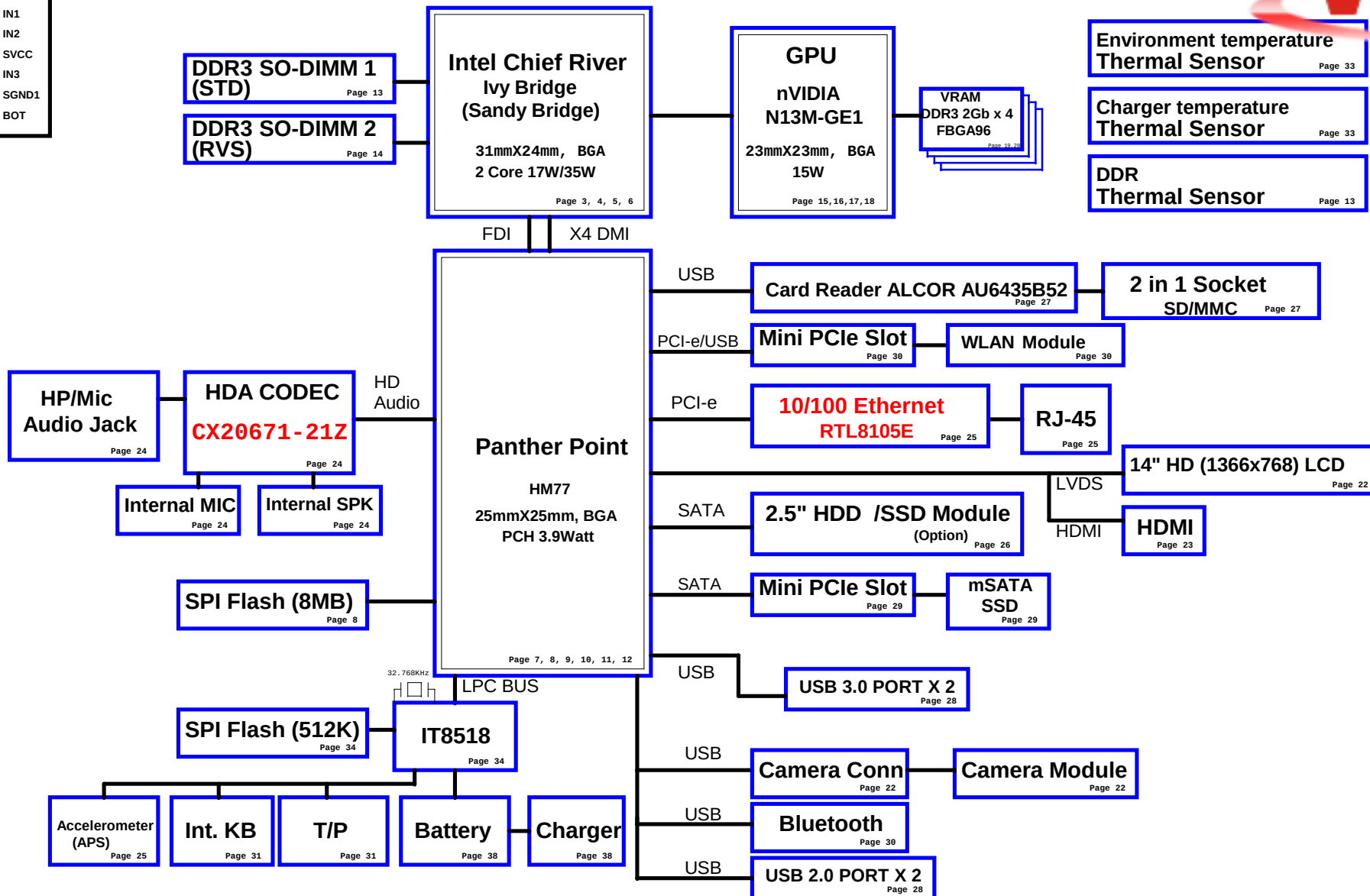


## LZ8 14" Block Diagram -- Intel Chief River ULV

**PCB STACK UP 8L**

|                 |
|-----------------|
| LAYER 1 : TOP   |
| LAYER 2 : SGND  |
| LAYER 3 : IN1   |
| LAYER 4 : IN2   |
| LAYER 5 : SVCC  |
| LAYER 6 : IN3   |
| LAYER 7 : SGND1 |
| LAYER 8 : BOT   |



### POWER

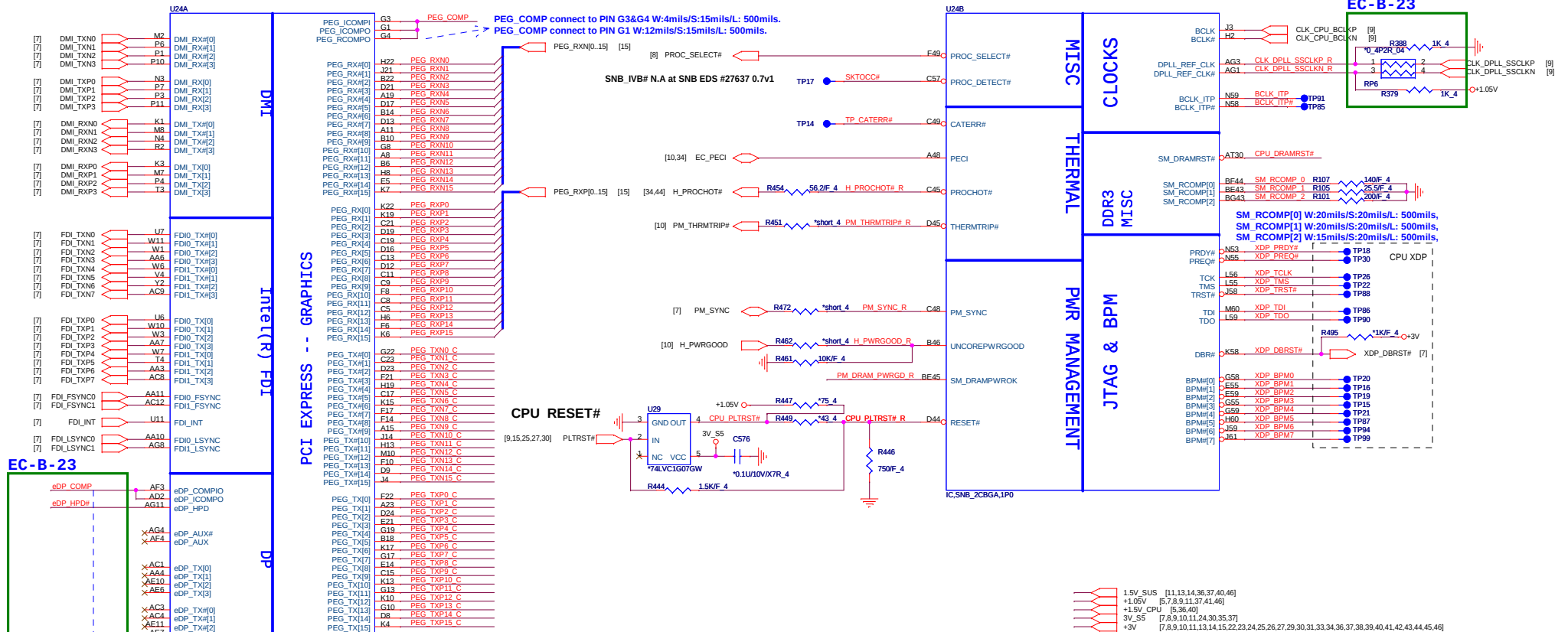
|                        |                         |            |
|------------------------|-------------------------|------------|
| DC/DC                  | 3V_PCU, 5V_PCU, +15V    | Page 39    |
| REGULATOR (DDR3)       | 1.5V_SUS, 0.75V_DDR_VTT | Page 40    |
| REGULATOR              | 1.05V                   | Page 41    |
| REGULATOR              | VCCSA                   | Page 42    |
| CPU Core               |                         | Page 44    |
| Charger                |                         | Page 38    |
| RUN POWER SW/Discharge | 5V_SUS, 3V_S5, 5V_S5    | Page 37    |
| REGULATOR              | 1.8V                    | Page 43    |
| dGPU Core              |                         | Page 45,46 |

Table of Contents

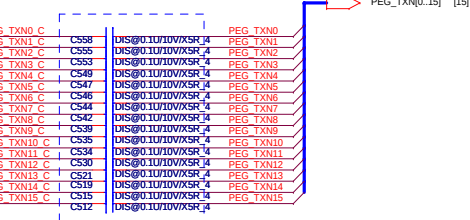
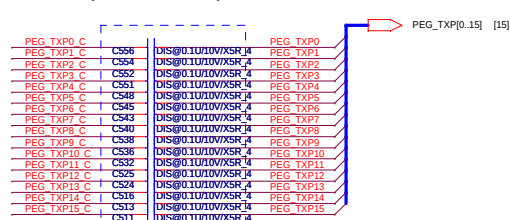
| PAGE  | DESCRIPTION               |
|-------|---------------------------|
| 01    | BLOCK DIAGRAM             |
| 02    | FRONT PAGE                |
| 03-06 | IVY/Sandy Bridge          |
| 07-12 | Panther/Cougar Point-PCH  |
| 13-14 | DDR3 SO-DIMM              |
| 15-18 | N13M                      |
| 19-20 | N13M VRAM                 |
| 21    | PS8622 LVDS converter     |
| 22    | LCD/CAMERA                |
| 23    | HDMI CONN                 |
| 24    | Audio Codec CX20672       |
| 25    | LAN[RTL8105E]             |
| 26    | SATA                      |
| 27    | Card Reader-AU6435B52-GDL |
| 28    | USB2.0 X2/USB3.0 X2       |
| 29    | MINI Card (SSD)           |
| 30    | WLAN/BT                   |
| 31    | KB/TP/LID                 |
| 32    | USB2.0--Audio Jack conn   |
| 33    | FAN/Thermal               |
| 34    | KBC IT8518                |
| 35    | SW/LED                    |
| 36    | Screw Hole/EMI/ESD        |
| 37    | Discharge                 |
| 38    | CHARGER (bq24725A)        |
| 39    | 3V/5V (TPS51123ARGER)     |
| 40    | DDR3/0.75V (TPS51216)     |
| 41    | 1.05V_PCH(RT8240B)        |
| 42    | VCCSA (RT8241A)           |
| 43    | 1.8V(TPS54318)            |
| 44    | CPU(ISL95831)IMVP2+1      |
| 45    | DGPU CORE(TPS51728)       |
| 46    | GPU                       |
| 47    |                           |
| 48    |                           |
| 49    |                           |
| 50    |                           |
| 51    |                           |

Power States

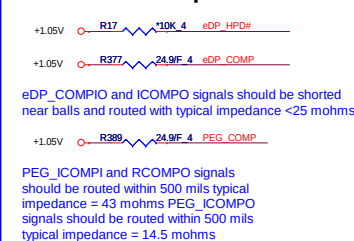
| POWER PLANE    | VOLTAGE     | PAGE                                                                                                 | DESCRIPTION                                             | CONTROL SIGNAL | ACTIVE IN |
|----------------|-------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------|-----------|
| VIN            | 10V~+20V    | 22,36,38,39,40,41,42,44,45                                                                           | MAIN POWER                                              |                | S0~S5     |
| +3V_RTC        | +3.0V~+3.3V | 7,8,11,34                                                                                            | RTC                                                     |                | S0~S5     |
| 3VPCU          | +3.3V       | 7,8,22,23,25,30,31,34,35,36,37,38,39,43,45                                                           | IT8518/19 POWER                                         | 3V5V_EN        | S0~S5     |
| 5VPCU          | +5V         | 22,36,37,39,40,41,42,43,44,45,46                                                                     | DC/DC POWER IC SOURCE                                   | 3V5V_EN        | S0~S5     |
| 15V            | +15V        | 22,37,39,40,46                                                                                       | LARGE POWER                                             | 3V5V_EN        | S0~S5     |
| LANVCC         | +3.3V       | 25,37                                                                                                | LAN POWER                                               | LAN_ON         |           |
| 5V_S5          | +5V         | 11,24,28,32,37                                                                                       | PCH SUS POWER                                           | S5_ON          | S0~S3     |
| 3V_S5          | +3.3V       | 3,7,8,9,10,11,30,35,37,45                                                                            | Sys Management,PCH Resume Well,<br>USB,WLAN,WiMAX POWER | S5_ON          | S0~S3     |
| 1.5V_SUS       | +1.5V       | 3,11,13,14,36,37,40,46                                                                               | DDR3 SODIMM POWER                                       | SUSON          | S0~S3     |
| +0.75V_DDR_VTT | +0.75V      | 13,14,37,40                                                                                          | DDR3 SODIMM REFERENCE POWER                             | MAINON         | S0        |
| +5V            | +5V         | 7,8,11,22,23,24,26,31,33,36,37,38                                                                    | SLP_S3# CTRLD POWER                                     | MAINON         | S0        |
| +3V            | +3.3V       | 3,7,8,9,10,11,13,14,15,21,22,23,24,25,26,27<br>29,30,31,33,34,35,36,37,38,39<br>40,41,42,43,44,45,46 | SLP_S3# CTRLD POWER                                     | MAINON         | S0        |
| VCC_GFX        |             | 5,36,44                                                                                              | VGA CORE POWER                                          | MAINON         | S0        |
| VCCSA          | +0.8V~+0.9V | 5,37,42                                                                                              | Sandy Bridge Power                                      | MAINON         | S0        |
| +1.8V          | +1.8V       | 5,8,11,37,43                                                                                         | LVDS,NVM POWER                                          | MAINON         | S0        |
| +1.05V         | +1.05V      | 3,5,7,8,9,11,21,36,37,41,46                                                                          | Sandy Bridge VTT POWER/PCH CORE POWER                   | MAINON         | S0        |
| VCC_CORE       |             | 5,6,36,44                                                                                            | CPU CORE POWER                                          | VRON           | S0        |
| +LCDVCC        | +3.3V       | 22                                                                                                   | LCD Power                                               | ENVDD          | S0        |
| +3V_HDD        | +3V         | 26                                                                                                   | ODD Power                                               | ODD_5V_ON      | S0        |
| +5V_HDD        | +5V         | 26                                                                                                   | HDD Power                                               | MAINON#        | S0        |
| BAT-V          | +10V~+17V   | 38                                                                                                   | MAIN BATTERY                                            | CHG_PBATT      | S0~S5     |
| +1.5V_CPU      | +1.5V       | 3,5,36                                                                                               | DDR3 1.5V Rails                                         | PS_S3CNTRL     | S0        |



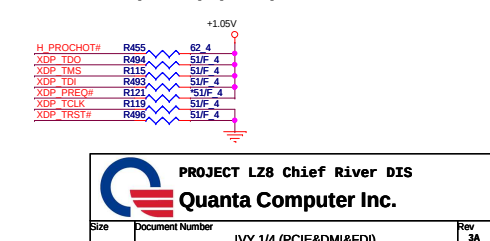
## PEG x16 (UMA Non-stuff)



