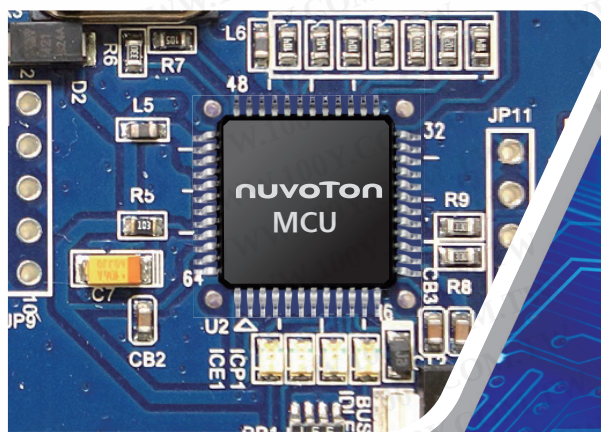


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新唐科技



Microcontrollers 微控制器产品选型指南

技术支持网站

NuMicro™

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勝特力材料 886-3-5753170
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www.nuvoton.com

nuvoTon

新唐科技股份有限公司成立于 2008 年，同年 7 月受让分割华邦电子逻辑 IC 事业单位正式展开营运，并于 2010 年在台湾证券交易所正式上市挂牌。新唐科技专注于逻辑 IC 产品之研发、设计及销售，在音讯、微控制器、电脑及云端相关应用 IC 之市占率皆具市场领先地位；此外，新唐科技拥有一座专攻特殊利基制程之 6 吋晶圆厂，除负责生产自有 IC 产品外，另提供部份产能作为晶圆代工服务。新唐科技以灵活之创新技术能力、完整之产品解决方案及卓越之技术综效整合，提供客户优质性价比之产品，在既有之深厚基础上提供客户更佳服务，并以「成为产业领导者不可或缺的伙伴」为公司愿景。新唐科技重视与客户及合作伙伴的长期关系，在美国、中国大陆、以色列等地均设有据点，强化地区性客户支持服务与全球运筹管理。如需进一步了解新唐科技，请参访公司网站 www.nuvoton.com。

Nuvoton MCU

新唐科技秉持过去十几年来在单片机领域的广大市占率与客户群基础上，不断地扩展新产品线，产品范围包括 ARM7 / ARM9 - MCU 系列、NuMicro™ Family - ARM® Cortex™ - M0 32 位单片机系列及 80C51 - 8 位系列三大产品线。除一般应用领域外，更涵盖无线耳机、触摸屏、网络连接设备、税控机 (POS)、直流无刷电机、通讯系统、工业控制、家电及安全监控等各专业领域，并提供多种性能优异的产品选项及提供客户全方位之服务，进而大幅提升产业效能。在更具挑战性的信息时代，持续以稳健之脚步，迈向成长的高峰，与客户共创双赢的未来。

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NuMicro™ 家族

NuMicro™ 是新唐科技新一代32位微控制器，采用ARM公司低功耗、低门数、具精简指令代码特性的Cortex™-M0处理器为核心，适合广泛的微控制器应用领域。NuMicro™ 家族目前已量产系列为：NUC100系列与NUC200系列；带有USB 2.0全速设备的低功耗NUC120/NUC122/NUC123系列与NUC220系列；内嵌CAN 2.0B标准局域网络控制器NUC130/140系列；高性价比的M051系列；和低管脚、低价位的Mini51系列；以200uA/MHz常态低功耗运行的Nano100超低功耗系列等。NuMicro™应用领域涵盖相当广泛，包括触控屏幕、USB 连接、直流无刷马达(BLDC)、汽车电子、医疗电子、通讯系统与医疗电子等。NuMicro™ 家族提供最新高效能的32位处理器并拥有与传统8位产品之匹敌价格。

NUC100 系列

NuMicro™ NUC100 系列为32位单片机，内建ARM® Cortex™-M0内核，最高可运行至72MHz，具32K/64K/128K字节Flash存储器、4K/8K/16K/20K字节SRAM、4K独立 Flash 字节作为在线系统编程(In System Programming)用途。并内建有丰富外设，如I/O接口、定时器、看门狗定时器、RTC、PDMA、UART、SPI/MICROWIRE、I²C、I²S、PWM、LIN、CAN 2.0B、PS/2、USB 2.0全速设备、12位ADC、模拟比较器、低电压复位和欠压检测等功能。

关键特性：宽电压工作范围 2.5V 至 5.5V，工作温度：-40℃~85℃；PDMA 用于 SRAM 和外围设备之间的自动数据传输；用于存储ISP引导代码的独立4k字节 FLASH；128K字节系统中可配置数据FLASH地址区域，32K/64K字节系统中独立4K字节数据FLASH区域。

应用领域：工业控制、安防系统、马达控制、通讯系统等。

NUC100 Advanced Line 高集成外设32位微控制器

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 ISPIAP	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 USB微控制器

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity						I²S	PWM	ADC	Comp.	RTC	EBI	PDMA	ISO-7816-3	ICP ISP,IAP	IRC 22MHz	Package
							UART	SPI	I²C	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) 低功耗USB微控制器

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity						I²S	Comp.	PWM	ADC	RTC	EBI	PDMA	ISP ICP	IRC 22MHz	Package
							UART	SPI	I²C	USB	LIN	CAN										
NUC122ZC1AN	32K	4K	4K	4K	18	4x32-bit	1	2	1	1	-	-	-	-	-	-	-	-	-	✓	✓	QFN33
NUC122ZD2AN	64K	8K	4K	4K	18	4x32-bit	2	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

Contact us: NuMicro@nuvoton.com

NUC123 USB Line (Low Power) 低功耗USB微控制器

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity						fS	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 C_CAN总线微控制器

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity						fS	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 带USB口和C_CAN总线微控制器

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity						fS	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

NUC200 系列

NuMicro™ NUC200 系列为32位单片机，内建ARM® Cortex™-M0内核，最高可运行至50MHz，具32K/64K/128K字节Flash存储器、8K/16K字节SRAM、4K独立Flash字节作为在线系统编程(In System Programming)用途。并内建有丰富外设，如I/O接口、定时器、看门狗定时器、RTC、PDMA、UART、SPI/MICROWIRE、I²C、I²S、PWM、智能卡接口ISO-7816-3、PS/2、USB 2.0全速设备、12位ADC、模拟比较器、低电压复位和欠电压检测等功能。

关键特性：宽电压工作范围 2.5V 至 5.5V，工作温度：-40℃~85℃；PDMA 用于 SRAM 和外围设备之间的自动数据传输；用于存储ISP引导代码的独立4k字节FLASH；128K字节系统中可配置数据FLASH地址区域，32K/64K字节系统中独立4K字节数据FLASH区域。

应用领域：工业控制、安防系统、马达控制、通讯系统等等。

NUC200 Advanced Line 高集成外设32位微控制器

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity						fS	PWM	ADC	Comp.	RTC	PDMA	ISO-7816-3	CRC	VBAT Supply	ICP ISP,IAP	IRC 22MHz	Package
							UART	SPI	I ² C	USB	LIN	CAN												
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 USB微控制器

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity						fS	PWM	ADC	Comp.	RTC	PDMA	ISO-7816-3	CRC	VBAT Supply	ICP ISP,IAP	IRC 22MHz	Package
							UART	SPI	I ² C	USB	LIN	CAN												
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 系列

NuMicro™ M051 系列为32位单片机，内建ARM® Cortex™-M0内核，最高可运行至50MHz，具8K/16K/32K/64K 字节Flash存储器、4K字节SRAM、4K独立Flash字节作为在线系统编程(In System Programming)用途。并内建有丰富外设，如I/O接口、定时器、UART、SPI、I²C、PWM、ADC、模拟比较器、看门狗定时器、低电压复位和欠压检测等功能。

关键特性：宽电压工作范围 2.5V 至 5.5V，工作温度：-40°C~+85°C；用于存储ISP引导代码的独立4k字节 FLASH；独立4K字节数据FLASH区域。

应用领域：工业控制、安防系统、通讯系统、马达控制等。

M051 Base Line I/O 管脚兼容8051, 8位价格32位效能微控制器

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity			PWM	ADC	Comp.	EBI	ICP ISP	IRC 22MHz	Package
							UART	SPI	I²C							
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

Mini51 系列

NuMicro™ Mini51系列为 32 位单片机，内建ARM® Cortex™-M0 内核，最高可运行至24MHz，具4K/8K/16K字节Flash内存、2K字节内建SRAM、可配置的数据Flash大小(与程序Flash内存共享)、2K独立Flash字节作为在线系统编程(In System Programming)用途。NuMicro™ Mini51系列内嵌丰富外设，如：I/O接口、定时器、UART、SPI、I²C、PWM、ADC、看门狗和低电压复位和欠压检测，使NuMicro™ Mini51系列适用于广泛的应用。

关键特性：宽电压工作范围 2.5V 至 5.5V；工作温度：-40°C~+85°C；用于存储ISP引导代码的独立2k字节 FLASH；独立4K字节数据FLASH区域。

应用领域：航模电调、光模块、工业控制、数据处理等。

Mini51 Base Line 高集成、低价位、低管脚、高性能32位微控制器

Part No.	Flash	SRAM	Data Flash	ISP ROM	I/O	Timer	Connectivity			PWM	ADC	Comp.	ICP ISP	IRC 22MHz	Package
							UART	SPI	I²C						
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

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勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-34970699
勝特力电子(深圳) 86-755-83298787
Http://www.100y.com.tw

Nano 系列

NuMicro™ Nano系列为 32 位单片机，内建ARM® Cortex™-M0 内核，最高可运行至42MHz，具32K/64K/128K字节Flash、8K/16K字节SRAM、可配置的数据Flash (与程序Flash存储器共享)、4K独立Flash字节作为在线系统编程(In System Programming)用途。

Nano系列为低功耗、高集成32位单片机，内嵌丰富外设，包含 4x40 或 6x38 LCD驱动、12位ADC、12位 DAC、电容触控按键、UART、SPI、I²C、I²S、USB 2.0全速设备、智能卡接口 ISO-7816-3、并支持多种外设快速唤醒功能、提供96-bit的MCU独立ID码与128-bit唯一客户的ID码。

