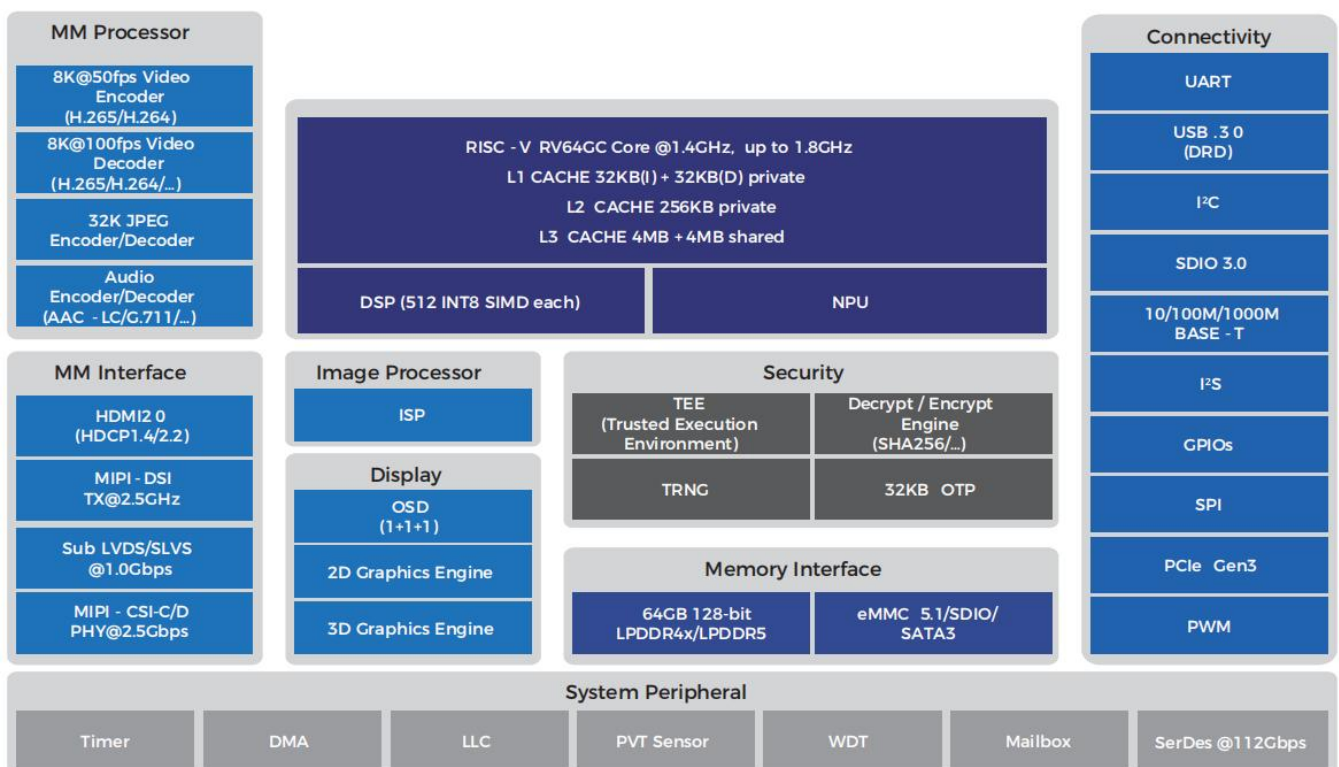


EIC7702X is an IC with high computation. It has 64-bit high-performance RISC-V CPU (processors) and self-developed efficient NPU, also it supports full-stack floating-point computing and comprehensively accelerating generative LLM. The product has rich peripheral expansion interfaces, strong capabilities of audio and video processing, high adaptability in the field of AI PC.

