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# MS-7A72

ATX  
Ver: 1.1

## Intel -Kabylake plamform Z270 / H270 / B250

### CPU:

Kabylake-S

### System Chipset:

Z270 Colay H270 and B250

### Onboard Chip:

HD Audio Codec : ALC887

LAN : Intel I219

SIO : Nuvoton 6795

Flash ROM : 16MB GSE Z270  
8MB GSE Lite For H270 / B250

### Main Memory:

DDRIV (800/1066/1333/1600/2133MHz) \* 4 (Dual Channel)

### ACPI:

NIKO/UPI

### PWM:

RT3606BC

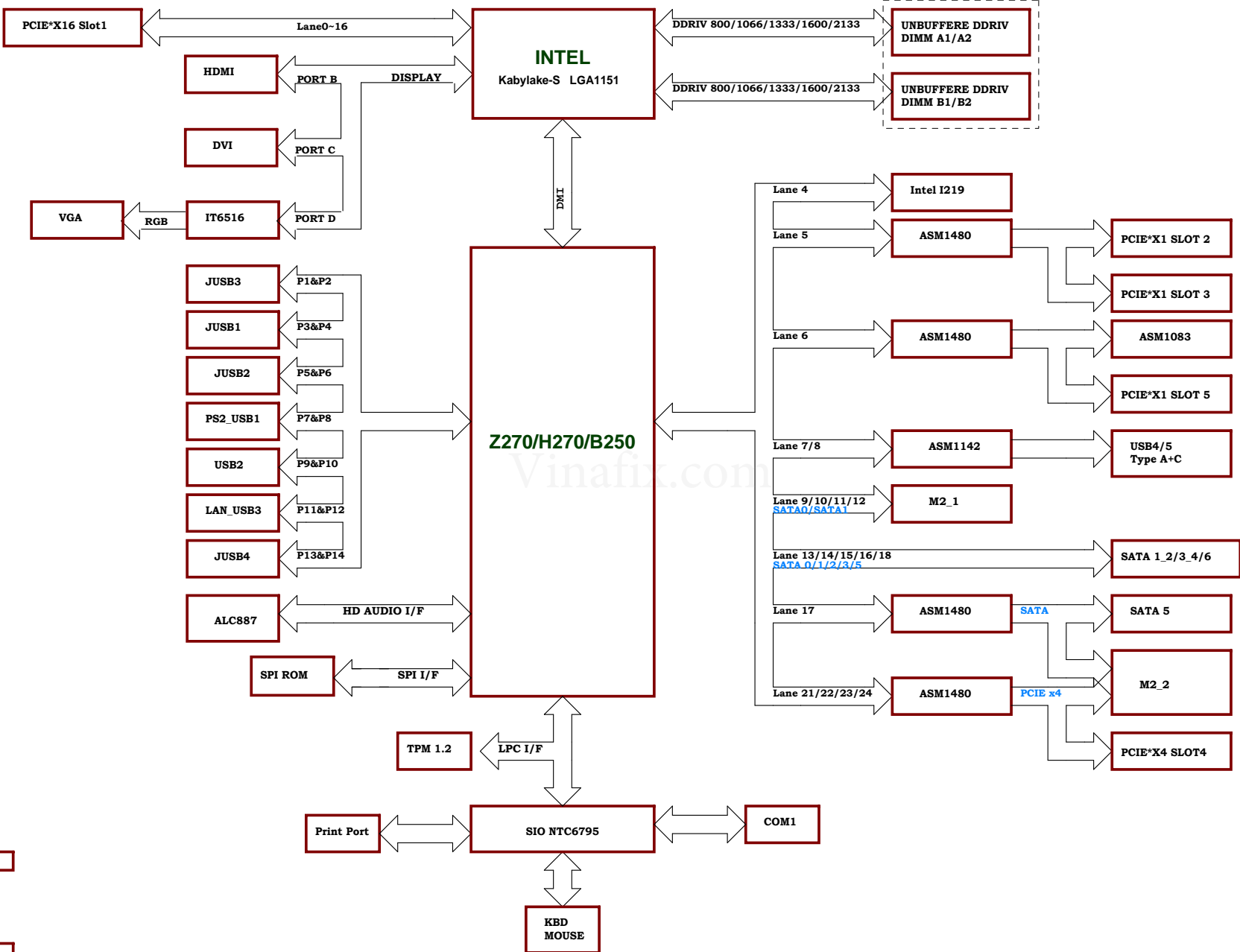
### Expansion Slots:

PCI Express (X16) Slot \*1  
PCI Express (X4) Slot \* 1  
PCI Express (X1 ) Slot \* 3  
PCI Slot \* 1  
M2 \* 2 (22110 and 2280)

### Other:

SATA3.0 x6 (PCH)  
FRONT USB2.0 \*4  
FRONT USB3.0 \*4(B250 only 2)  
REAR USB2.0 \*2  
REAR USB3.0 \*4  
REAR USB3.1 TYPE A+C

MS-7A72 Block Diagram

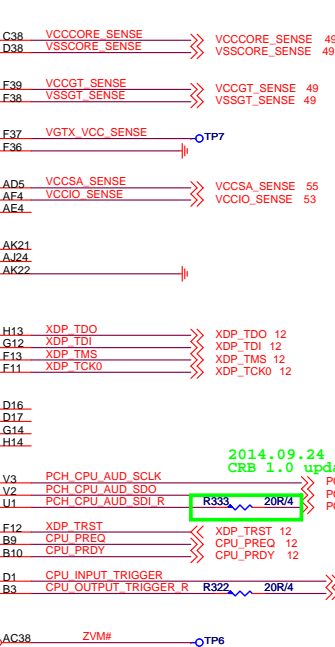
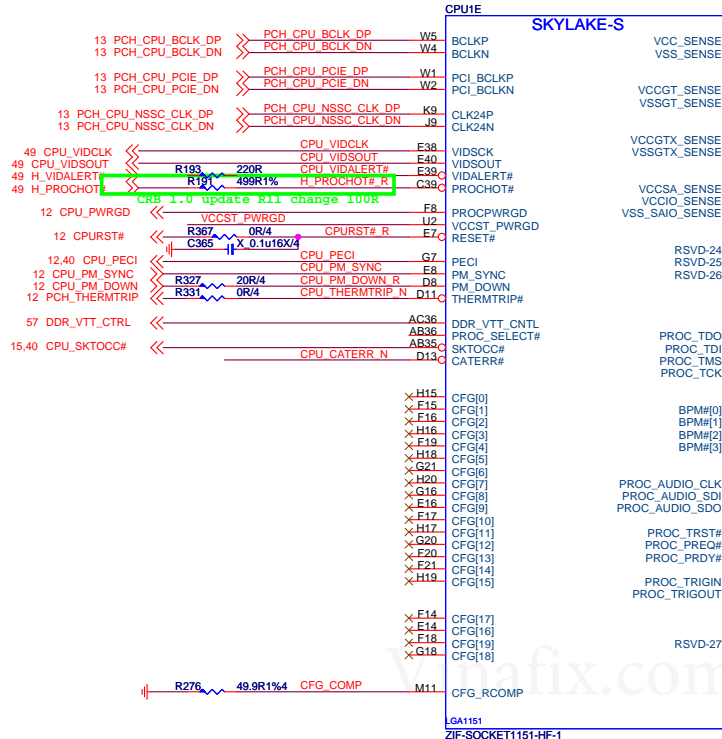
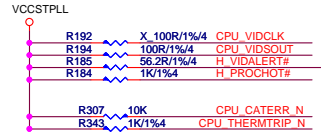


Slot Sequence:

- PCIE X16
- PCIE X1
- PCIE X1
- PCIE X4
- PCIE X1
- PCI

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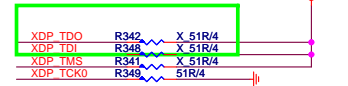




### CFG Strap

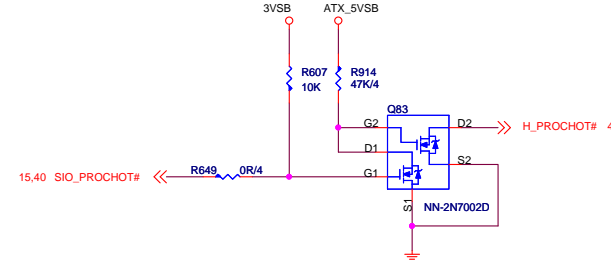
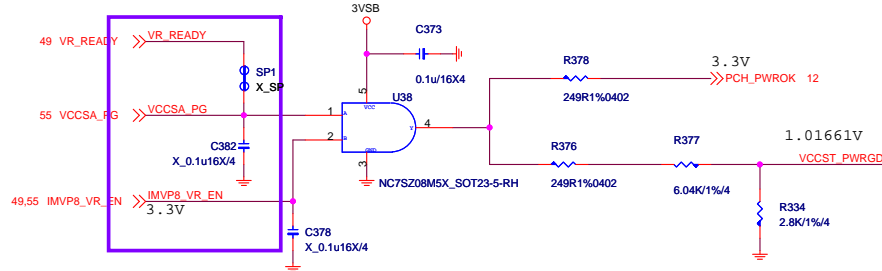
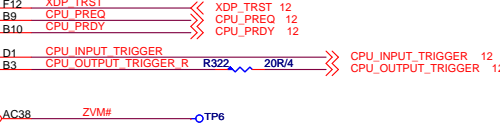
CFG Table			
	HIGH	LOW	DESCRIPTION
0	No Lock	Lock	PCU PLL lock
1	RSVD	RSVD	RSVD
2	NORM	REVERSE	PEG LANE REVERSAL
3	RSVD	RSVD	RSVD
4	DISABLE	ENABLE	eDP
5	DISABLE	ENABLE	PEG0CFSEL[0]
6	DISABLE	ENABLE	PEG0CFSEL[1]
7	RESET#	BIOS REQ	PEG DEFERR TRAINING
8	RSVD	RSVD	RSVD
9	RSVD	RSVD	RSVD
10	RSVD	RSVD	RSVD
11	RSVD	RSVD	RSVD
12	RSVD	RSVD	RSVD
13	RSVD	RSVD	RSVD
14	RSVD	RSVD	RSVD
15	RSVD	RSVD	RSVD

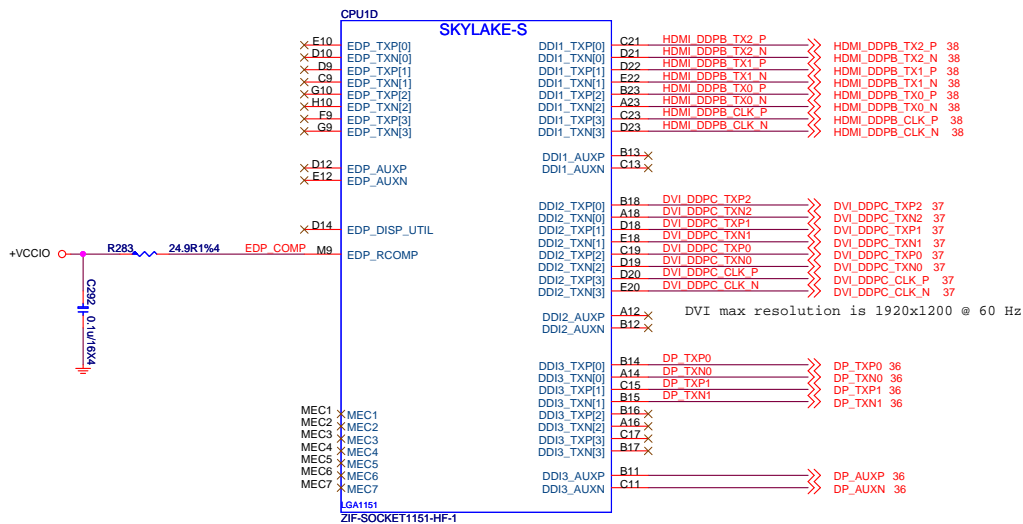
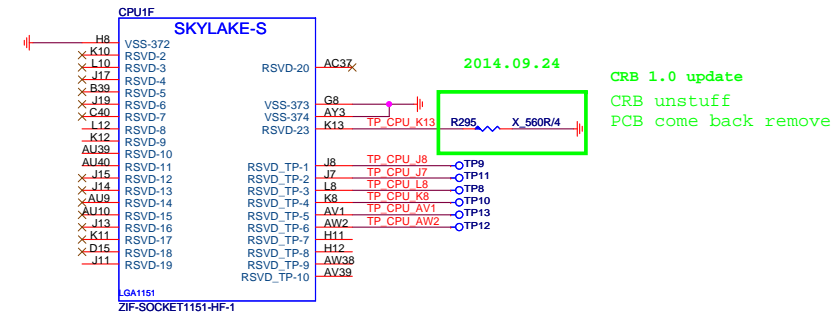
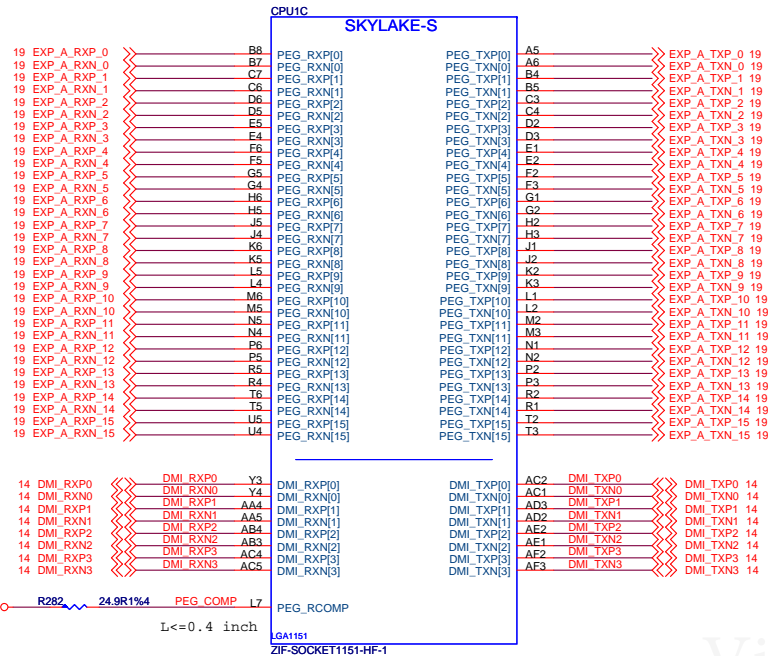
2014.09.29 remove

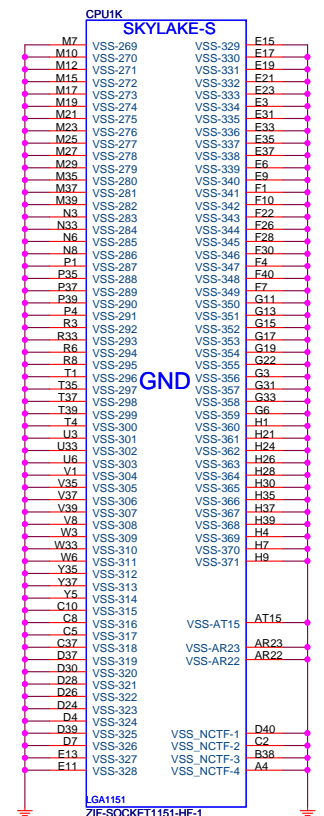
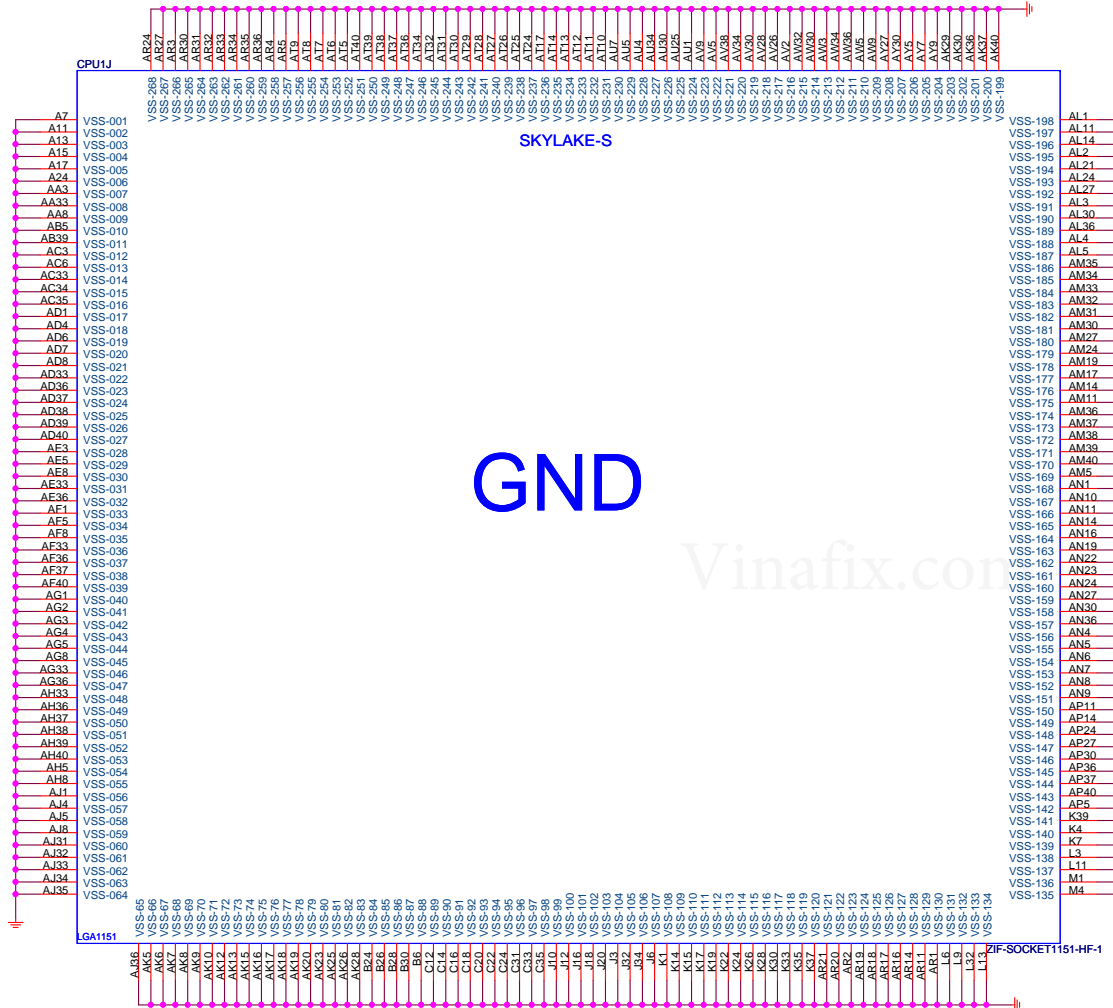


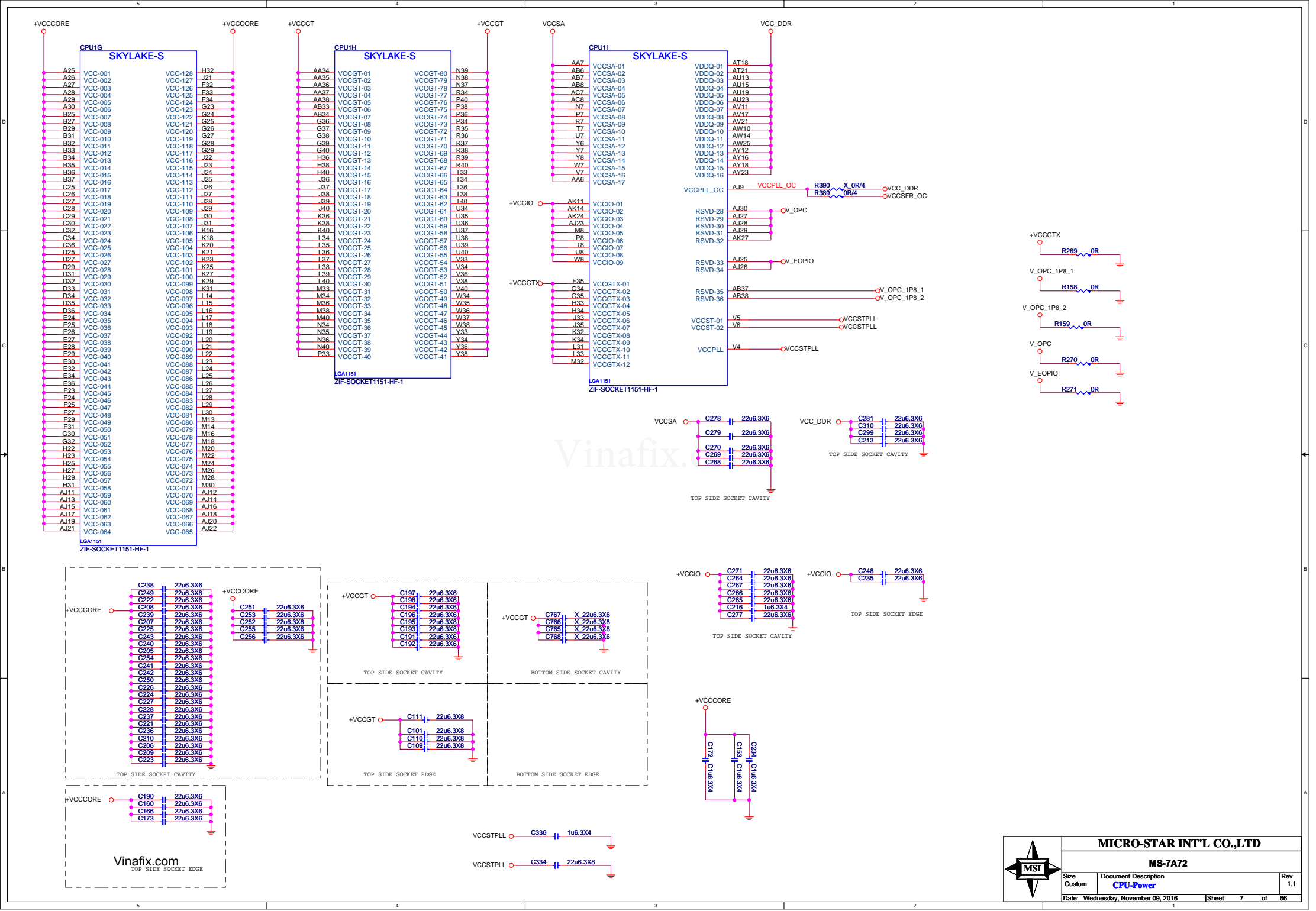
Close CPU <1100 mil  
1000 mil < CPU\_XDP\_MBP0-1 < 6000 mil

2014.09.24  
CRB 1.0 update R29 change 20R

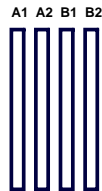












3 M\_DQS\_A\_DP7 >> M\_DQS\_A\_DP7 278  
3 M\_DQS\_A\_DN7 >> M\_DQS\_A\_DN7 277  
  
3 M\_DQS\_A\_DP6 >> M\_DQS\_A\_DP6 267  
3 M\_DQS\_A\_DN6 >> M\_DQS\_A\_DN6 266  
  
3 M\_DQS\_A\_DP5 >> M\_DQS\_A\_DP5 256  
3 M\_DQS\_A\_DN5 >> M\_DQS\_A\_DN5 255  
  
3 M\_DQS\_A\_DP4 >> M\_DQS\_A\_DP4 245  
3 M\_DQS\_A\_DN4 >> M\_DQS\_A\_DN4 244  
  
3 M\_DQS\_A\_DP3 >> M\_DQS\_A\_DP3 186  
3 M\_DQS\_A\_DN3 >> M\_DQS\_A\_DN3 185  
  
3 M\_DQS\_A\_DP2 >> M\_DQS\_A\_DP2 175  
3 M\_DQS\_A\_DN2 >> M\_DQS\_A\_DN2 174  
  
3 M\_DQS\_A\_DP1 >> M\_DQS\_A\_DP1 164  
3 M\_DQS\_A\_DN1 >> M\_DQS\_A\_DN1 163  
  
3 M\_DQS\_A\_DP0 >> M\_DQS\_A\_DP0 153  
3 M\_DQS\_A\_DN0 >> M\_DQS\_A\_DN0 152  
  
3 M\_CK\_A\_DP1 >> M\_CK\_A\_DP1 218  
3 M\_CK\_A\_DN1 >> M\_CK\_A\_DN1 219  
  
3 M\_CK\_A\_DP0 >> M\_CK\_A\_DP0 74  
3 M\_CK\_A\_DN0 >> M\_CK\_A\_DN0 75

× 235 C2  
× 237 S3\_N\_C1  
× 93 S2\_N\_C0  
  
3 M\_CS#\_A1 >> 89 S1\_N  
3 M\_CS#\_A0 >> 84 S0\_N  
  
3 M\_CKE\_A1 >> 203 CKE1  
3 M\_CKE\_A0 >> 60 CKE0  
  
3 M\_ODT\_A1 >> 91 ODT-1  
3 M\_ODT\_A0 >> 87 ODT-0  
  
× 199 CB-7  
× 54 CB-6  
× 192 CB-5  
× 47 CB-4  
× 201 CB-3  
× 56 CB-2  
× 194 CB-1  
× 49 CB-0  
  
DIMM\_RESET# 58 RESET\_N  
DIMM1\_EVENT 78 EVENT\_N  
3 M\_ALERT\_A\_N >> 208 ALERT\_N  
3 M\_ACT\_A\_N >> 62 ACT\_N  
3 M\_PARITY\_A >> 222 PAR  
  
× 230 SAVE\_N\_NC  
  
× 144 RFU-0  
× 205 RFU-1  
× 227 RFU-2

VCC\_DDR  
R256 470R1%0402  
12 DRAM\_RESET# >> R246 OR DIMM\_RESET# >> DIMM\_RESET# 9  
Vinafix.com  
C167 X\_0.1u16X/4

VCC\_DDR  
DIMMA1A  
51 DQS17P  
52 DQS17N  
132 DQS16P  
133 DQS16N  
121 DQS15P  
122 DQS15N  
110 DQS14P  
111 DQS14N  
99 DQS13P  
100 DQS13N  
40 DQS12P  
41 DQS12N  
29 DQS11P  
30 DQS11N  
18 DQS10P  
19 DQS10N  
7 DQS9P  
8 DQS9N  
197 DQS8P  
198 DQS8N  
278 DQS7P  
277 DQS7N  
267 DQS6P  
266 DQS6N  
256 DQS5P  
255 DQS5N  
245 DQS4P  
244 DQS4N  
186 DQS3P  
185 DQS3N  
175 DQS2P  
174 DQS2N  
164 DQS1P  
163 DQS1N  
153 DQS0P  
152 DQS0N  
218 CK1P  
219 CK1N  
74 CK0P  
75 CK0N  
235 C2  
237 S3\_N\_C1  
93 S2\_N\_C0  
89 S1\_N  
84 S0\_N  
203 CKE1  
60 CKE0  
91 ODT-1  
87 ODT-0  
199 CB-7  
54 CB-6  
192 CB-5  
47 CB-4  
201 CB-3  
56 CB-2  
194 CB-1  
49 CB-0  
58 RESET\_N  
78 EVENT\_N  
208 ALERT\_N  
62 ACT\_N  
222 PAR  
230 SAVE\_N\_NC  
144 RFU-0  
205 RFU-1  
227 RFU-2  
DDRIV-288P\_BLACK-RH-21  
DIMM1 (CHANNEL-A)  
ADDRESS = 0:0 [SA1:SA0]

DQ-63 280 M\_DATA\_A57  
DQ-62 135 M\_DATA\_A59  
DQ-61 273 M\_DATA\_A61  
DQ-60 128 M\_DATA\_A56  
DQ-59 282 M\_DATA\_A60  
DQ-58 137 M\_DATA\_A62  
DQ-57 275 M\_DATA\_A58  
DQ-56 130 M\_DATA\_A63  
DQ-55 269 M\_DATA\_A55  
DQ-54 124 M\_DATA\_A53  
DQ-53 262 M\_DATA\_A48  
DQ-52 117 M\_DATA\_A50  
DQ-51 271 M\_DATA\_A49  
DQ-50 126 M\_DATA\_A51  
DQ-49 264 M\_DATA\_A52  
DQ-48 119 M\_DATA\_A54  
DQ-47 258 M\_DATA\_A42  
DQ-46 113 M\_DATA\_A46  
DQ-45 251 M\_DATA\_A40  
DQ-44 106 M\_DATA\_A41  
DQ-43 260 M\_DATA\_A43  
DQ-42 115 M\_DATA\_A47  
DQ-41 253 M\_DATA\_A44  
DQ-40 108 M\_DATA\_A45  
DQ-39 247 M\_DATA\_A39  
DQ-38 102 M\_DATA\_A38  
DQ-37 240 M\_DATA\_A37  
DQ-36 95 M\_DATA\_A36  
DQ-35 249 M\_DATA\_A35  
DQ-34 104 M\_DATA\_A34  
DQ-33 97 M\_DATA\_A33  
DQ-32 188 M\_DATA\_A27  
DQ-31 43 M\_DATA\_A30  
DQ-30 181 M\_DATA\_A25  
DQ-29 36 M\_DATA\_A28  
DQ-28 190 M\_DATA\_A31  
DQ-27 45 M\_DATA\_A26  
DQ-26 183 M\_DATA\_A24  
DQ-25 38 M\_DATA\_A29  
DQ-24 177 M\_DATA\_A23  
DQ-23 32 M\_DATA\_A19  
DQ-22 170 M\_DATA\_A20  
DQ-21 25 M\_DATA\_A21  
DQ-20 179 M\_DATA\_A18  
DQ-19 34 M\_DATA\_A22  
DQ-18 172 M\_DATA\_A16  
DQ-17 27 M\_DATA\_A17  
DQ-16 166 M\_DATA\_A15  
DQ-15 21 M\_DATA\_A11  
DQ-14 159 M\_DATA\_A8  
DQ-13 14 M\_DATA\_A9  
DQ-12 168 M\_DATA\_A14  
DQ-11 23 M\_DATA\_A10  
DQ-10 161 M\_DATA\_A13  
DQ-9 16 M\_DATA\_A12  
DQ-8 155 M\_DATA\_A7  
DQ-7 10 M\_DATA\_A3  
DQ-6 148 M\_DATA\_A4  
DQ-5 3 M\_DATA\_A1  
DQ-4 157 M\_DATA\_A2  
DQ-3 12 M\_DATA\_A6  
DQ-2 150 M\_DATA\_A0  
DQ-1 5 M\_DATA\_A5  
BG-1 207 M\_BG\_A\_1  
BG-0 63 M\_BG\_A\_0  
BA-1 224 M\_BA\_A\_1  
BA-0 81 M\_BA\_A\_0  
A17 234 M\_MAA\_A16  
A16\_RAS\_N 86 M\_MAA\_A15  
A15\_CAS\_N 228 M\_MAA\_A14  
A14\_WE\_N 232 M\_MAA\_A13  
A13 66 M\_MAA\_A12  
A12 210 M\_MAA\_A11  
A11 225 M\_MAA\_A10  
A10 66 M\_MAA\_A9  
A9 88 M\_MAA\_A8  
A8 211 M\_MAA\_A7  
A7 69 M\_MAA\_A6  
A6 213 M\_MAA\_A5  
A5 214 M\_MAA\_A4  
A4 71 M\_MAA\_A3  
A3 216 M\_MAA\_A2  
A2 72 M\_MAA\_A1  
A1 79 M\_MAA\_A0  
SCL 141 SMB\_CLK\_DIMM  
SDA 285 SMB\_DATA\_DIMM  
SA-2 238  
SA-1 140  
SA-0 139  
DIMM1 (CHANNEL-A)  
ADDRESS = 0:0 [SA1:SA0]

