MY1690X-16S Voice Chip datasheet

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MY1690X-16S Voice Module User Manual

1 Overview

MY1690X-16S It is a card MP3 chip controlled by serial port independently developed by Shenzhen Maiyou Technology Co., Ltd. Supports dual decoding of MP3 and WAV formats, the module supports up to 32G TF card, and can also connect an external U disk or USB data cable to the computer to replace SD card audio files.

2. Product features

- Support MP3, WAV high-quality audio format files with beautiful sound. 24-bit DAC output, dynamic range support 93dB, signal-to-noise ratio support
- 85dB. It fully supports FAT16 and FAT32 file systems, and supports up to 32G TF cards and 32G U disks. Support UART asynchronous serial port
- control: support play, pause, up and down music, volume addition and subtraction, selection of music playback, interruption, etc. Headphones can be
- connected directly, or an external power amplifier can be connected.
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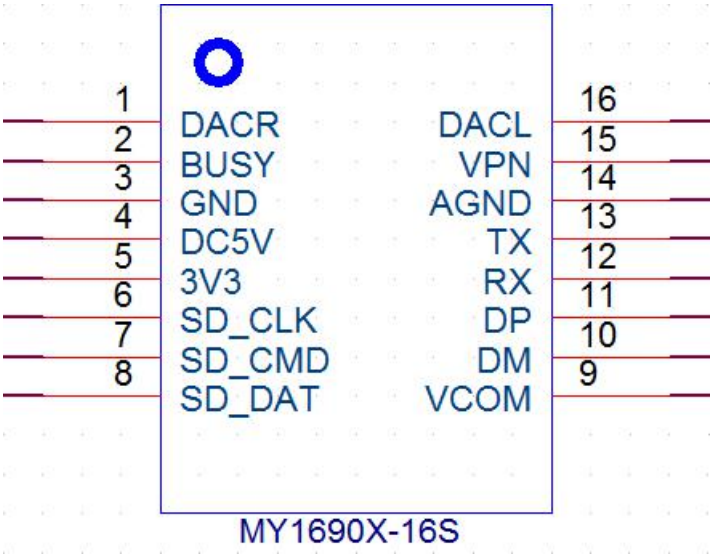
3. Technical specifications

name	parameter
MP3, WAV file format Mode	Support audio files with sampling rate 8～48K and bit rate 8～320Kbps
UART interface	Standard serial port, 3.3V TTL level, baud rate 9600
Input voltage	3.4V-5.5V
Quiescent Current	13MA
Operating temperature	-40°C～80°C
humidity	10%～90%

4. Chip pin definition



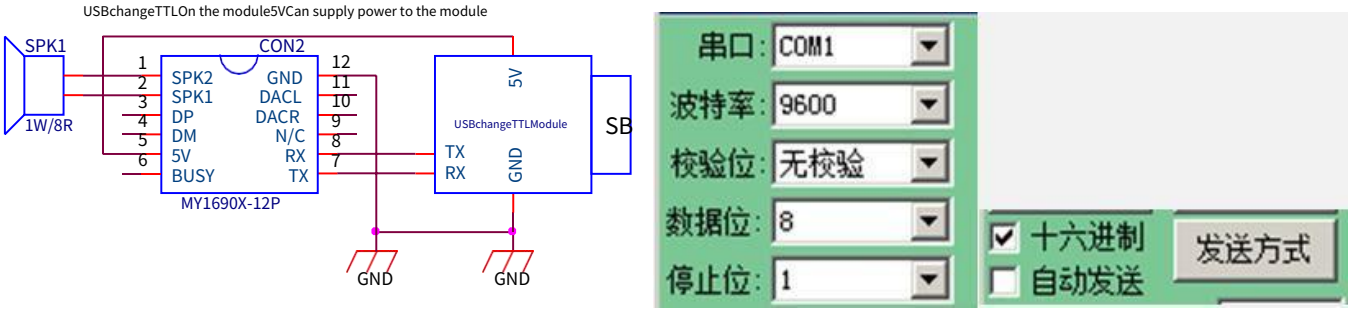
Pin number	Pin name	Function description	instruction manual
1	DACR	Right channel output	
2	BUSY	Play output high level, other states low level	
3	GND	Power negative	
4	DC5V	Power positive	3.4V-5V Power supply range
5	3 V 3	USB signal cable	Can be output as FLASH Power supply (drive current Within 100MA), this is the core LDO The power supply must be added nearby1UF Filter capacitor to negative pole (**Both ends of the capacitor to the chip3Feet and5Between feet The shortest distance possible**). The power supply cannot be combined with other 3.3V If the power is connected together, there will be conflicts
6	SD_CLK	SD_CLK for SD Card hour stitch	
7	SD _CMD	SD _CMD for SD Card command foot	
8	SD_DAT	SD_ DAT for SD Card data pin	
9	VCOM	Bias voltage	Must be close to the chip plus1uf The capacitor is connected to the negative pole
10	DM	USB Signal line (D-)	USB Download sound or read U Disk data
11	DP	USB Signal line (D+)	
12	RX	Serial read signal	
13	TX	Serial write signal	
14	AGND	Analog negative	When connected to a high-power amplifier, a single point can be near the amplifier Grounded
15	VPN	Bias voltage	Must be close to the chip plus1uf The capacitor is connected to the negative pole
16	DACL	Left channel output	

