OV9712 720p HD video image sensor product brief

The OV9712 Offers Best-in-Class 720p HD Video Performance at 30 Frames Per Second (fps)

lead free

available in a lead-free package

Enabled by OmniVision's proprietary OmniPixel3-HS™ high sensitivity pixel technology with 3 x 3 μm pixel and low-light sensitivity of 3.3 V/(lux-sec), the OV9712 provides vivid imaging in virtually every lighting condition from bright daylight to nearly complete darkness. As a result, it is ideally suited for use in all camera phone and PC multimedia cameras.

The 1/4-inch OV9712 sensor provides full-frame, sub-sampled or windowed 8-bit/10-bit images in raw RGB format via the digital video port and with complete user control over image quality, formatting and output data transfer. The OV9712 offers a chief ray angle (CRA) of 25°.

The OV9712 incorporates advanced image processing functions, including exposure control, gain control, white balance, lens correction and defective pixel correction, programmable through the serial camera control bus (SCCB) interface. For storage purposes, it includes one-time programmable (OTP) memory.

The OV9712 is available in a CSP2 package and is capable of operating within a temperature range of -30°C to +70°C.
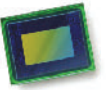
Find out more at www.ovt.com.

OmniVision™

Applications

- Notebooks
- Telepresence
- Mobile Phones
- Digital Still Cameras
- Webcams
- Medical
- Entertainment

OV9712

Ordering Information

- OV09712-V28A
  (color, lead-free, 28-pin CSP2)
- OV09712-G04A
  (color, chip probing, 200 μm backgrinding, reconstructed wafer)

Product Features

- high sensitivity for low-light operation
- ultra low power and low cost
- automatic image control functions:
  - automatic exposure control (AEC)
  - automatic gain control (AGC)
  - automatic white balance (AWB)
  - automatic band filter (ABF)
  - automatic black level calibration (ABLC)
- programmable controls:
  - frame rate
  - AEC/AGC 16-zone size/position/ weight control
  - mirror and flip
  - cropping and windowing
- image quality controls:
  - lens correction
  - defective pixel canceling
- output support for raw RGB supports image sizes:
  - WXGA (1280x800)
  - HD 720p (1280x720)
  - VGA (640x480)

- support for horizontal and vertical sub-sampling
- support for black sun cancellation
- support for internal and external frame cancellation
- standard serial camera control bus (SCCB) interface
- digital video port (DVP) parallel output interface
- embedded one-time programmable (OTP) memory
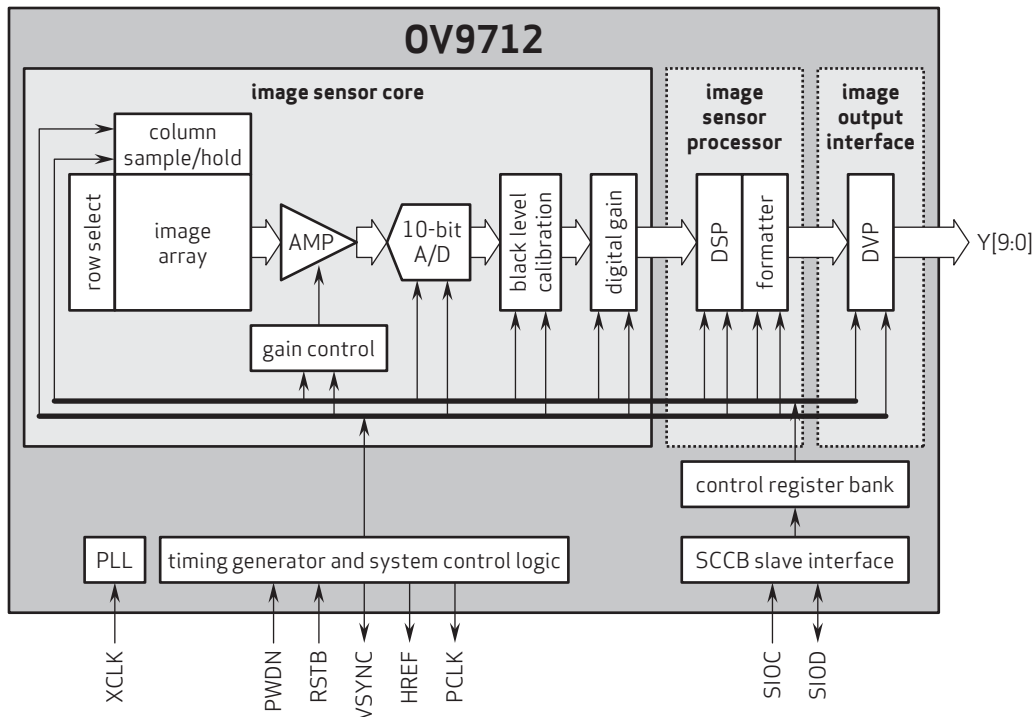- on-chip phase lock loop (PLL)
- built-in 1.5V regulator for core

Product Specifications

- **active array size:** 1280 x 800
- **power supply:**
  - **core:** 1.5 VDC ±5%
  - **analog:** 3.0 - 3.6 V
  - **I/O:** 1.7 - 3.6 V
- **power requirements:**
  - **active:** 110 mW
  - **standby:** 50 μA
- **temperature range:**
  - **operating:** -30°C to 70°C
  - **stable image:** 0°C to 50°C
- **output formats:** 10-bit RAW RGB data
- **lens size:** 1/4"
- **lens chief ray angle:** 25° non-linear
- **input clock frequency:** 6 - 27 MHz

- **dynamic range:** 69 dB
- **maximum image transfer rate:**
  - **WXGA (1280x800):** 30 fps
  - **HD 720p (1280x720):** 30 fps
  - **VGA (640x480):** 60 fps
- **sensitivity:** 3300 mV/(lux-sec)
- **S/N ratio:** 39 dB
- **maximum exposure interval:** 826 x t_{ROW}
- **pixel size:** 3 μm x 3 μm
- **well capacity:** 13 Ke⁻
- **dark current:** 20 mV/s @ 60°C
- **image area:** 3888 μm x 2430 μm
- **package/die dimensions:**
  - **CSP2:** 5415 μm x 4415 μm
  - **COB:** 5430 μm x 4430 μm

Functional Block Diagram

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