ES_I2C_CLK
ES_I2C_SDA

Camera_SIOC
Camera_SIOD
Camera_XCLK
Camera_PCLK
Camera_HREF
Camera_VSYNC
Camera_D[2:9]

ESP_LCD_DC
ESP_LCD_CLK
ESP_LCD_SDA

Codec_I2S0_MCLK
Codec_I2S0_SCLK
Codec_I2S0_LRCK
Codec_I2S0_DSDIN

ES7210_MCLK
ES7210_SCLK
ES7210_LRCK
ES7210_SDOUT

BAT_MEAS_ADC

ESP0_Boot_IO0
ESP0_Boot_IO2
ESP0_Boot_EN

ESP0_UART0_TX
ESP0_UART0_RX

ESP_USB_DP
ESP_USB_DM

BT_ARRAY_ADC

PERI_PWR_ON

PA_CTRL

ESP32-WRVER/ESP32-724-WROVER/ESP32-S3-WROVER:

ESP Module Pin Configuration:

ES_I2C_SDA	R291	0(1%)	ESP_IO17
ES_I2C_CLK	R287	0(1%)	ESP_IO18
Camera_SIOD	R289	0(1%)	ESP_IO17
Camera_SIOC	R323	0(1%)	ESP_IO18
Camera_XCLK	R308	0(1%)	ESP_IO40
Camera_PCLK	R303	0(1%)	ESP_IO11
Camera_HREF	R304	0(1%)	ESP_IO38
Camera_VSYNC	R313	0(1%)	ESP_IO21
Camera_D9	R306	0(1%)	ESP_IO39
Camera_D8	R377	0(1%)	ESP_IO41
Camera_D7	R383	0(1%)	ESP_IO42
Camera_D6	R381	0(1%)	ESP_IO12
Camera_D5	R382	0(1%)	ESP_IO3
Camera_D4	R380	0(1%)	ESP_IO14
Camera_D3	R378	0(1%)	ESP_IO47
Camera_D2	R379	0(1%)	ESP_IO13
ESP_LCD_DC	R424	0(1%)	ESP_IO2
ESP_LCD_CLK	R422	0(1%)	ESP_IO1
ESP_LCD_SDA	R423	0(1%)	ESP_IO0
	R436	0(1%)(NC)	ESP_IO20
Codec_I2S0_SCLK_R	R281	51(1%)(NC)	ESP_IO2
Codec_I2S0_LRCK_R	R302	0(1%)(NC)	ESP_IO1
Codec_I2S0_DSDIN	R300	0(1%)	ESP_IO8
	R434	0(1%)	Codec_I2S0_SCLK_R
	R433	0(1%)	Codec_I2S0_LRCK_R
Codec_I2S0_MCLK	R428	0(1%)	
Codec_I2S0_SCLK	R430	0(1%)	
Codec_I2S0_LRCK	R429	0(1%)	
ES7210_MCLK	R372	0(1%)	ESP_IO16
ES7210_SCLK	R371	0(1%)	ESP_IO9
ES7210_LRCK	R374	0(1%)	ESP_IO45
ES7210_SDOUT	R373	0(1%)	ESP_IO10
PA_CTRL	R435	0(1%)	ESP_IO48
BAT_MEAS_ADC	R425	0(1%)	ESP_IO6
ESP0_Boot_IO0	R294	0(1%)	ESP_IO0
ESP0_Boot_IO2	R296	0(1%)(NC)	ESP_IO2
ESP0_Boot_EN	R295	0(1%)	ESP_EN
ESP_TXD			
ESP_RXD			
ESP_USB_DP	R426	0(1%)	ESP_IO20
ESP_USB_DM	R427	0(1%)	ESP_IO19
BT_ARRAY_ADC	R375	0(1%)	ESP_IO5
ESP0_SD_CLK	R284	0(1%)	ESP_IO15
ESP0_SD_CMD	R282	0(1%)	ESP_IO7
ESP0_SD_DAT0	R292	0(1%)	ESP_IO4

