

OV3660 3-megapixel product brief



available in
a lead-free
package

1/5-Inch 3-Megapixel CMOS Image Sensor Based on OmniBSI™ Technology Delivers Best-in-Class Sensitivity and 720p HD Video for Entry Level Smart Phones

The OV3660 is OmniVision's first 3-megapixel CMOS image sensor based on its OmniBSI™ pixel architecture. Extending the company's portfolio of BSI sensors, the 1.4-micron OmniBSI pixel architecture enables the OV3660 to offer high performance imaging and 720p high-definition (HD) video in an ultra-compact 1/5-inch optical format, making it an ideal choice for entry-level and mainstream smart phones. Because the OV3660 fits into an industry-standard 6.5 x 6.5 mm module it offers a quick and easy upgrade from existing 2-megapixel camera designs.

The OV3660 supports 720p HD video recording at 30 frames per second (fps) with cropping and scaling, as well as 4:3 still image capture, allowing users to capture and share both HD video and photography. For still images, the sensor outputs JPEG compressed images that are

ready-to-use, allowing the OV3660 to be integrated into a broad selection of platforms. The sensor also supports Scalado™ SpeedTags for faster image rendering that improves user experience for the preview and zoom modes.

The OV3660 offers automatic image control functions including exposure control, white balance, auto 50/60 Hz flicker detection, and black level calibration. Additional features include color saturation, hue, gamma, sharpness (edge enhancement), lens correction, defective pixel and noise cancellation. Camera controls are accessed over a standard serial camera control bus interface and RAW or YUV video data is output through a parallel output interface.

Find out more at www.ovt.com.

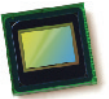
Applications

- Cellular Phones
- Toys
- PC Multimedia
- Digital Still Cameras

Product Features

- 1.4 μm x 1.4 μm pixel with OmniBSI technology for high performance (high sensitivity, low crosstalk, low noise, improved quantum efficiency)
- optical size of 1/5"
- automatic image control functions:
 - automatic exposure control (AEC)
 - automatic white balance (AWB)
 - automatic flicker detection
 - automatic black level calibration (ABLCL)
- programmable controls for frame rate, AEC/AGC 16-zone size/position/weight control, mirror and flip, cropping, windowing, and panning
- image quality controls: color saturation, hue, gamma, sharpness (edge enhancement), lens correction, defective pixel canceling, and noise canceling
- support for output formats: raw RGB data, RGB565/555/444, CCIR656, YCbCr422, and compression
- support for LED and flash strobe mode
- support for horizontal and vertical sub-sampling, binning
- support for 2x2 binning with binning filter to minimize binning artifacts
- support for data compression output
- standard serial SCCB interface
- digital video port (DVP) parallel output interface
- embedded 1.5 V regulator for core power
- programmable I/O drive capability, I/O tri-state configurability
- support for black sun cancellation
- support for images sizes: 3 megapixel, and any arbitrary size scaling down from 3 megapixel
- embedded microcontroller
- suitable for module size of 6.5 x 6.5 x <6mm

OV3660



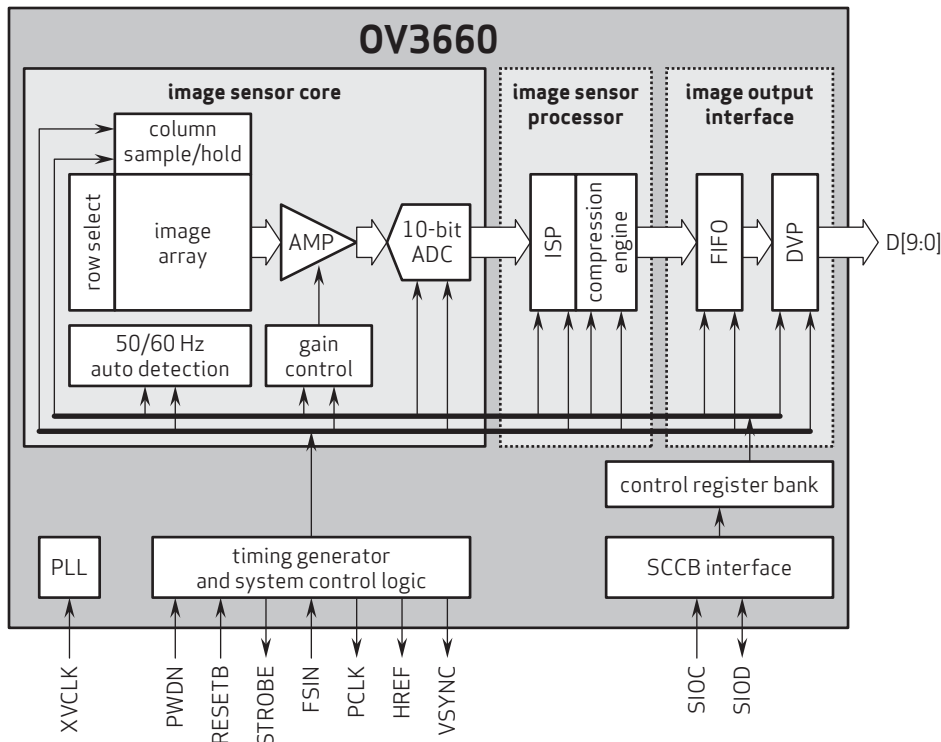
Ordering Information

- OV3660-A51A (color, lead-free, 51-pin CSP3)
- OV3660-G04A (color, chip probing, 200 μm backgrinding, reconstructed wafer)

Product Specifications

- active array size: 2048 x 1536
- max S/N ratio: 34 dB
- power supply:
 - core: 1.5 V \pm 5% (with embedded 1.5 V regulator)
 - analog: 2.6 - 3.0 V (2.8 V typical)
 - I/O: 1.8 V / 2.8 V (1.8 V recommended)
- power requirements:
 - active: 98 mA
 - standby: 20 μA
- temperature range:
 - operating: -20°C to 70°C junction temperature
 - stable image: 0°C to 50°C junction temperature
- output formats: 8/10-bit RAW, RGB and YCbCr output, compression
- lens size: 1/5"
- lens chief ray angle: 27.6°
- input clock frequency: 6 - 27 MHz
- dynamic range: 70 dB @ 8x gain
- maximum image transfer rate:
 - 2048x1536: 15 fps
 - 1080p: 20 fps
 - 720p: 45 fps
 - XGA (1024x768): 45 fps
 - VGA (640x480): 60 fps
 - QVGA (320x240): 120 fps
- sensitivity: 670 mV/lux-sec
- shutter: rolling shutter
- maximum exposure interval: 1560 x t_{ROW}
- pixel size: 1.4 μm x 1.4 μm
- image area: 2912 μm x 2167.2 μm
- package/die dimensions:
 - CSP3: 5010 μm x 4960 μm
 - COB: 5000 μm x 4950 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

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