NyquestNX1 OTP Series: 32-bit MCU with SBC, 16-ch MIDI, voice changer, and voice recognition.

2023/02/20

P/N	RAM	OTP	Flash	I/O	SPI 0/1	I^2C	UART	16-bit Timer	PWM-IO	12-bit ADC	MIC	X'tal	DAC	Push-Pull PA	VR	MCP	Package
NX11P21A	4KB	32KB	-	18	v / -	-	-	2	-	-	-	-	v	v	-	-	Dice, SOP-16, SSOP-24
NX11P22A	4KB	32KB	-	24	v / -	-	-	2	4	-	-	v	v	v	-	-	Dice, SSOP-24, LQFP-48
NX12P64A	12KB	64KB	-	32	v / v	v	v	3	8	8-ch	v	v	v	v	v	-	Dice, SSOP-24, LQFP-48
NX13P64A	12KB	64KB	-	32	v / v	v	v	3	8	8-ch	v	v	v	v	-	-	Dice, SSOP-24, LQFP-48
NX11S21A	4KB	32KB	2Mb	12	v / -	-	-	2	-	-	-	-	v	v	-	v	SOP-8, SOP-16
NX11S22A	4KB	32KB	4Mb	12	v / -	-	-	2	-	-	-	-	v	v	-	v	SOP-8, SOP-16
NX11M22A	4KB	32KB	4Mb	12	v / -	-	-	2	-	-	-	-	v	v	-	v	SOP-8, SOP-16
NX11M23A	4KB	32KB	8Mb	12	v / -	-	-	2	-	-	-	-	v	v	-	v	SOP-8, SOP-16
NX11M24A	4KB	32KB	16Mb	12	v / -	-	-	2	-	-	-	-	v	v	-	v	SOP-8, SOP-16
NX11M25A	4KB	32KB	32Mb	12	v / -	-	-	2	-	-	-	-	v	v	-	v	SOP-8, SOP-16
NX12M52A	10KB	96KB	4Mb	16	v / -	v	v	3	4	4-ch	v	v	v	v	v	v	SOP-16, SSOP-24
NX12M53A	10KB	96KB	8Mb	16	v / -	v	v	3	4	4-ch	v	v	v	v	v	v	SOP-16, SSOP-24
NX12M54A	10KB	96KB	16Mb	16	v / -	v	v	3	4	4-ch	v	v	v	v	v	v	SOP-16, SSOP-24
NX12M55A	10KB	96KB	32Mb	16	v / -	v	v	3	4	4-ch	v	v	v	v	v	v	SOP-16, SSOP-24
NX13M52A	10KB	96KB	4Mb	16	v / -	v	v	3	4	4-ch	v	v	v	v	-	v	SOP-16, SSOP-24
NX13M53A	10KB	96KB	8Mb	16	v / -	v	v	3	4	4-ch	v	v	v	v	-	v	SOP-16, SSOP-24
NX13M54A	10KB	96KB	16Mb	16	v / -	v	v	3	4	4-ch	v	v	v	v	-	v	SOP-16, SSOP-24
NX13M55A	10KB	96KB	32Mb	16	v / -	v	v	3	4	4-ch	v	v	v	v	-	v	SOP-16, SSOP-24

Remarks:

1. NX1 MCU is similar to Cortex-M0+. It can run up to 50+ DMIPS @ 32MHz.
2. Sub-Band Coding for high-quality sound with wider bandwidth (Ex. 16KHz BW @ 32KHz SR).
3. Support XIP (eXecute In Place) and MIDI wavetable timbres @ SPI Flash, up to 32MHz clock.
4. Support both Q-Code and C language programming.
5. Audio output resolution: 14-bit DAC, push-pull power amplifier.
6. MCP (Multi-Chip Package) for more GPIO pins in cost-effective packages.
7. NX12 is subject to Cyberon VR royalty.

Nyquest

NX1 EF Series — 32-bit MCU with SBC, 16-ch MIDI, voice effects & voice recognition.

