16-Megapixel 1-Micron Pixel PureCel®Plus-S Image Sensor with Phase Detection Autofocus for Slim Mobile Devices

OmniVision’s high performance OV16880 is a 1/3.06-inch 16-megapixel image sensor built on OmniVision’s PureCel®Plus-S stacked die technology. Utilizing an advanced 1-micron pixel, the sensor brings ultra-high resolution image and video capture, as well as advanced features such as phase detection autofocus (PDAF), to slim smartphones and tablets.

OmniVision’s PureCel®Plus-S sensors utilize buried color filter array (BCFA) and deep trench isolation (DTI) technology, which dramatically reduces pixel crosstalk and improves signal-to-noise ratio to produce superior images and video. Additionally, this technology enables a slimmer module design by allowing larger chief ray angle (CRA) lenses without degradation of image quality.

The OV16880 PureCel®Plus-S image sensor is capable of capturing 16-megapixel (4672 x 3504 pixels) images at 30 frames per second (fps), thus allowing burst photography and zero shutter lag at full resolution. Additionally, the sensor is capable of capturing 4K video at 30 fps, 1080p video at 90 fps, and 720p video at 120 fps.

The sensor can fit into an 8.5 x 8.5 mm module with a z-height less than 5 mm. The OV16880 is currently in mass production.

Find out more at www.ovt.com.
### Applications
- Smartphones
- Digital Still Cameras (DSC)
- Digital Video Camcorders (DVC)
- PC Multimedia

### Product Features
- Automatic black level calibration (ABLC)
- Programmable controls for frame rate, mirror and flip, cropping, and windowing
- Support for dynamic DPC cancellation
- Supports output formats: 10-bit RAW RGB
- Supports horizontal and vertical subsampling
- Supports typical images sizes: 4672x3504, 4672x2628, 2336x1752, 1920x1080, 1280x720
- Supports 2x2 binning
- Standard serial SCCB interface
- Up to 4-lane MIPI TX interface with speed up to 1.5 Gbps/lane
- Programmable I/O drive capability
- Up to 1/2/4-lane LVDS interface with speed up to 1.5 Gbps/lane
- Embedded 13kbits (1664 bytes) of one-time programmable (OTP) memory for customer use
- Interleave row HDR output
- Support for high speed AF
- Support for PDAF
- Three on-chip phase lock loops (PLLs)
- Programmable I/O drive capability
- Built-in temperature sensor

### Product Specifications
- **Active array size:** 4672 x 3504
- **Power supply:**
  - Core: 1.2V
  - Analog: 2.8V
  - I/O: 1.8V
- **Power requirements:**
  - Active: 300 mW
  - Standby: 6 mA
  - XSHUTDN: 3 µA
- **Temperature range:**
  - Operating: -30°C to +85°C junction temperature
  - Stable image: 0°C to +60°C junction temperature
- **Output formats:** 10-bit RGB RAW
- **Lens size:** 1/3.06"
- **Lens chief ray angle:** 34.2° non-linear
- **Input clock frequency:** 6 - 64 MHz
- **Maximum image transfer rate:**
  - 4672x3504: 30 fps
  - 4672x2628: 30 fps
  - 2336x1752: 60 fps
  - 1920x1080: 90 fps
  - 1280x720: 120 fps
- **Sensitivity:** 3200 e/flux-sec
- **Max S/N ratio:** 36.8 dB
- **Dynamic range:** 72 dB @ 16x gain
- **Scan mode:** Progressive
- **Pixel size:** 1.0 µm x 1.0 µm
- **Dark current:** 4 e−/sec @ 60°C junction temperature
- **Image area:** 4741.632 µm x 3564.288 µm
- **Die dimensions:**
  - COB: 5640 µm x 4560 µm
  - RW: 5690 µm x 4610 µm

### Ordering Information
- OV16880-GASA-1B
  (color, chip probing, 150 µm backgrinding, reconstructed wafer with good die)

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**OV16880**

**Functional Block Diagram**

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