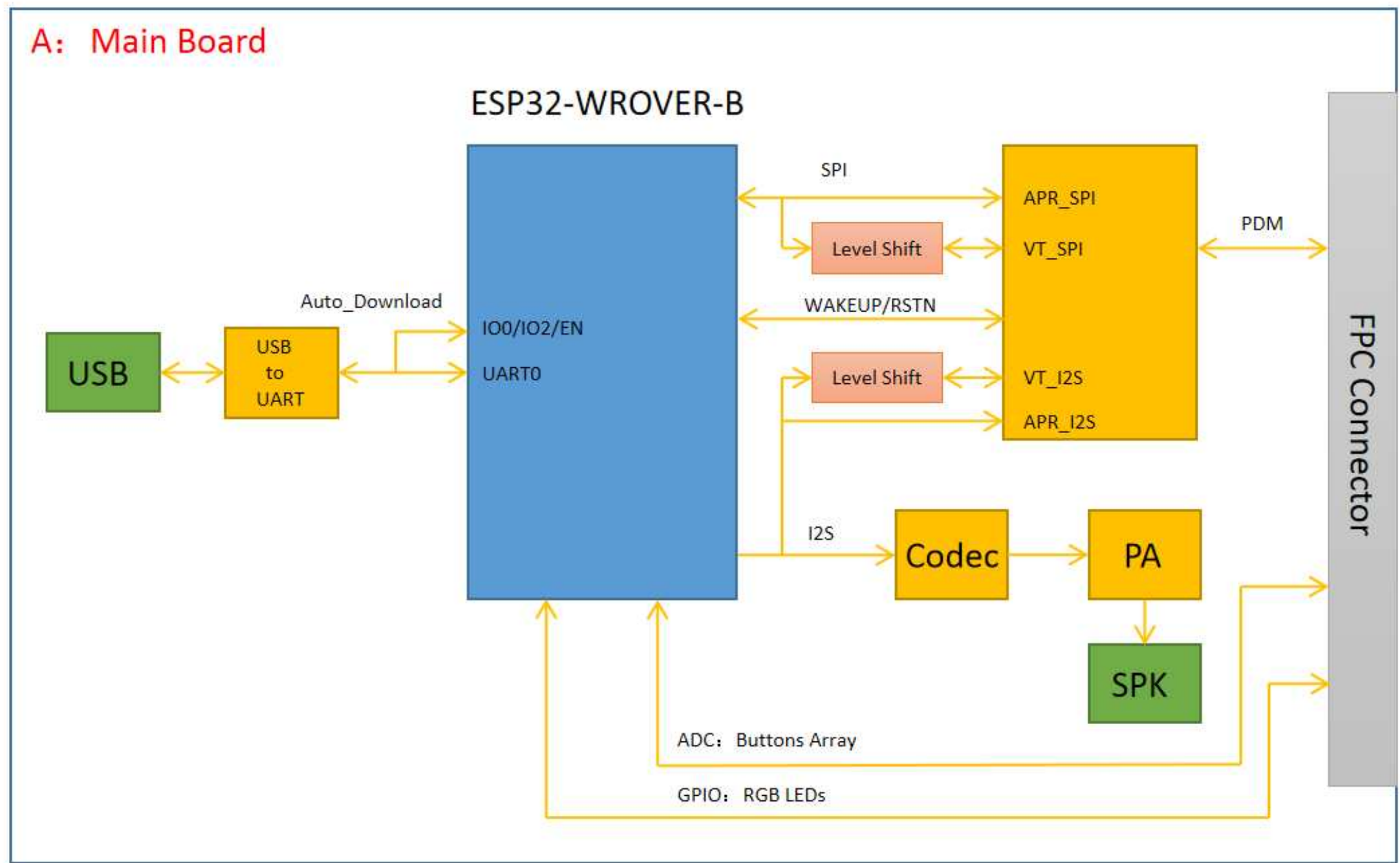
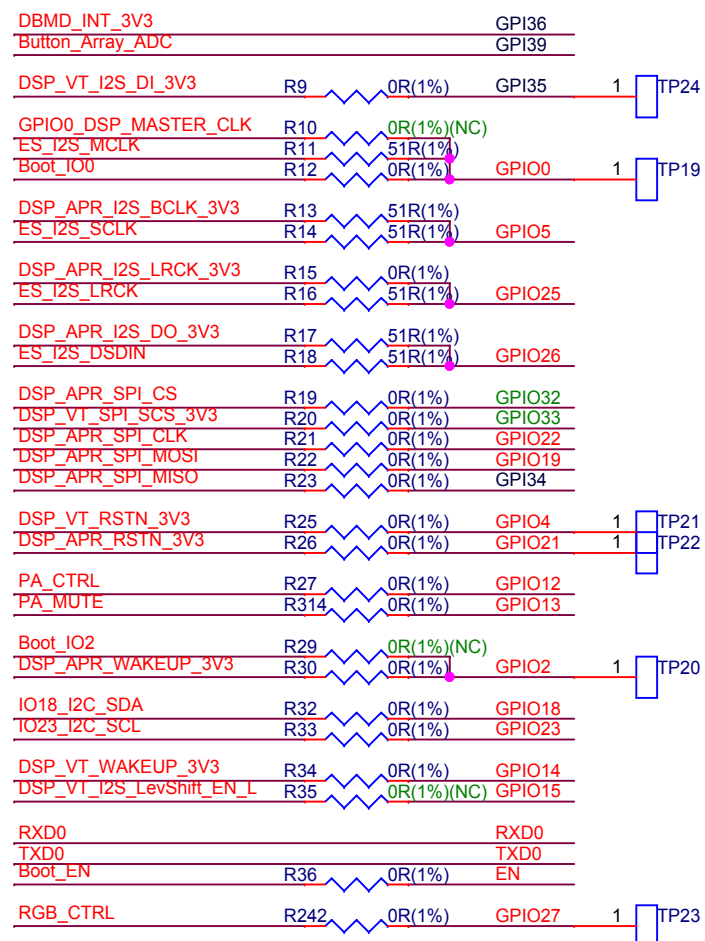
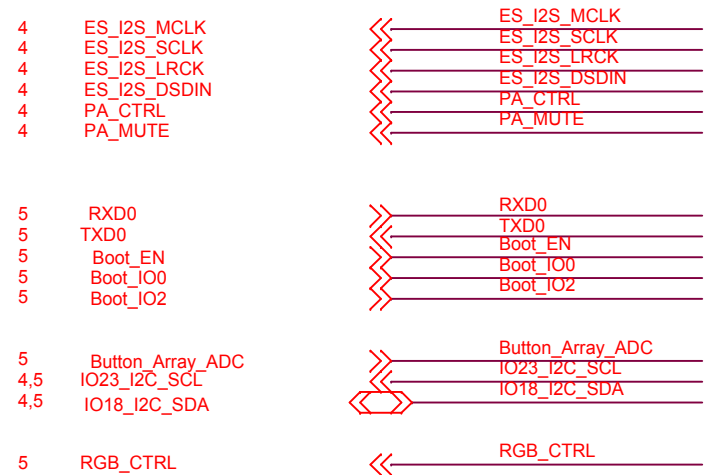
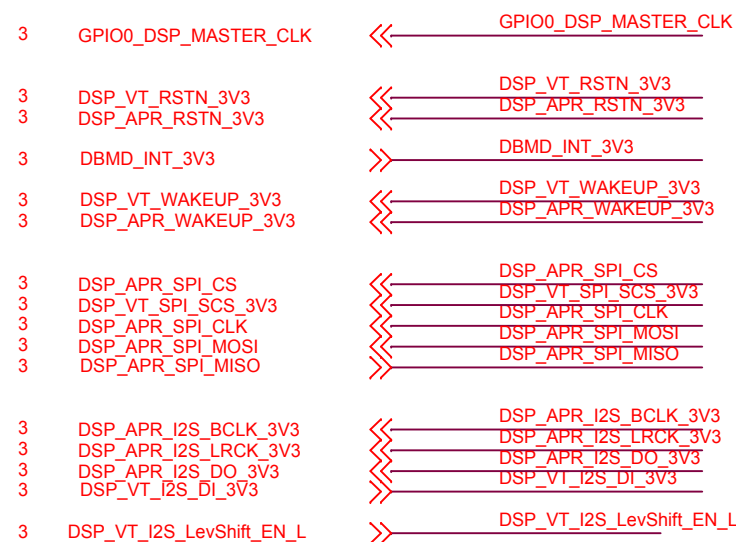
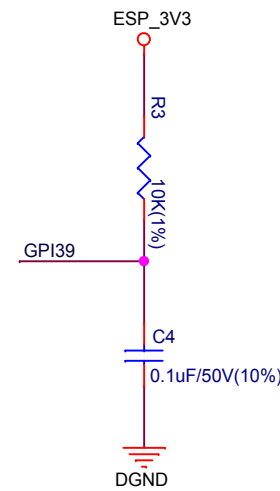
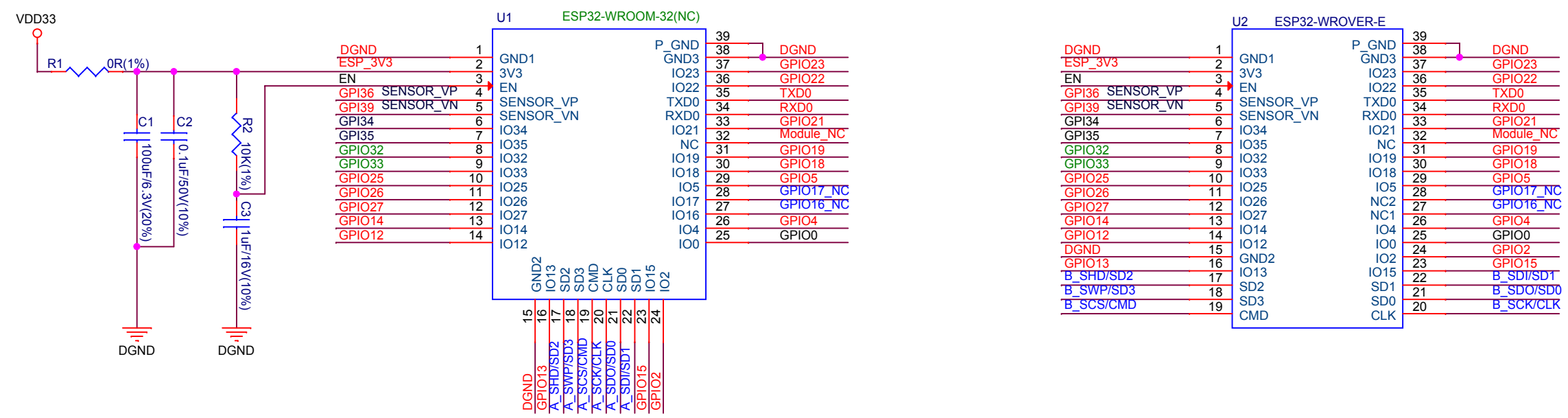


