



MS5837-02BA

Ultra-small Gel Filled Pressure & Temperature Sensor, with Stainless Steel Cap

Take your devices to the next level with our MS5837-02BA pressure sensor module. This ultra-small gel filled pressure sensor is optimized for both altimeter and barometer applications.

Optimized for consumer devices such as wearables, multisport watches and fitness trackers the MS5837-02BA's robust sensor package enables it to withstand harsh environments often encountered in these applications.

This MEMS based sensor includes a high-linearity pressure sensor with an ultra-low power 24 bit digital output (I²C) and an altitude resolution at sea level of 13 cm. This enables high resolution measurements such as counting flights of stairs.

This ultra-compact micro altimeter allows for design flexibility and is one of the smallest gel filled watertight sensor in the market. The robust sensor package consists of ceramic and metal materials. A high-resolution temperature output allows the implementation of a thermometer ion without any additional sensor.

Expanding on TE Connectivity's (TE) MS5837 series of ultra-compact digital altimeters, our new generation 2 bar models offer options for improved endurance in chlorine environments and shielding for reduced signal noise and interference. This new generation of sensor modules was developed by TE with leading MEMS technology and our proven experience in design and manufacturing of altimeter modules.

Applications

- ◆ Multisport watches
- ◆ Fitness trackers
- ◆ Swim watches
- ◆ Bike computers
- ◆ Mobile altimeter/barometer systems
- ◆ Personal navigation devices
- ◆ E-cigarettes
- ◆ Drones and other autonomous vehicles

Features

- ◆ Ceramic - metal package, 3.3 x 3.3 x 2.75mm
- ◆ High resolution module, 13 cm
- ◆ Supply voltage: 1.5 to 3.6 V
- ◆ Low power, 0.6 μ A (standby \leq 0.1 μ A at 25°C)
- ◆ Integrated digital pressure sensor (24 bit $\Delta\Sigma$ ADC)
- ◆ Operating range: 300 to 1,200 mbar, -20 to +85 °C
- ◆ I²C interface
- ◆ No external components (internal oscillator)
- ◆ Watertight sealing with 1.8 x 0.8mm O-ring
- ◆ Chlorine resistant option
- ◆ Shielded option

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PERFORMANCE SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Conditions	Min.	Typ.	Max	Unit
Supply voltage	V _{DD}		-0.3		+4	V
Storage temperature	T _S		-40		+85	°C
Overpressure	P _{max}	ISO 22810 ⁽¹⁾			10	bar
Maximum Soldering Temperature ⁽²⁾	T _{max}	40 sec. max			250	°C
ESD rating (lid to GND version)		Human Body Model	-2		+2	kV
Latch up		JEDEC JESD78 standard	-100		+100	mA

⁽¹⁾ Pressure ramp up/down min 60s

⁽²⁾ Refer to application note 808

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Min.	Typ.	Max	Unit
Operating Supply voltage	V _{DD}		1.5	3.0	3.6	V
Operating Temperature	T		-20	+25	+85	°C
Supply current (1 sample per sec.)	I _{DD}	OSR		20.09 10.05 5.02 2.51 1.26 0.63		μA
Peak supply current		during conversion		1.25		mA
Standby supply current		at 25°C (V _{DD} = 3.0 V)		0.01	0.1	μA
Power supply hold off for internal reset ⁽³⁾		V _{DD} < 0.1V	200			ms
VDD Capacitor		from VDD to GND	100	470		nF
Resistor value between the lid and the GND		Version 02BA2x only		1000		Ω

⁽³⁾ Supply voltage power up must be continuous from GND to VDD without any step

ANALOG DIGITAL CONVERTER (ADC)

Parameter	Symbol	Conditions	Min.	Typ.	Max	Unit
Output Word				24		bit
ADC Conversion time ⁽⁴⁾	t _c	OSR		16.44 8.22 4.13 2.08 1.06 0.54	17.2 8.61 4.32 2.17 1.10 0.56	ms

⁽⁴⁾ Maximum values must be used to determine waiting times in I²C communication