



640H x 480V, Ultra Low-Power, CMOS Digital Image Sensor Camera System-on-a-Chip

Features

- Ultra low-power, low-cost CMOS image sensor
- VGA-quality image resolution (640H x 480V)
- 1/4-inch optical format
- Superior low-light performance
- Up to 30 fps progressive scan for high-quality video
- On-chip image flow processor that performs color recovery and correction, sharpening, gamma correction, lens shading correction, on-the-fly defect correction, and 2X fixed zoom
- Image decimation to arbitrary size with smooth, continuous zoom and pan
- Automatic exposure, white balance, black level offset correction, flicker avoidance, color saturation, defect identification and correction, frame rate, and back light compensation
- Xenon- and LED-type flash support
- On-chip, 10-bit analog-to-digital converter (ADC)
- Two-wire serial interface
- ITU_R BT.656 (YCbCr), YUV, 565RGB, 555RGB, and 444RGB output data formats

Simple Design. Sophisticated Functionality.

Today's CCD image sensors make camera designs more complicated than they need to be, causing oversized form factors and delayed times to market. Quite the opposite is true with Aptina's simply designed, fully automatic MT9V111 CMOS image sensor. With a diagonal of just 4mm, it offers a complete camera system-on-a-chip solution, requiring only a power supply, lens, and clock source for basic operation.

The MT9V111's sophisticated on-chip image flow processor incorporates several indispensable functions onto the chip itself, eliminating unnecessary parts and freeing up valuable board space. Programmable through a two-wire serial interface, the processor performs operations like color recovery and correction; sharpening; programmable gamma correction; auto black level offset correction; auto exposure, white balance, lens shading, and flicker avoidance; and on-the-fly defect identification and correction.

Ultra Low-Power, Very High-Quality

The ultra low-power MT9V111 showcases Aptina's revolutionary CMOS active-pixel technology, performing superbly under poor lighting conditions and outputting brilliant, progressive scan images at up to 30 fps. And the MT9V111 enables image decimation to any size while maintaining smooth, uninterrupted motion for greater flexibility and control when capturing either continuous video or single frames.

Applications

- Cellular phones
- PDAs
- PC cameras
- Other battery-powered products

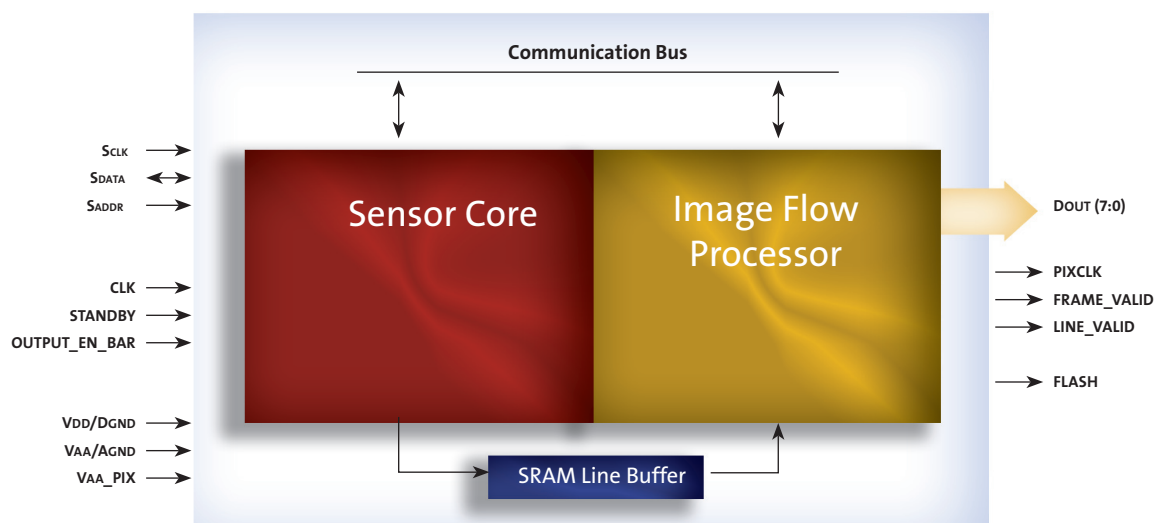
How to Buy

Production and sample quantities of Aptina products may be ordered through qualified distributors. See our Web site for details. You may also request access to NDA data sheets and other technical documentation by visiting our Web site.

Specifications

• Pixel Size:	5.6 μ m x 5.6 μ m	• Programmable Controls:	Gain, frame rate, ADC reference, left-right and up-down image reversal
• Array Format (Active):	640H x 480V	• ADC:	10-bit, on-chip
• Imaging Area:	3.584mm x 2.688mm	• Data Rate:	12–13.5 megapixels per second (master clock, 24–27 MHz)
• Color Filter Array:	RGB Bayer color filters	• Responsivity:	1.9 V/lux-sec (550nm)
• Optical Format:	1/4 inch (4:3)	• Signal-to-Noise Ratio:	>45dB (MAX)
• Frame Rates:	15 fps @ 640H x 480V, ≤60 fps @ 352H x 288V, ≤90 fps @ 320H x 240V	• Dynamic Range:	60dB
• Scan Mode:	Progressive	• Maximum Analog Gain:	16
• Shutter:	Electronic rolling shutter (ERS)	• Supply Voltage:	2.8V \pm 0.25V
• Window Size:	Programmable to VGA, QVGA, CIF, and QCIF	• Power Consumption:	<80mW (@ 15 fps)
• Automotive Functions:	Exposure, white balance, black level offset correction, flicker avoidance, color saturation, defect identification and correction, frame rate, and back light compensation	• Operating Temp. Range:	–20°C to +60°C
		• Package:	44-ball iCSP or Die

Block Diagram



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