TheiaCel™ Technology

Low Light / No Light

High Dynamic Range

LED Flicker Mitigation

OX05D10

5-megapixel product brief

5MP Image Sensor with TheiaCel™ Technology for LED-Flicker-Free Exterior Cameras

The OX05D10 5-megapixel (MP) CMOS image sensor offers industry-leading low power and lowlight performance in a compact size. It features 2.1-micron (µm) TheiaCel™ Technology, which harnesses the capabilities of next generation lateral overflow integration capacitors (LOFIC), together with OMNIVISION's DCG™ high dynamic range (HDR) technology, to mitigate LED flicker regardless of lighting condition – without sacrificing image quality.

The OX05D10 is based on PureCel®Plus-S Technology, renowned for its low-light sensitivity and the industry's leading signal-to-noise ratio performance. It comes in a-CSP™ package technology for the smallest possible solution.

Samples are available now, and the OX05D10 will be in mass production in Q3 2025.

Find out more at www.ovt.com.

OMNIVISION®

OX05D10

Ordering Information

- **OX05D10-E77Y-001A-Z** (RGGB, lead-free)
  77-pin a-CSP™, rev 1A, packed in tray without protective film

Applications

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

Technical Specifications

- **active array size:** 2880 x 1920

- **maximum image transfer rate:**
  - 2880 x 1920: 60 fps

- **power supply:**
  - analog: 3.3V
  - digital: 1.1V
  - I/O pins: 1.8V / 3.3V

- **temperature range:**
  - operating: -40°C to +105°C
    sensor ambient temperature
    and -40°C to +125°C
    junction temperature

- **output formats:**
  uncompressed 24-bit (HDR4),
  20-bit (HDR3), and 20/16/14/12-bit
  (PWL) combined HDR

- **lens size:** 1/2.48"

- **lens chief ray angle:** 11.5° linear

- **scan mode:** progressive

- **pixel size:** 2.1 µm x 2.1 µm

- **image area:**
  6064.8 µm x 4048.8 µm

Product Features

- support for image size:
  2880 x 1920 and any cropped size

- up to 4 captures and on-chip
  combination HDR output:
  - HDR4: DCG + LOFIC + VS
  - HDR3: LCG + LOFIC + VS
  - HDR3: DCG + LOFIC
  - PWL mapping 24-bit
    to 20-, 16-, 14-, or 12-bit

- support for LED flicker mitigation
  (LFM) using LOFIC

- SCCB for register programming

- high speed serial data transfer
  with MIPI CSI-2

- ASIL C hardware metrics

- image signal processor functions:
  - white balance gain
  - defective pixel correction
  - defringe
  - denoise
  - HDR combination
  - PWL compression, etc.

- cybersecurity for camera / host
  interface hacking prevention

- external frame synchronization
  capability

- embedded temperature sensor

- embedded supply voltage monitor

- one-time programmable (OTP)
  memory

Functional Block Diagram

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