OV24A10 24-megapixel product brief

OmniVision's First Image-Sensor Family with 0.9-micron Pixels Enables Best-in-Class Performance and Features for High-End Smartphones

The OV24A sensors are OmniVision's first sensors with 0.9-micron pixels. Built on PureCel®Plus stacked-die architecture, the sensors offer quantum efficiency performance matching that of the latest 1.0-micron pixel sensors. The combination of smaller pixels, higher resolution and improved performance makes the OV24A sensors an ideal camera solution for front- and rear-facing camera applications in high-end smartphones.

The OV24A sensor family consists of three individual products: OV24A1Q, OV24A1B and OV24A10.

The OV24A1Q, with its unique four-cell color-filter pattern, is ideal for front-facing camera applications. This sensor has an on-chip, in-pixel binning feature that captures four times more light photons than a standard 0.9-micron pixel, enabling better image quality in low-light conditions.

When used as the primary, rear-facing camera in a dual-camera configuration, the OV24A1B (monochrome) and OV24A10 (Bayer) sensors enable higher zoom ratios and higher-quality still images and video even in low-light conditions.

All three versions of the OV24A sensors are available in a 1/2.8-inch optical format and support phase detection autofocus and high dynamic range. The sensors are capable of recording ultra-high-quality video in a wide range of resolution formats, including full-resolution 24-megapixel, 4K2K, 1080p and 720p.

Find out more at www.ovt.com.

Applications

- Smartphones
- Video Conferencing
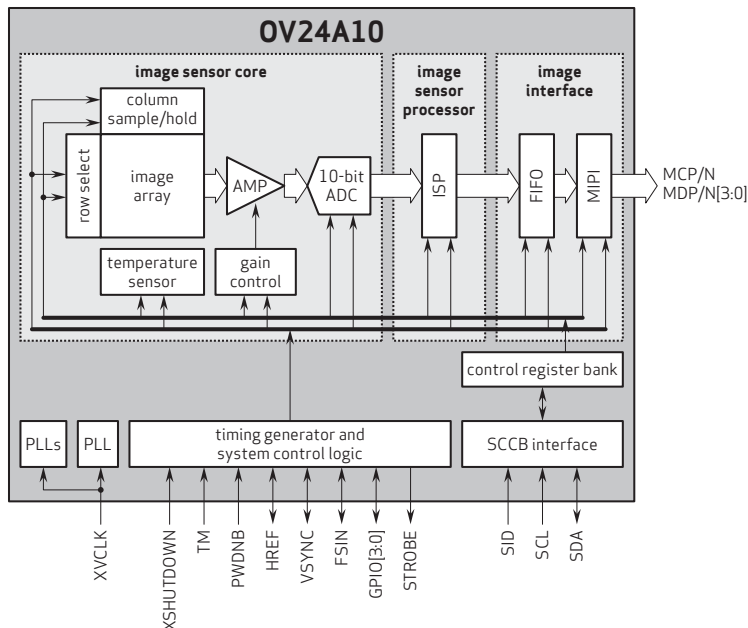- PC Multimedia

OV24A10

Ordering Information

- **OV24A10-GA5A-Z**
  (color, chip probing, 150 μm backgrinding, reconstructed wafer with good die)
- **OV24A1B-GA5A-Z**
  (B&W, chip probing, 150 μm backgrinding, reconstructed wafer with good die)
- **OV24A1Q-GA5A-Z**
  (color, chip probing, 150 μm backgrinding, reconstructed wafer with good die)

Product Features

- automatic black level calibration (ABLC)
- programmable controls for:
  - frame rate
  - mirror and flip
  - binning
  - cropping
  - windowing
- support for dynamic DPC cancellation
- supports output formats:
  - 10-bit RGB RAW
  - DPCM 10-8 compression
- supports horizontal and vertical subsampling
- supports typical images sizes:
  - 5664 x 4248
  - 3840 x 2160
  - 1920 x 1080
  - 1280 x 720
- standard serial SCCB interface
- up to 4-lane MIPI TX interface with speed up to 2.5 Gbps/lane
- programmable I/O drive capability
- gyro interface with 3-/4-wire SPI support
- embedded 16k bits of one-time programmable (OTP) memory (4k bits reserved for customer use)
- 4-cell support (OV24A1Q without PDAF):
  - 4-cell binning
  - 4-cell full
  - 4-cell HDR timing
- sequential multi-frame HDR (OV24A10/OV24A1B)
- ZigZag HDR timing (OV24A10/OV24A1B)
- three on-chip phase lock loops (PLLs)
- programmable I/O drive capability
- built-in temperature sensor
- typical module size: 8.5 x 8.5 x -5.5 mm

Product Specifications

- **active array size:** 5664 x 4248
- **power supply:**
  - **core:** 1.05V
  - **analog:** 2.8V
  - **I/O:** 1.8V
- **power requirements:**
  - **active:** 390 mW
  - **XSHUTDOWN:** <1.5 μW
- **temperature range:**
  - **operating:** -30°C to +85°C junction temperature
  - **stable:** 0°C to +60°C junction temperature
- **output formats:**
  - 10-bit RGB RAW
  - DPCM 10-8 compression
- **lens size:** 1/2.83"
- **lens chief ray angle:** 35.1° non-linear
- **input clock frequency:** 6 - 27 MHz
- **maximum image transfer rate:**
  - **5664 x 4248:** 30 fps
  - **3840 x 2160:** 60 fps
  - **1920 x 1080:** 120 fps
  - **1280 x 720:** 240 fps
- **maximum exposure:** VTS - 14 lines
- **minimum exposure:** 8 lines
- **sensitivity:**
  - **OV24A10:** 2700 e$^-$/Lux-sec
  - **OV24A1B:** 3000 e$^-$/Lux-sec
- **max S/N ratio:** 35.7 dB
- **dynamic range:** 71.0 dB @ 16x gain
- **scan mode:** progressive
- **pixel size:** 0.9 μm x 0.9 μm
- **image area:** 5112 μm x 3852 μm
- **dimensions:**
  - **COB:** 6148.8 μm x 4406.4 μm
  - **RW:** 6198.8 μm x 4456.4 μm

Functional Block Diagram

OmniVision.