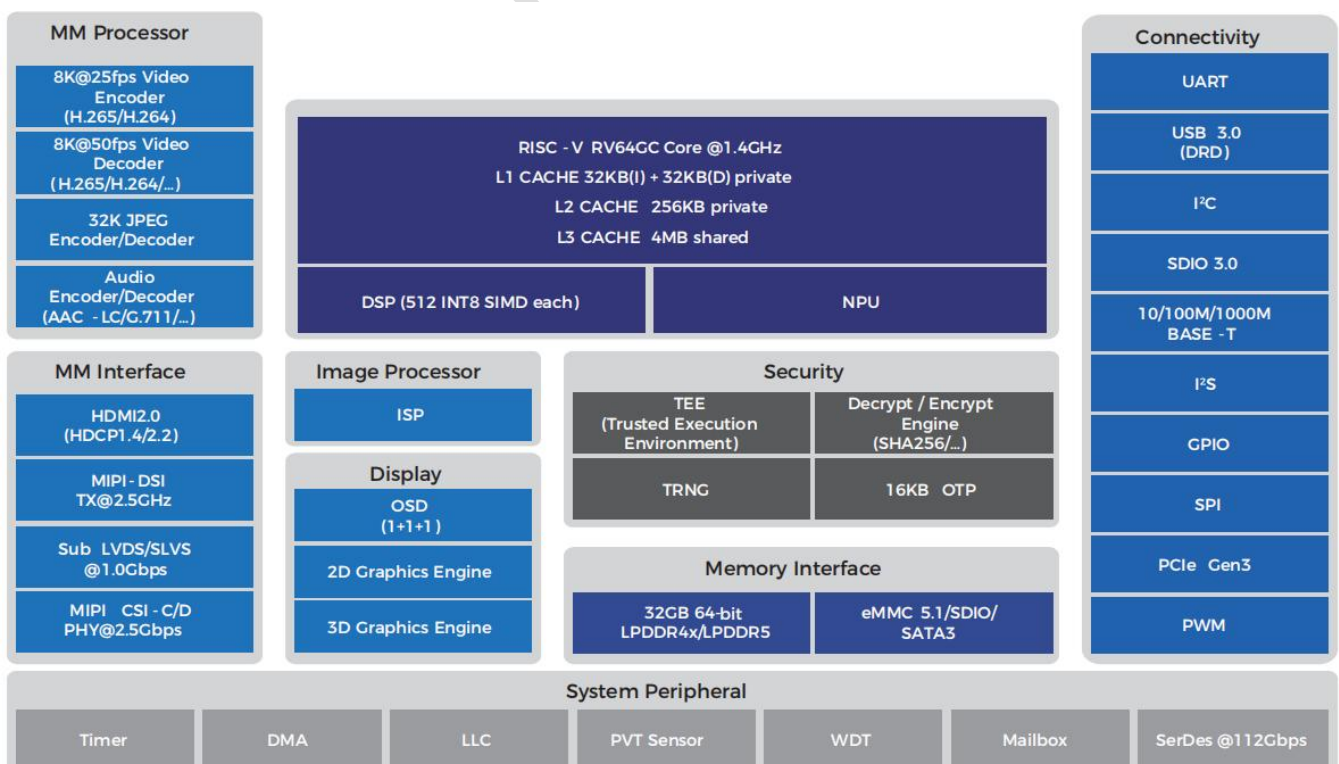


EIC7700 is an excellent SoC specialized in edge computing. It has 64-bit RISC-V high-performance CPU (processors) and self-developed efficient NPU, also it supports full-stack floating-point computing and comprehensively accelerating generative LLM. The product has rich peripheral expansion interfaces, strong capabilities of audio and video processing, and can be well applied in the field of computer vision (CV).

