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## Wireless Audio Module

WMA-9600

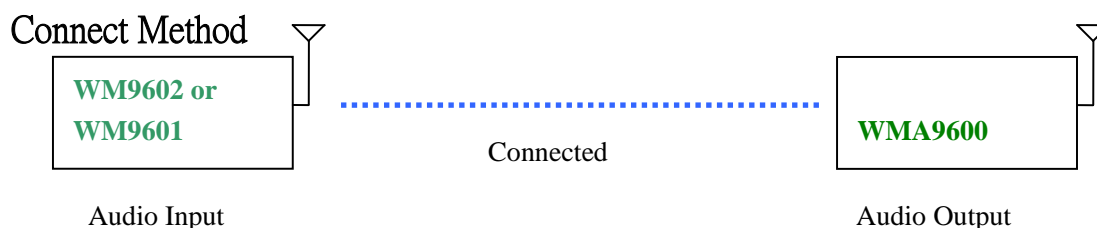
WMA-9601

WMA-9602

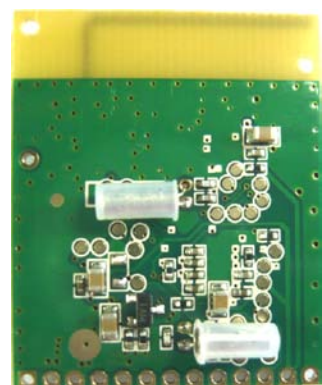
General Description .....	2
WMA-9600 (Receiver Module).....	3
Pin definition and Rating.....	3
Electronic Parameter .....	4
Block Circuit .....	6
Interface Circuit.....	6
WMA-9601 (Transmitter Module).....	8
Pin definition and Rating.....	9
Electronic Parameter .....	10
Block Circuit .....	11
Interface Circuit.....	11
WMA-9602 ( USB Transmitter Module) .....	13
Pin definition and Rating.....	13
Electronic Parameter .....	13
Interface Circuit .....	14
How to Pair WMA9600 and WMA9601?.....	15
How to Pair WMA9600 and WMA9602?.....	15
WMA9600, WMA9601 and WMA9602 Function.....	15

## General Description

WMA9600 and WMA9601 (WMA9602) are low cost wireless audio module pair utilizing digital audio compression technology and operating in worldwide 2.4GHz ISM band. The MP3-like audio quality, extremely low power consumption and mini module size make it suitable for applications such as wireless stereo headset and wireless speaker system etc,. WMA-9600 is the receiver module, WMA-9601 is the transmitter module with line-in input and USB input, and WMA-9602 is the transmitter module with USB input only.



# WMA-9600 (Receiver Module)



W=26.4MM

PIN1 is square hole

L=32.4MM



H=6MM

Length=32.4mm  
Width =26.4mm  
Thickness =6mm

## Pin definition and Rating

Pin No	Name	Description	Direction	Rating
1	SPKL	Left channel speaker output	Output	V <sub>p-p</sub> =1.4V
2	SPKR	Right channel speaker output	Output	V <sub>p-p</sub> =1.4V
3	AGND	Microphone and Speaker GND		
4	MIC IN	Connect to positive terminal of MIC. The negative terminal of MIC should be connected to GND	Input	
5	LED	LED Indicator	Output	<10MA
6	Play/Pause	Play/Pause key input	Input	-0.3V~+3.5V

