PRODUCT BRIEF

M1Max Camera SoC

车载轻算力端侧视觉SoC芯片

Key Features

Processor

- ARM® Cortex® A7 x 2 CPU
- 1.5TOPS NPU

Advanced Image Processing

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

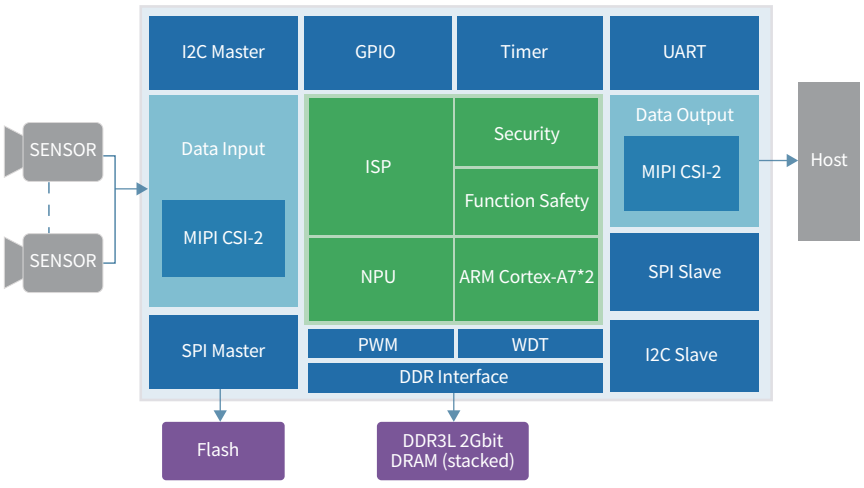
Applications

- Light computation power AI visual application
- Automotive Driver Assistance System (ADAS)
- Driver Monitoring System (DMS)
- Occupant Monitoring System (OMS)
- Surround View System (SVS)
- Camera Monitor System (CMS)
- Forward View Camera (FVC)
- Rear View Camera (RVC)
- Side View Camera
- Stereo Camera
- E-Mirror

Flyingchip 飞凌微电子 M1Max

Overview

Flyingchip™ M1Max is an automotive-grade camera System-on-Chip (SoC) with on-device computation enabled for intelligent automotive vision applications. The M1Max 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 144dB, LED Flicker Suppression (LFS), high-resolution RGB-IR processing of up to 5 MegaPixels (MPs), and dual ISP pipeline processing. Flyingchip' s proprietary NPU used on M1Max incorporates upgraded Convolutional Neural Networks (CNNs), delivering a dedicated processing performance of up to 1.5TOPS at INT8 precision for improved accuracy and speed of image data processing. Additionally, this camera SoC embeds Arm® Cortex®-A7 x 2 CPU with NEON® technology to accelerate AI pre/post process, system control, and other advanced processing.



M1Max Block Diagram

General Specifications

Processor Core

- CPU: ARM® Cortex®-A7 x 2 up to 1.2GHz
- NPU: 1.5TOPS@INT8
- RISC-V @ 32bit

Memory

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

Peripheral Interfaces

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

Power Supply

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

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

Automotive Certification

- Supports ISO26262 ASIL-B hardware metrics
- Certified AEC-Q100 Grade2

M1Max Camera Development Platform

The M1Max camera development platform contains the necessary tools, software, hardware, and documentation to develop a camera utilizing the M1Max while supporting the development of customized features.

Evaluation Kit

- M1Max 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.

- Building 8, Shanghai Business Park IV, No. 889 Tianlin Road, Minhang District, Shanghai
- Tel : 021-6485-3570
- E-mail : info@flyingchipmicro.com