



DigitalClarity® Technology

1.3-Megapixel, 1/2-Inch, Color, CMOS Active-Pixel Digital Image Sensor

Features

- DigitalClarity™ CMOS imaging technology
- Low-power CMOS image sensor
- 1.3-megapixel resolution (1,280H x 1,024V)
- 1/2-inch optical format
- Up to 30-frames-per-second (fps) progressive scan for high-quality video
- Programmable gain and exposure control
- Auto black level calibration
- Viewfinder and snapshot modes
- On-chip, 10-bit analog-to-digital converter (ADC)
- Two-wire serial host interface
- 10-bit parallel data output

Superior Image Quality

Designed around Micron's DigitalClarity advanced noise-reduction technology, our revolutionary MT9M001 CMOS image sensor achieves sharp CCD image quality based on its exceptional signal-to-noise ratio (SNR) and low-light sensitivity. At the same time, it retains all the advantages that CMOS technology is famous for, including its smaller form factor, lower power consumption, higher performance, and ease of design.

Powerful Design

The MT9M001 uses a 5.2µm-x-5.2µm pixel size in an RGB Bayer pattern, resulting in a 1/2-inch optical format. Sophisticated camera functions, including programmable gain, exposure control, auto black level calibration, and snapshot and viewfinder modes, have been integrated directly onto the chip, reducing the need for additional parts and increasing available board space.

Its sync-input, strobe-output, windowing, and horizontal blanking and vertical blanking controls enable it to capture both continuous video and single frames, which it outputs in high-quality, progressive-scan images at up to 30 fps. The user has the choice of operating the MT9M001's variable functions, including the frame rate, exposure, and gain settings, in the default mode or programming them through a simple two-wire serial host interface.

Faster Time-to-Market

The MT9M001's CMOS-based technology is also much simpler to implement in camera designs compared to conventional CCD technology, enabling designers to create smaller, higher-performance applications with shorter development periods.

Applications

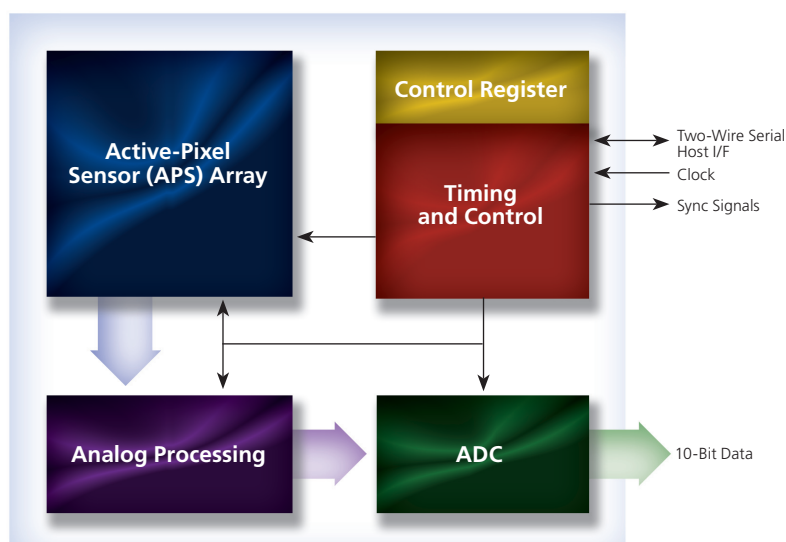
- Digital still cameras
- Digital video cameras
- PC cameras

Micron's truly innovative MT9M001 image sensor is the highest-quality 1.3-megapixel CMOS image sensor on the market, one that combines the image quality of CCD technology (based on SNR and low-light sensitivity) with the compact size, adaptability, and ease-of-design of CMOS. For more information about it or to order samples, call your Micron® Imaging representative or visit Micron's Web site at www.micron.com/imaging.

Specifications

| | | | |
|---------------------------------|---|---------------------------------|---|
| ● Pixel Size: | 5.2µm x 5.2µm | ● Data Rate: | 48 MSPS |
| ● Array Format (active): | 1,280H x 1,024V | ● Exposure Control: | 10µs–500ms |
| ● Imaging Area: | 6.83mm x 5.45mm | ● Responsivity (green): | 1.8 V/lux-sec @ 550nm illumination |
| ● Color Filter Array: | RGB Bayer color filters | ● SNR: | 45dB |
| ● Optical Format: | 1/2 inch | ● MIN Illumination: | 0.3 lux nominal (SNR = 1, f# = 2.8, exposure = 100ms, daylight) |
| ● Frame Rate: | 30 fps with programmable blanking | ● Dynamic Range: | 61dB |
| ● Scan Mode: | Progressive | ● Dark Current @ 25°C: | 30 e/sec |
| ● Shutter: | Electronic rolling shutter (ERS), continuous (video) and single frame (still) | ● Q. E. (green): | 52% |
| ● Windowing: | Programmable | ● Temporal Noise: | 10e |
| ● Programmable Controls: | Gain, horizontal blanking, vertical blanking, sampling rates, exposure, auto black level offset correction, image mirroring | ● Master Clock: | 48 MHz |
| ● ADC: | 10-bit | ● Supply Voltage: | 3.3V (3.0V–3.6V) |
| ● Color Sampling Rates: | Full, 1/2, 1/4, 1/8 (in viewfinder mode) | ● Power Consumption: | 325mW nominal (275µW standby) |
| ● Gain: | MAX 15X, MIN step size 0.125 | ● Operating Temp. Range: | 0°C to 60°C |
| | | ● Package: | 48-pin CLCC |

Block Diagram



www.micron.com

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