VCC_3V3 R406 0(1%) ESP0_VDD33
C128 100uF/6.3V(20%) C129 0.1uF/50V(10%)
R185 10K(1%) C127 1uF/16V(10%)
GND

U20 ESP32-S3-WROOM-1

1	GND1	EPAD	41
2	3V3	GND2	40
3	EN	IO1	39 ESP_IO1
4	IO4	IO2	38 ESP_IO2
5	IO5	TXD0	37 ESP_TXD
6	IO6	RXD0	36 ESP_RXD
7	IO7	IO42	35 ESP_IO42
8	IO15	IO41	34 ESP_IO41
9	IO16	IO40	33 ESP_IO40
10	IO17	IO39	32 ESP_IO39
11	IO18	IO38	31 ESP_IO38
12	IO8	IO37	30 ESP_IO37
13	IO19	IO36	29 ESP_IO36
14	IO20	IO35	28 ESP_IO35
		IO0	27 ESP_IO0

15	IO3	IO46	26 ESP_IO45
16	IO46	IO45	25 ESP_IO48
17	IO9	IO48	24 ESP_IO47
18	IO10	IO47	23 ESP_IO21
19	IO11	IO21	22 ESP_IO13
20	IO12	IO13	21 ESP_IO12
21	IO13	IO12	20 ESP_IO14
22	IO14	IO14	19 ESP_IO11
23	IO21	IO11	18 ESP_IO10
24	IO47	IO10	17 ESP_IO9
25	IO48	IO9	16 ESP_IO46
26	IO45	IO46	15 ESP_IO3

ESP0_VDD33
R221 10K(1%) R28 3.3K(1%) R29
ES_I2C_SDA
ES_I2C_CLK
ESP_IO6
ESP_IO5
ADC
C245 0.1uF/50V(10%) C156 10uF/25V(20%)
GND
Place close to Module.

ESP0_VDD33
R253 10K(1%)(NC) R255 10K(1%)(NC) R257 10K(1%)(NC) R259 10K(1%)(NC)
ESP_IO0
ESP_IO2
ESP_IO45
ESP_IO46
R254 10K(1%)(NC) R256 10K(1%)(NC) R258 10K(1%)(NC) R260 10K(1%)(NC)
GND

J17 CON6X1
1 VCC_3V3
2 ESP_TXD
3 ESP_RXD
4 ESP_IO0
5 ESP_EN
6
GND

J18 CON4X1_2P54
1 VCC_3V3
2 ES_I2C_CLK
3 ES_I2C_SDA
4
GND

Power Regulator: 5 -> 3.3V

VCC_5V
Note:
1.Vout = 0.6*(1+R1/R2);
U2 ETA3409S2F
IN LX EN FB GND
L1 2.2uH(20%) 3A
C239 10uF/25V(20%) C238 0.1uF/50V(10%)
R11 100K(1%) R15 100K(1%)(NC)
VDD33_EN
R12 680K(1%) R14 150K(1%)
C241 22pF/50V(5%)
C240 0.1uF/50V(10%) C242 10uF/25V(20%) C16 10uF/25V(20%)
VCC_3V3
R13 5.1K(1%)
D33 RED LED
TP34
GND

Peripherals Power:

VCC_3V3 R408 0(1%) PER_VCC_3V3 TP35
Q12 AO3401A(NC)
R407 10K(1%)(NC)
C243 10uF/25V(20%)(NC)
PERI_PWR_ON
GND

PERI_PWR_ON = H，PER_VCC_3V3 = OFF
PERI_PWR_ON = L，PER_VCC_3V3 = ON

MicroSD Card:

SD0_VCC33
R42 5.1K(1%) R43 5.1K(1%) R44 5.1K(1%) R173 5.1K(1%)(NC) R174 5.1K(1%)(NC)
PER_VCC_3V3
AO3401A Q3
R48 10K(1%)
TP36 1 ESP0_SD_DET
C26 10uF/25V(20%) C27 0.1uF/50V(10%)
GND

TP42 1 ESP0_SD_DAT2
TP43 1 ESP0_SD_DAT3
TP44 1 ESP0_SD_CMD
ESP0_SD_VCC33
TP45 1 ESP0_SD_CLK
TP46 1 ESP0_SD_DAT0
TP47 1 ESP0_SD_DAT1
ESP0_SD_DET

LESD8D3.3CAT5G D2 D3 D4 D5 D6 D25 D26 D27
LESD8D3.3CAT5G ×8
GND GND

J2 TF_CARD

1	DATA2	
2	CD/DATA3	
3	CMD	
4	VDD	
5	CLK	
6	VSS	
7	DATA0	
8	DATA1	
9	CD	
10	G1	
11	G2	
12	G3	
13	G4	

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-2	
Size C	Document Number 02_ESP32-S3	Rev 3.0
Date: Friday, September 17, 2021	Sheet 2 of 6	