# System Block:

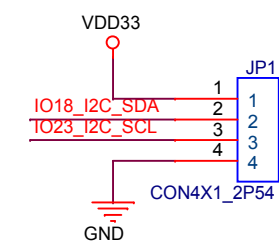
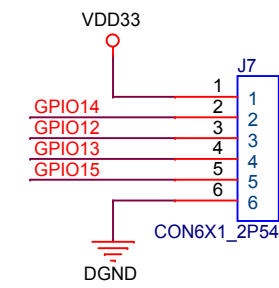
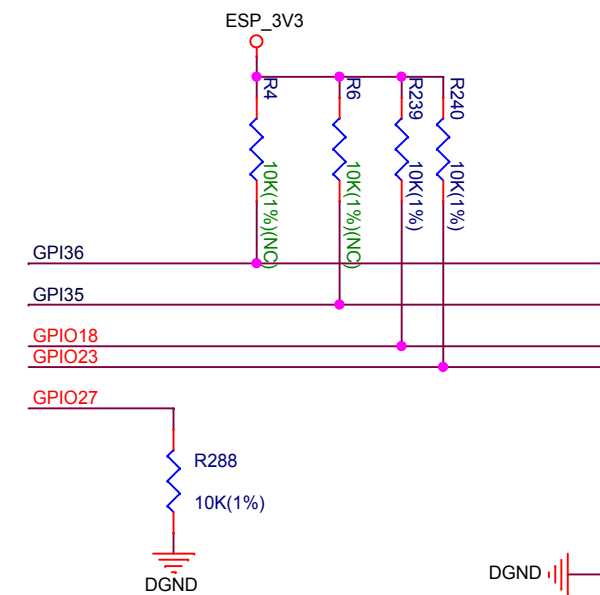




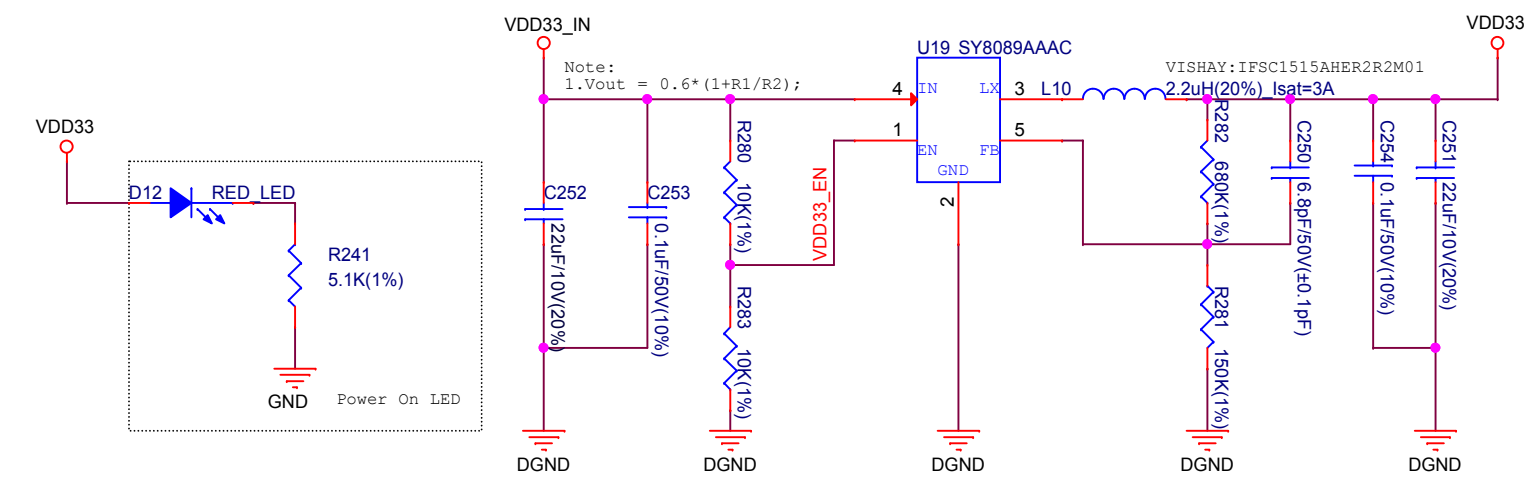
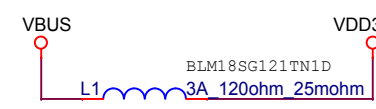
### ESP32 Module:



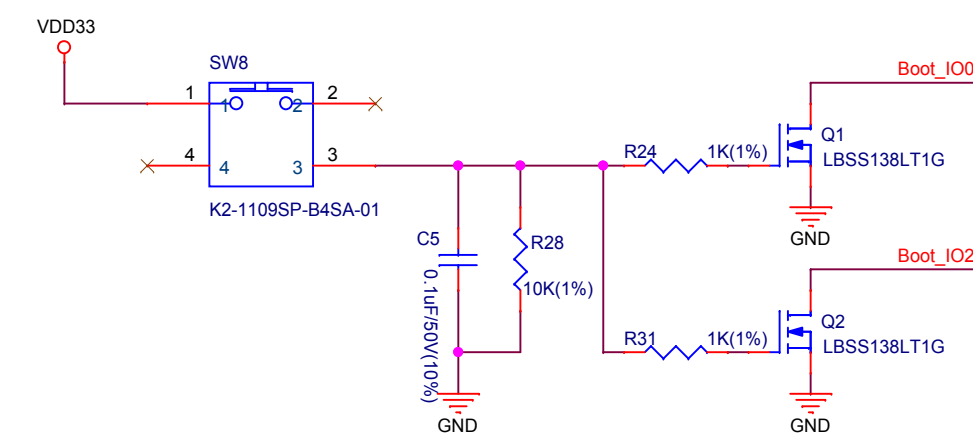
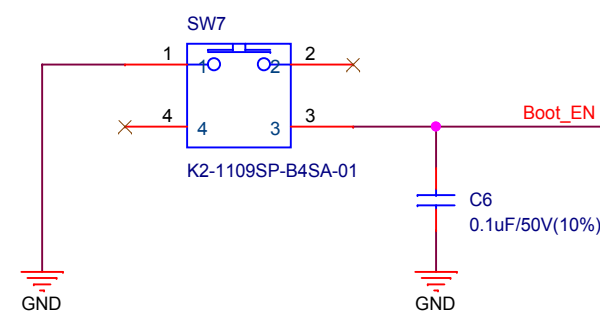
1. For Button Array ADC;  
2. Cap should be close to Module.



