

# OV12890 12MP product brief



## Advanced 1.55-Micron Large-Pixel PureCel®Plus-S Sensor for Premium Smartphones



available in  
a lead-free  
package

OmniVision's OV12890 is a high-performance 1.55-micron big-pixel PureCel®Plus-S image sensor that brings high-end imaging to flagship smartphones. Compared to OmniVision's previous-generation big-pixel sensor, the OV12890 delivers dramatically improved sensitivity and signal-to-noise (SNR) ratio with faster 12-bit readout architecture. The 1/2.3-inch OV12890 captures ultra-high resolution, high frame rate images, and video with support for advanced features such as phase detection autofocus (PDAF), high dynamic range (HDR), and slow motion video.

Built on OmniVision's latest generation PureCel®Plus-S pixel architecture, the OV12890 is capable of capturing full resolution 12-megapixel images and video at 45 frames per second (fps), ultra-high resolution 4K2K video at 60 fps, and 1080p full high definition (HD) video at 240 fps via high speed D-PHY and C-PHY interfaces.

The OV12890 fits into 10 x 10 mm modules with z-heights of <6 mm.

Find out more at [www.ovt.com](http://www.ovt.com).



## Applications

- Smartphones
- Tablets
- PC Multimedia

## Product Features

- 1.55  $\mu\text{m}$  x 1.55  $\mu\text{m}$  pixel
- optical size of 1/2.3"
- 35° CRA
- enhanced dual camera support
- high-speed architecture for fast frames per second (fps)
- programmable controls for frame rate, mirror and flip, cropping, and windowing
- support for image sizes: 12MP (4096x3072), 4K2K (3840x2160), 1080p (1920x1080), and more
- two-wire serial bus control (SCCB)
- strobe output to control flash
- embedded 13.5kbits 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, and lens shading correction
- built-in temperature sensor
- typical module size: 10 x 10 x <6 mm

# OV12890



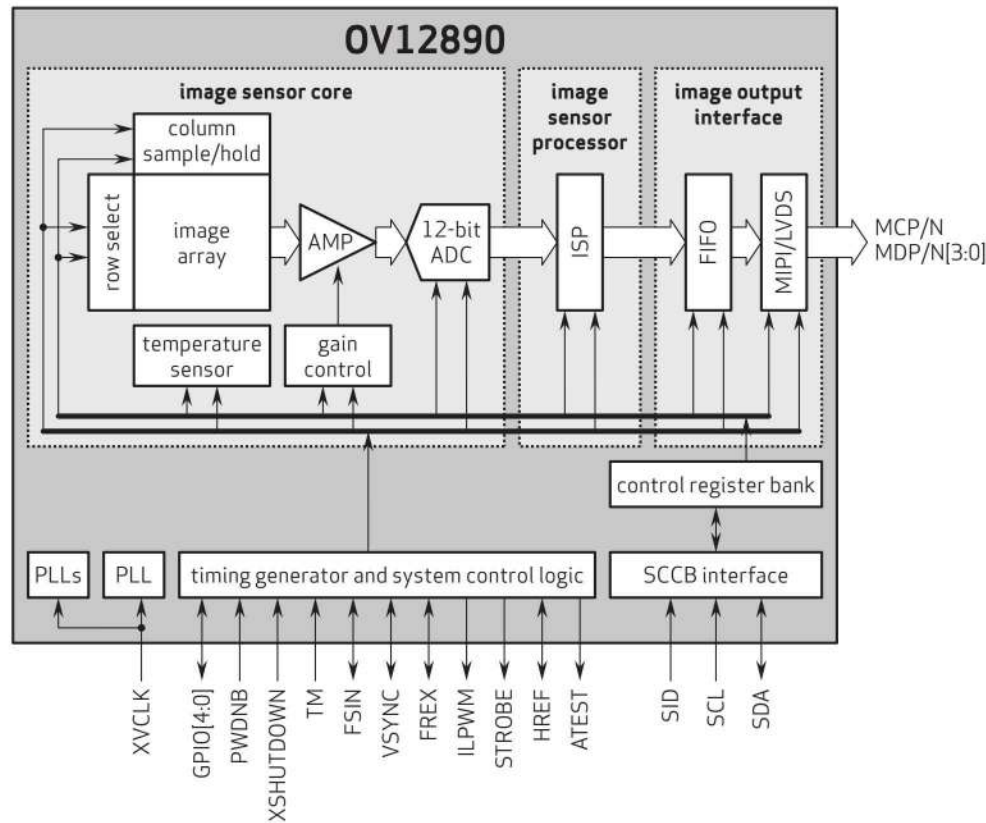
## Ordering Information

- OV12890-GA5A**  
(color, chip probing, 150  $\mu\text{m}$  backgrinding, reconstructed wafer with good die)

## Product Specifications

- active array size:** 4096 x 3072
- power supply:**
  - core: 1.2V
  - analog: 2.8V
  - I/O: 1.8V
- power requirements:**
  - active: 300 mW @ full-res, 30 fps, 12-bit
  - XSHUTDOWN: <10  $\mu\text{W}$
- temperature range:**
  - operating: -30°C to +85°C junction temperature
  - stable image: 0°C to +60°C junction temperature
- output formats:** 10/12-bit RGB RAW, DPCM 10-8 compression
- lens size:** 1/2.3"
- lens chief ray angle:** 35.11° non-linear
- input clock frequency:** 6 - 27 MHz
- maximum image transfer rate:**
  - 12MP (4:3): 30 fps
  - 4K2K (16:9): 60 fps
  - 1080p HD (crop+bin): 240 fps
- scan mode:** progressive
- pixel size:** 1.55  $\mu\text{m}$  x 1.55  $\mu\text{m}$
- image area:** 6398.4  $\mu\text{m}$  x 4811.2  $\mu\text{m}$
- die dimensions:**
  - COB: 7200  $\mu\text{m}$  x 5750  $\mu\text{m}$
  - RW: 7250  $\mu\text{m}$  x 5800  $\mu\text{m}$

## Functional Block Diagram



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