ES_I2C_CLK
ES_I2C_SDA

ES_I2C_CLK
ES_I2C_SDA
2

Camera_SIOC
Camera_SIOD
Camera_XCLK
Camera_PCLK
Camera_HREF
Camera_VSYNC
Camera_D[2:9]

Camera_SIOC
Camera_SIOD
Camera_XCLK
Camera_PCLK
Camera_HREF
Camera_VSYNC
Camera_D[2:9]
8

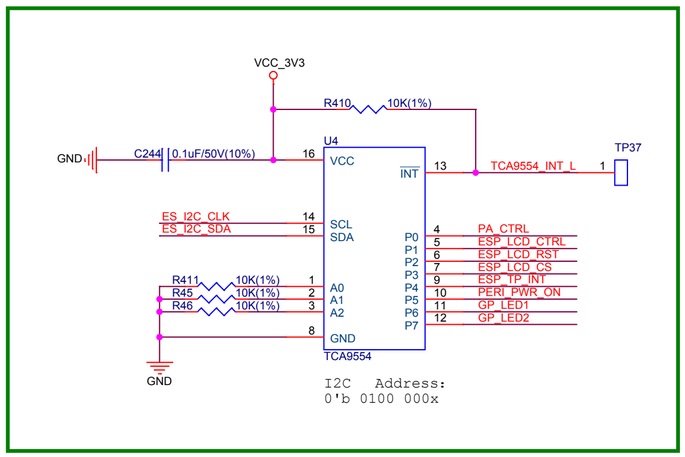
PA_CTRL
PERI_PWR_ON

PA_CTRL
PERI_PWR_ON
2

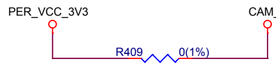
ESP_LCD_DC
ESP_LCD_CLK
ESP_LCD_SDA

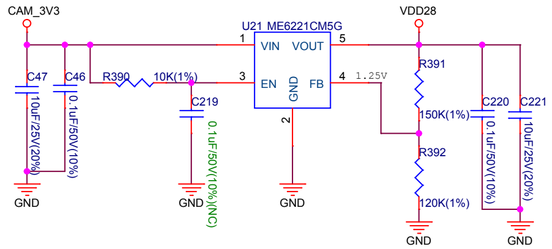
ESP_LCD_DC
ESP_LCD_CLK
ESP_LCD_SDA
3

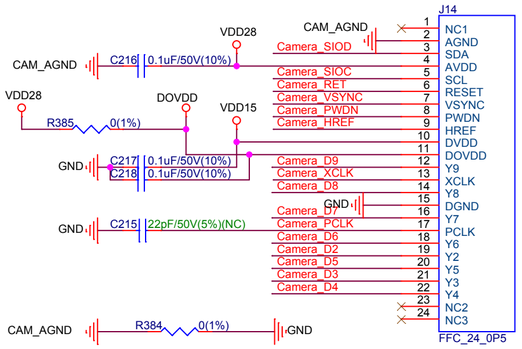
I/O Expander:

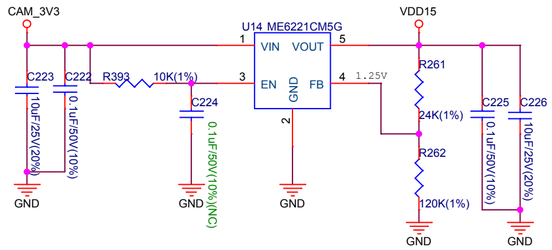


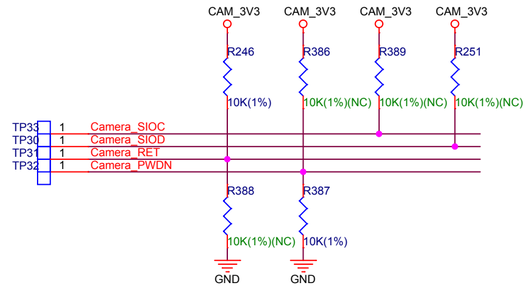
Camera:



