

OV50H 50-megapixel product brief



Flagship Low-Light and Autofocus Performance for Rear-Facing Smartphone Cameras

OV50H is a high-resolution 50-megapixel (MP) image sensor with a dual conversion gain (DCG™) technology powered 1.2-micron (µm) pixel in a 1/1.3-inch optical format, designed for high-end smartphone rear-facing cameras. The OV50H offers flagship-level low-light and autofocus performance, supports 12.5MP at 120 frames per second (fps) and high dynamic range (HDR) at 60 fps and is OMNIVISION's first sensor to feature horizontal/vertical (H/V) quad phase detection (QPD).

The OV50H is built on OMNIVISION's PureCel®Plus-S stacked-die technology for best-in-class image sensor performance. It features OMNIVISION's first H/V QPD

autofocus technology. QPD enables 2x2 phase detection autofocus (PDAF) across the sensor's entire image array, and H/V mode ensures that both horizontal and vertical orientations are in the same frame with 100% coverage. This feature improves distance calculation, provides faster autofocus and enhances low-light performance. In combination with on-chip remosaic for the QPD color filter array, the result is premium image quality for the wide and ultrawide rear-facing cameras in flagship and high-end smartphones.

Find out more at www.ovt.com.



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Ordering Information

• OV50H40-GA5A-004A-Z (color, chip probing, 150 µm backgrinding, reconstructed wafer with good die)

Applications

- smart phones
- video conferencing

Technical Specifications

- active array size: 8192 x 6144
- maximum image transfer rate: - 8192 x 6144: 30 fps
- power supply:
 core: 1.2V
- analog: 2.8V
- I/O: 1.8V/1.2V
- power requirements: active: 1395 mW (50MP @ 30 fps)
- XSHUTDOWN: <10 μA
- output formats: 10/12/14-bit RGB RAW

- temperature range:
 operating: -30°C to +85°C junction temperature
 - stable: 0°C to +60°C junction temperature
- lens size: 1/1.3"

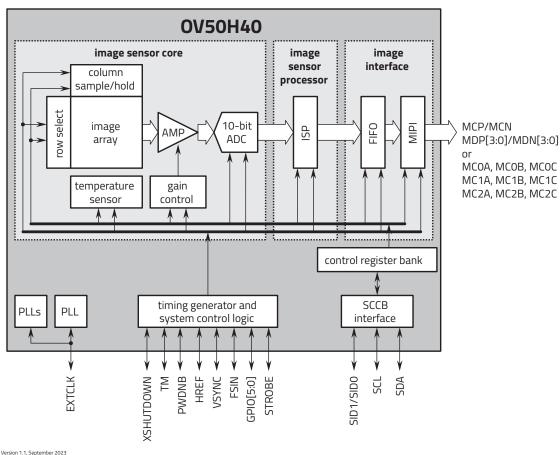
PC multimedia

- Iens chief ray angle: 36.9° non-linear
- scan mode: progressive
- pixel size: 1.197 μm x 1.197 μm
- image area: 9844.128 μm x 7430.976 μm

- **Product Features**
 - automatic black level calibration (ABLC) up to 4-lane MIPI TX interface with
 - programmable controls for:
 - frame rate - mirror and flip
 - binning
 - cropping
 - windowing
 - support for dynamic DPC
 - supports output formats:
 - 10-bit RGB RAW - 12/14-bit RGB RAW
 - after DCG combination
 - supports horizontal and vertical subsampling
 - supports typical images sizes: - 8192 x 6144
 - 4096 x 3072 - 4096 x 2304
 - 1920 x 1080
 - 1280 x 720
 - standard serial SCCB interface

- speeds up to 3.0 Gbps/lane
- 2/3 trio C-PHY interface. up to 3.5 Gsps/trio
- high gain mode support, up to 63.75x for full resolution and 255x for 4-cell binning SCG mode
- supports type 2 QPD PDAF
- HDR support:
 DCG RAW or combined RAW
- stagger HDR 2/3 exposure timing - DCG RAW or DCG combined RAW + VS RAW
- on-chip QPD to Bayer converter
- three on-chip phase lock loops (PLLs)
- programmable I/O drive capability
- built-in temperature sensor
- 1.197 µm pixel

Functional Block Diagram





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