5. Application areas

- Advanced toys: swing machines, car crashes, game consoles, etc.;
- Industrial control field: industry, control equipment voice broadcast;
- Intelligent transportation equipment: voice prompts in toll stations, parking lots, and cars;
- Advertising industry: advertising slogans broadcast;
- Access control, attendance: voice prompts such as the door is open;
- Security industry: human body induction prompt, safety voice prompt;
- Medical electronics: device voice prompts;

6. Serial port control protocol

MY1690X-16S quasi-UART asynchronous serial interface is a 3.3V TTL level interface. It can be converted to RS232 level through MAX3232 chip or communicated with PC through USB to TTL module for debugging. The communication data format is: start bit: 1 bit; data bit: 8 bits; parity bit: none; stop bit: 1 bit. The following figure shows the connection diagram between the USB to TTL module and MY1690X-12P. Using the computer serial debugging assistant, you need to set the parameters of the serial port correctly, as shown in the figure below:



Protocol command format:

Start code	length	Opcode	parameter	Check code	End code
0X7E	see below	see below	see below	see below	0XEF

Note: All data are**Hexadecimal number**.

"**length**"Refers to:**length**+**Opcode**+**parameter**(Some have no parameters, some have two parameters)+**Check code**The number of"

Check code"Refers to:**length**<XOR>**Opcode**<XOR>**parameter**The value of both is the value of the exclusive OR in sequence.

Customers can use the code XOR instruction to calculate the check code;

It can also be calculated by a calculator: for example, set the volume command to **7E 04 31 19 2C EF**length 04 Is obtained like this: "04","31","19","2C" 4 Number; check code 2C Is obtained like this:

First open the calculator and select the programmer mode;

Then choose 16 Base, double word;

Finally click to calculate 04 Xor 31 Xor19 = 2C

The figure below is a schematic diagram of the computer's calculation operation steps:

6.1 Instruction list

Communication control instructions (If the command is sent successfully, it will return OK, and the song will stop and return to STOP after the song is played)

CMD Detailed	Corresponding function	parameter(ASCK code)
0x11	Play	without
0x12	pause	without
0x13	next track	without
0x14	previous piece	without
0x15	Volume up	without
0x16	Volume down	without
0x19	Reset	without
0x1A	Fast forward	without
0x1B	Rewind	without
0x1C	play / Pause	without
0x1E	stop	without
CMD Detailed	Corresponding function	parameter(8 Bit HEX)
0x31	Set volume	0-30 Adjustable level, volume power down memory
0x32	set up EQ	0-5(NO\POP\ROCK\JAZZ\CLASSIC\BASS)
0x33	Set loop mode	0-4((Full/Folder/Single/Random/No Loop)
0x34	Folder switch	0(Previous folder),1(Next folder)
0x35	Device switching	0(U plate),1(SD Card)
0x38	BUSY Level switch	1 Output high level for playback,0 Output low level for playback, default 1

CMD Detailed	Corresponding function	parameter(16 Bit HEX)
0x41	Select a track to play	1-Largest head
0x42	Play the tracks in the specified folder	The upper eight digits are the folder number (00-99), and the lower eight digits are the song name (001-255)
0x43	Insertion function	1-Largest head
0x44	Insert the song in the specified folder to play	The upper eight digits are the folder number (00-99), and the lower eight digits are the song name (001-255)
Pass	Combination play	Continuously sending different tracks will stop after the broadcast, maximum support 20 part