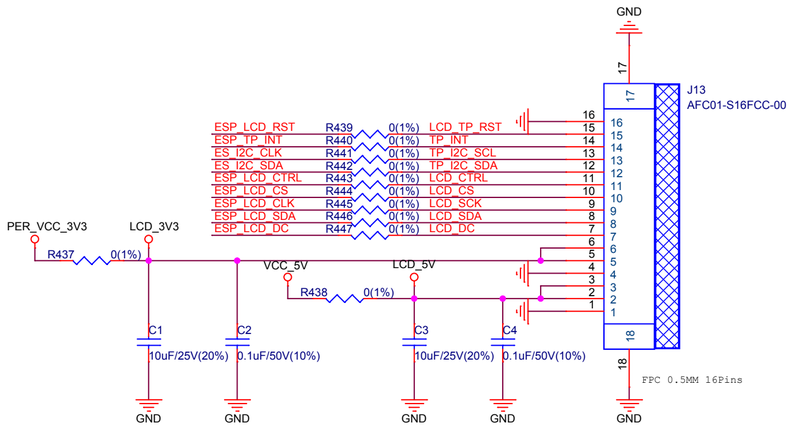




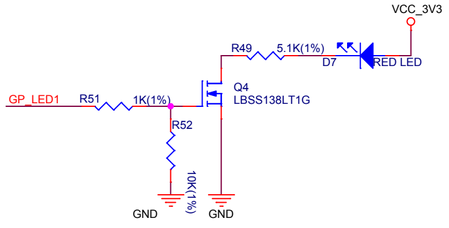


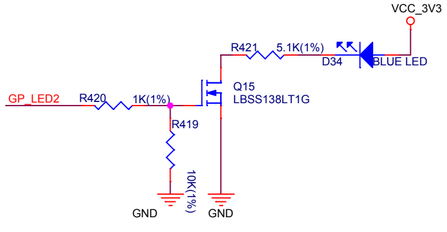


FPC for LCD Display:



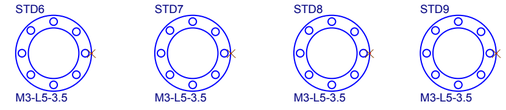
General LEDs:



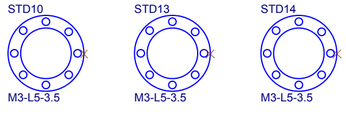


Location Holes:

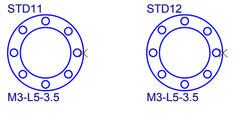
Support Board



Support LCD



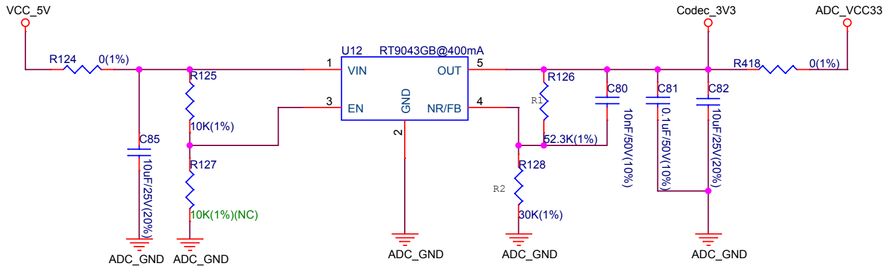
Support Camera.



ESPRESSIF
乐鑫信息科技（上海）股份有限公司

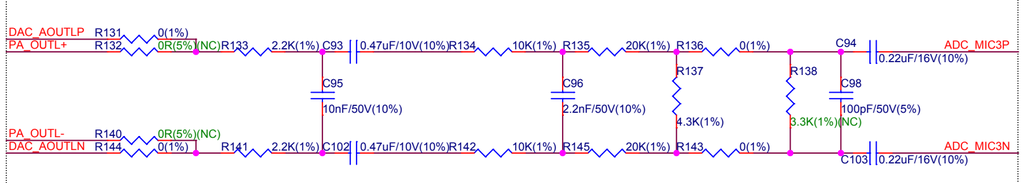
Title	ESP32-S3-KORVO-2	
Size C	Document Number 03_CAM_LCD	Rev 3.0
Date: Saturday, September 18, 2021	Sheet 3 of 6	

Power for Codec:

