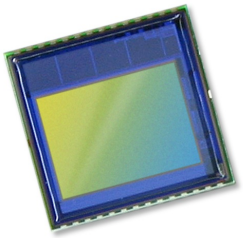

OMNI-VISION OX05B1S 5MP Sensor with 2.2um RGB-IR User Manual

Contents

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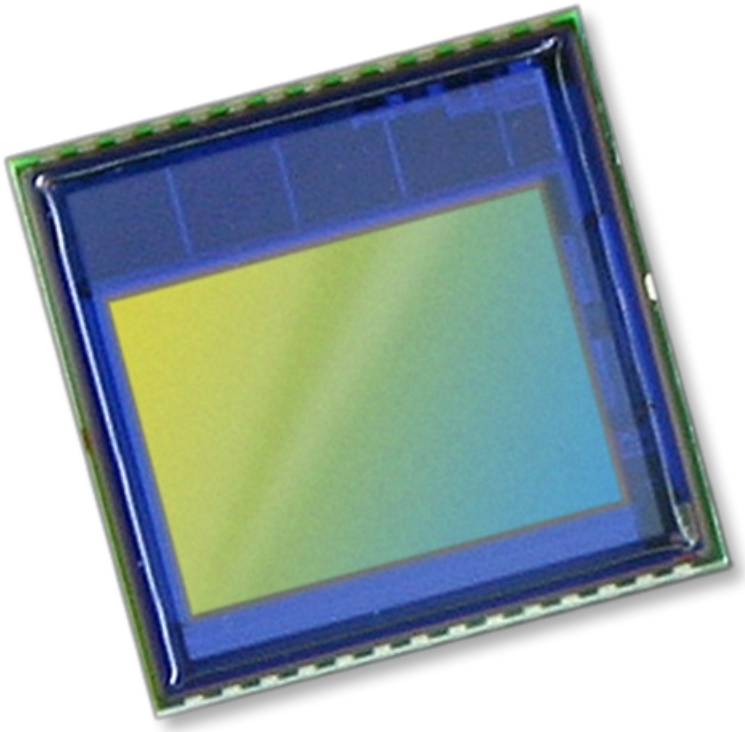


Automotive Industry's First 5MP RGB-IR Global Shutter Sensor for In-Cabin Driver Monitoring Systems

OmniVision's new OX05B is the automotive industry's first 5 megapixels (MP) RGB-IR BSI global shutter sensor for in-cabin applications. With a pixel size of just 2.2 µm, it offers 940 nm NIR sensitivity for the best performance in extremely low light conditions; it has a wide field of view and enough pixels to view both the driver and occupants. Additionally, it is the first RGB-IR sensor for in-cabin monitoring to feature integrated cybersecurity.

Based on OmniVision's revolutionary Nyxel® near-infrared (NIR) technology, the new OX05B brings dramatically improved resolution as well as overall enhanced efficiency and design flexibility to automotive OEMs. Nyxel® technology uses novel silicon semiconductor architectures and processes to achieve the world's best quantum efficiency (QE) at the 940 nm NIR wavelength. The OX05B has the industry's highest NIR QE at 36% (a 3x boost from 12% in the previous generation). This enables the OX05B to detect and recognize objects that other image sensors would miss under extremely low lighting conditions, enabling higher-performance in-cabin camera capabilities for improved occupant and driver monitoring, security, selfies, videoconferencing, and more. The sensor comes in an OmniVision stacked a-CSP™ package that is 50% smaller than competitive products and allows for higher-performance image sensors in tighter camera spaces. It is also available in a reconstructed wafer option for designers who want the flexibility to customize their own package. Find out more at **www.ovt.com**.

Applications

Automotive:

- Autonomous driving
- Driver monitor system
- Occupant monitor system
- In-cabin monitor system

