OV12D

12-megapixel product brief

12MP Image Sensor Provides Premium Video with HDR and Excellent Ultra Wide Angle Photo Performance

OMNIVISION's OV12D is a 12MP sensor that offers the unprecedented combination of a large 1/2.43" optical format, on-chip 4-cell remosaic color filter, high speed phase-detect autofocus (PDAF) and extra pixels for 4K2K video electronic image stabilization (EIS). This 1.4 micron image sensor has selective conversion gain (SCG) for the optimum SNR under both dark and bright lighting conditions. As a result, the OV12D simultaneously provides professional quality video, especially for low light conditions, and ultra wide angle photos in smartphones with multicamera configurations. This unique combination of features also makes the sensor ideal for high end front-facing selfie cameras.

SCG allows the pixel conversion gain to be dynamically switched between low and high, depending on the scene being captured. In combination with the OV12D's other features, including PureCel®Plus pixel technology for reduced cross talk and maximum quantum efficiency in low light, secondary smartphone cameras equipped with the OV12D are able to capture the industry's highest quality video and ultra wide angle photos.

The OV12D is a native 16:9 aspect ratio image sensor that uses a 4-cell color filter pattern. It has on chip 4-cell to Bayer remosaic, in order to provide 4K video at 60 fps with 20% additional pixels for EIS. In a 4-cell binned mode, it can output an impressive 3MP/1080p resolution with 20% additional pixels for EIS video and images at four times the sensitivity. This sensor also supports both CPHY and DPHY interfaces, and can output 12MP 16:9 captures at 60 fps, 4K video at 60 fps and 1080p video at 240 fps.

Find out more at www.ovt.com.

OV12D

Ordering Information

- **OV12D2Q-GA5A**
  (color, chip probing, 150 µm backgrinding, reconstructed wafer with good die)

Applications

- smart phones
- video conferencing
- PC multimedia

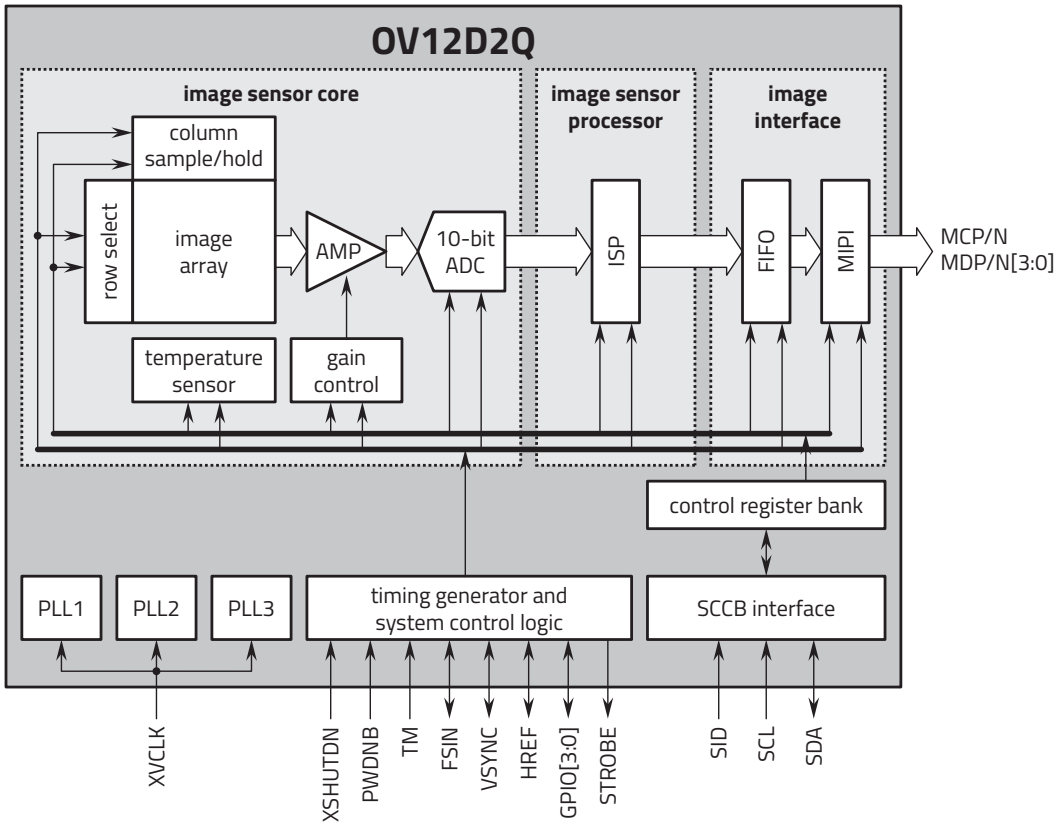
Technical Specifications

- **active array size:** 4608 x 2592
- **maximum image transfer rate:**
  - 4608 x 2592: 60 fps
- **power supply:**
  - core: 1.1V
  - analog: 2.8V
  - I/O: 1.8V
- **power requirements:**
  - active: 505 mW
  - XSHUTDOWN: <10 µW
- **output formats:**
  10-bit RGB 4-cell pattern Bayer RAW
- **temperature range:**
  - operating: -30°C to +85°C junction temperature
  - stable: 0°C to +60°C junction temperature
- **lens size:** 1/2.43"
- **lens chief ray angle:** 35.7° non-linear
- **scan mode:** progressive
- **pixel size:** 1.404 µm x 1.404 µm
- **image area:** 6514.56 µm x 3684.1 µm

Product Features

- automatic black level calibration (ABLC)
- programmable controls for:
  - frame rate
  - mirror and flip
  - binning
  - cropping
  - windowing
- support for dynamic defect pixel cancellation (DPC)
- supports output formats:
  10-bit RGB 4-cell pattern Bayer RAW
- supports horizontal and vertical subsampling
- supports typical images sizes:
  - 4608 x 2592
  - 3840 x 2160
  - 2304 x 1296
  - 1920 x 1080
  - 1280 x 720
- up to 4-lane MIPI TX interface with speed up to 2.5 Gbps/lane
- standard serial SCCB interface
- embedded 8k bits of one-time programmable (OTP) memory (4k bits reserved for customer use)
- 2/3 trio C-PHY interface, up to 1.6 Gsps/trio
- 4-cell support:
  - 4-cell binning
  - 4-cell full
- on-chip 4-cell to Bayer converter
- supports type-2 4C HS PDAF
- three on-chip phase lock loops (PLLs)
- sequential multi-frame HDR
- 3MP 10-bit 3-exposure 4C HDR output after tone mapping
- programmable I/O drive capability
- built-in temperature sensor
- typical module size: 8.5 x 8.5 x ~5.1 mm

Functional Block Diagram



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