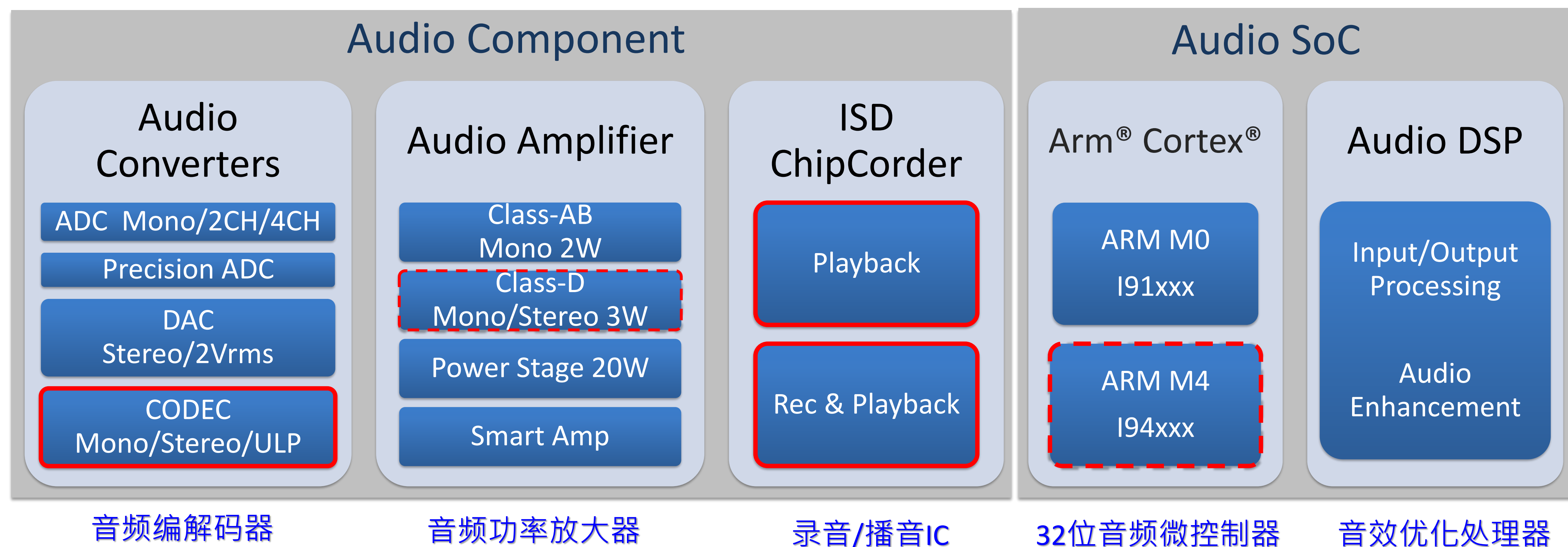
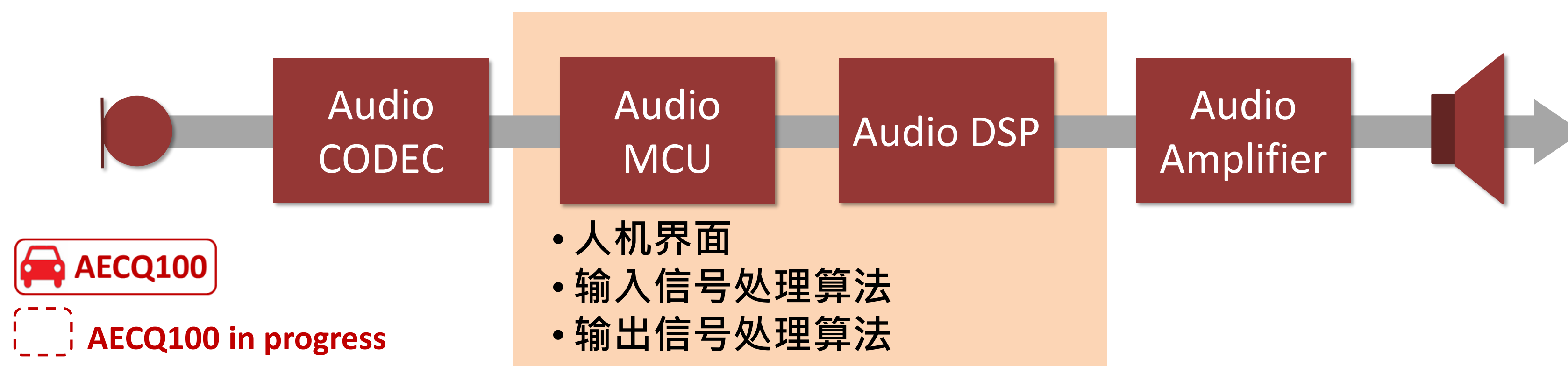


# 2023产品选型指南

**nuvoTon**



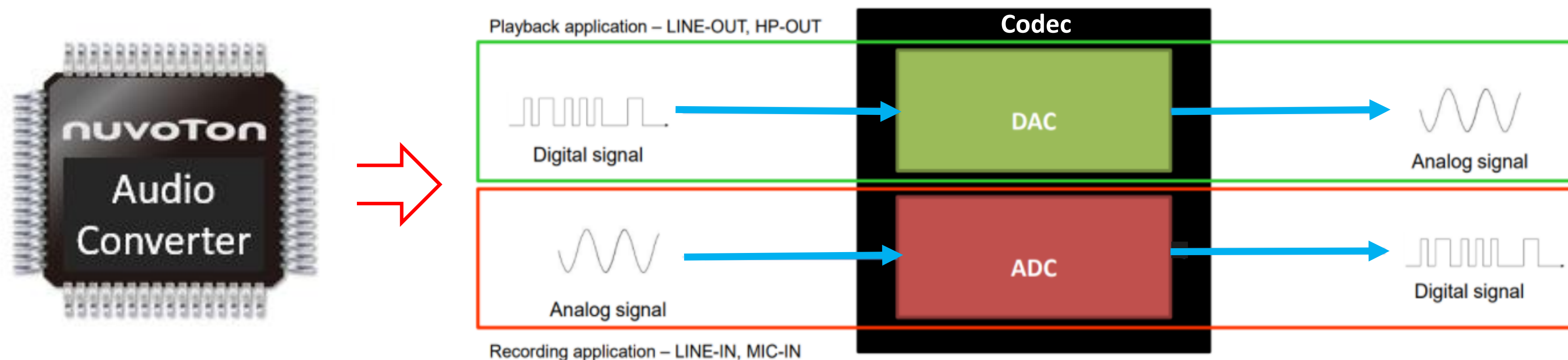
# 新唐智能家庭音频解决方案



# Audio Converters

## What is Audio Converters Product Family

- 什么是Audio Converters?
  - 语音/ 音频 编解码转换器 – 高质量的模数/数模 转换器
    - ◆ Codec(ADC&DAC) -单通道/ 双通道
    - ◆ 独立ADC/DAC -双/四通道ADC， 双通道DAC
  - 灵活的控制接口 – 2 线(I2C)/3 线(SPI)/ 4 线(SPI)
  - 丰富的应用领域 – 消费类/工控/安防/车用等



# Audio Codec Series – Mono/ Stereo

Audio CODEC Series - Mono CODEC

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	Control Interface	Analog/Digital (V)	Package
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU8810	Mono Audio CODEC	1	1	91	93	-79	-84	8 ~ 48	I2S PCM(TDM)	NAU8810-DEMO	2-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN20 (4x4)
NAU88C10	Mono Audio CODEC	1	1	91	93	-79	-84	8 ~ 48	I2S PCM(TDM)	NAU88C10-DEMO	2-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN20 (4x4)
NAU88U10	Mono Audio CODEC (*AEC-Q100)	1	1	91	93	-79	-84	8 ~ 48	I2S PCM(TDM)	NAU88C10-DEMO	2-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN20 (4x4)
NAU8812	Mono Audio CODEC with Speaker Driver	1	1	91	93	-79	-84	8 ~ 48	I2S PCM(TDM)	NAU8812-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (5x5) SSOP-28
NAU8814	Mono Audio CODEC with Speaker Driver, Equalizer	1	1	91	93	-79	-84	8 ~ 48	I2S PCM(TDM)	NAU8814-DEMO	2-Wire 3-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN24 (4x4)
NAU88C14	Mono Audio CODEC with Speaker Driver, Equalizer	1	1	91	93	-79	-84	8 ~ 48	I2S PCM(TDM)	NAU88C14-DEMO	2-Wire 3-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN24 (4x4)

Audio CODEC Series - Stereo CODEC

Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	Control Interface	Analog/Digital (V)	Package
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU8820	Stereo Audio CODEC	2	2	90	94	-80	-84	8 ~ 48	I2S PCM(TDM)	NAU8820-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (5x5)
NAU8822A	Stereo Audio CODEC with Speaker Driver	2	2	90	94	-80	-84	8 ~ 48	I2S PCM(TDM)	NAU8822A-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (5x5)
NAU88U22A	Stereo Audio CODEC with Speaker Driver (*AEC-Q100)	2	2	90	94	-80	-84	8 ~ 48	I2S PCM(TDM)	NAU8822A-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (5x5)
NAU88C22	Stereo Audio CODEC with Speaker Driver	2	2	89	89	-78	-84	8 ~ 192	I2S PCM(TDM)	NAU88C22-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (4x4) QFN32 (5x5)



# Audio Codec Series – Ultra Low Power(ULP)

Audio CODEC Series - ULP (Ultra Low Power) CODEC													
Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	Control Interface	Analog/Digital (V)	Package
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU88L11	ULP Mono Audio CODEC with Class-G Headphone Driver	1	1	103	105	-93	-85	8 ~ 96	I2S PCM(TDM)	NAU88L11-DEMO	2-Wire	1.6 ~ 2.0 1.6 ~ 3.6	QFN20(4x4)
*NAU88L20	ULP Stereo CODEC with Stereo Differential Lineout Driver	2	2	98	100	-91	-85	8 ~ 96	I2S PCM(TDM)	-	2-Wire	2.5 ~ 3.6 2.5 ~ 3.6	QFN32 (4x4)
NAU88L21	ULP Stereo Audio CODEC with Class-G Headphone Driver	2	2	103	105	-91	-80	8 ~ 192	I2S PCM(TDM)	NAU88L21-DEMO	2-Wire	1.6 ~ 2.0 1.6 ~ 3.6	QFN32 (4x4) QFN32 (5x5)
NAU88L24	ULP Stereo Audio CODEC with Advanced Headset Feature Class-D Amplifier	2	2	100	103	-85	-77	8 ~ 96	I2S PCM(TDM)	NAU88L24I-DEMO	2-Wire	1.6 ~ 2.0 1.6 ~ 3.6	QFN48 (6x6) QFN48 (7x7) WLCSP56
NAU88L25B	ULP Stereo Audio CODEC with Advanced Headset Feature & Detection Class-G Headphone Driver	1	2	101	124	-91	-89	8 ~ 192	I2S PCM(TDM)	NAU88L25-DEMO	2-Wire	1.6 ~ 2.0 1.6 ~ 3.6	QFN32(5x5) WLCSP42

