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

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.
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 PureCell® 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

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
  - XSHUTDN: 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”

Ordering Information
- OCOVA1B-RA0A (b&w, lead-free)
  CameraCubeChip™ with black coating

Functional Block Diagram