

OV7735 VGA product brief



High-Speed VGA Image Sensor for Video, Gaming and Portable Entertainment

lead free

available in a lead-free package

The OV7735 is an advanced VGA image sensor that can capture video at 60 frames per second (fps) enabling smoother motion video and achieve improved accuracy for motion detection applications. Implementing OmniVision's proven 3.0 µm OmniPixel3-HS™ high sensitivity pixel architecture ensures high quality video recording even in the most challenging lighting conditions, achieving low-light performance of 3300 mV/lux-sec. The image sensor's design enables some of the thinnest (<3 mm) VGA camera solutions capable of high-speed recording, making the OV7735 ideal for portable applications including digital video cameras, portable media players (PMPs), gaming devices and webcams.

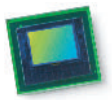
The OV7735 offers complete user control over image quality, resolution and output data format. The OV7735 provides full frame, sub-sampled, windowed or scaled 8-bit/10-bit images in RAW RGB and YUV formats over a parallel DVP or serial MIPI port, offering a versatile platform for use in single and multi-camera applications.

All required image processing functions, including exposure control, white balance, and defective pixel detection and correction are programmable through the serial camera control bus (SCCB) interface. The OV7735 also addresses image contamination issues such as fixed pattern noise, smearing and blooming, producing a clear, crisp color image. Designed largely for portable or wireless applications, the new sensor offers low power consumption, requiring just 100 mW under normal operating conditions.

Find out more at www.ovt.com.

OmniVision

OV7735



Applications

- Gaming
- DVR
- Portable Media Players
- Webcams

Product Features

- ultra high performance
- automatic image control functions:
  - automatic exposure control (AEC)
  - automatic gain control (AGC)
  - automatic white balance (AWB)
  - automatic band filter (ABF)
  - automatic 50/60 Hz luminance detection
  - automatic black level calibration (ABLC)
- programmable controls for frame rate, mirror and flip, scaling, cropping, and windowing
- image quality controls: color saturation, hue, gamma, sharpness (edge enhancement), lens correction, defective pixel canceling, and noise canceling
- support for output formats: 8/10-bit RAW RGB, CCIR656 and YUV422
- support for horizontal and vertical sub-sampling
- support for images sizes: VGA and any arbitrary size scaling down from VGA
- support for binning
- support for external frame synchronization
- standard serial SCCB interface
- digital video port (DVP) parallel output interface
- MIPI serial output interface
- embedded one-time programmable (OTP) memory for part identification, etc.
- on-chip phase lock loop (PLL)
- programmable I/O drive capability
- built-in 1.5V regulator for core

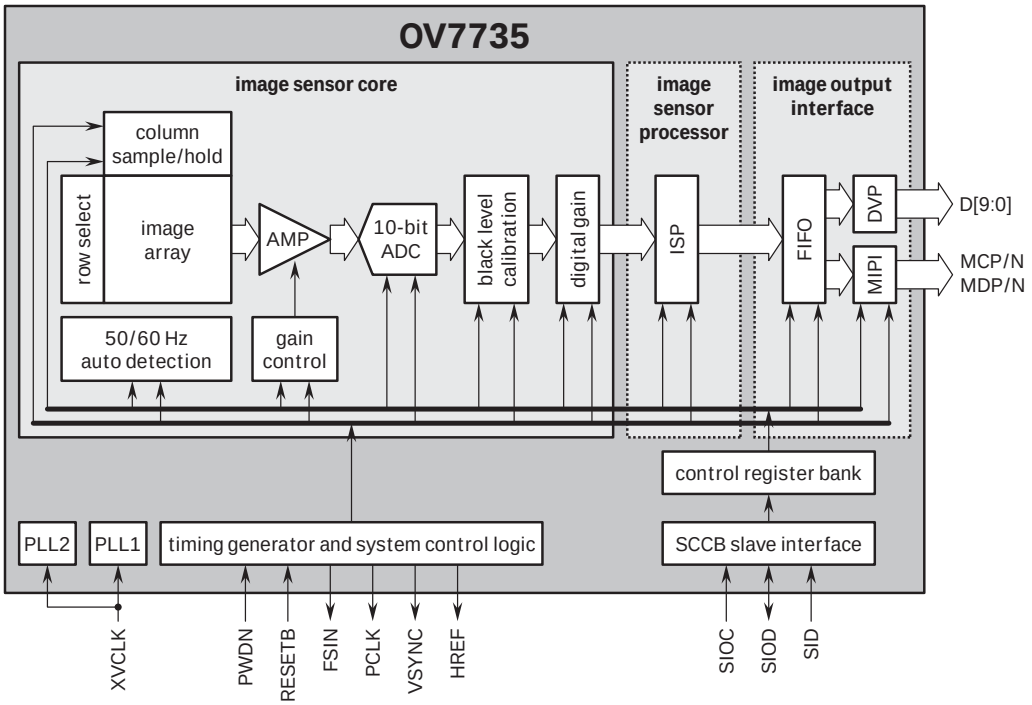
Ordering Information

- OV07735-A42A
  (color, lead-free, 42-pin CSP3)
- OV07735-G04A
  (color, chip probing, 200 µm backgrinding, reconstructed wafer)

Product Specifications

- active array size: 640 x 480
- power supply:
  - core: 1.5 VDC ±5% (internal regulator)
  - analog: 2.6 ~ 3.0 V
  - I/O: 1.7 ~ 3.0 V
- power requirements:
  - active: 100 mW
  - standby: 76 µW
- temperature range:
  - operating: -30° C to 70° C
  - stable image: 0° C to 50° C
- output formats: 8/10-bit RAW RGB, 8-bit YUV
- lens size: 1/7.5"
- lens chief ray angle: 26.5°
- input clock frequency: 6 ~ 27 MHz
- S/N ratio: 38 dB
- dynamic range: 68 dB
- maximum image transfer rate:
  - VGA: 60 fps
  - QVGA: 120 fps
  - QQVGA: 120 fps
- sensitivity: 3300 mV/lux-sec
- scan mode: progressive
- maximum exposure interval: 508 x t_{ROW}
- pixel size: 3 µm x 3 µm
- well capacity: 11 Ke^-
- dark current: 10 mV/s at 60°C
- fixed pattern noise: 1% of $V_{PEAK-TO-PEAK}$
- image area: 1968 µm x 1488 µm
- package dimensions:
  - CSP3: 3985 µm x 3635 µm
  - COB: 4000 µm x 3650 µm

Functional Block Diagram



4275 Burton Drive
Santa Clara, CA 95054
USA

Tel: + 1 408 567 3000
Fax: + 1 408 567 3001
www.ovt.com

OmniVision reserves the right to make changes to their products or to discontinue any product or service without further notice. OmniVision, the OmniVision logo and OmniPixel are registered trademarks of OmniVision Technologies, Inc. OmniPixel3-HS are trademarks of OmniVision Technologies, Inc. All other trademarks are the property of their respective owners.

Version 1.0, June, 2010