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Product Selection Guide 2014

- Microcontrollers
- Microprocessors
- Application Specific SoCs
- Audio
- ISD Voice ICs
- Cloud Computing
- Power Management
- Foundry Service



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

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

Microcontrollers

◆ ARM Cortex™-M0/M4 MCUs

Mini51 Series
M051 Series
NUC100/120/130/140 Series
NUC122/123 Series
NUC200/220/230/240 Series
Nano100/110/120/130 Series
Nano102/112 Series
AU9110 Series
NUC400/420/430/440/470 Series
Development Tools

◆ 8bit 8051 MCUs

6T/12T 8051 Series
4T 8051 Series
Low Pin Count 8051 Series
Development Tools



ARM Cortex™-M0/M4 MCUs



NuMicro™ Family

Nuvoton's NuMicro™ microcontroller (MCU) family is powered by the ARM® Cortex™-M0 and Cortex™-M4 core. With a variety of product offering and rich peripherals, the NuMicro™ family is ideal for use in consumer products, industrial control, embedded network control, energy and power system, motor control, health care and battery powered devices, etc. The Cortex™-M0 MCUs include NUC100/200 series, NUC120/220 series with USB 2.0 FS device, NUC130/140/230/240 series with Controller Area Network (CAN) 2.0B licensed from BOSCH, M051 and Mini51 series for cost-effective solution, and NUC122/NUC123 for high-performance USB 2.0 FS device, as well as the Ultra-low Power Nano100 series targeting at battery powered applications. The Cortex™-M4 MCUs include NUC400 high-performance series with USB OTG and CAN support. With the integration of the industry leading ARM® Cortex™-M0 and Cortex™-M4 microcontroller, the NuMicro™ family brings 32-bit performance to various applications with the best cost performance.

Mini51 Series

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

Key Features: Operable at 2.5V to 5.5V and -40°C to +105°C with separate Program Flash 4K/8K/16K bytes and ISP loader 2K bytes.

Potential Applications: Auto-control System, Data Communication, Industrial Control, etc.

Mini51 Base Series

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

QFN33*: 4x4mm

QFN33**: 5x5mm

M051 Series

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

Key Features: Operable at 2.5V to 5.5V and -40°C to +85°C/+105°C with separate Program Flash 8K/16K/32K/64K bytes, Data Flash 4K bytes and ISP loader 4K bytes.

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

M051 Series

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

M051 Base Series

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

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M058S Series

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

LQFP64*: 7x7mm

NUC100 Series

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

Key Features: Operable at 2.5V to 5.5V and -40°C to +85°C with separate Program Flash 32K/64K/128K bytes, Data Flash 4K bytes, ISP loader 4K bytes.

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

NUC100 Advanced Series

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

NUC120 USB Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I²S	PWM (16-bit)	ADC (12-bit)	Comparator	RTC	EBI	PDMA	ISO-7816-3	ISP ICP IAP	IRC 22MHz	PDMA	Operating Temp. Range (°C)
							UART	SPI	I²C	USB	LIN	CAN												
NUC120LC1DN	32	4	4	4	33	4	2	1	2	1	-	-	1	4	8	1	✓	-	9	✓	✓	✓	LQFP48	-40 to +85
NUC120LD2DN	64	8	4	4	33	4	2	1	2	1	-	-	1	4	8	1	✓	-	9	✓	✓	✓	LQFP48	-40 to +85
NUC120LE3DN	128	16	Configurable	4	33	4	2	1	2	1	-	-	1	4	8	1	✓	-	9	✓	✓	✓	LQFP48	-40 to +85
NUC120RC1CN	32	4	4	4	47	4	2	2	2	1	-	-	1	6	8	2	✓	✓	9	✓	✓	✓	LQFP64	-40 to +85
NUC120RD2DN	64	8	4	4	47	4	2	2	2	1	-	-	1	6	8	2	✓	✓	9	✓	✓	✓	LQFP64	-40 to +85
NUC120RE3DN	128	16	Configurable	4	47	4	2	2	2	1	-	-	1	6	8	2	✓	✓	9	✓	✓	✓	LQFP64	-40 to +85
NUC120VE3DN	128	16	Configurable	4	81	4	3	4	2	1	-	-	1	8	8	2	✓	✓	9	✓	✓	✓	LQFP100	-40 to +85

NUC130 Automotive Series

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

NUC140 Connectivity Series

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

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NUC122 Series

The NuMicro™ NUC122 series embedded with the ARM® Cortex™-M0 core runs up to 60 MHz with 32K/64K bytes Flash program memory, 4K/8K bytes SRAM, and 4K bytes Flash loader memory for In-System Program (ISP). The NUC122 series also integrates Timers, Watchdog Timer (WDT), RTC, UART, SPI, I²C, PWM Timer, GPIO, USB 2.0 FS Device, Low Voltage Reset Controller and Brown-out Detector.

NUC122 USB Series (Low Power)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I ² S	PWM (16-bit)	ADC (12-bit)	Comparator	RTC	EBI	PDMA	ISO-7816-3	ISP ICP	IRC 22MHz	PDMA	Operating Temp. Range (°C)
							UART	SPI	I ² C	USB	LIN	CAN												
NUC122ZC1AN	32	4	4	4	18	4	1	2	1	1	-	-	-	-	-	-	-	-	-	-	✓	✓	QFN33	-40 to +85
NUC122ZD2AN	64	8	4	4	18	4	1	2	1	1	-	-	-	-	-	-	-	-	-	-	✓	✓	QFN33	-40 to +85
NUC122LC1AN	32	4	4	4	30	4	2	2	1	1	-	-	-	4	-	-	✓	-	-	-	✓	✓	LQFP48	-40 to +85
NUC122LD2AN	64	8	4	4	30	4	2	2	1	1	-	-	-	4	-	-	✓	-	-	-	✓	✓	LQFP48	-40 to +85
NUC122SC1AN	32	4	4	4	41	4	2	2	1	1	-	-	-	4	-	-	✓	-	-	-	✓	✓	LQFP64*	-40 to +85
NUC122SD2AN	64	8	4	4	41	4	2	2	1	1	-	-	-	4	-	-	✓	-	-	-	✓	✓	LQFP64*	-40 to +85

LQFP64*: 7x7mm

NUC123 Series

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

NUC123 USB Series (Low Power)

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

LQFP64*: 7x7mm

NUC200 Series

The NuMicro™ NUC200 series embedded with the ARM® Cortex™-M0 core runs up to 72 MHz with 32K/64K/128K bytes Flash program memory, 8K/16K bytes SRAM, and 4K bytes Flash loader memory for In-System Programming (ISP) and In Application Program (IAP). The NUC200 series is equipped with a variety of peripherals, such as GPIOs, Timers, Watchdog Timer (WDT), RTC, PDMA, UART, SPI/MICROWIRE, I²C, I²S, PWM, ISO-7816-3 smart card interface, PS/2, USB 2.0 FS Device, 12-bit ADC, Analog Comparator, Low Voltage Reset, and Brown-out Detector.

Key Features: Operable at 2.5V to 5.5V and -40°C to +85°C/+105°C with separate Program Flash 32K/64K/128K bytes, Data Flash 4K bytes and ISP loader 4K bytes.

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

NUC200 Advanced Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I ² S	PWM (16-bit)	ADC (12-bit)	Comparator	RTC	PDMA	ISO-7816-3	CRC	RTC (V _{BAT})	ICP IAP ISP	IRC 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I ² C	USB	LIN	CAN													
NUC200LC2AN	32	8	4	4	35	4	4	1	2	-	-	-	1	6	7	1	✓	9	2	✓	✓	✓	✓	LQFP48	-40 to +85
NUC200LD2AN	64	8	4	4	35	4	4	1	2	-	-	-	1	6	7	1	✓	9	2	✓	✓	✓	✓	LQFP48	-40 to +85
NUC200LE3AN	128	16	Configurable	4	35	4	4	1	2	-	-	-	1	6	7	1	✓	9	2	✓	✓	✓	✓	LQFP48	-40 to +85
NUC200SC2AN	32	8	4	4	49	4	5	2	2	-	-	-	1	6	7	2	✓	9	2	✓	✓	✓	✓	LQFP64*	-40 to +85
NUC200SD2AN	64	8	4	4	49	4	5	2	2	-	-	-	1	6	7	2	✓	9	2	✓	✓	✓	✓	LQFP64*	-40 to +85
NUC200SE3AN	128	16	Configurable	4	49	4	5	2	2	-	-	-	1	6	7	2	✓	9	2	✓	✓	✓	✓	LQFP64*	-40 to +85
NUC200VE3AN	128	16	Configurable	4	83	4	6	4	2	-	-	-	1	8	8	2	✓	9	3	✓	✓	✓	✓	LQFP100	-40 to +85

LQFP64*: 7x7mm

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NUC220 USB Series

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

LQFP64*: 7x7mm

NUC230 Automotive Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I ² S	PWM (16-bit)	ADC (12-bit)	Comparator	RTC	PDMA	ISO- 7816-3	CRC	RTC (V _{BAT})	ICP IAP ISP	IRC 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I ² C	USB	LIN	CAN													
NUC230LC2AE	32	8	4	4	35	4	5	1	2	-	3	2	1	4	7	1	✓	9	2	✓	✓	✓	✓	LQFP48	-40 to +105
NUC230LD2AE	64	8	4	4	35	4	5	1	2	-	3	2	1	4	7	1	✓	9	2	✓	✓	✓	✓	LQFP48	-40 to +105
NUC230LE3AE	128	16	Configurable	4	35	4	5	1	2	-	3	2	1	4	7	1	✓	9	2	✓	✓	✓	✓	LQFP48	-40 to +105
NUC230SC2AE	32	8		4	49	4	5	2	2	-	3	2	1	6	7	2	✓	9	2	✓	✓	✓	✓	LQFP64*	-40 to +105
NUC230SD2AE	64	8	4	4	49	4	5	2	2	-	3	2	1	6	7	2	✓	9	2	✓	✓	✓	✓	LQFP64*	-40 to +105
NUC230SE3AE	128	16	Configurable	4	49	4	5	2	2	-	3	2	1	6	7	2	✓	9	2	✓	✓	✓	✓	LQFP64*	-40 to +105
NUC230VE3AE	128	16	Configurable	4	83	4	6	4	2	-	3	2	1	8	8	2	✓	9	3	✓	✓	✓	✓	LQFP100	-40 to +105

LQFP64*: 7x7mm

NUC240 Connectivity Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I ² S	PWM (16-bit)	ADC (12-bit)	Comparator	RTC	PDMA	ISO- 7816-3	CRC	RTC (V _{BAT})	ICP IAP ISP	IRC 22 MHz	Package	Operating Temp. Range (°C)
							UART	SPI	I ² C	USB	LIN	CAN													
NUC240LC2AE	32	8	4	4	31	4	4	1	2	1	2	2	1	4	7	1	✓	9	1	✓	✓	✓	✓	LQFP48	-40 to +105
NUC240LD2AE	64	8	4	4	31	4	4	1	2	1	2	2	1	4	7	1	✓	9	1	✓	✓	✓	✓	LQFP48	-40 to +105
NUC240LE3AE	128	16	Configurable	4	31	4	4	1	2	1	2	2	1	4	7	1	✓	9	1	✓	✓	✓	✓	LQFP48	-40 to +105
NUC240SC2AE	32	8	4	4	45	4	5	2	2	1	3	2	1	4	7	2	✓	9	2	✓	✓	✓	✓	LQFP64*	-40 to +105
NUC240SD2AE	64	8	4	4	45	4	5	2	2	1	3	2	1	4	7	2	✓	9	2	✓	✓	✓	✓	LQFP64*	-40 to +105
NUC240SE3AE	128	16	Configurable	4	45	4	5	2	2	1	3	2	1	4	7	2	✓	9	2	✓	✓	✓	✓	LQFP64*	-40 to +105
NUC240VE3AE	128	16	Configurable	4	79	4	6	4	2	1	3	2	1	8	8	2	✓	9	3	✓	✓	✓	✓	LQFP100	-40 to +105

LQFP64*: 7x7mm

Nano100 Series

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

Key Features: Operable at 1.8V~3.6V and -40°C to +85°C with ultra-low power: 200uA/MHz (Normal), 75uA/MHz (Idle), 2.5uA (Power Down, RTC On, RAM retention) and 1uA (Power Down, RAM retention) and less than 7 us wake-up time.

Potential Applications: Portable Health Care Device, Mobile Payment Smart Card Reader, Wireless Audio, Motion Gaming, IPTV Remote Control, Smart Home Appliances, Alarm and Security Monitoring, Zigbee Smart Energy AMR, GPS Data Logger, Car ETC, Home Smart Heat/Water/Gas Meter, etc.

Nano100 Base Series (Ultra-low Power)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity						I ² S	PWM (16-bit)	ADC (12-bit)	RTC	EBI	IRC 10KHz 12MHz	PDMA	LCD	DAC (12-bit)	ISO-7816-3	ISP ICP	Package	Operating Temp. Range (°C)
							UART	SPI	I ² C	USB															
NANO100NC2BN	32	8	Configurable	4	up to 38	4	4	3	2	-	-	1	6	7	7	✓	-	✓	8	-	2	2	✓	QFN48	-40 to +85
NANO100ND2BN	64	8	Configurable	4	up to 38	4	4	3	2	-	-	1	6	7	7	✓	-	✓	8	-	2	2	✓	QFN48	-40 to +85
NANO100ND3BN	64	16	Configurable	4	up to 38	4	4	3	2	-	-	1	6	7	7	✓	-	✓	8	-	2	2	✓	QFN48	-40 to +85
NANO100NE3BN	128	16	Configurable	4	up to 38	4	4	3	2	-	-	1	6	7	7	✓	-	✓	8	-	2	2	✓	QFN48	-40 to +85
NANO100LC2BN	32	8	Configurable	4	up to 38	4	4	3	2	-	-	1	6	7	7	✓	-	✓	8	-	2	2	✓	LQFP48	-40 to +85
NANO100LD2BN	64	8	Configurable	4	up to 38	4	4	3	2	-	-	1	6	7	7	✓	-	✓	8	-	2	2	✓	LQFP48	-40 to +85
NANO100LD3BN	64	16	Configurable	4	up to 38	4	4	3	2	-	-	1	6	7	7	✓	-	✓	8	-	2	2	✓	LQFP48	-40 to +85
NANO100LE3BN	128	16	Configurable	4	up to 38	4	4	3	2	-	-	1	6	7	7	✓	-	✓	8	-	2	2	✓	LQFP48	-40 to +85
NANO100SC2BN	32	8	Configurable	4	up to 52	4	5	3	2	-	-	1	8	7	7	✓	-	✓	8	-	2	3	✓	LQFP64*	-40 to +85
NANO100SD2BN	64	8	Configurable	4	up to 52	4	5	3	2	-	-	1	8	7	7	✓	-	✓	8	-	2	3	✓	LQFP64*	-40 to +85
NANO100SD3BN	64	16	Configurable	4	up to 52	4	5	3	2	-	-	1	8	7	7	✓	-	✓	8	-	2	3	✓	LQFP64*	-40 to +85
NANO100SE3BN	128	16	Configurable	4	up to 52	4	5	3	2	-	-	1	8	7	7	✓	-	✓	8	-	2	3	✓	LQFP64*	-40 to +85
NANO100KD3BN	64	16	Configurable	4	up to 86	4	5	3	2	-	-	1	8	12	✓	✓	✓	✓	8	-	2	3	✓	LQFP128	-40 to +85
NANO100KE3BN	128	16	Configurable	4	up to 86	4	5	3	2	-	-	1	8	12	✓	✓	✓	✓	8	-	2	3	✓	LQFP128	-40 to +85

QFN48: 7x7, 0.5mm LQFP48: 7x7, 0.5mm LQFP64*: 7x7, 0.4mm LQFP128: 14x14, 0.4mm

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Nano110 LCD Series (Ultra-low Power)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity				i ² S	PWM (16-bit)	ADC (12-bit)	RTC	EBI	IRC 10KHz 12MHz	PDMA	LCD	DAC (12-bit)	ISO- 7816-3	ISP ICP	Package	Operating Temp. Range (°C)
							UART	SPI	i ² C	USB													
NANO110SC2BN	32	8	Configurable	4	up to 51	4	5	3	2	-	1	7	7	✓	-	✓	8	4x31, 6x29	2	3	✓	LQFP64*	-40 to +85
NANO110SD2BN	64	8	Configurable	4	up to 51	4	5	3	2	-	1	7	7	✓	-	✓	8	4x31, 6x29	2	3	✓	LQFP64*	-40 to +85
NANO110SD3BN	64	16	Configurable	4	up to 51	4	5	3	2	-	1	7	7	✓	-	✓	8	4x31, 6x29	2	3	✓	LQFP64*	-40 to +85
NANO110SE3BN	128	16	Configurable	4	up to 51	4	5	3	2	-	1	7	7	✓	-	✓	8	4x31, 6x29	2	3	✓	LQFP64*	-40 to +85
NANO110RC2BN	32	8	Configurable	4	up to 51	4	5	3	2	-	1	7	7	✓	-	✓	8	4x31, 6x29	2	3	✓	LQFP64	-40 to +85
NANO110RD2BN	64	8	Configurable	4	up to 51	4	5	3	2	-	1	7	7	✓	-	✓	8	4x31, 6x29	2	3	✓	LQFP64	-40 to +85
NANO110RD3BN	64	16	Configurable	4	up to 51	4	5	3	2	-	1	7	7	✓	-	✓	8	4x31, 6x29	2	3	✓	LQFP64	-40 to +85
NANO110RE3BN	128	16	Configurable	4	up to 51	4	5	3	2	-	1	7	7	✓	-	✓	8	4x31, 6x29	2	3	✓	LQFP64	-40 to +85
NANO110KC2BN	32	8	Configurable	4	up to 86	4	5	3	2	-	1	8	12	✓	✓	✓	8	4x40, 6x38	2	3	✓	LQFP128	-40 to +85
NANO110KD2BN	64	8	Configurable	4	up to 86	4	5	3	2	-	1	8	12	✓	✓	✓	8	4x40, 6x38	2	3	✓	LQFP128	-40 to +85
NANO110KD3BN	64	16	Configurable	4	up to 86	4	5	3	2	-	1	8	12	✓	✓	✓	8	4x40, 6x38	2	3	✓	LQFP128	-40 to +85
NANO110KE3BN	128	16	Configurable	4	up to 86	4	5	3	2	-	1	8	12	✓	✓	✓	8	4x40, 6x38	2	3	✓	LQFP128	-40 to +85

