nuvoTon

2022 Product Selection Guide

NuMicro® Family Microcontrollers

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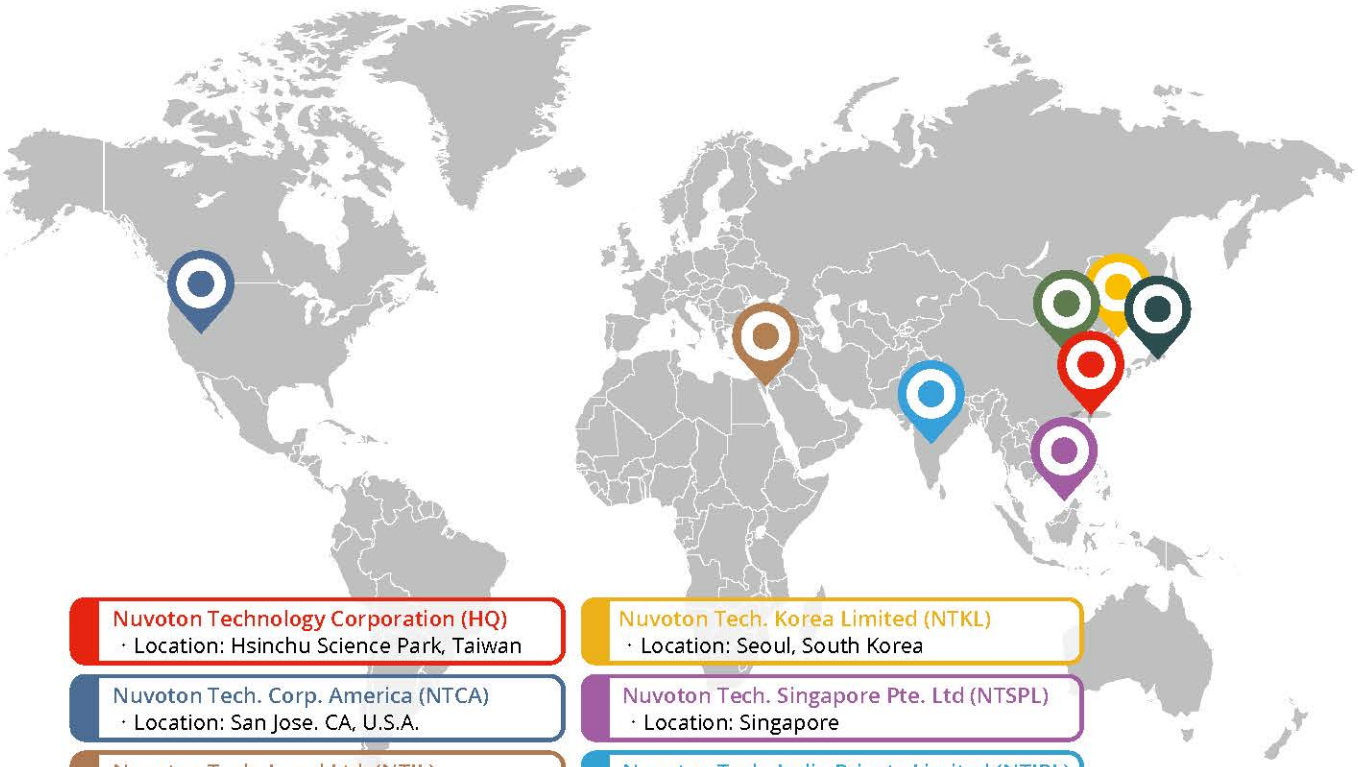
新唐科技

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 went public in September 2010 on the Taiwan Stock Exchange (TSE). Nuvoton Technology focuses on the developments of microcontroller, microprocessor, smart home and cloud security IC and has strong market share in Industrial, Consumer and Computer markets. Nuvoton owns a wafer fab, featuring customized processes for analog and power 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, Singapore, Korea and Japan to strengthen regional customer support and global management. For more information, please visit https://www.nuvoton.com



Nuvoton Technology Corporation (HQ)
· Location: Hsinchu Science Park, Taiwan

Nuvoton Tech. Korea Limited (NTKL)
· Location: Seoul, South Korea

Nuvoton Tech. Corp. America (NTCA)
· Location: San Jose. CA, U.S.A.

Nuvoton Tech. Singapore Pte. Ltd (NTSPL)
· Location: Singapore

Nuvoton Tech. Israel Ltd. (NTIL)
· Location: Herzlia, Israel

Nuvoton Tech. India Private Limited (NTIPL)
· Location: Bangalore, Karnataka, India

Nuvoton Elect. Tech. (NTSH) / Nuvoton Elect. Tech. (NTSZ) / Nuvoton Elect. Tech. (NTHK)
· Location: Shanghai (SH)/ Shenzhen (SZ) / Hong Kong (HK)

Nuvoton Technology Corporation Japan (NTCJ) / Atfields Manufacturing Technology Corporation (AMTC)
· Location: Japan

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, 2011/65/EU & Commission Delegated Directive (EU) 2015/863.

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Microcontrollers

NuMicro® Ecosystem

NuMicro Ecosystem

Microcontroller Platform

Key Feature Selection:
Automotive / Industrial Control / Security / Low Power / Optical Transceiver / Home Appliance

IoT Platform

GUI Platform

Digital Platform

Development Platform

NuMicro® Product Selection Guide

List of Abbreviations, Acronyms, Codes

NuMicro® Automotive Family

- M0A23 CAN Series NEW
- NUC131U CAN Series

NuMicro® Family Arm® Cortex®-M23 MCUs

- M2351 Series
- M2354 Series
- M251 Series
- M252 Series
- M253 Series NEW
- M254/ M256/ M258 Series NEW
- M261/ M262/ M263 Series

NuMicro® Family Arm® Cortex®-M0 MCUs

- M030G/ M031G Series NEW
- M031 Series
- M032 Series
- M031BT Series
- M032BT Series NEW
- M071 Series NEW
- Mini51 Series
- M051 Series
- NUC029 Series
- NUC121 Series
- NUC130 CAN Series
- Nano100 Series

Family Arm® Cortex®-M4 MCUs

- M451 Series
- M460 Series NEW
- M471 Series NEW
- M480 Series
- NUC505 Series

NuMicro® Family Arm9 MPUs

- NUC970/ 980 Series
- N9H Series
- N329 Series

NuMicro® Family 8051 MCUs

- MS51 Industrial Control Series (1T)
- ML51 Low Power Series (1T)
- ML54 Low Power LCD Series (1T)
- ML56 Low Power Touch Key Series (1T)
- N76E Series (1T)
- N76E Series (4T)
- Standard 8051 Series

Nuvoton - a Leading Microcontroller Platform Provider

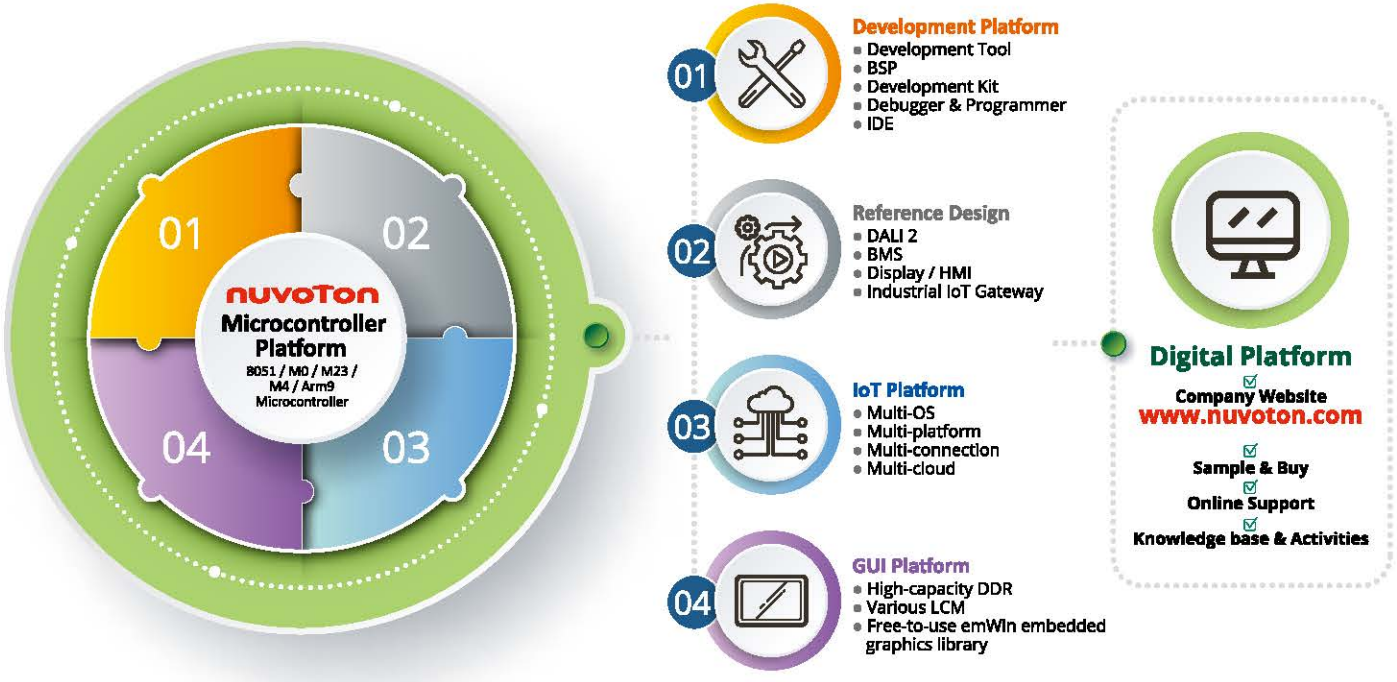
Nuvoton provides a comprehensive ecosystem from product selection and development to mass production, to shorten our partner's design cycles and accelerate time-to-market.

From the core of NuMicro ecosystem, Nuvoton provides a rich product portfolio from 8051, Cortex-M0/ M23/ M4 to Arm9-based microcontroller, offering over 600 parts for selection.
To provide an easy development experience, Nuvoton builds a development platform with multiple IDEs including Arm Keil, IAR Embedded Workbench and NuEclipse. The develop ment tools, BSPs, development kits, debuggers and programmers are also includ-ed to boost project development.

Nuvoton offers rich reference designs and an integral IoT platform to realize innovative ideas in various fields. Customers could easily implement IoT projects with the Nuvoton low-power or IoT secure microcontroller on Nuvoton IoT platform, which supports multi-OS with multi-platform, and available for multi-connection to multi-cloud.

As a microcontroller platform provider, Nuvoton has been devoted to supporting our customers worldwide by our digital platform. Nuvoton's digital platform can meet various needs including but not limited to product selection, product resources, product purchasing, sales/technical support, and knowledge-based learning.

NuMicro® Ecosystem



NuMicro® Ecosystem - Microcontroller Platform

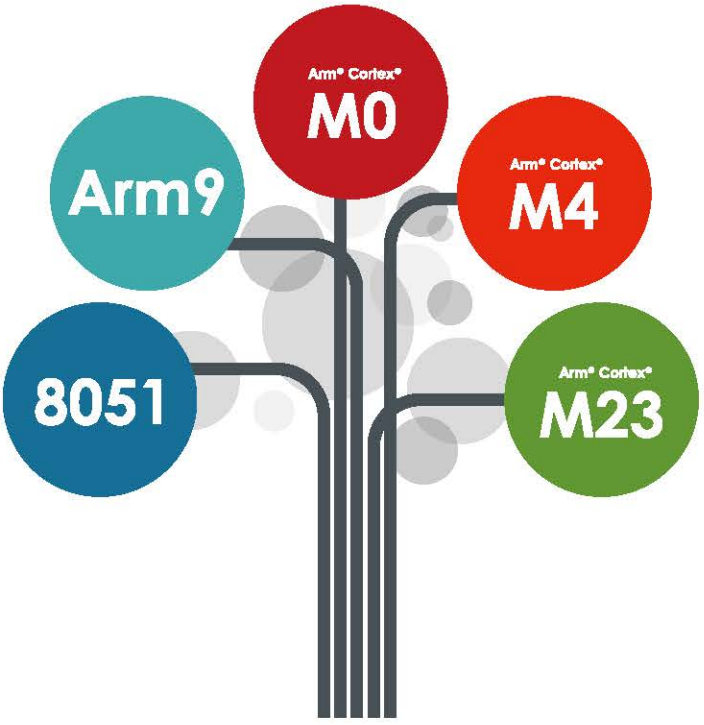
Cortex® M23
IoT Security

Cortex® M4
High Performance
Low Power
Security

Cortex® M0
High Performance
Ultra Low Power
General

Arm 9™
Industrial Control
HMI

8051
Industrial Control
Low Power



Frequency	8051	Cortex®-M0	Cortex®-M23	Cortex®-M4	Arm9™
300 MHz					NUC970/ NUC980 [E C U L]
192 MHz		2.5-5.5 NUC029 1.8-3.6 M032BT 1.8-3.6 M032 [U] 2.5-3.6 M031BT 2.7-3.6 M031G 2.5-3.6 M031 2.5-5.5 M071	1.8-3.6 M2354 [L]	1.8-3.6 M460 [C E] 1.8-3.6 M480 [C E U] 2.5-5.5 M471 [U] 2.5-5.5 M451/M4521 [U]	N9H [E C U L] N329 [E U L]
72 MHz		2.5-5.5 NUC230 [C] 2.5-5.5 NUC131 [C]	1.8-3.6 M2351		
64 MHz		2.5-5.5 NUC131U [C]	1.8-3.6 M261 1.8-5.5 M258 [U T L]		
48 MHz	1.8-3.6 ML56 [T L] 1.8-3.6 ML54 [L]	2.5-5.5 NUC123 [U] 2.7-3.6 M030G 2.5-5.5 M0A23 [C] 2.5-5.5 M0A21	1.8-5.5 M256 [T L] 1.8-5.5 M254 [L]	Over 600 parts ready for selection	
24 MHz	1.8-5.5 ML51 2.5-5.5 MS51 2.5-5.5 N79E	2.5-5.5 M051 Nano Mini51	1.8-3.6 M252 [U] 1.8-3.6 M251		
16 MHz	2.5-5.5 N76E				

Operating Voltage : 1.8V-3.6V | 1.8V-5.5V | 2.5V-5.5V

Connectivity : U USB | C CAN | E Ethernet | L LCD | T Touch Key

Automotive | Low Power | TrustZone

Key Feature Selection: **Automotive Microcontroller**

The NuMicro® automotive microcontrollers pass the AEC-Q100 standards and are suitable for automotive applications. Nuvoton automotive microcontrollers are embedded with Cortex-M0 and Cortex-M4, up to 3 sets of CAN. The operating frequency ranges from 48 to 192 MHz, and the Flash size ranges from 32 to 512 Kbytes.

NuMicro® automotive microcontroller provides a comprehensive system solution with high performance and high reliability for Body Control, ADAS, Networking, and Automotive Lighting.

Multiple IDEs are supported, including the free-to-use Keil MDK Nuvoton Edition, IAR EWARM, and NuEclipse.

	M0A23	NUC1311	NUC131U	NUC230/240	M453	M483	M487
Core	Cortex-M0	Cortex-M0	Cortex-M0	Cortex-M0	Cortex-M4	Cortex-M4	Cortex-M4
Speed (MHz)	48	50	50	50	72	192	192
Flash (Kbytes)	32	68	68	128	256	256	512
LIN	2	-	3	3			
CAN	1	1	1	2	1	3	2
Operating Temperature (°C)	-40 ~ 125	-40 ~ 105	-40 ~ 105	-40 ~ 105	-40 ~ 105	-40 ~ 105	-40 ~ 105
AEC-Q100	2022 Q1	-	✔	-	-	-	-

Key Feature Selection: **Industrial Control Microcontroller**

Nuvoton technology is a leading microcontroller provider in industrial control industry. With the high quality and longevity, Nuvoton is an indispensable partner of industrial control customers.

- **Longevity :**
  Full commitment to ensuring supply continuity and stability for as long as 10 years.
- **High manufacturing quality :**
  NuMicro products are made by tier-one foundry, package, and testing partners to achieve the high and stable product quality.
- **Extended operating temperature grades :**
  from -40 to 105°C for all new microcontroller product and -40 to 85°C for all new MPU product.
- **IEC 60730 Class B Certified Software Test Library (STL) supported**

8051 Family
Core Speed: up to 24 MHz
ESD (HBM) : up to 8 kV / EFT : up to 4.4 kV

Cortex-M0 Family
Core Speed: up to 72 MHz
ESD (HBM) : up to 8 kV / EFT : up to 4.4 kV

Cortex-23 Family
Core Speed: up to 96 MHz
ESD (HBM) : up to 7 kV / EFT : up to 4.4 kV

Cortex-M4 Family
Core Speed: up to 192 MHz
ESD (HBM) : up to 8 kV / EFT : up to 4.4 kV

Arm9 Family
Core Speed: up to 300 MHz
ESD (HBM) : up to 4 kV / EFT : up to 4.4 kV

Industrial Control Field	NuMicro Series Recommendation
 **Battery Management System**	[Arm9] **NUC980** (Data Collector) [M4] **M480/ M460** (Energy Storage System) [M23] **M253** (E-Scooter BMS) [M0] **M0A23** (E-bike BMS) [8051] **MS51/ ML51** (Electrical Tools)
 **LED Lightening**	[Arm9] **NUC980** (Large LED Advertising Display) [M4] **M480/ M460** (Mini LED Local Dimming Control) [M0] **NDA102** (DALI) [8051] **MS51** (LED Control Module)
 **Industrial Connectivity**	[Arm9] **NUC980** (Ethernet 10/100, CAN) [M4] **M480** (Ethernet 10/100, CAN), **M460** (Ethernet 10/100, CAN-FD) [M23] **M2351/ M2354** (Trustzone, CAN) [M0] **M0A23** (CAN)/ **M0A21**(UART) [8051] **MS51** (UART)
 **Industrial Automation**	[Arm9] **NUC980** (Industrial Switch) [M4] **M480/ M460** (Sensor Fusion) [M0] **M0A23** (CAN Converter)/ **M032/ M031** (Sensor module) [8051] **MS51/ ML51** (Sensor Module)/ **M254/ M256/ M258** (Com-seg LCD, Touch Key)
 **Grid Infrastructure**	[Arm9] **NUC980** (Data Collector) [M4] **M480** (Smart Circuit Breaker) [M4] **M471/ M451** (Smart Capacitor) [M23] **M2351/ M2354** (AMI 2.0 Smart Meter) [M23] **M253** (USB to UART Converter) [8051] **MS51** (Traditional Circuit Breaker)
 **Smart Building**	[Arm9] **NUC980** (Fire Controller) [M4] **M480** (Electronic Whiteboard) [M23] **M254/ M256/ M258** (Thermostat)/ **M2351/ M2354** (Smart Speaker) [M0] **M031BT/ M032BT** (BLE5.0) [8051] **ML51** (Smoke Detector)/ **ML54/ ML56** (Thermostat)
 **5V MCU**	[M4] **M451/ M471** [M23] **M251/ M253/ M254/ M256/ M258** [M0] **M0A21/ M0A23/ M071/ NUC131/ NUC230/ NUC029/ NUC1262** [8051] **MS51/ ML51**

Key Feature Selection: **Microcontroller with Security**

Nuvoton has dedicated to enhancing for the security of microcontrollers, the NuMicro® M2351 series is the first Arm® Cortex®-M23 based MCUs that has been both PSA Certified™ Level 1 (Feb. 2019), Level 2 (Jul. 2020) and PSA Functional API Certified (Feb. 2019).

To strengthen the security of microcontroller with software execution security, storage security, and connectivity security, Nuvoton has been developing a series of hardware and software mixture technologies to achieve the security targets of NuMicro products, which covers:

- All valuable attests in a microcontroller for protection are well identified.
- All potential security threats in a microcontroller for mitigation are well addressed.
- All potential security flaws in a microcontroller in terms of hardware and software are well avoided.

M235x IoT Security MCU portfolio also supports FreeRTOS, RT-Thread and Mbed OS 6.x for easy implementation of an IoT device and its connection to varied cloud services.

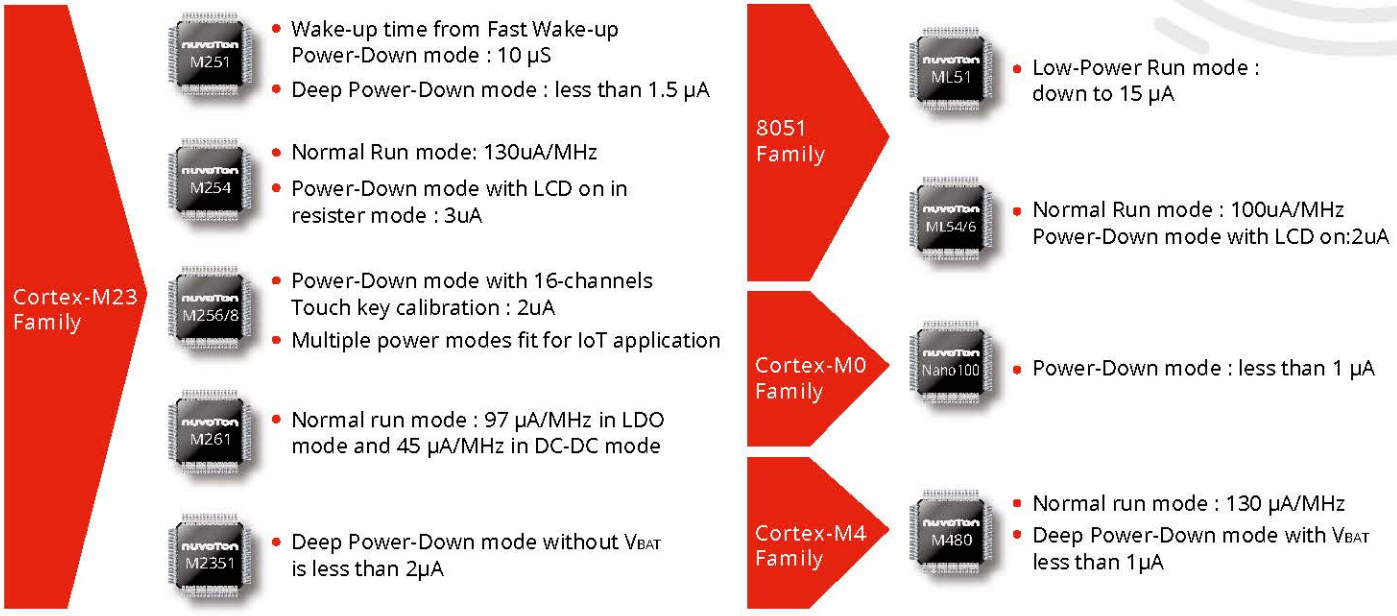
Targeted Applications : Smart Home, Smart City, Smart Building, Smart Transportation, Smart Agriculture, Smart Metering, Environment Surveillance (CCTV), Mobile POS, IoT Devices.

Security Technology	Item	NuMicro Series Recommendation				
		M251	M261	M2351	M2354	M480
Secure Boot ROM	Secure Bootloader (based on ECDSA signature)		✓	✓	✓	✓
	Secure firmware update (OTA)		✓	✓	✓	
	Driver APIs		✓	✓	✓	✓
	Debug Authentication (temporarily unlock)			✓	✓	
Security Reference Code / Lib /Tool	TrustZone reference code			✓	✓	
	Key Generation Tool		✓	✓	✓	✓
	Firmware Image Singing Tool		✓	✓	✓	✓
	Key/Certificate provisioning service		✓	✓	✓	
Isolation	Peripheral privileged mode			✓	✓	
	TrustZone partition for Cortex-M			✓	✓	
Flash Memory Protection	Flash Lock (read protection)	✓	✓	✓	✓	✓
	eXecute Only Memory	✓	✓	✓	✓	✓
	Dual bank (with bank swap)		✓	✓	✓	
	Flash Write Protection		✓	✓	✓	✓
Crypto Processors	DES/3DES		✓	✓		
	AES-256	✓	✓	✓	✓	✓
	AES CCM, GCM and GMAC				✓	
	ECC (Key generation, ECDH-ECDSA)		✓	✓	✓	✓
	RSA-4096				✓	
	Side Channel Attacks mitigation of AES, RSA, ECC				✓	
	SHA1/SHA2-384		✓	✓	✓	✓
	SHA2-512, HMAC-512				✓	
	SM2/3/4 (Chinese national cryptography standard)				✓	
	TRNG		✓	✓	✓	✓
	Cryptographic key store with chip level Active Shield				✓	
Device Identity	Unique ID	✓	✓	✓	✓	✓
	Customer Unique ID	✓	✓	✓	✓	✓
Anti-Tamper	Tamper Pin Detection	✓	✓	✓	✓	✓
	RTC backup registers	✓	✓	✓	✓	✓
Environment Sensor	Temperature sensors	✓	✓	✓	✓	✓
	Clock monitor	✓	✓	✓	✓	✓
	Voltage glitch detection				✓	
Platform Security	Booting Status Monitor			✓	✓	
	Life Cycle Management			✓	✓	
	Firmware Version Counter			✓	✓	
	Debug Port Management (DPM)			✓	✓	

Key Feature Selection: **Low Power Microcontroller**

Power consumption is a significant factor for microcontroller selection especially in a battery-powered application as IoT devices. In addition to consider the power consumption in different power modes, the wake-up time is also vital for the application in power mode switching.

Nuvoton devotes to offer the low-power microcontroller solutions with robust security for various application scenarios. The ML51 series has exclusive low-power run mode with less than 15 µA; the ML54/ML56 series has exclusive power down current with less than 2 µA with LCD panel display on; the Power-Down mode of Nano100 series is less than 2 µA; the wake-up time from Fast Wake-up Power-Down mode of M251 series is 10 µS; the M254/M256/M258 series consume less than 2 µA while finishing all touch keys scanning; the Deep Power-Down mode of M251 is less than 1.5 µA and less than 1 µA of M480 Series. Furthermore, there are additional DC-DC mode for M261 and M2351 series to halve the power consumption in LDO mode.



Low-power Application	NuMicro Series Recommendation						
	ML51	Nano100	M251	M261/M2351	M480	ML54/ML56	M254/M256/M258
Core	8051	Cortex-M0	Cortex-M23	Cortex-M23	Cortex-M4	8051	Cortex-M23
Operating Frequency (MHz)	24	32 - 42	48	64	192	24	48
Flash (Kbytes)	16 - 64	16 - 128	32 - 256	512	128 - 512	64	128
SRAM (Kbytes)	1 - 4	4 - 16	8 - 32	96	64 - 160	4	16
Smoke Sensor	○	△	△			○	
Glucose Meter	△	○	○	○			○
GPS Tracker	△	○	○			○	○
Handheld Meter	△	○	○	○	○		○
Wireless Keyboard/ Mouse	△	○	○				○
Smart Lock	○	○	○	○	○	○	○
Oximeter		○	○			○	○

Key Feature Selection: **Optical Transceiver Microcontroller**

Nuvoton serves a total solution of Optical Transceiver from Datacom to Telecom, or even from current optical transmission scenarios to new WDM (Wavelength Division Multiplexing) scenarios in 5G Fronthaul.

Both NuMicro M030G and NuMicro M031G series have a built-in temperature sensor, package selections of small size including QFN24 and QFN33, and 2 sets of strong I²C, which fully meet the requirement of traditional Optical Transceiver Module applications: (1) precise temperature measurement, (2) small form factor and (3) an I²C interface for communication. Moreover, to implement the Pilot Tone Modulation in WDM for OAM (Operation Administration and Maintenance) data transmission, NuMicro M031G series is also equipped with a Hardware Manchester Codec with CRC and 1 set of DAC supporting "Auto Data Generation" function.

