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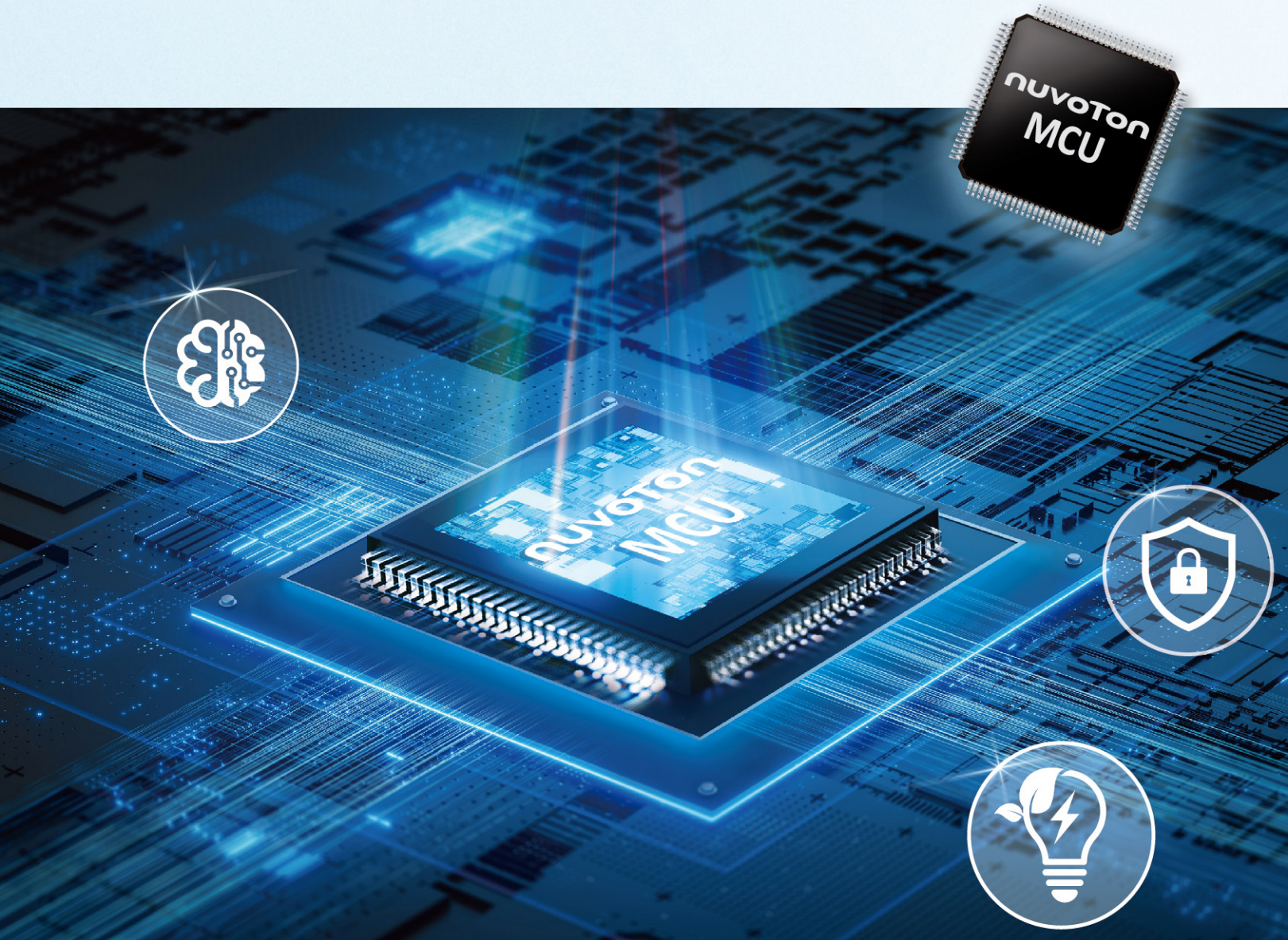
2026

Product Selection Guide



NuMicro® Family Microcontrollers

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

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

Nuvoton Tech. Germany GmbH (NTG)
· Location: Munich, Germany

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

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

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

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

Nuvoton Technology Corporation Japan (NTCJ)
· Location: Japan

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

Nuvoton Elect. Tech. (NTNJ) / Nuvoton Elect. Tech. (NTSH) / Nuvoton Elect. Tech. (NTSZ) / Nuvoton Elect. Tech. (NTHK)
· Location: Nanjing / Shanghai / Shenzhen / Hong Kong

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.

Microcontrollers

NuMicro® Ecosystem

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NuMicro® Product Selection Guide

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Nuvoton – 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.

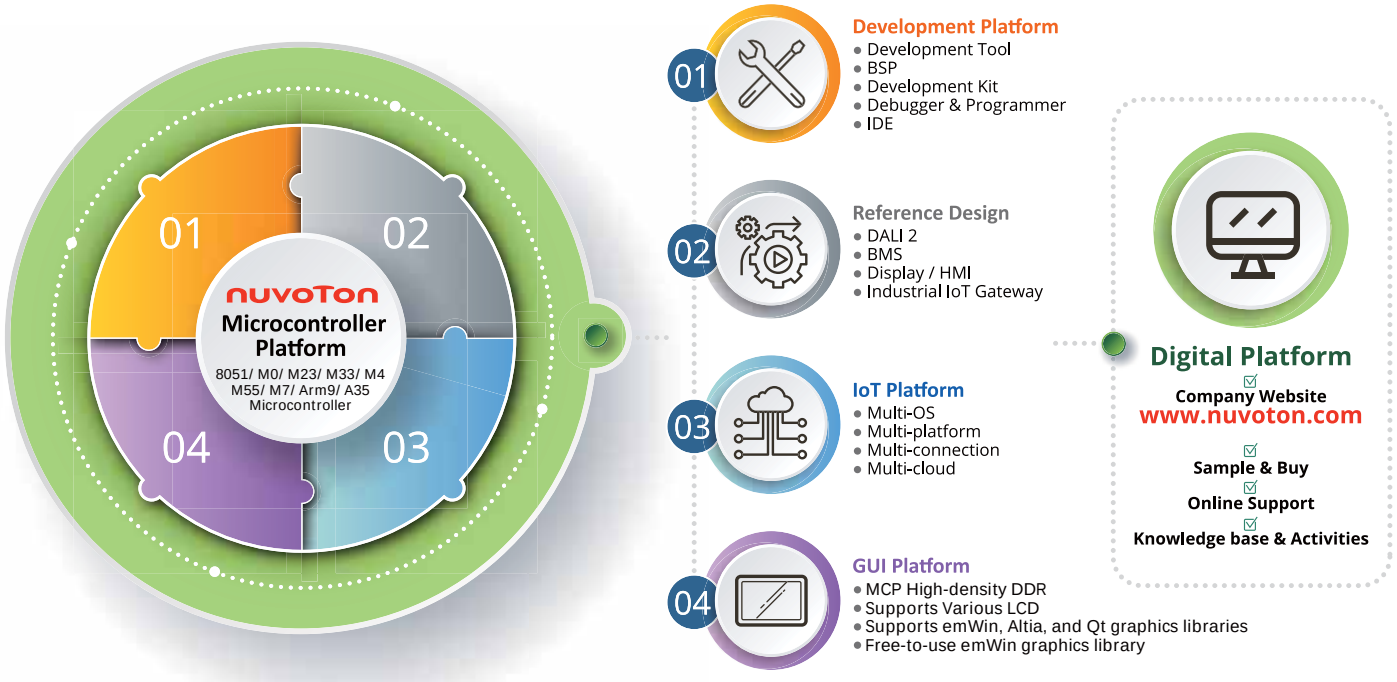
From the core of the NuMicro ecosystem, Nuvoton provides a rich product portfolio from 8051, Arm® Cortex-M0/ M23/ M33/ M4/ M55/ M7, and Arm9 to Cortex-A35-based micro-controllers, offering over 600 parts for selection.

To provide an easy development experience, Nuvoton builds a development platform with multiple IDEs, including Arm Keil, IAR Embedded Workbench, Visual Studio Code, and NuEclipse. The development tools, BSPs, development kits, debuggers, and programmers are also included 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 the Nuvoton IoT platform, which supports multi-OS with multi-platform and is available for multi-connection to multi-cloud.

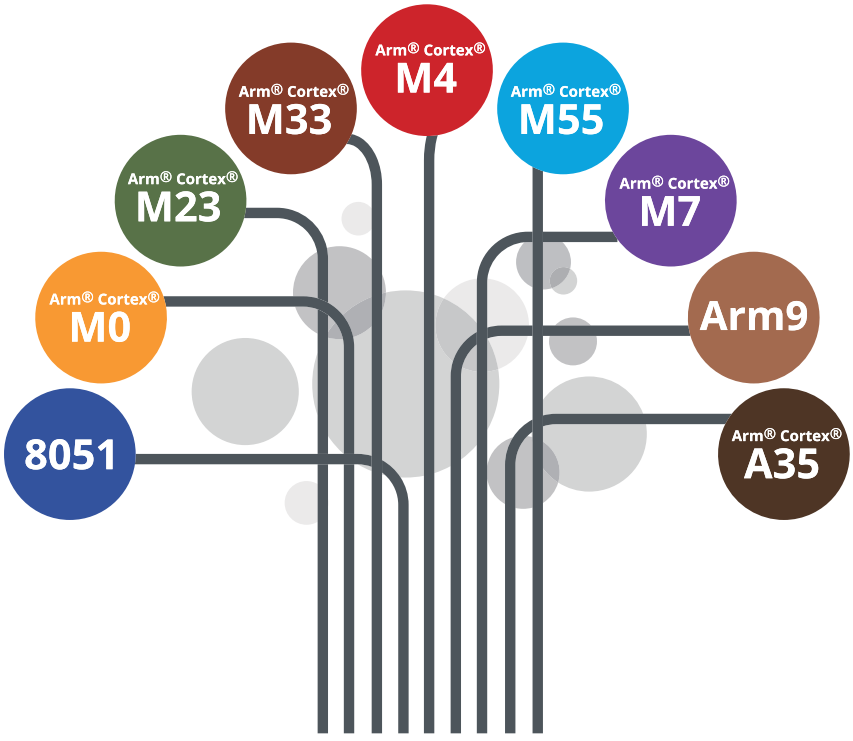
As a microcontroller platform provider, Nuvoton has been devoted to supporting our customers worldwide with our digital platform. Nuvoton's digital platform can meet various needs including but not limited to product selection, product resources, product purchasing, sales/ technical support, and knowledge-based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

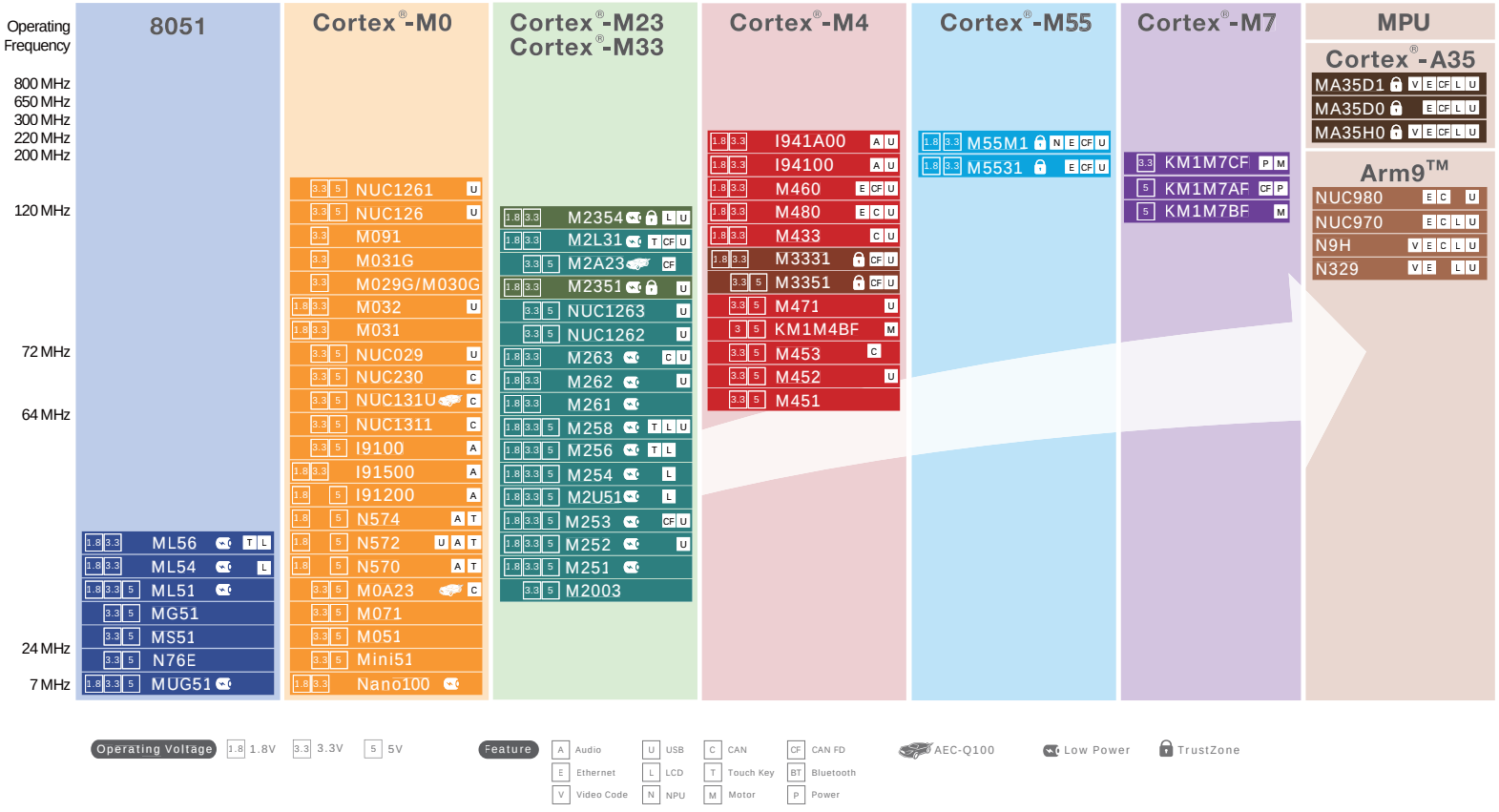
NuMicro® Ecosystem



Microcontroller Platform

Cortex® A35	Industrial Control & HMI Machine Learning Edge Gateway New Energy AIoT
Arm 9™	Industrial Control HMI IoT
Cortex® M7	Motor & Power Control
Cortex® M55	Machine Learning Endpoint AI Security
Cortex® M4	Audio Enhancement & HMI High Performance Security IoT
Cortex® M33	IoT Device Home Appliance
Cortex® M23	IoT Security Low Power
Cortex® M0	Comprehensive Platform Interactive Learning Industrial Control Automotive
8051	Industrial Control Low Power





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 4 sets of CAN FD. The operating frequency ranges from 48 to 200 MHz, and the Flash size ranges from 32 to 2.5 Mbytes.

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

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

	M0A23	NUC131	M2A23	NUC230/ NUC240	M253	M453	M483	M487	M463	M467
Core	Cortex-M0	Cortex-M0	Cortex-M23	Cortex-M0	Cortex-M23	Cortex-M4	Cortex-M4	Cortex-M4	Cortex-M4	Cortex-M4
Speed (MHz)	48	50	72	50	48	72	192	192	200	200
Flash (Kbytes)	32	68	256	128	128	256	256	2560	256	1024
LIN	2	3	1	3	2	2	2	2	2	2
CAN/CAN FD	1/-	1/-	-/3	2/-	-/1	1/-	3/-	2/-	-/2	-/4
Operating Temperature (℃)	-40 ~ +125	-40 ~ +105	-40 ~ +125	-40 ~ +105	-40 ~ +105	-40 ~ +105	-40 ~ +105	-40 ~ +105	-40 ~ +125	-40 ~ +105
AEC-Q100	✓	✓	✓	-	-	-	-	-	-	-

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 MCU products and -40 to +85°C for all new MPU products.
- **IEC 60730 Class B Certified Software Test Library (STL) supported**

Cortex-A35 Family
Core Speed: up to 800 MHz
ESD (HBM) : up to 2 kV

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

Cortex-M55 Family
Core Speed: up to 220MHz
ESD (HBM): up to 3 kV / EFT: up to 4.4 kV

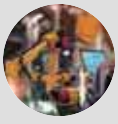
Cortex-M33 Family
Core Speed: up to 180 MHz
ESD (HBM): up to 4kV / EFT: up to 4.4kV

Cortex-M4 Family
Core Speed: up to 200 MHz
ESD (HBM) : up to 8 kV / EFT : up to 4.4 kV

Cortex-M23 Family
Core Speed: up to 96 MHz
ESD (HBM) : up to 7 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

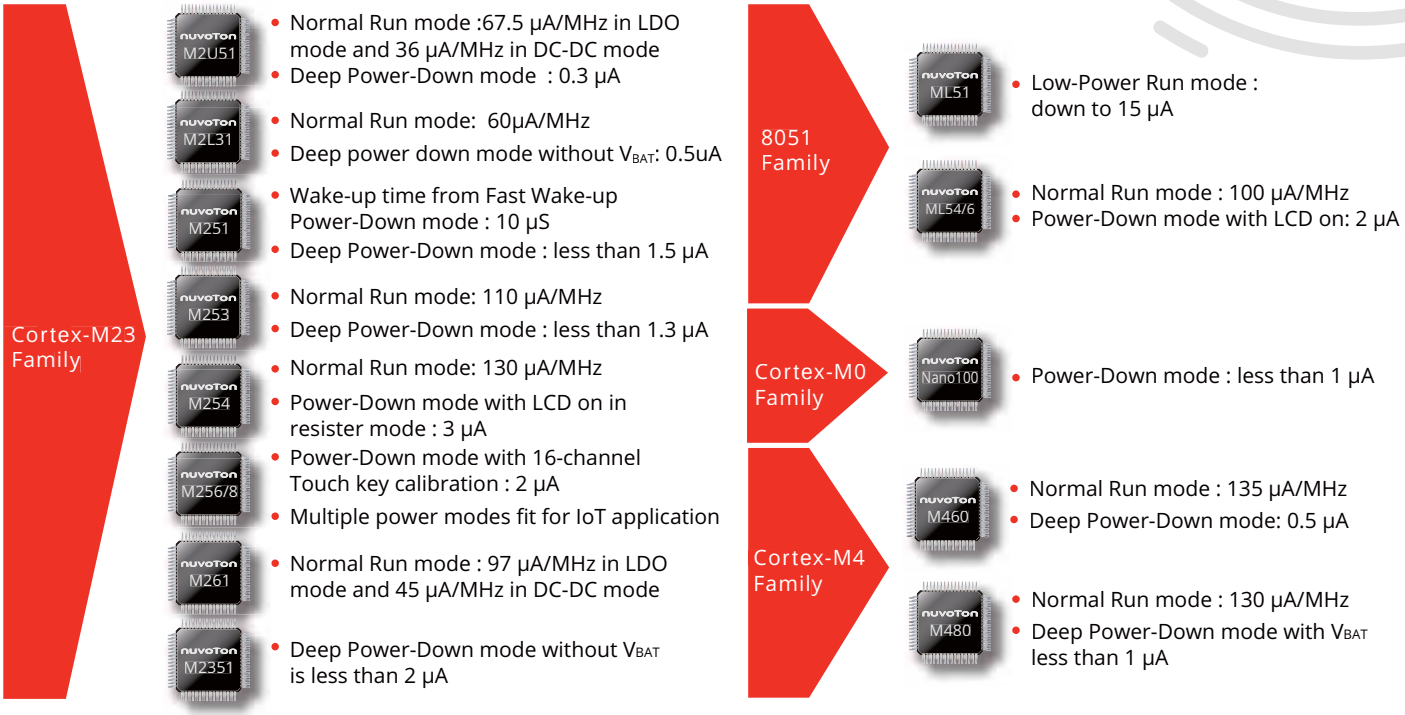
8051 Family
Core Speed: up to 24 MHz
ESD (HBM) : up to 8 kV / EFT : up to 4.4 kV

Industrial Control Field	NuMicro Series Recommendation
 Battery Management System	[A35] MA35D1/MA35D0 (Data Collector)/ MA35H0 (HMI) [Arm9] NUC980 (Data Collector) [M33/M4] M483/M433/M3331 (Energy Storage System) [M23] M253/M2L31/M2A23(E-Scooter BMS), M2003(Power Tool) [M0] M0A23 (E-bike BMS) [8051] MG51/ ML51 (Power Tools)
 LED Lightening	[Arm9] NUC980 (Large LED Advertising Display) [M33/M4] M463/M433/M3331 (Mini LED Local Dimming Control) [M23] NUC1262/NUC1263 (ARGB LED), M2003(LED Control Module) [M0] NDA102 (DALI) [8051] MG51 (LED Control Module)
 Industrial Connectivity	[A35] MA35D1/MA35D0 (Ethernet 10/100/1000, CAN FD) [Arm9] NUC980 (Ethernet 10/100, CAN) [M55] M5531 (Ethernet 10/100, CAN FD) [M33/M4] M467 (Ethernet 10/100, CAN FD), M487 (Ethernet 10/100, CAN FD), M471 (WLCSP100), M3331 (CAN FD) [M23] M2351/M2354 (Trustzone, CAN), M2L31/ M253 / M2A23 (CAN FD), M2003 (UART) [M0] M0A23 (CAN) [8051] MG51 (UART)
 Industrial Automation	[A35] MA35D1/MA35D0 (Industrial Switch) [Arm9] NUC980 (Industrial Switch) [M55] M55 (PLC Protocol Converter) [M4] M480/M460/M433 (Sensor Fusion, Motor Control) [M23] M2L31/M2003 (Sensor Module), M2A23 (CAN FD Converter) [M0] M0A23 (CAN Converter), M032/M031 (Sensor module) [8051] MG51/ ML51 (Sensor Module)
 Grid Infrastructure	[A35] MA35D1/MA35D0/MA35H0 (Charging Pile) [Arm9] NUC980 (Concentrator) [M55] M5531 (Charging Pile) [M4] M467 (Charging Pile), M463/M480 (Smart Circuit Breaker) [M23] M2351/ M2354 (AMI 2.0 Smart Meter), M2L31/ M253 (USB to UART Converter) [8051] MG51 (Circuit Breaker) [ADC] NADC24 (Precision ADC)
 Smart Building	[A35] MA35D1/MA35D0 (Edge Gateway)/ MA35H0 (HMI) [Arm9] NUC980 (Fire Alarm Controller) [M55] M5531 (Thermostat) [M33] M3331 (Home Appliance Display) [M4] M467 (Fire Alarm Controller, Thermostat) [M23] M254/ M256/ M258 (Thermostat), M2351/ M2354 (Smart Speaker) [M0] M0A23 (Elevator) [8051] ML51 (Smoke Detector), ML54/ML56 (Thermostat)
 5V MCU	[M33] M3351 [M4] M451/ M471 [M23] M251/ M253/ M254/ M256/ M258/ M2003/ M2A23 [M0] M0A23/ M071/ NUC131/ NUC230/ NUC029 [8051] MG51/ ML51/ MUG51

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 considering 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 1 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. The M2U51 series has exclusive power down current with 4µA with LCD charge pump operation; The M2L31 series has exclusive deep power down mode 0.5 µA



Low-power Application	NuMicro Series Recommendation										
	ML51	ML54/ ML56	Nano100	M251	M253	M254/ M256/M258	M261/ M2351	M2L31	M2U51	M480	M463/ M467
Core	8051	8051	Cortex-M0	Cortex-M23	Cortex-M23	Cortex-M23	Cortex-M23	Cortex-M23	Cortex-M23	Cortex-M4	Cortex-M4
Speed (MHz)	24	24	32 - 42	48	48	48	64	72	40	192	200
Flash (Kbytes)	16 - 64	64	16 - 128	32 - 256	128	64-256	512	64 - 512	32 - 256	2560	1024
Smoke Sensor	○	○	△	△	△			○	○		
Glucose Meter	△		○	○	○	○	○	○	○		
GPS Tracker	△	○	○	○	○	○		○	○		
Handheld Meter	△		○	○	○	○	○	○	○	○	○
Wireless Keyboard/ Mouse	△		○	○	○	○		○			
Smart Lock	○	○	○	○	○	○	○	○	○	○	○
Oximeter		○	○	○	○	○		○	○		

○ : Function could be fully satisfied　　△ : Basic function

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.

All of NuMicro M029G/ M030G/ 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 400 kHz(M029G) or 1 MHz(M030G/M031G) Slave mode and non-stretch mode

*Only for M031G

For high speed optical transceiver, Nuvoton provides the choices of M471 and M485 series.
The two MCU series are based on Cortex-M4 core, and provides the benefit of:

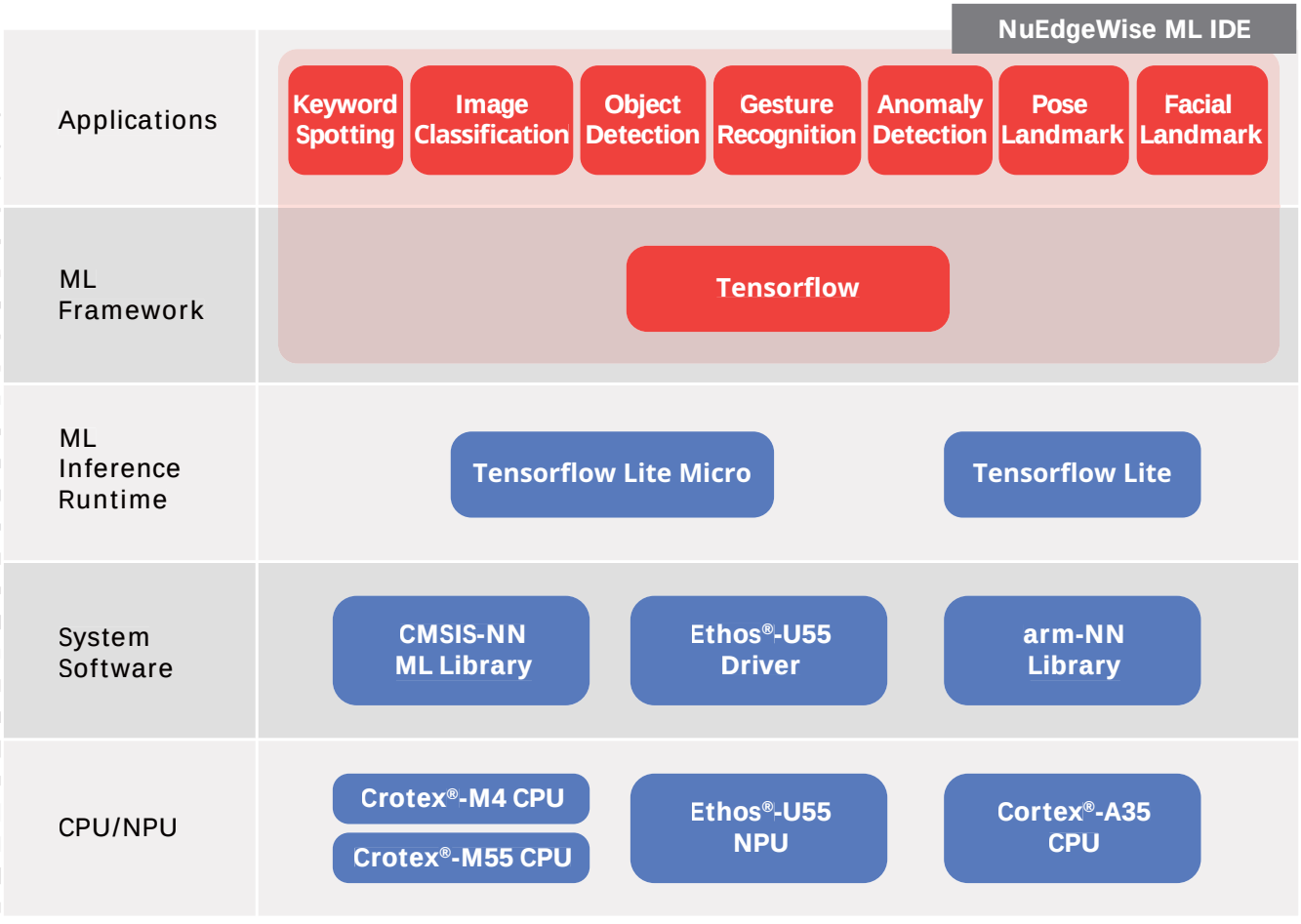
- Small package QFN48 5x5mm and WLCSP100 4.5x4.5mm
- Flash memory in dual bank structure for OTA
- Multiple ADC channel
- Strong I²C, up to 3.4 MHz

Optical Transceiver Application	NuMicro Series Recommendation									
	M029G	M030G			M031G				M471CI8AE	M485YIDAE
Core	Cortex-M0	Cortex-M0			Cortex-M0				Cortex-M4	Cortex-M4
Operating Frequency (MHz)	48	48			72				120	192
Flash (Kbytes)	32	32		64	32		64		512 (dual bank)	512 (dual bank)
SRAM (Kbytes)	2	4			8				64	160
Hardware Manchester Codec	-	-		-	✓		✓		-	-
DAC with Auto Data Generation	-	-		-	✓		✓		-	-
ADC	11	11/16		11/16	11/16		11/16		24	16
Temperature Sensor	✓	✓		✓	✓		✓		✓	✓
Package	QFN24	QFN24	QFN33	QFN24	QFN33	QFN24	QFN24	QFN33	QFN33	WLCSP100	QFN48
Scenario	General Purpose (Entry & Middle Speed)				Pilot Tone Modulation General Purpose (Middle Speed)				General Purpose (High Speed)	

NuMicro® Ecosystem – AI and Machine Learning Platform

The era of AI technology has arrived, and embedded systems products must now integrate AI features to meet user expectations. NuMicro supports this transition by equipping its advanced microcontrollers and microprocessors with AI and machine learning capabilities through a comprehensive software ecosystem. In the realm of MCU-based AI applications, combining sensors with machine learning models enables real-time recognition and decision-making across various fields such as machine vision, speech recognition, and smart sensing. NuMicro's M467 series MCU, M55M1 series MCU, and MA35D1 series MPU support running trained machine learning models for real-time inference. The primary software tool for this is NuEdgeWise, which offers a range of pretrained models and facilitates the entire ML development process—from data collection and preprocessing to model training, quantization, optimization, and performance verification.

