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OMNIVISION OV64B 64MP Smartphone Sensor User Guide

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User Guide**

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OV64B 64MP Smartphone Sensor

64-Megapixel, 0.7 Micron, 1/2″ Optical Format Image Sensor for Ultra-Thin, High-End Smartphone Cameras OMNIVISION's OV64B is a 64-megapixel (MP) image sensor with a 0.7 micron pixel size and a 1/2″ optical format, enabling high-end and high-mainstream mobile designers to create the thinnest possible smartphones with high resolution 64MP cameras. Built on OMNIVISION's Purace. Plus stacked die technology, this sensor provides leading-edge still image captures and exceptional 4K video recordings with electronic image stabilization (EIS), as well as 8K video at 30 frames per second (fps). These features make the OV64B ideal for the main, wide, ultra-wide or telephoto rear-facing camera in multicamera configurations.

This image sensor supports 3-exposure, staggered HDR timing for up to 16MP video modes. It integrates a 4-cell color filter array and on-chip hardware re-mosaic, which provides high quality, 64MP Bayer output in real time. In low light conditions, this sensor can use near-pixel binning to output a 16MP image with 4x the sensitivity, offering 1.4 micron equivalent performance for previews and still captures. In either case, the OV64B can consistently capture the best quality images, while enabling 2x digital crop zoom with 16MP resolution and fast mode switch.

The OV64B offers type-2, 2×2 micro lens phase detection autofocus (ML-PDAF) to boost autofocus accuracy, especially in low light. It also provides a CPHY interface for greater throughput using fewer pins, and supports slow motion video for 1080p at 240 fps and 720p at 480 fps. Other output formats include 64MP at 15 fps, 8K video at 30 fps, 16MP captures with 4-cell binning at 30 fps, 4K video at 60 fps and 4K video with EIS at 30 fps. Find out more at **www.ovt.com**.

Ordering Information

OV64840-.5A-002A (color, chip probing, 150 pm backgrounding, reconstructed wafer with good die,

Applications

- smart phones
- video conferencing
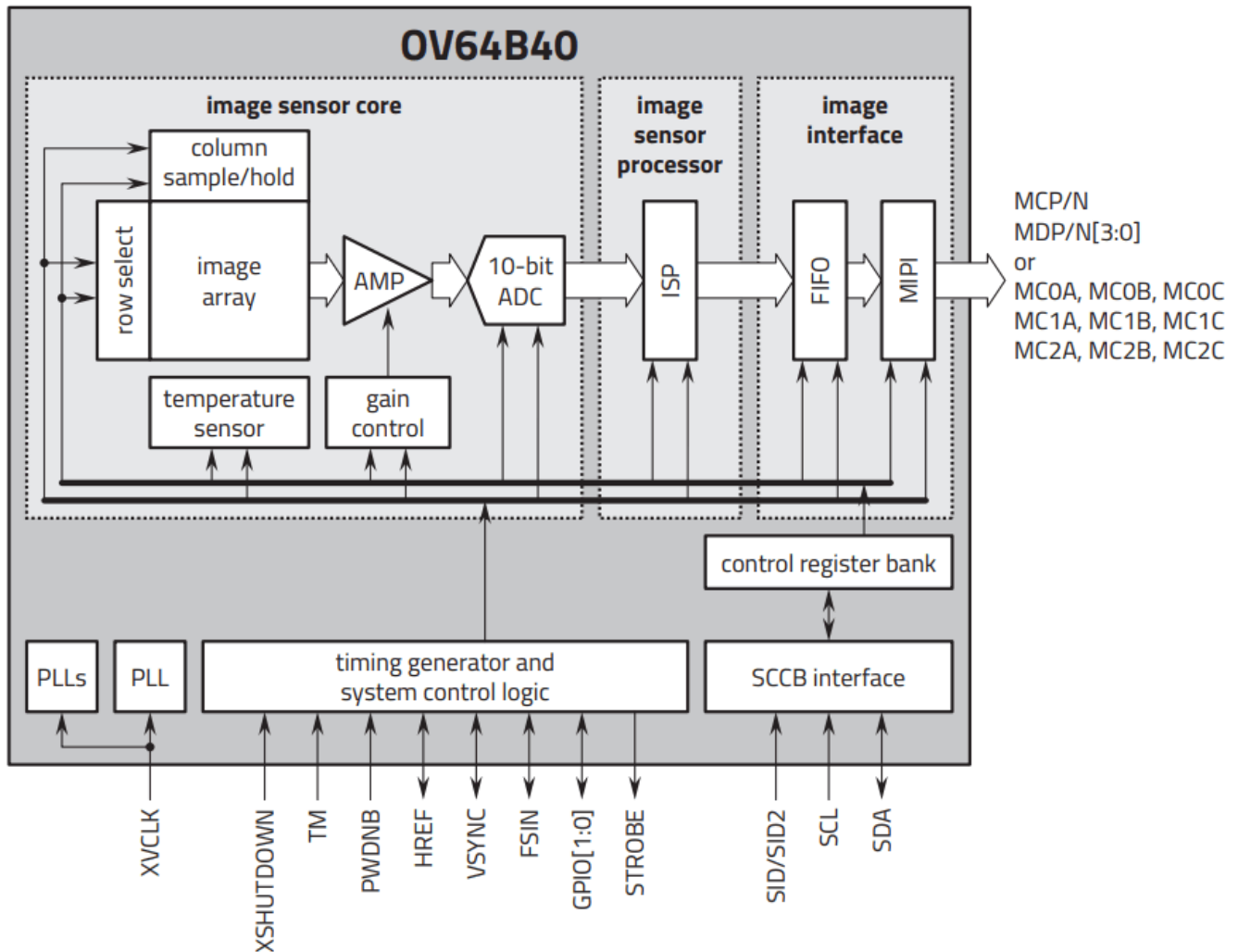- PC multimedia

