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新唐科技

Nuvoton Technology Corporation (NTC) was founded to bring innovative semiconductor solutions to the market. NTC was spun-off as a Winbond Electronics affiliate in July 2008 and became public in September 2010 on the Taiwan Stock Exchange (TSE). Nuvoton Technology focuses on development of analog/mixed signal, microcontroller, cloud and computing products and has strong market share in Industrial, Consumer and Computer markets. Nuvoton owns a wafer fab, featuring customized processes for analog, power and MCU products. Besides in-house IC products, the wafer fab also provides part of its capacity for foundry services. Nuvoton Technology 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. The company has established subsidiaries in the USA, China, Israel, and India to strengthen regional customer support and global management. For more information, please visit **http://www.nuvoton.com.**

Nuvoton MCU

Microcontrollers (MCUs) have become very popular and are widely used by all kinds of products, from low-cost consumer gizmos to highly sophisticated industrial control systems. Recognizing the demand for increased performance and peripherals, Nuvoton continues to invest significantly in microcontrollers to provide a broad product portfolio with ARM® Cortex®-M0 core, ARM® Cortex®-M4 core, ARM7, ARM9 and 8051, all with rich on-chip peripherals to meet the needs of our existing and future customers. Nuvoton's NuMicro® Family microcontroller portfolio comprises three product lines: 32-bit MCUs with ARM® Cortex®-M0 and ARM® Cortex®-M4, ARM7/ARM9 MPUs and 8-bit 8051 compatible MCUs, which all have been widely adopted by customers in various fields including IoT applications, smart home, mobile payment, industrial control, drone solutions, touch panels, network equipment, POS, home appliances, security systems, etc.

NuMicro® Family Microcontrollers

Nuvoton Technology Corporation certifies that semiconductor products designated by Nuvoton are compliant with the requirements of the European Union's Restriction on Use of Hazardous Substances (RoHS) Directive, 2002/95/EC.

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Microcontrollers

NuMicro® Family - ARM Cortex®-M0 MCUs

Mini51 Series
M051 Series
M0518 Series
M0519 Series
NUC100 Series
NUC123 Series
NUC131 Series
NUC200/220 Series
NUC230/240 Series
Nano100 Series
Nano102/112 Series

NuMicro® Family - ARM Cortex®-M4 MCUs

NUC442/472 Series
M451 Series
NUC505 Series

NuMicro® Family ARM7 / ARM9 MPUs

ARM7 Series
ARM9 Series

NuMicro® Family ARM SoC N329 MPUs

N3290 MJPEG Series
N3292 H.264 Codec Series

NuMicro® Family 8051 MCUs

6T/12T 8051 Series
Low Pin Count 8051 Series

NuMicro® Family Motor MCUs

NM1120 Series
NM1200 Series
NM1500 Series
NM1820 Series

NuMicro® Family Touch Key MCUs

NT Series

The NuMicro® Family Ecosystem

The NuMicro® Family Ecosystem

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NuMicro® M0/M4 Family

Nuvoton's NuMicro® microcontroller (MCU) family is powered by the ARM® Cortex®-M0 and Cortex®-M4 core. With a variety of product offering and rich peripherals, the NuMicro® family is ideal for use in consumer products, industrial control, embedded network control, energy and power system, motor control, health care and battery powered devices, etc. The NuMicro® Cortex®-M0 32-bit MCUs include NUC100/200 series, NUC120/220/123 series with USB 2.0 Full-Speed (FS) device, NUC130/131/140/230/240 series with Controller Area Network (CAN) 2.0B licensed from BOSCH, M051/M0518 and Mini51 series for cost-effective solutions, and M0519 series embedded with two independent ADCs and OPAs. In addition, the Cortex®-M0 MCUs further involve the Ultra-low Power Nano100/102/112 series with 0.65uA (Power Down, RAM retention), Nano110/112 series with integrated LCD driver, Nano120 series with high-performance USB 2.0 FS device, and Nano130 series with fully high Integrated LCD driver and USB 2.0 FS device. The NuMicro® Cortex®-M4 MCUs include high-performance NUC442/472 series with Ethernet MAC, USB OTG/HS Device and two CAN supports and M451 series with USB OTG/FS Device, CAN, Voltage Adjustable Interface and high precision PWM. With the integration of the industry leading ARM® Cortex®-M0 and Cortex®-M4 microcontroller, the NuMicro® family brings 32-bit performance to various applications with the best cost performance.

• Package Dimension for ARM Cortex®-M0/M4 MCUs

Package Code	Package	Dimension (mm)
F	TSSOP20	4.4x6.5
T	QFN33*	4x4
Z	QFN33	5x5
N	QFN48	7x7
L	LQFP48	7x7
S	LQFP64*	7x7
R	LQFP64	10x10
V	LQFP100	14x14
K	LQFP128	14x14
J	LQFP144	20x20
H	LQFP176	24x24

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NuMicro® Family ARM Cortex®-M0 MCUs

As one of the leading Microcontroller (MCU) companies in the world, Nuvoton provides the state-of-the–art NuMicro® 32-bit MCU family powered by the ARM® Cortex®-M0 core. The Cortex®-M0 MCUs provide wide operating voltage (2.5V ~ 5.5V), industrial temperature (-40°C ~ 105°C), high accuracy oscillator and high immunity (8KV ESD, 4KV EFT).

The Cortex®-M0 MCU family includes the general purpose NUC100/200 Base series, NUC120/220/123 series with USB 2.0 FS device, NUC130/131/140/230/240 series with Controller Area Network (CAN) 2.0B licensed from BOSCH. M051 and Mini51 series for cost-effective solutions, M0519 series with two independent ADCs and OPAs, as well as the Ultra-low Power Nano100 series providing low operating voltage (1.8V ~ 3.6V), targeting at battery powered applications. The Cortex®-M0 MCUs are ideal solutions for industrial control systems, industrial automation, consumer products, embedded network control, energy, power systems and motor control.

Mini51 Series

The NuMicro® Mini51 series embedded with the ARM® Cortex®-M0 core runs up to 24 MHz (Mini58 up to 50MHz) with 4/8/16/32 Kbytes Flash program memory, 2/4 Kbytes SRAM and 2/2.5 Kbytes Flash loader memory for In-System Programming (ISP). The Mini51 series is equipped with a variety of peripherals, such as GPIOs, Timers, UART, SPI, I²C, PWM, ADC, Comparator, Watchdog Timer (WDT), Low Voltage Reset, Brown-out Detected Reset, and supports 96-bit Unique ID and 128-bit Unique Customer ID.

Key Features: Operable at 2.5V to 5.5V and -40°C to +105°C with separate 4/8/16/32 Kbytes program Flash and 2 Kbytes ISP loader.
Potential Applications: Industrial Control, Motor Control, Data Communication, System Sub-Control, etc.

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Development Tools: NT-Mini51F (Mini51, Mini52, Mini54)/ NT-Mini51L (Mini51, Mini52, Mini54)/ NT-Mini58L (Mini58L)
Mass Production Programmer: NG-Mini51X (Mini51X, Mini52X, Mini54X, Mini58X); X stands for Package Code.

• Mini51 Base Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity			PWM (16-bit)	ADC (10-bit)	Comparator	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C							
MINI51FDE	4	2	Configurable	2	17	2	1	1	1	3	4	-	√	√	TSSOP20	-40 to +105
MINI52FDE	8	2	Configurable	2	17	2	1	1	1	3	4	-	√	√	TSSOP20	-40 to +105
MINI54FDE	16	2	Configurable	2	17	2	1	1	1	3	4	-	√	√	TSSOP20	-40 to +105
MINI58FDE	32	4	Configurable	2.5	17	2	2	1	2	6	4	-	√	√	TSSOP20	-40 to +105
MINI51TDE	4	2	Configurable	2	29	2	1	1	1	6	8	2	√	√	QFN33*	-40 to +105
MINI52TDE	8	2	Configurable	2	29	2	1	1	1	6	8	2	√	√	QFN33*	-40 to +105
MINI54TDE	16	2	Configurable	2	29	2	1	1	1	6	8	2	√	√	QFN33*	-40 to +105
MINI58TDE	32	4	Configurable	2.5	29	2	2	1	2	6	8	2	√	√	QFN33*	-40 to +105
MINI51ZDE	4	2	Configurable	2	29	2	1	1	1	6	8	2	√	√	QFN33	-40 to +105
MINI52ZDE	8	2	Configurable	2	29	2	1	1	1	6	8	2	√	√	QFN33	-40 to +105
MINI54ZDE	16	2	Configurable	2	29	2	1	1	1	6	8	2	√	√	QFN33	-40 to +105
MINI58ZDE	32	4	Configurable	2.5	29	2	2	1	2	6	8	2	√	√	QFN33	-40 to +105
MINI51LDE	4	2	Configurable	2	30	2	1	1	1	6	8	2	√	√	LQFP48	-40 to +105
MINI52LDE	8	2	Configurable	2	30	2	1	1	1	6	8	2	√	√	LQFP48	-40 to +105
MINI54LDE	16	2	Configurable	2	30	2	1	1	1	6	8	2	√	√	LQFP48	-40 to +105
MINI58LDE	32	4	Configurable	2.5	30	2	2	1	2	6	8	2	√	√	LQFP48	-40 to +105

QFN33*: 4x4mm

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M051 Series

The NuMicro M051® series embedded with the ARM® Cortex®-M0 core runs up to 50 MHz with 8/16/32/64 Kbytes Flash program memory, 4 Kbytes SRAM, and 4 Kbytes Flash loader memory for In-System Programming (ISP). The M051 series is equipped with a variety of peripherals, such as GPIOs, Timers, UART, SPI, I²C, PWM, ADC, Comparator, Watchdog Timer (WDT), Low Voltage Reset, Brown-out Detected Reset, and supports 96-bit Unique ID and 128-bit Unique Customer ID.

Key Features: Operable at 2.5V to 5.5V and -40°C to +85°C/+105°C with separate 8/16/32/64 Kbytes program Flash, 4 Kbytes Data Flash, 4 Kbytes ISP loader and Hardware Divider (M051 DN/DE only).

Potential Applications: Industrial Control, Motor Control, Security System, Communication System, etc.

Development Tools: NT-M051L (M052, M054, M058, M0516)/ NT-M058SF (M058S)/ NT-M058SS (M058S)

Mass Production Programmer: NG-M051X (M052X, M054X, M058X, M0516X)/ NG-M058SX (M058SX) ; X stands for Package Code.

• M051 Base Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity			PWM (16-bit)	ADC (12-bit)	Comparator	EBI	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C								
M052ZDN	8	4	4	4	24	4	2	1	2	5	5	3	-	√	√	QFN33	-40 to +85
M054ZDN	16	4	4	4	24	4	2	1	2	5	5	3	-	√	√	QFN33	-40 to +85
M058ZDN	32	4	4	4	24	4	2	1	2	5	5	3	-	√	√	QFN33	-40 to +85
M0516ZDN	64	4	4	4	24	4	2	1	2	5	5	3	-	√	√	QFN33	-40 to +85
M052LDN	8	4	4	4	40	4	2	2	2	8	8	4	√	√	√	LQFP48	-40 to +85
M054LDN	16	4	4	4	40	4	2	2	2	8	8	4	√	√	√	LQFP48	-40 to +85
M058LDN	32	4	4	4	40	4	2	2	2	8	8	4	√	√	√	LQFP48	-40 to +85
M0516LDN	64	4	4	4	40	4	2	2	2	8	8	4	√	√	√	LQFP48	-40 to +85

• M051 Series (Industrial Grade)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity			PWM (16-bit)	ADC (12-bit)	Comparator	EBI	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C								
M052ZDE	8	4	4	4	24	4	2	1	2	5	5	3	-	√	√	QFN33	-40 to +105
M054ZDE	16	4	4	4	24	4	2	1	2	5	5	3	-	√	√	QFN33	-40 to +105
M058ZDE	32	4	4	4	24	4	2	1	2	5	5	3	-	√	√	QFN33	-40 to +105
M0516ZDE	64	4	4	4	24	4	2	1	2	5	5	3	-	√	√	QFN33	-40 to +105
M052LDE	8	4	4	4	40	4	2	2	2	8	8	4	√	√	√	LQFP48	-40 to +105
M054LDE	16	4	4	4	40	4	2	2	2	8	8	4	√	√	√	LQFP48	-40 to +105
M058LDE	32	4	4	4	40	4	2	2	2	8	8	4	√	√	√	LQFP48	-40 to +105
M0516LDE	64	4	4	4	40	4	2	2	2	8	8	4	√	√	√	LQFP48	-40 to +105

• M058S Base Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity			PWM (16-bit)	ADC (12-bit)	Comparator	EBI	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C								
M058SFAN	32	4	4	4	14	4	1	1	1	1	2	-	-	√	√	TSSOP20	-40 to +85
M058SZAN	32	4	4	4	26	4	1	1	1	2	5	-	-	√	√	QFN33	-40 to +85
M058SLAN	32	4	4	4	42	4	1	1	2	4	8	-	-	√	√	LQFP48	-40 to +85
M058SSAN	32	4	4	4	55	4	1	1	2	4	8	-	-	√	√	LQFP64*	-40 to +85

LQFP64*: 7x7mm

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M0518 Series

The NuMicro® M0518 series embedded with the ARM® Cortex®-M0 core runs up to 50 MHz with 36/68 Kbytes Flash program memory, 8 Kbytes SRAM, and 4 Kbytes Flash loader memory for In-System Programming (ISP). The M0518 series is equipped with a variety of peripherals, such as GPIOs, Timers, UARTx6, SPI, I²C, PWMx24, ADC, Watchdog Timer (WDT), Low Voltage Reset, Brown-out Detected Reset, and supports 96-bit Unique ID and 128-bit Unique Customer ID.

Key Features: Operable at 2.5V to 5.5V and -40°C to +105°C with separate 36/68 Kbytes program Flash, configurable Data Flash, 4 Kbytes ISP loader, and 24 channels High Resolution PWM.
Potential Applications: LED Control, Motor Control, Industrial Control, POS machine, etc.

Development Tools: NT-M0518S (M0518)
Mass Production Programmer: NG-M0518X (M0518X) ; X stands for Package Code.

