# OV683 bridge chip product brief

## 3-Channel Stand Alone Bridge Chip for Multi-Camera Applications

**lead free**

available in a lead-free package

OmniVision's OV683 companion chip is a multi-sensor bridge solution that integrates images from three sensors into a single data stream. The companion chip has two 2-lane MIPI receivers and one 4-lane MIPI receiver with two built-in image signal processors (ISP).

The OV683 can support up to two 5-megapixel sensors and a 21-megapixel sensor, with lower-resolution sensors using the companion chip's two built-in ISPs and the higher-resolution sensor bypassing the processor

through a four-lane MIPI receiver. The companion chip can output a maximum resolution of 23 megapixels at 15 frames per second (fps), or one 8-megapixel video stream with two 1080p high definition (HD) streams at 30 fps.

Find out more at www.ovt.com.

OmniVision

# OV683

## Applications

- Stand Alone 3D Bridge Chip for HD Sensors

## Product Features

- interfaces
  - two 2-lane MIPI receiver for video input
  - one of the MIPI receivers can be divided into dual 1-lane MIPI receivers
  - one 4-lane MIPI receiver for video input
  - one 4-lane MIPI transmitter for video output
  - up to 1 MHz SCCB with 13 MHz - 26 MHz input clock
  - two sets of SCCB master
  - one set of SCCB master and slave
  - four sensor frame rate control pin
  - five general purpose IO (GPIO) pins
  - UART and SPI interfaces

- on-chip PLLs
  - system PLL - input clock frequency ranges from 13 MHz to 26 MHz
  - MIPI speed - 5x or 10x of system clock for RAW, 4x or 8x of system clock for YUV

- image signal processor (ISP)
  - AEC/AGC/AWB
  - two ISPs, one for each input video stream
  - 2592 x 1944 max resolution
  - max frame rate:
    - 24 fps at 5MP
    - 30 fps at 4MP
    - 60 fps at 1080p
    - 120 fps at 720p
  - lens shading correction (LENC)
  - auto exposure and gain control
  - auto white balance
  - defect pixel correction
  - auto contrast enhancement
  - gamma correction
  - YCbCr422 process

- SCCB
  - two sets of SCCB masters to control multiple sensors
  - one SCCB master/slave to take the commands from host controller
  - 7-bit SCCB slave device ID is fixed to 0x44 (0x88 for write, and 0x89 for read)
  - 7-bit SCCB slave device ID is fixed to 0x42 (0x84 for write, and 0x85 for read)
  - supports SCCB clock 100 kHz and 400 kHz and 1 MHz

- data format
  - input: RAW 8/10/12-bit, YUV422
  - output: RAW 8/10/12-bit, YUV422

- microcontroller
  - 32-bit microcontroller running at the system clock
  - 64 KByte program memory, 32 KB ROM

- power supply
  - 1.8V for IO voltage (e.g., PADVDD18), 1.8V for analog voltage (e.g., M*AVDD)
  - internal regulator generates 1.2V C*VDD12 from PADVDD18 for the digital core circuit
  - hardware standby mode initiated by pulling PWDN high, whole system halts and input clock is gated
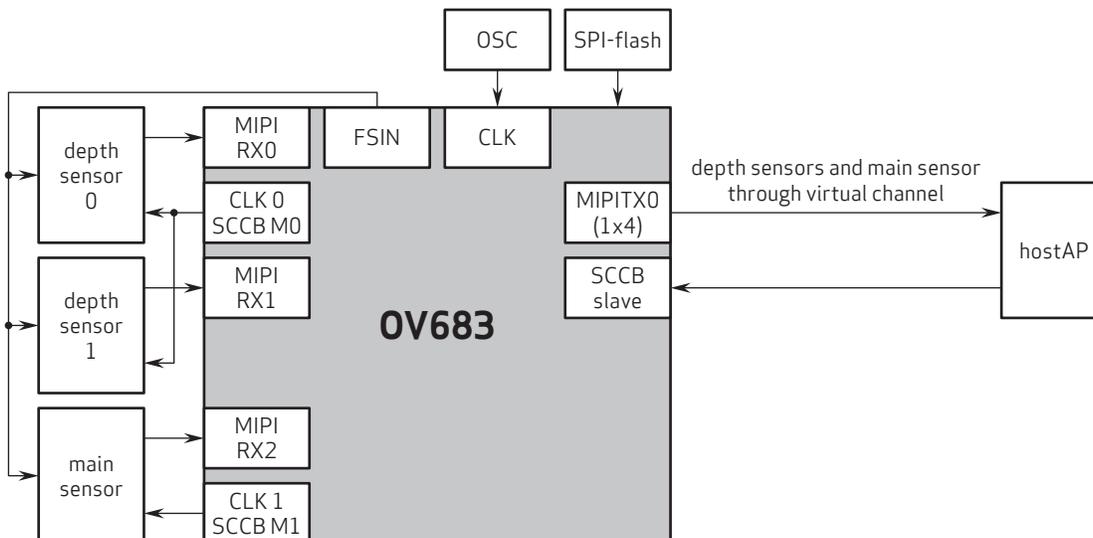  - software standby mode initiated by register
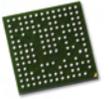
## Product Specifications

- power supply:
  - core: 1.2V
  - analog: 1.8V
  - I/O: 1.8V

- power requirements:
  - hardware standby: 100 µW

- temperature range:
  - operating: -30°C to +70°C junction temperature

- output formats:
  - 8/10-bit RAW RGB data
  - YUV422 data

- input clock frequency: 6 - 27 MHz

- maximum image transfer rate: 120 fps

- package dimensions: 7 mm x 7 mm

## Functional Block Diagram

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