Developers can use two methods to implement machine learning applications with NuMicro MCUs: Bring Your Own Data (BYOD) and Bring Your Own Model (BYOM). BYOD leverages NuEdgeWise's examples and pretrained models, allowing developers to retrain the model with data collected from their specific scenarios. BYOM allows developers to deploy and run their custom-trained models by leveraging the specific machine learning runtime, machine learning libraries, and NPU drivers.



IoT Security Platform

To strengthen the security of MCUs and MPUs 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® Family products, which covers:

- All data assets in the microcontroller are well identified and protected.
- All potential security threats while the microcontroller firmware is running are well addressed.
- All potential security vulnerabilities of the microcontroller, both in hardware and software, are well avoided.

Nuvoton has dedicated to enhancing 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).

The M2354 Series is based on M2351 Series' security fondation with enhancement on Side-Channel Attack mitigation of cryptographic hardware and physical secuirty of secure key storage.

Furthermore, M2354 Series , M480 Series and M460 Series elaborate comprehensively supporting for FreeRTOS, RT-Thread and Mbed OS 6.x for easy implementation of an IoT Device and its connection to varied clod services.

The MA35D1 Series introduces Trusted Secure Island (TSI) as a secure subsystem of microprocessors, contributing information security assurance for a range of embedded and IoT applications.

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

Security Technology	Item	NuMicro Series Recommendation					
		M261	M2351	M2354	M480	M460	MA35D1
Secure Boot ROM	Secure Bootloader (based on ECDSA signature)	✓	✓	✓	✓	✓	✓
	Secure Frmware Update (FOTA)	✓	✓	✓			✓
	Driver APIs	✓	✓	✓	✓	✓	
	Debug Authentication (temporarily unlock)		✓	✓			✓
Security Reference Code / Lib /Tool	TrustZone reference code		✓	✓			✓
	Key Generation Tool	✓	✓	✓		✓	✓
	Firmware Image Signing 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 remapping)	✓	✓	✓		✓	
	Flash Write Protection	✓	✓	✓	✓		
Crypto Processors	DES/3DES	✓	✓				✓
	AES-256	✓	✓	✓	✓	✓	✓
	AES with CCM, GCM and GMAC modes			✓		✓	✓
	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 + PRNG	✓	✓	✓	✓	✓	✓
	Cryptographic KeyStore (secure key storage)			✓		✓	
Device Identity	Unique ID	✓	✓	✓	✓	✓	
	Customer Unique ID	✓	✓	✓	✓	✓	
Anti-Tamper	Tamper Pin Detection	✓	✓	✓	✓	✓	
	RTC backup registers	✓	✓	✓	✓	✓	
Environment Sensor	Temperature sensor	✓	✓	✓	✓	✓	
	Clock monitor	✓	✓	✓	✓	✓	
	Voltage glitch detection			✓			
Platform Security	Booting Status Monitor		✓	✓			
	Life Cycle Management		✓	✓			
	Firmware Version Counter		✓	✓			
	Debug Port Management (DPM)		✓	✓			

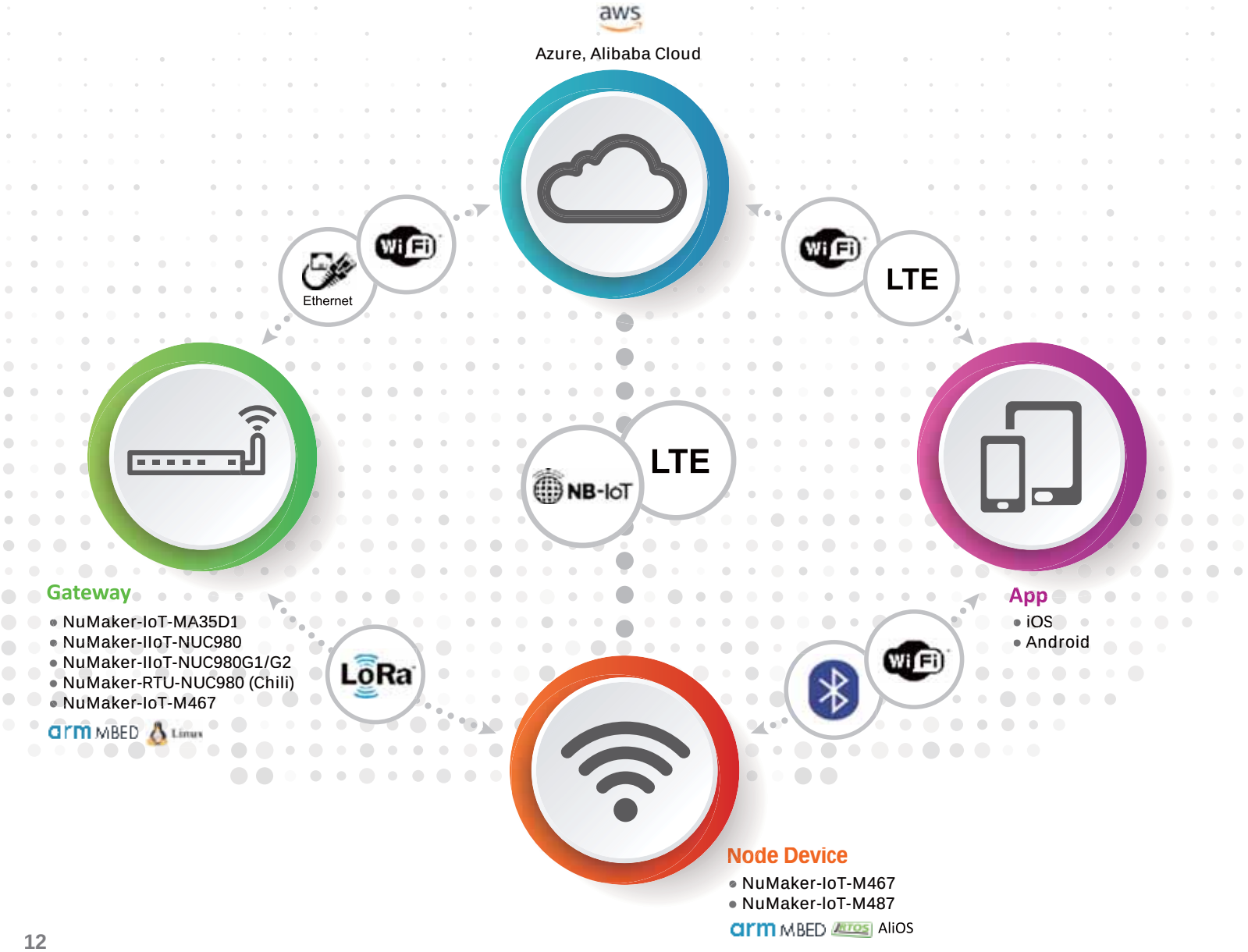
IoT Platform

Supports multi-OS with multi-platform; Provides 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-M467 and NuMaker-IoT-M487 are excellent for being a node device with sensor and connectivity. Besides, the NuMaker-IoT-MA35D1, NuMaker-IIoT-NUC980, NuMaker-IIoT-NUC980G1/G2, NuMaker-RTU-NUC980(Chili) and NuMaker-IoT-M467 are fit for being a gate-way.

Nuvoton links all aspects of the IoT platform to facilitate IoT innovation. NuMicro IoT platform supports Linux, Arm Mbed OS, Amazon FreeRTOS, AliOS Things 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), Alibaba Cloud and Microsoft Azure via various connectivity options including Ethernet, Wi-Fi, NB-IoT, and LTE.

Welcome to download the Nuvoton IoT resource reference file (https://www.nuvoton.com/iot_startup). The content includes rich information, such as development resource, quick-start examples, application tutorial videos, etc.



NuMaker Board	OS / RTOS	IP Connectivity					Non-IP Connectivity	Clouds		
		Ethernet	Wi-Fi	NB-IoT CAT-M1 Quectel BG96A	NB-IoT SIMCOM 7020E	LTE Quectel EC21A	LoRa Device SX1276	Amazon AWS	Alibaba Cloud	Microsoft Azure
NuMaker-IoT-MA35D1	Linux	●	●	●		●		●	●	
	RT-Thread	●							●	●
NuMaker-IIoT-NUC980G1 NuMaker-IIoT-NUC980G2	Linux	●	●	●		●		●	●	
	FreeRTOS	●								
	RT-Thread	●							●	●
NuMaker-RTU-NUC980(Chili)	Linux	●	●	●		●		●	●	
	FreeRTOS	●								
	RT-Thread	●							●	●
NuMaker-IoT-M467	MbedOS	●	●	●	●	●		●	●	●
	Amazon FreeRTOS		●					●		
	RT-Thread	●	●						●	●
NuMaker-IoT-M487	MbedOS	●	●	●	●	●		●	●	●
	Amazon FreeRTOS	●	●	●				●		
	AliOS Things	●	●						●	
	RT-Thread	●	●						●	●
NuMaker-LoRaD-M252	MbedOS/Non-OS*2						●*1			

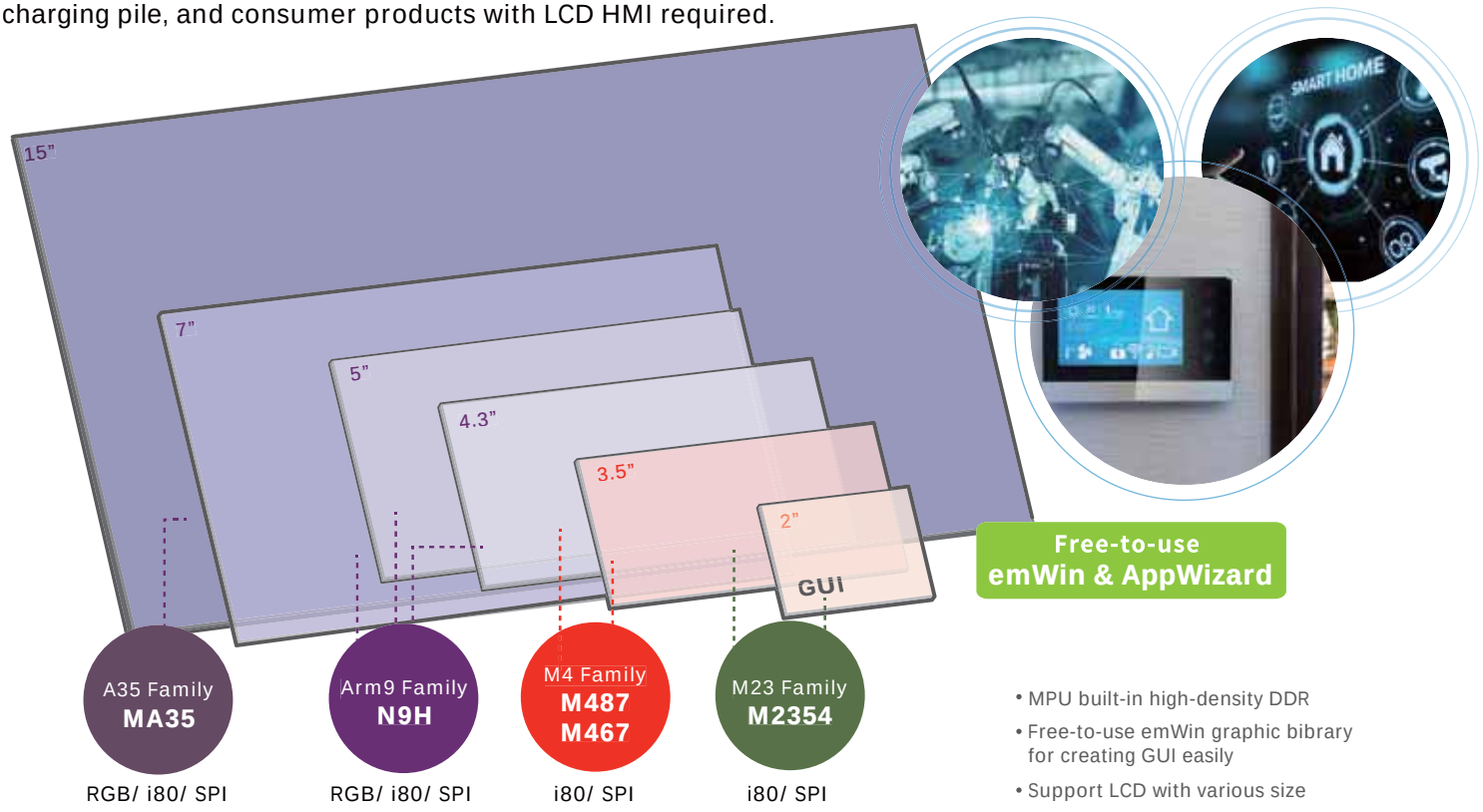
*1 US915/EU868/CN470 Bands *2 Non-OS is NuLoRaNode

GUI Platform

Nuvoton provides rich GUI platform resources, the platforms support SEGGER emWin, and Qt graphic libraries that help users create modern GUIs. In addition, we provide the powerful PC GUI tool SEGGER AppWizard for composing embedded GUI. It is easy to use, significantly saves development time, and is use-in-free for your HMI product.

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 1920 x 1080 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 (non-OS), RTOS, or Linux to be the OS according to application requirements.

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



- MPU built-in high-density DDR
- Free-to-use emWin graphic bibrary for creating GUI easily
- Support LCD with various size

Product Series	CPU Core (MHz)	SRAM Size	Flash Size	LCD Resolution & Interface	Hardware Accelerator For Graphics	EVB P/N	EVB LCD Size & Resolution
MA35D1	Dual Cortex-A35 800 MHz	MCP DDR 128/256/512 MB	External	1920x1080 RGB/ SPI/ i80	2D GFx JPEG Decoder H.264 Decoder	NuMaker-HMI-MA35D1-S1 NuMaker-HMI-MA35D1-A1	7" (1024x600)
MA35H0	Dual Cortex-A35 650 MHz	MCP DDR 128 MB	External	1280x800 RGB/ SPI/ i80	2D GFx JPEG Decoder H.264 Decoder	NuMaker-HMI-MA35H0-A1 NuMaker-HMI-MA35H0-A2	7" (1024x600)
N9H31	Arm9 300 MHz	MCP DDR 32 MB	External	1024x768 RGB/ SPI/ i80	2D GFx JPEG Codec	NuMaker-HMI-N9H31-A1 NuMaker-HMI-N9H31-A2	7" (800x480)
N9H30	Arm9 300 MHz	MCP DDR 64/128 MB	External	1024x768 RGB/ SPI/ i80	2D GFx JPEG Codec	NuMaker-HMI-N9H30	7" (800x480)
N9H26	Arm9 240 MHz	MCP DDR 64 MB	External	1024x768 RGB/ SPI/ i80	2D GFx JPEG Codec H.264 Codec	NuMaker-HMI-N9H26	5" (800x480)
N9H20	Arm9 200MHz	MCP DDR 2/8/32 MB	External	1024x768 RGB/ SPI/ i80	2D GFx JPEG Codec	NuMaker-HMI-N9H20	4.3" (480x272)
M460	Cortex-M4 200 MHz	512 KB	1024 KB	480x272 SPI/ i80	N/A	NuMaker-HMI-M467	4.3" (480x272)
M480	Cortex-M4 192 MHz	160 KB	512 KB	480x272 SPI/ i80	N/A	NuMaker-HMI-M487	3.2" (320x240)
M2354	Cortex-M23 96 MHz	256 KB	1024 KB	320x240 SPI/ i80	N/A	NuMaker-HMI-M2354	2.4" (320x240)

Smart Home Appliance Platform

- As the purist for quality of life continues, Smart Home Appliances have become essential for homes. Nuvoton microcontrollers integrate demands for Smart Home Appliances system. Critical features include: 1.8V 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. Robust anti-interference protection circuits of Electrostatic discharge (ESD) and Electrical fast transients (EFT) are also provided. Nuvoton microcontrollers support firmware update on the air (FOTA) by using the dual bank flash memory or in system programming (ISP) with loader ROM(LDROM). Nuvoton's human machine interface (HMI) micro-controllers incorporate high immunity features. The touch-key with waterproof and noise immunity can support 2 mm depth water droplet. The LCD charging pump patent can maintain the operating voltage and keep the display clear even when the voltage is insufficient.

- Nuvoton provides a rich product portfolio for Smart Home Appliances, including MG51, MS51 and ML51series based on 8051; M071, M032 series based on Cortex®-M0; M2003, M251/ M252, M254/ M256/ M258, and M2354 series based on Cortex®-M23; M471, M480 and M460 series based on Cortex®-M4; M3351 series based on Cortex®-M33; N9H series based on Arm9; and MA35D1 based on Cortex®-A35 and Cortex®-M4. All products offer long-term supply guarantee.

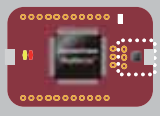
- Nuvoton microcontrollers provide rich-function features to meet various applications.
  - Main control: MG51, MS51, ML51, M2003, M251/ M252, M071, M471 and M3351 series
  - Display with COM/SEG LCD: ML54 and M254 series
  - Display with TFT LCD: M032, M2354, M480, M460, N9H and MA35D1 series
  - Touch-key with COM/SEG LCD: ML56 and M256/ M258 series
  - Wireless with consumer infrared receiver: M471 series

- Target applications: Smart Small Appliances, White Goods, Health Care Appliances, Smart Homes.

Home Appliance		MG51/ MS51/ ML51	M2003	M251/ M252	M071	M471	ML54/ ML56	M254/ M256/ M258	M032	M2354	M480	M460	N9H	MA35D1	M3351
Application		Main Control	Main Control	Main Control	Main Control	Main Control	Display + Touch	Display + Touch	Display	Display	Display	Display	Display	Display	Main Control
Core		8051-1T	Cortex-M23	Cortex-M23	Cortex-M0	Cortex-M4	8051-1T	Cortex-M23	Cortex-M0	Cortex-M23	Cortex-M4	Cortex-M4	Arm9	Dual Cortex-A35 + M4	Cortex-M33
Operating Frequency (MHz)		24	24/40	48	50 / 72	72 /120	24	48	72	96	192	200	200 / 240 / 300	800 MHz / 180 MHz	144 MHz
Flash (KB)		8 / 16 / 32 / 64	32 / 64 / 128 / 256 / 512 / 1024	32 / 64 / 128 / 256	64 / 128 / 256	64 /128 / 256	64	64 / 128 / 256	512	1024	512	1024	External	External	256 / 512 / 1024
SRAM (KB)		1 / 1.2 / 2 / 4	4 / 24 / 36 / 48	8 / 16 / 32	8/ 16 / 20	32 / 64	4	8 / 16 / 32	96	256	160	512	2 / 8 / 32 / 64 / 128MB	128 / 256 / 512MB	48 / 128
Operating Voltage (V)		2.5 ~ 5.5	2.4 ~ 5.5	1.8 ~ 5.5	2.5 ~ 5.5	2.5 ~ 5.5	1.8 ~ 3.6	1.75 ~ 5.5	1.8 ~ 3.6	1.7 ~ 3.6	1.8 ~ 3.6	1.7 ~ 3.6	3.0 ~ 3.6	3.0 ~ 3.6	2.7 ~ 5.5
IEC-60730 Class B STL		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Display							COM/SEG LCD 8x28	COM/SEG LCD 8x44	TFTLCD 3.5" 320x240	TFTLCD 3.5" 320x240	TFTLCD 4.3" 320x240	TFTLCD 5" 480x272	TFTLCD 7" 1024x768	TFTLCD 15" 1920x1080	
Touch-key							✓ 14	✓ 15 / 24							
Low Power		✓ (ML51)		✓			✓	✓		✓					
Infrared Receiver						✓									
Wide Pin Pitch	0.5mm Pin Pitch	✓	✓	✓	✓	✓	✓				✓	✓			✓
	0.65mm Pin Pitch	✓	✓	✓											
	0.8mm Pin Pitch	✓			✓	✓	✓	✓							

NuDeveloper Ecosystem – Make Engineers' Jobs Easier

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



Evaluation Board (NuMaker)

- NuMaker Series
  - Comprehensive peripherals for rapid prototyping of your idea.
  - Designed for general purpose development
  - On board debugger & programmer
- **Application Specific**

  Designed for DALI/IoT/ HMI/Touch key/COM/SEG LCD development.

Debugger & Programmer (Nu-Link)

- 1 to 1 Debugger & Programmer

  Nu-Link Series Debug Adapter is a USB debugger/programmer and can be applied to the development of NuMicro products. Besides, it supports off-line programming which can be triggered by a button.
- MP Programmer

  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 programming system.

Software Tool (NuTool)

- Programming Tool
  - ICP Tool
    Mass-production programming tool with code encryption, protect IP of customer.
  - ISP Tool
    Provides sample code for end-product firmware update.
  - Nu-Link Command
    Supports programming up to 16 target chips simultaneously.
- General Tool

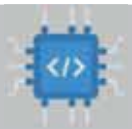
  PinConfigure Tool
  To configure I/O with multi-functions and generate OrCAD library.

  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.
  - CodeGenerator Tool
    Code generating for NuMicro M031/M032/M251/NUC1262/M2003C projects with the initial peripheral, pin, and clock configurations.
- **Application Specific**
  - DALIController
    Supports monitoring and recording of DALI bus communication and send DALI commands.
  - LCDView
    Creates customized LCD panel and COM/SEG table and emulators real-time COM/SEG status.

  TouchView
  Supports adjusting parameters and calibrating touch key system.

  NuEdgeWise
  Nuvoton Machine Learning Development Tool for TinyML



Embedded Software (BSP & Example Code)

- Board Support Package (BSP)

  Offers rich peripheral application example codes. With the unified API names of all NuMicro products and Nuvoton Code Generator, customer could easily start or migrate a NuMicro project.
- Example Code

  Offers rich popular applications : Audio codec, LED lighting, Fan speed detection, Modbus, SPI flash and EEPROM, Power detection, Temperature detection, etc.

IDE and Driver

Offers multiple IDEs for customers

- Arm Keil

  Free-to-use for NuMicro M0, M0+, M23, M33, M4, M55 and M7 products.
- IAR Embedded Workbench
- NuEclipse within the GNU Eclipse framework
- Visual Studio Code

Digital Platform

Nuvoton has been devoted to supporting our customers worldwide through 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 V_{BAT} pin when power off or 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 USCI supports UART, SPI and I^2C mode.
XOM		eXecute-Only Memory
TSI		Trusted Secure Island

Code of Chip Package	Package	Pin	Body Size (mm)	Pitch Size (mm)
A	QFN	68	8 x 8	0.4
B	MSOP	10	3 x 3	0.5
C	WLCSP	-	-	-
D	TSSOP	14	4.4 x 5.0	0.65
E	TSSOP	28	4.4 x 9.7	0.65
F	TSSOP	20	4.4 x 6.5	0.65
G	QFN	24	3 x 3	0.4
H	LQFP	176	24 x 24	0.5
H2	LQFP	176	24 x 24	0.5
I	SOP	8	4 x 5 (150 mil)	1.27
J	LQFP	144	20 x 20	0.5
J2	LQFP	144	20 x 20	0.5
K	LQFP	128	14 x 14	0.4
K1	LQFP	128	14 x 20	0.5
K2	LQFP	128	14 x 14	0.4
L	LQFP	48	7 x 7	0.5
M	LQFP	44	10 x 10	0.8
N	QFN	48	7 x 7	0.5
O	SOP	20	7.6 x 13 (300 mil)	1.27
P	LQFP	32	7 x 7	0.8
Q	LQFP	80	14 x 14	0.65
R	LQFP	64	10 x 10	0.5
R1	LQFP	64	14 x 14	0.8
S	LQFP	64	7 x 7	0.4
S2	LQFP	64	7 x 7	0.4
T	QFN	33	4 x 4	0.4
T1	QFN	16	4 x 4	0.65
U	SOP	28	7.6 x 18.1 (300 mil)	1.27
V	LQFP	100	14 x 14	0.5
V1	LQFP	100	14 x 20	0.65
W	Wafer	-	-	-
X	QFN	20	3 x 3	0.4
			4 x 4	0.5
Y	QFN	48	5 x 5	0.35
Z	QFN	33	5 x 5	0.5

NuMicro® Family Arm® Cortex®-A35 MPUs

High-performance Edge IIoT Series

The NuMicro® MA35 family is based on the Arm® Cortex-A35 core in Armv8-A 64-bit architecture and the Arm Cortex-M4 core. It supports TrustZone security technology for high-end industrial control, edge IIoT gateway, and HMI applications.

The MA35 family provides multiple cores architecture to meet the high computing power and real-time control requirements at the same time. The MA35 family supports 16-bit DDR2 and DDR3/ DDR3L SDRAM. For an easy system design and manufacture, the MA35 family also offers LQFP and BGA packages stacked with a DDR2/DDR3L SDRAM and the density up to 512 MB, which significantly reduces PCB layer, size and electromagnetic interference (EMI).

The MA35 family also provides rich features such as advanced security, Nuvoton TSI (Trusted Secure Island), Gigabit Ethernet, SDIO3.0 host controller, high-speed USB2.0 controller, and CAN FD for high-speed connectivity. It is also equipped with a LCD controller, 2D graphic accelerator, JPEG, and H.264 decoder for graphics HMI applications. Furthermore, the complete ecosystem is provided to shorten the customer's development time in embedded Linux.

