

Satellite boards based on VL6180X proximity, gesture and ambient light sensor

Data brief



Features

- Each satellite board integrates:
 - VL6180X 3-in-1 module (proximity, gesture and ambient light sensor)
 - 2.8 V output regulator
- Allows basic gesture recognition use case
- True distance measurement independent of target size and reflectance
- Able to function in multi-module applications
- Divisible board enabling use as mini-PCB breakout board, easy to integrate in customer device
- Compatible with X-NUCLEO-6180XA1 expansion board
 - Up to three VL6180X satellite boards can be plugged into the expansion board through its 2.54 mm connector

- Can be used with STM32 Nucleo boards, available in the following Nucleo packs:
 - P-NUCLEO-6180X1: Nucleo pack based on full-feature Nucleo board with STM32F401RE Dynamic Efficiency ARM® Cortex®-M4 microcontroller
 - P-NUCLEO-6180X2: Nucleo pack based on ultra-low-power Nucleo board with STM32L053R8 ARM® Cortex®-M0+ microcontroller

Description

The VL6180X satellite boards are hardware add-ons for the X-NUCLEO-6180XA1 expansion board.

Up to 3 satellite boards can be connected to the X-NUCLEO-6180XA1 expansion board, enabling multi sensors applications.

Satellite board can be used as well for basic gesture recognition applications.

Thanks to its 2.8 V regulator, the VL6180X satellite board can be used in any application with a 3.3 to 10 V supply.

The part supporting the VL6180X module, 2.54 mm connector and output regulator is scored so that developers can break off the mini PCB for use in a 2.8 V supply application using flying leads.

This makes it easier to integrate into development and evaluation devices due to its small form factor.

VL6180X Overview

The VL6180X is the latest product based on ST’s patented FlightSense™ technology. This is a ground-breaking technology allowing absolute distance to be measured independent of target reflectance.

Instead of estimating the distance by measuring the amount of light reflected back from the object (which is significantly influenced by color and surface), the VL6180X precisely measures the time the light takes to travel to the nearest object and reflect back to the sensor (Time-of-Flight).

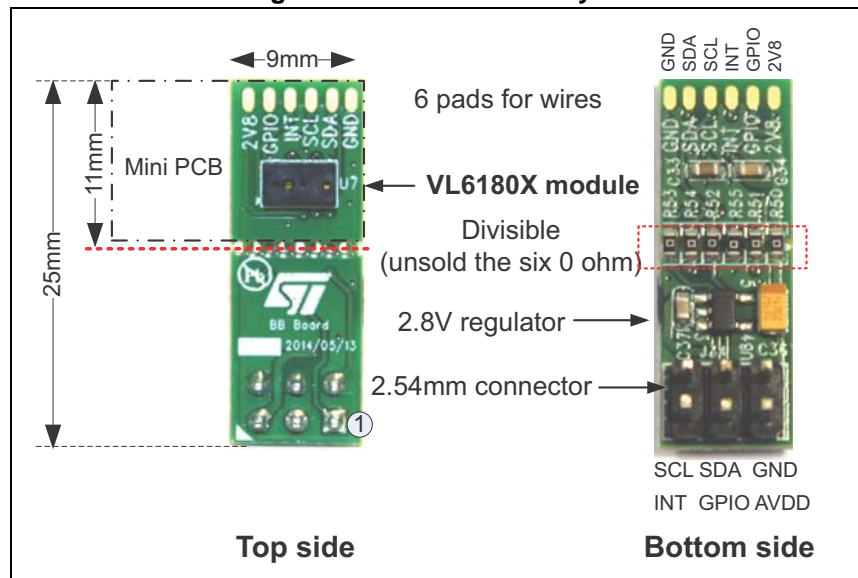
Combining an IR emitter, a range sensor and an ambient light sensor, the VL6180X is easy to integrate and saves OEMs long and costly optical and mechanical design optimizations. The module is designed for low-power operation. Ranging and ALS measurements can be automatically performed at user defined intervals.

Multiple threshold and interrupt schemes are supported to minimize host operations.

