

# MCX A1 family of microcontrollers

Addressing challenges engineers face while designing for the edge



The [MCX A1 families](#) deliver MCUs from high-performance platform to ultra-low-power designs, offering scalable device options and a rich portfolio of innovative hardware features.

The [MCX A13, A14 and A15 Arm® Cortex®-M33 MCUs](#) operate at up to 96 MHz, delivering a scalable platform for essential general-purpose designs. They offer low-power device options from 64 KB to 1 MB of flash, along with built-in RAM self-test hardware to support safety-critical applications. Featuring a broad set of low-power and intelligent peripherals—such as timers capable of generating 3 complementary PWM pairs with deadband insertion and a 4 Msps 16-bit ADC with hardware windowing and averaging—the MCX A1 devices are engineered for both efficiency and capability. An innovative power architecture enables high I/O utilization and strong power efficiency with a simple supply circuit, while expanded GPIO availability helps designers reduce board size, simplify layouts and lower overall system BOM costs.

Building on this platform, the [MCX A17](#) and [MCX A18](#) families elevate performance with Arm Cortex-M33 cores running up to 240 MHz, offering a high-performance, scalable MCU platform for more demanding control, industrial and IoT applications. With flexible memory options from 128 KB to 1 MB of flash, the MCX A17 and MCX A18 devices extend the scalability of the MCX A1 families, enabling developers to maintain software consistency while selecting the level of performance, peripherals and power efficiency that best matches their system needs.

## Target applications

- Sensing and metering
- Building control and automation
- Smart circuit breaker
- Home appliances
- USB accessories
- Compressor drive
- Smart lighting
- Hand-held devices
- Motor control
- Power tools
- IoT nodes

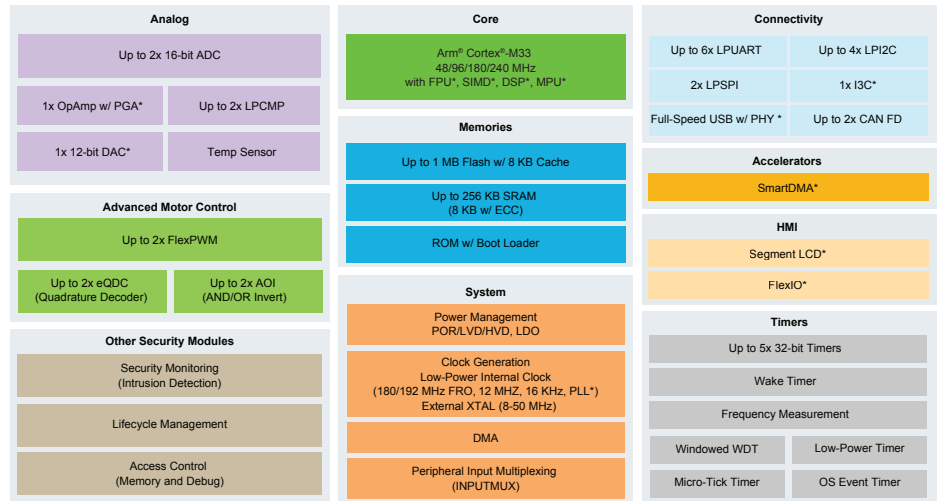
## Comprehensive enablement

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.