# Audio Codec Series – ADC/ DAC

Audio ADC Series													
Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	CTRL IF	Analog/Digital (V)	Package
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU8501	Stereo Audio ADC with Line Input Differential Microphone Inputs	2	-	90	-	-80	-	8 ~ 48	I2S PCM(TDM)	NAU8501-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (4x4)
NAU8502	Stereo Audio ADC with Differential Microphone Inputs	2	-	90	-	-80	-	8 ~ 48	I2S PCM(TDM)	NAU8502-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (5x5)
NAU85L20	ULP Stereo Audio ADC with Integrated FLL Microphone Pre-amplifier	2	-	101	-	-91	-	8 ~ 96	I2S PCM(TDM)	NAU85L20-DEMO	2-Wire 3-Wire	1.6 ~ 2.0 1.6 ~ 3.6	QFN28(4X4)
NAU85L40	ULP Quad Audio ADC with Integrated FLL Microphone Pre-amplifier	4	-	101	-	-92	-	8 ~ 96	I2S PCM(TDM)	NAU85L40-DEMO	2-Wire 3-Wire	1.6 ~ 2.0 1.6 ~ 3.6	QFN28(4X4)












Audio DAC Series													
Part No.	Description	# of		SNR (dB)		THD (dB)		Sample Rate (KHz)	Audio Format	Development Tools	CTRL IF	Analog/Digital (V)	Package
		ADC	DAC	ADC	DAC	ADC	DAC						
NAU8401	Stereo Audio DAC with Speaker Driver	-	2	-	94	-	-84	8 ~ 48	I2S PCM(TDM)	NAU8401-DEMO	2-Wire 3-Wire 4-Wire	2.5 ~ 3.6 1.6 ~ 3.6	QFN32 (5x5)
NAU8402	Stereo Audio DAC with 2Vrms Line Output	-	2	-	98	-	-82	24 ~ 96	I2S PCM(TDM)	NAU8402-DEMO	-	3.0 ~ 3.6 1.6 ~ 3.6	TSSOP16

# Audio Codec Series – Precision ADC Series

Precision ADC Series													
Part No.	Description	# of		Resolution Bits	ADC Type	ENOB (Gain=1, 10SPS)	RMS Noise (PGA=128)	Sample Rate Max (Hz)	Gain	Development Tools	CTRL IF	Analog/Di gital (V)	Package
		ADC	DAC										
NAU7802	Precision Audio ADC	2	-	24	Sigma-Delta	23	50nV in 10 SPS 150nV in 80 SPS	10, 20, 40, 80 & 320	1x, 2x, 4x, 8x, 16x, 32x, 64x, 128x	NAU7802- EVB	2-Wire	2.7 ~ 5.5 2.7 ~ 5.5	SOP16 PDIP16



# Development Tools for Audio Converters

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NU-NAUSB2I2C	NU-NAUSB2I2C	USB-To-I2C/I2S_V1.1	NAU88C22 NAU88L11 NAU88L21 NAU88L24I NAU88L25 NAU85L20 NAU85L40 NAU7802	• USB-To-I2C/I2S_V1.1	• USB-To-I2C/I2S_V1.1 Control Board for Audio Converters	
NL-NAU88C10	NL-NAU88C10	NAU88C10-DEMO	NAU88C10	• NAU88C10-DEMO	• Demo Board for NAU88C10YG	
NL-NAU88C22	NL-NAU88C22	NAU88C22-DEMO	NAU88C22	• NAU88C22-DEMO	• Demo Board for NAU88C22YG	
NL-NAU88L11	NL-NAU88L11	NAU88L11-DEMO	NAU88L11	• NAU88L11-DEMO	• Demo Board for NAU88L11YG	
NL-NAU88L21	NL-NAU88L21	NAU88L21-DEMO	NAU88L21	• NAU88L21-DEMO	• Demo Board for NAU88L21YG	
NL-NAU88L24I	NL-NAU88L24I	NAU88L24I-DEMO	NAU88L24	• NAU88L24I-DEMO	• Demo Board for NAU88L24IG	
NL-NAU88L25	NL-NAU88L25	NAU88L25-DEMO	NAU88L25B	• NAU88L25-DEMO	• Demo Board for NAU88L25YGB	
NL-NAU85L20	NL-NAU85L20	NAU85L20-DEMO	NAU85L20B	• NAU85L20-DEMO	• Demo Board for NAU85L20YGB	
NL-NAU85L40	NL-NAU85L40	NAU85L40-DEMO	NAU85L40B	• NAU85L40-DEMO	• Demo Board for NAU85L40YGB	
NL-NAU85L40S	NL-NAU85L40S	NAU85L40S-DEMO	NAU85L40S	• NAU85L40S-DEMO	• Demo Board for NAU85L40YGB with Single-ended Microphone	
NL-NAU7802	NL-NAU7802	NAU7802-EVB	NAU7802	• NAU7802-DEMO	• Demo Board for NAU7802	









# Development Tools for Audio Converters(Cont.)

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NV-NAU8810	NV-NAU8810	NAU8810-DEMO	NAU8810	• NAU8810-DEMO	• Compact Audio Base Board + NAU8810YG Daughter Card	
NV-NAU8812	NV-NAU8812	NAU8812-DEMO	NAU8812	• NAU8812-DEMO	• Compact Audio Base Board + NAU8812YG Daughter Card	
NV-NAU88C14	NV-NAU88C14	NAU88C14-DEMO	NAU88C14	• NAU88C14-DEMO	• Compact Audio Base Board + NAU88C14YG Daughter Card	
NV-NAU8814	NV-NAU8814	NAU8814-DEMO	NAU8814	• NAU8814-DEMO	• Compact Audio Base Board + NAU8814YG Daughter Card	
NV-NAU8820	NV-NAU8820	NAU8820-DEMO	NAU8820	• NAU8820-DEMO	• Compact Audio Base Board + NAU8820YG Daughter Card	
NV-NAU8501	NV-NAU8501	NAU8501-DEMO	NAU8501	• NAU8501-DEMO	• Compact Audio Base Board + NAU8501YG Daughter Card	
NV-NAU8502	NV-NAU8502	NAU8502-DEMO	NAU8502	• NAU8502-DEMO	• Compact Audio Base Board + NAU8502YG Daughter Card	
NV-NAU8401	NV-NAU8401	NAU8401-DEMO	NAU8401	• NAU8401-DEMO	• Compact Audio Base Board + NAU8401YG Daughter Card	
NV-NAU8402	NV-NAU8402	NAU8402-DEMO	NAU8402	• NAU8402-DEMO	• Compact Audio Base Board + NAU8402YG Daughter Card	
NT-NAU8810	NT-NAU8810	NAU8810-Card	NAU8810	• NAU8810-Card	• NAU8810YG Daughter Card	
NT-NAU8812	NT-NAU8812	NAU8812-Card	NAU8812	• NAU8812-Card	• NAU8812YG Daughter Card	
NT-NAU88C14	NT-NAU88C14	NAU88C14-Card	NAU88C14	• NAU88C14-Card	• NAU88C14YG Daughter Card	



# Development Tools for Audio Converters(Cont.)

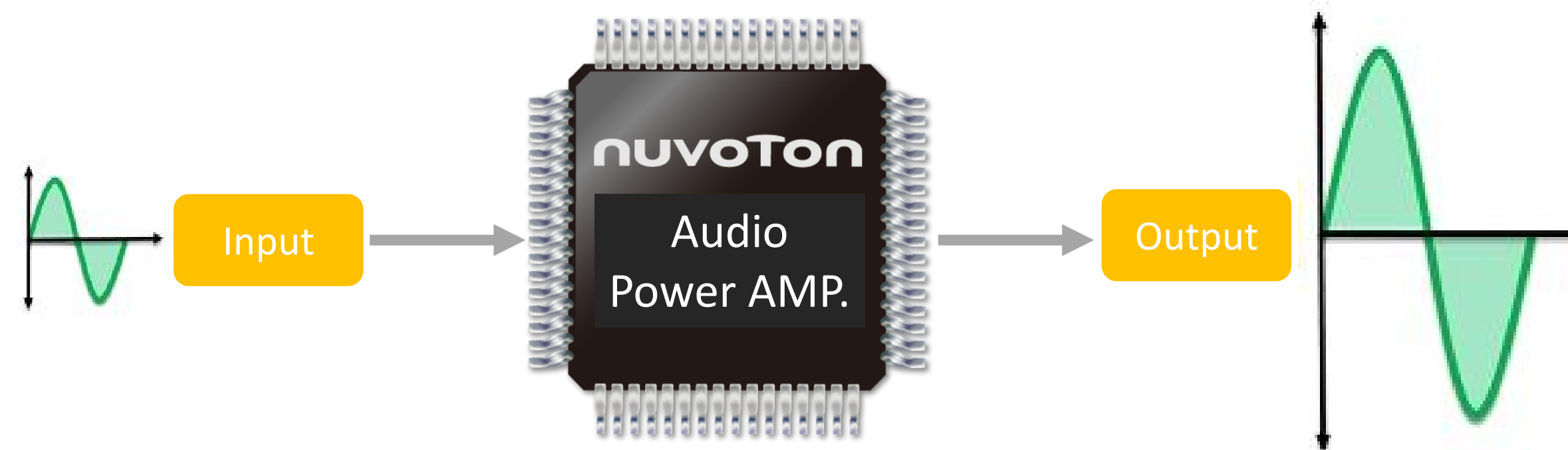
Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NT-NAU8814	NT-NAU8814	NAU8814-Card	NAU8814	• NAU8814-Card	• NAU8814YG Daughter Card	
NT-NAU8820	NT-NAU8820	NAU8820-Card	NAU8820	• NAU8820-Card	• NAU8820YG Daughter Card	
NT-NAU8501	NT-NAU8501	NAU8501-Card	NAU8501	• NAU8501-Card	• NAU8501YG Daughter Card	
NT-NAU8502	NT-NAU8502	NAU8502-Card	NAU8502	• NAU8502-Card	• NAU8502YG Daughter Card	
NT-NAU8401	NT-NAU8401	NAU8401-Card	NAU8401	• NAU8401-Card	• NAU8401YG Daughter Card	
NT-NAU8402	NT-NAU8402	NAU8402-Card	NAU8402	• NAU8402-Card	• NAU8402WG Daughter Card	



