Welcome to E-XFL.COM

What is "Embedded - Microcontrollers"?

"Embedded - Microcontrollers" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "Embedded - Microcontrollers"

Details	
Product Status	Active
Core Processor	ARM® Cortex®-M0
Core Size	32-Bit Single-Core
Speed	42MHz
Connectivity	EBI/EMI, I²C, SPI, UART/USART, USB
Peripherals	Brown-out Detect/Reset, DMA, I²S, POR, PWM, WDT
Number of I/O	86
Program Memory Size	128KB (128K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	16K x 8
Voltage - Supply (Vcc/Vdd)	1.8V ~ 3.6V
Data Converters	A/D 8x12b; D/A 2x12b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 85°C (TA)
Mounting Type	Surface Mount
Package / Case	128-LQFP
Supplier Device Package	128-LQFP (14x14)
Purchase URL	https://www.e-xfl.com/product-detail/nuvoton-technology-corporation-america/nano120ke3bn

LIST OF FIGURES

2 FEATURES

The equipped features are dependent on the product line and their sub products.

2.1 Nano100 Features – Base Line

- Core
  - ARM® Cortex™-M0 core running up to 42 MHz
  - One 24-bit system timer
  - Supports Low Power Sleep mode
  - Single-cycle 32-bit hardware multiplier
  - NVIC for the 32 interrupt inputs, each with 4-levels of priority
  - Serial Wire Debug supports with 2 watchpoints/4 breakpoints
- Brown-out
  - Built-in 2.5V/2.0V/1.7V BOD for wide operating voltage range operation
- Flash EPROM Memory
  - Runs up to 42 MHz with zero wait state for discontinuous address read access
  - 64K/32K/123K bytes application program memory (APROM)
  - 4 KB in system programming (ISP) loader program memory (LDROM)
  - Programmable data flash start address and memory size with 512 bytes page erase unit
  - In System Program (ISP)/In Application Program (IAP) to update on-chip Flash EPROM
- SRAM Memory
  - 16K/8K bytes embedded SRAM
  - Supports DMA mode
- DMA: Supports 8 channels: one VDMA channel, 6 PDMA channels and one CRC channel
  - VDMA
    - Memory-to-memory transfer
    - Supports block transfer with stride
    - Supports word/half-word/byte boundary address
    - Supports address direction: increment and decrement
  - PDMA
    - Peripheral-to-memory, memory-to-peripheral, and memory-to-memory transfer
    - Supports word boundary address
    - Supports word alignment transfer length in memory-to-memory mode
    - Supports word/half-word/byte alignment transfer length in peripheral-to-memory and memory-to-peripheral mode

- Supports hardware warm reset sequence process
- Supports hardware deactivation sequence process
- Supports hardware auto deactivation sequence when detect the card is removal
- Supports UART mode (Half Duplex)

- EBI (External bus interface) support
  - Accessible space: 64 KB in 8-bit mode or 128 KB in 16-bit mode
  - Supports 8bit/16bit data width
  - Supports byte write in 16-bit Data Width mode
- One built-in temperature sensor with 1℃ resolution
- 96-bit unique ID
- 128-bit unique customer ID
- Operating Temperature: -40℃~85℃
- Packages:
  - All Green package (RoHS)
  - LQFP 128-pin(14x14) / 64-pin(7x7) / 48-pin(7x7) / QFN 48-pin(7x7)

- Full duplex synchronous serial data transfer
- Variable length of transfer data from 4 to 32 bits
- MSB or LSB first data transfer
- RX and TX on both rising or falling edge of serial clock independently
- Two slave/device select lines when used as the master, and 1 slave/device select line when used as the slave
- Supports byte suspend mode in 32-bit transmission
- Supports two channel PDMA request, one for transmit and another for receive
- Supports three wire, no slave select signal, bi-direction interface
- Wake system up from Power-down or Idle mode

- I^2C
  - Up to two sets of I^2C device
  - Master/Slave up to 1Mbit/s
  - Bi-directional data transfer between masters and slaves
  - Multi-master bus (no central master)
  - Arbitration between simultaneously transmitting masters without corruption of serial data on the bus
  - Serial clock synchronization allowing devices with different bit rates to communicate via one serial bus
  - Serial clock synchronization can be used as a handshake mechanism to suspend and resume serial transfer
  - Built-in 14-bit time-out counter will request the I^2C interrupt if the I^2C bus hangs up and timer-out counter overflows
  - Programmable clocks allowing for versatile rate control
  - Supports 7-bit addressing mode
  - Supports multiple address recognition (four slave addresses with mask option)
- I^2S
  - Interface with external audio CODEC
  - Operate as either Master or Slave mode
  - Capable of handling 8, 16, 24 and 32 bit word sizes
  - Supports Mono and stereo audio data
  - Supports I^2S and MSB justified data format
  - Provides two 8 word FIFO data buffers: one for transmitting and the other for receiving
  - Generates interrupt requests when buffer levels cross a programmable boundary
  - Supports two PDMA requests: one for transmitting and the other for receiving
- ADC
  - 12-bit SAR ADC up to 2Msps conversion rate

