



OV9716



1.4-megapixel product brief

1.4-Megapixel Image Sensor with Best-in-Class Performance for Cost-Effective Automotive Applications

OMNIVISION's OV9716 is a high-performance image sensor that brings 1392 x 976 resolution at up to 60 frames per second with more than 120 dB dynamic range to automotive imaging applications. The sensor comes in a 1/3.8" optical format and is built on 2.8 μm OmniBSI™-2 Deep Well™ pixel technology, which delivers best-in-class low-light sensitivity and high dynamic range (HDR) performance even in challenging lighting conditions. The OV9716 is specifically designed to bring the performance of a high-end imaging solution at a cost and form factor suitable for the automotive mass market segment, targeting rear view cameras and 360-degree surround view systems.

The OV9716's Deep Well™ pixel technology provides a 16-bit linear output, capturing 94 dB of scene dynamic range in a single frame, compared to traditional sensors with only

12-bit linear output. This 94 dB output comes without HDR combination artifacts and has no sudden drops in signal-to-noise ratio across the scene. The sensor can further expand dynamic range to more than 120 dB by using a second 'very short' exposure, also minimizing motion artifacts.

The OV9716 is available in an AEC-Q100 Grade 2 qualified, compact chip scale package and contains an advanced set of safety mechanisms to enable advanced ASIL camera systems. The sensor is compatible with OMNIVISION's family of powerful image signal processor (ISP) companion chips for display-based automotive applications.

Find out more at www.ovt.com.



- OV9716-E66Y-1G (color, lead-free)
66-pin a-CSP™ with DAR coating, in tray

Applications

- automotive
 - 360° surround view systems
 - rear view cameras
 - lane departure warning / lane keep assist
 - blind spot detection
- pedestrian detection
- traffic sign recognition
- occupant sensors
- camera monitoring systems / e-mirrors
- autonomous driving

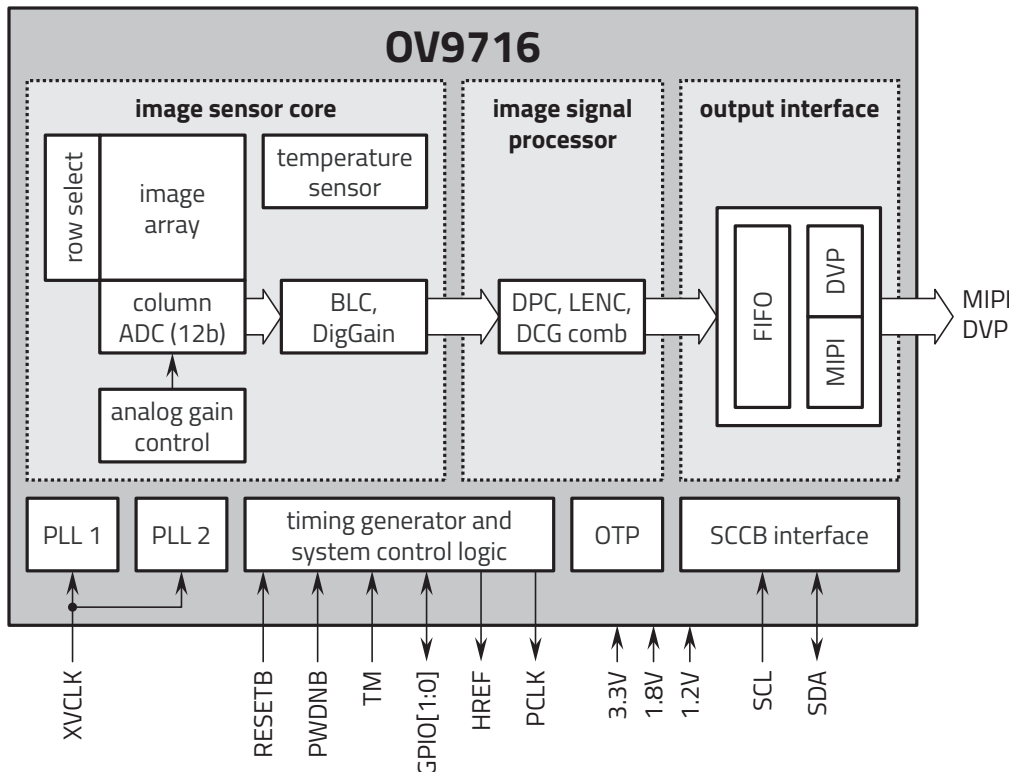
Product Features

- support for image size:
 - 1392 x 976
 - VGA
 - QVGA, and any cropped size
- high dynamic range
- high sensitivity
- low power consumption
- image sensor processor functions:
 - lens correction
 - defective pixel cancelation
 - HDR combination
 - automatic black level correction
- supported output formats: RAW
 - horizontal and vertical sub-sampling
 - 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

Technical Specifications

- active array size:** 1392 x 976
- maximum image transfer rate:**
 - full resolution: 60 fps
- power supply:**
 - SVDD, SVDD_pix, PVDD (analog): 3.14V ~ 3.47V
 - DVDD (digital): 1.14V ~ 1.3V
 - DOVDD (digital): 1.7V ~ 1.9V
 - AVDD18 (analog): 1.7V ~ 1.9V
- power requirements:**
 - active: 288 mW
 - standby: 12.5 mW
- temperature range:**
 - operating: -40°C to +105°C sensor ambient temperature and -40°C to +125°C junction temperature
- output formats:** single exposure HDR - 16-bit combined RAW, 12-bit compressed combined RAW; dual exposure HDR - 16-bit combined RAW + 12-bit VS RAW, 12-bit compressed combined RAW + 12-bit VS RAW, 3x12 bit RAW, 3x10 bit RAW
- output interfaces:** up to 4-lane MIPI CSI-2, 12-bit DVP
- lens size:** 1/3.8"
- lens chief ray angle:** 15°
- scan mode:** progressive
- pixel size:** 2.8 μm x 2.8 μm
- image area:** 3942.4 μm x 2777.6 μm

Functional Block Diagram



Version 1.7, June 2024