CMD Detailed	Corresponding function	Return parameters (ASCK code)(16 Bit)
0x20	Query playback status	0(stop)1(Play) 2(pause) 3(Fast forward)4(Rewind)
0x21	Query volume	0-30
0x22	Query current EQ	0-5(NO\POP\ROCK\JAZZ\CLASSIC\BASS
0x23	Query the current play mode	0-4((Full/Folder/Single/Random/No Loop)
0x24	Query version number	1.0
0x25	Inquire SD Total number of files in the card	1-65535
0x26	Inquire U Total number of files on the disk	1-65535
0x28	Query the current playback device	0(U plate),1(SD Card)
0x29	Inquire SD Card's current track	1-65536
0x2A	Inquire U The current track of the disc	1-65536
0x2C	Query the time of the currently playing song	Return time (seconds)
0x2D	Query the total time of the currently playing song	Return time (seconds)
0x2E	Query the name of the currently playing song	Return the song name (only the first two digits can be returned)
0x2F	Query the total quantity in the current play folder	0-65536

Note: The interval between sending two commands continuously is more than 50MS, and the interval between two commands of the combined playback function is less than 6MS.

6.2. Detailed description of control instructions (Pay attention to the initialization time of the module when powering on, and send the command after a delay of more than 1.5S)

6.2.1 Play

Start code	length	Opcode	Check code	End code
7E	03	11	12	EF

Send this command to play music, and it can start playing in pause or stop state.

6.2.2 Pause

Start code	length	Opcode	Check code	End code
7E	03	12	11	EF

Send this command to pause playing music.

6.2.3 Next song

Start code	length	Opcode	Check code	End code
7E	03	13	10	EF

The instruction can trigger the playback of the next music, and when the last music is played, sending the instruction can trigger the playback of the first music.

6.2.4 Previous song

Start code	length	Opcode	Check code	End code
7E	03	14	17	EF

The instruction can trigger the playback of the next music, and when the first music is played, sending the instruction can trigger the playback of the last music.**Volume up**

6.2.5

Start code	length	Opcode	Check code	End code
7E	03	15	16	EF

The chip has 30 levels of volume adjustable, sending a command once, the volume is increased by one level.

6.2.6 Volume reduction

Start code	length	Opcode	Check code	End code
7E	03	16	15	EF

The chip has 30 levels of volume adjustable, sending a command once, the volume is reduced by one level.

6.2.7 Reset

Start code	length	Opcode	Check code	End code
7E	03	19	1A	EF

Under normal circumstances, you do not need to use this command, Sending this command will reset the chip, and all parameters will be restored to the factory settings (the volume is the largest, back to the first one).

6.2.8 Fast forward

Start code	length	Opcode	Check code	End code
7E	03	1A	19	EF

Send a command to fast forward the music for a period of time.

6.2.9 Rewind

Start code	length	Opcode	Check code	End code
7E	03	1B	18	EF

Send a command to rewind the music for a period of time.

6.2.10 Play/Pause

Start code	length	Opcode	Check code	End code
7E	03	1C	1F	EF

Send a command to play, and send a command to pause.

6.2.11 Stop

Start code	length	Opcode	Check code	End code
7E	03	1E	1D	EF

The music can be stopped by sending this command when the music is playing or paused.

6.2.12 Set volume

Start code	length	Opcode	Volume level	Check code	End code
7E	04	31	19	2C	EF

The volume is adjustable from 0-30. This command can be used to modify and adjust the volume in real time. The volume level sent in the example is 25.

6.2.13 Set EQ

Start code	length	Opcode	parameter	Check code	End code
7E	04	32	00	36	EF

Send this command to change EQ.

6.2.14 Set cycle mode

Start code	length	Opcode	parameter	Check code	End code
7E	04	33	02	35	EF

Send this command to set the loop mode. In the example, set the single loop mode.

6.2.15 Folder switch

Start code	length	Opcode	parameter	Check code	End code
7E	04	34	01	31	EF

Send this command to switch folder playback, sending 1 is the next folder, and 0 is the previous folder.

