十速科技股份有限公司
tenx technology inc.

**TP6911-
LQFP48**
**USB Earphone
with Microphone**

PRODUCT NAME
TP6911

TITLE
LQFP48 USB to Earphone with MIC Application Note


Introduction
The purpose of this application note is to provide specific design and layout guidelines. The TP6911 is an USB Audio device tailored to the USB audio speaker and voice recorder application. It is able to play two channels speaker-out and record one channel voice through Full-Speed USB bus.

Applications
● USB Audio Speaker
● USB Audio Voice Recorder
● USB Phone
● USB Earphone with Microphone

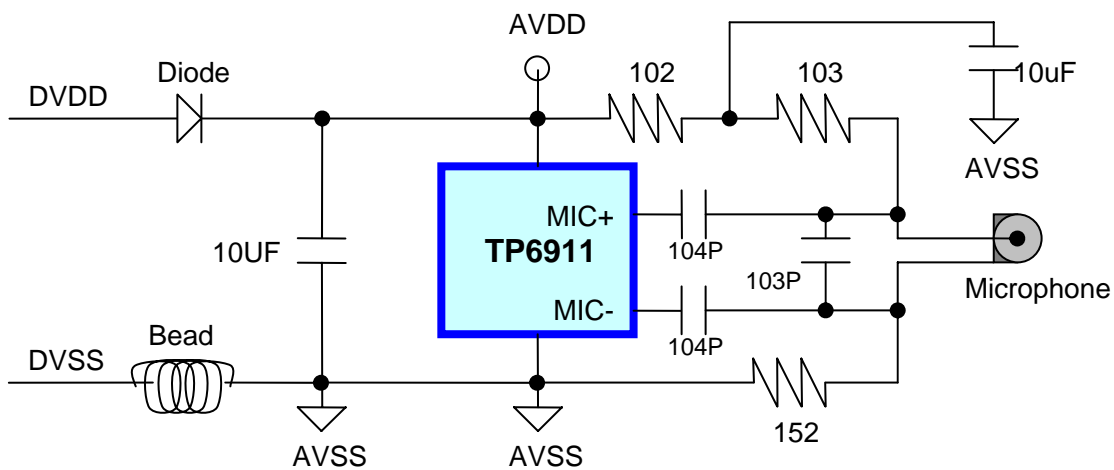## Guideline on Electrical Power

1. X'tal & PLL Circuit
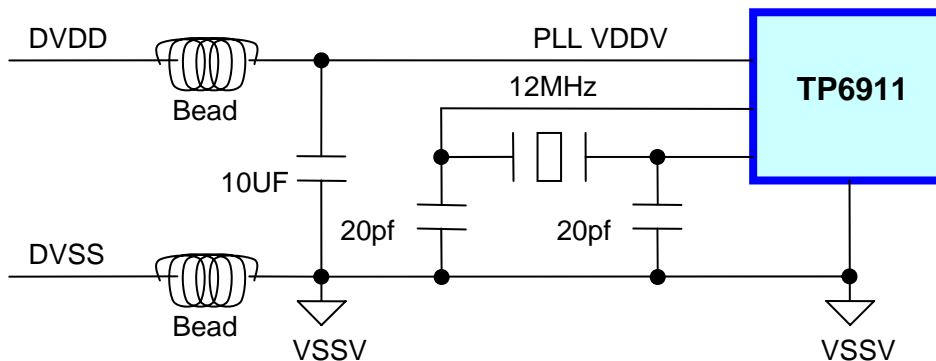
Noise on USB Power will cause phase jitter at the output of the PLL. To provide isolation from the noisy DVDD signals, VDDV / VSSV is brought to a pair of dedicated package pins.