- **Hardware Manchester Codec*** with CRC :
  to encode and decode the low-frequency dither signal
- **DAC with Auto Data Generation Function* :**
  to generate the smooth sine waveform up to 500 kHz 32 points for the output of Pilot Tone Modulation
- **Accurate Temp. Sensor :**
  with ±1.6°C deviation from 0 °C to 70 °C and ± 2 °C deviation from - 40 °C to 105°C
- **Small Package :**
  QFN24 3x3 mm / QFN33 4x4 mm
- **Strong I²C :**
  supports 1 MHz Slave mode and non-stretch mode

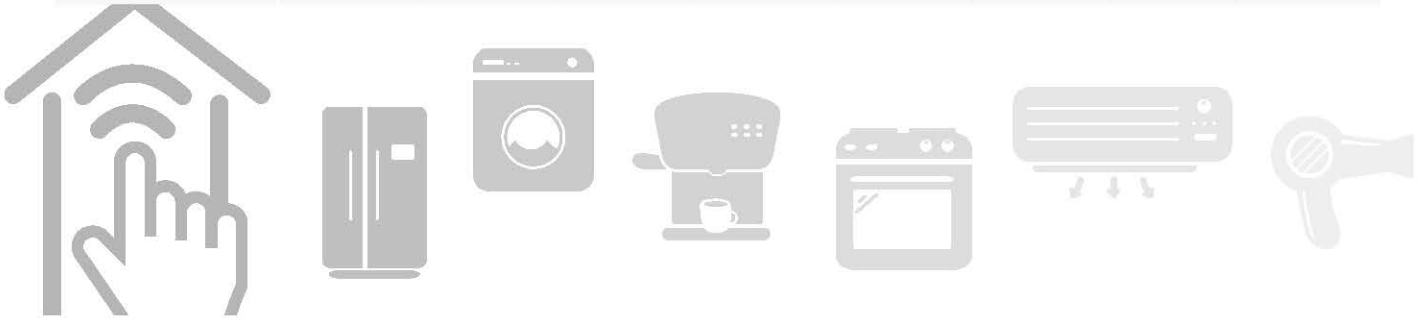
*Only for M031G

Optical Transceiver Application	NuMicro Series Recommendation							
	M030G				M031G			
Core	Cortex-M0				Cortex-M0			
Operating Frequency (MHz)	48				72			
Flash (Kbytes)	32		64		32		64	
SRAM (Kbytes)	4				8			
Hardware Manchester Codec	-		-		✔		✔	
DAC with Auto Data Generation	-		-		✔		✔	
Temperature Sensor	✔		✔		✔		✔	
Package	QFN24	QFN33	QFN24	QFN33	QFN24	QFN33	QFN24	QFN33
Scenario	General Purpose				Pilot Tone Modulation			

Key Feature Selection: **Microcontroller for Smart Home appliances**

- To enhance the quality of life, Smart Home Appliances have become trendy. Nuvoton microcontrollers integrate demand for Smart Home Appliances System. We provide the critical features of 2.5V to 5.5V operating voltage, packages with more than 0.5 mm wide pin pitch, a software library of self-test, and functional safety for IEC-60730 Class B. We also provide more robust anti-interference protection circuits of Electrostatic discharge (ESD) and Electrical fast transients (EFT).
- Nuvoton provides a rich product portfolio for Smart Home Appliance, including MS51 and ML51 series based on 8051, M071 series based on Cortex-M0, M251 series based on Cortex-M23, M471 series based on Cortex-M4, and N9H series based on Arm9.
- **Nuvoton microcontroller has multi-function features to meet various applications.**
  - Master control: M071 and M471 series
  - Display with COM/SEG LCD: ML54 and M254 series
  - Display with TFT LCD: N9H series
  - Touch-key with COM/SEG LCD: ML56 and M256/ M258 series
  - Wireless with infrared receiver: M471 series
  - Wireless with BLE 5.0: M031BT/ M032BT series
  - Security with the crypto engine: M261 series
- **Target applications:** Smart Small Appliance, White Good, Health Care Appliance, Smart Home.

Home Application	MS51/ ML51	M251/ M252	M071	M471	ML54/ ML56	M254/ M256/ M258	N9H	M031BT/ M032BT
Application	Master control	Master control	Master control	Master control	Display + Touch	Display + Touch	Display	Bluetooth
Core	8051	Cortex-M23	Cortex-M0	Cortex-M4	8051	Cortex-M23	Arm9	Cortex-M0
Operating Frequency (MHz)	24	48	72	72 / 120	24	48	200/240/300	48
Flash (KB)	16 - 64	32 - 256	32 - 256	64 - 512	16 - 64	64 - 128		64 - 512
SRAM (KB)	1 - 4	8 - 32	8 - 20	32 - 64	1 - 4	16		8 -96
IEC-60730 Class B STL	✔	✔	✔	✔	✔	✔	✔	✔
5V operating voltage	✔	✔	✔	✔	✔	✔		
>0.5mm Pin pitch			✔	✔				
Low power	✔ ML51 only	✔			✔	✔		
Display					✔ COM/SEG LCD	✔ COM/SEG LCD	✔ TFT LCD	
Touch-key					✔	✔		
BLE 5.0								✔
Infrared Receiver				✔				

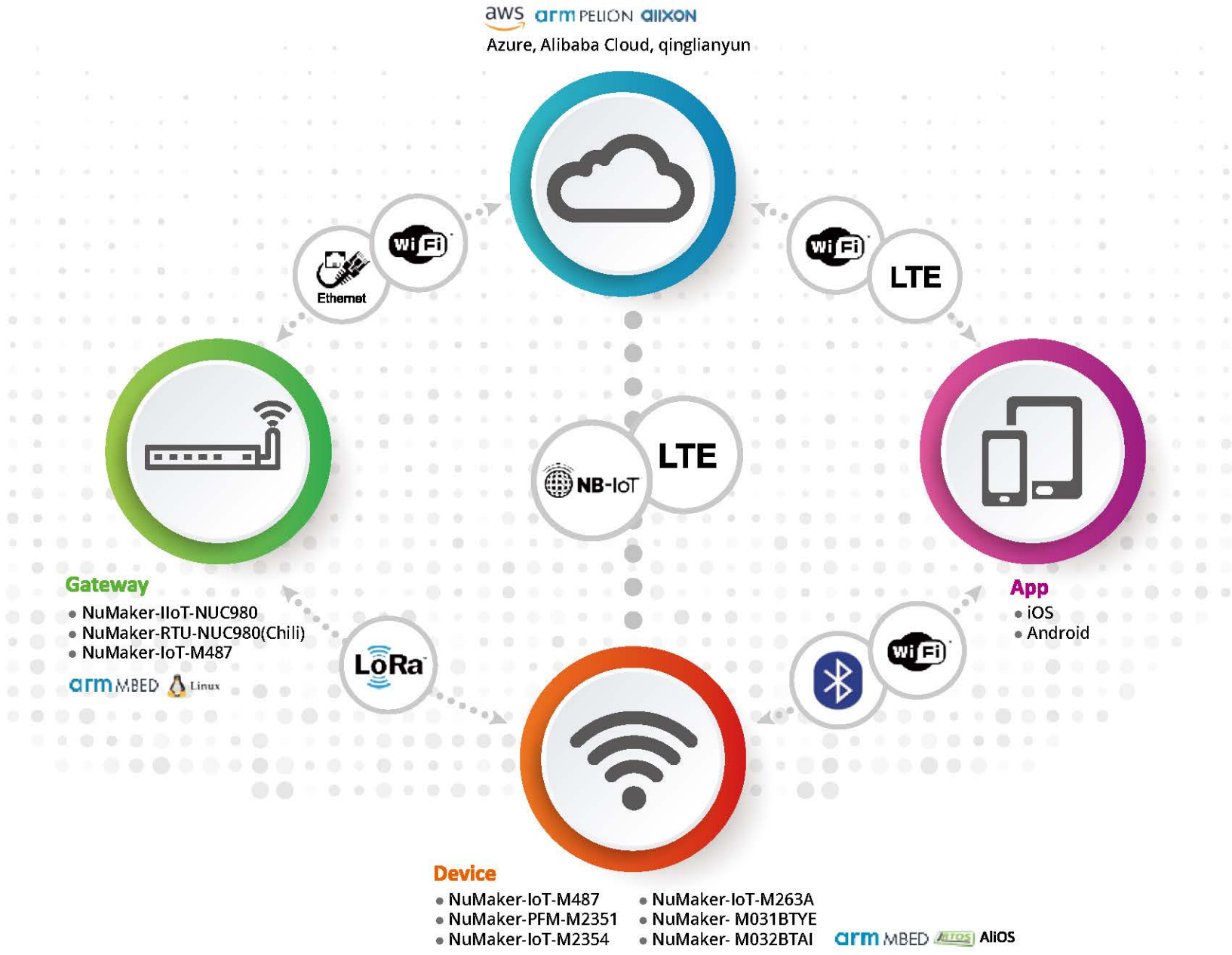


NuMicro Ecosystem - IoT Platform

Support multi-OS with multi-platform; Provide multi-connection to multi-cloud.

Nuvoton offers a comprehensive IoT platform, which supports multi-OS with multi-platform and provides multi-connection to multi-cloud. The NuMaker-IoT-M487, NuMaker-PFM-M2351, NuMaker-IoT-M2354, NuMaker-IoT-M263A, NuMaker-M031BTYE and NuMaker-M032BTAI are excellent for being a node device with sensors and connectivity. Besides, the NuMaker-IIoT-NUC980, NuMaker-RTU-NUC980(Chili) and NuMaker-IoT-M487 are fit for being a gateway.

Nuvoton links all aspects of the IoT platform to facilitate IoT innovation. NuMicro IoT platform supports Linux, Arm MbedOS, Amazon FreeRTOS, AliOS Things, Azure RTOS and RT-thread RTOS on selected NuMaker platform with embedded crypto accelerators to boost communication performance and strengthen connectivity security. Besides, the NuMaker platform can connect to various cloud services, such as Amazon Web Service (AWS), Pelion Device Management, Alibaba Cloud, Allxon, Qinglianyun and Microsoft Azure via various connectivity options including Ethernet, Wi-Fi, NB-IoT, and LTE.



NuMaker Board	OS / RTOS	IP Connectivity					Non-IP Connectivity			Clouds						
		Ether net	Wi-Fi	NB-IoT CAT-M1	NB-IoT	LTE	LoRa (Gateway)	LoRa (Device)	BLE 5 2.4G	Arm Pelion DM	Amazon AWS	Alibaba Cloud	Microsoft Azure	The Things Network (TTN)	Allxon	青莲云/ TinyTEE
				Quectel BG96A	SIMCOM 7020E	Quectel EC21A	SX1301 SX1308	SX1276								
NuMaker-IIoT-NUC980	Linux	✔	✔	✔		✔				✔	✔	✔				
	RT-Thread	✔	✔									✔	✔			
NuMaker-RTU-NUC980(Chili)	Linux	✔	✔	✔		✔				✔	✔	✔			✔*6	
	RT-Thread	✔	✔									✔	✔			
NuMaker-LoRaG-NUC980*1	Linux	✔	✔	✔		✔	✔			✔	✔	✔		✔		
NuMaker-IoT-M487	MbedOS	✔	✔	✔	✔	✔				✔	✔	✔	✔			
	Amazon FreeRTOS	✔	✔	✔							✔					
	AliOS Things	✔	✔									✔				
	RT-Thread	✔	✔									✔	✔			
	Azure RTOS		✔										✔			
NuMaker-IoT-M2354	MbedOS*3		✔	✔	✔	✔		✔		✔	✔	✔	✔			✔
	RT-Thread		✔					✔				✔	✔			✔
	FreeRTOS		✔					✔								
NuMaker-PFM-M2351	MbedOS		✔	✔	✔	✔				✔	✔		✔			✔
NuMaker-IoT-M263A	MbedOS		✔	✔	✔	✔		✔		✔	✔	✔	✔			
NuMkaer-LoRaD-M252*2	MbedOS/Non-OS*4							✔								
NuMaker-M031BTYE	Non-OS								✔							
NuMaker-M032BTAI	Non-OS								✔							
NuStamp-ACK-M031LE	Non-OS		✔								✔*5					

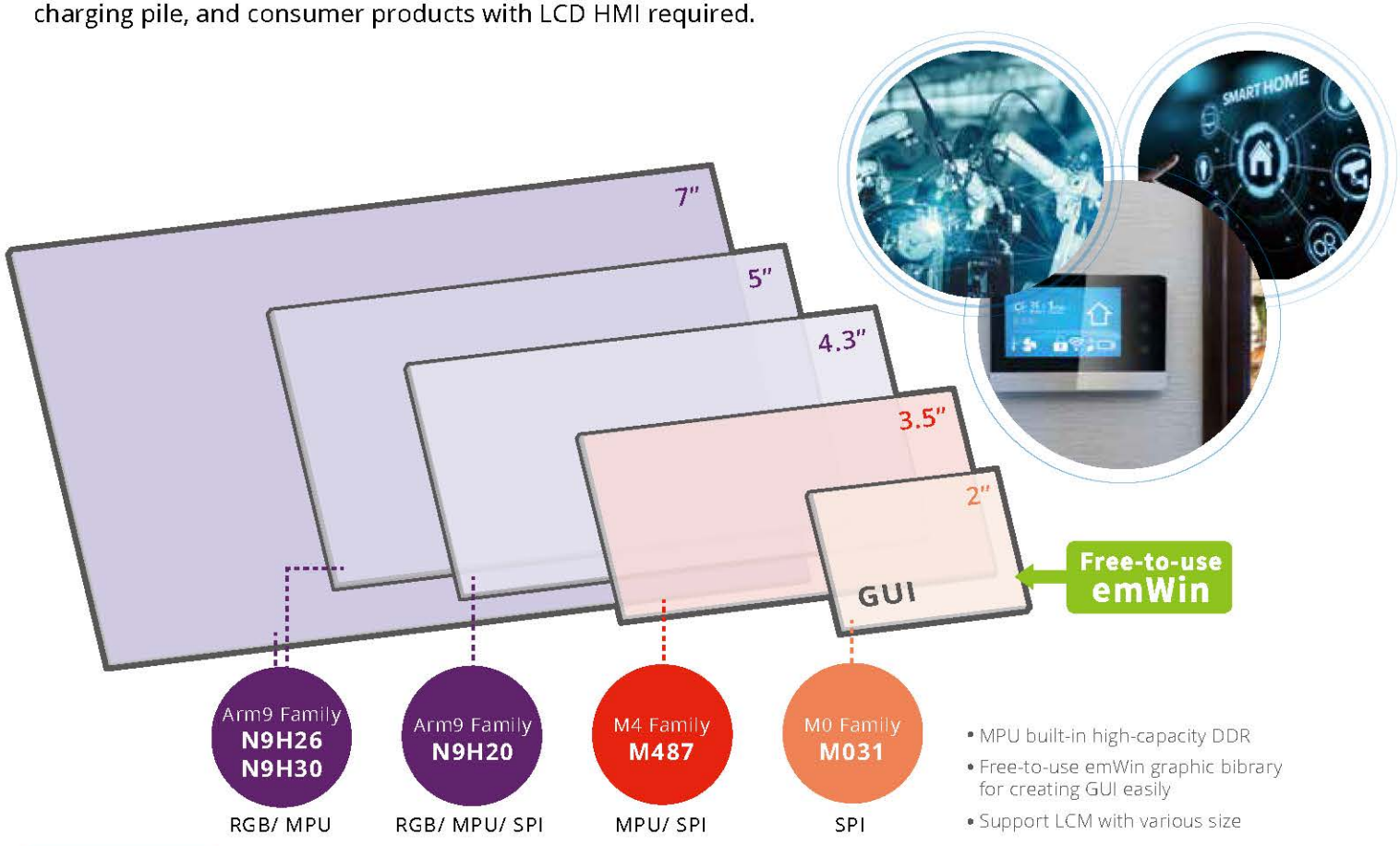
*1 US915/EU868 Bands *2 US915/EU868/CN470 Bands *3 Support on Mbed Studio *4 Non-OS is NuLoRaNode *5 Alexa Connect Kit (ACK) *6 Software as a Service (SaaS)

NuMicro Ecosystem – GUI Platform

Nuvoton provides rich GUI platform resources, the platforms support Qt, LVGL, and emWin (use-in-free) graphic libraries that help users create modern GUIs. In addition, we provide application templates, online videos, and forum to help users speed up their product development.

Nuvoton MPUs built-in high-capacity DDR reduces circuit design difficulty and manufacturing cost.
Support mono, gray, and color OLED and LCD modules, resolution up to 1024x768 in 16M colors. Moreover, the MPUs integrate 2D graphic accelerator, H.264, and JPEG codec to speed up graphics processing and improve users' experience of HMI applications.
Users can choose bare metal (no OS), RTOS, or Linux to be the OS according to the required.

Nuvoton GUI platforms are suitable in industrial control, smart building, smart appliance, medical device, charging pile, and consumer products with LCD HMI required.



	CPU Core (MHz)	RAM Size	LCD Resolution & Interface	Hardware Accelerator	NuMaker Platform	Onboard LCD Size (resolution)	Storage	Peripheral
N9H30 Series	Arm9 300MHz	MCP DDR 64 MB	1024x768 Parallel RGB / MPU / SPI	2D GFx JPEG Codec	NK-N9H30	7" (800x480)	SPI NOR/ NAND	Ethernet / UART / RS485 / SD Card / CAN / USB
N9H26 Series	Arm9 240 MHz	MCP DDR 64 MB	1024x768 Parallel RGB / MPU / SPI	2D GFx JPEG Codec H.264 Codec	NK-N9H26	5" (800x480)	SPI NOR	UART / SD Card / USB
N9H20 Series	Arm9 200MHz	MCP DDR 32 MB	1024x768 Parallel RGB / MPU / SPI	2D GFx JPEG Codec	NK-N9H20	4.3" (480x272)	SPI NOR/ NAND	UART / SD Card / USB
M480 Series	Cortex-M4 192 MHz	160 KB	480x272 MPU / SPI		NK-M487D	3.2" (320x240)	SPI NOR	Ethernet / UART / RS485 / SD Card / CAN / USB
M032 Series	Cortex-M0 72 MHz	96 KB	320x240 SPI		NK-M032	2.4" (320x240)	SPI NOR	UART/ RS485

NuMicro® Ecosystem - Development Platform

Nuvoton provides a comprehensive development platform to assist our customer to achieve rapid development, high-capacity mass production, and easy upgrade.

Development Kit

- **NuMaker Series**
  Comprehensive peripherals, rapid practice your idea.
  - Designed for IoT/ HMI development: NuMaker-IoT, NuMaker-emWin, RDK,...
  - Designed for general purpose development: NuMaker-IC Part No.
- **NuTiny Series**
  - Simple board design with high flexibility.

Board Support Package (BSP)

Offers rich sample code: Device usage, USB Device Classes, CAN, Ethernet, etc. With the unified API names of all NuMicro products and Nuvoton Code Generator, customer could easily start or migrate a NuMicro project.

IDE

arm KEIL IAR Embedded Workbench NuEclipse

Offers multiple IDEs for customers, including free-to-use Arm Keil (for M0/ M23 project, and $385/yr for M4/ M7 project), IAR Embedded Workbench (32 KB free), and NuEclipse within the GNU Eclipse framework which can be free-to-use in NuMicro M0/ M4/ M23 projects.

Debugger & Programmer

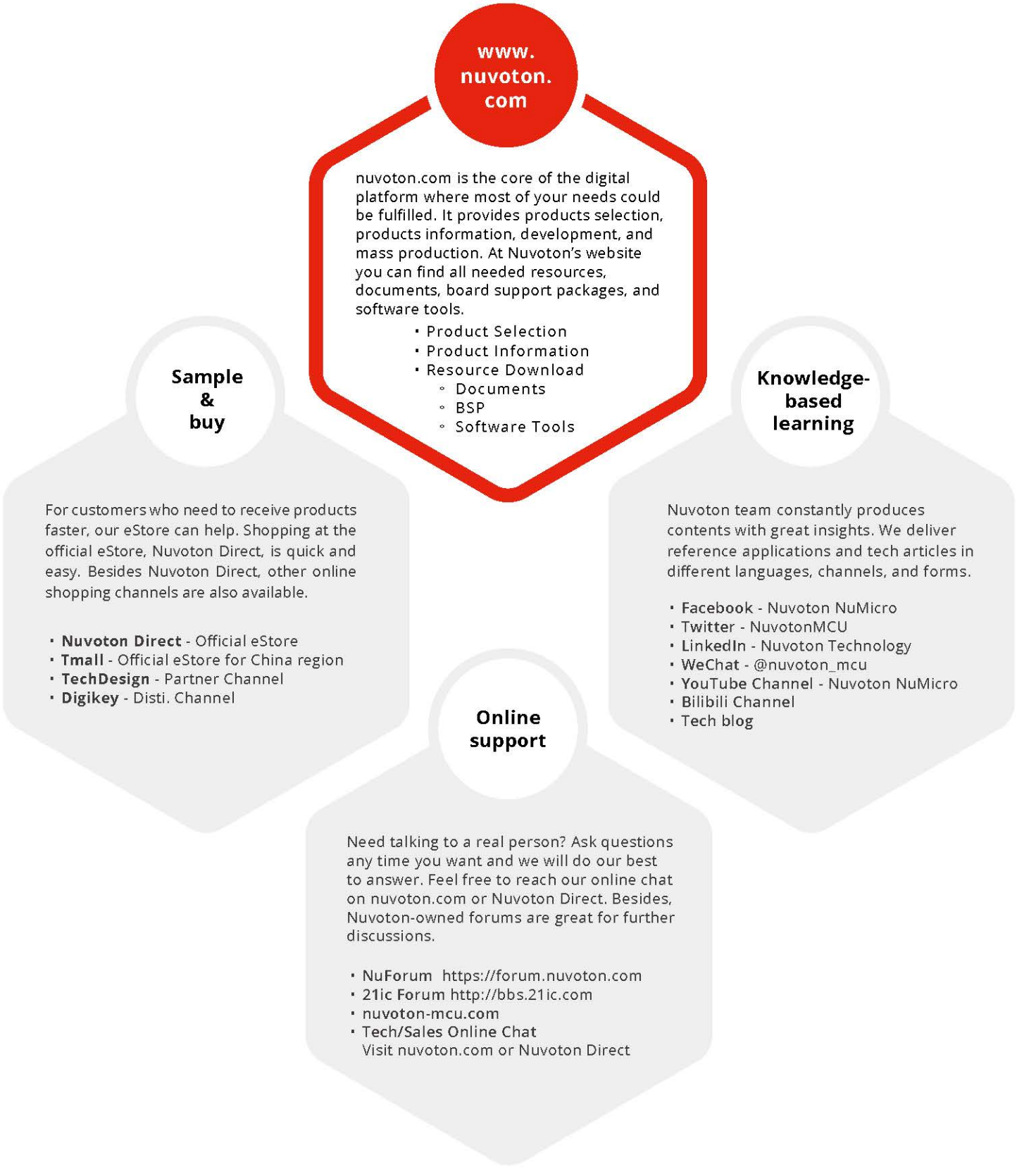
- **Nu-Link2-Pro**
  Nu-Link2-Pro Debug Adapter is a USB debugger/ programmer and can be applied to the development of NuMicro products. The original feature of Nu-Link is supported with higher performance. Furthermore, it supports embedded trace microcell (ETM) function, multi-path bridge communication, and signal monitor for advanced debugging requirements. Besides, it supports off-line programming which can be triggered by a button or the automatic IC programming system.
- **Nu-Link-Gang**
  The Nu-Link-Gang Programmer is designed for mass-production in the customer site. With flexible programming option which can offline programming 4 chips simultaneously or individually, fit for automatic IC programing system.

Development Tool (NuTool)

- **PinConfig Tool**
  To configure I/O with multi-functions and generate OrCAD library.
- **PinView Tool**
  A monitoring and visualization tool that can immediately show the current status of I/O pins.
- **Clock Configure Tool**
  Check the clock tree and generate the clock initiate code.
- **ICP Tool**
  Mass-production programming tool with code encryption, protect IP of customer.
- **ISP Tool**
  Provides sample code for end-product firmware update.
- **CodeGenerator**
  Code generating for NuMicro M251/ M252/ NUC126 projects with the initial peripheral, pin, and clock configurations.

NuMicro® Ecosystem - Digital Platform

As a microcontroller platform provider, Nuvoton has been devoted to supporting our customers worldwide by our digital platform. Nuvoton's digital platform can meet various needs including but not limited to product selection, product resources, product purchasing, sales/technical support, and knowledge-based learning.



List of Abbreviations, Acronyms & Codes

Abbreviation/ Code of Chip Specification		Description
ACMP		Analog Comparator
EMAC		Ethernet MAC
LP UART		Low-power UART
OPA		OP Amplifier
PDMA		Peripheral Direct Memory Access
QSPI		Quad SPI
RTC		Real-Time Clock
RTC (V_{BAT})		The RTC could be powered via VBAT pin when power off or in in Power-Down mode.
SPI Master		Master mode used only for this SPI.
USB	USB FS	USB Full Speed
	USB HS	USB High Speed
	O	On-The-Go (OTG)
	D	USB Device
	H	USB Host
	H/D	Allows to act as a USB host or device but not OTG
PSIO		Programmable Serial I/O
VAI		Voltage Adjustment Interface
USCI		Universal Serial Control Interface Controller USCI supports UART, SPI and I²C mode.
XOM		eXecute-Only Memory

Code of Chip Package	Package	Pin	Size (mm)
A	QFN	68	8 x 8
B	MSOP	10	3 x 3
C	WLCSP	-	-
D	TSSOP	14	4.4 x 5.0
E	TSSOP	28	4.4 x 9.7
F	TSSOP	20	4.4 x 6.5
G	QFN	24	3 x 3
H	LQFP	176	24 x 24
I	SOP	8	4 x 5
J	LQFP	144	20 x 20
K	LQFP	128	14 x 14
L	LQFP	48	7 x 7
M	LQFP	44	14 x 14
N	QFN	48	7 x 7
O	SOP	20	300 mil
P	LQFP	32	7 x 7
R	LQFP	64	10 x 10
S	LQFP	64	7 x 7
T	QFN	33	4 x 4
U	SOP	28	300 mil
V	LQFP	100	14 x 14
W	Wafer	-	-
X	QFN	20	3 x 3
Y	QFN	48	5 x 5
Z	QFN	33	5 x 5

NuMicro® Automotive Family

The NuMicro Automotive/CAN microcontroller is a new microcontroller product line which provides high performance with the capability to withstand up to 125 °C ambient temperature, qualified by AEC-Q100 grade 2, with built-in Controller Area Network(CAN) 2.0 B interface that designed for automotive applications.
The NuMicro Automotive/CAN microcontroller is based on the Arm® Cortex®-M0 core with built-in 16 to 68 Kbytes Flash, supports rich communication interfaces (such as LIN, UART, SPI, I²C... etc.), and comes with DAC , ADC, comparator and other rich analog interfaces.

Qualified by AEC-Q100 grade 2

Potential Application: Reverse Parking Assistanc, Automotive lighting, Body control module, Head Up Display, etc.

NuMicro® CAN/Automotive series MCUs are composed of the following product series.
M0A23 Series: Up to 125 °C, 48 MHz, up to 32 KB Flash, CAN/LIN interface, PDMA, DAC, ACMP
NUC131U Series: Qualified by AEC-Q100 grade 2, 50 MHz, up to 68 KB Flash, CAN/LIN interface, up to 6 UART

M0A23 Series

NuMicro® M0A23 based on the Arm® Cortex®-M0 core which is designed for automotive applications, provides up to 32 KB Flash, CAN/LIN interface and high stability with the capability to withstand up to 125 °C ambient temperature.