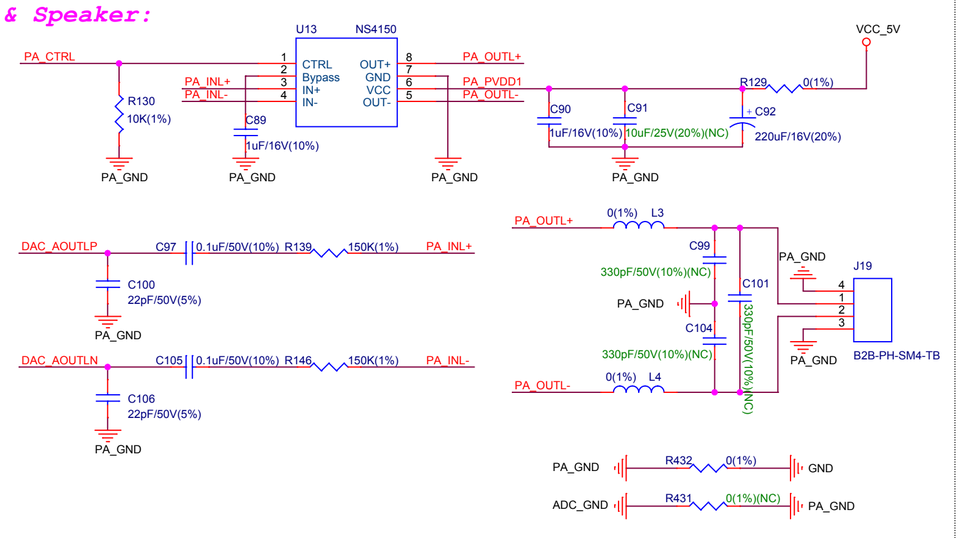


Notes:
1.Vout=1.20*(1+R1/R2)=3.296V;
R1=52.3K,R2=30.1K are recommended for better performance.

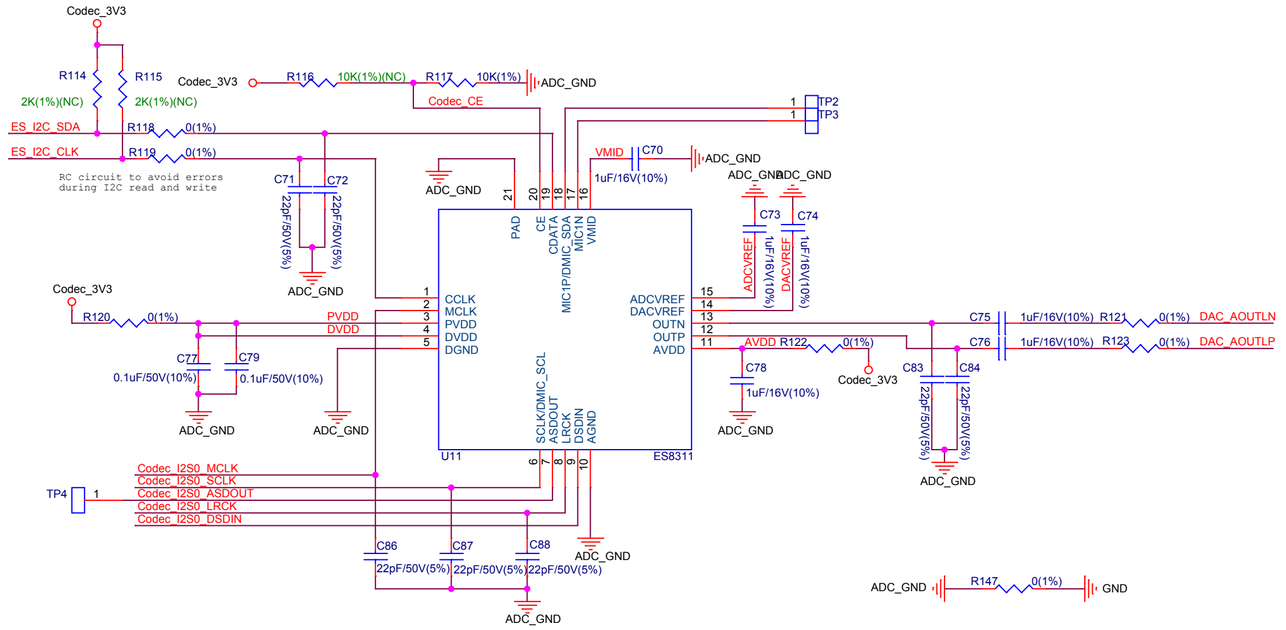
AEC:



