2. Specifications

2.1 Electrical Specifications

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units	Comments
Supply							
Supply Voltage	V_{DD}		2.7	3.3	5.5	V	
Power-up/down level	V_{POR}		2.3	2.5	2.7	V	
Supply current	I_{DD}			3.8	5.5	mA	
Ratiometric analog voltage output							
Output range			10%		90%	V_{DD}	
Resistive load to GND			10 [1]	100		kOhm	
Resistive load to VDD			1000			kOhm	
Capacitive load	C_{load}				100	nF	
Output voltage Integral Non Linearity (INL)					5	mV	
Output voltage noise (RMS)				0.5		mV	

2.2 Timing Specifications

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units	Comments
Power-up time	t_{PU}				25	ms	Time to first reliable measurement

2.3 Mechanical Specifications

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units	Comments
Allowable overpressure[2]	P_{max}			1		bar	
Rated burst pressure	P_{burst}		3			bar	
Weight	W				0.2	g	

2.4 Materials

Parameter	
Wetted materials	glass (silicon nitride, silicon oxide), LCP, green epoxy-based mold compound, epoxy-based resins
REACH, RoHS	REACH and RoHS compliant

2.5 Absolute Maximum Ratings

Parameter	Rating	Units
Supply Voltage V_{DD}	-0.3 to 5.5	V
Max Voltage on pins (Inputs)	-0.3 to V_{DD}+0.3	V
Input current on any pin	±70	mA
Operating temperature range[3]	-40 to +85	°C
Storage temperature range[4]	-40 to +85	°C
Max. humidity for long term exposure	40°C dew point	
ESD HBM (human body model)	2	kV

[1] For a resistive load to GND less than 100kOhm a 1nF capacitor to GND on the AOUT is recommended

[2] Allowable overpressure during operation. Refer to the SDP selection guide for pressure dependency of the measured signal. Fast absolute pressure changes on both ports can result in dynamic effects on the sensor signal. For higher overpressures or continuous high overpressures contact Sensirion.

[3] For Air and N_2. Long term exposure to high temperatures and (high concentrations of) O_2 can reduce the product lifetime

[4] For long term storage in Tape and Reel refer to the SDP3x handling instructions

3. Pin Assignment

The SDP3x consists of a QFN package with a plastic cap covering the top and providing the pneumatic connections to the sensor. Table 1 shows the pin assignments of the SDP3x-Analog sensor.

Pin no.	Name	Description
1	GND	Connect to ground
2	GND	Connect to ground
3	GND	Connect to ground
4	BWS	Bandwidth selection input
5	TCS	Temperature compensation selection input
6	GND	Connect to ground
7	VDD	VDD Supply
8	OCS	Output curve selection input
9	AOut	Ratiometric analog voltage output
10	GND	Connect to ground
11	GND	Connect to ground
12-16	-	Reserved. Do not connect

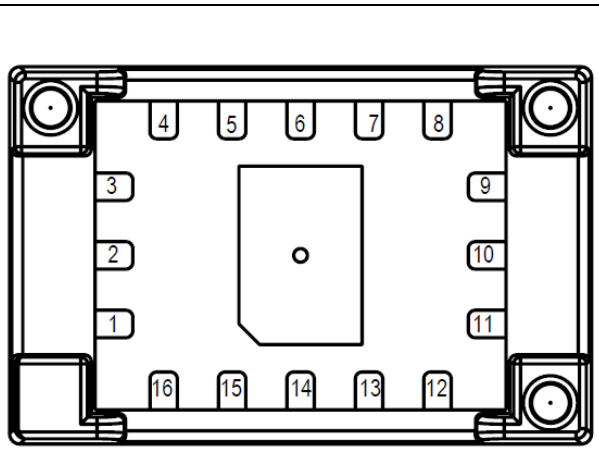
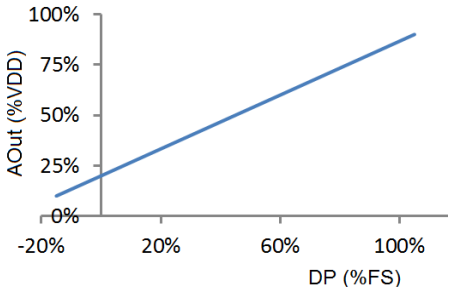
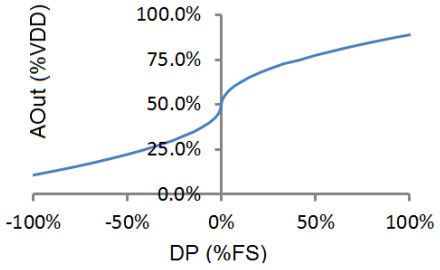


Table 1: *SDP3x-Analog pin assignment (bottom view).*

3.1 Power Pins (VDD, GND)

The power supply pins must be decoupled with a 100 nF capacitor that shall be placed as close to the sensor as possible.

3.2 OCS: Output Curve Selection Input

Config.	Polarity	Description	Conversion to physical values AOut[V], VDD[V], Differential Pressure (DP) [Pa]	
Linear	Low (GND)	Analog output is configured as a linear output. The sensor is not fully bi-directional in this configuration: -10% full-scale to 100% full scale. 	SDP36 (500Pa)	$DP = \frac{750 \cdot AOut}{VDD} - 150$
			SDP37 (125Pa)	$DP = \frac{190 \cdot AOut}{VDD} - 38$
Square Root	High (VDD)	Analog output is a fully bi-directional output with square root conversion. The benefits are that the bidirectional output has a more stable zero point and higher sensitivity at lower pressures 	SDP36 (500Pa)	$DP = sign\left(\frac{AOut}{VDD} - 0.5\right) \cdot \left(\frac{AOut}{VDD \cdot 0.4} - 1.25\right)^2 \cdot 525$
			SDP37 (125Pa)	$DP = sign\left(\frac{AOut}{VDD} - 0.5\right) \cdot \left(\frac{AOut}{VDD \cdot 0.4} - 1.25\right)^2 \cdot 133$