

## Simplifying development of airbag systems **New Bosch acceleration sensors** SMA6xy's standardized housing makes design-in more straightforward

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- ▶ Greatly improved protection against microcuts
- ▶ Increased design freedom thanks to flexible orientation
- ▶ For use in ASIL D airbag systems in accordance with ISO 26262

Bosch's latest generation of acceleration sensors makes developing airbag systems easier. With versions for use in the airbag control unit and versions for peripheral use in the vehicle's front, sides, and rear, the SMA6xy sensor platform simplifies the release approval process by giving sensors a common housing design whatever the application. All the sensors in the new SMA6xy product family are ideally suited to Bosch ASICs for airbag systems.

### **Better protection against microcuts**

The PSI5 sensor for peripheral use comes in versions offering measurement ranges of 120, 240, or 480 g (type SMA68x and SMA69x). In addition to the normal x and y channels, these sensors are now also available with a z channel for measuring acceleration in the vertical axis. So whatever the desired orientation of the sensor's installation, there is a version to match. This gives airbag system developers greater design freedom. Compared to previous versions, the new sensors are much better protected against microcuts – extremely brief interruptions in power supply to the sensor following an impact – and can now tolerate interruptions of up to ten microseconds.

Designed to be installed in the airbag control unit, the SPI sensors can measure accelerations of up to 120 g (type SMA66x) and their readings have 12-bit resolution. An arming pin helps developers to initiate the airbag algorithm by showing when readings exceed a defined threshold value.

All sensors in the SMA6xy product family have a compact SOIC8n housing and are available in 1-channel (x, y or z axis) or 2-channel (x-y or y-z axes) versions. Since they are designed for use in safety-critical airbag systems, the sensors meet the criteria stipulated for the ASIL D safety level in accordance with ISO 26262.

Samples of the SMA6xy are already available.

### **Background to MEMS technology**

Bosch has been at the forefront of MEMS (microelectromechanical systems) technology since the very beginning. Since the start of production in 1995, the company has manufactured well in excess of three billion MEMS sensors, with production volumes hitting new highs year after year. In 2013, more than a billion sensors rolled off the production lines at the company's Reutlingen plant. The range includes sensors for measuring pressure, acceleration, humidity, temperature, yaw rate, inertia, and geomagnetic field, as well as MEMS microphones for a wide range of applications in the consumer electronics and automotive industries. More information on Bosch sensors is available online at [www.bosch-sensors.com](http://www.bosch-sensors.com).

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*Automotive Technology is the largest Bosch Group business sector. According to preliminary figures, its 2013 sales came to 30.7 billion euros, or 66 percent of total group sales. This makes the Bosch Group one of the leading automotive suppliers (note: due to a change in the legal rules governing consolidation, the 2013 figures can only be compared to a limited extent with the 2012 figures). Automotive Technology largely operates in the following areas: injection technology for internal-combustion engines, alternative powertrain concepts, efficient and networked powertrain peripherals, systems for active and passive driving safety, assistance and comfort functions, technology for user-friendly infotainment as well as car-to-car and Car2X communication, and concepts, technology, and service for the automotive aftermarket. Bosch has been responsible for important automotive innovations, such as electronic engine management, the ESP® anti-skid system, and common-rail diesel technology.*

*The Bosch Group is a leading global supplier of technology and services. According to preliminary figures, its roughly 281,000 associates generated sales of 46.4 billion euros in 2013 (Note: due to a change in the legal rules governing consolidation, the 2013 figures can only be compared to a limited extent with the 2012 figures). Its operations are divided into four business sectors: Automotive Technology, Industrial Technology, Consumer Goods, and Energy and Building Technology. The Bosch Group comprises Robert Bosch GmbH and its more than 360 subsidiaries and regional companies in some 50 countries. If its sales and service partners are included, then Bosch is represented in roughly 150 countries. This worldwide development, manufacturing, and sales network is the foundation for further growth. In 2013, Bosch applied for some 5,000 patents worldwide. The Bosch Group's products and services are designed to fascinate, and to improve the quality of life by providing solutions which are both innovative and beneficial. In this way, the company offers technology worldwide that is "Invented for life."*

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