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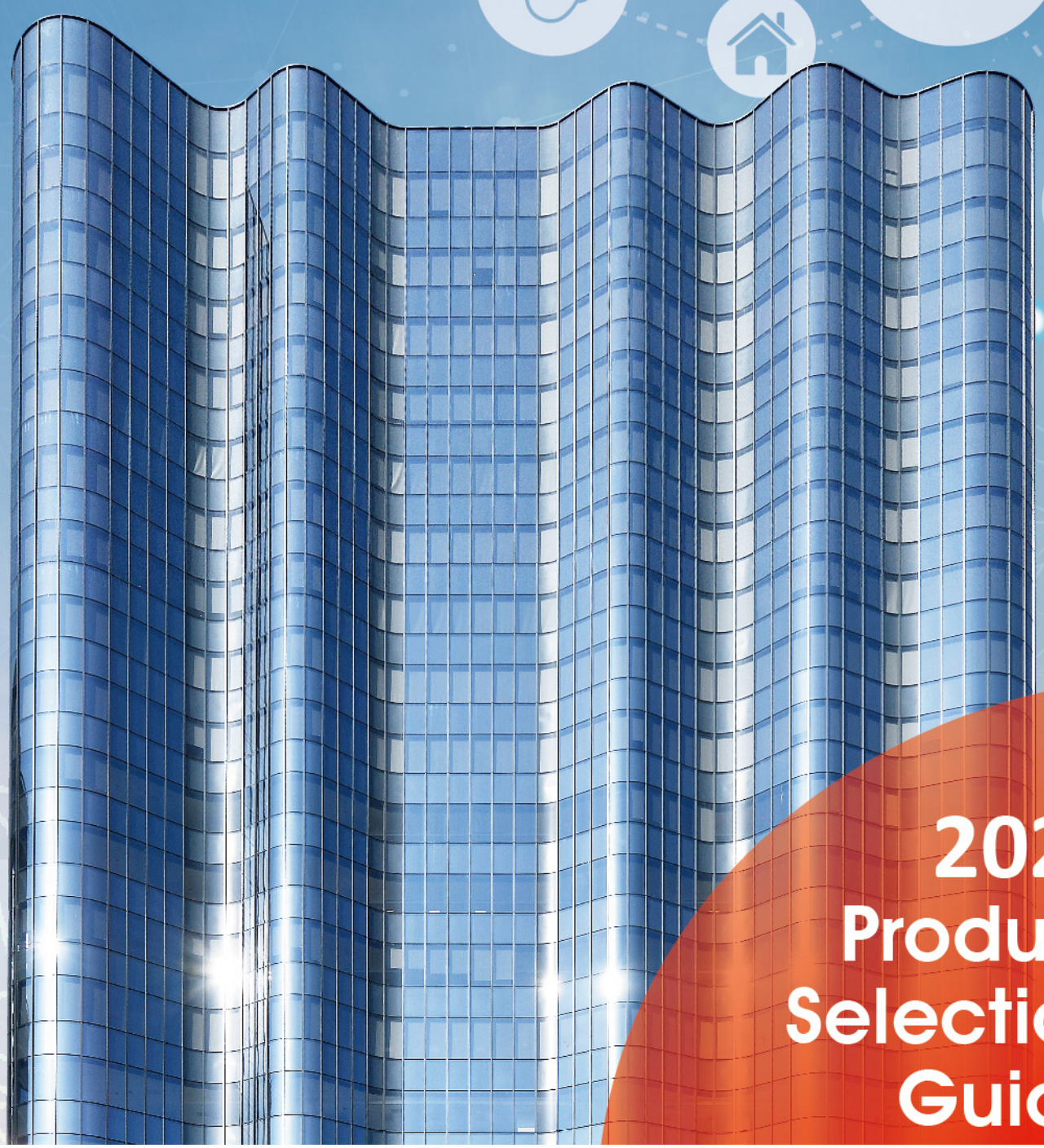

2023 Product Selection Guide

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新唐科技

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

Nuvoton Elect. Tech. (NTSH) / Nuvoton Elect. Tech. (NTSZ) / Nuvoton Elect. Tech. (NTHK) / Song Zhi Elect. Tech. (Suzhou) Ltd.
・Location: Shanghai / Shenzhen / Hong Kong / Suzhou

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® Product Selection Guide

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.

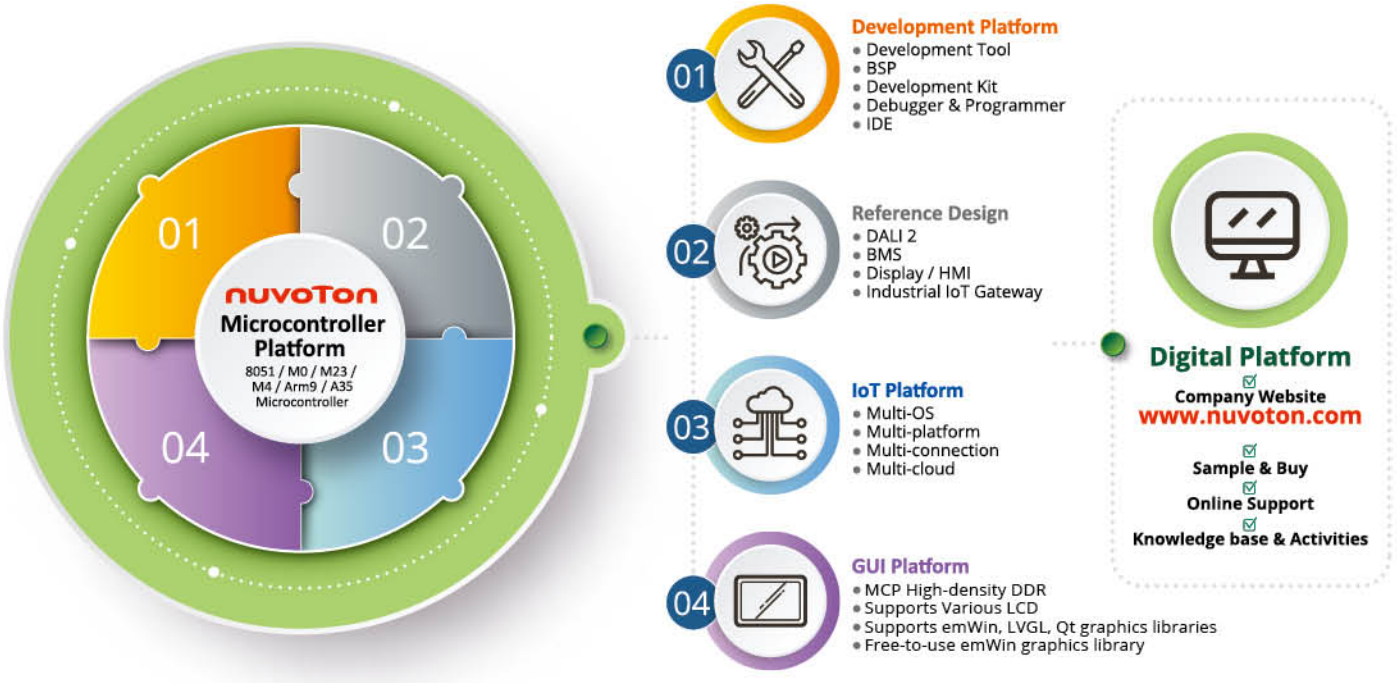
From the core of NuMicro ecosystem, Nuvoton provides a rich product portfolio from 8051, Cortex-M0/ M23/ M4, Arm9, to Cortex-A35-based microcontroller, offering over 600 parts for selection.

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 included to boost project development.

Nuvoton offers rich reference designs and an integral IoT platform to realize innovative ideas in various fields. Customers could easily implement IoT projects with the Nuvoton low-power or IoT secure microcontroller on 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® A35
Industrial Control & HMI
Machine Learning
Edge Gateway
New Energy
AIoT

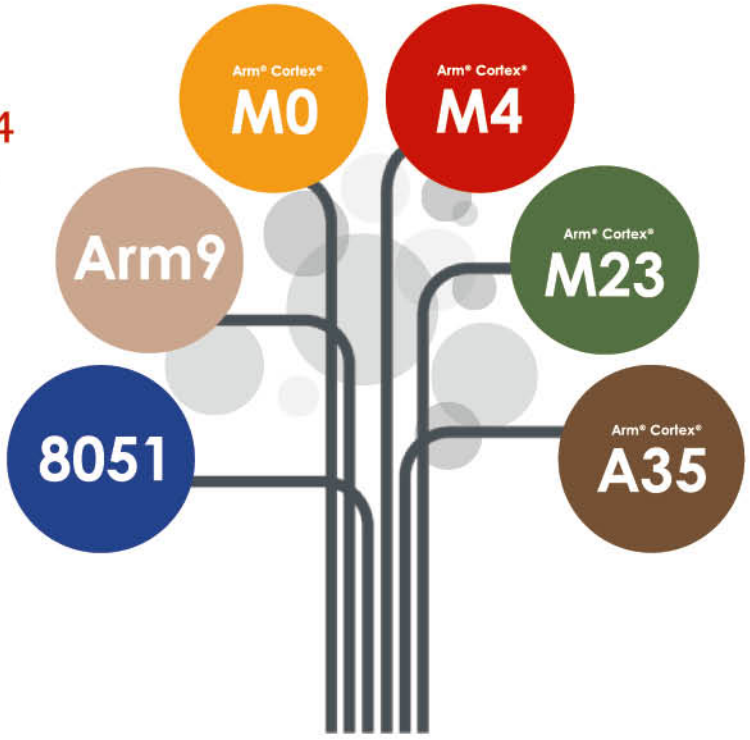
Cortex® M23
IoT Security
Low Power

Cortex® M4
High Performance
Security
IoT

Cortex® M0
Comprehensive Platform
Industrial Control
Automotive

Arm 9™
Industrial Control
HMI
IoT

8051
Low Power
Industrial Control



Frequency	8051	Cortex®-M0	Cortex®-M23	Cortex®-M4	MPU
					Cortex®-A35
1 GHz					MA35D1 V E C L U
					Arm9™
300 MHz					NUC980 E C U
192 MHz					NUC970 E C L U
					N9H V E C L U
					N329 V E L U
		M031G	M2354 L	M480 E C U	
		M029G/M030G	M2351	M460 E C U	
		M032 U		M471 U	
		M031	NUC1262 U	M453 C	
72 MHz		NUC029 U	M263 C U	M452 U	
		M032BT BT U	M262 U	M451	
64 MHz		M031BT BT	M261		
		NUC230 C	M258 T L U		
50 MHz	ML56 T L	NUC131U C	M256 T L		
	ML54 L	NUC1311 C	M254 L		
	ML51	M0A23 C	M253 C U		
	MS51	M071	M252 U		
	N79E	M051	M251		
24 MHz	N76E	Mini51			
16 MHz	MUG51	Nano100			

Over 600 parts ready for selection

Operating Voltage: 1.8 1.8V, 3.3 3.3V, 5 5V

Feature: U USB, C CAN, E Ethernet, L LCD, T Touch Key, BT Blue tooth, V Video Code

Automotive, Low Power, TrustZone

Key Feature Selection: **Automotive Microcontroller**

The NuMicro® automotive microcontrollers pass the AEC-Q100 standards and are suitable for auto-mo-tive applications. Nuvoton automotive microcontrollers are embedded with Cortex-M0 and Cortex-M4, up to 4 sets of CAN FD. The operating frequency ranges from 48 to 200 MHz, and the Flash size ranges from 32 to 2.5 Mbytes.

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

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

	M0A23	NUC131	NUC230/240	M253	M453	M483	M487	M463	M467
Core	Cortex-M0	Cortex-M0	Cortex-M0	Cortex-M23	Cortex-M4	Cortex-M4	Cortex-M4	Cortex-M4	Cortex-M4
Speed (MHz)	48	50	50	48	72	192	192	200	200
Flash (Kbytes)	32	68	128	128	256	256	2560	256	1024
LIN	2	3	3	2	2	2	2	2	2
CAN/CAN FD	1/-	1/-	2/-	-1	1/-	3/-	2/-	-/2	-/4
Operating Temperature (°C)	-40 ~ +125	-40 ~ +105	-40 ~ +105	-40 ~ +105	-40 ~ +105	-40 ~ +105	-40 ~ +105	-40 ~ +105	-40 ~ +105
AEC-Q100	✔	✔	-	-	-	-	-	-	-

Key Feature Selection: **Industrial Control Microcontroller**

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

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

Cortex-A35 Family
Core Speed: up to 1 GHz
ESD (HBM) : up to 2 kV

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

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

Cortex-M23 Family
Core Speed: up to 96 MHz
ESD (HBM) : up to 7 kV / EFT : up to 4.4 kV

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

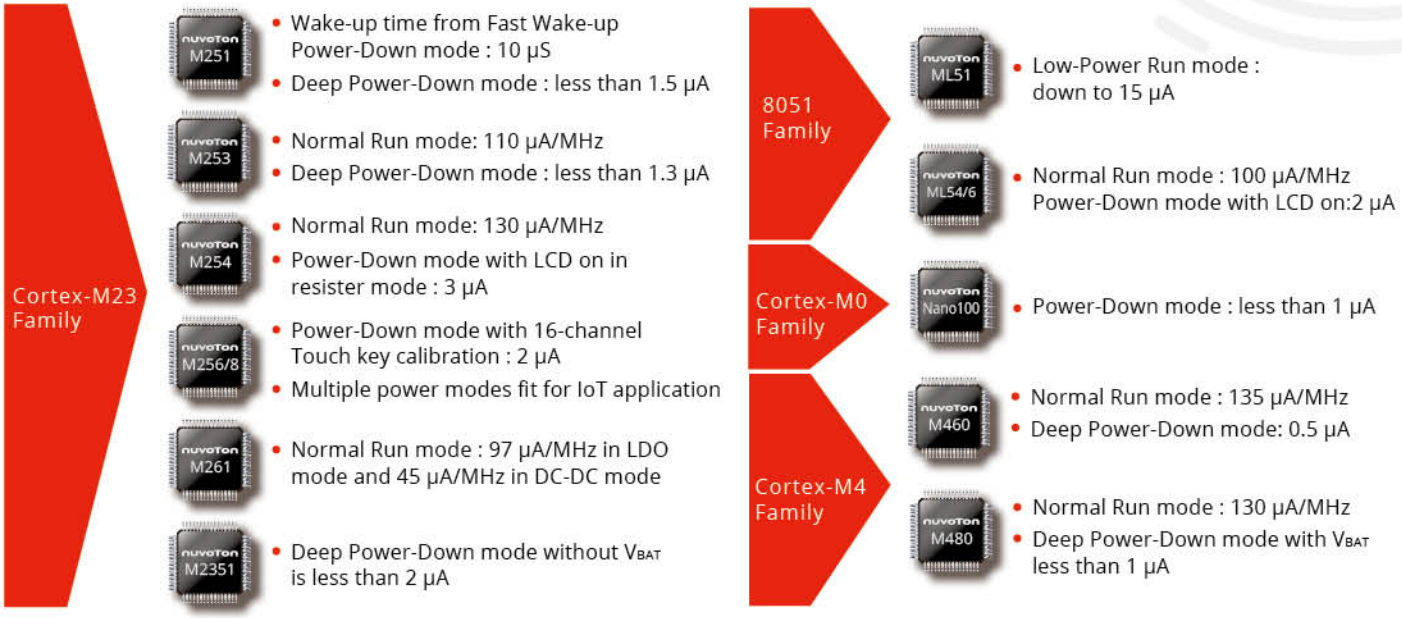
8051 Family
Core Speed: up to 24 MHz
ESD (HBM) : up to 8 kV / EFT : up to 4.4 kV

Industrial Control Field	NuMicro Series Recommendation
 Battery Management System	[A35] **MA35D1** (Data Collector) [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] **M460** (Mini LED Local Dimming Control) [M0] **NDA102** (DALI) [8051] **MS51** (LED Control Module)
 Industrial Connectivity	[A35] **MA35D1** (Ethernet 10/100/1000, CAN FD) [Arm9] **NUC980** (Ethernet 10/100, CAN) [M4] **M460** (Ethernet 10/100, CAN-FD)/ **M480** (Ethernet 10/100, CAN) [M23] **M2351/ M2354** (TrustZone, CAN))/ **M253** (CAN FD) [M0] **M0A23** (CAN) [8051] **MS51** (UART)
 Industrial Automation	[A35] **MA35D1** (Industrial Switch) [Arm9] **NUC980** (Industrial Switch) [M4] **M460/ M480** (Sensor Fusion) [M23] **M254/ M256/ M258** (Com-seg LCD, Touch Key) [M0] **M0A23** (CAN Converter)/ **M032/ M031** (Sensor Module) [8051] **MS51/ ML51** (Sensor Module) [OPA] **NOP912/ NOP914 (BLDC Motor Control)**
 Grid Infrastructure	[A35] **MA35D1 (Charging Pile HMI)** [Arm9] **NUC980** (Charging Pile) [M4] **M460/M480** (Smart Circuit Breaker)/**M471/ M451** (Smart Capacitor) [M23] **M2351/ M2354** (AMI 2.0 Smart Meter)/**M253** (USB to UART Converter) [8051] **MS51** (Traditional Circuit Breaker)
 Smart Building	[A35] **MA35D1 (Edge Gateway)** [Arm9] **NUC980** (Fire Controller) [M4] **M460** (Fire Alarm Controller) /**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] **M0A23/ M071/ NUC131/ NUC230/ NUC029** [8051] **MS51/ ML51/ MUG51**

Key Feature Selection: **Low Power Microcontroller**

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

Nuvoton devotes to offer the low-power microcontroller solutions with robust security for various application scenarios. The ML51 series has exclusive low-power run mode with less than 15 µA; the ML54/ML56 series has exclusive power down current with less than 2 µA with LCD panel display on; the Power-Down mode of Nano100 series is less than 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	ML54/ ML56	Nano100	M251	M253	M254/ M256/M258	M261/ M2351	M480	M463/ M467
Core	8051	8051	Cortex-M0	Cortex-M23	Cortex-M23	Cortex-M23	Cortex-M23	Cortex-M4	Cortex-M4
Speed (MHz)	24	24	32 - 42	48	48	48	64	192	200
Flash (Kbytes)	16 - 64	64	16 - 128	32 - 256	128	64-256	512	2560	1024
Smoke Sensor	○	○	△	△	△				
Glucose Meter	△		○	○	○	○	○		
GPS Tracker	△	○	○	○	○	○			
Handheld Meter	△		○	○	○	○	○	○	○
Wireless Keyboard/ Mouse	△		○	○	○	○			
Smart Lock	○	○	○	○	○	○	○	○	○
Oximeter		○	○	○	○	○			

○ : Function could be fully satisfied △ : Basic function

Key Feature Selection: **Optical Transceiver Microcontroller**

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

All of NuMicro M029G/ M030G/ M031G series have a built-in temperature sensor, package selections of small size including QFN24 and QFN33, and 2 sets of strong I²C, which fully meet the requirement of traditional Optical Transceiver Module applications: (1) precise temperature measurement, (2) small form factor and (3) an I²C interface for communication. Moreover, to implement the Pilot Tone Modulation in WDM for OAM (Operation Administration and Maintenance) data transmission, NuMicro M031G series is also equipped with a Hardware Manchester Codec with CRC and 1 set of DAC supporting "Auto Data Generation" function.

- **Hardware Manchester Codec*** with CRC **:**
  to encode and decode the low-frequency dither signal
- **DAC with Auto Data Generation Function* :**
  to generate the smooth sine waveform up to 500 kHz 32 points for the output of Pilot Tone Modulation
- **Accurate Temp. Sensor :**
  with ±1.6°C deviation from 0 °C to 70 °C and ± 2 °C deviation from - 40 °C to 105°C
- **Small Package :**
  QFN24 3x3 mm / QFN33 4x4 mm
- **Strong I²C :**
  supports 400 KHz(M029G) or 1 MHz(M030G/M031G) Slave mode and non-stretch mode

*Only for M031G

Optical Transceiver Application	NuMicro Series Recommendation								
	M029G	M030G				M031G			
Core	Cortex-M0	Cortex-M0				Cortex-M0			
Operating Frequency (MHz)	48	48				72			
Flash (Kbytes)	32	32		64		32		64	
SRAM (Kbytes)	2	4				8			
Hardware Manchester Codec	-	-		-		✓		✓	
DAC with Auto Data Generation	-	-		-		✓		✓	
Temperature Sensor	✓	✓		✓		✓		✓	
Package	QFN24	QFN24	QFN33	QFN24	QFN33	QFN24	QFN33	QFN24	QFN33
Scenario	General Purpose					Pilot Tone Modulation			

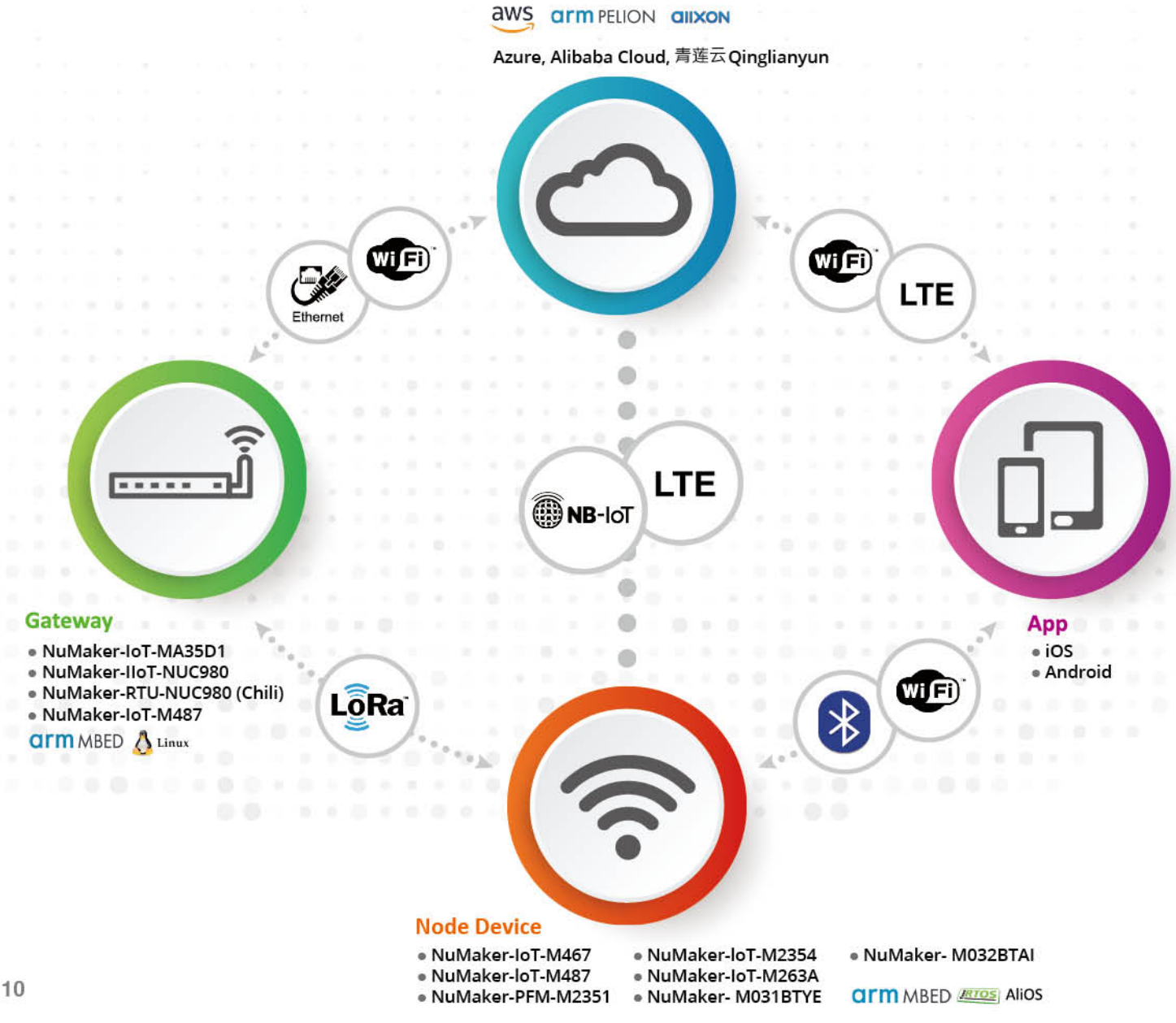
NuMicro® Ecosystem - IoT Platform

Supports multi-OS with multi-platform; Provides multi-connection to multi-cloud.

Nuvoton offers a comprehensive IoT platform, which supports multi-OS with multi-platform and provides multi-connection to multi-cloud. The NuMaker-IoT-M467, 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 sensor and connectivity. Besides, the NuMaker-IoT-MA35D1, 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 Mbed OS, 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), Arm Pelion, Alibaba Cloud, Allxon, Qinglianyun and Microsoft Azure via various connectivity options including Ethernet, Wi-Fi, NB-IoT, and LTE.

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



NuMaker Board	OS / RTOS	IP Connectivity					Non-IP Connectivity		Clouds						
		Ether net	Wi-Fi	NB-IoT CAT-M1 Quectel BG96A	NB-IoT SIMCOM 7020E	LTE Quectel EC21A	LoRa Device SX1276	BLE 5 2.4G	Arm Pelion DM	Amazon AWS	Alibaba Cloud	Microsoft Azure	The Things Network (TTN)	Allxon	青莲云/ TinyTEE
NuMaker-IoT-MA35D1	Linux	●	●	●		●			●	●	●		●		
	RT-Thread	●									●	●			
NuMaker-IIoT-NUC980	Linux	●	●	●		●			●	●	●				
	FreeRTOS	●													
	RT-Thread	●									●	●			
NuMaker-RTU-NUC980(Chili)	Linux	●	●	●		●			●	●	●			●[5]	
	FreeRTOS	●													
	RT-Thread	●									●	●			
NuMaker-IoT-M467	MbedOS	●	●	●	●	●			●	●	●	●			
	Amazon FreeRTOS		●							●					
	RT-Thread	●	●								●	●			
NuMaker-IoT-M487	MbedOS	●	●	●	●	●			●	●	●	●			
	Amazon FreeRTOS	●	●	●						●					
	AliOS Things	●	●								●				
	RT-Thread	●	●								●	●			
	Azure RTOS		●									●			
NuMaker-IoT-M2354	MbedOS*2		●	●	●	●	●		●	●	●	●			●
	RT-Thread		●				●				●	●			●
	FreeRTOS		●				●								
NuMaker-PFM-M2351	MbedOS		●	●	●	●			●	●		●			●
NuMaker-IoT-M263A	MbedOS		●	●	●	●	●		●	●	●	●			
NuMkaer-LoRaD-M252	MbedOS/Non-OS*3						●[1]								
NuMaker-M031BTYE	Non-OS							●							
NuMaker-M032BTAI	Non-OS							●							
NuStamp-ACK-M031LE	Non-OS		●							●[4]					

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

NuMicro® Ecosystem - IoT Security Platform

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

- All 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.

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

The M2354 Series elaborates comprehensively supporting FreeRTOS, RT-Thread and Mbed OS 6.x for easy implementation of an IoT device and its connection to varied cloud services.

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

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

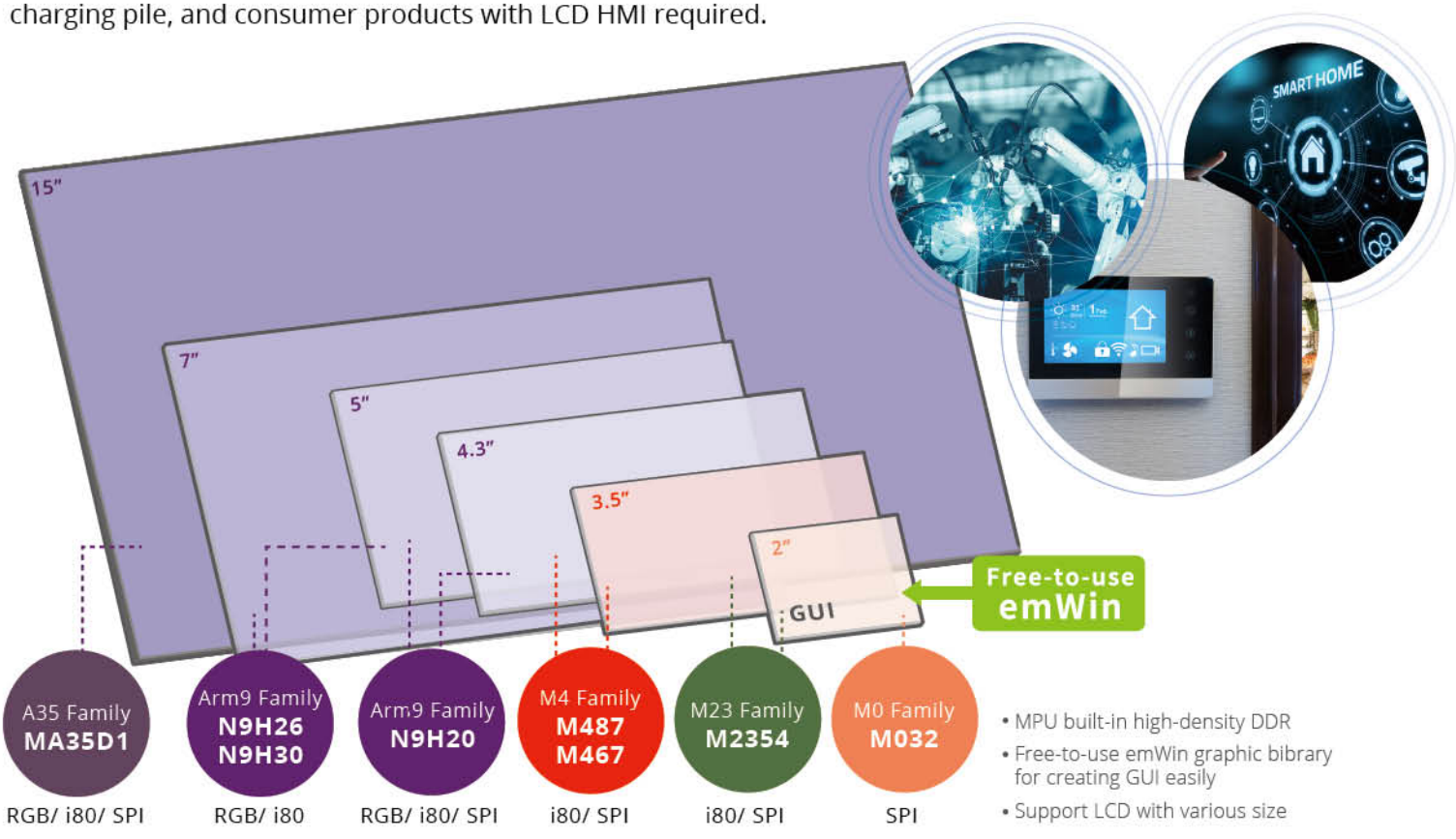
Security Technology	Item	NuMicro Series Recommendation					
		M251	M261	M2351	M2354	M480	M460
Secure Boot ROM	Secure Bootloader (based on ECDSA signature)		✓	✓	✓	✓	✓
	Secure Frmware Update (FOTA)		✓	✓	✓		
	Driver APIs		✓	✓	✓	✓	✓
	Debug Authentication (temporarily unlock)			✓	✓		
Security Reference Code / Lib /Tool	TrustZone reference code			✓	✓		
	Key Generation Tool		✓	✓	✓		✓
	Firmware Image Signing Tool		✓	✓	✓		✓
	Key/Certificate provisioning service		✓	✓	✓		
Isolation	Peripheral privileged mode			✓	✓		
	TrustZone partition for Cortex-M			✓	✓		
Flash Memory Protection	Flash Lock (read protection)	✓	✓	✓	✓	✓	✓
	eXecute Only Memory	✓	✓	✓	✓	✓	✓
	Dual Bank (with bank remapping)		✓	✓	✓		✓
	Flash Write Protection		✓	✓	✓	✓	
Crypto Processors	DES/3DES		✓	✓			
	AES-256	✓	✓	✓	✓	✓	✓
	AES with CCM, GCM and GMAC modes				✓		✓
	ECC (key generation, ECDH-ECDSA)		✓	✓	✓	✓	✓
	RSA-4096				✓		✓
	Side Channel Attacks mitigation of AES, RSA, ECC				✓		
	SHA1/SHA2-384		✓	✓	✓	✓	✓
	SHA2-512, HMAC-512				✓	✓	✓
	SM2/3/4 (Chinese national cryptography standard)				✓		
	TRNG + PRNG		✓	✓	✓	✓	✓
	Cryptographic KeyStore (secure key storage)				✓		✓
Device Identity	Unique ID	✓	✓	✓	✓	✓	✓
	Customer Unique ID	✓	✓	✓	✓	✓	✓
Anti-Tamper	Tamper Pin Detection	✓	✓	✓	✓	✓	✓
	RTC backup registers	✓	✓	✓	✓	✓	✓
Environment Sensor	Temperature sensor	✓	✓	✓	✓	✓	✓
	Clock monitor	✓	✓	✓	✓	✓	✓
	Voltage glitch detection				✓		
Platform Security	Booting Status Monitor			✓	✓		
	Life Cycle Management			✓	✓		
	Firmware Version Counter			✓	✓		
	Debug Port Management (DPM)			✓	✓		

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

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



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

	CPU Core (MHz)	SRAM Size	Flash Size	LCD Resolution & Interface	Hardware Accelerator for video	EVB P/N	EVB LCD Size & Resolution
MA35D1 Series	Dual Cortex-A35 + Cortex-M4 800 MHz/ 180 MHz	MCP DDR 128/256/512 MB	External	1920x1080 RGB/ SPI/ i80	2D GFx JPEG decoder H.264 decoder	NuMaker-HMI-MA35D1-S1	7" (1024x600)
N9H30 Series	Arm9 300 MHz	MCP DDR 64/128 MB	External	1024x768 RGB/ SPI/ i80	2D GFx JPEG Codec	NuMaker-HMI-N9H30	7" (800x480)
N9H26 Series	Arm9 240 MHz	MCP DDR 64 MB	External	1024x768 RGB/ SPI/ i80	2D GFx JPEG Codec H.264 Codec	NuMaker-HMI-N9H26	5" (800x480)
N9H20 Series	Arm9 200MHz	MCP DDR 2/8/32 MB	External	1024x768 RGB/ SPI/ i80	2D GFx JPEG Codec	NuMaker-HMI-N9H20	4.3" (480x272)
M460 Series	Cortex-M4 200 MHz	512 KB	1024 KB	480x272 SPI/ i80	N/A	NuMaker-HMI-M467	4.3" (480x272)
M480 Series	Cortex-M4 192 MHz	160 KB	512 KB	480x272 SPI/ i80	N/A	NuMaker-HMI-M487	3.2" (320x240)
M2354 Series	Cortex-M23 96 MHz	256 KB	1024 KB	320x240 SPI/ i80	N/A	NuMaker-HMI-M2354	2.4" (320x240)
M032 Series	Cortex-M0 72 MHz	96 KB	512 KB	320x240 SPI/ i80	N/A	NuMaker-HMI-M032	2.4" (320x240)

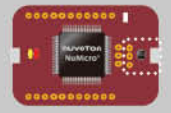
NuMicro® Ecosystem - Smart Home Appliance Platform

- As the purist for quality of life continues, Smart Home Appliances have become essential for homes. Nuvoton microcontrollers integrate demands for Smart Home Appliances system. Critical features include: 1.8V to 5.5V operating voltage, packages with more than 0.5 mm wide pin pitch, a software library of self-test, and functional safety for IEC-60730 Class B. Robust anti-interference protection circuits of Electrostatic discharge (ESD) and Electrical fast transients (EFT) are also provided.
  Nuvoton microcontrollers support firmware update on the air (FOTA) by using the dual bank flash memory or in system programming (ISP) with loader ROM(LDROM). Nuvoton's human machine interface (HMI) microcontrollers incorporate high immunity features. The touch-key with waterproof and noise immunity can support 2 mm depth water droplet. The LCD charging pump patent can maintain the operating voltage and keep the display clear even when the voltage is insufficient.
- Nuvoton provides a rich product portfolio for Smart Home Appliances, including MS51 and ML51 series based on 8051; M071, M031BT and M032BT series based on Cortex-M0; M251, M254, M256 and M258 series based on Cortex-M23; M471 and M460 series based on Cortex-M4; and N9H series based on Arm9. All products offer long-term supply guarantee.
- **Nuvoton microcontrollers provide rich-function features to meet various applications.**
  - Main control: MS51, ML51, M071, M471 and M460 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 consumer infrared receiver: M471 series
  - Wireless with BLE 5.0: M031BT/ M032BT series
- **Target applications:** Smart Small Appliances, White Goods, Health Care Appliances, Smart Homes.

