

## Product brief

# DPS422

## Digital barometric pressure and temperature sensor

The DPS422 is a miniaturized digital barometric air pressure sensor with a high accuracy level and low current consumption. DPS422 is both a pressure and temperature sensor and is sealed with a metal lid. The pressure sensor element is based on a capacitive principle which guarantees high precision during temperature changes. Additionally, self-diagnostic features and an intelligent FIFO principle are implemented. The small form factor and package height make the DPS422 ideal for mobile applications and wearable devices.

The DPS422's internal signal processor converts the output from the pressure and temperature sensor elements to 24-bit results. Each pressure sensor has been calibrated individually and contains calibration coefficients. The coefficients are used in the application to convert the measurement results to true pressure and temperature values.

The sensor has a FIFO that can store the latest 32 measurements. Since the host processor can remain in a sleep mode for a longer period between readouts, a FIFO can reduce the system power consumption. Sensor measurements and calibration coefficients are available via the serial I<sup>2</sup>C/SPI interface.

### Typical applications

- > Local weather station and thermostats
  - Micro weather forecasting; wind speed measurement; room temperature control
- > Air flow control
  - Smart filter replacement alarm, e.g. in whitegoods; servers CPU ventilation control
- > Health and sports
  - Accurate elevation gain and vertical speed detection (e.g. for smart watches)
- > Outdoor navigation
  - GPS start-up time and accuracy improvement; dead-reckoning e.g. in tunnels
- > Indoor navigation
  - Floor detection e.g. in shopping malls and parking garages
- > Smart home
  - Intruder detection and environmental monitoring of premises



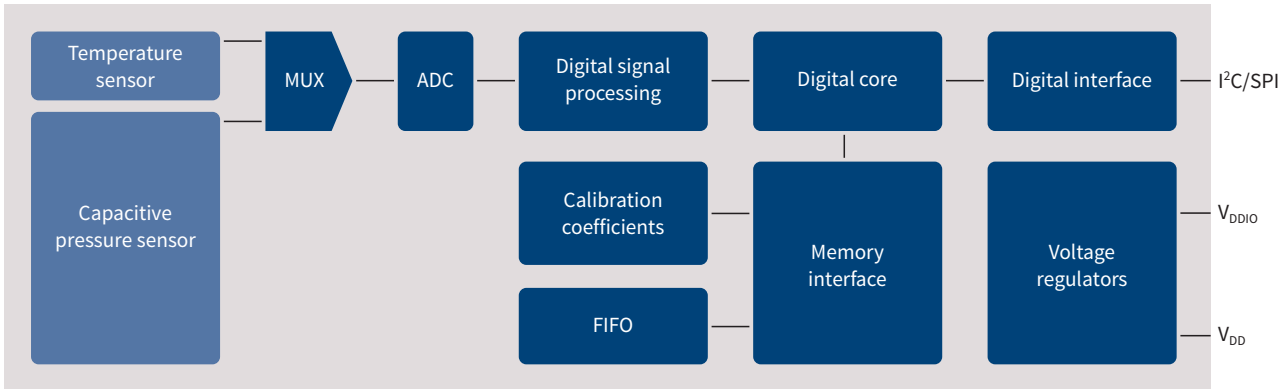
### Key features

- > Operation range
  - Pressure: 300 ... 1200 hPa
  - Temperature: -40 ... 85°C
- > Pressure level precision
  - ±0.005 hPa (or ±5 cm) (high-precision mode)
- > Pressure sensor relative accuracy
  - ±0.06 hPa (or ±0.5 m)
- > Temperature accuracy
  - ±0.4°C
- > Pressure temperature sensitivity
  - < 0.5 Pa/K
- > Measurement time
  - Low-power mode: 3 ms
- > Average current consumption
  - 1.7 µA for pressure measurement (1 measurement/sec.)
  - Standby: < 1 µA
- > Supply voltage
  - V<sub>DDIO</sub>: 1.2 – 3.6 V
  - V<sub>DD</sub>: 1.7 – 3.6 V
- > Operating modes
  - Command (manual)
  - Background (automatic)
  - Standby
- > Interface
  - I<sup>2</sup>C and SPI (both with optional interrupt)
- > Package dimensions
  - 8-pin LGA
  - 2.0 x 2.5 x 0.73 mm