## DP &amp; PEG Compensation

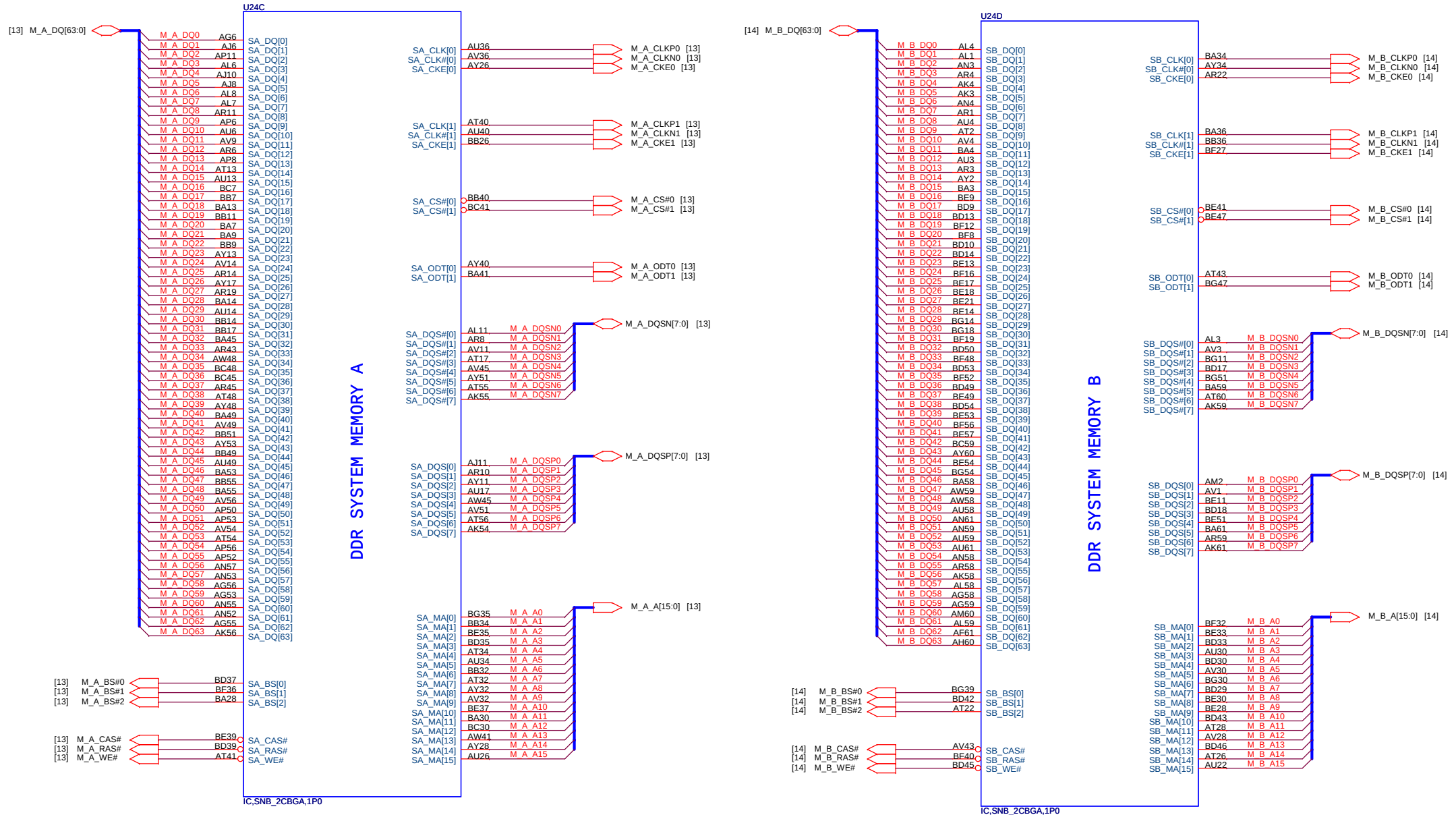


## Processor pull-up (CPU)



# Ivy/Sandy Bridge Processor (DDR3)

04



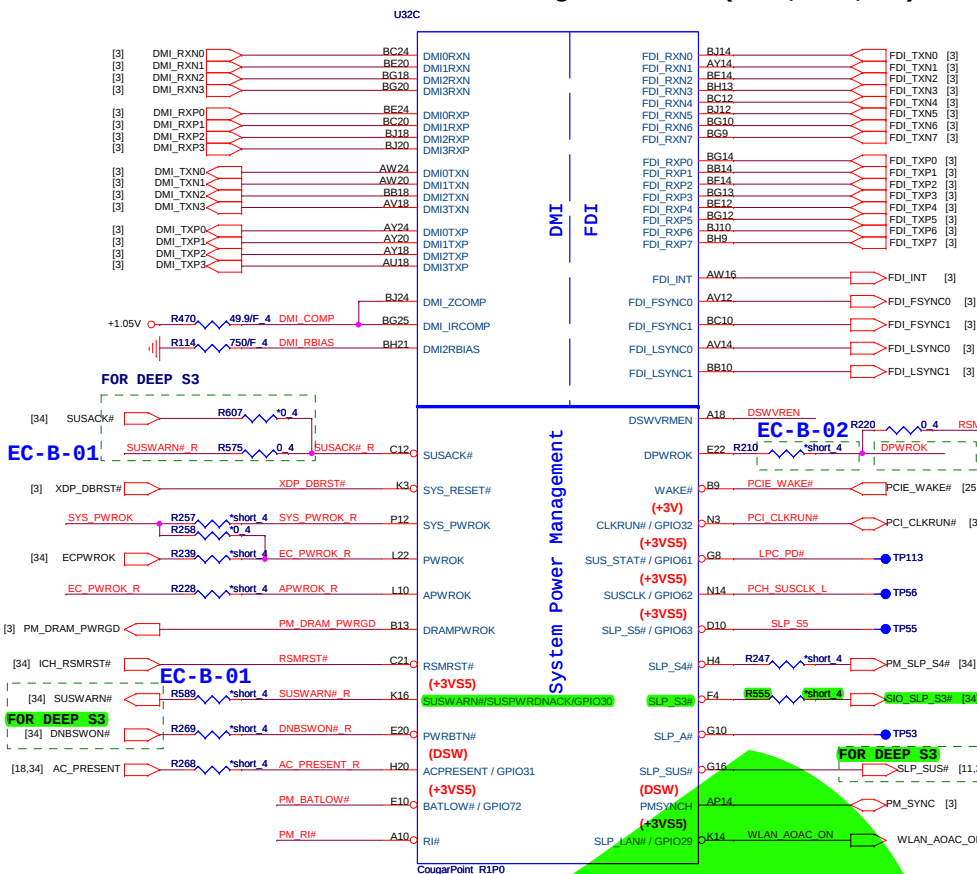




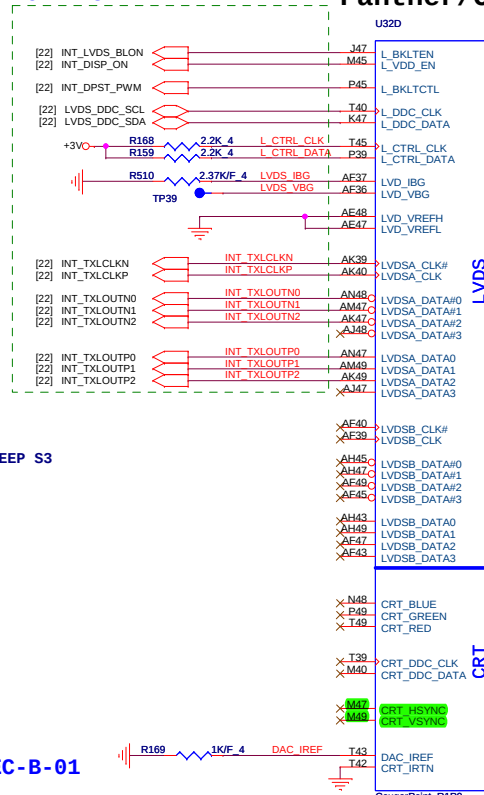
## Sandy Bridge Processor (RESERVED, CFG)

[www.vinafix.vn](http://www.vinafix.vn)

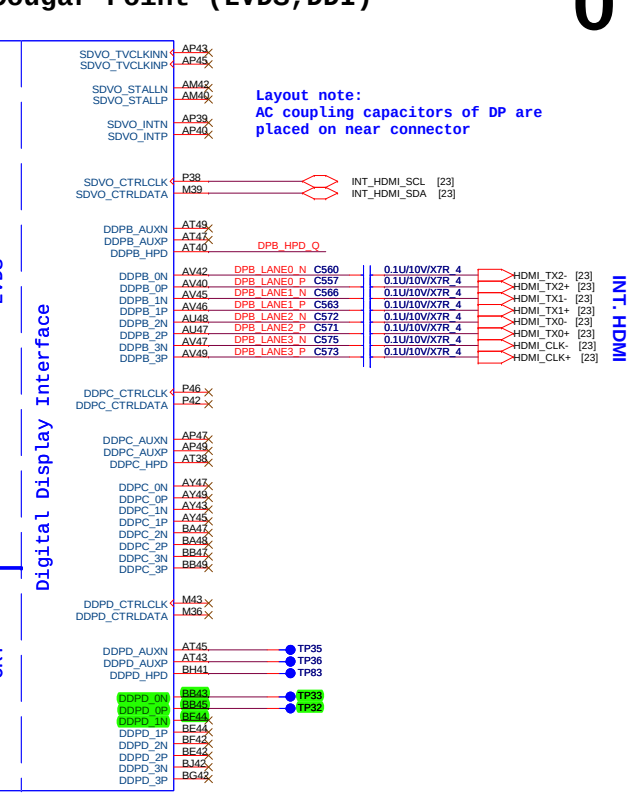
### Panther/Cougar Point (DMI, FDI, PM)



**EC-B-23**



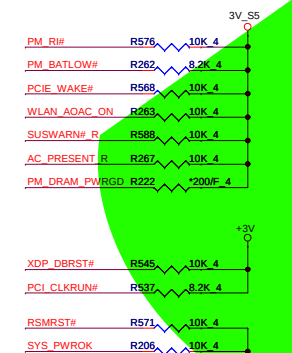
### **Panther/Cougar Point (LVDS, DDI)**



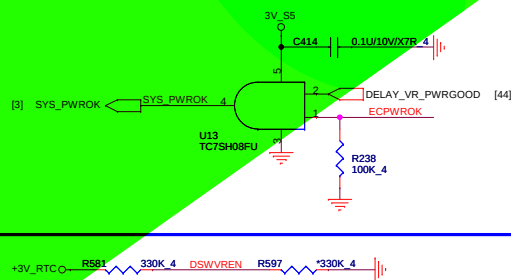
Layout note:  
AC coupling capacitors of DP are  
placed on near connector

## INT. HDM

### PCH Pull-high/low(CLG)

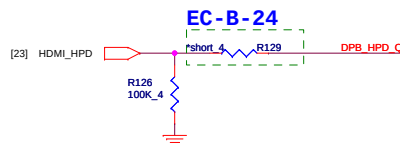


## System PWR\_OK(CLG)



|                                          |
|------------------------------------------|
| On Die DSW VR Enable                     |
| High = Enable (Default)<br>Low = Disable |

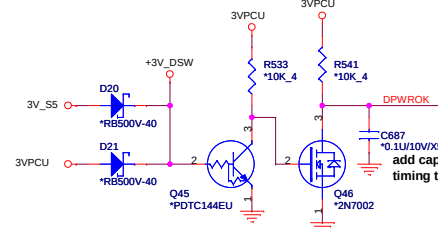
**INT HDMI DETECT**



## LVDS for HM76

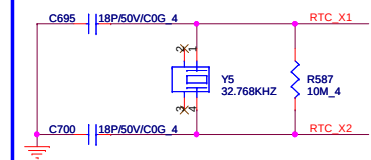
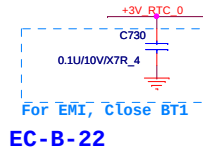
EC-B-23

## DPWROK FOR DSW (DEEP S3)



|         |                                                                                          |
|---------|------------------------------------------------------------------------------------------|
| +1.05V  | [3,5,7,9,11,37,41,46]                                                                    |
| +1.8V   | [5,11,37,43]                                                                             |
| +3V_RTC | [7,11,34]                                                                                |
| 3VCPU   | [7,22,25,30,31,34,35,36,37,38,39,43,45]                                                  |
| +3V     | [3,7,9,10,11,13,14,15,22,23,24,25,26,27,29,30,31,33,34,36,37,38,39,40,41,42,43,44,45,46] |
| +5V     | [11,23,24,26,33,36,37,38]                                                                |
| +3V_DSW | [7,11]                                                                                   |

# 08



30mils

+3V\_RTC

R270

20K/J\_4

C420

1U/6.3V/X5R\_4

J2

\*SOLDERJUMPER-2

RTC\_RST#

R271

20K/J\_4

C415

1U/6.3V/X5R\_4

J1

\*SOLDERJUMPER-2

SRCT\_RST#

R289

1K\_4

+3V\_RTC\_1

D10

BAT54C

C411

1U/6.3V/X5R\_4

R288

0.6

+3V\_RTC\_2

R287

\*0.6

FOR DEEP S3

RTC Power trace width 20mils.

R267

\*0.6

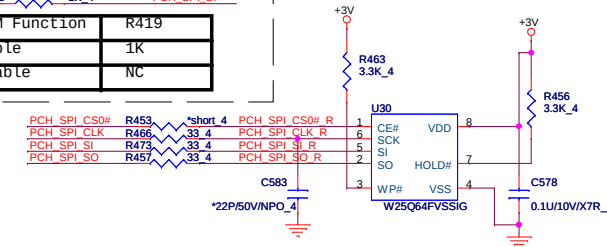
RTC\_RST#

SRCT\_RST#

W25Q64CVSSIG: AKE3EFP0N04  
MX25L6406EM2I-12G: AKE3NFP0Z00  
EN25Q64-104HIP: AKE3EFN0Q00

**iTPM ENABLE/DISABLE**

|               |      |
|---------------|------|
| 1TPM Function | R419 |
| Enable        | 1K   |
| Disable       | NC   |



if default boot destination is SPI,  
no external pull-up/-down resistors on the board are  
necessary

| Pin Name       | Strap description                                           | Sampled                       | Configuration                                                                                                                                                | Circuit                                                           |       |               |   |   |     |   |   |     |  |
|----------------|-------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-------|---------------|---|---|-----|---|---|-----|--|
| SPKR           | Different from Calpella                                     | No reboot mode setting        | PWROK                                                                                                                                                        | 0 = Default (weak pull-down 20K)<br>1 = Setting to No-Reboot mode |       |               |   |   |     |   |   |     |  |
| GNT3# / GPIO55 | Top-Block Swap Override                                     | PWROK                         | 0 = "top-block swap" mode<br>1 = Default (weak pull-up 20K)                                                                                                  |                                                                   |       |               |   |   |     |   |   |     |  |
| INTVRMEN       | Integrated 1.05V VRM enable                                 | ALWAYS                        | Should be always pull-up                                                                                                                                     |                                                                   |       |               |   |   |     |   |   |     |  |
| HDA_SDO        | Flash Descriptor Security<br>Only for Interposer            | PWROK                         | 0 = effective(Default: weak pull down)<br>1 = Override                                                                                                       |                                                                   |       |               |   |   |     |   |   |     |  |
| GNT1# / GPIO51 | Boot BIOS Selection 1 [bit-1]                               | PWROK                         | <table><tr><th>GNT1#</th><th>GNT0#</th><th>Boot Location</th></tr><tr><td>1</td><td>0</td><td>SPI</td></tr><tr><td>0</td><td>0</td><td>LPC</td></tr></table> | GNT1#                                                             | GNT0# | Boot Location | 1 | 0 | SPI | 0 | 0 | LPC |  |
| GNT1#          | GNT0#                                                       | Boot Location                 |                                                                                                                                                              |                                                                   |       |               |   |   |     |   |   |     |  |
| 1              | 0                                                           | SPI                           |                                                                                                                                                              |                                                                   |       |               |   |   |     |   |   |     |  |
| 0              | 0                                                           | LPC                           |                                                                                                                                                              |                                                                   |       |               |   |   |     |   |   |     |  |
| GPIO19         | Different from Calpella                                     | Boot BIOS Selection 0 [bit-0] | PWROK                                                                                                                                                        |                                                                   |       |               |   |   |     |   |   |     |  |
| GNT2# / GPIO53 | ESI strap (Server only)                                     | PWROK                         | Should not be pull-down<br>(weak pull-up 20K)                                                                                                                | USE GPIO PIN                                                      |       |               |   |   |     |   |   |     |  |
| DF_TVS         | DMI Termination voltage                                     | PWROK                         | weak pull-down 20kohm                                                                                                                                        |                                                                   |       |               |   |   |     |   |   |     |  |
| HDA_SYNC       | On-Die PLL VR Voltage Select                                | RSMRST                        | 0 = Support by 1.8V (weak pull-down)<br>1 = Support by 1.5V                                                                                                  |                                                                   |       |               |   |   |     |   |   |     |  |
| GPIO15         | Intel ME Crypto Transport Layer Security (TLS) cipher suite |                               | Low = Disable (Default)<br>High = Enable                                                                                                                     |                                                                   |       |               |   |   |     |   |   |     |  |
| GPIO28         | Different from Calpella                                     | On-die PLL Voltage Regulator  | RSMRST#                                                                                                                                                      | 0 = Disable<br>1 = Enable (Default)                               |       |               |   |   |     |   |   |     |  |
| DSWVREN        | 0: disable<br>1: enable                                     |                               |                                                                                                                                                              |                                                                   |       |               |   |   |     |   |   |     |  |

ACZ\_SYNC\_1

ACZ\_SYNC\_R

Q29 2N7002

R283 283 0.4

R242 33 4 ACZ\_BCLK

R291 1M\_4

R288 10K\_4

C422 33pF 50V NPO\_4

C415 10pF 50V COG\_4

+3.3V 50V NPO\_4

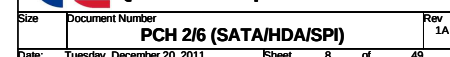
[24] ACZ\_BITCLK\_AUDIO < R242 33 4 ACZ\_BCLK

[24] ACZ\_SYNC\_AUDIO < R290 33 4 ACZ\_SYNC

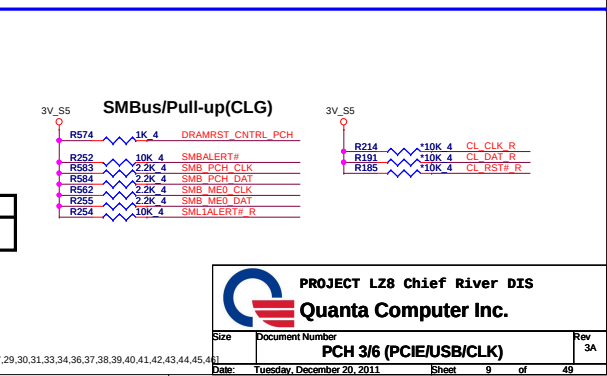
[24] ACZ\_RST#\_AUDIO < R202 33 4 ACZ\_RST#

[24] ACZ\_SDOUT\_AUDIO < R566 33 4 ACZ\_SDOUT

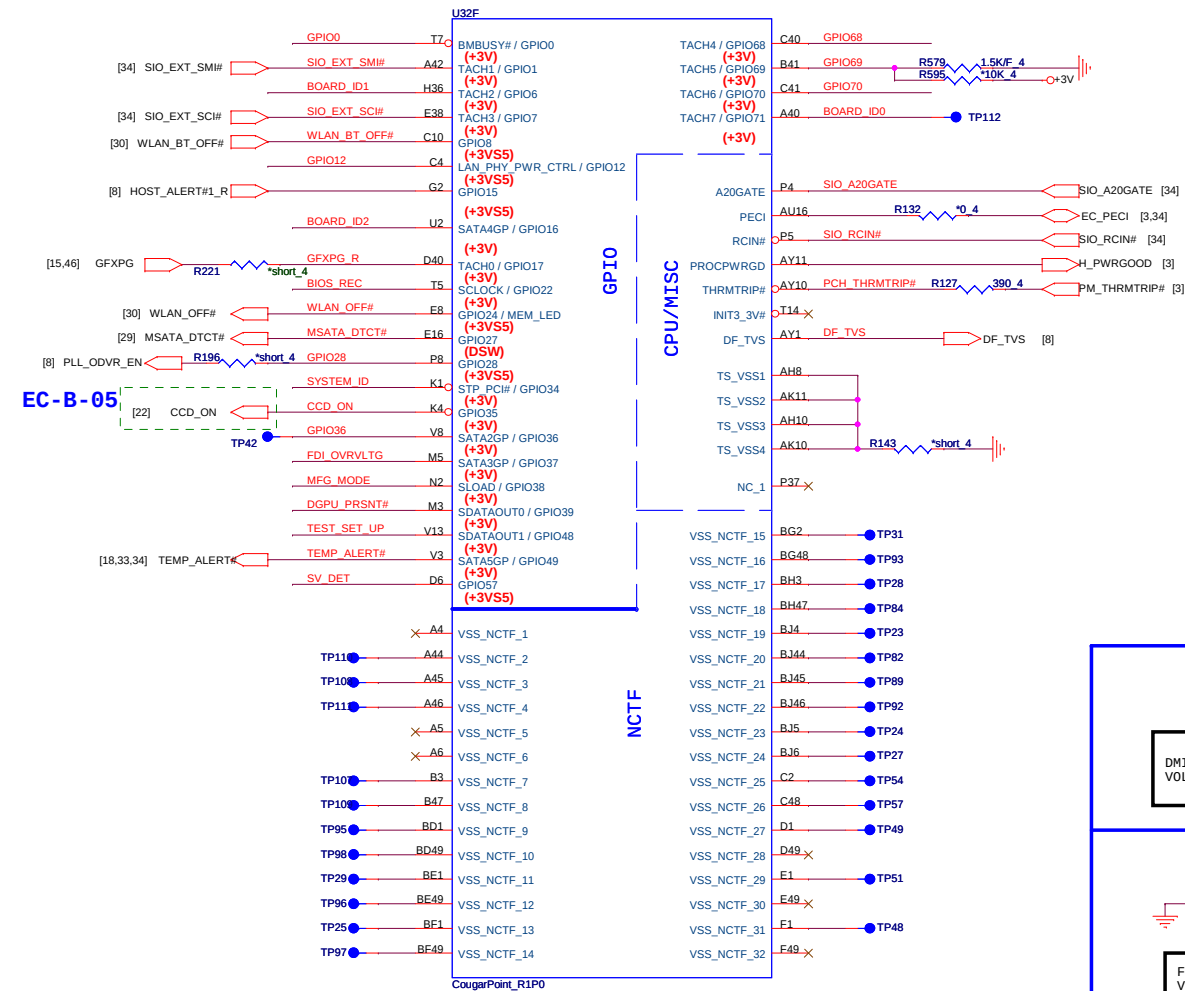
Place near the PCH







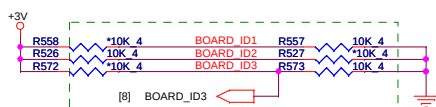
# Panther/Cougar Point (GPIO,VSS\_NCTF,RSVD)



3V\_S5 [3,7,8,9,11,24,30,35,37]  
+3V [3,7,8,9,11,13,14,15,22,23,24,25,26,27,29,30,31,33,34,36,37,38,39,40,41,42,43,44,45,46]

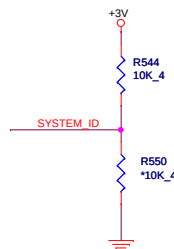
## BOARD ID SETTING

| Board ID For Function | ID1 GPIO6 | ID2 GPIO16 | ID3 GPIO13 |
|-----------------------|-----------|------------|------------|
| SDV                   | 0         | 0          | 0          |
| SIV                   | 0         | 0          | 1          |
| SVT                   | 0         | 1          | 0          |
| SOVP                  |           |            |            |



EC-B-04  
EC-C-02

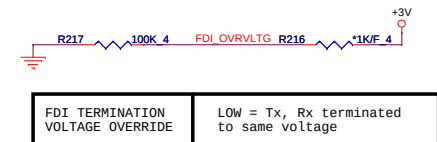
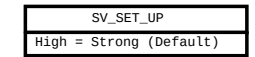
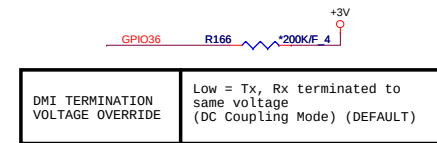
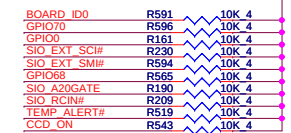
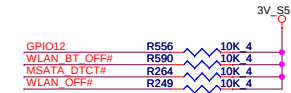
|     | SYSTEM_ID |
|-----|-----------|
| LZ7 | 0         |
| LZ8 | 1         |



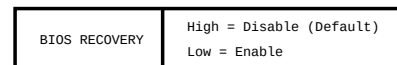
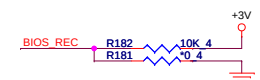
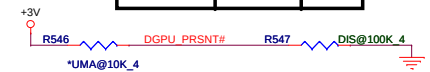
3V\_S5 [3,7,8,9,11,24,30,35,37]  
+3V [3,7,8,9,11,13,14,15,22,23,24,25,26,27,29,30,31,33,34,36,37,38,39,40,41,42,43,44,45,46]

10

## GPIO Pull-up/Pull-down(CLG)



## MFG-TEST

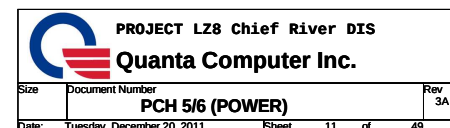


|          | Optimus | UMA  |
|----------|---------|------|
| Stuff    | R547    | R546 |
| No Stuff | R546    | R547 |

PROJECT LZ8 Chief River DIS  
Quanta Computer Inc.

