OV50D

50-megapixel product brief

1/2.88" Color CMOS 50MP (8192 x 6144) Image Sensor with PureCel®Plus-S Technology

The OV50D combines 50MP resolution and 0.612 μm pixel size in a small 1/2.88-inch optical format for smartphone cameras. 4-cell binning delivers premium video and preview quality in 12.5MP mode, especially in low light. The OV50D features staggered HDR, always-on ALS support, and ultra low power modes.

The OV50D can achieve up to 62x analog gain for 4-cell binning resolution. Built on OMNIVISION's PureCel®Plus-S stacked die technology, the OV50D can also use near-pixel binning to output a 12.5MP image or 4K2K video with two times the sensitivity, yielding 1.22 μm-equivalent performance for preview and video.

The OV50D supports type 2 2x2 ML phase detection autofocus. The OV50D supports the CPHY/DPHY MIPI interface and dual DOVDD 1.8/1.2V.

Find out more at www.ovt.com.

OMNIVISION®

OV50D

Applications

- mobile wide camera
- mobile ultrawide camera
- video conferencing

Technical Specifications

- **active array size:** 8192 x 6144

- **maximum image transfer rate:**
  - 12.5MP (4096 x 3072): 48 fps
  - 9MP (4096 x 2304): 60 fps

- **power supply:**
  - core: 1.1V
  - analog: 2.8V
  - I/O: 1.8V or 1.2V

- **power requirements:**
  - active: 380 mW (12MP @ 48 fps)
    284 mW (12MP @ 30 fps)
  - XSHUTDOWN: <50 µA
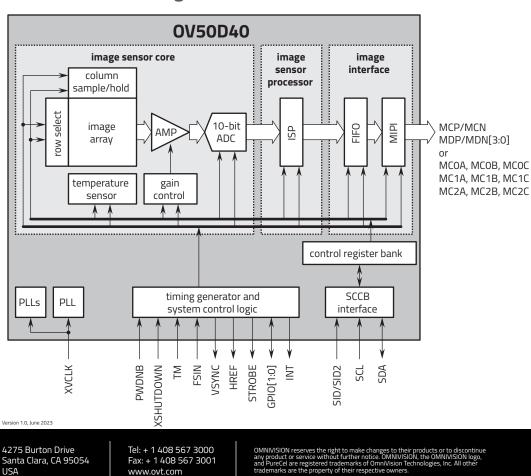
- **output formats:** 10-bit RGB RAW

- **temperature range:**
  - operating: -30°C to +85°C junction temperature
  - stable: 0°C to +60°C junction temperature
  - temperature sensor: ±5°C between 0°C to +80°C (for higher resolutions: ±2°C between +50°C to +80°C)

- **lens size:** 1/2.88"

- **lens chief ray angle:** 34.38° non-linear

- **scan mode:** progressive

- **pixel size:** 0.612 µm x 0.612 µm

- **image area:**
  5052.672 µm x 3799.296 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 for normal mode
  - 8-bit RGB RAW for ULP mode

- supports horizontal and vertical subsampling

- supports typical images sizes:
  - 4096 x 3072
  - 4096 x 2304
  - 3840 x 2160
  - 1920 x 1080
  - 1280 x 720

- standard serial SCCB interface

- up to 4-lane MIPI D-PHY interface with speed up to 2.4 Gbps/lane

- 2/3 trio C-PHY interface, up to 1.4 Gsps/trio

- supports 4-cell binning, 4-cell full, 16-cell binning, and 16-cell full

- supports type 2 2x2 ML PDAF

- 4-cell support:
  4-cell binning only (RGB Bayer output)

- HDR support: stagger HDR 2 exposure

- supports always-on ALS and ULP modes

- high gain mode for binning up to 62x analog gain

- dual I/O power supply (1.2V/1.8V)

- supports fast switch mode (fast switch between different modes)

- three on-chip phase lock loops (PLLs)

- programmable I/O drive capability

- built-in temperature sensor

- 0.612 µm pixel

Functional Block Diagram

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