6.2.16 Device switching

Start code	length	Opcode	parameter	Check code	End code
7E	04	35	01	30	EF

When there are multiple devices in the system, you can send this command to select the device to be read. The example is to select TF card to play.

6.2.17 BUSY level switch

Start code	length	Opcode	parameter	Check code	End code
7E	04	38	00	3C	EF

When the BUSY signal is used to control the enable pin of the power amplifier, the above command can be sent when it is low-level work when playing is required.

6.2.18 Select play track

Start code	length	Opcode	Repertoire high	Track low	Check code	End code
7E	05	41	00	01	45	EF

Send this command to specify the corresponding track in the memory to play. The example is to play the first song.**Note: The secondary function is to select the tracks in the root directory to play, and the tracks are named with a four-digit number, such as: 0001 Hello. MP3;**

0002 Goodbye. MP3; 0003 Welcome next time. MP3

6.2.19 Playback of tracks in a specified folder

Start code	length	Opcode	Folder number	Song name	Check code	End code
7E	05	42	00	02	45	EF

This command can specify the corresponding track in the corresponding folder, the upper 8 digits are the folder number, and the lower 8 digits are the song tracks. The example is the second play in the specified folder 00.

Note: If you want to use this function, the folder must be named 00-99, and the song must be named 001 XXX.MP3-255 XXX.MP3, otherwise it will fail to play.

6.2.20 Insertion function

Start code	length	Opcode	Repertoire high	Track low	Check code	End code
7E	05	43	00	03	45	EF

When this instruction is received, the currently playing track will be paused, and then the play track specified by this instruction will be executed. When the play is over, the originally paused track will be played.

6.2.21 Insert the song in the specified folder to play

Start code	length	Opcode	Folder number	Song name	Check code	End code
7E	05	44	01	06	46	EF

When this instruction is received, it will pause the track being played, and then execute the corresponding track play in the file specified by this instruction. When the play is over, it will continue to play the originally paused track. The upper 8 digits are the folder number, and the lower 8 digits are the song track.

Note: If you want to use this function, the folder must be named 00-99, and the song must be named 001 XXX.MP3-255 XXX.MP3, otherwise it will fail to play.

6.2.22 Combined playback

Continuous sending:

7E 05 41 00 01 45 EF 7E 05 41 00 03 47 EF 7E 05 41 00 02 46 EF 7E 05 41 00 04 40 EF

Play the first 1,3,2,4 Song, stop after playing, play continuously at most 20 song. The time interval between the two commands is less than 6MS.

6.3. Query instruction description

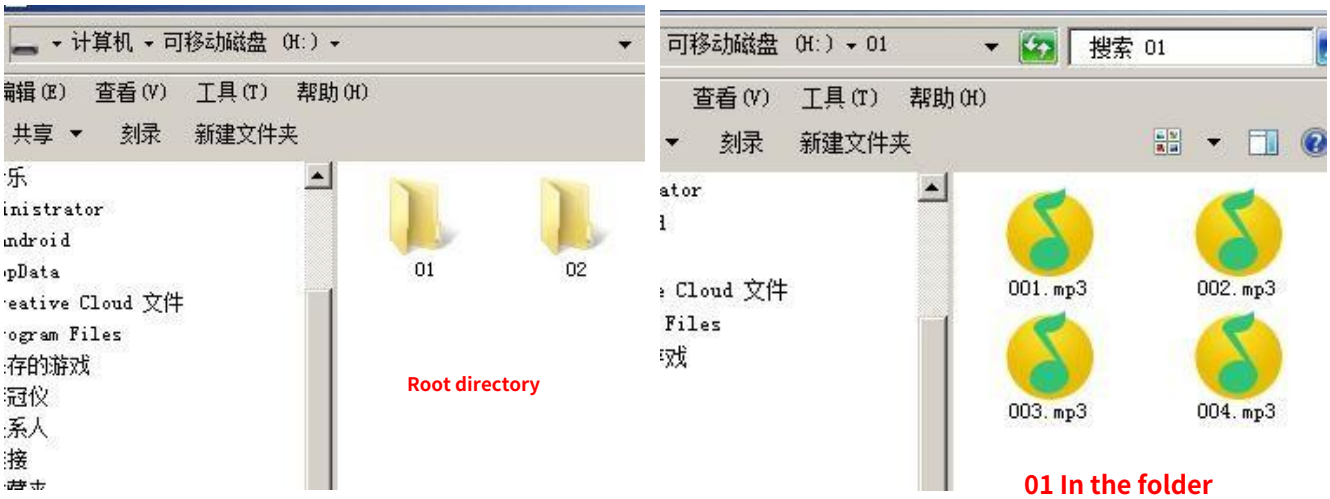
For example: send a command to query the playback status **7E 03 10 13 EF**,return **OK 0001**After sending the query command, the corresponding indicates that it is in the playing state.

parameters of the query command table above will be returned, and no detailed description will be given.

