OV32C

32-megapixel product brief

First RGBC 32MP Image Sensor with Always-on Capability for Front Facing Mobile Phone Cameras

OMNIVISION's OV32C is a 32MP image sensor with a compact 1/3.2-inch optical format—the ideal performance / size ratio for next-generation front-facing mobile phone "selfie" cameras. RGBC technology is built into the sensor to provide the highest quality images in challenging lighting conditions, as well as providing a 50% boost in overall sensitivity to enhance low-light image quality. The OV32C's low power modes can help enable "always-on" user experiences by facilitating artificial intelligence (AI) processing to automate many of the common tasks of the camera, such as face detection, QR code scans, etc.

The OV32C is built on OMNIVISION's highly successful 0.7 µm PureCel®Plus-S pixel technology that provides the ability to squeeze 32MP into a 1/3.2-inch OF. RGBC technology uses a 4-cell color filter pattern with clear pixels and on-chip RGBC-to-Bayer fusion, reducing design complexity for OEMs with an on-chip RGBC-to-Bayer fusion algorithm, therefore, a separate RGBC processing unit isn't required. The overall user experience is enhanced with the OV32C so that users have fast access to their camera functionality at all times. Additionally, the sensor's low power modes help enable "always-on" features optimizing the phone's back-end AI applications, minimizing power and data rate usage.

The sensor supports CPHY and DPHY interfaces and can output 15 frame rates per second (fps) at 32MP, or 30 fps at 8MP with on-chip fusion, for premium video and image quality. The OV32C also offers dual DOVDD support at 1.8 and 1.2 volts.

Find out more at www.ovt.com.

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Ordering Information

- **OV32C4C-GA5A-001A**
  (RGBC, chip probing, 150 µm backgrinding, reconstructed wafer with good die)

Applications

- smart phones
- video conferencing
- PC multimedia

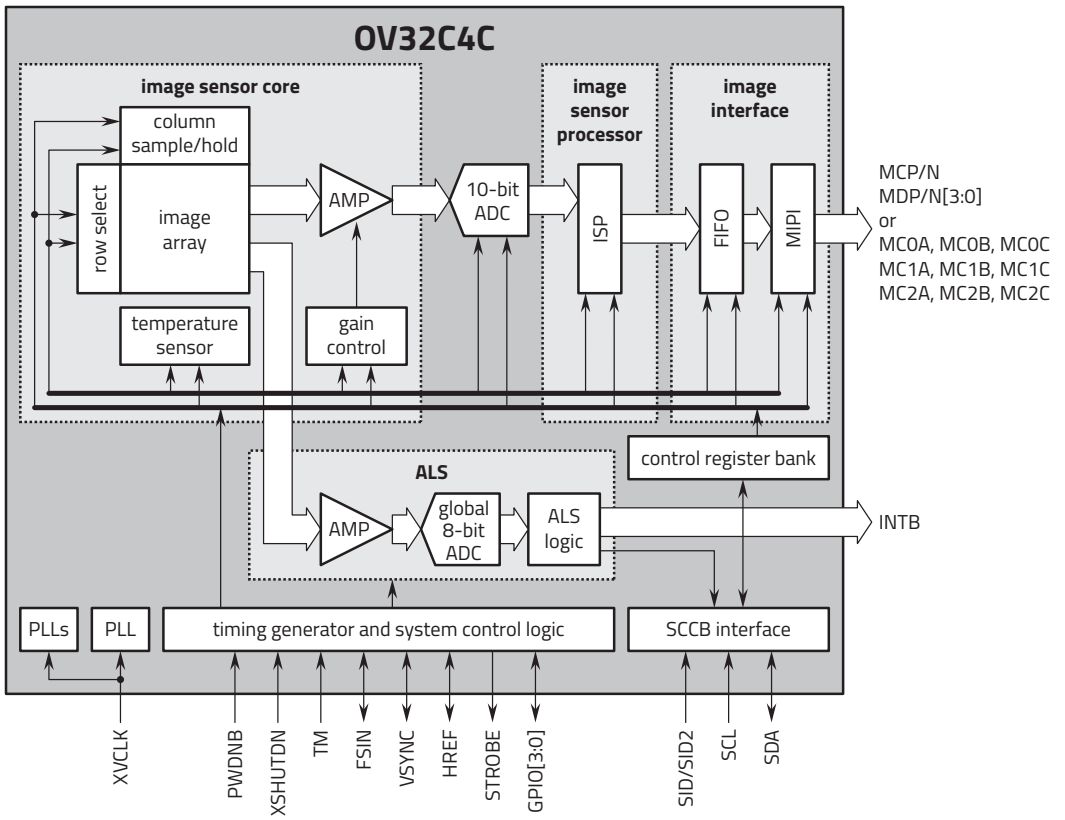
Technical Specifications

- **active array size:** 6528 x 4896
- **maximum image transfer rate:**
  - 6528 x 4896: 15 fps
  - 8 + 8MP (2x 3264 x 2448): 30 fps
  - 8MP (3264 x 1836 after 4C RGBC fusion): 30 fps
- **power supply:**
  - core: 1.1V
  - analog: 2.8V
  - I/O: 1.8V/1.2V
- **power requirements:**
  - active: 450 mW (8 + 8MP with RGBC fusion @ 30 fps)
  - XSHUTDOWN: <10 µA
- **lens size:** 1/3.14"
- **temperature range:**
  - operating: -30°C to +85°C junction temperature
  - stable: 0°C to +60°C junction temperature
- **output formats:**
  - 10-bit 4C RGBC RAW for 32MP
  - 10-bit Bayer and clear RAW output for 8/2MP
  - 8-bit clear RAW for ULP mode
- **lens chief ray angle:** 35.81° non-linear
- **scan mode:** progressive
- **pixel size:** 0.702 µm x 0.702 µm
- **image area:** 4605.12 µm x 3459.456 µm

Product Features

- automatic black level calibration (ABLC)
- programmable controls for:
  - frame rate
  - mirror and flip
  - binning
  - cropping
  - windowing
- supports output formats:
  - 10-bit 4C RGBC RAW
  - 10-bit Bayer RAW
  - 10-bit Bayer + clear RAW
- supports ambient light sensor (ALS) mode: 8-bit clear RAW
- supports ultra low power (ULP) mode: 8-bit clear RAW
- supports typical images sizes:
  - 6528 x 4896
  - 3264 x 2448
  - 1920 x 1080
  - 1632 x 918
  - 1280 x 720
- 4-lane MIPI D-PHY TX interface with speed up to 3.0 Gbps/lane
- 2/3 trio C-PHY interface, up to 3.0 Gsps/trio
- support for dynamic defect pixel cancellation (DPC)
- standard serial SCCB interface
- 4-cell RGBC support:
  - 4-cell RGBC binning
  - 4-cell RGBC full
  - on-chip 4-cell RGBC fusion
- three on-chip phase lock loops (PLLs)
- programmable I/O drive capability
- dual I/O power supply (1.2V/1.8V)
- built-in temperature sensor
- 0.702 µm pixel

Functional Block Diagram



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