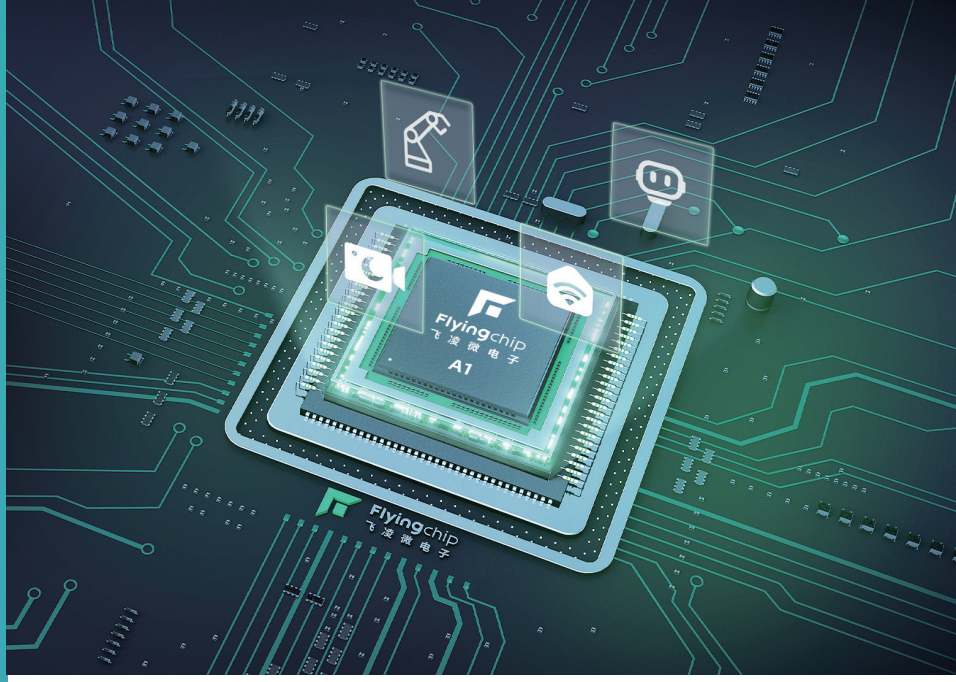
PRODUCT BRIEF

A1
Camera AI SoC

AIoT应用端侧视觉AI SoC芯片



Key Features

Processor

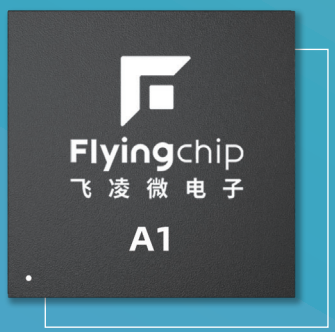
- ARM® Cortex® A7 CPU
- 0.8TOPS NPU

Advanced Image Processing

- Multi-exposure HDR
- Dual Camera support
- RGGB/RGB-IR/monochrome color filter pattern
- Advanced ISP function

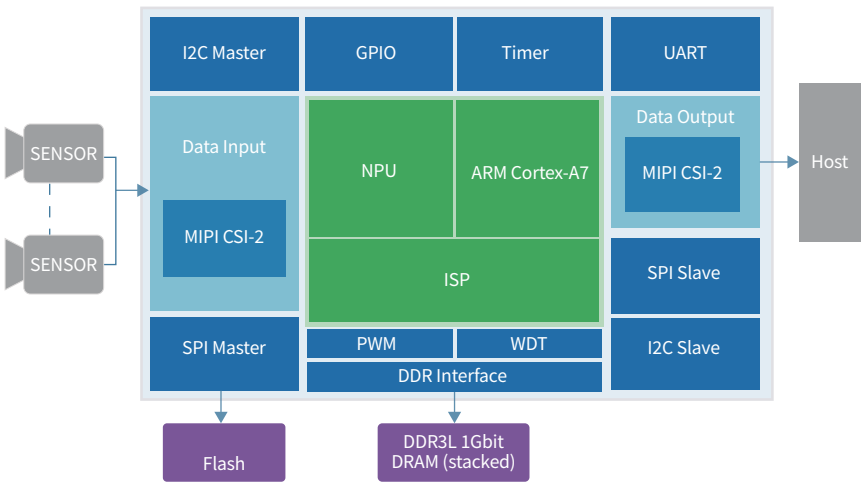
Applications

- Single/Stereo Camera for AI Devices
- Sensing Cameras for Smart Home Devices
- Industrial Inspection Applications
- Night Vision Enhancement Applications
- Light Computational Power AI Vision Processing



Overview

Flyingchip™ A1 is a camera System-on-Chip (SoC) with on-device computation enabled for AIoT applications. The A1 integrates an advanced Image Signal Processor (ISP), proprietary Neural Processing Unit (NPU), and embedded Central Processing Unit (CPU), with on-chip DDR3L memory. The advanced ISP supports high-performance noise reduction and image quality enhancement, multiple-exposure HDR with a dynamic range of up to 120dB, high-resolution RGB-IR processing, and dual ISP pipeline processing. Flyingchip' s proprietary Neural Processing Unit (NPU) used on A1 incorporates upgraded Convolutional Neural Networks (CNNs), delivering a dedicated processing performance of up to 0.8TOPS at INT8 precision for improved accuracy and speed of image data processing. Additionally, this camera SoC embeds Arm® Cortex®-A7 CPU with NEON® technology to accelerate AI pre/post process, system control, and other advanced processing.



A1 Block Diagram

General Specifications

Processor Core
- CPU: ARM® Cortex®-A7 up to 1.2GHz
- NPU: 0.8TOPS@ INT8
- RISC-V @ 32bit

Memory
- DDR3L 16bit 1Gb (stacked)
- Efuse 2K bits

Peripheral Interfaces
- Multiple SPI, I2C, and UART
- Multiple GPIO ports, PWM
- Watchdog, Timer

Camera Interface
- MIPI D-PHY CSI-2 v3.0 specification compliant up to 16 virtual channels two CSI-2 input ports and CSI-2 output port
- Supports 1/2/4 data lanes per port, up to 2.5Gbps/lane

HDR Image Signal Processor
- Up to Dual 3MP 30fps@HDR and Single 3MP 60fps@HDR
- Single 5MP 60fps@RGB-IR
- Single 8MP 30fps@HDR
- Multi-camera synchronization
- Programmable data types
- Supports multi-CFA pattern: RGGB, RGBIR, MONO

Power Supply
- Analog 1.8V, I/O 1.8V, Core 0.9V, DDR 1.35V

A1 Camera Development Platform

The A1 camera development platform contains the necessary tools, software, hardware, and documentation to develop a camera utilizing the A1 while supporting the development of customized features.

Evaluation Kit
- A1 main board with connectors for sensor/lens board and peripherals
- Sensor board: SmartSens
- Datasheet, BOM, schematics
- SDK and reference application with C source code

Software Development Kit
- Image Tuning Tool
- Detailed documentation, including a programmer’ s guide and more
- SSNE for NPU development

Contact Us

Flyingchip Microelectronics (Shanghai) Co., Ltd., as a wholly-owned subsidiary of SmartSens Technology, is committed to the R&D of advanced image processing technology and products. With thorough insights into the market needs, Flyingchip provides high-performance intelligent visual processing chip solutions for on-device computation applications across automobiles, etc. Through close cooperation with automobile manufacturers, Tier 1 suppliers, and algorithm solution providers, Flyingchip aims to bring intelligent vision technologies to new levels for future mobility.

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