Potential Applications: automotive, lighting, industrial communication, industrial Automation, power control, etc.

• M0A23 Series

Key Features: Hardware Divider, up to 125°C, LIN/CAN interface, PDMA, UART with the One-Wire

Part No.	System						Memory					Timer		Analog			Connectivity				Package		Status	Tool		Auto
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	ADC (12-bit)	DAC (5-bit)	ACMP	UART	LIN	USCI	CAN	Package Type	Package Size	Mass Production	EVB	MP Programmer	AEC-Q100
M0A23EC1ACU	48	2.4	5.5	-40	125	26	2	32	Configurable	4	5	4	6	17	1	2	2	2	2	1	TSSOP28	4.4x9.7	√	NK-M0A23EC	NLG-M0A21E	√
M0A23OC1ACU	48	2.4	5.5	-40	125	18	2	32	Configurable	4	5	4	6	17	1	2	2	2	2	1	SSOP20	5.3x7.2	√	NK-M0A23OC	NLG-M0A21O	√
M0A23EC1AC	48	2.4	5.5	-40	125	26	2	32	Configurable	4	5	4	6	17	1	2	2	2	2	1	TSSOP28	4.4x9.7	√	NK-M0A23EC	NLG-M0A21E	
M0A23OC1AC	48	2.4	5.5	-40	125	18	2	32	Configurable	4	5	4	6	17	1	2	2	2	2	1	SSOP20	5.3x7.2	√	NK-M0A23OC	NLG-M0A21O	

NUC131U Series

The NuMicro® NUC131SD2AEU is a 32-bit Arm® Cortex®-M0 based microcontroller running up to 50 MHz with built-in Controller Area Network(CAN) 2.0 B interface, up to 68 KB Flash and qualified by AEC-Q100 grade 2

Potential Applications: automotive, lighting, industrial communication, industrial Automation, Radar, etc.

• NUC131U Series

Key Features: Hardware Divider, LIN/CAN interface, 6 set of UARTs, 24 channels of 100 MHz PWMs

Part No.	System						Memory				Timer		Analog	Connectivity					Package		Status	Tool		Auto
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	Timer (32-bit)	PWM (16-bit)	ADC (12-bit)	UART	LIN	SPI	I²C	CAN	Package Type	Package Size	Mass Production	EVB	MP Programmer	AEC-Q100
NUC131LD2AEU	50	2.5	5.5	-40	105	42	4	68	Configurable	8	4	12	8	6	3	1	2	1	LQFP 48	7x7	√	NK-NUC131U	NLG-NUC131L	√
NUC131SD2AEU	50	2.5	5.5	-40	105	56	4	68	Configurable	8	4	12	8	6	3	1	2	1	LQFP 64	7x7	√	NK-NUC131U	NLG-NUC131S	√

NuMicro® Family Arm® Cortex®-M23 Microcontrollers

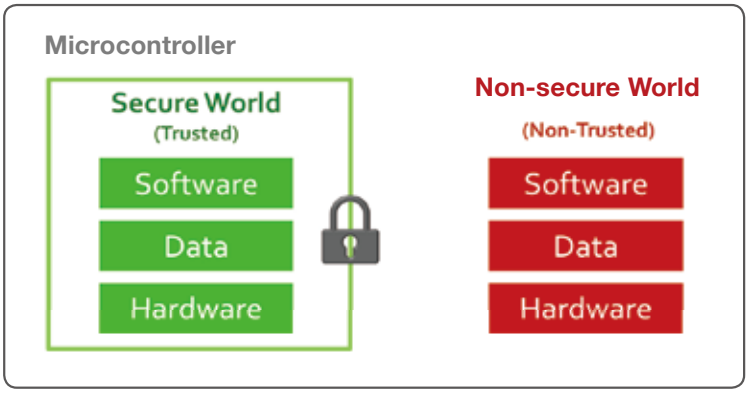
Offers the next industry standard for secure IoT devices

The NuMicro® M23 Family is based on the Arm® Cortex®-M23 core and is empowered by the Arm® TrustZone® for Armv8-M architecture.

With TrustZone® implemented, memory and peripherals could be divided into secure and non-secure worlds to achieve data integrity, firmware update and operation security. In addition, TrustZone® for Armv8-M provides the key benefit of context switching between secure and non-secure worlds by hardware for faster transitions and greater power efficiency.

In additional to the security capability, NuMicro® M23 Series inherits the standard set of Cortex-M0+ as the ultra-low power microprocessor in a tiny footprint.

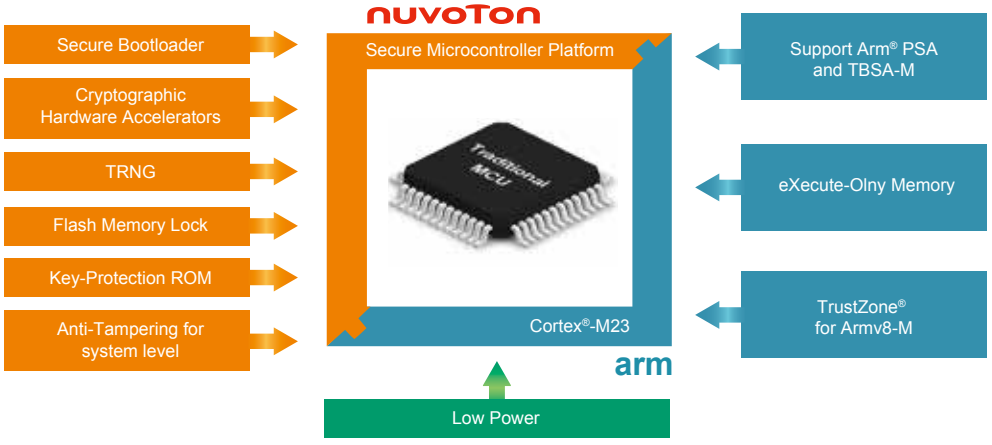
With the two key features of security and ultra-low power, NuMicro® M23 is built for small, energy-sipping IoT and embedded products. With the capability of the small-sized and low-power devices, NuMicro M23 provides security, enhanced efficiency, performance and scalability for deployment even in the most constrained contexts.



M2351 Series

The rise of the internet of things (IoT) era has increased awareness for the integration of physical worlds into digital systems. While the digitization of our everyday lives leads to efficiency improvements and economic benefits, it has also caused pressure on system designers who are now required to come up with innovative IoT products capable of performing secure connection and data exchange with low power consumption. Since security and power consumption are both key requirements for IoT applications, Nuvoton has developed the NuMicro® M2351 Series, which excels in supporting the proliferation of intelligent connected devices. The NuMicro® M2351 microcontroller series is based on the Arm® Cortex®-M23 core with TrustZone® for Armv8-M architecture, which elevates the traditional firmware security to a new level of robust hardware security.

The low power M2351 series microcontroller operates at up to 64 MHz, with up to 512 Kbytes Flash in dual bank mode, supporting secure firmware Over-The-Air (OTA) update and up to 96 Kbytes SRAM. Furthermore, the M2351 series also provides high-performance connectivity peripheral interfaces such as UART, SPI, I²C, GPIOs, USB and ISO 7816-3 for smart card readers. Its secure and efficient power management features strengthen the innovation of IoT security.



*For more information, please visit https://m2351.nuvoton.com

Potential Applications: Smart Meters, Gaming Software IP Protection, Smart City, Smart Wearable Devices, Medical Devices, IoT Devices with Secure Connection, Collaborative Secure Software Development Models, etc.

Key Features: TrustZone® for Armv8-M Technology, 8 regions MPU_NS (for non-secure world) and 8 regions MPU_S (for secure world), Hardware Crypto Accelerators, CRC calculation unit, Up to 6 tamper detection pins, Arm® Platform Security Architecture (PSA) and Trusted Base System Architecture-M (TBSA-M) supported, Multiple power modes.

Part No.	System								Memory					Timer			Analog			Connectivity										Security		Crypto	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	ETM	V_{BAT}	LDROM Flash (KB)	APROM Flash (KB)	Secure Flash (KB)	SRAM (KB)	PDMA (ch)	Timer/ PWM	BPWM (16-bit)	EPWM (16-bit)	EADC	DAC (12-bit)	ACMP	LPUART	ISO-7816-3	QSPI	I²C	USCI	SPI/ I²S	CAN	SDHC	USB FS OTG	EBI	TRNG	Tamper	AES/DES/3DS/SHA/ECC	Package Type	Package Size	Mass Production	EVB	MP Programmer
M2351CIAAE	64	1.7	3.6	-40	105	41	-	-	4	512	-	96	16	4	12	12	12	2	2	6	3	1	3	2	3	1	1	1	√	√	-	√	WLCSP 49	3.2x3.2	√	NK-BEDM2351	-
M2351KIAAE	64	1.7	3.6	-40	105	107	√	√	4	512	-	96	16	4	12	12	16	2	2	6	3	1	3	2	4	1	1	1	√	√	6	√	LQFP 128	14x14	√	NK-BEDM2351	NLG-128KX
M2351SFSIAAE	64	1.7	3.6	-40	85	45	-	√	4	512	4096	96	16	4	12	12	16	2	2	6	3	-	3	2	4	1	1	1	√	√	1	√	LQFP 64	7x7	√	NK-M2351SF	NLG-64S
M2351SIAAE	64	1.7	3.6	-40	105	51	-	√	4	512	-	96	16	4	12	12	16	2	2	6	3	1	3	2	4	1	1	1	√	√	1	√	LQFP 64	7x7	√	NK-BEDM2351	NLG-64S
M2351ZIAAE	64	1.7	3.6	-40	105	25	-	-	4	512	-	96	16	4	12	11	10	2	2	6	3	1	3	2	3	1	1	1	-	√	-	√	QFN 33	5x5	√	NK-BEDM2351	NLG-32Z

M2354 Series

The NuMicro M2354 series is a product portfolio of NuMicro Secure IoT MCU family based on Arm Cortex-M23 TrustZone, covering secure key storage protected by tamper-resistant physical shield, Flash memory protection lock, and secure control unit. It focuses on physical attack protection and certification for Arm PSA Level 2 even for Arm PSA Level 3. The M2354 series is quite competitive for those devices that need more secure, fast computing and low power in the IoT market.

The major challenge for IoT devices that are connected to cloud or other devices by network communication is Security, so the IoT devices must meet some security requirements to protect firmware, software and secure assets from being stolen or modified by an attacker. “Execution”, “Storage”, and “Connectivity” are the three important targets for secure IoT devices.

The ultra low power M2354 series microcontroller operates at up to 96 MHz frequency, with up to 1 Mbytes embedded Flash memory in dual bank mode, supporting secure OTA (Over-The-Air) firmware update and up to 256 Kbytes embedded SRAM. Following the M2351 series, it also provides high-performance connectivity peripheral interfaces such as UART, SPI, I²C, GPIOs, USB and ISO 7816-3 for smart card reader. On top of all, the countermeasures of mitigation for the side-channel attacks of cryptos and fault injection attacks of voltage and clock tampering elevate an Armv8-M TrustZone application system with physical security enhanced.

Key Features: Tamper-resistant key storage in Flash and SRAM, Up to 8 Com. x 40 Seg. LCD controller, TrustZone for Armv8-M Technology, 8 regions MPU_NS (for normal world) and 8 regions MPU_S (for secure world), Hardware Crypto Accelerators, CRC calculation unit, Up to 6 tamper detection pins, Arm Platform Security Architecture (PSA Certified Level 2 /Level 3) supported, Multiple power mode.

Part No.	System								Memory				Timer			Analog		Connectivity											Security			Crypto	Display	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	ETM	V_{BAT}	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer/ PWM	BPWM (16-bit)	EPWM (16-bit)	EADC	DAC (12-bit)	LPUART	ISO-7816-3	QSPI	I^2C	USCI	SPI/ I^2S	CAN	SDHC	USB FS OTG	EBI	TRNG	Tamper	Key Store	AES/ECC/SRA/ SM2/3/4	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
M2354KJFAE	96	1.7	3.6	-40	105	106	√	√	16	1024	256	16	4	12	12	16	2	6	3	1	3	2	4	1	1	1	√	√	6	√	√	8x40	LQFP128	14x14	√	NK-BEDM2354	NLG-128KX
M2354LJFAE	96	1.7	3.6	-40	105	40	-	-	16	1024	256	16	4	12	12	11	2	6	3	1	3	2	3	1	1	1	√	√	1	√	√	-	LQFP48	7x7	√	NK-BEDM2354	NLG-48L
M2354SJFAE	96	1.7	3.6	-40	105	50	-	√	16	1024	256	16	4	12	12	16	2	6	3	1	3	2	4	1	1	1	√	√	1	√	√	8X13	LQFP64	7x7	√	NK-BEDM2354	NLG-64S

M251/M252 Series

The NuMicro® M251/M252 is low power series embedded with the Arm® Cortex®-M23 core for Armv8-M architecture, support wide operating voltage built-in 16~256 Kbytes embedded Flash, 8~32 Kbytes embedded SRAM and 4 Kbytes Flash loader memory for In-System Programming (ISP). The M251/M252 series integrates PSIO (Programmable Serial I/O) that is capable of emulating various serial communication protocols including: UART, SPI, I2C...etc. Also Real Time Counter (RTC), 840 kSPS ADC, DAC, Analog Comparator, Operational Amplifier, VAI (Voltage Adjustable Interface), USB 2.0 FS device (Crystal-less), ISO-7816-3, and rich peripherals, supports fast wake-up via communication interfaces.

Potential Applications: Suitable for limited battery-powered device such as Wearable Device, IoT Node Device, Portable Medical Device, Smart Home Appliance, Alarm and Security Monitoring, Mobile Payment Smart Card Reader, GPS Data Collector, Wireless Communication (Zigbee, LoRa...etc.) Module, Electronic Shelf Label (ESL), RFID, Smart Heat/Water/Gas Meters, etc.

• M251 Series

Key Features: Up to 8-channel PSIO that is capable of emulating various serial communication protocols. Ultra-low power consumption with 138 µA/MHz (Normal Run Mode), 60 µA/MHz (Idle Mode), 2.5 µA (Power Down, RTC on, RAM retention) and 1.5 µA (Power Down, RTC off, RAM retention)

Part No.	System						Memory				Timer				Analog			Connectivity										Security			Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer/ PWM	PWM (16-bit)	BPWM (16-bit)	RTC	EADC	DAC (12-bit)	ACMP	UART	LIN	ISO-7816-3	QSPI	I²C	USCI	SPI/ I²S	PSIO	USB FS Device Crystal-less	TrustZone	XOM	Tamper	Package Type	Package Size	Mass Production	EVB	MP Programmer
M251EC2AE	48	1.75	5.5	-40	105	23	4	32	8	5	4	11	-	-	9	-	-	2	1	1	1	2	1	-	-	-	√	√	-	TSSOP28	4.4x9.7	√	NK-M252SD	NLG-28E
M251FC2AE	48	1.75	5.5	-40	105	15	4	32	8	5	4	9	-	-	7	-	-	2	1	1	1	2	1	-	-	-	√	√	-	TSSOP20	4.4x6.5	√	NK-M252SD	NLG-20F
M251KE3AE	48	1.75	5.5	-40	105	85	4	128	16	8	4	12	12	√	16	-	2	3	1	1	1	2	3	1	8	-	√	√	√	LQFP128	14x14	√	NK-M252KG	NLG-128KX
M251KG6AE	48	1.75	5.5	-40	105	85	4	256	32	8	4	12	12	√	16	1	2	3	1	1	1	2	3	1	8	-	-	√	√	LQFP128	14x14	√	NK-M252KG	NLG-128KX
M251LC2AE	48	1.75	5.5	-40	105	41	4	32	12	5	4	12	12	√	12	-	2	3	1	1	1	2	2	1	4	-	√	√	-	LQFP48	7x7	√	NK-M252SD	NLG-48L
M251LD2AE	48	1.75	5.5	-40	105	41	4	64	12	5	4	12	12	√	12	-	2	3	1	1	1	2	2	1	4	-	√	√	-	LQFP48	7x7	√	NK-M252SD	NLG-48L
M251LE3AE	48	1.75	5.5	-40	105	41	4	128	16	8	4	12	12	√	12	-	2	3	1	1	1	2	3	1	8	-	√	√	-	LQFP48	7x7	√	NK-M252KG	NLG-48L
M251LG6AE	48	1.75	5.5	-40	105	41	4	256	32	8	4	12	12	√	12	1	2	3	1	1	1	2	3	1	8	-	√	√	-	LQFP48	7x7	√	NK-M252KG	NLG-48L
M251SC2AE	48	1.75	5.5	-40	105	54	4	32	12	5	4	12	12	√	16	-	2	3	1	1	1	2	2	1	4	-	√	√	√	LQFP64	7x7	√	NK-M252SD	NLG-64S
M251SD2AE	48	1.75	5.5	-40	105	54	4	64	12	5	4	12	12	√	16	-	2	3	1	1	1	2	2	1	4	-	√	√	√	LQFP64	7x7	√	NK-M252SD	NLG-64S
M251SE3AE	48	1.75	5.5	-40	105	53	4	128	16	8	4	12	12	√	16	-	2	3	1	1	1	2	3	1	8	-	√	√	√	LQFP64	7x7	√	NK-M252KG	NLG-64S
M251SG6AE	48	1.75	5.5	-40	105	53	4	256	32	8	4	12	12	√	16	1	2	3	1	1	1	2	3	1	8	-	√	√	√	LQFP64	7x7	√	NK-M252KG	NLG-64S
M251ZC2AE	48	1.75	5.5	-40	105	26	4	32	8	5	4	12	-	√	10	-	-	2	1	1	1	2	1	-	-	-	√	√	-	QFN33	5x5	√	NK-M252SD	NLG-32Z
M251ZD2AE	48	1.75	5.5	-40	105	26	4	64	12	5	4	12	12	√	10	-	2	3	1	1	1	2	2	1	4	-	√	√	-	QFN33	5x5	√	NK-M252SD	NLG-32Z

• M252 Series

Key Features: USB 2.0 full speed device Crystal-less and up to 8-channel PSIO capable of emulating various serial communication protocols. Ultra-low power Consumption with 138 µA/MHz (Normal Run Mode), 60 µA/MHz (Idle Mode), 2.5 µA (Power Down, RTC on, RAM retention) and 1.5 µA (Power Down, RTC off, RAM retention)

Part No.	System						Memory				Timer				Analog			Connectivity										Security			Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer/ PWM	PWM (16-bit)	BPWM (16-bit)	RTC	EADC	DAC (12-bit)	ACMP	UART	LIN	ISO-7816-3	QSPI	I²C	USCI	SPI/ I²S	PSIO	USB FS Device Crystal-less	TrustZone	XOM	Tamper	Package Type	Package Size	Mass Production	EVB	MP Programmer
M252EC2AE	48	1.75	5.5	-40	105	19	4	32	8	5	4	11	-	-	9	-	-	2	1	1	1	2	1	-	-	√	-	√	-	TSSOP28	4.4x9.7	√	NK-M252SD	NLG-28E
M252FC2AE	48	1.75	5.5	-40	105	11	4	32	8	5	4	7	-	-	3	-	-	2	1	1	1	2	1	-	-	√	-	√	-	TSSOP20	4.4x6.5	√	NK-M252SD	NLG-20F
M252KE3AE	48	1.75	5.5	-40	105	81	4	128	16	8	4	12	12	√	16	-	2	3	1	1	1	2	3	1	8	√	-	√	√	LQFP128	14x14	√	NK-M252KG	NLG-128KX
M252KG6AE	48	1.75	5.5	-40	105	81	4	256	32	8	4	12	12	√	16	1	2	3	1	1	1	2	3	1	8	√	-	√	√	LQFP128	14x14	√	NK-M252KG	NLG-128KX
M252LC2AE	48	1.75	5.5	-40	105	37	4	32	12	5	4	12	8	√	12	-	2	3	1	1	1	2	2	1	4	√	-	√	-	LQFP48	7x7	√	NK-M252SD	NLG-48L
M252LD2AE	48	1.75	5.5	-40	105	37	4	64	12	5	4	12	12	√	12	-	2	3	1	1	1	2	2	1	4	√	-	√	-	LQFP48	7x7	√	NK-M252SD	NLG-48L
M252LE3AE	48	1.75	5.5	-40	105	37	4	128	16	8	4	12	12	√	12	-	2	3	1	1	1	2	3	1	8	√	-	√	-	LQFP48	7x7	√	NK-M252KG	NLG-48L
M252LG6AE	48	1.75	5.5	-40	105	37	4	256	32	8	4	12	12	√	12	1	2	3	1	1	1	2	3	1	8	√	-	√	-	LQFP48	7x7	√	NK-M252KG	NLG-48L
M252SC2AE	48	1.75	5.5	-40	105	50	4	32	12	5	4	12	12	√	16	-	2	3	1	1	1	2	2	1	4	√	-	√	√	LQFP64	7x7	√	NK-M252SD	NLG-64S
M252SD2AE	48	1.75	5.5	-40	105	50	4	64	12	5	4	12	12	√	16	-	2	3	1	1	1	2	2	1	4	√	-	√	√	LQFP64	7x7	√	NK-M252SD	NLG-64S
M252SE3AE	48	1.75	5.5	-40	105	49	4	128	16	8	4	12	12	√	16	-	2	3	1	1	1	2	3	1	8	√	-	√	√	LQFP64	7x7	√	NK-M252KG	NLG-64S
M252SG6AE	48	1.75	5.5	-40	105	49	4	256	32	8	4	12	12	√	16	1	2	3	1	1	1	2	3	1	8	√	-	√	√	LQFP64	7x7	√	NK-M252KG	NLG-64S
M252ZC2AE	48	1.75	5.5	-40	105	23	4	32	8	5	4	12	-	√	10	-	-	2	1	1	1	2	1	-	-	√	-	√	-	QFN33	5x5	√	NK-M252SD	NLG-32Z
M252ZD2AE	48	1.75	5.5	-40	105	22	4	64	12	5	4	12	12	√	10	-	2	3	1	1	1	2	2	1	4	√	-	√	-	QFN33	5x5	√	NK-M252SD	NLG-32Z

M253 Series

The NuMicro M253 series 32-bit microcontroller is based on Arm® Cortex®-M23 core using Armv8-M architecture. It provides one CAN FD and Crystal-less USB 2.0 FS interface, running up to 48 MHz and features up to 128 Kbytes Flash, 16 Kbytets SRAM.

Potential Applications: Suitable for automotive application, Industrial automatic application, and battery management system.

• M253 Series

Key Features: USB 2.0 full speed device interface with up to 17 configurable endpoints, 5 virtual COM ports, and one set of CAN FD interface, supporting up to 64 bytes per message.

Part No.	System						Memory				Timer			Analog		Connectivity								Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (°C)	Operating Voltage (max) (V)	Operating Temperature (min) (V)	Operating Temperature (max) (°C)	GPIO	LDROM Flash	APROM Flash	SRAM	PDMA	Timer (32-bit)	BPWM (16-bit)	RTC	EADC	ACMP	UART	I²C	USCI	SPI/ I²S	CAN FD	USB FS Device	USB FS Device Crystal-less	XOM	Package Type	Package Size	Mass Production	EVB	MP Programmer
M253LD3AE	48	1.75	5.5	-40	105	37	4	64	16	5	4	6	√	12	2	5	2	1	1	1	1	√	√	LQFP48	7x7	√	NK-M253LE	NLG-48L
M253LE3AE	48	1.75	5.5	-40	105	37	4	128	16	5	4	6	√	12	2	5	2	1	1	1	1	√	√	LQFP48	7x7	√	NK-M253LE	NLG-48L
M253ZE3AE	48	1.75	5.5	-40	105	22	4	128	16	5	4	6	√	10	2	5	2	1	1	1	1	√	√	QFN33	5x5	√	NK-M253LE	NLG-32Z

M254/M256/M258 Series

The NuMicro M254/M256/M258 series are low-power microcontroller platforms with COM/SEG LCD driver based on Arm® Cortex®-M23 core at Armv8-M architecture. M256/M258 series support capacitive touch sensing function. M258 series is with USB 2.0 full speed device. They run up to 48 MHz with 64/128 Kbytes embedded Flash memory and 16 Kbytes embedded SRAM, 4 Kbytes Flash loader memory (LDROM) for In-System Programming (ISP).

Potential Applications: Suitable for limited battery-powered device such as Portable Medical Device, Smart Home Appliance, Alarm and Security Monitoring, Thermostat, Temperature Logger Smart Heat/Water/Gas Meters, etc.

• M254 Series

Key Features: A 8x44, 6x46, 4x48 COM/SEG LCD is available on M254 series. The COM/SEG LCD driver is built-in charge-pump, supports 3 ~ 5V LCD panel, with selectable bias voltage (1/2, 1/3, 1/4) and duty (1/4, 1/6, 1/8)

Part No.	System						Memory				Timer			Analog				Connectivity									Security	Crypto	Display	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (°C)	Operating Voltage (max) (V)	Operating Temperature (min) (V)	Operating Temperature (max) (°C)	GPIO	LDROM Flash	APROM Flash	SRAM	PDMA	Timer/ PWM	BPWM (16-bit)	RTC	EADC	DAC (12-bit)	ACMP	Touch Key	UART	LIN	ISO-7816-3	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	XOM	AES	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
M254KE3AE	48	1.75	5.5	-40	105	86	4	128	16	5	4	6	√	16	-	2	-	3	1	1	1	1	1	-	-	√	-	8x44 6x46 4x48	LQFP128	14x14	√	NK-M258KE	NLG-128KX
M254KG6AE	48	1.75	5.5	-40	105	86	4	256	32	8	4	12	√	16	2	2	-	4	1	1	2	2	2	-	-	√	√	8x44 6x46 4x48	LQFP128	14x14	√	-	-
M254MD2AE	48	1.75	5.5	-40	105	37	4	64	8	5	4	6	√	12	-	2	-	3	1	1	1	1	1	-	-	√	-	8x16 6x18 4x20	LQFP44	10x10	√	-	-
M254QE3AE	48	1.75	5.5	-40	105	70	4	128	16	5	4	6	√	16	-	2	-	3	1	1	1	1	1	-	-	√	-	8x44 6x46 4x48	LQFP80	14x14	√	NK-M258KE	NLG-80Q
M254SD2AE	48	1.75	5.5	-40	105	54	4	64	8	5	4	6	√	16	-	2	-	3	1	1	1	1	1	-	-	√	-	8x28 6x30 4x32	LQFP64	7x7	√	-	-
M254SE3AE	48	1.75	5.5	-40	105	53	4	128	16	5	4	6	√	16	-	2	-	3	1	1	1	1	1	-	-	√	-	8x28 6x30 4x32	LQFP64	7x7	√	NK-M258KE	NLG-64S
M254SG6AE	48	1.75	5.5	-40	105	53	4	256	32	8	4	12	√	16	2	2	-	4	1	1	2	2	2	-	-	√	√	8x28 6x30 4x32	LQFP64	7x7	√	-	-

• M256 Series

Key Features: Supports 8x44, 6x46, 4x48 COM/SEG LCD driver and capacitive touch sensing function, intergrated up to 14 touch-keys with single-scan or programmable periodic key-scans.

