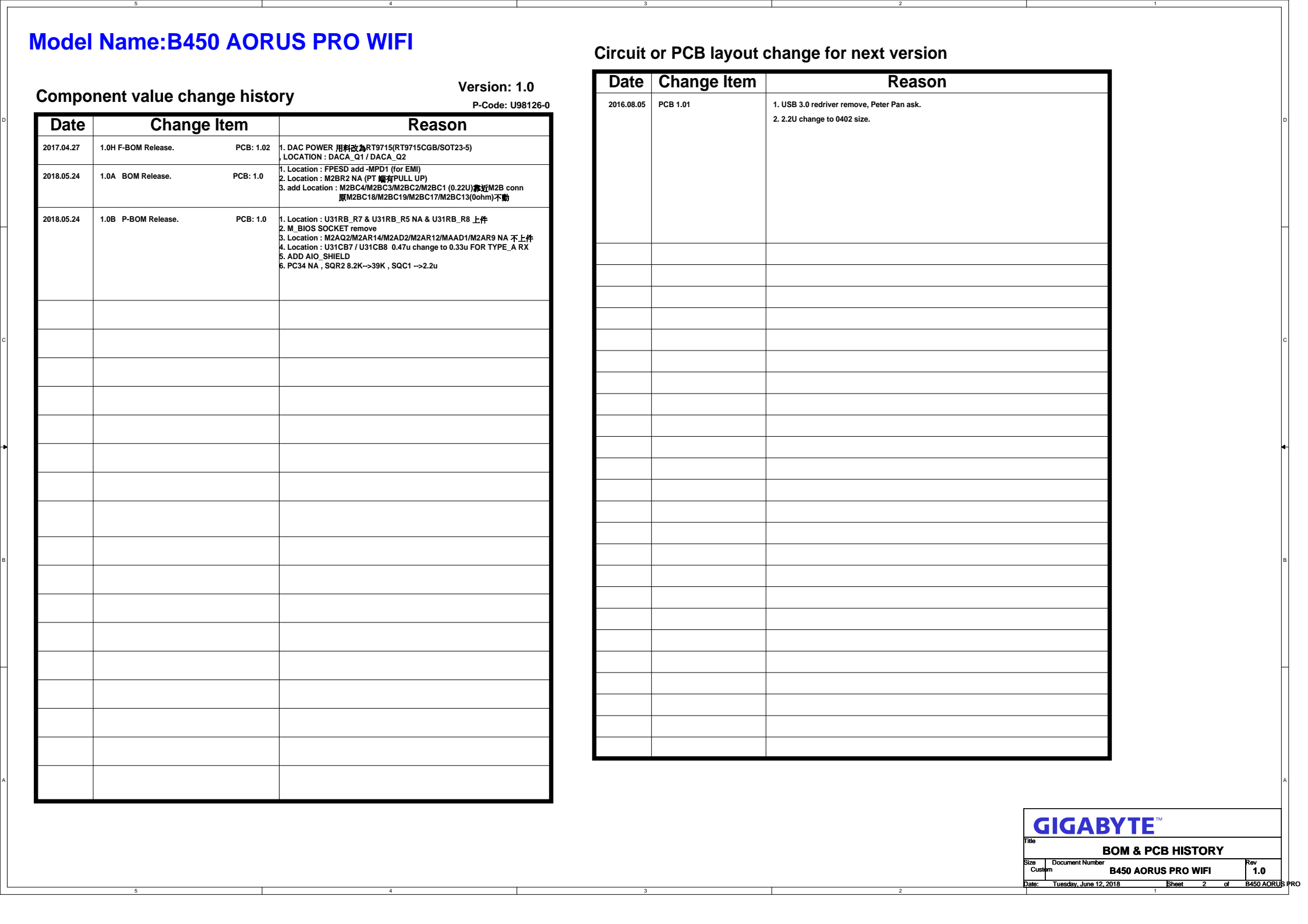
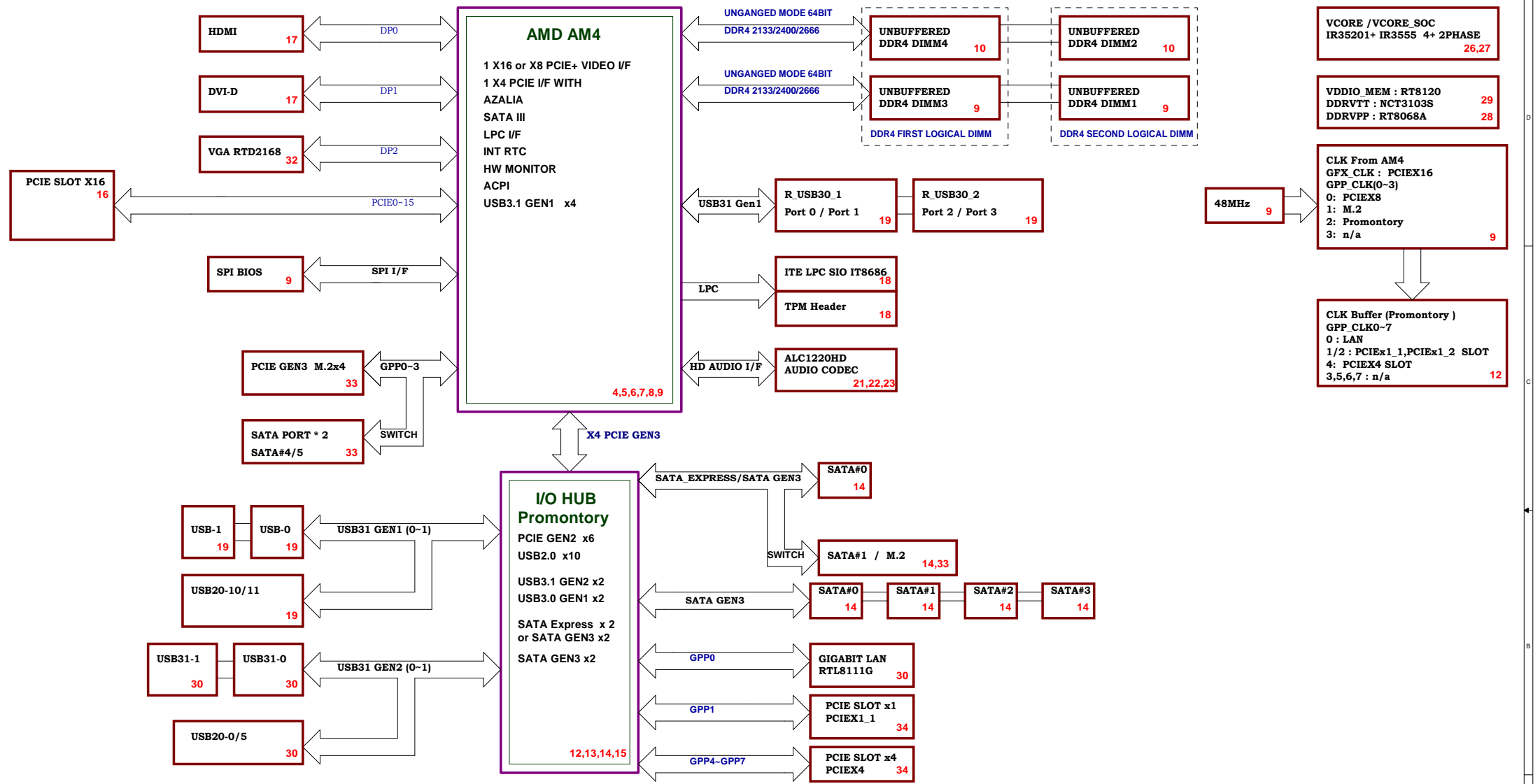


# B450 AORUS PRO WIFI

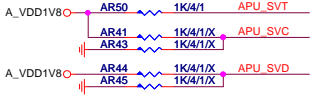
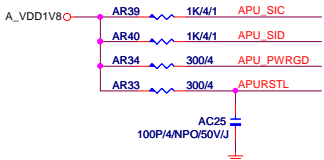
PAGE	TITLE	Revision : 1.0
01	COVER SHEET	
02	BOM & PCB MODIFY HISTORY	
03	BLOCK DIAGRAM	
04	CPU DDR4 MEMORY	
05	CPU CONTROL	
06	CPU GFX, GPP, SB, GND	
07	CPU ACPI/GPIO/USB/AUDIO	
08	CPU POWER & GND	
09	CPU CLK/SPI/USB	
10	DDR4 CHANNEL A	
11	DDR4 CHANNEL B	
12	PM CLK, SPI, MISC	
13	PM USB	
14	PM UMI/GPP/SATA	
15	PM POWER & GND	
16	PCI EXPRESS x16	
17	HDMI , DVI	
18	IT8688CX , TPM	
19	F_USB30 , R_USB30 , F_USB20	
20	A_VDD1V8	
21	ALC1220 CODEC	
22	AUDIO JACK	
23	POWER SEQUENCE , A_VDDP	
24	PWM SL95712	
25	VCORE MOS , VCORE_SOC MOS	

[illegible]

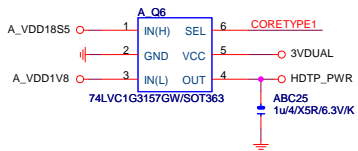
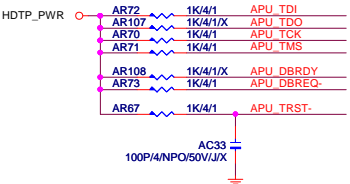
[illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible]







SVC	SVD	Boot voltage
0	0	1.1
0	1	1.0
1	0	0.9
1	1	0.8



DVI

HDMI

<24>

<18>

<18>

<24>

<24>

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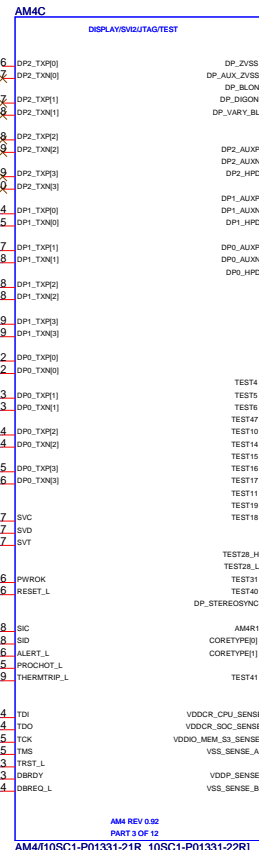
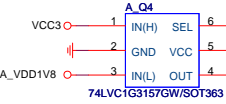
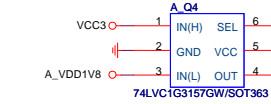
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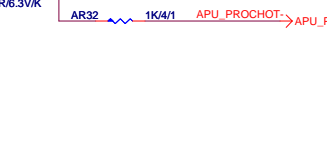
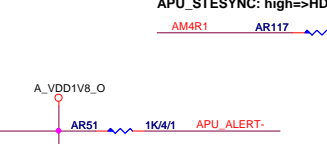
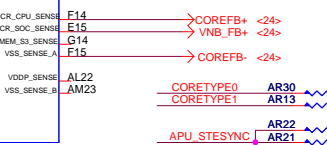
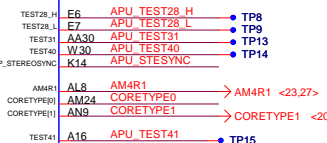
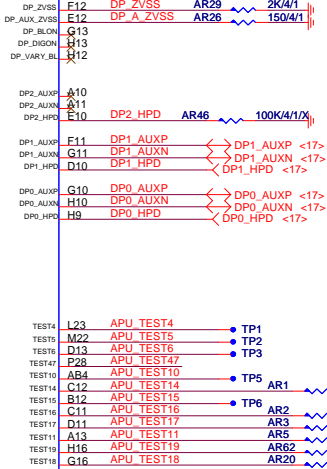
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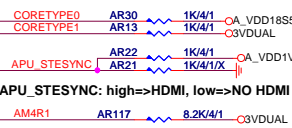
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Placed within 1500 mils from APU



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AM4 CPU CoreType

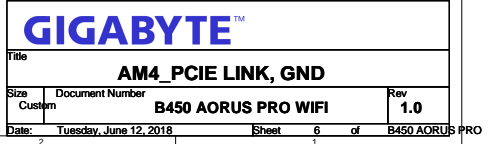
CORETYPE 1	CORETYPE 0	Family / Model Numbers	AM4 APU TYPE
0 BR	0	Family 15 h / Models 60 h-6 Fh	TYPE 0
0 ST	1	Reserved	TYPE 1
1 ZP	0	Family 17 h / Models 00 h-0 Fh	TYPE 2
1 RV	1	Family 17 h / Models 10 h-1 Fh	TYPE 3

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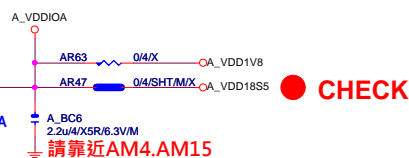
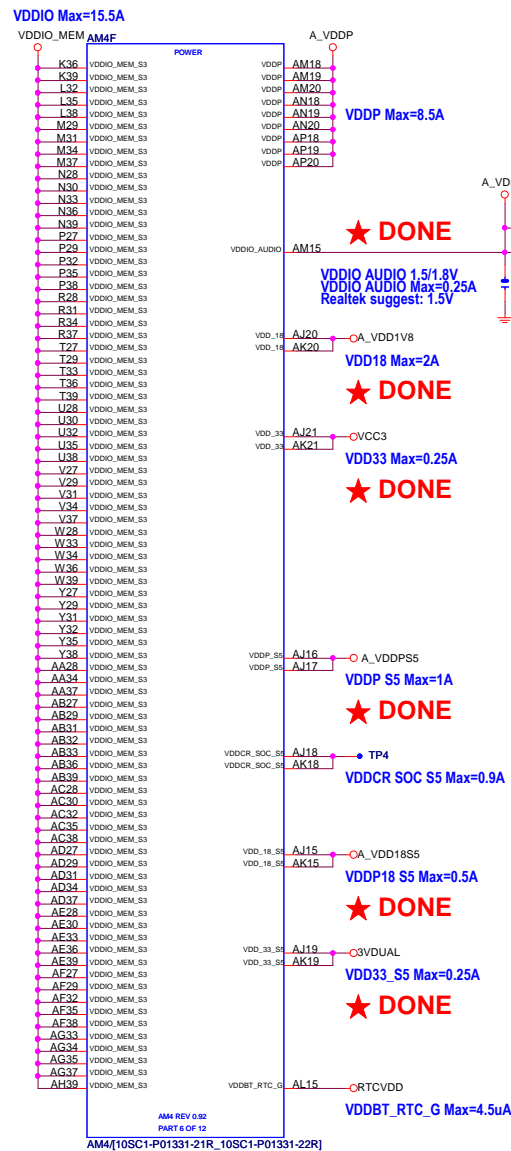
CPU CONTROL

Size	Document Number	Rev
Custom	B450 AORUS PRO WIFI	1.0

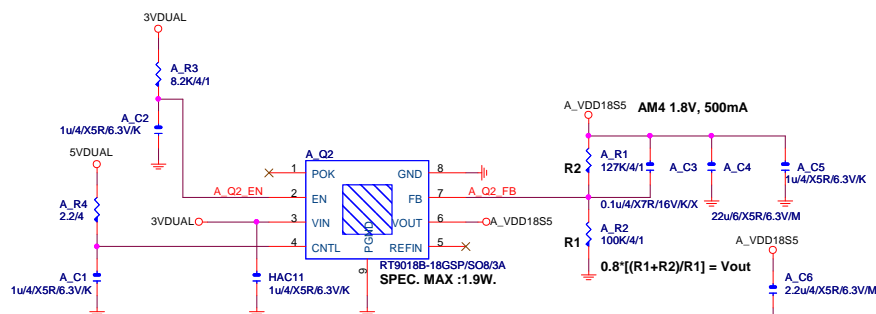
Date: Tuesday, June 12, 2018 Sheet 5 of B450 AORUS PRO



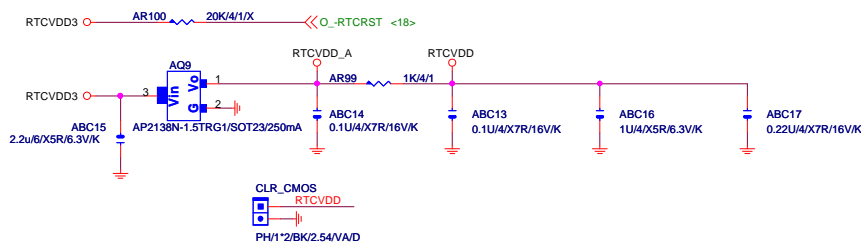
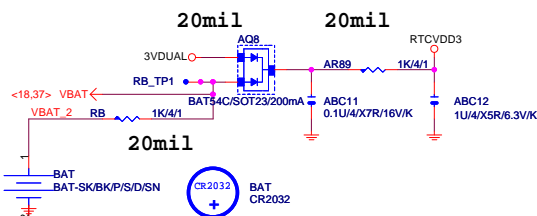




