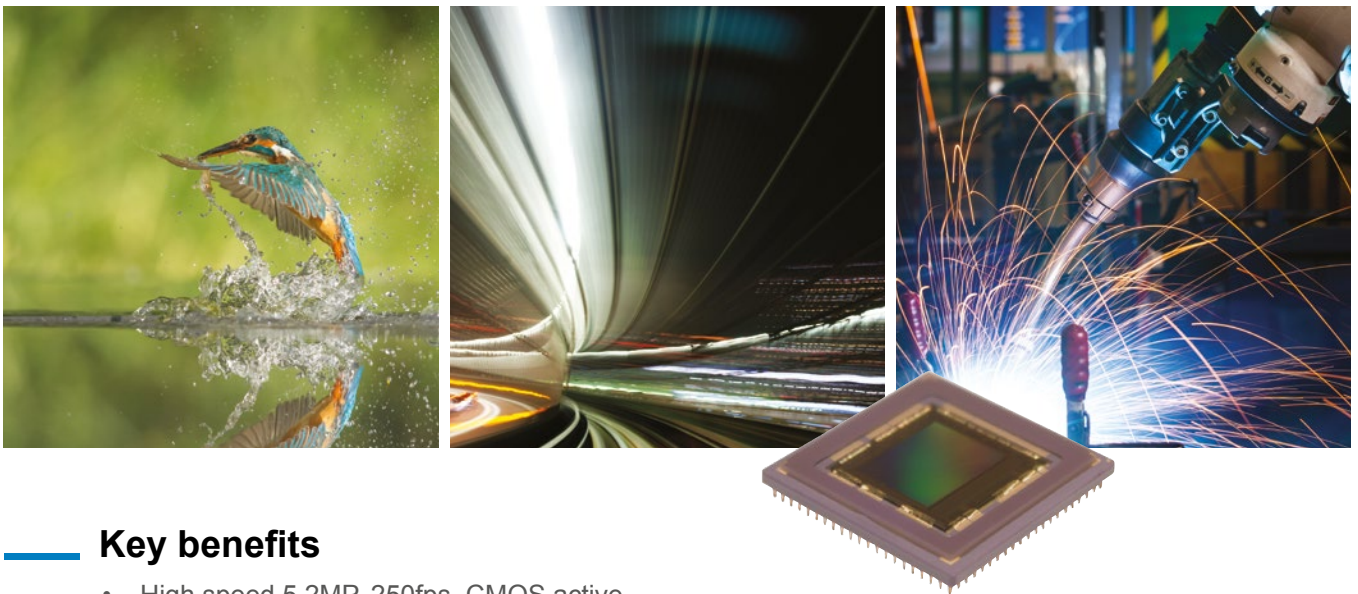


5.2 megapixels, 1 inch, 250fps, global shutter CMOS image sensor



Key benefits

- High speed 5.2MP, 250fps, CMOS active pixel image sensor
- Global shutter with programmable exposition time and linear and HDR sensing
- Configurable pixel for linear light or HDR response
- 58dB dynamic range (DR)
- 42dB SNRmax
- More than 100dB dynamic range for HDR
- 2 x 2 and 4 x 4 CMOS pixel binning for increased SNR & DR
- Pixel binning, windowing, and sub-sampling
- FPN & defective pixel correction (vertical & horizontal)
- Per pixel selectable analog gain (in color version)
- Per color fine digital gain & offset
- Programmable per color look-up tables (LUT)
- 2W maximum power consumption

Typical applications

- High-speed, high resolution machine vision
- Intelligent Transportation Systems (ITS)
- Generic inspection
- High speed video broadcasting
- Low noise high dynamic range
- Biometric & medical imaging

Sensor overview

Lince5M is a digital high speed image sensor designed for excellent performance in a large variety of applications. It incorporates a high speed 5.2Mpxl CMOS active pixel image sensor providing electronic global shutter and High Dynamic Range (HDR) features. The sensor array utilizes active CMOS pixels with pinned photodiodes to deliver high image quality whilst maintaining the size, cost, and integration advantage of the CMOS process.

The pixel response can be configured for either linear light response with 58dB or high dynamic range piecewise linear response with more than 100dB dynamic range.

All the features and CIS functions are programmable through a simple four wire standard Serial Peripheral Interface (SPI). The device includes 24 LVDS high speed outputs allowing image data to be transferred at up to 12-bit/sec, with 2 additional LVDS ports for clock recovery and image synchronization. Lince5M also offers a CMOS-output version, in which image data is transmitted via 16 CMOS output buffers, for those applications where LVDS receivers are not available.

The whole system runs with an external clock of 9.6MHz and all required timing and reference voltages are internally generated, thus minimizing the need for external components. It includes a power down capability for very low power consumption.

The complete camera reference design, including fully documented PCB schematics, PCB layout, FPGA firmware and communication, and embedded control software is available for customers willing to develop new cameras using the Lince5M image sensor.

Sensor characteristics

Optical format	1 inch
Active imager size	12.8mm x 10.24mm
Active pixel	2,560 x 2,048
Pixel size	5µm x 5µm
Pixel type	5T active pixel pitch with pinned photodiode
Shutter type	Electronic global shutter with programmable exposition time
Frame rate	Up to 250fps @ full resolution
Sensing modes	Linear and HDR
Dynamic range	58dB
SNRmax	42dB
PRNU	0.5%
DSNU	50 e-/sec, 10DN 12-bit/sec
Fill factor & QE	63%
Sensitivity	13,400 DN 12-bit/(lux sec)

Miscellaneous

Power supply	Dual 3.3V/1.8V
LVDS	Selectable active LVDS ports for a given frame rate
Maximum power consumption	2W
Operating junction temperature	-40°C to +125°C
Packages	181 pin micro PGA ceramic Low cost 84 pin CLCC