Preface

About this guide and technical support information.

About this document

This document mainly provides the users with the general information and feature description for StarFive next generation SoC platform - JH7110.

Revision History

Table 0-1 Revision History

Version	Released	Revision
1.2	2022/10/20	Refined block diagram and refined M l output s s.
1.1	2022/09/15	Updated block diagram in syn with ash .
1.0	2022/08/23	1st official release of the docu t.

Notes and notices

The following notes and notices might appear in this guide:

- **Tip:**
  Suggests how to apply the information i topic or step.
- **Note:**
  Explains a special case or expands on a important p t.
- **Important:**
  Points out critical infor tion cerning a or step.
- **CAUTION:**
  Indicate an action or p can ca e loss of data, security problems, or performance issues.
- **Warning:**
  Indicates that an ac or s can result in physical harm or cause damage to hardware.

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1. Introduction

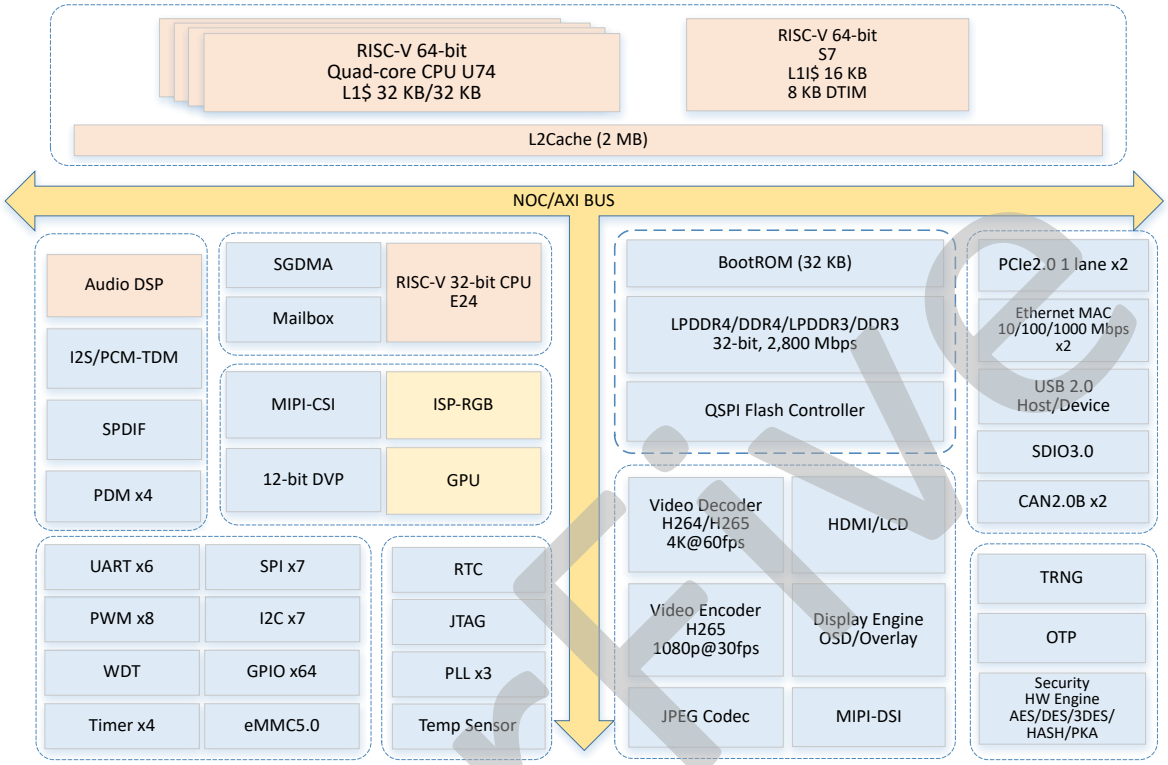
JH7110 is a high-performance RISC-V SoC featuring high-performance, low-power-consumption and high-security.

JH7110 is equipped with a 64-bit high-performance quad-core RISC-V processor core sharing 2 MB of cache coherency, whose working frequency is up to 1.5GHz. JH7110 has a rich high-speed native interface, supports the Linux operating system, and has powerful image and video processing system. The StarFive ISP is compatible with mainstream camera sensors, built-in image/video processing subsystem supports H264/H265/JPEG codec, and 4K@30fps display. The integrated GPU makes its image processing capabilities stronger, such as 3D rendering. With high-performance, OpenCL/OpenGL ES/Vulkan support, JH7110 can further enhance intelligence and efficiency. JH7110 can complete a variety of complex image/video processing and intelligent visual calculations. Also, it meets multiple visual real-time processing requirements at the edge.

2. Block Diagram

The following figure shows the block diagram of JH7110.

Figure 2-1 Block Diagram



Note:

- JH7110 supports one USB port. One of the PCIe2.0 lanes can be shared by USB3.0.
- JH7110 supports one port for SDIO and one port for eMMC, or both ports for SDIO.

3. Application

An introduction to the application scenarios.

JH7110 applies to the following scenarios.

- Commercial Electronics
    - Personal *Single Board Computer (SBC)*
    - Home NAS
    - Router (Soft routing)
- Smart Home
    - Sweeping robot
    - Intelligent visual home appliances (refrigerator, microwave oven, etc.)
- Industrial Intelligence
    - Industrial robot
    - Unmanned store
    - Logistics robot
    - Intelligent unmanned aerial vehicle (UAV), AV
- Public Security
    - Video surveillance
    - Traffic management

4. Highlighted Feature

JH7110 has the following highlighted features.

- RISC-V U74 quad-core and S7 monitor core with 2 MB L2 cache
- Support Linux OS with kernel versions 5.10 and 5.15
- CPU work frequency up to 1.5 GHz
- GPU IMG BXE-4-32
- 32-bit LPDDR4/DDR4/LPDDR3/DDR3, up to 2,800 Mbps
- Video decoder supports up to 4K@60fps and multi-stream for H264/H265
- Video encoder supports up to 1080p@30fps and multi-stream for H265
- Provide JPEG encoder/decoder
- Support up to 1080p@30fps full-functional ISP
- Support video input: 1 × DVP and 1 × MIPI-CSI with 4D2C up to 4K@30fps
- Support video output: MIPI display output with 4D1C up to 1080p@60fps
- Support 1 × HDMI2.0 port display up to 4K@30fps
- Support 24-bit RGB parallel interface up to 1080p@30fps
- Support 2 × PCIe2.0, 1 lane
- Support USB3.0 Host/Device (By reusing 1 of the PCIe2.0 lanes)
- Support 2 × Ethernet MAC 1000 Mbps, 2 × CAN2.0B
- Support IEEE 1588-2002 and IEEE 1588-2008 standards
- Support TRNG and support OTP, DMA, QSPI, and other peripherals
- Audio DSP supports floating-point instructions
- Dedicated audio processing and sub-system