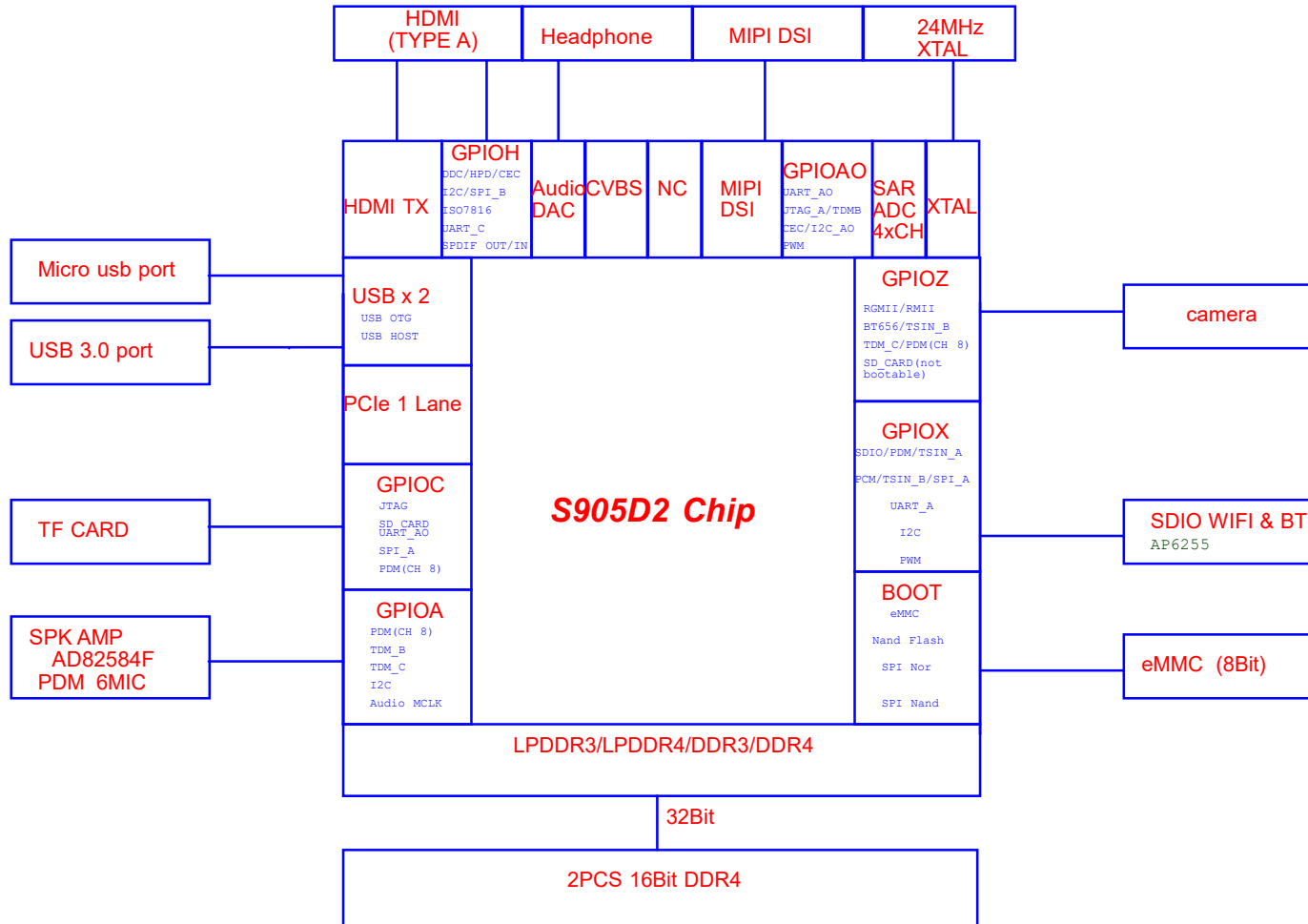
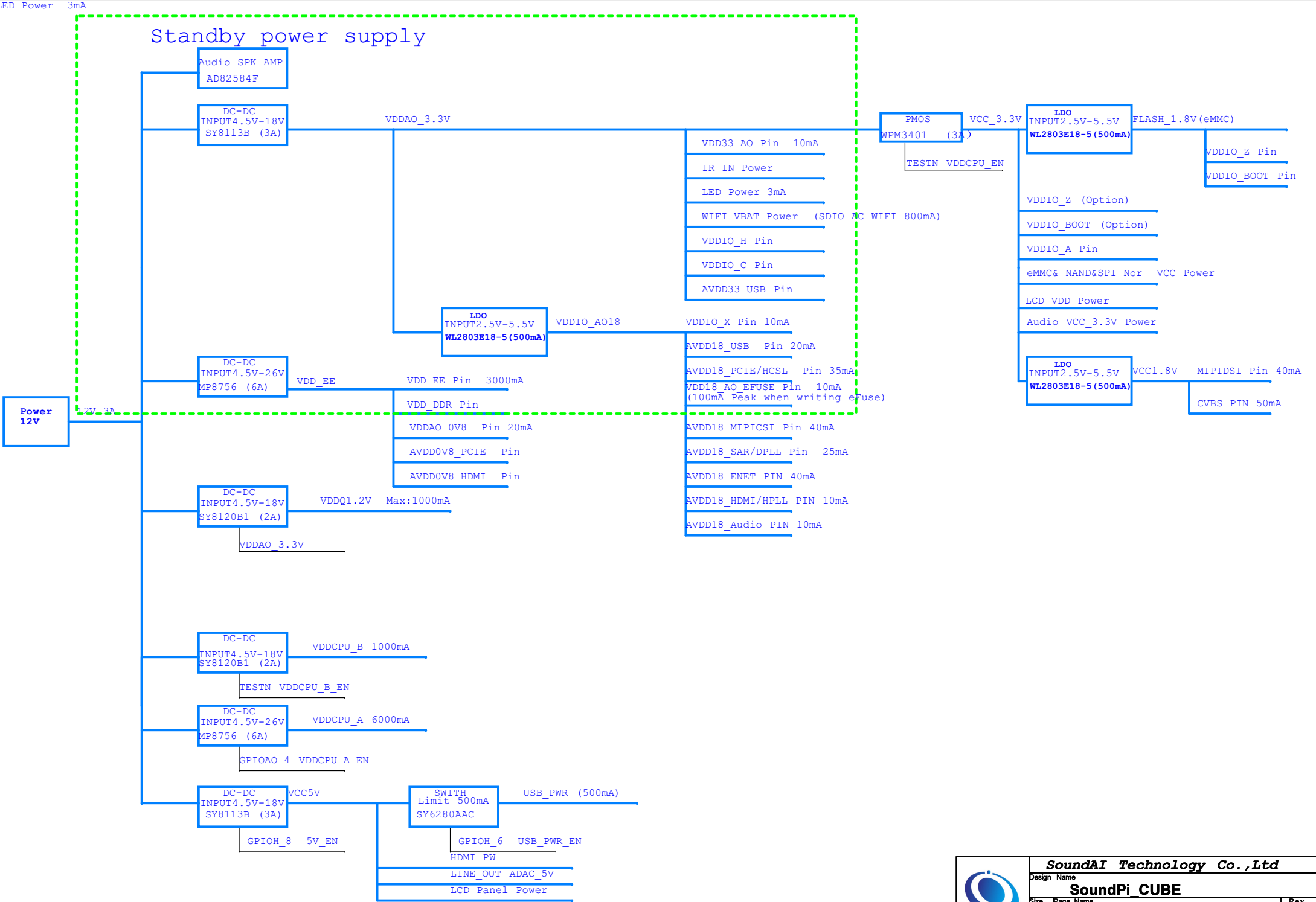


