Product Document

am **OSRAM**

High Accuracy Digital Temperature Sensor
ams.com/AS6221

Temperature Monitoring 06:00

37.3 °C
37.2 °C
37.1 °C
37.0 °C
36.9 °C
36.8 °C

02.30 03.00 03.30 04.00 04.30 05.00 05.30 06.00 06.30
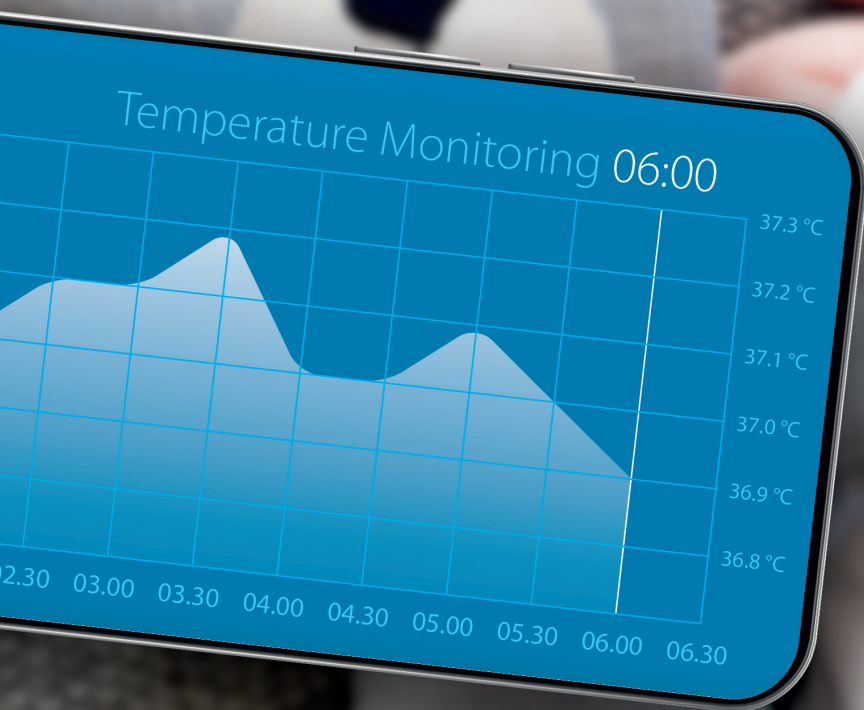
AS6221 – Digital Temperature Sensor for healthcare devices & wearables requiring high accuracy

- Best-in-class accuracy of ±0.09°C (20°C to 42°C)

- Low power consumption

- Ultra-small WLCSP package (1.5 × 1.0 mm)

Sensing
is life.

General Description

The AS6221 is a highly accurate digital temperature sensor with an accuracy of up to ±0.09℃, which is ideal for healthcare applications, wearables and devices requiring high performance thermal information.

The AS6221 is a complete digital sensor system, requires no calibration or linearization. It provides measurement outputs via a standard I²C interface. The sensor supports eight I²C addresses avoiding bus conflicts in multi-sensor use cases. The ultra-small size of the sensor (WLCSP 1.5 x 1.0 mm) enables accurate body/skin temperature

measurements in health and lifestyle monitoring products. In addition to the high accuracy and the small form factor, the AS6221 offers very low power consumption, for example measuring with 4 samples/s, the current consumption is only 6 µA. The sensor has 4 different automatic acquisition modes and keeps the high accuracy over the full supply range from 1.71 to 3.6 V. An integrated alert functionality triggers an interrupt to the micro controller when a temperature threshold is exceeded. The temperature threshold for the alert function can be adjusted in a device register.

Benefits

- Best-in-class accuracy
- Space saving with ultra-small integration size
- Superior power efficiency for better battery endurance
- Easy-to-use solution for fast go-to-market
- Enables multi device application development
- Easy to integrate with serial bus connection
- Alert functionality for advanced system power reduction

Features

- High temperature accuracy of ±0.09℃ (20℃ to 42℃)
- Small form factor WLCSP package (1.5 × 1.0mm)
- Ultra-low-power consumption: 6µA @ 4 samples/sec (typ)
- No calibration or linearization required
- Full-digital system with up to eight I²C addresses
- Programmable alert output pin - No need to constantly polling sensor

Block Diagram
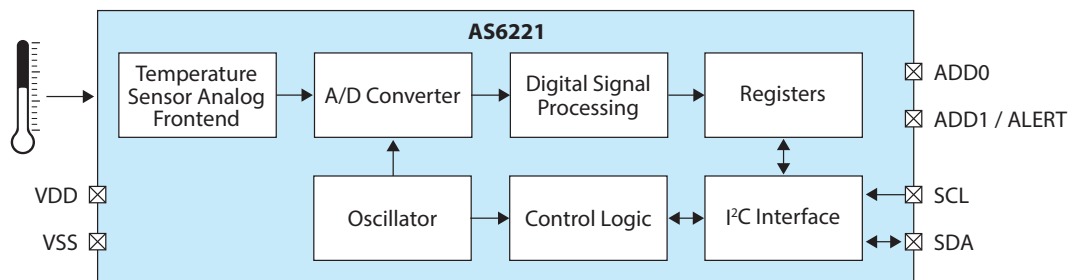
WLCSP Package
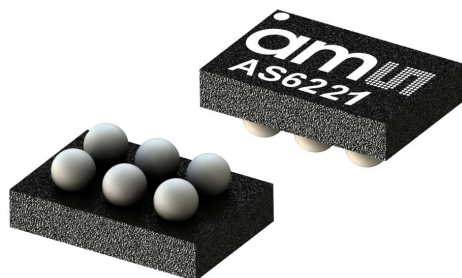
Applications

- Medical analysis devices
- Fitness and health tracker
- Wearables
- Mobile devices
- Cameras
- HVAC and thermostat control
- Cold chain monitoring
- Industrial automation