OMNIVISION OX02C1S Global Shutter Sensor User Guide

Contents

OMNIVISION OX02C1S Global Shutter Sensor

Product Information

Product Name: OX02C1S

The OX02C1S is a 2.5-megapixel Global Shutter Sensor designed for Automotive In-Cabin Driver and Occupant Monitoring Systems. It is equipped with advanced features and functions to provide accurate monitoring and detection capabilities.

Sample units of the OX02C1S GS sensor are currently available for evaluation, and it is expected to be in mass production by 2024. To learn more about the product, visit the official website at **www.ovt.com**.

Ordering Information

To place an order for the OX02C1S sensor, please refer to the provided ordering information.

Applications

- Occupant Monitor System
- In-Cabin Monitor System

Technical Specifications

The OX02C1S sensor offers the following technical specifications:

- Row select FIFO MIPI/DVP
- Functional Block Diagram: image sensor core, image array, temperature sensor, column ADCs, BLC, DigGain, analog gain control, image signal processing, white balance gain, automatic exposure/gain control, DPC (OTP+Dyn), window output interface, MIPI
  DVP, security IP, PLL1, PLL2, timing generator and system control, OTP (sensor), voltage monitor, OTP (crypto), SCCB interface, XCLK, FSIN, XSHUTDN, TM GPIO[1:0], VSYNC INTR, VMERRB, 2.8V, 1.8V, 1.2V, SID, SCL, SDA
- Version: 1.1, June 2023

Contact Information

For any queries or support related to the OX02C1S sensor, please contact OmniVision Technologies, Inc. at the following address:

4275 Burton Drive Santa Clara, CA 95054

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

Trademark Information

Product Usage Instructions

To use the OX02C1S sensor effectively, please follow the instructions below:

1. Ensure that you have received the necessary components and accessories along with the sensor.
2. Refer to the provided technical specifications for compatibility and system requirements.
3. Install the sensor securely in the desired location within the Automotive In-Cabin Driver and Occupant Monitoring System.
4. Connect the sensor to the appropriate interfaces using the provided cables or connectors.
5. Power on the system and configure the settings as per your requirements.
6. Refer to the user manual or documentation for detailed instructions on integrating and utilizing the sensor within your specific application.
7. If you encounter any issues or require further assistance, please contact OmniVision Technologies, Inc. for support.

2.5-megapixel product brief

OX02C1S Global Shutter Sensor for Automotive In-Cabin Driver and Occupant Monitoring Systems

The OX02C1S is a 2.5-megapixel (MP) RGB-IR BSI global shutter (GS) sensor for in-cabin driver and occupant monitoring systems (DMS and OMS). With a pixel size of just 2.2 microns (µm), it features Nyxel® near-infrared (NIR) technology with industry-leading NIR quantum efficiency (QE) at 36%. It also has a significant increase in modulation transfer function (MTF) over the previous 3.0 µm FSI GS pixel design. It offers extremely low power consumption for the highest-performance capabilities.
The OX02C1S GS sensor utilizes OmniPixel®4-GS technology for simultaneous image detection in all pixels to accurately reproduce rapid motion without any deformation. It features integrated ASIL-B and cybersecurity that meet the latest industry standards. It is available in an OMNIVISION stacked a-CSP™ package or a reconstructed wafer option. The OX02C1S sensor comes in a 1/3.52-inch optical format.
Samples of the OX02C1S GS sensor are available now and will be in mass production in 2024.
Find out more at **www.ovt.com**.

Ordering Information

OX02C1S-E56Y-001A-Z (RGB-Ir, lead-free)
56- pin a-CSP™, rev 1A, packed in tray without protective film version

Applications

- automotive
  - autonomous driving
  - driver monitor system
  - occupant monitor system
  - in-cabin monitor system

Technical Specifications

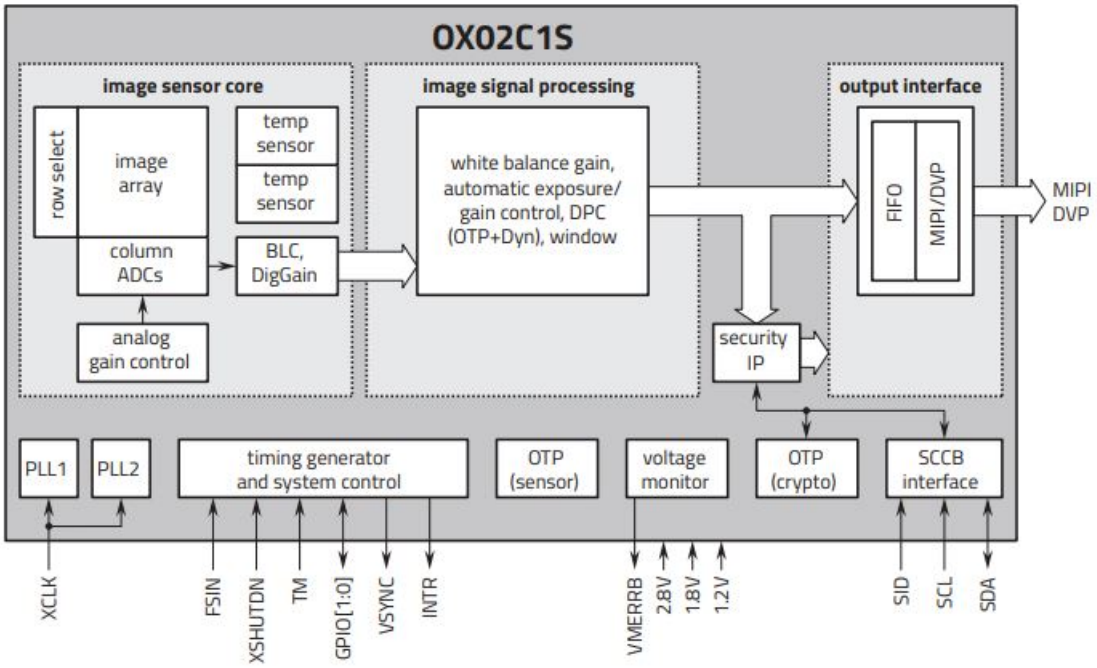
- active array size: 1920 x 1280
- maximum image transfer rate:

    - 1920 x 1280: 90 fps
- power supply:
    - analog: 2.8V
    - digital: 1.2V
    - I/O pads: 1.8V
- output formats: linear output
- temperature range:
  operating: -40°C to +105°C sensor ambient temperature and -40°C to + 125°C junction temperature
- lens size: 1/3.52″
- lens chief ray angle: 19.52°
- scan mode: progressive
- pixel size: 2.2 µm x 2.2 µm
- image area: 4259.2 µm x 2851.2 µm.

Product Features

- support for image size: 1920 x 1280 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 (4/2-lane D-PHY)
- parallel 10-bit DVP output
- SCCB for register programming
- external frame synchronization capability
- embedded temperature sensor
- embedded supply voltage monitor
- one time programmable (OTP) memory

Functional Block Diagram



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Documents / Resources

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