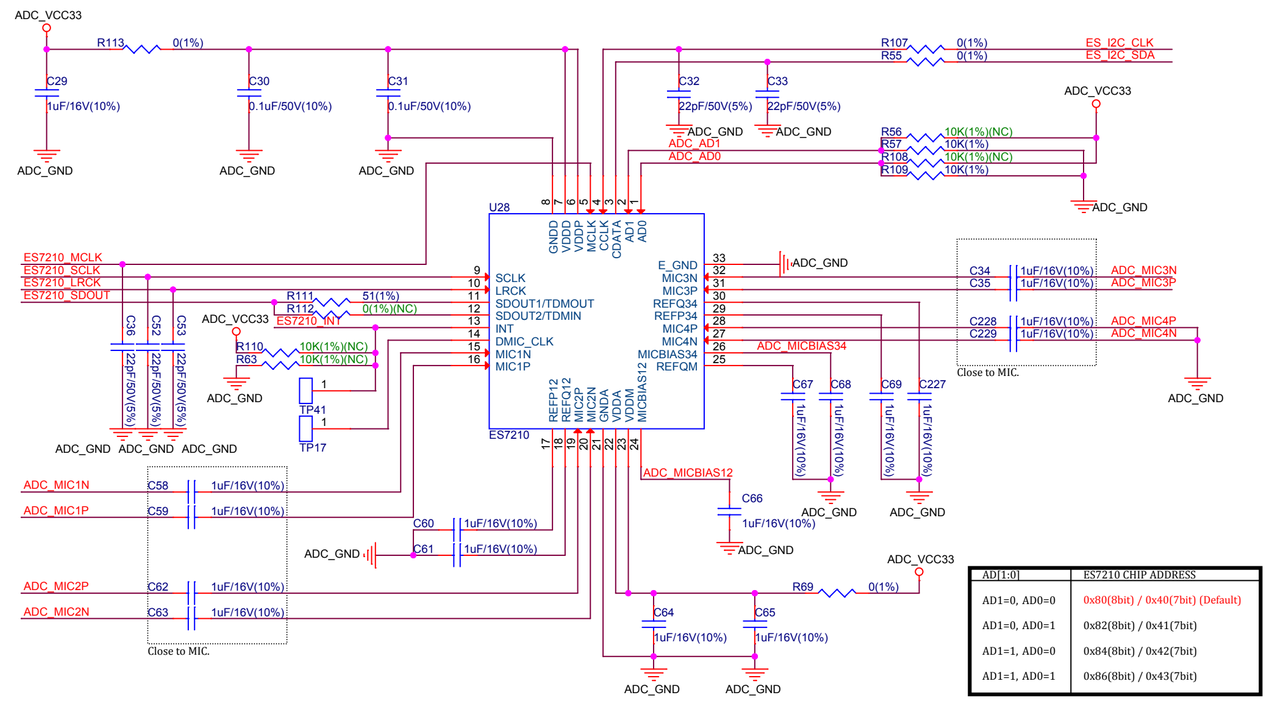
PA & Speaker:



Codec:

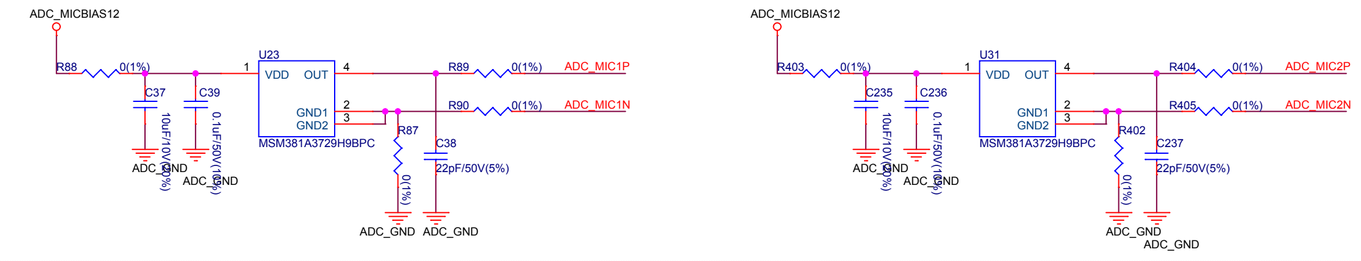


ADC:



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)

