OmniVision's high performance OV13855 is a 13-megapixel PureCel®Plus image sensor designed to bring high-quality imaging to rear-facing camera applications in mainstream smartphones. It is also well-suited for front-facing and dual camera applications in high-end mobile devices. In addition to best-in-class pixel performance, this third generation 13-megapixel sensor also offers advanced features, such as phase detection autofocus (PDAF).

Built on OmniVision's PureCel®Plus pixel technology, the OV13855 delivers significant improvements in low-light performance, color crosstalk reduction, and angular response when compared with previous-generation 13-megapixel sensors. The OV13855 captures full-resolution 13-megapixel still images at 30 frames per second (fps) and records ultra-high resolution 4K2K video at 30 fps or 1080p full high definition (HD) at 60 fps.

The OV13855 fits in 8.5 x 8.5 mm autofocus modules with z-heights of less than 5 mm for rear cameras, and 7.5 x 7.5 mm fixed focus modules with z-heights of less than 4.5 mm for high-end front-facing cameras. The sensor is available in non-PDAF (OV13858) and monochrome (OV13355) versions for front-facing and dual camera applications.

Find out more at www.ovt.com.
### Applications
- Smartphones and Feature Phones
- Tablets
- PC Multimedia
- Wearables

### Product Features
- 1.12 μm x 1.12 μm pixel
- optical size of 1/3.06".
- 33.15° CRA
- support for PDAF
- 13MP at 30 fps
- programmable controls for:
  - frame rate
  - mirror and flip
  - cropping
  - windowing
- supports image sizes:
  - 13MP (4224x3136)
  - 10MP (4224x2376)
  - 3MP (2112x1568), and more
- total embedded one-time programmable (OTP) memory: 1024 bytes, 416 bytes for customer use, remaining bytes for internal use
- support for output formats: 10-bit RGB RAW
- interlaced raw HDR output
- two-wire serial bus control (SCCB)
- MIPI serial output interface
  - [1-, 2-lane, or 4-lane]
- two on-chip phase lock loops (PLLs)
- 2x binning support
- image quality controls:
  - defect pixel correction
  - automatic black level calibration
  - lens shading correction
- built-in temperature sensor
- suitable for module size of 8.5 x 8.5 x <5 mm

### Product Specifications
- active array size: 4256 x 3168
- power supply:
  - analog: 2.7 - 3.0V (2.8V nominal)
  - core: 1.14 - 1.26V (1.2V nominal)
  - I/O: 1.7 - 1.9V (1.8V nominal)
- power requirements:
  - active: 233 mW (based on ISP ON)
  - standby: 1 mW
  - XSHUTDOWN: 10 µA
- power supply:
  - temperature range:
    - operating: -30°C to +85°C junction temperature
    - stable image: 0°C to +60°C junction temperature
- output interfaces:
  - 4-lane MIPI serial output
- output formats: 10-bit RGB RAW
- lens size: 1/3.06"
- input clock frequency: 6 - 64 MHz
- lens chief ray angle: 33.15° non-linear
- maximum image transfer rate:
  - 13MP (4224x3136): 30 fps
  - 10MP (4224x2376): 30 fps
  - 3MP (2112x1568): 60 fps
- sensitivity: 3900 e-/Lux-sec
- max S/N ratio: 36.5 dB
- dynamic range: 65 dB @ 1x gain
- minimum exposure: 4-row
- maximum exposure: VTS-8
- pixel size: 1.12 μm x 1.12 μm
- image area: 4749.70 µm x 3535.49 µm
- die dimensions:
  - COB: 5868 µm x 4950 µm
  - RW: 5918 µm x 5000 µm

### Ordering Information
- OV13855-GASA-2A
  - color, chip probing, 150 µm backgrinding, reconstructed wafer

### Functional Block Diagram

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OV13855

image sensor core

- column sample/hold
- image array

AMP

10-bit ADC

gain control

image sensor processor

ISP

image output interface

MCP/N MDP/N[3:0]

control register bank

PLLs

PLL

timing generator and system control logic

SCCB slave interface

EXTCLK

XSHUTDOWN

TSIN

VSYNC

SID

SCL

SDA

version 1.3, October 2018