# Audio Amplifier

## What is Audio Power Amplifier Product Family

- 什么是**Audio Amplifier**?
  - 音频功率放大器 – **高质量/ 大音量**
    - ◆ 输入信号:模拟/数字
    - ◆ 输出模式: 单通道/ 双通道
    - ◆ 智能功放:内置Klippel喇叭保护算法
  - 灵活的控制界面 – **I2C/ 硬件**



Mono Type



Stereo Type



# Audio Amplifier Series – 2Vrms Line Drive/ Class-AB

2Vrms Line DriverSeries

Part No.	Description	Output Performance		SNR (dB)	Output Noise (μVrms)	Gain (dB)	Standby Current (uA)	Operating Voltage (V)	Development Tools	Package
		Power (W)	THD+N (%)							
NAU8220	2Vrms Line Driver	-	<0.1	108	-	-	-	3.0 ~ 3.6	NAU8220WG-EVB	SOP14 TSSOP14

Class-AB Series

Part No.	Description	Output Performance		SNR (dB)	Output Noise (μVrms)	Gain (dB)	Standby Current (uA)	Operating Voltage (V)	Development Tools	Package
		Power (W)	THD+N (%)							
ISD8101	1.5W Class-AB Audio Amplifier with Chip Enable, Differential/Single-Ended Inputs, Low Pop and Click	0.5 (5V,8Ω)	<0.1	100	-	0 ~ 26	<1	2.4 ~ 5.5	ISD-DEMO8101	SOP8
		0.825 (5V,8Ω)	<1							
		1.1 (5V,8Ω)	<10							
ISD8102	2W Class-AB Audio Amplifier with Chip Enable, Single-Ended Inputs, Low Pop and Click	2 (5V,4Ω)	<10	100	-	0 ~ 26	<1	2.0 ~ 5.5	ISD-DEMO8102	SOP8
ISD8104	2W Class-AB Audio Amplifier with Chip Enable, Differential Inputs, Low Pop and Click	2 (5V,4Ω)	<10	100	-	0 ~ 26	<1	2.0 ~ 6.8	ISD-DEMO8104	SOP8



# Audio Amplifier Series – Class-D/ Smart Amp.

## Class-D Series





Part No.	Description	Output Performance		SNR (dB)	Output Noise (μVrms)	Gain (dB)	Standby Current (uA)	Operating Voltage (V)	Development Tools	Package
		Power (W)	THD+N (%)							
NAU82011	2.9W Mono Class-D Audio Amplifier with Variable Gain, Differential/Single-Ended Inputs	2.9 (5.0V,4Ω)	<10	-	20	Variable	<1	2.5 ~ 5.5	NAU82011Y-EVB NAU82011V-EVB	QFN16 WCSP9
NAU82039	3.2W Mono Class-D Audio Amplifier with Variable Gain, Differential/Single-Ended Inputs	3.2 (5.0V,4Ω)	<10	-	27	6, 12	<1	2.5 ~ 5.5	-	QFN16 WCSP9
NAU8223	3.1W Stereo Filer-Free Class-D Audio Amplifier with Differential/Single-Ended Inputs	3.1 (5.0V,4Ω)	<10	-	20	0, 6, 12, 18, 24	<1	2.5 ~ 5.5	NAU8223-EVB	QFN20
NAU8224	3.1W Stereo Filer-Free Class-D Audio Amplifier with 2-Wire Interface, Differential/Single-Ended Inputs	3.1 (5.0V,4Ω)	<10	-	20	0, 6, 12, 18, 24	<1	2.5 ~ 5.5	NAU8224-EVB	QFN20
NAU8315	3.1W Mono Filer-Free Class-D Audio Amplifier with I2S	3.1 (5.0V,4Ω)	<10	-	12	3, 6, 9, 12	<1	2.5 ~ 5.5	NAU8315-DEMO	QFN20 WLCSP9 WLCSP12
NAU8325	3.1W Mono Filer-Free Class-D Audio Amplifier with I2S, 2-Wire interface	3.1 (5.0V,4Ω)	<10	-	18	3, 6, 9, 12	<2	2.5 ~ 5.5	NAU8325-DEMO	QFN20
NAU83P20	20W High-Efficiency Class-D Audio Power Stage for Driving Stereo Bridge-Tied Speakers	20W (18.0V,8Ω)	<10	105	-	-	<1	4.5 ~ 24	-	QFN48

## Smart Amp Series

Part No.	Description	Output Performance		SNR (dB)	Output Noise (μVrms)	Speaker Protection	Standby Current (uA)	Operating Voltage (V)	Development Tools	Package
		Power (W)	THD+N (%)							
NAU83G10	8W Mono Boosted Class-D Amplifier with Klippel Controlled Sound DSP	8 (5.0V,4Ω) 6.5 (5.0V,8Ω)	<10	101	55	Integrated DSP	<13	2.9 ~ 5.5	NAD-NAU83G10	WLCSP50
NAU83G20	20W Mono Boosted Class-D Amplifier with Klippel Controlled Sound DSP	20 (12.6V,4Ω) 11 (12.6V,8Ω)	<10	101	65	Integrated DSP	<16	14 (MAX)	NAD-NAU83G20	WLCSP50
*NAU83G60	30W Stereo / 60W Mono Boosted Class-D Amplifier with Klippel Controlled Sound DSP	30 (18V,4Ω)	<10	-	-	Integrated DSP	-	6 ~ 18	-	QFN56




# Development Tools for Audio Amplifiers

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NE-NAU8220	NE-NAU8220	NAU8220WG-EVB	NAU8220	• NAU8220WG-EVB	• Demo Board for NAU8220WG	
NT-ISD8101	NT-ISD8101	ISD-DEMO8101	ISD8101	• ISDI8101-DEMO	• Demo Board for I8101SYI	
NT-ISD8102	NT-ISD8102	ISD-DEMO8102	ISD8102	• ISD8102-DEMO	• Demo Board for I8102SYI	
NT-ISD8104	NT-ISD8104	ISD-DEMO8104	ISD8104	• ISD8104-DEMO	• Demo Board for I8104SYI	


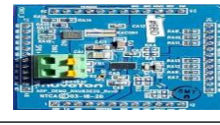
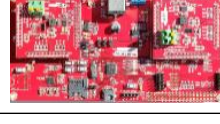









# Development Tools for Audio Amplifiers(Cont.)

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NE-NAU82011V	NE-NAU82011V	NAU82011V-EVB	NAU82011	• NAU82011V-EVB	• Demo Board for NAU82011VG	
NE-NAU82011Y	NE-NAU82011Y	NAU82011Y-EVB	NAU82011	• NAU82011Y-EVB	• Demo Board for NAU82011YG	
NE-NAU8223	NE-NAU8223	NAU8223-EVB	NAU8223	• NAU8223-EVB	• Demo Board for NAU8223YG	
NE-NAU8224	NE-NAU8224	NAU8224-EVB	NAU8224	• NAU8224-EVB	• Demo Board for NAU8224YG	
NU-NAU8224	NU-NAU8224	NAU-ES_MINI_USB	NAU8224	• NAU-ES_MINI_USB	• USB to I <sup>2</sup> C Bus Dongle for NE-NAU8224	
NL-NAU8315	NL-NAU8315	NAU8315-DEMO	NAU8315	• NAU8315-DEMO	• Demo Board for NAU8315YG	
NL-NAU8315B	NL-NAU8315B	NAU8315B-DEMO	NAU8315	• NAU8315B-DEMO	• Demo Board for NAU8315B31VG	
NL-NAU8325	NL-NAU8325	NAU8325-DEMO	NAU8325	• NAU8325-DEMO	• Demo Board for NAU8325YG	
NV-NADBASE	NV-NADBASE	NAD-BASE BOARD	NAU83G10 NAU83G20	• NAD-BASE BOARD	• Base Board of Smart Amp Series REVB	



# Development Tools for Audio Amplifiers(Cont.)

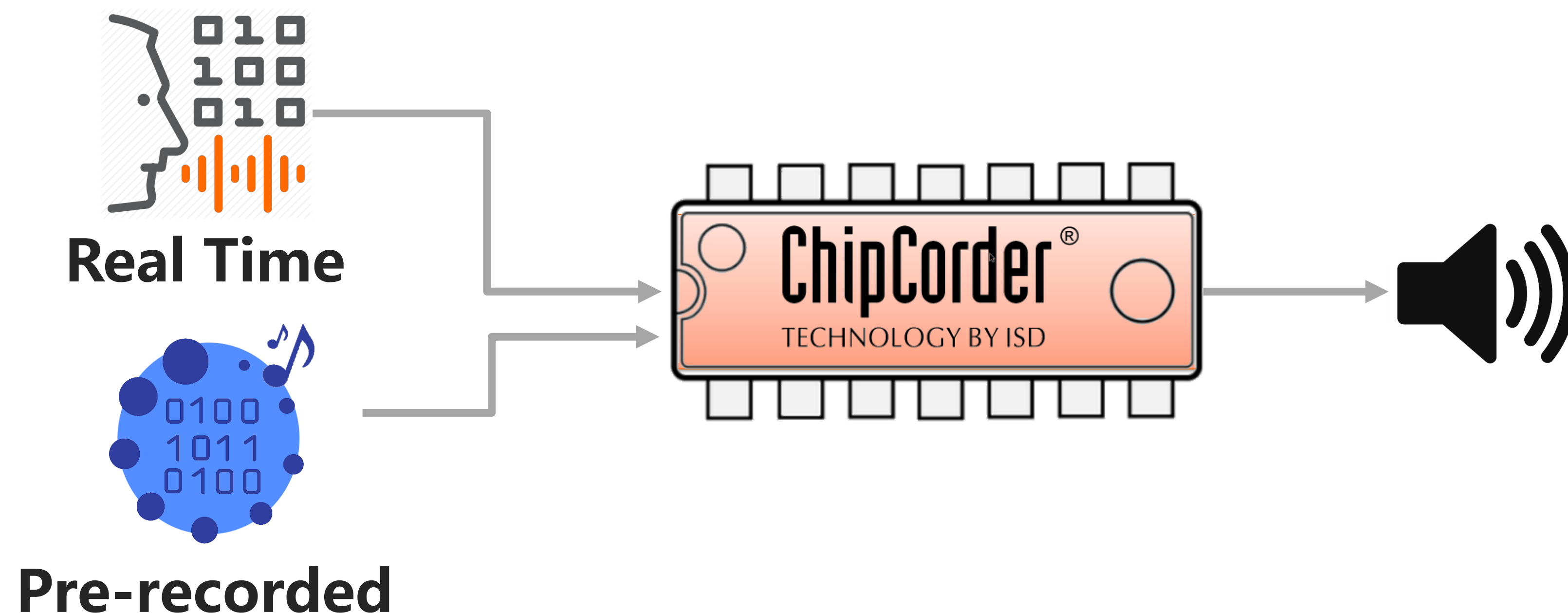
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NT-NAU83G10	NT-NAU83G10	NAU83G10-ADP	NAU83G10	• NAU83G10-ADP	• NAU83G10 Daughter Card	
NT-NAU83G20	NT-NAU83G20	NAU83G20-ADP	NAU83G20	• NAU83G20-ADP	• NAU83G20 Daughter Card	
NV-NAU83G10S	NV-NAU83G10S	NAD-NAU83G10	NAU83G10	• NAU83G10-EVB	• Demo Board for NAU83G10 Stereo	
NV-NAU83G20S	NV-NAU83G20S	NAD-NAU83G20	NAU83G20	• NAU83G20-EVB	• Demo Board for NAU83G20 Stereo	
NM-N83G10MA	NM-N83G10MA	NAD-NAU83G10_BRS-161200	NAU83G10	• NAD-NAU83G10_BRS-161200	• Demo Board for NAU83G10 Mono with Bujeon BRS-161200	
NM-N83G10MB	NM-N83G10MB	NAD-NAU83G10_BRS-181300	NAU83G10	• NAD-NAU83G10_BRS-181300	• Demo Board for NAU83G10 Mono with Bujeon BRS-181300	
NM-N83G10SA	NM-N83G10SA	NAD-NAU83G10_2*BRS-161200	NAU83G10	• NAD-NAU83G10_2*BRS-161200	• Demo Board for NAU83G10 Stereo with 2x Bujeon BRS-161200	
NM-N83G10SB	NM-N83G10SB	NAD-NAU83G10_2*BRS-181300	NAU83G10	• NAD-NAU83G10_2*BRS-181300	• Demo Board for NAU83G10 Stereo with 2x Bujeon BRS-181300	
NM-N83G20MA	NM-N83G20MA	NAD-NAU83G20_BUF-4203	NAU83G20	• NAD-NAU83G20_BUF-4203	• Demo Board for NAU83G20 Mono with Bujeon BUF-4203	
NM-N83G20SA	NM-N83G20SA	NAD-NAU83G20_2*BUF-4203	NAU83G20	• NAD-NAU83G20_2*BUF-4203	• Demo Board for NAU83G20 Stereo with 2x Bujeon BUF-4203	