关键特性：宽电压工作范围 1.8V 至 3.6V；工作温度：-40°C~85°C；超低功耗技术，运行模式 200uA/MHz、Idle 模式 75uA/MHz、待机模式 (RAM 数据保持) 1uA；RTC 模式 2.5uA；7uS 快速唤醒。

应用领域：可携式医疗装置、手机刷卡器、IPTV 体感遥控器、智能家居控制装置、Zigbee RF4CE 遥控器、智能卡读卡器、无线智能抄表、GPS 数据纪录器、高速公路自动收费装置 (Car ETC.)、智能热表、水表、燃气表等。

Nano 100 Base Line 超低功耗高集成高性能32位微控制器

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

Nano 110 LCD Line 超低功耗高集成高性能内嵌LCD驱动的32位微控制器

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

Nano 120 USB Connectivity Line 超低功耗高集成高性能内嵌USB的32位微控制器

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

Nano 130 Advanccd Line 超低功耗高集成高性能内嵌USB及LCD驱动的32位微控制器

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

NuMicro™ 家族开发工具

新唐特别针对 NuMicro 32 位单片机家族, 提供丰富与多样的开发工具, 包含硬件开发工具、丰富范例的源程序码、及相关外设的驱动程序软件开发包。这些开发工具可让相关的开发工程师有效且快速开发调试相关产品, 以达到 Time-To-Market 的目标。针对程序码的烧录部份, NuMicro 32 位单片机家族也支持在线系统编程 (ISP), 在线电路编程 (ICP), 联机烧录 (on-line programming), 脱机烧录 (off-line programming)。在开发板部份, 有操作简单且开发方便的 NuTiny-SDK 系列可供选择; 在学习应用部份, 有Nu-LB 学习板系列可供操作学习; 在量产编程部份, 亦提供可以一次编程 4 片芯片的 Nu-Gang 系列。新唐支持多个集成开发环境, NuMicro 32 位单片机家族所有芯片皆可在 Keil RVMDK、IAR EWARM 和免费的 CooCox ColDE (www.coocox.com/Nuvoton.htm) 集成环境下, 搭配新唐所开发的调试适配器 (Nu-Link) 进行编译, 调试, 编程等功能。

SDK (Software Development Kit)				
Ordering No.	Content	Supported Device	Evaluation / Development Kit for	Picture
NuTiny-SDK-Mini51	- Nu-Link-ME 仿真器/编程器 - NuTiny-EVB-Mini51开发板 - USB 连接线	Mini51 Mini52 Mini54	仿真與编程Mini51系列, 开发板使用Mini54LAN	
NuTiny-SDK-M051	- Nu-Link-ME 仿真器/编程器 - NuTiny-EVB-M051开发板 - USB 连接线	M052 M054 M058 M0516	仿真與编程M051系列, 开发板使用M0516LBN	
NuTiny-SDK-NUC100	- Nu-Link-ME 仿真器/编程器 - NuTiny-EVB-NUC100开发板 - USB 连接线	NUC100	仿真與编程NUC100系列, 开发板使用NUC100LE3AN	
NuTiny-SDK-NUC120	- Nu-Link-ME 仿真器/编程器 - NuTiny-EVB-NUC120开发板 - USB 连接线	NUC120	仿真與编程NUC120系列, 开发板使用NUC120LE3AN	
NuTiny-SDK-NUC122	- Nu-Link-ME 仿真器/编程器 - NuTiny-EVB-NUC122开发板 - USB 连接线	NUC122	仿真與编程NUC122系列, 开发板使用NUC122SD2AN	
NuTiny-SDK-NUC123	- Nu-Link-ME 仿真器/编程器 - NuTiny-EVB-NUC123开发板 - USB 连接线	NUC123	仿真與编程NUC123系列, 开发板使用NUC123SD4AN0	
NuTiny-SDK-NUC140	- Nu-Link-ME 仿真器/编程器 - NuTiny-EVB-NUC140开发板 - USB 连接线	NUC130 NUC140	仿真與编程NUC130/140系列, 开发板使用NUC140VE3CN	
NuTiny-SDK-NUC200	- Nu-Link-ME 仿真器/编程器 - NuTiny-EVB-NUC200开发板 - USB 连接线	NUC200	仿真與编程NUC200系列, 开发板使用NUC200VE3AN	
NuTiny-SDK-NUC220	- Nu-Link-ME 仿真器/编程器 - NuTiny-EVB-NUC220开发板 - USB 连接线	NUC220	仿真與编程NUC220系列, 开发板使用NUC220VE3AN	
NuTiny-SDK-Nano100	- Nu-Link-ME 仿真器/编程器 - NuTiny-EVB-Nano100开发板 - USB 连接线	Nano100	仿真與编程Nano100系列, 开发板使用Nano100KE3BN	
NuTiny-SDK-Nano120	- Nu-Link-ME 仿真器/编程器 - NuTiny-EVB-Nano120开发板 - USB 连接线	Nano120	仿真與编程Nano120系列, 开发板使用Nano120KE3BN	
NuTiny-SDK-Nano130	- Nu-Link-ME 仿真器/编程器 - NuTiny-EVB-Nano130开发板 - USB 连接线	Nano110 Nano130	仿真與编程Nano130系列, 开发板使用Nano130KE3BN	
Learning Board (LB) - 由 Nuvoton 开发的学习板 - 包含 IAR EWARM (评估版) 及 Keil MDK-ARM (评估版) 软件安装包 - 支持 CooCox 开发环境 - 包含开发例程源代码				
Ordering No.	Content	Supported Device	Evaluation / Development Kit for	Picture
Nu-LB-NUC140	- Nu-LB-NUC140 学习板 - 内嵌 Nu-Link-ME 仿真器/编程器 - USB 连接线 - NuMicro家族资料集成安装光盘	NUC100 NUC120 NUC130 NUC140	- SD Card - USB - CAN & LIN - EEPROM & Flash Memory - Display - Audio via NAU8822	
Nu-LB-M051	- Nu-LB-M051 学习板 - 内嵌 Nu-Link-ME 仿真器/编程器 - USB 连接线 - NuMicro家族资料集成安装光盘	M052 M054 M058 M0516	- EEPROM & Flash Memory - Display - EBI Interface	
Nu-LB-Mini51	- Nu-LB-Mini51 学习板 - 内嵌 Nu-Link-ME 仿真器/编程器 - USB 连接线 - NuMicro家族资料集成安装光盘	Mini51 Mini52 Mini54	- EEPROM & Flash Memory - Display	
Nu-LB-Nano130	- Nu-LB-Nano130 学习板 - 内嵌 Nu-Link-ME 仿真器/编程器 - USB 连接线 - NuMicro家族资料集成安装光盘	Nano100 Nano110 Nano120 Nano130	- SD Card - USB - Touck 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 仿真器/编程器	NuMicro Family	- USB到SWD 接口 - 支持在线电路编程(ICP) - 支持 USB 热插拔	
Nu-Link-Pro	Nu-Link-Pro 仿真器/编程器	NuMicro Family	- USB到SWD 接口 - 支持在线电路编程(ICP) - 支持 USB 热插拔 - 可程序控制电压输出: 1.8V, 2.5V, 3.3V, 5.0V - 宽电压输入: 1.8V ~5.5V	

Contact us: NuMicro@nuvoton.com

NuMicro™ 家族开发工具

勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-34970699
 勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Ordering No.	Content	Supported Devices	Description	Picture
3rd Party Starter Kit (SKT)				
Nu-IAR-SKT	• NUC140-SK开发板 • USB 连接线 • 安装光盘	NUC100 NUC120 NUC130 NUC140	• 由 IAR 提供的开发套件 • 包含 IAR EWARM (evaluation version) 软件安装包 • 包含 IAR C/C++ Compiler 编译器 • 支持 USB 热插拔	
Nu-Keil-SKT	• U-LINK-ME 仿真器/编程器 • MCBNUC1XX开发板 • USB 连接线 • 安装光盘	NUC100 NUC120 NUC130 NUC140	• 由 Keil 提供的开发套件 • 包含 Keil MDK-ARM (evaluation version) 软件安装包 • 包含 ARM C/C++ Compiler 编译器 • 支持 USB 热插拔	
NuMicro Mini51 Series Gang Writer (NuGang)				
NuGang-Mini51T-QFN33	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	Mini51T Mini52T Mini54T	• 支持一次烧录 4 颗Mini51系列 • 支持 USB 热插拔 • 支持脱机烧录 • T: QFN33 4x4mm • Z: QFN33 5x5mm • L: LQFP48 7x7mm	
NuGang-Mini51Z-QFN33	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	Mini51Z Mini52Z Mini54Z		
NuGang-Mini51L-QFN33	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	Mini51L Mini52L Mini54L		
NuMicro M051 Series Gang Writer (NuGang)				
NuGang-M051Z-QFN33	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	M052Z M054Z M058Z M0516Z	• 支持一次烧录 4 颗M051系列 • 支持 USB 热插拔 • 支持脱机烧录 • Z: QFN33 5x5mm • L: LQFP48 7x7mm	
NuGang-M051L-LQFP48	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	M052L M054L M058L M0516L		
NuMicro NUC100 Series Gang Writer (NuGang)				
NuGang-NUC100L-LQFP48	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	NUC100L NUC120L NUC130L NUC140L	• 支持一次烧录 4 颗NUC100系列 • 支持 USB 热插拔 • 支持脱机烧录 • Z: QFN33 5x5mm • L: LQFP48 7x7mm • S: LQFP64 7x7mm • R: LQFP64 10x10mm • V: LQFP100 14x14mm	
NuGang-NUC100R-LQFP64	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	NUC100R NUC120R NUC130R NUC140R		
NuGang-NUC100V-LQFP100	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	NUC100V NUC120V NUC130V NUC140V		
NuGang-NUC122Z-QFN33	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	NUC122Z		
NuGang-NU122L-LQFP48	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	NUC122L		
NuGang-NUC122S-LQFP64	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	NUC122S		
NuGang-NUC123Z-QFN33	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	NUC123Z		
NuGang-NU123L-LQFP48	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	NUC123L		
NuGang-NUC123S-LQFP64	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	NUC123S		
NuMicro NUC200 Series Gang Writer (NuGang)				
NuGang-NUC200L-LQFP48	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	NUC200L NUC220L	• 支持一次烧录 4 颗NUC200系列 • 支持 USB 热插拔 • 支持脱机烧录 • L: LQFP48 7x7mm • S: LQFP64 7x7mm • V: LQFP100 14x14mm	
NuGang-NUC200S-LQFP64	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	NUC200S NUC220S		
NuGang-NUC200V-LQFP100	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	NUC200V NUC220V		
NuMicro Nano100 Series Gang Writer (NuGang)				
NuGang-Nano100L-LQFP48	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	Nano100L Nano120L	• 支持一次烧录 4 颗 Nano100系列 • 支持 USB 热插拔 • 支持脱机烧录 • L: LQFP48 7x7mm • S: LQFP64 7x7mm • K: LQFP128 14x14mm	
NuGang-Nano100S-LQFP64	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	Nano100S Nano110S Nano120S Nano130S		
NuGang-Nano100K-LQFP128	• 使用手册 • 4颗芯片刻录转接板 • USB 连接线	Nano100K Nano110K Nano120K Nano130K		

