

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 N₂. Long term exposure to high temperatures and (high concentrations of) O₂ 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 |

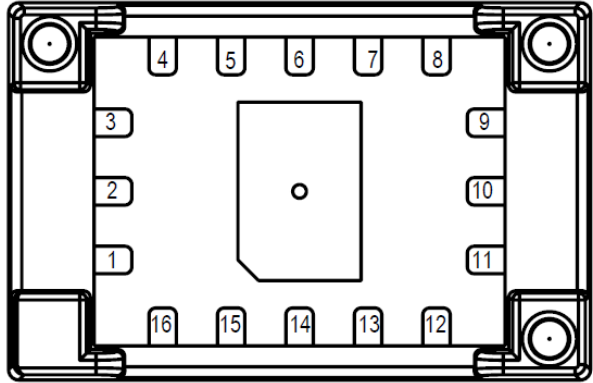
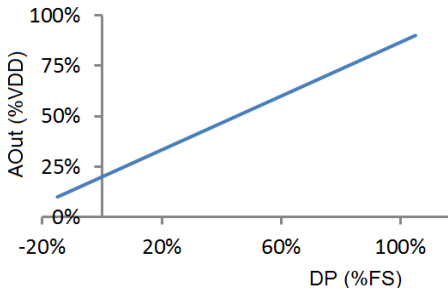
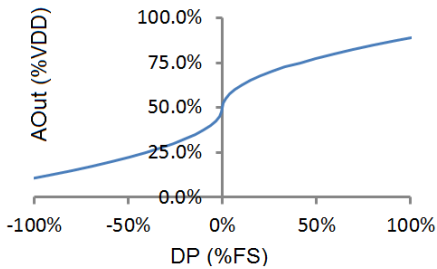


Table 1: SDP3x-Analog pin assignment (bottom view).

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) | <p>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.</p>  | SDP36 (500Pa) | $DP = \frac{750 \cdot AOut}{VDD} - 150$ |
| | | | SDP37 (125Pa) | $DP = \frac{190 \cdot AOut}{VDD} - 38$ |
| Square Root | High (VDD) | <p>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</p>  | SDP36 (500Pa) | $DP = \text{sign}\left(\frac{AOut}{VDD} - 0.5\right) \cdot \left(\frac{AOut}{VDD \cdot 0.4} - 1.25\right)^2 \cdot 525$ |
| | | | SDP37 (125Pa) | $DP = \text{sign}\left(\frac{AOut}{VDD} - 0.5\right) \cdot \left(\frac{AOut}{VDD \cdot 0.4} - 1.25\right)^2 \cdot 133$ |