



# OV7675

## VGA product brief



### Higher Performance, Feature Rich VGA Sensor to Support Fast Growing Emerging Markets

The OV7675 is a high performance VGA sensor designed specifically to address growing demand for consumer electronics from emerging markets. Its small optical format enables ultra-thin camera modules, which, combined with its excellent low-light performance, make it a very attractive solution for entry-level and mainstream mobile phones, notebooks, netbooks and webcams.

The OV7675 is a low-voltage color CMOS image sensor that supports the full functionality of a single chip VGA (640 x 480) camera in a small footprint package. The 1/9-inch OV7675 uses a unique 2.5-micron OmniPixel®3-HS pixel design, which allows it to offer best-in-class low-light sensitivity (1800 mV/lux-sec), significantly reduced noise and outstanding color reproduction.

The OV7675 provides full-frame, sub-sampled, windowed images in VGA, QVGA and QQVGA formats via the control of the serial camera control bus (SCCB) interface. Its image array is capable of operating at up to 30 frames per second (fps) in full VGA resolution with complete user control over image quality, formatting and output data transfer.

All required image processing functions, including exposure control, gamma, white balance, color saturation, hue control, defective pixel canceling, noise canceling are programmable through the SCCB interface. In addition, OMNIVISION image sensors use proprietary sensor technology to improve image quality by reducing or eliminating common lighting / electrical sources of image contamination, such as fixed pattern noise and smearing to produce a clean, fully stable color image.

Find out more at [www.ovt.com](http://www.ovt.com).



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## Ordering Information

- OV7675-A23A (color, lead-free) 23-pin CSP3
- OV7175-A23A (b&w, lead-free) 23-pin CSP3
- OV7675-G04A (color, chip probing, 200 µm backgrinding, reconstructed wafer)

## Applications

- cellular phones
- PC multimedia
- toys
- digital still cameras

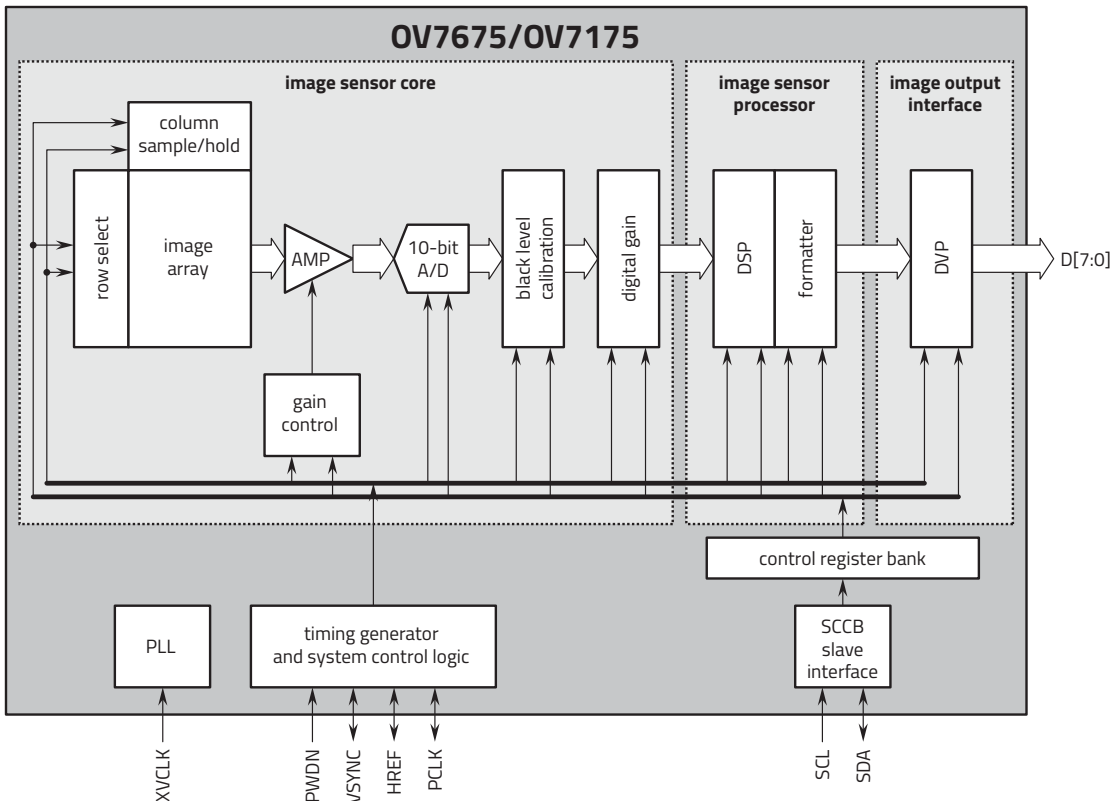
## Technical Specifications

- active array size:** 640 x 480
- temperature range:**
  - operating: -30°C to +70°C junction temperature
  - stable: 0°C to +50°C junction temperature
- maximum image transfer rate:**
  - VGA: 30 fps
  - QVGA: 60 fps
  - QQVGA: 240 fps
- power supply:**
  - analog: 2.6 ~ 3.0V
  - core: 1.5VDC ±5% (internal regulator)
  - I/O: 1.71 ~ 3.0V
- power requirements:**
  - active: 98 mW
  - standby: 60 µW
- lens size:** 1/9"
- lens chief ray angle:** 21°
- output formats:**
  - YUV422
  - RAW RGB
  - ITU656
  - RGB565
- scan mode:** progressive
- pixel size:** 2.5 µm x 2.5 µm
- image area:** 1640 µm x 1220 µm

## Product Features

- support for image sizes:**
  - VGA (640 x 480)
  - QVGA (320 x 240)
  - QQVGA (160 x 120)
- support for output formats:**
  - YUV4:2:2
  - RAW RGB
  - ITU656
  - RGB565
- 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**
- module size:** 6 mm x 6 mm
- digital video port (DVP) parallel output interface**
- on-chip phase lock loop (PLL)**
- built-in 1.5V regulator for core**
- capable of maintaining register values at power down**
- programmable controls for:**
  - frame rate
  - mirror and flip
  - AEC/AGC
  - windowing

## Functional Block Diagram



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