Cost-Effective, High-Resolution Global Shutter Image Sensor for Machine Vision Applications

OmniVision’s OV9285 is a global shutter image sensor designed to cost-effectively enable a wide range of consumer and industrial machine vision applications such as AR/VR headsets and accessories, industrial automation, robotics, agricultural drones and 3D modeling. This high-resolution sensor can quickly capture precise images of fast-moving or faraway objects while consuming very little power, and has a low chief ray angle (CRA) of 9 degrees to support wide field-of-view lens designs.

Available in a 1/3.4 inch optical format, the OV9285 captures 1.48 megapixel or 1328 x 1120 resolution images and video at 90 frames per second (fps) using advanced 3 x 3 micron OmniPixel®3-GS pixel technology. This global shutter technology eliminates motion artifacts and blurring, and dramatically improves low-light sensitivity. Additionally, the sensor’s excellent near infrared (NIR) sensitivity at 850 nm and 940 nm helps reduce device power consumption to extend battery life.

Find out more at www.ovt.com.
OV9285

Product Features
- 3 µm x 3 µm pixel with OmniPixel® 3-GS technology
- Automatic black level calibration (ABLC)
- Programmable controls for:
  - Frame rate
  - Mirroring and flip
  - Cropping
  - Windowing
- Support output formats:
  - 8/10-bit RAW
- Fast mode switching
- Supports 2x2 monochrome binning
- Two-lane MIPI serial output interface
- Supports horizontal and vertical 2:1 and 4:1 monochrome subsampling
- Support for image sizes:
  - 1328 x 1120
  - 1280 x 720
  - 640 x 480
  - 640 x 480 (b&w, chip probing, 200 µm backgrinding, reconstructed wafer with good die)
- Embedded 256 bits of one-time programmable (OTP) memory for part identification
- Two on-chip phase lock loops (PLLs)
- LED PWM
- Built-in strobe control
- Programmable controls for:
  - Automatic black level calibration (ABLC) with OmniPixel® 3-GS technology
- 3 µm x 3 µm pixel size
- Lens chief ray angle: 9°
- Maximum exposure time:
  - 1328 x 1120: 50 fps
- Scan mode: Progressive
- Minimum exposure time: 1 row period
- Maximum exposure time: Frame length - 25 row periods, where frame length is set by registers (0x380E, 0x380F)
- Pixel size: 3 µm x 3 µm

Applications
- Consumer HMD
- Machine Vision
- Mobile devices

Ordering Information
- OV9285-GA4A-Z (b&w, chip probing, 200 µm backgrinding, reconstructed wafer with good die)

Product Specifications
- Active array size: 1344 x 1136
- Power supply:
  - Analog: 2.8V (nominal)
  - Core: 1.2V (nominal)
  - I/O: 1.8V (nominal)
- Temperature range:
  - Operating: -30°C to +85°C junction temperature
- Output interface: 2-lane MIPI serial output
- Output formats: 8/10-bit RAW
- Lens size: 1/3.4"
- Input clock frequency: 6 - 64 MHz
- Maximum image transfer rate:
  - 1328 x 1120: 50 fps
- Scan mode: Progressive
- Minimum exposure time: 1 row period
- Maximum exposure time: Frame length - 25 row periods, where frame length is set by registers (0x380E, 0x380F)
- Pixel size: 3 µm x 3 µm

Functional Block Diagram