

Rockchip

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 Main10 L6.0: 8K@30fps (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 2: 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 embedded in IISB 3.1 Audio, HDCP2.3

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
PCIe 3.0, 4 lanes or 2x2 lanes or 4x1 lane
Ethernet port to e20/SA-Asa
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



RK3588 Target Applications

Tablet

AR/VR

ARM PC

.....

Block



RK3588 Target Applications

Tablet
AR/VR
ARM PC