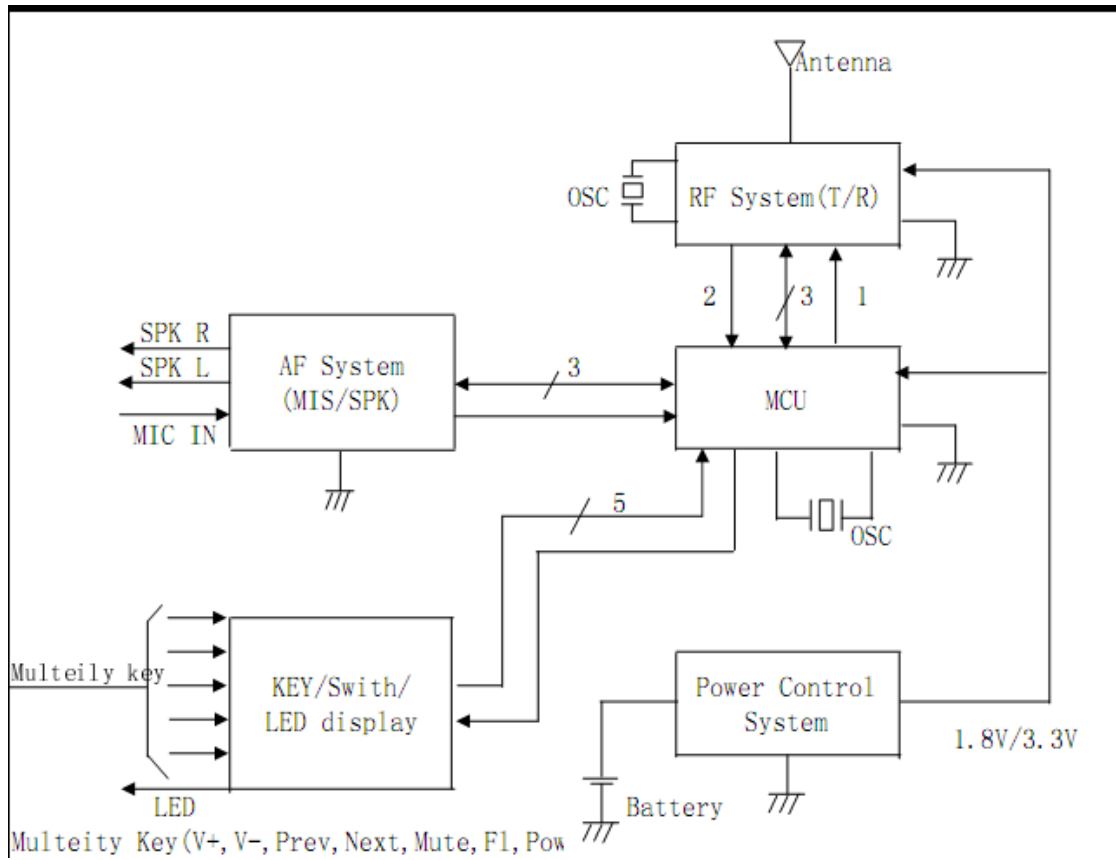
7	VOL+	Volume up	Input	(-)0.3V ~ (+)3.5V
8	VOL-	Volume down	Input	(-)0.3V ~ (+)3.5V
9	Power	on/off	Input	-0.3V~+3.5V
10	Mute	Audio mute on/off input	Input	-0.3V~+3.5V
11	Vdet	Low voltage alarm sense input	Input	+2.2V~+3.5V
12	+3.3V	Power supply		+3.3V
13	GND	Ground		

