OG0VA VGA product brief

Facial Recognition

Drones

AR / VR

Machine Vision

OmniVision Expands Industry's Smallest BSI Global Shutter Pixel Family with VGA Image Sensor

lead free

available in a lead-free package

OmniVision's OG0VA is a low voltage, high performance image sensor with the industry's smallest pixel size of 2.2 microns. The OG0VA 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. This image sensor is an expansion of its backside-illuminated (BSI), global shutter (GS) sensor family that provides VGA resolution options with the best NIR performance in a global shutter device.

The OG0VA image sensor provides 640 x 480 VGA resolution at 240 frames per second (fps) and 320 x 240 QVGA resolution at 480 fps, in the industry's smallest optical format of 1/10 inches. Additionally, its 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.

The image sensor's high MTF enables sharper images with greater contrast and more detail, which helps to enhance machine vision decision-making processes. The OG0VA also has a high QE of 40% at 940 nm and 60% at 850 nm. This industry-leading QE enables the device 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.

Omni Vision.

Applications

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

OG0VA

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
- 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
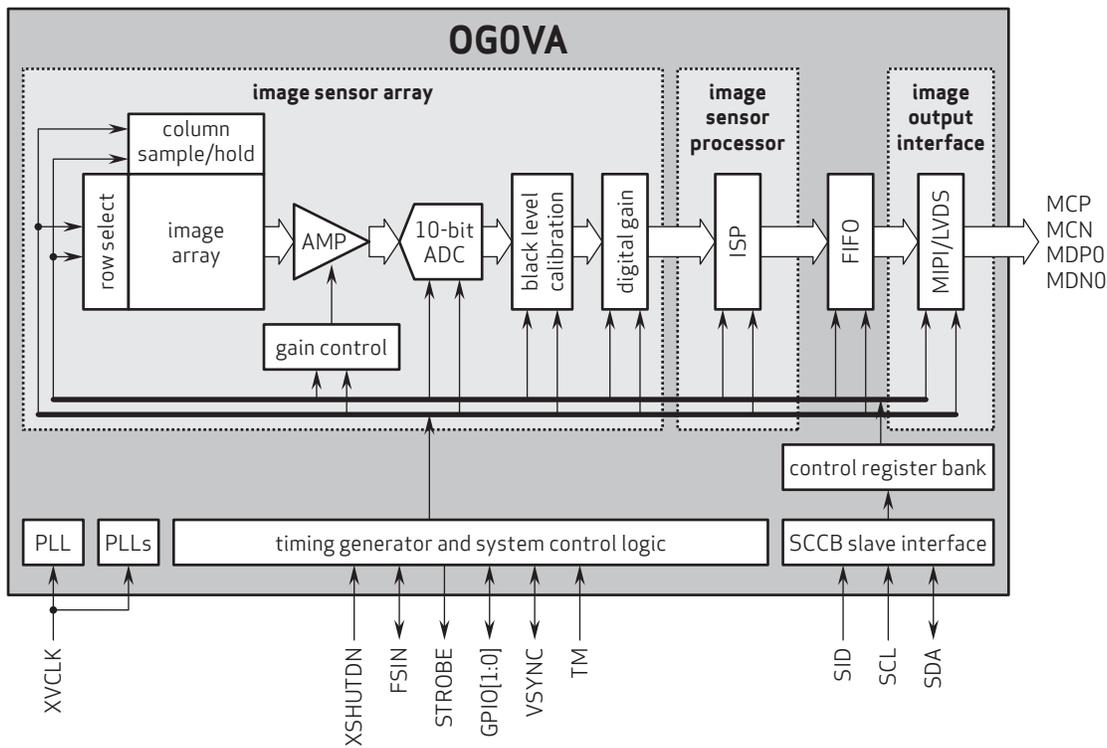- support for multi-sensor mode operation
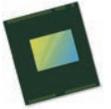
Technical Specifications

- **active array size:** 640 x 480
- **maximum image transfer rate:**
  - VGA (640x480): 240 fps
  - QVGA (320x240): 480 fps
- **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
- **lens size:** 1/10"
- **lens chief ray angle:** 23.4° non-linear
- **pixel size:** 2.2 µm x 2.2 µm
- **image area:** 1443.2 µm x 1091.2 µm

Functional Block Diagram

OmniVision®