Contact us: NuMicro@nuvoton.com

ARM7 / ARM9 微控制器

随着全球互联网应用越来越密集，ARM的微控制器需要更多功能，例如USB2.0 HS、SDHC2.0等，以提高系统性能，使厂商获得更多的系统设计机会。

新唐科技提供一系列基于ARM7的ARM9的网络处理器，为客户执行他们创新的产品概念提供及时协助。同时新唐提供完整工具链，包括 BSP (Board Support Package) 为基础的平台，在用户可以节省成本的前提下与在广为接受的平台上，进行具有领先优势的工业产品开发。新唐同时提供在Linux/ WinCE下的源代码及BSP驱动程序测试代码，以缩短用户设计开发周期。

本系列适用于任何需要网络连接设备，税控机 (POS)、数码摄影机、网络电台、及IP摄像头等应用。

NUC501为基于ARM7TDMI的微控制器，是新唐为提供低成本，高性能的各种应用，如2.4G射频无线系统、高端游戏杆、教育娱乐型机器人及家电类的应用而专门设计的型号。集成了32KB的高速SRAM、代码保护加密、引导ROM、LDO稳压器、模数转换器ADC、数模转换器DAC、I²C、SPI的接口、USB2.0全速设备接口和GPIO等低成本又具有功能丰富的微控制器。

NUC ARM 丰富的周边外设, 高效能的性价比, 完整的开发包和操作系统

Part No.	Core				Memory I/F		Storage		MAC	USB		GFX	LCD	Timer	Analog				Peripheral								Power		Package												
	Max Speed (MHz)	CPU	I Cache (KB)	D Cache (KB)	Security against piracy	SRAM (KB)	NOR Flash	SPI Flash, No. of I/O Pins	NAND Flash, No. of ECC bits	SD / SDIO	ATAPI	2D Graphics	STN LCD	TFT LCD	Real-Time Clock (RTC)	PWM	No. of Channels	ADC (10-bit)		Touch Screen Controller	16-bit DAC Channels	LVDT/LVR	Peripheral								Core Voltage (V)	I/O Voltage (V)	Built-in LDO	Operating Temperature ¹	Package						
																		Speed (Samples per second)	No. of Channels				External Bus Interface	JTAG	GPIO (Max)	UART	I ² C	SPI	KPI	PS2						I ² S/AC97	PCI Master				
NUC501A/B	80	ARM7TDMI	-	-	32	✓	-	2	-	-	-	-	-	✓	4	8	400K	-	1	✓	✓	✓	26 37	1 2	1	2	-	-	-	1.8	3.3	✓	E	LQFP-48 LQFP-64							
NUC710A	80	ARM7TDMI	4	4	-	✓	✓	1	-	-	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	-	-	-	-	-	4	-	-	✓	✓	31	4	2	1	✓	1	1	-	1.8	3.3	-	I	LQFP-128				
NUC910A	200	ARM926EJ	8	8	-	✓	✓	1	4	✓	2	1	-	2	-	1	✓	-	✓	✓	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	-	1	-	-	✓	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	-	1	-	-	-	-	-	-	✓	✓	34	1	-	-	-	-	-	1.8	3.3	-	C	LQFP-128					
NUC946A	200	ARM926EJ	8	8	-	✓	✓	✓	-	-	1	1	-	2	-	1	-	-	-	-	-	-	✓	✓	37	2	2	1	-	-	-	1.8	3.3	-	I ²	LQFP-128					
NUC950A	200	ARM926EJ	8	8	-	✓	✓	1	4	-	1	1	-	2	-	1	✓	-	✓	-	4	-	-	✓	52	3	2	1	✓	-	1	-	1.8	3.3	-	I ²	LQFP-216				
NUC951A	200	ARM926EJ	8	8	-	✓	✓	✓	4	-	2	1	-	2	-	1	✓	-	✓	✓	4	-	-	✓	✓	63	3	2	1	✓	✓	1	-	1.8	3.3	-	I ²	LQFP-216			
NUC960A	200	ARM926EJ	8	8	-	✓	✓	1	-	-	-	1	-	2	-	1	-	-	-	-	-	-	✓	✓	51	3	2	1	-	-	-	2	1.8	3.3	-	I ²	LQFP-216				
*NUC970A	300	ARM926EJ	16	16	32	✓	✓	✓	1	24	-	1	2	-	2	-	1	✓	-	✓	✓	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 IO 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 开发工具				
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 开发工具				
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

Contact us: MicroC-32bit@nuvoton.com

80C51 MCU

新唐在8051单片机领域深耕多年，不断提供产品高性价比与最佳解决方案来满足客户需求。80C51单片机全产品线为工业温度规格，并带丰富外设以满足市场不同应用需求。产品组合完整，适用于各类工业或消费产品应用领域，并提供完整开发工具及全方位服务，使客户能缩短产品上市时间。

6T/12T 80C51 产品系列

关键特性：6T/12T 80C52 内核运行;内建丰富外设UART、SPI、I²C、脉宽调制器(PWM)、RC振荡、数据Flash区域、在线系统编程(In System Programming)

功能：宽电压工作范围 2.4V 至 5.5V, 工作温度: -40°C~+85°C

应用领域：条形码读取设备、数字电话、多计算机切换器 (KVM)、2.4G无线键盘、工控机、显示器等。

W78 标准系列

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 工业温度规格系列

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 Q2, 2013.

4T 80C51 产品系列

关键特性：4T 80C52 内核运行;内建丰富外设 I²C、2*UART、SPI、ADC、脉宽调制器 (PWM)、数据 Flash 区域、在线系统编程(In System Programming)

功能：宽电压工作范围 2.4V 至 5.5V, 工作温度: -40°C~+85°C

应用领域：工控机、通讯设备、门禁系统/报警器、液晶电视、电机控制、电源管理等。

W77 增速型系列

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 增强型系列

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 低管脚单片机系列

关键特性：4T 80C52 内核运行;内建丰富外设 I²C、UART、SPI、ADC、脉宽调制器(PWM)、内建RC振荡、数据Flash区域、在线电路编程 (In Circuit Programming)、在线系统编程(In System Programming)功能; 宽电压工作范围 2.4V 至 5.5V, 工作温度: -40°C~+85°C
应用领域：温度传感设备、iPod docking、投影机、DVD机、电子秤、门禁及PC电源控制等。

N79/W79 低管脚工业温度系列

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
N79E815	16K	512	Share AP ROM	2K	25	3x16-bit	2/1	2/1	1	-	4x10-bit	8x10-bit	2	ISP ICP	internal 22MHz RC, KBI, BOR	TSSOP28/SOP28/TSSOP20/SOP20
N79E814	8K	512	4K	2K	25	3x16-bit	2/1	2/1	1	-	4x10-bit	8x10-bit	2	ISP ICP	internal 22MHz RC, KBI, BOR	TSSOP28/SOP28/TSSOP20/SOP20
N79E8132	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

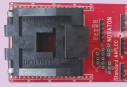
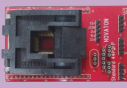
*Under development, available in 2Q, 2013.

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80C51 单片机开发工具

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Ordering Part No.	Description	Supported Devices	Picture
NuGang-N79E81X-SOP16	一拖四烧录器	N79E8132AS16	
NuGang-N79E81X-SOP20	一拖四烧录器	N79E815/814AS20	
NuGang-N79E81X-SOP28	一拖四烧录器	N79E815/814AS28	
NuGang-N79E81X-TSSOP28	一拖四烧录器	N79E815/814AT28	
NuGang-N79E81X-TSSOP20	一拖四烧录器	N79E815/814AT20	
NuGang-STD 8051-LQFP48	一拖四烧录器	W78E052/054/058/516 N78E366/517/059/055	
NuGang-STD 8051-PQFP44	一拖四烧录器	W78E052/054/058/516 N78E366/517/059/055	
NuGang-STD 8051-DIP40	一拖四烧录器	W78E052/054/058/516 N78E366/517/059/055	
NuGang-STD 8051-PLCC44	一拖四烧录器	W78E052/054/058/516 N78E366/517/059/055	
NuTiny-N79E85J	N79E81x 仿真器	N79E81X series	
NWR-005	ISP+ICP 编程器	Nuvoton 8-bit MCU	
NWR-002	烧录器	Nuvoton 8-bit MCU	
NWR-002-PLCC44	PLCC 44 转接座	Nuvoton 8-bit MCU	
NWR-002-PQFP44	PQFP 44 转接座	Nuvoton 8-bit MCU	
NWR-002-LQFP48	LQFP 48 转接座	Nuvoton 8-bit MCU	

