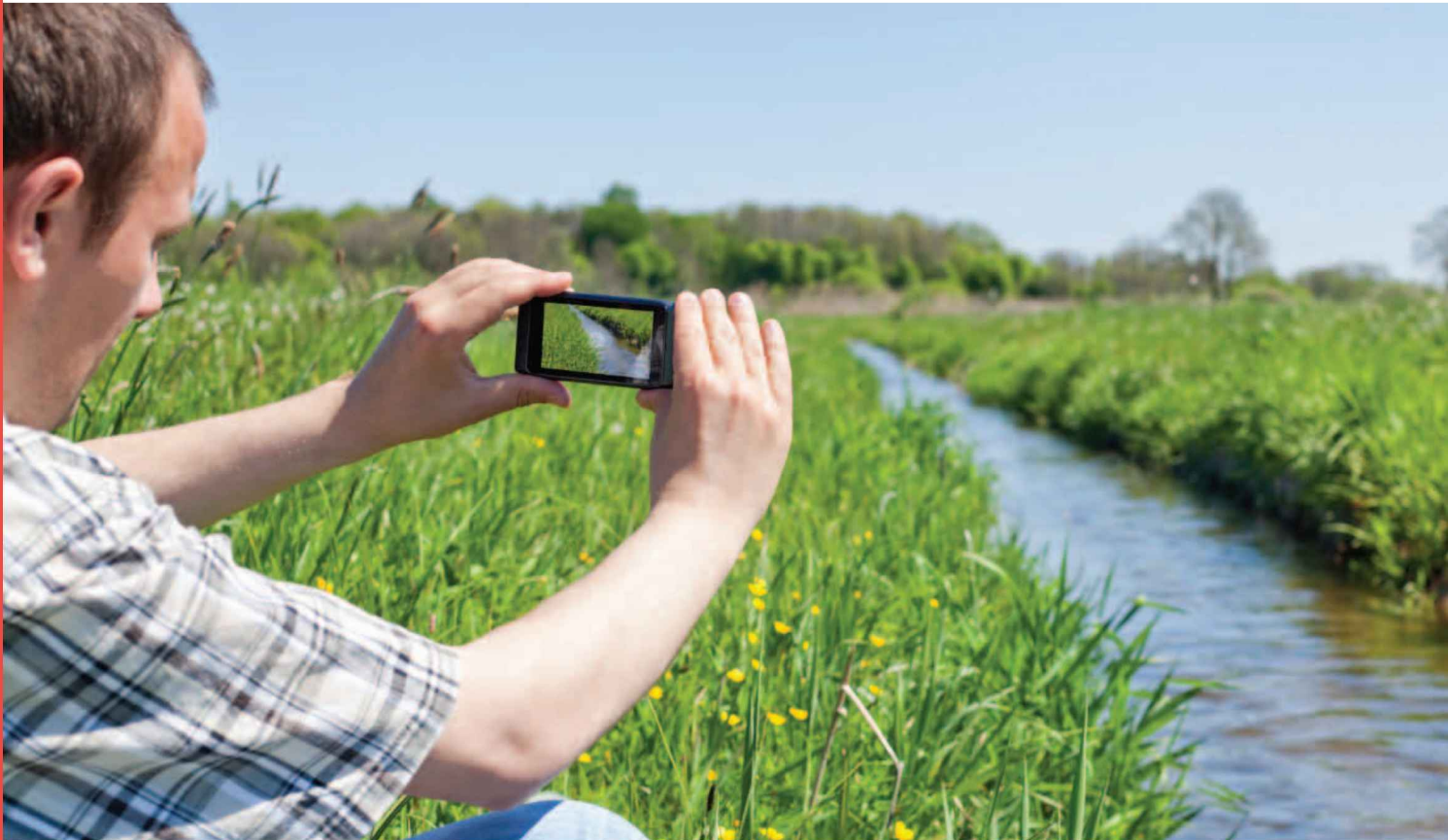


OV5680 5-megapixel product brief



5-Megapixel Image Sensor with OmniBSI-2™ Technology for Video-Centric Smartphones



available in
a lead-free
package

The 5-megapixel OV5680 features OmniVision's advanced 1.75-micron OmniBSI-2 pixel architecture, designed to further narrow the performance gap between smartphones and dedicated digital video cameras. The 1/3.2-inch CMOS image sensor offers best-in-class image quality while capturing 1080p high-definition (HD) video at 30 frames per second (fps) for mobile applications.

The OV5680 utilizes an integrated scaler to provide 1080p HD video capture at 30 fps for continuous shooting and shutterless designs without any lag. The scaler enables electronic image stabilization, while maintaining full field of view in 1080p HD video mode. The sensor's 2x2 binning functionality with post-binning re-sampling filter enables 720p video capture at 60 fps, minimizes spatial artifacts and removes image artifacts around edges, delivering clean and crisp color images for best-in-class HD video.

The OV5680 can synchronize exposure and frame for stereo cameras to meet 3D video capture requirements. The new 1.75-micron OmniBSI-2 pixel is built using a 300 mm copper process with 65 nm design rules, offering optimized die size, lower power consumption, and significant performance and image quality improvements over the first-generation OmniBSI™ pixel.