**PAGE INDEX**

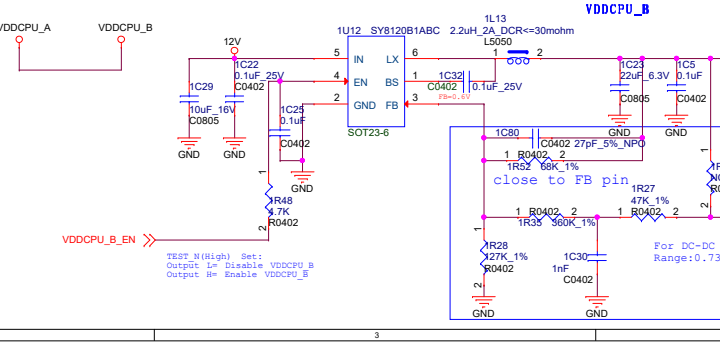
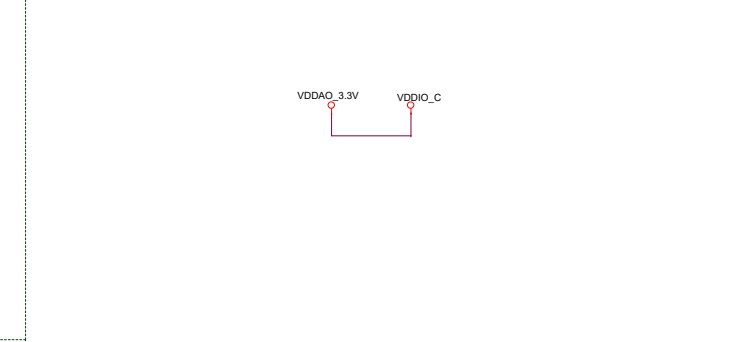
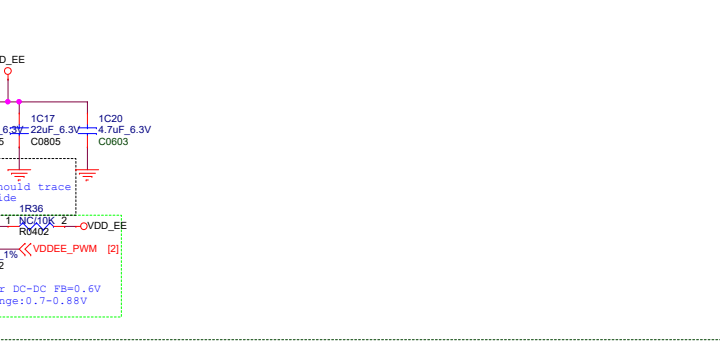
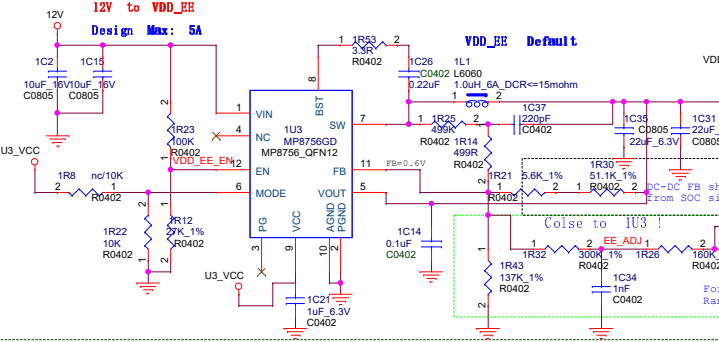
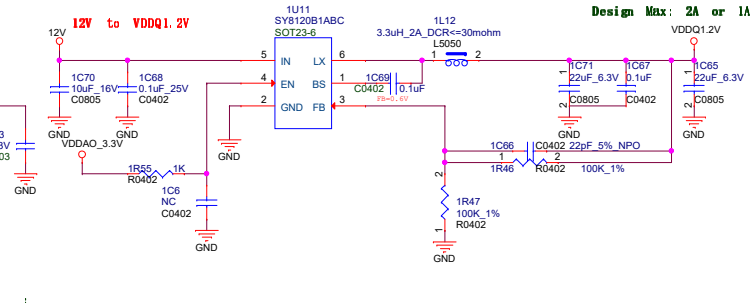
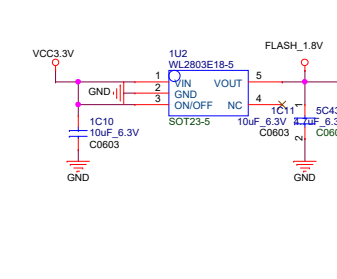
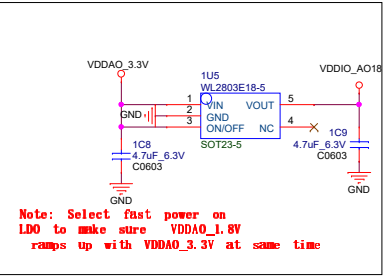
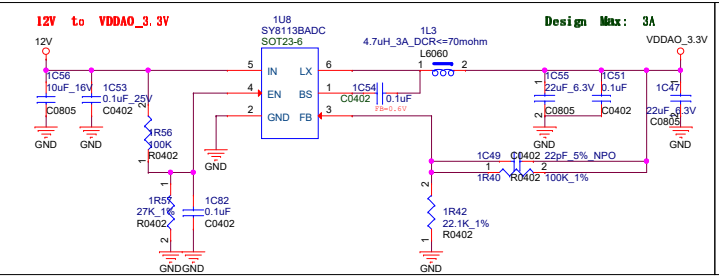
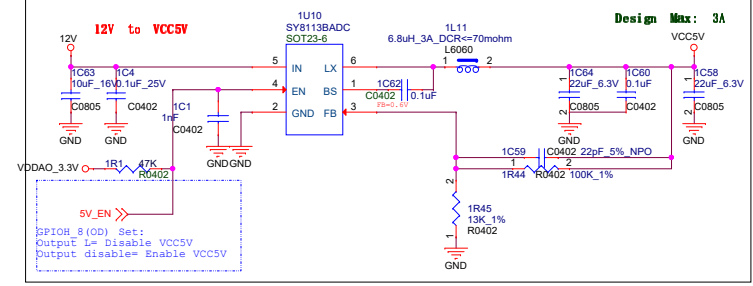
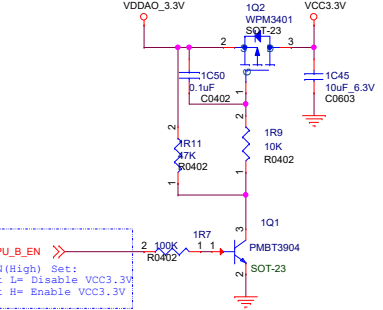
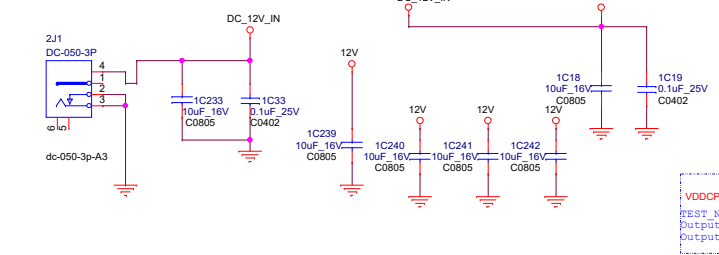
- 00- Block diagram
- 00- Power tree
- 01- Power
- 02- CPU I/O
- 03- DDR4
- 04- Flash
- 05- Ethernet
- 06- USB & PCIe
- 07- SDIO WIFI
- 08- Panel
- 09- HDMI & CVBS
- 10- Audio



