nuvoTon

2022
Product Selection Guide

Photo by Jeffrey Cheng

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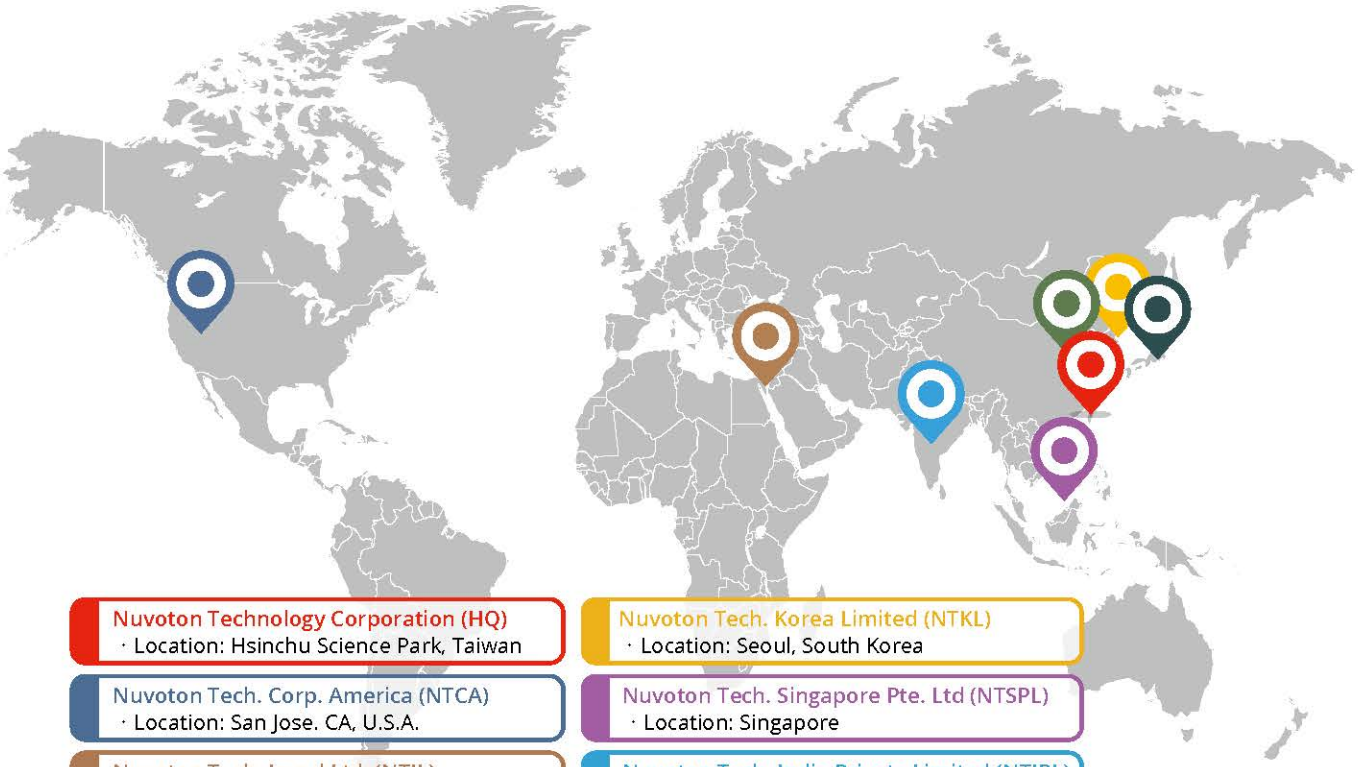
新唐科技

Nuvoton Technology Corporation (NTC) was founded to bring innovative semiconductor solutions to the market. NTC was spun-off as a Winbond Electronics affiliate in July 2008 and went public in September 2010 on the Taiwan Stock Exchange (TSE). Nuvoton Technology focuses on the developments of microcontroller, microprocessor, smart home and cloud security IC and has strong market share in Industrial, Consumer and Computer markets. Nuvoton owns a wafer fab, featuring customized processes for analog and power products. Besides in-house IC products, the wafer fab also provides part of its capacity for foundry services. Nuvoton Technology provides products with a high performance/cost ratio for its customers by leveraging flexible technology, advanced design capability, and integration of digital and analog technologies. Nuvoton values long term relationships with its partners and customers and is dedicated to continuous innovation of its products, processes, and services. The company has established subsidiaries in the USA, China, Israel, and India, Singapore, Korea and Japan to strengthen regional customer support and global management. For more information, please visit https://www.nuvoton.com



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

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

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

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

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

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

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

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

Nuvoton Technology Corporation certifies that semiconductor products designated by Nuvoton are compliant with the requirements of the European Union's Restriction on Use of Hazardous Substances ("RoHS") Directive, 2011/65/EU & Commission Delegated Directive (EU) 2015/863.

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Microcontrollers

NuMicro® Ecosystem

NuMicro Ecosystem

Microcontroller Platform

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

IoT Platform

GUI Platform

Digital Platform

Development Platform

NuMicro® Product Selection Guide

List of Abbreviations, Acronyms, Codes

NuMicro® Automotive Family

- M0A23 CAN Series NEW
- NUC131U CAN Series

NuMicro® Family Arm® Cortex®-M23 MCUs

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

NuMicro® Family Arm® Cortex®-M0 MCUs

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

Family Arm® Cortex®-M4 MCUs

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

NuMicro® Family Arm9 MPUs

- NUC970/ 980 Series
- N9H Series
- N329 Series

NuMicro® Family 8051 MCUs

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

Nuvoton - a Leading Microcontroller Platform Provider

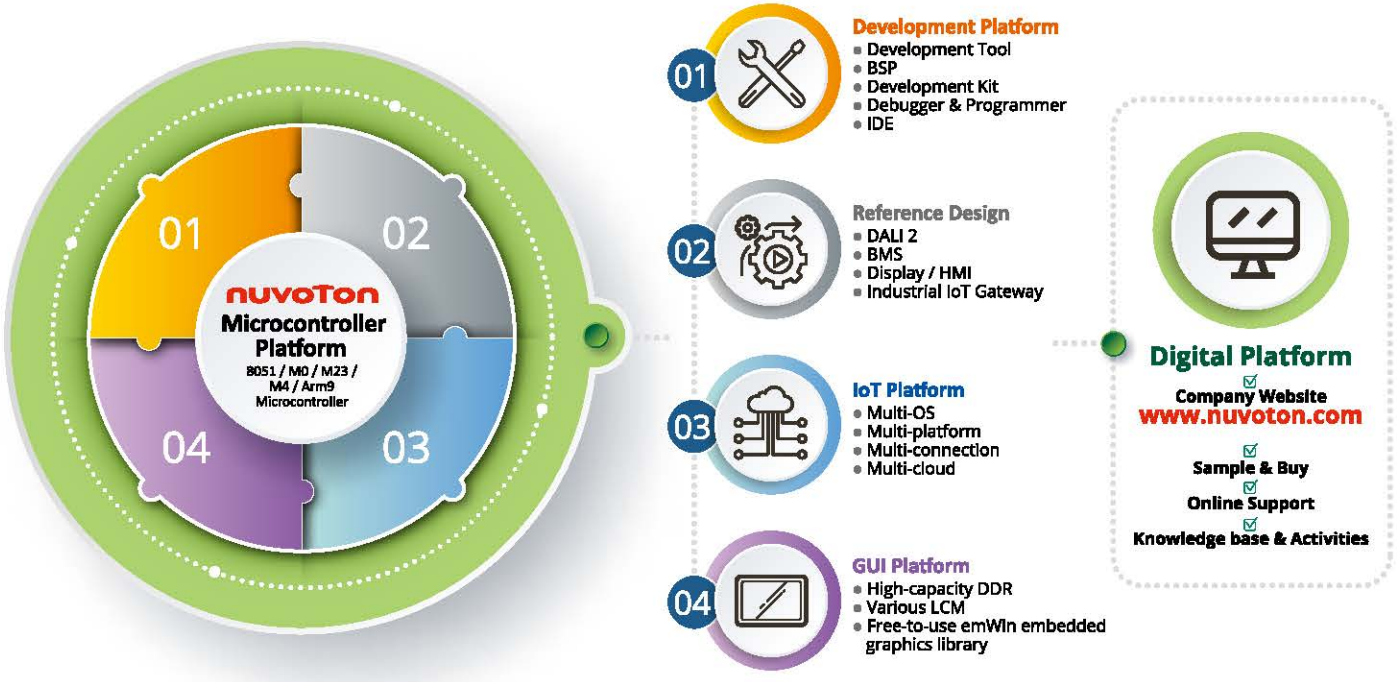
Nuvoton provides a comprehensive ecosystem from product selection and development to mass production, to shorten our partner's design cycles and accelerate time-to-market.

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

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

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

NuMicro® Ecosystem



NuMicro® Ecosystem - Microcontroller Platform

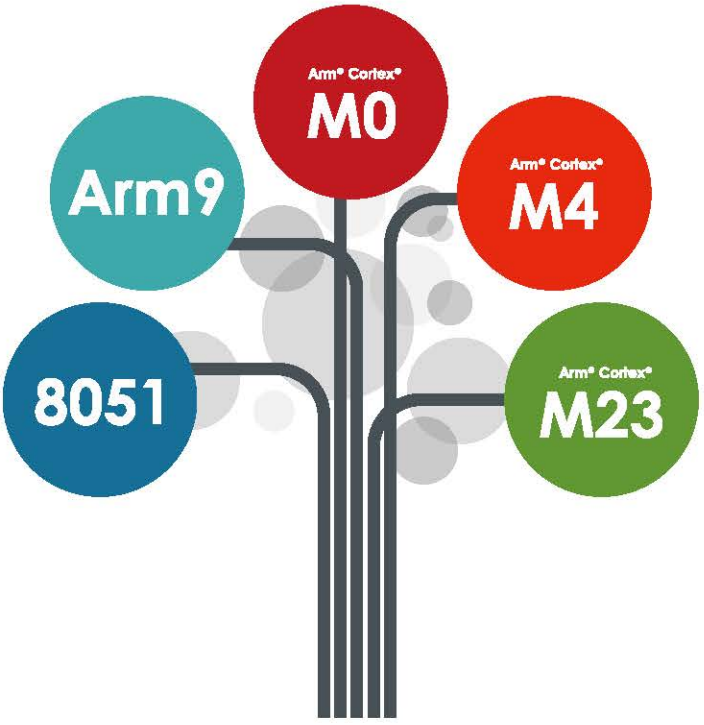
Cortex® M23
IoT Security

Cortex® M4
High Performance
Low Power
Security

Cortex® M0
High Performance
Ultra Low Power
General

Arm 9™
Industrial Control
HMI

8051
Industrial Control
Low Power



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

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

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

Automotive | Low Power | TrustZone

Key Feature Selection: **Automotive Microcontroller**

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

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

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

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

Key Feature Selection: **Industrial Control Microcontroller**

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

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

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

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

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

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

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

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

Key Feature Selection: **Microcontroller with Security**

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

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

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

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

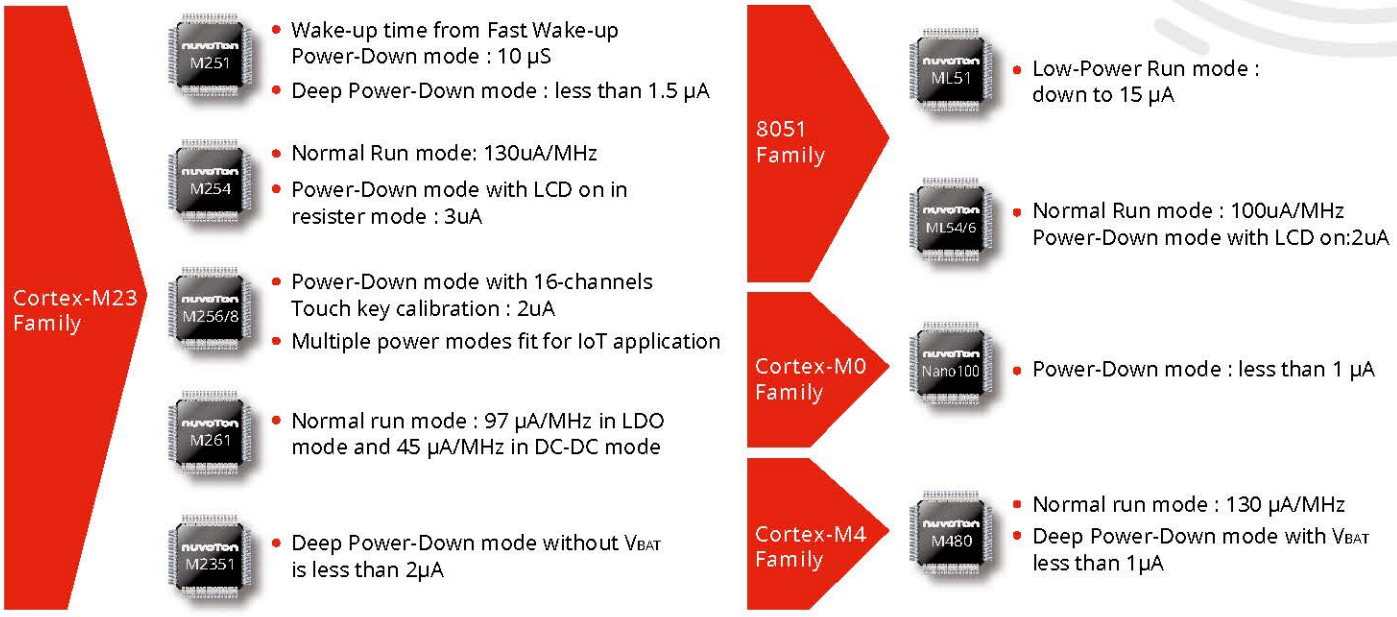
Targeted Applications : Smart Home, Smart City, Smart Building, Smart Transportation, Smart Agriculture, Smart Metering, Environment Surveillance (CCTV), Mobile POS, IoT Devices.

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

Key Feature Selection: **Low Power Microcontroller**

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

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



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

Key Feature Selection: **Optical Transceiver Microcontroller**

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

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

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

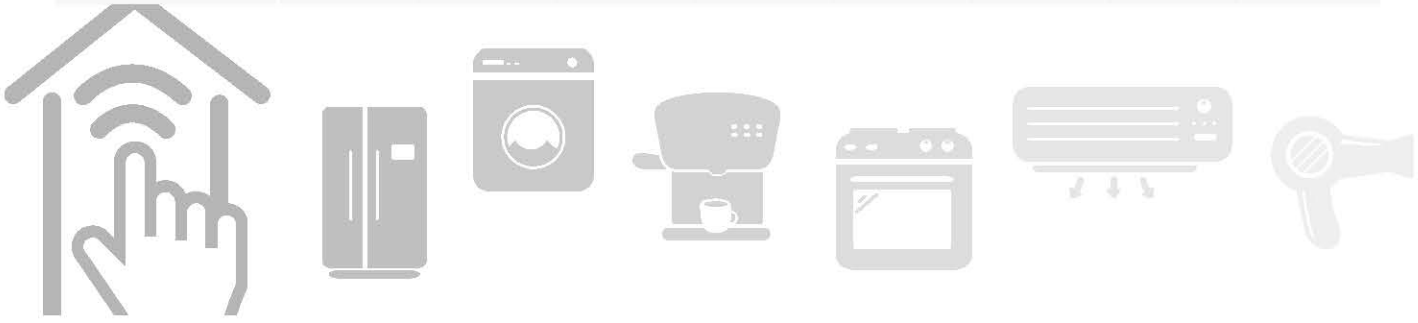
*Only for M031G

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

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

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

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

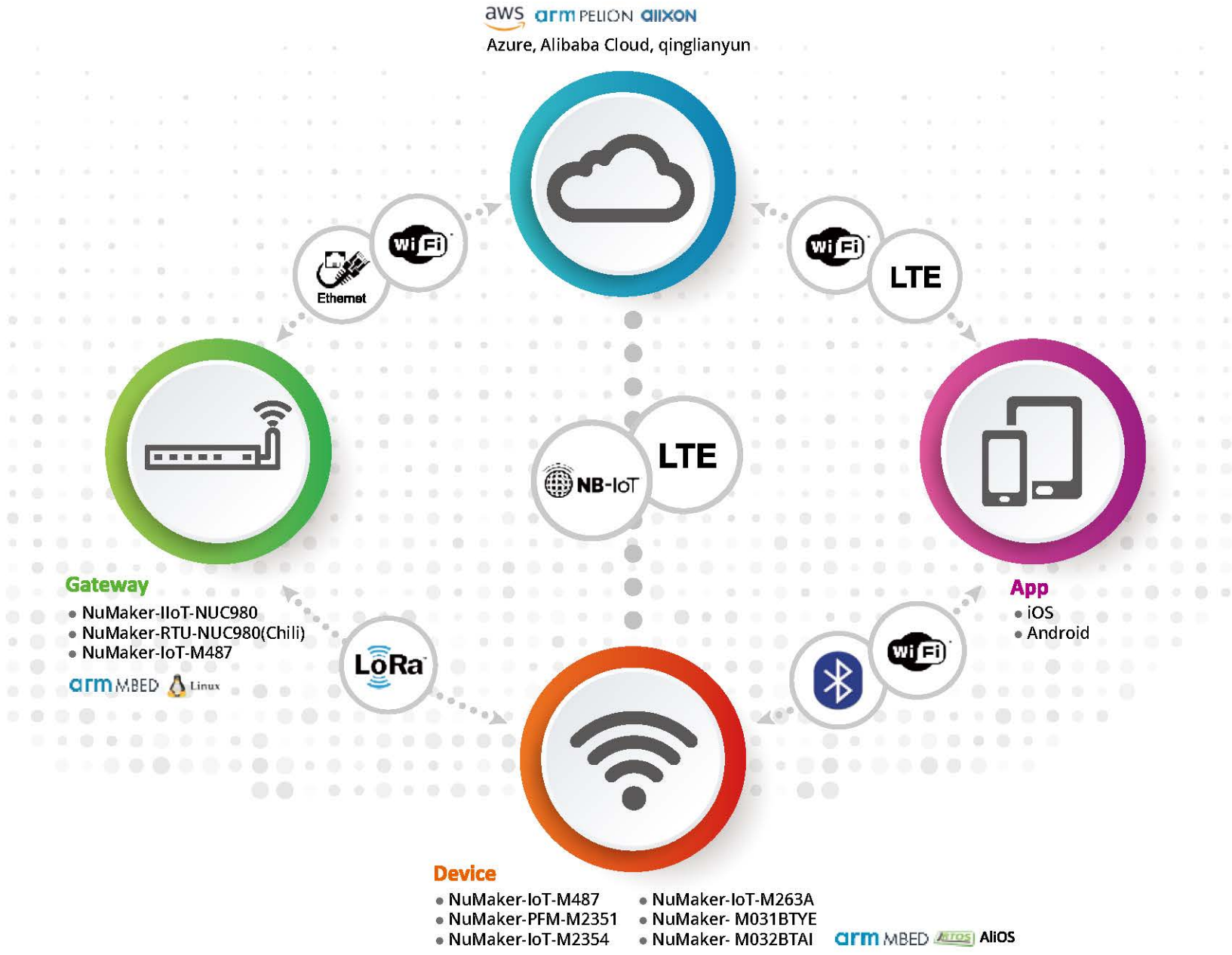


NuMicro Ecosystem - IoT Platform

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

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

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



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

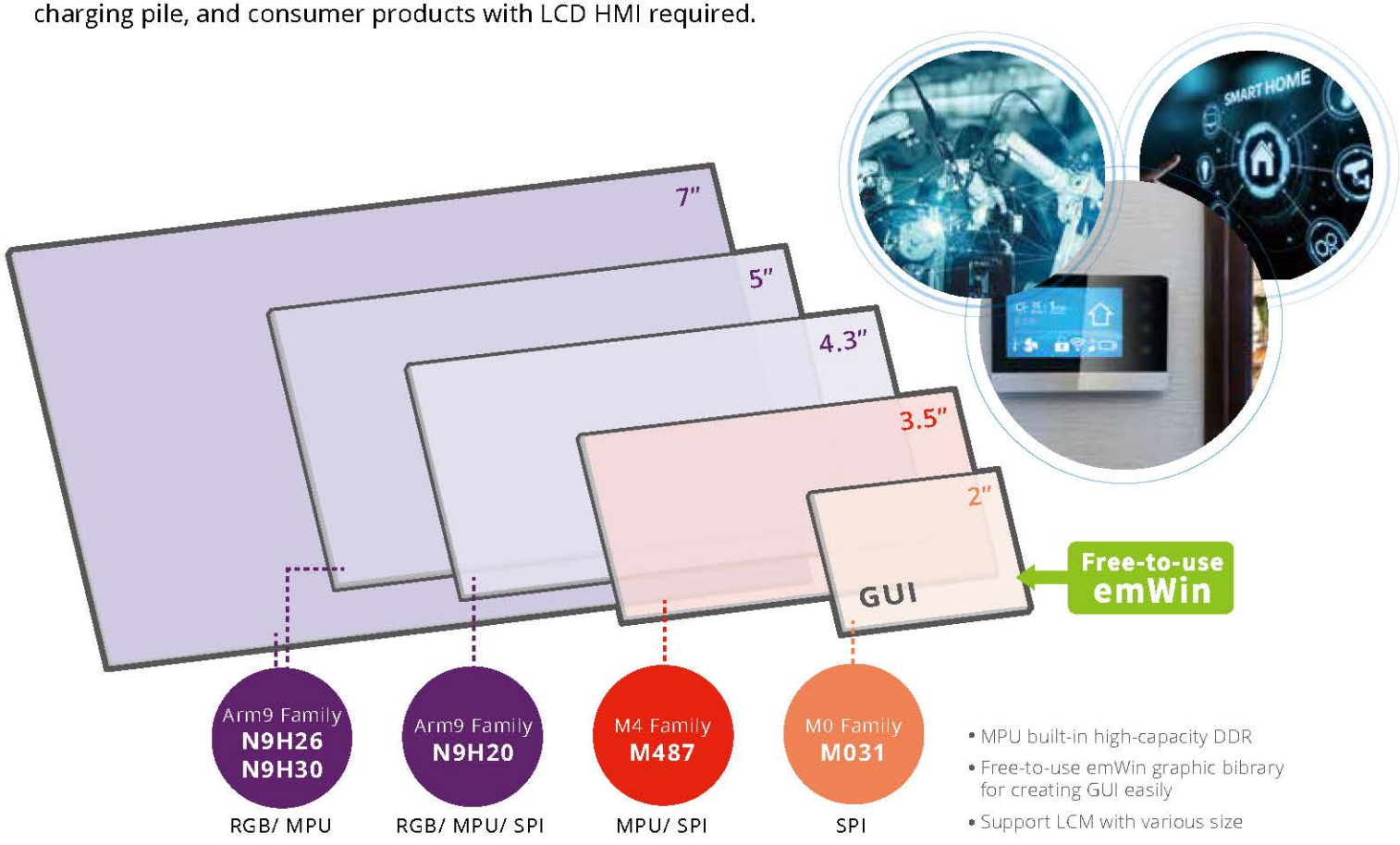
*1 US915/EU868 Bands *2 US915/EU868/CN470 Bands *3 Support on Mbed Studio *4 Non-OS is NuLoRaNode *5 Alexa Connect Kit (ACK) *6 Software as a Service (SaaS)

NuMicro Ecosystem – GUI Platform

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

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

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



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

NuMicro® Ecosystem - Development Platform

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

Development Kit

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

Board Support Package (BSP)

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

IDE

arm KEIL IAR Embedded Workbench NuEclipse

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

Debugger & Programmer

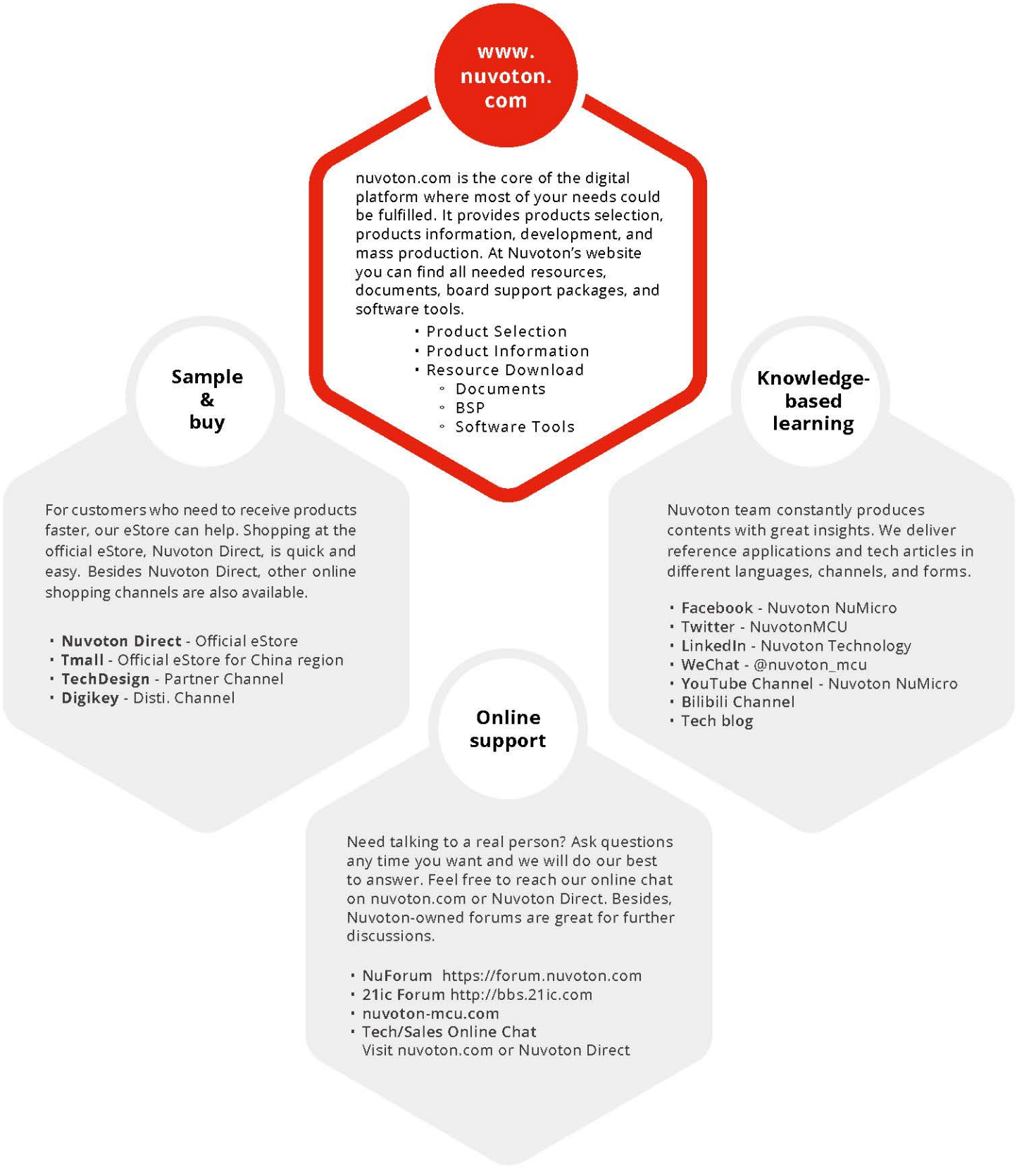
- **Nu-Link2-Pro**
  Nu-Link2-Pro Debug Adapter is a USB debugger/ programmer and can be applied to the development of NuMicro products. The original feature of Nu-Link is supported with higher performance. Furthermore, it supports embedded trace microcell (ETM) function, multi-path bridge communication,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

Development Tool (NuTool)

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

NuMicro® Ecosystem - Digital Platform

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



List of Abbreviations, Acronyms & Codes

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

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

NuMicro® Automotive Family

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

Qualified by AEC-Q100 grade 2

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

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

M0A23 Series

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

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

• M0A23 Series

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

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

NUC131U Series

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

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

• NUC131U Series

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

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

NuMicro® Family Arm® Cortex®-M23 Microcontrollers

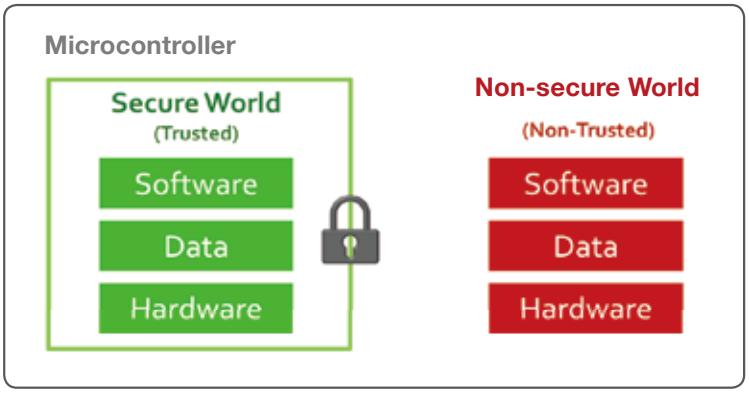
Offers the next industry standard for secure IoT devices

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

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

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

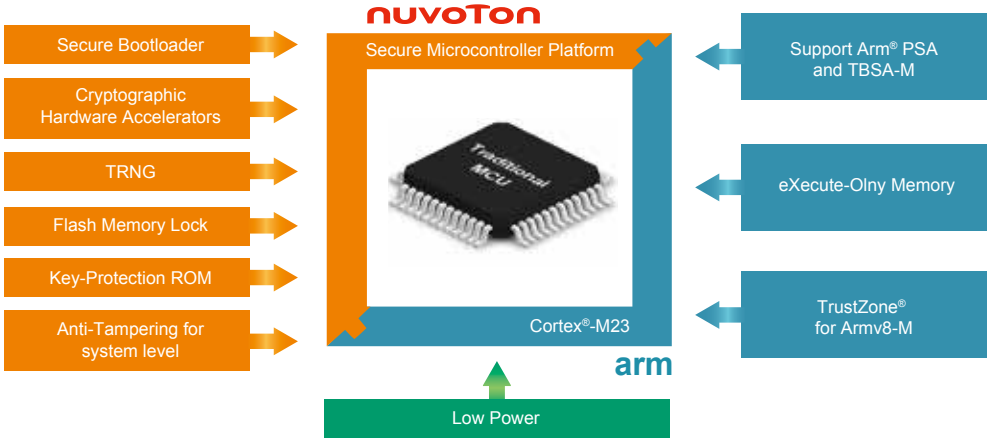
With the two key features of security and ultra-low power, NuMicro® M23 is built for small, energy-sipping IoT and embedded products. With the capability of the small-sized and low-power devices, NuMicro M23 provides security, enhanced efficiency, performance and scalability for deployment even in the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



M2351 Series

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

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



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

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

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

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

M2354 Series

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

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

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

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

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

M251/M252 Series

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

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

• M251 Series

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

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

• M252 Series

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

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

M253 Series

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

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

• M253 Series

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

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

M254/M256/M258 Series

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

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

• M254 Series

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

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

• M256 Series

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

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

• M258 Series

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

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

M261/M262/M263 Series

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

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

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

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

• M261/M262/M263 Series

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

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

NuMicro® Family Arm® Cortex®-M0 Microcontrollers

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

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

M030G/M031G Series

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

Specific Applications: Optical Transceiver Module

• M030G Series

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

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

• M031G Series

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

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

M031 Series

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

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

• M031 Series

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

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

M032 Series

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

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

• M032 Series

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

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

M031BT Series

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

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

• M031BT Series

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

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

M032BT Series

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

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

• M032BT Series

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

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

M071 Series

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

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

• M071 Series

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

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

Mini51 Series

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

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

• Mini51 Series

Key Features: Configurable Data Flash, 2 Kbytes ISP loader

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

• Mini55 Series

Key Features: Supports Hardware Divider

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

• Mini57 Series

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

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

• Mini58 Series

Key Features: Configurable Data Flash

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

M051 Series

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

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

• M051 Series

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

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

• M0518 Series

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

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

• M0519 Series

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

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

• M0564 Series

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

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

NUC029 Series

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

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

• NUC029 Series

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

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

NUC121 Series

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

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

• NUC121 Series

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

• NUC125 Series

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

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

• NUC123 Series

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

• NUC126 Series

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

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

• NUC1262 Series

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

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

NUC130 CAN Series

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

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

• NUC131 Series

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

• NUC130 Series

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

• NUC140 Series

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

• NUC230 Series

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

Nano100 Series

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

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

• Nano100 Series

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

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

• Nano102 Series

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

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

• Nano103 Series

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

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

• Nano110 Series

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

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

• Nano112 Series

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

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

• Nano120 Series

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

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

• Nano130 Series

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

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

NuMicro® Family Arm® Cortex®-M4 Microcontrollers

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

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

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

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

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

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

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

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

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

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

M480 Series

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

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

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

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

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

M471 Series

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

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

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

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

M460 Series

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

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

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

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

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

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

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

M451 Series

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

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

M451 Series	USB FS	LIN
M451		
M452	√	
M453	√	√

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

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

NUC505 Series

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

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

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

NuMicro® Family Arm9 MPUs

NUC970/980 Series

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

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

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

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

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

NUC970/980 Series

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

N9H Series

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

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

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

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

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

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

N329 Series

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

Boot Source: SPI NOR, NAND, SD, eMMC

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

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

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

NuMicro® Family 8051 Microcontrollers

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

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

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

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

MS51 Industrial Control Series (1T)

