

CYPRESS PRODUCT SELECTOR GUIDE

OPTICAL AND IMAGE SENSING SOLUTIONS

SEPTEMBER 2009

AUTOMOTIVE • CAPSense™ CAPACITIVE TOUCH SENSING • CLOCKS AND BUFFERS • LIGHTING AND POWER CONTROL • MEMORIES • OPTICAL AND IMAGE SENSING • PHYSICAL LAYER DEVICE • PSoC® PROGRAMMABLE SYSTEM-ON-CHIP • TRUETOUCH™ TOUCH SCREEN SOLUTIONS • USB SOLUTIONS • WEST BRIDGE® PERIPHERAL CONTROLLERS • WIRELESS/RF



OPTICAL SENSING

OvationONS LASER NAVIGATION SOLUTIONS

Cypress's OvationONS™ laser navigation solutions are breakthrough technologies for precision motion-sensing applications.

The **OvationONS II** family is the world's first laser navigation system-on-chip (SOC) solution with an integrated M8C 24 MHz CPU, USB, up to 32K of flash memory, a programmable timer, an ADC, and CapSense capacitive touch sensing capabilities. The OvationONS II family works for both wired USB and wireless applications.

Cypress's PSoC programmable system-on-chip technology integrates:

- 24 MHz CPU
- USB
- Up to 32K of flash memory
- Programmable timers
- ADC
- CapSense capacitive touch sensing capabilities.

Key Applications: Trackballs, desktop and high performance gaming mice.

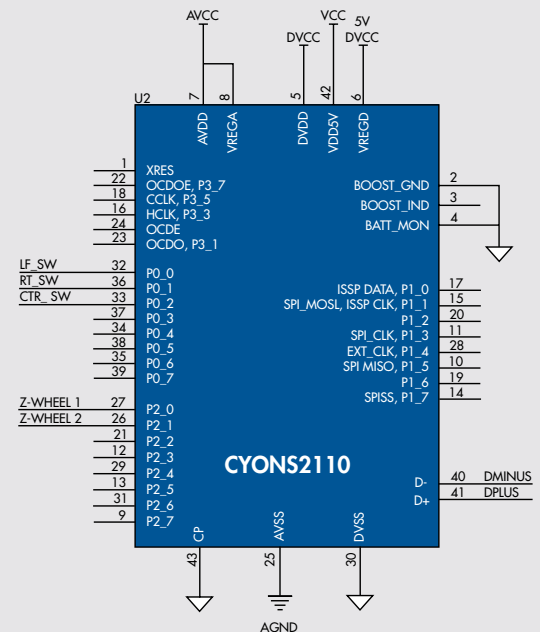
OvationONS™ II—WORLD'S FIRST LASER NAVIGATION SOC SOLUTION

Features

- Highly-integrated mouse-on-a-chip with programmable PSoC® MCU, 32K Flash memory and CapSense
- Continuously variable resolution 400 to 3200 cpi independent of speed, up to 75 in./s and 30G acceleration
- Integrated Full-Speed USB for wired application or SPI interface to radio for wireless applications
- Internal power system enables operation between 0.8V to 5V inputs with self adjusting power saving modes
- Integrated Class 1 eye-safety Laser, no calibration or alignment needed
- Self aligning snap on molded lens

Key Applications: Wired and wireless laser mice (gaming, graphic design, desktop, and mobile mice), optical trackballs, battery powered devices, motion sensing applications

For more information on OvationONS visit www.cypress.com/go/ovations



OvationONS Solutions

Part Number	Status	Acceleration	Boost Converter	CapSense	MCU Flash Size	MCU Integration	Max Speed	Package	RDK	Resolution	Sample Rate	Total Pin Count
CYONS2000	Active	20G	No	No	16K	M8C, 24 MHz	30 ips	QFN	CY4631	400, 800, 1600 dpi	80 kHz	42
CYONS2001	Active	20G	Yes	No	16K	M8C, 24 MHz	30 ips	QFN	CY4631	400, 800, 1600 dpi	80 kHz	42
CYONS2100	Active	30G	No	No	32K	M8C, 24 MHz	75 ips	QFN	CY4631	400 to 3200 dpi	80 kHz	42
CYONS2101	Active	30G	Yes	No	32K	M8C, 24 MHz	75 ips	QFN	CY4631	400 to 3200 dpi	80 kHz	42
CYONS2110	Active	30G	Yes	Yes	32K	M8C, 24 MHz	75 ips	QFN	CY4631	400 to 3200 dpi	80 kHz	42
CYONSLENS2000	Active	NA	NA	NA	NA	NA	NA	LENS	CY4631	NA	NA	NA