# Standby power supply



**DC 12V power supply input**



**SoundAI Technology Co., Ltd**

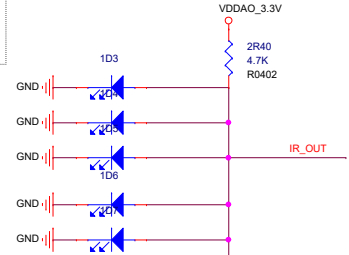
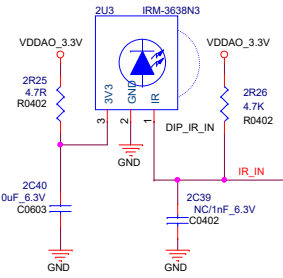
Design Name: **SoundPi CUBE**

Size: Custom

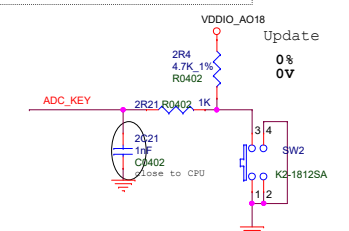
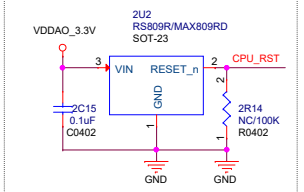
Page Name: **Power**

Date: **Tuesday, September 17, 2019** Sheet **3** of **12**

**Remote control receiver**



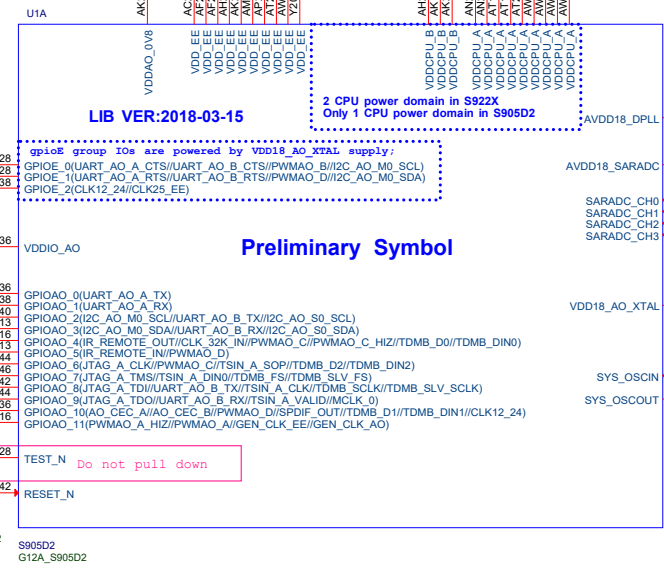
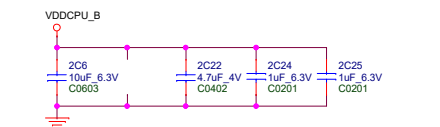
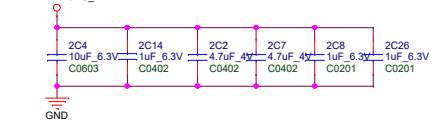
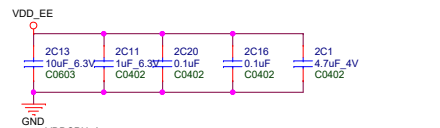
**CPU reset**



When using less keys, delete right side buttons. Only the left key works when multiple keys pressed key like "OK", and other special keys should be placed to the right side

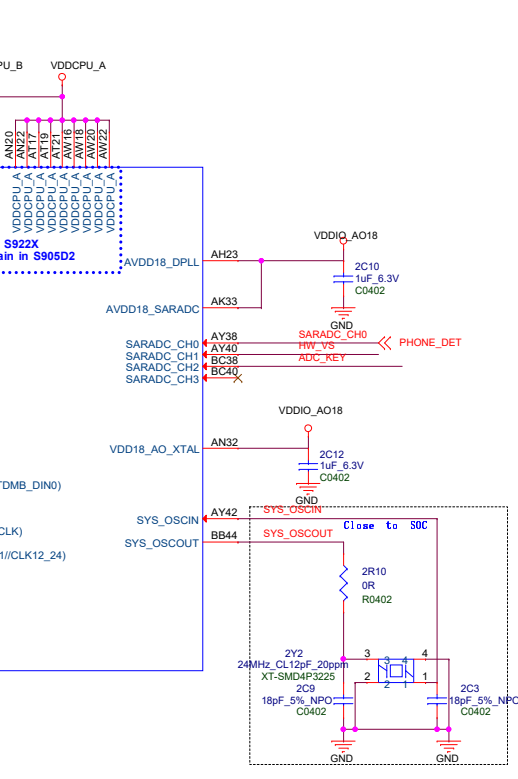
Please follow below resistor value

Key	1	2	3	4	5	6	7	8
Value	0A	34	20A	08A	03A	02A	5A	57A
Resistor	700R	10R	2K	880K	3.2K	8K		
Full-imp.	4.1K	2K	max	8	ADC keys			



**Preliminary Symbol**

HW ID	0	1	2	3	4	5	6	7	8	9	10	11	12
ADC_Data	0	85	167	248	334	420	512	603	689	775	856	938	1023
Full-up	X	91K	82K	75K	68K	56K	47K	39K	33K	24K	16K	8.2K	00K
Full-down	1.00K	8.2K	6K	24K	33K	39K	47K	56K	68K	75K	82K	91K	X
Version	Reserved		V3										



**SoundAI Technology Co., Ltd**

Design Name: **SoundPi CUBE**

Size: Custom

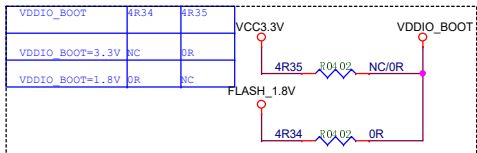
Page Name: **CPU I/O**

Date: Tuesday, September 17, 2019

Rev: \_\_\_\_\_

Sheet: 4 of 12

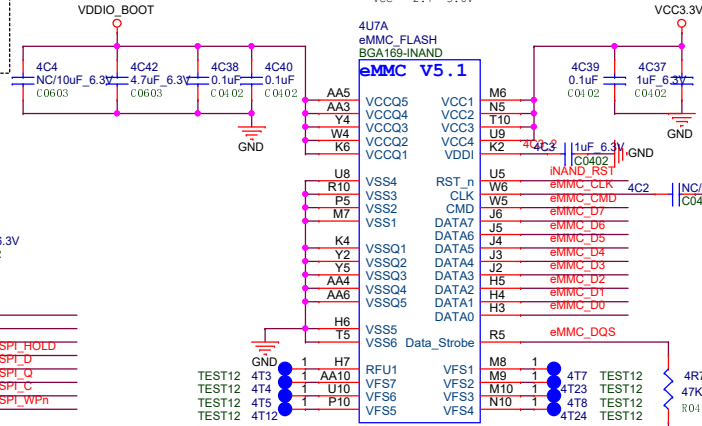




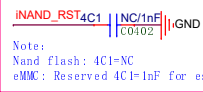
# eMMC/iNAND

PCB Decal:169pin balls type(BGA)