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

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

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

ML51 / ML54 / ML56 Low-power Series

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

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

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

• ML51 Low Power Series

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

• ML54 Low Power LCD Series

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

• ML56 Low Power Touch Key Series

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

N76E Series (1T)

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

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

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

N79E Series (4T)

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

Standard 8051

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

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

• N78E Series

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

• W78 Series

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

Smart Home

Smart Toy

PowerSpeech® Series
NuSpeech Series
BandDirector® Series
ViewTalk® Series
NuVoice™ Series
Peripheral Series

NSP

NSP Series

Arm® Cortex®-M Audio SoCs

AUI Enabled Series-M0
AUI-Enabled Series-M4

Audio Converters

Mono Codec Series
Stereo Codec Series
Ultra Low Power (ULP) Codec Series
Stereo ADC Series
Ultra Low Power (ULP) ADC Series
Stereo DAC Series
Precision ADC Series

Audio Amplifiers

2Vrms Line Driver and Class-AB Series
Class D Series
Smart Amplifier

Audio Enhancement

ChipCorder® Family

Digital ChipCorder® Series
MLS ChipCorder® Series

Smart Toy & NSP Development Tools

Audio Development Tools

Contact us: Audio@nuvoton.com

Smart Toy
PowerSpeech® Series

• W584A 4-bit µC Base, 1-ch Voice + Dual Tone Melody Synthesizer

Part No.	ROM (Kbits)	Duration (Sec.) @ 5-bit MDM		VDD (V)	CH	Fsys (MHz)	OSC	Audio		RAM (N)	GPIO	High Sink
		(6 KHz)	(8 KHz)					PWM	DAC			
W584A011	300	9	7	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584A016	460	15	11	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584A021	620	20	15	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584A031	1020	34	25	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584A041	1260	42	32	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584A052	1580	53	40	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584A062	1900	64	48	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584A017	460	15	11	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584A022	620	20	15	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584A032	1020	34	25	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584A042	1260	42	32	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584A051	1580	53	40	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584A061	1900	64	48	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584A071	2220	75	56	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584A081	2540	86	64	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584A025	620	20	15	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584A035	1020	35	26	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584A045	1260	42	32	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin

• W584A 4-bit µC Base, 1-ch Voice + Dual Tone Melody Synthesizer

Part No.	ROM (Kbits)	Duration (Sec.) @ 5-bit MDM		VDD (V)	CH	Fsys (MHz)	OSC	Audio		RAM (N)	GPIO	High Sink
		(6 KHz)	(8 KHz)					PWM	DAC			
W584A065	1900	64	48	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584A075	2220	75	56	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584A085	2540	86	64	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584A100	3180	108	81	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584A120	3820	129	97	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584A151	4460	151	113	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584A171	5100	173	130	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584A191	5740	195	146	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584A300	9100	310	232	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584A340	10220	348	261	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584AP017 (OTP)	460	15	11	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	12 I/O	-
W584AP045 (OTP)	1260	42	32	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	-
W584AP065 (OTP)	1900	64	48	2.2~5.5	1 + DTM	4,8	Ring	9-bit	10-bit	128	16 I/O	-

• W584B 4-bit µC Base, 1-ch Voice Synthesizer

Part No.	ROM (Kbits)	Duration (Sec.) @ 5-bit MDM		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (N)	GPIO	High Sink
		(6 KHz)	(8 KHz)					PWM	DAC			
W584B010	300	9	7	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584B015	460	15	11	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584B020	620	20	15	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584B030	1020	34	25	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584B040	1260	42	32	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584B052	1580	53	40	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584B062	1900	64	48	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	8 I/O	8-pin
W584B016	460	15	11	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584B021	620	20	15	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584B031	1020	34	25	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584B041	1260	42	32	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584B070	2220	75	56	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584B080	2540	86	64	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	12 I/O	8-pin
W584B100	3180	108	81	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584B120	3820	129	97	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584B150	4460	151	113	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584B170	5100	173	130	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin
W584B190	5740	195	146	2.2~5.5	1	4,8	Ring	9-bit	10-bit	128	16 I/O	8-pin

• W588L 8-bit µC Base, 2 Batteries, 2-ch Voice + Melody Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 5-bit MDM		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	GPIO
		(6 KHz)	(8 KHz)					PWM	DAC		
W588L020	94	23	18	1.8~3.6	1	4, 6	Ring	12-bit	-	96	8 I/O
W588L030	126	32	24	1.8~3.6	1	4, 6	Ring	12-bit	-	96	8 I/O
W588L035	170	44	33	1.8~3.6	2	4, 6	Ring	12-bit	-	128	16 I/O
W588L040	192	50	37	1.8~3.6	2	4, 6	Ring	12-bit	-	128	16 I/O
W588L050	224	58	43	1.8~3.6	2	4, 6	Ring	12-bit	-	128	16 I/O
W588L060	254	66	49	1.8~3.6	2	4, 6	Ring	12-bit	-	128	16 I/O
W588L070	330	86	65	1.8~3.6	2	4, 6	Ring	12-bit	-	128	16 I/O
W588L080	382	100	75	1.8~3.6	2	4, 6	Ring	12-bit	-	128	16 I/O
W588L100	448	118	88	1.8~3.6	2	4, 6	Ring	12-bit	-	128	16 I/O

• W588C 8-bit µC Base, 2-ch Voice + Melody Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	GPIO
		(6 KHz)	(8 KHz)					PWM	DAC		
W588C003	20	5	4	2.2~5.5	2	4~8	Ring	12-bit	-	96	8 I/O
W588C006	30	8	6	2.2~5.5	2	4~8	Ring	12-bit	-	96	8 I/O
W588C009	50	14	11	2.2~5.5	2	4~8	Ring	12-bit	-	96	8 I/O
W588C012	62	18	14	2.2~5.5	2	4~8	Ring	12-bit	-	96	8 I/O
W588C015	78	23	17	2.2~5.5	2	4~8	Ring	12-bit	-	96	8 I/O
W588C020	98	29	22	2.2~5.5	2	4~8	Ring	12-bit	13-bit	128	12 I/O
W588C025	114	35	26	2.2~5.5	2	4~8	Ring	12-bit	13-bit	128	12 I/O
W588C030	126	38	29	2.2~5.5	2	4~8	Ring	12-bit	13-bit	128	12 I/O

• W588C 8-bit µC Base, 2-ch Voice + Melody Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	GPIO
		(6 KHz)	(8 KHz)					PWM	DAC		
***W588C036**	170	52	39	2.2~5.5	2	4~8	Ring	12-bit	13-bit	128	16 I/O
***W588C041**	192	59	44	2.2~5.5	2	4~8	Ring	12-bit	13-bit	128	16 I/O
***W588C046**	205	63	48	2.2~5.5	2	4~8	Ring	12-bit	13-bit	128	16 I/O
***W588C051**	224	69	52	2.2~5.5	2	4~8	Ring	12-bit	13-bit	128	16 I/O
***W588C056**	240	74	56	2.2~5.5	2	4~8	Ring	12-bit	13-bit	128	16 I/O
***W588C061**	254	79	59	2.2~5.5	2	4~8	Ring	12-bit	13-bit	128	16 I/O
***W588C071**	330	103	77	2.2~5.5	2	4~8	Ring	12-bit	13-bit	128	16 I/O
***W588C081**	382	119	90	2.2~5.5	2	4~8	Ring	12-bit	13-bit	128	16 I/O
***W588C101**	448	140	105	2.2~5.5	2	4~8	Ring	12-bit	13-bit	128	16 I/O
***W588C121**	510	160	120	2.2~5.5	2	4~8	Ring	12-bit	13-bit	128	16 I/O
W588C150	640	201	151	2.2~5.5	2	4~8	Ring	12-bit	13-bit	192	16 I/O
W588C170	768	242	181	2.2~5.5	2	4~8	Ring	12-bit	13-bit	192	16 I/O
W588C210	896	282	212	2.2~5.5	2	4~8	Ring	12-bit	13-bit	192	16 I/O
W588C260	1022	322	242	2.2~5.5	2	4~8	Ring	12-bit	13-bit	192	16 I/O
W588C300	1180	372	279	2.2~5.5	2	4~8	Ring	12-bit	13-bit	192	16 I/O

*DAC w/o Noise Shaping

• W588D 8-bit µC Base, 3-ch Voice + Melody Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Sub-Clock 32KHz	Audio		RAM (Bytes)	GPIO	SIM SPI
		(6 KHz)	(8 KHz)						PWM	DAC			
W588D003	20	5	4	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	192	16 I/O	√
W588D006	30	8	6	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	192	16 I/O	√
W588D009	50	14	11	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	16 I/O	√
W588D012	62	18	14	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	16 I/O	√
W588D015	78	23	17	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	16 I/O	√
W588D020	98	29	22	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	16 I/O	√
W588D025	114	35	26	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	16 I/O	√
W588D030	126	38	29	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	16 I/O	√
W588D035	170	52	39	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	16 I/O	√
W588D040	192	59	44	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	16 I/O	√
W588D045	205	63	48	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	16 I/O	√
W588D050	224	69	52	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	16 I/O	√
W588D055	240	74	56	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	16 I/O	√
W588D060	254	79	59	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	16 I/O	√
W588DF060 (MTP)	254	79	59	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	16 I/O	√
W588D070	330	103	77	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	24 I/O	√
W588D080	382	119	90	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	24 I/O	√
W588D100	448	140	105	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	24 I/O	√
W588D120	510	160	120	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	256	24 I/O	√
W588D150	640	201	151	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	384	24 I/O	√
W588D170	768	242	181	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	384	24 I/O	√
W588D210	896	282	212	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	384	24 I/O	√
W588D260	1022	322	242	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	384	24 I/O	√
W588D300	1180	372	279	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	8I, 24 I/O	√
W588D350	1348	425	319	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	8I, 24 I/O	√
W588D400	1534	484	363	2.2~5.5	3	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	8I, 24 I/O	√

• N584L 4-bit µC Base, 1~2 Battery, 1-ch Voice + Dual Tone Melody Synthesizer

Part No.	ROM (Kbits)	Duration (Sec.) @ 5-bit MDM		V_{DD} (V)	Booster Output (V)	CH	Fsys (MHz)	OSC	Audio		RAM (N)	GPIO
		(6 KHz)	(8 KHz)						PWM	DAC		
N584L020	620	20	15	1.0~1.8	3	1 + DTM	4~8	Ring	9-bit	-	128	8 I/O
N584L030	1020	34	25	1.0~1.8	3	1 + DTM	4~8	Ring	9-bit	-	128	8 I/O
N584L040	1260	42	32	1.0~1.8	3	1 + DTM	4~8	Ring	9-bit	-	128	8 I/O
N584L080	2540	86	64	1.0~1.8	3	1 + DTM	4~8	Ring	9-bit	-	128	12 I/O
N584L120	3820	129	97	1.0~1.8	3	1 + DTM	4~8	Ring	9-bit	-	128	12 I/O
N584L031	1020	34	25	1.0~3.6	4	1 + DTM	4~8	Ring	9-bit	-	128	12 I/O
N584L041	1260	42	32	1.0~3.6	4	1 + DTM	4~8	Ring	9-bit	-	128	12 I/O
N584L061	1900	64	48	1.0~3.6	4	1 + DTM	4~8	Ring	9-bit	-	128	12 I/O
N584L081	2540	86	64	1.0~3.6	4	1 + DTM	4~8	Ring	9-bit	-	128	12 I/O
N584L121	3820	129	97	1.0~3.6	4	1 + DTM	4~8	Ring	9-bit	-	128	12 I/O

• N588L 1.0~3.6V, 8-bit µC Base, 2-ch Voice Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD}	CH	Fsys (MHz)	OSC	Audio		Vp (V)	RAM (Bytes)	LVD	GPIO	PWM Output
		(6 KHz)	(8 KHz)					PWM	DAC					
N588L040	126	40	30	1.0~3.6V	2	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N588L080	254	80	60	1.0~3.6V	2	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N588L120	416	132	99	1.0~3.6V	2	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N588L160	528	167	125	1.0~3.6V	2	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N588L200	638	202	152	1.0~3.6V	2	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N588L240	768	243	182	1.0~3.6V	2	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N588L280	896	284	213	1.0~3.6V	2	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N588L330	1022	324	243	1.0~3.6V	2	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N588LP080 (OTP)	254	80	60	1.0~3.6V	2	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N588LP200 (OTP)	638	202	152	1.0~3.6V	2	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N588LP330 (OTP)	1022	324	243	1.0~3.6V	2	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair

* N588LP (OTP), 1.0~3.6V, 8-bit µC base, 2-ch Voice Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD}	CH	Fsys (MHz)	OSC	Audio		Vp (V)	RAM (Bytes)	LVD	GPIO	PWM Output
		(6 KHz)	(8 KHz)					PWM	DAC					
N588LP122	416	132	99	1.0~3.6V	2	4,6,8	TRIM	12-bit	-	3.3, 4.2	384	√	16 I/O	2-pin
N588LP162	528	167	125	1.0~3.6V	2	4,6,8	TRIM	12-bit	-	3.3, 4.2	384	√	16 I/O	2-pin
N588LP202	638	202	152	1.0~3.6V	2	4,6,8	TRIM	12-bit	-	3.3, 4.2	384	√	16 I/O	2-pin
N588LP242	768	243	182	1.0~3.6V	2	4,6,8	TRIM	12-bit	-	3.3, 4.2	384	√	16 I/O	2-pin
N588LP282	896	284	213	1.0~3.6V	2	4,6,8	TRIM	12-bit	-	3.3, 4.2	384	√	16 I/O	2-pin
N588LP332	1022	324	243	1.0~3.6V	2	4,6,8	TRIM	12-bit	-	3.3, 4.2	384	√	16 I/O	2-pin

* Under Development

• N584H High Sound Quality 1-ch Voice

Part No.	ROM (Kbits)	Duration (Sec.) @ 4-bit NM4		V_{DD} (4 MHz)	CH	Fsys (MHz)	OSC	Audio		Cap Sensor	RAM (N)	LVD	GPIO	High Sink
		(6 KHz)	(8 KHz)					PWM	DAC					
N584H009	300	12	9	1.8~5.5V	1	4, 8	TRIM	9-bit	-	-	96	√	4 I/O	4-pin
N584H019	620	24	18	1.8~5.5V	1	4, 8	TRIM	9-bit	-	-	96	√	4 I/O	4-pin
N584H029	940	37	28	1.8~5.5V	1	4, 8	TRIM	9-bit	-	-	96	√	4 I/O	4-pin
N584H039	1260	49	37	1.8~5.5V	1	4, 8	TRIM	9-bit	-	-	96	√	4 I/O	4-pin
N584H010	300	12	9	1.8~5.5V	1	4, 8	TRIM	9-bit	-	-	96	√	8 I/O	8-pin
N584H020	620	24	18	1.8~5.5V	1	4, 8	TRIM	9-bit	-	-	96	√	8 I/O	8-pin
N584H030	940	37	28	1.8~5.5V	1	4, 8	TRIM	9-bit	-	-	96	√	8 I/O	8-pin
N584H040	1260	49	37	1.8~5.5V	1	4, 8	TRIM	9-bit	-	-	96	√	8 I/O	8-pin
N584H060	1740	68	51	1.8~5.5V	1	4, 8	TRIM	9-bit	-	-	96	√	8 I/O	8-pin
N584H070	1900	74	56	1.8~5.5V	1	4, 8	TRIM	9-bit	-	-	96	√	8 I/O	8-pin
N584H120	3340	131	98	1.8~5.5V	1 + DTM	4, 8	TRIM	9-bit	-	8-pin	224	√	16 I/O	8-pin
N584H160	4070	159	119	1.8~5.5V	1 + DTM	4, 8	TRIM	9-bit		8-pin	224	√	16 I/O	8-pin
N584H170	4460	175	131	1.8~5.5V	1 + DTM	4, 8	TRIM	9-bit	-	8-pin	224	√	16 I/O	8-pin
N584H210	5740	225	169	1.8~5.5V	1 + DTM	4, 8	TRIM	9-bit	-	8-pin	224	√	16 I/O	8-pin
N584H260	7020	275	206	1.8~5.5V	1 + DTM	4, 8	TRIM	9-bit	-	8-pin	224	√	16 I/O	8-pin
N584H300	7980	312	234	1.8~5.5V	1 + DTM	4, 8	TRIM	9-bit	-	8-pin	224	√	16 I/O	8-pin

• N584P (OTP), High Sound Quality 1-ch Voice

Part No.	ROM (Kbits)	Duration (Sec.) @ 4-bit NM4		V_{DD} (8 MHz)	CH	OSC	Audio		Cap Sensor	RAM (N)	LVD	GPIO	High Sink
		(6 KHz)	(8 KHz)				PWM	DAC					
N584P040	1260	49	37	1.8~5.5V	1	TRIM	9-bit	-	-	96	√	8 I/O	8-pin
N584P070	1900	74	56	1.8~5.5V	1	TRIM	9-bit	-	-	96	√	8 I/O	8-pin
N584P120	3340	131	98	1.8~5.5V	1 + DTM	TRIM	9-bit	-	8-pin	224	√	16 I/O	8-pin
N584P170	4460	175	131	1.8~5.5V	1 + DTM	TRIM	9-bit	-	8-pin	224	√	16 I/O	8-pin
N584P210	5740	225	169	1.8~5.5V	1 + DTM	TRIM	9-bit	-	8-pin	224	√	16 I/O	8-pin
N584P260	7020	275	206	1.8~5.5V	1 + DTM	TRIM	9-bit	-	8-pin	224	√	16 I/O	8-pin
N584P300	7980	312	234	1.8~5.5V	1 + DTM	TRIM	9-bit	-	8-pin	224	√	16 I/O	8-pin

• N588J 8-bit µC Base, 1-ch Voice Synthesizer w/ PWM Direct Driver

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD}	CH	Fsys (MHz)	Audio		RAM (Bytes)	LVD	GPIO	PWM Output
		(6 KHz)	(8 KHz)				PWM	DAC				
N588J010	30	10	7	2.2~5.5V	1	4,6,8	12-bit	-	128	√	16 I/O	3-pair
N588J040	126	40	30	2.2~5.5V	1	4,6,8	12-bit	-	128	√	16 I/O	3-pair
N588J060	206	65	49	2.2~5.5V	1	4,6,8	12-bit	-	128	√	16 I/O	3-pair
N588J080	254	80	60	2.2~5.5V	1	4,6,8	12-bit	-	128	√	16 I/O	3-pair
N588J120	414	131	98	2.2~5.5V	1	4,6,8	12-bit	-	128	√	16 I/O	3-pair
N588J170	510	162	121	2.2~5.5V	1	4,6,8	12-bit	-	128	√	16 I/O	3-pair
N588J200	704	223	167	2.2~5.5V	1	4,6,8	12-bit	-	192	√	24 I/O	3-pair
N588J250	830	263	197	2.2~5.5V	1	4,6,8	12-bit	-	192	√	24 I/O	3-pair
N588J340	1020	324	243	2.2~5.5V	1	4,6,8	12-bit	-	192	√	24 I/O	3-pair
N588J480	1534	486	364	2.2~5.5V	1	4,6,8	12-bit	-	192	√	24 I/O	3-pair
N588J650	2044	648	486	2.2~5.5V	1	4,6,8	12-bit	-	192	√	24 I/O	3-pair

• N588JP (OTP), 8-bit µC Base, 1-ch Voice Synthesizer w/ PWM Direct Driver

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD}	CH	Fsys (MHz)	Audio		RAM (Bytes)	LVD	GPIO	PWM Output
		(6 KHz)	(8 KHz)				PWM	DAC				
N588JP062	206	65	49	2.0~5.5V	1	4,6,8	12-bit	-	128	√	16 I/O	3-pair
N588JP082	254	80	60	2.0~5.5V	1	4,6,8	12-bit	-	128	√	16 I/O	3-pair
N588JP122	414	131	98	2.0~5.5V	1	4,6,8	12-bit	-	128	√	16 I/O	3-pair
N588JP172	510	162	121	2.0~5.5V	1	4,6,8	12-bit	-	128	√	16 I/O	3-pair
N588JP202	704	223	167	2.0~5.5V	1	4,6,8	12-bit	-	192	√	24 I/O	3-pair
N588JP252	830	263	197	2.0~5.5V	1	4,6,8	12-bit	-	192	√	24 I/O	3-pair
N588JP342	1020	324	243	2.0~5.5V	1	4,6,8	12-bit	-	192	√	24 I/O	3-pair

• N588H 8-bit µC Base, 3-ch Voice + Melody Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	LVD	GPIO	PWM Output
		(6 KHz)	(8 KHz)					PWM	DAC				
N588H061	206	65	49	2.2~5.5	3	4,6,8	TRIM	12-bit	-	128	√	16 I/O	3-pair
N588H081	254	80	60	2.2~5.5	3	4,6,8	TRIM	12-bit	-	128	√	16 I/O	3-pair
N588H120	414	131	98	2.2~5.5	3	4,6,8	TRIM	12-bit	-	128	√	16 I/O	3-pair
N588H170	510	162	121	2.2~5.5	3	4,6,8	TRIM	12-bit	-	128	√	16 I/O	3-pair
N588H200	704	223	167	2.2~5.5	3	4,6,8	TRIM	12-bit	-	192	√	24 I/O	3-pair
N588H250	830	263	197	2.2~5.5	3	4,6,8	TRIM	12-bit	-	192	√	24 I/O	3-pair
N588H340	1022	324	243	2.2~5.5	3	4,6,8	TRIM	12-bit	-	192	√	24 I/O	3-pair
N588H480	1534	486	364	2.2~5.5	3	4,6,8	TRIM	12-bit	-	192	√	24 I/O	3-pair
N588H650	2044	648	486	2.2~5.5	3	4,6,8	TRIM	12-bit	-	192	√	24 I/O	3-pair

• N588HP (OTP), 8-bit µC Base, 3-ch Voice + Melody Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	LVD	GPIO	PWM Output
		(6 KHz)	(8 KHz)					PWM	DAC				
N588HP062	206	65	49	2.0~5.5	3	4,6,8	TRIM	12-bit	-	128	√	16 I/O	3-pair
N588HP082	254	80	60	2.0~5.5	3	4,6,8	TRIM	12-bit	-	128	√	16 I/O	3-pair
N588HP122	414	131	98	2.0~5.5	3	4,6,8	TRIM	12-bit	-	128	√	16 I/O	3-pair
N588HP172	510	162	121	2.0~5.5	3	4,6,8	TRIM	12-bit	-	128	√	16 I/O	3-pair
N588HP202	704	223	167	2.0~5.5	3	4,6,8	TRIM	12-bit	-	192	√	24 I/O	3-pair
N588HP252	830	263	197	2.0~5.5	3	4,6,8	TRIM	12-bit	-	192	√	24 I/O	3-pair
N588HP342	1022	324	243	2.0~5.5	3	4,6,8	TRIM	12-bit	-	192	√	24 I/O	3-pair

NuSpeech Series

• N589A, 8-bit µC Base, 2-ch Voice or 8-ch MIDI, w/ SPIO, SPIM, ADC, IR Wake-up

Part No.	Duration (Sec) 8KHz	VDD (V)	LVR (V)	Speech/ MIDI CH	ADC	Audio PWM	RAM (Bytes)	GPIO	Interface	PWM Output	Touch I/O	LVD	IR wake up	LRC
N589A150	128	2.0~5.5	1.9	2/8	4ch, 6bit	13-bit	512	28 I/O	SPIO, SPIM	6 pin	6 pin	Yes	Yes	Yes
N589A200	189	2.0~5.5	1.9	2/8	4ch, 6bit	13-bit	512	28 I/O	SPIO, SPIM	6 pin	6 pin	Yes	Yes	Yes
N589A280	250	2.0~5.5	1.9	2/8	4ch, 6bit	13-bit	512	28 I/O	SPIO, SPIM	6 pin	6 pin	Yes	Yes	Yes
N589A400	371	2.0~5.5	1.9	2/8	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589A600	614	2.0~5.5	1.9	2/8	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589A900	857	2.0~5.5	1.9	2/8	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589A1K4	1342	2.0~5.5	1.9	2/8	4ch, 6bit	13-bit	1K	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589A1K9	1828	2.0~5.5	1.9	2/8	4ch, 6bit	13-bit	1K	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes

• N589B, 8-bit µC Base, 2-ch Voice, w/ SPIO, SPIM, ADC, IR Wake-up

Part No.	Duration (Sec) 8 KHz	VDD (V)	LVR (V)	Voice CH	ADC	Audio PWM	RAM (Bytes)	GPIO	Interface	PWM Output	Touch I/O	LVD	IR wake up	LRC
N589B120	125	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	22 I/O	SPIO, SPIM	6 pin	6 pin	Yes	Yes	Yes
N589B170	155	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	22 I/O	SPIO, SPIM	6 pin	6 pin	Yes	Yes	Yes
N589B200	216	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	28 I/O	SPIO, SPIM	6 pin	6 pin	Yes	Yes	Yes
N589B250	276	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	28 I/O	SPIO, SPIM	6 pin	6 pin	Yes	Yes	Yes
N589B340	337	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	28 I/O	SPIO, SPIM	6 pin	6 pin	Yes	Yes	Yes
N589B480	458	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589B650	701	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589B960	944	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589B1K5	1429	2.0~5.5	1.9	2	4ch, 6bit	13-bit	1K	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589B2K0	1915	2.0~5.5	1.9	2	4ch, 6bit	13-bit	1K	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes

• N589C, 8-bit µC Base, 2-ch Voice, with SPIO, IR Wake-up

Part No.	Duration (Sec) 8KHz	VDD (V)	LVR (V)	Voice CH	ADC	Audio PWM	RAM (Bytes)	GPIO	Interface	PWM Output	Touch I/O	LVD	IR wake up	LRC
N589C080	94	2.0~5.5	1.9	2	NO	13-bit	512	16 I/O	NO	3 pin	6 pin	Yes	Yes	Yes
N589C120	125	2.0~5.5	1.9	2	NO	13-bit	512	16 I/O	NO	3 pin	6 pin	Yes	Yes	Yes
N589C170	155	2.0~5.5	1.9	2	NO	13-bit	512	16 I/O	NO	3 pin	6 pin	Yes	Yes	Yes
N589C200	216	2.0~5.5	1.9	2	NO	13-bit	512	22 I/O	SPIO	6 pin	6 pin	Yes	Yes	Yes
N589C250	276	2.0~5.5	1.9	2	NO	13-bit	512	22 I/O	SPIO	6 pin	6 pin	Yes	Yes	Yes
N589C340	337	2.0~5.5	1.9	2	NO	13-bit	512	22 I/O	SPIO	6 pin	6 pin	Yes	Yes	Yes
N589C480	458	2.0~5.5	1.9	2	NO	13-bit	512	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589C650	701	2.0~5.5	1.9	2	NO	13-bit	512	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589C960	944	2.0~5.5	1.9	2	NO	13-bit	512	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589C1K5	1429	2.0~5.5	1.9	2	NO	13-bit	1K	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589C2K0	1915	2.0~5.5	1.9	2	NO	13-bit	1K	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes

• N589D, 8-bit µC Base, 1-ch Voice, with SPIO, IR Wake-up

Part No.	Duration (Sec)	V_{DD} (V)	LVR (V)	Speech CH	ADC	Audio	RAM (Bytes)	GPIO	Interface	PWM Output	Touch I/O	LVD	IR wake up	LRC
	8 KHz					PWM								
N589D081	94	2.0~5.5	1.9	1	NO	13-bit	384	16 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D121	125	2.0~5.5	1.9	1	NO	13-bit	384	16 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D171	155	2.0~5.5	1.9	1	NO	13-bit	384	16 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D201	216	2.0~5.5	1.9	1	NO	13-bit	384	25 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D251	276	2.0~5.5	1.9	1	NO	13-bit	384	25 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D341	337	2.0~5.5	1.9	1	NO	13-bit	384	25 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D481	458	2.0~5.5	1.9	1	NO	13-bit	384	25 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D650	701	2.0~5.5	1.9	1	NO	13-bit	512	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589D960	944	2.0~5.5	1.9	1	NO	13-bit	512	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589D1K5	1429	2.0~5.5	1.9	1	NO	13-bit	1K	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes
N589D2K0	1915	2.0~5.5	1.9	1	NO	13-bit	1K	32 I/O	SPIO, UART, LED String	6 pin	12 pin	Yes	Yes	Yes

• N589E, 8-bit µC Base, 1-ch Voice Synthesizer

Part No.	Flash (Kbytes)	Duration (Sec.)@ 4-bit NM4		V_{DD} (V)	Voice CH	Audio	RAM (Bytes)	GPIO	PWM Output	Cap Touch	LVD	IR Carrier	LVR (V)
		(6 KHz)	(8 KHz)			PWM							
N589E040	128	40	30	2.0~5.5	1	13-bit	384	8 I/O	3 pin	4 pin	Yes	Yes	1.9
N589E060	192	60	45	2.0~5.5	1	13-bit	384	8 I/O	3 pin	4 pin	Yes	Yes	1.9
N589E080	256	80	60	2.0~5.5	1	13-bit	384	8 I/O	3 pin	4 pin	Yes	Yes	1.9

BandDirector® Series

• W567C 8-bit µC Base, 16-ch Voice + Wavetable Melody Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		Channel		Fsys (MHz)	OSC	Sub-Clock 32 KHz	Audio		RAM (Bytes)	GPIO	PWM Output	SIM SPI	PAN Stereo
		(6 KHz)	(8 KHz)	Voice	WTM				PWM	DAC					
W567C070	336	99	74	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	-
W567C080	416	124	93	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	-
W567C100	464	139	104	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	-
W567C120	508	152	114	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	-
W567C151	640	193	145	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	-
W567C171	768	233	174	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	-
W567C210	896	272	204	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	-
W567C260	1020	311	233	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	-
W567C300	1232	376	282	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	-
W567C340	1376	421	316	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	-
W567C380	1532	469	352	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	-
W567C126	508	152	114	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	√
W567C266	1020	311	233	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	√
W567C306	1232	376	282	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	√
W567C346	1376	421	316	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	√
W567C386	1532	469	352	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	√
W567CP260 (OTP)	1020	311	233	2	16	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√	-

• N567G 8-bit µC Base, 4-ch Voice + Wavetable Melody Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	GPIO	PWM Output	SIM SPI
		(6 KHz)	(8 KHz)					PWM	DAC				
N567G030	126	34	26	2.2~5.5	4	4,6,8	TRIM/X'tal	12-bit	13-bit	384	24 I/O	-	√
N567G041	158	44	33	2.2~5.5	4	4,6,8	TRIM/X'tal	12-bit	13-bit	384	24 I/O	-	√
N567G080	286	84	63	2.2~5.5	4	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	√
N567G121	416	124	93	2.2~5.5	4	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	-
N567G161	528	158	119	2.2~5.5	4	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	-
N567G201	638	192	144	2.2~5.5	4	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	-
N567G240	768	233	174	2.2~5.5	4	4,6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	3-pair	√
N567G280	896	272	204	2.2~5.5	4	4,6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	3-pair	√
N567G330	1022	311	233	2.2~5.5	4	4,6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	3-pair	√

• N567K 8-bit µC Base, 6-ch Voice + Wavetable Melody Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	LVD	GPIO	PWM Output	SIM SPI
		(6 KHz)	(8 KHz)					PWM	DAC					
N567K030	126	34	26	2.2~5.5	6	4,6,8	TRIM/X'tal	12-bit	13-bit	384	-	24 I/O	-	√
N567K041	158	44	33	2.2~5.5	6	4,6,8	TRIM/X'tal	12-bit	13-bit	384	-	24 I/O	-	√
N567K080	286	84	63	2.2~5.5	6	4,6,8	TRIM	12-bit	13-bit	384	-	24 I/O	-	√
N567K081	254	80	60	2.2~5.5	6	4,6,8	TRIM	12-bit	13-bit	384	√	24 I/O	-	√
N567K121	416	124	93	2.2~5.5	6	4,6,8	TRIM	12-bit	13-bit	384	-	24 I/O	-	-
N567K161	528	158	119	2.2~5.5	6	4,6,8	TRIM	12-bit	13-bit	384	-	24 I/O	-	-
N567K201	638	192	144	2.2~5.5	6	4,6,8	TRIM	12-bit	13-bit	384	-	24 I/O	-	-
N567K240	768	233	174	2.2~5.5	6	4,6,8	TRIM/X'tal	12-bit	13-bit	384	-	8I, 24 I/O	3-pair	√
N567K280	896	272	204	2.2~5.5	6	4,6,8	TRIM/X'tal	12-bit	13-bit	384	-	8I, 24 I/O	3-pair	√
N567K330	1022	311	233	2.2~5.5	6	4,6,8	TRIM/X'tal	12-bit	13-bit	384	-	8I, 24 I/O	3-pair	√