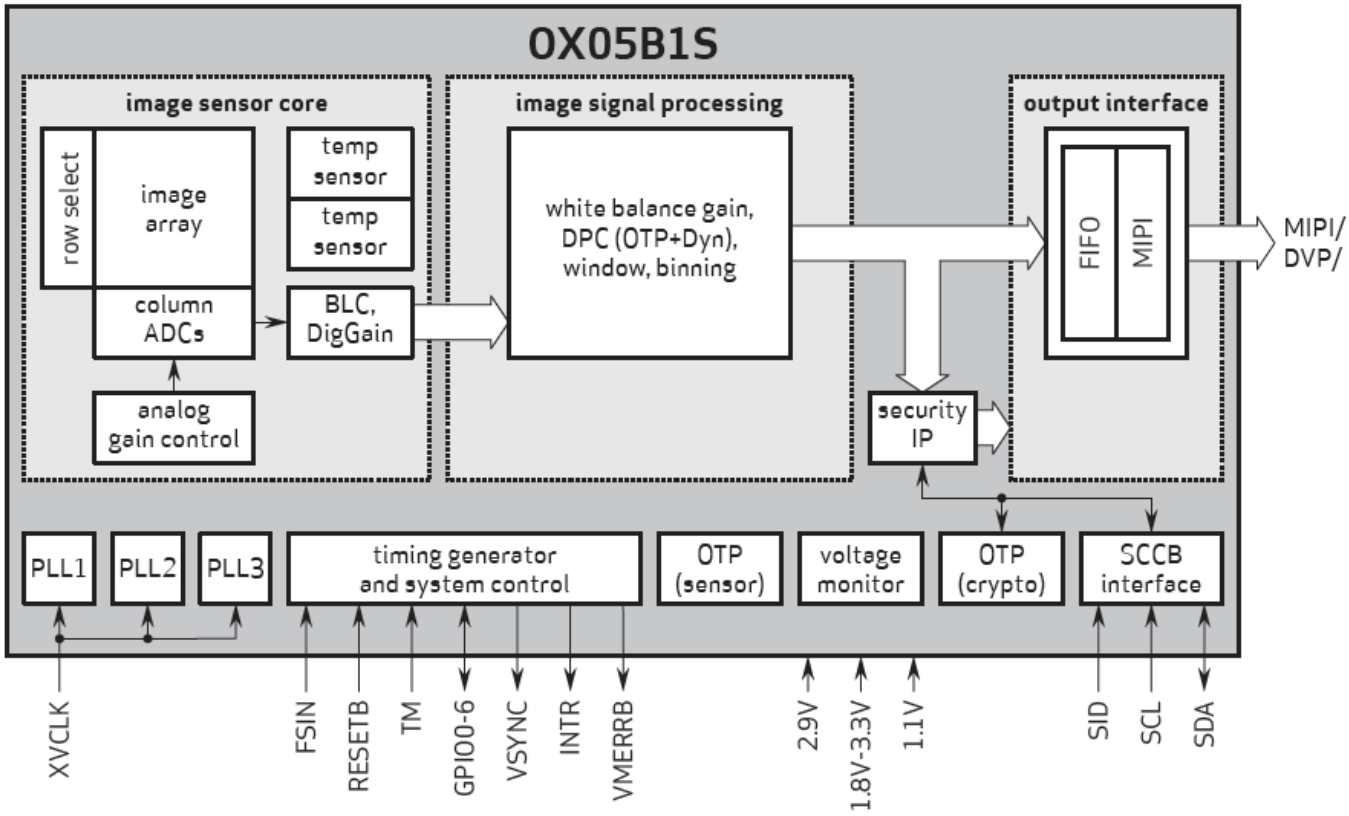
Technical Specifications

- active array size: 2592 x 1944
- maximum image transfer rate:
  - 1944p: 60 fps
- power supply:
  - analog: 2.8V
  - digital: 1.2V
  - I/O pads: 1.8V
- power requirements:
  - active: 290 mW (estimated)
  - XSHUTDOWN: 10 mW (estimated)
- output interfaces: up to 4-lane MIPI CSI-2, 10-bit DVP
- temperature range:
  - operating: -40°C to +105°C sensor ambient temperature and -40°C to + 125°C junction temperature
- lens size: 1/2.53″
- lens chief ray angle: 26°
- output formats: linear output
- pixel size: 2.2 µm x 2.2 µm
- image area: 5737.6 µm x 4312 µm

Product Features

- support for image size: 2592 x 1944 and any cropped size
- data format: RAW RGB-Ir
- 2.2 µm x 2.2 µm pixel with PureCel®Plus-S, Global Shutter, and Nyxel® technologies
- image sensor processor functions:
  - defective pixel cancellation
  - automatic black level correction, etc.
- dedicated safety features for supporting ASIL-B applications
- high-speed serial data transfer with MIPI CSI-2
- parallel 10-bit DVP output
- external frame synchronization capability
- SCCB for registering to the program
- embedded temperature sensor
- embedded supply voltage monitor
- one-time programmable (OTP) memory
- cybersecurity for camera / host interface hacking prevention

Functional Block Diagram



Documents / Resources

	OMNI-VISION OX05B1S 5MP Sensor with 2.2um RGB-IR [pdf] User Manual RGB-IR, 2.2um RGB-IR, Sensor OX05B1S, OX05B1S