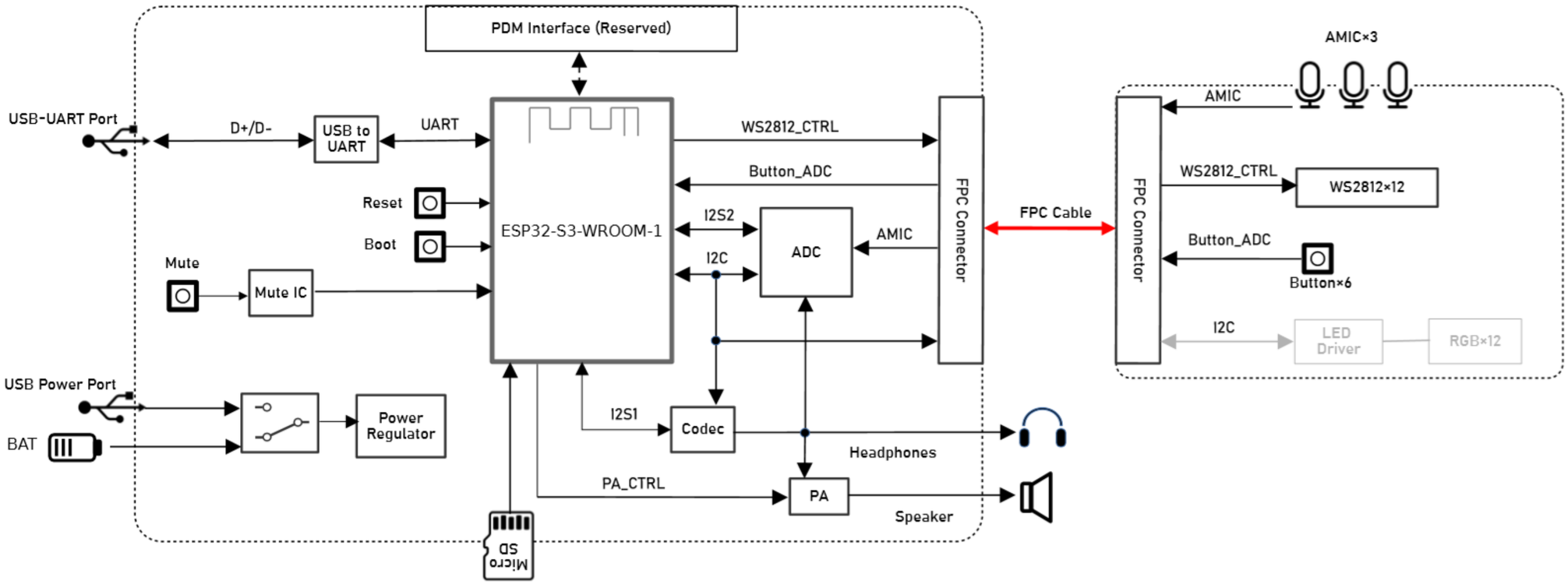
System Block:



ESPRESSIF		
乐鑫信息科技（上海）股份有限公司		
Title: ESP32-S3-Korvo-1		
Size: C	Document Number: <01_DesignBlock>	Rev: V6
Date: Wednesday, December 01, 2021	Sheet 1 of 6	