LQFP64*: 7x7, 0.4mm LQFP128: 14x14, 0.4mm

Nano120 USB Connectivity Series (Ultra-low Power)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity				i ² S	PWM (16-bit)	ADC (12-bit)	RTC	EBI	IRC 10KHz 12MHz	PDMA	LCD	DAC (12-bit)	ISO- 7816-3	ISP ICP	Package	Operating Temp. Range (°C)
							UART	SPI	i ² C	USB													
NANO120LC2BN	32	8	Configurable	4	up to 34	4	4	3	2	1	1	4	7	✓	-	✓	8	-	2	2	✓	LQFP48	-40 to +85
NANO120LD2BN	64	8	Configurable	4	up to 34	4	4	3	2	1	1	4	7	✓	-	✓	8	-	2	2	✓	LQFP48	-40 to +85
NANO120LD3BN	64	16	Configurable	4	up to 34	4	4	3	2	1	1	4	7	✓	-	✓	8	-	2	2	✓	LQFP48	-40 to +85
NANO120LE3BN	128	16	Configurable	4	up to 34	4	4	3	2	1	1	4	7	✓	-	✓	8	-	2	2	✓	LQFP48	-40 to +85
NANO120SC2BN	32	8	Configurable	4	up to 48	4	5	3	2	1	1	8	7	✓	-	✓	8	-	2	3	✓	LQFP64*	-40 to +85
NANO120SD2BN	64	8	Configurable	4	up to 48	4	5	3	2	1	1	8	7	✓	-	✓	8	-	2	3	✓	LQFP64*	-40 to +85
NANO120SD3BN	64	16	Configurable	4	up to 48	4	5	3	2	1	1	8	7	✓	-	✓	8	-	2	3	✓	LQFP64*	-40 to +85
NANO120SE3BN	128	16	Configurable	4	up to 48	4	5	3	2	1	1	8	7	✓	-	✓	8	-	2	3	✓	LQFP64*	-40 to +85
NANO120KD3BN	64	16	Configurable	4	up to 86	4	5	3	2	1	1	8	8	✓	✓	✓	8	-	2	3	✓	LQFP128	-40 to +85
NANO120KE3BN	128	16	Configurable	4	up to 86	4	5	3	2	1	1	8	8	✓	✓	✓	8	-	2	3	✓	LQFP128	-40 to +85

LQFP48: 7x7, 0.5mm LQFP64*: 7x7, 0.4mm LQFP128: 14x14, 0.4mm

Nano130 Advanced Series (Ultra-low Power)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity				i ² S	PWM (16-bit)	ADC (12-bit)	RTC	EBI	IRC 10KHz 12MHz	PDMA	LCD	DAC (12-bit)	ISO- 7816-3	ISP ICP	Package	Operating Temp. Range (°C)
							UART	SPI	i ² C	USB													
NANO130SC2BN	32	8	Configurable	4	up to 47	4	5	3	2	1	1	7	7	✓	-	✓	8	4x31, 6x29	2	3	✓	LQFP64*	-40 to +85
NANO130SD2BN	64	8	Configurable	4	up to 47	4	5	3	2	1	1	7	7	✓	-	✓	8	4x31, 6x29	2	3	✓	LQFP64*	-40 to +85
NANO130SD3BN	64	16	Configurable	4	up to 47	4	5	3	2	1	1	7	7	✓	-	✓	8	4x31, 6x29	2	3	✓	LQFP64*	-40 to +85
NANO130SE3BN	128	16	Configurable	4	up to 47	4	5	3	2	1	1	7	7	✓	-	✓	8	4x31, 6x29	2	3	✓	LQFP64*	-40 to +85
NANO130KC2BN	32	8	Configurable	4	up to 86	4	5	3	2	1	1	8	8	✓	✓	✓	8	4x40, 6x38	2	3	✓	LQFP128	-40 to +85
NANO130KD2BN	64	8	Configurable	4	up to 86	4	5	3	2	1	1	8	8	✓	✓	✓	8	4x40, 6x38	2	3	✓	LQFP128	-40 to +85
NANO130KD3BN	64	16	Configurable	4	up to 86	4	5	3	2	1	1	8	8	✓	✓	✓	8	4x40, 6x38	2	3	✓	LQFP128	-40 to +85
NANO130KE3BN	128	16	Configurable	4	up to 86	4	5	3	2	1	1	8	8	✓	✓	✓	8	4x40, 6x38	2	3	✓	LQFP128	-40 to +85

LQFP64*: 7x7, 0.4mm LQFP128: 14x14, 0.4mm

Nano102/112 Series

The NuMicro™ Nano102/112 series embedded with the ARM® Cortex™-M0 core runs up to 32 MHz with 16K/32K bytes embedded Flash and 4K/8K bytes embedded SRAM and 4K bytes Flash loader memory for In-System Programming (ISP). The Nano series integrates 4x36 & 6x34 COM/SEG LCD controller. Real Time Counter (RTC), 12-bit SAR ADC, UART, SPI, i²C, PWM/Capture, ISO-7816-3, Watchdog Timer (WDT), Brown-out Detector, fast wake-up via all peripheral interfaces, and supports 96-bit Unique ID and 128-bit Unique Customer ID.

Key Features: Operable at 1.8V~3.6V and -40°C to +85°C with ultra-low power: 150uA/MHz (Normal), 65uA/MHz (Idle), 1.5uA (Power Down, RTC On, RAM retention) and 0.65uA (Power Down, RAM retention) and less than 6 us wake-up time.

Potential Applications: Portable Instrumentation and Medical, Mobile Payment Smart Card Reader, Motion Gaming, Smart Remote Control, Smart Home Appliances, Alarm and Security Monitoring, Building Control, RFID Reader, Smart Water/Gas/Heat Meter, etc.

Nano102 Base Series (Ultra-low Power)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity				Comp	PWM (16-bit)	ADC (12-bit)	RTC	IRC 10 kHz / 12 MHz / 16 MHz	PDMA	LCD	ISO- 7816-3	ISP ICP	Package	Operating Temp. Range (°C)
							UART	SPI	i ² C												
NANO102ZB1AN	16	4	Configurable	4	up to 27	4	3	2	2	2	4	4	2	✓	✓	4	-	1	✓	QFN33	-40 to +85
NANO102ZC2AN	32	8	Configurable	4	up to 27	4	3	2	2	2	4	4	2	✓	✓	4	-	1	✓	QFN33	-40 to +85
NANO102LB1AN	16	4	Configurable	4	up to 40	4	4	2	2	2	4	7	✓	✓	✓	4	-	2	✓	LQFP48	-40 to +85
NANO102LC2AN	32	8	Configurable	4	up to 40	4	4	2	2	2	4	7	✓	✓	✓	4	-	2	✓	LQFP48	-40 to +85
NANO102SC2AN	32	8	Configurable	4	up to 58	4	4	2	2	2	4	7	✓	✓	✓	4	-	2	✓	LQFP64*	-40 to +85

QFN33: 5x5mm LQFP48: 7x7mm LQFP64*: 7x7mm

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Nano112 LCD Series (Ultra-low Power)

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity			Comp	PWM (16-bit)	ADC (12-bit)	RTC	IRC 10 kHz / 12 MHz / 16 MHz	PDMA	LCD	ISO-7816-3	ISP ICP	Package	Operating Temp. Range (°C)
							UART	SPI	I ² C											
NANO112LB1AN	16	4	Configurable	4	up to 40	4	4	2	2	2	4	7	√	√	4	4x20, 6x18	2	√	LQFP48	-40 to +85
NANO112LC2AN	32	8	Configurable	4	up to 40	4	4	2	2	2	4	7	√	√	4	4x20, 6x18	2	√	LQFP48	-40 to +85
NANO112SB1AN	16	4	Configurable	4	up to 58	4	4	2	2	2	4	7	√	√	4	4x32, 6x30	2	√	LQFP64*	-40 to +85
NANO112SC2AN	32	8	Configurable	4	up to 58	4	4	2	2	2	4	7	√	√	4	4x32, 6x30	2	√	LQFP64*	-40 to +85
NANO112RB1AN	16	4	Configurable	4	up to 58	4	4	2	2	2	4	7	√	√	4	4x32, 6x30	2	√	LQFP64	-40 to +85
NANO112RC2AN	32	8	Configurable	4	up to 58	4	4	2	2	2	4	7	√	√	4	4x32, 6x30	2	√	LQFP64	-40 to +85
NANO112VC2AN	32	8	Configurable	4	up to 80	4	4	2	2	2	4	8	√	√	4	4x36, 6x34	2	√	LQFP100	-40 to +85

LQFP64*: 7x7mm

AU9110 Series

The AU9110 embeds a Cortex™-M0 core running up to 50 MHz with 145K-byte of non-volatile flash memory and 12K-byte of embedded SRAM. It also comes equipped with a variety of peripheral devices, such as Timers, Watchdog Timer (WDT), Real-time Clock (RTC), Peripheral Direct Memory Access (PDMA), a variety of serial interfaces (UART, SPI/SSP, I²C, I²S), PWM modulators, GPIO, Low Voltage Detector and Brown-out detector.

Key Features: Operable at 2.4V to 5.5V and -40°C to +85°C with power management: <1uA (deep power down mode); <10uA (standby mode), Audio ADC (16-bit, SNR 92dB, PGA/ALC), Audio DPWM (1W speaker driver), comparator for capacitive sensor (8ch) and hardware CRC-16.

Potential Applications: Speech Air Mouse, Remote/Game Controller, Wireless Microphone, Walkie-Talkie, Voice Baby Monitor, Voice Prompt, iPhone/iPad, Android AppAccessory, etc.

AU9110 Audio Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	I/O	Timer (32-bit)	Connectivity				PWM (16-bit)	RTC	PDMA	Comp.	Touch Key	Audio		CRC	ISP ICP	Package
					UART	SPI	I ² C	USB						Mic.	Speaker			
AU9110LF3AN	145	12	24	2	1	1	1	-	2	√	4	8	8	1	1xDPWM	√	√	LQFP48

NUC400 Series

The NuMicro™ NUC400 series embedded with ARM® Cortex™-M4 core with DSP extensions and floating point unit and runs up to 84MHz with 256K/512K bytes Flash program memory, 64K bytes SRAM, and 16K bytes Flash loader memory for In-System Programming (ISP). The NUC400 series is equipped with a variety of peripherals, such as PDMA, GPIOs, Timers, Watchdog Timers, RTC, UART, SPI/MICROWIRE, I²C, I²S, PWM, LIN, CAN, PS/2, Smart Card Interface, SD Host, USB 2.0 FS OTG, USB 2.0 HS Device, Ethernet 10/100M MAC, symmetric encryption/decryption accelerator, secure Hash function accelerator (SHA), 12-bit ADC, Analog comparator, Operating Amplifier, Temperature Sensor, Low Voltage Reset, and Brown-out Detector.

Key Features: Operable at 2.5V to 5.5V and -40°C to +105°C with configurable Flash 256K/512K bytes as Program memory and Data Memory and ISP Loader 16K bytes.

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

NUC400 Base Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	ISP ROM (Kbytes)	PDMA	I/O	Timer (32-bit)	Connectivity							EBI I ² S	Ethernet MAC	USB OTG	USB Device	PWM (16-bit)	QEI	Analog Comp.	OP Amp.	ADC (12-bit)	RTC (V _{BAT})	Crypto	ICP ISP IAP	Package	Operating Temp. Range (°C)
							UART	ISO-7816-3	SPI	SD Host	I ² C	CAN	LIN														
NUC400RI8AE	512	64	16	16	51	4	5	3	3	√	2	-	5	√	1	-	-	8	1	2	-	x2, 8-ch	√	√	√	LQFP64	-40 to +105
NUC400RG8AE	256	64	16	16	51	4	5	3	3	√	2	-	5	√	1	-	-	8	1	2	-	x2, 8-ch	√	√	√	LQFP64	-40 to +105
NUC400VI8AE	512	64	16	16	84	4	6	5	4	√	5	-	6	√	2	-	-	16	2	3	-	x2, 16-ch	√	√	√	LQFP100	-40 to +105
NUC400VG8AE	256	64	16	16	84	4	6	5	4	√	5	-	6	√	2	-	-	16	2	3	-	x2, 16-ch	√	√	√	LQFP100	-40 to +105
NUC400KI8AE	512	64	16	16	108	4	6	6	4	√	5	-	6	√	2	-	-	16	2	3	2	x2, 16-ch	√	√	√	LQFP128	-40 to +105
NUC400KG8AE	256	64	16	16	108	4	6	6	4	√	5	-	6	√	2	-	-	16	2	3	2	x2, 16-ch	√	√	√	LQFP128	-40 to +105
NUC400JI8AE	512	64	16	16	120	4	6	6	4	√	5	-	6	√	2	-	-	16	2	3	2	x2, 16-ch	√	√	√	LQFP144	-40 to +105
NUC400JG8AE	256	64	16	16	120	4	6	6	4	√	5	-	6	√	2	-	-	16	2	3	2	x2, 16-ch	√	√	√	LQFP144	-40 to +105

*Under development, available in Q2, 2014.

NUC420 USB Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	ISP ROM (Kbytes)	PDMA	I/O	Timer (32- bit)	Connectivity							EBI	I ² S	Ethernet MAC	USB OTG	USB Device	PWM (16- bit)	QEI	Analog Comp.	OP Amp.	ADC (12-bit)	RTC (V _{BAT})	Crypto	ICP ISP IAP	Package	Operating Temp. Range (°C)
							UART	ISO- 7816-3	SPI	SD Host	I ² C	CAN	LIN															
NUC422RI8AE	512	64	16	16	45	4	4	3	3	✓	2	-	4	✓	1	-	FS	HS	8	1	2	-	x2, 8-ch	✓	✓	✓	LQFP64	-40 to +105
NUC422RG8AE	256	64	16	16	45	4	4	3	3	✓	2	-	4	✓	1	-	FS	HS	8	1	2	-	x2, 8-ch	✓	✓	✓	LQFP64	-40 to +105
NUC422VI8AE	512	64	16	16	77	4	6	5	4	✓	5	-	6	✓	2	-	FS	HS	16	2	3	-	x2, 16-ch	✓	✓	✓	LQFP100	-40 to +105
NUC422VG8AE	256	64	16	16	77	4	6	5	4	✓	5	-	6	✓	2	-	FS	HS	16	2	3	-	x2, 16-ch	✓	✓	✓	LQFP100	-40 to +105
NUC422KI8AE	512	64	16	16	101	4	6	6	4	✓	5	-	6	✓	2	-	FS	HS	16	2	3	2	x2, 16-ch	✓	✓	✓	LQFP128	-40 to +105
NUC422KG8AE	256	64	16	16	101	4	6	6	4	✓	5	-	6	✓	2	-	FS	HS	16	2	3	2	x2, 16-ch	✓	✓	✓	LQFP128	-40 to +105
NUC422JI8AE	512	64	16	16	114	4	6	6	4	✓	5	-	6	✓	2	-	FS	HS	16	2	3	2	x2, 16-ch	✓	✓	✓	LQFP144	-40 to +105
NUC422JG8AE	256	64	16	16	114	4	6	6	4	✓	5	-	6	✓	2	-	FS	HS	16	2	3	2	x2, 16-ch	✓	✓	✓	LQFP144	-40 to +105

*Under development, available in Q2, 2014.

Contact us: NuMicro@nuvoton.com

NUC430 Automotive Series

Part No.	Flash (Kbytes)	SRAM (Kbytes)	ISP ROM (Kbytes)	PDMA	I/O	Timer (32-bit)	Connectivity							EBI	I ² S	Ethernet MAC	USB OTG	USB Device	PWM (16-bit)	QEI	Analog Comp.	OP Amp.	ADC (12-bit)	RTC (V _{BAT})	Crypto	ICP ISP IAP	Package	Operating Temp. Range (°C)
							UART	ISO-7816-3	SPI	SD Host	I ² C	CAN	LIN															
NUC430RI8AE	512	64	16	16	51	4	5	3	3	✓	2	2	4	✓	1	-	-	-	8	1	2	-	x2, 8-ch	✓	✓	✓	LQFP64	-40 to +105
NUC430RG8AE	256	64	16	16	51	4	5	3	3	✓	2	2	4	✓	1	-	-	-	8	1	2	-	x2, 8-ch	✓	✓	✓	LQFP64	-40 to +105
NUC430VI8AE	512	64	16	16	84	4	6	5	4	✓	5	2	6	✓	2	-	-	-	16	2	3	-	x2, 16-ch	✓	✓	✓	LQFP100	-40 to +105
NUC430VG8AE	256	64	16	16	84	4	6	5	4	✓	5	2	6	✓	2	-	-	-	16	2	3	-	x2, 16-ch	✓	✓	✓	LQFP100	-40 to +105
NUC430KI8AE	512	64	16	16	108	4	6	6	4	✓	5	2	6	✓	2	-	-	-	16	2	3	2	x2, 16-ch	✓	✓	✓	LQFP128	-40 to +105
NUC430KG8AE	256	64	16	16	108	4	6	6	4	✓	5	2	6	✓	2	-	-	-	16	2	3	2	x2, 16-ch	✓	✓	✓	LQFP128	-40 to +105
NUC430JI8AE	512	64	16	16	120	4	6	6	4	✓	5	2	6	✓	2	-	-	-	16	2	3	2	x2, 16-ch	✓	✓	✓	LQFP144	-40 to +105
NUC430JG8AE	256	64	16	16	120	4	6	6	4	✓	5	2	6	✓	2	-	-	-	16	2	3	2	x2, 16-ch	✓	✓	✓	LQFP144	-40 to +105

*Under development, available in Q2, 2014.

NUC440 Connectivity Series

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

*Under development, available in Q1, 2014.




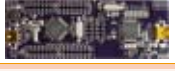







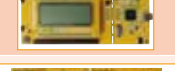

NUC470 Advanced Series

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

*Under development, available in Q1, 2014.