Home Application	MS51/ ML51	M251/ M252	M071	M471	M460	ML54/ ML56	M254/ M256/ M258	N9H	M031BT/ M032BT
Application	Main control	Main control	Main control	Main control	Main control	Display + Touch	Display + Touch	Display	Main Control with Bluetooth
Core	8051-1T	Cortex-M23	Cortex-M0	Cortex-M4	Contex-M4	805-1T	Cortex-M23	Arm9	Cortex-M0
Operating Frequency (MHz)	24	48	50/72	72/120	200	24	48	200/240/ 300	48/72
Flash (KB)	8/16/32/64	32/64/ 128/256	64/128/ 256	64/128/ 512	256/1024	64	64/128/ 256		64/128/ 256/512
SRAM (KB)	1/2/4	8/16/32	8/16/20	32/48/64	128/512	4	16		8/16/64/96
IEC-60730 Class B STL	✓	✓	✓	✓	✓	✓	✓	✓	✓
operating voltage	MS51 2.5~5.5 ML51 1.8~5.5	1.8~5.5	2.5~5.5	2.5~5.5	1.7~3.6	1.8~3.6	1.75~5.5	2.97~3.63	1.8~3.6
>0.5mm Pin pitch	✓	✓	✓	✓	✓	✓	✓		
Low power	✓ ML51 only	✓			✓	✓	✓		
Display					✓ TFT LCD	✓ COM/SEG LCD	✓ COM/SEG LCD	✓ TFT LCD	
Touch-key						✓	✓		
BLE 5.0									✓
Infrared Receiver				✓					

NuDeveloper Ecosystem – Make the Engineers' Job Easier

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



Evaluation Board (NuMaker)

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

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

Debugger & Programmer (Nu-Link)

- **1 to 1 Debugger & Programmer**

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

  The Nu-Link-Gang Programmer is designed for mass-production in the customer site. With flexible programming option which can offline programming 4 chips simultaneously or individually, fit for automatic IC programing system.

Software Tool (NuTool)

- **Programming Tool**
  - **ICP Tool**
    Mass-production programming tool with code encryption, protect IP of customer.
  - **ISP Tool**
    Provides sample code for end-product firmware update.
  - **Nu-Link Command**
    Supports programming up to 16 target chips simultaneously.
- **General Tool**
  - **PinConfigure Tool**
    To configure I/O with multi-functions and generate OrCAD library.
  - **PinView Tool**
    A monitoring and visualization tool that can immediately show the current status of I/O pins.
  - **Clock Configure Tool**
    Check the clock tree and generate the clock initiate code.
  - **CodeGenerator Tool**
    Code generating for NuMicro M031/M251/M252/M258/NUC1262 projects with the initial peripheral, pin, and clock configurations.
- **Application Specific**
  - **DALIController**
    Supports monitoring and recording of DALI bus communication and send DALI commands.
  - **LCDView**
    Creates customized LCD panel and COM/SEG table and emulators real-time COM/SEG status.
  - **TouchView**
    Supports adjusting parameters and calibrating touch key system.

Embedded Software (BSP & Example Code)

- **Board Support Package (BSP)**

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

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

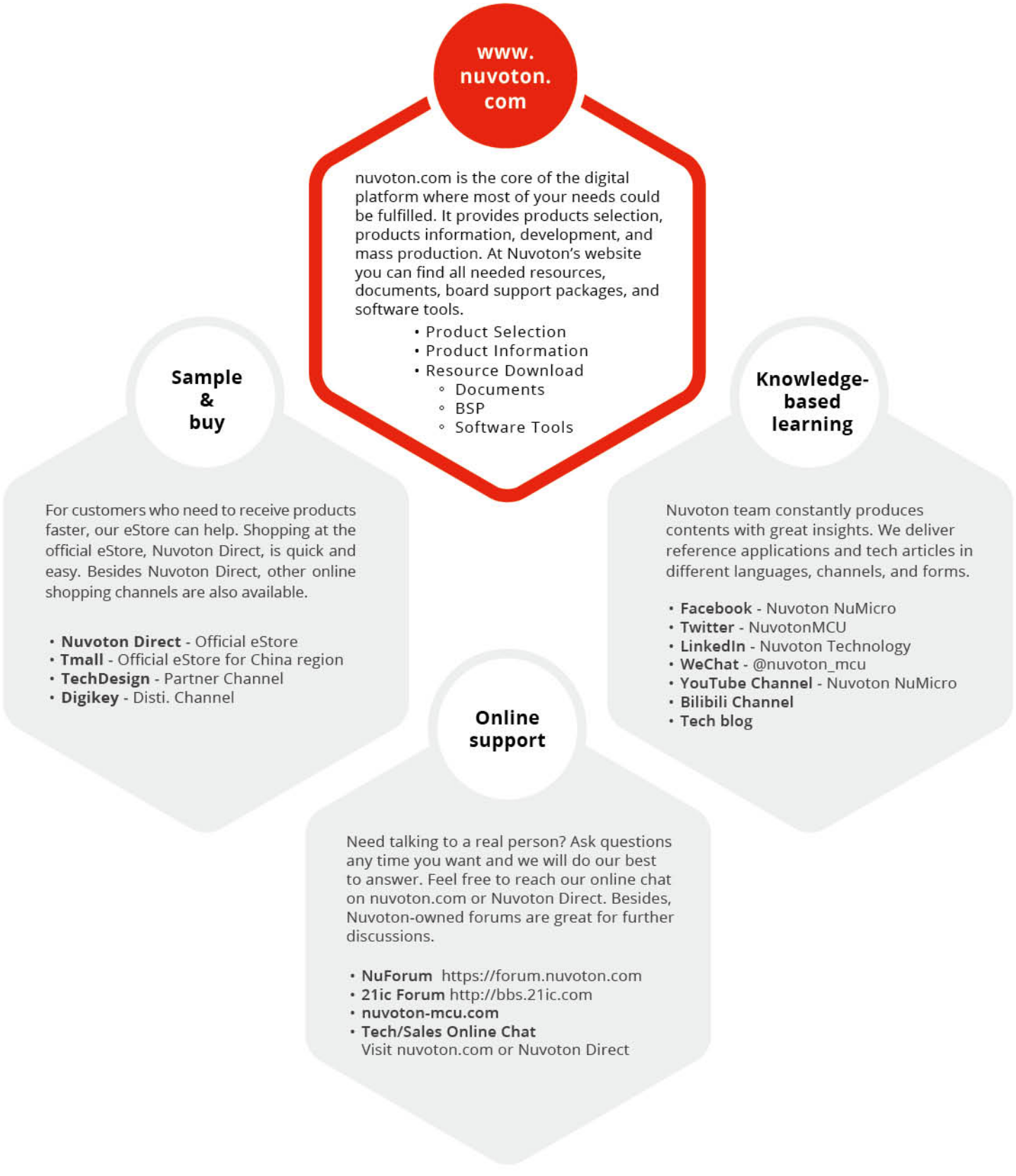
IDE and Driver

Offers multiple IDEs for customers

- **Arm Keil**
  - Free-to-use for NuMicro M0/M0+/M23 projects.
  - Special price for NuMicro M4/M7 projects.
- **IAR Embedded Workbench** 32 KB free for NuMicro M0/M4/M23 projects.
- **NuEclipse within the GNU Eclipse framework** Free-to-use in NuMicro M0/M4/M23 projects.

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
TSI		Trusted Secure Island

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® Family Arm® Cortex®-A35 MPUs

High-performance Edge IIoT Series

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

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

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

MA35D1 Series

The NuMicro® MA35D1 series is a heterogeneous multi-core microprocessor targeted to high-end edge IIoT gateway. It is based on dual 64-bit Arm® Cortex®-A35 cores with speed up to 1 GHz, and one 180 MHz Arm® Cortex®-M4 core. Based on the high-performance cores, the MA35D1 series facilities the tiny AI/ML for edge computing.
The MA35D1 supports 16-bit DDR2 and DDR3/ DDR3L SDRAM. For an easy system design and manufacture, the MA35D1 series also offers LQFP and BGA packages stacked with the DDR2/DDR3L SDRAM and density up to 512 MB, which significantly reduces PCB layer, size and electromagnetic interference (EMI).

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

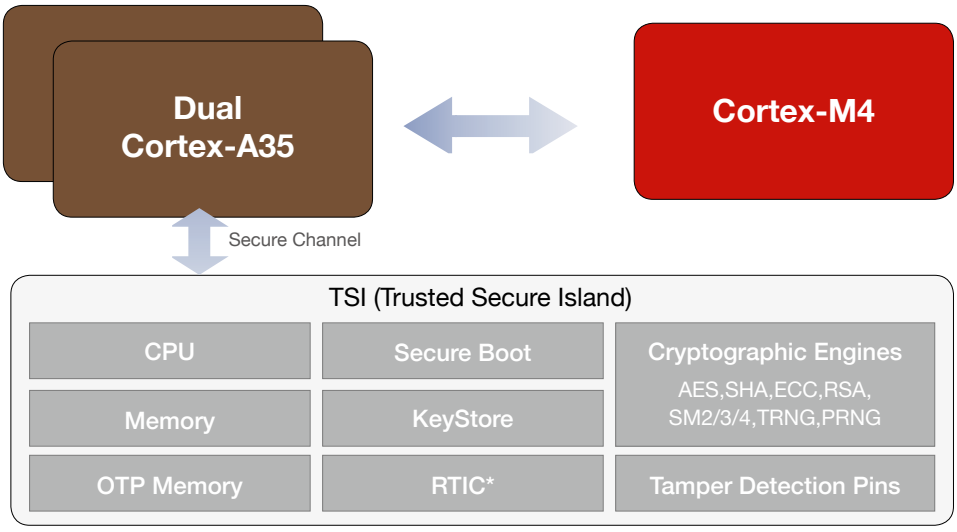
For high-end edge IIoT gateway requirements, the MA35D1 series provides multiple advanced and high-speed connection interfaces, such as Gigabit Ethernet, SDIO3.0, USB 2.0 HS, and CAN FD, for edge gateway and new energy applications.
For HMI applications, the MA35D1 series provides a LCD display controller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

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

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

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

MA35D1's Innovative Secure Subsystem Security for MPU



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

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

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

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

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

Part No.	System						Memory			Memory Interface	Timer				Analog		Connectivity														Display				TSI	Security	Package		Status	Tool
	Core	Real-Time Processor (RTP)	Operating Frequency (MHz)	Operating Temperature (min)(°C)	Operating Temperature (max)(°C)	GPIO	SRAM (KB)	DDR(MB)	PDMA (ch)	SDRAM Interface	Timer/PWM	Enhanced PWM (EPWM) (16-bit)	Quadrature Encoder Interface (QEI)	Enhanced Capture (ECAP)	ADC (12-bit)	Enhanced ADC (EADC)(12-bit)	Low-power UART (LPUART)	ISO-7816-3	Quad SPI (QSPI)	I²C	SPI/ I²S	I²S	CAN FD	Secure Digital Host Controller (SDHC)	USB HS Host	USB HS Device/ Host	Ethernet 10/100 Mbps	Ethernet 10/100/1000 Mbps	External Bus Interface (EBI)	Camera Interface	TFT-LCD Interface	2D Graphics Engine	Video Codec	Trusted Secure Island (TSI)	Tamper Detection Pin	Package Type	Package Size	Mass Production	EVB
MA35D16F787C	Cortex-A35 Dual	Cortex-M4	800	-40	85	154	256 + 128	128	40	-	10	18	3	3	8	-	17	2	2	6	4	2	4	2	1	1	1	√	2	24 bit	√	H.264 decoder JPEG decoder	√	-	LQFP 216-EP	24 x 24	2022Q4	-
MA35D16F987C	Cortex-A35 Dual	Cortex-M4	800	-40	85	154	256 + 128	512	40	-	10	18	3	3	8	-	17	2	2	6	4	2	4	2	1	1	1	√	2	24 bit	√	H.264 decoder JPEG decoder	√	-	LQFP 216-EP	24 x 24	2022Q4	NK-IMA 35D1A1
MA35D16A887C	Cortex-A35 Dual	Cortex-M4	800	-40	85	208	256 + 128	256	40	-	12	18	3	3	8	8	17	2	2	6	4	2	4	2	1	1	-	2	√	2	24 bit	√	H.264 decoder JPEG decoder	√	2	BGA 312	15 x 15	2022Q4	NK-HMA 35D1S1
MA35D16A087C	Cortex-A35 Dual	Cortex-M4	800	-40	85	208	256 + 128	-	40	√	12	18	3	3	8	8	17	2	2	6	4	2	4	2	1	1	-	2	√	2	24 bit	√	H.264 decoder JPEG decoder	√	2	BGA 364	14 x 14	2022Q4	-

NuMicro® Family Arm® Cortex®-M4 Microcontrollers

The NuMicro® Family Cortex®-M4 based MCUs provide high performance system design with up to 90-240 DMIPS operating at up to 72-200 MHz. When executing from the embedded Flash memory, the power consumption can be lowered to 130 µA/MHz with dynamic power scaling function supported by the M480 series.

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

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

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

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

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

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 on-chip 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

M460 Series

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

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

M460 Series	USB FS	USB HS	CAN FD	Crypto Engine	Ethernet
M467 Ethernet/Crypto Series	√	√	√	√	√
M463 CAN FD/USB HS Series		√	√	AES	

Key Features: Key Store, CAN FD, audio PLL, PSIO, Ethernet 10/100 MAC, Secure Boot, Crypto Engine, TRNG, PRNG, USB HS/FS OTG, Intel 8080 on EBI, HyperBus interface, 3 set of 12-bit 5 Msps ADC, 4 sets of comparator, 4x EQEI, camera interface, ICP/IAP/ISP

Part No.	System							Memory				Timer		Analog			Connectivity																Security			Crypto	Display		Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	RTC	EADC (12-bit)	DAC (12-bit)	ACMP	LPUART	ISO-7816	QSPI	I²C	USCI	SPI/I²S	SPIM	I²S	CAN FD	SDHC	PSIO	USB FS OTG	USB HS OTG	EMAC	EBI	TRNG	XOM	Key Store	Crypto	Camera Interface	Keypad Interface	Package Type	Package Size	Mass Production	EVB	MP Programmer
M467SJHAN	Cortex-M4	200	1.7	3.6	-40	85	44	8	1024	512	32	4	√	20	2	4	9	3	2	5	1	4	1	2	4	2	4	1	1	1	√	√	√	√	√	√	6x8	LQFP 64	7x7	√	NK-M467HJ	NLG-64S
M467KJHAN	Cortex-M4	200	1.7	3.6	-40	85	100	8	1024	512	32	4	√	28	2	4	10	3	2	5	1	4	1	2	4	2	8	1	1	1	√	√	√	√	√	√	6x8	LQFP 128	14x14	√	NK-M467HJ	NLG-128K
M467JJHAN	Cortex-M4	200	1.7	3.6	-40	85	114	8	1024	512	32	4	√	28	2	4	10	3	2	5	1	4	1	2	4	2	8	1	1	1	√	√	√	√	√	√	6x8	LQFP 144	20x20	√	NK-M467HJ	NLG-144J
M467HJHAN	Cortex-M4	200	1.7	3.6	-40	85	146	8	1024	512	32	4	√	28	2	4	10	3	2	5	1	4	1	2	4	2	8	1	1	1	√	√	√	√	√	√	6x8	LQFP 176	24x24	√	NK-M467HJ	NLG-176H
M463KGCAE	Cortex-M4	200	1.7	3.6	-40	105	100	8	256	128	16	4	√	16	-	2	8	1	2	5	1	4	-	-	2	1	-	-	1	-	√	√	√	√	AES	-	6x8	LQFP 128	14x14	√	NK-M463KG	NLG-128K
M463SGCAE	Cortex-M4	200	1.7	3.6	-40	105	44	8	256	128	16	4	√	16	-	2	8	1	2	5	1	4	-	-	2	1	-	-	1	-	√	√	√	√	AES	-	6x8	LQFP 64	7x7	√	NK-M463KG	NLG-64S
M463LGCAE	Cortex-M4	200	1.7	3.6	-40	105	33	8	256	128	16	4	√	12	-	2	8	1	2	5	1	4	-	-	2	1	-	-	1	-	√	√	√	√	AES	-	6x8	LQFP 48	7x7	√	NK-M463KG	NLG-48L
M463YGCAE	Cortex-M4	200	1.7	3.6	-40	105	33	8	256	128	16	4	√	12	-	2	8	1	2	5	1	4	-	-	2	1	-	-	1	-	√	√	√	√	AES	-	6x8	QFN 48	5x5	√	NK-M463KG	NLG-48Y

M480 Series

The NuMicro® M480 series is a 32-bit microcontroller based on Arm® Cortex®-M4F core, with DSP instruction set and single-precision floating-point unit (FPU), targeted for IoT, Industrial, and consumer applications. The M480 series runs up to 192 MHz, provides up to 512 KB dual bank Flash memory, 160 KB SRAM, and features 1.8V to 3.6V wide operating voltage, -40°C to +105°C wide operating temperature, a variety of packages choice, and excellent high immunity characteristics by ESD HBM 2 kV and EFT 4.4 kV.

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

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

Key Features: Ethernet 10/100 MAC, Secure Boot, Crypto Engine, TRNG, PRNG, CAN2.0B, USB HS/FS OTG, audio PLL, Intel 8080 on EBI, up to 2 sets of 12-bit 5 Msps ADC, 2 sets of comparator, camera interface, ICP/IAP/ISP

Part No.	System							Memory				Timer				Analog			Connectivity											Security	Crypto	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	BPWM (16-bit)	EPWM (16-bit)	RTC	EADC (12-bit)	DAC (12-bit)	ACMP	LPUART	QSPI	I²C	USCI	SPI/ I²S	CAN	SDHC	Camera Interface	USB FS OTG	USB HS OTG	EMAC	PRNG	Crypto	Package Type	Package Size	Mass Production	EVB	MP Programmer
M481LGCAE	Cortex-M4	192	1.8	3.6	-40	105	41	4	256	128	16	4	12	12	√	12	1	2	8	2	3	-	2	-	1	-	-	-	-	√	√	LQFP 48	7x7	√	NK-M483KG	NLG-48L
M481LIDAE	Cortex-M4	192	1.8	3.6	-40	105	41	4	512	160	16	4	12	12	√	12	2	2	6	1	3	2	3	-	2	-	-	-	-	-	-	LQFP 48	7x7	√	NK-BEDM487	NLG-48L
M481SGCAE	Cortex-M4	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	-	1	√	-	-	-	√	√	LQFP 64	7x7	√	NK-M483KG	NLG-64S
M481SGCAE2A	Cortex-M4	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	-	1	√	-	-	-	√	√	LQFP 64	7x7	√	NK-M483KG	NLG-64S
M481SIDAE	Cortex-M4	192	1.8	3.6	-40	105	52	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	-	-	-	-	-	-	LQFP 64	7x7	√	NK-BEDM487	NLG-64S
M481ZGCAE	Cortex-M4	192	1.8	3.6	-40	105	26	4	256	128	16	4	12	12	√	10	1	2	8	2	3	-	2	-	1	-	-	-	-	√	√	QFN 33	5x5	√	NK-M483KG	NLG-32Z
M481ZIDAE	Cortex-M4	192	1.8	3.6	-40	105	26	4	512	160	16	4	12	12	√	10	2	2	6	1	3	2	3	-	1	-	-	-	-	-	-	QFN 33	5x5	√	NK-BEDM487	NLG-32Z
M482KGCAE	Cortex-M4	192	1.8	3.6	-40	105	100	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	-	1	√	1	-	-	√	√	LQFP 128	14x14	√	NK-M483KG	NLG-128K
M482KIDAE	Cortex-M4	192	1.8	3.6	-40	105	100	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	-	1	-	-	-	-	LQFP 128	14x14	√	NK-BEDM487	NLG-128K
M482LGCAE	Cortex-M4	192	1.8	3.6	-40	105	41	4	256	128	16	4	12	12	√	12	1	2	8	2	3	-	2	-	1	-	1	-	-	√	√	LQFP 48	7x7	√	NK-M483KG	NLG-48L
M482LIDAE	Cortex-M4	192	1.8	3.6	-40	105	41	4	512	160	16	4	12	12	√	12	2	2	6	1	3	2	3	-	2	-	1	-	-	-	-	LQFP 48	7x7	√	NK-BEDM487	NLG-48L
M482SGCAE	Cortex-M4	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	-	1	√	1	-	-	√	√	LQFP 64	7x7	√	NK-M483KG	NLG-64S
M482SIDAE	Cortex-M4	192	1.8	3.6	-40	105	52	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	-	1	-	-	-	-	LQFP 64	7x7	√	NK-BEDM487	NLG-64S
M482ZGCAE	Cortex-M4	192	1.8	3.6	-40	105	26	4	256	128	16	4	12	12	√	10	1	2	8	2	3	-	2	-	1	-	1	-	-	√	√	QFN 33	5x5	√	NK-M483KG	NLG-32Z
M482ZIDAE	Cortex-M4	192	1.8	3.6	-40	105	26	4	512	160	16	4	12	12	√	10	2	2	6	1	3	2	3	-	1	-	1	-	-	-	-	QFN 33	5x5	√	NK-BEDM487	NLG-32Z
M483KGCAE	Cortex-M4	192	1.8	3.6	-40	105	100	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	3	1	√	1	-	-	√	√	LQFP 128	14x14	√	NK-M483KG	NLG-128K
M483KGCAE2A	Cortex-M4	192	1.8	3.6	-40	105	100	4	256	128	16	4	12	12	√	24	1	2	8	2	3	-	3	3	1	√	1	-	-	√	√	LQFP 128	14x14	√	NK-M483KG	NLG-128K
M483KIDAE	Cortex-M4	192	1.8	3.6	-40	105	100	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	2	2	-	1	1	-	-	-	LQFP 128	14x14	√	NK-BEDM487	NLG-128K
M483SGCAE	Cortex-M4	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	2	1	√	1	-	-	√	√	LQFP 64	7x7	√	NK-M483KG	NLG-64S
M483SGCAE2A	Cortex-M4	192	1.8	3.6	-40	105	52	4	256	128	16	4	12	12	√	16	1	2	8	2	3	-	3	2	1	√	1	-	-	√	√	LQFP 64	7x7	√	NK-M483KG	NLG-64S
M483SIDAE	Cortex-M4	192	1.8	3.6	-40	105	44	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	2	2	-	-	1	-	-	-	LQFP 64	7x7	√	NK-BEDM487	NLG-64S
M484KIDAE	Cortex-M4	192	1.8	3.6	-40	105	100	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	-	1	1	-	-	-	LQFP 128	14x14	√	NK-BEDM487	NLG-128K
M484SIDAE	Cortex-M4	192	1.8	3.6	-40	105	44	4	512	160	16	4	12	12	v	16	2	2	6	1	3	2	4	-	2	-	-	1	-	-	-	LQFP 64	7x7	v	NK-BEDM487	NLG-64S
M484SIDAE2U	Cortex-M4	192	1.8	3.6	-40	105	44	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	-	1	1	-	-	-	LQFP 64	7x7	√	NK-BEDM487	NLG-64S
M485KIDAE	Cortex-M4	192	1.8	3.6	-40	105	100	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	-	1	1	-	√	√	LQFP 128	14x14	√	NK-BEDM487	NLG-128K
M485LIDAE	Cortex-M4	192	1.8	3.6	-40	105	41	4	512	160	16	4	12	12	√	12	2	2	6	1	3	2	3	-	2	-	1	-	-	√	√	LQFP 48	7x7	√	NK-BEDM487	NLG-48L
M485SIDAE	Cortex-M4	192	1.8	3.6	-40	105	44	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	-	2	-	-	1	-	√	√	LQFP 64	7x7	√	NK-BEDM487	NLG-64S
M487JIDAE	Cortex-M4	192	1.8	3.6	-40	105	114	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	2	2	-	1	1	1	√	√	LQFP 144	20x20	√	NK-BEDM487	NLG-144J
M487KIDAE	Cortex-M4	192	1.8	3.6	-40	105	100	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	2	2	-	1	1	1	√	√	LQFP 128	14x14	√	NK-BEDM487	NLG-128K
M487KMCAN	Cortex-M4	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	√	√	LQFP 144	20x20	√	NK-M487KM	NLG-144K
M487SIDAE	Cortex-M4	192	1.8	3.6	-40	105	44	4	512	160	16	4	12	12	√	16	2	2	6	1	3	2	4	2	2	-	-	1	1	√	√	LQFP 64	7x7	√	NK-BEDM487	NLG-64S

M471 Series

The NuMicro® M471 series is a 32-bit microcontroller based on Arm® Cortex®-M4F core, with DSP instruction set and single-precision floating-point unit (FPU), targeted for smart home appliance applications. The M471 series runs up to 72/120 MHz, provides 512 KB on-chip Flash, 64 KB on-chip SRAM, and features 2.5V to 5.5V wide operating voltage, -40°C to +105°C wide operating temperature, a variety of packages choice, and excellent high immunity characteristics by ESD HBM 8 kV and EFT 4.4 kV.

Target Applications: Washing Machine, Refrigerator, Air Conditioner and other Smart Home Appliances
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	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Dual-Bank Flash	Data Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	EPWM (16-bit)	RTC	EADC (12-bit)	DAC (12-bit)	ACMP	UART	LPUART	I²C	SPI/ I²S	USB FS Device/ Host	PRNG	Package Type	Package Size	Mass Production	EVB	MP Programmer
M471KI8AE	Cortex-M4	120	2.5	5.5	-40	105	119	4	512	√	32	64	6	4	-	12	12	√	24	1	2	-	6	2	2	-	√	LQFP 128	14x14	√	NK-M471KI	NLG-128K
M471VI8AE	Cortex-M4	120	2.5	5.5	-40	105	91	4	512	√	32	64	6	4	-	12	12	√	23	1	2	-	6	2	2	-	√	LQFP 100	14x14	√	NK-M471KI	NLG-100V
M471CI8AE	Cortex-M4	120	2.5	5.5	-40	105	91	4	512	√	32	64	6	4	-	12	12	√	24	1	2	-	6	2	2	-	√	WLCSP 100	4.5x4.5	2023Q2	NK-M471KI	NLG-100C
M471R1E6AE	Cortex-M4	72	2.5	5.5	-40	105	49	4	128	-	Configurable	32	8	4	12	-	-	√	16	-	-	4	-	2	1	1	-	LQFP 64	14x14	√	NK-M471R1	NG-M471R1
M471SE6AE	Cortex-M4	72	2.5	5.5	-40	105	49	4	128	-	Configurable	32	8	4	12	-	-	√	16	-	-	4	-	2	1	1	-	LQFP 64	7x7	√	NK-M471R1	NG-M471S
M471MD6AE	Cortex-M4	72	2.5	5.5	-40	105	35	4	64	-	Configurable	32	8	4	10	-	-	√	10	-	-	3	-	2	1	-	-	LQFP 44	10x10	√	NK-M471R1	NG-M471M