To ADC

ES_I2C_CLK
ES_I2C_SDA

ES7210_MCLK
ES7210_SCLK
ES7210_LRCK
ES7210_SDOUT

ES7210_INT

WS2812_CTRL

BT_ARRAY_ADC
BT_ARRAY_ADC_2

To Codec

Codec_I2S0_MCLK
Codec_I2S0_SCLK
Codec_I2S0_LRCK
Codec_I2S0_DSDIN

PA_CTRL

UART & Download

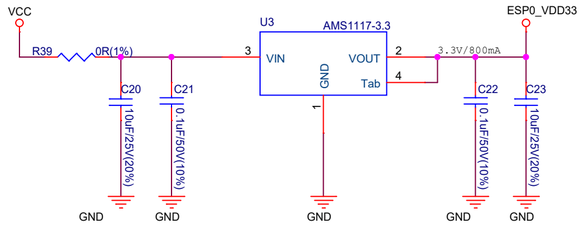
ESP0_UART0_TX
ESP0_UART0_RX

ESP0_Boot_IO0
ESP0_Boot_IO2
ESP0_Boot_EN

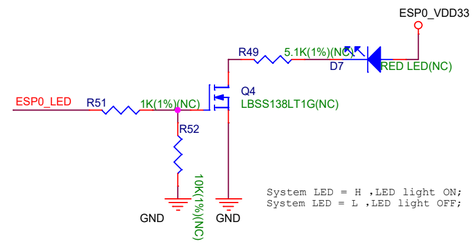
PDM_CLK1
PDM_DAT12
PDM_DAT34
PDM_CLK2
PDM_DAT56
PDM_DAT78

MUTE_STATUS_OD_L
MUTE_BTN_OD_L

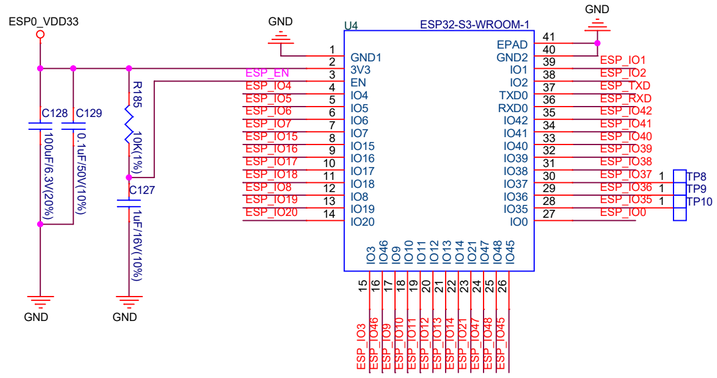
+5V -> 3.3V:



LED Indication:



ESP32-S3 Module:



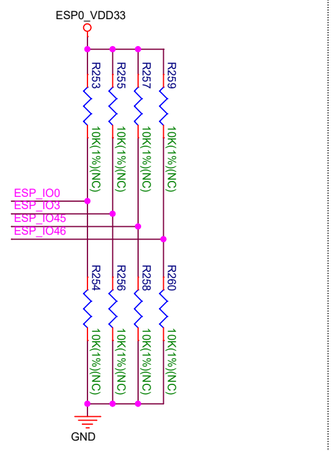
ESP0 Pin Configuration:

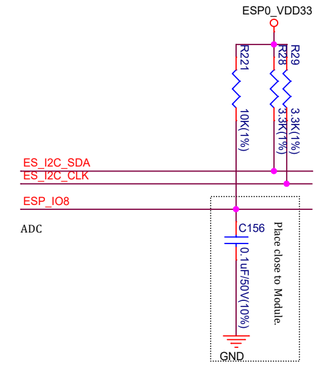
Codec_I2S0_MCLK	R292	0R(1%)(NC)	ESP_IO42
Codec_I2S0_LRCK	R289	0R(1%)	ESP_IO41
Codec_I2S0_SCLK	R291	0R(1%)	ESP_IO40
Codec_I2S0_DSDIN	R282	0R(1%)	ESP_IO39
PA_CTRL	R284	0R(1%)	ESP_IO38
ES_I2C_SDA	R288	0R(1%)	ESP_IO1
ES_I2C_CLK	R302	0R(1%)	ESP_IO2
ESP_SDIO_CLK	R303	0R(1%)	ESP_IO21
ESP_SDIO_CMD	R308	0R(1%)	ESP_IO14
ESP_SDIO_DAT0	R304	0R(1%)	ESP_IO13
ESP_SDIO_DAT1	R306	0R(1%)	ESP_IO3
ES7210_INT	R313	0R(1%)	ESP_IO12
ES7210_SDOUT	R314	0R(1%)	ESP_IO11
ES7210_SCLK	R299	0R(1%)	ESP_IO10
ES7210_LRCK	R300	0R(1%)	ESP_IO9
ES7210_MCLK	R307	0R(1%)	ESP_IO20
BT_ARRAY_ADC_2	R316	0R(1%)(NC)	
BT_ARRAY_ADC	R297	0R(1%)	ESP_IO8
ESP0_LED	R293	0R(1%)(NC)	
WS2812_CTRL	R312	0R(1%)	ESP_IO19
ESP0_SD_CLK	R305	0R(1%)	ESP_IO18
ESP0_SD_CMD	R281	51R(1%)	ESP_IO17
ESP0_SD_DAT0	R285	51R(1%)	ESP_IO16
ESP0_SD_DAT3	R287	0R(1%)	ESP_IO15
ESP0_SD_DET	R286	51R(1%)	ESP_IO7
ESP0_Boot_IO0	R294	0R(1%)	ESP_IO0
ESP0_Boot_IO2	R296	0R(1%)(NC)	ESP_IO2
ESP0_Boot_EN	R295	0R(1%)	ESP_EN
PDM_CLK1	R283	0R(1%)	ESP_IO4
PDM_DAT12	R290	0R(1%)	ESP_IO5
PDM_DAT34	R280	0R(1%)	ESP_IO6
PDM_CLK2			
PDM_DAT56	R309	0R(1%)	ESP_IO45
PDM_DAT78	R310	0R(1%)	ESP_IO46
MUTE_STATUS_OD_L	R343	0R(1%)	ESP_IO47
MUTE_BTN_OD_L	R344	0R(1%)	ESP_IO48