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Development Tools for NuMicro™ Family

Ordering No.	Content	Supported Device	Evaluation / Development Kit for	Picture
SDK (Software Development Kit)				
NuTiny-SDK-Mini51	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-Mini51 • USB Cable 	Mini51 Mini52 Mini54	<ul style="list-style-type: none"> • An Evaluation/Development Kit for Mini51 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-M051	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-M051 • USB Cable 	M052 M054 M058 M0516	<ul style="list-style-type: none"> • An Evaluation/Development Kit for M051 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-M058S	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-M058S • USB Cable 	M058S	<ul style="list-style-type: none"> • An Evaluation/Development Kit for M058S series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-NUC100	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC100 • USB Cable 	NUC100	<ul style="list-style-type: none"> • An Evaluation/Development Kit for NUC100 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-NUC120	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC120 • USB Cable 	NUC120	<ul style="list-style-type: none"> • An Evaluation/Development Kit for NUC120 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-NUC122	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC122 • USB Cable 	NUC122	<ul style="list-style-type: none"> • An Evaluation/Development Kit for NUC122 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-NUC123	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC123 • USB Cable 	NUC123	<ul style="list-style-type: none"> • An Evaluation/Development Kit for NUC123 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-NUC140	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC140 • USB Cable 	NUC130 NUC140	<ul style="list-style-type: none"> • An Evaluation/Development Kit for NUC130/140 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-NUC200	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC200 • USB Cable 	NUC200	<ul style="list-style-type: none"> • An Evaluation/Development Kit for NUC200 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-NUC220	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC220 • USB Cable 	NUC220	<ul style="list-style-type: none"> • An Evaluation/Development Kit for NUC220 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-NUC240	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC240 • USB Cable 	NUC230 NUC240	<ul style="list-style-type: none"> • An Evaluation/Development Kit for NUC230/240 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-Nano100	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-Nano100 • USB Cable 	Nano100	<ul style="list-style-type: none"> • An Evaluation/Development Kit for Nano100 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-Nano120	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-Nano120 • USB Cable 	Nano120	<ul style="list-style-type: none"> • An Evaluation/Development Kit for Nano120 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-Nano130	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-Nano130 • LCD Module • USB Cable 	Nano110 Nano130	<ul style="list-style-type: none"> • An Evaluation/Development Kit for Nano130 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-Nano102	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-Nano102 • USB Cable 	Nano102	<ul style="list-style-type: none"> • An Evaluation/Development Kit for Nano102 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-Nano112	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-Nano112 • LCD Module • USB Cable 	Nano112	<ul style="list-style-type: none"> • An Evaluation/Development Kit for Nano112 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-AU9110	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-AU9110 • USB Cable 	AU9110	<ul style="list-style-type: none"> • An Evaluation/Development Kit for AU9110 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-NUC440	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC440 • USB Cable 	NUC400 NUC420 NUC430 NUC440	<ul style="list-style-type: none"> • An Evaluation/Development Kit for NUC400 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	
NuTiny-SDK-NUC470	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC470 • USB Cable 	NUC400 NUC420 NUC430 NUC440 NUC470	<ul style="list-style-type: none"> • An Evaluation/Development Kit for NUC400 series • IAR EWARM/Keil RVMDK available on IAR/Keil website • Supported by CooCox CoIDE • Support On-line ICP (In-Circuit Programming) 	

Contact us: NuMicro@nuvoton.com

Development Tools for NuMicro™ Family

Ordering No.	Content	Evaluation Devices	Evaluation / Development Kit for	Picture
Learning Board (LB)				
Nu-LB-NUC140	<ul style="list-style-type: none">• Nu-LB-NUC140• Nu-Link-ME on board• USB Cable• NuMicro Family CD	NUC100 NUC120 NUC130 NUC140	<ul style="list-style-type: none">• A Starter Kit made by Nuvoton• IAR EWARM (evaluation version) included• Keil RVMDK (evaluation version) included• Supported by CooCox CoIDE• Examples with source code included	
Nu-LB-NUC240	<ul style="list-style-type: none">• Nu-LB-NUC240• Nu-Link-ME on board• USB Cable• NuMicro Family CD	NUC200 NUC220 NUC230 NUC240	<ul style="list-style-type: none">• A Starter Kit made by Nuvoton• IAR EWARM (evaluation version) included• Keil RVMDK (evaluation version) included• Supported by CooCox CoIDE• Examples with source code included	
Nu-LB-M051	<ul style="list-style-type: none">• Nu-LB-M051• Nu-Link-ME on board• USB Cable• NuMicro Family CD	M051	<ul style="list-style-type: none">• A Starter Kit made by Nuvoton• IAR EWARM (evaluation version) included• Keil RVMDK (evaluation version) included• Supported by CooCox CoIDE• Examples with source code included	
Nu-LB-Mini51	<ul style="list-style-type: none">• Nu-LB-Mini51• Nu-Link-ME on board• USB Cable• NuMicro Family CD	Mini51	<ul style="list-style-type: none">• A Starter Kit made by Nuvoton• IAR EWARM (evaluation version) included• Keil RVMDK (evaluation version) included• Supported by CooCox CoIDE• Examples with source code included	
Nu-LB-Nano130	<ul style="list-style-type: none">• Nu-LB-Nano130• Nu-Link-ME on board• LCD Module• USB Cable• NuMicro Family CD	Nano100 Nano110 Nano120 Nano130	<ul style="list-style-type: none">• A Starter Kit made by Nuvoton• IAR EWARM (evaluation version) included• Keil RVMDK (evaluation version) included• Supported by CooCox CoIDE• Examples with source code included	
Nu-LB-NUC470	<ul style="list-style-type: none">• Nu-LB-NUC470• Nu-Link-ME on board• LCD Module• USB Cable• NuMicro Family CD	NUC400 NUC420 NUC430 NUC440 NUC470	<ul style="list-style-type: none">• A Starter Kit made by Nuvoton• IAR EWARM (evaluation version) included• Keil RVMDK (evaluation version) included• Supported by CooCox CoIDE• Examples with source code included	
Nu-Link				
Nu-Link	<ul style="list-style-type: none">• Nu-Link	NuMicro Family	<ul style="list-style-type: none">• USB→SWD bridge• Support On-line and Off-line ICP (In-Circuit Programming)• USB Plug & Play	
Nu-Link-Pro	<ul style="list-style-type: none">• Nu-Link-Pro	NuMicro Family	<ul style="list-style-type: none">• USB→SWD bridge• Support On-line and Off-line ICP (In-Circuit Programming)• USB Plug & Play• Programmable output VDD: 1.8V,2.5V,3.3V,5.0V• Wide target VDD input level:1.8V~5.5V	
3rd Party Starter Kit (SKT)				
Nu-IAR-SKT	<ul style="list-style-type: none">• NUC140-SK• USB Cable• NuMicro Family CD	NUC100 NUC120 NUC130 NUC140	<ul style="list-style-type: none">• Starter Kit made by IAR• IAR EWARM (evaluation version) included• IAR C/C++ Compiler included• USB Plug & Play	
Nu-Keil-SKT	<ul style="list-style-type: none">• U-LINK-ME• MCBNUC1XX• USB Cable• NuMicro Family CD	NUC100 NUC120 NUC130 NUC140	<ul style="list-style-type: none">• Starter Kit made by Keil• Keil RVMDK (evaluation version) included• ARM C/C++ Compiler included• USB Plug & Play	
Ordering No.	Content	Supported Device	Evaluation / Development Kit for	Picture
NuMicro Mini51 Series Gang Writer (NuGang)				
NuGang-Mini51F-TSSOP20	<ul style="list-style-type: none">• User Manual• 4-chip Gang Programming Board	Mini51F Mini52F Mini54F	<ul style="list-style-type: none">• Support Mini51 series 4 chips at one time• USB to PC/Laptop interface• Support Off-line copy function• F: TSSOP 20• T: QFN33: 4x4mm• Z: QFN33: 5x5mm• L: LQFP48: 7x7mm	
NuGang-Mini51T-QFN33	<ul style="list-style-type: none">• User Manual• 4-chip Gang Programming Board	Mini51T Mini52T Mini54T		
NuGang-Mini51Z-QFN33	<ul style="list-style-type: none">• User Manual• 4-chip Gang Programming Board	Mini51Z Mini52Z Mini54Z		
NuGang-Mini51L-LQFP48	<ul style="list-style-type: none">• User Manual• 4-chip Gang Programming Board	Mini51L Mini52L Mini54L		
NuMicro M051 Series Gang Writer (NuGang)				
NuGang-M051Z-QFN33	<ul style="list-style-type: none">• User Manual• 4-chip Gang Programming Board	M052Z M054Z M058Z M0516Z	<ul style="list-style-type: none">• Support M051 series 4 chips at one time• USB to PC/Laptop interface• Support Off-line copy function• Z: QFN33: 5x5mm• L: LQFP48: 7x7mm	
NuGang-M051L-LQFP48	<ul style="list-style-type: none">• User Manual• 4-chip Gang Programming Board	M052L M054L M058L M0516L		
NuMicro M058S Series Gang Writer (NuGang)				
NuGang-M058SF-TSSOP20	<ul style="list-style-type: none">• User Manual• 4-chip Gang Programming Board	M058SF	<ul style="list-style-type: none">• Support M058S series 4 chips at one time• USB to PC/Laptop interface• Support Off-line copy function• F: TSSOP 20• Z: QFN33: 5x5mm• L: LQFP48: 7x7mm• S: LQFP64: 7x7mm	
NuGang-M058SZ-QFN33	<ul style="list-style-type: none">• User Manual• 4-chip Gang Programming Board	M058SZ		
NuGang-M058SL-LQFP48	<ul style="list-style-type: none">• User Manual• 4-chip Gang Programming Board	M058SL		
NuGang-M058SS-LQFP64	<ul style="list-style-type: none">• User Manual• 4-chip Gang Programming Board	M058SS		
NuMicro NUC100 Series Gang Writer (NuGang)				
NuGang-NUC100L-LQFP48	<ul style="list-style-type: none">• User Manual• 4-chip Gang Programming Board	NUC100L NUC120L NUC130L NUC140L	<ul style="list-style-type: none">• Support NUC100 series 4 chips at one time• USB to PC/Laptop interface• Support Off-line copy function• L: LQFP48: 7x7mm• R: LQFP64: 10x10mm	
NuGang-NUC100R-LQFP64	<ul style="list-style-type: none">• User Manual• 4-chip Gang Programming Board	NUC100R NUC120R NUC130R NUC140R		
NuGang-NUC100V-LQFP100	<ul style="list-style-type: none">• User Manual• 4-chip Gang Programming Board	NUC100V NUC120V NUC130V NUC140V		

Development Tools for NuMicro™ Family

Ordering No.	Content	Supported Devices	Evaluation / Development Kit for	Picture
NuMicro NUC122 Series Gang Writer (NuGang)				
NuGang-NUC122Z-QFN33	• User Manual • 4-chip Gang Programming Board	NUC122Z	• Support NUC122 series 4 chips at one time • USB to PC/Laptop interface • Support Off-line copy function • Z: QFN33: 5x5mm • L: LQFP48: 7x7mm • S: LQFP64: 7x7mm • V: LQFP100: 14x14mm	
NuGang-NUC122L-LQFP48	• User Manual • 4-chip Gang Programming Board	NUC122L		
NuGang-NUC122S-LQFP64	• User Manual • 4-chip Gang Programming Board	NUC122S		
NuGang-NUC123Z-QFN33	• User Manual • 4-chip Gang Programming Board	NUC123Z		
NuGang-NUC123L-LQFP48	• User Manual • 4-chip Gang Programming Board	NUC123L		
NuGang-NUC123S-LQFP64	• User Manual • 4-chip Gang Programming Board	NUC123S		
NuMicro NUC200 Series Gang Writer (NuGang)				
NuGang-NUC200L-LQFP48	• User Manual • 4-chip Gang Programming Board	NUC200L NUC220L NUC230L NUC240L	• Support NUC200 series 4 chips at one time • USB to PC/Laptop interface • Support Off-line copy function • L: LQFP48: 7x7mm • S: LQFP64: 7x7mm • V: LQFP100: 14x14mm	
NuGang-NUC200S-LQFP64	• User Manual • 4-chip Gang Programming Board	NUC200S NUC220S NUC230S NUC240S		
NuGang-NUC200V-LQFP100	• User Manual • 4-chip Gang Programming Board	NUC200V NUC220V NUC230V NUC240V		
NuMicro Nano100 Series Gang Writer (NuGang)				
NuGang-Nano100N-QFN48	• User Manual • 4-chip Gang Programming Board	Nano100N	• Support Nano100 series 4 chips at one time • USB to PC/Laptop interface • Support Off-line copy function • N: QFN48: 7x7mm • L: LQFP48: 7x7mm • S: LQFP64: 7x7mm • R: LQFP64: 10x10mm • K: LQFP128: 14x14mm	
NuGang-Nano100L-LQFP48	• User Manual • 4-chip Gang Programming Board	Nano100L Nano120L		
NuGang-Nano100S-LQFP64	• User Manual • 4-chip Gang Programming Board	Nano100S Nano110S Nano120S Nano130S		
NuGang-Nano100R-LQFP64	• User Manual • 4-chip Gang Programming Board	Nano110R		
NuGang-Nano100K-LQFP128	• User Manual • 4-chip Gang Programming Board	Nano100K Nano110K Nano120K Nano130K		
NuMicro Nano102/112 Series Gang Writer (NuGang)				
NuGang-Nano102Z-QFN33	• User Manual • 4-chip Gang Programming Board	Nano100Z	• Support Nano102/112 series 4 chips at one time • USB to PC/Laptop interface • Support Off-line copy function • Z: QFN33: 5x5mm • L: LQFP48: 7x7mm • S: LQFP64: 7x7mm • R: LQFP64: 10x10mm	
NuGang-Nano102L-LQFP48	• User Manual • 4-chip Gang Programming Board	Nano102L Nano102S		
NuGang-Nano102S/Nano112S-LQFP64	• User Manual • 4-chip Gang Programming Board	Nano112S		
NuGang-Nano112R-LQFP64	• User Manual • 4-chip Gang Programming Board	Nano112R		
NuMicro NUC400 Series Gang Writer (NuGang)				
NuGang-NUC400R-LQFP64	• User Manual • 4-chip Gang Programming Board	NUC400R NUC420R NUC430R NUC440R	• Support NUC400 series 4 chips at one time • USB to PC/Laptop interface • Support Off-line copy function • R: LQFP64: 10x10mm • V: LQFP100: 14x14mm • K: LQFP128: 14x14mm • J: LQFP144: 20x20mm • H: LQFP176: 24x24mm	
NuGang-NUC400V-LQFP100	• User Manual • 4-chip Gang Programming Board	NUC400V NUC420V NUC430V NUC440V NUC470V		
NuGang-NUC400K-LQFP128	• User Manual • 4-chip Gang Programming Board	NUC400K NUC420K NUC430K NUC440K NUC470K		
NuGang-NUC400J-LQFP144	• User Manual • 4-chip Gang Programming Board	NUC400J NUC420J NUC430J NUC440J NUC470J		
NuGang-NUC400H-LQFP176	• User Manual • 4-chip Gang Programming Board	NUC400H NUC420H NUC430H NUC440H NUC470H		

Contact us: NuMicro@nuvoton.com

8bit 8051 MCUs



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

6T/12T 8051 Series

Key Features: Operable at 2.4V ~ 5.5V and -40°C ~ +85°C with UART, SPI, internal RC and ISP.

Potential Applications: Bar Code Reader, Key Phone, KVM, 2.4G Wireless Keyboard, IPC, Monitor, Security System, etc.

W78 Standard Series

Part No.	Flash (Kbytes)	SRAM (bytes)	ISP ROM (Kbytes)	I/O	Timer (16-bit)	Connectivity			Comp.	PWM (8-bit)	ADC (10-bit)	INT	ISP	Special Function	Package
						UART	SPI	I ² C							
W78E052D	8	256	2	up to 36	3	1	-	-	-	-	-	4	✓	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/LQFP48/TQFP44
W78E054D	16	256	2	up to 36	3	1	-	-	-	-	-	4	✓	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/LQFP48/TQFP44
W78E058D	32	512	4	up to 36	3	1	-	-	-	-	-	4	✓	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/LQFP48
W78E516D	64	512	4	up to 36	3	1	-	-	-	-	-	4	✓	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/LQFP48
W78ERD2A	64	256+1K	4	up to 36	3	1	-	-	-	5	-	4	✓	PCA, 6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44
W78E858A	32	768	4	up to 36	3	1	-	-	-	4	-	10	✓	128B EE, Extra I/O port	PDIP40/PLCC44/PQFP44
W78C032	-	256	-	up to 32	3	1	-	-	-	-	-	2	-	Extra I/O port	PDIP40/PLCC44/PQFP44
W78C438	-	256	-	up to 40	3	1	-	-	-	-	-	4	-	1MB external memory space	PQFP100

N78/W78 Industrial Series

Part No.	Flash (Kbytes)	SRAM (bytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (16-bit)	Connectivity			Comp.	PWM (8-bit)	ADC (10-bit)	INT	ISP	Special Function	Package
							UART	SPI	I ² C							
N78E055A	16	256+1K	4	2.5	up to 40	3	1	1	-	-	5	-	4	✓	6T/12T option, Extra I/O port, internal 22 MHz RC, 4 level BOR	PDIP40/PLCC44/PQFP44/LQFP48
N78E059A	32	256+1K	4	2.5	up to 40	3	1	1	-	-	5	-	4	✓	6T/12T option, Extra I/O port, internal 22 MHz RC, 4 level BOR	PDIP40/PLCC44/PQFP44/LQFP48
N78E517A	64	256+1K	Configurable	2.5	up to 40	3	1	1	-	-	5	-	4	✓	6T/12T option, Extra I/O port, internal 22 MHz RC, 4 level BOR	PDIP40/PLCC44/PQFP44/LQFP48 /TQFP44
N78E366A	64	256+1K	-	2.5	up to 40	3	1	1	-	-	5	-	4	✓	6T/12T option, Extra I/O port, internal 22 MHz RC, 4 level BOR	PDIP40/PLCC44/PQFP44/LQFP48
W78IRD2A	64	256+1K	-	4	up to 36	3	1	-	-	-	5	-	4	✓	PCA, 6T/12T option, Extra I/O port	PDIP40/PLCC44

4T 8051 Series

Key Features: Integrated with Data Flash, 2* I²C, 2* UART, SPI, PWM(QEI), ADC and ISP operating at 2.4V ~ 5.5V and -40°C ~ +85°C.

Potential Applications: IPC, Communication Equipment, Security/Alarm System, LCD TV, Motor Applications, Power Management, etc.

W77 Turbo Series

Part No.	Flash (Kbytes)	SRAM (bytes)	ISP ROM (Kbytes)	I/O	Timer (16-bit)	Connectivity			Comp.	PWM (8-bit)	ADC (10-bit)	INT	ISP	Special Function	Package
						UART	SPI	I ² C							
W77E058A	32	256+1K	-	up to 36	3	2	-	-	-	-	-	6	-	dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44
W77L058A	32	256+1K	-	up to 36	3	2	-	-	-	-	-	6	-	dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44
W77E516A	64	256+1K	4	up to 36	3	2	-	-	-	-	-	6	✓	dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44
W77L516A	64	256+1K	4	up to 36	3	2	-	-	-	-	-	6	✓	dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44
W77E532A	128	256+1K	4	up to 36	3	2	-	-	-	-	-	6	✓	dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44
W77L532A	128	256+1K	4	up to 36	3	2	-	-	-	-	-	6	✓	dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44
W77C032A	-	256+1K	-	up to 36	3	2	-	-	-	-	-	6	-	dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44
W77L032A	-	256+1K	-	up to 36	3	2	-	-	-	-	-	6	-	dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44

N79/W79 Enhanced Turbo Series

Part No.	Flash (Kbytes)	SRAM (bytes)	Data Flash (bytes)	ISP ROM (Kbytes)	I/O	Timer (16-bit)	Connectivity			Comp.	PWM (8-bit)	ADC (10-bit)	INT	ISP	Special Function	Package
							UART	SPI	I ² C							
N79E352R	8	256	128	-	up to 38	3	1	-	1	-	2	-	2	ICP	internal 22MHz, KBI, BOR	PDIP40/LQFP48
W79E201A	16	256	-	4	up to 33	3	1	-	-	-	6	8	2	ISP	JTAG interface	PLCC44/PQFP44/LQFP48
W79E632A	128	256+1K	-	4	up to 36	3	1	-	-	-	6	-	2	ISP	Extra I/O port	PLCC44/PQFP44
W79L632A	128	256+1K	-	4	up to 36	3	1	-	-	-	6	-	2	ISP	Extra I/O port	PLCC44/PQFP44
W79E633A	128	256+1K	-	4	up to 36	3	1	-	2	-	6	4	2	ISP	Extra I/O port	PLCC44
W79L633A	128	256+1K	-	4	up to 36	3	1	-	2	-	6	4	2	ISP	Extra I/O port	PLCC44
W79E658A	128	256+1K	-	4	up to 60	3	1	-	2	-	6	8	2	ISP	JTAG interface, Extra I/O port	PQFP100
W79L658A	128	256+1K	-	4	up to 60	3	1	-	2	-	6	8	2	ISP	JTAG interface, Extra I/O port	PQFP100
W79E659A	32	256+1K	-	4	up to 60	3	1	-	2	-	6	8	2	ISP	JTAG interface, Extra I/O port	PQFP100
W79L659A	32	256+1K	-	4	up to 60	3	1	-	2	-	6	8	2	ISP	JTAG interface, Extra I/O port	PQFP100

