R818

Quad-Core Smart Device Processor
The Highly competitive speaker with screen

Overview

R818 is a highly-integrated application processor designed for smart speaker with screen.
It integrates quad-core 64-bit Cortex™-A53 CPU and Imagination PowerVR GE8300 GPU to ensure response rapidity and running smoothness for daily application, such as on-line video, web browsing, and so on.

It also integrates two ADCs for dual-mic voice solutions, DMIC and I2S for multi-mic solutions, two DACs for stereo audio speaker.

Highlights

Powerful Operation Capacity

R818 adopts quad-core 64-bit Cortex™-A53 CPU up to 1.5GHz, which has a more powerful performance to ensure response rapidity of daily application than A35 CPU. The CoolFlex low-power design architecture and dynamic power consumption management technology ensure excellent energy efficiency ratio for most scenes. The integrated Imagination PowerVR GE8300 GPU can easily meet the computing requirements of various mainstream graphics.

High Video Performance

R818 supports mainstream video decoding such as H.265 (maximum performance up to 4K@30fps), H.264 video encoding up to 1080p@60fps, display output up to FHD 1080p@60fps, and Allwinner SmartColor 2.0 display enhancement technology to provide excellent video experience for users.

Rich Audio Interfaces

Analog audio interfaces support two ADCs, two DACs, and one stereo headphone. Digital audio interfaces support I2S, DMIC, and OWA. With the rich audio interfaces, R818 can meet the requirements of mainstream audio recognition solutions. Also, with the companion chip AC107, R818 supports up to 8 mic array to meet the needs of far field voice recognition solutions.