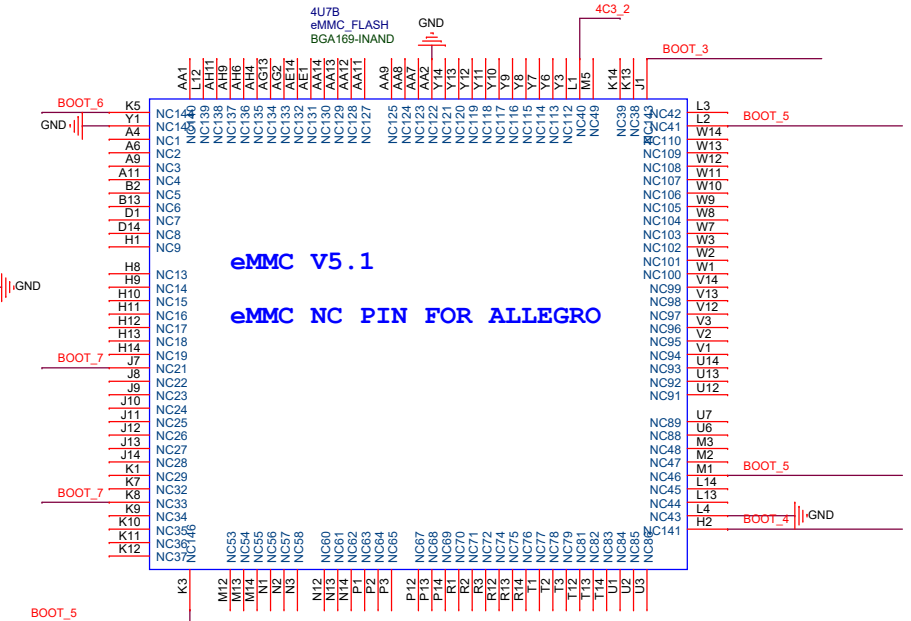
VCC = 2.7 ~ 3.6V



Do not route over RFU & VFS pins



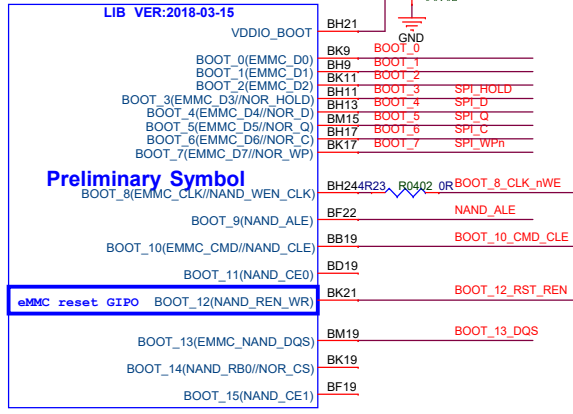
Note:  
Nand flash: 4C1=NC  
eMMC: Reserved 4C1=1nF for esd



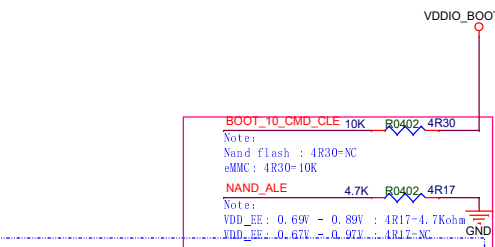
eMMC V5.1

eMMC NC PIN FOR ALLEGRO

Nand (TSOP)

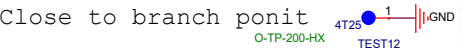


S905D2  
G12A\_S905D2



## Power on config

BOOT\_4[NAND\_D4]: 0= SPI NAND Boot first  
BOOT\_5[NAND\_D5]: 0= USB Boot first  
BOOT\_6[NAND\_D6]: 0= SPI NOR Boot first



Close to branch ponit

INAND_RST	NAND_nRE	BOOT_12_RST_REN
eMMC_D0	NAND_D0	BOOT_0
eMMC_D4	NAND_D4	BOOT_4
eMMC_D5	NAND_D5	BOOT_5
eMMC_D6	NAND_D6	BOOT_6
eMMC_CMD	NAND_CLE	BOOT_10_CMD_CLE
eMMC_CLK	NAND_nWE	BOOT_8_CLK_nWE

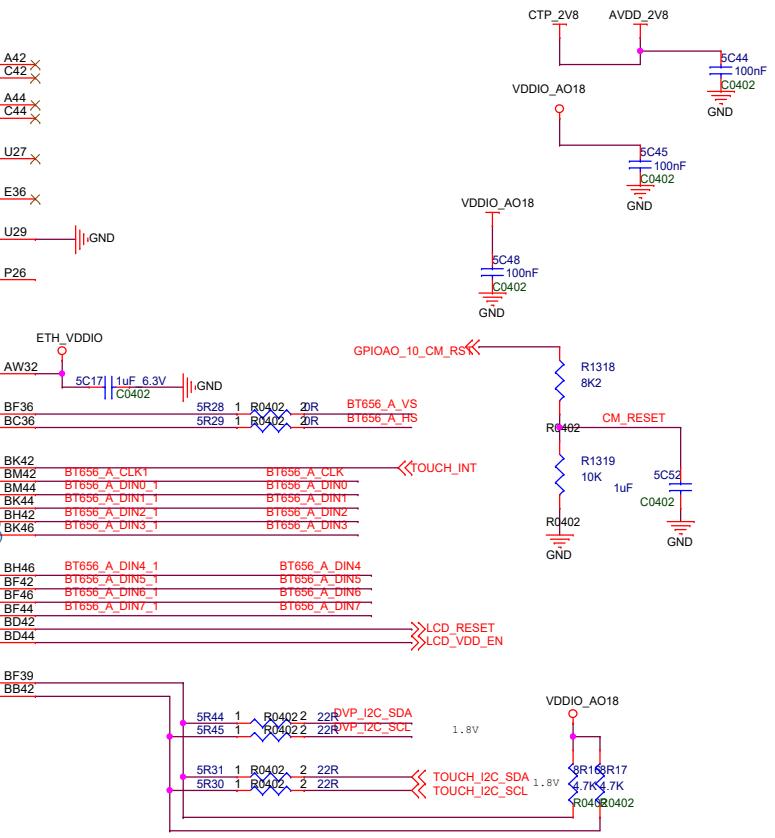
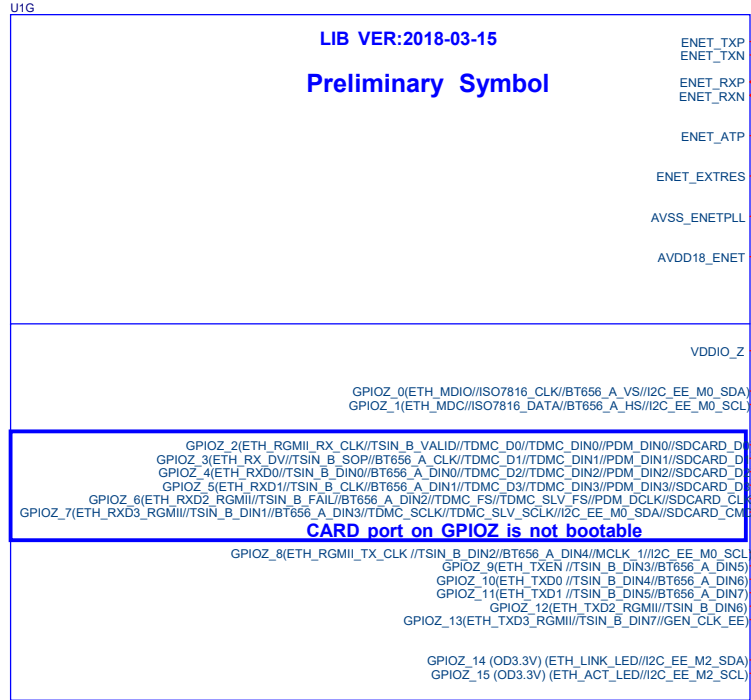
BOOT_1	NAND_D1	eMMC_D1
BOOT_2	NAND_D2	eMMC_D2
BOOT_3	NAND_D3	eMMC_D3
BOOT_7	NAND_D7	eMMC_D7
BOOT_13_DQS	NAND_DQS	eMMC_DQS