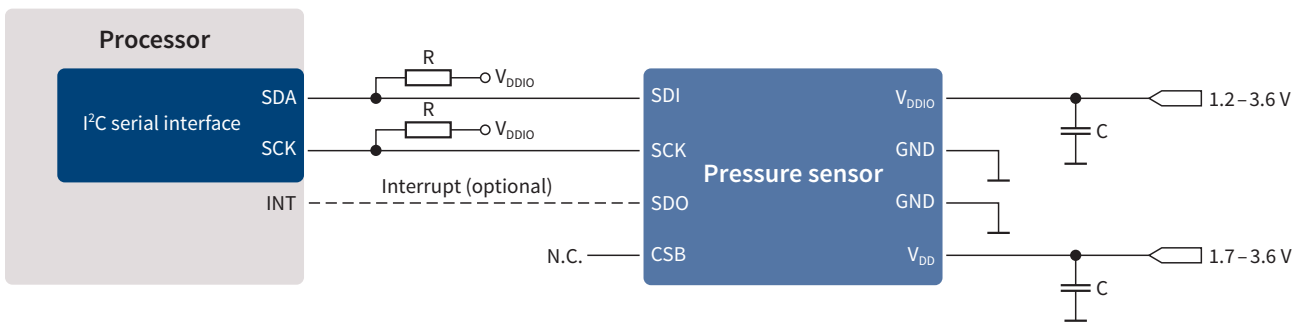
# Pressure sensor for mobile devices

## Digital barometric air pressure sensor

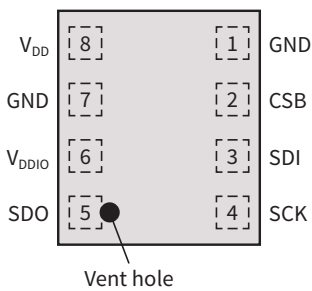
### Functional block diagram



### Application circuit example (in I<sup>2</sup>C configuration)



### Pin configuration (Top view)



Pin	Name	Function
1	GND	Ground
2	CSB	Chip select
3	SDI	Serial data in/out
4	SCK	Serial clock
5	SDO	Serial data out
6	V <sub>DDIO</sub>	Digital interface supply
7	GND	Ground
8	V <sub>DD</sub>	Analog supply

Orderable part number: DPS422XTSA1

Published by  
Infineon Technologies AG  
81726 Munich, Germany

© 2018 Infineon Technologies AG.  
All Rights Reserved.

#### Please note!

THIS DOCUMENT IS FOR INFORMATION PURPOSES ONLY AND ANY INFORMATION GIVEN HEREIN SHALL IN NO EVENT BE REGARDED AS A WARRANTY, GUARANTEE OR DESCRIPTION OF ANY FUNCTIONALITY, CONDITIONS AND/OR QUALITY OF OUR PRODUCTS OR ANY SUITABILITY FOR A PARTICULAR PURPOSE. WITH REGARD TO THE TECHNICAL SPECIFICATIONS OF OUR PRODUCTS, WE KINDLY ASK YOU TO REFER TO THE RELEVANT PRODUCT DATA SHEETS PROVIDED BY US. OUR CUSTOMERS AND THEIR TECHNICAL DEPARTMENTS ARE REQUIRED TO EVALUATE THE SUITABILITY OF OUR PRODUCTS FOR THE INTENDED APPLICATION.

WE RESERVE THE RIGHT TO CHANGE THIS DOCUMENT AND/OR THE INFORMATION GIVEN HEREIN AT ANY TIME.

#### Additional information

For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices, please contact your nearest Infineon Technologies office ([www.infineon.com](http://www.infineon.com)).

#### Warnings

Due to technical requirements, our products may contain dangerous substances. For information on the types in question, please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by us in a written document signed by authorized representatives of Infineon Technologies, our products may not be used in any life-endangering applications, including but not limited to medical, nuclear, military, life-critical or any other applications where a failure of the product or any consequences of the use thereof can result in personal injury.