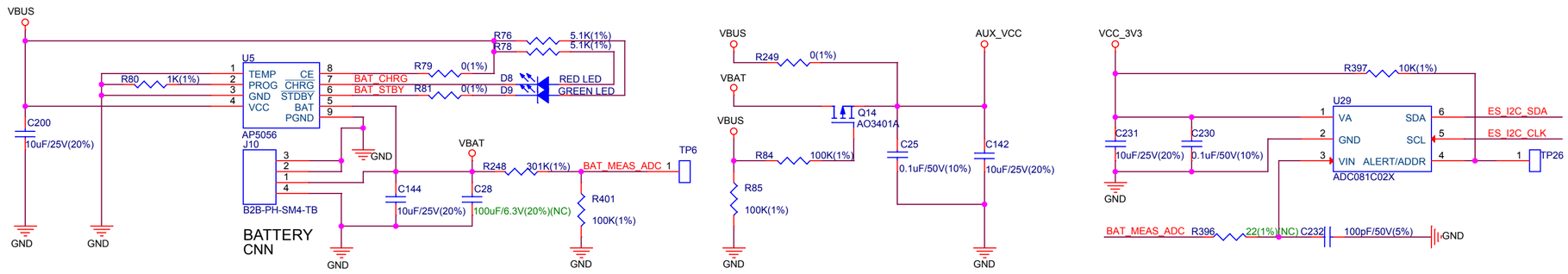
AMICx2:



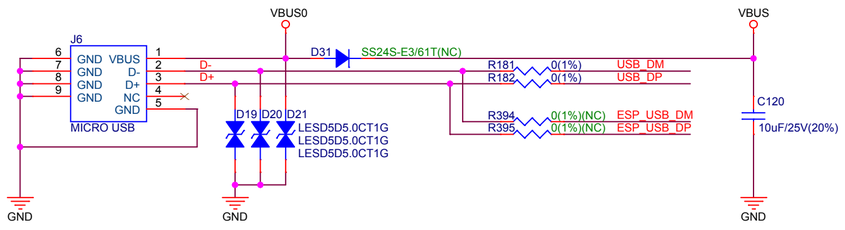
ESPRESSIF			
乐鑫信息科技（上海）股份有限公司			
Title: ESP32-S3-KORVO-2			
Size: C	Document Number: 04_AUDIO		Rev: 3.0
Date: Friday, September 17, 2021	Sheet 4 of 6		

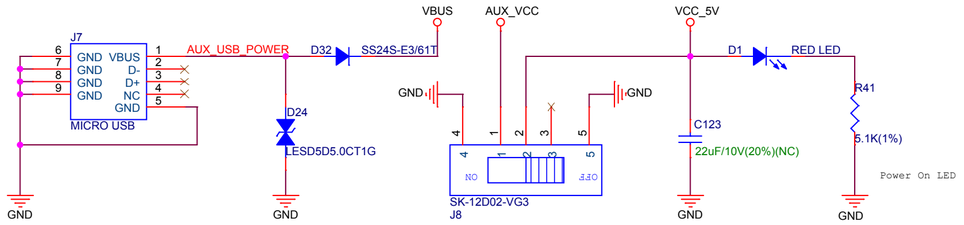
BAT_MEAS_ADC
ESP0_Boot_IO0
ESP0_Boot_IO2
ESP0_Boot_EN
ESP0_UART0_TX
ESP0_UART0_RX
ESP_USB_DP
ESP_USB_DM
ES_I2C_CLK
ES_I2C_SDA

BATTERY:

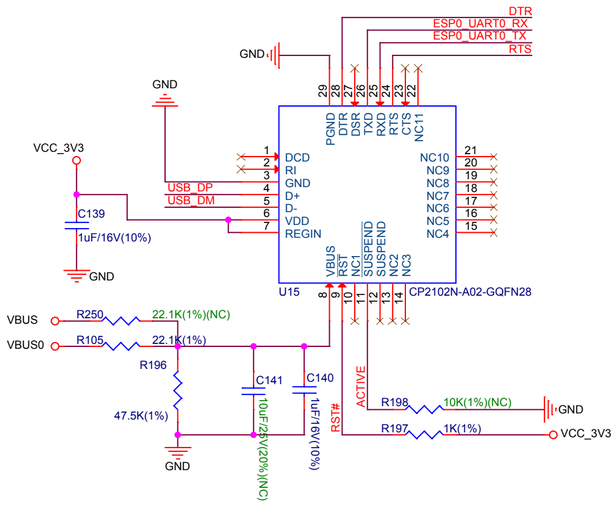


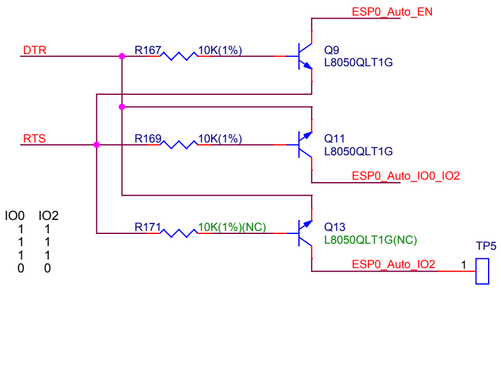
Power IN:



