



OS04A10



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 $\text{SNR}_{1850\text{nm}}$ and $\text{SNR}_{1940\text{nm}}$ 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.



- OS04A10-I72A-1B (color, lead-free)
72-pin fan-out package

Applications

- security cameras
- high resolution consumer cameras
- action cameras

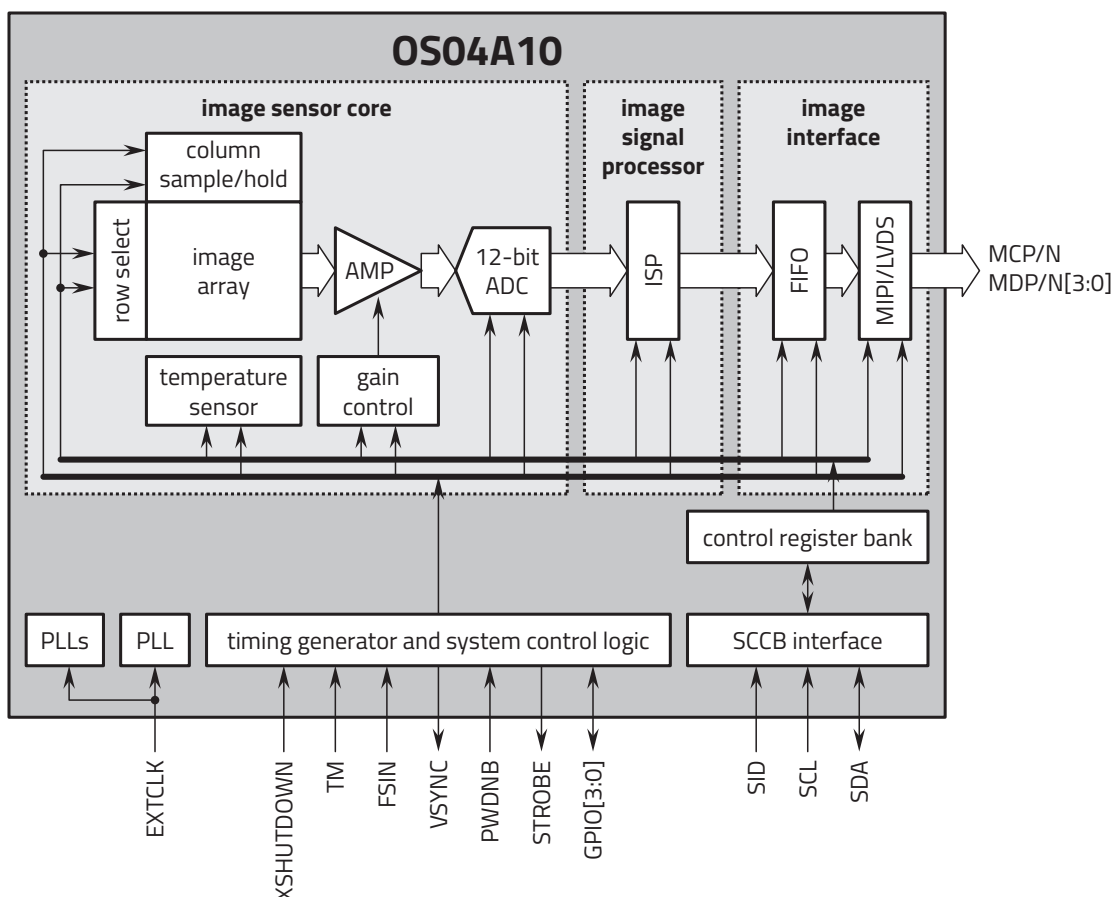
Product Features

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

Technical Specifications

- active array size: 2688 x 1520
- lens chief ray angle: 9°
- maximum image transfer rate: 30x3 fps @ 1520p
- scan mode: progressive
- shutter: rolling shutter
- 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 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
- output interfaces: up to 4-lane MIPI CSI-2 or LVDS
- lens size: 1/1.79"

Functional Block Diagram



Version 1.2, June 2023

