1.3-Megapixel, 1/2-Inch, Monochrome, 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 a monochrome format, 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

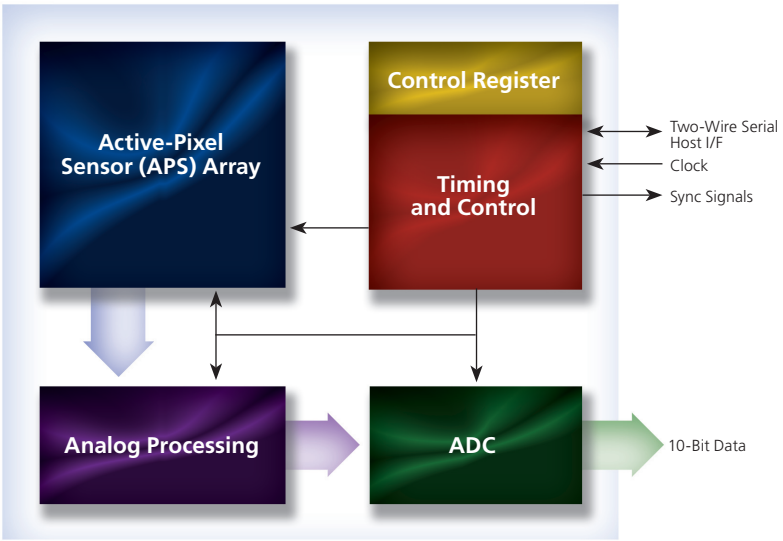
- 2D bar code readers
- Industrial and commercial cameras
- Security cameras

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
- **Array Format (active):** 1,280H x 1,024V
- **Imaging Area:** 6.83mm x 5.45mm
- **Optical Format:** 1/2 inch
- **Frame Rate:** 30 fps with programmable blanking
- **Scan Mode:** Progressive
- **Shutter:** Electronic rolling shutter (ERS), continuous (video) and single frame (still)
- **Windowing:** Programmable
- **Programmable Controls:** Gain, horizontal blanking, vertical blanking, sampling rates, exposure, auto black level offset correction, image mirroring
- **ADC:** 10-bit
- **Gain:** MAX 15X, MIN step size 0.125
- **Data Rate:** 48 MSPS
- **Exposure Control:** 10µs–500ms
- **Responsivity:** 1.9 V/lux-sec @ 550nm illumination
- **SNR:** 45dB
- **MIN Illumination:** 0.3 lux nominal (SNR = 1, f# = 2.8, exposure = 100ms, daylight)
- **Dynamic Range:** 61dB
- **Dark Current @ 25˚C:** 30 e/sec
- **Q. E.:** 58%
- **Temporal Noise:** 10e
- **Master Clock:** 48 MHz
- **Supply Voltage:** 3.3V (3.0V–3.6V)
- **Power Consumption:** 325mW nominal (275µW standby)
- **Operating Temp. Range:** 0˚C to 60˚C
- **Package:** 48-pin CLCC

Block Diagram



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