IMAGE SENSING

CUSTOM IMAGE SENSORS

Cypress provides complete development services, including sensor design, silicon prototyping, package design, assembly flow setup, test system development, full electro-optical characterization, qualification, and turn-key manufacturing support for all custom designs. Cypress delivers these custom sensors according to agreed specifications and specific customer requirements. First silicon to spec is our commitment.

For more information on your custom solution, please contact imagesensors@cypress.com.

Key Applications: Machine vision, high speed, X-ray, endoscope, linear, barcode, cinematography/HDTV, security, data storage, space/military

STANDARD IMAGE SENSORS

Cypress has several families of standard image sensors including features such as high speed capabilities, snapshot or rolling shutter modes, a wide range of resolutions and radiation tolerant designs.

Cypress's standard image sensors include the IBIS4, IBIS5, LUPA, and STAR products and we are developing a brand new family, VITA.

- IBIS4 image sensors are characterized by very high image quality, low noise, 3T-pixel, rolling shutter, high fill factor and dual slope for increased dynamic range.
- IBIS5 sensors have a 4-transistor pixel type, allowing both rolling shutter and snapshot shutter operation. Multiple windowing and multiple slopes for high-dynamic range is supported.
- LUPA high speed active pixel sensors combine a true snapshot shutter with very high readout rates.
- STAR integrated CMOS image sensors combine enhanced sensitivity, with excellent image quality and a unique tolerance to the harsh environment and radiation in space.

Key Applications: High-speed imaging, medical imaging, biometry, machine vision, bar code, traffic monitoring, document scanning

Part Number	Status	Application	Features	Frame Rate	Optical Format	Pixel Size	Resolution	Supply Voltage	Color	Package
IBIS4										
IBIS4-14000 CY114SC014KAA-GZDC CY114SM014KAA-GEC CY114SM014KAA-GWC	Active	Biometry, Machine Vision, Instrumentation, Document Scanning, Medical, Digital Photography	Rolling Shutter, Windowing, On-Chip FPN Correction, SPI, Double Slope	3 fps	35 mm	8 μ m x 8 μ m	3048 x 4560	3.3 V	Monochrome & Color RGB	49 PGA
IBIS4-6600 CY114SC6600AB-QDC CY114SM6600AB-QDC CY114SM6600AB-QWC	Active	Biometry, Machine Vision, Instrumentation, Document Scanning, Medical, Digital Photography	Rolling Shutter, Windowing, On-Chip FPN Correction, SPI, Double Slope	5 fps	2/3 inch	3.4 μ m x 3.4 μ m	2210 x 3002	2.5 V	Monochrome & Color RGB	68 LCC
IBIS5										
IBIS5-B-1300 CY115SM1300AB-QDC CY115SM1300AB-QWC CY115SC1300AB-QDC CY115FM1300AB-QDC CY115FM1300AB-QWC	Active	Machine Vision, Automation, Inspection, NIR Light Detection	Rolling/Snapshot Shutter, windowing, subsampling, on-chip FPN, SPI/Parallel	27 fps	2/3 inch	6.7 μ m x 6.7 μ m	1280 x 1024	3.3 V to 4.5 V	Monochrome & Color RGB	84 LCC