• M0518 Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity				PWM (16-bit)	ADC (12-bit)	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	LIN						
M0518LC2AE	36	8	Configurable	4	42	4	6	1	2	3	24	8	√	√	LQFP48	-40 to +105
M0518LD2AE	68	8	Configurable	4	42	4	6	1	2	3	24	8	√	√	LQFP48	-40 to +105
M0518SC2AE	36	8	Configurable	4	56	4	6	1	2	3	24	8	√	√	LQFP64*	-40 to +105
M0518SD2AE	68	8	Configurable	4	56	4	6	1	2	3	24	8	√	√	LQFP64*	-40 to +105

LQFP64*: 7x7mm

M0519 Series

The NuMicro® M0519 series embedded with the ARM® Cortex®-M0 core runs up to 72 MHz with 64/128 Kbytes Flash program memory, 16 Kbytes SRAM, and 8 Kbytes Flash loader memory for In-System Programming (ISP) and In Application Program (IAP). The M0519 series is equipped with a variety of peripherals, such as two independent ADC engines (16 ch x 12-bit), GPIOs, Timers, Watchdog Timer (WDT), UART, SPI, I²C, 14 ch x 16-bit PWM, QEI, 24-bit Capture, three sets of Analog Comparator, two sets of OPA, Low Voltage Reset, and Brown-out Detector.

Key Features: Operable at 2.5V to 5.5V and -40°C to +105°C with separate 64/128 Kbytes program Flash, 4 Kbytes Data Flash, 8 Kbytes ISP loader and Hardware Divider.
Potential Applications: Auto-control, Industrial Control, Motor control, etc.

Development Tools: NT-M0519V (M0519)
Mass Production Programmer: NG-M0519X (M0519X) ; X stands for Package Code.

• M0519 Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity				PWM (16-bit)	ADC (12-bit)	Comparator	OPA	Capture	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	LIN									
M0519LD3AE	64	16	4	8	38	4	2	1	1	2	6	x2, 16-ch	2	2	-	√	√	LQFP48	-40 to +105
M0519LE3AE	128	16	Configurable	8	38	4	2	1	1	2	6	x2, 16-ch	2	2	-	√	√	LQFP48	-40 to +105
M0519SD3AE	64	16	4	8	51	4	2	2	1	2	10	x2, 16-ch	2	2	-	√	√	LQFP64*	-40 to +105
M0519SE3AE	128	16	Configurable	8	51	4	2	2	1	2	10	x2, 16-ch	2	2	-	√	√	LQFP64*	-40 to +105
M0519VE3AE	128	16	Configurable	8	82	4	2	3	1	2	14	x2, 16-ch	3	2	6	√	√	LQFP100	-40 to +105

LQFP64*: 7x7mm

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NUC100 Series

The NuMicro® NUC100 series embedded with the ARM® Cortex®-M0 core runs up to 50 MHz with 32/64/128 Kbytes Flash program memory, 4/8/16 Kbytes SRAM, and 4 Kbytes Flash loader memory for In-System Programming (ISP). The NUC100 series is equipped with a variety of peripherals, such as GPIOs, Timers, Watchdog Timer (WDT), RTC, PDMA, UART, SPI, I²C, I²S, PWM, LIN, CAN, PS/2, EBI, Smart Card Host, USB 2.0 FS Device, 12-bit ADC, Analog Comparator, Low Voltage Reset and Brown-out Detector.

Key Features: Operable at 2.5V to 5.5V and -40°C to +85°C with separate 32/64/128 Kbytes program Flash, 4 Kbytes Data Flash, and 4 Kbytes ISP loader.
Potential Applications: Industrial Control, Security System, Motor Control, Communication System, etc.

Development Tools: NT-NUC100V (NUC100)/ NT-NUC120V (NUC100, NUC120)
Mass Production Programmer: NG-NUC100X (NG-NUC100X) ; X stands for Package Code.

• NUC100 Advanced Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I²S	PWM (16-bit)	ADC (12-bit)	Comparator	RTC	EBI	PDMA	ISO-7816-3	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	USB	LIN	CAN													
NUC100LC1DN	32	4	4	4	37	4	2	1	2	-	-	-	1	6	8	1	√	-	9	3	√	√	LQFP48	-40 to +85
NUC100LD2DN	64	8	4	4	37	4	2	1	2	-	-	-	1	6	8	1	√	-	9	3	√	√	LQFP48	-40 to +85
NUC100LE3DN	128	16	Configurable	4	37	4	2	1	2	-	-	-	1	6	8	1	√	-	9	3	√	√	LQFP48	-40 to +85
NUC100RC1DN	32	4	4	4	51	4	3	2	2	-	-	-	1	6	8	2	√	√	9	3	√	√	LQFP64	-40 to +85
NUC100RD1DN	64	4	4	4	51	4	3	2	2	-	-	-	1	6	8	2	√	√	9	3	√	√	LQFP64	-40 to +85
NUC100RD2DN	64	8	4	4	51	4	3	2	2	-	-	-	1	6	8	2	√	√	9	3	√	√	LQFP64	-40 to +85
NUC100RE3DN	128	16	Configurable	4	51	4	3	2	2	-	-	-	1	6	8	2	√	√	9	3	√	√	LQFP64	-40 to +85
NUC100VE3DN	128	16	Configurable	4	84	4	3	4	2	-	-	-	1	8	8	2	√	√	9	3	√	√	LQFP100	-40 to +85

• NUC120 USB Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I²S	PWM (16-bit)	ADC (12-bit)	Comparator	RTC	EBI	PDMA	ISO-7816-3	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	USB	LIN	CAN													
NUC120LC1DN	32	4	4	4	33	4	2	1	2	1	-	-	1	4	8	1	√	-	9	3	√	√	LQFP48	-40 to +85
NUC120LD2DN	64	8	4	4	33	4	2	1	2	1	-	-	1	4	8	1	√	-	9	3	√	√	LQFP48	-40 to +85
NUC120LE3DN	128	16	Configurable	4	33	4	2	1	2	1	-	-	1	4	8	1	√	-	9	3	√	√	LQFP48	-40 to +85
NUC120RC1DN	32	4	4	4	47	4	2	2	2	1	-	-	1	6	8	2	√	√	9	3	√	√	LQFP64	-40 to +85
NUC120RD2DN	64	8	4	4	47	4	2	2	2	1	-	-	1	6	8	2	√	√	9	3	√	√	LQFP64	-40 to +85
NUC120RE3DN	128	16	Configurable	4	47	4	2	2	2	1	-	-	1	6	8	2	√	√	9	3	√	√	LQFP64	-40 to +85
NUC120VE3DN	128	16	Configurable	4	80	4	3	4	2	1	-	-	1	8	8	2	√	√	9	3	√	√	LQFP100	-40 to +85

• NUC130 CAN Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I²S	PWM (16-bit)	ADC (12-bit)	Comparator	RTC	EBI	PDMA	ISO-7816-3	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	USB	LIN	CAN													
NUC130LC1CN	32	4	4	4	35	4	3	1	2	-	2	1	1	4	8	1	√	-	9	-	√	√	LQFP48	-40 to +85
NUC130LD2CN	64	8	4	4	35	4	3	1	2	-	2	1	1	4	8	1	√	-	9	-	√	√	LQFP48	-40 to +85
NUC130LE3CN	128	16	Configurable	4	35	4	3	1	2	-	2	1	1	4	8	1	√	-	9	-	√	√	LQFP48	-40 to +85
NUC130RC1CN	32	4	4	4	49	4	3	2	2	-	2	1	1	6	8	2	√	√	9	-	√	√	LQFP64	-40 to +85
NUC130RD2CN	64	8	4	4	49	4	3	2	2	-	2	1	1	6	8	2	√	√	9	-	√	√	LQFP64	-40 to +85
NUC130RE3CN	128	16	Configurable	4	49	4	3	2	2	-	2	1	1	6	8	2	√	√	9	-	√	√	LQFP64	-40 to +85
NUC130VE3CN	128	16	Configurable	4	80	4	3	4	2	-	2	1	1	8	8	2	√	√	9	-	√	√	LQFP100	-40 to +85

• NUC140 Connectivity Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I²S	PWM (16-bit)	ADC (12-bit)	Comparator	RTC	EBI	PDMA	ISO-7816-3	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	USB	LIN	CAN												
NUC140LC1CN	32	4	4	4	31	4	2	1	2	1	2	1	1	4	8	1	√	-	9	-	√	√	LQFP48	-40 to +85
NUC140LD2CN	64	8	4	4	31	4	2	1	2	1	2	1	1	4	8	1	√	-	9	-	√	√	LQFP48	-40 to +85
NUC140LE3CN	128	16	Configurable	4	31	4	2	1	2	1	2	1	1	4	8	1	√	-	9	-	√	√	LQFP48	-40 to +85
NUC140RC1CN	32	4	4	4	45	4	3	2	2	1	2	1	1	4	8	2	√	√	9	-	√	√	LQFP64	-40 to +85
NUC140RD2CN	64	8	4	4	45	4	3	2	2	1	2	1	1	4	8	2	√	√	9	-	√	√	LQFP64	-40 to +85
NUC140RE3CN	128	16	Configurable	4	45	4	3	2	2	1	2	1	1	4	8	2	√	√	9	-	√	√	LQFP64	-40 to +85
NUC140VE3CN	128	16	Configurable	4	76	4	3	4	2	1	2	1	1	8	8	2	√	√	9	-	√	√	LQFP100	-40 to +85

NUC123 Series

The NuMicro® NUC123 series embedded with the ARM® Cortex®-M0 core runs up to 72 MHz with 36/68 Kbytes Flash program memory, 12/20 Kbytes SRAM, and 4 Kbytes Flash loader memory for In-System Program (ISP). The NUC123 series also integrates Timers, Watchdog Timer (WDT), Window Watchdog Timer (WWDT), PDMA with CRC calculation unit, UART, SPI/MICROWIRE, I²C, I²S, PWM Timer, GPIO, PS/2, USB 2.0 FS Device, 10-bit ADC, Low Voltage Reset Controller and Brown-out Detector.

Key Features: Operable at 2.5V to 5.5V and -40°C to +85/105°C with separate 36/68 Kbytes program Flash, 4 Kbytes ISP loader, and USB2.0 Full-Speed Device.

Potential Applications: Gaming Accessory, USB device, Touch Monitor, etc.

Development Tools: NT-NUC123S (NUC123)

Mass Production Programmer: NG-NUC123X (NUC123X); X stands for Package Code.

• NUC123 USB Series (Consumer Grade)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						PS2	I²S	Comp	PWM (16-bit)	ADC (12-bit)	RTC	PDMA	CRC	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	USB	LIN	CAN												
NUC123ZC2AN1	36	12	Configurable	4	20	4	1	3	1	1	-	-	-	1	-	2	3	-	6	√	√	√	QFN33	-40 to +85
NUC123ZD4AN0	68	20	Configurable	4	20	4	1	3	1	1	-	-	-	1	-	2	3	-	6	√	√	√	QFN33	-40 to +85
NUC123LC2AN1	36	12	Configurable	4	36	4	2	3	2	1	-	-	1	1	-	4	8	-	6	√	√	√	LQFP48	-40 to +85
NUC123LD4AN0	68	20	Configurable	4	36	4	2	3	2	1	-	-	1	1	-	4	8	-	6	√	√	√	LQFP48	-40 to +85
NUC123SC2AN1	36	12	Configurable	4	47	4	2	3	2	1	-	-	1	1	-	4	8	-	6	√	√	√	LQFP64*	-40 to +85
NUC123SD4AN0	68	20	Configurable	4	47	4	2	3	2	1	-	-	1	1	-	4	8	-	6	√	√	√	LQFP64*	-40 to +85

LQFP64*: 7x7mm

• NUC123 USB Series (Industrial Grade)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						PS2	I²S	Comp	PWM (16-bit)	ADC (12-bit)	RTC	PDMA	CRC	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	USB	LIN	CAN												
NUC123ZC2AE1	36	12	Configurable	4	20	4	1	3	1	1	-	-	-	1	-	3	3	-	6	√	√	√	QFN33	-40 to +105
NUC123ZD4AE0	68	20	Configurable	4	20	4	1	3	1	1	-	-	-	1	-	3	3	-	6	√	√	√	QFN33	-40 to +105
NUC123LC2AE1	36	12	Configurable	4	36	4	2	3	2	1	-	-	1	1	-	4	8	-	6	√	√	√	LQFP48	-40 to +105
NUC123LD4AE0	68	20	Configurable	4	36	4	2	3	2	1	-	-	1	1	-	4	8	-	6	√	√	√	LQFP48	-40 to +105
NUC123SC2AE1	36	12	Configurable	4	47	4	2	3	2	1	-	-	1	1	-	4	8	-	6	√	√	√	LQFP64*	-40 to +105
NUC123SD4AE0	68	20	Configurable	4	47	4	2	3	2	1	-	-	1	1	-	4	8	-	6	√	√	√	LQFP64*	-40 to +105

LQFP64*: 7x7mm

NUC131 Series

The NuMicro® NUC131 series embedded with the ARM® Cortex®-M0 core running up to 50 MHz with 36/68 Kbytes Flash program memory, 8 Kbytes SRAM, and 4 Kbytes Flash loader memory for In-System Programming (ISP). The NUC131 series is equipped with a variety of peripherals, such as CAN, GPIOs, Timers, UARTx6, SPI, I²C, PWMx24, ADC, Watchdog Timer (WDT), Low Voltage Reset, Brown-out Detected Reset, and supports 96-bit Unique ID and 128-bit Unique Customer ID.

Key Features: Operable at 2.5V to 5.5V and -40°C to +105°C with separate 36/68 Kbytes program Flash, configurable Data Flash, 4 Kbytes ISP loader, and CAN 2.0b.
Potential Applications: Industrial Control, Security System, Communication System, Elevator, etc.

Development Tools: NT-NUC131S (NUC131)
Mass Production Programmer: NG-NUC131X (NUC131X); X stands for Package Code.

