OCE TECHNOLOGY

HISAOR

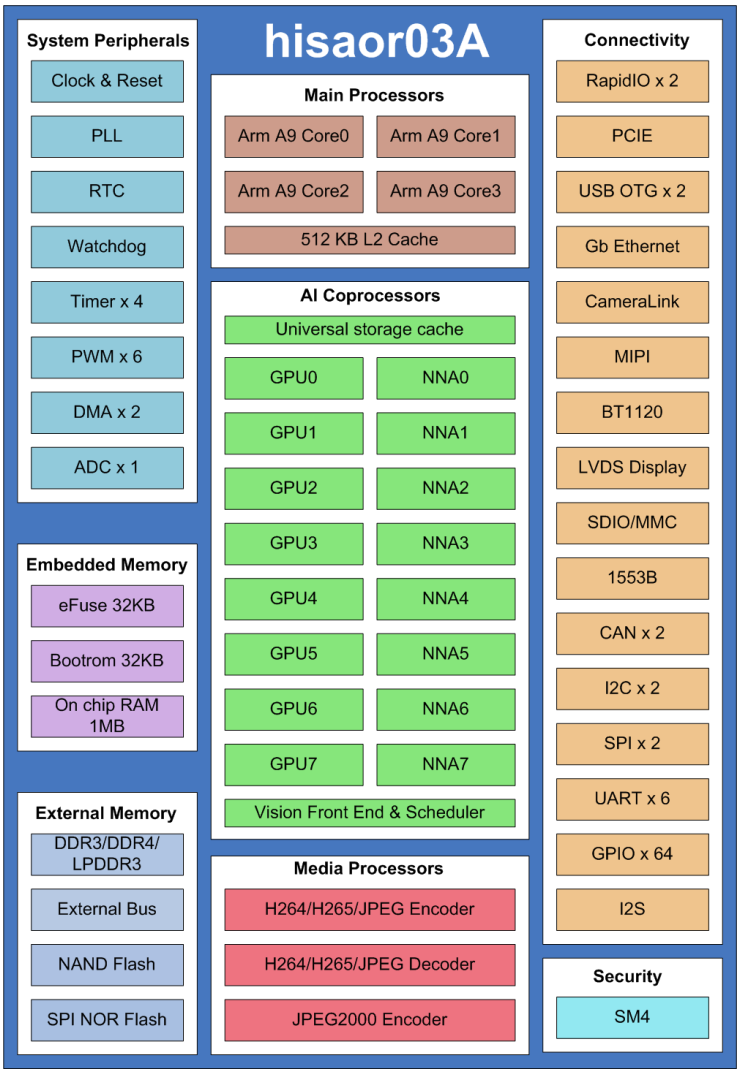
Rad-tolerant AI SOC

PRODUCT DESCRIPTION

HISAOR is a rad-tolerant high performance (12 TOPS, 64 GFLOPS) AI SOC designed for high-reliability embedded AI applications. Its quadcore ARM Cortex-A9 cores power the supervisory real-time operating system which manages the collection of data for AI processing from its high-speed communications interfaces. The AI number crunching is carried out by octacore GPU and neural network acceleration coprocessors based on Verisilicon IP. Vision processing applications take advantage of the media processors for encode and decode of H264/5 and JPEG2000 conversions. A memory controller supporting DDR4, DDR3, and LPDDR3 is available with non-volatile controllers for NAND and SPI NOR flash. A high-speed AXI interconnect matrix provides for high-throughput transfers beween peripherals and memory.

AI models trained and developed with cloud applications (e.g. Amazon SageMaker) can easily be ported to run on the HISAOR AI coprocessors using the Verisilicon Vivante Acuity tools and IDE. Support for OpenCL and OpenVX is provided as the standard interface for vision processing applications. Driver sources are provided for applications requiring bespoke AI optimisation. Host operating systems supported include Linux & OCEOS, the space qualified RTOS from OCE Technology.

The OCE technical team offers training and support for customers introducing AI technology into their applications.



Development Kit

The HISAOR03A development kit contains all the developer needs to get started:-

- HISAOR03A DDR4 Development Board
- On-board Linux development enviroment
- Power supply & USB Serial cable
- USB HD camera
- Software & Documentation

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Features

Processing	Memory related
4-core ARM-Cortex A9 main processing unit	DDR3L/LPDDR3/ DDR4 controller
512KB ARM A9 processor L2Cache module	DMA module comprising 3 groups of 8 channels
AI Coprocessor performance 12 TOPS 64 GFLOPS	BootROM module
AI coprocessor contains 8 Gaphics Processing Units (GPU)	External Memory Interface (EMI)
AI coprocessor contains 8 Neural Network Accelerators (NNA)	NAND FLASH controller
Video Front End & Scheduler	SPI Nor Flash controller
1MB on-chip SRAM for AI coprocessor	128-byte programable eFuse controller
H.264/H.265/JPEG encoder/decoder	**Standard interfaces:**
JPEG2000 encoder	RapidIO
Power supplies	PCIE, support PCIE Gen1, GEN2 protocols)
Core 0.8V	MIPI: MIPI CSI-2 controller
Digital IO 1.8V/3.3V	BT1120
Analog IO 1.8V/2.5V/3.3V	LVDS video output controller, on-chip integrated LVDS TX PHY
DDR SDRAMs IO 1.2V/1.35V/1.5V	SDIO/eMMC controller, SD3.0 and eMMC v4.5
Clock & Timers related	Giga-Ethernet, external PHY supported
Clock & Reset module	Camera Link 2.0
PLL: Phase-Locked Loop for clock signals generation	2-channel USB 2.0 OTG
Real Time Clock (RTC) module	1553B
Watchdog module	CAN
4-channel Timer module	4-channel I2C & I2S
Pulse Width Modulator (PWM) generator	2-channel SPI master/slave modes
Package & Environmental	4-channel UART
FCBGA-896, 25 x 25mm, 0.8pitch package	64 GPIO independently configurable
22 nm FD-SOI fabrication process	SM4 encryption/decryption module
Operating temperature range: -40°C ~ +125°C	12-bit precision SAR ADC
Radiation: TID 200 kRad, Latchup-immune	Process/Voltage/Temperature (PVT) sensors

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