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- Microcontroller Application IC
- Audio Application IC
- Cloud & Computing IC
- Foundry Service



nuvoTon
新唐科技
Product Selection Guide 2013



Nuvoton Technology Corp. was established as a spin-off of Winbond Electronics' Logic business group, starting operation in July, 2008 and IPO in September, 2010. Nuvoton Technology focuses on the R&D and sales in logic ICs, and leads in market shares of Audio, Microcontrollers, computer and cloud related application ICs. Nuvoton owns a six-inch wafer fab, featuring in special niche process. Besides in-house IC products, the wafer fab also provides part of its capacity for foundry services. Nuvoton Technology provides high cost performance products for its customers by means of flexible technology innovation capabilities, full product solutions and excellent integration of technology synergy. Nuvoton offers superior services based on existing solid foundation and continues to realize its vision: "Be an indispensable partner to industry leaders." Nuvoton values the long-term relationship with its partners and customers; 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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Microcontroller Application IC

- ARM Microcontroller
- 8051 Microcontroller
- ARM SoC
- Toy / ELA
- Small Home Electronics



ARM Microcontroller

NuMicro™ Family

NuMicro™ is Nuvoton's brand-new 32-bit Microcontroller (MCU) family powered by the ARM® Cortex™-M0 processor - the smallest, lowest power and most energy-efficient ARM processor optimized for a variety of MCU applications. Nuvoton's NuMicro™ family, which is ready for mass-production now, includes NUC100/200 series, NUC120/122/123/220 series with USB 2.0 FS device, NUC130/140 series embedded with Controller Area Network (CAN) 2.0B licensed from BOSCH, M051 series, Mini51 series, and Nano100 Ultra-low Power series targeting at battery powered applications. With a variety of product offerings, the NuMicro™ family is ideal for use in industrial control systems, industrial automation, consumer products, embedded network control, energy, power systems, motor control, and many more. Furthermore, with the integration of the industry leading ARM® Cortex™-M0 microprocessor, the NuMicro™ family brings 32-bit performance at a cost equivalent to traditional 8-bit microcontrollers.

NUC100 Series

The NuMicro™ NUC100 series embedded with the ARM® Cortex™-M0 core runs up to 72 MHz with 32K/64K/128K bytes Flash Program memory, 4K/8K/16K/20K bytes SRAM, and 4K bytes Flash loader memory for In System Programming (ISP). The NUC100 series also comes equipped with a variety of peripherals, such as GPIOs, Timers, Watchdog Timer, 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 (32 KB ~ 128 KB), Data Flash* (4 KB) and ISP loader (4 KB) and PDMA (*: 128 KB version configurable)

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

NUC100 Advanced Line

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity					I ² S	PWM	ADC	Comp.	RTC	EBI	PDMA	ISO-7816-3	ICP ISP/IAP	IRC 22MHz	Package	
							UART	SPI	I ² C	USB	LIN												CAN
Low Density																							
NUC100LC1DN	32K	4K	4K	4K	37	4x32-bit	2	1	2	-	-	-	1	4x16-bit	8x12-bit	1	√	-	9	√	√	√	LQFP48
NUC100LD1DN	64K	4K	4K	4K	37	4x32-bit	2	1	2	-	-	-	1	4x16-bit	8x12-bit	1	√	-	9	√	√	√	LQFP48
NUC100LD2DN	64K	8K	4K	4K	37	4x32-bit	2	1	2	-	-	-	1	4x16-bit	8x12-bit	1	√	-	9	√	√	√	LQFP48
NUC100RC1DN	32K	4K	4K	4K	51	4x32-bit	2	2	2	-	-	-	1	4x16-bit	8x12-bit	2	√	√	9	√	√	√	LQFP64
NUC100RD1DN	64K	4K	4K	4K	51	4x32-bit	2	2	2	-	-	-	1	4x16-bit	8x12-bit	2	√	√	9	√	√	√	LQFP64
NUC100RD2DN	64K	8K	4K	4K	51	4x32-bit	2	2	2	-	-	-	1	4x16-bit	8x12-bit	2	√	√	9	√	√	√	LQFP64
Medium Density																							
NUC100LD3DN	64K	16K	4K	4K	37	4x32-bit	2	1	2	-	-	-	1	6x16-bit	8x12-bit	1	√	-	9	√	√	√	LQFP48
NUC100LE3DN	128K	16K	Configurable	4K	37	4x32-bit	2	1	2	-	-	-	1	6x16-bit	8x12-bit	1	√	-	9	√	√	√	LQFP48
NUC100RD3DN	64K	16K	4K	4K	51	4x32-bit	3	2	2	-	-	-	1	6x16-bit	8x12-bit	2	√	√	9	√	√	√	LQFP64
NUC100RE3DN	128K	16K	Configurable	4K	51	4x32-bit	3	2	2	-	-	-	1	6x16-bit	8x12-bit	2	√	√	9	√	√	√	LQFP64
NUC100VD2DN	64K	8K	4K	4K	84	4x32-bit	3	4	2	-	-	-	1	8x16-bit	8x12-bit	2	√	√	9	√	√	√	LQFP100
NUC100VD3DN	64K	16K	4K	4K	84	4x32-bit	3	4	2	-	-	-	1	8x16-bit	8x12-bit	2	√	√	9	√	√	√	LQFP100
NUC100VE3DN	128K	16K	Configurable	4K	84	4x32-bit	3	4	2	-	-	-	1	8x16-bit	8x12-bit	2	√	√	9	√	√	√	LQFP100

NUC120 USB Line

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity					I ² S	PWM	ADC	Comp.	RTC	EBI	PDMA	ISO-7816-3	ICP ISP/IAP	IRC 22MHz	Package	
							UART	SPI	I ² C	USB	LIN												CAN
Low Density																							
NUC120LC1DN	32K	4K	4K	4K	33	4x32-bit	2	1	2	1	-	-	1	4x16-bit	8x12-bit	1	√	-	9	√	√	√	LQFP48
NUC120LD1DN	64K	4K	4K	4K	33	4x32-bit	2	1	2	1	-	-	1	4x16-bit	8x12-bit	1	√	-	9	√	√	√	LQFP48
NUC120LD2DN	64K	8K	4K	4K	33	4x32-bit	2	1	2	1	-	-	1	4x16-bit	8x12-bit	1	√	-	9	√	√	√	LQFP48
NUC120RC1DN	32K	4K	4K	4K	47	4x32-bit	2	2	2	1	-	-	1	4x16-bit	8x12-bit	2	√	√	9	√	√	√	LQFP64
NUC120RD1DN	64K	4K	4K	4K	47	4x32-bit	2	2	2	1	-	-	1	4x16-bit	8x12-bit	2	√	√	9	√	√	√	LQFP64
NUC120RD2DN	64K	8K	4K	4K	47	4x32-bit	2	2	2	1	-	-	1	4x16-bit	8x12-bit	2	√	√	9	√	√	√	LQFP64
Medium Density																							
NUC120LD3DN	64K	16K	4K	4K	33	4x32-bit	2	1	2	1	-	-	1	4x16-bit	8x12-bit	1	√	-	9	√	√	√	LQFP48
NUC120LE3DN	128K	16K	Configurable	4K	33	4x32-bit	2	1	2	1	-	-	1	4x16-bit	8x12-bit	1	√	-	9	√	√	√	LQFP48
NUC120RD3DN	64K	16K	4K	4K	47	4x32-bit	2	2	2	1	-	-	1	6x16-bit	8x12-bit	2	√	-	9	√	√	√	LQFP64
NUC120RE3DN	128K	16K	Configurable	4K	47	4x32-bit	2	2	2	1	-	-	1	6x16-bit	8x12-bit	2	√	-	9	√	√	√	LQFP64
NUC120VD2DN	64K	8K	4K	4K	81	4x32-bit	3	4	2	1	-	-	1	8x16-bit	8x12-bit	2	√	-	9	√	√	√	LQFP100
NUC120VD3DN	64K	16K	4K	4K	81	4x32-bit	3	4	2	1	-	-	1	8x16-bit	8x12-bit	2	√	-	9	√	√	√	LQFP100
NUC120VE3DN	128K	16K	Configurable	4K	81	4x32-bit	3	4	2	1	-	-	1	8x16-bit	8x12-bit	2	√	-	9	√	√	√	LQFP100

NUC122 USB Line (Low Power)

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity					I ² S	Comp.	PWM	ADC	RTC	EBI	PDMA	ISP ICP	IRC 22MHz	Package	
							UART	SPI	I ² C	USB	LIN											CAN
NUC122ZC1AN	32K	4K	4K	4K	18	4x32-bit	1	2	1	1	-	-	-	-	-	-	-	√	√	√	√	QFN33
NUC122ZD2AN	64K	8K	4K	4K	18	4x32-bit	1	2	1	1	-	-	-	-	-	-	-	√	√	√	√	QFN33
NUC122LC1AN	32K	4K	4K	4K	30	4x32-bit	2	2	1	1	-	-	-	4x16-bit	-	√	-	√	√	√	√	LQFP48
NUC122LD2AN	64K	8K	4K	4K	30	4x32-bit	2	2	1	1	-	-	-	4x16-bit	-	√	-	√	√	√	√	LQFP48
NUC122SC1AN	32K	4K	4K	4K	41	4x32-bit	2	2	1	1	-	-	-	4x16-bit	-	√	-	√	√	√	√	LQFP64*
NUC122SD2AN	64K	8K	4K	4K	41	4x32-bit	2	2	1	1	-	-	-	4x16-bit	-	√	-	√	√	√	√	LQFP64*

LQFP64* : 7 x 7mm

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NUC123 USB Line (Low Power)

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity						I ² S	Comp.	PWM	ADC	RTC	EBI	ISP ICP IAP	IRC 22MHz	PDMA	Package
							UART	SPI	I ² C	USB	LIN	CAN										
NUC123ZC2AN1	36K	12K	Configurable	4K	20	4x32-bit	1	3	1	1	-	-	1	-	2x16-bit	-	-	-	√	√	6	QFN33
NUC123ZD4AN0	68K	20K	Configurable	4K	20	4x32-bit	1	3	1	1	-	-	1	-	2x16-bit	-	-	-	√	√	6	QFN33
NUC123LC2AN1	36K	12K	Configurable	4K	36	4x32-bit	2	3	2	1	-	-	1	-	4x16-bit	8x10-bit	-	-	√	√	6	LQFP48
NUC123LD4AN0	68K	20K	Configurable	4K	36	4x32-bit	2	3	2	1	-	-	1	-	4x16-bit	8x10-bit	-	-	√	√	6	LQFP48
NUC123SC2AN1	36K	12K	Configurable	4K	47	4x32-bit	2	3	2	1	-	-	1	-	4x16-bit	8x10-bit	-	-	√	√	6	LQFP64*
NUC123SD4AN0	68K	20K	Configurable	4K	47	4x32-bit	2	3	2	1	-	-	1	-	4x16-bit	8x10-bit	-	-	√	√	6	LQFP64*

LQFP64* : 7 x 7mm

NUC130 Automotive Line

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity						I ² S	PWM	ADC	Comp.	RTC	EBI	PDMA	ISO-7816-3	ICP ISP	IRC 22MHz	Package
							UART	SPI	I ² C	USB	LIN	CAN											
NUC130LC1CN	32K	4K	4K	4K	35	4x32-bit	3	1	2	-	2	1	1	4x16-bit	8x12-bit	1	√	-	9	-	√	√	LQFP48
NUC130LD2CN	64K	8K	4K	4K	35	4x32-bit	3	1	2	-	2	1	1	4x16-bit	8x12-bit	1	√	-	9	-	√	√	LQFP48
NUC130LE3CN	128K	16K	Configurable	4K	35	4x32-bit	3	1	2	-	2	1	1	4x16-bit	8x12-bit	1	√	-	9	-	√	√	LQFP48
NUC130RC1CN	32K	4K	4K	4K	49	4x32-bit	3	2	2	-	2	1	1	6x16-bit	8x12-bit	2	√	√	9	-	√	√	LQFP64
NUC130RD2CN	64K	8K	4K	4K	49	4x32-bit	3	2	2	-	2	1	1	6x16-bit	8x12-bit	2	√	√	9	-	√	√	LQFP64
NUC130RE3CN	128K	16K	Configurable	4K	49	4x32-bit	3	2	2	-	2	1	1	6x16-bit	8x12-bit	2	√	√	9	-	√	√	LQFP64
NUC130VE3CN	128K	16K	Configurable	4K	80	4x32-bit	3	4	2	-	2	1	1	8x16-bit	8x12-bit	2	√	√	9	-	√	√	LQFP100

NUC140 Connectivity Line

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity						I ² S	PWM	ADC	Comp.	RTC	EBI	PDMA	ISO-7816-3	ICP ISP	IRC 22MHz	Package
							UART	SPI	I ² C	USB	LIN	CAN											
NUC140LC1CN	32K	4K	4K	4K	31	4x32-bit	2	1	2	1	2	1	1	4x16-bit	8x12-bit	1	√	-	9	-	√	√	LQFP48
NUC140LD2CN	64K	8K	4K	4K	31	4x32-bit	2	1	2	1	2	1	1	4x16-bit	8x12-bit	1	√	-	9	-	√	√	LQFP48
NUC140LE3CN	128K	16K	Configurable	4K	31	4x32-bit	2	1	2	1	2	1	1	4x16-bit	8x12-bit	1	√	-	9	-	√	√	LQFP48
NUC140RC1CN	32K	4K	4K	4K	45	4x32-bit	3	2	2	1	2	1	1	4x16-bit	8x12-bit	2	√	√	9	-	√	√	LQFP64
NUC140RD2CN	64K	8K	4K	4K	45	4x32-bit	3	2	2	1	2	1	1	4x16-bit	8x12-bit	2	√	√	9	-	√	√	LQFP64
NUC140RE3CN	128K	16K	Configurable	4K	45	4x32-bit	3	2	2	1	2	1	1	4x16-bit	8x12-bit	2	√	√	9	-	√	√	LQFP64
NUC140VE3CN	128K	16K	Configurable	4K	76	4x32-bit	3	4	2	1	2	1	1	8x16-bit	8x12-bit	2	√	√	9	-	√	√	LQFP100

Contact us: NuMicro@nuvoton.com

NUC200 Series

The NuMicro™ NUC200 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 4 Kbytes Flash loader memory for In System Programming (ISP) and In Application Program (IAP). The NUC200 series also comes equipped with a variety of peripherals, such as GPIOs, Timers, Watchdog Timer, RTC, PDMA, UART, SPI/MICROWIRE, I²C, I²S, PWM, LIN, CAN, Smart Card Host (including ISO-7816), PS2, 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 (32 KB ~ 128 KB), Data Flash* (4 KB) and ISP loader (4 KB) and PDMA (*: 128 KB version configurable)

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

NUC200 Advanced Line

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity				I ² S	PWM	ADC	Comp.	RTC	PDMA	ISO-7816-3	CRC	Vbat Supply	ICP IAP	IRC 22MHz	Package
							UART	SPI	I ² C	USB												
NUC200LC2AN	32K	8K	4K	4K	35	4x32-bit	2	1	2	-	1	6x16-bit	7x12-bit	1	√	9	2	√	√	√	√	LQFP48
NUC200LD2AN	64K	8K	4K	4K	35	4x32-bit	2	1	2	-	1	6x16-bit	7x12-bit	1	√	9	2	√	√	√	√	LQFP48
NUC200LE3AN	128K	16K	Configurable	4K	35	4x32-bit	2	1	2	-	1	6x16-bit	7x12-bit	1	√	9	2	√	√	√	√	LQFP48
NUC200SC2AN	32K	8K	4K	4K	49	4x32-bit	3	2	2	-	1	6x16-bit	7x12-bit	2	√	9	2	√	√	√	√	LQFP64*
NUC200SD2AN	64K	8K	4K	4K	49	4x32-bit	3	2	2	-	1	6x16-bit	7x12-bit	2	√	9	2	√	√	√	√	LQFP64*
NUC200SE3AN	128K	16K	Configurable	4K	49	4x32-bit	3	2	2	-	1	6x16-bit	7x12-bit	2	√	9	2	√	√	√	√	LQFP64*
NUC200VE3AN	128K	16K	Configurable	4K	83	4x32-bit	3	4	2	-	1	8x16-bit	8x12-bit	2	√	9	3	√	√	√	√	LQFP100