# ISD ChipCorder

## What is ISD ChipCorder Product Family

- 什么是ISD ChipCorder ?
  - 语音/音频录放最佳利器 – 高质量的语音/音频录音和播放
  - 高度集成的语音/音频单芯片 SoC – 开发简单
  - 非挥发性存储 – 实时录音及掉电保存





# ISD ChipCorder Series – Digital ChipCorder®

Digital ChipCorder® Series









Part No.	Description	Duration (Under 8KHz)	Sample Rate (KHz)	Operating Voltage (V)	Development Tools	Temp (°C)	Package
ISD15102	Multi-Message, Record/Playback with Int. Flash Memory, SPI	2 min	Up to 48	2.7 ~ 3.6	ISD-DMK_15100	-40 ~ 85	LQFP48
ISD15104		4 min					
ISD15108		8 min					
ISD15C00	Multi-Message, Record/Playback with Int. Flash Memory, SPI (*AEC-Q100)	Ext. Flash up to 64 min	Up to 48	2.7 ~ 3.6	ISD-DMK_15C00	AEC-Q100	LQFP48
ISD15D00	Multi-Message, Playback-Only with Ext. Flash Memory, SPI (*AEC-Q100)	Ext. Flash up to 64 min	Up to 48	2.7 ~ 5.5	ISD-DMK_15D00	AEC-Q100	QFN32
ISD2115A	Multi-Message, Playback-Only with Int. Flash Memory, SPI	16 sec	Up to 32	2.7 ~ 3.6	ISD-DMK_2100_Q	-40 ~ 85	SOP14 QFN20
ISD2130		32 sec					
ISD2360	Multi-Message, 3-Channel Audio, Playback-Only with Int. Flash Memory	64 sec	Up to 32	2.4 ~ 5.5	ISD-DMK_2360_Q	-40 ~ 85	SOP16 QFN32
ISD2361	Multi-Message, 3-Channel audio, Playback-Only with Int. Flash Memory, SPI	60 sec + Ext. Flash up to 1024 min	Up to 32	2.4 ~ 5.5	ISD-DMK_2361	-40 ~ 105	SOP16 QFN32
ISD3800	Multi-Message, playback-only with Ext. Flash Memory, SPI	Ext. Flash up to 64 min	Up to 48	2.7 ~ 5.5	ISD-DMK_3800	-40 ~ 85	LQFP48 QFN32
ISD3900	Multi-Message, Record/Playback with Ext. Flash Memory, SPI	Ext. Flash up to 64 min	Up to 48	2.7 ~ 3.6	ISD-DMK_3900	-40 ~ 85	LQFP48



# ISD ChipCorder Series – MLS

MLS ChipCorder® Series							
Part No.	Description	Duration (Under 8KHz)	Sample Rate (KHz)	Operating Voltage (V)	Development Tools	Temp (°C)	Package
ISD14B20	Multi-Message Record/Playback with Int. Flash Memory, SPI	32 sec	Up to 12	2.4 ~ 5.5	-	0 ~ 50	DIE
ISD14B40		64 sec					
ISD14B80		128 sec					
ISD1610B	Single-Message Record/Playback with Int. Flash Memory	16 sec	Up to 12	2.4 ~ 5.5	I16-COB20	0 ~ 50 -40 ~ 85	DIE SOIC16
ISD1616B		32 sec					
ISD1620B		64 sec					
ISD1730	Multi-Message, Record/Playback with Int. Flash Memory, SPI	32 sec	Up to 12	2.4 ~ 5.5	ISD-COB1730	0 ~ 50 -40 ~ 85	DIE SOIC28
ISD1760		64 sec			ISD-COB1760		
ISD17120		128 sec			ISD-COB17150		
ISD17240		256 sec			ISD-COB17240		
ISD1806	Single-Message Record/Playback with Int. Flash Memory	6 sec	Up to 8	2.7 ~ 4.5	ISD-COB1810	0 ~ 50	DIE
ISD1810		8 sec		2.4 ~ 5.5	ISD-COB18A04		
ISD18A04		4 sec			ISD-COB18B24		
ISD18B12		6 sec			ISD-COB18C10		
ISD18B24		12 sec					
ISD18C10		8 sec					
ISD1916	Multi-Message, Record/Playback with Int. Flash Memory	16 sec	Up to 12	2.4 ~ 5.5	ISD-DEMO1964	-40 ~ 85	SOIC28
ISD1932		32 sec					
ISD1964		64 sec					
ISD4002	Multi-Message Record/Playback with Int. Flash Memory, SPI	2 ~ 16 min	Up to 8	2.7 ~ 3.3	-	0 ~ 50	DIE PDIP28 SOIC28
ISD4003						0 ~ 70	
ISD4004						-40 ~ 85	
ISD5102	Multi-Message Record/Playback with Int. Flash Memory, I2C	2 ~ 16 min	Up to 8	2.7 ~ 3.3	-	0 ~ 50	DIE PDIP28 SOIC28
ISD5104						0 ~ 70	
ISD5108						-40 ~ 85	
ISD5116							

# Development Tools for ChipCorder

Ordering No.	Part No.	Board Name	Supported devices	Content	Description	Picture
NU-ISDMINUSB	NU-ISDMINUSB	ISD-ES_Mini_USB	ISD2130 / ISD2115A ISD2360 ISD2361 ISD3900 ISD15102/04/08 ISD15C00 ISD3800 ISD15D00	• ISD-ES_Mini_USB	• USB dongle for Digital ChipCorder Demo Board	
NM-ISD2100Q	NM-ISD2100Q	ISD-DMK_2100_Q	ISD2130 / ISD2115A	• ISD-DEMO2100_Q • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD2130 / ISD2115A	
NT-ISD2100S	NT-ISD2100S	ISD-DEMO2100_S	ISD2130 / ISD2115A	• ISD-DEMO2100_S	• Demo Board for ISD2130SYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NT-ISD2100Q	NT-ISD2100Q	ISD-DEMO2100_Q	ISD2130 / ISD2115A	• ISD-DEMO2100_Q	• Demo Board for ISD2130YYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NM-ISD2360Q	NM-ISD2360Q	ISD-DMK_2360_Q	ISD2360	• ISD-DEMO2360_Q • ISD-ES_MINI_USB • Speaker	• Evaluation and Demo Kit for ISD2360	
NT-ISD2360S	NT-ISD2360S	ISD-DEMO2360_S	ISD2360	• ISD-DEMO2360_S	• Demo Board for ISD2360SYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NT-ISD2360Q	NT-ISD2360Q	ISD-DEMO2360_Q	ISD2360	• ISD-DEMO2360_Q	• Demo Board for ISD2360YYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NT-ISD2361	NT-ISD2361	ISD-DEMO2361_Q	ISD2361	• ISD-DEMO3361_Q	• Demo Board for ISD2361YYI • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	



# Development Tools for ChipCorder<sub>(cont.)</sub>











Ordering No.	Part No.	Board Name	Supported devices	Content	Description	Picture
NM-ISD3900	NM-ISD3900	ISD-DMK_3900	ISD3900	<ul style="list-style-type: none"> <li>• ISD-DEMO3900</li> <li>• ISD-ES_MINI_USB</li> <li>• Speaker</li> </ul>	• Evaluation and Demo Kit for ISD3900	
NT-ISD3900	NT-ISD3900	ISD-DEMO3900	ISD3900	<ul style="list-style-type: none"> <li>• ISD-DEMO3900</li> </ul>	<ul style="list-style-type: none"> <li>• Demo Board for ISD3900FYI</li> <li>• Connect to PC via ISD-ES_Mini_USB for <b>programming and evaluation</b></li> </ul>	
NM-ISD15100	NM-ISD15100	ISD-DMK_15100	ISD15102/04/08	<ul style="list-style-type: none"> <li>• ISD-DEMO15100</li> <li>• ISD-ES_MINI_USB</li> <li>• Speaker</li> </ul>	• Evaluation and Demo Kit for ISD15102/04/08	
NT-ISD15100	NT-ISD15100	ISD-DEMO15100	ISD15102/04/08	<ul style="list-style-type: none"> <li>• ISD-DEMO15100</li> </ul>	<ul style="list-style-type: none"> <li>• Demo Board for ISD15102/04/08FYI</li> <li>• Connect to PC via ISD-ES_Mini_USB for <b>programming and evaluation</b></li> </ul>	
NM-ISD15C00	NM-ISD15C00	ISD-DMK_15C00	ISD15C00	<ul style="list-style-type: none"> <li>• ISD-DEMO15C00</li> <li>• ISD-ES_MINI_USB</li> <li>• Speaker</li> </ul>	• Evaluation and Demo Kit for ISD15C00	
NT-ISD15C00	NT-ISD15C00	ISD-DEMO15C00	ISD15C00	<ul style="list-style-type: none"> <li>• ISD-DEMO15C00</li> </ul>	<ul style="list-style-type: none"> <li>• Demo Board for ISD15C00FYI</li> <li>• Connect to PC via ISD-ES_Mini_USB for <b>programming and evaluation</b></li> </ul>	
NM-ISD3800	NM-ISD3800	ISD-DMK_3800	ISD3800	<ul style="list-style-type: none"> <li>• ISD-DEMO3800</li> <li>• ISD-ES_MINI_USB</li> <li>• Speaker</li> </ul>	• Evaluation and Demo Kit for ISD3800	
NT-ISD3800	NT-ISD3800	ISD-DEMO3800	ISD3800	<ul style="list-style-type: none"> <li>• ISD-DEMO3800</li> </ul>	<ul style="list-style-type: none"> <li>• Demo Board for ISD3800FYI</li> <li>• Connect to PC via ISD-ES_Mini_USB for <b>programming and evaluation</b></li> </ul>	

