ENS220

Premium accuracy barometric pressure and temperature sensor for activity tracking and indoor navigation/localization

- High relative and absolute accuracy with centimeter resolution
- Single die solution with best-of-breed form factor
- Ultra-low power for always-on operation

ScioSense®

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The ENS220 is an ultra-low-power, high-accuracy barometric pressure and temperature sensor. It comes in the smallest size LGA package with digital I²C and SPI interfaces. This enables new use cases in activity tracking, indoor navigation/localization, fall- and liquid-level detection.

The capacitive pressure sensor of the ENS220 is integrated on a CMOS ASIC. This single die solution not only allows small form factor packages with excellent immunity to changes in environmental conditions,

but also achieves ultra-low current consumption due to the capacitive read-out. High intrinsic pressure sensitivity combined with an ultra-low noise 24-bit ADC converter results in unprecedented low pressure noise. The integrated temperature sensor matches the performance of dedicated temperature measurement devices. It ensures a stable, temperature compensated pressure output with a fast response time. The highly accurate pressure reading, and the short conversion time make the ENS220 perfect for height measurements with a high output data rate and high bandwidth.

Features

- Absolute / Relative accuracy: ±0.5 hPa / ±0.025 hPa (±2.5 Pa is equivalent to a height of ±20 cm in air)
- Lowest power: average supply current of 0.1 µA at idle, 0.8 µA when sampling at 1/60 Hz
- Ultra-low noise of 0.1 Pa rms (≈ 1 cm in air) at 2 Hz sample rate
- User-configurable sample rate up to 1 kHz (0.9 Pa rms)
- Temperature accuracy of 0.2 K with 8 mK resolution
- Fully digital interface with best-of-breed form factor

Properties

- Small 2.0 x 2.0 x 0.75 mm³ LGA package
- P operating range from 300 to 1200 hPa
- T operating range from −40 to +85 °C
- Power supply range from 1.62 V to 1.98 V
- Standard, fast, and high speed I²C and SPI interface
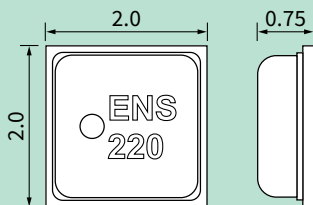
Benefits

- Reliable cm resolution positioning and differential pressure measurements
- Perfectly integrates into space-constraint designs, e.g. mobiles, wearables, hearables
- Long battery life even at high sampling rates
- Minimal peripheral BOM requirements

Applications

- Mobile/Wearables: activity tracking, indoor localization/navigation, fall detection
- Gaming, AR/VR, Drones: height tracking
- Appliances/HVAC: filter clogging detection
- White goods: liquid level detection
- Medical: blood pressure measurement
- Accurate temperature meter for gasses and surfaces

Dimensions

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