VR9

Hardware Accelerated VR Solution

The First Dedicated VR Processor of Allwinner

Overview

Allwinner VR9 application processor is a 64-bit quad-core SOC specially designed for VR & AR market. It is based on ARM Cortex ™ -A53, and features a high level of system integration as well as more powerful video playback capabilities combined with lower power consumption. In addition, the VR9 solution has a dedicated hardware accelerated module of ATW to reduce latency. It also supports spatial audio. All of these design considerations will bring end user greater feeling of immersion and better multi-media experience than most of the existing VR solutions in the market.

In terms of software, the VR9 solution is heavily optimized based on native Android system. Plenty of VR specific API and functionality are offered, which helps to speed time-to-market of VR system designer. It is also capable to support third party controller products similar to Daydream controller, which allows user to navigate and interact with the virtual world.

Highlights

Comfortable user experience

- Supports low to 20ms latency.
- Supports up to 1440x1440x2 dual display or 1440x2560 single display.
- Supports SensorHub, with up to 1KHz Gyro and 1KHz Accl sensor data sampling, which brings higher accuracy and stability.
- Supports SOC level hardware acceleration, including ATW, distortion correction,chromatic aberration correction.
- Supports third party controllers to navigate and interact with the environment for more immersive

Powerful video and audio playback effect

- Supports up to 6K@30fps or 4K@60fps HEVC and 4K@30fps VP9 /H264 video decoding, with SmartColor™3.0 image post-processing technique.
- Supports spatial audio.

