1/4-Inch VGA CMOS Active-Pixel Composite Analog and Digital Video Output Sensor

High-Performance Video Meets Low-Cost Home Security Systems

Built for home and commercial security systems, Micron's MT9V135 is a complete camera system-on-a-chip (SOC) solution. Our unique low-noise, stable-temperature design enables it to capture extraordinarily clear images. Requiring less light than a single candle produces, the MT9V135 creates crisp images for networked security applications that are just as effective on the darkest nights as on the brightest days. The VGA CMOS image sensor achieves CCD image quality (based on signal-to-noise ratio and low-light sensitivity) while maintaining the inherent size, cost, low power, and integration advantages of CMOS

MT9V135 Applications

- Low-cost wireless, 900 MHz, 2.4 GHz cameras
- CCTV cameras
- Smart camera upgrades
- Vehicle and contents theft identification
- Small office monitoring
- Home monitoring

Professional Quality for Home Systems

Until the introduction of Micron's MT9V135 device for home security applications, designers were forced to sacrifice performance for cost. Micron's ¼-inch VGA SOC solution changes that. It offers best-in-class performance while producing full-color video, making scenes and stills clear enough to enable e-mail or remote viewing. This versatile imager meets the strong demand for low cost, excellent color fidelity, and low-light sensitivity in video sensors for home security.

Sophisticated but Simple

The MT9V135 incorporates sophisticated camera functions on-chip and is programmable through a simple two-wire serial interface. NTSC- and PAL-formatted outputs are integrated on the device, and its flexible signal path supports a wide variety of system architectures. Because the sensor does not require an encoder chip for formatting, this lowers the bill of materials (BOM) and dramatically reduces costs. In addition, by offering both analog and digital output formats, the video sensor can be simultaneously viewed on a standard TV screen and captured in digital video storage. The image data can be output on any one of three output ports.

Dependable in Severe Conditions

Electronic components used in some security environments need to perform under rigorous operating conditions. Bright or dark, hot or cold, the MT9V135 can output full-color video at VGA-quality resolution (640H x 480V). The extended temperature option excels under extreme conditions, with an operating temperature range of –40°C to +105°C.

Contact a Dedicated Digital Video Expert

We realize security subsystem suppliers and manufacturers are looking for a dedicated source for image sensors. One who manufactures parts based on yet-to-be-realized home security customer demands. One who knows how to make fully integrated, high-performance digital video sensors. One who can assist with a design from inception to implementation.

For world-class products and support, call Micron at 208-368-3900, or visit us on the Web at ***www.micron.com***. Let our dedicated experts show you the technical details of the MT9V135 and how it can enhance your digital security systems.

MT9V135 Features and Benefits

	Features	Benefits
Pixel Size	5.6µm x 5.6µm	Formatted for a 1/4-inch lens; among the most sensitive on the market.
Active Array Format	640H x 480V, programmable to any smaller frame size	Sized for optimal performance in standard VGA/NTSC displays. The digital output mode is programmable to support smaller frame sizes to suit the needs of numerous systems.
Frame Rate	VGA 640H x 480V: 30 fps at 27 MHz (NTSC); 25 fps at 27 MHz (PAL)	The MT9V135 offers real-time frame rate at full resolution to match frame rates of TV displays.
Scan Mode	CCIR 656 interlaced	Enables the MT9V135 to capture high-quality video, which it outputs in standard color digital video format.
Shutter	Dual electronic rolling shutter (DERS)	The DERS provides excellent video capture, especially in low light conditions, by featuring two rolling shutters (one for each video field) that each can integrate for up to 33ms. This maintains an overall frame rate of 30Hz for NTSC (25Hz for PAL). Competing rolling shutter devices typically integrate for a maximum of 16ms or contain only 240 lines of information.
Image Processing	On-chip image flow processor (IFP) performs sophisticated processing	The IFP consists of a color processing pipeline and a measurement and control logic block (the camera controller). The measurement and control logic continuously accumulate image brightness and color statistics. Based on these measurements, the IFP calculates updated values for exposure time and sensor analog gains that are sent to the sensor core.
Automatic IFP Features	Auto exposure, auto white balance (AWB), auto black reference (ABR), auto flicker avoidance, auto color saturation, and auto defect identification and correction	The MT9V135 automatically detects and adapts to scene lighting conditions.
Video Formats	NTSC/PAL (true two-field) analog composite video output ITUR BT.656 parallel output (8 bit, interlaced)	The video output is formatted on the chip to go directly to an NTSC or PAL input (display) device. Because the sensor does not require an encoder chip, this lowers the bill of materials (BOM) and dramatically reduces the cost.
Digital Video Input	Supports use of external processing devices for addition of custom overlay graphics	Lowers the BOM for post-processed video and requires less board space (fewer chips).
Data Formats	Progressive or interlaced, parallel or LVDS (serial). The sensor supports parallel or serial digital interlaced output formats (CCIR 656, YUV 4:2:2). It also supports raw progressive or interlaced digital output.	The MT9V135 offers a selectable output data format, providing the flexibility for various system needs. Plus, its serial LVDS output mode significantly reduces wire count.
Minimum Detectable Light	Superior low-light performance	Leverages from Micron's recognized leadership in low-light, high-performance, low-cost imagers.
Dynamic Range	70dB	The MT9V135 features a superior dynamic range for high-quality video in very light and very dark conditions.
Minimum Detectable Light	>0.5 lux, color	Superior low-light performance makes the MT9V135 ideal for a wide range of automotive display applications.
Spectral Range	450–1,050nm, ~40% QE @ 550nm	With a spectral range from deep blue (DB) to near infrared (NIR), the MT9V135's peak response matches that of the human eye.
Programming Capability	Simple two-wire serial programming interface	Provides user access to override all on-chip algorithms.
Temperature Ranges	Operating: –30˚C to +70˚C (standard version) –40˚C to +105˚C (automotive version) Storage: –40˚C to +125˚C	The MT9V135 withstands extreme temperatures, providing dependable operation under severe conditions.
Packages	48-Pin CLCC (standard version) 52-ball BGA (automotive version)	The automotive-qualified package is specifically designed to excel under extreme conditions.

www.micron.com

Products are warranted only to meet Micron's production data sheet specifications. Products and specifications are subject to change without notice.