• N567H 8-bit µC Base, 8-ch Voice + Wavetable Melody Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	GPIO	PWM Output	SIM SPI
		(6 KHz)	(8 KHz)					PWM	DAC				
N567H030	126	34	26	2.2~5.5	8	4,6,8	TRIM/X'tal	12-bit	13-bit	384	24 I/O	-	√
N567H041	158	44	33	2.2~5.5	8	4,6,8	TRIM/X'tal	12-bit	13-bit	384	24 I/O	-	√
N567H080	286	84	63	2.2~5.5	8	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	√
N567H121	416	124	93	2.2~5.5	8	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	-
N567H161	528	158	119	2.2~5.5	8	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	-
N567H201	638	192	144	2.2~5.5	8	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	-
N567H240	768	233	174	2.2~5.5	8	4,6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	3-pair	√
N567H280	896	272	204	2.2~5.5	8	4,6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	3-pair	√
N567H330	1022	311	233	2.2~5.5	8	4,6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	3-pair	√
N567HP330 (OTP)	1022	311	233	2.2~5.5	8	4,6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	3-pair	√

• N567D 8-bit µC Base, 14-ch Voice + Wavetable Melody Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		Channel		Fsys (MHz)	OSC	Sub-Clock 32 KHz	Audio		RAM (Bytes)	GPIO	PWM Output	SIM SPI
		(6 KHz)	(8 KHz)	Voice	WTM				PWM	DAC				
N567D070	224	71	53	2	14	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√
N567D100	336	106	80	2	14	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√
N567D120	416	132	99	2	14	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√
N567D140	464	147	110	2	14	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√
N567D160	508	161	121	2	14	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√
N567D200	640	203	152	2	14	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√
N567D240	768	243	183	2	14	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√
N567D280	896	284	213	2	14	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√
N567D320	1020	323	242	2	14	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√
N567D380	1232	390	293	2	14	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√
N567D420	1376	436	327	2	14	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√
N567D470	1532	485	364	2	14	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√
N567DP320 (OTP)	1020	323	242	2	14	4~8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3-pin	√

• N567L 1.0~3.6V, 8-bit µC Base, 8-ch Voice + Wavetable Melody Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		Channel		V_{DD}	Fsys (MHz)	OSC	Audio		Vp (V)	RAM (Bytes)	LVD	GPIO	PWM Output
		(6 KHz)	(8 KHz)	Voice	WTM				PWM	DAC					
N567L080	254	80	60	2	8	1.0~3.6V	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N567L120	416	132	99	2	8	1.0~3.6V	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N567L160	528	167	125	2	8	1.0~3.6V	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N567L200	638	202	152	2	8	1.0~3.6V	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N567L240	768	243	182	2	8	1.0~3.6V	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N567L280	896	284	213	2	8	1.0~3.6V	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N567L330	1022	324	243	2	8	1.0~3.6V	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair
N567LP330 (OTP)	1022	324	243	2	8	1.0~3.6V	4,6,8	TRIM/X'tal	12-bit	-	3.3, 4.2	384	√	16 I/O	3-pair

• N566G 8-bit µC Base, 4-ch Voice + Wavetable Melody Synthesizer, w/ LVD

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	LVD	GPIO	PWM Output	Constant Current
		(6 KHz)	(8 KHz)					PWM	DAC					
N566G120	416	124	93	2.2~5.5	4	4,6,8	TRIM	12-bit	-	384	√	24 I/O	2-pin	√
N566G160	528	158	119	2.2~5.5	4	4,6,8	TRIM	12-bit	-	384	√	24 I/O	2-pin	√
N566G200	638	192	144	2.2~5.5	4	4,6,8	TRIM	12-bit	-	384	√	24 I/O	2-pin	√
N566G240	768	233	174	2.2~5.5	4	4,6,8	TRIM	12-bit	-	384	√	24 I/O	2-pin	√
N566G280	896	272	204	2.2~5.5	4	4,6,8	TRIM	12-bit	-	384	√	24 I/O	2-pin	√
N566G320	1022	311	233	2.2~5.5	4	4,6,8	TRIM	12-bit	-	384	√	24 I/O	2-pin	√

• N566GP (OTP), 8-bit µC Base, 4-ch Voice + Wavetable Melody Synthesizer, w/ LVD

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	LVD	GPIO	PWM Output	Constant Current
		(6 KHz)	(8 KHz)					PWM	DAC					
N566GP120	416	124	93	2.2~5.5	4	4,6,8	TRIM	12-bit	-	384	√	24 I/O	2-pin	-
N566GP160	528	158	119	2.2~5.5	4	4,6,8	TRIM	12-bit	-	384	√	24 I/O	2-pin	-
N566GP200	638	192	144	2.2~5.5	4	4,6,8	TRIM	12-bit	-	384	√	24 I/O	2-pin	-
N566GP240	768	233	174	2.2~5.5	4	4,6,8	TRIM	12-bit	-	384	√	24 I/O	2-pin	-
N566GP280	896	272	204	2.2~5.5	4	4,6,8	TRIM	12-bit	-	384	√	24 I/O	2-pin	-
N566GP320	1022	311	233	2.2~5.5	4	4,6,8	TRIM	12-bit	-	384	√	24 I/O	2-pin	-

• N566K 8-bit µC Base, 6-ch Voice + Wavetable Melody Synthesizer, w/ LVD

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	LVD	SIM	GPIO	PWM Output	Constant Current
		(6 KHz)	(8 KHz)					PWM	DAC						
N566K080	254	74	55	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	√	24 I/O	2-pin	√
N566K120	416	124	93	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	√
N566K160	528	158	119	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	√
N566K200	638	192	144	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	√
N566K240	768	233	174	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	√
N566K280	896	272	204	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	√
N566K320	1022	311	233	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	√

• N566KP (OTP), 8-bit µC Base, 6-ch Voice + Wavetable Melody Synthesizer, w/ LVD

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	LVD	SIM	GPIO	PWM Output	Constant Current
		(6 KHz)	(8 KHz)					PWM	DAC						
N566KP081	254	74	55	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	√	24 I/O	2-pin	-
N566KP120	416	124	93	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	-
N566KP160	528	158	119	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	-
N566KP200	638	192	144	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	-
N566KP240	768	233	174	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	-
N566KP280	896	272	204	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	-
N566KP320	1022	311	233	2.2~5.5	6	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	-

• N566H 8-bit µC Base, 8-ch Voice + Wavetable Melody Synthesizer, w/ LVD

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	LVD	SIM	GPIO	PWM Output	Constant Current
		(6 KHz)	(8 KHz)					PWM	DAC						
N566H080	254	74	55	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	√	24 I/O	2-pin	√
N566H120	416	124	93	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	√
N566H160	528	158	119	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	√
N566H200	638	192	144	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	√
N566H240	768	233	174	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	√
N566H280	896	272	204	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	√
N566H320	1022	311	233	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	√

• N566HP (OTP), 8-bit µC Base, 8-ch Voice + Wavetable Melody Synthesizer, w/ LVD

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		V_{DD} (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Bytes)	LVD	SIM	GPIO	PWM Output	Constant Current
		(6 KHz)	(8 KHz)					PWM	DAC						
N566HP081	254	74	55	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	√	24 I/O	2-pin	-
N566HP120	416	124	93	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	-
N566HP160	528	158	119	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	-
N566HP200	638	192	144	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	-
N566HP240	768	233	174	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	-
N566HP280	896	272	204	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	-
N566HP321	1022	311	233	2.2~5.5	8	4,6,8	TRIM	12-bit	-	384	√	-	24 I/O	2-pin	-

*N566LP (OTP), 1.0~3.6V, 8-bit µC base, 8-ch Voice/Melody Synthesizer

Part No.	ROM (Kbytes)	Duration (Sec.) @ 4-bit NM4		Channel		V_{DD}	Fsys (MHz)	OSC	Audio		Vp (V)	RAM (Bytes)	LVD	PWM Output
		(6 KHz)	(8 KHz)	Voice	WTM				PWM	DAC				
N566LP120	416	124	93	2	8	1.0~3.6V	4,6,8	TRIM	12-bit	-	3.3, 4.2	384	√	2-pin
N566LP160	528	158	119	2	8	1.0~3.6V	4,6,8	TRIM	12-bit	-	3.3, 4.2	384	√	2-pin
N566LP200	638	192	144	2	8	1.0~3.6V	4,6,8	TRIM	12-bit	-	3.3, 4.2	384	√	2-pin
N566LP240	768	233	174	2	8	1.0~3.6V	4,6,8	TRIM	12-bit	-	3.3, 4.2	384	√	2-pin
N566LP280	896	272	204	2	8	1.0~3.6V	4,6,8	TRIM	12-bit	-	3.3, 4.2	384	√	2-pin
N566LP320	1022	311	233	2	8	1.0~3.6V	4,6,8	TRIM	12-bit	-	3.3, 4.2	384	√	2-pin

* Under Development

ViewTalk® Series

• N531A170 8-bit µC Base, 2-ch Voice + Dual Tone Melody Synthesizer w/ B/W 1K-Dot LCD Driver

Part No.	ROM (Kbytes)	Working RAM (Bytes)	Duration (Sec.)	Dual Page LCD RAM (Bytes)	GPIO	Audio		LCD Resolution (SEGxCOM)	Bias	Duty
						PWM	DAC			
N531A170	509	1K	170	128x2	16 I/O	12-bit	-	64x16	1/4, 1/5	1/8, 1/16

• W539A 8-bit µC Base, 8-ch Voice + Wavetable Melody Synthesizer w/ B/W 1K-Dot LCD Driver

Part No.	ROM (Kbytes)	Working RAM (Bytes)	Duration (Sec.)	Dual Page LCD RAM (Bytes)	GPIO	Audio		LCD Resolution (SEGxCOM)	Bias	Duty
						PWM	DAC			
W539A804	505	1K	120	128x2	24 I/O	12-bit	13-bit	64x16	1/4, 1/5	1/8, 1/16
W539A806	761	1K	180	128x2	24 I/O	12-bit	13-bit	64x16	1/4, 1/5	1/8, 1/16
W539A808	1017	1K	250	128x2	24 I/O	12-bit	13-bit	64x16	1/4, 1/5	1/8, 1/16

• N539T 8-bit µC Base, 8-ch Voice + Wavetable Melody Synthesizer w/ 4-Gray Level, 2K-Dot LCD Driver

Part No.	ROM (Kbytes)	Working RAM (Bytes)	Duration (Sec.)	Dual Page LCD RAM (Bytes)	GPIO	Audio		LCD Resolution (SEGxCOM)	PWM Output	SIM	Bias	Duty
						PWM	DAC					
N539T171	509	1K	120	256x2x2	24 I/O	12-bit	13-bit	64x32 or 72x24	6-pin	√	1/4, 1/5, 1/6, 1/7	1/16, 1/24, 1/32
N539T261	765	1K	180	256x2x2	24 I/O	12-bit	13-bit	64x32 or 72x24	6-pin	√	1/4, 1/5, 1/6, 1/7	1/16, 1/24, 1/32
N539T341	1021	1K	250	256x2x2	24 I/O	12-bit	13-bit	64x32 or 72x24	6-pin	√	1/4, 1/5, 1/6, 1/7	1/16, 1/24, 1/32
N539TP340 (OTP)	1021	1K	250	256x2x2	24 I/O	12-bit	13-bit	64x32 or 72x24	-	√	1/4, 1/5, 1/6, 1/7	1/16, 1/24, 1/32

NuVoice™ Series

• N570H, 32-bit Cortex-M0 with Embedded Flash, 10-bit ADC, Touch Wake-up

Part No.	CPU	APROM Flash	VDD(V)	SRAM	GPIO	I/O Interface	PWM Output	Audio		ADC	Touch Wakeup	Voice Recognition
								Mic.	Speaker			
N570H064	Cortex®-M0 49 MHz	64 KB	1.8~5.5	6 KB	28	SPI x 2, UART	8	√	DPWM	10-bit 5-ch	√	-
N570HC64	Cortex®-M0 49 MHz	64 KB	1.8~5.5	6 KB	28	SPI x 2, UART	8	√	DPWM	10-bit 5-ch	√	√

• N570J, 32-bit Cortex-M0 with Embedded Flash, 10-bit ADC, Touch Wake-up, Long Duration Solution

Part No.	CPU	APROM Flash	Flash Memory	V_{DD} (V)	Duration(Sec)	SRAM	GPIO	I/O Interface	PWM Output	Audio		ADC	Touch Wakeup	Package
					8KHz					Mic.	Speaker			
N570J08AL	Cortex®-M0 49 MHz	64 KB	8Mbit	2.4~5.5	1,000	6 KB	24	SPI, UART	8	√	DPWM	10-bit 5-ch	√	LQFP48
N570J16AL	Cortex®-M0 49 MHz	64 KB	16Mbit	2.4~5.5	2,000	6 KB	24	SPI, UART	8	√	DPWM	10-bit 5-ch	√	LQFP48
N570J32AL	Cortex®-M0 49 MHz	64 KB	32Mbit	2.4~5.5	4,000	6 KB	24	SPI, UART	8	√	DPWM	10-bit 5-ch	√	LQFP48
N570J01GR	Cortex®-M0 49 MHz	64 KB	1Gbit	2.4~5.5	128,000	6 KB	24	SPI, UART	8	√	DPWM	10-bit 5-ch	√	LQFP64

• N572, 32-bit Cortex M0 with Embedded OTP/Flash and 12-bit ADC Solution

Part No.	CPU	APROM Flash	Flash Memory	V_{DD} (V)	Duration(Sec)	SRAM	I/O	I/O Interface	PWM Output	Audio		LDO	ADC	Other	Package
					8KHz					Mic.	Speaker				
N572F072	Cortex®-M0 48 MHz	72 KB	-	2.4~5.5	-	8 KB	32	SPI x 2	4	√	Class-AB (400mW)	√	12-bit 8-ch	-	LQFP64
N572C072	Cortex®-M0 48 MHz	72 KB	-	2.4~5.5	-	8 KB	32	SPI x 2	4	√	Class-AB (400mW)	√	12-bit 8-ch	Voice Recognition	LQFP64
N572F065	Cortex®-M0 48 MHz	64 KB	-	2.4~5.5	-	8 KB	32	SPI x 2	4	√	Class-AB (250mW)	√	12-bit 8-ch	USB 2.0 FS Device	LQFP64
N572S16A	Cortex®-M0 48 MHz	64 KB	16Mbit	2.4~5.5	2,000	8 KB	26	SPI	4	√	Class-AB (400mW)	√	12-bit 8-ch	-	LQFP64
N572S32A	Cortex®-M0 48 MHz	64 KB	32Mbit	2.4~5.5	4,000	8 KB	26	SPI	4	√	Class-AB (400mW)	√	12-bit 8-ch	-	LQFP64
N572S64A	Cortex®-M0 48 MHz	64 KB	64Mbit	2.4~5.5	8,000	8 KB	26	SPI	4	√	Class-AB (400mW)	√	12-bit 8-ch	-	LQFP64
N572U130	Cortex®-M0 48 MHz	64 KB	128Mbit	2.4~5.5	16,000	8 KB	22	SPI	4	√	Class-AB (250mW)	√	12-bit 8-ch	USB 2.0 FS Device	LQFP64

• N573, 32-bit Cortex-M0 with Embedded Flash and 16-bit ADC Solution

Part No.	CPU	APROM Flash	Flash Memory	V_{DD} (V)	Duration(Sec)	SRAM	I/O	I/O Interface	PWM Output	Audio		LDO	ADC	Other	Package
					8KHz					Mic.	Speaker				
N573F128	Cortex®-M0 48 MHz	128 KB	-	1.8~5.5	-	12 KB	32	UART, I²C, I²S, SPI	4	√	DPWM (1W)	√	16-bit sigma delta, 12-bit 10-ch SAR ADC	16-ch Touch Key, PDMA, CRC	LQFP64

* N574F, 32-bit Cortex-M0 with Embedded Flash, 10 bit ADC, Cap Touch

Part No.	CPU	APROM Flash	V_{DD} (V)	Duration (Sec.)		SRAM	GPIO	I/O Interface	PWM Output	Audio		ADC	Cap Touch	Voice Recognition	I2C
				8KHz	12KHz					Mic.	Speaker				
N574F256	Cortex®-M0	256 KB	1.8~5.5	220	146	12 KB	40	SPI, UART, LED String	12	√	DPWM	10-bit 5-ch	12	-	-
N574C256	Cortex®-M0	256 KB	1.8~5.5	220	146	12 KB	40	SPI, UART, LED String	12	√	DPWM	10-bit 5-ch	12	√	-
N574F512	Cortex®-M0	512 KB	1.8~5.5	462	308	12 KB	40	SPI, UART, LED String	12	√	DPWM	10-bit 5-ch	12	-	-
N574C512	Cortex®-M0	512 KB	1.8~5.5	462	308	12 KB	40	SPI, UART, LED String	12	√	DPWM	10-bit 5-ch	12	√	-
N574F1K0	Cortex®-M0	1024 KB	1.8~5.5	948	632	12 KB	40	SPI, UART, LED String	12	√	DPWM	10-bit 5-ch	16	-	√
N574C1K0	Cortex®-M0	1024 KB	1.8~5.5	948	632	12 KB	40	SPI, UART, LED String	12	√	DPWM	10-bit 5-ch	16	√	√
N574F1K5	Cortex®-M0	1536 KB	1.8~5.5	1433	955	12 KB	40	SPI, UART, LED String	12	√	DPWM	10-bit 5-ch	16	-	√
N574C1K5	Cortex®-M0	1536 KB	1.8~5.5	1433	955	12 KB	40	SPI, UART, LED String	12	√	DPWM	10-bit 5-ch	16	√	√

* Under Development

• N575, 32-bit Cortex-M0 with Embedded Flash and 16-bit ADC Solution

Part No.	CPU	APROM Flash	Flash Memory	V_{DD} (V)	Duration(Sec)	SRAM	I/O	I/O Interface	PWM Output	Audio		LDO	ADC	Other	Package
					8KHz					Mic.	Speaker				
N575F145	Cortex®-M0 48 MHz	145 KB	-	2.4~5.5	-	12 KB	24	UART, I²C, I²S, SPI	2	√	DPWM (1W)	√	16-bit, sigma delta	8-ch Touch Key, Temperature Alarm, PDMA, CRC	LQFP48
N575C145	Cortex®-M0 48 MHz	145 KB	-	2.4~5.5	-	12 KB	24	UART, I²C, I²S, SPI	2	√	DPWM (1W)	√	16-bit, sigma delta	8-ch Touch Key, Temperature Alarm, PDMA, CRC, Voice Recognition	LQFP48
N575S64A	Cortex®-M0 48 MHz	145 KB	64 Mbit	2.4~5.5	8,000	12 KB	20	UART, I²C, I²S, SPI	2	√	DPWM (1W)	√	16-bit, sigma delta	8-ch Touch Key, Temperature Alarm, PDMA, CRC	LQFP64

Peripheral Series

Nu-Touch

• N55T Capacitor Sensor Controller

Part No.	Input	Wake Up	V_{DD}(V)	Interface
N55T16	16	√	2.1~5.5	I²C, SPI

ADC

• N55AD SAR ADC

Part No.	Channel	Resolution	V_{DD}(V)	Conversion Rate
N55AD808	8	8-bit	2.7~5.5	50 KHz

I/O Expander

• N55P242 I/O Expander w/ 24 I/O Pins and SPI Interface

Part No.	Interface	GPIO	Wake Up	H/W PWM	Constant Current	Internal OSC
N55P242	SPI	24 I/O	√	24-pin	24-pin	8 MHz

* Under Development

MFID Family

• W55MID 13.56MHz MFID w/ Single-Tag/Multi-Tag and Reader

Part No.	Category	Frequency (MHz)	ID type	ID No.	Anti-collision	µC Interface
W55MID15	Single-tag	13.56	Bonding-ID	243	-	-
W55MID35	Multi-tag	13.56	Bonding-ID	243	4~6 tags	-
W55MID50	Reader	13.56	-	-	-	Serial/Parallel

• N55MID, 13.56MHz MFID w/ Single-Tag/Multi-Tag and Reader

Part No.	Category	Frequency (MHz)	ID type	ID No.	Anti-collision	µC Interface
N55MID16	Single-tag	13.56	Bonding-ID	729	-	-
N55MID36	Multi-tag	13.56	Bonding-ID	729	4~6 tags	-
N55MID51	Reader	13.56	-	-	-	Serial/Parallel

Serial ROM Family

• N551C Serial Mask ROM

Part No.	ROM (bits)	Access Time	V_{DD}(V)	Interface
N551C161	16M	1us	2.4~5.5	SPI
N551C321	32M	1us	2.4~5.5	SPI

PWM Power Amplifier

N55PA, PWM Power Amplifier

Part No.	VDD (V)	Mute Function	Gain Control	MIC Line In	Output Power	Package
N55PA01A	2.0~5.5V	Yes	Ext. R	Yes	1W (@ 5.5V, 8Ω, THD + N =1%)	SOP8
***N55PA03A**	2.0~5.5V	Yes	Ext. R	Yes	3W (@ 5.5V, 4Ω, THD + N =1%)	SOP8

NSP Series

• NSPxx, Embedded Flash, 1-ch Voice for Voice Prompt Application

Part No.	Package	Duration(Sec)		V_{DD} (V)	LVR (V)	Speech CH	Audio	REG Pin	Interface to MCU	ISP	Operation Temperature
		8KHz	12KHz				PWM				
NSP040A	SOP8	60	40	2.0~5.5	1.9	1	13-bit		2-Wire	No	-20°C~ 85°C
NSP081A	SOP8	94	63	2.0~5.5	1.9	1	13-bit		2-Wire	Yes	-20°C~ 85°C
NSP082A	SOP8	94	63	2.0~5.5	1.9	1	13-bit	√	2-Wire	Yes	-20°C~ 85°C
NSP171A	SOP8	155	103	2.0~5.5	1.9	1	13-bit		2-Wire	Yes	-20°C~ 85°C
NSP172A	SOP8	155	103	2.0~5.5	1.9	1	13-bit	√	2-Wire	Yes	-20°C~ 85°C
NSP340A	SOP8	337	225	2.0~5.5	1.9	1	13-bit		2-Wire	Yes	-20°C~ 85°C
NSP341A	SOP8	337	225	2.0~5.5	1.9	1	13-bit	√	2-Wire	Yes	-20°C~ 85°C
NSP481A	SOP8	458	305	2.0~5.5	1.9	1	13-bit		2-Wire	Yes	-20°C~ 85°C
NSP080B	SOP14	94	63	2.0~5.5	1.9	1	13-bit	√	2-Wire	Yes	-20°C~ 85°C
NSP170B	SOP14	155	103	2.0~5.5	1.9	1	13-bit	√	2-Wire	Yes	-20°C~ 85°C
NSP340B	SOP14	337	225	2.0~5.5	1.9	1	13-bit	√	2-Wire	Yes	-20°C~ 85°C
NSP480B	SOP14	458	305	2.0~5.5	1.9	1	13-bit	√	2-Wire, UART	Yes	-20°C~ 85°C
NSP650B	SOP14	701	467	2.0~5.5	1.9	1	13-bit	√	2-Wire, UART	Yes	-20°C~ 85°C
NSP960B	SOP14	944	629	2.0~5.5	1.9	1	13-bit	√	2-Wire, UART	Yes	-20°C~ 85°C

• NSP2xxx, Embedded Flash, 2-ch Voice for Voice Prompt Application w/ I2C and UART

Part No.	Package	Duration(Sec)		V_{DD} (V)	LVR (V)	Speech CH	Audio	REG Pin	Interface to MCU	ISP
		12KHz	16KHz				PWM			
NSP2080A	SOP8	144	108	1.8~5.5	1.9	2	13-bit	√	I2C, UART	Yes
NSP2170A	SOP8	225	168	1.8~5.5	1.9	2	13-bit	√	I2C, UART	Yes
NSP2340A	SOP8	467	350	1.8~5.5	1.9	2	13-bit	√	I2C, UART	Yes

• NSPxx, Embedded OTP, 1-ch Voice for Voice Prompt Application

Part No.	Package	Duration(Sec)		V_{DD} (V)	LVR (V)	Speech CH	Audio
		8KHz	12KHz				PWM
NSP075A	SOP8	81	49	2.0~5.5	2.0	1	12-bit
NSP165A	SOP8	162	97	2.0~5.5	2.0	1	12-bit
NSP335A	SOP8	324	194	2.0~5.5	2.0	1	12-bit
NSP075B	SOP14	81	49	2.0~5.5	2.0	1	12-bit
NSP165B	SOP14	162	97	2.0~5.5	2.0	1	12-bit
NSP335B	SOP14	324	194	2.0~5.5	2.0	1	12-bit

ARM® Cortex®-M Audio SoCs

• AUI Enabled Series-M0

Part No.	CPU	APROM	SRAM	I/O	Timer	SPI	PWM	ADC	RTC	Audio		Developemnt Tools	Other	Package
										MIC.	Speaker			
ISD91032	Cortex®-M0 49 MHz	64 KB	6 KB	22	3	1	8	10-bit SAR ADC	√	1	Class-D (0.45W)	ISD-DMK_91032C	13-bit DAC, UART	LQFP48
ISD91032C	Cortex®-M0 49 MHz	64 KB	6 KB	22	3	1	8	10-bit SAR ADC	√	1	Class-D (0.45W)	ISD-DMK_91032C	VR, 13-bit DAC, UART	LQFP48
ISD9130	Cortex®-M0 49 MHz	68 KB	12 KB	24	2	1	2	Sigma-Delta >92 dB	√	1	Class-D (1W)	ISD-DMK_9160	8-ch Touch Key, Temperature Alarm, UART, I²C, I²S, PDMA, CRC	LQFP48 QFN32
ISD9160	Cortex®-M0 49 MHz	145 KB	12 KB	24	2	1	2	Sigma-Delta >92 dB	√	1	Class-D (1W)	ISD-DMK_9160	8-ch Touch Key, Temperature Alarm, UART, I²C, I²S, PDMA, CRC	LQFP48 QFN32
ISD9160C	Cortex®-M0 49 MHz	145 KB	12 KB	24	2	1	2	Sigma-Delta >92 dB	√	1	Class-D (1W)	ISD-DMK_9160	VR, 8-ch Touch Key,Temperature Alarm,UART, I²C, I²S, PDMA, CRC	LQFP48 QFN32
ISD91230	Cortex®-M0 49 MHz	64 KB	12 KB	32	2	2 (Quad /Dual)	4	Sigma-Delta >90 dB	√	1	Class-D (0.45W)	ISD-DMK_91260	16-ch Touch Key,Temperature Alarm,2*UART, I²C, I²S, PDMA, CRC	LQFP64 QFN32
ISD91230B	Cortex®-M0 49 MHz	64 KB	12 KB	32	2	2 (Quad/ Dual)	4	Bridge Sense ADC, 24-bit	√	-	Class-D (0.45W)	ISD-DMK_91260B	16-ch Touch Key, Temperature Alarm, 2*UART, I²C, I²S, PDMA, CRC	LQFP64
ISD91260	Cortex®-M0 49 MHz	128 KB	12 KB	32	2	2 (Quad /Dual)	4	Sigma-Delta >90 dB	√	1	Class-D (0.45W)	ISD-DMK_91260	16-ch Touch Key,Temperature Alarm, 2*UART, I²C, I²S, PDMA, CRC	LQFP64 QFN32
ISD91260B	Cortex®-M0 49 MHz	128 KB	12 KB	32	2	2 (Quad/ Dual)	4	Bridge Sense ADC, 24-bit	√	-	Class-D (0.45W)	ISD-DMK_91260B	16-ch Touch Key, Temperature Alarm, 2*UART, I²C, I²S, PDMA, CRC	LQFP64
ISD91260C	Cortex®-M0 49 MHz	128 KB	12 KB	32	2	2 (Quad/ Dual)	4	Sigma-Delta >90 dB	√	1	Class-D (0.45W)	ISD-DMK_91260	VR, 16-ch Touch Key, Temperature Alarm, 2*UART, I²C, I²S, PDMA, CRC	LQFP64 QFN32
ISD91331	Cortex®-M0 98 MHz	68 KB	16 KB	32	2	1 (Quad)	6	Sigma-Delta >90 dB	√	1	Class-D (1W)	ISD-DMK_91300	16-ch Touch Key,Temperature Alarm, UART, I²C, I²S, PDMA, CRC	LQFP64
ISD91361	Cortex®-M0 98 MHz	145 KB	16 KB	32	2	1 (Quad)	6	Sigma-Delta >90 dB	√	1	Class-D (1W)	ISD-DMK_91300	16-ch Touch Key, Temperature Alarm, UART, I²C, I²S, PDMA, CRC	LQFP64
ISD91361C	Cortex®-M0 98 MHz	145 KB Flash	16 KB	32	2	1 (Quad)	6	Sigma-Delta >90 dB	√	1	Class-D (1W)	ISD-DMK_91300	VR, 16-ch Touch Key, Temperature Alarm, UART, I²C, I²S, PDMA, CRC	LQFP64
ISD91530	Cortex®-M0 49 MHz	64 KB Flash	12KB	50	3	2 (Quad/ Dual)	2	12-bit SAR ADC	√	1	Class-AB (20mW)	ISD-DMK_91500	USB 2.0 FS	LQFP64 QFN48
ISD91535	Cortex®-M0 49 MHz	64 KB Flash	20KB	50	3	2 (Quad/ Dual)	2	12-bit SAR ADC	√	1	Class-AB (20mW)	ISD-DMK_91500	USB 2.0 FS	LQFP64 QFN348

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• AUI Enabled Series-M4

Part No.	CPU	APROM	SRAM	I/O	Timer	SPI	PWM	ADC	RTC	Audio		Developemnt Tools	Other	Package	Status*
										MIC.	Speaker				
ISD94124A	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	3 (1 x Quad/ Dual)	6	12-bit SAR ADC	√	4x DMIC	DPWM to exteral amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS VAD	LQFP64, QFN48	P
ISD94124B	Cortex®-M4 200 MHz, Basic fetaure	512 KB	192 KB	57	4	3 (1 x Quad/ Dual)	6	12-bit SAR ADC	√	-	-	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS	LQFP64 QFN48	P

Part No.	CPU	APROM	SRAM	I/O	Timer	SPI	PWM	ADC	RTC	Audio		Developemnt Tools	Other	Package	Status*
										MIC.	Speaker				
ISD94124C	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	3 (1 x Quad/ Dual)	6	12-bit SAR ADC	√	4x DMIC	DPWM to exteral amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	VR, USB 2.0 FS VAD	LQFP64 QFN48	P
ISD94124D	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	3 (1 x Quad/ Dual)	6	12-bit SAR ADC	√	4x DMIC	DPWM to exteral amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	BF+NR, USB 2.0 FS VAD	LQFP64	P
ISD94124P	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	3 (1 x Quad/ Dual)	6	12-bit SAR ADC	√	4x DMIC	DPWM to exteral amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	BF+NR+VR, USB 2.0 FS VAD	LQFP64	P
ISD94124S	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	3 (1 x Quad/ Dual)	6	12-bit SAR ADC	√	4x DMIC	DPWM to exteral amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	AEC+NR, USB 2.0 FS VAD	LQFP64 QFN48	P
ISD941A24A	Cortex®-M4 200MHz, Stereo CODEC MCP	512 KB	192 KB	29	4	3 (1 x Quad/ Dual)	6	12-bit SAR ADC	√	4x DMIC	DPWM to exteral amp	ISD-DEMO941A24	USB 2.0 FS VAD	LQFP64	P
ISD941A24S	Cortex®-M4 200MHz, Stereo CODEC MCP	512 KB	192 KB	29	4	3 (1 x Quad/ Dual)	6	12-bit SAR ADC	√	4x DMIC	DPWM to exteral amp	ISD-DEMO941A24	AEC+NR, USB 2.0 FS VAD	LQFP64	P
ISD94123B	Cortex®-M4 200 MHz	512 KB Flash	128 KB	57	4	3 (1 x Quad/ Dual)	6	12-bit SAR ADC	√	-	-	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS	LQFP64 QFN48	P
ISD94123S	Cortex®-M4 200 MHz	512 KB	128 KB	41	4	3 (1 x Quad/ Dual)	5	12-bit SAR ADC	√	4x DMIC	DPWM to exteral amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	AEC+NR, USB 2.0 FS VAD	QFN48	P
ISD94113A	Cortex®-M4 200 MHz	256 KB	128 KB	57	4	3 (1 x Quad/ Dual,)	6	12-bit SAR ADC	√	4x DMIC	DPWM to exteral amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS VAD	LQFP64 QFN48	P
ISD94113B	Cortex®-M4 200 MHz	256 KB	128 KB	57	4	3 (1 x Quad/ Dual)	6	12-bit SAR ADC	√	-	-	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS	LQFP64 QFN48	P
ISD94113S	Cortex®-M4 200 MHz	256 KB	128 KB	57	4	3 (1 x Quad/ Dual)	6	12-bit SAR ADC	√	4x DMIC	DPWM to exteral amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	AEC+NR, USB 2.0 FS VAD	LQFP64 QFN48	P