Size Document Number PCH 4/6 (GPIO/MISC) Rev 3A  
Date: Tuesday, December 20, 2011 Sheet 10 of 49

**Panther/COUGAR POINT (POWER)**



# Panther/Cougar Point-M (GND)

|      |          |          |      |
|------|----------|----------|------|
| AY4  | VSS[159] | VSS[259] | H46  |
| AY42 | VSS[160] | VSS[260] | K18  |
| AY46 | VSS[161] | VSS[261] | K26  |
| AY8  | VSS[162] | VSS[262] | K39  |
| B11  | VSS[163] | VSS[263] | K46  |
| B15  | VSS[164] | VSS[264] | K7   |
| B19  | VSS[165] | VSS[265] | L18  |
| B23  | VSS[166] | VSS[266] | L2   |
| B27  | VSS[167] | VSS[267] | L20  |
| B31  | VSS[168] | VSS[268] | L26  |
| B35  | VSS[169] | VSS[269] | L28  |
| B39  | VSS[170] | VSS[270] | L36  |
| B7   | VSS[171] | VSS[271] | L48  |
| F45  | VSS[172] | VSS[272] | M12  |
| BB12 | VSS[173] | VSS[273] | M18  |
| BB16 | VSS[174] | VSS[274] | M22  |
| BB20 | VSS[175] | VSS[275] | M24  |
| BB22 | VSS[176] | VSS[276] | M30  |
| BB24 | VSS[177] | VSS[277] | M32  |
| BB28 | VSS[178] | VSS[278] | M34  |
| BB30 | VSS[179] | VSS[279] | M38  |
| BB38 | VSS[180] | VSS[280] | M4   |
| BB4  | VSS[181] | VSS[281] | M42  |
| BC14 | VSS[182] | VSS[282] | M46  |
| BC18 | VSS[183] | VSS[283] | M8   |
| BC2  | VSS[184] | VSS[284] | N18  |
| BC22 | VSS[185] | VSS[285] | P30  |
| BC26 | VSS[186] | VSS[286] | P47  |
| BC32 | VSS[187] | VSS[287] | P11  |
| BC34 | VSS[188] | VSS[288] | P18  |
| BC36 | VSS[189] | VSS[289] | P18  |
| BC40 | VSS[190] | VSS[290] | T33  |
| BC42 | VSS[191] | VSS[291] | P43  |
| BC48 | VSS[192] | VSS[292] | P47  |
| BD46 | VSS[193] | VSS[293] | P7   |
| BD5  | VSS[194] | VSS[294] | R2   |
| BE22 | VSS[195] | VSS[295] | R48  |
| BE26 | VSS[196] | VSS[296] | T12  |
| BE40 | VSS[197] | VSS[297] | T31  |
| BE10 | VSS[198] | VSS[298] | T37  |
| BE12 | VSS[199] | VSS[299] | T4   |
| BE16 | VSS[200] | VSS[300] | W34  |
| BE20 | VSS[201] | VSS[301] | T46  |
| BE22 | VSS[202] | VSS[302] | T47  |
| BE24 | VSS[203] | VSS[303] | T8   |
| BE26 | VSS[204] | VSS[304] | V11  |
| BE28 | VSS[205] | VSS[305] | V17  |
| BD3  | VSS[206] | VSS[306] | V26  |
| BE40 | VSS[207] | VSS[307] | V27  |
| BE38 | VSS[208] | VSS[308] | V29  |
| BE40 | VSS[209] | VSS[309] | V31  |
| BE42 | VSS[210] | VSS[310] | V36  |
| BF8  | VSS[211] | VSS[311] | V39  |
| BG17 | VSS[212] | VSS[312] | V43  |
| BG21 | VSS[213] | VSS[313] | V7   |
| BG33 | VSS[214] | VSS[314] | W17  |
| BG44 | VSS[215] | VSS[315] | W19  |
| BG8  | VSS[216] | VSS[316] | W2   |
| BH11 | VSS[217] | VSS[317] | W27  |
| BH15 | VSS[218] | VSS[318] | W48  |
| BH17 | VSS[219] | VSS[319] | Y12  |
| BH19 | VSS[220] | VSS[320] | Y38  |
| H10  | VSS[221] | VSS[321] | Y4   |
| BH27 | VSS[222] | VSS[322] | Y42  |
| BH31 | VSS[223] | VSS[323] | Y46  |
| BH33 | VSS[224] | VSS[324] | Y8   |
| BH35 | VSS[225] | VSS[325] | BC29 |
| BH39 | VSS[226] | VSS[326] | N24  |
| BH43 | VSS[227] | VSS[327] | AJ3  |
| BH7  | VSS[228] | VSS[328] | AD47 |
| D3   | VSS[229] | VSS[329] | B43  |
| D12  | VSS[230] | VSS[330] | BE10 |
| D16  | VSS[231] | VSS[331] | BE10 |
| D18  | VSS[232] | VSS[332] | BE10 |
| D22  | VSS[233] | VSS[333] | BE10 |
| D24  | VSS[234] | VSS[334] | BE10 |
| D26  | VSS[235] | VSS[335] | BE10 |
| D30  | VSS[236] | VSS[336] | BE10 |
| D32  | VSS[237] | VSS[337] | BE10 |
| D34  | VSS[238] | VSS[338] | BE10 |
| D38  | VSS[239] | VSS[339] | BE10 |
| D42  | VSS[240] | VSS[340] | BE10 |
| D8   | VSS[241] | VSS[341] | BE10 |
| E18  | VSS[242] | VSS[342] | BE10 |
| E26  | VSS[243] | VSS[343] | BE10 |
| G18  | VSS[244] | VSS[344] | BE10 |
| G20  | VSS[245] | VSS[345] | BE10 |
| G26  | VSS[246] | VSS[346] | BE10 |
| G28  | VSS[247] | VSS[347] | BE10 |
| G36  | VSS[248] | VSS[348] | BE10 |
| G48  | VSS[249] | VSS[349] | BE10 |
| H12  | VSS[250] | VSS[350] | BE10 |
| H18  | VSS[251] | VSS[351] | BE10 |
| H22  | VSS[252] | VSS[352] | BE10 |
| H24  | VSS[253] |          |      |
| H26  | VSS[254] |          |      |
| H30  | VSS[255] |          |      |
| H32  | VSS[256] |          |      |
| H34  | VSS[257] |          |      |
| F3   | VSS[258] |          |      |

CougarPoint\_R1P0

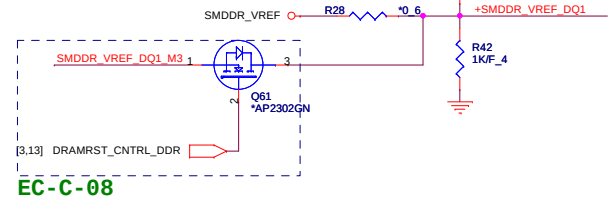
# Panther/Cougar Point-M (GND)

|      |         |          |      |
|------|---------|----------|------|
| H5   | VSS[0]  | VSS[80]  | AK38 |
| AA17 | VSS[1]  | VSS[81]  | AK4  |
| AA2  | VSS[2]  | VSS[82]  | AK42 |
| AA3  | VSS[3]  | VSS[83]  | AK46 |
| AA33 | VSS[4]  | VSS[84]  | AK8  |
| AA34 | VSS[5]  | VSS[85]  | AL16 |
| AB11 | VSS[6]  | VSS[86]  | AL17 |
| AB14 | VSS[7]  | VSS[87]  | AL19 |
| AB39 | VSS[8]  | VSS[88]  | AL2  |
| AB4  | VSS[9]  | VSS[89]  | AL21 |
| AB43 | VSS[10] | VSS[90]  | AL23 |
| P16  | VSS[11] | VSS[91]  | AL26 |
| AB7  | VSS[12] | VSS[92]  | AL27 |
| AC19 | VSS[13] | VSS[93]  | AL31 |
| AC2  | VSS[14] | VSS[94]  | AL33 |
| AC21 | VSS[15] | VSS[95]  | AL34 |
| AC24 | VSS[16] | VSS[96]  | AL48 |
| AC33 | VSS[17] | VSS[97]  | AM11 |
| AC34 | VSS[18] | VSS[98]  | AM14 |
| AC48 | VSS[19] | VSS[99]  | AM36 |
| AD10 | VSS[20] | VSS[100] | AM39 |
| AD11 | VSS[21] | VSS[101] | AM43 |
| AD12 | VSS[22] | VSS[102] | AM45 |
| AD13 | VSS[23] | VSS[103] | AM46 |
| AD19 | VSS[24] | VSS[104] | AM7  |
| AD24 | VSS[25] | VSS[105] | AN2  |
| AD26 | VSS[26] | VSS[106] | AN29 |
| AD27 | VSS[27] | VSS[107] | AN31 |
| AD33 | VSS[28] | VSS[108] | AP12 |
| AD34 | VSS[29] | VSS[109] | AP19 |
| AD36 | VSS[30] | VSS[110] | AP28 |
| AD37 | VSS[31] | VSS[111] | AP30 |
| AD38 | VSS[32] | VSS[112] | AP32 |
| AD39 | VSS[33] | VSS[113] | AP38 |
| AD4  | VSS[34] | VSS[114] | AP4  |
| AD40 | VSS[35] | VSS[115] | AP42 |
| AD42 | VSS[36] | VSS[116] | AP46 |
| AD43 | VSS[37] | VSS[117] | AP8  |
| AD45 | VSS[38] | VSS[118] | AR2  |
| AD46 | VSS[39] | VSS[119] | AR48 |
| AD8  | VSS[40] | VSS[120] | AT11 |
| AE2  | VSS[41] | VSS[121] | AT18 |
| AE3  | VSS[42] | VSS[122] | AT22 |
| AE10 | VSS[43] | VSS[123] | AT26 |
| AF12 | VSS[44] | VSS[124] | AT28 |
| AD14 | VSS[45] | VSS[125] | AT30 |
| AD16 | VSS[46] | VSS[126] | AT32 |
| AF18 | VSS[47] | VSS[127] | AT34 |
| AF19 | VSS[48] | VSS[128] | AT39 |
| AF24 | VSS[49] | VSS[129] | AT42 |
| AF26 | VSS[50] | VSS[130] | AT46 |
| AF27 | VSS[51] | VSS[131] | AT7  |
| AF28 | VSS[52] | VSS[132] | AU24 |
| AF3  | VSS[53] | VSS[133] | AU30 |
| AF4  | VSS[54] | VSS[134] | AV16 |
| AF42 | VSS[55] | VSS[135] | AV20 |
| AF46 | VSS[56] | VSS[136] | AV24 |
| AF5  | VSS[57] | VSS[137] | AV30 |
| AF7  | VSS[58] | VSS[138] | AV38 |
| AF8  | VSS[59] | VSS[139] | AV4  |
| AG19 | VSS[60] | VSS[140] | AV43 |
| AG2  | VSS[61] | VSS[141] | AV8  |
| AG31 | VSS[62] | VSS[142] | AW14 |
| AG48 | VSS[63] | VSS[143] | AW18 |
| AH11 | VSS[64] | VSS[144] | AW2  |
| AH3  | VSS[65] | VSS[145] | AW22 |
| AH36 | VSS[66] | VSS[146] | AW26 |
| AH39 | VSS[67] | VSS[147] | AW28 |
| BE10 | VSS[68] | VSS[148] | AW32 |
| BE10 | VSS[69] | VSS[149] | AW34 |
| BE10 | VSS[70] | VSS[150] | AW36 |
| BE10 | VSS[71] | VSS[151] | AW40 |
| BE10 | VSS[72] | VSS[152] | AW48 |
| BE10 | VSS[73] | VSS[153] | AV11 |
| BE10 | VSS[74] | VSS[154] | AY12 |
| BE10 | VSS[75] | VSS[155] | AY22 |
| BE10 | VSS[76] | VSS[156] | AY28 |
| BE10 | VSS[77] | VSS[157] |      |
| BE10 | VSS[78] | VSS[158] |      |
| BE10 | VSS[79] |          |      |

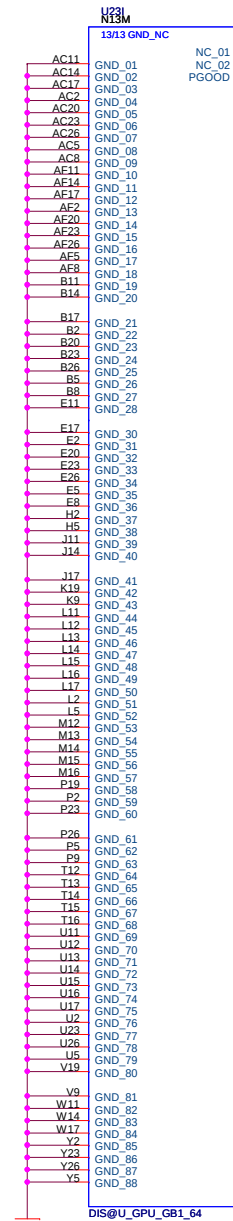
CougarPoint\_R1P0











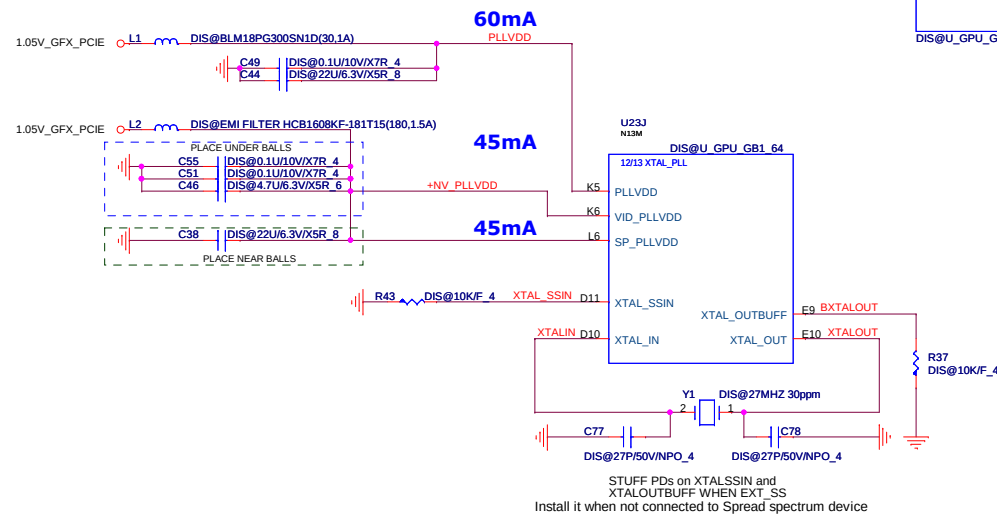
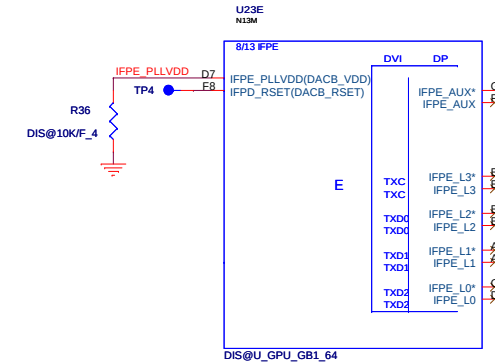
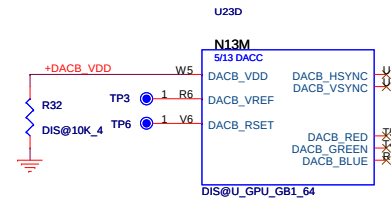
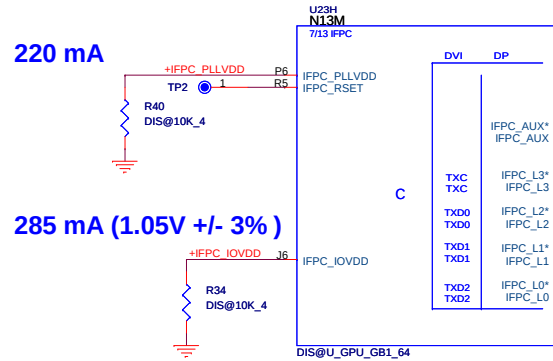
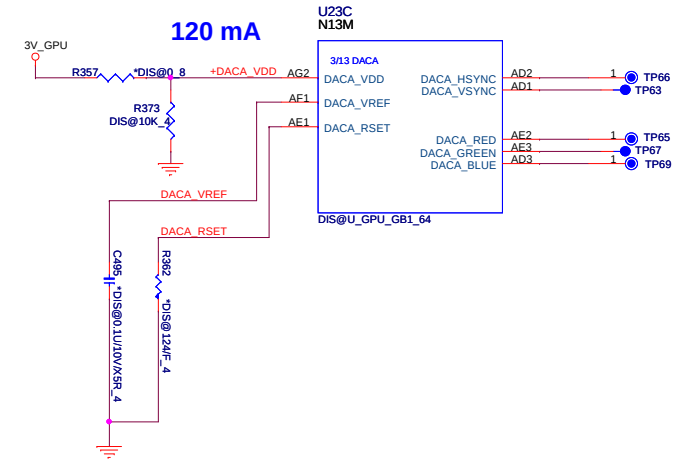
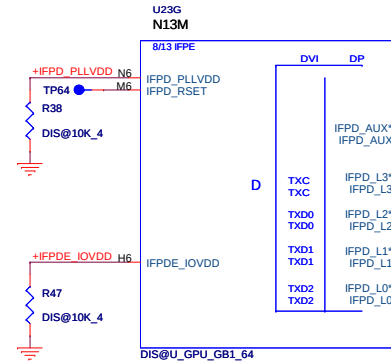
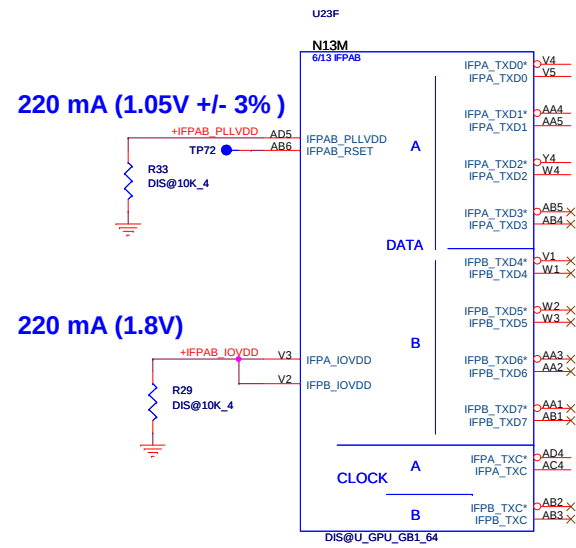
[19,20] VMA\_DQ[63..0]  

