OV7739 VGA (640x480) product brief

Ultra-Thin High-Performance Video Sensor

lead free

available in
a lead-free
package

The ultra-thin (3 mm) high-performance OV7739 video sensor provides the ideal image solution for a variety of applications including mobile, notebook PCs, netbooks, and gaming applications. In addition to its small footprint and high-performance features, the OV7739 is capable of producing various output formats over a parallel DVP or serial MIPI port, providing a versatile platform for use in single and multi-camera applications.

Developed specifically to address the low-light sensitivity demands of the fast-growing mobile market, the OV7739 delivers best-in-class low light performance at 3300 mV/lux-sec, enabling high quality video conferencing and recording in virtually any lighting condition.

Based on OmniPixel3-HS™ architecture, the 1/7.5-inch OV7739 is capable of operating at 30 frames per second (fps) in VGA resolution and 60 fps in QVGA resolution with complete user control over image quality, formatting and output data transfer. The OV7739 provides full-frame, sub-sampled, windowed or scaled 8-bit/10-bit images in RAW RGB and YUV formats.

All required image processing functions, including exposure control, white balance, and defective pixel canceling, are programmable through the SCCB interface. The OV7739 eliminates image contamination issues such as fixed pattern noise, smearing and blooming to produce a clean, stable and vivid color image.

Find out more at www.ovt.com.

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Applications

- Mobile Phones
- Notebook PC
- Netbook
- Games

OV7739

Product Features

- ultra-thin (3 mm) module z-height

- excellent low light performance 3300 mV/lux-sec

- support for multiple interfaces including parallel and MIPI serial output

- automatic image control functions:
  - automatic exposure control (AEC)
  - automatic gain control (AGC)
  - automatic white balance (AWB)
  - automatic band filter (ABF)
  - automatic 50/60 Hz luminance detection
  - automatic black level calibration (ABLC)

- programmable controls for frame rate, mirror and flip, scaling, cropping, and windowing

- image quality controls: color saturation, hue, gamma, sharpness (edge enhancement), lens correction, defective pixel canceling, and noise canceling

- support for output formats: 8/10-bit RAW RGB, CCIR656 and YUV422

- support for horizontal and vertical sub-sampling

- support for images sizes: VGA and any arbitrary size scaling down from VGA

- support for binning

- support for external frame synchronization

- standard serial SCCB interface

- embedded one-time programmable (OTP) memory for part identification, etc.

- on-chip phase lock loop (PLL)

- programmable I/O drive capability

- built-in 1.5V regulator for core

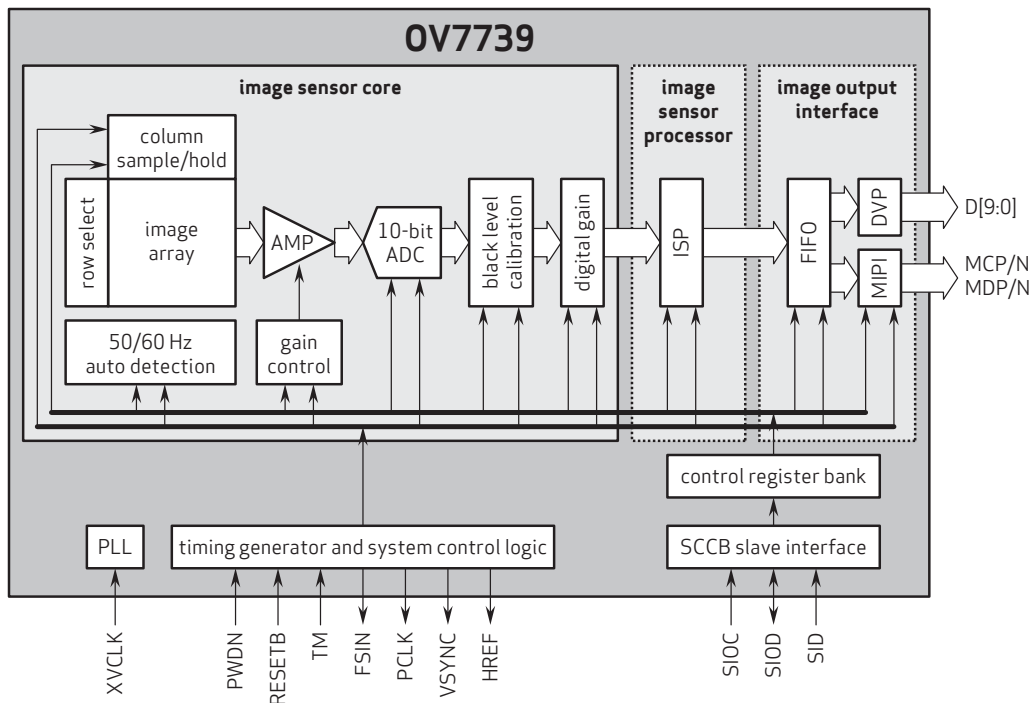# Product Specifications

- **active array size:** 640 x 480

- **power supply:**
  - **core:** 1.5 VDC ±5% (internal regulator)
  - **analog:** 2.6 - 3.0 V (2.8 V typical)
  - **I/O:** 1.7 - 3.0 V

- **temperature range:**
  - **operating:** -30° C to 70° C junction temperature
  - **stable image:** 0° C to 50° C junction temperature

- **output formats:** 8/10-bit RAW RGB, 8-bit YUV

- **lens size:** 1/7.5"

- **lens chief ray angle:** 27.5°

- **input clock frequency:** 6 - 27 MHz

- **S/N ratio:** 38 dB

- **dynamic range:** 68 dB @ 8x gain

- **maximum image transfer rate:**
  - **VGA (640 x 480):** 30 fps
  - **QVGA (320 x 240):** 60 fps
  - **QQVGA (160 x 120):** 120 fps

- **sensitivity:** 3300 mV/lux-sec

- **maximum exposure interval:** 508 x t_{ROW}

- **dark current:** 10 mV/s @ 60°C junction temperature

- **pixel size:** 3 μm x 3 μm

- **image area:** 2016 μm x 1488 μm

- **package/die dimensions:**
  - **CSP3:** 3985 μm x 3385 μm
  - **RW:** 4000 μm x 3400 μm

Functional Block Diagram

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