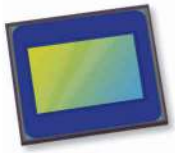
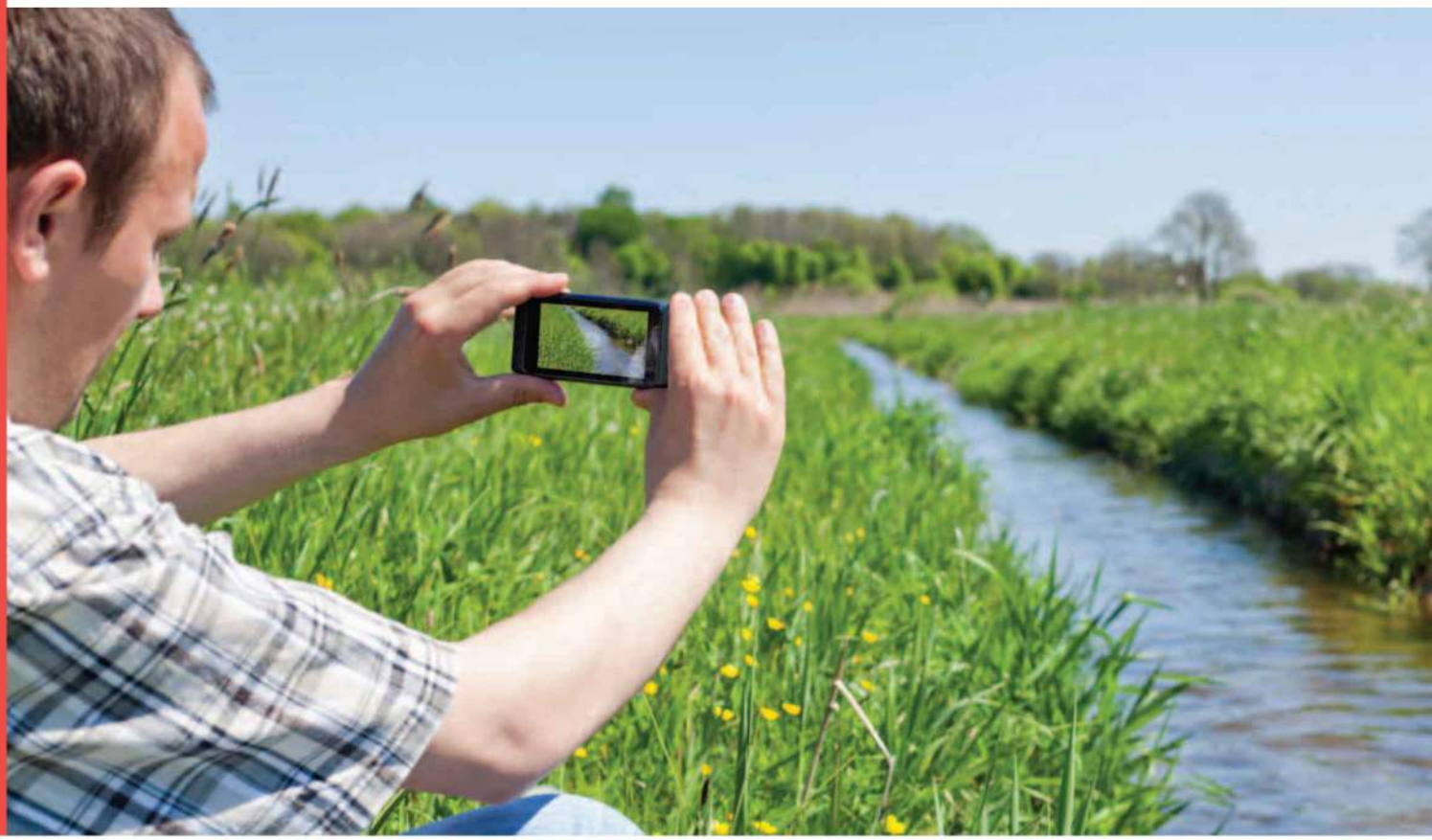


OV5680 5-megapixel product brief



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

lead free

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.

OmniVision

OV5680

Applications

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

Product Features

- 1.75 µm OmniBSI-2™ pixel technology
- support for image sizes:
  - 5 Mpixel (2592x1944)
  - EIS 1080p (2112x1188)
  - 1080p (1920x1080)
  - EIS 720p (1536x864)
  - 720p (1280x720)
  - VGA (640x480)
  - QVGA (320x240)
- programmable controls for frame rate, mirror and flip, cropping, windowing, and scaling
- image quality controls: defect pixel correction, lens shading correction, and black level calibration
- support for output formats: 10-bit RAW RGB and DPCM 10-8 compression
- supports horizontal and vertical subsampling
- fast mode switching
- support 2x2 binning, re-sampling filter
- supports 3D applications
- on chip scalar
- standard serial SCCB interface
- up to 2-lane MIPI serial output interface
- 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

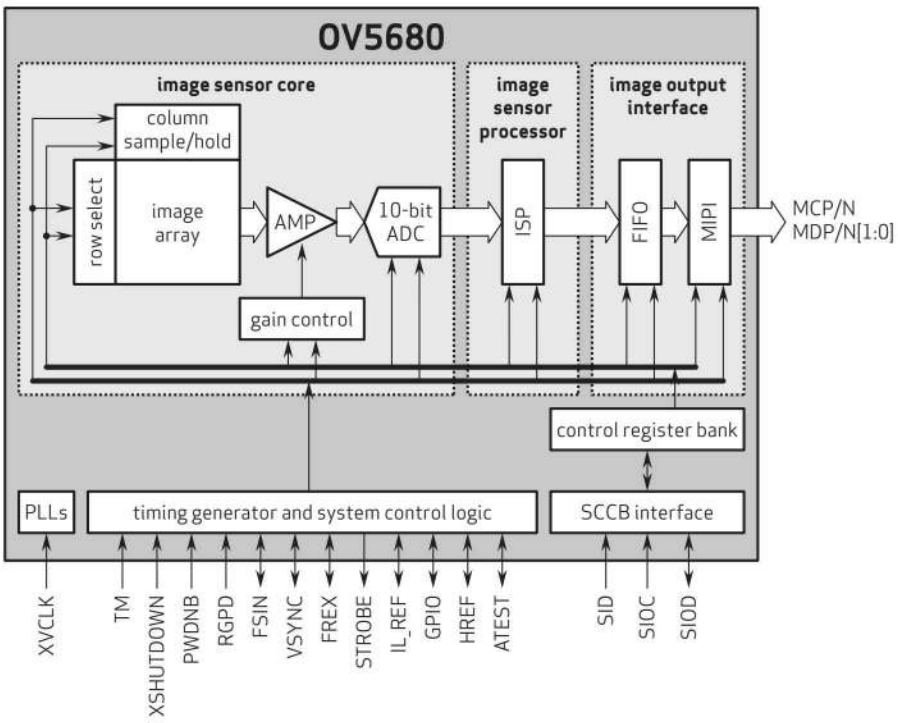
Ordering Information

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

Functional Block Diagram



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