LQFP64* : 7 x 7mm

NUC220 USB Line

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity				I ² S	PWM	ADC	Comp.	RTC	PDMA	ISO-7816-3	CRC	Vbat Supply	ICP IAP	IRC 22MHz	Package
							UART	SPI	I ² C	USB												
NUC220LC2AN	32K	8K	4K	4K	31	4x32-bit	2	1	2	1	1	4x16-bit	7x12-bit	1	√	9	2	√	√	√	√	LQFP48
NUC220LD2AN	64K	8K	4K	4K	31	4x32-bit	2	1	2	1	1	4x16-bit	7x12-bit	1	√	9	2	√	√	√	√	LQFP48
NUC220LE3AN	128K	16K	Configurable	4K	31	4x32-bit	2	1	2	1	1	4x16-bit	7x12-bit	1	√	9	2	√	√	√	√	LQFP48
NUC220SC2AN	32K	8K	4K	4K	45	4x32-bit	2	2	2	1	1	6x16-bit	7x12-bit	2	√	9	2	√	√	√	√	LQFP64*
NUC220SD2AN	64K	8K	4K	4K	45	4x32-bit	2	2	2	1	1	6x16-bit	7x12-bit	2	√	9	2	√	√	√	√	LQFP64*
NUC220SE3AN	128K	16K	Configurable	4K	45	4x32-bit	2	2	2	1	1	6x16-bit	7x12-bit	2	√	9	2	√	√	√	√	LQFP64*
NUC220VE3AN	128K	16K	Configurable	4K	79	4x32-bit	3	4	2	1	1	8x16-bit	8x12-bit	2	√	9	3	√	√	√	√	LQFP100

LQFP64* : 7 x 7mm

Contact us: NuMicro@nuvoton.com

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, and 4K bytes Flash loader memory for In System Programming (ISP). The M051 series also comes equipped with a variety of peripherals, such as GPIOs, Timers, UART, SPI, I²C, PWM, ADC, Comparator, Watchdog Timer and 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 (8 KB ~ 64 KB), Data Flash (4 KB) and ISP loader (4 KB)
Potential Applications: Industrial Control, Security System, Communication System, Motor Control, etc.

M051 Base Line

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity			PWM	ADC	Comp.	EBI	ICP ISP	IRC 22MHz	Package
							UART	SPI	I ² C							
M052LBN	8K	4K	4K	4K	40	4x32-bit	2	2	1	8x16-bit	8x12-bit	2	√	√	√	LQFP48
M052ZBN	8K	4K	4K	4K	24	4x32-bit	2	1	1	5x16-bit	5x12-bit	2	-	√	√	QFN33
M054LBN	16K	4K	4K	4K	40	4x32-bit	2	2	1	8x16-bit	8x12-bit	2	√	√	√	LQFP48
M054ZBN	16K	4K	4K	4K	24	4x32-bit	2	1	1	5x16-bit	5x12-bit	2	-	√	√	QFN33
M058LBN	32K	4K	4K	4K	40	4x32-bit	2	2	1	8x16-bit	8x12-bit	2	√	√	√	LQFP48
M058ZBN	32K	4K	4K	4K	24	4x32-bit	2	1	1	5x16-bit	5x12-bit	2	-	√	√	QFN33
M0516LBN	64K	4K	4K	4K	40	4x32-bit	2	2	1	8x16-bit	8x12-bit	2	√	√	√	LQFP48
M0516ZBN	64K	4K	4K	4K	24	4x32-bit	2	1	1	5x16-bit	5x12-bit	2	-	√	√	QFN33

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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, 2 Kbytes SRAM and 2 Kbytes Flash loader memory for In System Programming (ISP). The Mini51 series also comes equipped with a variety of peripherals, such as GPIOs, Timers, UART, SPI, I²C, PWM, ADC, Watchdog Timer and Low Voltage Reset.

Key Features: Operable at 2.5V to 5.5V and -40°C to +85°C with separate Program Flash (4 KB ~ 16 KB) and ISP loader (2 KB).
Potential Applications: Auto-control System, Data Communication, Industrial Control, etc.

Mini51 Base Line

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity			PWM	ADC	Comp.	ICP ISP	IRC 22MHz	Package
							UART	SPI	I ² C						
MINI51LAN	4K	2K	Configurable	2K	30	2x32-bit	1	1	1	6x16-bit	8x10-bit	2	√	√	LQFP48
MINI51ZAN	4K	2K	Configurable	2K	29	2x32-bit	1	1	1	6x16-bit	8x10-bit	2	√	√	QFN33*
MINI51TAN	4K	2K	Configurable	2K	29	2x32-bit	1	1	1	6x16-bit	8x10-bit	2	√	√	QFN33**
MINI52LAN	8K	2K	Configurable	2K	30	2x32-bit	1	1	1	6x16-bit	8x10-bit	2	√	√	LQFP48
MINI52ZAN	8K	2K	Configurable	2K	29	2x32-bit	1	1	1	6x16-bit	8x10-bit	2	√	√	QFN33*
MINI52TAN	8K	2K	Configurable	2K	29	2x32-bit	1	1	1	6x16-bit	8x10-bit	2	√	√	QFN33**
MINI54LAN	16K	2K	Configurable	2K	30	2x32-bit	1	1	1	6x16-bit	8x10-bit	2	√	√	LQFP48
MINI54ZAN	16K	2K	Configurable	2K	29	2x32-bit	1	1	1	6x16-bit	8x10-bit	2	√	√	QFN33*
MINI54TAN	16K	2K	Configurable	2K	29	2x32-bit	1	1	1	6x16-bit	8x10-bit	2	√	√	QFN33**

QFN33* : 5 x 5mm
 QFN33** : 4 x 4mm

Contact us: NuMicro@nuvoton.com

Nano Series

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

Key Features: Operable at 1.8V to 3.6V and -40°C to +85°C with ultra-low power: 200 uA/MHz (Normal), 75 uA/MHz (Idle), 2.5 uA (Power Down, RTC, RAM retention) and 1 uA (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 Line (Ultra Low Power)

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity				I ² S	PWM	12-bit ADC	RTC	EBI	IRC 10KHz 12MHz	PDMA	LCD	12-bit DAC	ISO-7816-3	Touch Key	ISP ICP	Package
							UART	SPI	I ² C	USB													
NANO100LC2BN	32K	8K	Configurable	4K	38	4x32-bit	4	3	2	-	1	6	7	√	-	√	8	-	2	2	4	√	LQFP48
NANO100LD2BN	64K	8K	Configurable	4K	38	4x32-bit	4	3	2	-	1	6	7	√	-	√	8	-	2	2	4	√	LQFP48
NANO100LD3BN	64K	16K	Configurable	4K	38	4x32-bit	4	3	2	-	1	6	7	√	-	√	8	-	2	2	4	√	LQFP48
NANO100LE3BN	128K	16K	Configurable	4K	38	4x32-bit	4	3	2	-	1	6	7	√	-	√	8	-	2	2	4	√	LQFP48
NANO100SC2BN	32K	8K	Configurable	4K	52	4x32-bit	5	3	2	-	1	8	7	√	-	√	8	-	2	3	8	√	LQFP64*
NANO100SD2BN	64K	8K	Configurable	4K	52	4x32-bit	5	3	2	-	1	8	7	√	-	√	8	-	2	3	8	√	LQFP64*
NANO100SD3BN	64K	16K	Configurable	4K	52	4x32-bit	5	3	2	-	1	8	7	√	-	√	8	-	2	3	8	√	LQFP64*
NANO100SE3BN	128K	16K	Configurable	4K	52	4x32-bit	5	3	2	-	1	8	7	√	-	√	8	-	2	3	8	√	LQFP64*
NANO100KC2BN	32K	8K	Configurable	4K	86	4x32-bit	5	3	2	-	1	8	12	√	√	√	8	-	2	3	16	√	LQFP128**
NANO100KD2BN	64K	8K	Configurable	4K	86	4x32-bit	5	3	2	-	1	8	12	√	√	√	8	-	2	3	16	√	LQFP128**
NANO100KD3BN	64K	16K	Configurable	4K	86	4x32-bit	5	3	2	-	1	8	12	√	√	√	8	-	2	3	16	√	LQFP128**
NANO100KE3BN	128K	16K	Configurable	4K	86	4x32-bit	5	3	2	-	1	8	12	√	√	√	8	-	2	3	16	√	LQFP128**

LQFP64* : 7 x 7mm
LQFP128** : 14 x 14mm

Nano110 LCD Line (Ultra Low Power)

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity				I ² S	PWM	12-bit ADC	RTC	EBI	IRC 10KHz 12MHz	PDMA	LCD	12-bit DAC	ISO-7816-3	Touch Key	ISP ICP	Package
							UART	SPI	I ² C	USB													
NANO110SC2BN	32K	8K	Configurable	4K	51	4x32-bit	5	3	2	-	1	7	7	√	-	√	8	4x31, 6x29	2	3	8	√	LQFP64*
NANO110SD2BN	64K	8K	Configurable	4K	51	4x32-bit	5	3	2	-	1	7	7	√	-	√	8	4x31, 6x29	2	3	8	√	LQFP64*
NANO110SD3BN	64K	16K	Configurable	4K	51	4x32-bit	5	3	2	-	1	7	7	√	-	√	8	4x31, 6x29	2	3	8	√	LQFP64*
NANO110SE3BN	128K	16K	Configurable	4K	51	4x32-bit	5	3	2	-	1	7	7	√	-	√	8	4x31, 6x29	2	3	8	√	LQFP64*
NANO110KC2BN	32K	8K	Configurable	4K	86	4x32-bit	5	3	2	-	1	8	12	√	√	√	8	4x40, 6x38	2	3	16	√	LQFP128**
NANO110KD2BN	64K	8K	Configurable	4K	86	4x32-bit	5	3	2	-	1	8	12	√	√	√	8	4x40, 6x38	2	3	16	√	LQFP128**
NANO110KD3BN	64K	16K	Configurable	4K	86	4x32-bit	5	3	2	-	1	8	12	√	√	√	8	4x40, 6x38	2	3	16	√	LQFP128**
NANO110KE3BN	128K	16K	Configurable	4K	86	4x32-bit	5	3	2	-	1	8	12	√	√	√	8	4x40, 6x38	2	3	16	√	LQFP128**

LQFP64* : 7 x 7mm
LQFP128** : 14 x 14mm

Nano120 USB Connectivity Line (Ultra Low Power)

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity				I ² S	PWM	12-bit ADC	RTC	EBI	IRC 10KHz 12MHz	PDMA	LCD	12-bit DAC	ISO-7816-3	Touch Key	ISP ICP	Package
							UART	SPI	I ² C	USB													
NANO120LC2BN	32K	8K	Configurable	4K	34	4x32-bit	4	3	2	1	1	4	7	√	-	√	8	-	2	2	4	√	LQFP48
NANO120LD2BN	64K	8K	Configurable	4K	34	4x32-bit	4	3	2	1	1	4	7	√	-	√	8	-	2	2	4	√	LQFP48
NANO120LD3BN	64K	16K	Configurable	4K	34	4x32-bit	4	3	2	1	1	4	7	√	-	√	8	-	2	2	4	√	LQFP48
NANO120LE3BN	128K	16K	Configurable	4K	34	4x32-bit	4	3	2	1	1	4	7	√	-	√	8	-	2	2	4	√	LQFP48
NANO120SC2BN	32K	8K	Configurable	4K	48	4x32-bit	5	3	2	1	1	8	7	√	-	√	8	-	2	3	8	√	LQFP64*
NANO120SD2BN	64K	8K	Configurable	4K	48	4x32-bit	5	3	2	1	1	8	7	√	-	√	8	-	2	3	8	√	LQFP64*
NANO120SD3BN	64K	16K	Configurable	4K	48	4x32-bit	5	3	2	1	1	8	7	√	-	√	8	-	2	3	8	√	LQFP64*
NANO120SE3BN	128K	16K	Configurable	4K	48	4x32-bit	5	3	2	1	1	8	7	√	-	√	8	-	2	3	8	√	LQFP64*
NANO120KC2BN	32K	8K	Configurable	4K	86	4x32-bit	5	3	2	1	1	8	8	√	√	√	8	-	2	3	8	√	LQFP128**
NANO120KD2BN	64K	8K	Configurable	4K	86	4x32-bit	5	3	2	1	1	8	8	√	√	√	8	-	2	3	16	√	LQFP128**
NANO120KD3BN	64K	16K	Configurable	4K	86	4x32-bit	5	3	2	1	1	8	8	√	√	√	8	-	2	3	16	√	LQFP128**
NANO120KE3BN	128K	16K	Configurable	4K	86	4x32-bit	5	3	2	1	1	8	8	√	√	√	8	-	2	3	16	√	LQFP128**

LQFP64* : 7 x 7mm
LQFP128** : 14 x 14mm

Nano130 Advanced Line (Ultra Low Power)

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity				I ² S	PWM	12-bit ADC	RTC	EBI	IRC 10KHz 12MHz	PDMA	LCD	12-bit DAC	ISO-7816-3	Touch Key	ISP ICP	Package
							UART	SPI	I ² C	USB													
NANO130SC2BN	32K	8K	Configurable	4K	47	4x32-bit	5	3	2	1	1	7	7	√	-	√	8	4x31, 6x29	2	3	8	√	LQFP64*
NANO130SD2BN	64K	8K	Configurable	4K	47	4x32-bit	5	3	2	1	1	7	7	√	-	√	8	4x31, 6x29	2	3	8	√	LQFP64*
NANO130SD3BN	64K	16K	Configurable	4K	47	4x32-bit	5	3	2	1	1	7	7	√	-	√	8	4x31, 6x29	2	3	8	√	LQFP64*
NANO130SE3BN	128K	16K	Configurable	4K	47	4x32-bit	5	3	2	1	1	7	7	√	-	√	8	4x31, 6x29	2	3	8	√	LQFP64*
NANO130KC2BN	32K	8K	Configurable	4K	86	4x32-bit	5	3	2	1	1	8	8	√	√	√	8	4x40, 6x38	2	3	16	√	LQFP128**
NANO130KD2BN	64K	8K	Configurable	4K	86	4x32-bit	5	3	2	1	1	8	8	√	√	√	8	4x40, 6x38	2	3	16	√	LQFP128**
NANO130KD3BN	64K	16K	Configurable	4K	86	4x32-bit	5	3	2	1	1	8	8	√	√	√	8	4x40, 6x38	2	3	16	√	LQFP128**
NANO130KE3BN	128K	16K	Configurable	4K	86	4x32-bit	5	3	2	1	1	8	8	√	√	√	8	4x40, 6x38	2	3	16	√	LQFP128**

