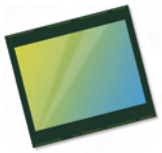


OV24B 24-megapixel product brief

24-Megapixel Image Sensor Family for High-End Smartphone Cameras

lead free

available in a lead-free package

OmniVision's OV24B family is the second generation of its 0.9 micron, 1/2.83-inch optical format 24 megapixel (MP) image sensors, built on the PureCel®Plus stacked die technology. This family is designed for high-resolution front- and rear-facing smartphone cameras, with cutting-edge technologies and design enhancements that enable differentiated features and excellent imaging performance.

The image sensor family is available in four versions:

- **OV24B1Q:** 4-cell Bayer imaging with pad locations on the top and bottom of the chip to reduce module size in the x-direction, ideal for front-facing cameras in thin-bezel infinity display phones
- **OV24B2Q:** 4-cell Bayer imaging with type-2, 2x2 microlens phase detection autofocus (ML PDAF), ideal for main cameras due to video and low-light performance
- **OV24B1B:** Monochrome imaging; excellent low-light sensitivity; ideal for rear-facing multi cameras for Bokeh and zoom
- **OV24B10:** Standard Bayer imaging; ideal for main cameras as a single camera or as part of a multi-camera arrangement for Bokeh and zoom

The OV24B family's combined features of on-chip re-mosaic, 2x2 ML PDAF, and high-speed video capability enable mobile cameras to provide the very best user experience for autofocus, low-light performance, and high-resolution video and still image capture. The on-chip re-mosaic feature, available in the OV24B1Q and OV24B2Q, makes it possible to have real-time conversion between high-performance quarter resolution and full resolution 24MP outputs. The OV24B2Q's new 2x2 ML PDAF enables faster autofocusing over standard PDAF, even in extremely low light conditions.

All four versions can output high-resolution streaming video in a variety of formats, including full-resolution 24MP, 4-cell binning 6MP, 4K2K, 1080p and 720p.

Find out more at www.ovt.com.

OmniVision

OV24B

Applications

- Smartphones
- Video Conferencing
- PC Multimedia

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 4C pattern
- supports horizontal and vertical subsampling
- supports typical images sizes:
  - 5664 x 4248
  - 3840 x 2160
  - 2832 x 2124
  - 1920 x 1080
  - 1280 x 720
- up to 4-lane MIPI TX interface with speed up to 2.5 Gbps/lane
- embedded 16k bits of one-time programmable (OTP) memory (4k bits reserved for customer use)
- 4-cell support:
  - 4-cell binning
  - 4-cell full
  - 4-cell HDR timing
- on-chip 4-cell to Bayer converter
- OV24B2Q: Support for phase detection auto focus
- standard serial SCCB interface
- 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 -5.1 mm

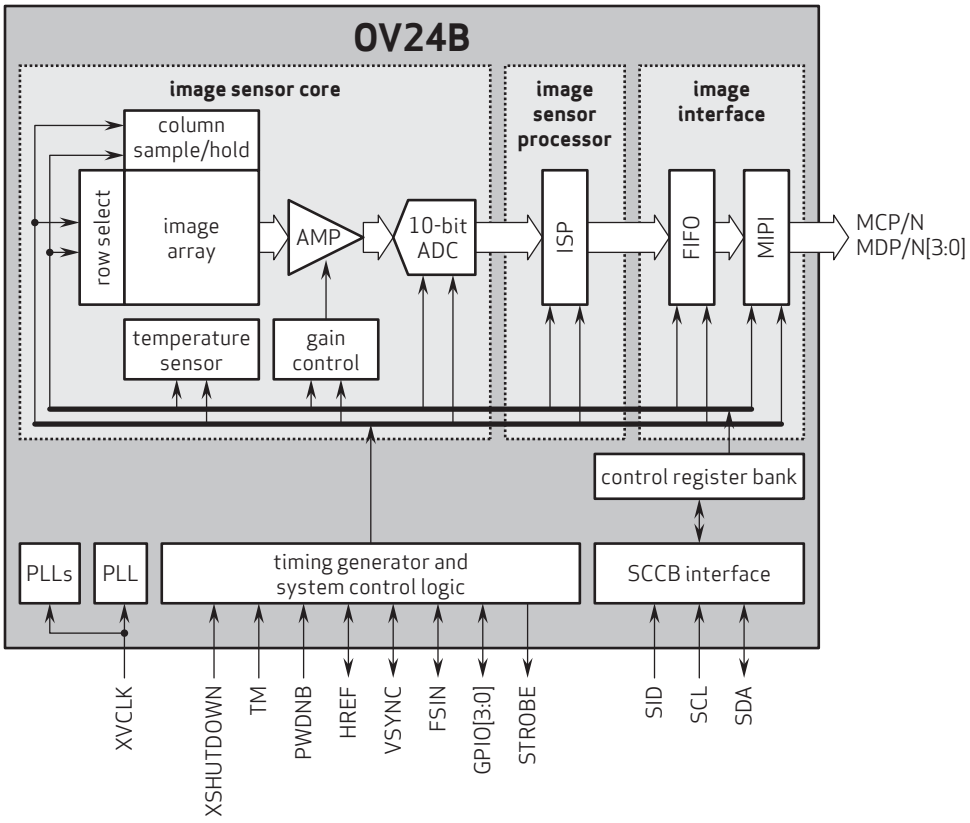
Ordering Information

- **OV24B1Q-GA5A-Z**
  (color, chip probing, 150 µm backgrinding, reconstructed wafer with good die)
- **OV24B2Q-GA5A-Z**
  (color, chip probing, 150 µm backgrinding, reconstructed wafer with good die)

Product Specifications

- **active array size:** 5664 x 4248
- **power supply:**
  - **core:** 1.1V
  - **analog:** 2.8V
  - **I/O:** 1.8V
- **temperature range:**
  - **operating:** -30°C to +85°C junction temperature
  - **stable:** 0°C to +60°C junction temperature
- **output formats:** 10-bit RGB 4C pattern
- **input clock frequency:** 6 - 27 MHz
- **lens size:** 1/2.83"
- **lens chief ray angle:** 35.1° non-linear
- **maximum image transfer rate:**
  - **5664 x 4248:** 24 fps
  - **2832 x 2124:** 60 fps
  - **1920 x 1080:** 120 fps
- **maximum exposure:** VTS - 14 lines
- **minimum exposure:** 8 lines
- **scan mode:** progressive
- **pixel size:** 0.9 µm x 0.9 µm
- **image area:** 5126.4 µm x 3852 µm
- **dimensions:**
  - **COB:** 5716.8 µm x 5167.8 µm
  - **RW:** 5766.8 µm x 5217.8 µm

Functional Block Diagram



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