12 SMBCLK\_VCC >> SMBCLK\_VCC R387 OR SMB\_CLK\_DIMM >> SMB\_CLK\_DIMM 9  
12 SMBDATA\_VCC >> SMBDATA\_VCC R388 OR SMB\_DATA\_DIMM >> SMB\_DATA\_DIMM 9

VCC\_DDR  
DIMMA2A  
51 DQS17P  
52 DQS17N  
132 DQS16P  
133 DQS16N  
121 DQS15P  
122 DQS15N  
110 DQS14P  
111 DQS14N  
99 DQS13P  
100 DQS13N  
40 DQS12P  
41 DQS12N  
29 DQS11P  
30 DQS11N  
18 DQS10P  
19 DQS10N  
7 DQS9P  
8 DQS9N  
197 DQS8P  
198 DQS8N  
278 DQS7P  
277 DQS7N  
267 DQS6P  
266 DQS6N  
256 DQS5P  
255 DQS5N  
245 DQS4P  
244 DQS4N  
186 DQS3P  
185 DQS3N  
175 DQS2P  
174 DQS2N  
164 DQS1P  
163 DQS1N  
153 DQS0P  
152 DQS0N  
218 CK1P  
219 CK1N  
74 CK0P  
75 CK0N  
235 C2  
237 S3\_N\_C1  
93 S2\_N\_C0  
89 S1\_N  
84 S0\_N  
203 CKE1  
60 CKE0  
91 ODT-1  
87 ODT-0  
199 CB-7  
54 CB-6  
192 CB-5  
47 CB-4  
201 CB-3  
56 CB-2  
194 CB-1  
49 CB-0  
58 RESET\_N  
78 EVENT\_N  
208 ALERT\_N  
62 ACT\_N  
222 PAR  
230 SAVE\_N\_NC  
144 RFU-0  
205 RFU-1  
227 RFU-2  
DDRIV-288P\_BLACK-RH-21  
DIMM2 (CHANNEL-A)  
ADDRESS = 0:1 [SA1:SA0]

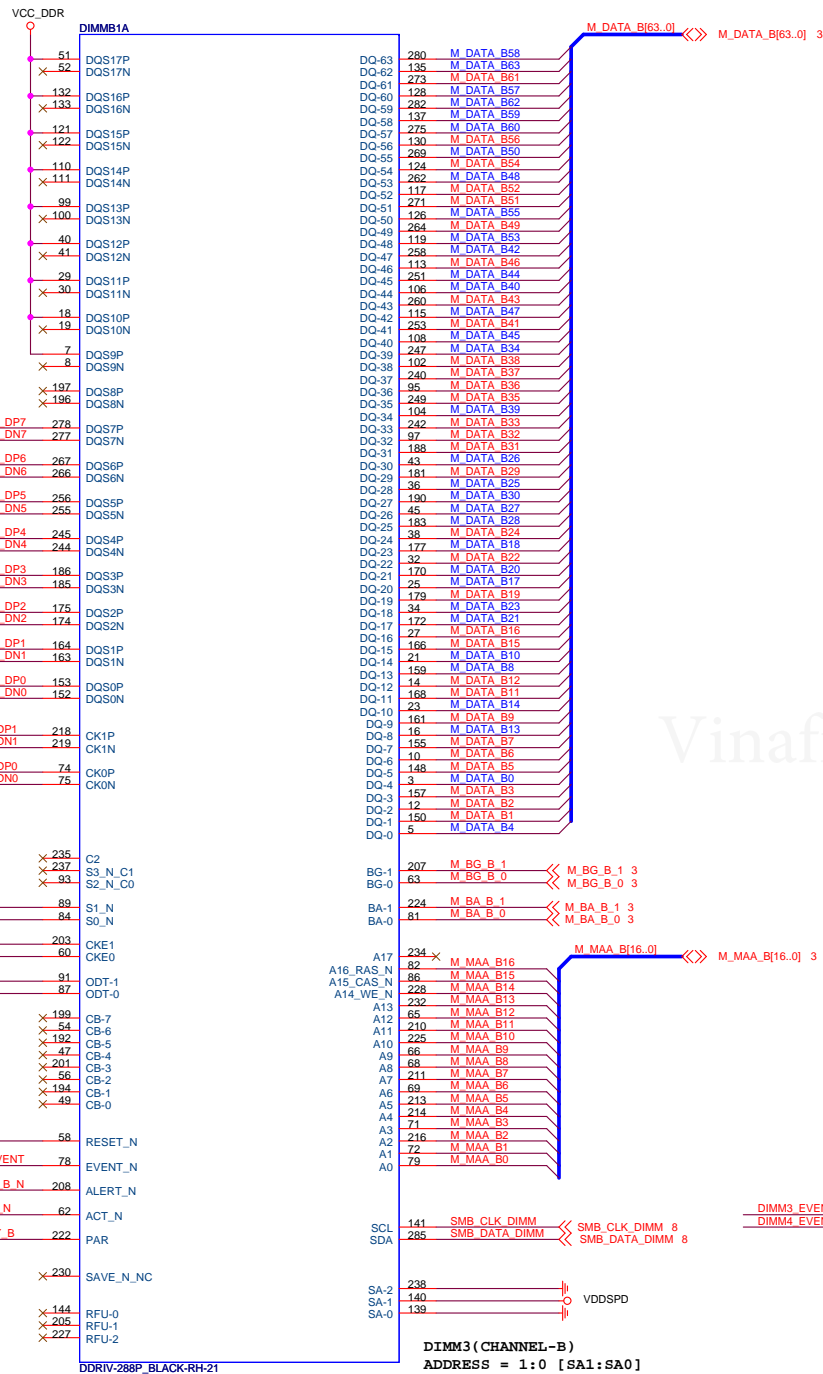
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3 M\_CK\_A\_DN3 >> M\_CK\_A\_DN3 219  
  
3 M\_CK\_A\_DP2 >> M\_CK\_A\_DP2 74  
3 M\_CK\_A\_DN2 >> M\_CK\_A\_DN2 75

3 M\_CS#\_A3 >> 89 S1\_N  
3 M\_CS#\_A2 >> 84 S0\_N  
  
3 M\_CKE\_A3 >> 203 CKE1  
3 M\_CKE\_A2 >> 60 CKE0  
  
3 M\_ODT\_A3 >> 91 ODT-1  
3 M\_ODT\_A2 >> 87 ODT-0  
  
× 199 CB-7  
× 54 CB-6  
× 192 CB-5  
× 47 CB-4  
× 201 CB-3  
× 56 CB-2  
× 194 CB-1  
× 49 CB-0  
58 RESET\_N  
78 EVENT\_N  
208 ALERT\_N  
62 ACT\_N  
222 PAR  
230 SAVE\_N\_NC  
144 RFU-0  
205 RFU-1  
227 RFU-2

VCC\_DDR  
DIMM1\_EVENT R277 240R/4/1%  
DIMM2\_EVENT R278 240R/4/1%  
DIMM2 (CHANNEL-A)  
ADDRESS = 0:1 [SA1:SA0]







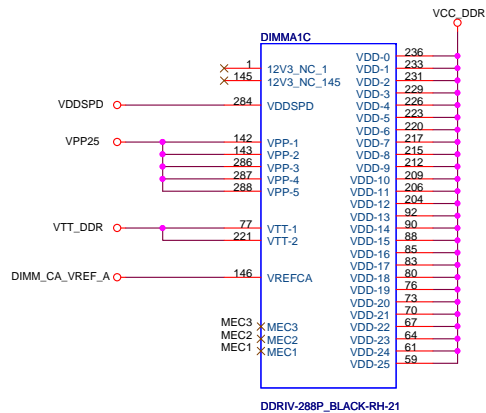
DIMM3 (CHANNEL-B)  
ADDRESS = 1:0 [SA1:SA0]

VCC\_DDR

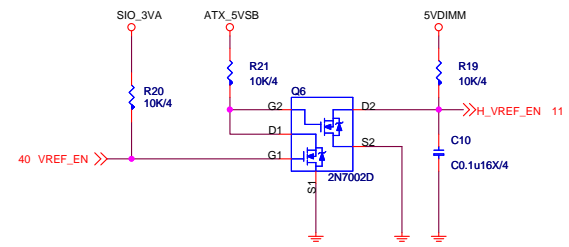
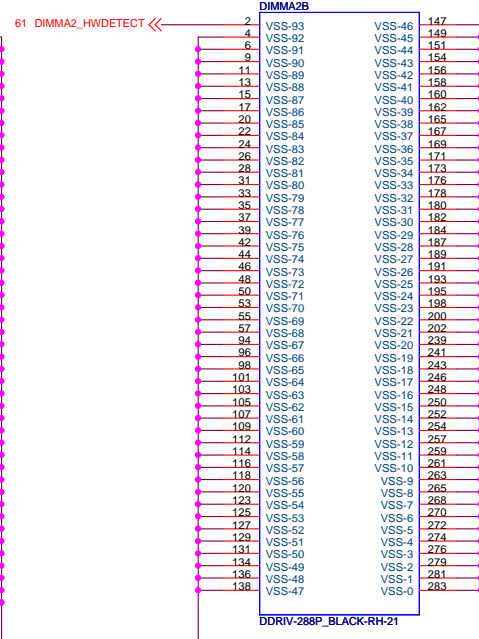
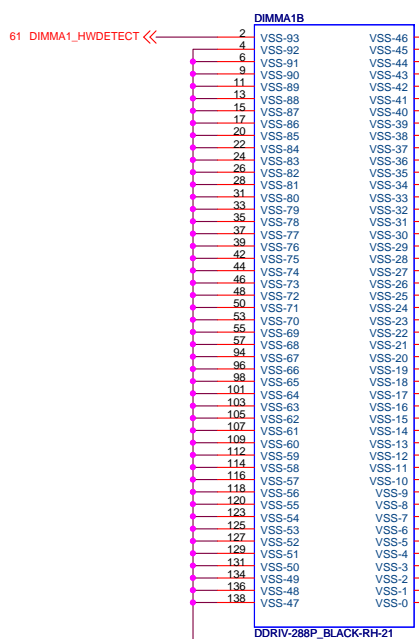
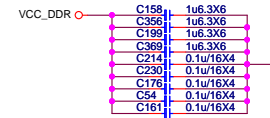
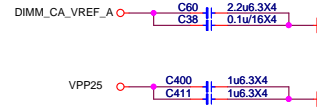
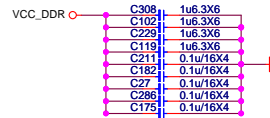
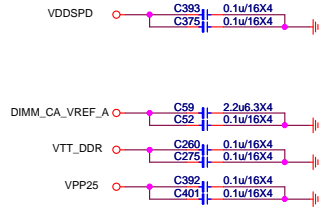
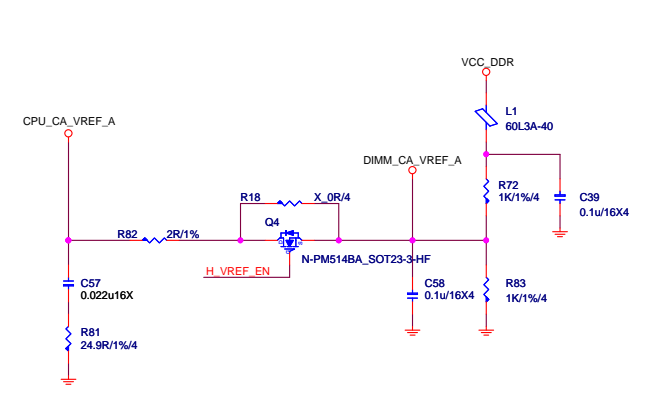
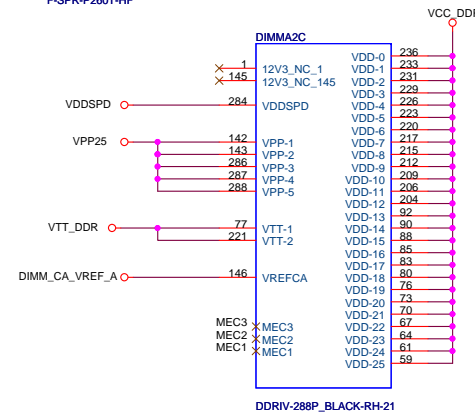
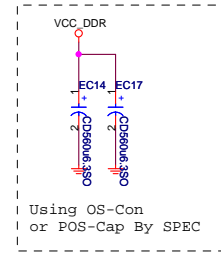
DIMM3 EVENT R279 240R/4/1%  
DIMM4 EVENT R280 240R/4/1%

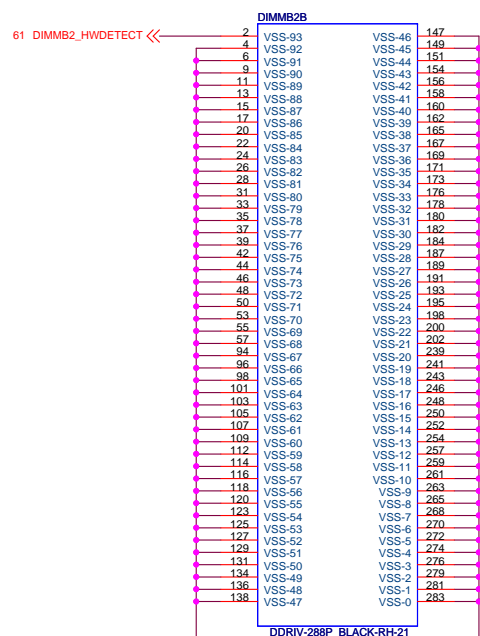
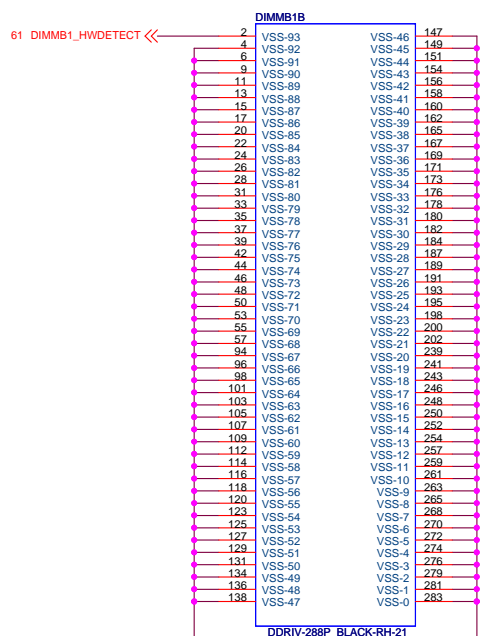
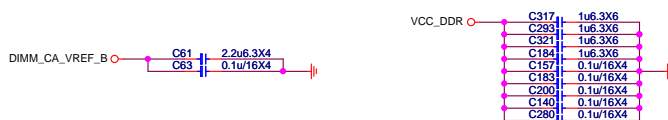
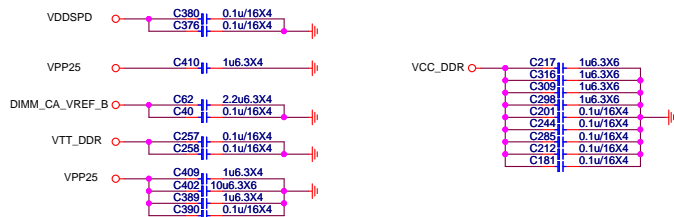
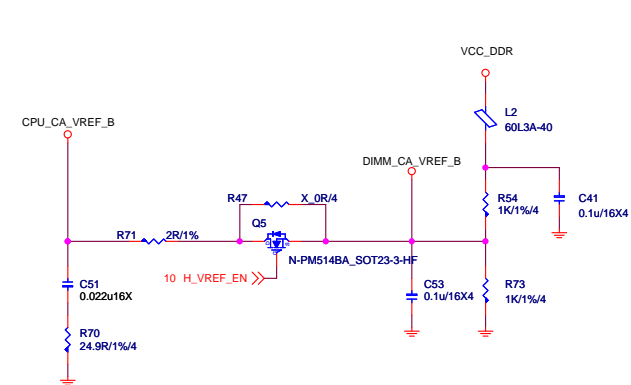
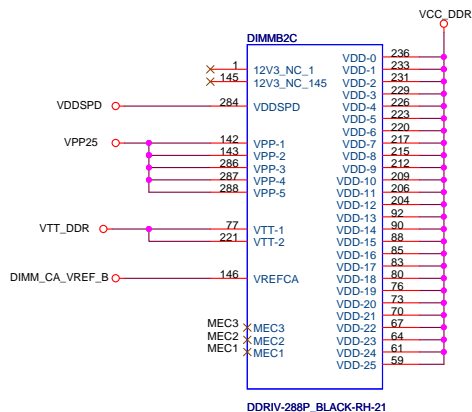
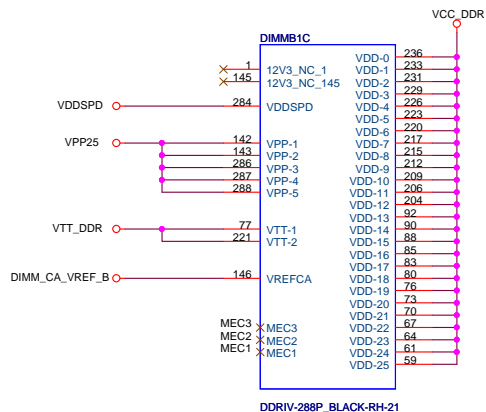


DIMM4 (CHANNEL-B)  
ADDRESS = 1:1 [SA1:SA0]

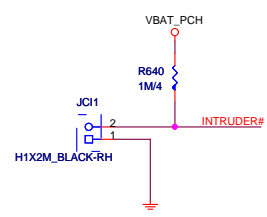
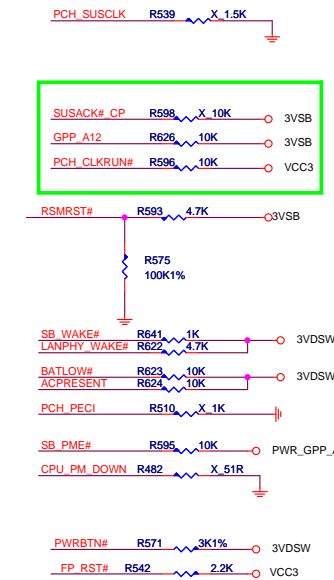
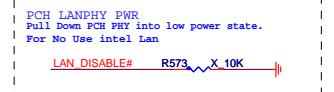
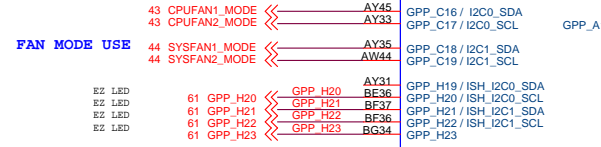
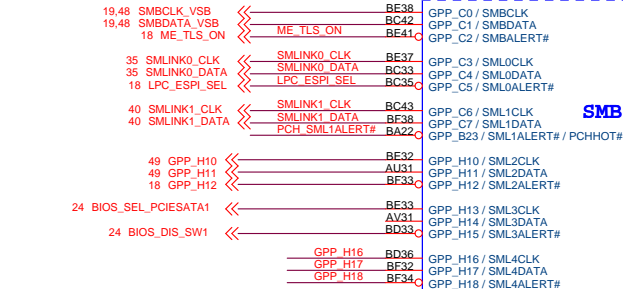
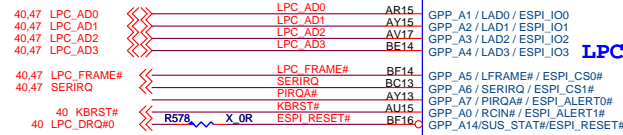


# DIMM SLOT PN BY SPEC

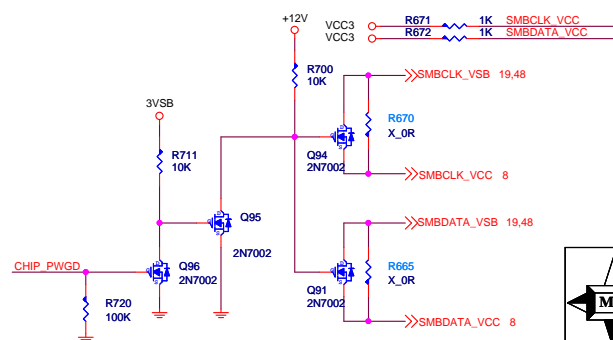
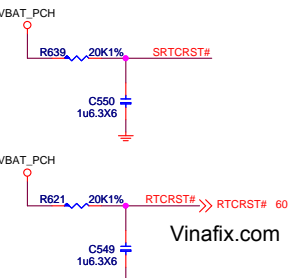




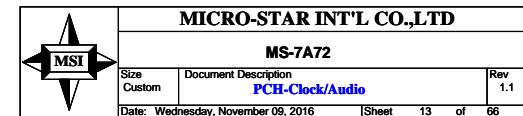
Vinafix.com

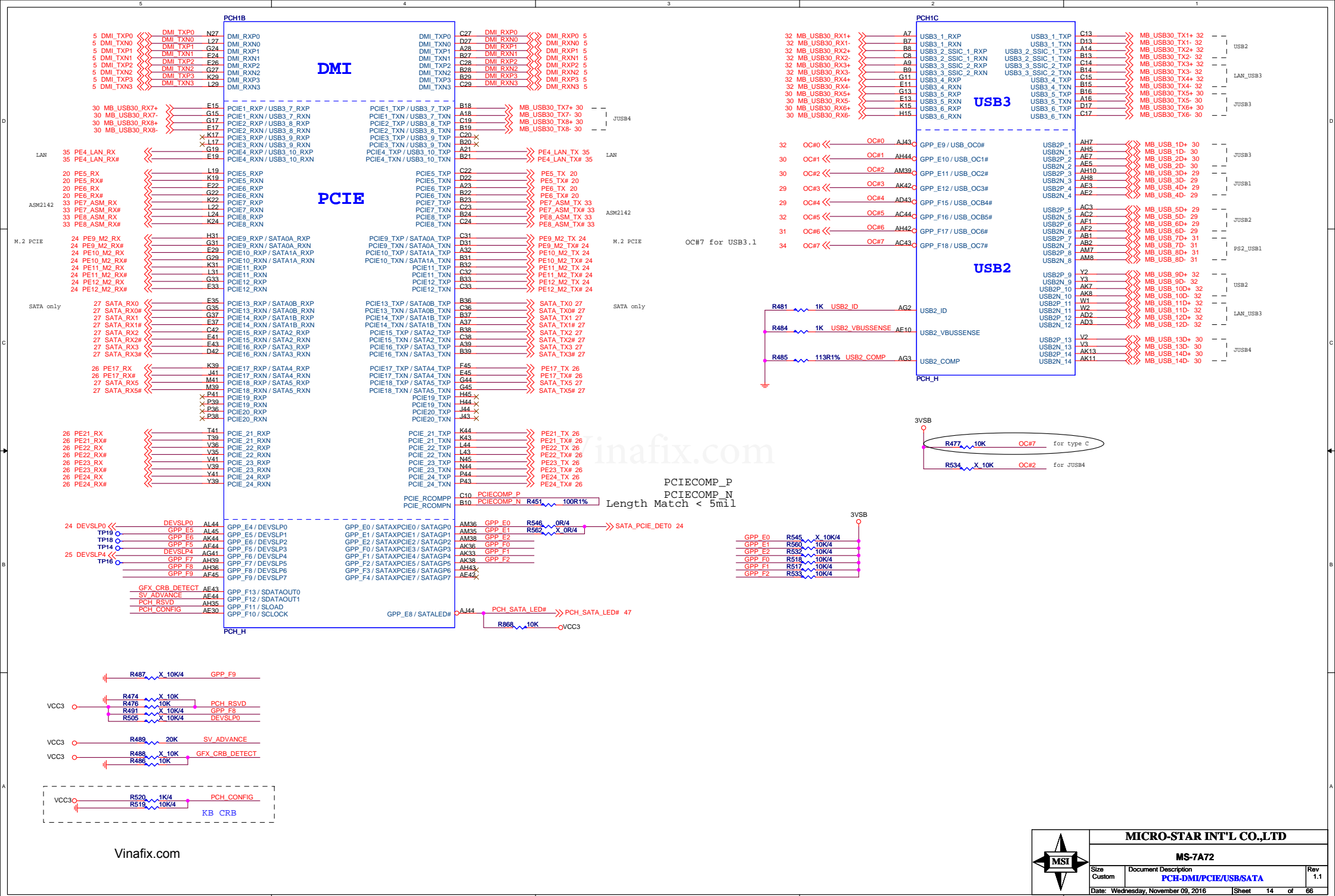


www.teknisi-indonesia.com



Close to PCH





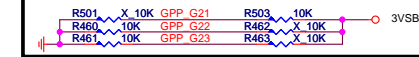
BIOS SHOW FAN FAULT Information USE

Default GPIO  
FAN MODE USE

BIOS SHOW FAN MODE Information USE

GPIO

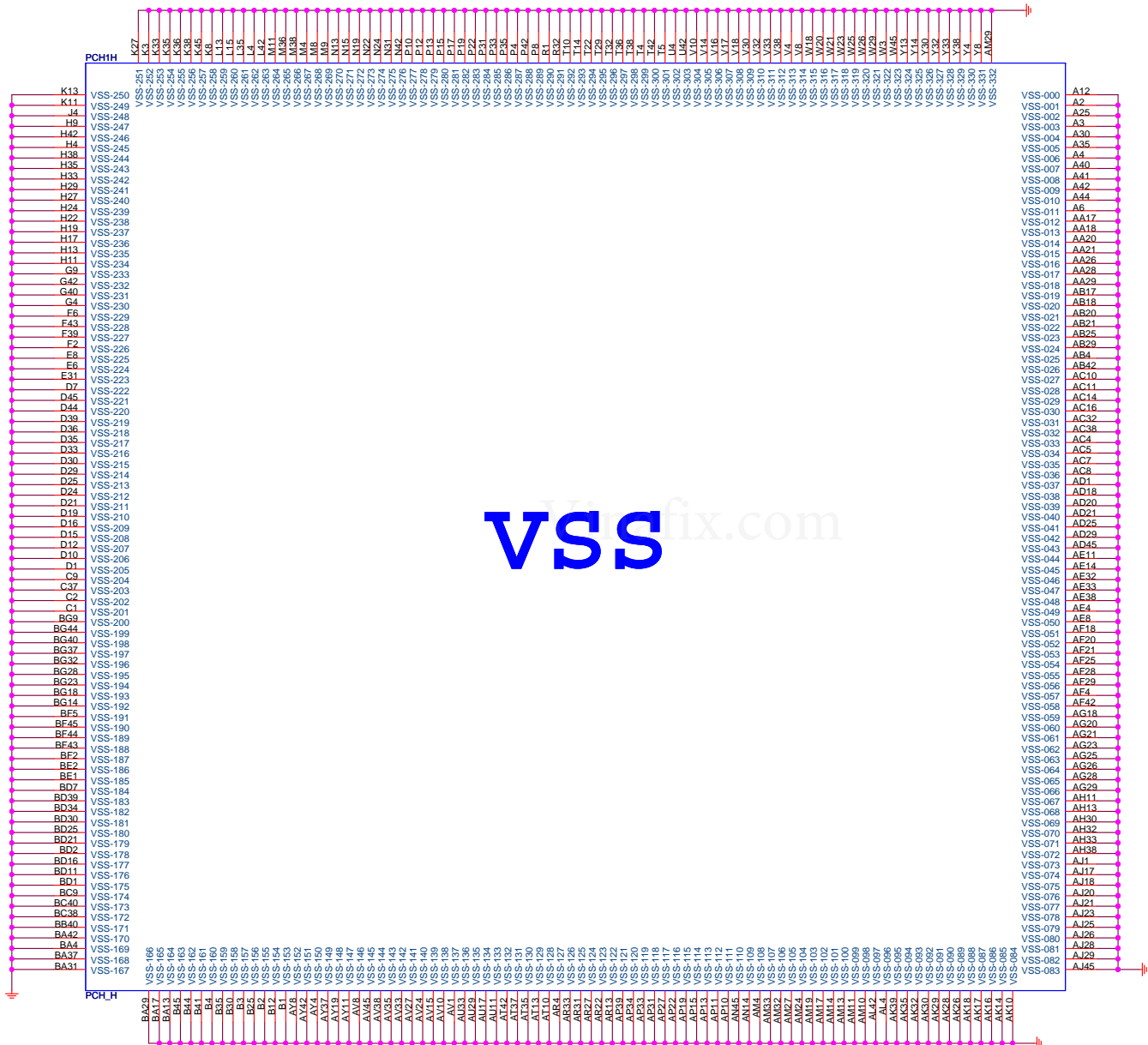
For BIOS BOM USE



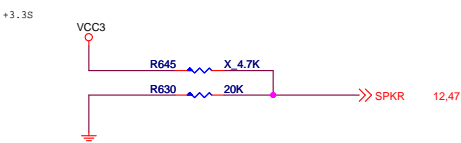
	GPP_G21	GPP_G22	GPP_G23
Z270	1	0	0
H270	0	1	0
B270	0	0	1





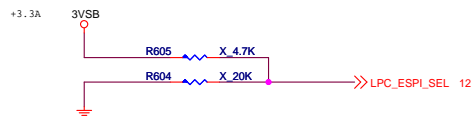


TOP Swap



Internal pull-down is disabled after PLTRST#

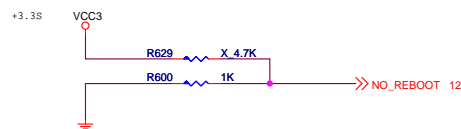
LPC eSPI Mode



0 : LPC  
1 : eSPI

Internal pull-down is disabled after RSMRST

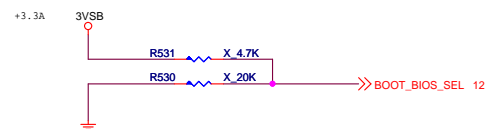
No Reboot



0 : DISABLE (Default)  
1 : ENABLE

Internal pull-down is disabled after PLTRST#

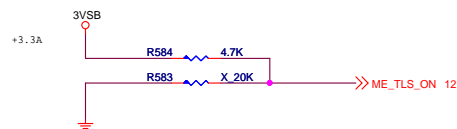
Boot BIOS



0 : SPI  
1 : LPC

Internal pull-down is disabled after PLTRST

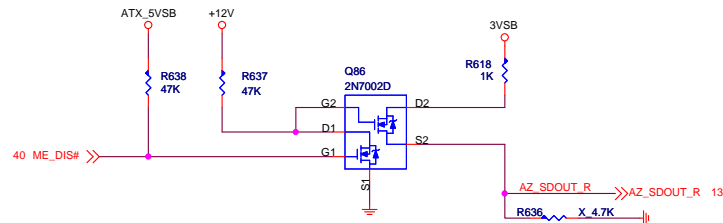
AMT and SBA with confidentiality



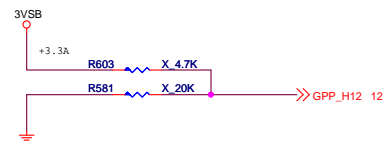
0 : DISABLE  
1 : ENABLE (Default)

