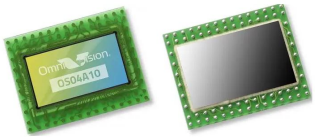

OMNIVISION OS04A10 Expands Resolution To 4 Megapixels In Image Sensor User Guide

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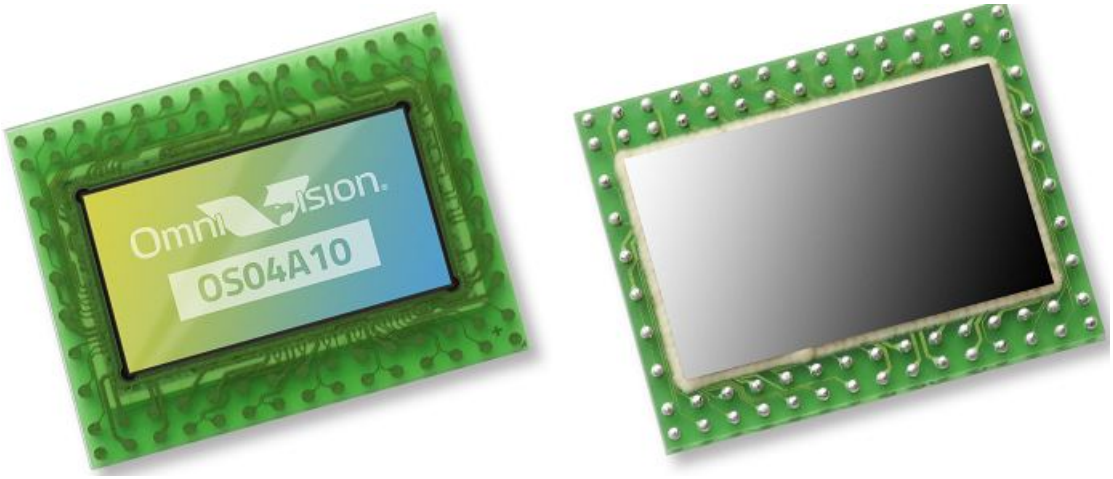


Product Information

The OS04A10 is a 4-megapixel image sensor designed for various applications, including security cameras. It incorporates advanced technologies such as QE (Quantum Efficiency) and DCGTM (Dual Conversion Gain) to

deliver superior performance.

The OS04A10 features excellent QE, allowing for lower power IR illumination in total darkness. This reduces system-level power consumption by an estimated 3x. It supports 940 nm NIR lighting, which is undetectable by human eyes in dark indoor settings, and 850 nm light, which is ideal for outdoor security cameras.

This image sensor achieves industry-leading SNR1850nm and SNR1940nm performance, surpassing competitors' sensors by 2x to 3x. The integrated DCGTM technology provides outstanding Ultra-Low Light (ULL) and high dynamic range (HDR) performance. It also offers greater flexibility in selecting a companion image signal processor.

For more information about the OS04A10, visit **www.ovt.com**.

Product Usage Instructions

To use the OS04A10 image sensor, follow these instructions:

1. Connect the OS04A10 to a compatible image signal processor using the provided image interface.
2. Ensure that the OS04A10 is powered using the appropriate power source.
3. If required, adjust the gain control settings to optimize image quality.
4. Connect any additional peripherals or devices to the GPIO ports as necessary.
5. Refer to the control register bank for any specific configuration settings or adjustments.
6. If using the SCCB interface, connect the necessary pins (SID, SCL, SDA) accordingly.
7. Provide an external clock signal (EXTCLK) if required.
8. Use the XSHUTDOWN pin to control the power state of the OS04A10.
9. Refer to the product's technical specifications for detailed information on its functionality and performance.

Note: OMNIVISION reserves the right to make changes or discontinue the product without notice. Please refer to the official website for the most up-to-date information.

4-megapixel product brief

4-Megapixel Nyxel® NIR and Ultra Low Light Image Sensor

- OMNIVISION's OS04A10 is a 2.9 µm pixel size, 4-megapixel (MP) resolution member of its industry-leading Nyxel® near-infrared (NIR) and ultra-low light (ULL) image sensor family. It provides security cameras with greater zoom range and AI-enabled surveillance systems with better object identification and facial authentication accuracy. Additionally, it maintains the industry's best performance, day and night, for detecting incident light in both the visible and NIR wavelengths to produce even more precise color and monochrome images. The OS04A10 also features OMNIVISION's PureCel®Plus-S die stacking technology, which enables its extremely small package and large 2.9 micron pixel size.
- OMNIVISION's Nyxel® NIR technology imparts the OS04A10 with exceptional quantum efficiency (QE) of 60% at 850 nm and 40% at 940 nm, which is 3x to 5x better than sensors without this technology. This excellent QE enables the use of lower power IR illumination in total darkness, resulting in an estimated 3x reduction in system-level power consumption. Additionally, 940 nm NIR lighting cannot be detected by human eyes in dark indoor settings, while the 850 nm light is ideal for outdoor security cameras.
- The OS04A10 achieves industry leading SNR1850nm and SNR1940nm performance that is 2x to 3x smaller

when compared with the leading known available competitor sensors. Additionally, OMNIVISION's integrated DCG™ (dual conversion gain) technology provides the industry's best ULL and high dynamic range (HDR) performance, along with greater flexibility in selecting a companion image signal processor.

