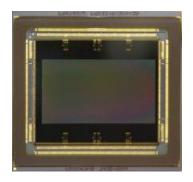


LUX9512

The LUXIMA™ LUX9512 image sensor is a 9.5 Megapixel 1,333 FPS Global Shutter CMOS Digital Sensor for applications in the 3D scanning, intraoral scanning, dental, motion analysis, laser triangulation, line profiling, and wafer inspection markets. It allows ease of integration and lower system noise with on-chip 12 bit ADC, and 128 parallel LVDS outputs. The sensor supports 8 simultaneous Region-Of-Interest readouts with flexible window positions. The user can obtain faster frame rates through X, Y windowing. Color and monochrome options are offered in a 696 pin LGA-LCC package with a footprint of 39.8 mm × 37.8 mm.



Active resolution 4096 × 2304 pixels Pixel 6.5 um pitch PPD global shutter pixel Full well 12 Ke- Read noise 9 e- Responsivity 5.5 V/lux-sec @ 525nm without color filter High dynamic range mode 3 slope HDR capability Frame rate Resolution Frame Rate 4096 × 2304 1,333 FPS 2048 × 1080 5,565 FPS 2048 × 512 11,631 FPS 2048 × 128 44,209 FPS 2048 × 128 44,209 FPS 2048 × 32 147,493 FPS Region of interest Windowing and up to 8 simultaneous ROI's are supported Binning 2x2, 1x2, 2x1 Analog to digital converter 12b on chip ADC Analog gain options 1x – 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	Optical format	2"		
Pixel 6.5 um pitch PPD global shutter pixel Full well 12 Ke- Read noise 9 e- Responsivity 5.5 V/lux-sec @ 525nm without color filter High dynamic range mode 3 slope HDR capability Frame rate Resolution Frame Rate 4096 × 2304 1,333 FPS 2048 × 1080 5,565 FPS 2048 × 512 11,631 FPS 2048 × 512 11,631 FPS 2048 × 2048 × 218 44,209 FPS 2048 × 32 147,493 FPS Region of interest Windowing and up to 8 simultaneous ROI's are supported Binning 2x2, 1x2, 2x1 Analog to digital converter 12b on chip ADC Analog gain options 1x - 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	<u>'</u>	_		
Full well 12 Ke- Read noise 9 e- Responsivity 5.5 V/lux-sec @ 525nm without color filter High dynamic range mode 3 slope HDR capability Frame rate Resolution Frame Rate 4096 × 2304 1,333 FPS 2048 × 1080 5,565 FPS 2048 × 512 11,631 FPS 2048 × 512 11,631 FPS 2048 × 64 82,919 FPS 2048 × 64 82,919 FPS 2048 × 32 147,493 FPS Region of interest Windowing and up to 8 simultaneous ROI's are supported Binning 2x2, 1x2, 2x1 Analog to digital converter 12b on chip ADC Analog gain options 1x - 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)		•		
Read noise 9 e- Responsivity 5.5 V/lux-sec @ 525nm without color filter High dynamic range mode 3 slope HDR capability Frame rate Resolution Frame Rate 4096 × 2304 1,333 FPS 2048 × 1080 5,565 FPS 2048 × 512 11,631 FPS 2048 × 512 14,631 FPS 2048 × 64 82,919 FPS 2048 × 64 82,919 FPS 2048 × 32 147,493 FPS Region of interest Windowing and up to 8 simultaneous ROI's are supported Binning 2x2, 1x2, 2x1 Analog to digital converter 12b on chip ADC Analog gain options 1x - 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)		·		
Responsivity S.5 V/lux-sec @ 525nm without color filter High dynamic range mode 3 slope HDR capability Frame rate Resolution Frame Rate 4096 × 2304 1,333 FPS 2048 × 1080 5,565 FPS 2048 × 512 11,631 FPS 2048 × 512 11,631 FPS 2048 × 64 82,919 FPS 2048 × 64 82,919 FPS 2048 × 32 147,493 FPS Region of interest Windowing and up to 8 simultaneous ROI's are supported Binning 2x2, 1x2, 2x1 Analog to digital converter 12b on chip ADC Analog gain options 1x - 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)				
High dynamic range mode Resolution Frame Rate 4096 × 2304 1,333 FPS 2048 × 1080 5,565 FPS 2048 × 512 11,631 FPS 2048 × 64 82,919 FPS 2048 × 32 147,493 FPS Region of interest Windowing and up to 8 simultaneous ROI's are supported Binning 2x2, 1x2, 2x1 Analog to digital converter 12b on chip ADC Analog gain options 1x - 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)				