M451 Series

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

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

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

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

Part No.		System							Memory					Timer			Analog			Connectivity									Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	VBAT	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	RTC	EADC (12-bit)	DAC (12-bit)	ACMP	UART	ISO-7816-3	QSPI	I²C	SPI/ I²S	CAN	USB FS Device/ Host	USB FS OTG	EBI	Package Type	Package Size	Mass Production	EVB	MP Programmer
M451LC3AE	Cortex-M4	72	2.5	5.5	-40	105	39	√	4	40	Configurable	16	8	4	12	√	10	1	2	4	1	1	2	1	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451L
M451LD3AE	Cortex-M4	72	2.5	5.5	-40	105	39	√	4	72	Configurable	16	8	4	12	√	10	1	2	4	1	1	2	1	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451L
M451LE6AE	Cortex-M4	72	2.5	5.5	-40	105	39	√	4	128	Configurable	32	12	4	12	√	8	1	2	3	1	1	2	2	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451L
M451LG6AE	Cortex-M4	72	2.5	5.5	-40	105	39	√	4	256	Configurable	32	12	4	12	√	8	1	2	3	1	1	2	2	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451L
M451MLC3AE	Cortex-M4	72	2.5	5.5	-40	105	42	-	4	40	Configurable	16	8	4	12	-	11	1	2	4	1	1	2	1	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451ML
M451MLD3AE	Cortex-M4	72	2.5	5.5	-40	105	42	-	4	72	Configurable	16	8	4	12	-	11	1	2	4	1	1	2	1	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451ML
M451MLE6AE	Cortex-M4	72	2.5	5.5	-40	105	42	-	4	128	Configurable	32	12	4	12	-	9	1	2	4	1	1	2	2	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451ML
M451MLG6AE	Cortex-M4	72	2.5	5.5	-40	105	42	-	4	256	Configurable	32	12	4	12	-	9	1	2	3	1	1	2	2	-	-	-	√	LQFP48	7x7	√	NT-M451V	NG-M451ML
M451MSC3AE	Cortex-M4	72	2.5	5.5	-40	105	55	-	4	40	Configurable	16	8	4	12	-	13	1	2	4	1	1	2	1	-	-	-	√	LQFP64	7x7	√	NT-M451V	NG-M451MS
M451MSD3AE	Cortex-M4	72	2.5	5.5	-40	105	55	-	4	72	Configurable	16	8	4	12	-	13	1	2	4	1	1	2	1	-	-	-	√	LQFP64	7x7	√	NT-M451V	NG-M451MS
M451RC3AE	Cortex-M4	72	2.5	5.5	-40	105	53	√	4	40	Configurable	16	8	4	12	√	16	1	2	4	1	1	2	1	-	-	-	√	LQFP64	10x10	√	NT-M451V	NG-M451R
M451RD3AE	Cortex-M4	72	2.5	5.5	-40	105	53	√	4	72	Configurable	16	8	4	12	√	16	1	2	4	1	1	2	1	-	-	-	√	LQFP64	10x10	√	NT-M451V	NG-M451R
M451RE6AE	Cortex-M4	72	2.5	5.5	-40	105	53	√	4	128	Configurable	32	12	4	12	√	12	1	2	4	1	1	2	2	-	-	-	√	LQFP64	10x10	√	NT-M451V	NG-M451R
M451RG6AE	Cortex-M4	72	2.5	5.5	-40	105	53	√	4	256	Configurable	32	12	4	12	√	12	1	2	4	1	1	2	2	-	-	-	√	LQFP64	10x10	√	NT-M451V	NG-M451R
M451VE6AE	Cortex-M4	72	2.5	5.5	-40	105	85	√	4	128	Configurable	32	12	4	12	√	16	1	2	4	1	1	2	2	-	-	-	√	LQFP100	14x14	√	NT-M451V	NG-M451V
M451VG6AE	Cortex-M4	72	2.5	5.5	-40	105	85	√	4	256	Configurable	32	12	4	12	√	16	1	2	4	1	1	2	2	-	-	-	√	LQFP100	14x14	√	NT-M451V	NG-M451V
M4521LE6AE	Cortex-M4	72	2.5	5.5	-40	105	35	√	4	128	Configurable	32	8	4	10	√	10	-	-	3	1	1	2	1	-	1	-	√	LQFP48	7x7	√	NT-M4521S	NG-M453L
M4521SE6AE	Cortex-M4	72	2.5	5.5	-40	105	49	√	4	128	Configurable	32	8	4	12	√	16	-	-	4	1	1	2	1	-	1	-	√	LQFP64	7x7	√	NT-M4521S	NG-M453S
M452LC3AE	Cortex-M4	72	2.5	5.5	-40	105	35	√	4	40	Configurable	16	8	4	10	√	10	1	2	4	1	1	2	1	-	1	-	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M452LD3AE	Cortex-M4	72	2.5	5.5	-40	105	35	√	4	72	Configurable	16	8	4	10	√	10	1	2	4	1	1	2	1	-	1	-	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M452LE6AE	Cortex-M4	72	2.5	5.5	-40	105	34	√	4	128	Configurable	32	12	4	10	√	8	1	2	3	1	1	2	1	-	-	1	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M452LG6AE	Cortex-M4	72	2.5	5.5	-40	105	34	√	4	256	Configurable	32	12	4	10	√	8	1	2	3	1	1	2	1	-	-	1	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M452RD3AE	Cortex-M4	72	2.5	5.5	-40	105	49	√	4	72	Configurable	16	8	4	12	√	16	1	2	4	1	1	2	1	-	1	-	√	LQFP64	10x10	√	NT-M451V	NG-M453R
M452RE6AE	Cortex-M4	72	2.5	5.5	-40	105	48	√	4	128	Configurable	32	12	4	12	√	12	1	2	4	1	1	2	2	-	-	1	√	LQFP64	10x10	√	NT-M451V	NG-M453R
M452RG6AE	Cortex-M4	72	2.5	5.5	-40	105	48	√	4	256	Configurable	32	12	4	12	√	12	1	2	4	1	1	2	2	-	-	1	√	LQFP64	10x10	√	NT-M451V	NG-M453R
M452VE6AE	Cortex-M4	72	2.5	5.5	-40	105	80	√	4	128	Configurable	32	12	4	12	√	16	1	2	4	1	1	2	2	-	-	1	√	LQFP100	14x14	√	NT-M451V	NG-M453V
M452VG6AE	Cortex-M4	72	2.5	5.5	-40	105	80	√	4	256	Configurable	32	12	4	12	√	16	1	2	4	1	1	2	2	-	-	1	√	LQFP100	14x14	√	NT-M451V	NG-M453V
M453LC3AE	Cortex-M4	72	2.5	5.5	-40	105	35	√	4	40	Configurable	16	8	4	10	√	10	1	2	4	1	1	2	1	1	1	-	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M453LD3AE	Cortex-M4	72	2.5	5.5	-40	105	35	√	4	72	Configurable	16	8	4	10	√	10	1	2	4	1	1	2	1	1	1	-	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M453LE6AE	Cortex-M4	72	2.5	5.5	-40	105	34	√	4	128	Configurable	32	12	4	10	√	8	1	2	3	1	1	2	2	1	-	1	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M453LG6AE	Cortex-M4	72	2.5	5.5	-40	105	34	√	4	256	Configurable	32	12	4	10	√	8	1	2	3	1	1	2	2	1	-	1	√	LQFP48	7x7	√	NT-M451V	NG-M453L
M453RD3AE	Cortex-M4	72	2.5	5.5	-40	105	49	√	4	72	Configurable	16	8	4	12	√	16	1	2	4	1	1	2	1	1	1	-	√	LQFP64	10x10	√	NT-M451V	NG-M453R
M453RE6AE	Cortex-M4	72	2.5	5.5	-40	105	48	√	4	128	Configurable	32	12	4	12	√	12	1	2	4	1	1	2	2	1	-	1	√	LQFP64	10x10	√	NT-M451V	NG-M453R
M453RG6AE	Cortex-M4	72	2.5	5.5	-40	105	48	√	4	256	Configurable	32	12	4	12	√	12	1	2	4	1	1	2	2	1	-	1	√	LQFP64	10x10	√	NT-M451V	NG-M453R
M453VD3AE	Cortex-M4	72	2.5	5.5	-40	105	72	√	4	72	Configurable	16	8	4	12	√	16	1	2	4	1	1	2	1	1	1	-	√	LQFP100	14x14	√	NT-M451V	NG-M453V
M453VE6AE	Cortex-M4	72	2.5	5.5	-40	105	80	√	4	128	Configurable	32	12	4	12	√	16	1	2	4	1	1	2	2	1	-	1	√	LQFP100	14x14	√	NT-M451V	NG-M453V
M453VG6AE	Cortex-M4	72	2.5	5.5	-40	105	80	√	4	256	Configurable	32	12	4	12	√	16	1	2	4	1	1	2	2	1	-	1	√	LQFP100	14x14	√	NT-M451V	NG-M453V

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.

Target 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
	Core	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
NUC505DL13Y	Cortex-M4	100	3	3.6	-40	85	25	√	2048	128	4	4	√	5	-	3	2	2	1	1	1	1	LQFP48	7x7	√	NT-NUC505Y
NUC505DLA	Cortex-M4	100	3	3.6	-40	85	18	√	512	128	4	-	√	5	1	2	1	2	1	-	-	1	LQFP48	7x7	√	NT-NUC505Y
NUC505DS13Y	Cortex-M4	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	Cortex-M4	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	Cortex-M4	100	3	3.6	-40	85	18	√	512	128	4	-	√	5	1	2	1	2	1	-	-	1	QFN48	7x7	√	NT-NUC505Y
NUC505YLA2Y	Cortex-M4	100	3	3.6	-40	85	25	√	512	128	4	4	√	5	-	3	2	3	1	1	1	1	QFN48	7x7	√	NT-NUC505Y
NUC505YO13Y	Cortex-M4	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 Arm® Cortex®-M23 Microcontrollers

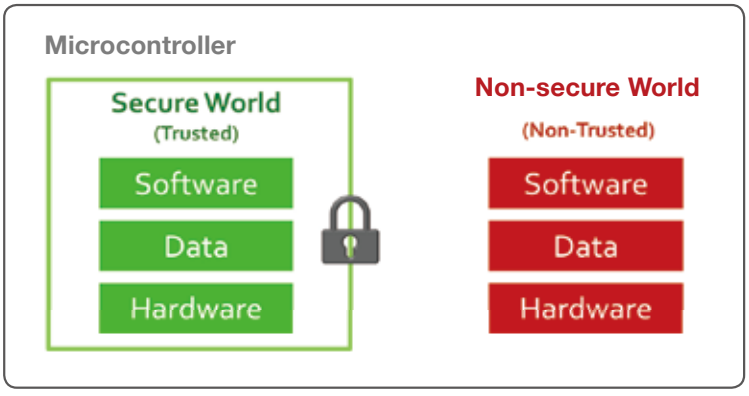
Offers the next industry standard for secure IoT devices

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.

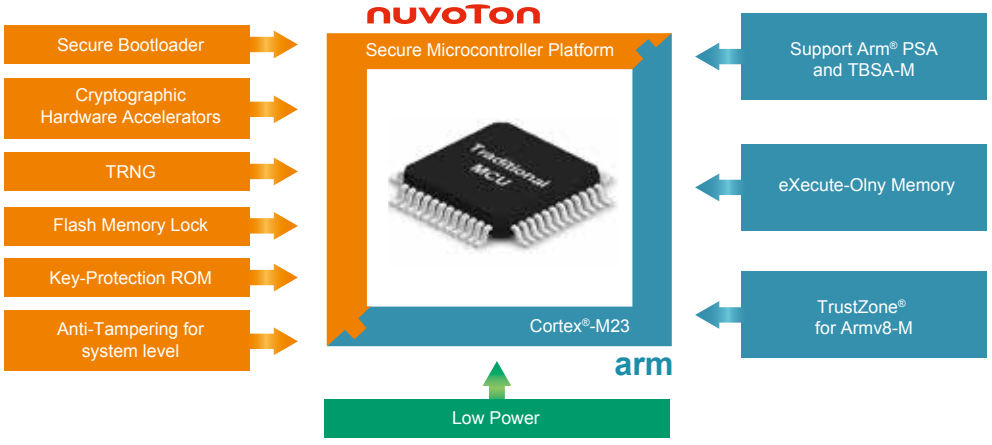
With the two key features of security and ultra-low power, NuMicro® M23 is built for small, energy-sipping IoT and embedded products. With the capability of the small-sized and low-power devices, NuMicro® M23 provides security, enhanced efficiency, performance and scalability for deployment even in the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

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

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

Part No.	System									Memory					Timer			Analog			Connectivity											Security		Crypto	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	ETM	V_{BAT}	LDROM Flash (KB)	APROM Flash (KB)	Secure Flash (KB)	SRAM (KB)	PDMA (ch)	Timer/ PWM	BPWM (16-bit)	EPWM (16-bit)	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	Cortex-M23	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-BEDM 2351	-
M2351KIAAE	Cortex-M23	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-BEDM 2351	NLG-128KX
M2351SFSIAAE	Cortex-M23	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-M2351 SF	NLG-64S
M2351SIAAE	Cortex-M23	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-BEDM 2351	NLG-64S
M2351ZIAAE	Cortex-M23	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-BEDM 2351	NLG-32Z

M2354 Series

NuMicro® M2354 series microcontrollers are based on Arm® Cortex®-M23. In addition to the built-in TrustZone® technology of the Armv8-M architecture, it also adds protection functions against side-channel attacks to cryptographic hardware accelerators as well as fault injection attacks of voltage and clock pin surges. Furthermore, M2354 Series has implemented the microcontroller platform security hardware features, including debug port management (Debug Port Management), product life cycle management (Product Lifecycle Management), Firmware Version Counter and a Secure Key storage area with chip physical level security, allowing the microcontroller application system to easily realize data storage security, software execution security and message communication security.

The M2354 series of microcontrollers can run at a frequency of up to 96 MHz, built-in 1 MBytes dual-bank architecture Flash Memory, can support real-time memory re-map to execute the updated firmware version after a successful firmware over-the-air update (Secure FOTA Update).

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

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	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	ETM	V_{BAT}	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer/ PWM	BPWM (16-bit)	EPWM (16-bit)	EADC	DAC (12-bit)	LPUART	ISO-7816-3	QSPI	I²C	USCI	SPI/ I²S	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	Cortex-M23	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	Cortex-M23	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	Cortex-M23	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 series is a low-power microcontroller platform based on Arm® Cortex®-M23 core for Armv8-M architecture. It runs up to 48 MHz with 32 ~ 256 Kbytes embedded Flash Memory and 8 ~ 32 Kbytes embedded SRAM, 4 Kbytes Flash loader memory (LDROM) for In-System Programming (ISP). The 32-bit low-power microcontrollers supports wide supply voltage from 1.75V ~ 5.5V and operating temperature range from -40°C ~ +105°C. It features highly flexible PSIO and plenty of peripherals, such as VAI interface, crystal-less USB 2.0 full-speed device and rich peripherals.

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

• M251 Series

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

Part No.	System							Memory				Timer				Analog			Connectivity										Security			Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer/ PWM	PWM (16-bit)	BPWM (16-bit)	RTC	EADC	DAC (12-bit)	ACMP	UART	LIN	ISO-7816-3	QSPI	I²C	USCI	SPI/ I²S	PSIO	USB FS Device Crystal-less	TrustZone	XOM	Tamper	Package Type	Package Size	Mass Production	EVB	MP Programmer
M251EC2AE	Cortex-M23	48	1.75	5.5	-40	105	23	4	32	8	5	4	11	-	-	9	-	-	2	1	1	1	2	1	-	-	-	√	√	-	TSSOP28	4.4x9.7	√	NK-M252SD	NLG-28E
M251FC2AE	Cortex-M23	48	1.75	5.5	-40	105	15	4	32	8	5	4	9	-	-	7	-	-	2	1	1	1	2	1	-	-	-	√	√	-	TSSOP20	4.4x6.5	√	NK-M252SD	NLG-20F
M251KE3AE	Cortex-M23	48	1.75	5.5	-40	105	85	4	128	16	8	4	12	12	√	16	-	2	3	1	1	1	2	3	1	8	-	√	√	√	LQFP128	14x14	√	NK-M252KG	NLG-128KX
M251KG6AE	Cortex-M23	48	1.75	5.5	-40	105	85	4	256	32	8	4	12	12	√	16	1	2	3	1	1	1	2	3	1	8	-	-	√	√	LQFP128	14x14	√	NK-M252KG	NLG-128KX
M251LC2AE	Cortex-M23	48	1.75	5.5	-40	105	41	4	32	12	5	4	12	12	√	12	-	2	3	1	1	1	2	2	1	4	-	√	√	-	LQFP48	7x7	√	NK-M252SD	NLG-48L
M251LD2AE	Cortex-M23	48	1.75	5.5	-40	105	41	4	64	12	5	4	12	12	√	12	-	2	3	1	1	1	2	2	1	4	-	√	√	-	LQFP48	7x7	√	NK-M252SD	NLG-48L
M251LE3AE	Cortex-M23	48	1.75	5.5	-40	105	41	4	128	16	8	4	12	12	√	12	-	2	3	1	1	1	2	3	1	8	-	√	√	-	LQFP48	7x7	√	NK-M252KG	NLG-48L
M251LG6AE	Cortex-M23	48	1.75	5.5	-40	105	41	4	256	32	8	4	12	12	√	12	1	2	3	1	1	1	2	3	1	8	-	√	√	-	LQFP48	7x7	√	NK-M252KG	NLG-48L
M251SC2AE	Cortex-M23	48	1.75	5.5	-40	105	54	4	32	12	5	4	12	12	√	16	-	2	3	1	1	1	2	2	1	4	-	√	√	√	LQFP64	7x7	√	NK-M252SD	NLG-64S
M251SD2AE	Cortex-M23	48	1.75	5.5	-40	105	54	4	64	12	5	4	12	12	√	16	-	2	3	1	1	1	2	2	1	4	-	√	√	√	LQFP64	7x7	√	NK-M252SD	NLG-64S
M251SE3AE	Cortex-M23	48	1.75	5.5	-40	105	53	4	128	16	8	4	12	12	√	16	-	2	3	1	1	1	2	3	1	8	-	√	√	√	LQFP64	7x7	√	NK-M252KG	NLG-64S
M251SG6AE	Cortex-M23	48	1.75	5.5	-40	105	53	4	256	32	8	4	12	12	√	16	1	2	3	1	1	1	2	3	1	8	-	√	√	√	LQFP64	7x7	√	NK-M252KG	NLG-64S
M251ZC2AE	Cortex-M23	48	1.75	5.5	-40	105	26	4	32	8	5	4	12	-	√	10	-	-	2	1	1	1	2	1	-	-	-	√	√	-	QFN33	5x5	√	NK-M252SD	NLG-32Z
M251ZD2AE	Cortex-M23	48	1.75	5.5	-40	105	26	4	64	12	5	4	12	12	√	10	-	2	3	1	1	1	2	2	1	4	-	√	√	-	QFN33	5x5	√	NK-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	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer/ PWM	PWM (16-bit)	BPWM (16-bit)	RTC	EADC	DAC (12-bit)	ACMP	UART	LIN	ISO-7816-3	QSPI	I²C	USCI	SPI/ I²S	PSIO	USB FS Device Crystal-less	TrustZone	XOM	Tamper	Package Type	Package Size	Mass Production	EVB	MP Programmer
M252EC2AE	Cortex-M23	48	1.75	5.5	-40	105	19	4	32	8	5	4	11	-	-	9	-	-	2	1	1	1	2	1	-	-	√	-	√	-	TSSOP28	4.4x9.7	√	NK-M252SD	NLG-28E
M252FC2AE	Cortex-M23	48	1.75	5.5	-40	105	11	4	32	8	5	4	7	-	-	3	-	-	2	1	1	1	2	1	-	-	√	-	√	-	TSSOP20	4.4x6.5	√	NK-M252SD	NLG-20F
M252KE3AE	Cortex-M23	48	1.75	5.5	-40	105	81	4	128	16	8	4	12	12	√	16	-	2	3	1	1	1	2	3	1	8	√	-	√	√	LQFP128	14x14	√	NK-M252KG	NLG-128KX
M252KG6AE	Cortex-M23	48	1.75	5.5	-40	105	81	4	256	32	8	4	12	12	√	16	1	2	3	1	1	1	2	3	1	8	√	-	√	√	LQFP128	14x14	√	NK-M252KG	NLG-128KX
M252LC2AE	Cortex-M23	48	1.75	5.5	-40	105	37	4	32	12	5	4	12	8	√	12	-	2	3	1	1	1	2	2	1	4	√	-	√	-	LQFP48	7x7	√	NK-M252SD	NLG-48L
M252LD2AE	Cortex-M23	48	1.75	5.5	-40	105	37	4	64	12	5	4	12	12	√	12	-	2	3	1	1	1	2	2	1	4	√	-	√	-	LQFP48	7x7	√	NK-M252SD	NLG-48L
M252LE3AE	Cortex-M23	48	1.75	5.5	-40	105	37	4	128	16	8	4	12	12	√	12	-	2	3	1	1	1	2	3	1	8	√	-	√	-	LQFP48	7x7	√	NK-M252KG	NLG-48L
M252LG6AE	Cortex-M23	48	1.75	5.5	-40	105	37	4	256	32	8	4	12	12	√	12	1	2	3	1	1	1	2	3	1	8	√	-	√	-	LQFP48	7x7	√	NK-M252KG	NLG-48L
M252SC2AE	Cortex-M23	48	1.75	5.5	-40	105	50	4	32	12	5	4	12	12	√	16	-	2	3	1	1	1	2	2	1	4	√	-	√	√	LQFP64	7x7	√	NK-M252SD	NLG-64S
M252SD2AE	Cortex-M23	48	1.75	5.5	-40	105	50	4	64	12	5	4	12	12	√	16	-	2	3	1	1	1	2	2	1	4	√	-	√	√	LQFP64	7x7	√	NK-M252SD	NLG-64S
M252SE3AE	Cortex-M23	48	1.75	5.5	-40	105	49	4	128	16	8	4	12	12	√	16	-	2	3	1	1	1	2	3	1	8	√	-	√	√	LQFP64	7x7	√	NK-M252KG	NLG-64S
M252SG6AE	Cortex-M23	48	1.75	5.5	-40	105	49	4	256	32	8	4	12	12	√	16	1	2	3	1	1	1	2	3	1	8	√	-	√	√	LQFP64	7x7	√	NK-M252KG	NLG-64S
M252ZC2AE	Cortex-M23	48	1.75	5.5	-40	105	23	4	32	8	5	4	12	-	√	10	-	-	2	1	1	1	2	1	-	-	√	-	√	-	QFN33	5x5	√	NK-M252SD	NLG-32Z
M252ZD2AE	Cortex-M23	48	1.75	5.5	-40	105	22	4	64	12	5	4	12	12	√	10	-	2	3	1	1	1	2	2	1	4	√	-	√	-	QFN33	5x5	√	NK-M252SD	NLG-32Z

M253 Series

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

Target Applications: Smart Home/ Smart Home Appliances , Industrial Control/ Industrial Automation, Battery Management System

• 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	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash	APROM Flash	SRAM	PDMA	Timer (32-bit)	BPWM (16-bit)	RTC	EADC	ACMP	UART	I²C	USCI	SPI/ I²S	CAN FD	USB FS Device	USB FS Device Crystal-less	XOM	Package Type	Package Size	Mass Production	EVB	MP Programmer
M253LD3AE	Cortex-M23	48	1.75	5.5	-40	105	37	4	64	16	5	4	6	√	12	2	5	2	1	1	1	1	√	√	LQFP48	7x7	√	NK-M253LE	NLG-48L
M253ZE3AE	Cortex-M23	48	1.75	5.5	-40	105	22	4	128	16	5	4	6	√	10	2	5	2	1	1	1	1	√	√	QFN33	5x5	√	NK-M253LE	NLG-32Z
M253LE3AE	Cortex-M23	48	1.75	5.5	-40	105	37	4	128	16	5	4	6	√	12	2	5	2	1	1	1	1	√	√	LQFP48	7x7	√	NK-M253LE	NLG-48L

M254/M256/M258 Series

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

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

• M254 Series

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

Part No.	System							Memory				Timer			Analog				Connectivity									Security	Crypto	Display	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash	APROM Flash	SRAM	PDMA	Timer/ PWM	BPWM (16-bit)	RTC	EADC	DAC (12-bit)	ACMP	Touch Key	UART	LIN	ISO-7816-3	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	XOM	AES	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
M254MD2AE	Cortex-M23	48	1.75	5.5	-40	105	37	4	64	8	5	4	6	√	12	-	2	-	3	1	1	1	1	1	-	-	√	-	4 x 20 6 x 18 8 x 16	LQFP 44	10x10	√	NK-M256SD	-
M254SD2AE	Cortex-M23	48	1.75	5.5	-40	105	54	4	64	8	5	4	6	√	16	-	2	-	3	1	1	1	1	1	-	-	√	-	4 x 32 6 x 30 8 x 28	LQFP 64	7x7	√	NK-M256SD	NLG-64S
M254SE3AE	Cortex-M23	48	1.75	5.5	-40	105	53	4	128	16	5	4	6	√	16	-	2	-	3	1	1	1	1	1	-	-	√	-	4 x 32 6 x 30 8 x 28	LQFP 64	7x7	√	NK-M258KE	NLG-64S
M254KE3AE	Cortex-M23	48	1.75	5.5	-40	105	86	4	128	16	5	4	6	√	16	-	2	-	3	1	1	1	1	1	-	-	√	-	4 x 40 6 x 42 8 x 44	LQFP 128	14x14	√	NK-M258KE	NLG-128KX
M254SG6AE	Cortex-M23	48	1.75	5.5	-40	105	53	4	256	32	8	4	12	√	16	2	2	-	4	1	1	2	2	2	-	-	√	√	4 x 32 6 x 30 8 x 28	LQFP 64	7x7	√	NK-M258KG	NLG-64S
M254KG6AE	Cortex-M23	48	1.75	5.5	-40	105	86	4	256	32	8	4	12	√	16	2	2	-	4	1	1	2	2	2	-	-	√	√	4 x 40 6 x 42 8 x 44	LQFP 128	14x14	√	NK-M258KG	NKG-128KX

• M256 Series

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

Part No.	System							Memory				Timer			Analog				Connectivity									Security	Crypto	Display	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA	Timer/ PWM	BPWM (16-bit)	RTC	EADC	DAC (12-bit)	ACMP	Touch Key	UART	LIN	ISO-7816-3	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	XOM	AES	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
M256MD2AE	Cortex-M23	48	1.75	5.5	-40	105	37	4	64	8	5	4	6	√	12	-	2	6	3	1	1	1	1	1	-	-	√	-	4 x 20 6 x 18 8 x 16	LQFP44	10x10	√	NK-M256SD	-
M256SD2AE	Cortex-M23	48	1.75	5.5	-40	105	54	4	64	8	5	4	6	√	16	-	2	14	3	1	1	1	1	1	-	-	√	-	4 x 32 6 x 30 8 x 28	LQFP64	7x7	√	NK-M256SD	NLG-64S
M256SE3AE	Cortex-M23	48	1.75	5.5	-40	105	53	4	128	16	5	4	6	√	16	-	2	14	3	1	1	1	1	1	-	-	√	-	4 x 32 6 x 30 8 x 28	LQFP64	7x7	√	NK-M258KE	NLG-64S
M256KE3AE	Cortex-M23	48	1.75	5.5	-40	105	86	4	128	16	5	4	6	√	16	-	2	15	3	1	1	1	1	1	-	-	√	-	4 x 40 6 x 42 8 x 44	LQFP128	14x14	√	NK-M258KE	NLG-128KX
M256SG6AE	Cortex-M23	48	1.75	5.5	-40	105	53	4	256	32	8	4	12	√	16	2	2	24	4	1	1	2	2	2	-	-	√	√	4 x 40 6 x 42 8 x 44	LQFP64	7x7	√	NK-M258KG	NLG-64S
M256KG6AE	Cortex-M23	48	1.75	5.5	-40	105	86	4	256	32	8	4	12	√	16	2	2	24	4	1	1	2	2	2	-	-	√	√	4 x 40 6 x 42 8 x 44	LQFP128	14x14	√	NK-M258KG	NLG-128KX

• M258 Series

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

Part No.	System							Memory				Timer			Analog				Connectivity									Security	Crypto	Display	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash	APROM Flash	SRAM	PDMA	Timer/ PWM	BPWM (16-bit)	RTC	EADC	DAC (12-bit)	ACMP	Touch Key	UART	LIN	ISO-7816-3	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	XOM	AES	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
M258SE3AE	Cortex-M23	48	1.75	5.5	-40	105	49	4	128	16	5	4	6	√	16	-	2	14	3	1	1	1	1	1	1	√	√	-	8x28 6x26 4x24	LQFP 64	7x7	√	NK-M258KE	NLG-64S
M258KE3AE	Cortex-M23	48	1.75	5.5	-40	105	82	4	128	16	5	4	6	√	16	-	2	15	3	1	1	1	1	1	1	√	√	-	8x40 6x42 4x44	LQFP 128	14x14	√	NK-M258KE	NLG-128KX
M258SG6AE	Cortex-M23	48	1.75	5.5	-40	105	49	4	256	32	8	4	12	√	16	2	2	20	4	1	1	2	2	2	1	√	√	√	8x28 6x26 4x24	LQFP 64	7x7	√	NK-M258KG	NKG-64S
M258KG6AE	Cortex-M23	48	1.75	5.5	-40	105	82	4	256	32	8	4	12	√	16	2	2	24	4	1	1	2	2	2	1	√	√	√	8x40 6x42 4x44	LQFP 128	14x14	√	NK-M258KG	NLG-128KX

M261/M262/M263 Series

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

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

• 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	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash	APROM Flash	SRAM	PDMA	Timer/ PWM	BPWM (16-bit)	EPWM (16-bit)	QEI	ECAP	RTC	EADC	DAC (12-bit)	ACMP	LIN	LPUART	ISO-7816-3	QSPI	I²C	USCI	SPI/ I²S	I²S	CAN	SDHC	USB FS OTG	EBI	TRNG	XOM	Tamper	Crypto	Package Type	Package Size	Mass Production	EVB	MP Programmer
M261KIAAE	Cortex-M23	64	1.8	3.6	-40	105	107	4	512	96	16	4	12	12	2	2	√	16	2	2	2	6	3	1	3	2	4	1	-	1	-	√	√	√	6	√	LQFP128	14x14	√	NK-M263KI	NLG-128KX
M261SIAAE	Cortex-M23	64	1.8	3.6	-40	105	51	4	512	96	16	4	12	12	2	1	√	16	2	2	2	6	3	1	3	2	4	1	-	1	-	√	√	√	1	√	LQFP128	7x7	√	NK-M263KI	NLG-64S
M261ZIAAE	Cortex-M23	64	1.8	3.6	-40	105	25	4	512	96	16	4	12	12	1	-	√	9	2	2	2	6	3	1	3	2	3	1	-	1	-	-	√	√	-	√	QFN33	5x5	√	NK-M263KI	NLG-32Z
M262KIAAE	Cortex-M23	64	1.8	3.6	-40	105	107	4	512	96	16	4	12	12	2	2	√	16	2	2	2	6	3	1	3	2	4	1	-	1	1	√	√	√	6	√	LQFP128	14x14	√	NK-M263KI	NLG-128KX
M262SIAAE	Cortex-M23	64	1.8	3.6	-40	105	51	4	512	96	16	4	12	12	2	1	√	16	2	2	2	6	3	1	3	2	4	1	-	1	1	√	√	√	1	√	LQFP64	7x7	√	NK-M263KI	NLG-64S
M262ZIAAE	Cortex-M23	64	1.8	3.6	-40	105	25	4	512	96	16	4	12	12	1	-	√	9	2	2	2	6	3	1	3	2	3	1	-	1	1	-	√	√	-	√	LQFP128	5x5	√	NK-M263KI	NLG-32Z
M263KIAAE	Cortex-M23	64	1.8	3.6	-40	105	107	4	512	96	16	4	12	12	2	2	√	16	2	2	2	6	3	1	3	2	4	1	1	1	1	√	√	√	6	√	LQFP128	14x14	√	NK-M263KI	NLG-128KX
M263SIAAE	Cortex-M23	64	1.8	3.6	-40	105	51	4	512	96	16	4	12	12	2	1	√	16	2	2	2	6	3	1	3	2	4	1	1	1	1	√	√	√	1	√	LQFP64	7x7	√	NK-M263KI	NLG-64S
M263ZIAAE	Cortex-M23	64	1.8	3.6	-40	105	25	4	512	96	16	4	12	12	1	-	√	9	2	2	2	6	3	1	3	2	3	1	1	1	1	-	√	√	-	√	QFN33	5x5	√	NK-M263KI	NLG-32Z

NuMicro® Automotive Family

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

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

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

M0A23 Series

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

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

• 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		Certification
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	Temperature Sensor	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	ADC (12-bit)	DAC (5-bit)	ACMP	Internal Voltage Reference	UART	LIN	USCI	CAN	Package Type	Package Size	Mass Production	EVB	MP Programmer	AEC-Q100
M0A23OC1ACU	Cortex-M0	48	2.4	5.5	-40	125	18	√	2	32	Configurable	4	5	4	6	17	1	2	√	2	2	2	1	SSOP20	5.3x7.2	-	NK-M0A23OC	NLG-M0A21O	Grade 1
M0A23EC1ACU	Cortex-M0	48	2.4	5.5	-40	125	26	√	2	32	Configurable	4	5	4	6	17	1	2	√	2	2	2	1	TSSOP28	4.4x9.7	√	NK-M0A23EC	NLG-M0A21E	Grade 1
M0A23OC1AC	Cortex-M0	48	2.4	5.5	-40	125	18	√	2	32	Configurable	4	5	4	6	17	1	2	√	2	2	2	1	SSOP20	5.3x7.2	√	NK-M0A23OC	NLG-M0A21O	-
M0A23EC1AC	Cortex-M0	48	2.4	5.5	-40	125	26	√	2	32	Configurable	4	5	4	6	17	1	2	√	2	2	2	1	TSSOP28	4.4x9.7	√	NK-M0A23EC	NLG-M0A21E	-

NUC131U Series

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

Target Applications: Elevator, Motor Control, BMS, Charger, CAN Module

• NUC131U Series

Key Features: Hardware Divider, LIN/CAN interface, 6 sets of UART, 24-channel 100 MHz PWM

Part No.	System							Memory				Timer		Analog	Connectivity						Package		Status	Tool		Certification
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	Timer (32-bit)	PWM (16-bit)	ADC (12-bit)	UART	LIN	SPI	I²C	CAN	Package Type	Package Size	Mass Production	EVB	MP Programmer	AEC-Q100
NUC131LD2AEU	Cortex-M0	50	2.5	5.5	-40	105	42	4	68	Configurable	8	4	12	8	6	3	1	2	1	LQFP 48	7x7	√	NK-NUC131U	NLG-NUC131L	Grade 2
NUC131SD2AEU	Cortex-M0	50	2.5	5.5	-40	105	56	4	68	Configurable	8	4	12	8	6	3	1	2	1	LQFP 64	7x7	√	NK-NUC131U	NLG-NUC131S	Grade 2

NuMicro® Family Arm® Cortex®-M0 Microcontrollers

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

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

M029G/M030G/M031G Series

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

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

• M029G/M030G Series

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

Part No.	System									Memory					Clock			Timer		Analog			Connectivity			Package		Status	Tool	
	Core	Operating Frequency (MHz)	CRC	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	Temperature Sensor Accuracy (°C)	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	LIRC (kHz)	HIRC (MHz)	PLL (MHz)	Timer (32-bit)	BPWM (16-bit)	ADC (12-bit)	DAC (12-bit)	Internal Voltage Reference	UART	I²C	SPI/ I²S	Package Type	Package Size	Mass Production	EVB	MP Programmer
M029GGC0AE	Cortex-M0	48	√	2.7	3.6	-40	105	19	±2	2	32	Configurable	2	5	38.4	48	-	2	6	11	2	√	1	2	1	QFN24	3x3	-	NK-M029GGC	-
M030GGC1AE	Cortex-M0	48	√	2.7	3.6	-40	105	19	±2	2	32	Configurable	4	5	38.4	48	-	2	6	11	4	√	1	2	1	QFN24	3x3	√	NK-M030GTD	-
M030GGD1AE	Cortex-M0	48	√	2.7	3.6	-40	105	19	±2	2	64	Configurable	4	5	38.4	48	-	2	6	11	4	√	1	2	1	QFN24	3x3	√	NK-M030GTD	-
M030GTC1AE	Cortex-M0	48	√	2.7	3.6	-40	105	28	±2	2	32	Configurable	4	5	38.4	48	-	2	6	16	4	√	1	2	1	QFN33	4x4	√	NK-M030GTD	-
M030GTD1AE	Cortex-M0	48	√	2.7	3.6	-40	105	28	±2	2	64	Configurable	4	5	38.4	48	-	2	6	16	4	√	1	2	1	QFN33	4x4	√	NK-M030GTD	-