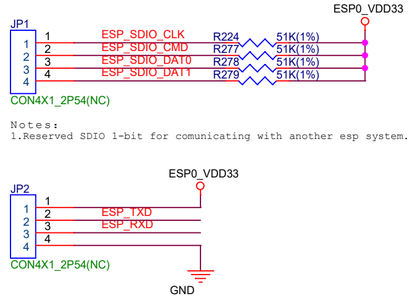
Connect between ESPs 1bit mode

ESP to MicroSD Card SPI Mode

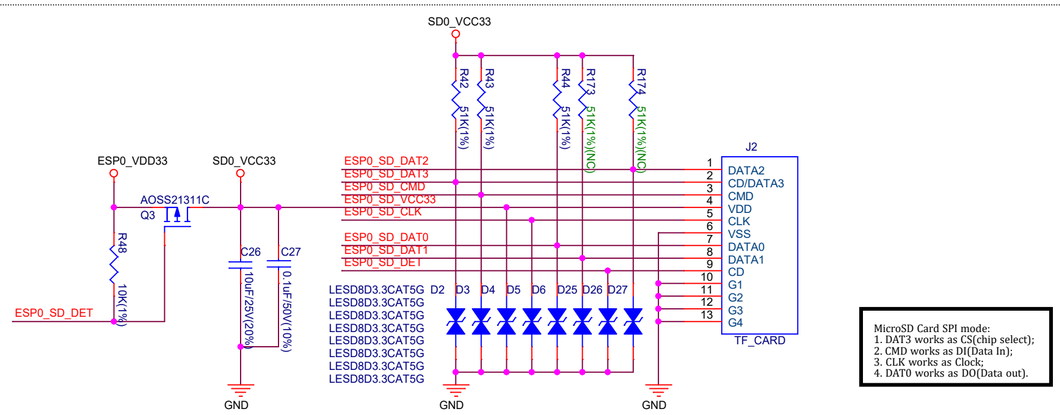
Strapping Pins







ESP32 Module:

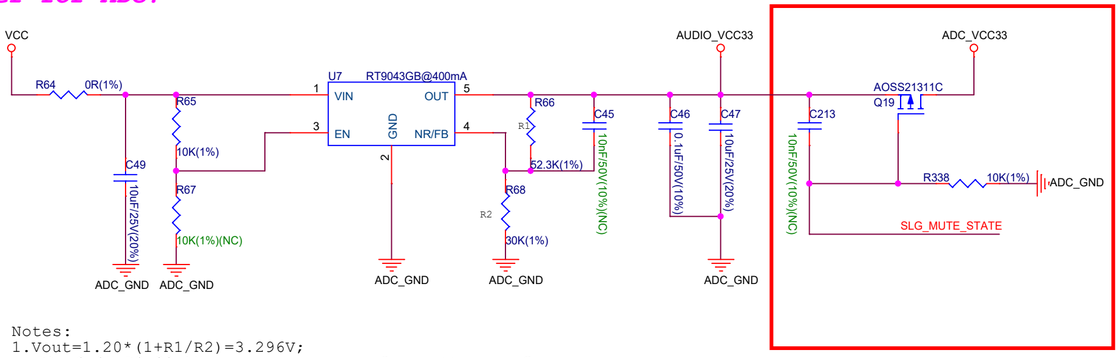


MicroSD Card SPI mode:
1. DAT3 works as CS(chip select);
2. CMD works as DI(Data In);
3. CLK works as Clock;
4. DAT0 works as DO(Data out).

ESPRESSIF		
乐鑫信息科技（上海）股份有限公司		
Title: ESP32-S3-Korvo-1		
Size: C	Document Number: <02_ESP0>	Rev: V6
Date: Wednesday, December 01, 2021	Sheet 2 of 6	

