

OX08A4Y 8.3MP product brief



8.3 Megapixel Automotive Image Sensor with 140 dB High Dynamic Range



available in a lead-free package

OmniVision's front-view OX08A4Y is a high-resolution 8.3MP image sensor with the automotive industry's best HDR of 140 dB. The optimal clarity and range offered by this sensor, in combination with integrated ASIL-C features, is vital for front-view automotive applications, such as ADAS and level 3+ autonomous vehicles, where the ability to accurately detect people and objects from far away in all lighting conditions is safety-critical.

The OX08A4Y utilizes OmniVision's dual conversion gain (DCG) technology to achieve 82 dB dynamic range on the first exposure, whereas competitors' image sensors only provide a dynamic range of 60 dB or less. Unlike DCG, the competing method, known as staggered HDR, relies on additional passes that introduce motion artifacts and diminish range, especially in low light.

The image sensor has a 1/1.73" optical format with a 2.1-micron pixel pitch. Furthermore, our PureCel[®]Plus-S stacked architecture enables each pixel to perform

optimally via higher full-well capacity for improved HDR. Additionally, the OX08A4Y has region-of-interest functionality for even clearer images of moving objects within fixed areas in the camera's field of view. To ensure the safety of images being used for machine vision applications, ultra low power cybersecurity is also integrated using industry-standard encryption techniques and consuming less than 10% of the sensor's total power budget.

The OX08A4Y offers 4-capture, 3840 x 2160 resolution at 36 fps and a 16:9 display aspect ratio. This image sensor will be available in different color-filter patterns to match the leading machine vision applications in the industry and is planned to be AEC-Q100 Grade 2 certified.

Find out more at www.ovt.com.



OmniVision.

Applications

- Automotive
 - High Resolution Front Viewing
 - Machine Vision
 - Autonomous Driving
- Assisted Driving
- Digital Video Recording

Product Features

- image size: 3840 x 2160 and any cropped size equal or larger than VGA
- PureCel™Plus-S technology
- high dynamic range
- high sensitivity
- image signal processor functions:
 - defect pixel correction
 - HDR combination
 - automatic black level correction
 - PWL compression, etc.
- SCCB for register programming
- dedicated safety features to fulfill ASIL C hardware metrics
- programmable GPIOs
- high speed serial data transfer with MIPI CSI-2
- external frame synchronization capability
- embedded temperature sensor
- one-time programmable (OTP) memory
- cybersecurity for camera/host interface hacking prevention

OX08A4Y



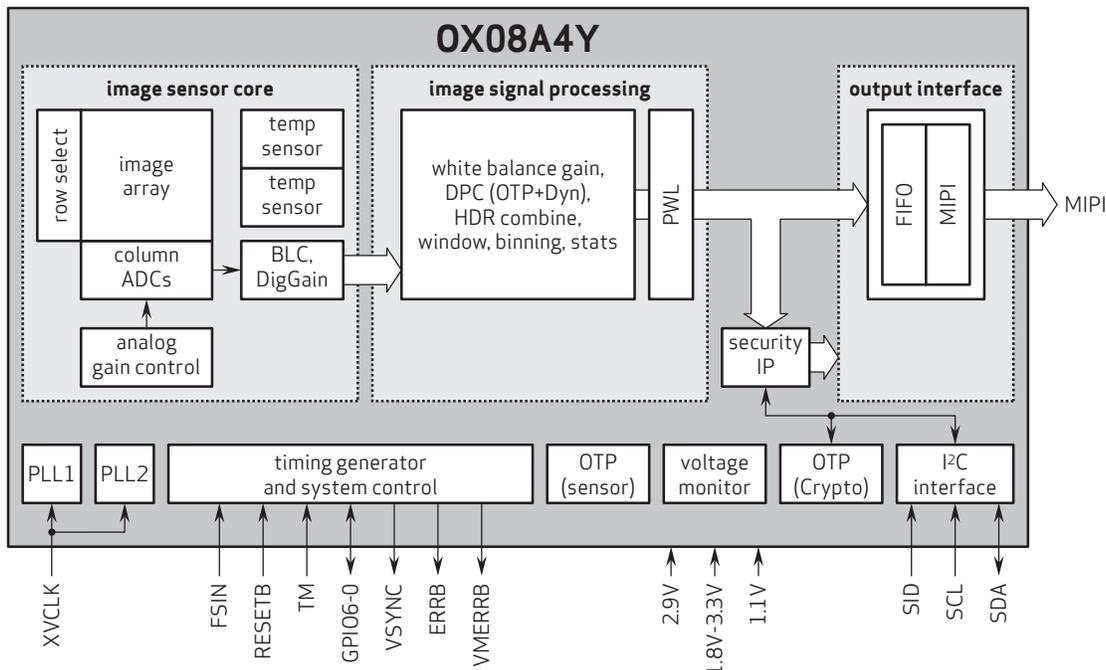
Ordering Information

- OX08A4Y-B86U-1A-Z** (RYYCy, lead-free)
86-pin a-BGA™ packed in tray without protective film, engineering special control grade (alpha sample)

Product Specifications

- active array size:** 3840 x 2160
- power supply:**
 - analog: 2.9V
 - digital: 1.1V
 - I/O pads: 1.8V/3.3V
- power requirements:**
 - active: streaming @ 4K36: 743 mW typical (4 captures), 634 mW typical (3 captures)
- temperature range:**
 - operating: -40°C to +105°C sensor ambient temperature and -40°C to +125°C junction temperature
- output interfaces:** up to 4-lane MIPI CSI-2
- input clock frequency:** 18 - 27 MHz
- lens size:** 1/1.73"
- lens chief ray angle:** 9°
- SCCB speed:** up to 1 MHz
- scan mode:** progressive
- shutter:** rolling shutter
- output formats:** uncompanded 24-bit, 20/16/14/12-bit (PWL) combined HDR
- maximum image transfer rate:** - 4K: 36 fps
- sensitivity:** 20,000 e⁻/lux-sec (yellow pixel response with 5100K illumination)
- max S/N ratio:** 42.6 dB
- dynamic range:** 120 dB (DCG + VS), 140 dB (DCG + S + VS)
- pixel size:** 2.1 μm x 2.1 μm
- image area array:** 8097.6 μm x 4569.6 μm
- package cover glass type:** double sided anti-reflective (AR/AR) coating (without IRCF)
- package dimensions:** - a-BGA™: 11 mm x 8 mm

Functional Block Diagram



4275 Burton Drive
Santa Clara, CA 95054
USA

Tel: + 1 408 567 3000
Fax: + 1 408 567 3001
www.ovt.com

OmniVision reserves the right to make changes to their products or to discontinue any product or service without further notice. OmniVision, the OmniVision logo, and PureCel are registered trademarks of OmniVision Technologies, Inc. a-BGA is a trademark of OmniVision Technologies, Inc. All other trademarks used herein are the property of their respective owners.



OmniVision