3.3.1.2 NuMicro™ Nano100 LQFP 64-pin

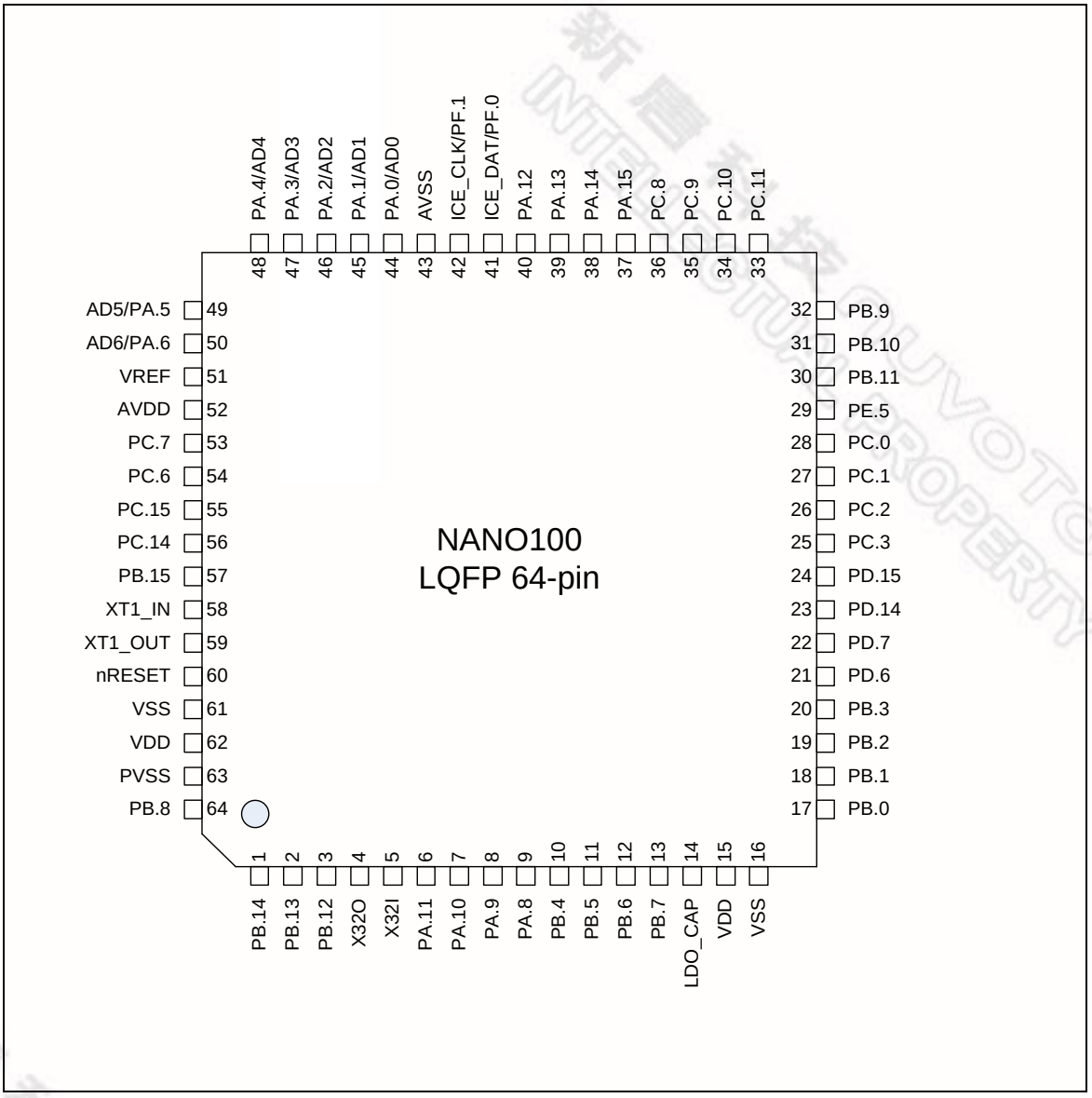

Figure 3-3 NuMicro™ Nano100 LQFP 64-pin Diagram

3.3.1.3 NuMicro™ Nano100 LQFP/QFN 48-pin

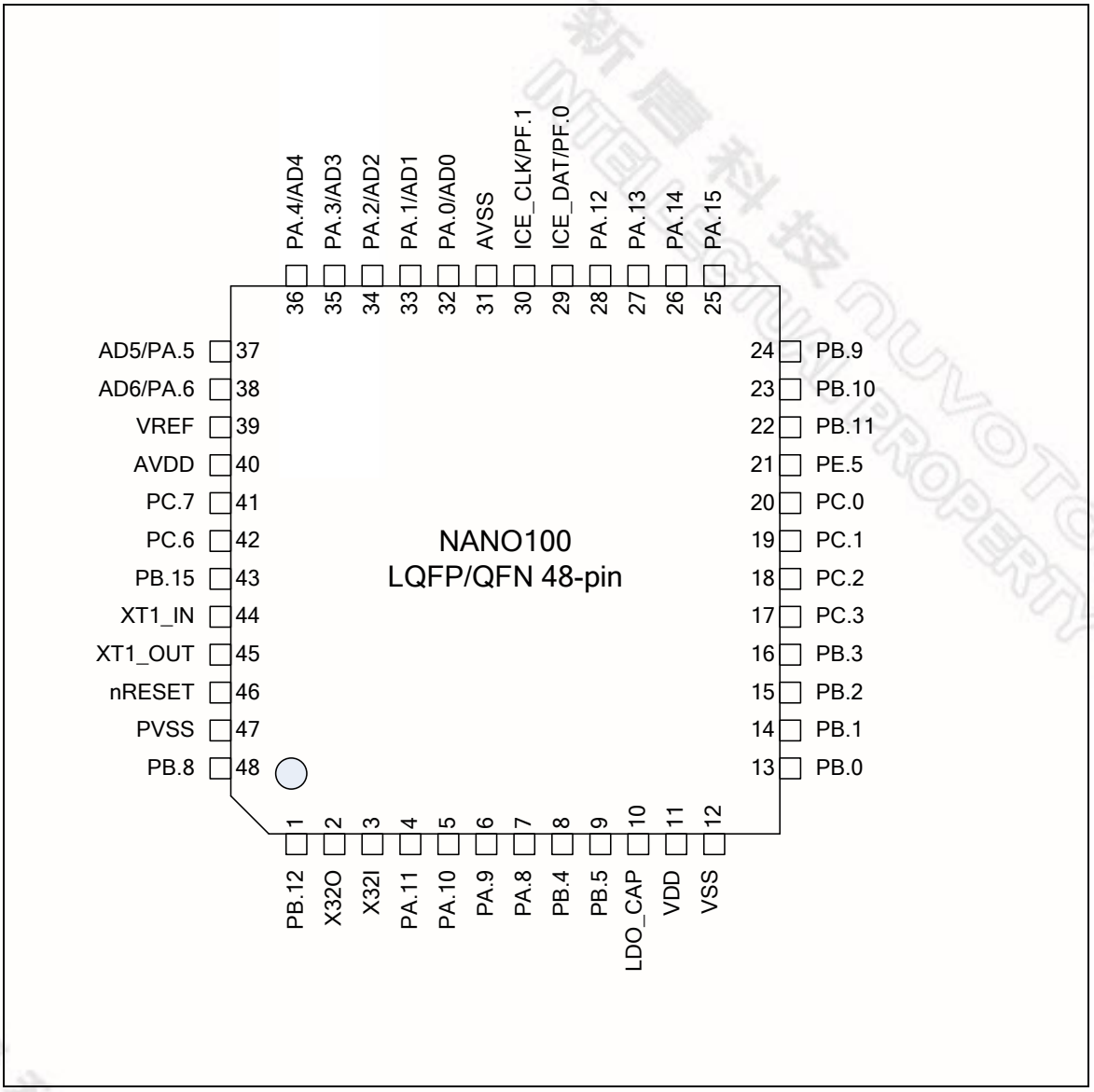

Figure 3-4 NuMicro™ Nano100 LQFP 48-pin Diagram

Pin No.			Pin Name	Pin Type	Description
LQFP 128-pin	LQFP 64-pin	LQFP/QFN 48-pin			
			EBI_nWRH	**O**	EBI high byte write enable output pin
			SPI1_SS0	**I/O**	SPI1 1st slave select pin
48	21		PD.6	**I/O**	General purpose digital I/O pin
49	22		PD.7	**I/O**	General purpose digital I/O pin
50	23		PD.14	**I/O**	General purpose digital I/O pin
51	24		PD.15	**I/O**	General purpose digital I/O pin
52			PC.5	**I/O**	General purpose digital I/O pin
			SPI0_MOSI1	**I/O**	SPI0 2nd MOSI (Master Out, Slave In) pin
53			PC.4	**I/O**	General purpose digital I/O pin
			SPI0_MISO1	**I/O**	SPI0 2nd MISO (Master In, Slave Out) pin