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Features of NUC100 series

◆ Core

- ARM® Cortex™-M0 core running up to 50 MHz
- One 24-bit system timer
- Low-power sleep mode
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with 4-levels of priority
- Serial Wire Debug (SWD) interface and 2 watchpoints/4 breakpoints

◆ Memory

- 32K/64K/128K bytes program memory (APROM) (128K bytes only for NUC100 Medium Density)
- 4K bytes loader memory (LDROM)
- Configurable data flash address and size for 128K bytes system, fixed 4K bytes data flash (DataFlash) for the 32K bytes and 64K bytes system
- 4K/8K/16K bytes embedded SRAM (16K bytes only for NUC100 Medium Density)
- PDMA mode
- In-Application-Programming (IAP) update APROM

◆ Clock Control

- Flexible selection from different clock sources
- 22.1184 MHz internal oscillator (trimmed to 1%) for system operation, and low-power 10 kHz internal oscillator for Watchdog timer and Wake-up operation
- One PLL, up to 50 MHz, for high performance system operation
- 4 ~ 24 MHz external crystal input for precise timing operation
- 32.768 kHz external crystal input for RTC function and low-power operation system

◆ Timers

- 4 sets of 32-bit timers with 24-bit up-timer and one 8-bit pre-scale counter
- Independent clock source for each timer
- One-shot, periodic, toggle and continuous counting operation modes (NUC100 Medium Density only for one-shot and periodic mode)
- Event counting function (NUC100 Low Density only)

◆ PWM

- Four 16-bit PWM generators with eight PWM outputs or four complementary paired PWM outputs
- Each PWM generator equipped with one clock source selector, one clock divider, one 8-bit pre-scale and one Dead-Zone generator for complementary paired PWM
- Up to eight 16-bit digital capture timers (shared with PWM timers) with eight rising/falling capture inputs
- Capture interrupt

◆ ADC

- 12-bit SAR ADC with 800 Ksps
- Up to 8-ch single-end input or 4-ch differential input
- Single scan/single cycle scan/continuous scan
- Each channel with individual result register
- Threshold voltage detection
- Conversion started by software programming or external input
- Temperature sensor with 1°C resolution
- PDMA mode

◆ Communication Interface

- 3 UARTs, up to 1 Mbps with flow control
- 4 SPIs, clock up to 36 MHz (Master at 5V), 18 MHz (Slave at 5V)
- 2 I²Cs
- IrDA (SIR) and RS485

◆ I²S

- Interface with external audio CODEC
- Operate as either Master or Slave mode
- Capable of handling 8-, 16-, 24- and 32-bit word sizes
- Mono and stereo audio data

◆ Analog Comparator

- Up to 2 analog comparators
- External input or internal band-gap voltage selectable at negative node
- Interrupt when compare results change

◆ RTC

- Software compensation by setting frequency compensate register (FCR)
- RTC counter (second, minute, hour) and calendar counter (day, month, year)
- Alarm registers (second, minute, hour, day, month, year)

◆ EBI Bus

(External bus interface only for NUC100 Low Density 64-pin package)

- Accessible space: 64K bytes in 8-bit mode or 128K bytes in 16-bit mode
- 8-/16-bit data width
- Byte write in 16-bit data width mode

◆ Brown-out Detector

- With 4 levels: 4.5V / 3.8V / 2.7V / 2.2V
- Brown-out interrupt and reset option

◆ GPIOs

- Up to 84 general-purpose I/O (GPIO) pins
- Four I/O modes: Quasi bi-direction, Push-Pull output, Open-Drain output, Input only with high impedance
- TTL/Schmitt trigger input selectable
- All GPIO pins can be configured as interrupt source with edge/level setting

◆ Wide Operating Voltage Range

- 2.5V to 5.5V

◆ Operating Temperature

- -40°C ~ 85°C

◆ Packages (RoHS)

- LQFP48 (7x7mm)
- LQFP64 (10x10mm)
- LQFP100 (14x14mm)

Features of NUC120 series

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◆ Core

- ARM® Cortex™-M0 core running up to 50 MHz
- One 24-bit system timer
- Low-power sleep mode
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with 4-levels of priority
- Serial Wire Debug (SWD) interface and 2 watchpoints/4 breakpoints

◆ Memory

- 32K/64K/128K bytes program memory (APROM) (128K bytes only for NUC100 Medium Density)
- 4K bytes loader memory (LDROM)
- Configurable data flash address and size for 128K bytes system, fixed 4K bytes data flash (DataFlash) for the 32K bytes and 64K bytes system
- 4K/8K/16K bytes embedded SRAM (16K bytes only for NUC120 Medium Density)
- PDMA mode
- In-Application-Programming (IAP) update APROM

◆ Clock Control

- Flexible selection from different clock sources
- 22.1184 MHz internal oscillator (trimmed to 1%) for system operation, and low-power 10 kHz internal oscillator for Watchdog timer and Wake-up operation
- One PLL, up to 50 MHz, for high performance system operation
- 4 ~ 24 MHz external crystal input for precise timing operation
- 32.768 kHz external crystal input for RTC function and low-power operation system

◆ Timers

- 4 sets of 32-bit timers with 24-bit up-timer and one 8-bit pre-scale counter
- Independent clock source for each timer
- One-shot, periodic, toggle and continuous counting operation modes (NUC120 Medium Density only for one-shot and periodic mode)
- Event counting function (NUC120 Low Density only)

◆ PWM

- Four 16-bit PWM generators with eight PWM outputs or four complementary paired PWM outputs
- Each PWM generator equipped with one clock source selector, one clock divider, one 8-bit pre-scale and one Dead-Zone generator for complementary paired PWM
- Up to eight 16-bit digital capture timers (shared with PWM timers) with eight rising/falling capture inputs
- Capture interrupt

◆ ADC

- 12-bit SAR ADC with 800 Ksps
- Up to 8-ch single-end input or 4-ch differential input
- Single scan/single cycle scan/continuous scan
- Each channel with individual result register
- Threshold voltage detection
- Conversion started by software programming or external input
- PDMA mode

◆ Communication Interface

- 3 UARTs, up to 1 Mbps with flow control
- 4 SPIs, clock up to 36 MHz (Master at 5V), 18 MHz (Slave at 5V)
- 2 I²Cs
- IrDA (SIR) and RS485

◆ I²S

- Interface with external audio CODEC
- Operate as either Master or Slave mode
- Capable of handling 8-, 16-, 24- and 32-bit word sizes
- Mono and stereo audio data

◆ USB 2.0 Full-Speed Device

- One set of USB 2.0 FS Device
- On-chip USB Transceiver
- 1 interrupt source with 4 interrupt events
- Control, Bulk, Interrupt and Isochronous transfers
- 6 programmable endpoints
- 512 bytes internal SRAM as USB buffer included
- Remote wake-up capability

◆ Analog Comparator

- Up to 2 analog comparators
- External input or internal band-gap voltage selectable at negative node
- Interrupt when compare results change

◆ RTC

- Software compensation by setting frequency compensate register (FCR)
- RTC counter (second, minute, hour) and calendar counter (day, month, year)
- Alarm registers (second, minute, hour, day, month, year)

◆ EBI Bus

(External bus interface only for in NUC120 Low Density 64-pin package)

- Accessible space: 64K bytes in 8-bit mode or 128K bytes in 16-bit mode
- 8-/16-bit data width
- Byte write in 16-bit data width mode

◆ Brown-out Detector

- With 4 levels: 4.5V / 3.8V / 2.7V / 2.2V
- Brown-out interrupt and reset option

◆ GPIOs

- Up to 80 general-purpose I/O (GPIO) pins
- Four I/O modes:
 - Quasi bi-direction
 - Push-Pull output
 - Open-Drain output
 - Input only with high impedance
- TTL/Schmitt trigger input selectable
- All GPIO pins can be configured as interrupt source with edge/level setting

◆ Wide Operating Voltage Range

- 2.5V to 5.5V

◆ Operating Temperature

- - 40°C ~ 85°C

◆ Packages (RoHS)

- LQFP48 (7x7mm)
- LQFP64 (10x10mm)
- LQFP100 (14x14mm)

Features of NUC122 series

◆ Core

- ARM® Cortex™-M0 core running up to 60 MHz
- One 24-bit system timer
- Low-power sleep mode
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with 4-levels of priority
- Serial Wire Debug (SWD) interface and 2 watchpoints/4 breakpoints

◆ Memory

- 32K/64K bytes program memory (APROM)
- 4K bytes data memory (DataFlash)
- 4K bytes loader memory (LDROM)
- 4K/8K bytes embedded SRAM
- In System Programming (ISP) update APROM
- 2-wire In Circuit Programming (ICP) update APROM or LDROM or DataFlash
- Fast parallel programming mode to update APROM or LDROM or DataFlash

◆ Clock Control

- Flexible selection from different clock source
- 22.1184 MHz internal oscillator for system operation
 - Trimmed to $\pm 1\%$ at $+25^{\circ}\text{C}$ and $\text{VDD} = 3.3\text{V}$
 - Trimmed to $\pm 5\%$ at $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ and $\text{VDD} = 2.5\text{V} \sim 5.5\text{V}$
- 10 kHz internal low-power oscillator for Watchdog Timer and Wake-up operation
- One PLL, up to 60 MHz, for high performance system operation
- 4 ~ 24 MHz external crystal input for USB and precise timing operation
- 32.768 kHz external crystal input for RTC function and low-power operation system

◆ Timers

- 4 sets of 32-bit timers with 24-bit counters and one 8-bit pre-scale counter
- Counter auto reload

◆ PWM

- Two 16-bit PWM generators with four PWM outputs or two complementary paired PWM outputs
- Each PWM generator equipped with one clock source selector, one clock divider, one 8-bit pre-scale and one Dead-Zone generator for complementary paired PWM
- Up to four 16-bit digital capture timers (shared with PWM timers) with four rising/falling capture inputs
- Capture interrupt

◆ Communication Interface

- 2 UARTs, up to 1 Mbps with flow control
- 2 SPIs, clock up to 25 MHz (Master at 5V), 12 MHz (Slave at 5V)
- 1 I²C
- IrDA (SIR) and RS485