• NUC131 CAN Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity					PWM (16-bit)	ADC (12-bit)	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	LIN	CAN						
NUC131LC2AE	36	8	Configurable	4	42	4	6	1	2	3	1	24	8	√	√	LQFP48	-40 to +105
NUC131LD2AE	68	8	Configurable	4	42	4	6	1	2	3	1	24	8	√	√	LQFP48	-40 to +105
NUC131SC2AE	36	8	Configurable	4	56	4	6	1	2	3	1	24	8	√	√	LQFP64*	-40 to +105
NUC131SD2AE	68	8	Configurable	4	56	4	6	1	2	3	1	24	8	√	√	LQFP64*	-40 to +105

LQFP64*: 7x7mm

NUC200 Series

The NuMicro® NUC200 series embedded with the ARM® Cortex®-M0 core runs up to 50 MHz with 32/64/128 Kbytes Flash program memory, 8/16 Kbytes SRAM, and 4 Kbytes Flash loader memory for In-System Programming (ISP) and In Application Program (IAP). The NUC200 series is equipped with a variety of peripherals, such as GPIOs, Timers, Watchdog Timer (WDT), RTC, PDMA, UART, SPI/ MICROWIRE, I²C, I²S, PWM, ISO-7816-3 smart card interface, PS/2, USB 2.0 FS Device, 12-bit ADC, Analog Comparator, Low Voltage Reset, and Brown-out Detector.

Key Features: Operable at 2.5V to 5.5V and -40°C to +85°C with separate 32/64/128 Kbytes program Flash, 4 Kbytes Data Flash and 4 Kbytes ISP loader.
Potential Applications: Industrial Control, Security System, Motor Control, Communication System, etc.

Development Tools: NT-NUC200V (NUC200)/ NT-NUC220V (NUC200, NUC220)
Mass Production Programmer: NG-NUC200X (NUC200X, NUC220X, NUC230X, NUC240X); X stands for Package Code.

• NUC200 Advanced Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I²S	PWM (16-bit)	ADC (12-bit)	Comparator	RTC	PDMA	ISO-7816-3	CRC	RTC (VBAT)	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	USB	LIN	CAN													
NUC200LC2AN	32	8	4	4	35	4	2	1	2	-	-	-	1	6	7	1	√	9	2	√	√	√	√	LQFP48	-40 to +85
NUC200LD2AN	64	8	4	4	35	4	2	1	2	-	-	-	1	6	7	1	√	9	2	√	√	√	√	LQFP48	-40 to +85
NUC200LE3AN	128	16	Configurable	4	35	4	2	1	2	-	-	-	1	6	7	1	√	9	2	√	√	√	√	LQFP48	-40 to +85
NUC200SC2AN	32	8	4	4	49	4	3	2	2	-	-	-	1	6	7	2	√	9	2	√	√	√	√	LQFP64*	-40 to +85
NUC200SD2AN	64	8	4	4	49	4	3	2	2	-	-	-	1	6	7	2	√	9	2	√	√	√	√	LQFP64*	-40 to +85
NUC200SE3AN	128	16	Configurable	4	49	4	3	2	2	-	-	-	1	6	7	2	√	9	2	√	√	√	√	LQFP64*	-40 to +85
NUC200VE3AN	128	16	Configurable	4	83	4	3	4	2	-	-	-	1	8	8	2	√	9	3	√	√	√	√	LQFP100	-40 to +85

LQFP64*: 7x7mm

• NUC220 USB Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I²S	PWM (16-bit)	ADC (12-bit)	Comparator	RTC	PDMA	ISO-7816-3	CRC	RTC (VBAT)	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	USB	LIN	CAN													
NUC220LC2AN	32	8	4	4	31	4	2	1	2	1	-	-	1	4	7	1	√	9	2	√	√	√	√	LQFP48	-40 to +85
NUC220LD2AN	64	8	4	4	31	4	2	1	2	1	-	-	1	4	7	1	√	9	2	√	√	√	√	LQFP48	-40 to +85
NUC220LE3AN	128	16	Configurable	4	31	4	2	1	2	1	-	-	1	4	7	1	√	9	2	√	√	√	√	LQFP48	-40 to +85
NUC220SC2AN	32	8	4	4	45	4	2	2	2	1	-	-	1	6	7	2	√	9	2	√	√	√	√	LQFP64*	-40 to +85
NUC220SD2AN	64	8	4	4	45	4	2	2	2	1	-	-	1	6	7	2	√	9	2	√	√	√	√	LQFP64*	-40 to +85
NUC220SE3AN	128	16	Configurable	4	45	4	2	2	2	1	-	-	1	6	7	2	√	9	2	√	√	√	√	LQFP64*	-40 to +85
NUC220VE3AN	128	16	Configurable	4	79	4	3	4	2	1	-	-	1	8	8	2	√	9	3	√	√	√	√	LQFP100	-40 to +85

NUC230/240 Series

The NuMicro® NUC230/240 series embedded with the ARM® Cortex®-M0 core runs up to 72 MHz with 32/64/128 Kbytes Flash program memory, 8/16 Kbytes SRAM, and 8 Kbytes loader ROM for In-System Programming (ISP) and In Application Program (IAP). The NUC230/240 series is equipped with a variety of peripherals, such as GPIOs, Timers, Watchdog Timer (WDT), RTC, PDMA, UART, SPI/MICROWIRE, I²C, I²S, PWM, ISO-7816-3 smart card interface, PS/2, USB 2.0 FS Device, 12-bit ADC, Analog Comparator, Low Voltage Reset, and Brown-out Detector.

Key Features: Operable at 2.5V to 5.5V and -40°C to +105°C with separate 32/64/128 Kbytes program Flash, 4 Kbytes Data Flash and 4 Kbytes ISP loader.

Potential Applications: Industrial Control, Security System, Communication System, Elevator Control, etc.

Development Tools: NT-NUC240V (NUC230, NUC240)

Mass Production Programmer: NG-NUC200X (NUC200X, NUC220X, NUC230X, NUC240X); X stands for Package Code.

• NUC230 CAN Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I²S	PWM (16-bit)	ADC (12-bit)	Comparator	RTC	PDMA	ISO-7816-3	CRC	RTC (VBAT)	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	USB	LIN	CAN													
NUC230LC2AE	32	8	4	8	35	4	3+2	1	2	-	3	2	1	4	7	1	√	9	2	√	√	√	√	LQFP48	-40 to +105
NUC230LD2AE	64	8	4	8	35	4	3+2	1	2	-	3	2	1	4	7	1	√	9	2	√	√	√	√	LQFP48	-40 to +105
NUC230LE3AE	128	16	Configurable	8	35	4	3+2	1	2	-	3	2	1	4	7	1	√	9	2	√	√	√	√	LQFP48	-40 to +105
NUC230SC2AE	32	8	4	8	49	4	3+2	2	2	-	3	2	1	6	7	2	√	9	2	√	√	√	√	LQFP64*	-40 to +105
NUC230SD2AE	64	8	4	8	49	4	3+2	2	2	-	3	2	1	6	7	2	√	9	2	√	√	√	√	LQFP64*	-40 to +105
NUC230SE3AE	128	16	Configurable	8	49	4	3+2	2	2	-	3	2	1	6	7	2	√	9	2	√	√	√	√	LQFP64*	-40 to +105
NUC230VE3AE	128	16	Configurable	8	83	4	3+3	4	2	-	3	2	1	8	8	2	√	9	3	√	√	√	√	LQFP100	-40 to +105

*Marked in the table (3+3) means 3 UART+ 3 ISO-7816 UART.
*ISO-7816 UART supports full duplex mode.

LQFP64*: 7x7mm

• NUC240 Connectivity Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I²S	PWM (16-bit)	ADC (12-bit)	Comparator	RTC	PDMA	ISO-7816-3	CRC	RTC (VBAT)	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	USB	LIN	CAN													
NUC240LC2AE	32	8	4	8	31	4	2+2	1	2	1	2	2	1	4	7	1	√	9	2	√	√	√	√	LQFP48	-40 to +105
NUC240LD2AE	64	8	4	8	31	4	2+2	1	2	1	2	2	1	4	7	1	√	9	2	√	√	√	√	LQFP48	-40 to +105
NUC240LE3AE	128	16	Configurable	8	31	4	2+2	1	2	1	2	2	1	4	7	1	√	9	2	√	√	√	√	LQFP48	-40 to +105
NUC240SC2AE	32	8	4	8	45	4	3+2	2	2	1	3	2	1	4	7	2	√	9	2	√	√	√	√	LQFP64*	-40 to +105
NUC240SD2AE	64	8	4	8	45	4	3+2	2	2	1	3	2	1	4	7	2	√	9	2	√	√	√	√	LQFP64*	-40 to +105
NUC240SE3AE	128	16	Configurable	8	45	4	3+2	2	2	1	3	2	1	4	7	2	√	9	2	√	√	√	√	LQFP64*	-40 to +105
NUC240VE3AE	128	16	Configurable	8	79	4	3+3	4	2	1	3	2	1	8	8	2	√	9	2	√	√	√	√	LQFP100	-40 to +105

*Marked in the table (3+3) means 3 UART+ 3 ISO-7816 UART.
*ISO-7816 UART supports full duplex mode.

LQFP64*: 7x7mm

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Nano100 Series

The NuMicro® Nano100 series embedded with the ARM® Cortex®-M0 core runs up to 42 MHz with 32/64/128 Kbytes embedded Flash and 8/16 Kbytes embedded SRAM and 4 Kbytes Flash loader memory for In-System Programming (ISP). The Nano series integrates 4x40 & 6x38 COM/SEG LCD controller, Real Time Counter (RTC), 12-bit SAR ADC (2 MSPS), 12-bit DAC, UART, SPI, I²C, I²S, PWM/Capture, EBI, USB 2.0 FS device, ISO-7816-3, Watchdog Timer, Brown-out Detector, fast wake-up via many interfaces, and supports 96-bit Unique ID and 128-bit Unique Customer ID.

Key Features: Operable at 1.8V~3.6V and -40°C to +85°C with ultra-low power: 200uA/MHz (Normal), 75uA/MHz (Idle), 2.5uA (Power Down, RTC On, RAM retention) and 1uA (Power Down, RAM retention) and less than 3.5 us wake-up time.

Potential Applications: Wearable Device, IoT Device, Portable Medical Device, Smart Home Appliances, Payment Smart Card Reader, Smart Motion Gaming, GPS Data Collector, Smoke Detector, Zigbee Smart Energy AMR, Electronic Shelf Label, 1D Barcode Scanner, Smart Heat/Water/Gas Meters, etc.

Development Tools: NT-Nano100K (Nano100)/ NT-Nano120K (Nano100, Nano120)/ NT-Nano130K (Nano100, Nano110, Nano120, Nano130)

Mass Production Programmer: NG-Nano100N (Nano100N)/ NG-Nano100L (Nano100L, Nano120L)/ NG-Nano100S (Nano100S, Nano110S, Nano120S, Nano130S)/ NG-Nano100R (Nano110R)/ NG-Nano100K (Nano100K, Nano110K, Nano120K, Nano130K)

• Nano100 Base Series (Ultra-Low Power)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity				I²S	PWM (16-bit)	ADC (12-bit)	RTC	EBI	PDMA	LCD	DAC (12-bit)	ISO-7816-3*	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART*	SPI	I²C	USB													
NANO100NC2BN	32	8	Configurable	4	38	4	2+2	3	2	-	1	6	7	√	-	8	-	2	2	√	√	QFN48	-40 to +85
NANO100ND2BN	64	8	Configurable	4	38	4	2+2	3	2	-	1	6	7	√	-	8	-	2	2	√	√	QFN48	-40 to +85
NANO100ND3BN	64	16	Configurable	4	38	4	2+2	3	2	-	1	6	7	√	-	8	-	2	2	√	√	QFN48	-40 to +85
NANO100NE3BN	128	16	Configurable	4	38	4	2+2	3	2	-	1	6	7	√	-	8	-	2	2	√	√	QFN48	-40 to +85
NANO100LC2BN	32	8	Configurable	4	38	4	2+2	3	2	-	1	6	7	√	-	8	-	2	2	√	√	LQFP48	-40 to +85
NANO100LD2BN	64	8	Configurable	4	38	4	2+2	3	2	-	1	6	7	√	-	8	-	2	2	√	√	LQFP48	-40 to +85
NANO100LD3BN	64	16	Configurable	4	38	4	2+2	3	2	-	1	6	7	√	-	8	-	2	2	√	√	LQFP48	-40 to +85
NANO100LE3BN	128	16	Configurable	4	38	4	2+2	3	2	-	1	6	7	√	-	8	-	2	2	√	√	LQFP48	-40 to +85
NANO100SC2BN	32	8	Configurable	4	52	4	2+3	3	2	-	1	8	7	√	-	8	-	2	3	√	√	LQFP64*	-40 to +85
NANO100SD2BN	64	8	Configurable	4	52	4	2+3	3	2	-	1	8	7	√	-	8	-	2	3	√	√	LQFP64*	-40 to +85
NANO100SD3BN	64	16	Configurable	4	52	4	2+3	3	2	-	1	8	7	√	-	8	-	2	3	√	√	LQFP64*	-40 to +85
NANO100SE3BN	128	16	Configurable	4	52	4	2+3	3	2	-	1	8	7	√	-	8	-	2	3	√	√	LQFP64*	-40 to +85
NANO100KD3BN	64	16	Configurable	4	86	4	2+3	3	2	-	1	8	12	√	√	8	-	2	3	√	√	LQFP128	-40 to +85
NANO100KE3BN	128	16	Configurable	4	86	4	2+3	3	2	-	1	8	12	√	√	8	-	2	3	√	√	LQFP128	-40 to +85

*Marked in the table (2+3) means 2 UART+ 3 ISO-7816 UART.
*ISO-7816 UART supports half duplex mode.

LQFP64*: 7x7mm

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• Nano110 LCD Series (Ultra-Low Power)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity				I²S	PWM (16-bit)	ADC (12-bit)	RTC	EBI	PDMA	LCD	DAC (12-bit)	ISO-7816-3*	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART*	SPI	I²C	USB													
NANO110SC2BN	32	8	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	8	4x31, 6x29	2	3	√	√	LQFP64*	-40 to +85
NANO110SD2BN	64	8	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	8	4x31, 6x29	2	3	√	√	LQFP64*	-40 to +85
NANO110SD3BN	64	16	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	8	4x31, 6x29	2	3	√	√	LQFP64*	-40 to +85
NANO110SE3BN	128	16	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	8	4x31, 6x29	2	3	√	√	LQFP64*	-40 to +85
NANO110RC2BN	32	8	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	8	4x31, 6x29	2	3	√	√	LQFP64	-40 to +85
NANO110RD2BN	64	8	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	8	4x31, 6x29	2	3	√	√	LQFP64	-40 to +85
NANO110RD3BN	64	16	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	8	4x31, 6x29	2	3	√	√	LQFP64	-40 to +85
NANO110RE3BN	128	16	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	8	4x31, 6x29	2	3	√	√	LQFP64	-40 to +85
NANO110KC2BN	32	8	Configurable	4	86	4	2+3	3	2	-	1	8	12	√	√	8	4x40, 6x38	2	3	√	√	LQFP128	-40 to +85
NANO110KD2BN	64	8	Configurable	4	86	4	2+3	3	2	-	1	8	12	√	√	8	4x40, 6x38	2	3	√	√	LQFP128	-40 to +85
NANO110KD3BN	64	16	Configurable	4	86	4	2+3	3	2	-	1	8	12	√	√	8	4x40, 6x38	2	3	√	√	LQFP128	-40 to +85
NANO110KE3BN	128	16	Configurable	4	86	4	2+3	3	2	-	1	8	12	√	√	8	4x40, 6x38	2	3	√	√	LQFP128	-40 to +85

*Marked in the table (2+3) means 2 UART+ 3 ISO-7816 UART.
*ISO-7816 UART supports half duplex mode.

