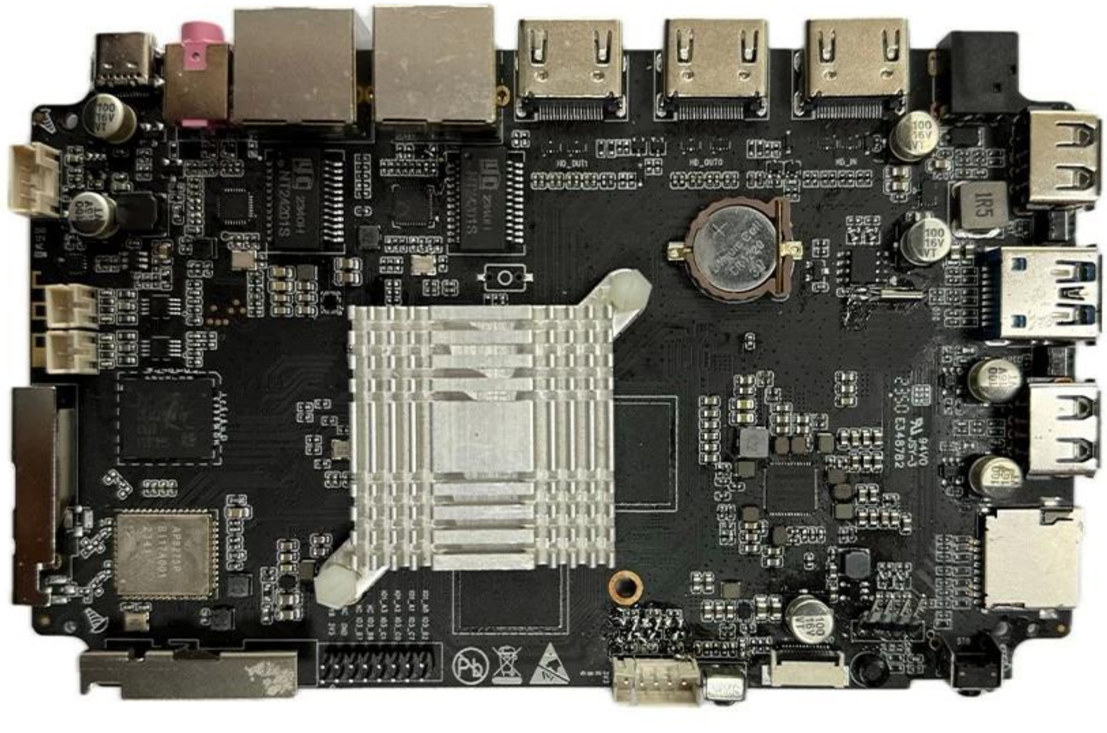
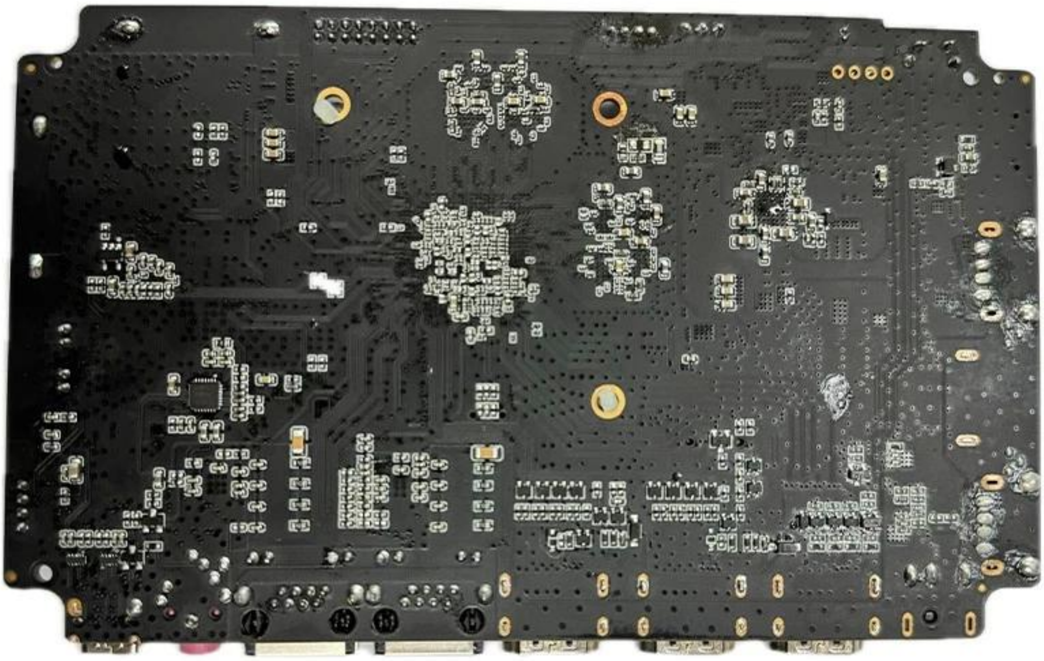
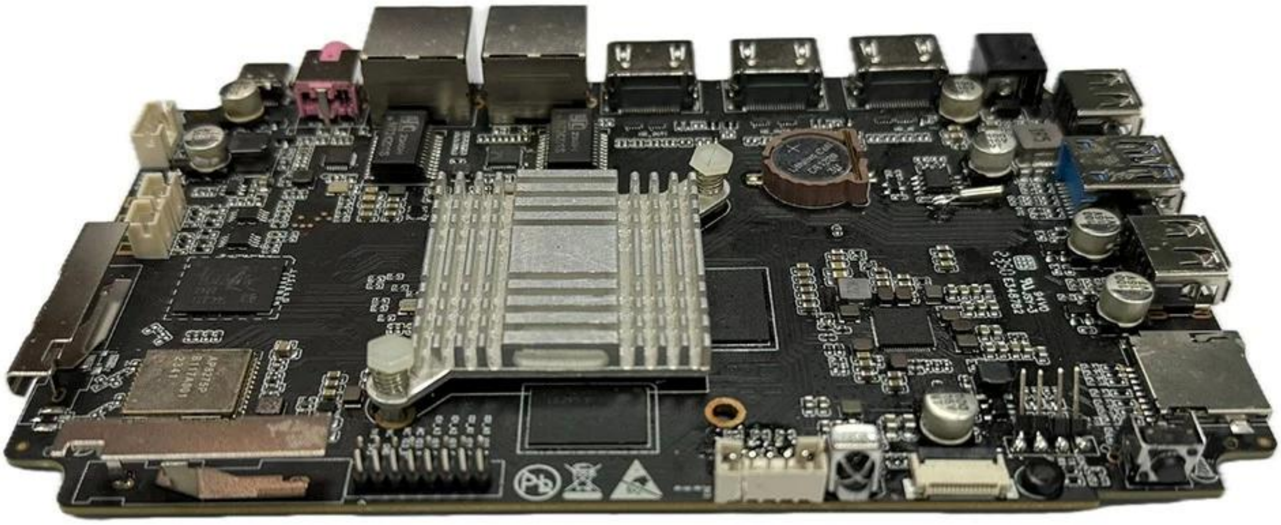
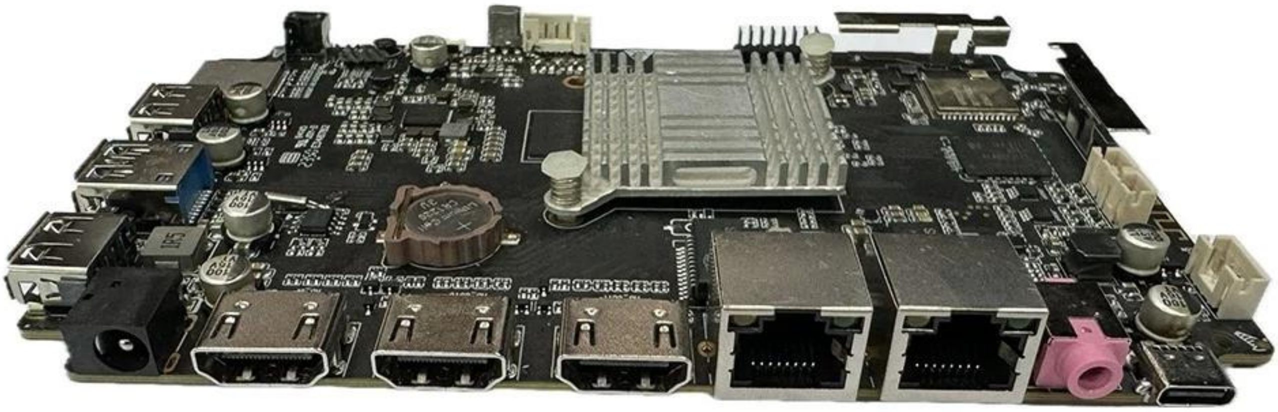
# □□□ AIoT □□□ Rockchip RK3588 □□ 8K

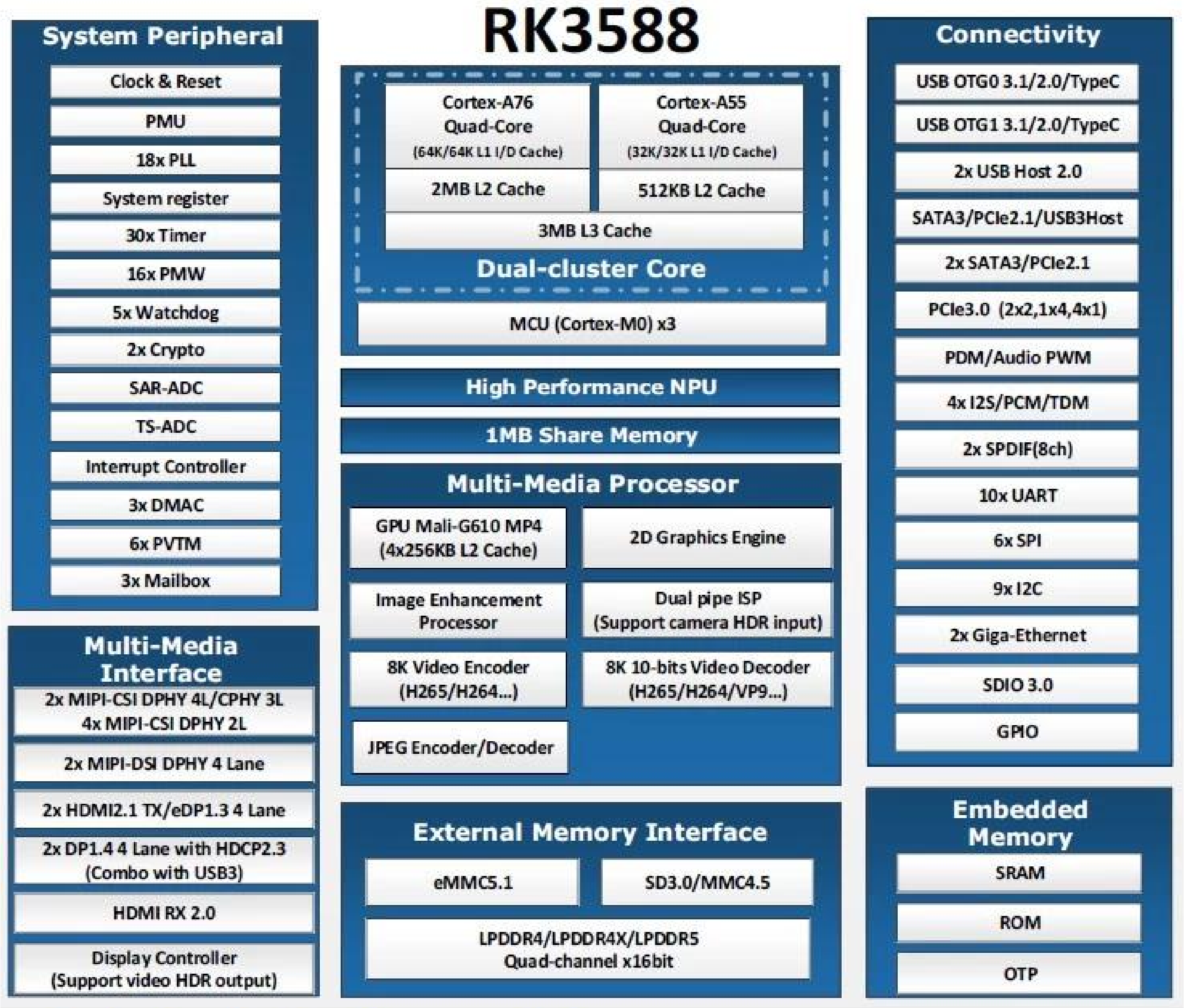
Rockchip
RK3588
A high performance, low power AIoT processor
Rockchip
RK3588



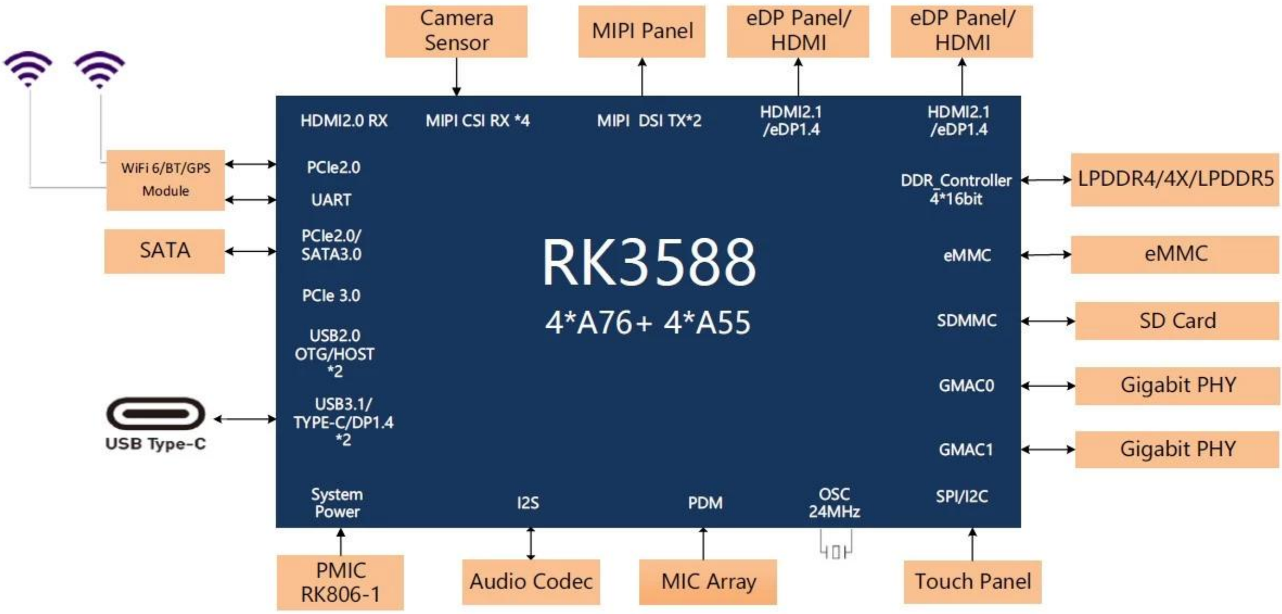


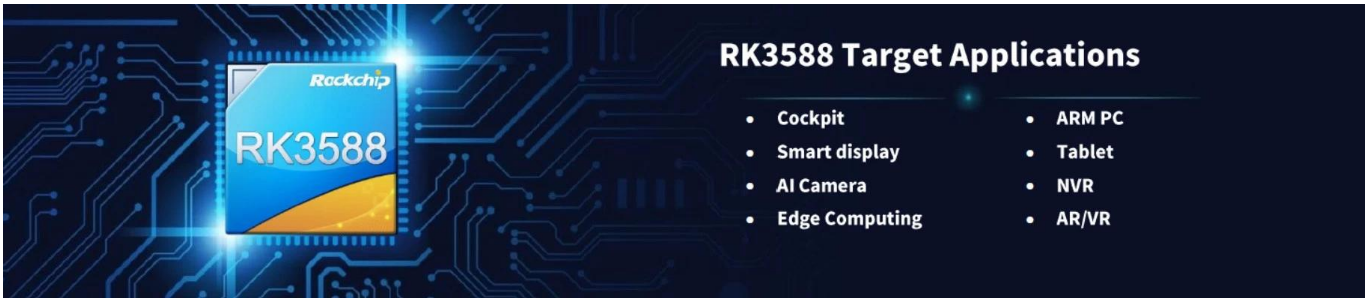





RK3588
System Peripheral
Clock & Reset
PMU
