



# OX12A10

## 12-megapixel product brief



### 12MP Automotive Image Sensor Features TheiaCel™ Technology for LED-Flicker-Free Exterior Cameras

The OX12A10 12-megapixel (MP)-resolution CMOS image sensor features industry-leading low power and lowlight performance in a compact size. It is the first 12MP image sensor to feature OMNIVISION's 2.1-micron ( $\mu\text{m}$ ) TheiaCel™ technology, which harnesses the capabilities of next generation lateral overflow integration capacitors (LOFIC), together with OMNIVISION's DCG™ high dynamic range (HDR) technology, to eliminate LED flicker regardless of lighting condition – and without sacrificing image quality. The

OX12A10 is ideal for high-performance front machine vision cameras for advanced driver assistance systems (ADAS) and autonomous driving (AD).

The new OX12A10 features OMNIVISION's new a-CSP+™ package technology for the smallest possible solution. Samples are available now and the OX12A10 will be in mass production in Q3 2025.

Find out more at [www.ovt.com](http://www.ovt.com).



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## Ordering Information

- OX12A10-F24U-001A-Z (RGGB, lead-free) 124-pin a-CSP+™, packed in tray without protective film
- OX12A1G-F24U-001A-Z (RCCG, lead-free) 124-pin a-CSP+™, packed in tray without protective film

## Applications

- automotive
  - high resolution front viewing
  - machine vision
- autonomous driving
- digital video recording

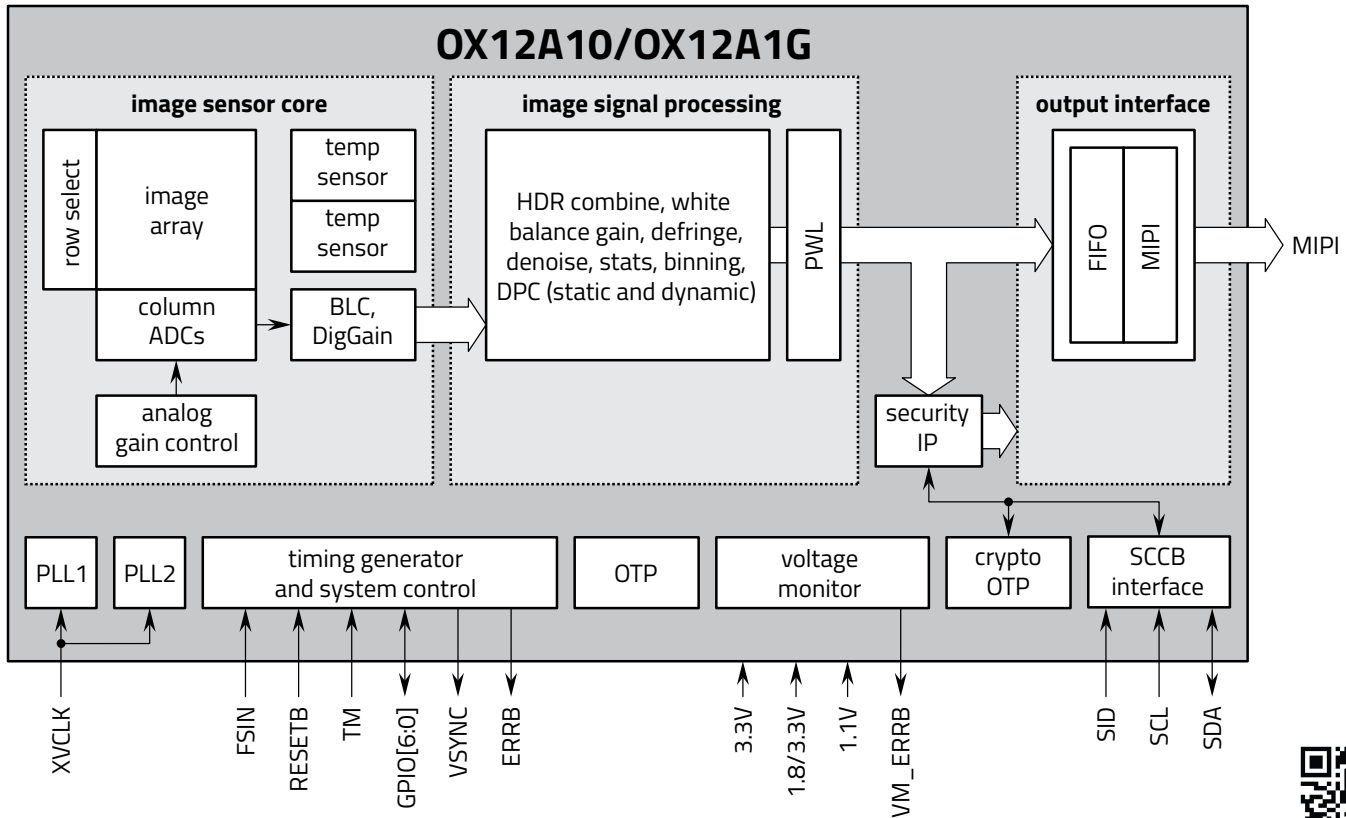
## Technical Specifications

- active array size:** 4624 x 2600
- temperature range:**
  - operating: -40°C to +105°C ambient temperature and -40°C to +125°C junction temperature
- maximum image transfer rate:**
  - 30 fps @ 4624 x 2600
- power supply:**
  - analog: 3.3V
  - digital: 1.1V
  - I/O pins: 1.8V or 3.3V
- power requirements:**
  - active: 946 mW (estimated) (full frame @ 30 fps, HDR4 combined 20-bit)
- output interfaces:**
  - up to 4-lane MIPI CSI-2
- lens size:** 1/1.43"
- lens chief ray angle:** 37.24° non-linear
- output formats:** 10-bit RGB RAW
- pixel size:** 2.1 µm x 2.1 µm
- image area:** 9727.2 µm x 5476.8 µm

## Product Features

- support for image size: 4624 x 2600 and any cropped size
- up to 4 captures and on-chip combination HDR output:
  - DCG™ + LOFIC + VS
  - LCG + LOFIC + VS
  - PWL mapping 24-bit to 20-, 16-, 14-, or 12-bit
- support for LED flicker mitigation (LFM) using LOFIC
- SCCB for register programming
- high speed serial data transfer with MIPI CSI-2
- ASIL-B compliant
- image signal processor functions:
  - white balance gain
  - defective pixel correction
  - defringe
  - denoise
  - HDR combination
  - PWL compression, etc.
- external frame synchronization capability
- embedded temperature sensor
- embedded supply voltage monitor
- one time programmable (OTP) memory

## Functional Block Diagram



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