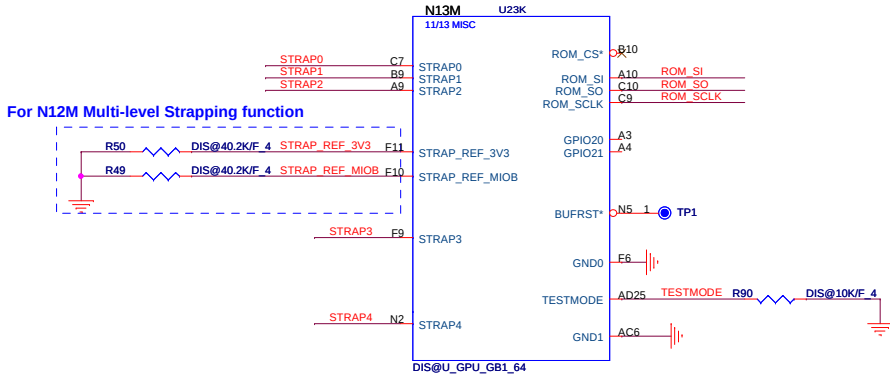
[19,20] VMA\_DM[7..0]  

[19,20] VMA\_WDQS[7..0]  

[19,20] VMA\_RDQS[7..0]  

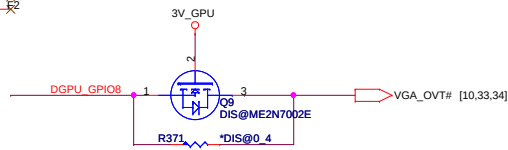
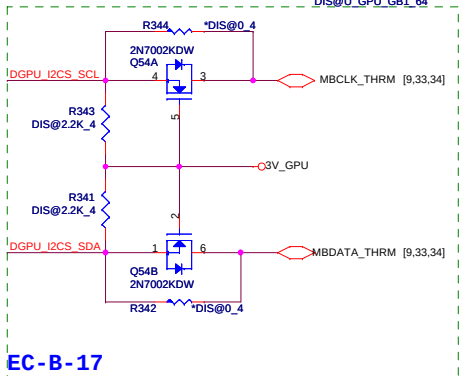
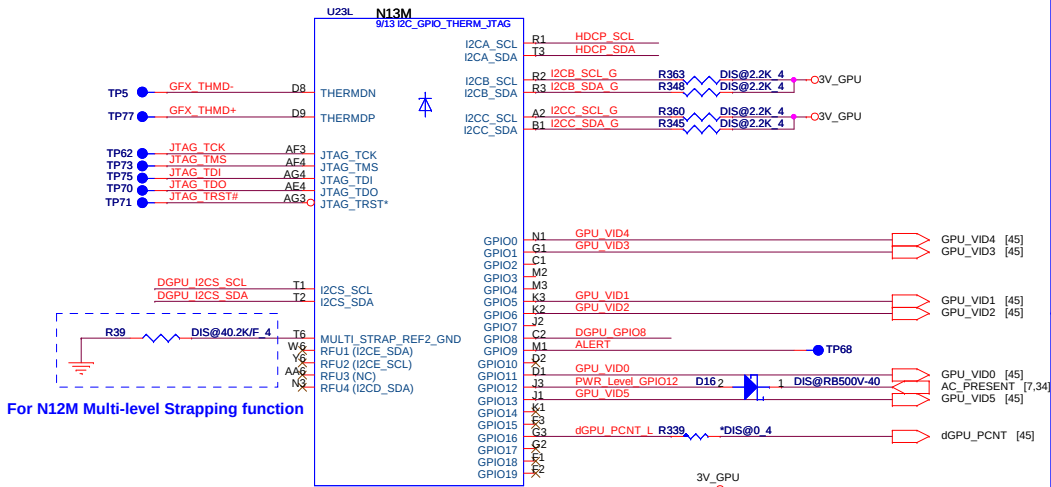
[19,20] FBA\_CMD[30..0]  



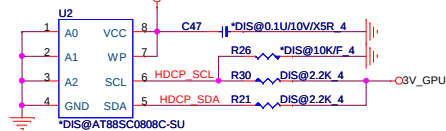


### 9.5 Unused I2C Pins

For unused dedicated (non-AUX) I2C pins, pull-up both the I2Cx\_SCL, I2Cx\_SDA, to 3.3 V using 2.2 kΩ resistors routing.



### HDPC ROM



| DHCP ROM |                                |
|----------|--------------------------------|
| HDPC_SCL | Low: Crypto ROM<br>Hi: I2C ROM |

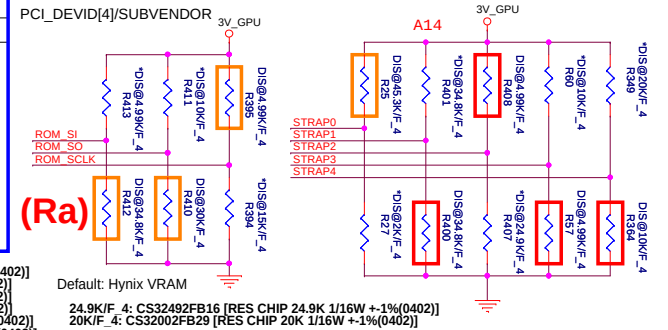
nV FAE suggest that the device ID for N13M-GE1 is 0x1058

### Logical Strap Bit Mapping

| Rv  | PU-VDD | PD-GND |
|-----|--------|--------|
| 5K  | 1000   | 0000   |
| 10K | 1001   | 0001   |
| 15K | 1010   | 0010   |
| 20K | 1011   | 0011   |
| 25K | 1100   | 0100   |
| 30K | 1101   | 0101   |
| 35K | 1110   | 0110   |
| 45K | 1111   | 0111   |

N13M-GE1

4.99K/F 4: CS24992FB26 [RES CHIP 4.99K 1/16W +1% (0402)]  
10K/F 4: CS31002FB26 [RES CHIP 10K 1/16W +1% (0402)]  
15K/F 4: CS31502FB24 [RES CHIP 15K 1/16W +1% (0402)]  
30K/F 4: CS33002FB13 [RES CHIP 30K 1/16W +1% (0402)]  
34.8K/F 4: CS33482FB22 [RES CHIP 34.8K 1/16W +1% (0402)]  
45.3K/F 4: CS34532FB18 [RES CHIP 45.3K 1/16W +1% (0402)]

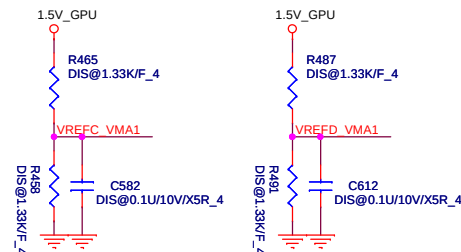
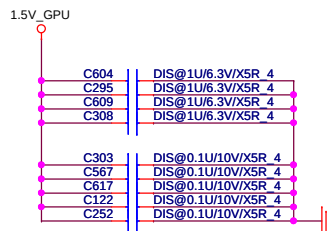
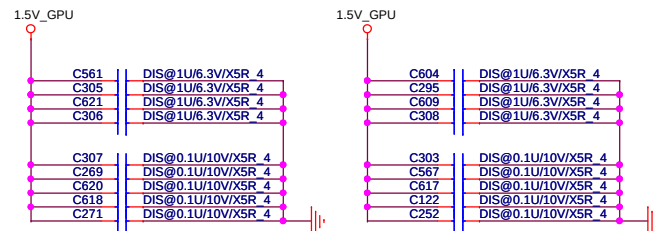
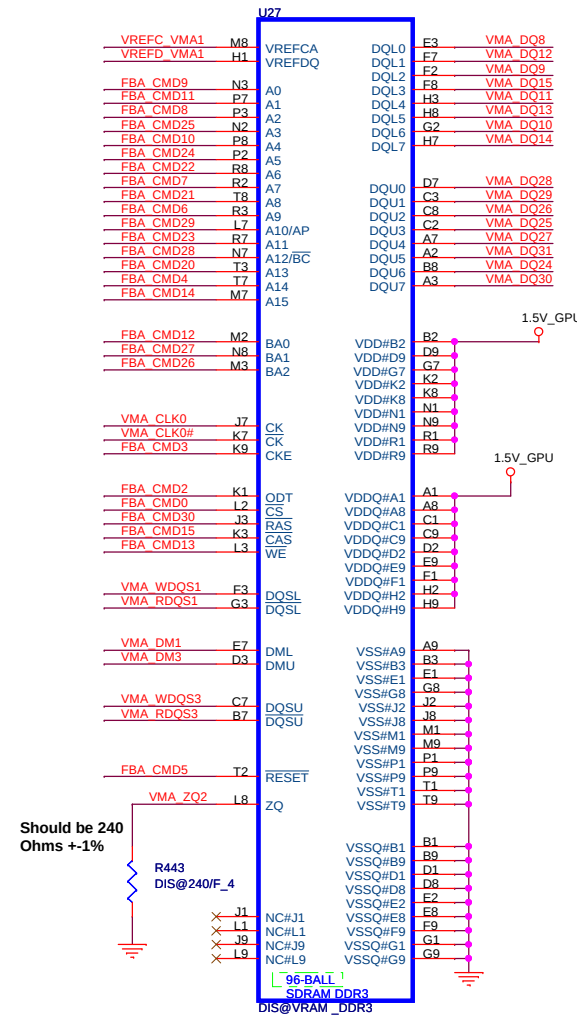
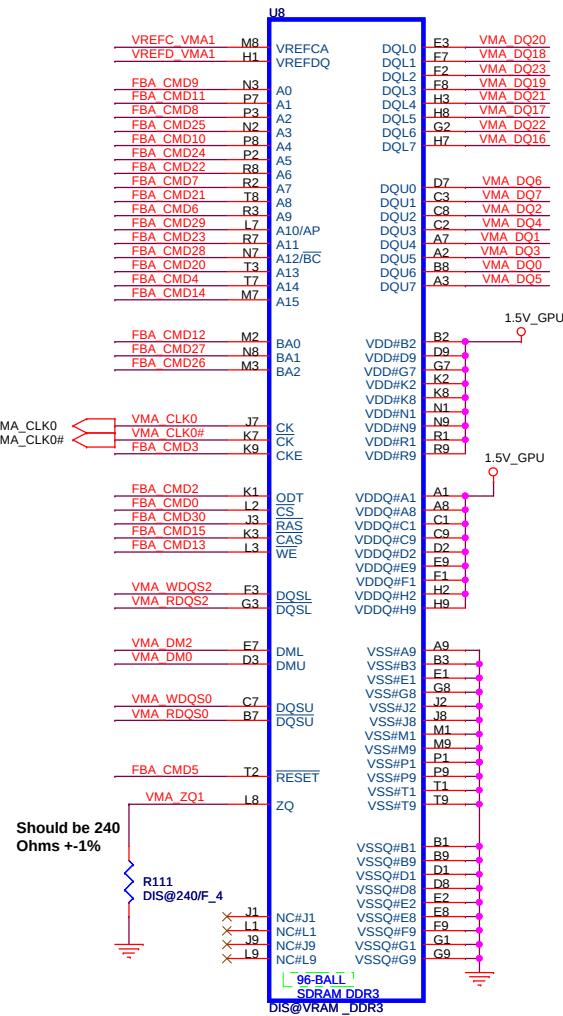




# CHANNEL A: 1024MB DDR3

[15,16,20,46] 1.5V\_GPU

19



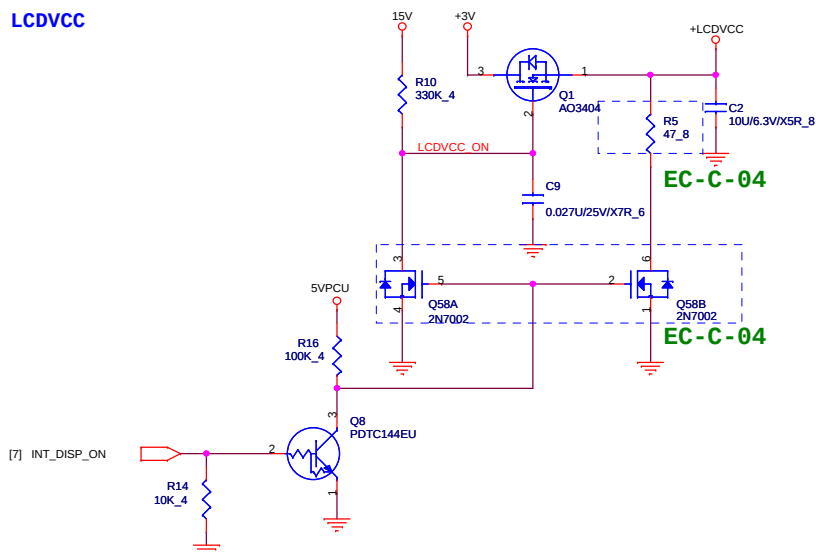


D  
C  
B  
A

D  
C  
B  
A

|       |                                                                                         |
|-------|-----------------------------------------------------------------------------------------|
| +3V   | [3,7,8,9,10,11,13,14,15,23,24,25,26,27,29,30,31,33,34,36,37,38,39,40,41,42,43,44,45,46] |
| 3VPCU | [7,8,25,30,31,34,35,36,37,38,39,43,45]                                                  |
| 15V   | [37,39,40,46]                                                                           |
| VIN   | [36,38,39,40,41,42,44,45]                                                               |
| 5VPCU | [11,36,37,39,40,41,42,43,44,45,46]                                                      |

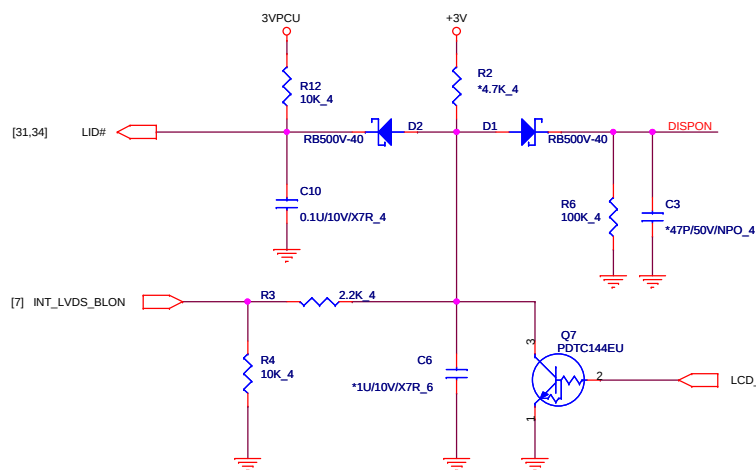
## LCDVCC



EC-C-04

EC-C-04

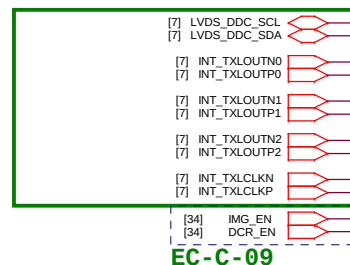
## Back light



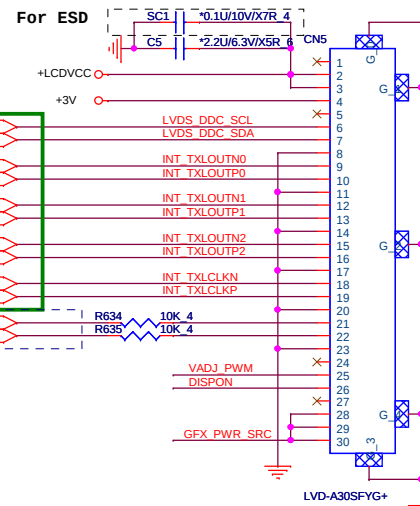
EC-C-06

EC-B-22

## EC-B-22

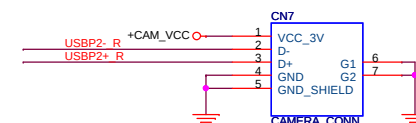


EC-C-09

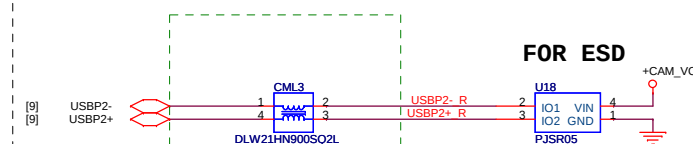


LVDS (14")  
(1024x600,  
1366x768)

