



Transforming
interactions in
ways you've
never imagined

i.MX 8M Family of Applications Processors

Built with **industry-leading audio, voice and video processing**, the i.MX 8M applications processor family is ideal for applications scaling from consumer home audio to industrial building automation and mobile computers.

TARGET APPLICATIONS

- ▶ Streaming video devices – over-the-top (OTT) set top boxes, digital media adapters, digital signage, machine visual inspection
- ▶ Streaming audio devices – surround sound, wireless or networked speakers, sound bars, audio/video (AV) receivers, public address systems
- ▶ Voice control and voice assistants, with reference designs for homes or noisy industrial environments
- ▶ General purpose human machine interface (HMI) solutions – touch, voice, graphics, video, image analytics, vision, sensor

INDUSTRY-LEADING VIDEO AND AUDIO

- ▶ **Video quality with full 4K UltraHD resolution and High Dynamic Range (HDR)**
Delivers 10-bit video with 50% more colors and up to 40 times more brightness than current TV displays with Dolby Vision, HDR10, and HLG resolution. HDR can display the finest details for medical imaging, detailed inspection and magnifying the tiniest objects.
- ▶ **Highest levels of pro audio fidelity**
Up to 20 audio channels enabled on a price-competitive mobile applications processor. It brings DSD512 audio and a game-changing selection of advanced audio streaming interfaces into the next generation of connected speakers, sound bars and AV receivers.

PERFORMANCE AND VERSATILITY

- ▶ **Up to four 1.5 GHz ARM Cortex-A53 processors**
Optimized for fanless operation, low thermal system cost and long battery life. The ARM® Cortex®-A cores can be powered off while the Cortex-M4 subsystem performs low power, real time system monitoring.
- ▶ **Flexible memory options**
Offers LPDDR4 memory interface for the highest performance and lowest standby power, or DDR4 and DDR3L interfaces for lowest system cost.
- ▶ **The newest high-speed interfaces for flexible connectivity**
 - Two USB 3.0 interfaces with PHY and Type-C support
 - Two PCIe interfaces (1-lane each) with L1 substates for fast wakeup and low power
 - HDMI 2.0a, MIPI-DSI (4-lane) and eDP display interfaces
 - Up to two MIPI-CS12 (4-lane) camera interfaces
 - Gigabit Ethernet MAC with Audio Video Bridging (AVB) and IEEE capability



ADVANCED HMI SOLUTIONS

► Industrial and consumer HMI

Designs can leverage the latest audio, video and voice control capabilities. Software solutions support reliable voice control in noisy environment without a DSP.

► Dual displays

Up to 4Kp60 resolution on the HDMI 2.0a output and 1080p60 resolution on the MIPI-DSI (4-lanes) interface.

► Enriched user experience

Provides a 4-shader graphics core supporting the latest OpenGL ES 3.1, OpenCL 1.2, OpenGL 3.0, OpenVG and Vulkan standards.

► Video processing unit

Playback all the latest video standards up to 4K resolution using h.264, h.265 and VP9 (for YouTube 4K) codecs with HDR.

THE SCALABLE PLATFORM OF CHOICE

► Comprehensive software support

Android™, Linux®, FreeRTOS and partner commercial operating systems

► Industrial and consumer qualified

Industrial (-40 °C to 105 °C Tj), consumer (0 °C to 95 °C Tj)

PIN AND POWER COMPATIBLE

Highly scalable design options allow a single platform to cover multiple products. Pin- and power-compatible packages (all 0.65 pitch) allow a single PCB platform and utilize different i.MX 8M processors as product needs dictate.

EARLY DEVELOPMENT ACCESS

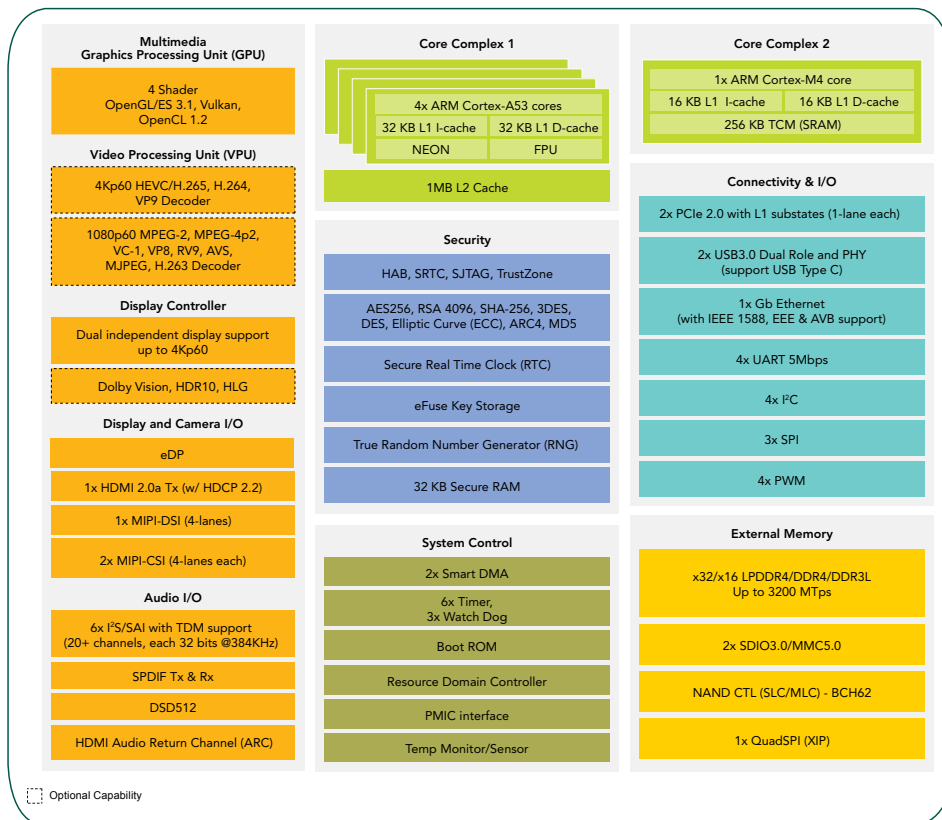
The i.MX 8M evaluation kit (EVK) is available now to prototype i.MX 8M systems. Contact your NXP sales representative for details.

i.MX 8M FAMILY—DIFFERENTIATED FEATURES

Feature	i.MX 8M Dual/i.MX 8M Quad	i.MX 8M QuadLite
ARM® Core	2 or 4 x Cortex-A53	4 x Cortex-A53
ARM Core	1 x Cortex-M4F	1 x Cortex-M4F
Audio	20 channels in/out; 32-bit up to 384 KHz, with DSD512 support	
GPU	GC7000Lite	GC7000Lite
Video Acceleration	4Kp60, h.265 and VP9	
Camera	2 x MIPI-CSI	2 x MIPI-CSI

*2-lane PCIe can act as 2 x 1-lane PCIe

i.MX 8M FAMILY BLOCK DIAGRAM



www.nxp.com/IMX8M

NXP, the NXP logo and SafeAssure are trademarks of NXP B.V. All other product or service names are the property of their respective owners. ARM, Cortex and TrustZone are registered trademarks of ARM Limited (or its subsidiaries) in the EU and/or elsewhere. All rights reserved. © 2017 NXP B.V.

Date of Release: November 2017
Document Number: IMX8MFAMFS REV 1