Pay attention to naming according to song naming rules!

The stub directory is named in the following way, with a four-digit number starting with 0001, followed by Chinese or not.

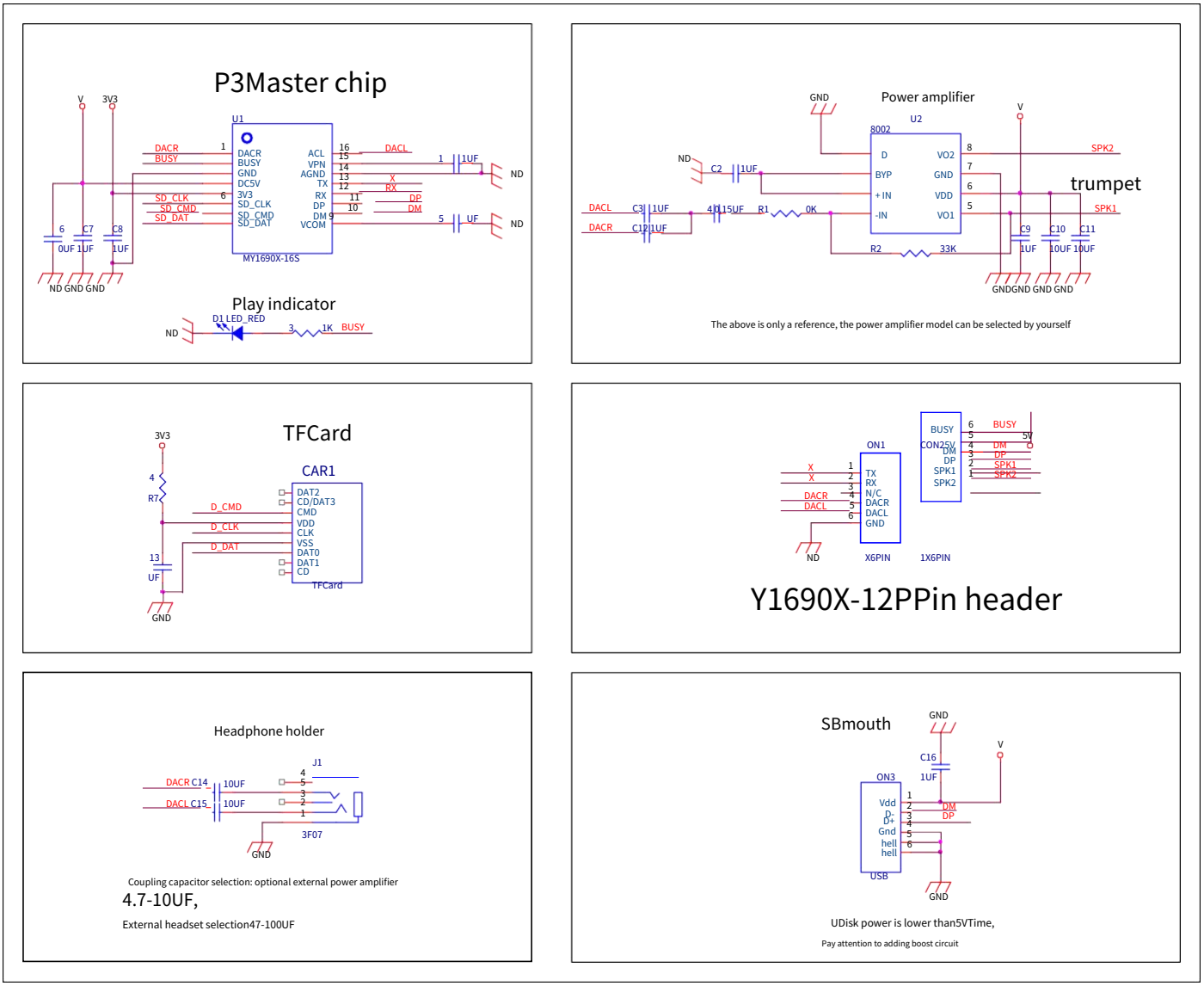
When creating a folder, name it in the following way. The folder is named with two digits at the beginning, and the songs in the folder are named with three digits and can be followed by Chinese or not.