LQFP64*: 7x7mm

• Nano120 USB Connectivity Series (Ultra-Low Power)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity				I²S	PWM (16-bit)	ADC (12-bit)	RTC	EBI	PDMA	LCD	DAC (12-bit)	ISO-7816-3*	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART*	SPI	I²C	USB													
NANO120LC2BN	32	8	Configurable	4	34	4	2+2	3	2	1	1	4	7	√	-	8	-	2	2	√	√	LQFP48	-40 to +85
NANO120LD2BN	64	8	Configurable	4	34	4	2+2	3	2	1	1	4	7	√	-	8	-	2	2	√	√	LQFP48	-40 to +85
NANO120LD3BN	64	16	Configurable	4	34	4	2+2	3	2	1	1	4	7	√	-	8	-	2	2	√	√	LQFP48	-40 to +85
NANO120LE3BN	128	16	Configurable	4	34	4	2+2	3	2	1	1	4	7	√	-	8	-	2	2	√	√	LQFP48	-40 to +85
NANO120SC2BN	32	8	Configurable	4	48	4	2+3	3	2	1	1	8	7	√	-	8	-	2	3	√	√	LQFP64*	-40 to +85
NANO120SD2BN	64	8	Configurable	4	48	4	2+3	3	2	1	1	8	7	√	-	8	-	2	3	√	√	LQFP64*	-40 to +85
NANO120SD3BN	64	16	Configurable	4	48	4	2+3	3	2	1	1	8	7	√	-	8	-	2	3	√	√	LQFP64*	-40 to +85
NANO120SE3BN	128	16	Configurable	4	48	4	2+3	3	2	1	1	8	7	√	-	8	-	2	3	√	√	LQFP64*	-40 to +85
NANO120KD3BN	64	16	Configurable	4	86	4	2+3	3	2	1	1	8	8	√	√	8	-	2	3	√	√	LQFP128	-40 to +85
NANO120KE3BN	128	16	Configurable	4	86	4	2+3	3	2	1	1	8	8	√	√	8	-	2	3	√	√	LQFP128	-40 to +85

*Marked in the table (2+3) means 2 UART+ 3 ISO-7816 UART.
*ISO-7816 UART supports half duplex mode.

LQFP64*: 7x7mm

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• Nano130 LCD with USB Connectivity Series (Ultra-Low Power)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity				I²S	PWM (16-bit)	ADC (12-bit)	RTC	EBI	PDMA	LCD	DAC (12-bit)	ISO-7816-3*	ICP IAP ISP	IRC 10 kHz 22 MHz	Package	Operating Temp. Range (°C)
							UART*	SPI	I²C	USB													
NANO130SC2BN	32	8	Configurable	4	47	4	2+3	3	2	1	1	7	7	√	-	8	4x31, 6x29	2	3	√	√	LQFP64*	-40 to +85
NANO130SD2BN	64	8	Configurable	4	47	4	2+3	3	2	1	1	7	7	√	-	8	4x31, 6x29	2	3	√	√	LQFP64*	-40 to +85
NANO130SD3BN	64	16	Configurable	4	47	4	2+3	3	2	1	1	7	7	√	-	8	4x31, 6x29	2	3	√	√	LQFP64*	-40 to +85
NANO130SE3BN	128	16	Configurable	4	47	4	2+3	3	2	1	1	7	7	√	-	8	4x31, 6x29	2	3	√	√	LQFP64*	-40 to +85
NANO130KC2BN	32	8	Configurable	4	86	4	2+3	3	2	1	1	8	8	√	√	8	4x40, 6x38	2	3	√	√	LQFP128	-40 to +85
NANO130KD2BN	64	8	Configurable	4	86	4	2+3	3	2	1	1	8	8	√	√	8	4x40, 6x38	2	3	√	√	LQFP128	-40 to +85
NANO130KD3BN	64	16	Configurable	4	86	4	2+3	3	2	1	1	8	8	√	√	8	4x40, 6x38	2	3	√	√	LQFP128	-40 to +85
NANO130KE3BN	128	16	Configurable	4	86	4	2+3	3	2	1	1	8	8	√	√	8	4x40, 6x38	2	3	√	√	LQFP128	-40 to +85

*Marked in the table (2+3) means 2 UART+ 3 ISO-7816 UART.
*ISO-7816 UART supports half duplex mode.

LQFP64*: 7x7mm

Nano102/112 Series

The NuMicro® Nano102/112 series embedded with the ARM® Cortex®-M0 core runs up to 32 MHz with 16/32 Kbytes embedded Flash and 4/8 Kbytes embedded SRAM and 4 Kbytes Flash loader memory for In-System Programming (ISP). The Nano102/112 series integrates 4x36 & 6x34 COM/SEG LCD controller. Real Time Counter (RTC), 12-bit SAR ADC (1.5 MSPS), Comparator, UART, SPI, I²C, PWM/Capture, ISO-7816-3, Watchdog Timer (WDT), Brown-out Detector, fast wake-up via all peripheral interfaces, and supports 96-bit Unique ID and 128-bit Unique Customer ID.

Key Features: Operable at 1.8V~3.6V and -40°C to +85°C with ultra-low power: 150uA/MHz (Normal), 65uA/MHz (Idle), 1.5uA (Power Down, RTC On, RAM retention) and 0.65uA (Power Down, RAM retention) and less than 3.5 us wake-up time.

Potential Applications: Wearable Device, IoT Device, Portable Medical Device, Smart Home Appliances, Alarm and Security Monitoring, Zigbee Smart Energy AMR, Mobile Payment Smart Card Reader, Electronic Shelf Label, Active RFID, Smart Heat/ Water/Gas Meters, etc.

Development Tools: NT-Nano102S (Nano102)/ NT-Nano112V (Nano102, Nano112)
Mass Production Programmer: NG-Nano102Z (Nano102Z)/ NG-Nano112L (Nano102L, Nano112L)/ NG-Nano112S (Nano102S, Nano112S)/ NG-Nano112R (Nano112R)/ NG-Nano112V (Nano112V)

• Nano102 Base Series (Ultra-Low Power)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity			Comparator	PWM (16-bit)	ADC (12-bit)	RTC	PDMA	LCD	ISO-7816-3*	ICP IAP ISP	IRC 10 kHz / 12 MHz / 16 MHz	Package	Operating Temp. Range (°C)
							UART*	SPI	I²C											
NANO102ZB1AN	16	4	Configurable	4	27	4	2+1	2	2	2	4	2	√	4	-	1	√	√	QFN33	-40 to +85
NANO102ZC2AN	32	8	Configurable	4	27	4	2+1	2	2	2	4	2	√	4	-	1	√	√	QFN33	-40 to +85
NANO102LB1AN	16	4	Configurable	4	40	4	2+2	2	2	2	4	7	√	4	-	2	√	√	LQFP48	-40 to +85
NANO102LC2AN	32	8	Configurable	4	40	4	2+2	2	2	2	4	7	√	4	-	2	√	√	LQFP48	-40 to +85
NANO102SC2AN	32	8	Configurable	4	56	4	2+2	2	2	2	4	7	√	4	-	2	√	√	LQFP64*	-40 to +85

*Marked in the table (2+2) means 2 UART+ 2 ISO-7816 UART.
*ISO-7816 UART supports UART full duplex mode

LQFP64*: 7x7mm

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• Nano112 LCD Series (Ultra-Low Power)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity			Comparator	PWM (16-bit)	ADC (12-bit)	RTC	PDMA	LCD	ISO-7816-3*	ICP IAP ISP	IRC 10 kHz / 12 MHz / 16 MHz	Package	Operating Temp. Range (°C)
							UART*	SPI	I²C											
NANO112LB1AN	16	4	Configurable	4	40	4	2+2	2	2	2	4	7	√	4	4x20, 6x18	2	√	√	LQFP48	-40 to +85
NANO112LC2AN	32	8	Configurable	4	40	4	2+2	2	2	2	4	7	√	4	4x20, 6x18	2	√	√	LQFP48	-40 to +85
NANO112SB1AN	16	4	Configurable	4	56	4	2+2	2	2	2	4	7	√	4	4x32, 6x30	2	√	√	LQFP64*	-40 to +85
NANO112SC2AN	32	8	Configurable	4	56	4	2+2	2	2	2	4	7	√	4	4x32, 6x30	2	√	√	LQFP64*	-40 to +85
NANO112RB1AN	16	4	Configurable	4	56	4	2+2	2	2	2	4	7	√	4	4x32, 6x30	2	√	√	LQFP64	-40 to +85
NANO112RC2AN	32	8	Configurable	4	56	4	2+2	2	2	2	4	7	√	4	4x32, 6x30	2	√	√	LQFP64	-40 to +85
NANO112VC2AN	32	8	Configurable	4	80	4	2+2	2	2	2	4	8	√	4	4x36, 6x34	2	√	√	LQFP100	-40 to +85

*Marked in the table (2+2) means 2 UART+ 2 ISO-7816 UART.
*ISO-7816 UART supports UART full duplex mode

LQFP64*: 7x7mm

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NuMicro® Family ARM Cortex®-M4 MCUs

As one of the leading Microcontroller (MCU) companies in the world, Nuvoton provides the state-of-the–art NuMicro® 32-bit MCU family powered by the ARM® Cortex®-M4 core. The Cortex®-M4 MCUs provide wide operating voltage (2.5V ~ 5.5V) , industrial operating temperature (-40°C ~ 105°C) , high accuracy oscillator and high immunity (8KV ESD, 4KV EFT).

The Cortex®-M4 MCUs include NuMicro® NUC442/NUC472 series and M451 series. The NUC442/NUC472 series features ARM® Cortex®-M4 with DSP extensions and floating point unit (FPU) , runs up to 84 MHz, and integrates 256 or 512 Kbytes embedded Flash memory, 64 Kbytes embedded SRAM, Ethernet 10/100 MAC, USB HS Device, USB FS OTG, CAN, SD host and other peripherals. The M451 series features ARM® Cortex®-M4 with DSP extensions and floating point unit (FPU) , runs up to 72 MHz, and integrates 128/256 Kbytes embedded flash memory, 32 Kbytes embedded SRAM, USB FS OTG, CAN and other peripherals.

The NuMicro® NUC442/NUC472 series consists of NUC442 Connectivity series and NUC472 Advanced series. The M451 Series consists of M451 Base Series, M451M Series, M452 USB Series and M453 CAN Series. They are ideal solutions for industrial control systems, industrial automation, consumer products, embedded network control, energy, power systems, motor control, etc.

NUC442/472 Series

The NuMicro® NUC442/472 series is embedded with ARM® Cortex®-M4 core with DSP extensions and floating point unit (FPU) and runs up to 84 MHz with 256/512 Kbytes Flash program memory, 64 Kbytes SRAM, and 16 Kbytes Flash loader memory for In-System Programming (ISP). The NUC442/472 series is equipped with a variety of peripherals, such as PDMA, GPIO, Timer, Watchdog Timer, RTC, UART, SPI/Microwire, I²C, I²S, PWM, LIN, CAN, PS/2, Smart Card Interface, SD Host, USB 2.0 FS OTG, USB 2.0 HS Device, Ethernet 10/100M MAC, Symmetric Encryption/Decryption Accelerator, Secure Hash Function (SHA) Accelerator , 12-bit ADC, Analog comparator, Operational Amplifier, Temperature Sensor, Low Voltage Reset, and Brown-out Detector.

Key Features: Operable at 2.5V to 5.5V and -40°C to +105°C with configurable 256/512 Kbytes Flash as program memory and data memory, 16 Kbytes ISP loader and Hardware Divider.

Potential Applications: Potential Applications: Industrial Automation, Motor Control, Home Automation, Communication Systems, Security System, POS, etc.

