

# OV10640 HDR product brief



available in  
a lead-free  
package

## High Definition Video Output with Enhanced Low-Light Sensitivity and OmniHDR-S™ Technology for Advanced Driver Assistance Systems (ADAS)

The OV10640 is the automotive industry's first image sensor to utilize backside illumination technology, enabling industry-leading sensitivity. The sensor uses OmniVision's proprietary OmniHDR-S™ technology to deliver high dynamic range (HDR) of up to 120 dB in highly compact automotive-grade packages, making it an excellent solution for a broad range of advanced driver assistance systems (ADAS), including: 360-degree surround view, rear view, machine vision, blind spot detection and lane departure warning.

The sensor's 4.2-micron OmniBSI™ pixel is capable of recording highly detailed full-resolution 1.3-megapixel images and video at 60 frames per second (fps). The OV10640 leverages advanced OmniHDR-S technology

to deliver split pixel and staggered HDR, in which the scene information is sampled simultaneously rather than sequentially. This process minimizes motion artifacts and delivers superior image quality in RAW output in the most demanding and difficult lighting conditions.

The OV10640 contains a well-defined feature set to fulfill Automotive Safety Integrity Level (ASIL) according to ISO26262. The sensor fits into a compact chip-scale package (CSP), and is expected to complete AEC-Q100 Grade-2 qualifications.

Find out more at [www.ovt.com](http://www.ovt.com).



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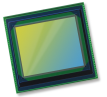
## Applications

- Automotive
  - 360° surround view system
  - rear view camera
  - lane departure warning/
  - lane keep assist
  - blind spot detection
  - night vision
- pedestrian detection
- traffic sign recognition
- occupant sensor
- camera monitoring system
- autonomous driving

## Product Features

- support for image size: 1280x1080, VGA, QVGA and any cropped size
- high dynamic range
- high sensitivity
- safety features
- low power consumption
- image sensor processor functions:
  - automatic exposure/gain control
  - lens correction
  - defective pixel cancelation
  - HDR combination and tone mapping
  - automatic black level correction
- supported output formats: RAW
- horizontal and vertical sub-sampling
- serial camera control bus (SCCB) for register programming
- high speed serial data transfer with MIPI CSI-2
- external frame synchronization capability
- parallel 12-bit DVP output
- embedded temperature sensor
- one time programmable (OTP) memory

# OV10640



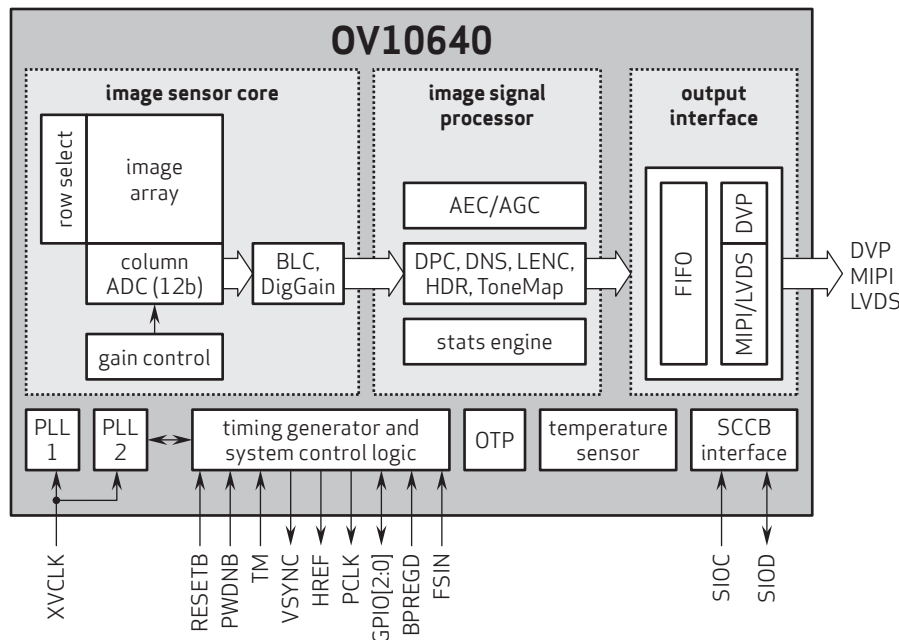
## Ordering Information

- **OV10640-N79Y-PD-Z**  
(color, lead-free, 78-pin aCSP™, rev 1D, in tray)

## Product Specifications

- **active array size:** 1280 x 1080
- **lens size:** 1/2.56"
- **lens chief ray angle:** 9°
- **input clock frequency:** 6 - 27 MHz
- **maximum image transfer rate:**
  - full resolution: 60 fps
- **scan mode:** progressive
- **shutter:** rolling shutter
- **sensitivity:** TBD
- **max S/N ratio:** TBD
- **dynamic range:** TBD
- **pixel size:** 4.2 μm x 4.2 μm
- **image area:** 5410 μm x 4570 μm
- **package dimensions:**
  - aCSP: 7430 μm x 7190 μm
- **power supply:**
  - analog: 3.14 - 3.47V
  - digital: 1.425 - 1.575V
  - DVDD: 1.7 - 1.9V
  - AVDD: 1.7 - 1.9V
- **power requirements:**
  - active: TBD
  - standby: TBD
- **temperature range:**
  - operating: -40°C to +105°C sensor ambient temperature and -40°C to +125°C junction temperature
- **output interfaces:** 12-bit DVP, MIPI/LVDS CSI-2
- **output formats:**
  - 20-bit combined RAW
  - 12-bit compressed combined RAW
  - separated 12-bit RAW
  - 2x12-bit compressed RAW
  - 16-bit log domain combined RAW
  - 3x12-bit uncompressed RAW

## Functional Block Diagram



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