



MCX A5 family of microcontrollers

Simplifying secure connectivity for the Intelligent Industrial Edge

The MCX A5 families extend the MCX A portfolio with richer connectivity peripherals and enhanced secure system capabilities for industrial and IoT edge applications.

Built a 240 MHz Arm® Cortex®-M33 core, MCX A5 combines up to 2 MB flash and up to 640 KB SRAM, 10/100M Ethernet MAC with 10BASE-T1S digital PHY support, high-speed USB, CAN FD, eSPI, I3C, advanced analog capabilities, including EdgeLock® accelerator, secure boot with PQC hybrid support, secure firmware update, lifecycle management, secure debug, external flash encryption and anti-tamper monitoring for industrial and IoT edge applications.

Key features

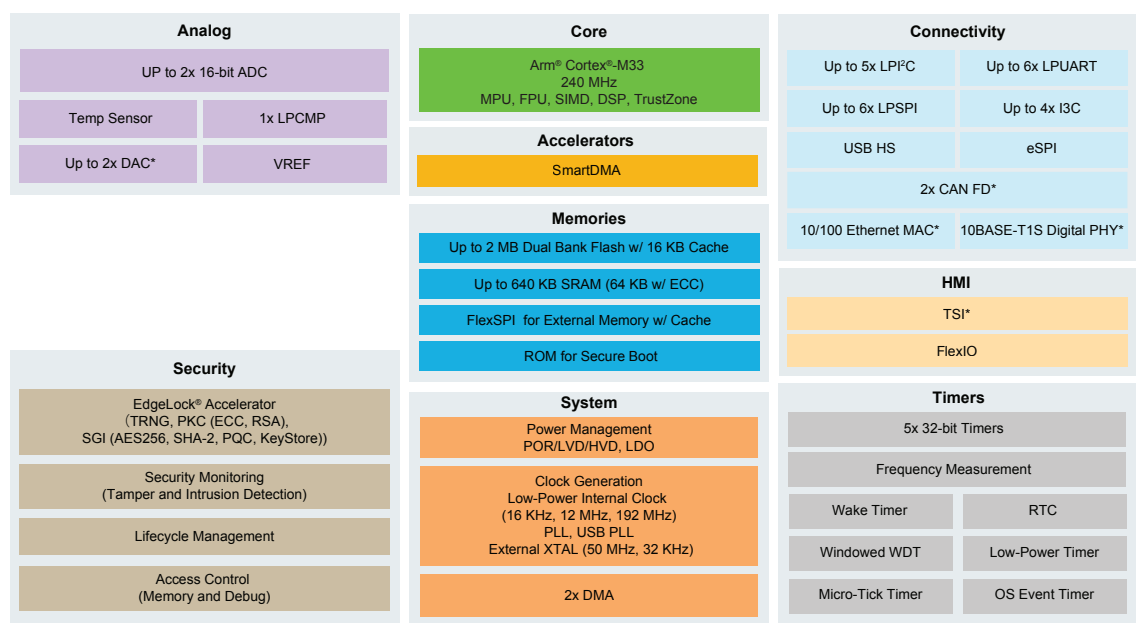
- Arm® Cortex®-M33 up to 240 MHz with FPU, DSP, MPU and TrustZone support
- Up to 2 MB dual-bank Flash with ECC and read-while-write support
- Up to 640 KB SRAM, with up to 64 KB configurable RAM with ECC
- 10/100 Ethernet MAC and 10BASE-T1S digital PHY for connectivity-focused variants
- USB high-speed host/device with on-chip HS PHY, 2x CAN FD, 4x I3C, 5x LPI2C, 6x LPSPI and 6x LPUART
- EdgeLock® accelerator, secure boot, secure firmware update, secure debug and PQC hybrid secure boot mode
- 2x 16-bit ADC, 2x 12-bit DAC, LPCMP, temperature sensor and VREF outputs
- Up to 134 GPIOs, selected 1.2 V independent I/O supply support and -40 °C to 125 °C junction temperature



Target applications

- Building control
- Control panel
- Factory automation
- Power and energy
- Building safety and security
- Home appliances
- Home entertainment
- Data center
- Gaming accessories

MCX A5 block diagram



* Feature is only enabled on selected products

Comprehensive enablement

The MCX MCU portfolio is supported by the MCUXpresso developer experience to optimize, ease and help accelerate embedded system development. The MCUXpresso suite includes tools for simple device configuration and secure programming. Developers can choose to work with multiple IDEs including MCUXpresso for VS Code, MCUXpresso IDE, IAR or Keil. NXP provides drivers and middleware with extensive examples and support for a range of RTOS choices, further complemented by a wide range of compatible

middleware from NXP’s partner ecosystem, allowing rapid development of a broad range of end applications.

Hardware platforms

For quick prototyping, we offer our low-cost, compact and scalable FRDM development boards. Developers have easy access to additional tools like our expansion board hub for add-on boards and the application code hub for software examples through the MCUXpresso developer experience.

MCX A5 MCU options

Part number	Freq.	Flash	SRAM	LPUART	LPI²C	LPSPi	I3C	CAN FD	HS USB	100M ENET MAC	10BASE-T1S DPHY	eSPI	FlexSPI	TSI	16b ADC	ADC ch.	16b ADC	12b DAC	FlexPWM	Comparator	GPIO	Package
MCXA577VPN	240 MHz	2 MB	640 KB	6	5	6	4	2	1	1	1	1	1	1	2	43	2	2	–	1	134	WFBGA169
MCXA577VLQ	240 MHz	2 MB	640 KB	6	5	6	4	2	1	1	1	1	1	1	2	43	2	2	–	1	113	LQFP144
MCXA577VLL	240 MHz	2 MB	640 KB	6	5	6	4	2	1	1	1	1	1	1	2	37	2	2	–	1	76	LQFP100
MCXA557VPN	240 MHz	2 MB	640 KB	6	5	6	4	–	1	–	–	1	1	–	2	43	2	–	–	1	134	WFBGA169
FRDM-MCXA577	MCX A577 FRDM development board, supporting MCX A577/557																					

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