

OV20880 20MP product brief



20-Megapixel Second-Generation 1.0-Micron PureCel®Plus-S Sensor for Smartphones

lead free

available in a lead-free package

OmniVision's OV20880 is an ultra-compact image sensor designed specifically to bring 20-megapixel resolution to high-end, dual-camera mobile zoom solutions using OmniVision's second-generation, 1.0-micron PureCel®Plus-S pixel technology. The OV20880 offers advanced features such as zig-zag high dynamic range (zHDR), phase detection autofocus (PDAF), and support for dual-camera functionality with context switching, scaler and electronic image stabilization (EIS). The on-chip EIS also enables advanced capabilities such as image deblur.

zHDR uses a long and a short exposure in a single frame to extend dynamic range capabilities of the sensors. Long and short exposure lines are diagonally interlaced across the entire pixel array in a zig-zag pattern. This enables live preview and video recording in HDR mode and single-shot full-resolution HDR images in capture mode without any shutter lag.

The OV20880 captures full-resolution 20-megapixel images and video with zHDR capability at 30 fps, ultra-high-resolution 4K2K video with full field-of-view at 60 fps, and 1080p high definition (HD) video at 120 fps. The OV20880 offers both MIPI D-PHY and C-PHY interfaces.

The OV20880 comes in a package size of 8.5 x 8.5 mm with a z-height of 5.3 mm.

Find out more at www.ovt.com.

OmniVision

OV20880

Applications

- Smartphones
- Video Conferencing
- PC Multimedia

Product Features

- automatic black level calibration (ABLC)
- programmable controls for:
  - frame rate
  - mirror and flip
  - cropping
  - windowing
- support for dynamic DPC cancellation
- supports output formats:
  - 10-bit RAW RGB
  - DPCM 10-8 compression
- supports horizontal and vertical subsampling
- supports typical images sizes:
  - 5184 x 3888
  - 3840 x 2160
  - 2560 x 1440
  - 1920 x 1080
  - 1280 x 720
  - 1000 x 568
  - 800 x 480
- programmable I/O drive capability
- standard serial SCCB interface with speed up to 1 MHz (when clock input is >10 MHz)
- up to 4-lane MIPI TX interface with speed up to 1.92 Gbps/lane
- embedded 20 kbits of one-time programmable (OTP) memory
- sequential multi-frame HDR and ZigZag HDR support
- phase detection auto focus (PDAF) pixels with bypass PD pixels
- gyro interface with 4-wire SPI and EIS support
- long exposure time of up to 30 seconds
- two on-chip phase lock loops (PLLs)
- built-in temperature sensor
- typical module size: 8.5 x 8.5 x 5.3 mm

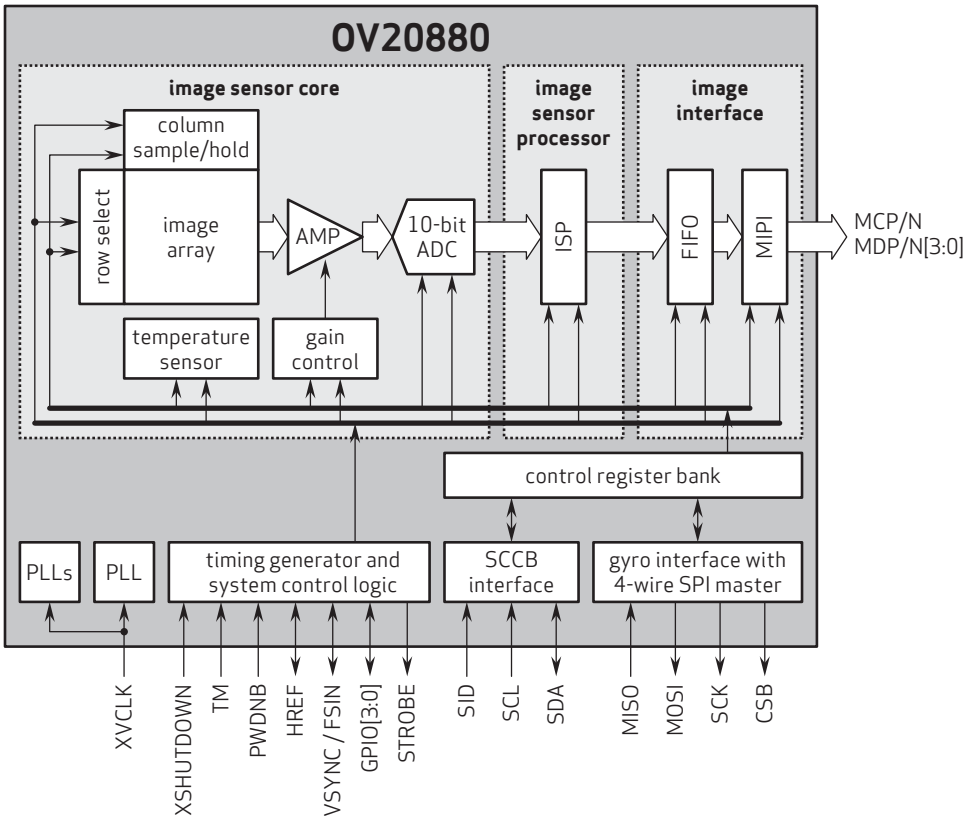
Ordering Information

- **OV20880-GA5A**
  (color, chip probing, 150 µm backgrinding, reconstructed wafer with good die)

Product Specifications

- **active array size:** 5184 x 3888
- **power supply:**
  - **core:** 1.05V
  - **analog:** 2.8V
  - **I/O:** 1.8V
- **power requirements:**
  - **active:** 349 mW
  - **standby:** 10 mW
  - **XSHUTDOWN:** 5 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, DPCM 10-8 compression
- **lens size:** 1/2.76"
- **lens chief ray angle:** 34.86° non-linear
- **maximum image transfer rate:**
  - **5184x3888:** 30 fps
- **input clock frequency:** 6 - 27 MHz
- **sensitivity:** 3,400 e⁻/Lux-sec
- **max S/N ratio:** 37.3 dB
- **dynamic range:** 72.9 dB @ 16x gain
- **scan mode:** progressive
- **pixel size:** 1.00 µm x 1.00 µm
- **image area:** 5257.73 µm x 3951.36 µm
- **die dimensions:**
  - **COB:** 6210 µm x 4446 µm
  - **RW:** 6260 µm x 4515.8 µm

Functional Block Diagram



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