LQFP64* : 7 x 7mm
LQFP128** : 14 x 14mm

Contact us: NuMicro@nuvoton.com

Development Tools for NuMicro™ Family

SDK (Software Development Kit)			<ul style="list-style-type: none"> • IAR EWARM / Keil RVMDK available on IAR / Keil website • Support CoCoX CoIDE • Support On-line ICP (In-Circuit Programming) 	
Ordering No.	Content	Supported Device	Evaluation / Development Kit for	Picture
NuTiny-SDK-Mini51	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-Mini51 • USB Cable 	Mini51 Mini52 Mini54	Mini51 Series by Mini54LAN	
NuTiny-SDK-M051	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-M051 • USB Cable 	M052 M054 M058 M0516	M051 Series by M0516LBN	
NuTiny-SDK-NUC100	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC100 • USB Cable 	NUC100	NUC100 Series by NUC100LE3AN	
NuTiny-SDK-NUC120	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC120 • USB Cable 	NUC120	NUC120 Series by NUC120LE3AN	
NuTiny-SDK-NUC122	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC122 • USB Cable 	NUC122	NUC122 Series by NUC122SD2AN	
NuTiny-SDK-NUC123	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC123 • USB Cable 	NUC123	NUC123 Series by NUC123SD4AN0	
NuTiny-SDK-NUC140	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC140 • USB Cable 	NUC130 NUC140	NUC130/140 Series by NUC140VE3CN	
NuTiny-SDK-NUC200	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC200 • USB Cable 	NUC200	NUC200 Series by NUC200VE3AN	
NuTiny-SDK-NUC220	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-NUC220 • USB Cable 	NUC220	NUC220 Series by NUC220VE3AN	
NuTiny-SDK-Nano100	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-Nano100 • USB Cable 	Nano100	Nano100 Series by Nano100KE3BN	
NuTiny-SDK-Nano120	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-Nano120 • USB Cable 	Nano120	Nano120 Series by Nano120KE3BN	
NuTiny-SDK-Nano130	<ul style="list-style-type: none"> • Nu-Link-ME • NuTiny-EVB-Nano130 • LCD Module • USB Cable 	Nano110 Nano130	Nano130 Series by Nano130KE3BN	
Learning Board (LB)			<ul style="list-style-type: none"> • A Starter Kit made by Nuvoton • IAR EWARM (evaluation version) and Keil RVMDK (evaluation version) included • Support CoCoX CoIDE • Examples with source code included 	
Ordering No.	Content	Supported Device	Evaluation / Development Kit for	Picture
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"> • SD Card • USB • CAN & LIN • EEPROM & Flash Memory • Display • Audio via NAU8822 	
Nu-LB-M051	<ul style="list-style-type: none"> • Nu-LB-M051 • Nu-Link-ME on board • USB Cable • NuMicro Family CD 	M052 M054 M058 M0516	<ul style="list-style-type: none"> • EEPROM & Flash Memory • Display • EBI Interface 	
Nu-LB-Mini51	<ul style="list-style-type: none"> • Nu-LB-Mini51 • Nu-Link-ME on board • USB Cable • NuMicro Family CD 	Mini51 Mini52 Mini54	<ul style="list-style-type: none"> • EEPROM & Flash Memory • Display 	
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"> • SD Card • USB • Touch Key • 3.5" TFT Color Display • Smart Card Reader • Audio via NAU8822 	
Nu-Link				
Ordering No.	Content	Supported Device	Description	Picture
Nu-Link	• 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	• 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 	

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Development Tools for NuMicro™ Family

Ordering No.	Content	Supported Devices	Description	Picture
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 	
NuMicro Mini51 Series Gang Writer (NuGang)				
NuGang-Mini51T-QFN33	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	Mini51T Mini52T Mini54T	<ul style="list-style-type: none"> • Support Mini51 series 4 chips at one time • USB to PC/Laptop interface • Support Off-line copy function * T: QFN33 4x4mm * Z: QFN33 5x5mm * L: LQFP48 7x7mm 	
NuGang-Mini51Z-QFN33	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	Mini51Z Mini52Z Mini54Z		
NuGang-Mini51L-QFN33	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	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 • USB Cable 	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 • USB Cable 	M052L M054L M058L M0516L		
NuMicro NUC100 Series Gang Writer (NuGang)				
NuGang-NUC100L-LQFP48	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	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 * Z: QFN33 5x5mm * L: LQFP48 7x7mm * S: LQFP64 7x7mm * R: LQFP64 10x10mm * V: LQFP100 14x14mm 	
NuGang-NUC100R-LQFP64	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	NUC100R NUC120R NUC130R NUC140R		
NuGang-NUC100V-LQFP100	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	NUC100V NUC120V NUC130V NUC140V		
NuGang-NUC122Z-QFN33	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	NUC122Z		
NuGang-NU122L-LQFP48	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	NUC122L		
NuGang-NUC122S-LQFP64	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	NUC122S		
NuGang-NUC123Z-QFN33	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	NUC123Z		
NuGang-NU123L-LQFP48	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	NUC123L		
NuGang-NUC123S-LQFP64	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	NUC123S		
NuMicro NUC200 Series Gang Writer (NuGang)				
NuGang-NUC200L-LQFP48	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	NUC200L NUC220L	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	NUC200S NUC220S		
NuGang-NUC200V-LQFP100	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	NUC200V NUC220V		
NuMicro Nano100 Series Gang Writer (NuGang)				
NuGang-Nano100L-LQFP48	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	Nano100L Nano120L	<ul style="list-style-type: none"> • Support Nano100 series 4 chips at one time • USB to PC/Laptop interface • Support Off-line copy function * L: LQFP48 7x7mm * S: LQFP64 7x7mm * K: LQFP128 14x14mm 	
NuGang-Nano100S-LQFP64	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	Nano100S Nano110S Nano120S Nano130S		
NuGang-Nano100K-LQFP128	<ul style="list-style-type: none"> • User Manual • 4-chip Gang Programming Board • USB Cable 	Nano100K Nano110K Nano120K Nano130K		

Contact us: NuMicro@nuvoton.com

ARM7 / ARM9 MCU

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 MCU, 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.

NUC ARM

Part No.	Max Speed (MHz)	CPU	Core				Memory I/F	Storage	MAC	USB			GFX	LCD	Timer	Analog				Peripheral							Power		Package											
			ARM7TDMI	ARM926EJ	Cache (KB)	Cache (KB)				Cache (KB)	Cache (KB)	Flash (KB)				Flash (KB)	Flash (KB)	Flash (KB)	Flash (KB)	Flash (KB)	Flash (KB)	Flash (KB)	Flash (KB)	Flash (KB)	Flash (KB)	Flash (KB)	Flash (KB)	Flash (KB)		Flash (KB)	Flash (KB)	Flash (KB)	Flash (KB)	Flash (KB)	Flash (KB)					
NUC501A/B	80	ARM7TDMI	-	-	32	√	-	-	2	-	-	-	-	-	√	4	8	400K	-	1	√	√	√	26	1	2	1	2	-	-	1.8	3.3	√	E	LQFP-48 LQFP-64					
NUC710A	80	ARM7TDMI	4	4	-	√	√	1	-	-	1	2	-	1	-	√	√	√	√	4	-	-	-	√	√	71	4	2	1	√	1	1	-	1.8	3.3	-	I	LQFP-176		
NUC740A	80	ARM7TDMI	8	2	-	√	√	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	√	√	21	1	-	-	-	-	1.8	3.3	-	C	LQFP-176					
NUC745A	80	ARM7TDMI	4	4	-	√	√	1	-	-	1	2	-	1	-	-	-	-	-	-	-	-	√	√	31	4	2	1	√	1	1	-	1.8	3.3	-	I	LQFP-128			
NUC910A	200	ARM926EJ	8	8	-	√	√	1	4	√	2	1	-	2	-	√	√	√	√	4	8	300K	√	-	√	√	92	5	2	1	√	2	1	-	1.8	3.3	-	I	PBGA-324	
NUC920A	200	ARM926EJ	8	8	-	√	√	1	-	√	1	1	-	2	-	√	√	√	√	4	8	300K	√	-	√	√	92	3	2	1	√	2	1	3	1.8	3.3	-	I	PBGA-324	
NUC945A	200	ARM926EJ	8	8	-	√	√	-	-	-	1	1	-	1	-	-	-	-	-	-	-	-	√	√	34	1	-	-	-	-	-	1.8	3.3	-	C	LQFP-128				
NUC946A	200	ARM926EJ	8	8	-	√	√	-	-	-	1	1	-	2	-	-	-	-	-	-	-	-	√	√	37	2	2	1	-	-	-	1.8	3.3	-	I ²	LQFP-128				
NUC950A	200	ARM926EJ	8	8	-	√	√	1	4	-	1	1	-	2	-	√	√	√	√	4	-	-	-	√	√	52	3	2	1	√	-	1	-	1.8	3.3	-	I ²	LQFP-216		
NUC951A	200	ARM926EJ	8	8	-	√	√	√	4	-	2	1	-	2	-	√	√	√	√	4	-	-	-	√	√	63	3	2	1	√	√	1	-	1.8	3.3	-	I ²	LQFP-216		
NUC960A	200	ARM926EJ	8	8	-	√	√	1	-	-	1	-	2	-	-	-	-	-	-	-	-	-	√	√	51	3	2	1	-	-	2	1.8	3.3	-	I ²	LQFP-216				
NUC970A	300	ARM926EJ	16	16	32	√	√	√	1	24	-	1	2	-	2	-	√	√	√	√	4	8	1M	√	-	√	√	?	8	2	2	√	-	√	-	1.2	3.3	-	I	LQFP-216

*Under development, available in 2Q, 2013

1. Commercial (C) is 0 to +70°C, Industrial (I) is -40 to +85 °C, Extended (E) is -40 to +105 °C

2. 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%

ARM 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	uClinux 2.6.38	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	NUC945/946	NUC950/951	NUC960
SDK	ARM ADS 1.2	ARM ADS 1.2	ARM ADS 1.2	ARM ADS 1.2
WinCE 5.0 / 6.0 BSP	√	-	√	-
Linux	Linux 2.6.17 Linux 2.6.35	Linux 2.6.17 Linux 2.6.35	Linux 2.6.17 Linux 2.6.35	Linux 2.6.17 Linux 2.6.35

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8051 Microcontroller

80C51 MCU

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 80C51 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 Line

Part No.	Flash	SRAM	ISP Loader ROM	I/O	Timer	Connectivity			Comp.	PWM	ADC	INT	ISP ICP	Special Function	Package
						UART	SPI	I ² C							
W78E052D	8K	256	2K	36	3x16-bit	1	-	-	-	-	4	ISP	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/LQFP48	
W78E054D	16K	256	2K	36	3x16-bit	1	-	-	-	-	4	ISP	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/LQFP48	
W78E058D	32K	512	4K	36	3x16-bit	1	-	-	-	-	4	ISP	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/LQFP48	
W78E516D	64K	512	4K	36	3x16-bit	1	-	-	-	-	4	ISP	6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44/LQFP48	
W78ERD2A	64K	256+1K	4K	36	3x16-bit	1	-	-	-	5x8-bit	4	ISP	PCA, 6T/12T option, Extra I/O port	PDIP40/PLCC44/PQFP44	
W78E58A	32K	768	4K	36	3x16-bit	1	-	-	-	4x8-bit	10	ISP	128B EE, Extra I/O port	PDIP40/PLCC44/PQFP44	
W78C032	-	256	-	32	3x16-bit	1	-	-	-	-	2	-	Extra I/O port	PDIP40/PLCC44/PQFP44	
W78C438	-	256	-	40	3x16-bit	1	-	-	-	-	4	-	1MB external memory space	PQFP100	

N78/W78 Industrial Line

Part No.	Flash	SRAM	Data Flash	ISP Loader ROM	I/O	Timer	Connectivity			Comp.	PWM	ADC	INT	ISP ICP	Special Function	Package
							UART	SPI	I ² C							
*N78S052	8K	256+1K	8K	2K	46	4x16-bit	2	1	1	-	5x8-bit	-	4	ISP	6T/12T option, Extra I/O port, internal 22MHz RC, 2 level BOR	PDIP40/PLCC44/PQFP44/LQFP48
*N78S054	16K	256+1K	Share AP ROM	2K	46	4x16-bit	2	1	1	-	5x8-bit	-	4	ISP	6T/12T option, Extra I/O port, internal 22MHz RC, 2 level BOR	PDIP40/PLCC44/PQFP44/LQFP48
N78E055A	16K	256+1K	4K	2.5K	40	3x16-bit	1	1	-	-	5x8-bit	-	4	ISP	6T/12T option, Extra I/O port, internal 22MHz RC, 4 level BOR	PDIP40/PLCC44/PQFP44/LQFP48
N78E059A	32K	256+1K	4K	2.5K	40	3x16-bit	1	1	-	-	5x8-bit	-	4	ISP	6T/12T option, Extra I/O port, internal 22MHz RC, 4 level BOR	PDIP40/PLCC44/PQFP44/LQFP48
N78E517A	64K	256+1K	Share AP ROM	2.5K	40	3x16-bit	1	1	-	-	5x8-bit	-	4	ISP	6T/12T option, Extra I/O port, internal 22MHz RC, 4 level BOR	PDIP40/PLCC44/PQFP44/LQFP48
N78E366A	64K	256+1K	-	2.5K	40	3x16-bit	1	1	-	-	5x8-bit	-	4	ISP	6T/12T option, Extra I/O port, internal 22MHz RC, 4 level BOR	PDIP40/PLCC44/PQFP44/LQFP48
W78IRD2A	64K	256+1K	-	4K	36	3x16-bit	1	-	-	-	5x8-bit	-	4	ISP	PCA, 6T/12T option, Extra I/O port	PDIP40/PLCC44

*Under development, available in 2Q, 2013

Contact us: MicroC-8bit@nuvoton.com

4T 80C51 Series

Key Features: 4T 80C52 Core 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 Line

Part No.	Flash	SRAM	ISP Loader ROM	I/O	Timer	Connectivity			Comp.	PWM	ADC	INT	ISP ICP	Special Function	Package
						UART	SPI	I ² C							
W77E058A	32K	256+1K	-	36	3x16-bit	2	-	-	-	-	6	-	Dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44	
W77L058A	32K	256+1K	-	36	3x16-bit	2	-	-	-	-	6	-	Dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44	
W77E516A	64K	256+1K	4K	36	3x16-bit	2	-	-	-	-	6	ISP	Dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44	
W77L516A	64K	256+1K	4K	36	3x16-bit	2	-	-	-	-	6	ISP	Dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44	
W77E532A	128K	256+1K	4K	36	3x16-bit	2	-	-	-	-	6	ISP	Dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44	
W77L532A	128K	256+1K	4K	36	3x16-bit	2	-	-	-	-	6	ISP	Dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44	
W77C032A	-	256+1K	-	36	3x16-bit	2	-	-	-	-	6	-	Dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44	
W77L032A	-	256+1K	-	36	3x16-bit	2	-	-	-	-	6	-	Dual DPTR, Extra I/O port	PDIP40/PLCC44/PQFP44	

N79/W79 Enhanced Turbo Line

Part No.	Flash	SRAM	Data Flash	ISP Loader ROM	I/O	Timer	Connectivity			Comp.	PWM	ADC	INT	ISP ICP	Special Function	Package
							UART	SPI	I ² C							
N79E352R	8K	256	128	-	38	3x16-bit	1	-	1	-	2x8-bit	-	2	ICP	internal 22MHz, KBI, BOR	PDIP40/PLCC44/PQFP44/LQFP48
W79E201A	16K	256	-	4K	33	3x16-bit	1	-	-	-	6x8-bit	8x10-bit	2	ISP	JTAG interface	PLCC44/PQFP44/LQFP48
W79E632A	128K	256+1K	-	4K	36	3x16-bit	1	-	-	-	6x8-bit	-	2	ISP	Extra I/O port	PLCC44/PQFP44
W79L632A	128K	256+1K	-	4K	36	3x16-bit	1	-	-	-	6x8-bit	-	2	ISP	Extra I/O port	PLCC44/PQFP44
W79E633A	128K	256+1K	-	4K	36	3x16-bit	1	-	2	-	6x8-bit	4x10-bit	2	ISP	Extra I/O port	PLCC44
W79L633A	128K	256+1K	-	4K	36	3x16-bit	1	-	2	-	6x8-bit	4x10-bit	2	ISP	Extra I/O port	PLCC44
W79E658A	128K	256+1K	-	4K	60	3x16-bit	1	-	2	-	6x8-bit	8x10-bit	2	ISP	JTAG interface, Extra I/O port	PQFP100
W79L658A	128K	256+1K	-	4K	60	3x16-bit	1	-	2	-	6x8-bit	8x10-bit	2	ISP	JTAG interface, Extra I/O port	PQFP100
W79E659A	32K	256+1K	-	4K	60	3x16-bit	1	-	2	-	6x8-bit	8x10-bit	2	ISP	JTAG interface, Extra I/O port	PQFP100
W79L659A	32K	256+1K	-	4K	60	3x16-bit	1	-	2	-	6x8-bit	8x10-bit	2	ISP	JTAG interface, Extra I/O port	PQFP100

Contact us: MicroC-8bit@nuvoton.com

80C51 LPC (Low Pin Count) Series

Key Features: 4T 80C82 Core 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, Small HA, etc.













