

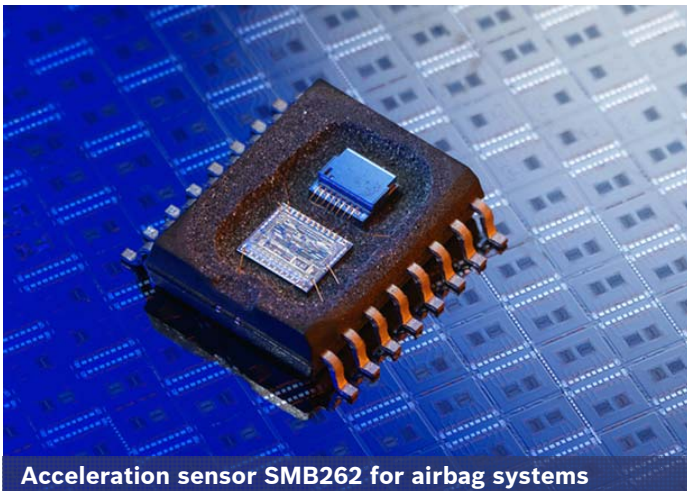
Automotive Electronics

High-g accelerometers for passive safety applications

SMB25x, SMB26x



BOSCH
Invented for life



Acceleration sensor SMB262 for airbag systems

Customer benefit / features:

- ▶ Single (a_x) or dual channel (a_x/a_y) sensors available
- ▶ Measurement ranges between ± 35 g and ± 140 g
- ▶ Ratiometric analog output signal
- ▶ On-chip 2-pole Bessel filter
- ▶ Automatic on-chip offset adjustment
- ▶ Full self-test capability
- ▶ RoHS compliant

Overview

The SMB25x and SMB26x are high-g accelerometers mainly developed for automotive airbag systems. They are typically used as central sensors in the airbag Electronic Control Unit (ECU) and measure the deceleration rate of a vehicle during a collision or crash to activate front or side airbags. Other applications like shock monitoring are also possible.

The sensors consist of a micromechanical (MEMS) sensor element and a signal processing ASIC packaged together in a molded plastic housing for surface mounting.

Product description

The SMB25x/26x sensors are linear, in-plane accelerometers with an analog and ratiometric output signal.

A built-in triggerable self-test and an implemented offset adjustment ensure reliable performance especially in demanding or safety critical systems.

The sensors are applicable in the temperature range from -40 °C up to $+95$ °C and require a 5 V power supply.

Products

Type	Range	Sens. axes	Sensitivity
SMB253	±50 g	X	38.5 mV/g
SMB256	±100 g	X	19.3 mV/g
SMB257	±140 g	X	13.8 mV/g
SMB262	±35 g	X, Y	55.0 mV/g
SMB263	±50 g	X, Y	38.5 mV/g
SMB266	X: ±100 g Y: ±50 g	X, Y	19.3 mV/g 38.5 mV/g

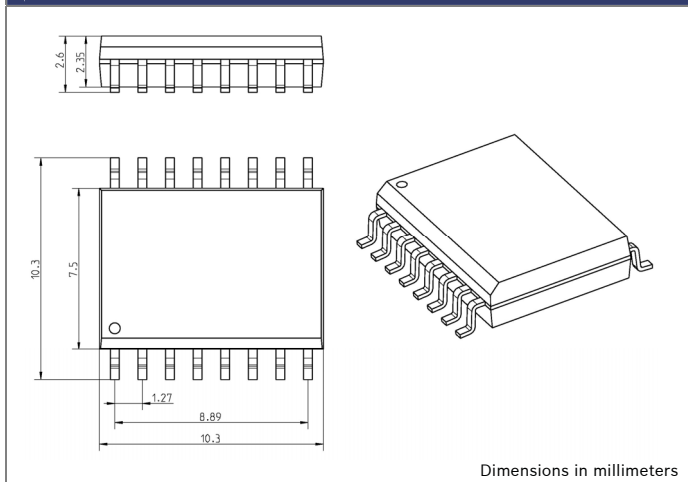
Parameters SMB25x/26x**Measurement and functional characteristics**

Nonlinearity of sensitivity	1 %
3dB corner frequency	400 Hz
Tolerance of sensitivity	4 %
Cross axis sensitivity	< 5 %

Operating conditions

Supply voltage	5.0 V
Supply current single	5 mA
Supply current dual channel	8 mA
Operating temperature	-40 °C...+95 °C
Interface	analog output (ratiometric)

Typical values

Outline SOIC16w package**Working principle**

The acceleration sensors SMB25x/26x are manufactured by using surface micromachining technology. The acceleration sensors feature suspended free moving comb-like seismic mass elements and fixed counter-electrodes. As a result of external forces acting on the vehicle, deflections of the seismic masses along the sensitive axis generate changes in system capacitance. These changes are detected using the differential measurement principle.

Interface

The SMB25x/26x sensors feature an analog and ratiometric output signal.

Package

All SMB25x/26x sensors are packaged in easy mountable state of the art SOIC16-wide packages.

Portfolio

The SMB25x/26x sensors are part of a larger sensor portfolio. This portfolio consists of acceleration sensors, angular rate sensors, pressure sensors, torque sensors, and CO₂ sensors for occupant safety systems, Vehicle Dynamics Control VDC, active suspension systems, motor management, steering systems, and A/C systems.

Bosch has been active in the field of micromechanics (MEMS) for more than 20 years, and is established as one of the pioneers of this technology. With more than 900 MEMS patents, hundreds of engineers in this field, and more than 1.6 billion MEMS sensors shipped to date, Bosch is the global market leader for MEMS sensors.

For more information about automotive MEMS sensors, visit www.bosch-sensors.com.

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