

OV7670/OV7171 CMOS VGA (640x480) CAMERACHIPTM with OmniPixel[®] Technology

DataShee

General Description

The OV7670/OV7171 CAMERACHIPTM is a low voltage CMOS image sensor that provides the full functionality of a single-chip VGA camera and image processor in a small footprint package. The OV7670/OV7171 provides full-frame, sub-sampled or windowed 8-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 30 frames per second (fps) in VGA 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 (FPN), smearing, blooming, etc., to produce a clean, fully stable color image.



Note: The OV7670/OV7171 uses a lead-free package.

Features

- High sensitivity for low-light operation
- Low operating voltage for embedded portable apps
- Standard SCCB interface compatible with I2C interface
- Output support for Raw RGB, RGB (GRB 4:2:2, RGB565/555/444), YUV (4:2:2) and YCbCr (4:2:2) formats
- Supports image sizes: VGA, CIF, 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), and 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
- Supports LED and flash strobe mode
- Supports scaling
- Lens shading correction
- Flicker (50/60 Hz) auto detection
- Saturation level auto adjust (UV adjust)
- Edge enhancement level auto adjust
- De-noise level auto adjust

Ordering Information

	Product	Package
	OV07670-VL2A (Color, lead-free)	24 pin CSP2
taSheet4U.com	OV07171-VL2A (B&W, lead-free)	24 pin CSP2

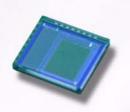
Applications

- Cellular and Picture Phones
- Toys
- PC Multimedia
- **Digital Still Cameras**

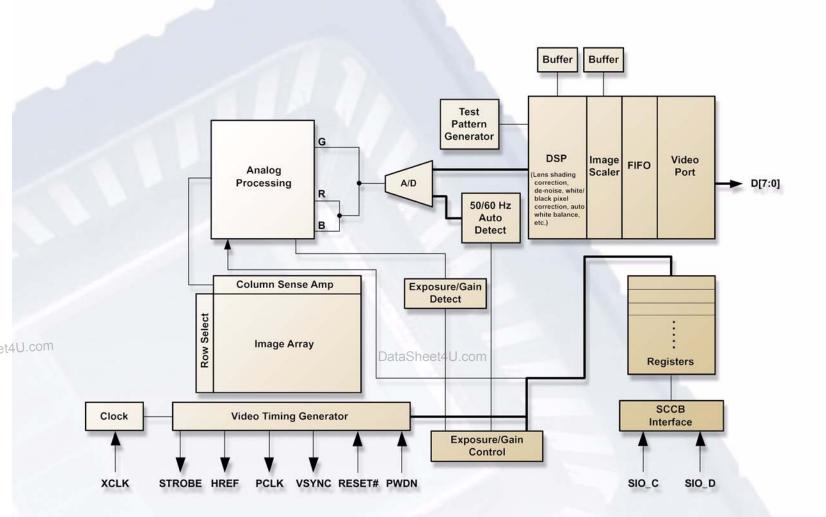
Key Specifications

Active Array Size		640 x 480
	Digital Core	1.8VDC <u>+</u> 10%
Power Supply	Analog	2.45V to 3.0V
	I/O	1.7V to 3.0V ^a
Power Requirements	Active	60 mW typical (15fps VGA YUV format)
	Standby	< 20 µA
Temperature Range	Operation	-30°C to 70°C
	Stable Image	0°C to 50°C
Output Formats (8-bit)		 YUV/YCbCr 4:2:2 RGB565/555/444 GRB 4:2:2 Raw RGB Data
Lens Size		1/6"
Cł	nief Ray Angle	25°
Ma	aximum Image Transfer Rate	30 fps for VGA
	Sensitivity	1.3 V/(Lux • sec)
	S/N Ratio	46 dB
D	ynamic Range	52 dB
	Scan Mode	Progressive
Electro	nics Exposure	Up to 510:1 (for selected fps)
	Pixel Size	3.6 µm x 3.6 µm
	Dark Current	12 mV/s at 60°C
	Well Capacity	17 K e
	Image Area	2.36 mm x 1.76 mm
Package Dimensions		3785 µm x 4235 µm

a. I/O power should be 2.45V or higher when using the internal regulator for Core (1.8V); otherwise, it is necessary to provide an external 1.8V for the Core power supply.



Functional Block Diagram



www.ovt.com

OmniVision reserves the right to make changes to their products or to discontinue any product or service without further notice. 'OmniVision', the OmniVision logo, 'VarioPixel', and 'OmniPixel' are registered trademarks of OmniVision Technology. All other trademarks are the property of their respective owners.

DataShe Version 1.1, 10/06/05