54	25	17	PC.3	**I/O**	General purpose digital I/O pin
			SPI0_MOSI0	**I/O**	SPI0 1st MOSI (Master Out, Slave In) pin
			I2S_DO	**O**	I2S data output
			SC1_RST	**O**	SmartCard1 RST pin
55	26	18	PC.2	**I/O**	General purpose digital I/O pin
			SPI0_MISO0	**I/O**	SPI0 1st MISO (Master In, Slave Out) pin
			I2S_DI	**I**	I2S data input
			SC1_PWR	**O**	SmartCard1 PWR pin
56	27	19	PC.1	**I/O**	General purpose digital I/O pin
			SPI0_CLK	**I/O**	SPI0 serial clock pin
			I2S_BCLK	**I/O**	I2S bit clock pin
			SC1_DAT	**I/O**	SmartCard1 DATA pin(SC1_UART_RXD)
57	28	20	PC.0 / MCLKO	**I/O**	General purpose digital I/O pin / Module clock output pin
			SPI0_SS0	**I/O**	SPI0 1st slave select pin
			I2S_LRCLK	**I/O**	I2S left right channel clock
			SC1_CLK	**O**	SmartCard1 clock pin(SC1_UART_TXD)
58			PE.6	**I/O**	General purpose digital I/O pin
59					NC
60					NC