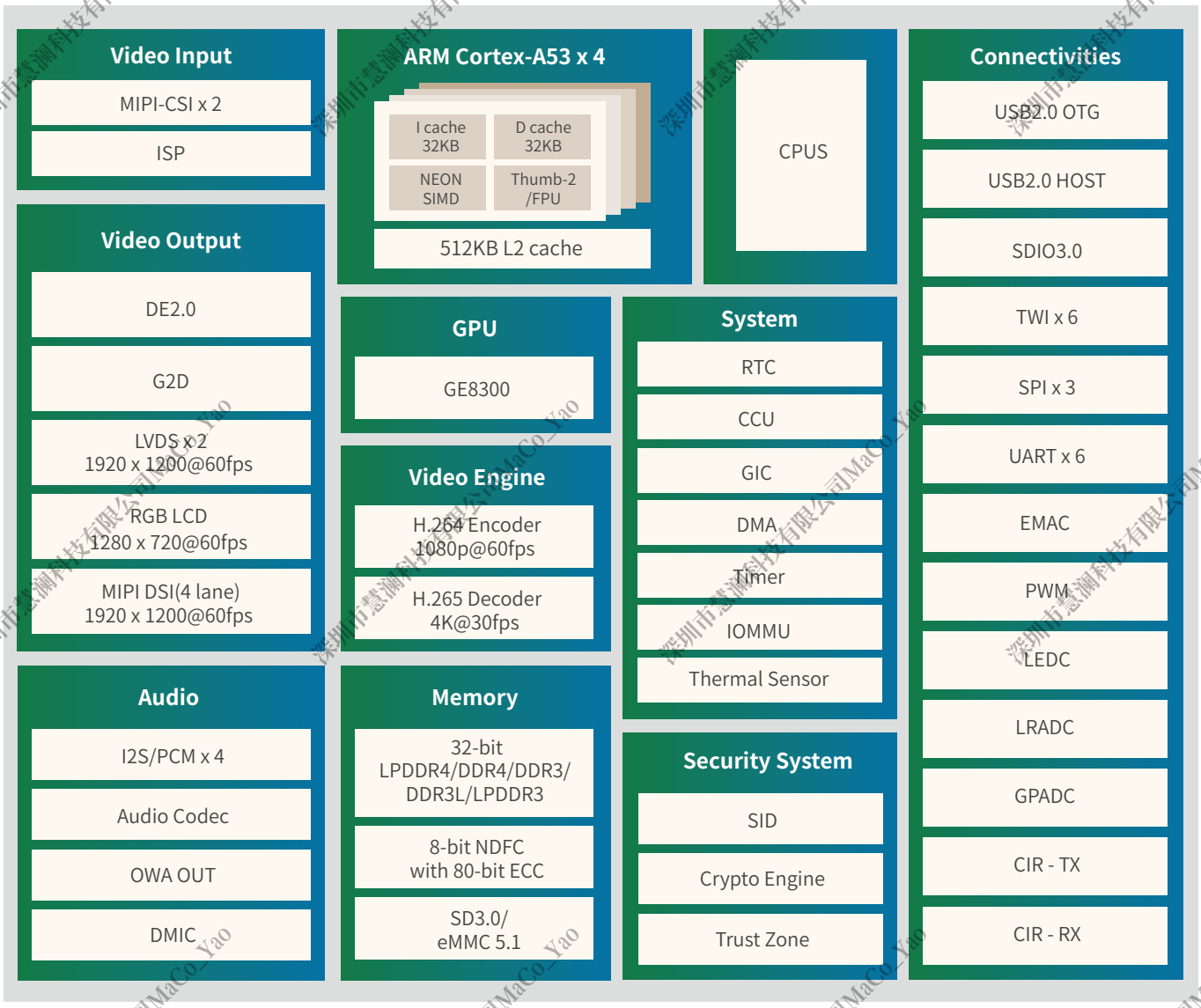
Dual Cameras

R818 integrates two MIPI CSI interfaces and one 13M ISP, which can input/process the data of two camera sensors at the same time and meet the requirements of binocular depth of field, binocular face recognition and other visual AI schemes, such as ToF and 3D-Structured Light.

Features

CPU	• Quad-core ARM Cortex™-A53@1.5 GHz • 32 KB L1 I-cache + 32 KB L1 D-cache per core, 512 KB L2 cache • Low-power CoolFlex™ power management architecture
GPU	• IMG PowerVR GE8300 • Support OpenGL ES3.2, Vulkan1.1, OpenCL1.2
Memory	• DDR3/DDR3L/DDR4/LPDDR3/LPDDR4, 32-bit width, support 4 GB • eMMC 5.1, 8-bit parallel NAND Flash, SPI NAND flash
video	• H.265 video decoder 4K@30fps, H.264 video decoder 1080p@60fps, VP9 video decoder 720p@30fps • H.264 video encoder 1080p@60fps • MJPEG/JPEG Baseline encoder 1080p@30fps
Display	• MIPI-DSI 1920 x 1200@60fps • Dual link LVDS 1920 x 1200@60fps • RGB interface 1280 x 720@60fps • Allwinner SmartColor2.0 post processing for an excellent display experience
Camera	• Dual MIPI-CSI@1.0 Gbps, 4 lanes + 2 lanes • Single camera 13M@10fps or 8M@30fps • Dual camera 5M@25fps + 2M@25fps • Supports 3A/2D de-noise/defect pixel correction
Audio	• 2 DAC and 2ADC • LINE-OUT/MIC-IN/Stereo headphone • 4 I2S, 8 channel DMIC, OWA OUT
ISP	• Up to 8M@30fps or 13M@10fps, can be configured as dual 1080p@60fps • Adjustable 3A functions, including AE, AWB and AF • Supports spatial (2D) de-noise filter • Supports contrast enhancement and sharping • Supports chrominance noise reduction • Supports defect pixel correction
Connectivity	• 2 USB2.0 (USB Host x 1, USB OTG x 1) • SDIO 3.0 • SPIx3, UARTx6, TWIx6, PWM (5-ch) • EMAC, GPADC, LRADC, CIR RX&TX
PMIC	• AXP305B
WIFI/BT	• Allwinner XR829 802.11 b/g/n + BT4.2 • AW859A 802.11 a/b/g/n/ac + BT 5.0
Package	• LFBGA 346 balls • 12 mm x 12 mm body size, 0.5 mm ball pitch, 0.3 mm ball size
OS	• Android 10.0

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.