low-power features for an optimal motion experience.

The combination of a high-resolution 3D accelerometer and 3D gyroscope in a single package significantly reduces the risk of drift over-time and temperature, while reducing footprint on the final PCB.



KEY FEATURES

- Acceleration range: $\pm 2/\pm 4/\pm 8/\pm 16$ g
- Angular rate range: $\pm 125/\pm 245/\pm 500/\pm 1000/\pm 2000$ dps
- Smart FIFO up to 8 kbyte
- Noise density (Axl): $90 \mu\text{g}/\sqrt{\text{Hz}}$
- Rate noise (Gyro): $7 \text{ mdps}/\sqrt{\text{Hz}}$
- 16-bit output resolution
- Current consumption (gyro & axl):
 - Normal mode 0.9 mA @ ODR = 208 Hz
 - Low-power mode 0.42 mA @ ODR = 13 Hz
- Supply voltage range: 1.71 to 3.6 V
- Temperature range: -40 to +85 °C
- Embedded sensor hub: up to 4 external sensors data collection
- I²C/SPI digital interfaces
- 14-pin plastic land grid array (LGA) package (2.5 mm x 3 mm x 0.83 mm)

KEY APPLICATIONS

- Full gesture recognition and movement detection
- Activity monitoring
- Gaming applications
- Wearable devices
- Mobile phone and portable devices
- Headsets and virtual reality
- Remote control
- IMU for helicopters, drones and robots
- Dead reckoning
- Electronic Image Stabilization (EIS)

*Best in MEMS & Sensors Innovation Awards -MEMSies- MEMS Industry Group

ADVANCED FEATURES

Enhanced flexibility with embedded FIFO

- Able to store external data from up to four external different sensors
- Synchronous data collection and possibility to store time stamp data

Advanced sensor hub

- Data coming from external and internal sensors can be stored, elaborated and efficiently sent to the upper-layer MCU.

Ultra-low power consumption

- 0.42 mA in Combo low power mode
- 0.9 mA in Combo normal mode
- 1.25 mA in Combo high-performance mode at up to 1.6 kHz

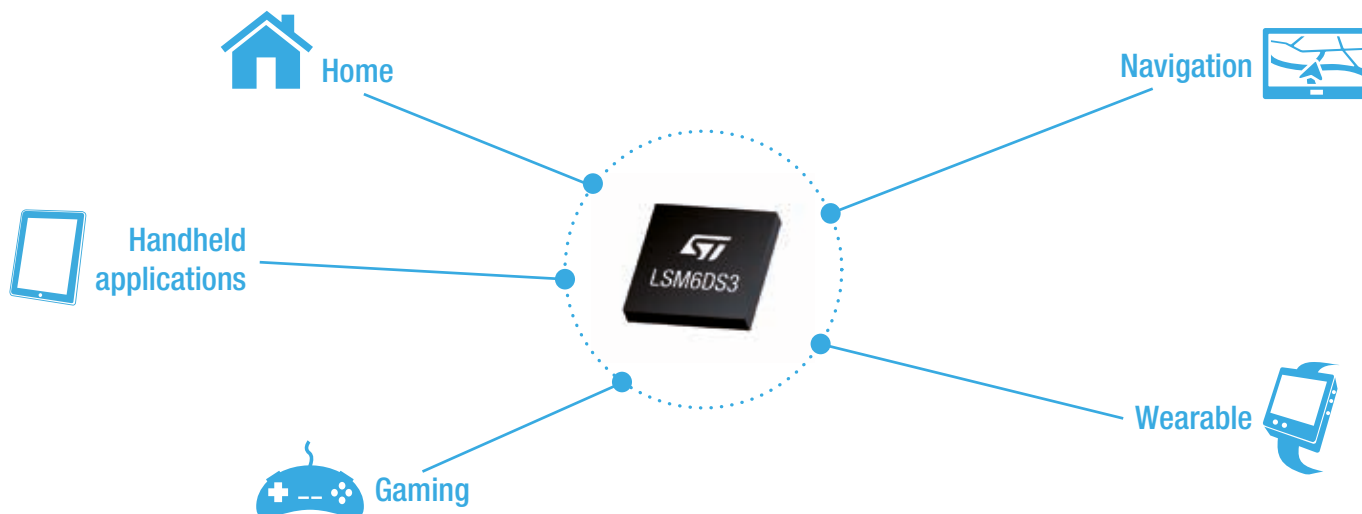
Higher thermal stability

- For both offset/sensitivity of accelerometer and gyroscope over the whole operating temperature range from -40 to +85 °C

Advanced digital features

- Event detection and fully configurable interrupts: free-fall, wakeup, 6D orientation, tap and double-tap sensing, and activity/inactivity recognition
- Specific embedded IP blocks with negligible power consumption and high-performance:
 - Pedometer functions, step detector and step counters
 - Tilt detection
 - Significant motion detection

APPLICATIONS



EVALUATION TOOLS

Order code	Description
X-NUCLEO-IKS01A1	Expansion board for STM32 Nucleo boards
STEVAL-MKI160V1	Adapter board for X-NUCLEO-IKS01A1 Nucleo board

For further information please visit <http://www.st.com/inemo>



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