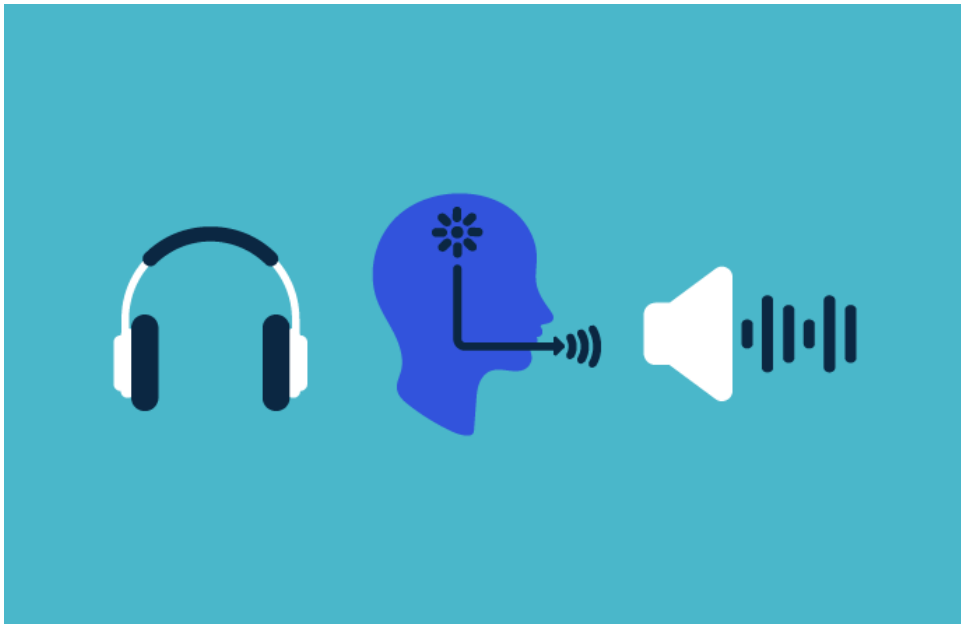


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# AUDIO



## CODEC

NAU88C10YG	Nuvoton	Mono Audio Codec with 2-wire Control Interface	0.63\$	1W	Mono	<a href="https://doc.inmys.ru/hash/8299e5eec4f546d429ade45ee0083891/nuvoton~nau88c10yg.pdf">https://doc.inmys.ru/hash/8299e5eec4f546d429ade45ee0083891/nuvoton~nau88c10yg.pdf</a>
NAU8814	Nuvoton	Mono Audio Codec with Speaker Driver and Equalizer	1\$	1W	Mono	<a href="https://doc.inmys.ru/hash/072f57728e4b455df96b113215f7ce33/DS_NAU8814_DataSheet_EN_Rev3.1.pdf">https://doc.inmys.ru/hash/072f57728e4b455df96b113215f7ce33/DS_NAU8814_DataSheet_EN_Rev3.1.pdf</a>
NAU88C22	Nuvoton	24-bit Stereo Audio Codec with Speaker Driver	0.66\$	1W	Stereo	<a href="https://doc.inmys.ru/hash/ae625c521ed4b7daf93510c136a325c0/nuvoton~nau88c22yg.pdf">https://doc.inmys.ru/hash/ae625c521ed4b7daf93510c136a325c0/nuvoton~nau88c22yg.pdf</a>

Part No	Description	# of ADC	# of DAC	SNR (dB) ADC	SNR (dB) DAC	THD (dB) ADC	THD (dB) DAC	Sample Rate (kHz)	Audio Format	CTRL IF	Analog/Digital (V)	Package (mm)
NAU8810YG	Mono Audio CODEC	1	1	91	93	-79	-84	8 ~ 48	I2S/TDM/PCM	2-Wire	2.5V ~ 3.6V 1.6V ~ 3.6V	QFN20 (4x4)
NAU8812RG	Mono Audio CODEC with speaker driver	1	1	91	93	-79	-84	8 ~ 48	I2S/TDM/PCM	2/3/4-Wire	2.5V ~ 3.6V 1.6V ~ 3.6V	SSOP28
NAU8812YG	Mono Audio CODEC with speaker driver	1	1	91	93	-79	-84	8 ~ 48	I2S/TDM/PCM	2/3/4-Wire	2.5V ~ 3.6V 1.6V ~ 3.6V	QFN32 (5x5)

