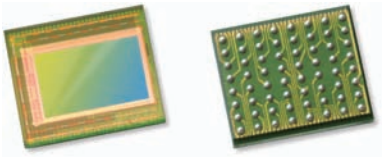


OV9281-OV9282 1-megapixel product brief

1-Megapixel OmniPixel®3-GS Sensors for Computer Vision Applications

lead free

available in a lead-free package

OmniVision's OV9281 and OV9282 are high-speed global shutter image sensors that bring 1-megapixel resolution to a wide range of consumer and industrial computer vision applications, including augmented reality (AR), virtual reality (VR), collision avoidance in drones, bar code scanning and factory automation. Built on OmniVision's OmniPixel®3-GS pixel technology, the OV9281 and OV9282 feature a high-speed global shutter pixel with best-in-class near-infrared (NIR) quantum efficiency (QE) to meet high-resolution and low-latency requirements.

Special features of the OV9281 and OV9282 include region of interest (ROI) selection and context switching. This allows some of the camera settings to change dynamically as fast as alternating frames. The sensors are available in both narrow and wide chief ray angle (CRA) settings.

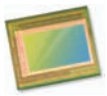
The 1/4-inch OV9281 and OV9282 capture 1280 x 800 resolution images at 120 frames per second (fps) and VGA resolution at 180 fps with 2-lane MIPI and DVP output. The OV9281 and OV9282 also feature support for frame synchronization and dynamic defective pixel correction.

The OV9281 has a chief ray angle (CRA) of 9 degrees and comes in a chip scale package (CSP). The OV9282 features a CRA of 27 degrees and is available in a reconstructed wafer (RW) format. Both sensors are currently available in volume production.

Find out more at www.ovt.com.

OmniVision

OV9281-OV9282



Applications

- Consumer HMD
- Drones
- Machine Vision
- PCNB

Product Features

- 3 µm x 3 µm pixel with OmniPixel®3-GS technology
- automatic black level calibration (ABLC)
- programmable controls for:
  - frame rate
  - mirror and flip
  - cropping
  - windowing
- support output formats: 8/10-bit RAW
- fast mode switching
- supports 2x2 monochrome binning
- two-lane MIPI serial output interface
- DVP parallel output interface
- supports horizontal and vertical 2:1 and 4:1 monochrome subsampling
- support for image sizes:
  - 1280 x 800
  - 1280 x 720
  - 640 x 480
  - 640 x 400
- 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

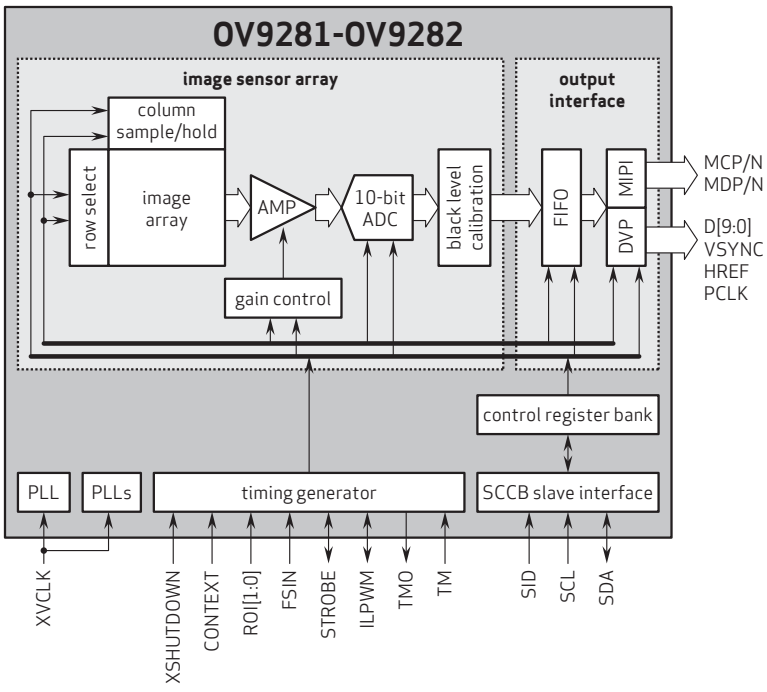
Ordering Information

- **OV09281-H64A**
  (b&w, lead-free) 64-pin CSP
- **OV09282-GA4A**
  (b&w, lead-free, 200 µm backgrinding, reconstructed wafer with good die)

Product Specifications

- **active array size:** 1296 x 816
- **power supply:**
  - **core:** 1.2V (nominal)
  - **analog:** 2.8V (nominal)
  - **I/O:** 1.8V (nominal)
- **power requirements:**
  - **active:** 156 mW
  - **standby:** 150 µA
  - **XSHUTDOWN:** 150 µA
- **temperature range:**
  - **operating:** -30°C to +85°C junction temperature
  - **stable image:** 0°C to +50°C junction temperature
- **output interfaces:**
  2-lane MIPI serial output and DVP parallel output
- **output formats:** 8/10-bit RAW
- **lens size:** 1/4"
- **lens chief ray angle:**
  - **OV9281:** 9° linear
  - **OV9282:** 26.78° non-linear
- **input clock frequency:** 6 - 27 MHz
- **max S/N ratio:** 38 dB
- **dynamic range:** 68 dB
- **maximum image transfer rate:**
  - **1280 x 800:** 120 fps
- **sensitivity:**
  13000 mV/µW.cm^{-2}.sec) @ 850 nm
  6500 mV/µW.cm^{-2}.sec) @ 940 nm
- **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
- **image area:** 3896 µm x 2453 µm
- **package dimensions:**
  - **OV9281 CSP:** 5237 µm x 4463 µm
  - **OV9282 RW:** 5252 µm x 4478 µm

Functional Block Diagram



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