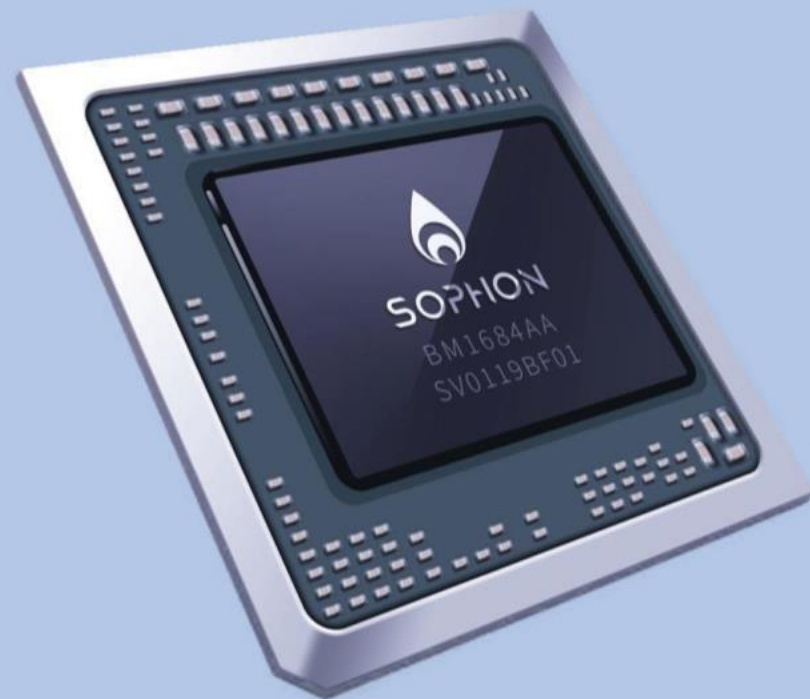SOPHON

SOPHON Intelligent Computing Chip BM1684

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BM1684 Specification

1 Independently Developed TPU Architecture
   17.6T INT8；2.2T FP32

2 On-chip high-speed SRAM reaches 32MB
   LPDDR4x bandwidth: 68.3GB/s
   Maximum capacity: 16GB

3 8-Core ARM A53
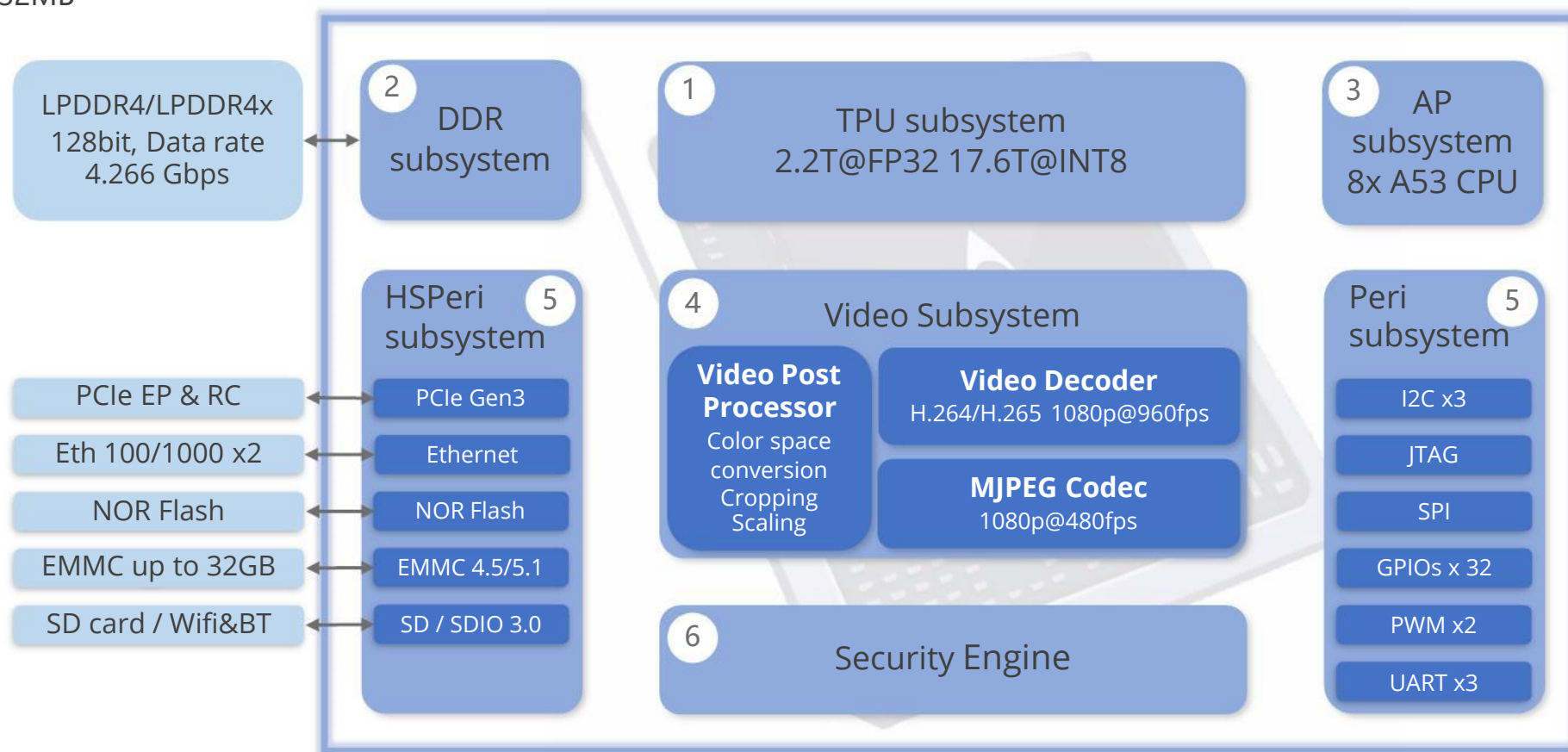   Main Frequency2.3GHz, 42320
   DMIPS

4 Video Decoding1080p@960fps
   Video Encoding 1080p@50fps
   MJPEG Codec 480fps 1080P
   Video post-processing system

5 Rich I/Os
   Dual Gigabit Network Interface
   PCIE RC/EP

6 Security engine
   Data encryption and decryption
   Signature

7 -40~105℃
   Typical power consumption16W

BM1684

LPDDR4/LPDDR4x 128bit, Data rate 4.266 Gbps

2 DDR subsystem

1 TPU subsystem 2.2T@FP32 17.6T@INT8

3 AP subsystem 8x A53 CPU

5 HSPeri subsystem

4 Video Subsystem

Video Post Processor Color space conversion Cropping Scaling

Video Decoder H.264/H.265 1080p@960fps

MJPEG Codec 1080p@480fps

6 Security Engine

5 Peri subsystem

Interface	HSPeri
PCIe EP & RC	PCIe Gen3
Eth 100/1000 x2	Ethernet
NOR Flash	NOR Flash
EMMC up to 32GB	EMMC 4.5/5.1
SD card / Wifi&BT	SD / SDIO 3.0

Peri subsystem:
I2C x3
JTAG
SPI
GPIOs x 32
PWM x2
UART x3

Force Model

SOC
- The 3rd gen. self-developed AI chip with strong acceleration capability in the whole process
- The actual computing power and power consumption are significantly improved compared with competitors

Application
- Multiple industrial and algorithm partners
- Compatible for different CPU and OS

Hardware Type
- Diversified product forms for cloud-edge application
- High density and low energy consumption on the cloud side
- Easy to deploy, maintain and integrate on the edge side