The OV5680 comes with a standard 2-lane MIPI serial output interface and fits into the industry standard 8.5 x 8.5 x ≤6 mm module size.

Find out more at www.ovt.com.

Applications

- Cellular and Mobile Phones
- Digital Video Camcorders (DVC)
- Digital Still Cameras (DSC)
- PC Multimedia
- 3D Cameras

Product Features

- 1.75 μm OmniBSI-2™ pixel technology
- fast mode switching
- support for image sizes:
 - 5 Mpixel (2592x1944)
 - EIS 1080p (2112x1188)
 - 1080p (1920x1080)
 - EIS 720p (1536x864)
 - 720p (1280x720)
 - VGA (640x480)
 - QVGA (320x240)
- support 2x2 binning, re-sampling filter
- supports 3D applications
- programmable controls for frame rate, mirror and flip, cropping, windowing, and scaling
- on chip scalar
- image quality controls: defect pixel correction, lens shading correction, and black level calibration
- standard serial SCCB interface
- support for output formats: 10-bit RAW RGB and DPCM 10-8 compression
- up to 2-lane MIPI serial output interface
- supports horizontal and vertical subsampling
- supports alternate row HDR timing
- embedded 4K bits one-time programmable (OTP) memory for part identification, etc.
- two on-chip phase lock loop (PLL)
- programmable I/O drive capability
- built-in 1.2V regulator for core
- built-in temperature sensor
- supports alternate row HDR timing

OV5680



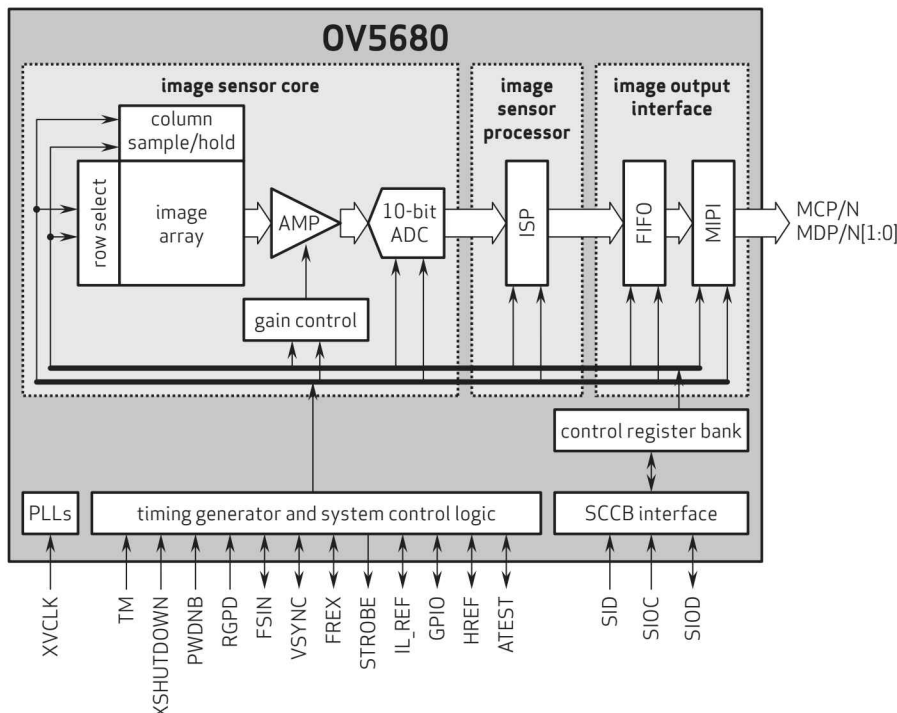
Ordering Information

- OV05680-G04A-2A**
(color, chip probing, 200 μm backgrinding, reconstructed wafer with good die)
- OV05680-G14A-2A**
(color, chip probing, 200 μm backgrinding, uncut die, cut into four quarters)
- OV05680-G20A-2A**
(color, chip probing, no backgrinding, no die-saw, whole wafer)

Product Specifications

- active array size:** 2592 x 1944
- input clock frequency:** 6 - 27 MHz
- power supply:**
 - core: 1.16 - 1.32V
 - analog: 2.6 - 3.0V
 - I/O: 1.7 - 3.0V
- max S/N ratio:** 38 dB
- dynamic range:** 73 dB @ 8x gain
- power requirements:**
 - active: 250 mW
 - standby: 560 μW
 - XSHUTDOWN: 5 μW
- maximum image transfer rate:**
 - SMP: 30 fps
 - EIS1080p: 30 fps
 - EIS720p: 30 fps
 - 1080p: 60 fps (crop)
 - 720p: 60 fps
- temperature range:**
 - operating: -30°C to 70°C junction temperature
 - stable image: 0°C to 50°C junction temperature
- sensitivity:** 1380 mV/lux-sec
- scan mode:** progressive
- output formats:** RAW RGB data
- pixel size:** 1.75 μm x 1.75 μm
- image area:** 4592 μm x 3423 μm
- die dimensions:** 5750 μm x 5700 μm
- lens size:** 1/3.2"
- lens chief ray angle:** 27° non-linear

Functional Block Diagram



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