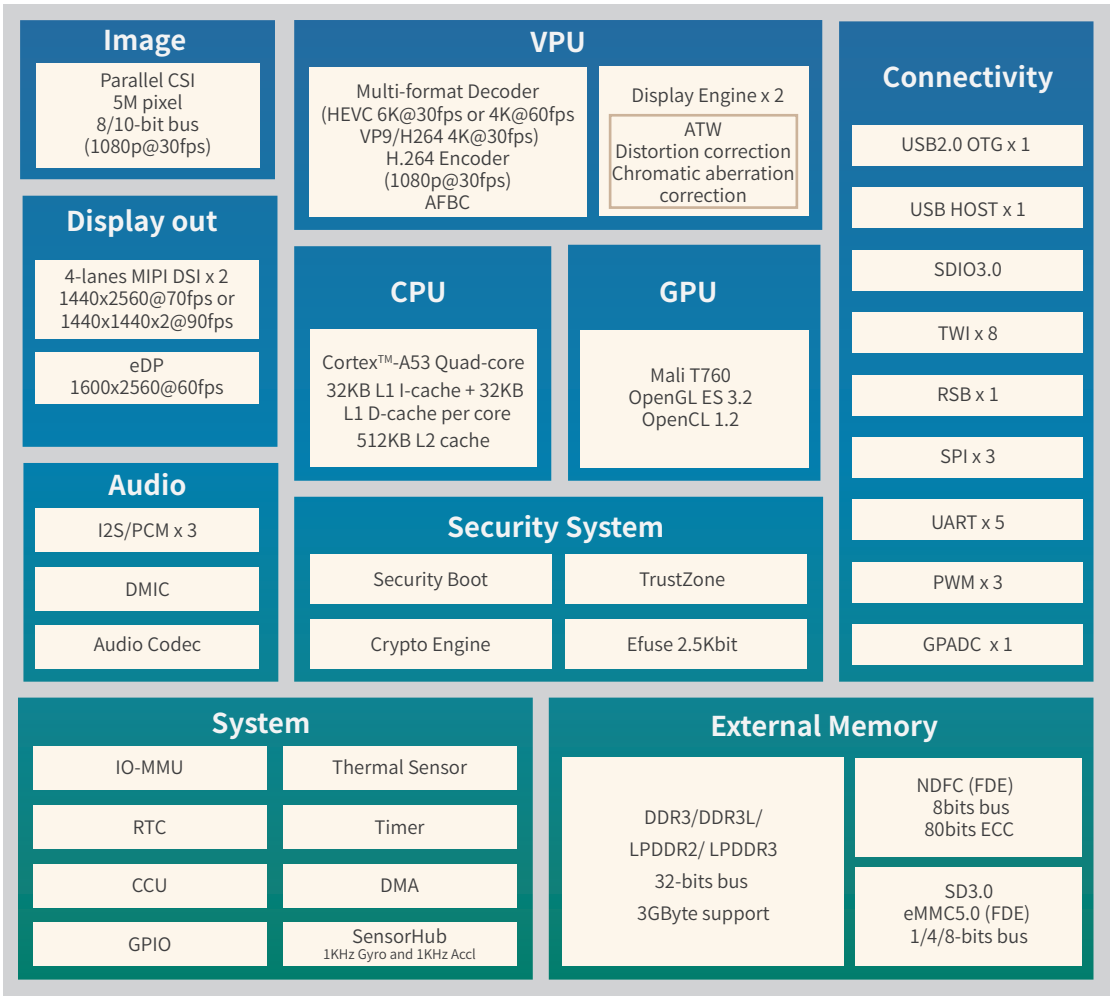
High level of system integration

Thanks to its highly integration, Allwinner VR9 solution has significantly reduced peripheral components, which makes it possible for more compact PCBA design.
By leveraging Allwinner' s professional optimization experience on Android device, power consumption, heat dissipation and system performance are well balanced on VR9 solution.
Thus, VR system designer can implement a lighter weighted and more attractive VR device more easily.

Features

CPU	• Quad-Core ARM Cortex™-A53 1.8GHz • 32KB L1 I-cache + 32KB L1 D-cache per core • 512KB L2 cache • Low-power CoolFlex™ power management architecture
GPU	• Mali-T760 624MHz • Supports OpenGL ES3.2/3.1/3.0/2.0/1.1, DirectX11.1, OpenCL 1.2/1.1 and Renderscript
Memory	• Supports 32-bit DDR3/DDR3L/LPDDR3/LPDDR2 • Supports eMMC 5.0, support Full Disk Encryption(FDE) • Supports 8-bit TLC/MLC/SLC/EF NAND flash with 80-bit ECC, support FDE
Video	• Supports HEVC decoder 6K@30fps，4K@60fps • Supports H.264/ VP9 decoder 4K@30fps • Supports multi-format 1080P@60fps video playback, including VP8,MPEG1/2, MPEG4 SP/ASP L5, H.263, WMV9/VC-1 • Supports H264 HP encoder 1080P@30fps • Supports macro block bit rate control • Supports JPEG encoder 4096X4096
Camera	• Supports 8/10bit DC interface • Supports BT656 interface • Supports ITU-R BT.656 time-multiplexed format • Supports image crop function • Maximum still capture resolution for parallel interface to 5M • Maximum video capture resolution for parallel interface to 1080P@30fps
Audio	• Supports stereo ADC and DAC • Supports five analog audio inputs and three analog audio outputs • Capless headphone driver
Display	• Supports output resolution up to 1440x2560@70fps or 1440x1440x2@90fps • Supports dual Display Engine for high-end VR • Supports SmartColor™3.0 for excellent display experience • Supports Frame Packing/Top-and-Bottom/Side-by-Side Full/Side-by-Side Half 3D format data • Supports hardware accelerator “Portal ”for ATW, distortion correction，chromatic aberration correction
Connectivity	• USB Host, USB 2.0 OTG • SDIO 3.0,RSB • 8x TWI,3x SPI • 5x UART,3x PWM • GPADC
Sensor	• Supports built-in Sensor Hub • Supports 9-axis sensor, including accelerometer, gyroscope, magnetometer • Supports ambient light and proximity sensor
WIFI	• Supports IEEE 802.11 a/b/g/n/ac
OS	• Android 7.1 and above
PMIC	• Customized AXP802
Package	• FCBGA 463 • 15mm x 15mm size,0.65 pitch,0.35 ball size
Process	• 28nm HPC

Block Diagram



ABOUT ALLWINNER

Allwinner Technology is a leading fabless design company dedicated to smart application processor SoCs and smart analog ICs. Its product line includes multi-core application processors for smart devices and smart power management ICs used by brands worldwide.

With its focus on cutting edge UHD video processing, high performance multi-core CPU/GPU integration, and ultra-low power consumption, Allwinner Technology is a mainstream solution provider for the global tablet, internet TV, smart home device, automotive in-dash device, smart power management, and mobile connected device markets. Allwinner Technology is headquartered in Zhuhai, China.

CONTACT US

For more product info, please contact service@allwinnertech.com, or scan the QR code to follow us on Wechat.