2. USB Bus Power connect PWMVDD for Class D Speaker

PWMVDD

VDD

10UF

TP6911

Bead

Bead

470P

470P

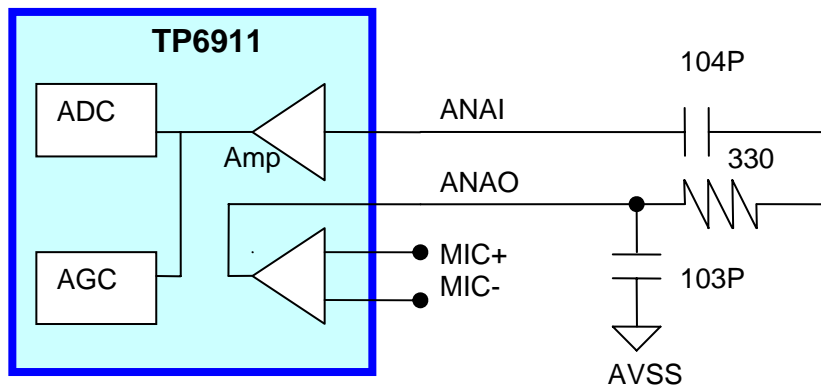VSS

PWMVSS   PWMVSS   PWMVSS
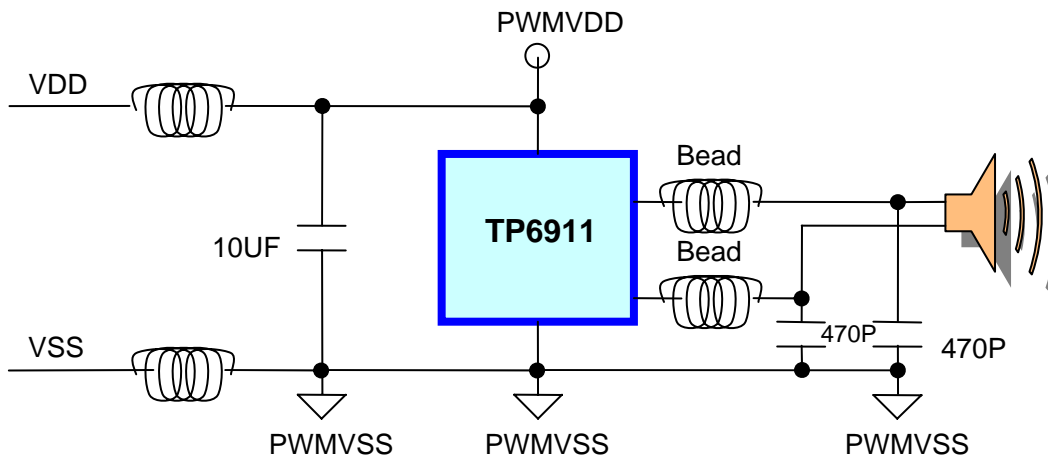
The differential SP+ and SP- pins are designed to drive a 8ohm speaker directly. A coupling capacitor is needed each the SP+/SP- pin and the speaker

3. Microphone Power Circuit

AVDD

DVDD

Diode

102   103   10uF

AVSS

10UF

TP6911

MIC+

MIC-

104P

104P

103P

Microphone

DVSS

Bead

152

AVSS   AVSS

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4. Analog in / out application circuit for Recording