3.4.2 NuMicro™ Nano110 Pin Description

Pin No.			Pin Name	Pin Type	Description
LQFP 128-pin	LQFP 64-pin	LQFP 48-pin			
1			PE.13	I/O	General purpose digital I/O pin
			LCD_SEG27	O	LCD segment output 27 at LQFP128
2	1		PB.14	I/O	General purpose digital I/O pin
			INT0	I	External interrupt0 input pin
			SC2_CD	I	SmartCard2 card detect
			SPI2_SS1	I/O	SPI2 2nd slave select pin
			LCD_SEG12	O	LCD segment output 12 at LQFP64
			LCD_SEG26	O	LCD segment output 26 at LQFP128
3	2		PB.13	I/O	General purpose digital I/O pin
			EBI_AD1	I/O	EBI Address/Data bus bit1
			LCD_SEG11	O	LCD segment output 11 at LQFP64
			LCD_SEG25	O	LCD segment output 25 at LQFP128
4	3		PB.12	I/O	General purpose digital I/O pin
			EBI_AD0	I/O	EBI Address/Data bus bit0
			FCLKO	O	Frequency Divider output pin
			LCD_SEG10	O	LCD segment output 10 at LQFP64
			LCD_SEG24	O	LCD segment output 24 at LQFP128
5					NC
6	4		X32O	O	External 32.768 kHz crystal output pin
7	5		X32I	I	External 32.768 kHz crystal input pin
8					NC
9	6		PA.11	I/O	General purpose digital I/O pin
			I2C1_SCL	I/O	I2C1 clock pin
			EBI_nRD	O	EBI read enable output pin
			SC0_RST	O	SmartCard0 RST pin
			SPI2_MOSI0	I/O	SPI2 1st MOSI (Master Out, Slave In) pin
			LCD_SEG9	O	LCD segment output 9 at LQFP64
			LCD_SEG23	O	LCD segment output 23 at LQFP128
10	7		PA.10	I/O	General purpose digital I/O pin

Pin No.			Pin Name	Pin Type	Description
LQFP 128-pin	LQFP 64-pin	LQFP 48-pin			
			LCD_SEG0	O	LCD segment output 0 at LQFP64 (or as LCD_COM4)
			LCD_SEG6	O	LCD segment output 6 at LQFP128
46	19		PB.2	I/O	General purpose digital I/O pin
			UART0_RTSn	O	UART0 Request to Send output pin
			EBI_nWRL	O	EBI low byte write enable output pin
			SPI1_CLK	I/O	SPI1 serial clock pin
			LCD_COM3	O	LCD common output 3 at LQFP64
			LCD_SEG5	O	LCD segment output 5 at LQFP128
47	20		PB.3	I/O	General purpose digital I/O pin
			UART0_CTSn	I	UART0 Clear to Send input pin
			EBI_nWRH	O	EBI high byte write enable output pin
			SPI1_SS0	I/O	SPI1 1st slave select pin
			LCD_COM2	O	LCD common output 2 at LQFP64
			LCD_SEG4	O	LCD segment output 4 at LQFP128
48	21		PD.6	I/O	General purpose digital I/O pin
			LCD_SEG3	O	LCD segment output 3 at LQFP128
49	22		PD.7	I/O	General purpose digital I/O pin
			LCD_SEG2	O	LCD segment output 2 at LQFP128
50	23		PD.14	I/O	General purpose digital I/O pin
			LCD_SEG1	O	LCD segment output 1 at LQFP128 (or as LCD_COM5)
51	24		PD.15	I/O	General purpose digital I/O pin
			LCD_SEG0	O	LCD segment output 0 at LQFP128 (or as LCD_COM4)
52			PC.5	I/O	General purpose digital I/O pin
			SPI0_MOSI1	I/O	SPI0 2nd MOSI (Master Out, Slave In) pin
			LCD_COM3	O	LCD common output 3 at LQFP128
53			PC.4	I/O	General purpose digital I/O pin
			SPI0_MISO1	I/O	SPI0 2nd MISO (Master In, Slave Out) pin
			LCD_COM2	O	LCD common output 2 at LQFP128

Pin No.			Pin Name	Pin Type	Description
LQFP 128-pin	LQFP 64-pin	LQFP 48-pin			
54	25		PC.3	**I/O**	General purpose digital I/O pin
			SPI0_MOSI0	**I/O**	SPI0 1st MOSI (Master Out, Slave In) pin
			I2S_DO	**O**	I2S data output
			SC1_RST	**O**	SmartCard1 RST pin
			LCD_COM1	**O**	LCD common output 1 at LQFP64
			LCD_COM1	**O**	LCD common output 1 at LQFP128
55	26		PC.2	**I/O**	General purpose digital I/O pin
			SPI0_MISO0	**I/O**	SPI0 1st MISO (Master In, Slave Out) pin
			I2S_DI	**I**	I2S data input
			SC1_PWR	**O**	SmartCard1 PWR pin
			LCD_COM0	**O**	LCD common output 0 at LQFP64
			LCD_COM0	**O**	LCD common output 0 at LQFP128
56	27		PC.1	**I/O**	General purpose digital I/O pin
			SPI0_CLK	**I/O**	SPI0 serial clock pin
			I2S_BCLK	**I/O**	I2S bit clock pin
			SC1_DAT	**I/O**	SmartCard1 DATA pin(SC1_UART_RXD)
			LCD_DH2	**O**	LCD externl capacitor pin of charge pump circuit at LQFP64
			LCD_DH2	**O**	LCD externl capacitor pin of charge pump circuit at LQFP128
57	28		PC.0 / MCLKO	**I/O**	General purpose digital I/O pin / Module clock output pin
			SPI0_SS0	**I/O**	SPI0 1st slave select pin
			I2S_LRCLK	**I/O**	I2S left right channel clock
			SC1_CLK	**O**	SmartCard1 clock pin(SC1_UART_TXD)
			LCD_DH1	**O**	LCD externl capacitor pin of charge pump circuit at LQFP64
			LCD_DH1	**O**	LCD externl capacitor pin of charge pump circuit at LQFP128
58			PE.6	**I/O**	General purpose digital I/O pin
59	29		LCD_VLCD	**AO**	LCD power supply pin
60					NC

