

### OV7649 Color CMOS VGA (640 x 480) CAMERACHIP<sup>™</sup> OV7149 B&W CMOS VGA (640 x 480) CAMERACHIP<sup>™</sup>

#### General Description

The OV7649 (color) and OV7149 (black and white) CAMERACHIPS<sup>™</sup> are low voltage CMOS image sensors that provide the full functionality of a single-chip VGA (640 x 480) camera and image processor in a small footprint package. The OV7649/OV7149 provides full-frame, sub-sampled or windowed 8-bit images in a wide range of formats, controlled through OmniVision's Serial Camera Control Bus (SCCB) interface.

This product family has an image array capable of operating at up to 30 frames per second (fps) with complete user control over image quality, formatting and output data transfer. All required image processing functions, including exposure control, gamma, white balance, color saturation, hue control and more, are also programmable through the SCCB interface. 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, blooming, etc. to produce a clean, fully stable color image.

#### Features

- High sensitivity for low-light operation
- 2.5V operating voltage for embedded portable applications
- Standard Serial Camera Control Bus (SCCB) interface
- VGA, QVGA (sub-sampled) and Windowed outputs with Raw RGB, RGB (GRB 4:2:2), YUV (4:2:2) and YCbCr (4:2:2) formats
- Automatic image control functions including: Automatic Exposure Control (AEC), Automatic Gain Control (AGC), Automatic White Balance (AWB), Automatic Brightness Control (ABC), Automatic Band Filter (ABF) for 60Hz noise and Automatic Black-Level Calibration (ABLC)
- Image quality controls including color saturation, hue, gamma, sharpness (edge enhancement), anti-blooming and zero smearing

#### Ordering Information

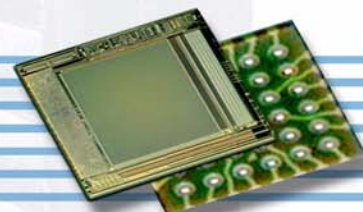
Product	Package
OV07649-K06A (Color)	CSP-22
OV07149-K06A (B&W)	CSP-22

#### Applications

- Cellular Phones
- Picture Phones
- Toys
- PC Multimedia

#### Key Specifications

<b>Array Size</b>		640 x 480 (VGA)
<b>Power Supply</b>	<b>Core</b>	2.5VDC $\pm$ 10%
	<b>Analog</b>	2.5VDC $\pm$ 4%
	<b>I/O</b>	2.25V to 3.3V
<b>Power Requirements</b>	<b>Active</b>	40 mW (30 fps, including I/O power)
	<b>Standby</b>	30 $\mu$ W
<b>Temperature Range</b>	<b>Operation</b>	-10°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/YCbCr 4:2:2</li> <li>• RGB 4:2:2</li> <li>• Raw RGB Data</li> </ul>
<b>Lens Size</b>		1/4"
<b>Lens Chief Ray Angle</b>		16°
<b>Maximum Image Transfer Rate</b>	<b>VGA</b>	30 fps
	<b>QVGA</b>	60 fps
<b>Sensitivity</b>	<b>B&amp;W</b>	2.20 V/Lux-sec
	<b>Color</b>	1.12 V/Lux-sec
<b>S/N Ratio</b>		46 dB
<b>Dynamic Range</b>		62 dB
<b>Scan Mode</b>		Progressive/Interlaced
<b>Maximum Exposure Interval</b>		523 x t <sub>ROW</sub>
<b>Gamma Correction</b>		0.45
<b>Pixel Size</b>		5.6 $\mu$ m x 5.6 $\mu$ m
<b>Dark Current</b>		30 mV/s
<b>Well Capacity</b>		60 Ke
<b>Fixed Pattern Noise</b>		< 0.03% of V <sub>PEAK-TO-PEAK</sub>
<b>Image Area</b>		3.6 mm x 2.7 mm
<b>Package Dimensions</b>		4930 $\mu$ m x 4760 $\mu$ m





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For further information, contact OmniVision Technologies at [info@ovt.com](mailto:info@ovt.com) or any of our sales offices:

**USA Headquarters**

1341 Orleans Drive  
Sunnyvale, CA 94089  
USA

Tel: +1 408 542 3000  
Fax: +1 408 542 3001

Email: [salesAmerica@ovt.com](mailto:salesAmerica@ovt.com)

**Beijing Branch**

3119 EverBright Nat. Trust Bldg.  
No. 11 South Zhong Guan Cun Road  
Haiden Dist. Beijing 100081

Tel: +86 10 6848 6964  
Fax: +86 10 6848 6882

Email: [salesChina@ovt.com](mailto:salesChina@ovt.com)

**Hong Kong Branch**

Flat 1-2, 8/F  
Ever Gain Plaza Tower 1  
88 Container Port, Kwai Chung  
New Territories, Hong Kong

Tel: +852 2403 4011  
Fax: +852 2403 4018

Email: [salesChina@ovt.com](mailto:salesChina@ovt.com)

**Korea Branch**

ORIX Bldg. 405  
755-5 Banbae-dong  
Seocho-Ku, Seoul South Korea

Tel: +82 2 4378 2811  
Fax: +82 2 4378 2813

Email: [salesKorea@ovt.com](mailto:salesKorea@ovt.com)

**Europe Branch**

Albany House  
14 Shute End, Wokingham  
Berkshire, RG40 1BJ, UK

Tel: +44 1189 740 191  
Fax: +44 1189 740 204

Email: [salesEurope@ovt.com](mailto:salesEurope@ovt.com)

**Shanghai Branch**

Room 201, #12 Building  
498 Guo Shoujing Road  
Shanghai 201203

Tel: +86 21 5080 3390  
Fax: +86 21 5080 3389

Email: [salesChina@ovt.com](mailto:salesChina@ovt.com)

**Taiwan Branch**

3F-7, #700, Chung Cheng Road  
Chung-ho City, Taipei Hsein  
Taiwan, R.O.C.

Tel: +886 2 8227 3770  
Fax: +886 2 8227 3773

Email: [salesTaiwan@ovt.com](mailto:salesTaiwan@ovt.com)

**Japan Branch**

333 New State Manor, 2-23-1  
Yoyogi, Shibuya-Ku, Tokyo  
151-0053

Tel: +81 3 5333 8235  
Fax: +81 3 5333 8236

Email: [salesJapan@ovt.com](mailto:salesJapan@ovt.com)

**Shenzhen Branch**

Room 1511  
3027 Sherman Road  
Central Shenzhen 518033

Tel: +86 755 8328 9329  
Fax: +86 755 8328 9327

Email: [salesChina@ovt.com](mailto:salesChina@ovt.com)

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