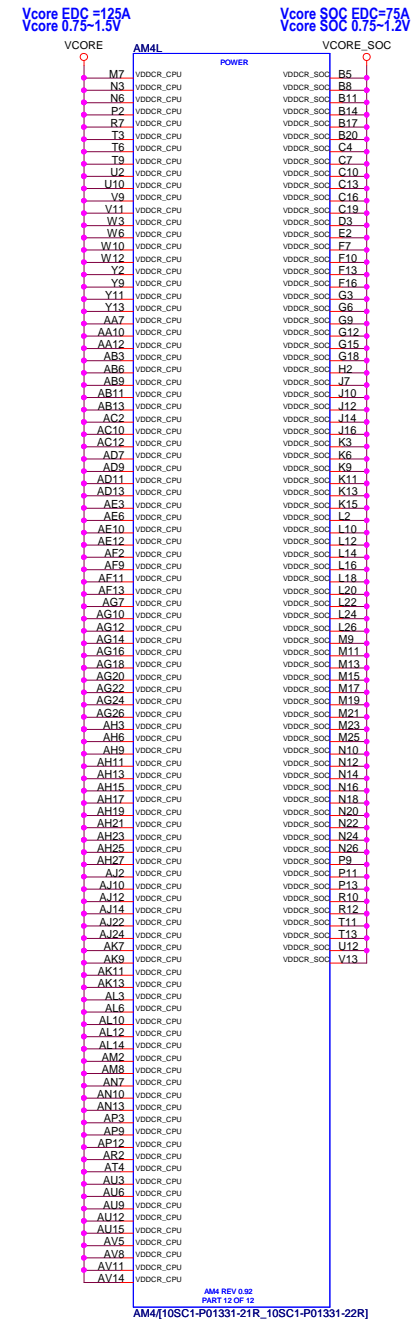
AM4 1.5V, 250mA (A\_V15S5)  
A\_Q1 改接A\_VDD18S5 for VDDIO\_AUDIO



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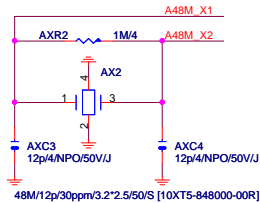
CLR_CMOS	
SHORT	CLEAR CMOS
OPEN	NORMAL
NOT ADD ICT FOR RTCVDD PIN	



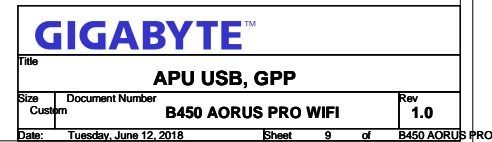
**GIGABYTE™**

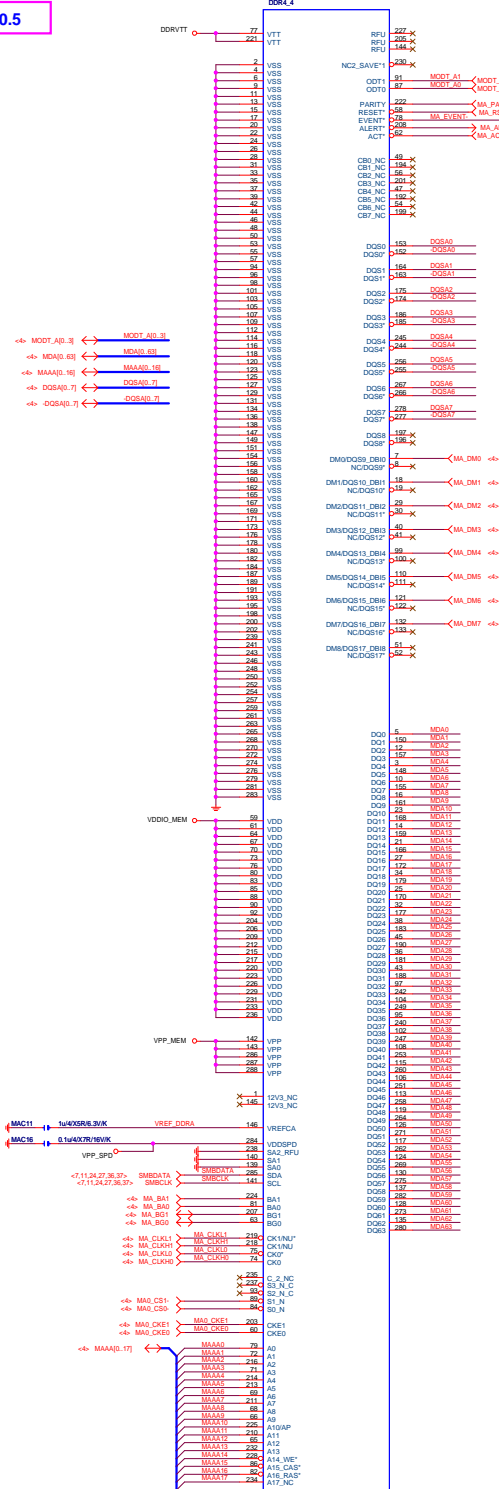
CPU POWER & GND			
Size	Document Number	Rev	
Custom	B450 AORUS PRO WIFI	1.0	
Date:	Tuesday, June 12, 2018	Sheet	8 of B450 AORUS PRO



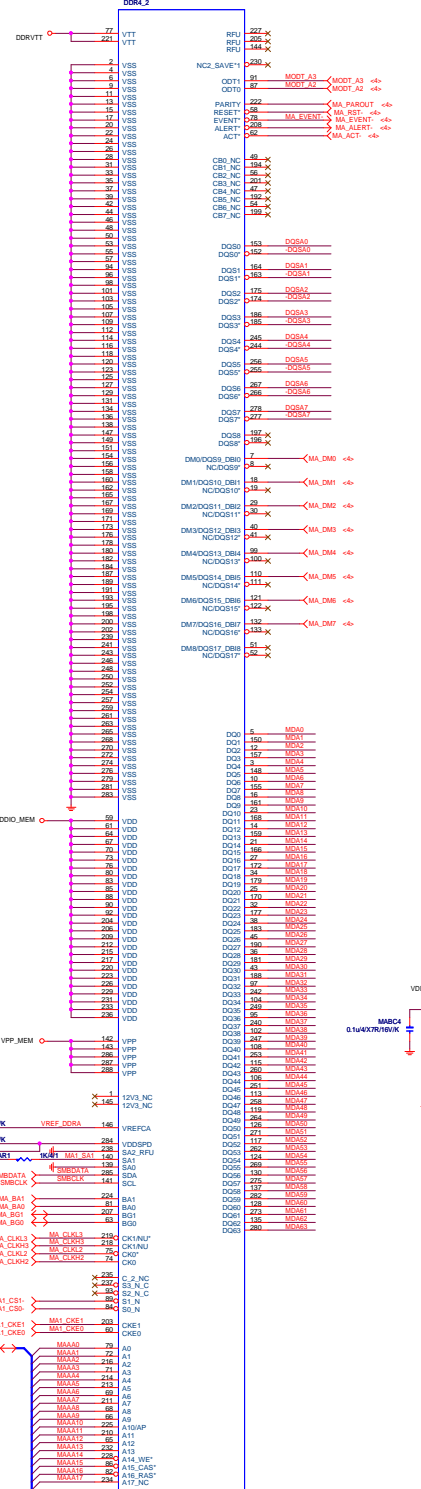


## ★1.8V SPI ROM USE

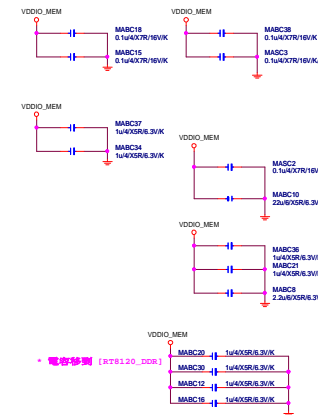
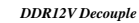




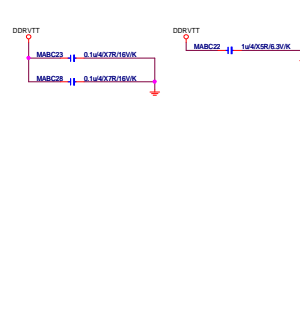
CHANNEL A0  
SA2:0=000

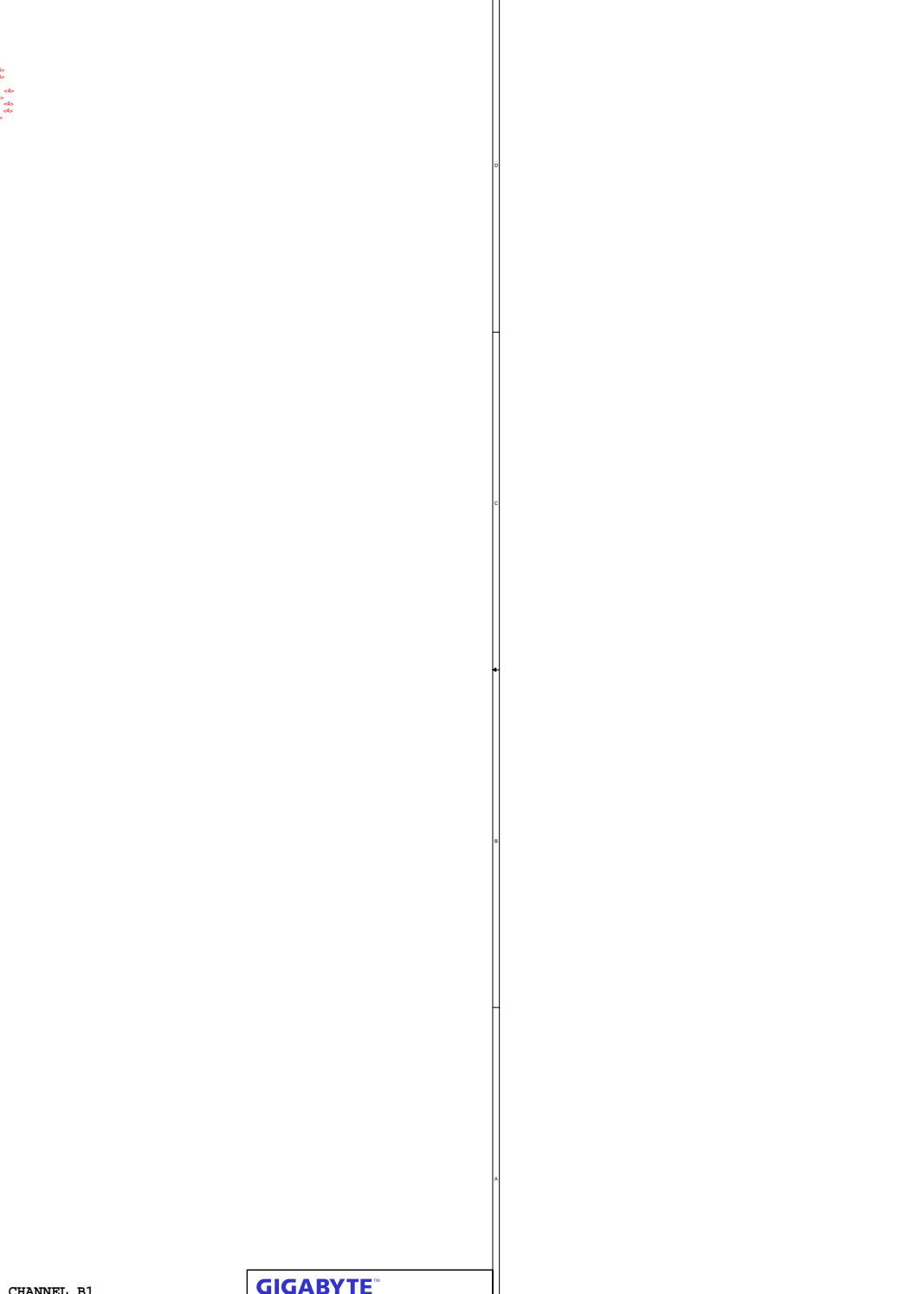


CHANNEL A1  
SA2:2=010



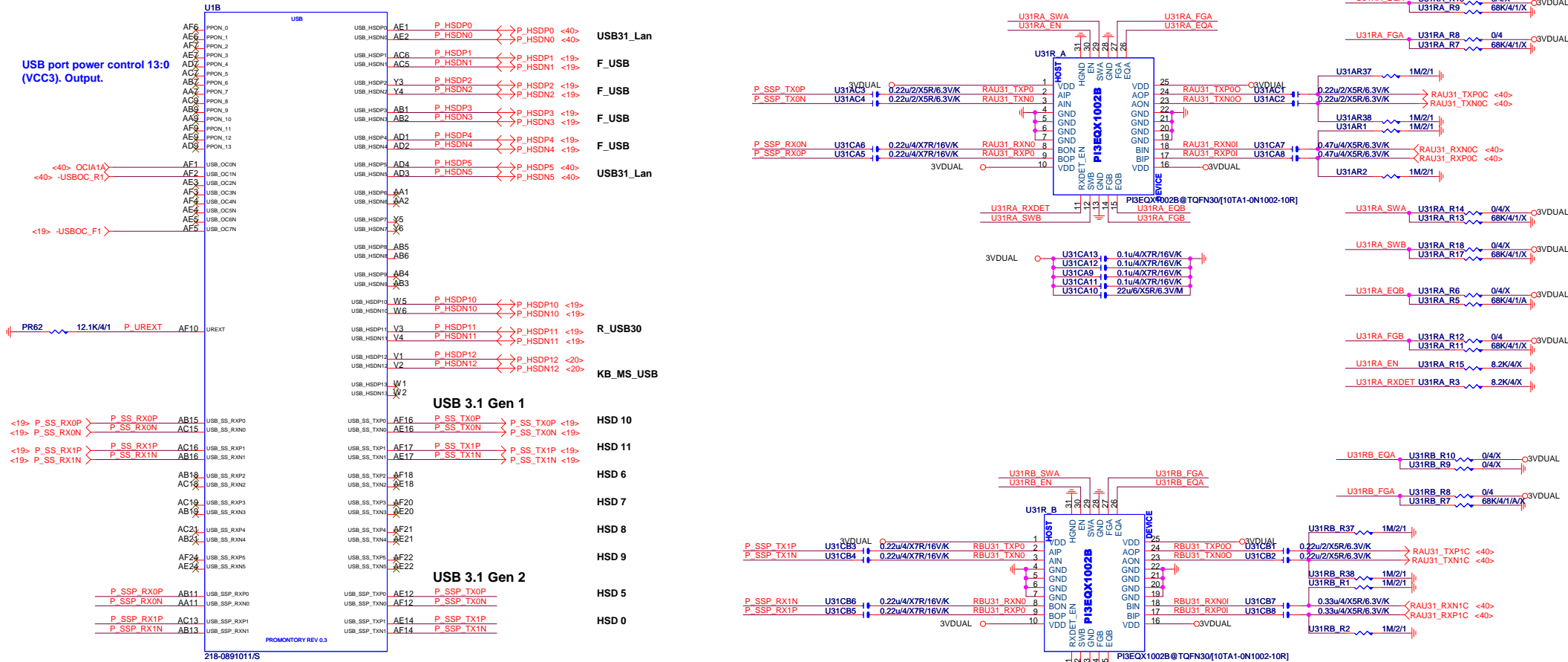
### DDRVTT Decouple







USB port power control 13:0  
(VCC3). Output.