Part Number	Status	Application	Features	Frame Rate	Optical Format	Pixel Size	Resolution	Supply Voltage	Color	Package
LUPA										
LUPA-300 CY1L1SE0300AA-QDC CY1L1SM0300AA-QDC CY1L1SM0300AA-QWC	Active	Machine Vision, Motion Analysis, Scientific High-Speed Image Analysis	Triggered & Pipelined Sync Shutter, Windowing, SPI, Multiple Slope	250 fps	1/2 inch	9.9 μm x 9.9 μm	640 x 480	3.3V	Monochrome & Color RGB	48 LCC
LUPA-1300-2 - NEW CY1L2SM1300AA-GWCES CY1L2SM1300AA-GZDC CY1L2SC1300AA-GZDC	Active	Machine Vision, Motion Analysis, Scientific High-Speed Image Analysis	Pipelined Snapshot Shutter, Windowing, SPI, Double Slope, LVDS outputs	500 fps	1 inch	14 μm x 14 μm	1280 x 1024	5V	Monochrome & Color RGB	168 μPGA
LUPA-4000 CY1L1SM4000AA-GDC CY1L1SM4000AA-GWC CY1L1SC4000AA-GDCES	Active	Machine Vision, Traffic Monitoring, License Plate Capture	Pipelined Snapshot Shutter, Windowing, SPI, Double Slope	15 fps	1 inch F-mount	12 μm x 12 μm	2048 x 2048	2.5V to 3.3V	Monochrome & Color RGB	127 PGA
LUPA-3000 - NEW CY1L1SN3000AA-GZDC CY1L1SE3000AA-GZDC	Sampling	High Speed Machine Vision, ITS, Holographic Data Storage, Motion Analysis, Medical Imaging, Industrial Imaging	Pipelined Snapshot Shutter, dual slope, SPI, LVDS outputs, Windowing	485 fps	1 inch	8 μm x 8 μm	1696 x 1710	2.5 V	Monochrome & Color RGB	399 μPGA
STAR										
STAR-1000 CY1S1SM1000AA-HQC CY1S1SM1000AA-HHC CY1S1SM1000AA-HHCS	Active	Satellite Optical Altitude, Comm Sensors, Spacecraft Visual monitors, Nuclear, Radiation environments, Space Science, Planetary Imaging, Particle Detection Systems, Rover Vision Systems, Lander Camera, Startrackers, Sun Sensors, Optical Docking Systems, Visual Monitoring	Rolling Shutter, dual slope, windowing, SPI	11 fps	1 inch to 33 mm	15 μm x 15 μm	1024 x 1024	5V	Monochrome	84 JLCC
STAR-250 CY1S1SM0250AA-HQC CY1S1SM0250AA-HHC CY1S1SM0250AA-HHCS	Active	Satellite Optical Altitude, Comm Sensors, Spacecraft Visual monitors, Nuclear, Radiation environments, Space Science, Planetary Imaging, Particle Detection Systems, Rover Vision Systems, Lander Camera, Startrackers, Sun Sensors, Optical Docking Systems, Visual Monitoring	Rolling Shutter, dual slope, windowing, SPI	29 fps	1 inch to 33 mm	25 μm x 25 μm	512 x 512	5V	Monochrome	84 JLCC
HAS-2 CY1H1SM1000AA-HHCS CY1H1SM1000AA-HHCS	Sampling Active	Satellite Optical Altitude, Comm Sensors, Spacecraft Visual monitors, Nuclear, Radiation environments, Space Science, Planetary Imaging, Particle Detection Systems, Rover Vision Systems, Lander Camera, Startrackers, Sun Sensors, Optical Docking Systems, Visual Monitoring	Rolling Shutter, dual slope, windowing, SPI	9 fps	1 inch to 33 mm	18 μm x 18 μm	1024 x 1024	3.3V	Monochrome	84 JLCC

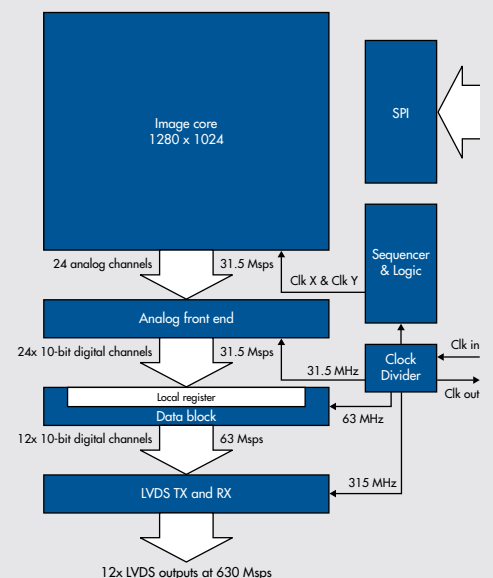
LUPA 1300-2—HIGH SPEED AND HIGH PERFORMANCE IMAGE SENSOR

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
- Multiple random programmable ROI readouts
- Pipelined, triggered, and snapshot shutter

