

OX03A1Y 2.5MP product brief



available in
a lead-free
package

Industry-Leading Ultra Low-Light Performance and High Dynamic Range for a Wide Range of Automotive Applications

OmniVision's OX03A1Y is a high-performance, low-power 3.2 μm OmniBSI™-2 image sensor designed for a wide range of advanced automotive imaging applications, including 360-degree surround view, rear view, blind-spot detection, e-mirrors, and lane departure warning. Its color filter combination RCCB, enables a very high sensitivity in low light, making it an ideal sensor for machine vision applications.

The 2.5-megapixel sensor uses OmniVision's proprietary Deep Well™ pixel technology to deliver industry-leading low-light sensitivity, and enables up to 90 dB of high dynamic range (HDR) from a single exposure without any decrease in signal-to-noise ratio and without motion artifacts. The OX03A1Y also features dual-exposure HDR mode that can extend the sensor's dynamic range to more than 120 dB.

The OX03A1Y can output multiple resolution formats, including 1920 x 1280 resolution video at 50 frames per second (fps) and 1920 x 1080 resolution video at 60 fps.

The sensor comes in an AEC-Q100 Grade 2 qualified 8.0 x 7.2 mm chip-scale package and has been developed according to ISO 26262 ASIL B requirements.

Find out more at www.ovt.com.



Applications

- Automotive
 - Machine Vision
 - 360° Surround View System
 - Rear View Camera
- Lane Departure Warning / Lane Keep Assist
- E-mirrors
- Autonomous Driving

Product Specifications

- active array size:** 1920 x 1280
- power supply:**
 - analog: 3.3V
 - digital: 1.2V
 - I/O pads: 1.8V
- power requirements:**
 - active: streaming @ 1280p50: 370 mW (with FuSa/ASIL off)
- 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:** 6 - 36 MHz
- lens size:** 1/2.44"
- lens chief ray angle:** 19.7°
- SCCB speed:** up to 1 MHz
- scan mode:** progressive
- shutter:** rolling shutter
- max S/N ratio:** 45.4 dB
- 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
- maximum image transfer rate:**
 - 1280p: 50 fps
 - 1080p: 60 fps
 - 1280p (with FuSa/ASIL on): 40 fps
 - 1080p (with FuSa/ASIL on): 45 fps
- sensitivity:** 60,000 e⁻/lux-sec (clear pixel response under 5100K illumination)
- dynamic range:**
 - 90 dB single exposure HDR
 - >120 dB dual exposure staggered HDR
- pixel size:** 3.2 μm x 3.2 μm
- image area:** 6195.2 μm x 4147.2 μm
- package cover glass type:** double sided anti-reflective (AR/AR) coating (without IRCF)
- package dimensions:**
 - a-CSP™: 8034 μm x 7210 μm

OX03A1Y



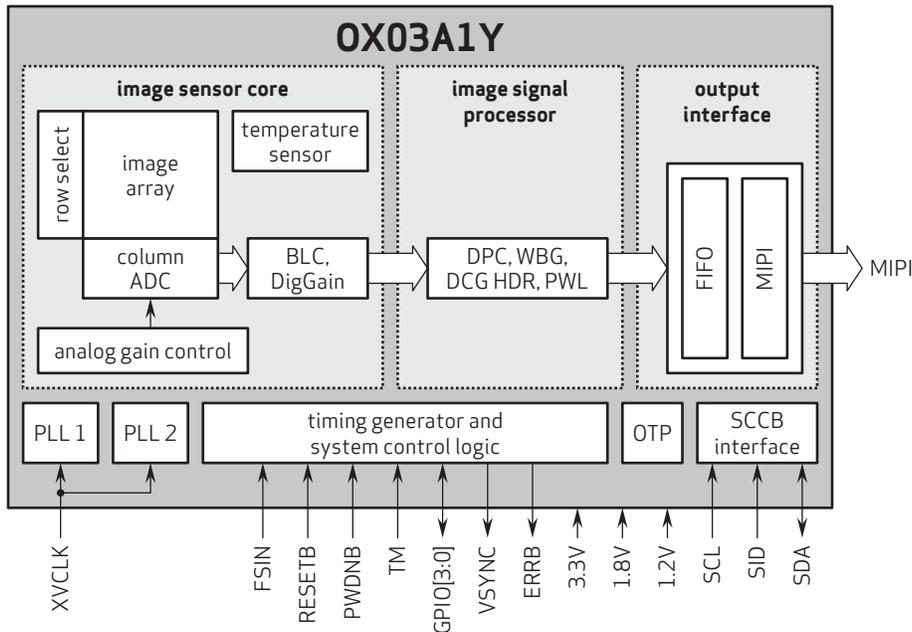
Ordering Information

- OX03A1Y-E80Y-1F-Z** (RCCB, lead-free)
80-pin a-CSP™ packed in tray without protective film
- OX03A1Y-E80Y-SF-Z** (RCCB, lead-free)
80-pin a-CSP™ packed in tape and reel with protective film

Product Features

- support for image size:
 - 1920 x 1280
 - 1920 x 1080
 - VGA
 - QVGA, and any cropped size
- high dynamic range
- low-light sensitivity
- high sensitivity
- image sensor processor functions:
 - defective pixel cancelation
 - HDR combination
 - automatic black level correction
 - PWL compression, etc.
- pixel data: 12b RAW RGB
- SCCB for register programming
- dedicated safety features for supporting minimum ASIL B applications
- programmable GPIOs
- high speed serial data transfer with MIPI CSI-2
- external frame synchronization capability
- embedded temperature sensor
- one time programmable (OTP) memory

Functional Block Diagram



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