USB3.1	USB2.0	USB_OC
USB_SSP_TX/RXP/N[0]	USB_HSDP/N[5]	USB_OC0N
USB_SSP_TX/RXP/N[1]	USB_HSDP/N[0]	USB_OC1N
USB3.0	USB2.0	USB_OC
USB_SS_TX/RXP/N[0]	USB_HSDP/N[10]	USB_OC2N
USB_SS_TX/RXP/N[1]	USB_HSDP/N[11]	USB_OC3N
USB_SS_TX/RXP/N[2]	USB_HSDP/N[6]	USB_OC4N
USB_SS_TX/RXP/N[3]	USB_HSDP/N[7]	USB_OC5N
USB_SS_TX/RXP/N[4]	USB_HSDP/N[8]	USB_OC6N
USB_SS_TX/RXP/N[5]	USB_HSDP/N[9]	USB_OC7N
	USB_HSDP/N[1]	USB_OC7N
	USB_HSDP/N[2]	USB_OC7N
	USB_HSDP/N[3]	USB_OC7N
	USB_HSDP/N[4]	USB_OC7N
	USB_HSDP/N[12]	USB_OC7N
	USB_HSDP/N[13]	USB_OC7N

BUS Model	USB			
	3.1 Gen2 10 Gbps	3.1 Gen1 5 Gbps	2.0	Debug Port
PROM4	USB_SSP Port0~1	USB_SS Port 0~5	USB_HSD Port0~13	USB_SSP Port0
PROM2	USB_SSP Port0~1	USB_SS Port 0~1	USB_HSD Port0~5 USB_HSD Port10~13	USB_SSP Port0
PROM1	USB_SSP Port0	USB_SS Port0 USB_SSP Port1	USB_HSD Port0~5 USB_HSD Port10, 12~13	USB_SSP Port0

**GIGABYTE**<sup>TM</sup>  
ANS 6333185

**PM USB**

Size Custom

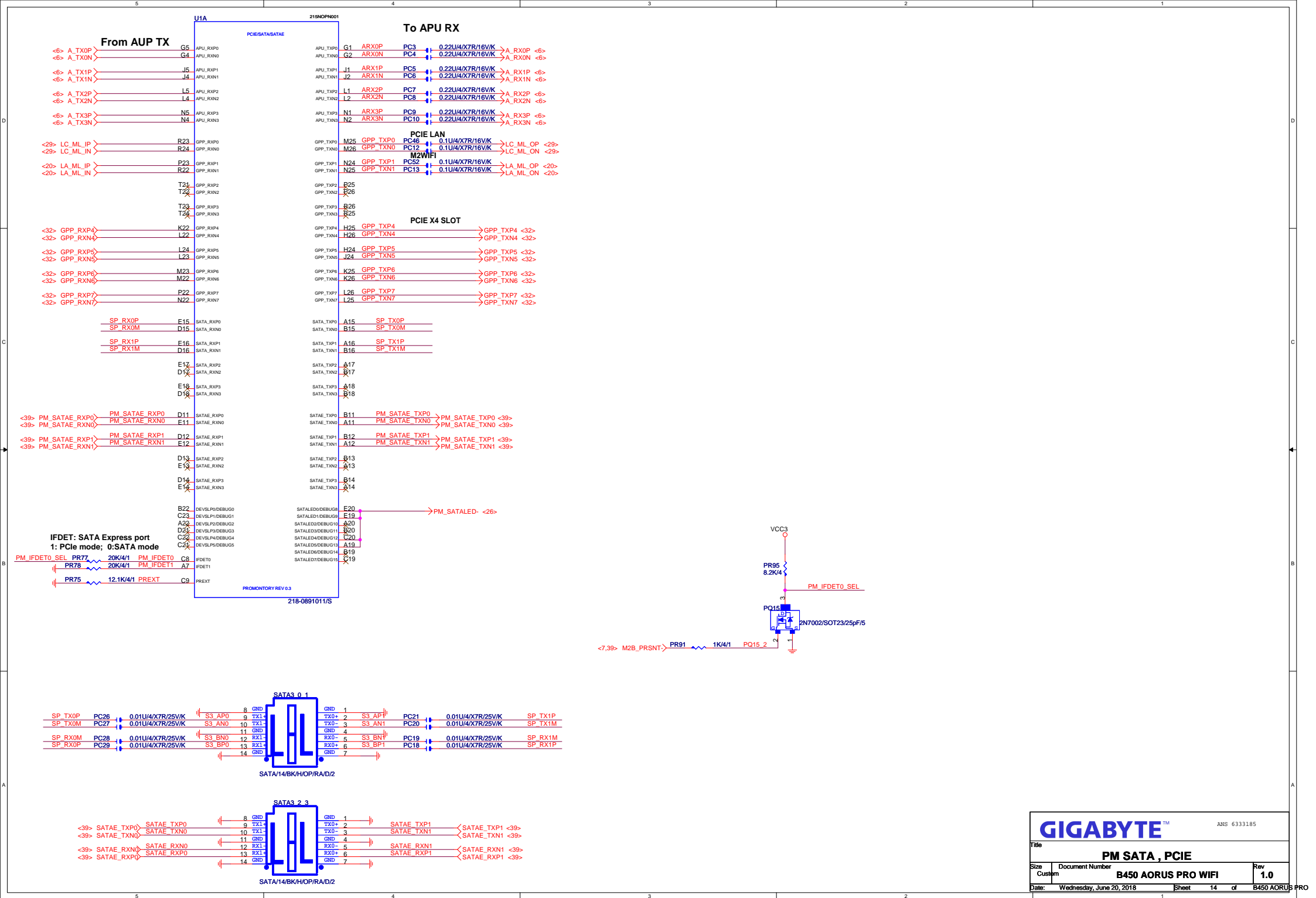
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**B450 AORUS PRO WIFI**

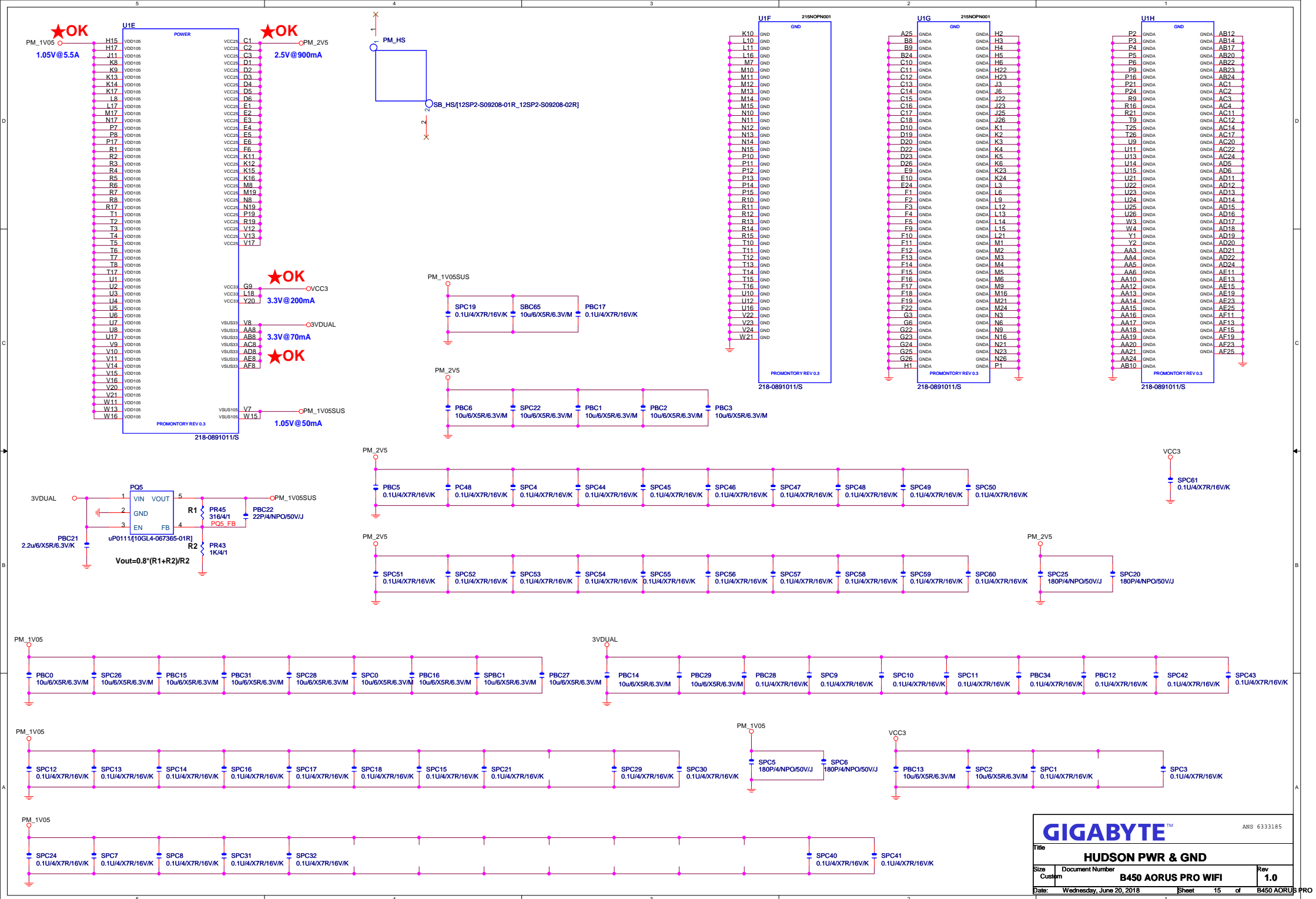
Date: Wednesday, June 20, 2018

Rev  
**1.0**

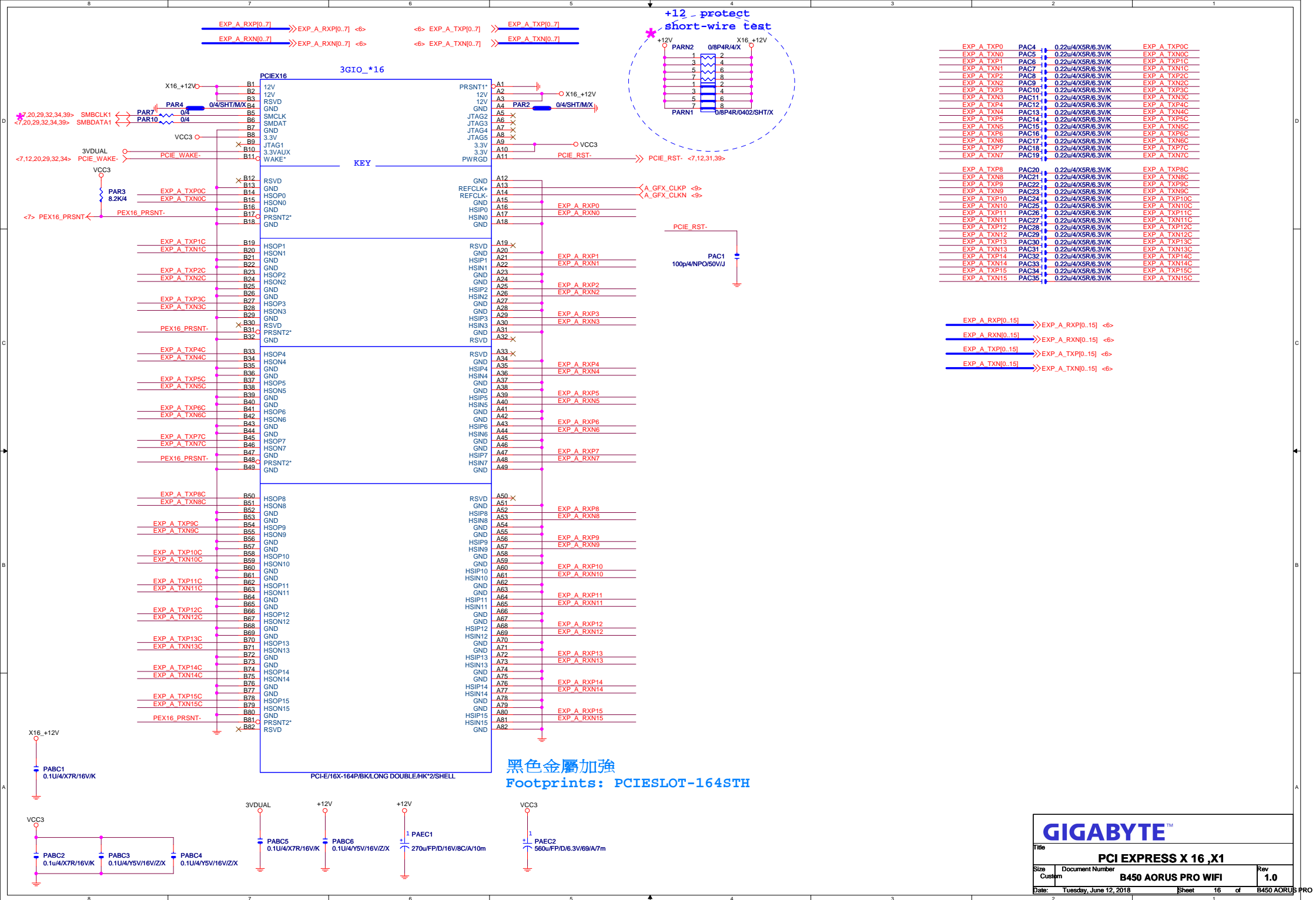
Sheet 13 of 13

B450 AORUS PRO

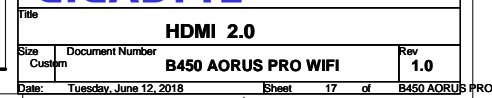
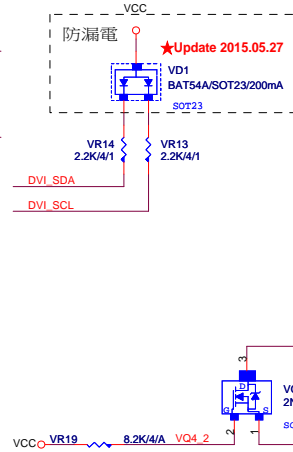
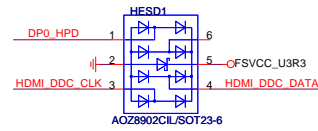
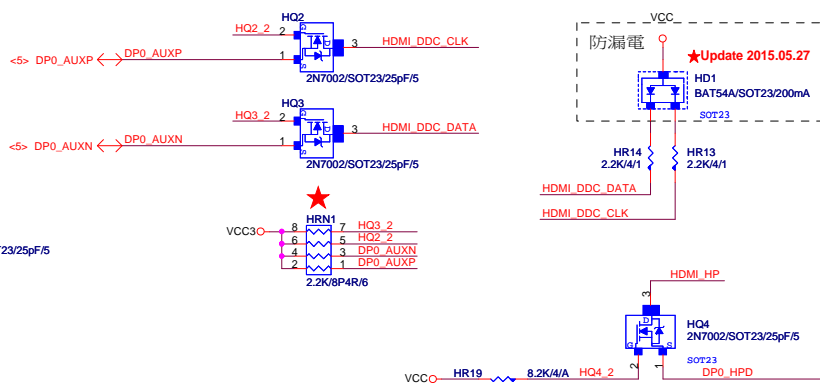