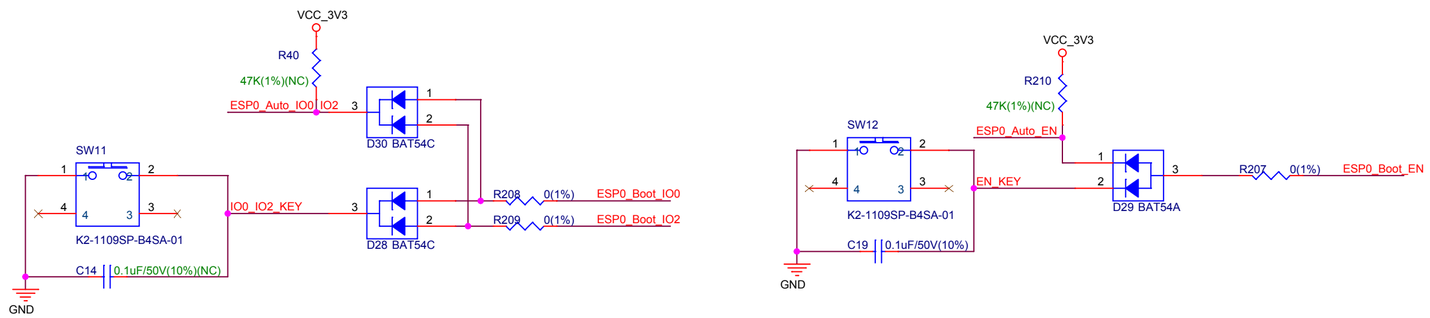


UART:





Reset & Download & Button:



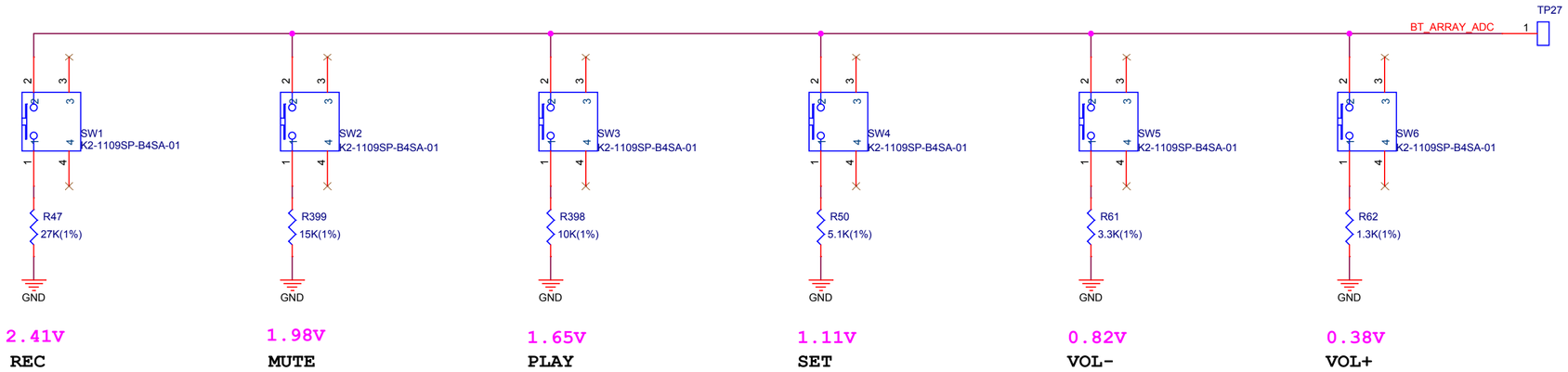
ESPRESSIF
乐鑫信息科技（上海）股份有限公司

Title	ESP32-S3-KORVO-2	
Size: C	Document Number: 05_POWER	Rev: 3.0
Date: Friday, September 17, 2021	Sheet 5 of 6	

BT_ARRAY_ADC

BT_ARRAY_ADC

Button Array:



ESPRESSIF		
乐鑫信息科技（上海）股份有限公司		
Title: ESP32-S3-KORVO-2		
Size: C	Document Number: 06_BUTTON_LEDS	Rev: 3.0
Date: Friday, September 17, 2021	Sheet 6 of 6	