MA35D1 Series

The NuMicro® MA35D1 series is a heterogeneous multi-core microprocessor targeted to high-end edge IIoT gateway. It is based on dual 64-bit Arm® Cortex®-A35 cores with speed up to 800 MHz, and one 180 MHz Arm® Cortex®-M4 core. Based on the high-performance cores, the MA35D1 series facilities the tiny AI/ML for edge computing.
The MA35D1 supports 16-bit DDR2 and DDR3/ DDR3L SDRAM. For an easy system design and manufacture, the MA35D1 series also offers LQFP and BGA packages stacked with the DDR2/DDR3L SDRAM and density up to 512 MB, which significantly reduces PCB layer, size and electromagnetic interference (EMI).

The MA35D1 series is a trusted system for IoT products' security requirements. It includes several advanced security mechanisms such as Nuvoton Trusted Secure Island (TSI) an isolated secure hardware unit, TrustZone, secure boot, tamper-detection, built-in cryptographic accelerators, and a TRNG, as well as Key Store and OTP memory. All the security operations are performed in the TSI to protect sensitive and high-value data. The features also satisfy customers in IEC 62443 certification requirements.

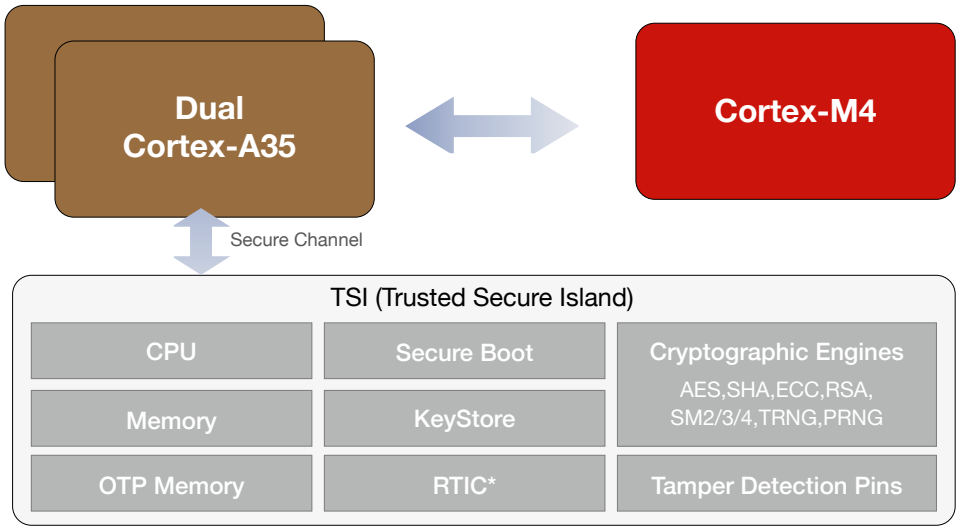
For high-end edge IIoT gateway requirements, the MA35D1 series provides multiple advanced and high-speed connection interfaces, such as Gigabit Ethernet, SDIO3.0, USB 2.0 HS, and CAN FD, for edge gateway and new energy applications.
For HMI applications, the MA35D1 series provides a LCD display controller with the resolution up to 1920x1080 at 60 FPS, a 2D graphic engine, a JPEG and a H.264 decoder integrated for better graphical HMI effects and video playback.

Boot Source: SPI NOR, SPI NAND, NAND, SD, eMMC, USB
Target Applications: Edge Gateway, Tiny AI/ML, HMI & Industrial Control, New Energy Applications

Part No.	Package	MCP DDR	Ethernet	Temper Pins	EADC	GPIOs
MA35D16F787C	LQFP216	128 MB	Megabit + Gigabit Ethernet	-	-	154
MA35D16F887C	LQFP216	256 MB	Megabit + Gigabit Ethernet	-	-	154
MA35D16F987C	LQFP216	512 MB	Megabit + Gigabit Ethernet	-	-	154
MA35D16A887C	BGA312	256 MB	2 sets of Gigabit Ethernet	√	√	208
MA35D16AJ87C	BGA312	512 MB	2 sets of Gigabit Ethernet	√	√	208
MA35D16A087C	BGA364	-	2 sets of Gigabit Ethernet	√	√	208

Key Features: Dual Cortex-A35 high-performance cores, One real-time processor Cortex-M4, MCP industrial DDR in LQFP & BGA packages, Advanced security Nuvoton TSI, 1080P display, 2D graphic engine, JPEG&H.264 decoder, 2 sets of 10/100/1000 Ethernet MAC, 2 sets of USB High Speed Host, 1 set of SD3.0, 4 sets of CAN FD.

MA35D1's Innovative Secure Subsystem Security for MPU



The MA35D1 is a trusted system for IoT products' security requirements

The Nuvoton TSI is an isolated secure hardware unit where operation is not affected by MA35D1's main dual-core CPU system.

Multiple built-in security features in the subsystem to carry out :

- **Software Execution Security**
  Secure Boot, TrustZone, *Run-Time Integrity Checker (RTIC)
- **Communication Security**
  True Random Number Generator (TRNG), Pseudo Random Number Generator (PRNG), Hardware Cryptographic Accelerators
- **Chip-level Storage Security**
  Secure key storage (KeyStore) and OTP memory accessed by the cryptographic engines without needs of CPU intervention, supporting product lifecycle management (PLM)
- **System Security**
  Tamper pins for system-level intrusion detection

Customers can easily utilize TSI's secure environment and features to realize the Protection, Detection, and Recovery for IoT devices.

Part No.	System						Memory			Memory Interface	Timer				Analog		Connectivity												Display			TSI	Security	Package		Status	Tool
	Core	Real-Time Processor (RTP)	Operating Frequency (MHz)	Operating Temperature (Tj, min)(°C)	Operating Temperature (Tj, max)(°C)	GPIO	SRAM (KB)	DDR(MB)	PDMA (ch)	SDRAM Interface	Timer/PWM	Enhanced PWM (EPWM) (16-bit)	Quadrature Encoder Interface (QEI)	Enhanced Capture (ECAP)	ADC (12-bit)	Enhanced ADC (EADC)(12-bit)	Low-power UART (LPUART)	ISO-7816-3	Quad SPI (QSPI)	I²C	SPI/ I²S	I²S	CAN FD	Secure Digital Host Controller (SDHC)	USB HS Host	USB HS Device/ Host	Ethernet 10/100 Mbps	Ethernet 10/100/1000 Mbps	External Bus Interface (EBI)	Camera Interface	TFT-LCD Interface	2D Graphics Engine	Video Codec	Trusted Secure Island (TSI)	Tamper Detection Pin	Package Type	Package Size	Mass Production	EVB
MA35D16 F787C	Cortex-A35 Dual	Cortex-M4	800	-40	105	154	256 + 128	128	40	-	12	18	2	3	8	-	17	2	2	6	4	2	4	2	1	1	1	1	√	2	24 bit	√	H.264 decoder JPEG decoder	√	-	LQFP 216-EP	24 x 24	√	-
MA35D16 F887C	Cortex-A35 Dual	Cortex-M4	800	-40	105	154	256 + 128	256	40	-	12	18	2	3	8	-	17	2	2	6	4	2	4	2	1	1	1	1	√	2	24 bit	√	H.264 decoder JPEG decoder	√	-	LQFP 216-EP	24 x 24	√	-
MA35D16 F987C	Cortex-A35 Dual	Cortex-M4	800	-40	105	154	256 + 128	512	40	-	12	18	2	3	8	-	17	2	2	6	4	2	4	2	1	1	1	1	√	2	24 bit	√	H.264 decoder JPEG decoder	√	-	LQFP 216-EP	24 x 24	√	NuMaker-IoT-MA35D1-A1
MA35D16 A887C	Cortex-A35 Dual	Cortex-M4	800	-40	105	208	256 + 128	256	40	-	12	18	3	3	8	8	17	2	2	6	4	2	4	2	1	1	-	2	√	2	24 bit	√	H.264 decoder JPEG decoder	√	2	BGA 312	15 x 15	√	NuMaker-HMI-MA35D1-S1
MA35D16 AJ87C	Cortex-A35 Dual	Cortex-M4	800	-40	105	208	256 + 128	512	40	-	12	18	3	3	8	8	17	2	2	6	4	2	4	2	1	1	-	2	√	2	24 bit	√	H.264 decoder JPEG decoder	√	2	BGA 312	15 x 15	√	NuMaker-HMI-MA35D1-A1
MA35D16 A087C	Cortex-A35 Dual	Cortex-M4	800	-40	105	208	256 + 128	-	40	√	12	18	3	3	8	8	17	2	2	6	4	2	4	2	1	1	-	2	√	2	24 bit	√	H.264 decoder JPEG decoder	√	2	BGA 364	14 x 14	√	-

MA35H0 Series

The NuMicro® MA35H0 series is a high-performance microprocessor targeted to industrial HMI applications. It is based on dual 64/32-bit Arm® Cortex®-A35 cores, the high-performance cores run up to 650 MHz and include 32/32 KB I/D L1 cache for each core, and a 512 KB shared L2 cache.

The MA35H0 series supports secure booting from four modes, USB, SD/eMMC, NAND, and SPI Flash (SPI NOR/SPI NAND). In order to provide easy system design and manufacture, MA35H0 series also offers LQFP package stacked with a DDR SDRAM and the size of 128 MB, which significantly reduces PCB layer, size and electromagnetic interference (EMI).

The MA35H0 series is a trusted system for industrial HMI applications security requirement. It includes practical security mechanisms such as Arm® TrustZone® technology and secure boot, built-in cryptographic accelerators with AES, SHA, ECC, RSA, SM2/3/4, and a TRNG, also Key Store and OTP memory to protect sensitive and high-value data.

To obtain better graphical HMI effects, the MA35H0 series provides an LCD Display controller with the resolution up to 1920 x 1080 at 60 fps, a 2D graphic engine, a JPEG and a H.264 decoder for video decoding. Furthermore, the MA35H0 series also provides high-speed connectivity and advanced control interfaces for high-performance HMI applications, such as Megabit Ethernet, high-speed USB host and device, SD3.0/eMMC, and CAN FD.

Boot Source: SPI NOR, SPI NAND, NAND, SD, eMMC, USB
Target Applications: Factory Automation, Industrial HMI, Smart Building, Smart Home, Smart Appliance, Smart Medical, New Energy

Part No.	Package	MCP DDR	Ethernet	Temper Pins	EADC	GPIOs
MA35H04F764C	LQFP216	128 MB	Megabit	-	-	154

Key Features: Dual Cortex-A35 high-performance cores, MCP industrial DDR in LQFP package, Practical security Nuvoton, 1080P display, 2D graphic engine, JPEG & H.264 decoder, Megabit Ethernet MAC, USB High Speed Host & Device, SD3.0, CAN FD.

New Option for Industrial HMI

MA35H0 EVB & Demos
NuMaker-HMI-MA35H0-A1

EV Charging Station

Industrial Control

Coffee Machine

Speed Meter

High-Performance with Power Efficiency

Ddual-core 64-bit Cortex-A35 CPU with a clock speed of 650 MHz.

Smooth Graphics & Video Playback

Supports 1080P HMI, built-in a LCD interface, a 2D graphics accelerator, and JPEG & H.264 decoders.

Industrial Grade Operating Temp.

Supports industrial-grade operating temperatures, ranging from -40 to +125 degrees Celsius in junction.

Rich Design Resource

HMI software supports mainstream graphics libraries such as SEGGER emWin, LVGL, and Qt.Additionally, provides user-friendly PC GUI tools for UI development, significantly reducing development time.

Part No.	System						Memory			Memory Interface	Timer				Analog		Connectivity												Display				TSI	Security	Package		Status	Tool	
	Core	Real-Time Processor (RTP)	Operating Frequency (MHz)	Operating Temperature (Tj, min)(°C)	Operating Temperature (Tj, max)(°C)	GPIO	SRAM (KB)	DDR(MB)	PDMA (ch)	SDRAM Interface	Timer/PWM	Enhanced PWM (EPWM) (16-bit)	Quadrature Encoder Interface (QEI)	Enhanced Capture (ECAP)	ADC (12-bit)	Enhanced ADC (EADC)(12-bit)	Low-power UART (LPUART)	ISO-7816-3	Quad SPI (QSPI)	I²C	SPI/ IPS	IPS	CAN FD	Secure Digital Host Controller (SDHC)	USB HS Device/ Host	USB HS Host	Ethernet 10/100 Mbps	Ethernet 10/100/1000 Mbps	External Bus Interface (EBI)	Camera Interface	TFT-LCD Interface	2D Graphics Engine	Video Codec	Trusted Secure Island (TSI)	Tamper Detection Pin	Package Type	Package Size	Mass Production	EVB
MA35H04F764C	Cortex-A35 Dual	-	650	-40	125	154	384	128	40	-	12	18	-	-	8	-	6	2	1	3	2	1	2	2	1	1	1	-	v	-	24 bit	√	H.264 decoder JPEG decoder	-	-	LQFP 216-EP	24 x 24	2024 Q1	NuMaker-HMI-MA35H0-A1 NuMaker-HMI-MA35H0-A2

MA35D0 Series

The NuMicro MA35D0 series is a high-performance microprocessor designed for industrial edge device applications. It features dual 64/32-bit Arm Cortex-A35 cores, running at speeds of up to 650 MHz. Each core includes a 32/32 KB I/D L1 cache, and there is a 512 KB shared L2 cache.

The MA35D0 series comes with a built-in 128 KB IBR (Internal Boot ROM) and supports secure booting from four modes: USB, SD/eMMC, NAND, and SPI Flash (SPI NOR/SPI NAND). To facilitate system design and manufacturing, the MA35D0 series offers an LQFP package stacked with DDR SDRAM, with capacities of up to 256 MB. This integration significantly reduces PCB layers, size, and electromagnetic interference (EMI).

For industrial applications requiring high security, the MA35D0 series provides practical security mechanisms such as Arm TrustZone technology and secure boot. It also includes built-in cryptographic accelerators for AES, SHA, ECC, RSA, SM2/3/4, and a TRNG, as well as Key Store and OTP memory to protect sensitive and high-value data.

In addition to security features, the MA35D0 series offers high-speed connectivity and advanced control interfaces suitable for edge device applications. These include Megabit Ethernet, high-speed USB host and device, SD3.0/eMMC, and CAN FD. The series also features an LCD Display controller supporting resolutions up to 1920 x 1080 at 60 fps, a 2D graphic engine, and JPEG image decoding capabilities.

Boot Source: SPI NOR, SPI NAND, NAND, SD, eMMC, USB
Target Applications: Factory Automation, Industrial Gateway, New Energy, Edge Device

Part No.	Package	MCP DDR	Ethernet	Temper Pins	EADC	GPIOs
MA35D03F864C	LQFP216	256 MB	Megabit	-	-	154
MA35D03F764C	LQFP216	128 MB	Megabit	-	-	154

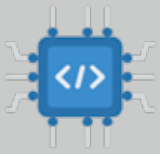
Key Features: Dual Cortex-A35 high-performance cores, MCP industrial DDR in LQFP package, Practical security Nuvoton, 1080P display, 2D graphic engine, Megabit Ethernet MAC, USB High Speed Host & Device, SD3.0, CAN FD.

New Option for Industrial Edge Device Applications

NuMaker-IoT-MA35D0-A1

Nuvoton provides rich design resources for MA35D0 to meet diverse and complex application needs

The MA35D0 EVB is pre-loaded with remote operation examples, allowing you to start evaluation and development immediately



BSP & Docs

SW Tools

EVB

OS

Part No.	System						Memory			Memory Interface	Timer				Analog		Connectivity												Display				TSI	Security	Package		Status	Tool
	Core	Real-Time Processor (RTP)	Operating Frequency (MHz)	Operating Temperature (Tj, min)(°C)	Operating Temperature (Tj, max)(°C)	GPIO	SRAM (KB)	DDR(MB)	PDMA (ch)	SDRAM Interface	Timer/PWM	Enhanced PWM (EPWM) (16-bit)	Quadrature Encoder Interface (QEI)	Enhanced Capture (ECAP)	ADC (12-bit)	Enhanced ADC (EADC)(12-bit)	Low-power UART (LPUART)	ISO-7816-3	Quad SPI (QSPI)	I²C	SPI/ FS	I²S	CAN FD	Secure Digital Host Controller (SDHC)	USB HS Device/ Host	USB HS Host	Ethernet 10/100 Mbps	Ethernet 10/100/1000 Mbps	External Bus Interface (EBI)	Camera Interface	TFT-LCD Interface	2D Graphics Engine	Video Codec	Trusted Secure Island (TSI)	Tamper Detection Pin	Package Type	Package Size	Mass Production	EVB
MA35D03F864C	Cortex-A35 Dual	-	650	-40	125	154	384	256	40	-	12	18	-	-	8	-	11	2	1	3	2	1	3	2	1	1	2	-	√	-	24 bit	√	JPEG decoder	-	-	LQFP 216-EP	24 x 24	2024 Q1	NuMaker-IoT-MA35D0
MA35D03F764C	Cortex-A35 Dual	-	650	-40	125	154	384	128	40	-	12	18	-	-	8	-	11	2	1	3	2	1	3	2	1	1	2	-	√	-	24 bit	√	JPEG decoder	-	-	LQFP 216-EP	24 x 24	2024 Q2	-

NuMicro® Family Arm® Cortex® - M7 Microcontroller

The KM1M7 series is a 32-bit flash microcontroller equipped with Arm® Cortex®-M7, which features both high processing power and low power consumption.

Equipped with high-performance PWM, high-speed / high-precision AD converter, and feedback control assist function that are ideal for motor control / digital power supply control, it contributes to the creation of high-efficiency / low heat generation / miniaturization power management systems.

KM1M7A/KM1M7C Digital Power Control Series

KM1M7 Series MCU is a 32-bit MCU with Arm® Cortex® M7, which have a good balance between high speed processing ability and low power consumption.

High speed/high-precision analog functions and assist functions are embedded, which can satisfy the request of power control.

This series has communication functions such as CAN and SM-BUS necessary for power supply control.

They can contribute to the power management system which needs high-efficiency, super low-power consumption and miniaturization

• KM1M7AFxx

Part No.	Core speed (MHz)	Flash (KB)	SRAM (KB)	Data Flash	I-RAM (KB)	I/O	Timer (16-bit)	Power control PWM	Connectivity						ADC(12-bit)		DAC (8-bit)	DAC (10-bit)	Comparator	VGA	Flash/SRAM ECC	CRC	Package
									Clock synchronous	UART	SPI	I²C	SM-Bus	CAN	Channel	Unit							
KM1M7AF52N	160	512	64	64	64	82	20	10	7	6	3	2	-	2	23	3	10	2	5	5	v	v	HQFP100 (14x14)
KM1M7AF50N	160	512	64	64	64	123	20	12	8	7	3	2	1	2	32	3	10	2	5	5	v	v	HQFP144 (20x20)

• KM1M7CFxx

Part No.	Core speed (MHz)	Flash (KB)	SRAM (KB)	Data Flash	I-RAM (KB)	I/O	Timer (16-bit)	Power control PWM	RTC	Connectivity						ADC(12-bit)		DAC (8-bit)	DAC (10-bit)	Comparator	VGA	Flash/SRAM ECC	CRC	Package
										Clock synchronous	UART	SPI	I²C	SM-Bus	CAN	Channel	Unit							
KM1M7CF06N	160	512	64	32	64	24	14	3	1	7	7	7	2	1	1	11	3	7	6	v	-	v	v	QFN32 (4x4)
KM1M7CF05N	160	512	64	32	64	38	14	5	1	7	7	7	2	1	1	16	3	12	10	v	-	v	v	TQFP48 (7x7)
KM1M7CF04N	160	512	64	32	64	52	14	6	1	7	7	7	2	1	1	18	3	12	12	v	-	v	v	TQFP64 (10x10)
KM1M7CF03N	160	512	64	32	64	68	14	8	1	7	7	7	2	1	1	26	3	12	12	v	-	v	v	TQFP80 (12x12)
KM1M7CF16N	160	512	64	32	64	24	14	3	1	7	7	7	2	1	1	11	3	7	6	v	-	v	v	QFN32 (4x4)
KM1M7CF15N	160	512	64	32	64	38	14	5	1	7	7	7	2	1	1	16	3	12	10	v	-	v	v	TQFP48 (7x7)
KM1M7CF14N	160	512	64	32	64	52	14	6	1	7	7	7	2	1	1	18	3	12	12	v	-	v	v	TQFP64 (10x10)
KM1M7CF13N	160	512	64	32	64	68	14	8	1	7	7	7	2	1	1	26	3	12	12	v	-	v	v	TQFP80 (12x12)

KM1M7B Inverter Control Series

KM1M7 Series MCU is a 32-bit MCU with Arm® Cortex® M7, which have a good balance between high speed processing ability and low power consumption.

High speed/high-precision analog functions and assist functions are embedded, which can satisfy the request of motor control.

Accessing EEPROM becomes more efficient by using RWW(Read While Write) flash.

They can contribute to the power management system which needs high-efficiency, super low-power consumption and miniaturization.

• KM1M7BFxx

Part No.	Core speed (MHz)	Flash (KB)	SRAM (KB)	Data Flash	I-RAM (KB)	I/O	Timer (16-bit)	Power control PWM	Connectivity					ADC(12-bit)		DAC (8-bit)	DAC (10-bit)	Comparator	VGA	Flash/SRAM ECC	CRC	Package
									Clock synchronous	UART	SPI	I²C	SM-Bus	Channel	Unit							
KM1M7BF02K	160	256	32	64	64	82	20	10	7	6	3	2	-	23	3	10	2	5	5	v	v	HQFP100 (14x14)
KM1M7BF02M	160	384	48	64	64	82	20	10	7	6	3	2	-	23	3	10	2	5	5	v	v	HQFP100 (14x14)
KM1M7BF02N	160	512	64	64	64	82	20	10	7	6	3	2	-	23	3	10	2	5	5	v	v	HQFP100 (14x14)
KM1M7BF00K	160	256	32	64	64	123	20	12	8	7	3	2	1	32	3	10	2	5	5	v	v	HQFP144 (20x20)
KM1M7BF00M	160	384	48	64	64	123	20	12	8	7	3	2	1	32	3	10	2	5	5	v	v	HQFP144 (20x20)
KM1M7BF00N	160	512	64	64	64	123	20	12	8	7	3	2	1	32	3	10	2	5	5	v	v	HQFP144 (20x20)

NuMicro® Family Arm® Cortex®-M55 Microcontrollers

The NuMicro M55 family offers lifted computing performance, robust security, and a rich set of peripheral functions in its microcontrollers. The M55 family includes two product sub-series: M55M1 and M5531. The core of the M55 family of MCUs is the Arm Cortex-M55 CPU, which operates at speeds up to 220 MHz. The main difference between the M55M1 and M5531 series is that the M55M1 integrates an Arm Ethos-U55 NPU (Neural Processing Unit) for accelerating neural network computations.

The NuMicro M55 family, featuring the Arm Cortex-M55 core based on the Arm v8.1-M architecture, enhances computing performance with lifted DMIPS/MHz and CoreMark/MHz. It incorporates advanced DSP and vector processing instructions, leading to significant performance improvements in signal processing and machine learning tasks. In addition to its powerful CPU, the M55 family is equipped with substantial memory capacity, including up to 1.5MB of SRAM and 2MB of embedded flash memory. Besides its internal memories, the M55 family MCU also features HyperBus interface, which can be used to expand RAM or flash memory by connecting HyperRAM, HyperFlash, or OctoSPI flash.

The M55M1, equipped with its NPU, is designed for real-time AI tasks such as object detection, presence detection, and speech recognition. The M5531, with its advanced CPU and extensive memory, is well-suited for applications like digital signal processing, sensor fusion, and video streaming by USB video class.

M55M1 Series

The NuMicro M55M1 stands as a powerful microcontroller, purpose-built to deliver lifted performance in signal processing and on-device machine learning inference. This strength is effectively enabled by its Arm Cortex-M55 processor, clocked at speeds of up to 220 MHz. Moreover, the M55M1 series integrates an advanced Arm Ethos®-U55 micro neural processing unit (micro-NPU), dedicated for accelerating neural network operations, with the aim of facilitating state-of-the-art endpoint AI applications. Its operating voltage ranges from 1.71V to 3.6V while its operating temperature ranges from -40°C to 105°C.

Target Applications: AIoT, AI home appliance, Smart home, Presence detection, Access control
Key Features: DSP extension, Vector processing extension, NPU, Extensive SRAM and Flash memory, camera interface, digital microphone inerface, TrustZone, Crypto, HyperBus, 10/100 Ethernet MAC, USB HS/FS, CAN FD.

Part No.	System									Memory						Timer		Analog					Connectivity																		Security			Crypto	Display	Package		Status	Tool	
	CPU	NPU	Operating Frequency (MHz)	NPU MAC (MAC/cc)	Operating Voltage (min)(V)	Operating Voltage (max)(V)	Operating Temperature (min)(°C)	Operating Temperature (max)(°C)	GPIO (pin)	LDROM Flash (KB)	APROM Flash (MB)	SRAM (MB)	GDMA (ch)	PDMA (ch)	LPPDMA (ch)	Timer	RTC	EADC (ch)	LPADC (ch)	DAC (ch)	ECAP	ACMP	UART	QSPI	I²C	I3C	SPI/ I²S	SPIM	CAN FD	SDHC	USB FS OTG	USB HS OTG	10/100 EMAC	DMIC (ch)	EBI	TRNG	XOM	Key Store	Crypto	Camera Interface	Package Type	Package Size	Mass Production	EVB	MP Programmer
M55M1 H2LJAE	Cortex-M55	Ethos-U55	220	256	1.71	3.6	-40	105	143	8	2	1.5	2	32	4	4	1	24	24	2	4	4	10	2	4	1	4	1	2	2	1	1	1	4	1	√	√	√	√	√	LQFP 176	24 x 24	√	NK-XM55M1	NLG-M55M1H
M55M1 K2LJAE	Cortex-M55	Ethos-U55	220	256	1.71	3.6	-40	105	97	8	2	1.5	2	32	4	4	1	24	24	2	4	4	10	2	4	1	4	1	2	2	1	1	1	4	1	√	√	√	√	√	LQFP 128	14 x 14	√	NK-XM55M1	NLG-M55M1K
M55M1 R2LJAE	Cortex-M55	Ethos-U55	220	256	1.71	3.6	-40	105	39	8	2	1.5	2	32	4	4	1	24	24	2	4	4	10	2	4	1	4	1	2	2	1	1	1	4	1	√	√	√	√	√	LQFP 64	10 x 10	√	NK-XM55M1	NLG-M55M1R

M5531 Series

The NuMicro M5531 is a robust and secure microcontroller designed to enhance computing performance, particularly for signal and vector processing tasks. This capability is powered by its Arm Cortex-M55 processor, which operates at speeds up to 220 MHz. The M5531 is equipped with substantial on-chip memory, including up to 1.5MB of SRAM and 2MB of flash memory. It operates within a voltage range of 1.71V to 3.6V and is capable of functioning in temperatures ranging from -40°C to 105°C.

Target Applications: IIOT, Industrial Automation, Human Machine Interface, Communication System, Sensor Fusion, Smart Appliance
Key Features: Secure Boot, Vector Processing Extension, I3C, Digital Microphone Interface, TrustZone, Key Store, Key Derivation Function, Crypto, 10/100 Ethernet MAC, USB HS/FS, CAN FD.