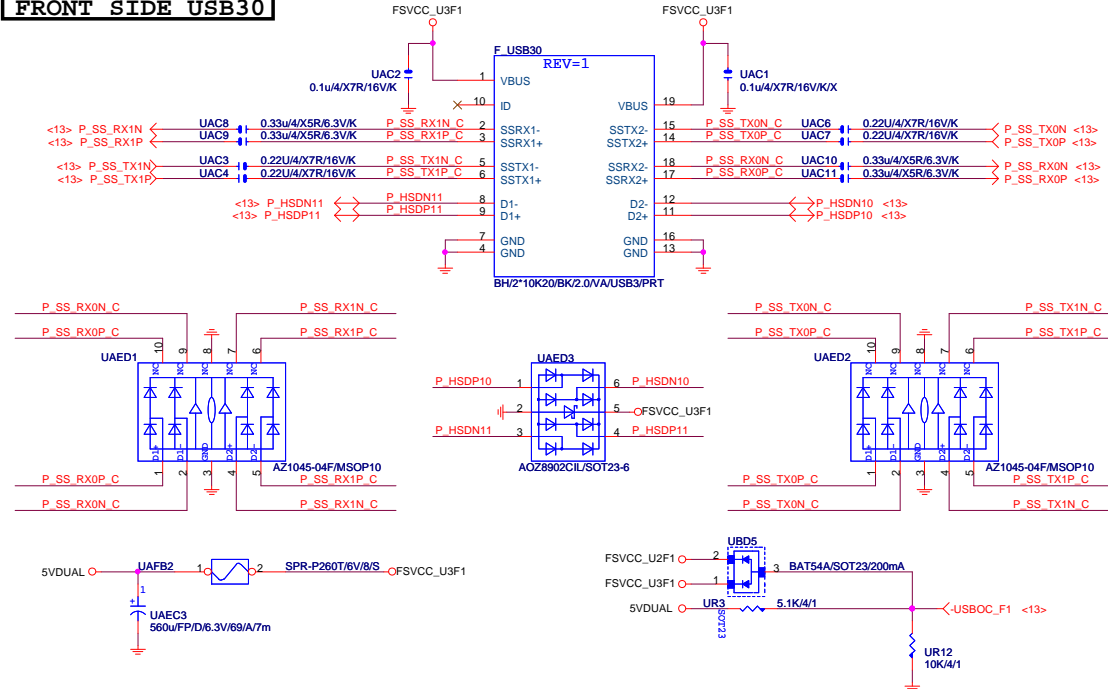




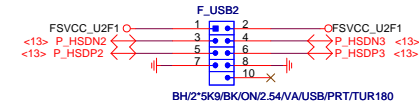




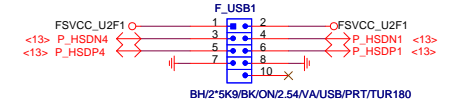
## FRONT SIDE USB30



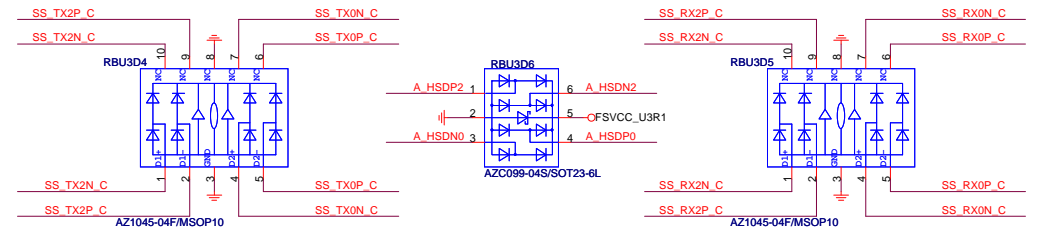
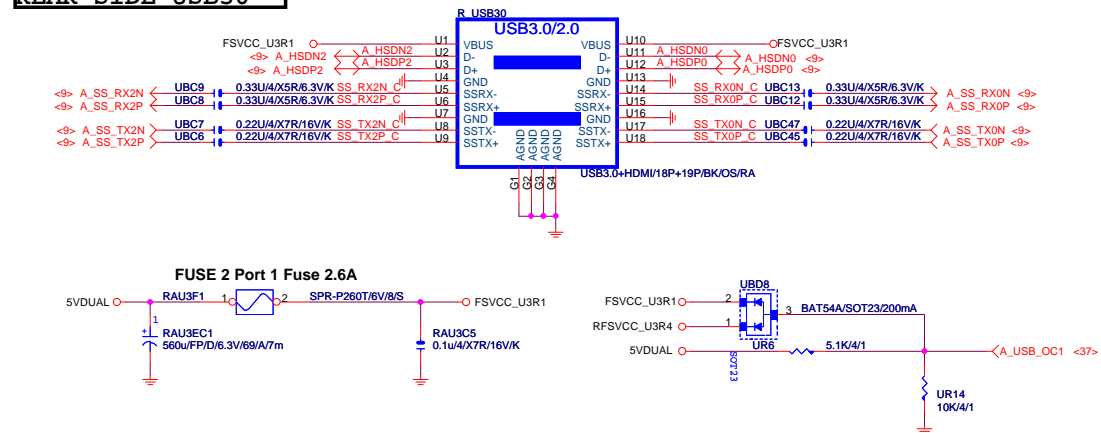
## FRONT SIDE USB2



## FRONT SIDE USB1



## REAR SIDE USB30



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F_USB, R_USB CONN			
Title	B450 AORUS PRO WIFI		
Size	Customer	Document Number	Rev
			1.0
Date	Tuesday, June 12, 2018	Sheet	19 of B450 AORUS PRO

Rev: 0.2

請選擇適用的USBport :  
SOC/UD7/UD5/G1/G7 : USB4  
UD3/G5:USB6

NET 可變

<13> P\_HSDP12  
<13> P\_HSDN12

PCIE:15/4/4/15(breakout min 8/4/4/4/8)  
外層Impedance=85 +- 17.5%

PCIE:15/4/4/15(breakout min 8/4/4/4/8)  
內層Impedance=85 +- 12%

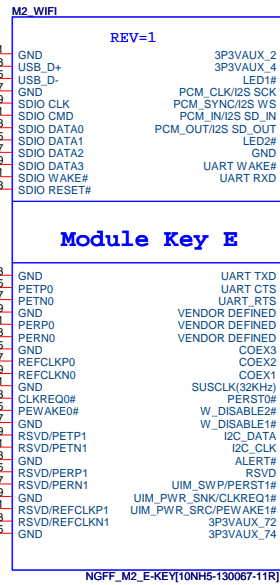
NET 可變

WIFI use PCIE port4 in X99

<14> LA\_ML\_OP  
<14> LA\_ML\_OX  
<14> LA\_ML\_IP  
<14> LA\_ML\_IN  
<12> CK\_WIF1\_100M\_DP  
<12> CK\_WIF1\_100M\_DN  
<12> LA\_CLKREQ  
<7,12,16,29,32,34> PCIE\_WAKE

WIFI CKREQ connect to relative pin.

3VDUAL M2WR1 8.2K/4 WIFI CKREQ



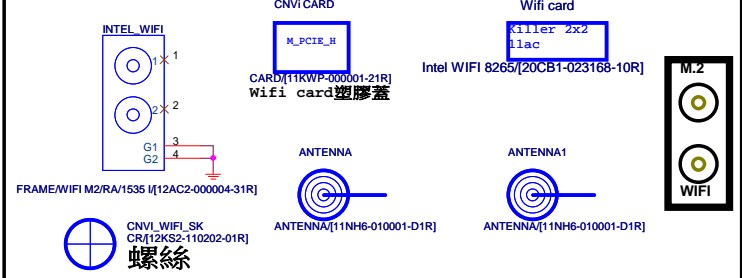
Remove LED show  
Remove LED show

3VDUAL  
M2WC1 0.01u4/X7R/25V/K  
M2WC2 0.01u4/X7R/25V/K  
M2WC3 0.1u4/X7R/16V/K  
M2WC6 10u6/X5R/6.3V/M

Update 2015-07-22  
M2\_WIF1\_RST-  
M2\_WBC1 10p4/NPO/50V/JX

Update 2015-02-11

一套WIFI MODULE包含外框+WIFI CARD+天線



Footprint Notice.

Update 2015-07-22  
Footprint for 直立式  
SMD:  
WIFI-EKEY

Footprint Notice.

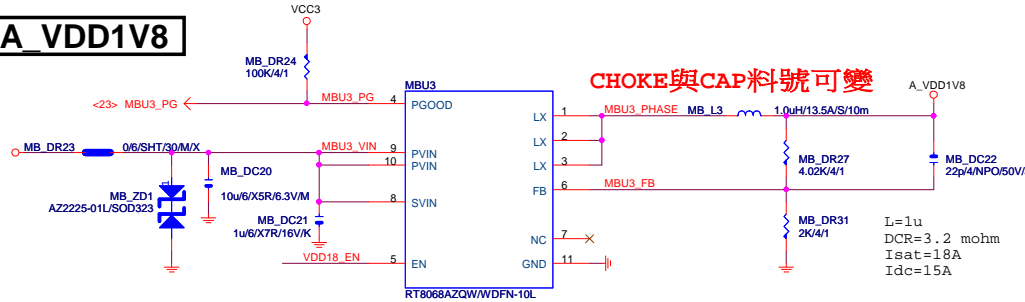
Update 2015-07-22  
Footprint for 橫躺式SMD: NGFF-E-75P-2

兩片式WIFI金屬殼改為單件式  
Layout Library : wifi-ekey-module-1  
Tiptop P/N : 12AC2-000004-31R

REV: 0.4

A\_VDD1V8

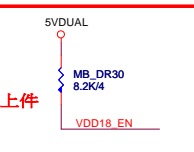
CHOKE與CAP料號可變



L=1u  
DCR=3.2 mohm  
Isat=18A  
Idc=15A

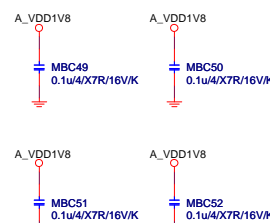
PWR\_SEQ

\* 刪 MA\_DR32



VPP CAP

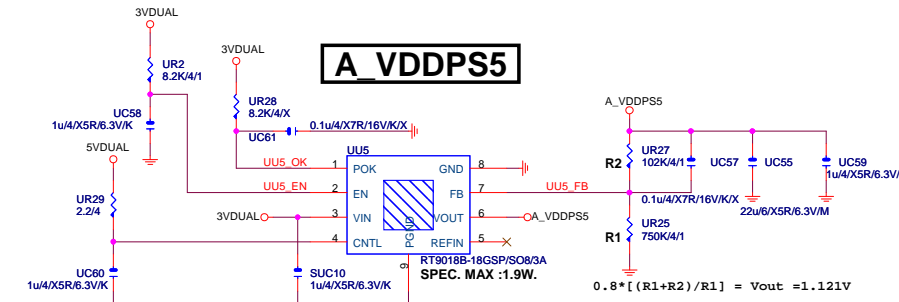
\* 大電容 >= 22u\*1PCS



CORETYPE1	CORETYPE0	VPPD_ALW
1	X	0.9V
0	X	1.05V

<5,23,37> CORETYPE1 UR30 8.2K/4/1 UQ2 2

A\_VDDPS5



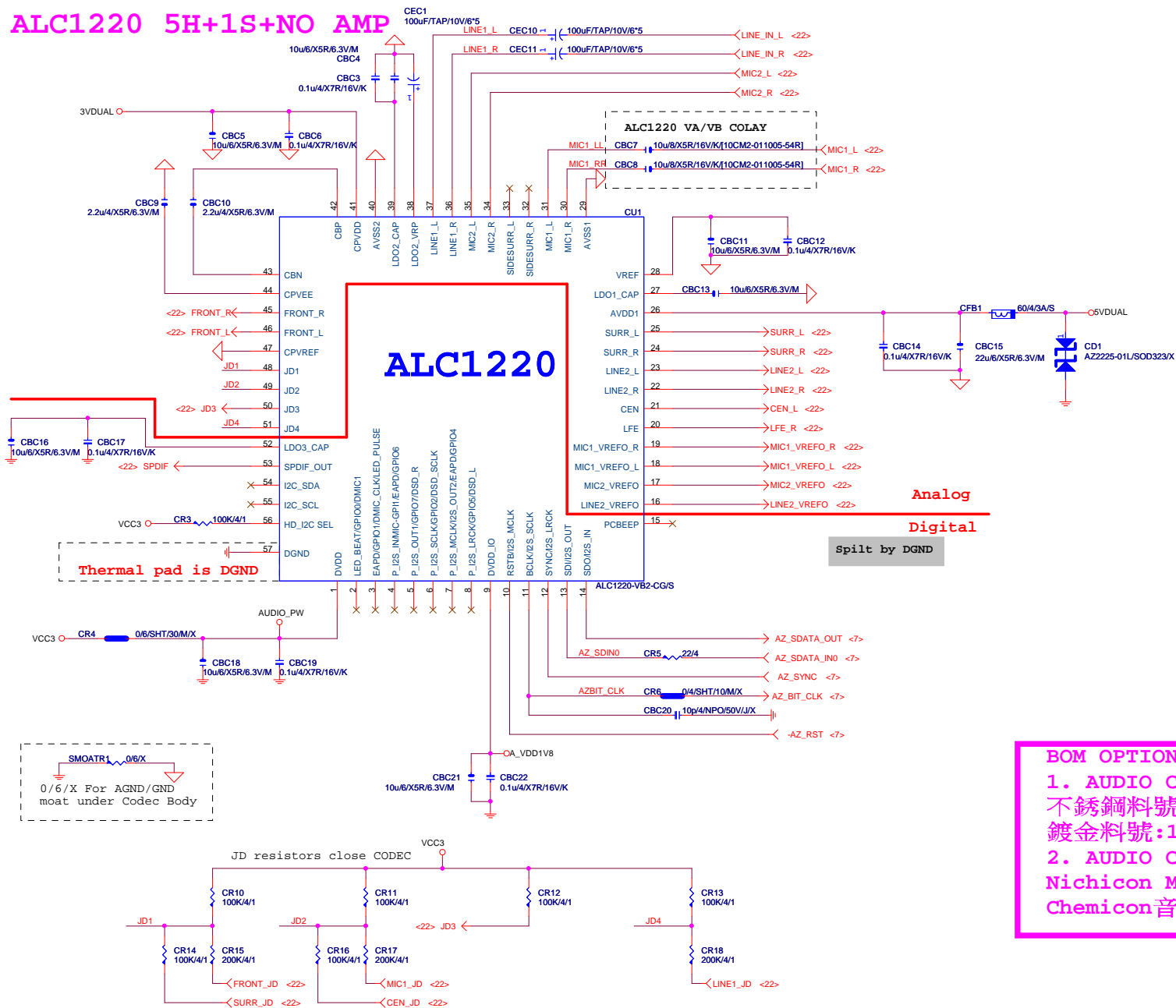
【技術通報R&D技術通報156】  
RT9018 (RICHTER)與NCT3730 (NUVOTON),  
EM5103GE (EMC) 做共用, 針對PIN7 (FB) 分壓阻值部份  
(R1/R2) 須做修改為100K以上電阻值

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FAN\_A\_VDD1V8

Size	Document Number	Rev
Custom	B450 AORUS PRO WIFI	1.0
Date:	Tuesday, June 12, 2018	Sheet 20 of B450 AORUS PRO

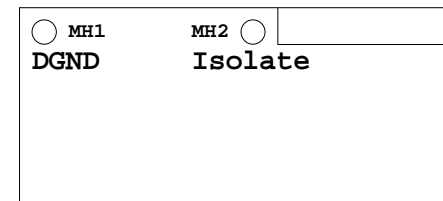
## ALC1220 5H+1S+NO AMP



LAYOUT注意:螺絲孔下GND方式

1. MH1下DGND

2. MH2一律改為Isolate



LAYOUT注意:是否要加?

AGND切割線



音效區域印刷



BOM OPTION :

1. AUDIO CONNECT

不銹鋼料號:11NR6-403025-A3R

鍍金料號:11NR6-403025-92R

2. AUDIO CAP

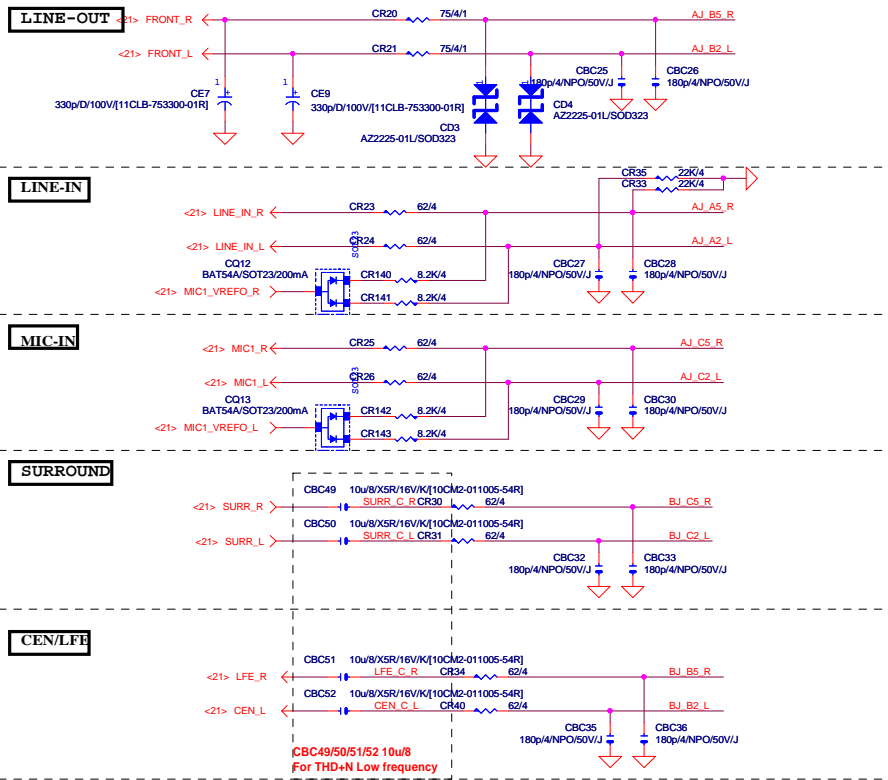
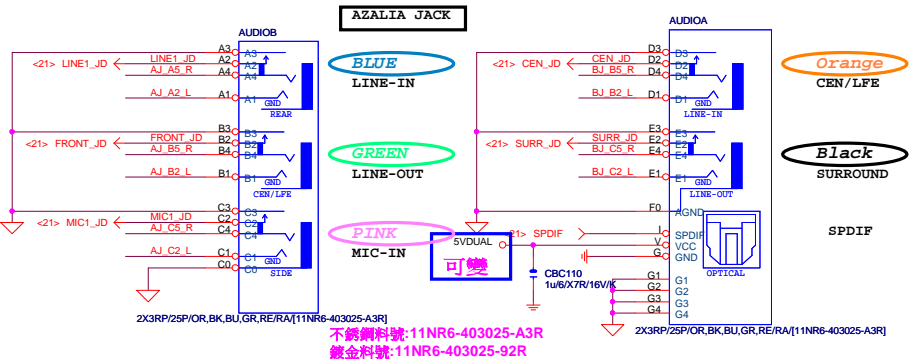
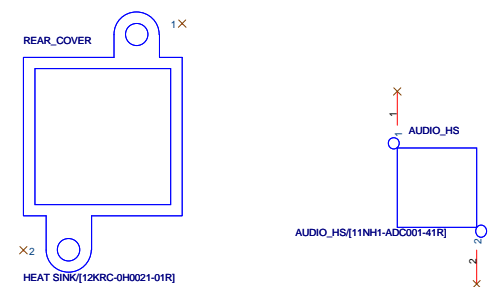
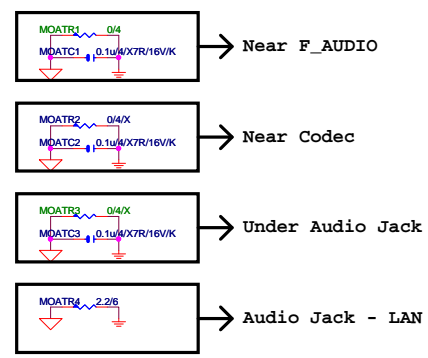
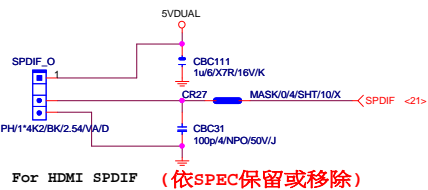
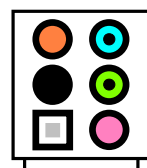
Nichicon MW音效電容 : 11CE1-651000-12R

