EPIX®

Preliminary

Specifications Subject to Change without notice.

Color Camera SV643C
Monochrome Camera SV643M

High Speed & Low Cost Silicon Video® 643

PIXCI® SI1
Frame Grabber

Available Soon

PIXCI® SI2
Frame Grabber

PIXCI® SI4
Frame Grabber

SV643 Camera High Frame Rate Camera
(Lens Optional)

Optical Format:	1/2-inch
Active Image Size:	6.3mm(H) x 4.7mm(V) 7.8mm Diagonal
Active Pixels:	640H x 480V
Pixel Size:	9.9µm x 9.9µm
Color Filter Array:	Monochrome or Color RGB Bayer Pattern
Shutter Type:	Electronic Snapshot (Global) Shutter
Maximum Data Rate:	70 MPS
Master Clock:	70 MHz
Frame Rate:	211 fps (at full resolution)
ADC Resolution:	10-bit, on-chip
Responsivity:	17 Volts/Lux-sec
Dynamic Range:	61dB linear
Supply Voltage:	5 to 12 Volts
Power Consumption:	190 mWatt
Operating Temperature:	-40ºC to +70ºC
Camera Dimensions:	1.89” L x 1.49” H x 0.83” D 48mm L x 38mm H x 21mm D
Weight:	1.4 oz / 39 grams

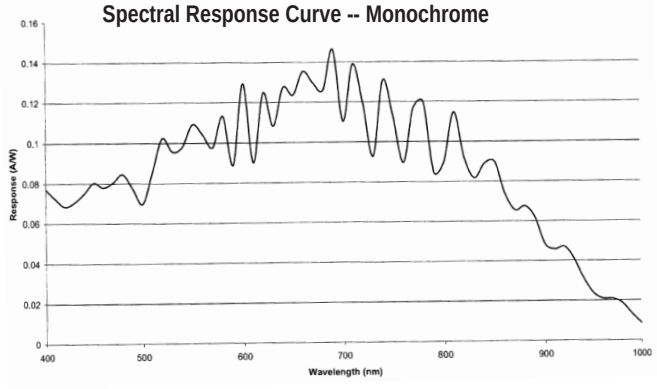
The ***SILICON VIDEO®*** monochrome ***643M*** and color ***643C*** cameras provide 640 by 480 resolution at 211frames per second (fps). Reducing the number of lines to 2 allows frame rates up to *26,636* fps. Fast frame rates, global shutter, asynchronous reset, and shutter speeds as short as 1 microsecond (1/1,000,000th of a second) provide sharp images of high-speed motion. Example applications include high-speed inspection, particle tracking, kinematics, collision studies, sports analysis, ballistics, and plant or animal motion analysis. Images can be captured at rates above 200 frames per second and can then be played-back at slow display rates to reveal previously undetected details. Individual frames can be extracted from a sequence for further analysis or measurement.

The rugged aluminum camera case is 48 mm high by 38 mm wide by 21 mm deep. Each side of the case has two M2-0.4 screw holes for attaching the ¼-20 tripod adapter or for mounting. The flexible, category 5e, shielded RJ-45 interface cable provides image data transfer, camera control, and camera power while allowing camera positioning in tight spaces. Optional cables with right angle connectors and thumbscrews are available.

This progressive scan camera connects to the PCI Express bus thru the PIXCI® SI1 (one camera), PIXCI® SI2 (two camera), or PIXCI® SI4 (four camera) imaging board. In addition to providing power, camera control, and data transfer, the PIXCI® SI boards have a trigger input and a strobe output to synchronize external equipment.

Also available is the SV643 camera with an EPIX® imaging computer system that can be configured to capture for a specified frame rate and time period. The SILICON VIDEO® 643 camera is available from EPIX, Inc., or from an authorized EPIX, Inc. Distributor.