Part No.	System							Memory						Timer			Analog				Connectivity												Security			Package		Status	Tool	
	Core	Operating Frequency	Operating Voltage (min)	Operating Voltage (max)	Operating Temperature (min)	Operating Temperature (max)	GPIO	LDROM Flash	APROM Flash	SRAM	PDMA	GDMA	LPPDMA	Timer (32N/Abit)	PWM	RTC (Vbat)	EADC (12N/Abit)	LPADC (12N/Abit)	DAC (12N/Abit)	Analog Comparator	I3C	UART + LPUART	SPI/ I²S + LPSPI	QSPI	I²C + LPI²C	USCI	I²S	CAN FD	SDHC	USB HS + FS	Ethernet 10/100	DMIC (4-ch)	EBI	EQEI	Secure Boot	Crypto Engine	Key Store	Package Type	Package Size	Mass Production	EVB	MP Programmer
M5531 H2LJAE	Cortex-M55	220	1.71	3.6	-40	105	142	8	2048	1552	32	2	4	4	24	v	24	24	2	4	1	10 + 1	4 + 1	2	4 + 1	1	2	2	2	1 + 1	1	1	1	4	√	√	√	LQFP 176	24x24	√	NK-M5531	NLG-176H2
M5531 K2LJAE	Cortex-M55	220	1.71	3.6	-40	105	97	8	2048	1552	32	2	4	4	24	v	24	24	2	4	1	10 + 1	4 + 1	2	4 + 1	1	2	2	2	1 + 1	1	1	-	4	√	√	√	LQFP 128	14x14	√	NK-M5531	NLG-128K2
M5531 R2LJAE	Cortex-M55	220	1.71	3.6	-40	105	39	8	2048	1552	32	2	4	4	24	v	18	18	2	4	1	9 + 1	4 + 1	1	3 + 1	1	2	2	2	1 + 0	1	1	-	4	√	√	√	LQFP 64	10x10	√	NK-M5531	NLG-64R2

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.

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

M460 Series: 200 MHz CPU, up to 1024 KB of dual bank Flash memory, up to 512 KB of SRAM memory, secure boot, key store (KS), programmable audio PLL, hyperbus interface (HBI), programmable serial I/O (PSIO), SPI Master interface with XIP (eXecute-In-Place), and external bus interface (EBI)

M463 Series – Dual CAN FD, USB High Speed (HS) OTG with on-chip PHY
M467 Series – Ethernet 10/100 MAC, hardware cryptography engine, Quad CAN FD, USB High Speed (HS) OTG and USB Full Speed (FS) OTG both with on-chip PHY

M480 Series: 192 MHz CPU, up to 512 KB of dual bank Flash memory, up to 160 KB of SRAM memory, secure boot, SPI Master interface with XIP (eXecute-In-Place), and external bus interface (EBI)

M481 Series – Base line
M482 Series – USB 2.0 Full Speed (FS) OTG with on-chip PHY
M483 Series – Dual/Triple CAN 2.0B, USB High Speed (HS) OTG and USB Full Speed (FS) OTG both with on-chip PHY.
M484 Series – USB High Speed (HS) OTG and USB Full Speed (FS) OTG both with on-chip PHY.
M485 Series – Hardware cryptography engine, USB High Speed (HS) OTG and USB Full Speed (FS) OTG both with on-chip PHY.
M487 Series – Ethernet 10/100 MAC, hardware cryptography engine, dual CAN 2.0B, and USB High Speed (HS) OTG and USB Full Speed (FS) OTG both with on-chip PHY

M433 Series: 144 MHz CPU, up to 128 KB Flash memory, up to 64 KB of SRAM memory, Dual CAN 2.0B, USB Full Speed (FS) OTG with on-chip PHY.

M471 Series: 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

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

M460 Series

The NuMicro® M460 series is a 32-bit microcontroller based on Arm® Cortex®-M4F core, with DSP instruction set and single-precision floating-point unit (FPU), targeting IoT gateway, industrial control, telecom, and data center. The M460 series runs up to 200 MHz, provides up to 1024 KB dual-bank Flash and 512 KB SRAM, and features 1.7V to 3.6V wide operating voltage, -40°C to +85°C/105°C/125°C wide operating temperature, a variety of packages choice, and excellent high immunity characteristics by ESD HBM 2 kV and EFT 4.4 kV.

M460 Series	USB FS	USB HS	CAN FD	Crypto Engine	Ethernet	Temperature
M467 Ethernet/Crypto Series	√	√	√	√	√	85°C/105°C
M463 CAN FD/USB HS Series		√	√	AES		105°C/125°C

Target Applications: IoT Gateway, Industrial Control, Telecom, and Data Center

• M467 Series

Key Features: Secure Boot, Key Store, CAN FD, Audio PLL, PSIO, Ethernet 10/100 MAC, Crypto Engine, TRNG, PRNG, USB HS/FS OTG, Intel 8080 on EBI, HyperBus interface, 3 sets of 12-bit 5 Msps ADC, 4 sets of Comparator, 4 sets of Enhanced QEI, Camera Interface, ICP/IAP/ISP

Part No.	System							Memory				Timer		Analog			Connectivity																	Security			Crypto	Display		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)	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
M467H2JHAE	Cortex-M4	200	1.7	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	LQFP 176	24x24	√	NK-M467HJ	NLG-176H
M467HJHAN	Cortex-M4	200	1.7	3.6	-40	85	146	8	1024	512	32	4	√	28	2	4	10	3	2	5	1	4	1	2	4	2	8	1	1	1	√	√	√	√	√	√	6x8	LQFP 176	24x24	√	NK-M467HJ	NLG-176H
M467J2JHAE	Cortex-M4	200	1.7	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	LQFP 144	20x20	√	NK-M467HJ	NLG-144J
M467JJHAN	Cortex-M4	200	1.7	3.6	-40	85	114	8	1024	512	32	4	√	28	2	4	10	3	2	5	1	4	1	2	4	2	8	1	1	1	√	√	√	√	√	√	6x8	LQFP 144	20x20	√	NK-M467HJ	NLG-144J
M467K2JHAE	Cortex-M4	200	1.7	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	LQFP 128	14x14	√	NK-M467HJ	NLG-128K
M467KJHAN	Cortex-M4	200	1.7	3.6	-40	85	100	8	1024	512	32	4	√	28	2	4	10	3	2	5	1	4	1	2	4	2	8	1	1	1	√	√	√	√	√	√	6x8	LQFP 128	14x14	√	NK-M467HJ	NLG-128K
M467S2JHAE	Cortex-M4	200	1.7	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	LQFP 64	7x7	√	NK-M467HJ	NLG-64S
M467SJHAN	Cortex-M4	200	1.7	3.6	-40	85	44	8	1024	512	32	4	√	20	2	4	9	3	2	5	1	4	1	2	4	2	4	1	1	1	√	√	√	√	√	√	6x8	LQFP 64	7x7	√	NK-M467HJ	NLG-64S

• M463 Series

Key Features: 125°C, Key Store, CAN FD, Secure Boot, Crypto Engine, TRNG, PRNG, USB HS OTG, Intel 8080 on EBI

Part No.	System							Memory				Timer		Analog			Connectivity																	Security			Crypto	Display		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)	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
M463K2GCAC	Cortex-M4	200	1.7	3.6	-40	125	100	8	256	128	16	4	v	16	-	2	8	1	2	5	1	4	-	-	2	1	1	-	1	-	v	v	v	v	AES	-	6x8	LQFP 128	14x14	v	NK-M463KG	NLG-128K
M463KGCAE	Cortex-M4	200	1.7	3.6	-40	105	100	8	256	128	16	4	√	16	-	2	8	1	2	5	1	4	-	-	2	1	1	-	1	-	√	√	√	√	AES	-	6x8	LQFP 128	14x14	√	NK-M463KG	NLG-128K
M463S2GCAC	Cortex-M4	200	1.7	3.6	-40	125	44	8	256	128	16	4	√	16	-	2	8	1	2	5	1	4	-	-	2	1	1	-	1	-	√	√	√	√	AES	-	6x8	LQFP 64	7x7	√	NK-M463KG	NLG-64S
M463SGCAE	Cortex-M4	200	1.7	3.6	-40	105	44	8	256	128	16	4	√	16	-	2	8	1	2	5	1	4	-	-	2	1	1	-	1	-	√	√	√	√	AES	-	6x8	LQFP 64	7x7	√	NK-M463KG	NLG-64S
M463L2GCAC	Cortex-M4	200	1.7	3.6	-40	125	33	8	256	128	16	4	√	12	-	2	8	1	2	5	1	4	-	-	2	1	1	-	1	-	√	√	√	√	AES	-	6x8	LQFP 48	7x7	√	NK-M463KG	NLG-48L
M463LGCAE	Cortex-M4	200	1.7	3.6	-40	105	33	8	256	128	16	4	√	12	-	2	8	1	2	5	1	4	-	-	2	1	1	-	1	-	√	√	√	√	AES	-	6x8	LQFP 48	7x7	√	NK-M463KG	NLG-48L
M463YGCAE	Cortex-M4	200	1.7	3.6	-40	105	33	8	256	128	16	4	√	12	-	2	8	1	2	5	1	4	-	-	2	1	1	-	1	-	√	√	√	√	AES	-	6x8	QFN 48	5x5	√	NK-M463KG	NLG-48Y

M433 Series

The NuMicro® M433 series is a 32-bit microcontroller based on Arm® Cortex®-M4F core, with DSP instruction set and single-precision floating-point unit (FPU), targeting IoT, Industrial, and consumer applications. The M433 series runs up to 144 MHz, provides up to 128 KB Flash memory, 64 KB SRAM, and features 1.8V to 3.6V wide operating voltage, -40°C to +105°C wide operating temperature, a variety of packages choice, and excellent high immunity characteristics by ESD HBM 2 kV and EFT 4.4 kV.

Target Applications: Local Dimming, Motor Control, Industrial Control, Telecom
Key Features: CAN 2.0B, USB FS OTG, 2 sets of Comparator, ICP/IAP/ISP

Part No.	System							Memory				Timer			Analog		Connectivity						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)	SRAM (KB)	PDMA (CH)	Timer (32-bit)	BPWM (16-bit)	EPWM (16-bit)	EADC (12-bit)	ACMP	LPUART	QSPI	I²C	SPI/ I²S	CAN	USB FS OTG	Package Type	Package Size	Mass Production	EVB	MP Programmer
M433LE8AE	Cortex-M4	144	1.8	3.6	-40	105	41	4	128	64	9	4	12	6	12	2	4	1	2	2	2	1	LQFP48	7x7	√	NK-M433LE	NLG-48L
M433SE8AE	Cortex-M4	144	1.8	3.6	-40	105	52	4	128	64	9	4	12	6	16	2	4	1	2	2	2	1	LQFP64	7x7	√	NK-M433SE	NLG-64S

M480 Series

The NuMicro® M480 series is a 32-bit microcontroller based on Arm® Cortex®-M4F core, with DSP instruction set and single-precision floating-point unit (FPU), targeted for IoT, Industrial, and consumer applications. The M480 series runs up to 192 MHz, provides up to 2560 KB Flash memory, 160 KB SRAM, and features 1.8V to 3.6V wide operating voltage, -40°C to +105°C wide operating temperature, a variety of packages choice, and excellent high immunity characteristics by ESD HBM 2 kV and EFT 4.4 kV.

Target Applications: IoT market such as UART to Ethernet Converter; Industrial market such as Energy Storage System; Consumer market such as Label Printer, Gaming market such as Gamepad

M480 Series	USB FS	USB HS	CAN 2.0B	Crypto Engine	Ethernet
M481 Base Series					
M482 USB FS Series	√				
M483 CAN2.0B Series	√	√	√		
M484 USB HS Series	√	√			
M485 Crypto Series	√		√	√	
M487 Ethernet Series	√	√	√	√	√

• M487/M485 Series

Key Features: Ethernet 10/100 MAC, Crypto Engine, random number generator, CAN 2.0B, USB HS OTG, USB FS OTG, EBI/i80 interface

Part No.	System							Memory				Timer				Analog			Connectivity										Security	Crypto	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)	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	Camera Interface	USB FS OTG	USB HS OTG	EMAC	PRNG	Crypto	Package Type	Package Size	Mass Production	EVB	MP Programmer
M487KMCAN	Cortex-M4	192	1.8	3.6	-40	85	114	4	2560	160	16	4	12	12	√	16	2	2	6	1	3	2	4	2	2	-	1	1	1	√	√	LQFP 128	14x14	√	NK-M487KM	NLG-128K
M487JIDAE	Cortex-M4	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	√	√	LQFP 144	20x20	√	NK-BEDM487	NLG-144J
M487KIDAE	Cortex-M4	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	√	√	LQFP 128	14x14	√	NK-BEDM487	NLG-128K
M487SIDAE	Cortex-M4	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	√	√	LQFP 64	7x7	√	NK-BEDM487	NLG-64S
M485YIDAE	Cortex-M4	192	1.8	3.6	-40	105	40	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	2	1	-	1	-	-	√	√	QFN 48	5x5	√	NK-BEDM487	NLG-48Y

• M484 Series

Key Features: USB HS OTG, USB FS OTG, EBI/i80 interface

Part No.	System							Memory				Timer				Analog			Connectivity										Security	Crypto	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)	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	Camera Interface	USB FS OTG	USB HS OTG	EMAC	PRNG	Crypto	Package Type	Package Size	Mass Production	EVB	MP Programmer
M484KIDAE	Cortex-M4	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	-	-	-	LQFP 128	14x14	√	NK-BEDM487	NLG-128K
M484SIDAE2U	Cortex-M4	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	-	-	-	LQFP 64	7x7	√	NK-BEDM487	NLG-64S
M484SIDAE	Cortex-M4	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	-	-	-	LQFP 64	7x7	√	NK-BEDM487	NLG-64S

• M483 Series

Key Features: CAN 2.0B, USB HS OTG, USB FS OTG, EBI/i80 interface, camera interface

Part No.	System							Memory				Timer				Analog			Connectivity												Security	Crypto	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)	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	Camera Interface	USB FS OTG	USB HS OTG	EMAC	PRNG	Crypto	Package Type	Package Size	Mass Production	EVB	MP Programmer
M483KIDAE	Cortex-M4	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	-	-	-	LQFP 128	14x14	√	NK-BEDM487	NLG-128K
M483SIDAE	Cortex-M4	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	-	-	-	LQFP 64	7x7	√	NK-BEDM487	NLG-64S
M483KGCAE	Cortex-M4	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	-	-	√	√	LQFP 128	14x14	√	NK-M483KG	NLG-128K
M483KGCAE2A	Cortex-M4	192	1.8	3.6	-40	105	100	4	256	128	16	4	12	12	√	16+8	1	2	8	2	3	-	3	3	1	√	1	-	-	√	√	LQFP 128	14x14	√	NK-M483KG	NLG-128K
M483SGCAE	Cortex-M4	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	-	-	√	√	LQFP 64	7x7	√	NK-M483KG	NLG-64S
M483SGCAE2A	Cortex-M4	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	8+8	1	2	8	2	3	-	3	2	1	√	1	-	-	√	√	LQFP 64	7x7	√	NK-M483KG	NLG-64S

• M482 Series

Key Features: USB FS OTG, EBI/i80 interface, camera interface

Part No.	System							Memory				Timer				Analog			Connectivity												Security	Crypto	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)	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	Camera Interface	USB FS OTG	USB HS OTG	EMAC	PRNG	Crypto	Package Type	Package Size	Mass Production	EVB	MP Programmer
M482KIDAE	Cortex-M4	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	-	-	-	-	LQFP 128	14x14	√	NK-BEDM487	NLG-128K
M482SIDAE	Cortex-M4	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	-	-	-	-	LQFP 64	7x7	√	NK-BEDM487	NLG-64S
M482LIDAE	Cortex-M4	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	-	-	-	-	LQFP 48	7x7	√	NK-BEDM487	NLG-48L
M482ZIDAE	Cortex-M4	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	-	-	-	-	QFN 33	5x5	√	NK-BEDM487	NLG-32Z
M482KGCAE	Cortex-M4	192	1.8	3.6	-40	105	100	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	-	1	√	1	-	-	√	√	LQFP 128	14x14	√	NK-M483KG	NLG-128K
M482SGCAE	Cortex-M4	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	-	1	√	1	-	-	√	√	LQFP 64	7x7	√	NK-M483KG	NLG-64S
M482LGCAE	Cortex-M4	192	1.8	3.6	-40	105	41	4	256	128	16	4	12	12	√	12	1	2	8	2	3	-	2	-	1	-	1	-	-	√	√	LQFP 48	7x7	√	NK-M483KG	NLG-48L
M482ZGCAE	Cortex-M4	192	1.8	3.6	-40	105	26	4	256	128	16	4	12	12	√	10	1	2	8	2	3	-	2	-	1	-	1	-	-	√	√	QFN 33	5x5	√	NK-M483KG	NLG-32Z

• M481 Series

Key Features: EBI/i80 interface, camera interface

Part No.	System							Memory				Timer				Analog			Connectivity										Security	Crypto	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)	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	Camera Interface	USB FS OTG	USB HS OTG	EMAC	PRNG	Crypto	Package Type	Package Size	Mass Production	EVB	MP Programmer
M481SIDAE	Cortex-M4	192	1.8	3.6	-40	105	52	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	-	-	-	-	-	-	LQFP 64	7x7	√	NK-BEDM487	NLG-64S
M481LIDAE	Cortex-M4	192	1.8	3.6	-40	105	41	4	512	160	16	4	12	12	√	12	2	2	6	1	3	2	3	-	2	-	-	-	-	-	-	LQFP 48	7x7	√	NK-BEDM487	NLG-48L
M481ZIDAE	Cortex-M4	192	1.8	3.6	-40	105	26	4	512	160	16	4	12	12	√	10	2	2	6	1	3	2	3	-	1	-	-	-	-	-	-	QFN 33	5x5	√	NK-BEDM487	NLG-32Z
M481SGCAE2A	Cortex-M4	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	8+8	1	2	8	2	3	-	3	-	1	√	-	-	-	√	√	LQFP 64	7x7	√	NK-M483KG	NLG-64S
M481SGCAE	Cortex-M4	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	-	1	√	-	-	-	√	√	LQFP 64	7x7	√	NK-M483KG	NLG-64S
M481LGCAE	Cortex-M4	192	1.8	3.6	-40	105	41	4	256	128	16	4	12	12	√	12	1	2	8	2	3	-	2	-	1	-	-	-	-	√	√	LQFP 48	7x7	√	NK-M483KG	NLG-48L
M481ZGCAE	Cortex-M4	192	1.8	3.6	-40	105	26	4	256	128	16	4	12	12	√	10	1	2	8	2	3	-	2	-	1	-	-	-	-	√	√	QFN 33	5x5	√	NK-M483KG	NLG-32Z

M471 Series

The NuMicro® M471 series is a 32-bit microcontroller based on Arm® Cortex®-M4F core, with DSP instruction set and single-precision floating-point unit (FPU), targeted for smart home appliance applications. The M471 series runs up to 120 MHz, provides 512 KB onchip Flash, 64 KB on-chip SRAM, and features 2.5V to 5.5V wide operating voltage, -40°C to +105°C wide operating temperature, wide pin pitch packages, WLCSP100 package, and excellent high immunity characteristics by ESD HBM 8 kV and EFT 4.4 kV.

Target Applications: Washing Machine, Refrigerator, Air Conditioner, other Smart Home Appliances, and 400G/800G optical transceiver
Key Features: Wide pin pitch package, WLCSP100 package, independent 32 Kbytes data flash, 1.8 Msps ADC (up to 24-ch), EBI/i80 interface, ICP/ISP/IAP

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)	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 (8-bit)	ACMP	UART	LPUART	I²C	SPI/ I²S	USB FS Device/ Host	PRNG	Package Type	Package Size	Mass Production	EVB	MP Programmer
M471KI8AE	Cortex-M4	120	2.5	5.5	-40	105	119	4	512	√	32	64	6	4	-	12	12	√	24	1	2	-	6	2	2	-	√	LQFP 128	14x14	√	NK-M471KI	NLG-128K
M471VI8AE	Cortex-M4	120	2.5	5.5	-40	105	91	4	512	√	32	64	6	4	-	12	12	√	23	1	2	-	6	2	2	-	√	LQFP 100	14x14	√	NK-M471KI	NLG-100V
M471CI8AE	Cortex-M4	120	2.5	5.5	-40	105	91	4	512	√	32	64	6	4	-	12	12	√	24	1	2	-	6	2	2	-	√	WLCSP 100	4.5x4.5	√	NK-M471KI	NLG-100C

M451 Series

The NuMicro® M451 series is a 32-bit microcontroller based on Arm® Cortex®-M4F core, with DSP instruction set and single-precision floating-point unit (FPU), targeted for Industrial, and consumer applications. The M451 series runs up to 72 MHz, provides 256 KB on-chip Flash, 32 KB on-chip SRAM, and features 2.5V to 5.5V wide operating voltage, -40°C to +105°C wide operating temperature, a variety of packages choice, and excellent high immunity characteristics by ESD HBM 6 kV and EFT 4.4 kV.

Target Applications: Industrial market such as Smart Capacitor; Smart home appliances market such as Air Purifier

M451 Series	USB FS	CAN 2.0B
M451 Base Series		
M4521 USB FS Series	√	
M452 USB FS Series	√	
M453 CAN 2.0B Series	√	√

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	
	Core	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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

Part No.	System							Memory						Timer			Analog			Connectivity									Package		Status	Tool	
	Core	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
M4521LE6AE	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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
M452LD3AE	Cortex-M4	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
M452LE6AE	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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
M452RE6AE	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	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	Cortex-M4	72	2.5	5.5	-40	105	35	√	4	40	Configurable	16	8	4	10	√	10	1	2	4	1	1	2	1	1	1	-	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M453LD3AE	Cortex-M4	72	2.5	5.5	-40	105	35	√	4	72	Configurable	16	8	4	10	√	10	1	2	4	1	1	2	1	1	1	-	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M453LE6AE	Cortex-M4	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	Cortex-M4	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	Cortex-M4	72	2.5	5.5	-40	105	49	√	4	72	Configurable	16	8	4	12	√	16	1	2	4	1	1	2	1	1	1	-	√	LQFP64	10x10	√	NT-M451V	NG-M453R
M453RE6AE	Cortex-M4	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	Cortex-M4	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	Cortex-M4	72	2.5	5.5	-40	105	72	√	4	72	Configurable	16	8	4	12	√	16	1	2	4	1	1	2	1	1	1	-	√	LQFP100	14x14	√	NT-M451V	NG-M453V
M453VE6AE	Cortex-M4	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	Cortex-M4	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

KM1M4B Inverter Control Series

KM1M4B Series MCU is a 32-bit MCU with Arm® Cortex® M4F, which have a good balance between high speed processing ability and low power consumption.
High speed/high-precision analog functions and assist functions are embedded, which can satisfy the request of motor control.
Accessing EEPROM becomes more efficient by using RWW(Read While Write) flash.
They can contribute to the power management system which needs high-efficiency, super low-power consumption and miniaturization.

Part No.	Core speed (MHz)	Flash (KB)	SRAM (KB)	Data Flash	I/O	Timer (16-bit)	Power control PWM	Connectivity				ADC(12-bit)		DAC (8-bit)	DAC (10-bit)	Comparator	VGA	Flash/SRAM ECC	CRC	Package
								Clock synchronous	UART	SPI	I²C	Channel	Unit							
KM1M4BF05G	120	136	16	8	37	14	8	4	4	4	4	10	3	6	1	4	2	v	v	LQFP48 (7x7)
KM1M4BF54G	120	136	16	8	51	14	8	7	7	7	7	13	3	6	1	4	2	v	v	LQFP64 (10x10)
KM1M4BF54K	120	264	16	32	51	14	8	7	7	7	7	13	3	6	1	4	2	v	v	LQFP64 (10x10)
KM1M4BF53G	120	136	16	8	65	14	8	7	7	7	7	18	3	6	1	4	2	v	v	LQFP80 (12x12)
KM1M4BF53K	120	264	16	32	65	14	8	7	7	7	7	18	3	6	1	4	2	v	v	LQFP80 (12x12)
KM1M4BF52G	120	136	16	8	85	14	8	7	7	7	7	23	3	6	1	4	2	v	v	LQFP100 (14x14)
KM1M4BF52K	120	264	16	32	85	14	8	7	7	7	7	23	3	6	1	4	2	v	v	LQFP100 (14x14)
KM1M4BF64G	120	136	16	8	50	12	6	6	6	6	6	13	2	2	1	1	1	v	v	LQFP64 (10x10)
KM1M4BF65G	120	136	16	8	36	12	6	6	6	6	6	11	2	2	1	1	1	v	v	LQFP48 (7x7)
KM1M4BF66G	120	136	16	8	32	12	4	6	6	6	6	10	2	2	1	1	1	v	v	LQFP44(10x10)
KM1M4BF67G	120	136	16	8	20	12	4	3	3	3	3	6	2	2	1	1	1	v	v	LQFP32(7x7)

NuMicro® Family Arm® Cortex®-M33 Microcontrollers

The NuMicro® Family Cortex®-M33 based MCUs provide high performance system design with up to 221-277 DMIPS operating at up to 144-180 MHz. When executing from the embedded Flash memory, the power consumption can be lowered to 90 µA/MHz with dynamic power scaling function supported by the M3331 series.

The NuMicro® Family Cortex®-M33 based MCUs are composed of the following product series.

M3331 Series: 180 MHz CPU, up to 512 KB of Flash memory, up to 320 KB of SRAM memory, secure boot, USB HS OTG, CAN FD, I3C, enhanced LED light strip interface (ELLSI), LED light strip interface (LLSI), and external bus interface (EBI)

M3334 Series – Dual CAN FD, USB High Speed OTG

M3333 Series – Dual CAN FD

M3351 Series: 144 MHz CPU, up to 1024 KB of Flash memory, up to 128 KB of SRAM memory, secure boot, USB FS Dual Role, CAN FD, enhanced LED light strip interface (ELLSI), LED light strip interface (LLSI), and external bus interface (EBI)

M3351 Series – Dual CAN FD, USB Full Speed Dual Role

M3331 Series

The NuMicro® M3331 series is a 32-bit microcontroller based on Arm® Cortex®-M33 core, with DSP instruction set and single-precision floating-point unit (FPU), targeting industrial control, smart factory, smart building, new energy, and consumer electronics. The M3331 series runs up to 180 MHz, provides up to 512 KB Flash and 320 KB SRAM, and features 1.7V to 3.6V wide operating voltage, -40°C to +105°C wide operating temperature, a variety of packages choice, and excellent high immunity characteristics by ESD HBM 4 kV and EFT 4.4 kV.