◆ USB 2.0 Full-Speed Device

- One set of USB 2.0 FS Device
- On-chip USB Transceiver
- 1 interrupt source with 4 interrupt events
- Control, Bulk, Interrupt and Isochronous transfers
- Auto suspend function when no bus signaling for 3 ms
- 6 programmable endpoints
- 512 bytes internal SRAM as USB buffer included
- Remote wake-up capability

◆ RTC

- Software compensation by setting frequency compensate register (FCR)
- RTC counter (second, minute, hour) and calendar counter (day, month, year)
- Alarm registers (second, minute, hour, day, month, year)

◆ Brown-out Detector

- With 4 levels: 4.5V / 3.8V / 2.7V / 2.2V
- Brown-out interrupt and reset option

◆ GPIOs

- Up to 41 general-purpose I/O (GPIO) pins
- Four I/O modes:
 - Quasi bi-direction
 - Push-Pull output
 - Open-Drain output
 - Input only with high impedance
- TTL/Schmitt trigger input selectable
- All GPIO pins can be configured as interrupt source with edge/level setting

◆ Wide Operating Voltage Range

- 2.5V to 5.5V

◆ Operating Temperature

- $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$

◆ Packages (RoHS)

- QFN33 (5x5mm)
- LQFP48 (7x7mm)
- LQFP64 (7x7mm)

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Features of NUC123 series

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◆ Core

- ARM® Cortex™-M0 core running up to 72 MHz
- One 24-bit system timer
- Low-power sleep mode
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with 4-levels of priority
- Serial Wire Debug (SWD) interface and 2 watchpoints/ 4 breakpoints

◆ Memory

- 36K/68K bytes program memory (APROM)
- 4K bytes loader memory (LDROM)
- 12K/20K bytes embedded SRAM
- In System Programming (ISP) and In Application Programming (IAP) update APROM
- 2-wire In Circuit Programming (ICP) update APROM or LDROM or DataFlash
- Fast parallel programming mode to update APROM or LDROM or DataFlash

◆ Clock Control

- Flexible selection from different clock source
- 22.1184 MHz internal oscillator for system operation
 - Trimmed to $\pm 1\%$ at $+25^{\circ}\text{C}$ and $\text{VDD} = 3.3\text{V}$
 - Trimmed to $\pm 5\%$ at $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ and $\text{VDD} = 2.5\text{V} \sim 5.5\text{V}$
- 10 kHz internal low-power oscillator for Watchdog Timer and Wake-up operation
- One PLL, up to 144 MHz, for high performance system operation
- 4 ~ 24 MHz external crystal input for USB and precise timing operation
- 32.768 kHz external crystal input for RTC function and low-power operation system

◆ PDMA (Peripheral DMA)

- 6 channels PDMA for automatic data transfer between SRAM and peripherals such as SPI, UART, I²S, USB 2.0 FS device, PWM and ADC
- CRC calculation with four common polynomials, CRC-CCITT, CRC-8, CRC-16 and CRC-32

◆ Timers

- 4 sets of 32-bit timers with 24-bit counters and one 8-bit pre-scale counter
- Counter auto reload

◆ PWM

- Two 16-bit PWM generators with four PWM outputs or two complementary paired PWM outputs
- Each PWM generator equipped with one clock source selector, one clock divider, one 8-bit pre-scale and one Dead-Zone generator for complementary paired PWM
- Up to four 16-bit digital capture timers (shared with PWM timers) with four rising/falling capture inputs
- Capture interrupt

◆ Communication Interface

- 2 UARTs, up to 1 Mbps with flow control
- 3 SPIs, clock up to 32 MHz (Master at 5V), 16 MHz (Slave at 5V)
- 2 I²Cs
- IrDA (SIR) and RS485

◆ USB 2.0 Full-Speed Device

- One set of USB 2.0 FS Device
- On-chip USB Transceiver
- 1 interrupt source with 4 interrupt events
- Control, Bulk, Interrupt and Isochronous transfers
- Auto suspend function when no bus signaling for 3 ms
- 6 programmable endpoints
- 512 bytes internal SRAM as USB buffer included
- Remote wake-up capability

◆ I²S

- Interface with external audio CODEC
- Operate as either Master or Slave mode
- Capable of handling 8-, 16-, 24- and 32-bit word sizes
- Mono and stereo audio data

◆ ADC

- 12-bit SAR ADC with 150 Ksps
- Up to 8-ch single-end input or 4-ch differential input
- Single scan/single cycle scan/continuous scan
- Each channel with individual result register
- Threshold voltage detection
- Conversion started by software programming or external input
- PDMA mode

◆ Brown-out Detector

- With 4 levels: 4.5V / 3.8V / 2.7V / 2.2V
- Brown-out interrupt and reset option

◆ GPIOs

- Up to 47 general-purpose I/O (GPIO) pins
- Four I/O modes:
 - Quasi bi-direction
 - Push-Pull output
 - Open-Drain output
 - Input only with high impedance
- TTL/Schmitt trigger input selectable
- All GPIO pins can be configured as interrupt source with edge/level setting

◆ Operating Voltage Range

- 2.5V to 5.5V

◆ Operating Temperature

- $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$

◆ Packages (RoHS)

- QFN33 (5x5mm)
- LQFP48 (7x7mm)
- LQFP64 (7x7mm)

Features of NUC130/140 series

◆ Core

- ARM® Cortex™-M0 core running up to 50 MHz
- One 24-bit system timer
- Low-power sleep mode
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with 4-levels of priority
- Serial Wire Debug (SWD) interface and 2 watchpoints/4 breakpoints

◆ Memory

- 32K/64K/128K bytes program memory (APROM)
- 4K bytes loader memory (LDROM)
- Configurable data flash address and size for 128K bytes system, fixed 4K bytes data flash (DataFlash) for the 32K bytes and 64K bytes system
- 4K/8K/16K bytes embedded SRAM
- PDMA mode

◆ Clock Control

- Flexible selection from different clock source
- 22.1184 MHz internal oscillator (trimmed to 1%) for system operation, and 10 kHz internal low-power oscillator for Watchdog timer and Wake-up operation
- One PLL, up to 50 MHz, for high performance system operation
- 4 ~ 24 MHz external crystal input for precise timing operation
- 32.768 kHz external crystal input for RTC function and low-power operation system

◆ Timers

- 4 sets of 32-bit timers with 24-bit up-timer and one 8-bit pre-scale counter
- Independent clock source for each timer
- One-shot, periodic, toggle and continuous counting operation modes
- Event counting function
- Input capture function

◆ PWM

- Four 16-bit PWM generators with eight PWM outputs or four complementary paired PWM outputs
- Each PWM generator equipped with one clock source selector, one clock divider, one 8-bit pre-scale and one Dead-Zone generator for complementary paired PWM
- Up to eight 16-bit digital capture timers (shared with PWM timers) with eight rising/falling capture inputs
- Capture interrupt

◆ ADC

- 12-bit SAR ADC with 700 Ksps
- Up to 8-ch single-end input or 4-ch differential input
- Single scan/single cycle scan/continuous scan
- Each channel with individual result register
- Threshold voltage detection
- Conversion started by software programming or external input
- PDMA mode

◆ Communication Interface

- 3 UARTs, up to 1 Mbps with flow control
- 4 SPIs, clock up to 32 MHz (Master at 5V), 10 MHz (Slave at 5V)
- 2 I²Cs
- IrDA (SIR) and RS485

◆ I²S

- Interface with external audio CODEC
- Operate as either Master or Slave mode
- Capable of handling 8-, 16-, 24- and 32-bit word sizes
- Mono and stereo audio data

◆ USB 2.0 Full-Speed Device (NUC140 only)

- One set of USB 2.0 FS Device
- On-chip USB Transceiver
- 1 interrupt source with 4 interrupt events
- Control, Bulk, Interrupt and Isochronous transfers
- 6 programmable endpoints
- 512 bytes internal SRAM as USB buffer included
- Remote wake-up capability

◆ CAN 2.0

- CAN protocol version 2.0 part A and B
- Bit rates up to 1 Mbps
- 32 Message Objects
- Each message object has its own identifier mask
- Programmable FIFO mode (concatenation of Message Object)
- Maskable interrupt
- Disabled Automatic Re-transmission mode for Time Triggered CAN applications
- Power down wake-up function

◆ Analog Comparator

- Up to 2 analog comparators
- External input or internal band-gap voltage selectable at negative node
- Interrupt when compare results change
- Power down wake-up

◆ RTC

- Software compensation by setting frequency compensate register (FCR)
- RTC counter (second, minute, hour) and calendar counter (day, month, year)
- Alarm registers (second, minute, hour, day, month, year)

◆ EBI Bus (100-pin and 64-pin package only)

- Accessible space: 64K bytes in 8-bit mode or 128K bytes in 16-bit mode
- 8-/16-bit data width
- Byte write in 16-bit data width mode

◆ Brown-out Detector

- With 4 levels: 4.5V / 3.8V / 2.7V / 2.2V
- Brown-out interrupt and reset option

◆ GPIOs

- Up to 80 general-purpose I/O (GPIO) pins
- Four I/O modes:
 - Quasi bi-direction
 - Push-Pull output
 - Open-Drain output
 - Input only with high impedance
- TTL/Schmitt trigger input selectable
- All GPIO pins can be configured as interrupt source with edge/level setting

◆ Wide Operating Voltage Range

- 2.5V to 5.5V

◆ Operating Temperature

- -40°C ~ 85°C

◆ Packages (RoHS)

- LQFP48 (7x7mm)
- LQFP64 (10x10mm)
- LQFP100 (14x14mm)

Features of NUC200 series

◆ Core

- ARM® Cortex™-M0 core running up to 50 MHz
- One 24-bit system timer
- Low-power sleep mode
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with 4-levels of priority
- Serial Wire Debug (SWD) interface and 2 watchpoints/4 breakpoints

