National Semiconductor

ADVANCE INFORMATION

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LM9630 100 x 128, 580 fps Ultra Sensitive Monochrome CMOS Image Sensor

General Description

The LM9630 is a high performance, low power, CMOS Active Pixel Image Sensor capable of capturing monochrome images at 580 frames per second.

In addition to the active pixel array, an on-chip 8 bit A/D convertor, fixed pattern noise elimination circuits and a video gain amplifier are provided.

The integrated programmable timing and control circuit allows the user maximum flexibility in adjusting integration time and frame rate. Furthermore, a fast read out circuit is provided allowing a full frame to read out on a single 8-bit digital data bus in less than 2ms.

The sensor utilizes a patented pixel design that incorporates an integrated electronic shutter. This together with its ultra high sensitivity makes the LM9630 an ideal choice for low light imaging applications or applications where images of fast moving objects need to be captured with minimum motion blur.

Applications

- High Speed Motion Detection
- IR Imaging
- Low Light Imaging Applications

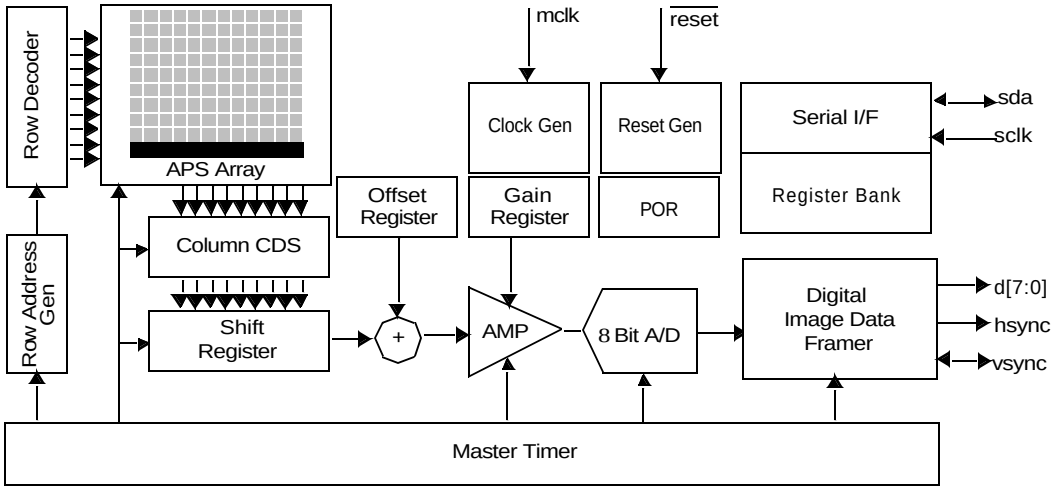
Features

- Electronic shutter with global reset & pixel exposure.
- Programmable analog video gain.
- Integrated 8 bit analog to digital conversion.
- Programmable integration time.
- Programmable frame rate.
- Master and slave mode of operation
- On chip black level compensation.
- Power down and low power modes.
- I^2C compatible serial interface.
- 10 bit digital video port (8 data, vertical & horizontal sync).
- Power on reset with hardware and software override.

Key Specifications

Array Format	
Total	128H x 101V
Active	118H x 96V
Effective Image Area	
Total	2.56 mm x 2.00 mm
Active	2.36 mm x 1.92 mm
Optical Format	1/5”
Pixel Size	20µm x 20µm
Video Outputs	8 Bit Digital
Frame Rate	580 frames per second
Dynamic Range	48 dB
Electronic Shutter	Global Reset
FPN	0.5%
PRMU	1.3%
Sensitivity	22 Volt/lux.s
Fill Factor	47%
Package	32 CLCC
Single Supply	3.3V +/- 10%
Power Consumption	110 mW
Operating Temp	-40°C to 85°C

Chip Block Diagram



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Ordering Information (Product, Samples & Design In Tools)

Item	Description	Part Number
LM9630	LM9630, 580 frames per second, ultra sensitive, 128x101 monochrome CMOS image sensor. This sensor is shipped in a 48 pin ceramic leadless chip carrier package. Minimum order quantity, one tray of 176 units.	LM9630BIEA
Sample Kit	This kit includes 5 LM9630 samples and complete product datasheet.	LM9630SAMPLE-KIT
Headboard	This is a small PCB that houses the LM9630 sensor together with all the necessary discrete components. The headboard is supplied with C-MOUNT lens block (lens not included) and documentation. M12 Lens mounts (not included) can be mounted on this board.	LM9630HEADBOARD
Evaluation Kit	The evaluation kit is a complete software/hardware solution designed to give the system designer a complete raw data evaluation toolset for the LM9630 sensor. The kit contains a LM9630 headboard (see above), C-MOUNT lens, capture and display board, power supply, SNAPS EVAL version Windows application software and documentation.	LM9630EVAL-KIT
1/5" Lens Kit	The 1/5" lens kit includes two 1/5" M12 lenses and an M12 mount that can be attached to any LM9630 headboard (see above). All lenses in the kit have been tested by National Semiconductor and are supplied with documentation and test data.	LM96-1/5-LENS-KIT

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