# Development Tools for ChipCorder<sub>(Cont.)</sub>










Ordering No.	Part No.	Board Name	Supported devices	Content	Description	Picture
NM-ISD15D00	NM-ISD15D00	ISD-DMK_15D00	ISD15D00	<ul style="list-style-type: none"> <li>• ISD-DEMO15D00</li> <li>• ISD-ES_MINI_USB</li> <li>• Speaker</li> </ul>	• Evaluation and Demo Kit for ISD15D00	
NT-ISD15D00	NT-ISD15D00	ISD-DEMO15D00	ISD15D00	<ul style="list-style-type: none"> <li>• ISD-DEMO15D00</li> </ul>	<ul style="list-style-type: none"> <li>• Demo Board for ISD15D00YYI</li> <li>• Connect to PC via ISD-ES_Mini_USB for <b>programming and evaluation</b></li> </ul>	
NC-ISD1620B	NC-ISD1620B	I16-COB20	ISD1610/16/20	I16-COB20	• Demo Board for ISD1610/16/20	
NC-ISD1730	NC-ISD1730	ISD-COB1730	ISD1730	<ul style="list-style-type: none"> <li>• ISD-COB1730</li> </ul>	• Demo Board for ISD1730	
NC-ISD1760	NC-ISD1760	ISD-COB1760	ISD1760	<ul style="list-style-type: none"> <li>• ISD-COB1760</li> </ul>	• Demo Board for ISD1760	
NC-ISD17150	NC-ISD17150	ISD-COB17150	ISD17150	<ul style="list-style-type: none"> <li>• ISD-COB17150</li> </ul>	• Demo Board for ISD17120	
NC-ISD17240	NC-ISD17240	ISD-COB17240	ISD17240	<ul style="list-style-type: none"> <li>• ISD-COB17240</li> </ul>	• Demo Board for ISD17240	
NC-ISD1810	NC-ISD1810	ISD-COB1810	ISD1806/10	<ul style="list-style-type: none"> <li>• ISD-COB1810</li> </ul>	• Demo Board for ISD1806/1810	



# Development Tools for ChipCorder<sub>(Cont.)</sub>

Ordering No.	Part No.	Board Name	Supported devices	Content	Description	Picture
NC-ISD18B24	NC-ISD18B24	ISD-COB18B24	ISD18B12/24	• ISD-COB18B24	• Demo Board for ISD18B12/24	
NC-ISD18C10	NC-ISD18C10	ISD-COB18C10	ISD18C10	• ISD-COB18C10	• Demo Board for ISD18C06/18C10 (SPK/MIC sharing)	
NT-ISD1964	NT-ISD1964	ISD-DEMO1964	ISD1916/32/64 Class-D output	• ISD-DEMO1964	• Demo Board for 1964SYI	
NT-ISD1964A	NT-ISD1964A	ISD-DEMO1964_AUX	ISD1916/32/64 AUX output	• ISD-DEMO1964_AUX	• Demo Board for ISD1964SYI01	
NW-ISD2100S	NW-ISD2100S	ISD-ES2100_Mini_PROG_S	ISD2115ASYI ISD2130SYI	• ISD-ES2100_Mini_PROG_S	• ISD2100 SOP Single Socket Programmer • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NW-ISD2100Q	NW-ISD2100Q	ISD-ES2100_Mini_PROG_Q	ISD2115AYYI ISD2130YYI	• ISD-ES2100_Mini_PROG_Q	• ISD2100 QFN Single Socket Programmer • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NG-ISD2100S	NG-ISD2100S	ISD-2100_GANG_Prog_S	ISD2115ASYI ISD2130SYI	• ISD-2100_GANG_Prog_S	• ISD2100 SOP Standalone Gang Programmer	
NG-ISD2100Q	NG-ISD2100Q	ISD-2100_GANG_Prog_Q	ISD2115AYYI ISD2130YYI	• ISD-2100_GANG_Prog_Q	• ISD2100 QFN Standalone Gang Programmer	
NW-ISD2360S	NW-ISD2360S	ISD-ES2360_MINI_PROG_S	ISD2360SYI	• ISD-ES2360_MINI_PROG_S	• ISD2360 SOP Single Socket Programmer • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	
NW-ISD2360Q	NW-ISD2360Q	ISD-ES2360_MINI_PROG_Q	ISD2360YYI	• ISD-ES2360_MINI_PROG_Q	• ISD2360 QFN Single Socket Programmer • Connect to PC via ISD-ES_Mini_USB for programming and evaluation	

# Development Tools for ChipCorder<sub>(Cont.)</sub>

Ordering No.	Part No.	Board Name	Supported devices	Content	Description	Picture
NG-ISD2360S	NG-ISD2360S	ISD-2360_GANG_PROG_S	ISD2360SYI	• ISD-2360_GANG_PROG_S	• ISD2360 SOP Standalone Gang Programmer	
NG-ISD2360Q	NG-ISD2360Q	ISD-2360_GANG_PROG_Q	ISD2360YYI	• ISD-2360_GANG_PROG_Q	• ISD2360 QFN Standalone Gang Programmer	
NW-ISD15100	NW-ISD15100	ISD-ES15100_Mini_PROG	ISD15102FYI ISD15104FYI ISD15108FYI	• ISD-ES15100_Mini_PROG	• ISD15100 LQFP Single Socket Programmer • Connect to PC via ISD-ES_Mini_USB for <b>programming and evaluation</b>	
NW-ISDPROG	NW-ISDPROG	ISD-PROG	ISD2100 Series ISD15100 Series ISD15D00 Series	• ISD-PROG	• Digital ChipCorder Standalone Programmer • Support ISD2100/ISD15100/ISD15D00 Series	
NW-ISDIPROG1	NW-ISDIPROG1	ISD-IPROG-1	ISD4000 Series ISD5100 Series ISD1700 Series	• ISD-PROG-1	• Digital ChipCorder Single-Chip Programmer • Support ISD4000/ISD5100/ISD1700 Series	
NE-ISD1600	NE-ISD1600	ISD-ES1600_USB_PROG	ISD1600 Series	• ISD-ES1600_USB_PROG	• USB Evaluation Board for ISD1600 Series	
NW-P1700	NW-P1700	P1700	ISD1700 Series	• P1700	• Programmer Adapter of ISD-IPROG-1	
NE-ISD1700	NE-ISD1700	ISD-ES17XX_USB_PB	ISD1700 Series	• ISD-ES17XX_USB_PB	• USB Evaluation Board for ISD1700 Series	
NE-ISD1900	NE-ISD1900	ISD-ES1900_USB_PROG	ISD1900 Series	• ISD-ES1900_USB_PROG	• USB Evaluation Board for ISD1900 Series	

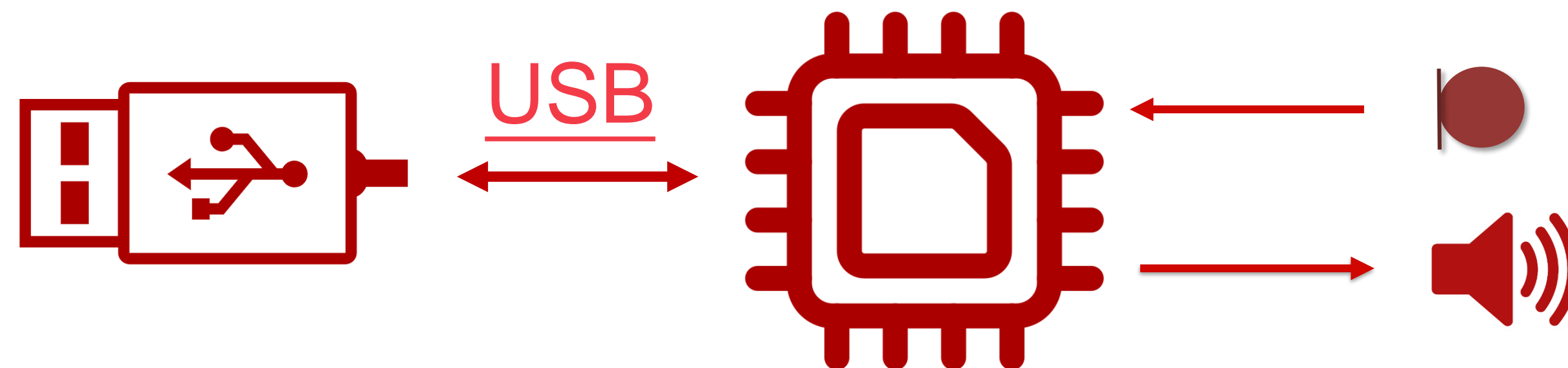


# Audio SoC(System on Chip)

## What is Audio SoC platform Product Family

- 什么是**Audio SoC**?