Internal pull-down is disabled after RSMRST

HDA\_SDO



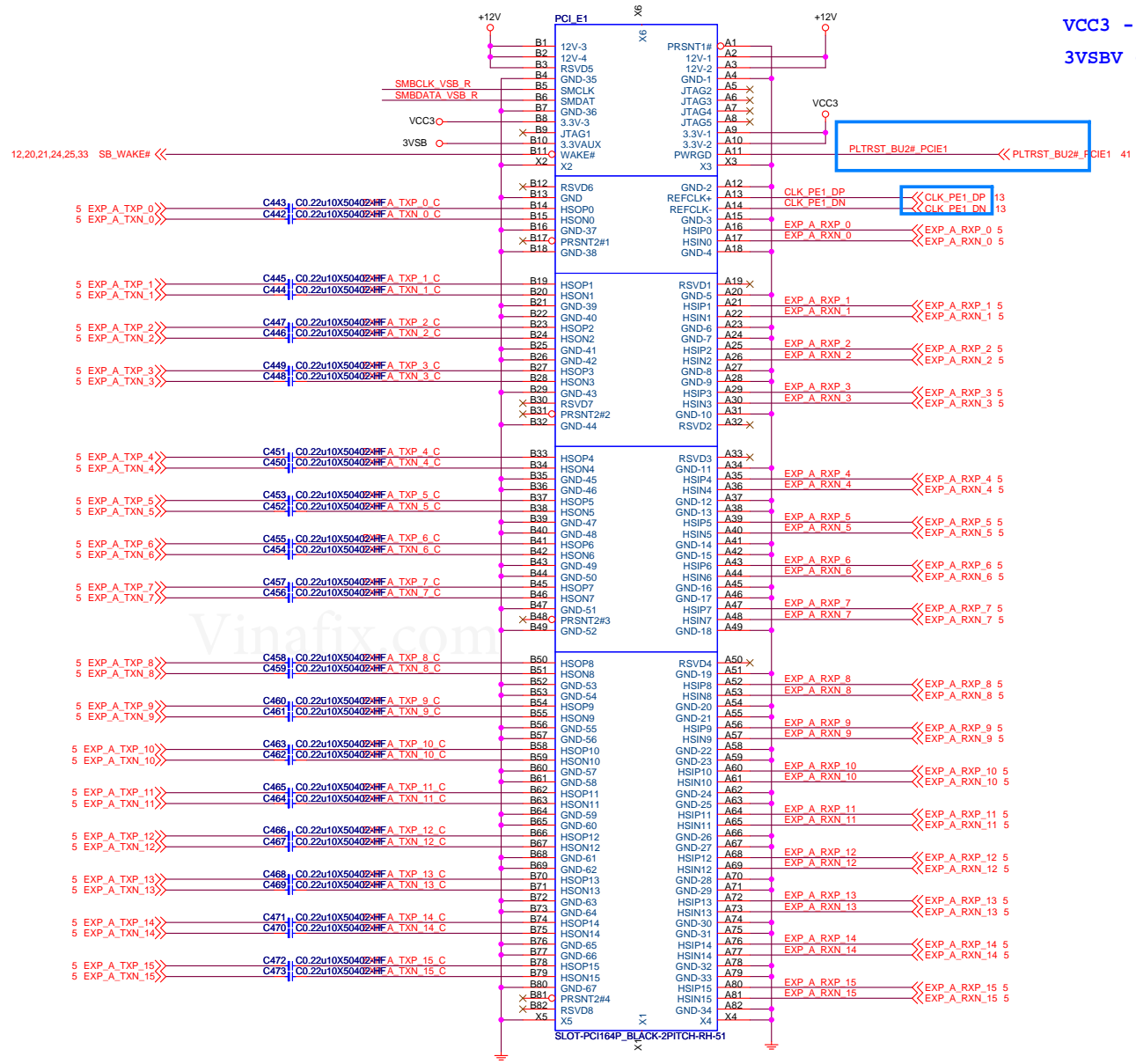
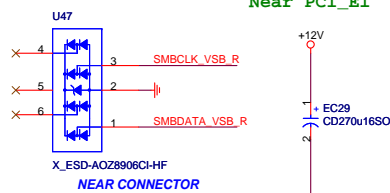
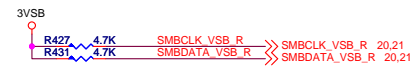
ESPI FLASH SHARING MODE

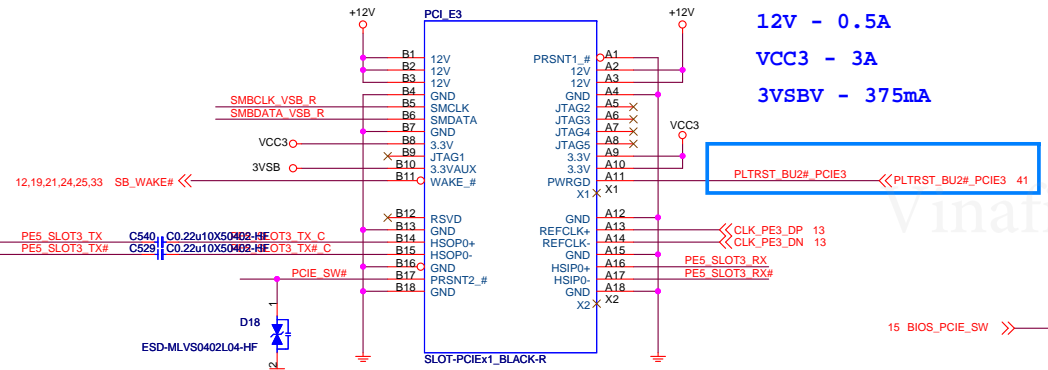
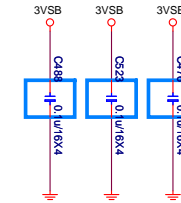
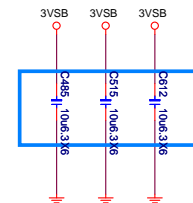
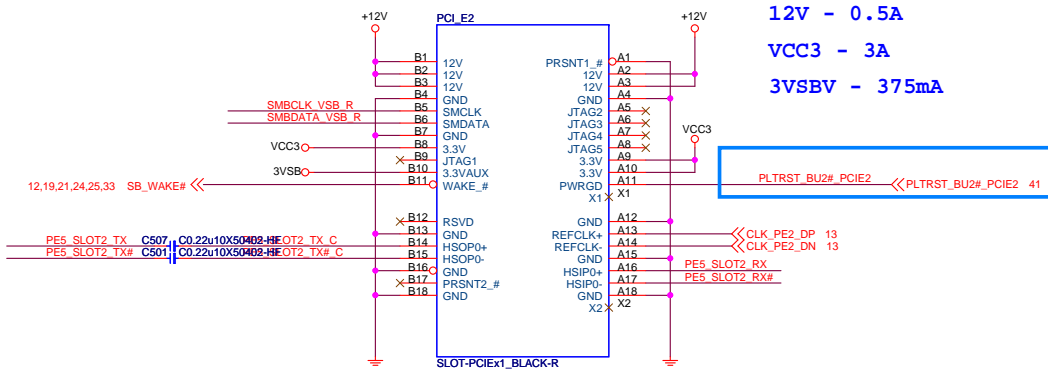


0 : MASTER ATTACHED FLASH SHARING  
1 : SLAVE ATTACHED FLASH SHARING

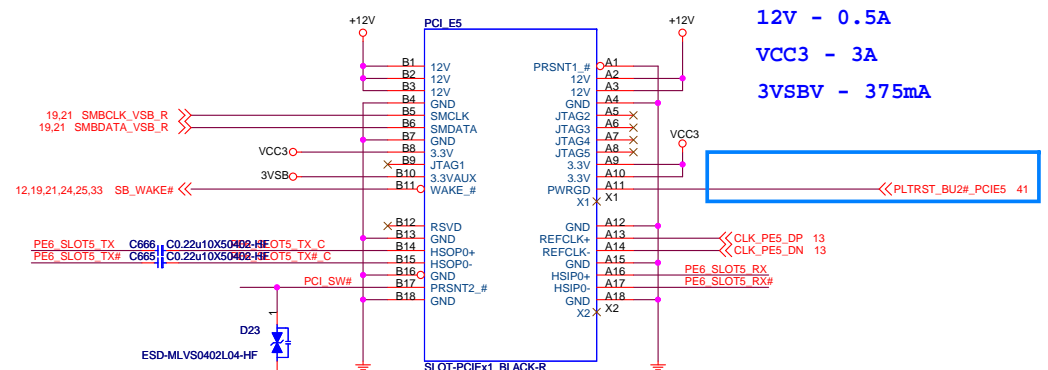
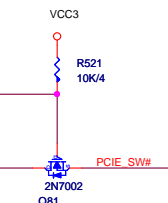
Internal pull-down is disabled after RSMRST

12V - 5.5A  
VCC3 - 3A  
3VSBV - 375mA

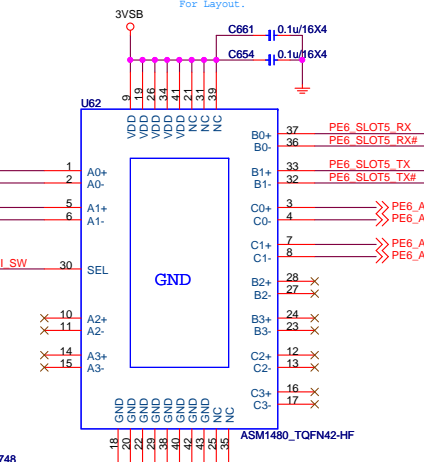
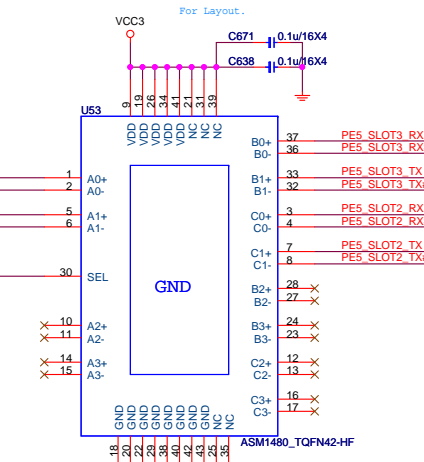
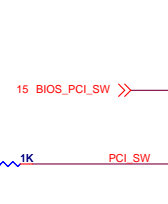




12,19,21,24,25,33 PCIE\_SW <<



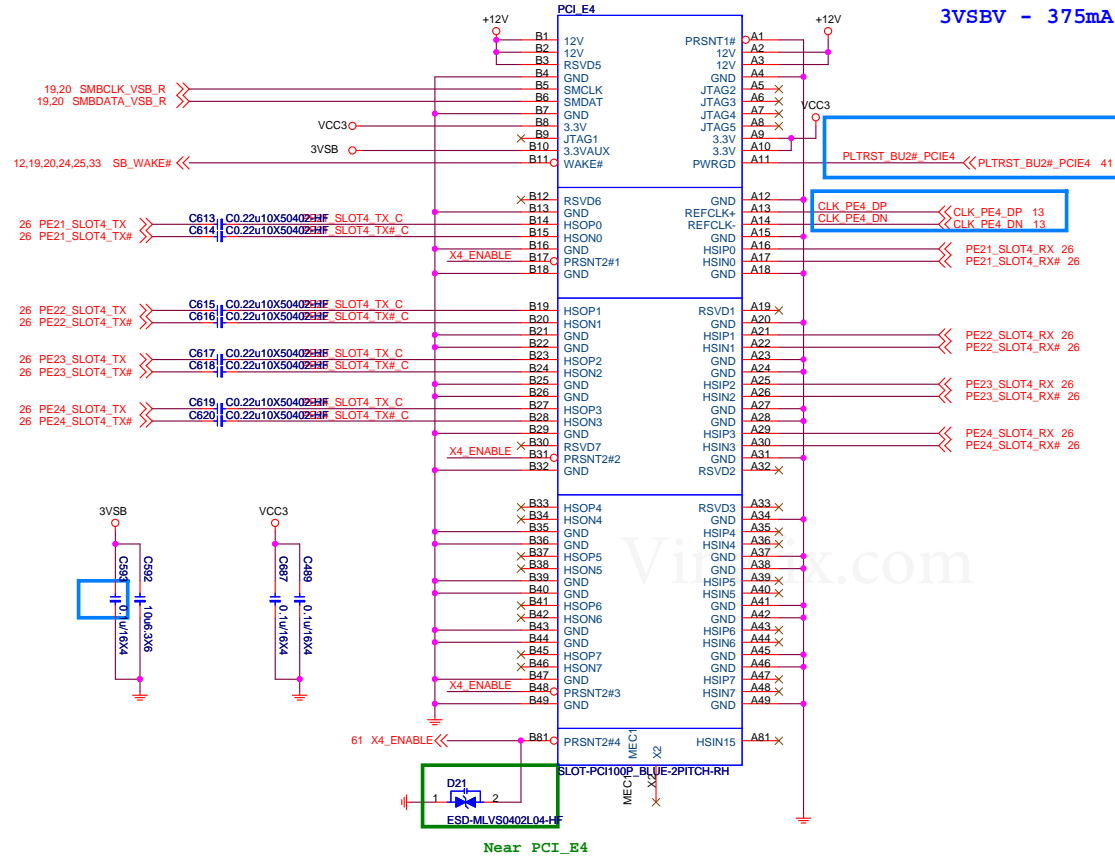
14 PE6\_RX <<  
14 PE6\_RX# <<  
14 PE6\_TX <<  
14 PE6\_TX# <<



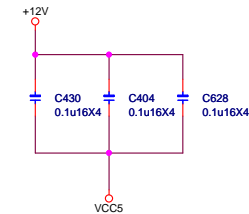
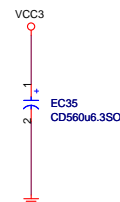
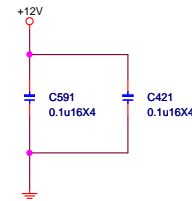
Vinafix.com

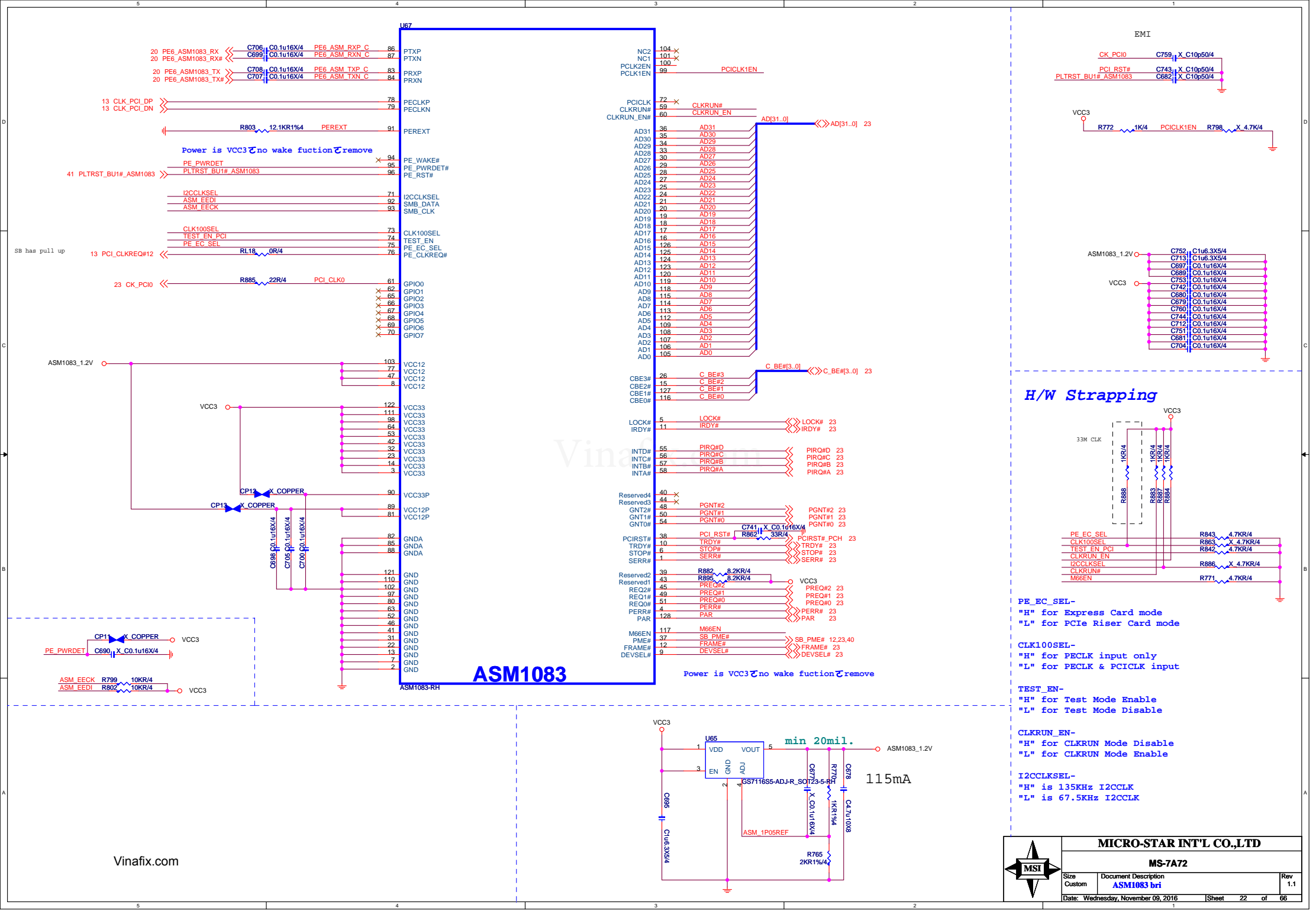
# PCI\_Express X4 slot

12V - 2.1A  
VCC3 - 3A  
3VSBV - 375mA



Near PCI\_E4



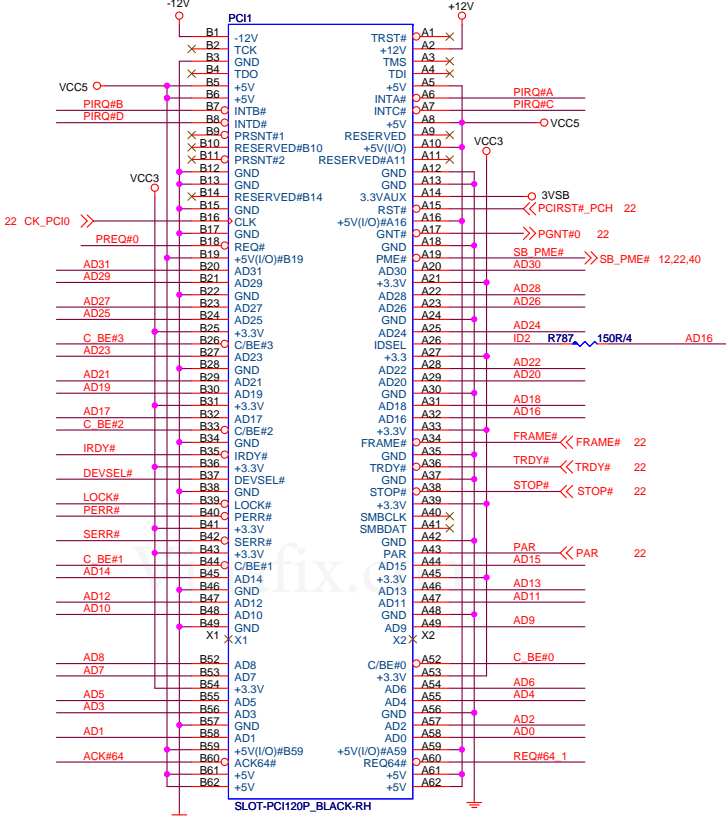




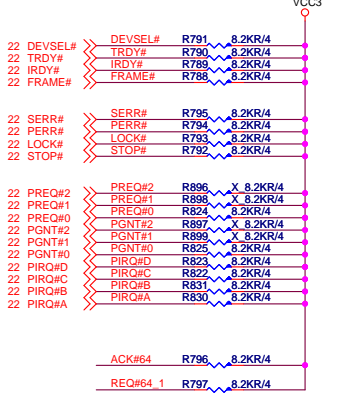
PCI

3.3Vaux:0.375\*2=0.75A(wake)  
0.02\*2=0.04A(no wake)  
VCC3 :7.6\*2=15.2A  
VCC5:5\*2=10A  
+12V:0.5\*2=1A  
-12V:0.1\*2=0.2A

AD[31..0] <<>> AD[31..0] 22  
C\_BE#[3..0] <<>> C\_BE#[3..0] 22

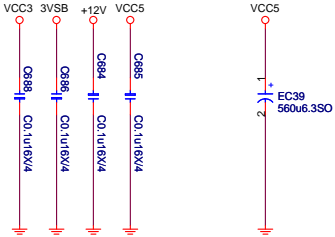


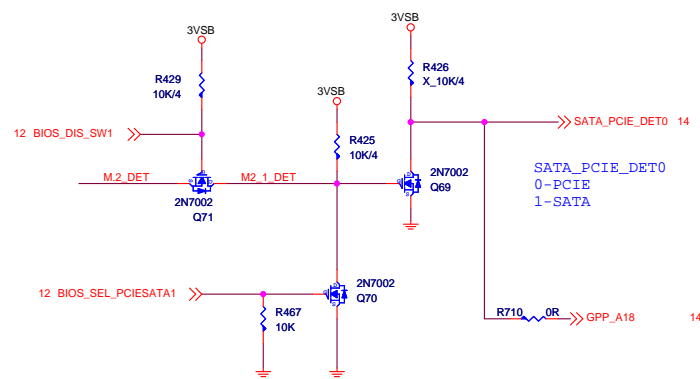
PCI PULL-UP / DOWN RESISTORS



IDSEL = AD16  
MASTER = REQ#0  
PIRQ#A

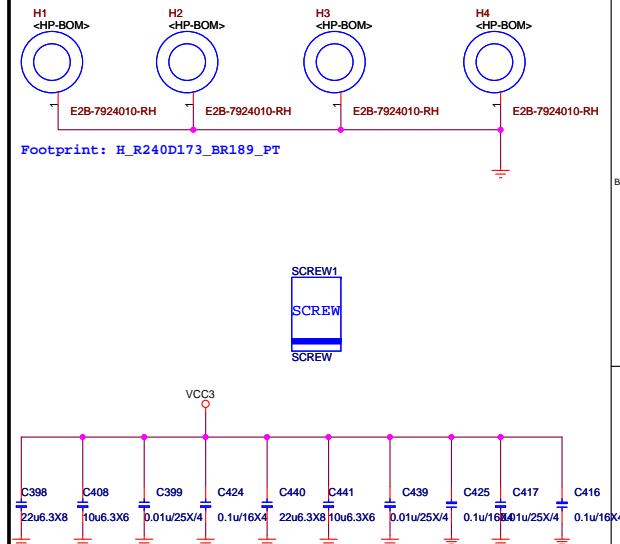
EMI:close pin





BIOS\_MODE

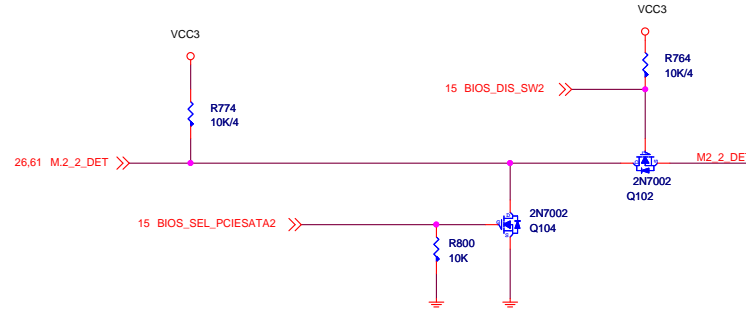
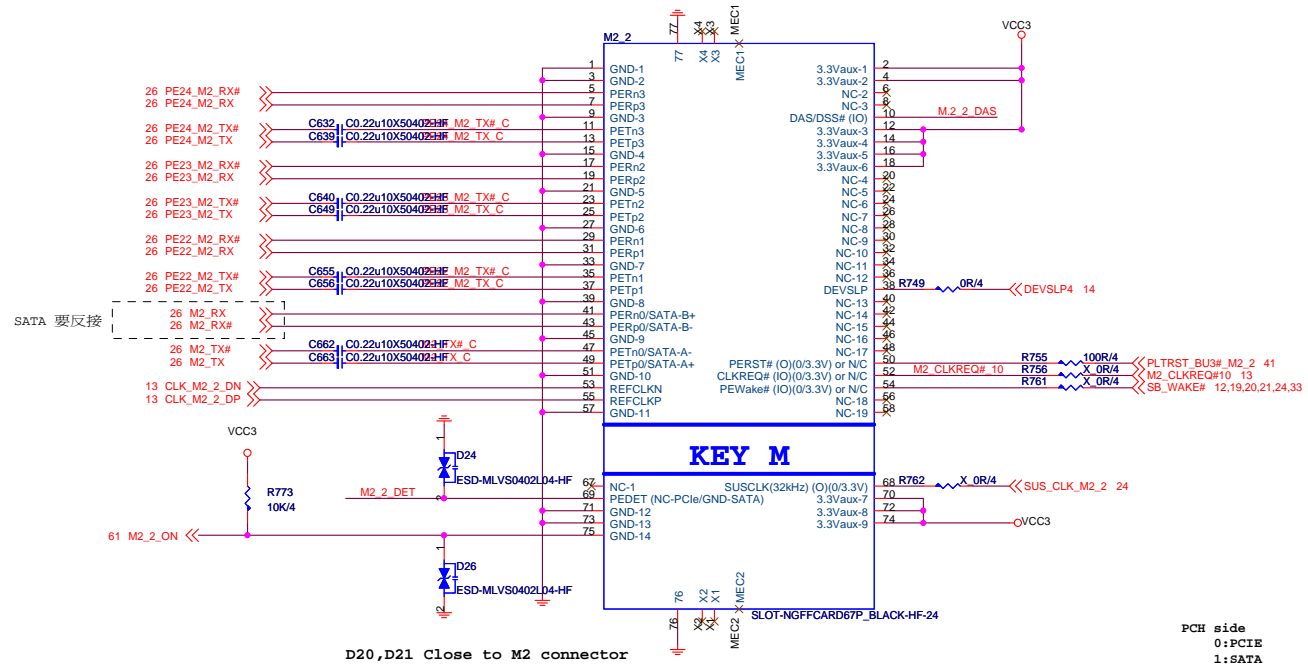
BIOS_DIS_SW	BIOS_SEL_PCIESATA1	Mode
0	1	M2-SATA
0	0	M2-PCIE
GPI	GPI	AUTO



2.5A

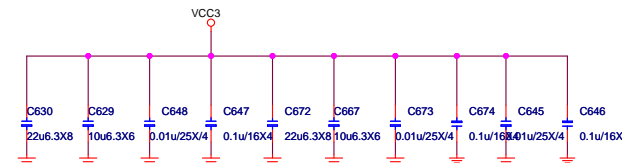
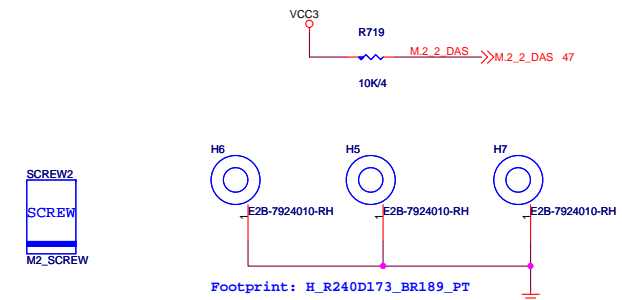
SATA 要反接

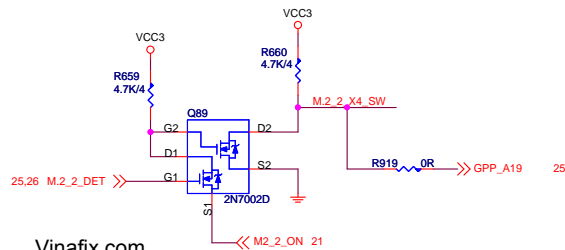
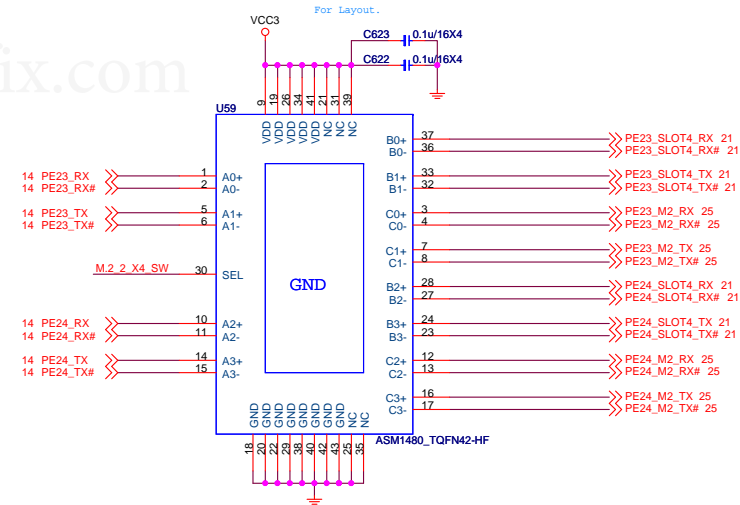
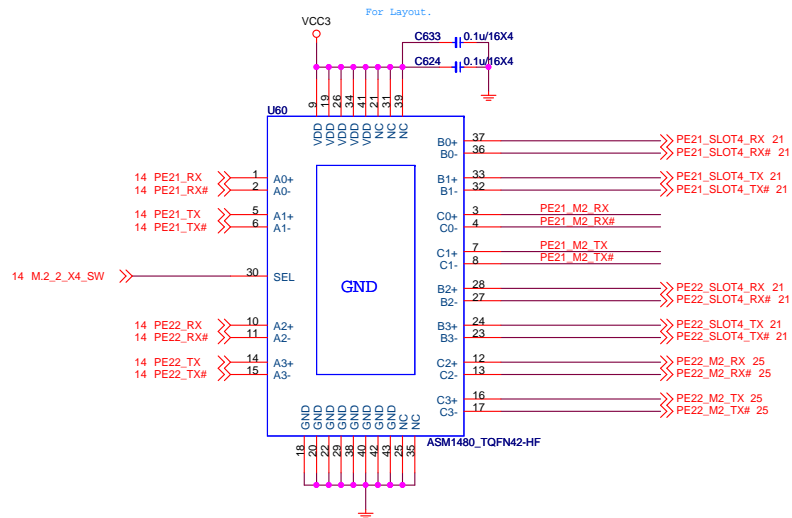
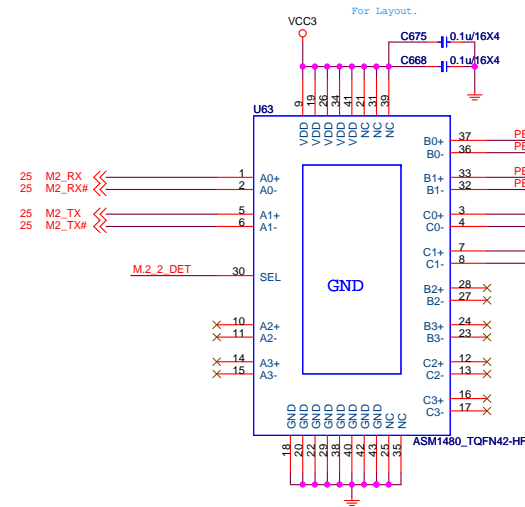
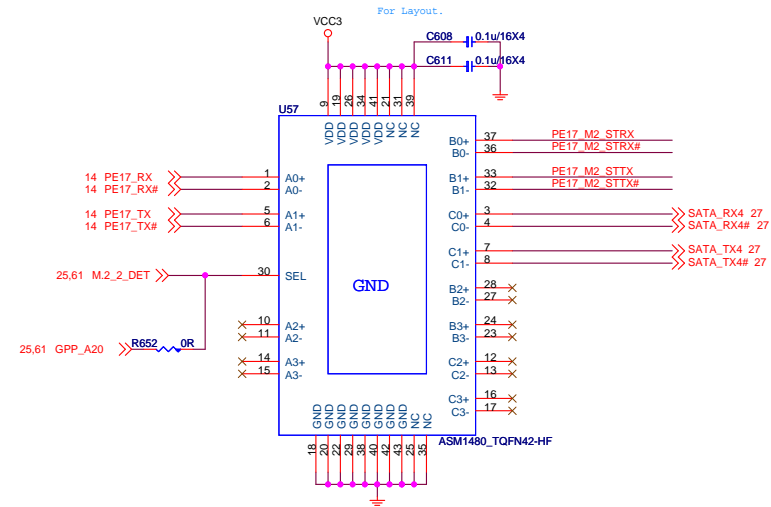
KEY M



