F133

The Most Cost-Effective Decoding Platform SoC

Overview

F133-A/B is an advanced application processor designed for the video decoding platform. It integrates a 64-bit processor with RISC CPU instruction architecture to provide the most efficient computing power. F133-A/B supports full format decoding such as H.265, H.264, MPEG-1/2/4, JPEG, and so on. And the independent hardware encoder can encode in JPEG or MJPEG. Integrated multi ADCs/D ACs and I2S/PCM/DMIC/OWA audio interfaces can provide the perfect voice interaction solution. F133-A/B supports rich display output interfaces to meet the requirements of the screen display in differentiated markets. F133-A/B can be used in network video machines, advertising machines, digital photo frames, car MP5, and so on.

Highlights

- Integrated 64-bit RISC CPU processor provides powerful computing performance.
- The 1080p full format decoding, rich display output interfaces, and Allwinner SmartColor 2.0 display enhancement technology provide excellent video experience for users.
- To reduce the BOM cost, a 64 MB DDR2 die is embedded for F133-A/B.
- Rich peripheral interfaces, such as USB, SDIO, EMAC, TWI, UART, SPI, PWM, GPADC, 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.

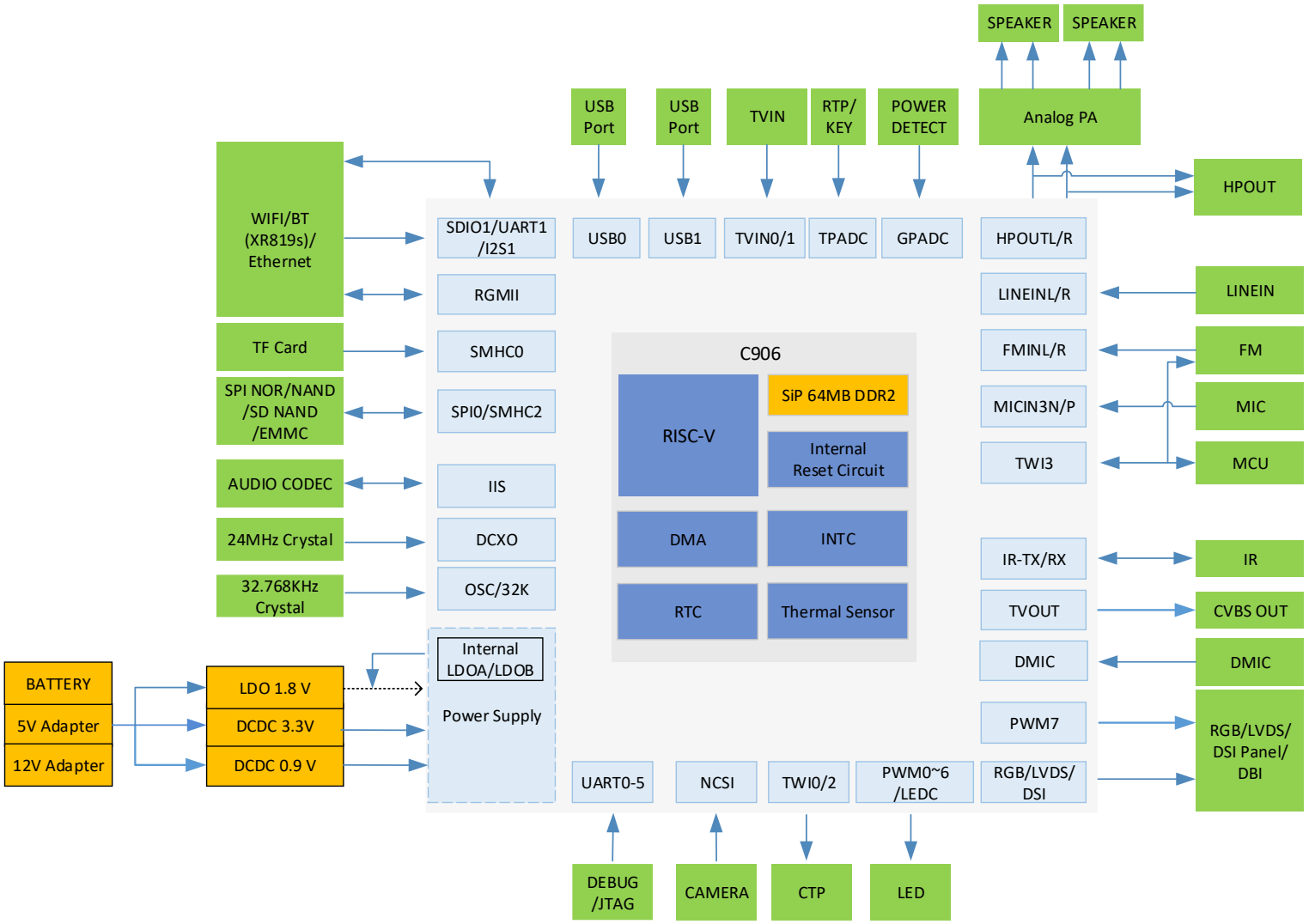
Features

CPU	• RISC CPU • 32 KB I-cache + 32 KB D-cache
Memory	• SIP 64 MB DDR2 • SD3.0/eMMC 5.0, SPI Nor/NAND Flash
Video Engine	• Video decoding -H.265 up to 1080p@60fps -H.264 up to 1080p@60fps -H.263, MPEG-1/2/4, JPEG, Xvid, Sorenson Spark, 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	• CVBS OUT interface, supporting NTSC and PAL format • 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 1080@60fps
Video IN	• 8-bit parallel CSI interface • CVBS IN interface, supporting NTSC and PAL format (only for F133-B)
Audio	• 2 DACs and 3 ADCs • Analog audio interfaces: MICIN3P/N, LINEINL/R, FMINL/R, HPOUTL/R • Digital audio interfaces: I2S/PCM, DMIC, OWA
Connectivity	• USB2.0 OTG, USB2.0 Host • SDIO 3.0, SPI x 2, UART x 6, TWI x 4 • PWM (8-ch), GPADC (1-ch), TPADC (4-ch), IR TX&RX • 10/100/1000M EMAC with RMII and RGMII interfaces
Package	• eQFP128, 14 mm x 14 mm

Block Diagram

Note: F133-A does not support CVBS IN interface.

Application Diagram



ABOUT ALLWINNER

Allwinner Technology, founded in 2007, is an 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, Hong Kong, 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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