Pin No.			Pin Name	Pin Type	Description
LQFP 128-pin	LQFP 64-pin	LQFP 48-pin			
			INT0	I	External interrupt0 input pin
81	42		ICE_CLK	I	Serial Wired Debugger Clock pin
			PF.1	I/O	General purpose digital I/O pin
			FCLKO	O	Frequency Divider output pin
			INT1	I	External interrupt1 input pin
82					NC
83			VDD	P	Power supply for I/O ports and LDO source for internal PLL and digital circuit
84					NC
85			VSS	P	Ground
86			VSS	P	Ground
87	43		AVSS	AP	Ground Pin for analog circuit
88			AVSS	AP	Ground Pin for analog circuit
89	44		PA.0	I/O	General purpose digital I/O pin
			AD0	AI	ADC analog input0
			SC2_CD	I	SmartCard2 card detect
90	45		PA.1	I/O	General purpose digital I/O pin
			AD1	AI	ADC analog input1
			EBI_AD12	I/O	EBI Address/Data bus bit12
91	46		PA.2	I/O	General purpose digital I/O pin
			AD2	AI	ADC analog input2
			EBI_AD11	I/O	EBI Address/Data bus bit11
			UART1_RXD	I	UART1 Data receiver input pin
			LCD_SEG23*	AO	LCD segment output 23 at LQFP64
92	47		PA.3	I/O	General purpose digital I/O pin
			AD3	AI	ADC analog input3
			EBI_AD10	I/O	EBI Address/Data bus bit10
			UART1_TXD	O	UART1 Data transmitter output pin
			LCD_SEG22*	AO	LCD segment output 22 at LQFP64
93	48		PA.4	I/O	General purpose digital I/O pin

Pin No.			Pin Name	Pin Type	Description
LQFP 128-pin	LQFP 64-pin	LQFP 48-pin			
			AD4	**AI**	ADC analog input4
			EBI_AD9	**I/O**	EBI Address/Data bus bit9
			SC2_PWR	**O**	SmartCard2 Power pin
			I2C0_SDA	**I/O**	I^2C0 data I/O pin
			LCD_SEG21*	**AO**	LCD segment output 21 at LQFP64
			LCD_SEG39*	**AO**	LCD segment output 39 at LQFP128
94	49		PA.5	**I/O**	General purpose digital I/O pin
			AD5	**AI**	ADC analog input5
			EBI_AD8	**I/O**	EBI Address/Data bus bit8
			SC2_RST	**O**	SmartCard2 RST pin
			I2C0_SCL	**I/O**	I^2C0 clock pin
			LCD_SEG20*	**AO**	LCD segment output 19 at LQFP64
			LCD_SEG38*	**AO**	LCD segment output 37 at LQFP128
95	50		PA.6	**I/O**	General purpose digital I/O pin
			AD6	**AI**	ADC analog input6
			EBI_AD7	**I/O**	EBI Address/Data bus bit7
			TC3	**I**	Timer3 capture input
			SC2_CLK	**O**	SmartCard2 clock pin(SC2_UART_TXD)
			PWM0_CH3	**O**	PWM0 Channel3 output
			LCD_SEG19*	**AO**	LCD segment output 19 at LQFP64
			LCD_SEG37*	**AO**	LCD segment output 37 at LQFP128
96			PA.7	**I/O**	General purpose digital I/O pin
			AD7	**AI**	ADC analog input7
			EBI_AD6	**I/O**	EBI Address/Data bus bit6
			TC2	**I**	Timer2 capture input
			SC2_DAT	**I/O**	SmartCard2 DATA pin(SC2_UART_RXD)
			PWM0_CH2	**O**	PWM0 Channel2 output
			LCD_SEG36*	**AO**	LCD segment output 36 output at LQFP128
97	51		VREF	**AP**	Voltage reference input for ADC
98					NC