#### BIOS\_MODE

BIOS_DIS_SW2	BIOS_SEL_PCIESATA2	Mode
1	0	M2-PCIE
0	1	X4 SL0L-PCIE
GPI	GPI	GPI





M.2_2_ON	M.2_2_X4_SW	M.2 SATA	M.2 PCIE	X4 SLOT	SATA5
V	V	X	X	V	V
X	X	X	V	X	V
X	V	V	X	V	X

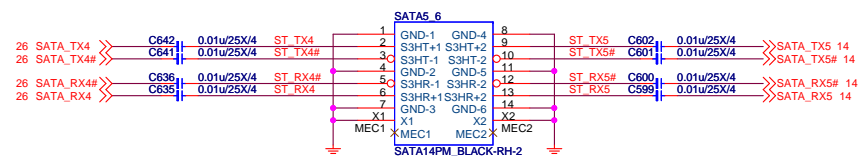
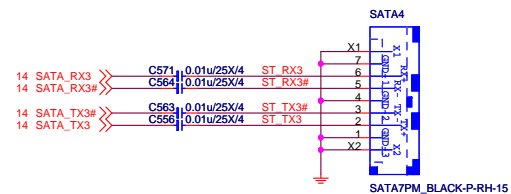
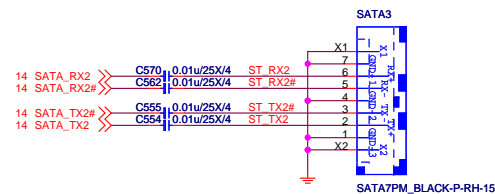
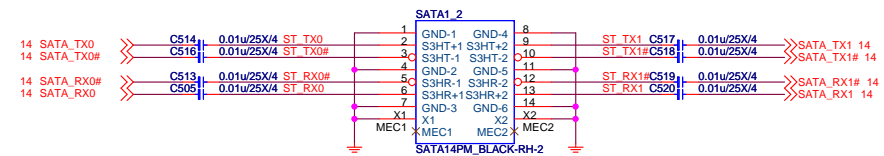


MICRO-STAR INT'L CO.,LTD

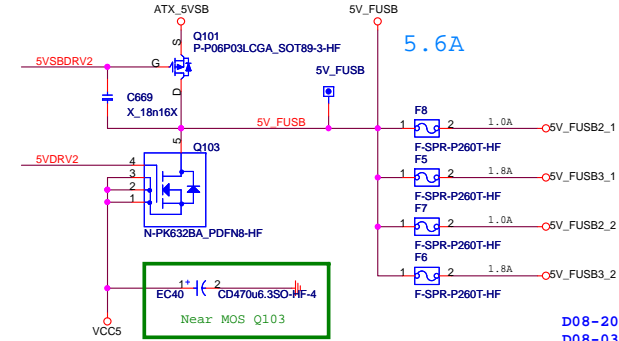
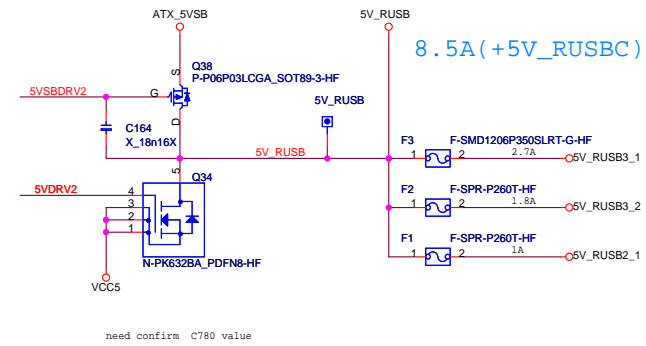
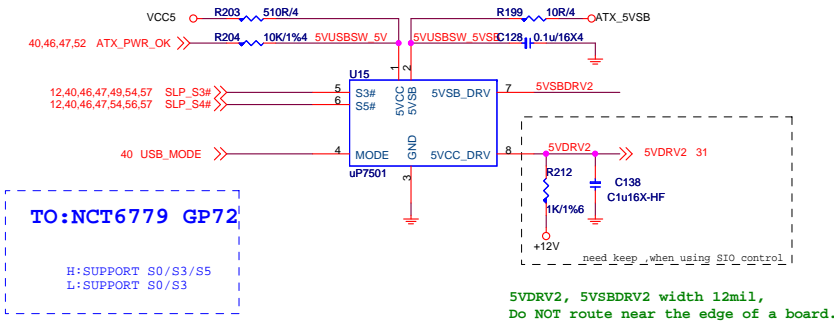
MS-7A72

Size	Document Description	Rev
Custom	M.2/SATA/PCIE SW	1.1

Date: Wednesday, November 09, 2016 Sheet 26 of 66



# REAR USB PORT POWER

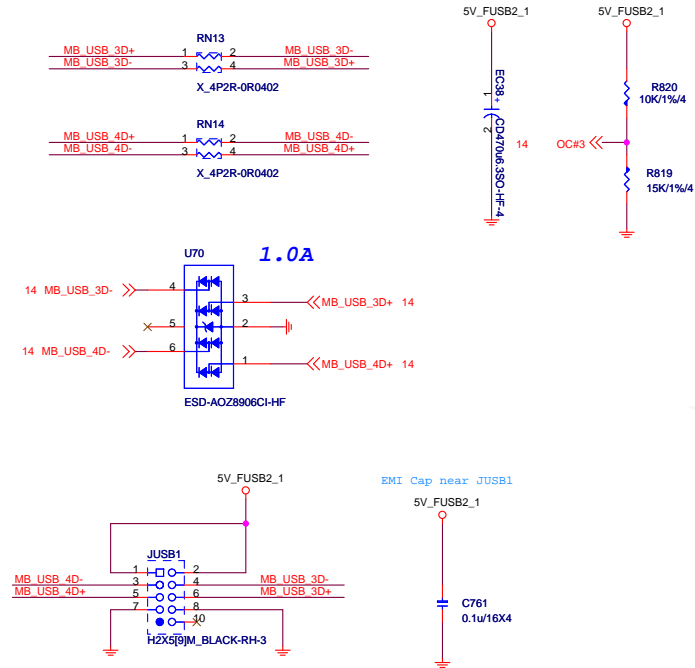


P-MOS  
D03-06P0319-N03

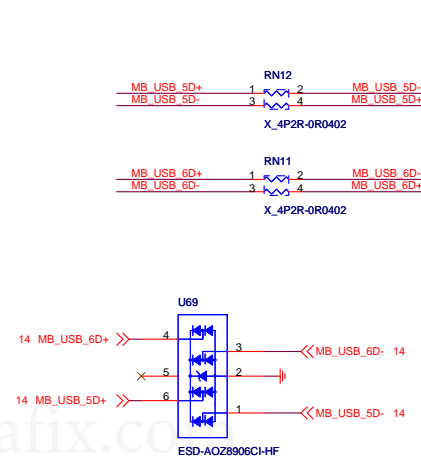
N-MOS  
D03-510BA0C-N03  
D03-3056M00-U47  
D03-4C05N03-O05  
D03-3830D09-N47  
D03-632BA0C-N03

D08-2000400-P16 (Itrip=3.5A; 0.003ohm)  
D08-0301000-P16 (Itrip=2.6A; 0.015ohm)

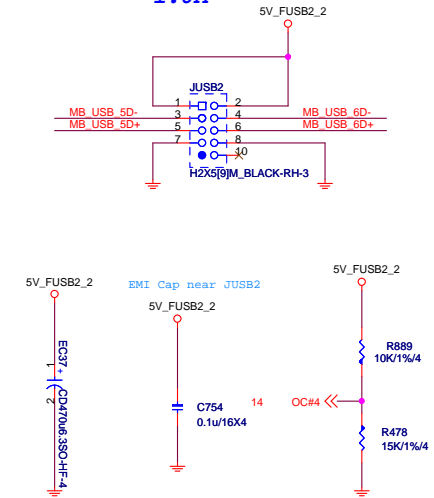
# FRONT USB2.0 PORT 3,4



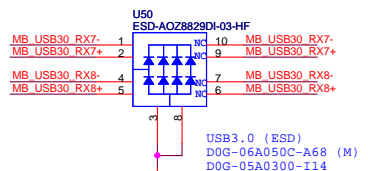
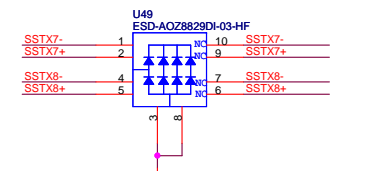
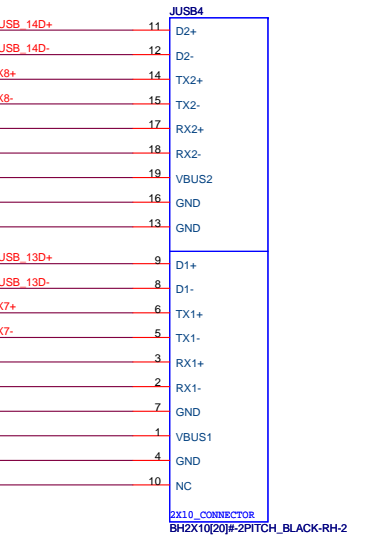
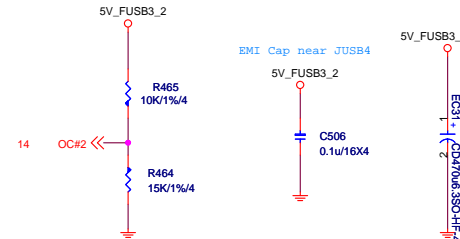
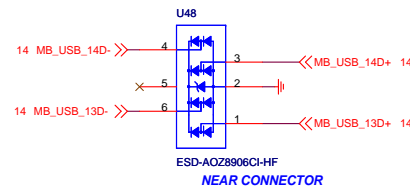
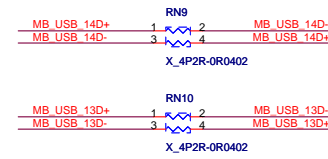
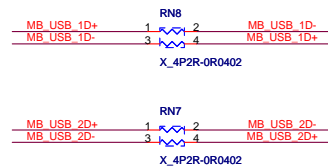
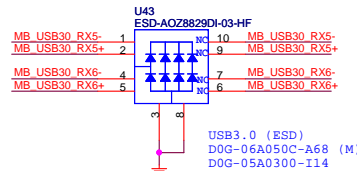
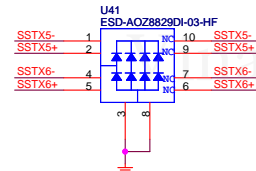
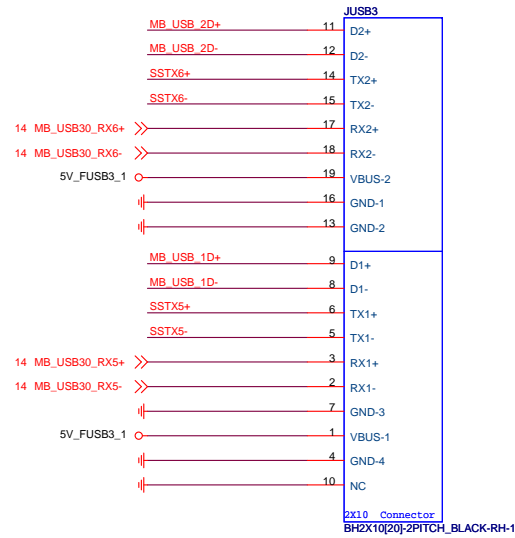
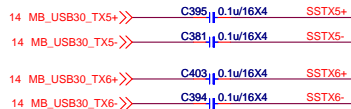
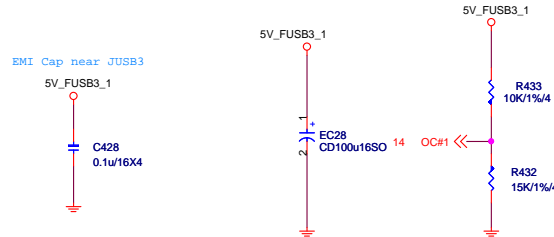
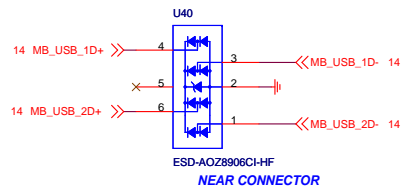
# FRONT USB2.0 PORT 5,6



# 1.0A

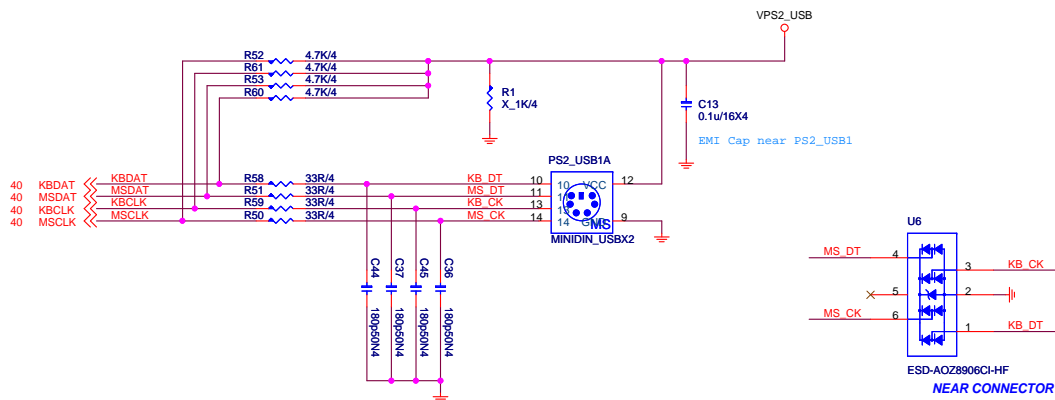




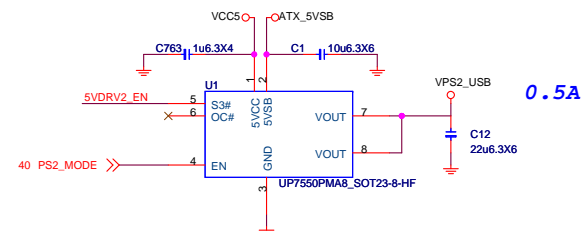


# PS2 KEYBOARD & MOUSE CONNECTOR

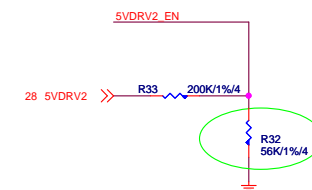
## PS2 Connector



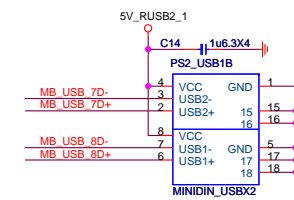
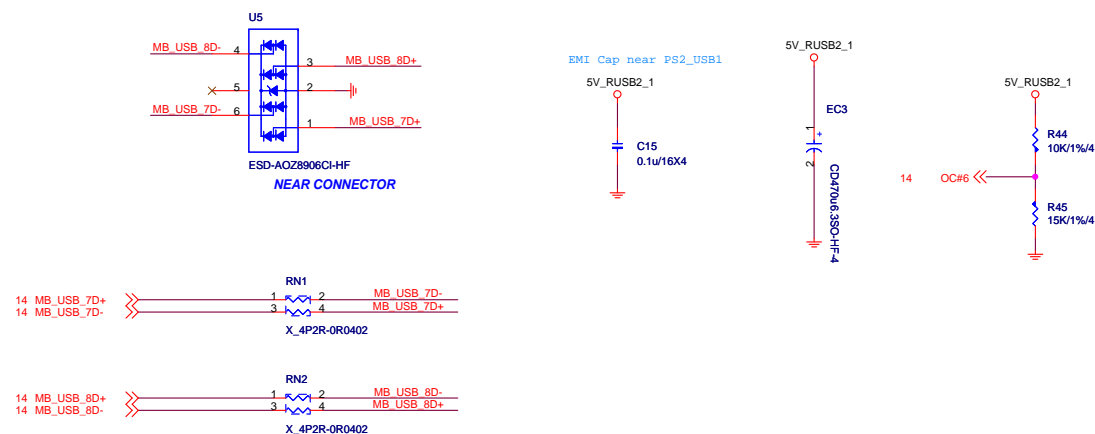
# PS2 Power

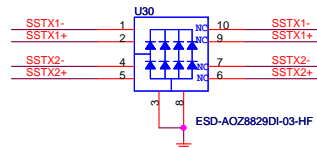
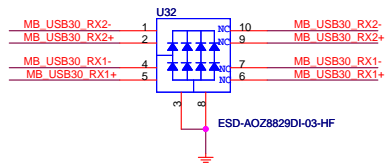
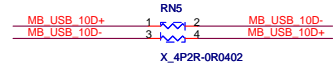
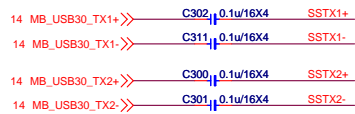
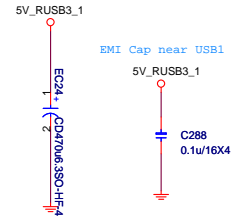
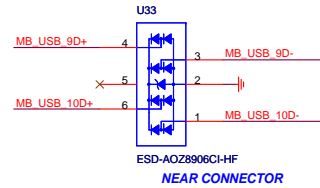


# USB MODE

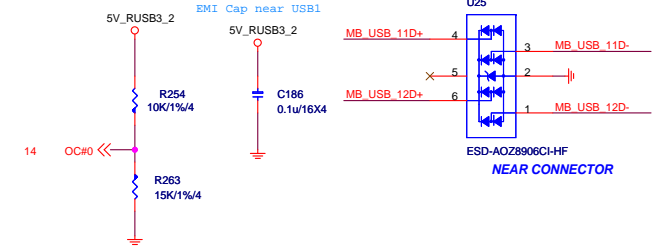
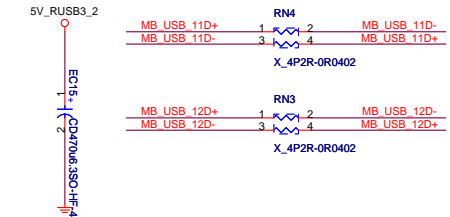
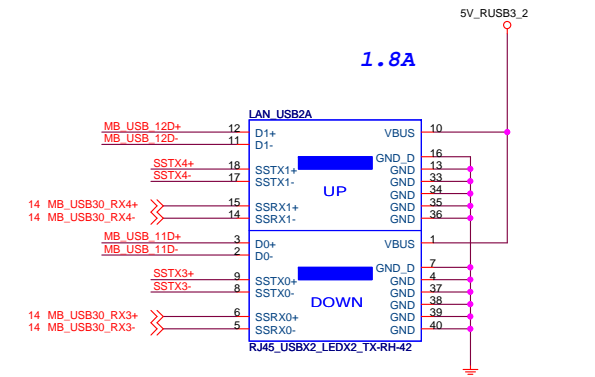
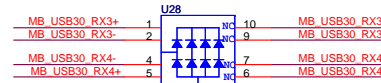
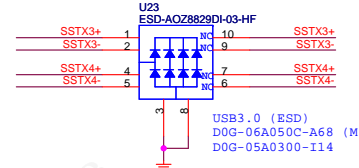
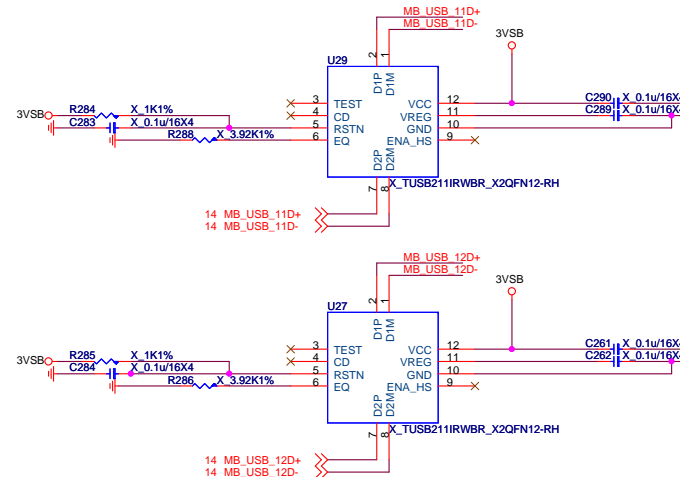
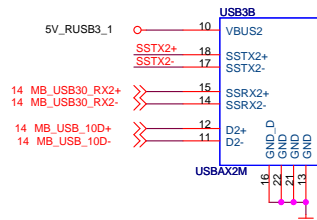
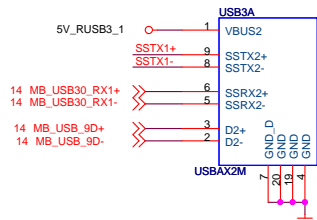


## PS2\_USB



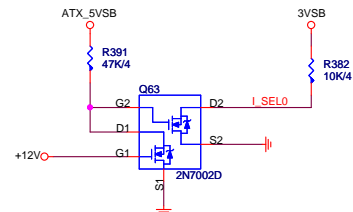


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## Current Mode

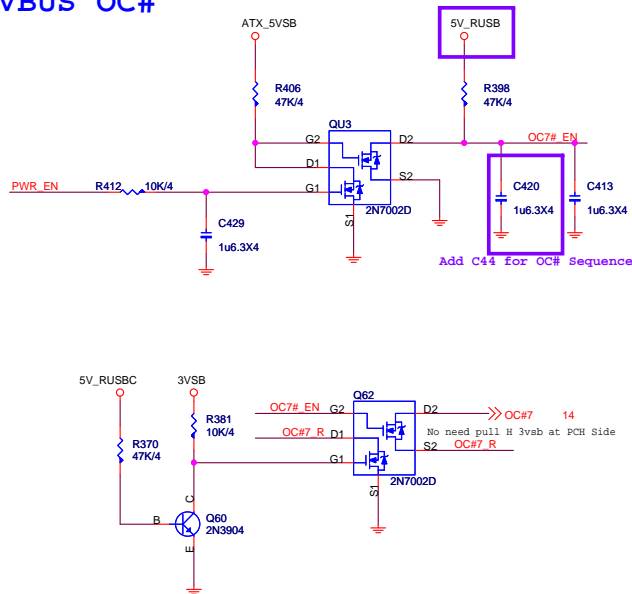


I\_SEL0 : I\_SEL1

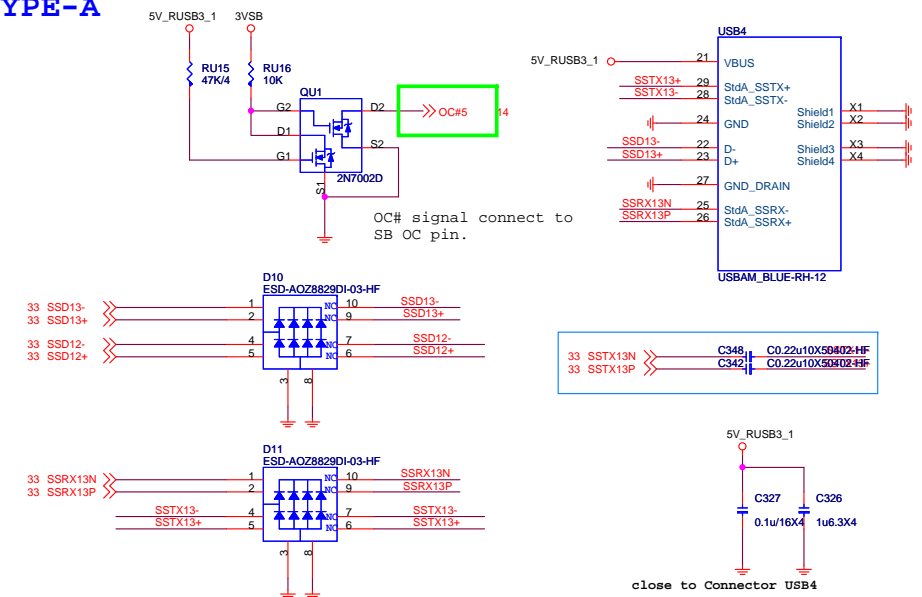
X	0	Default for 900mA
0	1	1.5A @5V
1	1	3A @5V

1.5A under S3 mode  
3A under S0 mode

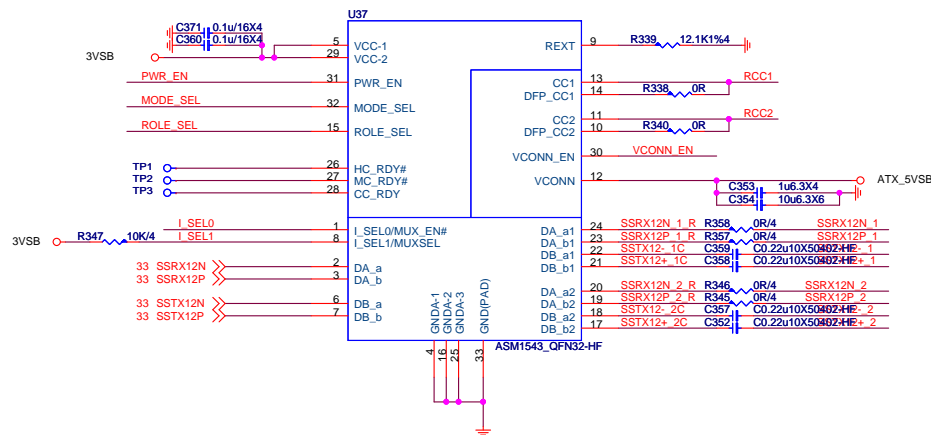
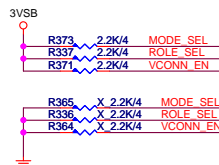
## VBUS OC#



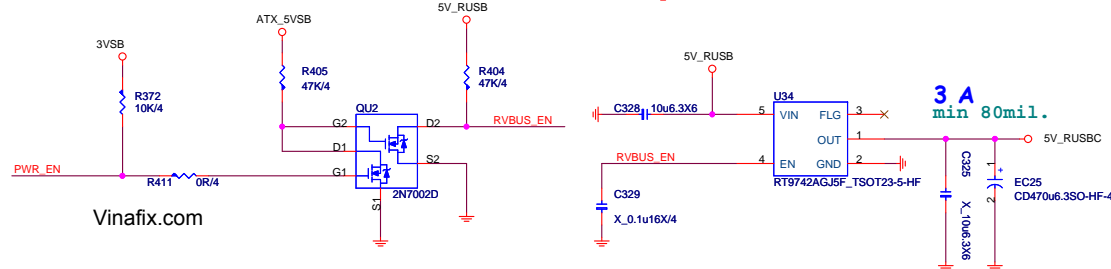
## TYPE-A



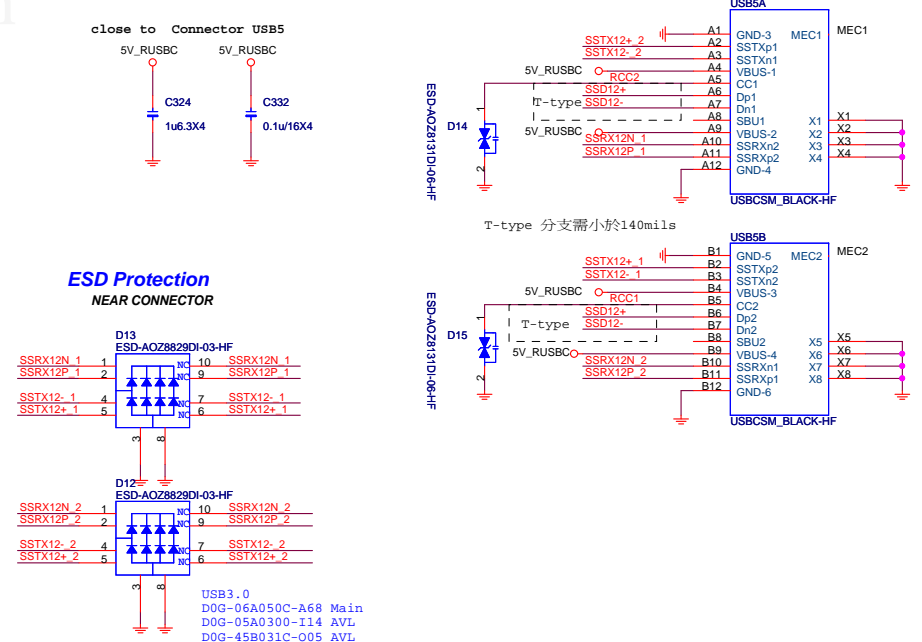
## USB Type-C MUX with Configuration Channel (CC)



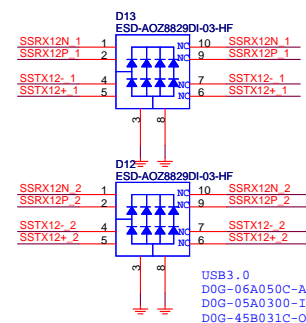
MODE_SEL	
1	CCL MODE (default)
0	Mux MODE
ROLE_SEL	
1	DFF role (default)
0	UFP role
VCONN_EN	
1	enable
0	disable