• M031G Series

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

Part No.	System									Memory					Clock			Timer		Analog			Connectivity			Package		Status	Tool		Others	
	Core	Operating Frequency (MHz)	CRC	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	Temperature Sensor Accuracy (°C)	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	LIRC (kHz)	HIRC (MHz)	PLL (MHz)	Timer (32-bit)	BPWM (16-bit)	ADC (12-bit)	DAC (12-bit)	Internal Voltage Reference	UART	I²C	SPI/ I²S	Package Type	Package Size	Mass Production	EVB	MP Programmer	DAC Auto Data Generation	Hardware Manchester Codec
M031GGC2AE	Cortex-M0	72	√	2.7	3.6	-40	105	19	±2	2	32	Configurable	8	7	38.4	48	72	6	6	11	4	√	1	2	1	QFN24	3x3	√	NK-M031GTD	-	√	√
M031GGD2AE	Cortex-M0	72	√	2.7	3.6	-40	105	19	±2	2	64	Configurable	8	7	38.4	48	72	6	6	11	4	√	1	2	1	QFN24	3x3	√	NK-M031GTD	-	√	√
M031GTC2AE	Cortex-M0	72	√	2.7	3.6	-40	105	28	±2	2	32	Configurable	8	7	38.4	48	72	6	6	16	4	√	1	2	1	QFN33	4x4	√	NK-M031GTD	-	√	√
M031GTD2AE	Cortex-M0	72	√	2.7	3.6	-40	105	28	±2	2	64	Configurable	8	7	38.4	48	72	6	6	16	4	√	1	2	1	QFN33	4x4	√	NK-M031GTD	-	√	√

M031 Series

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

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

• 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	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	RTC	ADC (12-bit)	ACMP	UART	QSPI	I²C	SMBUS (Supported by I2C)	USCI	SPI/ I²S	EBI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
M031FB0AE	Cortex-M0	48	1.8	3.6	-40	105	15	2	16	2	-	2	6	-	-	7	-	3	-	2	-	-	1	-	512	TSSOP20	4.4x6.5	√	NK-M031TB	NLG-20F
M031EB0AE	Cortex-M0	48	1.8	3.6	-40	105	23	2	16	2	-	2	6	-	-	9	-	3	-	2	-	-	1	-	512	TSSOP28	4.4x9.7	√	NK-M031TB	NLG-28E
M031TB0AE	Cortex-M0	48	1.8	3.6	-40	105	27	2	16	2	-	2	6	-	-	10	-	3	-	2	-	-	1	-	512	QFN33	4x4	√	NK-M031TB	NLG-32T
M031FC1AE	Cortex-M0	48	1.8	3.6	-40	105	15	2	32	4	2	4	6	-	-	7	-	3	-	2	-	-	1	-	512	TSSOP20	4.4x6.5	√	NK-M031TC	NLG-20F
M031EC1AE	Cortex-M0	48	1.8	3.6	-40	105	23	2	32	4	2	4	6	-	-	9	-	3	-	2	-	-	1	-	512	TSSOP28	4.4x9.7	√	NK-M031TC	NLG-28E
M031TC1AE	Cortex-M0	48	1.8	3.6	-40	105	27	2	32	4	2	4	6	-	-	10	-	3	-	2	-	-	1	-	512	QFN33	4x4	√	NK-M031TC	NLG-32T
M031LC2AE	Cortex-M0	48	1.8	3.6	-40	105	42	2	32	8	5	4	12	-	-	12	2	3	-	2	-	1	1	-	512	LQFP48	7x7	√	NK-M031SD	NLG-48L
M031SC2AE	Cortex-M0	48	1.8	3.6	-40	105	55	2	32	8	5	4	12	-	-	16	2	3	-	2	-	1	1	-	512	LQFP64	7x7	√	NK-M031SD	NLG-64S
M031TD2AE	Cortex-M0	48	1.8	3.6	-40	105	27	2	64	8	5	4	12	-	-	10	2	3	-	2	-	1	1	-	512	QFN33	4x4	√	NK-M031SD	NLG-32T
M031LD2AE	Cortex-M0	48	1.8	3.6	-40	105	42	2	64	8	5	4	12	-	-	12	2	3	-	2	-	1	1	-	512	LQFP48	7x7	√	NK-M031SD	NLG-48L
M031SD2AE	Cortex-M0	48	1.8	3.6	-40	105	55	2	64	8	5	4	12	-	-	16	2	3	-	2	-	1	1	-	512	LQFP64	7x7	√	NK-M031SD	NLG-64S
M031TE3AE	Cortex-M0	48	1.8	3.6	-40	105	27	4	128	16	5	4	12	-	-	10	2	3	-	2	-	1	1	-	512	QFN33	4x4	√	NK-M031SE	NLG-32T
M031LE3AE	Cortex-M0	48	1.8	3.6	-40	105	42	4	128	16	5	4	12	-	-	12	2	3	-	2	-	1	1	√	512	LQFP48	7x7	√	NK-M031SE	NLG-48L
M031SE3AE	Cortex-M0	48	1.8	3.6	-40	105	55	4	128	16	5	4	12	-	-	16	2	3	-	2	-	1	1	√	512	LQFP64	7x7	√	NK-M031SE	NLG-64S
M031LG6AE	Cortex-M0	72	1.8	3.6	-40	105	42	4	256	32	7	4	12	12	√	12	2	6	1	2	1	2	1	√	2048	LQFP48	7x7	√	NK-M031KG	NLG-48L
M031LG8AE	Cortex-M0	72	1.8	3.6	-40	105	42	4	256	64	7	4	12	12	√	12	2	6	1	2	1	2	1	√	2048	LQFP48	7x7	√	NK-M031KG	NLG-48L
M031SG6AE	Cortex-M0	72	1.8	3.6	-40	105	55	4	256	32	7	4	12	12	√	16	2	6	1	2	1	2	1	√	2048	LQFP64	7x7	√	NK-M031KG	NLG-64S
M031SG8AE	Cortex-M0	72	1.8	3.6	-40	105	55	4	256	64	7	4	12	12	√	16	2	6	1	2	1	2	1	√	2048	LQFP64	7x7	√	NK-M031KG	NLG-64S
M031KG6AE	Cortex-M0	72	1.8	3.6	-40	105	111	4	256	32	7	4	12	12	√	16	2	6	1	2	1	2	1	√	2048	LQFP128	14x14	√	NK-M031KG	NLG-128KX
M031KG8AE	Cortex-M0	72	1.8	3.6	-40	105	111	4	256	64	7	4	12	12	√	16	2	6	1	2	1	2	1	√	2048	LQFP128	14x14	√	NK-M031KG	NLG-128KX
M031SIAAE	Cortex-M0	72	1.8	3.6	-40	105	55	8	512	96	9	4	12	12	√	16	2	8	1	-	-	2	1	√	2048	LQFP64	7x7	√	NK-M031KI	NLG-64S
M031KIAAE	Cortex-M0	72	1.8	3.6	-40	105	111	8	512	96	9	4	12	12	√	16	2	8	1	-	-	2	1	√	2048	LQFP128	14x14	√	NK-M031KI	NLG-128KX

M032 Series

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

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

• M032 Series

Key Features: Configurable up to 10 UARTs, 144 MHz PWM, 2 Msps ADC, 24 MHz SPI, Support 1-wire UART, OTA, Crystal-less USB FS device, Security Protection ROM (SPROM).

Part No.	System							Memory				Timer				Analog		Connectivity									Security	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	RTC	ADC (12-bit)	ACMP	UART	QSPI	I²C	SMBUS (Supported by I2C)	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	EBI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
M032EC1AE	Cortex-M0	48	1.8	3.6	-40	105	19	2	32	4	2	2	-	6	-	9	-	1	-	-	-	1	1	1	√	-	512	TSSOP28	4.4x9.7	√	NK-M032TC	NLG-28E
M032FC1AE	Cortex-M0	48	1.8	3.6	-40	105	11	2	32	4	2	2	-	6	-	3	-	1	-	-	-	1	1	1	√	-	512	TSSOP20	4.4x6.5	√	NK-M032TC	NLG-20F
M032KG6AE	Cortex-M0	72	1.8	3.6	-40	105	107	4	256	32	4	4	12	12	√	16	2	6	1	2	1	2	1	1	√	√	2048	LQFP128	14x14	√	NK-M032KG	NLG-128KX
M032KG8AE	Cortex-M0	72	1.8	3.6	-40	105	107	4	256	64	4	4	12	12	√	16	2	6	1	2	1	2	1	1	√	√	2048	LQFP128	14x14	√	NK-M032KG	NLG-128KX
M032KIAAE	Cortex-M0	72	1.8	3.6	-40	105	107	8	512	96	8	4	12	12	√	16	2	8	1	2	1	2	1	1	√	√	2048	LQFP128	14x14	√	NK-M032KI	NLG-128KX
M032LC2AE	Cortex-M0	48	1.8	3.6	-40	105	38	2	32	8	2	4	-	12	-	12	-	1	1	-	-	2	1	1	√	-	512	LQFP48	7x7	√	NK-M032LD	NLG-48L
M032LD2AE	Cortex-M0	48	1.8	3.6	-40	105	38	2	64	8	2	4	-	12	-	12	-	1	1	-	-	2	1	1	√	-	512	LQFP48	7x7	√	NK-M032LD	NLG-48L
M032LE3AE	Cortex-M0	48	1.8	3.6	-40	105	38	4	128	16	4	4	12	-	-	12	2	3	-	2	0	1	1	1	√	√	512	LQFP48	7x7	√	NK-M032SE	NLG-48L
M032LG6AE	Cortex-M0	72	1.8	3.6	-40	105	38	4	256	32	4	4	12	12	√	12	2	6	1	2	1	2	1	1	√	√	2048	LQFP48	7x7	√	NK-M032KG	NLG-48L
M032LG8AE	Cortex-M0	72	1.8	3.6	-40	105	38	4	256	64	4	4	12	12	√	12	2	6	1	2	1	2	1	1	√	√	2048	LQFP48	7x7	√	NK-M032KG	NLG-48L
M032SE3AE	Cortex-M0	48	1.8	3.6	-40	105	51	4	128	16	4	4	12	-	-	16	2	3	-	2	0	1	1	1	√	√	512	LQFP64	7x7	√	NK-M032SE	NLG-64S
M032SG6AE	Cortex-M0	72	1.8	3.6	-40	105	51	4	256	32	4	4	12	12	√	16	2	6	1	2	1	2	1	1	√	√	2048	LQFP64	7x7	√	NK-M032KG	NLG-64S
M032SG8AE	Cortex-M0	72	1.8	3.6	-40	105	51	4	256	64	4	4	12	12	√	16	2	6	1	2	1	2	1	1	√	√	2048	LQFP64	7x7	√	NK-M032KG	NLG-64S
M032SIAAE	Cortex-M0	72	1.8	3.6	-40	105	51	8	512	96	8	4	12	12	√	16	2	8	1	2	1	2	1	1	√	√	2048	LQFP64	7x7	√	NK-M032KI	NLG-64S
M032TC1AE	Cortex-M0	48	1.8	3.6	-40	105	23	2	32	4	2	2	-	6	-	10	-	1	-	-	-	1	1	1	√	-	512	QFN33	4x4	√	NK-M032TC	NLG-32T
M032TD2AE	Cortex-M0	48	1.8	3.6	-40	105	23	2	64	8	2	4	-	12	-	10	-	1	1	-	-	2	1	1	√	-	512	QFN33	4x4	√	NK-M032LD	NLG-32T

M031BT/M032BT Series

The M031BT/M032BT BLE MCU series microcontroller (MCU) is based on Arm® Cortex®-M0 core with built-in Bluetooth Low Energy 5.0 (BLE 5.0) with rich peripherals and analog functions for applications that need wireless connectivity with multiple control functions. The M031BT/M032BT BLE MCU series runs up to 72 MHz and features 64 Kbytes to 512 Kbytes Flash, 8 Kbytes to 96 Kbytes SRAM, 1.8V ~ 3.6V supply voltages, and supports 5V I/O tolerance within -40°C ~ +85°C operating temperature. The M031BT/M032BT BLE MCU series with built-in wireless connectivity and rich I/O peripherals to make it easier for IoT application.

Target Applications: IoT Edge Device, Motor Control and Access Device, Smart Home Appliances, Personal Healthcare Device with Wireless Connectivity

• 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	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	Timer (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 (B)	BLE	Package Type	Package Size	Mass Production	EVB	MP Programmer
M031BTYD2AN	Cortex-M0	48	1.8	3.6	-40	85	29	2	64	Configurable	8	5	√	4	12	-	-		16	2	3	-	0	1	-	-		512	√	QFN 48	5x5	√	NK-M031BTYE	NLG-M031BTY
M031BTYE3AN	Cortex-M0	48	1.8	3.6	-40	85	29	4	128	Configurable	16	5	√	4	12	-	-		16	2	3	-	0	1	-	-		512	√	QFN 48	5x5	√	NK-M031BTYE	NLG-M031BTY

• 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	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	Timer (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 (B)	BLE	Package Type	Package Size	Mass Production	EVB	MP Programmer
M032BTAG8AN	Cortex-M0	72	1.8	3.6	-40	85	43	4	256	Configurable	64	7	√	4	12	12	v		16	2	6	1	1	2	1	v		2048	√	QFN 68	8x8	√	NK-M032BTAI	NLG-M032BTA
M032BTAIAAN	Cortex-M0	72	1.8	3.6	-40	85	43	8	512	Configurable	96	9	√	4	12	12	v		16	2	8	1	1	2	1	v		2048	√	QFN 68	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.

Target Applications: Smart Home Appliances, 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	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	PDMA (ch)	Timer (32-bit)	Timer/ PWM	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Internal Voltage Reference	UART	LIN	ISO-7816-3	SPI	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	EBI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
M071MC2AE	Cortex-M0	50	2.5	5.5	-40	105	38	4	36	8	-	4	-	12	-	8	-	-	4	3	-	1	1	-	-	-	-	-	-	LQFP44	10x10	√	NK-M071MD	NLG-M071M
M071MD2AE	Cortex-M0	50	2.5	5.5	-40	105	38	4	68	8	-	4	-	12	-	8	-	-	4	3	-	1	1	-	-	-	-	-	-	LQFP44	10x10	√	NK-M071MD	NLG-M071M
M071R1D3AE	Cortex-M0	72	2.5	5.5	-40	105	45	8	64	16	9	4	-	6	√	12	-	-	3	3	-	2	2	-	-	1	√	√	-	LQFP64	14x14	√	NK-M071R1E	NLG-M071R1
M071R1E3AE	Cortex-M0	72	2.5	5.5	-40	105	45	8	128	16	9	4	-	6	√	12	-	-	3	3	-	2	2	-	-	1	√	√	-	LQFP64	14x14	√	NK-M071R1E	NLG-M071R1
M071SD3AE	Cortex-M0	72	2.5	5.5	-40	105	45	8	64	16	9	4	-	6	√	12	-	-	3	3	-	2	2	-	-	1	√	√	-	LQFP64	7x7	√	NK-M071R1E	NLG-M071S
M071SE3AE	Cortex-M0	72	2.5	5.5	-40	105	45	8	128	16	9	4	-	6	√	12	-	-	3	3	-	2	2	-	-	1	√	√	-	LQFP64	7x7	√	NK-M071R1E	NLG-M071S
M071VG4AE	Cortex-M0	72	2.5	5.5	-40	105	85	4	256	20	5	-	4	12	√	20	2	√	3	3	2	-	2	3	2	-	-	√	2048	LQFP100	14x14	√	NK-M071VG	NLG-M071V

Mini51 Series

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

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

• Mini51 Series

Key Features: Configurable Data Flash, 2 Kbytes ISP loader

Part No.	System							Memory			Timer				Analog					Connectivity				Security	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ECAP	ADC (10-bit)	ADC (12-bit)	ACMP	PGA	Internal Voltage Reference	UART	SPI	I²C	USCI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
MINI51FDE	Cortex-M0	24	2.5	5.5	-40	105	17	2	4	2	2	3	-	-	4	-	-	-	-	1	1	1	-	-	TSSOP20	4.4x6.5	√	NT-Mini51F	NLG-Mini51F
MINI51LDE	Cortex-M0	24	2.5	5.5	-40	105	30	2	4	2	2	6	-	-	8	-	2	-	-	1	1	1	-	-	LQFP48	7x7	√	NT-Mini51L	NLG-Mini51L
MINI51TDE	Cortex-M0	24	2.5	5.5	-40	105	29	2	4	2	2	6	-	-	8	-	2	-	-	1	1	1	-	-	QFN33	4x4	√	NT-Mini51L	NLG-Mini51T
MINI51ZDE	Cortex-M0	24	2.5	5.5	-40	105	29	2	4	2	2	6	-	-	8	-	2	-	-	1	1	1	-	-	QFN33	5x5	√	NT-Mini51L	NLG-Mini51Z
MINI52FDE	Cortex-M0	24	2.5	5.5	-40	105	17	2	8	2	2	3	-	-	4	-	-	-	-	1	1	1	-	-	TSSOP20	4.4x6.5	√	NT-Mini51F	NLG-Mini51F
MINI52LDE	Cortex-M0	24	2.5	5.5	-40	105	30	2	8	2	2	6	-	-	8	-	2	-	√	1	1	1	-	-	LQFP48	7x7	√	NT-Mini51L	NLG-Mini51L
MINI52TDE	Cortex-M0	24	2.5	5.5	-40	105	29	2	8	2	2	6	-	-	8	-	2	-	-	1	1	1	-	-	QFN33	4x4	√	NT-Mini51L	NLG-Mini51T
MINI52ZDE	Cortex-M0	24	2.5	5.5	-40	105	29	2	8	2	2	6	-	-	8	-	2	-	-	1	1	1	-	-	QFN33	5x5	√	NT-Mini51L	NLG-Mini51Z
MINI54FDE	Cortex-M0	24	2.5	5.5	-40	105	17	2	16	2	2	3	-	-	4	-	-	-	√	1	1	1	-	-	TSSOP20	4.4x6.5	√	NT-Mini51F	NLG-Mini51F
MINI54LDE	Cortex-M0	24	2.5	5.5	-40	105	30	2	16	2	2	6	-	-	8	-	2	-	√	1	1	1	-	-	LQFP48	7x7	√	NT-Mini51L	NLG-Mini51L
MINI54TDE	Cortex-M0	24	2.5	5.5	-40	105	29	2	16	2	2	6	-	-	8	-	2	-	√	1	1	1	-	-	QFN33	4x4	√	NT-Mini51L	NLG-Mini51T
MINI54ZDE	Cortex-M0	24	2.5	5.5	-40	105	29	2	16	2	2	6	-	-	8	-	2	-	√	1	1	1	-	-	QFN33	5x5	√	NT-Mini51L	NLG-Mini51Z

• Mini55 Series

Key Features: Supports Hardware Divider

Part No.	System							Memory			Timer				Analog					Connectivity				Security	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ECAP	ADC (10-bit)	ADC (12-bit)	ACMP	PGA	Internal Voltage Reference	UART	SPI	I²C	USCI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
MINI55LDE	Cortex-M0	48	2.1	5.5	-40	105	33	2	17.5	2	2	6	-	-	12	-	2	-	√	2	1	1	-	-	LQFP48	7x7	√	NT-Mini55L	NLG-Mini51L
MINI55TDE	Cortex-M0	48	2.1	5.5	-40	105	29	2	17.5	2	2	6	-	-	12	-	2	-	√	2	1	1	-	-	QFN33	4x4	√	NT-Mini55L	NLG-Mini51T

• Mini57 Series

Key Features: Supports Hardware Divider

Part No.	System							Memory			Timer					Analog					Connectivity				Security	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ECAP	ADC (10-bit)	ADC (12-bit)	ACMP	PGA	Internal Voltage Reference	UART	SPI	I²C	USCI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
MINI57EDE	Cortex-M0	48	2.1	5.5	-40	105	22	2	29.5	4	2	6	2	3	-	8	2	√	√	-	-	-	2	512x3	TSSOP28	4.4x9.7	√	NT-Mini57E	NLG-Mini57E
MINI57FDE	Cortex-M0	48	2.1	5.5	-40	105	18	2	29.5	4	2	6	2	3	-	8	2	√	√	-	-	-	2	512x3	TSSOP20	4.4x6.5	√	NT-Mini57E	NLG-Mini57F
MINI57TDE	Cortex-M0	48	2.1	5.5	-40	105	22	2	29.5	4	2	6	2	3	-	8	2	√	√	-	-	-	2	512x3	QFN33	4x4	√	NT-Mini57E	NLG-Mini57T

• Mini58 Series

Key Features: Configurable Data Flash

Part No.	System							Memory			Timer				Analog					Connectivity				Security	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	SRAM (KB)	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ECAP	ADC (10-bit)	ADC (12-bit)	ACMP	PGA	Internal Voltage Reference	UART	SPI	I²C	USCI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
MINI58FDE	Cortex-M0	50	2.5	5.5	-40	105	17	2.5	32	4	2	6	-	-	4	-	-	-	√	2	1	2	-	512	TSSOP20	4.4x6.5	√	NT-Mini58L	NLG-Mini51F
MINI58LDE	Cortex-M0	50	2.5	5.5	-40	105	30	2.5	32	4	2	6	-	-	8	-	2	-	√	2	1	2	-	512	LQFP48	7x7	√	NT-Mini58L	NLG-Mini51L
MINI58TDE	Cortex-M0	50	2.5	5.5	-40	105	29	2.5	32	4	2	6	-	-	8	-	2	-	√	2	1	2	-	512	QFN33	4x4	√	NT-Mini58L	NLG-Mini51T
MINI58ZDE	Cortex-M0	50	2.5	5.5	-40	105	29	2.5	32	4	2	6	-	-	8	-	2	-	√	2	1	2	-	512	QFN33	5x5	√	NT-Mini58L	NLG-Mini51Z

M051 Series

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

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

• M051 Series

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

Part No.	System							Memory				Timer				Analog		Connectivity					Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	ADC (12-bit)	ACMP	UART	LIN	SPI	I²C	EBI	Package Type	Package Size	Mass Production	EVB	MP Programmer
M052LBN	Cortex-M0	50	2.5	5.5	-40	85	40	4	8	4	4	√	-	4	8	8	2	2	2	2	1	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M052LDE	Cortex-M0	50	2.5	5.5	-40	105	40	4	8	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M052LDN	Cortex-M0	50	2.5	5.5	-40	85	40	4	8	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M052ZBN	Cortex-M0	50	2.5	5.5	-40	85	24	4	8	4	4	√	-	4	5	5	2	2	2	1	1	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M052ZDE	Cortex-M0	50	2.5	5.5	-40	105	24	4	8	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M052ZDN	Cortex-M0	50	2.5	5.5	-40	85	24	4	8	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M054LBN	Cortex-M0	50	2.5	5.5	-40	85	40	4	16	4	4	√	-	4	8	8	2	2	2	2	1	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M054LDE	Cortex-M0	50	2.5	5.5	-40	105	40	4	16	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M054LDN	Cortex-M0	50	2.5	5.5	-40	85	40	4	16	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M054ZBN	Cortex-M0	50	2.5	5.5	-40	85	24	4	16	4	4	√	-	4	5	5	2	2	2	1	1	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M054ZDE	Cortex-M0	50	2.5	5.5	-40	105	24	4	16	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M054ZDN	Cortex-M0	50	2.5	5.5	-40	85	24	4	16	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M058LBN	Cortex-M0	50	2.5	5.5	-40	85	40	4	32	4	4	√	-	4	8	8	2	2	2	2	1	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M058LDE	Cortex-M0	50	2.5	5.5	-40	105	40	4	32	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M058LDN	Cortex-M0	50	2.5	5.5	-40	85	40	4	32	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M058ZBN	Cortex-M0	50	2.5	5.5	-40	85	24	4	32	4	4	√	-	4	5	5	2	2	2	1	1	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M058ZDE	Cortex-M0	50	2.5	5.5	-40	105	24	4	32	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M058ZDN	Cortex-M0	50	2.5	5.5	-40	85	24	4	32	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M0516LBN	Cortex-M0	50	2.5	5.5	-40	85	40	4	64	4	4	√	-	4	8	8	2	2	2	2	1	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M0516LDE	Cortex-M0	50	2.5	5.5	-40	105	40	4	64	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M0516LDN	Cortex-M0	50	2.5	5.5	-40	85	40	4	64	4	4	√	√	4	8	8	4	2	2	2	2	√	LQFP48	7x7	√	NK-M051L	NLG-M051L
M0516ZBN	Cortex-M0	50	2.5	5.5	-40	85	24	4	64	4	4	√	-	4	5	5	2	2	2	1	1	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M0516ZDE	Cortex-M0	50	2.5	5.5	-40	105	24	4	64	4	4	√	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z
M0516ZDN	Cortex-M0	50	2.5	5.5	-40	85	24	4	64	4	4	v	√	4	5	5	4	2	2	1	2	-	QFN33	5X5	√	NK-M051L	NLG-M051Z

• M0518 Series

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

Part No.	System							Memory					Timer						Analog	Connectivity			Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ADC (12-bit)	UART	SPI	I²C	Package Type	Package Size	Mass Production	EVB	MP Programmer
M0518LC2AE	Cortex-M0	50	2.5	5.5	-40	105	42	4	36	Configurable	8	-	√	√	4	12	12	8	6	1	2	LQFP48	7x7	√	NT-M0518S	NLG-M0518L
M0518LD2AE	Cortex-M0	50	2.5	5.5	-40	105	42	4	68	Configurable	8	-	√	√	4	12	12	8	6	1	2	LQFP48	7x7	√	NT-M0518S	NLG-M0518L
M0518SC2AE	Cortex-M0	50	2.5	5.5	-40	105	56	4	36	Configurable	8	-	√	√	4	12	12	8	6	1	2	LQFP64	7x7	√	NT-M0518S	NLG-M0518S
M0518SD2AE	Cortex-M0	50	2.5	5.5	-40	105	56	4	68	Configurable	8	-	√	√	4	12	12	8	6	1	2	LQFP64	7x7	√	NT-M0518S	NLG-M0518S

• M0519 Series

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

Part No.	System							Memory				Timer						Analog		Connectivity				Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	WDT	WWDT	Timer (32-bit)	BPWM (16-bit)	EPWM (16-bit)	ECAP	ADC (12-bit)	ACMP	UART	LIN	SPI	I²C	Package Type	Package Size	Mass Production	EVB	MP Programmer
M0519LD3AE	Cortex-M0	72	2.5	5.5	-40	105	38	8	64	4	16	√	√	4	2	4	-	16	2	2	2	1	1	LQFP48	7X7	√	NT-M0519V	NLG-M0519L
M0519LE3AE	Cortex-M0	72	2.5	5.5	-40	105	38	8	128	Configurable	16	√	√	4	2	4	-	16	2	2	2	1	1	LQFP48	7X7	√	NT-M0519V	NLG-M0519L
M0519SD3AE	Cortex-M0	72	2.5	5.5	-40	105	51	8	64	4	16	√	√	4	2	8	-	16	2	2	2	2	1	LQFP64	7X7	√	NT-M0519V	NLG-M0519S
M0519SE3AE	Cortex-M0	72	2.5	5.5	-40	105	51	8	128	Configurable	16	√	√	4	2	8	-	16	2	2	2	2	1	LQFP64	7X7	√	NT-M0519V	NLG-M0519S
M0519VE3AE	Cortex-M0	72	2.5	5.5	-40	105	82	8	128	Configurable	16	√	√	4	2	12	6	16	3	2	2	3	1	LQFP100	14X14	√	NT-M0519V	NLG-M0519V

• M0564 Series

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

Part No.	System							Memory					Timer					Analog		Connectivity						Security	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer/ PWM	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	UART	ISO-7816-3	I²C	USCI	SPI/ I²S	EBI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
M0564LE4AE	Cortex-M0	72	2.5	5.5	-40	105	41	4	128	Configurable	20	5	√	√	4	12	√	10	2	3	2	2	3	2	√	2048	LQFP48	7x7	√	NT-M0564V	NLG-M0564L
M0564LG4AE	Cortex-M0	72	2.5	5.5	-40	105	41	4	128	Configurable	20	5	√	√	4	12	√	10	2	3	2	2	3	2	√	2048	LQFP48	7x7	√	NT-M0564V	NLG-M0564L
M0564SE4AE	Cortex-M0	72	2.5	5.5	-40	105	53	4	256	Configurable	20	5	√	√	4	12	√	15	2	3	2	2	3	2	√	2048	LQFP64	7x7	√	NT-M0564V	NLG-M0564S
M0564SG4AE	Cortex-M0	72	2.5	5.5	-40	105	53	4	128	Configurable	20	5	√	√	4	12	√	15	2	3	2	2	3	2	√	2048	LQFP64	7x7	√	NT-M0564V	NLG-M0564S
M0564VG4AE	Cortex-M0	72	2.5	5.5	-40	105	85	4	256	Configurable	20	5	√	√	4	12	√	20	2	3	2	2	3	2	√	2048	LQF100	14X14	√	NT-M0564V	NLG-M0564V

NUC029 Series

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

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

• 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	
	Core	Operating Frequency (MHz)	Operating Voltage (min)	Operating Voltage (max)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	Timer/ 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	Cortex-M0	24	2.5	5.5	-40	105	17	2	16	Configurable	2	-	2	3	-	4	-	2	1	1	-	-	-	-	-	√	-	TSSOP20	4.4x6.5	√	NT-NUC029F	NLG-NUC029FA
NUC029KGE	Cortex-M0	72	2.5	5.5	-40	105	86	4	256	Configurable	20	5	4	12	√	-	20	2	3	-	2	3	2	1	√	√	2048	LQFP128	14x14	√	NT-NUC029SG	NLG-NUC029KG
NUC029LAN	Cortex-M0	50	2.5	5.5	-40	85	40	4	64	4	4	-	4	8	-	-	8	4	2	2	-	-	-	-	-	√	-	LQFP48	7x7	√	NK-NUC029L	NLG-NUC029LD
NUC029LDE	Cortex-M0	50	2.5	5.5	-40	105	42	4	68	Configurable	20	-	4	12	-	-	8	-	4	1	-	-	-	-	-	-	-	LQFP48	7x7	√	NT-NUC029SD	NLG-NUC029LD
NUC029LEE	Cortex-M0	72	2.5	5.5	-40	105	31	8	128	Configurable	16	9	4	4	√	-	10	-	2	1	-	-	-	1	√	√	-	LQFP48	7x7	√	NT-NUC029SE	NLG-NUC029LE
NUC029LGE	Cortex-M0	72	2.5	5.5	-40	105	35	4	256	Configurable	20	5	4	10	√	-	9	2	3	-	2	3	2	1	√	√	2048	LQFP48	7x7	√	NT-NUC029SG	NLG-NUC029LG
NUC029NAN	Cortex-M0	50	2.5	5.5	-40	85	40	4	64	4	4	-	4	8	-	-	8	4	2	2	-	-	-	-	-	√	-	QFN48	7x7	√	NK-NUC029L	NLG-NUC029NA
NUC029SDE	Cortex-M0	50	2.5	5.5	-40	105	56	4	68	Configurable	20	-	4	12	-	-	8	-	4	1	-	-	-	-	-	-	-	LQFP64	7x7	√	NT-NUC029SD	NLG-NUC029SD
NUC029SEE	Cortex-M0	72	2.5	5.5	-40	105	45	8	128	Configurable	16	9	4	6	√	-	12	-	3	2	-	-	-	1	√	√	-	LQFP64	7x7	√	NT-NUC029SE	NLG-NUC029SE
NUC029SGE	Cortex-M0	72	2.5	5.5	-40	105	49	4	256	Configurable	20	5	4	12	√	-	15	2	3	-	2	3	2	1	√	√	2048	LQFP64	7x7	√	NT-NUC029SG	NLG-NUC029SG
NUC029TAN	Cortex-M0	50	2.5	5.5	-40	85	24	4	32	4	4	-	4	5	-	-	5	3	2	1	-	-	-	-	-	√	-	QFN33	4x4	√	NK-NUC029L	NLG-NUC029TA
NUC029ZAN	Cortex-M0	50	2.5	5.5	-40	85	24	4	64	4	4	-	4	5	-	-	5	3	2	1	-	-	-	-	-	√	-	QFN33	5x5	√	NK-NUC029L	NLG-NUC029ZA

NUC121 Series

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

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.
Target 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	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ADC (12-bit)	UART	LIN	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC121LC2AE	Cortex-M0	50	2.5	5.5	-40	105	38	4.5	32	Configurable	8	5	√	√	4	24	14	10	1	1	2	1	1	1	√	512	LQFP48	7x7	√	NT-NUC121S	NLG-NUC121L
NUC121SC2AE	Cortex-M0	50	2.5	5.5	-40	105	52	4.5	32	Configurable	8	5	√	√	4	24	17	12	1	1	2	1	1	1	√	512	LQFP64	7x7	√	NT-NUC121S	NLG-NUC121S
NUC121ZC2AE	Cortex-M0	50	2.5	5.5	-40	105	22	4.5	32	Configurable	8	5	√	√	4	17	7	4	1	1	2	1	1	1	√	512	QFN33	5x5	√	NT-NUC121S	NLG-NUC121Z

