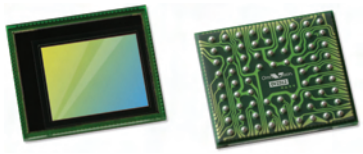


OV2312 2-megapixel product brief

lead free

available in a lead-free package

OmniVision's New Dual-Mode Automotive Image Sensor for Single-Camera Driver State Monitoring and Viewing Applications Can Save Cost, Power and Space

OmniVision's OV2312 image sensor is the automotive industry's first and smallest-in-its-class 2MP, RGB-IR global shutter image sensor. Built on our OmniPixel®3-GS pixel technology, the OV2312 offers advanced ASIL functional safety, industry-leading near-infrared light performance and low power consumption; and facilitate lowest total system cost. The OV2312 provides a dual-mode sensor that fuses human and machine vision capabilities, allowing designers to address both trends with a single camera (e.g., driver state monitoring (DSM) and video conferencing). It delivers motion-artifact-free images at high resolutions of 1600 x 1300 at 60 fps and 1280 x 720 at 90 fps. Additionally, because this is the smallest 2MP GS sensor in its class-offered in a 7.2 x 6.1 mm automotive chip-scale package-cameras can be designed more discretely.

For operation without visible light, the OV2312 features the 3.0 µm OmniPixel®3-GS architecture, which provides an industry-leading near-infrared quantum efficiency of 14% at the 940 nm wavelength, along with excellent modulation transfer function (MTF). Not only does this sensor capture images with the high quality required for driver eye and gaze tracking when running in single mode at 60 fps, it also reduces system power consumption and cost by requiring fewer IR LEDs and by its capability to synchronize with the pulses of the IR light source. The sensor itself only consumes an industry-leading 190 mW in typical conditions. This greatly reduces the heat generated, which is important to guarantee optimal sensor performance for interior cameras that operate continuously in confined spaces. Additionally, its array size of 1600 x 1300 pixels enables reliable monitoring regardless of driver height, seat position or vehicle cockpit design.

OV2312 samples are available now, and it is AEC-Q100 Grade 2 certified for automotive applications.

Find out more at www.ovt.com.

OmniVision

OV2312

Applications

- In-Cabin Monitoring
- Driver Monitoring Systems (DMS)
- Video Conferencing

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:
  - RGB-Ir RAW 4x4 pattern
- fast mode switching
- two-lane MIPI serial output interface
- DVP parallel output interface
- support for image sizes:
  - 1600 x 1300
  - 1280 x 720
- built-in strobe control
- embedded 128 bytes of one-time programmable (OTP) memory
- two on-chip phase lock loops (PLLs)
- temperature sensor
- LED PWM
- low power modes
- frame sync mode
- advanced ASIL safety features

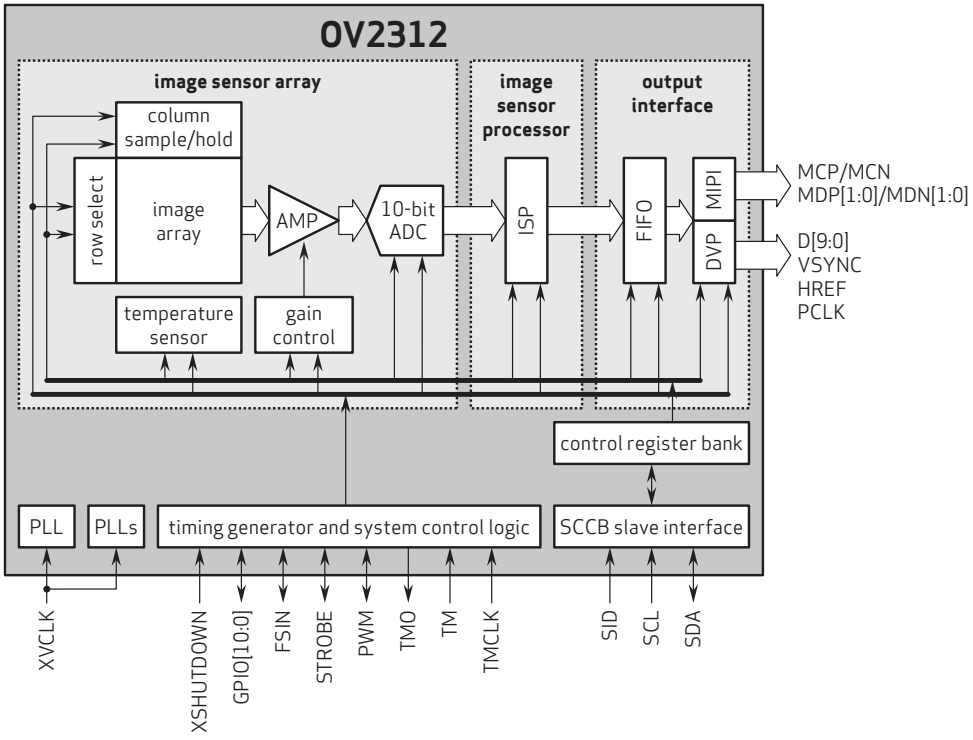
Ordering Information

- **OV02312-E75Y-1A-Z** (RGB-Ir, lead-free)
  75-pin a-CSP™, rev 1A, packed in tray without protective film

Product Specifications

- **active array size:** 1600 x 1300
- **power supply:**
  - **analog:** 2.8V (nominal)
  - **core:** 1.2V (nominal)
  - **I/O:** 1.8V (nominal)
- **power requirements:**
  - **active:** 190 mW
  - **XSHUTDOWN:** <25 µA
- **temperature range:**
  - **operating:** -40°C to +105°C sensor ambient temperature and -40°C to +125°C junction temperature
- **output interface:** 2-lane MIPI serial output and DVP parallel output
- **output formats:** 10-bit RGB-Ir RAW
- **lens size:** 1/2.9"
- **input clock frequency:** 6 - 27 MHz
- **lens chief ray angle:** 15° linear
- **max S/N ratio:** 37.4 dB
- **dynamic range:** 68 dB
- **maximum image transfer rate:**
  - **1600 x 1300:** 60 fps
- **sensitivity:**
  $114Ke^{-}/(\mu W.cm^{-2}.sec)$ @ 850 nm
  $54Ke^{-}/(\mu W.cm^{-2}.sec)$ @ 940 nm
- **maximum exposure interval:**
  1 row period
- **maximum exposure time:**
  frame length - 12 row periods, where frame length is set by registers {0x380E, 0x380F}
- **pixel size:** 3 µm x 3 µm
- **image area:** 4857.7 µm x 3955.9 µm
- **package dimensions:**
  - **a-CSP™:** 7219 µm x 6157 µm

Functional Block Diagram



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