

## OV2640 Color CMOS UXGA (2.0 MegaPixel) CAMERACHIP™ with OmniPixel2™ Technology

### General Description

The OV2640 CAMERACHIP™ is a low voltage CMOS image sensor that provides the full functionality of a single-chip UXGA (1632x1232) camera and image processor in a small footprint package. The OV2640 provides full-frame, sub-sampled, scaled or windowed 8-bit/10-bit images in a wide range of formats, controlled through the Serial Camera Control Bus (SCCB) interface.

This product has an image array capable of operating at up to 15 frames per second (fps) in UXGA resolution with complete user control over image quality, formatting and output data transfer. All integrated image processing functions, including exposure control, gamma, white balance, color saturation, hue control, white pixel canceling, noise canceling, and more, are also programmable through the SCCB interface. The OV2640 also includes a compression engine for increased processing power. In addition, OmniVision CAMERACHIPS use proprietary sensor technology to improve image quality by reducing or eliminating common lighting/electrical sources of image contamination, such as fixed pattern noise, smearing, etc., to produce a clean, fully stable color image.



**Note:** The OV2640 uses a lead-free package.

### Features

- High sensitivity for low-light operation
- Low operating voltage for embedded portable apps
- Standard SCCB interface
- Integrated compression engine
- 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® 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), and Automatic Black-Level Calibration (ABLC)
- Image quality controls including color saturation, gamma, sharpness (edge enhancement), lens correction, white pixel canceling, noise canceling, and 50/60 Hz luminance detection
- Line optical black level output capability
- Video or snapshot operation
- Zooming, panning, and windowing functions
- Internal/external frame synchronization
- Variable frame rate control
- Supports LED and flash strobe mode
- Supports scaling
- Embedded microcontroller

### Ordering Information

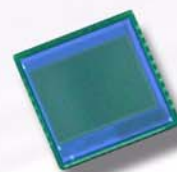
Product	Package
OV02640-VL9A (Color, Lead-free)	38-pin CSP2

### Applications

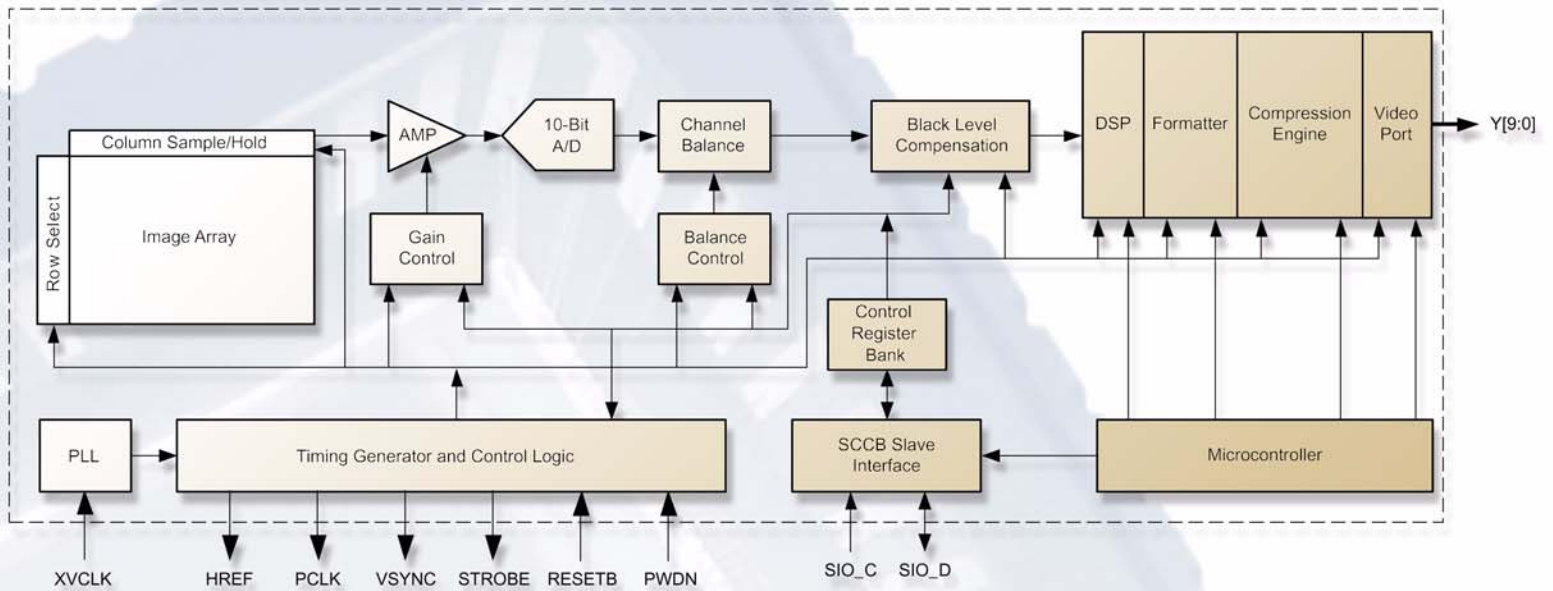
- Cellular and Camera Phones
- Toys
- PC Multimedia
- Digital Still Cameras

### Key Specifications

<b>Array Size</b>	<b>UXGA</b>	1600 x 1200
<b>Power Supply</b>	<b>Core</b>	1.2VDC $\pm$ 5%
	<b>Analog</b>	2.5 ~ 3.0VDC
	<b>I/O</b>	1.7V to 3.3V
<b>Power Requirements</b>	<b>Active</b>	TBD
	<b>Preview (CIF)</b>	TBD
	<b>Standby</b>	TBD
<b>Temperature Range</b>	<b>Operation</b>	-30°C to 70°C
	<b>Stable Image</b>	0°C to 50°C
<b>Output Formats (8-bit)</b>		<ul style="list-style-type: none"> <li>• YUV(422/420)/YCbCr422</li> <li>• RGB565/555</li> <li>• 8-bit compressed data</li> <li>• 8-/10-bit Raw RGB data</li> </ul>
<b>Lens Size</b>		1/4"
<b>Chief Ray Angle</b>		25° non-linear
<b>Maximum Image Transfer Rate</b>	<b>UXGA/SXGA</b>	15 fps
	<b>SVGA</b>	30 fps
	<b>CIF</b>	60 fps
<b>Sensitivity</b>		0.6 V/Lux-sec
<b>S/N Ratio</b>		40 dB
<b>Dynamic Range</b>		50 dB
<b>Scan Mode</b>		Progressive
<b>Maximum Exposure Interval</b>		1247 x t <sub>ROW</sub>
<b>Gamma Correction</b>		Programmable
<b>Pixel Size</b>		2.2 $\mu$ m x 2.2 $\mu$ m
<b>Dark Current</b>		15 mV/s at 60°C
<b>Well Capacity</b>		12 Ke
<b>Fixed Pattern Noise</b>		<1% of V <sub>PEAK-TO-PEAK</sub>
<b>Image Area</b>		3590 $\mu$ m x 2684 $\mu$ m
<b>Package Dimensions</b>		5725 $\mu$ m x 6285 $\mu$ m



## Functional Block Diagram



[www.ovt.com](http://www.ovt.com)

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