◆ Memory

- 32K/64K/128K bytes program memory (APROM)
- 4K bytes loader memory (LDROM)
- 8K/16K bytes embedded SRAM
- In System Programming (ISP) and In Application Programming (IAP) update APROM
- 2-wire In Circuit Programming (ICP) update APROM or LDROM or DataFlash
- Fast parallel programming mode to update APROM or LDROM or DataFlash

◆ Clock Control

- Flexible selection from different clock source
- 22.1184 MHz internal oscillator for system operation
 - Trimmed to $\pm 1\%$ at $+25^{\circ}\text{C}$ and $\text{VDD} = 3.3\text{V}$
 - Trimmed to $\pm 5\%$ at $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ and $\text{VDD} = 2.5\text{V} \sim 5.5\text{V}$
- 10 kHz internal low-power oscillator for Watchdog Timer and Wake-up operation
- One PLL, up to 50 MHz, for high performance system operation
- 4 ~ 24 MHz external crystal input for precise timing operation
- 32.768 kHz external crystal input for RTC function and low-power operation system

◆ PDMA (Peripheral DMA)

- 6 channels PDMA for automatic data transfer between SRAM and peripherals such as SPI, UART, I2S, PWM and ADC
- CRC calculation with four common polynomials, CRC-CCITT, CRC-8, CRC-16 and CRC-32

◆ Timers

- 4 sets of 32-bit timers with 24-bit counters and one 8-bit pre-scale counter
- Counter auto reload

◆ PWM

- Four 16-bit PWM generators with eight PWM outputs or complementary paired PWM outputs
- Each PWM generator equipped with one clock source selector, one clock divider, one 8-bit pre-scale and one Dead-Zone generator for complementary paired PWM
- Four 16-bit digital capture timers (shared with PWM timers) with four rising/falling capture inputs
- Capture interrupt

◆ Communication Interface

- 3 UARTs, up to 1 Mbps with flow control
- 4 SPIs, clock up to 36 MHz (Master at 5V), 18 MHz (Slave at 5V)
- 2 I2Cs
- IrDA (SIR) and RS485

◆ Smart Card Host (SC)

- Compliant to ISO-7816-3 T=0, T=1
- Three ISO-7816-3 ports

◆ I2S

- Interface with external audio CODEC
- Operate as either Master or Slave mode
- Capable of handling 8-, 16-, 24- and 32-bit word sizes
- Mono and stereo audio data

◆ ADC

- 12-bit SAR ADC with 800 Ksps
- Up to 8-ch single-end input or 4-ch differential input
- Single scan/single cycle scan/continuous scan
- Each channel with individual result register
- Threshold voltage detection
- Conversion started by software programming or external input
- PDMA mode
- Built-in temperature sensor with 1°C resolution

◆ Window Watchdog Timer

- 6-bit down counter with 11-bit prescale for wide range window selected

◆ RTC

- Software compensation by setting frequency compensate register (FCR)
- RTC counter (second, minute, hour) and calendar counter (day, month, year)
- Alarm registers (second, minute, hour, day, month, year)

◆ Analog Comparator

- Up to 2 analog comparators
- External input or internal band-gap voltage selectable at negative node
- Interrupt when compare results change

◆ Brown-out Detector

- With 4 levels: 4.5V / 3.8V / 2.7V / 2.2V
- Brown-out interrupt and reset option

◆ GPIOs

- Up to 83 general-purpose I/O (GPIO) pins
- Four I/O modes:
 - Quasi bi-direction
 - Push-Pull output
 - Open-Drain output
 - Input only with high impedance
- TTL/Schmitt trigger input selectable
- All GPIO pins can be configured as interrupt source with edge/level setting

◆ Operating Voltage Range

- 2.5V to 5.5V

◆ Operating Temperature

- $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$

◆ Packages (RoHS)

- LQFP48 (7x7mm)
- LQFP64 (7x7mm)
- LQFP100 (10x10mm)

Features of NUC220 series

◆ Core

- ARM® Cortex™-M0 core running up to 50 MHz
- One 24-bit system timer
- Low-power sleep mode
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with 4-levels of priority
- Serial Wire Debug (SWD) interface and 2 watchpoints/4 breakpoints

◆ Memory

- 32K/64K/128K bytes program memory (APROM)
- 4K bytes loader memory (LDROM)
- 8K/16K bytes embedded SRAM
- In System Programming (ISP) and In Application Programming (IAP) update APROM
- 2-wire In Circuit Programming (ICP) update APROM or LDROM or DataFlash
- Fast parallel programming mode to update APROM or LDROM or DataFlash

◆ Clock Control

- Flexible selection from different clock source
- 22.1184 MHz internal oscillator for system operation
 - Trimmed to $\pm 1\%$ at $+25^{\circ}\text{C}$ and $\text{VDD} = 3.3\text{V}$
 - Trimmed to $\pm 5\%$ at $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ and $\text{VDD} = 2.5\text{V} \sim 5.5\text{V}$
- 10 kHz internal low-power oscillator for Watchdog Timer and Wake-up operation
- One PLL, up to 50 MHz, for high performance system operation
- 4 ~ 24 MHz external crystal input for precise timing operation
- 32.768 kHz external crystal input for RTC function and low-power operation system

◆ PDMA (Peripheral DMA)

- 6 channels PDMA for automatic data transfer between SRAM and peripherals such as SPI, UART, I²S, PWM and ADC
- CRC calculation with four common polynomials, CRC-CCITT, CRC-8, CRC-16 and CRC-32

◆ Timers

- 4 sets of 32-bit timers with 24-bit counters and one 8-bit pre-scale counter
- Counter auto reload

◆ PWM

- Four 16-bit PWM generators with eight PWM outputs or four complementary paired PWM outputs
- Each PWM generator equipped with one clock source selector, one clock divider, one 8-bit pre-scale and one Dead-Zone generator for complementary paired PWM
- Up to four 16-bit digital capture timers (shared with PWM timers) with four rising/falling capture inputs
- Capture interrupt

◆ Communication Interface

- 3 UARTs, up to 1 Mbps with flow control
- 4 SPIs, clock up to 36 MHz (Master at 5V), 18 MHz (Slave at 5V)
- 2 I²Cs
- IrDA (SIR) and RS485

◆ USB 2.0 Full-Speed Device

- One set of USB 2.0 FS Device
- On-chip USB Transceiver
- 1 interrupt source with 4 interrupt events
- Control, Bulk, Interrupt and Isochronous transfers
- Auto suspend function when no bus signaling for 3 ms
- 6 programmable endpoints
- 512 bytes internal SRAM as USB buffer included
- Remote wake-up capability

◆ Smart Card Host (SC)

- Compliant to ISO-7816-3 T=0, T=1
- Three ISO-7816-3 ports

◆ I²S

- Interface with external audio CODEC
- Operate as either Master or Slave mode
- Capable of handling 8-, 16-, 24- and 32-bit word sizes
- Mono and stereo audio data

◆ ADC

- 12-bit SAR ADC with 760 Ksps
- Up to 8-ch single-end input or 4-ch differential input
- Single scan/single cycle scan/continuous scan
- Each channel with individual result register
- Threshold voltage detection
- Conversion started by software programming or external input
- PDMA mode
- Temperature sensor with 1°C resolution

◆ Window Watchdog Timer

- 6-bit down counter with 11-bit prescale for wide range window selected

◆ RTC

- Software compensation by setting frequency compensate register (FCR)
- RTC counter (second, minute, hour) and calendar counter (day, month, year)
- Alarm registers (second, minute, hour, day, month, year)

◆ Analog Comparator

- Up to 2 analog comparators
- External input or internal band-gap voltage selectable at negative node
- Interrupt when compare results change

◆ Brown-out Detector

- With 4 levels: 4.5V / 3.8V / 2.7V / 2.2V
- Brown-out interrupt and reset option

◆ GPIOs

- Up to 79 general-purpose I/O (GPIO) pins
- Four I/O modes:
 - Quasi bi-direction
 - Push-Pull output
 - Open-Drain output
 - Input only with high impedance
- TTL/Schmitt trigger input selectable
- All GPIO pins can be configured as interrupt source with edge/level setting

◆ Operating Voltage Range

- 2.5V to 5.5V

◆ Operating Temperature

- $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$

◆ Packages (RoHS)

- LQFP48 (7x7mm)
- LQFP64 (7x7mm)
- LQFP100 (10x10mm)

Features of M051 series

◆ Core

- ARM® Cortex™-M0 core running up to 50 MHz
- One 24-bit system timer
- Low-power sleep mode
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with 4-levels of priority
- Serial Wire Debug (SWD) interface and 2 watchpoints/4 breakpoints

◆ Memory

- 8K/16K/32K/64K bytes program memory (APROM)
- 4K bytes data memory (DataFlash)
- 4K bytes loader memory (LDROM)
- 4K bytes embedded SRAM
- In System Programming (ISP) update APROM
- 2-wire In Circuit Programming (ICP) update APROM or LDROM or DataFlash
- Fast parallel programming mode to update APROM or LDROM or DataFlash

◆ Clock Control

- Programmable system clock source
- 4 ~ 24 MHz external crystal input
- 22.1184 MHz internal oscillator (trimmed to 1% accuracy at room temp.)
- 10 kHz internal low-power oscillator for Watchdog timer and Wake-up in sleep mode
- PLL allows CPU operation up to the maximum 50 MHz

◆ Timers

- 4 sets of 32-bit timers, one 8-bit pre-scale counter with 24-bit up-timer for each timer
- Independent clock source for each timer
- 24-bit timer value is readable through TDR (Timer Data Register)
- One-shot, periodic and toggle operation modes
- Event counter function
- External capture/reset counter function equivalent to 8051 Timer2

◆ PWM

- Four 16-bit PWM generators with eight PWM outputs or four complementary paired PWM outputs
- Individual clock source, clock divider, 8-bit pre-scale and Dead-Zone generator for each PWM generator
- PWM interrupt synchronized to PWM period
- 16-bit digital capture timers (shared with PWM timers) with rising/falling capture inputs
- Capture interrupt, edge or center alignment

