





Power-Efficient 13-Megapixel Image Sensor with Best-In-Class Performance for High-End Smartphones and Tablets

The OV13850 is a high performance PureCel™ 13-megapixel CameraChip™ sensor that delivers best-in-class high- and low-light performance, as well as dramatically reduced power consumption for smartphones and tablets.

The OV13850 sensor offers a number of performance enhancements, including improved full-well capacity (FWC) and sensitivity for industry-leading high- and low-light performance. It also offers a 40 percent reduction in power consumption compared to our previous generation sensor, making the OV13850 ideally suited for feature-rich mobile devices.

The 1/3.06-inch OV13850 supports an active array of 4224×3136 pixels (13.2-megapixels) operating at 30 frames per second (fps) for zero shutter lag and can seamlessly transition between recording video and capturing still images. Additionally, the sensor supports 4K2K ultra-high definition video at 30 fps with full-horizontal field of view (FOV) and electronic image stabilization (EIS), as well as high frame rate 1080p HD video at 60 fps with EIS to enable high quality videos.

The OV13850 fits into an industry standard $8.5 \times 8.5 \times 5$ mm module.

Find out more at www.ovt.com.





Applications

- Cellular Phones
- PC Multimedia

■ Tablets

Product Features

- PureCel[™] image sensor
- 1.12 µm x 1.12 µm pixel
- optical size of 1/3.06"
- 0V13850-G04A-2A: 31.2° CRA for <6 mm z-height
- 0V13850-G05A-2D: 35° CRA for <5.5 mm z-height
- programmable controls for frame rate, mirror and flip, cropping, and windowing
- support for image sizes:
 13.2MP (4224x3136),
 10MP (16:9 4224x2376),
 4K2K (3840x2160), EIS 1080p (2112x1188), EIS 720p (1408x792), and more
- 13.2MP at 30 fps

- two-wire serial bus control (SCCB)
- strobe output to control flash
- 8 kbits of embedded one-time programmable (OTP) memory
- two on-chip phase lock loops (PLLs)
- programmable controls: gain, exposure, frame rate, image size, horizontal mirror, vertical flip, cropping, and panning
- image quality controls: defect pixel correction, automatic black level calibration, lens shading correction, and alternate row HDR
- built-in temperature sensor
- suitable for module size of 8.5 x 8.5 x < 6 mm

0V13850



- 0V13850-G04A-2A
- (color, chip probing, 200 µm backgrinding, reconstructed wafer with good die)
- 0V13850-G05A-2D
 - (color, chip probing, 150 µm backgrinding, reconstructed wafer with good die)

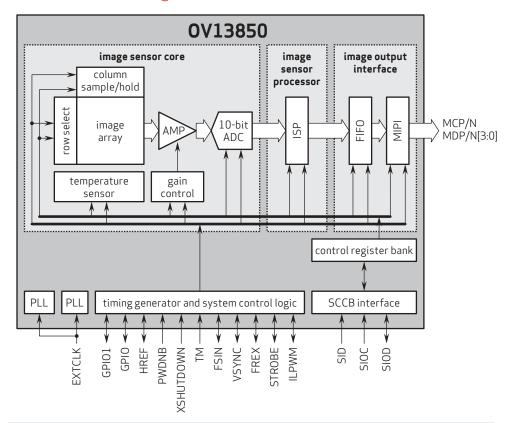
Product Specifications

- active array size: 4224 x 3136

- power supply:
 core: 1.14 1.26V (1.2V nominal)
 analog: 2.6 3.0V (2.8V nominal)
 I/O: 1.7 3.0V (1.8V or 2.8V nominal)
- active: 199 mW (13MP @ 30 fps, ISP off) input clock frequency: 6 64 MHz standby: 300 µW
- XSHUTDOWN: 1 μW
- temperature range:
 operating: -30°C to +85°C junction
- temperature
- stable image: 0°C to +60°C junction temperature
- output interfaces: up to 4-lane MIPI serial output

- output formats: 10-bit RGB RAW
- lens size: 1/3.06"
- lens chief ray angle:
 OV13850-G04A-2A: 31.2°
 OV13850-G05A-2D: 35°
- maximum image transfer rate: 30 fps
- scan mode: progressive
- pixel size: 1.12 µm x 1.12 µm
- image area: 4815 µm x 3678.3 µm
- die dimensions: 6210 µm x 5517 µm

Functional Block Diagram



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