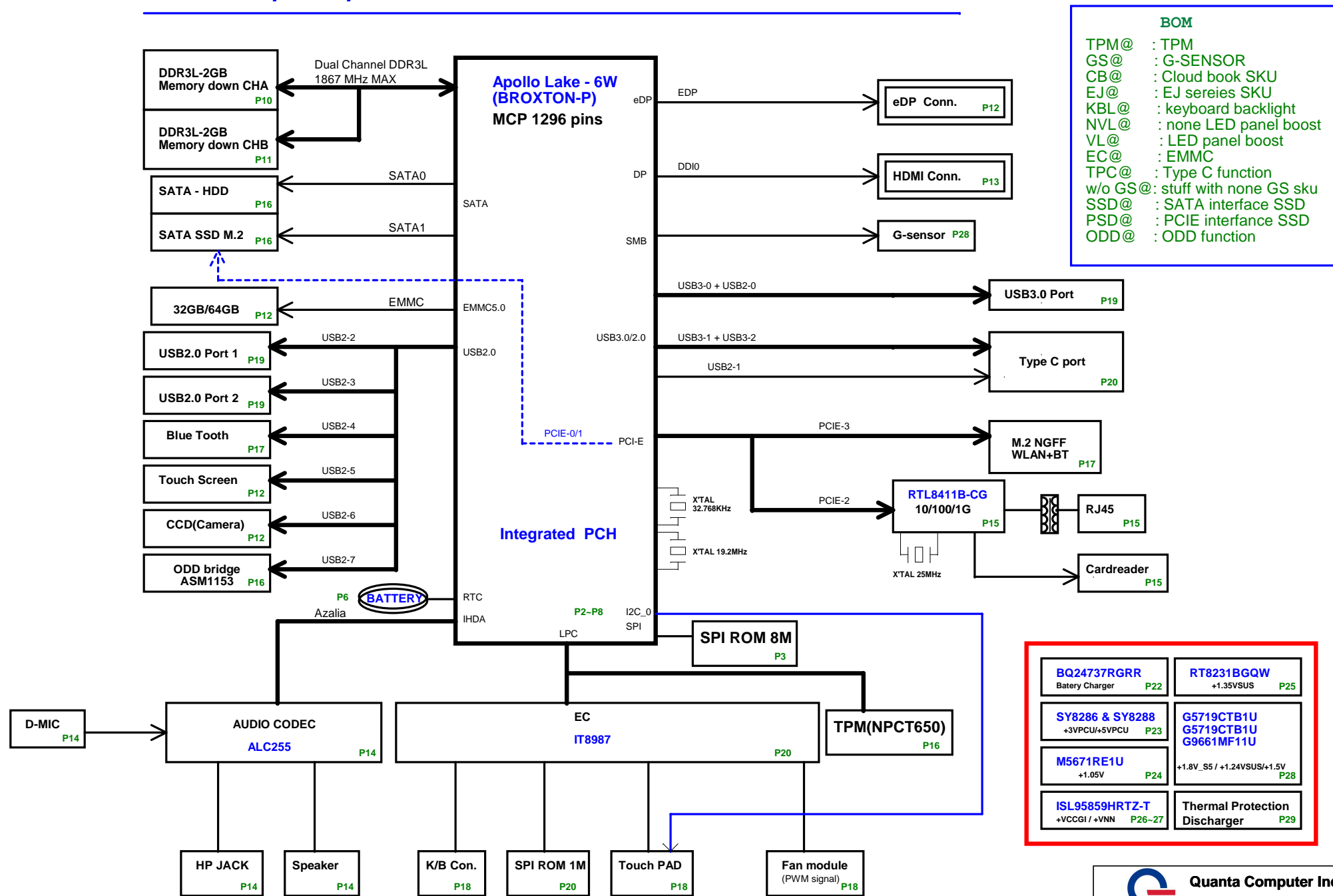
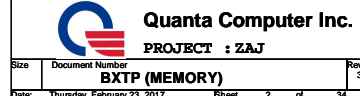
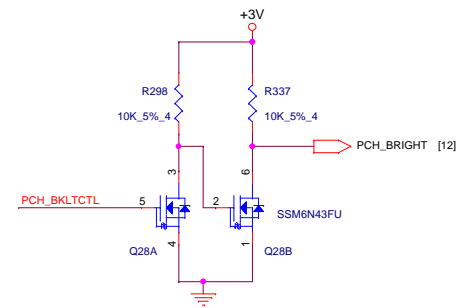