Chemicon音效電容 : 11CE2-651000-05R

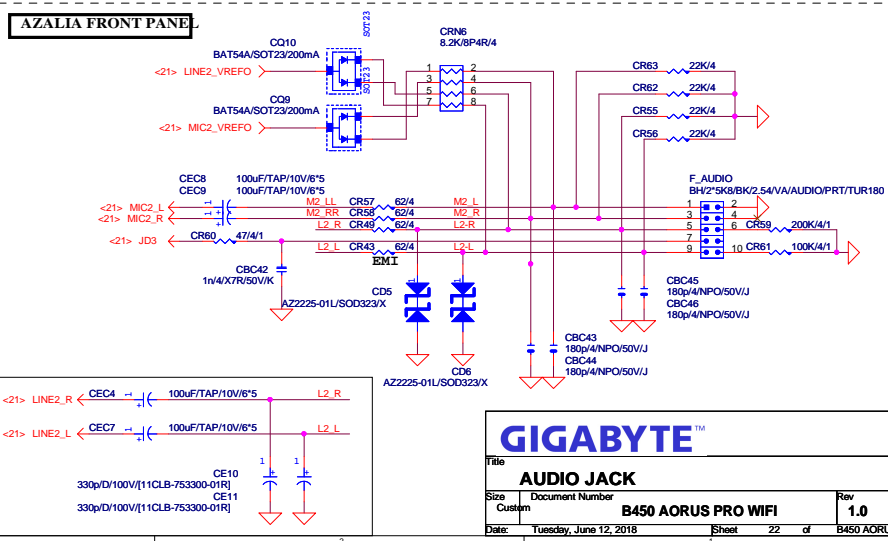
GIGABYTE™

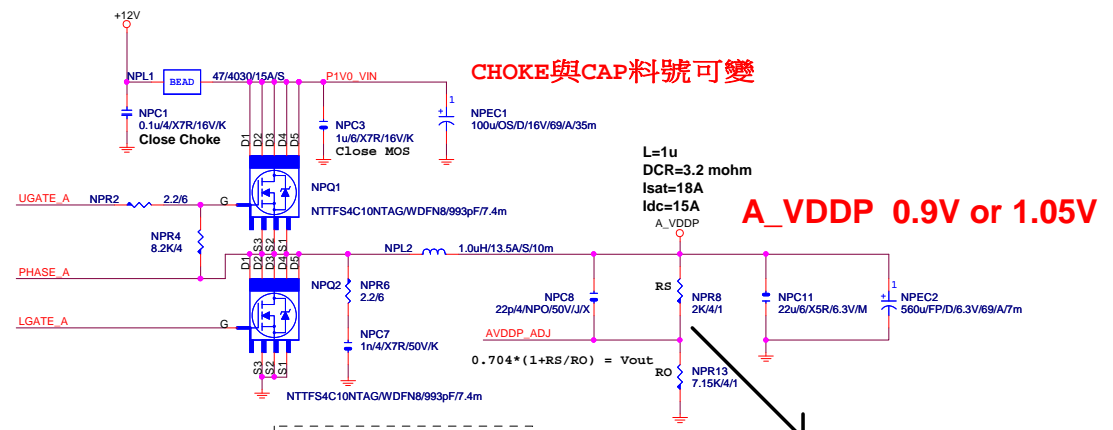
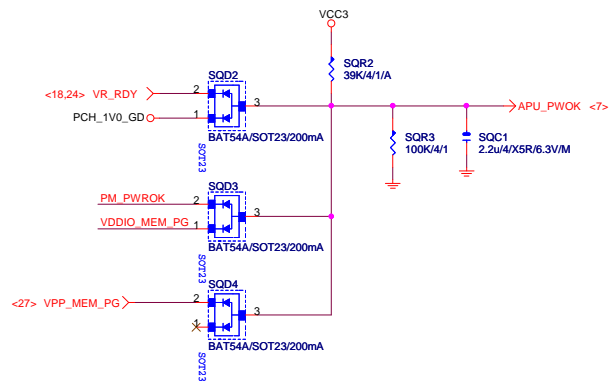
Title		
ALC1220 CODEC		
Size	Document Number	Rev
Custom	B450 AORUS PRO WIFI	1.0
Date:	Tuesday, June 12, 2018	Sheet 21 of B450 AORUS PRO

AZALIA JACK

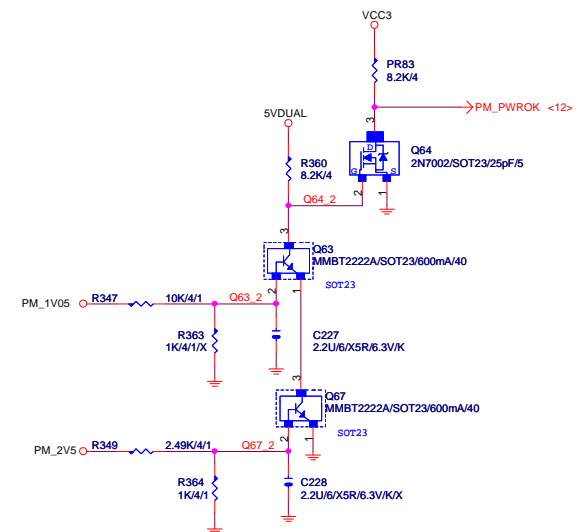
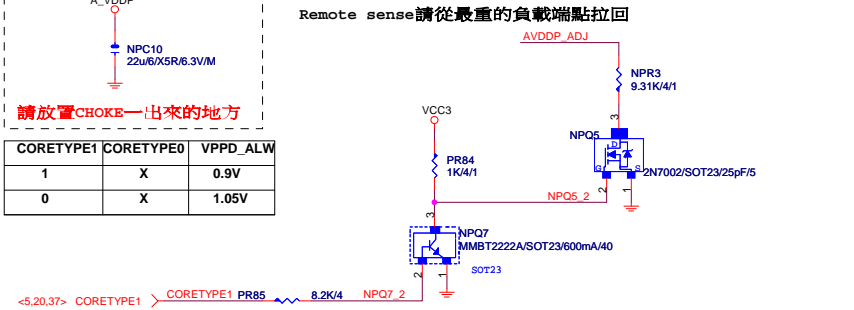


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CORETYPE1	CORETYPE0	VPPD_ALV
1	X	0.9V
0	X	1.05V



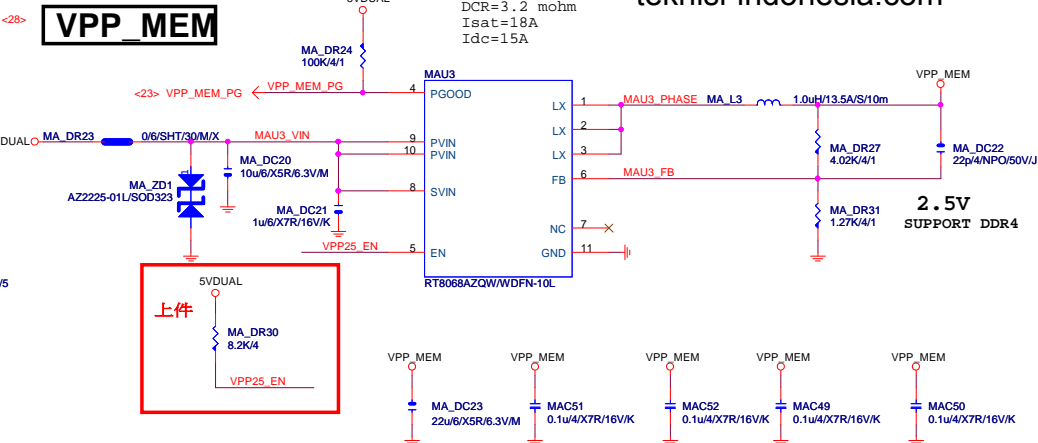
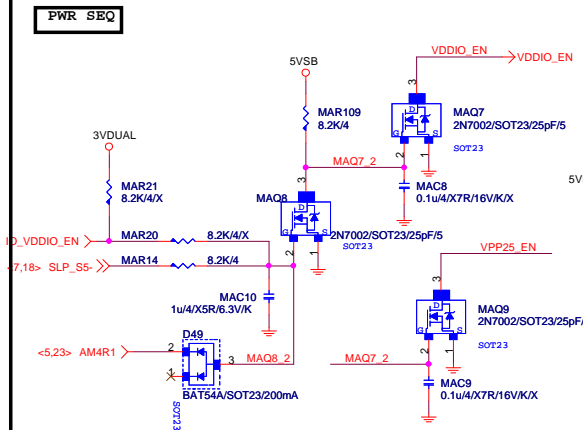
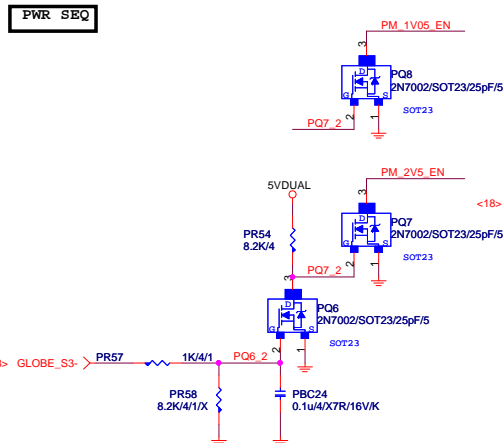
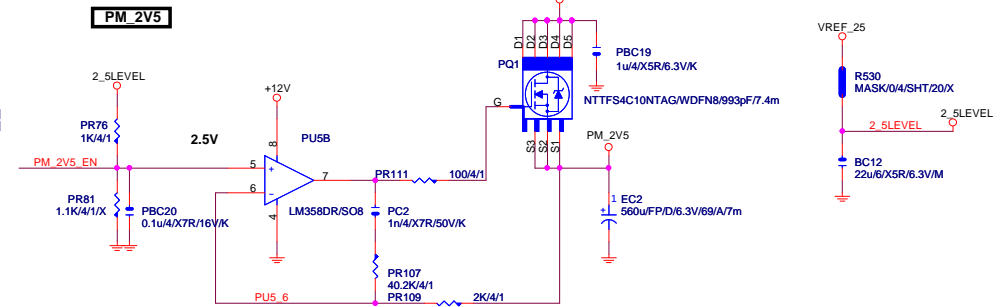
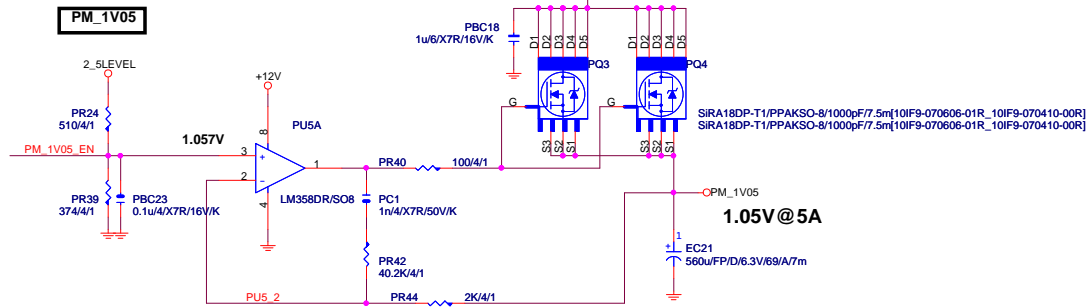










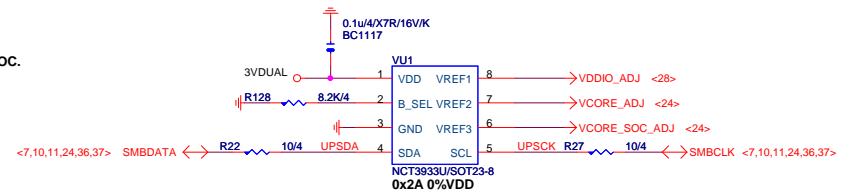


## VDDCR SOC S5

S5\_MUX: S0-->High, S5-->Low  
H: VDDCR\_SOC\_S5 will track VCORE\_SOC.  
L: If VCORE\_SOC < 0.775V (OR 0.85V) , VDDCR\_SOC\_S5=0.775V.  
If VCORE\_SOC >= 0.775V (OR 0.85V) , VDDCR\_SOC\_S5 will trace VCORE\_SOC.



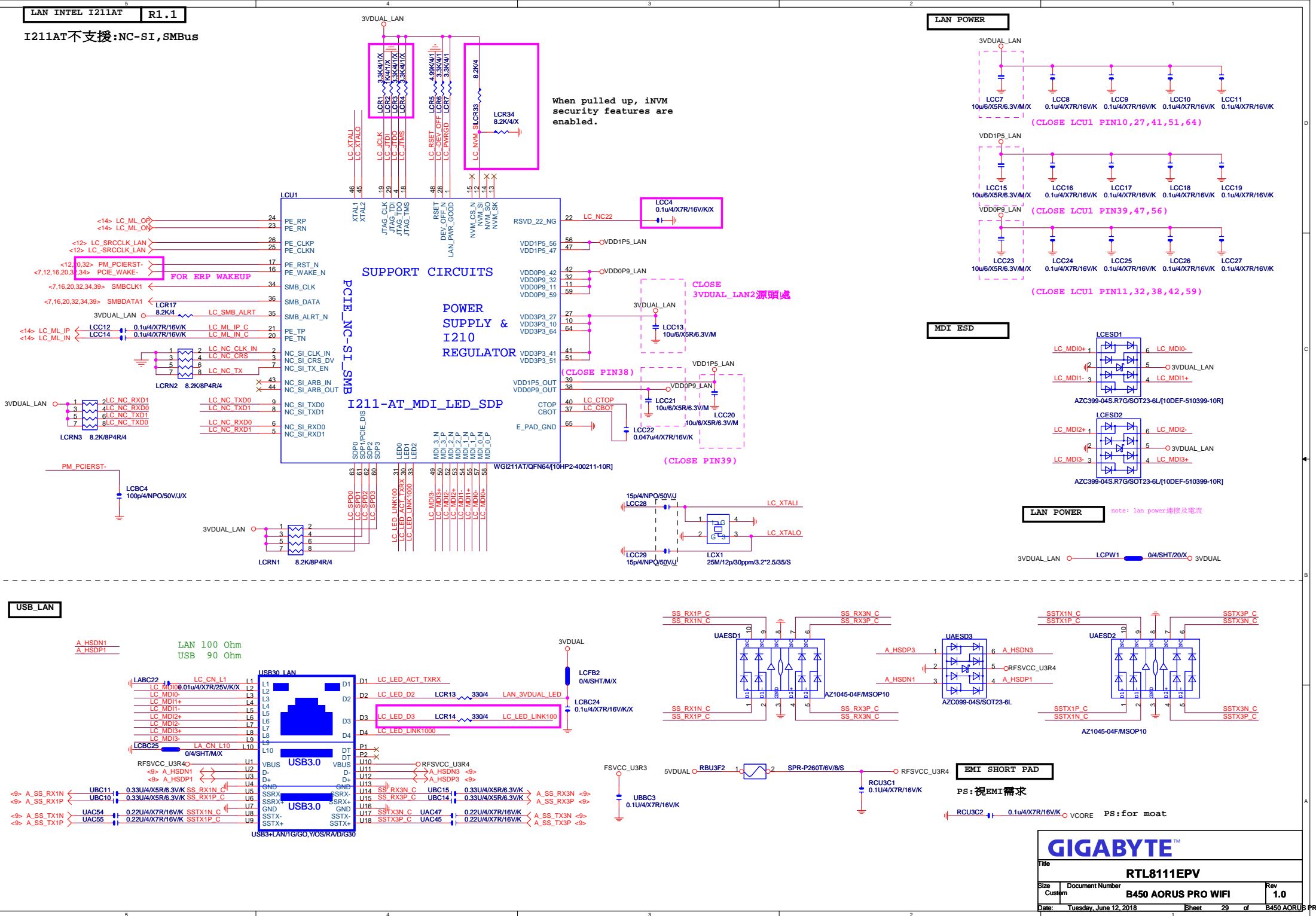
AM4 S5: 0.775V, 200mA,  
S0:VAR, 900mA.