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Audio Converters

• Mono Codec Series

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	CTRL IF	SPKVDD/ Analog/Digital/ Digital I/O (V)	Package (mm)
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU8810	Mono Codec with 2-wire interface	1	1	91	93	-79	-84	8~48	I²S PCM (Timeslot)	NAU8810-DEMO	2-Wire	2.50~5.50 2.50~3.60 1.71~3.60 1.71~3.60	QFN20 (4x4)
NAU88C10	Mono Codec with 2-wire interface	1	1	91	93	-79	-84	8~48	I²S PCM (Timeslot)	NAU88C10-DEMO	2-Wire	2.50~5.50 2.50~3.60 1.71~3.60 1.71 ~ 3.60	QFN20 (4x4)
NAU88U10	AEC-Q100 Automotive Grade Mono Codec with 2-wire interface.	1	1	91	93	-79	-84	8~48	I²S PCM (Timeslot)	NAU88C10-DEMO	2-Wire	2.50 ~ 5.50 2.50 ~ 3.60 1.71 ~ 3.60 1.71 ~ 3.60	QFN20 (4x4)
NAU8812	Mono Codec with speaker driver	1	1	91	93	-79	-84	8~48	I²S PCM (Timeslot)	NAU8812-DEMO	2-Wire 3-Wire 4-Wire	2.50 ~ 5.50 2.50 ~ 3.60 1.71 ~ 3.60 1.71 ~ 3.60	QFN32 (5x5) SSOP-28
NAU8814	Mono Audio Codec with Equalizer, speaker driver	1	1	91	93	-79	-84	8~48	I²S PCM (Timeslot)	NAU8814-DEMO	2-Wire 3-Wire	2.50 ~ 5.50 2.50 ~ 3.60 1.71 ~ 3.60 1.71 ~ 3.60	QFN24 (4x4)
NAU88C14	Mono Audio Codec with Equalizer, speaker driver	1	1	91	93	-79	-84	8~48	I²S PCM (Timeslot)	NAU88C14-DEMO	2-Wire 3-Wire	2.50 ~ 5.50 2.50 ~ 3.60 1.71 ~ 3.60 1.71 ~ 3.60	QFN24 (4x4)

• Stereo Codec Series

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	CTRL IF	SPKVDD/ Analog/Digital/ Digital I/O (V)	Package (mm)	Status*
		ADC	DAC	ADC	DAC	ADC	DAC							
NAU8822A	Stereo Codec with Speaker Drive	2	2	90	94	-80	-84	8~48	I²S PCM (Timeslot)	NAU8822A-DEMO	2-Wire 3-Wire 4-Wire	2.50 ~ 5.50 2.50 ~ 3.60 1.65 ~ 3.60 1.65 ~ 3.60	QFN32 (5x5)	P
NAU88U22A	AEC-Q100 Automotive Grade Stereo Codec with Speaker Drive	2	2	90	94	-80	-84	8~48	I²S PCM (Timeslot)	NAU8822A-DEMO	2-Wire 3-Wire 4-Wire	2.50 ~ 5.50 2.50 ~ 3.60 1.65 ~ 3.60 1.65 ~ 3.60	QFN32 (5x5)	P
NAU88C22	Stereo Codec with Speaker Drive	2	2	89	89	-78	-84	8~192	I²S PCM (Timeslot)	NAU88C22-DEMO	2-Wire 3-Wire 4-Wire	2.50 ~ 5.50 2.50 ~ 3.60 1.65 ~ 3.60 1.65 ~ 3.60	QFN32 (5x5) QFN32 (4x4)	P
NAU8820	Stereo Codec	2	2	90	94	-80	-84	8~48	I²S PCM (Timeslot)	NAU8820-DEMO	2-Wire 3-Wire 4-Wire	2.50 ~ 5.50 2.50 ~ 3.60 1.65 ~ 3.60 1.65 ~ 3.60	QFN32 (5x5)	P

• Ultra Low Power (ULP) Codec Series

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	CTRL IF	SPKVDD/ MICBIAS/ Analog/Digital/ Digital I/O (V)	Package (mm)	Status*
		ADC	DAC	ADC	DAC	ADC	DAC							
NAU88L21	ULP Stereo CODEC with Class-G Headphone Driver	2	2	103	105	-91	-80	8~192	I²S (TDM) PCM (Timeslot)	NAU88L21-DEMO	I²C	NA 3.0 ~ 3.6 1.62 ~ 1.98 N/A 1.62 ~ 3.6	QFN32 (5x5)	P

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Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	CTRL IF	SPKVDD/ MICBIAS/ Analog/Digital/ Digital I/O (V)	Package (mm)	Status*
		ADC	DAC	ADC	DAC	ADC	DAC							
NAU88L11	ULP Mono CODEC with Class-G Headphone Driver	1	1	103	105	-93	-85	8~96	I²S (TDM) PCM (Timeslot)	NAU88L11-DEMO	I²C	NA 3.0 ~ 3.6 1.62 ~ 1.98 N/A 1.62 ~ 3.6	QFN20 (4x4)	P
NAU88L20*	ULP Stereo CODEC with I2S/PCM interface and digital mixer	2	2	98	100	-91	-85	8~96	I²S (TDM) PCM (Timeslot)		I²C	NA 3.0 ~ 3.6 1.6 ~ 3.6 1.6 ~ 3.6 1.6 ~ 3.6	QFN32 (4x4)	2022Q1 MP*
NAU88L24	ULP Stereo CODEC With Advanced Headset Detection and Stereo Class D Amp	2	2	100	103	-85	-77	8~96	I²S (TDM) PCM (Timeslot)	NAU88L24I-DEMO	I²C	2.5 ~ 5.0 2.5 ~ 5.0 1.6 ~ 2.0 1.1 ~ 1.98 1.6 ~ 3.6	QFN48 (6x6)	P
NAU88L25B	Ultra-Low Power Audio CODEC With Advanced Headset Features and 124dB Class G Headphone Drive	1	2	101	124	-91	-89	8~192	I²S / PCM	NAU88L25-DEMO	I²C	NA 2.6 ~ 5.0 1.6 ~ 2.0 1.1 ~ 1.98 1.6 ~ 3.6	QFN32 (5x5)	P

• Stereo ADC Series

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	CTRL IF	Analog/Digital/ Digital I/O (V)	Package (mm)
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU8501	Stereo ADC with Input Mixer and Line Output	2	-	90	-	-80	-	8~48	I²S (TDM) PCM (Timeslot)	NAU8501-DEMO	2-Wire 3-Wire 4-Wire	2.50 ~ 3.60 1.65 ~ 3.60 1.65 ~ 3.60	QFN32 (5x5)
NAU8502	Stereo ADC with Integrated LDO	2	-	90	-	-80	-	8~48	I²S (TDM) PCM (Timeslot)	NAU8502-Card	2-Wire 3-Wire 4-Wire	2.70 ~ 3.60 1.71 ~ 3.60 1.71 ~ 3.60	QFN32 (5x5)

• Ultra Low Power (ULP) ADC Series

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	CTRL IF	MICBIAS/ Analog/Digital/ Digital I/O (V)	Package (mm)
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU85L20	ULP Stereo Audio ADC with integrated FLL and Microphone Preamplifier	2	-	101	-	-91	-	8~96	I²S (TDM)	NAU85L20-DEMO	I²S	1.80 ~ 5.50 1.62 ~ 1.98 1.20 ~ 1.98 1.62 ~ 3.60	QFN28 (4x4)
NAU85L40	ULP Quad Audio ADC with integrated FLL and Microphone Preamplifier	4	-	101	-	-91	-	8~96	I²S (TDM)	NAU85L40-DEMO	I²S	2.50 ~ 5.50 1.62 ~ 1.98 1.20 ~ 1.98 1.62 ~ 3.60	QFN28 (4x4)

• Stereo DAC Series

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	CTRL IF	SPKVDD/ Analog/Digital/ Digital I/O (V)	Package (mm)
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU8401	Stereo DAC with Speaker Drive and Line Input	-	2	-	94	-	-84	8~48	I²S PCM (Timeslot)	NAU8401-DEMO	2-Wire 3-Wire 4-Wire	2.50 ~ 5.50 2.50 ~ 3.60 1.65 ~ 3.60 1.65 ~ 3.60	QFN32 (5x5)
NAU8402	Stereo DAC with 2Vrms Output	-	2	-	98	-	-82	8~96	I²S	NAU8402-Card	-	NA 3.0 ~ 3.6 1.7 ~ 3.6 1.7 ~ 3.6	TSSOP 16

• Precision ADC Series

Part No.	Description	Resolution Bits	Sample Rates (max)	Architectur	Gain	# of Input Channels	Development Tools	ENOB (Gain=1,10SPS)	Package	Satus*
NAU7802	Dual Channel 24-bit ADC	24	10, 20, 40,80 & 320Hz	Sigma-Delta	1x, 2x, 4x,8x, 16x,32x, 64x,128x	2	N/A	23	SOP-16, PDIP-16	P

*Status: P=Mass Production

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Audio Amplifiers

• 2Vrms Line Driver and Class-AB Series

Part No.	Description	SNR (dB)	Output Power		Gain (dB)	Standby Current (uA)	Operating Voltage (V)	Temp (°C)	Development Tools	Package
			Power (W)	THD+N (%)						
NAU8220	2Vrms Line Driver	108	-	0.003	-	-	3.0~3.6	-40~85	NAU8220WG-EVB	SOP14 TSSOP14
ISD8101	1.5W Class-AB Audio Amplifier with Chip Enable, Differential/ Single ended inputs, Low pop and Click	100	0.825 (5.0V)	<1	20	<1	2.4~6.8	-40~85	ISD-DEMO8101	8-pin SOP 8-pin PDIP
			1.1 (5.0V)	<10						
			1.5 (6.8V)	<10						
ISD8102	2W Class-AB Audio Amplifier with Head Phone Sense Input	100	2W into 4Ω at 5V	<10	20	<1	2.0~6.8	-40~85	ISD-DEMO8102	8-pin SOP (Thermal ex-pad)
ISD8104	2W Class-AB Audio Amplifier, Differential/Single ended inputs	100	2W into 4Ω at 5V	<10	20	<1	2.0~6.8	-40~85	ISD-DEMO8104	8-pin SOP (Thermal ex-pad)P

• Class D Series

Part No.	Description	Output Power		Gain (dB)	Standby Current (uA)	Operating Voltage (V)	Temp (°C)	Development Tools	Package	Status*
		Power (W)	THD+N (%)							
NAU82011	3.1W Mono Class-D Audio Amplifier, variable gain with Differential / Single ended inputs	3.1W into 4Ω at 5V	<10	Variable	<1	2.5~5.5	-40~85	NAU82011VG-EVB	QFN16 WCSP-9	P
NAU82039	3.2W Mono Class-D Audio Amplifier, variable gain with Differential / Single ended inputs	3.2W into 4Ω at 5V	<10	12dB	<1	2.5~5.5	-40~85		WLCSP-9	P

• Class D Series

Part No.	Description	Output Power		Gain (dB)	Standby Current (uA)	Operating Voltage (V)	Temp (°C)	Development Tools	Package	Status*
		Power (W)	THD+N (%)							
NAU8223	3.1W Stereo Filer-Free Class-D Audio Amplifier, 5 gain steps with Differential / Single ended inputs	3.1W into 4Ω at 5V	<10	0, 6, 12, 18, 24	<1	2.5~5.5	-40~85	NAU8223-EVB	QFN20	P
NAU8224	3.1W Stereo Filer-Free Class-D Audio Amplifier, 2 wire interface gain control with Differential / Single ended inputs	3.1W into 4Ω at 5V	<10	24 ~ -62	<1	2.5~5.5	-40~85	NAU8224-EVB	QFN20	P
NAU8315	I2S, 3.2W Mono Filer-Free Class-D Audio Amplifier, with I2S input	3.2W into 4Ω at 5V	<10	3, 6, 9, 12	typ. 0.3	SPK_VDD: 2.5 - 5.25 IO_Vdd: 1.8 - 5.25	-40~85	NAU8325-DEMO	QFN20 WLCSP-9 WLCSP-12	P
NAU8325	I2S, 3.1W Stereo Filer-Free Class-D Audio Amplifier, 2 wire interface	3.0W into 4Ω at 5V	<10	24 ~ -62	<2	SPK_VDD: 2.5 - 5.5 A_Vdd: 1.62 - 1.98 IO_Vdd: 1.62 - 3.6	-40~85	NAU8325-DEMO	QFN20	P
NAU83P20	Class D power stage 2x20W into 8Ohms (1% THD)	10Wx4 20Wx2	<0.18	3BTL / 3SE	<1	7.0~24.0	-40~85	NAU83P20-DEMO	QFN48	P

• Smart Amplifier

Part No.	Description	Output Power	Operating Voltage (V)	Speaker Protection	Speaker Channel	Audio Interface	Package	Status
NAU8331VG	8W Mono Boosted Class D Amplifier	8W @ 4Ω 6W @ 8Ω	2.9~5.5	External DSP	Mono	I2S, PCM, TDM	WLCSP 35 Balls with 0.5mm Pitch	P
NAU83G10VG	12W Mono Boosted Class D with Klippel Controlled Sound DSP	8W @ 4Ω 6.5W @ 8Ω	2.9~5.5	Integrated DSP	Mono	I2S, PCM, TDM	WLCSP 50 Balls swith 0.5mm Pitch	P
NAU83G20VG	20W Mono Boosted Class D with Klippel Controlled Sound DSP	20W @ 4Ω 11W @ 8Ω	Up to 14	Integrated DSP	Mono	I2S, PCM, TDM	WLCSP 50 Balls with 0.5mm Pitch	P

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Audio Enhancement

Part No.	Description	HW Configuration					Algorithms									
		I²S Stereo Inputs	ADC Stereo Inputs	I²S Output 2 x Stereo	DAC Single Output	Power Output	Bass	Pro. Eq.	3D	Treble	Volume	Level	Dialog	DRC	V3D	Package
NPCP215F	MaxxAudio	4	0	3	0	20W (8R)	Y	Y	Y	Y	Y	Y	Y	-	-	QFN48
NPCA112D	MaxxAudio	4	0	3	0	-	Y	Y	Y	Y	Y	Y	Y	-	-	QFN32
NPCA110P	MaxxAudio	2	3	3	4	-	Y	Y	Y	Y	Y	Y	Y	-	-	QFN40
NPCA110T	MaxxAudio	3	0	3	3	-	Y	Y	Y	Y	Y	Y	Y	-	-	QFN32
NPCA110D	MaxxAudio	3	0	3	0	-	Y	Y	Y	Y	Y	Y	Y	-	-	QFN32
NPCA110B	MaxxAudio	1	2	1	2	-	Y	Y	-	-	Y	-	-	-	-	QFN32
NPCA120D	DPS	2	0	2	0	-	Y	Y	Y	Y	Y	Y	Y	Y	-	LQFP64
NPCA121D	DPS	3	0	3	0	-	Y	Y	Y	Y	Y	Y	Y	Y	Y	LQFP64

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ChipCorder® Family

• Digital ChipCorder® Series

Part No.	Description	Duration	Sample Rate (KHz)	Operating Voltage (V)	Package	Development Tools	Temp (°C)	Status*
ISD15102	Multi-message record/playback, Flash memory, I²S digital audio and SPI interfaces	2 min	Up to 48	2.7~3.6	LQFP48	ISD-DMK_15100	Industrial -40~85°C	P
ISD15104		4 min						
ISD15108		8 min						
ISD15C00	Multi-message record/playback with I²S digital audio and SPI interfaces	Ext. Flash up to 64 min	Up to 48	2.7~3.6	LQFP48	ISD-DMK_15C00	AEC-Q100	P
ISD15D00	Multi-message playback-only with I²S digital audio and SPI interfaces	Ext. Flash up to 64 min	Up to 48	2.7~5.5	QFN32	ISD-DMK_15D00	AEC-Q100	P
ISD3900	Multi-message record/playback with I²S digital audio and SPI interfaces	Ext. Flash up to 64 min	Up to 48	2.7~3.6	LQFP48	ISD-DMK_3900	Industrial -40~85°C	P
ISD3800	Multi-message playback-only with I²S digital audio and SPI interfaces	Ext. Flash up to 64 min	Up to 48	2.7~5.5	LQFP48 QFN32	ISD-DMK_3800	Industrial -40~85°C	P
ISD2130	Multi-message playback-only with embedded Flash memory	30 sec	Up to 32	2.7~3.6	QFN20 SOP14	ISD-DMK_2100	Industrial -40~85°C	P
ISD2115A		15 sec				ISD-DMK_2100		P
ISD2360	Multi-message, 3-channel audio, playback-only with embedded Flash memory	64 sec	Up to 32	2.4~5.5	QFN32 SOP16	ISD-DMK_2360	Industrial -40~85°C	P
ISD2361	Multi-message, 3-channel audio, playback-only with embedded Flash and SPI Interface	64 sec + Ext. Flash up to 1024 min	Up to 32	2.4~5.5	QFN32 SOP16	ISD-DMK_2361	Industrial -40~105°C	P

• MLS ChipCorder® Series

Part No.	Description	Duration	Sample Rate (KHz)	Operating Voltage (V)	Package	Development Tools	Temp (˚C)
ISD14B20	Multi-message record/playback with internal Flash memory	10~128 sec	4~12	2.4~5.5	DIE	ISD-COB18B20	0~50°C
ISD14B40						ISD-COB18B24	
ISD14B80						ISD-COB18B80	
ISD1916	Multi-message record/playback with internal Flash memory	10~128 sec	4~12	2.4~5.5	SOIC 28	ISD-DEMO1964	Industrial -40~85°C
ISD1932							
ISD1964							

Part No.	Description	Duration	Sample Rate (KHz)	Operating Voltage (V)	Package	Development Tools	Temp (˚C)
ISD1610B	Single-message record/playback with internal Flash memory	6~40 sec	4~12	2.4~5.5	SOIC 16 DIE	I16-COB20	Commercial Industrial
ISD1616B							
ISD1620B							
ISD1730	Multi-message record/playback, internal Flash memory and SPI interface	20~480 sec	4~12	2.4~5.5	SOIC 28 PDIP 28 DIE	ISD-COB1730	Commercial Industrial
ISD1760						ISD-COB17160	
ISD17120						ISD-COB17150	
ISD17240						ISD-COB17240	
ISD1806	Single-message record/playback with internal Flash	6~16 sec	4~8	2.7~4.5	DIE	ISD-COB1810	0~50ºC
ISD1810							
ISD18A04	Single-message record/playback with internal Flash memory	4~8 sec	4~8	2.4~5.5	DIE	ISD-COB18A04	0~50ºC
ISD18B12	Single-message record/playback with internal Flash memory	6~24 sec	4~8	2.4~5.5	DIE	ISD-COB18B24	0~50ºC
ISD18B24							
ISD18C10	Single-message record/playback with internal Flash memory	8-16 sec	4~8	2.7~4.5	DIE	ISD-COB18C10	0~50ºC
ISD4002	Multi-message record/playback, internal Flash memory and SPI interface	2~16 min	4,5.3,6.4,8	2.7~3.3	PDIP 28 SOIC 28 DIE	ISD-IPROG-1	Commercial Industrial
ISD4003							
ISD4004							
ISD5102	Multi-message record/playback, internal Flash memory and I²C interface	2~16 min	4,5.3,6.4,8	2.7~3.3	PDIP 28 SOIC 28 DIE	ISD-IPROG-1	Commercial Industrial
ISD5104							
ISD5108							
ISD5116							

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PowerSpeech Family

Ordering No.	Board Name	Content	Description	Picture
PowerSpeech (584, 588) ICE Development System				
ICE-N584H	NHS-584H-ICE	• N584H ICE System	• N584H (Mask) and N584HP/N584P (OTP) ICE Dev. Kit. Provide In-Circuit Emulation with Program, Execute, Verification & Debugging	
ICE-W588D-FS	WHS-588D-ICE	• WHS-MINI-USB-ICE System V1.1 • WHS-588D-ICE System V3.3	• W588C/D ICE Dev. Kit. Provide In-Circuit Emulation with Program, Execute, Verification & Debugging	
ICE-W584A-FS	WHS-584A-ICE	• WHS-584A-ICE-IL System V1.1 • WHS-584A-ICE System V1.2	• W584A ICE Dev. Kit. Provide In-Circuit Emulation with Program, Execute, Verification & Debugging	
ICE-N588H	NHS-588H-ICE	• WHS-MINI-USB-ICE System V1.1 • NHS-588H-ICE System V1.1	• N588H/J (Mask) and N588HP/JP (OTP) ICE Dev. Kit. Provide In-Circuit Emulation w/ Program, Execute, Verification & Debugging.	

Ordering No.	Board Name	Content	Description	Picture
PowerSpeech (584, 588) Evaluation Board, Tiny Board, Writer				
NV-W584A-H	WHS-584AH-16M	• W584A/B/C Series EVB	• W584A/B/C Series Evaluation Board with 16Mbit Flash	
NV-W584AP20	NHS-584AP20	• W584AP065(W584AP20) OTP EVB	• W584AP065(W584AP20) One-Time Programmable (OTP) Evaluation Board (EVB)	
NV-W584AP05	NHS-584AP05	• W584AP017(W584AP05) OTP EVB	• W584AP017(W584AP05) One-Time Programmable (OTP) Evaluation Board (EVB)	
NV-N584H	NHS-584H-16M	• N584H Series EVB	• N584H Series Evaluation Board w/ 16Mbit Flash	
NV-N584HP300	NHS-584HP300	• N584HP300 OTP Demo Board	• N584HP300 (OTP) Demo Board (COB)	
NV-N584L-3V	NHS-584L-16M-3V	• N584L Series EVB with Vp=3V	• N584L Series Evaluation Board w/ 16Mbit Flash for Vp=3V	
NV-N584L-4V	NHS-584L-16M-4V	• N584L Series EVB with Vp=4V	• N584L Series Evaluation Board w/ 16Mbit Flash for Vp=4V	
NV-W588D	WHS-588C/D-16M	• W588C/D Series EVB	• W588C/D series Evaluation Board with 16Mbit Flash	
NV-W588DF20B	WHS-W588DF20-H1	• W588DF060 (W588DF20) EVB	• W588DF060(W588DF20) Evaluation Board	
NV-N588H	NHS-588H-16M	• NHS-588H-16M EVB	• N588H/J series Evaluation Board with 16Mbit Flash Support: N588H061~650/J010~650, and N588HP062~342/JP062~342 (OTP)	
NV-N588H-L	NHS-588H-08ML	• NHS-588H-08ML EVB	• N588H/J Series Evaluation Board w/ 8Mbit Low Voltage Flash Support: N588H061~340 /J010~340, and N588HP062~342/JP062~342 (OTP)	
NV-N588HP080	NHS-588HP080	• N588HP080 OTP EVB	• N588HP080 (OTP) Demo Board (COB)	

Ordering No.	Board Name	Content	Description	Picture
PowerSpeech (584, 588) Evaluation Board, Tiny Board, Writer				
NV-N588HP170	NHS-588HP170	• N588HP170 OTP Demo Board	• N588HP170 (OTP) Demo Board (COB)	
NV-N588HP340	NHS-588HP340	• N588HP340 OTP Demo Board	• N588HP340 (OTP) Demo Board (COB)	
NV-N588HP650	NHS-N588HP650	• N588HP650 OTP Demo Board	• N588HP650 (OTP) Demo Board (COB)	
N588HP082-TB	N588HP082-TB	• N588HP082 Tiny Board	• N588HP082 (OTP) Tiny Demo Board (COB) Support: N588HP062/082, N588JP062/082	
N588HP172-TB	N588HP172-TB	• N588HP172 Tiny Board	• N588HP172 (OTP) Tiny Demo Board (COB) Support: N588HP122/172 and N588JP122/172	
N588HP342-TB	N588HP342-TB	• N588HP342 Tiny Board	• N588HP342 (OTP) Tiny Demo Board (COB) Support: N588HP202/252/342 and N588JP202/252/342	
NV-N588L	NHS-N588L-16M	• N588L Series EVB	• N588L Series Evaluation Board (EVB) with 16Mbit Flash	
NV-N588LP330	NHS-588LP330	• N588LP330 OTP EVB	• N588LP330 (OTP) Demo Board (COB)	
NW-NUOTP-M	NuOTP Gang Writer	• NuOTP Gang Writer Main Board	• New OTP series 1 to 8 Gang Writer. Support for: N566GP/KP-120/160/200/240/280/320 -N566HP-120/160/200/240/280/321 -N588HP/JP-062/082/122/172/202/252/342 -N584P040/070/120/170/210/260/300 -NSP075A/165A/335A	
NW-OTP	Nuvoton OTP Writer	• Old OTP Series Writer	• Old OTP Series 1 on 1 Writer Support: N588HPxx0, N588JPxx0, N567HP330, N566HP320, N584HPxxx	
NW-OTP-SP	NW-OTP-SP	• New OTP Writer	• New OTP Writer Dongle for: N566GP/KP-120/160/200/240/280/320 N566HP-120/160/200/240/280/321 N588HP/JP-062/082/122/172/202/252/342 N584P-030/040/070/120/170/210/260/300	
NW-USB	WHS-USB-Writer	• USB Writer	• EVB USB Writer to Cover PowerSpeech/ViewTalk/ BandDirectorEVB, and NSP-OTP-EVB	

Ordering No.	Board Name	Content	Description	Picture
PowerSpeech (N589) Evaluation Board, Tiny Board, Adaptor, Writer				
NV-N589EVB	NHS-589A340-EVB	• N589A/B/C EVB	• N589A/B/C Series Evaluation Board Support: N589A080~280, B080~340, C080~340	
N589A900-EVB	N589A900-EVB	• N589A900 EVB	• N589A/B/C/D Series Evaluation Board Support: N589A400/600/900, N589B342/480/650/960, N589C480/650/960, N589D342/480/650/960	
N589D171-EVB	N589D171-EVB	• N589D171 EVB	• N589D171 Evaluation Board Support: N589D081, N589D121 and N589D171	
N589D481-EVB	N589D481-EVB	• N589D481-EVB	• N589D481 Evaluation Board Support: N589D201, D251, D341 and D481	
N589A-TB	N589A Tboard	• N589A/B/C (COB) Tiny Board	• N589A/B/C Series Tiny Demo Board Support: N589A080~280, B080~340, C080~340	
N589A900-TB	N589A900-Tboard	• N589A900 (COB) Tiny Board	• N589A/B/C/D Series Tiny Demo Board Support: N589A400/600/900, N589B342/480/650/960, N589C480/650/960, N589D342/480/650/960	
N589D171-TB	N589D171TBoard	• N589D171 (COB) Tiny Board	• N589D171 (COB) Tiny Demo Board Support: N589D081/121/171	
N589D481-TB	N589D481-TB	• N589D481 Tiny Board	• N589D481 Tiny Demo Board Support: N589D201/251/341/481	
N589A-STB	N589A_TOP_ BOARD	• N589A Dev Platform Standard Top Board	• N589A/B/C Series Dev. Platform Standard Top Board Support: N589A080~280/B080~340/C080~340	
N589D171-STB	N589D171_TOP_ Board	• N589D171 Top Board	• N589D171 Standard Top Board w/ Passive Parts Support: N589D081/121/171	
N589-1-WTR	N589 1-1 Writer	• N589 1-1 Writer	• N589A/B/C/D Series USB Songle, Supports 1 to 1 Writer and ICE Debug	
N589-8-WTR-M (NW-N589-MAIN)	N589 1-8 Writer	• N589 Gang Writer Main Board	• N589A/B/C/D 1 to 8 Gang Writer (Mother Board)	
N589-8-WTR-F	N589 GANG WRITER 20180724	• N589 1-8 Gang Writer Main Board, SOP14 Adaptor Board x 8, SOP14 Socket x 8	• N589 Gang Writer Full Set, Main Board x 1, Socket Adaptor SOP14 x 8 Support N589B/C-080B/120B/170B/200B/250B/340B (SOP14)	

NSP Family

Ordering No.	Board Name	Content	Description	Picture
NSP-Flash Evaluation Board, Tiny Board, Adaptor, Writer				
NSP171A-TB1	NSP171A-TB1	• NSP171A (SOP8) Tiny Board	• NSP171A (SOP8) Tiny Demo Board Support: NSP081A, NSP171A	
NSP340A-TB1	NSP340A-TB1	• NSP340A (SOP8) Tiny Board	• NSP340A (SOP8) Tiny Demo Board Support: NSP080A, NSP170A, NSP340A	
NSP340B-TB1	NSP340B-TB1	• NSP340B (SOP14) Tiny Board	• NSP340B (SOP14) Tiny Demo Board Support: NSP080B, NSP170B, NSP340B	
NSP960B-TB1	NSP960B-TB1	• NSP960B (SOP14) Tiny Board	• NSP960B (SOP14) Tiny Demo Board Support: NSP480B/650B/960B	
NSP-1-WTR	NSP 1-1 Writer	• NSP-Flash 1 to 1 Writer	• NSP-Flash 1 to 1 Writer to Support NSP080A/081A/170A/171A/340A/341A/481A, NSP080B/170B/340B/480B/650B/960B	
NSP-SOP8	Adaptor of NSP-SOP8	• NSP-Flash SOP8 Adaptor	• NSP-Flash SOP8 Adaptor on NSP-8-WTR-M (Gang Writer) Support: NSP080A/081A/170A/171A/340A	
NSP-SOP14	Adaptor of NSP SOP14	• NSP-Flash SOP14 Adaptor	• NSP-Flash SOP14 Adaptor on NSP-8-WTR-M (Gang Writer) Support: NSP080B/170B/340B	
NSP-SOP14-2	Adaptor of NSP-SOP14-2	• NSP-Flash SOP14-2 Adaptor	• NSP-Flash SOP14 Adaptor on NSP-8-WTR-M (Gang Writer) Support: NSP480B/650B/960B	

Ordering No.	Board Name	Content	Description	Picture
NSP-OTP Evaluation Board, Tiny Board, Adaptor, Writer				
NSP-OTP-EVB	NSP-OTP-EVB	• NSP-OTP Series EVB	• NSP-OTP Series Evaluation Board Support: NSP075A/165A/335A, NSP075B/165B/335B	
NSP165A-TB2	NSP165A-TB2	• NSP165A Tiny Board	• NSP165A OTP Tiny Board for NSP165A Chip.	
NW-OTP-SP	NW-OTP-SP	• New OTP Writer	• NSP-OTP 1 to 1 Writer (Dongle) Support: NSP075A/165A/335A, NSP075B/165B/335B	
NSP-OTP-D-S8	NSP-OTP-D-S8	• NSP-OTP SOP8 Adaptor	• NSP-OTP SOP8 Adaptor for NSPO-8-GW-M (Gang Writer) Support: NSP075A, NSP165A and NSP335A	

BandDirector® Family

Ordering No.	Board Name	Content	Description	Picture
BandDirector ICE Development Kit				
ICE-W567C	WHS-BD567C	• WHS-MINI-USB-ICE System V1.1 • WHS-567C-IC System V1.3	• W567C/J In-Circuit Emulation (ICE) Dev. Kit. Provide In-Circuit Emulation with Program, Execute, Step Through Features for Design Development, Verification & Debugging	
ICE-N566H	NHS-566H001-ICE	• WHS-MINI-USB-ICE System V1.1 • WHS-566H001-ICE System V1.0	• N566H/K/G In-Circuit Emulation (ICE) Dev. Kit. Provide In-Circuit Emulation with Program, Execute, Step Through Features for Design Development, Verification & Debugging	
ICE-N567H	WHS-N567H-ICE	• WHS-MINI-USB-ICE System V1.1 • WHS-N567H-ICE System V3.0	• N567G/H/K In-Circuit Emulation (ICE) Dev. Kit. Provide In-Circuit Emulation with Program, Execute, Step Through Features For Design Development, Verification & Debugging	

Ordering No.	Board Name	Content	Description	Picture
BandDirector Evaluation Board (EVB), Writer				
NV-W567C	WHS-567C-16M	• W567C/J Series EVB	• W567C/J Series Evaluation Board (EVB) with 16Mbit Flash	
N566H-EVB	NHS-566H001-16M	• N566H/K/G Series EVB	• N566H/K/G Evaluation Board (EVB) with 16M-bit Parallel Flash	
NV-N567H	WHS-N567-H1	• N567G/H/K Series EVB	• N567G/H/K Series Evaluation Board (EVB) with 16Mbit Flash	
NV-N567L	NHS-N567L-16M	• N567L Series EVB	• N567L Series Evaluation Board (EVB) with 16Mbit Flash	
NV-W567CP80	NHS-W567CP80	• W567CP260(W567CP80) OTP EVB	• W567CP260(W567CP80) One-Time Programmable (OTP) Evaluation Board (EVB)	
N566HP080EVB	NHS-566HP080	• N566HP080 EVB	• N566HP080 OTP EV Board w/ Components	
NV-N566HP320	NHS-N566HP320	• N566HP320 EVB	• N566HP320 COB with Passive Parts	
N566HP321EVB	N566HP321-EVB	• N566HP321 (New OTP) EVB	• N566HP/KP/GP (New OTP) Evaluation Board Support N566HP120/160/200/240/280/321, N566KP120/160, 200/240/320, N566GP120/160/200/240/280/320	
NV-N567HP80	NHS-567HP80	• N567HP330(N567HP80) OTP EVB	• N567HP330(N567HP80) One-Time Programmable (OTP) Evaluation Board (EVB)	
NV-N567LP330	NHS-567LP330	• N567LP330 OTP EVB	• N567LP330 EVB One-Time Programmable (OTP) Evaluation Board (EVB)	