Development Tools: NT-NUC442J (NUC442)/ NT-NUC472H (NUC472)

Mass Production Programmer: NG-NUC442R (NUC442R)/ NG-NUC472V (NUC442V, NUC472V)/ NG-NUC472K (NUC442K, NUC472K)/ NG-NUC472J (NUC442J, NUC472J)/ NG-NUC472H (NUC472H)

• NUC442 Connectivity Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	ISP ROM (Kbytes)	PDMA	I/O	Timer (32-bit)	Connectivity							EBI	I²S	Ethernet MAC	USB OTG	USB Device	PWM (16-bit)*	QEI	Analog Comp.	OP Amp.	ADC (12-bit)	RTC (VBAT)	Crypto	ISO-7816-3*	ICP IAP ISP	Package	Operating Temp. Range (°C)
							UART*	SPI	SD Host	I²C	CAN	LIN	PS/2																
NUC442RG8AE	256	64	16	16	45	4	4+3	3	√	2	2	4	-	√	1	-	FS	HS	8	1	2	-	x2, 8-ch	√	√	3	√	LQFP64	-40 to +105
NUC442RI8AE	512	64	16	16	45	4	4+3	3	√	2	2	4	-	√	1	-	FS	HS	8	1	2	-	x2, 8-ch	√	√	3	√	LQFP64	-40 to +105
NUC442VG8AE	256	64	16	16	77	4	6+5	4	√	5	2	6	-	√	2	-	FS	HS	16	2	3	-	x2, 16-ch	√	√	5	√	LQFP100	-40 to +105
NUC442VI8AE	512	64	16	16	77	4	6+5	4	√	5	2	6	-	√	2	-	FS	HS	16	2	3	-	x2, 16-ch	√	√	5	√	LQFP100	-40 to +105
NUC442KG8AE	256	64	16	16	101	4	6+6	4	√	5	2	6	-	√	2	-	FS	HS	16	2	3	2	x2, 16-ch	√	√	6	√	LQFP128	-40 to +105
NUC442KI8AE	512	64	16	16	101	4	6+6	4	√	5	2	6	-	√	2	-	FS	HS	16	2	3	2	x2, 16-ch	√	√	6	√	LQFP128	-40 to +105
NUC442JG8AE	256	64	16	16	114	4	6+6	4	√	5	2	6	√	√	2	-	FS	HS	16	2	3	2	x2, 16-ch	√	√	6	√	LQFP144	-40 to +105
NUC442JI8AE	512	64	16	16	114	4	6+6	4	√	5	2	6	√	√	2	-	FS	HS	16	2	3	2	x2, 16-ch	√	√	6	√	LQFP144	-40 to +105

*Marked in the table (6+6) means 6 UART+ 6 ISO-7816 UART.
*ISO-7816 UART supports full duplex mode.
*Supports two independent PWM modules with 16-bit resolution

• NUC472 Advanced Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	ISP ROM (Kbytes)	PDMA	I/O	Timer (32-bit)	Connectivity							EBI	I²S	Ethernet MAC	USB OTG	USB Device	PWM (16-bit)*	QEI	Analog Comp.	OP Amp.	ADC (12-bit)	RTC (VBAT)	Crypto	ISO-7816-3*	ICP IAP ISP	Package	Operating Temp. Range (°C)
							UART*	SPI	SD Host	I²C	CAN	LIN	PS/2																
NUC472VG8AE	256	64	16	16	77	4	6+5	4	√	5	2	6	-	√	2	√	FS	HS	16	2	3	-	x2, 16-ch	√	√	5	√	LQFP100	-40 to +105
NUC472VI8AE	512	64	16	16	77	4	6+5	4	√	5	2	6	-	√	2	√	FS	HS	16	2	3	-	x2, 16-ch	√	√	5	√	LQFP100	-40 to +105
NUC472KG8AE	256	64	16	16	101	4	6+6	4	√	5	2	6	-	√	2	√	FS	HS	16	2	3	2	x2, 16-ch	√	√	6	√	LQFP128	-40 to +105
NUC472KI8AE	512	64	16	16	101	4	6+6	4	√	5	2	6	-	√	2	√	FS	HS	16	2	3	2	x2, 16-ch	√	√	6	√	LQFP128	-40 to +105
NUC472JG8AE	256	64	16	16	114	4	6+6	4	√	5	2	6	√	√	2	√	FS	HS	16	2	3	2	x2, 16-ch	√	√	6	√	LQFP144	-40 to +105
NUC472JI8AE	512	64	16	16	114	4	6+6	4	√	5	2	6	√	√	2	√	FS	HS	16	2	3	2	x2, 16-ch	√	√	6	√	LQFP144	-40 to +105
NUC472HG8AE	256	64	16	16	144	4	6+6	4	√	5	2	6	√	√	2	√	FS	HS	16	2	3	2	x2, 16-ch	√	√	6	√	LQFP176	-40 to +105
NUC472HI8AE	512	64	16	16	144	4	6+6	4	√	5	2	6	√	√	2	√	FS	HS	16	2	3	2	x2, 16-ch	√	√	6	√	LQFP176	-40 to +105

*Marked in the table (6+6) means 6 UART+ 6 ISO-7816 UART.
*ISO-7816 UART supports full duplex mode.
*Supports two independent PWM modules with 16-bit resolution

M451 Series

The NuMicro® M451 series is embedded with ARM® Cortex® -M4 core with DSP extensions and floating point unit(FPU) and runs up to 72 MHz with 40/72/128/256 Kbytes Flash program memory, 16/32 Kbytes SRAM, and 4 Kbytes Flash loader memory for In-System Programming (ISP). The M451 series is equipped with a variety of peripherals, such as PDMA, GPIO, Timer, Watchdog Timer, RTC, UART, SPI/Microwire, I²C, I²S, PWM, LIN, CAN, Smart Card Interface, Voltage Adjustable Interface(VAI), USB 2.0 FS OTG, USB 2.0 FS Device, 12-bit ADC, 12-bit DAC, Analog Comparator, Temperature Sensor, Low Voltage Reset, and Brown-out Detector.

Key Features: Operable at 2.5V to 5.5V and -40°C to +105°C with configurable 40/72/128/256 Kbytes Flash as program memory and data memory, 4 Kbytes ISP loader and Hardware Divider.

Potential Applications: Potential Applications: Industrial Automation, Motor Control, Home Automation, Communication Systems, Security System, USB Accessory, etc.

Development Tools: NT-M451V (M451, M452, M453, M451M)

Mass Production Programmer: NG-M451X (M451X)/ NG-M451MX (M451MX); X stands for Package Code/ NG-M453L (M452L, M453L, M4TKL)/ NG-M453R (M452R, M453R, M4TKR)/ NG-M453V (M453V, M4TKV)

• M451 Base Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	PDMA	I/O	Timer (32-bit)	Connectivity						EBI	I²S	USB OTG	USB Device	PWM (16-bit)*	Analog Comp.	DAC (12-bit)	ADC (12-bit)	VAI	RTC (VBAT)	ICP IAP ISP	Package	Operating Temp. Range (°C)
								UART*	ISO-7816-3*	SPI	I²C	CAN	LIN													
M451LC3AE	40	16	Configurable	4	8	39	4	4+1	1	2	2	-	2	√	1	-	-	12	2	1-ch	10-ch	√	√	√	LQFP48	-40 to +105
M451LD3AE	72	16	Configurable	4	8	39	4	4+1	1	2	2	-	2	√	1	-	-	12	2	1-ch	10-ch	√	√	√	LQFP48	-40 to +105
M451LE6AE	128	32	Configurable	4	12	39	4	3+1	1	3	2	-	2	√	2	-	-	12	2	1-ch	8-ch	√	√	√	LQFP48	-40 to +105
M451LG6AE	256	32	Configurable	4	12	39	4	3+1	1	3	2	-	2	√	2	-	-	12	2	1-ch	8-ch	√	√	√	LQFP48	-40 to +105
M451RC3AE	40	16	Configurable	4	8	53	4	4+1	1	2	2	-	2	√	1	-	-	12	2	1-ch	16-ch	√	√	√	LQFP64	-40 to +105
M451RD3AE	72	16	Configurable	4	8	53	4	4+1	1	2	2	-	2	√	1	-	-	12	2	1-ch	16-ch	√	√	√	LQFP64	-40 to +105
M451RE6AE	128	32	Configurable	4	12	53	4	4+1	1	3	2	-	2	√	2	-	-	12	2	1-ch	12-ch	√	√	√	LQFP64	-40 to +105
M451RG6AE	256	32	Configurable	4	12	53	4	4+1	1	3	2	-	2	√	2	-	-	12	2	1-ch	12-ch	√	√	√	LQFP64	-40 to +105
M451VE6AE	128	32	Configurable	4	12	85	4	4+1	1	3	2	-	2	√	2	-	-	12	2	1-ch	16-ch	√	√	√	LQFP100	-40 to +105
M451VG6AE	256	32	Configurable	4	12	85	4	4+1	1	3	2	-	2	√	2	-	-	12	2	1-ch	16-ch	√	√	√	LQFP100	-40 to +105

*Marked in the table (4+1) means 4 UART+ 1 ISO-7816 UART.
*ISO-7816 UART supports full duplex mode.
*Supports two independent PWM modules with 16-bit resolution

• M451M Series (M051 Pin Compatible)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	PDMA	I/O	Timer (32-bit)	Connectivity						EBI	I²S	USB OTG	USB Device	PWM (16-bit)*	Analog Comp.	DAC (12-bit)	ADC (12-bit)	VAI	RTC (VBAT)	ICP IAP ISP	Package	Operating Temp. Range (°C)
								UART*	ISO-7816-3*	SPI	I²C	CAN	LIN													
M451MLC3AE	40	16	Configurable	4	8	42	4	4+1	1	2	2	-	2	√	1	-	-	12	2	1-ch	11-ch	-	-	√	LQFP48	-40 to +105
M451MLD3AE	72	16	Configurable	4	8	42	4	4+1	1	2	2	-	2	√	1	-	-	12	2	1-ch	11-ch	-	-	√	LQFP48	-40 to +105
M451MLE6AE	128	32	Configurable	4	12	42	4	3+1	1	3	2	-	2	√	2	-	-	12	2	1-ch	9-ch	-	-	√	LQFP48	-40 to +105
M451MLG6AE	256	32	Configurable	4	12	42	4	3+1	1	3	2	-	2	√	2	-	-	12	2	1-ch	9-ch	-	-	√	LQFP48	-40 to +105
M451MSC3AE	40	16	Configurable	4	8	55	4	4+1	1	2	2	-	2	√	1	-	-	12	2	1-ch	13-ch	-	-	√	LQFP64*	-40 to +105
M451MSD3AE	72	16	Configurable	4	8	55	4	4+1	1	2	2	-	2	√	1	-	-	12	2	1-ch	13-ch	-	-	√	LQFP64*	-40 to +105

*Marked in the table (4+1) means 4 UART+ 1 ISO-7816 UART.
*ISO-7816 UART supports full duplex mode.
*Supports two independent PWM modules with 16-bit resolution

LQFP64*: 7x7mm

• M452 USB Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	PDMA	I/O	Timer (32-bit)	Connectivity						EBI	I²S	USB OTG	USB Device	PWM (16-bit)*	Analog Comp.	DAC (12-bit)	ADC (12-bit)	VAI	RTC (VBAT)	ICP IAP ISP	Package	Operating Temp. Range (°C)
								UART*	ISO-7816-3*	SPI	I²C	CAN	LIN													
M452LC3AE	40	16	Configurable	4	8	35	4	4+1	1	2	2	-	2	√	1	-	FS	10	2	1-ch	10-ch	√	√	√	LQFP48	-40 to +105
M452LD3AE	72	16	Configurable	4	8	35	4	4+1	1	2	2	-	2	√	1	-	FS	10	2	1-ch	10-ch	√	√	√	LQFP48	-40 to +105
M452LE6AE	128	32	Configurable	4	12	34	4	3+1	1	3	2	-	2	√	2	FS	-	10	2	1-ch	8-ch	√	√	√	LQFP48	-40 to +105
M452LG6AE	256	32	Configurable	4	12	34	4	3+1	1	3	2	-	2	√	2	FS	-	10	2	1-ch	8-ch	√	√	√	LQFP48	-40 to +105
M452RD3AE	72	16	Configurable	4	8	49	4	4+1	1	2	2	-	2	√	1	-	FS	12	2	1-ch	16-ch	√	√	√	LQFP64	-40 to +105
M452RE6AE	128	32	Configurable	4	12	48	4	4+1	1	3	2	-	2	√	2	FS	-	12	2	1-ch	12-ch	√	√	√	LQFP64	-40 to +105
M452RG6AE	256	32	Configurable	4	12	48	4	4+1	1	3	2	-	2	√	2	FS	-	12	2	1-ch	12-ch	√	√	√	LQFP64	-40 to +105

*Marked in the table (4+1) means 4 UART+ 1 ISO-7816 UART.
*ISO-7816 UART supports full duplex mode.
*Supports two independent PWM modules with 16-bit resolution

• M453 CAN Series (CAN+USB)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	PDMA	I/O	Timer (32-bit)	Connectivity						EBI	I²S	USB OTG	USB Device	PWM (16-bit)*	Analog Comp.	DAC (12-bit)	ADC (12-bit)	VAI	RTC (VBAT)	ICP IAP ISP	Package	Operating Temp. Range (°C)
								UART*	ISO-7816-3*	SPI	I²C	CAN	LIN													
M453LC3AE	40	16	Configurable	4	8	35	4	4+1	1	2	2	1	2	√	1	-	FS	10	2	1-ch	10-ch	√	√	√	LQFP48	-40 to +105
M453LD3AE	72	16	Configurable	4	8	35	4	4+1	1	2	2	1	2	√	1	-	FS	10	2	1-ch	10-ch	√	√	√	LQFP48	-40 to +105
M453LE6AE	128	32	Configurable	4	12	34	4	3+1	1	3	2	1	2	√	2	FS	-	10	2	1-ch	8-ch	√	√	√	LQFP48	-40 to +105
M453LG6AE	256	32	Configurable	4	12	34	4	3+1	1	3	2	1	2	√	2	FS	-	10	2	1-ch	8-ch	√	√	√	LQFP48	-40 to +105
M453RD3AE	72	16	Configurable	4	8	49	4	4+1	1	2	2	1	2	√	1	-	FS	12	2	1-ch	16-ch	√	√	√	LQFP64	-40 to +105
M453RE6AE	128	32	Configurable	4	12	48	4	4+1	1	3	2	1	2	√	2	FS	-	12	2	1-ch	12-ch	√	√	√	LQFP64	-40 to +105
M453RG6AE	256	32	Configurable	4	12	48	4	4+1	1	3	2	1	2	√	2	FS	-	12	2	1-ch	12-ch	√	√	√	LQFP64	-40 to +105
M453VD3AE	72	16	Configurable	4	8	72	4	4+1	1	2	2	1	2	√	1	-	FS	12	2	1-ch	16-ch	√	√	√	LQFP100	-40 to +105
M453VE6AE	128	32	Configurable	4	12	80	4	4+1	1	3	2	1	2	√	2	FS	-	12	2	1-ch	16-ch	√	√	√	LQFP100	-40 to +105
M453VG6AE	256	32	Configurable	4	12	80	4	4+1	1	3	2	1	2	√	2	FS	-	12	2	1-ch	16-ch	√	√	√	LQFP100	-40 to +105

*Marked in the table (4+1) means 4 UART+ 1 ISO-7816 UART.
*ISO-7816 UART supports full duplex mode.
*Supports two independent PWM modules with 16-bit resolution

• M4TK Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	PDMA	I/O	Timer (32-bit)	Connectivity						EBI	I²S	USB OTG	USB Device	PWM (16-bit)*	Analog Comp.	DAC (12-bit)	ADC (12-bit)	Touch Key	VAI	RTC (VBAT)	ICP IAP ISP	Package	Operating Temp. Range (°C)
								UART*	ISO-7816-3*	SPI	I²C	CAN	LIN														
M4TKLE6AE	128	32	Configurable	4	12	34	4	3+1	1	3	2	1	2	√	2	FS	-	10	2	1-ch	8-ch	6	√	√	√	LQFP48	-40 to +105
M4TKLG6AE	256	32	Configurable	4	12	34	4	3+1	1	3	2	1	2	√	2	FS	-	10	2	1-ch	8-ch	6	√	√	√	LQFP48	-40 to +105
M4TKRE6AE	128	32	Configurable	4	12	48	4	4+1	1	3	2	1	2	√	2	FS	-	12	2	1-ch	12-ch	11	√	√	√	LQFP64	-40 to +105
M4TKRG6AE	256	32	Configurable	4	12	48	4	4+1	1	3	2	1	2	√	2	FS	-	12	2	1-ch	12-ch	11	√	√	√	LQFP64	-40 to +105
M4TKVE6AE	128	32	Configurable	4	12	80	4	4+1	1	3	2	1	2	√	2	FS	-	12	2	1-ch	16-ch	16	√	√	√	LQFP100	-40 to +105
M4TKVG6AE	256	32	Configurable	4	12	80	4	4+1	1	3	2	1	2	√	2	FS	-	12	2	1-ch	16-ch	16	√	√	√	LQFP100	-40 to +105

*Marked in the table (4+1) means 4 UART+ 1 ISO-7816 UART.
*ISO-7816 UART supports full duplex mode.
*Supports two independent PWM modules with 16-bit resolution

NUC505 Series

The NuMicro® NUC505 series 32-bit microcontroller is embedded with the ARM® Cortex®-M4F core and runs up to 100 MHz, supports DSP and FPU function, and provides 2 M/ 512 Kbytes embedded SPI Flash memory, and 128 Kbytes embedded SRAM. The NUC505 series is also equipped with plenty of peripheral devices, such as USB Host/Device, Timer , Watchdog Timer, RTC, UART, SPI, I²S, I²C, PWM Timer, GPIO, 12-bit ADC, 24-bit Audio CODEC, Low Voltage Reset and Low Voltage Detector.