**SoundAI Technology Co., Ltd**

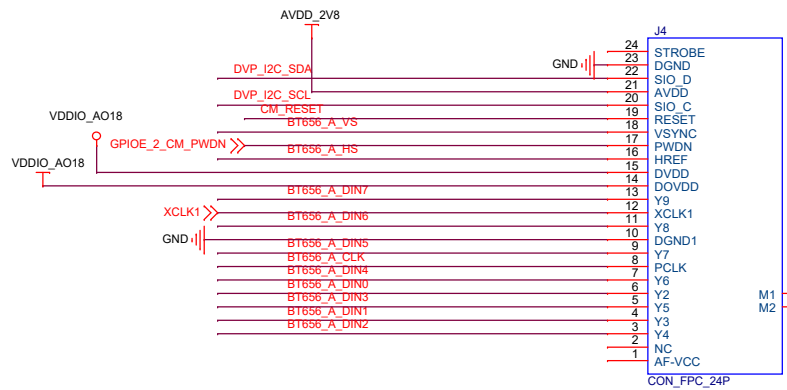
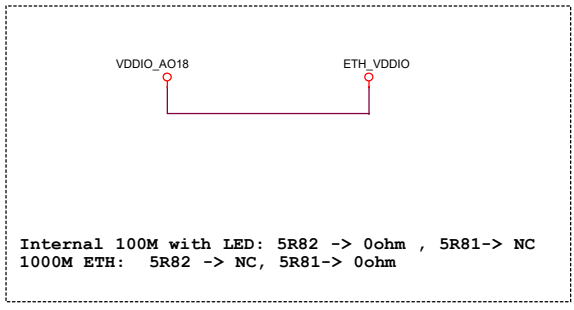
Design Name: **SoundPi CUBE**

Size: A3 Page Name: **Flash** Rev: \_\_\_\_\_

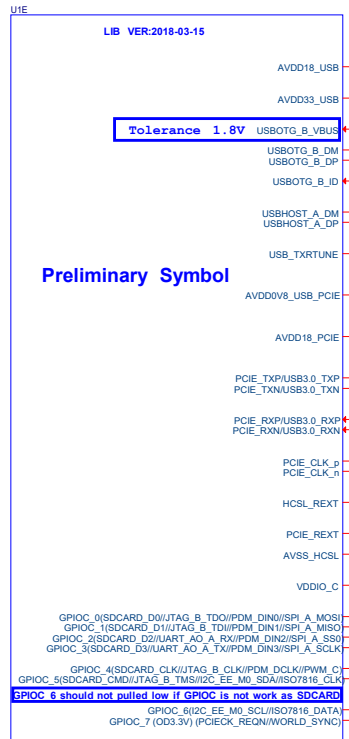
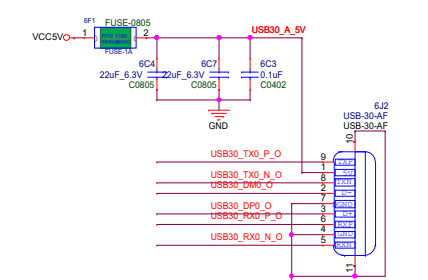
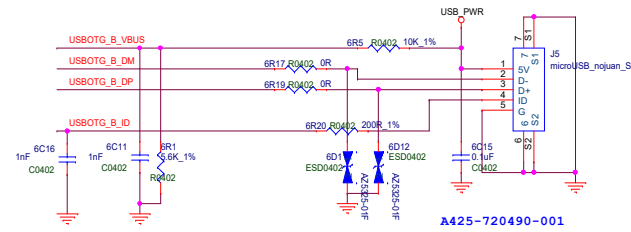
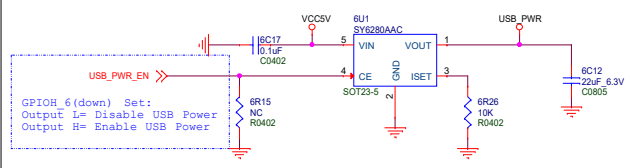
Date: Tuesday, September 17, 2019 Sheet: 6 of 12



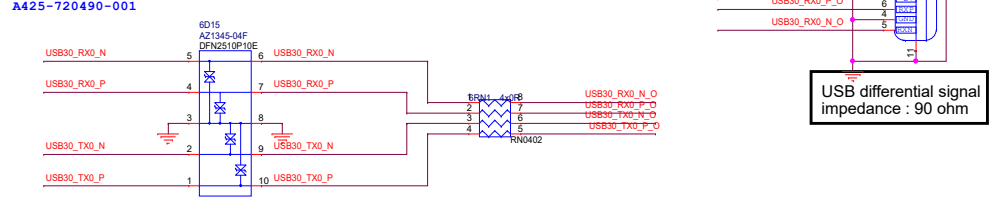
G12A\_S905D2  
S905D2



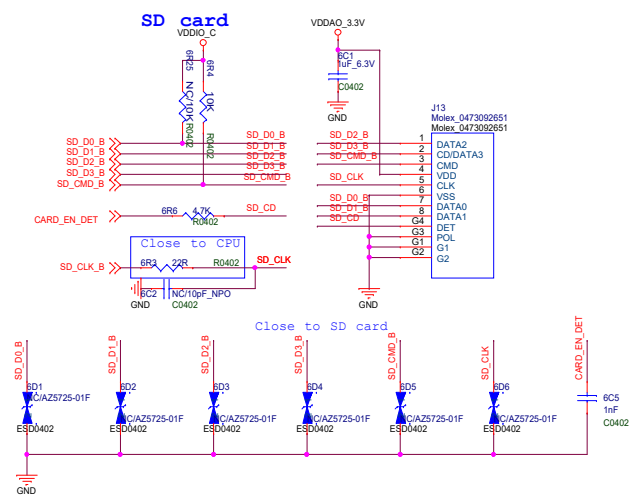
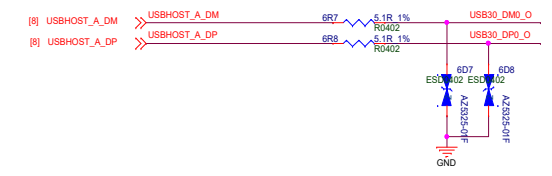
limit 500mA output current



