

# GW7120

## Smart Ultrasonic Sensor SoC with LIN Interface

### Description

The GW7120 is a device that combines an integrated microcontroller and an analog front end to provide ultrasonic range detection using a minimal number of components. Its pulse-width modulation (PWM) output allows for programmable bursts ranging from 30kHz to 80kHz to be sent to a single ultrasonic transducer connected through a center-tapped transformer. With the use of supported transducers, this device enables distance measurement between 30cm and 5m, achieving a resolution of 1cm.

By utilizing internal components such as a programmable gain amplifier (PGA), a 12-bit analog-to-digital converter (ADC), digital filters, an envelope detector, and a peak detector, the desired measurement range and resolution can be achieved. Additionally, the device includes an internal temperature sensor and ADC for reading operating temperature information.

The device includes a 16KB embedded Flash memory for storing application-specific program and data, while a 2KB SRAM is available for storing data required for signal processing purposes.

The GW7120 offers various communication interfaces, including LIN, UART, and I2C, making it convenient to connect with a host device.

### Features

- Analog Front End integrated stand-alone Ultrasonic Park Assist Solution
- PWM output driver for Ultrasonic Transducer
- Programmable Transducer Power
- Programmable Receiver Sensitivity
- Digital Filtering and Signal Processing including Envelope Detection
- Adjustable Burst Length and Filter Bandwidth
- Internal Oscillator
- LIN 2.x interface
- 8bit CPU with 16MHz Clock
- 16KB Flash memory for application program
- 2KB SRAM
- Fast Calibration Data and Program Update via LIN interface

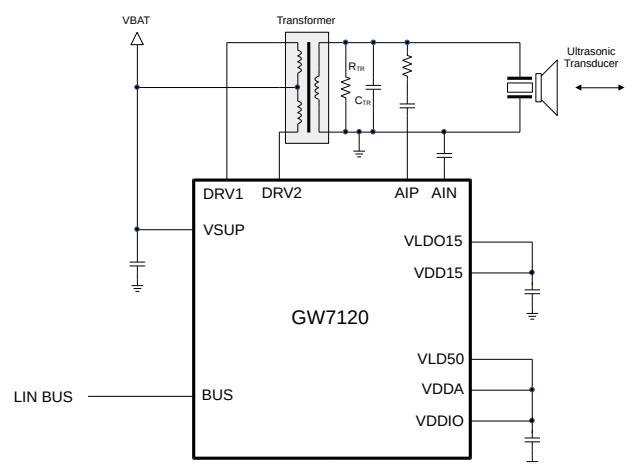
### Physical Characteristics

- Operating voltages
  - External supply voltage: 8V ~ 18V
  - I/O supply voltage: 5V
  - Analog core voltage: 5.0V
  - Digital core voltage: 1.5V
- Operating temperature: -40°C ~ 105°C (AEC-Q100 Grade 2)
- Available in 5x5 0.4mm pitch 40-QFN package

### Typical Applications

- Ultrasonic Park Assist Systems
- Blind Spot Detection
- Industrial Distance Measuring
- Robotics