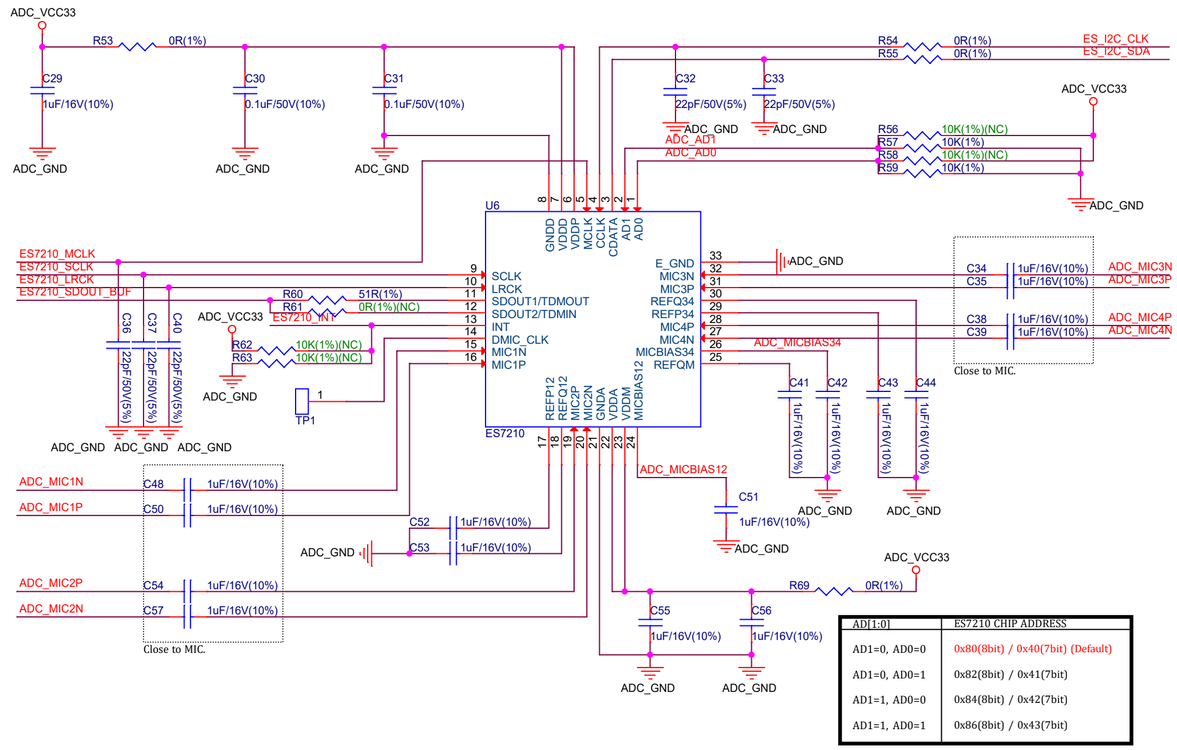
ES_I2C_CLK
ES_I2C_SDA
WS2812_CTRL
BT_ARRAY_ADC
BT_ARRAY_ADC_2
ES7210_MCLK
ES7210_SCLK
ES7210_LRCK
ES7210_SDOUT
ES7210_INT
AEC_ADC_MIC3P
AEC_ADC_MIC3N
PDM_CLK1
PDM_DAT12
PDM_DAT34
PDM_CLK2
PDM_DAT56
PDM_DAT78
SLG_MUTE_STATE
SLG_MUTE_STATE_L

Power for ADC:



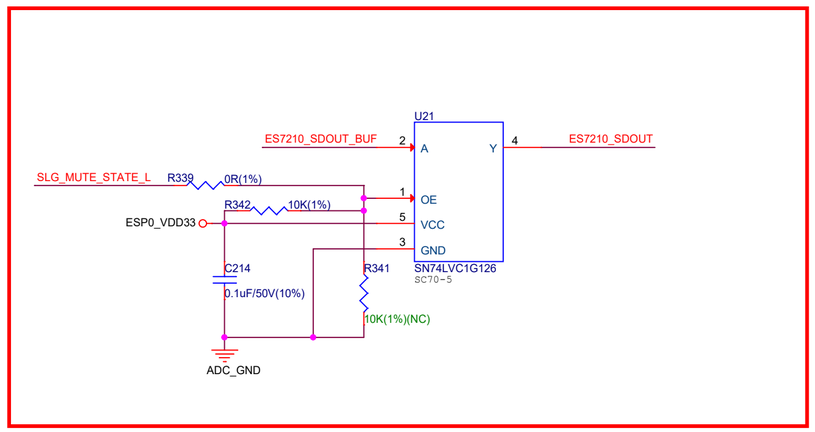
Notes:
1.Vout=1.20*(1+R1/R2)=3.296V;
R1=52.3K,R2=30.1K are recommended for better performance.

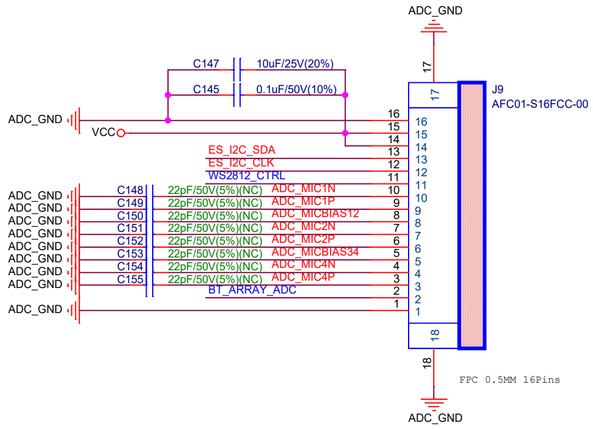
ADC:

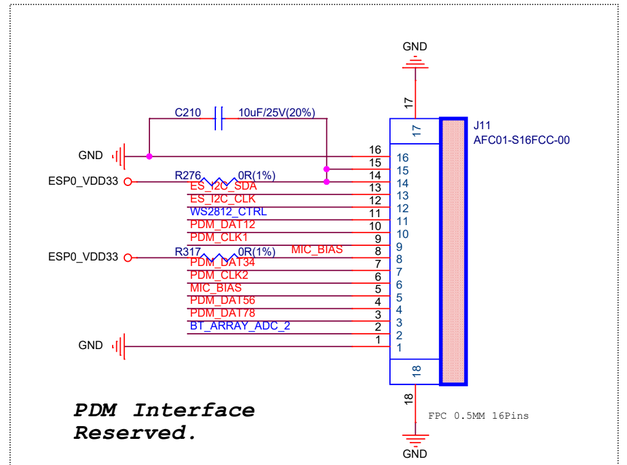


AD[1:0]	ES7210 CHIP ADDRESS
AD1=0, AD0=0	0x80(8bit) / 0x40(7bit) (Default)
AD1=0, AD0=1	0x82(8bit) / 0x41(7bit)
AD1=1, AD0=0	0x84(8bit) / 0x42(7bit)
AD1=1, AD0=1	0x86(8bit) / 0x43(7bit)

Power for ADC:







PDM Interface Reserved.

