

2. Specifications

2.1 Electrical Specifications

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units	Comments
Supply Voltage	V _{DD}		3.0	3.3	4	V	For 5V supply contact Sensirion
Power-up/down level	V _{POR}		2.3	2.5	2.7	V	
VDD ramp up slew	V _{DD, ramp}		0.2			V/ms	Minimum voltage ramp up slew when powering up SDP3x
Supply current	I _{DD}	Measuring		3.8	5.5	mA	
		Idle state			1.1	mA	
IRQn driving strength					4	mA	

2.2 Timing Specifications

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units	Comments
Power-up time	t _{PU}				25	ms	Time to sensor ready
Soft reset time	t _{SR}				20	ms	Time between soft reset command and sensor ready
I ² C SCL frequency	f _{I2C}			400	1000	kHz	
Update rate differential pressure value		Continuous mode	900	1000	1100	Hz	Upgrade to 2kHz expected in March 2017
Update rate temperature value		Continuous mode	112.5	125	137.5	Hz	Temperature value is updated once every eight pressure values
Measurement time		Triggered mode	40	45	50	ms	

2.3 Mechanical Specifications

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units	Comments
Allowable overpressure ¹	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 4.5	V
Max Voltage on pins SDA, SCL, IRQn	-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 ³	-40 to +85	°C
Max. humidity for long term exposure	40°C dew point	
ESD HBM (human body model)	2	kV

¹ 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.

² For Air and N₂. Long term exposure to high temperatures and (high concentrations of) O₂ can reduce the product lifetime

³ For long term storage in Tape and Reel, please 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. The pin assignments of the SDP3x-Digital can be found in Table 1.

Pin no.	Name	Description
1	GND	Connect to ground
2	GND	Connect to ground
3	GND	Connect to ground
4	IRQn	Interrupt output. Active low. Keep floating when not used.
5	SCL	Serial Clock (I ² C Interface)
6	GND	Connect to ground
7	VDD	VDD Supply
8	SDA	Bidirectional Serial Data (I ² C Interface)
9	ADDR	I ² C Address selection input.
10	GND	Connect to ground
11	GND	Connect to ground
12-16	-	Reserved. Do not connect

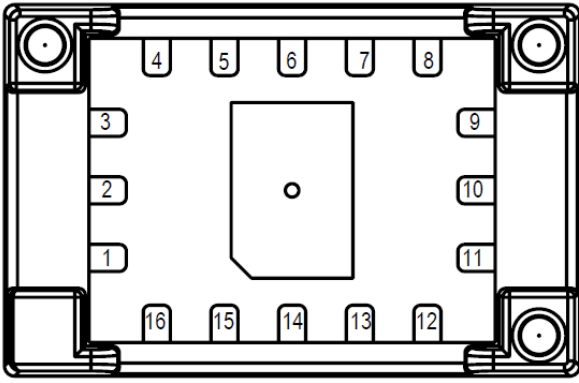


Table 1: SDP3x-Digital pin assignment (bottom view).

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 Serial Clock and Serial Data (SCL, SDA)

The SCL and SDA are bidirectional pins of the I²C slave interface. The SCL is the Serial Clock pin and the SDA is the Serial Data pin. For more details about the I²C interface refer to section 5.

3.3 ADDR Pin

The SDP3x-Digital supports different I²C addresses. With the ADDR pin an address can be selected. Connecting the ADDR pin to GND selects the default address. Other I²C addresses can be selected with a resistor connected to GND. The maximum tolerance for the resistor is $\pm 5\%$. Do not connect the ADDR pin to VDD.

I ² C Address (Hex)	Condition
0x21	ADDR connected to GND
0x22	ADDR connected with 1.2kOhm to GND
0x23	ADDR connected with 2.7kOhm to GND

3.4 IRQn Pin

The IRQn pin indicates whether new measurement results are available. The signal is active low, meaning that when the signal is high there is no new measurement data available. The IRQn will automatically clear to high when a differential pressure value is read out. The IRQn pin will also be set to low after every soft reset or Power on Reset, until a measurement command is sent.

When the IRQn signal is not used, the pin should stay unconnected and must not be connected to GND or VDD.

3.5 Die Pad (Center Pad)

The die pad or center pad is visible from below and located in the center of the package. It is internally connected to GND and therefore there are no electrical constraints on connecting or not connecting the die pad to GND. For mechanical stability it is recommended to solder the center pad to the PCB.

The hole in the middle of the die pad must stay open during soldering.