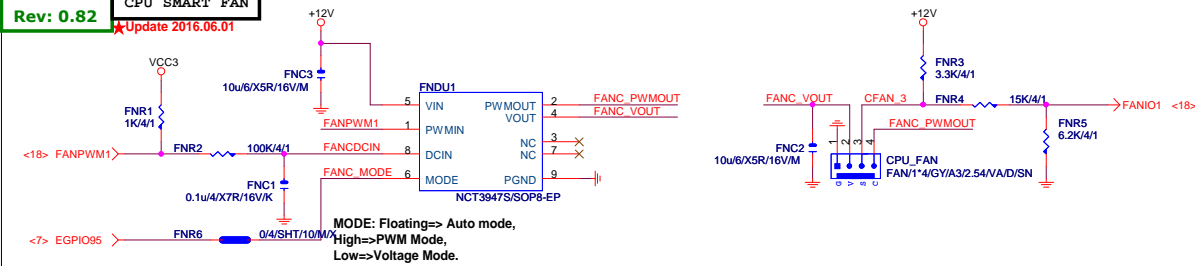


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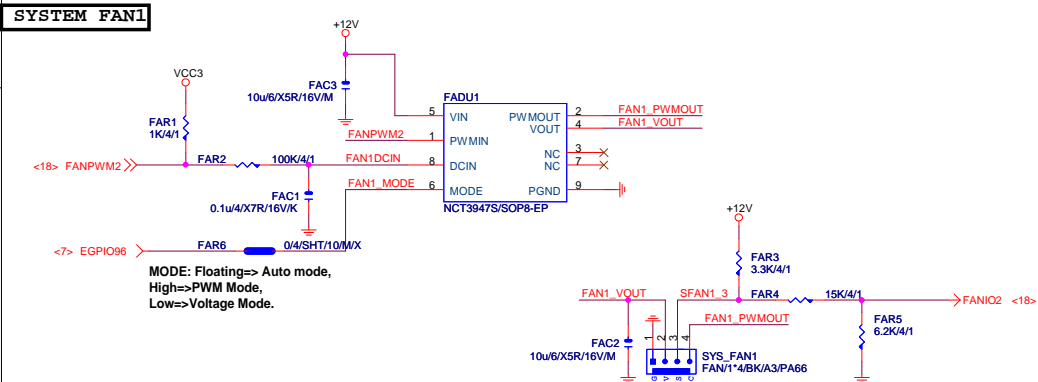
Title			
PM POWER			
Size	Document Number	Rev	
Custom	B450 AORUS PRO WIFI	1.0	
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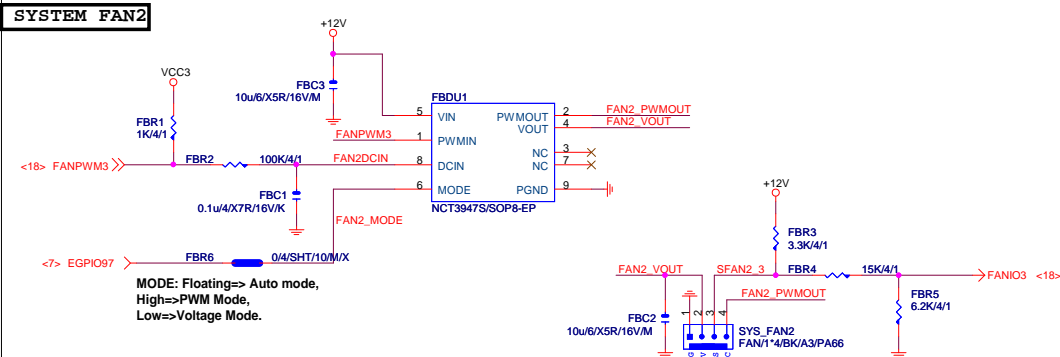




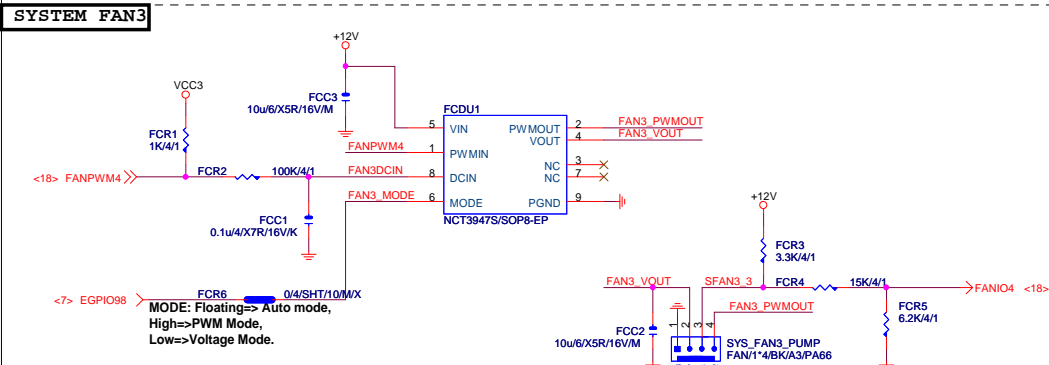
SYSTEM FAN1
-------------



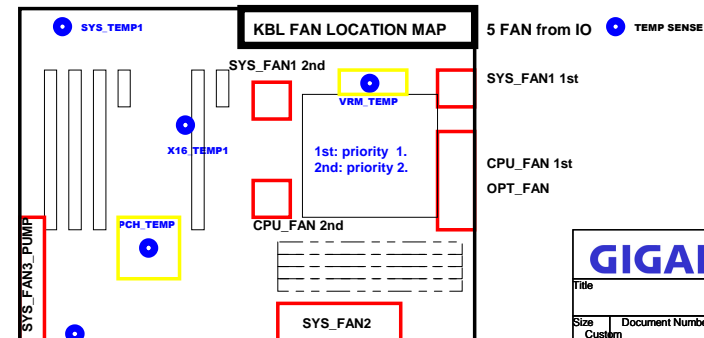
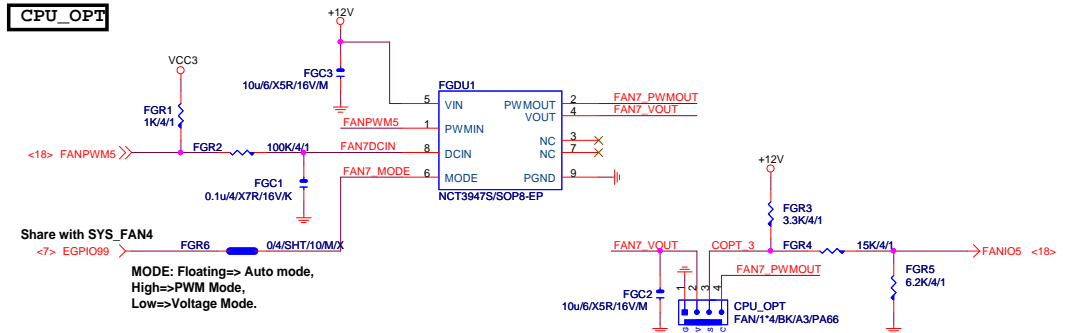
## SYSTEM FAN2



## SYSTEM FAN3



## CPU\_OPT



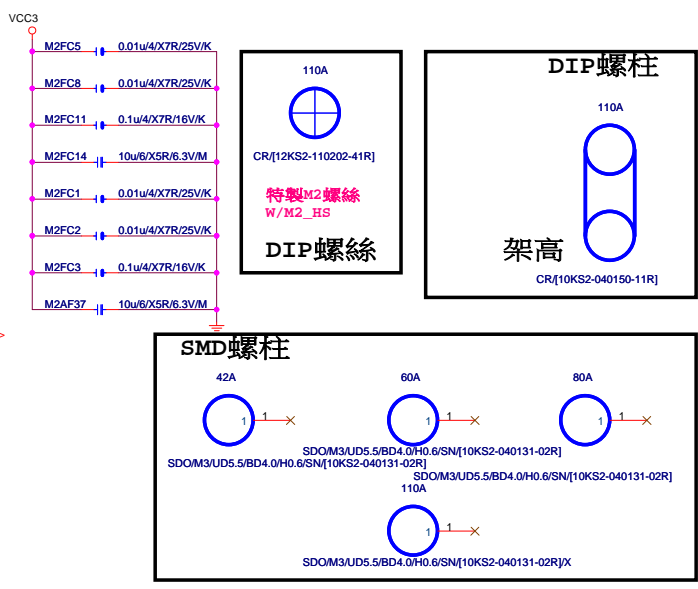
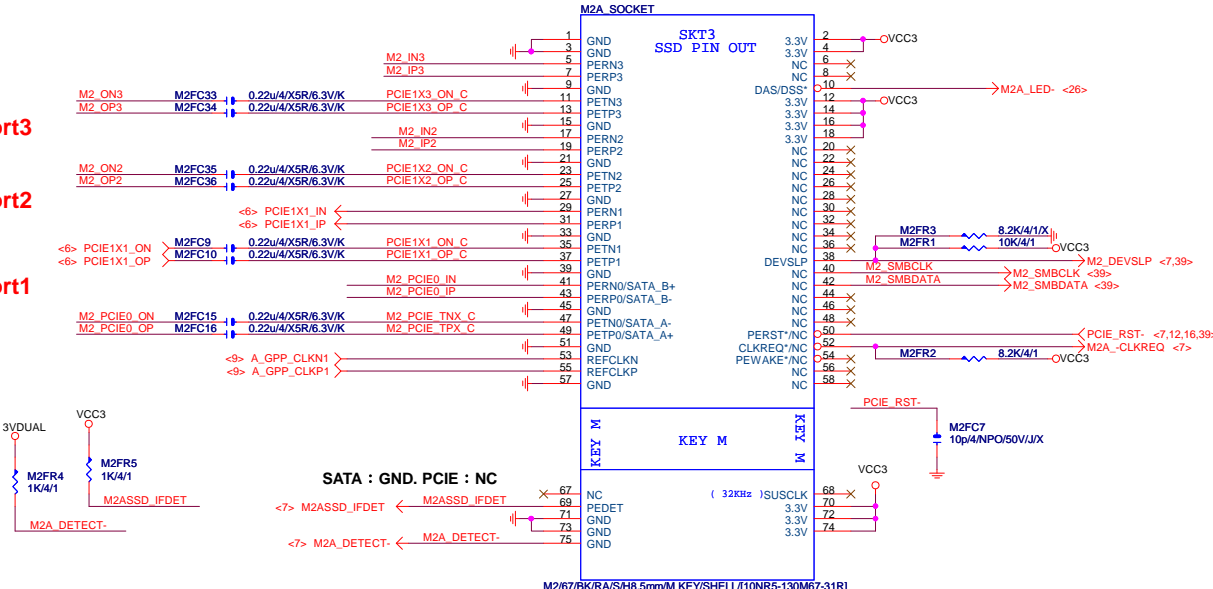
Rev 0.5

### M.2 Lane4 from AM4 port3

### M.2 Lane4 from AM4 port2

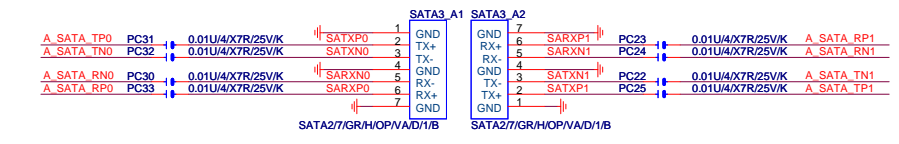
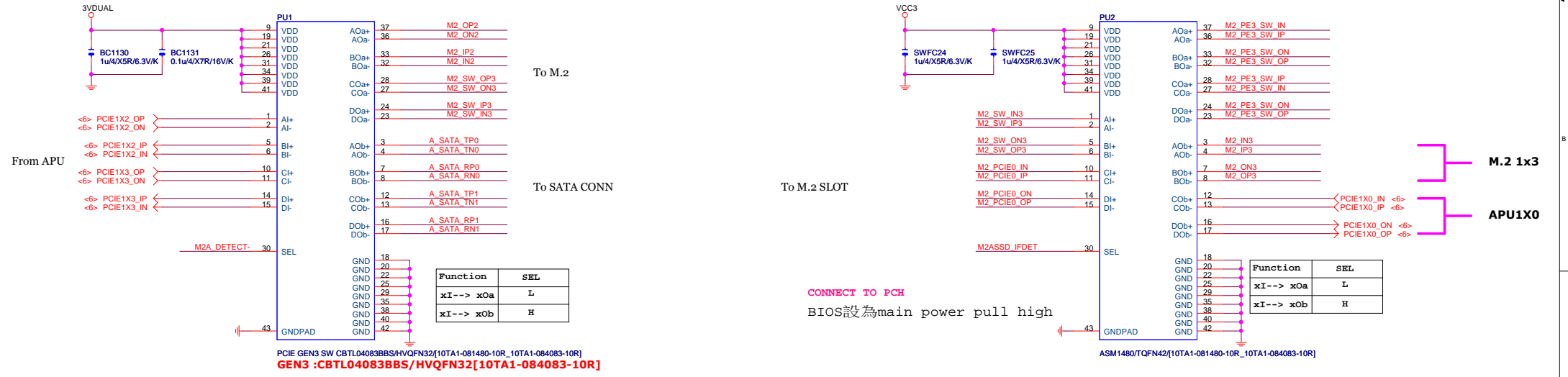
### M.2 Lane4 from AM4 port1