Location Holes:

STD1 M3-L5-3.5
STD2 M3-L5-3.5
STD3 M3-L5-3.5
STD4 M3-L5-3.5

ESPRESSIF
乐鑫信息科技（上海）股份有限公司

Title			
ESP32-S3-Korvo-1			
Size	Document Number		Rev
C	<03_ESP0_ADC_MicphoneCNN>		V6
Date:	Wednesday, December 01, 2021	Sheet 3 of 6	

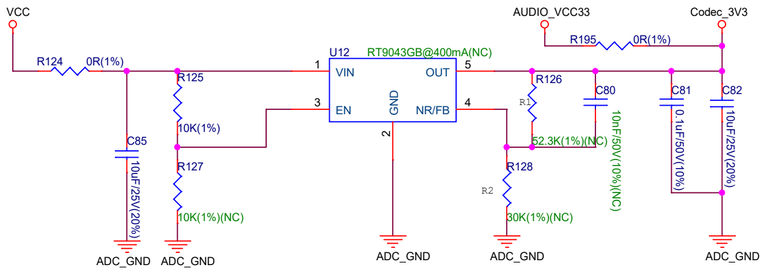
ES_I2C_CLK
ES_I2C_SDA

Codec_I2S0_MCLK
Codec_I2S0_SCLK
Codec_I2S0_LRCK
Codec_I2S0_DSDIN

PA_CTRL

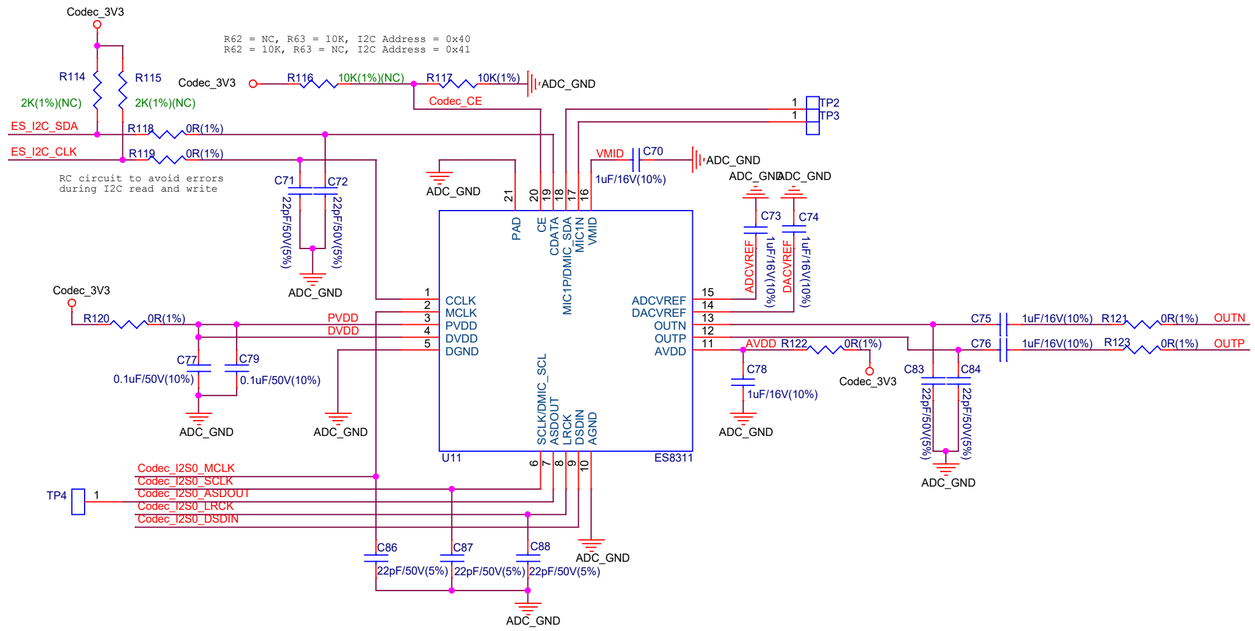
AEC_ADC_MIC3P
AEC_ADC_MIC3N

Power for Codec:

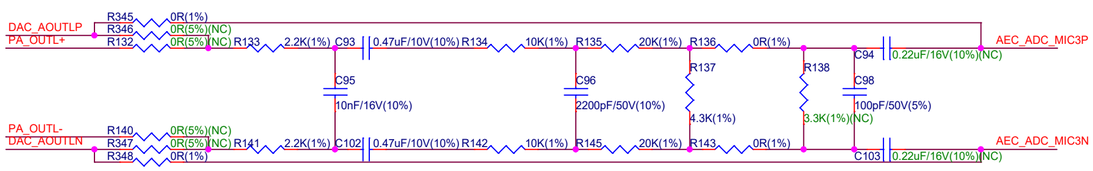


Notes:
1.Vout=1.20*(1+R1/R2)=3.296V;
R1=52.3K,R2=30.1K are recommended for better performance.

