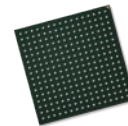




# OAX4600

## ASIC product brief



Automotive Industry's Most Robust Integrated ISP and NPU for Simultaneous DMS/OMS; Features Design Flexibility with Integrated RGB-IR ISPs and Two NPUs in a Small Package with Low Power Consumption

OMNIVISION's OAX4600 is an AI-enabled application-specific integrated circuit (ASIC) that can seamlessly and simultaneously power dedicated driver and occupant monitoring systems (DMS/OMS). The OAX4600 uses a stacked-die architecture to provide integrated RGB-IR image signal processing (ISP) with two integrated AI neural processing units (NPUs) and embedded DDR3 memory (2Gb) in a single low power, small package chip. The OAX4600 is capable of higher resolution processing of up to 5 megapixels. It has fast boot-up time to eliminate any delay between ignition and activation of the interior camera and features integrated cybersecurity.

The OAX4600 is a next generation ASIC that uses OMNIVISION's dedicated NPU with 2 tera operations per second (TOPS). Seeing Machine's Occula™ NPU is also included for greater application flexibility. The OAX4600 features 2Gb of embedded DDR stacked memory and utilizes the tri-ARM® Cortex® A53 with NEON™ core subsystem.

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

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- OAX4600 (lead-free)  
256-pin BGA, packed in tray

## Applications

- Automotive
  - Automotive driver assistance system (ADAS)
  - Surround view system (SVS)
  - Driver monitoring system (DMS)
  - Interior monitor system (IMS)
- Camera monitor system (CMS)
- Surround view system (SVS)
- E-Mirror
- Rear view camera (RVC)

## NPU Specifications

- 2048 MAC @ 500 MHz
- **MAC input:** 8/16-bit dynamic fixed point with global 4-bit of exponent (=12/20-bit floating)
- **MAC output:** 16-bit fixed point with global 4-bit exponent
- **Models supported:**
  - YOLOv3
  - YOLOv2
  - MobileNet-SSD, and more
- NPU tool chain supported (Caffe, MXNet, ONNX, Keras)

## Product Features

- ultra low power and fast boot up device
- embedded Tri-ARM® Cortex® with NEON® @ 800 MHz
- dedicated neural processor unit up to 2 TOPS
- embedded 2 Gb DDR memory
- embedded Occula™ IP
- embedded neural network
- support secure boot features
- advanced safety mechanisms (ASIL-B)
- processing pipelines for viewing and vision
- 120 dB HDR
- ABAB mode
- RGB-IR ISP processing
- AEC/AGC, AWB, HDR combination, RLTM, LENC, de-noise, DPC, gamma, 50/60 auto flicker detect
- ethernet I/F
- frame rate: up to 5MP @ 30 fps
- output format:
  - MIPI CSI: 8-bit YUV420/YUV422, 8/10/12-bit RAW
  - MIPI DSI: RGB888
- power:
  - I/O: 1.2V/1.35V, 1.8V, 3.3V
  - core: 0.9V
- interface:
  - MIPI Rx: 4-lane (1x4, 2x2)
  - MIPI Tx: 2-lane
  - serial interface, storage card / NAND flash, LPDDR3
- package:
  - BGA with stacked memory
  - AEC-Q100 Grade 2
  - ASPICE level 2

## Functional Block Diagram