N79/W79 LPC Series - Industrial Line

Part No.	Flash	SRAM	Data Flash	ISP Loader ROM	I/O	Timer	Connectivity			Comp.	PWM	ADC	INT	ICP ISP/IAP	Special Function	Package
							UART	SPI	I ² C							
N76E885	18K	512	Share AP ROM	√	26	3x16-bit	2	2	1	-	6x10-bit	8x10-bit	2	ISP ICP IAP	1T 8051, internal 22MHz RC, KBI, BOR	TSSOP28
N76E884	8K	512	8K	√	14	3x16-bit	1	1	1	-	6x10-bit	8x10-bit	2	ISP ICP IAP	1T 8051, internal 22MHz RC, KBI, BOR	TSSOP16/MSOP10
N79E855	16K	512	Share AP ROM	2K	25	3x16-bit	2	2	1	-	4x10-bit	8x10-bit	2	ISP ICP	internal 22MHz RC, KBI, BOR	TSSOP28/SOP28
N79E854	8K	512	4K	2K	25	3x16-bit	2	2	1	-	4x10-bit	8x10-bit	2	ISP ICP	internal 22MHz RC, KBI, BOR	TSSOP28/SOP28
N79E845	16K	512	Share AP ROM	2K	17	3x16-bit	1	1	1	-	4x10-bit	7x10-bit	2	ISP ICP	internal 22MHz RC, KBI, BOR	TSSOP20/SOP20
N79E844	8K	512	4K	2K	17	3x16-bit	1	1	1	-	4x10-bit	7x10-bit	2	ISP ICP	internal 22MHz RC, KBI, BOR	TSSOP20/SOP20
N79E8432	4K	512	4K	2K	13	3x16-bit	1	-	1	-	4x10-bit	4x10-bit	2	ISP ICP	internal 22MHz RC, KBI, BOR	SOP16
N79E825	16K	256	256	-	18	2x16-bit	1	-	1	2	4x10-bit	4x10-bit	2	ICP	internal 6MHz RC, KBI, BOR	SSOP20/SOP20/PDIP20
N79E824	8K	256	256	-	18	2x16-bit	1	-	1	2	4x10-bit	4x10-bit	2	ICP	internal 6MHz RC, KBI, BOR	SSOP20/SOP20/PDIP20
N79E823	4K	256	256	-	18	2x16-bit	1	-	1	2	4x10-bit	4x10-bit	2	ICP	internal 6MHz RC, KBI, BOR	SSOP20/SOP20/PDIP20
N79E822	2K	256	256	-	18	2x16-bit	1	-	1	2	4x10-bit	4x10-bit	2	ICP	internal 6MHz RC, KBI, BOR	SSOP20/SOP20/PDIP20
W79E4051	4K	256	128	-	17	2x16-bit	1	-	-	1	1x10-bit		2	ICP	internal 22MHz RC, 4 level BOR	SSOP20/SOP20/PDIP20
W79E2051	2K	256	128	-	17	2x16-bit	1	-	-	1	1x10-bit		2	ICP	internal 22MHz RC, 4 level BOR	SSOP20/SOP20/PDIP20
W79E8213	4K	128	128	-	18	2x16-bit	-	-	-	-	4x10-bit	8x10-bit	2	ICP	internal 20MHz RC, KBI, 3 input capture, High sink (40mA) port, Buzzer, BOR	SSOP20/SOP20/PDIP20
N79E342	2K	128	128	-	14	2x16-bit	-	-	-	-	4x10-bit	2	ICP	dual clock, internal 455KHz RC, KBI, BOR	SOP16/PDIP16	
N79E875	16K	512	128	-	36	3x16-bit, 1x12-bit	1	1	1	2	8x12-bit	8x10-bit	2	ICP	internal 22MHz RC, KBI, OP, 3 level BOR	LQFP48
N79E235	16K	512	256	-	36	3x16-bit, 1x12-bit	1	1	1	2	8x12-bit	8x10-bit	2	ICP	internal 22MHz RC, KBI, 3 level BOR	LQFP48
N79E234	8K	512	256	-	36	3x16-bit, 1x12-bit	1	1	1	2	8x12-bit	8x10-bit	2	ICP	internal 22MHz RC, KBI, 3 level BOR	LQFP48

*Under development, available in 2Q, 2013

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Development Tools for 80C51 MCU

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

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ARM Video SoC

Nowadays, TTM (Time To Market) is of great concern due to fierce competition. In order to shorten the DCT (Development Cycle Time), designers need to build up a flexible platform where cost & performance might be traded off during development period. The ARM SoC N329 family is specially designed to meet such increasing needs in terms of flexibility and ease-of-design.

By adopting the stacked MCP approach, ARM SoC is packaged in the cost-effective LQFP-128 / LQFP-64 with various SDRAM sizes. It leads to a very neat PCB layout, as the most complicated traces @ SDRAM are now inside the package. The resultant design exhibits lower BOM cost, higher reliability, reduced EMI, smaller PCB, and less power consumption.

Three N329 series are developed to cope with various kinds of applications: MJPEG @ N3290x series, Multi-format decoder @ N3291x series, and H.264 codec @ N3292x series. Migration among different N329 series is easy and straightforward since S/W is compatible and MCP is maintained across series.

Part No.	Core				Memory				USB		H/W Accelerator		LCD		Analog				Peripheral						Power		PKG	Status ⁶								
	Max Speed (MHz)	ARM CPU	I-Cache (KB)	D-Cache (KB)	SPRAM (KB)	Stacked SDRAM (bit)	NAND Flash, ECC bits	SD / SDIO ⁹	SDRAM I/F	USB 1.1 Host (12 Mbps)	USB 2.0 Host (480 Mbps)	USB 2.0 FS / HS Device	2D GFX	JPEG Codec	Video Codec	RGB Color (bits)	Resolution ⁵	10-bit SAR ADC	16-bit Σ - Δ ADC	Extra ADC for MIC	4-wire TP ADC	Stereo DAC (bits)	Ethernet MAC	CI/MS Sensor ¹	GPIO (Max)	UART	SPI ⁷		RTC	PWM	TV Output	I2S	Core Voltage (V)	I/O Voltage (V)	Package	
ARM7 Media Processor Line																																				
W55PA71	96	7	8	8	40	-	✓	4	1	✓	-	-	-	-	18	QVGA	✓	✓	✓	✓	✓	✓	-	✓	35 31 35	1	1	2	✓	20	-	✓	1.8	3.3	Dice LQFP-128 LQFP-176	MP
N3290 MJPEG Line																																				
N32905U1DN	200	926	8	8	8	16Mx16 DDR	✓	15	3	-	1	-	HS	-	✓	MJPEG ³ Codec	18	XGA ⁸	✓	-	✓	✓	✓	✓	60	2	1	2	✓	4	-	✓	1.8	3.3	LQFP-128 (MCP)	MP
N32905U2DN	200	926	8	8	8	16Mx16 DDR	✓	15	3	-	1	-	HS	-	✓	MJPEG Codec	18	XGA ⁸	✓	-	✓	✓	✓	✓	59	2	1	2	✓	4	✓	-	1.8	3.3	LQFP-128 (MCP)	MP
N32903U1DN	200	926	8	8	8	4Mx16 DDR	✓	15	3	-	1	-	HS	-	✓	MJPEG Codec	18	XGA ⁸	✓	-	✓	✓	✓	✓	64	2	1	2	✓	4	-	✓	1.8	3.3	LQFP-128 (MCP)	MP
N32901U1DN	200	926	8	8	8	1Mx16 SDR	✓	15	3	-	1	-	HS	-	✓	MJPEG Codec	18	QVGA	✓	-	✓	✓	✓	✓	64	2	1	2	✓	4	-	✓	1.8	3.3	LQFP-128 (MCP)	MP
N3291 Multi-Format Decoder Line																																				
N32916U1DN	300	926	16	16	8	32Mx16 DDR2	✓	24	3	-	1	-	HS	-	✓	MF ⁴ Decoder	24	XGA ⁸	✓	-	✓	✓	✓	✓	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	✓	MF ⁴ Decoder	24	XGA ⁸	✓	-	✓	✓	✓	✓	89	2	1	2	✓	4	✓	✓	1.2	3.3	LQFP-128 (MCP)	MP
N3292 H.264 Codec Line																																				
N32926U1DN	240	926	8	8	8	32Mx16 DDR2	✓	24	3	-	1	1	HS	-	✓	H.264 Codec	24	XGA	✓	✓	✓	✓	✓	✓	89	2	1	2	✓	4	✓	✓	1.2	3.3	LQFP-128 (MCP)	UD
N32925U1DN	240	926	8	8	8	16Mx16 DDR2	✓	24	3	-	1	1	HS	-	✓	H.264 Codec	24	XGA	✓	✓	✓	✓	✓	✓	89	2	1	2	✓	4	✓	✓	1.2	3.3	LQFP-128 (MCP)	UD

1. CMOS sensor: CCIR601 / CCIR656 I/F, 2M pixel.
 2. OVG: Khronos OpenVG 1.1-compliant IP.
 3. MJPEG: Motion JPEG Codec, VGA 30fps.
 4. MF: Multi-Format Decoder, H.264 BP / MPEG4 SP / H.263 P3 @ SVGA 30fps, Sorenson Spark @ D1 30fps.
 5. Resolution: QVGA (320x240), VGA (640x480), SVGA (800x600), XGA (1024 x 768).
 6. Status: MP - Mass Production, ES - Engineering Sample, CS - Customer Sample, UD - Under Development & may be subject to change without notice.
 7. Only one hardware SPI controller to support two SPI device with two chip selection signals.
 8. XGA is for still image only. For video, N3290x is MJPEG VGA@30fps and N3291x is 800x600@30fps.
 9. N3290x and N3291x have only one hardware host controller and N3292x has two hardware host controllers.
 10. Under Development Product may be changed without notice. Please check the final specification with contact window.

Contact us: CE@nuvoton.com

ARM Cortex™-M0 NuVoice™ Family

NuVoice™ is a voice processing SoC with high integration analog and digital peripherals and high performance algorithms for varieties of interactive and funny toys.

NuVoice™ Cortex-M0 based voice processor

Part No.	CPU	APROM	SRAM	Clock	HW PWM I/O	USB	DAC	PA	ADC	I/O
							(13-bit)			
N572F064	Cortex-M0 48MHz	embFlash, 64KB	8KB	Rosc 24MHz, Xtal 32KHz, 6M/12M Hz	4-ch	-	1-ch	250mW	8-ch, SAR, 12-bit	32
N572F065	Cortex-M0 48MHz	embFlash, 64KB	8KB	Rosc 24MHz, Xtal 32KHz, 6M/12M Hz	4-ch	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-ch	-	1-ch	400mW	8-ch, SAR, 12-bit	32
N572P072 (OTP)	Cortex-M0 48MHz	OTP, 64KB +embFlash 8KB	8KB	Rosc 48MHz, Xtal 32KHz	4-ch	-	1-ch	400mW	8-ch, SAR, 12-bit	32
N571P032 (OTP)	Cortex-M0 23MHz	OTP, 32KB	4KB	Rosc 46MHz, Xtal 32KHz	4-ch	-	1-ch	450mW	8-ch, SAR, 10-bit	24

Contact us: NuVoice@nuvoton.com

Adobe FlashLite Platform

Optimized for Adobe FL3.1 & FL4.0 rendering performance to get smooth playback of FlashLite contents. With unique MCP (Multi-Chip Package) technology to stack DDR / DDR2 inside the cost-effective LQFP-128 package, Nuvoton's Linux-based FlashLite platforms offer customers the best cost / performance for leveraging the eco-system built around Adobe Flash.

Part No.	Core				Memory				USB		Accelerator		LCD		Analog				Peripheral						Power		PKG	Status ⁸							
	Max Speed (MHz)	ARM CPU	I-Cache (KB)	D-Cache (KB)	Stacked SDRAM (bit)	SPI Flash	NAND Flash, ECC bits	SP / SDIO ¹	1.1 Host	2.0 Host	2.0 Device	2D GFX	JPEG Codec	Video Decoder	RGB Color (bits)	Resolution	10-bit ADC	18-bit ADC	Extra ADC for MIC	4-wire TP ADC	Stereo DAC (bits)	JTAG	CMOS Sensor ¹	GPIO (Max)	UART	I2C	FTC		PWM	TV Output	I2S	Core Voltage (V)	I/O Voltage (V)	Package	
W55FL93SDN	200	926	8	8	16Mx16 DDR	✓	15	3	1	-	HS	BitBLT	✓	MJPEG ³	18	XGA ⁵	✓	-	✓	✓	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	XGA	✓	-	✓	✓	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	XGA	✓	-	✓	✓	24	✓	✓	89	2	1	2	✓	4	✓	✓	1.2	3.3	LQFP-128 (MCP)	MP
W55FL92SDN	240	926	8	8	16Mx16 DDR2	✓	24	3	1	1	HS	BitBLT	✓	MJPEG H.264	24	XGA	✓	✓	✓	✓	24	✓	✓	89	2	1	2	✓	4	✓	✓	1.2	3.3	LQFP-128 (MCP)	UD ⁷
W55FL92DDN	240	926	8	8	32Mx16 DDR2	✓	24	3	1	1	HS	BitBLT	✓	MJPEG H.264	24	XGA	✓	✓	✓	✓	24	✓	✓	89	2	1	2	✓	4	✓	✓	1.2	3.3	LQFP-128 (MCP)	UD ⁷

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. XGA: 1024 x 768 resolution.
 6. MP - Mass Production, ES - Engineering Sample, CS - Customer Sample, UD - Under Development.
 7. Under Development Product may be changed without notice. Please check the final specification with contact window.
 8. W55FL93 and W55FL95 have only one hardware SD host controller and W55FL92 has two hardware SD host controllers.

Contact us: CE@nuvoton.com

PowerSpeech® Family series is ideal for all sound-based applications such as talking toys, singing dolls, greeting cards, or premiums.

