OV13870 13MP product brief

13-Megapixel PureCel®Plus-S Sensor for High-End Mobile Applications

lead free

available in a lead-free package

OmniVision's OV13870 is the industry's first 13-megapixel "big pixel" sensor capable of recording full-resolution 1080p high definition (HD) video at 240 frames per second (fps). The OV13870 also features a 12-bit analog to digital converter (ADC) to enable better low light signal to noise ratio (SNR), phase detection auto focus (PDAF), and dedicated support for dual-camera functionality.

Built on OmniVision's new PureCel Plus-S pixel architecture, the OV13870 delivers best-in-class pixel performance with significant improvements in low-light performance and crosstalk reduction with minimal chip size. Even with a 1/2.74-inch optical format, the OV13870 has an extremely compact module with a z-height of about 5.5 mm.

The OV13870 can capture full-resolution 13-megapixel still images at 45 fps or record ultra-high resolution 4K2K video at 60 fps, 1080p full HD at 240 fps.

Find out more at www.ovt.com.

OmniVision

OV13870

Applications

- Smartphones
- Tablets
- PC Multimedia

Product Features

- 1.25 µm x 1.25 µm pixel
- optical size of 1/2.74"
- 33.99° CRA
- enhanced dual cam support
- high-speed architecture for fast frames per second (fps)
- programmable controls for frame rate, mirror and flip, cropping, and windowing
- supports images sizes:
  - 13MP (4224x3136)
  - 4K2K (3840x2160)
  - 1080p (1920x1080), and more
- two-wire serial bus control (SCCB)
- strobe output to control flash
- embedded 13.5 kbits of one-time programmable (OTP) memory
- support for phase detection auto focus (PDAF)
- two on-chip phase lock loops (PLLs)
- programmable controls for gain, exposure, frame rate, image size, horizontal mirror, vertical flip, cropping, and panning
- image quality controls for:
  - defect pixel correction
  - automatic black level calibration
  - lens shading correction
  - alternate row HDR
- built-in temperature sensor
- typical module size: 9.5 x 9.5 x <5.55 mm

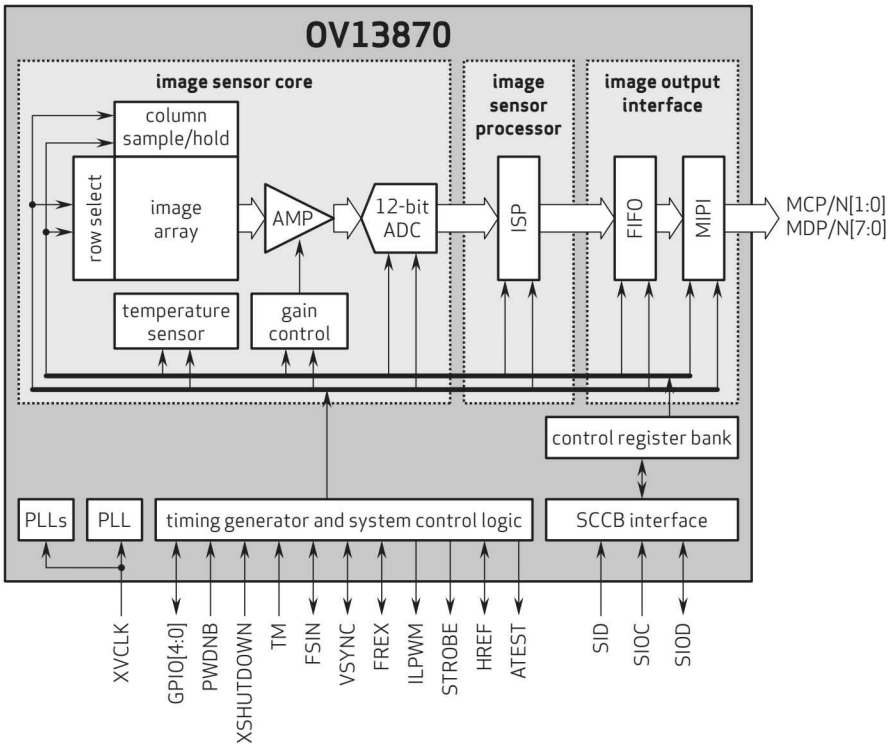
Ordering Information

- **OV13870-GA5A-Z**
  (color, chip probing, 150 µm backgrinding, reconstructed wafer with good die)

Product Specifications

- **active array size:** 4224 x 3136
- **power supply:**
  - **core:** 1.2V
  - **analog:** 2.8V
  - **I/O:** 1.8V
- **power requirements:**
  - **active:** 320 mW @ full-res, 30 fps, 12-bit
  - **standby:** 265 mW @ full-res, 30 fps, 10-bit
  - **XSHUTDOWN:** <10 µW
- **temperature range:**
  - **operating:** -30°C to +85°C junction temperature
  - **stable image:** 0°C to +60°C junction temperature
- **output formats:** 12/10-bit RGB RAW, DPCM 12-8 compression
- **lens size:** 1/2.74"
- **lens chief ray angle:** 33.99° non-linear
- **input clock frequency:** 6 - 27 MHz
- **maximum image transfer rate:**
  - **13MP (10-bit) (4:3):** 45 fps
  - **13MP (12-bit) (4:3):** 30 fps
  - **4K2K (16:9):** 60 fps
  - **1080p FHD (crop+bin):** 240 fps
- **sensitivity:** 4800 e⁻/lux-sec
- **max S/N ratio:** 37.7 dB
- **dynamic range:** 72.3 dB @ 8x gain
- **scan mode:** progressive
- **pixel size:** 1.25 µm x 1.25 µm
- **dark current:** 2 e⁻/sec @ 60°C junction temperature
- **image area:** 5320 µm x 3960 µm
- **die dimensions:**
  - **COB:** 6300 µm x 4900 µm
  - **RW:** 6350 µm x 4950 µm

Functional Block Diagram



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