by SWITCH Select

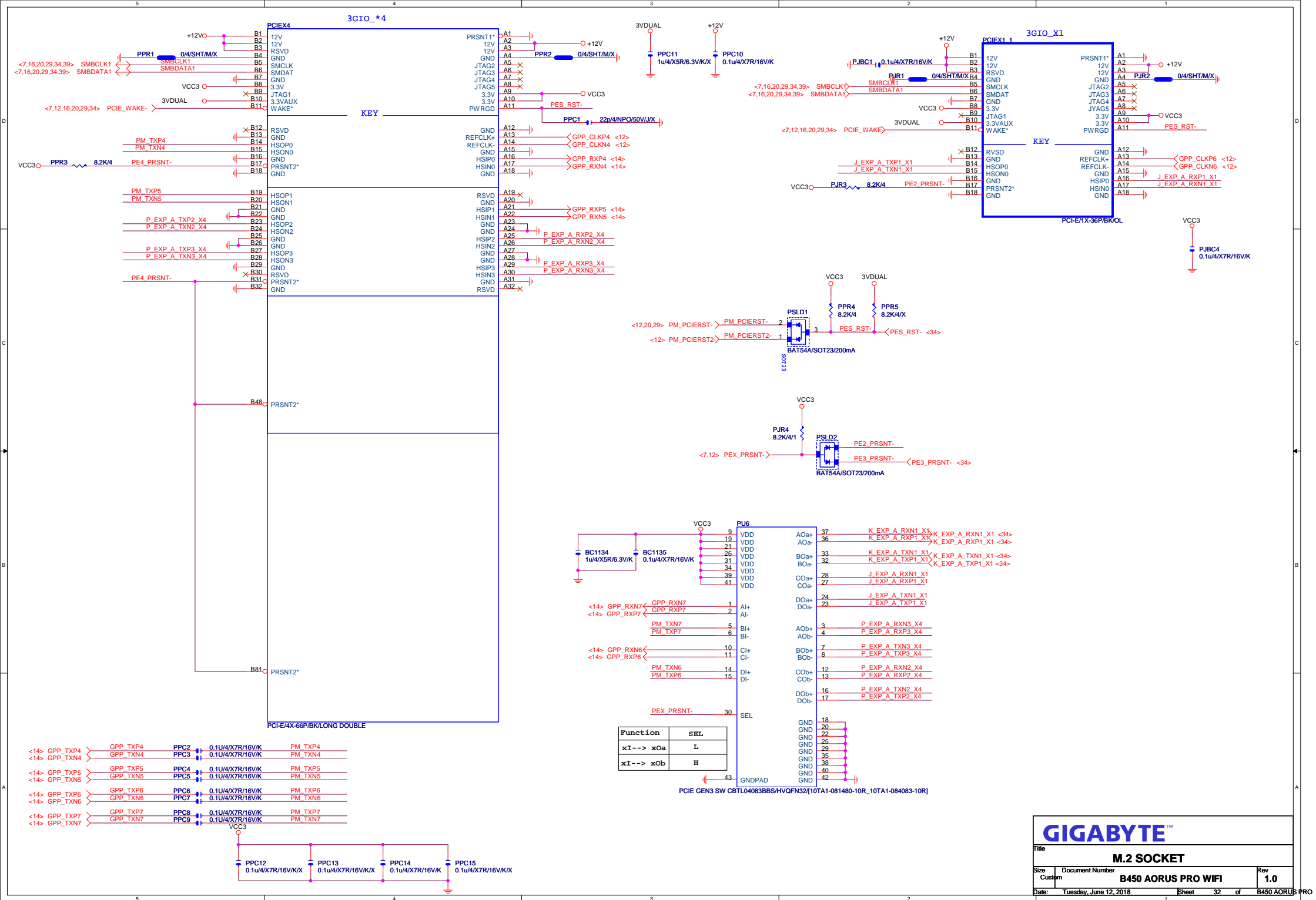


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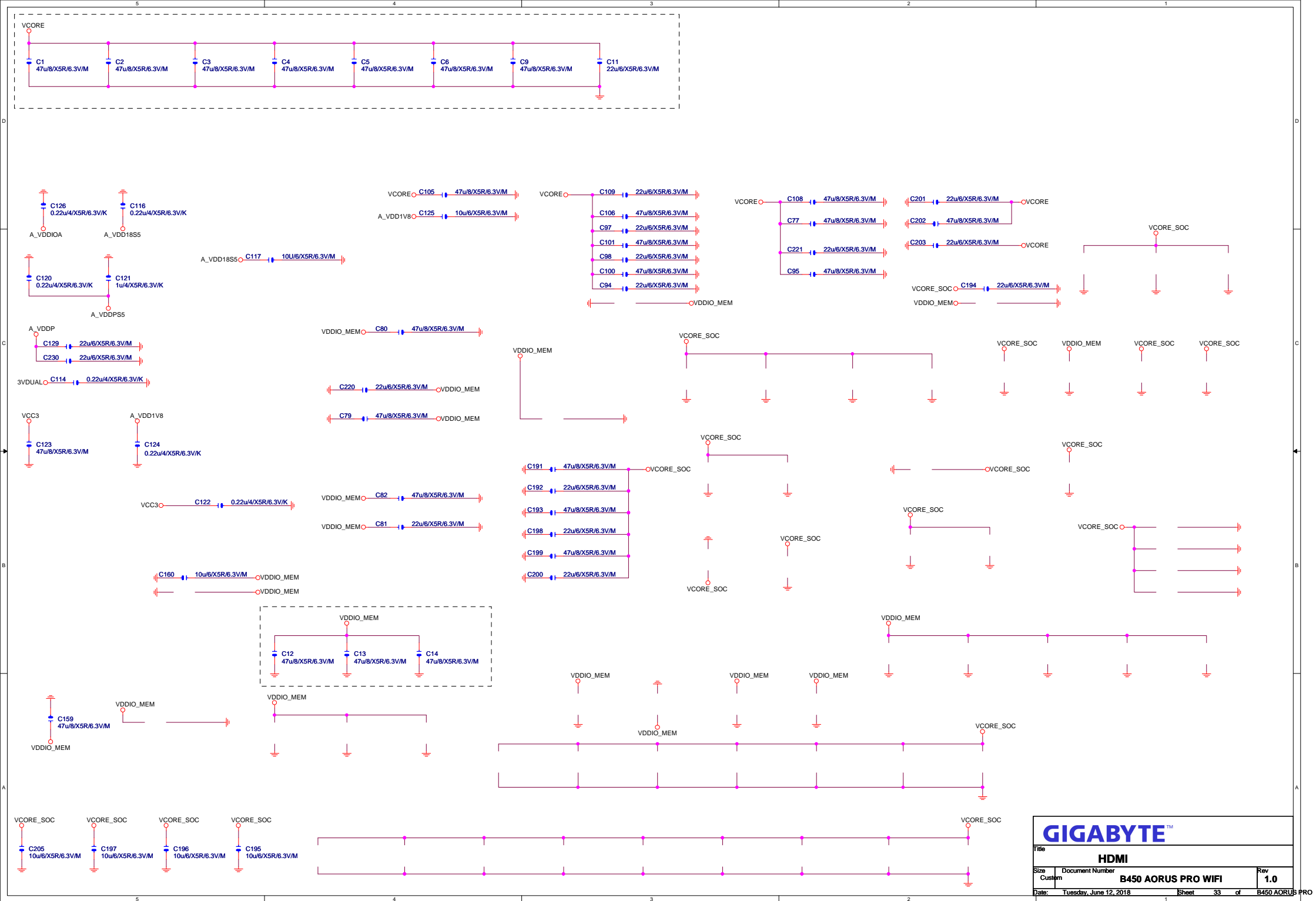
8.5H鐵殼  
Footprint :M2\_110(DIP)



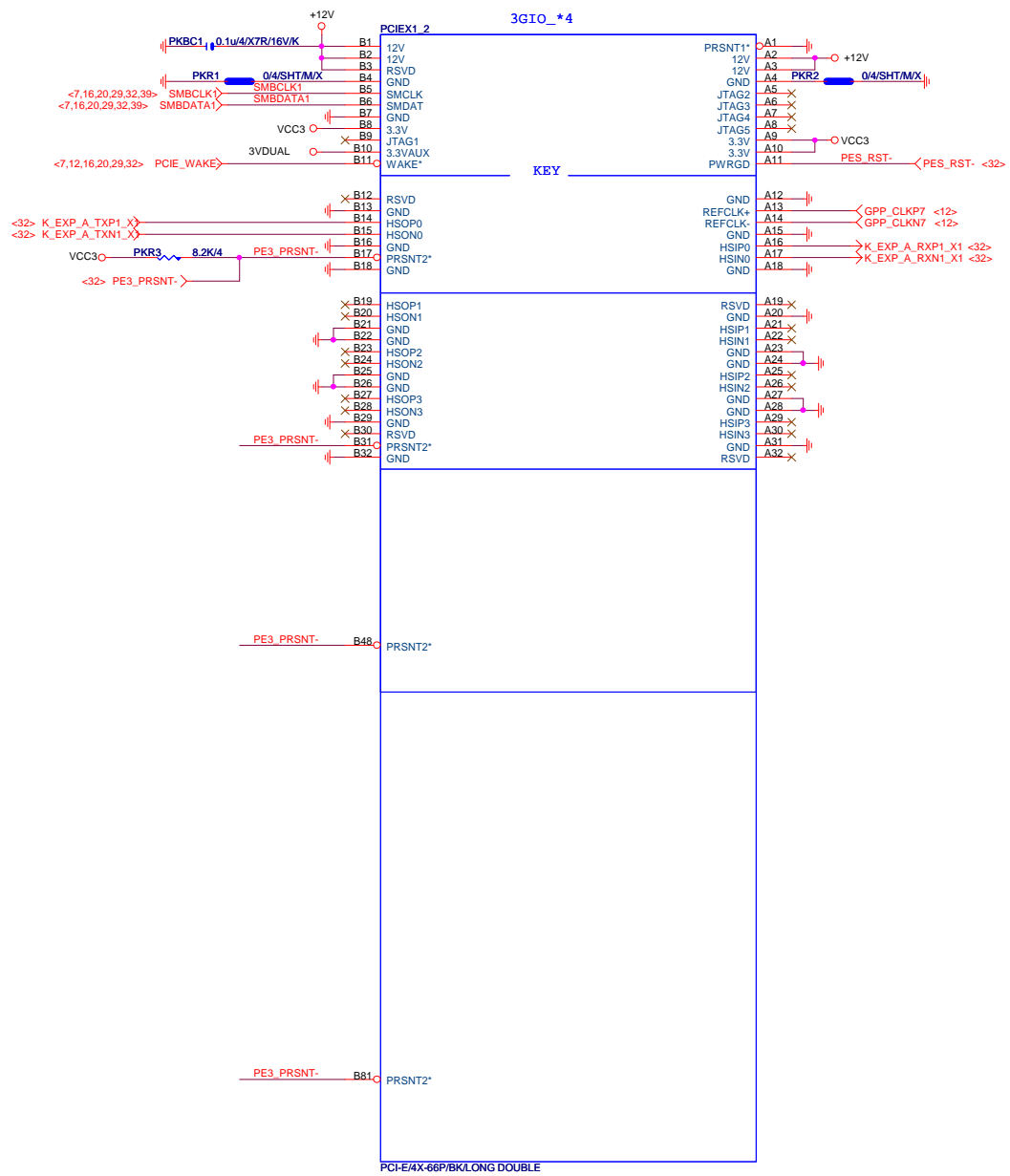
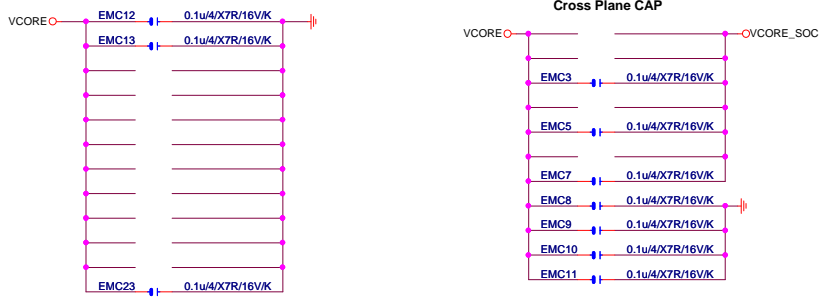
			
Title			
M.2 SOCKET			
Size	Document Number	Rev	
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## CPU TOP CAVITY



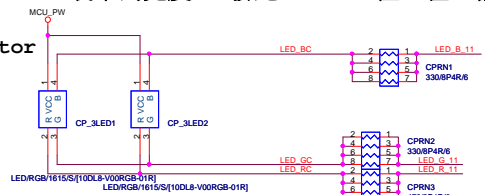
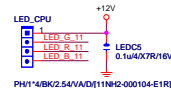
			
Title			
HDMI			
Size	Document Number	Rev	
Custom	B450 AORUS PRO WIFI	1.0	
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## 第一區 LED

FOR CPU 正發光 LED\*4  
(在CPU CHOKE之間,MOS\_HS下方,不外露)

FOR 裝甲高亮度 正發光 LED\*2 (位置在正板, 依據裝甲設計擺放)

AMD CPU FAN LED connector



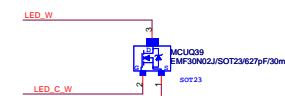
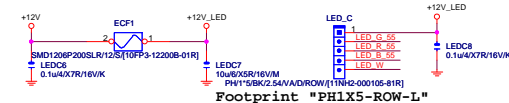
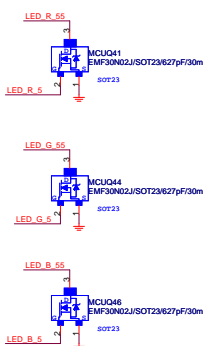
## 第二區 LED

FOR DIMM 側發光 LED\*12  
(位置在DIMM兩側)

## 第五區 LED

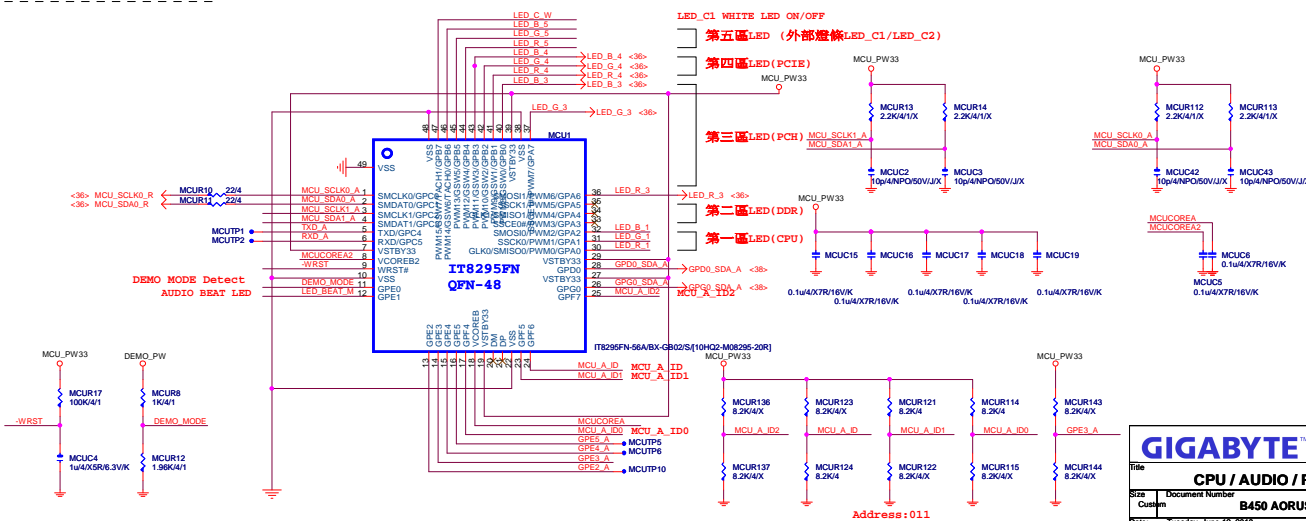
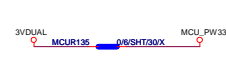
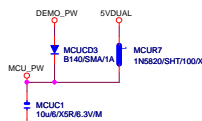
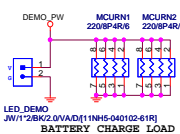
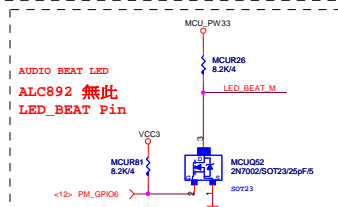
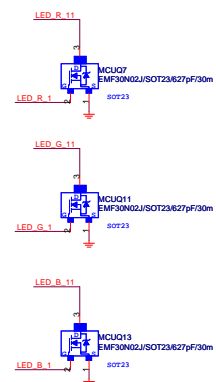
燈條 LED (LED\_C1放在PCB左邊板邊位置)

## 第五區 LED CONTROL



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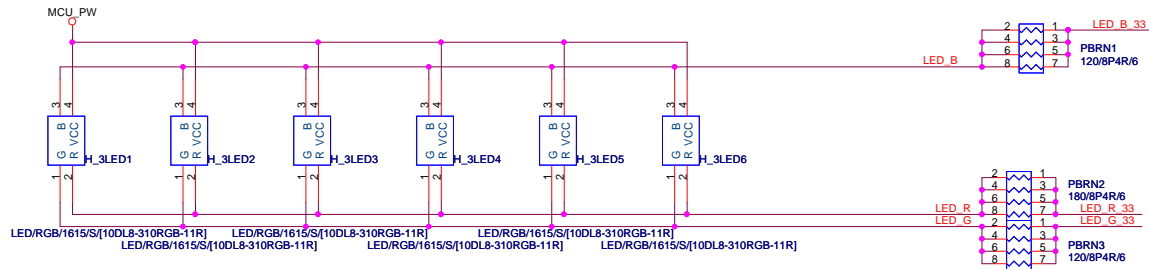
## 第一區 LED CONTROL



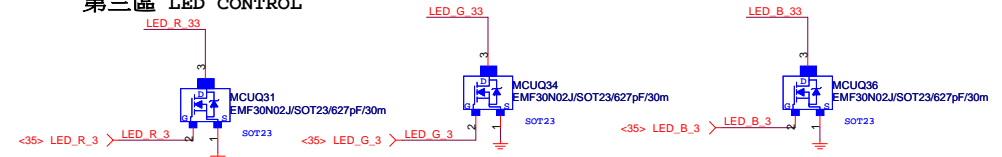
EC_GP71	CPU DEBUG
EC_GP72	DDR DEBUG
IO_GP63	VGA DEBUG
IO_GP64	BOOT DEVICE DEBUG
PM_GPI06	software beat mode contro
N_GPP_A22	
N_GPP_D12	

## 第三區 LED

FOR PCH 正發光 LED\*6 (位置在正板,依據PCH\_HS設計擺放)



