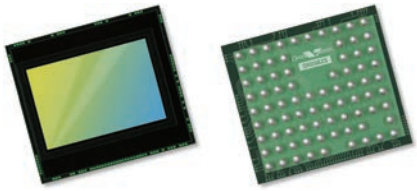
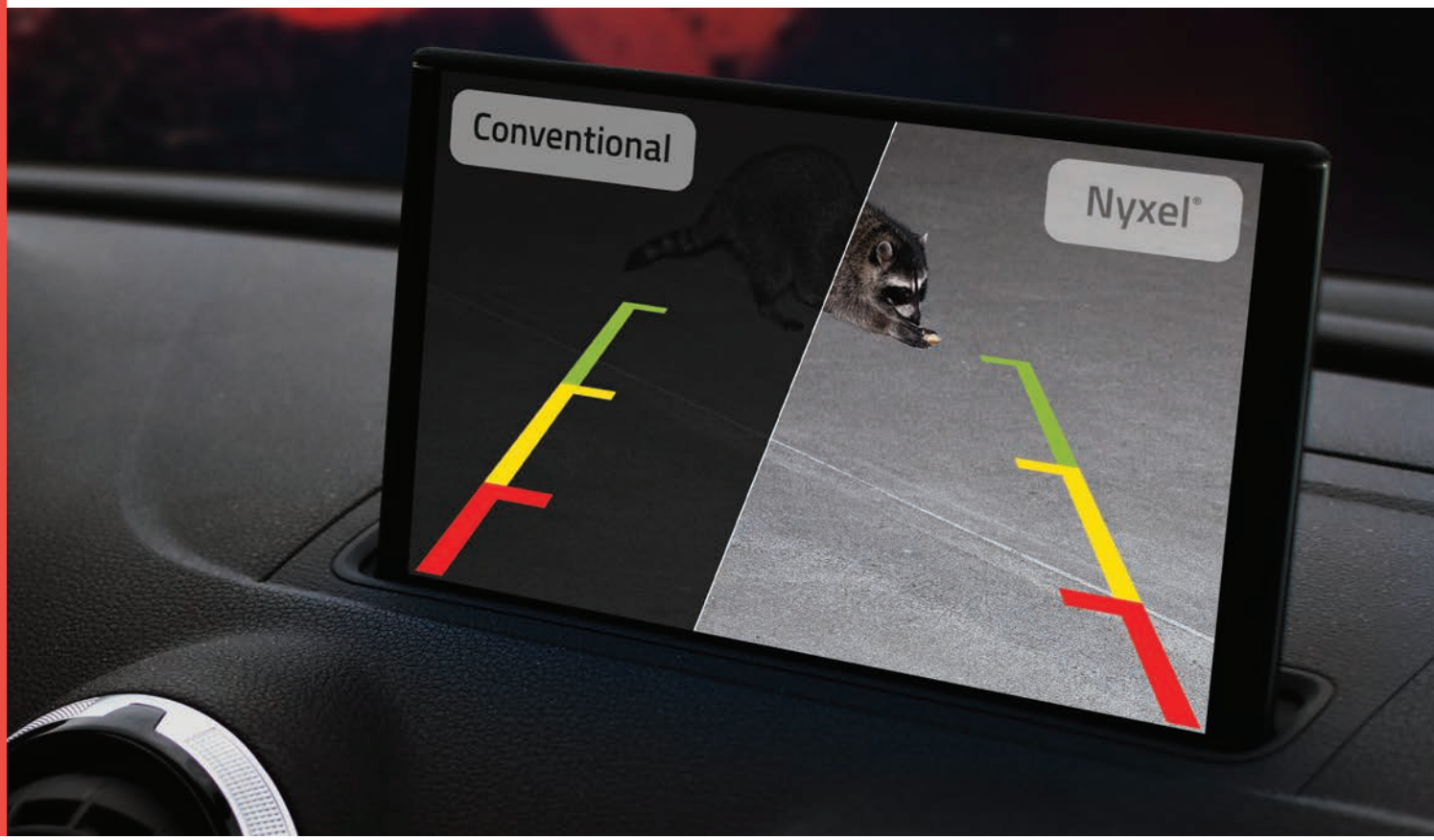


OX03A2S 2.5MP product brief



lead free

available in a lead-free package

2.5 Megapixel Automotive Image Sensor with Nyxel® Technology for Best Low-Light, RGB-IR Performance in Exterior, Near Range Applications

OmniVision's OX03A2S is a 2.5 megapixel (MP), ASIL-B image sensor with a 3.2 micron pixel size and a 1/2.44" optical format. It provides the industry's best image quality, smallest size, highest 940 nm near-infrared sensitivity and lowest power consumption for exterior, short-range machine vision applications. This sensor is ideal for exterior imaging applications that operate in low to no ambient light conditions within 2 meters of the vehicle. The OX03A2S combines Nyxel® technology and a 3.2 micron pixel to provide the best low light performance of any automotive image sensor. This automotive imaging benchmark opens new possibilities for exterior, close-range cameras within the camera belt, operating in near or total darkness.

