

LUPA 1300-2 500 FPS High Speed CMOS Sensor

CYL2SM1300AA Product Brief

Features

- 1280 x 1024 active pixels
- 14 μm X 14 μm square pixels
- 1" optical format
- Monochrome or color digital output
- 500 fps frame rate
- On-chip 10-bit ADCs
- 12 LVDS serial outputs
- Random programmable ROI readout
- Pipelined, Triggered and Snapshot shutter
- On-chip column FPN correction
- Serial to Parallel Interface (SPI)
- Limited supplies: Nominal 2.5V (some supplies require 3.3V)
- 0°C to 70°C operational temperature range
- 168-pin uPGA package
- Power dissipation: 1.2W

Applications

- High speed machine vision
- Motion analysis
- Intelligent traffic system
- Medical imaging
- Industrial imaging

Description

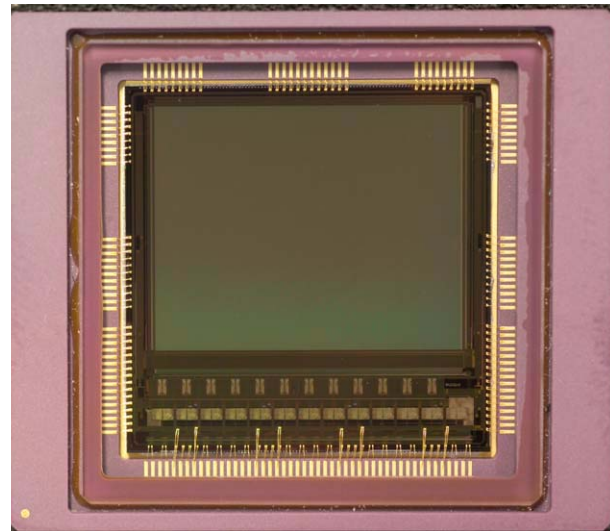
The LUPA 1300-2 is a highly integrated SXGA high speed, high sensitivity CMOS image sensor targeted at various high speed machine vision and industrial monitoring applications. The sensor runs at 500fps and features triggered and pipelined shutter modes. The sensor packs 24 parallel 10-bit A/D converters with an aggregate conversion rate of 740 MSPS. On-chip digital column FPN correction allows the sensor to output ready-to-use image data for all but the most demanding applications. In order to allow simple and reliable system integration, the 13 channel 8 Gbps LVDS serial link protocol supports per channel skew correction and serial link integrity monitoring. Peak responsivity of the 14x14μm 6T pixel is 7350 V.m2/W.s. Dynamic range is measured to be 57dB. In full frame video mode, the sensor consumes 1.2W from a 2.5V power supply. The sensors integrates A/D conversion, on-chip timing for

a wide range of operating modes and features an LVDS interface for easy system integration. By removing the visually highly disturbing column patterned noise, this sensor allows building a camera without having to perform any off-line correction or the need for any memory making this sensor highly suitable for lower cost applications. Moreover, since the on-chip column FPN correction is more reliable than an off-line correction as it is intrinsically compensated for supply and temperature variations, this sensor also allows to build reliable high-end camera's without having to worry about column FPN appearing in environments with highly varying ambient temperatures.

The sensor requires only one master clock for operation up to 500 fps. It is housed in a 168-pin ceramic μPGA package.

The LUPA 1300-2 is available in a monochrome version or Bayer (RGB) patterned color filter array and is available with and without glass.

LUPA 1300-2 Die Photo



Ordering Information

Marketing Part Number (ES Samples)	Mono/Color	Package
CYL2SM1300AA-GDCES	mono with glass	168 pin ceramic uPGA
CYL2SM1300AA-GWCES	mono without glass	
CYL2SC1300AA-GDCES	color with glass	
CYL2SC1300AA-GWCES	color without glass	

General Specifications

Parameter	Specifications
Active Pixels	1280 (H) x 1024 (V)
Pixel Size	14 μm x 14 μm
Pixel Type	Pipelined shutter pixel
Pixel Rate	620 Mbps per channel (12 serial LVDS outputs)
Shutter Type	Pipelined and Triggered Global Shutter
Frame Rate	500 fps at 1.3 Mpixel (can be boosted by subsampling and windowing).
Master Clock	315Mhz for 500 fps
Windowing (ROI)	Randomly programmable ROI read out up to four multiple windows
Read Out	Windowed, flipped, mirrored, and subsampled read out possible
ADC Resolution	10 bit, on-chip
Sensitivity	10.16 V/lux.s @ 550nm
Extended Dynamic Range	Multiple slope (up to 90 dB optical dynamic range)

Electro-Optical Specifications

Parameter	Value
Conversion gain	34uV/e
Full well charge	30000e
Responsivity	7350 V.m ² /W.s @680nm
Fill factor	40%
Parasitic light sensitivity	< 1/10000
Dark noise	37e ⁻
QE x FF	35% @ 680nm
FPN	2% of V _{sat}
PRNU	<1% of V _{signal}
Dark signal	170mV/s @ 30°C
Power dissipation	1.2W

Document History Page

Document Title: LUPA 1300-2, 500 FPS High Speed Image Sensor				
Document Number:				
REV	ECN	Orig. of Change	Submission Date	Description Of Change
**	2598181	VED	October 29, 2008	New image sensor document

Sales, Solutions, and Legal Information

Worldwide Sales and Design Support

Cypress maintains a worldwide network of offices, solution centers, manufacturer's representatives, and distributors. For more information on Image sensors, please contact at imagesensors@cypress.com.

Cypress offers standard and customized CMOS image sensors for consumer as well as industrial and professional applications. Consumer applications include the fast growing high volume cell phone, digital still cameras as well as automotive applications. Cypress' customized CMOS image sensors are characterized by very high pixel counts, large area, very high frame rates, large dynamic range, and high sensitivity.

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