

# OV7850 WVGA product brief



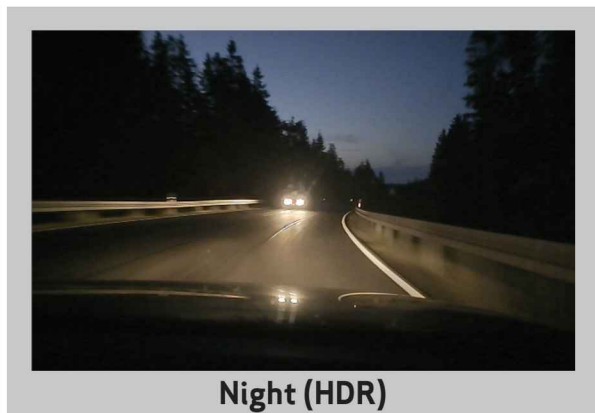
Day (Non-HDR)



Day (HDR)



Night (Non-HDR)



Night (HDR)

## Complete, High-Performance Camera-On-Chip Solution for Advanced Consumer Video Applications



available in a lead-free package

OmniVision's OV7850 is a single-chip color CMOS camera solution designed for high performance video applications, such as dashboard and DIY rearview cameras. Featuring a 1/3.2-inch optical format, the low-power OV7850 captures full resolution high definition (HD) images and video at 60 frames per second (fps). The sensor also supports advanced features such as high dynamic range (HDR) while maintaining excellent low-light sensitivity, providing the ideal camera solution for low light and high contrast viewing.

Built on OmniVision's OmniPixel3-HS™ technology, the OV7850 supports advanced image sensor processor functions such as automatic white balance control, lens

shading correction, defect pixel correction, and de-noise and sharpening. The OV7850 enables WVGA, VGA, and NTSC output formats, delivering fully processed video outputs. These output formats support high dynamic range (HDR) rendering for human vision applications in a single chip application.

The OV7850 operates at commercial temperature grade from -30°C to +85°C, and comes in a 7.31 mm x 7.81 mm chip scale package (CSP) package.

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



## Applications

- Security and Surveillance Cameras
- Rear View Cameras
- 360° View Applications
- Night View Cameras

## Product Features

- support for image size: WVGA, VGA, QVGA and any cropped size
- supported output formats: YUV, RAW, CCIR656
- high dynamic range
- horizontal and vertical sub-sampling
- high sensitivity
- serial camera control bus (SCCB) for register programming
- safety features
- SPI master for overlay and loading settings
- low power consumption
- image sensor processor functions:
  - automatic exposure/gain control
  - automatic white balance control
  - lens correction
  - defective pixel cancellation
  - HDR combination and tone mapping
  - automatic black level correction
- external frame synchronization capability
- 50/60 Hz flicker cancellation
- parallel 16-bit DVP output
- NTSC with overlay and analog output

# OV7850



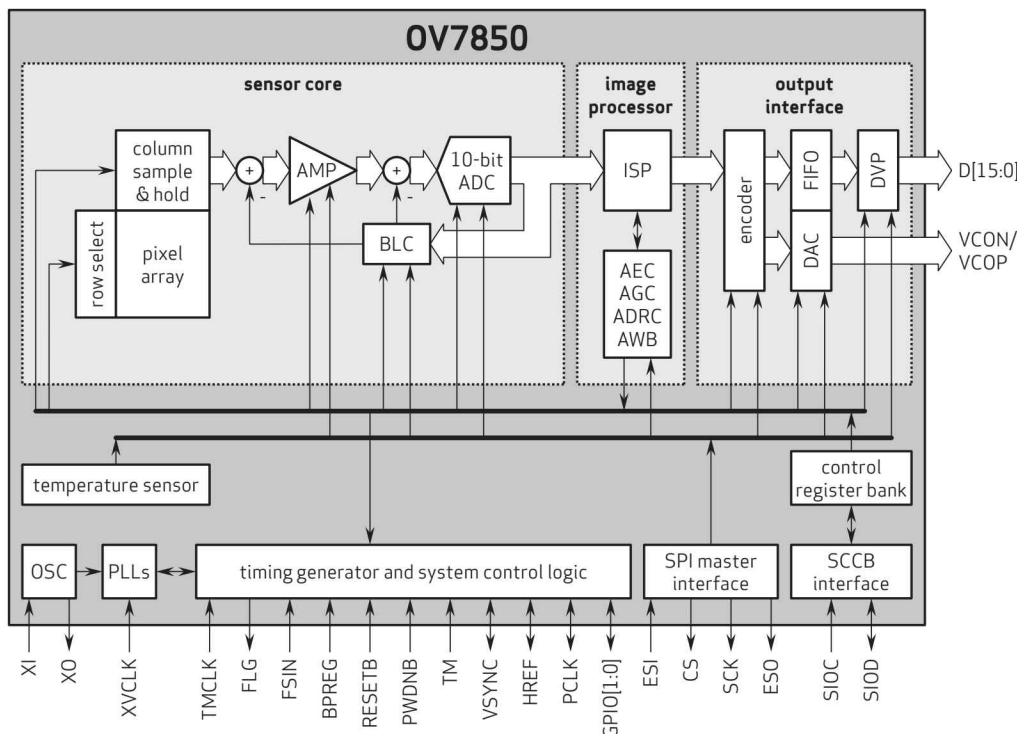
## Ordering Information

- OV07850-N02A (color, lead-free, 102-pin CSP, packed in tray)

## Product Specifications

- active array size: 752 x 548
- lens size: 1/3.7" for VGA and NTSC 1/3.2" for WVGA
- power supply:
  - analog: 3.14 - 3.47V
  - core: 1.425 - 1.575V
  - I/O: 1.7 - 3.47V
- lens chief ray angle: 9°
- input clock frequency: 6 - 27 MHz
- power requirements:
  - active: 410 mW typical @ 3.3V AVDD, 1.5V DVDD, and 1.8V DOVDD
  - standby: 260 μW typical @ 3.3V AVDD, 1.5V DVDD, and 1.8V DOVDD
- scan mode: progressive
- shutter: rolling shutter
- maximum image transfer rate: 60 fps full resolution
- temperature range:
  - operating: -30°C to +85°C junction temperature
  - stable image: 0°C to +50°C junction temperature
- sensitivity: 16 V/lux-sec
- max S/N ratio: 41 dB
- output interfaces: 16-bit parallel DVP, analog NTSC (single end and differential)
- dynamic range: 120 dB
- pixel size: 6 μm x 6 μm
- image area: 4608 μm x 3384 μm
- output formats:
  - up to 20-bit combined RAW
  - separated 8/10-bit RAW
  - 8-/10-bit YUV422
- package dimensions: 7310 μm x 7810 μm

## Functional Block Diagram



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