## Electronic Parameter

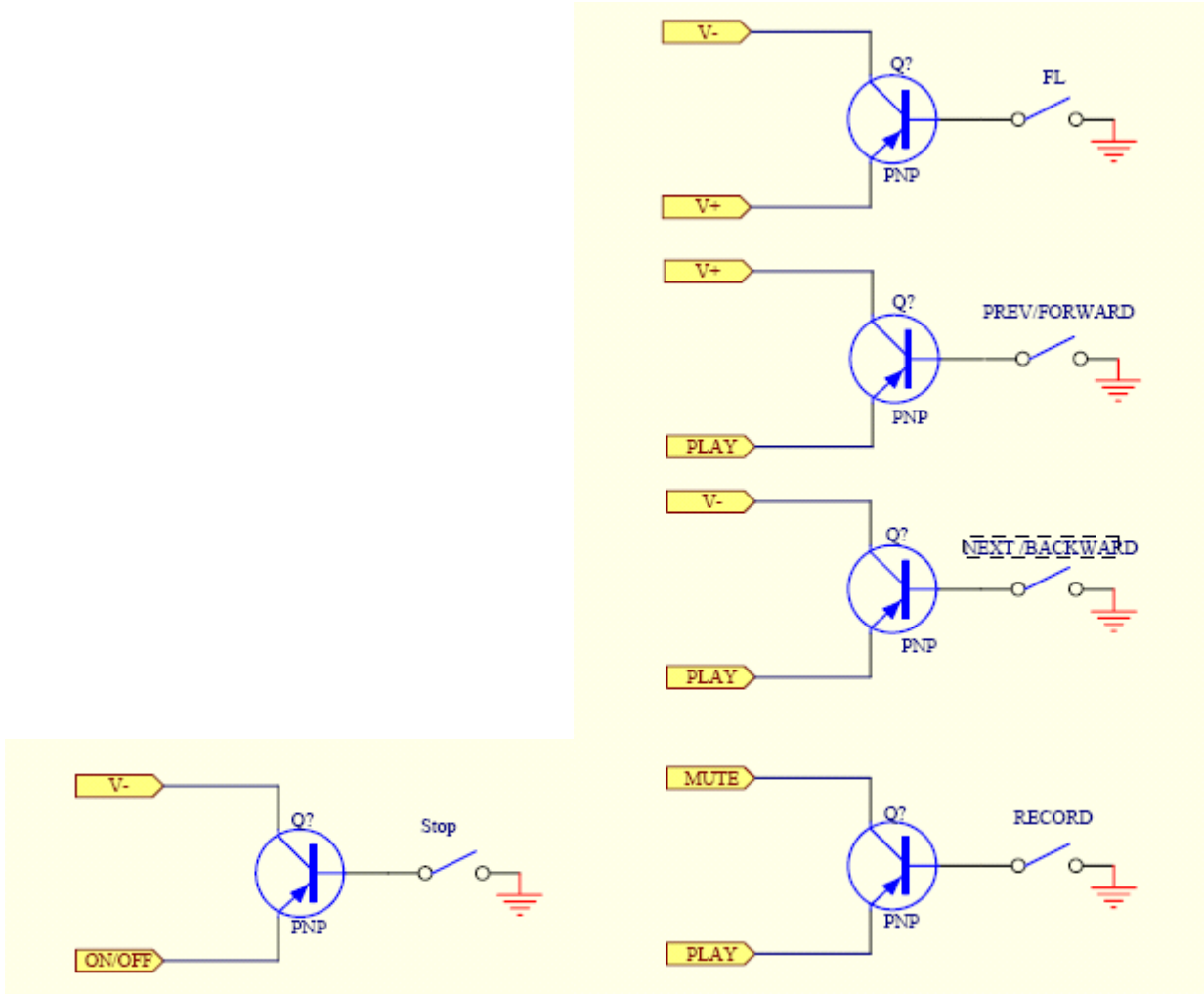
Parameter	Min	Typ	Max	Unit
Supply Voltage(+3.3V)			3.3V	Volt
Operation Current (VBUS = VBAT = 3.8V)	38	40	45	mA
Sleep Current		200		uA
Mic Sampling Rate		16		KHz
A/D Resolution		10		bits
SNR of Mic Circuit	50	55		dB
3dB Voice BW	60		6500	Hz
Mic channels		1		
Audio THD+N(0dB@1KHz)		0.1%	0.5%	

<i>Audio output SNR</i>	<i>55</i>	<i>62</i>		<i>dB</i>
<i>Audio Resolution</i>		<i>16</i>		<i>bit</i>
<i>Audio Sample Rate</i>		<i>48</i>		<i>KHz</i>
<i>Audio Latency</i>		<i>64</i>		<i>mS</i>
<i>Audio data compression</i>		<i>yes</i>		
<i>Audio Channels</i>		<i>2</i>		
<i>L/R Channels Separation</i>	<i>55</i>	<i>62</i>		<i>dB</i>
<i>Audio output Band(with 32ohm Loading)</i>	<i>20</i>		<i>22000</i>	<i>Hz</i>
<i>Audio output Range</i>			<i>1400</i>	<i>mV(p-p)</i>
<i>Operating Frequency</i>	<i>2403</i>		<i>2479</i>	<i>MHz</i>
<i>RF-channels</i>		<i>77</i>		
<i>RX Sensitivity</i>		<i>-85</i>		<i>dBm</i>
<i>Channel spacing</i>		<i>2</i>		<i>MHz</i>
<i>Air Data Rate</i>		<i>2</i>		<i>Mbps</i>
<i>Modulation</i>		<i>GFSK</i>		
<i>Radiated Power</i>			<i>+3</i>	<i>dBm</i>
<i>Operation Range</i>		<i>10</i>		<i>Meters/light of sight</i>