◆ ADC

- 12-bit SAR ADC with 760 Ksps
- Up to 8-ch single-ended input or 4-ch differential input
- Single mode/ burst mode/ single-cycle scan mode/ continuous scan mode
- 2['] complement/ un-signed format in differential mode conversion result
- Each channel with an individual result register
- Conversion value monitoring (or comparison) for threshold voltage detection
- Conversion can be started either by software trigger or external pin trigger

◆ Communication Interface

- 2 UARTs, up to 1 Mbps with flow control
- 2 SPIs, clock up to 16 MHz (Master at 5V), 10 MHz (Slave at 5V)
- 1 I²C
- IrDA (SIR) and RS485, LIN

◆ Analog Comparator

- 2 comparator analog modules
- External input or internal band-gap voltage selectable at negative node
- Interrupt when compare results change
- Power down wake-up

◆ Wake-up Sources

- Watchdog timer, all GPIOs, UARTs, Comparators, BOD

◆ EBI Bus

- Accessible space: 64K bytes in 8-bit mode or 128K bytes in 16-bit mode
- 8-bit/16-bit data width
- Byte-write in 16-bit data width

◆ Brown-out Detector

- With 4 levels: 4.5V / 3.8V / 2.7V / 2.2V
- Brown-out interrupt and reset option

◆ GPIOs

- Up to 40 general-purpose I/O (GPIO) pins
- Four I/O modes:
 - Quasi bi-direction
 - Push-Pull output
 - Open-Drain output
 - Input only with high impedance
- TTL/Schmitt trigger input selectable
- All GPIO pins can be configured as interrupt source with edge/level setting

◆ Wide Operating Voltage Range

- 2.5V to 5.5V

◆ Operating Temperature

- - 40°C ~ 85°C

◆ Packages (RoHS)

- QFN33 (4x4mm)
- QFN33 (5x5mm)
- LQFP48 (7x7mm)

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Features of Mini51 series

◆ Core

- ARM® Cortex™-M0 core running up to 24 MHz
- One 24-bit system timer
- Low-power Idle mode
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with 4-levels of priority
- Serial Wire Debug (SWD) interface and 2 watchpoints/4 breakpoints

◆ Memory

- 4K/8K/16K bytes program memory (APROM)
- Configurable 0/1/2/4K bytes data memory (DataFlash)
- 2K bytes loader memory (LDROM)
- 2K bytes embedded SRAM
- In System Programming (ISP) update APROM
- 2-wire In Circuit Programming (ICP) update APROM or LDROM or DataFlash
- Fast parallel programming mode to update APROM or LDROM or DataFlash

◆ Clock Control

- Programmable system clock source
 - Switch clock sources on-the-fly
- 4 ~ 24 MHz external crystal input
- 22.1184 MHz internal oscillator (trimmed to 1% accuracy at room temp.)
 - Dynamic calibrating the 22.1184 MHz RC OSC to +/-1% from -40°C to 85°C by external 32.768 kHz external crystal input
- 10 kHz internal low-power oscillator for Watchdog timer and Idle mode wake-up
- 32.768 kHz external crystal input

◆ Timers

- 2 sets of 32-bit timers, one 8-bit pre-scale counter with 24-bit up-timer for each timer.
- Event counter mode
- Toggle output mode
- Pulse width capture mode for frequency or pulse width measurement

◆ PWM

- Three 16-bit PWM generators with six PWM outputs or three complementary paired PWM outputs
- Individual clock source, clock divider, 8-bit pre-scale and Dead-Zone generator for each PWM generator
- PWM interrupt synchronized to PWM period
- Edge or center alignment
- Fault detection

◆ ADC

- 10-bit SAR ADC with 150 Ksps
- Up to 8-ch single-ended input and one internal input from band-gap
- Conversion can be started either by software or external pin trigger

◆ Communication Interface

- 1 UART
- 1 SPI, clock up to 24 MHz (Master at 5V), 4 MHz (Slave at 5V)
- 1 I²Cs Master/Slave
- IrDA (SIR) and RS485, LIN

◆ Analog Comparator

- 2 analog comparators with programmable 16-level internal voltage reference
- External input or internal band-gap voltage selectable at negative node

◆ Wake-Up Sources

- Timer, Watchdog timer, all GPIOs, UARTs, Comparators, BOD

◆ Brown-out Detector

- With 3 levels: 3.8V / 2.7V / 2.0V
- Brown-out interrupt and reset option

◆ GPIOs

- Up to 30 general-purpose I/O (GPIO) pins
- Four I/O modes:
 - Quasi bi-direction
 - Push-Pull output
 - Open-Drain output
 - Input only with high impedance
- TTL/Schmitt trigger input selectable
- All GPIO pins can be configured as interrupt source with edge/level setting

◆ Wide Operating Voltage Range

- 2.5V to 5.5V

◆ Operating Temperature

- -40°C ~ 85°C

◆ Packages (RoHS)

- QFN33 (5x5mm)
- LQFP48 (7x7mm)

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Features of Nano100 series

◆ Core

- ARM® Cortex™-M0 core running up to 42 MHz
- One 24-bit system tick timer
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with 4-levels of priority
- Serial Wire Debug (SWD) interface and 2 watch points / 4 breakpoints

◆ Ultra Low Power Features

- Single power supply: 1.8V ~ 3.6V
- Normal mode: 200 uA/MHz
- Idle mode: CPU stop, 75 uA/MHz
- Power-down mode: CPU and all clocks stop, RAM retention
 - 1 uA, 32.768 kHz RTC OFF
 - 2.5 uA, 32.768 kHz RTC ON
- Wake-up time: 7us (from wake-up event to first ARM® Cortex™-M0 core valid clock)

◆ Memory

- 32K/64K/128K bytes program memory (APROM)
- 4K bytes flash loader memory (LDROM)
- 512 bytes page erase for flash memory
- 8K/16K bytes embedded SRAM
- Configurable data flash size (data flash shared with APROM)

◆ Clock Control

- On-chip PLL, up to 120 MHz for high performance system operation
- 12 MHz internal oscillator
 - $\pm 2\%$ at -40°C ~ 85°C, 1.8V ~ 3.6V
 - $\pm 0.25\%$ at -40°C ~ 85°C, 1.8V ~ 3.6V by 32.768 kHz crystal auto calibration
- 10 kHz internal low-power oscillator for Watchdog timer and low-power operation system
- 4 ~ 24 MHz external crystal input for precise timing operation
- 32.768 kHz external crystal input for RTC function and low-power operation system

◆ Timers

- 4 sets of 32-bit timers with 24-bit up-timer and one 8-bit pre-scale counter
- Watchdog timer with 8-bit selectable time out period
- Event counter, pulse width capture mode and inter-timer trigger mode

◆ DMA

- 8 channels DMA (6-channel PDMA, 1-channel VDMA, and 1-channel CRC) for peripheral timers, UARTs, SPIs, I²S, ADC, DAC and PWM

◆ RTC

- Software compensation by setting frequency compensate register (FCR)
- RTC counter (second, minute, hour) and calendar counter (day, month, year)
- Alarm registers (second, minute, hour, day, month, year)
- 80 byte backup register with snoop pin detection

◆ PWM/Capture

- 8 channels 16-bit PWM
- 8 channels 16-bit digital capture timers with eight capture inputs (rising, falling or both)
- Dead-Zone generator for complementary paired PWM

◆ ADC/DAC

- 12 channels 12-bit SAR ADC up to 2 Msps
- Two 12-bit DACs up to 400 Ksps
- Three reference voltage sources from V_{REF} pin, Internal reference voltage (Int_V_{REF}) and AVDD
- Internal reference voltage (Int_V_{REF}) with two output voltage options: 1.8V / 2.5V
- On-chip temperature sensor

◆ Communication Interface

- 5 UARTs (2 dedicated UARTs with flow control), up to 1 Mbps
- 3 SPIs, clock up to 32 MHz (Master at 3V), 16 MHz (Slave at 3V)
- 2 I²Cs
- 3 ISO7816-3 (Smart card interface)
- RS485, LIN and IrDA (SIR)

◆ I²S

- Interface with external audio CODEC
- Operates as either Master or Slave mode
- Capable of handling 8-, 16-, 24- and 32-bit word sizes
- Mono and stereo audio data

◆ Capacitive Touch Key

- Up to 16 touch keys

◆ Wake-up Sources

- Timers, RTC, Watchdog timer, all GPIOs, UARTs, SPIs

◆ EBI Bus

- Accessible space: 64K bytes in 8-bit mode or 128K bytes in 16-bit mode
- 8-/16-bit data width

◆ Brown-out Detector

- With 3 levels: 1.7V / 2.0V / 2.5V
- Brown-out interrupt and reset option

◆ GPIOs

- Up to 86 general-purpose I/O (GPIO) pins
- Three I/O modes: Push-Pull output, Open-Drain output, Input only with high impedance
- All inputs with Schmitt trigger and programmable hardware de-bounce
- All I/O pins can be configured as interrupt source with edge/level setting
- Input 5V tolerance

◆ Wide Operating Voltage Range

- 1.8V to 3.6V

◆ Unique ID (UID)

- 96-bit UID

◆ Operating Temperature

- -40°C ~ 85°C

◆ Packages (RoHS)

- LQFP48 (7x7mm)
- LQFP64 (7x7mm)
- LQFP128 (14x14mm)

Features of Nano110 series

◆ Core

- ARM® Cortex™-M0 core running up to 42 MHz
- One 24-bit system tick timer
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with 4-levels of priority
- Serial Wire Debug (SWD) interface and 2 watch points / 4 breakpoints

◆ Ultra Low Power Features

- Single power supply: 1.8V ~ 3.6V
- Normal mode: 200 uA/MHz
- Idle mode: CPU stop, 75 uA/MHz
- Power-down mode: CPU and all clocks stop, RAM retention
 - 1 uA, 32.768 kHz RTC OFF
 - 2.5 uA, 32.768 kHz RTC ON
 - 8 uA, 32.768 kHz RTC ON, LCD ON without panel loading
- Wake-up time: 7us (from wake-up event to first ARM® Cortex™-M0 core valid clock)