W581Jxxx Simple Function, 1-ch Voice Synthesizer

Part No.	ROM (Kbit)	Duration (Sec.)		VDD (V)	CH	Fsys (MHz)	OSC	PWM (9-bit)	GPIO	Voice Section	Sentence
		(6KHz)	(8KHz)								
W581J020	504	21	16	2.2-5.5	1	1.5/3.0	Ring	v	2I, 2I/O	64	16
W581J030	760	32	24	2.2-5.5	1	1.5/3.0	Ring	v	2I, 2I/O	64	16
W581J040	1016	42	32	2.2-5.5	1	1.5/3.0	Ring	v	2I, 2I/O	64	16
W581J050	1272	53	40	2.2-5.5	1	1.5/3.0	Ring	v	2I, 2I/O	64	16
W581J060	1528	64	48	2.2-5.5	1	1.5/3.0	Ring	v	2I, 2I/O	64	16
W581J080	2040	85	64	2.2-5.5	1	1.5/3.0	Ring	v	2I, 2I/O	128	32
W581J100	2552	106	80	2.2-5.5	1	1.5/3.0	Ring	v	2I, 2I/O	128	32
W581J120	3064	128	96	2.2-5.5	1	1.5/3.0	Ring	v	2I, 2I/O	128	32

*Status: Mass Production

Contact us: Toy@nuvoton.com

W584Axxx 4-bit µC 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 (W584AP05) (OTP)	460	15	11	2.2-5.5	1 + DTM	4-8	Ring	9-bit	10-bit	128	12 I/O	-
W584AP065 (W584AP20) (OTP)	1900	64	48	2.2-5.5	1 + DTM	4-8	Ring	9-bit	10-bit	128	16 I/O	-

*Status: Mass Production

Contact us: Toy@nuvoton.com

W584Bxxx 4-bit µC 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

*Status: Mass Production

Contact us: Toy@nuvoton.com

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

*Status: Mass Production

Contact us: Toy@nuvoton.com

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

Part No.	ROM (KByte)	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	4~8	Ring	-	12-bit	No	96	8 I/O
W588L030	126	32	24	1.8~3.6	1	4~8	Ring	-	12-bit	No	96	8 I/O
W588L035	170	44	33	1.8~3.6	2	4~8	Ring	-	12-bit	No	128	16 I/O
W588L040	192	50	37	1.8~3.6	2	4~8	Ring	-	12-bit	No	128	16 I/O
W588L050	224	58	43	1.8~3.6	2	4~8	Ring	-	12-bit	No	128	16 I/O
W588L060	254	66	49	1.8~3.6	2	4~8	Ring	-	12-bit	No	128	16 I/O
W588L070	330	86	65	1.8~3.6	2	4~8	Ring	-	12-bit	No	128	16 I/O
W588L080	382	100	75	1.8~3.6	2	4~8	Ring	-	12-bit	No	128	16 I/O
W588L100	448	118	88	1.8~3.6	2	4~8	Ring	-	12-bit	No	128	16 I/O
W588L121	510	133	101	1.8~3.6	2	4~8	Ring	-	12-bit	No	128	16 I/O
W588L150	640	169	127	1.8~3.6	2	4~8	Ring/X'tal	X'tal	12-bit	No	256	16 I/O
W588L170	766	203	152	1.8~3.6	2	4~8	Ring/X'tal	X'tal	12-bit	No	256	16 I/O

*Status: Mass Production

Contact us: Toy@nuvoton.com

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

*Status: Mass Production

**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 IO
		(6KHz)	(8KHz)					PWM	DAC			
N588H060	206	64	48	2.2-5.5	3	4,6,8	TRIM	12-bit	No	128	16 I/O	3-pair
N588H061	206	64	48	2.2-5.5	3	4,6,8	TRIM	12-bit	No	128	16 I/O	3-pair
N588H080	254	79	59	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 (N588HP80) (OTP)	1022	322	242	2.2-5.5	3	4,6,8	TRIM	12-bit	No	192	24 I/O	3-pair

*Status: Mass Production

Contact us: Toy@nuvoton.com

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 (W588DF20)	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	✓

*Status: Mass Production

Contact us: Toy@nuvoton.com

W539P/N539P 8-bit μ C Base, 1-ch Voice Synthesizer w/ ADC, SPI

Part No.	ROM (KByte)	Fsys (MHz)	OSC	Sub-Clock 32KHz	I/O	H/W PWM	SPI I/O	SIM SPI	Audio		RAM (Byte)	ADC	LVD
									PWM	DAC			
W539P116	32	4-10	Ring/X'tal	X'tal	16 I/O	-	✓	✓	12-bit	13-bit	512	4-ch, 8-bit	✓
W539P124	32	4-10	Ring/X'tal	X'tal	24 I/O	6-pin	✓	✓	12-bit	13-bit	512	4-ch, 8-bit	✓
N539PP006 (N539PP32) (OTP)	32	4-10	Ring/X'tal	X'tal	24 I/O	6-pin	✓	✓	12-bit	13-bit	1280	4-ch, 8-bit	✓

*Status: Mass Production

Contact us: Toy@nuvoton.com

BandDirector® Family

BandDirector® Family Series can be used for applications like: music box, rock'n'roll musical toy, synthetic toy instrument, toy band/ensemble/orchestra, etc.

W567Bxxx 8-bit µC Base, 4-ch Voice + Wavetable Melody Synthesizer

Part No.	ROM (KByte)	Duration (Sec.) @ 5-bit MDM		CH	Audio		RAM (Byte)	GPIO	SIM
		(6KHz)	(8KHz)		PWM	DAC			
W567B010	80	14	10	4	No	10-bit	256	4I, 16 I/O	-
W567B015	94	18	13	4	No	10-bit	256	4I, 16 I/O	-
W567B020	126	26	20	4	No	10-bit	256	4I, 16 I/O	-
W567B030	158	35	26	4	No	10-bit	256	8I, 24 I/O, 8O	✓
W567B040	224	52	39	4	No	10-bit	256	8I, 24 I/O, 8O	✓
W567B060	254	60	45	4	No	10-bit	256	8I, 24 I/O, 8O	✓
W567B080	416	104	78	4	No	10-bit	256	8I, 24 I/O, 8O	✓
W567B100	464	116	87	4	No	10-bit	256	8I, 24 I/O, 8O	✓
W567B120	510	129	96	4	No	10-bit	256	8I, 24 I/O, 8O	✓
W567B150	640	163	122	4	No	10-bit	256	8I, 24 I/O, 8O	✓
W567B170	768	197	148	4	No	10-bit	256	8I, 24 I/O, 8O	✓
W567B210	896	232	174	4	No	10-bit	256	8I, 24 I/O, 8O	✓
W567B260	1018	264	198	4	No	10-bit	256	8I, 24 I/O, 8O	✓

*Status: Mass Production

Contact us: Toy@nuvoton.com

W567Sxxx 8-bit µC Base, 8-ch Voice + Wavetable Melody Synthesizer

Part No.	ROM (KByte)	Duration (Sec.) @ 5-bit MDM		CH	Audio		SPK	RAM (Byte)	GPIO	RTC (32KHz)	SIM
		(6KHz)	(8KHz)		PWM	DAC					
W567S010	80	14	10	8	No	10-bit	1	256	16 I/O	-	-
W567S015	94	18	13	8	No	10-bit	1	256	16 I/O	-	-
W567S020	128	27	20	8	No	10-bit	1	256	16 I/O	-	-
W567S025	144	31	23	8	No	10-bit	1	256	16 I/O	-	-
W567S030	158	35	26	8	No	10-bit	1	256	16 I/O	-	-
W567S040	224	52	39	8	No	10-bit	2	256	4I, 16 I/O	-	-
W567S060	254	60	45	8	No	10-bit	2	256	4I, 16 I/O	-	-
W567S080	416	104	78	8	No	10-bit	2	384	8I, 24 I/O	X'tal	✓
W567S100	464	116	87	8	No	10-bit	2	384	8I, 24 I/O	X'tal	✓
W567S120	510	129	96	8	No	10-bit	2	384	8I, 24 I/O	X'tal	✓
W567S150	640	163	122	8	No	10-bit	2	384	8I, 24 I/O	X'tal	✓
W567S170	768	197	148	8	No	10-bit	2	384	8I, 24 I/O	X'tal	✓
W567S210	896	232	174	8	No	10-bit	2	384	8I, 24 I/O	X'tal	✓
W567S260	1022	265	199	8	No	10-bit	2	384	8I, 24 I/O	X'tal	✓
W567S301	1152	300	225	8	No	10-bit	2	768	8I, 24 I/O	X'tal	✓
W567S341	1278	334	250	8	No	10-bit	2	768	8I, 24 I/O	X'tal	✓

*Status: Mass Production

Contact us: Toy@nuvoton.com

N567Gxxx 8-bit µC 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 I/O	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	6	✓
N567G280	896	272	204	2.2~5.5	4	4,6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	6	✓
N567G330	1022	311	233	2.2~5.5	4	4,6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	6	✓

*Status: Mass Production

Contact us: Toy@nuvoton.com

N567Kxxx 8-bit µC 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 I/O	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	6	✓
N567K280	896	272	204	2.2~5.5	6	4,6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	6	✓
N567K330	1022	311	233	2.2~5.5	6	4,6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	6	✓

*Status: Mass Production

Contact us: Toy@nuvoton.com

N567Hxxx 8-bit μC 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 I/O	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	6	√
N567H280	896	272	204	2.2-5.5	8	4.6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	6	√
N567H330	1022	311	233	2.2-5.5	8	4.6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	6	√
N567HP330 (N567HP80) (OTP)	1022	311	233	2.2-5.5	8	4.6,8	TRIM/X'tal	12-bit	13-bit	384	8I, 24 I/O	6	√

*Status: Mass Production

Contact us: Toy@nuvoton.com

W567Jxxx 8-bit μC Base, 6-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 I/O	SIM SPI
		(6KHz)	(8KHz)	Voice	WTM				PWM	DAC				
W567J070	336	99	74	2	6	4-8	Ring/X'tal	X'tal	12-bit	13-bit	384	16 I/O	3	√
W567J080	416	124	93	2	6	4-8	Ring/X'tal	X'tal	12-bit	13-bit	384	16 I/O	3	√
W567J100	464	139	104	2	6	4-8	Ring/X'tal	X'tal	12-bit	13-bit	384	16 I/O	3	√
W567J120	508	152	114	2	6	4-8	Ring/X'tal	X'tal	12-bit	13-bit	384	16 I/O	3	√
W567J151	640	193	145	2	6	4-8	Ring/X'tal	X'tal	12-bit	13-bit	384	16 I/O	3	√
W567J171	768	233	174	2	6	4-8	Ring/X'tal	X'tal	12-bit	13-bit	384	16 I/O	3	√
W567J210	896	272	204	2	6	4-8	Ring/X'tal	X'tal	12-bit	13-bit	384	16 I/O	3	√
W567J260	1020	311	233	2	6	4-8	Ring/X'tal	X'tal	12-bit	13-bit	384	16 I/O	3	√
W567J300	1232	376	282	2	6	4-8	Ring/X'tal	X'tal	12-bit	13-bit	384	16 I/O	3	√
W567J340	1376	421	316	2	6	4-8	Ring/X'tal	X'tal	12-bit	13-bit	384	16 I/O	3	√
W567J380	1532	469	352	2	6	4-8	Ring/X'tal	X'tal	12-bit	13-bit	384	16 I/O	3	√

*Status: Mass Production

Contact us: Toy@nuvoton.com

W567Cxxx 8-bit μC 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 I/O	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	√	-
W567C080	416	124	93	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	-
W567C100	464	139	104	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	-
W567C120	508	152	114	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	-
W567C151	640	193	145	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	-
W567C171	768	233	174	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	-
W567C210	896	272	204	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	-
W567C260	1020	311	233	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	-
W567C300	1232	376	282	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	-
W567C340	1376	421	316	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	-
W567C380	1532	469	352	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	-
W567C126	508	152	114	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	√
W567C266	1020	311	233	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	√
W567C306	1232	376	282	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	√
W567C346	1376	421	316	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	√
W567C386	1532	469	352	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	√
W567CP260 (W567CP80) (OTP)	1020	311	233	2	16	4-8	Ring/X'tal	X'tal	12-bit	13-bit	512	24 I/O	3	√	√

*Status: Mass Production

Contact us: Toy@nuvoton.com

ViewTalk® Family

ViewTalk® Family Series are specially designed for LCD-based consumer product applications such as musical watches, musical calculators, musical PDAs, hand-held games, toy PCs, pre-school kid education toys, virtual pets, and security systems.

W536C/E 4-bit μC Base, 1-ch Voice + Single Tone Melody Synthesizer w/ B/W 1K dot LCD Driver

Part No.	ROM (KByte)	Working RAM (bit)	Duration (sec)	Dual Page LCD RAM (bit)	I/O	Audio Output	LCD Resolution (SEGxCOM)	Bias	Duty
W536E3A0 (MTP)	80	1.4Kx4	12	256x4x2	4I, 8 I/O	8-bit PWM	64*16	1/3, 1/4, 1/5	1/4, 1/8, 1/16
W536C3A0	80	1.4Kx4	12	256x4x2	4I, 8 I/O	8-bit PWM	64*16	1/4, 1/5	1/8, 1/16

*Status: Mass Production

**W536C/E Voice Duration: base on 16K ROM for 4bit ADPCM, 6.4KHz Sampling Rate
***Single ROM design for P-ROM/V-ROM

Contact us: ViewTalk@nuvoton.com

W536K/A/T 4-bit μ C Base, 1-ch Voice + Dual Tone Melody Synthesizer w/ B/W 320/640/1K LCD Driver

Part No.	ROM (KByte)	Working RAM (bit)	Duration (sec)	Dual Page LCD RAM (bit)	I/O	Audio Output	LCD Resolution (SEGxCOM)	Bias	Duty
W536020K	80	1Kx4	20	80x4	8I, 4 I/O	8-bit PWM/8-bit DAC	40x8	1/3, 1/4	1/4, 1/8
W536030K	128	1Kx4	30	80x4	8I, 4 I/O	8-bit PWM/8-bit DAC	40x8	1/3, 1/4	1/4, 1/8
W536060K	256	1Kx4	60	80x4	8I, 8 I/O	8-bit PWM/8-bit DAC	40x8	1/3, 1/4	1/4, 1/8
W536090K	384	1Kx4	90	80x4	8I, 8 I/O, 8O	8-bit PWM/8-bit DAC	40x8	1/3, 1/4	1/4, 1/8
W536120K	512	1Kx4	120	80x4	8I, 8 I/O, 8O	8-bit PWM/8-bit DAC	40x8	1/3, 1/4	1/4, 1/8
W536A031	128	1.4Kx4	30	256x4x2	8I, 8 I/O	8-bit PWM/8-bit DAC	64x16	1/4, 1/5	1/8, 1/16
W536030A	128	1.4Kx4	30	256x4x2	8I, 4 I/O	8-bit PWM/8-bit DAC	64x16	1/4, 1/5	1/8, 1/16
W536060A	256	1.4Kx4	60	256x4x2	8I, 8 I/O	8-bit PWM/8-bit DAC	64x16	1/4, 1/5	1/8, 1/16
W536090A	384	1.4Kx4	90	256x4x2	8I, 8 I/O, 8O	8-bit PWM/8-bit DAC	64x16	1/4, 1/5	1/8, 1/16
W536120A	512	1.4Kx4	120	256x4x2	8I, 8 I/O, 8O	8-bit PWM/8-bit DAC	64x16	1/4, 1/5	1/8, 1/16
W536030T	128	1.4Kx4	30	512x4x2	4I, 4 I/O	8-bit PWM/8-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W536060T	256	1.4Kx4	60	512x4x2	8I, 4 I/O	8-bit PWM/8-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W536090T	384	1.4Kx4	90	512x4x2	8I, 8 I/O, 8O	8-bit PWM/8-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W536120T	512	1.4Kx4	120	512x4x2	8I, 8 I/O, 8O	8-bit PWM/8-bit DAC	64x32	1/4, 1/5	1/16, 1/32

*Status: Mass Production
 **W536K/A/T Voice Duration: Based on 5bit MDPCM, 6.4KHz Sampling Rate

Contact us: ViewTalk@nuvoton.com

W537A/Txxx 8-bit μ C Base, 2-ch Voice + Wavetable Melody Synthesizer w/ B/W 1K/2K LCD Driver

Part No.	ROM (KByte)	Working RAM (Byte)	Duration (sec)	Dual Page LCD RAM (Byte)	I/O	Audio Output	LCD Resolution (SEGxCOM)	Bias	Duty
W537A203	249	1K	60	128x2	16 I/O	9-bit PWM / 10-bit DAC	64x16	1/4, 1/5	1/8, 1/16
W537A205	505	1K	120	128x2	16 I/O	9-bit PWM / 10-bit DAC	64x16	1/4, 1/5	1/8, 1/16
W537A206	761	1K	180	128x2	24 I/O	9-bit PWM / 10-bit DAC	64x16	1/4, 1/5	1/8, 1/16
W537A208	1017	1K	250	128x2	24 I/O	9-bit PWM / 10-bit DAC	64x16	1/4, 1/5	1/8, 1/16
W537T202	249	1K	60	256x2	24 I/O	9-bit PWM / 10-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W537T204	505	1K	120	256x2	24 I/O	9-bit PWM / 10-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W537T206	761	1K	180	256x2	24 I/O	9-bit PWM / 10-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W537T208	1017	1K	250	256x2	24 I/O	9-bit PWM / 10-bit DAC	64x32	1/4, 1/5	1/16, 1/32