Key Features: Operable at 2.7V to 3.6V and -40°C to +85°C with 128 Kbytes SRAM, 24-bit Audio CODEC, USB 2.0 HS Device and Hardware Divider.
Potential Applications: Sound Bar, Thermal Printer, GPS Tracker, 2.4G Wireless Audio, Audio Application, etc.
Development Tools: NT-NUC505Y (NUC505)

Mass Production Programmer: NG-NUC505LA (NUC505DLA)/ NG-NUC505L (NUC505DL13Y)/ NG-NUC505NA (NUC505YLA)/ NG-NUC505N (NUC505YLA2Y)/ NG-NUC505SA (NUC505DSA)/ NG-NUC505S (NUC505DS13Y)/ NG-NUC505O (NUC505YO13Y)

• NUC505 24-bit Audio CODEC Series

Part No.	Serial Flash (Kbytes)	SRAM (Kbytes)	I/O	Timer (32-bit)	Connectivity				I²S	USB Host	USB Device	PWM (16-bit)	ADC (12-bit)	Digital MIC	24-bit Audio CODEC	RTC (VBAT)	Security against piracy	ICP	Package	Operating Temp. Range (°C)
					UART	SPI*	SD Host	I²C												
NUC505DL13Y	2048	128	25	4	3	2+1	√	2	1	FS	HS	4	5-ch	√	-	√*	√	√	LQFP48	-40 to +85
NUC505DLA	512	128	20	4	2	1+1	-	2	1	-	HS	-	5-ch	√	√	-	√	√	LQFP48	-40 to +85
NUC505YLA2Y	512	128	25	4	3	2+1	√	2	1	FS	HS	4	5-ch	√	-	√*	√	√	QFN48	-40 to +85
NUC505YLA	512	128	20	4	2	1+1	-	2	1	-	HS	-	5-ch	√	√	-	√	√	QFN48	-40 to +85
NUC505DS13Y	2048	128	35	4	3	2+1	√	2	1	FS	HS	4	8-ch	√	√*	√*	√	√	LQFP64*	-40 to +85
NUC505DSA	512	128	34	4	3	2+1	√	2	1	FS	HS	4	5-ch	√	√	-	√	√	LQFP64*	-40 to +85
NUC505YO13Y	2048	128	52	4	3	2+1	√	2	1	FS	HS	4	8-ch	√	√	√	√	√	QFN88	-40 to +85

The 24-bit Audio CODEC marked in the table √ means it only supports Headphone Out.
The +1 marked in the table SPI means SPIM can only support SPI Flash.
The RTC marked in the table √ means it cannot support 32 kHz crystal pin out.
*The packages are not pin-to-pin compatible even though they are the same packages.

LQFP64*: 7x7mm

Contact us: SalesSupport@nuvoton.com

NuMicro® Family ARM7 / ARM9 MPUs

Nuvoton provides a series of network connected processors with feature rich peripherals based on ARM7TDMI and ARM926 to let customers implement their innovative products in a timely manner. A complete development environment is provided for each platform. The source code of BSP drivers under Linux are all provided to shorten the design cycle times. The targeted applications range from devices that require network connectivity, USB connectivity, user interface devices, and industrial control, such as POS, HMI, IP camera, etc. The NUC501 is an ARM7TDMI-based MPU, specifically designed to offer low cost and high performance for various applications, such as 2.4G RF wireless applications, thermal printer, bar code reader, and home appliances.

Development Tools: ND-NUC972 (NUC972, NUC976, NUC977)/ ND-NUC977 (NUC977)

ARM7 Series

Part No.	Core					Memory I/F				Storage	MAC	USB		LCD		Timer			Analog				Peripheral										Power			Package	Operating Temp. Range1 (°C)
	Max Speed (MHz)	CPU	I Cache (KB)	D Cache (KB)	Security against piracy	SDRAM	SRAM (KB)	NOR Flash	SPI Flash, No. of I/O Pins	SD / SDIO	Ethernet 10/100 MAC	USB 1.1 Host (12M bps)	USB 2.0 FS Device	STN LCD	TFT LCD	Real-Time Clock (RTC)	Watchdog Timer	PWM	ADC (10-bit) No. of Channels	ADC (10-bit) Speed (Samples per second)	16-bit DAC Channels	LVD/LVR	JTAG	External Bus Interface	GPIO (Max)	UART	I²C	SPI	KPI	PS2	I²S/AC97	Core Voltage (V)	I/O Voltage (V)	Built-in LDO		
NUC501ADN	80	ARM7TDMI	-	-	√	-	32	-	2	-	-	-	1	-	-	√	√	4	8	400K	1	√	√	-	26	1	1	2	-	-	-	-	3.3	√	LQFP48	-40 to +105
NUC501BDN	80	ARM7TDMI	-	-	√	-	32	-	2	-	-	-	1	-	-	√	√	4	8	400K	1	√	√	-	37	2	1	2	-	-	-	-	3.3	√	LQFP64	-40 to +105
NUC502ADN	80	ARM7TDMI	-	-	√	-	64	-	2	-	-	-	1	-	-	√	√	4	8	400K	1	√	√	-	26	1	1	2	-	-	-	-	3.3	√	LQFP48	-40 to +105
NUC502BDN	80	ARM7TDMI	-	-	√	-	64	-	2	-	-	-	1	-	-	√	√	4	8	400K	1	√	√	-	37	2	1	2	-	-	-	-	3.3	√	LQFP64	-40 to +105
NUC502CDN	80	ARM7TDMI	-	-	√	-	64	-	2	-	-	-	1	-	-	√	√	4	8	400K	1	√	√	-	37	2	1	2	-	-	-	-	3.3	√	LQFP64*	-40 to +105
NUC710ADN	80	ARM7TDMI	4	4	-	√	-	√	1	1	1	2	1	√	√	√	√	4	-	-	-	-	√	√	71	4	2	1	√	1	1	1.8	3.3	-	LQFP176	-40 to +85
NUC740ADN	80	ARM7TDMI	8	2	-	√	-	√	-	-	2	1	-	-	-	-	√	-	-	-	-	-	√	√	21	1	-	-	-	-	-	1.8	3.3	-	LQFP176	0 to +70
NUC745ADN	80	ARM7TDMI	4	4	-	√	-	√	1	-	1	2	1	-	-	-	√	4	-	-	-	-	√	√	31	4	2	1	√	1	1	1.8	3.3	-	LQFP128	-40 to +85

ARM9 Series

Part No.	Core					Memory I/F					Storage			MAC	USB		GFX	LCD	Timer					
	Max Speed (MHz)	CPU	I Cache (KB)	D Cache (KB)	Security against piracy	SDRAM	DDR2 RAM(MB)	SRAM (KB)	NOR Flash	SPI Flash, No. of I/O Pins	NAND Flash, No. of ECC bits	EMMC	SD / SDIO	Ethernet 10/100 MAC	USB 1.1 Host (12M bps)	USB 2.0 FS Device	2D Graphics	TFT LCD	Real-Time Clock (RTC)	Timer (32-bit)	Enhanced Timer	Watchdog Timer	Window Watchdog Timer	PWM
NUC910ABN	200	ARM926EJ	8	8	-	√	-	-	√	1	4	-	2	1	2	1	√	√	√	-	-	√	-	4
NUC920ABN	200	ARM926EJ	8	8	-	√	-	-	√	1	-	-	1	1	2	1	-	-	√	-	-	√	-	4
NUC945ADN	200	ARM926EJ	8	8	-	√	-	-	√	-	-	-	1	1	1	1	-	-	-	-	-	√	-	-
NUC946ADN	200	ARM926EJ	8	8	-	√	-	-	√	1	-	-	1	1	2	1	-	-	-	-	-	√	-	-
NUC947AND	200	ARM926EJ	8	8	-	√	-	-	√	1	-	-	1	1	1	1	-	-	-	-	-	√	-	4
NUC950ADN	200	ARM926EJ	8	8	-	√	-	-	√	1	4	-	1	1	2	1	√	√	-	-	-	√	-	4
NUC951ADN	200	ARM926EJ	8	8	-	√	-	-	√	1	4	-	2	1	2	1	√	√	√	-	-	√	-	4
NUC972DF62Y	300	ARM926EJ	16	16	√	-	64	56	-	1	24	√	2	2	2	1	√	√	√	5	4	√	√	4
NUC976DK62Y	300	ARM926EJ	16	16	√	-	64	56	-	1	-	√	2	1	2	1	√	√	√	5	1	√	√	4
NUC977DK62Y	300	ARM926EJ	16	16	√	-	64	56	-	1	24	√	2	1	2	1	√	√	√	5	2	√	√	4
NUC976DK51Y	300	ARM926EJ	16	16	√	-	32	56	-	1	-	√	2	1	2	1	√	√	√	5	1	√	√	4
NUC977DK51Y	300	ARM926EJ	16	16	√	-	32	56	-	1	24	√	2	1	2	1	√	√	√	5	2	√	√	4

NuMicro® Family ARM SoC N329 MPUs

Designed for cost-effective solutions targeting at toys and consumer electronics, the ARM-based SoC are embedded with various H/W accelerators and a number of useful peripherals. Some parts even come up with a unique MCP (Multi-Chip Package) in the LQFP footprint, which is ideal in terms of several key design factors: high performance, small dimension, low power, much less EMI, stable production yield, and lower BOM cost.

Development Tools: ND-N32905 (N32901,N32903,N32905)/ ND-N32926 (N32926)

N3290 MJPEG Series

Nuvoton's N3290 MJPEG Series is an ARM926EJ-S running up to 200MHz and hardware JPEG codec based product line targeting for low-cost ELA (Educational Learning Aid) , Video Baby Monitor, WiFi Camera and HMI (Human Machine Interface) applications. The N3290 series is 64-pin and 128-pin LQFP package stacked with 2MB, 8MB or 32MB DRAM. It can also be used as a general purpose MCU.

Part No.	Core				Memory I/F					USB			H/W Accelerator			LCD		Analog					Peripheral												Power		PKG
	Max. Speed (MHz)	ARM CPU	I Cache (KB)	D Cache (KB)	SRAM (KB)	Stacked SDRAM (bit)	SPI Flash I/F	Raw NAND I/F, ECC bits	SD / SDIO 7	SDRAM I/F	1.1 Host (12 Mbps)	2.0 Host (480 Mbps)	Device (FS / HS)	2D GFX	JPEG Codec	Video Codec	RGB Color (bits)	Max. Resolution3	SAR ADC	Σ-Δ ADC	ADC for MIC Input	Touch Panel (Wire)	Stereo DAC (bits)	JTAG	Ethernet MAC	CMOS Sensor1	GPIO (Max)	UART	I²C	SPI 5	RTC	PWM	TV Output	I²S	Core Voltage (V)	I/O Voltage (V)	Package
N32905U3DN	200	926	8	8	8	16M x16 DDR	√	15	3	-	1	-	HS	BitBLT	√	MJPEG2 Codec	18	VGA6	√	-	√	4	16	√	-	√	64	2	1	2	√	4	-	√	1.8	3.3	LQFP-128 (MCP)
N32905U2DN	200	926	8	8	8	16M x16 DDR	√	15	2	-	1	-	HS	BitBLT	√	MJPEG Codec	18	VGA	√	-	√	4	16	√	-	√	59	2	1	2	√	4	√	-	1.8	3.3	LQFP-128 (MCP)
N32905R3DN	200	926	8	8	8	16M x16 DDR	√	15	1	-	1	-	HS	-	√	MJPEG Codec	-	-	√	-	√	-	16	-	-	√	34	2	-	2	-	2	-	√	1.8	3.3	LQFP-128 (MCP)
N32903R1DN	200	926	8	8	8	4M x16 DDR	√	15	1	-	1	-	HS	-	√	MJPEG Codec	-	-	√	-	√	-	16	-	-	√	34	2	-	2	-	2	-	√	1.8	3.3	LQFP-128 (MCP)
N32903U1DN	200	926	8	8	8	4M x16 DDR	√	15	3	-	1	-	HS	BitBLT	√	MJPEG Codec	18	VGA	√	-	√	4	16	√	-	√	64	2	1	2	√	4	-	√	1.8	3.3	LQFP-128 (MCP)
N32903U2DN	200	926	8	8	8	4M x16 DDR	√	15	2	-	1	-	HS	BitBLT	√	MJPEG Codec	18	VGA	√	-	√	4	16	√	-	√	59	2	1	2	√	4	√	-	1.8	3.3	LQFP-128 (MCP)
N32901R1DN	200	926	8	8	8	4M x16 DDR	√	15	1	-	1	-	HS	-	√	MJPEG Codec	-	-	√	-	√	-	16	-	-	√	34	2	-	2	-	2	-	√	1.8	3.3	LQFP-128 (MCP)
N32901U1DN	200	926	8	8	8	1M x16 DDR	√	15	3	-	1	-	HS	BitBLT	√	MJPEG Codec	18	QVGA	√	-	√	4	16	√	-	√	64	2	1	2	√	4	-	√	1.8	3.3	LQFP-128 (MCP)
N32901U2DN	200	926	8	8	8	1M x16 DDR	√	15	2	-	1	-	HS	BitBLT	√	MJPEG Codec	18	QVGA	√	-	√	4	16	√	-	√	59	2	1	2	√	4	√	-	1.8	3.3	LQFP-128 (MCP)

1 CMOS sensor: CCIR601 / CCIR656 I/F, 2M pixel.
2 MJPEG: Motion JPEG Codec, VGA 30fps.
3 Resolution: QVGA (320x240), VGA (640x480).
4 Status: MP - Mass Production.
5 Only one hardware SPI controller to support two SPI device with two chip selection signals.
6 XGA is for still image only. For video, N3290x is MJPEG VGA@30fps.
7 N3290x has only one hardware host controller.