Part No	Description	# of ADC	# of DAC	SNR (dB) ADC	SNR (dB) DAC	THD (dB) ADC	THD (dB) DAC	Sample Rate (kHz)	Audio Format	CTRL IF	Analog/Digital (V)	Package (mm)
NAU8814YG	Mono Audio CODEC with speaker driver equalizer	1	1	91	93	-79	-84	8 ~ 48	I2S/TDM/PCM	2/3-Wire	2.5V ~ 3.6V 1.6V ~ 3.6V	QFN24 (4x4)
NAU8820YG	Stereo Audio CODEC	2	2	90	94	-80	-84	8 ~ 48	I2S/TDM/PCM	2/3/4-Wire	2.5V ~ 3.6V 1.6V ~ 3.6V	QFN32 (5x5)
NAU8822AYG	Stereo Audio CODEC with speaker driver	2	2	90	94	-80	-84	8 ~ 48	I2S/TDM/PCM	2/3/4-Wire	2.5V ~ 3.6V 1.6V ~ 3.6V	QFN32 (5x5)
NAU88C10YG	Mono Audio CODEC	1	1	91	93	-79	-84	8 ~ 48	I2S/TDM/PCM	2-Wire	2.5V ~ 3.6V 1.6V ~ 3.6V	QFN20 (4x4)
NAU88C14YG	Mono Audio CODEC with speaker driver equalizer	1	1	91	93	-79	-84	8 ~ 48	I2S/TDM/PCM	2/3-Wire	2.5V ~ 3.6V 1.6V ~ 3.6V	QFN24 (4x4)
NAU88C20YG	Stereo Audio CODEC	2	2	90	94	-80	-84	8 ~ 48	I2S/TDM/PCM	2/3/4-Wire	2.5V ~ 3.6V 1.6V ~ 3.6V	QFN32 (5x5)
NAU88C22YG	Stereo Audio CODEC with speaker driver	2	2	89	89	-78	-84	8 ~ 192	I2S/TDM/PCM	2/3/4-Wire	2.5V ~ 3.6V 1.6V ~ 3.6V	QFN32 (5x5)
NAU88L11YG	Ultra Low Power Mono Audio CODEC with class-G headphone driver	1	1	103	105	-93	-85	8 ~ 96	I2S/TDM/PCM	2-Wire	1.6V ~ 2.0V 1.6V ~ 3.6V	QFN20 (4x4)
NAU88L21IG	Ultra Low Power Stereo Audio CODEC with class-G headphone driver	2	2	103	105	-91	-80	8 ~ 192	I2S/TDM/PCM	2-Wire	1.6V ~ 2.0V 1.6V ~ 3.6V	QFN32 (4x4)
NAU88L21YG	Ultra Low Power Stereo Audio CODEC with class-G headphone driver	2	2	103	105	-91	-80	8 ~ 192	I2S/TDM/PCM	2-Wire	1.6V ~ 2.0V 1.6V ~ 3.6V	QFN32 (5x5)
NAU88L24IG	Ultra Low Power Stereo Audio CODEC with advanced headset detection class-D amp	2	2	100	103	-85	-77	8 ~ 96	I2S/TDM/PCM	2-Wire	1.6V ~ 2.0V 1.6V ~ 3.6V	QFN48 (6x6)

Part No	Description	# of ADC	# of DAC	SNR (dB) ADC	SNR (dB) DAC	THD (dB) ADC	THD (dB) DAC	Sample Rate (kHz)	Audio Format	CTRL IF	Analog/Digital (V)	Package (mm)
NAU88L24VG	Ultra Low Power Stereo Audio CODEC with advanced headset detection □ class-D amp	2	2	100	103	-85	-77	8 ~ 96	I2S/TDM/PCM	2-Wire	1.6V ~ 2.0V 1.6V ~ 3.6V	WLCSP56
NAU88L24YG	Ultra Low Power Stereo Audio CODEC with advanced headset detection □ class-D amp	2	2	100	103	-85	-77	8 ~ 96	I2S/TDM/PCM	2-Wire	1.6V ~ 2.0V 1.6V ~ 3.6V	QFN48 (7x7)
NAU88L25VGB	Ultra Low Power Stereo Audio CODEC with advanced headset feature □ class-G headphone driver	1	2	101	124	-91	-89	8 ~ 192	I2S/TDM/PCM	2-Wire	1.6V ~ 2.0V 1.6V ~ 3.6V	WLCSP42
NAU88L25YGB	Ultra Low Power Stereo Audio CODEC with advanced headset feature □ class-G headphone driver	1	2	101	124	-91	-89	8 ~ 192	I2S/TDM/PCM	2-Wire	1.6V ~ 2.0V 1.6V ~ 3.6V	QFN32 (5x5)
NAU88U10YG	Mono Audio CODEC (*AEC-Q100)	1	1	91	93	-79	-84	8 ~ 48	I2S/TDM/PCM	2-Wire	2.5V ~ 3.6V 1.6V ~ 3.6V	QFN20 (4x4)
NAU88U22AYG	Stereo Audio CODEC (*AEC-Q100) with speaker driver	2	2	90	94	-80	-84	8 ~ 48	I2S/TDM/PCM	2/3/4-Wire	2.5V ~ 3.6V 1.6V ~ 3.6V	QFN32 (5x5)

