

OV3647 3 megapixel product brief



high-performance 1/4-inch, 3 megapixel CameraChip™ sensor with MDDI high speed serial and parallel interfaces

The OV3647 is a 3 megapixel RGB raw image sensor using OmniVision's high performance 1.75 μm OmniPixel3™ technology, with a sensitivity of 700 mV/(Lux-sec) and small enough to enable camera module sizes of 7 x 7 x 5 mm.

The OV3647 is the first 3 megapixel sensor to support an MDDI high speed serial interface. It is also equipped with a standard parallel interface with the unique ability to act as an input for a secondary camera and then share the MDDI interface, i.e. also functioning as an MDDI hub. MDDI reduces the number of interconnects to the baseband processor, enabling rapid two-way data transfer, increasing reliability, reducing power consumption and also eliminating high frequency electro-magnetic interference (EMI) issues.

The OV3647 has a 3 megapixel image array, capable of operating at 15 frames per second in QXGA (2048 x 1536) resolution, with complete user control over image quality, formatting and output data transfer.

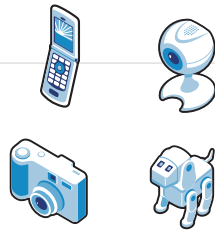
The embedded image processing functions include exposure control, white balance, defective pixel canceling and lens shading compensation, and these are programmable through the SCCB interface or MDDI interface.

The OV3647 uses proprietary OmniPixel3 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.

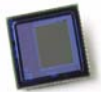
The OV3647's embedded, one time programmable (OTP) memory is designed for part recognition and simplification of module designs using different lenses.

applications

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



OV3647



ordering information

- **OV03647-V47A**
(color, lead-free, 47-pin CSP2)
- **OV03647-G04A**
(color, chip probing, 200 mm backgrinding, reconstructed wafer)

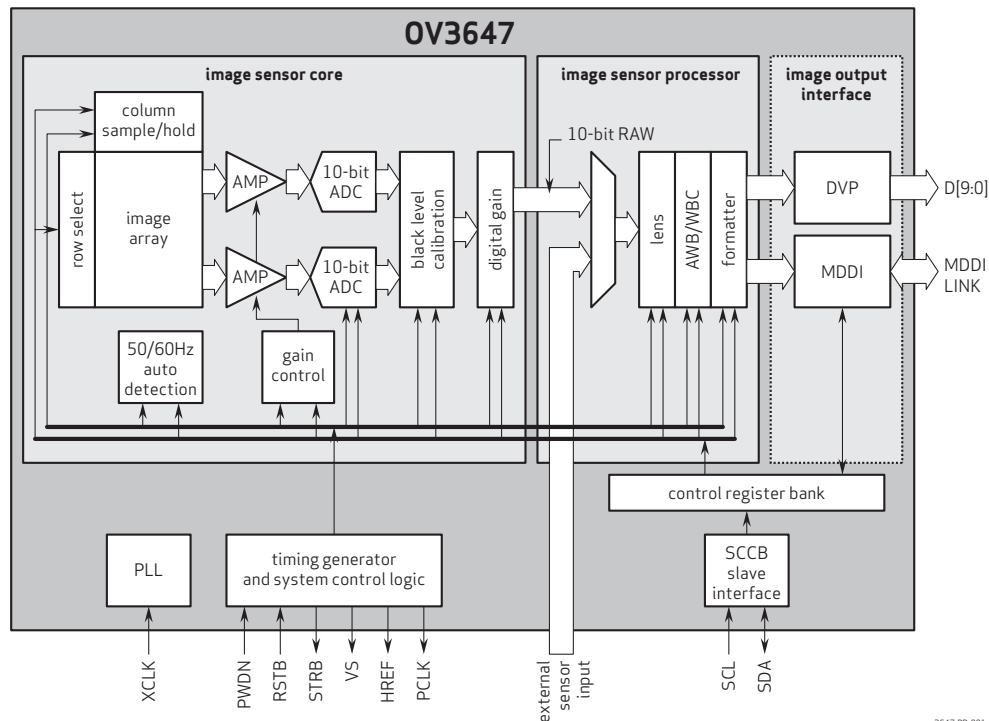
product features

- MDDI serial interface
- digital video port (DVP) parallel output interface
- second camera can share MDDI interface
- ultra low power and low cost
- automatic image control functions:
 - automatic exposure control (AEC)
 - automatic gain control (AGC)
 - automatic white balance (AWB)
 - auto 50/60 Hz luminance detection
 - auto black level calibration (ABLC)
- support for QXGA, XGA and HF mode
- programmable controls for frame rate, mirror, flip, and cropping
- lens correction and defective pixel canceling
- RAW RGB output format
- black sun cancellation
- embedded regulator for core
- support for LED and flash strobe mode
- standard serial SCCB interface
- embedded one-time programmable (OTP) memory
- on-chip phase lock loop (PLL)
- programmable I/O drive capability
- fits module size of 7.0 x 7.0 mm
- HDR-ready - provides high dynamic range (HDR) data signals for external processing enabling extended dynamic range at half resolution

product specifications

- **active array size:** 2048 x 1536
- **power supply:**
 - core: 1.5VDC \pm 5%
 - analog: 2.45 - 3.0V
 - I/O: 1.7 - 3.0V
- **power requirements:**
 - active: 70 mA (typical)
 - standby: 20 μ A (typical)
- **temperature range:**
 - operating: -20°C to 70°C
 - stable image: 0°C to 50°C
- **output:** 8-/10-bit raw RGB data
- **lens size:** 1/4"
- **lens chief ray angle:** 25° non-linear
- **input clock frequency:** 6 - 54 MHz (MDDI: 260 MHz)
- **S/N ratio:** 37 dB
- **dynamic range:**
 - normal mode: 65 dB
 - HDR mode: 85 dB (1024 x 768 or lower resolution)
- **maximum image transfer rate:**
 - QXGA (2048 x 1536): 15 fps
 - XGA (1024 x 768): 30 fps
 - HF (512 x 384): 60 fps
- **sensitivity:** 700 mV(Lux-sec)
- **maximum exposure interval:** 1574 x t_{ROW}
- **pixel size:** 1.75 μ m x 1.75 μ m
- **image area:** 3626 μ m x 2709 μ m
- **package dimensions:**
 - CSP2: 5515 μ m x 5195 μ m
 - COB: 5530 μ m x 5210 μ m

functional block diagram



3647_P8_001

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