

# OV20381 20MP product brief



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



available in  
a lead-free  
package

OmniVision's OV20381 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 OV20381 offers advanced features such as zig-zag high dynamic range (zHDR) 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 OV20381 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 OV20381 offers both MIPI D-PHY and C-PHY interfaces.

The OV20381 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](http://www.ovt.com).



## Applications

- Smartphones
- PC Multimedia
- Video Conferencing

## 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
  - 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)
- sequential multi-frame HDR
- up to 4-lane MIPI TX interface with speed up to 1.92 Gbps/lane
- programmable I/O drive capability
- embedded 20kbits of one-time programmable (OTP) memory with 12 kbits reserved for customer use
- 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

# OV20381



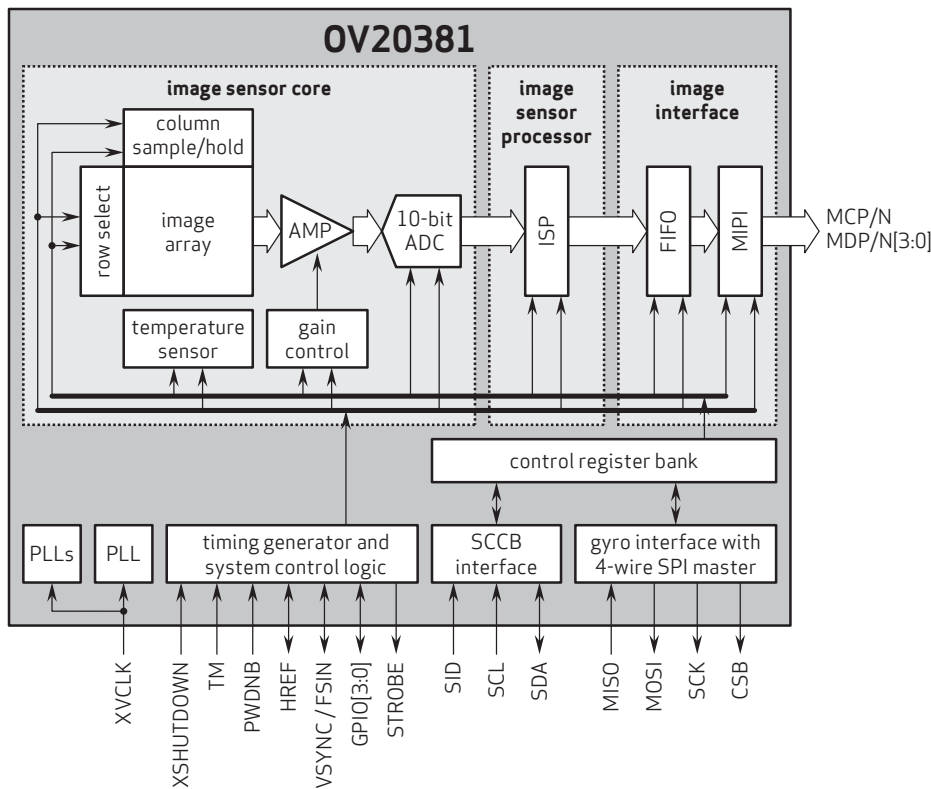
## Ordering Information

- OV20381-GA5A**  
(B&W, chip probing, 150 μm backgrinding, reconstructed wafer with good die)

## Product Specifications

- active array size:** 5184 x 3888
- lens chief ray angle:** 34.86° non-linear
- 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 RAW, DPCM 10-8 compression
- lens size:** 1/2.76"
- maximum image transfer rate:**
  - 5184 x 3888: 30 fps
  - 2592 x 1944: 120 fps
- input clock frequency:** 6 - 27 MHz
- sensitivity:** 6,340 e-/Lux-sec
- max S/N ratio:** 37.8 dB
- dynamic range:** 73.2 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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