### Power Supply for ESP32:



### Buttons:



### ESPRESSIF

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Title: ESP32-Vaquita-DSPG

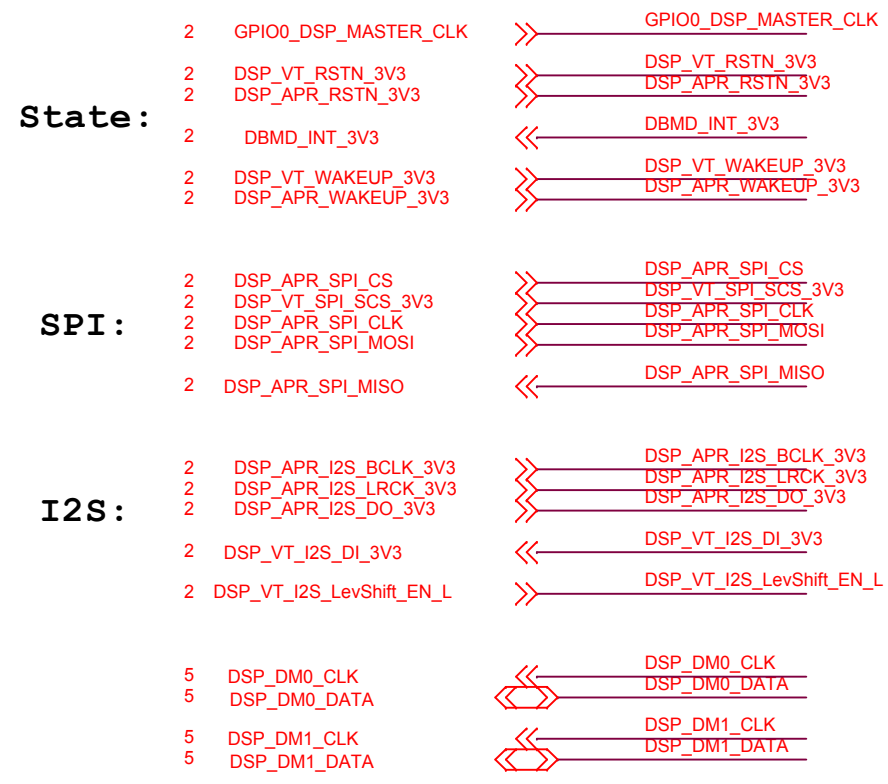
Size: Document Number

C: <02\_ESP32\_MCU>

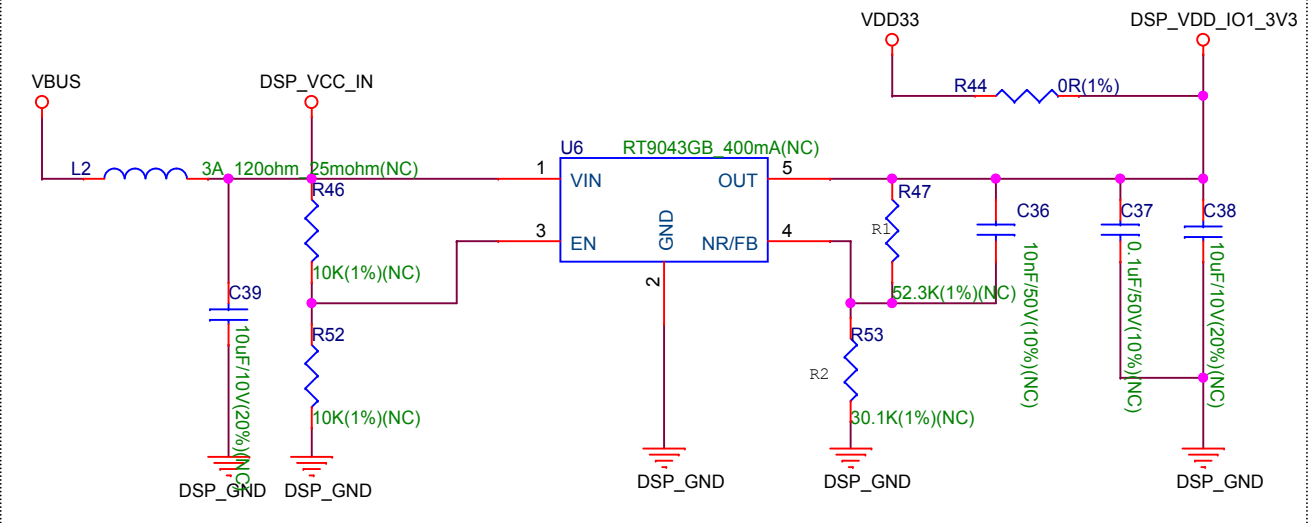
Date: Tuesday, February 25, 2020

Sheet 2 of 5

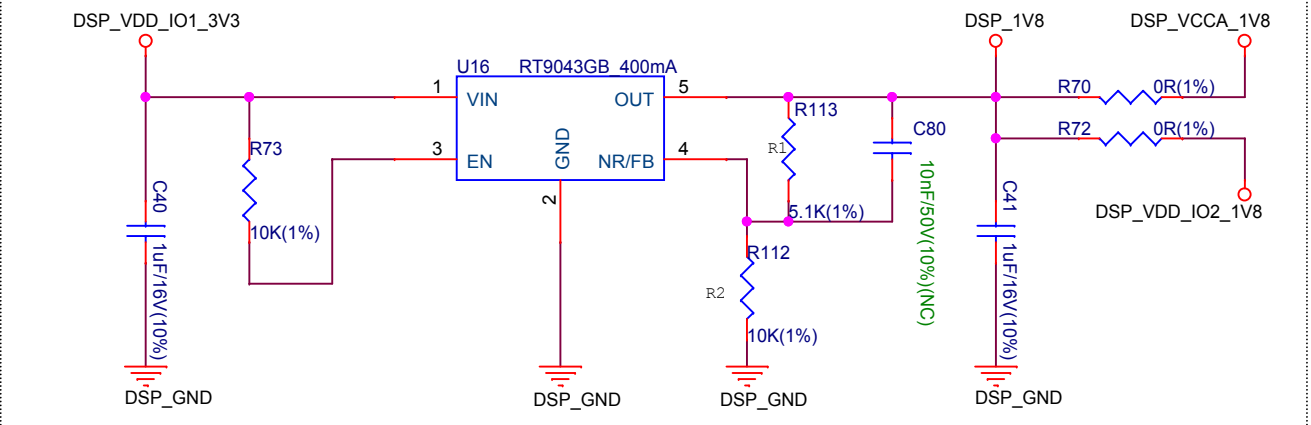