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Low Pin Count 8051 Series

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

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

N79/W79 LPC Series

Part No.	Flash (Kbytes)	SRAM (bytes)	Data Flash (bytes)	ISP ROM (Kbytes)	I/O	Timer (16-bit)	Connectivity			Comp.	PWM (10-bit)	ADC (10-bit)	INT	ISP ICP IAP	Special Function	Package
							UART	SPI	I ² C							
*N76E885	18	512	Configurable	√	up to 26	3	2	2	1	-	8	8	2	ISP ICP IAP	1T 8051, internal 22 MHz RC, KBI, BOR	TSSOP28
*N76E884	8	512	8K	√	up to 14	3	1	1	1	-	6	7	2	ISP ICP IAP	1T 8051, internal 22 MHz RC, KBI, BOR	TSSOP16/MSOP10
N79E855	16	512	Configurable	2	up to 25	3	2	2	1	-	4	8	2	ISP ICP	internal 22 MHz RC, KBI, BOR	TSSOP28/SOP28
N79E854	8	512	4K	2	up to 25	3	2	2	1	-	4	8	2	ISP ICP	internal 22 MHz RC, KBI, BOR	TSSOP28/SOP28
N79E845	16	512	Configurable	2	up to 17	3	1	1	1	-	4	7	2	ISP ICP	internal 22 MHz RC, KBI, BOR	TSSOP20/SOP20
N79E844	8	512	4K	2	up to 17	3	1	1	1	-	4	7	2	ISP ICP	internal 22 MHz RC, KBI, BOR	TSSOP20/SOP20
N79E8432	4	512	4K	2	up to 13	3	1	-	1	-	4	4	2	ISP ICP	internal 22 MHz RC, KBI, BOR	SOP16
N79E825	16	256	256	-	up to 18	2	1	-	1	2	4	4	2	ICP	internal 6 MHz RC, KBI, BOR	SSOP20/SOP20/PDIP20
N79E824	8	256	256	-	up to 18	2	1	-	1	2	4	4	2	ICP	internal 6 MHz RC, KBI, BOR	SSOP20/SOP20/PDIP20
N79E823	4	256	256	-	up to 18	2	1	-	1	2	4	4	2	ICP	internal 6 MHz RC, KBI, BOR	SSOP20/SOP20/PDIP20
N79E822	2	256	256	-	up to 18	2	1	-	1	2	4	4	2	ICP	internal 6 MHz RC, KBI, BOR	SSOP20/SOP20/PDIP20
W79E4051	4	256	128	-	up to 17	2	1	-	-	1	1	1	2	ICP	internal 22 MHz RC, 4 level BOR	SSOP20/SOP20/PDIP20
W79E2051	2	256	128	-	up to 17	2	1	-	-	1	1	1	2	ICP	internal 22 MHz RC, 4 level BOR	SSOP20/SOP20/PDIP20
W79E8213	4	128	128	-	up to 18	2	-	-	-	-	4	8	2	ICP	internal 20 MHz RC, KBI, 3 input capture, High sink (40mA) port, Buzzer, BOR	SSOP20/SOP20/PDIP20
N79E342	2	128	128	-	up to 14	2	-	-	-	-	4	4	2	ICP	dual clock, internal 455 kHz RC, KBI, BOR	SOP16/PDIP16
N79E875	16	512	128	-	up to 36	3x16-bit, 1x12-bit	1	1	1	2	8x12-bit	8	2	ICP	internal 22 MHz RC, KBI, OP, 3 level BOR	LQFP48

*Under development, available in Q2, 2014.

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Development Tools for 8-bit 8051 MCUs

Ordering No.	Supported Devices	Description	Picture
NuGang-N79E8432-SOP16	N79E8432	4-chip Gang Programming Board	
NuGang-N79E85X-TSSOP28	N79E855/854	4-chip Gang Programming Board	
NuGang-N79E84X-TSSOP20	N79E845/844	4-chip Gang Programming Board	
NuGang-STD 8051-LQFP48	W78E052/054/058/516/N78E366/517/059/055	4-chip Gang Programming Board	
NuGang-STD 8051-PQFP44	W78E052/054/058/516/N78E366/517/059/055	4 chips Gang programming board	
NuGang-STD 8051-DIP40	W78E052/054/058/516/N78E366/517/059/055	4 chips Gang programming board	
NuGang-STD 8051-PLCC44	W78E052/054/058/516/N78E366/517/059/055	4-chip Gang Programming Board	
NuTiny-N79E85J	N79E85X/84X series	N79E85x/84x ICE	
NWR-005	Nuvoton 8-bit MCU	ISP+ICP Programmer	
NWR-002	Nuvoton 8-bit MCU	Writer	
NWR-002-PLCC44	Nuvoton 8-bit MCU	Adapter PLCC 44	
NWR-002-PQFP44	Nuvoton 8-bit MCU	Adapter PQFP 44	
NWR-002-LQFP48	Nuvoton 8-bit MCU	Adapter LQFP 48	

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Microprocessors

◆ ARM7™ / ARM9™ MPUs

ARM7™ / ARM9™ MPUs
Development Tools

◆ ARM SoC N329 Family

N3290 MJPEG Series
N3291 Multi-Format Decoder Series
N3292 H.264 Codec Series



ARM7™ / ARM9™ MPUs



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

Part No.	Core				Memory I/F		Storage		MAC	USB			GFX	LCD	Timer	Analog			Peripheral										Power			Package ²	Operating Temp. Range ¹ (°C)									
	Max Speed (MHz)	CPU	I Cache (KB)	Security against piracy	SPRAM (KB)	NOR Flash	SPI Flash, No. of I/O Pins	NAND Flash, No. of ECC bits	ATAPI	SD / SDIO	Ethernet 10/100 MAC	USB 1.1 Host (12M bps)	USB 2.0 Host (480M bps)	USB 2.0 FS Device	USB 2.0 HS Device	2D Graphics	TFT LCD	STN LCD	Real-Time Clock (RTC)	PWM	No. of Channels	Speed (Samples per second)	Touch Screen Controller	16-bit DAC Channels	LVD/LVR	External Bus Interface	GPIO (Max)	UART	I ² C	SPI	KPI			PS2	I ³ SAC97	PCI Master	Core Voltage (V)	I/O Voltage (V)	Built-in LDO			
ARM7																																										
NUC501ADN	80	ARM7TDMI	-	-	32	✓	-	-	2	-	-	-	-	1	-	-	-	-	✓	4	8	400K	-	1	✓	✓	-	26	1	1	2	-	-	-	-	-	3.3	✓	LQFP48	-40 to +105		
NUC501BDN	80	ARM7TDMI	-	-	32	✓	-	-	2	-	-	-	-	1	-	-	-	-	✓	4	8	400K	-	1	✓	✓	-	37	2	1	2	-	-	-	-	-	3.3	✓	LQFP64	-40 to +105		
NUC502ADN	80	ARM7TDMI	-	-	64	✓	-	-	2	-	-	-	-	1	-	-	-	-	✓	4	8	400K	-	1	✓	✓	-	26	1	1	2	-	-	-	-	-	3.3	✓	LQFP48	-40 to +105		
NUC502BDN	80	ARM7TDMI	-	-	64	✓	-	-	2	-	-	-	-	1	-	-	-	-	✓	4	8	400K	-	1	✓	✓	-	37	2	1	2	-	-	-	-	-	3.3	✓	LQFP64	-40 to +105		
NUC502CDN	80	ARM7TDMI	-	-	64	✓	-	-	2	-	-	-	-	1	-	-	-	-	✓	4	8	400K	-	1	✓	✓	-	37	2	1	2	-	-	-	-	-	3.3	✓	LQFP64*	-40 to +105		
NUC710ADN	80	ARM7TDMI	4	4	-	-	✓	✓	1	-	-	1	1	2	-	1	-	-	✓	✓	✓	4	-	-	-	-	✓	✓	71	4	2	1	✓	1	1	-	1.8	3.3	-	LQFP176	-40 to +85	
NUC740ADN	80	ARM7TDMI	8	2	-	-	✓	✓	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	21	1	-	-	-	-	-	-	1.8	3.3	-	LQFP176	0 to +70		
NUC745ADN	80	ARM7TDMI	4	4	-	-	✓	✓	1	-	-	1	2	-	1	-	-	-	-	-	-	-	-	-	-	✓	✓	31	4	2	1	✓	1	1	-	1.8	3.3	-	LQFP128	-40 to +85		
ARM9																																										
NUC910ABN	200	ARM926EJ	8	8	-	-	✓	✓	1	4	✓	2	1	-	2	-	1	✓	-	✓	✓	4	8	300K	✓	-	✓	✓	✓	92	5	2	1	✓	2	1	-	1.8	3.3	-	PBGA324	-40 to +85
NUC920ABN	200	ARM926EJ	8	8	-	-	✓	✓	1	-	✓	1	1	-	2	-	1	-	-	✓	4	8	300K	✓	-	✓	✓	✓	92	3	2	1	✓	2	1	3	1.8	3.3	-	PBGA324	-40 to +85	
NUC945ADN	200	ARM926EJ	8	8	-	-	✓	✓	-	-	-	1	1	-	1	-	1	-	-	-	-	-	-	-	-	-	✓	34	1	-	-	-	-	-	-	1.8	3.3	-	LQFP128	-40 to +85*		
NUC946ADN	200	ARM926EJ	8	8	-	-	✓	✓	1	-	-	1	1	-	2	-	1	-	-	-	-	-	-	-	-	-	✓	37	2	2	1	-	-	-	-	1.8	3.3	-	LQFP128	-40 to +85*		
NUC950ADN	200	ARM926EJ	8	8	-	-	✓	✓	1	4	-	1	1	-	2	-	1	✓	-	✓	-	4	-	-	-	-	✓	52	3	2	1	✓	-	1	-	1.8	3.3	-	LQFP216	-40 to +85*		
NUC951ADN	200	ARM926EJ	8	8	-	-	✓	✓	1	4	-	2	1	-	2	-	1	✓	-	✓	✓	4	-	-	-	-	✓	63	3	2	1	✓	✓	1	-	1.8	3.3	-	LQFP216	-40 to +85*		
NUC960ADN	200	ARM926EJ	8	8	-	-	✓	✓	1	-	-	-	1	-	2	-	1	-	-	-	-	-	-	-	-	✓	✓	51	3	2	1	-	-	-	2	1.8	3.3	-	LQFP216	-40 to +85		

1. -40 to 85 °C in VDD18 for I/O Buffer: 1.8V+/-10%, VDD33 for Core Logic: 3.3V+/-5%, USBVDDC0/USBVDDC1/USBVDDT0/USBVDDT1 for USB: 3.3V+/-5%, PLLVDD18 for PLL: 1.8V+/-10%.

2. LQFP64*: 7x7mm

Development Tools

ARM7				
Part No.	NUC740	NUC710	NUC745	NUC501
SDK	ARM ADS 1.2	ARM ADS 1.2	ARM ADS 1.2	ARM ADS 1.2 / Keil / IAR / GNU
uClinux	uClinux 2.4.20	Normal Release uClinux 2.4.20 uClinux 2.6.38	Normal release uClinux 2.4.20 uClinux 2.6.38	Driver Library Driver Sample Code USB Device Samples PLL Generator Tool Writer Tool User's Manual Quick Start Guide Application Note
ARM9				
Part No.	NUC910	NUC920	NUC950	NUC960
SDK	ARM ADS 1.2	ARM ADS 1.2	ARM ADS 1.2	ARM ADS 1.2
WinCE 5.0 BSP	✓	-	✓	-
WinCE 6.0 BSP	✓	-	✓	-
uClinux	-	-	Conditional release uClinux 2.6.19	-
Linux	Linux 2.6.35	Linux 2.6.35	Linux 2.6.35	Linux 2.6.35

Contact us: MicroC-32bit@nuvoton.com



N3290 MJPEG Series

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

Part No.	Core				Memory I/F				USB		H/W Accelerator		LCD		Analog		Peripheral										Power		PKG		Status ⁴							
	Max Speed (MHz)	ARM CPU	I-Cache (KB)	D-Cache (KB)	SRAM (KB)	Stacked SDRAM (bit)	Raw NAND I/F ECC bits	SPI Flash I/F	SD / SDIO ⁷	SDRAM I/F	1.1 Host (12 Mbps)	2.0 Host (480 Mbps)	Device (FS / HS)	2D GFX	JPEG Codec	Video Codec	RGB Color (bits)	Max. Resolution ⁵	SAR ADC	Σ-Δ ADC	ADC for MIC Input	Touch Panel (Wire)	Stereo DAC (bits)	JTAG	Ethernet MAC	CMOS Sensor ¹	GPIO (Max)	UART	I ² C	SPI ⁶		RTC	PWM	TV Output	FS	Core Voltage (V)	I/O Voltage (V)	Package
N32905U1DN	200	926	8	8	8	16Mx16 DDR	✓	15	3	-	1	-	HS	BitBLT	✓	MJPEG ² Codec	18	VGA ³	✓	-	✓	4	16	✓	-	✓	64	2	1	2	✓	4	-	✓	1.8	3.3	LQFP-128 (MCP)	MP
N32905U2DN	200	926	8	8	8	16Mx16 DDR	✓	15	2	-	1	-	HS	BitBLT	✓	MJPEG Codec	18	VGA	✓	-	✓	4	16	✓	-	✓	59	2	1	2	✓	4	✓	-	1.8	3.3	LQFP-128 (MCP)	MP
N32903R1DN	200	926	8	8	8	4Mx16 DDR	✓	15	1	-	1	-	HS	-	✓	MJPEG Codec	-	-	✓	-	✓	-	16	-	-	✓	34	2	-	2	-	2	-	✓	1.8	3.3	TQFP-64 (MCP)	MP
N32903U1DN	200	926	8	8	8	4Mx16 DDR	✓	15	3	-	1	-	HS	BitBLT	✓	MJPEG Codec	18	VGA	✓	-	✓	4	16	✓	-	✓	64	2	1	2	✓	4	-	✓	1.8	3.3	LQFP-128 (MCP)	MP
N32903U2DN	200	926	8	8	8	4Mx16 DDR	✓	15	2	-	1	-	HS	BitBLT	✓	MJPEG Codec	18	VGA	✓	-	✓	4	16	✓	-	✓	59	2	1	2	✓	4	✓	-	1.8	3.3	LQFP-128 (MCP)	MP
N32901R1DN	200	926	8	8	8	1Mx16 SDR	✓	15	1	-	1	-	HS	-	✓	MJPEG Codec	-	-	✓	-	✓	-	16	-	-	✓	34	2	-	2	-	2	-	✓	1.8	3.3	LQFP-64 (MCP)	MP
N32901U1DN	200	926	8	8	8	1Mx16 SDR	✓	15	3	-	1	-	HS	BitBLT	✓	MJPEG Codec	18	QVGA	✓	-	✓	4	16	✓	-	✓	64	2	1	2	✓	4	-	✓	1.8	3.3	LQFP-128 (MCP)	MP
N32901U2DN	200	926	8	8	8	1Mx16 SDR	✓	15	2	-	1	-	HS	BitBLT	✓	MJPEG Codec	18	QVGA	✓	-	✓	4	16	✓	-	✓	59	2	1	2	✓	4	✓	-	1.8	3.3	LQFP-128 (MCP)	MP

1. CMOS sensor: CCIR601 / CCIR656 I/F, 2M pixel.

2. MJPEG: Motion JPEG Codec, VGA 30fps.

3. Resolution: QVGA (320x240), VGA (640x480).

4. Status: MP - Mass Production.

5. Only one hardware SPI controller to support two SPI device with two chip selection signals.

6. XGA is for still image only. For video, N3290x is MJPEG VGA@30fps.

7. N3290x has only one hardware host controller.

Contact us: CE@nuvoton.com

N3291 Multi-Format Decoder Series

Nuvoton's N3291 Multi-Format Decoder Series is an ARM926EJ-S running up to 300MHz and hardware multi-format video decoder based product line targeting for HMI (Human Machine Interface), Home Appliance and ELA (Educational Learning Aid) applications. The video formats supported are H.264, MPEG-4, H.263 and Sorenson Spark with resolution up to 800x600. The N3291 series is 128-pin LQFP package stacked with 32MB or 64MB DRAM.

Part No.	Core					Memory I/F					USB		H/W Accelerator		LCD		Analog		Peripheral										Power		PKG		Status ⁴					
	Max Speed (MHz)	ARM CPU	I-Cache (KB)	D-Cache (KB)	SRAM (KB)	Stacked SDRAM (bit)	SPI Flash I/F	Raw NAND I/F ECC bits	SD / SDIO ⁷	SDRAM I/F	1.1 Host (12 Mbps)	2.0 Host (480 Mbps)	Device (FS / HS)	2D GFX	JPEG Codec	Video Codec	RGB Color (bits)	Max. Resolution ⁵	SAR ADC	Σ-Δ ADC	ADC for MIC Input	Touch Panel (Wire)	Stereo DAC (bits)	JTAG	Ethernet/MAC	CMOS Sensor ¹	GPIO (Max)	UART	I ² C	SPI ⁶	RTC	PWM		TV Output	I ² S	Core Voltage (V)	I/O Voltage (V)	Package
N32916U1DN	300	926	16	16	8	32Mx16 DDR2	✓	24	3	-	1	-	HS	BitBLT	✓	MP ³ Dec. MJPEG Codec	24	SVGA	✓	-	✓	4	16	✓	-	✓	89	2	1	2	✓	4	✓	✓	1.2	3.3	LQFP-128 (MCP)	MP
N32916U2DN	300	926	16	16	8	32Mx16 DDR2	✓	24	3	-	1	-	HS	OVG ²	✓	MP ³ Dec. MJPEG Codec	24	SVGA	✓	-	✓	4	16	✓	-	✓	89	2	1	2	✓	4	✓	✓	1.2	3.3	LQFP-128 (MCP)	MP
N32915U3DN	300	926	16	16	8	16Mx16 DDR2	✓	24	3	-	1	-	HS	BitBLT	✓	MP ³ Dec. MJPEG Codec	24	SVGA	✓	-	✓	4	16	✓	-	✓	89	2	1	2	✓	4	✓	✓	1.2	3.3	LQFP-128 (MCP)	MP

1. CMOS sensor: CCIR601 / CCIR656 I/F, 2M pixel.

2. OVG: Khronos OpenVG 1.1-compliant IP.

3. MF: Multi-Format Decoder, H.264 BP / MPEG4 SP / H.263 P3 @ SVGA 30fps, Sorenson Spark @ D1 30fps.

4. Resolution: QVGA (320x240), VGA (640x480), SVGA (800x600).

5. Status: MP - Mass Production.

6. Only one hardware SPI controller to support two SPI device with two chip selection signals.

7. N3291x has only one hardware host controller.

Contact us: CE@nuvoton.com

N3292 H.264 Codec Series

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

Part No.	Core		Memory I/F				USB		H/W Accelerator		LCD		Analog		Peripheral								Power		PKG		Status ⁹											
	Max Speed (MHz)	ARM CPU	I Cache (KB)	D Cache (KB)	SRAM (KB)	Stacked SDRAM (bit)	Raw NAND I/F, ECC bits	SPI Flash I/F	SD / SDIO ⁸	SDRAM I/F	1.1 Host (12 Mbps)	2.0 Host (480 Mbps)	Device (FS / HS)	2D GFX	JPEG Codec	Video Codec	RGB color (bits)	Max. Resolution ⁵	SARADC	Σ-Δ ADC	ADC for MIC Input	Touch Panel (Wire)	Stereo DAC (bits)	JTAG	Ethernet MAC	CMOS Sensor ¹		GPIO (Max)	UART	I ² C	SPI ⁷	RTC	PWM	TV Output	I ² S	Core Voltage (V)	I/O Voltage (V)	Package
N32926U1DN	240	926	8	8	8	32Mx16 DDR2	✓	24	3	-	1	1	HS	BitBLT	✓	H.264 Codec MJPEG Codec	24	XGA	V ⁹	16	V ¹⁰	4/5	16	✓	✓	✓	80	2	1	2	✓	4	✓	✓	1.2	3.3	LQFP-128 (MCP)	MP
N32925U3DN	240	926	8	8	8	16Mx16 DDR2	✓	24	3	-	1	1	HS	BitBLT	✓	H.264 Codec MJPEG Codec	24	XGA	V ⁹	16	V ¹⁰	4/5	16	✓	✓	✓	80	2	1	2	✓	4	✓	✓	1.2	3.3	LQFP-128 (MCP)	MP

1. CMOS sensor: CCIR601 / CCIR656 I/F, 3M pixel.
2. MJPEG: Motion JPEG Codec, VGA 30fps.
3. H.264 Codec: support H.264 BP 720P upto 30fps.
4. XGA is for still image only.
5. Resolution: QVGA (320x240), VGA (640x480), SVGA (800x600), XGA (1024 x 768).
6. Status: MP - Mass Production.
7. Only one hardware SPI controller to support two SPI device with two chip selection signals.
8. N3292x has two hardware host controllers.
9. N3292x supports 12-bit SARADC.
10. N3292x also support optional channel for audio line-in.