7. Application circuit diagram

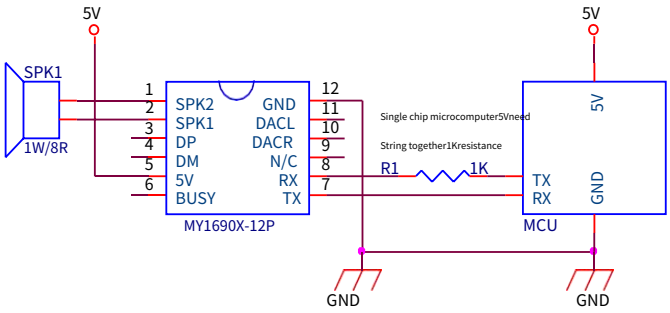
Note that all IO ports of the main control chip have a voltage of 3.3V, and pay attention to voltage matching when connecting with other microcontrollers!

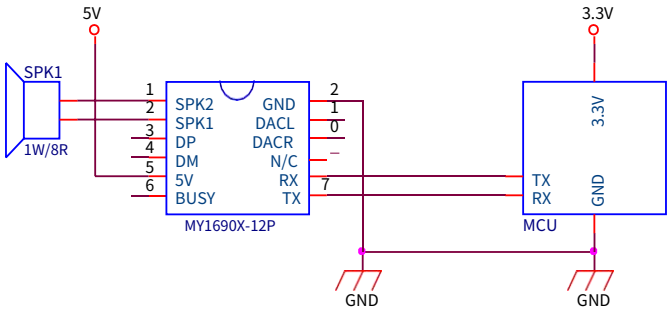
7.1. Schematic diagram of chip application



The following uses the MY1690-12P module as a reference application connection

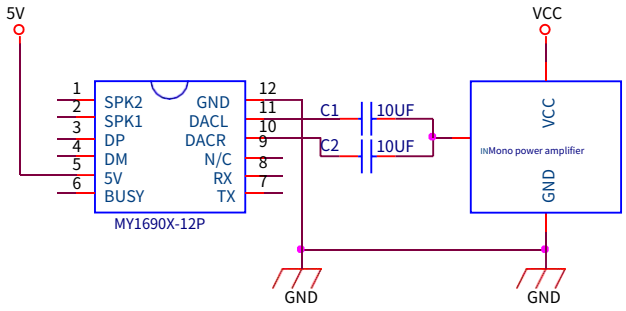
7.2. Single-chip serial port control application circuit

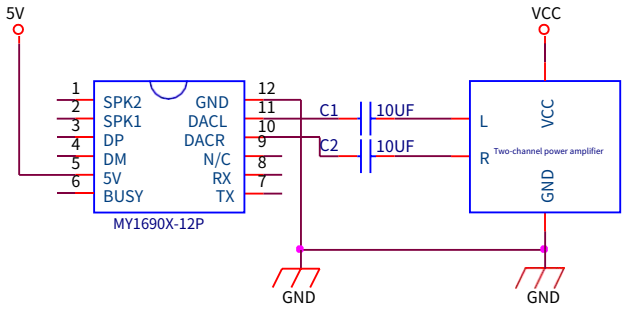




7.3. External output audio application circuit

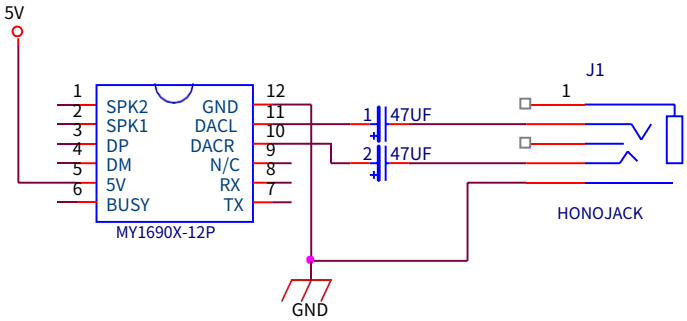
External single and dual-channel power amplifier application circuit:





If the power of the module is not up to the requirement, the customer can connect an external power amplifier.