Divisible board

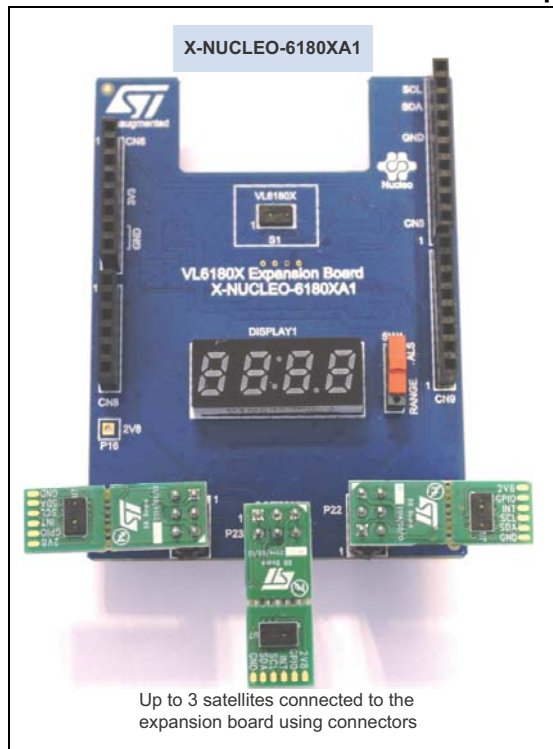
For 2.8V supply application, the satellite board can be divided along the red dotted line as shown in *Figure 1*, in order to only use the “mini PCB”, easier to integrate into a customer device due to its small form factor.

Figure 1. Satellite board layout



Connection to X-NUCLEO-6180XA1 Nucleo expansion board

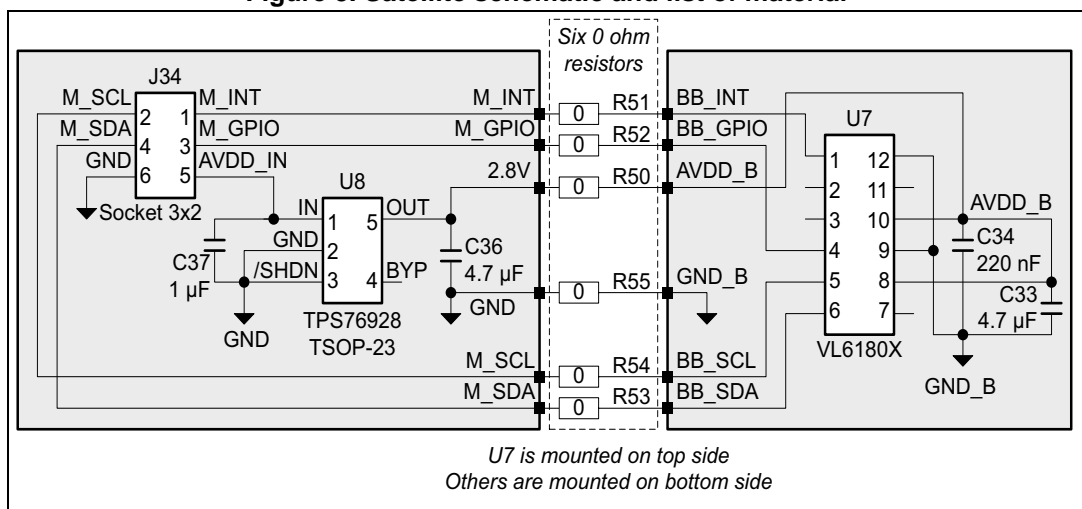
Figure 2. Connection to X-NUCLEO-6180XA1 Nucleo expansion board



X-NUCLEO-6180XA1 is the new generation of Nucleo expansion board, it can be used with all STM32 Nucleo family and can be plugged / superposed with other ST Nucleo expansion boards (e.g.: Bluetooth, WiFi, etc...).

Schematic and list of material

Figure 3. Satellite schematic and list of material



Ordering information

Table 1. Ordering information

Order code	Description
VL6180X-SATEL	Two VL6180X satellite boards

Revision history

Table 2. Document revision history

Date	Revision	Changes
15-Jan-2015	1	Initial release.
10-Jun-2015	2	Add Section : VL6180X Overview

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