Part No.	System						Memory				Timer			Analog				Connectivity								Security	Crypto	Display	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (°C)	Operating Voltage (max) (V)	Operating Temperature (min) (V)	Operating Temperature (max) (°C)	GPIO	LDROM Flash	APROM Flash	SRAM	PDMA	Timer/ PWM	BPWM (16-bit)	RTC	EADC	DAC (12-bit)	ACMP	Touch Key	UART	LIN	ISO-7816-3	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	XOM	AES	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
M256KE3AE	48	86	1.75	5.5	-40	105	4	128	16	5	4	6	√	16	-	2	15	3	1	1	1	1	1	-	-	√	-	8x44 6x46 4x48	LQFP128	14x14	√	NK-M258KE	NLG-128KX
M256MD2AE	48	37	1.75	5.5	-40	105	4	64	8	5	4	6	√	12	-	2	6	3	1	1	1	1	1	-	-	√	-	8x16 6x18 4x20	LQFP44	10x10	√	-	-
M256QE3AE	48	70	1.75	5.5	-40	105	4	128	16	5	4	6	√	16	-	2	15	3	1	1	1	1	1	-	-	√	-	8x44 6x46 4x48	LQFP80	14x14	√	NK-M258KE	NLG-80Q
M256QG6AE	48	70	1.75	5.5	-40	105	4	256	32	8	4	12	√	16	2	2	23	4	1	1	2	2	2	-	-	√	√	8x44 6x46 4x48	LQFP80	14x14	√	-	-
M256SD2AE	48	54	1.75	5.5	-40	105	4	64	8	5	4	6	√	16	-	2	14	3	1	1	1	1	1	-	-	√	-	8x28 6x30 4x32	LQFP64	7x7	√	-	-
M256SE3AE	48	53	1.75	5.5	-40	105	4	128	16	5	4	6	√	16	-	2	14	3	1	1	1	1	1	-	-	√	-	8x28 6x30 4x32	LQFP64	7x7	√	NK-M258KE	NLG-64S

• M258 Series

Key Features: Supports 8x40, 6x42, 4x44 COM/SEG LCD driver, capacitive touch sensing function, and a crystal-less USB 2.0 full speed device with Battery Charging Detection v1.2 (BC 1.2) profile.

Part No.	System						Memory				Timer			Analog				Connectivity								Security	Crypto	Display	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (°C)	Operating Voltage (max) (V)	Operating Temperature (min) (V)	Operating Temperature (max) (°C)	GPIO	LDROM Flash	APROM Flash	SRAM	PDMA	Timer/ PWM	BPWM (16-bit)	RTC	EADC	DAC (12-bit)	ACMP	Touch Key	UART	LIN	ISO-7816-3	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	XOM	AES	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
M258KE3AE	48	82	1.75	5.5	-40	105	4	128	16	5	4	6	√	16	-	2	15	3	1	1	1	1	1	1	√	√	-	8x40 6x42 4x44	LQFP128	14x14	√	NK-M258KE	NLG-128KX
M258KG6AE	48	82	1.75	5.5	-40	105	4	256	32	8	4	12	√	16	2	2	24	4	1	1	2	2	2	1	√	√	√	8x40 6x42 4x44	LQFP128	14x14	√	-	-
M258QE3AE	48	66	1.75	5.5	-40	105	4	128	16	5	4	6	√	16	-	2	15	3	1	1	1	1	1	1	√	√	-	8x40 6x42 4x44	LQFP80	14x14	√	NK-M258KE	NLG-80Q
M258QG6AE	48	66	1.75	5.5	-40	105	4	256	32	8	4	12	√	16	2	2	23	4	1	1	2	2	2	1	√	√	√	8x40 6x42 4x44	LQFP80	14x14	√	-	-
M258SE3AE	48	49	1.75	5.5	-40	105	4	128	16	5	4	6	√	16	-	2	14	3	1	1	1	1	1	1	√	√	-	8x28 6x26 4x24	LQFP64	7x7	√	NK-M258KE	NLG-64S
M258SG6AE	48	49	1.75	5.5	-40	105	4	256	32	8	4	12	√	16	2	2	20	4	1	1	2	2	2	1	√	√	√	8x28 6x26 4x24	LQFP64	7x7	√	-	-

M261/M262/M263 Series

The NuMicro® M261/M262/M263 series is the low power microcontroller based on the Arm® Cortex®-M23 core for Armv8-M architecture. It runs at up to 64 MHz with 512 Kbytes Flash in dual bank mode supporting Over-The-Air (OTA) firmware update and 96 Kbytes SRAM. It also supports low supply voltage from 1.8V to 3.6V and operating temperature from -40°C to 105°C.
The NuMicro® M261/M262/M263 series provides multiple power modes for diverse operating scenarios, such as Power-down Mode, Fast Wake-up Power-down Mode, Low Leakage Power-down Mode, Ultra Low Leakage Power-down Mode, Standby Power-down Mode and Deep Power-down mode. The power consumption is 97 µA/MHz (LDO Mode) and 45 µA/MHz (DC-DC Mode) in Normal Run Mode, 2.8 µA in Standby Power-down Mode, and less than 2 µA in Deep Power-down Mode.
The NuMicro® M261/M262/M263 series is equipped with plenty of peripherals, such as Timers, Watchdog Timers, RTC, PDMA, External Bus Interface, Low power UART, Universal Serial Control Interface (USCI), Qual SPI (QSPI), SPI/ I²S, I²C, Smart Card Interface (ISO 7816-3), Secure Digital Host Controllers (SDHC) 2.0, GPIOs, and up to 24 channels of PWM, which makes it highly suitable for connecting comprehensive external modules. It also integrates high performance analog front-end circuit blocks, such as one 16 channels of 12-bit 3.76 MSPS SAR ADC, two 12-bit 1 MSPS voltage type DAC, two rail-to-rail analog comparators (ACMP), temperature sensors, low voltage reset, and Brown-Out Detector to enhance product performance.

The NuMicro® M262 series is based on NuMicro® M261 series. It integrates USB 2.0 full speed OTG transceiver, USB 1.1 Host Controller and USB 2.0 full speed Device Controller with crystal-less function.

The NuMicro® M263 series is based on NuMicro® M262 series. It supports one set of CAN Bus 2.0B controllers. This CAN Bus can be set to be one of six paired I/Os by PinConfigure tool.

Potential Applications: Suitable for limited battery-powered device, such as IoT Node Device, Portable Medical Device, Smart Home Appliance, Security Alarm Monitoring, Wireless Sensor Node Device, Electronic Payment Smart Card Reader, Wireless Communication (Zigbee, LoRa, Thread, etc.) Module, Smart Door Lock, etc.

• M261/M262/M263 Series

Key Features: 512 Kbytes Flash in dual bank mode for OTA, USB 2.0 full speed OTG, CAN Bus 2.0B, SDHC 2.0, Secure Boot function, Hardware Crypto Engine, one 16-channel 12-bit 3.76 MSPS SAR ADC, two 12-bit 1 MSPS DAC, two rail-to-rail analog comparators (ACMP), Low power consumption: 97 µA/MHz (LDO mode), 45 µA/MHz (DC-DC mode) in Normal Run Mode, 2.8 µA in Standby Power-down Mode, and less than 2 µA in Deep Power-down Mode.

Part No.	System						Memory				Timer						Analog			Connectivity														Security			Crypto	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash	APROM Flash	SRAM	PDMA	Timer/ PWM	BPWM (16-bit)	EPWM (16-bit)	QEI	ECAP	RTC	EADC	DAC (12-bit)	ACMP	LIN	LPUART	ISO-7816-3	QSPI	I²C	USCI	SPI/ I²S	I²S	CAN	SDHC	USB FS OTG	EBI	TRNG	XOM	Tamper	Crypto	Package Type	Package Size	Mass Production	EVB	MP Programmer
M261KIAAE	64	1.8	3.6	-40	105	107	4	512	96	16	4	12	12	2	2	√	16	2	2	2	6	3	1	3	2	4	1	-	1	-	√	√	√	6	√	LQFP128	14x14	√	NK-M263KI	NLG-128KX
M261SIAAE	64	1.8	3.6	-40	105	51	4	512	96	16	4	12	12	2	1	√	16	2	2	2	6	3	1	3	2	4	1	-	1	-	√	√	√	1	√	LQFP128	7x7	√	NK-M263KI	NLG-64S
M261ZIAAE	64	1.8	3.6	-40	105	25	4	512	96	16	4	12	12	1	-	√	9	2	2	2	6	3	1	3	2	3	1	-	1	-	-	√	√	-	√	QFN33	5x5	√	NK-M263KI	NLG-32Z
M262KIAAE	64	1.8	3.6	-40	105	107	4	512	96	16	4	12	12	2	2	√	16	2	2	2	6	3	1	3	2	4	1	-	1	1	√	√	√	6	√	LQFP128	14x14	√	NK-M263KI	NLG-128KX
M262SIAAE	64	1.8	3.6	-40	105	51	4	512	96	16	4	12	12	2	1	√	16	2	2	2	6	3	1	3	2	4	1	-	1	1	√	√	√	1	√	LQFP64	7x7	√	NK-M263KI	NLG-64S
M262ZIAAE	64	1.8	3.6	-40	105	25	4	512	96	16	4	12	12	1	-	√	9	2	2	2	6	3	1	3	2	3	1	-	1	1	-	√	√	-	√	LQFP128	5x5	√	NK-M263KI	NLG-32Z
M263KIAAE	64	1.8	3.6	-40	105	107	4	512	96	16	4	12	12	2	2	√	16	2	2	2	6	3	1	3	2	4	1	1	1	1	√	√	√	6	√	LQFP128	14x14	√	NK-M263KI	NLG-128KX
M263SIAAE	64	1.8	3.6	-40	105	51	4	512	96	16	4	12	12	2	1	√	16	2	2	2	6	3	1	3	2	4	1	1	1	1	√	√	√	1	√	LQFP64	7x7	√	NK-M263KI	NLG-64S
M263ZIAAE	64	1.8	3.6	-40	105	25	4	512	96	16	4	12	12	1	-	√	9	2	2	2	6	3	1	3	2	3	1	1	1	1	-	√	√	-	√	QFN33	5x5	√	NK-M263KI	NLG-32Z

NuMicro® Family Arm® Cortex®-M0 Microcontrollers

The NuMicro® M030G/M031G 32-bit microcontroller series is designed for Optical Transceiver Module applications, both of the M030G and the M031G series have a built-in temperature sensor with ±2°C deviation from -40°C to 105°C. The M031G series is equipped with a Hardware Manchester Codec and 1 set of DAC with "Auto Data Generation" function to generate the smooth sine waveform up to 500kHz for Optical Transceiver Module with the function of pilot tone modulation. The M030G/M031G series runs up to 48/72 MHz and features 64 Kbytes Flash, 4/8 Kbytes SRAM, 2.7V ~ 3.6V operating voltage, and -40°C to 105°C operating temperature.

The M030G/M031G series provides plenty of peripherals including 2 sets of I²C supporting 1 MHz Slave Mode, internal voltage reference, up to 16 channels of 1.4 MSPS 12-bit SAR ADC and 4 sets of 12-bit DAC. Both M030G/M031G series provide the QFN 24-pin (3x3 mm) and QFN 33-pin (4x4 mm) small form factor package.

M030G/M031G Series

The NuMicro® M030G/M031G 32-bit microcontroller series is designed for Optical Transceiver Module applications, both of the M030G and the M031G series have a built-in temperature sensor with ±2°C deviation from -40°C to 105°C. The M031G series is equipped with a Hardware Manchester Codec and 1 set of DAC with "Auto Data Generation" function to generate the smooth sine waveform up to 500kHz for Optical Transceiver Module with the function of pilot tone modulation. The M030G/M031G series runs up to 48/72 MHz and features 32/64 Kbytes Flash, 4/8 Kbytes SRAM, 2.7V ~ 3.6V operating voltage, and -40°C to 105°C operating temperature.
The M030G/M031G series provides plenty of peripherals including 2 sets of I2C supporting 1 MHz Slave Mode, internal voltage reference, up to 16 channels of 1.4 MSPS 12-bit SAR ADC and 4 sets of 12-bit DAC. Both M030G/M031G series provide the QFN 24-pin (3x3 mm) and QFN 33-pin (4x4 mm) small form factor package.

Specific Applications: Optical Transceiver Module

• M030G Series

Key Features: Build-in Temperature Sensor, 1MHz Slave Mode I²C, QFN24/33 Small Form Factor Package

Part No.	System							Memory					Clock			Timer		Analog			Connectivity			Package		Status	Tool		Others
	Operating Frequency (MHz)	CRC	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	LIRC	HIRC (MHz)	PLL (MHz)	Timer (32-bit)	BPWM (16-bit)	ADC (12-bit)	DAC (12-bit)	Internal Voltage Reference	UART	I²C	SPI/ I²S	Package Type	Package Size	Mass Production	EVB	MP Programmer	Additional Features
M030GGC1AE	48	√	2.7	3.6	-40	105	19	2	32	Configurable	4	5	38.4	48	-	2	6	11	4	√	1	2	1	QFN24	3x3	√	NK-M030GTD	NLG-M030GG	Temperature Sensor
M030GGD1AE	48	√	2.7	3.6	-40	105	19	2	64	Configurable	4	5	38.4	48	-	2	6	11	4	√	1	2	1	QFN24	3x3	√	NK-M030GTD	NLG-M030GG	Temperature Sensor
M030GTC1AE	48	√	2.7	3.6	-40	105	28	2	32	Configurable	4	5	38.4	48	-	2	6	16	4	√	1	2	1	QFN33	4x4	√	NK-M030GTD	NLG-M030GT	Temperature Sensor
M030GTD1AE	48	√	2.7	3.6	-40	105	28	2	64	Configurable	4	5	38.4	48	-	2	6	16	4	√	1	2	1	QFN33	4x4	√	NK-M030GTD	NLG-M030GT	Temperature Sensor

• M031G Series

Key Features: Hardware Manchester Codec, 1 set of DAC with Auto Data Generation Function, Build-in Temperature Sensor, 1MHz Slave Mode I²C, QFN24/33 Small Form Factor Package

Part No.	System							Memory					Clock			Timer		Analog			Connectivity			Package		Status	Tool		Others
	Operating Frequency (MHz)	CRC	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	LIRC	HIRC (MHz)	PLL (MHz)	Timer (32-bit)	BPWM (16-bit)	ADC (12-bit)	DAC (12-bit)	Internal Voltage Reference	UART	I²C	SPI/ I²S	Package Type	Package Size	Mass Production	EVB	MP Programmer	Additional Features
M031GGC2AE	72	√	2.7	3.6	-40	105	19	2	32	Configurable	8	7	38.4	48	72	6	6	11	4	√	1	2	1	QFN24	3x3	√	NK-M031GTD	NLG-M031GG	DAC Auto Data Generation, Temperature Sensor, Hardware Manchester Codec
M031GGD2AE	72	√	2.7	3.6	-40	105	19	2	64	Configurable	8	7	38.4	48	72	6	6	11	4	√	1	2	1	QFN24	3x3	√	NK-M031GTD	NLG-M031GG	DAC Auto Data Generation, Temperature Sensor, Hardware Manchester Codec
M031GTC2AE	72	√	2.7	3.6	-40	105	28	2	32	Configurable	8	7	38.4	48	72	6	6	16	4	√	1	2	1	QFN33	4x4	√	NK-M031GTD	NLG-M031GG	DAC Auto Data Generation, Temperature Sensor, Hardware Manchester Codec
M031GTD2AE	72	√	2.7	3.6	-40	105	28	2	64	Configurable	8	7	38.4	48	72	6	6	16	4	√	1	2	1	QFN33	4x4	√	NK-M031GTD	NLG-M031GG	DAC Auto Data Generation, Temperature Sensor, Hardware Manchester Codec

M031 Series

The NuMicro® M031 series is based on the Arm® Cortex®-M0 core, designed for 1.8V to 3.6V industrial applications. It features high performance and plenty of peripherals, such as 2 MSPS ADC and up to 144 MHz PWM. It also supports IEC-60730 safety specifications. The M031 series supports built-in 16 to 512 Kbytes Flash and 2 to 96 Kbytes SRAM.

Potential Applications: Industrial Control, High-Precision Meter, Wireless Charger, HMI, IoT Node Device, Security System, Motor Control, Communication System, etc.

• M031 Series

Key Features: Configurable up to 10 UART, 144 MHz PWM, 2 MSPS ADC, 24 MHz SPI, 1-wire UART, OTA, SPROM.

Part No.	System						Memory				Timer				Analog		Connectivity							Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	RTC	ADC (12-bit)	ACMP	UART	QSPI	I²C	SMBUS (Supported by I2C)	USCI	SPI/ I²S	EBI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
M031EB0AE	48	1.8	3.6	-40	105	23	2	16	2	-	2	6	-	-	9	-	3	-	2	-	-	1	-	512	TSSOP28	4.4x9.7	√	NK-M031TB	NLG-28E
M031EC1AE	48	1.8	3.6	-40	105	23	2	32	4	2	4	6	-	-	9	-	3	-	2	-	-	1	-	512	TSSOP28	4.4x9.7	√	NK-M031TC	NLG-28E
M031FB0AE	48	1.8	3.6	-40	105	15	2	16	2	-	2	6	-	-	7	-	3	-	2	-	-	1	-	512	TSSOP20	4.4x6.5	√	NK-M031TB	NLG-20F
M031FC1AE	48	1.8	3.6	-40	105	15	2	32	4	2	4	6	-	-	7	-	3	-	2	-	-	1	-	512	TSSOP20	4.4x6.5	√	NK-M031TC	NLG-20F
M031KG6AE	72	1.8	3.6	-40	105	111	4	256	32	7	4	12	12	√	16	2	6	1	2	1	2	1	√	2048	LQFP128	14x14	√	NK-M031KG	NLG-128KX
M031KG8AE	72	1.8	3.6	-40	105	111	4	256	64	7	4	12	12	√	16	2	6	1	2	1	2	1	√	2048	LQFP128	14x14	√	NK-M031KG	NLG-128KX
M031KIAAE	72	1.8	3.6	-40	105	111	8	512	96	9	4	12	12	√	16	2	8	1	-	-	2	1	√	2048	LQFP128	14x14	√	NK-M031KI	NLG-128KX
M031LC2AE	48	1.8	3.6	-40	105	42	2	32	8	5	4	12	-	-	12	2	3	-	2	-	1	1	-	512	LQFP48	7x7	√	NK-M031SD	NLG-48L
M031LD2AE	48	1.8	3.6	-40	105	42	2	64	8	5	4	12	-	-	12	2	3	-	2	-	1	1	-	512	LQFP48	7x7	√	NK-M031SD	NLG-48L
M031LE3AE	48	1.8	3.6	-40	105	42	4	128	16	5	4	12	-	-	12	2	3	-	2	-	1	1	√	512	LQFP48	7x7	√	NK-M031SE	NLG-48L
M031LG6AE	72	1.8	3.6	-40	105	42	4	256	32	7	4	12	12	√	12	2	6	1	2	1	2	1	√	2048	LQFP48	7x7	√	NK-M031KG	NLG-48L
M031LG8AE	72	1.8	3.6	-40	105	42	4	256	64	7	4	12	12	√	12	2	6	1	2	1	2	1	√	2048	LQFP48	7x7	√	NK-M031KG	NLG-48L
M031SC2AE	48	1.8	3.6	-40	105	55	2	32	8	5	4	12	-	-	16	2	3	-	2	-	1	1	-	512	LQFP64	7x7	√	NK-M031SD	NLG-64S
M031SD2AE	48	1.8	3.6	-40	105	55	2	64	8	5	4	12	-	-	16	2	3	-	2	-	1	1	-	512	LQFP64	7x7	√	NK-M031SD	NLG-64S
M031SE3AE	48	1.8	3.6	-40	105	55	4	128	16	5	4	12	-	-	16	2	3	-	2	-	1	1	√	512	LQFP64	7x7	√	NK-M031SE	NLG-64S
M031SG6AE	72	1.8	3.6	-40	105	55	4	256	32	7	4	12	12	√	16	2	6	1	2	1	2	1	√	2048	LQFP64	7x7	√	NK-M031KG	NLG-64S
M031SG8AE	72	1.8	3.6	-40	105	55	4	256	64	7	4	12	12	√	16	2	6	1	2	1	2	1	√	2048	LQFP64	7x7	√	NK-M031KG	NLG-64S
M031SIAAE	72	1.8	3.6	-40	105	55	8	512	96	9	4	12	12	√	16	2	8	1	-	-	2	1	√	2048	LQFP64	7x7	√	NK-M031KI	NLG-64S
M031TB0AE	48	1.8	3.6	-40	105	27	2	16	2	-	2	6	-	-	10	-	3	-	2	-	-	1	-	512	QFN33	4x4	√	NK-M031TB	NLG-32T
M031TC1AE	48	1.8	3.6	-40	105	27	2	32	4	2	4	6	-	-	10	-	3	-	2	-	-	1	-	512	QFN33	4x4	√	NK-M031TC	NLG-32T
M031TD2AE	48	1.8	3.6	-40	105	27	2	64	8	5	4	12	-	-	10	2	3	-	2	-	1	1	-	512	QFN33	4x4	√	NK-M031SD	NLG-32T

M032 Series

The NuMicro® M032 series embedded with the Arm® Cortex®-M0 core, designed for 1.8V to 3.6V industrial applications. it equipped high performance and plenty peripher, such as 2 Msps ADC, up to 144 MHz PWM. It also supports IEC60730 safety specifications and USB support FS Device mode (crystal-less) . Built-in 16 to 512 Kbytes Flash, 2 to 96 Kbytes SRAM.

Potential Applications: Mouse, Keyboard, Gaming Monitor, HMI, IoT Node Device, Security System, Motor Control, Communication System, etc.

• M032 Series

Key Features: Configurable up to 10 UART, 144 MHz PWM, 2 MSPS ADC, 24 MHz SPI, 1-wire UART, OTA, USB full speed (Crystal-less), SPROM.

Part No.	System						Memory				Timer				Analog		Connectivity										Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	RTC	ADC (12-bit)	ACMP	UART	QSPI	I²C	SMBUS (Supported by I2C)	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	EBI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
M032EC1AE	48	1.8	3.6	-40	105	19	2	32	4	2	2	-	6	-	9	-	1	-	-	-	1	1	1	√	-	512	TSSOP28	4.4x9.7	√	NK-M032TC	NLG-28E
M032FC1AE	48	1.8	3.6	-40	105	11	2	32	4	2	2	-	6	-	3	-	1	-	-	-	1	1	1	√	-	512	TSSOP20	4.4x6.5	√	NK-M032TC	NLG-20F
M032KG6AE	72	1.8	3.6	-40	105	107	4	256	32	4	4	12	12	√	16	2	6	1	2	1	2	1	1	√	√	2048	LQFP128	14x14	√	NK-M032KG	NLG-128KX
M032KG8AE	72	1.8	3.6	-40	105	107	4	256	64	4	4	12	12	√	16	2	6	1	2	1	2	1	1	√	√	2048	LQFP128	14x14	√	NK-M032KG	NLG-128KX
M032KIAAE	72	1.8	3.6	-40	105	107	8	512	96	8	4	12	12	√	16	2	8	1	2	1	2	1	1	√	√	2048	LQFP128	14x14	√	NK-M032KI	NLG-128KX
M032LC2AE	48	1.8	3.6	-40	105	38	2	32	8	2	4	-	12	-	12	-	1	1	-	-	2	1	1	√	-	512	LQFP48	7x7	√	NK-M032LD	NLG-48L
M032LD2AE	48	1.8	3.6	-40	105	38	2	64	8	2	4	-	12	-	12	-	1	1	-	-	2	1	1	√	-	512	LQFP48	7x7	√	NK-M032LD	NLG-48L
M032LE3AE	48	1.8	3.6	-40	105	38	4	128	16	4	4	12	-	-	12	2	3	-	2	0	1	1	1	√	√	512	LQFP48	7x7	√	NK-M032SE	NLG-48L
M032LG6AE	72	1.8	3.6	-40	105	38	4	256	32	4	4	12	12	√	12	2	6	1	2	1	2	1	1	√	√	2048	LQFP48	7x7	√	NK-M032KG	NLG-48L
M032LG8AE	72	1.8	3.6	-40	105	38	4	256	64	4	4	12	12	√	12	2	6	1	2	1	2	1	1	√	√	2048	LQFP48	7x7	√	NK-M032KG	NLG-48L
M032SE3AE	48	1.8	3.6	-40	105	51	4	128	16	4	4	12	-	-	16	2	3	-	2	0	1	1	1	√	√	512	LQFP64	7x7	√	NK-M032SE	NLG-64S
M032SG6AE	72	1.8	3.6	-40	105	51	4	256	32	4	4	12	12	√	16	2	6	1	2	1	2	1	1	√	√	2048	LQFP64	7x7	√	NK-M032KG	NLG-64S
M032SG8AE	72	1.8	3.6	-40	105	51	4	256	64	4	4	12	12	√	16	2	6	1	2	1	2	1	1	√	√	2048	LQFP64	7x7	√	NK-M032KG	NLG-64S
M032SIAAE	72	1.8	3.6	-40	105	51	8	512	96	8	4	12	12	√	16	2	8	1	2	1	2	1	1	√	√	2048	LQFP64	7x7	√	NK-M032KI	NLG-64S
M032TC1AE	48	1.8	3.6	-40	105	23	2	32	4	2	2	-	6	-	10	-	1	-	-	-	1	1	1	√	-	512	QFN33	4x4	√	NK-M032TC	NLG-32T
M032TD2AE	48	1.8	3.6	-40	105	23	2	64	8	2	4	-	12	-	10	-	1	1	-	-	2	1	1	√	-	512	QFN33	4x4	√	NK-M032LD	NLG-32T

M031BT Series

The NuMicro® M031BT series is 32-bit microcontroller based on Arm® Cortex®-M0 core with built-in Bluetooth Low Energy 5.0 (BLE 5.0), designed for 1.8V~3.6V industrial applications. It equipped with high performance and plenty of peripherals, such as 2 Msps ADC, up to 96 MHz PWM. Built-in 64/128 Kbytes Flash, 8/16 Kbytes SRAM.

Potential Applications: IoT edge device, Personal healthcare device with wireless connectivity, Smart home appliance with remote control, Dual modes gaming keyboard/ mouse, Assess tracking devices, etc.

• M031BT Series

Key Features: Bluetooth Low Energy 5.0, 96 MHz PWM, 2 Msps ADC, 24 MHz SPI, Support 1-wire UART, Security Protection ROM (SPROM).

Part No.	System						Memory				Timer					Analog		Connectivity						Security	Wireless	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	PDMA (ch)	WDT	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	RTC	ADC (12-bit)	ACMP	UART	QSPI	SMBUS (Supported by I2C)	USCI	USB FS Device	USB FS Device Crystal-less	SPROM (Byte)	BLE	Package Type	Package Size	Mass Production	EVB	MP Programmer
M031BTYD2AN	48	1.8	3.6	-40	85	29	2	64	Configurable	5	√	4	12	-	-	16	2	3	-	0	1	-	-	512	√	QFN48	5x5	√	NK-M031BTYE	NLG-M031BTY
M031BTYE3AN	48	1.8	3.6	-40	85	29	4	128	Configurable	5	√	4	12	-	-	16	2	3	-	0	1	-	-	512	√	QFN48	5x5	√	NK-M031BTYE	NLG-M031BTY

M032BT Series

The NuMicro® M032BT series is 32-bit microcontroller based on Arm® Cortex®-M0 core with built-in Bluetooth Low Energy 5.0 (BLE 5.0), designed for 1.8V~3.6V industrial applications. It equipped with high performance and plenty of peripherals, such as 2M sps ADC, up to 144MHz PWM. Built-in 256/512 Kbytes Flash, 64/96 Kbytes SRAM.

Potential Applications: Motor control and access device, IoT edge device, Personal healthcare device with wireless connectivity, Smart home appliances, etc.