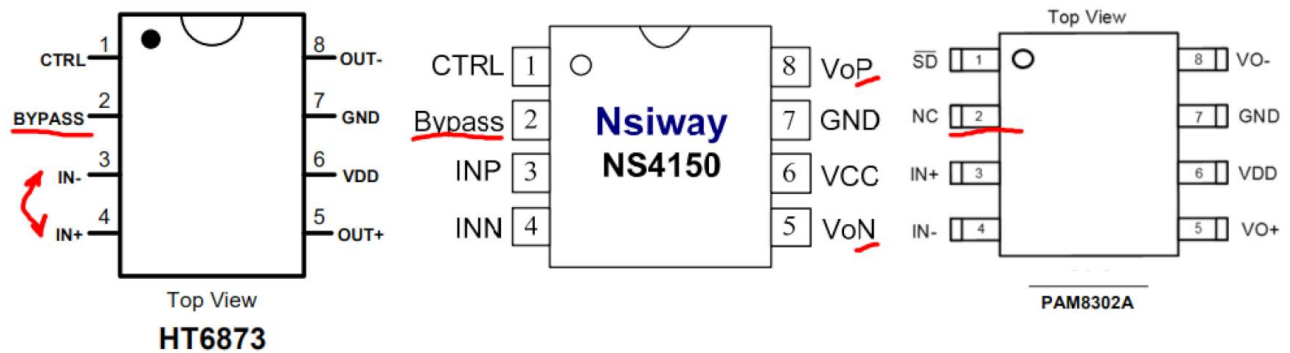
## Amplifier

Manufacturers:

Фирма	Link	Продукция	Продажники
Diodes	<a href="https://www.diodes.com/">https://www.diodes.com/</a>	Amp, ...	-
Nsiway	<a href="http://www.nsiway.com.cn/news/15.html">http://www.nsiway.com.cn/news/15.html</a>	Amp, Touch controller, ...	Компел, Чип-дип
Heroic	<a href="https://www.heroic.com.cn/">https://www.heroic.com.cn/</a>	Amp, power, rgb driver, ...	Компел

Фирма	Link	Продукция	Продажники
Hmsemi	<a href="https://hmsemi.com/">https://hmsemi.com/</a>	Amp AB\D, power, ... МНОГО всякого разного!!!	?

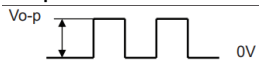
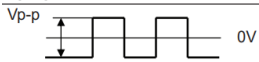
Hmsemi	HM8881		6.5W	ClassD\AB	SOIC8	<a href="https://hmsemi.com/downfile/HM8881.PDF">https://hmsemi.com/downfile/HM8881.PDF</a>
Heroic	HT6873	0.2\$	2.5W	ClassD	SOIC8	<a href="https://www.heroic.com.cn/public/uploads/file/20191114/1573699200606250.pdf">https://www.heroic.com.cn/public/uploads/file/20191114/1573699200606250.pdf</a>
Nsiway	NS4150B, NS4150C	0.08\$	2.5W	ClassD	SOIC8, MSOP8	<a href="https://static.chipdip.ru/lib/002/DOC013002158.pdf">https://static.chipdip.ru/lib/002/DOC013002158.pdf</a>
Diodes	PAM8302A	0.12\$	2.5W	ClassD	SOIC8, MSOP8, DFN8	<a href="https://www.diodes.com/assets/Datasheets/PAM8302A.pdf">https://www.diodes.com/assets/Datasheets/PAM8302A.pdf</a>



