

GW6210

Sensor Signal Conditioning SoC for Particulate Matter Measurement

Description

The GW6210 simplifies particulate matter detection by integrating an MCU and an analog front end, reducing the component count.

An automatic power control unit efficiently manages external sensing components. The integrated analog front end includes a Transimpedance Amplifier (TIA), two Programmable Gain Amplifiers (PGAs) with low-pass filters, and a 12-bit ADC.

These components process the sensor's input by amplifying, filtering, and converting it into a digital format, ready for proprietary digital signal processing algorithms.

Two embedded Low Dropout Regulators (LDOs) provide essential power, while an internal temperature sensor, in coordination with the ADC, monitors operating temperature.

The GW6210 features 32KB of embedded Flash memory for program and data storage, and 2KB of SRAM for critical processing data.

Multiple communication interfaces, such as UART and SPI/I2C options, ensure seamless host device connectivity.

Features

- PM0.3, PM0.5, PM1.0, PM2.5, PM4, PM7 and PM10 support
- System clock frequency: 16MHz
- Analog Front End featuring a 12-bit 50kSPS ADC
- Embedded temperature sensor
- Integrated 8-bit MCU
- Integrated DSP
- Internal Oscillators: 16MHz, 32KHz for sleep mode
- 32KB Flash memory for application programs
- 2KB SRAM
- 2 UART, 2 I2C, SPI and 4 PWM interfaces
- Support for LIN interface through UART functionality
- Support for laser diodes and infrared sensors

- Low power operation modes: Run, Idle, Sleep and Deep-Sleep

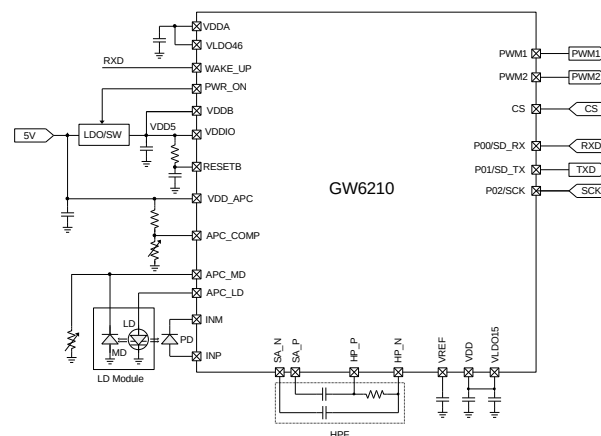
Physical Characteristics

- Operating voltages
 - External supply voltage: 5V
 - I/O supply voltage: 3.3V ~ 5V
 - Analog core voltage: 4.6V
 - Digital core voltage: 1.5V
- Operating temperature: -40°C to 85°C
- Available in 6x6 0.4mm pitch 48-QFN package and 5x5 0.4mm pitch 48-QFN package

Typical Applications

- PM detection
- Dust sensor
- HVAC and climate control

Basic Application Diagram



Ordering Information

Device name	Package	Remark
GW6210_Q48C6	48QFN, 6x6, 0.4 mm pitch	QFN48, Commercial
GW6210_Q48I6	48QFN, 6x6, 0.4 mm pitch	QFN48, Industrial
GW6210_Q48C5	48QFN, 5x5, 0.4 mm pitch	QFN48, Commercial

Device name	Package	Remark
GW6210_Q48I5	48QFN, 5x5, 0.4 mm pitch	QFN48, Industrial

Block Diagram

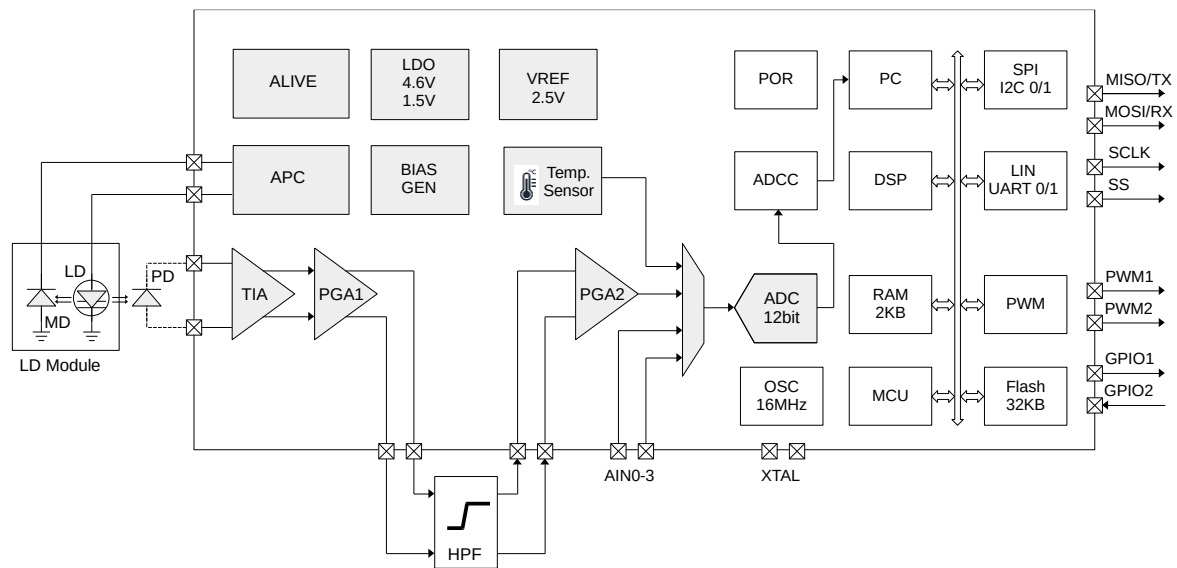
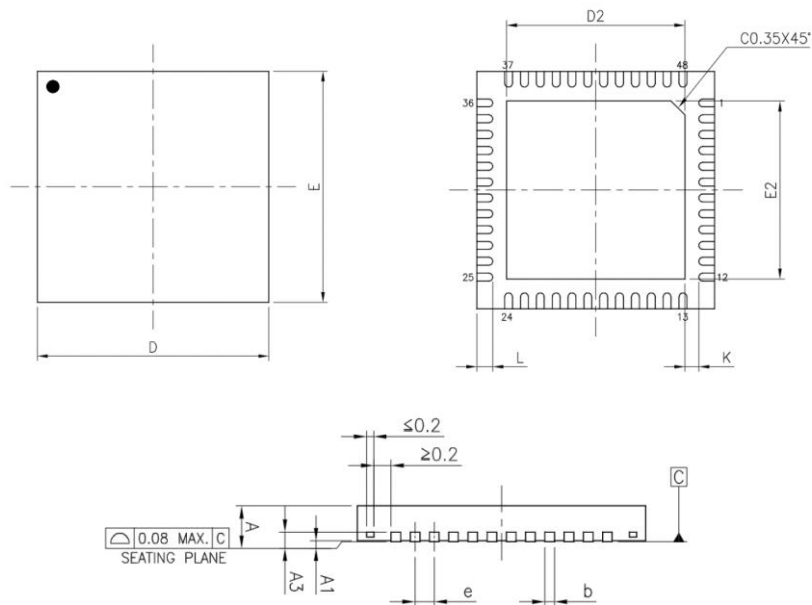


Figure 1 Functional Block Diagram of the GW6210

Package Information



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