ViewTalk® Family

Ordering No.	Board Name	Content	Description	Picture
ViewTalk Development Kit				
ICE-N539T-FS	NHS-539-ICE	• WHS-MINI-USB-ICE System V1.1 • NHS-539-ICE System V1.2	• N539 In-Circuit Emulation (ICE) Dev. Kit. Provide In-Circuit Emulation with Program, Execute, Verification & Debugging Support: N539T170/171/260/261/340/341, N531A170	
ViewTalk Evaluation Board				
NV-N531-16M	NHS-531-16M	• N531A170 EVB	• N531A170 Evaluation Board with 16Mbit Flash Support: N531A170	
NV-N539T001	NHS-539001-16M	• N539Txx1 Series EVB	• N539Txx1 Series Evaluation Board with 16Mbit Flash Support: N539T171/261/341	
NV-N539T000	NHS-539-16M	• N539Txx0 Series EVB	• N539Txx0 Series Evaluation Board with 16Mbit Flash Support: N539T170/260/340	

NuVoice® Family

Ordering No.	Board Name	Content	Description	Picture
NuVoice® Family				
NuVoice Demo Board, Evaluation Board				
NV-N570C064	NHS-570C064-EVB	• N570F/C064 EVB	• N570F/C064 Evaluation Board (EVB) with I/O Interface & Microphone for Voice Recognition Application Support: N570F064, N570C064	
NV-N569S8K0	NHS-N569S8K0	• N569S8K0 (MCP) EVB	• N569S (w/ 64Mbit Flash) Evaluation Board (EVB) with I/O Interface Support: N569S502/1K0/2K0/4K0/8K0	
NV-N570SC64	NHS-570SC64	• N570SC64 (MCP) EVB	• N570SC64 (w/ 64Mbit Flash) Evaluation Board with I/O Interface & Microphone for Voice Recognition Application Support: N570S08A/16A/32A/64A, N570SC08/16/32/64	

Ordering No.	Board name	Content	Description	Picture
NuVoice Demo Board, Evaluation Board				
N570HC64-EVB	NHS-570H064-EVB	• N570H064 EVB	• N570H064 and N570HC64 Evaluation Board (EVB) with Push Button for Demo	
N570J32A-EVB	NHS-N570J32A	• N570J32A (MCP) EVB VDD: 2.4~5.5V	• N570J32AL (w/ 32Mbit Spi-Flash) Evaluation Board Support: N570J08AL, N570J16AL and N570J32AL	
NV-N572F065	NHS-572F065-EVB	• N572F065 EVB	• N572F065 Evaluation Board (EVB) with I/O Interface	
NV-N572C072	NHS-572C072-EVB	• N572F/C072 EVB	• N572F/C072 Evaluation Board (EVB) with I/O Interface & Microphone for Voice Recognition Application Support: N572F072, N572C072	
NV-N575C145	NHS-575C145	• N575F/C145 EVB	• N575F/C145 Evaluation Board (EVB) with I/O Interface & Microphone for Voice Recognition Application Support: N575F145, N575C145	
NT-N575C145	NHS-575C145	• N575C145-EVB + Daughter Board	• N575F/C145 Evaluation Board (EVB) with I/O Interface & Microphone for Voice Recognition Application with Daughter Board	
NuVoice Dongle, Writer				
NU-NUVOICE	NU-LINK	• Nu-Link Debug Adapter	• NuVoice Series 1 to 1 Writer (Dongle) with Online/Offline In-Circuit Program (ICP), Develop, and Debug. Support: N569, N570, N572, N573, N574, N575	
NW-570H574-F	Flash Gang Writer (Full Set)	• The 2 to 8 Gang Writer Full Set Includes NW-N570H574-M (Mother Board), 8 x LQFP48 Socket with Adaptor Board.	• This 2 to 8 Gang Writer Full Set is for N570H064L (LQFP48)	
NW-570H574-M	Flash Gang Writer (Main Board)	• 2 to 8 Gang Writer Main Board (N570H/N574F)	• 2 to 8 Gang Writer Main Board for N570H064, N570J, N569J, N574F	
NW-570S64A-F	Flash Gang Writer	• N569S/N570S 1-8 Gang Writer	• N569S/N570S (MCP) 1 to 8 Gang Writer Support: N569S502/1K0/2K0/4K0/8K0, and N570S08A/16A/32A/64A	
NW-569SAK2-F	NW-569SAK2-F	• N569SAK2/N570S130 1-8 Gang Writer	• N569SAK2/N570S130 (MCP) 1 to 8 Gang Writer • Support: N569SAK2 and N570S130 (w/ 128Mbit Spi-Flash)	

Peripheral Family

Ordering No.	Board name	Content	Description	Picture
N55T Demo Board, Evaluation Board				
NV-N55T16	NHS-55T16-EV	• N55T16 EVB	• N55T16 Evaluation Board (EVB)	
N55T16-16KEY	NHS-55T16-KEY	• 16 Key Touch Pad Board	• N55T16 16 x Key Touch Pad Evaluation/Demo Board	
IO Expander Evaluation Board, Demo Board				
NV-N55P242	NHS-55P242	• N55P242 EVB	• N55P242 Evaluation Board (EVB)	
NV-N55P242-R	N55P242_RING_TYPE_ DEMO_BOARD_V1.0	• N55P242 Demo Board (Circle)	• N55P242 Circle Demo Board w/ 16 RGB LEDs	
NV-N55P242-S	N55P242_SINGLE_STRIP_ DEMO_BOARD_V1.0	• N55P242 Demo Board (Rectangle)	• N55P242 Rectangle Demo Board w/ 8 RGB LEDs	
MFID Evaluation Board, Demo Board				
NV-MFID50	WHS-55MID50-002	• W55MID50 Demo Board	• W55MID50 MFID Reader Demo Board with PCB Antenna (42mm*34.5mm)	
NV-W55MID15	WHS-55MID15	• W55MID15 Demo Board	• W55MID15 MFID Single Tag Demo Board w/ ANT (20mm*20mm)	
NV-W55MID35	WHS-55MID35	• W55MID35 Demo Board	• W55MID35 MFID Mult-Tag Demo Board w/ ANT (15mm*15mm)	

Development Tools for AUI Enabler Series

Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Development Kit					
NM-I94100_AM	**ISD-DMK_94100_AM**	ISD941xx Series	• NL-ISD94124A • NP-I94124_AM • Speaker	• Evaluation, Debugging and Demo Kit for ISD941xx • Connect with Analog Microphone Adaptor	
NM-I94100_DM	**ISD-DMK_94100_DM**	ISD941xx Series	• NL-ISD94124A • NP-I94124_DM • Speaker	• Evaluation, Debugging and Demo Kit for ISD941xx • Connect with Digital Microphone Adaptor	
NV-ISD94100	**DEMO-I94100-NAU88C22**	ISD941xx Series	• DEMO-I94100-NAU88C22	• ISD94100* Demo Board with Audio CODEC (NAU88C22) on Board • Connect to PC Via ISD-NU-LINK for Programming and Debugging * P/N ISD94100 is for Demo Board Use Only	
NL-ISD94124A	**EVB-I94124**	ISD94124	• EVB-I94124	• ISD94124PDI Eval Board with Nu-Link ICE Bridge on Board for Drag and Drop Programming	
NP-I94124_AM	**EVB-I94124-NAU85L40**	ISD94124	• EVB-I94124-NAU85L40	• Analog Microphone Adaptor for NL-ISD94124A	
NP-I94124_DM	**EVB-I94124-Audio**	ISD94124	• EVB-I94124-Audio	• Digital Microphone Adaptor for NL-ISD94124A	
NV-ISD941A24	**ISD-DEMO941A24**	ISD941A24	• ISD-DEMO941A24	• Demo Board for ISD941A24SDI	
NU-NULINKISD	**ISD-NU-LINK**	ISD9160 ISD91032 ISD91260	• ISD-NU-LINK	• USB Dongle for ISD-DEMO9160, for Evaluation and Debugging. • Support ICP(In-Circuit Programming)	

Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Development Kit					
NM-ISD91260	**ISD-DMK_91260**	ISD91260CRI	• ISD-DEMO91260 • ISD-NU-LINK • Speaker	• Evaluation and Demo Kit for ISD91260CRI	
NM-ISD91260B	**ISD-DMK_91260B**	ISD91260BRI	• ISD-DEMO91260B • ISD-NU-LINK • Speaker	• Evaluation and Demo Kit for ISD91260BRI	
NM-ISD91032C	**ISD-DMK_91032C**	ISD91032CFI	• ISD-DEMO91032C • ISD-NU-LINK • Speaker	• Evaluation and Demo Kit for ISD91032CFI	
NM-ISD9160	**ISD-DMK_9160**	ISD9160	• ISD-DEMO9160 • ISD-NU-LINK • ISD-9160-Touch • ISD-9160-KB • Speaker	• Evaluation, Debugging and Demo Kit for ISD9160 • Keil RV/MDK Available on Keil Website • Supports ICP (In-Circuit Programming)	
NM-ISD91300	**ISD-DMK_91300**	ISD913xx	• ISD-DEMO91300 • ISD-91300-Touch • Speaker	• Evaluation, Debugging and Demo Kit for ISD91300 • Keil RV/MDK Available on Keil Website • Supports ICP (In-Circuit Programming)	
NM-ISD91500	**ISD-DMK_91500**	ISD91500ADI	• NT-ISD91500 • ISD-NU-Link • Speaker	• Evaluation and Demo Kit for ISD91500ADI	

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Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Programmer/Writer					
NW-ISD9160	**ISD-ES9160__Prog_F**	ISD9160 Series LQFP Pakcage	• ISD-ES9160__Prog_F	• ISD9160 LQFP Single Socket Programmer • Connect to PC Via ISD NU-LINK for Programming and Evaluation	
NG-ISD9160	**ISD-9160_GANG_Prog_F**	ISD9160	• ISD-9160_GANG_Prog_F	• ISD9160 LQFP Standalone Gang Programmer	
NW-ISD91300	**ISD-ES91300_PROG_F**	ISD913xx	• ISD-ES91300_PROG_F	• ISD913xx LQFP Single Socket Programmer for Programming and Evaluation	
NG-ISD91300	**ISD-91300_GANG_Prog_F**	ISD913xx	• ISD-91300_GANG_Prog_F	• ISD913xx LQFP Standalone Gang Programmer	
NT-ISD91260B	**ISD-DEMO91260B**	ISD91260B	• ISD-DEMO91260B	• ISD91260BRI Demo Board • Connect to PC Via ISD-NU-LINK for Programming and Debugging	
NT-ISD91260	**ISD-DEMO91260**	ISD91261	• ISD-DEMO91260	• ISD91260CRI Demo Board • Connect to PC Via ISD-NU-LINK for Programming and Debugging	
NT-ISD91032C	**ISD-DEMO91032C**	ISD91032	• ISD-DEMO91032C	• ISD91032CFI Demo Board • Connect to PC Via ISD-NU-LINK for Programming and Debugging	
NT-ISD9160	**ISD-DEMO9160**	ISD9160	• ISD-DEMO9160	• ISD9160CFI Demo Board • Connect to PC Via ISD-NU-LINK for Programming and Debugging	
NP-ISD9160-T	**ISD-9160-TOUCH**	ISD9160	• ISD-9160-TOUCH	• 8-Input Touch Pad for ISD-DEMO9160	
NP-ISD9160-K	**ISD-9160-KB**	ISD9160	• ISD-9160-KB	• 8-Input Key Pad for ISD-DEMO9161	

Development Tools for Audio Converters

Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Evaluation Board					
NV-NAU88C10	NAU88C10-DEMO	NAU88C10	• NAU88C10-DEMO	• Compact Audio Base Board + NAU88C10YG Daughter Card	
NV-NAU8810	NAU8810-DEMO	NAU8810	• NAU8810-DEMO	• Compact Audio Base Board + NAU8810YG Daughter Card	
NV-NAU8812	NAU8812-DEMO	NAU8812	• NAU8812-DEMO	• Compact Audio Base Board + NAU8812RG Daughter Card	
NV-NAU88C14	NAU88C14-DEMO	NAU88C14	• NAU88C14-DEMO	• Compact Audio Base Board + NAU88C14YG Daughter Card	
NV-NAU8814	NAU8814-DEMO	NAU8814	• NAU8814-DEMO	• Compact Audio Base Board + NAU8814YG Daughter Card	
NT-NAU88C10	NAU88C10-Card	NAU88C10	• NAU88C10-Card	• NAU88C10YG Daughter Board	
NT-NAU8810	NAU8810-Card	NAU8810	• NAU8810-Card	• NAU8810YG Daughter Board	
NT-NAU8812	NAU8812-Card	NAU8812	• NAU8812-Card	• NAU8812YG Daughter Board	
NT-NAU88C14	NAU88C14-Card	NAU88C14	• NAU88C14-Card	• NAU88C14YG Daughter Board	
NT-NAU8814	NAU8814-Card	NAU8814	• NAU8814-Card	• NAU8814YG Daughter Board	

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Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Evaluation Board					
NL-NAU88L25	NAU88L25-DEMO	NAU88L25	• NAU88L25-DEMO	• Demo Board for NAU88L25YGB	
NU-NAU88L25	NAU-Audio_ Control_USB	NAU88L21 NAU88L24I NAU88L25 NAU85L40	• NAU-Audio_ Control_USB	• Micro USB Audio Control Board for Connecting NL-NAU88L21, NL-NAU88L24I, NL-NAU88L25 and NL - NAU85L40 to PC	
NL-NAU88L24I	NAU88L24I-DEMO	NAU88L24	• NAU88L24I-DEMO	• Demo Board for NAU88L24IG	
NL-NAU88L21	NAU88L21-DEMO	NAU88L21	• NAU88L21-DEMO	• Demo Board for NAU88L21YG	
NL-NAU88C22	NAU88C22-DEMO	NAU88C22	• NAU88C22-DEMO	• Demo Board for NAU88C22YG	
NU-NAUSB2I2C	USB-To-I2C/I2S_ V1.1	NAU88C22 NAU8315/8315B NAU8325 NAU88L21 NAU88L24/88L25 NAU85L40/85L20 NPCA120/121	• USB-To-I2C/I2S_ V1.1	• USB-To-I2C/I2S Control Board for Audio Amplifier & Audio Codec Demo Board	
NV-NAU8822A	NAU8822A-DEMO	NAU8822A NAU88U22A	• NAU8822A-DEMO	• Compact Audio Base Board + NAU8822AYG Daughter Card	
NV-NAU8820	NAU8820-DEMO	NAU8820	• NAU8820-DEMO	• Compact Audio Base Board + NAU8820YG Daughter Card	
NV-NAU8401	NAU8401-DEMO	NAU8401	• NAU8401-DEMO	• Compact Audio Base Board + NAU8401YG Daughter Card	
NV-NAU8501	NAU8501-DEMO	NAU8501	• NAU8501-DEMO	• Compact Audio Base Board + NAU8501YG Daughter Card	

Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Evaluation Board					
NL-NAU7802	NAU7802-EVB	NAU7802	• NAU7802-DEMO	• Evaluation Board for NAU7802	
NL-NAU88L11	NAU88L11-DEMO	NAU88L11	• NAU88L11-DEMO	• Demo Board for NAU88L11YG	
NL-NAU85L40S	NAU85L40S-DEMO	NAU85L40S	• NAU85L40S-DEMO	• Demo Board fo NAU85L40YGB with Single Ended MIC.	
NL-NAU85L40	NAU85L40-DEMO	NAU85L40	• NAU85L40-DEMO	• Demo Board for NAU85L40YGB	
NL-NAU85L20	NAU85L20-DEMO	NAU85L20	• NAU85L20-DEMO	• Demo Board for NAU85L20YGB	
NT-NAU85L40	NAU85L40-Card	NAU85L40	• NAU85L40-Card	• NAU85L40YG Daughter Board	
NT-NAU88L24I	NAU88L24I-Card	NAU88L24	• NAU88L24I-Card	• NAU88L24IG Daughter Board	
NT-NAU8822A	NAU8822A-Card	NAU8822A NAU88U22A	• NAU8822A-Card	• NAU8822AYG Daughter Board	
NT-NAU8820	NAU8820-Card	NAU8820	• NAU8820-Card	• NAU8820YG Daughter Board	
NT-NAU8401	NAU8401-Card	NAU8401	• NAU8401-Card	• NAU8401YG Daughter Board	
NT-NAU8501	NAU8501-Card	NAU8501	• NAU8501-Card	• NAU8501YG Daughter Board	
NT-NAU8402	NAU8402-Card	NAU8402	• NAU8402-Card	• NAU8402WG Daughter Board	
NT-NAU8502	NAU8502-Card	NAU8502	• NAU8502-Card	• NAU8502YG Daughter Board	

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Development Tools for Audio Amplifiers

Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Power Amplifier					
NE-NAU82011V	NAU82011V-EVB	NAU82011	• NAU82011V-EVB	• Evaluation Board for NAU82011VG	
NE-NAU82011Y	NAU82011Y-EVB	NAU82011	• NAU82011Y-EVB	• Evaluation Board for NAU82011YG	
NT-ISD8101	ISD-DEMO8101	ISD8101	• ISDI8101-DEMO	• Demo Board for I8101SYI	
NT-ISD8102	ISD-DEMO8102	ISD8102	• ISD8102-DEMO	• Demo Board for I8102SYI	
NL-NAU8315	NAU8315-DEMO	NAU8315	• NAU8315-DEMO	• Demo Board for NAU8315YG	
NL-NAU8315B	NAU8315B-DEMO	NAU8315	• NAU8315-DEMO	• Demo Board for NAU8315B31VG WLCSP-12	
NL-NAU8325	NAU8325-DEMO	NAU8325	• NAU8325-DEMO	• Demo Board for NAU8325YG	
NE-NAU8223	NAU8223-EVB	NAU8223	• NAU8223-EVB	• Evaluation Board for NAU8223YG	
NE-NAU8224	NAU8224-EVB	NAU8224	• NAU8224-EVB	• Evaluation Board for NAU8224YG	
NU-NAU8224	NAU-ES_MINI_USB	NAU8224	• NAU-ES_MINI_USB	• USB to I²C Bus Dongle for NAU8224-EVB	

Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Power Amplifier					
NE-NAU8220	NAU8220WG-EVB	NAU8220	• NAU8220WG-EVB	• Evaluation Board for NAU8220WG	
NV-NAU83G10S	NAD-NAU83G10	NAU83G10	• NAD-NAU83G10	• Stereo NAU83G10 EVAL Board	
NV-NAU83G20S	NAD-NAU83G20	NAU83G20	• NAD-NAU83G20	• Stereo NAU83G20 EVAL Board	
NM-N83G10MA	NAD-NAU83G10_BRS-161200	NAU83G10	• NAD-NAU83G10_BRS-161200	• Mono NAU83G10 with Bujeon BRS-161200	
NM-N83G10MB	NAD-NAU83G10_BRS-181300	NAU83G10	• NAD-NAU83G10_BRS-181300	• Mono NAU83G10 with Bujeon BRS-181300	
NM-N83G10SA	NAD-NAU83G10_2*BRS-161200	NAU83G10	• NAD-83G10_2*BRS-161200	• Stereo NAU83G10 with 2x Bujeon BRS-161200	
NM-N83G10SB	NAD-NAU83G10_2*BRS-181300	NAU83G10	• NAD-83G10_2*BRS-181300	• Stereo NAU83G10 with 2x Bujeon BRS-181300	
NM-N83G20MA	NAD-NAU83G20_BUF-4203	NAU83G20	• NAD-NAU83G20_BUF-4203	• Mono NAU83G20 with Bujeon BUF-4203	
NM-N83G20SA	NAD-NAU83G20_2*BUF-4203	NAU83G20	• NAD-NAU83G20_2*BUF-4203	• Stereo NAU83G20 with 2x Bujeon BUF-4203	

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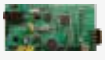
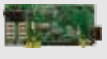
Development Tools for ChipCorder® Family

Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Development Kit					
NU-ISDMINUSB	ISD-ES_Mini_USB	ISD-ES_Mini_USB	• ISD2130/2115 • ISD2360 • ISD15012/4/8 • ISD15C00/3900 • ISD15D00/3800	• USB Dongle for Connecting Digital ChipCorder Demo Board to PC	
NM-ISD15100	ISD-DMK_15100	ISD15102/04/08	• ISD-DEMO15100 • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD15102/4/8	
NM-ISD15C00	ISD-DMK_15C00	ISD15C00	• ISD-DEMO15C00 • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD15C00	
NM-ISD15D00	ISD-DMK_15D00	ISD15D00	• ISD-DEMO15D00 • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD15D00	
NM-ISD2100Q	ISD-DMK_2100	ISD2100YYI	• ISD-DEMO2100_Q • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD2100Y	
NM-ISD2360Q	ISD-DMK_2360_Q	ISD2360YYI	• ISD-DEMO2360_Q • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD2360Y	
NM-ISD2360S	ISD-DMK_2360_S	ISD2360SYI	• ISD-DEMO2360_S • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD2360S	
NM-ISD3800	ISD-DMK_3800	ISD3800	• ISD-DEMO3800 • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD3800	
NM-ISD3900	ISD-DMK_3900	ISD3900	• ISD-DEMO3900 • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD3900	

Development Tools for ChipCorder® Family

Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Evaluation/Demo/Development Board					
NT-ISD1964	ISD-DEMO1964	ISD1916/32/64 Class-D Output	• ISD-DEMO1964	• ISD1900 Demo Board with I1964SYI on Board	
NT-ISD1964A	ISD-DEMO1964_AUX	ISD1916/32/64 AUX Output	• ISD-DEMO1964_AUX	• ISD1900 AUX Output Demo Board with ISD1964SYI01 on Board	
NT-ISD15100	ISD-DEMO15100	IAD15108/04/02	• ISD-DEMO15100	• ISD15108 LQFP Demo Board • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	
NT-ISD15C00	ISD-DEMO15C00	IAD15C00	• ISD-DEMO15C00	• ISD15C00 LQFP Demo Board • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	
NT-ISD3900	ISD-DEMO3900	IAD3900	• ISD-DEMO3900	• ISD3900 LQFP Demo Board • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	
NT-ISD15D00	ISD-DEMO15D00	IAD15D00	• ISD-DEMO15D00	• ISD15D00 QFN Demo Board • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	

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Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Evaluation/Demo/Development Board					
NT-ISD3800	ISD-DEMO3800	ISD3800	• ISD-DEMO3800	• ISD3800 LQFP Demo Board • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	
NT-ISD2100Q	ISD-DEMO2100_Q	ISD2130/2115	• ISD-DEMO2100_Q	• ISD2130 QFN Demo Board • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	
NT-ISD2100S	ISD-DEMO2100_S	ISD2130/2115	• ISD-DEMO2100_S	• ISD2130 SOP Demo Board • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	
NT-ISD2361	ISD-DEMO2361_Q	ISD2361	• ISD-DEMO3361_Q	• ISD2361 QFN Demo Board • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	
NT-ISD2360Q	ISD-DEMO2360_Q	ISD2360	• ISD-DEMO2360_Q	• ISD2360 QFN Demo Board • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	
NT-ISD2360S	ISD-DEMO2360_S	ISD2360	• ISD-DEMO2360_S	• ISD2360 SOP Demo Board • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	
NC-ISD18B24	ISD-COB18B24	ISD18B12/24	• ISD-COB18B24	• ISD18B24/12 Demo Board	

Development Tools for ChipCorder® Family

Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Evaluation/Demo/Development Board					
NC-ISD18C10	ISD-COB18C10	ISD18C10	• ISD-COB18C10	• ISD18C06/18C10 Demo Board (SPK/MICSharing)	
NC-ISD1810	ISD-COB1810	ISD1806/10	• ISD-COB1810	• ISD1806/1810 Demo Board	
NC-ISD17240	ISD-COB17240	ISD17240/210/180	• ISD-COB17240	• ISD17240/210/180 Demo Board	
NC-ISD17150	ISD-COB17150	ISD17150	• ISD-COB17150	• ISD17150/120/090 Demo Board	
NC-ISD1760	ISD-COB1760	ISD1760	• ISD-COB1760	• ISD1760/50/40 Demo Board	
NC-ISD1730	ISD-COB1730	ISD1730	• ISD-COB1730	• ISD1730 Demo Board	
NC-ISD1620B	I16-COB20	ISD1600 Series	• I16-COB20	• ISD1610/16/20 Demo Board	
Programmer/Writer					
NW-ISD15100	ISD-ES15100_Mini_PROG_F	ISD15102/04/08	• ISD-ES15100_Mini_PROG	• ISD15102/04/08 LQFP Single Socket Programmer • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	
NW-ISD2100Q	ISD-ES2100_Mini_PROG_Q	ISD2100 Series QFN Package	• ISD-ES2100_Mini_PROG_Q	• ISD2100 QFN Single Socket Programmer • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	
NW-ISD2100S	ISD-ES2100_Mini_PROG_S	ISD2100 Series SOP Package	• ISD-ES2100_Mini_PROG_S	• ISD2100 SOP Single Socket Programmer • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	
NG-ISD2100Q	ISD-2100_GANG_Prog_Q	ISD2100 Series QFN Package	• ISD-2100_GANG_Prog_Q	• ISD2100 QFN Standalone Gang Programmer	

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Development Tools for ChipCorder® Family

Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Evaluation/Demo/Development Board					
NG-ISD2100S	ISD-2100_GANG_Prog_S	ISD2100 Series Package SOP	• ISD-2100_ GANG Prog_S	• ISD2100 SOP Standalone Gang Programme	
NW-ISD2360Q	ISD-ES2360_MINI_PROG_Q	ISD2360	• ISD-ES2360_ MINI_PROG_Q	• ISD2360 QFN Single Socket Programmer, Used with ISD-ES_Mini_USB • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluation	
NW-ISD2360S	ISD-ES2360_MINI_PROG_S	ISD2360	• ISD-ES2360_ MINI_PROG_S	• ISD2360 SOP Single Socket Programme • Connect to PC Via ISD-ES_Mini_USB for Programming and Evaluatio	
NG-ISD2360S	ISD-2360_GANG_PROG_S	ISD2360 PackageP SO	• ISD-2360_ GANG PROG_S	• ISD2360 SOP Rstandalone Gang Programme	
NG-ISD2360Q	ISD-2360_GANG_PROG_Q	ISD2360 QFN Package	• ISD-2360_ GANG PROG_Q	• ISD2360 QFN Standalone Gang Programmer	

Development Tools for ChipCorder® Family

Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Evaluation/Demo/Development Board					
NW-ISDPROG	ISD-PROG	ISD2100 Series ISD15100 Series ISD15D00 Series Winbond SPI Flash	• ISD-PROG	• Stand Alone Programmer for Digital ChipCorder	
NW-ISDIPROG1	ISD-IPROG-1	ISD4000/5000/1700	• ISD-PROG-1	• Single Chip Programming Board Support ISD4000/5000/1700 Series	
NW-P1700	P1700	ISD1700	• P1700	• Programmer Adapter of ISD-IPROG-1 for ISD1700 Series	
NE-ISD1700	ISD-ES17XX_USB_PB	ISD1700 Serie	• ISD-ES17XX_ USB_PB	• Eval Board for 1700 Series	
NE-ISD1900	ISD-ES1900_USB_PROG	ISD1900 Serie	• ISD-ES1900_ USB_PROG	• USB Evaluation Board for ISD1900 Series	
NE-ISD1600	ISD-ES1600_USB_PROG	ISD1600 Serie	• ISD-ES1600_ USB_PROG	• USB Evaluation Board for ISD1600 Series	
Software					
	VPE	ISD2130/15 ISD2360 ISD15C00/3900 ISD15C00/3900/15102/4/8 ISD15D00/3800	• Development Software	• Download Link: http://www.nuvoton.com/hq/products/isd-voice-ics/isd-chipcorder-family/Software/?__locale=en&resourcePage=Y	
	SDK for Audio SoC	ISD91xxx	• Development Software	• http://www.nuvoton.com/hq/products/application-specific-socs/arm-based-audio/Software/?__locale=en&resourcePage=Y&category=%2f_categories%2fsupport%2ftool-and-software%2fsoftware%2f&pageIndex=1	

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Development Tools for Audio Enhancement Series

Ordering No.	Part No.	Supported Devices	Content	Description	Picture
Evaluation/Demo/Development Board					
NE-NPCA120	EVB-NPCA120_V1.0	NPCA120DD	• NPCA120DD Evaluation Board	• NPCA120 Audio Enhancement, Bongiovi DPS, Standard Level Evaluation Board	
NE-NPCA121	EVB-NPCA121_V1.0	NPCA121DD	• NPCA121DD Evaluation Board	• NPCA121 Audio Enhancement, Bongiovi DPS, Premium Level Evaluation Board	
NL-NPCA120	DEMO-NPCA12X-V2.0	NPCA120DD	• NPCA120DD Demo Board	• NPCA120DD LQFP-64 Audio Enhancement, Bongiovi DPS, Standard Level Demo Board	
NL-NPCA121	DEMO-NPCA12X-V2.0	NPCA121DD	• NPCA121DD Demo Board	• NPCA121DD LQFP-64 Audio Enhancement, Bongiovi DPS, Standard Level Demo Board	
NL-NPCA120DY	DEMO-NPCA120_V3.0	NPCA120DY	• NPCA120DY Demo Board	• NPCA120DY QFN-48 Audio Enhancement, Bongiovi DPS, Standard Level Demo Board	
NE-NPCA110XB	NPCA110x Evaluation Board	NPCA110x device	• NPCA110x Evaluation Board	• NPCA110x 1 Watt Base Board	
NT-NPCA110PP	NPCA110P/M Piggy Board	NPCA110P	• NPCA110P/M Evaluation Board	• NPCA110P Piggy Board	
NU-NPUSB2I2C	USB-To-I²C/I²S	NPCA110x & NPCP215x	• USB-To-I²C/I²S	• USB2I2C Board for NPCA110x & NPCP215x	
NE-NPCP215F	NPCP215x Evaluation Board	NPCP215F	• NPCP215x Evaluation Board	• NPCP215F Evaluation Board	
NU-NPUSB2I2C	USB-To-I2C/I2S_V1.1	NPCA120DD/ 121DD/120DY	• USB-To-I2C/I2S_V1.1	• USB2I2C Control Board for NPCA120/121 Eval & Demo Board	

Contact us: AudioEnhancement@nuvoton.com

Cloud Security

EC

EC for Portable Applications

Security

Trusted Platform Module (TPM)

Hardware Monitors

Desktop / Server Series
NB and Networking / Storage Series

Interface Logic

Switches and Multiplexers
Interface Logic Series

I/O

General Purpose I/O Series
Super I/O Series
eSIO Series

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EC

EC for Portable Applications

Nuvoton's highly-integrated embedded controller (EC) device has an embedded 32-bit, high-performance RISC core and integrated advanced functions. It is targeted for a wide range of portable applications and provides best-in-class, complete EC functionality. The EC uses either the Low Pin Count (LPC), the Enhanced Serial Peripheral Interface (eSPI), or I²C Host interface and is designed to best meet the requirements of mobile systems.

Part No.	Core Type	Core Max Freq.	Internal Flash Memory	SRAM	SPI Flash I/F	eSPI	LPC	SMBus /I²C	I3C	Core UART	Peripheral SPI Ctrl	PECI	ADC	Host I/F Ch.	8042 KBC	Host Mailbox	PWM Ch./ with HB	Fan TACHs	KBD Scan	PS/2	JTAG	Package
NPCE6mnx	CR16CPlus	50 MHz	Up to 512 KB	32 KB	Up to 64 MB	√	√	5 Controllers/ 7 Ports	-	1	Master	3.1	Up to 10-bit / Up to 10 inputs	4	√	4	8 / 8	6	18 x 8	3	Standard/ Serial	LQFP128 VFBGA128
NPCX796FA	Arm® Cortex®-M4	100 MHz	1 MB	256 KB	N/A	√	√	8 Controllers/ 10 Ports	-	1	Master/ Slave	3.1	Up to 10-bit / Up to 10 inputs	4	√	4	10 / 8	4	18 x 8	4	Standard/ SWD	VFBGA144
NPCX796FB	Arm® Cortex®-M4	100 MHz	1 MB	256 KB	N/A	√	√	8 Controllers/ 10 Ports	-	2	Master/ Slave	3.1	Up to 10-bit / Up to 10 inputs	4	√	4	10 / 8	4	18 x 8	4	Standard/ SWD	VFBGA144
NPCX796FC	Arm® Cortex®-M4	100 MHz	512 KB	256 KB	N/A	√	√	8 Controllers/ 10 Ports	-	2	Master/ Slave	3.1	Up to 10-bit / Up to 10 inputs	4	√	4	10 / 8	4	18 x 8	4	Standard/ SWD	VFBGA144
NPCX797FC	Arm® Cortex®-M4	100 MHz	512 MB	384 KB	N/A	√	√	8 Controllers/ 10 Ports	-	2	Master/ Slave	3.1	Up to 10-bit / Up to 10 inputs	4	√	4	10 / 8	4	18 x 8	4	Standard/ SWD	VFBGA144
NPCX998FA	Arm® Cortex®-M4	100 MHz	1 MB	512KB	NA	√	√	8 controllers / 10 ports	1	4	Master/ Slave	4.0	10-bit / Up to 12 inputs	4	V	4	10 / 8	4	18x8	4	Standard/ SWD	VFBGA144

Hardware Monitors

Desktop / Server Series

Nuvoton's Desktop & Server Hardware Monitoring IC Series is one of Nuvoton's most popular computer product categories. Hardware Monitoring ICs are widely adopted in desktop and server motherboards and in Industrial PC applications. Hardware Monitoring ICs monitor important hardware parameters including voltage, temperature, and fan speed and are able to issue alarms or warning signals to prevent system damage when abnormal events are detected.

