

# OV10650 HDR product brief



available in  
a lead-free  
package

## High-Performance Automotive Image Sensor with 2:1 Aspect Ratio and 120 dB Dynamic Range

OmniVision's OV10650 is the industry's first 1.7-megapixel automotive image sensor with a 2:1 aspect ratio and 120 dB of dynamic range. The OV10650 can be paired with OmniVision's OV491 and OV495 image signal processing companion chips to deliver exceptional image quality.

Built on OmniVision's 4.2-micron OmniBSI™ split-pixel technology, the OV10650 captures high-quality color video in 1820 x 940 resolution at up to 60 frames per second (fps), while providing excellent high dynamic range and best-in-class low-light performance.

The OV10650 contains an advanced set of safety mechanisms built-in to enable ISO 26262 ASIL B-rated camera systems. The sensor is available in an AEC-Q100 Grade 2-qualified 9.5 x 6.8 mm chip-scale package.

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



## 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
- camera monitoring system
- autonomous driving

## Product Features

- support for image size:
  - 1824 x 940
  - VGA
  - QVGA, and any cropped size
- OmniHDR-S™ technology
- high sensitivity
- safety features
- low power consumption
- image sensor processor functions:
  - 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, parallel 12-bit DVP output
- external frame synchronization capability
- embedded temperature sensor
- one time programmable (OTP) memory

# OV10650



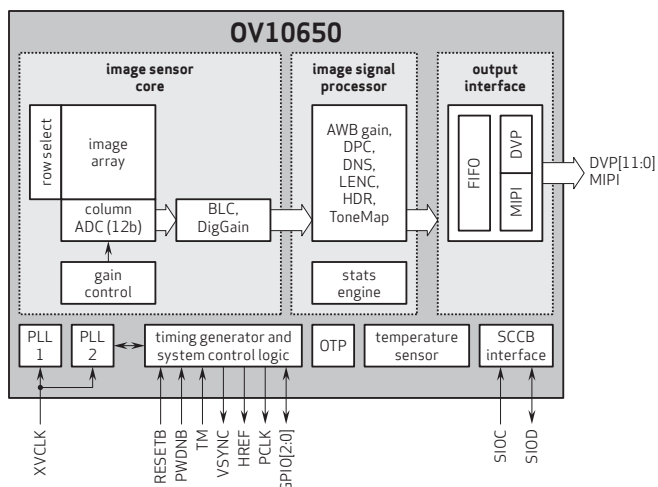
## Ordering Information

- OV10650-E85Y-1D** (color, lead-free) 85-pin a-CSP™, with DAR coating, rev 1D, packed in tray)
- OV10650-E85Y-LD** (color, lead-free) 85-pin a-CSP™, with DAR coating, rev 1D, packed in tray with protective film (tab top left)
- OV10650-E85Y-OD** (color, lead-free) 85-pin a-CSP™, with DAR coating, rev 1D, packed in tape& reel with protective film (tab top left)
- OV10650-E85Y-MD** (color, lead-free) 85-pin a-CSP™, with DAR coating, rev 1D, packed in tray with protective film (tab top right)
- OV10650-E85Y-ND** (color, lead-free) 85-pin a-CSP™, with DAR coating, rev 1D, packed in tape& reel with protective film (tab top right)

## Product Specifications

- active array size:** 1824 x 940
- power supply:**
  - analog: 3.14 - 3.47V
  - digital: 1.425 - 1.575V
  - DOVDD: 1.7 - 1.9V
  - AVDD: 1.7 - 1.9V
- power requirements:**
  - active: 450 mW
  - standby: 100 µW
- 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 CSI-2
- input clock frequency:** 6 - 40 MHz
- lens size:** 1/2.09"
- lens chief ray angle:** 19°
- scan mode:** progressive
- shutter:** rolling shutter
- 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
- shutter:** rolling shutter
- maximum image transfer rate:**
  - full resolution: 60 fps
- sensitivity:** 8.5 V/Lux-scc
- max S/N ratio:** 41.7 dB
- dynamic range:** 120 dB
- pixel size:** 4.2 µm x 4.2 µm
- image area:** 7711.2 µm x 3998.4 µm
- package dimensions:** 9510 µm x 6860 µm

## Functional Block Diagram



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