



SpacemiT K3 series chips adopt RISC-V homogeneous integrated computing technology, integrating 8 high-performance computing large cores X100 and 8 ultra-wide parallel computing AI cores A100 developed by SpacemiT, which can provide 130 KDMIPS general computing power and 60 TOPS general AI computing power, and can smoothly run 30 billion parameter models.

The K3 series chips are mainly used in AI consumer hardware, such as AI smart home devices, AI-powered conference and office solutions, AI content creation tools, AI-driven e-commerce and retail systems, and other fields.



Exceptional CPU Performance

8 high-performance X100 cores, up to 2.4 GHz, delivering 130 K DMIPS
Full support for RVA23 Profile
Single-core SPECint2006 > 9.0/GHz, comparable to ARM Cortex-A76



General-Purpose AI Performance

Up to 60 TOPS AI performance, supporting BF16, FP16, FP8, INT8, and INT4 data types
Smoothly run local 30B models, achieving 84% of the overall intelligence performance of a 235B model



Latest RISC-V architecture, robust parallel computing power

A100 supports up to 1024-bit RVV 1.0 vector processing
Dedicated TCM and DMA acceleration channels provided



Rich I/O Expansion Interfaces

Integrated multiple high-speed expansion interfaces to flexibly meet diverse computing needs
Supports 8-lane PCIe, 4x USB 3.0 ports, and 4x GMAC interfaces, among others



Comprehensive Hardware Virtualization

Supports RV Hypervisor 1.0, AIA, and RV IOMMU extensions
Provides full hardware virtualization for CPU, memory, interrupts, and I/O



Enhanced Security and Defense Technologies

Supports M/S/U processor privilege levels with hardware mitigations against Spectre- and Meltdown-class attacks
Supports China's commercial cryptography standards SM2, SM3, and SM4



Compliant with Industrial-Grade Standards

Delivers stable and reliable computing performance across a wide temperature range of -40°C to 85°C, meeting the demanding requirements of industrial applications

Key Stone K3 Series RISC-V AI CPU Features

High Performance RISC-V Processor

- 8× X100™ 64-bit RISC-V AI Processor Cores
- X100™ is a quad-issue, out-of-order high-performance core
- 8 MB shared L2 cache per 8-core cluster

60TOPS General-Purpose AI Compute

- 8-core A100™ delivers up to 60 TOPS AI performance
- Model throughput > 10 Tokens/s @ 30B
- Supports FP16, BF16, FP8, INT8, and INT4 data format
- Supports all AI algorithms and large-model deployment

RISC-V Hardware Virtualization

- RVH 1.0 extension for CPU and memory virtualization
- RV AIA extension for interrupt virtualization
- RV IOMMU extension for device virtualization

RISC-V Security Architecture

- Supports RISC-V PMP & ePMP, combined with IOPMP for high-level security protection
- Secure boot, secure storage & signature verification
- Hardware acceleration for AES / SHA / RSA / SM2 / SM3 / SM4
- Full product lifecycle security management support

Memory

- 64-bit LPDDR5 - 6400Mbps
- 64-bit LPDDR4x - 4266Mbps
- Up to 32 GB capacity, with bandwidth up to 51 GB/s

Storage

- SPI Flash
- eMMC 5.1
- UFS 2.2
- SDIO 3.0 / SD Card
- SSD support: NVMe over PCIe

Real-Time RISC-V Processor

- Dual-core RT24™ 64-bit RISC-V real-time processor
- Six-stage in-order pipeline per core

Multimedia and Display

- Integrated 3D graphics engine supporting Vulkan, OpenCL, and OpenGL ES
- 4K 120fps decoding for H.265, H.264, VP9, and other formats
- 4K 60fps encoding for H.265, H.264, and other formats
- Dual 3840×2160@60fps display outputs
- MIPI-DSI 8Lane display output 4.5Gbps/Lane, supporting:
 - 3840×2160@60fps
 - 2560×1440@90fps
 - 1920×1080@60fps, etc.
- Dual DP/eDP display outputs, supporting:
 - 3840×2160@60fps
 - 2560×1440@144fps, etc.
- 4x MIPI-CSI 12Lanes 4 + 4 + (2 + 2)
- Supports up to s12 camera inputs

Interface

- 8× PCIe lanes (8 Gbps per lane), across 5 PCIe controllers
 - PCIe x8 supports both RC and EP modes
 - Hot-plug supported
- 3× USB3.0 Host (Combo with PCIe, includes USB2.0)
- 1× USB3.0 DRD (Type-C, includes 2.0 OTG)
- 1× USB2.0 Host)
- 4× GMAC (RGMII&RMII&MII)
 - TSN Protocol support
- 6× SPI, 2× eSPI, 17× UART, 10× CAN-FD, 9× I2C, 30× PWM

Power

- TDP: 15W ~ 25W