*Status: Mass Production
 **W537A/T Voice Duration: Based on 5bit MDPCM, 6.4KHz Sampling Rate

Contact us: ViewTalk@nuvoton.com

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

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

*Status: Mass Production

Contact us: ViewTalk@nuvoton.com

W538Txxx 8-bit μ C Base, 8-ch Voice + Wavetable Melody Synthesizer w/ B/W 2K LCD Driver

Part No.	ROM (KByte)	Dual Page LCD RAM (Byte)	Duration (sec)	Dual Page LCD RAM (Byte)	I/O	Audio Output	LCD Resolution (SEGxCOM)	Bias	Duty
W538T802	249	1K	60	256x2	24 I/O	9-bit PWM / 10-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W538T804	505	1K	120	256x2	24 I/O	9-bit PWM / 10-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W538T806	761	1K	180	256x2	24 I/O	9-bit PWM / 10-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W538T808	1017	1K	250	256x2	24 I/O	9-bit PWM / 10-bit DAC	64x32	1/4, 1/5	1/16, 1/32

*Status: Mass Production

Contact us: ViewTalk@nuvoton.com

N538T340 8-bit μ C Base, 8-ch Voice + Wavetable Melody Synthesizer w/ B/W 2K LCD Driver

Part No.	ROM (KByte)	Dual Page LCD RAM (Byte)	Duration (sec)	Dual Page LCD RAM (Byte)	I/O	Audio Output	LCD Resolution (SEGxCOM)	Bias	Duty
N538T340	1017	1K	250	256x2	24 I/O	9-bit PWM / 10-bit DAC	64x32	1/4, 1/5	1/16, 1/32

*Status: Mass Production

Contact us: ViewTalk@nuvoton.com

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

Part No.	ROM (KByte)	Dual Page LCD RAM (Byte)	Duration (sec)	Dual Page LCD RAM (Byte)	I/O	Audio Output	LCD Resolution (SEGxCOM)	Bias	Duty
W539A804	505	1K	120	128x2	24 I/O	12-bit PWM/13-bit DAC	64x16	1/4, 1/5	1/16, 1/32
W539A806	761	1K	180	128x2	24 I/O	12-bit PWM/13-bit DAC	64x16	1/4, 1/5	1/16, 1/32
W539A808	1017	1K	250	128x2	24 I/O	12-bit PWM/13-bit DAC	64x16	1/4, 1/5	1/16, 1/32

*Status: Mass Production

Contact us: ViewTalk@nuvoton.com

W539Txxx 8-bit μ C Base, 2-ch / 8-ch Voice + Wavetable Melody Synthesizer w/ 4-Gray Level, 2K-dot LCD Driver

Part No.	ROM (KByte)	Working RAM (Byte)	Duration (sec)	Dual Page LCD RAM (Byte)	I/O	Audio Output	LCD Resolution (SEGxCOM)	Bias	Duty
W539T204	505	1K	120	256 x 2 x2	16 I/O	12-bit PWM/13-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W539T206	761	1K	180	256 x 2 x2	16 I/O	12-bit PWM/13-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W539T208	1017	1K	250	256 x 2 x2	16 I/O	12-bit PWM/13-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W539T804	505	1K	120	256 x 2 x2	16 I/O	12-bit PWM/13-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W539T806	761	1K	180	256 x 2 x2	16 I/O	12-bit PWM/13-bit DAC	64x32	1/4, 1/5	1/16, 1/32
W539T808	1017	1K	250	256 x 2 x2	16 I/O	12-bit PWM/13-bit DAC	64x32	1/4, 1/5	1/16, 1/32

*Status: Mass Production

Contact us: ViewTalk@nuvoton.com**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)	I/O	Audio Output	LCD Resolution (SEGxCOM)	Bias	Duty
N539T170	509	1K	120	256 x 2 x2	24 I/O	12-bit PWM/13-bit DAC	64x32 or 72x24	1/4, 1/5, 1/6, 1/7	1/16, 1/32
N539T260	765	1K	180	256 x 2 x2	24 I/O	12-bit PWM/13-bit DAC	64x32 or 72x24	1/4, 1/5, 1/6, 1/7	1/16, 1/32
N539T340	1021	1K	250	256 x 2 x2	24 I/O	12-bit PWM/13-bit DAC	64x32 or 72x24	1/4, 1/5, 1/6, 1/7	1/16, 1/32
N539TP340 (N359TP80) (OTP)	1021	1K	250	256 x 2 x2	24 I/O	12-bit PWM/13-bit DAC	64x32 or 72x24	1/4, 1/5, 1/6, 1/7	1/16, 1/32

*Status: Mass Production

Contact us: ViewTalk@nuvoton.com**FS-LCD Driver IC Family**

This series of driver IC is designed for FS-LCD panel use. FS stands for Field Sequential. FS-LCD uses the same panel process as TN that the panel works with RGB LED switching effect to produce a colorful display. FS-LCD driver targets at the applications which require both color display and low cost, such as games, toys, ELA, weather forecast station, etc.

N532FSxx Single Tone Melody Synthesizer w/ FS-LCD Driver

Part No.	ROM (KByte)	Working RAM (Byte)	Duration (sec)	LCD RAM (Byte)	I/O	Audio Output	LCD Resolution (SEGxCOM)	Color No.	Bias	Duty
N532FS22	64	128	12	120	8 I/O	PWM	80x4	8-Color	1/2, 1/3	Static, 1/2, 1/3, 1/4

*Status: Mass Production

Contact us: ViewTalk@nuvoton.com**N535FSxx FS-LCD Driver**

Part No.	VLCD (max.)	LCD Resolution (SEGxCOM)	Color No.	Bias	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

*Status: Mass Production

Contact us: ViewTalk@nuvoton.com**USB Device**

The W55U02 is an USB V1.1 controller for W55Fxx, SPI serial flash or NAND type flash memory. It has an 8-bit microprocessor that provides flexible API functions to support general applications. It is compatible with any PC via USB.

W55Uxx USB Controller

Part No.	ISO	HID	Mass Storage	Customer Code	ROM (KByte)	OS supporting
W55U02-A3	-	√	-	-	-	Windows ME/2000/XP/Vista
W55U02-A4	-	-	√	-	-	Windows ME/2000/XP/Vista
W55U032A	-	√	√	√	32	Windows ME/2000/XP/Vista/Mac

*Status: Mass Production

Contact us: Toy@nuvoton.com**Peripheral****Analog to Digital Converter**

Our 8-bit A/D converters are using synchronous 3-wire serial interface with guaranteed 8-bit resolution. Each channel can be independently programmed to an analog input mode and supports A/D conversion rates up to 50KHz. Used in applications that require fewer external components.

W55ADxxx 8-ch, 8-bit A/D Converter

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

*Status: Mass Production

Contact us: Toy@nuvoton.com

Nu-Touch

N55T10 10 Key Capacitor Sensor Controller

Part No.	I/O	Wake Up	I2C Interface	VDD (V)
N55T10	10	√	√	2.4 ~ 5.5

*Status: Mass Production

Contact us: Toy@nuvoton.com

I/O Expander

The W55P241 is a general purpose programmable I/O device usable with many different microprocessors through SPI interface. This contains three 8-bit ports, total 24 I/O pins which may be individually programmed for 4 separate command groups. These I/O pins can drive LED directly with high-current applications. A dedicated counter is in charge of 256-level output functions.

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

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

*Status: Mass Production

Contact us: Toy@nuvoton.com

MFID & RF Family

In recent years, contactless identification devices have been increasingly used in the toy market. MFID (Magnetic Field Identification) is used in all areas of automatic data capture allowing contactless identification of objects using magnetic coupling.

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	-	-	-
W55MID35	Multi-tag	13.56	Bonding-ID	10	6 ~ 8 tags	-	-
W55MID50	Reader	13.56	-	-	-	4-level	Serial/Parallel

*Status: Mass Production

Contact us: Toy@nuvoton.com

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

*Status: Mass Production

Contact us: Toy@nuvoton.com

Serial ROM Family

Serial ROM Family W55F, W551C and W55S are designated to interface with Nuvoton PowerSpeech, BandDirector, and ViewTalk family to increase the speech or HQ-melody duration.

W551Cxxx Serial Mask ROM

Part No.	ROM (bit)	Access Time	Cascade Mode	Voltage (volt)	Interface
W551C002	256K	1us	√	2.4 ~ 5.5	SIM
W551C005	512K	1us	√	2.4 ~ 5.5	SIM
W551C010	1M	1us	√	2.4 ~ 5.5	SIM
W551C020	2M	1us	√	2.4 ~ 5.5	SIM
W551C040	4M	1us	√	2.4 ~ 5.5	SIM
W551C060	6M	1us	√	2.4 ~ 5.5	SIM
W551C080	8M	1us	√	2.4 ~ 5.5	SIM
W551C161	16M	1us	√	2.4 ~ 5.5	SPI
N551C321	32M	1us	-	2.4 ~ 5.5	SPI

*Status: Mass Production

Contact us: Toy@nuvoton.com

N55Sxxx Mask ROM with SPI Interface

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

*Status: Mass Production

Contact us: Toy@nuvoton.com

Telephone

4-bit μ C based single-chip telephone processor with built-in LCD segment driver. This family is ideal for caller ID, message, and multi-function phones.

W742xxxx, 4-bit μ C based, w/ B/W LCD driver and DTMF

Part No.	Voltage	ROM (bit)	RAM	I/O	LCD	System Clock	Fast Working Frequency	Slow Working Frequency	Package
W742S82A	2.4-5.5V	16K*16	2K*4	24 I/O	4*40	Single / Dual Crystal/RC	400K ~ 3.58MHz	32,768 Hz	QFP-100
W742E81A (MTP)	2.4-5.5V	16K*16	2K*4	24 I/O	4*40	Single / Dual Crystal/RC	400K ~ 3.58MHz	32,768 Hz	QFP-100

*Status: Mass Production

Contact us: 4-bit@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.	Voltage	ROM (bit)	RAM	I/O	LCD	System Clock	Fast Working Frequency	Slow Working Frequency	Package
W541L20x	1.2-1.8V	2K*16	128*4	20 I/O	-	Single Crystal/RC	400K-1MHz	32,768Hz	DIP:18/20/28 SOP:20/28
W541C20x	2.4-5.5V	2K*16	128*4	20 I/O	-	Single Crystal/RC	400K-4MHz	32,768Hz	DIP:18/20/28 SOP:20/28
W541E20x (MTP)	2.4-5.5V	2K*16	128*4	20 I/O	-	Single Crystal/RC	400K-4MHz	32,768Hz	DIP:18/20/28 SOP:20/28
W541L23x	1.2-3.6V	1K*16 1.5K*16 2K*16	64*4 96*4 128*4	12 I/O	4*16	Single / Dual Crystal/ Internal RC	100K-800KHz	32,768Hz	PLCC-44
W541L240	1.2-1.8V	2K*16	64*4	12 I/O	4*24	Single Crystal/ RC	400K-1MHz	32,768Hz	QFP-64
W541C240	2.4-5.5V	2K*16	64*4	12 I/O	4*24	Single Crystal/RC	400K-4MHz	32,768Hz	QFP-64
W541E260 (MTP)	2.4-5.5V	2K*16	128*4	20 I/O	4*32	Single / Dual Crystal/RC	400K-4MHz	32,768Hz	QFP-80
W541L261	1.2-3.6V	2K*16	128*4	20 I/O	4*32	Single / Dual Crystal/RC	400K-4MHz	32,768Hz	QFP-80
W541C261	2.4-5.5V	2K*16	128*4	20 I/O	4*32	Single / Dual Crystal/RC	400K-4MHz	32,768Hz	QFP-80
W541E261 (MTP)	2.4-5.5V	2K*16	128*4	20 I/O	4*32	Single / Dual Crystal/RC	400K-4MHz	32,768Hz	QFP-80
W541L480	1.2-3.6V	4K*16	256*4	20 I/O	4*32	Single / Dual Crystal/RC	400K-4MHz	32,768Hz	QFP-80
W541C480	2.4-5.5V	4K*16	256*4	20 I/O	4*32	Single / Dual Crystal/RC	400K-4MHz	32,768Hz	QFP-80
W541E480 (MTP)	2.4-5.5V	4K*16	256*4	20 I/O	4*32	Single / Dual Crystal/RC	400K-4MHz	32,768Hz	QFP-80
W541L250	1.2-1.8V	2K*16	128*4	20 I/O	4*24	Single Crystal/RC	400K-1MHz	32,768Hz	QFP-64

*Status: P= Mass Production

Contact us: 4-bit@nuvoton.com

Audio Application IC

- ISD Voice IC
- emPowerAudio
- ARM Audio SoC
- Telecom
- Audio Enhancement



ISD Voice IC

ISD ChipCorder®

Nuvoton's ChipCorder® is a complete, single chip solution for voice and 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, alerts, interactive menus, and voice memos to consumer, industrial and security products. Available pre-recording services make it easy to add voice to system design.

DIGITAL CHIPCORDER

Part No.	Description	Duration	Sample Rate (kHz)	Voltage	Package	Other	Development Tools
ISD15102	Multi-message record/playback, flash memory, I ² S digital audio and SPI interfaces	2 min*	Up to 48kHz	2.7 to 3.6V	LQFP48	Industrial -40 to 85°C	ISD-DMK_15100
ISD15104		4 min*					
ISD15108		8 min*					
ISD15116		16 min*					
ISD15C00	Multi-message record/playback with I ² S digital audio and SPI interfaces	0**	Up to 48kHz	2.7 to 3.6V	LQFP48	AEC-Q100	ISD-DMK_15C00
ISD15D00	Multi-message playback-only with I ² S digital audio and SPI interfaces	0**	Up to 48kHz	2.7 to 5.5V	QFN32	AEC-Q100	ISD-DMK_15D00
ISD3900	Multi-message record/playback with I ² S digital audio and SPI interfaces	0**	Up to 48kHz	2.7 to 3.6V	LQFP48	Industrial -40 to 85°C	ISD-DMK_3900
ISD3800	Multi-message playback-only with I ² S digital audio and SPI interfaces	0**	Up to 48kHz	2.7 to 5.5V	LQFP48	Industrial -40 to 85°C	ISD-DMK_3800
ISD2130	Multi-message playback-only with embedded flash memory	30* sec	Up to 32kHz	2.7 to 3.6V	QFN20	Industrial -40 to 85°C	ISD-DMK_2100
ISD2115		15* sec					
ISD2110		10* sec					
ISD2360	Multi-message, 3-channel audio, playback-only with embedded flash memory	60* sec	Up to 32kHz	2.7 to 5.5V	QFN32 SOP16	Industrial -40 to 85°C	ISD-DMK_2300

MLS CHIPCORDER

Part No.	Description	Duration	Sample Rate (kHz)	Voltage	Package	Temperature	Development Tools
ISD14B20	Multi-message record/playback with internal flash memory	10-128 sec	4-12	2.4 to 5.5V	DIE	0 - 50°C	ISD-DEMO1964
ISD14B40							
ISD14B80							
ISD1916	Multi-message record/playback with internal flash memory	10-128 sec	4-12	2.4 to 5.5V	SOIC 28	Industrial	ISD-DEMO1964
ISD1932							
ISD1964							
ISD1610B							
ISD1616B	Single-message record/playback with internal flash memory	6-40 sec	4-12	2.4 to 5.5V	SOIC 16 DIE	Commercial Industrial	I16-COB20
ISD1620B	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	ISD-COB1730 ISD-COB1760 ISD-COB17120 ISD-COB17240
ISD1730							
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	ISD-ES1810
ISD1810							
ISD18A04	Single-message record/playback with internal flash memory	4-8 sec	4-8	2.4 to 5.5V	DIE	0 - 50°C	N/A
ISD18B12	Single-message record/playback with internal flash memory	6-24 sec	4-8	2.4 to 5.5V	DIE	0 - 50°C	ISD-COB18B24
ISD18B24							
ISD18C10	Single-message record/playback with internal flash memory	12 sec	4-8	2.7 to 4.5V	DIE	0 - 50°C	ISD-COB18C00
ISD4002	Multi-message record/playback, internal flash memory and SPI interface	2-16 min	4	2.7 to 3.3V	DIP 28 SOIC 28 TSOP 28 DIE	Commercial Industrial	N/A
ISD4003			5.3				
ISD4004			6.4				
ISD4004			8				
ISD5102	Multi-message record/playback, internal flash memory and I ² C interface	1-16 min	4	2.7 to 3.3V	SOIC 28 TSOP 28 DIE	Industrial	ISD-ES512
ISD5104			5.3				
ISD5108			6.4				
ISD5116			8				

* Based on 8kHz, 4-Bit ADPCM
** Use external SPI Flash

Contact us: ChipCorder@nuvoton.com

Audio CODEC

Nuvoton's high performance Audio CODEC ICs are cost-effective solutions targeting consumer, telecommunication and automotive markets. Nuvoton devices carry AEC-Q100 certification.

