



# OVM7690 640 x 480 CameraCube™ device product brief



## simplify mobile phone design with the industry's smallest profile total camera solution

The OVM7690 is a three dimensional reflowable total camera solution based on OmniVision's innovative CameraCube™ technology. The OVM7690 combines the full functionality of a single chip image sensor, embedded processor and wafer-level optics in the industry's smallest profile package (2.5 x 2.9 x 2.5 mm), making it ideal for today's ultra-slim applications such as mobile phones and notebook PCs.

Because CameraCube technology delivers a complete all-in-one camera solution, manufacturing is significantly streamlined. As with any other surface mount device, the reflowable OVM7690 can be directly soldered to the printed circuit board (PCB), with no socket or insertion required, thus eliminating the need for additional components, resulting in reduced cost and faster time-to-market.

Unlike traditional camera module designs that combine image sensors and lenses in a barrel, OmniVision CameraCube devices are assembled using wafer level alignment tools. The lens can be placed directly on the chip scale package (CSP), rather than glued onto the flex or interposer.

The OVM7690 operates at up to 30 frames per second (fps) in VGA resolution with complete user control over image quality, formatting and output data transfer. Enabling output of 640 x 480 pixels allows users to perform image stabilization functions with post processing. All required image processing functions, including exposure, gamma, white balance, color saturation and hue control are programmable through the SCCB interface. Elimination of image contamination issues such as fixed pattern noise, smearing, and blooming produces a clean, fully stable color image.



# OVM7690

## applications

- mobile phones
- notebook webcam
- surveillance
- automotive
- medical imaging

## ordering information

- **OVM7690-R20A**  
(color, lead-free, 20-pin CameraCube device)

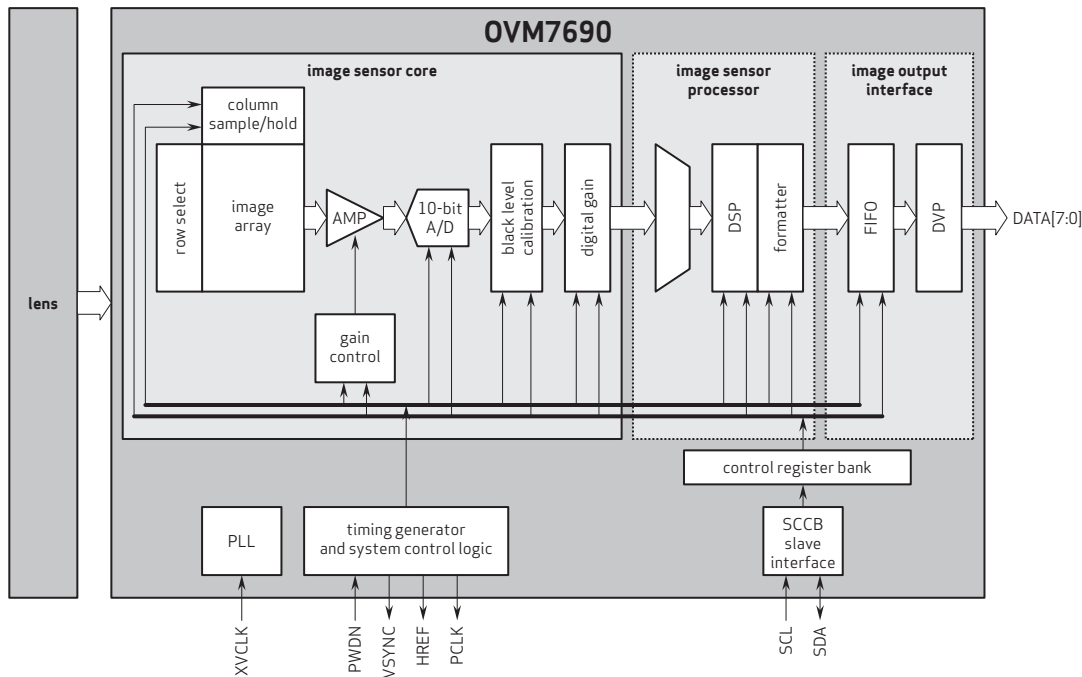
## product features

- 640 x 480 pixel resolution
- 64° FOV (diagonal), F/3.0 lens
- automatic image control functions:
  - automatic exposure control (AEC)
  - automatic white balance (AWB)
  - automatic black level calibration (ABLC)
- ultra low power and low cost
- standard serial SCCB interface
- image quality controls: color saturation, hue, gamma, sharpness (edge enhancement), lens correction, defective pixel canceling, and noise canceling
- support for images sizes: VGA, scaling CIF and sub-sampling QVGA and scaling QCIF
- support for output formats: RAW RGB, RGB565, CCIR656 and YCbCr422
- digital video port (DVP) parallel output interface
- programmable I/O drive capability
- built-in 1.5V regulator for sensor core power
- industry's smallest profile: (2.5 x 2.9 x 2.5)

## product specifications

- **active array size:** 640 x 480
- **power supply:**
  - analog: 2.6 - 3.0V
  - I/O: 1.7 - 3.0V
- **temperature range:**
  - operating: -30°C to 70°C
  - stable image: 0°C to 50°C
- **output formats (8-bit):** YUV 422 / YCbCr422, RGB565, CCIR656, raw RGB data
- **input clock frequency:** 6 - 27 MHz
- **shutter:** rolling shutter
- **maximum image transfer rate:**
  - **VGA (640x480):** 30 fps for VGA
  - **QVGA (320x240):** 60 fps for QVGA
- **dynamic range:** 66 dB
- **pixel size:** 1.75 μm x 1.75 μm
- **image area:** 1148 μm x 861 μm
- **package dimensions (not including ball height):** 2517 μm x 2967 μm x 2465 μm

## functional block diagram



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