New 720p Image-Sensor Family Combines Compact Form Factor with High Performance for Ultra-Thin Mobile Devices

The OV01A family of image sensors is built on OmniVision’s most advanced 1.12-micron PureCel® Plus stacked-die architecture to deliver best-in-class performance while maintaining an extremely small footprint. By enabling a camera module size of just 2.5 mm in the “y” dimension and less than 2 mm in the “z” dimension, the OV01A image-sensor family is ideal for space-constrained applications such as notebooks and mobile devices with thin bezels.

To suit the performance requirements of different mobile applications, the OV01A is available in three versions: the OV01A10 Bayer color sensor, the OV01A1B monochrome infrared (IR) sensor and the OV01A1S RGB-IR sensor.

Key highlights of each sensor:
• OV01A10: Delivers excellent Bayer color imaging throughout the visible light spectrum
• OV01A1B: Optimizes near-infrared (NIR) quantum efficiency for biometric imaging
• OV01A1S: Combines RGB and IR imaging capabilities in a single sensor

The sensors can output 720p high definition (HD) video at 60 frames per second (fps), 1280 x 800 resolution video at 60 fps, or VGA video at 90 fps.

Find out more at www.ovt.com.
Applications

- Notebooks / PCs
- Tablets, Detachables, and 2-in-1s
- Wearables
- Smartphones and Feature Phones

Product Features

- 1.116 µm x 1.116 µm pixel
- optical size of 1/11"
- 32° CRA
- 1MP at 60 fps
- programmable controls for:
  - frame rate
  - mirror and flip
  - cropping
  - windowing
- supports images sizes:
  - 1MP (1280x800)
  - 720p (1280x720)
  - VGA (640x480), and more

- 32 bytes of embedded one-time programmable (OTP) memory for customer use
- two-wire serial bus control (SCCB)
- MIPI serial output interface (1-lane)/LVDS
- two on-chip phase lock loops (PLLs)
- 2x binning support
- image quality controls:
  - defect pixel correction
  - automatic black level calibration
- targeting module "Y" of 2.5 mm

Product Specifications

- active array size: 1296 x 816
- power supply:
  - analog: 2.7 - 3.0V (2.8V nominal)
  - core: 1.14 - 1.26V (1.2V nominal)
  - VDD: 1.7 - 1.9V (1.8V nominal)
- power requirements:
  - active: 52 mA
  - standby: 1 mA
  - XSHUTDN: 10 µA
- temperature range:
  - operating: -30°C to +85°C junction temperature
  - stable: 0°C to +60°C junction temperature
- output formats:
  - OV01A10: 8/10-bit RGB-Ir
  - OV01A1B: 8/10-bit RAW
  - OV01A1S: 8/10-bit RAW

Ordering Information

- OV01A10-GA5A-Z
  (color, chip probing, 150 µm backgrinding, reconstructed wafer)
- OV01A1B-GA5A-Z
  (B&W, chip probing, 150 µm backgrinding, reconstructed wafer)
- OV01A1S-GA5A-Z
  (RGB-Ir, chip probing, 150 µm backgrinding, reconstructed wafer)

VGA (640x480), and more
- 720p (1280x720)
- 1MP (1280x800)
- windowing
- mirror and flip
- frame rate
- programmable controls for:
- 1MP at 60 fps
- 32° CRA
- optical size of 1/11"
- 1.116 µm x 1.116 µm pixel
- maximum exposure:
  - VGA (640x480): 90 fps
  - 1MP (1280x800): 60 fps
- minimum exposure:
  - 4-row
- maximum exposure:
  - VTS-8
- pixel size:
  - 1.116 µm x 1.116 µm
- image area:
  - 1446.34 µm x 910.66 µm
- die dimensions:
  - COB: 2493 µm x 1494 µm
  - RW: 2543 µm x 1544 µm

Functional Block Diagram

OV01A10

image sensor core

image sensor processor

image output interface

image array

AMP

10-bit ADC

gain control

column sample/hold

control register bank

PLLs

PLL

timing generator and system control logic

SCCB slave interface

MCP/N

MDP/N

XVCLK

XSHUTDN

TM

FSIN

SID

SCL

SDA

OV01A10-GA5A-Z

OV01A1B-GA5A-Z

OV01A1S-GA5A-Z

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