



High-Resolution, 3-Megapixel CMOS Digital Image Sensor

Powerful Features

- 3-megapixel resolution (2048H x 1536V)
- 1/2-inch optical format
- 3.2 μ m x 3.2 μ m pixel size
- Low-power CMOS image sensor
- 12 frames per second at full resolution (12 fps – QXGA; 20 fps – UXGA; 27 fps – SXGA; 43 fps – XGA; 93 fps – VGA)
- Global pixel reset
- Row and column pixel binning
- Programmable gain and exposure control
- Automatic black level calibration
- Viewfinder and snapshot modes
- On-chip, 10-bit analog-to-digital converter (ADC)
- Pin-for-pin compatible with Aptina's 1.3-megapixel MT9M001 and 2.0-megapixel MT9D001 CMOS image sensors

High Resolution, High Speed

Aptina's innovative 3-megapixel MT9T001 CMOS image sensor boasts of Aptina's groundbreaking technology that enables brilliant, high-resolution color images that rival CCD quality (based on signal-to-noise ratio and low-light sensitivity), without added power requirements. The MT9T001 superbly captures single frames as well as continuous video.

What's more, the sensor's high-speed readout and fast auto exposure, auto focus, and viewfinder modes eliminate two common digital still camera problems: shot-to-shot delay and button-lag, the delay between when the camera's button is pressed and when the image is actually taken. Together, these high-resolution, high-speed features make the MT9T001 ideal for today's digital still cameras (DSCs), digital video cameras, and combined DSCs/camcorders.

Exceptional Functionality

Besides the standard snapshot mode, the MT9T001 offers a global shutter reset, which, when combined with a mechanical shutter, achieves the simultaneous exposure of all rows in a captured image. Two global shutter modes, programmed exposure and bulb mode, provide increased flexibility with either a set or an arbitrary exposure time.

The MT9T001 also supplies row and column binning modes to minimize the visual impact of artifacts introduced when an image is resized. The sensor supports both 2X and 3X reductions of the output resolution and enables independent binning of rows and columns for precise manipulation of images.

Ease of Design, Speed of Development

With fewer required parts compared to CCD-based sensors, Aptina's MT9T001 CMOS image sensor simplifies camera design. Its on-chip analog-to-digital conversion, clock generation, and other sophisticated camera functions enable designers to create smaller, higher-performance, lower-cost applications within shorter development periods.

Perfect for These Applications

- Digital still cameras
- Digital video cameras
- Converged DSCs/camcorders

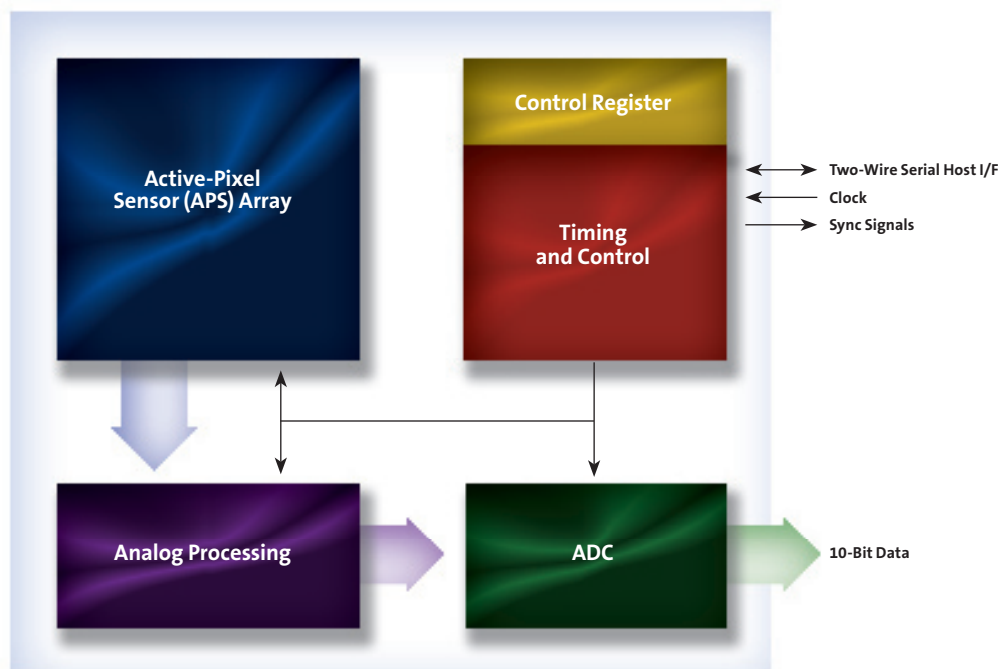
How to Buy

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:	3.2µm x 3.2µm	• Programmable Controls:	Gain, horizontal blanking, vertical blanking, sampling rates, exposure time, auto black level offset correction, image mirroring
• Array Format (active):	2048H x 1536V	• ADC Resolution:	10 bit
• Imaging Area:	6.55mm x 4.92mm (8.19mm diagonal)	• Gain:	Analog – 8X MAX step size 0.125 MIN
• Color Filter Array:	RGB Bayer color filters	• Data Rate:	48 megapixels per second
• Optical Format:	1/2 inch (4:3)	• Dynamic Range:	>61dB
• Frame Rates:	12 fps (QXGA), 20 fps (UXGA), 27 fps (SXGA), 43 fps (XGA), 93 fps (VGA), with programmable blanking	• Signal-to-Noise Ratio:	>43dB (MAX)
• Scan Mode:	Progressive	• Supply Power:	3.3V nominal (3.0V to 3.6V)
• Shutter:	Electronic rolling shutter (ERS), global pixel reset	• Operating Temperature Range:	0°C to +60°C
• Windowing:	Programmable in size and location	• Shipping Options:	48-pin PLCC or die

Block Diagram



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