## MCX A1 block diagram



\* Feature is only enabled on selected products

## 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 A1 MCU options

Part number	Frequency	Flash	SRAM	LPI2C	LPUART	LPSPI	I3C	USB FS	FlexIO	Segment LCD	CAN	16b SE ADC	ADC channels	12b DAC	OpAmp	FlexPWM	Comparator	GPIOs	Package
MCXA186VPN	240 MHz	1024 KB	256 KB	4	6	2	1	1	1	4x44	2x CAN FD	2	43	1	1	2	2	114	WFBGA169
MCXA186VLQ	240 MHz	1024 KB	256 KB	4	6	2	1	1	1	4x44	2x CAN FD	2	43	1	1	2	2	114	LQFP144
MCXA186VLL	240 MHz	1024 KB	256 KB	4	6	2	1	1	1	4x44	2x CAN FD	2	39	1	1	2	2	83	LQFP100
MCXA186VLH	240 MHz	1024 KB	256 KB	4	6	2	1	1	1	4x44	2x CAN FD	2	28	1	1	2	2	52	LQFP64
MCXA185VPN	240 MHz	512 KB	128 KB	4	6	2	1	1	1	4x44	2x CAN FD	2	43	1	1	2	2	114	WFBGA169
MCXA185VLQ	240 MHz	512 KB	128 KB	4	6	2	1	1	1	4x44	2x CAN FD	2	43	1	1	2	2	114	LQFP144
MCXA185VLL	240 MHz	512 KB	128 KB	4	6	2	1	1	1	4x44	2x CAN FD	2	39	1	1	2	2	83	LQFP100
MCXA185VLH	240 MHz	512 KB	128 KB	4	6	2	1	1	1	4x44	2x CAN FD	2	28	1	1	2	2	52	LQFP64
MCXA176VPN	180 MHz	1024 KB	256 KB	4	5	2	1	1	1	-	1x CAN FD	2	43	1	1	2	2	114	WFBGA169
MCXA176VLQ	180 MHz	1024 KB	256 KB	4	5	2	1	1	1	-	1x CAN FD	2	43	1	1	2	2	114	LQFP144
MCXA176VLL	180 MHz	1024 KB	256 KB	4	5	2	1	1	1	-	1x CAN FD	2	39	1	1	2	2	83	LQFP100
MCXA176VLH	180 MHz	1024 KB	256 KB	4	5	2	1	1	1	-	1x CAN FD	2	28	1	1	2	2	52	LQFP64
MCXA175VPN	180 MHz	512 KB	128 KB	4	5	2	1	1	1	-	1x CAN FD	2	43	1	1	2	2	114	WFBGA169
MCXA175VLQ	180 MHz	512 KB	128 KB	4	5	2	1	1	1	-	1x CAN FD	2	43	1	1	2	2	114	LQFP144
MCXA175VLL	180 MHz	512 KB	128 KB	4	5	2	1	1	1	-	1x CAN FD	2	39	1	1	2	2	83	LQFP100
MCXA175VLH	180 MHz	512 KB	128 KB	4	5	2	1	1	1	-	1x CAN FD	2	28	1	1	2	2	52	LQFP64
MCXA174VLL	180 MHz	256 KB	64 KB	2	4	2	-	-	-	-	1x CAN FD	2	39	-	1	2	2	86	LQFP100
MCXA174VLH	180 MHz	256 KB	64 KB	2	4	2	-	-	-	-	1x CAN FD	2	31	-	1	2	2	55	LQFP64
MCXA174VLF	180 MHz	256 KB	64 KB	2	4	2	-	-	-	-	1x CAN FD	2	21	-	1	2	2	41	LQFP48
MCXA174VFM	180 MHz	256 KB	64 KB	2	4	2	-	-	-	-	1x CAN FD	2	13	-	1	2	2	29	HP-QFN32

