

Overview

The H137 is a highly integrated multimedia and display SoC. Its low power consumption, decoding capability for multiple video formats, and rich interfaces can excellently support various multimedia and display application expansion.

For lite multimedia and display application, H137 utilizes a low-power RISC-V CPU and a low-power H265/H264 multimedia decoding unit.

For graphics rendering under Linux and RTOS, this SoC has a built-in keystone correction controller (KSC) and a 2D Graphic hardware accelerator (G2D) that supports rotation and mix. Rendered by Allwinner Awonder1.1 Lite display engine, H137 is able to deliver excellent picture quality.

To meet the expansion requirements of different display applications, H137 also supports RGB888/MIPI-DSI/LVDS video output interfaces, as well as HDMI receiver and parallel CSI video input interfaces to maximize screen compatibility. It also provides USB, SDIO and GMAC interfaces to expand multiple peripherals.

Highlights

- Integrated 64-bit RISC CPU processor provides powerful computing performance.
- External DDR2/DDR3/DDR3L, up to 792 MHz.
- Supports 4K@30fps H265 and 4K@24fps H264 video decoding, and MJPEG/JPEG 1080p@60fps video encoding.
- Video output: supports 1 x RGB888, 1 x Dual-LVDS, and 1 x MIPI DSI interfaces.
- Video input: supports DVP-CSI and 2 x HDMI RX interfaces.
- Important special characteristic: 4-point keystone correction.
- Rich peripheral interfaces, such as USB, SDIO, GMAC, UART, SPI, PWM, GPADC, TPADC, IR, and so on.

Features

CPU	<ul style="list-style-type: none"> • XuanTie C906 RISC-V CPU
Memory	<ul style="list-style-type: none"> • 16-bit DDR2/DDR3/DDR3L, maximum capability up to 1 GB • SD3.0/eMMC5.1 • SPI Nand/Nor Flash