## TYPE-C

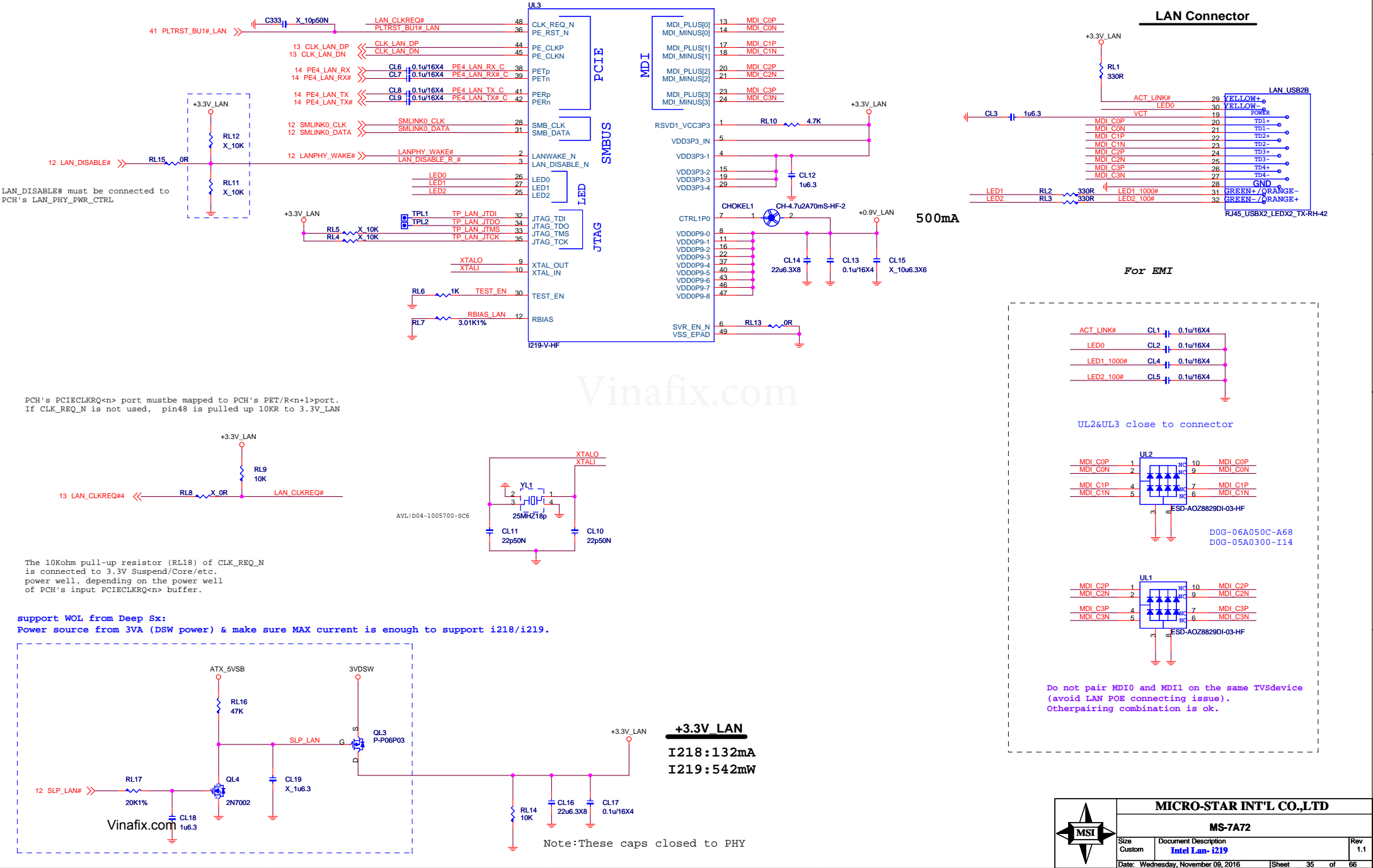


### ESD Protection NEAR CONNECTOR



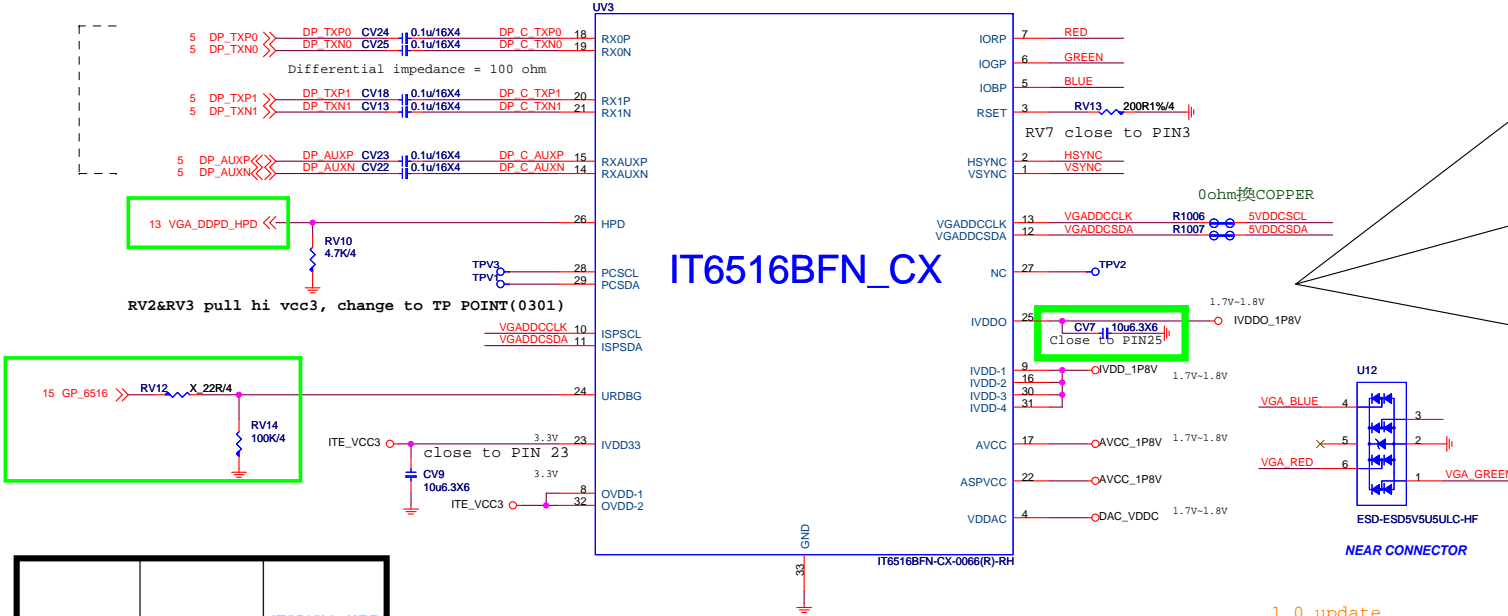
Intel Lan- I219

8111H:B06-08111CC-R09  
8111G:B06-081116C-R09

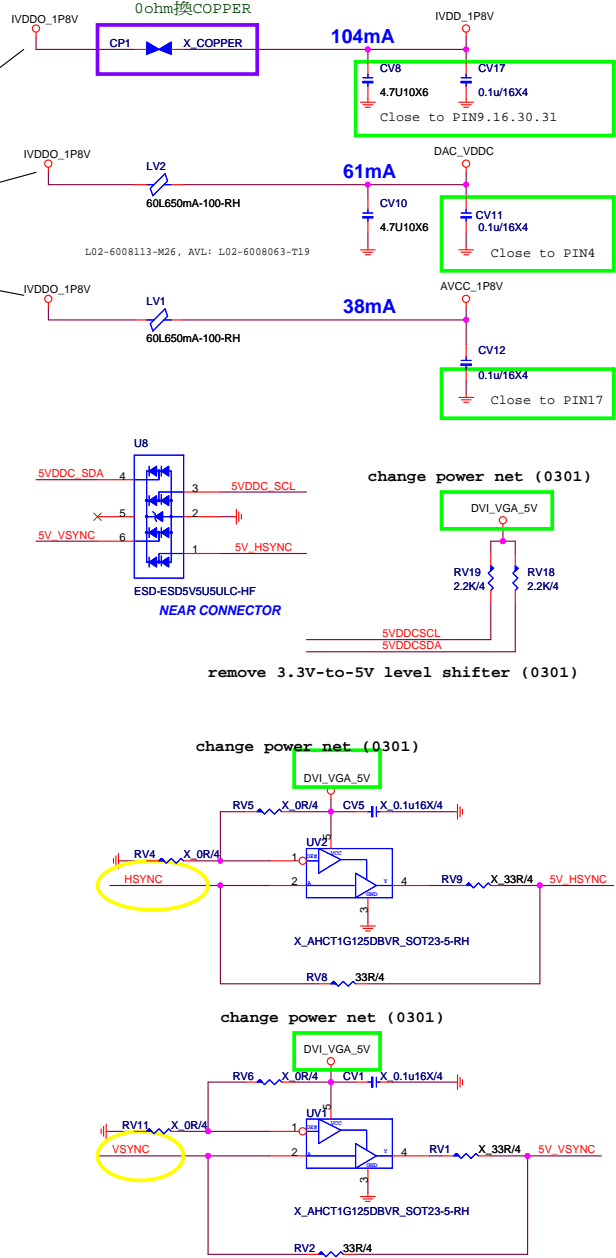
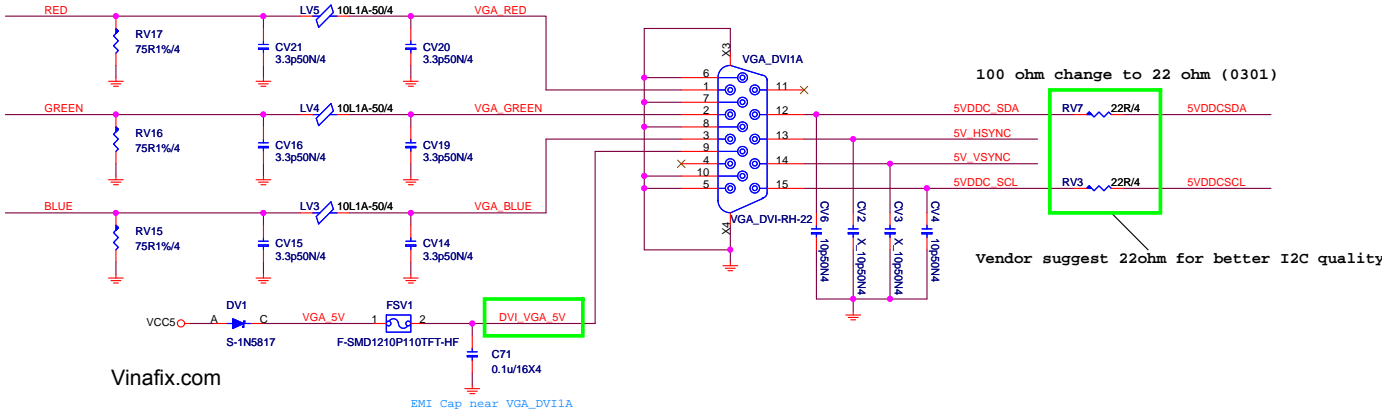
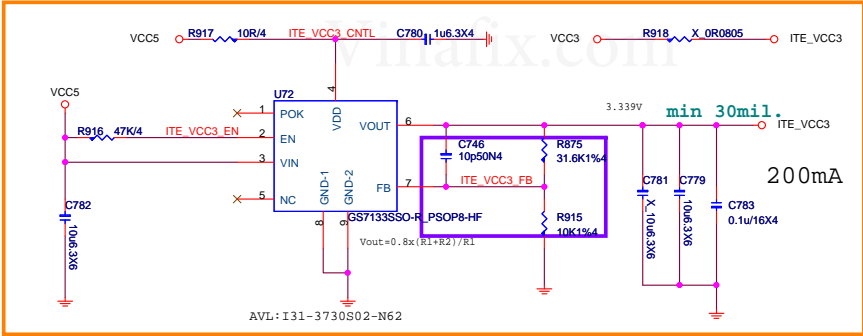


**Note:**  
If connect to eDP port,must confirm whether it support hot plug detection HPD and re-auxtraining

add D-sub function 0225



System Status	GPIO	IT6516b's HPD
Legacy Mode (VBIOS) /DOS Mode	HIGH	Force HIGH
Windows /UEFI Mode (GOP)	LOW	Depend on VGA device's plug/unplug

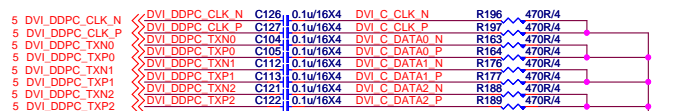


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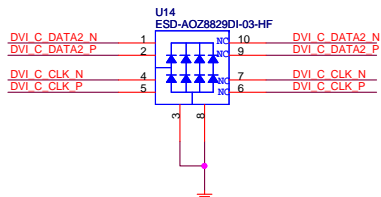


VGA: resolution of 2048x1536 pixels with 32-bit color at 75 Hz (4:3 QXGA)

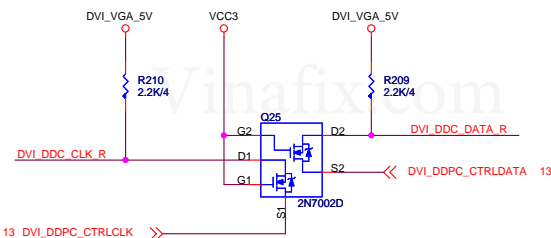
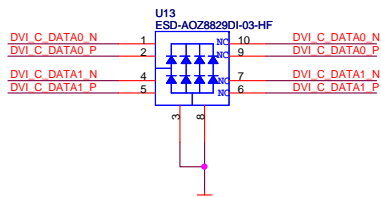
Check MSI PN  
N58-39F0231-K06



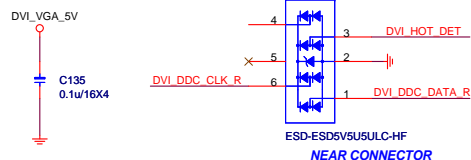
U26 AVL:D0G-05A050C-005  
D0G-06A050C-A68



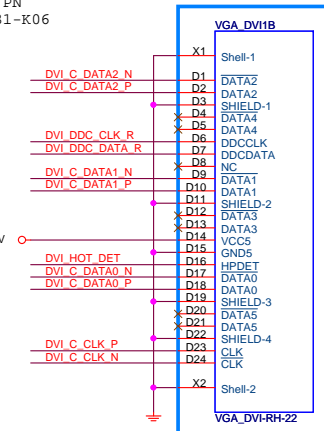
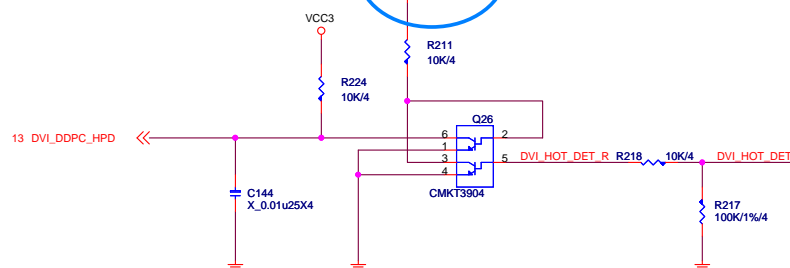
U27 AVL:D0G-05A050C-005  
D0G-06A050C-A68



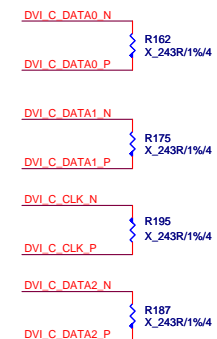
EMI Cap near connector DVI1



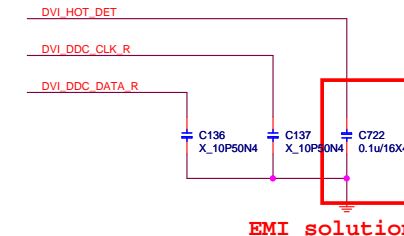
HPD



For EMI



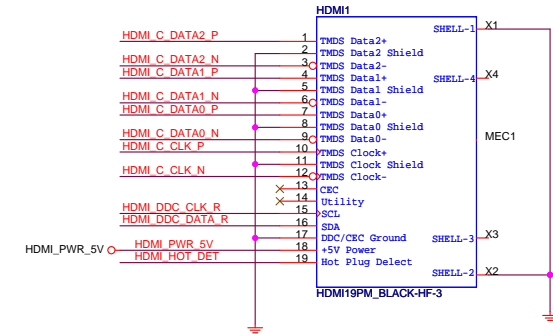
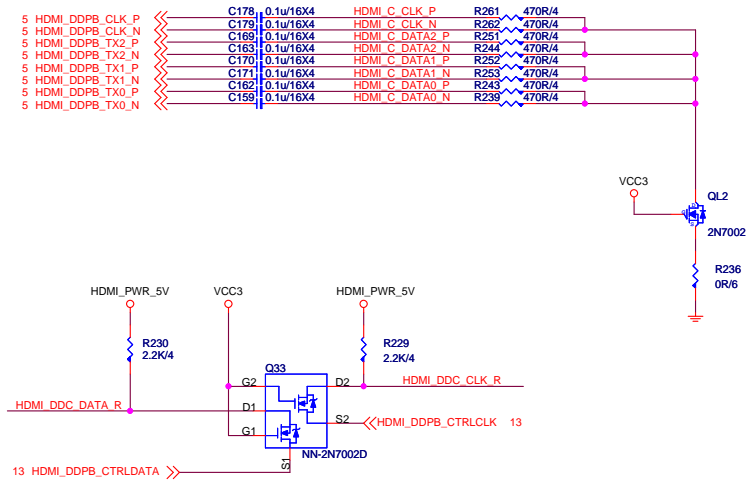
EMI



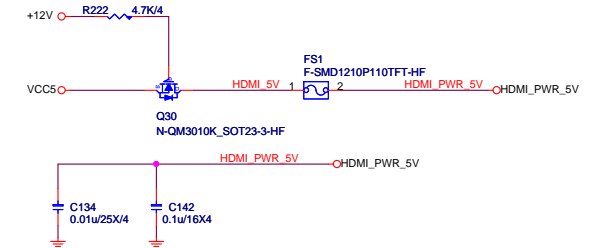
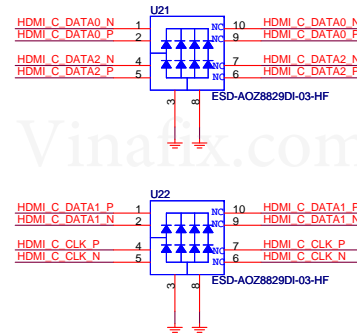
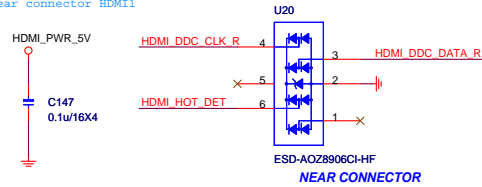
EMI solution

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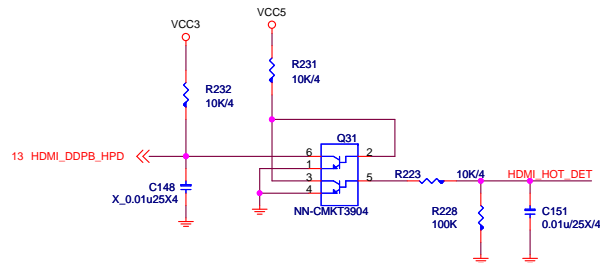
HDMI, DVI : 1920x1200 at 60 Hz (16:10 WUXGA)



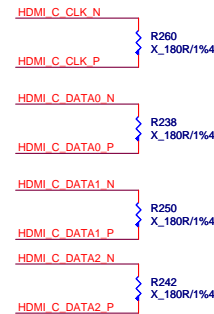
EMI Cap near connector HDMI1



HPD

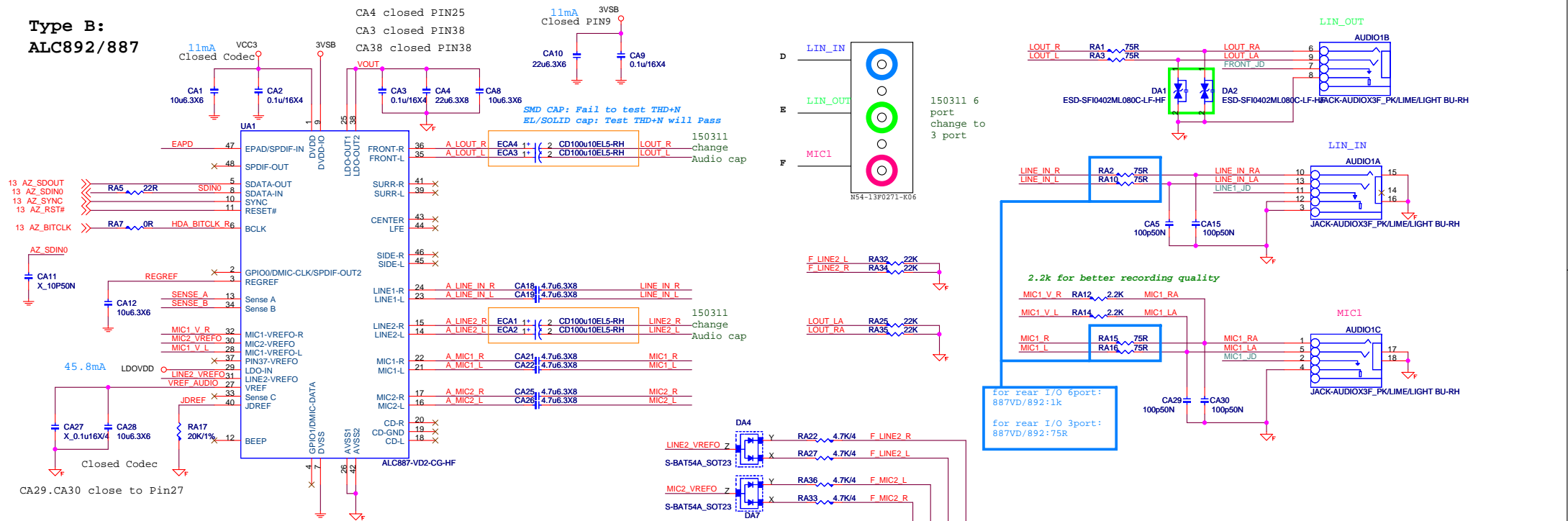


For EMI



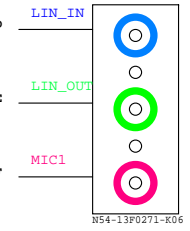
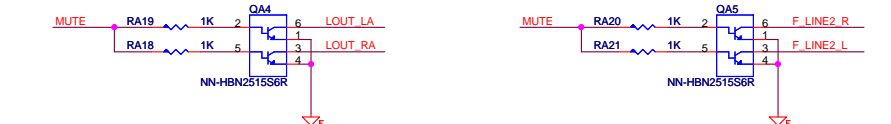
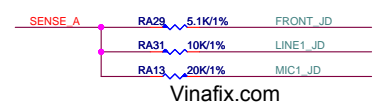
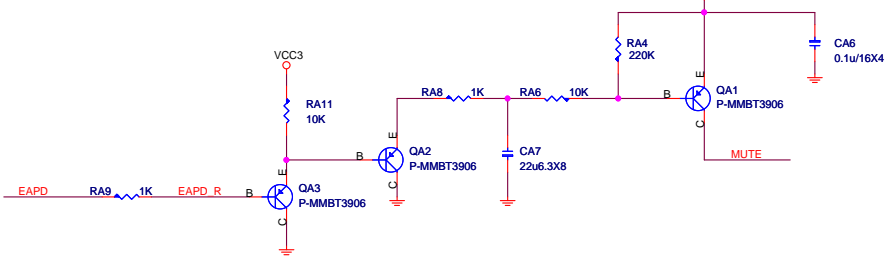
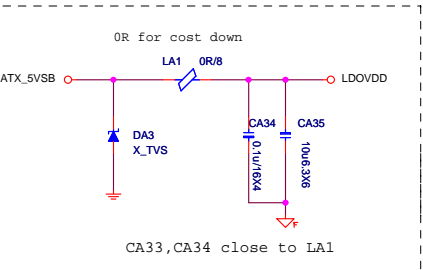
Vinafix.com

# Type B: ALC892/887

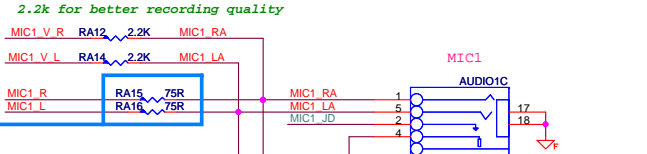
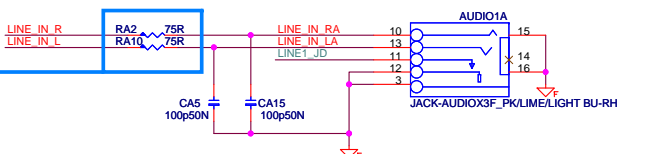
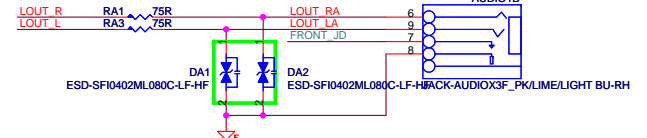


## Rear Line OUT De-POP circuit

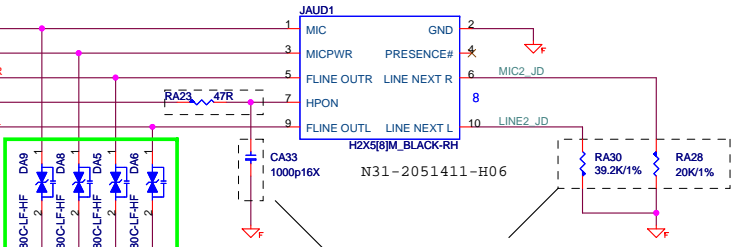
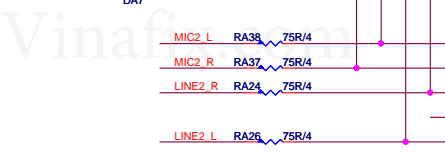
De-pop circuit for Rear Line out & Front Headphone out)



150311 6 port change to 3 port

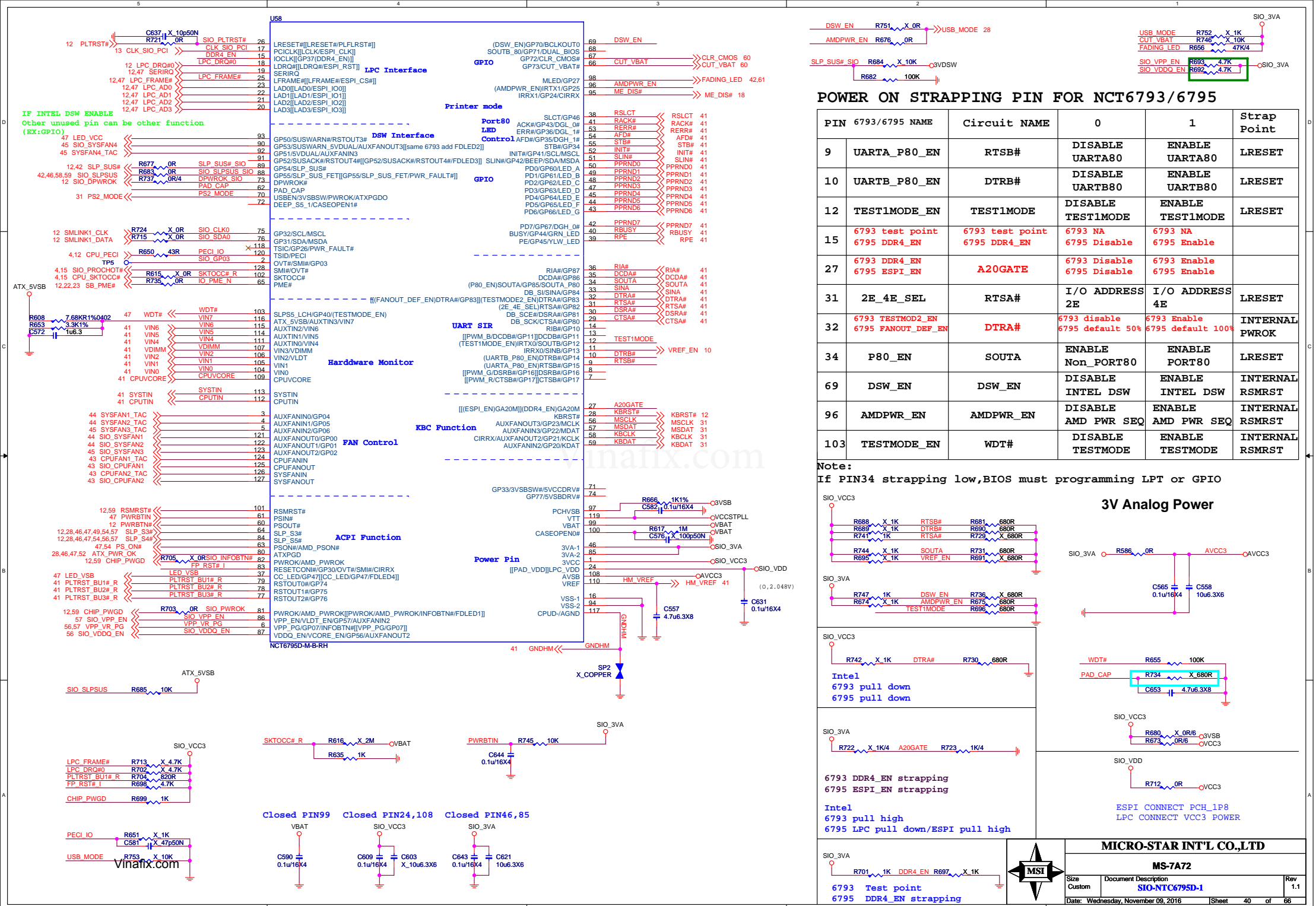


for rear I/O 6port:  
887VD/892:1k  
for rear I/O 3port:  
887VD/892:75R



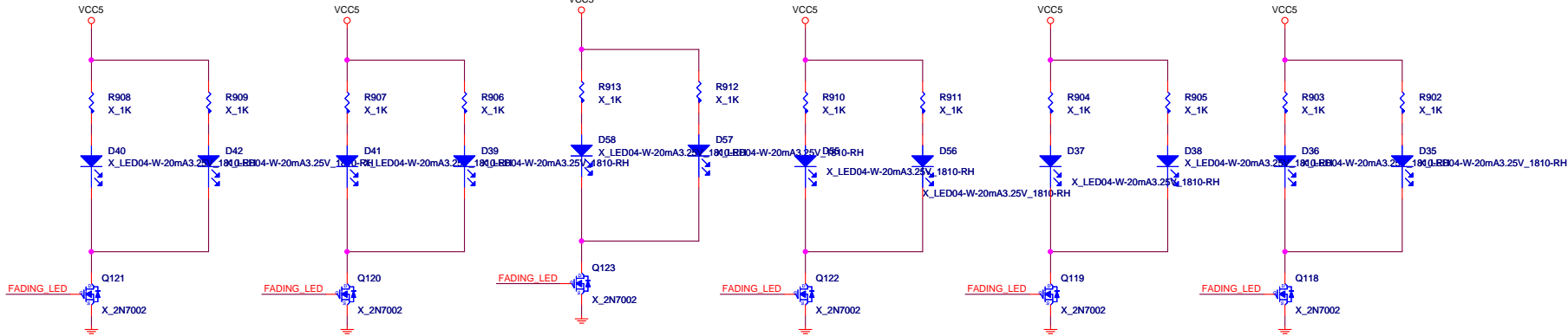
Close to Front panel  
For HDA/AC97 front cable.