- 音频 SoC 是一款基于Cortex M0/M4 系列的 ARM based 同时内置Tensilica DSP给音频使用
  - ◆ 在Cortex/ DSP 平台上, 与第三方解决方案商合作降噪/ 回声消除/ 语音识别
  - ◆ Teams 认证
- USB FS 1.1 兼容 USB FS 2.0 - **USB to I2S Bridge**
- 开放平台上广泛的应用领域 – 消费类/工控/安防/医疗/车用等



# Audio SoC Series – ARM® Cortex®-M0

ARM® Cortex®-M0												
Part No.	CPU	APROM	SRAM	I/O	Timer	ADC	RTC	Audio		Developemnt Tools	Other	Package
								MIC.	Speaker			
ISD9130	Cortex®-M0 49 MHz	68 KB	12 KB	24	2	16-bit Sigma-Delta	√	1	Class-D (1W)	ISD-DMK_9160	UART, I²C, I²S, PDMA, CRC	LQFP48 QFN33
ISD9160	Cortex®-M0 49 MHz	145 KB	12 KB	24	2	16-bit Sigma-Delta	√	1	Class-D (1W)	ISD-DMK_9160	UART, I²C, I²S, PDMA, CRC	LQFP48 QFN33
ISD9160C	Cortex®-M0 49 MHz	145 KB	12 KB	24	2	16-bit Sigma-Delta	√	1	Class-D (1W)	ISD-DMK_9160	UART, I²C, I²S, PDMA, CRC, VR	LQFP48 QFN33
ISD91230	Cortex®-M0 49 MHz	64 KB	12 KB	32	2	12-bit SAR	√	1	Class-D (0.45W)	ISD-DMK_91260	UART, I²C, I²S, PDMA, CRC	LQFP64 QFN33
ISD91230B	Cortex®-M0 49 MHz	64 KB	12 KB	32	2	12-bit SAR 24-bit BridgeSense	√	-	Class-D (0.45W)	ISD-DMK_91260B	UART, I²C, I²S, PDMA, CRC	LQFP64
ISD91260	Cortex®-M0 49 MHz	128 KB	12 KB	32	2	12-bit SAR	√	1	Class-D (0.45W)	ISD-DMK_91260	UART, I²C, I²S, PDMA, CRC	LQFP64 QFN33
ISD91260B	Cortex®-M0 49 MHz	128 KB	12 KB	32	2	12-bit SAR 24-bit BridgeSense	√	-	Class-D (0.45W)	ISD-DMK_91260B	UART, I²C, I²S, PDMA, CRC	LQFP64
ISD91260C	Cortex®-M0 49 MHz	128 KB	12 KB	32	2	12-bit SD	√	1	Class-D (0.45W)	ISD-DMK_91260	UART, I²C, I²S, PDMA, CRC, VR	LQFP64 QFN33
ISD91530	Cortex®-M0 49 MHz	64 KB	12KB	50	3	12-bit SAR 16-bit SD	-	1	Class-AB (0.02W)	ISD-DMK_91500	USB 2.0 FS	LQFP64 QFN48
ISD91535	Cortex®-M0 49 MHz	64 KB	20KB	50	3	12-bit SAR 16-bit SD	-	1	Class-AB (0.02W)	ISD-DMK_91500	USB 2.0 FS	LQFP64 QFN48




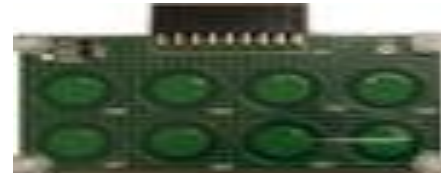
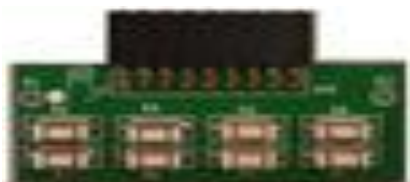







# Audio SoC Series – ARM® Cortex®-M4












ARM® Cortex®-M4												
Part No.	CPU	APROM	SRAM	I/O	Timer	ADC	RTC	Audio		Developemnt Tools	Other	Package
								MIC.	Speaker			
ISD94124A	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD	LQFP64 QFN48
ISD94124B	Cortex®-M4 200 MHz Basic fetaure	512 KB	192 KB	57	4	12-bit SAR	√	-	-	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS	LQFP64 QFN48
ISD94124C	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD, VR	LQFP64
ISD94124D	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD, BF+NR	LQFP64
ISD94124P	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD, VR, BF+NR	LQFP64
ISD94124S	Cortex®-M4 200 MHz	512 KB	192 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD, AEC+NR	LQFP64
ISD941A24A	Cortex®-M4 200MHz Stereo CODEC MCP	512 KB	192 KB	29	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DEMO941A24	USB 2.0 FS, VAD	LQFP64
ISD941A24S	Cortex®-M4 200MHz Stereo CODEC MCP	512 KB	192 KB	29	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DEMO941A24	USB 2.0 FS, VAD, AEC+NR	LQFP64
ISD94123B	Cortex®-M4 200 MHz Basic Feature	512 KB	128 KB	57	4	12-bit SAR	√	-	-	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS	LQFP64 QFN48
ISD94123S	Cortex®-M4 200 MHz	512 KB	128 KB	41	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD, AEC+NR	QFN48
ISD94113A	Cortex®-M4 200 MHz	256 KB	128 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD	LQFP64 QFN48
ISD94113B	Cortex®-M4 200 MHz Basic Feature	256 KB	128 KB	57	4	12-bit SAR	√	-	-	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS	LQFP64 QFN48
ISD94113S	Cortex®-M4 200 MHz	256 KB	128 KB	57	4	12-bit SAR	√	4x DMIC	DPWM/I2S to ext. amp	ISD-DMK_94100_AM ISD-DMK_94100_DM	USB 2.0 FS, VAD, AEC+NR	LQFP64 QFN48

# Development Tools for Audio SoC

Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NU-NULINKISD	NU-NULINKISD	ISD-NU-LINK	ISD9100 Series ISD91200 Series ISD91500 Series ISD94100 Series	<ul style="list-style-type: none"> <li>• ISD-NU-LINK</li> </ul>	<ul style="list-style-type: none"> <li>• USB <b>Dongle</b></li> <li>• Support ICP (In-Circuit Programming)</li> </ul>	
NM-ISD9160	NM-ISD9160	ISD-DMK_9160	ISD9100 Series	<ul style="list-style-type: none"> <li>• ISD-DEMO9160</li> <li>• ISD-NU-LINK</li> <li>• ISD-9160-Touch</li> <li>• ISD-9160-KB</li> <li>• Speaker</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluation and Demo Kit for ISD9100 Series</li> </ul>	
NT-ISD9160	NT-ISD9160	ISD-DEMO9160	ISD9100 Series	<ul style="list-style-type: none"> <li>• ISD-DEMO9160</li> </ul>	<ul style="list-style-type: none"> <li>• Demo Board for <b>ISD9100 Series</b></li> <li>• Connect to PC via ISD NU-LINK for programming and evaluation</li> </ul>	
NP-ISD9160-T	NP-ISD9160-T	ISD-9160-TOUCH	ISD9100 Series	<ul style="list-style-type: none"> <li>• ISD-9160-TOUCH</li> </ul>	<ul style="list-style-type: none"> <li>• 8-input <b>Touch Pad</b> for <b>NT-ISD9160</b></li> </ul>	
NP-ISD9160-K	NP-ISD9160-K	ISD-9160-KB	ISD9100 Series	<ul style="list-style-type: none"> <li>• ISD-9160-KB</li> </ul>	<ul style="list-style-type: none"> <li>• 8-input <b>Key Pad</b> for <b>NT-ISD9160</b></li> </ul>	
NM-ISD91260	NM-ISD91260	ISD-DMK_91260	<b>ISD91200C Series</b>	<ul style="list-style-type: none"> <li>• ISD-DEMO91260</li> <li>• ISD-NU-LINK</li> <li>• Speaker</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluation and Demo Kit for <b>ISD91200C Series</b></li> </ul>	
NM-ISD91260B	NM-ISD91260B	ISD-DMK_91260B	<b>ISD91200B Series</b>	<ul style="list-style-type: none"> <li>• ISD-DEMO91260B</li> <li>• ISD-NU-LINK</li> <li>• Speaker</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluation and Demo Kit for <b>ISD91200B Series</b></li> </ul>	
NT-ISD91260	NT-ISD91260	ISD-DEMO91260	<b>ISD91200C Series</b>	<ul style="list-style-type: none"> <li>• ISD-DEMO91260</li> </ul>	<ul style="list-style-type: none"> <li>• Demo Board for <b>ISD91200C Series</b></li> <li>• Connect to PC via ISD NU-LINK for programming and evaluation</li> </ul>	
NT-ISD91260B	NT-ISD91260B	ISD-DEMO91260B	<b>ISD91200B Series</b>	<ul style="list-style-type: none"> <li>• ISD-DEMO91260B</li> </ul>	<ul style="list-style-type: none"> <li>• Demo Board for <b>ISD91200B Series</b></li> <li>• Connect to PC via ISD NU-LINK for programming and evaluation</li> </ul>	
NM-ISD91500	NM-ISD91500	ISD-DMK_91500	ISD91500 Series	<ul style="list-style-type: none"> <li>• NT-ISD91500</li> <li>• ISD-NU-LINK</li> <li>• Speaker</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluation and Demo Kit for ISD91500 Series</li> </ul>	