Contact us: SalesSupport@nuvoton.com

N3292 H.264 Codec Series

Nuvoton's N3292 H.264 Codec Series is an ARM926EJ-S running up to 240MHz, hardware H.264 and JPEG codec based product line targeting for IP Camera, Video Baby Monitor, Home Appliance and HMI (Human Machine Interface) applications. The H.264 is baseline profile and the resolution is up to 720P (1280x720) . The N3292 series is 128-pin LQFP package stacked with 32MB or 64MB DRAM.

Part No.	Core				Memory I/F						USB			H/W Accelerator			LCD		Analog						Peripheral												Power		PKG
	Max Speed (MHz)	ARM CPU	I Cache (KB)	D Cache (KB)	SRAM (KB)	Stacked SDRAM (bit)	SPI Flash I/F	Raw NAND I/F, ECC bits	SD / SDIO 8	SDRAM I/F	1.1 Host (12 Mbps)	2.0 Host (480 Mbps)	Device (FS / HS)	2D GFX	JPEG Codec	Video Codec	RGB Color (bits)	Max. Resolution5	SARADC	Σ-Δ ADC	ADC for MIC Input	Touch Panel (Wire)	Stereo DAC (bits)	JTAG	Ethernet MAC	CMOS Sensor	GPIO (Max)	UART	I²C	SPI7	RTC	PWM	TV Output	I²S	Core Voltage (V)	I/O Voltage (V)	Package
N32926U1DN	240	926	8	8	8	32M x16 DDR2	√	24	3	-	1	1	HS	BitBLT	√	H.264 Codec MJPEG Codec	24	XGA	V9	16	V10	4/5	16	√	√	√	80	2	1	2	√	4	√	√	1.2	3.3	LQFP-128 (MCP)
N32925U3DN	240	926	8	8	8	16M x16 DDR2	√	24	3	-	1	1	HS	BitBLT	√	H.264 Codec MJPEG Codec	24	XGA	V9	16	V10	4/5	16	√	√	√	80	2	1	2	√	4	√	√	1.2	3.3	LQFP-128 (MCP)
N32923U1DN	240	926	8	8	8	4M x16 DDR2	√	24	3	-	1	1	HS	BitBLT	√	H.264 Codec MJPEG Codec	24	XGA	V9	16	V10	4/5	16	√	√	√	80	2	1	2	√	4	√	√	1.2	3.3	LQFP-128 (MCP)

1 CMOS sensor: CCIR601 / CCIR656 I/F, 3M pixel.
2 MJPEG: Motion JPEG Codec, VGA 30fps.
3 H.264 Codec: support H.264 BP 720P upto 25fps.
4 XGA is for still image only.
5 Only one hardware SPI controller to support two SPI device with two chip selection signals.
6 N3292x has two hardware host controllers.
7 N3292x supports 12-bit SARADC. 10 N3292x also support optional channel for audio line-in.
8 N3292x also support optional channel for audio line-in.

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8051 MCUs

As a leading supplier of 8051 microcontrollers (MCUs), Nuvoton offers a variety of products with the best-in-class price/performance critical to the success of consumers and industrial products. The 8-bit MCU comes equipped with rich peripherals to meet various system requirements and is supported by the tool chain from world leading tool makers for rapid product development.

6T/12T 8051 Series

Key Features: Operable at 2.4V ~ 5.5V and -40°C ~ +85°C with UART, SPI, internal RC and ISP.
Potential Applications: Bar Code Reader, Key Phone, KVM, 2.4G Wireless Keyboard, IPC, Monitor, Security System, etc.
Development Tools: NT-N76E616 (N76E616)/ NT-N76E885 (N76E885)/ NT-N79E715 (N79E715)/ NT-N79E85J (N79E85J)

• W78 Standard Series

Part No.	Flash (Kbytes)	SRAM (bytes)	ISP ROM (Kbytes)	I/O	Timer (16-bit)	Connectivity			Comp.	PWM (8-bit)	ADC (10-bit)	INT	ISP	Special Function	Package
						UART	SPI	I^2C							
W78E052D	8	256	2	up to 36	3	1	-	-	-	-	-	4	√	6T/12T option, Extra I/O port	PLCC44/PQFP44/TQFP44
W78E054D	16	256	2	up to 36	3	1	-	-	-	-	-	4	√	6T/12T option, Extra I/O port	PLCC44/PQFP44/TQFP44
W78E058D	32	512	4	up to 36	3	1	-	-	-	-	-	4	√	6T/12T option, Extra I/O port	PLCC44/PQFP44
W78E516D	64	512	4	up to 36	3	1	-	-	-	-	-	4	√	6T/12T option, Extra I/O port	PLCC44/PQFP44

• N78/W78 Industrial Series

Part No.	Flash (Kbytes)	SRAM (bytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (16-bit)	Connectivity			Comp.	PWM (8-bit)	ADC (10-bit)	INT	ISP	Special Function	Package
							UART	SPI	I^2C							
N78E055A	16	256+1K	4	2.5	up to 40	3	1	1	-	-	5	-	4	√	6T/12T option, Extra I/O port, 22 MHz internal RC,4 level BOR	PLCC44/ PQFP44
N78E059A	32	256+1K	4	2.5	up to 40	3	1	1	-	-	5	-	4	√	6T/12T option, Extra I/O port, 22 MHz internal RC,4 level BOR	PLCC44/ PQFP44
N78E517A	64	256+1K	Configurable	2.5	up to 40	3	1	1	-	-	5	-	4	√	6T/12T option, Extra I/O port, 22 MHz internal RC,4 level BOR	PLCC44/ PQFP44/ TQFP44
N78E366A	64	256+1K	-	2.5	up to 40	3	1	1	-	-	5	-	4	√	6T/12T option, Extra I/O port, 22 MHz internal RC,4 level BOR	PLCC44/ PQFP44

• N79/W79 Enhanced Turbo Series

Part No.	Flash (Kbytes)	SRAM (bytes)	Data Flash (bytes)	ISP ROM (Kbytes)	I/O	Timer (16-bit)	Connectivity			Comp.	PWM (8-bit)	ADC (10-bit)	INT	ISP	Special Function	Package
							UART	SPI	I^2C							
N79E352R	8	256	128	-	up to 38	3	1	-	1	-	2	-	2	ICP	22 MHz internal RC, KBI, BOR	PDIP40/LQFP48
W79E632A	128	256+1K	-	4	up to 36	3	1	-	-	-	6	-	2	ISP	Extra I/O port	PLCC44/PQFP44
W79E633A	128	256+1K	-	4	up to 36	3	1	-	2	-	6	4	2	ISP	Extra I/O port	PLCC44
W79E658A	128	256+1K	-	4	up to 60	3	1	-	2	-	6	8	2	ISP	JTAG interface, Extra I/O port	PQFP100

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Low Pin Count 8051 Series

Key Features: Integrated with Data Flash, ADC, BOR, I²C, UART, SPI, internal RC and ICP/ISP operating at 2.4V ~ 5.5V and -40°C ~ +85°C.

Potential Applications: Temperature Sensor, iPod Docking, Projector, DVD Player, E-balance, Security, Power Control, LED/Lighting, etc.

Development Tools: NT-N76E616 (N76E616)/ NT-N76E885 (N76E885)/ NT-N79E715 (N79E715)/ NT-N79E85J (N79E85J)

• N79/N76 LPC Series

Part No.	Flash (Kbytes)	SRAM (bytes)	Data Flash (bytes)	ISP ROM (Kbytes)	I/O	Timer (16-bit)	Connectivity			Comp.	PWM	ADC	INT	ISP ICP IAP	Special Function	Package
							UART	SPI	I²C							
***N76E003**	18	1K	Configurable	√	up to 18	4	2	1	1	-	6x16-bit	8x12-bit	2	ISP ICP IAP	1T 8051, 16 MHz internal RC, KBI, on-chip debugger	TSSOP20
N76E616	18	512	Configurable	√	up to 46	up to 7	2	-	1	-	4	8	2	ISP ICP IAP	11.059 MHz internal RC, 4 level BOR, on-chip debugger LCD driver: 4COM x 32SEG/6COM x 30SEG	LQFP48 QFP44
N76E885	18	512	Configurable	√	up to 26	3	2	1	1	-	8x12-bit	10	2	ISP ICP IAP	1T 8051,22 MHz internal RC, KBI, on-chip debugger	TSSOP28/ TSSOP20
N79E715	16	512	Configurable	2	up to 17	3	1	1	1	-	4	8	2	ISP ICP	22 MHz internal RC, KBI, BOR	TSSOP28/ TSSOP20/SOP16
N79E845	16	512	Configurable	2	up to 17	3	1	1	1	-	4	7	2	ISP ICP	22 MHz internal RC, KBI, BOR	TSSOP28/ TSSOP20
N79E844	8	512	4K	2	up to 17	3	1	1	1	-	4	7	2	ISP ICP	22 MHz internal RC, KBI, BOR	TSSOP28/ TSSOP20
N79E8432	4	512	4K	2	up to 13	3	1	-	1	-	4	4	2	ISP ICP	22 MHz internal RC, KBI, BOR	SOP16

*Under development, available in Q4, 2016.

NuMicro® Family Motor MCUs

NM1120 Series for PMSM/BLDC

The NuMicro® NM1120 series is embedded with the ARM® Cortex®-M0 core running up to 48 MHz with 29.5 K/16Kbytes programmable Flash memory, 4K/2 Kbytes SRAM and 2 Kbytes Flash loader memory for In-System Programming (ISP). The NM1120 series is equipped with a variety of peripherals, such as GPIOs, Timers, UART, SPI, I²C, Asymmetric PWM, 2 S/HADC, Comparator, PGA, Watchdog Timer (WDT), Low Voltage Reset, Brown-out Detected Reset, and supports 96-bit Unique ID and 128-bit Unique Customer ID.

Key Features: Operable at 2.1V to 5.5V and -40°C to +105°C, with 16/29.5 Kbytes programmable Flash and 2 Kbytes ISP loader.
Potential Applications: DC Fan, ESC, Power tool etc.

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash	ISP ROM (Kbytes)	I/O	Timer (16-bit)	Connectivity				PWM (16-bit)	ADC (12-bit) 1MSPS	Comparator	PGA	ISP ICP IAP	IRC 48 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	LIN								
NM1120DC1AE	29.5	4	Configurable	2	12	4	2	1	1	-	6	6	2	1	√	√	TSSOP14	-40 to +105
NM1120FC1AE	29.5	4	Configurable	2	18	4	2	1	1	√	6	6	2	1	√	√	TSSOP20	-40 to +105
NM1120EC1AE	29.5	4	Configurable	2	22	4	2	1	1	√	6	6	2	1	√	√	TSSOP28	-40 to +105
NM1120XC1AE	29.5	4	Configurable	2	18	4	2	1	1	√	6	6	2	1	√	√	QFN20	-40 to +105
NM1120TC1AE	29.5	4	Configurable	2	22	4	2	1	1	√	6	6	2	1	√	√	QFN33*	-40 to +105
NM1120ZC1AE	29.5	4	Configurable	2	22	4	2	3	1	√	6	6	2	1	√	√	QFN33	-40 to +105
NM1120DB0AE	16	2	Configurable	2	12	4	2	1	1	-	6	6	2	1	√	√	TSSOP14	-40 to +105
NM1120FB0AE	16	2	Configurable	2	18	4	2	1	1	√	6	6	2	1	√	√	TSSOP20	-40 to +105
NM1120EB0AE	16	2	Configurable	2	22	4	2	1	1	√	6	6	2	1	√	√	TSSOP28	-40 to +105
NM1120XB0AE	16	2	Configurable	2	18	4	2	1	1	√	6	6	2	1	√	√	QFN20	-40 to +105
NM1120TB0AE	16	2	Configurable	2	22	4	2	1	1	√	6	6	2	1	√	√	QFN33*	-40 to +105
NM1120ZB0AE	16	2	Configurable	2	22	4	2	3	1	√	6	6	2	1	√	√	QFN33	-40 to +105

NM1200 Series for PMSM/BLDC

The NuMicro® NM1200 series embedded with the ARM® Cortex®-M0 core runs up to 48 MHz with 17.5 Kbytes Flash program memory, 2 Kbytes SRAM and 2 Kbytes Flash loader memory for In-System Programming (ISP). The NM1200 series is equipped with a variety of peripherals, such as GPIOs, Timers, UART, SPI, I²C, Asymmetric PWM, ADC, Comparator, Watchdog Timer (WDT), Low Voltage Reset, Brown-out Detected Reset, and supports 96-bit Unique ID and 128-bit Unique Customer ID.

Key Features: Operable at 2.5V to 5.5V and -40°C to +105°C, with 17.5 Kbytes of programmable Flash, 2 Kbytes ISP loader and Hardware Divider.
Potential Applications: DC Fan, E-bike, ESC, Power tool, etc.

