

GW6220

Sensor Signal Conditioning SoC for Particulate Matter Measurement

Description

The GW6220 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 GW6220 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

- PM1.0, PM2.5 and PM10 support.
- PC0.3, PC0.5, PC1.0, PC2.5, PC4, PC7 and PC10
- System clock frequency: 16MHz
- Analog Front End featuring a 12-bit 50kSPS
- 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: 5V

Analog core voltage: 4.6V

Digital core voltage: 1.5V

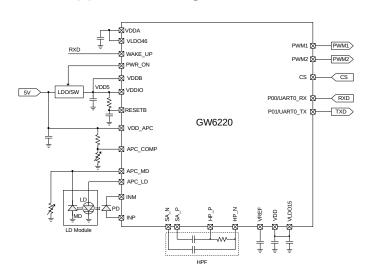
• Operating temperature: -40°C to 105°C

 Available in 6x6 0.4mm pitch 48-QFN package and 5x5 0.35mm pitch 48-QFN package

Typical Applications

- PM detection
- Dust sensor
- · HVAC and climate control

Basic Application Diagram



Ordering Information

Device name	Package	Remark
GW6220INJVTQ	6.0mmx6.0mm, 0.4 mm pitch	QFN48, Automotive
GW6220INJVT	6.0mmx6.0mm, 0.4 mm pitch	QFN48, Industrial

 $^{^{\}ast}\,5x5~0.35mm$ pitch package information will be available soon.



Block Diagram

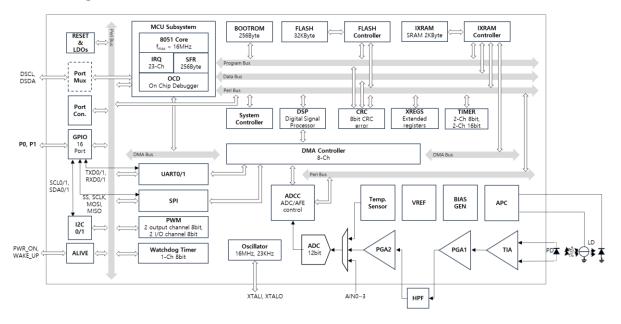
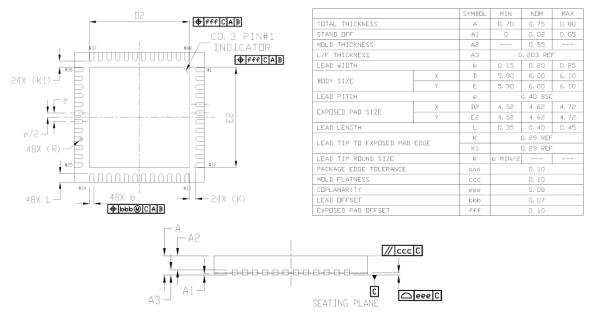


Figure 1 Functional Block Diagram

Package Information (6x6, 0.4mm pitch)



 $^{^{\}ast}\,5x5\,\,0.35mm$ pitch package information will be available soon.



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