Contact us: CE@nuvoton.com

Application Specific SoCs

◆ ARM based Audio

AUI Enablers Series
Development Tool

◆ ARM based Video

Adobe FlashLite Platform Series

◆ Consumer Speech

BandDirector® Series
NuVoice® Series
Peripheral Series
PowerSpeech® Series
ViewTalk® Series
Home Appliance



ARM based Audio



AUI Enabler Series

Nuvoton's ARM® Cortex™ -M0 based AUI Enabler provides powerful yet cost effective single-chip solution for applications that require voice/audio features. The highly integrated architecture – 32bit Cortex™-M0 processor, microphone interface, 2.4 to 5.5V wide operating voltage, I²S digital audio interface, 1 watt speaker driver, 145KB built-in flash memory, 3V regulator and multi-functions GPIOs was designed to provide cost effective voice/audio solution for consumer and industrial markets.


These system-on-a-chip (SOC) devices, enable designers to develop systems and individual products capable of delivering clear, reliable, easily managed audio recording and playback, system control, that simplifies products' design time and reduces bill-of-materials costs; the chip's highly integrated architecture eliminates the need for various periphery chips such as USB, audio Codec.

The ARM Cortex™-M0 in the Nuvoton's AUI enabler delivers 32-bit performance and low power consumption, but at a price point of an 8-bit microcontroller. Its 32-bit architecture enables designers to develop complicated algorithms such as voice recognition, text to speech and capacitive touch – applications that at one time required DSPs and/or other high-end, ARM-based devices.

Part No.	Flash	SRAM	I/O	Timer	PWM	RTC	Connectivity			Audio			Other	Package	Status*
							SPI	I ² C	UART	ADC/ Microphone	Speaker	Digital Interface			
ISD9160	145KB	12KB	24	2	2	Yes	2	1	1	1	PWM (1W at 8Ω 5V)	I ² S, SPI	8 Analog GPIO for capacitive sensing touch input, 3V LDO, Temperature Alarm	LQFP48	P
ISD9361	145KB	16KB	32	2	3	Yes	2, Support Quad SPI	1	1	1	PWM (1W at 8Ω 5V)	I ² S, SPI	16 Analog GPIO for capacitive sensing touch input, 3V LDO, Temperature Alarm	LQFP64	UD

*Status: P= Mass Production, UD=Under Development

Development Tool for AUI Enabler Series

Ordering No.	Content	Supported Devices	Description	Picture
ISD-DMK_9160	<ul style="list-style-type: none"> ISD-DEMO9160 ISD-NU-LINK ISD-9160-Touch ISD-9160-KB Speaker 	ISD9160	<ul style="list-style-type: none"> Evaluation, debugging and demo kit for ISD91600 Keil RV/MDK available on Keil website Support ICP (In-Circuit Programming) 	

Contact us: ChipCorder@nuvoton.com

ARM based Video



Adobe FlashLite Platform Series

Nuvoton's Adobe FlashLite Platform Series is an Adobe FlashLite based product line targeting for ELA (Educational Learning Aid) and HMI (Human Machine Interface) applications. This series provides a ReadGo™ application framework with Adobe certified FlashLite 3.1.7 and 4.0 players for fast design-in and high compatibility.

32-bit ARM SoC for FlashLite ELA

Part No.	Core				Memory I/F			USB		H/W Accelerator			LCD		Analog				Peripheral							Power		PKG	Status						
	Max Speed (MHz)	ARM CPU	I-Cache (Kb)	D-Cache (Kb)	Stacked SDRAM (bit)	SPI Flash	SD / SDIO	1.1 Host	2.0 Device	2D GFX	JPEG Codec	Video Decoder	RGB Color (bits)	Resolution	SAR ADC(bits)	Σ-ΔADC	TP ADC	Stereo DAC (bits)	JTAG	CMOS Sensor ¹	GPIO (Max)	UART	I ² C	SPI	RTC	PWM	TV Output	I ² S		Core Voltage (V)	I/O Voltage (V)	Package			
W55FL93SDN	200	926	8	8	16Mx16 DDR	✓	15	3	1	-	HS	BitBLT	✓	MJPEG ³	18	VGA	10	-	✓	4-wire	16	✓	✓	64	2	1	2	✓	4	-	✓	1.8	3.3	LQFP-128 (MCP)	MP
W55FL93TDN	200	926	8	8	16Mx16 DDR	✓	15	3	1	-	HS	BitBLT	✓	MJPEG ³	18	VGA	10	-	✓	4-wire	16	✓	✓	59	2	1	2	✓	4	✓	✓	1.8	3.3	LQFP-128 (MCP)	MP
W55FL95DDN	300	926	16	16	32Mx16 DDR2	✓	24	3	1	-	HS	OVG ²	✓	Multi-Format ⁴	24	SVGA	10	-	✓	4-wire	16	✓	✓	89	2	1	2	✓	4	✓	✓	1.2	3.3	LQFP-128 (MCP)	MP

1 CMOS sensor: CCIR601 / CCIR656 I/F, 2M pixel.

2 OVG: Khronos OpenVG 1.1-compliant IP inside.

3 MJPEG: Motion JPEG, VGA 30fps.

4 Multi-Format: H.264 BP / MPEG4 SP / H.263 P3 @ SVGA 30fps, Sorenson Spark @ D1 30fps, AVI M-JPEG @ VGA 30fps.

5 Status: MP - Mass Production.

Contact us: CE@nuvoton.com



BandDirector® Series

Nuvoton's BandDirector® Series is a multi-channel Speech/MIDI product line with advanced Wavetable Melody synthesis technology to implement up to 16-ch Voice/Melody synthesizer. With the help of high performance 8-bit μ C core and advanced algorithms, this series performs high quality melody and sound effects. Except basic features such as SIM interface, H/W PWM I/O, high sink I/O ports, IR carrier, LVR, WDT for infant toys or ELA applications, it also provides various timbre libraries and MIDI effects that suitable for instrument toys and organ applications.

Nuvoton's BandDirector® Series contains sub-product families with different channel numbers. Nuvoton's BandDirector™ Series : N567G, N567K, N567H, N567L, W567C.

N567Gxxx, 8-bit μ C Base, 4-ch Voice + Wavetable Melody Synthesizer

Part No.	ROM (KByte)	Duration (Sec.) @ 4-bit NM4		VDD (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Byte)	GPIO	H/W PWM	SIM SPI
		(6KHz)	(8KHz)					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	-	✓
N567G120	416	124	93	2.2~5.5	4	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	-
N567G160	528	158	119	2.2~5.5	4	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	-
N567G200	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	✓

N567Kxxx 8-bit μ C Base, 6-ch Voice + Wavetable Melody Synthesizer

Part No.	ROM (KByte)	Duration (Sec.) @ 4-bit NM4		VDD (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Byte)	GPIO	H/W PWM	SIM SPI
		(6KHz)	(8KHz)					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	-	✓
N567K120	416	124	93	2.2~5.5	6	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	-
N567K160	528	158	119	2.2~5.5	6	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	-
N567K200	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	✓

N567Hxxx 8-bit μ C Base, 8-ch Voice + Wavetable Melody Synthesizer

Part No.	ROM (KByte)	Duration (Sec.) @ 4-bit NM4		VDD (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Byte)	GPIO	H/W PWM	SIM SPI
		(6KHz)	(8KHz)					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	-	✓
N567H120	416	124	93	2.2~5.5	8	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	-
N567H160	528	158	119	2.2~5.5	8	4,6,8	TRIM	12-bit	13-bit	384	24 I/O	-	-
N567H200	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	✓

Contact us: Toy@nuvoton.com

W567Cxxx, 8-bit μ C Base, 16-ch Voice + Wavetable Melody Synthesizer

Part No.	ROM (KByte)	Duration (Sec.) @ 4-bit NM4		Channel		Fsys (MHz)	OSC	Sub-Clock 32KHz	Audio		RAM (Byte)	GPIO	H/W PWM	SIM SPI	PAN Stereo
		(6KHz)	(8KHz)	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	✓	-

N567Lxxx 8-bit μ C Base, Low Voltage, 8-ch Voice + Wavetable Melody Synthesizer

Part No.	ROM (KByte)	Duration (Sec.) @ 4-bit NM4		VDD (V)	Vp (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Byte)	GPIO	H/W PWM	LVD
		(6KHz)	(8KHz)						PWM	DAC				
*N567L120	416	124	93	1.0~3.6	3.3/4.0	8	4,6,8	TRIM/X'tal	12-bit		320	16 I/O	3-pair	✓
*N567L160	528	158	119	1.0~3.6	3.3/4.0	8	4,6,8	TRIM/X'tal	12-bit		320	16 I/O	3-pair	✓
*N567L200	638	192	144	1.0~3.6	3.3/4.0	8	4,6,8	TRIM/X'tal	12-bit		320	16 I/O	3-pair	✓

*Under Development

Contact us: Toy@nuvoton.com

NuVoice® Series

Nuvoton's NuVoice® Series is a voice processing SoC with high integration analog and digital peripherals and high performance algorithms for varieties of interactive and funny toys. It builds in high performance 32bit Cortex M0 MCU core, ADC, DAC and PA and PGC for long duration, sound effect, detection, watermark and voice recording related applications.

Nuvoton's NuVoice® Series: N571P032, N572P072, N572F072, N572F065.

NuVoice® Cortex-M0 Based Voice Processor

Part No.	CPU	APROM	SRAM	Clock	H/W PWM	USB	DAC	PA	ADC	GPIO
							(13-bit)			
N572F065	Cortex-M0 48MHz	embFlash, 64KB	8KB	Rosc 24MHz, Xtal 32KHz, 6M/12M Hz	4-pin	2.0 F.S.	1-ch	250mW	8-ch, SAR, 12-bit	32
N572F072	Cortex-M0 48MHz	embFlash, 72KB	8KB	Rosc 48MHz, Xtal 32KHz	4-pin	-	1-ch	400mW	8-ch, SAR, 12-bit	32
N572P072 (OTP)	Cortex-M0 48MHz	OTP, 64KB+embFlash 8KB	8KB	Rosc 48MHz, Xtal 32KHz	4-pin	-	1-ch	400mW	8-ch, SAR, 12-bit	32
N571P032 (OTP)	Cortex-M0 23MHz	OTP, 32KB	4KB	Rosc 46MHz, Xtal 32KHz	4-pin	-	1-ch	450mW	3-ch, SAR, 10-bit	24

Contact us: NuVoice@nuvoton.com

Peripheral Series

Apply with main chip MCUs (PowerSpeech®, BandDirector®, ViewTalk®, NuVocie®), nuvoton also support correspondent peripheral devices to expand wider applications in Toy market. Those peripheral devices include memory extension, ADC, USB, I/O expander, Cap Sensor, MFID and RF.

■ USB Device

W55U032A USB Controller

Part No.	ISO	HID	Mass Storage	Customer Code	ROM (KByte)	OS supporting
W55U032A	-	✓	✓	✓	32	Windows ME/2000/XP/Vista/Mac

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■ Analog to Digital Converter

W55AD808 8-ch, 8-bit A/D Converter

Part No.	A/D Channel	Convert Rate	Resolution (bit)	VDD (V)	μC Interface
W55AD808	8	50KHz	8	2.7 ~ 5.5	3 wires

■ Nu-Touch

N55T10 10 Key Capacitor Sensor Controller

Part No.	Input	Wake Up	VDD (V)	Interface
N55T10	10	√	2.4 ~ 5.5	I ² C

■ I/O Expander

W55P241 I/O Expander w/ 24 I/O Pins and SPI Interface

Part No.	Interface	GPIO	Wake Up	H/W PWM	Internal OSC
W55P241	SPI	24 I/O	√	8-pin	8MHz

■ MFID & RF

W55MIDxx 13.56MHz MFID w/ Single-tag/Multi-tag and Reader

Part No.	Category	Frequency (MHz)	ID type	ID length (bit)	Anti-collision	TX power	μC Interface
W55MID15	Single-tag	13.56	Bonding-ID	10	-	-	-
W55MID20	Single-tag	13.56	Program-ID	64	-	-	-
W55MID35	Multi-tag	13.56	Bonding-ID	10	6 ~ 8 tags	-	-
W55MID50	Reader	13.56	-	-	-	4-level	Serial/Parallel

W55RFS27xxx 27/35/40/49MHz Super-Regeneration RF-Module

Module No.	Category	Channel Share	Sensitivity/TX Power	Baseband Function
W55RFS27R1B	Receiver	-	-90dBm	6-function decoder
W55RFS27T1B	Transmitter	-	+10dBm	6-function decoder
W55RFS27R3C	Receiver	3	-90dBm	6-function decoder
W55RFS27T3B	Transmitter	3	+10dBm	6-function decoder

N551C Serial Mask ROM

Part No.	ROM (bit)	Access Time	Cascade Mode	VDD (V)	Interface
N551C161	16M	1us	-	2.4 ~ 5.5	SPI
N551C321	32M	1us	-	2.4 ~ 5.5	SPI

N55Sxxx Mask ROM with SPI Interface

Part No.	Memory (bit)	Access Time	Cascade Mode	VDD (V)	Interface
N55S016	16M	20ns	√	3.0 ~ 3.6	SPI
N55S032	32M	20ns	√	3.0 ~ 3.6	SPI
N55S064	64M	20ns	√	3.0 ~ 3.6	SPI
N55S128	128M	20ns	√	3.0 ~ 3.6	SPI

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PowerSpeech® Series

Nuvoton's PowerSpeech® is a fundamental Speech product line with advanced synthesis technology to implement up to 3-ch Voice/Melody. This series contains wide voltage range product families with 4-bit or 8-bit μ C based core to fulfill multi-tasking applications on toy market. Take the advantage of high quality algorithms, it perform outstanding sound quality with low cost structure to get the best cost performance product line. Except basic features such as H/W PWM I/O, high sink I/O ports, IR carrier, LVR, WDT for various applications, it also has user friendly full fledge development tools with ICE level debugger, Ultra_I/O system, PowerScript™ language and WIZARD code generation.

Nuvoton's PowerSpeech® Series includes various families with specific product segments. Nuvoton's PowerSpeech® Series : W581J, W528S, W584A, W584B, W584L, W588C, W588D, N588H, W588L.

W584Axxx 4-bit μ C Base, 1-ch Voice + Dual Tone Melody Synthesizer

Part No.	ROM (Kbit)	Duration (Sec.) @ 5-bit MDM		VDD (V)	CH	Fsys (MHz)	OSC	Audio		RAM (N)	GPIO	High Sink
		(6KHz)	(8KHz)					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
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	2.4~5.5	1 + DTM	4~8	Ring	9-bit	10-bit	128	20 I/O	8-pin
W584A340	10220	348	261	2.4~5.5	1 + DTM	4~8	Ring	9-bit	10-bit	128	20 I/O	8-pin
W584AP017 (OTP)	460	15	11	2.2~5.5	1 + DTM	4~8	Ring	9-bit	10-bit	128	12 I/O	-
W584AP065 (OTP)	1900	64	48	2.2~5.5	1 + DTM	4~8	Ring	9-bit	10-bit	128	16 I/O	-

W584Bxxx 4-bit μ C Base, 1-ch Voice Synthesizer

Part No.	ROM (Kbit)	Duration (Sec.) @ 5-bit MDM		VDD (V)	CH	Fsys (MHz)	OSC	Audio		RAM (N)	GPIO	High Sink
		(6KHz)	(8KHz)					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

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N584Lxxx 4-bit μ C Base, 1~2 Battery, 1-ch Voice + Dual Tone Melody Synthesizer

Part No.	ROM (Kbit)	Duration (Sec.) @ 5-bit MDM		VDD (V)	Booster Output	CH	Fsys (MHz)	OSC	Audio		RAM (N)	GPIO
		(6KHz)	(8KHz)						PWM	DAC		
N584L020	620	20	15	1.0~1.8	3.0V	1 + DTM	4~8	Ring	9-bit	No	128	8 I/O
N584L030	1020	34	25	1.0~1.8	3.0V	1 + DTM	4~8	Ring	9-bit	No	128	8 I/O
N584L040	1260	42	32	1.0~1.8	3.0V	1 + DTM	4~8	Ring	9-bit	No	128	8 I/O
N584L080	2540	86	64	1.0~1.8	3.0V	1 + DTM	4~8	Ring	9-bit	No	128	12 I/O
N584L120	3820	129	97	1.0~1.8	3.0V	1 + DTM	4~8	Ring	9-bit	No	128	12 I/O
N584L031	1020	34	25	1.0~3.6	4.0V	1 + DTM	4~8	Ring	9-bit	No	128	12 I/O
N584L041	1260	42	32	1.0~3.6	4.0V	1 + DTM	4~8	Ring	9-bit	No	128	12 I/O
N584L061	1900	64	48	1.0~3.6	4.0V	1 + DTM	4~8	Ring	9-bit	No	128	12 I/O
N584L081	2540	86	64	1.0~3.6	4.0V	1 + DTM	4~8	Ring	9-bit	No	128	12 I/O
N584L121	3820	129	97	1.0~3.6	4.0V	1 + DTM	4~8	Ring	9-bit	No	128	12 I/O

