OV12890 12MP product brief



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

lead free

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.

OmniVision

OV12890

Applications

- Smartphones
- Tablets
- PC Multimedia

Product Features

- 1.55 µm x 1.55 µm 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
  - windowing
- support for image sizes:
  - 12MP (4096x3072)
  - 4K2K (3840x2160)
  - 1080p (1920x1080), and more
- two-wire serial bus control (SCCB)
- strobe output to control flash
- two on-chip phase lock loops (PLLs)
- total embedded one-time programmable (OTP) memory: 4096 bytes, 64 bytes for customer use, remaining bytes for internal use
- support for phase detection auto focus (PDAF)
- programmable controls for:
  - gain
  - exposure
  - frame rate
  - image size
  - horizontal mirror
  - vertical flip
  - cropping
  - panning
- image quality controls for:
  - defect pixel correction
  - automatic black level calibration
  - lens shading correction
  - alternate row HDR
- built-in temperature sensor
- typical module size: 10 x 10 x 5.63 mm

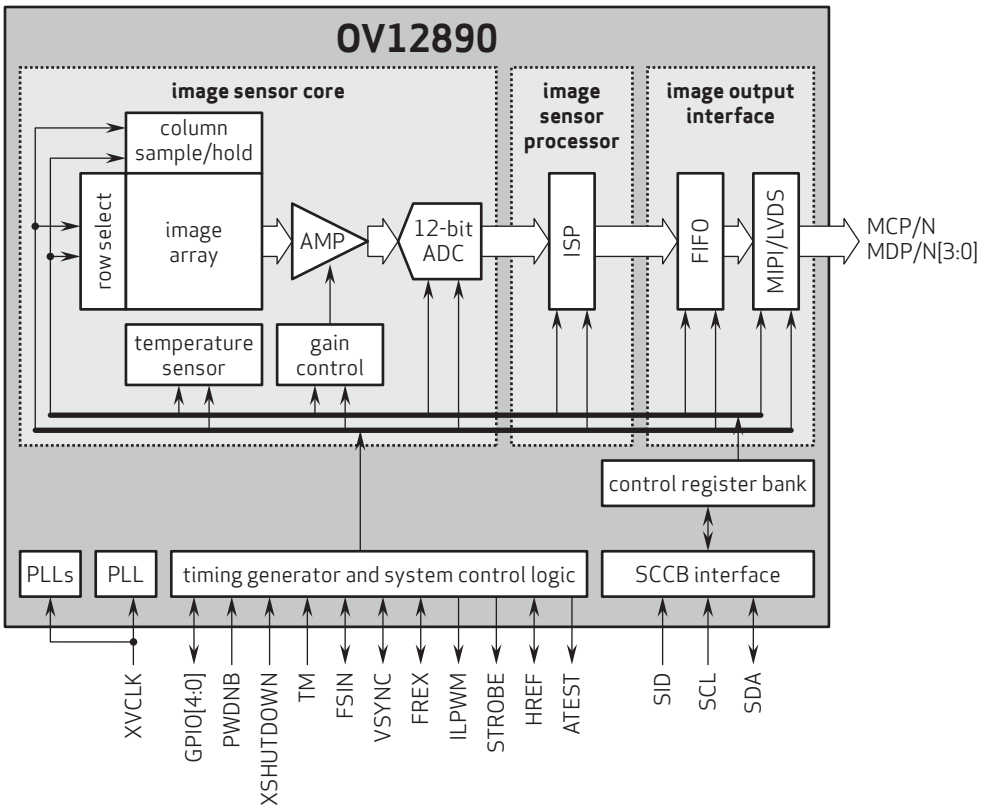
Ordering Information

- **OV12890-GA5A**
  (color, chip probing, 150 µm 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:** 320 mW @ full-res, 30 fps, 12-bit
  - **XSHUTDOWN:** <10 µW
- **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
- **sensitivity:** 8300 e⁻/lux-sec
- **max S/N ratio:** 39.5 dB
- **dynamic range:** 73.5 dB @ 8x gain
- **scan mode:** progressive
- **pixel size:** 1.55 µm x 1.55 µm
- **image area:** 6398.4 µm x 4811.2 µm
- **die dimensions:**
  - **COB:** 7200 µm x 5750 µm
  - **RW:** 7250 µm x 5800 µm

Functional Block Diagram



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