## CAMERA CONN

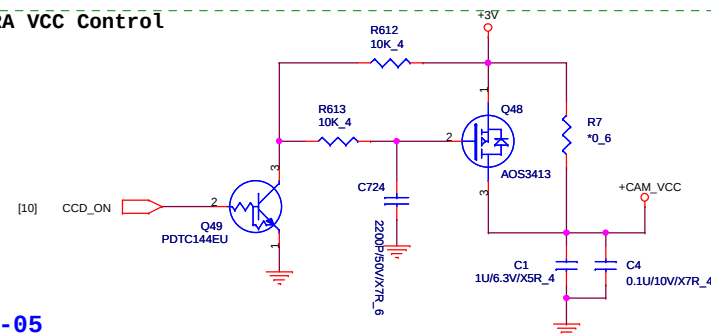


## FOR ESD

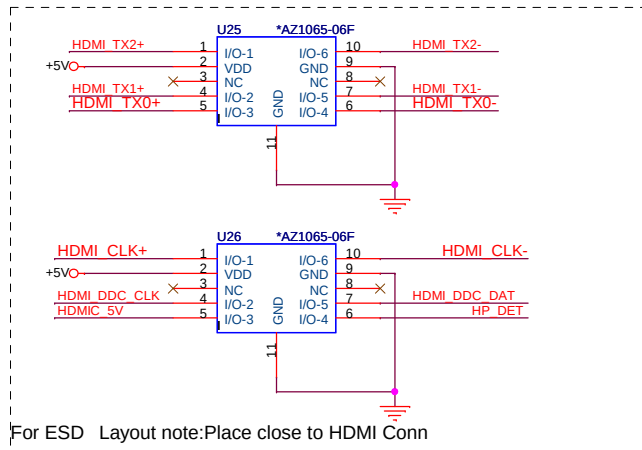
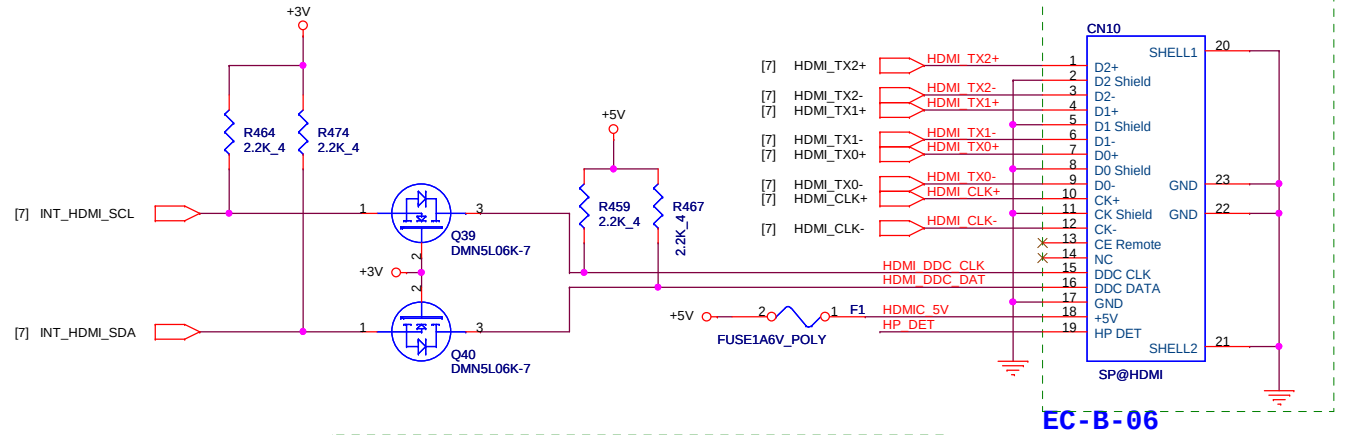
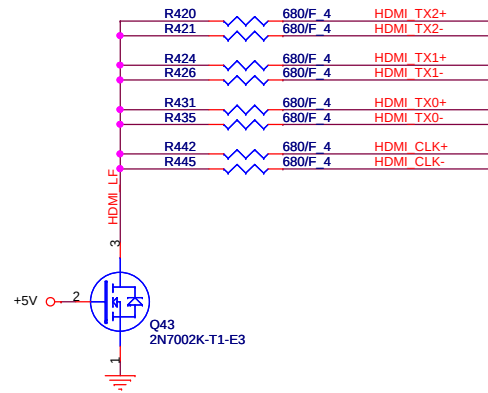


EC-B-18

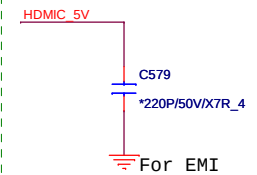
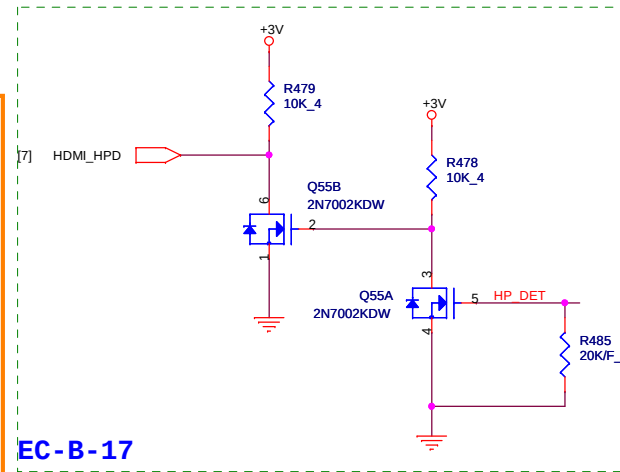
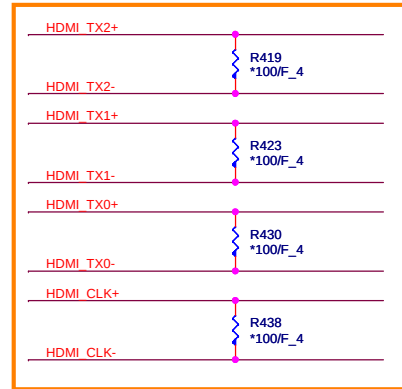
## CAMERA VCC Control



EC-B-05



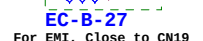
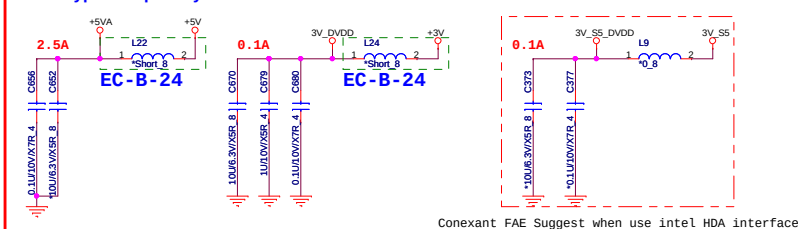
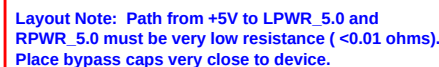
### EMI reserve for HDMI



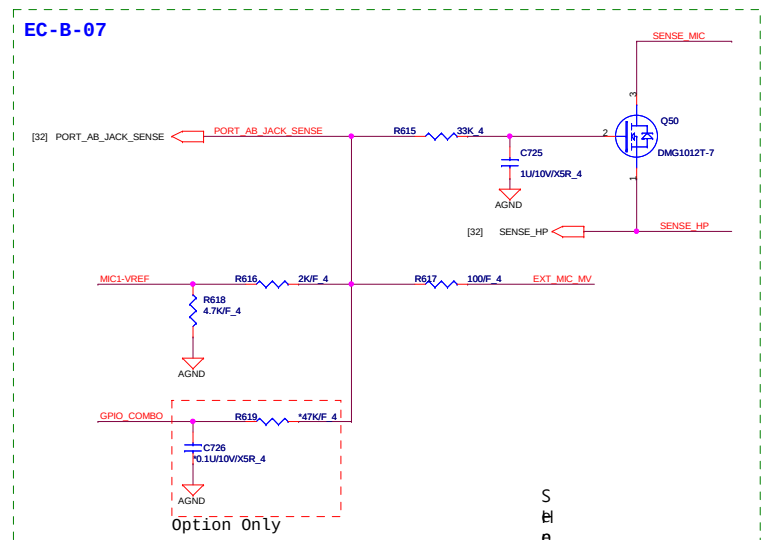


To support Wake-on-Jack or Wake-on-Ring, the `CODVAUX_3.3` pins must be powered by a rail that is not removed unless AC power is removed.

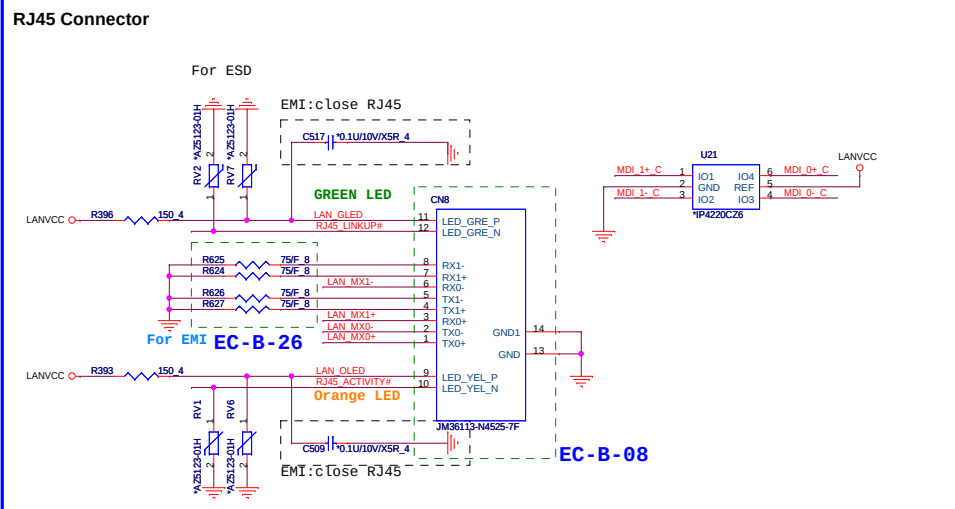
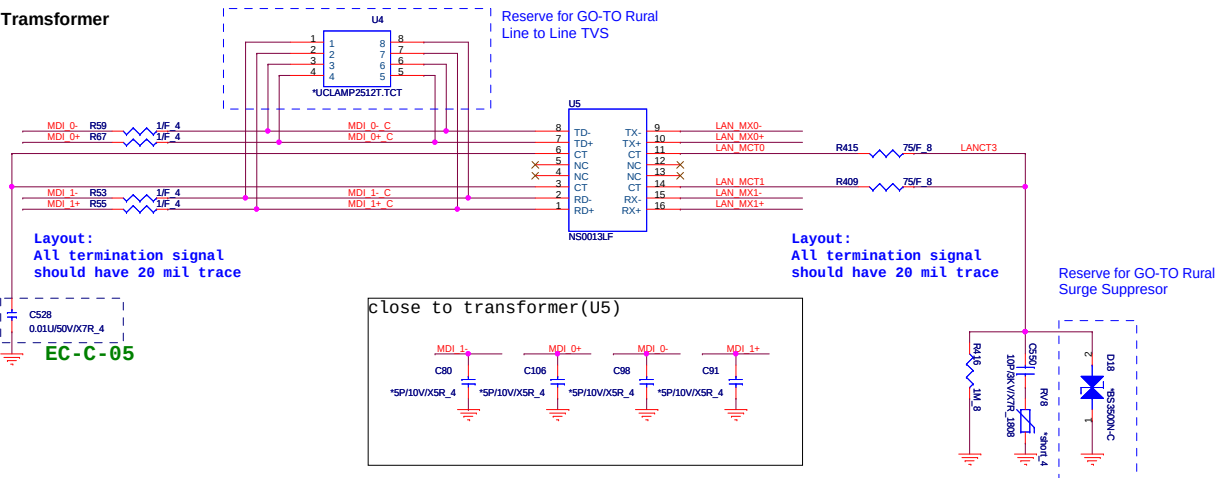
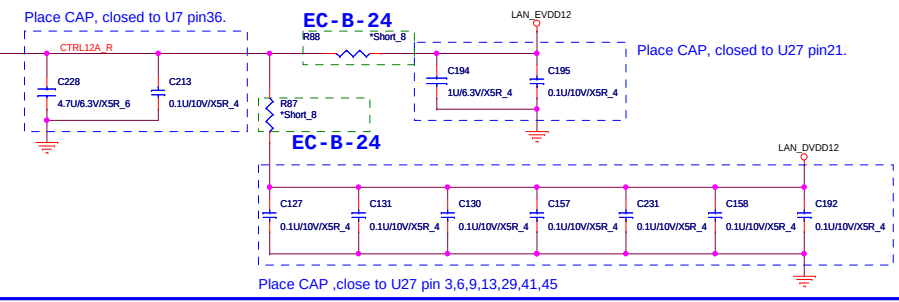
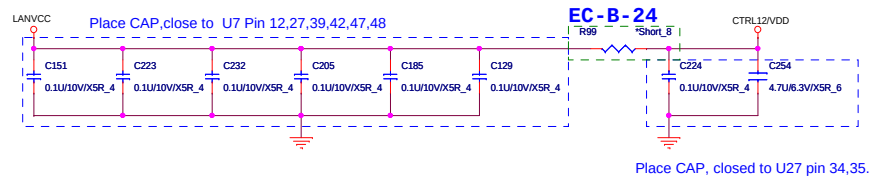
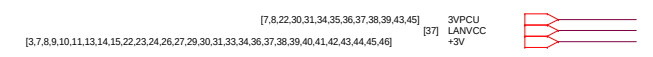
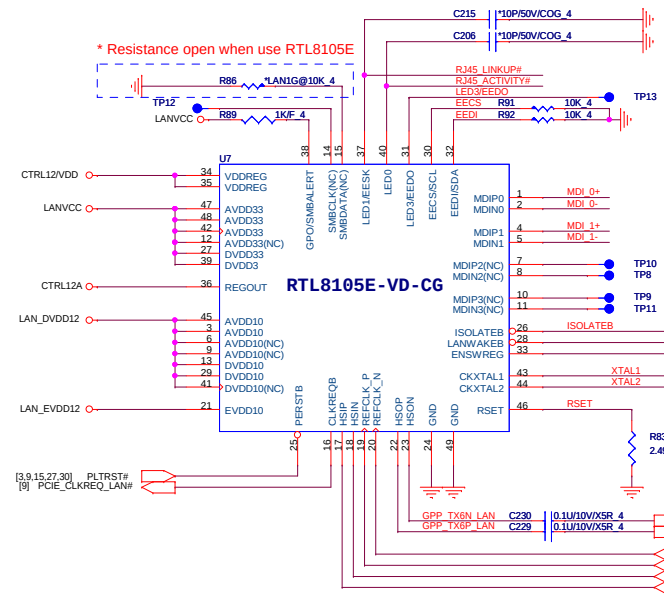
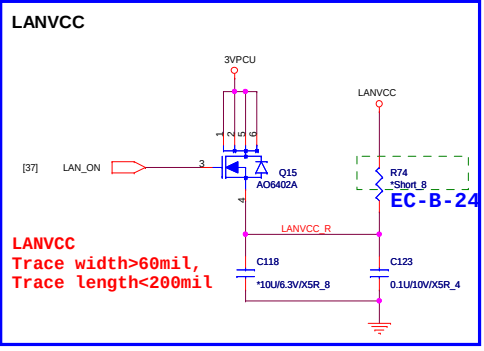
**AVDD\_3.3 pin is output of internal LDO. Do NOT connect to external supply.**

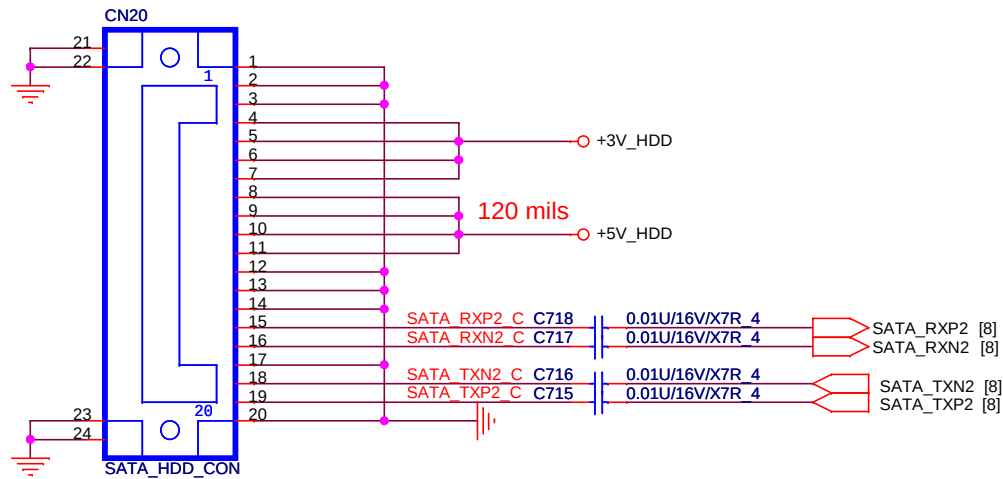


Port A: Headphone jack (jack shared with S/PDIF)  
Port B: Internal analog mono or stereo MIC.  
Port C: Microphone jack  
Port G: Internal stereo speakers  
Port J: Optional Internal stereo digital mic  
Port H: S/PDIF (jack shared with headphone)

