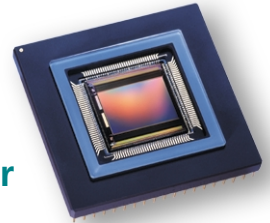


500-fps, 1.3-Megapixel CMOS Image Sensor

Featuring Micron's TrueSNAP™ Electronic Shutter



Features

- 1,280H x 1,024V image resolution
- TrueSNAP™ freeze-frame electronic shutter
- 500 frames per second (fps)
- Monochrome or color digital output
- <500mW maximum power dissipation @ 500 fps
- On-chip, 10-bit analog-to-digital converters (ADCs)
- Simple digital interface

Description

Micron's MI-MV13 is the world record holder for the fastest CMOS image sensor. The sensor features Micron's revolutionary TrueSNAP freeze-frame electronic shutter, which enables simultaneous exposure of the entire pixel array to stop even the fastest motion with crystal clear images. It delivers 10-bit color or monochrome digital images with a 1.3-megapixel resolution at 500 fps—or 655 million pixels per second—for machine vision and high-speed imaging applications. The sensor can run at higher frame rates by reducing the window size (e.g., 4,800 fps for a 1,280 x 128 pixel window). Digital responsiveness of 1,600 bits per lux-second and Micron's exclusive TrueBit® noise cancellation and Micron TrueColor™ image fidelity ensure high image quality.

The simple digital interface provides flexibility to control exposure time, frame rate, windowing functionality, and other parameters. Compared to charged-coupled device (CCD) based cameras, the MI-MV13 is much simpler to design a camera around, and it enables a faster time-to-market with a smaller, lower-power and higher-performance camera.

Applications

The MI-MV13 CMOS image sensor captures complex high-speed events for traditional machine vision applications, as well as various high-speed imaging applications. Its electronic shutter is capable of freezing and capturing near-instantaneous events with a 1.3-megapixel resolution while outputting 500 fps. The sensor can capture an event with a series of images taken at a high repetitive rate, enabling them to be viewed at lower speeds.

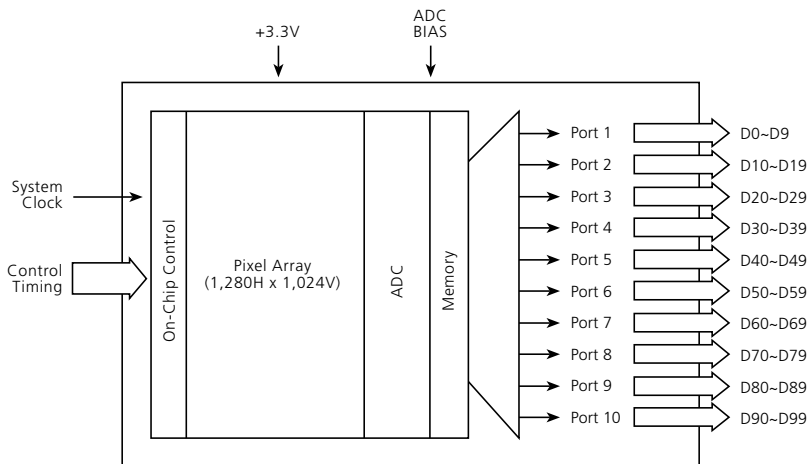
Applications include machine vision (production line monitoring and control for industries ranging from semiconductor fabrication to food sorting); automotive testing; microscopy; traffic control; 3D imaging; animation; motion analysis; film special effects; forestry; industrial and military research; and security systems. The MI-MV13's capabilities enable camera performance far beyond current CCD-based systems, creating an unprecedented number of possibilities for future applications.



Specifications

■ Array Format:	1,280H x 1,024V (1,310,720 pixels)	■ Operating Temperature:	-5°C to +60°C
■ Aspect Ratio:	5:4	■ Output:	10-bit digital video through 10 parallel ports
■ Pixel Size and Type:	12.0µm x 12.0µm TrueSNAP	■ Color:	Monochrome or color RGB
■ Sensor Imaging Area:	H: 15.36mm V: 12.29mm Diagonal: 19.67mm	■ Shutter:	TrueSNAP freeze-frame electronic shutter
■ Frame Rate:	0–500 fps @ (1,280 x 1,024) >10,000 fps with partial scan [e.g., 0–4,800 fps @ (1,280 x 128)]	■ Shutter Efficiency:	>99.9%
■ Output Data Rate:	660 MB/s (master clock, 66 MHz; ~500 fps)	■ Shutter Exposure Time:	<100ns to >33ms
■ Power Consumption:	<500mW at 500 fps	■ ADC:	On-chip, 10-bit column parallel
■ Digital Responsivity:	1,600 bits/lux-sec at 550nm	■ Package:	280-pin ceramic PGA
■ Internal Intra-Scene Dynamic Range:	59dB	■ Controls:	On-Chip: <ul style="list-style-type: none">■ ADC controls■ Output multiplexing■ ADC calibration Off-Chip: <ul style="list-style-type: none">■ Window size and location■ Frame rate and data rate■ Shutter exposure time (integration time)■ ADC reference
■ Supply Voltage:	+3.3V		

Block Diagram



To learn more about Micron's imaging products, visit our Web site at www.micron.com/imaging, or call us at 208.368.3900.

www.micron.com

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