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.

OV50H

Ordering Information

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

Applications

- smart phones
- video conferencing
- PC multimedia

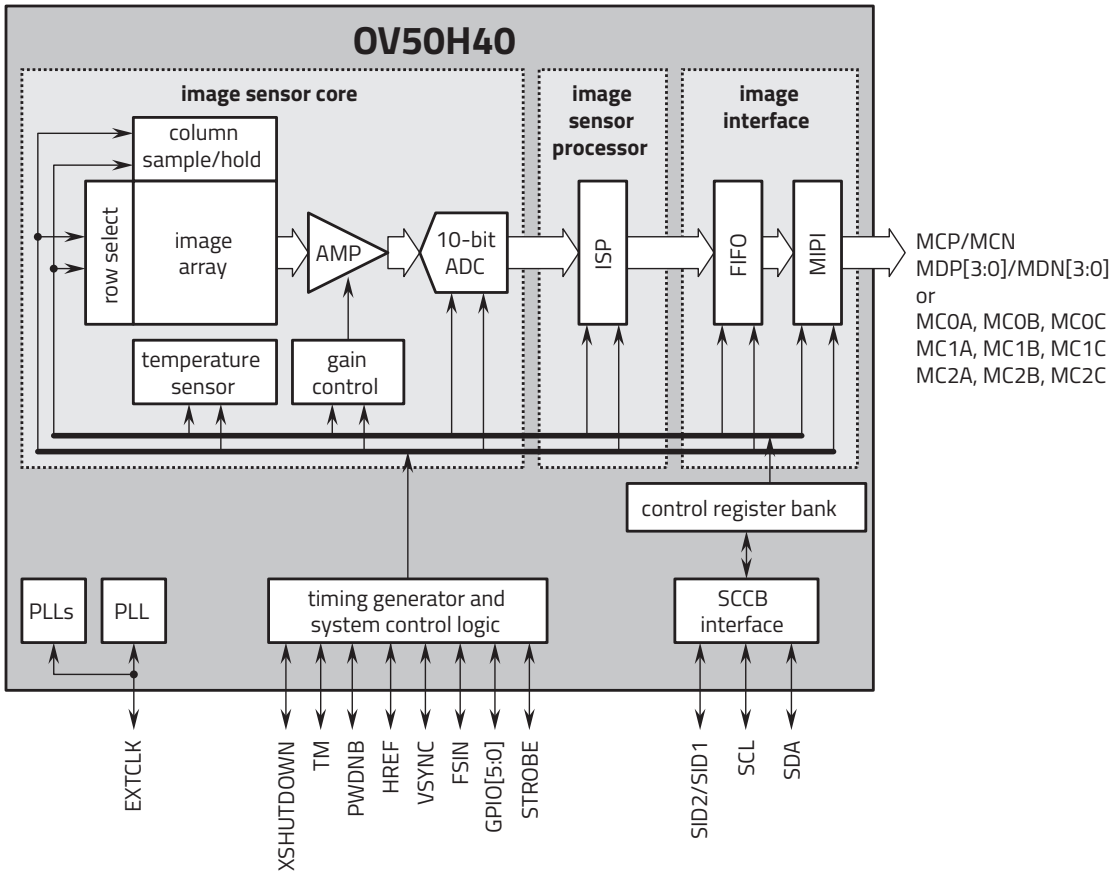
Technical Specifications

- **active array size:** 8192 x 6144
- **maximum image transfer rate:**
  - 8192 x 6144: 30 fps
- **power supply:**
  - core: 1.1V
  - analog: 2.8V
  - I/O: 1.8V/1.2V
- **power requirements:**
  - 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:** 1/1.28"
- **lens 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)
- 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
- up to 4-lane MIPI TX interface with 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



Version 1.0, January 2023

4275 Burton Drive
Santa Clara, CA 95054
USA

Tel: + 1 408 567 3000
Fax: + 1 408 567 3001
www.ovt.com

OMNIVISION™