

Automotive Electronics

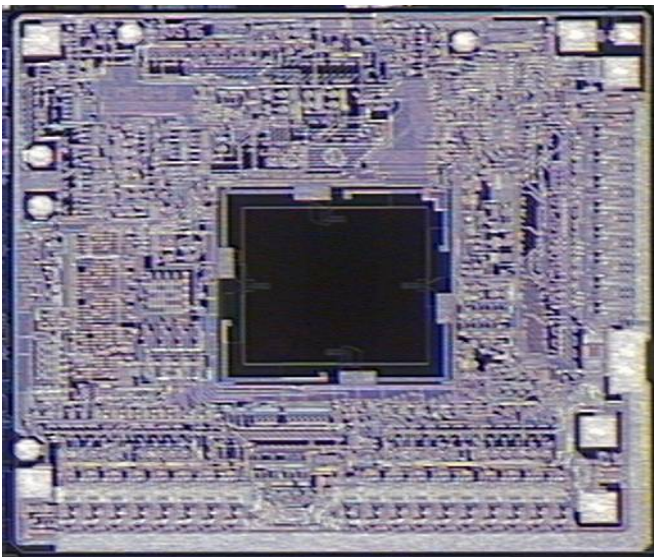
Product Information

Surface Mount Piezoresistive Silicon Absolute Pressure Sensor 60...115 kPa



BOSCH

Invented for life



SMD085

Customer benefits:

- ▶ Pressure range: 60...115 kPa
- ▶ Custom specific ranges upon request
- ▶ On-chip calibration
- ▶ Ratiometric analog output
- ▶ Calibrated transfer function
- ▶ Temperature compensated
- ▶ Surface mount package
- ▶ ESD-protection
- ▶ Robust bipolar technology
- ▶ Fast analog technology
- ▶ Short circuit protected
- ▶ Inverse polarity protected up to 300 mA supply current
- ▶ OBD capability due to high driver output

Introduction

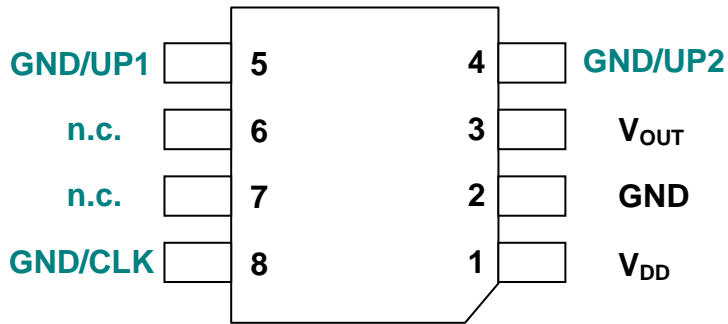
Bosch is the world market leader for pressure sensors in automotive applications. The SMD08x are a new family of a wide range of micromachined pressure sensors. They are one of the first pressure sensors for barometric air pressure which comes in an SMD package. It is easy to equip in standard assembly lines.



Function

The SMD08x are high precision barometric pressure sensors for automotive applications. The mess principle is based on piezoresistive technology. With this technology we realized a very robust design and a high accuracy. To reach the cost targets the SMD085 is packaged in a SMD8 Housing. The main application for this device is the barometric air pressure measurement in diesel or gasoline engine management control Units. The SMD08x schematics consist on an integrated sensing element, a logic control unit, a temperature compensation circuit as well as offset compensation circuit. The Output Voltage will be between 0.3V and 4.8V 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.

Pin out



The output circuit is protected against short circuit to V_{dd}, GND and V_{dd,max}.

The sensor is protected against inverse polarity up to supply current of 300 mA (the sensor shows diode characteristic, therefore a current limitation is necessary).

The sensor is protected against ESD up to 2 KV human body model and 200 V machine model.

Transfer function

	SMD084/ SMD284	SMD085	SMD088/ SMD288
Transfer Function $V_{OUT} = (C_1 \cdot p_{abs} + C_0) \cdot V_{DD}$	 $C_0 = 0$ $C_1 = 0,007895 \text{ kPa}^{-1}$	 $C_0 = 0$ $C_1 = 0,007895 \text{ kPa}^{-1}$	 $C_0 = -0,095$ $C_1 = 0,009 \text{ kPa}^{-1}$
Foot Print	 Customer specific	 SO8	 SO8

Characteristics

Parameter	Symbol	Value			Unit
		min	typ	max	
Operating Temperature	T _A	-40		130	°C
Minimum rated pressure	p _{abs,min}	60 ¹			kPa
Maximum rated pressure	p _{abs,max}			115	kPa
Output voltage at p _{abs,min}	V _{OUT,min}	0,25	0,3	0,35	V
Output voltage at p _{abs,max}	V _{OUT,max}	4,75	4,8	4,85	V
Overall accuracy	A _{CC}			1.5	kPa
Supply voltage	V _{DD}	4.75	5.0	5.25	V
Supply current	I _{IN}			12.5	mA
Output current Sink	I _L	1.0			mA
Output current Source	I _L	0.5			mA

¹ SMDx88: 50kPa

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