

Miniature, Ultra-low power, Long-range Ultrasonic Time-of-Flight Range Sensor

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.

DEVICE INFORMATION

PART NUMBER	PACKAGE	LID OPENING
CH201-00ABx-x	3.5 x 3.5 x 1.26 mm LGA	1-Hole

RoHS and Green-Compliant Package



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)