• NUC125 Series

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

Part No.	System							Memory					Timer					Analog	Connectivity								Security	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ADC (12-bit)	UART	LIN	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC125LC2AE	Cortex-M0	50	2.5	5.5	-40	105	37	4.5	32	Configurable	8	5	√	√	4	23	13	9	1	1	2	1	1	1	√	512	LQFP48	7x7	√	NT-NUC125S	NLG-NUC125L
NUC125SC2AE	Cortex-M0	50	2.5	5.5	-40	105	51	4.5	32	Configurable	8	5	√	√	4	23	16	11	1	1	2	1	1	1	√	512	LQFP64	7x7	√	NT-NUC125S	NLG-NUC125S
NUC125ZC2AE	Cortex-M0	50	2.5	5.5	-40	105	22	4.5	32	Configurable	8	5	√	√	4	17	7	4	1	1	2	1	1	1	√	512	QFN33	5x5	√	NT-NUC125S	NLG-NUC125Z

• NUC123 Series

Part No.	System							Memory						Timer					Analog	Connectivity							Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	ADC (10-bit)	UART	SPI	I²C	I²S	PS/2 Device	USB FS Device	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC123LC2AE1	Cortex-M0	72	2.5	5.5	-40	105	36	4	36	Configurable	12	6	√	√	4	4	8	2	3	2	1	1	1	LQFP48	7x7	√	NK-NUC123SE	NLG-NUC123L
NUC123LC2AN1	Cortex-M0	72	2.5	5.5	-40	85	36	4	36	Configurable	12	6	√	√	4	4	8	2	3	2	1	1	1	LQFP48	7x7	√	NK-NUC123SE	NLG-NUC123L
NUC123LD4AE0	Cortex-M0	72	2.5	5.5	-40	105	36	4	68	Configurable	20	6	√	√	4	4	8	2	3	2	1	1	1	LQFP48	7x7	√	NK-NUC123SE	NLG-NUC123L
NUC123LD4AN0	Cortex-M0	72	2.5	5.5	-40	85	36	4	68	Configurable	20	6	√	√	4	4	8	2	3	2	1	1	1	LQFP48	7x7	√	NK-NUC123SE	NLG-NUC123L
NUC123SC2AE1	Cortex-M0	72	2.5	5.5	-40	105	47	4	36	Configurable	12	6	√	√	4	4	8	2	3	2	1	1	1	LQFP64	7x7	√	NK-NUC123SE	NLG-NUC123S
NUC123SC2AN1	Cortex-M0	72	2.5	5.5	-40	85	47	4	36	Configurable	12	6	√	√	4	4	8	2	3	2	1	1	1	LQFP64	7x7	√	NK-NUC123SE	NLG-NUC123S
NUC123SD4AE0	Cortex-M0	72	2.5	5.5	-40	105	47	4	68	Configurable	20	6	√	√	4	4	8	2	3	2	1	1	1	LQFP64	7x7	√	NK-NUC123SE	NLG-NUC123S
NUC123SD4AN0	Cortex-M0	72	2.5	5.5	-40	85	47	4	68	Configurable	20	6	√	√	4	4	8	2	3	2	1	1	1	LQFP64	7x7	√	NK-NUC123SE	NLG-NUC123S
NUC123ZC2AE1	Cortex-M0	72	2.5	5.5	-40	105	20	4	36	Configurable	12	6	√	√	4	3	3	1	3	1	1	-	1	QFN33	5x5	√	NK-NUC123SE	NLG-NUC123Z
NUC123ZC2AN1	Cortex-M0	72	2.5	5.5	-40	85	20	4	36	Configurable	12	6	√	√	4	2	3	1	3	1	1	-	1	QFN33	5x5	√	NK-NUC123SE	NLG-NUC123Z
NUC123ZD4AE0	Cortex-M0	72	2.5	5.5	-40	105	20	4	68	Configurable	20	6	√	√	4	3	3	1	3	1	1	-	1	QFN33	5x5	√	NK-NUC123SE	NLG-NUC123Z
NUC123ZD4AN0	Cortex-M0	72	2.5	5.5	-40	85	20	4	68	Configurable	20	6	√	√	4	2	3	1	3	1	1	-	1	QFN33	5x5	√	NK-NUC123SE	NLG-NUC123Z

• NUC126 Series (NRND)

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

Part No.	System							Memory					Timer							Analog		Connectivity								Security	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer/ PWM	PWM (16-bit)	RTC	BPWM (16-bit)	ADC (12-bit)	ACMP	UART	ISO-7816-3	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	EBI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC126LE4AE	Cortex-M0	72	2.5	5.5	-40	105	35	4	128	Configurable	20	5	v	√	4	10	√	-	9	2	3	2	2	3	2	1	√	√	2048	LQFP48	7x7	√	NT-NUC126V	NLG-NUC126L
NUC126LG4AE	Cortex-M0	72	2.5	5.5	-40	105	49	4	256	Configurable	20	5	v	√	4	10	√	-	9	2	3	2	2	3	2	1	√	√	2048	LQFP48	7x7	√	NT-NUC126V	NLG-NUC126L
NUC126NE4AE	Cortex-M0	72	2.5	5.5	-40	105	35	4	128	Configurable	20	5	v	√	4	10	√	-	9	2	3	2	2	3	2	1	√	√	2048	QFN48	7x7	√	NT-NUC126V	NLG-NUC126N
NUC126SE4AE	Cortex-M0	72	2.5	5.5	-40	105	49	4	128	Configurable	20	5	v	√	4	12	√	-	15	2	3	2	2	3	2	1	√	√	2048	LQFP64	7x7	√	NT-NUC126V	NLG-NUC126S
NUC126SG4AE	Cortex-M0	72	2.5	5.5	-40	105	49	4	256	Configurable	20	5	v	√	4	12	√	-	15	2	3	2	2	3	2	1	√	√	2048	LQFP64	7x7	√	NT-NUC126V	NLG-NUC126S
NUC126VG4AE	Cortex-M0	72	2.5	5.5	-40	105	81	4	256	Configurable	20	5	v	√	4	12	√	-	20	2	3	2	2	3	2	1	√	√	2048	LQFP100	14x14	√	NT-NUC126V	NLG-NUC126V

• NUC1261 Series

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

Part No.	System							Memory					Timer						Analog		Connectivity								Security	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer/ PWM	PWM (16-bit)	RTC	BPWM (16-bit)	ADC (12-bit)	ACMP	UART	ISO-7816-3	I²C	USCI	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	EBI	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC1261NE4AE	Cortex-M0	72	2.5	5.5	-40	105	35	4	128	Configurable	20	5	√	√	4	10	√	-	9	2	3	2	3	2	1	√	√	2048	QFN 48	7x7	√	NT-NUC1261S	NLG-NUC126N	NLG-NUC126L
NUC1261LE4AE	Cortex-M0	72	2.5	5.5	-40	105	35	4	128	Configurable	20	5	√	√	4	10	√	-	9	2	3	2	3	2	1	√	√	2048	LQFP 48	7x7	√	NT-NUC1261S	NLG-NUC126L	NLG-NUC126L
NUC1261LG4AE	Cortex-M0	72	2.5	5.5	-40	105	35	4	256	Configurable	20	5	√	√	4	10	√	-	9	2	3	2	3	2	1	√	√	2048	LQFP 48	7x7	√	NT-NUC1261S	NLG-NUC126L	NLG-NUC126N
NUC1261SE4AE	Cortex-M0	72	2.5	5.5	-40	105	49	4	128	Configurable	20	5	√	√	4	12	√	-	15	2	3	2	3	2	1	√	√	2048	LQFP 64	7x7	√	NT-NUC1261S	NLG-NUC126S	NLG-NUC126S
NUC1261SG4AE	Cortex-M0	72	2.5	5.5	-40	105	49	4	256	Configurable	20	5	√	√	4	12	√	-	15	2	3	2	3	2	1	√	√	2048	LQFP 64	7x7	√	NT-NUC1261S	NLG-NUC126S	NLG-NUC126S

• NUC1262 Series

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

Key Features: Up to 10-channel LED Light Strip Interface (LLSI), Up to 24-channel 72 MHz BPWM, 8-channel 800 ksps ADC,10-channel PDMA.

Part No.	System							Memory					Timer						Analog	Connectivity							Security	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash(KB)	SRAM(KB)	PDMA(ch)	WDT	WWDT	Timer/ PWM	BPWM(16-bit)	RTC	ADC(12-bit)	LLSI	UART	I²C	SPI/ I²S	USB FS Device	USB FS Device Crystal-less	SPROM(B)	Package Type	Package Size	Mass Production	Evaluation Board (Ordering No.)	Mass Production Programmer
NUC1262NE4AE	Cortex-M23	72	2.5	5.5	-40	105	38	4	128	Configurable	20	10	√	√	4	24	-	8	8	2	2	2	1	√	2048	QFN48	7x7	√	NK-NUC1262SE	NLG-NUC126N
NUC1262LE4AE	Cortex-M23	72	2.5	5.5	-40	105	38	4	128	Configurable	20	10	√	√	4	24	-	8	8	2	2	2	1	√	2048	LQFP48	7x7	√	NK-NUC1262SE	NLG-NUC126L
NUC1262SE4AE	Cortex-M23	72	2.5	5.5	-40	105	50	4	128	Configurable	20	10	√	√	4	24	-	8	10	2	2	2	1	√	2048	LQFP64	7x7	√	NK-NUC1262SE	NLG-NUC126S

• NUC1263 Series

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

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

Part No.	System							Memory					Timer					Analog			Connectivity								Security	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer/ PWM	BPWM (16-bit)	RTC	ADC (12-bit)	ACMP	DAC	I²C	LSI	UART	I²C	SPI/ FS	USB FS Device	USB FS Device Crystal-less	SPROM(B)	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC1263ZD4AE	Cortex-M23	72	2.5	5.5	-40	105	35	4	64	Configurable	20	10	√	√	4	24	-	16	4	4	2	6	3	3	3	1	√	2048	QFN 33	5x5	2023 Q2	NK-NUC1263S	NLG-NUC126Z
NUC1263ND4AE	Cortex-M23	72	2.5	5.5	-40	105	35	4	64	Configurable	20	10	√	√	4	24	-	16	4	4	2	6	3	3	3	1	√	2048	QFN 48	7x7	2023 Q2	NK-NUC1263S	NLG-NUC126N
NUC1263LD4AE	Cortex-M23	72	2.5	5.5	-40	105	35	4	64	Configurable	20	10	√	√	4	24	-	16	4	4	2	6	3	3	3	1	√	2048	LQFP 48	7x7	2023 Q2	NK-NUC1263S	NLG-NUC126L
NUC1263SD4AE	Cortex-M23	72	2.5	5.5	-40	105	49	4	64	Configurable	20	10	√	√	4	24	-	16	4	4	2	6	3	3	3	1	√	2048	LQFP 64	7x7	2023 Q2	NK-NUC1263S	NLG-NUC126S

NUC131/ NUC230/ NUC240 CAN Series

The NuMicro® NUC131/230/240 series with CAN Bus is based on the Arm® Cortex®-M0 core with 32 to 128 Kbytes Flash memory, 4 to 16 Kbytes SRAM, and 4/ 8 Kbytes Flash loader memory for In-System Programming (ISP). This series is designed for CAN applications. It is equipped with a variety of peripherals for general connectivity functions such as LIN, USB 2.0 full speed device, UART, I²C, and ADC. In addition, the NUC131/ NUC230/ NUC240 CAN Series features Analog Comparator, Low Voltage Reset, and Brown-Out Detector.

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

• NUC131 Series

Part No.	System							Memory				Timer					Analog	Connectivity							Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	BPWM (16-bit)	ADC (12-bit)	UART	LIN	SPI	I²C	CAN	LPUART	ISO-7816-3	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC131LC2AE	Cortex-M0	50	2.5	5.5	-40	105	56	4	36	Configurable	8	√	√	4	12	12	8	6	3	1	2	1	-	-	LQFP 48	7x7	√	NK-NUC131	NLG-NUC131L
NUC131LD2AE	Cortex-M0	50	2.5	5.5	-40	105	56	4	68	Configurable	8	√	√	4	12	12	8	6	3	1	2	1	-	-	LQFP 48	7x7	√	NK-NUC131	NLG-NUC131L
NUC131SC2AE	Cortex-M0	50	2.5	5.5	-40	105	42	4	36	Configurable	8	√	√	4	12	12	8	6	3	1	2	1	-	-	LQFP 64	7x7	√	NK-NUC131	NLG-NUC131S
NUC131SD2AE	Cortex-M0	50	2.5	5.5	-40	105	42	4	68	Configurable	8	√	√	4	12	12	8	6	3	1	2	1	-	-	LQFP 64	7x7	√	NK-NUC131	NLG-NUC131S
NUC1311LC2AE	Cortex-M0	50	2.5	5.5	-40	105	42	4	36	Configurable	8	√	√	4	12	-	8	4	3	1	1	1	-	-	LQFP 48	7x7	√	NK-NUC1311	NLG-NUC1311
NUC1311LD2AE	Cortex-M0	50	2.5	5.5	-40	105	42	4	68	Configurable	8	√	√	4	12	-	8	4	3	1	1	1	-	-	LQFP 48	7x7	√	NK-NUC1311	NLG-NUC1311

• NUC230 Series

Part No.	System							Memory					Timer					Analog		Connectivity									Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	UART	LIN	ISO-7816-3	SPI	I²C	I²S	CAN	PS/2 Device	EBI	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC230LC2AE	Cortex-M0	72	2.5	5.5	-40	105	35	8	32	4	8	9	√	√	4	4	√	7	1	3	3	2	1	2	1	2	-	-	LQFP48	7x7	√	NK-NUC240V	NLG-NUC200L
NUC230LD2AE	Cortex-M0	72	2.5	5.5	-40	105	35	8	64	4	8	9	√	√	4	4	√	7	1	3	3	2	1	2	1	2	-	-	LQFP48	7x7	√	NK-NUC240V	NLG-NUC200L
NUC230LE3AE	Cortex-M0	72	2.5	5.5	-40	105	35	8	128	Configurable	16	9	√	√	4	4	√	7	1	3	3	2	1	2	1	2	-	-	LQFP48	7x7	√	NK-NUC240V	NLG-NUC200L
NUC230SC2AE	Cortex-M0	72	2.5	5.5	-40	105	49	8	32	4	8	9	√	√	4	6	√	7	2	3	3	2	2	2	1	2	-	√	LQFP64	7x7	√	NK-NUC240V	NLG-NUC200S
NUC230SD2AE	Cortex-M0	72	2.5	5.5	-40	105	49	8	64	4	8	9	√	√	4	6	√	7	2	3	3	2	2	2	1	2	-	√	LQFP64	7x7	√	NK-NUC240V	NLG-NUC200S
NUC230SE3AE	Cortex-M0	72	2.5	5.5	-40	105	49	8	128	Configurable	16	9	√	√	4	6	√	7	2	3	3	2	2	2	1	2	-	√	LQFP64	7x7	√	NK-NUC240V	NLG-NUC200S
NUC230VE3AE	Cortex-M0	72	2.5	5.5	-40	105	83	8	128	Configurable	16	9	√	√	4	8	√	8	2	3	3	3	4	2	1	2	1	√	LQFP100	14x14	√	NK-NUC240V	NLG-NUC200V

• NUC240 Series

Part No.	System							Memory					Timer					Analog		Connectivity										Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	UART	LIN	ISO-7816-3	SPI	I²C	I²S	CAN	PS/2 Device	USB FS Device	EBI	Package Type	Package Size	Mass Production	EVB	MP Programmer
NUC240LC2AE	Cortex-M0	72	2.5	5.5	-40	105	31	8	32	4	8	9	√	√	4	4	√	7	1	2	2	1	1	2	1	2	-	1	-	LQFP48	7x7	√	NK-NUC240V	NLG-NUC200L
NUC240LD2AE	Cortex-M0	72	2.5	5.5	-40	105	31	8	64	4	8	9	√	√	4	4	√	7	1	2	2	1	1	2	1	2	-	1	-	LQFP48	7x7	√	NK-NUC240V	NLG-NUC200L
NUC240LE3AE	Cortex-M0	72	2.5	5.5	-40	105	31	8	128	Configurable	16	9	√	√	4	4	√	7	1	2	2	1	1	2	1	2	-	1	-	LQFP48	7x7	√	NK-NUC240V	NLG-NUC200L
NUC240SC2AE	Cortex-M0	72	2.5	5.5	-40	105	45	8	32	4	8	9	√	√	4	4	√	7	2	3	3	2	2	2	1	2	-	1	√	LQFP64	7x7	√	NK-NUC240V	NLG-NUC200S
NUC240SD2AE	Cortex-M0	72	2.5	5.5	-40	105	45	8	64	4	8	9	√	√	4	4	√	7	2	3	3	2	2	2	1	2	-	1	√	LQFP64	7x7	√	NK-NUC240V	NLG-NUC200S
NUC240SE3AE	Cortex-M0	72	2.5	5.5	-40	105	45	8	128	Configurable	16	9	√	√	4	4	√	7	2	3	3	2	2	2	1	2	-	1	√	LQFP64	7x7	√	NK-NUC240V	NLG-NUC200S
NUC240VE3AE	Cortex-M0	72	2.5	5.5	-40	105	79	8	128	Configurable	16	9	√	√	4	8	√	8	2	3	3	3	4	2	1	2	1	1	√	LQFP100	14x14	√	NK-NUC240V	NLG-NUC200V

Nano100 Series

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

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

• Nano100 Series

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

Part No.	System							Memory						Timer						Analog		Connectivity							Package		Status	Package	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	DAC (12-bit)	UART	LIN	ISO-7816-3	SPI	I²C	I²S	Package Type	Package Size	Mass Production	EVB	MP Programmer
NANO100KD3BN	Cortex-M0	42	1.8	3.6	-40	85	86	4	64	Configurable	16	8	√	√	4	8	√	12	2	2	2	3	3	2	1	LQFP128	14X14	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100K
NANO100KE3BN	Cortex-M0	42	1.8	3.6	-40	85	86	4	128	Configurable	16	8	√	√	4	8	√	12	2	2	2	3	3	2	1	LQFP128	14X14	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100K
NANO100LC2BN	Cortex-M0	42	1.8	3.6	-40	85	38	4	32	Configurable	8	8	√	√	4	6	√	7	2	2	2	2	3	2	1	LQFP48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100L
NANO100LD2BN	Cortex-M0	42	1.8	3.6	-40	85	38	4	64	Configurable	8	8	√	√	4	6	√	7	2	2	2	2	3	2	1	LQFP48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100L
NANO100LD3BN	Cortex-M0	42	1.8	3.6	-40	85	38	4	64	Configurable	16	8	√	√	4	6	√	7	2	2	2	2	3	2	1	LQFP48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100L
NANO100LE3BN	Cortex-M0	42	1.8	3.6	-40	85	38	4	128	Configurable	16	8	√	√	4	6	√	7	2	2	2	2	3	2	1	LQFP48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100L
NANO100NC2BN	Cortex-M0	42	1.8	3.6	-40	85	38	4	32	Configurable	8	8	√	√	4	6	√	7	2	2	2	2	3	2	1	QFN48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100N
NANO100ND2BN	Cortex-M0	42	1.8	3.6	-40	85	38	4	64	Configurable	8	8	√	√	4	6	√	7	2	2	2	2	3	2	1	QFN48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100N
NANO100ND3BN	Cortex-M0	42	1.8	3.6	-40	85	38	4	64	Configurable	16	8	√	√	4	6	√	7	2	2	2	2	3	2	1	QFN48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100N
NANO100NE3BN	Cortex-M0	42	1.8	3.6	-40	85	38	4	128	Configurable	16	8	√	√	4	6	√	7	2	2	2	2	3	2	1	QFN48	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100N
NANO100SC2BN	Cortex-M0	42	1.8	3.6	-40	85	52	4	32	Configurable	8	8	√	√	4	8	√	7	2	2	2	3	3	2	1	LQFP64	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100S
NANO100SD2BN	Cortex-M0	42	1.8	3.6	-40	85	52	4	64	Configurable	8	8	√	√	4	8	√	7	2	2	2	3	3	2	1	LQFP64	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100S
NANO100SD3BN	Cortex-M0	42	1.8	3.6	-40	85	52	4	64	Configurable	16	8	√	√	4	8	√	7	2	2	2	3	3	2	1	LQFP64	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100S
NANO100SE3BN	Cortex-M0	42	1.8	3.6	-40	85	52	4	128	Configurable	16	8	√	√	4	8	√	7	2	2	2	3	3	2	1	LQFP64	7X7	√	NT-Nano100K / NT-Nano120K / NT-Nano130K	NLG-Nano100S

• Nano102 Series

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

Part No.	System							Memory					Timer						Analog			Connectivity				Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	Package Type	Package Size	Mass Production	EVB	MP Programmer
NANO102LB1AN	Cortex-M0	32	1.8	3.6	-40	85	40	4	16	Configurable	4	4	√	√	4	4	√	7	2	√	2	2	2	2	LQFP48	7x7	√	NT-Nano102S	NLG-Nano112L
NANO102LC2AN	Cortex-M0	32	1.8	3.6	-40	85	40	4	32	Configurable	8	4	√	√	4	4	√	7	2	√	2	2	2	2	LQFP48	7x7	√	NT-Nano102S	NLG-Nano112L
NANO102SC2AN	Cortex-M0	32	1.8	3.6	-40	85	58	4	32	Configurable	8	4	√	√	4	4	√	7	2	√	2	2	2	2	LQFP64	7x7	√	NT-Nano102S	NLG-Nano112S
NANO102ZB1AN	Cortex-M0	32	1.8	3.6	-40	85	27	4	16	Configurable	4	4	√	√	4	4	√	2	2	√	2	1	2	2	QFN33	5x5	√	NT-Nano102S	NLG-Nano102Z
NANO102ZC2AN	Cortex-M0	32	1.8	3.6	-40	85	27	4	32	Configurable	8	4	√	√	4	4	√	2	2	√	2	1	2	2	QFN33	5x5	√	NT-Nano102S	NLG-Nano102Z

• Nano103 Series

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

Part No.	System							Memory					Timer					Analog			Connectivity				Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	Package Type	Package Size	Mass Production	EVB	MP Programmer
NANO103LD3AE	Cortex-M0	36	1.8	3.6	-40	105	39	4	64	Configurable	16	4	√	√	4	6	√	8	1	√	2	2	4	2	LQFP48	7x7	√	NT-Nano103S	NLG-Nano103L
NANO103SD3AE	Cortex-M0	36	1.8	3.6	-40	105	53	4	64	Configurable	16	4	√	√	4	6	√	8	1	√	2	2	4	2	LQFP64	7x7	√	NT-Nano103S	NLG-Nano103S
NANO103ZD3AE	Cortex-M0	36	1.8	3.6	-40	105	26	4	64	Configurable	16	4	√	√	4	2	√	6	1	√	2	2	4	2	QFN33	5x5	√	NT-Nano103S	NLG-Nano103Z

• Nano110 Series

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

Part No.	System							Memory					Timer						Analog		Connectivity						Display	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	DAC (12-bit)	UART	LIN	ISO-7816-3	SPI	I²C	I²S	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
NANO110KC2BN	Cortex-M0	42	1.8	3.6	-40	85	86	4	32	Configurable	8	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO110KD2BN	Cortex-M0	42	1.8	3.6	-40	85	86	4	64	Configurable	8	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO110KD3BN	Cortex-M0	42	1.8	3.6	-40	85	86	4	64	Configurable	16	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO110KE3BN	Cortex-M0	42	1.8	3.6	-40	85	86	4	128	Configurable	16	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO110RC2BN	Cortex-M0	42	1.8	3.6	-40	85	51	4	32	Configurable	8	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	10X10	√	NT-Nano130K	NLG-Nano100R
NANO110RD2BN	Cortex-M0	42	1.8	3.6	-40	85	51	4	64	Configurable	8	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	10X10	√	NT-Nano130K	NLG-Nano100R
NANO110RD3BN	Cortex-M0	42	1.8	3.6	-40	85	51	4	64	Configurable	16	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	10X10	√	NT-Nano130K	NLG-Nano100R
NANO110RE3BN	Cortex-M0	42	1.8	3.6	-40	85	51	4	128	Configurable	16	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	10X10	√	NT-Nano130K	NLG-Nano100R
NANO110SC2BN	Cortex-M0	42	1.8	3.6	-40	85	51	4	32	Configurable	8	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S
NANO110SD2BN	Cortex-M0	42	1.8	3.6	-40	85	51	4	64	Configurable	8	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S
NANO110SD3BN	Cortex-M0	42	1.8	3.6	-40	85	51	4	64	Configurable	16	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S
NANO110SE3BN	Cortex-M0	42	1.8	3.6	-40	85	51	4	128	Configurable	16	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S

• Nano120 Series

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

Part No.		System						Memory					Timer						Analog			Connectivity				Display	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
NANO112LB1AN	Cortex-M0	32	1.8	3.6	-40	85	40	4	16	Configurable	4	4	√	√	4	4	√	7	2	√	2	2	2	2	4x20/6x18	LQFP48	7x7	√	NT-Nano112V	NLG-Nano112L
NANO112LC2AN	Cortex-M0	32	1.8	3.6	-40	85	40	4	32	Configurable	8	4	√	√	4	4	√	7	2	√	2	2	2	2	4x20/6x18	LQFP48	7x7	√	NT-Nano112V	NLG-Nano112L
NANO112RB1AN	Cortex-M0	32	1.8	3.6	-40	85	58	4	16	Configurable	4	4	√	√	4	4	√	7	2	√	2	2	2	2	4x32/6x30	LQFP64	10x10	√	NT-Nano112V	NLG-Nano112R
NANO112RC2AN	Cortex-M0	32	1.8	3.6	-40	85	58	4	32	Configurable	8	4	√	√	4	4	√	7	2	√	2	2	2	2	4x32/6x30	LQFP64	10x10	√	NT-Nano112V	NLG-Nano112R
NANO112SB1AN	Cortex-M0	32	1.8	3.6	-40	85	58	4	16	Configurable	4	4	√	√	4	4	√	7	2	√	2	2	2	2	4x32/6x30	LQFP64	7x7	√	NT-Nano112V	NLG-Nano112S
NANO112SC2AN	Cortex-M0	32	1.8	3.6	-40	85	58	4	32	Configurable	8	4	√	√	4	4	√	7	2	√	2	2	2	2	4x32/6x30	LQFP64	7x7	√	NT-Nano112V	NLG-Nano112S
NANO112VC2AN	Cortex-M0	32	1.8	3.6	-40	85	80	4	32	Configurable	8	4	√	√	4	4	√	8	2	√	2	2	2	2	4x36/6x34	LQFP100	14x14	√	NT-Nano112V	NLG-Nano112V

• Nano130 Series

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

Part No.	System							Memory					Timer					Analog		Connectivity							Display	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	WWDT	Timer (32-bit)	PWM (16-bit)	RTC	ADC (12-bit)	DAC (12-bit)	UART	LIN	ISO-7816-3	SPI	I²C	I²S	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
NANO130KC2BN	Cortex-M0	42	1.8	3.6	-40	85	86	4	32	Configurable	8	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO130KD2BN	Cortex-M0	42	1.8	3.6	-40	85	86	4	64	Configurable	8	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO130KD3BN	Cortex-M0	42	1.8	3.6	-40	85	86	4	64	Configurable	16	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO130KE3BN	Cortex-M0	42	1.8	3.6	-40	85	86	4	128	Configurable	16	8	√	√	4	8	√	12	2	2	2	3	3	2	1	4x40/6x38	LQFP128	14X14	√	NT-Nano130K	NLG-Nano100K
NANO130SC2BN	Cortex-M0	42	1.8	3.6	-40	85	47	4	32	Configurable	8	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S
NANO130SD2BN	Cortex-M0	42	1.8	3.6	-40	85	47	4	64	Configurable	8	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S
NANO130SD3BN	Cortex-M0	42	1.8	3.6	-40	85	47	4	64	Configurable	16	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S
NANO130SE3BN	Cortex-M0	42	1.8	3.6	-40	85	47	4	128	Configurable	16	8	√	√	4	7	√	7	2	2	2	3	3	2	1	4x31/6x29	LQFP64	7X7	√	NT-Nano130K	NLG-Nano100S

NuMicro® Family 8051 Microcontrollers

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

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

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

ML51/ML54/ML56 low power series provides up to 64 Kbytes Flash memory and 4 Kbytes SRAM. The operating current is 80 μA/MHz and the powerdown current can be as low as 0.8 μA.

ML51 - Basic low power line

ML54 - Low power with an LCD driver line

ML56 - Low power with LCD driver and Touch key line

MUG51 Low-power Series

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

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

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

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

Target Applications: Suitable for Passive Stylus Pen and RFID card

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

• MUG51 Series

Part No.	System							Memory					Timer					Analog				Connectivity				Security			Display	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA(ch)	WDT	Timer (16-bit)	PWM (10-bit)	RTC	ADC (12-bit)	ACMP	Touch Key	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	SPROM(B)	UID	UCID	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
MUG51TB9AE	8051	7.3728	1.8	5.5	-40	105	24	4	16	Shared with APROM	1	2	v	4	6	-	-	2	-	-	2	1	1	2	128	-	-	-	QFN33	4x4	v	NK-MUG51TB	-

MS51 Industrial Control Series (1T)

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

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

Part No.	System							Memory				Timer			Analog	Connectivity				Security	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	WDT	Timer (16-bit)	PWM (16-bit)	ADC (12-bit)	UART	ISO-7816-3	SPI	I²C	SPROM (Byte)	Package Type	Package Size	Mass Production	EVB	MP Programmer
MS51BA9AE	8051	16/24	2.4	5.5	-40	105	8	4	8	Shared with APROM	1K + 256 (B)	√	4	5	5	2	-	1	1	128	MSOP10	3x3	√	NT-MS51DA	-
MS51DA9AE	8051	16/24	2.4	5.5	-40	105	12	4	8	Shared with APROM	1K + 256 (B)	√	4	5	8	2	-	1	1	128	TSSOP14	4.4x5	√	NT-MS51DA	-
MS51EB0AE	8051	16/24	2.4	5.5	-40	105	26	4	16	Shared with APROM	2K+256 (B)	√	4	12	15	2	3	1	1	128	TSSOP28	4.4x9.7	√	NK-MS51PC	NLG-MS51E
MS51EC0AE	8051	16/24	2.4	5.5	-40	105	26	4	32	Shared with APROM	2K+256 (B)	√	4	12	15	2	3	1	1	128	TSSOP28	4.4x9.7	√	NK-MS51PC	NLG-MS51E
MS51FB9AE	8051	16/24	2.4	5.5	-40	105	18	4	16	Shared with APROM	1K + 256 (B)	√	4	6	8	2	-	1	1	128	TSSOP20	4.4x6.5	√	NT-MS51FB	NLG-MS51F
MS51FC0AE	8051	16/24	2.4	5.5	-40	105	18	4	32	Shared with APROM	2K+256 (B)	√	4	12	15	2	3	1	1	128	TSSOP20	4.4x6.5	√	NK-MS51PC	NLG-MS51F
MS51PC0AE	8051	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	8051	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	8051	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	8051	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	8051	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

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

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.