• M032BT Series

Key Features: Bluetooth Low Energy 5.0, 144 MHz PWM, 2 Msps ADC, OTA, USB full speed (Crystal-less)

Part No.	System						Memory				Timer					Analog		Connectivity						Security	Wireless	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	PDMA (ch)	WDT	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	RTC	ADC (12-bit)	ACMP	UART	QSPI	SMBUS (Supported by I2C)	USCI	USB FS Device	USB FS Device Crystal-less	SPROM (Byte)	BLE	Package Type	Package Size	Mass Production	EVB	MP Programmer
M032BTAG8AN	72	1.8	3.6	-40	85	43	4	256	Configurable	7	√	4	12	12	v	16	2	6	1	1	2	1	v	2048	√	QFN68	8x8	√	NK-M032BTAI	NLG-M032BTA
M032BTAIAAN	72	1.8	3.6	-40	85	43	8	512	Configurable	9	√	4	12	12	v	16	2	8	1	1	2	1	v	2048	√	QFN68	8x8	√	NK-M032BTAI	NLG-M032BTA

M071 Series

The NuMicro® M071 series microcontroller is 32-bit microcontroller based on Arm® Cortex®-M0 and is designed for HA applications with 0.65/0.8mm pin-pitch. The series provides 16 to 256 Kbytes Flash memory, 8 to 20 Kbytes SRAM, rich communication interfaces (such as USB, UART, SPI, I²C... etc.), and comes with ADC, comparator and other rich analog interfaces.

Potential Applications: Home appliance, Motor control, White goods, Industrial Control

• M071 Series

Key Features: Hardware Divider, VAI, RTC, EBI, PDMA

Part No.	System						Memory				Timer				Analog			Connectivity										Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	Timer/ PWM	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Internal Voltage Reference	UART	LIN	ISO-7816-3	SPI	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	EBI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
M071MC2AE	50	2.5	5.5	-40	105	38	4	36	8	-	4	-	12	-	8	-	-	4	3	-	1	1	-	-	-	-	-	-	LQFP44	10x10	√	NK-M071MD	NLG-M071M
M071MD2AE	50	2.5	5.5	-40	105	38	4	68	8	-	4	-	12	-	8	-	-	4	3	-	1	1	-	-	-	-	-	-	LQFP44	10x10	√	NK-M071MD	NLG-M071M
M071QE4AE	72	2.5	5.5	-40	105	67	4	128	20	5	-	4	12	√	17	2	√	3	3	2	-	2	3	2	1	√	√	2048	LQFP80	14x14	√	NK-M071VG	NLG-M071Q
M071QG4AE	72	2.5	5.5	-40	105	67	4	256	20	5	-	4	12	√	17	2	√	3	3	2	-	2	3	2	1	√	√	2048	LQFP80	14x14	√	NK-M071VG	NLG-M071Q
M071R1D3AE	72	2.5	5.5	-40	105	45	8	64	16	9	4	-	6	√	12	-	-	3	3	-	2	2	-	-	1	√	√	-	LQFP64	14x14	√	NK-M071R1E	NLG-M071R1
M071R1E3AE	72	2.5	5.5	-40	105	45	8	128	16	9	4	-	6	√	12	-	-	3	3	-	2	2	-	-	1	√	√	-	LQFP64	14x14	√	NK-M071R1E	NLG-M071R1
M071SD3AE	72	2.5	5.5	-40	105	45	8	64	16	9	4	-	6	√	12	-	-	3	3	-	2	2	-	-	1	√	√	-	LQFP64	7x7	√	NK-M071R1E	NLG-M071S
M071SE3AE	72	2.5	5.5	-40	105	45	8	128	16	9	4	-	6	√	12	-	-	3	3	-	2	2	-	-	1	√	√	-	LQFP64	7x7	√	NK-M071R1E	NLG-M071S
M071VG4AE	72	2.5	5.5	-40	105	85	4	256	20	5	-	4	12	√	20	2	√	3	3	2	-	2	3	2	1	√	√	2048	LQFP100	14x14	√	NK-M071VG	NLG-M071V

Mini51 Series

The NuMicro® Mini51 series is based on the Arm® Cortex®-M0 core runs at up to 50 MHz with 4 to 32 Kbytes Flash memory and 2/4 Kbytes SRAM. The Mini51 series is equipped with plenty of ADC and PWM for different industrial applications, supporting Low Voltage Reset , Brown-Out Detector , 96-bit Unique ID, and 128-bit Unique Customer ID.

Potential Applications: Wireless Chargers, Home Appliances, Security/ Alarms, Temperature Sensors, Motors, Industrial Control, etc.

• Mini51 Series

Key Features: Configurable Data Flash, 2 Kbytes ISP loader

Part No.	System						Memory			Timer				Analog					Connectivity				Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ECAP	ADC (10-bit)	ADC (12-bit)	ACMP	PGA	Internal Voltage Reference	UART	SPI	I²C	USCI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
MINI51FDE	24	2.5	5.5	-40	105	17	2	4	2	2	3	-	-	4	-	-	-	-	1	1	1	-	-	TSSOP20	4.4x6.5	√	NT-Mini51F	NLG-Mini51F
MINI51LDE	24	2.5	5.5	-40	105	30	2	4	2	2	6	-	-	8	-	2	-	-	1	1	1	-	-	LQFP48	7x7	√	NT-Mini51L	NLG-Mini51L
MINI51TDE	24	2.5	5.5	-40	105	29	2	4	2	2	6	-	-	8	-	2	-	-	1	1	1	-	-	QFN33	4x4	√	NT-Mini51L	NLG-Mini51T
MINI51ZDE	24	2.5	5.5	-40	105	29	2	4	2	2	6	-	-	8	-	2	-	-	1	1	1	-	-	QFN33	5x5	√	NT-Mini51L	NLG-Mini51Z

• Mini55 Series

Key Features: Supports Hardware Divider

Part No.	System						Memory			Timer				Analog					Connectivity				Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ECAP	ADC (10-bit)	ADC (12-bit)	ACMP	PGA	Internal Voltage Reference	UART	SPI	I²C	USCI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
MINI52FDE	24	2.5	5.5	-40	105	17	2	8	2	2	3	-	-	4	-	-	-	-	1	1	1	-	-	TSSOP20	4.4x6.5	√	NT-Mini51F	NLG-Mini51F
MINI52LDE	24	2.5	5.5	-40	105	30	2	8	2	2	6	-	-	8	-	2	-	√	1	1	1	-	-	LQFP48	7x7	√	NT-Mini51L	NLG-Mini51L
MINI52TDE	24	2.5	5.5	-40	105	29	2	8	2	2	6	-	-	8	-	2	-	-	1	1	1	-	-	QFN33	4x4	√	NT-Mini51L	NLG-Mini51T
MINI52ZDE	24	2.5	5.5	-40	105	29	2	8	2	2	6	-	-	8	-	2	-	-	1	1	1	-	-	QFN33	5x5	√	NT-Mini51L	NLG-Mini51Z

• Mini57 Series

Key Features: 2 Sample and Hold ADC, Programmable Gain Amplifier

Part No.	System						Memory			Timer				Analog					Connectivity				Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM(KB)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ECAP	ADC (10-bit)	ADC (12-bit)	ACMP	PGA	Internal Voltage Reference	UART	SPI	I²C	USCI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
MINI54FDE	24	2.5	5.5	-40	105	17	2	16	2	2	3	-	-	4	-	-	-	√	1	1	1	-	-	TSSOP20	4.4x6.5	√	NT-Mini51F	NLG-Mini51F
MINI54LDE	24	2.5	5.5	-40	105	30	2	16	2	2	6	-	-	8	-	2	-	√	1	1	1	-	-	LQFP48	7x7	√	NT-Mini51L	NLG-Mini51L
MINI54TDE	24	2.5	5.5	-40	105	29	2	16	2	2	6	-	-	8	-	2	-	√	1	1	1	-	-	QFN33	4x4	√	NT-Mini51L	NLG-Mini51T
MINI54ZDE	24	2.5	5.5	-40	105	29	2	16	2	2	6	-	-	8	-	2	-	√	1	1	1	-	-	QFN33	5x5	√	NT-Mini51L	NLG-Mini51Z

• Mini58 Series

Key Features: Configurable Data Flash

Part No.	System						Memory			Timer				Analog					Connectivity				Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ECAP	ADC (10-bit)	ADC (12-bit)	ACMP	PGA	Internal Voltage Reference	UART	SPI	I²C	USCI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
MINI55LDE	48	2.1	5.5	-40	105	33	2	17.5	2	2	6	-	-	12	-	2	-	√	2	1	1	-	-	LQFP48	7x7	√	NT-Mini55L	NLG-Mini51L
MINI55TDE	48	2.1	5.5	-40	105	29	2	17.5	2	2	6	-	-	12	-	2	-	√	2	1	1	-	-	QFN33	4x4	√	NT-Mini55L	NLG-Mini51T

M051 Series

The NuMicro® M051 series is based on the Arm® Cortex®-M0 core, equipped with plenty of resources and peripherals, such as 8 to 256 Kbytes Flash, 4 to 20 Kbytes SRAM, and 4/ 8 Kbytes Flash loader memory for In-System Programming (ISP), up to 20-channel ADC, and 14-channel PWM. It supports Low Voltage Reset , Brown-Out Detector , 96-bit Unique ID and 128-bit Unique Customer ID.

Potential Applications: Industrial Control, Security/ Alarms, Temperature Sensors, Motors, etc.

• M051 Series

Key Features: 4 Kbytes Data Flash, Hardware Divider, 4x comparators

Part No.	System						Memory				Timer				Analog		Connectivity					Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	ADC (12-bit)	ACMP	UART	LIN	SPI	I²C	EBI	Package Type	Package Size	Mass Production	EVB	MP Programmer
M052LBN	50	2.5	5.5	-40	85	40	4	8	4	4	√	-	4	8	8	2	2	2	2	1	√	LQFP48	7x7	√	NT-M051L	NLG-M051L
M052LDE	50	2.5	5.5	-40	105	40	4	8	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NT-M051L	NLG-M051L
M052LDN	50	2.5	5.5	-40	85	40	4	8	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NT-M051L	NLG-M051L
M052ZBN	50	2.5	5.5	-40	85	24	4	8	4	4	√	-	4	5	5	2	2	2	1	1	-	QFN33	5X5	√	NT-M051L	NLG-M051Z
M052ZDE	50	2.5	5.5	-40	105	24	4	8	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NT-M051L	NLG-M051Z
M052ZDN	50	2.5	5.5	-40	85	24	4	8	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NT-M051L	NLG-M051Z
M054LBN	50	2.5	5.5	-40	85	40	4	16	4	4	√	-	4	8	8	2	2	2	2	1	√	LQFP48	7x7	√	NT-M051L	NLG-M051L
M054LDE	50	2.5	5.5	-40	105	40	4	16	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NT-M051L	NLG-M051L
M054LDN	50	2.5	5.5	-40	85	40	4	16	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NT-M051L	NLG-M051L
M054ZBN	50	2.5	5.5	-40	85	24	4	16	4	4	√	-	4	5	5	2	2	2	1	1	-	QFN33	5X5	√	NT-M051L	NLG-M051Z
M054ZDE	50	2.5	5.5	-40	105	24	4	16	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NT-M051L	NLG-M051Z
M054ZDN	50	2.5	5.5	-40	85	24	4	16	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NT-M051L	NLG-M051Z
M058LBN	50	2.5	5.5	-40	85	40	4	32	4	4	√	-	4	8	8	2	2	2	2	1	√	LQFP48	7x7	√	NT-M051L	NLG-M051L
M058LDE	50	2.5	5.5	-40	105	40	4	32	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NT-M051L	NLG-M051L
M058LDN	50	2.5	5.5	-40	85	40	4	32	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NT-M051L	NLG-M051L
M058ZBN	50	2.5	5.5	-40	85	24	4	32	4	4	√	-	4	5	5	2	2	2	1	1	-	QFN33	5X5	√	NT-M051L	NLG-M051Z
M058ZDE	50	2.5	5.5	-40	105	24	4	32	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NT-M051L	NLG-M051Z
M058ZDN	50	2.5	5.5	-40	85	24	4	32	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NT-M051L	NLG-M051Z
M0516LBN	50	2.5	5.5	-40	85	40	4	64	4	4	√	-	4	8	8	2	2	2	2	1	√	LQFP48	7x7	√	NT-M051L	NLG-M051L
M0516LDE	50	2.5	5.5	-40	105	40	4	64	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NT-M051L	NLG-M051L
M0516LDN	50	2.5	5.5	-40	85	40	4	64	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NT-M051L	NLG-M051L
M0516ZBN	50	2.5	5.5	-40	85	24	4	64	4	4	√	-	4	5	5	2	2	2	1	1	-	QFN33	5X5	√	NT-M051L	NLG-M051Z
M0516ZDE	50	2.5	5.5	-40	105	24	4	64	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NT-M051L	NLG-M051Z
M0516ZDN	50	2.5	5.5	-40	85	24	4	64	4	4	v	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NT-M051L	NLG-M051Z

• M0518 Series

Key Features: Configurable Data Flash, 24-channel 100 MHz PWM output, 6x UART

Part No.	System						Memory					Timer					Analog	Connectivity			Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ADC (12-bit)	UART	SPI	I²C	Package Type	Package Size	Mass Production	EVB	MP Programmer
M0518LC2AE	50	2.5	5.5	-40	105	42	4	36	Configurable	8	-	√	√	4	12	12	8	6	1	2	LQFP48	7x7	√	NT-M0518S	NLG-M0518L
M0518LD2AE	50	2.5	5.5	-40	105	42	4	68	Configurable	8	-	√	√	4	12	12	8	6	1	2	LQFP48	7x7	√	NT-M0518S	NLG-M0518L
M0518SC2AE	50	2.5	5.5	-40	105	56	4	36	Configurable	8	-	√	√	4	12	12	8	6	1	2	LQFP64	7x7	√	NT-M0518S	NLG-M0518S
M0518SD2AE	50	2.5	5.5	-40	105	56	4	68	Configurable	8	-	√	√	4	12	12	8	6	1	2	LQFP64	7x7	√	NT-M0518S	NLG-M0518S

• M0519 Series

Key Features: Hardware Divider, Dual ADC, 2x OPAs, 3x Comparators

Part No.	System						Memory				Timer						Analog		Connectivity				Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	WDT	WWDT	Timer (32-bit)	BPWM (16-bit)	EPWM (16-bit)	ECAP	ADC (12-bit)	ACMP	UART	LIN	SPI	I²C	Package Type	Package Size	Mass Production	EVB	MP Programmer
M0519LD3AE	72	2.5	5.5	-40	105	38	8	64	4	16	√	√	4	2	4	-	16	2	2	2	1	1	LQFP48	7X7	√	NT-M0519V	NLG-M0519L
M0519LE3AE	72	2.5	5.5	-40	105	38	8	128	Configurable	16	√	√	4	2	4	-	16	2	2	2	1	1	LQFP48	7X7	√	NT-M0519V	NLG-M0519L
M0519SD3AE	72	2.5	5.5	-40	105	51	8	64	4	16	√	√	4	2	8	-	16	2	2	2	2	1	LQFP64	7X7	√	NT-M0519V	NLG-M0519S
M0519SE3AE	72	2.5	5.5	-40	105	51	8	128	Configurable	16	√	√	4	2	8	-	16	2	2	2	2	1	LQFP64	7X7	√	NT-M0519V	NLG-M0519S
M0519VE3AE	72	2.5	5.5	-40	105	82	8	128	Configurable	16	√	√	4	2	12	6	16	3	2	2	3	1	LQFP100	14X14	√	NT-M0519V	NLG-M0519V

• M0564 Series

Key Features: Configurable Data Flash, Hardware Divider, Up to 8x UART, 144 MHz PWM output, 800 kSPS ADC

Part No.	System						Memory					Timer					Analog		Connectivity						Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer/ PWM	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	UART	ISO-7816-3	I²C	USCI	SPI/ I²S	EBI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
M0564LE4AE	72	2.5	5.5	-40	105	41	4	128	Configurable	20	5	√	√	4	12	√	10	2	3	2	2	3	2	√	2048	LQFP48	7x7	√	NT-M0564V	NLG-M0564L
M0564LG4AE	72	2.5	5.5	-40	105	41	4	128	Configurable	20	5	√	√	4	12	√	10	2	3	2	2	3	2	√	2048	LQFP48	7x7	√	NT-M0564V	NLG-M0564L
M0564SE4AE	72	2.5	5.5	-40	105	53	4	256	Configurable	20	5	√	√	4	12	√	15	2	3	2	2	3	2	√	2048	LQFP64	7x7	√	NT-M0564V	NLG-M0564S
M0564SG4AE	72	2.5	5.5	-40	105	53	4	128	Configurable	20	5	√	√	4	12	√	15	2	3	2	2	3	2	√	2048	LQFP64	7x7	√	NT-M0564V	NLG-M0564S
M0564VG4AE	72	2.5	5.5	-40	105	85	4	256	Configurable	20	5	√	√	4	12	√	20	2	3	2	2	3	2	√	2048	LQF100	14X14	√	NT-M0564V	NLG-M0564V

NUC029 Series

The NuMicro® NUC029 series is designed for industrial applications supported by the robust noise immunity EFT features. It is based on the Arm® Cortex®-M0 core with 5V operating voltage. NUC029 series provides 16 to 256 Kbytes Flash, 2 to 20 Kbytes SRAM, and high performance peripherals such as 12-bit ADC, UART, PWM, SPI, I²C, etc. Specific parts support hardware divider, comparator, and USB 2.0 full speed device (Crystal-less).

Potential Applications: Industrial Control, High-precision Meters, HMI, Motor Control, Communication Systems, etc.

• NUC029 Series

Key Features: 5V industrial control, Robust noise immunity EFT 4.4 kV, strong ESD up to HBM 8 kV.

Part No.	System						Memory						Timer					Analog		Connectivity								Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min)	Operating Voltage (max)	Operating Temperature (min)	Operating Temperature (max)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	Timer/ PWM	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	ACMP	UART	SPI	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	EBI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC029FAE	24	2.5	5.5	-40	105	17	2	16	Configurable	2	-	2	3	-	4	-	2	1	1	-	-	-	-	-	√	-	TSSOP20	4.4x6.5	√	NT-NUC029F	NLG-NUC029FA
NUC029KGE	72	2.5	5.5	-40	105	86	4	256	Configurable	20	5	4	12	√	-	20	2	3	-	2	3	2	1	√	√	2048	LQFP128	14x14	√	NT-NUC029SG	NLG-NUC029KG
NUC029LAN	50	2.5	5.5	-40	85	40	4	64	4	4	-	4	8	-	-	8	4	2	2	-	-	-	-	-	√	-	LQFP48	7x7	√	NT-NUC029L	NLG-NUC029LD
NUC029LDE	50	2.5	5.5	-40	105	42	4	68	Configurable	20	-	4	12	-	-	8	-	4	1	-	-	-	-	-	-	-	LQFP48	7x7	√	NT-NUC029SD	NLG-NUC029LD
NUC029LEE	72	2.5	5.5	-40	105	31	8	128	Configurable	16	9	4	4	√	-	10	-	2	1	-	-	-	1	√	√	-	LQFP48	7x7	√	NT-NUC029SE	NLG-NUC029LE
NUC029LGE	72	2.5	5.5	-40	105	35	4	256	Configurable	20	5	4	10	√	-	9	2	3	-	2	3	2	1	√	√	2048	LQFP48	7x7	√	NT-NUC029SG	NLG-NUC029LG
NUC029NAN	50	2.5	5.5	-40	85	40	4	64	4	4	-	4	8	-	-	8	4	2	2	-	-	-	-	-	√	-	QFN48	7x7	√	NT-NUC029L	NLG-NUC029NA
NUC029SDE	50	2.5	5.5	-40	105	56	4	68	Configurable	20	-	4	12	-	-	8	-	4	1	-	-	-	-	-	-	-	LQFP64	7x7	√	NT-NUC029SD	NLG-NUC029SD
NUC029SEE	72	2.5	5.5	-40	105	45	8	128	Configurable	16	9	4	6	√	-	12	-	3	2	-	-	-	1	√	√	-	LQFP64	7x7	√	NT-NUC029SE	NLG-NUC029SE
NUC029SGE	72	2.5	5.5	-40	105	49	4	256	Configurable	20	5	4	12	√	-	15	2	3	-	2	3	2	1	√	√	2048	LQFP64	7x7	√	NT-NUC029SG	NLG-NUC029SG
NUC029TAN	50	2.5	5.5	-40	85	24	4	32	4	4	-	4	5	-	-	5	3	2	1	-	-	-	-	-	√	-	QFN33	4x4	√	NT-NUC029L	NLG-NUC029TA
NUC029ZAN	50	2.5	5.5	-40	85	24	4	64	4	4	-	4	5	-	-	5	3	2	1	-	-	-	-	-	√	-	QFN33	5x5	√	NT-NUC029L	NLG-NUC029ZA

NUC121 Series

The NuMicro® NUC121 series is based on the Arm® Cortex®-M0 core with 32 to 256 Kbytes Flash, 8 to 20 Kbytes SRAM, and 4 Kbytes Flash loader memory for In-System Programming (ISP). This series is a standard USB series supporting crystal-less (except NUC123). 48 MHz high speed RC oscillator supports crystal-less USB transfer and 24-channel PWM/BPWM supports external components control. In addition, NUC121 series provides plenty of selections with up to 24-channel PWM and 20-channel ADC.

Key Features: Over 4 Kbytes ISP loader, USB 2.0 full speed device crystal-less (except NUC123). NUC125/ NUC126 supports voltage adjustable interface (VAI) with individual I/O (1.8V to 5.5V) connecting to the external components allowing flexbile for product design.
Potential Applications: USB Composite Devices, Gaming Mouse/ Keyboards/ Pads, USB Type-C Earphones, Industrial Automation, IoT devices, etc.

• NUC121 Series

Part No.	System						Memory					Timer					Analog	Connectivity							Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min)	Operating Voltage (max)	Operating Temperature (min)	Operating Temperature (max)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ADC (12-bit)	UART	LIN	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC121LC2AE	50	2.5	5.5	-40	105	38	4.5	32	Configurable	8	5	√	√	4	24	14	10	1	1	2	1	1	1	√	512	LQFP48	7x7	√	NT-NUC121S	NLG-NUC121L
NUC121SC2AE	50	2.5	5.5	-40	105	52	4.5	32	Configurable	8	5	√	√	4	24	17	12	1	1	2	1	1	1	√	512	LQFP64	7x7	√	NT-NUC121S	NLG-NUC121S
NUC121ZC2AE	50	2.5	5.5	-40	105	22	4.5	32	Configurable	8	5	√	√	4	17	7	4	1	1	2	1	1	1	√	512	QFN33	5x5	√	NT-NUC121S	NLG-NUC121Z

• NUC125 Series

Key Features: Voltage Adjustable Interface from 1.8V to 5.5V, up to 12-channel ADC

Part No.	System						Memory					Timer					Analog	Connectivity							Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ADC (12-bit)	UART	LIN	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC125LC2AE	50	2.5	5.5	-40	105	37	4.5	32	Configurable	8	5	√	√	4	23	13	9	1	1	2	1	1	1	√	512	LQFP48	7x7	√	NT-NUC125S	NLG-NUC125L
NUC125SC2AE	50	2.5	5.5	-40	105	51	4.5	32	Configurable	8	5	√	√	4	23	16	11	1	1	2	1	1	1	√	512	LQFP64	7x7	√	NT-NUC125S	NLG-NUC125S
NUC125ZC2AE	50	2.5	5.5	-40	105	22	4.5	32	Configurable	8	5	√	√	4	17	7	4	1	1	2	1	1	1	√	512	QFN33	5x5	√	NT-NUC125S	NLG-NUC125Z

• NUC123 Series

Part No.	System						Memory					Timer				Analog	Connectivity						Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	ADC (10-bit)	UART	SPI	I²C	I²S	PS/2 Device	USB FS Device	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC123LC2AE1	72	2.5	5.5	-40	105	36	4	36	Configurable	12	6	√	√	4	4	8	2	3	2	1	1	1	LQFP48	7x7	√	NK-NUC123SE	NLG-NUC123L
NUC123LC2AN1	72	2.5	5.5	-40	85	36	4	36	Configurable	12	6	√	√	4	4	8	2	3	2	1	1	1	LQFP48	7x7	√	NK-NUC123SE	NLG-NUC123L
NUC123LD4AE0	72	2.5	5.5	-40	105	36	4	68	Configurable	20	6	√	√	4	4	8	2	3	2	1	1	1	LQFP48	7x7	√	NK-NUC123SE	NLG-NUC123L
NUC123LD4AN0	72	2.5	5.5	-40	85	36	4	68	Configurable	20	6	√	√	4	4	8	2	3	2	1	1	1	LQFP48	7x7	√	NK-NUC123SE	NLG-NUC123L
NUC123SC2AE1	72	2.5	5.5	-40	105	47	4	36	Configurable	12	6	√	√	4	4	8	2	3	2	1	1	1	LQFP64	7x7	√	NK-NUC123SE	NLG-NUC123S
NUC123SC2AN1	72	2.5	5.5	-40	85	47	4	36	Configurable	12	6	√	√	4	4	8	2	3	2	1	1	1	LQFP64	7x7	√	NK-NUC123SE	NLG-NUC123S
NUC123SD4AE0	72	2.5	5.5	-40	105	47	4	68	Configurable	20	6	√	√	4	4	8	2	3	2	1	1	1	LQFP64	7x7	√	NK-NUC123SE	NLG-NUC123S
NUC123SD4AN0	72	2.5	5.5	-40	85	47	4	68	Configurable	20	6	√	√	4	4	8	2	3	2	1	1	1	LQFP64	7x7	√	NK-NUC123SE	NLG-NUC123S
NUC123ZC2AE1	72	2.5	5.5	-40	105	20	4	36	Configurable	12	6	√	√	4	3	3	1	3	1	1	-	1	QFN33	5x5	√	NK-NUC123SE	NLG-NUC123Z
NUC123ZC2AN1	72	2.5	5.5	-40	85	20	4	36	Configurable	12	6	√	√	4	2	3	1	3	1	1	-	1	QFN33	5x5	√	NK-NUC123SE	NLG-NUC123Z
NUC123ZD4AE0	72	2.5	5.5	-40	105	20	4	68	Configurable	20	6	√	√	4	3	3	1	3	1	1	-	1	QFN33	5x5	√	NK-NUC123SE	NLG-NUC123Z
NUC123ZD4AN0	72	2.5	5.5	-40	85	20	4	68	Configurable	20	6	√	√	4	2	3	1	3	1	1	-	1	QFN33	5x5	√	NK-NUC123SE	NLG-NUC123Z

• NUC126 Series

Key Features: Up to 12-channel 144 MHz PWM, 800 kSPS 20-channel ADC, Hardware Divider.

