



OA7100

ASIC product brief



Mainstream, Ultra Low Power & Cost Effective 1080p Video Processor for Security and Surveillance Applications

Introducing the OA7100, the latest innovation in video processing ICs from OMNIVISION. Designed for 1080p low power video processing, the OA7100 is the third-generation in our 1080p product lineups, building upon the success of the OV798 and OA7000.

With the introduction of the RISC-V processor, the OA7100 offers improved cost and performance optimization, making it the perfect solution for your video processing needs. Whether it's H.264 or H.265, the OA7100 has you covered with its powerful processing capabilities.

Not only that, but the OA7100 is also equipped with a powerful neural processor, bringing cutting-edge AI technology to mainstream 1080p category. This IC is designed to provide most demanding video processing tasks while using minimal power. This makes it ideal for use in a wide range of devices, from battery powered security cameras, video doorbells, car DVRs, wearable cameras, trail cameras, barcode scanners, and everything in between.

OMNIVISION product is known for its excellent image quality. OA7100 has pushed the envelope further by adding much complex

image processing units. The improved ISP processing, especially in low light conditions, provides stunning image quality no matter the lighting situation is.

In addition to its impressive features, the OA7100 is designed with cost in mind. The QFN package, with stacked 1Gbit DDR3L DRAM, reduces the overall system BOM cost, making it the ideal choice for a wide range of devices and applications.

The OA7100 is pin to pin compatible with our 2K upgraded version, the OA8100, making it a seamless upgrade path. In addition, the OA7100 offers outstanding compatibility, making it easy to integrate into your existing system. Whether you're looking to upgrade your current OMNIVISION products or replace other competitor's projects, the OA7100 is the right choice for you.

In conclusion, the OA7100 is the ideal solution for your 1080p low power video processing needs. With its RISC-V processor, powerful neural processor unit, low power consumption, and seamless compatibility, this IC is sure to meet your every requirement. So why wait? Start experiencing the benefits of the OA7100 today!

Find out more at www.ovt.com.



Applications

- battery-powered smart home monitoring camera applications
- video doorbells
- car DVRs
- wearable cameras
- trail cameras
- barcode scanners

Technical Specifications

- **power supply:**
 - core: 0.9V
 - analog: 1.8V, 3.3V
 - DDR I/O: 1.8V (DDR2) / 1.35V (DDR3L) / 1.5V (DDR3)
 - I/O: 1.8V/3.3V
 - PLL: 1.8V
- **temperature range:**
 - commercial grade operational temperature: -20°C to +85°C
- **power requirements:** TBD
- **package dimensions:**
 - QFN (88-pin): 9 mm x 9 mm

Product Features

- **general features**
 - highly integrated low power and fast boot up video processor
- **camera interfaces**
 - MIPI receiver: 2-lanes
 - supports up to 2.3MP image sensor (1920 x 1080, 1536 x 1536)
 - SCCB master to access image sensor
- **image signal processor**
 - HDR processing
 - 10-bit RAW, DCG™ 14-bit or DCG™ 16-bit to YUV processing
 - adjustable AEC/AGC and AWB
 - color correction/adjustment, gamma correction and contrast adjustment
 - local gamma, normalize and post-stretch, local tone-mapping for wide dynamic range and contrast
 - lens shading correction
 - defective pixel correction
 - spatial and temporal de-noise filter
- **video engine**
 - H.264 and H.265 video encoders
 - single-stream video recording with a maximum resolution of up to 2.3MP @ 30 fps (1536 x 1536 or 1920 x 1080)
 - dual-stream video recording with one 2.3MP @ 30 fps (1536 x 1536 or 1920 x 1080) and one 1MP @ 30 fps (1024 x 1024 or 1280 x 720)
 - rate control to support variable and constant bit rates
- **video processing**
 - cropping and scaling
 - rotation
- **neural processing and video analytics**
 - built-in neural processing engine for CNN edge inference acceleration
 - built-in advanced motion-detection engine
- **still picture**
 - still picture capture up to 2.3MP @ 30 fps
 - still picture compression
- **storage interfaces**
 - one storage I/O peripheral interface, that can be used for an external WiFi module
 - one storage card peripheral interface
 - NAND/NOR flash serial interface, with or without ECC engine
- **USB device**
 - USB2.0 HS/FS device controller
- **security engine**
 - AES encryption/ decryption
 - secure boot
- **audio CODEC and audio engine**
 - built-in 16-bit sigma delta ADC and 16-bit mono DAC, with full-duplex audio, AGC and echo/noise cancellation
 - embedded audio engine for audio recording and playback
 - full-duplex audio serial interface (up to 2 channels)
 - supports various audio formats
- **analog-to-digital converter**
 - 2-channel 10-bit SAR analog-to-digital converter
- **embedded microcontrollers**
 - dual core RISC-V
 - 32KB I-cache, 32KB D-cache per core
 - 128KB L2-cache
- **DDR-SDRAM controller**
 - DDR2/DDR3/DDR3L 16-bits wide
- **miscellaneous**
 - UART, timers, watchdog timer, general-purpose I/O, JTAG

Functional Block Diagram

