

With the quick development of the AD/ADAS industry, the penetration rate of new vehicles equipped ADAS grows very fast. The vision-based ADAS system is currently the most mainstream solution in the industry.

With the innovative Proton™ AI ISP, mixed precision Neutron™ NPU, rich resources and ultra low power performance, M55H supplies the complete solution of chip, SDK, AI tool chain, reference algorithm and EVK targeting the Intelligent Front View, CMS, DMS and OMS market.



Key Specifications

Neutron™ v2.0 NPU

- Popular CNN model support
- Low-bit Mixed Precision support
- High performance Heterogeneous Multicore architecture.
- Pipeline level Optimization
- Full functional toolchain, supporting high precision PTQ and rich operator set

Multi-Core system

- Quad-Core Arm® Cortex®-A7 1GHz
- Delicate CV Engine
- Support rich CV operators

Powerful Video Processing

- 8MP30 maximum Video encoding performance
- Hardware mosaic module

Proton™ v2.0 AI-ISP

- AI NR/HDR/EIS/Demosaic
- AI De-Purpling/De-Haze
- RGB-IR AI fusion
- AI sharpen CCM



Rich Interfaces

- 3x4 Lane MIPI Rx
- 2xMIPI CSI/DSI Tx
- Support 1G Ethernet MAC

Certificate

- AEC-Q100 Grade 2

Low Power

- TDP 3.2w

Application

Intelligent Front View System

- Optimize the corner case with AI-ISP
- Close-loop data system with HW masking
- Mixed precision with low width
- Ultra low power consumption
- Complete reference design.

CMS System

- Powerful AI-ISP, improve HDR and low illumination scenario
- low latency < 60ms
- Fast cold boot
- Complete Reference design.

DMS&OMS integrated system

- Perception enhanced with RGB & IR fusion
- Image quality enhancement

Product Description

CPU:

- Quad-Core Arm® Cortex®-A7 1GHz
- 32KB I-Cache/D-cache
- Advanced SIMD and floating-point extension(Arm® Neon™)

NPU:

- Supports Mainstream deep learning frameworks
- Supports batch acceleration
- Supports mixed precision
- Mature tool chain, high-precision PTQ, rich operator

ISP:

- Maximum performance 8M@30fps
- Supports RAW8/10/12/14 and YUV8
- Supports many CFA Patterns, such as RGGB, RGB-IR, RCCB Pattern
- AI ISP
 - AI-HDR and multi-exposure AI-HDR
 - 2/3 frameDOL HDR
 - AI Raw Local Tone Mapping
 - AI-3DNR
 - AI fusion of RGB and IR image
 - AI-DIS, AI-EIS
 - AI-Demosaic
 - AI-Sharpen
 - AI-CCM
- HDR support
- 3A (AF, AWB, AE) and PDAF support

- LDC and fisheye distortion correction, defog, depurple, Gamma compensation, mirror/flip,EIS,DRC and DRD support

Video Encoding:

- H.264/H.265、JPEG Encoding
- Maximum performance: 4K@30fps

Video and image process:

- Supports rich CV functions, such as crop.

Interface

Video Interfaces

Video Input

- 3 x 4-lane MIPI-CSI2 Rx (or 2x4+2x2) with four camera input, up to 2.5Gbps/Lane

Video output

- 2 x 4-lane MIPI-CSI2 Tx/DSI, up to 2.5Gbps/Lane

Memory Interface:

DDR

- 32-bit LPDDR4/LPDDR4x
- Speed up to 3733Mbps
- Capability up to 4GB

eMMC

- eMMC v5.1
- Capability up to 2TB

SDCard

- SD3.0

SPI Flash

- Single- / dual- / quad-SPI NOR and SPI NAND

Peripherals :

Ethernet

- 1xRGMII/RMII

Others

- PWM, I2C, SPI, UART, ADC
- USB 2.0

Security

- Secure boot
- Memory security isolation
- Hardware true random number generator
- Cryptographic acceleration - AES/DES/3DES/SHA-1/224/256
- Public Key Accelerator - RSA /ECDSA
- Chinese national crypto algorithms: SM2/SM3/SM4

Physical

Operating temperature range:

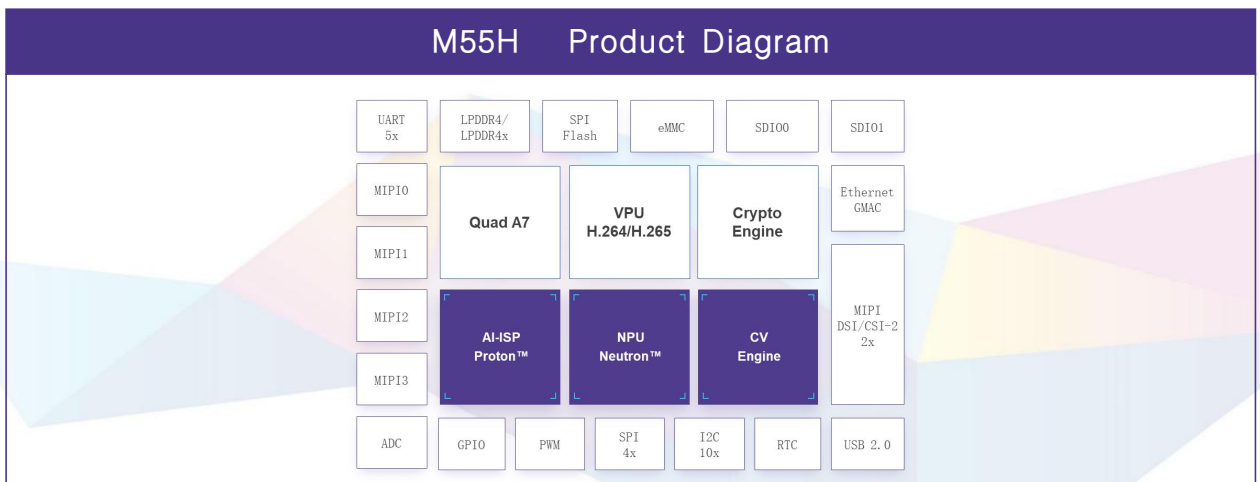
- -40°C ~ 105°C (Ambient)

Package:

- 14x14 mm,0.65 mm pitch, FC-CSP

Qualification:

- AEC-Q100 Grade 2



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