18x PLL
System register
30x Timer
16x PMW
5x Watchdog
2x Crypto
SAR-ADC
TS-ADC
Interrupt Controller
3x DMAC
6x PVTM
3x Mailbox
Cortex-A76 Quad-Core (64K/64K L1 I/D Cache)
Cortex-A55 Quad-Core (32K/32K L1 I/D Cache)
2MB L2 Cache
512KB L2 Cache
3MB L3 Cache
Dual-cluster Core
MCU (Cortex-M0) x3
High Performance NPU
1MB Share Memory
Multi-Media Processor
GPU Mali-G610 MP4 (4x256KB L2 Cache)
2D Graphics Engine
Image Enhancement Processor
Dual pipe ISP (Support camera HDR input)
8K Video Encoder (H265/H264...)
8K 10-bits Video Decoder (H265/H264/VP9...)
JPEG Encoder/Decoder
Connectivity
USB OTG0 3.1/2.0/TypeC
USB OTG1 3.1/2.0/TypeC
2x USB Host 2.0
SATA3/PCIe2.1/USB3Host
2x SATA3/PCIe2.1
PCIe3.0 (2x2,1x4,4x1)
PDM/Audio PWM
4x I2S/PCM/TDM
2x SPDIF(8ch)
10x UART
6x SPI
9x I2C
2x Giga-Ethernet
SDIO 3.0
GPIO
Multi-Media Interface
2x MIPI-CSI DPHY 4L/CPHY 3L
4x MIPI-CSI DPHY 2L
2x MIPI-DSI DPHY 4 Lane
