

A new generation, long distance ranging Time-of-Flight sensor based on ST's FlightSense™ technology

Data brief



Features

- Fully integrated miniature module
 - Size: 4.9x2.5x1.56 mm
 - Emitter: 940 nm invisible laser (Class1)
 - SPAD (single photon avalanche diode) receiving array with integrated lens
 - Low-power microcontroller running advanced digital firmware
- Pin-to-pin compatible with the VL53L0X FlightSense™ ranging sensor
- Fast and accurate long distance ranging
 - Up to 400 cm distance measurement
 - Up to 50 Hz ranging frequency
- Typical full field-of-view (FoV): 27 °
- Programmable region-of-interest (ROI) size on the receiving array, allowing the sensor FoV to be reduced
- Programmable ROI position on the receiving array, providing multizone operation control from the host
- Easy integration
 - Single reflowable component
 - Can be hidden behind many cover window materials
 - Software driver and code example for turnkey ranging
 - Single power supply (2v8)
 - I²C interface (up to 1 MHz)
 - Shutdown and interrupt pins

Applications

- User detection (Autonomous low-power mode) to power on/off and lock/unlock devices like personal computers, laptops, and the IoT
- Service robots and vacuum cleaners (long distance and fast obstacle detection)
- Drones (landing assistance, hovering, ceiling detection)
- Smart shelves and vending machines (goods inventory monitoring)
- Sanitary (robust user detection whatever the target reflectance)
- Smart building and smart lighting (people detection, gesture control)
- 1 D gesture recognition
- Laser assisted autofocus which enhances the camera autofocus system speed and robustness, especially in difficult scenes (low light and low contrast) and video focus tracking assistance

Description

The VL53L1X is a state-of-the-art, Time-of-Flight (ToF), laser-ranging sensor, enhancing the ST FlightSense™ product family. It is the fastest miniature ToF sensor on the market with accurate ranging up to 4 m and fast ranging frequency up to 50 Hz

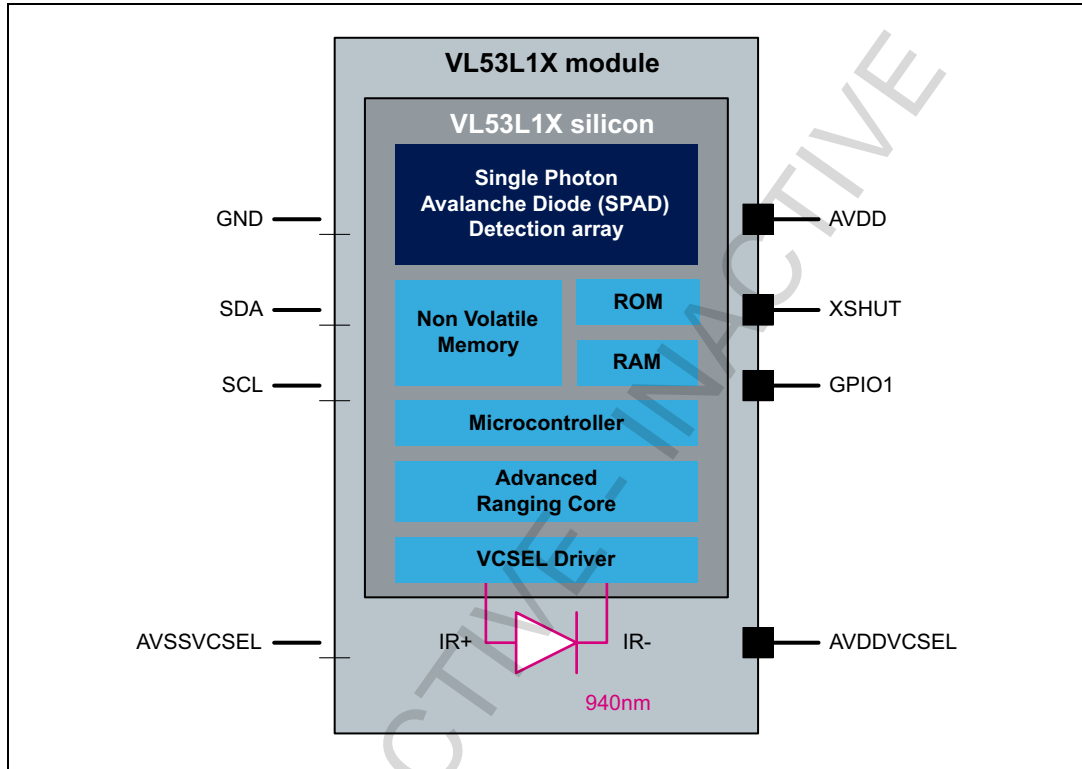
Housed in a miniature and reflowable package, it integrates a SPAD receiving array, a 940 nm invisible Class1 laser emitter, physical infrared filters, and optics to achieve the best ranging performance in various ambient lighting conditions with a range of cover window options.

Unlike conventional IR sensors, the VL53L1X uses ST's latest generation ToF technology which allows absolute distance measurement whatever the target color and reflectance.

It is also possible to program the size of the ROI on the receiving array, allowing the sensor FoV to be reduced.

1 Block diagram

Figure 1. VL53L1X block diagram



2 Ordering information

Table 1. Order codes

Order code	Package	Packing
VL53L1CXV0FY/1	Optical LGA12 with liner	Tape and reel

3 Revision history

Table 2. Document revision history

Date	Revision	Changes
18-Jan-2018	1	Initial release
14-Feb-2018	2	Modified document title Updated Features , Applications , and Description

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