## Buzzers

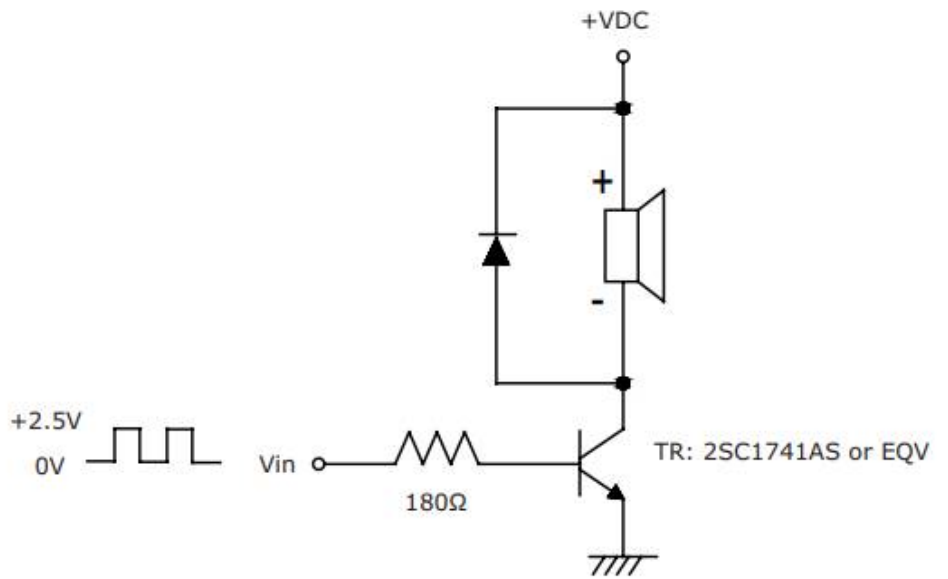
Manufacturers:

CUI	<a href="https://www.cuidevices.com/catalog/audio/buzzers">https://www.cuidevices.com/catalog/audio/buzzers</a>
JL WORLD	<a href="https://www.jlworld.com/products/pin/">https://www.jlworld.com/products/pin/</a>
KLS	<a href="https://klsele.com/products/Buzzers-Microphones-Speakers.html">https://klsele.com/products/Buzzers-Microphones-Speakers.html</a>

- audio indicators
  - internal drive circuit
  - drive
    - Vdc
      - dc voltage
    - Vac
      - ac voltage
- audio transducers
  - external drive circuit
  - drive
    - Vo-p
 
    - Vp-p
 
    - Vdc
      - for 3 pin piezo ??? непонятно...

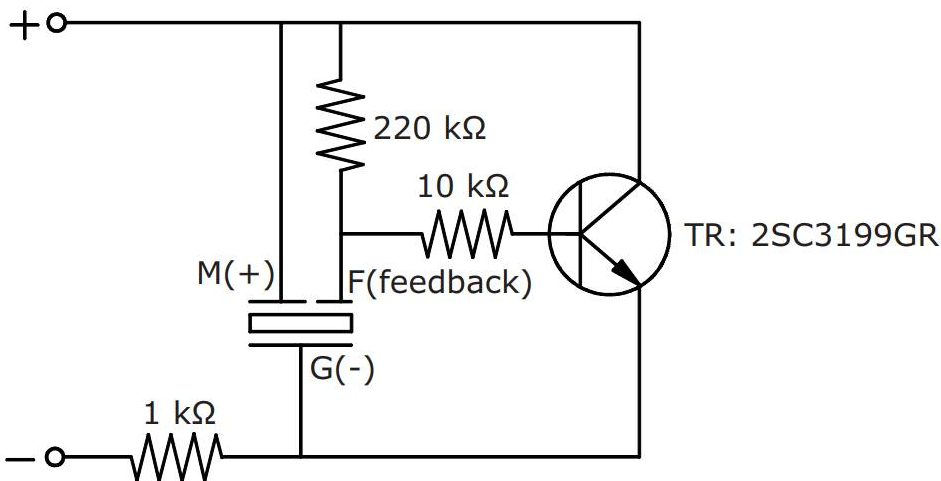
- piezo elements
  - external drive circuit
    - Vp-p
- sirens