Part No.	System						Memory					Timer						Analog	Connectivity								Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer/ PWM	PWM (16-bit)	RTC	BPWM (16-bit)	ADC (12-bit)	UART	ISO-7816-3	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	EBI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC126LE4AE	72	2.5	5.5	-40	105	35	4	128	Configurable	20	5	v	√	4	10	√	-	9	3	2	2	3	2	1	√	√	2048	LQFP48	7x7	√	NT-NUC126V	NLG-NUC126L
NUC126LG4AE	72	2.5	5.5	-40	105	49	4	256	Configurable	20	5	v	√	4	10	√	-	9	3	2	2	3	2	1	√	√	2048	LQFP48	7x7	√	NT-NUC126V	NLG-NUC126L
NUC126NE4AE	72	2.5	5.5	-40	105	35	4	128	Configurable	20	5	v	√	4	10	√	-	9	3	2	2	3	2	1	√	√	2048	QFN48	7x7	√	NT-NUC126V	NLG-NUC126N
NUC126SE4AE	72	2.5	5.5	-40	105	49	4	128	Configurable	20	5	v	√	4	12	√	-	15	3	2	2	3	2	1	√	√	2048	LQFP64	7x7	√	NT-NUC126V	NLG-NUC126S
NUC126SG4AE	72	2.5	5.5	-40	105	49	4	256	Configurable	20	5	v	√	4	12	√	-	15	3	2	2	3	2	1	√	√	2048	LQFP64	7x7	√	NT-NUC126V	NLG-NUC126S
NUC126VG4AE	72	2.5	5.5	-40	105	81	4	256	Configurable	20	5	v	√	4	12	√	-	20	3	2	2	3	2	1	√	√	2048	LQFP100	14x14	√	NT-NUC126V	NLG-NUC126V

• NUC1262 Series

Key Features: Up to 10-channel LED Light Strip Interface (LLSI), Up to 24-channel 72MHz PWM, Up to 9-channel 50mA high sink current, 800kSPS 8-channel ADC, Support 10-channel PDMA

Part No.	System							Memory					Timer				Analog	Connectivity					Security	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer/ PWM	PWM (16-bit)	ADC (12-bit)	UART	I²C	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	SPROM (Byte)	Package Type	Package Size	Mass Production	Evaluation Board (Ordering No.)	Mass Production Programmer
NUC1262LE4AE	Cortex-M23	72	2.5	5.5	-40	105	37	4	128	Configurable	20	10	√	√	4	24	8	2	2	2	1	√	2048	LQFP48	7x7	√	NK-NUC1262SE	NLG-NUC126L
NUC1262NE4AE	Cortex-M23	72	2.5	5.5	-40	105	37	4	128	Configurable	20	10	√	√	4	24	8	2	2	2	1	√	2048	QFN48	7x7	√	NK-NUC1262SE	NLG-NUC126N
NUC1262SE4AE	Cortex-M23	72	2.5	5.5	-40	105	50	4	128	Configurable	20	10	√	√	4	24	8	2	2	2	1	√	2048	LQFP64	7x7	√	NK-NUC1262SE	NLG-NUC126S

NUC130 CAN Series

The NuMicro® NUC130/131/140/230/240 series with CAN Bus is based on the Arm® Cortex®-M0 core with 32 to 128 Kbytes Flash memory, 4 to 16 Kbytes SRAM, and 4/ 8 Kbytes Flash loader memory for In-System Programming (ISP). This series is designed for CAN applications. It is equipped with a variety of peripherals for general connectivity functions such as LIN, USB 2.0 full speed device, UART, I²C, and ADC. In addition, the NUC130/131/140/230/240 series features Analog Comparator, Low Voltage Reset, and Brown-Out Detector.

NUC130 CAN Series	USB FS	LIN	CAN
NUC131		√	√
NUC130		√	√
NUC140	√	√	√
NUC230		√	√
NUC240	√	√	√

• NUC131 Series

Part No.	System						Memory				Timer					Analog	Connectivity							Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ADC (12-bit)	UART	LIN	SPI	I²C	CAN	LPUART	ISO-7816-3	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC131LC2AE	50	2.5	5.5	-40	105	56	4	36	Configurable	8	√	√	4	12	12	8	6	3	1	2	1	-	-	LQFP 48	7x7	√	NK-NUC131	NLG-NUC131L
NUC131LD2AE	50	2.5	5.5	-40	105	56	4	68	Configurable	8	√	√	4	12	12	8	6	3	1	2	1	-	-	LQFP 48	7x7	√	NK-NUC131	NLG-NUC131L
NUC131SC2AE	50	2.5	5.5	-40	105	42	4	36	Configurable	8	√	√	4	12	12	8	6	3	1	2	1	-	-	LQFP 64	7x7	√	NK-NUC131	NLG-NUC131S
NUC131SD2AE	50	2.5	5.5	-40	105	42	4	68	Configurable	8	√	√	4	12	12	8	6	3	1	2	1	-	-	LQFP 64	7x7	√	NK-NUC131	NLG-NUC131S
NUC1311LC2AE	50	2.5	5.5	-40	105	42	4	36	Configurable	8	√	√	4	12	-	8	4	3	1	1	1	-	-	LQFP 48	7x7	√	NK-NUC1311	NLG-NUC1311
NUC1311LD2AE	50	2.5	5.5	-40	105	42	4	68	Configurable	8	√	√	4	12	-	8	4	3	1	1	1	-	-	LQFP 48	7x7	√	NK-NUC1311	NLG-NUC1311

• NUC130 Series

Part No.	System						Memory					Timer			Analog		Connectivity									Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	Timer (32-bit)	PWM (16-bit)	ADC (12-bit)	ACMP	UART	LIN	SPI	I²C	I²S	CAN	PS/2 Device	EBI	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC130LC1CN	50	2.5	5.5	-40	85	35	4	32	4	4	9	√	4	4	8	1	3	2	1	2	1	1	-	-	LQFP48	7x7	√	NT-NUC140V	NLG-NUC100L
NUC130LD2CN	50	2.5	5.5	-40	85	35	4	64	4	8	9	√	4	4	8	1	3	2	1	2	1	1	-	-	LQFP48	7x7	√	NT-NUC140V	NLG-NUC100L
NUC130LE3CN	50	2.5	5.5	-40	85	35	4	128	Configurable	16	9	√	4	4	8	1	3	2	1	2	1	1	-	-	LQFP48	7x7	√	NT-NUC140V	NLG-NUC100L
NUC130RC1CN	50	2.5	5.5	-40	85	49	4	32	4	4	9	√	4	6	8	2	3	2	2	2	1	1	-	√	LQFP64	10x10	√	NT-NUC140V	NLG-NUC100R
NUC130RD2CN	50	2.5	5.5	-40	85	49	4	64	4	8	9	√	4	6	8	2	3	2	2	2	1	1	-	√	LQFP64	10x10	√	NT-NUC140V	NLG-NUC100R
NUC130RE3CN	50	2.5	5.5	-40	85	49	4	128	Configurable	16	9	√	4	6	8	2	3	2	2	2	1	1	-	√	LQFP64	10x10	√	NT-NUC140V	NLG-NUC100R
NUC130VE3CN	50	2.5	5.5	-40	85	80	4	128	Configurable	16	9	√	4	8	8	2	3	2	4	2	1	1	1	√	LQFP100	14x14	√	NT-NUC140V	NLG-NUC100V

• NUC140 Series

Part No.	System						Memory					Timer				Analog		Connectivity									Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	UART	LIN	SPI	I²C	I²S	CAN	PS/2 Device	USB FS Device	EBI	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC140LC1CN	50	2.5	5.5	-40	85	31	4	32	4	4	9	√	4	4	√	8	1	2	2	1	2	1	1	-	1	-	LQFP48	7x7	√	NT-NUC140V	NLG-NUC100L
NUC140LD2CN	50	2.5	5.5	-40	85	31	4	64	4	8	9	√	4	4	√	8	1	2	2	1	2	1	1	-	1	-	LQFP48	7x7	√	NT-NUC140V	NLG-NUC100L
NUC140LE3CN	50	2.5	5.5	-40	85	31	4	128	Configurable	16	9	√	4	4	√	8	1	2	2	1	2	1	1	-	1	-	LQFP48	7x7	√	NT-NUC140V	NLG-NUC100L
NUC140RC1CN	50	2.5	5.5	-40	85	45	4	32	4	4	9	√	4	4	√	8	2	3	2	2	2	1	1	-	1	√	LQFP64	10x10	√	NT-NUC140V	NLG-NUC100R
NUC140RD2CN	50	2.5	5.5	-40	85	45	4	64	4	8	9	√	4	4	√	8	2	3	2	2	2	1	1	-	1	√	LQFP64	10x10	√	NT-NUC140V	NLG-NUC100R
NUC140RE3CN	50	2.5	5.5	-40	85	45	4	128	Configurable	16	9	√	4	4	√	8	2	3	2	2	2	1	1	-	1	√	LQFP64	10x10	√	NT-NUC140V	NLG-NUC100R
NUC140VE3CN	50	2.5	5.5	-40	85	76	4	128	Configurable	16	9	√	4	8	√	8	2	3	2	4	2	1	1	1	1	√	LQFP100	14x14	√	NT-NUC140V	NLG-NUC100V

• NUC230 Series

Part No.	System						Memory					Timer					Analog		Connectivity									Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	UART	LIN	ISO-7816-3	SPI	I²C	I²S	CAN	PS/2 Device	EBI	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC230LC2AE	72	2.5	5.5	-40	105	35	8	32	4	8	9	√	√	4	4	√	7	1	3	3	2	1	2	1	2	-	-	LQFP48	7x7	√	NT-NUC240V	NLG-NUC200L
NUC230LD2AE	72	2.5	5.5	-40	105	35	8	64	4	8	9	√	√	4	4	√	7	1	3	3	2	1	2	1	2	-	-	LQFP48	7x7	√	NT-NUC240V	NLG-NUC200L
NUC230LE3AE	72	2.5	5.5	-40	105	35	8	128	Configurable	16	9	√	√	4	4	√	7	1	3	3	2	1	2	1	2	-	-	LQFP48	7x7	√	NT-NUC240V	NLG-NUC200L
NUC230SC2AE	72	2.5	5.5	-40	105	49	8	32	4	8	9	√	√	4	6	√	7	2	3	3	2	2	2	1	2	-	√	LQFP64	7x7	√	NT-NUC240V	NLG-NUC200S
NUC230SD2AE	72	2.5	5.5	-40	105	49	8	64	4	8	9	√	√	4	6	√	7	2	3	3	2	2	2	1	2	-	√	LQFP64	7x7	√	NT-NUC240V	NLG-NUC200S
NUC230SE3AE	72	2.5	5.5	-40	105	49	8	128	Configurable	16	9	√	√	4	6	√	7	2	3	3	2	2	2	1	2	-	√	LQFP64	7x7	√	NT-NUC240V	NLG-NUC200S
NUC230VE3AE	72	2.5	5.5	-40	105	83	8	128	Configurable	16	9	√	√	4	8	√	8	2	3	3	3	4	2	1	2	1	√	LQFP100	14x14	√	NT-NUC240V	NLG-NUC200V

Nano100 Series

The NuMicro® Nano100 series supports Ultra-Low power consumption. It is based on the Arm® Cortex®-M0 core with 16 to 128 Kbytes Flash, 4 to 16 Kbytes SRAM, and 4 Kbytes Flash loader memory for In-System Programming (ISP). The Nano series integrates COM/ SEG LCD controller, RTC, ADC, DAC, USB 2.0 full speed device, ISO 7816-3, and rich peripherals, supporting fast wake-up via different interfaces.

Key Features: Ultra-low power and short wake-up time.
Potential Applications: Suitable for battery-powered devices such as Smart Wearable Devices, IoT Devices, Portable Medical Devices, Smart Home Appliances, Security Alarms Monitoring, Mobile Payment Smart Card Readers, GPS Data Collector, Wireless Communication (Zigbee, LoRa, etc.), Node Device, Electronic Shelf Label (ESL), RFID, Smart Heat/ Water/ Gas Meters, etc.

• Nano100 Series

Key Features: Ultra-low power: 200 µA/MHz (Normal), 75 µA/MHz (Idle), 2.5 µA (Power Down, RTC On, RAM retention) and 1 µA (Power Down, RAM retention) and less than 3.5 µs wake-up time

Part No.	System						Memory					Timer					Analog		Connectivity						Package		Status	Package	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	DAC (12-bit)	UART	LIN	ISO-7816-3	SPI	I²C	I²S	Package Type	Package Size	Mass Production	EVB	MP Programmer
NANO100KD3BN	42	1.8	3.6	-40	85	86	4	64	Configurable	16	8	√	√	4	8	√	12	2	2	2	3	3	2	1	LQFP128	14X14	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100K
NANO100KE3BN	42	1.8	3.6	-40	85	86	4	128	Configurable	16	8	√	√	4	8	√	12	2	2	2	3	3	2	1	LQFP128	14X14	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100K
NANO100LC2BN	42	1.8	3.6	-40	85	38	4	32	Configurable	8	8	√	√	4	6	√	7	2	2	2	2	3	2	1	LQFP48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100L
NANO100LD2BN	42	1.8	3.6	-40	85	38	4	64	Configurable	8	8	√	√	4	6	√	7	2	2	2	2	3	2	1	LQFP48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100L
NANO100LD3BN	42	1.8	3.6	-40	85	38	4	64	Configurable	16	8	√	√	4	6	√	7	2	2	2	2	3	2	1	LQFP48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100L
NANO100LE3BN	42	1.8	3.6	-40	85	38	4	128	Configurable	16	8	√	√	4	6	√	7	2	2	2	2	3	2	1	LQFP48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100L
NANO100NC2BN	42	1.8	3.6	-40	85	38	4	32	Configurable	8	8	√	√	4	6	√	7	2	2	2	2	3	2	1	QFN48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100N
NANO100ND2BN	42	1.8	3.6	-40	85	38	4	64	Configurable	8	8	√	√	4	6	√	7	2	2	2	2	3	2	1	QFN48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100N
NANO100ND3BN	42	1.8	3.6	-40	85	38	4	64	Configurable	16	8	√	√	4	6	√	7	2	2	2	2	3	2	1	QFN48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100N
NANO100NE3BN	42	1.8	3.6	-40	85	38	4	128	Configurable	16	8	√	√	4	6	√	7	2	2	2	2	3	2	1	QFN48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100N
NANO100SC2BN	42	1.8	3.6	-40	85	52	4	32	Configurable	8	8	√	√	4	8	√	7	2	2	2	3	3	2	1	LQFP64	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100S
NANO100SD2BN	42	1.8	3.6	-40	85	52	4	64	Configurable	8	8	√	√	4	8	√	7	2	2	2	3	3	2	1	LQFP64	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100S
NANO100SD3BN	42	1.8	3.6	-40	85	52	4	64	Configurable	16	8	√	√	4	8	√	7	2	2	2	3	3	2	1	LQFP64	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100S
NANO100SE3BN	42	1.8	3.6	-40	85	52	4	128	Configurable	16	8	√	√	4	8	√	7	2	2	2	3	3	2	1	LQFP64	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100S

• Nano102 Series

Key Features: Ultra-low power: 150 µA/MHz (Normal), 65 µA/MHz (Idle), 1.5 µA (Power Down, RTC On, RAM retention) and 0.65 µA (Power Down, RAM retention) and less than 3.5 µs wake-up time

Part No.	System						Memory					Timer					Analog			Connectivity				Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	Package Type	Package Size	Mass Production	EVB	MP Programmer
NANO102LB1AN	32	1.8	3.6	-40	85	40	4	16	Configurable	4	4	√	√	4	4	√	7	2	√	2	2	2	2	LQFP48	7x7	√	NT-Nano102S	NLG-Nano112L
NANO102LC2AN	32	1.8	3.6	-40	85	40	4	32	Configurable	8	4	√	√	4	4	√	7	2	√	2	2	2	2	LQFP48	7x7	√	NT-Nano102S	NLG-Nano112L
NANO102SC2AN	32	1.8	3.6	-40	85	58	4	32	Configurable	8	4	√	√	4	4	√	7	2	√	2	2	2	2	LQFP64	7x7	√	NT-Nano102S	NLG-Nano112S
NANO102ZB1AN	32	1.8	3.6	-40	85	27	4	16	Configurable	4	4	√	√	4	4	√	2	2	√	2	1	2	2	QFN33	5x5	√	NT-Nano102S	NLG-Nano102Z
NANO102ZC2AN	32	1.8	3.6	-40	85	27	4	32	Configurable	8	4	√	√	4	4	√	2	2	√	2	1	2	2	QFN33	5x5	√	NT-Nano102S	NLG-Nano102Z

• Nano103 Series

Key Features: Ultra-low power: 180 µA/MHz (Normal), 75 µA/MHz (Idle), 2 µA (Power Down, RTC On, RAM retention)

Part No.	System						Memory					Timer					Analog			Connectivity				Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	Package Type	Package Size	Mass Production	EVB	MP Programmer
NANO103LD3AE	36	1.8	3.6	-40	105	39	4	64	Configurable	16	4	√	√	4	6	√	8	1	√	2	2	4	2	LQFP48	7x7	√	NT-Nano103S	NLG-Nano103L
NANO103SD3AE	36	1.8	3.6	-40	105	53	4	64	Configurable	16	4	√	√	4	6	√	8	1	√	2	2	4	2	LQFP64	7x7	√	NT-Nano103S	NLG-Nano103S
NANO103ZD3AE	36	1.8	3.6	-40	105	26	4	64	Configurable	16	4	√	√	4	2	√	6	1	√	2	2	4	2	QFN33	5x5	√	NT-Nano103S	NLG-Nano103Z

• Nano110 Series

Key Features: Integrates 4x40 & 6x38 COM/SEG LCD controller, ultra-low power: 200 µA/MHz (Normal), 75 µA/MHz (Idle), 2.5 µA (Power Down, RTC On, RAM retention) and 1 µA (Power Down, RAM retention) and less than 3.5 µs wake-up time

Part No.	System						Memory					Timer					Analog		Connectivity						Display	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	DAC (12-bit)	UART	LIN	ISO-7816-3	SPI	I²C	I²S	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
NANO110KC2BN	42	1.8	3.6	-40	85	86	4	32	Configurable	8	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO110KD2BN	42	1.8	3.6	-40	85	86	4	64	Configurable	8	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO110KD3BN	42	1.8	3.6	-40	85	86	4	64	Configurable	16	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO110KE3BN	42	1.8	3.6	-40	85	86	4	128	Configurable	16	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO110RC2BN	42	1.8	3.6	-40	85	51	4	32	Configurable	8	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	10X10	√	NT-Nano130K	NLG-Nano100R
NANO110RD2BN	42	1.8	3.6	-40	85	51	4	64	Configurable	8	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	10X10	√	NT-Nano130K	NLG-Nano100R
NANO110RD3BN	42	1.8	3.6	-40	85	51	4	64	Configurable	16	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	10X10	√	NT-Nano130K	NLG-Nano100R
NANO110RE3BN	42	1.8	3.6	-40	85	51	4	128	Configurable	16	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	10X10	√	NT-Nano130K	NLG-Nano100R
NANO110SC2BN	42	1.8	3.6	-40	85	51	4	32	Configurable	8	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S
NANO110SD2BN	42	1.8	3.6	-40	85	51	4	64	Configurable	8	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S
NANO110SD3BN	42	1.8	3.6	-40	85	51	4	64	Configurable	16	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S
NANO110SE3BN	42	1.8	3.6	-40	85	51	4	128	Configurable	16	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S

• Nano112 Series

Key Features: Integrates 4x36 & 6x34 COM/SEG LCD controller,ultra-low power: 150 µA/MHz (Normal), 65 µA/MHz (Idle), 1.5 µA (Power Down, RTC On, RAM retention) and 0.65 µA (Power Down, RAM retention) and less than 3.5 µs wake-up time

Part No.	System						Memory					Timer					Analog			Connectivity				Display	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
NANO112LB1AN	32	1.8	3.6	-40	85	40	4	16	Configurable	4	4	√	√	4	4	√	7	2	√	2	2	2	2	4x20/6x18	LQFP48	7x7	√	NT-Nano112V	NLG-Nano112L
NANO112LC2AN	32	1.8	3.6	-40	85	40	4	32	Configurable	8	4	√	√	4	4	√	7	2	√	2	2	2	2	4x20/6x18	LQFP48	7x7	√	NT-Nano112V	NLG-Nano112L
NANO112RB1AN	32	1.8	3.6	-40	85	58	4	16	Configurable	4	4	√	√	4	4	√	7	2	√	2	2	2	2	4x32/6x30	LQFP64	10x10	√	NT-Nano112V	NLG-Nano112R
NANO112RC2AN	32	1.8	3.6	-40	85	58	4	32	Configurable	8	4	√	√	4	4	√	7	2	√	2	2	2	2	4x32/6x30	LQFP64	10x10	√	NT-Nano112V	NLG-Nano112R
NANO112SB1AN	32	1.8	3.6	-40	85	58	4	16	Configurable	4	4	√	√	4	4	√	7	2	√	2	2	2	2	4x32/6x30	LQFP64	7x7	√	NT-Nano112V	NLG-Nano112S
NANO112SC2AN	32	1.8	3.6	-40	85	58	4	32	Configurable	8	4	√	√	4	4	√	7	2	√	2	2	2	2	4x32/6x30	LQFP64	7x7	√	NT-Nano112V	NLG-Nano112S
NANO112VC2AN	32	1.8	3.6	-40	85	80	4	32	Configurable	8	4	√	√	4	4	√	8	2	√	2	2	2	2	4x36/6x34	LQFP100	14x14	√	NT-Nano112V	NLG-Nano112V

• Nano120 Series

Key Features: Integrates USB 2.0 FS device interface,ultra-low power: 200 μA/MHz (Normal), 75 μA/MHz (Idle), 2.5 μA (Power Down, RTC On, RAM retention) and 1 μA (Power Down, RAM retention) and less than 3.5 μs wake-up time

Part No.	System						Memory					Timer					Analog			Connectivity				Display	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
NANO112LB1AN	32	1.8	3.6	-40	85	40	4	16	Configurable	4	4	√	√	4	4	√	7	2	√	2	2	2	2	4x20/6x18	LQFP48	7x7	√	NT-Nano112V	NLG-Nano112L
NANO112LC2AN	32	1.8	3.6	-40	85	40	4	32	Configurable	8	4	√	√	4	4	√	7	2	√	2	2	2	2	4x20/6x18	LQFP48	7x7	√	NT-Nano112V	NLG-Nano112L
NANO112RB1AN	32	1.8	3.6	-40	85	58	4	16	Configurable	4	4	√	√	4	4	√	7	2	√	2	2	2	2	4x32/6x30	LQFP64	10x10	√	NT-Nano112V	NLG-Nano112R
NANO112RC2AN	32	1.8	3.6	-40	85	58	4	32	Configurable	8	4	√	√	4	4	√	7	2	√	2	2	2	2	4x32/6x30	LQFP64	10x10	√	NT-Nano112V	NLG-Nano112R
NANO112SB1AN	32	1.8	3.6	-40	85	58	4	16	Configurable	4	4	√	√	4	4	√	7	2	√	2	2	2	2	4x32/6x30	LQFP64	7x7	√	NT-Nano112V	NLG-Nano112S
NANO112SC2AN	32	1.8	3.6	-40	85	58	4	32	Configurable	8	4	√	√	4	4	√	7	2	√	2	2	2	2	4x32/6x30	LQFP64	7x7	√	NT-Nano112V	NLG-Nano112S
NANO112VC2AN	32	1.8	3.6	-40	85	80	4	32	Configurable	8	4	√	√	4	4	√	8	2	√	2	2	2	2	4x36/6x34	LQFP100	14x14	√	NT-Nano112V	NLG-Nano112V

• Nano130 Series

Key Features: Integrates both 4x40 & 6x38 COM/SEG LCD controller and USB 2.0 FS device interface,ultra-low power: 200 μA/MHz (Normal), 75 μA/MHz (Idle), 2.5 μA (Power Down, RTC On, RAM retention) and 1 μA (Power Down, RAM retention) and less than 3.5 μs wake-up time

Part No.	System						Memory					Timer					Analog		Connectivity						Display	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	DAC (12-bit)	UART	LIN	ISO-7816-3	SPI	I²C	I²S	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
NANO130KC2BN	42	1.8	3.6	-40	85	86	4	32	Configurable	8	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO130KD2BN	42	1.8	3.6	-40	85	86	4	64	Configurable	8	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO130KD3BN	42	1.8	3.6	-40	85	86	4	64	Configurable	16	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO130KE3BN	42	1.8	3.6	-40	85	86	4	128	Configurable	16	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO130SC2BN	42	1.8	3.6	-40	85	47	4	32	Configurable	8	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S
NANO130SD2BN	42	1.8	3.6	-40	85	47	4	64	Configurable	8	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S
NANO130SD3BN	42	1.8	3.6	-40	85	47	4	64	Configurable	16	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S
NANO130SE3BN	42	1.8	3.6	-40	85	47	4	128	Configurable	16	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S

NuMicro® Family Arm® Cortex®-M4 Microcontrollers

The NuMicro Family Cortex-M4 based MCUs provide high performance system design with up to 90-240 DMIPS operating at up to 72-200 MHz. When executing from the embedded Flash memory, the power consumption can be lowered to 130 µA/MHz with dynamic power scaling function supported by the M480 series. EBI supports Intel 8080 panel. With emWin graphics library, designer can easily creates the outstanding graphical user interface.

The NuMicro Family Cortex-M4 based MCUs are composed of the following product series.

M480 Series: 192 MHz CPU, up to 512 KB of dual bank Flash memory, up to 160 KB of SRAM memory, SPI Master interface with XIP (eXecute-In-Place), and 16-bit I80 QVGA LCD

M481 Series – 192 MHz PWM, dual SDHC, dual 5 MSPS ADC, and dual 1 MSPS DAC.
M482 Series – USB 2.0 Full Speed device/host/OTG with integrated OTG PHY and 1 KB data buffer, dual 5 MSPS ADC.
M483 Series – Dual/Triple CAN 2.0B, dual USB supporting High Speed (HS) OTG and Full Speed (FS) OTG
M484 Series – USB 2.0 High Speed device/host/OTG with integrated OTG PHY and 4 KB data buffer, USB 2.0 Full Speed device/host/OTG with integrated OTG PHY and 1 KB data buffer.
M485 Series – Hardware cryptography engine including ECC-256, AES-256, and SHA-512, random number generator, and dual USB 2.0 device/host/OTG.
M487 Series – 10/100 Mbps Ethernet MAC with RMII/MDC/MDIO interface, hardware cryptography engine, dual CAN 2.0B, and dual USB 2.0 device/host/OTG.

M471 Series: 72/120 MHz CPU, up to 512 Kbytes of dual bank Flash memory, up to 64 Kbytes of SRAM memory, an independent 32 Kbytes of data Flash, wide pin pitch packages, and certified IEC60730-1 Class B Software Test Library (STL)

M471 V/K Series – 2 MSPS, 12-bit, up to 24 channels SAR ADC, and hardware Customize IR receiver interface
M471 M/R1/S Series – 1 MSPS, 12-bit, up to 16 channels SAR ADC, USB 2.0 full speed device/host with integrated PHY

M460 Series: 200 MHz CPU, up to 1024 KB of dual bank Flash memory, up to 512 KB of SRAM memory, dual peripheral direct memory access (PDMA), programmable serial I/O (PSIO), hyper bus interface (HBI), certified IEC60730-1 Class B Software Test Library (STL), and SPI Master interface with XIP (eXecute-In-Place)

M463 Series – Quad CAN-FD, USB High Speed (HS) OTG, both with integrated OTG PHY.
M464 Series – USB High Speed device/host/OTG with integrated OTG PHY and 4 KB data buffer
M467 Series – 10/100 Mbps Ethernet MAC with RMII/MDC/MDIO interface, hardware cryptography engine, quad CAN-FD, USB High Speed (HS) OTG and USB Full Speed (FS) OTG, both with on-chip OTG PHY

M451 Series: 72 MHz CPU, up to 256 KB of Flash memory, up to 32 KB of SRAM memory, and Quad-SPI interface

M451 Series – 144 MHz PWM, 1 MSPS ADC, 1 MSPS DAC
M452 Series – USB 2.0 Full Speed device/host/OTG with integrated OTG PHY
M453 Series – USB 2.0 Full Speed device/host/OTG with integrated OTG PHY, CAN 2.0B

M480 Series

The high performance, low power consumption, secure boot and hardware cryptography NuMicro® M480 series Arm® Cortex®-M4F microcontroller supports DSP instruction and integrated floating-point unit (FPU). The dynamic power consumption can be down to 175 or 130 µA/MHz and the standby current can be down to 1 µA. M480 series supports Secure Boot functionality, which provides a constant digital signature of system software for identification during boot up, to protect the integrity of Flash content from attack.