Rev V1.0



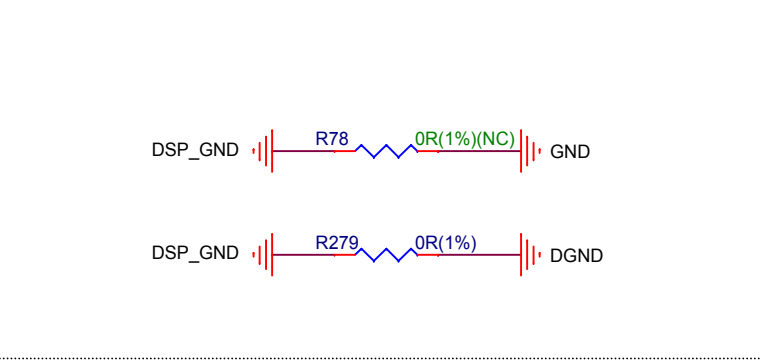
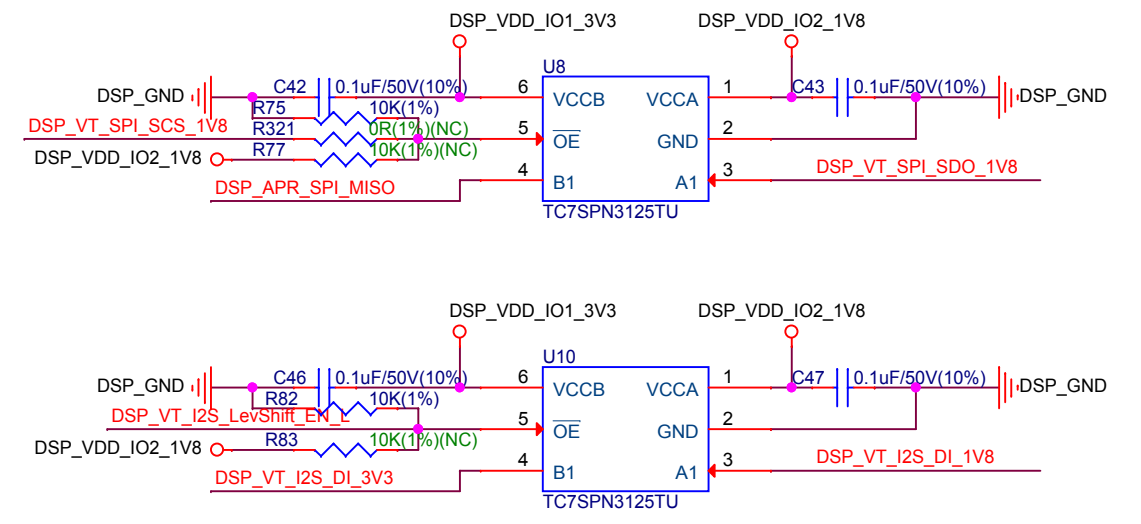
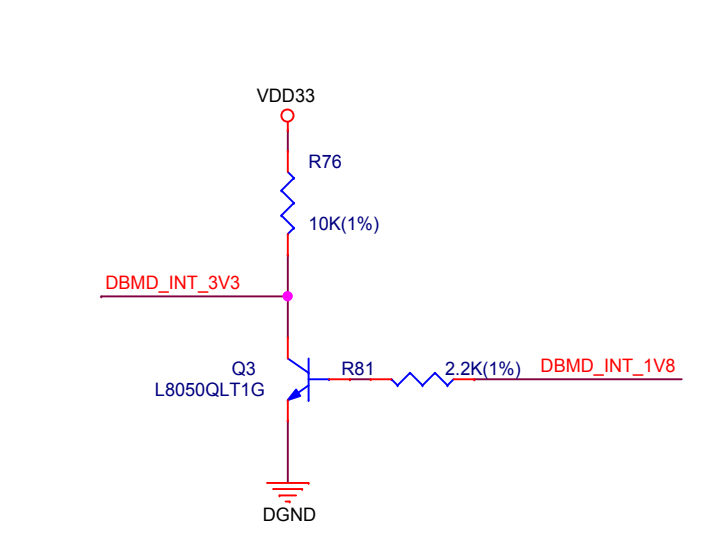
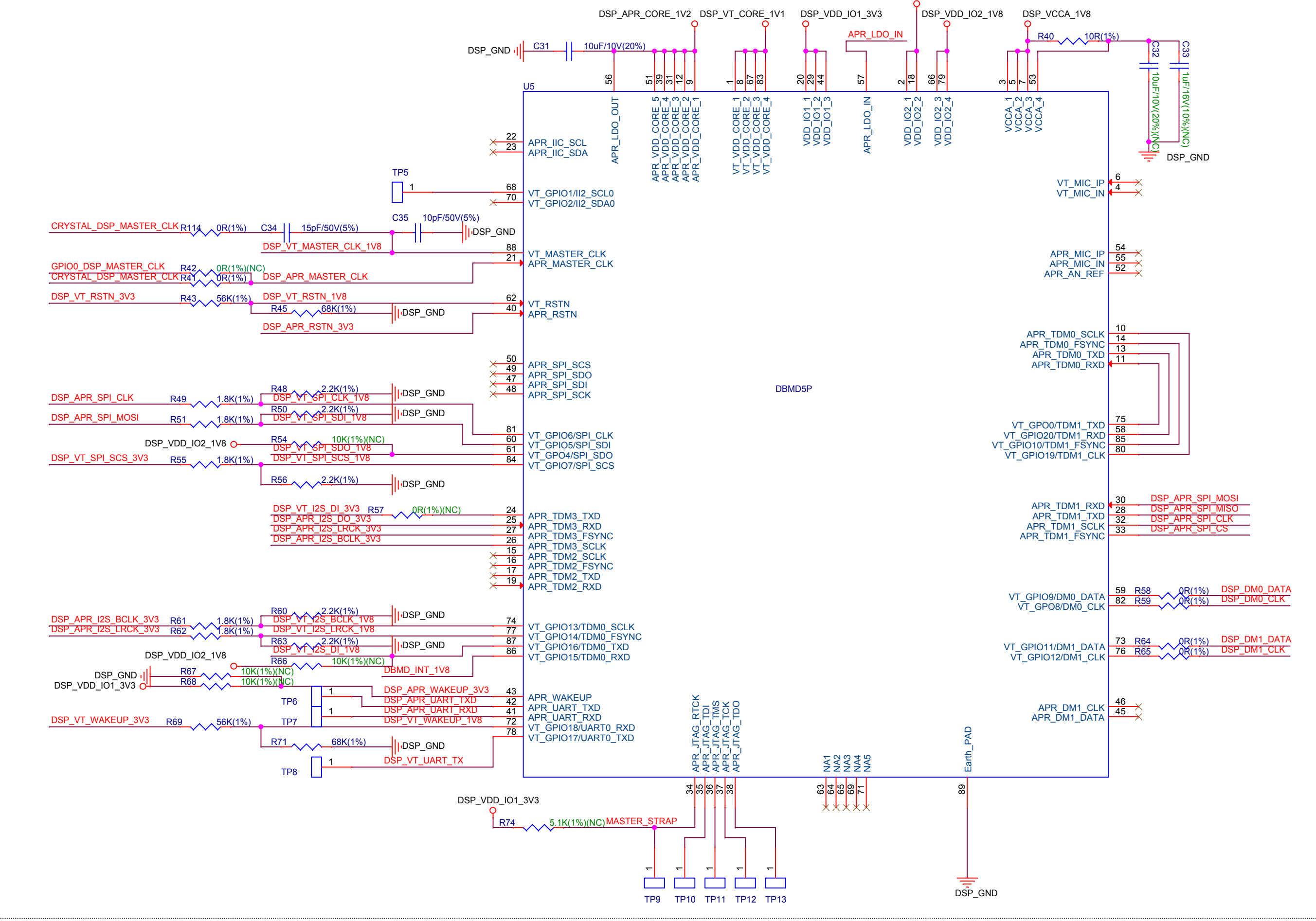
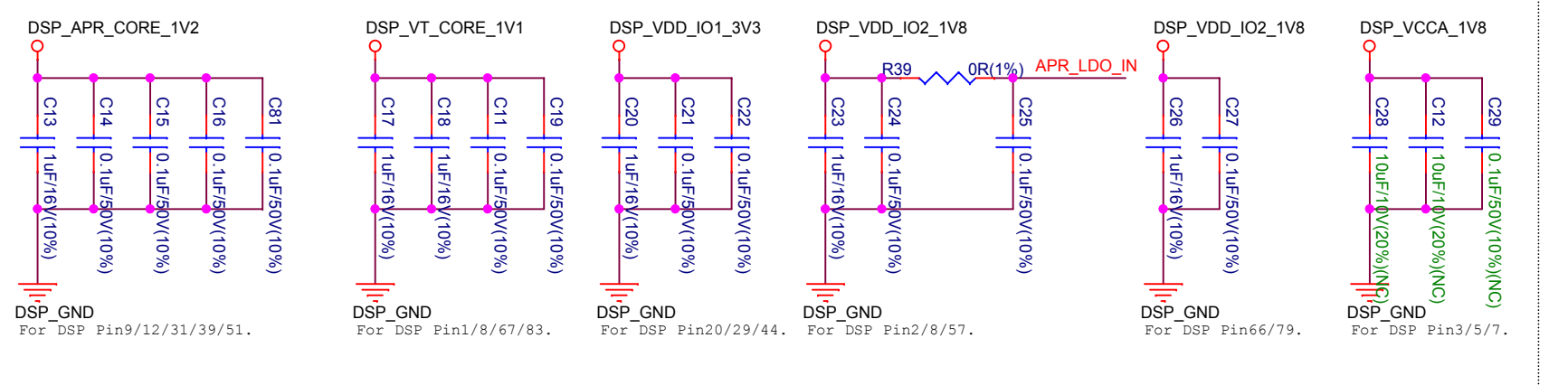
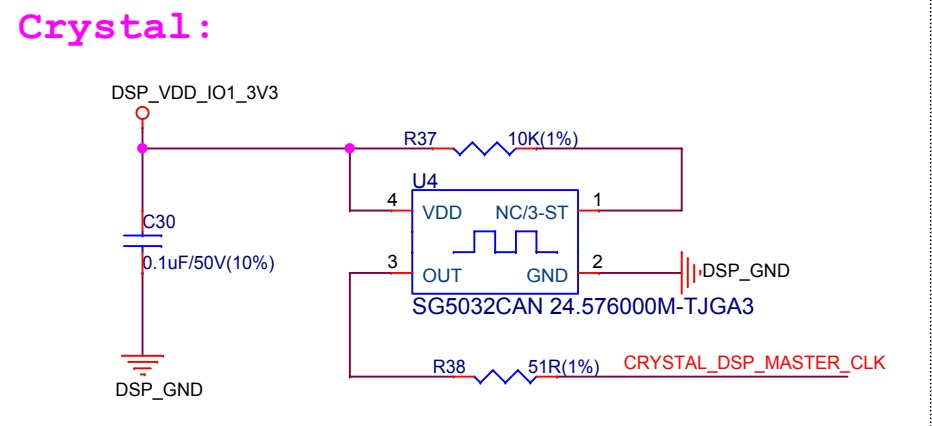
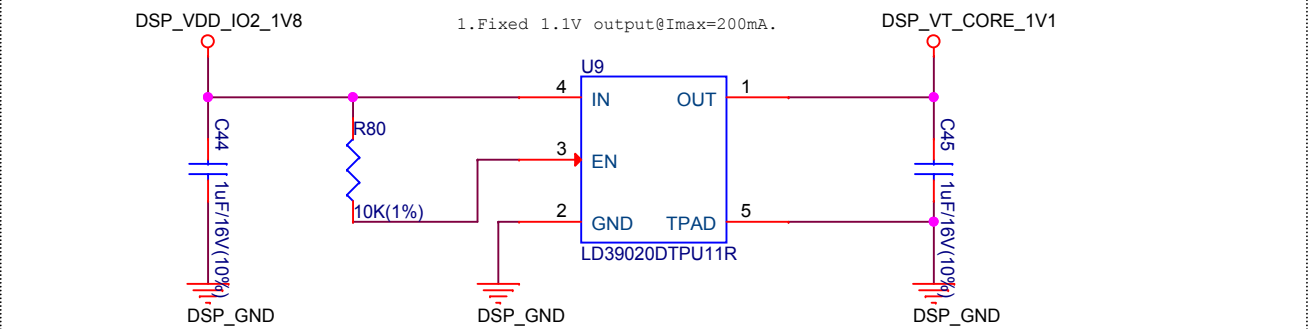
**Power For DSP:**