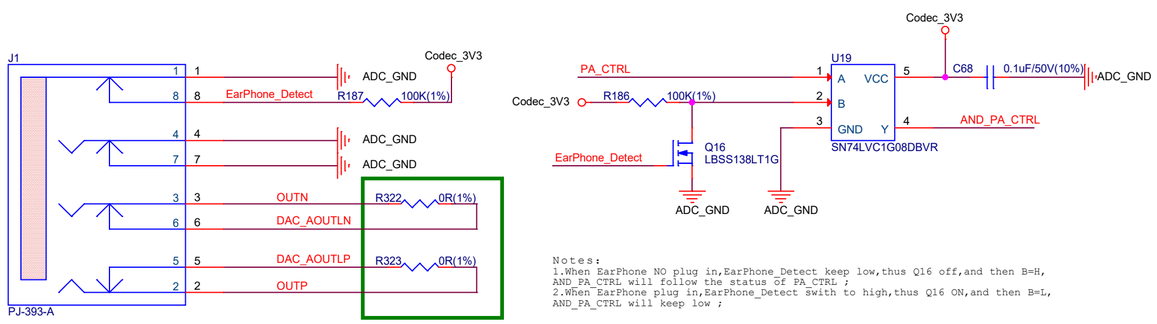
Codec:



AEC:



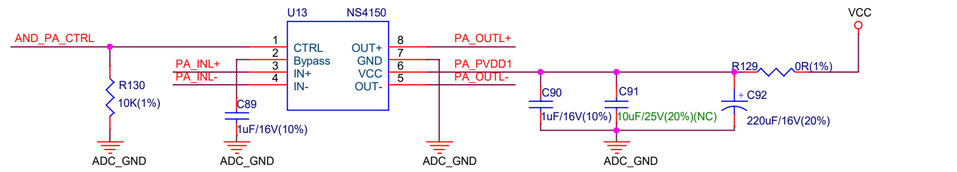
EarPhone:

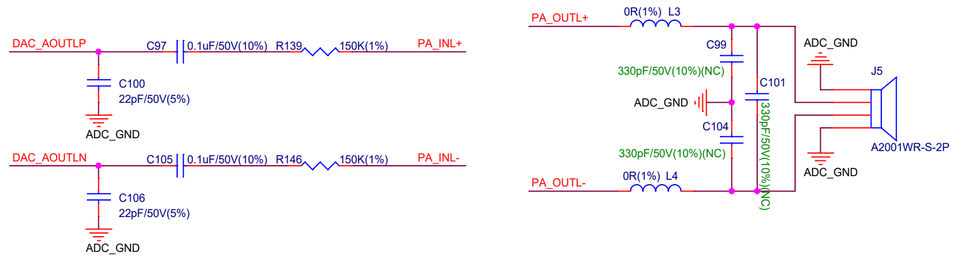


Notes:
1.When EarPhone NO plug in,EarPhone_Detect keep low,thus Q16 off,and then B=H, AND_PA_CTRL will follow the status of PA_CTRL ;
2.When EarPhone plug in,EarPhone_Detect swith to high,thus Q16 ON,and then B=L, AND_PA_CTRL will keep low ;

Place under PJ-393-A.

PA & Speaker:



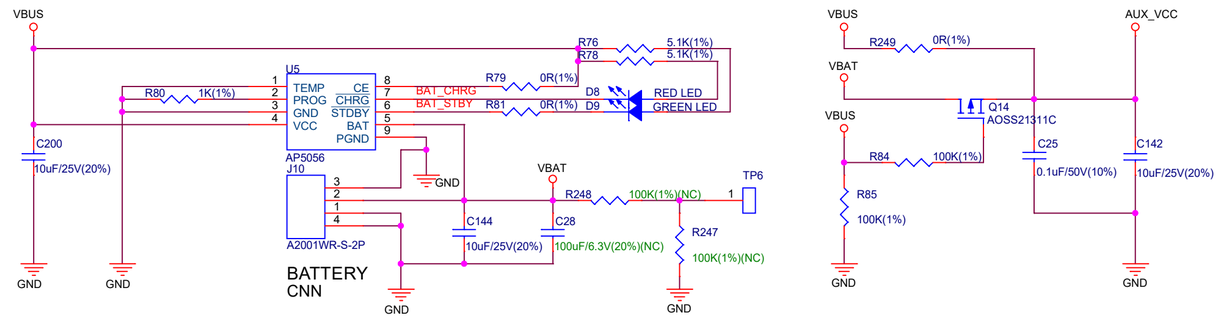


ESPRESSIF		
乐鑫信息科技（上海）股份有限公司		
Title: ESP32-S3-Korvo-1		
Size: C	Document Number: <04_ESP0_Codec_PA>	Rev: V6
Date: Wednesday, December 01, 2021	Sheet 4 of 6	

