



OCOVA VGA product brief



OmniVision Expands Industry's Smallest BSI Global Shutter Pixel Family with Wafer-Level Camera Module



available in a lead-free package

OmniVision's OCOVA wafer-level camera module is the first CameraCubeChip™ module with Nyxel® technology and features the industry's smallest pixel size of 2.2 microns. The OCOVA expands our family of the industry's smallest GS imagers by providing a VGA resolution option with the best NIR performance in a global shutter device. Existing VGA global shutter devices have low near-infrared (NIR) quantum efficiency (QE) and high modulation transfer function (MTF) degradation, which requires a stronger light source with high power consumption and low performance. The OCOVA features OmniVision's PureCel®Plus-S stacked pixel architecture and Nyxel® NIR technology to enable optimal performance and precision along with industry-leading QE and excellent MTF for sharp, accurate images in machine vision and 3D sensing applications.

The OCOVA is ideal for a wide range of consumer and industrial machine vision and 3D sensing applications that need a global shutter to avoid motion blur, along with top NIR performance that reduces system power consumption by requiring less IR LED illumination in low- and no-light conditions. It combines image sensor OGOVA with image signal processing and optics into a compact 2.69 x 3.04 x 3.04 mm wafer-level camera module.

The wafer level module's low light sensitivity is excellent, with significantly lower gain than the industry's typical 3.0 micron pixel size for an improved signal-to-noise ratio. Target applications include facial authentication and eye tracking in smartphones and notebooks, as well as imaging for AR/VR headsets, drones and robots.

The OCOVA's high MTF enables sharper images with greater contrast and more detail, which helps to enhance machine vision decision-making processes. Additionally it features a high QE of 40% at 940 nm and 60% at 850 nm. This industry-leading QE enables devices to see farther and better in low- and no-light conditions, which allows designers to use less IR LED light and achieve lower system-level power consumption. For AR/VR headsets, this reduces heat generation, while industrial and robotics applications can use fewer IR LEDs for lower system cost, or use the same number to achieve a greater image detection range.

Find out more at www.ovt.com.



OmniVision

Applications

- Machine Vision
- Industrial Automation
- Augmented and Virtual Reality
- Gaming
- Biometric Authentication
- Drones
- 3D Imaging
- Industrial Bar Code Scanning

Product Features

- 2.2 μm x 2.2 μm pixel with PureCel⁺Plus-S Global Shutter and Nyxel⁺ technology
- automatic black level calibration (ABLC)
- programmable controls for:
 - frame rate
 - mirror and flip
 - cropping
- support output formats: 10-bit RAW RGB
- fast mode switching
- supports horizontal and vertical 2:1 subsampling
- supports 2x2 binning
- 1-lane MIPI/LVDS serial output interface
- support for image sizes:
 - 640 x 480
 - 320 x 240
- embedded 128 bytes of one-time programmable (OTP) memory for part identification
- two on-chip phase lock loops (PLLs)
- built-in strobe control
- support for multi-sensor mode operation

OCOVA



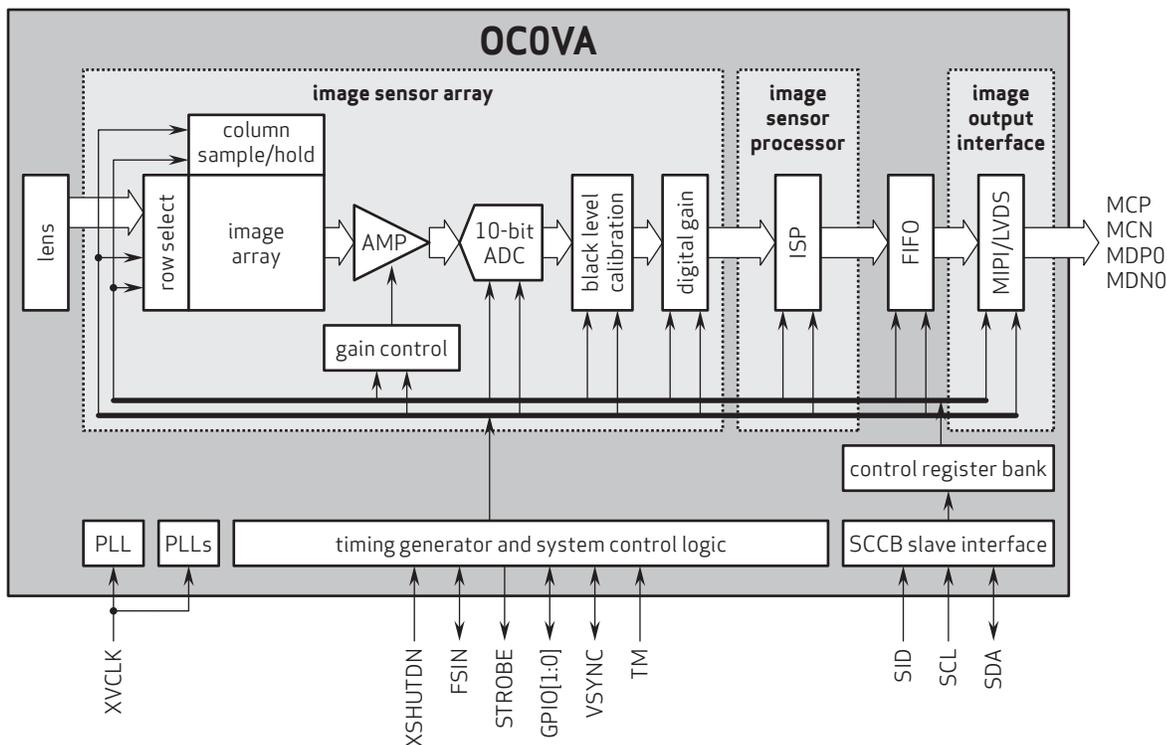
Ordering Information

- OCOVA1B-RAOA** (b&w, lead-free)
CameraCubeChip[™] with black coating

Product Specifications

- active array size:** 640 x 480
- power supply:**
 - analog: 2.8V (nominal)
 - core: 1.2V (nominal)
 - I/O: 1.8V (nominal)
- power requirements:**
 - active: 139 mW
 - standby: 1 mA
 - XSHUTDOWN: 30 μA
- temperature range:**
 - operating: -30°C to +85°C junction temperature
 - stable image: 0°C to +60°C junction temperature
- output interface:** 1-lane MIPI/LVDS serial output
- output formats:** 10-bit RAW RGB
- lens size:** 1/10"
- input clock frequency:** 6 - 64 MHz
- diagonal field of view (FOV):** 89°
- maximum image transfer rate:**
 - VGA (640x480): 240 fps
 - QVGA (320x240): 480 fps
- minimum exposure time:** 1 row period
- maximum exposure time:** frame length - 14 row periods, where frame length is set by registers [0x380E, 0x380F]
- pixel size:** 2.2 μm x 2.2 μm
- image area:** 1443.2 μm x 1091.2 μm
- package dimensions (including ball height):** 2.69 x 3.04 x 3.04 mm

Functional Block Diagram



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