



OX08B40

8.3-megapixel product brief



8.3-Megapixel Automotive Image Sensor with LED Flicker Mitigation and 140 dB High Dynamic Range

OMNIVISION's OX08B40 is a front-view, 8.3MP image sensor that features the automotive industry's best HDR of 140 dB and adds a new benchmark in LED flicker mitigation (LFM) performance, enabled by the sensor's on-chip HALE (HDR and LFM engine) combination algorithm. 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 OX08B40 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. Additionally, our 3D stacking technology allowed us to integrate our unique HALE combination algorithm into the OX08B40.

With OMNIVISION's 4-cell technology, we can offer the industry's best LFM with optimal low-light performance in a 1/1.73" optical format that has 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 OX08B40 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 OX08B40 offers 4-capture, 3840 x 2160 resolution at 36 fps and a 16:9 display aspect ratio. It 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.



- OX08B40-B86Y-001F (color, lead-free)
86-pin a-BGA™, revision 1F

Applications

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

Technical Specifications

- active array size:** 3840 x 2160
- maximum image transfer rate:**
 - 4K: 36 fps
- 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)
- output formats:** uncompanded 24-bit, 20/16/14/12-bit (PWL) combined HDR
- 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
- lens size:** 1/1.73"
- lens chief ray angle:** 18°
- scan mode:** progressive
- pixel size:** 2.1 μm x 2.1 μm
- image area:** 8097.6 μm x 4569.6 μm

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.
- dedicated safety features to fulfill ASIL C hardware metrics
- programmable GPIOs
- SCCB for register programming
- high speed serial data transfer with MIPI CSI-2
- external frame synchronization capability
- embedded temperature sensor
- one-time programmable (OTP) memory
- support for LED flicker mitigation (LFM) function
- cybersecurity for camera / host interface hacking prevention

Functional Block Diagram

