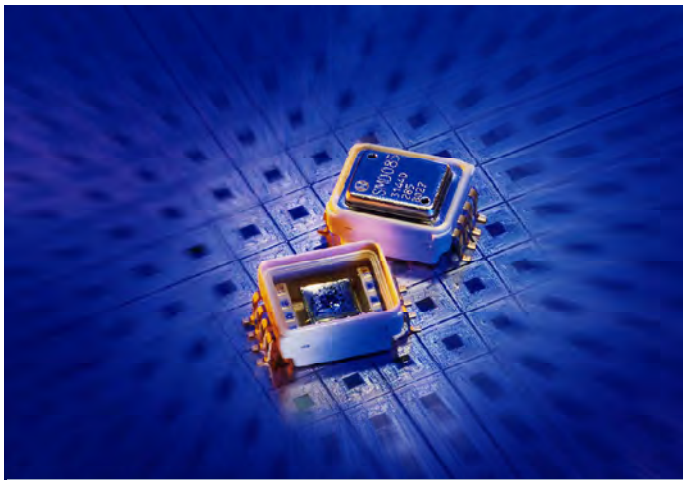


Absolute Pressure Sensor 60...115 kPa Surface Mountable, Piezoresistive SMD085

Bosch Sensortec



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Absolute Pressure Sensor SMD085

General Description

The SMD085 is a high precision barometric pressure sensor. The measurement principle is based on a piezoresistive technology with a very robust design and high accuracy. It is packaged in a SMD08 housing. The main application is ambient pressure measurement.

The SMD085 consists of an integrated sensing element, a logic control unit, a temperature compensation circuit as well as an offset compensation circuit. The output voltage is between 2.37 V and 4.54 V for a pressure range between 60 kPa and 115 kPa.

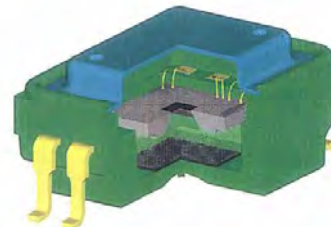
Due to the full integrated concept, no additional external circuits are necessary. The bipolar technology of the integrated signal condition circuit guarantees a high ESD protection. The output circuit is protected against short circuiting to V_{DD} and GND.

Key Features SMD085

- ▶ Pressure range 60 ... 115 kPa
- ▶ SMD8 Package
- ▶ Temperature compensated
- ▶ Fast ratiometric analog output
- ▶ ESD and short circuit protection
- ▶ Inverse polarity protected up to 300 mA supply current
- ▶ On chip fully calibrated transfer function

Typical Applications of the SMD085

- ▶ Barometer
- ▶ Altimeter
- ▶ Weather forecasts
- ▶ Blood pressure measurement
- ▶ Vertical velocity
- ▶ Security systems



Maximum Ratings

Absolute Pressure Sensor SMD085	
Storage temperature	-40 ... 130°C
Supply voltage ¹⁾	-0.3 ... 16 V
Burst pressure	600 kPa

¹⁾ for T < 50°C and t < 1min

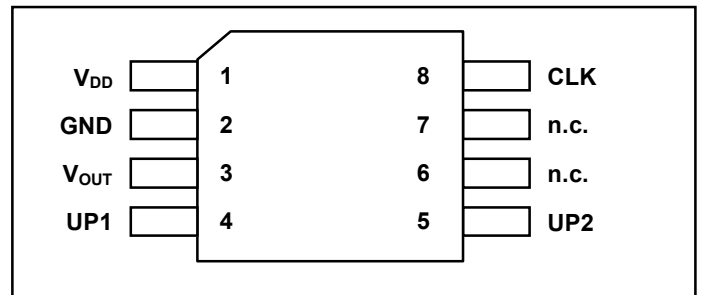
Operating Conditions

Absolute Pressure Sensor SMD085	
Operating temperature	-40 ... +130°C
Absolute pressure	60 ... 115 kPa
Supply voltage ¹⁾	4.5 ... 5.5 V
Overall accuracy ²⁾	1.0 kPa
Supply current at V _{DD} = 5V	8.5 mA typ.
Response time ³⁾	100 µs
Lower limit at U _S = 5 V ⁴⁾	0.3 V typ.
Upper limit at U _S = 5 V ⁴⁾	4.8 V typ.
ESD (HBM)	2 kV
Ratiometricity error	0.006 V max.
Inverse polarity protection	300 mA

Notes:

- 1) The output of the sensor is ratiometric to the supply voltage V_{DD} within a specified range of 4.5 V to 5.5 V.
- 2) Accuracy is the deviation of measured output from nominal output over the entire pressure range and temperatures 0 ... 85°C.
- 3) Response time is defined as the time for the change in the output to its final value after a change in pressure.
- 4) Range above upper limit and below lower limit serves as a diagnosis range.
- 5) Formula of ratiometricity: $| (V_{out1}/5V) - (V_{out2}/V_{DD, min}) |$ and $| (V_{out1}/5V) - (V_{out2}/V_{DD, max}) |$ at 25°C

SMD085 Pinout configuration



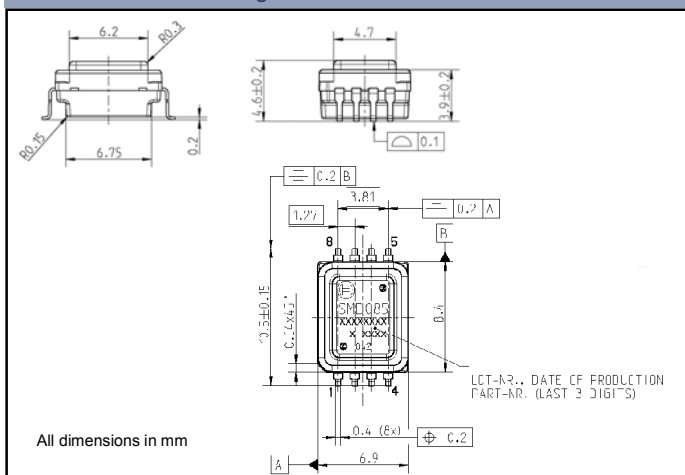
Pin	Name	Function
1	V _{DD}	5 V supply
2	GND	0 V ground
3	V _{OUT}	Output
4	UP1	Used for calibration in manufacturing (may be connected to ground)
5	UP2	Used for calibration in manufacturing (may be connected to ground)
6	n.c.	No internal connection
7	n.c.	No internal connection
8	CLK	Used for calibration in manufacturing (may be connected to ground)

Bosch is the world market leader for pressure sensors in automotive applications. The SMD085 is a new family member of a wide range of micromachined pressure sensors. It is one of the first pressure sensors for barometric air pressure which comes in an SMD package. It is easy to equip in standard assembly lines.

Bosch Sensortec is a newly founded subsidiary of Bosch. It focuses on the application and marketing of micromechanical components for all markets except the automotive.

Please contact us for further details. We are happy to provide you further information upon request.

Dimensions of Housing



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