OV7720 VGA product brief

high-performance, all-digital security camera solution

The OV7720 Camera Chip™ image sensor is a high-performance 1/4 inch, single-chip VGA camera and image processor that performs under low voltage conditions. Operating at full functionality in a small footprint package, the OV7720 meets all security and surveillance market requirements in terms of performance, quality and reliability.
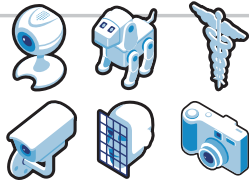
The OV7720 excels in low light conditions and can operate within a wide temperature range from -20°C to +70°C.

The OV7720 provides full-frame, sub-sampled or windowed 8-bit/10-bit images in a wide range of formats, controlled through the Serial Camera Control Bus (SCCB) interface.
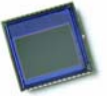
The OV7720 incorporates a 640 x 480 image array capable of operating at up to 60 frames per second (fps) in VGA with complete user control over image quality, formatting and output data transfer. The OV7720 possesses all required camera processing functions including exposure control, gamma, white balance, color saturation, hue control and more. These functions are also programmable through the SCCB interface.

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applications

- security/surveillance cameras
- video conferencing
- video phones
- video e-mail
- toys
- fingerprint equipment
- medical and dental equipment
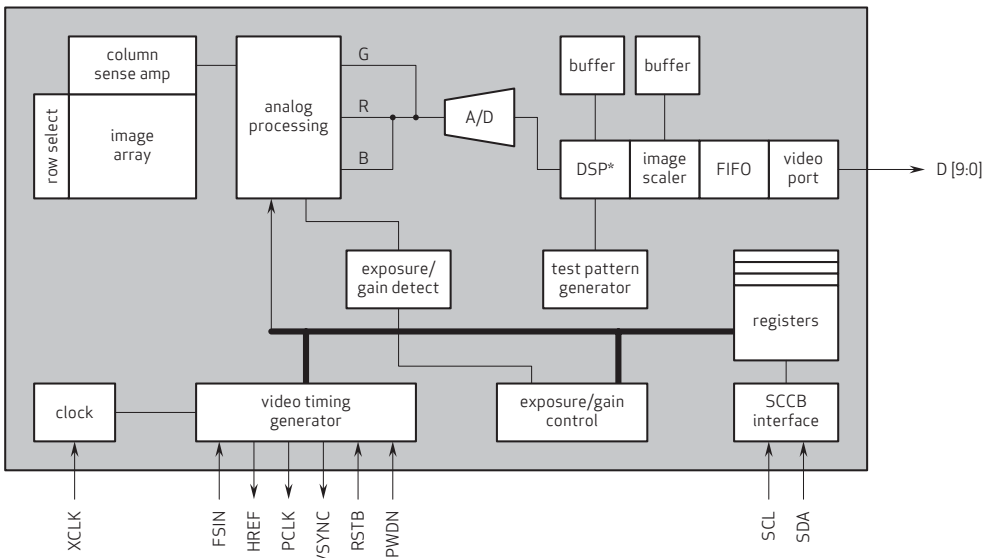- digital still cameras
- webcams

OV7720

product features

- high sensitivity for low-light operation
- standard SCCB interface output support for:
  – raw RGB
  – RGB (GRB 4:2:2, RGB565/555/444)
  – YCbCr (4:2:2) formats
- supports image sizes: VGA, QVGA, and any size scaling down from CIF to 40x30
- VarioPixel® method for sub sampling
- automatic image control functions including:
  – automatic exposure control (AEC)
  – automatic gain control (AGC)
  – automatic white balance (AWB)
  – automatic band filter (ABF)
  – automatic black-level calibration (ABLC)
- image quality controls including color saturation, hue, gamma, sharpness (edge enhancement), and anti blooming
- ISP includes noise reduction and defect correction
- lens shading correction
- saturation level auto adjust (UV adjust)

product specifications

- **array size:** 640 x 480
- **power supply:**
  analog: 3.0 V to 3.6 V
  digital core: 1.8 VDC ± 10%
  I/O: 1.7V to 3.3V
- **power requirements:**
  active: 120 mW (60 fps VGA, YUV)
  standby: <20 µA
- **image area:**
  3984 µm x 2952 µm
- **electronic exposure:**
  up to 510:1 (for selected fps)
- **S/N ratio:** 50 dB
- **output format:**
  8-bit YUV/RGB/raw data
- **dynamic range:** 60 dB
- **pixel size:** 6.0 µm x 6.0 µm
- **dark current:** 40 mV/s
- **scan mode:** progressive
- **fixed pattern noise:**
  < 0.03% of $V_{PEAK-TO-PEAK}$
- **package dimensions:**
  CSP2: 5345 µm x 5265 µm
  CLCC: 11.43 mm x 11.43 mm
- **temperature range:**
  -20°C to +70°C

functional block diagram

note 1 DSP* (lens shading correction, de-noise, white/black pixel correction, auto white balance, etc.)

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