The ANA-IN transfers an input signal to the chip for recording. This ANA IN pin should be connected via an external capacitor to the ANA-OUT pin. This capacitor value, together with the 330ohm input impedance of ANA-IN, is selected to give additional cutoff at the low-frequency end of the voice pass-band. The ANA-OUT provides the preamplifier output to the user.
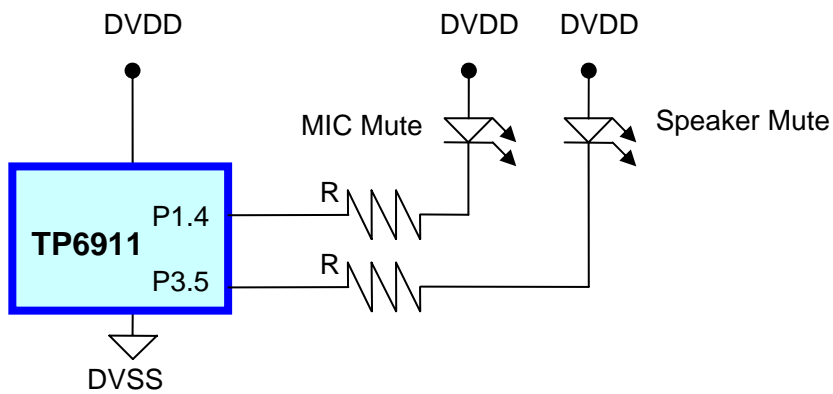
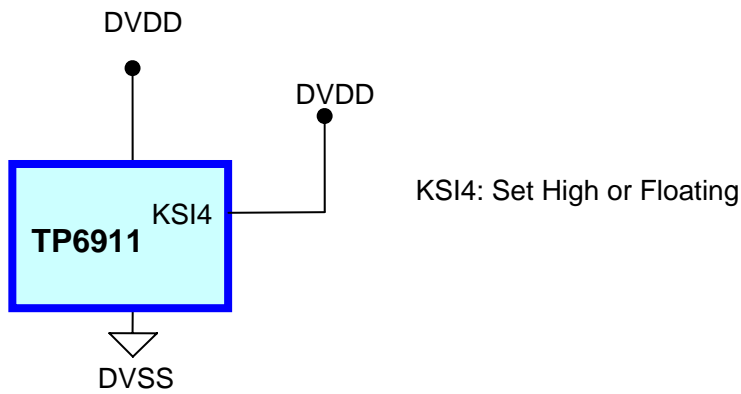## 5. USB Full Speed Transceiver application circuit
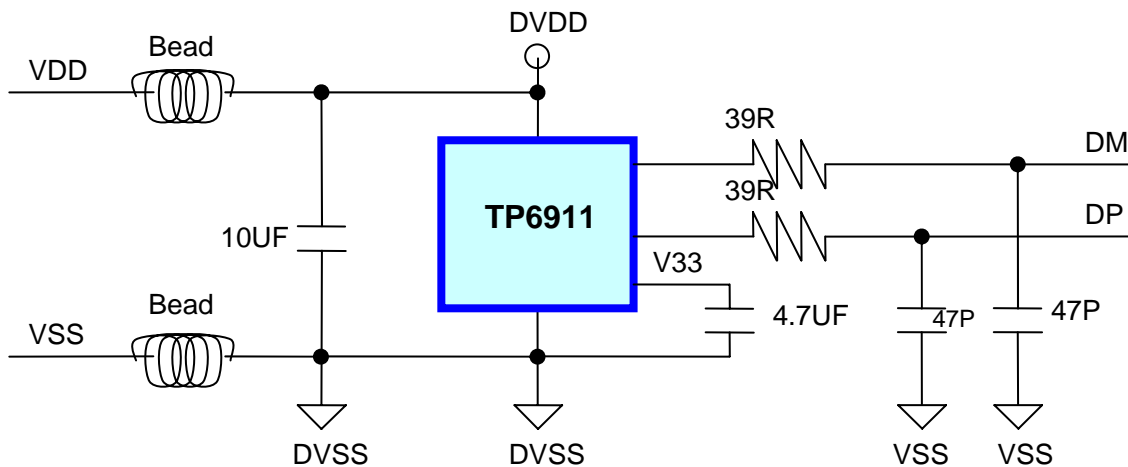
TP6911 Build-in internal regulator for USB used. The decoupling components should be connected closely to the V33 power / ground pins outside the chip

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6. LED Indicators
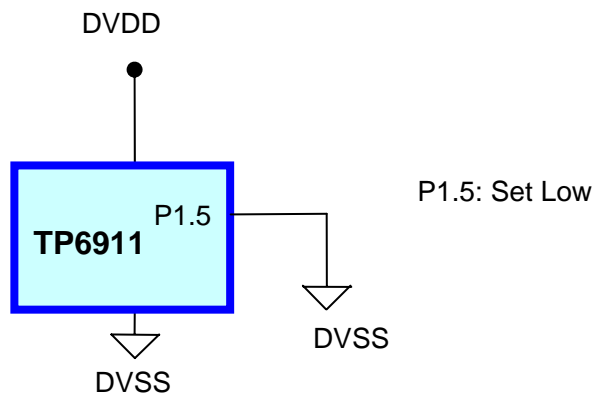
Port 3.5 with LED Intensity control pin. It support 34mA high current to drive high-brightness LED for indicator USB status.
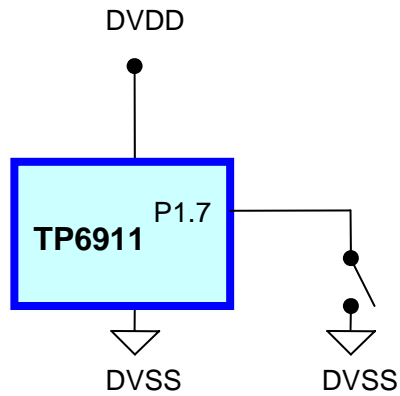

