

PYTHON5000

CMOS Image Sensor, 5.3 MP, Global Shutter

Product Overview

For complete documentation, see the data sheet.

The PYTHON 5000 is a 1 inch 5.3 megapixel CMOS image sensor with a pixel array of 2592 by 2048 pixels.

The high sensitivity 4.8 μm x 4.8 μm pixels support low noise “pipelined” and “triggered” global shutter readout modes. Furthermore the correlated double sampling (CDS) support in global shutter mode results in reduced noise and increased dynamic range.

The sensor has on-chip programmable gain amplifiers and 10-bit A/D converters. The integration time and gain parameters can be reconfigured without any visible image artifact. Optionally the on-chip automatic exposure control loop (AEC) controls these parameters dynamically. The image’s black level is either calibrated automatically or can be adjusted by adding a user programmable offset.

A high level of programmability using a four wire serial peripheral interface enables the user to read out specific regions of interest. Up to 16 regions can be programmed, achieving even higher frame rates. The P1 version of the sensor operates with 8 LVDS lanes, facilitating frame rates up to 100 frames per second in Zero ROT mode. P3 versions operate with 4 LVDS lanes, enabling frame rates up to 45 fps in Zero ROT mode. Each channel runs at 720 Mbps. A separate synchronization channel containing payload information is provided to facilitate the image reconstruction at the receiving end.

The PYTHON 5000 is packaged in a 84-pin LCC package and is available in monochrome, color and extended Near Infrared (NIR) versions both with and without protective tape.

PYTHON Image Sensors Add Vision To Mars Perseverance EDL. Learn more about it through the [Mars Perseverance Rover Case Study](#)

Features

- IP-CDS global shutter technology
- True HW scalable family concept
- High configurability
- Fast adaptability
- Multiple windowing
- Higher frame rates
- High Dynamic Range

Applications

- Image Capture














Benefits

- Enables global shutter imaging with single digit noise performance
- Easily adopt multiple resolutions (5 resolutions with single PCB)
- High flexibility to optimize sensor for customer application
- Fast switching between operating modes
- Speed increase from windowing in x- and y- direction
- Faster image capturing capabilities
- Retain image detail in high-contrast scenes

End Products

- Industrial cameras and systems
- Inspection systems (food, bottles, recycling labels)
- Machine Vision camera
- Medical Imaging Systems
- Intelligent Transportation Systems (ITS) camera

Part Electrical Specifications

Product	Pricing (\$/Unit)	Compliance	Status	Type	Megapixels	Frame Rate (fps)	Optical Format	Shutter Type	Pixel Size (µm)	Output Interface	Color	Package Type
NOIP1FN5000A-QTI		 	Active	CMOS	5.3	100	1 inch	Pipeline d and Triggered Global	4.8 x 4.8	LVDS	NIR	LCC-84
NOIP1SE5000A-LTI		 	Active	CMOS	5.3	100	1 inch	Pipeline d and Triggered Global	4.8 x 4.8	LVDS	Bayer Color	LBGA-128
NOIP1SE5000A-QTI		 	Active	CMOS	5.3	100	1 inch	Pipeline d and Triggered Global	4.8 x 4.8	LVDS	Bayer Color	LCC-84
NOIP1SN5000A-LTI		 	Active	CMOS	5.3	100	1 inch	Pipeline d and Triggered Global	4.8 x 4.8	LVDS	Mono	LBGA-128
NOIP1SN5000A-QTI		 	Active	CMOS	5.3	100	1 inch	Pipeline d and Triggered Global	4.8 x 4.8	LVDS	Mono	LCC-84
NOIP3SE5000A-QTI		 	Active	CMOS	5.3	45	1 inch	Pipeline d and Triggered Global	4.8 x 4.8	LVDS	Bayer Color	LCC-84
NOIP3SN5000A-QTI		 	Active	CMOS	5.3	45	1 inch	Pipeline d and Triggered Global	4.8 x 4.8	LVDS	Mono	LCC-84