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



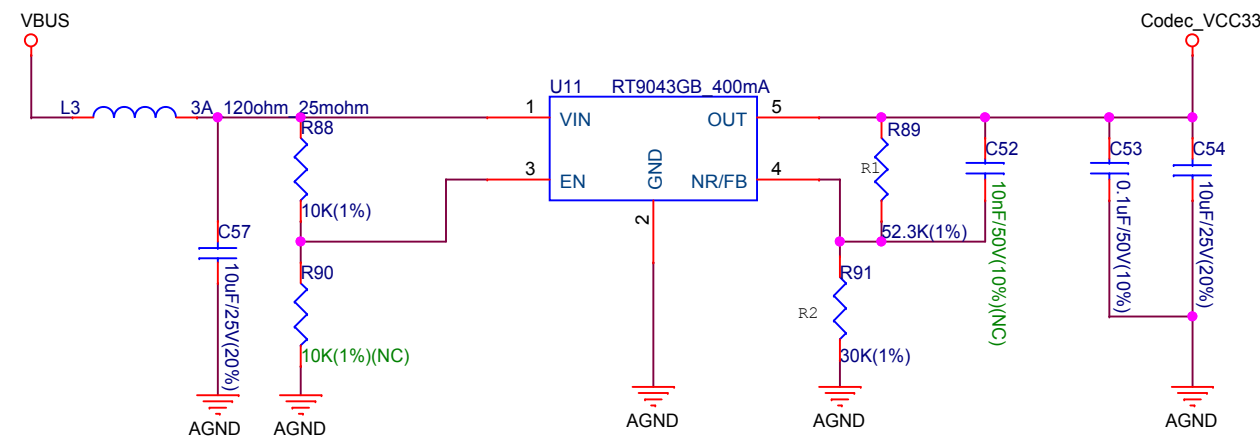
Notes:  
 $1. V_{out} = 1.20 * (1 + R1/R2) = 1.81V;$



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Title: ESP32-Vaquita-DSPG		
Size: C	Document Number: <03_DSP>	Rev: V1.0
Date: Monday, December 09, 2019	Sheet: 3 of 5	

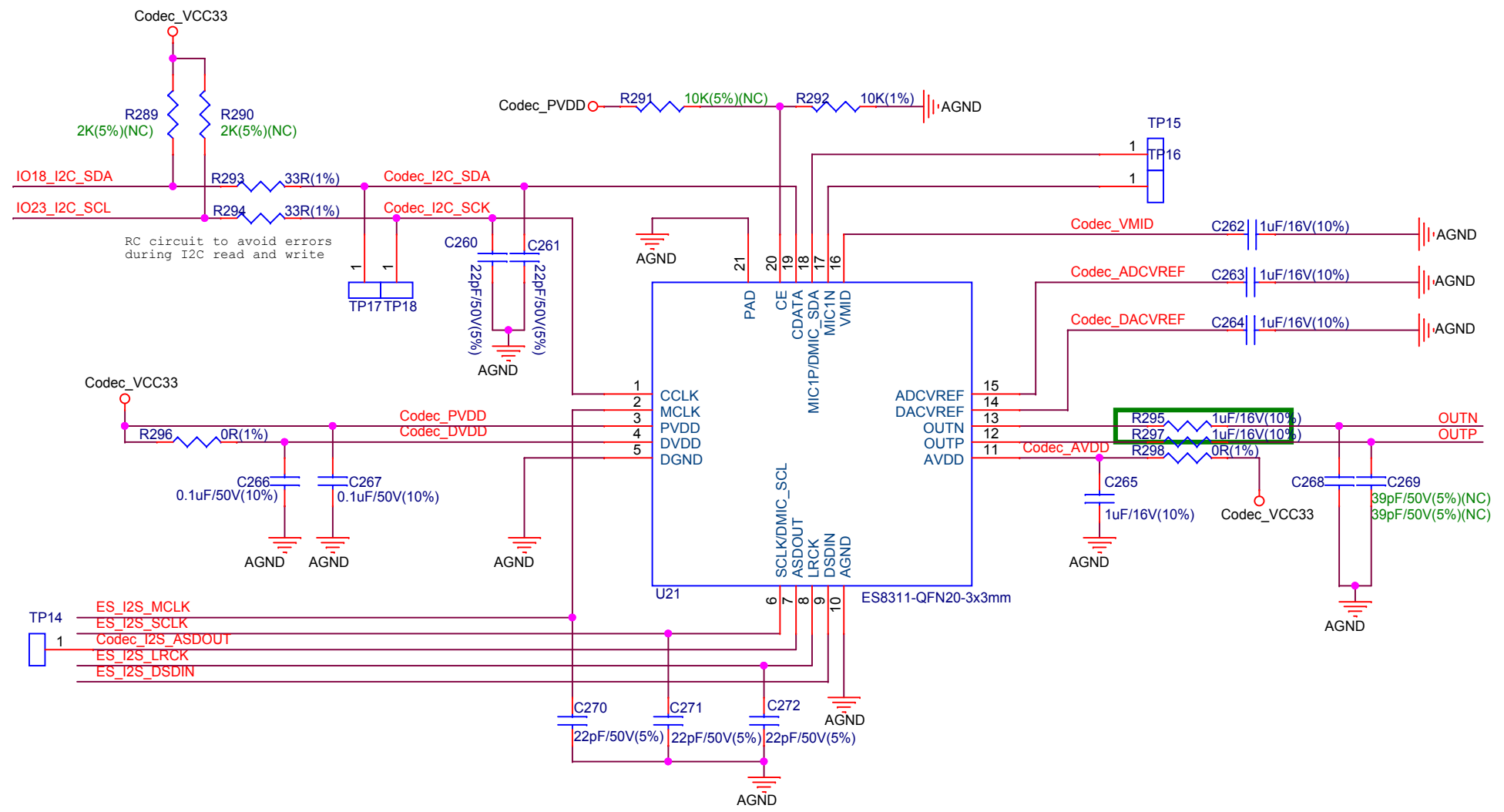
2.5 IO23\_I2C\_SCL  
 2.5 IO18\_I2C\_SDA  
 ES\_I2S\_MCLK:IO0 2 ES\_I2S\_MCLK  
 ES\_I2S\_SCLK:IO5 2 ES\_I2S\_SCLK  
 ES\_I2S\_LRCK:IO25 2 ES\_I2S\_LRCK  
 ES\_I2S\_DSDIN:IO26 2 ES\_I2S\_DSDIN  
 PA\_CTRL:IO12 2 PA\_CTRL  
 PA\_MUTE:IO13 2 PA\_MUTE

