

Try tilting it instead – “Artificial Balance” adds life to the screen BMA140/145 triaxial acceleration sensors score with analog outputs

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- ▶ Analog outputs for on-demand signal processing
- ▶ Low-profile packages at only 0.9 millimeters
- ▶ ± 4 g measurement range, low standby current of 0.9 μ Ampere

The new BMA140 is the first analog acceleration sensor from Bosch Sensortec available in their field-proven 3 x 3 x 0.9 millimeters miniature 12-pin LGA package. Labelled BMA145, the same sensor comes in an ultra-flat 16-pin LGA package with 4 mm edge length. Both are targeted for consumer electronics including mobile phones, game controllers, PDAs, activity monitoring. With these two new products, Bosch Sensortec continues to offer customers new levels of performance, size, and value while maintaining world class Bosch quality. The BMA145 also provides an easy upgrade path and footprint compatibility for customer designs already in production.

BMA140/145 expand the Bosch Sensortec product portfolio of MEMS acceleration sensors to five models, allowing customers many options and choices for optimization in their products. Targeted for detecting inclination, motion, shock and vibration over a wide ± 4 g measurement range, BMA140/145 implement the advanced micromechanical sensing element which is tried and tested with millions of units already in the field. With the ability to withstand overloading of as much as 10,000 g Bosch Sensortec delivers the required robustness to the market.

With three analog outputs this new offering from Bosch Sensortec is especially suitable for more sophisticated applications. Acting as a kind of artificial balance organ, for instance, the sensors detect motion in three dimensions by game controllers or free fall. Compared to digital sensors, this is where the extra design scope becomes obvious – parallel analog

output of measured values as three voltage levels is proportional (ratiometric) to momentarily measured acceleration, offering a maximum of motion data. No integrated analog/digital converters or multiplexer to serialize measured data impacts resolution capability and speed of reaction of this parallel analog signal path. That provides the designer the freedom to use external ADCs, multiplexers and filters exactly attuned to product requirements. In this way specific motion patterns can be detected with extremely high accuracy while unwanted ones are rejected.

In addition to three parallel outputs, BMA140 and BMA145 feature a flexible serial analog output by leveraging an integrated multiplexer. By directing acceleration signals to a single-channel A/D converter, engineers can achieve lower system costs without sacrificing performance.

A flexible use of signal outputs makes the two new analog sensors suitable for detecting motion and position in a variety of mobile consumer goods like sport items, game controllers, cell phones, PDAs, health articles and navigation sets.

Achieving new levels of power performance, the BMA140 and BMA145 offer just 0.9 μ Ampere current draw in standby mode. With 200 μ Ampere in full active mode, the sensors continue the Bosch Sensortec legacy of industry leading power performance among all acceleration sensor suppliers targeting the consumer market. Switching from standby to operating mode takes just a thousandth of a second, and the sensors are ready to measure with full accuracy immediately after waking from their energy-saving standby mode.

The BMA140 and BMA145 are ROHS compliant, calibrated, and immediately available in production volumes.

About Bosch Sensortec

Bosch Sensortec GmbH, a 100 percent subsidiary of Robert Bosch GmbH, which is the global market leader for automotive sensors, offers micromechanical sensors, application and foundry services for consumer electronics, security systems and logistics. Its product portfolio to date includes triaxial acceleration sensors as well as pressure sensors. The company was founded in early 2005 and is headquartered near Reutlingen to the south of Stuttgart (Germany). For more information about Bosch Sensortec, visit www.bosch-sensortec.com.

Bosch has been active in the field of MEMS since 1988 and is one of the pioneers in this technology. Today, hundreds of engineers of the Bosch

Group work in the field of MEMS. A wide selection of products – from pressure and acceleration sensors to yaw-rate sensors – is manufactured for the automotive industry. Annual production at Bosch is more than 160 million sensors.

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Readers' contact:

Bosch Sensortec:

Julia Patzelt, Phone +49 7121 3535921

Contact person for press inquiries:

Ulf-Malte Wunsch, Phone +49 711 811-7204

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Additional information can be accessed at www.bosch.com.