M3331 Series	USB HS	CAN FD	Secure Boot	I3C	ELLSI	LLSI	Temperature
M3334 CAN FD/USB HS Series	√	√	√	√	√	√	-40°C to 105°C
M3333 CAN FD Series		√	√	√	√	√	-40°C to 105°C

Target Applications: Industrial Control, Smart Factory, Smart Building, New Energy, and Consumer Electronics

• M3334 Series

Key Features: Secure Boot, PDMA, LDROM, USB HS, CAN FD, ELLSI, LLSI, USCI, SDIO, QSPI, SPI, I2S, Intel 8080 on EBI, 12-bit 4 Msps ADC, Analog Comparator, Enhanced QEI, ICP/IAP/ISP

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)	SRAM (KB)	PDMA (ch)	Timer (32N/Abit)	PWM	RTC	EADC (12N/Abit)	Analog Comparator	I3C	ELLSI	LLSI	LPUART	QSPI	I²C	USCI	SPI/ I²S	I²S	CAN FD	SDHC	USB HS	EBI	EQEI	eCapture	XOM (KB)	Package Type	Package Size	Mass Production	EVB	MP Programmer
M3334 KIGAE	Cortex-M33	180	1.7	3.6	-40	105	102	8	512	320	16	4	48	v	16	2	1	1	10	5	1	3	2	3	1	2	1	OTG	v	1	1	√	LQFP 128	14x14	2026Q1	NK-M3334KI	NLG-128K
M3334 SIGAE	Cortex-M33	180	1.7	3.6	-40	105	46	8	512	320	16	4	45	v	16	2	1	1	10	5	1	3	2	3	1	2	1	OTG	v	1	1	√	LQFP 64	7x7	2026Q1	NK-M3334KI	NLG-64S
M3334 LIGAE	Cortex-M33	180	1.7	3.6	-40	105	34	8	512	320	16	4	40	v	12	2	1	1	10	5	1	3	2	3	1	2	1	OTG	-	1	1	√	LQFP 48	7x7	2026Q1	NK-M3334KI	NLG-48L
M3334 YIGAE	Cortex-M33	180	1.7	3.6	-40	105	34	8	512	320	16	4	40	v	12	2	1	1	10	5	1	3	2	3	1	2	1	OTG	-	1	1	√	QFN 48	5x5	2026Q1	NK-M3334KI	NLG-48Y
M3334 TIGAE	Cortex-M33	180	1.7	3.6	-40	105	21	8	512	320	16	4	29	v	10	2	1	1	8	5	1	3	2	2	1	-	1	Device	-	-	-	√	QFN 33	4x4	2026Q1	NK-M3334KI	NLG-33T

• M3333 Series

Key Features: Secure Boot, PDMA, LDROM, CAN FD, ELLSI, LLSI, USCI, SDIO, QSPI, SPI, I2S, Intel 8080 on EBI, 12-bit 4 Msps ADC, Analog Comparator, Enhanced QEI, ICP/IAP/ISP

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)	SRAM (KB)	PDMA (ch)	Timer (32N/Abit)	PWM	RTC	EADC (12N/Abit)	Analog Comparator	I3C	ELLSI	LLSI	LPUART	QSPI	I²C	USCI	SPI/ I²S	I²S	CAN FD	SDHC	USB HS	EBI	EQEI	eCapture	XOM (KB)	Package Type	Package Size	Mass Production	EVB	MP Programmer
M3333 KIGAE	Cortex-M33	180	1.7	3.6	-40	105	110	8	512	320	16	4	48	v	16	2	1	1	10	5	1	3	2	3	1	2	1	-	v	1	1	√	LQFP 128	14x14	2026Q1	NK-M3333KI	NLG-128K
M3333 SIGAE	Cortex-M33	180	1.7	3.6	-40	105	54	8	512	320	16	4	48	v	16	2	1	1	10	5	1	3	2	3	1	2	1	-	v	1	1	√	LQFP 64	7x7	2026Q1	NK-M3333KI	NLG-64S
M3333 LIGAE	Cortex-M33	180	1.7	3.6	-40	105	42	8	512	320	16	4	45	v	12	2	1	1	10	5	1	3	2	3	1	2	1	-	v	1	1	√	LQFP 48	7x7	2026Q1	NK-M3333KI	NLG-48L
M3333 YIGAE	Cortex-M33	180	1.7	3.6	-40	105	42	8	512	320	16	4	45	v	12	2	1	1	10	5	1	3	2	3	1	2	1	-	v	1	1	√	QFN 48	5x5	2026Q1	NK-M3333KI	NLG-48Y
M3333 TIGAE	Cortex-M33	180	1.7	3.6	-40	105	27	8	512	320	16	4	36	v	10	2	1	1	10	5	1	3	2	3	1	1	1	-	-	-	-	√	QFN 33	4x4	2026Q1	NK-M3333KI	NLG-33T

M3351 Series

The NuMicro® M3351 series is the high-performance microcontroller of strong noise tolerance for 5V Power supply, this series is based on Arm® Cortex®-M33 core, it features a comprehensive DSP instruction set and a single-precision floating-point unit (FPU), making it ideal for demanding computational tasks. The M3351 series runs up to 144 MHz and features 256 Kbytes to 1 Mbytes Flash memory, 48 Kbytes to 128 Kbytes SRAM, 2.7V to 5.5V operating voltage, -40°C to 105°C wide operating temperature and excellent high immunity characteristics by ESD HBM 4 KV and EFT 4.4 KV, making the series ideal for expanding the functionality of home appliances and industrial equipment

M3351 Series	USB HS	CAN FD	ELLSI	LLSI	DAC	I3C	Secure Boot	Crypto Engine	Temperature
M3351 CAN FD/USB HS Series	√	√	√	√	√	√	√	√	-40°C to 105°C

Target Applications: Industrial Control, Smart Factory, Smart Building, New Energy, and Consumer Electronics

• M3351 Series

Key Features: Secure Boot, PDMA, LDROM, CAN FD, ELLSI, LLSI, USCI, QSPI, SPI, I2S, Intel 8080 on EBI, 12-bit DAC,12-bit 1.7 Msps ADC, 14-bit 1.0 Msps ADC Analog Comparator, ICP/IAP/ISP

Part No.	System							Memory				Timer				Analog				Connectivity											Security			Crypto	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)	SRAM (KB)	PDMA (ch)	Timer (32N/Abit)	RTC	PWM (16-bit)	BPWM (16-bit)	DAC (12-bit)	EADC (12-bit)	EADC (14-bit)	ACMP	UART	QSPI	I²C	USCI	SPI/ I²S	CAN FD	USB FS Dual Role	LLSI	eLLSI	I3C	EQEI	EBI	TRNG	PRNG	XOM (KB)	Crypto	Package Type	Package Size	Mass Production	EVB	MP Programmer
M3351 ZG7AE	Cortex-M33	144	2.7	5.5	-40	105	22	16	256	48	10	4	v	12	7	-	10	-	2	6	1	2	2	2/1	-	1	9	2	-	-	-	-	-	√	√	QFN 33	4x4	-	NK-M3351SG	NLG-M3351Z
M3351 LG7AE	Cortex-M33	144	2.7	5.5	-40	105	37	16	256	48	10	4	v	12	12	-	16	-	2	8	1	2	2	2/1	2	1	10	2	-	1	-	-	-	√	√	LQFP 48	7x7	-	NK-M3351SG	NLG-M3351L
M3351 YG7AE	Cortex-M33	144	2.7	5.5	-40	105	37	16	256	48	10	4	v	12	12	-	16	-	2	8	1	2	2	2/1	2	1	10	2	-	1	-	-	-	√	√	QFN 48	5x5	-	NK-M3351SG	NLG-M3351Y
M3351 SG7AE	Cortex-M33	144	2.7	5.5	-40	105	50	16	256	48	10	4	v	12	12	-	20	-	2	8	1	2	2	2/1	2	1	10	2	-	1	-	-	-	√	√	LQFP 64	7x7	-	NK-M3351SG	NLG-M3351S
M3351 LICAE	Cortex-M33	144	2.7	5.5	-40	105	37	16	512	128	12	4	v	12	12	1	16	5	2	8	1	3	2	2/1	2	1	10	2	1	1	-	√	√	√	√	LQFP 48	7x7	-	NK-M3351KJ	NLG-M3351L
M3351 YICAE	Cortex-M33	144	2.7	5.5	-40	105	37	16	512	128	12	4	v	12	12	1	16	5	2	8	1	3	2	2/1	2	1	10	2	1	1	-	√	√	√	√	QFN 48	5x5	-	NK-M3351KJ	NLG-M3351Y
M3351 SICAE	Cortex-M33	144	2.7	5.5	-40	105	50	16	512	128	12	4	v	12	12	1	20	9	2	8	1	3	2	2/1	2	1	10	2	1	1	-	√	√	√	√	LQFP 64	7x7	-	NK-M3351KJ	NLG-M3351S
M3351 VICAE	Cortex-M33	144	2.7	5.5	-40	105	82	16	512	128	12	4	v	12	12	1	23	11	2	10	1	3	2	2/1	2	1	10	2	1	2	v	√	√	√	√	LQFP 100	14x14	-	NK-M3351KJ	-
M3351 KICAE	Cortex-M33	144	2.7	5.5	-40	105	106	16	512	128	12	4	v	12	12	1	24	16	2	10	1	3	2	2/1	2	1	10	2	1	2	v	√	√	√	√	LQFP 128	14x14	-	NK-M3351KJ	NLG-M3351K
M3351 LJCAE	Cortex-M33	144	2.7	5.5	-40	105	37	16	1024	128	12	4	v	12	12	1	16	5	2	8	1	3	2	2/1	2	1	10	2	1	1	-	√	√	√	√	LQFP 48	7x7	-	NK-M3351KJ	NLG-M3351L
M3351 YJCAE	Cortex-M33	144	2.7	5.5	-40	105	37	16	1024	128	12	4	v	12	12	1	16	5	2	8	1	3	2	2/1	2	1	10	2	1	1	-	√	√	√	√	QFN 48	5x5	-	NK-M3351KJ	NLG-M3351Y
M3351 SJCAE	Cortex-M33	144	2.7	5.5	-40	105	50	16	1024	128	12	4	v	12	12	1	20	9	2	8	1	3	2	2/1	2	1	10	2	1	1	-	√	√	√	√	LQFP 64	7x7	-	NK-M3351KJ	NLG-M3351S
M3351 VJCAE	Cortex-M33	144	2.7	5.5	-40	105	82	16	1024	128	12	4	v	12	12	1	23	11	2	10	1	3	2	2/1	2	1	10	2	1	2	v	√	√	√	√	LQFP 100	14x14	-	NK-M3351KJ	-
M3351 KJCAE	Cortex-M33	144	2.7	5.5	-40	105	106	16	1024	128	12	4	v	12	12	1	24	16	2	10	1	3	2	2/1	2	1	10	2	1	2	v	√	√	√	√	LQFP 128	14x14	-	NK-M3351KJ	NLG-M3351K

NuMicro® Family Arm® Cortex®-M23 Microcontrollers

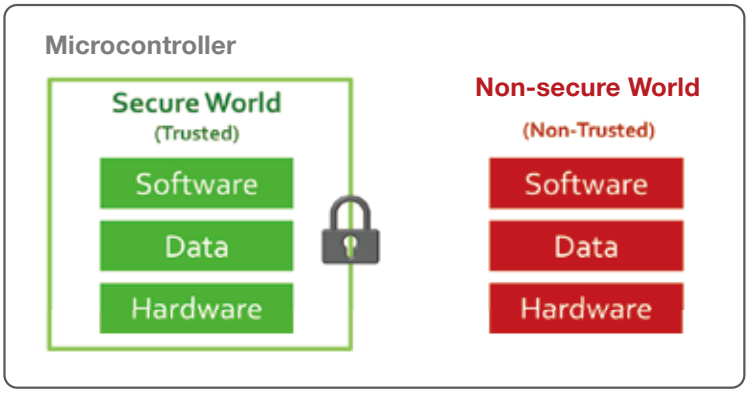
Offers the next industry standard for secure IoT devices

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.



M2U51 Series

The NuMicro M2U51 ultra-low power series is based on Arm Cortex-M23 core at Armv8-M architecture with a single-cycle hardware multiplier/divider. It runs up to 40 MHz and features 32 to 256 Kbytes Flash, 6 to 32 Kbytes SRAM, 1.75V to 5.5V operating voltage, -40°C to 105°C wide operating temperature, offer both LDO and DC-DC power supply functionalities and excellent high immunity characteristics by ESD HBM 4 kV and EFT 4.4 kV, making them ideal for energy-sensitive or even battery-less applications.

Target Applications: Smart Home/ Smart Home Appliances, Industrial Control/ Industrial Automation, Smart City, IoT Device, Security Alarm System, PC Peripherals, Battery Management System

Key Features: Integrated with 8x42 segment LCD, two ACMP, 16-ch 12-bit 1MSPS Low Power SAR ADC, 12-ch high speed PWM.The hardware crypto accelerators, including AES, PRNG. Ultra-Low-Power Consumption with 67.5μA/MHz in LDO mode (Normal), 36μA/MHz in DC-DC mode(Normal).The current consumption of Normal Power-Down mode with full with LCD charge pump operation is lower than 4 uA ; 0.4 μA (Standby Power Down, RAM retention)

Part No.	System							Memory				Timer				Analog			Connectivity				Security		Crypto	Package	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)	SRAM (KB)	PDMA (ch)	Timer/ PWM	BPWM (16-bit)	PWM (16-bit)	RTC	ADC	ACMP	Internal Voltage Reference	UART	I²C	USCI	SPI/ I²S	Pseudorandom Number Generator (PRNG)	XOM	AES	Package Type	EVB	MP Programmer
M2U51FC2AE	Cortex-M23	40	1.75	5.5	-40	105	15	4	32	6	5	4	6	-	-	8	-	√	1	1	-	1	√	√	-	TSSOP20	NK-M2U54KG	NLG-20F
M2U51EC2AE	Cortex-M23	40	1.75	5.5	-40	105	23	4	32	6	5	4	6	-	-	8	-	√	1	2	-	1	√	√	-	TSSOP28	NK-M2U54KG	NLG-28F
M2U51TC2AE	Cortex-M23	40	1.75	5.5	-40	105	27	4	32	6	5	4	6	-	-	10	-	√	2	2	-	1	√	√	-	QFN33	NK-M2U54KG	NLG-33T
M2U51YC2AE	Cortex-M23	40	1.75	5.5	-40	105	41	4	32	6	5	4	6	-	-	12	-	√	2	2	-	1	√	√	-	QFN48	NK-M2U54KG	NLG-48Y
M2U51YD3AE	Cortex-M23	40	1.75	5.5	-40	105	37	4	64	16	8	4	6	6	√	12	2	√	2	3	1	3	√	√	√	QFN48	NK-M2U54KG	NLG-48Y
M2U54YE4AE	Cortex-M23	40	1.75	5.5	-40	105	37	4	128	24	8	4	6	6	√	12	2	√	3	3	1	3	√	√	√	QFN48	NK-M2U54KG	NLG-48Y
M2U54SE4AE	Cortex-M23	40	1.75	5.5	-40	105	51	4	128	24	8	4	6	6	√	16	2	√	3	3	1	3	√	√	√	LQFP64	NK-M2U54KG	NLG-64S
M2U54AE4AE	Cortex-M23	40	1.75	5.5	-40	105	72	4	128	24	8	4	6	6	√	16	2	√	3	3	1	3	√	√	√	QFN88	NK-M2U54KG	
M2U54KE4AE	Cortex-M23	40	1.75	5.5	-40	105	106	4	128	24	8	4	6	6	√	16	2	√	3	3	1	3	√	√	√	LQFP128	NK-M2U54KG	NLG-128KX
M2U54YG6AE	Cortex-M23	40	1.75	5.5	-40	105	37	4	256	32	8	4	6	6	√	12	2	√	3	3	1	3	√	√	√	QFN48	NK-M2U54KG	NLG-48Y
M2U54SG6AE	Cortex-M23	40	1.75	5.5	-40	105	51	4	256	32	8	4	6	6	√	16	2	√	3	3	1	3	√	√	√	LQFP64	NK-M2U54KG	NLG-64S
M2U54AG6AE	Cortex-M23	40	1.75	5.5	-40	105	72	4	256	32	8	4	6	6	√	16	2	√	3	3	1	3	√	√	√	QFN88	NK-M2U54KG	
M2U54KG6AE	Cortex-M23	40	1.75	5.5	-40	105	106	4	256	32	8	4	6	6	√	16	2	√	3	3	1	3	√	√	√	LQFP128	NK-M2U54KG	NLG-128KX

M2L31 Series

The NuMicro® M2L31 series is based on Arm Cortex-M23 core at Armv8-M architecture with a single-cycle hardware multiplier/divider. It runs up to 72 MHz and features 64 to 512 Kbytes ReRAM, 40 to 168 Kbytes SRAM, 1.71V to 3.6V operating voltage, -40°C to 105°C wide operating temperature, a variety of packages choices, and excellent high immunity characteristics by 4 kV ESD HBM and 4.4 kV EFT. The dual bank design of 512 Kbytes ReRAM supports firmware update through the Over-The-Air (FOTA) process.

Target Applications: Smart Home/ Smart Home Appliances, Industrial Control/ Industrial Automation, Smart City, IoT Device, Security Alarm System, PC Peripherals, Battery Management System

Key Features: Provides up to three PGA, three ACMP, 24-ch 12-bit 3.6MSPS ADC, two 12-bit 1 MSPS DAC, 24-ch high speed PWM, USB 2.0 Type-C Power Delivery 3.1 Controller, The hardware crypto accelerators, including AES, PRNG, and TRNG. Ultra-Low-Power Consumption with 60μA/MHz (Normal), 33μA/MHz (Idle), 2.4 μA (Power Down, RTC on, RAM retention) and 0.5 μA (Power Down, RTC off, RAM retention)

Part No.	System								Memory				Timer						Analog						Connectivity												Security				Crypto	Package	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	VBAT	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer/ PWM	EPWM (16-bit)	PWM (16-bit)	RTC	QEI	ECAP	EADC	DAC (12-bit)	ACMP	PGA	Touch Key	Internal Voltage Reference	LPUART	UART	LIN	I²C	USCI	SPI/ I²S	USB FS OTG	EBI	CAN FD	Power delivery	True Random Number Generator (TRNG)	Pseudorandom Number Generator (PRNG)	XOM	Tamper	AES	Package Type	EVB	MP Programmer
M2L31XD4AE	Cortex-M23	72	1.71	3.6	-40	105	√	18	8	64	40	10	4	12	-	√	1	1	6	-	2	1	-	√	1	5	2	2	-	2	√	-	1	-	-	-	√	3	√	WLCSP 25	NK-M2L31SG	-
M2L31ZD4AE	Cortex-M23	72	1.71	3.6	-40	105	√	26	8	64	40	10	4	12	-	√	2	2	10	1	3	2	-	√	1	6	2	2	1	2	√	-	1	√	-	-	√	3	√	QFN 33	NK-M2L31SG	NLG-33Z
M2L31LD4AE	Cortex-M23	72	1.71	3.6	-40	105	√	41	8	64	40	10	4	12	-	√	2	2	16	1	3	2	-	√	1	6	2	2	1	2	√	-	1	√	-	-	√	3	√	LQFP 48	NK-M2L31SG	NLG-48Y
M2L31YD4AE	Cortex-M23	72	1.71	3.6	-40	105	√	41	8	64	40	10	4	12	-	√	2	2	16	1	3	2	-	√	1	6	2	2	1	2	√	-	1	√	-	-	√	3	√	QFN 48	NK-M2L31SG	NLG-48Y
M2L31ZE4AE	Cortex-M23	72	1.71	3.6	-40	105	√	26	8	128	40	10	4	12	-	√	2	2	10	1	3	2	-	√	1	6	2	2	1	2	√	-	1	√	-	-	√	3	√	QFN33	NK-M2L31SG	NLG-32Z
M2L31YE4AE	Cortex-M23	72	1.71	3.6	-40	105	√	41	8	128	40	10	4	12	-	√	2	2	16	1	3	2	-	√	1	6	2	2	1	2	√	-	1	√	-	-	√	3	√	QFN 48	NK-M2L31SG	NLG-48Y
M2L31LE4AE	Cortex-M23	72	1.71	3.6	-40	105	√	41	8	128	40	10	4	12	-	√	2	2	16	1	3	2	-	√	1	6	2	2	1	2	√	-	1	√	-	-	√	3	√	LQFP 48	NK-M2L31SG	NLG-48Y
M2L31SE4AE	Cortex-M23	72	1.71	3.6	-40	105	√	53	8	128	40	10	4	12	-	√	2	2	16	1	3	2	-	√	1	6	2	2	1	2	√	-	1	√	-	-	√	3	√	LQFP 64	NK-M2L31SG	NLG-64S
M2L31YG4AE	Cortex-M23	72	1.71	3.6	-40	105	√	41	8	256	40	10	4	12	-	√	2	2	16	1	3	2	-	√	1	6	2	2	1	2	√	-	1	√	-	-	√	3	√	QFN 48	NK-M2L31SG	NLG-48Y
M2L31YGDAE	Cortex-M23	72	1.71	3.6	-40	105	√	41	8	256	168	16	4	12	12	√	2	2	16	2	3	3	12	√	1	8	2	4	2	4	√	V	2	√	√	√	√	3	√	QFN 48	NK-M2L31KI	NLG-48Y
M2L31LG4AE	Cortex-M23	72	1.71	3.6	-40	105	√	41	8	256	40	10	4	12	-	√	2	2	16	1	3	2	-	√	1	6	2	2	1	2	√	-	1	√	-	-	√	3	√	LQFP 48	NK-M2L31SG	NLG-48Y
M2L31LGDAE	Cortex-M23	72	1.71	3.6	-40	105	√	41	8	256	168	16	4	12	12	√	2	2	16	2	3	3	12	√	1	8	2	4	2	4	√	√	2	√	√	√	√	3	√	LQFP 48	NK-M2L31KI	NLG-48L
M2L31CGDAE	Cortex-M23	72	1.71	3.6	-40	105	√	40	8	256	168	16	4	12	12	√	2	2	16	1	3	2	12	√	1	6	2	2	1	2	√	√	1	√	√	√	√	3	√	WLCSP 49	NK-M2L31KI	-
M2L31SGDAE	Cortex-M23	72	1.71	3.6	-40	105	√	53	8	256	168	16	4	12	12	√	2	2	20	2	3	3	17	√	1	8	2	4	2	4	√	√	2	√	√	√	√	3	√	LQFP 64	NK-M2L31KI	NLG-64S
M2L31SG4AE	Cortex-M23	72	1.71	3.6	-40	105	√	53	8	256	40	10	4	12	-	√	2	2	16	1	3	2	-	√	1	6	2	2	1	2	√	-	1	√	-	-	√	3	√	LQFP 64	NK-M2L31SG	NLG-64S
M2L31KGDAE	Cortex-M23	72	1.71	3.6	-40	105	√	109	8	256	168	16	4	12	12	√	2	2	24	2	3	3	18	√	1	8	2	4	2	4	√	√	2	√	√	√	√	3	√	LQFP 128	NK-M2L31KI	NLG-128KX
M2L31YIDAE	Cortex-M23	72	1.71	3.6	-40	105	√	41	8	512	168	16	4	12	12	√	2	2	16	2	3	3	12	√	1	8	2	4	2	4	√	√	2	√	√	√	√	3	√	QFN 48	NK-M2L31KI	NLG-48Y
M2L31LIDAE	Cortex-M23	72	1.71	3.6	-40	105	√	41	8	512	168	16	4	12	12	√	2	2	16	2	3	3	12	√	1	8	2	4	2	4	√	√	2	√	√	√	√	3	√	LQFP 48	NK-M2L31KI	NLG-48L
M2L31CIDAE	Cortex-M23	72	1.71	3.6	-40	105	√	40	8	512	168	16	4	12	12	√	2	2	16	1	3	2	12	√	1	6	2	2	1	2	√	√	1	√	√	√	√	3	√	WLCSP 49	NK-M2L31KI	-
M2L31SIDAE	Cortex-M23	72	1.71	3.6	-40	105	√	53	8	512	168	16	4	12	12	√	2	2	20	2	3	3	17	√	1	8	2	4	2	4	√	√	2	√	√	√	√	3	√	LQFP 64	NK-M2L31KI	NLG-64S
M2L31KIDAE	Cortex-M23	72	1.71	3.6	-40	105	√	109	8	512	168	16	4	12	12	√	2	2	24	2	3	3	18	√	1	8	2	4	2	4	√	√	2	√	√	√	√	3	√	LQFP 128	NK-M2L31KI	NLG-128KX

M2003 Series

The NuMicro® M2003 series 32-bit microcontroller is based on Arm® Cortex®-M23 core with 32-bit hardware multiplier/divider. It runs up to 32 MHz and features 1024 Kbytes, 48 Kbytes SRAM, 2.4V ~ 5.5V operating voltage, and -40°C ~105°C operating temperature. The M2003 series provides plenty of peripherals including 9 sets of 32-bit Timers, Watchdog Timers, up to 5 sets of UART, 3 sets of I2C and 5 sets of Universal Serial Control Interface (USCI) that can be set as UART/SPI/I2C flexibly. The M2003 series also provides rich analog peripherals including 24 single-end analog input channels of 1M SPS 12-bit ADC and 12 channels of 16-bit PWM.

Target Applications: Suitable for a wide range of application such as Smart Building, Smart Home, Smart Home Appliances, Industrial Control, BMS etc.

Key Features:

1. Robust Communication Interfaces: offers flexible peripheral support such as CAN, UART, I2C and multiple ADC channels.
2. Wide voltage support (2.4V - 5V) ensures compatibility with both legacy and modern systems, making it a versatile choice for embedded developers.
3. High noise immunity, featuring EFT resistance up to 4.4KV and with ESD/HBM protection up to 7KV, it is highly resistant to electrostatic discharge, making it an ideal choice for automotive electronics, factory automation, and industrial control systems that require robust and reliable operation.

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	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	ECAP	ADC (12-bit)	UART	LIN	I²C	QSPI	CAN	USCI	SPROM(B)	Flash/RAM ECC	CRC	Package Type	Package Size	Mass Production	EVB	MP Programmer
M2003 FC1AE	Cortex-M23	24	2.4	5.5	-40	105	18	4	32	Configurable	4	-	√	√	4	-	1	8	2	-	1	-	-	1	1024	-	-	TSSOP20	4.4x6.5	√	NK-M2003FC	N/A
M2003 XC1AE	Cortex-M23	24	2.4	5.5	-40	105	18	4	32	Configurable	4	-	√	√	4	-	1	8	2	-	1	-	-	1	1024	-	-	QFN20	3x3	√	NK-M2003FC	N/A
M2003 ED5AE	Cortex-M23	32	2.4	5.5	-40	105	26	4	64	Configurable	24	-	√	√	4	-	1	9	2	2	1	-	1	1	1024	-	-	TSSOP28	4.4x9.7	x	NK-M2003LE	N/A
M2003 TD5AE	Cortex-M23	32	2.4	5.5	-40	105	30	4	64	Configurable	24	-	√	√	4	-	1	8	2	2	1	-	1	1	1024	-	-	QFN33	4x4	x	NK-M2003LE	N/A
M2003 TE5AE	Cortex-M23	32	2.4	5.5	-40	105	30	4	128	Configurable	24	-	√	√	4	-	1	8	2	2	1	-	1	1	1024	-	-	QFN33	4x5	x	NK-M2003LE	N/A
M2003 LD5AE	Cortex-M23	32	2.4	5.5	-40	105	46	4	64	Configurable	24	-	√	√	4	-	1	10	2	2	1	-	1	1	1024	-	-	LQFP48	7x7	x	NK-M2003LE	N/A
M2003 LE5AE	Cortex-M23	32	2.4	5.5	-40	105	46	4	128	Configurable	24	4	√	√	4	-	1	10	2	2	1	-	1	1	1024	-	-	LQFP48	7x7	x	NK-M2003LE	N/A
M2003 LG6AE	Cortex-M23	32	2.4	5.5	-40	105	46	4	256	Configurable	36	4	√	√	4	-	1	10	3	3	1	1	1	4	1024	-	√	LQFP48	7x7	x	NK-M2003SG	N/A
M2003 SG6AE	Cortex-M23	32	2.4	5.5	-40	105	59	4	256	Configurable	36	2	√	√	4	-	1	14	3	3	1	1	1	4	1024	-	√	LQFP64	7x7	x	NK-M2003SG	N/A
M2003 SI7AE	Cortex-M23	32	2.4	5.5	-40	105	58	4	512	Configurable	48	2	√	√	9	12	-	24	5	1	3	-	-	5	1024	√	√	LQFP64	7x7	x	NK-M2003VJ	N/A
M2003 SJ7AE	Cortex-M23	32	2.4	5.5	-40	105	58	4	1204	Configurable	48	2	√	√	9	12	-	24	5	1	3	-	-	5	1024	√	√	LQFP64	7x7	x	NK-M2003VJ	N/A
M2003 VI7AE	Cortex-M23	32	2.4	5.5	-40	105	87	4	512	Configurable	48	2	√	√	9	12	-	24	5	1	3	-	-	5	1024	√	√	LQFP100	14x14	x	NK-M2003VJ	N/A
M2003 VJ7AE	Cortex-M23	32	2.4	5.5	-40	105	87	4	1024	Configurable	48	√	√	√	9	12	-	24	5	1	3	-	-	5	1024	√	√	LQFP100	14x14	x	NK-M2003VJ	N/A

M251/M252 Series

The NuMicro® M251/M252 series is a low-power microcontroller platform based on Arm® Cortex®-M23 core for Armv8-M architecture. It runs up to 48 MHz with 32 ~ 256 Kbytes embedded Flash Memory and 8 ~ 32 Kbytes embedded SRAM, 4 Kbytes Flash loader memory (LDROM) for In-System Programming (ISP). The 32-bit low-power microcontrollers supports wide supply voltage from 1.75V ~ 5.5V and operating temperature range from -40°C ~ +105°C. It features highly flexible PSIO and plenty of peripherals, such as VAI interface, crystal-less USB 2.0 full-speed device and rich peripherals.