Part No.	System Interface	On-chip Thermal Sensor	Remote Thermal Sensor Inputs	Voltage Monitor Inputs	Fan Tachometer Inputs	Fan Speed Control Outputs	Operation Voltage	PECI I/F	Package
NCT7802Y	SMBus/I²C	Y	3(max)	5(max)	3	3	3.3V	3.1	QFN20
NCT7906D	SMBus/I²C	Y	4(max)	16(max)	8	4	3.3V	3.1	TQFP64
NCT7904D	SMBus/I²C	Y	4(max)	17(max)	12(max)	4	3.3V	3.1	LQFP48
W83795ADG	SMBus/I²C	N	6	18(max)	14(max)	2	3.3V	2.0	LQFP48
W83795G	SMBus/I²C	N	6	21(max)	14(max)	8(max)	3.3V	2.0	LQFP64
NCT7201Y/W	SMBus/I2C	N	N	8 (max)	N	N	3.3V	N	QFN16/TSSOP16
NCT7202Y/W	SMBus/I2C	N	N	12 (max)	N	N	3.3V	N	QFN20/TSSOP20
NCT7362Y	SMBus/I2C	N	N	N	16	16	2.7V-5.5V	N	QFN24

NB and Networking / Storage Series

Nuvoton's Notebook and Networking/Storage Hardware Monitoring IC series is widely adopted in the industry and monitor important hardware parameters including voltage, temperature, and fan speed. These devices prevent system damage by issuing alarms or warning signals when abnormal events are detected.

Part No.	System Interface	On-chip Thermal Sensor	Remote Thermal Sensor Inputs	Voltage Monitor Inputs	Fan Tachometer Inputs	Fan Speed Control Outputs	Operation Voltage	PECI I/F	Package
NCT7511Y	SMBus/I²C	Y	2 (max)	N	1	1	3.3V	N	QFN16
NCT7717U	SMBus/I²C	Y	N	N	N	N	3.3V	N	SOT23-5
NCT7718W	SMBus/I²C	Y	1	N	N	N	3.3V	N	MSOP8
NCT7719W	SMBus/I²C	Y	2	N	N	N	3.3V	N	MSOP10
W83773G	SMBus/I²C	Y	2	N	N	N	3.3V	N	MSOP8
NCT7601Y/W	SMBus/I²C	N	8 (max)	N	N	N	3.3V	N	QFN16/TSSOP16
NCT7602Y/W	SMBus/I²C	N	12 (max)	N	N	N	3.3V	N	QFN20/TSSOP20
NCT7716Y/U	SMBus/I²C	Y	N	N	N	N	3.3V	N	DFN6/SOT23-6
NCT7728W/S	SMBus/I²C	Y	N	N	N	N	3.3V	N	MSOP8/SOP8

Contact us: ComputerIC@nuvoton.com

I/O

General Purpose I/O Series

Nuvoton's General Purpose I/O Expansion IC series allows the easy addition of multiple GPIO capabilities over a standard SMBus interface. These devices include strappable address setting, Input interrupts, and LED and BEEP functions.

Part No.	Supply Voltage	GPIO	Interface	Package
NCT5655W/Y	2.3V ~ 5.5V	16	SMBus	TSSOP24/QFN24
NCT5635W/Y	2.3V ~ 5.5V	16	SMBus	TSSOP24/QFN24
NCT5605Y	3.3V	14	SMBus	QFN20
W83L604G	3.3V	14	SMBus	SSOP20
W83L603G	3.3V	8	SMBus	SOP14
W83601G	5V	15	SMBus	SSOP20

Super I/O Series

Nuvoton's Super I/O series are widely adopted in the motherboard, industrial PC, AIO and workstation applications and support both traditional legacy functions (serial port, parallel port, KBC, and General Purpose I/O) as well as advanced hardware monitoring functions and control features.

Part No.	Interface	KBC	UART	Parallel Port	Hardware Monitor	ACPI	SMBus Master	PECI I/F	SB-TSI I/F	EuP Power Saving	Port 80	Package
NCT5104D	LPC	N	4	N	N	N	N	N	N	N	N	LQFP48
NCT5124D	LPC / eSPI	N	4	N	N	N	N	N	N	N	N	LQFP48
NCT5567D-B	LPC	Y	1	N	Y	Y	Y	3.1	Y	Y	N	LQFP64
NCT5581D	LPC	Y	1	N	Y	Y	Y	3.1	Y	Y	Y	LQFP64
NCT5585D	LPC / eSPI	Y	1	N	Y	Y	Y	3.1	Y	Y	Y	LQFP64
NCT6793D	LPC	Y	2	Y	Y	Y	Y	3.1	Y	Y	Y	LQFP128
NCT6796D	LPC	Y	2	Y	Y	Y	Y	3.1	Y	Y	Y	LQFP128
NCT6796D-E	LPC / eSPI	Y	2	Y	Y	Y	Y	3.1	Y	Y	Y	LQFP128
NCT6106D	LPC	Y	6	Y	Y	Y	Y	3.1	Y	Y	Y	LQFP128
NCT6126D	LPC / eSPI	Y	6	Y	Y	Y	Y	3.1	Y	Y	Y	LQFP128

eSIO Series

Nuvoton's family of eSIO devices combines built-in microcontroller and traditional legacy SIO functions in a single device. These devices can perform traditional Super I/O functions and the programmable core allows a rich set of customized features including advanced fan control and flexible power sequence control. The eSIO series is widely adopted in gaming PCs, AIOs, workstations, datacenter and entry-level server applications.

Part No.	Interface	KBC	UART	Parallel Port	Hardware Monitor	ACPI	SMBus Master	SPI I/F	PECI I/F	SB-TSI I/F	EuP Power Saving	Port 80	Built-in uC	Package
NCT6683D-T	LPC	Y	2	Y	Y	Y	Y	Y	3.1	Y	Y	Y	Y	LQFP128
NCT6685D	LPC	Y	2	Y	Y	Y	Y	Y	3.1	Y	Y	Y	Y	LQFP128
NCT6686D	LPC / eSPI	Y	2	Y	Y	Y	Y	Y	3.1	Y	Y	Y	Y	LQFP128

Security

Trusted Platform Module (TPM)

Nuvoton's Trusted Platform Module (TPM) (NPCT75x) is a seventh-generation Nuvoton SafeKeeper™ device that implements the Trusted Platform Module (TPM) 2.0 specifications for PC-Client TPM.

Part No.	Description	TPM Main Specification Version Compliance	TCG PC Client Specific TIS Version	Compliances	Interface	Operation Temperature (°C)	Package Options
NPCT7xx	SafeKeeper™ Trusted Platform Module (TPM)	Version 2.0 revision 01.16	PTP v1.03 Rev 22	CC EAL4+ and FIPS 140-2 Level 2	SPI, I²C (1.8V-3.3V)	0 ~ 70 or -40 ~ 85	QFN32 UQFN16
		Version 2.0 revision 01.38	PTP v1.04 Rev 0.37	CC EAL4+ and FIPS 140-2 Level 2 with Physical security level 3	SPI, I²C (1.8V-3.3V)	0 ~ 70 or -40 ~ 85	QFN32 UQFN16
		Version 2.0 revision 01.59	PTP v1.05 Rev 14	CC and FIPS certifications in progress	SPI, I²C (1.8V-3.3V)	0 ~ 70 or -40 ~ 85	QFN32 UQFN16

Interface Logic

Voltage Level Shifter

Nuvoton level shifter series provides the ability to interface a variety of devices with different operating voltages. High ESD protection and speeds are supported. These devices are suitable for all Desktop, Workstation, Industrial PC, Server and Cloud computing applications.

Part No.	Operation Voltage	Interface	Inputs	Outputs	Operation Temperature (°C)	Package
NCT5927W	0.8V-5.5V/ 2.2V-5.5V	SMBus/I²C	1	1	-40~85	MSOP 8
NCT5914W	0.5V-6.0V	GTL to LVTTL	4	4	-40~85	TSSOP14

Switches and Multiplexers

Nuvoton Switches and multiplexers allow the connection of devices that operate at different voltage levels but share the same bus, and isolate devices when not in use to reduce overall system capacitive loading. They are widely used in Workstation, Industrial PC, Server and Cloud computing applications.

Part No.	Frequency	Operation Voltage	Interface	Inputs	Outputs	Operation Temperature (°C)	Package
NCT5945W/Y	1 MHz	2.3-5.5V	SMBus/I²C	1	4	-40~85	TSSOP20/QFN20
NCT5946W/Y	1 MHz	2.3-5.5V	SMBus/I²C	1	4	-40~85	TSSOP16/QFN16
NCT5948W/Y	1 MHz	2.3-5.5V	SMBus/I²C	1	8	-40~85	TSSOP24/QFN24
NCT1901D	380Mbit	0.8-3.6V	NC-SI	2	3	-40~85	LQFP64

Contact us: ComputerIC@nuvoton.com

Power Management

TCPC (Type C Port Controller)

TCPC (Type C Port Controller) Series

Power Switch

Power Switch Series

Voltage Regulators

DDR Bus Termination Series
Fan Driver IC Series
Linear Regulator Series

TCPC (Type C Port Controller)

TCPC (Type C Port Controller) Series

Part No.	Description	Main Specification Version Compliance	Interface	Power Role	VCONN Switch	Type-C Ports	No. of GPIOs		Package
							Multiplexed	Dedicated	
NCT3807A0YX	Type-C Port Controller with integrated VCONN switch and GPIO expander	Type-C Cable and Connector, Revision 2.0 Power Delivery (PD), Revision 3.0, v2.0 Type-C Port Controller Interface (TCPCI), Revision 2.0, v1.1	I2C, up to 1MHz	Sink, Source and Dual Power Role	Integrated, up to 1.5W with automatic turn-off protection	1	7	9	QFN32, 5x5
NCT3808A0YX	Type-C Port Controller with integrated VCONN	Type-C Cable and Connector, Revision 2.0 Power Delivery (PD), Revision 3.0, v2.0 Type-C Port Controller Interface (TCPCI) Revision 2.0, v1.1	I2C, up to 1MHz	Sink, Source and Dual Power Role	Integrated, up to 1.5W with automatic turn-off protection	2	10	-	QFN32, 5x5

Power Switch

Power Switch Series

Nuvoton's Power Switch Series are solutions of high integration and cost-effectiveness. Our products offer PCB space saving and are ideal for high side over current protection and system power saving applications. Our series feature low RDS (ON), low input voltage and abundant protections such as over current protection, short circuit, over temperature and reverse voltage/current protections.

Part No.	Input Voltage (VIN)	Features	Rdson (typ.)	Output Current (typ.)	Flag indicator	OCP Adjustable	Output Discharge	Package
NCT3521U	2.7V ~ 5.5V	Enable; Adj. Soft-start & Shutdown Output Discharge, UVLO, OCP, RCP, RVP, OTP	80 m-ohm	2.0A	Y	N	Y	SOT23-5 SOT23-6
NCT3521U-2	2.7V ~ 5.5V	Enable; Adj. Soft-start & Shutdown Output Discharge, UVLO, OCP, RCP, RVP, OTP	80 m-ohm	2.0A	Y	N	Y	SOT23-5 SOT23-6
NCT3527U	3.0V ~ 5.5V	Enable; OCP adjustable, UVLO, OCP, RCP, RVP, OTP; Output Latched off when Flag# Alerted	70 m-ohm	2.5A	Y	Y	Y	TSOT23-6
NCT3527U-A	3.0V ~ 5.5V	Enable; OCP adjustable, UVLO, OCP, RCP, RVP, OTP; Output cycle by cycle re-try when Flag# Alerted	70 m-ohm	2.5A	Y	Y	Y	TSOT23-6
NCT3530Y	4.5V ~ 5.5V	Enable; OCP, UVLO, OCP, RCP, RVP, OTP; HDMI/DVI DDC I²C, HPD Level Shifters	0.6 ohm	0.25A	Y	N	Y	DFN10
NCT3532Y	3.0V ~ 5.5V	Enable; OCP, UVLO, OCP, RCP, RVP, OTP; Dual Mode Display Port (DP++) Auxiliary Channels Splitter with HDMI DDC I²C, HPD Voltage Level Translators	0.2 ohm	0.5A	N	N	N	QFN16

Voltage Regulators

DDR Bus Termination Series

Nuvoton's family of DDR bus termination regulators series provides bi-directional (sinking/ sourcing) current outputs for high speed bus termination applications. These devices provide stable termination power (VTT) and fast transient response for DDR, DDR2, DDR3x, and DDR4 VTT bus termination applications, and are intended for high-performance, low cost DDR designs.

Part No.	Input Voltage (VIN)	Features	Control Voltage	Memory Supported	VTT Output offset (max)	Sink/Source Current (max)	Package
NCT3103S	1.0V ~ 5.5V	Sleep S3 & DDR VTT Enable Control Signals, OCP & OTP	3.0V ~ 5.5V	DDRII, DDRIII, DDRIV	-20mV ~ +20mV	2A	SOP8 with Exposed Pad
NCT3105Y	1.0V ~ 3.6V	EN with Suspend to RAM (STR) Functionality, Power Good, OCP & OTP	2.3V ~ 5.5V	DDRII, DDRIII, DDRIV	-20mV ~ +20mV	2A	DFN10
NCT3101S	1.0V ~ 5.5V	OCP & OTP	3.0V ~ 5.5V	DDRI, DDRII, DDRIII, DDRIV	-20mV ~ +20mV	2A	SOP8 with Exposed Pad

Fan Driver IC Series

Nuvoton's Fan Driver devices are highly integrated and cost-effective solutions providing small PCB footprint and reduced BOM cost. These devices can be coupled with Nuvoton's Super IO Series to drive low cost DC or PWM fans and feature over-current protection, short circuit protection and thermal shutdown for enhanced design safety.

Part No.	Input Voltage (VIN)	Output Voltage	Features	V_{SET} / DCIN	Current Limit Trigger	Output Current (typ.)	Package
NCT3941S	8.0V ~ 17.6V	Follow V_{SET} *4.0 times	OCP, SCP & OTP EN: NCT3941S FON#: NCT3941S-A	1.0 ~ VIN	1.6A (typ.)	0.5A	SOP8 with Exposed Pad
NCT3941S-A	8.0V ~ 17.6V	Follow V_{SET} *4.0 times	OCP, SCP & OTP EN: NCT3941S FON#: NCT3941S-A	1.0 ~ VIN	1.6A (typ.)	0.5A	SOP8 with Exposed Pad
NCT3947S-A	10.8V ~ 13.2V	DC Mode: 3.8 * DCIN; PWM Mode: follows VIN	Auto Fan Type Detection (DC/PWM Fan), Manual Mode, Fault#, OCP, SCP & OTP	0 ~ 3.6V	3.0A ~ 4.0A	2.0A	SOP8 with Exposed Pad

Linear Regulator Series

Nuvoton's Linear Regulator Series provides high performance, low input voltage and low dropout voltage features. Our products provide on/off control (enable pin) for power saving and feature over-current protection, short circuit protection and thermal shutdown for enhanced design safety.

Part No.	Input Voltage (VIN)	Features	Control Voltage	Dropout (typ.)	Output Current (typ.)	Package
NCT3720S	1V ~ 5.5V	EN, PG, UVLO, OCP, SCP & OTP	3V ~ 5.5V	150mV	2A	SOP8 with Exposed Pad
NCT3730S	1V ~ 5.5V	EN, PG, UVLO, OCP, SCP & OTP	3V ~ 5.5V	210mV	3A	SOP8 with Exposed Pad

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NuMotor MCU

NuMotor MCU

NuMotor MCU Series

NuMotor MCP(MCU + Gate driver)

NuMotor MCP Series

NuMotor MCU

NuMotor MCU Series

NuMotor MCU Series for motor application
All series built-in complementary PWM linked with ADC for motor drive
All series built-in analog comparators, rail-to-rail OPA or PGA(except NM1200)
Operating voltage : 2.5V ~ 5.5V
Operating temperature : -40°C ~ 105°C

• NM1200 series (Applicable to: Fan, Ceiling fan, Water pump…)

Part No.	Flash ROM (kB)	SRAM (kB)	I/O	Timer 32-bits	EPWM 16-bit	ADC ch 10-bit	Comp	UART SPI I2C	MAX HCLK	Package Type
NM1100FBAE	17.5	2	17	2	6	8	2	1/0/0	48	TSSOP20
NM1200ZBAE	17.5	2	29	2	6	12	2	2/1/1	48	QFN33 (5x5)
NM1200LBAE	17.5	2	33	2	6	12	2	2/1/1	48	LQFP48(7x7)

• NM1120 sereis (Applicable to : Fan, Cooling fan, Hand-held machine tool, Garden tool, Water pump…)

Part No.	Flash ROM (kB)	SRAM (kB)	I/O	Timer 32-bits	EPWM 16-bit	ADC ch 12-bit	Comp	UART SPI I2C	MAX HCLK	BPWM 16-bit	ECAP 24-bit	PGA	SPROM (kB)	Package Type
NM1120XC1AE	29.5	4	18	2	6	8	2	2/2/2	48	2	3	1	3x0.5	QFN20 (4x4)
NM1120FC1AE	29.5	4	18	2	6	8	2	2/2/2	48	2	3	1	3x0.5	TSSOP20
NM1120EC1AE	29.5	4	22	2	6	8	2	2/2/2	48	2	3	1	3x0.5	TSSOP28

• NM1244 series (Applicable to: Home fan, Ceiling fan, Ebike, Electric scooter, Sewing machine, Hand-held machine, Garden tool...)

Part No.	Flash ROM (kB)	SRAM (kB)	I/O	Timer 32-bits	EPWM 16-bit	ADC ch 12-bit	Comp	UART SPI I2C	MAX HCLK	BPWM 16-bit	ECAP 24-bit	GDMA	SPROM (kB)	OPA	DAC 12-bit	Package Type
NM1244D48	64	8	44	3	6	20	1	2/1/2	60	2	3	2	3x0.5	1	2	LQFP48 (7x7)
NM1244Y48	64	8	44	3	6	20	1	2/1/2	60	2	3	2	3x0.5	1	2	QFN48 (7x7)
NM1244Y	64	8	29	3	6	16	1	2/1/2	60	2	3	2	3x0.5	1	2	QFN33 (4x4)

• NM1234 series (Applicable to: Quadrature encoder interface, Home fan, Ceiling fan, Ebike, Sewing machine, White goods...)

Part No.	Flash ROM (kB)	SRAM (kB)	I/O	Timer 32-bits	EPWM 16-bit	ADC ch 12-bit	Comp	UART SPI I2C	MAX HCLK	BPWM 16-bit	ECAP 24-bit	PGA	SPROM (kB)	OPA	QEI (A/B/IDX)	DAC 12-bit	Package Type
NM1234D	64	16	44	4	6	16	2	3/2/3	72	2	3	1	3x0.5	3	1	2	LQFP48 (7x7)
NM1234Y	64	16	44	4	6	16	2	3/2/3	72	2	3	1	3x0.5	3	1	2	QFN48 (7x7)

• NM1530 series (Applicable to: Quadrature encoder interface, CAN bus, Dual motor control, Ebike, Sewing machine, White goods...)

Part No.	Flash ROM (kB)	SRAM (kB)	I/O	Timer 32-bits	EPWM 16-bit	ADC ch 12-bit	Comp	UART SPI I2C	MAX HCLK	BPWM 16-bit	ECAP 24-bit	CAN2.0	MDU	OPA	QEI (A/B/IDX)	Package Type
NM1520LD2AE	64	8	38	4	9	9	1	2/1/1	72	0	3	1	√	2	1	LQFP48 (7x7)
NM1520RD2AE	64	8	51	4	12	14	2	2/1/1	72	1	3	1	√	2	1	LQFP64 (10x10)
NM1520RC2AE	32	8	51	4	12	14	2	2/1/1	72	1	3	1	√	2	1	LQFP64 (10x10)
NM1530VD3AE	64	16	82	4	12	16	3	2/3/1	72	2	6	1	√	2	2	LQFP100 (14x14)
NM1530VE3AE	128	16	82	4	12	16	3	2/3/1	72	2	6	1	√	2	2	LQFP100 (14x14)

Refer to the following web site for more information
www.nuvoton-mcu.com/forum.php?mod=viewthread&tid=1819&fromuid=177288

NuMotor MCP(MCU + Gate driver)

NuMotor MCP Series

Operating temperature : -40°C ~ 105°C

• NM18107 series (NM1120 + 40V_Gate Driver) (Applicable to: Hand-held machine, Garden tool, Fan...)

Part No.	Flash ROM (kB)	SRAM (kB)	I/O	Timer 32-bits	EPWM 16-bit	ADC ch 12-bit	Comp	UART SPI I2C	MAX HCLK	BPWM 16-bit	ECAP 24-bit	PGA	SPROM (kB)	LDO	Package Type
NM18107Y	29.5	4	14	2	6	8	2	2/1/2	48	2	3	1	3x0.5	5V & 12V	QFN33 (5x5)

• NM1817 series (NM1120 + 600V_Gate Driver) (Applicable to: Ceiling fan, Home fan...)

Part No.	Flash ROM (kB)	SRAM (kB)	I/O	Timer 32-bits	EPWM 16-bit	ADC ch 12-bit	Comp	UART SPI I2C	MAX HCLK	BPWM 16-bit	ECAP 24-bit	PGA	SPROM (kB)	LDO	Package Type
NM1817NT	29.5	4	15	2	6	8	2	2/2/2	48	2	3	1	3x0.5	5V	LQFP44 (10x10)

• NM18407 series (NM1244 + 40V_Gate Driver) (Applicable to: Hand-held machine, Garden tool, Fan...)

Part No.	Flash ROM (kB)	SRAM (kB)	I/O	Timer 32-bits	EPWM 16-bit	ADC ch 12-bit	Comp	UART SPI I2C	MAX HCLK	BPWM 16-bit	ECAP 24-bit	GDMA	SPROM (kB)	OPA	DAC 12-bit	LDO	Package Type
NM18407Y*	64	8	29	3	6	17	1	2/1/2	60	2	3	2	3x0.5	1	2	5V	QFN48 (7x7)

* Under development

Refer to the following web site for more information
www.nuvoton-mcu.com/forum.php?mod=viewthread&tid=1819&fromuid=177288

Component

MOSFET

Low On Resistance MOSFET for Li-ion Battery Protection

Small Size MOSFET for General Switching

Laser Diodes

Blue-Violet

MOSFET

Key customer benefits

1. Long battery run time and fast charging
2. High designability
3. Excellent thermal performance
4. High reliability
5. Low noise
6. Ringing suppression

Product

CSP MOSFET for Li-ion Battery protection
CSP MOSFET for General Switching

Low on Resistance MOSFET for Li-ion Battery protection

Feature

1. Long battery run time and fast charging: Low on resistance; 1.1mΩ
2. Designability: Ultra small size; 0.6 x 0.6mm
3. Prevent deep discharge: Low leakage; IGSS=0.1uA
4. High safety: Low failure rate; 0PPM (Based on Nuvoton QA records)

• 12V-30V Nch Dual MOSFET

• VSS: 12V to 30V
• Size: 0.6 x 0.6mm to 6 x 3mm
• Rss(on) Typ @VGS=3.8V: 1.1mΩ to 100mΩ

Part No.	Type	VSS [V]	VGS [V]	IS*1 [A]	Rss(on)Typ.[mΩ]				Package Size[mm]		
					VGS 4.5V	VGS 3.8V	VGS 3.1V	VGS 2.5V	x	y	t
KFCAB21860L	N-Dual	12	±8	17	1.35	1.5	1.7	2.25	2.52	2.3	0.095
KFCAB21520L	N-Dual	12	±8	16	1.45	1.6	1.8	2.3	3.54	1.77	0.11
KFCAB21890L	N-Dual	12	±8	14.5	1.75	1.95	2.25	2.9	2.98	1.49	0.075
KFCAB21770L	N-Dual	12	±8	14.5	1.8	2	2.2	2.7	3.54	1.77	0.11
KFCAB21260L	N-Dual	12	±8	12	2	2.2	2.4	3.1	3.54	1.77	0.11
KFCAB21740L	N-Dual	12	±8	13.6	2.1	2.2	2.6	3.5	1.96	1.84	0.08
KFCAB21350L	N-Dual	12	±8	12	2.1	2.2	2.4	3.1	3.05	1.77	0.11
KFCAB21490L	N-Dual	12	±8	13.5	2.1	2.2	2.4	3.1	2.98	1.49	0.11
KFCAB21A50L	N-Dual	12	±8	13.5	2.1	2.2	2.4	3.1	2.98	1.49	0.11
KFC6B21150L	N-Dual	12	±10.5	8	4	4.3	4.8	5.9	2.14	1.67	0.11
KFC6B21810L	N-Dual	12	±8	9	4.2	4.6	5.4	7.4	1.89	1.24	0.08
KFC4B21210L	N-Dual	12	±8	4.7	12	13	14	17	1.29	1.29	0.1
KFC4B21220L	N-Dual	12	±8	3	21	23	26	33	0.97	0.97	0.1
KFC4B21080L	N-Dual	12	±12	2.9	27	30	39	60	1.11	1.11	0.1
KFC4B21320L	N-Dual	12	±8	2.5	36	39	45	58	0.8	0.8	0.1
KFC4A21300L	N-Dual	12	±8	1.5	70	80	90	115	0.6	0.6	0.2
KFC4B21300L	N-Dual	12	±8	1.5	70	80	90	115	0.6	0.6	0.1
KFC4B21330L	N-Dual	12	±8	1.5	95	100	115	145	0.8	0.8	0.1
KFCAB22370L	N-Dual	20	±12	10	3.1	3.3	3.8	4.6	3.05	1.77	0.11
KFC6B22160L	N-Dual	20	±8	8	4.7	4.9	5.2	6	2.65	1.67	0.11

Part No.	Type	VSS [V]	VGS [V]	IS*1 [A]	Rss(on)Typ.[mΩ]				Package Size[mm]		
					VGS 4.5V	VGS 3.8V	VGS 3.1V	VGS 2.5V	x	y	t
KFC4B22180L	N-Dual	20	±8	5	9.4	10	11.1	13.4	1.74	1.74	0.11
KFC4B22270L	N-Dual	20	±12	4	17	18	19	22	1.29	1.29	0.1
KFC4B22690L	N-Dual	20	±12	3.4	28	30.5	33	36	1.1	1.1	0.1
KFC4B22670L	N-Dual	20	±12	2.9	35	37.5	42	64	1.1	1.1	0.1
KFCAB22630L	N-Dual	23	±12	13.8	2.2	2.4	2.8	5	3.4	1.96	0.095
KFCAB22680L	N-Dual	23	±12	13	2.45	2.65	3	3.85	3.2	2.1	0.095
KFC6B22100L	N-Dual	24	±12	6	8.2	8.7	9.7	12.5	2.56	1.67	0.1
KFC6B22220L	N-Dual	24	±12	13*2	8.2	8.7	9.7	12.5	2.56	1.67	0.1
KFC6B22090L	N-Dual	24	±12	12*2	8.5	9	10	13	2.56	1.67	0.1
KFC4B22070L	N-Dual	24	±12	3.5	17.5	-	20	23	1.67	1.67	0.1
KFC7P23440L	N-Dual	30	±20	19	3.4	-	-	-	6	3	0.345

∗1 FR4 board (25.4mm×25.4mm×t1.0mm), Full Cu
∗2 Mounted on Ceramic substrate (70mm x 70mm x t1.0mm)

Small Size MOSFET for General Switching

Feature

1. Designability: Ultra small size; 0.6 x 0.6mm
2. Low noise/ Ringing suppression: Low inductance; 99% less than Mold package
3. High reliability: Low failure rate; 0PPM (Based on Nuvoton QA records)

• 12V Nch/Pch Single MOSFET

- VDS: 12V
- Size: 0.6 x 0.6mm to 1 x 1mm
- Rds(on) Typ @VGS=4.5V: 34mΩ to 118mΩ

Part No.	Type	VDS [V]	VGS [V]	ID*1 [A]	Rds(on)Typ.[mΩ]				Package Size[mm]		
					VGS 4.5V	VGS 2.5V	VGS 1.8V	VGS 1.5V	x	y	t
KFJ4B01110L	P-Single	-12	±8	-2.2	118	141	169	199	0.6	0.6	0.1
KFJ4B01100L	P-Single	-12	±8	-3.3	57	68	82	97	0.8	0.8	0.1
KFJ4B01120L	P-Single	-12	±8	-4.2	34	40	48	57	1	1	0.1

∗ 1 FR4 board (25.4mm×25.4mm×t1.0mm), Full Cu

Laser Diodes

Blue-Violet

Nuvoton Technology Corporation Japan (NTCJ)'s blue-violet laser diode has realized a high-power, high-reliability laser suitable for industrial applications by using its unique compound semiconductor process technology and low light loss structure.

• KLC4 Series

The KLC4 series is available in a TO-CAN package with a peak wavelength of 402 nm.
Wide operating temperature range, suitable for industrial applications.

• KLC431FS01WW

Wavelength : 402nm
Multi Transverse Mode
Φ5.6 TO-CAN Package
Emitter size : 7um x 1um
Rated Operating Power : 800mW
Operating Case Temperature (Tc) : 0 ~ +50 degrees C

Part No.	Wavelength [Typ] (nm)	Rated Operating Power(mW)	Operating Case Temperature(°C)	Package
KLC431FS01WW	402	800(CW)	0 ~ 50	Φ5.6CAN

Visual Sensing

Image Sensors

2D View Sensors
3D TOF Sensors

DSP / ISPs

Human Machine Interface Display LSIs
Audio Integrated LSIs

Image Sensors

2D View Sensors

- Over 30 years of mass production achieved in the medical, broadcasting and production camera market
- High resolution, high frame rate, small size and low power consumption for medical, industry and production camera

• KM344 Series

Product Overview

Our CMOS Image sensors achieve high sensitivity, low noise and high color reproducibility which enables backlight scenes to be captured,
reducing blur and providing near infrared photo shooting capability.
Our Image sensors therefore meet the diversified needs of many applications.