# Block Circuit



# Interface Circuit

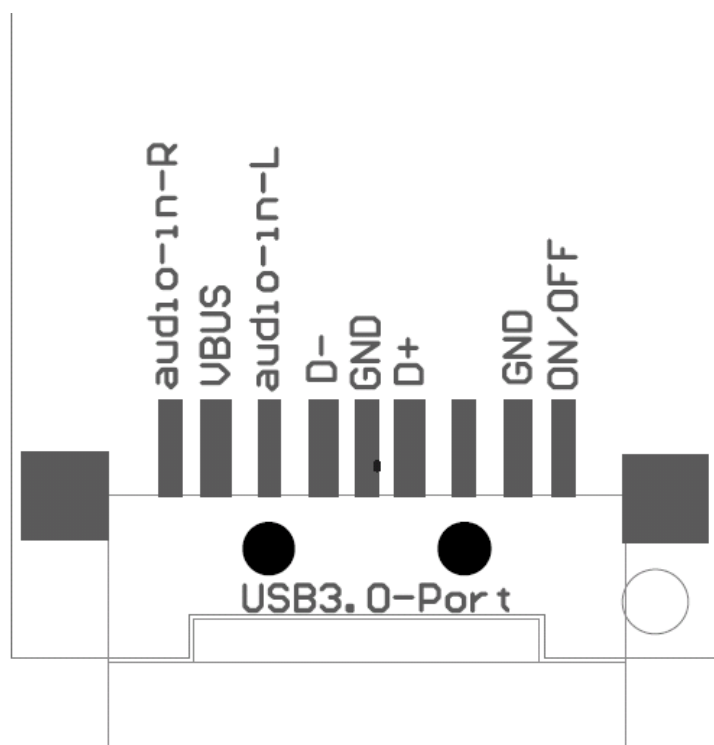


key	Functions Description
Power on/off	Switch the module between normal operation mode and standby mode
(Vol+)+(Vol-)	Used for ID pairing. Pressing the key again will abort the ID pairing operation
Vol+	Keys for volume adjustment
Vol-	Keys for volume adjustment
Mute	Key for muting the audio output

<i>Play“+” Vol+</i>	<i>Prev</i>
<i>Play“+” Vol-</i>	<i>Next</i>
<i>ON/OFF“+” Vol-</i>	<i>Stop</i>
<i>Play</i>	
<i>Mute“+”Sleep</i>	<i>MIC Mute</i>

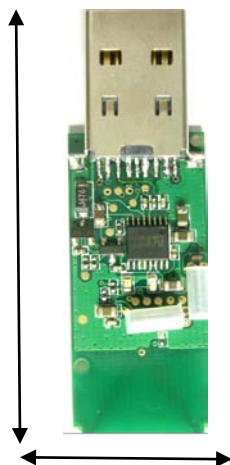
Please see above for LED, Button, SPEAKER and Usage of Microphone.

