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D1H

RISC-V Multi-Media Decoding Platform SoC

Overview

D1-H is an advanced application processor designed for RISC-V Multi-Media decoding platform. It integrates a 64-bit XuanTie C906 RISC-V CPU and a HiFi4 DSP to provide the high-efficient computing power. D1-H supports full format decoding such as H.265, H.264, MPEG-1/2/4, JPEG, VC1, and so on. The independent encoder can encode in JPEG or MJPEG. Integrated multi ADCs/DACs and I2S/PCM/DMIC/OWA audio interfaces can work seamlessly with the CPU to accelerate multimedia algorithms and improve the user experience. D1-H supports RGB/LVDS/MIPI DSI/HDMI/CVBS OUT display output interfaces to meet the requirements of the different screen display. D1-H comes with extensive connectivity and interfaces, such as USB, SDIO, EMAC, TWI, UART, SPI, PWM, GPADC, LRADC, TPADC, IR TX&RX, and so on. Besides, D1-H can connect with other different peripherals like WiFi and BT via SDIO and UART.

Highlights

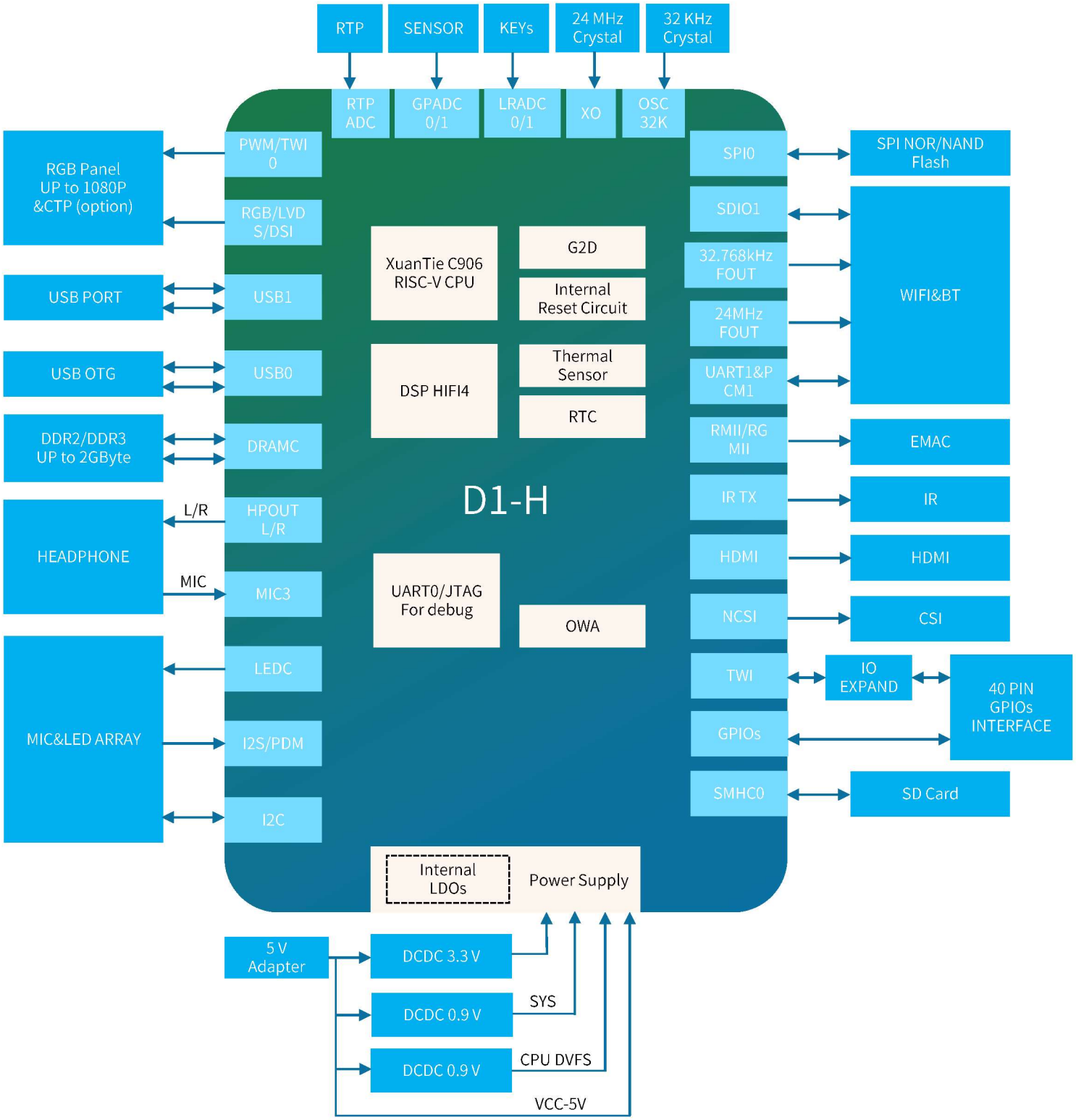
- D1-H integrates 64-bit XuanTie C906 RISC-V CPU to provide energy-efficient and stable computing power.
- D1-H integrates H.265/H.264 4K decoding and SmartColor2.0 post processing to deliver the perfect video entertainment experience.
- D1-H supports high performance 3 ADCs, 2 DACs, 3 I2S/PCM, 8 digital microphones to provide the perfect voice interaction solutions.
- Rich peripheral interfaces, such as RGB, LVDS, MIPI DSI, USB, SDIO, EMAC, TWI, UART, SPI, PWM, GPADC, LRADC, TPADC, IR TX&RX, and so on, greatly facilitate product expansion.
- The advanced process design with lower voltage and lower leakage, the power optimization design for typical scenes, and the enhanced heat dissipation package improve the heating experience of the product.
- Industrial level working temperature, 10-years chip life.

