



DigitalClarity® Technology

5-Megapixel, 1/2.5-Inch CMOS Image Sensor for Wide FOV and Electronic Pan/Tilt Cameras

Image Quality Has Never Been Better

Features

- DigitalClarity® CMOS imaging technology
- Low-power, progressive scan CMOS image sensor
- 5-megapixel resolution (2592H x 1944V)
- 1/2.5-inch optical format
- On-chip, 12-bit analog-to-digital converter (ADC)
- 12 frames per second (fps) at full resolution
- Up to 60 fps at 720p resolution
- Viewfinder and snapshot modes
- Programmable gain and exposure
- Two-wire serial interface
- Global reset
- Binning for enhanced viewing experience
- Phase lock loop (PLL) for versatile clock in scheme

Complex Digital Functions

What do you get when you combine 5 million pixels with a crisp digital output? Micron's MT9P031 CMOS image sensor, complete with electronic pan and tilt capabilities. At 5 megapixels, the MT9P031 provides a wide field of view (FOV) that can be subwindowed, positioned, and sized to enable a low cost, high performance, highly reliable pan/tilt camera with no moving parts.

With the subwindow sized to produce VGA video, the camera focuses on 300,000 of the 5 million pixels at one time, leaving the rest of the scene to be accessed through the pan and tilt functions. The MT9P031 supports both 2X and 3X reductions of the output resolution and enables independent binning of rows and columns—which means precise manipulation of images and a wider FOV image is possible without having to output all of the pixels that the scene comprises. Additionally, the MT9P031 enables an electronic zoom function by ending the binning and selecting a subwindow frame or by reading out all of the pixels.

High Resolution, High Speed

The MT9P031 showcases Micron's groundbreaking DigitalClarity technology, which enables brilliant, high-resolution color images that rival CCD-level image quality (based on signal-to-noise ratio and low-light sensitivity) without CCD-level power consumption. The MT9P031 superbly captures single frames as well as continuous video. What's more, the sensor's high-speed readout and viewfinder modes eliminate two common commercial security camera problems: shot-to-shot delay and video-to-still lag—the delay between when someone presses the camera's button and when the picture is actually taken.

Ease of Design, Speed of Development

With fewer required parts compared to CCD-based sensors, Micron's MT9P031 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 product development periods.

Perfect for These Applications

- High-resolution security cameras
- Electronic pan/tilt cameras
- Wide field of view cameras
- HD security cameras (720p)



Unparalleled CMOS Image Quality

Micron's exclusive DigitalClarity technology dramatically reduces noise levels in our CMOS sensors. While some security cameras generate shots that look like abstract paintings, your MT9P031-equipped camera will deliver sharp, crystal-clear images. Our sensor provides best-in-class image quality—whether capturing continuous video or single frames—even

in extremely low light.

Better Service for Better Designs

Micron's MT9P031 incorporates a number of features and functions to streamline your designs and improve your customers' imaging experiences. To order, call us at +1 208-368-3900 or visit us on the Web at www.micron.com/imaging.

Specifications

<ul style="list-style-type: none"> ● Pixel Size: 2.2µm x 2.2µm ● Array Format (Active): 2592H x 1944V ● Imaging Area: 5.70mm x 4.28mm ● Color Filter Array: RGB Bayer color filters ● Optical Format: 1/2.5 inch ● Frame Rates: 12 fps @ full resolution 30 fps @ 1080p resolution (1920H x 1080V) ● Scan Mode: Progressive ● Shutter: Electronic rolling shutter (ERS), global reset release (GRR) ● Window Size: Programmable to any size ● Exposure Time: 10µs–32s; bulb (external timer, snapshot only) ● Operating Modes: ERS continuous video, ERS snapshot, ERS bulb, GRR snapshot, GRR bulb ● Input Clock: 6–27 MHz 	<ul style="list-style-type: none"> ● Master Clock: 96 MHz ● Maximum Data Rate: 96 megapixels per second ● Programmable Controls: Gain, frame rate, exposure time, horizontal and vertical blanking, image mirroring ● ADC: 12-bit, on-chip ● Gain: Analog: 1–8 (Step size: 0.25) Digital: 1–16 (Step size: 0.125) ● Dynamic Range: 60dB ● Responsivity: 0.53 V/lux-sec (550nm) ● Supply Voltage: Analog: 2.6–3.1V (2.8V nominal) Digital: 1.7–1.9V (1.8V nominal) I/O: 1.8–3.1V ● Power Consumption: <260mW ● Operating Temp: -30°C to +70°C ● Package: Die, 48-pin ILCC
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