Tools and I/Os
- Support dockerizing and K8S
- Mature and usable SDK and toolchain
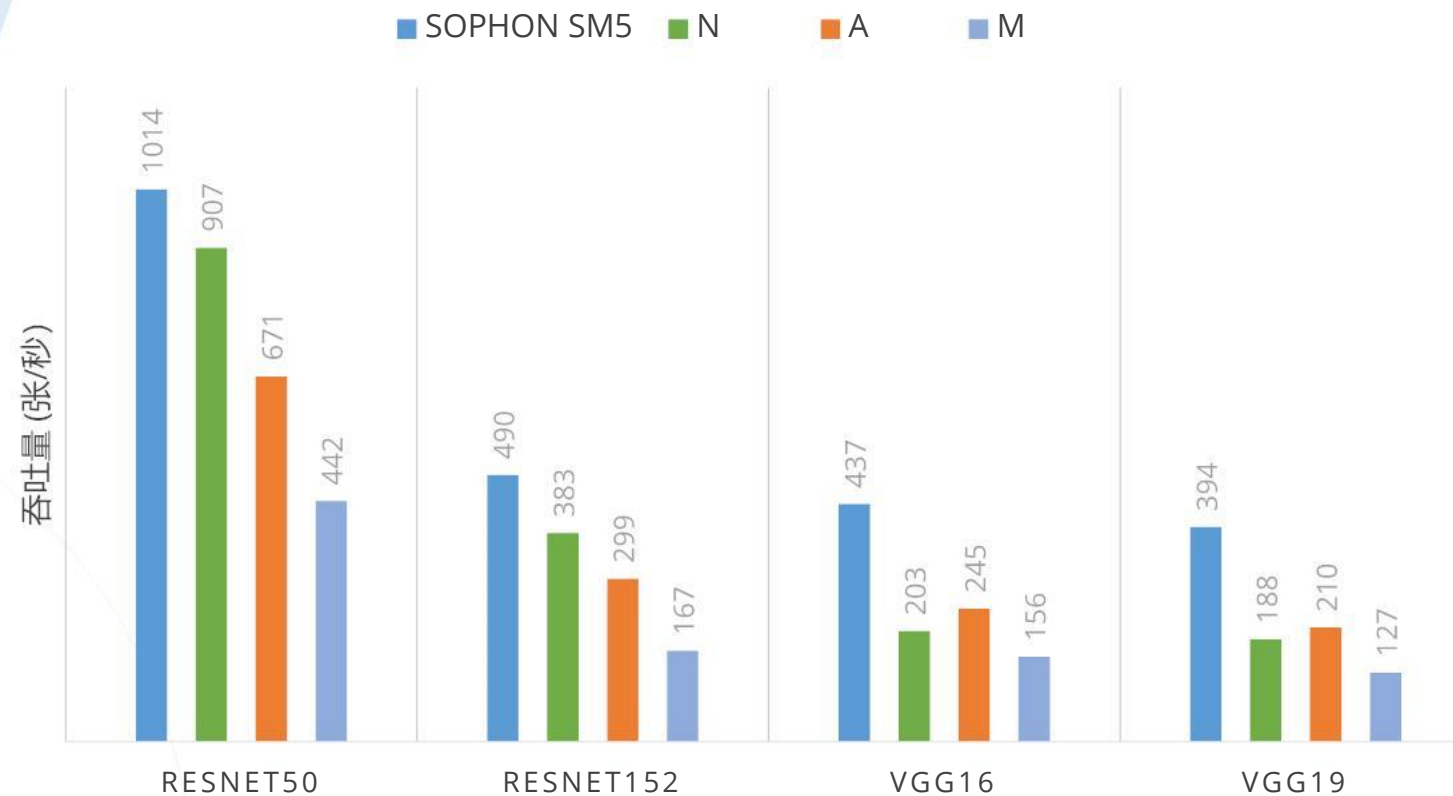- Rapid and convenient algorithm migration

AI Framework

Support mainstream deep learning frameworks: TensorFlow / PyTorch / Paddle / Caffe / ONNX / MXNet / Tengine / DarkNet

Competitors Analysis

Measured Performance Analysis (IMG/S)

■ SOPHON SM5   ■ N   ■ A   ■ M

吞吐量 (张/秒)

	SOPHON SM5	N	A	M
RESNET50	1014	907	671	442
RESNET152	490	383	299	167
VGG16	437	203	245	156
VGG19	394	188	210	127

VS

* Description: N, M and A are the mainstream intelligent computing module platforms in the industry. The data is measured based on INT8 quantized Batch4

SOPHGO

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