Frame rate Resolution 4096 × 2304 1,333 FPS 2048 × 1080 5,565 FPS 2048 × 512 11,631 FPS 2048 × 128 44,209 FPS 2048 × 32 147,493 FPS Region of interest Windowing and up to 8 simultaneous ROl's are supported Binning 2x2, 1x2, 2x1 Analog to digital converter 12b on chip ADC Analog gain options 1x - 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	· · · · · · · · · · · · · · · · · · ·	· -		
4096 × 2304 1,333 FPS 2048 × 1080 5,565 FPS 2048 × 512 11,631 FPS 2048 × 128 44,209 FPS 2048 × 32 147,493 FPS Region of interest Windowing and up to 8 simultaneous ROI's are supported Binning 2x2, 1x2, 2x1 Analog to digital converter 12b on chip ADC Analog gain options 1x - 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	<u> </u>	• • •		
2048 × 1080 5,565 FPS 2048 x 512 11,631 FPS 2048 x 128 44,209 FPS 2048 x 64 82,919 FPS 2048 x 32 147,493 FPS Region of interest Windowing and up to 8 simultaneous ROI's are supported Binning 2x2, 1x2, 2x1 Analog to digital converter 12b on chip ADC Analog gain options 1x - 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	Traine rate			
2048 x 512 11,631 FPS 2048 x 128 44,209 FPS 2048 x 64 82,919 FPS 2048 x 32 147,493 FPS Region of interest Windowing and up to 8 simultaneous ROI's are supported Binning 2x2, 1x2, 2x1 Analog to digital converter 12b on chip ADC Analog gain options 1x - 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)			•	
2048 x 128			·	
2048 x 64 82,919 FPS 2048 x 32 147,493 FPS Region of interest Windowing and up to 8 simultaneous ROI's are supported Binning 2x2, 1x2, 2x1 Analog to digital converter 12b on chip ADC Analog gain options 1x - 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)			·	
Region of interest Windowing and up to 8 simultaneous ROI's are supported Binning 2x2, 1x2, 2x1 Analog to digital converter 12b on chip ADC Analog gain options 1x - 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)			·	
Binning 2x2, 1x2, 2x1 Analog to digital converter 12b on chip ADC Analog gain options 1x - 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)		2048 x 32	•	
Analog to digital converter Analog gain options 1x - 6x Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	Region of interest	·		
Analog gain options Clock rate 100 MHz maximum Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	Binning	2x2, 1x2, 2x1		
Clock rate 100 MHz maximum 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	Analog to digital converter	12b on chip ADC		
Number of data channels 128 LVDS data channels + 8 LVDS synchronization channels Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	Analog gain options	1x - 6x		
Multiplexer mode: 64 LVDS or 32 LVDS data channels Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	Clock rate	100 MHz maximum		
Output data rate Bit Depth Clock Rate 100MHz 12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	Number of data channels	128 LVDS data channels + 8 LVDS synchronization channels		
12b 1200 Mbps 10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	Multiplexer mode: 64 LVDS or		de: 64 LVDS or 32 LVDS data channels	
10b 1000 Mbps 8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	Output data rate	Bit Depth	Clock Rate 100MHz	
8b 800 Mbps Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)		12b	1200 Mbps	
Power supply 3.3V Analog, 1.8V Analog & 1.8V Digital Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)		10b	1000 Mbps	
Power consumption 5.6W Typical Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)		8b	800 Mbps	
Lower power with Multiplexer Mode Communication interface 4-Wire serial peripheral interface (SPI)	Power supply	3.3V Analog, 1.8V Analog & 1.8V Digital		
Communication interface 4-Wire serial peripheral interface (SPI)	Power consumption	5.6W Typical	• •	
· · · · · · · · · · · · · · · · · · ·		Lower power with Multiplexer Mode		
Package type	Communication interface			
Package type 696 pin LGA-LCC in a footprint of 39.8 mm × 37.8 mm	Package type	696 pin LGA-LCC in a footprint of 39.8 mm × 37.8 mm		
Color filter Color or Monochrome	Color filter	Color or Monochrome		