Target Applications: Smart Home/ Smart Home Appliances, Industrial Control/ Industrial Automation, Smart City, IoT Device, Security Alarm System, Electronic Payments, Communication Modules, Portable Wireless Data Collector, Smart Door Lock, Handheld Medical Device, (GPS) Location Tracker, Electronic Shelf Labels (ESL)

• 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	
	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)	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	XOM	Tamper	Package Type	Package Size	Mass Production	EVB	MP Programmer
M251FC2AE	Cortex-M23	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-M251SD	NLG-20F
M251EC2AE	Cortex-M23	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-M251SD	NLG-28E
M251ZC2AE	Cortex-M23	48	1.75	5.5	-40	105	26	4	32	8	5	4	12	-	√	10	-	-	2	1	1	1	2	1	-	-	-	√	-	QFN33	5x5	√	NK-M251SD	NLG-32Z
M251LC2AE	Cortex-M23	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-M251SD	NLG-48L
M251SC2AE	Cortex-M23	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-M251SD	NLG-64S
M251ZD2AE	Cortex-M23	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-M251SD	NLG-32Z
M251LD2AE	Cortex-M23	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-M251SD	NLG-48L
M251SD2AE	Cortex-M23	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-M251SD	NLG-64S
M251LE3AE	Cortex-M23	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-M251KG	NLG-48L
M251SE3AE	Cortex-M23	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-M251KG	NLG-64S
M251KE3AE	Cortex-M23	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-M251KG	NLG-128KX
M251KG6AE	Cortex-M23	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-M251KG	NLG-128KX
M251LG6AE	Cortex-M23	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-M251KG	NLG-48L
M251SG6AE	Cortex-M23	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-M251KG	NLG-64S

• 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	
	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)	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	XOM	Tamper	Package Type	Package Size	Mass Production	EVB	MP Programmer
M252FC2AE	Cortex-M23	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
M252EC2AE	Cortex-M23	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
M252ZC2AE	Cortex-M23	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
M252LC2AE	Cortex-M23	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
M252SC2AE	Cortex-M23	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
M252ZD2AE	Cortex-M23	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
M252LD2AE	Cortex-M23	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
M252SD2AE	Cortex-M23	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
M252LE3AE	Cortex-M23	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
M252SE3AE	Cortex-M23	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
M252KE3AE	Cortex-M23	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
M252LG6AE	Cortex-M23	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
M252SG6AE	Cortex-M23	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
M252KG6AE	Cortex-M23	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

M253 Series

The Nuvoton NuMicro® M253 microcontroller based on Arm® Cortex®-M23 core runs up to 48 MHz with 128 Kbytes embedded Flash Memory and 16 Kbytes embedded SRAM. It features CAN-FD interface, crystal-less USB 2.0 full speed device and rich peripherals. The M253 series supports wide supply voltage from 1.8V ~ 5.5V and operating temperature from -40°C ~ +105°C, providing 8kV HBM ESD and 4.4kV EFT high immunity.

Target Applications: Smart Home/ Smart Home Appliances , Industrial Control/ Industrial Automation, Battery Management System
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	
	Core	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 (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
M253LD3BE	Cortex-M23	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
M253ZE3BE	Cortex-M23	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
M253LE3BE	Cortex-M23	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

M254/M256/M258 Series

The NuMicro® M254/M256/M258 series is a low-power microcontroller platform based on Arm® Cortex®-M23 core using Armv8-M architecture. It runs up to 48 MHz with 64 to 256 Kbytes embedded Flash Memory, 8 to 32 Kbytes embedded SRAM, 4 Kbytes Flash loader memory (LDROM) for In-System Programming (ISP). It features COM/SEG LCD driver, capacitive touch sensing function for smart home appliance HMI, and USB 2.0 full speed device, 1.75V to 5.5V wide operating voltage, 5V I/O tolerance, and -40°C to +105°C operating temperature.

Target Applications: Handheld Meter, Thermostat, Smart Home/ Home Appliances, Industrial Control/ Industrial Automation, Temperature/ Humidity Logger

• 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	
	Core	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)	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
M254MD2AE	Cortex-M23	48	1.75	5.5	-40	105	37	4	64	8	5	4	6	√	12	-	2	-	3	1	1	1	1	1	-	-	√	-	4 x 20 6 x 18 8 x 16	LQFP 44	10x10	√	NK-M256SD	-
M254SD2AE	Cortex-M23	48	1.75	5.5	-40	105	54	4	64	8	5	4	6	√	16	-	2	-	3	1	1	1	1	1	-	-	√	-	4 x 32 6 x 30 8 x 28	LQFP 64	7x7	√	NK-M256SD	NLG-64S
M254SE3AE	Cortex-M23	48	1.75	5.5	-40	105	53	4	128	16	5	4	6	√	16	-	2	-	3	1	1	1	1	1	-	-	√	-	4 x 32 6 x 30 8 x 28	LQFP 64	7x7	√	NK-M258KE	NLG-64S
M254KE3AE	Cortex-M23	48	1.75	5.5	-40	105	86	4	128	16	5	4	6	√	16	-	2	-	3	1	1	1	1	1	-	-	√	-	4 x 40 6 x 42 8 x 44	LQFP 128	14x14	√	NK-M258KE	NLG-128KX
M254SG6AE	Cortex-M23	48	1.75	5.5	-40	105	53	4	256	32	8	4	12	√	16	2	2	-	4	1	1	2	2	2	-	-	√	√	4 x 32 6 x 30 8 x 28	LQFP 64	7x7	√	NK-M258KG	NLG-64S
M254KG6AE	Cortex-M23	48	1.75	5.5	-40	105	86	4	256	32	8	4	12	√	16	2	2	-	4	1	1	2	2	2	-	-	√	√	4 x 40 6 x 42 8 x 44	LQFP 128	14x14	√	NK-M258KG	NKG-128KX

• 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	
	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)	SRAM (KB)	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
M256MD2AE	Cortex-M23	48	1.75	5.5	-40	105	37	4	64	8	5	4	6	√	12	-	2	6	3	1	1	1	1	1	-	-	√	-	4 x 20 6 x 18 8 x 16	LQFP44	10x10	√	NK-M256SD	-
M256SD2AE	Cortex-M23	48	1.75	5.5	-40	105	54	4	64	8	5	4	6	√	16	-	2	14	3	1	1	1	1	1	-	-	√	-	4 x 32 6 x 30 8 x 28	LQFP64	7x7	√	NK-M256SD	NLG-64S
M256SE3AE	Cortex-M23	48	1.75	5.5	-40	105	53	4	128	16	5	4	6	√	16	-	2	14	3	1	1	1	1	1	-	-	√	-	4 x 32 6 x 30 8 x 28	LQFP64	7x7	√	NK-M258KE	NLG-64S
M256KE3AE	Cortex-M23	48	1.75	5.5	-40	105	86	4	128	16	5	4	6	√	16	-	2	15	3	1	1	1	1	1	-	-	√	-	4 x 40 6 x 42 8 x 44	LQFP128	14x14	√	NK-M258KE	NLG-128KX
M256SG6AE	Cortex-M23	48	1.75	5.5	-40	105	53	4	256	32	8	4	12	√	16	2	2	20	4	1	1	2	2	2	-	-	√	√	4 x 40 6 x 42 8 x 44	LQFP64	7x7	√	NK-M258KG	NLG-64S
M256KG6AE	Cortex-M23	48	1.75	5.5	-40	105	86	4	256	32	8	4	12	√	16	2	2	24	4	1	1	2	2	2	-	-	√	√	4 x 40 6 x 42 8 x 44	LQFP128	14x14	√	NK-M258KG	NLG-128KX

• 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	
	Core	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)	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
M258SE3AE	Cortex-M23	48	1.75	5.5	-40	105	49	4	128	16	5	4	6	√	16	-	2	14	3	1	1	1	1	1	1	√	√	-	8x28 6x26 4x24	LQFP 64	7x7	√	NK-M258KE	NLG-64S
M258KE3AE	Cortex-M23	48	1.75	5.5	-40	105	82	4	128	16	5	4	6	√	16	-	2	15	3	1	1	1	1	1	1	√	√	-	8x40 6x42 4x44	LQFP 128	14x14	√	NK-M258KE	NLG-128KX
M258SG6AE	Cortex-M23	48	1.75	5.5	-40	105	49	4	256	32	8	4	12	√	16	2	2	20	4	1	1	2	2	2	1	√	√	√	8x28 6x26 4x24	LQFP 64	7x7	√	NK-M258KG	NKG-64S
M258KG6AE	Cortex-M23	48	1.75	5.5	-40	105	82	4	256	32	8	4	12	√	16	2	2	24	4	1	1	2	2	2	1	√	√	√	8x40 6x42 4x44	LQFP 128	14x14	√	NK-M258KG	NLG-128KX

M261/M262/M263 Series

The NuMicro® M261/M262/M263 series is a low-power microcontroller platform based on Arm® Cortex®-M23 core for Arm®v8-M architecture. It runs up to 64 MHz with 512 Kbytes embedded Flash memory in dual bank mode supporting Over-The-Air (OTA) firmware update and 96 Kbytes embedded SRAM. It also supports low supply voltage from 1.8V ~ 3.6V and operating temperature range from -40°C ~ +105°C.

Target Applications: Smart Door Lock, Fingerprint Card, Smart Home Appliances, Smart Building, Wireless Sensor Node Devices, Smart Metering, Mobile Data Loggers, Handheld Medical Devices
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	
	Core	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	Cortex-M23	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	Cortex-M23	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	√	LQFP64	7x7	√	NK-M263KI	NLG-64S
M261ZIAAE	Cortex-M23	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	Cortex-M23	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	Cortex-M23	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	Cortex-M23	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	-	√	√	-	√	QFN33	5x5	√	NK-M263KI	NLG-32Z
M263KIAAE	Cortex-M23	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	Cortex-M23	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	Cortex-M23	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

NUC1262/NUC1263 Series

The NuMicro® NUC1262/NUC1263 series 32-bit microcontroller is based on Arm® Cortex®-M23 core for Armv8-M architecture, running up to 72 MHz and features up to 128 Kbytes of Flash, 20 Kbytes of SRAM. With LED Light Strip Interface (LLSI), I3C, and crystal-less USB2.0 full-speed device make it an ideal solution for PC accessories and industrial control applications. It can support 2.5V to 5.5V operating voltage and -40°C to +105°C operating temperature.

Target Applications: Sensor hub, gaming peripherals, DDR5 DIMM module, VGA card
Key Features: 20 KB SRAM, up to 2 sets of 1V I3C, up to 24 channel PWM outputs, up to 11 channels of LED Light stripe Control interface (LLSI), 50 mA high sink current pins, up to 4 channels of 8-bit 200 ksps DAC, up to 16 channels of 12-bit 800 ksps ADC, up to 4 sets of analog comparators (ACMP)

• NUC1262 Series

The NuMicro® NUC1262 series is based on the Arm® Cortex®-M23 core with Arm®v8-M architecture. It runs up to 72 MHz and incorporates 128 Kbytes of Flash memory and 20 Kbytes of SRAM. It features LED Light Strip Interface (LLSI), USB2.0 full-speed device using built-in 48 MHz oscillator for communication with PC and Mobile accessories. It supports 2.5V ~ 5.5V wide operating voltage and works in operating temperature from -40°C to +105°C.

Key Features: Up to 10-channel LED Light Strip Interface (LLSI), Up to 24-channel 72 MHz BPWM, 8-channel 800 ksps ADC,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	BPWM(16-bit)	RTC	ADC(12-bit)	LLSI	UART	I²C	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	SPROM(B)	Package Type	Package Size	Mass Production	Evaluation Board (Ordering No.)	Mass Production Programmer
NUC1262NE4AE	Cortex-M23	72	2.5	5.5	-40	105	38	4	128	Configurable	20	10	√	√	4	24	-	8	8	2	2	2	1	√	2048	QFN48	7x7	√	NK-NUC1262SE	NLG-NUC126N
NUC1262LE4AE	Cortex-M23	72	2.5	5.5	-40	105	38	4	128	Configurable	20	10	√	√	4	24	-	8	8	2	2	2	1	√	2048	LQFP48	7x7	√	NK-NUC1262SE	NLG-NUC126L
NUC1262SE4AE	Cortex-M23	72	2.5	5.5	-40	105	50	4	128	Configurable	20	10	√	√	4	24	-	8	10	2	2	2	1	√	2048	LQFP64	7x7	√	NK-NUC1262SE	NLG-NUC126S
NUC1262YE4AE	Cortex-M23	72	2.5	5.5	-40	105	38	4	128	Configurable	20	10	√	√	4	24	-	8	8	2	2	2	1	√	2048	QFN48	5x5	√	NK-NUC1262SE	NLG-NUC126Y

• NUC1263 Series

The NuMicro® NUC1263 series is based on the Arm® Cortex®-M23 core with Arm®v8-M architecture. It runs up to 72 MHz and incorporates 64 Kbytes of Flash memory and 20 Kbytes of SRAM. It features I^3C interface, LED Light Strip Interface (LLSI), USB2.0 full-speed device using built-in 48 MHz oscillator for communication with PC and Mobile accessories, 4 sets of ACMP and 4 sets of DAC. It supports 2.5V ~ 5.5V wide operating voltage and works in operating temperature from -40°C to +105°C .

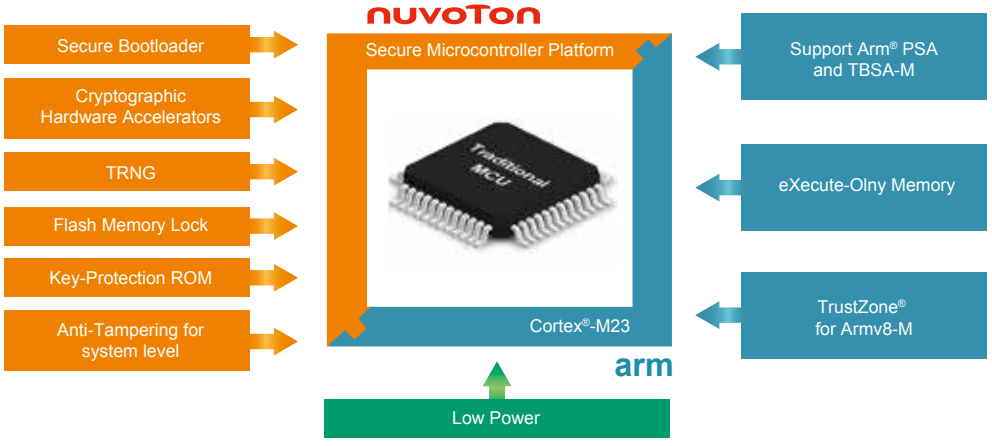
Key Features: Up to 6-channel LED Light Strip Interface (LLSI), Up to 24-channel 144 MHz BPWM, 16-channel 800 ksps ADC, 10-channel PDMA.

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	BPWM (16-bit)	RTC	ADC (12-bit)	ACMP	DAC	I³C	LLSI	UART	I²C	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	SPROM(B)	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC1263ZD4CE	Cortex-M23	72	2.5	5.5	-40	105	22	4	64	Configurable	20	10	√	√	4	24	-	16	4	4	2	6	3	3	3	1	√	2048	QFN 33	5x5	2023 Q2	NK-NUC1263S	NLG-NUC126Z
NUC1263ND4CE	Cortex-M23	72	2.5	5.5	-40	105	36	4	64	Configurable	20	10	√	√	4	24	-	16	4	4	2	6	3	3	3	1	√	2048	QFN 48	7x7	2023 Q2	NK-NUC1263S	NLG-NUC126N
NUC1263LD4CE	Cortex-M23	72	2.5	5.5	-40	105	36	4	64	Configurable	20	10	√	√	4	24	-	16	4	4	2	6	3	3	3	1	√	2048	LQFP 48	7x7	2023 Q2	NK-NUC1263S	NLG-NUC126L
NUC1263SD4CE	Cortex-M23	72	2.5	5.5	-40	105	49	4	64	Configurable	20	10	√	√	4	24	-	16	4	4	2	6	3	3	3	1	√	2048	LQFP 64	7x7	2023 Q2	NK-NUC1263S	NLG-NUC126S

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

Target Applications: Smart Door Lock, Fingerprint Card, Smart Home Appliances, Smart Building, Wireless Sensor Node Devices, Smart Metering, Mobile Data Loggers, Digital Currency Authentication

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	
	Core	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)	QEI	ECAP	EADC	DAC (12-bit)	ACMP	LPUART	ISO-7816-3	QSPI	I²C	USCI	SPI/ PS	CAN	SDHC	USB FS OTG	EBI	TRNG	Tamper	AES/DES/3DS/SHA/ECC	Package Type	Package Size	Mass Production	EVB	MP Programmer
M2351CIAAE	Cortex-M23	64	1.7	3.6	-40	105	41	-	-	4	512	-	96	16	4	12	12	2	1	16	2	2	6	3	1	3	2	3	1	1	1	√	√	-	√	WLCSP 49	3.0x 3.0	√	NK-BEDM 2351	-
M2351KIAAE	Cortex-M23	64	1.7	3.6	-40	105	107	√	√	4	512	-	96	16	4	12	12	2	2	16	2	2	6	3	1	3	2	4	1	1	1	√	√	6	√	LQFP 128	14x 14	√	NK-BEDM 2351	NLG-128KX
M2351SFSIAAE	Cortex-M23	64	1.7	3.6	-40	85	45	-	√	4	512	4096	96	16	4	12	12	2	1	16	2	2	6	3	-	3	2	4	1	1	1	√	√	1	√	LQFP 64	7x7	√	NK-M2351 SF	NLG-64S
M2351SIAAE	Cortex-M23	64	1.7	3.6	-40	105	51	-	√	4	512	-	96	16	4	12	12	2	1	16	2	2	6	3	1	3	2	4	1	1	1	√	√	1	√	LQFP 64	7x7	√	NK-BEDM 2351	NLG-64S
M2351ZIAAE	Cortex-M23	64	1.7	3.6	-40	105	25	-	-	4	512	-	96	16	4	12	11	1	-	10	2	2	6	3	1	3	2	3	1	1	1	-	√	-	√	QFN 33	5x5	√	NK-BEDM 2351	NLG-32Z

M2354 Series

The NuMicro® M2354 series is based on Arm® Cortex®-M23 with built-in TrustZone® technology and enhanced hardware security, including side-channel and fault injection protection. It features secure debug port and lifecycle management, firmware version control, and secure key storage for robust data, code, and communication protection. M2354 has cryptographic hardware accelerators that supports FIPS PUB 197/180/180-2/180-4 and NIST SP 800-38A, and complies with PSA Certified Level 3 and SESIP Level 3 security assurance levels.

M2354 runs up to 96 MHz with 1MB dual-bank Flash supporting real-time remap for secure FOTA. The latest version also upgrades secure boot with DICE implemented in Mask ROM and supports ECDSA P-521, enabling strong device identity and establishing a robust chain-of-trust.

Target Applications: Smart Door Lock, Fingerprint Card, Smart Home Appliances, Smart Building, Wireless Sensor Node Devices, Smart Metering, Mobile Data Loggers, Digital Currency Authentication, Mobile Payment Facilities, Server Peripherals

Key Features: Tamper-resistant key storage in Flash and SRAM, 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, Multiple power mode, SPDM supported.

Part No.	System							Memory				Timer		Analog		Connectivity								Security					Crypto	Display	Package		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)	SRAM (KB)	PDMA (ch)	Timer(32-bit)	PWM(16-bit)	ADC(12-bit)	ACMP	LPUART	ISO-7816	I²C	Quad SPI	SPI/I²S	I²S	USCI	TrustZone	Secure Boot	XOM	TRNG	Key Store	Tamper Controller	AES/RSA/ECC/SHA/HMAC	ComSeg LCD	Package Type	Package Size	EVB
M2354LJFAE	Cortex-M23	96	1.7	3.6	-40	105	40	16	1024	256	16	4	24	11	2	6	2	3	1	3	1	1	√	With ECC P256	√	√	√	√	√	-	LQFP48	7x7	NuMaker-M2354
M2354SJFAE	Cortex-M23	96	1.7	3.6	-40	105	50	16	1024	256	16	4	24	16	2	6	3	3	1	4	1	2	√	With ECC P256	√	√	√	√	√	8x13	LQFP64	7x7	NuMaker-M2354
M2354KJFAE	Cortex-M23	96	1.7	3.6	-40	105	106	16	1024	256	16	4	24	16	2	6	3	3	1	4	1	2	√	With ECC P256	√	√	√	√	√	8x40	LQFP128	14x14	NuMaker-M2354
M2354LJFBE	Cortex-M23	96	1.7	3.6	-40	105	40	16	1024	256	16	4	24	11	2	6	2	3	1	3	1	1	√	With DICE, ECC P521	√	√	√	√	√	-	LQFP48	7x7	NuMaker-M2354KJB
M2354SJFBE	Cortex-M23	96	1.7	3.6	-40	105	50	16	1024	256	16	4	24	16	2	6	3	3	1	4	1	2	√	With DICE, ECC P521	√	√	√	√	√	8x13	LQFP64	7x7	NuMaker-M2354KJB
M2354KJFBE	Cortex-M23	96	1.7	3.6	-40	105	106	16	1024	256	16	4	24	16	2	6	1	3	1	4	1	2	√	With DICE, ECC P521	√	√	√	√	√	8x40	LQFP128	14x14	NuMaker-M2354KJB
M2354CJFAE	Cortex-M23	96	1.7	3.6	-40	105	41	16	1024	256	16	4	24	16	2	6	1	3	-	4	1	1	√	With DICE, ECC P521	√	√	√	√	√	-	WLCSP49	3.455x 3.725	NuMaker-M2354KJB

NuMicro® Automotive Family

The NuMicro® Automotive/CAN microcontroller is a new microcontroller product line qualified by AEC-Q100, with built-in Controller Area Network(CAN) 2.0B interface that designed for automotive applications.

Target Applications: Reverse Parking Assistanc, Automotive lighting, Body control module, Head Up Display, etc.

NuMicro® CAN/Automotive series MCUs are composed of the following product series.
M0A21/M0A23 Series: Qualified by AEC-Q100 grade 1, up to 125°C, 48 MHz, up to 32KB Flash, CAN/LIN interface, PDMA, DAC, ACMP
NUC131U Series: Qualified by AEC-Q100 grade 2, up to 105°C, 50 MHz, up to 68KB Flash, CAN/LIN interface, up to 6 UART

M0A23 CAN Series

NuMicro® M0A23 is based on the Arm® Cortex®-M0 core and designed for automotive applications, provides up to 32 KB Flash, 4 KB SRAM, CAN/LIN interface and high reliability with the capability of withstanding up to 125°C ambient temperature.

Target Applications: Automotive, Lighting, Industrial Communication, Industrial Automation, Power Control, etc.
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		Certification
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	Temperature Sensor	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	Internal Voltage Reference	UART	LIN	USCI	CAN	Package Type	Package Size	Mass Production	EVB	MP Programmer	AEC-Q100
M0A23OC1ACU	Cortex-M0	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	Grade 1
M0A23EC1ACU	Cortex-M0	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	Grade 1
M0A23OC1AC	Cortex-M0	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	Cortex-M0	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	-

M2A23 CAN FD Series

The NuMicro® M2A23 is an automotive-grade microcontroller platform with an operating temperature range of -40°C to 125°C, an operating voltage of 2.5V to 5.5V, and up to 3 sets of CAN FD functionality. It is based on the Arm® Cortex®-M23 core, running up to 72 MHz, and includes a single-cycle hardware multiplier/divider. It features up to 256 Kbytes of Flash memory and 24 Kbytes of SRAM. The dual-bank design of the 256 Kbytes Flash memory supports firmware updates via the Over-The-Air (FOTA) process and includes function safety protection features designed for automotive applications.

Target Applications: Automotive, Lighting, Industrial Communication, Industrial Automation, Power Control, etc.

Key Features: 72MHz, up to 125°C, CAN FD x3/LIN interface, AEC-Q100, Dual Bank

Part No.	System				Memory				Timer			Analog		Connectivity						Package	Status	Certification
	Operating Frequency (MHz)	Operating Voltage (V)	Operating Temperature(°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ADC (12-bit)	ACMP	CAN-FD	LIN	UART	USCI	I²C	SPI	Package Type	Mass Production	AEC-Q100
M2A23LG5ACU	72	2.5~5.5	-40~125	42	4	256	24	6	4	6	6	12	2	3	1	2	2	1	1	LQFP48(7x7)	25Q4	√
M2A23SG5ACU	72	2.5~5.5	-40~125	55	4	256	24	6	4	6	6	16	2	3	1	2	2	1	1	LQFP64(7x7)	26Q1	√
M2A23YG5AC	72	2.5~5.5	-40~125	42	4	256	24	6	4	6	6	12	2	3	1	2	2	1	1	QFN48(5x5)	24Q3	-
M2A23LG5AC	72	2.5~5.5	-40~125	42	4	256	24	6	4	6	6	12	2	3	1	2	2	1	1	LQFP48(7x7)	24Q3	-
M2A23SG5AC	72	2.5~5.5	-40~125	55	4	256	24	6	4	6	6	16	2	3	1	2	2	1	1	LQFP64(7x7)	24Q3	-
M2A23YE5AC	72	2.5~5.5	-40~125	42	4	128	24	6	4	6	6	12	2	3	1	2	2	1	1	QFN48(5x5)	24Q3	-
M2A23LE5AC	72	2.4~5.5	-40~125	42	4	128	24	6	4	6	6	12	2	3	1	2	2	1	1	LQFP48(7x7)	24Q3	-
M2A23SE5AC	72	2.4~5.5	-40~125	55	4	128	24	6	4	6	6	16	2	3	1	2	2	1	1	LQFP64(7x7)	24Q3	-
M2A23YD5AC	72	2.4~5.5	-40~125	42	4	64	24	6	4	6	6	12	2	3	1	2	2	1	1	QFN48(5x5)	24Q3	-
M2A23LD5AC	72	2.4~5.5	-40~125	42	4	64	24	6	4	6	6	12	2	3	1	2	2	1	1	LQFP48(7x7)	24Q3	-
M2A23SD5AC	72	2.4~5.5	-40~125	55	4	64	24	6	4	6	6	16	2	3	1	2	2	1	1	LQFP64(7x7)	24Q3	-

NUC131U Series

The NUC131SD2AEU/NUC131LD2AEU is a 32-bit ARM® Cortex®-M0 based microcontroller running up to 50 MHz with 68 KB Flash, 8 KB SRAM, and 4 KB ISP ROM, built-in Controller Area Network (CAN) 2.0 B interface, qualified by AEC-Q100 grade 2, designed for automotive, industrial control applications which needs reliable and robust CAN communication.

