OV2640 2 MPixel product brief

world's smallest 2 megapixel CameraChip

lead free

available in
a lead-free
package

The OV2640 is the world's first 1/4 inch 2 megapixel sensor. It's a fully integrated CameraChip™ built on OmniVision's latest 2.2 micron OmniPixel2™ architecture and can be assembled in the very popular 8 x 8 mm sockets with a building height as low as 5 mm, essentially thinner than today's 1.3 megapixel camera modules. This optimal sensor size, coupled with an embedded compression engine, allows customers to use the same camera interface bandwidth as they have used with their 1.3 mega pixel sensors, making it very easy to upgrade their current platforms to the OV2640's 2 megapixel solution without hardware or mechanical changes.

The OV2640 takes advantage of the many process and design improvements of the new OmniPixel2 architecture, including more vibrant color, a zero-gap micro lens structure, an increased fill factor as well as significant improvements in the quantum efficiency and full well capacity resulting in a very small but highly sensitive 2.2 micron pixel.

In addition to the benefits of the OmniPixel2 architecture, OmniVision also integrated an advanced image signal processing block (OmniQSP™), which provides high-grade picture processing and additional features traditionally only found in digital still cameras. This advanced imaging processor has become very important as the camera phone continues to evolve from a simple gadget to a full fledged digital camera.
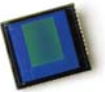
applications

- cell and camera phones
- toys
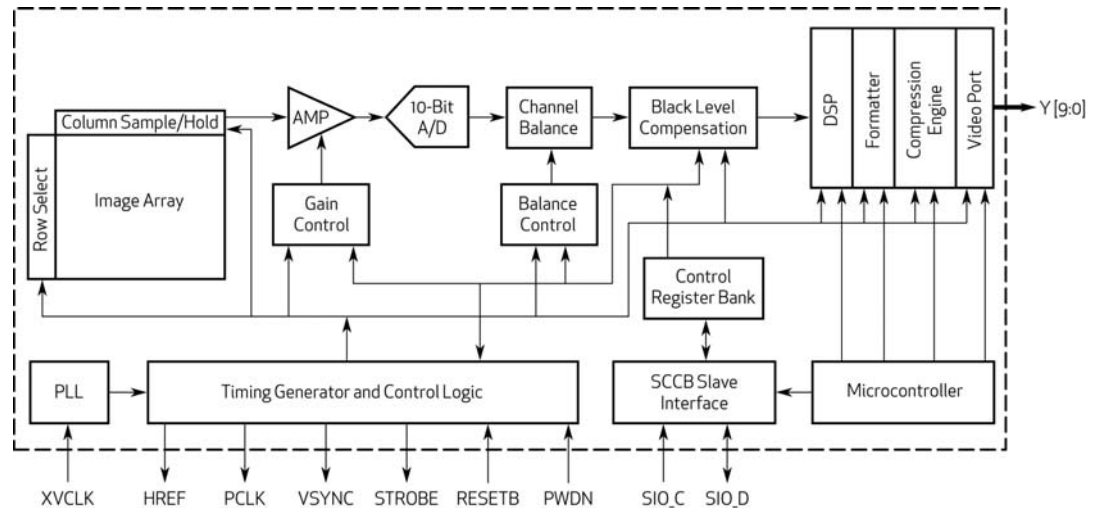- PC multimedia
- digital still cameras
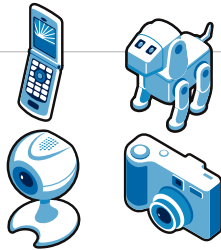
OV2640

product features

- high sensitivity for low-light operation

- embedded compression engine supporting most common compression formats

- output support for Raw RGB, RGB (RGB565/555), GRB422, YUV (422/420) and YCbCr (4:2:2) formats

- supports image sizes: UXGA, SXGA, SVGA, and any size scaling down from SXGA to 40x30

- VarioPixel® for increased sensitivity when sub-sampling

- automatic image control functions including automatic exposure control (AEC), automatic gain control (AGC), automatic white balance (AWB), automatic band filter (ABF), and automatic black-level calibration (ABLC)

- image quality controls including color saturation, gamma, sharpness (edge enhancement), lens correction, white pixel canceling, noise canceling, 50/60 Hz luminance detection and variable frame rate control

product specifications

- **array size:** 1600 x 1200 (UXGA)

- **power supply**
  core: 1.3VDC ± 5%
  analog: 2.5 - 3.0VDC
  I/O: 1.7V to 3.3V

- **power consumption**
  active (full resolution)
    125 mW (for 15 fps, YUV mode)
    140 mW (for 15 fps, compressed mode)
  standby: 600µA

- **lens size:** 1/4"

- **maximum image transfer rate**
  UXGA/SXGA: 15 fps
  SVGA: 30 fps
  CIF: 60 fps

- **sensitivity:** 0.6 V/Lux-sec

- **S/N ratio:** 40 dB

- **dynamic range:** 50 dB

- **pixel size:** 2.2 µm x 2.2 µm

- **dark current:** 15 mV/s at 60°C

- **well capacity:** 12 Ke

- **fixed pattern noise:** <1% of $V_{PEAK-TO-PEAK}$

- **image area:** 3590 µm x 2684 µm

- **package dimensions:** 5725 µm x 6285 µm

block diagram

Version 1.8:2.4, May, 2006