### Basic Application Diagram



## Block Diagram

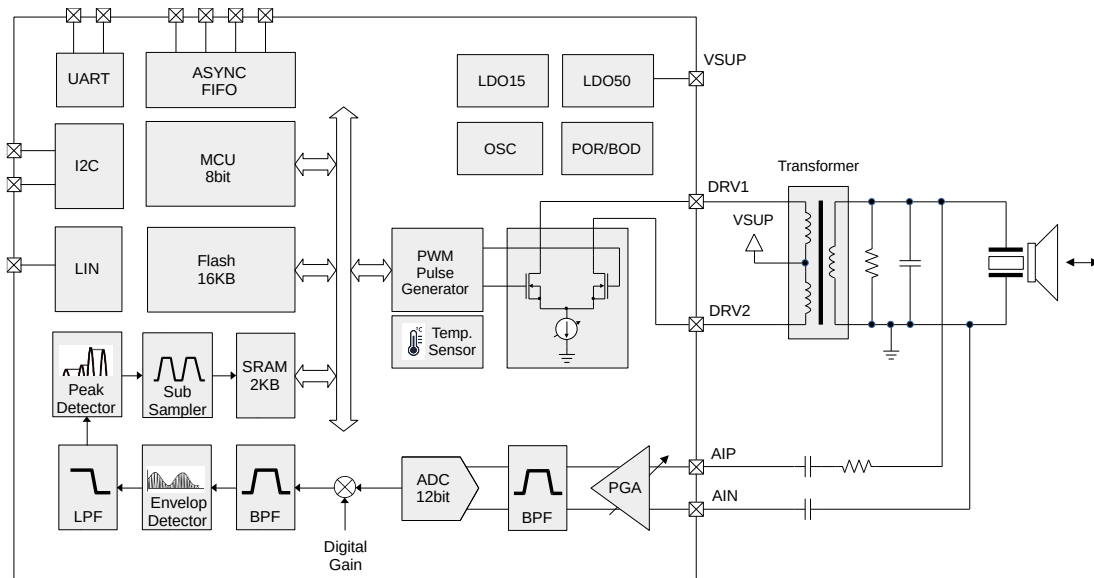
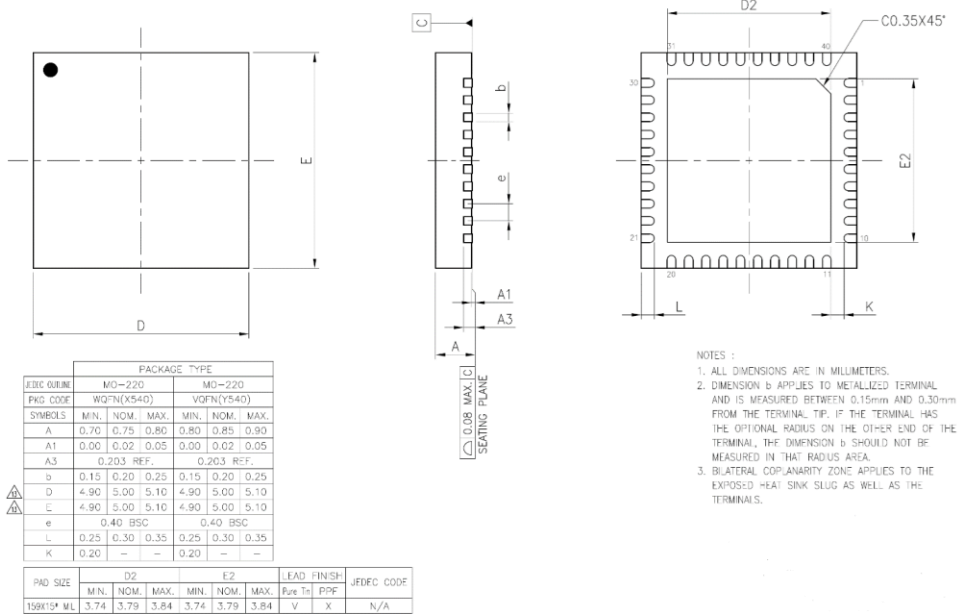


Figure 1 Functional Block Diagram

## Package Information



- NOTES :
1. ALL DIMENSIONS ARE IN MILLIMETERS.
  2. DIMENSION b APPLIES TO METALLIZED TERMINAL AND IS MEASURED BETWEEN 0.15mm AND 0.30mm FROM THE TERMINAL TIP. IF THE TERMINAL HAS THE OPTIONAL RADIUS ON THE OTHER END OF THE TERMINAL, THE DIMENSION b SHOULD NOT BE MEASURED IN THAT RADIUS AREA.
  3. BILATERAL COPLANARITY ZONE APPLIES TO THE EXPOSED HEAT SINK SLUG AS WELL AS THE TERMINALS.

## Ordering Information

Device name	Package	Remark
GW7120_Q40A	40QFN, 5x5, 0.4 mm pitch	QFN40, Automotive
GW7120_Q40I	40QFN, 5x5, 0.4 mm pitch	QFN40, Industrial

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