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

• ML51 Low Power Series

Part No.	System							Memory					Timer					Analog					Connectivity					Security			Display	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	Timer (16-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Touch Key	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	SPROM (Byte)	UID	UCID	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
ML51BB9AE	8051	24	1.8	5.5	-40	105	7	4	16	Shared with APROM	1	2	√	4	4	-	2	-	-	-	2	-	-	1	128	96	128	-	MSOP10	3x3	√	NT-ML51EB	-
ML51DB9AE	8051	24	1.8	5.5	-40	105	11	4	16	Shared with APROM	1	2	√	4	4	-	3	-	-	-	2	1	1	2	128	96	128	-	TSSOP14	4.4x5.0	√	NT-ML51EB	-
ML51EB9AE	8051	24	1.8	5.5	-40	105	24	4	16	Shared with APROM	1	2	√	4	6	-	8	-	-	-	2	1	1	2	128	96	128	-	TSSOP28	4.4x9.7	√	NT-ML51EB	NLG-28E
ML51EC0AE	8051	24	1.8	5.5	-40	105	24	4	32	Shared with APROM	2	2	√	4	6	-	8	2	-	√	2	1	2	2	128	96	128	-	TSSOP28	4.4x9.7	√	NK-ML51PC	NLG-28E
ML51FB9AE	8051	24	1.8	5.5	-40	105	16	4	16	Shared with APROM	1	2	√	4	6	-	6	-	-	-	2	1	1	2	128	96	128	-	TSSOP20	4.4x6.5	√	NT-ML51EB	NLG-20F
ML51LD1AE	8051	24	1.8	3.6	-40	105	43	4	64	Shared with APROM	4	4	√	4	12	√	10	2	-	√	2	2	2	2	128	96	128	-	LQFP48	7x7	√	NK-ML51SD	NLG-48L
ML51OB9AE	8051	24	1.8	5.5	-40	105	16	4	16	Shared with APROM	1	2	√	4	6	-	6	-	-	-	2	1	1	2	128	96	128	-	SOP20	7.6x13	√	NT-ML51EB	-
ML51PB9AE	8051	24	1.8	5.5	-40	105	28	4	16	Shared with APROM	2	2	√	4	6	-	8	2	-	√	2	1	1	2	128	96	128	-	LQFP32	7x7	√	NT-ML51EB	-
ML51PC0AE	8051	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	8051	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	8051	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	8051	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	8051	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	8051	24	1.8	5.5	-40	105	24	4	16	Shared with APROM	2	2	√	4	6	-	8	-	-	√	2	1	1	2	128	96	128	-	SOP28	7.6x18	√	NT-ML51EB	-
ML51UC0AE	8051	24	1.8	5.5	-40	105	24	4	32	Shared with APROM	2	2	√	4	6	-	8	2	-	√	2	1	2	2	128	96	128	-	SOP28	7.6x18	√	NK-ML51PC	-
ML51XB9AE	8051	24	1.8	5.5	-40	105	17	4	16	Shared with APROM	1	2	√	4	6	-	6	-	-	-	2	1	1	2	128	96	128	-	QFN20	3x3	√	NT-ML51EB	-

• ML54 Low Power LCD Series

Part No.	System							Memory					Timer					Analog					Connectivity					Security			Display	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	Timer (16-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Touch Key	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	SPROM (Byte)	UID	UCID	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
ML54LD1AE	8051	24	1.8	3.6	-40	105	42	-	64	Shared with APROM	4	4	√	4	12	√	10	2	-	√	2	2	2	2	128	96	128	4x22/6x20/8x18	LQFP48	7x7	√	NK-ML54SD	NLG-48L
ML54MD1AE	8051	24	1.8	3.6	-40	105	38	-	64	Shared with APROM	4	4	√	4	12	√	10	2	-	√	2	2	2	2	128	96	128	4x21/6x19/8x17	LQFP44	10x10	√	NK-ML54SD	-
ML54SD1AE	8051	24	1.8	3.6	-40	105	55	-	64	Shared with APROM	4	4	√	4	12	√	14	2	-	√	2	2	2	2	128	96	128	4x32/6x30/8x28	LQFP64	7x7	√	NK-ML54SD	NLG-64S

• ML56 Low Power Touch Key Series

Part No.	System							Memory						Timer				Analog				Connectivity				Security			Display	Package		Status	Tool	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	PDMA (ch)	WDT	Timer (16-bit)	PWM (16-bit)	RTC	ADC (12-bit)	ACMP	Touch Key	Internal Voltage Reference	UART	ISO-7816-3	SPI	I²C	SPROM (Byte)	UID	UCID	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
ML56LD1AE	8051	24	1.8	3.6	-40	105	42	-	64	Shared with APROM	4	4	√	4	12	√	10	2	9	√	2	2	2	2	128	96	128	4x22/6x20/8x18	LQFP48	7x7	√	NK-ML56SD	NLG-48L
ML56MD1AE	8051	24	1.8	3.6	-40	105	38	-	64	Shared with APROM	4	4	√	4	12	√	10	2	6	√	2	2	2	2	128	96	128	4x21/6x19/8x17	LQFP44	10x10	√	NK-ML56SD	-
ML56SD1AE	8051	24	1.8	3.6	-40	105	55	-	64	Shared with APROM	4	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	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	WDT	Timer (16-bit)	PWM (10-bit)	PWM (12-bit)	PWM (16-bit)	ADC (10-bit)	ADC (12-bit)	UART	SPI	I²C	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
N76E003AQ20	8051	16	2.4	5.5	-40	105	18	4	18	Shared with APROM	1	√	4	-	-	6	-	8	2	1	1	-	QFN20	3x3	√	NT-N76E003	-
N76E003AT20	8051	16	2.4	5.5	-40	105	18	4	18	Shared with APROM	1	√	4	-	-	6	-	8	2	1	1	-	TSSOP20	4.4x6.5	√	NT-N76E003	NLG-MS51F
N76E003BQ20	8051	16	2.4	5.5	-40	105	18	4	18	Shared with APROM	1	√	4	-	-	6	-	8	2	1	1	-	QFN20	3x3	√	NT-N76E003	NLG-20XB
N76E616AF44	8051	16	2.4	5.5	-40	105	42	4	18	Shared with APROM	512 (B)	√	4	-	-	6	8	-	2	-	1	4x32/6x30	PQFP44	10x10	√	NT-N76E616	-
N76E616AL48	8051	16	2.4	5.5	-40	105	46	4	18	Shared with APROM	512 (B)	√	4	-	-	6	8	-	2	-	1	4x32/6x30	LQFP48	7x7	√	NT-N76E616	-
N76E616AM44	8051	16	2.4	5.5	-40	105	42	4	18	Shared with APROM	512 (B)	√	4	-	-	6	8	-	2	-	1	4x32/6x30	LQFP44	10x10	√	NT-N76E616	-
N76E885AQ20	8051	25	2.4	5.5	-40	105	18	4	18	Shared with APROM	512 (B)	√	4	-	6	-	10	-	2	1	1	-	QFN20	4x4	√	NT-N76E885	-
N76E885AT20	8051	25	2.4	5.5	-40	105	18	4	18	Shared with APROM	512 (B)	√	4	-	6	-	10	-	2	1	1	-	TSSOP20	4.4x6.5	√	NT-N76E885	-
N76E885AT28	8051	25	2.4	5.5	-40	105	26	4	18	Shared with APROM	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	
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	LDROM Flash (KB)	APROM Flash (KB)	Data Flash (KB)	SRAM (KB)	WDT	Timer (16-bit)	PWM (10-bit)	PWM (12-bit)	PWM (16-bit)	ADC (10-bit)	ADC (12-bit)	UART	SPI	I²C	ComSeg LCD	Package Type	Package Size	Mass Production	EVB	MP Programmer
N79E715AS16	8051	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	8051	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	8051	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	8051	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	8051	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	8051	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	8051	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	8051	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	8051	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	8051	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).

Target 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.

• W78 Series

Part No.	Core	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	8051	8	256	2	36	-	-	1	-	-	√	4	-	3	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/ LQFP48//TQFP44	√
W78E054D	8051	16	256	2	36	-	-	1	-	-	√	4	-	3	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/ LQFP48//TQFP44	√
W78E058D	8051	32	512	4	36	-	-	1	-	-	√	4	-	3	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/ LQFP48	√
W78E516D	8051	64	512	4	36	-	-	1	-	-	√	4	-	3	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/ LQFP48	√

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

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

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

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

NUC970/980 Series

Part No.	System							Memory			Timer	Analog	Connectivity												Security	Crypto	Display		Package		Status	Tool
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	SRAM (KB)	DDR (MB)	PDMA	PWM (16-bit)	ADC (12-bit)	UART	ISO-7816-3	QSPI	SPI	I²C	CAN	SDHC	USB FS Host	USB HS Host	USB HS Device/ Host	EMAC	EBI	OTP	Crypto	Camera Interface	TFT-LCD Interface	Package Type	Package Size	Mass Production	EVB
NUC980DF63YC	ARM926EJ-S	300	2.97	3.63	-40	85	104	16	64	6	8	8	10	2	1	2	4	4	2	HL*6	1	1	2	√	-	√	2	-	LQFP 216	24x24	√	NK-NUC980
NUC980DF71YC	ARM926EJ-S	300	2.97	3.63	-40	85	104	16	128	6	8	8	10	2	1	2	4	4	2	HL*6	1	1	2	√	-	√	2	-	LQFP 216	24x24	√	-
NUC980DK63YC	ARM926EJ-S	300	2.97	3.63	-40	85	92	16	64	6	8	8	10	2	1	2	4	4	2	HL*6	1	1	2	√	-	√	2	-	LQFP 128	14x14	√	NK-980IOT
NUC980DK71YC	ARM926EJ-S	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	-	LQFP 128	14x14	√	-
NUC980DR63YC	ARM926EJ-S	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	-	LQFP 64-EP	10x10	√	NK-RTU980
NUC972DF63YC	ARM926EJ-S	300	2.97	3.63	-40	85	146	56	64	-	4	8	11	2	-	2	2	2	2	-	1	1	2	√	√	√	1	24bit	LQFP 216	24x24	√	ND-NUC972
NUC972DF71YC	ARM926EJ-S	300	2.97	3.63	-40	85	146	56	128	-	4	8	11	2	-	2	2	2	2	-	1	1	2	√	√	√	1	24bit	LQFP 216	24x24	√	-
NUC975DK63YC	ARM926EJ-S	300	2.97	3.63	-40	85	87	56	64	-	4	4	10	2	-	2	2	1	2	-	1	1	1	√	√	√	1	-	LQFP 128	14x14	√	ND-NUC972
NUC976DK63YC	ARM926EJ-S	300	2.97	3.63	-40	85	80	56	64	-	4	4	6	2	-	2	2	1	2	-	1	1	1	-	√	√	1	16bit	LQFP 128	14x14	√	ND-NUC972
NUC977DK63YC	ARM926EJ-S	300	2.97	3.63	-40	85	87	56	64	-	4	-	8	2	-	2	2	1	2	-	1	1	1	-	√	√	1	16bit	LQFP 128	14x14	√	ND-NUC972

N9H Series

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

Boot Source: SPI NOR, NAND, SD, eMMC

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

Series	CPU (MHz)	LCD	Video CODEC	Audio DAC	Ethernet	CAN	Operating Temp
N9H20	200	16 / 24bit	JPEG	√	-	-	-20°C to 85°C
N9H26	240	24 bit	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
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	SRAM (KB)	DDR (MB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	ADC (10-bit)	ADC (12-bit)	UART	ISO-7816-3	SPI	I²C	CAN	SDHC	USB FS Host	USB HS Device	USB HS Host	USB HS Device/ Host	EMAC	EBI	Camera Interface	TFT-LCD Interface	2D Graphics Engine	Video Codec	Package Type	Package Size	Mass Production	EVB
N9H20K11N	ARM926EJ-S	200	2.97	3.63	-20	85	70	8	2	4	2	4	3	-	2	-	2	1	-	3	1	1	-	-	-	-	-	24bit	√	JPEG	LQFP128	14x14	√	-
N9H20K31N	ARM926EJ-S	200	2.97	3.63	-20	85	70	8	8	4	2	4	3	-	2	-	2	1	-	3	1	1	-	-	-	-	-	24bit	√	JPEG	LQFP128	14x14	√	-
N9H20K51N	ARM926EJ-S	200	2.97	3.63	-20	85	70	8	32	4	2	4	3	-	2	-	2	1	-	3	1	1	-	-	-	-	-	24bit	√	JPEG	LQFP128	14x14	√	NK-N9H20
N9H20R11N	ARM926EJ-S	200	2.97	3.63	-20	85	44	8	2	4	2	4	-	-	2	-	1	1	-	1	1	1	-	-	-	-	-	16bit	√	JPEG	TQFP64-EP	10x10	√	-
N9H26K63N	ARM926EJ-S	240	2.97	3.63	-20	85	80	8	64	4	4	4	-	12	2	-	2	1	-	3	1	1	1	-	1	-	-	24bit	√	JPEG/ H.264	LQFP128	14x14	√	NK-N9H26
N9H30F63IEC	ARM926EJ-S	300	2.97	3.63	-40	85	146	56	64	-	5	4	-	8	11	2	2	2	2	2	-	-	1	1	2	√	1	24bit	√	JPEG	LQFP216	24x24	√	NK-N9H30
N9H30F71IEC	ARM926EJ-S	300	2.97	3.63	-40	85	146	56	128	-	5	4	-	8	11	2	2	2	2	2	-	-	1	1	2	√	1	24bit	√	JPEG	LQFP216	24x24	√	-
N9H30K63IEC	ARM926EJ-S	300	2.97	3.63	-40	85	86	56	64	-	5	4	-	5	9	2	2	2	1	2	-	-	1	1	1	-	1	16bit	√	JPEG	LQFP128	14x14	√	-

N329 Series

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

Boot Source: SPI NOR, NAND, SD, eMMC

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

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

Part No.	System							Memory			Timer		Analog	Connectivity							Display				Package		Status	Tool
	Core	Operating Frequency (MHz)	Operating Voltage (min) (V)	Operating Voltage (max) (V)	Operating Temperature (min) (°C)	Operating Temperature (max) (°C)	GPIO	SRAM (KB)	DDR (MB)	PDMA (ch)	Timer (32-bit)	PWM (16-bit)	ADC (10-bit)	UART	SPI	I²C	SDHC	USB FS Host	USB HS Host	EMAC	Camera Interface	TFT-LCD Interface	2D Graphics Engine	Video Codec	Package Type	Package Size	Mass Production	EVB
N32903K5DN	ARM926EJ-S	200	2.97	3.63	-20	85	70	8	8	4	2	4	3	2	2	1	3	1	-	-	1	24bit	√	JPEG	LQFP128	14x14	√	ND-N32905
N32905K5DN	ARM926EJ-S	200	2.97	3.63	-20	85	70	8	32	4	2	4	3	2	2	1	3	1	-	-	1	24bit	√	JPEG	LQFP128	14x14	√	ND-N32905
N32901R1DN	ARM926EJ-S	200	2.97	3.63	-20	85	34	8	2	4	2	2	1	2	1	-	2	1	-	-	1	-	√	JPEG	LQFP64	10x10	√	ND-N32905
N32903R5DN	ARM926EJ-S	200	2.97	3.63	-20	85	34	8	8	4	2	2	1	2	1	-	2	1	-	-	1	-	√	JPEG	TQFP64-EP	10x10	√	ND-N32905
N32905R3DN	ARM926EJ-S	200	2.97	3.63	-20	85	34	8	32	4	2	2	1	2	1	-	2	1	-	-	1	-	√	JPEG	TQFP64-EP	10x10	√	ND-N32905
N32901U1DN	ARM926EJ-S	200	2.97	3.63	-20	85	64	8	2	4	2	4	2	2	1	1	3	1	-	-	1	18bit	√	JPEG	LQFP128	14x14	√	ND-N32905
N32903U5DN	ARM926EJ-S	200	2.97	3.63	-20	85	64	8	8	4	2	4	2	2	1	1	3	1	-	-	1	18bit	√	JPEG	LQFP128	14x14	√	ND-N32905
N32905U3DN	ARM926EJ-S	200	2.97	3.63	-20	85	64	8	32	4	2	4	2	2	1	1	3	1	-	-	1	18bit	√	JPEG	LQFP128	14x14	√	ND-N32905
N32926U6DN	ARM926EJ-S	240	2.97	3.63	-20	85	80	8	64	4	4	4	7	2	2	1	3	1	1	1	2	24bit	√	JPEG/ H.264	LQFP128	14x14	√	ND-N32926

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Audio Development Tools

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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		V_{DD} (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		V_{DD} (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

• 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		VDD (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

* 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)		VDD (V)	LVR (V)	Speech/ MIDI CH	ADC	Audio	RAM (Bytes)	GPIO	Interface	PWM Output	Touch I/O	LVD	IR Wake up	LRC
	12KHz	16KHz					PWM								
N589A150	85	64	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	126	94	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	166	125	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	247	185	2.0~5.5	1.9	2/8	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589A600	409	307	2.0~5.5	1.9	2/8	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589A900	571	428	2.0~5.5	1.9	2/8	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589A1K4	895	671	2.0~5.5	1.9	2/8	4ch, 6bit	13-bit	1K	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589A1K9	1218	914	2.0~5.5	1.9	2/8	4ch, 6bit	13-bit	1K	32 I/O	SPIO, UART, Addr. LED	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)		VDD (V)	LVR (V)	Voice CH	ADC	Audio	RAM (Bytes)	GPIO	Interface	PWM Output	Touch I/O	LVD	IR Wake up	LRC
	12KHz	16KHz					PWM								
N589B120	83	62	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	103	77	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	144	108	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	184	138	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	225	168	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	305	229	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589B650	467	350	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589B960	629	472	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589B125	83	62	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, SPIM	9 pin	8 pin	Yes	Yes	Yes
N589B175	103	77	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, SPIM	9 pin	8 pin	Yes	Yes	Yes
N589B205	144	108	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, SPIM	9 pin	8 pin	Yes	Yes	Yes
N589B255	184	138	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, SPIM	9 pin	8 pin	Yes	Yes	Yes
N589B345	225	168	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, SPIM	9 pin	8 pin	Yes	Yes	Yes
N589B485	305	229	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, Addr. LED	16 pin	12 pin	Yes	Yes	Yes
N589B655	467	350	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, Addr. LED	16 pin	12 pin	Yes	Yes	Yes
N589B965	629	472	2.0~5.5	1.9	2	4ch, 6bit	13-bit	512	32 I/O	SPIO, UART, Addr. LED	16 pin	12 pin	Yes	Yes	Yes
N589B1K5	953	714	2.0~5.5	1.9	2	4ch, 6bit	13-bit	1K	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589B2K0	1276	957	2.0~5.5	1.9	2	4ch, 6bit	13-bit	1K	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes

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

Part No.	Duration (Sec)		VDD (V)	LVR (V)	Voice CH	ADC	Audio	RAM (Bytes)	GPIO	Interface	PWM Output	Touch I/O	LVD	IR Wake up	LRC
	12KHz	16KHz					PWM								
N589C080	63	47	2.0~5.5	1.9	2	NO	13-bit	512	16 I/O	NO	3 pin	6 pin	Yes	Yes	Yes
N589C120	83	62	2.0~5.5	1.9	2	NO	13-bit	512	16 I/O	NO	3 pin	6 pin	Yes	Yes	Yes
N589C170	103	77	2.0~5.5	1.9	2	NO	13-bit	512	16 I/O	NO	3 pin	6 pin	Yes	Yes	Yes
N589C200	144	108	2.0~5.5	1.9	2	NO	13-bit	512	22 I/O	SPIO	6 pin	6 pin	Yes	Yes	Yes
N589C250	184	138	2.0~5.5	1.9	2	NO	13-bit	512	22 I/O	SPIO	6 pin	6 pin	Yes	Yes	Yes
N589C340	225	168	2.0~5.5	1.9	2	NO	13-bit	512	22 I/O	SPIO	6 pin	6 pin	Yes	Yes	Yes
N589C480	305	229	2.0~5.5	1.9	2	NO	13-bit	512	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589C650	467	350	2.0~5.5	1.9	2	NO	13-bit	512	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589C960	629	472	2.0~5.5	1.9	2	NO	13-bit	512	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589C1K5	953	714	2.0~5.5	1.9	2	NO	13-bit	1K	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589C2K0	1276	957	2.0~5.5	1.9	2	NO	13-bit	1K	32 I/O	SPIO, UART, Addr. LED	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
	12KHz	16KHz					PWM								
N589D081	63	47	2.0~5.5	1.9	1	NO	13-bit	384	16 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D121	83	62	2.0~5.5	1.9	1	NO	13-bit	384	16 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D171	103	77	2.0~5.5	1.9	1	NO	13-bit	384	16 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D201	144	108	2.0~5.5	1.9	1	NO	13-bit	384	25 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D251	184	138	2.0~5.5	1.9	1	NO	13-bit	384	25 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D341	225	168	2.0~5.5	1.9	1	NO	13-bit	384	25 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D481	305	229	2.0~5.5	1.9	1	NO	13-bit	384	25 I/O	SPIO	3 pin	8 pin	Yes	Yes	Yes
N589D085	63	47	2.0~ 5.5	1.9	1	NO	13-bit	384	16 I/O	SPIO	9 pin	8 pin	Yes	Yes	Yes
N589D125	83	62	2.0~5.5	1.9	1	NO	13-bit	384	16 I/O	SPIO	9 pin	8 pin	Yes	Yes	Yes
N589D175	103	77	2.0~5.5	1.9	1	NO	13-bit	384	16 I/O	SPIO	9 pin	8 pin	Yes	Yes	Yes
N589D205	144	108	2.0~5.5	1.9	1	NO	13-bit	384	25 I/O	SPIO	12 pin	10 pin	Yes	Yes	Yes
N589D255	184	138	2.0~5.5	1.9	1	NO	13-bit	384	25 I/O	SPIO	12 pin	10 pin	Yes	Yes	Yes
N589D345	225	168	2.0~5.5	1.9	1	NO	13-bit	384	25 I/O	SPIO	12 pin	10 pin	Yes	Yes	Yes
N589D485	305	229	2.0~5.5	1.9	1	NO	13-bit	384	25 I/O	SPIO	12 pin	10 pin	Yes	Yes	Yes
N589D650	467	350	2.0~5.5	1.9	1	NO	13-bit	512	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589D960	629	472	2.0~5.5	1.9	1	NO	13-bit	512	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589D1K5	953	714	2.0~5.5	1.9	1	NO	13-bit	1K	32 I/O	SPIO, UART, Addr. LED	6 pin	12 pin	Yes	Yes	Yes
N589D2K0	1276	957	2.0~5.5	1.9	1	NO	13-bit	1K	32 I/O	SPIO, UART, Addr. LED	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)
		(8 KHz)	(12 KHz)			PWM							
N589E041	128	30	20	2.0~5.5	1	13-bit	384	8 I/O	3 pin	4 pin	Yes	Yes	1.9
N589E061	192	45	30	2.0~5.5	1	13-bit	384	8 I/O	3 pin	4 pin	Yes	Yes	1.9
N589E081	256	60	40	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

• N572F/C, N572S, 32-bit Cortex-M0 with Embedded 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
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

• N572H, 32-bit Cortex-M0 with Embedded 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				
N572H064	Cortex®-M0 48 MHz	64 KB	-	2.0~5.5	-	6 KB	32	SPI x 2	4	√	Class-AB (400mW)	√	12-bit 8-ch	-	
N572H064S	Cortex®-M0 48 MHz	64 KB	-	2.0~5.5	-	6 KB	32	SPI x 2	4	√	Class-AB (400mW)	√	12-bit 8-ch	-	LQFP64
N572H16A	Cortex®-M0 48 MHz	64 KB	16Mbit	2.0~5.5	2,000	6 KB	26	SPI	4	√	Class-AB (400mW)	√	12-bit 8-ch	-	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	SpiFlash Interface
				12KHz	16KHz					Mic.	Speaker				
***N574F128**	Cortex®-M0	128 KB	1.8~5.5	63	47	12 KB	40	SPI, UART, I2C, Addr. LED	16	√	DPWM	10-bit 5-ch	16	-	√
***N574C128**	Cortex®-M0	128 KB	1.8~5.5	63	47	12 KB	40	SPI, UART, I2C, Addr. LED	16	√	DPWM	10-bit 5-ch	16	-	√
N574F256	Cortex®-M0	256 KB	1.8~5.5	144	108	12 KB	40	SPI, UART, I2C, Addr. LED	12	√	DPWM	10-bit 5-ch	12	-	-
N574C256	Cortex®-M0	256 KB	1.8~5.5	144	108	12 KB	40	SPI, UART, I2C, Addr. LED	12	√	DPWM	10-bit 5-ch	12	√	-
N574F512	Cortex®-M0	512 KB	1.8~5.5	305	229	12 KB	40	SPI, UART, I2C, Addr. LED	12	√	DPWM	10-bit 5-ch	12	-	-
N574C512	Cortex®-M0	512 KB	1.8~5.5	305	229	12 KB	40	SPI, UART, I2C, Addr. LED	12	√	DPWM	10-bit 5-ch	12	√	-
N574F1K0	Cortex®-M0	1024 KB	1.8~5.5	629	472	12 KB	40	SPI, UART, 2C, Addr. LED	12	√	DPWM	10-bit 5-ch	16	-	-
N574C1K0	Cortex®-M0	1024 KB	1.8~5.5	629	472	12 KB	40	SPI, UART, I2C, Addr. LED	12	√	DPWM	10-bit 5-ch	16	√	-
N574F1K5	Cortex®-M0	1536 KB	1.8~5.5	953	714	12 KB	40	SPI, UART, I2C, Addr. LED	12	√	DPWM	10-bit 5-ch	16	-	-
N574C1K5	Cortex®-M0	1536 KB	1.8~5.5	953	714	12 KB	40	SPI, UART, I2C, Addr. LED	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

■ MFID Family

• 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

■ PA Family

• 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

* Under Development

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	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
NSP082A	SOP8	94	63	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
NSP342A	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
NSP2K0B	SOP14	1896	1264	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	Interface to MCU	ISP	Operation Temperature
		12KHz	16KHz				PWM			
NSP2080A	SOP8	144	108	1.8~5.5	1.9	2	13-bit	I2C, UART	Yes	-40°C~ 85°C
NSP2170A	SOP8	225	168	1.8~5.5	1.9	2	13-bit	I2C, UART	Yes	-40°C~ 85°C
NSP2340A	SOP8	467	350	1.8~5.5	1.9	2	13-bit	I2C, UART	Yes	-40°C~ 85°C

• 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

Audio SoCs

• ARM® Cortex®-M0

Part No.	CPU	APROM	SRAM	I/O	Timer	ADC	RTC	Audio		Developemnt Tools	Other	Package
								MIC.	Speaker			
ISD9130	Cortex®-M0 49 MHz	68 KB	12 KB	24	2	16-bit Sigma-Delta	√	1	Class-D (1W)	ISD-DMK_9160	UART, I²C, I²S, PDMA, CRC	LQFP48 QFN33
ISD9160	Cortex®-M0 49 MHz	145 KB	12 KB	24	2	16-bit Sigma-Delta	√	1	Class-D (1W)	ISD-DMK_9160	UART, I²C, I²S, PDMA, CRC	LQFP48 QFN33
ISD9160C	Cortex®-M0 49 MHz	145 KB	12 KB	24	2	16-bit Sigma-Delta	√	1	Class-D (1W)	ISD-DMK_9160	UART, I²C, I²S, PDMA, CRC, VR	LQFP48 QFN33
ISD91230	Cortex®-M0 49 MHz	64 KB	12 KB	32	2	12-bit SAR	√	1	Class-D (0.45W)	ISD-DMK_91260	UART, I²C, I²S, PDMA, CRC	LQFP64 QFN33
ISD91230B	Cortex®-M0 49 MHz	64 KB	12 KB	32	2	12-bit SAR 24-bitBridgeSense	√	-	Class-D (0.45W)	ISD-DMK_91260B	UART, I²C, I²S, PDMA, CRC	LQFP64
ISD91260	Cortex®-M0 49 MHz	128 KB	12 KB	32	2	12-bit SAR	√	1	Class-D (0.45W)	ISD-DMK_91260	UART, I²C, I²S, PDMA, CRC	LQFP64 QFN33
ISD91260B	Cortex®-M0 49 MHz	128 KB	12 KB	32	2	12-bit SAR 24-bit BridgeSense	√	-	Class-D (0.45W)	ISD-DMK_91260B	UART, I²C, I²S, PDMA, CRC	LQFP64
ISD91260C	Cortex®-M0 49 MHz	128 KB	12 KB	32	2	12-bit SD	√	1	Class-D (0.45W)	ISD-DMK_91260	UART, I²C, I²S, PDMA, CRC, VR	LQFP64 QFN33
ISD91530	Cortex®-M0 49 MHz	64 KB Flash	12KB	50	3	12-bit SAR 16-bit SD	-	1	Class-AB (0.02W)	ISD-DMK_91500	USB 2.0 FS	LQFP64 QFN48
ISD91535	Cortex®-M0 49 MHz	64 KB Flash	20KB	50	3	12-bit SAR 16-bit SD	-	1	Class-AB (0.02W)	ISD-DMK_91500	USB 2.0 FS	LQFP64 QFN48

• ARM® Cortex®-M4

Part No.	CPU	APROM	SRAM	I/O	Timer	ADC	RTC	Audio		Developemnt Tools	Other	Package
								MIC.	Speaker			
ISD94124A	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD	LQFP64 QFN48
ISD94124B	Cortex®-M4 200 MHz, Basic fetaure	512 KB	192 KB	57	4	12-bit SAR	√	-	-	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS	LQFP64 QFN48
ISD94124C	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD, VR	LQFP64
ISD94124D	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD, BF+NR	LQFP64
ISD94124P	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD, VR, BF+NR	LQFP64
ISD94124S	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD, AEC+NR	LQFP64
ISD941A24A	Cortex®-M4 200MHz Stereo CODEC MCP	512 KB	192 KB	29	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DEMO941A24	USB 2.0 FS, VAD	LQFP64
ISD941A24S	Cortex®-M4 200MHz Stereo CODEC MCP	512 KB	192 KB	29	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DEMO941A24	USB 2.0 FS, VAD, AEC+NR	LQFP64
ISD94123B	Cortex®-M4 200 MHz Basic Feature	512 KB	128 KB	57	4	12-bit SAR	√	-	-	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS	LQFP64 QFN48
ISD94123S	Cortex®-M4 200 MHz	512 KB	128 KB	41	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD, AEC+NR	QFN48
ISD94113A	Cortex®-M4 200 MHz	256 KB	128 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD	LQFP64 QFN48
ISD94113B	Cortex®-M4 200 MHz Basic Feature	256 KB	128 KB	57	4	12-bit SAR	√	-	-	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS	LQFP64 QFN48
ISD94113S	Cortex®-M4 200 MHz	256 KB	128 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD, AEC+NR	LQFP64 QFN48

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Audio Converters

• Audio CODEC Series - Mono CODEC

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	Control Interface	Analog/Digital (V)	Package
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU8810	Mono Audio CODEC	1	1	91	93	-79	-84	8~48	I2S PCM(TDM)	NAU8810-DEMO	2-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN20 (4x4)
NAU88C10	Mono Audio CODEC	1	1	91	93	-79	-84	8~48	I2S PCM(TDM)	NAU88C10-DEMO	2-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN20 (4x4)
NAU88U10	Mono Audio CODEC (*AEC-Q100)	1	1	91	93	-79	-84	8~48	I2S PCM(TDM)	NAU88C10-DEMO	2-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN20 (4x4)
NAU8812	Mono Audio CODEC with Speaker Driver	1	1	91	93	-79	-84	8~48	I2S PCM(TDM)	NAU8812-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (5x5) SSOP-28
NAU8814	Mono Audio CODEC with Speaker Driver, Equalizer	1	1	91	93	-79	-84	8~48	I2S PCM(TDM)	NAU8814-DEMO	2-Wire 3-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN24 (4x4)
NAU88C14	Mono Audio CODEC with Speaker Driver, Equalizer	1	1	91	93	-79	-84	8~48	I2S PCM(TDM)	NAU88C14-DEMO	2-Wire 3-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN24 (4x4)

• Audio CODEC Series - Stereo CODEC

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	Control Interface	Analog/Digital (V)	Package
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU8820	Stereo Audio CODEC	2	2	90	94	-80	-84	8 ~ 48	I2S PCM(TDM)	NAU8820-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (5x5)
NAU8822A	Stereo Audio CODEC with Speaker Driver	2	2	90	94	-80	-84	8 ~ 48	I2S PCM(TDM)	NAU8822A-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (5x5)
NAU88U22A	Stereo Audio CODEC with Speaker Driver (*AEC-Q100)	2	2	90	94	-80	-84	8 ~ 48	I2S PCM(TDM)	NAU8822A-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (5x5)
NAU88C22	Stereo Audio CODEC with Speaker Driver	2	2	89	89	-78	-84	8 ~ 192	I2S PCM(TDM)	NAU88C22-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (4x4) QFN32 (5x5)

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• Audio CODEC Series - ULP (Ultra Low Power) CODEC

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	Control Interface	Analog/Digital (V)	Package
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU88L11	ULP Mono Audio CODEC with Class-G Headphone Driver	1	1	103	105	-93	-85	8 ~ 96	I2S PCM(TDM)	NAU88L11-DEMO	2-Wire	1.6 ~ 2.0 1.6 ~ 3.6	QFN20 (4x4)
***NAU88L20**	ULP Stereo CODEC with Stereo Differential Lineout Driver	2	2	98	100	-91	-85	8 ~ 96	I2S PCM(TDM)		2-Wire	2.5 ~ 3.6 2.5 ~ 3.6	QFN32 (4x4)
NAU88L21	ULP Stereo Audio CODEC with Class-G Headphone Driver	2	2	103	105	-91	-80	8 ~ 192	I2S PCM(TDM)	NAU88L21-DEMO	2-Wire	1.6 ~ 2.0 1.6 ~ 3.6	QFN32 (4x4) QFN32 (5x5)
NAU88L24	ULP Stereo Audio CODEC with Advanced Headset Feature Class-D Amp	2	2	100	103	-85	-77	8 ~ 96	I2S PCM(TDM)	NAU88L24I-DEMO	2-Wire	1.6 ~ 2.0 1.6 ~ 3.6	QFN48 (6x6) QFN48 (7x7) WLCSP56
NAU88L25B	ULP Stereo Audio CODEC with Advanced Headset Feature & Detection Class-G Headphone Driver	1	2	101	124	-91	-89	8 ~ 192	I2S PCM(TDM)	NAU88L25-DEMO	2-Wire	1.6 ~ 2.0 1.6 ~ 3.6	QFN32 (5x5) WLCSP42