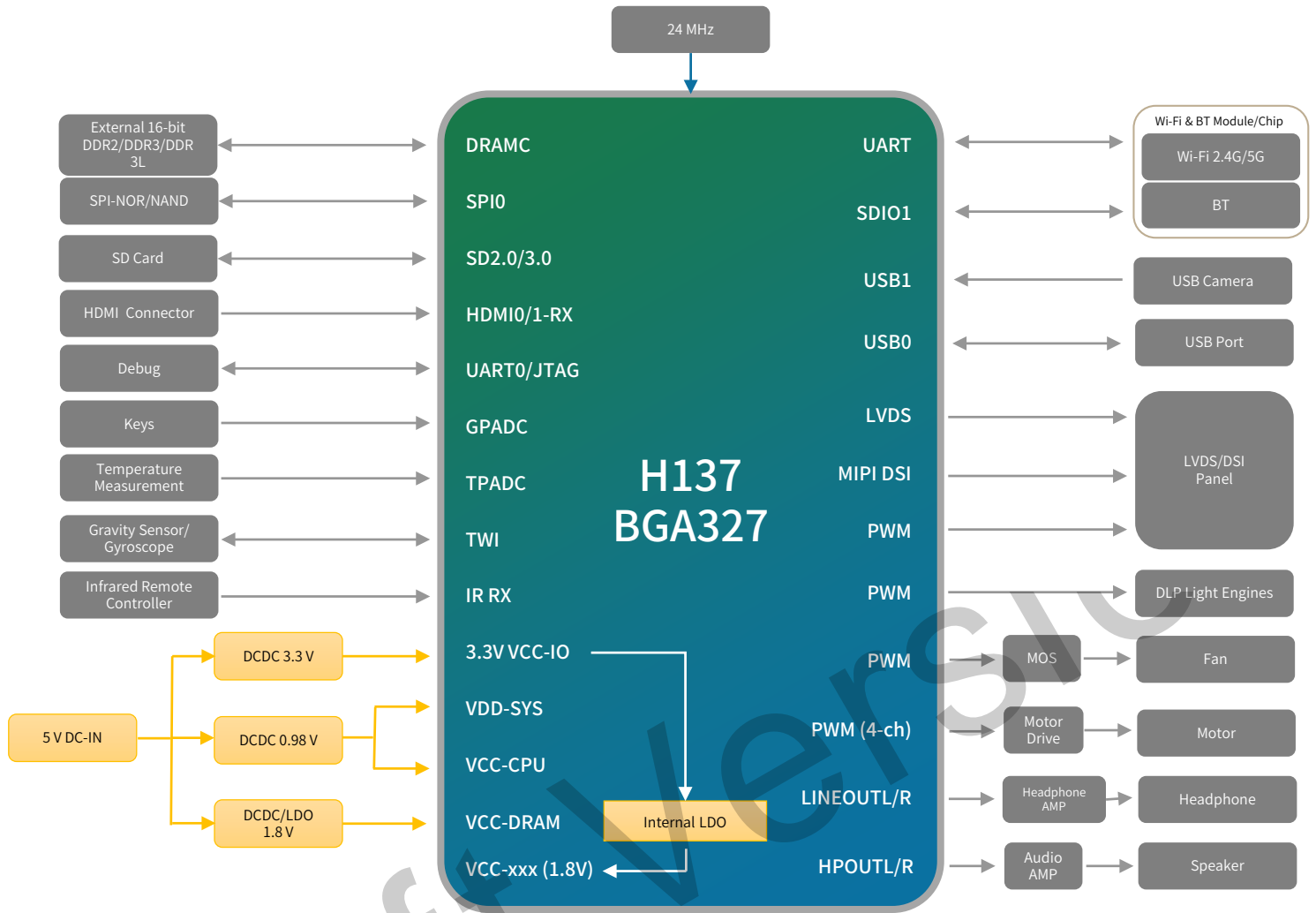
Features

Video Engine	<ul style="list-style-type: none"> • Video decoding <ul style="list-style-type: none"> -H.265 up to 4K@30fps -H.264 up to 4K@24fps -H.263, MPEG-1/2/4, JPEG, VC-1, up to 1080p@60fps • Image decoding <ul style="list-style-type: none"> -JPEG up to 1080p@60fps • Video encoding <ul style="list-style-type: none"> - JPEG/MJPEG up to 1080p@60fps - Supports input picture scaler up/down
Display Engine	<ul style="list-style-type: none"> • Allwinner Awonder1.1 Lite post processing for an excellent display experience • Supports keystone correction (KSC) up to 1920 x 1080@60fps • Supports de-interlace (DI) up to 1920 x 1080@60fps • Supports 2D Graphic hardware accelerator (G2D) including rotate and mix functions
Video IN	<ul style="list-style-type: none"> • 8-bit parallel CSI interface • 2 x HDMI RX interfaces <ul style="list-style-type: none"> - Up to 3840 x 2160 @30fps - Supports HDCP1.4, CEC, and ARC
Video OUT	<ul style="list-style-type: none"> • 1 x RGB888 output interface up to 1920 x 1080@60fps • 1 x Dual-link LVDS interface up to 1920 x 1080@60fps • 4-lane MIPI DSI interface up to 1920 x 1200@60fps
Audio	<ul style="list-style-type: none"> • 2 DACs and 2 ADCs • Analog audio interfaces: <ul style="list-style-type: none"> -Two differential microphone inputs: MICIN1P/N, MICIN2P/N -One stereo line-in input: LINEINL/R -One stereo FM-in input: FMINL/R -One stereo differential lineout output: LINEOUTLP/N, LINEOUTRP/N -One stereo headphone output: HPOUTL/R • Digital audio interfaces: 2 x I2S/PCM, DMIC, OWA IN/OUT
Security	<ul style="list-style-type: none"> • AES, DES, 3DES encryption and decryption algorithms • RSA signature verification algorithm • MD5/SHA and HMAC tamper proofing • Hardware random number generator • Integrated 2 Kbits eFuse storage space
Connectivity	<ul style="list-style-type: none"> • USB2.0 DRD x 1, USB2.0 Host x 1 • SPI x 2, UART x 6, TWI x 4 • 8-ch PWM (8-ch), 2-ch General Purpose ADC (GPADC), 4-ch Touch Panel ADC (TPADC, TPADC pad can be used by GPIO) • 2 x 10/100/1000M GMAC with RMII and RGMII interfaces • SDIO 3.0, IR TX&RX
Package	<ul style="list-style-type: none"> • WBBGA 327 balls • 13 mm x 13mm size, 0.6&0.65 mm ball pitch, 0.3 mm ball size

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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