Pin No.			Pin Name	Pin Type	Description
LQFP 128-pin	LQFP 64-pin	LQFP 48-pin			
			LCD_SEG31	**AO**	LCD segment output 31 at LQFP128
112					NC
113	58		XT1_IN	**O**	External 4~24 MHz crystal output pin
			PF.3	**I/O**	General purpose digital I/O pin
114	59		XT1_OUT	**I**	External 4~24 MHz crystal input pin
			PF.2	**I/O**	General purpose digital I/O pin
115					NC
116	60		nRESET	**I**	External reset input: Low active, set this pin low reset chip to initial state. With internal pull-up.
117	61		VSS	**P**	Ground
118			VSS	**P**	Ground
119					NC
120	62		VDD	**P**	Power supply for I/O ports and LDO source for internal PLL and digital circuit
121					NC
122			PF.4	**I/O**	General purpose digital I/O pin
			I2C0_SDA	**I/O**	I^2C0 data I/O pin
123			PF.5	**I/O**	General purpose digital I/O pin
			I2C0_SCL	**I/O**	I^2C0 clock pin
124			VSS	**P**	Ground
125	63		PVSS	**P**	PLL Ground
126	64		PB.8	**I/O**	General purpose digital I/O pin
			STADC	**I**	ADC external trigger input.
			TM0	**I**	Timer0 external counter input
			INT0	**I**	External interrupt0 input pin
			SC2_PWR	**O**	SmartCard2 Power pin
			LCD_SEG13	**AO**	LCD segment output 13 at LQFP64
			LCD_SEG30	**AO**	LCD segment output 30 at LQFP128
127			PE.15	**I/O**	General purpose digital I/O pin
			LCD_SEG29	**O**	LCD segment output 29 at LQFP128

3.4.3 NuMicro™ Nano120 Pin Description

Pin No.			Pin Name	Pin Type	Description
LQFP 128	LQFP 64	LQFP 48			
1			PE.13	**I/O**	General purpose digital IO pin
2	1		PB.14	**I/O**	General purpose digital IO pin
			INT0	**I**	External interrupt0 input pin
			SC2_CD	**I**	SmartCard2 card detect
			SPI2_SS1	**I/O**	SPI2 2nd slave select pin
3	2		PB.13	**I/O**	General purpose digital IO pin
			EBI_AD1	**I/O**	EBI Address/Data bus bit1
4	3	1	PB.12	**I/O**	General purpose digital IO pin
			EBI_AD0	**I/O**	EBI Address/Data bus bit0
			FCLKO	**O**	Frequency Divider output pin
5					NC
6	4	2	X32O	**O**	External 32.768 kHz crystal output pin
7	5	3	X32I	**I**	External 32.768 kHz crystal input pin
8					NC
9	6	4	PA.11	**I/O**	General purpose digital IO pin
			I2C1_SCL	**I/O**	I2C 1 clock pin
			EBI_nRD	**O**	EBI read enable output pin
			SC0_RST	**O**	SmartCard0 RST pin
			SPI2_MOSI0	**I/O**	SPI2 1st MOSI (Master Out, Slave In) pin
10	7	5	PA.10	**I/O**	General purpose digital IO pin
			I2C1_SDA	**I/O**	I2C 1 data I/O pin
			EBI_nWR	**O**	EBI write enable output pin
			SC0_PWR	**O**	SmartCard0 Power pin
			SPI2_MISO0	**I/O**	SPI2 1st MISO (Master In, Slave Out) pin
11	8	6	PA.9	**I/O**	General purpose digital IO pin
			I2C0_SCL	**I/O**	I2C 0 clock pin
			SC0_DAT	**I/O**	SmartCard0 DATA pin(SC0_UART_RXD)
			SPI2_CLK	**I/O**	SPI2 serial clock pin

Pin No.			Pin Name	Pin Type	Description
LQFP 128	LQFP 64	LQFP 48			
27	15	11	VDD	**P**	Power supply for I/O ports and LDO source
28					NC
29	16	12	VSS	**P**	Ground
30			VSS	**P**	Ground
31			VSS	**P**	Ground
32			VSS	**P**	Ground
33			PE.12	**I/O**	General purpose digital IO pin
34			PE.11	**I/O**	General purpose digital IO pin
35			PE.10	**I/O**	General purpose digital IO pin
36			PE.9	**I/O**	General purpose digital IO pin
37			PE.8	**I/O**	General purpose digital IO pin
38			PE.7	**I/O**	General purpose digital IO pin
39					NC
40	17	13	USB_VBUS	**USB**	POWER SUPPLY: From USB Host or HUB.
41	18	14	USB_VDD33_CAP	**USB**	Internal Power Regulator Output 3.3V Decoupling Pin
42	19	15	USB_D-	**USB**	USB Differential Signal D-
43	20	16	USB_D+	**USB**	USB Differential Signal D+
44	21	17	PB.0	**I/O**	General purpose digital IO pin
			UART0_RXD	**I**	UART0 Data receiver input pin
			SPI1_MOSI0	**I/O**	SPI1 1st MOSI (Master Out, Slave In) pin
45	22	18	PB.1	**I/O**	General purpose digital IO pin
			UART0_TXD	**O**	UART0 Data transmitter output pin
			SPI1_MISO0	**I/O**	SPI1 1st MISO (Master In, Slave Out) pin
46	23	19	PB.2	**I/O**	General purpose digital IO pin
			UART0_nRTS	**O**	UART0 Request to Send output pin
			EBI_nWRL	**O**	EBI low byte write enable output pin
			SPI1_CLK	**I/O**	SPI1 serial clock pin
47	24	20	PB.3	**I/O**	General purpose digital IO pin
			UART0_nCTS	**I**	UART0 Clear to Send input pin