Highlights

- **The Powerful RISC-V CPU:** 64-bit out-of-order RISC-V high-performance processors, support Die-to-Die cache coherency interconnect
- **Multiple Computing Acceleration Units:** Multiple CV and AI computing acceleration units including NPU, GPU and DSP, which can be widely applied to various scenarios in computing
- **Graphics Processing:** High-performance 3D graphics processing capability
- **High Computation:** Up to 39.9 TOPS in INT8, 19.95 TOPS in INT16, and 19.95 FTOPS in FP16
- **Rich Peripherals:** USB 3.0/2.0, Ethernet RGMII, PCIE 3.0, I²C, HDMI, etc.
- **Strong Capabilities of Audio and Video Processing:** Support video decoding up to 8K@100fps and video encoding up to 8K@50fps. Support audio codecs such as ACC-LC, G.711, G.722.1, etc.
- **Security and Reliability:** Hardware encryption engine supports the algorithms of TEE, TRNG, RSA, ECDSA, AES, DES, HMAC, SM4, CRC32, etc.
- **High-Precision LLM Model:** Support software development frameworks such as Pytorch, Tensorflow, PaddlePaddle, ONNX, etc., and high-precision LLM

Functional Diagram



Chip Packaging

- FC-BGA 35 x 35 mm²

Application Scenarios

- Office
- Gaming
- Video
- Internet

Parameters

CPU	<ul style="list-style-type: none">• RISC-V RV64GC 8 cores @1.4GHz up to 1.8GHz• L1 Cache 32KB(I) + 32KB(D) private• L2 Cache 256KB private• L3 Cache 4MB + 4MB shared• Support ECC (support SECDED)
DNN Acceleration Units	<ul style="list-style-type: none">• Up to 39.9 TOPS in INT8, 19.95 TOPS in INT16, and 19.95 FTOPS in FP16
Vision DSP	<ul style="list-style-type: none">• Multiple DSP cores, support 512 INT8 SIMD each
Memory	<ul style="list-style-type: none">• Up to 64GB 128-bit LPDDR 4/4x/5
Video Decoder/Encoder	<ul style="list-style-type: none">• Support HEVC (H.265) and AVC (H.264) encoding and decoding• H.265 up to 8K@100fps or 64-channel 1080P@30fps video decoding• H.265 up to 8K@50fps or 26-channel 1080P@30fps video encoding
JPEG Codec	<ul style="list-style-type: none">• JPEG ISO/IEC 10918-1, ITU-T T.81, up to 32K x 32K
Vision Engine	<ul style="list-style-type: none">• HAE x2 (Bitblit, Crop, Resize, Normalization...)• 3D GPU x2 (support OpenGL-ES 3.2, EGL 1.4, OpenCL 1.2/2.1 EP2, Vulkan 1.2, Android NN HAL)• OSD x2 (3 layers)
Audio Codec	<ul style="list-style-type: none">• AAC-LC encoding• G.711/G.722.1/G.726/MP2L2/PCM/MP3/AAC-LC decoding
Video Interface	<ul style="list-style-type: none">• Video in: MIPI DPHY v2.1 and CPHY v1.2 Sub LVDS/SLVS or up to 8 cameras input• Single channel supports up to 4-Lane MIPI D-PHY/3-Trio C-PHY interface, up to 2.5Gbps/Lane• Single channel supports up to 4-Lane LVDS/Sub-LVDS/HiSPi interface, up to 1.0Gbps/Lane

EIC7702X Product Brief

ESWIN

	<ul style="list-style-type: none">Video out: HDMI 2.0 x2 (support H DCP 1.4/2.2), 4-lane MIPI-DSI TX 2.5GHz x2
External Memory	<ul style="list-style-type: none">eMMC 5.1 x2, SDIO 3.0 x2, SATA3 (6Gb/s) x2, SPI NOR Flash x2
Peripheral Devices and Interfaces	<ul style="list-style-type: none">USB 3.0/2.0 (DRD) x4, 4-lane PCIe 3.0 (RC+EP) x2, GMAC (RGMII interface) x4I²C @ 1Mbps x24, UARTs x10, SPI x4, I²S (slave + master) x6
Security	<ul style="list-style-type: none">TEE, TRNG, ECDSA, RSA, AES, SM4, DES, HMAC, CRC32, Dual core hardware acceleration 32KB OTP
Power	<ul style="list-style-type: none">Typical 15W
Temperature	<ul style="list-style-type: none">-20°C ~ 105°C

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