## Highlights

- **The Powerful RISC-V CPU:** The world's first SoC equipped with 64-bit out-of-order RISC-V CPU (processors) and self-developed high-performance NPU
- **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 13.3 TOPS in INT8, 6.65 TOPS in INT16, and 6.65 FTOPS in FP16
- **Rich Peripherals:** USB 3.0/2.0, Ethernet RGMII, PCIE 3.0, I<sup>2</sup>C, HDMI, etc.
- **Strong Capabilities of Audio and Video Processing:** Support video decoding up to 8K@50fps and video encoding up to 8K@25fps. 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-CSP 17 x 17 mm<sup>2</sup>
- FC-BGA 23 x 23 mm<sup>2</sup>

## Application Scenarios

- Machine Vision
- Robotics and Autonomous System
- Manufacturing Safety

## Parameters

<b>CPU</b>	<ul style="list-style-type: none"><li>• RISC-V RV64GC 4 cores @1.4GHz</li><li>• L1 Cache 32KB(I) + 32KB(D) private</li><li>• L2 Cache 256KB private</li><li>• L3 Cache 4MB shared</li><li>• Support ECC (support SECCED)</li></ul>
<b>DNN Acceleration Units</b>	<ul style="list-style-type: none"><li>• Up to 13.3 TOPS in INT8, 6.65 TOPS in INT16, and 6.65 FTOPS in FP16</li></ul>
<b>Vision DSP</b>	<ul style="list-style-type: none"><li>• Multiple DSP cores, support 512 INT8 SIMD each</li></ul>
<b>Memory</b>	<ul style="list-style-type: none"><li>• Up to 32GB 64-bit LPDDR 4/4x/5</li></ul>
<b>Video Decoder/Encoder</b>	<ul style="list-style-type: none"><li>• Support HEVC (H.265) and AVC (H.264) encoding and decoding</li><li>• H.265 up to 8K@50fps or 32-channel 1080P@30fps video decoding</li><li>• H.265 up to 8K@25fps or 13-channel 1080P@30fps video encoding</li></ul>
<b>JPEG Codec</b>	<ul style="list-style-type: none"><li>• JPEG ISO/IEC 10918-1, ITU-T T.81, up to 32K x 32K</li></ul>
<b>Vision Engine</b>	<ul style="list-style-type: none"><li>• HAE (Bitblit, Crop, Resize, Normalization...)</li><li>• 3D GPU (support Open GL-ES 3.2, EGL 1.4, OpenCL 1.2/2.1 EP2, Vulkan 1.2, Android NN HAL)</li><li>• OSD (3 layers)</li></ul>
<b>Audio Codec</b>	<ul style="list-style-type: none"><li>• AAC-LC encoding</li><li>• G.711/G.722.1/G.726/MP2L2/PCM/MP3/AAC-LC decoding</li></ul>
<b>Video Interface</b>	<ul style="list-style-type: none"><li>• Video in: MIPI DPHY v2.1 and CPHY v1.2 Sub LVDS/SLVS or up to 6 cameras input</li><li>• Single channel supports 4-Lane MIPI D-PHY/3-Trio C-PHY interface, up to 2.5Gbps/Lane</li><li>• Single channel supports 4-Lane LVDS/Sub-LVDS/HiSPi interface, up to 1.0Gbps/Lane</li></ul>

# EIC7700 Product Brief

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	<ul style="list-style-type: none"><li>• Video out: HDMI 2.0 (support HDCP1.4/2.2), 4-lane MIPI-DSI TX 2.5GHz</li></ul>
<b>External Memory</b>	<ul style="list-style-type: none"><li>• eMMC 5.1, SDIO 3.0 x2, SATA3 (6Gbps), SPI NOR Flash</li></ul>
<b>Peripheral Devices and Interfaces</b>	<ul style="list-style-type: none"><li>• USB 3.0/2.0 (DRD) x2, 4-lane PCIe 3.0 (RC+EP), GMAC (RGMII interface) x2</li><li>• I<sup>2</sup>C @1Mbps x12, UART x5, SPI x2, I<sup>2</sup>S (slave + master) x3</li></ul>
<b>Security</b>	<ul style="list-style-type: none"><li>• TEE, TRNG, ECDSA, RSA, AES, SM4, DES, HMAC, CRC32</li><li>• Dual core hardware acceleration 16KB OTP</li></ul>
<b>Power</b>	<ul style="list-style-type: none"><li>• Typical 8W</li></ul>
<b>Temperature</b>	<ul style="list-style-type: none"><li>• -20°C ~ 105°C</li></ul>

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