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.
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: 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

OG01A1B

Ordering Information
- OG01A1B-GAS-Z
  (b&w, chip probing, 150 µm backgrinding, reconstructed wafer with good die)

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

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Functional Block Diagram