◆ Memory

- 32K/64K/128K bytes program memory (APROM)
- 4K bytes loader memory (LDR0M)
- 512 bytes page erase for flash memory
- 8K/16K bytes embedded SRAM
- Configurable data flash size (data flash shared with APROM)

◆ Clock Control

- On-chip PLL, up to 120 MHz for high performance system operation
- 12 MHz internal oscillator
 - $\pm 2\%$ at -40°C ~ 85°C, 1.8V ~ 3.6V
 - $\pm 0.25\%$ at -40°C ~ 85°C, 1.8V ~ 3.6V by 32.768 kHz crystal auto calibration
- 10 kHz internal low-power oscillator for Watchdog timer and low-power operation system
- 4 ~ 24 MHz external crystal input for precise timing operation
- 32.768 kHz external crystal input for RTC function and low-power operation system

◆ Timers

- 4 sets of 32-bit timers with 24-bit up-timer and one 8-bit pre-scale counter
- Watchdog timer with 8-bit selectable time out period
- Event counter, pulse width capture mode and inter-timer trigger mode

◆ DMA

- 8 channels DMA (6-channel PDMA, 1-channel VDMA, and 1-channel CRC) for peripheral timers, UARTs, SPIs, I²S, ADC, DAC and PWM

◆ RTC

- Software compensation by setting frequency compensate register (FCR)
- RTC counter (second, minute, hour) and calendar counter (day, month, year)
- Alarm registers (second, minute, hour, day, month, year)
- 80 byte backup register with snoop pin detection

◆ PWM/Capture

- 8 channels 16-bit PWM
- 8 channels 16-bit digital capture timers with eight capture inputs (rising, falling or both)
- Dead-Zone generator for complementary paired PWM

◆ ADC/DAC

- 12 channels 12-bit SAR ADC up to 2 Msps
- Two 12-bit DACs up to 400 Ksps
- Three reference voltage sources from V_{REF} pin, Internal reference voltage (Int_V_{REF}) and AVDD
- Internal reference voltage (Int_V_{REF}) with two output voltage options: 1.8V / 2.5V
- On-chip temperature sensor

◆ LCD Driver

- Up to 160 dots (4 Com x 40 Segment) or 228 dots (6 Com x 38 Segment)
- R and C type driver
- Adjustable contrast and blinking
- Selection 1/2, 1/3, 1/4, 1/5, 1/6 duty and statics, 1/2, 1/3 bias
- Configurable Charge pump frequency

◆ Communication Interface

- 5 UARTs (2 dedicated UARTs with flow control), up to 1 Mbps
- 3 SPIs, clock up to 32 MHz (Master at 3V), 16 MHz (Slave at 3V)
- 2 I²Cs
- 3 ISO7816-3 (Smart card interface)
- RS485, LIN and IrDA (SIR)

◆ I²S

- Interface with external audio CODEC
- Operates as either Master or Slave mode
- Capable of handling 8-, 16-, 24- and 32-bit word sizes
- Mono and stereo audio data

◆ Capacitive Touch Key

- Up to 16 touch keys

◆ Wake-up Sources

- Timers, RTC, Watchdog timer, all GPIOs, UARTs, SPIs

◆ EBI Bus

- Accessible space: 64K bytes in 8-bit mode or 128K bytes in 16-bit mode
- 8-/16-bit data width

◆ Brown-out Detector

- With 3 levels: 1.7V / 2.0V / 2.5V
- Brown-out interrupt and reset option

◆ GPIOs

- Up to 86 general-purpose I/O (GPIO) pins
- Three I/O modes: Push-Pull output, Open-Drain output, Input only with high impedance
- All inputs with Schmitt trigger and programmable hardware de-bounce
- All I/O pins can be configured as interrupt source with edge/level setting
- Input 5V tolerance

◆ Wide Operating Voltage Range

- 1.8V to 3.6V

◆ Unique ID (UID)

- 96-bit UID

◆ Operating Temperature

- -40°C ~ 85°C

◆ Packages (RoHS)

- LQFP64 (7x7mm)
- LQFP128 (14x14mm)

Features of Nano120 series

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◆ Core

- ARM® Cortex™-M0 core running up to 42 MHz
- One 24-bit system tick timer
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with 4-levels of priority
- Serial Wire Debug (SWD) interface and 2 watchpoints / 4 breakpoints

◆ Ultra Low Power Features

- Single power supply: 1.8V ~ 3.6V
- Normal mode: 200 uA/MHz
- Idle mode: CPU stop, 75 uA/MHz
- Power-down mode: CPU and all clocks stop, RAM retention

■ 1 uA, 32.768 kHz RTC OFF

- 2.5 uA, 32.768 kHz RTC ON

- Wake-up time: 7us (from wake-up event to first ARM® Cortex™-M0 core valid clock)

◆ Memory

- 32K/64K/128K bytes program memory (APROM)
- 4K bytes loader memory (LDROM)
- 512 bytes page erase for flash memory
- 8K/16K bytes embedded SRAM
- Configurable data flash size (data flash shared with APROM)

◆ Clock Control

- On-chip PLL, up to 120 MHz for high performance system operation and USB application (48 MHz)
- 12 MHz internal oscillator
 - $\pm 2\%$ at -40°C ~ 85°C, 1.8V ~ 3.6V
 - $\pm 0.25\%$ at -40°C ~ 85°C, 1.8V ~ 3.6V by 32.768 kHz crystal auto calibration
- 10 kHz internal low-power oscillator for Watchdog timer and low-power operation system
- 4 ~ 24 MHz external crystal input for precise timing operation
- 32.768 kHz external crystal input for RTC function and low-power operation system

◆ Timers

- 4 sets of 32-bit timers with 24-bit up-timer and one 8-bit pre-scale counter
- Watchdog timer with 8-bit selectable time out period
- Event counter, pulse width capture mode and inter-timer trigger mode

◆ DMA

- 8 channels DMA (6-channel PDMA, 1-channel VDMA, and 1-channel CRC) for peripheral timers, UARTs, SPIs, I²S, USB, ADC, DAC and PWM

◆ RTC

- Software compensation by setting frequency compensate register (FCR)
- RTC counter (second, minute, hour) and calendar counter (day, month, year)
- Alarm registers (second, minute, hour, day, month, year)
- 80 byte backup register with snooze pin detection

◆ PWM/Capture

- 8 channels 16-bit PWM
- 8 channels 16-bit digital capture timers with eight capture inputs (rising, falling or both)
- Dead-Zone generator for complementary paired PWM

◆ ADC/DAC

- 12 channels 12-bit SAR ADC up to 2 Msps
- Two 12-bit DACs up to 400 Ksps
- Three reference voltage sources from V_{REF} pin, Internal reference voltage (Int_V_{REF}) and AVDD
- Internal reference voltage (Int_V_{REF}) with two output voltage options: 1.8V / 2.5V
- On-chip temperature sensor

◆ USB 2.0 Full-Speed Device

- One set of USB 2.0 FS Device
- On-chip USB Transceiver
- Control, Bulk, Interrupt and Isochronous transfers
- 8 programmable endpoints
- 512 bytes internal SRAM as USB buffer
- On-chip 5V to 3.3V LDO for USB transceiver

◆ Communication Interface

- 5 UARTs (2 dedicated UARTs with flow control), up to 1 Mbps
- 3 SPIs, clock up to 32 MHz (Master at 3V), 16 MHz (Slave at 3V)
- 2 I²Cs
- 3 ISO7816-3 (Smart card interface)
- RS485, LIN and IrDA (SIR)

◆ I²S

- Interface with external audio CODEC
- Operates as either Master or Slave mode
- Capable of handling 8-, 16-, 24- and 32-bit word sizes
- Mono and stereo audio data

◆ Capacitive Touch Key

- Up to 16 touch keys

◆ Wake-up Sources

- Timers, RTC, Watchdog timer, all GPIOs, UARTs, SPIs, USB

◆ EBI Bus

- Accessible space: 64K bytes in 8-bit mode or 128K bytes in 16-bit mode
- 8-/16-bit data width

◆ Brown-out Detector

- With 3 levels: 1.7V / 2.0V / 2.5V
- Brown-out interrupt and reset option

◆ GPIOs

- Up to 86 general-purpose I/O (GPIO) pins
- Three I/O modes: Push-Pull output, Open-Drain output, Input only with high impedance
- All inputs with Schmitt trigger and programmable hardware de-bounce
- All I/O pins can be configured as interrupt source with edge/level setting
- Input 5V tolerance

◆ Wide Operating Voltage Range

- 1.8V to 3.6V

◆ Unique ID (UID)

- 96-bit UID

◆ Operating Temperature

- -40°C ~ 85°C

◆ Packages (RoHS)

- LQFP48 (7x7mm)
- LQFP64 (7x7mm)
- LQFP128 (14x14mm)

Features of Nano130 series

◆ Core

- ARM® Cortex™-M0 core running up to 42 MHz
- One 24-bit system tick timer
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with 4-levels of priority
- Serial Wire Debug (SWD) interface and 2 watchpoints / 4 breakpoints

◆ Ultra Low Power Features

- Single power supply: 1.8V ~ 3.6V
- Normal mode: 200 uA/MHz
- Idle mode: CPU stop, 75 uA/MHz
- Power-down mode: CPU and all clocks stop, RAM retention
 - 1 uA, 32.768 kHz RTC OFF
 - 2.5 uA, 32.768 kHz RTC ON
 - 10 uA, 32.768 kHz RTC ON, LCD ON without panel loading
- Wake-up time: 7us (from wake-up event to first ARM® Cortex™-M0 core valid clock)

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- Internal reference voltage (Int_V_{REF}) with two output voltage options: 1.8V / 2.5V
- On-chip temperature sensor

◆ LCD Driver

- Up to 160 dots (4 Com x 40 Segment) or 228 dots (6 Com x 38 Segment)
- R and C type driver
- Adjustable contrast and blinking
- Selection 1/2, 1/3, 1/4, 1/5, 1/6 duty and statics, 1/2, 1/3 bias
- Configurable Charge pump frequency

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