External earphone application circuit:



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package size drawing

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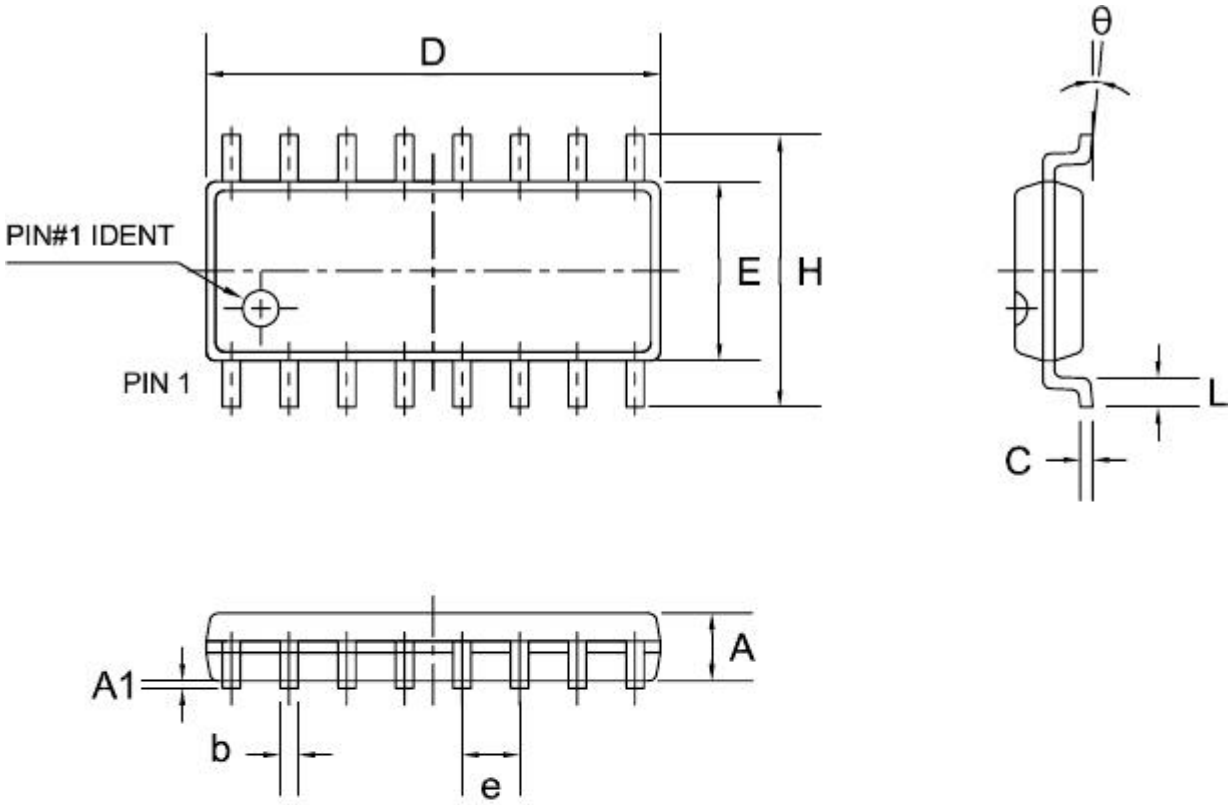

Symbol	Dimensions In Millmeters			Dimensions In Inches		
	Min	Nom	Max	Min	Nom	Max
A	1.30	1.50	1.70	0.051	0.059	0.067
A1	0.06	0.16	0.26	0.002	0.006	0.010
b	0.30	0.40	0.55	0.012	0.016	0.022
C	0.15	0.25	0.35	0.006	0.010	0.014
D	9.70	10.00	10.30	0.382	0.394	0.406
E	3.75	3.95	4.15	0.148	0.156	0.163
e	1.15	1.27	1.39	0.045	0.050	0.055
H	5.70	6.00	6.30	0.224	0.236	0.248
L	0.45	0.65	0.85	0.018	0.026	0.033
θ	0°	——	8°	0°	——	8°

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Manual version

Version	date	update content
V1.0	2020-09-30	initial version
V1.1	2021-02-26	Improve some functions

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