W588Lxxx 8-bit μ C Base, 2 Batteries, 2-ch Voice + Melody Synthesizer

Part No.	ROM (Kbit)	Duration (Sec.) @ 5-bit MDM		VDD (V)	CH	Fsys (MHz)	OSC	Sub-Clock 32kHz	Audio		RAM (Byte)	GPIO
		(6KHz)	(8KHz)						PWM	DAC		
W588L020	94	23	18	1.8~3.6	1	4.6	Ring	-	12-bit	No	96	8 I/O
W588L030	126	32	24	1.8~3.6	1	4.6	Ring	-	12-bit	No	96	8 I/O
W588L035	170	44	33	1.8~3.6	2	4.6	Ring	-	12-bit	No	128	16 I/O
W588L040	192	50	37	1.8~3.6	2	4.6	Ring	-	12-bit	No	128	16 I/O
W588L050	224	58	43	1.8~3.6	2	4.6	Ring	-	12-bit	No	128	16 I/O
W588L060	254	66	49	1.8~3.6	2	4.6	Ring	-	12-bit	No	128	16 I/O
W588L070	330	86	65	1.8~3.6	2	4.6	Ring	-	12-bit	No	128	16 I/O
W588L080	382	100	75	1.8~3.6	2	4.6	Ring	-	12-bit	No	128	16 I/O
W588L100	448	118	88	1.8~3.6	2	4.6	Ring	-	12-bit	No	128	16 I/O
W588L121	510	133	101	1.8~3.6	2	4.6	Ring	-	12-bit	No	128	16 I/O
W588L150	640	169	127	1.8~3.6	2	4.6	Ring/X'tal	X'tal	12-bit	No	256	16 I/O
W588L170	766	203	152	1.8~3.6	2	4.6	Ring/X'tal	X'tal	12-bit	No	256	16 I/O

W588Cxxx 8-bit μ C Base, 2-ch Voice + Melody Synthesizer

Part No.	ROM (KByte)	Duration (Sec.) @ 4-bit NM4		VDD (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Byte)	GPIO
		(6KHz)	(8KHz)					PWM	DAC		
W588C003	20	5	4	2.2~5.5	2	4~8	Ring	12-bit	No	96	8 I/O
W588C006	30	8	6	2.2~5.5	2	4~8	Ring	12-bit	No	96	8 I/O
W588C009	50	14	11	2.2~5.5	2	4~8	Ring	12-bit	No	96	8 I/O
W588C012	62	18	14	2.2~5.5	2	4~8	Ring	12-bit	No	96	8 I/O
W588C015	78	23	17	2.2~5.5	2	4~8	Ring	12-bit	No	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
*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
W588C350	1348	425	319	2.2~5.5	2	4~8	Ring	12-bit	13-bit	192	16 I/O
W588C400	1534	484	363	2.2~5.5	2	4~8	Ring	12-bit	13-bit	192	16 I/O

*DAC w/o Noise Shaping

Contact us: Toy@nuvoton.com

N588Hxxx 8-bit μ C Base, 3-ch Voice + Melody Synthesizer

Part No.	ROM (KByte)	Duration (Sec.) @ 4-bit NM4		VDD (V)	CH	Fsys (MHz)	OSC	Audio		RAM (Byte)	GPIO	H/W PWM
		(6KHz)	(8KHz)					PWM	DAC			
N588H061	206	64	48	2.2~5.5	3	4,6,8	TRIM	12-bit	No	128	16 I/O	3-pair
N588H081	254	79	59	2.2~5.5	3	4,6,8	TRIM	12-bit	No	128	16 I/O	3-pair
N588H120	414	130	97	2.2~5.5	3	4,6,8	TRIM	12-bit	No	128	16 I/O	3-pair
N588H170	510	160	120	2.2~5.5	3	4,6,8	TRIM	12-bit	No	128	16 I/O	3-pair
N588H250	830	261	196	2.2~5.5	3	4,6,8	TRIM	12-bit	No	192	24 I/O	3-pair
N588H340	1022	322	242	2.2~5.5	3	4,6,8	TRIM	12-bit	No	192	24 I/O	3-pair
N588HP340 (OTP)	1022	322	242	2.2~5.5	3	4,6,8	TRIM	12-bit	No	192	24 I/O	3-pair

W588Dxxx 8-bit μ C Base, 3-ch Voice + Melody Synthesizer

Part No.	ROM (KByte)	Duration (Sec.) @ 4-bit NM4		VDD (V)	CH	Fsys (MHz)	OSC	Sub-Clock 32kHz	Audio		RAM (Byte)	GPIO	SIM SPI
		(6KHz)	(8KHz)						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	2 Mbit (MTP)	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	✓

Contact us: Toy@nuvoton.com

ViewTalk® Series

Nuvoton's ViewTalk® Series is a high integration of Speech/Melody product line with LCD driver synthesizer. It has advanced 8-bit μ C insides, advanced voice/melody synthesizer and LCD regulator with levels of voltage bias to implement high quality sound and display effects. ViewTalk® series offers key features such as 1K ~ 2K dot COM-SEG, B/W or grey scale display, SIM interface, H/W PWM I/O, high sink I/O ports, IR carrier, LVR, WDT for ELA applications; it also provides dual page mode for animation moving smoothly.

Nuvoton's ViewTalk® Series contains sub-product families for ELA applications. Nuvoton's ViewTalk® Series: N531A, N537A, N538A, N538T, W539A, N539T.

N537A090, 8-bit μ C Base, 2-ch Voice + Dual Tone Melody Synthesizer w/ B/W 1K-dot LCD Driver

Part No.	ROM (KByte)	Working RAM (Byte)	Duration (sec.)	LCD RAM (Byte)	GPIO	Audio	LCD Resolution (SEGxCOM)	Bias	Duty
						PWM			
N537A090	283	1K	90	128	12 I/O	9-bit	64x16	1/4, 1/5	1/8, 1/16

N531A170, 8-bit μ C Base, 2-ch Voice + Dual Tone Melody Synthesizer w/ B/W 1K-dot LCD Driver

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

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N538Txxx, 8-bit μ C Base, 8-ch Voice + Wavetable Melody Synthesizer w/ B/W 2K-dot LCD Driver

Part No.	ROM (KByte)	Working RAM (Byte)	Duration (sec.)	Dual Page LCD RAM (Byte)	GPIO	Audio		LCD Resolution (SEGxCOM)	Bias	Duty
						PWM	DAC			
N538T080	249	1K	60	256x2	24 I/O	9-bit	10-bit	64x32	1/4, 1/5	1/16, 1/32
N538T170	505	1K	120	256x2	24 I/O	9-bit	10-bit	64x32	1/4, 1/5	1/16, 1/32
N538T260	761	1K	180	256x2	24 I/O	9-bit	10-bit	64x32	1/4, 1/5	1/16, 1/32
N538T340	1017	1K	250	256x2	24 I/O	9-bit	10-bit	64x32	1/4, 1/5	1/16, 1/32

N538Axxx, 8-bit μ C Base, 8-ch Voice + Wavetable Melody Synthesizer w/ B/W 1K-dot LCD Driver

Part No.	ROM (KByte)	Working RAM (Byte)	Duration (sec.)	Dual Page LCD RAM (Byte)	GPIO	Audio		LCD Resolution (SEGxCOM)	Bias	Duty
						PWM	DAC			
N538A170	505	1K	120	256x2	24 I/O	9-bit	10-bit	64x16	1/4, 1/5	1/16, 1/32
N538A260	761	1K	180	256x2	24 I/O	9-bit	10-bit	64x16	1/4, 1/5	1/16, 1/32
N538A340	1017	1K	250	256x2	24 I/O	9-bit	10-bit	64x16	1/4, 1/5	1/16, 1/32

W539Axxx, 8-bit μ C Base, 8-ch Voice + Wavetable Melody Synthesizer w/ B/W 1K LCD driver

Part No.	ROM (KByte)	Working RAM (Byte)	Duration (sec.)	Dual Page LCD RAM (Byte)	GPIO	Audio Output		LCD Resolution (SEGxCOM)	Bias	Duty
						PWM	DAC			
W539A804	505	1K	120	128X2	24 I/O	12-bit	13-bit	64x16	1/4, 1/5	1/16, 1/32
W539A806	761	1K	180	128X2	24 I/O	12-bit	13-bit	64x16	1/4, 1/5	1/16, 1/32
W539A808	1017	1K	250	128X2	24 I/O	12-bit	13-bit	64x16	1/4, 1/5	1/16, 1/32

N539Txxx, 8-bit μ C Base, 8-ch Voice + Wavetable Melody Synthesizer w/ 4-Gray Level 2K LCD Driver

Part No.	ROM (KByte)	Working RAM (Byte)	Duration (sec.)	Dual Page LCD RAM (Byte)	GPIO	Audio Output		LCD Resolution (SEGxCOM)	Bias	Duty
						PWM	DAC			
N539T170	509	1K	120	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
N539T260	765	1K	180	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
N539T340	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
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

N535FSxxxx FS-LCD Driver

Part No.	VLCD (max.)	LCD Resolution (SEGxCOM)	Color No.	Bais	Duty
N535FS0080	14V	80x1	8-color	1/1	Static
N535FSA080	14V	80x1	27-color	1/1	Static
N535FS0240	6V	120x2	8-color	1/2, 1/3	Static, 1/2
N535FS1024	14V	64x16	8-color/27-color	1/3, 1/4, 1/5	1/8, 1/16

Contact us: ViewTalk@nuvoton.com

Home Appliance

4-bit μ C based IC, which is designed to cover one-battery to three-battery applications. Its stable LCD performance, ultra-low power consumption, along with the EEPROM and mask ROM as the program memory, this family is ideal for portable products such as remote controllers, gifts, toys, clocks, timers, and thermometers.

W541xxxx, Low power 4-bit μ C

Part No.	VDD (V)	ROM (bit)	RAM (bit)	GPIO	LCD	System Clock	Fast Working Frequency	Slow Working Frequency	Package
W541L20x	1.2~1.8V	2Kx16	128x4	20 I/O	-	Single Crystal/RC	400K~1MHz	32,768Hz	DIP:18/20/28 SOP:20/28
W541C20x	2.4~5.5V	2Kx16	128x4	20 I/O	-	Single Crystal/RC	400K~4MHz	32,768Hz	DIP:18/20/28 SOP:20/28
W541E20x (MTP)	2.4~5.5V	2Kx16	128x4	20 I/O	-	Single Crystal/RC	400K~4MHz	32,768Hz	DIP:18/20/28 SOP:20/28
W541L23x	1.2~3.6V	1Kx16 1.5Kx16 2Kx16	64x4 96x4 128x4	12 I/O	4x16	Single / Dual Crystal/ Internal RC	100K~800KHz	32,768Hz	PLCC-44
W541L240	1.2~1.8V	2Kx16	64x4	12 I/O	4x24	Single Crystal/ RC	400K~1MHz	32,768Hz	QFP-64
W541C240	2.4~5.5V	2Kx16	64x4	12 I/O	4x24	Single Crystal/ RC	400K~1MHz	32,768Hz	QFP-64
W541E260 (MTP)	2.4~5.5V	2Kx16	128x4	20 I/O	4x32	Single / Dual Crystal/RC	400K~4MHz	32,768Hz	QFP-80
W541L261	1.2~3.6V	2Kx16	128x4	20 I/O	4x32	Single / Dual Crystal/RC	400K~4MHz	32,768Hz	QFP-80
W541C261	2.4~5.5V	2Kx16	128x4	20 I/O	4x32	Single / Dual Crystal/RC	400K~4MHz	32,768Hz	QFP-80
W541E261 (MTP)	2.4~5.5V	2Kx16	128x4	20 I/O	4x32	Single / Dual Crystal/RC	400K~4MHz	32,768Hz	QFP-80
W541L480	1.2~3.6V	4Kx16	256x4	20 I/O	4x32	Single / Dual Crystal/RC	400K~4MHz	32,768Hz	QFP-80
W541C480	2.4~5.5V	4Kx16	256x4	20 I/O	4x32	Single / Dual Crystal/RC	400K~4MHz	32,768Hz	QFP-80
W541E480 (MTP)	2.4~5.5V	4Kx16	256x4	20 I/O	4x32	Single / Dual Crystal/RC	400K~4MHz	32,768Hz	QFP-80
W541L250	1.2~1.8V	2Kx16	128x4	20 I/O	4x24	Single Crystal/ RC	400K~1MHz	32,768Hz	QFP-64

Contact us: 4-bit@nuvoton.com

Audio

◆ Audio Amplifiers

Class AB Series
Class D Series
Development Tools

◆ Audio CODECs

Mono Codec Series
Stereo ADC Series
Stereo Codec Series
Stereo DAC Series
Development Tools

◆ Audio Converters

Precision ADC Series

◆ Audio Enhancement

MaxxAudio® Algorithms on A Chip





Nuvoton's high-efficiency audio amplifiers are designed to address the market's need for low standby current and reduced switching noise for portable consumer devices such as smart phones, tablet PC, docking stations, portable audio and video players, LCD and LED TVs, and toys. Product key features include ultra-low quiescent current, low EMI and high power supply rejection ratio (PSRR).

Class AB Series

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

*Status: Mass Production

Class D Series









Part No.	Description	SNR (dB)	Output Power		Gain (dB)	Standby Current (uA)	Operating Voltage (V)	Temp (°C)	Development Tools	Package	Status*
			Power (W)	THD+N (%)							
NAU82011VG	3.1W Mono Class-D Audio Amplifier, variable gain with Differential / Single ended inputs	103	3.1W into 4Ω at 5V	<10	Variable	<1	2.5 to 5.5	-40 to 85	NAU82011VG-EVB	9 bump WCSP	P
NAU82011WG	2.9W Mono Class-D Audio Amplifier, variable gain with Differential / Single ended inputs	103	2.9W into 4Ω at 5V	<10	Variable	<1	2.5 to 5.5	-40 to 85	NAU82011WG-EVB	MSOP8	P
NAU82039VG	3.2W Mono Class-D Audio Amplifier 12dB fixed gain with Differential / Single ended inputs	103	3.2W into 4Ω at 5V	<10	12	<1	2.5 to 5.5	-40 to 85	NAU82039VG-EVB	9 bump WCSP	P
NAU82028VG	3.1W Mono Filter-Free Class-D Audio Amplifier, 2 wire interface gain control with Differential / Single ended inputs	101	3.1W into 4Ω at 5V	<10	12 to -20.5	<1	2.5 to 5.5	-40 to 85	NAU82028VG-EVB	9 bump WCSP	P
NAU8214	3.1W Stereo Filter-Free Class-D Audio Amplifier, 5 gain steps with Differential / Single ended inputs and with Speaker Protection/ Max Power Limiting feature	103	3.1W into 4Ω at 5V	<10	0, 6, 12, 18, 24dB	<1	2.5 to 5.5	-40 to 85	NAU8223-EVB	QFN20/SOP8**	UD
NAU8223	3.1W Stereo Filter-Free Class-D Audio Amplifier, 5 gain steps with Differential / Single ended inputs	103	3.1W into 4Ω at 5V	<10	0, 6, 12, 18, 24dB	<1	2.5 to 5.5	-40 to 85	NAU8223-EVB	QFN20	P
NAU8224	3.1W Stereo Filter-Free Class-D Audio Amplifier, 2 wire interface gain control with Differential / Single ended inputs	101	3.1W into 4Ω at 5V	<10	24 to -62dB	<1	2.5 to 5.5	-40 to 85	NAU8224-EVB	QFN20	P

*Status: P= Mass Production, UD=Under Development

**Contact Nuvoton sales representative for latest status

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Development Tools for Audio Amplifiers

Ordering No.	Content	Supported Devices	Description	Picture
Development Kit for Audio Amplifiers				
NAU8220WG-EVB	NAU8220-EVB in TSSOP14	NAU8220WG	<ul style="list-style-type: none"> Evaluation Kit for NAU8220WG NAU8220WG: 2V RMS Line Driver 	
NAU8223-EVB	NAU8223-EVB in QFN20	NAU8223YG	<ul style="list-style-type: none"> Evaluation Kit for NAU8223YG NAU8223YG: 3.1W Stereo Class-D Audio Power Amplifier 	
NAU8224-EVB	NAU8224-EVB in QFN20	NAU8224YG	<ul style="list-style-type: none"> Evaluation Kit for NAU8224YG NAU8224YG: 3.1W Stereo Class-D Audio Power Amplifier with Volume Control 	
NAU82011WG-EVB	NAU82011-EVB in MSOP8	NAU82011WG	<ul style="list-style-type: none"> Evaluation Kit for NAU82011WG NAU82011WG: 2.9W Mono Class-D Audio Power Amplifier 	
NAU82011VG-EVB	NAU82011-EVB in WCSP9	NAU82011VB	<ul style="list-style-type: none"> Evaluation Kit for NAU82011VG NAU82011VG: 3.1W Mono Class-D Audio Power Amplifier 	
NAU82039VG-EVB	NAU82039-EVB in WCSP9	NAU82039VG	<ul style="list-style-type: none"> Evaluation Kit for NAU82039VG NAU82039VG: 3.2W Mono Class-D Audio Power Amplifier 	
Demo Board for Audio Amplifiers				
ISD-DEMO8101	ISD8101-DEMO in SOP8	ISD8101SYI	<ul style="list-style-type: none"> Demo Board for ISD8101 ISD8101: 1.5W Class-AB Audio Amplifier with Chip Enable, Differential or Single-ended input, Low pop and Click 	
ISD-DEMO8102	ISD8102-EVB in SOP8	ISD8102SYI	<ul style="list-style-type: none"> Demo Board for ISD8102 ISD8102: 2W Class-AB Audio Amplifier with Head Phone Sense Input 	
NAU8223-DEMO	NAU8223-EVB in QFN20	NAU8223YG	<ul style="list-style-type: none"> Demo Board for NAU8223 NAU8223: 3.1W Stereo Class-D Audio Power Amplifier with 5 Gain Steps 	
NAU8224-DEMO	NAU8224-EVB in QFN20	NAU8224YG	<ul style="list-style-type: none"> Demo Board for NAU8224 NAU8224: 3.1W Stereo Class-D Audio Power Amplifier with 2 Wire Gain Control 	

Audio CODECs



Nuvoton's high performance audio CODEC ICs are cost-effective solutions targeting consumer, telecommunication and automotive markets. With very low power consumption in all key areas, unprecedented power-management flexibility and advanced, graphical evaluation system, the devices simplify designers' efforts and get their products to market quickly.