7. KSI4 Pin Define

KSI4: Set High or Floating

8. P1.5 Pin Define

P1.5: Set Low

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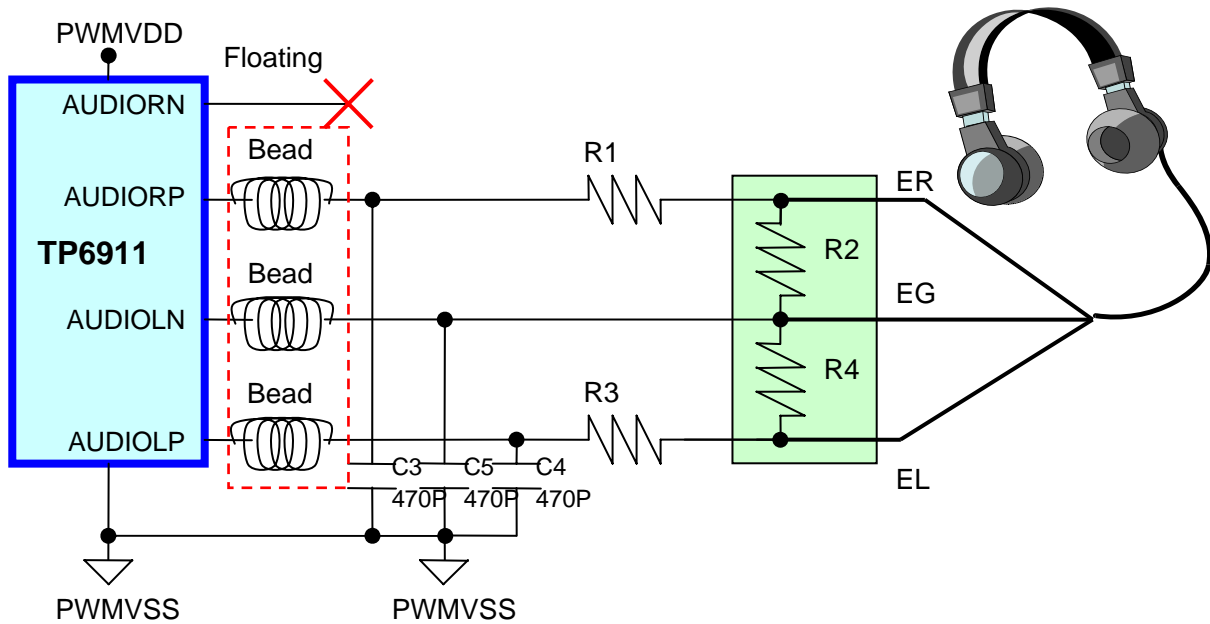
9. P1.7 Pin Define

DVDD

TP6911   P1.7

DVSS   DVSS

Volume adjustment :

64 levels function:
P1.7: Set High or Floating

16 levels function:
P1.7: Set Low

10. Earphone Output Define

PWMVDD

Floating

AUDIORN

Bead

AUDIORP

TP6911

Bead

AUDIOLN

Bead

AUDIOLP

C3   C5   C4
470P 470P 470P

PWMVSS   PWMVSS

R1

R2

R3

R4

ER

EG

EL

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11. ADCI Pin Define

Function define	No.	KSI3	USB Audio Device function keys
Audio VOL+	1	H	Speaker volume up
Audio VOL-	2	H	Speaker volume down
Audio Mute	3	H	Speaker volume mute
Audio Play/Pause	4	H	Audio play / pause
Audio Next	5	H	Audio Next song
Audio Previous	6	H	Audio Previous song
Skype VOL+	1	L	Speaker volume up
Skype VOL-	2	L	Speaker volume down
Skype MIC_Mute	3	L	Microphone mute voice
Skype SKYPE	4	L	SKYPE Function key
Skype Call	5	L	Skype call
Skype OFF	6	L	Skype off

TP6911 Circuit for Earphone/Microphone

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