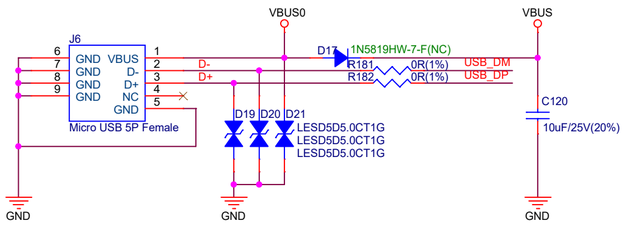
ESP0_UART0_TX
ESP0_UART0_RX

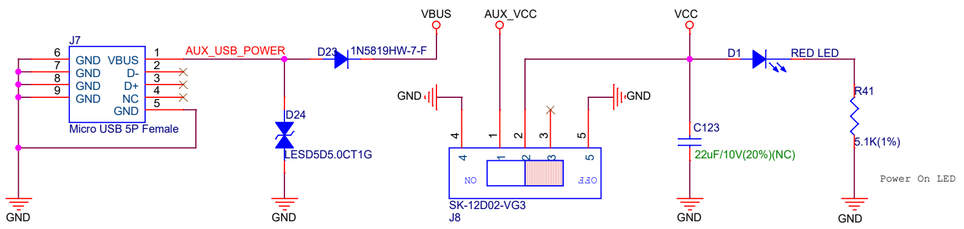
ESP0_Boot_IO0
ESP0_Boot_IO2
ESP0_Boot_EN

BATTERY:

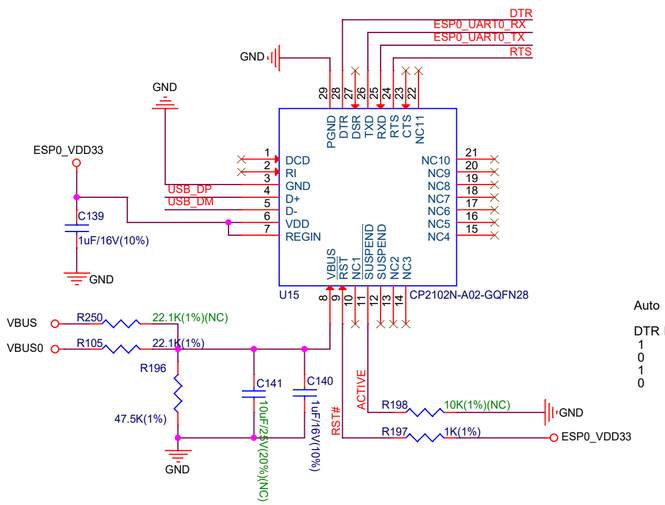


Power IN:



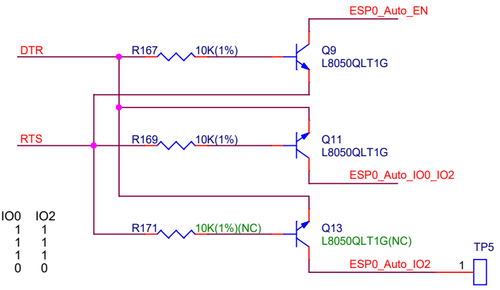


UART:

