

OV6680 SGA product brief



lead free

available in a lead-free package

optimal low-light sensitivity and pixel performance for video conferencing cameras in 3G mobile phones

The OV6680 is a single-chip, high-performance SquareGA™ (SGA™) resolution (400x400) CameraChip™ sensor that incorporates all the functionality of a camera and image processor in one small footprint package. Using a 3.6 µm x 3.6 µm pixel built on OmniPixel2™ technology utilizing a 0.18 µm CMOS process, the OV6680 has outstanding low-light performance to accommodate any lighting condition.

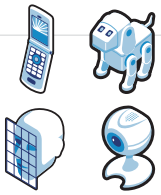
The OV6680 color camera is an excellent candidate for secondary handset cameras for 2-way video conferencing over 3G networks. This is enabled by its ultra small module design (5x5x3.0 mm) and superior low-light performance. Low light performance is most critical for video conferencing applications because LCD screens emit very little light (about 1 lux) and indoor environments tend to be less bright.

Additionally, by outperforming smaller VGAs, it is also an excellent alternative as a primary camera for low cost mobile phones. The OV6680 provides full-frame, sub-sampled or windowed 8-bit images in a wide range of formats, controlled through the Serial Camera Control Bus (SCCB) interface.

The OV6680 operates at 30 frames per second (fps) in SGA resolution (400x400 pixels) with complete user control over image quality, formatting and output data. Enabling a 400x400 pixel output allows users to perform image stabilization functions with post processing. All the required image processing functions such as exposure control, gamma, white balance, color saturation and hue control are also programmable through the SCCB interface.

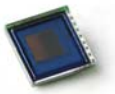
OmniVision

applications



- camera/video phones
- webcams
- games/toys
- pattern/face recognition

OV6680



ordering information

- OV06680-VL9A
  (color, lead-free, CSP2-23)

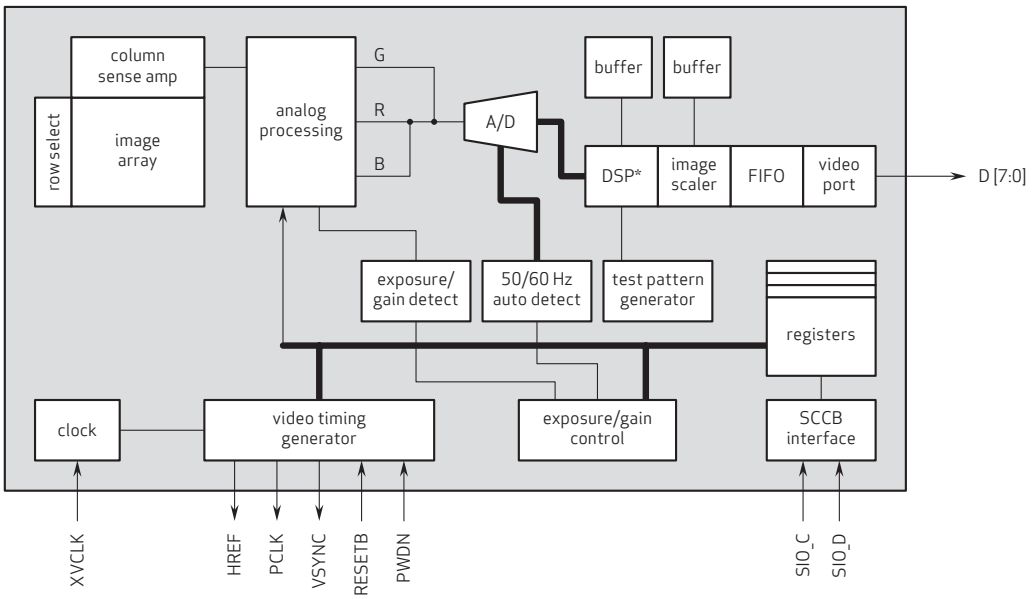
product features

- attractive alternative for low-cost, entry-level camera phones
- high sensitivity for low-light operation
- low operating voltage for embedded portable applications
- standard SCCB interface compatible with I2C interface
- output support for Raw RGB, RGB (RGB565/444), and YCbCr (4:2:2) formats
- supports image sizes: 400x400, windowing down to CIF, and scaling down to QCIF from CIF only
- image quality controls including color saturation, hue, gamma, sharpness (edge enhancement), and anti-blooming
- ISP includes defect correction
- lens shading correction
- saturation level auto adjust
- edge enhancement and auto adjust
- output stream OFF mode
- 50/60 Hz auto detection
- automatic image control functions including:
  - automatic exposure control (AEC)
  - automatic gain control (AGC)
  - automatic white balance (AWB)
  - automatic band filter (ABF)
  - automatic black-level calibration (ABLC)

product specifications

- **array size:** 400 x 400
- **power supply**
  analog: 2.8V ± 5%
  digital core: 1.8VDC ± 10%
  I/O: 1.71V to 3.0V
- **image area:**
  1440 µm x 1440 µm
- **optical format:** 1/9"
- **pixel size:** 3.6µm x 3.6µm
- **S/N ratio:** 41 dB
- **dynamic range:** 59 dB
- **chief ray angle:** 30°
- **package dimensions:**
  3385 µm x 3545µm
- **temperature range:**
  -30°C to +70°C
- **maximum image transfer rate:**
  30 fps at 400 x 400 resolution
- **electronic exposure:**
  up to 435:1 (for selected fps)
- **power requirments:**
  active: 70 mW typical
  (30 fps CIF YCbCr format)
  standby: <20 µA

functional block diagram



note 1 DSP* (lens shading correction, white/black pixel correction, auto white balance, etc.)

OV6680_PB_001

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