Varist - 1000V for cost down  
D08-290500-SI  
D08-3010510-I06  
Close to Jack



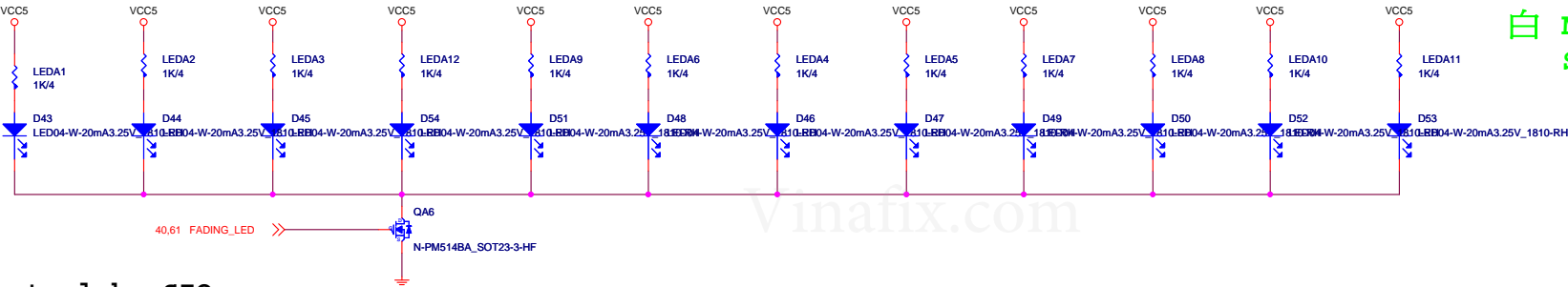


**BOTTOM LED**



**AUDIO LED**

Audio moat is transparent and width 40mil

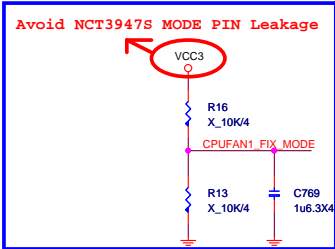
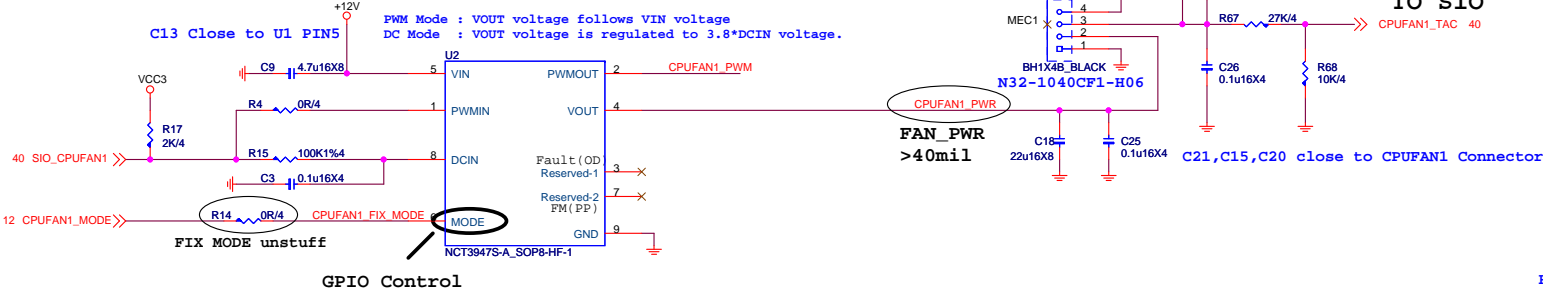


Bottom LED  
白 M : D0C-040T300-H91  
S : D0C-040S300-E07

**LED Control by SIO**

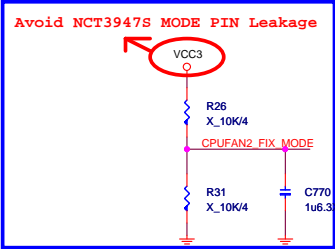
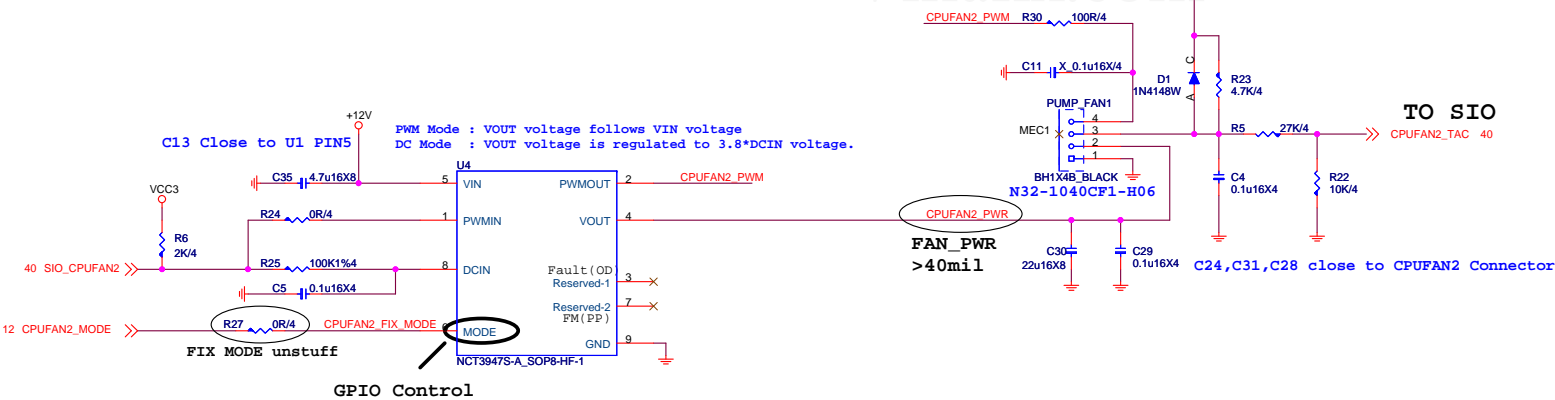
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

- 1.PWM/DC/OCF LED(現在是改成R/G/B3色LED)
- 2.GPIO可以由BIOS切換 PWM/DC MODE
- 3.OCF拉回GPIO給BIOS認
- 4.PWM OR DC FAN拉回GPIO給BIOS認
- 5.FAN轉速加快的時候由SOFTWARE 控制GPIO讓燈的變化



Resever For FIX DC or PWM MODE USE By PM SPEC

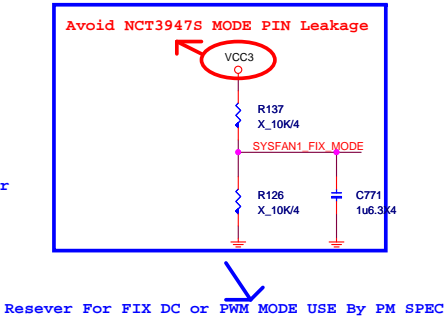
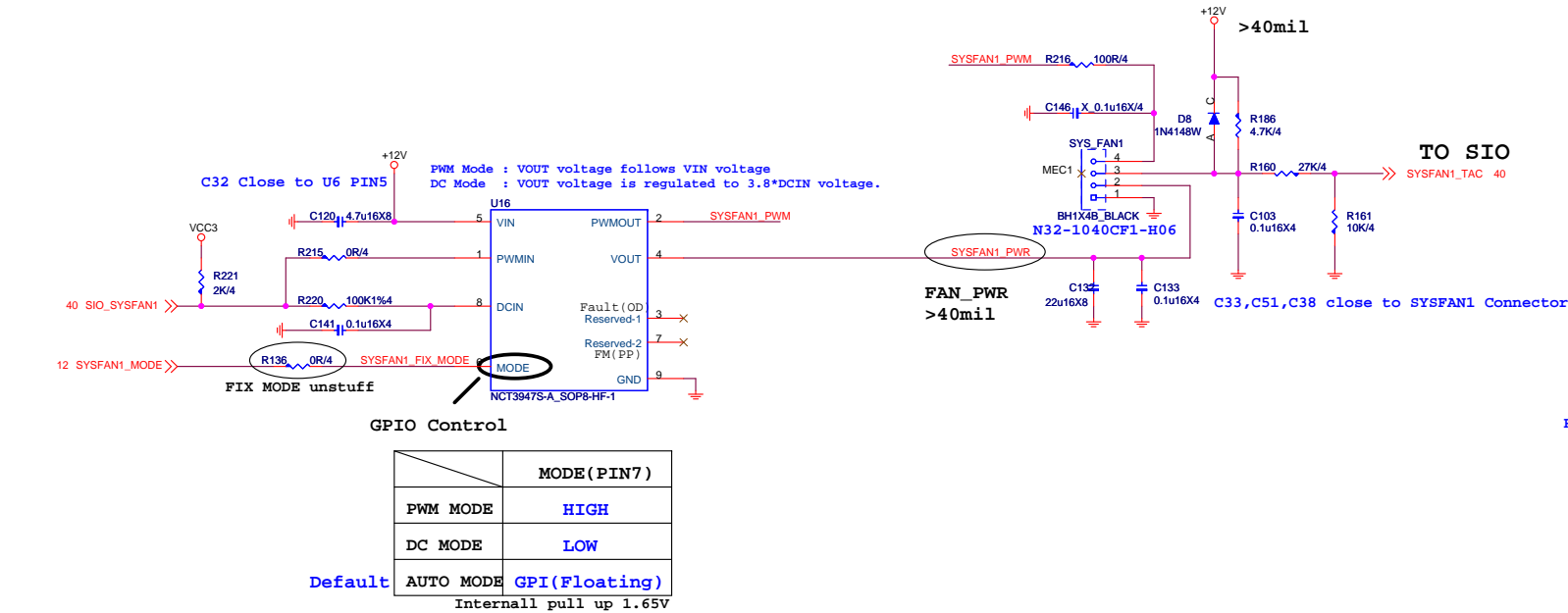
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE



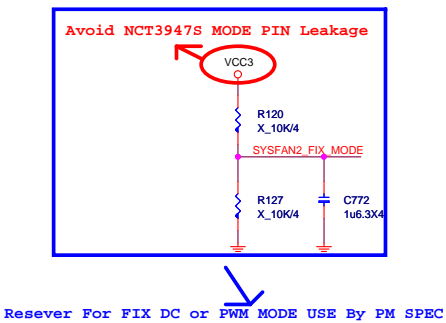
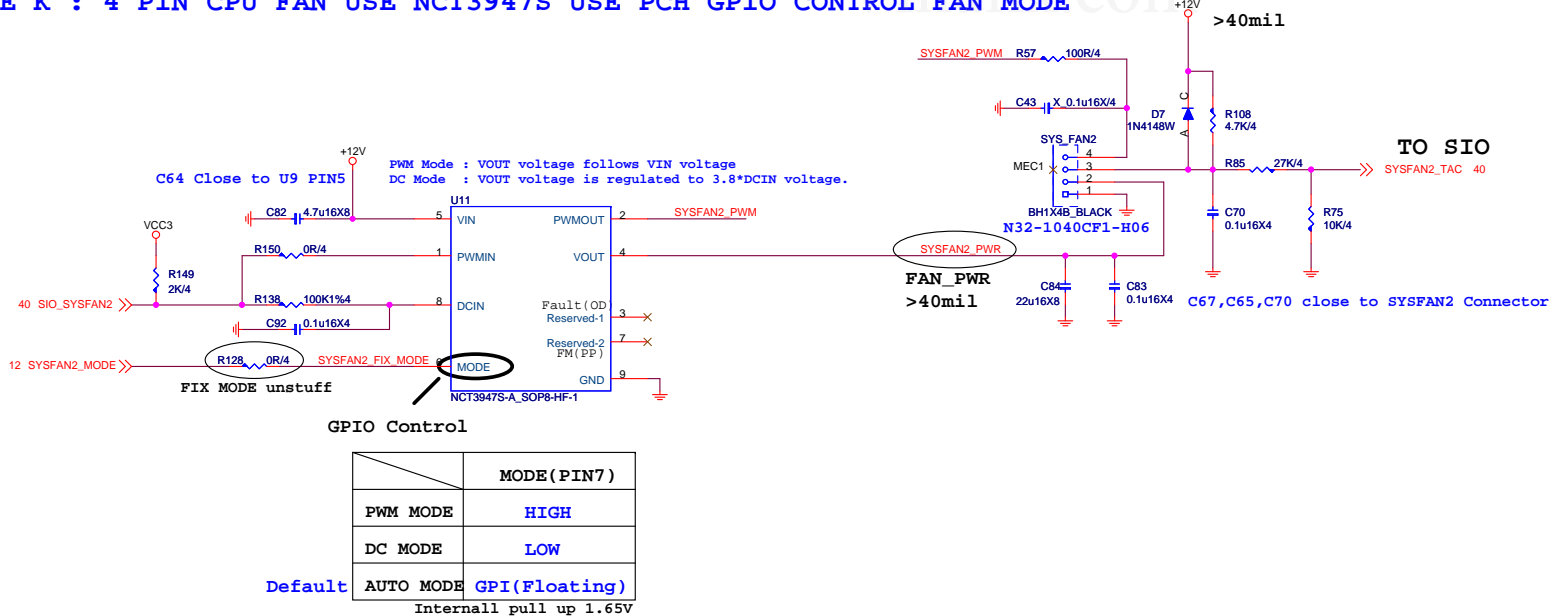
Resever For FIX DC or PWM MODE USE By PM SPEC

- 1.MODE : USE MODE PIN change FAN MODE(PWM or DC FAN)
- 2.FAULT : USE FAULT PIN Trigger OVT/OCF Protection,LOW Atcive (Reserve NEW IC)
- 3.FM : USE FM PIN For BIOS USE to Detect PWM or DC FAN & Show information(Reserve NEW IC)

TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

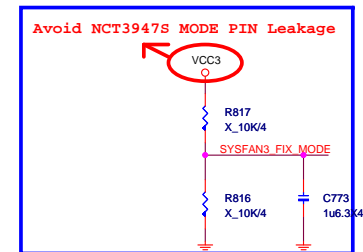
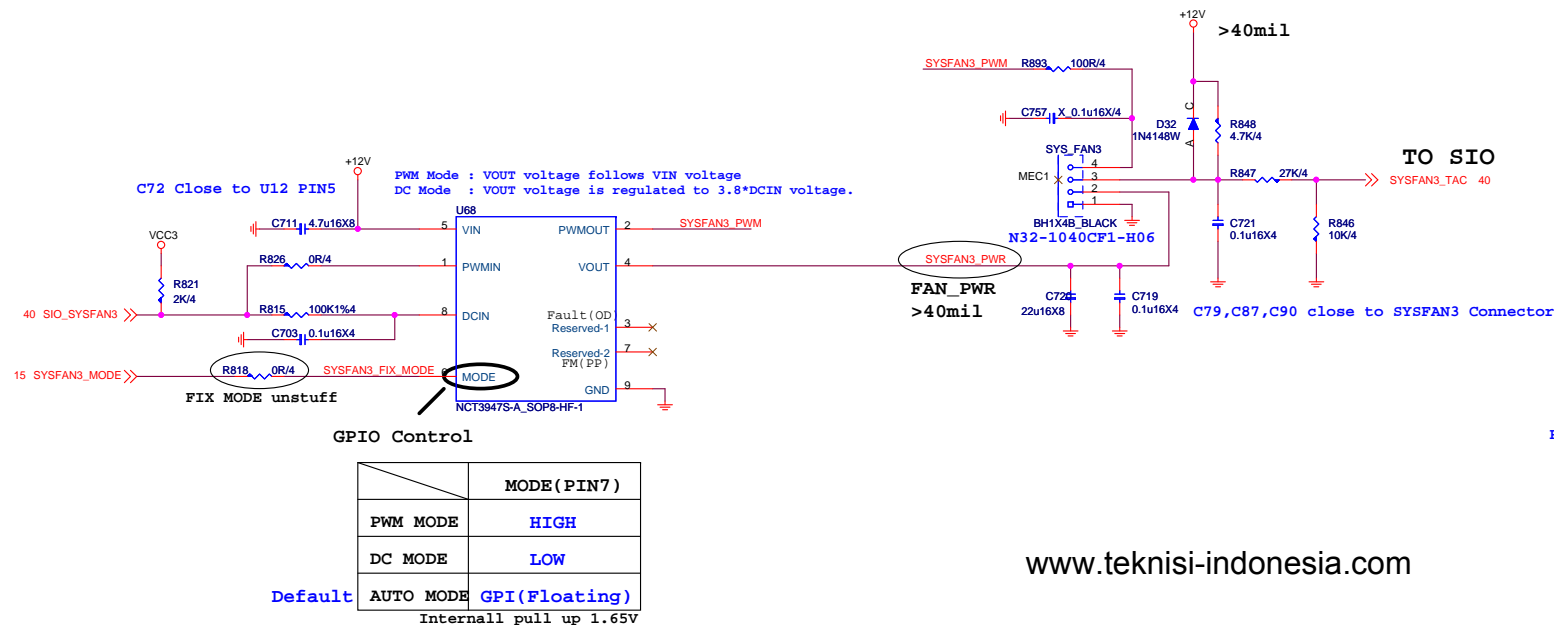


TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE





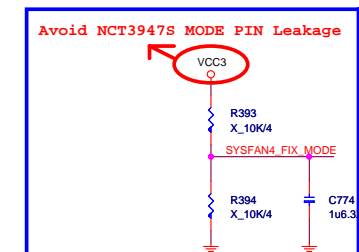
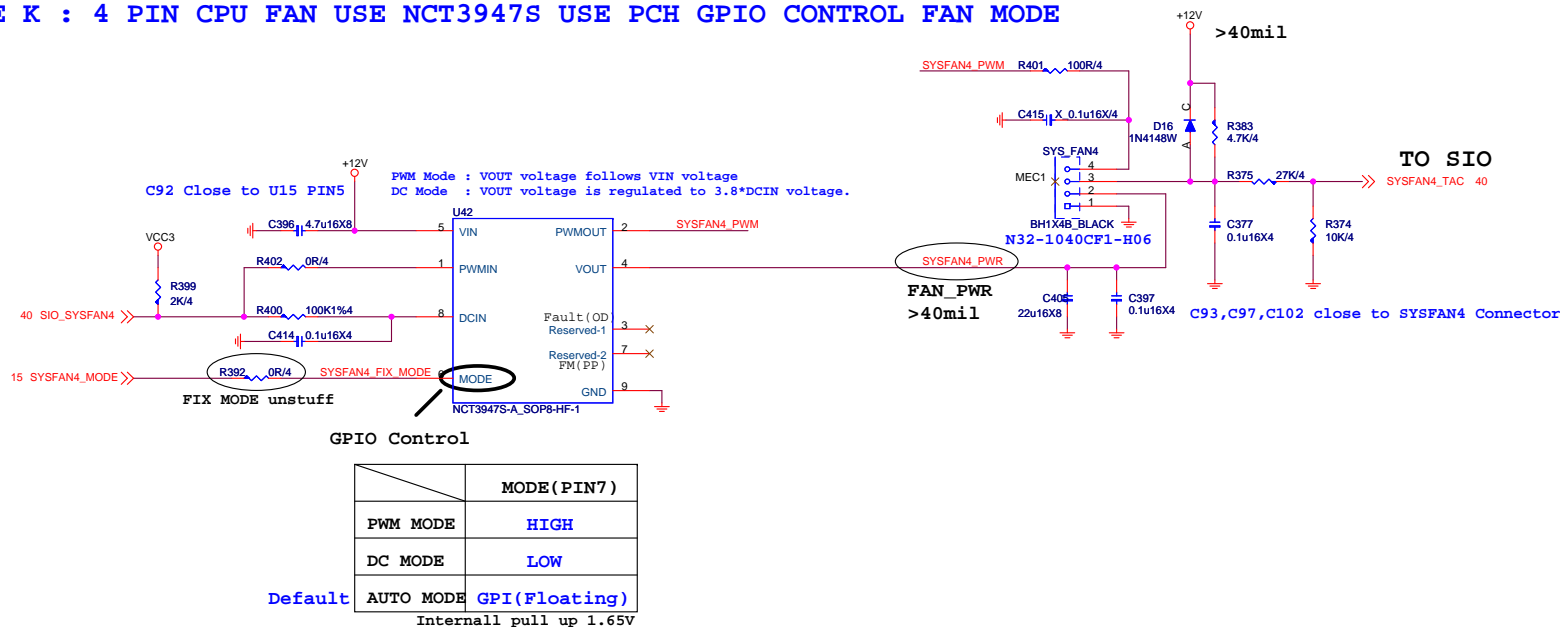
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE



Resever For FIX DC or PWM MODE USE By PM SPEC

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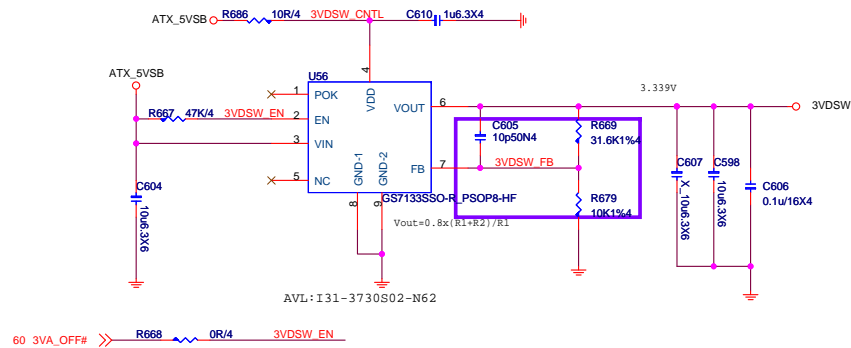
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE



Resever For FIX DC or PWM MODE USE By PM SPEC

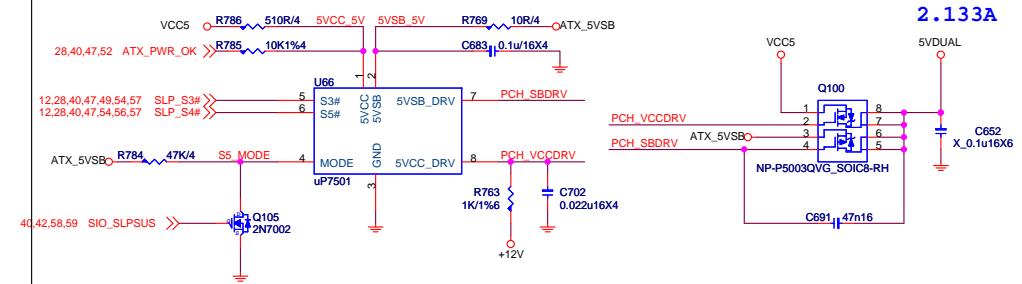
Vinafix.com

## 3VDSW

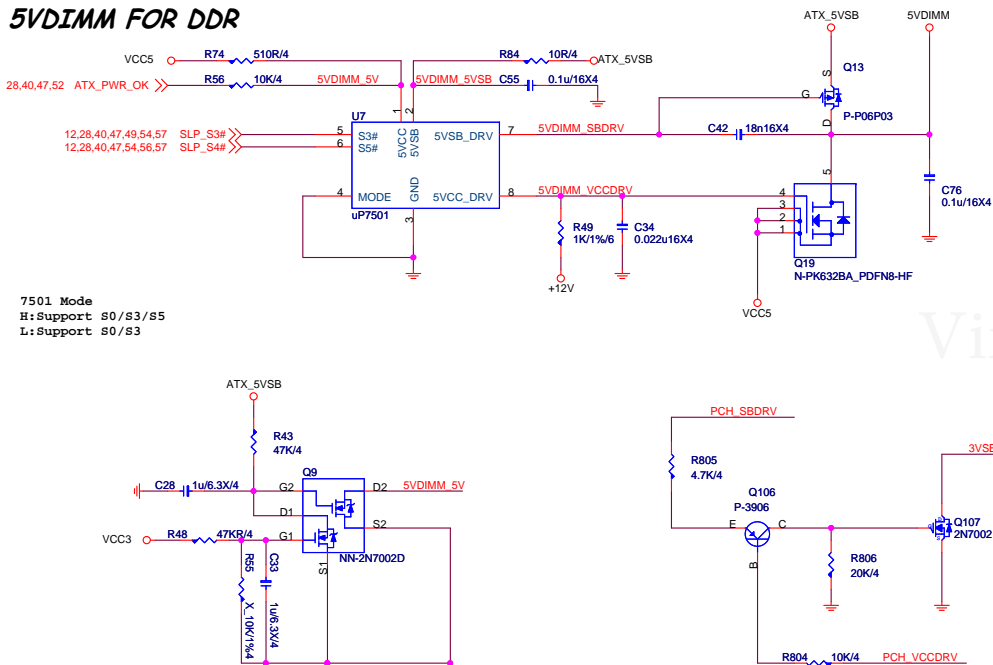


## 5VDUAL

5VDUAL is power source of 1P0SB

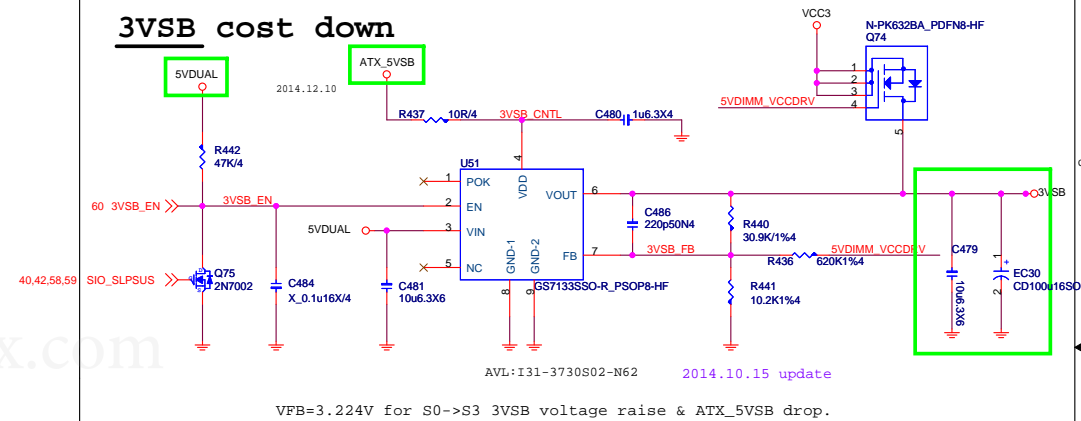


## 5VDIMM FOR DDR



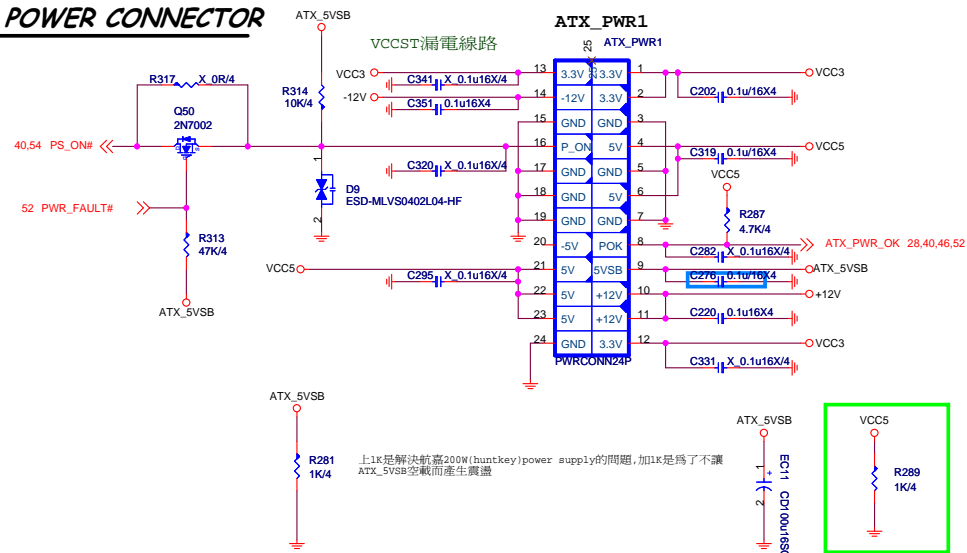
防G3-->S5底下5VSBDRV2瞬間有電變沒電,使得下一級電壓爬升有drop

## 3VSB cost down

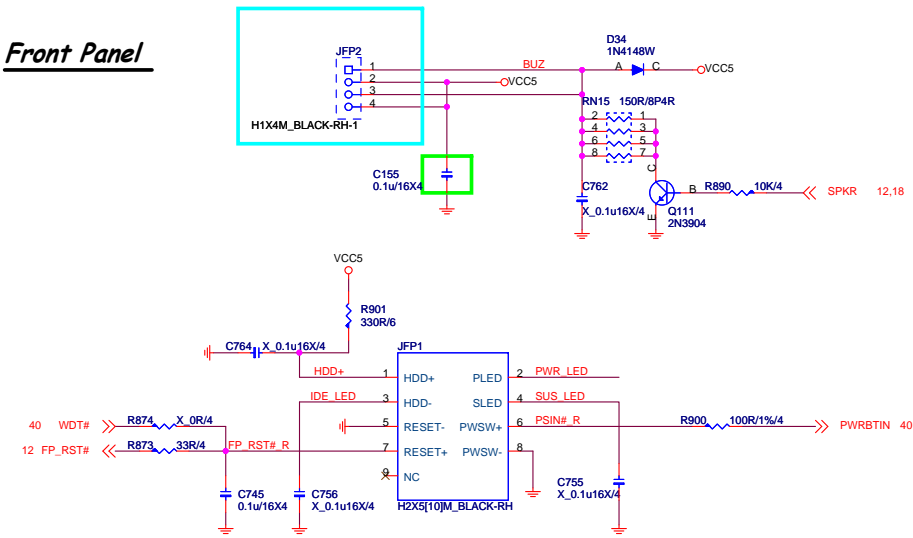


VFB=3.224V for S0->S3 3VSB voltage raise & ATX\_5VSB drop.