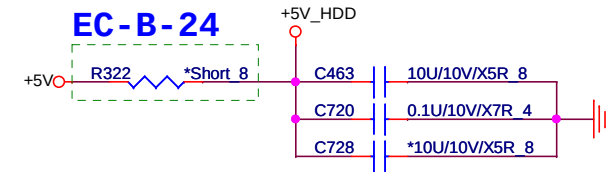


# SHADPHONE MBG COMBO

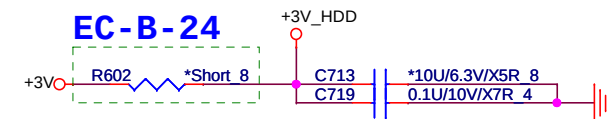




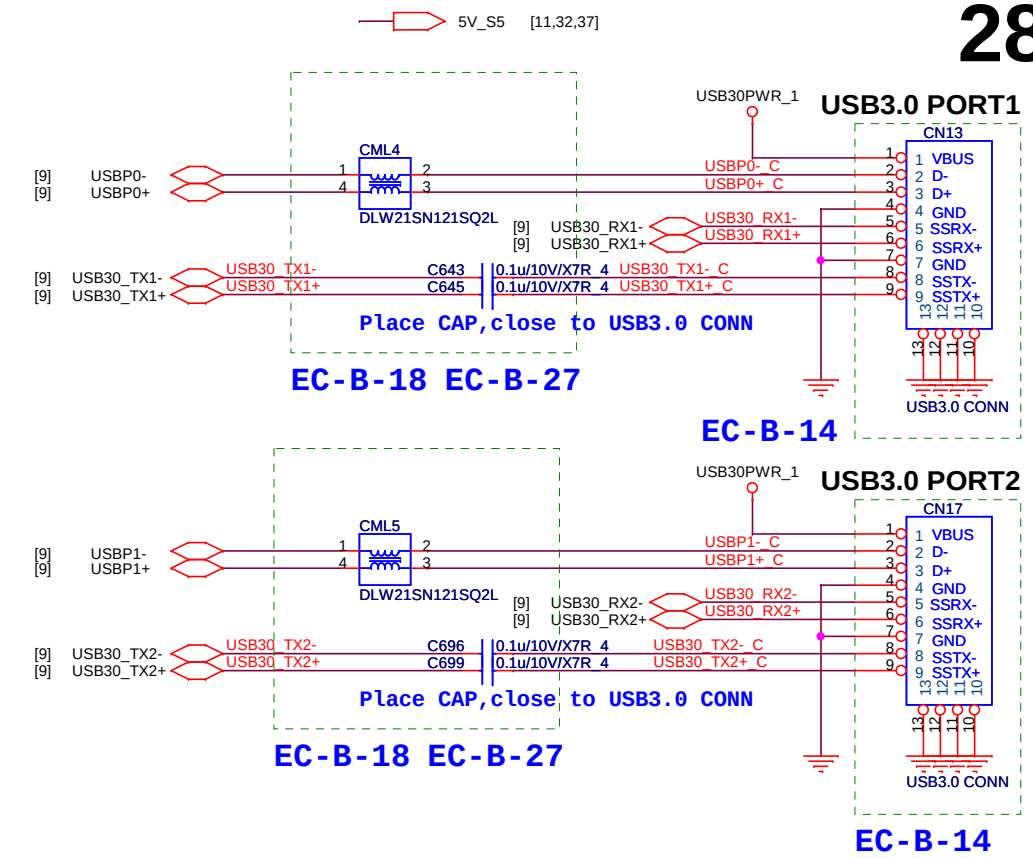
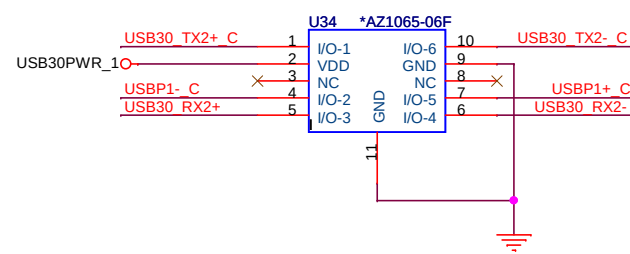
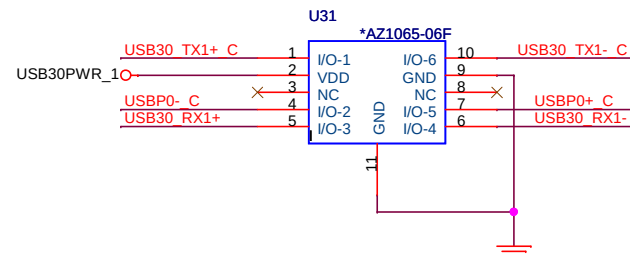
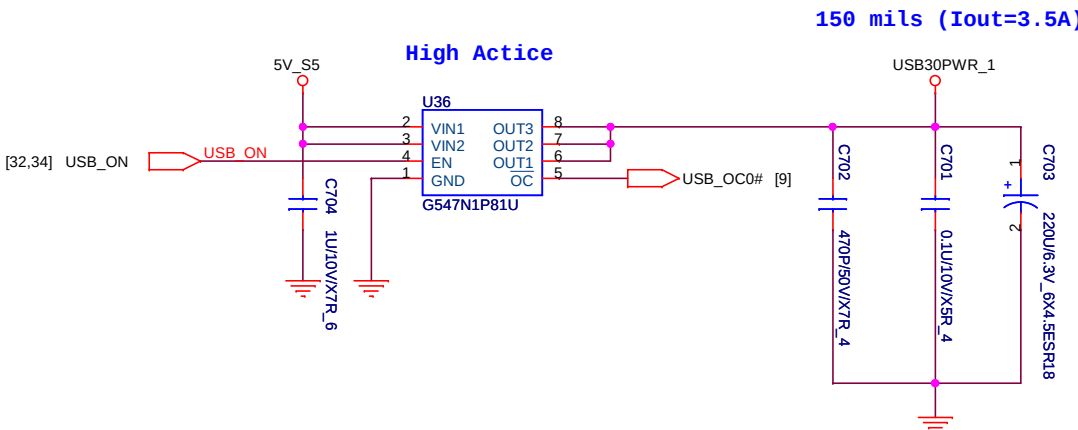
DC Current rating: 2 A (MAX)

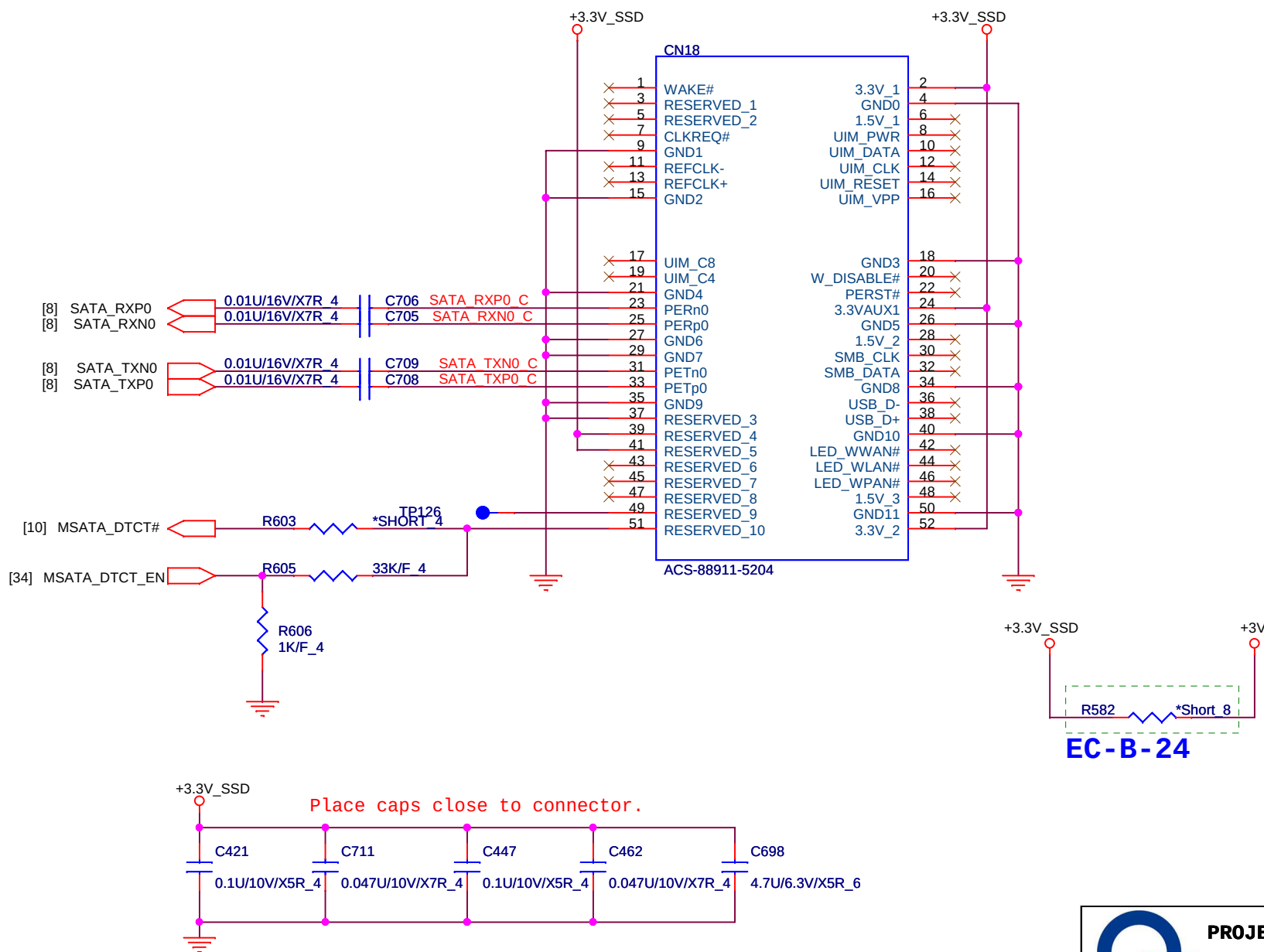


**DC Current rating: 3 A (MAX)**







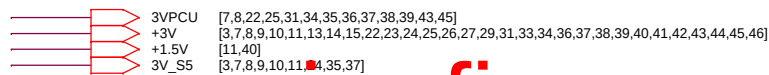
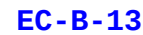
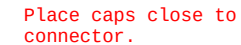
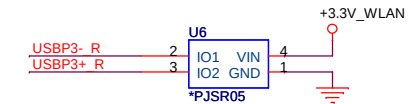
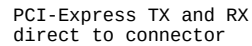


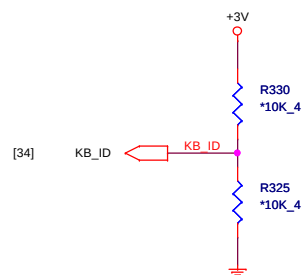
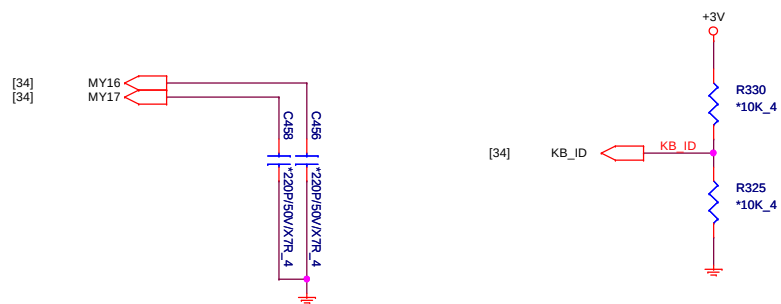
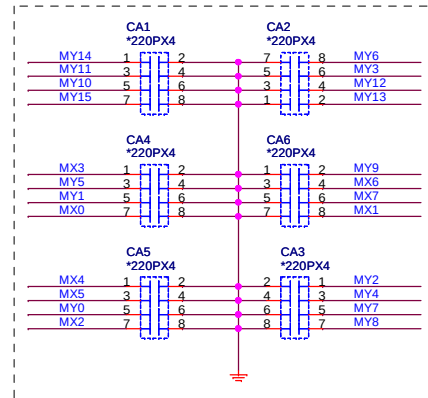
EC-B-24

Place caps close to connector.

|                                                                                       |                                    |  |                             |    |           |
|---------------------------------------------------------------------------------------|------------------------------------|--|-----------------------------|----|-----------|
|  |                                    |  | PROJECT LZ8 Chief River DIS |    |           |
|                                                                                       |                                    |  | Quanta Computer Inc.        |    |           |
| Size<br>Custom                                                                        | Document Number<br>MINI Card (SSD) |  |                             |    | Rev<br>1A |
| Date:                                                                                 | Tuesday, December 20, 2011         |  | Sheet                       | 29 | of 49     |

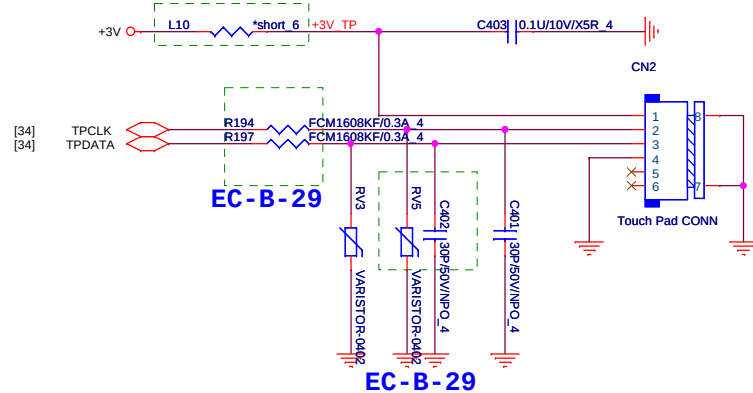






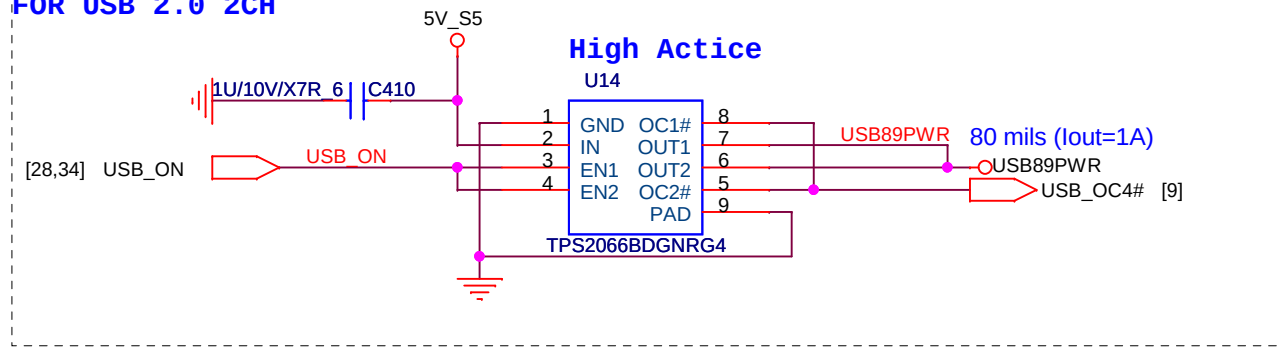
→ +3V [3,7,8,9,10,11,13,14,15,22,23,24,25,26,27,29,30,33,34,36,37,38,39,40,41,42,43,44,45,46]

**EC-B-24**

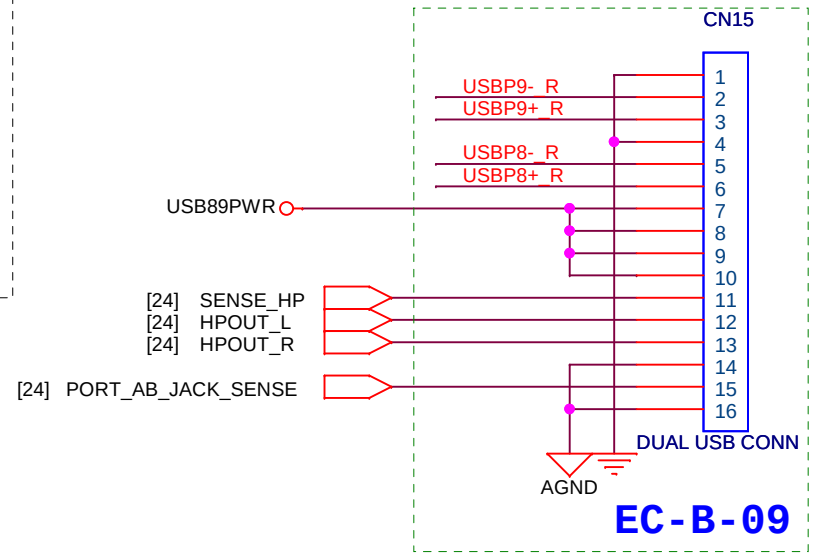


### LID Switch

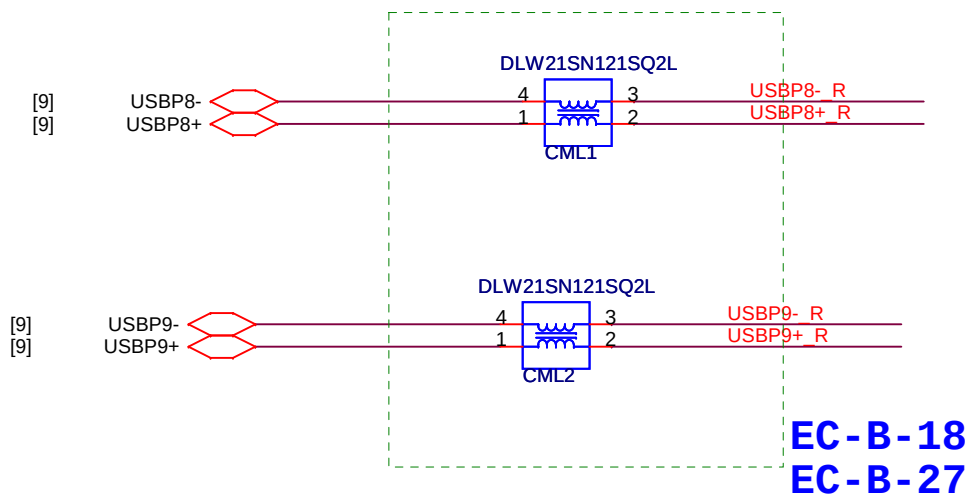
FOR USB 2.0 2CH



5V\_S5 [11,28,37]



EC-B-09



EC-B-18  
EC-B-27



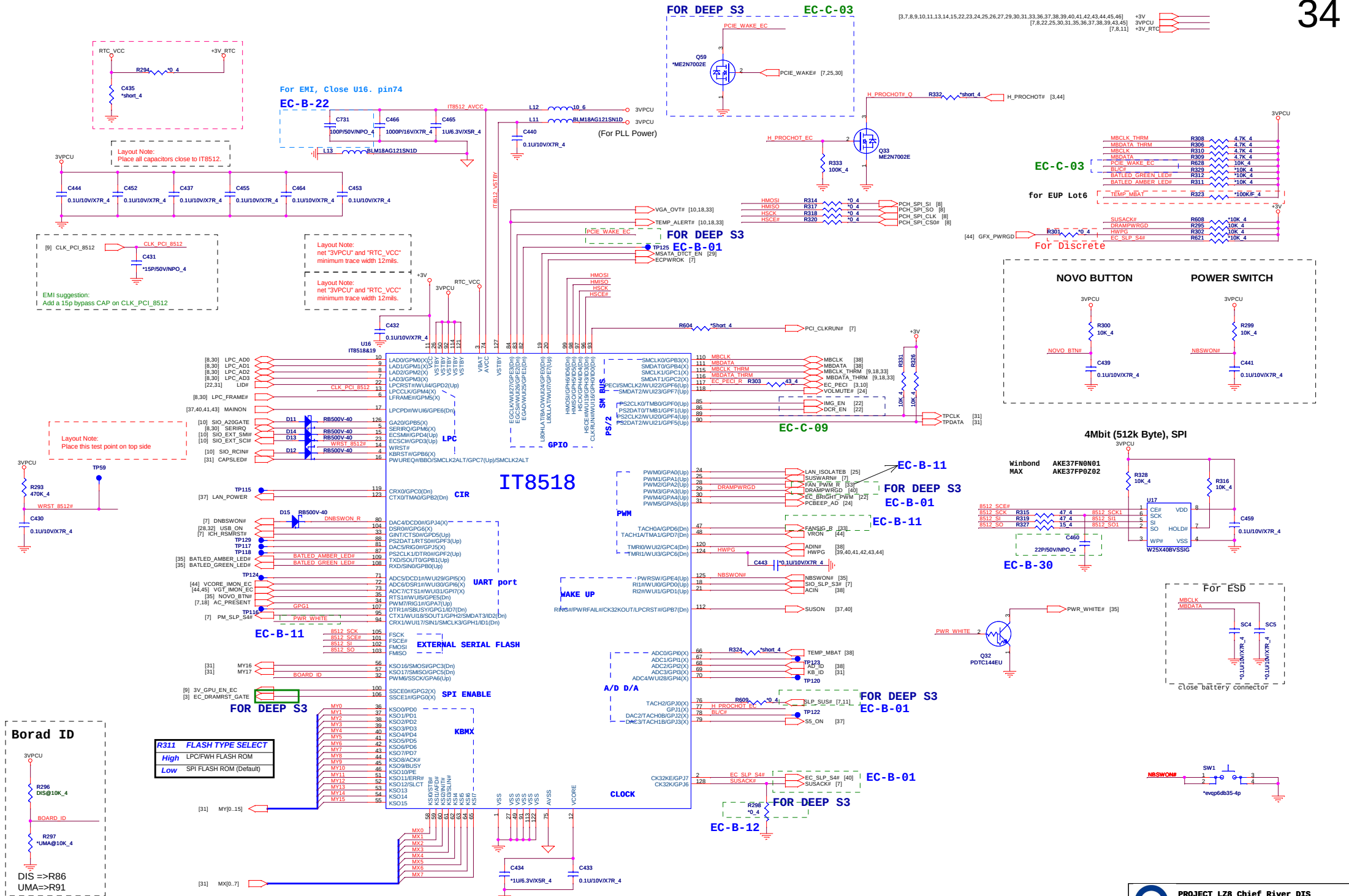
PROJECT LZ8 Chief River DIS

**Quanta Computer Inc.**

|       |                                |                |
|-------|--------------------------------|----------------|
| Size  | Document Number                | Rev            |
|       | <b>USB2.0--Audio Jack Conn</b> | 3A             |
| Date: | Tuesday, December 20, 2011     | Sheet 32 of 49 |