* Under Development

• Audio ADC Series

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	CTRL IF	Analog/Digital (V)	Package
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU8501	Stereo Audio ADC with Line Input Differential Microphone Inputs	2	-	90	-	-80	-	8~48	I2S PCM(TDM)	NAU8501-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (4x4)
NAU8502	Stereo Audio ADC with Differential Microphone Inputs	2	-	90	-	-80	-	8~48	I2S PCM(TDM)	NAU8502-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (5x5)
NAU85L20	ULP Stereo Audio ADC with Integrated FLL Microphone Preamplifier	2	-	101	-	-91	-	8~96	I2S PCM(TDM)	NAU85L20-DEMO	2-Wire 3-Wire	1.6 ~ 2.0 1.6 ~ 3.6	QFN28 (4x4)
NAU85L40	ULP Quad Audio ADC with Integrated FLL Microphone Preamplifier	4	-	101	-	-91	-	8~96	I2S PCM(TDM)	NAU85L40-DEMO	2-Wire 3-Wire	1.6 ~ 2.0 1.6 ~ 3.6	QFN28 (4x4)

• Audio DAC Series

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	CTRL IF	Analog/Digital (V)	Package
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU8401	Stereo Audio DAC with Speaker Driver	-	2	-	94	-	-84	8 ~ 48	I2S PCM(TDM)	NAU8401-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (5x5)
NAU8402	Stereo Audio DAC with 2Vrms Line Output	-	2	-	98	-	-82	24 ~ 96	I2S PCM(TDM)	NAU8402-DEMO	-	3.0 ~ 3.6 1.6 ~ 3.6	TSSOP 16

• Precision ADC Series

Part No.	Description	# of		Resolution Bits	ADC Type	ENOB (Gain=1, 10SPS)	RMS Noise (PGA=128)	Sample Rate Max (Hz)	Gain	Development Tools	CTRL IF	Analog/Digital (V)
		ADC	DAC									
NAU7802	Precision Audio ADC	2	-	24	Sigma-Delta	23	50nV in 10 SPS 150nV in 80 SPS	10, 20, 40, 80 & 320	1x, 2x, 4x, 8x, 16x, 32x, 64x, 128x	NAU7802-EVB	2-Wire	2.7 ~ 5.5 2.7 ~ 5.5

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Audio Amplifiers

• 2Vrms Line Driver Series

Part No.	Description	Output Performance		SNR (dB)	Output Noise (μVrms)	Gain (dB)	Standby Current (uA)	Operating Voltage (V)	Development Tools	Package
		Power (W)	THD+N (%)							
NAU8220	2Vrms Line Driver	-	<0.1	108	-	-	-	3.0 ~ 3.6	NAU8220WG-EVB	SOP14 TSSOP14

• Class-AB Series

Part No.	Description	Output Performance		SNR (dB)	Output Noise (μVrms)	Gain (dB)	Standby Current (uA)	Operating Voltage (V)	Development Tools	Package
		Power (W)	THD+N (%)							
ISD8101	1.5W Class-AB Audio Amplifier with Chip Enable, Differential/ Single-Ended Inputs, Low Pop and Click	0.5 (5V,8Ω) 0.825 (5V,8Ω) 1.1 (5V,8Ω)	<0.1 <1 <10	100	-	0 ~ 26	<1	2.4 ~ 5.5	ISD-DEMO8101	SOP8
ISD8102	2W Class-AB Audio Amplifier with Chip Enable, Single-Ended Inputs, Low Pop and Click	2 (5V,4Ω)	<10	100	-	0 ~ 26	<1	2.0 ~ 5.5	ISD-DEMO8102	SOP8
ISD8104	2W Class-AB Audio Amplifier with Chip Enable, Differential Inputs, Low Pop and Click	2 (5V,4Ω)	<10	100	-	0 ~ 26	<1	2.0 ~ 6.8	ISD-DEMO8104	SOP8

• Class D Series

Part No.	Description	Output Performance		SNR (dB)	Output Noise (μVrms)	Gain (dB)	Standby Current (uA)	Operating Voltage (V)	Development Tools	Package
		Power (W)	THD+N (%)							
NAU82011	2.9W Mono Class-D Audio Amplifier with Variable Gain, Differential/ Single-Ended Inputs	2.9 (5.0V,4Ω)	<10	-	20	Variable	<1	2.5 ~ 5.5	NAU82011Y-EVB NAU82011V-EVB	QFN16 WLCSP9
NAU82039	3.2W Mono Class-D Audio Amplifier with Variable Gain, Differential/ Single-Ended Inputs	3.2 (5.0V,4Ω)	<10	-	27	6, 12	<1	2.5 ~ 5.5	-	QFN16 WLCSP9
NAU8223	3.1W Stereo Filer-Free Class-D Audio Amplifier with Differential/ Single-Ended Inputs	3.1 (5.0V,4Ω)	<10	-	20	0, 6, 12, 18, 24	<1	2.5 ~ 5.5	NAU8223-EVB	QFN20
NAU8224	3.1W Stereo Filer-Free Class-D Audio Amplifier with 2-Wire Interface, Differential/Single-Ended Inputs	3.1 (5.0V,4Ω)	<10	-	20	0, 6, 12, 18, 24	<1	2.5 ~ 5.5	NAU8224-EVB	QFN20
NAU8315	3.1W Mono Filer-Free Class-D Audio Amplifier with I2S	3.1 (5.0V,4Ω)	<10	-	12	3, 6, 9, 12	<1	2.5 ~ 5.5	NAU8315-DEMO	QFN20 WLCSP9 WLCSP12
NAU8325	3.1W Mono Filer-Free Class-D Audio Amplifier with I2S, 2-Wire Interface	3.1 (5.0V,4Ω)	<10	-	18	3, 6, 9, 12	<2	2.5 ~ 5.5	NAU8325-DEMO	QFN20
NAU83P20	20W High-Efficiency Class-D Audio Power Stage for Driving Stereo Bridge-Tied Speakers	20W (18.0V,8Ω)	<10	105	-	-	<1	4.5 ~ 24	-	QFN48

• Smart Amp Series

Part No.	Description	Output Performance		SNR (dB)	Output Noise (μVrms)	Speaker Protection	Standby Current (uA)	Operating Voltage (V)	Development Tools	Package
		Power (W)	THD+N (%)							
NAU83G10	12W Mono Boosted Class-D Amplifier with Klippel Controlled Sound DSP	8 (5.0V,4Ω) 6.5 (5.0V,8Ω)	<10	101	55	Integrated DSP	<13	2.9 ~ 5.5	NAD-NAU83G10	WLCSP50
NAU83G20	20W Mono Boosted Class-D Amplifier with Klippel Controlled Sound DSP	20 (12.6V,4Ω) 11 (12.6V,8Ω)	<10	101	65	Integrated DSP	<16	14 (MAX)	NAD-NAU83G20	WLCSP50
***NAU83G60**	30W Stereo / 60W Mono Boosted Class-D Amplifier with Klippel Controlled Sound DSP	30 (18V,4Ω)	<10	-	-	Integrated DSP	-	6 ~ 18	-	QFN56

* Under Development

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Audio Enhancement

Part No.	Description	HW Configuration					Algorithms									
		I²S Stereo Inputs	ADC Stereo Inputs	I²S Stereo Output	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)	Development Tools	Temp (°C)	Package
ISD15102	Multi-Message, Record/Playback with Int. Flash Memory, SPI	2 min	Up to 48	2.7 ~ 3.6	ISD-DMK_15100	-40 ~ 85°C	LQFP48
ISD15104		4 min					
ISD15108		8 min					
ISD15C00	Multi-Message, Record/Playback with Int. Flash Memory, SPI (*AEC-Q100)	Ext. Flash up to 64 min	Up to 48	2.7 ~ 3.6	ISD-DMK_15C00	AEC-Q100	LQFP48
ISD15D00	Multi-Message, Playback-Only with Ext. Flash Memory, SPI (*AEC-Q100)	Ext. Flash up to 64 min	Up to 48	2.7 ~ 5.5	ISD-DMK_15D00	AEC-Q100	QFN32
ISD2115A	Multi-Message, Playback-Only with Int. Flash Memory, SPI	16 sec	Up to 32	2.7 ~ 3.6	ISD-DMK_2100_Q	-40 ~ 85°C	SOP14 QFN20
ISD2130		32 sec					
ISD2360	Multi-Message, 3-Channel Audio, Playback-Only with Int. Flash Memory	64 sec	Up to 32	2.4 ~ 5.5	ISD-DMK_2360_Q	-40 ~ 85°C	SOP16 QFN32
ISD2361	Multi-Message, 3-Channel Audio, Playback-Only with Int. Flash Memory, SPI	60 sec + Ext. Flash up to 1024 min	Up to 32	2.4 ~ 5.5	ISD-DMK_2361	-40 ~ 105°C	SOP16 QFN32
ISD3800	Multi-Message, Playback-only with ext. Flash Memory, SPI	Ext. Flash up to 64 min	Up to 48	2.7 ~ 5.5	ISD-DMK_3800	-40 ~ 85°C	LQFP48 QFN32
ISD3900	Multi-Message, Record/Playback with ext. Flash Memory, SPI	Ext. Flash up to 64 min	Up to 48	2.7 ~ 3.6	ISD-DMK_3900	-40 ~ 85°C	LQFP48

• MLS ChipCorder® Series

Part No.	Description	Duration	Sample Rate (KHz)	Operating Voltage (V)	Development Tools	Temp (°C)	Package
ISD14B20	Multi-Message Record/Playback with Int. Flash Memory, SPI	32 sec	Up to 12	2.4 ~ 5.5		0 ~ 50	DIE
ISD14B40		64 sec					
ISD14B80		128 sec					
ISD1610B	Single-Message Record/Playback with Int. Flash Memory	16 sec	Up to 12	2.4 ~ 5.5	I16-COB20	0 ~ 50 -40 ~ 85	DIE SOIC16
ISD1616B		32 sec					
ISD1620B		64 sec					
ISD1730	Multi-Message, Record/Playback with Int. Flash Memory, SPI	32 sec	Up to 12	2.4 ~ 5.5	ISD-COB1730	0 ~ 50 -40 ~ 85	DIE SOIC28
ISD1760		64 sec			ISD-COB1760		
ISD17120		128 sec			ISD-COB17150		
ISD17240		256 sec			ISD-COB17240		
ISD1806	Single-Message Record/Playback with Int. Flash Memory	6 sec	Up to 8	2.7 ~ 4.5	ISD-COB1810	0 ~ 50	DIE
ISD1810		8 sec					
ISD18A04		4 sec		2.4 ~ 5.5	ISD-COB18A04		
ISD18B12		6 sec		2.4 ~ 5.5	ISD-COB18B24		
ISD18B24		12 sec					
ISD18C10		8 sec		2.7 ~ 4.5	ISD-COB18C10		
ISD1916	Multi-Message, Record/Playback with Int. Flash Memory	16 sec	Up to 12	2.4 ~ 5.5	ISD-DEMO1964	-40 ~ 85	SOIC28
ISD1932		32 sec					
ISD1964		64 sec					
ISD4002	Multi-Message Record/Playback with Int. Flash Memory, SPI	2 ~ 16 min	Up to 8	2.7 ~ 3.3		0 ~ 50 0 ~ 70 -40 ~ 85	DIE PDIP28 SOIC28
ISD4003							
ISD4004							
ISD5102	Multi-Message Record/Playback with Int. Flash Memory, I2C	2 ~ 16 min	Up to 8	2.7 ~ 3.3		0 ~ 50 0 ~ 70 -40 ~ 85	DIE PDIP28 SOIC28
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.	
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)	
N584P070-TB	N584P070-TB	• N584P070 Tiny Board	• N584P070 Tiny Board to Cover N584P040, N584P070	
N584P170-TB	N584P170-TB	• N584P170 Tiny Board	• N584P170 Tiny Board to Cover N584P120, N584P170	
N584P300-TB	N584P300-TB	• N584P300 Tiny Board	• N584P300 Tiny Board to Cover N584P210, N584P260, N584P300	

Ordering No.	Board Name	Content	Description	Picture
PowerSpeech (584, 588) Evaluation Board, Tiny Board, Writer				
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)	
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)	
N588HP082-TB	N588HP082-TB	• N588HP082 Tiny Board	• N588HP082 (OTP) Tiny Demo Board (COB) Support: N588HP062/082, N588JP062/082	

Ordering No.	Board Name	Content	Description	Picture
PowerSpeech (584, 588) Evaluation Board, Tiny Board, Writer				
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	
NV-N589EVB	NHS-589EVB	• 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	

Ordering No.	Board Name	Content	Description	Picture
PowerSpeech (N589) Evaluation Board, Tiny Board, Adaptor, Writer				
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	
N589B345-TB	N589B345-TB	N589B345 Tiny Board	• N589B345 Tiny Board to Cover N589B085, N589B125, N589B175, N589B205, N589B255, N589B345	
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	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	
NSP481A-TB3	NSP481A-TB3	• NSP481A-TB3 Tiny Board	• NSP481A with N55PA01A Tiny Board for Demo and Evaluation. It is for NSP341A and NSP481A	
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-8-WTR-F	NSP-8-WTR-F	• NSP-Flash Gang Writer Main Board	• NSP Series 1 to 8 Gang Writer Full Set Support: NSP040A,NSP080A/NSP081A/NSP082A,NSP170A/ NSP171A/NSP172A,NSP340A/NSP341A,NSP481A	
NSP-AP-A-1	NSP-AP-A-1	• NSP-SOP8-1 (with Adapter) * 8	• For NSP SOP8 Chip	
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	
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	
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	

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Ordering No.	Board Name	Content	Description	Picture
BandDirector Evaluation Board (EVB), Writer				
N566HP080EVB	NHS-566HP080	• N566HP080 EVB	• N566HP080 OTP EV Board w/ Components	
N566HP200EVB	NHS-566HP200	•N566HP200 EVB	• N566HP200 EVB is for N566 Series Evaluation Board or Demo Board. It supports: N566GP120/160/200, N566KP120/160/200 and N566HP120/160/200	
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 N566HP240/280/321, N566KP240/280/320, N566GP240/280/320	
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	
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	

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Ordering No.	Board name	Content	Description	Picture
NuVoice Dongle, Writer				
NW-NULINK2	Nu-Link2	• Nu-Link2 Dongle	• Nu-Link2 Dongle as NuVoice 1 to 1 Writer. Support to:N570F/C064, N570H064, N570HC64, N572F/C072, N572F065, N574F/C-256/512/1K0/1K5 MCP Series: N569S, N570S, N570J	
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-570F064-F	NW-570F064-F	• NW-570F064-F 1-8 Gang Writer w/ LQFP48 Adaptor and Socket	• N570F064 LQFP48 1-8 Gang Writer. Support: N570F064L, N570FW64L	
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-N570J32-F	NW-N570J32-F	• NW-N570J32-M x 1 (2 to 8 Gang Writer Main Board) N570J32 adaptor board x 8 and LQFP48 Socket x 8	• N570J32AL/DL 2 to 8 Gang Writer Full Set. It supports 570J08AL/16AL/32AL, N570J08DL/16DL/32DL, and N569J1K0/2K0	
NW-N570J32-M	NW-N570J32-M	• NW-N570J32-M (2 to 8 Gang Writer Main Board)	• N570J32AL/DL 2 to 8 Gang Writer Main Board. It supports N570J08AL/16AL/32AL, N570J08DL/16DL/32DL, and N569J1K0/2K0/4K0	
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)	
NW-572H16A-F	NW-572H16A-F	• N572H16A Gang Writer Main Board, Adaptor Board and LQFP64 Socket	• N572H16A 1 to 8 Gang Writer Full Set to Program N572H16A MCP (LQFP64, 7x7mm^2) Chip	
NW-572H064-F	NW-572H064-F	• N572H064S Gang Writer Main Board, Adaptor Board and LQFP64 Socket	• N572H064S 1 to 8 Gang Writer Full Set to Program N572H064S (LQFP64, 7x7mm^2) Chip	

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				
N55MID16-EVB	NHS-55MID16.D3ANT2	• N55MID16 EVB	• N55MID16 MFID Single-Tag Tiny Board	
N55MID36-EVB	NHS-55MID36.D4	• N55MID36 EVB	• N55MID36 MFID Multi-Tag Tiny Board	
N55MID51-EVB	N55MID51-001	• N55MID51 EVB	• N55MID51 MFID Reader for N55MID16 and N55MID36	

Development Tools for Audio SoCs

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NU-NULINKISD	**NU-NULINKISD**	ISD-NU-LINK	ISD9100 Series ISD91200 Series ISD91500 Series ISD94100 Series	• ISD-NU-LINK	• USB Dongle • Support ICP (In-Circuit Programming)	
NM-ISD9160	**NM-ISD9160**	ISD-DMK_9160	ISD9100 Series	• ISD-DEMO9160 • ISD-NU-LINK • ISD-9160-Touch • ISD-9160-KB • Speaker	• Evaluation and Demo Kit for ISD9100 Series	
NT-ISD9160	**NT-ISD9160**	ISD-DEMO9160	ISD9100 Series	• ISD-DEMO9160	• Demo Board for ISD9100 Series • Connect to PC via ISD NU-LINK for programming and evaluation	
NP-ISD9160-T	**NP-ISD9160-T**	ISD-9160-TOUCH	ISD9100 Series	• ISD-9160-TOUCH	• 8-input Touch Pad for NT-ISD9160	
NP-ISD9160-K	**NP-ISD9160-K**	ISD-9160-KB	ISD9100 Series	• ISD-9160-KB	• 8-input Key Pad for NT-ISD9160	
NM-ISD91260	**NM-ISD91260**	ISD-DMK_91260	ISD91200C Series	• ISD-DEMO91260 • ISD-NU-LINK • Speaker	• Evaluation and Demo Kit for ISD91200C Series	
NM-ISD91260B	**NM-ISD91260B**	ISD-DMK_91260B	ISD91200B Series	• ISD-DEMO91260B • ISD-NU-LINK • Speaker	• Evaluation and Demo Kit for ISD91200B Series	
NT-ISD91260	**NT-ISD91260**	ISD-DEMO91260	ISD91200C Series	• ISD-DEMO91260	• Demo Board for ISD91200C Series • Connect to PC via ISD NU-LINK for programming and evaluation	
NT-ISD91260B	**NT-ISD91260B**	ISD-DEMO91260B	ISD91200B Series	• ISD-DEMO91260B	• Demo Board for ISD91200B Series • Connect to PC via ISD NU-LINK for programming and evaluation	

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NM-ISD91500	**NM-ISD91500**	ISD-DMK_91500	ISD91500 Series	• NT-ISD91500 • ISD-NU-LINK • Speaker	• Evaluation and Demo Kit for ISD91500 Series	
NM-I94100_AM	**NM-I94100_AM**	ISD-DMK_94100_AM	ISD94100 Series	• NL-ISD94124A • NP-I94124_AM • Speaker	• Evaluation and Demo Kit for ISD94100 Series • Connect with Analog Microphone Adaptor	
NM-I94100_DM	**NM-I94100_DM**	ISD-DMK_94100_DM	ISD94100 Series	• NL-ISD94124A • NP-I94124_DM • Speaker	• Evaluation and Demo Kit for ISD94100 Series • Connect with Digital Microphone Adaptor	
NL-ISD94124A	**NL-ISD94124A**	EVB-I94124	ISD94100 Series	• EVB-I94124	• Evaluation and Demo Kit for ISD94100 Series	
NP-I94124_AM	**NP-I94124_AM**	EVB-I94124ADI-NAU85L40B_V1.0	ISD94100 Series	• EVB-I94124ADI-NAU85L40B_V1.0	• Analog Microphone Adaptor for NL-ISD94124A	
NP-I94124_DM	**NP-I94124_DM**	EVB-I94124ADI-NAU85L40B_V1.2	ISD94100 Series	• EVB-I94124ADI-NAU85L40B_V1.2	• Analog / Digital Microphone Adaptor for NL-ISD94124A	
NV-ISD94100	**NV-ISD94100**	DEMO-I94100-NAU88C22	ISD94100 Series	• DEMO-I94100-NAU88C22	• ISD94100 Demo Board with audio CODEC (NAU88C22) on board • Connect to PC via ISD NU-LINK for programming and evaluation	
NV-ISD941A24	**NV-ISD941A24**	ISD-DEMO941A24	ISD941A24	• ISD-DEMO941A24	• Demo Board for ISD941A24	
NW-ISD9160	**NW-ISD9160**	ISD-ES9160__Prog_F	ISD9160 LQFP	• ISD-ES9160__Prog_F	• ISD9160 LQFP Single Socket Programmer • Connect to PC via ISD NU-LINK for programming and evaluation	
NG-ISD9160	**NG-ISD9160**	ISD-9160_GANG_Prog_F	ISD9160 LQFP	• ISD-9160_GANG_Prog_F	• ISD9160 LQFP Standalone Gang Programmer	

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Development Tools for Audio Converters

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NU-NAUSB2I2C	**NU-NAUSB2I2C**	USB-To-I2C/I2S_ V1.1	NAU88C22 NAU88L11 NAU88L21 NAU88L24I NAU88L25 NAU85L20 NAU85L40 NAU7802	• USB-To-I2C/I2S_ V1.1	• USB-To-I2C/I2S_V1.1 Control Board for Audio Converters	
NL-NAU88C10	**NL-NAU88C10**	NAU88C10-DEMO	NAU88C10	• NAU88C10-DEMO	• Demo Board for NAU88C10YG	
NL-NAU88C22	**NL-NAU88C22**	NAU88C22-DEMO	NAU88C22	• NAU88C22-DEMO	• Demo Board for NAU88C22YG	
NL-NAU88L11	**NL-NAU88L11**	NAU88L11-DEMO	NAU88L11	• NAU88L11-DEMO	• Demo Board for NAU88L11YG	
NL-NAU88L21	**NL-NAU88L21**	NAU88L21-DEMO	NAU88L21	• NAU88L21-DEMO	• Demo Board for NAU88L21YG	
NL-NAU88L24I	**NL-NAU88L24I**	NAU88L24I-DEMO	NAU88L24	• NAU88L24I-DEMO	• Demo Board for NAU88L24IG	
NL-NAU88L25	**NL-NAU88L25**	NAU88L25-DEMO	NAU88L25B	• NAU88L25-DEMO	• Demo Board for NAU88L25YGB	
NL-NAU85L20	**NL-NAU85L20**	NAU85L20-DEMO	NAU85L20B	• NAU85L20-DEMO	• Demo Board for NAU85L20YGB	
NL-NAU85L40	**NL-NAU85L40**	NAU85L40-DEMO	NAU85L40B	• NAU85L40-DEMO	• Demo Board for NAU85L40YGB	

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NL-NAU85L40S	**NL-NAU85L40S**	NAU85L40S-DEMO	NAU85L40S	• NAU85L40S-DEMO	• Demo Board for NAU85L40YGB with Single-ended Microphone	
NL-NAU7802	**NL-NAU7802**	NAU7802-EVB	NAU7802	• NAU7802-DEMO	• Demo Board for NAU7802	
NV-NAU8812	**NV-NAU8812**	NAU8812-DEMO	NAU8812	• NAU8812-DEMO	• Compact Audio Base Board + NAU8812YG Daughter Card	
NV-NAU88C14	**NV-NAU88C14**	NAU88C14-DEMO	NAU88C14	• NAU88C14-DEMO	• Compact Audio Base Board + NAU88C14YG Daughter Card	
NV-NAU8814	**NV-NAU8814**	NAU8814-DEMO	NAU8814	• NAU8814-DEMO	• Compact Audio Base Board + NAU8814YG Daughter Card	
NV-NAU8820	**NV-NAU8820**	NAU8820-DEMO	NAU8820	• NAU8820-DEMO	• Compact Audio Base Board + NAU8820YG Daughter Card	
NV-NAU8501	**NV-NAU8501**	NAU8501-DEMO	NAU8501	• NAU8501-DEMO	• Compact Audio Base Board + NAU8501YG Daughter Card	
NV-NAU8502	**NV-NAU8502**	NAU8502-DEMO	NAU8502	• NAU8502-DEMO	• Compact Audio Base Board + NAU8502YG Daughter Card	
NV-NAU8401	**NV-NAU8401**	NAU8401-DEMO	NAU8401	• NAU8401-DEMO	• Compact Audio Base Board + NAU8401YG Daughter Card	
NV-NAU8402	**NV-NAU8402**	NAU8402-DEMO	NAU8402	• NAU8402-DEMO	• Compact Audio Base Board + NAU8402YG Daughter Card	
NT-NAU8812	**NT-NAU8812**	NAU8812-Card	NAU8812	• NAU8812-Card	• NAU8812YG Daughter Card	
NT-NAU88C14	**NT-NAU88C14**	NAU88C14-Card	NAU88C14	• NAU88C14-Card	• NAU88C14YG Daughter Card	
NT-NAU8814	**NT-NAU8814**	NAU8814-Card	NAU8814	• NAU8814-Card	• NAU8814YG Daughter Card	

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Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NT-NAU8820	**NT-NAU8820**	NAU8820-Card	NAU8820	• NAU8820-Card	• NAU8820YG Daughter Card	
NT-NAU8501	**NT-NAU8501**	NAU8501-Card	NAU8501	• NAU8501-Card	• NAU8501YG Daughter Card	
NT-NAU8502	**NT-NAU8502**	NAU8502-Card	NAU8502	• NAU8502-Card	• NAU8502YG Daughter Card	
NT-NAU8401	**NT-NAU8401**	NAU8401-Card	NAU8401	• NAU8401-Card	• NAU8401YG Daughter Card	
NT-NAU8402	**NT-NAU8402**	NAU8402-Card	NAU8402	• NAU8402-Card	• NAU8402WG Daughter Card	

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Development Tools for Audio Amplifiers

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NE-NAU8220	**NE-NAU8220**	NAU8220WG-EVB	NAU8220	• NAU8220WG-EVB	• Demo Board for NAU8220WG	
NT-ISD8101	**NT-ISD8101**	ISD-DEMO8101	ISD8101	• ISDI8101-DEMO	• Demo Board for I8101SYI	
NT-ISD8102	**NT-ISD8102**	ISD-DEMO8102	ISD8102	• ISD8102-DEMO	• Demo Board for I8102SYI	
NT-ISD8104	**NT-ISD8104**	ISD-DEMO8104	ISD8104	• ISD8104-DEMO	• Demo Board for I8104SYI	
NE-NAU82011V	**NE-NAU82011V**	NAU82011V-EVB	NAU82011	• NAU82011V-EVB	• Demo Board for NAU82011VG	
NE-NAU82011Y	**NE-NAU82011Y**	NAU82011Y-EVB	NAU82011	• NAU82011Y-EVB	• Demo Board for NAU82011YG	
NE-NAU8223	**NE-NAU8223**	NAU8223-EVB	NAU8223	• NAU8223-EVB	• Demo Board for NAU8223YG	
NE-NAU8224	**NE-NAU8224**	NAU8224-EVB	NAU8224	• NAU8224-EVB	• Demo Board for NAU8224YG	
NU-NAU8224	**NU-NAU8224**	NAU-ES_MINI_USB	NAU8224	• NAU-ES_MINI_USB	• USB to I²C Bus Dongle for NE-NAU8224	
NL-NAU8315	**NL-NAU8315**	NAU8315-DEMO	NAU8315	• NAU8315-DEMO	• Demo Board for NAU8315YG	
NL-NAU8315B	**NL-NAU8315B**	NAU8315B-DEMO	NAU8315	• NAU8315B-DEMO	• Demo Board for NAU8315B31VG	

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Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NL-NAU8325	**NL-NAU8325**	NAU8325-DEMO	NAU8325	• NAU8325-DEMO	• Demo Board for NAU8325YG	
NV-NADBASE	**NV-NADBASE**	NAD-BASE BOARD	NAU83G10 NAU83G20	• NAD-BASE BOARD	• Base Board of Smart Amp Series REVB	
NT-NAU83G10	**NT-NAU83G10**	NAU83G10-ADP	NAU83G10	• NAU83G10-ADP	• NAU83G10 Daughter Card	
NT-NAU83G20	**NT-NAU83G20**	NAU83G20-ADP	NAU83G20	• NAU83G20-ADP	• NAU83G20 Daughter Card	
NV-NAU83G10S	**NV-NAU83G10S**	NAD-NAU83G10	NAU83G10	• NAU83G10-EVB	• Demo Board for NAU83G10 Stereo	
NV-NAU83G20S	**NV-NAU83G20S**	NAD-NAU83G20	NAU83G20	• NAU83G20-EVB	• Demo Board for NAU83G20 Stereo	
NM-N83G10MA	**NM-N83G10MA**	NAD-NAU83G10_ BRS-161200	NAU83G10	• NAD-NAU83G10_ BRS-161200	• Demo Board for NAU83G10 Mono with Bujeon BRS-161200	
NM-N83G10MB	**NM-N83G10MB**	NAD-NAU83G10_ BRS-181300	NAU83G10	• NAD-NAU83G10_ BRS-181300	• Demo Board for NAU83G10 Mono with Bujeon BRS-181300	
NM-N83G10SA	**NM-N83G10SA**	NAD-NAU83G10_ 2*BRS-161200	NAU83G10	• NAD-NAU83G10_ 2*BRS-161200	• Demo Board for NAU83G10 Stereo with 2x Bujeon BRS-161200	
NM-N83G10SB	**NM-N83G10SB**	NAD-NAU83G10_ 2*BRS-181300	NAU83G10	• NAD-NAU83G10_ 2*BRS-181300	• Demo Board for NAU83G10 Stereo with 2x Bujeon BRS-181300	
NM-N83G20MA	**NM-N83G20MA**	NAD-NAU83G20_ BUF-4203	NAU83G20	• NAD-NAU83G20_ BUF-4203	• Demo Board for NAU83G20 Mono with Bujeon BUF-4203	
NM-N83G20SA	**NM-N83G20SA**	NAD-NAU83G20_ 2*BUF-4203	NAU83G20	• NAD-NAU83G20_ 2*BUF-4203	• Demo Board for NAU83G20 Stereo with 2x Bujeon BUF-4203	

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Development Tools for ISD ChipCorder®

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NU-ISDMINUSB	**NU-ISDMINUSB**	ISD-ES_Mini_USB	ISD2130 / ISD2115A ISD2360 ISD2361 ISD3900 ISD15102/04/08 ISD15C00 ISD3800 ISD15D00	• ISD-ES_Mini_USB	• USB dongle for Digital ChipCorder Demo Board	
NM-ISD2100Q	**NM-ISD2100Q**	ISD-DMK_2100_Q	ISD2130 / ISD2115A	• ISD-DEMO2100_Q • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD2130 / ISD2115A	
NT-ISD2100S	**NT-ISD2100S**	ISD-DEMO2100_S	ISD2130 / ISD2115A	• ISD-DEMO2100_S	• Demo Board for ISD2130SYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NT-ISD2100Q	**NT-ISD2100Q**	ISD-DEMO2100_Q	ISD2130 / ISD2115A	• ISD-DEMO2100_Q	• Demo Board for ISD2130YYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NM-ISD2360Q	**NM-ISD2360Q**	ISD-DMK_2360_Q	ISD2360	• ISD-DEMO2360_Q • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD2360	
NT-ISD2360S	**NT-ISD2360S**	ISD-DEMO2360_S	ISD2360	• ISD-DEMO2360_S	• Demo Board for ISD2360SYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	

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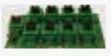
Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NT-ISD2360Q	**NT-ISD2360Q**	ISD-DEMO2360_Q	ISD2360	• ISD-DEMO2360_Q	• Demo Board for ISD2360YYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NT-ISD2361	**NT-ISD2361**	ISD-DEMO2361_Q	ISD2361	• ISD-DEMO2361_Q	• Demo Board for ISD2361YYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NM-ISD3900	**NM-ISD3900**	ISD-DMK_3900	ISD3900	• ISD-DEMO3900 • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD3900	
NT-ISD3900	**NT-ISD3900**	ISD-DEMO3900	ISD3900	• ISD-DEMO3900	• Demo Board for ISD3900FYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NM-ISD15100	**NM-ISD15100**	ISD-DMK_15100	ISD15102/04/08	• ISD-DEMO15100 • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD15102/04/08	
NT-ISD15100	**NT-ISD15100**	ISD-DEMO15100	ISD15102/04/08	• ISD-DEMO15100	• Demo Board for ISD15102/04/08FYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NM-ISD15C00	**NM-ISD15C00**	ISD-DMK_15C00	ISD15C00	• ISD-DEMO15C00 • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD15C00	
NT-ISD15C00	**NT-ISD15C00**	ISD-DEMO15C00	ISD15C00	• ISD-DEMO15C00	• Demo Board for ISD15C00FYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NM-ISD3800	**NM-ISD3800**	ISD-DMK_3800	ISD3800	• ISD-DEMO3800 • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD3800	
NT-ISD3800	**NT-ISD3800**	ISD-DEMO3800	ISD3800	• ISD-DEMO3800	• Demo Board for ISD3800FYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NM-ISD15D00	**NM-ISD15D00**	ISD-DMK_15D00	ISD15D00	• ISD-DEMO15D00 • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD15D00	
NT-ISD15D00	**NT-ISD15D00**	ISD-DEMO15D00	ISD15D00	• ISD-DEMO15D00	• Demo Board for ISD15D00YYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NC-ISD1620B	**NC-ISD1620B**	I16-COB20	ISD1610/16/20	• I16-COB20	• Demo Board for ISD1610/16/20	
NC-ISD1730	**NC-ISD1730**	ISD-COB1730	ISD1730	• ISD-COB1730	• Demo Board for ISD1730	
NC-ISD1760	**NC-ISD1760**	ISD-COB1760	ISD1760	• ISD-COB1760	• Demo Board for ISD1760	
NC-ISD17150	**NC-ISD17150**	ISD-COB17150	ISD17150	• ISD-COB17150	• Demo Board for ISD17120	
NC-ISD17240	**NC-ISD17240**	ISD-COB17240	ISD17240	• ISD-COB17240	• Demo Board for ISD17240	
NC-ISD1810	**NC-ISD1810**	ISD-COB1810	ISD1806/10	• ISD-COB1810	• Demo Board for ISD1806/1810	
NC-ISD18B24	**NC-ISD18B24**	ISD-COB18B24	ISD18B12/24	• ISD-COB18B24	• Demo Board for ISD18B12/24	
NC-ISD18C10	**NC-ISD18C10**	ISD-COB18C10	ISD18C10	• ISD-COB18C10	• Demo Board for ISD18C06/18C10 (SPK/MIC sharing)	
NT-ISD1964	**NT-ISD1964**	ISD-DEMO1964	ISD1916/32/64 Class-D output	• ISD-DEMO1964	• Demo Board for 1964SYI	