Key Applications: High speed machine vision, motion analysis, intelligent traffic system, medical imaging, industrial imaging

For more information on LUPA 1300 visit www.cypress.com/go/LUPA



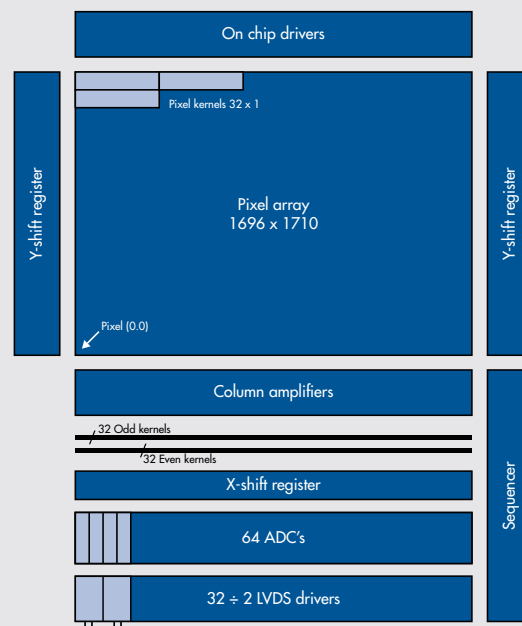
LUPA 3000—13.2 GBPS PIXEL-RATE, 485 FRAMES-PER-SECOND IMAGE SENSOR

Features

- 1696 x 1710 active pixels
- 8 μm x 8 μm square pixels
- 1" optical format
- Monochrome or color digital output
- 485 fps frame rate
- 64 On-chip 8-bit ADCs
- 32 LVDS serial outputs
- Multiple random programmable ROI readouts
- Pipelined, Triggered and Snapshot shutter
- Serial to Parallel Interface (SPI)
- Limited supplies: Nominal 2.5V (some supplies require 3.3V)
- 0°C to 60°C operational temperature range
- Power dissipation: 1.1W

Key Applications: High speed machine vision, holographic data storage, motion analysis, intelligent traffic system, medical imaging, industrial imaging

For more information on LUPA 3000 visit www.cypress.com/go/LUPA



Part Number Key

CY	I	Group	Process	Color	Resolution	Function	Revision	"-"	Package	Glass	Temp	Spec									
CY	Cypress	I	Image Sensor	I4	IBIS4	S	Standard	M	Monochrome	300	640 x 480	A	A	"-"	H	JLCC	D	D263	C	S	Space qualified
				I5	IBIS5	F	epi 15	N	Mono Micro Lens	250	512 x 512		B		Q	LCC	E	D263 AR		ES	Engineering Samples
				L1	LUPA			C	Color	1000	1024 x 1024				G	PGA	H	BK7G18 AR			
				L2	LUPA 2			E	Color Micro Lens	1300	1280 x 1024				B	BGA	Q	Quartz			
				S1	STAR					4000	2048 x 2048						W	Windowless			
				H1	HAS					6600	2210 x 3002										
										014K	3048 x 4560										

CONTACT US

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Cypress delivers high-performance, mixed-signal, programmable solutions that provide customers with rapid time-to-market and exceptional system value. Cypress offerings include the PSoC Programmable System-on-Chip, USB controllers, general-purpose programmable clocks, and memories. Cypress also offers wired and wireless connectivity solutions ranging from its CyFi Low-Power RF solution, to West Bridge and EZ-USB FX2LP controllers that enhance connectivity and performance in multimedia handsets. Cypress serves numerous markets, including consumer, computation, data communications, automotive and industrial. Cypress trades on the NYSE under the ticker symbol CY. Visit Cypress online at www.cypress.com.