- Find out more at **www.ovt.com**.

Applications

- security cameras
- action cameras
- high resolution consumer cameras

Product Features

- QE enhancement in NIR range
- support for image size:
  - 2688 x 1520
  - VGA
  - QVGA, and any cropped size
- high dynamic range
- high sensitivity
- image sensor processor functions:
  - defective pixel cancelation
  - DCG™ combination
  - automatic black level correction
  - PWL compression, etc.
- pixel data: 12b RAW RGB
- SCCB for register programming
- programmable GPIOs
- high speed serial data transfer with MIPI CSI-2 or LVDS
- external frame synchronization capability
- embedded temperature sensor
- one-time programmable (OTP) memory

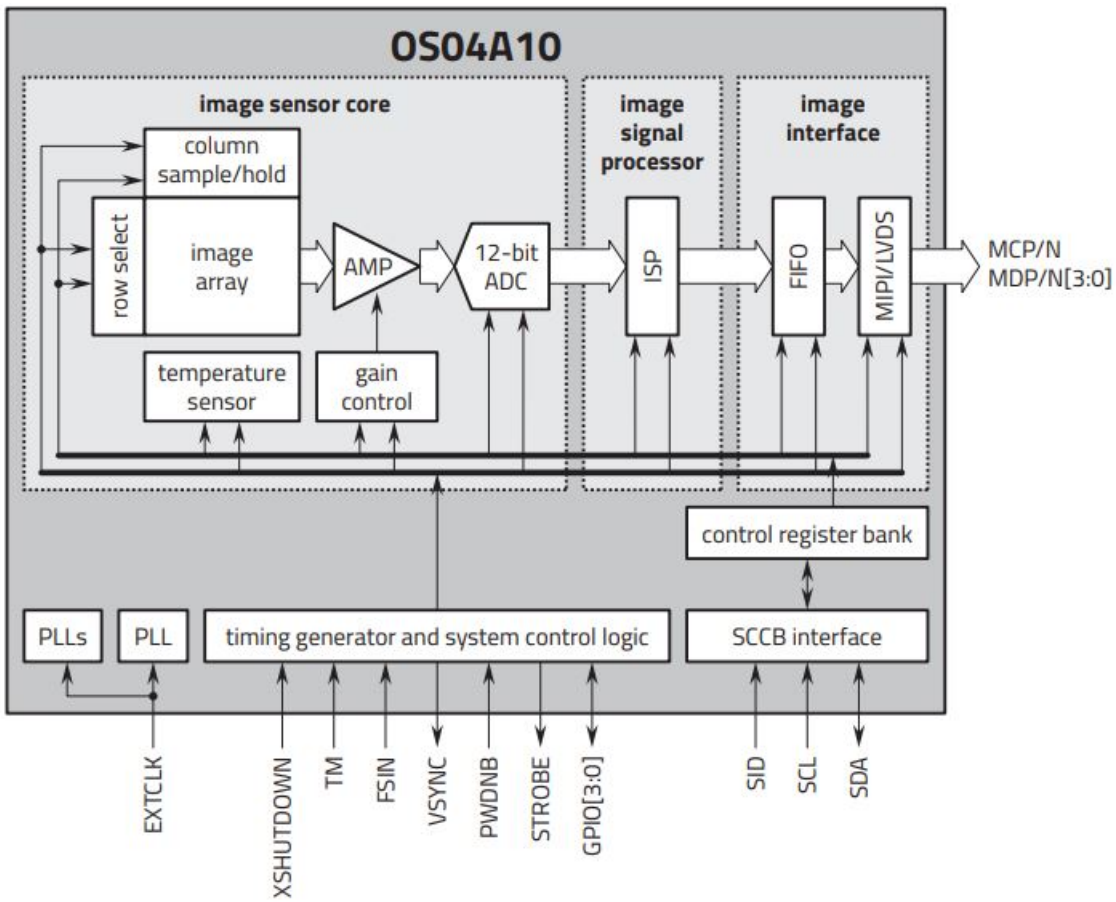
Technical Specifications

- **active array size:** 2688 x 1520
- **maximum image transfer rate:** 30×3 fps @ 1520p
- **power supply:**
  - analog: 2.8V
  - digital: 1.2V
  - I/O pads: 1.8V
- **power requirements:**
  – active: 300 mW
- **temperature range:**

– operating: -30°C to +85°C junction temperature

- **output interfaces:**
  up to 4-lane MIPI CSI-2 or LVDS
- **lens size:** 1/1.79″
- lens chief ray angle: 9°
- scan mode: progressive
- shutter: rolling shutter
- **output formats:** single exposure HDR – 16- bit combined RAW, 12-bit (PWL) compressed combined RAW; dual exposure HDR – 16-bit combined RAW
  + 12-bit VS RAW, 12-bit (PWL) compressed combined RAW + 12-bit VS RAW; 3-exposure HDR – 12-bit long exposure + 12-bit medium exposure +12-bit short exposure
- **pixel size:** 2.9 µm x 2.9 µm
- **image area:** 7841.6 µm x 4454.4 µm

Functional Block Diagram



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Documents / Resources

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