Technical Specifications

- active array size: 9248 x 6944
- maximum image transfer rate:
  - 9248 x 6944:15 fps
- power supply:
  - core: 1.1V
  - analog: 2.8V
  - I/0: 1.8V
- power requirements:
  - active: 647 mW (64MP @ 15 fps)

- – XSHUTDOWN: <10 pA
- output formats: 10-bit RGB RAW
- temperature range:
  - – operating: -30°C to +85°C junction temperature
  - – stable: 0°C to +60°C junction temperature
- lens size: 1/2″
- lens chief ray angle: 34.55° non-linear
- scan mode: progressive
- pixel size: 0.702 pm x 0.702 pm
- image area: 6514.56 pm x 4897.152 pm

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 4C non-HDR
  - – 10-bit RGB Bayer non-HDR
- supports horizontal and vertical subsampling
- supports typical images sizes:
  - – 9248 x 6944
  - – 7680 x 4320
  - – 4624 x 4320
  - – 3840 x 2160
  - – 1920 x 1080
  - – 1280 x 720
- standard serial SCCB interface
- up to 4-lane MIPI TX interface with speed up to 3.0 Gbps/lane
- 2/3 trio CPHY interface, up to 2.45 Gsps/trio
- supports type 2 202 ML PDAF
- 4-cell support: – 4-cell binning – 4-cell full
- HDR support: stagger HDR 2/3 exposure timing
- on-chip 4-cell to Bayer converter
- three on-chip phase lock loops (PLLs)
- programmable I/O drive capability
- built-in temperature sensor
- 0.702 pm pixel

Functional Block Diagram

OV64B40

image sensor core — image sensor processor — image interface

column sample/hold
row select
image array
AMP
10-bit ADC
ISP
FIFO
MIPI

MCP/N
MDP/N[3:0]
or
MC0A, MC0B, MC0C
MC1A, MC1B, MC1C
MC2A, MC2B, MC2C

temperature sensor
gain control

control register bank

PLLs
PLL
timing generator and system control logic
SCCB interface

XVCLK
XSHUTDOWN
TM
PWDNB
HREF
VSYNC
FSIN
GPIO[1:0]
STROBE
SID/SID2
SCL
SDA

https://www.ovt.com/products/ov64b/

Documents / Resources

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OV64B 64MP Smartphone Sensor, OV64B, 64MP Smartphone Sensor, Smartphone Sensor, Sensor