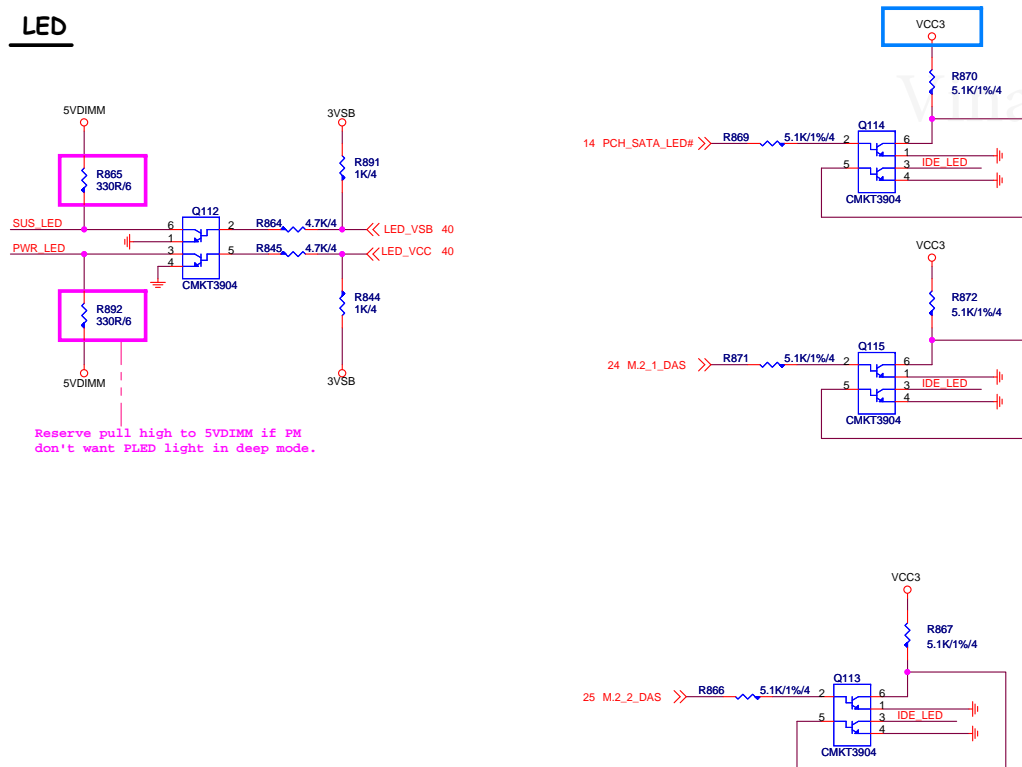
ATX POWER CONNECTOR



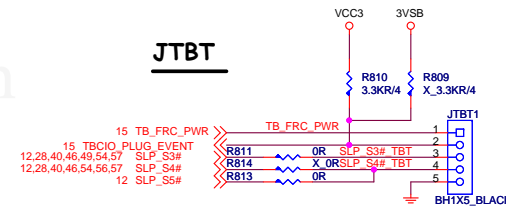
Front Panel



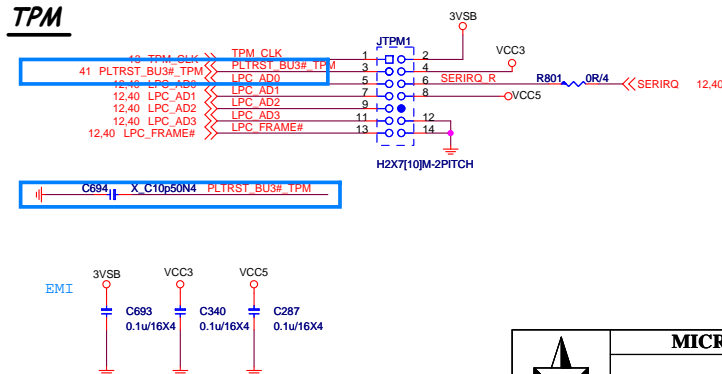
LED



JTBT



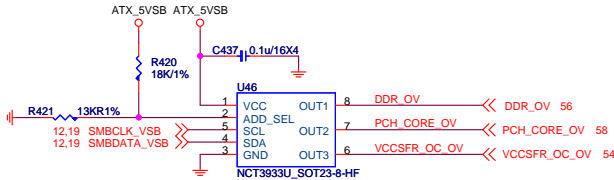
TPM



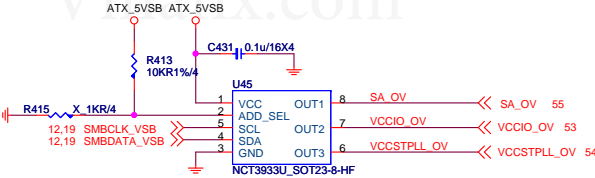
Remove Cut Power.

UPI VOLTAGE CONSOLE

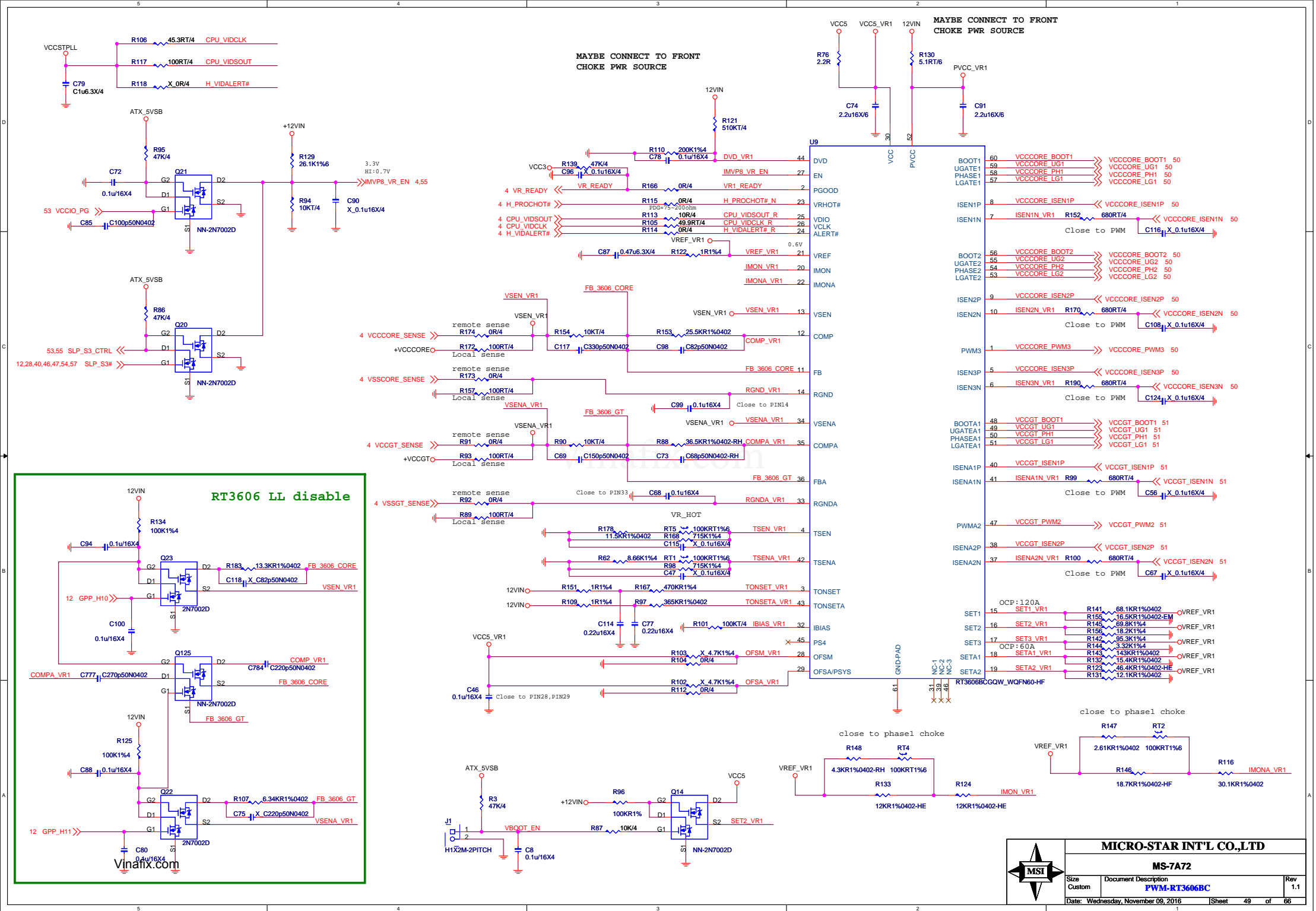
0x26:RH=18K,RL=13K



0x20:RH=10K,RL=OPEN



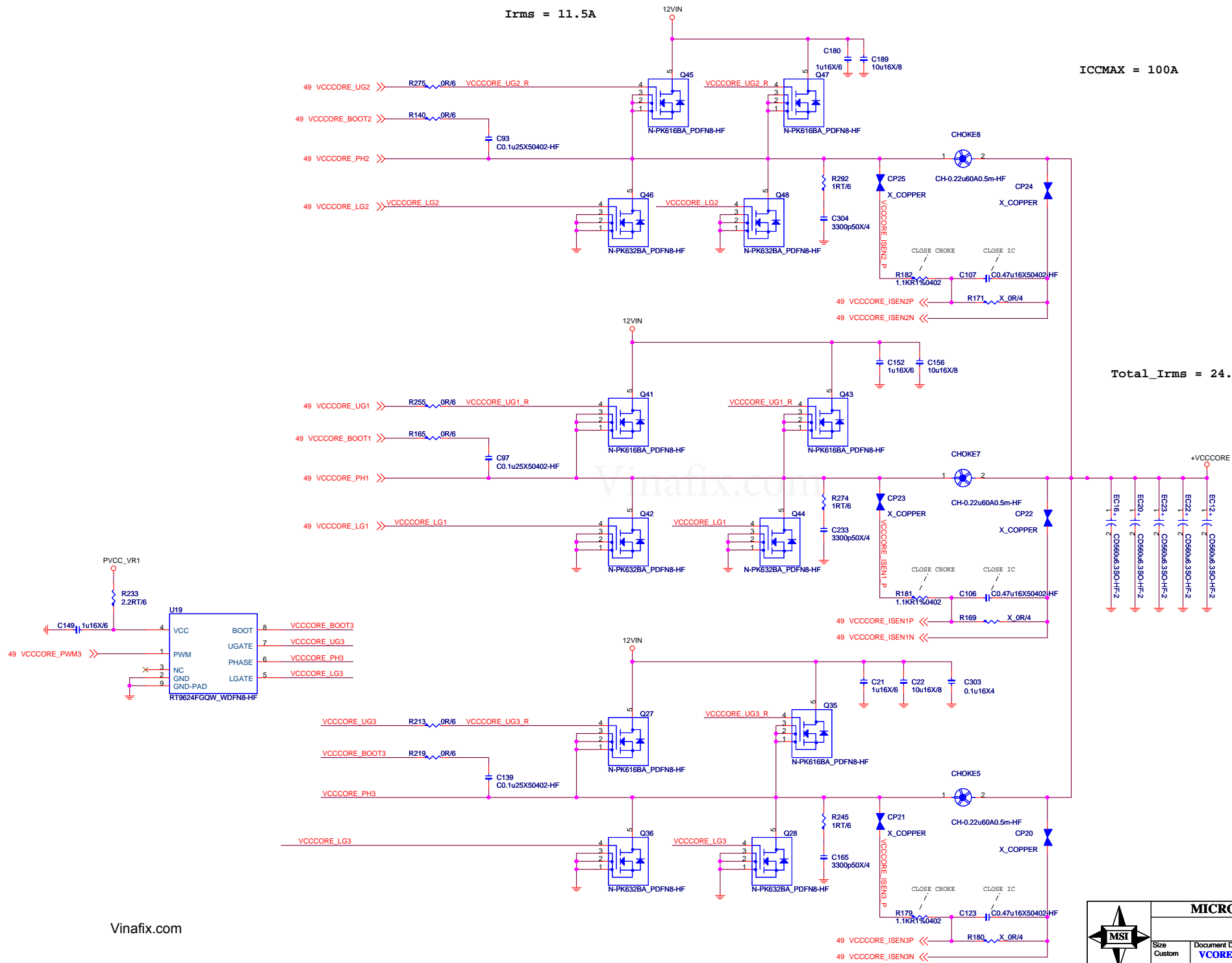
ADDRESS	0x2A	0X28	0x26	0x24	0x22	0x20
RH (KOhm)	OPEN	3.9	3	2.2	1.3	10
RL (KOhm)	10	1.3	2.3	3	3.9	OPEN
BUS_SEL	0%	25%	40%	60%	75%	100%



I<sub>rms</sub> = 11.5A

ICCMAX = 100A

Total\_I<sub>rms</sub> = 24.1A



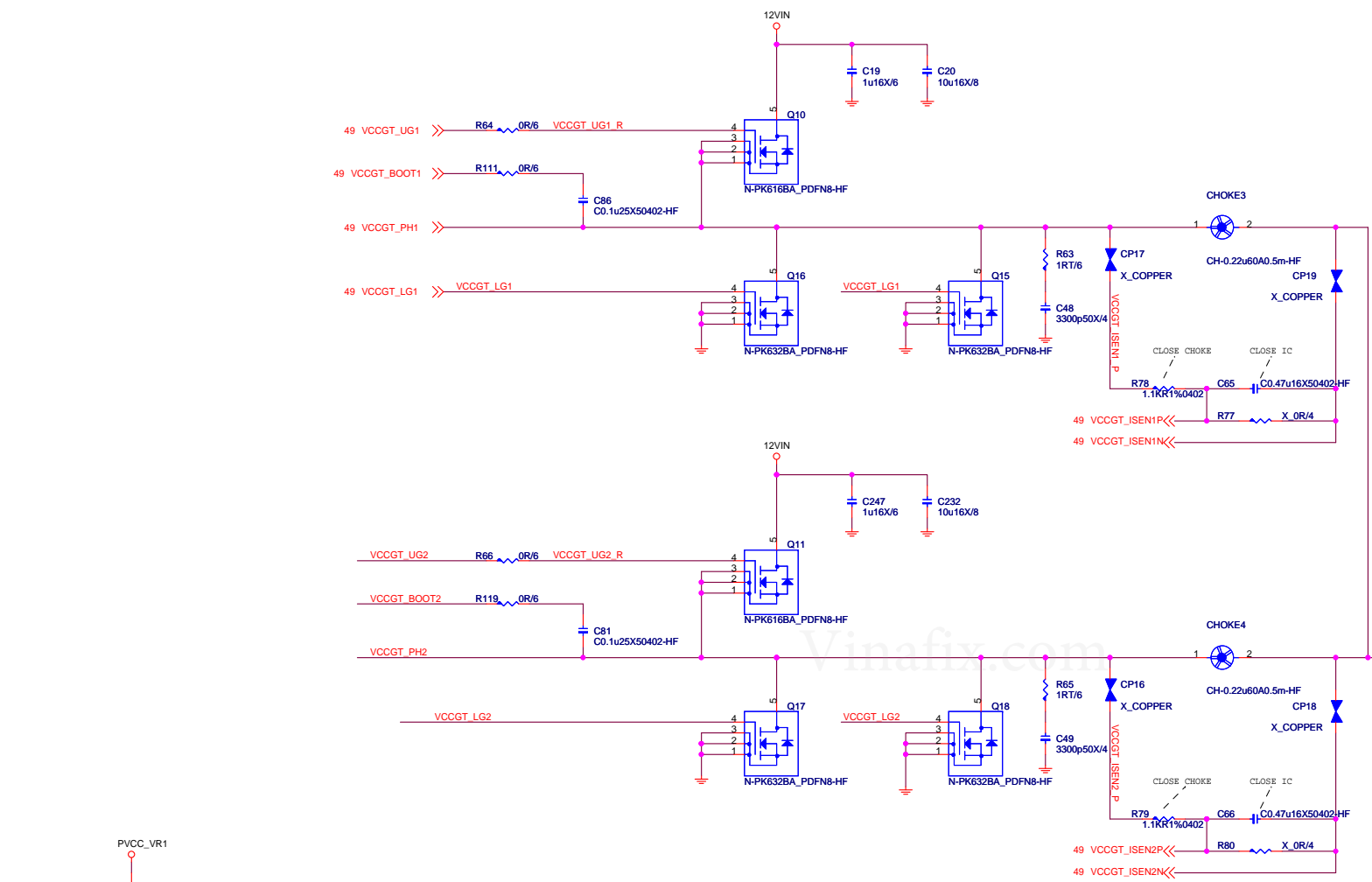
Vinafix.com



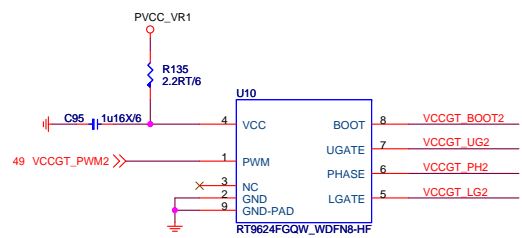
MICRO-STAR INT'L CO.,LTD

MS-7A72

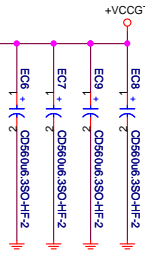
Size	Document Description	Rev
Custom	VCCORE MOS-PHASE 1-4	1.1
Date: Wednesday, November 09, 2016		Sheet 50 of 66



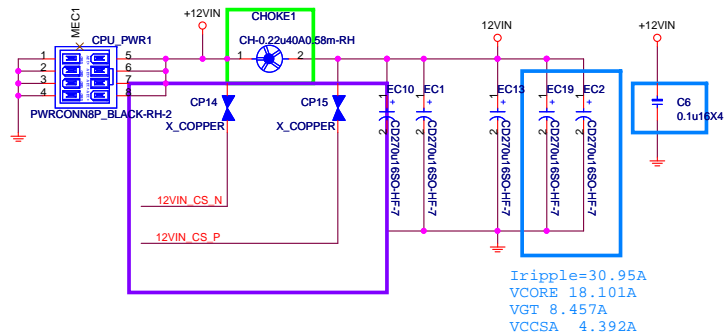
$I_{rms} = 9.5A$



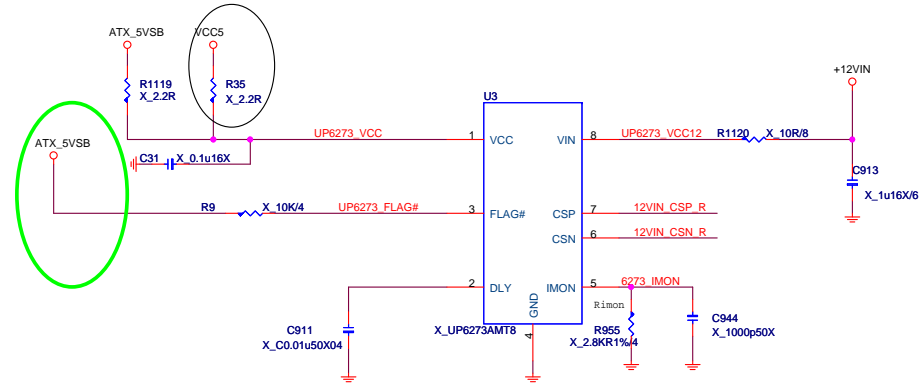
45A



Vinafix.com

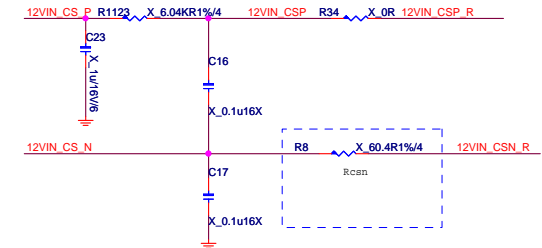
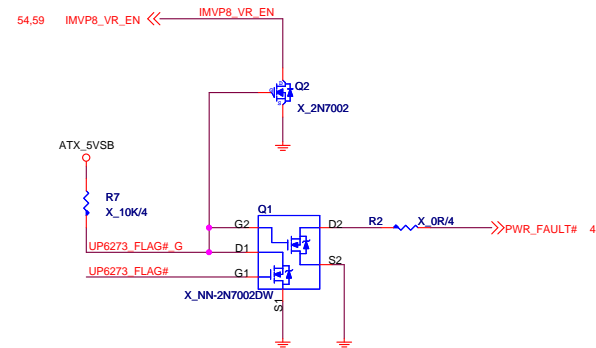


## POWER METER OCP: 120A



$I_{in} = (V_{mon} \cdot R_{csn}) / (R_{mon} \cdot R_{dc})$   
 $V_{mon} = 1.2$   
 can change OCP trigger level by Rcsn and Rmon  
 $(1.2 \cdot 0.2) / (10K \cdot 0.3m) = 80A$

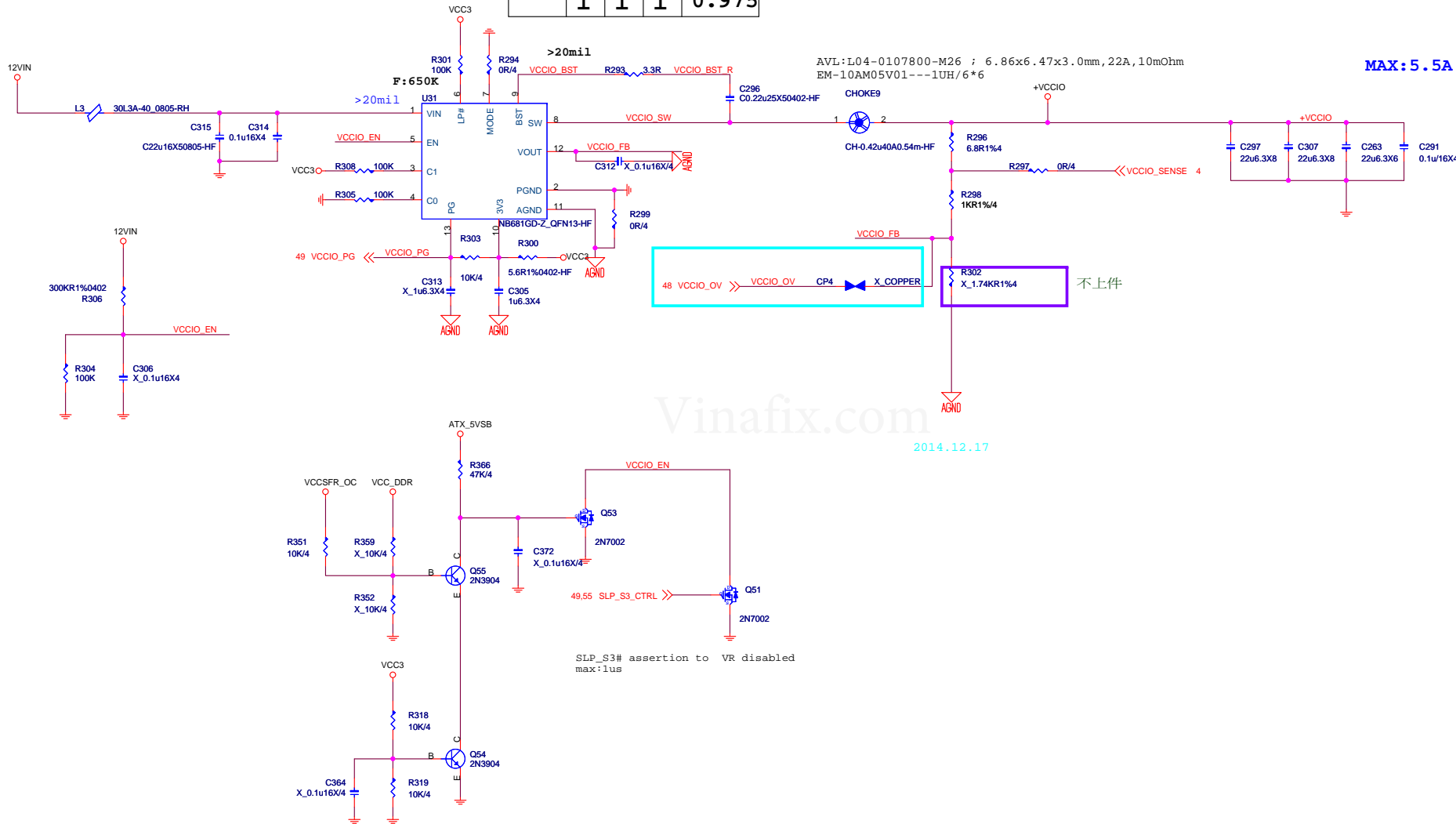
Vinafix.com





**VCCIO**  
 0.95V; 5.5A  
 I<sub>MAX</sub> 6A  
 I<sub>LIMIT</sub>=8.5~9A

	LP#	C1	C0	VOUT(V)
VCCIO	0	X	X	0
	1	0	0	0.85
	1	0	1	0.875
	1	1	0	0.95
	1	1	1	0.975



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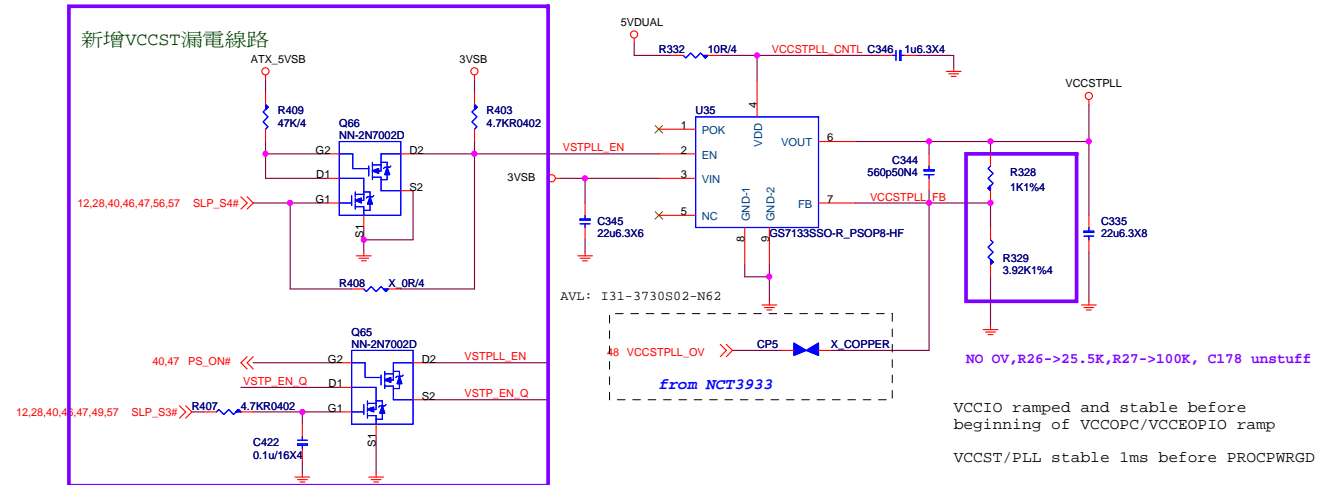
2014.12.17

## VCCSTPLL

1.0V; 250mA

For Cost down VCCST&VCCPLL merge

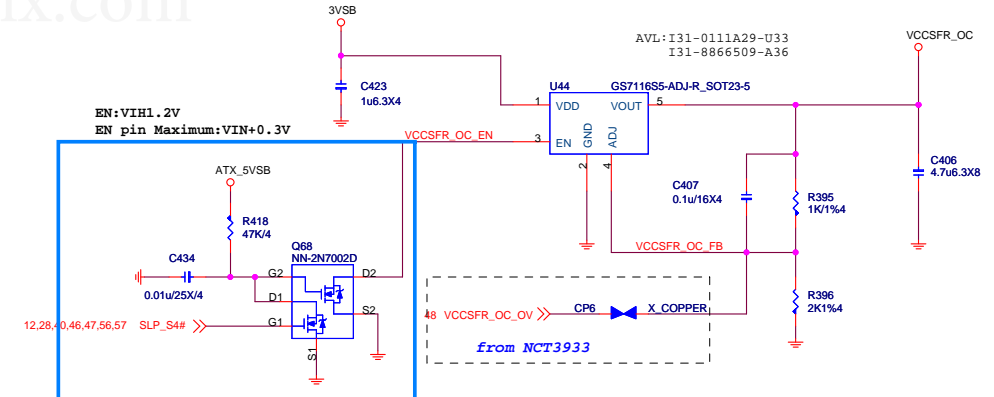
for Gaming3/5, Classic, ECO  
and H110



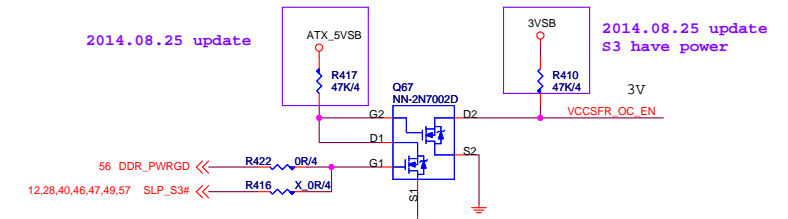
## VCCPLL\_OC

1.2V; 110mA

2014.08.21 update



2014.08.25 update



# SA Power:1.05V,12.3A

Rocpset:5.6K

OCP=Rocset\*Rdson(Low side)/10uA

=5.6K\*3.3mohm/10uA

=18.48A

Rocs:5.76K,OCP:

D03-4C05N03-005 : 16.94A

D03-632BA0C-N03 : 17.45A

use UBIQ MOS need Check

Rdson(low)10V

D03-4C05N03-005 : 3.4mohm

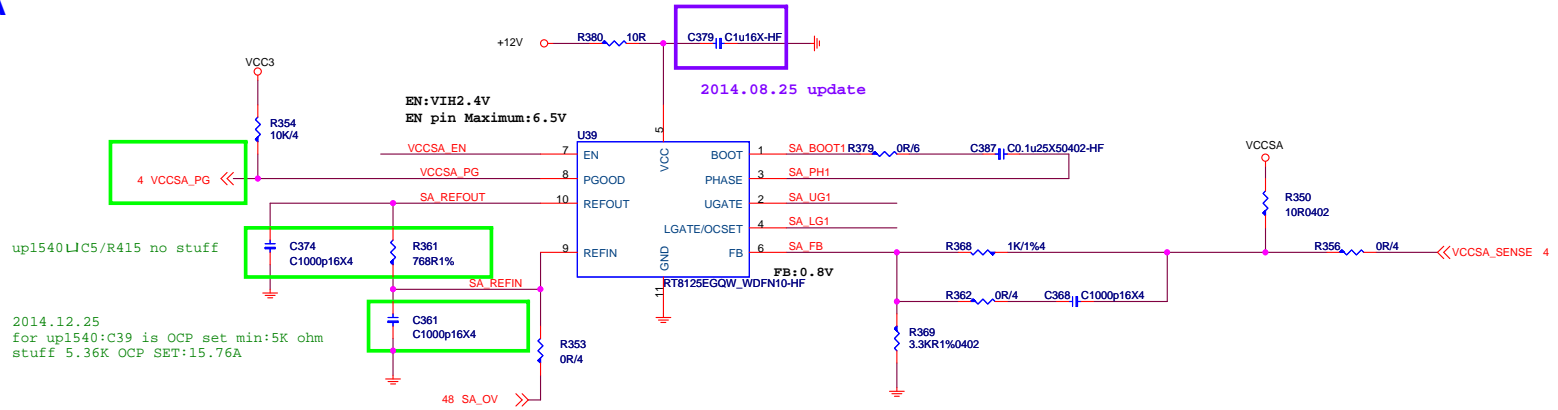
D03-632BA0C-N03 : 3.3mohm

D03-3056M00-U47 : 4.2mohm

up1540LIC5/R415 no stuff

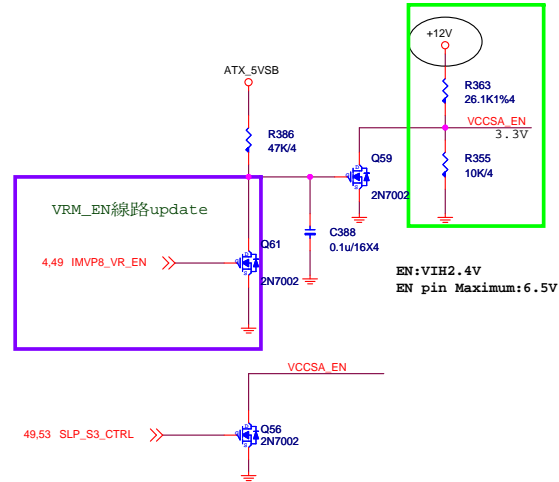
2014.12.25

for up1540:C39 is OCP set min:5K ohm  
stuff 5.36K OCP SET:15.76A



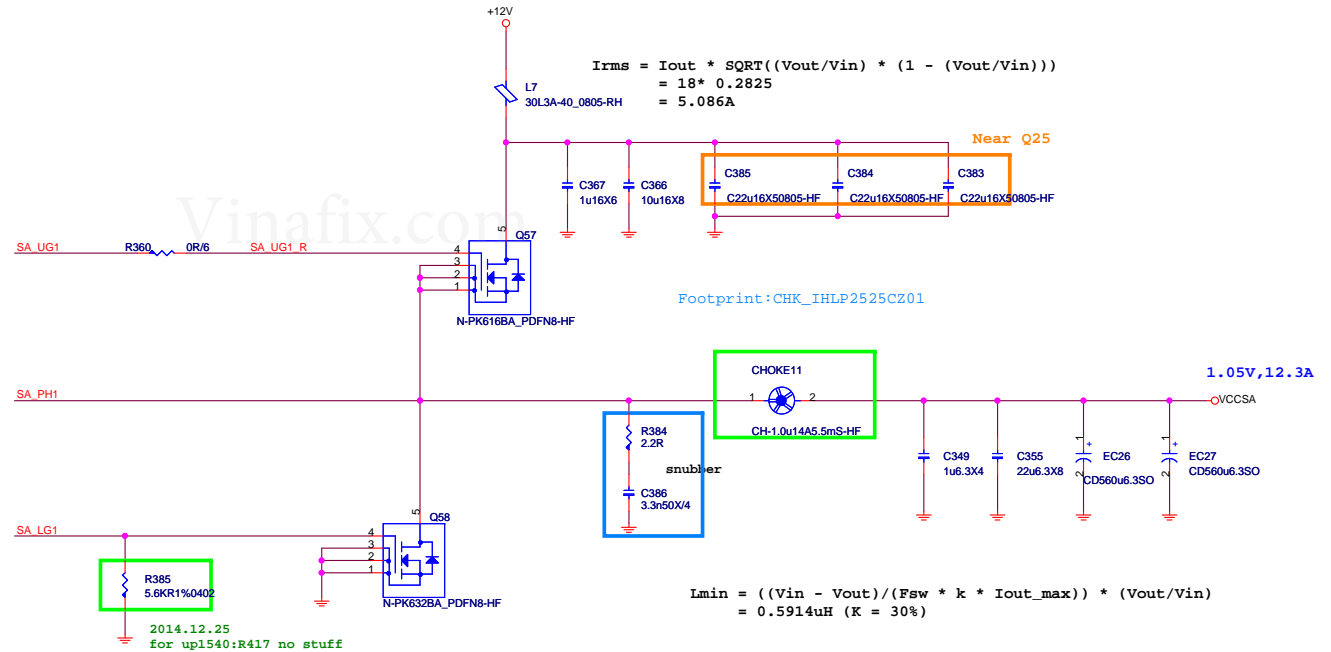
2014.08.21 update

Pull up by layout&Check level



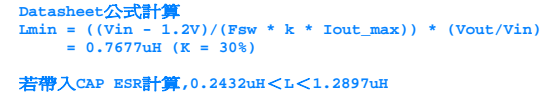
SLP\_S3# assertion to VCC, VCCGT, VCCIO and VCCSA rails completely off.