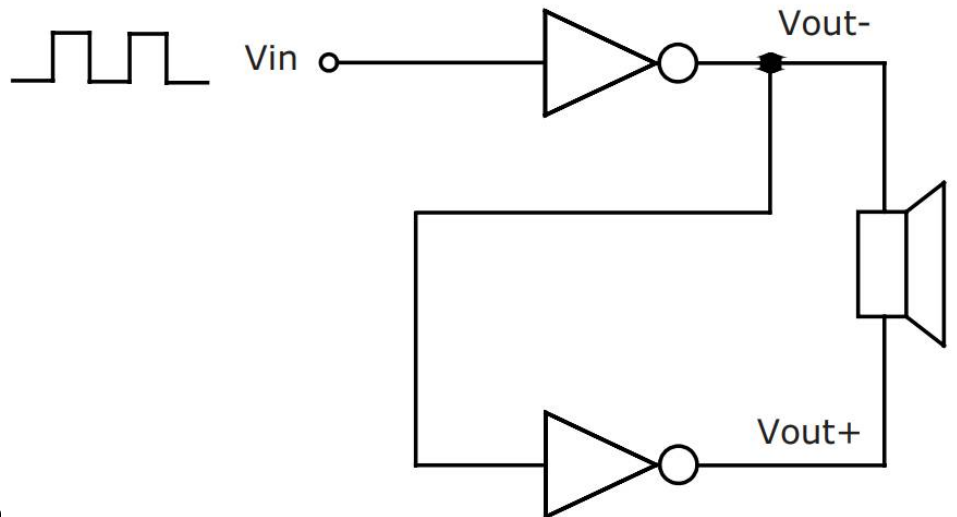
CEM-1206S	CUI	audio transducer	Vo-p	6V
HCM1206A	JL WORLD	audio transducer	Vo-p	5V
L-KLS3-MT-12x09-B	KLS	audio transducer	Vo-p	5V
HCM1203X	JL WORLD	audio indicator	Vdc	3V
HCM1201X	JL WORLD	audio indicator	Vdc	1.5V



Drive circuit 1: (external, ..

Drive circuit 2 (external, Vpp 3pin piezo):





Drive circuit 3 (external, ' , , , ,

## Microphone

Чувствительность микрофона приводят в dB, но при разных условиях:

- $f=1\text{KHz}$ ,  $0\text{dB}=1\text{V}/\mu\text{bar}$
- $f=1\text{KHz}$ ,  $0\text{dB}=1\text{V}/\text{pa}$

Use “Pascal (Pa)” indication of sensitivity as per the recommendation of I.E.C.(International Electro technical Commission).The Sensitivity of “Pa” will increase 20dB comparing with “ubar” indication.

Example:  $-60\text{dB}$  ( $0\text{dB}=1\text{V}/\text{ubar}$ ) =  $-40\text{dB}$  ( $1\text{V}/\text{Pa}$ )

Mfg	P\N	Sensitivity	Freq	SNR	RL	Op. Voltage	Current	Description	Link
RUICHI	DG06050CD-P	-46dB...-36dB ( $0\text{dB}=1\text{V}/\mu\text{Bar}$ ,1KHz), -3dB (3V)	20Hz...16KHz, Omni	60dB	2K2	4.5V (10V)	0.5mA	Электретный микрофон D6-H5-C1.9-TH	<a href="#">DG06050CD-P</a>
VOISE	VS6050PS32	-35dB...-29dB ( $0\text{dB}=1\text{V}/\text{Pa}$ ,1KHz), -3dB (2...1.5V)		55dBA	2K2	4.5V (1-10V)	0.5mA, 2V, 2K2	Электретный микрофон D6-H5-C1.9-TH	
VOISE	VS6027PS30	-33dB...-27dB ( $0\text{dB}=1\text{V}/\text{Pa}$ ,1KHz), -3dB (2...1.5V)		55dBA	2K2	2V (1-10V)	0.5mA, 2V, 2K2	Электретный микрофон D6-H2.7-C1.9-TH	
SoniCrest	HMO0603A-60	-43dB...-37dB ( $0\text{dB}=1\text{V}/\text{Pa}$ ,1KHz),	50Hz...16KHz, Omni	58dB	2K2	3V (10V)	0.5mA	Электретный микрофон D6-H5-SMD	

## Speaker

**Manufacturers:**

RUICHI	<a href="https://ruelectronics.com/">https://ruelectronics.com/</a>
KLS	<a href="https://klsele.com/">https://klsele.com/</a>

?	<a href="#">динамики aliexpress</a>				
RUICHI	<a href="#">S1585</a>	W10-L20	H4	1W	8R



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RUICHI	<a href="#">HD-2040</a>	W20-L40	H5.8	1W	8R
?	???	W20-L40	H5.8	2W	8R
RUICHI	<a href="#">S1801</a>	D28	H6	2W	4R
KLS	<a href="#">L-KLS3-YS03B-32MM-8R2W</a>	D32	H5	2W	8R