Pin No.			Pin Name	Pin Type	Description
LQFP 128	LQFP 64	LQFP 48			
			AD0	AI	ADC analog input0
			SC2_CD	I	SmartCard2 card detect
90	45	33	PA.1	I/O	General purpose digital IO pin
			AD1	AI	ADC analog input1
			EBI_AD12	I/O	EBI Address/Data bus bit12
91	46	34	PA.2	I/O	General purpose digital IO pin
			AD2	AI	ADC analog input2
			EBI_AD11	I/O	EBI Address/Data bus bit11
			UART1_RXD	I	UART1 Data receiver input pin
92	47	35	PA.3	I/O	General purpose digital IO pin
			AD3	AI	ADC analog input3
			EBI_AD10	I/O	EBI Address/Data bus bit10
			UART1_TXD	O	UART1 Data transmitter output pin
93	48	36	PA.4	I/O	Digital GPIO pin
			AD4	AI	ADC analog input4
			EBI_AD9	I/O	EBI Address/Data bus bit9
			SC2_PWR	O	SmartCard2 Power pin
			I2C0_SDA	I/O	I^2C 0 data I/O pin
94	49	37	PA.5	I/O	General purpose digital IO pin
			AD5	AI	ADC analog input5
			EBI_AD8	I/O	EBI Address/Data bus bit8
			SC2_RST	O	SmartCard2 RST pin
			I2C0_SCL	I/O	I^2C 0 clock pin
95	50	38	PA.6	I/O	General purpose digital IO pin
			AD6	AI	ADC analog input6
			EBI_AD7	I/O	EBI Address/Data bus bit7
			TC3	I	Timer3 capture input
			SC2_CLK	O	SmartCard2 clock pin(SC2_UART_TXD)
			PWM0_CH3	O	PWM0 Channel3 output
96			PA.7	I/O	General purpose digital IO pin

Pin No.			Pin Name	Pin Type	Description
LQFP 128	LQFP 64	LQFP 48			
			AD7	**AI**	ADC analog input7
			EBI_AD6	**I/O**	EBI Address/Data bus bit6
			TC2	**I**	Timer2 capture input
			SC2_DAT	**I/O**	SmartCard2 DATA pin(SC2_UART_RXD)
			PWM0_CH2	**O**	PWM0 Channel2 output
97	51	39	VREF	**AP**	Voltage reference input for ADC
98					NC
99	52	40	AVDD	**AP**	Power supply for internal analog circuit
100			PD.0	**I/O**	General purpose digital IO pin
			UART1_RXD	**I**	UART1 Data receiver input pin
			SPI2_SS0	**I/O**	SPI2 1st slave select pin
			SC1_CLK	**O**	SmartCard1 clock pin(SC1_UART_TXD)
			AD8	**AI**	ADC analog input8
101			PD.1	**I/O**	General purpose digital IO pin
			UART1_TXD	**O**	UART1 Data transmitter output pin
			SPI2_CLK	**I/O**	SPI2 serial clock pin
			SC1_DAT	**I/O**	SmartCard1 DATA pin(SC1_UART_RXD)
			AD9	**AI**	ADC analog input9
102			PD.2	**I/O**	General purpose digital IO pin
			UART1_nRTS	**O**	UART1 Request to Send output pin
			I2S_LRCLK	**I/O**	I2S left right channel clock
			SPI2_MISO0	**I/O**	SPI2 1st MISO (Master In, Slave Out) pin
			SC1_PWR	**O**	SmartCard1 Power pin
			AD10	**AI**	ADC analog input10
103			PD.3	**I/O**	General purpose digital IO pin
			UART1_nCTS	**I**	UART1 Clear to Send input pin
			I2S_BCLK	**I/O**	I2S bit clock pin
			SPI2_MOSI0	**I/O**	SPI2 1st MOSI (Master Out, Slave In) pin
			SC1_RST	**O**	SmartCard1 RST pin
			AD11	**AI**	ADC analog input11

