



OV9281

1-megapixel product brief



1/4" B&W 1-Megapixel (1280 x 800) CMOS Image Sensor with OmniPixel®3-GS Technology for Computer Vision Applications

OMNIVISION's OV9281 is a high-speed global shutter image sensor that brings 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 features 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 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 sensor is available in both narrow and wide chief ray angle (CRA) settings.

The 1/4-inch OV9281 captures 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 also features 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 sensor is currently available in volume production.

Find out more at www.ovt.com.



- OV9281-H64A (b&w, lead-free)
64-pin CSP

Applications

- consumer HMD
- drone
- machine vision
- PCNB

Technical Specifications

- active array size:** 1296 x 816
- maximum image transfer rate:**
 - 1280 x 800: 120 fps
- power supply:**
 - analog: 2.8V (nominal)
 - core: 1.2V (nominal)
 - I/O: 1.8V (nominal)
- power requirements:**
 - active: 156 mW
 - standby: 150 μ A
 - XSHUTDOWN: 150 μ A
- output formats:** 8/10-bit RAW
- 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
- lens size:** 1/4"
- lens chief ray angle:** 9° linear
- scan mode:** progressive
- pixel size:** 3 μ m x 3 μ m
- image area:** 3896 μ m x 2453 μ m

Product Features

- 3 μ m x 3 μ m 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

Functional Block Diagram

