



## MS5803-14BA

### Miniature 14 bar Module

The MS5803-14BA is a new generation of high resolution pressure sensors with SPI and I2C bus interface. The MS5803-14BA HE is the High Endurance version of MS5803-14BA sensor. It is optimized for depth measurement systems with a water depth resolution of 1cm and below. The sensor module includes a high linear pressure sensor and an ultra-low power 24 bit  $\Delta\Sigma$  ADC with internal factory calibrated coefficients. It provides a precise digital 24 Bit pressure and temperature value and different operation modes that allow the user to optimize for conversion speed and current consumption. A high resolution temperature output allows the implementation of a depth measurement systems and thermometer function without any additional sensor. The MS5803-14BA can be interfaced to any microcontroller. The communication protocol is simple, without the need to programming internal registers in the device. The gel protection and antimagnetic stainless steel cap protects against 30 bar overpressure water resistant. This new sensor module generation is based on leading MEMS technology and latest benefits from the TE proven experience and know-how in high volume manufacturing of pressure modules have been widely used for over a decade. This sensing principle employed leads to very low hysteresis and high stability of both pressure and temperature signal.

## FEATURES

- High resolution module, 0.2mbar
- Fast conversion down to 1 ms
- Low power, 1  $\mu$ A (standby < 0.15  $\mu$ A)
- Integrated digital pressure sensor (24 bit  $\Delta\Sigma$  ADC)
- Supply voltage 1.8 to 3.6 V
- Operating range: 0 to 14bar, -40 to +85 °C
- I2C and SPI interface (Mode 0, 3)
- No external components (Internal oscillator)
- Excellent long term stability
- Hermetically sealable for outdoor devices
- High Endurance (HE version)

## APPLICATIONS

- Mobile water depth measurements systems
- Diving computers
- Adventure or multi-mode watches

**TECHNICAL DATA**

| Sensor Performances (V <sub>DD</sub> = 3 V)                   |                              |       |      |         |
|---|------------------------------|-------|------|---------|
| Pressure  | Min                          | Typ   | Max  | Unit    |
| Range   | 0                            |       | 14   | bar     |
| ADC   | 24                           |       |      | bit     |
| Resolution (1)  | 1 / 0.6 / 0.4 / 0.3 / 0.2    |       |      | mbar    |
| Accuracy 0°C to +40°C, 0 to 6 bar (2)                         | -20                          |       | +20  | mbar    |
| Accuracy -40°C to + 85°C 0 to 6 bar (2)                       | -40                          |       | +40  | mbar    |
| Response time   | 0.5 / 1.1 / 2.1 / 4.1 / 8.22 |       |      | ms      |
| Long term stability   |                              | -20   |      | mbar/yr |
| Temperature   | Min                          | Typ   | Max  | Unit    |
| Range   | -40                          |       | +85  | °C      |
| Resolution  |                              | <0.01 |      | °C      |
| Accuracy  | -0.8                         |       | +0.8 | °C      |
| Notes: (1) Oversampling Ratio: 256 / 512 / 1024 / 2048 / 4096 |                              |       |      |         |
| (2) With autozero at one pressure point                       |                              |       |      |         |

**FUNCTIONAL BLOCK DIAGRAM**

