

# OVM7251 VGA CameraCubeChip™ product brief



## Compact Global Shutter Camera Module for Near-Infrared Mobile Facial Authentication, AR/VR Eye Tracking and Machine Vision



available in a lead-free package

OmniVision's OVM7251 CameraCubeChip™ module is built on the 3  $\mu\text{m}$  OmniPixel®3-GS global shutter architecture. The OVM7251 offers designers a small form factor, low power consumption and a cost effective 640 x 480 VGA resolution camera module. The module provides low power consumption via multiple standby modes and faster global shutter capture and processing during active mode. Additionally, it is available in an 850 nm version for AR/VR eye tracking, and a 940 nm version for machine vision and 3D sensing in mobile facial authentication.

The OVM7251's sleep current consumption is only at 5  $\mu\text{A}$ . During active mode, the module's global shutter enables fast image capture. This arrangement can result in extended battery life for a broad range of

applications, such as head-mounted displays for AR/VR, facial authentication in smart phones, and machine vision for factory automation, barcode readers and robot vacuum cleaners.

OmniVision's CameraCubeChip™ modules reduce design time by integrating the image sensors, processor and lenses in a miniature wafer-level, reflowable chip-scale package. The OVM7251 module is available now for sampling and volume production, along with an evaluation kit.

Find out more at [www.ovt.com](http://www.ovt.com).



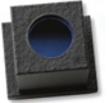
## Applications

- Eye Tracking
- Security and Surveillance
- Wearable Devices
- Toys and Games

## Product Features

- 3  $\mu\text{m}$  x 3  $\mu\text{m}$  pixel with OmniPixel<sup>3</sup>-GS technology
- supports horizontal and vertical 2:1 and 4:1 monochrome subsampling
- automatic black level calibration (ABL)
- supports 2x2 monochrome binning
- programmable controls for:
  - frame rate
  - mirror and flip
  - cropping
  - windowing
- one-lane MIPI serial output interface
- one-lane LVDS serial output interface
- support output formats: 8/10-bit RAW
- embedded 256 bits of one-time programmable (OTP) memory for part identification
- support for image sizes:
  - 640 x 480
  - 320 x 240
  - 160 x 120
- two on-chip phase lock loops (PLLs)
- built-in 1.5V regulator for core
- fast mode switching
- PWM
- built-in strobe control

# OVM7251



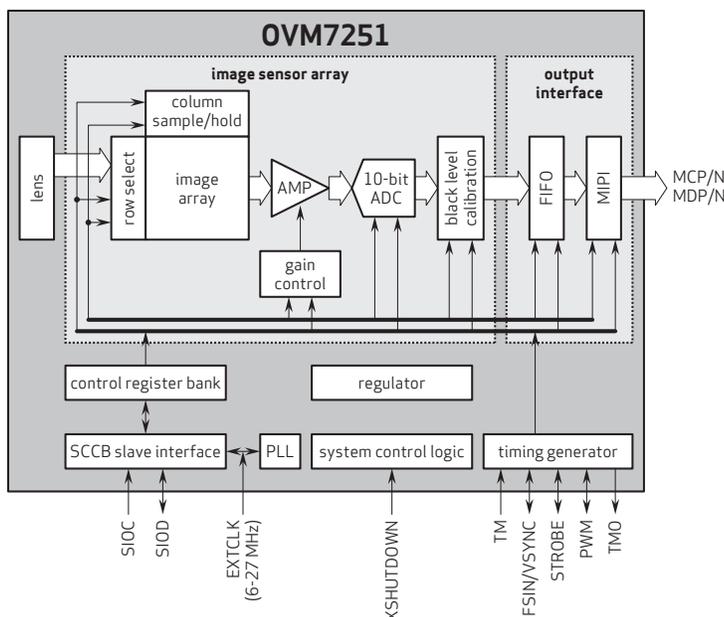
## Ordering Information

- OVM7251-RAIA (b&w, lead-free) CameraCubeChip™ with black coating, 850 nm short focus
- OVM7251-RAIA-R1 (b&w, lead-free) CameraCubeChip™ with black coating, 940 nm long focus

## Product Specifications

- active array size: 640 x 480
- f no.: 2.2
- power supply:
  - analog: 2.8V (nominal)
  - core: 1.5V (optional)
  - I/O: 1.8V (nominal)
- focal length:
  - RAIA: 1.837 mm
  - RAIA-R1: 1.842 mm
- power requirements:
  - active: 119 mW @ 120 fps, VGA output
  - standby: 15  $\mu\text{A}$  for AVDD, 40  $\mu\text{A}$  for DOVDD without input clock, 700  $\mu\text{A}$  for DOVDD with input clock
  - XSHUTDOWN: 5  $\mu\text{A}$  for AVDD, 5  $\mu\text{A}$  for DOVDD
- input clock frequency: 6 - 27 MHz
- max S/N ratio: 38 dB
- dynamic range: 69.6 dB @ 8x gain
- maximum image transfer rate:
  - 640 x 480: 120 fps
- temperature range:
  - operating: -30°C to +70°C junction temperature
  - stable image: 0°C to +50°C junction temperature
- scan mode: progressive
- maximum exposure interval: 502 x  $t_{\text{row}}$
- output interface: 1-lane MIPI/LVDS serial output
- pixel size: 3  $\mu\text{m}$  x 3  $\mu\text{m}$
- output formats: 10-bit RAW BW
- image area: 1968  $\mu\text{m}$  x 1488  $\mu\text{m}$
- net weight: 60 mg
- optical format: 1/7.5"
- package dimensions (including ball height):
  - RAIA: 3960 x 3460 x 3438  $\mu\text{m}$
  - RAIA-R1: 3960 x 3460 x 3340  $\mu\text{m}$
- diagonal field of view (FOV):
  - RAIA: 80°
  - RAIA-R1: 83°

## Functional Block Diagram



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