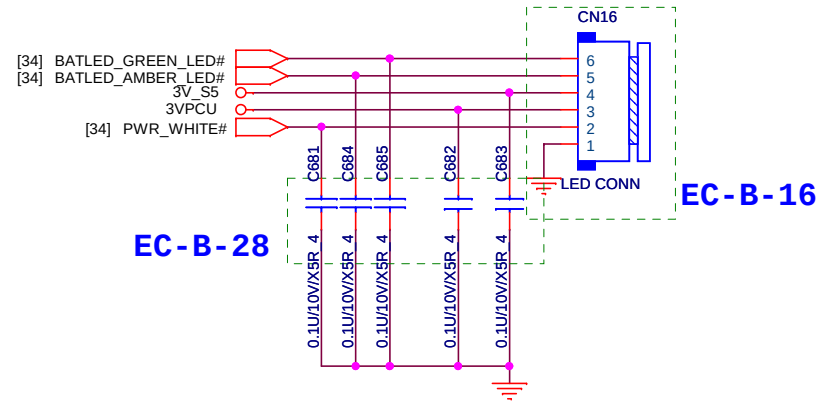
[3,7,8,9,10,11,13,14,15,22,23,24,25,26,27,29,30,31,34,36,37,38,39,40,41,42,43,44,45,46] +3V  
[8,11,23,24,26,36,37,38] +5V





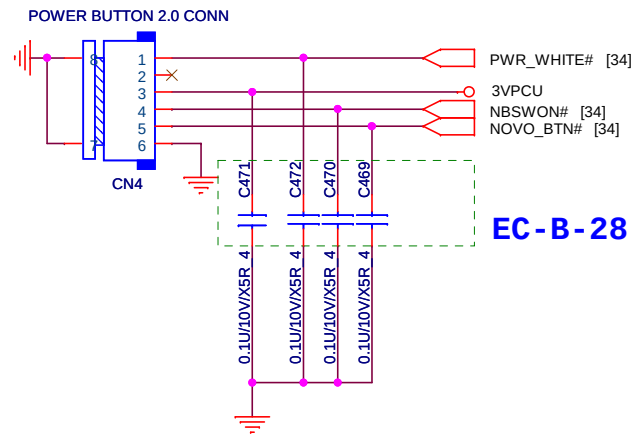
3VPCU [7,8,22,25,30,31,34,36,37,38,39,43,45]  
3V\_S5 [3,7,8,9,10,11,24,30,37]

## LED Conn



**EC-B-28**

## POWER BUTTON/NOVO Button



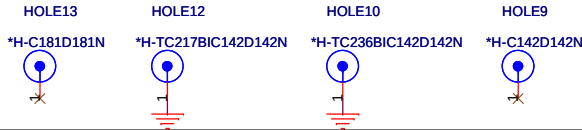
PROJECT LZ8 Chief River DIS

Quanta Computer Inc.

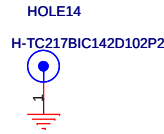
|       |                            |                |
|-------|----------------------------|----------------|
| Size  | Document Number            | Rev            |
|       | SW/LED/RFID_EEPROM         | 2A             |
| Date: | Tuesday, December 20, 2011 | Sheet 35 of 49 |



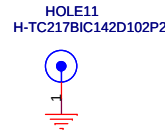
### Hole for CPU support



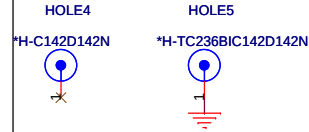
### MiniCard WWAN



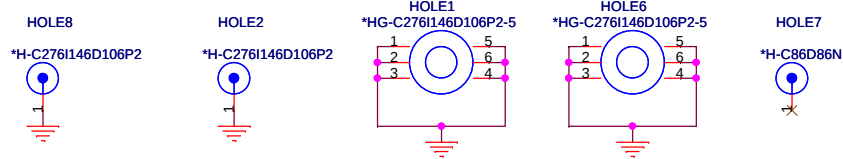
### MiniCard WLAN



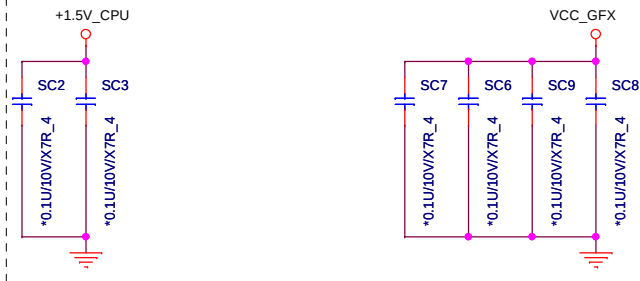
### Hole for GPU support



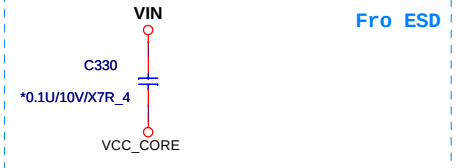
### Boundary Hole



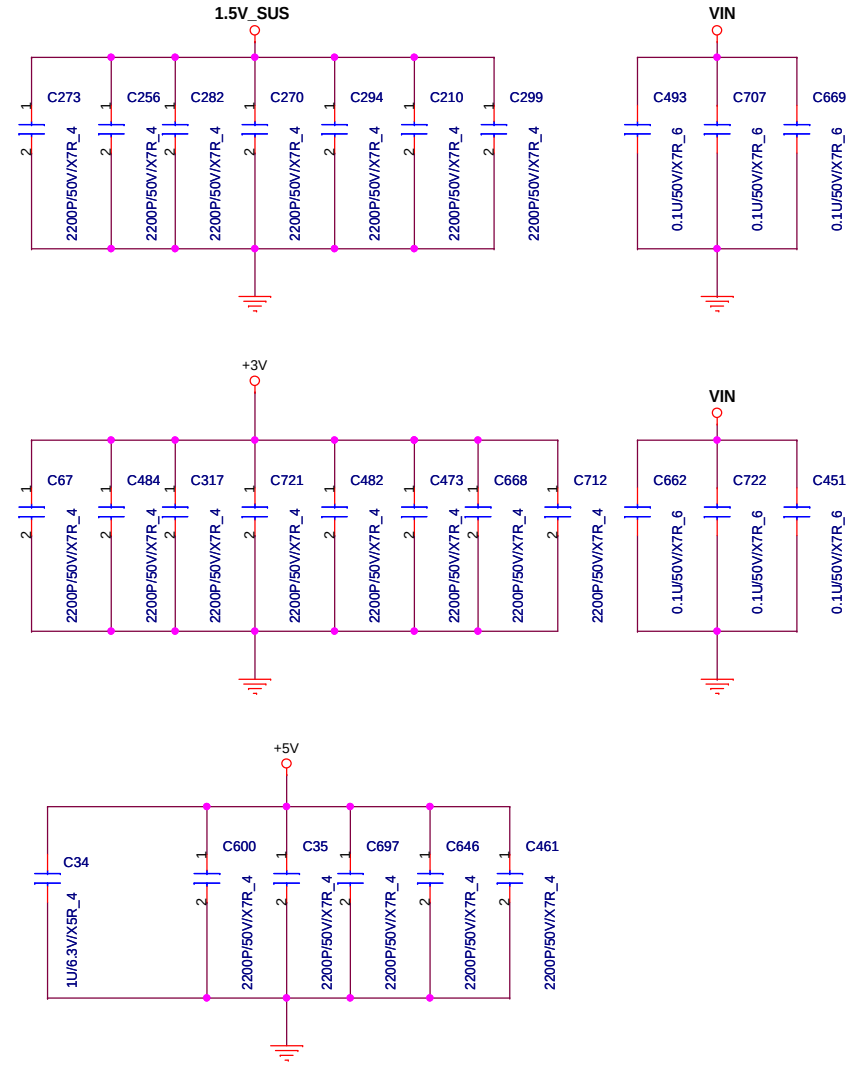
### Fro ESD



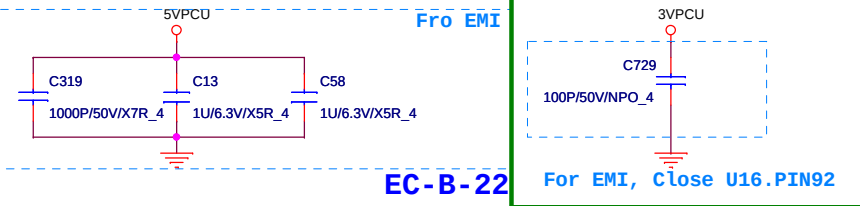
### Fro ESD



### EMI



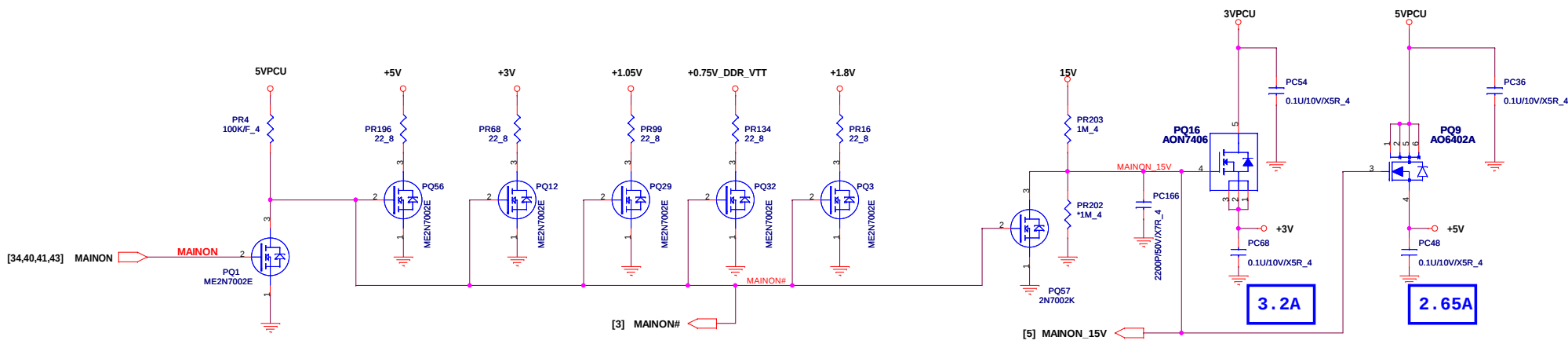
### Fro EMI



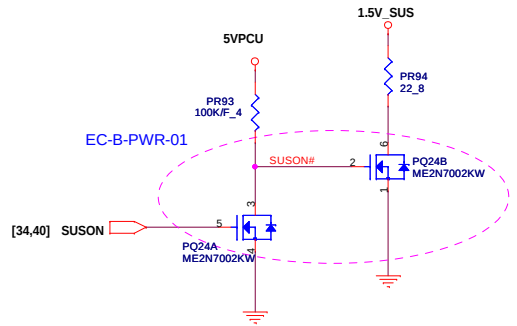
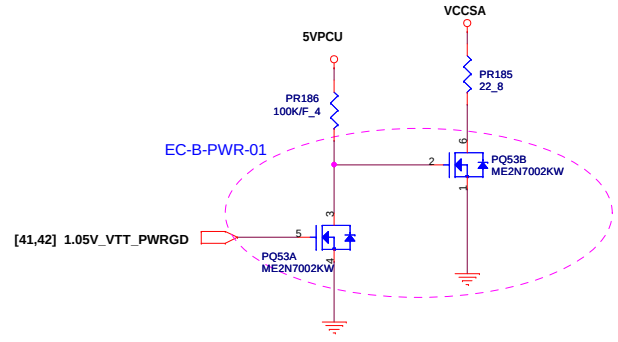
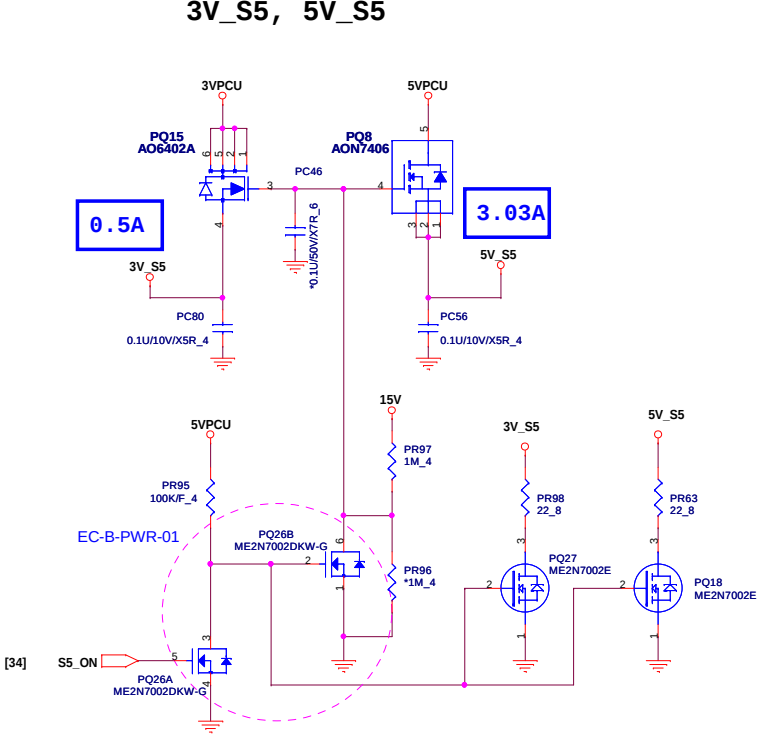
EC-B-22

For EMI, Close U16.PIN92

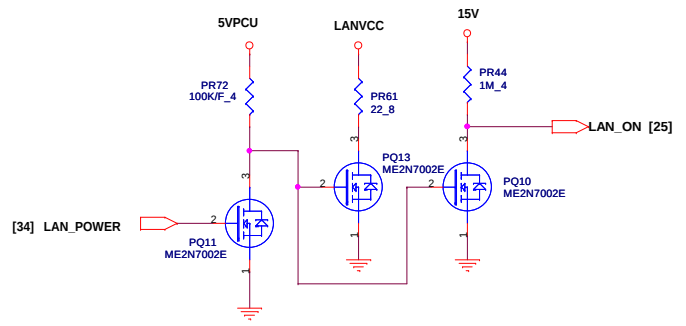
|           |                                                                                         |
|-----------|-----------------------------------------------------------------------------------------|
| +1.5V_CPU | [3,5,40]                                                                                |
| 3VPCU     | [7,8,22,25,30,31,34,35,37,38,39,43,45]                                                  |
| VCC_GFX   | [5,44]                                                                                  |
| +3V       | [3,7,8,9,10,11,13,14,15,22,23,24,25,26,27,29,30,31,33,34,37,38,39,40,41,42,43,44,45,46] |
| +5V       | [8,11,23,24,26,33,37,38]                                                                |
| 1.5V_SUS  | [3,11,13,14,37,40,46]                                                                   |
| 5VPCU     | [11,22,37,39,40,41,42,43,44,45,46]                                                      |
| VIN       | [22,38,39,40,41,42,44,45]                                                               |
| VCC_CORE  | [5,6,44]                                                                                |
| +1.05V    | [3,5,7,8,9,11,37,41,46]                                                                 |

