



MS5837-02BA

Gel-filled, ultra-compact, water resistant digital pressure and temperature sensor

Take your devices to the next level with our MS5837-02BA pressure and temperature sensor module. This ultra-compact (3.3 x 3.3 x 2.75 mm), gel-filled sensor is optimized for consumer devices such as fitness trackers, drones and wearables, providing a robust sensor package to withstand the harsh environments often encountered in these applications.

Expanding on TE Connectivity's (TE) MS5837 series of ultra-compact, digital altimeters, our 2 bar models offers options for shielding and high chemical endurance.

This MEMS based sensor includes a high-linearity pressure sensor with low power (0.6 μ A), 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. The board level design delivers sensing accuracy for both pressure (\pm 0.5mbar) and temperature (\pm 2 $^{\circ}$ C) measurements. Lid shield option reduces signal noise and interference that may be experienced with sensors installed in plastic housings or high electrical noise environments with integrated shielding. (Non-shielded models should only be recommended for use in applications with metal housings.)

Our MS5837-02BA provides exceptional performance, reliability and accurate performance from a brand you can trust.

APPLICATIONS

- Fitness Trackers
- Drones
- Bike Computers
- Mobile Altimeter/Barometer Systems
- E-cigarettes
- Wearables

FEATURES

- Ceramic and 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 $^{\circ}$ C)
- Integrated digital pressure sensor (24 bit $\Delta\Sigma$ ADC)
- Operating range: 300 to 1,200 mbar, -20 to +85 $^{\circ}$ C
- I²C interface
- No external components (internal oscillator)
- Water resistant sealing with 1.8 x 0.8mm O-ring
- Shielded metal lid 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