Time-of-Flight sensor with extended range measurement

Features

Fast, accurate distance ranging

- Histogram based technology
- Distance measurement from 0 mm up to 6 m
- Short distance linearity down to 10 mm
- Major improvement in long distance ranging performance across all targets and light levels
- Field of view (FoV) of 18°
- Multiobject detection capability
- Targets beyond 80 cm range are immune to crosstalk from cover glass, and smudge

VL53L4CX is a fully integrated miniature module

- Emitter: 940 nm invisible laser (VCSEL) and its analog driver
- Low power microcontroller running advanced digital Firmware
- Size: 4.4 x 2.4 x 1 mm
- Pin-to-pin compatible with VL53L0X, VL53L1X, VL53L1CB, VL53L3CX, and VL53L4CD

Easy integration

- Reflowable component
- Live crosstalk correction
- Part-to-part or generic shape crosstalk calibration available
- Single power supply 2v8
- Can be hidden behind cover glass
- I²C interface (up to 1 MHz)
- Full set of software drivers (Linux compatible) for turnkey ranging
- Drivers are compatible with VL53L3CX ones

Product status link
VL53L4CX

Applications

- Obstacle avoidance, cliff detection for robotics, service robots, and vacuum cleaners
- User presence detection for sanitary and smart lighting
- System activation for smart building and access control devices
- Content management for smart bins and logistics
- User and object detection for IoT devices
- Light curtain for industrial applications
- Landing assist and collision avoidance for indoor drones

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For further information contact your local STMicroelectronics sales office.

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Description

Specifically designed for long-range, multitarget measurements, the VL53L4CX provides very accurate distance measurements up to 6 m with excellent results over short distances. A new generation laser emitter with 18° FoV improves performances under ambient light.

Thanks to ST's patented algorithms and innovative module construction, the VL53L4CX is also able to detect multiple objects within the FoV with depth understanding. ST histogram algorithms ensure cover glass crosstalk immunity beyond 80 cm and dynamic smudge compensation for targets below 80 cm.

Like all Time-of-Flight sensors based on ST's FlightSense technology, the VL53L4CX records an absolute distance measurement regardless of the target color and reflectance.

Housed in a miniature reflowable package, which integrates a SPAD (single photon avalanche diode) array, the VL53L4CX achieves the best ranging performance even when hidden behind a wide range of cover glass materials.

All of ST's Time-of-Flight sensors integrate a VCSEL (vertical cavity surface emitting laser) which emits a fully invisible 940 nm IR light, which is totally safe for eyes (Class 1 certification).

Revision history

Table 1. Document revision history

Date	Version	Changes
05-Nov-2021	1	Initial release

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