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash	ISP ROM (Kbytes)	I/O	Timer (16-bit)	Connectivity			PWM (16-bit)	ADC (10-bit)	Comparator	ISP ICP IAP	IRC 48 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C							
NM1100DBAE	17.5	2	Configurable	2	11	2	1	0	0	4	5	2	√	√	TSSOP14	-40 to +105
NM1100FBAE	17.5	2	Configurable	2	17	2	1	0	0	6	8	2	√	√	TSSOP20	-40 to +105
NM1100XBAE	17.5	2	Configurable	2	17	2	1	0	0	6	8	2	√	√	QFN20	-40 to +105
NM1200TBAE	17.5	2	Configurable	2	29	2	2	1	1	6	12	2	√	√	QFN33*	-40 to +105
NM1200ZBAE	17.5	2	Configurable	2	29	2	2	1	1	6	12	2	√	√	QFN33 5x5	-40 to +105
NM1200LBAE	17.5	2	Configurable	2	33	2	2	1	1	6	12	2	√	√	LQFP48	-40 to +105

QFN33*: 4x4mm

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NM1500 series for PMSM/BLDC

The NuMicro® NM1500 series embedded with the ARM® Cortex®-M0 core runs up to 72 MHz with 32/64/128 Kbytes Flash program memory, 4/8/16 Kbytes SRAM, and 8 Kbytes Flash loader memory for In-System Programming (ISP) and In Application Program (IAP). The NM1530 series is equipped with a variety of peripherals, such as GPIOs, Timers, Watchdog Timer (WDT), UART, SPI, I²C, 14 ch x 16-bit PWM, 2 sets x 8 ch x 12-bit ADC, 24-bit Capture, three sets Analog Comparator, two sets of OPA, Hardware FOC (MDU), Low Voltage Reset, and Brown-out Detector.

Key Features: Operable at 2.5V to 5.5V and -40°C to +105°C, with 32/64/128 Kbytes of programmable Flash, 4 Kbytes Data Flash, 8 Kbytes ISP loader and Hardware Divider.

Potential Applications: Industrial Control, Motor Control, Electronic Vehicles, HVAC compressor, etc.

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity				PWM (16-bit)	ADC (12-bit) 1MSPS	Comparator	OP	ISP ICP IAP	IRC 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	CAN								
NM1510LC1AE	32	4	4K	8	37	4	2	1	1	-	9	9	1	2	√	√	LQFP48	-40 to +105
NM1510RD2AE	64	8	4K	8	51	4	2	1	1	-	13	14	2	2	√	√	LQFP64	-40 to +105
NM1520LC2AE	32	8	4K	8	37	4	2	1	1	√	9	9	1	2	√	√	LQFP48	-40 to +105
NM1520LD2AE	64	8	4K	8	37	4	2	1	1	√	9	9	1	2	√	√	LQFP48	-40 to +105
NM1520RC2AE	32	8	4K	8	51	4	2	1	1	√	13	14	2	2	√	√	LQFP64	-40 to +105
NM1520RD2AE	64	8	4K	8	51	4	2	1	1	√	13	14	2	2	√	√	LQFP64	-40 to +105
NM1521RD2AE	64	8	4K	8	51	4	2	1	1	√	13	14	2	2	√	√	LQFP64	-40 to +105
NM1530VD3AE	64	16	4K	8	82	4	2	3	1	√	14	16	3	2	√	√	LQFP100	-40 to +105
NM1530VE3AE	128	16	Configurable	8	82	4	2	3	1	√	14	16	3	2	√	√	LQFP100	-40 to +105

NM1820 Series for PMSM/BLDC

The NuMicro® NM1820 series is embedded with the ARM® Cortex®-M0 core running up to 48 MHz with 17.5 Kbytes programmable Flash memory, 2 Kbytes SRAM and 2 Kbytes Flash loader memory for In-System Programming (ISP). The NM1820 series is equipped with a variety of peripherals, such as GPIOs, Timers, UART, SPI, I²C, Asymmetric PWM, ADC, Comparator, Watchdog Timer (WDT), Low Voltage Reset, Brown-out Detected Reset, and supports 96-bit Unique ID and 128-bit Unique Customer ID.

Key Features: Operable at 2.5V to 5.5V and -40°C to +105°C, Gate driver 40V/200V/600V, with 17.5 Kbytes of programmable Flash and 2 Kbytes ISP loader.

Potential Applications: DC Fan, E-bike, ESC, Power tool, etc.

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity				PWM (16-bit)	ADC (10-bit)	Comparator	LDO	ISP ICP IAP	IRC 48 MHz	Gate driver Phase/ Voltage	Package	Operating Temp. Range (°C)
							UART	SPI	I²C	LIN									
NM1821FB0AE	17.5	2	Configurable	2	10	2	1	0	0	-	4	4	2	5V	√	√	2/ 40V	TSSOP20	-40 to +105
NM1820EB0AE	17.5	2	Configurable	2	18	2	1	0	0	-	6	7	2	5V	√	√	3/ 40V	TSSOP28	-40 to +105
NM1820ZB0AE	17.5	2	Configurable	2	22	2	2	1	1	-	6	12	2	5V	√	√	3/ 40V	QFN33	-40 to +105
NM1820LB0AE	17.5	2	Configurable	2	33	2	2	1	1	-	6	12	2	5V	√	√	3/ 40V	LQFP48	-40 to +105
NM1824FB0AE	17.5	2	Configurable	2	10	2	1	0	0	-	4	4	2	-	√	√	2/ 200V	TSSOP20	-40 to +105
NM1823EB0AE	17.5	2	Configurable	2	18	2	1	0	0	-	6	7	2	-	√	√	3/ 200V	TSSOP28	-40 to +105
NM1823ZB0AE	17.5	2	Configurable	2	22	2	2	1	1	-	6	12	2	-	√	√	3/ 200V	QFN33 5x5	-40 to +105
NM1823LB0AE	17.5	2	Configurable	2	33	2	2	1	1	-	6	12	2	-	√	√	3/ 200V	LQFP48	-40 to +105
NM1827UB0AE	17.5	2	Configurable	2	22	2	1	0	0	-	6	8	2	-	√	√	3/ 600V	SOP32	-40 to +105
NM1827YB0AE	17.5	2	Configurable	2	30	2	2	1	1	-	6	12	2	-	√	√	3/ 600V	LQFP44	-40 to +105

LQFP44: 10x10mm

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Touch Key MCUs

NT Series

The Nuvoton NT series Touch Key IC supports robust, reliable, feasible and malfunction-proof operation with high noise immunity (4KV EFT/8KV HBM ESD). Using I²C as the control interface, it supports the wide operating voltage from 2.4V to 5.5V and operating temperature from -40°C to 105°C. The NT series is embedded with LED display driver and is able to withstand a wide relative humidity range from 1% to 99%. It has also passed multiple interference tests including the electrostatic discharge test (ESD), alternative current test (AC), cellular communication test, intercom communication test, T5 LED lighting test and water repellent tests. To provide a friendly development environment, Nuvoton also offers easy-to-use intuitive GUI touch key software for users to configure sensitivity without coding or setting the resistance value.

Key Features: Operable at 2.4V to 5.5V and -40°C to +85°C, with high noise immunity (ESD>8KV, EFT>4.4KV), auto calibration function, I²C control interface or analog key control, advanced key algorithm, and simple PCB layout.

Potential Applications: Small Appliance, Industrial Control Panel, Audio/TV Control Panel, Power/Lighting Control Panel, etc.

Part No.	Touch Key	Key Output Type	Slide	Wheel	LED Control	Package	Operating Temp. Range (°C)
NT1160AT20	16-key	I²C	-	-	3	TSSOP20	-40 to +85
NT1080AT20	8-key	I²C	-	-	5	TSSOP20	-40 to +85
NT084DAT28	8-key	I²C	V	V	4*8	TSSOP28	-40 to +85
NT066EAT20	6-key	I²C	V	V	6	TSSOP20	-40 to +85
NT0880AT20	8-key	8-ch outputs	-	-	-	TSSOP20	-40 to +85
NT0660AS16	6-key	6-ch outputs	-	-	-	SOP16	-40 to +85

The NuMicro® Family Ecosystem

Nuvoton offers powerful development tools to support customers in development, production and upgrades. We provide:

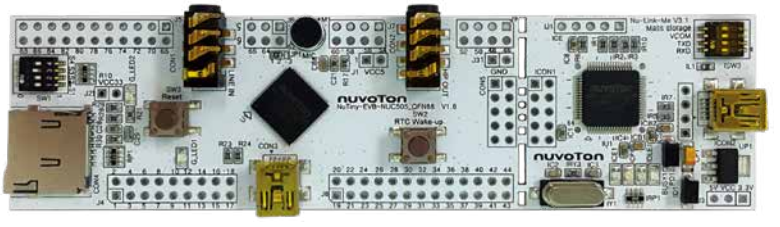
- Multiple development kits to suit various production types;
- Rich online resources;
- Hardware/software support;
- Open source tool to support product upgrades via multiple communication interfaces.

Development Boards

Nuvoton offers distinctive evaluation boards and a variety of debug tools to shorten the development time. Each evaluation board includes a Nu-Link-Me ICE adaptor, so no additional debug equipments is needed.

• NuTiny Board

The NuTiny Board is a simple, easy to use evaluation/ development kit supported by IAR EWARM and Keil RVMDK environment. Its compact size is applicable for all types of product development. The Nu-Link-Me ICE adaptor is also included.



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• NuEdu Board

The NuEdu Board is a convenient starter kit pin-compatible with Arduino and supports the Keil RVMDK environment and online ICP (In-Circuit Programming). The UNO interface allows users to add different modules to the board base on various development needs, offering more flexibility. The kit includes examples with source code and the Nu-Link-Me ICE adaptor.

• Nu-Learning Board

The Nu-Learning Board includes rich functional blocks that connects to the embedded microcontroller. With the functional blocks, users can develop and verify applications to emulate the real behavior. It can be used as a real system controller to design users' target systems. The Nu-Link-Me ICE adapter is also included for easy debug.

NuMaker Boards

Nuvoton's NuMaker Boards are application specific development boards specially designed for Makers.

• NuMaker Uni (NK-UNI000)

The NuMaker Uni is an IoT application development board based on the NuMicro® NANO100NE3BN microcontroller. With small dimensions of 3.5cm by 3.5cm, it is especially suitable for wearable devices. It integrates the 802.11 b/g/n WiFi module and bluetooth module, as well as four instantly operable modules including the accelerometer, temperature-humidity sensor, IR tranceiver and RGB LED light. The kit also includes complete source-code examples, which helps users to build target C code applications quickly.The NuMaker Uni leaves 20 multifunctional pins unprogrammed to allow more flexibility in design. While the MCU enters Power-down mode, it consumes less than 1uA.

• NuMaker Uno (NK-UNO-131)

The NuMaker Uno is Arduino compatible and its function can be extended with Arduino add-ons. With Arduino IDE, users can develop applications and leverage large number of open source samples. It is a specific development tool for NuMicro® Cortex®-M0 series by which users can develop and verify the application program easily. It supports various peripheral functions such as ADC, PWM, I²C and SPI, allowing more flexibility in design. The Nu-Link debugger/programmer is also included in the kit.

• Nuvoton Quadcopter Kit (NK-QUAD00)

The Nuvoton Quadcopter Kit includes a flight control board, a joystick, a 2.4G RF module, and a section board with a Nu-Link-Me emulator that employs Nuvoton's Cortex® -M4 development board. This package is furnished with a complete Attitude Heading and Reference System (AHRS) Library to facilitate user control. Users can easily invest valuable time in perfecting the flight controls and develop flight applications.
This package supports a failsafe system (automatic landing), fixed attitude hovering system (with a barometer), and headless mode (with an electronic compass). Users can also choose from a series of airframes with different sizes and diameters as well as freely adjust the PID flight controllers and calibrate their sensors.
Nuvoton's Cortex® -M4 microcontroller supports high speed ESC (400 Hz) and includes the proprietary 10-axis sensor algorithm system with sensor update frequency up to 500 Hz, allowing real-time control of flight dynamics with zero delays.

• NuMaker Brick (NK-BRICK00)

The NuMaker Brick is a highly extensible, open source IoT platform including a combination of sensors and modules.The modules can work independently or be arranged in any order. Monitoring and the adjustment of parameter settings can be done via the NuBrick App on Android based mobile devices or tablet computers. Embedded with the NuMicro® M451 microcontroller, it is able to perform powerful computing functions and to quickly process large amounts of data. An extension board and the Nu-Link-Me ICE adapter are also included to allow more flexibilty in design.

Debugger & Programmer

• Nu-Link-Me

The Nuvoton ICE adapter Nu-Link-Me is included in all evaluation development boards. It connects the PC's USB port to the target system and allows users to program and debug embedded programs on the target hardware. It supports Keil RVMDK/IAR EWARM environment, online ICP and there is no need to install additional debug hardware. The Nu-Link-Me V3.0 also supports VCOM function, which gives users more flexibility for debugging. (Not for retail sale)

• Nu-Link

Nuvoton's Nu-Link Debug Adapter is an USB debugger/programmer and can be applied to the development of NuMicro® Family microcontrollers. It supports online/offline ICP (In-Circuit Programming) based on the SWD (Serial Wire Debug) signal interface. Users can employ the NuMicro® ICP Programming Tool to update chip firmware for mass production. It also supports third-party development tools, such as Keil RVMDK and IAR EWARM.

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• Nu-Link-Pro

The Nu-Link-Pro is able to detect the VDD input level of a target chip automatically. It supports all of Nu-Link's features plus programmable output VDD (1.8V, 2.5V, 3.3V, 5.0V) and wide target VDD input level (1.8V-5.5V).

• ISP + ICP Tool

A programmar designed for 8051 Family microcontrollers.

Programmer

• NuGang

The NuGang Programmer provides the four-chip gang programming functionality, which is specially designed for mass-production in the customer site. The offline programming function is available once programming data has been downloaded.

Software Development

Nuvoton provides a variety of programming/debug tools that support the IAR EWARM and Keil RVMDK environment.

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For more information, please visit

www.nuvoton.com

Technical Supporting Web

NuMicro® Cortex-M0/M4 MCU

www.nuvoton.com/M0

www.nuvoton.com/M4

ARM7/ARM9 MPU

www.nuvoton.com/ARM7

www.nuvoton.com/ARM9

8051 MCU

www.nuvoton.com/8051

Nuvoton MCU Forum

www.nuvoton-m0.com

21IC Forum

bbs.21ic.com/iclist-187-1.html

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