## MCX A1 MCU options (continued)

Part number	Frequency	Flash	SRAM	LPI2C	LPUART	LPSPi	I3C	USB FS	FlexIO	segment LCD	CAN	16b SE ADC	ADC channels	12b DAC	OpAmp	FlexPWM	Comparator	GPIOs	Package
MCXA173VLL	180 MHz	128 KB	32 KB	2	4	2	-	-	-	-	1x CAN FD	2	39	-	1	2	2	86	LQFP100
MCXA173VLH	180 MHz	128 KB	32 KB	2	4	2	-	-	-	-	1x CAN FD	2	31	-	1	2	2	55	LQFP64
MCXA173VLF	180 MHz	128 KB	32 KB	2	4	2	-	-	-	-	1x CAN FD	2	21	-	1	2	2	41	LQFP48
MCXA173VFM	180 MHz	128 KB	32 KB	2	4	2	-	-	-	-	1x CAN FD	2	13	-	1	2	2	29	HP-QFN32
MCXA156VPJ	96 MHz	1024 KB	128 KB	4	5	2	1	1	1	-	1x CAN FD	2	39	1	1	2	2	82	VFBGA112
MCXA156VMP	96 MHz	1024 KB	128 KB	4	5	2	1	1	1	-	1x CAN FD	2	26	1	1	2	2	50	LFBGA64
MCXA156VLL	96 MHz	1024 KB	128 KB	4	5	2	1	1	1	-	1x CAN FD	2	39	1	1	2	2	81	LQFP100
MCXA156VLH	96 MHz	1024 KB	128 KB	4	5	2	1	1	1	-	1x CAN FD	2	28	1	1	2	2	52	LQFP64
MCXA156VFT	96 MHz	1024 KB	128 KB	4	5	2	1	1	1	-	1x CAN FD	2	20	1	1	2	2	41	HP-QFN48
MCXA155VPJ	96 MHz	512 KB	96 KB	4	5	2	1	1	1	-	1x CAN FD	2	39	1	1	2	2	82	VFBGA112
MCXA155VMP	96 MHz	512 KB	96 KB	4	5	2	1	1	1	-	1x CAN FD	2	26	1	1	2	2	50	LFBGA64
MCXA155VLL	96 MHz	512 KB	96 KB	4	5	2	1	1	1	-	1x CAN FD	2	39	1	1	2	2	81	LQFP100
MCXA155VLH	96 MHz	512 KB	96 KB	4	5	2	1	1	1	-	1x CAN FD	2	28	1	1	2	2	52	LQFP64
MCXA155VFT	96 MHz	512 KB	96 KB	4	5	2	1	1	1	-	1x CAN FD	2	20	1	1	2	2	41	HP-QFN48
MCXA154VPJ	96 MHz	256 KB	64 KB	4	5	2	1	1	1	-	1x CAN FD	2	23	1	1	2	2	82	VFBGA112
MCXA154VMP	96 MHz	256 KB	64 KB	4	5	2	1	1	1	-	1x CAN FD	2	15	1	1	2	2	50	LFBGA64
MCXA154VLL	96 MHz	256 KB	64 KB	4	5	2	1	1	1	-	1x CAN FD	2	17	1	1	2	2	81	LQFP100
MCXA154VLH	96 MHz	256 KB	64 KB	4	5	2	1	1	1	-	1x CAN FD	2	8	1	1	2	2	52	LQFP64
MCXA154VFT	96 MHz	256 KB	64 KB	4	5	2	1	1	1	-	1x CAN FD	2	23	1	1	2	2	41	HP-QFN48
MCXA153VLH	96 MHz	128 kB	32 kB	1	3	2	1	1	-	-	-	1	15	-	-	1	2	52	LQFP64
MCXA153VLF	96 MHz	128 kB	32 kB	1	3	2	1	1	-	-	-	1	17	-	-	1	2	41	LQFP48
MCXA153VFT	96 MHz	128 kB	32 kB	1	3	2	1	1	-	-	-	1	8	-	-	1	2	41	HP-QFN48
MCXA153VFM	96 MHz	128 kB	32 kB	1	3	2	1	1	-	-	-	1	39	-	-	1	2	26	HP-QFN32
MCXA152VLH	96 MHz	64 kB	16 kB	1	3	2	1	1	-	-	-	1	26	-	-	1	2	52	LQFP64
MCXA152VLF	96 MHz	64 kB	16 kB	1	3	2	1	1	-	-	-	1	39	-	-	1	2	41	LQFP48
MCXA152VFT	96 MHz	64 kB	16 kB	1	3	2	1	1	-	-	-	1	28	-	-	1	2	41	HP-QFN48
MCXA152VFM	96 MHz	64 kB	16 kB	1	3	2	1	1	-	-	-	1	20	-	-	1	2	26	HP-QFN32
MCXA146VPJ	48 MHz	1024 KB	128 KB	4	5	2	1	1	1	-	1xFlexCAN	2	39	-	-	1	2	82	VFBGA112
MCXA146VMP	48 MHz	1024 KB	128 KB	4	5	2	1	1	1	-	1xFlexCAN	2	26	-	-	1	2	50	LFBGA64
MCXA146VLL	48 MHz	1024 KB	128 KB	4	5	2	1	1	1	-	1xFlexCAN	2	39	-	-	1	2	81	LQFP100
MCXA146VLH	48 MHz	1024 KB	128 KB	4	5	2	1	1	1	-	1xFlexCAN	2	28	-	-	1	2	52	LQFP64
MCXA146VFT	48 MHz	1024 KB	128 KB	4	5	2	1	1	1	-	1xFlexCAN	2	20	-	-	1	2	41	HP-QFN48
MCXA145VPJ	48 MHz	512 KB	96 KB	4	5	2	1	1	1	-	1xFlexCAN	2	39	-	-	1	2	82	VFBGA112
MCXA145VMP	48 MHz	512 KB	96 KB	4	5	2	1	1	1	-	1xFlexCAN	2	26	-	-	1	2	50	LFBGA64
MCXA145VLL	48 MHz	512 KB	96 KB	4	5	2	1	1	1	-	1xFlexCAN	2	39	-	-	1	2	81	LQFP100
MCXA145VLH	48 MHz	512 KB	96 KB	4	5	2	1	1	1	-	1xFlexCAN	2	28	-	-	1	2	52	LQFP64
MCXA145VFT	48 MHz	512 KB	96 KB	4	5	2	1	1	1	-	1xFlexCAN	2	20	-	-	1	2	41	HP-QFN48
MCXA144VPJ	48 MHz	256 KB	64 KB	4	5	2	1	1	1	-	1xFlexCAN	2	39	-	-	1	2	82	VFBGA112
MCXA144VMP	48 MHz	256 KB	64 KB	4	5	2	1	1	1	-	1xFlexCAN	2	26	-	-	1	2	50	LFBGA64
MCXA144VLL	48 MHz	256 KB	64 KB	4	5	2	1	1	1	-	1xFlexCAN	2	39	-	-	1	2	81	LQFP100
MCXA144VLH	48 MHz	256 KB	64 KB	4	5	2	1	1	1	-	1xFlexCAN	2	28	-	-	1	2	52	LQFP64
MCXA144VFT	48 MHz	256 KB	64 KB	4	5	2	1	1	1	-	1xFlexCAN	2	20	-	-	1	2	41	HP-QFN48