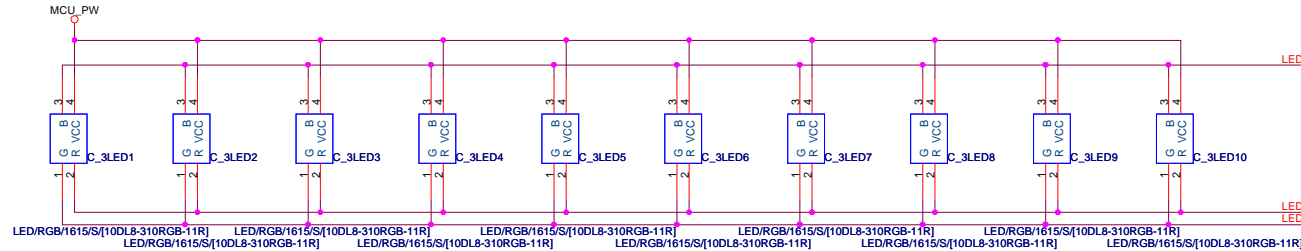
## 第三區 LED CONTROL



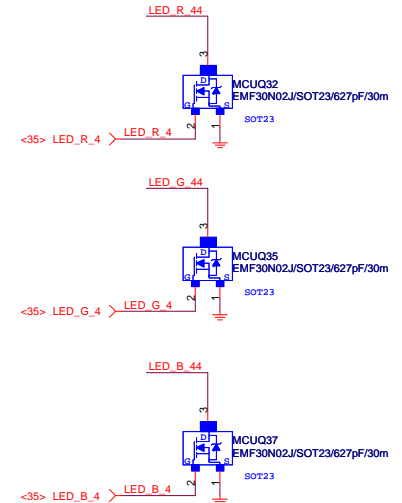
RGB LED壓克力燈條 REMOVE

## 第四區 LED

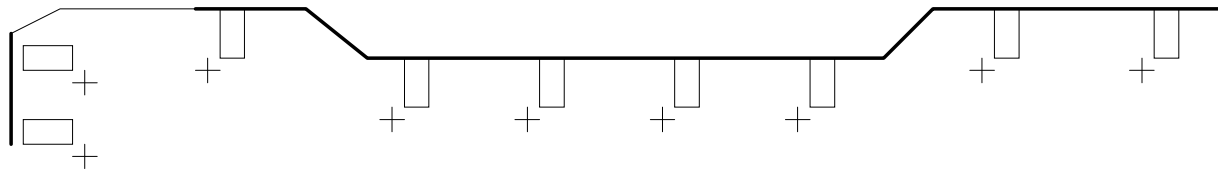
FOR AUDIO 正發光 LED\*10 C\_3LED1~10)



## 第四區 LED CONTROL



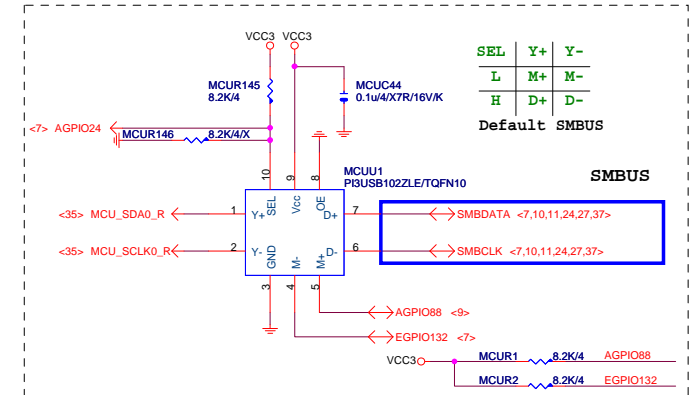
Audio Ground切割線+背面 RGB LED



## RGB LED LAYOUT 注意事項：

1. Debug LED (各LED依CPU/DRAM/VGA/BOOT個別位置擺放)
2. 背板 RGB LED 方向整板請統一如下  
(整板正極可統一朝下或朝上)
3. 正板 RGB LED 統一方向即可
4. MCU\_PW & MCU\_PW33電源一律走20mils
5. ECF1, ECF2, ECF3, ECF5 兩端電源走80mils或用鋪銅方式加粗
6. MCU LED 出pin的走線4mils,如:LED\_R\_1,LED\_G\_1,LED\_B\_1 .....
7. LED RGBW rule :W/S=10/5 mils 如:LED\_R\_11,LED\_G\_11,LED\_B\_11,LED\_W.....  
(包含從晶體到排阻到LED的net)
8. Digital LED NET rule W/S=4/8 mils  
GPD0\_SDA\_B,GPD0\_SDA\_BB,GPD0\_SDA\_C,GPD0\_SDA\_CC

For AMD MCU update

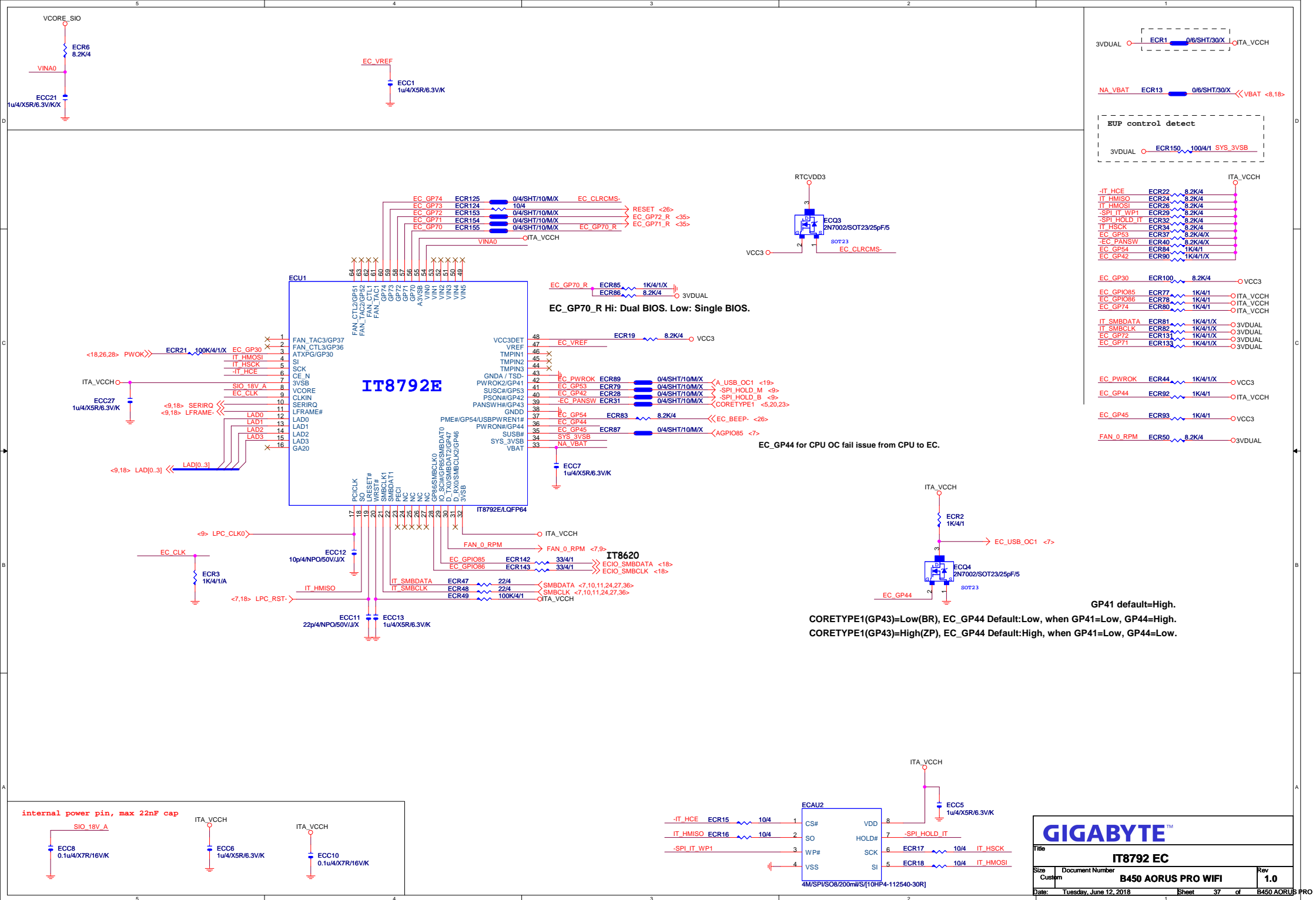


GIGABYTE™

Title PCB / PCH / DDR / LED\_C LED

Size Custom Document Number B450 AORUS PRO WIFI Rev 1.0

Date: Tuesday, June 12, 2018 Sheet 36 of B450 AORUS PRO

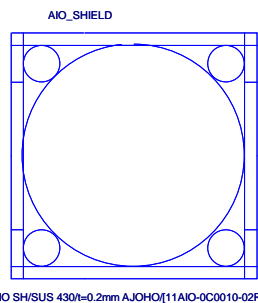
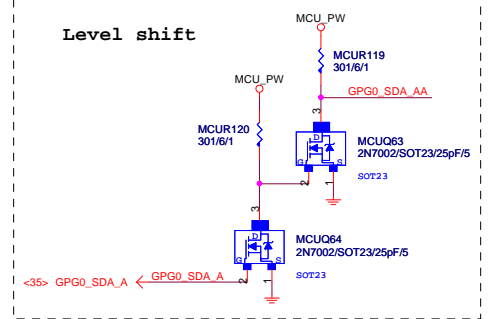
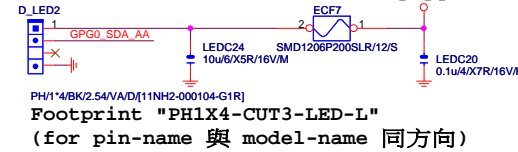
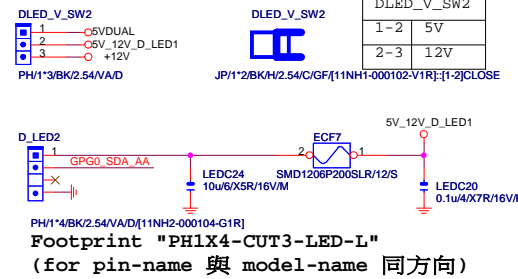
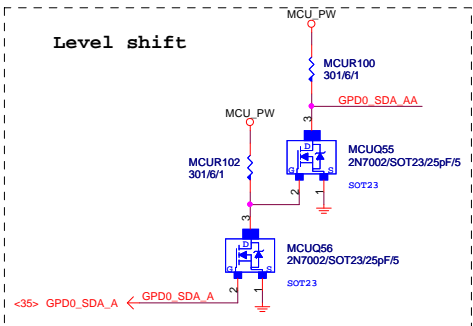
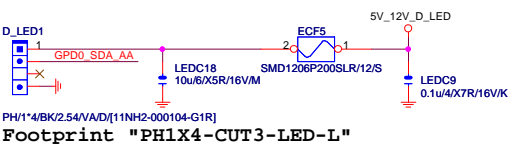


第六區 LED (靠近左上板邊位置)

第七區 LED (靠近右下DDR板邊位置) Digital LED Strip2

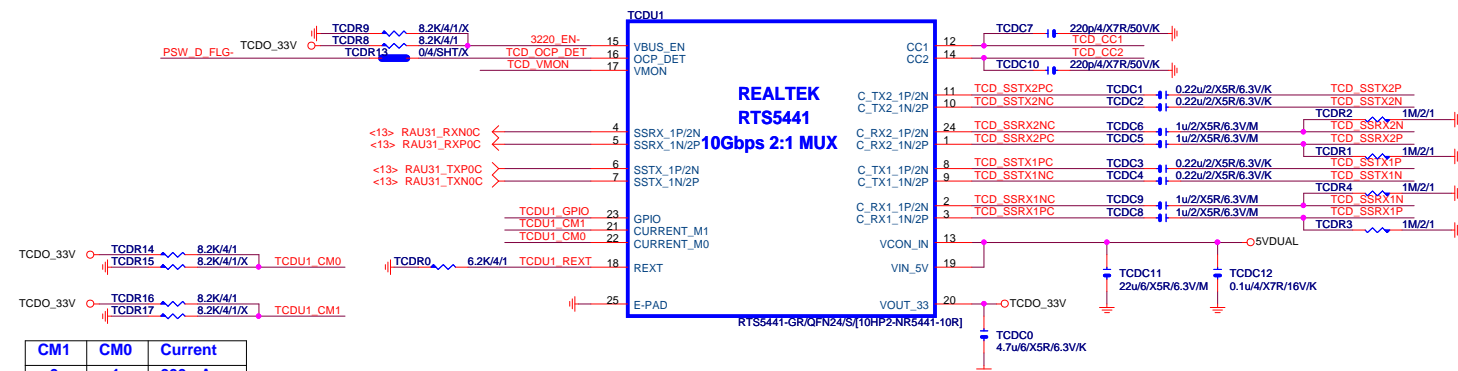


Digital LED Strip1

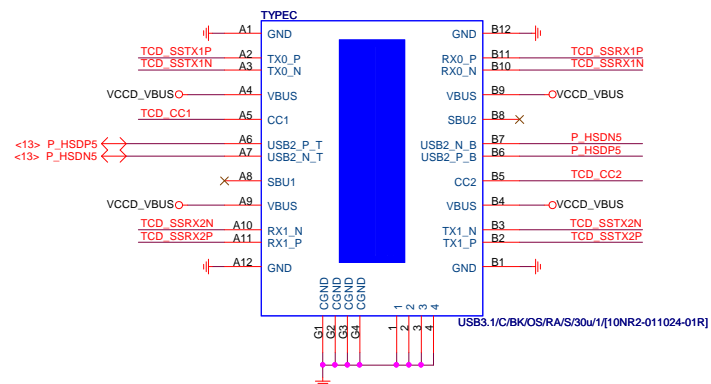
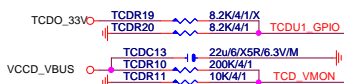




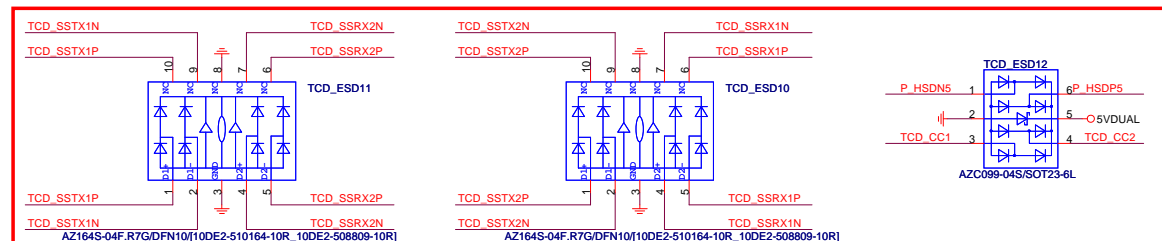
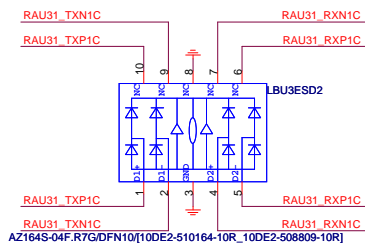
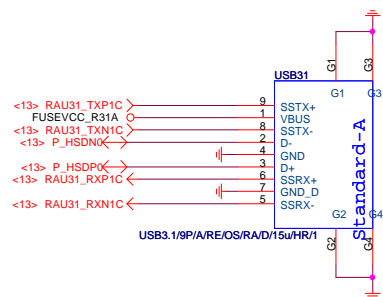
## REALTEK CC LOGIC AND MUX RTS5441



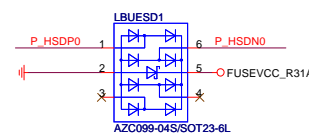
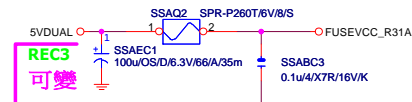
CM1	CM0	Current
0	1	900mA
1	0	1.5A
1	1	3A Default



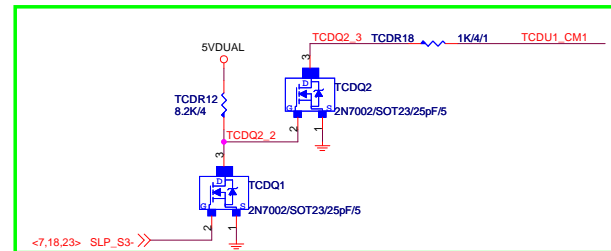
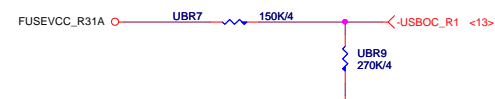
## USB2.0 can be used the same source



## Color markers can be changed by model



USB 3.1 Red  
架高, Lotus.



**For VBUS current limit at 900mA on S3**

