EnviroSen
For a future more sensitive to the environment.

# eIMAG-I

24.5 Mpixel CMOS Image Sensor

## Features

eIMAG-I is a 24.5 Mpixel pipeline global shutter CMOS Imager for environmental monitoring and machine vision applications.

### Pixel

- 5T 6.4µm × 6.4µm Pixel
- 6144 × 4000 active pixels (2D stitched from an array of 1536 × 2000)
- Monochrome/color
- Bayer Pattern Color Filter

### Readout Channel

- Pipeline Readout
- 3-bit Programmable Gain Amplifier
- Programmable 12-bit SAR ADC
- Delta Sampling
- 48 CMOS IO @ 100Mbps
- Serial Interface

### Imager

- Front-side Illuminated
- Global Shutter Mode
- 0.18µm CMOS
- 20fps at Full Resolution
- Programmable Region of Interest (down to 8×8 pixels)
- On-chip Regulator and Bias Generation
- Operating range: -40 to +85 $^{o}$C

### Power

- 1.8V Digital Supply
    - 0.3W @ 20fps
- 3.3V Analog Supply
    - 0.5W @ 20fps

## Status

- Under Development (available early 2017)

## Applications

- Environmental monitoring
- Machine vison
- Traffic systems
- Motion monitoring

## Description

eIMAG-I functional block diagram is shown in Fig. 1. The Image sensor has an array of 6144 × 4000 that is divided to a top and bottom sections with independent read-out channels. This allows for simultaneous read-out of the sub-arrays. 2D stitching technique is utilized to achieve resolution of 24.5 Mpixels. The highly sensitive 5T 6.4µm × 6.4µm pixels support both global shutter mode and low-noise rolling shutter mode. The read-out channel consists of column parallel column driver and programmable gain amplifier (PGA) with 3-bit gain setting. Each eight PGA is interfaced with a low-power 12-bit pipeline SAR ADC. The image sensor achieves a maximum frame rate of up-to 20fps at full resolution. It can be programmed to allow read-out from a specific section achieving a higher-frame rate. The image sensor data interface consists of 48 CMOS drivers running at 100Mpbs. All the required clock signals and on-chip regulators and bias generation circuits provide all the bias voltages and currents. The Imager consumes 0.3W from a digital 1.8V supply and 0.5W from a 3.3V analog supply at maximum frame rate and resolution. The image sensor is available in monochromic and color versions.

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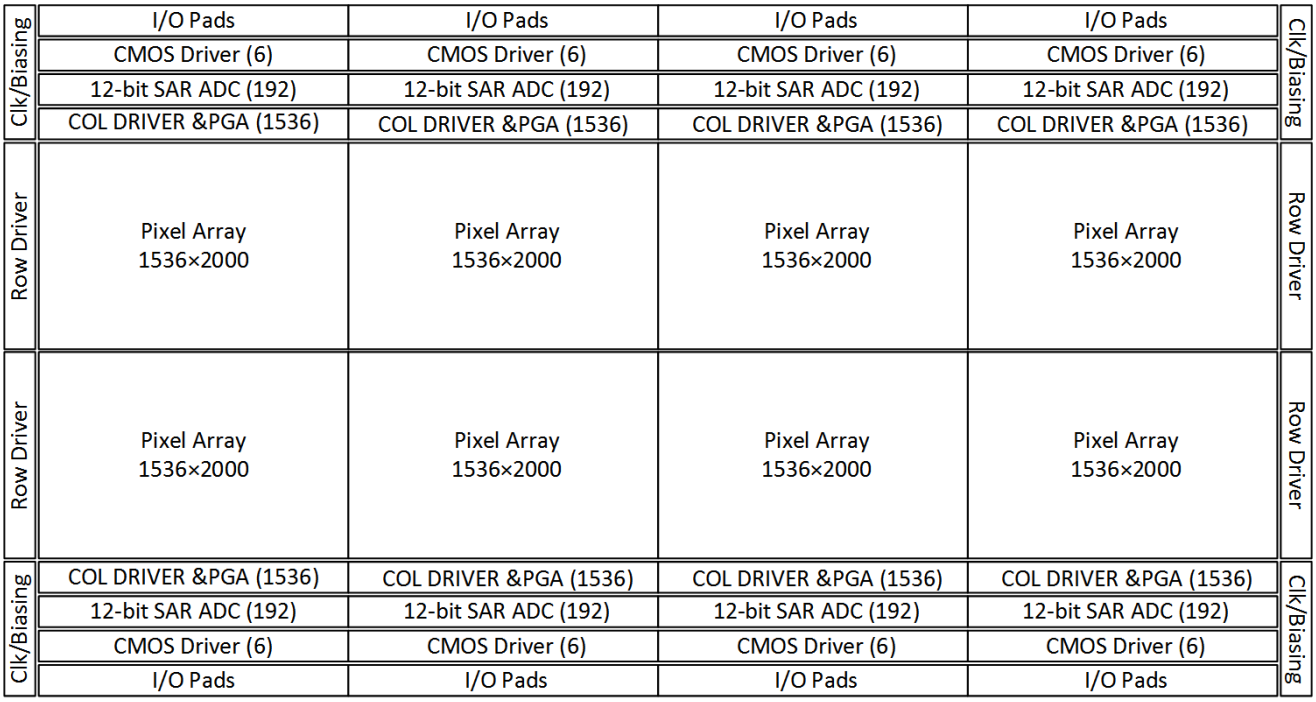


Fig. 1, eIMGA-I block diagram