PCIe :6C8/6C13/6R11/6R12 should NC  
6C20/6C27/6R10/6R9 should placed



USB differential signal impedance : 90 ohm



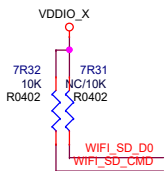


# Preliminary Symbol

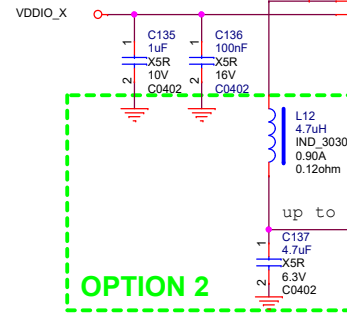
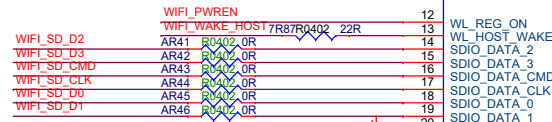
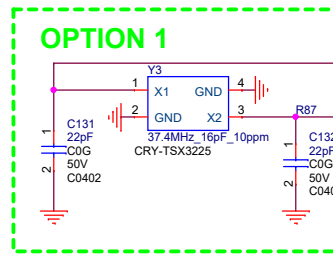
LIB VER:2018-03-15

GPIOX_0(SDIO_D0/PDM_DIN0/TSIN_A_DIN0)	BK32	WIFI_SD_D0
GPIOX_1(SDIO_D1/PDM_DIN1/TSIN_A_SOP)	BK34	WIFI_SD_D2
GPIOX_2(SDIO_D2/PDM_DIN2/TSIN_A_VALID)	BH34	WIFI_SD_D3
GPIOX_3(SDIO_D3/PDM_DIN3/TSIN_A_CLK/PWM_D)	BK36	WIFI_SD_CLK
GPIOX_4(SDIO_CLK/PDM_DCLK)	BK38	WIFI_SD_CMD
GPIOX_5(SDIO_CMD/MCLK_1/PWM_C)		
GPIOX_6(PWM_A/UART_EE_B_TX/PWM_D)	BK40	WIFI_PWREN
GPIOX_7(PWM_FI/UART_EE_B_RX/PWM_B)	BH40	WIFI_WAKE_HOST
GPIOX_8(TDMA_D1/TDMA_DIN1/TSIN_B_SOP/SPI_A_MOSI/ISO7816_CLK/PWM_C)	BB34	BTPCM_DIN
GPIOX_9(TDMA_D0/TDMA_DIN0/TSIN_B_VALID/SPI_A_MISO/ISO7816_DATA)	BD34	BTPCM_DOUT
GPIOX_10(TDMA_FS/TDMA_SLV_FS/TSIN_B_DIN0/SPI_A_SS0/I2C_EE_M1_SDA)	BD31	BTPCM_SYNC
GPIOX_11(TDMA_SCL/TDMA_SLV_SCL/TSIN_B_CLK/SPI_A_SCL/I2C_EE_M1_SCL)	BF34	BTPCM_CLK
GPIOX_12(UART_EE_A_TX)	BK28	BTUART_A_TX
GPIOX_13(UART_EE_A_RX)	BH30	BTUART_A_RX
GPIOX_14(UART_EE_A_CTS)	BH28	BTUART_A_CTS_N
GPIOX_15(UART_EE_A_RTS)	BK26	BTUART_A_RTS_N
GPIOX_16(PWM_E)	BK30	WIFI_32K
GPIOX_17(I2C_EE_M2_SDA)	BF31	BT_EN
GPIOX_18(I2C_EE_M2_SCL)	BM24	BT_WAKE_HOST
GPIOX_19(PWM_B/WORLD_SYNC/GEN_CLK_EE)	BH26	HOST_WAKE_BT

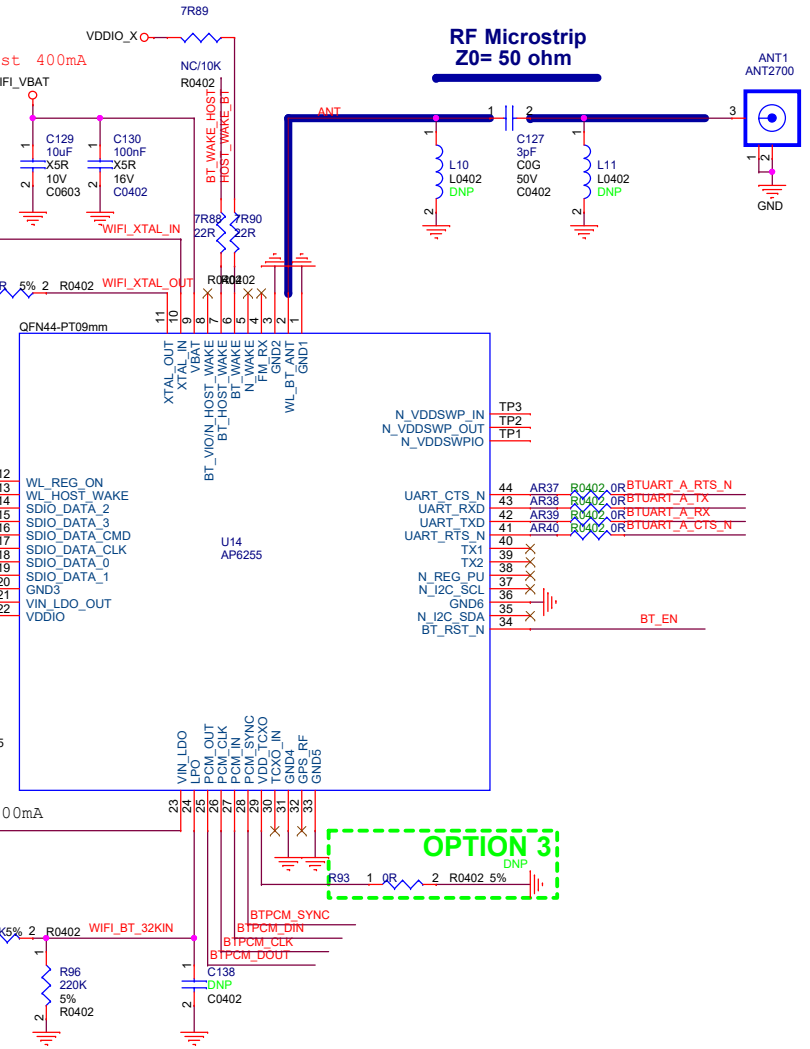
G12A\_S905D2  
S905D2



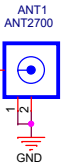
Note:VBAT Peak-current is at least 400mA



OPTION 2



RF Microstrip  
Z0= 50 ohm



OPTION	WIFI				BT	Crystals	VCCIO_SDIO
	a	b/g/n	ac	5GHz			
AP6212	No	Yes	No	No	Yes	26MHz	1.71-3.6V
AP6255	Yes	Yes	Yes	Yes	Yes	37.4MHz	1.71-3.6V
RTL8723DS	No	Yes	No	No	Yes	Module Integrated	1.62-3.6V