SLP\_S3# assertion to VR disabled  
max:1us

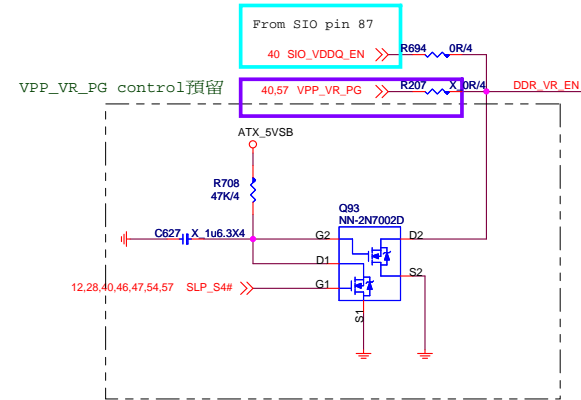


### 1.2A FOR DDR VTT

```
| Rds(on) 4.5V
| D03-4C05N03-O05 : 5 mohm
| D03-632BA0C-N03 : 4.6mohm
| D03-3056M00-U47 : 6.2mohm
```

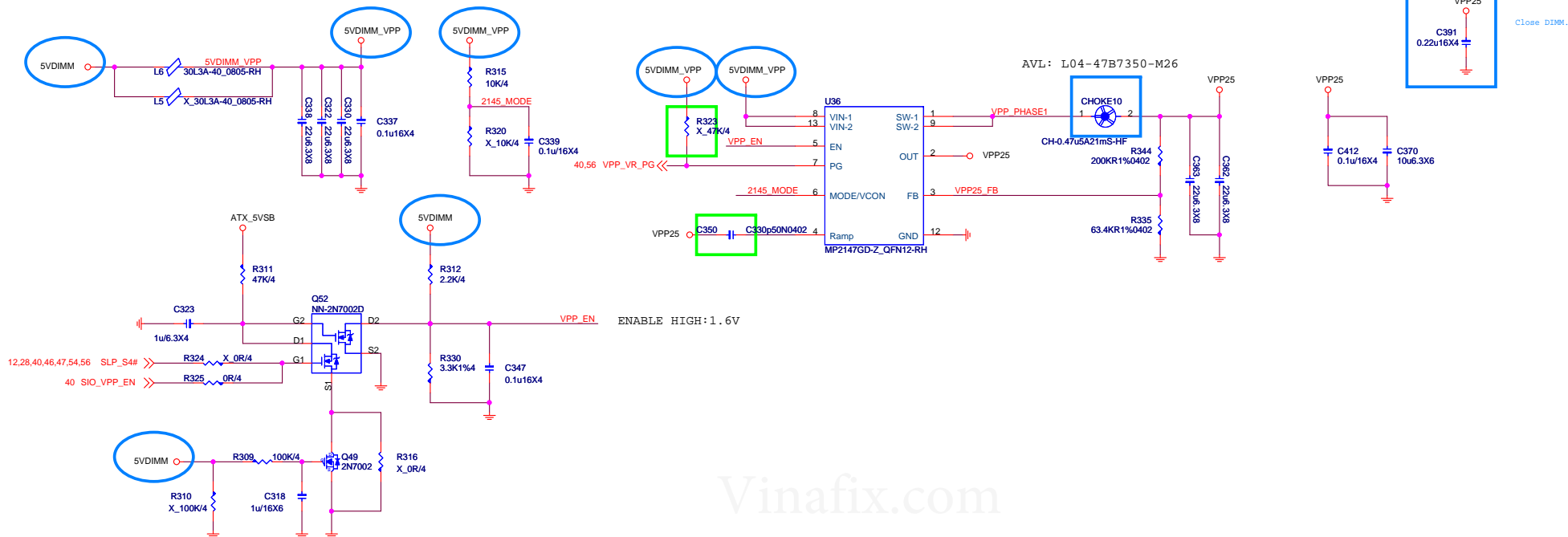


From SIO pin 87



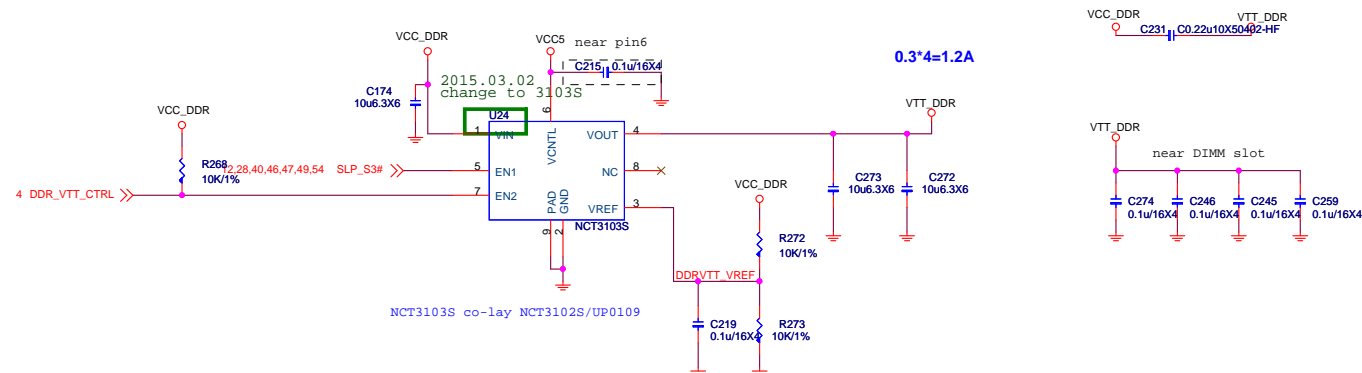
4DIMM :2.24A FOR DDR VPP2.5V

**VPP25 Power**  
2.5V; 2.24A



To make sure VPP EN after 5VDIMM stable

### DDR VTT Power



VCC\_DDR VTT\_DDR  
C231 C0.22u10X50402-HF

# PCH\_1VSB

1.0V; 11A

Rocpset:3.48K

OCp=Rocset\*Rdson(Low side)/10uA

=3.48K\*4.6mohm/10uA

=16A

Rocs:7.87K, OCP:

D03-4C05N03-O05 : 15.74A

D03-632BA0C-N03 : 17.1A

use UBIQ MOS need Check

Rdson(Low)4.5V

D03-3116M00-U47 : 3.6 mohm

D03-632BA0C-N03 : 4.6mohm

D03-3056M00-U47 : 6.2mohm

$$I_{rms} = I_{out} * \sqrt{(V_{out}/V_{in}) * (1 - (V_{out}/V_{in}))}$$

$$= 10.664 * 0.4$$

$$= 4.2656A < 5000mA$$

L04-47B7730-T15 for OC, Gaming 10, 9, 7, 5  
L04-12A7321-L65 for Gaming 3, SLI, ECO  
L04-12A7721-T15 for cost down

MAX:10.664A

$$I_{min} = ((V_{in} - V_{out}) / (F_{sw} * k * I_{out\_max})) * (V_{out}/V_{in})$$

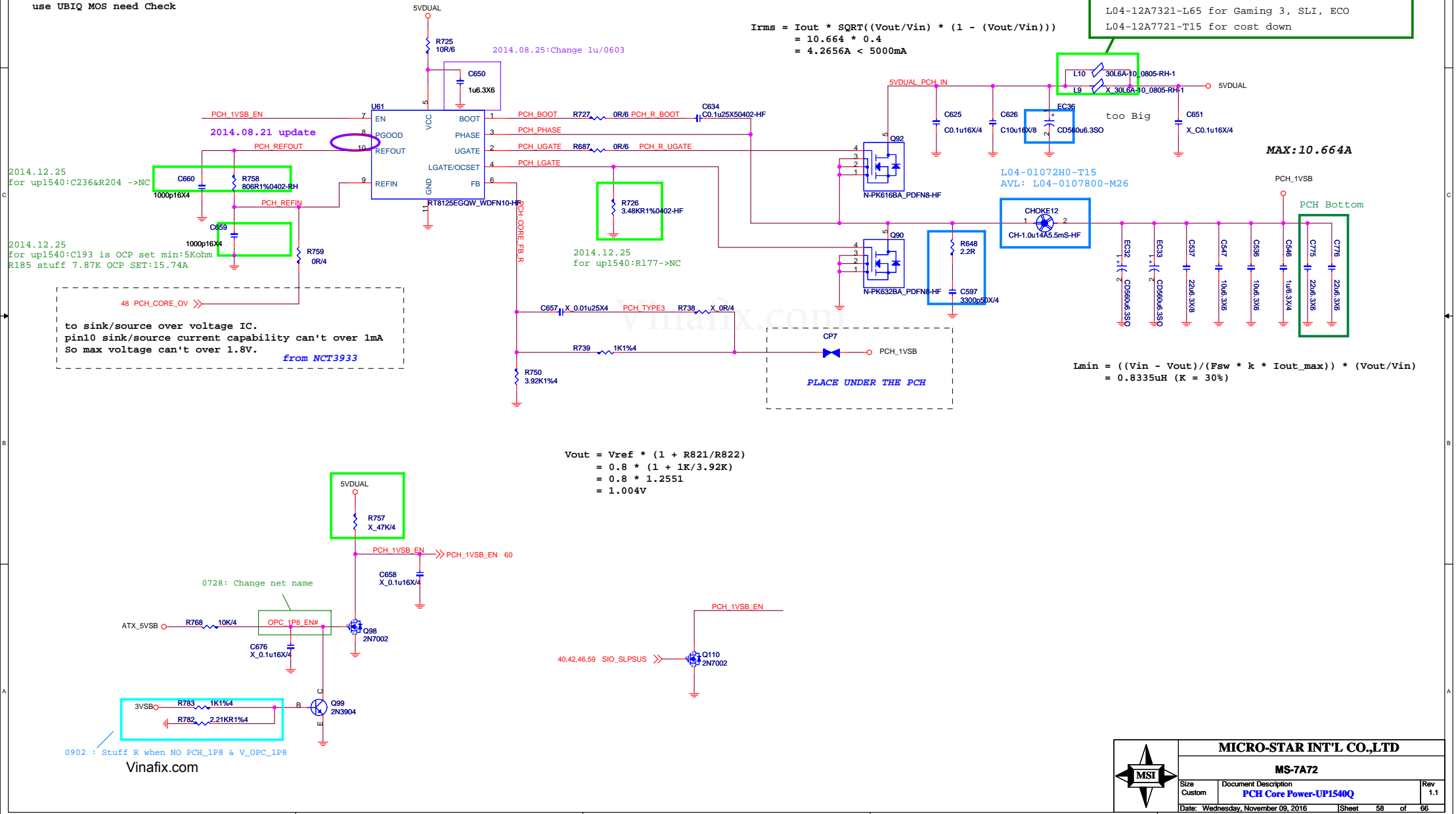
$$= 0.8335uH (K = 30\%)$$

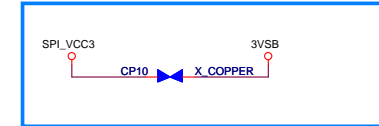
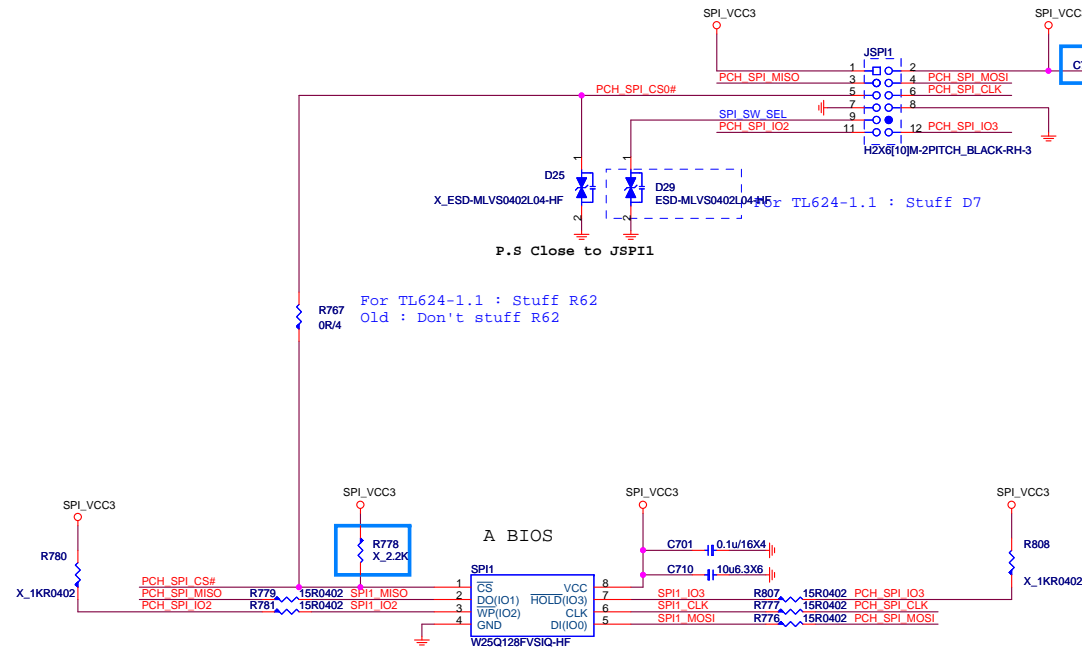
$$V_{out} = V_{ref} * (1 + R_{821}/R_{822})$$

$$= 0.8 * (1 + 1K/3.92K)$$

$$= 0.8 * 1.2551$$

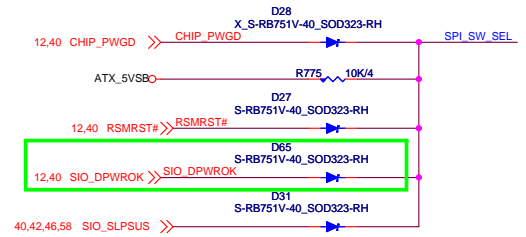
$$= 1.004V$$



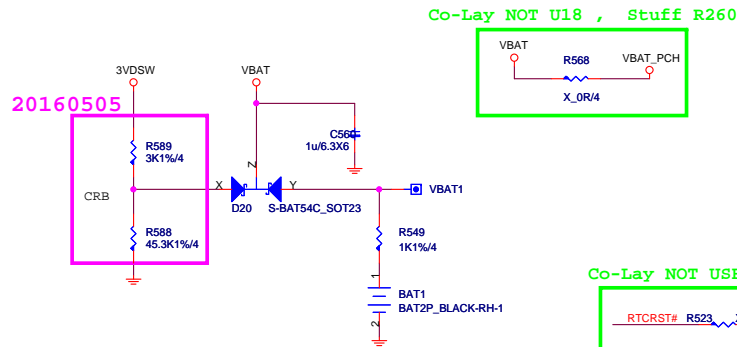


Module Stuff CHIP\_PWGD,  
But PCH\_PWROK may ramp up before CHIP\_PWGD.

For TL624 1.1



**For TL624-1.1**  
**SKYLAKE : Stuff D10/D17/R353**  
**B85/H87 : Stuff D8/D9/R353**  
**Others : Stuff R272**



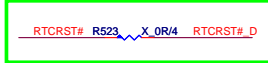
Function 1		
IN		OUT
INPUT1	INPUT2	OUTPUT1
0	1	1
1	0	0
1	1	0
0	0	0

Default

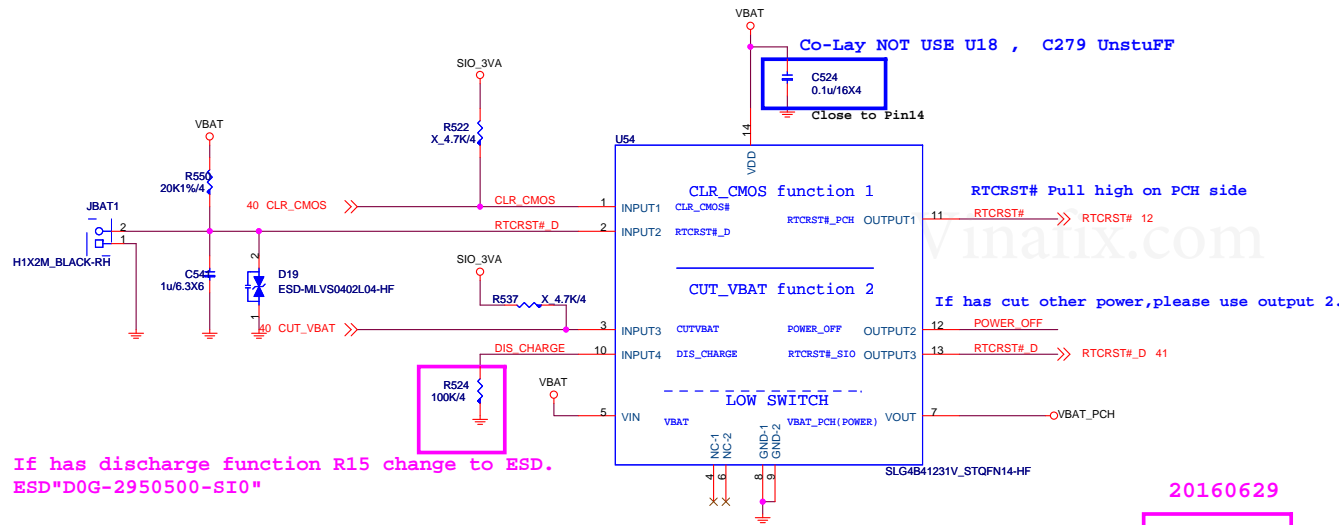
Function 2				
IN		OUT		
INPUT3 & lowswitch EN	INPUT4	OUTPUT2	OUTPUT3	VOUT
0	0	0	1	1
1	0	1	1	0 (discharge)
0	1	1	0	0 (discharge)
1	1	1	0	0 (discharge)

Default

Co-Lay NOT USE U1 , R20 STUFF

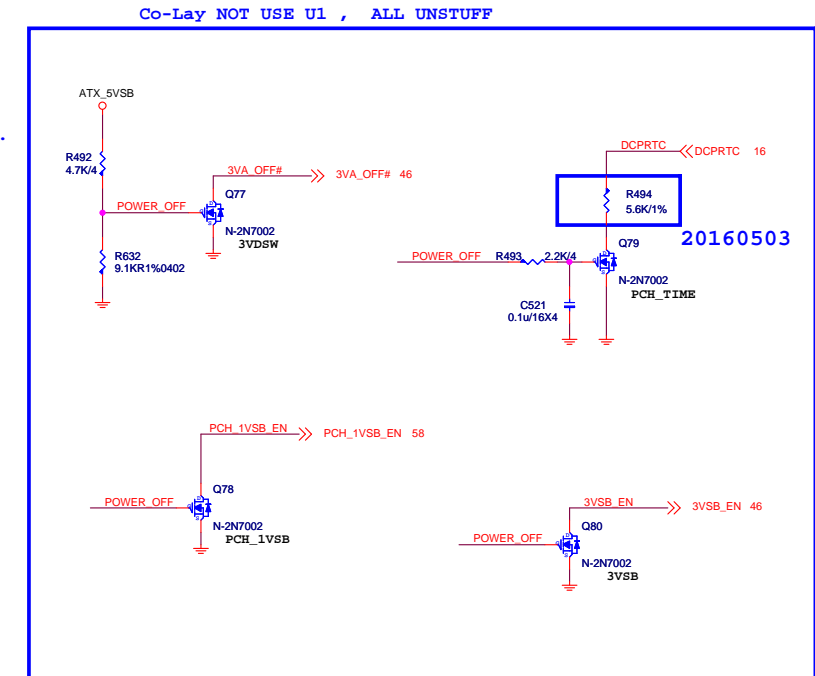
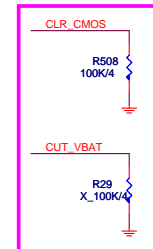


If STUFF R20 Please Check RTCRST# Double Pull High



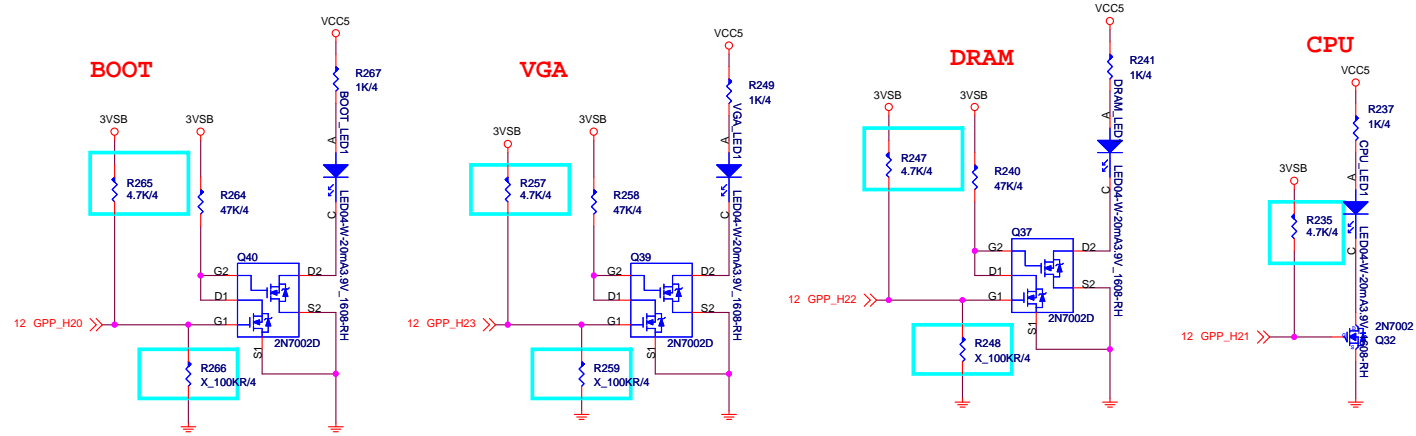
If has discharge function R15 change to ESD.  
ESD"D0G-2950500-SIO"

20160629





## EZ Debug



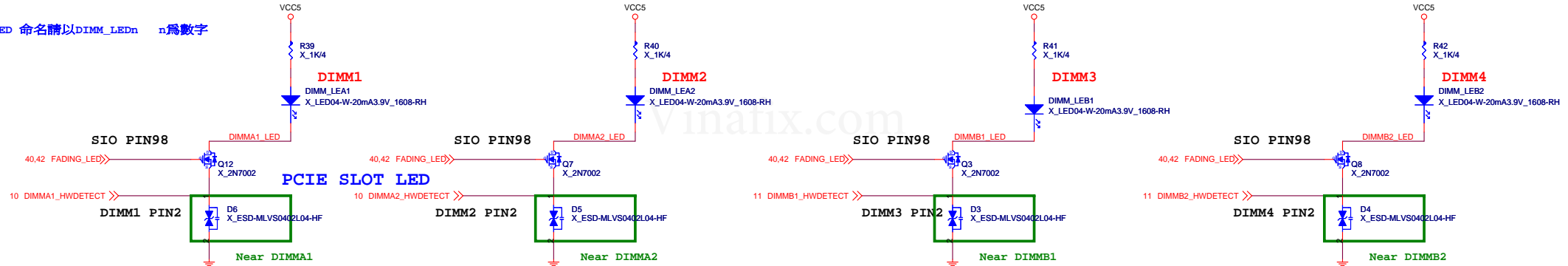
www.teknisi-indonesia.com

## TOP LED

紅 M:DOC-040P100-H91  
S:DOC-040S500-E07  
白 M:DOC-040T200-H91  
S:DOC-040S200-E07

## DIMM

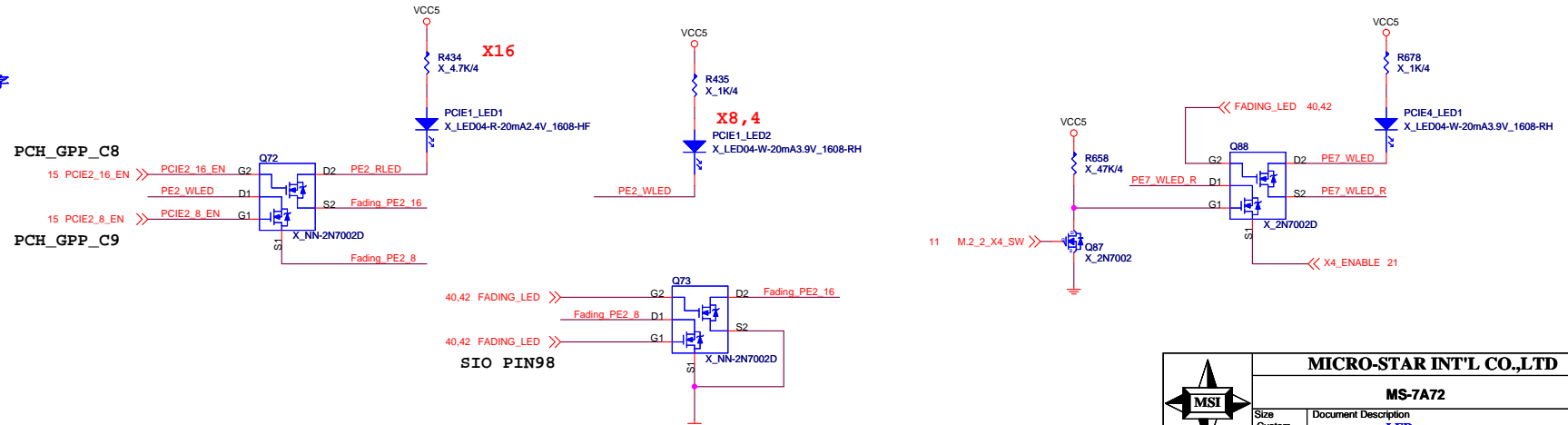
LED 命名請以DIMM\_LEDn n為數字



## PCIE

PCIE SLOT LED 命名請以PCIE\_LEDn n為數字

GPIO LED	GPP_C8	GPP_C9
亮	GPO PO HIGH	GPO PO HIGH
滅	GPI (default LOW)	GPI (default LOW)



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## PCB



PD0-07A7211-G37, 精成-深圳, 23, 寶安恩斯邁廠 (MSIS)  
PD0-07A7211-E48, 競華, 23, 寶安恩斯邁廠 (MSIS)

## CPU Socket



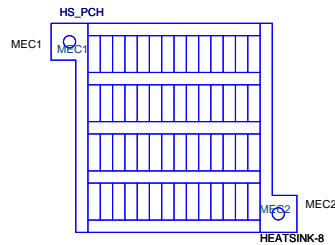
HDMI Virtual Part Number

## Battery

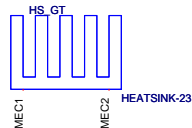


USB3.1

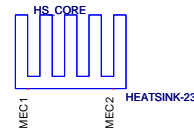
## BIOS Label



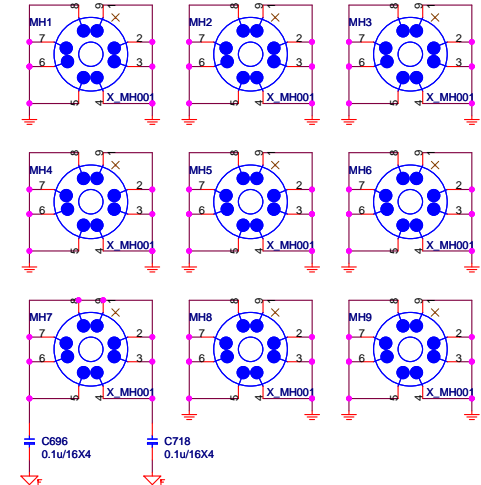
## MOS1 Heatsink



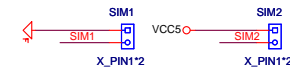
## MOS2 Heatsink



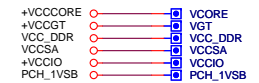
## Mounting Holes



## Simulation



## Test point



## Optical Fiducial Marks-120

