

GW6310

Smoke Detector IC with Low Power Management and Reliable AFE

Description

The GW6310 is a highly flexible smoke detector IC with accurate smoke sensing AFE and long battery life power management circuit. GW6310 integrates 8051 compatible processor and peripherals for photoelectric smoke alarm, low power management, and communication. It includes accurate transimpedance amplifier (TIA), programmable gain amplifier (PGA), 12-bit ADC, LDOs for internal logic circuitry and MCU with IDLE, SLEEP, and RUN mode supported, highly reliable LED driver, two general purpose pulse width modulators (PWM), Power Line Communication (PLC) I/F, serial interfaces, and general purpose I/Os.

The GW6310 features 16KB of embedded Flash memory and 2KB of SRAM for program and data storage.

Multiple communication interfaces, such as UART, SPI and PLC, ensure efficient host device connectivity.

Features

- Low power consumption
 - Configurable system clock from 400 kHz to 12.8 MHz for power optimized operation
 - Dedicated power management structure
- Accurate and reliable analog circuits for smoke sensing
 - Current driver for external LED: Maximum 300 mA with 5 mA adjustable step
 - Analog Front-End (AFE): TIA + PGA
 - Variable gain and offset calibration
 - DC offset cancellation
 - 12-bit, 6 channel SAR ADC
- 8-bit 8051 compatible MCU core
 - 16 KB flash memory
 - 2 KB SRAM
 - 512B EEPROM (emulated in flash memory)
 - Dedicated AFE/ADC control logic
- Digital filters
- Versatile Peripherals
 - 6 channel DMA
 - 1x UART
 - 1x SPI
 - 2x 12-bit PWM with width measurement

- 1x PWM+/PWM- with dead zone
- PLC interface
 - Slave operation with programmable 10-bit device address and 8-bit data frame
 - Selectable operating frequency 12.8/6.4/3.2/1.6/0.8/0.4 MHz
 - Support response time less than 500 μ s including sensing/computation

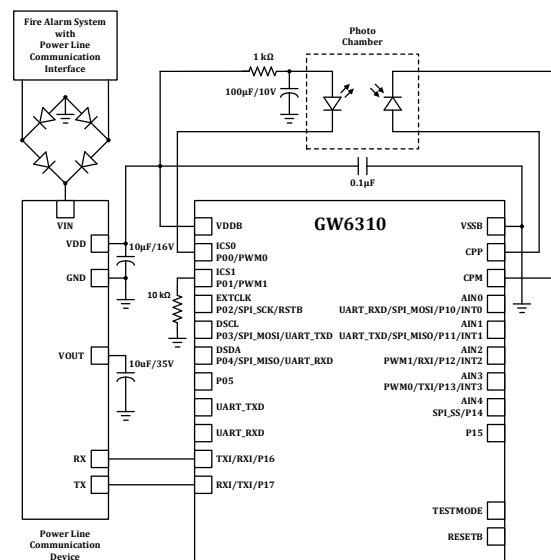
Physical Characteristics

- Operating voltages
 - Supply voltage: 4.5 V ~ 5.5 V
- Operating temperature: -40°C to 85°C
- Available in bare die on wafer

Typical Applications

- Smoke detector

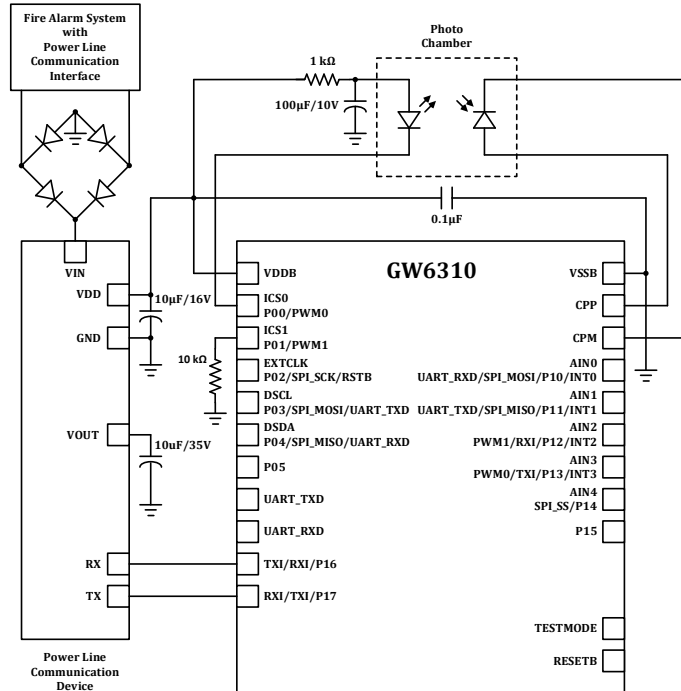
Basic Application Diagram



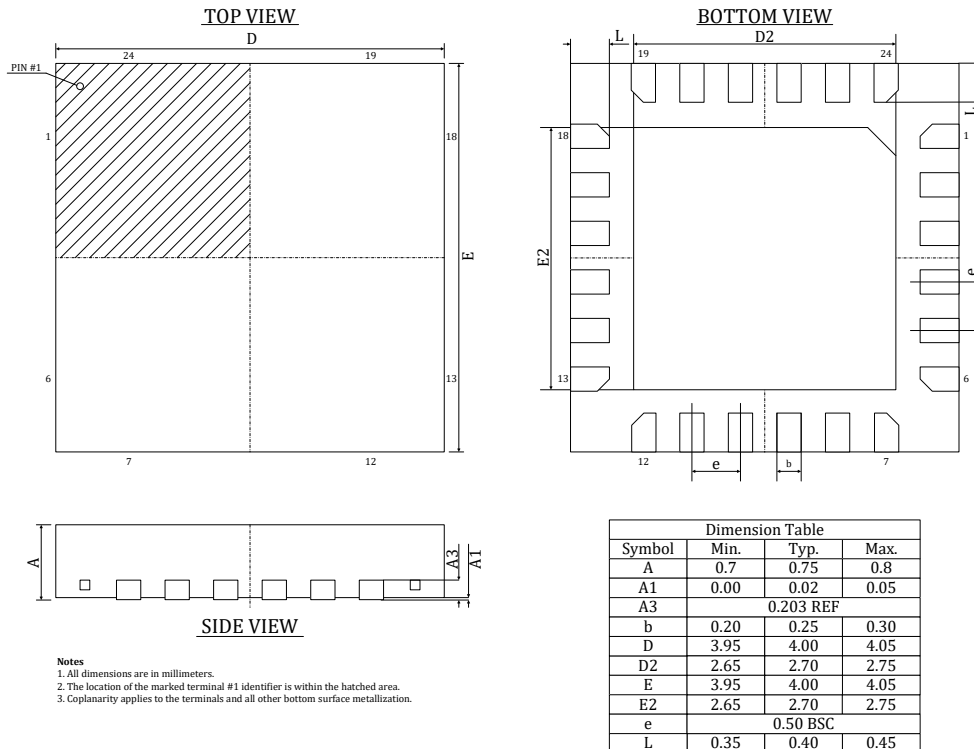
Ordering Information

| Device name | Package | Remark |
|-------------|---------------------------------|---------------------|
| GW6310AWTFR | 4.0 mm x 4.0 mm 0.5 mm pitch | QFN24 Industrial |

Typical Application



Package Information



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