OG01A1B 1.3MP product brief

Facial Recognition

Drones

Industrial Automation

Machine Vision

lead free

available in
a lead-free
package

BSI Global Shutter Sensor with Nyxel® Technology Provides Superior Near-Infrared Performance for Advanced Consumer and Industrial Applications

OmniVision's OG01A is a backside-illuminated (BSI) global shutter (GS) image sensor with a pixel size of 2.2 microns. It combines OmniVision's PureCel®Plus-S pixel technology and Nyxel® near-infrared (NIR) technology to enable optimal performance and precision along with industry-leading NIR quantum efficiency (QE). These features make the OG01A ideal for a wide range of consumer and industrial applications that need a global shutter to avoid motion blur, along with top NIR performance for low- and no-light conditions.

The OG01A is well-suited to multiple machine-vision applications, including AR/VR headsets, drones, robots, and simultaneous localization and mapping (SLAM), as well as facial authentication in smartphones and other consumer electronics. This technology is also ideal for automotive in-cabin driver state monitoring and eye tracking.

The 1.3 megapixel OG01A image sensor provides 1280 x 1024 resolution at 120 frames per second (fps) and 640 x 480 resolution at 240 fps in a compact 1/5 inch optical format.

The sensor's high modulation transfer function (MTF) enables sharper images with more detail, which is especially important for enhancing decision-making processes in machine vision applications. The OG01A also has a high NIR QE at 940 nm and 850 nm, enabling the sensor 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. For industrial and robotics applications, designers can use fewer IR LEDs for lower system cost, or use the same number of IR LEDs to achieve a greater image detection range.

Find out more at www.ovt.com.
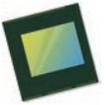
OmniVision®

OG01A1B

Applications

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

Ordering Information

- **OG01A1B-GA5A-Z**
  (b&w, chip probing, 150 µm backgrinding, reconstructed wafer with good die)

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: 8/10-bit RAW
- fast mode switching
- supports horizontal and vertical 2:1 and 4:1 monochrome subsampling
- supports 2x2 monochrome binning
- 1/2-lane MIPI serial output interface
- 1/2 trio CPHY interface, up to 1.1 Gsps/trio
- support for image sizes:
  - 1280 x 1024
  - 640 x 480
- embedded 256 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
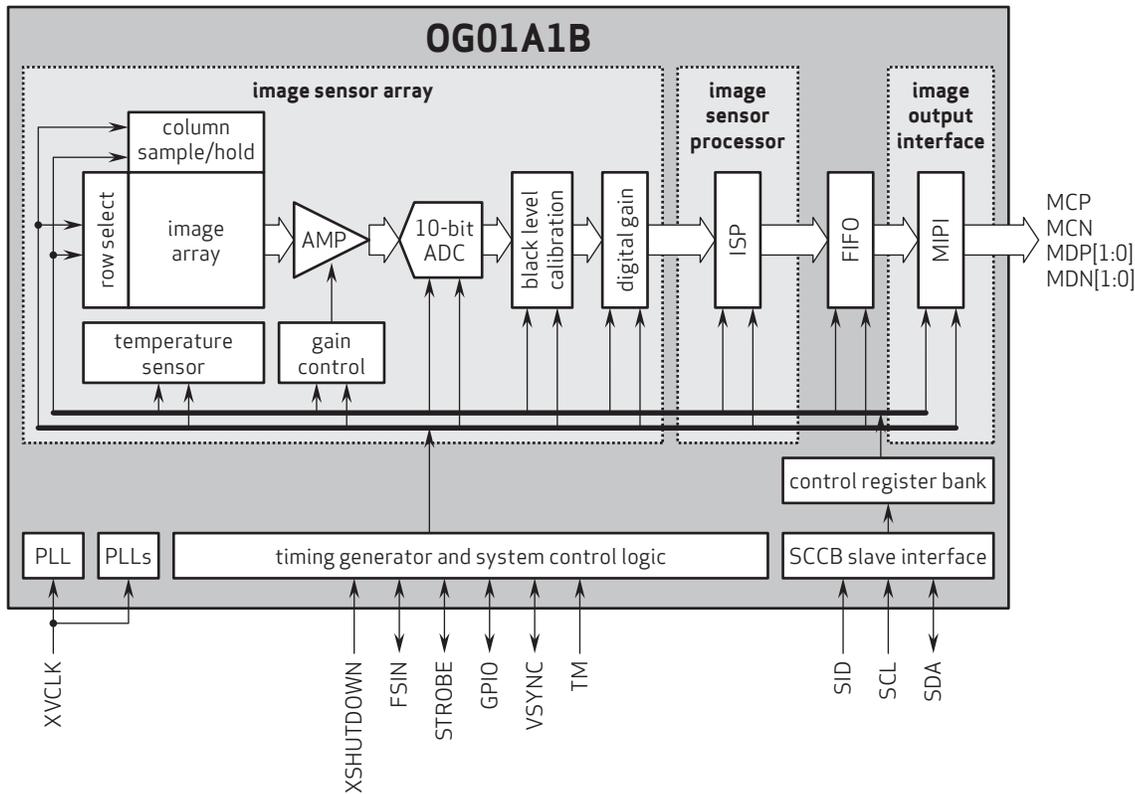- programmable ROI
- embedded temperature sensor

Technical Specifications

- **active array size:** 1280 x 1024
- **maximum image transfer rate:**
  - 1.3MP (1280x1024): 120 fps
  - VGA (640x480): 240 fps
- **power supply:**
  - **analog:** 2.8V (nominal)
  - **core:** 1.2V (nominal)
  - **I/O:** 1.8V (nominal)
- **power requirements:**
  - **active:** 184 mW @ 120 fps
  - **XSHUTDOWN:** 1 µA
- **temperature range:**
  - **operating:** -30°C to +85°C junction temperature
  - **stable image:** 0°C to +60°C junction temperature
- **output interface:** 1/2-lane MIPI serial output
- **output formats:** 8/10-bit RAW
- **lens size:** 1/5"
- **lens chief ray angle:** 31.3° non-linear
- **pixel size:** 2.2 µm x 2.2 µm
- **image area:** 2851.2 µm x 2288 µm

Functional Block Diagram