GW7120

Smart Ultrasonic Sensor SoC with LIN Interface

Description

The GW7120 with integrated analog front end and microcontroller offers ultrasonic range detection with minimum component count. A single ultrasonic transducer with a center tapped transformer is directly driven with programmable 30kHz to 80kHz bursts. Supported transducers allow distance measuring from 30cm to 5m with a resolution of 1cm.

The received echo signal is amplified and converted by an internal 12-bit ADC. Digital filtering and envelope detection achieves excellent tracking with the sending frequency. Operating temperature information can be read out using the internal temperature sensor and the ADC.

An onboard Flash memory stores processed values of the oscillator/sending frequency, transmitted power and receiver sensitivity. The GW7120 has multiple communication interfaces for ease of connecting with a host – LIN, UART and I²C interface.

Features

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

Physical Characteristics

- Operating voltages
  - External supply voltage: 8V to 18V
  - I/O supply voltage: 5V
  - Analog core voltage: 5.0V
  - Digital core voltage: 1.5V
- Operating temperature (ambient – AEC-Q100 Grade 2): -40°C to 105°C
- Available in a 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

![Functional Block Diagram of the GW7120](image)

**Figure 1 Functional Block Diagram of the GW7120**

Package Information

![Package Diagram](image)

**Ordering Information**

<table>
<thead>
<tr>
<th>Device name</th>
<th>Package</th>
<th>Remark</th>
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<td>40QFN, 5x5, 0.4 mm pitch</td>
<td>QFN40, Automotive</td>
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<tr>
<td>GW7120_Q40I</td>
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