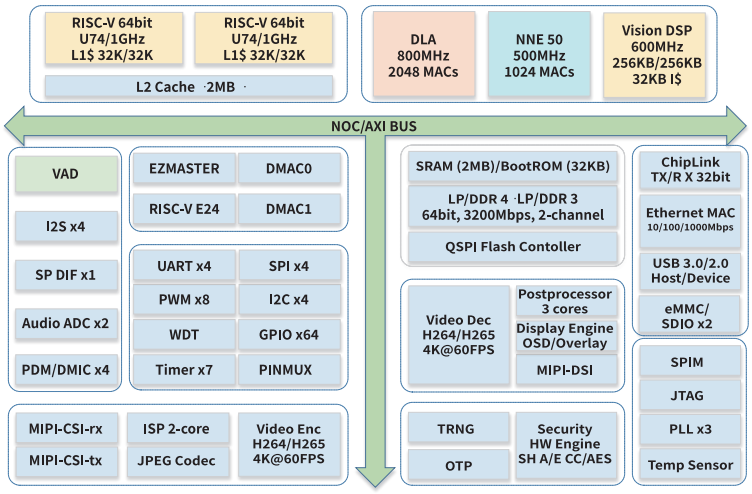
JH7100

AI Visual Processor Platform

StarFive 赛昉科技

Introduction

Equipped with dual-core U74, JH7100 shares 2MB of L2 cache and supports Linux OS. The StarFive ISP is compatible with mainstream camera sensors and the built-in image/video processing subsystem supports H265/H264/JPEG codec. With high-performance, low-power Vision DSP and NNE integrated, JH7100 will make thinking more intelligent and efficient. JH7100 can meet the various real-time visual processing needs of the edge end thanks to the capabilities of various complex image/video processing and intelligent visual calculations.



Highlights

64-bit High-performance RISC-V Dual-core U74 Processor

- 2MB L2 cache, working@1.0GHz
- Cache coherence for dual core

Powerful Image and Video Processing System

- StarFive ISP
- Vision DSP
- H264/265 Video Codec
- Display engine
- MIPI interface

Powerful Deep Learning Processing Engine

- StarFive Neural Network Engine (NNE) (1 TOPS)

Applications

Public Security

- Video surveillance
- Traffic management

Smart Home

- Sweeping robot
- Smart door lock
- Intelligent visual home appliances (refrigerator, microwave over, etc.)

Industrial Intelligence

- Industrial robot
- Unmanned container
- Logistics robot
- Intelligent unmanned aerial vehicle (UAV), AV, ADAS

Features

CPU Subsystem

- 64-bit RISC-V CPU (U74) dual cores with 2MB L2 cache, support Linux, 1.0GHz
- 32-bit RISC-V CPU core (E24) for real-time control

Vision and AI Computing

- Vision DSP: VP6 for computing vision
- AI Processors: NNE (1024 MAC@500MHz) and NVDLA Engine (2048 MACs@800MHz)

Memory and Storage

- 2 channels of 32-bit LPDDR4/DDR4, up to 3200Mbps
- BUS RAM 2MB share with DLA Engine
- Support QSPI flash memory

Video Processing Subsystem

- Separate video decoder and encoder, both support up to 4K@60FPS and multi-stream for H264/H265
- JPEG encoder/decoder
- Dual channels of ISP, each channel support up to 4K@30FPS
- Support up to 3 video inputs, one for DVP and two for MIPI-CSI with 4D2C up to 4K@30FPS

Display Subsystem

- Support LCD or MIPI-DSI output up to 4K@30FPS
- Support MIPI-CSI TX for video output after ISP and AI processing

Connectivity Subsystem

- USB3.0/2.0 Host/Device mode
- Ethernet GMAC for 10/100/1000Mbps
- SD/SDIO/eMMC host controller

Security Subsystem

- Encrypt Engines: AES, SHA, ECC/RSA, HASH
- Compliant with NIST SP800-90a/b/c and BSI AIS 20/31 TRNG
- 2KB OTP for key data on-die storage

Audio Subsystem

- I2S I/F, support DMA interface
- S/PDIF, support RX and TX mode
- 4 channels PDM input for DMIC application
- DAC output with PWM interface

Rich System Peripherals

- 4 x SPI support Slave and Master mode
- 4 x UART
- 4 x I2C
- 8 x PWM output
- 64 x GPIO