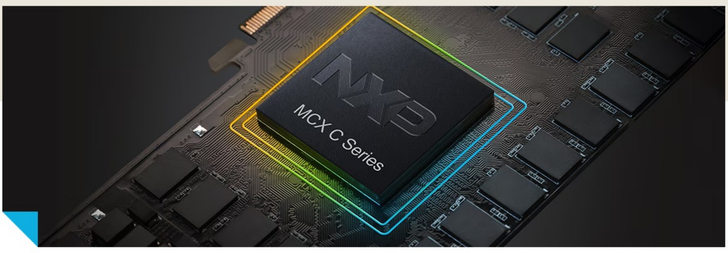
Boost Performance: 5 Reasons to Migrate to 32-Bits MCUs with MCX C

July 25, 2025 by Bassel Saab



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Thinking of upgrading from 8-bit to 32-bit microcontrollers? Discover five reasons why it's time to switch up, and how NXP MCX C series makes it this easy with better performance, rich peripherals and robust tools. Future-proof your designs with an affordable and scalable solution.

For decades, 8-bit microcontroller units (MCUs) have powered simple embedded systems. But times have changed, and the applications are becoming more complex and connected, requiring even more new requirements that 8-bit microcontrollers no longer support. Thus developers are increasingly turning to 32-bit microcontrollers for better performance, scalability and features; often at the same or lower cost. For developers, with change comes new challenges, so this article covers five compelling reasons to make the switch and how NXP MCX series helps developers migrate with confidence.

Higher Performance for Modern Applications

8-bit MCUs are great for basic tasks, but they tend to struggle with real-time processing, multitasking and advanced control algorithms. In contrast, 32-bit MCUs offer significantly higher performance thanks to faster clock speeds, wider data paths and more efficient instruction sets.

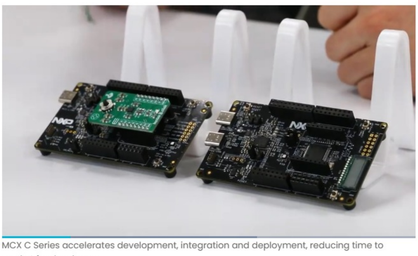
Explore the compact and affordable FRDM MCX C development platforms. Start prototyping today with multiple demos available in the Application Code Hub

Rich Peripheral Integration

Unlike many 8-bit MCUs that require external components for advanced functionality, the MCX C series integrates a wide range of peripherals on chip. This includes:

- High-resolution analog and digital interfaces
- Multiple communication protocols
- Segment Liquid Crystal Display (SLCD) control and pulse width modulation (PWM) for simple motor applications or LED drivers

This integration reduces board size, simplifies design and lowers overall system cost, all while enabling more sophisticated applications.



MCX C Series accelerates development, integration and deployment, reducing time to market for developers.

Affordable Pricing That Rivals 8-bit MCUs

One of the biggest myths about 32-bit MCUs is that they are more expensive. In reality, the price gap has disminished significantly. At a comparable or more affordable cost, developers can access vastly superior performance and features with the 32-bit MCU and without increasing their bill of materials (BOM). This makes the MCX C series a cost-effective upgrade path from 8-bit applications.

Superior Development Tools and Ecosystem

Migrating from 8-bit to 32-bit may seem daunting, but NXP makes it easier with a robust development ecosystem:

- MCUXpresso for Visual Studio (VS) Code is a lightweight, customizable environment with direct integration into the associated software development kit (SDK) allowing developers to import example projects, manage SDK components and debug with ease
- Zephyr Real-Time Operating System (RTOS) support enables developers to write portable, scalable code that runs across multiple hardware platforms including other NXP MCX devices, thus Zephyr simplifies peripheral access and accelerates development
- Comprehensive SDKs include pre-built drivers, middleware and example projects
- As part of NXP's commitment to simplifying the transition to 32-bit, the FRDM MCX C development platforms (FRDM-MCXC041, FRDM-MCXC242 and FRDM-MCXC444) offer a powerful, low-cost entry point for developers, purpose-built to showcase the performance and peripheral richness of MCX C microcontrollers—making them ideal for evaluating real-world applications
- Community and Support resources provide access to forums, documentation and training resources which helps you quickly find solutions, enhance your skills and stay updated with the latest developments

This ecosystem helps developers ramp up quickly and reducing the learning curve when transitioning from 8-bit platforms.

Future-Proof Your Designs

As IoT, AI and connectivity become standard in embedded systems, 8-bit MCUs will struggle to keep up. However, transitioning to 32-bit ensures your designs are scalable and ready for modern demands.

MCX C, part of the MCX Microcontrollers Portfolio series, is built with longevity in mind, offering scalable performance, advanced security features and ultra-low-power operation across the MCU portfolio. These devices are ideal for applications ranging from smart home devices to industrial automation.

Unlock New Possibilities with 32-bit Microcontrollers

Upgrading from 8-bit to 32-bit microcontrollers is no longer just about performance; it's about unlocking new possibilities without increasing cost or complexity. With MCX MCUs, NXP provides a powerful, affordable and developer-friendly platform that makes this transition seamless.

Whether you're building your next-generation product or modernizing an existing design, now is the perfect time to explore what 32-bit MCUs can do for you.

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Bassel holds a Master's of Engineering from ESIGELEC Engineering School in France and a Master's in Computer Science from UQAC University in Canada. He brings a customer-first mindset, developed through his previous roles as a Pre-Sale Engineer and Senior Field Application Engineer in the semiconductor industry.