

2. Specifications

2.1 Electrical Specifications

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units	Comments
Supply							
Supply Voltage	V _{DD}		2.7		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	P _{max}				1	bar	
Rated burst pressure	P _{burst}		5			bar	
Weight	W				6	g	

2.4 Materials

Parameter	
Wetted materials	PBT (polybutylene terephthalate), glass (silicon nitride, silicon oxide), silicon, gold, FR4, silicone as static sealing, epoxy, copper alloy, lead-free solder
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 ²	-40 to +85	°C
Storage temperature range	-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 For Air and N₂. Long term exposure to (high concentrations of) O₂ at high temperatures can reduce the product lifetime

3. Pin Assignment

The pin assignments of the SDP8xx-Analog can be found in Table 1.

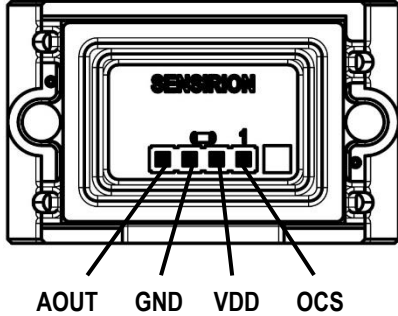
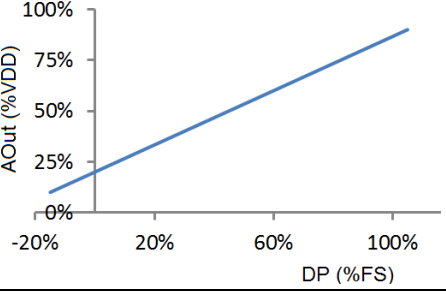
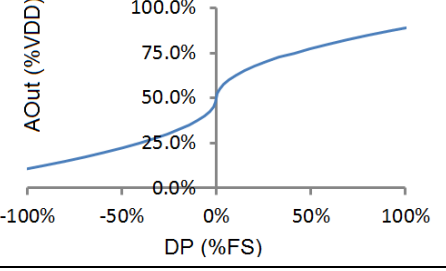
Pin no.	Name	Description	
1	OCS	Output curve selection input	
2	VDD	VDD Supply	
4	AOOut	Ratiometric analog voltage output	

Table 1: SDP8xx-Analog pin assignment (bottom view)

3.1 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. 	500Pa	$DP = \frac{750 \cdot AOut}{VDD} - 150$
			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 	500Pa	$DP = \text{sign}\left(\frac{AOut}{VDD} - 0.5\right) \cdot \left(\frac{AOut}{VDD \cdot 0.4} - 1.25\right)^2 \cdot 525$
			125Pa	$DP = \text{sign}\left(\frac{AOut}{VDD} - 0.5\right) \cdot \left(\frac{AOut}{VDD \cdot 0.4} - 1.25\right)^2 \cdot 133$

3.2 AOOut Pin

The AOOut pin gives out an analog ratiometric voltage, representing the measured differential pressure value. Please note the resistive and capacitive loads as mentioned in section 2.1.

Formulas for converting AOOut [V] to differential pressure [Pa] can be found in section 3.1.