Features

CPU	• XuanTie C906 RISC-V CPU • 32 KB I-cache + 32 KB D-cache
DSP	• HiFi4 • 32 KB I-cache + 32 KB D-cache • 64 KB I-ram + 64 KB D-ram
Memory	• DDR2/DDR3, up to 2 GB • SD3.0/eMMC 5.0, SPI Nor/Nand Flash
Video Engine	• Video decoding -H.265 up to 1080p@60fps, or 4K@30fps - H.264 up to 1080p@60fps, or 4K@24fps - MPEG-1/2/4, JPEG, VC1 up to 1080p@60fps • Video encoding - JPEG/MJPEG up to 1080p@60fps - Supports input picture scaler up/down
Display Engine	• Allwinner SmartColor2.0 post processing for an excellent display experience • Supports de-interlace (DI) up to 1080p@60fps • Supports G2D hardware accelerator including rotate, mixer, lbc decompression functions
Video OUT	• RGB LCD output interface up to 1920 x 1080@60fps • Dual link LVDS interface up to 1920 x 1080@60fps • 4-lane MIPI DSI interface up to 1920 x 1200@60fps • HDMI V1.4 output interface up to 4K@30fps • CVBS OUT interface, supporting NTSC and PAL format
Video IN	• 8-bit parallel CSI interface • CVBS IN interface, supporting NTSC and PAL format
Audio	• 2 DACs and 3 ADCs • Analog audio interfaces: MICIN1P/N, MICIN2P/N, MICIN3P/N, FMINL/R, LINEINL/R, LINEOUTLP/N, LINEOUTRP/N, HPOUTL/R • Digital audio interfaces: I2S/PCM, DMIC, OWA IN/OUT
Connectivity	• USB2.0 OTG, USB2.0 Host • SDIO 3.0, SPI x 2, UART x 6, TWI x 4 • PWM (8-ch), GPADC (2-ch), LRADC (1-ch), TPADC (4-ch), IR TX&RX • 10/100/1000M EMAC with RMII and RGMII interfaces
Package	• LFBGA 337 balls, 13 mm x 13 mm

Block Diagram

Application Diagram



ABOUT ALLWINNER

Allwinner Technology, founded in 2007, is a outstanding designer dedicated to intelligent application SoC, high performance analog component and wireless connectivity IC. It is headquartered in Zhuhai China, with other R&D centers and offices in Shenzhen, HongKong, Xi'an, Beijing and Shanghai. Listed on the GEM of the Shenzhen Stock Exchange in 2015, with the stock code 300458.

Motivated by customer-oriented strategy, Allwinner aligns remarkable R&D teams with long-term core-technology investment in UHD video processing, high-performance multi-core CPU/GPU integration with AI and advanced manufacturing process in terms of high integration , ultra-low power consumption and full-stack integration platform, providing competitive turnkey solutions with considerate services. The products powered by Allwinner spread across from smart hardware, smart home, consumer electronics, HD media, smart video, connected car, industry control, wireless communication to analog products.

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