Stereo Audio Codec

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					
NAU8822A	Stereo CODEC with Speaker Drive	2	2	90	94	-80	-84	8 - 48	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 - 48	I ² S PCM (Timeslot)	2-Wire 3-Wire	2.5 to 3.6/ 1.7 to 3.10	QFN-32 (5x5)

Mono Audio Codec

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	93	91	-79	-84	8 - 48	I ² S PCM (Timeslot)	3-Wire	2.5 to 3.6/ 1.7 to 3.6	QFN-20 (4x4)
NAU8811	Mono CODEC with SPI Interface	1	1	93	91	-79	-84	8 - 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	93	91	-79	-84	8 - 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	1	1	93	91	-79	-84	8 - 48	I ² S PCM (Timeslot)	2-Wire 3-Wire	2.5 to 3.6/ 1.7 to 3.8	QFN-24 (4x4)

Contact us: Audio@nuvoton.com

Audio ADC

Nuvoton's high performance Audio ADC ICs are cost-effective solutions targeting consumer, telecommunication and automotive markets. Nuvoton devices carry AEC-Q100 certification.

Stereo Audio ADC

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 - 48	I ² S PCM (Timeslot)	2-Wire 3-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 - 48	I ² S PCM (Timeslot)	2-Wire 3-Wire	2.5 to 3.6/ 1.7 to 3.12	QFN-32 (5x5)

Contact us: Audio@nuvoton.com

Audio DAC

Nuvoton's high performance Audio DAC ICs are cost-effective solutions targeting consumer, telecommunication and automotive markets. Nuvoton devices carry AEC-Q100 certification.

Stereo Audio DAC

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 - 48	I ² S PCM (Timeslot)	2-Wire 3-Wire	2.5 to 3.6/ 1.7 to 3.11	QFN-32 (5x5)
NAU8402	Stereo DAC with 2Vrms Output	0	2	-	97	-	-85	8 - 48	I ² S	N/A	2.7 to 3.6/ 1.7 to 3.12	TSSOP-16

Contact us: Audio@nuvoton.com

Audio Amplifiers

Nuvoton's Series of Power Amplifiers combine low operating currents with fast start-up times. Better THD+N performance gives industry-leading sound quality.

Part No.	Description	SNR(dB)	Output Power		Gain (dB)	Standby Current (uA)	Operating Voltage (V)	Temp (°C)	Development Tools	Package
			Power (W)	THD+N (%)						
NAU82039	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	NAU82039-EVB	9 bump WCSP
NAU82011V	3.2W Mono Class-D Audio Amplifier, variable gain with Differential / Single ended inputs	103	3.2W into 4Ω at 5V	<10	Variable	<1	2.5 to 5.5	-40 to +85	NAU82011-EVB	9 bump WCSP
NAU82011W	2.9W Mono Class-D Audio Amplifier, variable gain with Differential / Single ended inputs	103	3.2W into 4Ω at 5V	<10	Variable	<1	2.5 to 5.5	-40 to +85	NAU82011-EVB	MSOP8
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
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 ~ -62dB	<1	2.5 to 5.5	-40 to +85	NAU8224-EVB	QFN20
ISD8101	1.5W Class-AB Audio Amplifier with Chip Enable, Differential / Single ended inputs, Low pop and Click	100	0.825 (5.0V) 1.1 (5.0V) 1.5 (6.8V)	<10	20	<1	+2.4 to +6.8	-40 to +85	ISD-DEMO8101	8-Pin SOP, 8-Pin PDIP
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)
NAU8220	2Vrms Line Driver	108	-	0.003	-	-	3.0 to 3.6	-40 to +85	NAU8220-EVB	SOP14 / TSSOP14

*Status: P= Mass Production

Contact us: Audio@nuvoton.com

Precision ADC

Nuvoton's NAU78xx Series of Programmable Precision ADCs are utilized in measurement equipment such as weighing scales, glucose meters and portable instrumentation.

Part No.	Description	Resolution Bits	Sample Rates (max)	Architecture	Gain	# Input Channels	ENOB (Gain=1, 10SPS)	Package
NAU7801	Single Channel 24-bit ADC	24	10, 20, 40, 80 & 320 Hz	Sigma-Delta	1x, 2x, 4x, 8x, 16x, 32x, 64x, 128x	1	20.8	SOP-8, PDIP-8
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: P= Mass Production

Contact us: padc@nuvoton.com

ARM Audio SoC

AUI Enablers

Nuvoton's ARM® Cortex™-M0 based AUI Enablers 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-funtions GPIOs was designed to provide cost effective voice/audio solution for consumer and industrial markets.

Cortex™-M0 Audio SoC

Part No.	Flash	SRAM	I/O	Timer	PWM	RTC	Connectivity			Audio			Other	Package
							SPI	I ² C	UART	ADC/Microphone	Speaker	Digital Interface		
ISD9160	145KB	12KB	24	2	2	-	2	1	1	1	PWM (1W at 8Ω 5V)	I ² S, SPI	Capacitive Touch, 3V LDO, Temperature Alarm	LQFP48

Contact us: ChipCorder@nuvoton.com

Telecom

Voice CODEC

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.

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

*Status: P= Mass Production

Contact us: CODEC@nuvoton.com

VoIP Audio

Powered by 20 years of voice/speech expertise in consumer applications, Nuvoton is now empowering mono audio CODEC solutions for legacy and emerging applications. Nuvoton's growing family of mono audio CODEC solutions addresses the market requirements for audio grade A/D and D/A conversions. Being the most cost effective CODEC supplier in the industry, the portfolio includes audio solutions for cutting edge low power consumption, performance, integration, size, and user friendly tools.

Part No.	Description	DAC SNR / THD (dB)	ADC SNR / THD (dB)	Sample Rate	Analog Supply (V)	Digital Supply (V)	Package (mm)
NAU8810	Mono Audio CODEC with I ² C	93/-84	90/-80	48kHz	2.5-3.6	1.71-1.95	20-QFN (4x4)
NAU8811	Mono Audio CODEC with SPI	93/-84	90/-80	48kHz	2.5-3.6	1.71-1.95	20-QFN (4x4)
NAU8812	Mono Audio CODEC	93/-84	90/-80	48kHz	2.5-3.6	1.71-1.95	28-SSOP (10x7) 32-QFN (5x5)
NAU8814	Mono Audio CODEC with Equalizer	93/-84	90/-80	48kHz	2.5-3.6	1.71-1.95	24-QFN (4x4)

*Status: P= Mass Production

Contact us: CODEC@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				Fast Working Frequency								
	I ² S Stereo Inputs	ADC Stereo Inputs	I ² S Output 2 x Stereo	DAC Single Output	Package	Bass	Eq	Stereo	Treble	Volume	Level	Dialog	Sub- Woofer
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: P= Mass Production

Contact us: APC.Support@nuvoton.com

Cloud & Computing IC

- Super I/O
- General Purpose I/O
- Hardware Monitor
- Voltage Level Shift IC
- Power Management ICs
- Bus Interface Bridge ICs
- EC & NB Keyboard Controller
- Security



Super I/O

Super I/O for Desktop and IPC

Nuvoton's Low Pin Count (LPC) SI/O families are widely adopted in the motherboard and industrial PC applications. In addition to legacy I/O functions, such as serial port, parallel port, KBC, and GPI/O, Nuvoton's SI/O solutions provide hardware monitoring functions, and other up-to-date 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	Built-in uC	Package	Status*
NCT6106D	LPC	Y	6	Y	Y	Y	Y	N	3.0	Y	Y	Y	Y	N	128-LQFP	P
W83627UHG	LPC	Y	6	Y	Y	Y	N	N	1.0	N	N	N	N	N	128-QFP	P
NCT6627UD	LPC	Y	6	Y	Y	Y	N	N	1.0	N	N	N	N	N	128-LQFP	P
W83627DHG-P	LPC	Y	2	Y	Y	Y	N	Y	1.1	N	N	N	N	N	128-QFP	P
W83527HG	LPC	Y	N	N	Y	Y	N	N	1.1	N	N	N	N	N	48-LQFP	P
NCT6776D	LPC	Y	2	Y	Y	Y	Y	N	3.0	Y	Y	Y	Y	N	128-QFP	P
NCT5577D	LPC	Y	1	N	Y	Y	Y	N	3.0	Y	Y	Y	N	N	64-LQFP	P
NCT6779D	LPC	Y	2	Y	Y	Y	Y	N	3.0	Y	Y	Y	Y	N	128-LQFP	P
NCT5532D	LPC	Y	1	N	Y	Y	Y	N	3.0	Y	Y	Y	N	N	64-LQFP	P

*Status: P= Mass Production, S= Samples, NRFND= Not Recommended for New Design

Contact us: ComputerIC@nuvoton.com

eSIO with μ C for Desktop, AIO and Server

Nuvoton's eSIO families are widely adopted in the motherboard, AIO and server applications. In addition to legacy I/O functions, such as serial port, parallel port, KBC, and GPI/O, Nuvoton's eSIO solutions provide hardware monitoring functions, flexible control functions and other specific features for desktop, AIO and server platforms.

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	Status*
NCT6681D	LPC	Y	2	Y	Y	Y	Y	Y	3.0	Y	Y	Y	Y (2-digits)	Y	128-LQFP	P

*Status: P= Mass Production, S= Samples, NRFND= Not Recommended for New Design

Contact us: ComputerIC@nuvoton.com

General Purpose I/O

General Purpose I/O

Nuvoton offers a series of easy-to-use General Purpose I/O solutions supporting the SMBus™ standard. These products provide SMBus (I²C) address setting pins to set the address during power-on-reset or from external reset and provide an interrupt to inform the system that a transition has occurred on General Purpose (GP) input pins. W83L603G/W83L604G also provides Auto LED, PC Beep functions.

Part No.	Interface	GPIO	Supply Voltage	Package type	Status*
W83601G	SMBus Multi-function GP I/O	15	5V	20 Pin SSOP	P
W83L603G	SMBus/PC, 8 pin Multi-function GP I/O, Auto LED, PC Beep, 3.3V	8	3.3V	14 Pin SOP	P
W83L604G	SMBus/PC, 14 pin Multi-function GP I/O, Auto LED, PC Beep, 3.3V	14	3.3V	20 Pin SSOP	P
NCT5605Y	SMBus/PC, 14 pin Multi-function GP I/O, Auto LED, PC Beep, 3.3V	14	3.3V	20 Pin QFN	P

*Status: P= Mass Production, S= Samples, NRFND= Not Recommended for New Design

Contact us: ComputerIC@nuvoton.com

Hardware Monitor

H/W Monitor for Desktop & Server

Hardware Monitoring ICs are one of Nuvoton's most popular computer IC product categories. Hardware Monitoring ICs for desktop and server applications are widely adopted in the motherboard, server, and Industrial PC applications. Hardware Monitoring solutions monitor several important hardware parameters, such as voltage, temperature, and fan speed, and then issue alarm / warning signals when sensing abnormal events to prevent the systems from any damage.

Part No.	System Interface	PECI	Remote Thermal Sensor Inputs	Voltage Monitor Inputs	Fan Tachometer Inputs	Fan Speed Control Outputs	Operation Voltage and Package	Status*
W83793G	SMBus	1.1	6	11	12	8	5V; SSOP 56-pin	NRFND
W83793AG	SMBus	1.1	3	9	12	8	5V; SSOP 56-pin	NRFND
W83795G	SMBus	2.0	6	21(max)	14(max)	8(max)	3.3V; LQFP; 64-pin	P
W83795ADG	SMBus	2.0	6	18(max)	14(max)	2	3.3V; LQFP; 48-pin	P
NCT7802Y	SMBus	3.0	3(max)	5(max)	3	3	3.3V; QFN; 20-pin	P
NCT7904D	SMBus	3.0	4(max)	17(max)	12(max)	4	3.3V; LQFP; 48-pin	P

*Status: P= Mass Production, S= Samples, NRFND= Not Recommended for New Design

Contact us: ComputerIC@nuvoton.com

H/W Monitor for Graphic Card, NB and Networking/Storage Devices

Hardware Monitoring ICs for graphic card, notebook, and networking/storage devices applications are widely adopted in the graphic card, NB, and Industrial PC applications. Hardware Monitoring solutions monitor several important hardware parameters, such as voltage, temperature, and fan speed, and then issue alarm / warning signals when sensing abnormal events to prevent the systems from any damage.

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	Status*
W83L771AWG W83L771ASG	SMBus	Y	1	N	N	N	3.3V; MSOP 8-pin/ SOP 8-pin	NRFND
W83772G	SST	Y	1	N	N	N	3.3V; MSOP 8-pin	P
W83773G	SMBus	Y	2	N	N	N	3.3V; MSOP 8-pin	P
W83775G	SMBus	Y	2	N	N	N	3.3V; MSOP 10-pin	P
NCT7717U	SMBus	Y	N	N	N	N	3.3V; SOT 23-5	P
NCT7718W	SMBus	Y	1	N	N	N	3.3V; MSOP 8-pin	P
NCT7509W	SMBus	Y	1	N	1	1	3.3V; MSOP 10-pin	P
NCT7511Y	SMBus	Y	3 (max)	N	1	1	3.3V; QFN 16-pin	P
NCT7802Y	SMBus	Y	3 (max)	5 (Max)	3	3	3.3V; QFN 20-pin	P

*Status: Status: P= Mass Production, S=Samples, NRFND= Not Recommended for New Design

Contact us: ComputerIC@nuvoton.com

Voltage Level Shift IC

Voltage Level Shift IC

NCT5917W is the first product of Nuvoton Voltage Level shift IC series. It is intended for I²C bus and SMBus systems. It provides bidirectional voltage-level translation between low voltages (down to 0.9 V) and higher voltages (2.7 V to 5.5 V).

Part No.	Interface	Bus Frequency	Operation Voltage 1	Operation Voltage 2	Inputs	Outputs	Operation Voltage and Package	Package Type	Status*
NCT5917W	I ² C/SMBus	400KHz	0.9V-5.5V	2.7V-5.5V	1	1	-40~+85°C	MSOP 8-pin	P

*Status: P= Mass Production, S=Samples, NRFND= Not Recommended for New Design

Contact us: ComputerIC@nuvoton.com

Power Management ICs

PWM ICs

Switching Regulators is a family of high efficiency products for desktop PCs. Switching regulators are required for applications using highly-regulated low voltage power that needs high conversion efficiency. Nuvoton's Switching Regulators provide system designers a high performance and cost-effective solution.