2023/10/4

P/N	VDD	RAM	EF	SPI Flash	Duration (Sec)		I/O	SPI 0	SPI 1	I²C	UART	16-bit Timer	PWM-IO	12-bit SAR	MIC	Cap Touch	DAC	Power Amp.	NFC Tag	LVD	VR	MCP	Package	ES
					16Kbps	24Kb																		
NX11FS20A	2.0V ~ 5.5V	4KB	1Mb	-	57	38	4 12	- v	-	-	v	2	1 3	-	-	v	-	Σ–Δ PWM	-	v	-	-	SOP-8 SOP-16	Aug. 2023
NX11FS21A	2.0V ~ 5.5V	4KB	2Mb	-	123	82	4 12	- v	-	-	v	2	1 3	-	-	v	-	Σ–Δ PWM	-	v	-	-	SOP-8 SOP-16	Aug. 2023
NX11FS22B	2.0V ~ 5.5V	4KB	4Mb	-	254	169	4 12 20	- v v	-	-	v	2	1 7 8	-	-	v	-	Σ–Δ PWM	-	v	-	-	SOP-8 SOP-16 SSOP-24	Q4 2023
NX11FS23A	2.0V ~ 5.5V	4KB	8Mb	-	516	344	4 12 20	- v v	-	-	v	2	1 7 8	-	-	v	14-bit	Σ–Δ PWM	-	v	-	-	SOP-8 SOP-16 SSOP-24	MP
NX12FS51A	2.0V ~ 5.5V	10KB	2Mb	-	98	66	25 10 22 25	v - v v	v v v v	v - v v	v	4	8 3 8 8	8 1 6 8	v	13 5 7 13	14-bit	Σ–Δ PWM	v	v	v	-	Dice SOP-16 SSOP-28 LQFP-32	MP
NX12FS61A	2.0V ~ 5.5V	12KB	2Mb	-	98	66	25 10 22 25	v - v v	v v v v	v - v v	v	4	8 3 8 8	8 1 6 8	v	13 5 7 13	14-bit	Σ–Δ PWM	v	v	v	-	Dice SOP-16 SSOP-28 LQFP-32	MP
NX12FM52A	2.0V ~ 5.5V	10KB	2Mb	4Mb	360	240	10 21	- -	v v	- v	v	4	3 4	1 8	v	5 11	14-bit	Σ–Δ PWM	v	v	v	v	SOP-16 SSOP-28	MP
NX12FM54A	2.0V ~ 5.5V	10KB	2Mb	16Mb	1,147	765	10 21	- -	v v	- v	v	4	3 4	1 8	v	5 11	14-bit	Σ–Δ PWM	v	v	v	v	SOP-16 SSOP-28	MP
NX12FM62A	2.0V ~ 5.5V	12KB	2Mb	4Mb	360	240	10 21	- -	v v	- v	v	4	3 4	1 8	v	5 11	14-bit	Σ–Δ PWM	v	v	v	v	SOP-16 SSOP-28	MP
NX12FM64A	2.0V ~ 5.5V	12KB	2Mb	16Mb	1,147	765	10 21	- -	v v	- v	v	4	3 4	1 8	v	5 11	14-bit	Σ–Δ PWM	v	v	v	v	SOP-16 SSOP-28	MP
NX13FS51A	2.0V ~ 5.5V	10KB	2Mb	-	98	66	25 10 22 25	v - v v	v v v v	v - v v	v	4	8 3 8 8	8 1 6 8	v	13 5 7 13	14-bit	Σ–Δ PWM	v	v	-	-	Dice SOP-16 SSOP-28 LQFP-32	MP
NX13FS61A	2.0V ~ 5.5V	12KB	2Mb	-	98	66	25 10 22 25	v - v v	v v v v	v - v v	v	4	8 3 8 8	8 1 6 8	v	13 5 7 13	14-bit	Σ–Δ PWM	v	v	-	-	Dice SOP-16 SSOP-28 LQFP-32	MP
NX13FM52A	2.0V ~ 5.5V	10KB	2Mb	4Mb	360	240	10 21	- -	v v	- v	v	4	3 4	1 8	v	5 11	14-bit	Σ–Δ PWM	v	v	-	v	SOP-16 SSOP-28	MP
NX13FM54A	2.0V ~ 5.5V	10KB	2Mb	16Mb	1,147	765	10 21	- -	v v	- v	v	4	3 4	1 8	v	5 11	14-bit	Σ–Δ PWM	v	v	-	v	SOP-16 SSOP-28	MP
NX13FM62A	2.0V ~ 5.5V	12KB	2Mb	4Mb	360	240	10 21	- -	v v	- v	v	4	3 4	1 8	v	5 11	14-bit	Σ–Δ PWM	v	v	-	v	SOP-16 SSOP-28	MP
NX13FM64A	2.0V ~ 5.5V	12KB	2Mb	16Mb	1,147	765	10 21	- -	v v	- v	v	4	3 4	1 8	v	5 11	14-bit	Σ–Δ PWM	v	v	-	v	SOP-16 SSOP-28	MP

Remarks:

1. The 32-bit NX1 EF series is embedded with Cortex-M0+ like CPU. It can run up to 50+ DMIPS @ 48MHz.
2. Sub-Band Coding for high-quality sound with wider bandwidth (Ex. 16KHz BW @ 32KHz SR).
3. Support both Q-Code and C language programming.
4. Support NFC Tag feature for communicating with NFC reader at mobile devices. (only for NX12F / NX13F series)
4. Audio Output Resolution: 14-bit DAC, 13-bit Sigma-Delta PWM (effective).
5. PWM-IO with 16-bit resolution, IHRC as clock source.
6. Built-in 3.3V LDO to power external SPI Flash @ SPI0 and I/O periphery @ SPI1 for NX12F/NX13F series.
7. Duration calculated for SBC after deduction of 16KB / 64KB for (NX11F) / (NX12F / NX13F) from EF size for code storage.