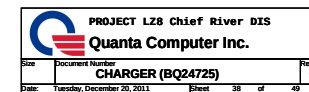


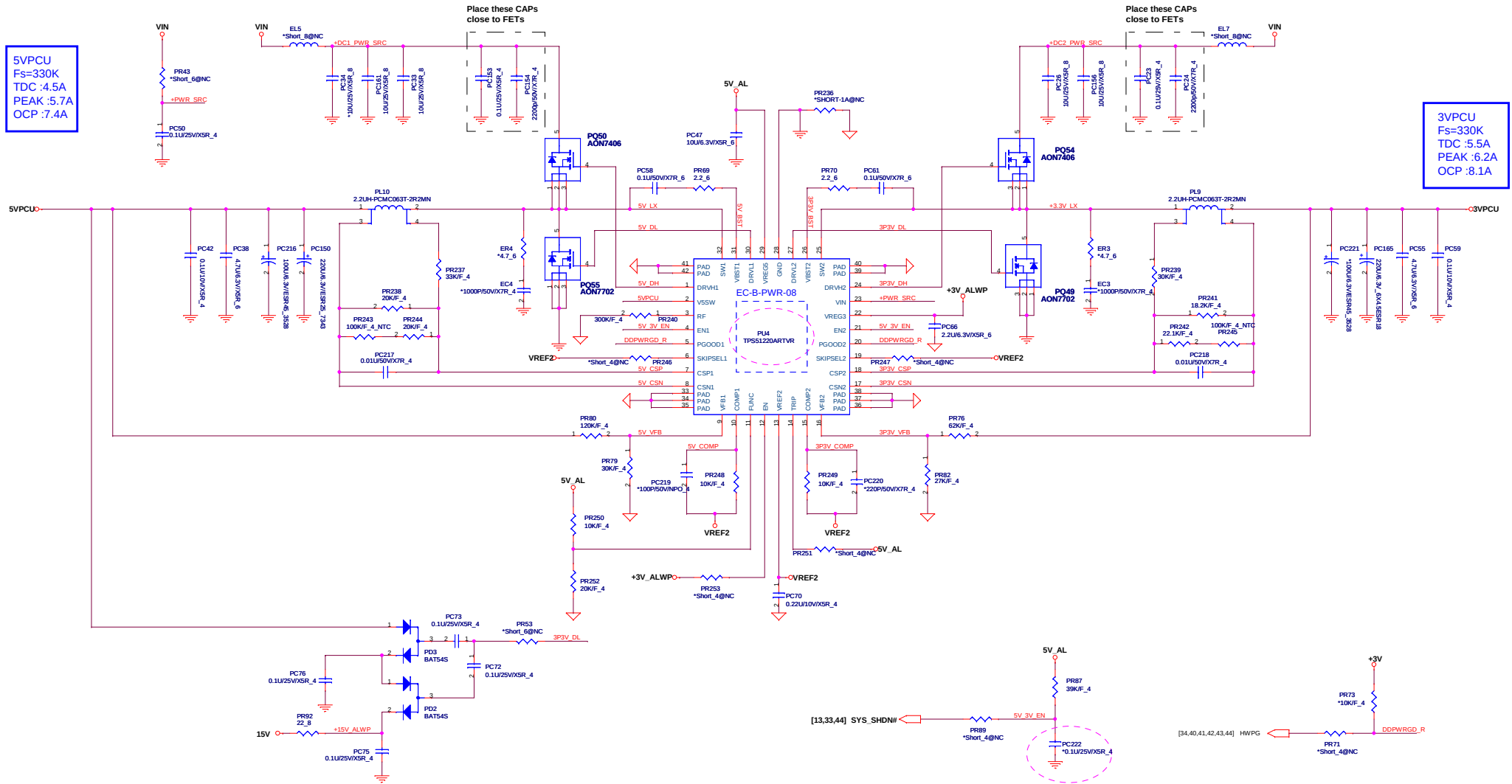
3V\_S5, 5V\_S5



LANVCC

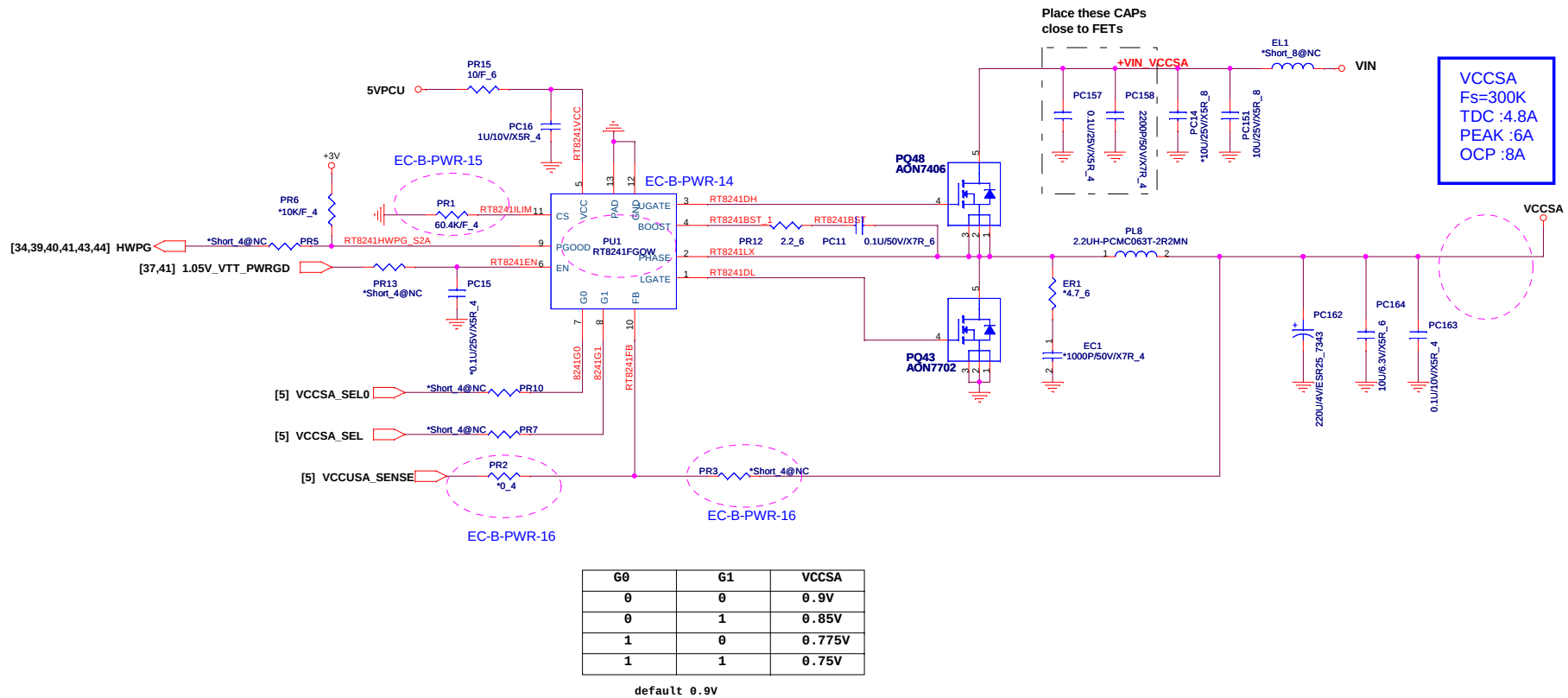




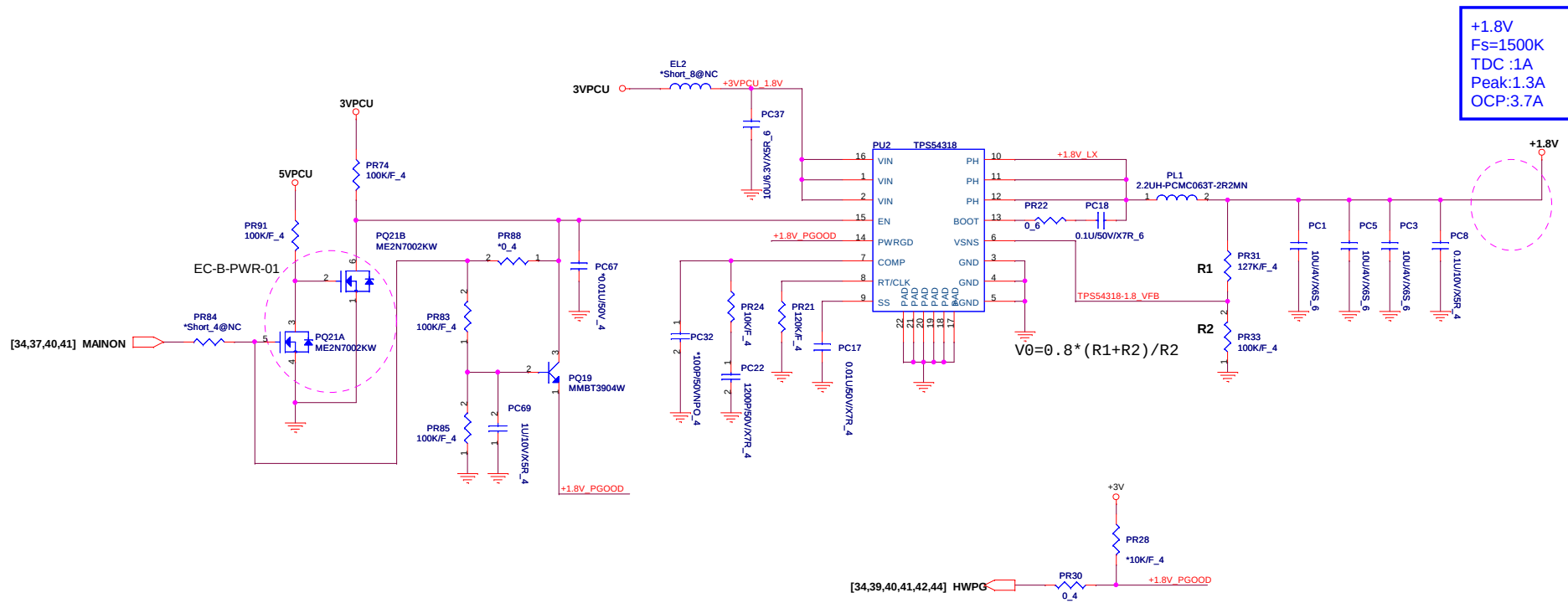


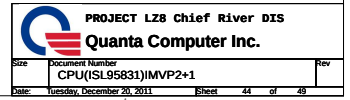


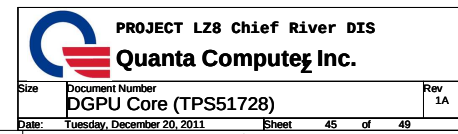


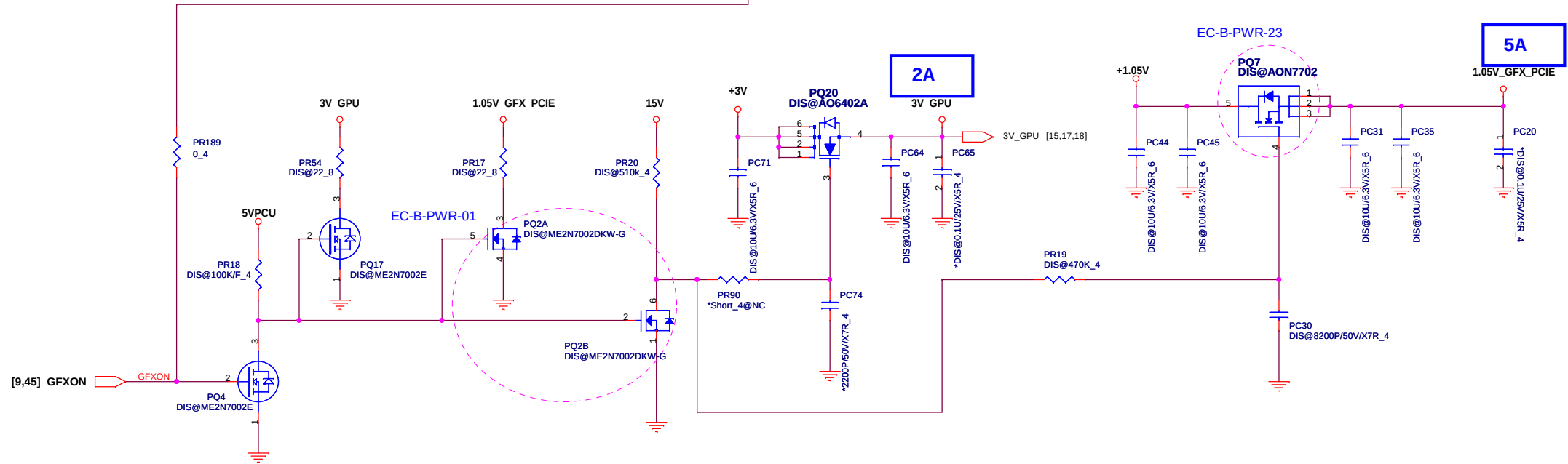
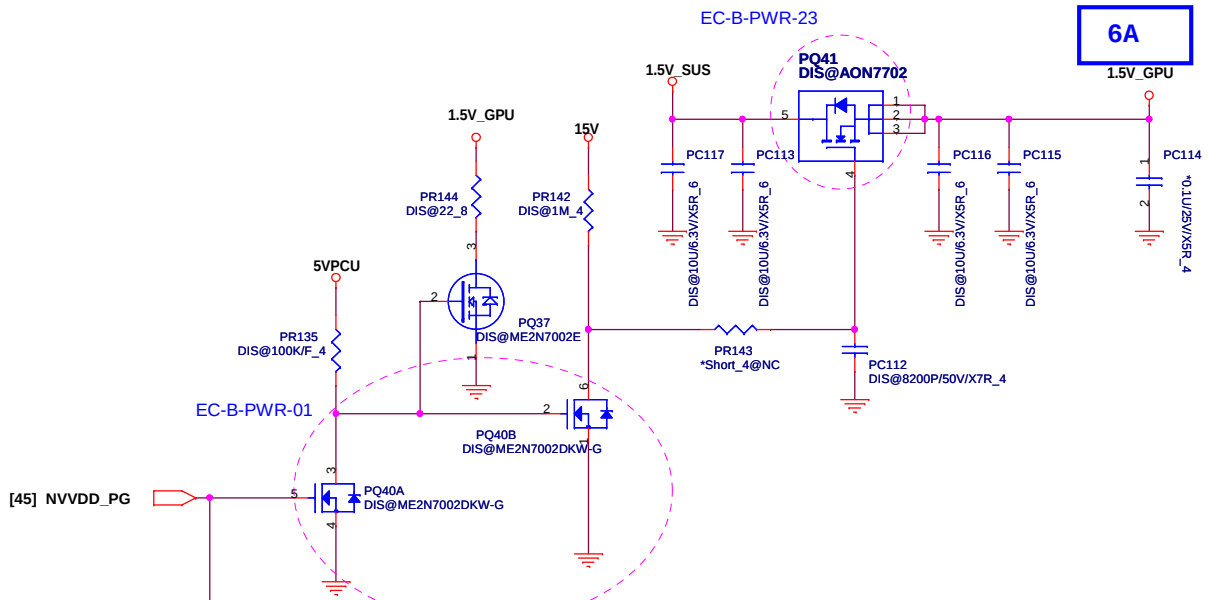
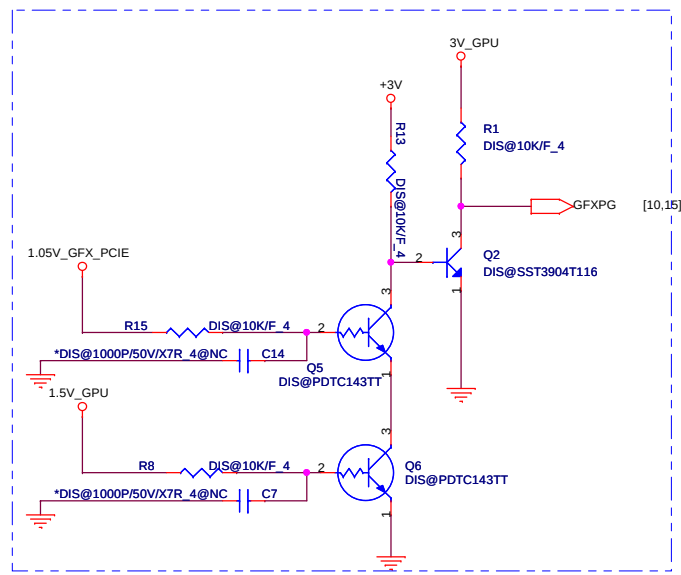












| E<br>C<br>N | P<br>G                          | D<br>y/mm/dd | P<br>A                                                                                          | D<br>E                                                                                               |
|-------------|---------------------------------|--------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| EC-B-01     | 7,11,34                         | 11/10/13     | Add R607,R608,R621 and no ASM                                                                   | Add DEEP S3 function                                                                                 |
| EC-B-02     | 7                               | 11/10/13     | R210                                                                                            | R210 chnage to short pad                                                                             |
| EC-B-03     | 9                               | 11/10/13     | R610 no ASM,R611 ASM,<br>R                                                                      | For DGPU power enable sequence                                                                       |
| EC-B-04     | 10                              | 11/10/13     | R573 no ASM,R572 ASM                                                                            | Change Board ID for SIV stage                                                                        |
| EC-B-05     | 10,22                           | 11/10/13     | Q49,R613,C724,R612,Q48<br>add and ASM                                                           | Change CCD control by PCH GPIO35                                                                     |
| EC-B-06     | 23                              | 11/10/13     | CN10                                                                                            | Change CN10 to correct footprint                                                                     |
| EC-B-07     | 24                              | 11/10/13     | R                                                                                               | Change Audio detect schematic                                                                        |
| EC-B-08     | 25                              | 11/10/13     | CN8                                                                                             | Change CN8 to correct footprint                                                                      |
| EC-B-09     | 32                              | 11/10/13     | CN15                                                                                            | Change CN25 Pin define                                                                               |
| EC-B-10     | 33                              | 11/10/13     | Add R614,R622 no ASM                                                                            | Add EC detect Fan speed schematic                                                                    |
| EC-B-11     | 34                              | 11/10/13     | DEL R321                                                                                        | Change EC pin define,PIN94 connect to PWR_WHITE,PIN28 connect to FAN_PWM_R,PIN47 connect to FANSIG_R |
| EC-B-12     | 34                              | 11/10/13     | R298 no ASM                                                                                     | EC can output CLOCK by itself                                                                        |
| EC-B-13     | 30                              | 11/10/13     | R35 no ASM,Q11ASM                                                                               | input AOAC function                                                                                  |
| EC-B-14     | 28                              | 11/10/13     | CN13,CN17                                                                                       | Change CN13,CN17 to correct footprint                                                                |
| EC-B-15     | 28                              | 11/10/13     | add Q51,R623 no ASM                                                                             | Add DEEP S3 function                                                                                 |
| EC-B-16     | 35                              | 11/10/13     | CN16                                                                                            | Change CN16 footprint for ME request                                                                 |
| EC-B-17     | 9,18,22<br>23,33                | 11/10/14     | Q30,Q31,Q26,Q27,Q34,Q35,Q3,Q4,<br>Q41,Q42,Q23,Q24 DEL<br>Add Q52,Q53,Q54,Q55,Q56,Q57<br>and ASM | Change MOS to Dual MOS                                                                               |
| EC-B-18     | 21                              | 11/10/19     | Add Q58                                                                                         | For PS8622 flash ROM by EC ROM                                                                       |
| EC-B-19     | 05                              | 11/10/19     | Add C727                                                                                        | Add a 10UF CAP for INTEL suggestion                                                                  |
| EC-B-20     | 21                              | 11/10/19     | L14,L15,L16                                                                                     | Change footprint to 0603                                                                             |
| EC-B-21     | 27                              | 11/10/20     | CN3                                                                                             | Change footprint for ME request                                                                      |
| EC-B-22     | 36                              | 11/10/24     | Add C729,C730,C731                                                                              | For EMI request                                                                                      |
| EC-B-23     | 3,7,11                          | 11/10/24     |                                                                                                 | Change LVDS singal by PCH provide                                                                    |
| EC-B-24     | 7,24,25<br>26,27,29<br>30,31,33 | 11/10/24     | R602,R322,R274,R305,R582,R580,<br>L10,R129,R88,R87,R99,R79,R78,<br>L22,L24                      | Change to short PAD                                                                                  |
| EC-B-25     | 8                               | 11/10/24     | BT1                                                                                             | Change BT1 footprint                                                                                 |
| EC-B-26     | 25                              | 11/10/24     | CN8                                                                                             | CN8 PIN4,5,7,8 connect to GND                                                                        |
| EC-B-27     | 11,15                           | 11/10/24     | CML1,CML2,CML4,CML5 ASM<br>R505,R502,R560,R563,R232,R233<br>R234,R235,C486,C488,C490,C497       | for EMI request                                                                                      |
| EC-B-28     | 35                              | 11/10/25     | C472, C471, C470,C469,C681, C682<br>C683, C684,C685 ASM 0.1U                                    | for EMI request                                                                                      |
| EC-B-29     | 35                              | 11/10/25     | RV5,C402 ASM 30P<br>R194,R197 change to Bead                                                    | for EMI request                                                                                      |
| EC-B-30     | 35                              | 11/10/26     | C460 ASM 22P                                                                                    | for EMI request                                                                                      |
|             |                                 |              |                                                                                                 |                                                                                                      |

[illegible]

[illegible]