OPTION	1	2	3
AP6212	Yes	Yes	No
AP6255	Yes	Yes	Yes@SDIO2.0 No@SDIO3.0
RTL8723DS	No	No	No

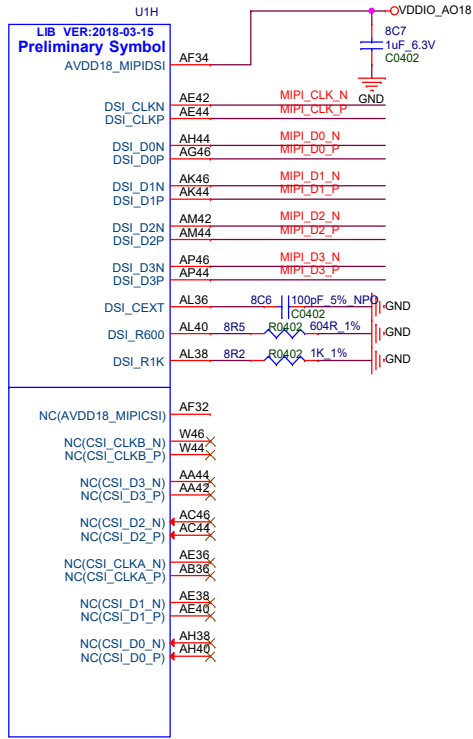
Note:  
Yes: option circuit be mounted  
No: option circuit not be mounted

**SoundAI Technology Co., Ltd**

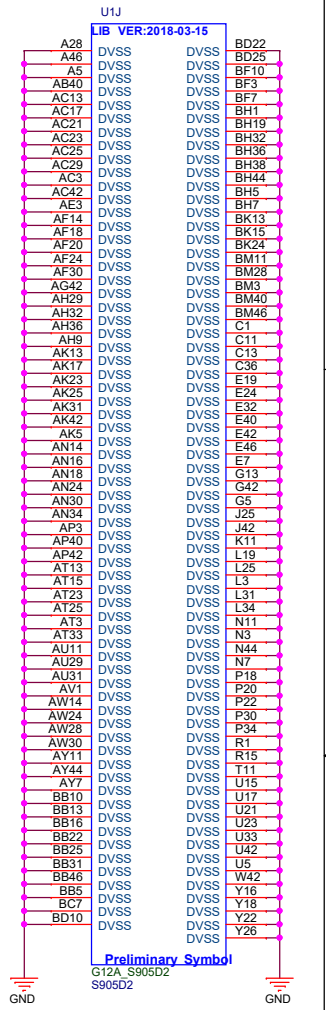
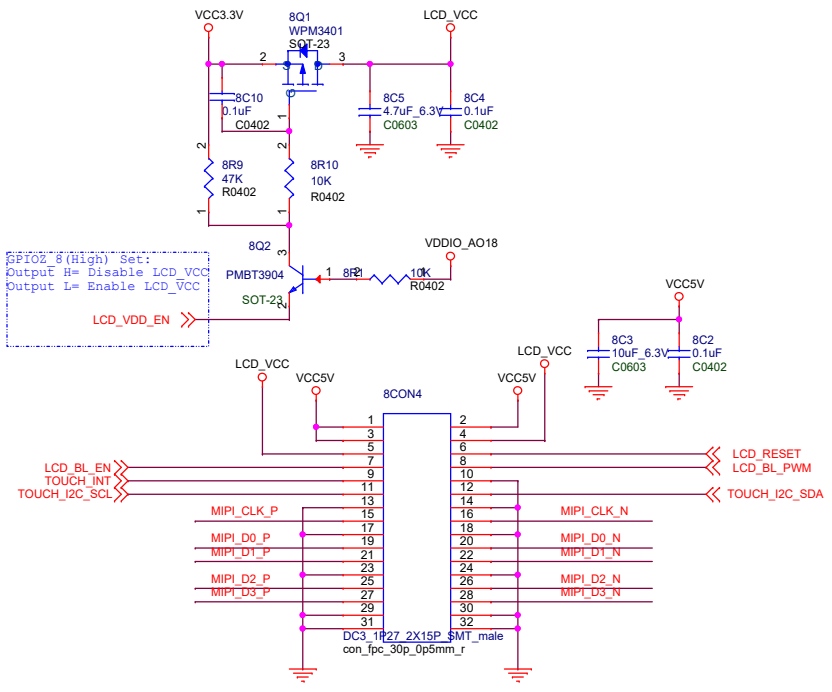
Design Name  
**SoundPi CUBE**

Size A3 Page Name  
**SDIO WIFI**

Date: Tuesday, September 17, 2019 Sheet 9 of 12

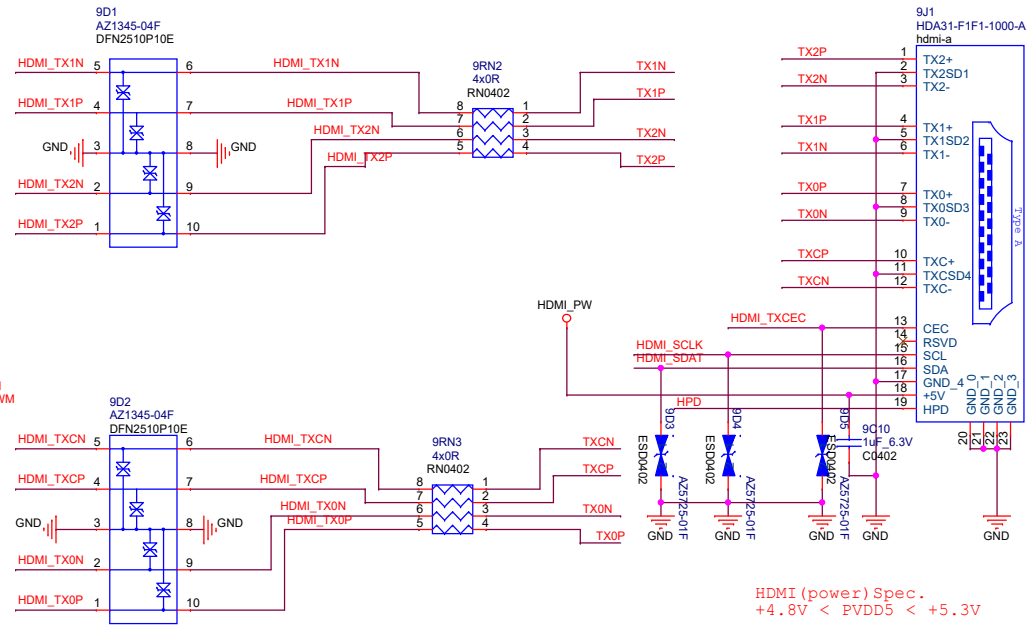


G12A\_S905D2  
S905D2

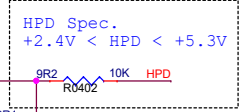
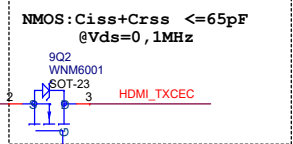