Features

- High sensitivity & low noise — Clear images under low illuminance
- High color reproducibility — Uniformed Images
- Supports WDR-mode — Bright images in backlight conditions
- High frame-rate — Capture the moment
- High sensitivity for NIR — Clear images under dark scene

• KM34427ALJ

Providing impressive images with high sensitivity and high S/N 1/3”2.4M Image Sensor

- Monochrome Image Sensor
- Suppresses distortion of the subject and high dynamic range image can be acquired
  High frame rate : 120fps max
  Line-by-Line HDR up to 4 frame data can be synthesized.
- Facilitates thermal design of sets
  Low power consumption : 210mW (at 1080P60fps)
- Facilitates mechanical design of sets
  Small QFN package (8.30mm x 9.40mm x 1.53mm)

• KM34450PLJ

High image quality and high speed Full-frame 8k-60fps Image Sensor

- High resolution and suppresses distortion of the subject, records with natural depiction
  8k(47.8M pixels) high speed shooting 60fps
- High image quality from dark to bright scene
  Realized high dynamic range by 4.3um large pixel
- High image quality on dark condition
  Switching function of Low gain mode and high gain mode

Part No.	Series	Applications	Number of pixels	Optical size	Filter	Output frame rate	Package	Halogen Free
KM34427ALJ	CMOS	Security and Industrial, Medical Camera Use	2.4M	1/3 type	B/W	1080p/120fps	WQFN046-C-0809C	Yes
KM34450PLJ	CMOS	Broadcast,Drone and Industrial Cameras	48M(8k)	Full-frame	RGB	8k4k/12bit_60fps	LGA632-C-379505-IA	Yes

3D TOF Sensors

• Shipped to automotive market and industrial market
• A wide range of spatial sensing by sensor with high spatial resolution
• Sensors can be used for indoors and outdoors

• KM349 Series

• Suitable for Recognition and Detection in spatial sensing
• Even fast movement objects can be supported
• High robustness against changes in sunlight and temperature
• Good performance even in sunlight and high temperature environment

• KM34906BRA

KM34906BRA is a type -1/4”
VGA supports
In-Direct TOF (Time of Flight) operation
Bare Die type

• KM34906B1S

KM34906B1S is a type -1/4”
VGA supports
In-Direct TOF (Time of Flight) operation for Automotive
Package type

• KM34906BLJ5Z

KM34906BLJ5Z is a type -1/4”
VGA supports
In-Direct TOF (Time of Flight) operation
Package type

• KM34930BRA

KM34930BRA is a type -1/8”
QVGA supports
In-Direct TOF (Time of Flight) operation
Bare Die type
• Mass production is scheduled to begin in Q2 of CY2022

• KW330 Series

- Suitable for Recognition and Detection in spatial sensing
- Even fast movement objects can be supported
- High robustness against changes in sunlight and temperature
- Good performance even in sunlight and high temperature environment
- Integrated depth processing unit reduces the data traffic & processing resource from ECU
- Mass production is scheduled to begin in Q2 of CY2022

• KW33000ARA

KW33000ARA is a type -1/4”
VGA supports
In-Direct TOF (Time of Flight) operation
Bare Die type

• KW33000A1T

KW33000A1T is a type -1/4”
VGA supports
In-Direct TOF (Time of Flight) operation for Automotive
Package type

• KW33000A1K

KW33000A1K is a type -1/4”
VGA supports
In-Direct TOF (Time of Flight) operation
Package type

Part No.	Number of pixels	Optical size	Filter	Output frame rate	Depth range (m) / FoV(deg)	Package
KM34906BRA	640x480	1/4	No	30fps	Type-1)0.2m-1.0m/51x38deg Type-2)0.2m-1.2m(mode 1), 1.0m-6.0m(mode 2)/88x66deg Type-3)0.3m-4.0m/108x79deg	CHIP/WAFER
KM34906B1S	640x480	1/4	No	30fps	Type-1)0.2m-1.0m/51x38deg Type-2)0.2m-1.2m(mode 1), 1.0m-6.0m(mode 2)/88x66deg Type-3)0.3m-4.0m/108x79deg	FBGA057-P-0808
KM34906BLJ5Z	640x480	1/4	No	30fps	Type-1)0.2m-1.0m/51x38deg Type-2)0.2m-1.2m(mode 1), 1.0m-6.0m(mode 2)/88x66deg Type-3)0.3m-4.0m/108x79deg	WQFN038-C-0708
KM34930BRA	320x240	1/8	No	60fps	0.1m-3.0m/108x89deg	CHIP/WAFER
KW33000ARA	640x480	1/4	B/W	60fps	Type 1)0.2m-1.2m/51x38deg Type 2)0.2m-1.2m/137x107deg Type3)0.5m-10m/108x79deg	CHIP/WAFER
KW33000A1T	640x480	1/4	B/W	60fps	Type 1)0.2m-1.2m/51x38deg Type 2)0.2m-1.2m/137x107deg Type3)0.5m-10m/108x79deg	iBGA, 9.5mm x 10mm, 97pins
KW33000A1K	640x480	1/4	B/W	60fps	Type 1)0.2m-1.2m/51x38deg Type 2)0.2m-1.2m/137x107deg Type3)0.5m-10m/108x79deg	iBGA, 9.5mm x 10mm, 97pins

DSP / ISPs

Human Machine Interface Display LSIs

- Over 10 years of mass production achieved and cumulative shipment exceeding 55 million units
- An in-vehicle information display having high-class sense harmonized with the interior and functional extensibility can be achieved by various graphic functions and video input interface
- Gerda® is our trademark

Features

- The high-quality 2D/3D graphics can be displayed on information devices
- Achieve comfortable display with quick boot up and high resolution (worth the level of high-end display performance)
- Supporting composite analog input and the latest digital video input can expand the system and product lineup
- The embedded CPU can execute the HMI scenario and extend applications(e.g. for connected car)

• Gerda™-EINS Series

- High resolution system (recommendation: 1920x480)
- Enhanced 2.5D graphics
- Camera I/F: Analog, Digital & MIPI
- Display output after image processing
- Image quality processing engine
  High visibility under foggy, dark or dirty lens condition
- Warping Engine
- Embedded frame buffer memory

• Gerda™-C Series

- High resolution system(WXGA + WVGA)
- Enhanced 2.5D/3D graphics
- Camera I/F 2ch(Analog/Digital)
- Dual display output after image processing
- Distortion compensation for HUD
- Operating System: RTOS, RTOS/Linux Dual

• Gerda™-Cdash Series

- High resolution system(FullHD + WVGA)
- Enhanced 2.5D/3D graphics
- Camera I/F 2ch(Analog/Digital & Ethernet AVB)
- Dual display output after image processing
- Distortion compensation for HUD
- Operating System :RTOS, RTOS/Linux Dual, INTEGRITY®

Part No.	Series Name	CPU	Graphics	OpenGL	Display size	Video input	Mipi-Rx	Video output channel	LVDS-Tx	Audio DSP	Video decoder	External Memory IF	Boot Memory	Embedded Memory	USB	Ethernet	CAN-FD	Package
KM2KSZ100UA	Gerda™-EINS	ARM Cortex®-M7 Single	2.5D	-	1920 x 480 (recommend)	Analog, Digital	Mipi-CSI2	1ch	Dual	-	-	S-Flash	S-Flash	Embedded	(option)	-	(option)	QFP 24mm□ 216pins
KM2KSZ110UA	Gerda™-EINS	ARM Cortex®-M7 Single	2.5D	-	1920 x 480 (recommend)	Analog, Digital	Mipi-CSI2	1ch	Dual	-	-	S-Flash	S-Flash	Embedded	(option)	-	(option)	QFP 24mm□ 216pins
KM2KSZ120UA	Gerda™-EINS	ARM Cortex®-M7 Single	2.5D	-	1920 x 480 (recommend)	Analog, Digital	Mipi-CSI2	1ch	Single	-	-	S-Flash	S-Flash	Embedded	(option)	1ch	(option)	QFP 24mm□ 216pins
KM2KSZ130UA	Gerda™-EINS	ARM Cortex®-M7 Single	2.5D	-	1920 x 480 (recommend)	Analog, Digital	Mipi-CSI2	1ch	Single	-	-	S-Flash	S-Flash	Embedded	(option)	1ch	(option)	QFP 24mm□ 216pins
KM2KSC100UB	Gerda™-C	ARM Cortex®-A9 Dual	2.5D, 3D	ES1.1	WXGA + WVGA	Analog, Digital	-	2ch	Single	HiFiEP	H.264	S-Flash, eMMC, DDR3	S-Flash	-	USB2.0	-	-	BGA 21mm□ 538pins
KM2KSC15K08U	Gerda™-Cdash	ARM Cortex®-A9 Dual	2.5D	-	WXGA	Digital	-	1ch	Single	-	H.264	S-Flash, eMMC, DDR3	S-Flash	-	USB2.0	2ch	-	BGA 21mm□ 538pins
KM2KSC15D00U	Gerda™-Cdash	ARM Cortex®-A9 Dual	2.5D	-	FullHD + WVGA	Analog, Digital	-	2ch	Dual	HiFiEP	H.264	S-Flash, eMMC, DDR3	S-Flash	-	USB2.0	-	-	BGA 21mm□ 538pins
KM2KSC15D0GU	Gerda™-Cdash	ARM Cortex®-A9 Dual	2.5D	-	FullHD + WVGA	Analog, Digital	-	2ch	Dual	HiFiEP	H.264	S-Flash, eMMC, DDR3	eMMC	-	USB2.0	-	-	BGA 21mm□ 538pins
KM2KSC15E0GU	Gerda™-Cdash	ARM Cortex®-A9 Dual	2.5D, 3D	ES2.0	FullHD + WVGA	Analog, Digital	-	2ch	Dual	HiFiEP	H.264	S-Flash, eMMC, DDR3	eMMC	-	USB2.0	2ch	-	BGA 21mm□ 538pins
KM2KSC15010U	Gerda™-Cdash	ARM Cortex®-A9 Dual	2.5D, 3D	ES2.0	FullHD + WVGA	Analog, Digital	-	2ch	Dual	HiFiEP	H.264	S-Flash, eMMC, DDR3	S-Flash	-	USB2.0, USB3.0	2ch	-	BGA 21mm□ 538pins
KM2KSC15003U	Gerda™-Cdash	ARM Cortex®-A9 Dual	2.5D, 3D	ES2.0	FullHD + WVGA	Analog, Digital	-	2ch	Dual	HiFiEP	H.264	S-Flash, eMMC, DDR3	S-Flash	-	USB2.0, USB3.0	2ch	√	BGA 21mm□ 538pins

Audio Integrated LSIs

Audio integrated LSI supports variety of audio interfaces, multiple DSP cores, and 32-bit CPU.
It perform principal audio processing in various applications with a single chip.

Application

- In-vehicle audio system
- Multi-speaker system: 3D surround
- Microphone array: Voice UI, Sound sensing

• KM103S Audio Series

KM103S Audio Series is an Audio integrated LSI that supports multi-channel audio signal processing.

Feature

- Supports multi-channel audio with analog / digital interfaces and sampling rate converters.
- Multi-DSP enables various sound enhanced processing and original algorithms.
- The embedded CPU can be used as a peripheral system controller or coprocessor

• KM103S0G0Q

• Audio DSP Dual
• Cadence® Tensilica® HiFi EP Single
• TDM, I2S, PCM, SPDIF
• Audio ADC/DAC
• Sampling Rate Converter
• 32bit CPU Single
• GPIO, SPI, UART, I2C
• HQFP216 24mmx24mm

• KM103S0H0Q

• Audio DSP Dual
• Cadence® Tensilica® HiFi EP Single
• TDM, I2S, PCM, SPDIF
• Audio ADC/DAC
• Sampling Rate Converter
• AM32 (32bit CPU) Single
• GPIO, SPI, UART, I2C
• LQFP128 18mmx18mm

Part No.	CPU	DSP	Digital input	Analog input	Digital output	Analog output	Sampling Rate Converter	Peripherals	Package
KM103S0G0Q	AM32 (original CPU) Single	ACORE (original DSP) Dual Tensilica® HiFi EP Single	TDM, I2S, PCM, SPDIF	ADC 6ch	TDM, I2S, PCM, SPDIF	DAC 6ch	2ch x 9	GPIO, SPI, UART, I2C	HQFP216 24x24
KM103S0H0Q	AM32 (original CPU) Single	ACORE (original DSP) Dual Tensilica® HiFi EP Single	TDM, I2S, PCM, SPDIF	ADC 6ch	TDM, I2S, PCM, SPDIF	DAC 6ch	2ch x 9	GPIO, SPI, UART, I2C	LQFP128 18x18

nuvoTon

Battery and Analog Solutions

Analog ICs

Battery Monitoring ICs
Motor Driver ICs
DC-DC Regulator ICs
LED Drivers
RF & Microwave
LCD Power Management
Display Driver ICs

Analog ICs

Battery Monitoring ICs

Nuvoton's Battery Monitoring ICs can improve more efficient battery utilization by being equipped with high accuracy ADC.
In addition, our ICs family is reliability and apply to multi cell by high-voltage SOI (Silicon on Insulator) process.
Nuvoton's Battery Monitoring ICs prepare product lineup for customer's battery applications.

• KA49 Series

Lithium-ion batteries has high energy density and low memory effect and will be used in storage likes battery-powered equipment and solar power as well as automotive.
To safely and efficiently use a battery, the management of the series connected cells is important.
This IC has high precision AD converter for 22 batteries cells in series to measure battery voltage and charge/discharge current and equalizes the cell voltage.
It has the protection function for battery voltage and over- current detection for safety.
The microcomputer with communication function for battery management, analog IC and power devices are prepared.

Features

- Monitoring up to 22 batteries cells in series lithium-ion cells
- High performance by SOI (Silicon on Insulator) process
  1.High accuracy from low to high temperatures
  2.Stabilize a circuit by reducing noise
  3.Latch-up free
- Controlling cell by integrated circuit reduces the number of parts, circuit board area and costs

• KA49503A

KA49503A is a battery monitoring IC with protection function. With high resolution ADC built-in, KA49503A is capable to measure battery cell voltage and current level accurately.
Through SPI serial interface, microcontroller unit (MCU) is able to read the status and measured result by KA49503A.In addition, this IC can support an application with up to 16 batteries cells in series or a maximum voltage of 85V, it is suitable for application with high input voltage such as E-bike, UPS etc.

• KA49511A

KA49511A is a multicell battery stack monitor IC which apply to be capable of voltage measurement of up to 10 batteries cells in series with maximum 45V input common mode voltage.
This IC is optimized for such as batteries for electrical bicycles requiring high-voltage operation.
In addition, this IC has the control of the cell balancing switches, the control of the high-side N-channel MOSFET for charge and discharge and a built-in regulator necessary for the peripheral circuits.

• KA49517A

KA49517A is a battery monitoring IC with protection function. With high resolution ADC built-in, KA49517A is capable to measure battery cell voltage and current level accurately.
Through SPI serial interface, microcontroller unit (MCU) is able to read the status and measured result by KA49517A.
In addition, this IC enhances safety diagnostic function to get reliability by embedding FETOFF function for abnormal detection.
KA49517A can support an application with up to 17 batteries cells in series or a maximum voltage of 85V, it is suitable for application with high input voltage such as E-bike, UPS, Energy Storage System etc.

• KA49522A

KA49522A is a battery monitoring IC with protection function. With high resolution ADC built-in, KA49522A is capable to measure battery cell voltage and current level accurately.
Through SPI serial interface, microcontroller unit (MCU) is able to read the status and measured result by KA49522A.
In addition, this IC enhances safety diagnostic function to get reliability by embedding FETOFF function for abnomal detection.
KA49522A can support an application with up to 22 batteries cells in series or a maximum voltage of 110V, it is suitable for application with high input voltage such as E-bike, UPS, Energy Storage System etc.

• KA49625A

KA49625A is a 20 channel multi-cell stacked battery management IC which measures up to 100V.
Therefore, it is ideal for applications that require high voltage monitoring such as UPS , ESS.
Another important feature of this IC is system redundancy which is targeted to support functional safety. Cell voltage is measured with two separate independent systems which are namely, the highly precise measurement system and the fault surveillance system.

Part No.	Description	Operating Voltage [Min] (V)	Operating Voltage [Max] (V)	Operating Temperature [Min] (°C)	Operating Temperature [Max] (°C)	Max Series Cells	Cell Voltage Measurement Accuracy (mV)	Monitoring Function	Daisy Chain Connection	High-Side NchFET	Protective Function	Package
KA49503A	BM-IC for Industrial	12.5	85	-40	105	16	±10	Voltage/ Current/ Temperature	N/A	Available	Over and Under Voltage/ Over Current in Charge/ Over Current in Discharge/ Short Circuit in Discharge	LQFP080-P-1414FZ
KA49511A	BM-IC for Industrial	12.5	45	-40	105	10	±10	Voltage	N/A	Available	Over Voltage	TQFP056-P-1010
KA49517A	BM-IC for Industrial	12.5	85	-40	105	17	±10	Voltage/ Current/ Temperature	N/A	Available	Over and Under Voltage/ Over Current in Charge/ Over Current in Discharge/ Short Circuit in Discharge.Diagnostic function check	HQFP064-P-1010DZ
KA49522A	BM-IC for Industrial	12.5	110	-40	85	22	±10	Voltage/ Current/ Temperature	N/A	Available	Over and Under Voltage/ Over Current in Charge/ Over Current in Discharge/ Short Circuit in Discharge.Diagnostic function check	HQFP064-P-1010DZ
KA49625A	BM-IC for Industrial	12.5	100	-40	105	20	±10	Voltage	15	-	Over and Under Voltage Detection / Diagnostic function check	LQFP080-P-1414F

Motor Driver ICs

Nuvoton's Motor Driver ICs save customer's development resources and support to make a plat form by APC (Auto Phase control) which maximize performance of motor.
Nuvoton's Motor Driver ICs prepare product lineup of single-phase and 3-phase DC motor driver with APC for customer's motor applications.

• 1-Phase Brushless DC KA44 Series

This product is Driver IC for 1-phase brushless motor which used for industrial products like base stations or sever, OA equipment, beauty home appliances and white goods.
On motor module design, by induced power, current phase is slipped out and it makes inefficient.
This driver has APC: Auto Phase control and detected motor current and keeps good rotation efficiency for reducing power consumption.

Features

• APC: Auto Phase control
• Build in soft switching function and protection make reducing external parts

• KA44168A

KA44168A is a high efficiency single phase motor driver IC with built-in Soft Switching function for low noise operation.
The soft switching period is automatically adjusted based on the motor current. This eliminates the need for individual adjustment of the soft switching period based on the Motor's specifications.
With a wide input voltage range of 12V/24V, this IC is most suitable for usage in HA, OA and FA equipment.

• KA44169A

KA44169A is a high efficiency single phase motor driver IC with built-in Soft Switching function for low noise operation.
The soft switching period is automatically adjusted based on the motor current. This eliminates the need for individual adjustment of the soft switching period based on the Motor's specifications.
KA44169A enable to select for speed control by direct PWM input.
With a wide input voltage range of 12V/24V, this IC is most suitable for usage in HA, OA and FA equipment.

• KA44169AB

KA44169AB is a high efficiency single phase motor driver IC with built-in Soft Switching function for low noise operation.
The soft switching period is automatically adjusted based on the motor current. This eliminates the need for individual adjustment of the soft switching period based on the Motor's specifications.
KA44169AB enable to select for speed control by DC input.
With a wide input voltage range of 12V/24V, this IC is most suitable for usage in HA, OA and FA equipment.

• KA44170A

KA44170A is a high efficiency single phase motor driver IC with built-in Soft Switching function for low noise operation.
An automatic phase adjustment function is provided to optimize the soft switching section and its current, so it is possible to drive the motor with low noise and high efficiency regardless of the type of motor and operating environment with a small number of parts.
KA44170A enable to select for speed control by direct PWM input.
With a wide input voltage range of 12V/24V, this IC is most suitable for usage in HA, OA and FA (for high speed fan motor < 15krpm) equipment.

• KA44171A

KA44171A is Pre Driver IC for single phase Brushless Motor. It can apply DC or PWM signal for Motor speed control input.
PWM soft switching function and Motor current phase setting can makes Motor current direction switch smoothly, high efficiency and silent driving.
Wide supply voltage range can use various external power MOSFET. It can drive various Motor using 12V,24,and 48V power supply.
KA44171A is equipped with APRaS (Advanced Phase and Rapid Soft switching) to optimize high speed motor performance.
With a wide input voltage range of 12V/24V and 48V, this IC is most suitable for usage in Industrial for data sever, base station, HA, OA and FA (for high speed fan motor < 100krpm) equipment.

Part No.	Control Circuit	Interface	Protection Circuit	Operating Voltage [VCC] (V)	Rated Voltage (V)	Rated Current (A)	RDS(on) (Ω)	Operating Temperature [Min] (°C)	Operating Temperature [Max] (°C)	Package
KA44168A	PWM (Voltage Drive)		Low Voltage, Heat, Locking, Overcurrent	12V/24V System	35	1	1.6	-40	90	MSOP008-P-0150XZL
KA44169A	PWM (Voltage Drive)	PWM	Low Voltage, Heat, Locking, Overcurrent	12V/24V System	36	1.4 (1sec)	1.6	-40	90	MSOP014-P-0225XZL
KA44169AB	PWM (Voltage Drive)	DC	Low Voltage, Heat, Locking, Overcurrent	12V/24V System	36	1.4 (1sec)	1.6	-40	105	MSOP014-P-0225XZL
KA44170A	PWM (Voltage Drive)	PWM	Low Voltage, Heat, Locking, Overcurrent	12V/24V System	36	1.6 (1sec)	1.25	-40	105	MSOP014-P-0225XZL
KA44171A	PWM (Voltage Drive)	PWM/DC	Low Voltage, Heat, Locking, Overcurrent	12V/24V/48V System	39	Pre-Dr	Pre-Dr	-40	95	HQFN020-A-0303XZL

• 3-Phase Brushless DC KA44 Series

Our 3-phase Brushless DC motor driver ICs provide sine-wave PWM drive with one Hall sensor to reduce the component count, size, and noise of a motor module, which are best suited for a cooling fan and can also be applied to air conditioner, electric fan and other home appliances.

Features

With the rotor position detector and sine-wave PWM drive with one Hall sensor, and the APC: Auto Phase control,
- Allow the reduce of components of motor products, so it comes reduction of BOM cost
- Feature with APC: Auto Phase control and hence development time can be reduced by cutting down manual adjustment or fine tuning process
- Achieve low noise operation by adopting full sine wave output driving current
- Maximize efficiency, torque and speed
- Built-in standby function for power-saving purpose

• KA44143A

KA44143A is a high efficiency 3-phase brushless motor driver IC with built-in Soft Switching function for low noise operation. The soft switching period is automatically adjusted based on the motor current. This eliminates the need for individual adjustment of the soft switching period based on the Motor's specifications.
By employing the rotor position detector and sine wave PWM drive by 1-Hall-sensor, this IC achieves component reduction and miniaturization of motor set as well as motor drive at low noise, low vibration and low power consumption.
With a wide input voltage range of 12V/24V, this IC is most suitable for usage in HA, OA and FA equipment.

Part No.	Control Circuit	Interface	Protection Circuit	Operating Voltage [VCC] (V)	Rated Voltage (V)	Rated Current (A)	RDS(on) (Ω)	Operating Temperature [Min] (°C)	Operating Temperature [Max] (°C)	Package
KA44143A	PWM (Voltage Drive)	DC/PWM	Low Voltage, Heat, Overvoltage, Locking, Overcurrent	12V/24V System	28	2.2	1	-40	95	HQFN024-A-0404AZ

• Stepper Motor Driver ICs

Nuvoton's Stepper motor driver ICs achieve high efficiency and low noise with micro-step and mix-decay control, which are best suited to be used in printer, FA, surveillance-camera, and other home appliances.

Features

1.Realize easy thermal design and small substrate by the low ON resistance power transistors
2.Reduction of switching noise by low EMI power drive
3.Achieve safety with over-current protection, thermal protection, and low power-supply-voltage
4.Achieve low vibration and low power consumption with micro-step and mix-decay control

• KA44180A

KA44180A is a two channel H-bridge driver IC. Bipolar stepping motor can be controlled by a single driver IC.
Interface is "parallel control IF" and 2 phase excitation, half-step, 1-2 phase excitation, W1-2 phase excitation can be selected.

Part No.	Control Circuit	Interface	Protection Circuit	Operating Voltage [VCC] (V)	Rated Voltage (V)	Rated Current (A)	RDS(on) (Ω)	Operating Temperature [Min] (°C)	Operating Temperature [Max] (°C)	Package
KA44180A	PWM (Current Drive)	Parallel	Low Voltage, Heat, Overcurrent, thermal	12V/24V System	37	1.5	0.95	-20	85	SSOP032-P-0300D

• Lens Motor Driver ICs

Nuvoton's Lens Motor Driver ICs are suitable to be used in products with zoom, focus control and iris control.

Features

1. This single-chip IC features zoom, focus and iris functions, dramatically reduces the package size and external parts.
   Thus, this IC achieves miniaturization of mounting board and therefore reduce camera size.

2. Realizing super low noise by adopting a micro-step drive with built-in correction circuit for zoom and focus.
   CAP (Correction Amplitude & Phase) function
   - Amplitude correction circuit: correct an imbalance of back EMF occurs at each coil by the current adjustment of each phase.
   - Phase correction circuit: correct a phase difference between coils with the adjustment resolution of 0.7 degree.

3. Iris drive realizes low power consumption by adopting the PWM drive.
   Built-in LPF of variable cut-off frequency and noise reduction circuit around PID control circuits to dramatically reduce the influences of acoustic noise against various iris mechanical characteristics.

• KA41908B

KA41908B is a lens motor driver IC for surveillance-camera, web camera, featuring Iris control function.
Voltage drive system and CAP function enable super- low noise micro-step drive.

Part No.	Control Circuit	Interface	Protection Circuit	Operating Voltage [VCC] (V)	Rated Voltage (V)	Rated Current (A)	RDS(on) (Ω)	Operating Temperature [Min] (°C)	Operating Temperature [Max] (°C)	Package
KA41908B	PWM (Voltage Drive)	Serial data communication for 4 line both sides	Low Voltage, Heat	3.3V/5V System	4.0/6.0	0.25	Max2.5 / Max5.0	-20	85	QFN 44L

DC/DC Switching Regulators

Switching regulators are the most efficient way to convert from one input DC voltage to another output DC voltage.
Nuvoton's DC-DC regulator ICs can help you to reduce power consumption with industry-leading power conversion efficiency.

• Step-Down (Buck) Switching Regulators

Step-down (buck) switching regulators is the function of the efficient conversion from an input voltage to a lower output voltage, generally this output voltage is used for the power supply of various semiconductor device in your equipment.
Nuvoton's step-down (buck) switching regulators can help your system to operate stably, applying to wide-range operation voltage and supplying stable output voltage with industry-leading load transient response through our unique control system.

Features

- Wide-range operation voltage (input voltage : 4.5~80V, output voltage : 2.5~18V)
- Industry-leading load transient response with our unique control system

• KA83111UA

KA83111UA is a synchronous DC-DC Step down Regulator (1-ch) with integrated power MOSFETs and employs the hysteretic control system.
The wide input voltage range (VIN:4.5V to 80V), and low current consumption mode are suitable for automotive and battery-powered applications .

Part No.	Channel number	MOSFET	Rectification system	Operating Voltage (V)	Rated voltage (V)	Output Voltage (V)	Max. Output Current (A)	SW Frequency (MHz)	Control System	Control Mode	5V Regulator	Protection Circuit	Operating Temperature (°C)	Package Type
KA83111UA	1	H/L-side Built in	Synchronous	4.5~80	90	2.5~18	1	0.25~1	Hysteretic	Skip mode or FCCM	Built in	UVLO,TSD, XOVP, PGOOD,OCP, SCP	-40~125	HSOP20

LED Drivers

Nuvoton's LED Driver ICs prepare product lineup from RGB LED for consumer products to controllers for in-vehicle headlights with unique LED drive technology suitable for each application.
We can help your production of various LED lighting applications.

• RGB LED Drivers

Nuvoton's RGB LED driver ICs prepare product lineup from the string LED deriver to the matrix LED driver, and enable high-accuracy representation by adopting a current control of up to 256 steps and an original light control technology.
Our LED Driver ICs are used for various LED applications including mobile, wearable, AV equipment, home appliances and others, by additional music synchronization and persistence of vision (POV) functions.
You can choose an RGB LED driver that meets the needs of communications interface, power line wiring reduction, realize the LED lighting suitable for your equipment.

Features

- New LED driver circuits enable over 67 million RGB color
- Brightness is freely controlled by original lighting control method
- Reduce power line wiring or harnesses/connectors by built-in LDO

• KA32180A

KA32180A is a 16 Dots (4 x 4) Matrix LED Driver. It can drive up to 4 channels of RGB LEDs.

Features

- 4 x 4 LED Matrix Driver (Total LED that can be driven = 16)
- LED Selectable Maximum Current
- LED Music Synchronizing Function
- I^2C interface (Standard Mode, Fast Mode and Fast Mode Plus)
  (4 Slave address selectable)
- 16 pin Plastic Quad Flat Non-leaded Package (QFN Type)

• KA32182A

KA32182A is a 36 dots (6 x 6) Matrix LED driver. It can drive up to 12 RGB LEDs.

Features

- 6 x 6 LED Matrix Driver (Total LED that can be driven = 36)
- LED Selectable Maximum Current
- LED Music Synchronizing function
- I^2C interface (Standard Mode, Fast Mode and Fast Mode Plus) (4 Slave address selectable)
- 20 pin Plastic Quad Flat Non-leaded Package (QFN Type)

• KA32183A

KA32183A is a 81 Dots (9 x 9) Matrix LED Driver. It can drive up to 27 RGB LEDs.

Features

- 9 x 9 LED Matrix Driver (Total LED that can be driven = 81)
- LED Selectable Maximum Current
- LED Music Synchronizing Function
- I^2C interface (Standard Mode, Fast Mode and Fast Mode Plus) (4 Slave address selectable)
- 24 pin Shrink Small Outline Package (SSOP Type)

• KA37775A

KA37775A is a constant current source IC for driving LEDs.
This IC is equipped with 24-channels of constant current output terminals, SPI, and I2C interface, and capable of dimming by PWM modulation of each channel by resister setting. In addition, R,G,B group current adjustment is possible by register setting.
Maximum current value can be adjusted with an external resistor.

Features

- Built-in LDO to save PCB space and power consumption
- Simple control to reduce the complexity of software control
- Improve immunity against external disturbance.

• KA37777A

KA37777A is a constant current source IC for driving LEDs.
This IC is equipped with 9-channels of constant current output terminals, SPI interface, and capable of dimming by PWM modulation of each channel by resister setting. In addition, R,G,B group current adjustment is possible by register setting.
Maximum current value can be adjusted with an external resistor.

Features

- Built-in LDO to save PCB space and power consumption
- Simple control to reduce the complexity of software control
- Improve the immunity against external disturbance.

Part No.	Series	Matrix LEDs	number of channels	Number of PWM step	Number of Current step	constant current control	Host I/F	Operating Voltage [Min] (V)	Operating Voltage [Max] (V)	Package
KA32180A	LED Matrix Driver	4 x 4	-	256	16	-	I2C	3.1	5.5	QFN016-P-0304C
KA32182A	LED Matrix Driver	6 x 6	-	256	16	-	I2C	3.1	5.5	QFN020-P-0304C
KA32183A	LED Matrix Driver	9 x 9	-	256	16	-	I2C	3.1	5.5	SSOP024-P-0300F
KA37775A	Constant Current LED Driver	-	24	256	-	Available	SPI/I2C	4.5	28	HQFP048-P-0707E
KA37777A	Constant Current LED Driver	-	9	256	-	Available	SPI	4.5	28	SSOP020-P-0225FZ

RF & Microwave

Nuvoton's RF products contribute to customers' module design with high performance, miniaturization, and low power consumption by using high-performance CMOS process technology and circuit design technology.
Nuvoton offers a lineup that supports small portable devices and battery-powered consumer applications using 2.4GHz / 5GHz wireless LAN.

• RF Front End ICs

Nuvoton offers RF front-end ICs that are ideal for modular designs that customize for 3rd party products.
The LNA (Low Noise Amplifier) on the receiving side has a high-linear, low-noise figure that does not distort the input return signal.
Moreover, the embedded switch and logic circuit make it possible to switch between TX mode, RX mode / high gain, and RX mode / low gain.
Nuvoton also offers single pole three-throw (SP3T) RF switch IC for wireless LAN, Bluetooth, and general-purpose medium-power wireless devices.
This RF switch IC allows Shutdown mode with low voltage switching control to block interference from other high power wireless devices.

Features

- Embedded high-linearity LNA does not distort the input signal on the receiver
- Available switching between TX mode, RX mode / high gain, and RX mode / low gain with embedded logic circuit control
- Available Shutdown mode to block interference (only with RF switch IC product)

• KA29222K

KA29222K is a LNA (Low Noise Amplifier)-IC with integrated SW (SPDT) for 5GHz Band applications. It is controlled by integrated CMOS logic circuit to TX mode , RX mode / High Gain , RX mode / Low Gain.
Achieve miniaturization by using small size Chip Size Package with solder bump.

This IC is most suitable for usage in Wireless LAN for 5GHz.

• KA29223K

KA29223K is a LNA (Low Noise Amplifier)-IC integrated SW (SP3T) for 2.4GHz Band applications.
It is controlled by integrated by CMOS logic circuit to TX mode , BT mode , RX mode / High Gain , RX mode / Low Gain.
Achieve miniaturization by using small size Chip Size Package with solder bump.

This IC is most suitable for usage in Wireless LAN and Bluetooth for 2.4GHz.

• KA29242K

KA29242K is a SP3T Antenna Switch-IC for Wireless LAN, Bluetooth and General Purpose Middle-Power Wireless Applications.
This IC allows Low voltage control switching and Shutdown mode for blocking disturbing wave from other High-Power Wireless Applications.
Achieve miniaturization by using small size Chip Size Package with solder bump.

This IC is most suitable for usage in Wireless LAN, Bluetooth for 2.4GHz and General Purpose Middle-Power Wireless Applications.

Part No.	Application	Frequency [GHz]	Operating Voltage [Min] (V)	Operating Voltage [Max] (V)	Gani1 (High Gain Mode) [dB]	Gani2 (Low Gain Mode) [dB]	IIP3 (Gain1) [dBm]	NF (High Gain Mode) [dB]	Insertion Loss (SW) [dB]	ICC(Typ) [mA]	Package
KA29222K	LNA+SW(SPDT)-IC for WLAN	WLAN5GHz Band	3	3.6	11	-8.5	8	2.5	0.7	12	Chip Size Package with solder bump (11Pin, Size : 0.711 x 0.923 mm2 x 0.3 t mm)
KA29223K	LNA+SW(SP3T)-IC for WLAN	WLAN2.4GHz Band	3	3.6	12.5	-8	4	1.7	0.6	11.5	Chip Size Package with solder bump (11Pin, Size : 0.711 x 0.923 mm2 x 0.3 t mm)
KA29242K	SW(SP3T)-IC for WLAN etc.	WLAN2.4GHz Band	2.7	5	-	-	-	-	0.5	0.012	Chip Size Package with solder bump (10Pin, Size : 0.807 x 0.601 mm2 x 0.3 t mm)

LCD Power Management

Nuvoton's LCD Power Management helps to provide all the supply voltages necessary for TFT - LCD driving, to reduce peripheral parts and to design compact form needed for space-constrained applications.
Nuvoton's LCD Power Management meet your LCD design requirements for industrial and consumer applications.

• LCD Power Supply ICs

Nuvoton's LCD power supply ICs can supply output voltage and is used for various power supply voltages, timing controller, source driver and gate driver.
It is possible to set a command with I^2C interface and can help applying display size by adjusting built-in power supplies.