Nyxel® technology uses novel silicon semiconductor architectures and processes to achieve the world's best automotive quantum efficiency of 40% at the 940 nm NIR wavelength. This enables the OX03A2S to detect and recognize objects that other image sensors would miss under extremely low lighting conditions, enabling more capable safety systems. Nyxel® technology also enhances RGB image captures in bright conditions by improving sensitivity. This provides automotive designers with the flexibility to display a high quality, NIR-enhanced, viewable RGB image during the day, and a high quality machine vision image in both day and night environments.

The OX03A2S comes in an a-CSP™ package that is 50% smaller than the competition to keep cameras out of view and improve styling. Additionally, this sensor is AEC-Q100 Grade 2 certified.

Find out more at www.ovt.com.

OmniVision

OX03A2S

Applications

- In-Cabin Monitoring
- Autonomous Driving

Product Features

- support for image size:
  - 1920 x 1280
  - 1920 x 1080
  - VGA
  - QVGA, and any cropped size
- high dynamic range
- high sensitivity
- image sensor processor functions:
  - defective pixel cancelation
  - HDR combination
  - automatic black level correction
  - PWL compression, etc.
- pixel data: 12b RAW RGB-Ir
- 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

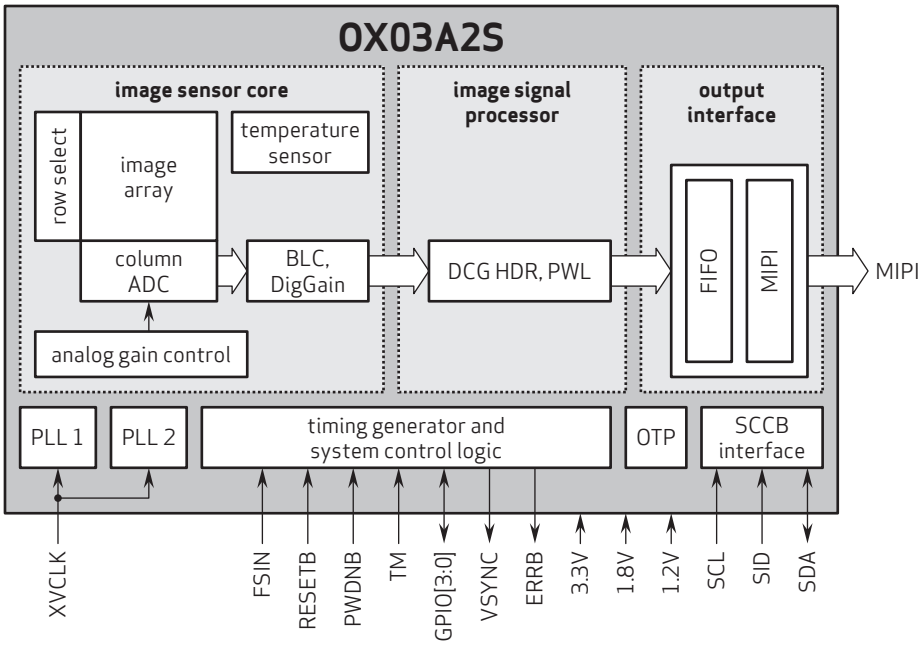
Ordering Information

- **OX03A2S-E80Y-001A-Z** (RGB-Ir, lead-free)
  80-pin a-CSP™ packed in tape and reel with protective film

Technical Specifications

- **active array size:** 1920 x 1280
- **maximum image transfer rate:**
  - **1280p:** 50 fps
  - **1080p:** 60 fps
- **power supply:**
  - **analog:** 3.3V
  - **digital:** 1.2V
  - **I/O pads:** 1.8V
- **power requirements:**
  - **active:** streaming @ 1280p50: 370 mW
- **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:** 1/2.44"
- **lens chief ray angle:** 19.7°
- **scan mode:** progressive
- **shutter:** rolling shutter
- **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
- **dynamic range:**
  >120 dB dual exposure staggered HDR
- **pixel size:** 3.2 µm x 3.2 µm
- **image area:** 6195.2 µm x 4147.2 µm

Functional Block Diagram



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