## WMA-9601 (Transmitter Module)



Pin assignment Diagram





Length=55.2mm  
Width =16.8mm  
Thickness =6mm



Pin definition and Rating

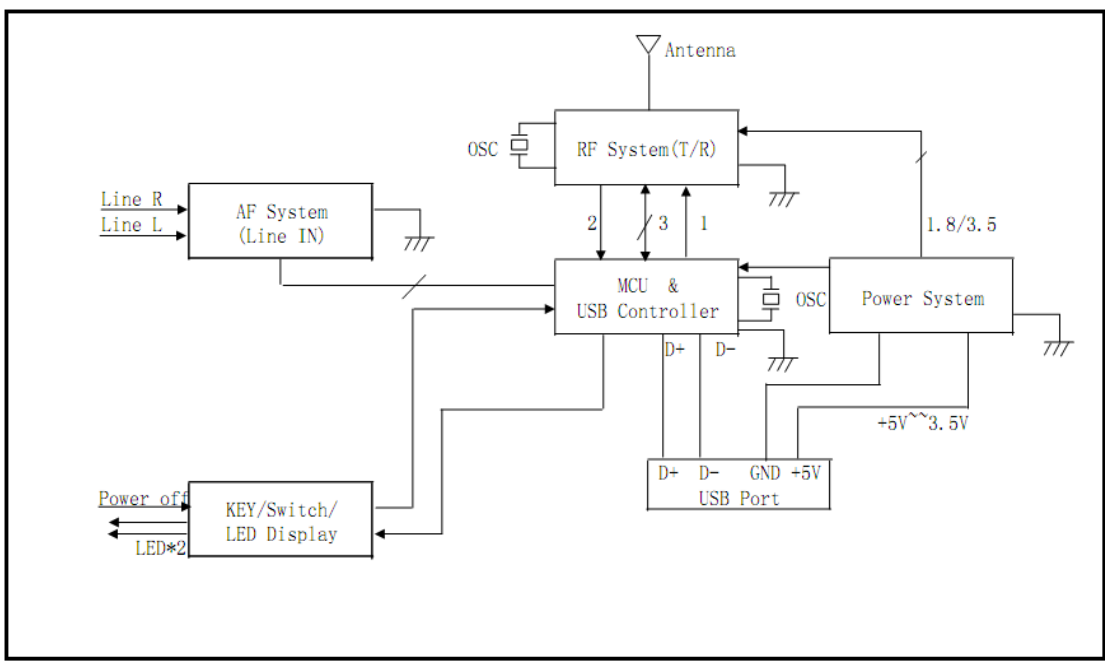
<i>Pin No</i>	<i>Pin Name</i>	<i>Description</i>	<i>Rating</i>
1	Audio R	Right channel Audio input	$V_{p-p}=1.4V$
2	VBUS	Power supply	+3.5V~+5.5V
3	Audio L	Left channel Audio input	$V_{p-p}=1.4V$
4	D-	USB D- terminal	
5	GND	Ground	
6	D+	USB D+ terminal	
7	Audio E	Audio indication Pin	
8	GND	Ground	
9	ON/OFF	Power on/off control input	-0.3V~3.5V