### Power Supply for Codec:

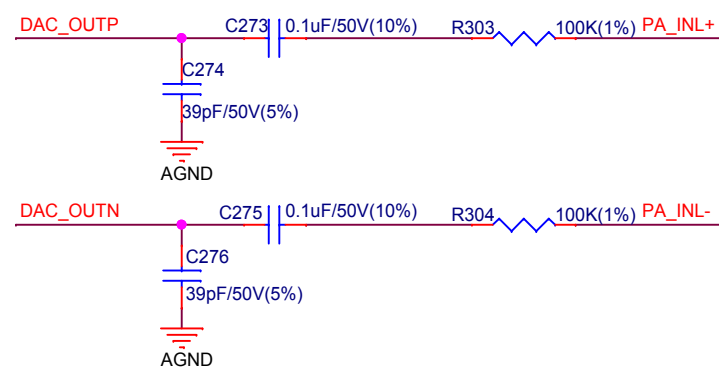


Notes:  
 1.  $V_{out} = 1.20 * (1 + R1/R2) = 3.296V$ ;  
 R1=52.3K, R2=30.1K are recommended for better performance.

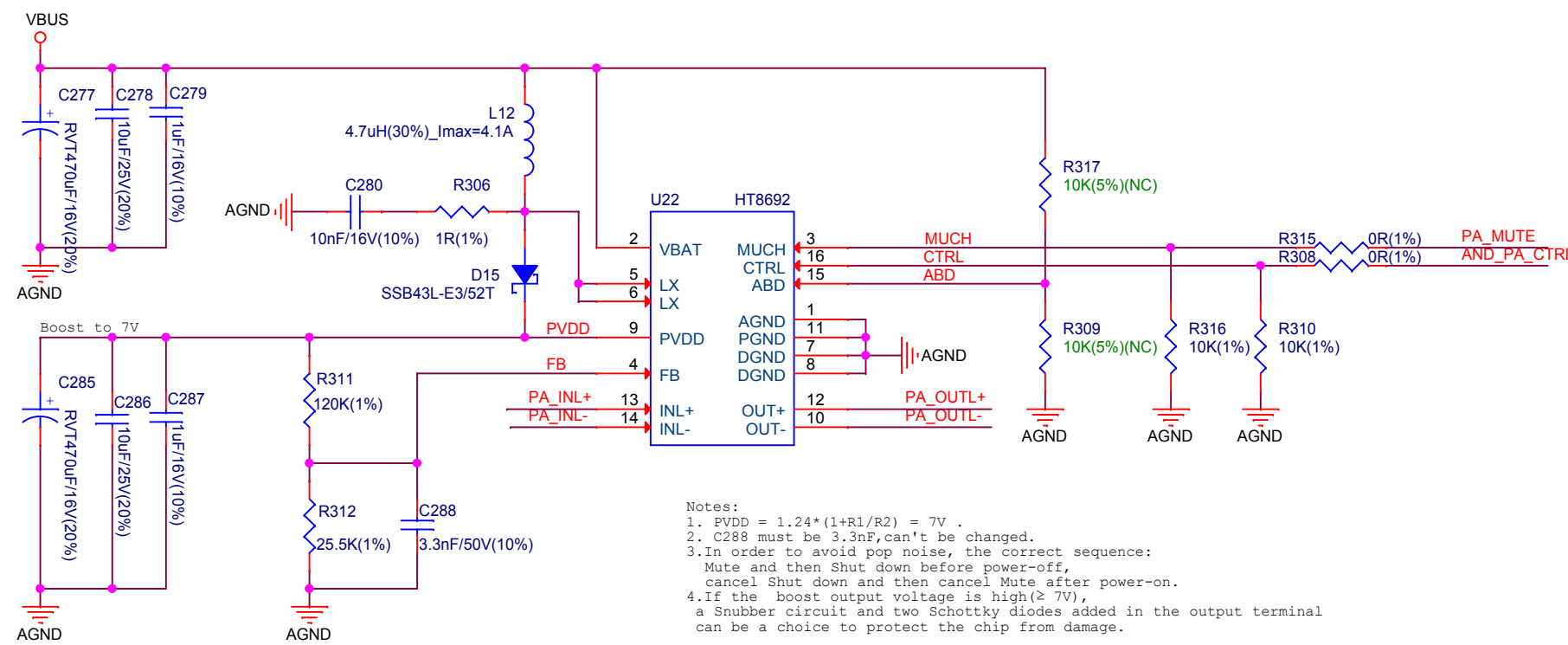
### Codec:



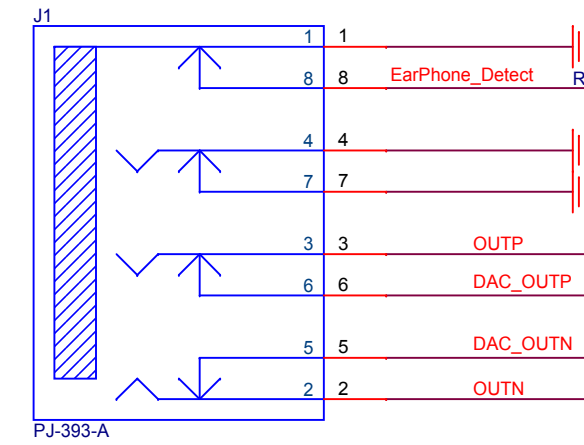
### PA:



