OV7650 Color CMOS VGA (640 x 480) CameraChip™
OV7151 B&W CMOS VGA (640 x 480) CameraChip™

General Description

The OV7650 (color) and OV7151 (black and white) CameraChips™ 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 OV7650/OV7151 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 apps
- Standard Serial Camera Control Bus (SCCB)
- VGA, QVGA (sub-sampled), CIF (352x288), QCIF (176x144) 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

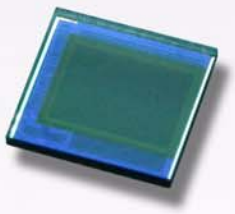
Product	Package
OV07650-K06A (Color, w/ lead)	CSP-22
OV07150-K06A (B&W w/ microlens, w/ lead)	CSP-22
OV07650-KL6A (color, lead-free)	CSP-22
OV07150-KL6A (B&W w/ microlens, lead-free)	CSP-22

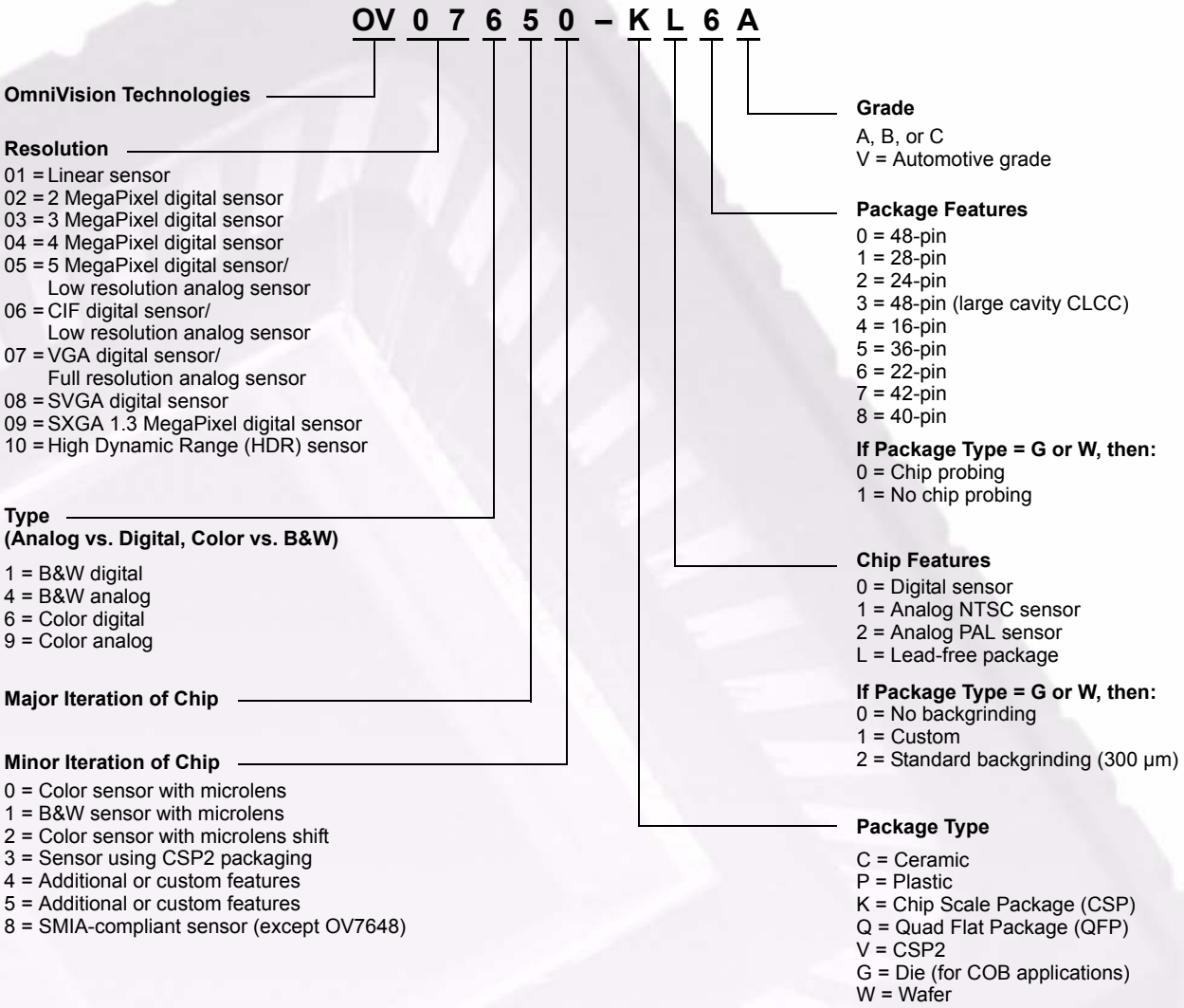
Applications

- Cellular and Picture Phones
- Toys
- PC Multimedia

Key Specifications

Array Size	**VGA**	640 x 480
	QVGA	320 x 240
	CIF	352 x 288
	QCIF	176 x 144
Power Supply	**Core**	2.5VDC ± 10%
	Analog	2.5VDC ± 4%
	I/O	2.25V to 3.3V
Power Requirements	**Active**	40 mW (30 fps, including I/O power)
	Standby	30 µW
Temperature Range	**Operation**	-10°C to 70°C
	Stable Image	0°C to 50°C
Output Formats (8-bit)		• YUV/YCbCr 4:2:2 • RGB 4:2:2 • Raw RGB Data
Lens Size		1/4"
Maximum Image Transfer Rate	**VGA**	30 fps
	QVGA	60 fps
	CIF	40 fps
	QCIF	40 fps
Sensitivity	**B&W**	2.20 V/Lux-sec
	Color	1.12 V/Lux-sec
S/N Ratio		46 dB
Dynamic Range		62 dB
Scan Mode		Progressive/Interlaced
Maximum Exposure Interval		523 x t_{ROW}
Gamma Correction		0.45
Pixel Size		5.6 µm x 5.6 µm
Dark Current		30 mV/s
Well Capacity		60 Ke
Fixed Pattern Noise		< 0.03% of $V_{PEAK-TO-PEAK}$
Image Area		3.6 mm x 2.7 mm
Package Dimensions		4930 µm x 4760 µm





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