



Nuvoton NuMicro® Family

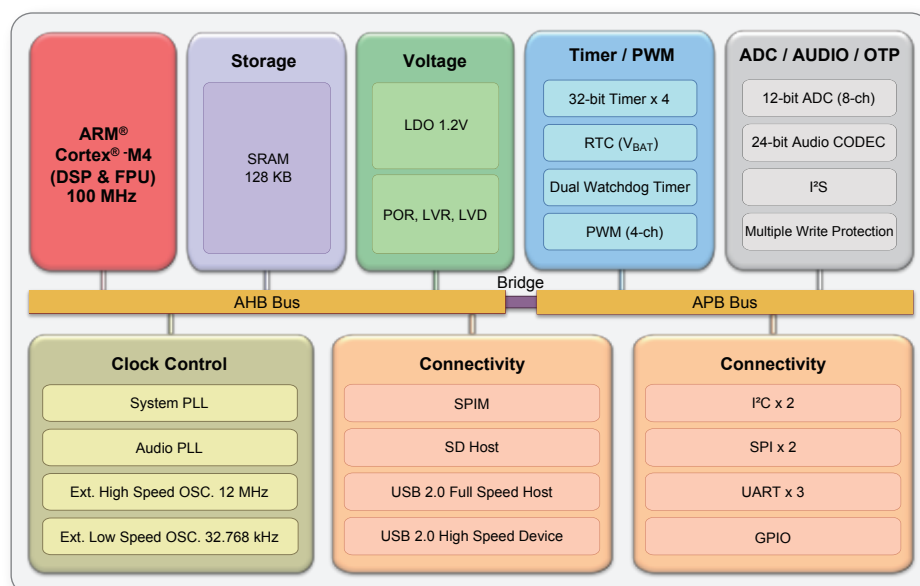
# NuMicro® NUC505 Series



Newest Generation Cortex® -M4F MCU  
with 24-bit Audio CODEC

## Applications

- ◆ Audio and Wireless Audio Applications
- ◆ Thermal Printer
- ◆ Others High Performance or Data Intensive Computing Applications



## Selection Guide

Part No.	Serial Flash (Kbytes)	SRAM (Kbytes)	I/O	Timer (32-bit)	Connectivity				I²S	USB Host	USB Device	PWM (16-bit)	ADC (12-bit)	Digital MIC	24-bit Audio CODEC	RTC (V <sub>BAT</sub> )	Security against piracy	ICP	Package	Operating Temp.
					UART*	SPI	SD Host	I²C												
NUC505DLA	512	128	20	4	2	2	-	2	1	FS	HS	-	5-ch	√	√	-	√	√	LQFP48	-40 to +85
NUC505DL13Y	2048	128	25	4	3	3	√	2	1	FS	HS	4	5-ch	√	-	√	√	√	LQFP48	-40 to +85
NUC505YLA	512	128	20	4	2	2	-	2	1	FS	HS	-	5-ch	√	√	-	√	√	QFN48	-40 to +85
NUC505DSA	512	128	34	4	3	3	√	2	1	FS	HS	-	5-ch	√	√	-	√	√	LQFP64*	-40 to +85
NUC505DS13Y	2048	128	35	4	3	3	√	2	1	FS	HS	4	8-ch	√	√*	√	√	√	LQFP64*	-40 to +85
NUC505YO13Y	2048	128	52	4	3	3	√	2	1	FS	HS	4	8-ch	√	√	√	√	√	QFN88	-40 to +85

\*Marked in the table √\* means only support Headphone Out.

LQFP64\*: 7x7mm

Contact us: NuMicro@nuvoton.com

## ❖ Features

### ◆ Core

- ARM® Cortex®-M4F core running up to 100 MHz (with DSP and FPU)

### ◆ Memory

- 128 KB of SRAM with zero-wait state
- 2 MB/ 512 KB of SPI Flash

### ◆ Security for Code Protection

- 128-bit key for code protection against piracy
- Up to 15 times of programming the key

### ◆ Clock Control

- 12 MHz crystal oscillator input
- Up to two PLLs for system clock and Audio

### ◆ Up to 12 Communication interfaces

- USB 2.0 HS Device interface
- Up to two USB 2.0 FS Host interfaces
- Up to three UARTs
- Up to three SPIs
- Up to two I<sup>2</sup>C interfaces (up to 1 MHz)
- SD Host

### ◆ GPIO

- Supports up to 25/ 35/ 52 GPIOs for QFN88/ LQFP64/ LQFP48 respectively

### ◆ Timer

- Supports 4 sets of 32-bit timers
- Supports two watchdog timers (Independent and Window)

### ◆ RTC

- Supports external power pin V<sub>BAT</sub>
- 32 bytes spare registers
- Internal 32.768 kHz RC with calibration

### ◆ I<sup>2</sup>S

- Supports Master or Slave mode operation
- Supports PCM mode A, PCM mode B, I<sup>2</sup>S and MSB justified data format
- Supports DMA mode

### ◆ Audio CODEC

- Embedded Stereo 24-bit Sigma-Delta CODEC
- MIC/ LINE-In-THDN: -80 dB, Dynamic Range SNR: 90 dB (A-Weighted)
- Headphone Output-THDN: -60 dB, Dynamic Range SNR: 93 dB (A-Weighted)
- Sample Rate: 8 kHz to 96 kHz

### ◆ 12-bit ADC

- Analog input voltage range: 0 ~ AV<sub>DD</sub>
- Supports single 12-bit SAR ADC conversion
- Up to 8 channels
- Up to 1 MSPS conversion with ADC\_CH1, and up to 200 kSPS with other channels (except ADC\_CH0: 100 kSPS)

### ◆ Built-in 3.3 to 1.2V LDO

### ◆ Low Voltage Detector (LVD)

- With 2 levels: 2.8V / 2.6V

### ◆ Low Voltage Reset (LVR)

- Threshold voltage level: 2.4 V

### ◆ Operating Temperature: -40°C ~ +85°C

### ◆ Packages

- QFN 88-pin (10mm x 10mm)
- LQFP 64-pin (7mm x 7mm)
- QFN 48-pin (7mm x 7mm)
- LQFP 48-pin (7mm x 7mm)