OV7725 VGA product brief
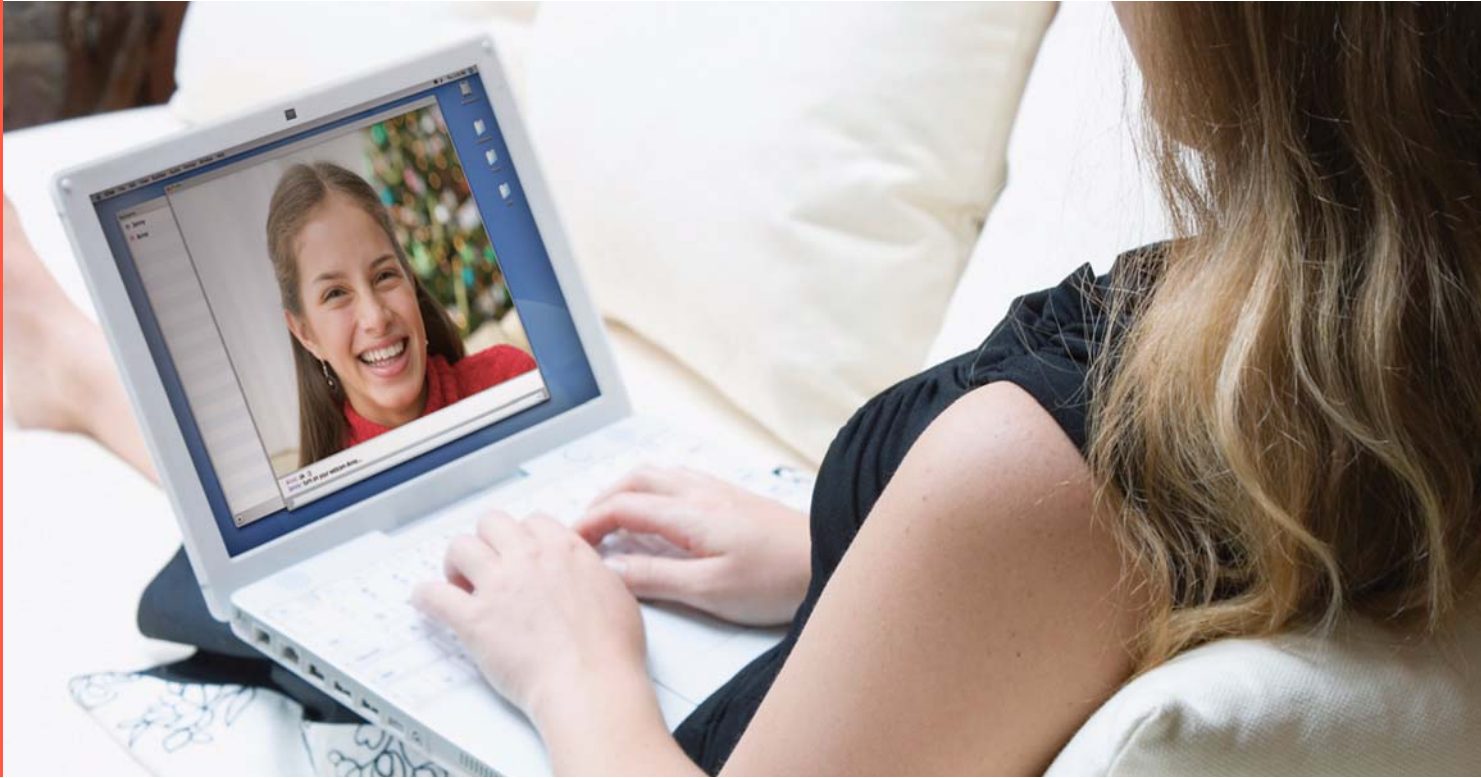
high performance, all-digital VGA camera solution

lead free

available in a lead-free package

The OV7725 CameraChip™ sensor is a high-performance 1/4 inch, single-chip VGA camera and image processor in a small footprint package. Operating at full functionality, the OV7725 meets all pc multimedia and cameraphone market requirements in terms of performance, quality and reliability. The low-power OV7725 excels in low light conditions and can operate in a wide temperature range, from -20°C to +70°C.

The OV7725 incorporates a 640 x 480 image array, capable of operating at 60 frames per second in VGA mode with complete user control over image quality, formatting and output data transfer.

The OV7725 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 OV7725 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.

OmniVision®

applications

- camera phones
- toys
- digital still cameras
- webcams

OV7725
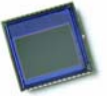
product features

- 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
- edge enhancement level auto adjust
- noise suppression technology auto adjust

- frame synchronization capability
- 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

product specifications

- **array size:** 640 x 480
- **power supply**
  analog: 3.0V to 3.6V
  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

- **dynamic range:** 60 dB
- **pixel size:** 6.0 µm x 6.0 µm
- **lens size:** 1/4"
- **scan mode:** progressive
- **fixed pattern noise:**
  < 0.03% of $V_{PEAK-TO-PEAK}$
- **package dimensions:**
  CSP2: 5345 µm x 5265 µm
  COB: 5360 µm x 5260 µm
- **temperature range**
  -20ºC to +70ºC

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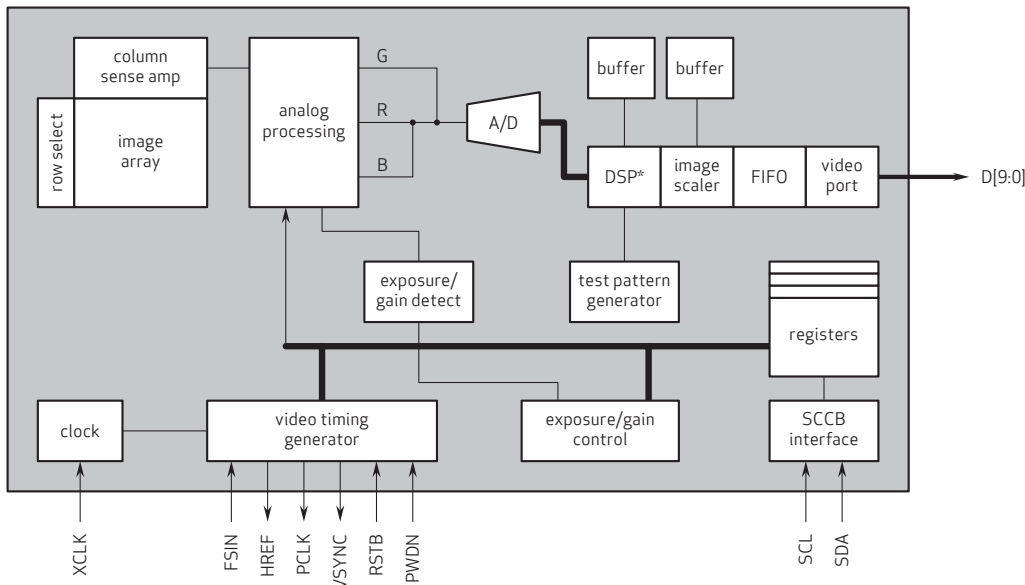
note 1 DSP* (lens shading correction, de-noise, white/black pixel correction, auto white balance, etc.)

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