Mono Codec Series

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (kHz)	Audio Format	CTRL IF	Analog Digital (V)	Package (mm)
		ADC	DAC	ADC	DAC	ADC	DAC					
NAU8810	Mono CODEC with 2-wire interface	1	1	91	93	-79	-84	8 to 48	I ² S PCM (Timeslot)	2-Wire	2.5 to 3.6 1.7 to 3.6	QFN-20 (4x4)
NAU8811	Mono CODEC with SPI interface	1	1	91	93	-79	-84	8 to 48	I ² S PCM (Timeslot)	3-Wire	2.5 to 3.6 1.7 to 3.6	QFN-20 (4x4)
NAU8812	Mono CODEC with speaker driver	1	1	91	93	-79	-84	8 to 48	I ² S PCM (Timeslot)	2-Wire 3-Wire 4-Wire	2.5 to 3.6 1.7 to 3.7	QFN-32 (5x5) SSOP-28
NAU8814	Mono Audio CODEC with Equalizer, speaker driver	1	1	91	93	-79	-84	8 to 48	I ² S PCM (Timeslot)	2-Wire 3-Wire	2.5 to 3.6 1.7 to 3.8	QFN-24 (4x4)

*Status: Mass Production

Contact us: Audio@nuvoton.com

Stereo ADC Series

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (kHz)	Audio Format	CTRL IF	Analog Digital (V)	Package (mm)
		ADC	DAC	ADC	DAC	ADC	DAC					
NAU8501	Stereo ADC with Input Mixer and Line Output	2	0	90	-	-80	-	8 to 48	I ² S PCM (Timeslot)	2-Wire 3-Wire 4-Wire	2.5 to 3.6 1.7 to 3.12	QFN-32 (5x5)
NAU8502	Stereo ADC with Integrated LDO	2	0	90	-	-80	-	8 to 48	I ² S PCM (Timeslot)	2-Wire 3-Wire 4-Wire	2.5 to 3.6 1.7 to 3.12	QFN-32 (5x5)

*Status: Mass Production

Stereo Codec Series

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (kHz)	Audio Format	CTRL IF	Analog Digital (V)	Package (mm)
		ADC	DAC	ADC	DAC	ADC	DAC					
NAU8822L	Stereo CODEC with Speaker Drive	2	2	90	94	-80	-84	8 to 192	I ² S PCM (Timeslot)	2-Wire 3-Wire 4-Wire	2.5 to 3.6 1.7 to 3.9	QFN-32 (5x5)
NAU8820	Stereo CODEC	2	2	90	94	-80	-84	8 to 48	I ² S PCM (Timeslot)	2-Wire 3-Wire 4-Wire	2.5 to 3.6 1.7 to 3.10	QFN-32 (5x5)








*Status: Mass Production

Stereo DAC Series

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (kHz)	Audio Format	CTRL IF	Analog Digital (V)	Package (mm)
		ADC	DAC	ADC	DAC	ADC	DAC					
NAU8401	Stereo DAC with Speaker Drive and Line Input	0	2	-	94	-	-84	8 to 48	I ² S PCM (Timeslot)	2-Wire 3-Wire 4-Wire	2.5 to 3.6 1.7 to 3.11	QFN-32 (5x5)
NAU8402	Stereo DAC with 2Vrms Output	0	2	-	98	-	-82	8 to 96	I ² S	N/A	2.7 to 3.6 1.7 to 3.12	TSSOP-16

*Status: Mass Production

Development Tools for Audio CODECs

Ordering No.	Content	Supported Devices	Description	Picture
Development Kit for Mono Codec Series				
NAU8810-EVB	• NAU8810-EVB • NAU8810-Card • GUI Installation CD	NAU8810	• Evaluation Kit for NAU8810 • NAU8810: 24bit Mono CODEC	
NAU8814-EVB	• NAU8814-EVB • NAU8814-Card • GUI Installation CD	NAU8814	• Evaluation Kit for NAU8814 • NAU8814: 24bit Mono CODEC	
Development Kit for Stereo Codec Series				
NAU8822L-EVB	• NAU8822L-EVB • NAU8822L-Card • GUI Installation CD	NAU8822L	• Evaluation Kit for NAU8822L • NAU8822L: Low Power 24bit Stereo CODEC	
NAU8401-EVB	• NAU8401-EVB • NAU8401-Card • GUI Installation CD	NAU8401	• Evaluation Kit for NAU8401 • NAU8401: 24bit Stereo DAC	
NAU8501-EVB	• NAU8501-EVB • NAU8501-Card • GUI Installation CD	NAU8501	• Evaluation Kit for NAU8501 • NAU8501: 24bit Stereo ADC	
NAU8402-EVB	• NAU8402-EVB • NAU8402-Card • GUI Installation CD	NAU8402	• Evaluation Kit for NAU8402 • NAU8402: 24bit Stereo ADC with 2Vrms	
NAU8502-EVB	• NAU8502-EVB • NAU8502-Card • GUI Installation CD	NAU8502	• Evaluation Board for NAU8502 • NAU8502: 24bit Stereo ADC	

Contact us: Audio@nuvoton.com



The NAU7802 is a high-performance, cost-effective, low-power 24-bit sigma-delta ADC designed specifically for Weight Scales, Industrial Process Controls, Strain Gauges, Data Acquisitions, Portable Instrumentations and Fluid/Gas Analyzers. It delivers exceptional flexibility in performance and optimization of power consumption, while providing designers with development and test tools that can dramatically accelerate time to market. With the on-chip LDO and less external components, NAU7802 can greatly reduce the BOM cost and PCB complexity.

Precision ADC Series

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

*Status: Mass Production

Contact us: Audio@nuvoton.com

Audio Enhancement



MaxxAudio® Algorithms on A Chip

The NPCA110x is a family of Audio Enhancement SOCs, targeted for consumer electronics applications.

The NPCA110x chip runs “Waves Audio” (2011 Technical Grammy award Winner) professional grade algorithms, making it a single plug & play audio processor, which offers high-end audio performance. The algorithms are designed to overcome the acoustic limitations common with modern consumer electronic device, like slim designs, small speakers and resonant enclosure. The target device is easily tuned using the provided Audio Console GUI that controls MaxxAudio3.0®. This enables an “in-house” audio engineer or a Nuvoton’s audio engineer to quickly tune the system and customize audio pre-sets.

The NPCA110x offers the end user a rich and enjoyable audio experience, even from acoustically restricted designs.

Features:

The NPCA110x is pre-programmed with MaxxAudio3.0® algorithms and system features. These include:

- **MaxxBass®** reproduces full, rich-sounding bass tones even from small speakers. This is done by using a patented psychoacoustic technique to create a perceived low bass, which can be extended up to 1.5 octaves lower than the original cut-off.
- Power handling is done by **MaxxVolume®**, which utilizes the power amplifiers and speakers to their full extent yet avoids clipping and distortions.
- **Maxx3D™** widens the 3D image and provides a spacious feel, even from small devices.
- **MaxxTreble™** reproduces crystal clear high frequencies to compensate for tweeter-less designs.
- **MaxxDialog™** enables end users to enjoy clear, crisp dialog that is not masked by loud music or noisy effects.
- **MaxxEQ™** provides a flexible equalizer with up to 20 stereophonic bands, providing ample bands for solving resonance issues as well as creating unique sound signatures.
- **Digital Volume** and Bass/Treble controls which can replace traditional analog potentiometers.
- Additional digital controls for selecting a specific music style (Jazz, Vocal, Rap, Classical, etc.)

Derivatives:

- **NPCA110P** – Designed for Portable audio devices, such as docking stations, multimedia speaker and similar products.
- **NPCA110T** – Designed specifically for TV applications. The algorithms compensate for small speakers with no low-frequency reproduction capabilities and restricted dynamic range. It can downsize or completely replace internal tweeters, large amplifiers and sub-woofers.
- **NPCA110D** – A digital-only version for systems that can integrate it into their digital flow.
- **NPCA110B** – An algorithm-restricted design for cost-sensitive projects that require Volume and Bass boost, such as USB based soundbar.
- **NPCA110M** – Designed for modern mobile devices and tablets. It is an embedded CODEC that runs all the output processing as well as microphone handling.

Part No.	HW Configuration					FW Configuration							
	I²S Stereo Inputs	ADC Stereo Inputs	I²S Output 2 x Stereo	DAC Single Output	Package	Bass	Eq	Stereo	Treble	Volume	Level	Dialog	Sub-Woofers
NPCA110P	2	3	3	4	40QFN	Y	Y	Y	Y	Y	Y	Y	Y
NPCA110T	3	0	3	3	32QFN	Y	Y	Y	Y	Y	Y	Y	Y
NPCA110D	3	0	3	0	32QFN	Y	Y	Y	Y	Y	Y	Y	Y
NPCA110B	1	2	1	2	32QFN	Y	Y	-	-	Y	-	-	-
NPCA110M	2	3	3	4	40QFN	Y	Y	Y	Y	Y	Y	Y	Y

*Status: Mass Production

Contact us: APC.Support@nuvoton.com

ISD Voice ICs

◆ ISD ChipCorder® Family

Digital ChipCorder Series
MLS ChipCorder Series
Development Tools

◆ Voiceband CODECs

Voice Codec Series





Nuvoton's ChipCorder® is a complete, single chip solution for voice, audio recording and playback. It is designed to offer the highest quality single-chip voice record/playback solutions for embedded applications. Non-volatile and highly integrated, they are ideal solutions for adding voice prompts, audio/sound feedback for touch buttons, alerts, interactive menus, and voice memos to consumer, industrial and security products. Available pre-recording services make it easy to add audio/voice to system design. The easily programmable devices also allow array of products to carry branding messages, enabling manufacturers to distinguish their products with high-quality digital playback of audio-grade sound alerts and corporate audio-logo clips. "Acoustic branding" has been embraced by a wide range of markets to build brand identity and distinctiveness, tapping into users' powerful sense of sound and memory.

Digital ChipCorder Series

Part No.	Description	Duration	Sample Rate (kHz)	Voltage	Package	Other
ISD15102	Multi-message record/playback, flash memory, I ² S digital audio and SPI interfaces	2 min	Up to 48	2.7 to 3.6V	LQFP48	Industrial -40 to 85°C
ISD15104		4 min				
ISD15108		8 min				
ISD15116		16 min				
ISD15C00	Multi-message record/playback with I ² S digital audio and SPI interfaces	Ext. Flash up to 64 min	Up to 48	2.7 to 3.6V	LQFP48	AEC-Q100
ISD15D00	Multi-message playback-only with I ² S digital audio and SPI interfaces	Ext. Flash up to 64 min	Up to 48	2.7 to 5.5V	QFN32	AEC-Q100
ISD3900	Multi-message record/playback with I ² S digital audio and SPI interfaces	Ext. Flash up to 64 min	Up to 48	2.7 to 3.6V	LQFP48	Industrial -40 to 85°C
ISD3800	Multi-message playback-only with I ² S digital audio and SPI interfaces	Ext. Flash up to 64 min	Up to 48	2.7 to 5.5V	LQFP48	Industrial -40 to 85°C
ISD2130	Multi-message playback-only with embedded flash memory	30 sec	Up to 32	2.7 to 3.6V	QFN20	Industrial -40 to 85°C
ISD2115A		15 sec				
ISD2360	Multi-message, 3-channel audio, playback-only with embedded flash memory	64 sec	Up to 32	2.4 to 5.5V	QFN32 SOP16	Industrial -40 to 85°C

*Status: Mass Production








MLS ChipCorder Series

Part No.	Description	Duration	Sample Rate (kHz)	Voltage	Package	Temperature
ISD14B20	Multi-message record/playback with internal flash memory	10-128 sec	4~12	2.4 to 5.5V	DIE	0 - 50°C
ISD14B40						
ISD14B80						
ISD1916	Multi-message record/playback with internal flash memory	10-128 sec	4~12	2.4 to 5.5V	SOIC 28	Industrial
ISD1932						
ISD1964						
ISD1610B	Single-message record/playback with internal flash memory	6-40 sec	4~12	2.4 to 5.5V	SOIC 16 DIE	Commercial Industrial
ISD1616B						
ISD1620B						
ISD1730	Multi-message record/playback, internal flash memory and SPI interface	20-480 sec	4~12	2.4 to 5.5V	SOIC 28 DIE	Commercial Industrial
ISD1760						
ISD17120						
ISD17240						
ISD1806	Single-message record/playback with internal flash	6-12 sec	4~8	2.7 to 4.5V	DIE	0 - 50°C
ISD1810						
ISD18A04	Single-message record/playback with internal flash memory	4-8 sec	4~8	2.4 to 5.5V	DIE	0 - 50°C
ISD18B12	Single-message record/playback with internal flash memory	6-24 sec	4~8	2.4 to 5.5V	DIE	0 - 50°C
ISD18B24						
ISD18C10	Single-message record/playback with internal flash memory	12 sec	4~8	2.7 to 4.5V	DIE	0 - 50°C
ISD4002	Multi-message record/playback, internal flash memory and SPI interface	2-16 min	4 5.3 6.4 8	2.7 to 3.3V	DIP 28 SOIC 28 TSOP 28 DIE	Commercial Industrial
ISD4003						
ISD4004						
ISD5102	Multi-message record/playback, internal flash memory and I ² C interface	2-16 min	4 5.3 6.4 8	2.7 to 3.3V	SOIC 28 TSOP 28 DIE	Industrial
ISD5104						
ISD5108						
ISD5116						

*Status: Mass Production

Contact us: ChipCorder@nuvoton.com

Development Tools for Digital ChipCorder

Ordering No.	Content	Supported Devices	Description	Picture
ISD-DMK_15100	<ul style="list-style-type: none"> • ISD-DEMO15100 • ISD-ES_MINI_USB • Speaker 	ISD15116/08/04/02	• Evaluation and demo kit for ISD15102/4/8/16	
ISD-DMK_15C00	<ul style="list-style-type: none"> • ISD-DEMO15C00 • ISD-ES_MINI_USB • Speaker 	ISD15C00	• Evaluation and demo kit for ISD15C00	
ISD-DMK_15D00	<ul style="list-style-type: none"> • ISD-DEMO15D00 • ISD-ES_MINI_USB • Speaker 	ISD15D00	• Evaluation and demo kit for ISD15D00	
ISD-DMK_2100	<ul style="list-style-type: none"> • ISD-DEMO2100_Q • ISD-ES_MINI_USB • Speaker 	ISD2100 series	• Evaluation and demo kit for ISD2100 series	
ISD-DMK_2360	<ul style="list-style-type: none"> • ISD-DEMO2360_Q • ISD-ES_MINI_USB • Speaker 	ISD2360	• Evaluation and demo kit for ISD2360	
ISD-DMK_3800	<ul style="list-style-type: none"> • ISD-DEMO3800 • ISD-ES_MINI_USB • Speaker 	ISD3800	• Evaluation and demo kit for ISD3800	
ISD-DMK_3900	<ul style="list-style-type: none"> • ISD-DEMO3900 • ISD-ES_MINI_USB • Speaker 	ISD3900	• Evaluation and demo kit for ISD3900	

Contact us: ChipCorder@nuvoton.com

Voiceband CODECs



Nuvoton's family of Voice CODEC solutions address the market requirements for voice-grade A/D and D/A conversion at the lowest possible power consumption. The portfolio includes both single and dual channel devices with 3V, 5V or mixed 3V/5V supply voltages options as well as a variety of analog output variations. All CODECs comply with industry standard ITU G.711 and G.712 recommendations.

Voice Codec Series

Part No.	# of Channels	PCM Format	Supply Voltage	Power (TYP/STBY)	Package
W6810	1	μ -Law / A-Law	5V	25mW / 0.5 μ W	SOP20, SSOP20, TSSOP20
W6811	1	μ -Law / A-Law	5V Analog 3V Digital	25mW / 0.5 μ W	SOP24, SSOP24
W681310	1	μ -Law / A-Law	3V	10mW / 0.5 μ W	SOP20, SSOP20, TSSOP20
W681360	1	13-bit Linear	3V	9.8mW / 0.09 μ W	SOP20, SSOP20, TSSOP20, QFN32
W681511	1	μ -Law / A-Law	5V	25mW / 0.5 μ W	SOP20
W681512	1	μ -Law / A-Law	5V	30mW / 0.5 μ W	SOP20, SSOP20, TSSOP20
W682310	2	μ -Law / A-Law	3V	22mW / 3 μ W	SOP24, SSOP20
W682510	2	μ -Law / A-Law	5V	35mW / 5 μ W	SOP24, SSOP20

*Status: Mass Production

Contact us: CODEC@nuvoton.com

Cloud Computing

◆ EC

EC for Portable Applications

◆ Hardware Monitors

Desktop / Server Series
NB and Networking / Storage Series

◆ I/O

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

◆ Security

Trusted Platform Module (TPM)

◆ Voltage Level Shifters

GTL to TTL Series
I²C Series





EC for Portable Applications

Highly integrated embedded controller (EC) devices with an embedded 32 bits 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) or the I²C Host interface and is designed to best meet the requirements of mobile systems.

Part No.	Description
NPCE78nx	LPC Embedded Controller with extended functionality for Notebook Keyboard Control and Power Management with shared BIOS interface, low-cost I/O expansion interface and enhanced LED control. LQFP128 package.
NPCE791x	LPC Embedded Controller with extended functionality for Notebook Keyboard Control and Power Management with shared BIOS interface, on-chip Clock Generator and PECI3.0 interface. LQFP128 package.
NPCE795x	LPC Embedded Controller with extended functionality for Notebook Keyboard Control and Power Management with shared SPI Flash interface, on-chip Clock Generator, large on-chip RAM and PECI3.0 interface. LQFP128 and TFBGA128 package options.
NPCE885x NPCE895x	Highly integrated embedded controller (EC) with a high performance embedded RISC core and integrated advanced functions. It is targeted for a wide range of portable applications and provides best-in-class complete EC functionality such as KBC, Power Management, enhanced debug capability and more. LQFP128, TFBGA128 and TFBGA144 package options.
NPCE69x	The NPCE69x family of devices is a 64-pin highly integrated embedded controller (EC) with an embedded RISC core and integrated advanced functions. It is targeted for small form factor portable applications such as netbooks and tablets, and provides best-in-class, complete EC functionality. It supports both LPC and I ² C host interfaces. LQFP64.

*Status: Mass Production

**Please contact your local FAE/sales for a specific RoHS P/N

Contact us: APC.Support@nuvoton.com

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 and Package	Package Type	PECI
W83795G	SMBus	Y	6	21(max)	14(max)	8(max)	3.3V	LQFP64	2.0
W83795ADG	SMBus	Y	6	18(max)	14(max)	2	3.3V	LQFP48	2.0
NCT7802Y	SMBus	Y	3(max)	5(max)	3	3	3.3V	QFN20	3.0
NCT7904D	SMBus	Y	4(max)	17(max)	12(max)	4	3.3V	LQFP48	3.0

*Status: Mass Production

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 and Package	Package Type	PECI
NCT7802Y	SMBus	Y	3(max)	5(max)	3	3	3.3V	QFN20	3.0
W83773G	SMBus	Y	2	N	N	N	3.3V	MSOP8	N
W83775G	SMBus	Y	2	N	N	N	3.3V	MSOP10	N
NCT7717U	SMBus	Y	N	N	N	N	3.3V	SOT23-5	N
NCT7718W	SMBus	Y	1	N	N	N	3.3V	MSOP8	N
NCT7511Y	SMBus	Y	2	N	1	1	3.3V	QFN16	N

*Status: Mass Production

Contact us: ComputerIC@nuvoton.com

I/O



General Purpose I/O Series

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

Part No.	Interface	GPIO	Supply Voltage	Package type
W83601G	SMBus / I ² C	15	5V	SSOP20
W83L603G	SMBus / I ² C	8	3.3V	SOP14
W83L604G	SMBus / I ² C	14	3.3V	SSOP20
NCT5605Y	SMBus / I ² C	14	3.3V	QFN20

*Status: Mass Production

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.	I/O Bus	KBC	UART	Parallel Port	Hardware Monitor	ACPI	SMBus Master	SPI I/F	PECI I/F	SB-TSI I/F	CIR	EuP Power Saving	Port 80	Package
W83527HG	LPC	Y	N	N	Y	Y	N	N	1.1	N	N	N	N	48-LQFP
NCT5577D	LPC	Y	1	N	Y	Y	Y	N	3	Y	Y	Y	N	64-LQFP
NCT5532D	LPC	Y	1	N	Y	Y	Y	N	3	Y	Y	Y	N	64-LQFP
NCT5523D	LPC	N	2	N	Y	Y	N	N	3	N	N	Y	Y	64-LQFP
NCT5526D	LPC	N	1	Y	Y	Y	N	N	3	Y	N	Y	Y	64-LQFP
NCT6776D	LPC	Y	2	Y	Y	Y	Y	N	3	Y	Y	Y	Y	128-LQFP
NCT6779D	LPC	Y	2	Y	Y	Y	Y	N	3	Y	Y	Y	Y	128-LQFP
NCT6792D	LPC	Y	2	Y	Y	Y	Y	N	3	Y	Y	Y	Y	128-LQFP
NCT6106D	LPC	Y	6	Y	Y	Y	Y	N	3	Y	Y	Y	Y	128-LQFP
NCT6627UD	LPC	Y	6	Y	Y	Y	N	N	1	N	N	N	N	128-LQFP
W83627DHG-P	LPC	Y	2	Y	Y	Y	N	Y	1.1	N	N	N	N	128-QFP
W83627UHG	LPC	Y	6	Y	Y	Y	N	N	1	N	N	N	N	128-QFP

*Status: Mass Production

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.	I/O Bus	KBC	UART	Parallel Port	Hardware Monitor	ACPI	SMBus Master	SPI I/F	PECI I/F	SB-TSI I/F	CIR	EuP Power Saving	Port 80	Built-in uC	Package
NCT6683D-T	LPC	Y	2	Y	Y	Y	Y	Y	3	Y	Y	Y	Y	Y	128-LQFP
NCT6681D	LPC	Y	2	Y	Y	Y	Y	Y	3	Y	Y	Y	Y	Y	128-LQFP

*Status: Mass Production

Contact us: ComputerIC@nuvoton.com

Security



Trusted Platform Module (TPM)

The Nuvoton TPM (NPCT42x and NPCT50x), a single-chip, Trusted Platform Module (TPM), is a third generation Nuvoton SafeKeeper™ device that implements the Trusted Computing Group (TCG) version 1.2 specifications for PC-Client TPM. It provides a complete solution for PC security for a wide range of PC applications.

