VL53L4CD, VL53L4CX, VL53L4ED

Advanced, pin-to-pin compatible Time-of-Flight sensors

ToF sensor series to ensure high accuracy distance measurement, ultralow power consumption, and extended temperature range

The VL53L4 series features a new laser emitter and brings significant improvements in terms of enhanced short-distance linearity, stronger ambient light immunity, increased long-distance accuracy, and higher temperature capabilities.

Designers will find a development ecosystem that includes an STM32 Nucleo expansion, breakout boards, ultralow power drivers, code examples, and a full liquid level monitoring solution.

KEY FEATURES AND BENEFITS
- VL53L4CD
  - Ultralow power consumption (down to 55 µA)
  - Short distance linearity down to 1 mm
  - Distance ranging up to 1.3 meters
- VL53L4ED
  - Effective temperature from -40°C to 105°C
  - Short distance linearity down to 1 mm
  - Distance ranging up to 1.3 meters
- VL53L4CX
  - Distance ranging up to 6 meters
  - Multi-target detection capability
  - Distance ranging under ambient light up to 1.8 meters

KEY APPLICATIONS
- Industrial
- Sanitary devices
- Smart home
- Robotics

DRIVERS & CODE
- Ultralow power feature
- Liquid level monitoring
- VL6180X migration to VL53L4CD

Products description

The VL53L4 series represents a collection of three Time-of-Flight sensors with various attributes for accurate distance measurement in a wide variety of applications.

The VL53L4CX offers long-range, multitarget capabilities and advanced algorithms for complex environments. For proximity and short-range applications, the VL53L4CD features ultralow power consumption for battery-powered devices, while the VL53L4ED offers high-precision measurements even under extreme temperatures for harsh industrial applications.

Note that the VL53L4CD device replaces the VL6180 and VL6180X.

Associated solutions

We have developed turnkey solutions such as liquid level monitoring for virtually any kind of liquid in a container, which is critical in coffee machines and many other applications. We also provide free drivers for ultralow power proximity detection to optimize power consumption, especially in battery-powered applications.

Developer resources

Developers can choose from various options to assess the features and performance of the VL53L4 series. These include a complete STM32 Nucleo kit consisting of an STM32 Nucleo board and Time-of-Flight sensor expansion board, a ToF expansion board only, or tiny breakout boards that can be integrated in user designs and projects for testing and prototyping purposes.

Complete STM32 Nucleo kit	Time-of-Flight expansion board	Time-of-Flight breakout boards	Graphical User Interface (GUI)
P-NUCLEO-53L4A1	X-NUCLEO-53L4A1	SATEL-VL53L4CD	STSW-IMG027
P-NUCLEO-53L4A2	X-NUCLEO-53L4A2	SATEL-VL53L4CX	STSW-IMG030
P-NUCLEO-53L4A3	X-NUCLEO-53L4A3	SATEL-VL53L4ED	STSW-IMG045

VL53L4 series product comparison

	VL53L4CD	VL53L4ED	VL53L4CX (Histogram-based)
Maximum ranging distance	1,3 m		6 m
Minimum ranging distance	1 mm		10 mm
Field of view	18° (no lens)		
Power consumption	22 mA (typ.) / 55 uA (ULP)	22 mA (typ.)	19 mA (typ.)
Operating voltage	2.6 to 3.5 V	2.7 to 3.4 V	2.6 to 3.5 V
Wide effective temperature range	-30 to 85°C	-40 to 105°C	-30 to 85°C
Ranging accuracy	Very high		High
Ranging under ambient light	60 cm	60 cm	180 cm
Ultralow power mode available	Yes	No	No
Liquid level monitoring (example code)	Yes	No	No

Product reference
VL53L4CDV0GC/1
VL53L4CXV0GC/1
VL53L4EDV0GC/1