



Model PSC 641

PSC641 is a digital barometric pressure sensor especially designed for applications requiring highly-precision pressure measurement like quadcopter altitude control and portable navigation device. It is both a pressure and temperature sensor housed in a compact $2.0 \times 2.5 \times 1.05$ mm³ package. The pressure sensor is based on the industry-recognized piezo-resistive technology featuring long-term stability and EMC robustness. A high-performance 24-bit ADC provides pressure resolution up to 0.18Pa, and temperature resolution up to 0.004°C. The pressure sensor has a wide operating range from 300 to 1100hPa that covers all surface elevations on earth.



Applications

- Ascending/descending speed estimation
- Altimetry and barometry
- indoor navigation for floor/elevator detection
- GPS applications
- Activity tracking for health care applications

Pin description

Pin No.	Name	Description
1	GND	Ground pin
2	CSB	I ² C /SPI mode select High for I ² C mode Low for SPI mode
3	SDI/SDA	I ² C mode: SDA data I/O pin SPI 4-wire mode: SDI data input pin SPI 3-wire mode: SDA data I/O pin
4	SCK/SCL	I ² C mode: SCL clock pin SPI mode: SCK clock pin
5	SDO	I ² C mode: slave address select pin SPI mode: data output pin
6	VID	Digital interface power supply in
7	GND	Ground pin
8	VDD	Core circuit power supply in

Absolute Maximum Rating

Parameter	Symbol	Min.	Max.	Unit
Power supply voltage	VDD, VID	-0.3	6.5	V
Signal input voltage	VIS	-0.3	VDD/VID + 0.3	V
Pressure	P _{MAX}	0	20000	hPa
Storage temperature	T _{ST}	-40	+125	°C
ESD	HBM	—	±2	kV



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Electrical properties

Parameter	Symbol	Test Condition	Min.	Typical	Max.	Unit
Operation voltage	VDD		1.8	—	5.5	V
IO voltage	VID		1.2	—	VDD	V
Temperature range	Ta		-40	25	+85	°C
Pressure range	P		300	—	1100	hPa
Operating current OSR=256 OSR=1024 OSR=4096 OSR=16384 OSR=32768 (default)	IDD	VDD = 3.3V 20Hz Pressure and temperature conversion	—	97 120 190 420 800	—	uA
Standby current	IDDSD	After POR or soft reset	—	1	—	uA
Relative accuracy of pressure	PREL	Relative accuracy during pressure change between 700 to 950 hPa at any constant temperature between 25°C to 40°C	—	±0.12	—	hPa
Offset temperature coefficient	TCO		—	±1.5	—	Pa/K
Absolute accuracy of pressure	PABS		—	1	—	hPa
Noise in pressure			—	1.9	—	Pa RMS
Absolute accuracy of temperature	TABS	@25°C	—	0.5	—	°C
		-40 to 85°C	—	1	—	°C
Long-term stability			—	±1	—	hPa

Package size (Note: Dimensions are measured in mm with tolerance of: ±0.1mm; weight: 0.02g ±10%.)