Target Applications: Elevator, Motor Control, BMS, Charger, CAN Module
Key Features: Hardware Divider, LIN/CAN interface, 6 sets of UART, 24-channel 100 MHz PWM

Part No.	System							Memory				Timer		Analog	Connectivity						Package		Status	Tool		Certification
	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)	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	Cortex-M0	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	Grade 2
NUC131SD2AEU	Cortex-M0	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	Grade 2

NuMicro® Family Arm® Cortex®-M0 Microcontrollers

As one of the leading Microcontroller (MCU) companies in the world, Nuvoton provides the state-of-the–art NuMicro® 32-bit MCU family powered by the ARM® Cortex®-M0 core. The Cortex®-M0 MCUs provide wide operating voltage (1.8V~3.6V,2.5V-5.5V), industrial temperature (-40°C-105°C), high accuracy oscillator and high immunity (8kV ESD, 4kV EFT).

The Cortex®-M0 MCU family includes Industrial control 1.8V M031 series, 5V NUC029 series, NUC121/123/125/126 series with USB 2.0 FS device, NUC131/230/240 series with Controller Area Network (CAN) bus, Mini51 and M051 series for value solutions and ultra-low power solution Nano100 series(1.8V-3.6V), targeting at battery powered applications. They are ideal solutions for industrial control systems, industrial automation, consumer products, embedded network control, energy, power systems and motor control.

M029G/M030G/M031G Series

The NuMicro® M029G/M030G/M031G series is an Optical Transceiver Module specific microcontroller platform based on Arm® Cortex®-M0 core with 32-bit hardware multiplier/divider. It runs up to 48/72 MHz with 32/64 Kbytes embedded Flash Memory, 2/4/8 Kbytes embedded SRAM, 2 Kbytes Flash loader memory (LDROM) for In-System Programming (ISP). It features Hardware Manchester Codec (M031G series) and DAC with automatic data generation function (M031G series) for pilot tone signal, plentiful analog peripheral including 12-bit DAC and up to 2MSPS 12-bit ADC, built-in temperature sensor, small package, QFN24 and QFN33, and I²C with 400 KHz/1 MHz of slave mode for general Optical Transceiver Module application, 2.7V to 3.6V operating voltage, 5V I/O tolerance, and -40°C to +105°C operating temperature.

Specific Applications: Optical Transceiver. Also suitable for small size applications requiring analog circuit, such as Power Module, Small Screen, Pico Projector, Small Appliance, Wearable Device, Sensor, etc.

• M029G/M030G Series

Key Features: Build-in Temperature Sensor, 400 KHz(M029G)/ 1 MHz(M030G) Slave Mode I²C, QFN24/33 Small Form Factor Package

Part No.	System									Memory					Clock			Timer		Analog			Connectivity			Package		Status	Tool	
	Core	Operating Frequency (MHz)	CRC	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	Temperature Sensor Accuracy (°C)	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	LIRC (kHz)	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
M029GGC0AE	Cortex-M0	48	√	2.7	3.6	-40	105	19	±2	2	32	Configurable	2	5	38.4	48	-	2	6	11	2	√	1	2	1	QFN24	3x3	-	NK-M029GGC	NLG-M031GG
M030GGC1AE	Cortex-M0	48	√	2.7	3.6	-40	105	19	±2	2	32	Configurable	4	5	38.4	48	-	2	6	11	4	√	1	2	1	QFN24	3x3	√	NK-M030GTD	NLG-M031GG
M030GGD1AE	Cortex-M0	48	√	2.7	3.6	-40	105	19	±2	2	64	Configurable	4	5	38.4	48	-	2	6	11	4	√	1	2	1	QFN24	3x3	√	NK-M030GTD	NLG-M031GG
M030GTC1AE	Cortex-M0	48	√	2.7	3.6	-40	105	28	±2	2	32	Configurable	4	5	38.4	48	-	2	6	16	4	√	1	2	1	QFN33	4x4	√	NK-M030GTD	NLG-M031GT
M030GTD1AE	Cortex-M0	48	√	2.7	3.6	-40	105	28	±2	2	64	Configurable	4	5	38.4	48	-	2	6	16	4	√	1	2	1	QFN33	4x4	√	NK-M030GTD	NLG-M031GT

• 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	
	Core	Operating Frequency (MHz)	CRC	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	Temperature Sensor Accuracy (°C)	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	LIRC (kHz)	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	DAC Auto Data Generation	Hardware Manchester Codec
M031GGC2AE	Cortex-M0	72	√	2.7	3.6	-40	105	19	±2	2	32	Configurable	8	7	38.4	48	144	6	6	11	4	√	1	2	1	QFN24	3x3	√	NK-M031GTD	NLG-M031GG	√	√
M031GGD2AE	Cortex-M0	72	√	2.7	3.6	-40	105	19	±2	2	64	Configurable	8	7	38.4	48	144	6	6	11	4	√	1	2	1	QFN24	3x3	√	NK-M031GTD	NLG-M031GG	√	√
M031GTC2AE	Cortex-M0	72	√	2.7	3.6	-40	105	28	±2	2	32	Configurable	8	7	38.4	48	144	6	6	16	4	√	1	2	1	QFN33	4x4	√	NK-M031GTD	NLG-M031GT	√	√
M031GTD2AE	Cortex-M0	72	√	2.7	3.6	-40	105	28	±2	2	64	Configurable	8	7	38.4	48	144	6	6	16	4	√	1	2	1	QFN33	4x4	√	NK-M031GTD	NLG-M031GT	√	√

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.

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

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	
	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)	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
M031FB0AE	Cortex-M0	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
M031EB0AE	Cortex-M0	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
M031TB0AE	Cortex-M0	48	1.8	3.6	-40	105	27	2	16	2	-	2	6	-	-	10	-	3	-	2	-	-	1	-	512	QFN33	4x4	√	NK-M031TB	NLG-32T
M031FC1AE	Cortex-M0	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
M031EC1AE	Cortex-M0	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
M031TC1AE	Cortex-M0	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
M031LC2AE	Cortex-M0	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
M031SC2AE	Cortex-M0	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
M031TD2AE	Cortex-M0	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
M031LD2AE	Cortex-M0	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
M031SD2AE	Cortex-M0	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
M031TE3AE	Cortex-M0	48	1.8	3.6	-40	105	27	4	128	16	5	4	12	-	-	10	2	3	-	2	-	1	1	-	512	QFN33	4x4	√	NK-M031SE	NLG-32T
M031LE3AE	Cortex-M0	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
M031SE3AE	Cortex-M0	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
M031LG6AE	Cortex-M0	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	Cortex-M0	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
M031SG6AE	Cortex-M0	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	Cortex-M0	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
M031KG6AE	Cortex-M0	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	Cortex-M0	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
M031SIAAE	Cortex-M0	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
M031KIAAE	Cortex-M0	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

M032 Series

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

Target Applications: Mouse, Keyboard, Gaming Monitor, HMI, IoT Node Device, Security System, Motor Control, Communication System, etc.
Key Features: Configurable up to 10 UARTs, 144 MHz PWM, 2 Msps ADC, 24 MHz SPI, Support 1-wire UART, OTA, Crystal-less USB FS device, Security Protection ROM (SPROM).

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)	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/ FS	USB FS Device	USB FS Device Crystal-less	EBI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
M032FC1AE	Cortex-M0	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
M032EC1AE	Cortex-M0	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
M032TC1AE	Cortex-M0	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
M032LC2AE	Cortex-M0	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
M032TD2AE	Cortex-M0	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
M032LD2AE	Cortex-M0	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	Cortex-M0	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
M032SE3AE	Cortex-M0	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
M032LG6AE	Cortex-M0	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	Cortex-M0	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
M032SG6AE	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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
M032KIAAE	Cortex-M0	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
M032KG6AE	Cortex-M0	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	Cortex-M0	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

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.

Target Applications: Industrial Control, Security/ Alarms, Temperature Sensors, Motors, etc.
Key Features: 4 Kbytes Data Flash, Hardware Divider, 4x comparators

Part No.	System							Memory				Timer				Analog		Connectivity					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)	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	Cortex-M0	50	2.5	5.5	-40	85	40	4	8	4	4	√	-	4	8	8	2	2	2	2	1	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M052LDE	Cortex-M0	50	2.5	5.5	-40	105	40	4	8	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M052LDN	Cortex-M0	50	2.5	5.5	-40	85	40	4	8	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M052ZBN	Cortex-M0	50	2.5	5.5	-40	85	24	4	8	4	4	√	-	4	5	5	2	2	2	1	1	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M052ZDE	Cortex-M0	50	2.5	5.5	-40	105	24	4	8	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M052ZDN	Cortex-M0	50	2.5	5.5	-40	85	24	4	8	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M054LBN	Cortex-M0	50	2.5	5.5	-40	85	40	4	16	4	4	√	-	4	8	8	2	2	2	2	1	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M054LDE	Cortex-M0	50	2.5	5.5	-40	105	40	4	16	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M054LDN	Cortex-M0	50	2.5	5.5	-40	85	40	4	16	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M054ZBN	Cortex-M0	50	2.5	5.5	-40	85	24	4	16	4	4	√	-	4	5	5	2	2	2	1	1	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M054ZDE	Cortex-M0	50	2.5	5.5	-40	105	24	4	16	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M054ZDN	Cortex-M0	50	2.5	5.5	-40	85	24	4	16	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M058LBN	Cortex-M0	50	2.5	5.5	-40	85	40	4	32	4	4	√	-	4	8	8	2	2	2	2	1	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M058LDE	Cortex-M0	50	2.5	5.5	-40	105	40	4	32	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M058LDN	Cortex-M0	50	2.5	5.5	-40	85	40	4	32	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M058ZBN	Cortex-M0	50	2.5	5.5	-40	85	24	4	32	4	4	√	-	4	5	5	2	2	2	1	1	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M058ZDE	Cortex-M0	50	2.5	5.5	-40	105	24	4	32	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M058ZDN	Cortex-M0	50	2.5	5.5	-40	85	24	4	32	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M0516LBN	Cortex-M0	50	2.5	5.5	-40	85	40	4	64	4	4	√	-	4	8	8	2	2	2	2	1	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M0516LDE	Cortex-M0	50	2.5	5.5	-40	105	40	4	64	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M0516LDN	Cortex-M0	50	2.5	5.5	-40	85	40	4	64	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M0516ZBN	Cortex-M0	50	2.5	5.5	-40	85	24	4	64	4	4	√	-	4	5	5	2	2	2	1	1	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M0516ZDE	Cortex-M0	50	2.5	5.5	-40	105	24	4	64	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M0516ZDN	Cortex-M0	50	2.5	5.5	-40	85	24	4	64	4	4	v	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-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	
	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 (32-bit)	PWM (16-bit)	BPWM (16-bit)	ADC (12-bit)	UART	SPI	I²C	Package Type	Package Size	Mass Production	EVB	MP Programmer
M0518LC2AE	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	
	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)	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	
	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)	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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

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.

Target Applications: Smart Home Appliances, Motor Control, White Goods, Industrial Control
Key Features: Hardware Divider, VAI, RTC, EBI, 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)	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	Cortex-M0	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	Cortex-M0	50	2.5	5.5	-40	105	38	4	68	8	-	4	-	12	-	8	-	-	4	3	-	1	1	-	-	-	-	-	-	LQFP44	10x10	√	NK-M071MD	NLG-M071M
M071R1D3AE	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	72	2.5	5.5	-40	105	85	4	256	20	5	-	4	12	√	20	2	√	3	3	2	-	2	3	2	-	-	√	2048	LQFP100	14x14	√	NK-M071VG	NLG-M071V

M091 Series

The NuMicro® M091 series is designed for analog sensor applications based on Arm® Cortex®-M0 core with 32-bit hardware multiplier/ divider. It runs up to 72 MHz with 32/64 Kbytes embedded Flash Memory, 8 Kbytes embedded SRAM, 2 Kbytes Flash loader memory (LDROM) for In-System Programming (ISP). It is equipped with plentiful analog peripheral including up to 4 sets of 8 MHz gain bandwidth (GBW) with 50uV operational amplifier (OPA), 4 sets of 12-bit DAC, 2 levels of internal voltage reference, up to 16 channels of 2MSPS 12-bit SAR ADC and built-in temperature sensor with ±1.6°C deviation from 0°C to 70°C and ±2°C deviation from -40°C to 105°C. It also features small package, QFN33 4x4mm and QFN48 5x5mm, 2.7V to 3.6V operating voltage, 5V I/O tolerance, and -40°C to +105°C operating temperature.

Target Applications: Photoelectric sensor, Pressure sensor, position sensor, etc.
Key Features: 8 MHz gain bandwidth (GBW) with 50uV operational amplifier (OPA), 4 sets of DAC, 16 channels of ADC, Built-in Temperature Sensor, QFN33/48 Small Form Factor Package

Part No.	System								Memory						Clock			Timer		Analog				Connectivity			Package		Status	Tool		Others	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	CRC	GPIO	Temperature Sensor Accuracy (°C)	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (CH)	LIRC (kHz)	HIRC (kHz)	PLL (kHz)	Timer (32-bit)	BPWM (16-bit)	ADC (12-bit)	DAC (12-bit)	OP Amplifier (OPA)	Internal Voltage Reference	UART	I²C	SPI/ I²S	Package Type	Package Size	Mass Production	EVB	MP Programmer	DAC Auto Data Generation	Hardware Manchester Codec
M091TC2AE	Cortex-M0	72	2.7	3.6	-40	105	√	22	±2	2	32	Configurable	8	7	38.4	48	144	6	6	14	4	2	√	1	2	1	QFN33	4x4	√	NK-M091YD	-	√	√
M091TD2AE	Cortex-M0	72	2.7	3.6	-40	105	√	22	±2	2	64	Configurable	8	7	38.4	48	144	6	6	14	4	2	√	1	2	1	QFN33	4x4	√	NK-M091YD	-	√	√
M091YC2AE	Cortex-M0	72	2.7	3.6	-40	105	√	29	±2	2	32	Configurable	8	7	38.4	48	144	6	6	16	4	4	√	1	2	1	QFN48	5x5	√	NK-M091YD	-	√	√
M091YD2AE	Cortex-M0	72	2.7	3.6	-40	105	√	29	±2	2	64	Configurable	8	7	38.4	48	144	6	6	16	4	4	√	1	2	1	QFN48	5x5	√	NK-M091YD	-	√	√

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.

Target Applications: Wireless Chargers, Smart Home Appliances, Security/ Alarms, Temperature Sensors, Motors, Industrial Control, etc.
Key Features: Configurable Data Flash, 2 Kbytes ISP loader

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)	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	24	2.5	5.5	-40	105	29	2	4	2	2	6	-	-	8	-	2	-	-	1	1	1	-	-	QFN33	5x5	√	NT-Mini51L	NLG-Mini51Z
MINI52FDE	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	24	2.5	5.5	-40	105	29	2	8	2	2	6	-	-	8	-	2	-	-	1	1	1	-	-	QFN33	5x5	√	NT-Mini51L	NLG-Mini51Z
MINI54FDE	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	24	2.5	5.5	-40	105	29	2	16	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	
	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)	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	Cortex-M0	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	Cortex-M0	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

• Mini57 Series

Key Features: Supports Hardware Divider

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)	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
MINI57EDE	Cortex-M0	48	2.1	5.5	-40	105	22	2	29.5	4	2	6	2	3	-	8	2	√	√	-	-	-	2	512x3	TSSOP28	4.4x9.7	√	NT-Mini57E	NLG-Mini57E
MINI57FDE	Cortex-M0	48	2.1	5.5	-40	105	18	2	29.5	4	2	6	2	3	-	8	2	√	√	-	-	-	2	512x3	TSSOP20	4.4x6.5	√	NT-Mini57E	NLG-Mini57F
MINI57TDE	Cortex-M0	48	2.1	5.5	-40	105	22	2	29.5	4	2	6	2	3	-	8	2	√	√	-	-	-	2	512x3	QFN33	4x4	√	NT-Mini57E	NLG-Mini57T

• Mini58 Series

Key Features: Configurable Data Flash

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)	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
MINI58FDE	Cortex-M0	50	2.5	5.5	-40	105	17	2.5	32	4	2	6	-	-	4	-	-	-	√	2	1	2	-	512	TSSOP20	4.4x6.5	√	NT-Mini58L	NLG-Mini51F
MINI58LDE	Cortex-M0	50	2.5	5.5	-40	105	30	2.5	32	4	2	6	-	-	8	-	2	-	√	2	1	2	-	512	LQFP48	7x7	√	NT-Mini58L	NLG-Mini51L
MINI58TDE	Cortex-M0	50	2.5	5.5	-40	105	29	2.5	32	4	2	6	-	-	8	-	2	-	√	2	1	2	-	512	QFN33	4x4	√	NT-Mini58L	NLG-Mini51T
MINI58ZDE	Cortex-M0	50	2.5	5.5	-40	105	29	2.5	32	4	2	6	-	-	8	-	2	-	√	2	1	2	-	512	QFN33	5x5	√	NT-Mini58L	NLG-Mini51Z

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).

Target Applications: Industrial Control, High-precision Meters, HMI, Motor Control, Communication Systems, etc.
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	
	Core	Operating Frequency (MHz)	Operating Voltage (min)	Operating Voltage (max)	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)	RTC	ADC (10-bit)	ADC (12-bit)	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	50	2.5	5.5	-40	85	40	4	64	4	4	-	4	8	-	-	8	4	2	2	-	-	-	-	-	√	-	LQFP48	7x7	√	NK-NUC029L	NLG-NUC029LD
NUC029LDE	Cortex-M0	50	2.5	5.5	-40	105	42	4	68	Configurable	20	-	4	12	-	-	8	-	4	1	-	-	-	-	-	-	-	LQFP48	7x7	√	NT-NUC029SD	NLG-NUC029LD
NUC029LEE	Cortex-M0	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	Cortex-M0	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	Cortex-M0	50	2.5	5.5	-40	85	40	4	64	4	4	-	4	8	-	-	8	4	2	2	-	-	-	-	-	√	-	QFN48	7x7	√	NK-NUC029L	NLG-NUC029NA
NUC029SDE	Cortex-M0	50	2.5	5.5	-40	105	56	4	68	Configurable	20	-	4	12	-	-	8	-	4	1	-	-	-	-	-	-	-	LQFP64	7x7	√	NT-NUC029SD	NLG-NUC029SD
NUC029SEE	Cortex-M0	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	Cortex-M0	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	Cortex-M0	50	2.5	5.5	-40	85	24	4	32	4	4	-	4	5	-	-	5	3	2	1	-	-	-	-	-	√	-	QFN33	4x4	√	NK-NUC029L	NLG-NUC029TA
NUC029ZAN	Cortex-M0	50	2.5	5.5	-40	85	24	4	64	4	4	-	4	5	-	-	5	3	2	1	-	-	-	-	-	√	-	QFN33	5x5	√	NK-NUC029L	NLG-NUC029ZA

NUC121 Series

The NuMicro® NUC121 series is based on the Arm® Cortex®-M0 core with 32 to 256 Kbytes Flash memory, 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.

Target Applications: USB Composite Devices, Gaming Mouse/ Keyboards/ Pads, USB Type-C Earphones, Industrial Automation, IoT devices, etc.

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.

• NUC121 Series

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 (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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	
	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 (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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	
	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 (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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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

• NUC1261 Series

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

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)	RTC	BPWM (16-bit)	ADC (12-bit)	ACMP	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
NUC1261NE4AE	Cortex-M0	72	2.5	5.5	-40	105	35	4	128	Configurable	20	5	√	√	4	10	√	-	9	2	3	2	3	2	1	√	√	2048	QFN 48	7x7	√	NT-NUC1261S	NLG-NUC126N	NLG-NUC126L
NUC1261LE4AE	Cortex-M0	72	2.5	5.5	-40	105	35	4	128	Configurable	20	5	√	√	4	10	√	-	9	2	3	2	3	2	1	√	√	2048	LQFP 48	7x7	√	NT-NUC1261S	NLG-NUC126L	NLG-NUC126L
NUC1261LG4AE	Cortex-M0	72	2.5	5.5	-40	105	35	4	256	Configurable	20	5	√	√	4	10	√	-	9	2	3	2	3	2	1	√	√	2048	LQFP 48	7x7	√	NT-NUC1261S	NLG-NUC126L	NLG-NUC126N
NUC1261SE4AE	Cortex-M0	72	2.5	5.5	-40	105	49	4	128	Configurable	20	5	√	√	4	12	√	-	15	2	3	2	3	2	1	√	√	2048	LQFP 64	7x7	√	NT-NUC1261S	NLG-NUC126S	NLG-NUC126S
NUC1261SG4AE	Cortex-M0	72	2.5	5.5	-40	105	49	4	256	Configurable	20	5	√	√	4	12	√	-	15	2	3	2	3	2	1	√	√	2048	LQFP 64	7x7	√	NT-NUC1261S	NLG-NUC126S	NLG-NUC126S

NUC131/ NUC230/ NUC240 CAN Series

The NuMicro® NUC131/230/240 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 NUC131/ NUC230/ NUC240 CAN Series features Analog Comparator, Low Voltage Reset, and Brown-Out Detector.

NUC131/ NUC230/ NUC240 CAN Series	USB FS	LIN	CAN
NUC131		√	√
NUC230		√	√
NUC240	√	√	√

• NUC131 Series

Part No.	System							Memory				Timer					Analog	Connectivity							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)	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	Cortex-M0	50	2.5	5.5	-40	105	42	4	36	Configurable	8	√	√	4	12	12	8	6	3	1	2	1	-	-	LQFP 48	7x7	√	NK-NUC131	NLG-NUC131L
NUC131LD2AE	Cortex-M0	50	2.5	5.5	-40	105	42	4	68	Configurable	8	√	√	4	12	12	8	6	3	1	2	1	-	-	LQFP 48	7x7	√	NK-NUC131	NLG-NUC131L
NUC131SC2AE	Cortex-M0	50	2.5	5.5	-40	105	56	4	36	Configurable	8	√	√	4	12	12	8	6	3	1	2	1	-	-	LQFP 64	7x7	√	NK-NUC131	NLG-NUC131S
NUC131SD2AE	Cortex-M0	50	2.5	5.5	-40	105	56	4	68	Configurable	8	√	√	4	12	12	8	6	3	1	2	1	-	-	LQFP 64	7x7	√	NK-NUC131	NLG-NUC131S
NUC1311LC2AE	Cortex-M0	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	Cortex-M0	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

• NUC230 Series

Part No.	System							Memory					Timer					Analog		Connectivity									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 (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	Cortex-M0	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	√	NK-NUC240V	NLG-NUC200L
NUC230LD2AE	Cortex-M0	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	√	NK-NUC240V	NLG-NUC200L
NUC230LE3AE	Cortex-M0	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	√	NK-NUC240V	NLG-NUC200L
NUC230SC2AE	Cortex-M0	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	√	NK-NUC240V	NLG-NUC200S
NUC230SD2AE	Cortex-M0	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	√	NK-NUC240V	NLG-NUC200S
NUC230SE3AE	Cortex-M0	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	√	NK-NUC240V	NLG-NUC200S
NUC230VE3AE	Cortex-M0	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	√	NK-NUC240V	NLG-NUC200V

• NUC240 Series

Part No.	System							Memory					Timer					Analog		Connectivity										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 (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	UART	LIN	ISO-7816-3	SPI	I²C	I²S	CAN	PS/2 Device	USB FS Device	EBI	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC240LC2AE	Cortex-M0	72	2.5	5.5	-40	105	31	8	32	4	8	9	√	√	4	4	√	7	1	2	2	1	1	2	1	2	-	1	-	LQFP48	7x7	√	NK-NUC240V	NLG-NUC200L
NUC240LD2AE	Cortex-M0	72	2.5	5.5	-40	105	31	8	64	4	8	9	√	√	4	4	√	7	1	2	2	1	1	2	1	2	-	1	-	LQFP48	7x7	√	NK-NUC240V	NLG-NUC200L
NUC240LE3AE	Cortex-M0	72	2.5	5.5	-40	105	31	8	128	Configurable	16	9	√	√	4	4	√	7	1	2	2	1	1	2	1	2	-	1	-	LQFP48	7x7	√	NK-NUC240V	NLG-NUC200L
NUC240SC2AE	Cortex-M0	72	2.5	5.5	-40	105	45	8	32	4	8	9	√	√	4	4	√	7	2	3	3	2	2	2	1	2	-	1	√	LQFP64	7x7	√	NK-NUC240V	NLG-NUC200S
NUC240SD2AE	Cortex-M0	72	2.5	5.5	-40	105	45	8	64	4	8	9	√	√	4	4	√	7	2	3	3	2	2	2	1	2	-	1	√	LQFP64	7x7	√	NK-NUC240V	NLG-NUC200S
NUC240SE3AE	Cortex-M0	72	2.5	5.5	-40	105	45	8	128	Configurable	16	9	√	√	4	4	√	7	2	3	3	2	2	2	1	2	-	1	√	LQFP64	7x7	√	NK-NUC240V	NLG-NUC200S
NUC240VE3AE	Cortex-M0	72	2.5	5.5	-40	105	79	8	128	Configurable	16	9	√	√	4	8	√	8	2	3	3	3	4	2	1	2	1	1	√	LQFP100	14x14	√	NK-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.

Target 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	
	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 (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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	
	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 (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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	
	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 (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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	
	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 (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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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

• 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	
	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 (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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	
	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 (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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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	Cortex-M0	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 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.

MUG51 series is a Flash embedded 1T 8051-based low-power microcontroller which is suitable for battery-free device which harvests power from the magnetic field of coil, such as stylus pen powered by EMR (Electro-magnetic Resonance) technology and RFID card.

MG51 series is an embedded Flash type 1T 8051-based microcontroller. It supports 16/24 MHz core speed and features up to 32 Kbytes Flash memory, 256 Bytes of RAM and 1 Kbyte of auxiliary RAM (XRAM), 2.4V to 5.5V operating voltage, and -40°C to105°C operating temperature.

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.

ML51/ML54/ML56 low power series provides up to 64 Kbytes Flash memory and 4 Kbytes SRAM. The operating current is 80 µA/MHz and the powerdown 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

MUG51 Low-power Series

The Low Power MUG51 series is a Flash embedded 1T 8051-based low-power microcontroller. It runs up to 7.3728 MHz with 16 Kbytes embedded Flash memory, 1 Kbytes embedded SRAM, 4 Kbytes Flash loader memory (LDROM), 1.8V ~ 5.5V operating voltage, and -40°C ~ 105°C operating temperature. The Low Power MUG51 series supports enhanced low current consumption at 200 µA while CPU Power-on before Flash memory is initialized. Its low-power feature makes it suitable for battery-free device which harvests power from the magnetic field of coil such as stylus pen powered by EMR (Electro-magnetic Resonance) technology and RFID card.

The Low Power MUG51 series features low current consumption at 200 µA while CPU Power-on before Flash memory is initialized. It is suitable for battery-free devices such as stylus pen powered by EMR (Electro-magnetic Resonance) technology and RFID card. The current consumption is less than 1.3 mA in normal run mode at 7.3728 MHz, and less than 1 µA in Power-down mode.

The Low Power MUG51 series provides rich peripherals including 24 general purpose I/Os with internal inverter, four 16-bit Timers/Counters, 2 sets of UARTs with frame error detection and automatic address recognition, 1 set of ISO7816 Smartcard interface, 1 set of SPI, 2 sets of I2C, 6 enhanced PWM output channels with dead zone control, 2 sets of analog comparators, eight-channel shared pin interrupt for all I/O ports, low voltage reset (LVR) and brown-out detector (BOD) to enhance product performance, reduce external components and form factor simultaneously.

The Low Power MUG51 series includes the QFN33 (4mm x 4mm) package.