Potential Applications: Industrial Automation, Home Automation, Sensor Hub, IoT/IIoT Gateway, Access Control, Ethernet Converter, Gaming Accessory, etc.

M480 Series	USB FS	USB HS	CAN	Crypto Engine	Ethernet
M481					
M482	√				
M483	√	√	√		
M484	√	√			
M485	√	√		√	
M487	√	√	√	√	√

Key Features: Configurable data flash, Voltage Adjustable Interface, 16+16 bytes UART FIFO for TX/RX, Dual 5 MSPS ADC, USB high speed device/host/OTG with on-chip PHY, Hardware Crypto Engine, 10/100 Mbps Ethernet, Intel 8080 on EBI, ICP/ISP/IAP

Part No.	System						Memory				Timer				Analog			Connectivity										Security	Crypto	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	BPWM (16-bit)	EPWM (16-bit)	RTC	EADC (12-bit)	DAC (12-bit)	ACMP	LPUART	QSPI	I²C	USCI	SPI/ I²S	CAN	SDHC	USB FS OTG	USB HS OTG	EMAC	PRNG	Crypto	Package Type	Package Size	Mass Production	EVB	MP Programmer
M481LGCAE	192	1.8	3.6	-40	105	41	4	256	128	16	4	12	12	√	12	1	2	8	2	3	-	2	-	1	-	-	-	√	√	LQFP48	7x7	√	NK-M483KG	NLG-48L
M481LIDAE	192	1.8	3.6	-40	105	41	4	512	160	16	4	12	12	√	12	2	2	6	1	3	2	3	-	2	-	-	-	-	-	LQFP48	7x7	√	NK-BEDM487	NLG-48L
M481SGCAE	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	-	1	-	-	-	√	√	LQFP64	7x7	√	NK-M483KG	NLG-64S
M481SGCAE2A	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	-	1	-	-	-	√	√	LQFP64	7x7	√	NK-M483KG	NLG-64S
M481SIDAE	192	1.8	3.6	-40	105	52	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	-	-	-	-	-	LQFP64	7x7	√	NK-BEDM487	NLG-64S
M481ZGCAE	192	1.8	3.6	-40	105	26	4	256	128	16	4	12	12	√	10	1	2	8	2	3	-	2	-	1	-	-	-	√	√	QFN33	5x5	√	NK-M483KG	NLG-32Z
M481ZIDAE	192	1.8	3.6	-40	105	26	4	512	160	16	4	12	12	√	10	2	2	6	1	3	2	3	-	1	-	-	-	-	-	QFN33	5x5	√	NK-BEDM487	NLG-32Z
M482KGCAE	192	1.8	3.6	-40	105	100	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	-	1	1	-	-	√	√	LQFP128	14x14	√	NK-M483KG	NLG-128K
M482KIDAE	192	1.8	3.6	-40	105	100	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	1	-	-	-	-	LQFP128	14x14	√	NK-BEDM487	NLG-128K
M482LGCAE	192	1.8	3.6	-40	105	41	4	256	128	16	4	12	12	√	12	1	2	8	2	3	-	2	-	1	1	-	-	√	√	LQFP48	7x7	√	NK-M483KG	NLG-48L
M482LIDAE	192	1.8	3.6	-40	105	41	4	512	160	16	4	12	12	√	12	2	2	6	1	3	2	3	-	2	1	-	-	-	-	LQFP48	7x7	√	NK-BEDM487	NLG-48L
M482SGCAE	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	-	1	1	-	-	√	√	LQFP64	7x7	√	NK-M483KG	NLG-64S
M482SIDAE	192	1.8	3.6	-40	105	52	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	1	-	-	-	-	LQFP64	7x7	√	NK-BEDM487	NLG-64S
M482ZGCAE	192	1.8	3.6	-40	105	26	4	256	128	16	4	12	12	√	10	1	2	8	2	3	-	2	-	1	1	-	-	√	√	QFN33	5x5	√	NK-M483KG	NLG-32Z
M482ZIDAE	192	1.8	3.6	-40	105	26	4	512	160	16	4	12	12	√	10	2	2	6	1	3	2	3	-	1	1	-	-	-	-	QFN33	5x5	√	NK-BEDM487	NLG-32Z
M483KGCAE	192	1.8	3.6	-40	105	100	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	3	1	1	-	-	√	√	LQFP128	14x14	√	NK-M483KG	NLG-128K
M483KGCAE2A	192	1.8	3.6	-40	105	100	4	256	128	16	4	12	12	√	24	1	2	8	2	3	-	3	3	1	1	-	-	√	√	LQFP128	14x14	√	NK-M483KG	NLG-128K
M483KIDAE	192	1.8	3.6	-40	105	100	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	2	2	1	1	-	-	-	LQFP128	14x14	√	NK-BEDM487	NLG-128K
M483SGCAE	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	2	1	1	-	-	√	√	LQFP64	7x7	√	NK-M483KG	NLG-64S
M483SGCAE2A	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	2	1	1	-	-	√	√	LQFP64	7x7	√	NK-M483KG	NLG-64S
M483SIDAE	192	1.8	3.6	-40	105	44	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	2	2	-	1	-	-	-	LQFP64	7x7	√	NK-BEDM487	NLG-64S
M484KIDAE	192	1.8	3.6	-40	105	100	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	1	1	-	-	-	LQFP128	14x14	√	NK-BEDM487	NLG-128K
M484SIDAE	192	1.8	3.6	-40	105	44	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	1	-	-	-	-	LQFP64	7x7	√	NK-BEDM487	NLG-64S
M484SIDAE2U	192	1.8	3.6	-40	105	44	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	1	1	-	-	-	LQFP64	7x7	√	NK-BEDM487	NLG-64S
M485KIDAE	192	1.8	3.6	-40	105	100	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	1	1	-	√	√	LQFP128	14x14	√	NK-BEDM487	NLG-128K
M485LIDAE	192	1.8	3.6	-40	105	41	4	512	160	16	4	12	12	√	12	2	2	6	1	3	2	3	-	2	1	-	-	√	√	LQFP48	7x7	√	NK-BEDM487	NLG-48L
M485SIDAE	192	1.8	3.6	-40	105	44	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	-	1	-	√	√	LQFP64	7x7	√	NK-BEDM487	NLG-64S
M487JIDAE	192	1.8	3.6	-40	105	114	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	2	2	1	1	1	√	√	LQFP144	20x20	√	NK-BEDM487	NLG-144J
M487KIDAE	192	1.8	3.6	-40	105	100	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	2	2	1	1	1	√	√	LQFP128	14x14	√	NK-BEDM487	NLG-128K
M487KMCAN	192	1.8	3.6	-40	105	114	4	2560	160	16	4	12	12	√	16	2	2	6	1	3	2	4	2	2	1	1	1	√	√	LQFP128	14x14	√	NK-BEDM487	NLG-128K
M487SIDAE	192	1.8	3.6	-40	105	44	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	2	2	-	1	1	√	√	LQFP64	7x7	√	NK-BEDM487	NLG-64S

M471 Series

NuMicro M471 series is based on Arm® Cortex®-M4F microcontroller supports DSP instruction and integrated floating-point unit (FPU). The dynamic power consumption can be down to 370 µA/MHz and the standby current can be down to 1.6 µA.

Support multiple wide pin pintch packages, certified IEC60730-1 Class B Software Test Library (STL), high immunity characteristics including ESD (HBM) 8 KV and EFT 4.4 KV

Potential Applications: White Goods, Small Home Applicance, Industrial Automation, Communication System, etc.
Key Features: Independent 32 Kbytes data flash, Voltage Adjustable Interface, 16+16 bytes UART FIFO for TX/RX, 1.8 MSPS ADC, USB full speed device/host/OTG with on-chip PHY, Intel 8080 on EBI, ICP/ISP/IAP

Part No.	System							Memory						Timer		Analog			Connectivity									Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	V_{BAT}	LDROM Flash (KB)	APROM Flash (KB)	Dual-Bank Flash	Data Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	EPWM (16-bit)	RTC	EADC (12-bit)	DAC (12-bit)	ACMP	UART	LPUART	I²C	SPI/ I²S	USB FS Device/ Host	PRNG	Package Type	Package Size	Mass Production	EVB	MP Programmer
M471KI8AE	120	2.5	5.5	-40	105	119	-	4	512	√	32	64	6	4	-	12	12	√	24	1	2	-	6	2	2	-	√	LQFP128	14x14	√	NK-M471KI	NLG-128K
M471VI8AE	120	2.5	5.5	-40	105	91	-	4	512	√	32	64	6	4	-	12	12	√	23	1	2	-	6	2	2	-	√	LQFP100	14x14	√	NK-M471KI	NLG-100V
M471R1E6AE	72	2.5	5.5	-40	105	49	√	4	128	-	Configurable	32	8	4	12	-	-	√	16	-	-	4	-	2	1	1	-	LQFP64	14x14	√	NK-M471R1	NG-M471R1
M471SE6AE	72	2.5	5.5	-40	105	49	√	4	128	-	Configurable	32	8	4	12	-	-	√	16	-	-	4	-	2	1	1	-	LQFP64	7x7	√	NK-M471R1	NG-M471S
M471MD6AE	72	2.5	5.5	-40	105	35	√	4	64	-	Configurable	32	8	4	10	-	-	√	10	-	-	3	-	2	1	-	-	LQFP44	10x10	√	NK-M471R1	NG-M471M

M460 Series

The high performance, low power consumption, secure boot and keystore supported NuMicro® M460 series Arm® Cortex®-M4F microcontroller supports DSP instruction and integrated floating-point unit (FPU). The dynamic power consumption can be down to 130 µA/MHz and the standby current can be down to 1 µA. M460 series supports Secure Boot functionality, which provides a constant digital signature of system software for identification during boot up, to protect the integrity of Flash content from attack.

M460 series supports dual peripheral direct memory access (PDMA) design which could significantly increase the data transfer speed inside MCU and the whole system performance.

M460 series provide keystore function which could enhance the key security when encrypion and decryption

Potential Applications: Smart Factory, Smart Building, Sensor Fusion, IoT/IIoT Gateway, Energy Storage System, TFT LCD GUI Control, Ethernet Converter, Gaming Accessory, etc.

M480 Series	USB FS	USB HS	CAN	Crypto Engine	Ethernet
M463	√	√	√		
M464		√			
M467	√	√	√	√	√

Key Features: Configurable data flash, Voltage Adjustable Interface, 16+16 bytes UART FIFO for TX/RX, Triple 5 MSPS ADC, USB high speed device/host/OTG with on-chip PHY, Hardware crypto engine, 10/100 Mbps Ethernet, Intel 8080 on EBI, ICP/ISP/IAP

Part No.	System						Memory				Timer		Analog			Connectivity																Security			Crypto	Display		Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	RTC	EADC (12-bit)	DAC (12-bit)	ACMP	LPUART	ISO-7816	QSPI	I²C	USCI	SPI/I²S	SPIM	I²S	CAN FD	SDHC	PSIO	USB FS OTG	USB HS OTG	EMAC	EBI	TRNG	XOM	Key Store	Crypto	Camera Interface	Keypad Interface	Package Type	Package Size	Mass Production	EVB	MP Programmer
M467SJHAE	200	1.8	3.6	40	105	44	8	1024	512	32	4	√	20	2	4	9	3	2	5	1	4	1	2	4	2	4	1	1	1	√	√	√	√	√	√	6x8	LQFP64	7x7	2022Q3	-	-
M467KJHAE	200	1.8	3.6	40	105	100	8	1024	512	32	4	√	28	2	4	10	3	2	5	1	4	1	2	4	2	8	1	1	1	√	√	√	√	√	√	6x8	LQFP128	14x14	2022Q3	-	-
M467JJHAE	200	1.8	3.6	40	105	114	8	1024	512	32	4	√	28	2	4	10	3	2	5	1	4	1	2	4	2	8	1	1	1	√	√	√	√	√	√	6x8	LQFP144	20x20	2022Q3	-	-
M467HJHAE	200	1.8	3.6	40	105	146	8	1024	512	32	4	√	28	2	4	10	3	2	5	1	4	1	2	4	2	8	1	1	1	√	√	√	√	√	√	6x8	LQFP176	24x24	2022Q3	-	-
M463SJHAE	200	1.8	3.6	40	105	44	8	1024	512	32	4	√	20	2	4	9	3	2	5	1	4	1	2	4	2	4	1	1	-	√	√	√	√	-	√	6x8	LQFP64	7x7	2022Q3	-	-
M463KJHAE	200	1.8	3.6	40	105	100	8	1024	512	32	4	√	28	2	4	10	3	2	5	1	4	1	2	4	2	8	1	1	-	√	√	√	√	-	√	6x8	LQFP128	14x14	2022Q3	-	-
M463SIHAE	200	1.8	3.6	40	105	44	8	512	512	32	4	√	20	2	4	9	3	2	5	1	4	1	2	4	2	4	1	1	-	√	√	√	√	-	√	6x8	LQFP64	7x7	2022Q3	-	-
M463KIHAE	200	1.8	3.6	40	105	100	8	512	512	32	4	√	28	2	4	10	3	2	5	1	4	1	2	4	2	8	1	1	-	√	√	√	√	-	√	6x8	LQFP128	14x14	2022Q3	-	-
M463KGCAE	200	1.8	3.6	40	105	100	8	256	128	16	4	√	16	-	2	8	1	2	5	1	4	-	-	2	1	-	-	1	-	√	√	√	√	√	-	6x8	LQFP128	14x14	2022Q4	-	-
M464KGCAE	200	1.8	3.6	40	105	100	8	256	128	16	4	√	16	-	2	8	1	2	5	1	4	-	-	-	1	-	-	1	-	√	√	√	√	√	-	6x8	LQFP128	14x14	2022Q4	-	-
M463SGCAE	200	1.8	3.6	40	105	44	8	256	128	16	4	√	16	-	2	8	1	2	5	1	4	-	-	2	1	-	-	1	-	√	√	√	√	√	-	6x8	LQFP64	7x7	2022Q4	-	-
M464SGCAE	200	1.8	3.6	40	105	44	8	256	128	16	4	√	16	-	2	8	1	2	5	1	4	-	-	-	1	-	-	1	-	√	√	√	√	√	-	6x8	LQFP64	7x7	2022Q4	-	-
M464AGCAE	200	1.8	3.6	40	105	44	8	256	128	16	4	√	16	-	2	8	1	2	5	1	4	-	-	-	1	-	-	1	-	√	√	√	√	√	-	6x8	QFN64	8x8	2022Q4	-	-
M463LGCAE	200	1.8	3.6	40	105	33	8	256	128	16	4	√	12	-	2	8	1	2	5	1	4	-	-	2	1	-	-	1	-	√	√	√	√	√	-	6x8	LQFP48	7x7	2022Q4	-	-
M464LGCAE	200	1.8	3.6	40	105	33	8	256	128	16	4	√	12	-	2	8	1	2	5	1	4	-	-	-	1	-	-	1	-	√	√	√	√	√	-	6x8	LQFP48	7x7	2022Q4	-	-
M464YGCAE	200	1.8	3.6	40	105	33	8	256	128	16	4	√	12	-	2	8	1	2	5	1	4	-	-	-	1	-	-	1	-	√	√	√	√	√	-	6x8	QFN48	8x8	2022Q4	-	-

M451 Series

The high immunity NuMicro® M451 series based on the Arm® Cortex®-M4F core supports DSP instruction and integrated floating-point unit (FPU).The dynamic power consumption can be down to 430 μA/MHz and the standby current can be down to 1.6 μA.

Potential Applications: Industrial Automation, Home Automation, Motor Control, Communication Systems, USB Accessories, etc.

M451 Series	USB FS	LIN
M451		
M452	√	
M453	√	√

Key Features: Configurable Data flash, Voltage Adjustable Interface, 16+16 bytes UART FIFO for TX/ RX, 1 MSPS ADC, USB full speed device/ host/ OTG with on-chip PHY, Intel 8080 on EBI, ICP/ ISP.

Part No.	System							Memory					Timer				Analog			Connectivity									Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	VBAT	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	RTC	EADC (12-bit)	DAC (12-bit)	ACMP	UART	ISO-7816-3	QSPI	I²C	SPI/ I²S	CAN	USB FS Device/ Host	USB FS OTG	EBI	Package Type	Package Size	Mass Production	EVB	MP Programmer
M451LC3AE	72	2.5	5.5	-40	105	39	√	4	40	Configurable	16	8	4	12	√	10	1	2	4	1	1	2	1	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451L
M451LD3AE	72	2.5	5.5	-40	105	39	√	4	72	Configurable	16	8	4	12	√	10	1	2	4	1	1	2	1	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451L
M451LE6AE	72	2.5	5.5	-40	105	39	√	4	128	Configurable	32	12	4	12	√	8	1	2	3	1	1	2	2	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451L
M451LG6AE	72	2.5	5.5	-40	105	39	√	4	256	Configurable	32	12	4	12	√	8	1	2	3	1	1	2	2	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451L
M451MLC3AE	72	2.5	5.5	-40	105	42	-	4	40	Configurable	16	8	4	12	-	11	1	2	4	1	1	2	1	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451ML
M451MLD3AE	72	2.5	5.5	-40	105	42	-	4	72	Configurable	16	8	4	12	-	11	1	2	4	1	1	2	1	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451ML
M451MLE6AE	72	2.5	5.5	-40	105	42	-	4	128	Configurable	32	12	4	12	-	9	1	2	4	1	1	2	2	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451ML
M451MLG6AE	72	2.5	5.5	-40	105	42	-	4	256	Configurable	32	12	4	12	-	9	1	2	3	1	1	2	2	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451ML
M451MSC3AE	72	2.5	5.5	-40	105	55	-	4	40	Configurable	16	8	4	12	-	13	1	2	4	1	1	2	1	-	-	-	√	LQFP64	7x7	√	NT-M451V	NG-M451MS
M451MSD3AE	72	2.5	5.5	-40	105	55	-	4	72	Configurable	16	8	4	12	-	13	1	2	4	1	1	2	1	-	-	-	√	LQFP64	7x7	√	NT-M451V	NG-M451MS
M451RC3AE	72	2.5	5.5	-40	105	53	√	4	40	Configurable	16	8	4	12	√	16	1	2	4	1	1	2	1	-	-	-	√	LQFP64	10x10	√	NT-M451V	NG-M451R
M451RD3AE	72	2.5	5.5	-40	105	53	√	4	72	Configurable	16	8	4	12	√	16	1	2	4	1	1	2	1	-	-	-	√	LQFP64	10x10	√	NT-M451V	NG-M451R
M451RE6AE	72	2.5	5.5	-40	105	53	√	4	128	Configurable	32	12	4	12	√	12	1	2	4	1	1	2	2	-	-	-	√	LQFP64	10x10	√	NT-M451V	NG-M451R
M451RG6AE	72	2.5	5.5	-40	105	53	√	4	256	Configurable	32	12	4	12	√	12	1	2	4	1	1	2	2	-	-	-	√	LQFP64	10x10	√	NT-M451V	NG-M451R
M451VE6AE	72	2.5	5.5	-40	105	85	√	4	128	Configurable	32	12	4	12	√	16	1	2	4	1	1	2	2	-	-	-	√	LQFP100	14x14	√	NT-M451V	NG-M451V
M451VG6AE	72	2.5	5.5	-40	105	85	√	4	256	Configurable	32	12	4	12	√	16	1	2	4	1	1	2	2	-	-	-	√	LQFP100	14x14	√	NT-M451V	NG-M451V
M4521LE6AE	72	2.5	5.5	-40	105	35	√	4	128	Configurable	32	8	4	10	√	10	-	-	3	1	1	2	1	-	1	-	√	LQFP48	7x7	√	NT-M4521S	NG-M453L
M4521SE6AE	72	2.5	5.5	-40	105	49	√	4	128	Configurable	32	8	4	12	√	16	-	-	4	1	1	2	1	-	1	-	√	LQFP64	7x7	√	NT-M4521S	NG-M453S
M452LC3AE	72	2.5	5.5	-40	105	35	√	4	40	Configurable	16	8	4	10	√	10	1	2	4	1	1	2	1	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M452LD3AE	72	2.5	5.5	-40	105	35	√	4	72	Configurable	16	8	4	10	√	10	1	2	4	1	1	2	1	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M452LE6AE	72	2.5	5.5	-40	105	34	√	4	128	Configurable	32	12	4	10	√	8	1	2	3	1	1	2	1	-	-	1	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M452LG6AE	72	2.5	5.5	-40	105	34	√	4	256	Configurable	32	12	4	10	√	8	1	2	3	1	1	2	1	-	-	1	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M452RD3AE	72	2.5	5.5	-40	105	49	√	4	72	Configurable	16	8	4	12	√	16	1	2	4	1	1	2	1	-	-	-	√	LQFP64	10x10	√	NT-M451V	NG-M453R
M452RE6AE	72	2.5	5.5	-40	105	48	√	4	128	Configurable	32	12	4	12	√	12	1	2	4	1	1	2	2	-	-	1	√	LQFP64	10x10	√	NT-M451V	NG-M453R
M452RG6AE	72	2.5	5.5	-40	105	48	√	4	256	Configurable	32	12	4	12	√	12	1	2	4	1	1	2	2	-	-	1	√	LQFP64	10x10	√	NT-M451V	NG-M453R
M452VE6AE	72	2.5	5.5	-40	105	80	√	4	128	Configurable	32	12	4	12	√	16	1	2	4	1	1	2	2	-	-	1	√	LQFP100	14x14	√	NT-M451V	NG-M453V
M452VG6AE	72	2.5	5.5	-40	105	80	√	4	256	Configurable	32	12	4	12	√	16	1	2	4	1	1	2	2	-	-	1	√	LQFP100	14x14	√	NT-M451V	NG-M453V
M453LC3AE	72	2.5	5.5	-40	105	35	√	4	40	Configurable	16	8	4	10	√	10	1	2	4	1	1	2	1	1	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M453LD3AE	72	2.5	5.5	-40	105	35	√	4	72	Configurable	16	8	4	10	√	10	1	2	4	1	1	2	1	1	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M453LE6AE	72	2.5	5.5	-40	105	34	√	4	128	Configurable	32	12	4	10	√	8	1	2	3	1	1	2	2	1	-	1	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M453LG6AE	72	2.5	5.5	-40	105	34	√	4	256	Configurable	32	12	4	10	√	8	1	2	3	1	1	2	2	1	-	1	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M453RD3AE	72	2.5	5.5	-40	105	49	√	4	72	Configurable	16	8	4	12	√	16	1	2	4	1	1	2	1	1	-	-	√	LQFP64	10x10	√	NT-M451V	NG-M453R
M453RE6AE	72	2.5	5.5	-40	105	48	√	4	128	Configurable	32	12	4	12	√	12	1	2	4	1	1	2	2	1	-	1	√	LQFP64	10x10	√	NT-M451V	NG-M453R
M453RG6AE	72	2.5	5.5	-40	105	48	√	4	256	Configurable	32	12	4	12	√	12	1	2	4	1	1	2	2	1	-	1	√	LQFP64	10x10	√	NT-M451V	NG-M453R
M453VD3AE	72	2.5	5.5	-40	105	72	√	4	72	Configurable	16	8	4	12	√	16	1	2	4	1	1	2	1	1	-	-	√	LQFP100	14x14	√	NT-M451V	NG-M453V
M453VE6AE	72	2.5	5.5	-40	105	80	√	4	128	Configurable	32	12	4	12	√	16	1	2	4	1	1	2	2	1	-	1	√	LQFP100	14x14	√	NT-M451V	NG-M453V
M453VG6AE	72	2.5	5.5	-40	105	80	√	4	256	Configurable	32	12	4	12	√	16	1	2	4	1	1	2	2	1	-	1	√	LQFP100	14x14	√	NT-M451V	NG-M453V

NUC505 Series

The NuMicro® NUC505 series based on the Arm® Cortex®-M4F core supports DSP instructions and integrated floating-point unit (FPU). The dynamic power consumption can be down to 479 μA/MHz and the standby current can be down to 7 μA. NUC505 series supports internal Audio PLL and internal stereo 24-bit Sigma-Delta audio CODEC with Mic/ Line input and headphone output.

Potential Applications: Thermal Printers, GPS Trackers, Wireless Microphones, Security/ Alarms, etc.
Key Features: 128-bit Key for Code Protection, 64+64 bytes UART FIFO for TX/ RX, Dual USB, Audio PLL, 24-bit audio CODEC.

Part No.	System							Memory		Timer			Analog		Connectivity							Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	V_{BAT}	APROM Flash (KB)	Data Flash (KB)	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	Audio Codec	UART	SPI	I²C	I²S	SDHC	USB FS Host	USB HS Device	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC505DL13Y	100	3	3.6	-40	85	25	√	2048	128	4	4	√	5	-	3	2	2	1	1	1	1	LQFP48	7x7	√	NT-NUC505Y	-
NUC505DLA	100	3	3.6	-40	85	18	√	512	128	4	-	√	5	1	2	1	2	1	-	-	1	LQFP48	7x7	√	NT-NUC505Y	-
NUC505DS13Y	100	3	3.6	-40	85	35	√	2048	128	4	4	√	8	1	3	2	2	1	1	1	1	LQFP64	7x7	√	NT-NUC505Y	-
NUC505DSA	100	3	3.6	-40	85	34	√	512	128	4	4	√	5	1	3	2	2	1	1	1	1	LQFP64	7x7	√	NT-NUC505Y	-
NUC505YLA	100	3	3.6	-40	85	18	√	512	128	4	-	√	5	1	2	1	2	1	-	-	1	QFN48	7x7	√	NT-NUC505Y	-
NUC505YLA2Y	100	3	3.6	-40	85	25	√	512	128	4	4	√	5	-	3	2	3	1	1	1	1	QFN48	7x7	√	NT-NUC505Y	-
NUC505YO13Y	100	3	3.6	-40	85	52	√	2048	128	4	4	√	8	1	3	2	2	1	1	1	1	QFN88	10x10	√	NT-NUC505Y	-

NuMicro® Family Arm9 MPUs

NUC970/980 Series

Nuvoton's Arm9 Industrial network series offers LQFP packages stacked with 64 to 128 Mbytes DDR memory to reduce PCB size and EMI issues. Rich peripherals include 11 sets of UART, dual Ethernet, SDIO/ eMMC interface, NAND Flash interface, LCD controller, CAN Bus 2.0B interface, and USB 2.0 high speed host/ device controller, allowing flexibility for product design. The Arm9 Industrial network series also integrates the crypto engine which provides hardware acceleration for AES, ECC, RSA, and SHA functions.

Boot Source: SPI NOR, SPI NAND, NAND, SD, eMMC, USB

Potential Applications: Industrial Control, HMI, Industrial IoT Gateway, Network Printer, Smart Meter, and Smart Home Gateway applications.

NUC970/980 Series	EBI	LCD	Crypto Engine	Linux
NUC980DF	√	-	AES/ECC/RSA/SHA	√
NUC980DK	√	-	AES/ECC/RSA/SHA	√
NUC980DR	-	-	AES/ECC/RSA/SHA	√
NUC972DF	√	√	AES/ECC/SHA/DES/3DES	√
NUC975DK	-	-	AES/ECC/SHA/DES/3DES	√
NUC976DK	-	√	AES/ECC/SHA/DES/3DES	√
NUC977DK	-	√	AES/ECC/SHA/DES/3DES	√

Key Features: MCP industrial DDR in LQFP package, Dual USB high speed host, Dual 10/100M Ethernet MAC.