# Development Tools for Audio SoC<sub>(Cont.)</sub>

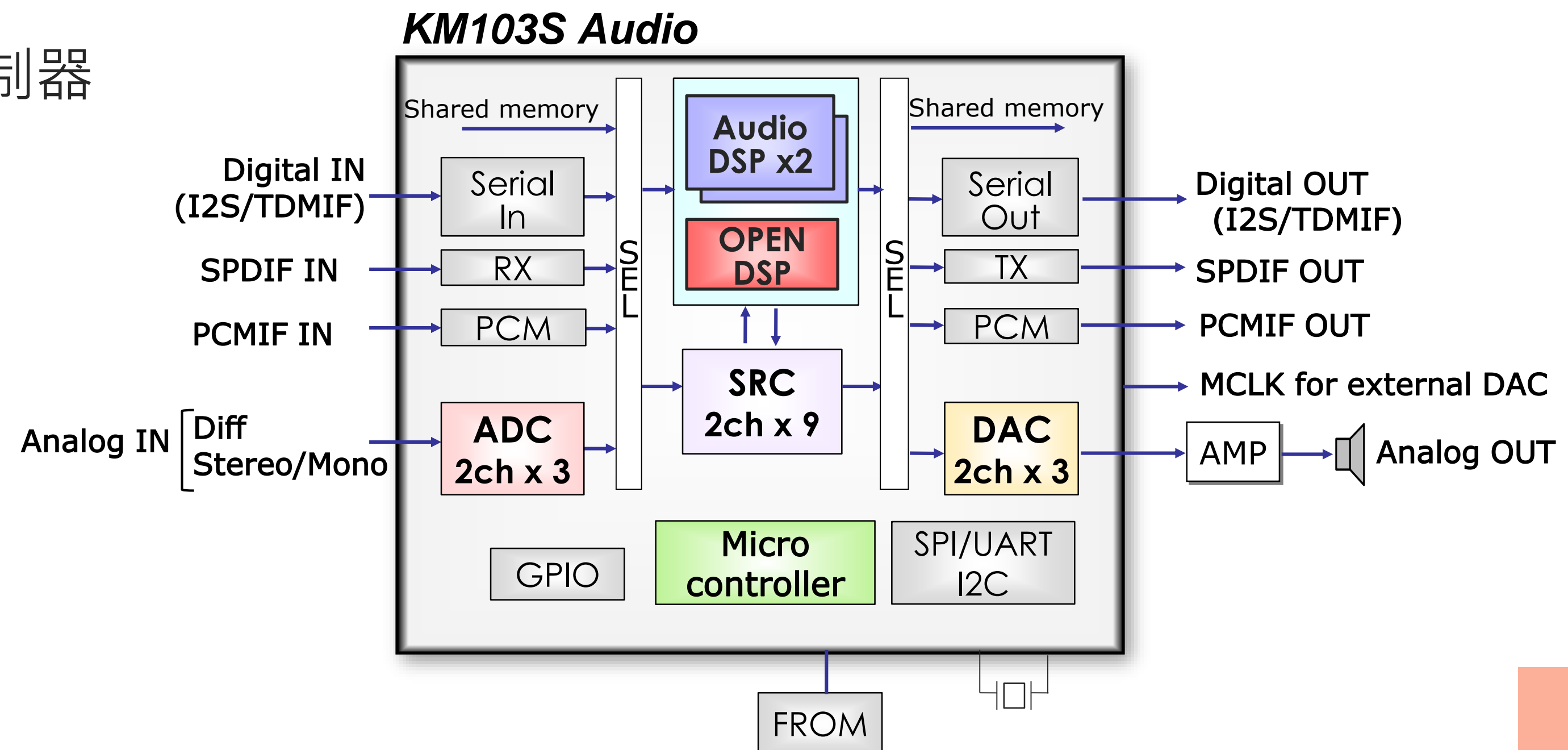
Ordering No.	Part No.	Board Name	Supported Devices	Content	Description	Picture
NM-I94100_AM	NM-I94100_AM	ISD-DMK_94100_AM	ISD94100 Series	<ul style="list-style-type: none"> <li>NL-ISD94124A</li> <li>NP-I94124_AM</li> <li>Speaker</li> </ul>	<ul style="list-style-type: none"> <li>Evaluation and Demo Kit for ISD94100 Series</li> <li>Connect with Analog Microphone Adaptor</li> </ul>	
NM-I94100_DM	NM-I94100_DM	ISD-DMK_94100_DM	ISD94100 Series	<ul style="list-style-type: none"> <li>NL-ISD94124A</li> <li>NP-I94124_DM</li> <li>Speaker</li> </ul>	<ul style="list-style-type: none"> <li>Evaluation and Demo Kit for ISD94100 Series</li> <li>Connect with Digital Microphone Adaptor</li> </ul>	
NL-ISD94124A	NL-ISD94124A	EVB-I94124	ISD94100 Series	<ul style="list-style-type: none"> <li>EVB-I94124</li> </ul>	<ul style="list-style-type: none"> <li>Evaluation and Demo Kit for ISD94100 Series</li> </ul>	
NP-I94124_AM	NP-I94124_AM	EVB-I94124ADI-NAU85L40B_V1.0	ISD94100 Series	<ul style="list-style-type: none"> <li>EVB-I94124ADI-NAU85L40B_V1.0</li> </ul>	<ul style="list-style-type: none"> <li>Analog Microphone Adaptor for NL-ISD94124A</li> </ul>	
NP-I94124_DM	NP-I94124_DM	EVB-I94124ADI-NAU85L40B_V1.2	ISD94100 Series	<ul style="list-style-type: none"> <li>EVB-I94124ADI-NAU85L40B_V1.2</li> </ul>	<ul style="list-style-type: none"> <li>Analog / Digital Microphone Adaptor for NL-ISD94124A</li> </ul>	
NV-ISD94100	NV-ISD94100	DEMO-I94100-NAU88C22	ISD94100 Series	<ul style="list-style-type: none"> <li>DEMO-I94100-NAU88C22</li> </ul>	<ul style="list-style-type: none"> <li>ISD94100 Demo Board with audio CODEC (NAU88C22) on board</li> <li>Connect to PC via ISD NU-LINK for programming and evaluation</li> </ul>	
NV-ISD941A24	NV-ISD941A24	ISD-DEMO941A24	ISD941A24	<ul style="list-style-type: none"> <li>ISD-DEMO941A24</li> </ul>	<ul style="list-style-type: none"> <li>Demo Board for ISD941A24</li> </ul>	
NW-ISD9160	NW-ISD9160	ISD-ES9160__Prog_F	ISD9160 LQFP	<ul style="list-style-type: none"> <li>ISD-ES9160__Prog_F</li> </ul>	<ul style="list-style-type: none"> <li>ISD9160 LQFP Single Socket Programmer</li> <li>Connect to PC via ISD NU-LINK for programming and evaluation</li> </ul>	
NG-ISD9160	NG-ISD9160	ISD-9160_GANG_Prog_F	ISD9160 LQFP	<ul style="list-style-type: none"> <li>ISD-9160_GANG_Prog_F</li> </ul>	<ul style="list-style-type: none"> <li>ISD9160 LQFP Standalone Gang Programmer</li> </ul>	

# KM103S Audio

## What is KM103S Audio platform Product Family

### • 什么是KM103S Audio?

- KM103S Audio系列是一款支持多声道音频信号处理的音频集成LSI
- 功能
  - 具有模拟/数字接口和采样率转换器的多声道音频
  - 多核DSP支持各种声音增强处理和原始算法
  - 嵌入式MCU可以用作外围系统控制器或协处理器
  - 可视化图形开发界面
  - 支持车规AEC-Q100



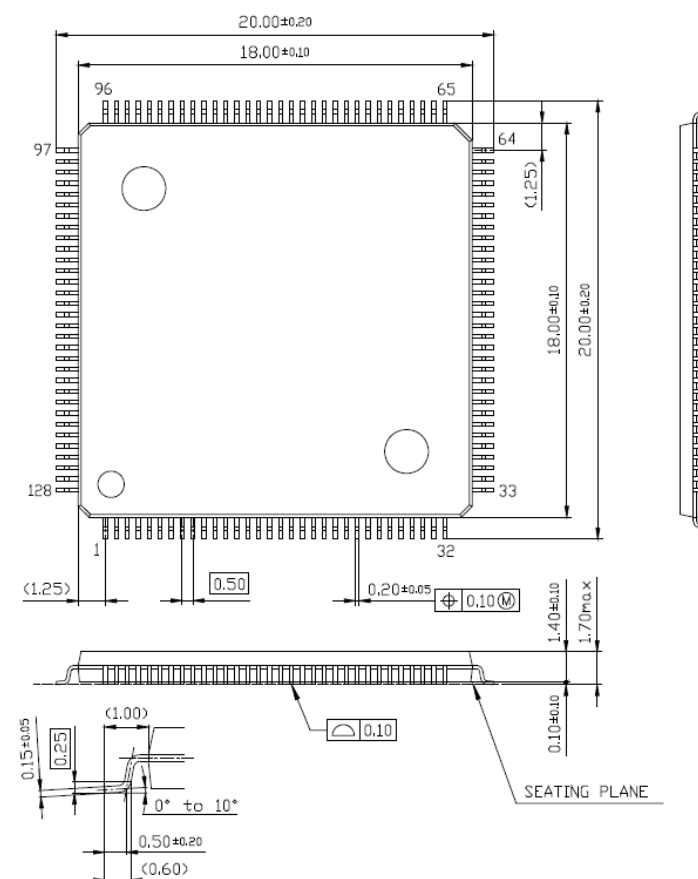


# P/N and Development Tools for KM103S Audio

<i>KM103S Audio</i>				
part number	Grade	Package	Operating Temperature	
			Ambient	Junction
KM103S0H0QAA	Non-Automotive	LQFP128	0 ~ 70°C	125°C
KMZS0H0QAAUB	Automotive	LQFP128	-40 ~ 85°C	125°C
KM103S0G0QAA	Non-Automotive	LQFP216	0 ~ 70°C	125°C
KMZS0G0QAAUB	Automotive	LQFP216	-40 ~ 85°C	125°C

