

OV5650 5 megapixel product brief



available in
a lead-free
package

DSC-Quality Imaging for High-Performance Mobile Phones

Introducing the OV5650, OmniVision's latest 5 megapixel imaging solution for mobile phones featuring 1.75 μm OmniBSI™ (backside illumination) technology. OmniBSI technology delivers a number of performance improvements over front-side illumination (FSI) technology, including increased sensitivity per unit area, improved quantum efficiency, reduced crosstalk and photo response non-uniformity, which all lead to significant improvements in image quality.

Designed specifically to address consumer demand for digital still camera (DSC) quality imaging in a mobile phone, the OV5650 combines the industry's best low-light sensitivity at 1300 mV/(lux · sec) and a 2x improvement in (SNR10) signal-to-noise ratio (<70 lux), with the industry's lowest stack height – ideal for today's ultra-slim mobile phones.

The superior pixel performance of the 1/3.2 inch OV5650 enables high frame rate HD video at 60 frames per second (fps) with complete user control over formatting and output data transfer. The OV5650 supports a digital video parallel port or two-lane MIPI, and provides full-frame, windowed or scaled 10-bit images in RAW RGB format, and 256 bytes of available on-chip memory.

Automatic image control features and high frame rates for video encoding deliver vivid still and video images, even in the most challenging lighting conditions.

The OV5650 – simply the best 5 megapixel solution in its class. Find out more at www.ovt.com.

Applications

- Mobile Phones
- PC Multimedia
- Games and Toys

Product Features

- 1.75 μm OmniBSI technology
- industry's best low light sensitivity
- 2x improvement in (SNR10) signal-to-noise ratio <70 lux
- industry's lowest stack height
- high frame HD video at 60 fps
- improved quantum efficiency and crosstalk
- programmable controls for mirror and flip, cropping, windowing, and panning
- image quality controls: lens correction, 2-D defective pixel canceling
- support for video or snapshot operations
- support for LED and flash strobe mode
- support for horizontal and vertical sub-sampling
- standard serial SCCB interface
- digital video port (DVP) parallel output interface
- MIPI interface (two lanes)
- 256 bytes of embedded one-time programmable (OTP) memory
- embedded 1.5 V regulator for core power
- programmable I/O drive capability, I/O tri-state configurability
- support for black sun cancellation
- suitable for module size of 8.5 x 8.5 x 6 mm

OV5650



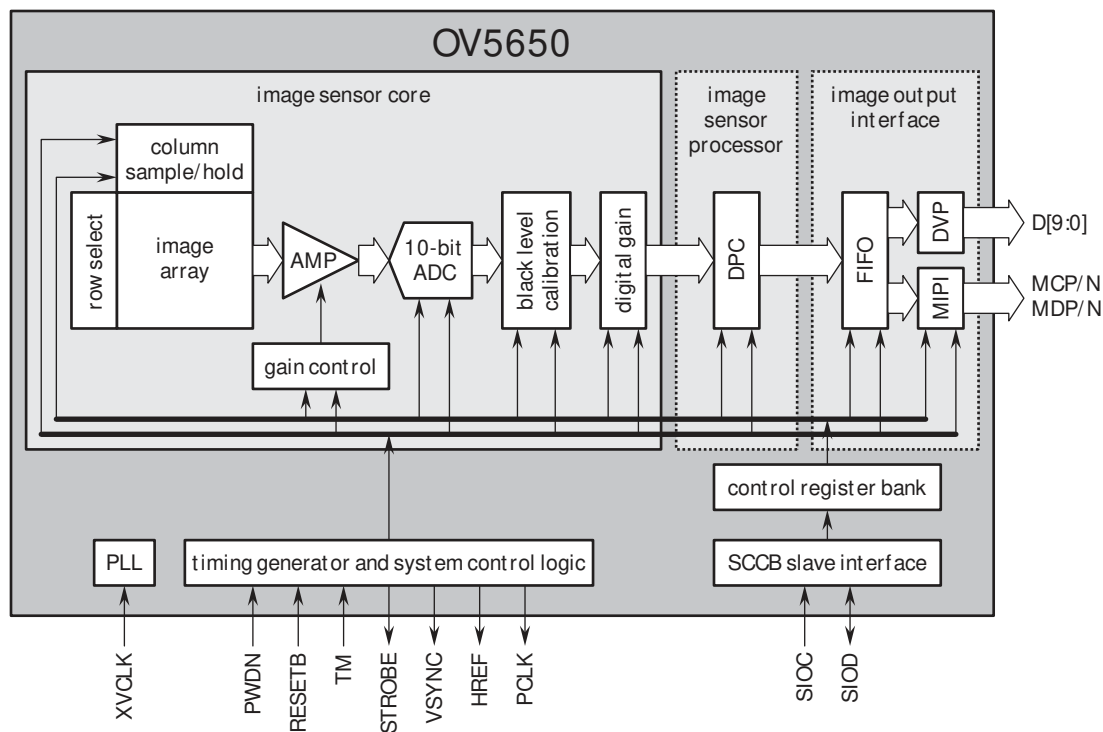
Ordering Information

- OV05650-A66A (color, lead-free, 66-pin CSP3)
- OV05650-G04A (color, chip probing, 200 μm backgrinding, reconstructed wafer)

Product Specifications

- active array size: 2592 x 1944
- 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
- power requirements:
 - active: 150 mA
 - standby: 40 μA
- temperature range:
 - operating: -30 $^{\circ}\text{C}$ to 70 $^{\circ}\text{C}$
 - stable image: 0 $^{\circ}\text{C}$ to 50 $^{\circ}\text{C}$
- output formats: 8/10-bit raw RGB output
- lens size: 1/3.2"
- lens chief ray angle: 25 $^{\circ}$
- input clock frequency: 6-27 MHz
- S/N ratio: 37 dB
- dynamic range: 69 dB
- maximum image transfer rate:
 - QSXGA (2592 x 1944): 15 fps
 - 1080p: 30 fps
 - 720p: 60 fps
 - VGA (640 x 480): 90 fps
 - QVGA (320 x 240): 120 fps
- sensitivity: 1300 mV/(lux - sec)
- shutter: rolling shutter
- pixel size: 1.75 μm x 1.75 μm
- image area: 4592 μm x 3423 μm
- package/die dimensions:
 - CSP3: 6505 μm x 6005 μm
 - COB: 6500 μm x 6000 μm

Functional Block Diagram



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