Part No.	Vcc	Vout	Frequency	Adjustable VREF	Features	Package	Status*
NCT3230S	5V-12V	0.8V-Vin	300KHz	N	Soft Start OCP, OVP, UVP	SOP 8	P

*Status: P= Mass Production, S= Samples, NRFND= Not Recommended for New Design

Contact us: ComputerIC@nuvoton.com

DDR Bus Termination Regulator

DDR bus termination regulator is a linear regulator for applications of a high speed bus terminator. The chip provides a stable power supply which tracks half of input power dynamically for bus termination with a single chip. The bus termination regulator is available in SOP-8, power SOP-8 & DFN10 packages. With DDR bus termination regulator design, a high integration, high performance, and a cost-effective solution are promoted.

Part No.	Load Regulation	Output Current Max	Vin	Control Voltage	Function	Package	Status*
W83310G-R2	-20mV~+20mV	2A	1.4V-3.6V	3V - 3.3V	OC	SOP 8	NRFND
W83310DG	-20mV~+20mV	2A	1.4V-3.6V	3V - 3.3V	OC	Power SOP 8	NRFND
W83312SN	-20mV~+20mV	Peak 3A	1.2V-5.5V	3V - 5.5V	OC, OTP	Power SOP 8	P
NCT3101S	-20mV~+20mV	Peak 2.5A	1.0V-5.5V	3V - 5.5V	OC, OTP	Power SOP 8	P
NCT3107S	-20mV~+20mV	VTT: 1.5A; VREF: 10mA	1.5V-5.0V	2.2V-5.5V	OC, OTP, EN	Power SOP 8	P
NCT3105Y	-20mV~+20mV	VTT: 2A; VREF: 10mA	VLD0IN: 1.0V~3.6V; VREFIN: 0.5V~1.8V	2.3V-5.5V	OC, OTP, EN, PG	DFN10	P

*Status: P= Mass Production, S= Samples, NRFND= Not Recommended for New Design

Contact us: ComputerIC@nuvoton.com

Power Switch

The W83L351YG is the power interface switch ICs for single slot ExpressCard and provide all power management functions required by ExpressCard. The W83L351YG distributes 3.3V, 3.3Vaux, and 1.5V to the ExpressCard socket. Each voltage line is protected with a built-in current limit circuit and a thermal shutdown circuit.

The NCT3521 series are high-side current-limited switches with soft-start and output shutdown discharge functions, optimized for general purpose power distribution and LCD/LVDS power ON/OFF requiring circuits timing control and protections.

Part No.	Input Voltage(V)	Rds-on(mOhm)	Output Current	UVLO	Protection	Package	Status*
W83L351YG	AUX 3.0 to 3.6	100	400mA	Y	OC, OTP	QFN 20	P
	3.3V 3.0 to 3.6	50	1.7A				
	1.5V 1.35 to 1.65	70	1.1A				
NCT3521U NCT3521U-2	2.7V to 5.5V	80 (typ.)	2.0A	Y	OC, RVP, OTP	SOT23-5 SOT23-6	P

*Status: P= Mass Production, S= Samples, NRFND= Not Recommended for New Design

Contact us: ComputerIC@nuvoton.com

Linear Regulator

Nuvoton NCT3720 / NCT3730 is a high performance linear regulator designed for use in applications requiring very low input voltage and very low dropout voltage. It operates with a VIN as low as 1.0V and control voltage 3V with output voltage programmable as low as 0.8V. The significant feature includes ultralow dropout, ideal for applications where VOUT is very close to VIN. Additionally, there is an enable pin to further reduce power dissipation while shutdown and power good indicator. The NCT3720S/S-L provides 2Amp output current and NCT3730S/S-L provides 3Amp output current.

Part No.	Control Input Voltage	Power Input Voltage	Output Current	Dropout	Protections	Others	Package	Status*
NCT3720S/ S-L	3.0V~5.5V	1.0V~5.5V	2A	150mV	UVLP, OCP, SC & Thermal Shutdown	Enable & Power Good	SOP8-EP	P
NCT3730S/ S-L	3.0V~5.5V	1.0V~5.5V	3A	210mV	UVLO, OCP, SC & Thermal Shutdown	Enable & Power Good	SOP8-EP	P

*Status: P= Mass Production, S= Samples, NRFND= Not Recommended for New Design

Contact us: ComputerIC@nuvoton.com

Others

Nuvoton provides some useful ICs for BOM saving, easy to use and cost-effective solutions to customer applications. Linear fan drivers and SMBus current DAC are widely used in PC or non-PC applications.

The W83391TG is paired with all of Nuvoton's new series of Super IO and Hardware Monitoring IC for DC Fan voltage regulation. The W83391TG provides system designers a high performance and cost-effective solution.

The NCT3940, NCT3941 & NCT3946 are low quiescent current, low dropout linear regulators which are designed with a P-channel MOSFET to power a DC fan and delivers output current up to 500mA. The output voltage follows the 1.6/4.0/6.0 times on the voltage of VSET pin to dynamic adjust the DC fan speed.

NCT3933, NCT3934 & NCT3935 are SMBus current DACs which provide 128 steps sinking/ sourcing adjustable current through SMBus interface. It operates in 3.3V/5.0V voltage and easily uses in power supply margining.

Part No.	Input Voltage (max)	Output Voltage (max)	Channels	Charge Pump Freq.	Output Drive Current	Package	Status*
W83391TG	8V	24V	X 3	180 KHz	45uA	SSOP 14	P
NCT3940S NCT3940S-A	5.5V	5.12V Follows 1.6 times V SET	1	N/A	MOSFET Integrated	SOP8	P
NCT3941S NCT3941S-A	17.6V	17.6V Follows 4.0 times V SET	1	N/A	MOSFET Integrated	PSOP8	P
NCT3946S NCT3946S-A	17.6V	17.6V Follows 6.0 times V SET	1	N/A	MOSFET Integrated	PSOP8	P

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Part No.	Operating Voltage	Channels	Sinking Steps	Sourcing Steps	Resolution/ Step	Interface	Package	Status*
NCT3933U	3.0-5.0V	X 3	128	128	10uA/20uA	SMBus	SOT23-8	P
NCT3934U	3.0-5.0V	X 3	128	128	10uA/20uA/40uA/80uA	SMBus	SOT23-8	P
NCT3935U	3.0-5.0V	X 1	128	128	10uA/20uA/40uA/80uA	SMBus	SOT23-8	P

*Status: P= Mass Production, S=Samples, NRFND= Not Recommended for New Design

Contact us: ComputerIC@nuvoton.com

Bus Interface Bridge ICs

PCIe to PCI I/F

The NCT5868D/NCT5862D series is PCI Express to PCI Bridge that provides a solution to connect legacy PCI bus to PCI Express serial bus. The NCT5868D/NCT5862D series implements PCI Express as a primary bus and PCI as a second bus. With Bridge, existing PCI components can plug into PCI Express based system. They have been chosen to be the most economical solution for cost savings.

Part No.	Interface	Features	Package type	Status*
NCT5868D	PCIe to PCI	Supports PCI Express x1 port and 4 external PCI devices. The PCI Express port is fully compliant with PCI Express Base Specification, Revision 1.1. It supports an X1 link operation, allowing 250MBps throughput in the upstream and downstream direction. It supports a Maximum Payload Size (MPS) of 128 bytes, AER & ECRC, single virtual channel, legacy power management and ASPM L0s.	128 Pin LQFP	P
NCT5862D	PCIe to PCI	Supports PCI Express x1 port and 2 external PCI devices. The PCI Express port is fully compliant with PCI Express Base Specification, Revision 1.1. It supports an X1 link operation, allowing 250MBps throughput in the upstream and downstream direction. It supports a Maximum Payload Size (MPS) of 128 bytes, AER & ECRC, single virtual channel, legacy power management and ASPM L0s.	128 Pin LQFP	P

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Contact us: ComputerIC@nuvoton.com

EC & NB Keyboard Controller

Advanced Embedded Controller

Embedded controllers (EC) for notebook applications enable the implementation of flexible solutions; and a high-performance CPU core enables EC functionality to be extended via the firmware.

Part No.	Description	Status*
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.	P
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.	P
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.	P
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.	P
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.	P

*Status: P= Mass Production, S= Samples, UD= Under Development, UD (Time)= Under Development(Ready Time),
NRFND= Not Recommended for New Design, EOL= End of life
*Please contact your local FAE/sales for a specific RoHS P/N

Contact us: APC.Support@nuvoton.com

Security

SafeKeeper™ TPM

The Nuvoton TPM (WPCT21x, 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. For more technical information, please Contact Sales.

Part No.	Description	Interface	EK Certificate Support	Status*
WPCT21x	SafeKeeper™ stand-alone Trusted Platform Module (TPM) Compliant with TPM Main Specification Version 1.2 Revision 103 and TCG PC Client Specific TPM Interface Specification (TIS) Version 1.2.	LPC	N	NRFND
NPCT42x	SafeKeeper™ stand-alone Trusted Platform Module (TPM) Compliant with TPM Main Specification Version 1.2 Revision 116 and TCG PC Client Specific TPM Interface Specification (TIS) Version 1.21. Now available also in 5x5mm2 QFN32 package form.	LPC	Optional	P
NPCT50x	SafeKeeper™ stand-alone Trusted Platform Module (TPM) Compliant with TPM Main Specification Version 1.2 Revision 116. Now available also in 5x5mm2 QFN32 package form.	I ² C	Optional	P

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Foundry Service

- Nuvoton Foundry FAB
- Technology
- Foundry Service



Foundry Service

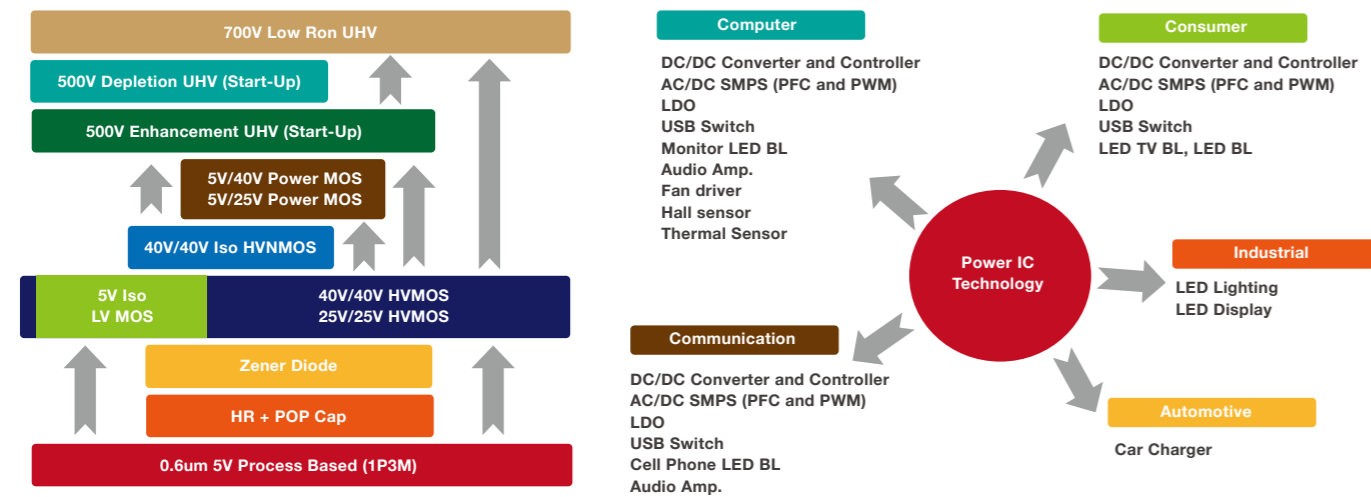
Nuvoton Foundry FAB

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 processes, etc. based on 0.35um to 0.6um 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

Power and High Voltage Process

Modular Process is realized for Power Management IC, LCD driver, LED driver, and Green Mode (Start-Up) application in 0.6um 5V/40V/UHV modular process, which included 5V Logic MOS, Power MOS, HV MOS, and Ultra HV MOS etc.



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

Nuvoton Technology Foundry FAB 0.35um 3.3V/5V process offers 3.3V logic-based Non-Volatile Memory (NVM) Intellectual property (IP) which provided by third party YMC (Yield Microelectronics Corporation). The NVM IP owns competitive cell and macro size, adopting logic-based architecture, and featuring the scalability. YMC NVM IP is Byte Write and Byte Read operation. Low standby current (0.2uA), and Low read voltage (1.2V) IP are available. In Nuvoton, YMC NVM IP products are categorized into three types, including embedded MTP IP, embedded EEPROM IP, and embedded EPROM IP. Complete IP Memory density is available from 256X8 bits to 16KX16 bits.

Application	Target Product	Function
Trimming	LCD Driver, LED Driver, Touch Panel, Power IC, STB Control, Image Capture Control	Fuse Like
Parameter Setting	LCD, LED, Battery Pack Protection	Status Parameter, Logic function
Encryption	LCD, STB, Smart Card	Security confirm code
Function Selection	SoC product Function selector	SoC Function Control
Identification Setting	Product ID, TagIC <13.5MHz	ID Code
Code Storage	4/8 bits MCU	Program, Data Storage



Available Technologies

Process	Technology	Process Feature
Logic / Mixed Mode	0.35um	3.3V / 5V Mixed Mode
	0.45um	3.3V, 5V Mixed Mode
	0.5um	3.3V, 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 Modular Process
		5V/12V CDMOS
		5V/16V CDMOS
		5V/20V Low-Vgs CDMOS
		5V/40V Dual-Vgs CDMOS
	0.6um	5V/40V/800V UHV



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

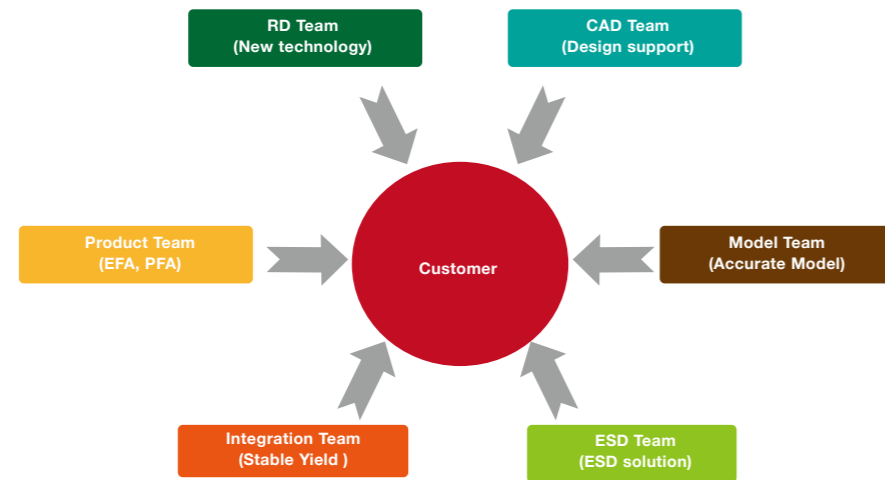
Nuvoton's Multi-Chip and Multi-Layer Mask (MLM) services are available for engineering lot for all processes. The MLM service configures images form four design layers with similar mask specifications onto a single reticle. This service not only saves your development cost, but provides tape-out flexibility that customers can launch their tape-out product at any time without being dependent on pre-set prototyping schedules. Nuvoton's Multi-Project Wafer Service offers platform for multiple customers sharing mask tooling costs through a multi-project wafer in prototyping product.

Customized Process and Excellent Cycle Time

Customized Process and Excellent cycle time support for your Prototyping and Time to Market, and a strategic product can enjoy 0.8D/Layer without extra charge.

Complete Design Kits and Integrity Supporting Group

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	SpringSoft	Laker Custom Layout System (with M-Cell)	



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