OV9653 Color CMOS SXGA (1.3 MegaPixel) CAMERACHIP™ with OmniPixel® Technology

General Description

The OV9653 CAMERACHIP™ is a low voltage CMOS image sensors that provides the full functionality of a single-chip SXGA (1280x1024) camera and image processor in a small footprint package. The OV9653 provides full-frame, sub-sampled 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 SXGA resolution 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, white pixel canceling, noise canceling, 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, etc., to produce a clean, fully stable color image.

Note: The OV9653 uses a lead-free package.

Features

- High sensitivity for low-light operation
- Low operating voltage for embedded portable applications
- Standard SCCB interface
- Supports SXGA, VGA, QVGA, QQVGA, CIF, QCIF, QQCIF, and windowed outputs with Raw RGB, RGB (GRB 4:2:2), YUV (4:2:2) and YCbCr (4:2:2) formats
- VarioPixel® method for sub-sampling formats (VGA, QVGA, QQVGA, CIF, QCIF, and QQCIF)
- Automatic image control functions including: Automatic Exposure Control (AEC), Automatic Gain Control (AGC), Automatic White Balance (AWB), and Automatic Black-Level Calibration (ABLC)
- Image quality controls including color saturation, hue, gamma, sharpness (edge enhancement), lens correction, white pixel canceling, and noise canceling

Ordering Information

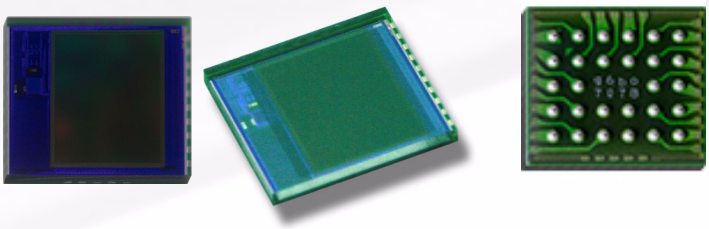
Product	Package
OV09653-VL1A (Color, Lead-free)	28-pin CSP2

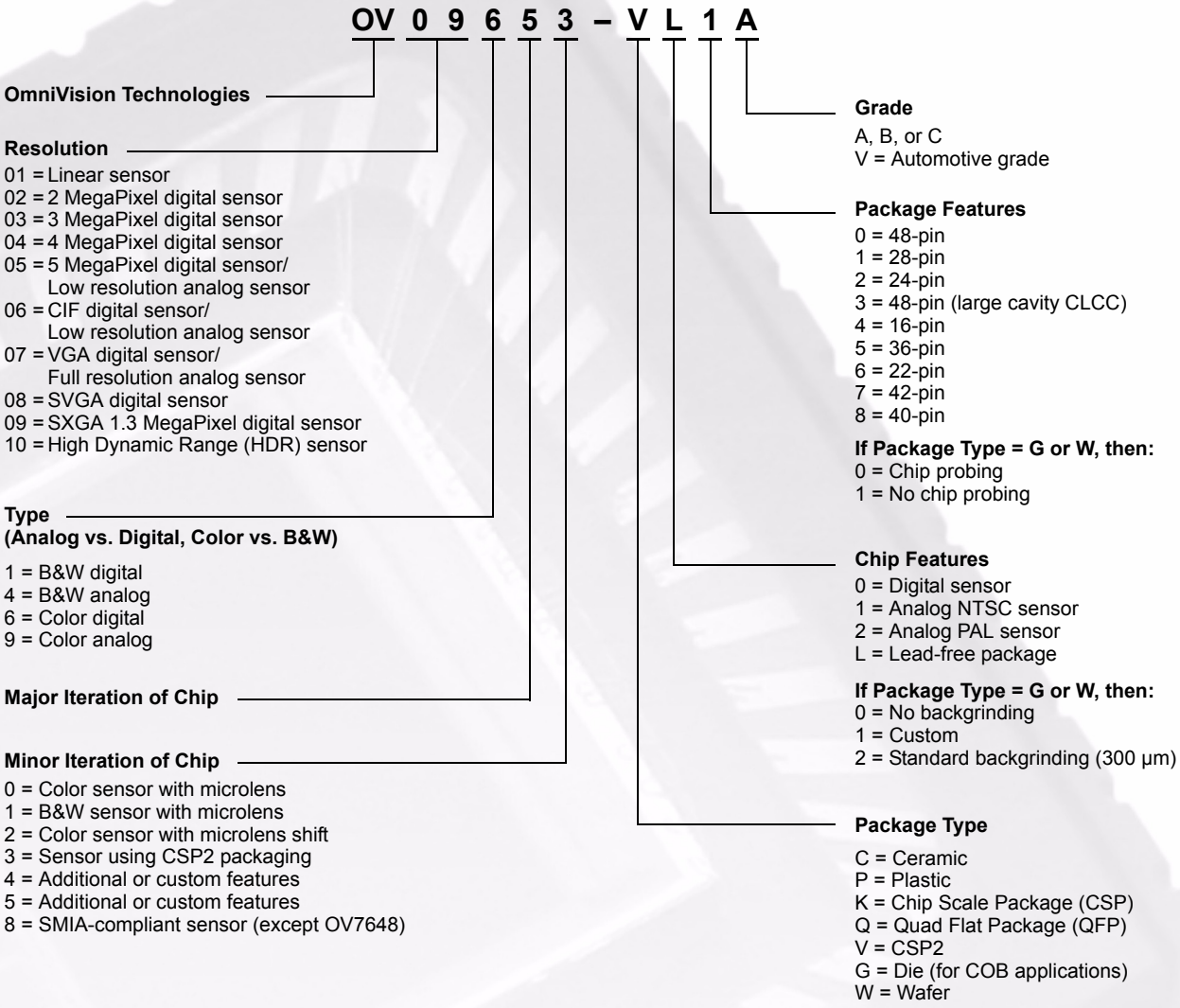
Applications

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

Key Specifications

Active Array Size		1300 x 1028
Power Supply	**Core**	1.8VDC ± 10%
	Analog	2.45 to 2.8 VDC
	I/O	2.5V to (V_{DD-A}+0.3V)
Power Requirements	**Active**	50 mW (15 fps, no I/O power)
	Standby	30 µW
Temperature Range	**Operation**	-20°C to 70°C
	Stable Image	0°C to 50°C
Output Formats (8-bit)		• YUV/YCbCr 4:2:2 • GRB 4:2:2 • Raw RGB Data
Lens Size		1/4"
Maximum Image Transfer Rate	**SXGA**	15 fps
	VGA	30 fps
	QVGA, QQVGA, CIF	60 fps
	QCIF, QQCIF	120 fps
Sensitivity		0.9 v/Lux-sec
S/N Ratio		40 dB
Dynamic Range		62 dB
Scan Mode		Progressive
Maximum Exposure Interval		1050 x t_{ROW}
Gamma Correction		Programmable
Pixel Size		3.18 µm x 3.18 µm
Dark Current		30 mV/s at 60°C
Well Capacity		28 K e
Fixed Pattern Noise		<0.03% of $V_{PEAK-TO-PEAK}$
Image Area		4.13 mm x 3.28 mm
Package Dimensions		5095 µm x 5715 µm





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