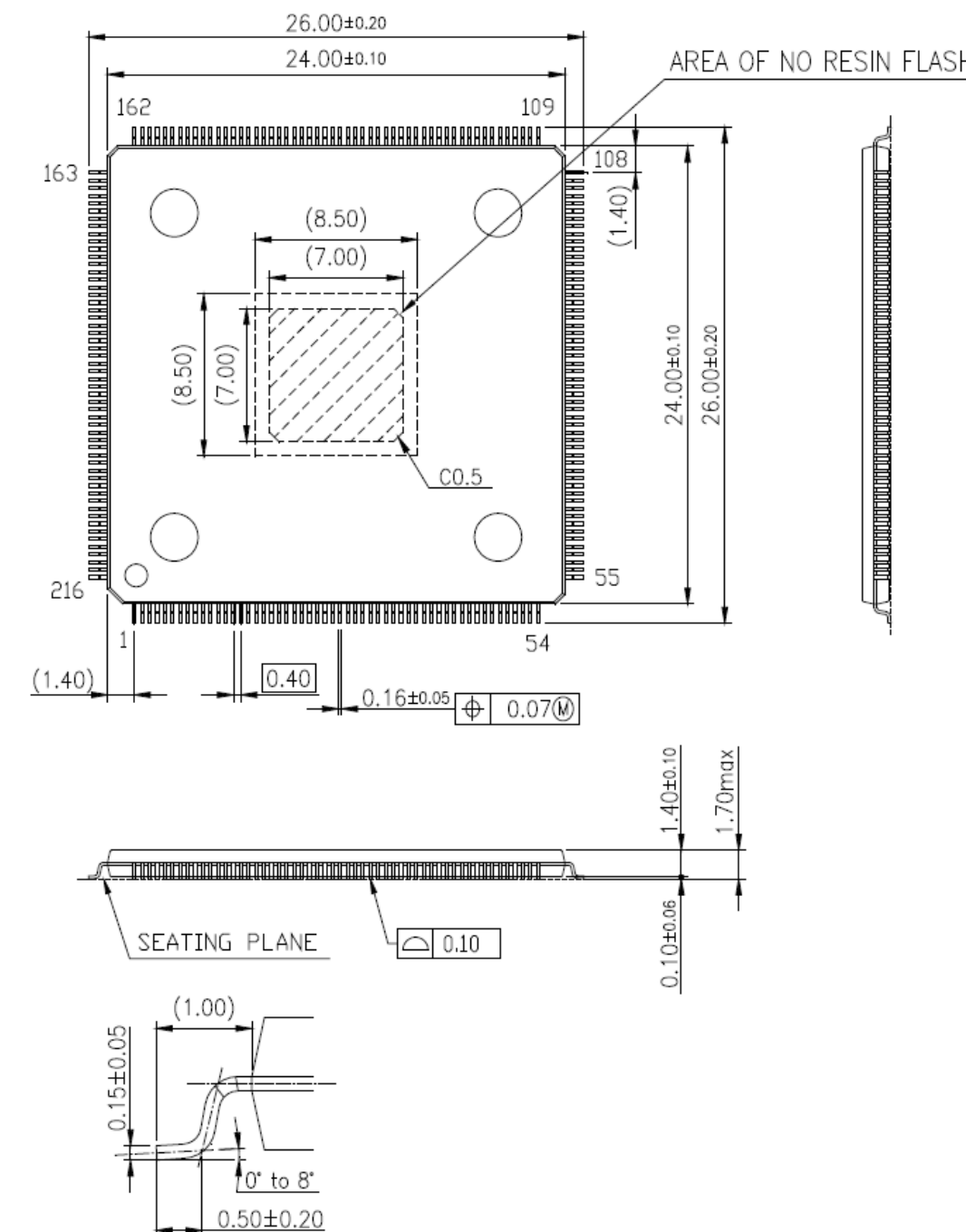
## KM103S0H0QAA/KMZS0H0QAAUB

### LQFP128 18x18



## KM103S0G0QAA/KMZS0G0QAAUB

### LQFP216 24x24



## 开发工具

### 评估板 (KE-S010HAA)



### PC控制盒 (KU-S04MONACO)



### MCU调试编程器 (Nu-EX1)



# Audio Enhancement

## What is Audio Enhancement Product Family

- 什么是Audio Enhancement?
  - 音质提升 – **DSP/ DSP+功放**
  - 声音质量 – **内置Waves/ Bongiovi算法**










# Audio Enhancement Series – Waves/ Bongiovi






[illegible]

# Development Tools for Audio Enhancement

Ordering No.	Part No.	Board Name	Supported devices	Content	Description	Picture
NU-NAUSB2I2C	NU-NAUSB2I2C	USB-To-I2C/I2S_V1.1	NPCA120DD NPCA121DD NPCA120DY	• USB-To-I2C/I2S_V1.1	• USB-To-I2C/I2S_V1.1 Control Board for NPCA120/121 Demo Board	
NU-NPUSB2I2C	NU-NPUSB2I2C	USB-To-I2C/I2S	NPCA110X & NPCP215F	• USB-To-I2C/I2S	• USB-To-I2C/I2S Board for NPCA110X & NPCP215X	
NE-NPCA120	NE-NPCA120	EVB-NPCA120_V1.0	NPCA120DD	• EVB-NPCA120_V1.0	• NPCA120 Audio Enhancement, Bongiovi DPS, Standard Level Demo Board	
NE-NPCA121	NE-NPCA121	EVB-NPCA121_V1.0	NPCA121DD	• EVB-NPCA121_V1.0	• NPCA121 Audio Enhancement, Bongiovi DPS, Premium Level Demo Board	
NL-NPCA120	NL-NPCA120	DEMO-NPCA120-V2.0	NPCA120DD	• DEMO-NPCA120-V2.0	• NPCA120DD LQFP-64 Audio Enhancement, Bongiovi DPS, Standard Level Demo Board	



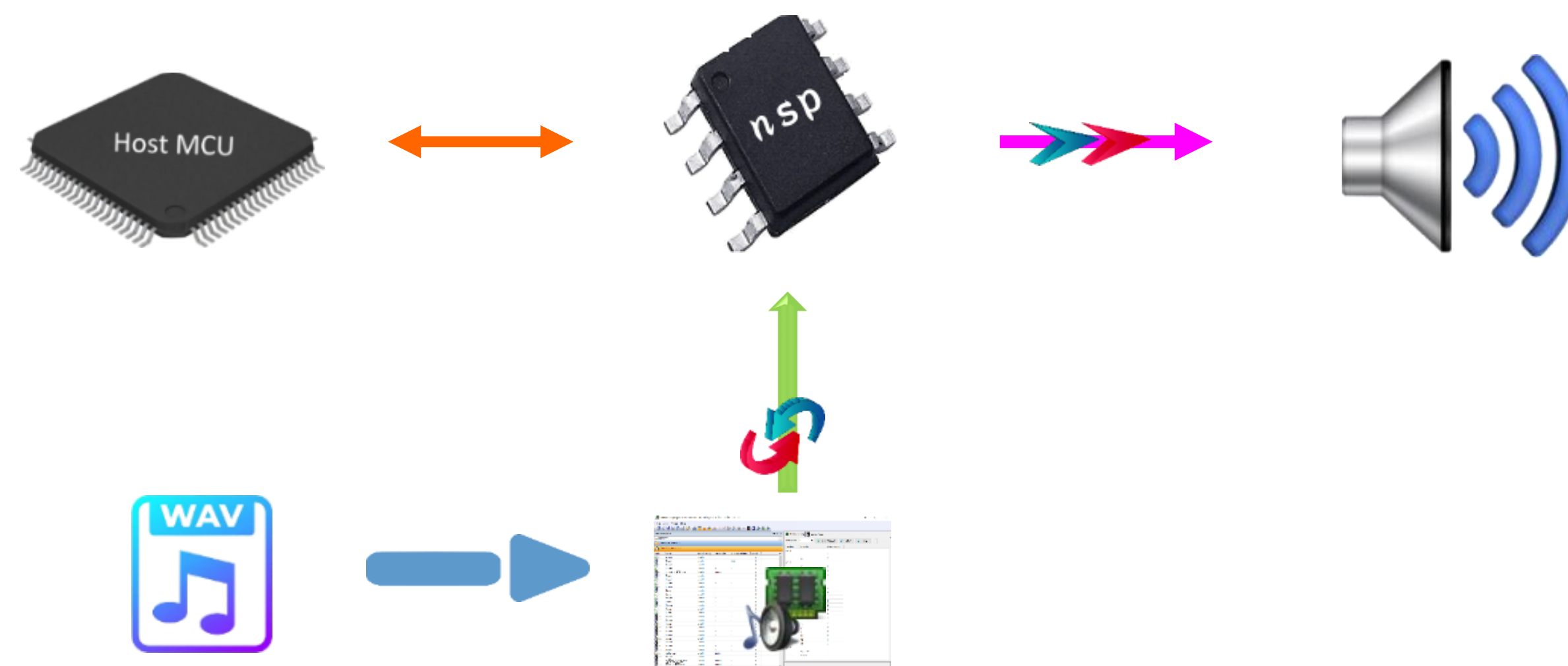
# Development Tools for Audio Enhancement(Cont.)

Ordering No.	Part No.	Board Name	Supported devices	Content	Description	Picture
NL-NPCA121	NL-NPCA121	DEMO-NPCA121-V2.0	NPCA121DD	• DEMO-NPCA121-V2.0	• NPCA121DD LQFP-64 Audio Enhancement, Bongiovi DPS, Standard Level Demo <b>Board</b>	
NL-NPCA120DY	NL-NPCA120DY	DEMO-NPCA120_V3.0	NPCA120DY	• DEMO-NPCA120_V3.0	• NPCA120DY QFN-48 Audio Enhancement, Bongiovi DPS, Standard Level Demo <b>Board</b>	
NE-NPCA110XB	NE-NPCA110XB	NPCA110X-EVB	NPCA110X	• NPCA110X-EVB	• NPCA110X 1 Watt Base <b>Board</b>	
NT-NPCA110PP	NT-NPCA110PP	NPCA110P Piggy Board	NPCA110P	• NPCA110P Piggy Board	• NPCA110P Piggy <b>Board</b>	
NE-NPCP215F	NE-NPCP215F	NPCP215X-EVB	NPCP215F	• NPCP215X-EVB	• NPCP215F Demo <b>Board</b>	

# NSP(Nuvoton Sound Processor)

## What is NSP Product Family

- 什么是NSP？
  - NSP是一款内嵌 Flash 的高音质语音播放晶片
  - 内含多种通讯接口与外部之微控制晶片沟通
  - 经由新唐所提供的软件工具编辑声音组合, 透过微控制晶片下达指令来播报声音. 适合应用于各种语音提示之应用, 以及在线升级的功能





型号	秒数			包装	在线升级	温度	双信道	通讯接口			
	8KHz	12KHz	16KHz					I2C	UART	2-Wire	1-Wire
NSP2080A	144	96	72	SOP8	✓	-40℃~85℃	✓	✓	✓	✓	✓
NSP2170A	265	177	133								
NSP2340A	630	420	315								
NSP040A	60	40	30	SOP8	-20℃~85℃	-	-	-	-	✓	✓
NSP082A	94	63	47								
NSP172A	155	103	77								
NSP342A	337	225	168								
NSP481A	458	305	229								
NSP650B	701	467	350	SOP14	✓	-20℃~85℃	-	-	✓	✓	✓
NSP960B	944	629	477								
NSP2K0B	2000	1333	1000								

# NSP工具选型表

SP 开发板, 演示板, 转板, 刻录器					
型号	板子刻号	版别	品项	说明	实体照片
NSP2340A-TB1	NSP2340A-TB1	V1.0	NSP2340A 演示板	NSP2340A 演示板, 支持型号 NSP2080A, NSP2170A, NSP2340A	
NSP2340A1EP1	NSP2340A1EP1	V1.0	NSP2340A 开发板, 含 N55PA01A	NSP2.0 开发板, 支持型号 NSP2080A, NSP2170A, NSP2340A	
NSP342A-TB1	NSP342A-TB1	V1.0	NSP342A 演示板	NSP342A 演示板, 支持型号 NSP082A, NSP172A, NSP342A	
NSP342A1EP1	NSP342A1EP1	V1.0	NSP342A EV 开发板, 含 N55PA01A	NSP342A 开发板, 支持型号 NSP082A, NSP172A, NSP342A	
NSP481A-TB3	NSP481A-TB3	V1.0	NSP481A-TB3 演示板, 含 N55PA01A	NSP481A演示板, 含 N55PA01A	
NSP960B-TB1	NSP960B-TB1	V1.0	NSP960B (SOP14) 演示板	NSP960B (SOP14) 演示板, 支持型号 NSP650B, NSP960B	
NSP-1-WTR	NSP 1-1 Writer	V1.0	NSP-Flash 1 to 1 Writer	NSP-Flash 1 to 1 Writer, 支持型号 NSP040A/082A/172A/342A/481A, NSP650B/960B/2K0B	
NSP-8-WTR-F	NSP-8-WTR-F	V1.0	NSP-Flash Gang Writer 主板	NSP 1 to 8 Gang Writer 主板 支持型号: NSP040A/082A/172A/342A/481A, NSP2080A/2170A/2340A	
NSP-AP-A-1	NSP-AP-A-1	V1.0	NSP-SOP8-1 含socket 及转板	支持 NSP SOP8 IC	



