High-Performance 13-Megapixel PureCel® Plus-S Image Sensor Optimized for Dual-Camera Smartphone Applications

OmniVision’s OV13A10 is an ultra-compact 13-megapixel image sensor built on OmniVision’s second-generation, 1.0-micron PureCel® Plus-S stacked die pixel technology. Designed specifically for dual-camera applications, the OV13A10 achieves a z-height of less than 6 mm, meeting the compact space requirements of next-generation smartphones.

A customized chief ray angle (CRA) enables the OV13A10 to be used as a tele-sensor in a 2x optical zoom configuration, which offers DSLR-like image quality and user experience. The OV13A10 is also optimized for dual-camera zoom solutions, with features such as context switching and frame synchronizing to simplify camera system architecture.

The OV13A10 brings a host of advanced imaging capabilities to smartphones, including zigzag high dynamic range (zHDR) and phase-detection autofocus (PDAF), which extends the sensor’s dynamic range capabilities and enables snap-quick autofocus, respectively. The sensor supports multiple resolution and frame-rate configurations, including full-resolution 13-megapixel images and video at 30 frames per second (fps) with zHDR, 4K2K video at 30 fps, and 1080p video at 60 fps.

Find out more at www.ovt.com.
# OV13A10

## Product Features
- 13MP @ 30 fps, 4K2K @ 30 fps
- supports phase detection auto focus (PDAF) with bypass PD pixels
- supports dynamic defect pixel correction (DPC)
- automatic black level calibration (ABLC)
- total embedded one-time programmable (OTP) memory: 1536 bytes
- supports typical images sizes:
  - 4224x3136
  - 4224x2376
  - 2112x1568
  - 2112x1188
  - 1408x792
- supports horizontal and vertical subsampling
- programmable I/O drive capability
- supports ZigZag HDR timing
- programmable controls for:
  - frame rate
  - mira and flip
  - cropping
  - windowing
- up to 4-lane MIPI TX interface with speed up to 1.2 Gbps/lane
- standard serial SCCB interface with speed up to 1 MHz (when clock input is ~10 MHz)
- supports output formats:
  - 10-bit RAW RGB
  - DPCM 10-B compression
- long exposure time of up to 30 seconds
- two on-chip phase lock loops (PLLs)
- built-in temperature sensor
- typical module size: 8.5 x 8.5 x <6 mm

## Product Specifications
- active array size: 4224 x 3136
- power supply:
  - core: 1.2V
  - analog: 2.8V
  - V/IQ: 1.8V
- power requirements:
  - active: 228 mW
  - standby: 1.2 mW
  - XSHUTDOWN: <20 µA
- temperature range:
  - operating: -30°C to +85°C junction temperature
  - stable image: 0°C to +60°C junction temperature
- pixel size: 1.008 µm x 1.008 µm
- lens size: 1/3.4"
- lens chief ray angle: 29.48° non-linear
- input clock frequency: 6 - 64 MHz
- maximum image transfer rate:
  - 4224 x 3136: 30 fps
  - 4224 x 2376: 60 fps
  - 2112 x 1568: 60 fps
  - 2112 x 1188: 60 fps
  - 1408 x 792: 60 fps
- minimum exposure: 4 lines
- maximum exposure: (VT5/2-12) lines
- sensitivity: 3400 e-/Lux-sec
- max S/N ratio: 36 dB
- dynamic range: 62.5 dB @ 1x gain
- scan mode: progressive
- image area: 4290.05 µm x 3193.34 µm
- die dimensions:
  - COB: 5364 µm x 3627 µm
  - RW: 5414 µm x 3677 µm

## Ordering Information
- OV13A10-GAS-A-Z
  (color, chip probing, 150 µm backgrinding, reconstructed wafer with good die)

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**Applications**

- Smartphones
- PC Multimedia
- Video Conferencing

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**Functional Block Diagram**

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OV13A10

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