2x HDMI2.1 TX/eDP1.3 4 Lane
2x DP1.4 4 Lane with HDCP2.3 (Combo with USB3)
HDMI RX 2.0
Display Controller (Support video HDR output)
External Memory Interface
eMMC5.1
SD3.0/MMC4.5
LPDDR4/LPDDR4X/LPDDR5 Quad-channel x16bit
Embedded Memory
SRAM
ROM
OTP

## Typical Application Diagram – AIoT


Camera Sensor
MIPI Panel
eDP Panel/ HDMI
eDP Panel/ HDMI
HDMI2.0 RX
MIPI CSI RX *4
MIPI DSI TX*2
HDMI2.1 /eDP1.4
HDMI2.1 /eDP1.4
WiFi 6/BT/GPS Module
PCIe2.0
UART
SATA
PCIe2.0/ SATA3.0
PCIe 3.0
USB2.0 OTG/HOST *2
USB Type-C
USB3.1/ TYPE-C/DP1.4 *2
RK3588
4*A76+ 4*A55
DDR_Controller 4*16bit
LPDDR4/4X/LPDDR5
eMMC
eMMC
SDMMC
SD Card
GMAC0
Gigabit PHY
GMAC1
Gigabit PHY
System Power
I2S
PDM
OSC 24MHz
SPI/I2C
PMIC RK806-1
Audio Codec
MIC Array
Touch Panel


Rockchip
RK3588
RK3588 Target Applications
Cockpit
Smart display
AI Camera
Edge Computing
ARM PC
Tablet
NVR
AR/VR

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