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AEC-Q100-qualified for smart automotive sensors applications





Introduction

Ultra-low-power 3D accelerometer, 3D digital gyroscope, and 3D medium-g accelerometer ICs

The AIS328DQ 3-axis linear accelerometer features ultra-low-power modes for advanced power-saving and smart sleep-to-wakeup functions. It has dynamic user-selectable full-scales of $\pm 2g/\pm 4g/\pm 8g$ and is capable of measuring accelerations with output data rates from 0.5 Hz to 1 kHz. The self-test capability lets the user verify that the sensor is functioning in the final application. Available in a small QFPN package with a 4x4 mm footprint, the AIS328DQ is guaranteed to operate over a temperature range from -40 to $+105$ °C.

The A3G4250D is a low-power 3-axis angular rate sensor able to provide unprecedented stability at zero rate level and sensitivity over temperature and time. It offers a ± 245 dps full scale range and is capable of measuring rates with a user-selectable bandwidth. Available in a plastic land grid array (LGA) package, it can operate within a -40 to $+85$ °C temperature range.

The AIS3624DQ offers the same features as the AIS328DQ, including smart power management and small footprint, while offering a more extended full scale range of $\pm 6g/\pm 12g/\pm 24g$.

These AEC-Q100-qualified MEMS sensors address a variety of non-safety automotive applications such as eCall systems, telematic boxes, impact recognition and logging systems.

- In-dash car navigation and positioning
- eCall and telematics system
- Car alarms and tilt detection
- Intertainment and display



AIS328DQ ULTRA-LOW-POWER 3-AXIS ACCELEROMETER

| Key features | Benefits |
|-----------------------|---|
| Low power consumption | Battery saving (ignition off) |
| 3-axis | For accurate tilt measurements and dead reckoning |



A3G4250D 3-AXIS DIGITAL GYROSCOPE

| Key features | Benefits |
|-----------------------|--|
| Low power consumption | Single device for multiple applications (pitch, roll, yaw, and dead reckoning) |
| 16-bit data output | Suitable for high-resolution applications |



AIS3624DQ 3-AXIS MEDIUM-G ACCELEROMETER

| Key features | Benefits |
|-------------------------------------|------------------------------------|
| Medium-g detection | Accurate crash recording and eCall |
| Pin-to-pin compatible with AIS328DQ | Scalable solution |





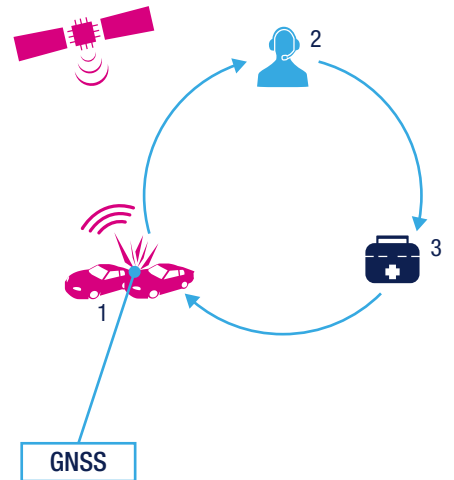
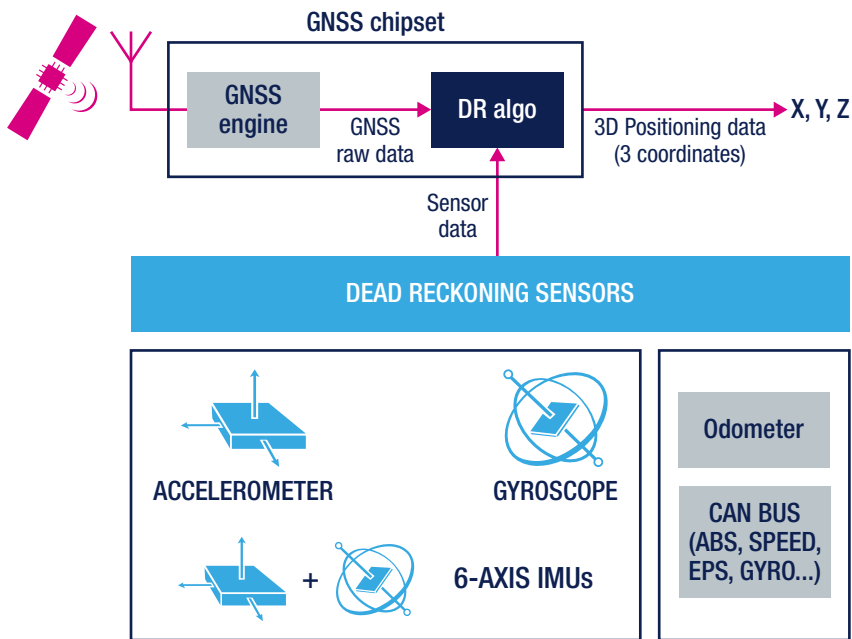
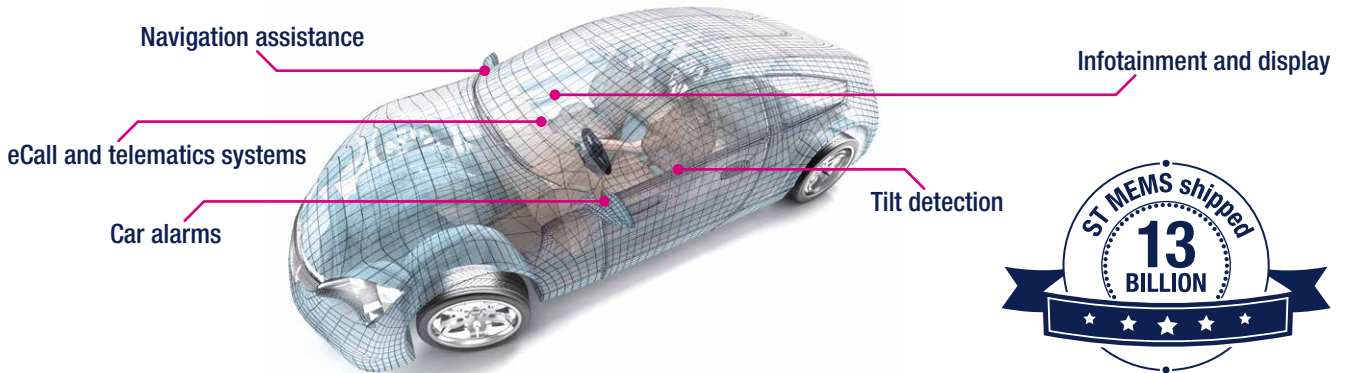
ST's automotive solutions