Target Applications: Suitable for Passive Stylus Pen and RFID card
Key Features: The Low Power MUG51 series supports enhanced low current consumption at 200 µA while CPU Power-on before Flash memory is initialized, The current consumption is less than 1.3 mA in normal run mode at 7.3728 MHz, and less than 1 µA in Power-down mode.

Part No.	System							Memory					Timer				Analog				Connectivity				Security			Display	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	Timer (16-bit)	PWM (10-bit)	RTC	ADC (12-bit)	ACMP	Touch Key	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	SPROM(B)	UID	UCID	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
MUG51TB9AE	8051	7.3728	1.8	5.5	-40	105	24	4	16	Shared with APROM	1 + 256(B)	2	√	4	6	-	-	2	-	-	2	1	1	2	128	-	-	-	QFN33	4x4	√	NK-MUG51TB	-

MG51 Industrial Control Series

The NuMicro MG51 series microcontrollers are a subset of the NuMicro 8051 product line, featuring a 1T 8051 CPU with configurable core speeds of 16 MHz or 24 MHz. The MG51 series MCU includes 256 bytes of internal RAM supporting direct addressing, and up to 4 kbytes of SRAM supporting indirect addressing. For ROM, it offers up to 64 kbytes of Flash memory, with up to 4 kbytes allocated for LDROM to store the bootloader. MG51 series operates within a voltage range of 2.4V to 5.5V and a wide temperature range of -40°C to +105°C, making them suitable for industrial-grade applications.

Target Applications: LED lighting control, Home Appliances, Industrial Control, User interface, BMS, etc.
Key Features: 2 UARTS, 1 SPI, 1 I2C, Up to 15-ch 12-bit ADC, Up to 12-ch PWM.

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)	WDT	Timer (16-bit)	PWM (16-bit)	ADC (12-bit)	UART	ISO-7816-3	SPI	I²C	SPROM(B)	Package Type	Package Size	Mass Production	EVB	MP Programmer
MG51FB9AE	8051	16/24	2.4	5.5	-40	105	18	4	16	Shared with APROM	1 + 256 (B)	√	4	6	8	2	-	1	1	128	TSSOP20	4.4x6.5	√	NK-MG51FC	NLG-MS51F
MG51XB9AE	8051	16/24	2.4	5.5	-40	105	18	4	16	Shared with APROM	1 + 256 (B)	√	4	6	8	2	-	1	1	128	QFN20	3x3	√	NK-MG51FC	-
MG51FC9AE	8051	16/24	2.4	5.5	-40	105	18	4	32	Shared with APROM	1 + 256 (B)	√	4	6	8	2	-	1	1	128	TSSOP20	4.4x6.5	√	NK-MG51FC	NLG-MS51F
MG51XC9AE	8051	16/24	2.4	5.5	-40	105	18	4	32	Shared with APROM	1 + 256 (B)	√	4	6	8	2	-	1	1	128	QFN20	3x3	√	NK-MG51FC	-
MG51EC1AE	8051	16/24	2.4	5.5	-40	105	26	4	32	Shared with APROM	4 + 256 (B)	√	4	12	15	2	3	1	1	128	TSSOP28	4.4x9.7	√	NK-MG51LD	-
MG51TC1AE	8051	16/24	2.4	5.5	-40	105	30	4	32	Shared with APROM	4 + 256 (B)	√	4	12	15	2	3	1	1	128	QFN33	4x4	√	NK-MG51LD	-
MG51PC1AE	8051	16/24	2.4	5.5	-40	105	30	4	32	Shared with APROM	4 + 256 (B)	√	4	12	15	2	3	1	1	128	LQFP32	7x7	√	NK-MG51LD	-
MG51LC1AE	8051	16/24	2.4	5.5	-40	105	46	4	32	Shared with APROM	4 + 256 (B)	√	4	12	15	2	3	1	1	128	LQFP48	7x7	√	NK-MG51LD	-
MG51TD1AE	8051	16/24	2.4	5.5	-40	105	30	4	64	Shared with APROM	4 + 256 (B)	√	4	12	15	2	3	1	1	128	QFN33	4x4	√	NK-MG51LD	-
MG51PD1AE	8051	16/24	2.4	5.5	-40	105	30	4	64	Shared with APROM	4 + 256 (B)	√	4	12	15	2	3	1	1	128	LQFP32	7x7	√	NK-MG51LD	-
MG51LD1AE	8051	16/24	2.4	5.5	-40	105	46	4	64	Shared with APROM	4 + 256 (B)	√	4	12	15	2	3	1	1	128	LQFP48	7x7	√	NK-MG51LD	-

MS51 Industrial Control Series

The NuMicro® MS51 series is a 8-bit high performance 1T 8051-based microcontroller. The instruction set is fully compatible with the standard 80C51 and performance enhanced. It runs up to 24 MHz with 8 to 32 Kbytes embedded Flash Memory, 1 to 2 Kbytes embedded SRAM, configurable 1 to 4 Kbytes Flash loader memory (LDROM) for In-System Programming (ISP). It features rich peripherals, up to 15-channel 12-bit ADC with DMA, up to 5 sets of UART, up to 12-channel 16-bit PWM, strong ESD and EFT immunity.

Target Applications: Suitable for a wide range of application such as Smart Building, Smart Home, Smart Home Appliances, Industrial Control, BMS etc.
Key Features: Configurable Data Flash, ESD resistivity 8 kV and EFT resistivity 4.4 kV, GPIO supports 20 mA driving capability.

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)	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	8051	16/24	2.4	5.5	-40	105	8	4	8	Shared with APROM	1 + 256(B)	√	4	5	5	2	-	1	1	128	MSOP10	3x3	√	NT-MS51DA	-
MS51DA9AE	8051	16/24	2.4	5.5	-40	105	12	4	8	Shared with APROM	1 + 256(B)	√	4	5	8	2	-	1	1	128	TSSOP14	4.4x5	√	NT-MS51DA	-
MS51EB0AE	8051	16/24	2.4	5.5	-40	105	26	4	16	Shared with APROM	2 + 256(B)	√	4	12	15	2	3	1	1	128	TSSOP28	4.4x9.7	√	NK-MS51PC	NLG-MS51E
MS51EC0AE	8051	16/24	2.4	5.5	-40	105	26	4	32	Shared with APROM	2 + 256(B)	√	4	12	15	2	3	1	1	128	TSSOP28	4.4x9.7	√	NK-MS51PC	NLG-MS51E
MS51FB9AE	8051	16/24	2.4	5.5	-40	105	18	4	16	Shared with APROM	1 + 256(B)	√	4	6	8	2	-	1	1	128	TSSOP20	4.4x6.5	√	NT-MS51FB	NLG-MS51F
MS51FC0AE	8051	16/24	2.4	5.5	-40	105	18	4	32	Shared with APROM	2 + 256(B)	√	4	11	15	2	3	1	1	128	TSSOP20	4.4x6.5	√	NK-MS51PC	NLG-MS51F
MS51PC0AE	8051	16/24	2.4	5.5	-40	105	30	4	32	Shared with APROM	2 + 256(B)	√	4	12	15	2	3	1	1	128	LQFP32	7x7	√	NK-MS51PC	-
MS51TC0AE	8051	16/24	2.4	5.5	-40	105	30	4	32	Shared with APROM	2 + 256(B)	√	4	12	15	2	3	1	1	128	QFN33	4x4	√	NK-MS51PC	-
MS51XB9AE	8051	16/24	2.4	5.5	-40	105	18	4	16	Shared with APROM	1 + 256(B)	√	4	6	8	2	-	1	1	128	QFN20	3x3	√	NT-MS51FB	-
MS51XB9BE	8051	16/24	2.4	5.5	-40	105	18	4	16	Shared with APROM	1 + 256(B)	√	4	6	8	2	-	1	1	128	QFN20	3x3	√	NT-MS51FB	NLG-20XB
MS51XC0BE	8051	16/24	2.4	5.5	-40	105	18	4	32	Shared with APROM	2 + 256(B)	√	4	12	15	2	3	1	1	128	QFN20	3x3	√	NK-MS51PC	-

ML51 / ML54 / ML56 Low-power Series

The NuMicro® ML51/ML54/ML56 series is a low-power microcontroller platform based on 1T 8051-based microcontroller. The instruction set is fully compatible with the standard 80C51 and performance enhanced. It runs up to 24 MHz with 16 to 64 Kbytes embedded Flash Memory, 1 to 4 Kbytes embedded SRAM, configurable 1 to 4 Kbytes Flash loader memory(LDROM) for In-System Programming (ISP). It features COM/SEG LCD driver, capacitive touch sensing function for smart home appliance HMI, 1.8V to 5.5V wide operating voltage (ML51 32/16 KB), 5V tolerance I/O, and -40°C to +105°C operating temperature.

Target Applications: Suitable for limited battery-powered device such as Handheld Meter, Thermostat, Healthcare, HMI, Smart Home, Smart Home Appliances, Industrial Control, Industrial Automation, Temperature/Humidity Logger
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.

• ML51 Low Power Series

Part No.	System							Memory					Timer				Analog				Connectivity				Security			Display	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	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	8051	24	1.8	5.5	-40	105	7	4	16	Shared with APROM	1 + 256(B)	2	√	4	4	-	2	-	-	-	2	-	-	1	128	96	128	-	MSOP10	3x3	√	NT-ML51EB	-
ML51DB9AE	8051	24	1.8	5.5	-40	105	11	4	16	Shared with APROM	1 + 256(B)	2	√	4	4	-	3	-	-	-	2	1	1	2	128	96	128	-	TSSOP14	4.4x5.0	√	NT-ML51EB	-
ML51EB9AE	8051	24	1.8	5.5	-40	105	24	4	16	Shared with APROM	1 + 256(B)	2	√	4	6	-	8	-	-	-	2	1	1	2	128	96	128	-	TSSOP28	4.4x9.7	√	NT-ML51EB	NLG-28E
ML51EC0AE	8051	24	1.8	5.5	-40	105	24	4	32	Shared with APROM	2 + 256(B)	2	√	4	6	-	8	2	-	√	2	1	2	2	128	96	128	-	TSSOP28	4.4x9.7	√	NK-ML51PC	NLG-28E
ML51FB9AE	8051	24	1.8	5.5	-40	105	16	4	16	Shared with APROM	1 + 256(B)	2	√	4	6	-	6	-	-	-	2	1	1	2	128	96	128	-	TSSOP20	4.4x6.5	√	NT-ML51EB	NLG-20F
ML51LD1AE	8051	24	1.8	3.6	-40	105	43	4	64	Shared with APROM	4 + 256(B)	4	√	4	12	√	10	2	-	√	2	2	2	2	128	96	128	-	LQFP48	7x7	√	NK-ML51SD	NLG-48L
ML51OB9AE	8051	24	1.8	5.5	-40	105	16	4	16	Shared with APROM	1 + 256(B)	2	√	4	6	-	6	-	-	-	2	1	1	2	128	96	128	-	SOP20	7.6x13	√	NT-ML51EB	-
ML51PB9AE	8051	24	1.8	5.5	-40	105	28	4	16	Shared with APROM	2 + 256(B)	2	√	4	6	-	8	2	-	√	2	1	1	2	128	96	128	-	LQFP32	7x7	√	NK-ML51PC	-
ML51PC0AE	8051	24	1.8	5.5	-40	105	28	4	32	Shared with APROM	2 + 256(B)	2	√	4	6	-	8	2	-	√	2	1	2	2	128	96	128	-	LQFP32	7x7	√	NK-ML51PC	-
ML51SD1AE	8051	24	1.8	3.6	-40	105	56	4	64	Shared with APROM	4 + 256(B)	4	√	4	12	√	14	2	-	√	2	2	2	2	128	96	128	-	LQFP64	7x7	√	NK-ML51SD	NLG-64S
ML51TB9AE	8051	24	1.8	5.5	-40	105	28	4	16	Shared with APROM	2 + 256(B)	2	√	4	6	-	8	2	-	√	2	1	1	2	128	96	128	-	QFN33	4x4	√	NK-ML51PC	NLG-32T
ML51TC0AE	8051	24	1.8	5.5	-40	105	28	4	32	Shared with APROM	2 + 256(B)	2	√	4	6	-	8	2	-	√	2	1	2	2	128	96	128	-	QFN33	4x4	√	NK-ML51PC	NLG-32T
ML51TD1AE	8051	24	1.8	3.6	-40	105	28	4	64	Shared with APROM	4 + 256(B)	4	√	4	12	√	9	2	-	√	2	2	2	2	128	96	128	-	QFN33	4x4	√	NK-ML51SD	NLG-32T
ML51UB9AE	8051	24	1.8	5.5	-40	105	24	4	16	Shared with APROM	2 + 256(B)	2	√	4	6	-	8	-	-	√	2	1	1	2	128	96	128	-	SOP28	7.6x18	√	NT-ML51EB	-
ML51UC0AE	8051	24	1.8	5.5	-40	105	24	4	32	Shared with APROM	2 + 256(B)	2	√	4	6	-	8	2	-	√	2	1	2	2	128	96	128	-	SOP28	7.6x18	√	NK-ML51PC	-
ML51XB9AE	8051	24	1.8	5.5	-40	105	17	4	16	Shared with APROM	1 + 256(B)	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	
	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	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	8051	24	1.8	3.6	-40	105	42	-	64	Shared with APROM	4 + 256(B)	4	√	4	12	√	10	2	-	√	2	2	2	2	128	96	128	4x22/6x20/8x18	LQFP48	7x7	√	NK-ML54SD	NLG-48L
ML54MD1AE	8051	24	1.8	3.6	-40	105	38	-	64	Shared with APROM	4 + 256(B)	4	√	4	12	√	10	2	-	√	2	2	2	2	128	96	128	4x21/6x19/8x17	LQFP44	10x10	√	NK-ML54SD	-
ML54SD1AE	8051	24	1.8	3.6	-40	105	55	-	64	Shared with APROM	4 + 256(B)	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	
	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	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	8051	24	1.8	3.6	-40	105	42	-	64	Shared with APROM	4 + 256(B)	4	√	4	12	√	10	2	9	√	2	2	2	2	128	96	128	4x22/6x20/8x18	LQFP48	7x7	√	NK-ML56SD	NLG-48L
ML56MD1AE	8051	24	1.8	3.6	-40	105	38	-	64	Shared with APROM	4 + 256(B)	4	√	4	12	√	10	2	6	√	2	2	2	2	128	96	128	4x21/6x19/8x17	LQFP44	10x10	√	NK-ML56SD	-
ML56SD1AE	8051	24	1.8	3.6	-40	105	55	-	64	Shared with APROM	4 + 256(B)	4	√	4	12	√	14	2	14	√	2	2	2	2	128	96	128	4x32/6x30/8x28	LQFP64	7x7	√	NK-ML56SD	NLG-64S

N76E Series

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 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	
	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)	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	8051	16	2.4	5.5	-40	105	18	4	18	Shared with APROM	768(B) + 256(B)	√	4	-	-	6	-	8	2	1	1	-	QFN20	3x3	√	NT-N76E003	-
N76E003AT20	8051	16	2.4	5.5	-40	105	18	4	18	Shared with APROM	768(B) + 256(B)	√	4	-	-	6	-	8	2	1	1	-	TSSOP20	4.4x6.5	√	NT-N76E003	NLG-MS51F
N76E003BQ20	8051	16	2.4	5.5	-40	105	18	4	18	Shared with APROM	768(B) + 256(B)	√	4	-	-	6	-	8	2	1	1	-	QFN20	3x3	√	NT-N76E003	NLG-20XB
N76E616AF44	8051	16	2.4	5.5	-40	105	42	4	18	Shared with APROM	256(B) + 256(B)	√	4	-	-	6	8	-	2	-	1	4x32/6x30	PQFP44	10x10	√	NT-N76E616	-
N76E616AL48	8051	16	2.4	5.5	-40	105	46	4	18	Shared with APROM	256(B) + 256(B)	√	4	-	-	6	8	-	2	-	1	4x32/6x30	LQFP48	7x7	√	NT-N76E616	-
N76E616AM44	8051	16	2.4	5.5	-40	105	42	4	18	Shared with APROM	256(B) + 256(B)	√	4	-	-	6	8	-	2	-	1	4x32/6x30	LQFP44	10x10	√	NT-N76E616	-
N76E885AQ20	8051	25	2.4	5.5	-40	105	18	4	18	Shared with APROM	256(B) + 256(B)	√	4	-	6	-	10	-	2	1	1	-	QFN20	4x4	√	NT-N76E885	-
N76E885AT20	8051	25	2.4	5.5	-40	105	18	4	18	Shared with APROM	256(B) + 256(B)	√	4	-	6	-	10	-	2	1	1	-	TSSOP20	4.4x6.5	√	NT-N76E885	-
N76E885AT28	8051	25	2.4	5.5	-40	105	26	4	18	Shared with APROM	256(B) + 256(B)	√	4	-	6	-	10	-	2	1	1	-	TSSOP28	4.4x9.7	√	NT-N76E885	-

NuMicro® Family Arm9 MPUs

NUC970/NUC980 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

Target 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/NUC980 Series

Part No.	System							Memory			Timer	Analog	Connectivity												Security	Crypto	Display		Package		Status	Tool
	Core	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	ARM926EJ-S	300	2.97	3.63	-40	85	104	16	64	20	8	8	10	2	1	2	4	4	2	HL*6	1	1	2	√	-	√	2	-	LQFP 216	24x24	√	NK-NUC980
NUC980DF71YC	ARM926EJ-S	300	2.97	3.63	-40	85	104	16	128	20	8	8	10	2	1	2	4	4	2	HL*6	1	1	2	√	-	√	2	-	LQFP 216	24x24	√	-
NUC980DK63YC	ARM926EJ-S	300	2.97	3.63	-40	85	92	16	64	20	8	8	10	2	1	2	4	4	2	HL*6	1	1	2	√	-	√	2	-	LQFP 128	14x14	√	NK-980IOTG1/D
NUC980DK71YC	ARM926EJ-S	300	2.97	3.63	-40	85	92	16	128	20	8	8	10	2	1	2	4	4	2	HL*6	1	1	2	√	-	√	2	-	LQFP 128	14x14	√	NK-980IOTG2/D
NUC980DR63YC	ARM926EJ-S	300	2.97	3.63	-40	85	40	16	64	20	5	2	8	2	-	2	2	2	1	HL*6	-	1	1	-	-	√	1	-	LQFP 64-EP	10x10	√	NK-RTU980
NUC972DF63YC	ARM926EJ-S	300	2.97	3.63	-40	85	146	56	64	-	4	8	11	2	-	2	2	2	2	-	2	1	2	√	√	√	1	24bit	LQFP 216	24x24	√	ND-NUC972
NUC972DF71YC	ARM926EJ-S	300	2.97	3.63	-40	85	146	56	128	-	4	8	11	2	-	2	2	2	2	-	2	1	2	√	√	√	1	24bit	LQFP 216	24x24	√	-
NUC975DK63YC	ARM926EJ-S	300	2.97	3.63	-40	85	87	56	64	-	2	4	10	2	-	2	2	1	2	-	2	1	1	-	√	√	1	-	LQFP 128	14x14	√	ND-NUC972
NUC976DK63YC	ARM926EJ-S	300	2.97	3.63	-40	85	80	56	64	-	4	4	6	2	-	2	2	1	2	-	2	1	1	-	√	√	1	16bit	LQFP 128	14x14	√	ND-NUC972
NUC977DK63YC	ARM926EJ-S	300	2.97	3.63	-40	85	87	56	64	-	4	-	8	2	-	2	2	1	2	-	2	1	1	-	√	√	1	16bit	LQFP 128	14x14	√	ND-NUC972

N9H Series

The N9H series is based on the ARM926EJ-S core. The series includes N9H20, N9H26 and N9H30 with CPUs operating at up to 200 MHz , 240 MHz and 300 MHz respectively. It uses Multi Chip Package (MCP) with SDRAM stacked, size ranging from 2 MB to 128 MB, which significantly reduces PCB size and electromagnetic interference (EMI) to minimize system design efforts and shorten the product design cycle time. The N9H series also provides built-in 24-bit TFT RGB interface with resolution support up to 1024x768, 2D graphics accelerator, JPEG/ H.264 video codec as well as resistive touch screen interface. Furthermore, Nuvoton licensed industrial leading emWin embedded GUI library from SEGGER to allow developers to create smooth, professional, high quality GUI on N9H series free of charge.

Boot Source: SPI NOR, NAND, SD, eMMC

Target Applications: Industrial Control, Smart Building, Smart Appliances, Medical Devices, New Energy Applications, and Consumer Products

Series	CPU (MHz)	LCD	Video CODEC	Audio DAC	Ethernet	CAN	Operating Temp
N9H20	200	16 / 24bit	JPEG	√	-	-	-20°C to 85°C
N9H26	240	24bit	JPEG/ H.264	√	√	-	-20°C to 85°C
N9H30	300	16 / 24bit	JPEG	-	√	√	-40°C to 85°C
N9H31	300	24bit	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
	Core	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 Host	USB HS Device	USB HS Host	USB HS Device/ Host	EMAC	EBI	Camera Interface	TFT-LCD Interface	2D Graphics Engine	Video Codec	Package Type	Package Size	Mass Production	EVB
N9H20K11N	ARM926EJ-S	200	2.97	3.63	-20	85	70	8	2	4	2	4	7	-	2	-	2	1	-	3	1	1	-	-	-	-	-	24bit	√	JPEG	LQFP128	14x14	√	-
N9H20K31N	ARM926EJ-S	200	2.97	3.63	-20	85	70	8	8	4	2	4	7	-	2	-	2	1	-	3	1	1	-	-	-	-	-	24bit	√	JPEG	LQFP128	14x14	√	-
N9H20K51N	ARM926EJ-S	200	2.97	3.63	-20	85	70	8	32	4	2	4	7	-	2	-	2	1	-	3	1	1	-	-	-	-	-	24bit	√	JPEG	LQFP128	14x14	√	NK-N9H20
N9H20R11N	ARM926EJ-S	200	2.97	3.63	-20	85	44	8	2	4	2	4	-	-	2	-	1	1	-	1	1	1	-	-	-	-	-	16bit	√	JPEG	TQFP64-EP	10x10	√	-
N9H26K63N	ARM926EJ-S	240	2.97	3.63	-20	85	80	8	64	4	4	4	-	7	2	-	2	1	-	3	2	1	1	-	2	-	-	24bit	√	JPEG/ H.264	LQFP128	14x14	√	NK-N9H26
N9H30F63IEC	ARM926EJ-S	300	2.97	3.63	-40	85	146	56	64	-	5	4	-	8	11	2	2	2	2	2	-	-	2	1	2	√	1	24bit	√	JPEG	LQFP216	24x24	√	NK-N9H30
N9H30F71IEC	ARM926EJ-S	300	2.97	3.63	-40	85	146	56	128	-	5	4	-	8	11	2	2	2	2	2	-	-	2	1	2	√	1	24bit	√	JPEG	LQFP216	24x24	√	-
N9H30K63IEC	ARM926EJ-S	300	2.97	3.63	-40	85	86	56	64	-	5	4	-	5	9	2	2	2	1	2	-	-	2	1	1	-	1	16bit	√	JPEG	LQFP128	14x14	√	-
N9H31K51IFC	ARM926EJ-S	300	2.97	3.63	-40	85	86	56	32	-	5	2	-	4	8	-	2	2	1	2	-	-	2	1	1	-	1	24bit	√	JPEG	LQFP128	14x14	√	NK-N9H31A1 NK-N9H31A2

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	JPEG/ H.264	√

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
	Core	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	SPI	I²C	SDHC	USB FS Host	USB HS Device	USB HS Host	EMAC	Camera Interface	TFT-LCD Interface	2D Graphics Engine	Video Codec	Package Type	Package Size	Mass Production	EVB
N32903K5DN	ARM926EJ-S	200	2.97	3.63	-20	85	70	8	8	4	2	4	7	-	2	2	1	3	1	1	-	-	1	24bit	√	JPEG	LQFP128	14x14	√	-
N32905K5DN	ARM926EJ-S	200	2.97	3.63	-20	85	70	8	32	4	2	4	7	-	2	2	1	3	1	1	-	-	1	24bit	√	JPEG	LQFP128	14x14	√	-
N32901R1DN	ARM926EJ-S	200	2.97	3.63	-20	85	34	8	2	4	2	2	3	-	2	1	-	2	1	1	-	-	1	-	-	JPEG	LQFP64	10x10	√	-
N32903R5DN	ARM926EJ-S	200	2.97	3.63	-20	85	34	8	8	4	2	2	3	-	2	1	-	2	1	1	-	-	1	-	-	JPEG	TQFP64-EP	10x10	√	-
N32905R3DN	ARM926EJ-S	200	2.97	3.63	-20	85	34	8	32	4	2	2	3	-	2	1	-	2	1	1	-	-	1	-	-	JPEG	TQFP64-EP	10x10	√	-
N32901U1DN	ARM926EJ-S	200	2.97	3.63	-20	85	64	8	2	4	2	4	8	-	2	2	1	3	1	1	-	-	1	18bit	√	JPEG	LQFP128	14x14	√	-
N32903U5DN	ARM926EJ-S	200	2.97	3.63	-20	85	64	8	8	4	2	4	8	-	2	2	1	3	1	1	-	-	1	18bit	√	JPEG	LQFP128	14x14	√	-
N32905U3DN	ARM926EJ-S	200	2.97	3.63	-20	85	64	8	32	4	2	4	8	-	2	2	1	3	1	1	-	-	1	18bit	√	JPEG	LQFP128	14x14	√	ND-N32905
N32926U6DN	ARM926EJ-S	240	2.97	3.63	-20	85	80	8	64	4	4	4	-	7	2	2	1	3	2	1	1	2	2	24bit	√	JPEG/ H.264	LQFP128	14x14	√	ND-N32926

Analog ICs

Analog-to-Digital Converters (ADC)

The Analog-to-Digital Converter (ADC) stands as a key component in electronic designs, facilitating the transformation of analog signals into precise digital data. In addition to the SAR ADCs which are integrated within the NuMicro MCU, Nuvoton introduces NADC24, a series of 24-bit Delta-sigma ADC that delivers exceptional performance in terms of resolution, precision, speed, and more.

• NADC24 Series ADC

The NADC24 series is a family of high-precision, 24-bit delta-sigma (ΔΣ) analog-to-digital converters (ADCs). These ADCs are excellent at measuring small signals with high preceision and speed. To achive a high level of integration, NADC24 incorporates a programmable gain amplifier (PGA) with configurable gain from 1 to 128, an internal refernce voltage generator (1.2 V or 2.4 V), an internal 49.152MHz oscillator, a temperature sensor, a 12-bit DAC for sensor driving, and SPI interface for ADC configuration.

Key Features: High precision: Up to 22-bit ENOB, High speed: up to 96Ksps output data rate, Integrated 12-bit DAC, Integrated temperature sensor, Internal V_{REF} of 1.2V/ 2.4V

Target Applications: Power meters, Power distribution unit (PDU), Electronic weighing scales, Pressure sensors, Gas sensors, Oximeters

Part No.	Vdd (V)	Operating Temperature (min)(°C)	Operating Temperature (max)(°C)	Architecture (Type)	Input Channels (Differential) (Ch)	Input Channels (Single-ended) (Ch)	Resolution (Bit)	Output data rate (SPS)	12-bit DAC (Set)	Internal VREF (V)	Temperature Sensor Accuracy (°C)	SPI (Set)	Package Type (Type)	Package size (mm x mm
NADC24D003FA	2.7 ~ 3.6	-40	105	Delta-Sigma	3	6	24	1.25~96K	-	1.2 or 2.4	±2	1	TSSOP20	4.4 x 6.5
NADC24D004TA	2.7 ~ 3.6	-40	105	Delta-Sigma	4	8	24	1.25~96K	1	1.2 or 2.4	±2	1	QFN32	4 x 4

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