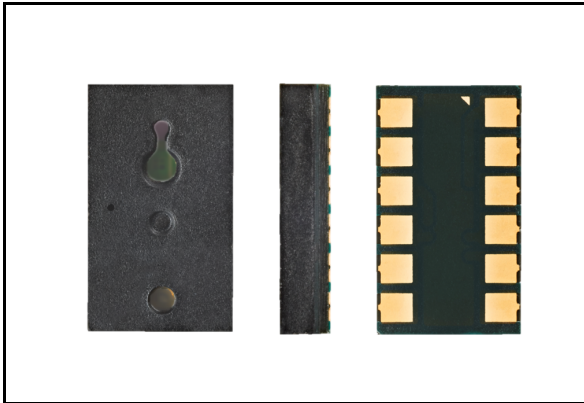


Proximity and ambient light sensing (ALS) module

Data brief - preliminary data



Features

- Three-in-one smart optical module
- Fast, accurate distance ranging
 - Measures absolute range
 - Independent of object reflectance
 - Ambient rejection (for example, sunlight)
 - Crosstalk compensation for cover glass
- Ambient light sensor
 - High dynamic range
 - Accurate/sensitive in ultra-low light
 - Calibrated output value in lux
- Easy integration
 - Single reflowable component
 - No additional optics or gasket
 - Single power supply
 - 400 kHz I²C interface for control
- Two programmable GPIO
 - Flexible interrupts
 - Window and thresholding functions for both ranging and ALS

Description

The VL6180 is the first open market product based on ST's patented **FlightSense™** technology. This is a ground-breaking proximity measuring technology allowing absolute distance measurement 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 VL6180 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 in a three-in-one ready-to-use reflowable package, the VL6180 is easy to integrate and saves the end-product maker long and costly optical and mechanical design optimizations.

The module is designed for ultra low power operation, performing ranging and ALS measurements automatically at user defined intervals. Multiple threshold and interrupt schemes are supported to minimize host operations.

Host control is performed using a 400 kHz I²C interface. Optional additional functions, such as measurement ready and threshold interrupts, are provided by two programmable GPIO.

Applications

- Smartphones/portable touchscreen devices
- Tablet/laptop/gaming devices
- Domestic appliances/industrial devices

Technical specification

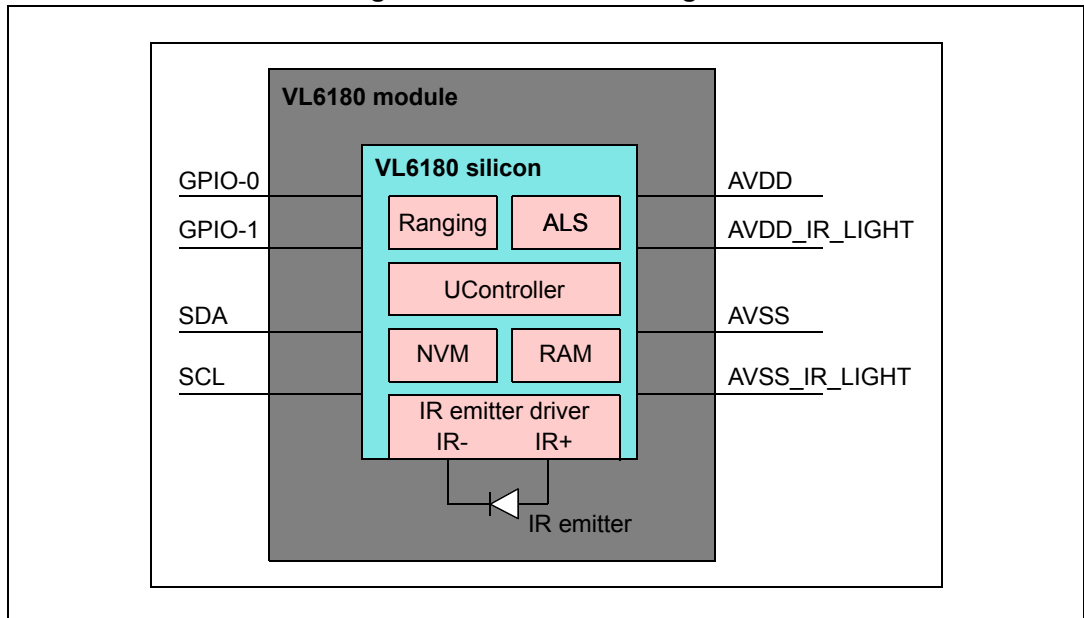
Table 1. Technical specification

Feature	Detail
Package	Optical LGA12 4.8x2.8x1
Size	4.8 x 2.8 x 1.0 mm
Ranging	0 to 10 cm
Ambient light sensor	0.0046 to 95 klux 16-bit output (calibrated in Lux). 8 manual gain settings
Operating voltage	2.5 to 3.0V
Typical power consumption	Sleep - < 1 uA (typical) Standby - < 1uA (typical) ALS - 250uA (typical) Ranging - < 2.0 mA (typical) ⁽¹⁾
Operating temperature	-20 to 70°C
IR emitter	850nm
I ² C address	0x29 (7-bit)

1. Maximum convergence 10 ms. 10 Hz sampling rate.

System block diagram

Figure 1. VL6180 block diagram



Ordering information

VL6180 is currently available in the following format. More detailed information is available on request.

Table 2. Delivery format

Order code	Description
VL6180V0NR/1	Tape and reel

Revision history

Table 3. Document revision history

Date	Revision	Changes
20-Feb-2013	1	Initial release.
21-Mar-2013	2	Updates to Technical specification on page 2 .

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