**HDMI output**

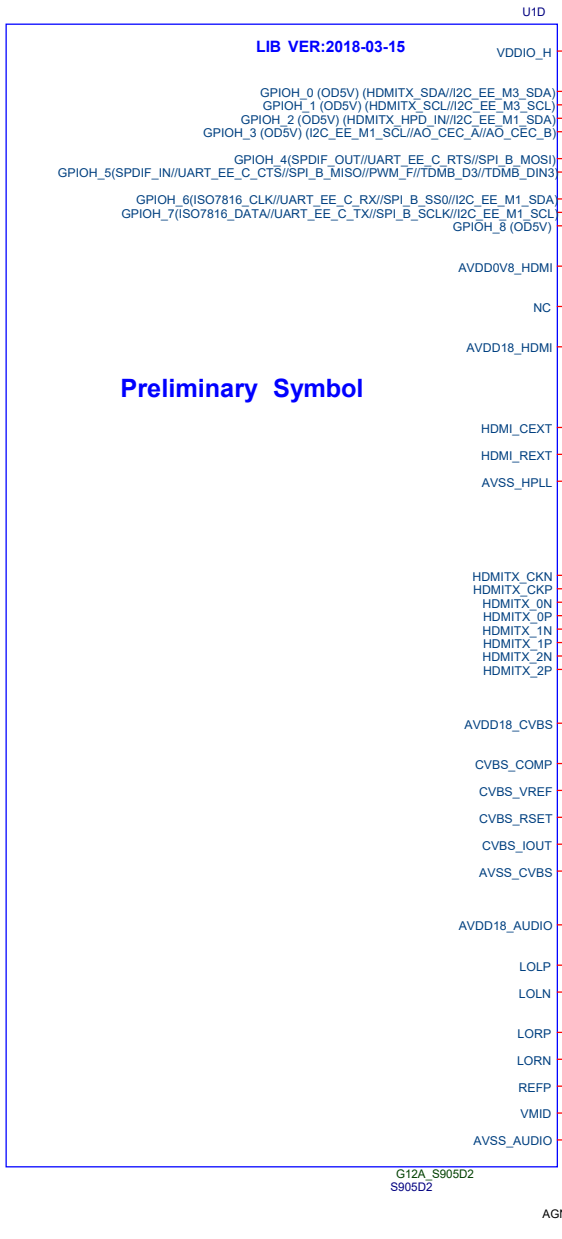
**Type A**



HDMI (power) Spec.  
+4.8V < PVDD5 < +5.3V



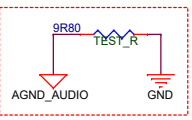
Do not delete 9R2 9R1 resistors



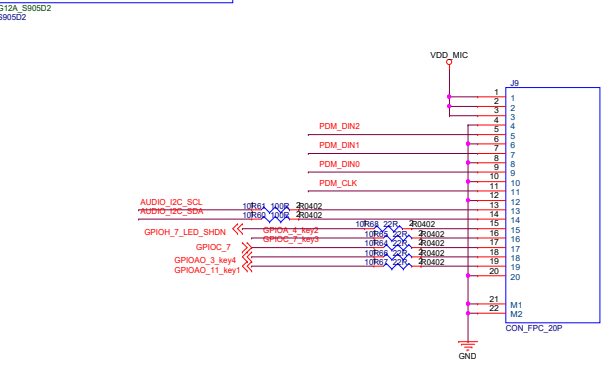
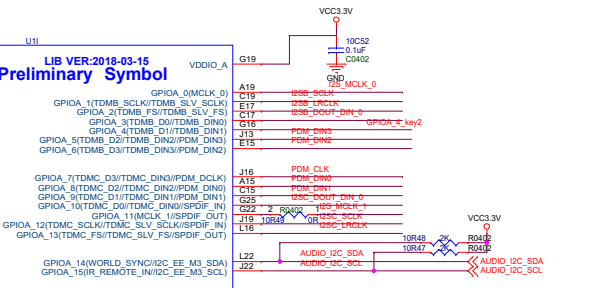
**Preliminary Symbol**

LIB VER:2018-03-15

Short GND pin of REFP/VMID filter caps & AVSS\_AUDIO together, then to GND (single point connection)

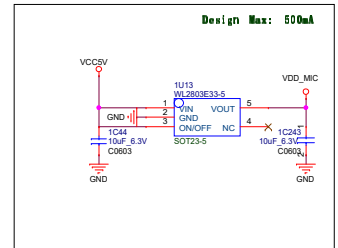
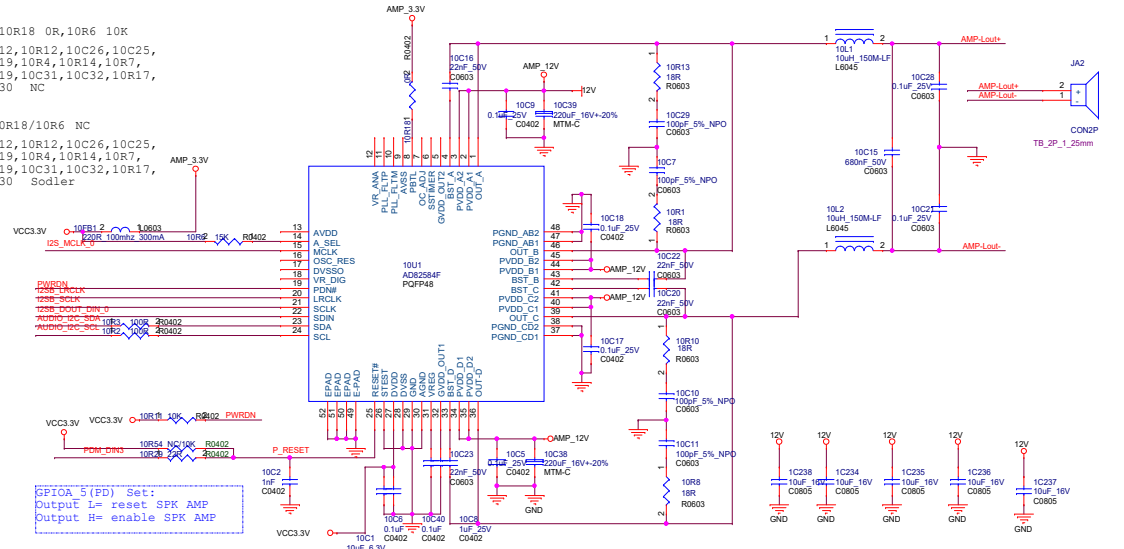


<b>SoundAI Technology Co., Ltd</b>		
Design Name		
<b>SoundPi CUBE</b>		
Size	Page Name	Rev
A3	<b>HDMI &amp; CVBS</b>	
Date:	Tuesday, September 17, 2019	Sheet 11 of 12



AD82584F:10R18 0R,10R6 10K  
 10C24,10C12,10R12,10C26,10C25,  
 10C35,10C19,10R4,10R14,10R7,  
 10C32,10C19,10C31,10C32,10R17,  
 10C27,10C30 NC

TAS5707:10R18/10R6 NC  
 10C24,10C12,10R12,10C26,10C25,  
 10C35,10C19,10R4,10R14,10R7,  
 10C32,10C19,10C31,10C32,10R17,  
 10C27,10C30 Solder



GPIOA 5(PD) Set:  
 Output L= reset SPK AMP  
 Output H= enable SPK AMP

