



OV5678

5-megapixel product brief



Industry's First 5MP RGB-Ir Image Sensor for 2-in-1 Convertible Laptops with Windows Hello Facial Authentication

OMNIVISION's OV5678 is the industry's first 5MP RGB-Ir image sensor for 2-in-1 convertible laptops. The sensor enables a single camera with greater accuracy for infrared (IR) Windows Hello facial authentication as well as high quality color (RGB) images for selfies and videoconferencing. Combining IR and color imaging allows designers to create more compact, thinner 2-in-1 convertible laptops with greater functionality. To ensure high quality color images, the OV5678 is built on OMNIVISION's 1.12 μm PureCel®Plus pixel architecture with deep trench isolation for greatly reduced color crosstalk. Additionally, its buried color filter array (BCFA) has a high tolerance for collecting light with various incident light angles.

The PureCel®Plus architecture also utilizes thicker silicon to improve quantum efficiency when capturing images using near-infrared light outside the visible spectrum. This is accomplished with only 1.3MP, which is a quarter of the OV5678 sensor's full resolution. This IR performance enables machine vision applications such as Windows Hello facial authentication. It can also be used to perform eye tracking for reduced power consumption when the user isn't viewing the screen. Eye tracking can also enable user warnings about eye fatigue from looking at the screen for an extended period of time.

The OV5678 is available now for samples and volume production, along with an evaluation kit.

Find out more at www.ovt.com.



- OV5678-GA4A (RGB-Ir, chip probing, 200 µm backgrinding, reconstructed wafer)

Applications

- smartphones and feature phones
- tablets
- PC multimedia
- wearables

Product Features

- 1.12 µm x 1.12 µm pixel
- 260 bytes of embedded one-time programmable (OTP) memory for customer use
- 5MP at 30 fps
- programmable controls for:
 - frame rate
 - mirror and flip
 - cropping
 - windowing
- support for output formats:
 - 10-bit RGB-IR RAW
 - two-wire serial bus control (SCCB)
 - MIPI serial output interface (1- or 2-lane)
 - image quality control: automatic black level calibration
 - RGB-IR in a 4x4 pattern
- supports images sizes:
 - 5MP (2592 x 1944)
 - quad HD (2560 x 1440)
 - 1080p (1920 x 1080)

Technical Specifications

- active array size:** 2592 x 1944
- temperature range:**
 - operating: -30°C to +85°C junction temperature
 - stable image: -20°C to +60°C junction temperature
- maximum image transfer rate:**
 - 5MP (2592 x 1944): 30 fps
 - quad HD (2560 x 1440): 30 fps
 - 1080p (1920 x 1080): 60 fps
- power supply:**
 - analog: 2.6 ~ 3.0V (2.8V nominal)
 - core: 1.14 ~ 1.26V (1.2V nominal)
 - I/O: 1.7 ~ 1.9V (1.8V nominal)
- power requirements:**
 - active: 96 mW
 - standby: 165 µW
 - XSHUTDOWN: 1 µW
- output interface:** 2-lane MIPI serial output
- lens size:** 1/5"
- lens chief ray angle:** 31.24° non-linear
- pixel size:** 1.12 µm x 1.12 µm
- image area:** 2928.384 µm x 2205.216 µm
- output formats:** 10-bit RGB-IR RAW

Functional Block Diagram