## Electronic Parameter

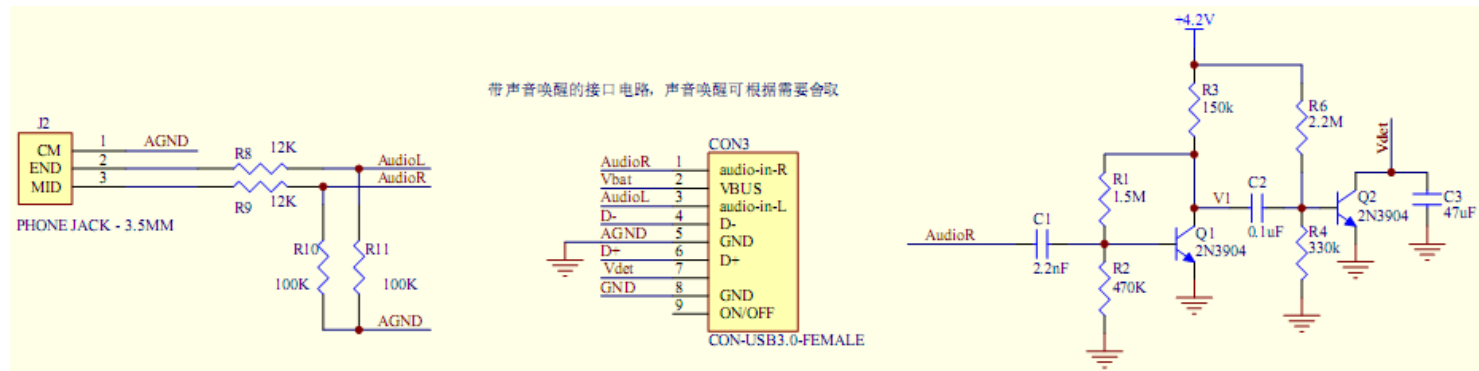
<i>Parameter</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>
<i>Supply Voltage(VBUS)</i>	<i>3.5</i>		<i>5.5</i>	<i>Volt</i>
<i>Operation Current</i> <i>(VBUS = VBAT = 3.8V)</i>	<i>38</i>	<i>40</i>	<i>45</i>	<i>mA</i>
<i>Sleep Current</i>		<i>200</i>		<i>uA</i>
<i>Audio Sample Rate</i>		<i>48</i>		<i>KHz</i>
<i>Audio Channels</i>		<i>2</i>		
<i>Audio Input Type(1)</i>		<i>Analog</i>		
<i>Audio Input Type(2)</i>		<i>USB2.0(Full Speed) Isochronous mode</i>		
<i>Audio Input Dynamic Range</i>			<i>1400</i>	<i>mV(p-p)</i>
<i>Audio Frequency Response(-3dB)</i>	<i>20</i>		<i>22000</i>	<i>Hz</i>
<i>Operating Frequency</i>	<i>2403</i>		<i>2479</i>	<i>MHz</i>
<i>RF-channels</i>		<i>77</i>		
<i>Channel spacing</i>		<i>2</i>		<i>MHz</i>
<i>Air Data Rate</i>		<i>2</i>		<i>Mbps</i>
<i>Modulation</i>		<i>GFSK</i>		

<i>Radiated Power</i>			<i>+3</i>	<i>dBm</i>
<i>Operation Range</i>		<i>10</i>		<i>Meters/light of sight</i>

