OV7695

VGA product brief
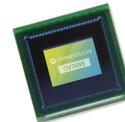
Ultra-Compact, Cost-Effective Secondary Camera Solution for Smartphones and Tablets

The OV7695 is a high-performance CameraChip™ sensor that utilizes OMNIVISION's new OmniBSI™+ pixel architecture to deliver high quality VGA video at 30 frames per second. At just 2.4 mm x 2.3 mm, the cost-competitive OV7695 is a highly attractive solution for front-facing cameras in smartphones and tablets.

The 1/13-inch VGA sensor is built on a 1.75-micron OmniBSI™+ pixel, which has a significantly lower level of noise when compared with traditional FSI pixel architectures. The result is a dramatic improvement in dynamic range, which translates into higher quality color video. Using proprietary technology to improve image quality, the OV7695

reduces or eliminates common sources of image contamination such as fixed pattern noise and smearing to produce a clean, stable color image.

The sensor provides full-framed, sub-sampled and cropped images in YUV422 format via a one-lane MIPI interface. All required image processing functions, including exposure control, gamma, white balance, color saturation, defective pixel canceling, and noise canceling are programmable through the serial camera control bus (SCCB) interface.

Find out more at www.ovt.com.

OMNIVISION®

OV7695

Applications

- cellular and picture phones
- PC multimedia
- tablets
- toys
- digital video cameras

Technical Specifications

- **active array size:** 640 x 480

- **maximum image transfer rate:**
  - VGA (640 x 480): 30 fps
  - QVGA (320 x 240): 60 fps
  - QQVGA (160 x 120): 120 fps
  - HF (640 x 20): 120 fps

- **power supply:**
  - analog: 2.8V ±5%
  - core: 1.5V DC ±5% (internal regulator)
  - I/O: 2.8V, 1.8V

- **power requirements:**
  - I_{DD-A}: 15 mA
  - I_{DD-IO}: 20 mA
  - XSHUTDOWN: 5 µA

- **temperature range:**
  - operating: -30°C to +70°C junction temperature
  - stable: 0°C to +50°C junction temperature

- **output formats:** YUV422, RAW RGB

- **lens size:** 1/13"

- **lens chief ray angle:** 26.11°

- **scan mode:** progressive

- **pixel size:** 1.75 µm x 1.75 µm

- **image area:** 1148 µm x 868 µm

Product Features

- support for image sizes:
  - VGA (640 x 480)
  - QVGA (320 x 240)
  - QQVGA (160 x 120)
  - HF (640 x 20)

- support for output formats:
  - YUV422, RAW8 through MIPI
  - YUV422, RAW8, RAW10 through OMNIVISION's proprietary SPI

- on-chip phase lock loop (PLL)

- built-in 1.5V regulator for digital block

- capable of maintaining register values at software power down

- programmable controls for:
  - frame rate
  - mirror and flip
  - AEC/AGC
  - windowing

- support for horizontal and vertical sub-sampling

- automatic image control functions:
  - automatic exposure control (AEC)
  - automatic white balance (AWB)
  - automatic black level calibration (ABLC)

- image quality controls:
  - defect pixel correction
  - lens shading correction

- support for black sun cancellation

- standard serial SCCB interface

- parallel I/O tri-state configurability and programmable polarity

Functional Block Diagram

OMNIVISION®