Features

- Generate various supply voltages for timing controller, source driver and gate driver, VCOM
- Gamma voltage correction control (Breakpoint voltage control, Gamma shift)

• KN32094AA-BJ

KN32094AA-BJ generates all the voltages for LCD by integrating one step-down DCDC converter, one step-up DCDC converter and charge pump circuits in the IC.
In addition, it is possible to boot up without command by storing the power supplies settings in the built-in non-volatile memory (MTP : Multi-Time Programmable).
KN32094AA-BJ is suitable for applications such as a tablet device and laptop for consumer, other medical and industrial.

Part No.	Serial I/F	Operating Voltage (V)	Output Logic Voltage [DVDD] (V)	Output Source Voltage [AVDD] (V)	Output Gate Voltage [VGH/VGL] (V)	VCOM Volatage (V)	Gamma Correction (ch)	Internal Memory	Operating Temperature [Min] (°C)	Operating Temperature [Max] (°C)	Package
KN32094AA-BJ	I^2C	2.7V to 3.6V	1.2	8.5V to 15V	15V to 32V (VGH)-4V to 10V (VGL)	VREFH×0.2705 to VREFH×0.5524 (VREFH=AVDD-0.5V)	18	MTP (1Kbit×2)	-40	95	HQFP100-P-1414C

Display Driver ICs

Nuvoton's Display Driver ICs can be driven according to display size, resolution, and definition.
It can contribute to the reduction of EMI noise, power consumption, and board area.
Nuvoton's Display Driver ICs can be applied to displays in a wide range of industrial and consumer applications.

• Source Driver ICs

Nuvoton's Source Driver ICs are equipped with a high-speed interface that transmits differentially.
It can contribute to the reduction of EMI noise during communication and is best suited for driving high-resolution displays.
In addition, it has a function to switch the number of outputs and can be driven according to the resolution of the display.

• KM838996

KM838996 supports 10-bit high-resolution data.
It is suitable for high-definition large displays for gaming and medical applications.

Features

- 1056 / 1050 / 1026 / 966 / 960 / 900 / 864 / 768 output channels
- Interface : mini-LVDS™, Data Structure : 10-bit/8pairs
- 22 Gamma correction inputs

Part No.	Digital Operating Voltage (V)	Analog Operating Voltage (V)	Gamma Correction Voltage (V)	Analog Output Voltage (V)	Operating Frequency [Max] (MHz)	Operating Temperature [Min] (°C)	Operating Temperature [Max] (°C)	Package
KM838996	2.3V to 3.6V	AVDD : 11.0V to 15.5V	Vrf1 to Vrf11 : 0.4*AVDD to AVDD-0.2 Vrf12 to Vrf22 : AVSS+0.2 0.6*AVDD	AVSS+0.2 to AVDD-0.2	310 MHz	-20	85	COF

nuvoTon

IoT with Security

Microcontrollers

8bit KM101 MCUs
32bit KM103 MCUs
Arm Cortex-M7 MCUs

Communication & Interface LSIs

NFC Tag LSIs

Microcontrollers

8bit KM101 MCUs

KM101 Series MCU is 8-bit general use MCU with Nuvoton Japan original 8-bit CPU.
It is low power consumption, high code efficiency, and high performance. Its performance is comparable to the 16-bit MCU of other companies

• Ultra Low Power KM101L Series

KM101LSeries MCU is a 8-bit MCU with Nuvoton Japan original 8-bit CPU, which has a good balance between high speed processing ability and low power consumption.
ReRAM is embedded in the MCU. It is possible to rewrite in high speed and low-power, and large-capacity data area is also realized.
It is ideal for battery-powered systems that operate intermittently.

• KM101LR03D/KM101LR04D/KM101LR05D

Features

- 8-bit CPU original core with low-power consumption
- ReRAM which can be rewritten by high-speed and low-power consumption
- Archive a good balance between high-performance and low-power consumption by low-power design

Added Value

- Battery can be a longer life because of the super low-power consumption
- EEPROM size reduction is possible, because ReRAM can be rewritten by byte
- Production cycle time reduction is possible because of high-speed rewritten

Part No.	Applications	ROM Size (KB)	ROM Type	RAM Size (KB)	Pin Count	Max Operating Frequency (MHz)	8-bit Timer (channel)	16-bit Timer (channel)	PWM (channel)	3-Phase PWM Output Function (set)	Serial I/F [Clock Synchronous] (channel)	Serial I/F [UART] (channel)	Serial I/F [I2C] (channel)	Serial I/F [LIN] (channel)	Serial I/F [CAN] (channel)	Serial I/F [Remarks] (channel)	DMA (channel)	ADC [10bit] (channel)	ADC [12bit] (channel)	ADC [Remarks]	DAC [8bit] (channel)	Op Amp	Min Instruction Exec. Time / Voltage (ns/V)	Max Operating Voltage (V)	Min Operating Voltage (V)	Number of I/O Ports (channel)	Interrupt Sources (channel)	External Interrupt (channel)	LCD [SEG] (channel)	LCD [COM] (channel)	External Bus Expansion	RTC	High Speed On Chip Oscillator Frequency (MHz)	Low Speed On Chip Oscillator Frequency (kHz)	Power On Reset	Low Voltage Detection	Watch Dog Timer (channel)	Package
KM101LR03D	LCD Driver Built-in Type	64	ReRAM	4	48	10	6	3	6		4	2	2			Sync./ UART x2,Sync./ I2C x2	1		4	12bit x 1unit			100 / 1.8 to 3.6	3.6	1.1	38	39	8	21	4		Yes	10,8	40	Yes	Yes	1	TQFP 048-P -0707
KM101LR04D	LCD Driver Built-in Type	64	ReRAM	4	64	10	6	3	6		4	2	2			Sync./ UART x2,Sync./ I2C x2	1		6	12bit x 1unit			100 / 1.8 to 3.6	3.6	1.1	53	39	8	31	4		Yes	10,8	40	Yes	Yes	1	TQFP 064-P -1010
KM101LR05D	LCD Driver Built-in Type	64	ReRAM	4	80	10	6	3	6		4	2	2			Sync./ UART x2,Sync./ I2C x2	1		8	12bit x 1unit			100 / 1.8 to 3.6	3.6	1.1	69	39	8	43 (39)	4 (8)		Yes	10,8	40	Yes	Yes	1	TQFP 080-P -1212

• Low Power KM101E Series

KM101E Series MCU is 8-bit general use flash MCU with original 8-bit CPU.
They can contribute to create various systems because of its simple and compact, various peripheral functions such as LCD driver, wide range of pin count and memory lineup.

Part No.	Applications	ROM Size (KB)	ROM Type	RAM Size (KB)	Pin Count	Max Operating Frequency (MHz)	8-bit Timer (channel)	16-bit Timer (channel)	PWM (channel)	3-Phase PWM Output Function (set)	Serial I/F [Clock Synchronous] (channel)	Serial I/F [UART] (channel)	Serial I/F [I2C] (channel)	Serial I/F [LIN] (channel)	Serial I/F [CAN] (channel)	Serial I/F [Remarks] (channel)	DMA (channel)	ADC [10bit] (channel)	ADC [12bit] (channel)	ADC [Remarks]	DAC [8bit] (channel)	Op Amp	Min Instruction Exec. Time / Voltage (ns/V)	Max Operating Voltage (V)	Min Operating Voltage (V)	Number of I/O Ports (channel)	Interrupt Sources (channel)	External Interrupt (channel)	LCD [SEG] (channel)	LCD [COM] (channel)	External Bus Expansion	RTC	High Speed On Chip Oscillator Frequency (MHz)	Low Speed On Chip Oscillator Frequency (kHz)	Power On Reset	Low Voltage Detection	Watch Dog Timer (channel)	Package
KM101EF50D	LCD Driver Built-in Type	64	FLASH	4	64	20	7	2	5	1	4	3	1			Sync./ UART x3,Sync./ I2C x1		12		10bit x 1unit			50 / 2.7 to 5.5	5.5	1.8	55	30	5	24	8			20,16		Yes	Yes	1	LQFP 064-P -1414
KM101EF51A	ADC Built-in Type	32	FLASH	1	44,48	20	5	2	3	1	3	2	1			Sync./ UART x2,Sync./ I2C x1		12		10bit x 1unit			50 / 2.7 to 5.5	5.5	1.8	36	25	5					20,16	30	Yes	Yes	2	QFP044-P-1010, TQFP048-P-0707
KM101EF52A	ADC Built-in Type	32	FLASH	1	32	20	5	2	3	1	3	2	1			Sync./ UART x2,Sync./ I2C x1		8		10bit x 1unit			50 / 2.7 to 5.5	5.5	1.8	24	22	5					20,16	30	Yes	Yes	2	TQFP 032-P -0707
KM101EF56K	LCD Driver Built-in Type	256	FLASH	10	100	20	7	3	5	1	5	4	1			Sync./ UART x4,Sync./ I2C x1	1	24		10bit x 1unit	4		50 / 2.7 to 5.5	5.5	1.8	90	36	5	55	4			20,16	30	Yes	Yes	2	QFP 100-P -1818
KM101EF57G	LCD Driver Built-in Type	128	FLASH	6	80	20	7	3	5	1	4	3	1			Sync./ UART x3,Sync./ I2C x1	1	16		10bit x 1unit	2		50 / 2.7 to 5.5	5.5	1.8	70	34	5	41	4			20,16	30	Yes	Yes	2	LQFP080-P-1414, TQFP080-P-1212
KM101EF59R	Voice Control	928	FLASH	8	100	20	7	3	6		5	4	2			Sync./ UART x4,Sync./ I2C x1,I2C x1	2	12		10bit x 1unit	4		50 / 2.2 to 5.5	5.5	2.2	85	36	5	55	4	Yes				Yes		1	QFP 100-P -1818
KM101EF76K	LCD Driver Built-in Type	256	FLASH	10	128	20	7	3	5	1	5	4	1			Sync./ UART x4,Sync./ I2C x1	1	24		10bit x 1unit	4		50 / 2.7 to 5.5	5.5	1.8	104	36	5	55	4			20,16	30	Yes	Yes	2	LQFP 128-P-1818
KM101EF77G	Audio Amplifier Built-in Type	128	FLASH	2	48	10	5	2	4		3	2	1			Sync./ UART x2,Sync./ I2C x1		9		10bit x 1unit	2		62.5 / 2.7 to 3.6	3.6	1.8	35	24	5					16	5	Yes		2	HQFP 048-P-0707
KM101EF79G	ADC Built-in Type	128	FLASH	2	48	8	5	1	3		1	1				Sync./ UART x1		6		10bit x 1unit	2		125 / 2.0 to 3.6	3.6	1.8	26	17	5					16	5	Yes	Yes	2	HQFP 048-P-0707
KM101EF93G	ADC Built-in Type	128	FLASH	6	80	20	6	2	4		4	3	1			Sync./ UART x3,Sync./ I2C x1		12		10bit x 1unit			50 / 4.0 to 5.5	5.5	4	72	25	5					16		Yes		1	LQFP 080-P-1414
KM101EF94F	LCD Driver Built-in Type	96	FLASH	6	100	20	7	3	5	1	6	5	1			Sync./ UART x5,Sync./ I2C x1	1	19		10bit x 1unit			50 / 2.7 to 5.5	5.5	1.8	86	35	5	55	8			16	32.5	Yes	Yes	2	LQFP 100-P-1414

Part No.	Applications	ROM Size (KB)	ROM Type	RAM Size (KB)	Pin Count	Max Operating Frequency (MHz)	8-bit Timer (channel)	16-bit Timer (channel)	PWM (channel)	3-Phase PWM Output Function (set)	Serial I/F [Clock Synchronous] (channel)	Serial I/F [UART] (channel)	Serial I/F [I2C] (channel)	Serial I/F [LIN] (channel)	Serial I/F [CAN] (channel)	Serial I/F [Remarks] (channel)	DMA (channel)	ADC [10bit] (channel)	ADC [12bit] (channel)	ADC [Remarks]	DAC [8bit] (channel)	Op Amp	Min Instruction Exec. Time / Voltage (ns/V)	Max Operating Voltage (V)	Min Operating Voltage (V)	Number of I/O Ports (channel)	Interrupt Sources (channel)	External Interrupt (channel)	LCD [SEG] (channel)	LCD [COM] (channel)	External Bus Expansion	RTC	High Speed On Chip Oscillator Frequency (MHz)	Low Speed On Chip Oscillator Frequency (kHz)	Power On Reset	Low Voltage Detection	Watch Dog Timer (channel)	Package
KM101EFA1A	ADC Built-in Type	32	FLASH	1	44	20	5	2	3	1	3	2	1			Sync./ UART x2,Sync./ I2C x1		12		10bit x 1unit			50 / 4.0 to 5.5	5.5	4	36	27	5					16		Yes		1	QFP 044-P -1010
KM101EFA2D	ADC Built-in Type	64	FLASH	4	64	20	6	3	4	1	4	3	1			Sync./ UART x3,Sync./ I2C x1		12		10bit x 1unit			50 / 4.0 to 5.5	5.5	4	55	32	5					16		Yes		1	LQFP064 -P-1414, TQFP064- P-1010
KM101EFA2G	ADC Built-in Type	128	FLASH	6	64	20	6	3	4	1	4	3	1			Sync./ UART x3,Sync./ I2C x1		12		10bit x 1unit			50 / 4.0 to 5.5	5.5	4	55	32	5					16		Yes		1	LQFP064 -P-1414, TQFP064 -P-1010
KM101EFA3D	ADC Built-in Type	64	FLASH	4	80	20	6	3	4	1	4	3	1			Sync./ UART x3,Sync./ I2C x1		16		10bit x 1unit			50 / 4.0 to 5.5	5.5	4	70	28	5					16		Yes		1	LQFP080- P-1414, TQFP080 -P-1212
KM101EFA3G	ADC Built-in Type	128	FLASH	6	80	20	6	3	4	1	4	3	1			Sync./ UART x3,Sync./ I2C x1		16		10bit x 1unit			50 / 4.0 to 5.5	5.5	4	70	28	5					16		Yes		1	LQFP080 -P-1414, TQFP080 -P-1212 (ES Available)
KM101EFA8D	Touch Key Control	64	FLASH	4	80	20	6	3	4	1	4	3	1			Sync./ UART x3,Sync./ I2C x1		16		10bit x 1unit			50 / 4.0 to 5.5	5.5	4	70	36	5					16		Yes		1	LQFP080 -P-1414, TQFP080 -P-1212
KM101EFC3D	Automotive Network	76	FLASH	6	64	20	7	3	5	1	4	3	1	1		Sync./ UART x3,Sync./ I2C x1	1	12		10bit x 1unit			50 / 2.7 to 5.5	5.5	1.8	54	33	5	32	4			20,16	30	Yes	Yes	2	LQFP064 -P-1414, TQFP064 -P-1010
KM101EFC3G	Automotive Network	128	FLASH	6	64	20	7	3	5	1	4	3	1	1		Sync./ UART x3,Sync./ I2C x1	1	12		10bit x 1unit			50 / 2.7 to 5.5	5.5	1.8	54	33	5	32	4			20,16	30	Yes	Yes	2	LQFP064 -P-1414, TQFP064 -P-1010
KM101EFC3Z	Automotive Network	128	FLASH	10	64	20	7	3	5	1	4	3	1	1		Sync./ UART x3,Sync./ I2C x1	1	12		10bit x 1unit			50 / 2.7 to 5.5	5.5	1.8	54	33	5	32	4			20,16	30	Yes	Yes	2	LQFP064 -P-1414, TQFP064 -P-1010
KM101EFD3G	Automotive Network	128	FLASH	10	64	20	7	3	5	1	4	3	1	1	1	Sync./ UART x3,Sync./ I2C x1	1	12		10bit x 1unit			50 / 2.7 to 5.5	5.5	1.8	54	33	5	32	4			20,16	30	Yes	Yes	2	LQFP064 -P-1414, TQFP064 -P-1010
KM101EFG0D	ADC Built-in Type	64	FLASH	4	56	20	6	3	4	1	4	3	1			Sync./ UART x3,Sync./ I2C x1		12		10bit x 1unit			50 / 4.0 to 5.5	5.5	4	48	26	4					16		Yes		1	TQFP056 -P-1010
KM101EFG0G	ADC Built-in Type	128	FLASH	6	56	20	6	3	4	1	4	3	1			Sync./ UART x3,Sync./ I2C x1		12		10bit x 1unit			50 / 4.0 to 5.5	5.5	4	48	26	4					16		Yes		1	TQFP056 -P-1010
KM101EFG1H	ADC Built-in Type	164	FLASH	8	80	20	7	2	5		4	3	2			Sync./ UART x3,Sync./ I2C x1,I2C x1	1	12		10bit x 1unit			50 / 2.7 to 5.5	5.5	1.8	70	29	6							Yes	Yes	1	LQFP080 -P-1414

32bit KM103 MCUs

The KM103 series is a 32-bit flash MCU with a built-in original 32-bit CPU "AM32R" that is ideal for inverter motor control and features both high processing power and low power consumption.
This MCU is equipped with high-function PWM circuit, high-speed A / D converter, and motor feedback control, enabling highly efficient and high-performance motor control.

• KM103H Inverter Control Series

KM103H Series MCU embedded 32-bit flash MCU with original 32-bit CPU, have high speed processing ability and low power consumption.
These MCUs are a high-performance PWM circuit that is ideal for inverter motor control, a high-speed A/D converter, an inverter/ converter dedicated arithmetic unit (3phase-2phase conversion, Trigonometric function, square root, n-order multiply–accumulate operation, flash dedicated cache) . This realizes highly efficient and high-performance motor control.

• KM103S Inverter Control Series

KM103S Series MCU embedded 32-bit flash MCU with original 32-bit CPU, have a good balance between high speed processing ability and low power consumption.
They can contribute to creation of a high performance and high-efficiency inverter system, and help the system easily to realize the safety standards(IEC60730) because of complementary 3-phase PWM circuit, high speed A/D converter, expansion calculation(high speed multiplication and division, dedicated calculation for inverter control).

Part No.	Applications	ROM Size (KB)	ROM Type	RAM Size (KB)	Pin Count	Max Operating Frequency (MHz)	8-bit Timer (channel)	16-bit Timer (channel)	PWM (channel)	3-Phase PWM Output Function (Set)	Serial I/F [Clock Synchronous] (channel)	Serial I/F [UART] (channel)	Serial I/F [I2C] (channel)	Serial I/F [LIN] (channel)	Serial I/F [CAN] (channel)	Serial I/F [Remarks]	DMA (channel)	ADC [10bit] (channel)	ADC [12bit] (channel)	ADC [Remarks]	Op Amp	Comparator	Min Instruction Exec. Time / Voltage (ns/V)	Max Operating Voltage (V)	Min Operating Voltage (V)	Number of I/O Ports (channel)	Interrupt Sources (channel)	External Interrupt (channel)	High Speed On Chip Oscillator Frequency (MHz)	Power On Reset	Low Voltage Detection	Watch Dog Timer (channel)	Package
KM103HFB5K	Invertor & Converter control	264	FLASH	20	80	80	12	6	6	2	4	4	1	1		Sync./UART x2,Sync./UART/I2C x1, Sync./UART/LIN x1	2		16	12bit x 3units	2	4	12.5 / 2.9 to 5.5	5.5	2.9	54	104	10	10	Yes	Yes	2	LQFP080-P-1414, TQFP080-P-1212
KM103HFD8N	Invertor & Converter control	512	FLASH	64	144	120	20	4	10	3	7	7	1	1		Sync./UART x5,Sync./UART/I2C x1, Sync./UART/LIN x1	3		28	12bit x 3units	3	6	8.33 / 2.9 to 5.5	5.5	2.9	124	163	16	10	Yes	Yes	2	LQFP144-P-2020
KM103SFE4K	Invertor motor control	256	FLASH	8	80	60	12	6	4	2	3	3				Sync./UART x3		16		10bit x 3units			16.7 / 3.6 to 5.5	5.5	3.6	61	56	9		Yes		1	LQFP080-P-1414
KM103SFJ9D	Invertor motor control	64	FLASH	4	44	60	8	3	2	1	2	2				Sync./UART x2		8	8	10bit x 1unit, 12bit x 1unit			16.7 / 3.7 to 5.5	5.5	3.7	30	38	8	10	Yes		1	QFP044-P-1010
KM103SFK0K	Invertor motor control	256	FLASH	8	100	60	12	7	7	2	4	3	1			Sync./UART x3,Sync./I2C x1		20		10bit x 3units			16.7 / 3.7 to 5.5	5.5	3.7	84	70	16	10	Yes		1	QFP100-P-1818
KM103SFK1K	Invertor motor control	256	FLASH	8	80	60	12	7	5	2	4	3	1			Sync./UART x3,Sync./I2C x1		20		10bit x 3units			16.7 / 3.7 to 5.5	5.5	3.7	64	66	12	10	Yes		1	LQFP080-P-1414, TQFP080-P-1212

Arm Cortex-M7 MCUs

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.

• KM1M7 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.
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.

• KM1M7 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.

Part No.	Applications	ROM Size (KB)	ROM Type	RAM Size (KB)	Pin Count	Max Operating Frequency (MHz)	16-bit Timer (channel)	PWM (channel)	3-Phase PWM Output Function [use 3 PWMs] (Set)	Serial I/F [Clock Synchronous] (channel)	Serial I/F [UART] (channel)	Serial I/F [I2C] (channel)	Serial I/F [LIN] (channel)	Serial I/F [CAN] (channel)	Serial I/F [Remarks]	DMA (channel)	ADC [12bit] (channel)	Op amp	Comparator	Min Instruction Exec. Time / Voltage (ns/V)	Max Operating Voltage (V)	Min Operating Voltage (V)	Number of I/O Ports (channel)	External Interrupt (channel)	High Speed On Chip Oscillator Frequency (MHz)	Power On Reset	Low Voltage Detection	Watch Dog Timer (channel)	Other Special Function	Package
KM1M7AF02N	Invertor & Converter control	512	FLASH	128	100	160	20	10	3	7	6	2	1		Sync/I2C x1,Sync/UART/LIN x1,Sync/UART x2, Sync/SPI/UART x2, Sync/SPI/UART/I2C x1	16	23	5	10	6.25 / 3.5 to 5.5	5.5	3.5	82	18	10	Yes	Yes	1	Double-precision floating-point arithmetic, ROM/RAM-ECC,Clock monitor,High resolution PWM	HQFP100 -P-1414
KM1M7AF52N	Invertor & Converter control	512	FLASH	128	100	160	20	10	3	7	6	2	1	2	Sync/I2C x1,Sync/UART/LIN x1,Sync/UART x2, Sync/SPI/UART x2, Sync/SPI/UART/I2C x1	16	23	5	10	6.25 / 3.5 to 5.5	5.5	3.5	82	18	10	Yes	Yes	1	Double-precision floating-point arithmetic, ROM/RAM-ECC,Clock monitor,High resolution PWM	HQFP100 -P-1414
KM1M7BF02N	Invertor & Converter control	512	FLASH	128	100	160	20	10	3	7	6	2	1		Sync/I2C x1,Sync/UART/LIN x1,Sync/UART x2, Sync/SPI/UART x2, Sync/SPI/UART/I2C x1	16	23	5	10	6.25 / 3.5 to 5.5	5.5	3.5	82	18	10	Yes	Yes	1	Double-precision floating-point arithmetic, ROM/RAM-ECC,Clock monitor,High resolution PWM	HQFP100 -P-1414

Communication & Interface LSIs

NFC Tag LSIs

We are one of the leading NFC Tag LSIs (also known as NFC Tag ICs) maker in the world. Our NFC Tag LSI is a contactless IC tag supporting Near Field Communication (NFC) technology, where NFC devices like smartphones can communicate with the tag to read/write data .
Embedding this NFC LSI in various equipments enable radio communication between the equipment and NFC devices.
In addition, with built-in memory for data retention, this NFC interface LSI can be used as an individual wireless IC tag.
NFC tag IC works with the power supplied wirelessly from NFC devices, and enables radio communication to NFC devices even while equipment with this LSI are turned off.
Using this LSI as an individual contactless IC tag enables the system to be configured without power supply.

Features

- No communication delay regardless of model of smartphone / tablet
- Able to communicate with off-powered devices
- Protect important data from skimming
- High speed communication with microcomputer of devices by NFC touch

• KM63Y Series

We are one of the leading NFC Tag LSIs (also known as NFC Tag ICs) maker in the world. Our NFC Tag LSI is a contactless IC tag supporting Near Field Communication (NFC) technology, where NFC devices like smartphones can communicate with the tag to read/write data .
Embedding this NFC LSI in various equipment enables radio communication between the equipment and NFC devices.
In addition, with built-in memory for data retention, this NFC interface LSI can be used as an individual wireless IC tag.
NFC tag IC works with the power supplied wirelessly from NFC devices, and enables radio communication to NFC devices even while equipment with this LSI are turned off.
Using this LSI as an individual contactless IC tag enables the system to be configured without power supply.

Features

- No communication delay regardless of model of smartphone / tablet
- Able to communicate with off-powered devices
- Protect important data from skimming
- High speed communication with microcomputer of devices by NFC touch

Part No.	Host Interface	Operating Voltage (V)	Built-in FeRAM (Nonvolatile Memory)	RF interface (Auto selection)	NDEF Communication(NFC Forum Tag)	RF communication stop function when the power OFF	Encryption	User memory (FeRAM)	Power current	Package Type
KM63Y1212	N/A		Rewriting : 100 million times , Data retention period : 10 years	ISO/IEC14443 TypeB JISX6319-4 (FeliCa) *1	Type4B Tag(NFC-B) Type3 Tag(NFC-F)	N/A	AES128	432Bytes (FeRAM)	-	HSON008 -A-0202
KM63Y1213	I2C (to 100Kbps)	1.7 to 3.6	Rewriting : 100 million times , Data retention period : 10 years	ISO/IEC14443 TypeB JISX6319-4 (FeliCa) *1	Type4B Tag(NFC-B) Type3 Tag(NFC-F)	N/A	AES128	432Bytes (FeRAM)	to 500uA	HSON008 -A-0202
KM63Y1221	I2C (to 400Kbps)	1.7 to 3.6	Rewriting : 100 million times , Data retention period : 10 years	ISO/IEC14443 Type A ISO/IEC14443 Type B JISX6319-4 (FeliCa) *1	Type4A,/4B(NFC-A,B) Type3 Tag(NFC-F)	Available	N/A (Password)	960Byte (FeRAM)	to 500uA	HSON008 -A-0202

Foundry Service

Nuvoton Foundry Service

About us

Nuvoton Foundry Service (previous Winbond FAB2: 6 inch fab) has a capacity of 45,000 wafers per month. As a semiconductor manufacturing foundry, our mission is to deliver excellent foundry capabilities as a manufacturing partner to fabless or fab-lite semiconductor companies.

Nuvoton Foundry FAB offers a variety of technologies including Generic Logic, Mixed Signal (Mixed Mode), High Voltage, HVIC, Ultra High Voltage, Power Management, Mask ROM (Flat Cell), embedded Logic Non-Volatile Memory, and customized processes (e.g. GaN HEMT, MOSFET, Biochip, TVS, Sensor, etc.) based on 0.35um to 1.0um technologies.

In addition to its mature, stable, and customized processes, Nuvoton also provides long-term stable production capacity, high quality, and accurate delivery schedules.

In addition, Nuvoton's foundry has a process development team with more than 20 years of experience in Devices, Integration, Modules, ESD, and SPICE Modeling to meet your customized process needs.

Nuvoton's foundry also has a product service team to provide customers with complete IDM class service. We have an internationally certified laboratory (with ESD, EMMI, OBIRCH, FIB, SEM, and TEM electrical / physical analysis equipment) to ensure product reliability and certification requirements.

Nuvoton has a wealth of resources and support services, and operates with a More-Than-Foundry thinking process. Nuvoton Foundry Service can meet market capacity demand and enable customers to achieve business goals. Nuvoton Foundry Service is your best foundry choice.

FAB
6 inch (class-1)

Capacity
45k pcs/M

Technology
1.0um to 0.35um

Specialty Process

Focus on Technology

Nuvoton Foundry's process technology currently offers 0.35um processes, including Integrated-circuit (logic, Mix-mode, Flat-cell ROM, eNVM, HVCMOS, BCD, Ultra-HV, Gate-driver HVIC), GaN on Si Power Device (SBD, Depletion HEMT, Depletion MIS-HEMT), Sensor (Light, Thermal, Humidity, Gas, Pressure, Micropnone, Bio chip) more and more process and customized.

Specialty Process

CMOS IC
Power (HV/ BCD/ UHV/ HVIC), Logic/ eNVM, Mixed signal, Mask ROM/ Flat cell

Sensor
Thermal, Pressure, Light, Gas, Humidity

Discrete
TVS, MOSFET

GaN-on-Si Power
Depletion HEMT/MIS-HEMT

Available Technologies

Process	Technology	Process Feature
Power (HV/ BCD/ UHV/ HVIC)	0.35um	5/12~40V BCD G2 (NEW)
		5/12~40V BCD (with OTP)
		5/60~80V BCD
		5/16/60~120V BCD (Developing)
	0.5um	7/9/30/40/150~700V UHV G2 (NEW)
		5/20/120~600V HVIC G2 (NEW)
		5/7/9/25V HVCMOS
	0.6um	5/12/16/20V BCD
		5/25/40V BCD
		5/25/40/120/500V UHV
	0.8um	5/40V HVCMOS (N-sub)
	1.0um	5/40V HVCMOS (P-epi)
Logic / Mixed Mode	0.35um	1.5/3.3/5V Logic 3.3/5V Logic 5V Logic
	0.45um	3.3V Logic 5V Logic
	0.5um	1.5V Logic 3.3V Logic 5V Logic
Logic / Mixed Mode + eNVM	0.35um	3.3/5V Logic (YMC_eNVM)
Mask ROM / Flat Cell	0.32um	1.5/3.3/5V embedded 0.32 flat cell
	0.37um	5V embedded 0.37 flat cell

Contact us: Foundry@nuvoton.com

Applications

Nuvoton Foundry's process technologies are highly focused on High-Voltage, power management, LED Driver, and logic related fields. Current customers have successfully used our processes to create MCUs, Speech ICs, DC / DC converters, AC / DC SMPS, LDOs, USB Switches, Chargers, LCD drivers, Fan Drivers, Hall Sensors and LED B/L driver products in volumes exceeding several million wafers.

In addition to general IC processes, Nuvoton also provides customized process services to support HV MOSFETs, TVS, Light Sensor, Pressure Sensors, BioChip, GaN HEMT etc. Applications include industrial control, high power conversion systems, mobile devices, sensors, system electrostatic protection, medical care, and more. Nuvoton also has a strong R&D team that can create a variety of customized processes for customer requirements.

- **DC/DC Converter & Controller**
- **AC/DC SMPS (PFC and PWM)**
- **LDO, USB Switch**
- **LED Lighting, LED Display**
- **HVIC, MOSFET, SBD**
- **Biochip, MCU, Speech**
- **Motor Driver, Fan Driver,**
- **Audio Amp, Sensor, TVS**
- **Car Charger**
- **Pressure sensor, MEMS Microphone**
- **Thermal Sensor, Light sensor**
- **Gas sensor, Humidity Sensor**

Service Values

In production services, we provide stable production capacity, best quality and accurate delivery. We have complete hardware and software equipment and technical service resources, and obtained a number of international certification files. With the thinking of More-Than-Foundry, we provide excellent foundry services to meet your needs in the market. Nuvoton technology foundry is determined to become the best partner for customers.

Multi-Layer Mask (MLM)

Multi-Layer Mask (MLM) services are available for engineering lots on all processes. The MLM service configures images with multiple design layers using similar mask specifications on a single reticle. This service not only saves development cost, but provides tape-out flexibility allowing customers to tape-out products at any time without being dependent on pre-set prototyping schedules.

Customized Technology and Excellent Cycle Time

Nuvoton's modular platform provides customers customized processes and quick Cycle Time of 0.8 Days/Layer for fast prototyping to help customers' Time to Market in a fast changing world

Best R&D team
TD, ESD, Model, PDK

Strong technical support team
CE, PIE, Product

Professional analysis machine
TLP, EMMI, OBRICH, FIB, SEM, TEM

International certifications LAB
IATF 16949, QC 080000, ISO 14001, ISO 45001

Design Kit	Vender	Tools / Version	
Design Rule & Sample Layout	Nuvoton Own	Layout Design Rule	Device sample layout
	Nuvoton Own	ESD/Latch-Up Layout Design Rule	ESD sample layout
Schematic Entry	Cadence	Virtuoso Schematic	
SPICE Model	Synopsys	HSPICE	BSIM4 (L54) (+ macro)
	Cadence	Spectre	BSIM4 (L54) (+ macro)
DRC	Mentor Graphics	Calibre 2013.2	
LVS	Mentor Graphics	Calibre 2013.2	
LPE	Mentor Graphics	Calibre 2013.2	
Cell Library	Nuvoton Own	Standard Cell Library	
PDK	Cadence	Virtuoso IC51 & IC61, P-Cells	
	Mentor	Tanner Tools PDK	

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