



Bosch Sensortec

Navigation accurate to the nearest floor: Pressure sensor BMP180 provides the required altitude information

MEMS pressure sensor for mobile devices

May 2011

PI 7416 BST KI/af

- ▶ Altitude resolution accurate to within 8 cm (0.26 feet)
- ▶ Battery-saving as a result of extremely low power consumption
- ▶ Flat housing measuring 0.93 mm in height

Bosch has been developing and marketing pressure sensors for the past 18 years – more than 400 million sensors have been sold to date. And the market for these sensors is growing. Many different sensors are increasingly being integrated into consumer products, thus acceleration sensors have become an integral part of cell phones. New functions, such as pedestrian navigation, are only made possible by the use of pressure sensors like the BMP180 from Bosch Sensortec.

The BMP180 from Bosch Sensortec is a new barometric pressure sensor in MEMS technology, which can accurately measure changes in air pressure. For navigation systems, it is vital to be able to determine altitude – not only in buildings where there is no GPS satellite signal, and thus no altitude information is available, but also to improve positioning accuracy where there is GPS reception. This is because the GPS signal has typical tolerances greater than ± 10 m (± 33 feet), making navigation suitable for pedestrians impossible.

“Location information accurate to the nearest floor is only possible where the sum of all sensor parameters results in an accuracy of at least ± 2.5 m (± 8.2 feet) – a challenge that the BMP180 has managed to overcome really well at low power consumption.” says Frank Melzer, CEO of Bosch Sensortec: “Its high relative measuring accuracy of 0.12 hPa combined with a low temperature coefficient and low noise is a decisive factor here.” Since

temperature fluctuations, for example due to a change in the ambient temperature, can occur in cell phones, the temperature coefficient of the sensor is crucial to the accuracy of the altitude measurement that is achievable in practice. The temperature coefficient of the BMP180 is 0.01 hPa/°C, currently the lowest on the market.

Noise is the other parameter that has a considerable effect on actual accuracy when determining altitude. As a technology leader in MEMS sensors, Bosch has succeeded in reducing the noise of the sensor to a mere 0.02 hPa. This enables the BMP180 to detect altitude changes down to 0.17 m (0.56 feet).

The BMP180 measures absolute pressure or altitude relative to a reference plane such as sea level accurate to within ±1 hPa. So the unit is also suitable for applications that require a classic altimeter. An established altitude profile can thus be recorded, for example during sports activities. As with indoor navigation, the pressure sensor can also assist the GPS during outdoor navigation by stepping in whenever the satellite navigation system in valleys or street canyons reaches its limits.

Compared with its predecessor BMP085, the BMP180 has around 60 percent smaller construction volume, and with its package dimensions reduced to 3.6 mm x 3.8 mm x 0.93 mm it complies with the limited space in mobile devices such as smartphones.

BMP180 – Technical data (excerpt, typical values)	
Measuring ranges	300 hPa to 1100 hPa
Dimensions	3.6 x 3.8 x 0.93 mm ³
Accuracy (relative)	±0.12 hPa
Min. noise (RMS)	±0.02 hPa
Min. supply voltage	1.8 V
Power consumption	
- during operation	3 ... 32 µA
- on standby	0.1 µA
Moisture sensitivity	MSL1
A/D-conversion time	3 ... 51 ms (depending on accuracy)
Data interfaces	I ² C and SPI

Press photo: 1-BST-17670

Contact:

Martina Foerster
 phone: +49 7121 35-35936

Contact person for press inquiries:

Thomas Knoll
 phone: +49 711 811-7088

Bosch Sensortec GmbH is a fully owned subsidiary of Robert Bosch GmbH. It develops and markets micro-mechanical sensors for consumer electronics, mobile phones, safety systems, industrial technology and logistics. The product portfolio includes triaxial acceleration sensors, barometric pressure sensors and a comprehensive software portfolio for various applications. Since its foundation in 2005 Bosch Sensortec emerged as the technology leader in the addressed markets. The Bosch Group has been the global market leader for MEMS sensors since 1998 and has to date sold more than 1.6 billion MEMS sensors.

For more information, go to www.bosch-sensortec.com

The Bosch Group is a leading global supplier of technology and services. In the areas of automotive and industrial technology, consumer goods, and building technology, some 285,000 associates generated sales of 47.3 billion euros in fiscal 2010. The Bosch Group comprises Robert Bosch GmbH and its more than 350 subsidiaries and regional companies in over 60 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. Bosch spent 3.8 billion euros for research and development in 2010, and applied for over 3,800 patents worldwide. With all its products and services, Bosch enhances the quality of life by providing solutions which are both innovative and beneficial. In 2011 Bosch is celebrating its 125th anniversary.

Additional information can be accessed at www.bosch.com, www.bosch-press.com, and www.125.bosch.com.

Press Photo 1-BST-17670



Bildtext | Caption

MEMS-Drucksensor BMP180 von Bosch Sensortec ermöglicht genauere mobile Navigation.

Der nur 3,6 x 3,8 x 0,93 Millimeter kleine Drucksensor ist für den Einsatz in mobilen Geräten entwickelt worden. Neben der GPS-Unterstützung für die Outdoor- als auch Indoornavigation wird der Sensor beispielsweise auch für Höhenprofilmessungen bei Sportaktivitäten genutzt.

MEMS pressure sensor BMP180 from Bosch Sensortec enables more accurate mobile navigation.

The small pressure sensor, measuring only 3.6 x 3.8 x 0.93 mm, has been developed for use in mobile devices. In addition to GPS support for both outdoor and indoor navigation, the sensor can also be used to measure altitude profiles during sports activities for example.



BOSCH

Pressebild Nr.
Press Photo No.
1-BST-17670

zu Presse-Information
See Press Release
PI 7416

Nachdruck für redaktionelle
Zwecke honorarfrei mit Vermerk
„Foto: Bosch“

Reproduction for press purposes
free of charge with credit
“Picture: Bosch”

Alle Bosch-Pressebilder finden
Sie unter www.bosch-presse.de

You can find all Bosch press
photos at www.bosch-presse.de