GENERAL INFORMATION

Based on Chirp’s patented MEMS technology, the CH201 is a system-in-package that integrates a PMUT (Piezoelectric Micromachined Ultrasonic Transducer) together with an ultra-low power SoC (System on Chip) in a miniature, reflowable package. The SoC runs Chirp’s advanced ultrasonic DSP algorithms and includes an integrated microcontroller that provides digital range readings via I²C.

Complementing Chirp’s other ultrasonic ToF sensor products, the CH201 provides accurate range measurements to targets at distances up to 5 m. Based on ultrasonic pulse-echo measurements, the sensor works in any lighting conditions, including full sunlight, and provides millimeter-accurate range measurements independent of the target’s color and optical transparency. The sensor’s wide Field-of-View (FOV) enables simultaneous range measurements to multiple objects in the FOV.

APPLICATIONS

- Augmented/Virtual Reality and Gaming
- Drones and Robotics
- Mobile and Computing Devices
- Obstacle avoidance
- Printers and Scanners
- Proximity sensing
- Presence detection: always-on sensing to lock/unlock and power on/off notebooks, tablets, white goods, etc.
- Smart Home

FEATURES

- Fast, accurate range-finding
  - Operating range from 20cm to 5m
  - Sample rate up to 100 samples/sec
  - 0.2 mm RMS range noise at 1m range
  - Programmable modes optimized for long and short-range sensing applications
  - Field of view (FoV): 45° nominal
  - Multi-object detection
  - Works in sunlight and any other lighting
  - Insensitive to object color, detects optically transparent surfaces like glass windows

- Easy to integrate
  - Single sensor for receive and transmit
  - Single 1.8V supply
  - I²C Fast Mode compatible interface, data-rates up to 400 kHz
  - Dedicated programmable range interrupt pin
  - Platform-independent software driver enables turnkey range-finding

- Miniature integrated module
  - Compatible with standard SMT reflow
  - Low-power micro-controller running advanced ultrasound firmware
  - Operating temperature range: -40° to 85°C

- Ultra-low power consumption
  - 1 sample/s:
    - 15 µW (1m max range)
    - 27 µW (4m max range)
  - 25 samples/s:
    - 180 µW (1m max range)
    - 500 µW (4m max range)

DEVICE INFORMATION

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>PACKAGE</th>
<th>LID OPENING</th>
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<tbody>
<tr>
<td>CH201-00ABx-x</td>
<td>3.5 x 3.5 x 1.26 mm LGA</td>
<td>1-Hole</td>
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RoHS and Green-Compliant Package