# RV1126B

A High-performance AI Vision SoC


## Key Features:

- High-performance CPU
- High-performance NPU, support MLMs (Multimodal Large Models)
- Customized low power AI-ISP, upgrade clarity, sporty tailing, facial and license plate effects in low light scenarios
- Support multi-sensor dynamic splicing
- Super encoding, saving storage over 50% compared to traditional H.265/H.264
- Third-generation fast boot and AOV technology
- Safer, support SM2, SM3, SM4, TrustZone and Keyladder

## Key Parameters:

### CPU

- Quad-core ARM Cortex-A53
- 32KB I-Cache, 32KB D-Cache, 512KB L2 cache
- Support NEON accelerated, integrated FPU
- Support TrustZone
- Low power MCU

### NPU

- 3TOPS
- Supports INT4, INT8, INT16, FP16, BF16 and TF32
- Support MLMs (Multimodal Large Models)

### Memory

- 32-bit DDR3/DDR3L/DDR4/LPDDR3/LPDDR4/LPDDR4X
- Support eMMC 4.51, dual and quad SPI flash, supports both SDR and DTR mode

### Multimedia

- 12M AI-ISP with 2F HDR(Line-based/Frame-based/DCG)
- Support geometric correction of arbitrary shapes such as fish eyes
- Supports 6-DoF digital image stabilization
- Support MIPI CSI /sub LVDS, support MIPI virtual channels
- Support 2x4-Lane or 4x2-Lane up to 4 sensor inputs
- Support 8/10/12/14/16 Bit RGB Bayer DC timing video input, clock frequency up to 148.5MHz
- Support BT.656, BT.1120 video input interface
- Support mainstream CMOS thermal imaging sensor
- H.264/H.265 video codec capability:
  - 3840x 2160@30 +1920*10800@30 encoding
  - 3840x 2160@30 encoding + 3840x2160@30 decoding
  - Six bit rate control modes (CBR, VBR, FIXOP, AVBR, QPMAP, and CVBR)
  - Intelligent encoding mode
  - 8-area OSD
  - Ultra-low delay encoding

### Display

- MIPI-DSI/RGB interface, up to 1920x1080@60fps
- Support BT.1120 or BT.656 interface output

### 2D Graphics Engine

- Support rotation, x-mirror, y-mirror
- Support alpha blending
- Support scale down/up

### External Interfaces

- RGMII interface with TSO network acceleration, embedded RMII Ethernet PHY
- USB 3.0 OTG and USB 2.0 host
- Dual SDIO 3.0 interface for Wi-Fi and SD card
- Embedded audio codec, RTC, POR

### Electrical Specifications

- Power consumption
  Typical power consumption at 8M30FPS: TBD
- Operating Voltage
  - 0.9V core voltage
  - 1.8/3.3V I/O voltage
  - 1.8V analog voltage
  - DDR3/DDR3L/LPDDR3/DDR4/LPDDR4/LPDDR4X interface voltage: 1.5/1.35/1.2/1.2/1.1/0.6V

### Package Information

- RV1126B 14mm x 14mm
- RV1126B-P (pin2pin RV1126) 14mm x 14mm

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## RV1126B Block Diagram