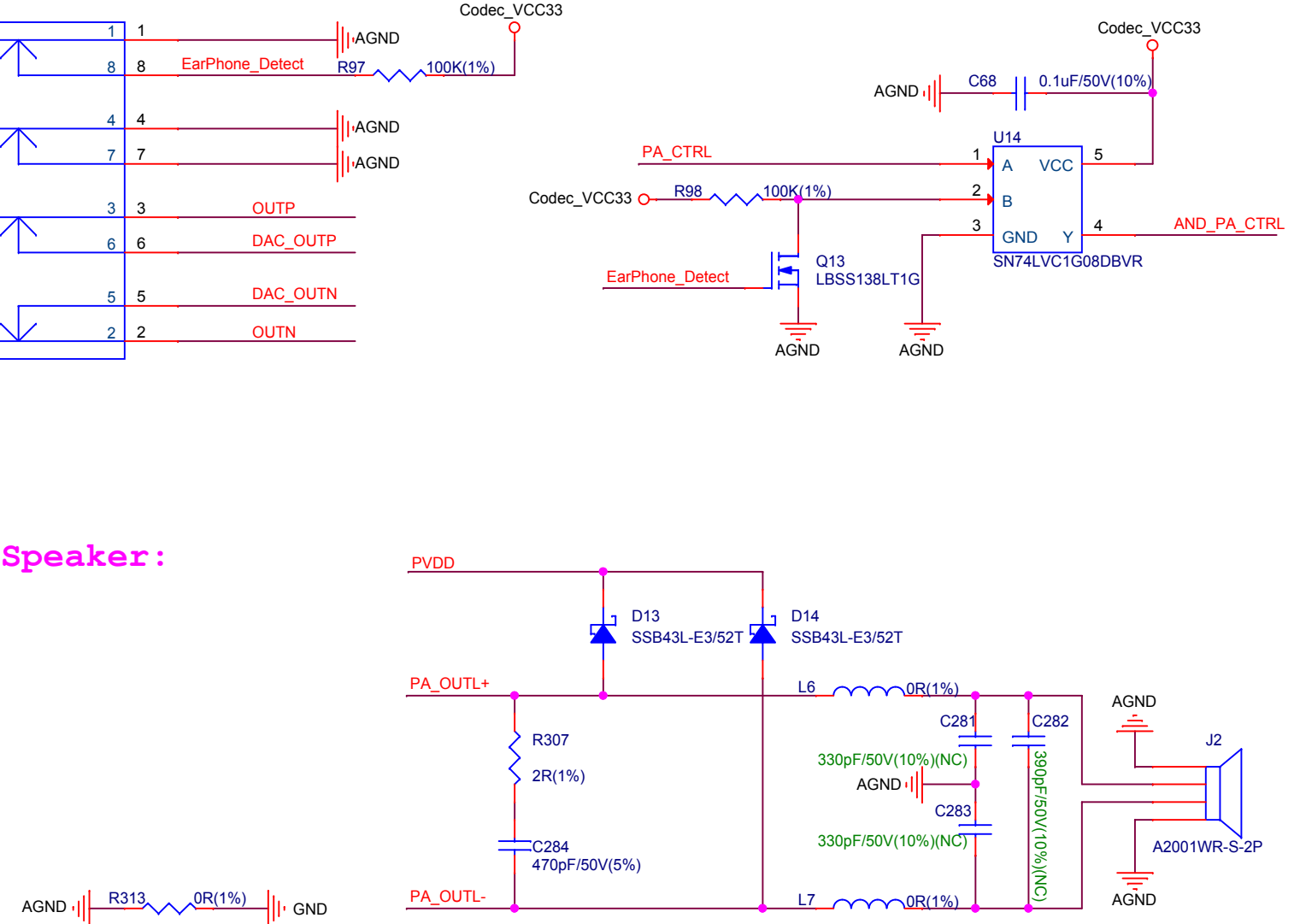
	H	L
MUCH(Default Low)	Mute	AMP ON
CTRL(Default Low In D)	ACF Mode	Shut Down
ABD(Default High)	Class D Boost ON	Class AB Boost OFF



Notes:  
 1.  $PVDD = 1.24 * (1 + R1/R2) = 7V$  .  
 2. C288 must be 3.3nF, can't be changed.  
 3. In order to avoid pop noise, the correct sequence:  
 Mute and then Shut down before power-off,  
 cancel Shut down and then cancel Mute after power-on.  
 4. If the boost output voltage is high(2 7V),  
 a Snubber circuit and two Schottky diodes added in the output terminal  
 can be a choice to protect the chip from damage.



### Speaker:



**ESPRESSIF**

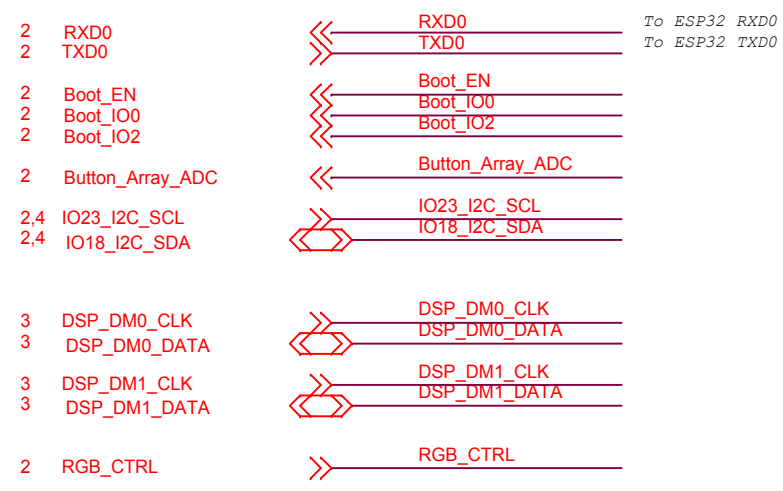
乐鑫信息科技(上海)股份有限公司

Title ESP32-Vaquita-DSPG

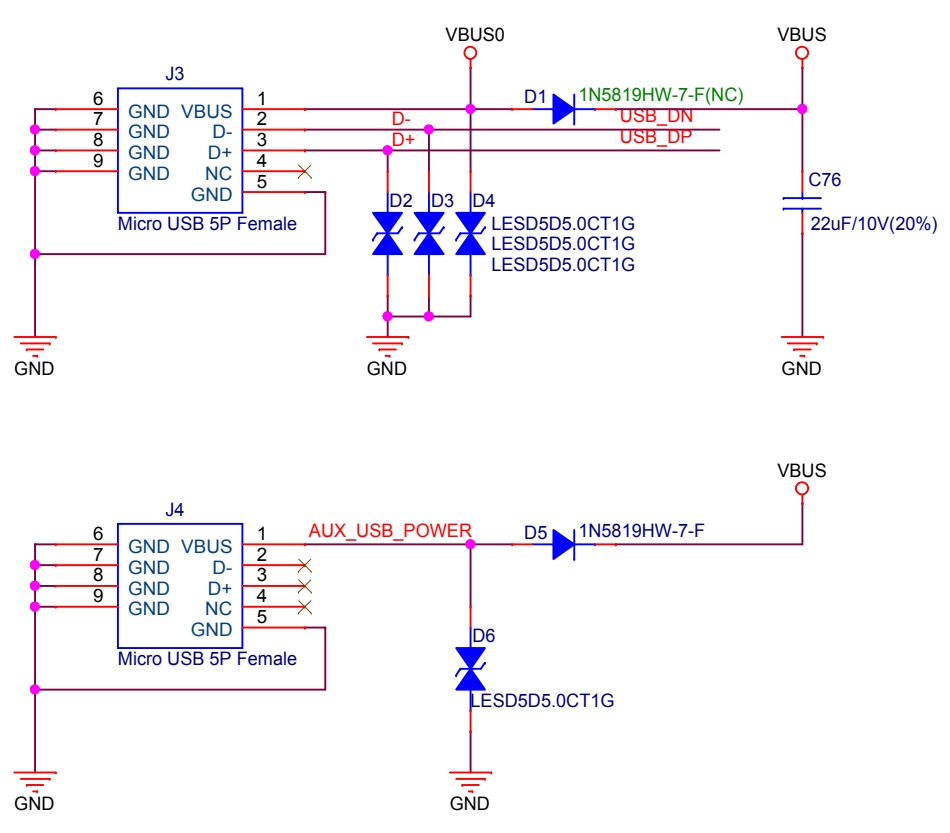
Size Document Number Rev V1.0

C <04\_Codec&PA>

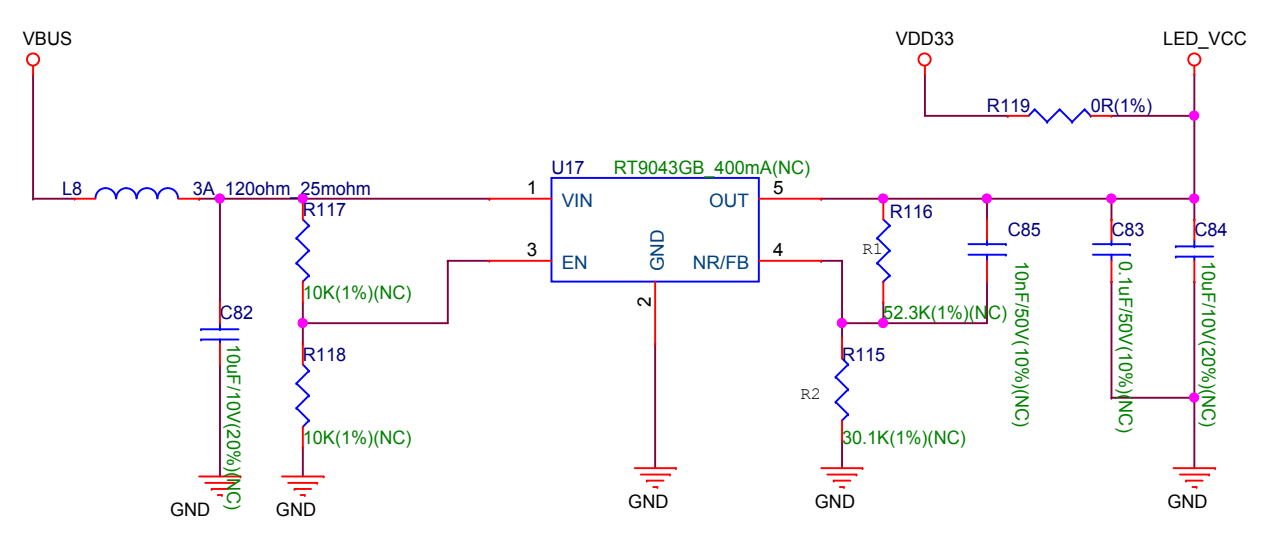
Date: Monday, December 09, 2019 Sheet 4 of 5



