i.MX 8ULP Applications Processor Family

i.MX8ULP

Last Updated: Dec 22, 2025

The i.MX 8ULP applications processor family brings ultra-low power processing and advanced integrated security with EdgeLock® secure enclave to the intelligent edge.
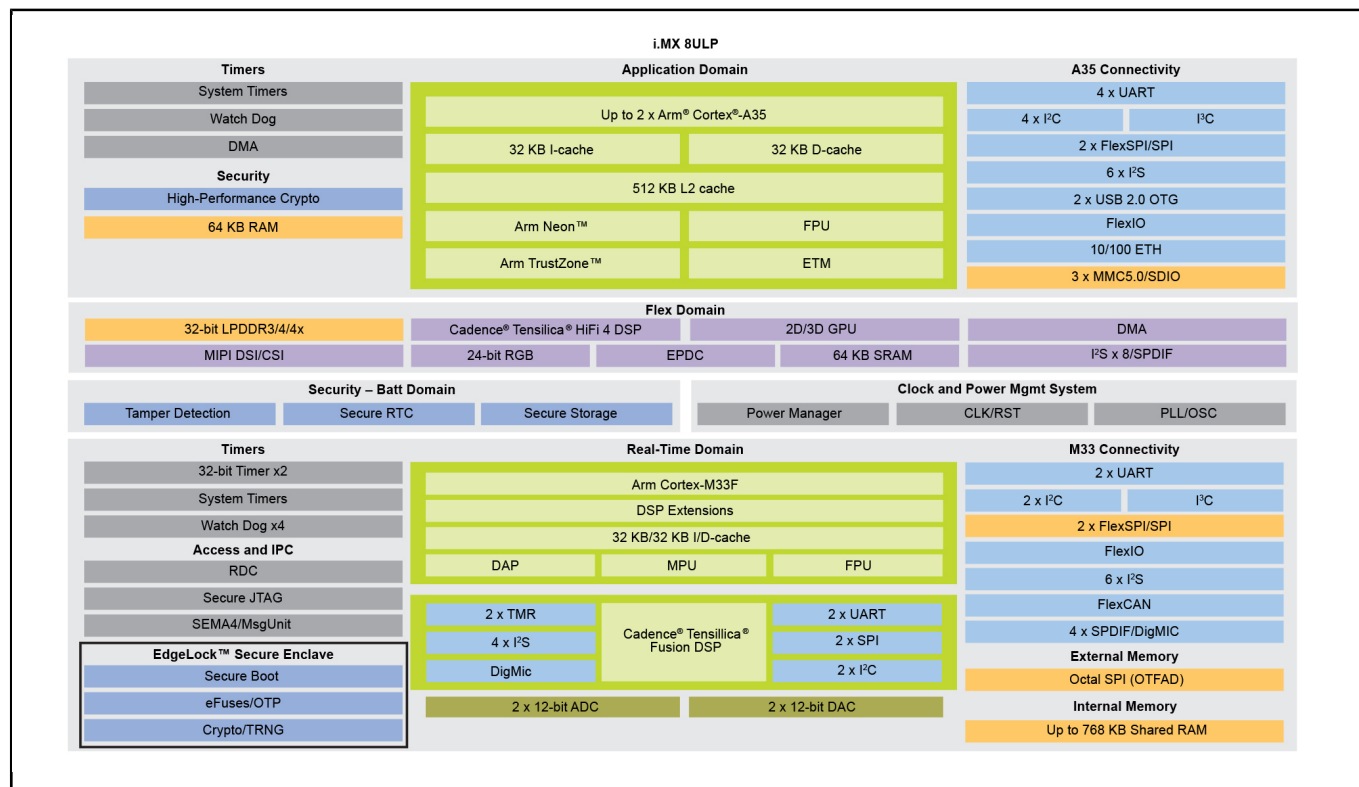
Optimizing energy at the chip level is becoming increasingly crucial for designing energy-efficient edge systems. NXP's innovative Energy Flex architecture implementation in i.MX 8ULP processors uniquely combines heterogeneous domain computing, design techniques and process technology. A dedicated power management subsystem offers more than 20 power mode combinations to deliver exceptional efficiency across a range of applications.

Building on our strong history of security solutions, NXP's EdgeLock secure enclave is pre-configured to simplify complex security implementations for faster time to market and help designers avoid costly configuration errors. The i.MX 8ULP processor has also achieved PSA and SESIP Level 2 certifications, enabling security for device manufactures at the design stage.

The i.MX 8ULP family features up to two Arm® Cortex®-A35 running at 800 MHz, an Arm Cortex-M33 core, 3D/2D Graphics Processing Units (GPUs) and a Cadence® Tensilica® HiFi 4 DSP and Fusion DSP for low-power audio/voice and edge AI/ML processing.

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

i.MX 8ULP Applications Processors Block Diagram

i.MX 8ULP		
Timers	**Application Domain**	**A35 Connectivity**
System Timers	Up to 2 x Arm® Cortex®-A35	4 x UART
Watch Dog		4 x I²C / I³C
DMA	32 KB I-cache / 32 KB D-cache	2 x FlexSPI/SPI
Security	512 KB L2 cache	6 x I²S
High-Performance Crypto	Arm Neon™ / FPU	2 x USB 2.0 OTG
64 KB RAM	Arm TrustZone™ / ETM	FlexIO
		10/100 ETH
		3 x MMC5.0/SDIO

Flex Domain				
32-bit LPDDR3/4/4x	Cadence® Tensilica® HiFi 4 DSP	2D/3D GPU		DMA
MIPI DSI/CSI	24-bit RGB	EPDC	64 KB SRAM	I²S x 8/SPDIF

Security – Batt Domain			**Clock and Power Mgmt System**		
Tamper Detection	Secure RTC	Secure Storage	Power Manager	CLK/RST	PLL/OSC

Timers	**Real-Time Domain**	**M33 Connectivity**
32-bit Timer x2	Arm Cortex-M33F	2 x UART
System Timers	DSP Extensions	2 x I²C / I³C
Watch Dog x4	32 KB/32 KB I/D-cache	2 x FlexSPI/SPI
Access and IPC	DAP / MPU / FPU	FlexIO
RDC		6 x I²S
Secure JTAG	2 x TMR / Cadence® Tensilica® Fusion DSP / 2 x UART	FlexCAN
SEMA4/MsgUnit	4 x I²S / 2 x SPI	4 x SPDIF/DigMIC
EdgeLock™ Secure Enclave	DigMic / 2 x I²C	**External Memory**
Secure Boot		Octal SPI (OTFAD)
eFuses/OTP	2 x 12-bit ADC / 2 x 12-bit DAC	**Internal Memory**
Crypto/TRNG		Up to 768 KB Shared RAM

View additional information for i.MX 8ULP Applications Processor Family.

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