ST is one of the leading automotive electronics suppliers, with tens of years of expertise in the manufacturing and testing of ICs designed to perform under the most stringent automotive environmental conditions.

We are committed to making cars safer and more comfortable to improve the life of millions of people every day.

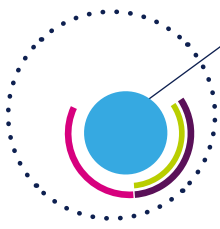
ST has shipped more than 13 billion MEMS sensors to customers and has a unique sensor portfolio, from discrete to fully-integrated solutions. Dedicated 8-inch wafer production lines with high-volume manufacturing and full in-house dual-sourcing guarantee fast time-to-market, cost-effectiveness and 100% security of supply.

NON SAFETY APPLICATIONS



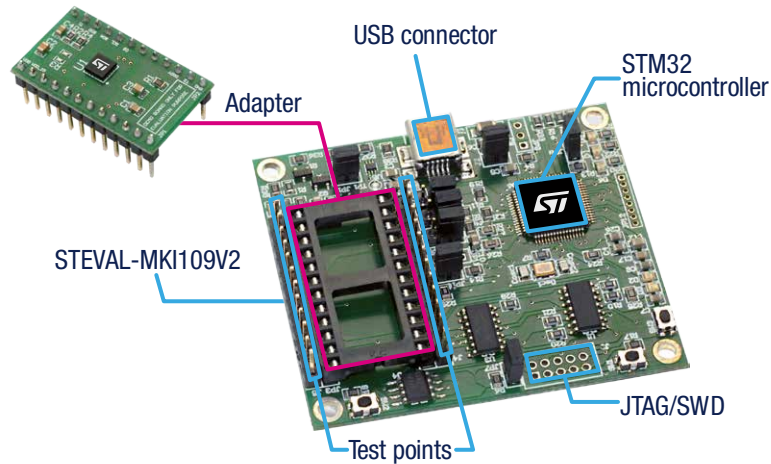
ST's MEMS sensors for automotive applications showcased here are perfect for Global Navigation Satellite System (GNSS) solutions where proven accuracy and robustness are a must.

ST's MEMS sensors are the ideal partner for NON-SAFETY automotive applications including anti-theft systems, vehicle tracking, emergency calls, fleet management, vehicle sharing, infotainment and display.



Design support

With an extensive expertise in sensor integration and the development of new applications, ST can assist customers in their design-in phase. ST's evaluation kits and firmware allows a real-time evaluation of sensor performance in customer applications.



ST offers a complete evaluation solution including:

- A full set of DIL24 MEMS non-safety sensor adapters supporting fast prototyping
- eMotion motherboard compatible with all adapters and based on an STM32 microcontroller
- UNICO graphic user interface for direct and real-time access to the sensor outputs and configuration registers

| Board | Description | Order code |
|----------------------|---|-----------------|
| Motherboard | ST MEMS sensor adapter motherboard is based on the high-performance STM32F103 32-bit ARM Cortex-M3 MCU Interfaces: USB connector and JTAG/SWD for debugging DFU-compatible for USB microprocessor firmware updates Compatible with all ST MEMS sensor adapters | STEVAL-MKI109V2 |
| Adapter board | AIS328DQ 3D accelerometer | STEVAL-MKI110V1 |
| Adapter board | A3G4250D 3D digital gyroscope | STEVAL-MKI125V1 |
| Adapter board | AIS3624DQ 3D medium-g accelerometer | STEVAL-MKI158V1 |

Technical documents

To see all technical documents and files for a specific product, go to www.st.com/sensors and select the product you are interested in through our product catalog. Each part number has a corresponding web page where you can easily find all associated technical documents and resources.

Developer links

- For more information about MEMS sensors for automotive applications: www.st.com/memsauto
- For more information about MEMS evaluation boards : www.st.com/mems-boards
- Take part in the MEMS and sensors community: <https://community.st.com/community/mems-sensors-community>

For further information, visit <http://www.st.com/en/mems-and-sensors.html>



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