NUC970/980 Series

Part No.	System						Memory			Timer	Analog	Connectivity												Security	Crypto	Display		Package		Status	Tool
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	SRAM (KB)	DDR (MB)	PDMA	PWM (16-bit)	ADC (12-bit)	UART	ISO-7816-3	QSPI	SPI	I²C	CAN	SDHC	USB FS Host	USB HS Host	USB HS Device/ Host	EMAC	EBI	OTP	Crypto	Camera Interface	TFT-LCD Interface	Package Type	Package Size	Mass Production	EVB
NUC980DF63YC	300	2.97	3.63	-40	85	104	16	64	6	8	8	10	2	1	2	4	4	2	HL*6	1	1	2	√	-	√	2	-	LQFP216	24x24	√	NK-NUC980
NUC980DF71YC	300	2.97	3.63	-40	85	104	16	128	6	8	8	10	2	1	2	4	4	2	HL*6	1	1	2	√	-	√	2	-	LQFP216	24x24	√	-
NUC980DK63YC	300	2.97	3.63	-40	85	92	16	64	6	8	8	10	2	1	2	4	4	2	HL*6	1	1	2	√	-	√	2	-	LQFP128	14x14	√	NK-NUC980
NUC980DK71YC	300	2.97	3.63	-40	85	92	16	128	6	8	8	10	2	1	2	4	4	2	HL*6	1	1	2	√	-	√	2	-	LQFP128	14x14	√	-
NUC980DR63YC	300	2.97	3.63	-40	85	40	16	64	6	5	2	8	2	-	2	2	2	1	HL*6	1	1	1	-	-	√	1	-	LQFP64-EP	10x10	√	NK-NUC980
NUC972DF63YC	300	2.97	3.63	-40	85	146	56	64	-	4	8	11	2	-	2	2	2	2	-	1	1	2	√	√	√	1	24bit	LQFP216	24x24	√	ND-NUC972
NUC972DF71YC	300	2.97	3.63	-40	85	146	56	128	-	4	8	11	2	-	2	2	2	2	-	1	1	2	√	√	√	1	24bit	LQFP216	24x24	√	-
NUC975DK63YC	300	2.97	3.63	-40	85	87	56	64	-	4	4	10	2	-	2	2	1	2	-	1	1	1	√	√	√	1	-	LQFP128	14X14	√	ND-NUC972
NUC976DK63YC	300	2.97	3.63	-40	85	80	56	64	-	4	4	6	2	-	2	2	1	2	-	1	1	1	-	√	√	1	16bit	LQFP128	14x14	√	ND-NUC972
NUC977DK63YC	300	2.97	3.63	-40	85	87	56	64	-	4	-	8	2	-	2	2	1	2	-	1	1	1	-	√	√	1	16bit	LQFP128	14x14	√	ND-NUC972

N9H Series

The HMI emWin N9H series is based on the ARM926EJ-S core. CPU operates at up to 300 MHz respectively. Multi Chip Package (MCP) with SDRAM, size ranging from 2 to 128 Mbytes. The MCP could significantly reduces PCB size and electromagnetic interference (EMI) to minimize system design efforts and shorten the product design cycle time.

The N9H series Board Support Package (BSP) comes with licensed industrial leading emWin embedded graphical user interface (GUI) library, containing emWin library, samples, tools, and documents. Nuvoton licenses it from SEGGER to allow developers to create smooth, professional, high quality graphical user interface (GUI).

Boot Source: SPI NOR, NAND, SD, eMMC
Potential Applications: Industrial control, smart building, smart appliances, medical devices, charging pile, and consumer products

Series	CPU (MHz)	LCD	Video CODEC	Audio DAC	Ethernet	CAN	Operating Temp	Linux
N9H20	200	16 / 24bit	JPEG	√	-	-	-20°C to 85°C	√
N9H26	240	24bit	JPEG /H.264	√	-	-	-20°C to 85°C	√
N9H30	300	16 / 24 bit	JPEG	-	√	√	-40°C to 85°C	√

Key Features: MCP Memory up to 128 Mbytes, LCD resolution up to 1024x768 24-bit RGB, free-to-use emWin graphic library.

Part No.	System						Memory			Timer		Analog		Connectivity											Display				Package		Status	Tool
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	SRAM (KB)	DDR (MB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	ADC (10-bit)	ADC (12-bit)	UART	ISO-7816-3	SPI	I²C	CAN	SDHC	USB FS	USB HS	USB HS Device/ Host	EMAC	EBI	Camera Interface	TFT-LCD Interface	2D Graphics Engine	Video Codec	Package Type	Package Size	Mass Production	EVB
N9H20K11N	200	2.97	3.63	-20	85	70	8	2	4	2	4	3	-	2	-	2	1	-	3	H*1	D*1	-	-	-	-	24bit	√	JPEG	LQFP128	14x14	√	NK-N9H20
N9H20K31N	200	2.97	3.63	-20	85	70	8	8	4	2	4	3	-	2	-	2	1	-	3	H*1	D*1	-	-	-	-	24bit	√	JPEG	LQFP128	14x14	√	NK-N9H20
N9H20K51N	200	2.97	3.63	-20	85	70	8	32	4	2	4	3	-	2	-	2	1	-	3	H*1	D*1	-	-	-	-	24bit	√	JPEG	LQFP128	14x14	√	NK-N9H20
N9H20R11N	200	2.97	3.63	-20	85	44	8	2	4	2	4	-	-	2	-	1	1	-	1	H*1	D*1	-	-	-	-	16bit	√	JPEG	TQFP64-EP	10x10	√	NK-N9H20
N9H26K63N	240	2.97	3.63	-20	85	80	8	64	4	4	4	7	-	2	-	2	1	-	3	-	H*2+D*1	-	-	-	-	24bit	√	JPEG/ H.264	LQFP128	14x14	√	NK-N9H26
N9H30F63IEC	300	2.97	3.63	-40	85	146	56	64	-	5	4	-	8	11	2	2	2	2	2	-	H*1+H/D*1	1	2	√	1	24bit	√	JPEG	LQFP216	24x24	√	NK-N9H30
N9H30F71IEC	300	2.97	3.63	-40	85	146	56	128	-	5	4	-	8	11	2	2	2	2	2	-	H*1+H/D*1	1	2	√	1	24bit	√	JPEG	LQFP216	24x24	√	-
N9H30K63IEC	300	2.97	3.63	-40	85	86	56	64	-	5	4	-	5	9	2	2	2	1	2	-	H*1+H/D*1	1	1	-	1	16bit	√	JPEG	LQFP128	14x14	√	NK-N9H30

N329 Series

Designed for cost-effective solutions targeting consumer electronics, the ARM926EJ-S based SoC is embedded with various hardware accelerators and useful peripherals. All part numbers come up with a unique Multi-Chip Package (MCP) in the LQFP footprint, which is ideal in terms of several key design factors: high performance, small dimension, much less EMI, high production yield, and lower BOM cost.

Boot Source: SPI NOR, NAND, SD, eMMC

Series	CPU (MHz)	Video CODEC	Linux
N3290xR	200	JPEG	√
N3290xU	200	JPEG	√
N3290xK	200	JPEG	√
N3292xU	240	H.264/ JPEG	√

Key Features: 2D GFX, H.264/ JPEG CODEC, LQFP MCP Memory up to 64 Mbytes, LCD Display, Built-in Audio CODEC.

Part No.	System						Memory			Timer		Analog	Connectivity							Display				Package		Status	Tool
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	SRAM (KB)	DDR (MB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	ADC (10-bit)	UART	SPI	I²C	SDHC	USB FS	USB HS	EMAC	Camera Interface	TFT-LCD Interface	2D Graphics Engine	Video Codec	Package Type	Package Size	Mass Production	EVB
N32903K5DN	200	2.97	3.63	-20	85	70	8	8	4	2	4	3	2	2	1	3	H*1	D*1	-	1	24bit	√	JPEG	LQFP128	14x14	√	ND-N32905
N32905K5DN	200	2.97	3.63	-20	85	70	8	32	4	2	4	3	2	2	1	3	H*1	D*1	-	1	24bit	√	JPEG	LQFP128	14x14	√	ND-N32905
N32901R1DN	200	2.97	3.63	-20	85	34	8	2	4	2	2	1	2	1	-	2	H*1	D*1	-	1	-	√	JPEG	LQFP64	10x10	√	ND-N32905
N32903R5DN	200	2.97	3.63	-20	85	34	8	8	4	2	2	1	2	1	-	2	H*1	D*1	-	1	-	√	JPEG	TQFP64-EP	10x10	√	ND-N32905
N32905R3DN	200	2.97	3.63	-20	85	34	8	32	4	2	2	1	2	1	-	2	H*1	D*1	-	1	-	√	JPEG	TQFP64-EP	10x10	√	ND-N32905
N32901U1DN	200	2.97	3.63	-20	85	64	8	2	4	2	4	2	2	1	1	3	H*1	D*1	-	1	18bit	√	JPEG	LQFP128	14x14	√	ND-N32905
N32903U5DN	200	2.97	3.63	-20	85	64	8	8	4	2	4	2	2	1	1	3	H*1	D*1	-	1	18bit	√	JPEG	LQFP128	14x14	√	ND-N32905
N32905U3DN	200	2.97	3.63	-20	85	64	8	32	4	2	4	2	2	1	1	3	H*1	D*1	-	1	18bit	√	JPEG	LQFP128	14x14	√	ND-N32905
N32926U6DN	240	2.97	3.63	-20	85	80	8	64	4	4	4	7	2	2	1	3	H*1	D*1	1	2	24bit	√	JPEG/H.264	LQFP128	14x14	√	ND-N32926

NuMicro® Family 8051 Microcontrollers

As a leading supplier of 8051 microcontrollers, Nuvoton offers a variety of products with a great price-performance ratio which is critical to the success of consumers and industrial products. The 8-bit microcontrollers are equipped with rich peripherals to meet various system requirements and are supported by the toolchain from world-leading tool makers for rapid product development.

ML51 low power series provides up to 64 Kbytes and 4 Kbytes SRAM. The operating current is 80 μA/MHz and the power-down current can be as low as 0.8 μA.

ML51 - Basic low power line
ML54 - Low power with an LCD driver line
ML56 - Low power with LCD driver and Touch key line

MS51 series is suitable for cost-conscious applications by being based on the 1T 8051 core and rich peripherals in various compact packages. GPIO is equipped with 20 mA high sink current. This series provides high immunity 8 kV ESD.

MS51 Industrial Control Series (1T)

Nuvoton's compact 8-bit microcontroller MS51 series is suitable for cost-conscious applications by being based on the 1T 8051 core and rich peripherals in various compact packages.

Potential Applications: Industrial Control, Battery Packs, Home Appliances, LED Control, Consumer Devices, etc.

Part No.	System						Memory				Timer			Analog	Connectivity				Security	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	WDT	Timer (16-bit)	PWM (16-bit)	ADC (12-bit)	UART	ISO-7816-3	SPI	I²C	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
MS51BA9AE	16/24	2.4	5.5	-40	105	8	4	8	Shared with APROM	1K + 256 (B)	√	4	5	5	2	-	1	1	128	MSOP10	3x3	√	NT-MS51DA	-
MS51DA9AE	16/24	2.4	5.5	-40	105	12	4	8	Shared with APROM	1K + 256 (B)	√	4	5	8	2	-	1	1	128	TSSOP14	4.4x5	√	NT-MS51DA	-
MS51EB0AE	16/24	2.4	5.5	-40	105	26	4	16	Shared with APROM	2K+256 (B)	√	4	12	15	2	3	1	1	128	TSSOP28	4.4x9.7	√	NK-MS51PC	NLG-MS51E
MS51EC0AE	16/24	2.4	5.5	-40	105	26	4	32	Shared with APROM	2K+256 (B)	√	4	12	15	2	3	1	1	128	TSSOP28	4.4x9.7	√	NK-MS51PC	NLG-MS51E
MS51FB9AE	16/24	2.4	5.5	-40	105	18	4	16	Shared with APROM	1K + 256 (B)	√	4	6	8	2	-	1	1	128	TSSOP20	4.4x6.5	√	NT-MS51FB	NLG-MS51F
MS51FC0AE	16/24	2.4	5.5	-40	105	18	4	32	Shared with APROM	2K+256 (B)	√	4	12	15	2	3	1	1	128	TSSOP20	4.4x6.5	√	NK-MS51PC	NLG-MS51F
MS51PC0AE	16/24	2.4	5.5	-40	105	31	4	32	Shared with APROM	2K+256 (B)	√	4	12	15	2	3	1	1	128	LQFP32	7x7	√	NK-MS51PC	-
MS51TC0AE	16/24	2.4	5.5	-40	105	31	4	32	Shared with APROM	2K+256 (B)	√	4	12	15	2	3	1	1	128	QFN33	4x4	√	NK-MS51PC	-
MS51XB9AE	16/24	2.4	5.5	-40	105	18	4	16	Shared with APROM	1K + 256 (B)	√	4	6	8	2	-	1	1	128	QFN20	3x3	√	NT-MS51FB	-
MS51XB9BE	16/24	2.4	5.5	-40	105	18	4	16	Shared with APROM	1K + 256 (B)	√	4	6	8	2	-	1	1	128	QFN20	3x3	√	NT-MS51FB	NLG-20XB
MS51XC0BE	16/24	2.4	5.5	-40	105	18	4	32	Shared with APROM	2K+256 (B)	√	4	12	15	2	3	1	1	128	QFN20	3x3	√	NK-MS51PC	-

ML51 / ML54 / ML56 Low-power Series

NuMicro® ML51 series based on the 1T 8051 core is suitable for low power and high performance applications. The internal voltage reference and analog comparator can support portable devices, where power consumption is critical.

Key Features: The operating current can support 80 µA/MHz, 15 µA power consumption for low power run mode, 13 µA for low power idle mode, 0.8 µA (at 3.3V) for Power-down mode, 10 µs fast wake-up time, high immunity (8 kV ESD, 4 kV EFT), 20 mA large sink current, making this series also ideal for industrial applications.

Potential Applications: Industrial Control, Home Appliances, Thermostats, Smart Door Locks, HMI, Battery Packs, Medical Devices, etc.

• ML51 Low Power Series

Part No.	System						Memory					Timer				Analog				Connectivity				Security			Display	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	Timer (16-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Touch Key	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	SPROM (Byte)	UID	UCID	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
ML51BB9AE	24	1.8	5.5	-40	105	7	4	16	Shared with APROM	1	2	√	4	4	-	2	-	-	-	2	-	-	1	128	96	128	-	MSOP10	3x3	√	NT-ML51EB	-
ML51DB9AE	24	1.8	5.5	-40	105	11	4	16	Shared with APROM	1	2	√	4	4	-	3	-	-	-	2	1	1	2	128	96	128	-	TSSOP14	4.4x5.0	√	NT-ML51EB	-
ML51EB9AE	24	1.8	5.5	-40	105	24	4	16	Shared with APROM	1	2	√	4	6	-	8	-	-	-	2	1	1	2	128	96	128	-	TSSOP28	4.4x9.7	√	NT-ML51EB	NLG-28E
ML51EC0AE	24	1.8	5.5	-40	105	24	4	32	Shared with APROM	2	2	√	4	6	-	8	2	-	√	2	1	2	2	128	96	128	-	TSSOP28	4.4x9.7	√	NK-ML51PC	NLG-28E
ML51FB9AE	24	1.8	5.5	-40	105	16	4	16	Shared with APROM	1	2	√	4	6	-	6	-	-	-	2	1	1	2	128	96	128	-	TSSOP20	4.4x6.5	√	NT-ML51EB	NLG-20F
ML51LD1AE	24	1.8	3.6	-40	105	43	4	64	Shared with APROM	4	4	√	4	12	√	10	2	-	√	2	2	2	2	128	96	128	-	LQFP48	7x7	√	NK-ML51SD	NLG-48L
ML51OB9AE	24	1.8	5.5	-40	105	16	4	16	Shared with APROM	1	2	√	4	6	-	6	-	-	-	2	1	1	2	128	96	128	-	SOP20	7.6x13	√	NT-ML51EB	-
ML51PB9AE	24	1.8	5.5	-40	105	28	4	16	Shared with APROM	2	2	√	4	6	-	8	2	-	√	2	1	1	2	128	96	128	-	LQFP32	7x7	√	NT-ML51EB	-
ML51PC0AE	24	1.8	5.5	-40	105	28	4	32	Shared with APROM	2	2	√	4	6	-	8	2	-	√	2	1	2	2	128	96	128	-	LQFP32	7x7	√	NK-ML51PC	-
ML51SD1AE	24	1.8	3.6	-40	105	56	4	64	Shared with APROM	4	4	√	4	12	√	14	2	-	√	2	2	2	2	128	96	128	-	LQFP64	7x7	√	NK-ML51SD	NLG-64S
ML51TB9AE	24	1.8	5.5	-40	105	28	4	16	Shared with APROM	2	2	√	4	6	-	8	2	-	√	2	1	1	2	128	96	128	-	QFN33	4x4	√	NT-ML51EB	NLG-32T
ML51TC0AE	24	1.8	5.5	-40	105	28	4	32	Shared with APROM	2	2	√	4	6	-	8	2	-	√	2	1	2	2	128	96	128	-	QFN33	4x4	√	NK-ML51PC	NLG-32T
ML51TD1AE	24	1.8	3.6	-40	105	28	4	64	Shared with APROM	4	4	√	4	12	√	9	2	-	√	2	2	2	2	128	96	128	-	QFN33	4x4	√	NK-ML51SD	NLG-32T
ML51UB9AE	24	1.8	5.5	-40	105	24	4	16	Shared with APROM	2	2	√	4	6	-	8	2	-	√	2	1	1	2	128	96	128	-	SOP28	7.6x18	√	NT-ML51EB	-
ML51UC0AE	24	1.8	5.5	-40	105	24	4	32	Shared with APROM	2	2	√	4	6	-	8	2	-	√	2	1	2	2	128	96	128	-	SOP28	7.6x18	√	NK-ML51PC	-
ML51XB9AE	24	1.8	5.5	-40	105	17	4	16	Shared with APROM	1	2	√	4	6	-	6	-	-	-	2	1	1	2	128	96	128	-	QFN20	3x3	√	NT-ML51EB	-

• ML54 Low Power LCD Series

Part No.	System						Memory					Timer				Analog				Connectivity				Security			Display	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	Timer (16-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Touch Key	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	SPROM (Byte)	UID	UCID	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
ML54LD1AE	24	1.8	3.6	-40	105	42	-	64	Shared with APROM	4	4	√	4	12	√	10	2	-	√	2	2	2	2	128	96	128	4x22/6x20/8x18	LQFP48	7x7	√	NK-ML54SD	NLG-48L
ML54MD1AE	24	1.8	3.6	-40	105	38	-	64	Shared with APROM	4	4	√	4	12	√	10	2	-	√	2	2	2	2	128	96	128	4x21/6x19/8x17	LQFP44	10x10	√	NK-ML54SD	-
ML54SD1AE	24	1.8	3.6	-40	105	55	-	64	Shared with APROM	4	4	√	4	12	√	14	2	-	√	2	2	2	2	128	96	128	4x32/6x30/8x28	LQFP64	7x7	√	NK-ML54SD	NLG-64S

• ML56 Low Power Touch Key Series

Part No.	System						Memory					Timer				Analog				Connectivity				Security			Display	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	Timer (16-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Touch Key	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	SPROM (Byte)	UID	UCID	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
ML56LD1AE	24	1.8	3.6	-40	105	42	-	64	Shared with APROM	4	4	√	4	12	√	10	2	9	√	2	2	2	2	128	96	128	4x22/6x20/8x18	LQFP48	7x7	√	NK-ML56SD	NLG-48L
ML56MD1AE	24	1.8	3.6	-40	105	38	-	64	Shared with APROM	4	4	√	4	12	√	10	2	6	√	2	2	2	2	128	96	128	4x21/6x19/8x17	LQFP44	10x10	√	NK-ML56SD	-
ML56SD1AE	24	1.8	3.6	-40	105	55	-	64	Shared with APROM	4	4	√	4	12	√	14	2	14	√	2	2	2	2	128	96	128	4x32/6x30/8x28	LQFP64	7x7	√	NK-ML56SD	NLG-64S

N76E Series (1T)

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.

Key Features: N76E N79E series offer high-value features by integrating high resolution of ADC, power management circuit such as LDO, POR and BOD.

Part No.	System						Memory				Timer					Analog		Connectivity			Display	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	WDT	Timer (16-bit)	PWM (10-bit)	PWM (12-bit)	PWM (16-bit)	ADC (10-bit)	ADC (12-bit)	UART	SPI	I²C	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
N76E003AQ20	16	2.4	5.5	-40	105	18	4	18	Shared with APROM	1	√	4	-	-	6	-	8	2	1	1	-	QFN20	3x3	√	NT-N76E003	-
N76E003AT20	16	2.4	5.5	-40	105	18	4	18	Shared with APROM	1	√	4	-	-	6	-	8	2	1	1	-	TSSOP20	4.4x6.5	√	NT-N76E003	NLG-MS51F
N76E003BQ20	16	2.4	5.5	-40	105	18	4	18	Shared with APROM	1	√	4	-	-	6	-	8	2	1	1	-	QFN20	3x3	√	NT-N76E003	NLG-20XB
N76E616AF44	16	2.4	5.5	-40	105	42	4	18	Shared with APROM	512 (B)	√	4	-	-	6	8	-	2	-	1	4x32/6x30	PQFP44	10x10	√	NT-N76E616	-
N76E616AL48	16	2.4	5.5	-40	105	46	4	18	Shared with APROM	512 (B)	√	4	-	-	6	8	-	2	-	1	4x32/6x30	LQFP48	7x7	√	NT-N76E616	-
N76E616AM44	16	2.4	5.5	-40	105	42	4	18	Shared with APROM	512 (B)	√	4	-	-	6	8	-	2	-	1	4x32/6x30	LQFP44	10x10	√	NT-N76E616	-
N76E885AQ20	25	2.4	5.5	-40	105	18	4	18	Shared with APROM	512 (B)	√	4	-	6	-	10	-	2	1	1	-	QFN20	4x4	√	NT-N76E885	-
N76E885AT20	25	2.4	5.5	-40	105	18	4	18	Shared with APROM	512 (B)	√	4	-	6	-	10	-	2	1	1	-	TSSOP20	4.4x6.5	√	NT-N76E885	-
N76E885AT28	25	2.4	5.5	-40	105	26	4	18	Shared with APROM	512 (B)	√	4	-	6	-	10	-	2	1	1	-	TSSOP28	4.4x9.7	√	NT-N76E885	-

N79E Series (4T)

Part No.	System						Memory				Timer					Analog		Connectivity			Display	Package		Status	Tool	
	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	WDT	Timer (16-bit)	PWM (10-bit)	PWM (12-bit)	PWM (16-bit)	ADC (10-bit)	ADC (12-bit)	UART	SPI	I²C	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
N79E715AS16	24	2.4	5.5	-40	85	13	4	16	Shared with APROM	512 (B)	√	4	4	-	-	8	-	2	1	1	-	SOP16	3.9x10	√	NT-N79E715	-
N79E715AS20	24	2.4	5.5	-40	85	17	4	16	Shared with APROM	512 (B)	√	4	4	-	-	8	-	2	1	1	-	SOP20	7.6x13	√	NT-N79E715	-
N79E715AS28	24	2.4	5.5	-40	85	25	4	16	Shared with APROM	512 (B)	√	4	4	-	-	8	-	2	1	1	-	SOP28	7.6x18	√	NT-N79E715	-
N79E715AT20	24	2.4	5.5	-40	85	17	4	16	Shared with APROM	512 (B)	√	4	4	-	-	8	-	2	1	1	-	TSSOP20	4.4x6.5	√	NT-N79E715	-
N79E715AT28	24	2.4	5.5	-40	85	25	4	16	Shared with APROM	512 (B)	√	4	4	-	-	8	-	2	1	1	-	TSSOP28	4.4x9.7	√	NT-N79E715	-
N79E8132AS16	24	2.4	5.5	-40	85	13	4	16	Shared with APROM	512 (B)	√	4	4	-	-	8	-	2	1	1	-	SOP16	3.9x10	√	NT-N79E715	-
N79E815AS20	24	2.4	5.5	-40	85	17	4	16	Shared with APROM	512 (B)	√	4	4	-	-	8	-	2	1	1	-	SOP20	7.6x13	√	NT-N79E715	-
N79E815AS28	24	2.4	5.5	-40	85	25	4	16	Shared with APROM	512 (B)	√	4	4	-	-	8	-	2	1	1	-	SOP28	7.6x18	√	NT-N79E715	-
N79E815AT20	24	2.4	5.5	-40	85	17	4	16	Shared with APROM	512 (B)	√	4	4	-	-	8	-	2	1	1	-	TSSOP20	4.4x6.5	√	NT-N79E715	-
N79E815AT28	24	2.4	5.5	-40	85	25	4	16	Shared with APROM	512 (B)	√	4	4	-	-	8	-	2	1	1	-	TSSOP28	4.4x9.7	√	NT-N79E715	-

Standard 8051

The Nuvoton standard 8051 series is based on 6/12 cycle core structure, providing 22.1184 MHz internal oscillator (1% accuracy at 25°C, 5V), Data Flash configurable and high immunity (8 kV ESD, 4 kV EFT).

Potential Applications: Industrial Control, Power Management, etc.
Key Features: 16 to 64 Kbytes Flash, with sufficient IO, pin supports from 40 to 48. Standard line also includes energy management circuit such as LDO, POR, and BOD.

• N78E Series

Part No.	Flash (KB)	SRAM (bytes)	Data Flash (Kbytes)	ISP ROM (KB)	I/O	Connectivity			ADC (10-bit)	Comp	ISP	INT	PWM (8-bit)	Timer (16-bit)	Special Function	Package	Mass Production
						I²C	SPI	UART									
N78E055A	16	256+1K	4	2.5	40	-	1	1	-	-	√	4	5	3	6T/12T option, Extra I/O port, 22.1184 MHz internal RC, BOR	PLCC44/PQFP44/ LQFP48/DIP40	√
N78E059A	32	256+1K	4	2.5	40	-	1	1	-	-	√	4	5	3	6T/12T option, Extra I/O port, 22.1184 MHz internal RC, BOR	PLCC44/PQFP44/ LQFP48/DIP40	√
N78E517A	64	256+1K	Configurable	2.5	40	-	1	1	-	-	√	4	5	3	6T/12T option, Extra I/O port, 22.1184 MHz internal RC, BOR	PDIP40/PLCC44/ PQFP44/LQFP48 /TQFP44	√
N78E366A	64	256+1K	-	2.5	40	-	1	1	-	-	√	4	5	3	6T/12T option, Extra I/O port, 22.1184 MHz internal RC, BOR	PLCC44/PQFP44/ LQFP48/DIP40	√

• W78 Series

Part No.	Flash (KB)	SRAM (bytes)	ISP ROM (KB)	I/O	Connectivity			ADC (10-bit)	Comp	ISP	INT	PWM (8-bit)	Timer (16-bit)	Special Function	Package	Mass Production
					I²C	SPI	UART									
W78E052D	8	256	2	36	-	-	1	-	-	√	4	-	3	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/ LQFP48//TQFP44	√
W78E054D	16	256	2	36	-	-	1	-	-	√	4	-	3	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/ LQFP48//TQFP44	√
W78E058D	32	512	4	36	-	-	1	-	-	√	4	-	3	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/ LQFP48	√
W78E516D	64	512	4	36	-	-	1	-	-	√	4	-	3	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/ LQFP48	√

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