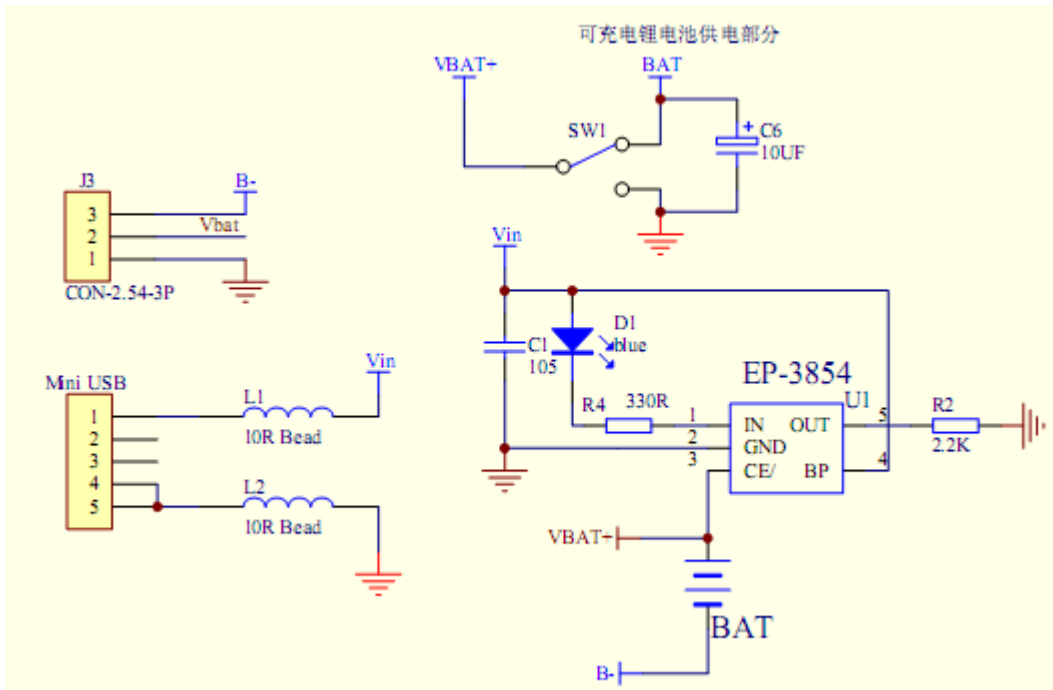
### Block Circuit



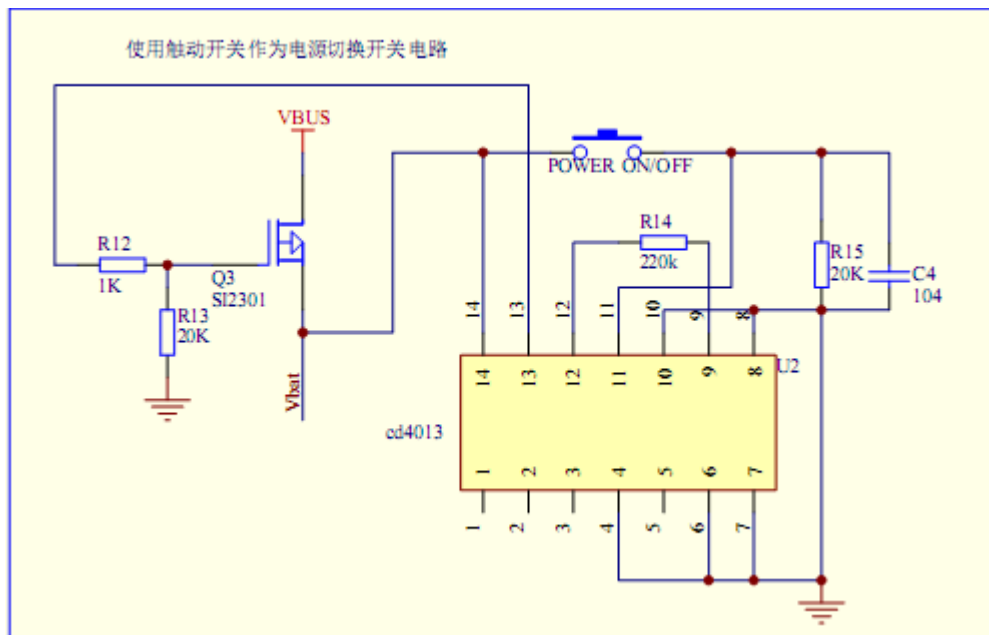
### Interface Circuit



In order to save power, the audio wakeup circuit is supported.

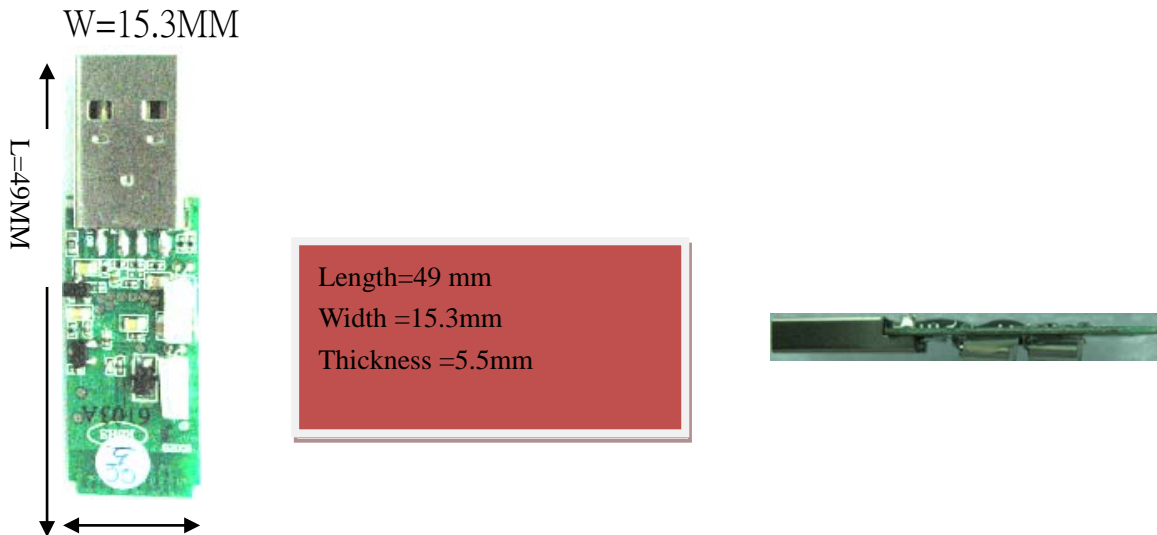


The Charge Circuit for Li-battery.



