i.MX 8M Family - Arm® Cortex®-A53, Cortex-M4, Audio, Voice, Video
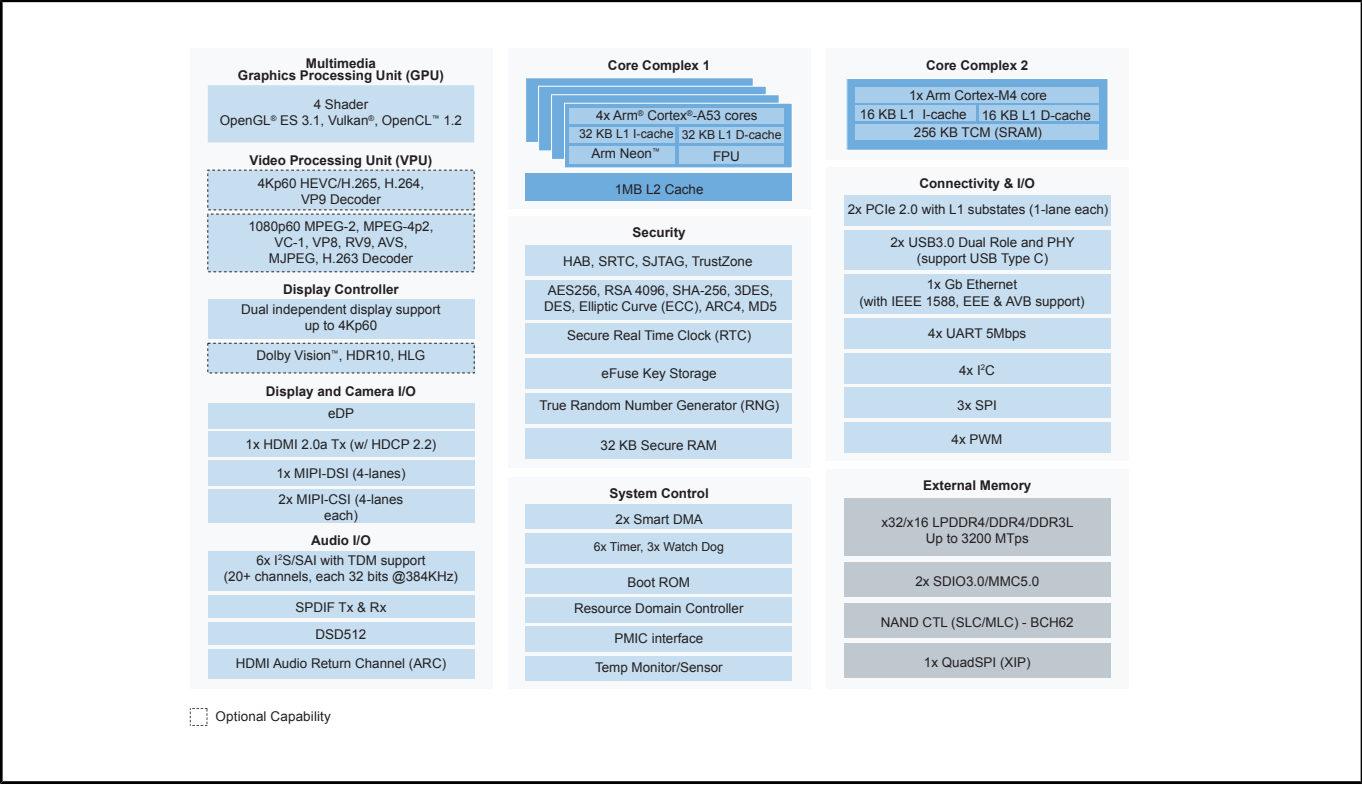
i.MX8M

Last Updated: Apr 11, 2024

The i.MX 8M family of applications processors based on Arm® Cortex®-A53 and Cortex-M4 cores provide advanced audio, voice and video processing for applications that scale from consumer home audio to industrial building automation and mobile computers.

- Video quality with full 4K UltraHD resolution and HDR (HDR10 and HLG)
- Highest levels of pro audio fidelity with more than 20 audio channels each @384KHz
- DSD512 audio capability
- Optimized for fanless operation, low thermal system cost and long battery life
- Flexible memory options
- The newest high-speed interfaces for flexible connectivity
- Fully supported on NXP's 10 and 15-year Longevity Program

i.MX 8 applications processors are part of NXP's EdgeVerse™ edge computing platform.

i.MX 8M Processors Block Diagram

Multimedia
Graphics Processing Unit (GPU)

4 Shader
OpenGL® ES 3.1, Vulkan®, OpenCL™ 1.2

Video Processing Unit (VPU)

4Kp60 HEVC/H.265, H.264,
VP9 Decoder

1080p60 MPEG-2, MPEG-4p2,
VC-1, VP8, RV9, AVS,
MJPEG, H.263 Decoder

Display Controller

Dual independent display support
up to 4Kp60

Dolby Vision™, HDR10, HLG

Display and Camera I/O

eDP

1x HDMI 2.0a Tx (w/ HDCP 2.2)

1x MIPI-DSI (4-lanes)

2x MIPI-CSI (4-lanes
each)

Audio I/O

6x I²S/SAI with TDM support
(20+ channels, each 32 bits @384KHz)

SPDIF Tx & Rx

DSD512

HDMI Audio Return Channel (ARC)

▫ Optional Capability

Core Complex 1

4x Arm® Cortex®-A53 cores
32 KB L1 I-cache | 32 KB L1 D-cache
Arm Neon™ | FPU

1MB L2 Cache

Security

HAB, SRTC, SJTAG, TrustZone

AES256, RSA 4096, SHA-256, 3DES,
DES, Elliptic Curve (ECC), ARC4, MD5

Secure Real Time Clock (RTC)

eFuse Key Storage

True Random Number Generator (RNG)

32 KB Secure RAM

System Control

2x Smart DMA

6x Timer, 3x Watch Dog

Boot ROM

Resource Domain Controller

PMIC interface

Temp Monitor/Sensor

Core Complex 2

1x Arm Cortex-M4 core
16 KB L1 I-cache | 16 KB L1 D-cache
256 KB TCM (SRAM)

Connectivity & I/O

2x PCIe 2.0 with L1 substates (1-lane each)

2x USB3.0 Dual Role and PHY
(support USB Type C)

1x Gb Ethernet
(with IEEE 1588, EEE & AVB support)

4x UART 5Mbps

4x I²C

3x SPI

4x PWM

External Memory

x32/x16 LPDDR4/DDR4/DDR3L
Up to 3200 MTps

2x SDIO3.0/MMC5.0

NAND CTL (SLC/MLC) - BCH62

1x QuadSPI (XIP)

View additional information for i.MX 8M Family - Arm® Cortex®-A53, Cortex-M4, Audio, Voice, Video.

Note: The information on this document is subject to change without notice.