

OV3650 3 megapixel product brief



OmniVision's latest low-voltage, high-performance 1/4-inch, 3 megapixel color sensor

The OV3650 color sensor provides the most advanced pixel quality on the market today. Featuring OmniVision's high-sensitivity 1.75 μm OmniPixel3-HS™ architecture, the OV3650 delivers double the sensitivity (960m V/lux-sec), of competing devices resulting in best-in-class low-light performance.

The OmniPixel3-HS architecture is the latest and most advanced generation of OmniVision's family of front side illumination (FSI) OmniPixel architectures. OmniPixel3-HS significantly enhances image capture under very low lighting conditions, enabling a new generation of compact camera solutions for mobile handsets, notebook webcam and other applications that require exceptional low-light performance without the need for flash.

The OV3650 color sensor is a low-voltage, high-performance 1/4-inch 3 megapixel CMOS image sensor that provides the full functionality of a single chip QXGA (2048 x 1536) camera in a small footprint package.

The OV3650 provides full-frame, sub-sampled and windowed 10-bit images in various formats via the SCCB interface and offers an image array capable of operating at up to 15 frames per second (fps) in QXGA resolution. All required image processing functions, including exposure control, white balance, and defective pixel canceling, are programmable through the SCCB interface. Elimination of image contamination issues such as fixed pattern noise, smearing, and blooming produces a clean, fully stable color image.

For customized information purposes, the OV3650 includes a one-time programmable (OTP) memory. The OV3650 has a one lane MIPI interface and a traditional parallel digital video port. The sensor's parallel port can also be used to communicate to an external secondary camera (digital video port) while providing continued output through the MIPI interface.

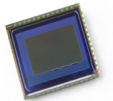
applications

- mobile phones
- notebook webcam
- DSC
- toys
- PC multimedia

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 black level calibration (ABLC)
- programmable controls: frame rate, mirror, and flip
- image quality controls: defective pixel canceling
- support for output formats: 10-bit RAW RGB output format
- support for images sizes: QXGA, horizontal and vertical subsampling
- support for LED and flash strobe mode
- standard serial SCCB interface
- MIPI serial output interface (one data lane up to 800Mbps/lane)
- MIPI hub/secondary camera interface
- embedded one-time programmable (OTP) memory for part identification, etc.
- digital video port (DVP) parallel output interface
- I/O state configurability
- on-chip phase lock loop (PLL)
- embedded 1.5V regulator for core power

OV3650



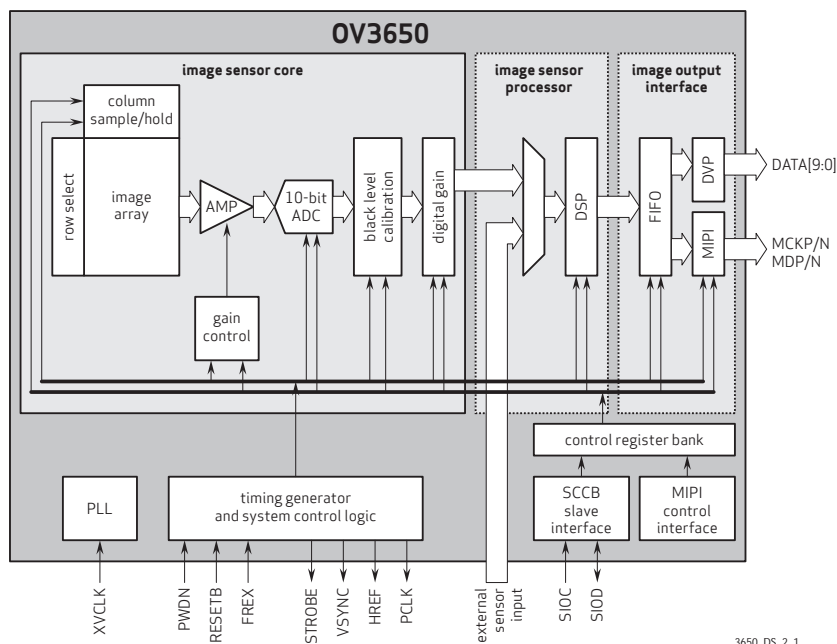
ordering information

- **OV03650-A65A**
(color, lead-free, 65-pin CSP3)
- **OV03650-G04A**
(color, chip probing, 200µm backgrounding, reconstructed wafer)

product specifications

- **active array size:** 2048 x 1536
- **power supply:**
 - core: 1.5VDC + 5% (internal regulator)
 - analog: 2.6 - 3.0V (2.8V typical)
 - I/O: 1.7 - 3.0V (1.8V typical)
- **temperature range:**
 - operating: -30°C to 70°C
 - stable image: 0°C to 50°C
- **output formats:**
 - 8-/10-bit raw RGB data
- **lens size:** 1/4"
- **lens chief ray angle:** 23.6° non-linear
- **input clock frequency:** 6 - 27 MHz
- **maximum image transfer rate:**
 - QXGA (2048x1536): 15 fps
 - SXGA (1024x768): 30 fps
- **scan mode:** progressive
- **pixel size:** 1.75 µm x 1.75 µm
- **image area:** 3626 µm x 2709 µm
- **package dimensions:** 5425 µm x 5385 µm
- **sensitivity:** 960 mV/Lux-sec.

functional block diagram



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