If you want to use the touch key for power on/off , above circuit is recommended.

# WMA-9602 ( USB Transmitter Module)



## Pin definition and Rating

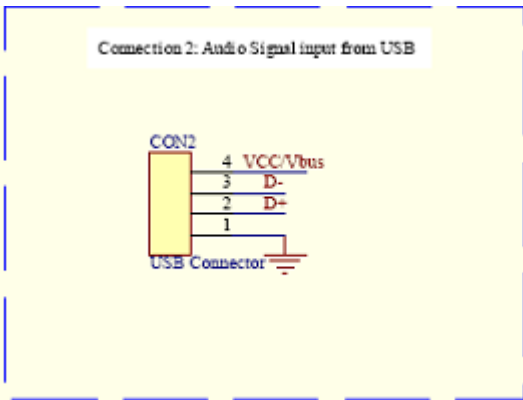
Pin No.	Pin Name	Description	Rating
1	Vbus	Power supply	4.5V~5.5V
2	D+	USB D+ terminal	
3	D-	USB D- terminal	
4	GND	Ground	

## Electronic Parameter

Parameter	Min	Typ	Max	Unit
Supply Voltage	4.5	5.0	5.5	Volt
Operation Current		38		mA

<i>Audio Resolution</i>		16		<i>bit</i>
<i>Audio Sample Rate</i>		48		<i>KHz</i>
<i>Audio data compression</i>		yes		
<i>Audio Channels</i>		2		
<i>Audio Input Type</i>		USB2.0(Full Speed) Isochronous mode		
<i>Operating Frequency</i>	2403		2479	<i>MHz</i>
<i>RF-channels</i>		77		
<i>Channel spacing</i>		2		<i>MHz</i>
<i>Air Data Rate</i>		2		<i>Mbps</i>
<i>Modulation</i>		GFSK		
<i>Radiated Power</i>			+3	<i>dBm</i>
<i>Operation Range</i>		10		<i>Meters/light of sight</i>
<i>Antenna Type</i>				<i>PCB printed antenna</i>

## Interface Circuit



## How to Pair WMA9600 and WMA9601?

Press the FL keys (or Vol+ and Vol- together) of WMA9600, FL keys of WMA9601, then the pairing will automatically complete

for WMA9600, the LED indicate both power on and link: when power on, the LED flashes to indicate looking for WMA9601 or WMA9602, when found the LED will continuously turn on, the LED lights only.

for WMA9601, the LED indicate both power on and link: when power on, the LED flashes to indicate looking for WMA9600, when found the LED will continuously turn on, the LED lights only.

## How to Pair WMA9600 and WMA9602?

Press the FL keys of WMA9600 once, and move the WMA9600 close to the USB module, then the pairing will automatically complete

For WMA9600, the LED indicates both power on and link: when power on, the LED flashes to indicate looking for WMA9602, when found the LED will continuously turn on, the LED lights only.

For WMA9602, the LED indicates only Link; when the link is built, the LED lights only.

## WMA9600, WMA9601 and WMA9602

### Function

- WMA9600 is the receiver module (headset side), the transmitter side could be WMA 9601 or WMA 9602. With WMA 9601, both analogue signal (LINE-IN) or digital signal from USB could be the audio source. With MA 9602, only digital signal from USB is the audio source.
- The MIC function of WMA 9600 is operable only when the transmitter side is connected to USB port. The MIC function is automatically activated when a 2-way conversion is to go, and deactivated when the conversion is over. During conversion, the audio playing switches to mono mode.
- When MIC function is not activated, one transmitter (WMA 9602 or WMA 9601) can send audio signals to 2 receiver modules (WMA 9600) simultaneously without causing interference. This feature suits the application for which multi-users share a signal audio



source.