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# Nuvoton Announces Feature-**P**acked Microcontrollers for CAN FD/USB and Ethernet/Crypto

## *Powerful 200 MHz Arm Core, Complete On-Chip Solution, and Application-Specific Features*

**Hsinchu, Taiwan – 1st December 2023 –** Nuvoton is pleased to announce its new feature-rich microcontrollers, the M463 CAN FD/USB HS Series and the M467 Ethernet/Crypto Series, which are ideal core components for numerous devices and systems, including IoT gateways, industrial control, telecoms, data centers, smart grid control, white goods motor control, small TFT LCDs, and TinyML (Machine Learning) products. The M463 is also great for gaming applications. There is support for numerous popular real-time operating systems (RTOS) and GUI libraries, and sample code is available for several use cases.

While the M463 and M467 share many features, including an Arm Cortex-M4F, both chips have unique special features that make them particularly suitable for certain purposes. The M463 emphasizes CAN FD (Controller Area Network Flexible Data-Rate) applications for sensor and control data, while the M467 provides greater on-chip support for network communication and strong hardware cryptography requirements.

### NuMicro M463: A Complete CAN Solution in a Chip

The NuMicro® M463 CAN FD/USB HS series of 32-bit microcontrollers is based around the Arm Cortex-M4F core, with a DSP instruction set and single-precision floating-point unit (FPU). It offers up to 256 KB of Flash memory and up to 128 KB of SRAM, including hardware parity check.

Support for multiple digital and analog peripherals is on-chip, including 2 CAN FD buses to cut BOM costs, USB High-Speed OTG, up to 24 channels of 16-bit PWM, UART, SPI/I2S, Quad-SPI, I²C, analog comparators, and up to 16 channels of 12-bit SAR ADC.

The M463 core runs at up to 200 MHz, with a versatile operating voltage from 1.7 V to 3.6 V and a wide operating temperature range from -40 °C to 125 °C. Active power consumption is 135 μA/MHz at 25°C/3.3V (with peripherals off). Multiple low-power modes and power-saving capabilities, including wake on various external inputs, are built-in.

### NuMicro M467: Everything Needed for Security and Network Connectivity

The NuMicro® M467 Ethernet/Crypto series is a 32-bit microcontroller based on the Arm Cortex-M4F core, with a DSP instruction set, single-precision floating-point unit (FPU) and Ethernet 10/100 MAC support. It provides up to 1024 KB of flash memory with a dual bank structure and supports Firmware Over-The-Air (FOTA) updating and up to 512 KB SRAM with hardware parity check. This chip provides rich analog peripherals, including 4 analog comparators, 3 12-bit SAR ADCs (up to 28 channels), and 2 channels of 12-bit DAC.

The M467 Ethernet/Crypto series supports plenty of peripherals, including Ethernet 10/100 MAC, hardware crypto engine, hardware key store, true random number generator (TRNG), programmable audio PLL, 4 CAN FD buses, USB HS OTG, USB FS OTG, up to 24 channels of 16-bit PWM, 10 UARTs, 4 SPI/I2S interfaces, 2 Quad-SPIs, 5 I²C buses, and 4 Quadrature Encoder Interfaces (QEI).

The M467 series operates as fast as 200 MHz, with a wide operating voltage from 1.7 V to 3.6 V and an operating temperature range from -40 °C to 105 °C. In operation, the chip consumes only 175 μA/MHz at 25°C/3.3V, with peripherals off. Numerous low power modes and power-saving features are built-in, including wake on various external inputs, including EMAC (Ethernet Media Access Controller).

### Powerful Security: Protecting Code and Data and Users

Essential integrated security features included in both microcontrollers include Execute-Only-Memory (XOM) capability to protect confidential code from being copied; hardware secure boot; hardware key store; hardware AES-256 cryptography acceleration; plus a Pseudo Random Number Generator (PRNG) and a True Random Number Generator (TRNG). The M467 series adds a much wider range of hardware cryptography acceleration: as well as AES-256, it provides ECC-571, SHA-512, HMAC-512, RSA-4096, and SM2 acceleration.

### Flexible Packaging Possibilities to Suit Any Application

These Nuvoton microcontrollers are both available in a wide variety of LQFP and QFN package sizes, with the size depending mainly on the number of dedicated I/O pins (from 48 up to 128 pins for the M463 and from 64 up to 176 pins for the M467). There are also variants with an exposed thermal pad (EPAD) for particular cooling requirements. Therefore, users can choose the most suitable package variant for their design or even scale it up or down with a small effort. Besides the I/O pin count and dimensions, almost all other features remain identical for each packaging variant.

### Strong Evaluation, Design, and Development Tools for Fast Product Turn Around

Nuvoton provides the NuMaker-M467HJ evaluation board for the M467, the NuMaker-M463KG evaluation board for the M463, and the Nuvoton Nu-Link debugger. Third-party IDE support for both products includes Keil MDK, IAR EWARM, and Eclipse IDE with GNU GCC compilers. These tools provide a simple, consistent development environment for both products, based on familiar industry-standard software, thus reducing development time.

These products support real-time operating systems (RTOS) such as Mbed OS, Amazon FreeRTOS, and Zephyr. Supported GUI libraries include emWin and LVGL.

Sample code includes TinyML applications, such as keyword spotting, license plate recognition, image classification, visual wake words (people sensing), and gesture sensing. Sample code for an e-bike dashboard HMI/GUI on emWin Appwizard and for uploading data to the internet/cloud via TLS is also available.

### Find Out More

[M463 Series](https://www.nuvoton.com/products/microcontrollers/arm-cortex-m4-mcus/m463-can-fd-usb-hs-series/?utm_source=pr&utm_medium=pr)
[M467 Series](https://www.nuvoton.com/products/microcontrollers/arm-cortex-m4-mcus/m467-ethernet-crypto-series/?utm_source=pr&utm_medium=pr)

### About Nuvoton Technology

Nuvoton Technology Corporation (Nuvoton) was founded to bring innovative semiconductor solutions to the market. Nuvoton was spun-off as a Winbond Electronics affiliate in July 2008 and went public in September 2010 on the Taiwan Stock Exchange (TWSE). Nuvoton focuses on the development of microcontroller, microprocessor, smart home, cloud security IC, battery monitoring IC, components, visual sensing and IoT with security. The company has a strong market share in Industrial, Automotive, Communication, Consumer and Computer markets. Nuvoton owns 6-inch wafer fabs equipped with diversified processing technologies to provide professional wafer foundry services. Nuvoton provides products with a high performance/cost ratio for its customers by leveraging flexible technology, advanced design capability, and integration of digital and analog technologies. Nuvoton values long term relationships with its partners and customers and is dedicated to continuous innovation of its products, processes, and services. Nuvoton has established subsidiaries in the USA, China, Israel, India, Singapore, Korea and Japan to strengthen regional customer support and global management. For more information, please visit [http://www.nuvoton.com](http://www.nuvoton.com/).