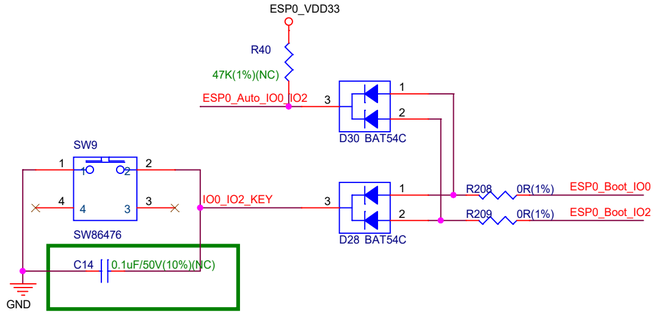


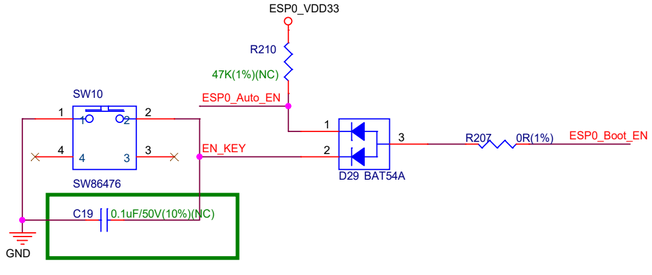
Auto program

DTR	RTS--->EN	IO0	IO2
1	1	1	1
0	0	1	1
1	0	0	1
0	1	1	0



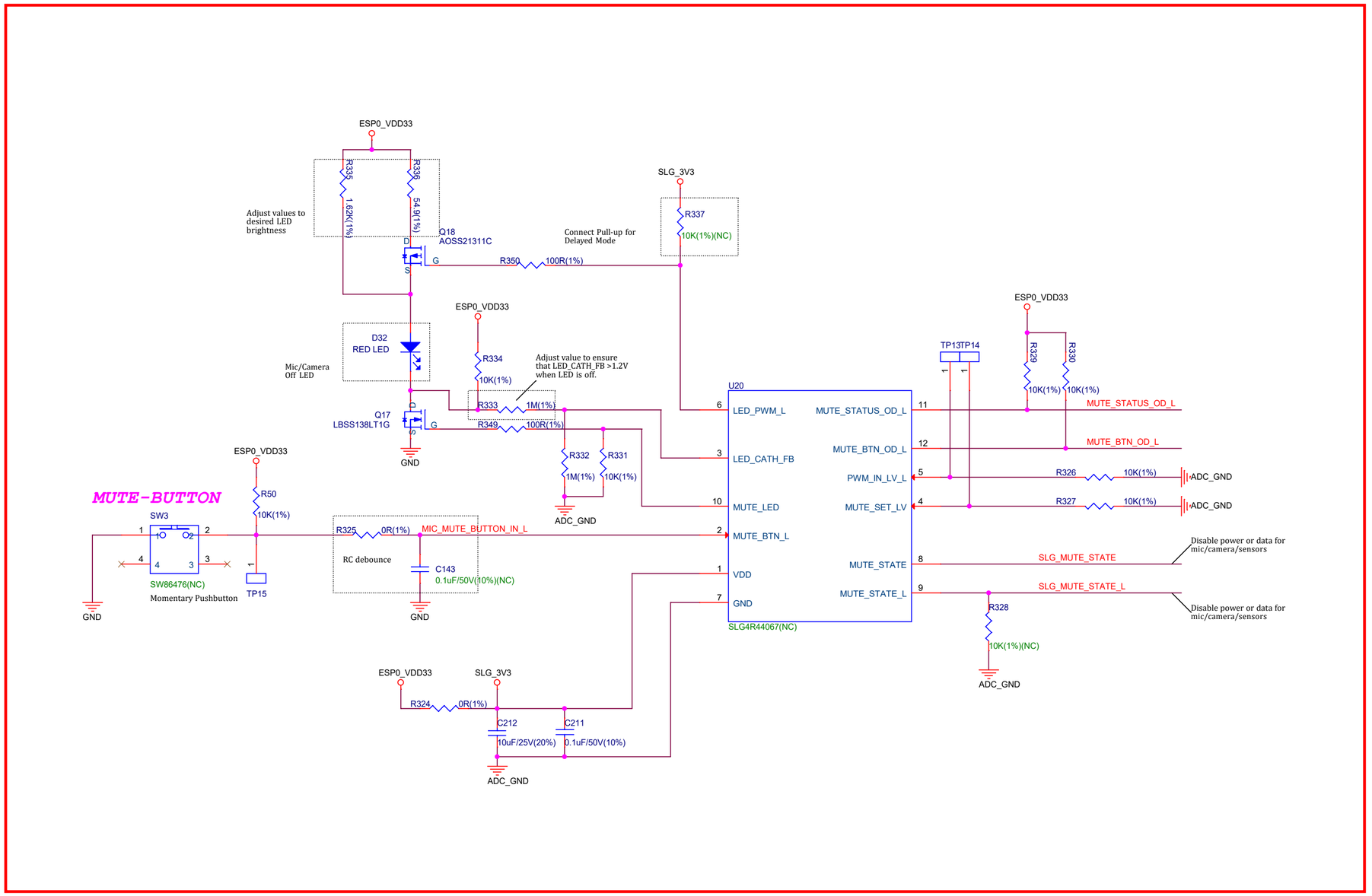
Reset & Download & Button:





ESPRESSIF		
乐鑫信息科技（上海）股份有限公司		
Title: ESP32-S3-Korvo-1		
Size: C	Document Number: <05_Power_UART>	Rev: V6
Date: Wednesday, December 01, 2021	Sheet 5 of 6	

SLG_MUTE_STATE
SLG_MUTE_STATE_L
MUTE_STATUS_OD_L
MUTE_BTN_OD_L



ESPRESSIF		
乐鑫信息科技（上海）股份有限公司		
Title: ESP32-S3-Korvo-1		
Size: C	Document Number: <06_MIC_MUTE>	Rev: V6
Date: Wednesday, December 01, 2021	Sheet 6 of 6	