Pin No.			Pin Name	Pin Type	Description
LQFP 128-pin	LQFP 64-pin	LQFP 48-pin			
			LCD_SEG39*	**AO**	LCD segment output 39 at LQFP128
94	49		PA.5	**I/O**	General purpose digital I/O pin
			AD5	**AI**	ADC analog input5
			EBI_AD8	**I/O**	EBI Address/Data bus bit8
			SC2_RST	**O**	SmartCard2 RST pin
			I2C0_SCL	**I/O**	I^2C0 clock pin
			LCD_SEG20*	**AO**	LCD segment output 20 at LQFP64
			LCD_SEG38*	**AO**	LCD segment output 38 at LQFP128
95	50		PA.6	**I/O**	General purpose digital I/O pin
			AD6	**AI**	ADC analog input6
			EBI_AD7	**I/O**	EBI Address/Data bus bit7
			TC3	**I**	Timer3 capture input
			SC2_CLK	**O**	SmartCard2 clock pin(SC2_UART_TXD)
			PWM0_CH3	**O**	PWM0 Channel3 output
			LCD_SEG19*	**AO**	LCD segment output 19 at LQFP64
			LCD_SEG37*	**AO**	LCD segment output 37 at LQFP128
96			PA.7	**I/O**	General purpose digital I/O pin
			AD7	**AI**	ADC analog input7
			EBI_AD6	**I/O**	EBI Address/Data bus bit6
			TC2	**I**	Timer2 capture input
			SC2_DAT	**I/O**	SmartCard2 DATA pin(SC2_UART_RXD)
			PWM0_CH2	**O**	PWM0 Channel2 output
			LCD_SEG36*	**AO**	LCD segment output 36 output at LQFP128
97	51		VREF	**AP**	Voltage reference input for ADC
98					NC
99	52		AVDD	**AP**	Power supply for internal analog circuit
100			PD.0	**I/O**	General purpose digital I/O pin
			UART1_RXD	**I**	UART1 Data receiver input pin
			SPI2_SS0	**I/O**	SPI2 1st slave select pin
			SC1_CLK	**O**	SmartCard1 clock pin(SC1_UART_TXD)

3.7 Nano120 Block Diagram

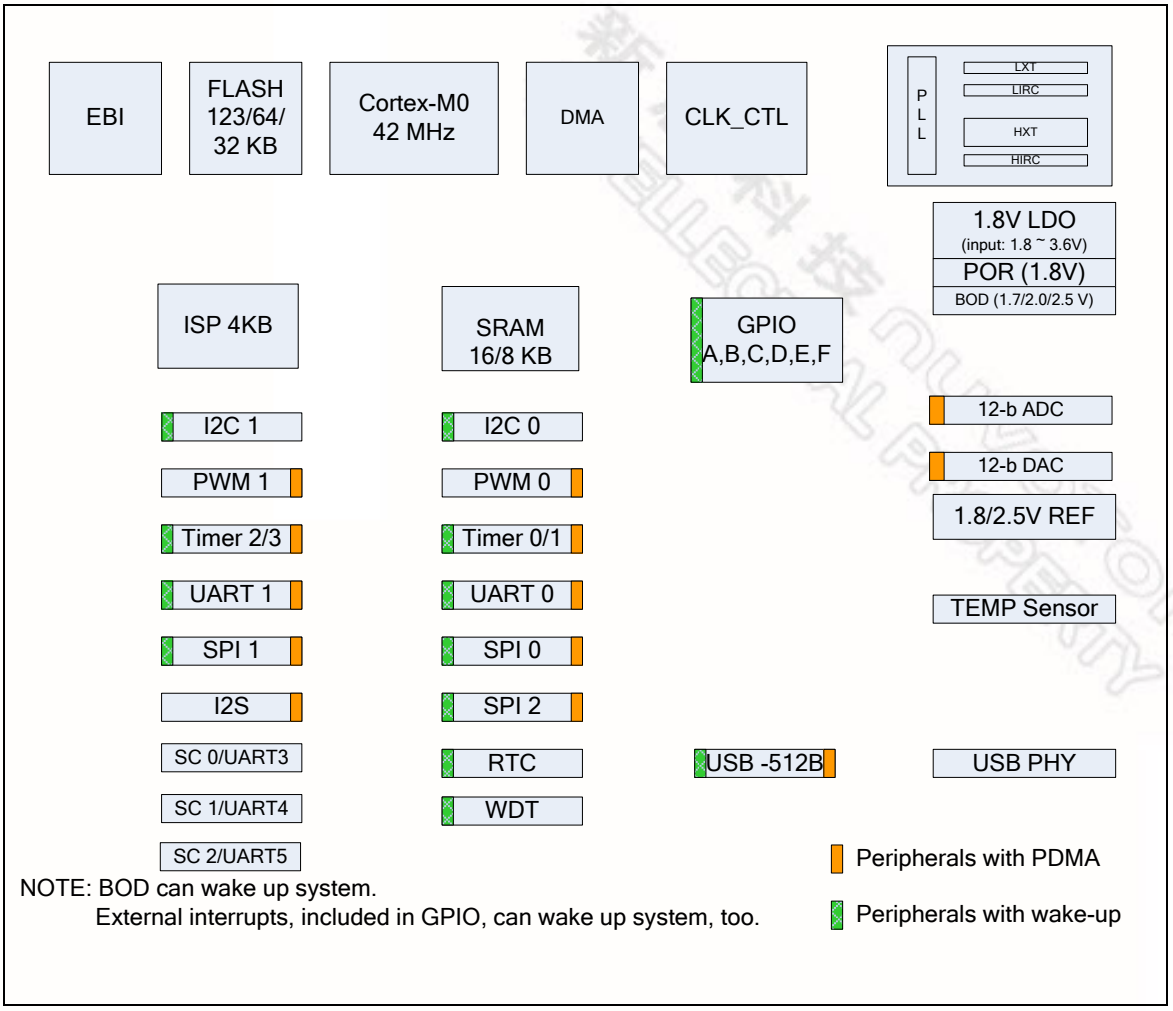

Figure 4-14 NuMicro™ Nano120 Block Diagram

4.3 LQFP64 (7x7x1.4 mm footprint 2.0 mm)