Part No.	Description	TPM Main Specification Version Compliance	TCG PC Client Specific TIS Version	FIPS Compliance	Security Innovation TSS Availability	Wave Systems CSP	Interface	EK Certificate Support	Package Options
NPCT42x	SafeKeeper™ stand-alone Trusted Platform Module (TPM)	Version 1.2 revision 116	1.21	140-2 Level 1 - Optional	Optional	Optional	LPC	Optional	TSSOP28 QFN32
NPCT50x	SafeKeeper™ stand-alone Trusted Platform Module (TPM)	Version 1.2 revision 116	NA	N	NA	NA	I ² C	Optional	TSSOP28 QFN32

*Status: Mass Production

Contact us: APC.Support@nuvoton.com

Voltage Level Shifters



GTL to TTL Series

Nuvoton GTL to TTL IC series provides bi-directional level shifting between buses operation at TTL and GTL voltage levels. They are widely used in Workstation, Industrial PC, Server and Cloud computing applications.

Part No.	Operation Voltage 1	Operation Voltage 2	Inputs	Outputs	Operation Temperature	Package Type
NCT5914W	0.5V~6.0V	0.5V~6.0V	4	4	-40~+85°C	TSSOP14

*Status: Mass Production

I²C Series

Nuvoton I²C level shifter series provides the ability to interface a variety of devices with different operating voltages on the same I²C. High ESD protection and speeds are supported. These devices are suitable for all desktop, workstation, server and industrial PC applications.

Part No.	Interface	Bus Frequency	Operation Voltage 1	Operation Voltage 2	Inputs	Outputs	Operation Temperature	Package Type
NCT5917W	I ² C / SMBus	400KHz	0.9V~5.5V	2.7V~5.5V	1	1	-40~+85°C	MSOP 8-pin
NCT5927W	I ² C / SMBus	1MHz	0.8V~5.5V	2.2V~5.5V	1	1	-40~+85°C	MSOP 8-pin

*Status: Mass Production

Contact us: ComputerIC@nuvoton.com

Power Management

◆ Power Switch

Power Switch Series

◆ Voltage Regulators

DDR Bus Termination Series

Fan Driver IC Series

Linear Regulator Series

PWM IC Series

Others



Power Switch



Power Switch Series

Nuvoton's Power Switch Series are high integration and cost-effective solutions. Our products provide PCB space saving and are good for high side over current protection and system power saving applications. Our series feature low $R_{DS(ON)}$, low input voltage and abundant protections like over current protection, short circuit, over temperature and reverse voltage/current protections.

Part No.	Input Voltage	R _{ds(on)} (typ.)	Output Current (max)	Flag Indicator	OCP Adjustable	Output Discharge	Features	Package
NCT3520W-XXX	4.5V~5.5V	70 m-ohm	2.0A (-X15) 1.5A (-X12) 1.0A (-X10)	Y	N	Y	Enable(X: H active high; L active low); Shutdown Output Discharge, UVLO, OCP, RCP, RVP, OTP	MSOP8
NCT3521U NCT3521U-2	2.7V~5.5V	80 m-ohm	2.0A	Y	N	Y	Enable; Adj. Soft-start & Shutdown Output Discharge, UVLO, OCP, RCP, RVP, OTP	SOT23-5 SOT23-6
NCT3522U	2.7V~5.5V	80 m-ohm	1.5A	N	N	Y	Enable; Shutdown Output Discharge, UVLO, OCP, RCP, RVP, OTP	SOT23-5

*Status: Mass Production

Contact us: ComputerIC@nuvoton.com



Voltage Regulators

DDR Bus Termination Series

Nuvoton's family of DDR bus termination regulators series provide 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.	Memory Supported	V _{in}	Control Voltage	VTT Output Offset (max)	Sink/Source Current (max)	Features	Package
W83312SN	DDR1, DDR2, DDR3, DDR4	1.2V~5.5V	3.0V~5.5V	-20mV~+20mV	2.5A	OCP & OTP	SOP8 with Exposed Pad
NCT3101S	DDR1, DDR2, DDR3, DDR4	1.0V~5.5V	3.0V~5.5V	-20mV~+20mV	2A	OCP & OTP	SOP8 with Exposed Pad
NCT3107S	DDR1, DDR2, DDR3, DDR4	1.5V~5.0V	2.2V~5.5V	-30mV~+30mV	1.5A & VREF: 10mA (Source)	EN with Suspend to RAM (STR) Functionality, OCP & OTP	SOP8 with Exposed Pad

*Status: Mass Production

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 (V _{IN})	Output Voltage	V _{SET}	Output Current (typ.)	Current Limit Trigger	Features	Package
NCT3940S NCT3940S-A	4.5V~5.5V	Follow V _{SET} *1.6 times	1.0V~V _{IN}	0.5A	1.0A (typ.)	OCP, SCP & OTP EN: NCT3940S FON#: NCT3940S-A	SOP8
NCT3942S NCT3942S-A	4.5V~5.5V	Follow V _{SET} *1.6 times	1.0V~V _{IN}	0.5A	1.0A (typ.)	SS, OCP, SCP & OTP EN: NCT3942S FON#: NCT3942S-A	SOP8
NCT3941S NCT3941S-A	8.0V~17.6V	Follow V _{SET} *4.0 times	1.0V~V _{IN}	0.5A	1.6A (typ.)	OCP, SCP & OTP EN: NCT3941S FON#: NCT3941S-A	SOP8 with Exposed Pad

*Status: Mass Production

Linear Regulator Series

Nuvoton's Linear Regulator Series provide 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.	Control Voltage	Input Voltage	Output Current	Dropout (typ.)	Features	Package
NCT3720S NCT3720S-L	3V~5.5V	1V~5.5V	2A	150mV	EN, PG, UVLO, OCP, SCP & OTP	SOP8 with Exposed Pad
NCT3730S NCT3730S-L	3V~5.5V	1V~5.5V	3A	210mV	EN, PG, UVLO, OCP, SCP & OTP	SOP8 with Exposed Pad

*Status: Mass Production

PWM IC Series

Nuvoton's PWM IC series are high performance and cost-effective solution which are good for DC/DC regulation application. Our PWM controller are designed to drive high side and low side N-channel MOSFETs in a synchronous rectified buck topology and provide high efficiency and fast transient response.

Part No.	Supply Voltage	Input Voltage	Output Voltage	Accuracy	Frequency (typ.)	Features	Package
NCT3230S	4.5V~13.2V	1.5V~13.2V	0.8V~V _{IN}	-2%~+2%	300KHz	Internal Soft start, Programmable OCP, UVP & OVP	SOP8

*Status: Mass Production

Others

Nuvoton's NCT393x family of programmable D/A converters (DAC) provide 7-bit sink/source current outputs that are programmable via a standard SMBus interface. These products can be coupled with PWM or linear regulators to provide power supply margining for over voltage or under voltage applications.

Part No.	Operating Voltage	Output Channel	Sinking Steps	Sourcing Steps	Resolution/ Step	Interface	Package
NCT3933U	3.0 ~ 5.0V	3	128	128	10uA/20uA	SMBus	SOT23-8

*Status: Mass Production

Contact us: ComputerIC@nuvoton.com

Foundry Service

◆ Nuvoton Foundry FAB

◆ Technology

High Voltage and Power Process
Embedded Logic-Based Non-Volatile Memory (NVM) Process
Customized Technology
Available Technologies
Technology Roadmap

◆ Foundry Service

Multi-Layer Mask (MLM), and Multi-Project Wafer (MPW) Services
Customized Technology and Excellent Cycle Time
Complete Design Kits and Product Service Team





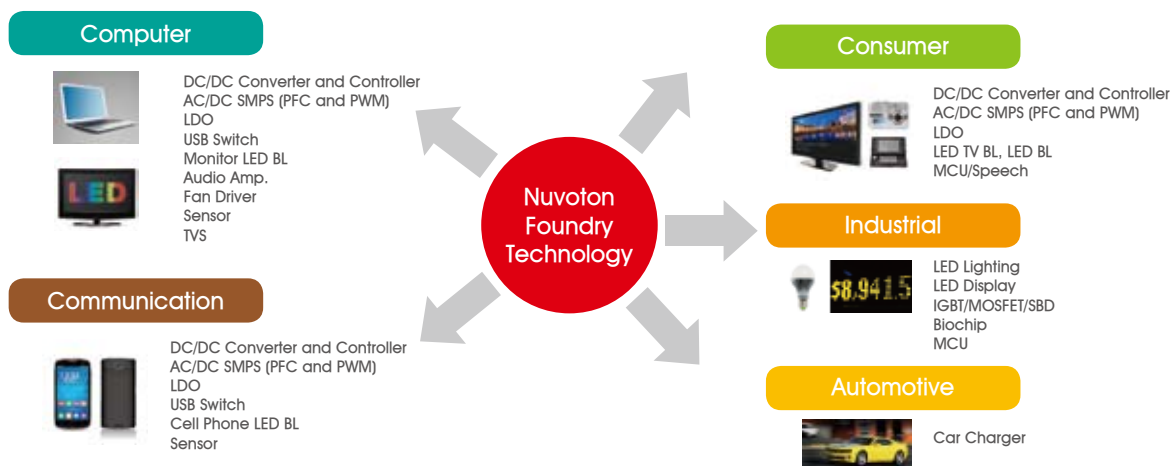
Nuvoton Foundry FAB (previous Winbond FAB2: 6 inch fab) has a capacity of 45,000 wafers per month for foundry service since year 2008. Nuvoton Foundry FAB offers a variety of technologies including Generic Logic, Mixed Signal (Mixed Mode), High Voltage, Ultra High Voltage, Power Management, Mask ROM (Flat Cell), embedded Logic Non-Volatile Memory, and customized processes (For Example: IGBT, MOSFET, Biochip, TVS, Sensor) etc. based on 0.35um to 1.0um technologies. As a semiconductor manufacturing foundry, our goal is to deliver excellent foundry capabilities as a manufacturing partner to fabless or fab-lite semiconductor companies.

Technology



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, IGBTs, TVS, Light Sensor, Pressure Sensors, BioChip, GaN SBD etc. Applications include industrial control, high power conversion systems, mobile devices, sensors, system electrostatic protection, medical care, and more. Nuvoton also has a strong R&D team that can create a variety of customized processes for customer requirements.



High Voltage and Power Process

Nuvoton offers 0.5um 5V, 0.6um CDMOS/UHV, and 0.35um BCD's power management and high-voltage related processes. These processes cover the requirements of systems with power supplies from 5V ~ 700V and include low on-resistance (Low Rds(on)) power devices (LDMOS) and UHV devices (Ultra High Voltage Devices). In order to reduce costs and improve performance, Nuvoton is constantly thinking of ways to achieve low on-resistance devices to enhance customers' competitiveness. We currently offer our 0.35um BCD process providing world-class low on-resistance devices.

Process	Device	Rds,on (mOhm-mm²)	Vdss (V)
0.6um 5V/40V/UHV Modular Process	5V/25V LDNMOS	25	>30
	5V/40V LDNMOS	55	>48
	500V Low Ron UHV	212 (mOhm-cm²)	~750
0.6um 5V/12V, 16V, 20V CDMOS Process	12V/12V LDNMOS	7.8	>18
	16V/16V LDNMOS	12	>22
	5V/20V LDNMOS	25	>24
0.35um BCD Process	5V NMOS	3.7	>8
	5V/18V LDNMOS	15	>22
	5V/25V LDNMOS	23	>30
	5V/40V LDNMOS	50	>48
	5V/60V LDNMOS	70	>72
	5V/80V LDNMOS	90	>96
	700V Low Ron UHV	135 (mOhm-cm²)	>800

Contact us: LogicFoundry@nuvoton.com

Embedded Logic-Based Non-Volatile Memory (NVM) Process

In order to meet a variety of applications requiring memory on demand, particularly in 0.35um processes, we provide three kinds of logic-based Non-Volatile Memory (NVM). They are (1) Yield Microelectronics Corporation's (YMC) 3.3V MTP (Multi-Time-Programing) NVM IP; (2) eMemory's 5V OTP (One-Time-Programing) NVM IP; and (3) Nuvotons Own Poly e-Fuse IP for Trimming.

Application	Target Product	Function	0.35um Process	NVM IP
Trimming	LCD Driver, LED Driver, Touch Panel, Power IC, STB Control	Fuse Like	5V/40V/UHV or BCD	eMemory 5V OTP NTC Poly e-fuse
Parameter Setting	LCD, LED, Battery Pack Protection	Status Parameter	5V/40V HV or BCD	eMemory 5V OTP
Encryption	LCD, STB, Smart Card	Security confirm code	5V/40V HV or BCD	eMemory 5V OTP
Function Selection	SoC product Function selector	SoC Function Control	3.3V/5V Logic	YMC 3.3V MTP
Identification Setting	Product ID, TagIC <13.5MHz	ID Code	3.3V/5V Logic	YMC 3.3V MTP
Code Storage	4/8 bits MCU	Program, Data Storage	3.3V/5V Logic	YMC 3.3V MTP

Customized Technology

IGBT / MOSFET Process Platform

With today's emphasis on environmental protection and green energy, Nuvoton deeply believes that improving system performance and creating high-performance power components is more important than ever. Thus, we accordingly provide a high voltage MOSFET and IGBT process platform. On this platform features include Deep Trench Gate, Thin wafer Handling, 3mil Backside Grinding, Backside Imp and Backside Metal plus other technologies.



III-V Material Process Platform

With many IC processes and with a deep level of experience in material properties, we have a proven isolation technology that allows us to group III-V material into Si base FAB production. By resolving potential contamination problems, we can now group III-V materials in the Nuvoton foundry.

Sensor Technology Process Platform

By using Deep Trench and Backend Etch with SOI technology, we have manufactured a variety of customer required sensors (such as pressure, light and acid-base properties) for use in handheld and medical systems.

ESD Protection Process Platform

Nuvoton has a complete ESD protection IC process platform that provides all the necessary ESD protection. Processes are highly customized to meet customer requirements across multiple products.

Available Technologies

Process	Technology	Process Feature
Logic / Mixed Mode	0.35um	3.3V/5V Mixed Mode
	0.45um	3.3V or 5V Mixed Mode
	0.5um	3.3V or 5V Mixed Mode
Embedded Logic NVM	0.35um	3.3V/5V Mixed Mode embedded NVM
Mask ROM	0.35um	3.3V/5V Logic embedded 0.32um Flat Cell
	0.5um	5V Logic embedded 0.37um Flat Cell
High Voltage / Power	0.35um	5V BCD Process
	0.6um	5V/12V/16V/20V CDMOS
		5V/18V/30V/40V Low-Vgs CDMOS
		5V/25V/40V Dual-Vgs CDMOS
		5V/40V/800V UHV

Technology Roadmap

Technology	Available Process	2013				2014				2015	
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	H1	H2
0.35um	5V/12V~40V BCD Process (with Electrical Fuse and OTP NVM)	5V/60V, 80V BCD						100V~500V BCD			
		2nd G Low Ron UHV						2nd G. 12V~80V BCD			
		700V HVIC									
								3.3V Logic			
Customized Process	Transient Voltage Suppressor (TVS) HV MOSFET Light Sensor	Pressure Sensor									
		1200V IGBT									
		GaN SBD						GaN HEMT			

Contact us: LogicFoundry@nuvoton.com



Multi-Layer Mask (MLM), and Multi-Project Wafer (MPW) Services

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. MPW Service offers platforms that use multi-project wafers for prototyping which enables multiple customers to share mask tooling costs.

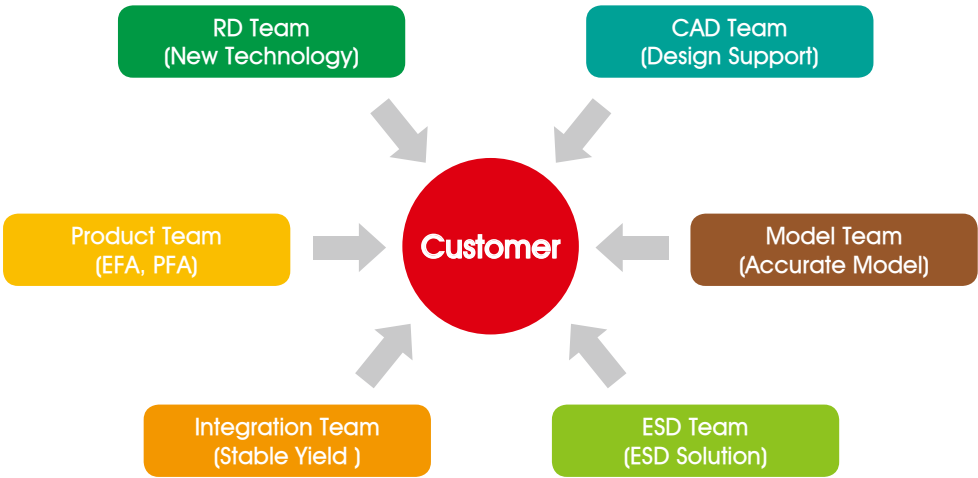
Customized Technology and Excellent Cycle Time

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

Complete Design Kits and Product Service Team

We provide the most accurate and complete Design Kits to customers for product design, while providing a full range of customer support services to help customers get to market quickly.

Process	Vender	Tools / Version	
Design Rule & Sample Layout	-	Layout Design Rule	Device sample layout
	-	ESD/Latch-Up Layout Design Rule	ESD sample layout
SPICE Model	-	HSPICE	BSIM3V3 (L49) (+ macro)
	-	Spectre SPICE	BSIM3V3 (L49) (+ macro)
DRC	Mentor Graphics	Calibre	
LVS	Mentor Graphics	Calibre	
LPE	Mentor Graphics	Calibre	
Cell Library	-	Standard Cell Library / IO Cell Library	
SRAM	-	SRAM compiler (64 X 2 bits ~ 4K X 8 bits)	
Mismatch Report	-	Mismatch Report	
PDK	Snopsys	Laker Custom Layout System (with M-Cell)	



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