RK3588

A high performance, low power AIoT processor

Features

CPU

Quad-core ARM Cortex-A76 processor and quad-core ARM Cortex-A55 processor

Integrated 64KB L1 instruction cache, 64KB L1 data cache and 512KB L2 cache for each Cortex-A76

Integrated 32KB L1 instruction cache, 32KB L1 data cache and 128KB L2 cache for each Cortex-A55

Big cluster and little cluster share 3MB L3 cache

MCU for low power control

GPU

ARM Mali-G610 MC4

High performance OpenGL ES 1.1, 2.0 and 3.2, OpenCL 2.2, Vulkan1.2 etc.

Embedded 4 shader cores with shared hierarchical tiler

NPU

6TOPs@int8

Support int4/int8/int16/FP16/BF16/TF32

Support deep learning frameworks: TensorFlow, Caffe, Tflite, Pytorch, Onnx NN, Android NN, etc.

Memory

64bit LPDDR4/LPDDR4x/LPDDR5

Support eMMC 5.1 with HS400, SDIO 3.0 with HS200, NVMe，SFC

Multi-Media

H.265/H.264/VP9/AV1/AVS2 video decoder，up to 8K@60fps

H.264 AVC/MVC Main10 L6.0: 8K@30fps (7680x4320)

VP9 Profile0/2 L6.1: 8K@60fps (7680x4320)

H.265 HEVC/MVC Main10 L6.1: 8K@60fps (7680x4320)

AVS2 Profile0/2 L10.2.6: 8K@60fps (7680x4320)

AV1 Main Profile 0&1: up to 8K@60fps (7680x4320)

1080P other video decoders (VC-1, MPEG-1/2/4, VP8, AVS1)

MPEG-1 up to MP: 1080p@60fps (1920x1088)

MPEG-2 up to MP: 1080p@60fps (1920x1088)

VC-1 up to AP level 3: 1080p@60fps (1920x1088)

VP8 version: 1080p@60fps (1920x1088)

8K@30fps video encoders for H.264/H.265

Video Input

48M Pixel ISP with HDR&3DNR

Multiple (4*4lanes or 4*2lanes+2*4Lanes) MIPI CSI-2 and DVP interface

HDMI 2.0 input to 4K@60fps

Display

Multiple display engine max to 8K

Dual HDMI2.1/eDP V1.4 Combo interface

Dual MIPI-DSI TX, 4 lanes

Dual DP v1.3 embed in HSR3.1, Audio, HDCP2.x

Audio Interface

I2S0/I2S1 with 8 channels

I2S2/I2S3 with 2 channels

SPDIF0/SPDIF1

PDM0/PDM1 with 8 channels

Digital Audio Codec with 2 channels

VAD (Voice Activity Detection)

High Speed Interface

Dual port USB 3.1 with type-C & DP

Dual port USB 2.0 OTG & dual port USB 2.0 host

PCIe3.0, 4 lanes or 2x2 lanes or 4x1 lane

Three port PCIe2.0/SATA 3.0

Dual RGMII interface

Security

ARM Trustzone security extension

Secure boot

Secure JTAG to debug

Key ladder

Crypto (RSA 2K, HAS 256…)

HDCP 2.x for HDMI and DP/eDP

SDK

L

Android12

Device Information

Package:	Package: FCBGA1088L Body: 23mm x 23mm Ball pitch: 0.65mm

Rockchip
RK3588
RK3588 Target Applications
Tablet
AR/VR
ARM PC
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