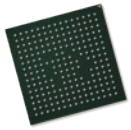
OA7000

ASIC product brief



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

OMNIVISION's OA7000 video processor, building on the success of its predecessor, the OV798, provides a more cost effective solution for battery powered intrusion cameras and video doorbells. It includes industry leading technologies for low power consumption and fast boot-up. When paired with OMNIVISION's unique and sophisticated RGB-Ir sensors, it eliminates the need for a mechanical IR cut filter, which further optimizes the camera size and enhances system reliability.

Additional improvements include a triple-core ARM® Cortex® A5 CPU with NEON® support. This high-performance processor enables more advanced video analytics algorithms to be done on-chip, which reduces false alarms and increases battery life. Thanks to the powerful processor and integrated audio CODEC, high quality audio with noise reduction and echo cancellation is now available without extra cost.

A newly redesigned and more power efficient high dynamic range (HDR) ISP with RGB-Ir support is available on the OA7000. Combining the benefits of RGB-Ir and HDR, it shows every detail of the most challenging scenes with widely contrasting dark and bright areas, which are commonly found in video doorbell footage.

As cybersecurity becomes increasingly important, the OA7000 provides security features for secured boot up and live streaming.

Find out more at www.ovt.com.

OA7000

Ordering Information

- **OA07000-B11G** (lead-free)
  211-pin BGA

Applications

- battery-powered smart home monitoring camera applications

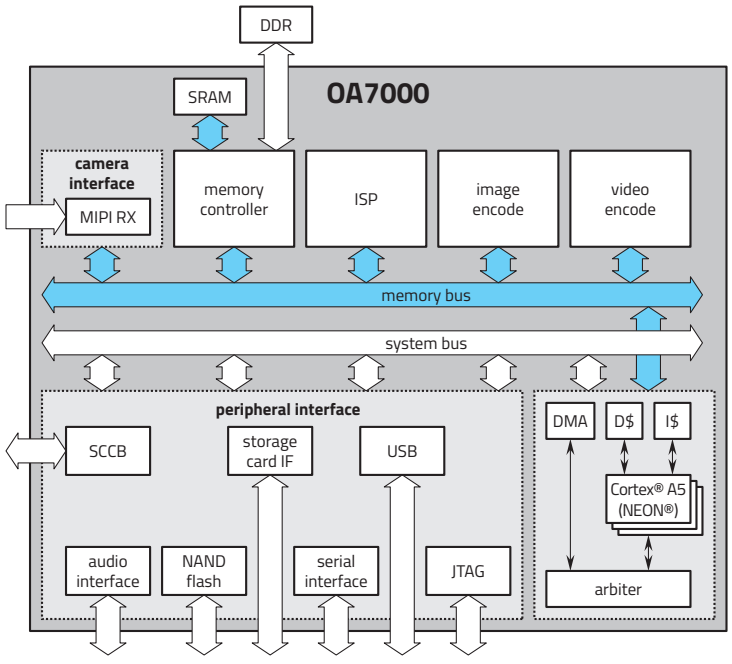
Technical Specifications

- **power supply:**
  - core: 1.1V
  - analog: 3.3V
  - DDR I/O: 1.2V (LPDDR2) / 1.35V (DDR3L) / 1.5V (DDR3)
  - I/O: 1.8V/3.3V
  - PLL: 1.8V
- **temperature range:**
  - commercial grade operational temperature: -30°C to +85°C
- **power requirements:**
  - active: 365 mW, measured at 1080p @ 24 fps
- **package dimensions:** 11 mm x 11 mm

Product Features

- general features
  - highly integrated low power and fast boot up video processor
- camera interfaces
  - MIPI receiver: one 2-lanes, two 1-lane
  - supports up to 4MP image sensor
  - SCCB master to access image sensor
- image signal processor
  - RGB-Ir processing
  - HDR processing
  - 10-bit RAW to YUV processing
  - adjustable AEC/AGC, AWB and auto focus
  - color correction/adjustment, gamma correction and contrast adjustment
  - 16x16 zone lens shading correction and online color shading correction
  - lens distortion and perspective correction
  - defective pixel correction
  - mirror and flip
  - supports up to 4x digital zoom
  - 3D/2D de-noise filter
- video engine
  - supports single-stream video recording with a maximum resolution of up to 1080p @ 48 fps (1920x1080)
  - supports dual-video-stream recording with one 1080p @ 30 fps (1920x1080) stream and one 720p @ 30 fps (1280x720) stream
  - supports triple-video-stream recording with three 720p @ 30 fps (1280x720) streams
  - rate control to support variable and constant bit rates
- video processing
  - cropping and scaling
  - de-warping and rotation
- video analytics
  - built-in advanced motion-detection engine
- still picture
  - supports still picture capture up to 2 megapixels @ 48 fps
  - supports 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 flash parallel interface for 8-bit and 16-bit, with up to 8-bit BCH ECC
  - NAND flash serial interface, with or without ECC engine
- USB device
  - USB2.0 HS/FS device controller
- security engine
  - supports AES/DES/3DES encryption/decryption
  - supports 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
- embedded microcontrollers
  - triple core ARM® Cortex® A5, with NEON® and FPU
  - 16KB I-cache, 16KB D-cache for core 0 and core 1
  - 32KB I-cache, 32KB D-cache for core 2
- DDR-SDRAM controller
  - LPDDR2/DDR3 16-bits wide
- miscellaneous
  - UART, timers, watchdog timer, general-purpose I/O, JTAG

Functional Block Diagram



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