## MCX A1 MCU options (continued)

Part number	Frequency	Flash	SRAM	LP2C	LPUART	LPSPi	I3C	USB FS	FlexIO	segment LCD	CAN	16b SE ADC	ADC channels	12b DAC	OpAmp	FlexPWM	Comparator	GPIOs	Package
MCXA143VLH	48 MHz	128 kB	32 kB	1	3	2	1	1	-	-	-	1	23	-	-	1	2	52	LQFP64
MCXA143VLF	48 MHz	128 kB	32 kB	1	3	2	1	1	-	-	-	1	15	-	-	1	2	41	LQFP48
MCXA143VFT	48 MHz	128 kB	32 kB	1	3	2	1	1	-	-	-	1	17	-	-	1	2	41	HP-QFN48
MCXA143VFM	48 MHz	128 kB	32 kB	1	3	2	1	1	-	-	-	1	8	-	-	1	2	26	HP-QFN32
MCXA142VLH	48 MHz	64 kB	16 kB	1	3	2	1	1	-	-	-	1	23	-	-	1	2	52	LQFP64
MCXA142VLF	48 MHz	64 kB	16 kB	1	3	2	1	1	-	-	-	1	15	-	-	1	2	41	LQFP48
MCXA142VFT	48 MHz	64 kB	16 kB	1	3	2	1	1	-	-	-	1	17	-	-	1	2	41	HP-QFN48
MCXA142VFM	48 MHz	64 kB	16 kB	1	3	2	1	1	-	-	-	1	8	-	-	1	2	26	HP-QFN32
MCXA133VLF	96 MHz	128 kB	32 kB	1	3	2	1	-	-	-	-	1	15	-	-	1	2	44	LQFP48
MCXA133VFT	96 MHz	128 kB	32 kB	1	3	2	1	-	-	-	-	1	17	-	-	1	2	44	HP-QFN48
MCXA133VFM	96 MHz	128 kB	32 kB	1	3	2	1	-	-	-	-	1	9	-	-	1	2	29	HP-QFN32
MCXA132VLF	96 MHz	64 kB	16 kB	1	3	2	1	-	-	-	-	1	15	-	-	1	2	44	LQFP48
MCXA132VFT	96 MHz	64 kB	16 kB	1	3	2	1	-	-	-	-	1	17	-	-	1	2	44	HP-QFN48
MCXA132VFM	96 MHz	64 kB	16 kB	1	3	2	1	-	-	-	-	1	9	-	-	1	2	29	HP-QFN32
FRDM-MCXA266	MCX A266 FRDM development board, supporting MCX A175/176/185/186																		LQFP144
FRDM-MCXA174	MCX A174 FRDM development board, supporting MCX A173/174																		LQFP100
FRDM-MCXA156	MCX A156 FRDM development board, supporting MCX A144/145/146/154/155/156																		LQFP100
FRDM-MCXA153	MCX A153 FRDM development board, supporting MCX A142/143/152/153																		LQFP64

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