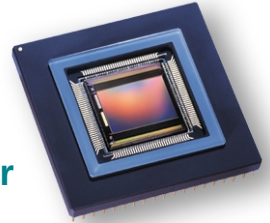


# 500-fps, 1.3-Megapixel CMOS Image Sensor

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 @ 600 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.

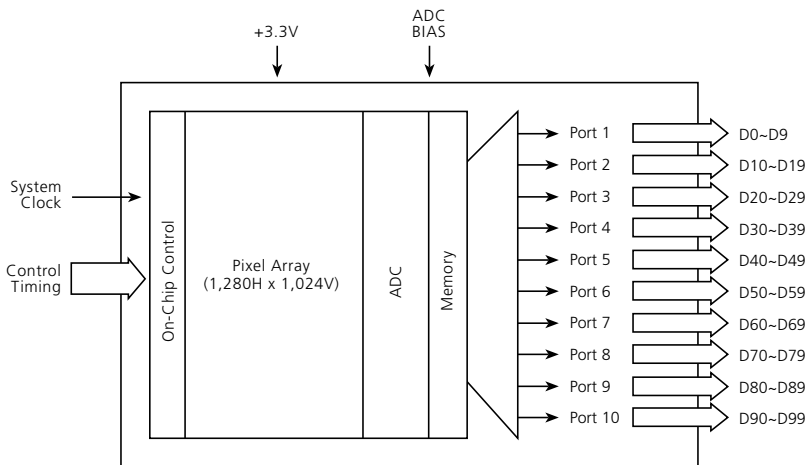
Applications include machine vision (production line monitoring and control for industries ranging from semiconductor fabrication to food sorting); automotive testing; microscopy; traffic control; 3D imaging; animation; motion analysis; film special effects; forestry; industrial and military research; 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

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

## Block Diagram



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

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