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NT-ISD1964A	**NT-ISD1964A**	ISD-DEMO1964_AUX	ISD1916/32/64 AUX output	• ISD-DEMO1964 AUX	• Demo Board for ISD1964SYI01	
NW-ISD2100S	**NW-ISD2100S**	ISD-ES2100_Mini_ PROG_S	ISD2115ASYI ISD2130SYI	• ISD-ES2100_Mini_ PROG_S	• ISD2100 SOP Single Socket Programmer • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NW-ISD2100Q	**NW-ISD2100Q**	ISD-ES2100_Mini_ PROG_Q	ISD2115AYYI ISD2130YYI	• ISD-ES2100_Mini_ PROG_Q	• ISD2100 QFN Single Socket Programmer • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NG-ISD2100S	**NG-ISD2100S**	ISD-2100_GANG_ Prog_S	ISD2115ASYI ISD2130SYI	• ISD-2100_GANG_ Prog_S	• ISD2100 SOP Standalone Gang Programmer	
NG-ISD2100Q	**NG-ISD2100Q**	ISD-2100_GANG_ Prog_Q	ISD2115AYYI ISD2130YYI	• ISD-2100_GANG_ Prog_Q	• ISD2100 QFN Standalone Gang Programmer	
NW-ISD2360S	**NW-ISD2360S**	ISD-ES2360_MINI_ PROG_S	ISD2360SYI	• ISD-ES2360_MINI_ PROG_S	• ISD2360 SOP Single Socket Programmer • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NW-ISD2360Q	**NW-ISD2360Q**	ISD-ES2360_MINI_ PROG_Q	ISD2360YYI	• ISD-ES2360_MINI_ PROG_Q	• ISD2360 QFN Single Socket Programmer • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NG-ISD2360S	**NG-ISD2360S**	ISD-2360_GANG_ PROG_S	ISD2360SYI	• ISD-2360_GANG_ PROG_S	• ISD2360 SOP Standalone Gang Programmer	
NG-ISD2360Q	**NG-ISD2360Q**	ISD-2360_GANG_ PROG_Q	ISD2360YYI	• ISD-2360_GANG_ PROG_Q	• ISD2360 QFN Standalone Gang Programmer	

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NW-ISD15100	**NW-ISD15100**	ISD-ES15100_ Mini_PROG	ISD15102FYI ISD15104FYI ISD15108FYI	• ISD-ES15100_Mini_ PROG	• ISD15100 LQFP Single Socket Programmer • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NW-ISDPROG	**NW-ISDPROG**	ISD-PROG	ISD2100 Series ISD15100 Series ISD15D00 Series	• ISD-PROG	• Digital ChipCorder Standalone Programmer • Support ISD2100/ISD15100/ISD15D00 Series	
NW-ISDIPROG1	**NW-ISDIPROG1**	ISD-IPROG-1	ISD4000 Series ISD5100 Series ISD1700 Series	• ISD-PROG-1	• Digital ChipCorder Single-Chip Programmer • Support ISD4000/ISD5100/ISD1700 Series	
NE-ISD1600	**NE-ISD1600**	ISD-ES1600_ USB_PROG	ISD1600 Series	• ISD-ES1600_USB_ PROG	• USB Evaluation Board for ISD1600 Series	
NW-P1700	**NW-P1700**	P1700	ISD1700 Series	• P1700	• Programmer Adapter of ISD-IPROG-1	
NE-ISD1700	**NE-ISD1700**	ISD-ES17XX_ USB_PB	ISD1700 Series	• ISD-ES17XX_USB_ PB	• USB Evaluation Board for ISD1700 Series	
NE-ISD1900	**NE-ISD1900**	ISD-ES1900_ USB_PROG	ISD1900 Series	• ISD-ES1900_USB_ PROG	• USB Evaluation Board for ISD1900 Series	

Development Tools for Audio Enhancement

Ordering No.	Part No.	BoardName	Supported Devices	Content	Description	Picture
NU-NAUSB2I2C	**NU-NAUSB2I2C**	USB-To-I2C/I2S_ V1.1	NPCA120DD NPCA121DD NPCA120DY	• USB-To-I2C/I2S_V1.1	• USB-To-I2C/I2S_V1.1 Control Board for NPCA120/121 Demo Board	
NU-NPUSB2I2C	**NU-NPUSB2I2C**	USB-To-I2C/I2S	NPCA110X & NPCP215F	• USB-To-I2C/I2S	• USB-To-I2C/I2S Board for NPCA110X & NPCP215X	
NE-NPCA120	**NE-NPCA120**	EVB-NPCA120_ V1.0	NPCA120DD	• EVB-NPCA120_V1.0	• NPCA120 Audio Enhancement, Bongiovi DPS, Standard Level Demo Board	
NE-NPCA121	**NE-NPCA121**	EVB-NPCA121_ V1.0	NPCA121DD	• EVB-NPCA121_V1.0	• NPCA121 Audio Enhancement, Bongiovi DPS, Premium Level Demo Board	
NL-NPCA120	**NL-NPCA120**	DEMO-NPCA120-V2.0	NPCA120DD	• DEMO-NPCA120-V2.0	• NPCA120DD LQFP-64 Audio Enhancement, Bongiovi DPS, Standard Level Demo Board	
NL-NPCA121	**NL-NPCA121**	DEMO-NPCA121-V2.0	NPCA121DD	• DEMO-NPCA121-V2.0	• NPCA121DD LQFP-64 Audio Enhancement, Bongiovi DPS, Standard Level Demo Board	
NL-NPCA120DY	**NL-NPCA120DY**	DEMO-NPCA120_ V3.0	NPCA120DY	• DEMO-NPCA120_V3.0	• NPCA120DY QFN-48 Audio Enhancement, Bongiovi DPS, Standard Level Demo Board	
NE-NPCA110XB	**NE-NPCA110XB**	NPCA110X-EVB	NPCA110X	• NPCA110X-EVB	• NPCA110X 1 Watt Base Board	
NT-NPCA110PP	**NT-NPCA110PP**	NPCA110P Piggy Board	NPCA110P	• NPCA110P Piggy Board	• NPCA110P Piggy Board	
NE-NPCP215F	**NE-NPCP215F**	NPCP215X-EVB	NPCP215F	• NPCP215X-EVB	• NPCP215F Demo Board	

Cloud Security

EC

EC for Portable Applications

Security

Trusted Platform Module (TPM)

Hardware Monitors

Desktop / Server Series
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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/16-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
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
NPCX993FA	Arm® Cortex®-M4	100 MHz	512 KB	320 KB	N/A	√	√	8 Controllers/ 10 Ports	1	4	Master/ Slave	4.0	10-bit / Up to 12 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
NCT7363Y	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

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
NCT5585D	LPC / eSPI	Y	1	N	Y	Y	Y	3.1	Y	Y	Y	LQFP64
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
NCT6686D	LPC / eSPI	Y	2	Y	Y	Y	Y	Y	3.1	Y	Y	Y	Y	LQFP128

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
W83L603G	3.3V	8	SMBus	SOP14
W83601G	5V	15	SMBus	SSOP20

Security

Trusted Platform Module (TPM)

Nuvoton's Trusted Platform Module (TPM) (NPCT7xx) 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 EAL4+, FIPS certification 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

Contact us: ComputerIC@nuvoton.com

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-bit	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-bit	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-bit	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-bit	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-bit	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-bit	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-bit	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)

• NM18440 series (NM1244 + 200V_Gate Driver) (Applicable to: Hand-held machine, Garden tool, Fan, E-scooter, E-bike...)

Part No.	Flash ROM (kB)	SRAM (kB)	I/O	Timer 32-bit	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
NM18440D	64	8	29	3	6	17	1	2/1/2	60	2	3	2	3x0.5	1	2	5V	LQFP48 (7x7)

• NM18002 series (MS51FB9AE(1T-8051) + 40V_Gate Driver(High P-ch/Low N-ch MOSFET)) (Applicable to: Single-phase Server Fan, Cooling Fan, BDC...)

Part No.	Flash ROM (kB)	SRAM (kB)	I/O	Timer 16-bit	EPWM 16-bit	ADC ch 12-bit	Comp	UART SPI I2C	MAX HCLK	SPROM (kB)	LDO	Package Type
NM18002Y	16	1	9	4	4	4	2	2/1	24	128	5V	QFN24 (4x4)

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

nuvoTon

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

3D TOF Sensors

DSP / ISPs

Human Machine Interface Display LSIs
Audio Integrated LSIs

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

• TOF (Time-of-Flight) Sensors of “Pulse-TOF System”, which contribute to mitigate motion blurs.
• High robustness under sunlight /high temperature allows applications as recognition, detection, etc. both in the indoor & outdoor use cases.
• Small profile & footprints of “1/4 & “1/8 size sensor at high spatial resolutions.

• 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
*Not Recommended for New Design.
Alternatively KM34906B1S /KM34906BRA are recommended.

• KM34930BRA

KM34930BRA is a type -1/8”
QVGA supports
In-Direct TOF (Time of Flight) operation
Bare Die type

• KW330 Series

• TOF (Time-of-Flight) Sensors of “Pulse-TOF System”, which contribute to mitigate motion blurs.
• High robustness under sunlight /high temperature allows applications as recognition, detection, etc. both in the indoor & outdoor use cases.
• Small profile & footprints of “1/4 size sensor at high spatial resolutions.
• Built-in depth processing circuits help to release CPU resources from the backend processor.

• 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
LED Drivers
LCD Power Management
Display Driver ICs
Operational Amplifiers

Analog ICs

Battery Monitoring ICs

Wide range of battery cell abnormalities and BMS failures can be detect by Nuvoton BM-ICs that include diagnosis and safety functions. High precision voltage measurement error help to extend the battery duration. Measuring up to 22 connected battery cells in series and BMS can be configured with smaller number of components for a high-voltage battery system with many battery cells connected in series, contributing to the miniaturization of the battery module.
Automotive qualified BM-ICs include redundant measurement system consisting duplicates of the battery cell input terminal, multiplexer, and AD converter in a single IC. It is equipped with more robust daisy communication function. This will enable automakers and battery module manufacturers to easily develop and design battery systems that comply with ISO26262 ASIL-D requirements.

Nuvoton offers a lineup of high performance battery monitoring ICs including automotive qualified, stackable, and built-in current sensor. Applications include electric and hybrid electric vehicles, energy storage systems and e-bikes.

• Automotive qualified

For Lithium-ion batteries in an electric vehicle, ensuring high safety against dangerous events such as smoke and fire are required. Nuvoton automotive qualified battery monitoring ICs include a redundant measurement system in which the elements and functional blocks are electrically separated by utilizing the characteristics of in-house development SOI process and achieve high security and reliability with a highly redundant communication topology. This makes it easier for customers to design and develop an automotive battery system compliant with ISO26262 ASIL-D. High precision voltage measurement help to extend the cruising range of BEVs and the guaranteed voltage measurement error in wide input voltage ranges and wide temperatures enable to provide a common platform for various vehicle models and applications.

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 FET Control	Package
KA84923UA	Stackable	10	100	-40	125	20	±1.5	Voltage/ Temperature	Available	N/A	HQFP080-P-1414
KA84933UA	Stackable	10	100	-40	125	20	±1.5	Voltage/ Temperature	Available	N/A	HQFP080-P-1414
KA84939UA	Stackable	10	100	-40	125	20	±1.5	Voltage/ Temperature	Available	N/A	HQFP080-P-1414

• Stackable

A large number of batteries are stacked in series for high voltage energy storage system or electric vehicles. Nuvoton stackable battery monitoring ICs can be connected in series with one host processor connection for all devices.

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 FET Control	Package
KA84923UA	Stackable	10	100	-40	125	20	±1.5	Voltage/ Temperature	Available	N/A	HQFP080-P-1414
KA84933UA	Stackable	10	100	-40	125	20	±1.5	Voltage/ Temperature	Available	N/A	HQFP080-P-1414
KA84939UA	Stackable	10	100	-40	125	20	±1.5	Voltage/ Temperature	Available	N/A	HQFP080-P-1414
KA49625A	Stackable	12.5	100	-40	105	20	±10	Voltage/ Temperature	Available	N/A	LQFP080-P-1414

•Non-Stackable

Nuvoton non-stackable battery monitoring ICs include high resolution ADC and correctly measure battery cell voltage and current. Our non-stackable battery monitoring ICs include built-in regulator necessary for the peripheral circuits and makes it easier for customers to build the control of cell balancing switch and charge and discharge. Our one chip battery monitoring ICs with the functions required for battery system enable customers to achieve simple battery system without switching devices and level shifter circuits.

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 FET Control	Package
KA49503A	Non stackable	12.5	85	-40	105	16	±10	Voltage/ Current/ Temperature	N/A	Available	LQFP080-P-1414
KA49511A	Non stackable	12.5	45	-40	105	10	±10	Voltage	N/A	Available	TQFP056-P-1010
KA49517A	Non stackable	12.5	85	-40	105	17	±5	Voltage/ Current/ Temperature	N/A	Available	HQFP064-P-1010
KA49522A	Non stackable	12.5	110	-40	85	22	±5	Voltage/ Current/ Temperature	N/A	Available	HQFP064-P-1010

Motor Driver ICs

Over current caused by motor heat generation leads to motor failure and shorter motor life. Our technology for creating optimum current phase and waveform can efficiently operate the motor and reduce heat generation. Nuvoton motor driver IC series uses unique current control technology to optimize current to realize safer motor with longer life.

Nuvoton motor driver IC line up consists of brushless DC motor drivers, stepper motor drivers and lens motor drivers. Our products can be used in a wide range of applications such as Enable to use wide range of applications, data servers, base stations, office automation equipment and cameras.

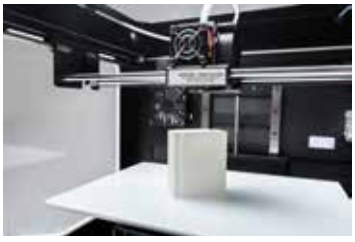
•Brushless DC Motor Drivers

Brushless DC motors are highly efficient and are advantageous for energy saving. In addition, due to its high design flexibility, it is used in various applications with diversified voltage, rotation speed and load requirement. Nuvoton brushless DC motor drivers maximize the motor characteristics performance with our original Auto Phase Control (APC) technology for motor current phase that previously required adjustment.

This will help to achieve high efficiency with any motor during motor platform design.

Part No.	Sub-Family Description	Control Method	Sensor	Control Interface	Ron(Ω)	Operating Voltage(V)	Output Voltage [max](V)	Output Current [max](A)	Operating ambient temperature [min](°C)	Operating ambient temperature [max](°C)	Package
KA44143A	Three-phase BLDC motor driver	APC, PWM sinusoidal control	1	PWM/DC	1	12V/24V	28	2.2	-40	105	HQFN024-A-0404
KA44168A	Single-phase BLDC motor driver	APC, PWM softswitching	1	-	1.6	12V/24V	35	1	-40	105	MSOP008-P-0150
KA44169A	Single-phase BLDC motor driver	APC, PWM softswitching	1	PWM	1.6	12V/24V	36	1.4	-40	105	MSOP014-P-0225
KA44169AB	Single-phase BLDC motor driver	APC, PWM softswitching	1	DC	1.6	12V/24V	36	1.4	-40	105	MSOP014-P-0225
KA44170A	Single-phase BLDC motor driver	APC, PWM softswitching	1	PWM	1.25	12V/24V	36	1.6	-40	105	MSOP014-P-0225
KA44171A	Single-phase BLDC motor driver	APRaS, PWM softswitching	1	PWM/DC	Pre-Driver	12V/24V/48V	39	0.03	-40	105	HQFN020-A-0303

• Stepper Motor Drivers



Stepper motors are used in office automation, industrial equipment, and required to have low heat generation, low vibration, and low EMI. Nuvoton stepper motor drivers can control bipolar two phase stepper motors with a single chip. Mixed-decay automatic control which is one of our strengths in current control technology, helps to constantly detects and attenuates excessive current that does not contribute to torque., This function help to easily realize low heat generation and low vibration drive. In addition, the original power drive control suppresses noise, when a large output current is needed, contributing to low EMI of the motor.

Part No.	Sub-Family Description	Control Method	Sensor	Control interface	Ron(Ω)	Operating Voltage (V)	Output Voltage [max](V)	Output Current [max](A)	Operating ambient temperature [min] (°C)	Operating ambient temperature [max] (°C)	Package
KA44180A	Dual bipolar stepper motor driver	Full step to Quarter step, Mixed-Decay control	-	parallel	0.95	12V/24V	37	1.5	-20	85	HQFN036-A-0505

• Lens Motor Drivers

Lens motor are used for surveillance camera and web camera. The requirements for these applications are small size, low power consumption, and low acoustic noise. Nuvoton lens motor driver has the functions for hall-iris control and zoom/focus control in one package that allows the design of a circuit board for a smaller camera. In addition, the hall-iris position control operates with low power consumption and low acoustic noise by our unique digital circuit technology, compared with conventional configuration of discrete components. Easy settings through SPI communication contribute to your platform development of lens module.

Part No.	Sub-Family Description	Control Method	Sensor	Control interface	Ron(Ω)	Operating Voltage (V)	Output Voltage [max](V)	Output Current [max](A)	Operating ambient temperature [min] (°C)	Operating ambient temperature [max] (°C)	Package
KA41908B	Zoom, focus and iris control lens driver	CAP (Correction Amplitude & Phase) control, 256 microstep	1(Iris)	SPI	2.5 /5.0	3.3V/5V	4V/6V	0.25A/ 0.15A	-40	105	HQFN044-A-0606

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	HQFN016-A-0304
KA32182A	LED Matrix Driver	6 x 6	-	256	16	-	I2C	3.1	5.5	HQFN020-A-0304
KA32183A	LED Matrix Driver	9 x 9	-	256	16	-	I2C	3.1	5.5	SSOP024-P-0225
KA37775A	Constant Current LED Driver	-	24	256	-	Available	SPI/I2C	4.5	28	HQFP048-P-0707
KA37777A	Constant Current LED Driver	-	9	256	-	Available	SPI	4.5	28	HSOP020-P-0225

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-1414

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

Operational Amplifiers

Operational amplifiers (op amps) is a very important component in analog signal process application. Nuvoton offers precision, high performance operational amplifiers for general purpose and industrial applications.

• NOP912/NOP914

The NOP912/NOP914 series operational (OP) amplifier is a 2.7V ~ 5.5V single-powered OP amplifier with low offset voltage and wide gain bandwidth devices. It is suitable for precision small signal and high speed signal conditioning, such as voltage or current sampling and sensor interfacing in industrial control.
The NOP912/NOP914 series is a chopper-stabilized amplifier which can minimize the offset voltage to 50 μV and temperature drift to 0.05 μV/°C. The NOP912/NOP914 series also provides wide gain bandwidth to 8 MHz, rail-to-rail input/output, and high slew rate to help users improve the precision of measurement.
The NOP912 series (Dual version) is offered in the SOIC-8 package. The NOP914 series (Quad version) is offered in the TSSOP-14 package. All versions are specified over the industrial temperature range of -40°C to +105°C.
The above features make the NOP912/NOP914 series suitable for applications such as photodiode amplification, sensor interface, signal conditioning, and battery powered instrumentation.

Key Features: The NOP912/NOP914 series behaves low offset voltage 50 μV and 0.05 μV/°C temperature drift with wide gain bandwidth 8 MHz. The feature makes it suitable for precision measure in industrial environment.
Target Applications: Photodiode Amplification, Sensor Interface, Battery Powered Instrumentation, Portable Devices, Signal Conditioning, Active Filtering, Health Care Application

Part No.	Number of Channels	Operating Voltage (min)(V)	Operating Voltage (max)(V)	Operating Temperature (min)(°C)	Operating Temperature (max)(°C)	GBW (MHz)	VOFFSET@ 25°C (μV)	Offset Drift (uV/°C)	Slew Rate (V/μS)	Rail-to-rail	I_{DD} (mA)	Package Type	Package Size	Mass Production
NOP912	2	2.7	5.5	-40	105	8	50	0.05	6	In,Out	2.5	SOIC8	3.91 x 4.9	v
NOP914	4	2.7	5.5	-40	105	8	50	0.05	6	In,Out	4	TSSOP14	4.4 x 5.0	v

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IoT with Security

Microcontrollers

8bit KM101 MCUs
32bit KM103 MCUs
Arm® Cortex®-M4F 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

• 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 [12bit] (channel) ADC [10bit] (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.

• KM103HFBx

Part No.	Core speed (MHz)	Flash (KB)	SRAM (KB)	Data Flash	I/O	Timer (8-bit)	Timer (16-bit)	Motor PWM	Power control PWM	Connectivity				ADC(12-bit)		DAC (8-bit)	DAC (10-bit)	Comparator	VGA	Flash/SRAM ECC	CRC	Package
										Clock synchronous	UART	SPI	I²C	Channel	Unit							
KM103HFB3G	80	132	16	16	25	12	5	1	3	2	2	1	1	8	2	6	2	4	2	v	v	TQFP48 (7x7)
KM103HFB4G	80	132	16	16	41	12	5	2	6	3	3	1	1	10	2	6	2	4	2	v	v	TQFP64 (10x10)
KM103HFB5K	80	264	20	32	54	12	6	2	6	4	4	1	1	16	3	6	2	4	2	v	v	TQFP80 (12x12)

• KM103HFDx/C4

Part No.	Core speed (MHz)	Flash (KB)	SRAM (KB)	Data Flash	I-RAM (KB)	I/O	Timer (8-bit)	Timer (16-bit)	Motor PWM	Connectivity				ADC(12-bit)		DAC (8-bit)	DAC (10-bit)	Comparator	VGA	Flash/SRAM ECC	CRC	Package
										Clock synchronous	UART	SPI	I²C	Channel	Unit							
KM103HFC4K	120	264	12	32	16	44	12	6	2	3	3	1	1	12	3	6	2	4	-	v	v	TQFP64 (10x10)
KM103HFD5K	120	264	12	32	16	54	16	8	2	5	5	1	1	16	3	9	2	6	3	v	v	TQFP80 (12x12)
KM103HFD5M	120	408	20	64	20	54	16	8	2	5	5	1	1	16	3	9	2	6	3	v	v	TQFP80 (12x12)
KM103HFD6M	120	408	20	64	20	74	16	8	2	5	5	1	1	20	3	9	2	6	3	v	v	LQFP100 (14x14)
KM103HFD6N	120	512	32	64	32	74	16	8	2	5	5	1	1	20	3	9	2	6	3	v	v	LQFP100 (14x14)
KM103HFD7N	120	512	32	64	32	100	20	10	3	7	7	1	1	28	3	9	2	6	3	v	v	LQFP128 (18x18)
KM103HFD8N	120	512	32	64	32	112	20	10	3	7	7	1	1	28	3	9	2	6	3	v	v	LQFP144 (20x20)

• KM103HFGx

Part No.	Core speed (MHz)	Flash (KB)	SRAM (KB)	Data Flash	I-RAM (KB)	I/O	Timer (8-bit)	Timer (16-bit)	Motor PWM	Connectivity				ADC(12-bit)		DAC (8-bit)	DAC (10-bit)	Comparator	VGA	Flash/SRAM ECC	CRC	Package
										Clock synchronous	UART	SPI	I²C	Channel	Unit							
KM103HFG4K	120	264	12	32	16	44	12	6	2	3	3	1	1	12	3	6	2	4	2	v	v	TQFP64 (10x10)
KM103HFG4M	120	408	20	64	20	44	12	6	2	3	3	1	1	12	3	6	2	4	2	v	v	TQFP64 (10x10)
KM103HFG5K	120	264	12	32	16	54	16	8	2	5	5	1	1	16	3	9	2	6	3	v	v	TQFP80 (12x12)
KM103HFG5M	120	408	20	64	20	54	16	8	2	5	5	1	1	16	3	9	2	6	3	v	v	TQFP80 (12x12)
KM103HFG5N	120	512	32	64	32	54	16	8	2	5	5	1	1	16	3	9	2	6	3	v	v	TQFP80 (12x12)
KM103HFG6K	120	264	12	32	16	74	16	8	2	5	5	1	1	20	3	9	2	6	3	v	v	LQFP100 (14x14)
KM103HFG6M	120	408	20	64	20	74	16	8	2	5	5	1	1	20	3	9	2	6	3	v	v	LQFP100 (14x14)
KM103HFG6N	120	512	32	64	32	74	16	8	2	5	5	1	1	20	3	9	2	6	3	v	v	LQFP100 (14x14)
KM103HFG7K	120	264	12	32	16	100	20	10	3	7	7	1	1	28	3	9	2	6	3	v	v	LQFP128 (18x18)
KM103HFG7M	120	408	20	64	20	100	20	10	3	7	7	1	1	28	3	9	2	6	3	v	v	LQFP128 (18x18)
KM103HFG7N	120	512	32	64	32	100	20	10	3	7	7	1	1	28	3	9	2	6	3	v	v	LQFP128 (18x18)
KM103HFG8M	120	408	20	64	20	112	20	10	3	7	7	1	1	28	3	9	2	6	3	v	v	LQFP144 (20x20)
KM103HFG8N	120	512	32	64	32	112	20	10	3	7	7	1	1	28	3	9	2	6	3	v	v	LQFP144 (20x20)

• KM103HFKx

Part No.	Core speed (MHz)	Flash (KB)	SRAM (KB)	Data Flash	I-RAM (KB)	I/O	Timer (8-bit)	Timer (16-bit)	Motor PWM	Connectivity				ADC(12-bit)		DAC (8-bit)	DAC (10-bit)	Comparator	VGA	Flash/SRAM ECC	CRC	Package
										Clock synchronous	UART	SPI	I²C	Channel	Unit							
KM103HFK4Y	120	264	12	32	32	44	12	6	2	3	3	1	1	12	3	12	2	8	4	v	v	TQFP64 (10x10)
KM103HFK5Y	120	264	12	32	32	54	16	8	2	5	5	1	1	16	3	12	2	8	4	v	v	TQFP80 (12x12)
KM103HFK5N	120	512	32	64	32	54	16	8	2	5	5	1	1	16	3	12	2	8	4	v	v	TQFP80 (12x12)
KM103HFK6Y	120	264	12	32	32	74	16	8	2	5	5	1	1	20	3	12	2	8	4	v	v	LQFP100 (14x14)
KM103HFK6N	120	512	32	64	32	74	16	8	2	5	5	1	1	20	3	12	2	8	4	v	v	LQFP100 (14x14)
KM103HFK7N	120	512	32	64	32	100	20	10	3	7	7	1	1	28	3	12	2	8	4	v	v	LQFP128 (18x18)
KM103HFK8N	120	512	32	64	32	112	20	10	3	7	7	1	1	28	3	12	2	8	4	v	v	LQFP144 (20x20)

Arm® Cortex®-M4F MCUs

The KM1M4 series is a 32-bit flash microcontroller equipped with Arm® Cortex®-M4F, 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, it contributes to the creation of high-efficiency / low heat generation / miniaturization power management systems.

• KM1M4B/Inverter Control Series

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

• KM1M4BFx

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

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.

• KM1M7A/KM1M7C Digital Power Control Series

KM1M7 Series MCU is a 32-bit MCU with Arm® Cortex® M7, which have a good balance between high speed processing ability and low power consumption.
High speed/high-precision analog functions and assist functions are embedded, which can satisfy the request of power control.
This series has communication functions such as CAN and SM-BUS necessary for power supply control.
They can contribute to the power management system which needs high-efficiency, super low-power consumption and miniaturization

•KM1M7B/Inverter Control Series

KM1M7 Series MCU is a 32-bit MCU with Arm® Cortex® M7, which have a good balance between high speed processing ability and low power consumption.
High speed/high-precision analog functions and assist functions are embedded, which can satisfy the request of motor control.
Accessing EEPROM becomes more efficient by using RWW(Read While Write) flash.
They can contribute to the power management system which needs high-efficiency, super low-power consumption and miniaturization.

• KM1M7AFxx

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

• KM1M7CFxx

Part No.	Core speed (MHz)	Flash (KB)	SRAM (KB)	Data Flash	I-RAM (KB)	I/O	Timer (16-bit)	Power control PWM	RTC	Connectivity						ADC(12-bit)		DAC (8-bit)	DAC (10-bit)	Comparator	VGA	Flash/SRAM ECC	CRC	Package
										Clock synchronous	UART	SPI	I²C	SM-Bus	CAN	Channel	Unit							
KM1M7CF06N	160	512	64	32	64	24	14	3	1	7	7	7	2	1	1	11	3	7	6	v	v	-	-	TQFP32 (7x7)
KM1M7CF05N	160	512	64	32	64	38	14	5	1	7	7	7	2	1	1	16	3	12	10	v	v	-	-	TQFP48 (7x7)
KM1M7CF04N	160	512	64	32	64	52	14	6	1	7	7	7	2	1	1	18	3	12	12	v	v	-	-	TQFP64 (10x10)
KM1M7CF03N	160	512	64	32	64	68	14	8	1	7	7	7	2	1	1	26	3	12	12	v	v	-	-	TQFP80 (12x12)
KM1M7CF16N	160	512	64	32	64	24	14	3	1	7	7	7	2	1	1	11	3	7	6	v	v	v	v	TQFP32 (7x7)
KM1M7CF15N	160	512	64	32	64	38	14	5	1	7	7	7	2	1	1	16	3	12	10	v	v	v	v	TQFP48 (7x7)
KM1M7CF14N	160	512	64	32	64	52	14	6	1	7	7	7	2	1	1	18	3	12	12	v	v	v	v	TQFP64 (10x10)
KM1M7CF13N	160	512	64	32	64	68	14	8	1	7	7	7	2	1	1	26	3	12	12	v	v	v	v	TQFP80 (12x12)

• KM1M7BFxx

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

Communication & Interface LSIs

High Speed Interface LSIs

• KM864 Series

Product Overview

Nuvoton is a leading supplier of HDMI(High Definition Multimedia Interface)ICs used in various applications of AV receiver, sound bar, switcher, game, VR, signage and measuring equipment of HDMI.
KM86473D is a bridge IC that convert HDMI2.0 and Display Port to MIPI, used in head mount display of VR. KM864788 is a matrix switch IC that supports HDMI2.0 with 4 input and 2 output, used in AV receiver, sound bar, switcher etc. KM864807 is a matric switch IC that supports HDMI2.1 with 4 input and 2 output.

Features

- KM86473D: Selectable input of HDMI2.0 and Display Port 1.4. MIPI DSI 2.5Gbps x 16 lanes output. Support HDCP 1.4/2.3, Audio output of I2S/TDM/SPDIF, DSC encode, OSD, Up Scaler and I2C slave control.
- KM864788: 4 HDMI2.0 input and 2 HDMI2.0 output. Resolution of up to 4k/60Hz. Support HDCP1.4/2.3, Audio output of I2S/SPDIF, OSD, Up and Down scaler, ARC, and I2C slave control.
- 64807: 4 HDMI2.1 input and 2 HDMI2.1 output. Resolution of up to 8k/60Hz and 4k/120Hz.Support HDCP1.4/2.3, Audio output of I2S/TDM/SPDIF, OSD, Up and Down scaler, eARC input, and I2C slave control.

Parts	Input interface	Output interface	HDCP	Power supply	Power consumption	Package	Other functions
KM86473D	Selectable of HDMI2.0 and Display Port 1.4	MIPI DSI 2.5Gbps x 16 lanes	HDCP 1.4 and 2.3	I0.9V, 1.8V, 3.3V	0.9W	8x8mm BGA 160pin 0.5mm pitch	Audio output of I2S/TDM/SPDIF, DSC encode, OSD, UP scaler and I2C slave control.
KM864788	4 input of HDMI2.0	2 output of HDMI2.0	HDCP 1.4 and 2.3	1.1V, 3.3V	3.5W	20x20mm QFP 144pin 0.5mm pitch	Audio output of I2S/TDM/SPDIF, DSC encode, OSD, UP scaler and I2C slave control.
KM864807	4 input of HDMI2.1	2 output of HDMI2.1	HDCP 1.4 and 2.3	0.9V, 1.8V, 3.3V	3.8W	16x16mm BGA 378pin 0.65mm pitch	Audio output of I2S/SPDIF, OSD, UP and down scaler, eARC input, DSC pass through, Dynamic HDR, HDR,HDR10+, VRR, ALLM, and I2C slave control.

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, 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) 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, GaN HEMT etc. Applications include industrial control, high power conversion systems, mobile devices, sensors, system electrostatic protection, 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**
- **MCU, Speech**
- **Motor Driver, Fan Driver,**
- **Audio Amp, Sensor, TVS**
- **Car Charger**
- **Pressure sensor**
- **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 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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