Spectral Response Curve -- Monochrome



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SV643 High Speed Digital Cameras

CAMERA CONTROL SOFTWARE

Sequence Capture with SV643 Camera and XCAP Imaging Program

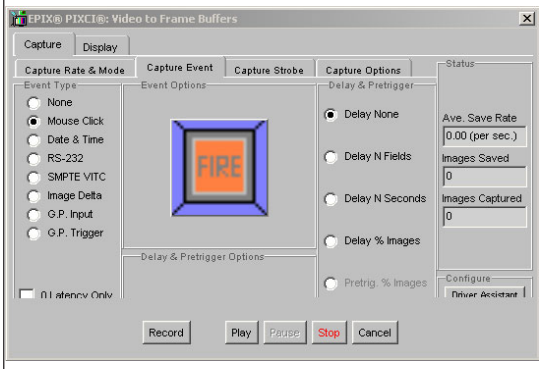
The SILICON VIDEO® 643 camera is designed to capture thousands of images at fast frame rates.

XCAP-Lite will capture for a maximum of one second at full resolution, 8 bits per pixel, and maximum frame rate. images must be saved individually.

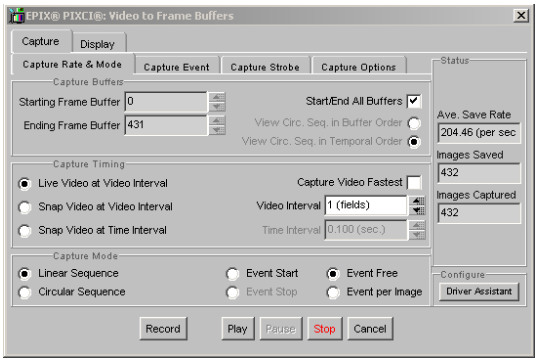
The XCAP-LTD program captures and saves sequences for more than 2 minutes into 8 GBytes of available memory (computer must have approximately 10 GBytes of installed memory).

The XCAP-STD imaging program offers video to disk, which allows sequences of images to be captured directly to as few as two hard disks configured as RAID 0. Using four 500 GB hard drives, 7200 rpm, images can be captured continuously for 8 hours (640 x 480 resolution, 8-bits per pixel, 211 fps). Longer durations are possible.

The XCAP program is optimized for capturing image sequences. The ***Capture Rate & Mode*** window allows selection of sequence length and interval rate. Linear and Circular sequences are offered. A *Linear Sequence* is a simple capture of a preset number of frames. A *Circular Sequence* offers continuous capture until an event stop. The ***Capture Event*** window offers different conditions that can start, modulate, or stop sequence capture. Events include (among others) *Date & Time, RS-232 Signal*, or a *Mouse Click.*



XCAP Capture Event



XCAP Capture Rate & Mode

Images can be overlayed with frame number and time stamp. XCAP offers 16 different time stamp formats.

The ***Display Rate*** window provides automatic playback at rates easily selected by the user. A sequence can be displayed once, or can be displayed continuously. Display can progress from beginning to end or in reverse. A subset of frames, extracted from the complete sequence, can be displayed or saved.

XCAP compliments the SV642 camera with sequence capture, display, processing, analyzing, and saving operations. Select which version of the XCAP program is best for your application by reviewing the description at http://www.epixinc.com/products/xcap.htm.

SV643C & SV643M High Frame Rate Color/Mono Cameras

Frame Resolution	Pixel Clock Frequency 25 MHz	48 MHz	66 MHz	70 MHz
640 x 480	75 fps	145 fps	199 fps	211 fps
512 x 480	93 fps	178 fps	245 fps	260 fps
480 x 360	138 fps	260 fps	358 fps	380 fps
320 x 240	303 fps	568 fps	781 fps	828 fps
240 x 180	527 fps	976 fps	1,343 fps	1,424 fps
8 x 480	953 fps	1,831 fps	2,517 fps	2,670 fps
120 x 90	1,911 fps	3,406 fps	4,683 fps	4,967 fps
64 x 46	5,835 fps	9,700 fps	13,338 fps	14,147 fps
640 x 2	10,794 fps	18,264 fps	25,114 fps	26,636 fps

Note: Cable length tests specific to the SV643 camera have yet to be conducted. Contact EPIX, Inc., technical support if a cable length greater than 14 feet will be used. Cable lengths greater than 14 feet (4.2 meters) may require use of a pixel clock frequncy less than 70 MHz -- which, as indicated in the SV643 frame rate chart, will result in reduced frame rates.

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