### USB: Power & Communication

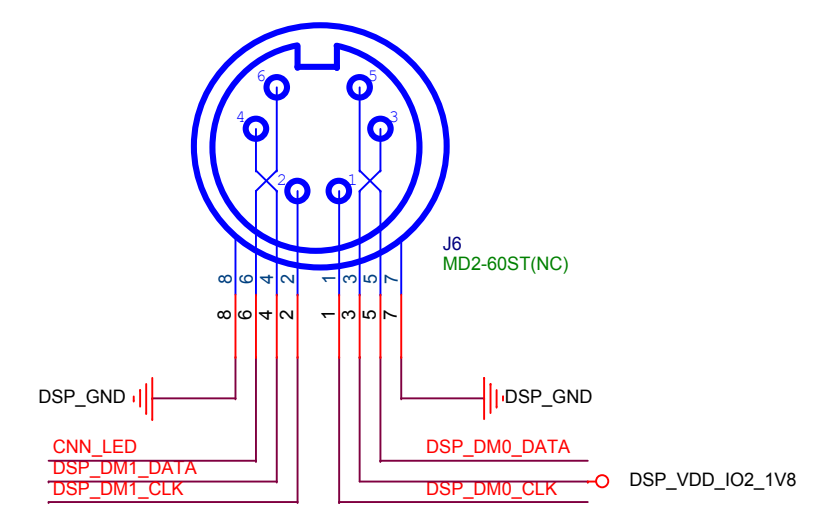


### Power For LED:

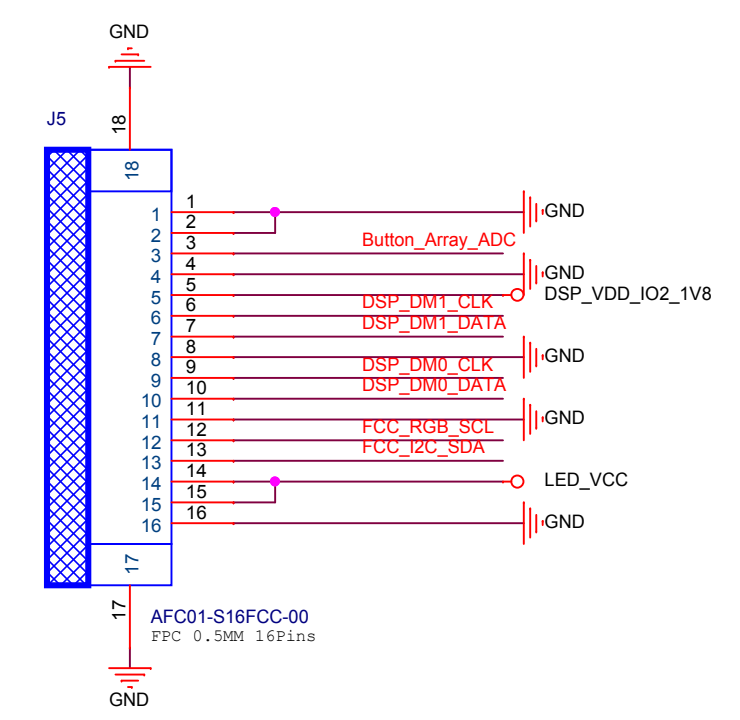


Notes:  
 1.  $V_{out} = 1.20 * (1 + R1/R2) = 3.296V$ ;  
 R1=52.3K, R2=30.1K are recommended for better performance.  
 2. Default VBUS power for LED, thus save one LDO.

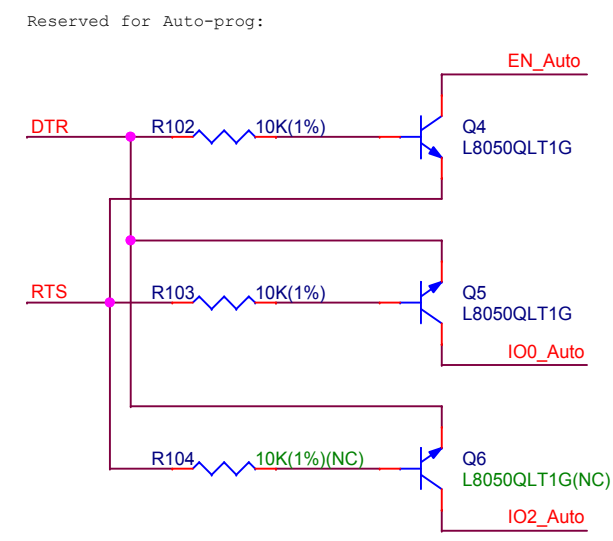
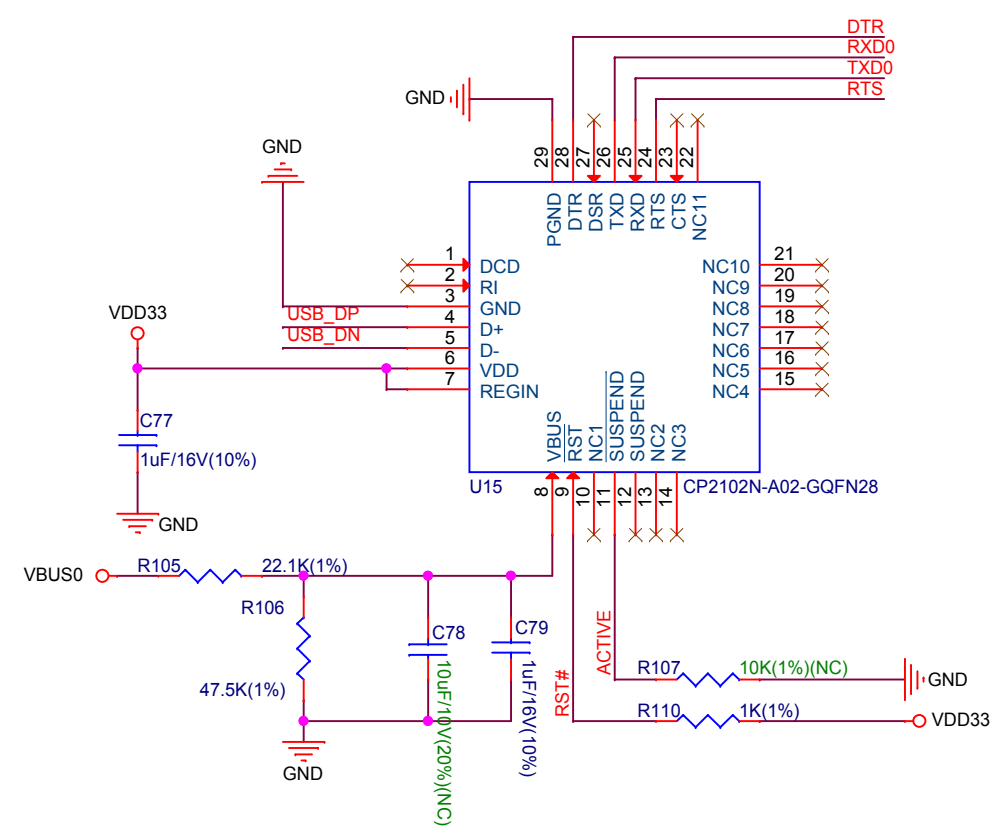
### MINI DIN Connector:



### FPC Connector/Reserved:



### USB <-> UART:



Auto program

DTR	RTS	EN	IO0	IO2
1	1	1	1	1
0	0	1	1	1
1	0	0	1	1
0	1	1	0	0