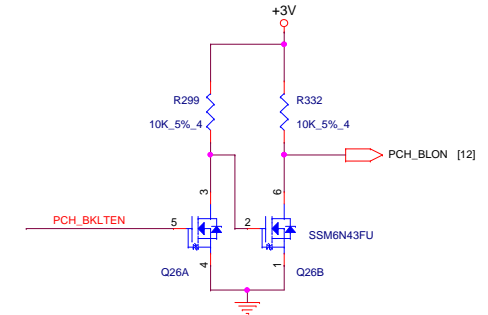
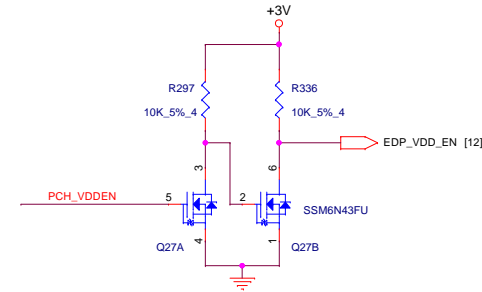
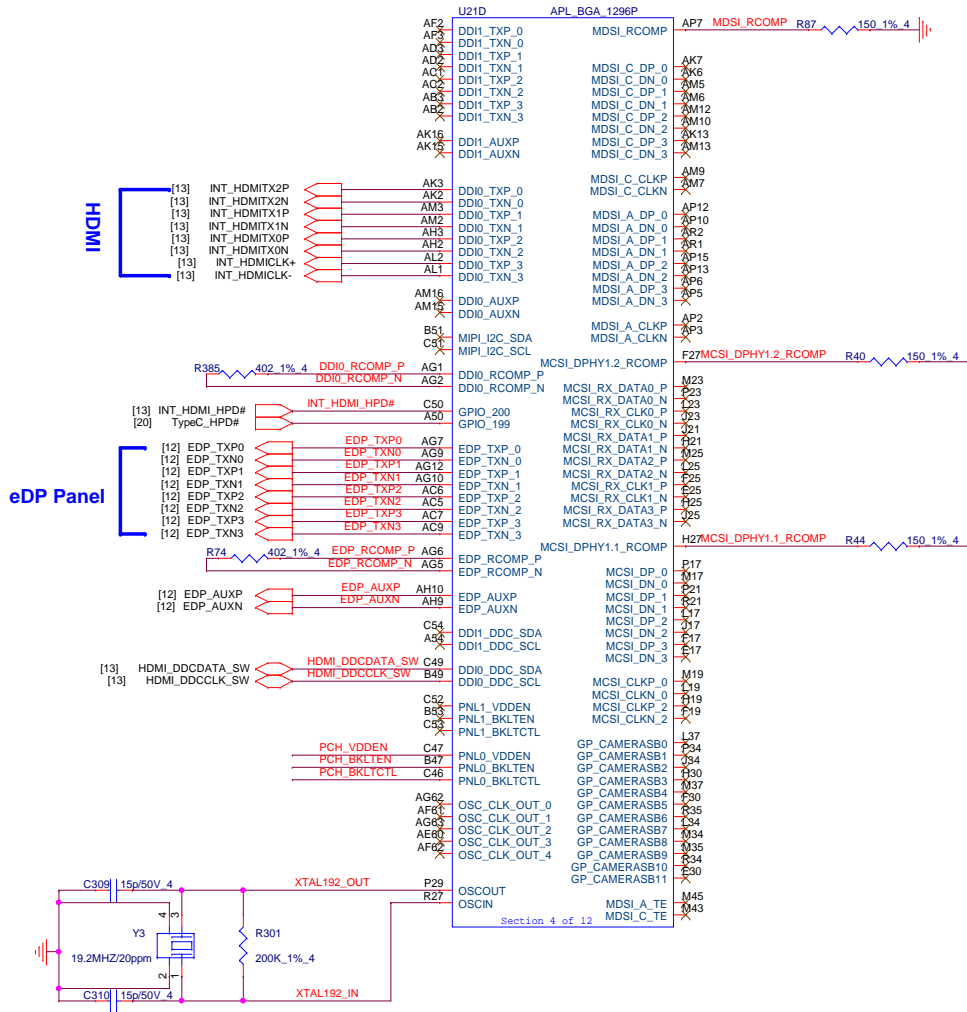


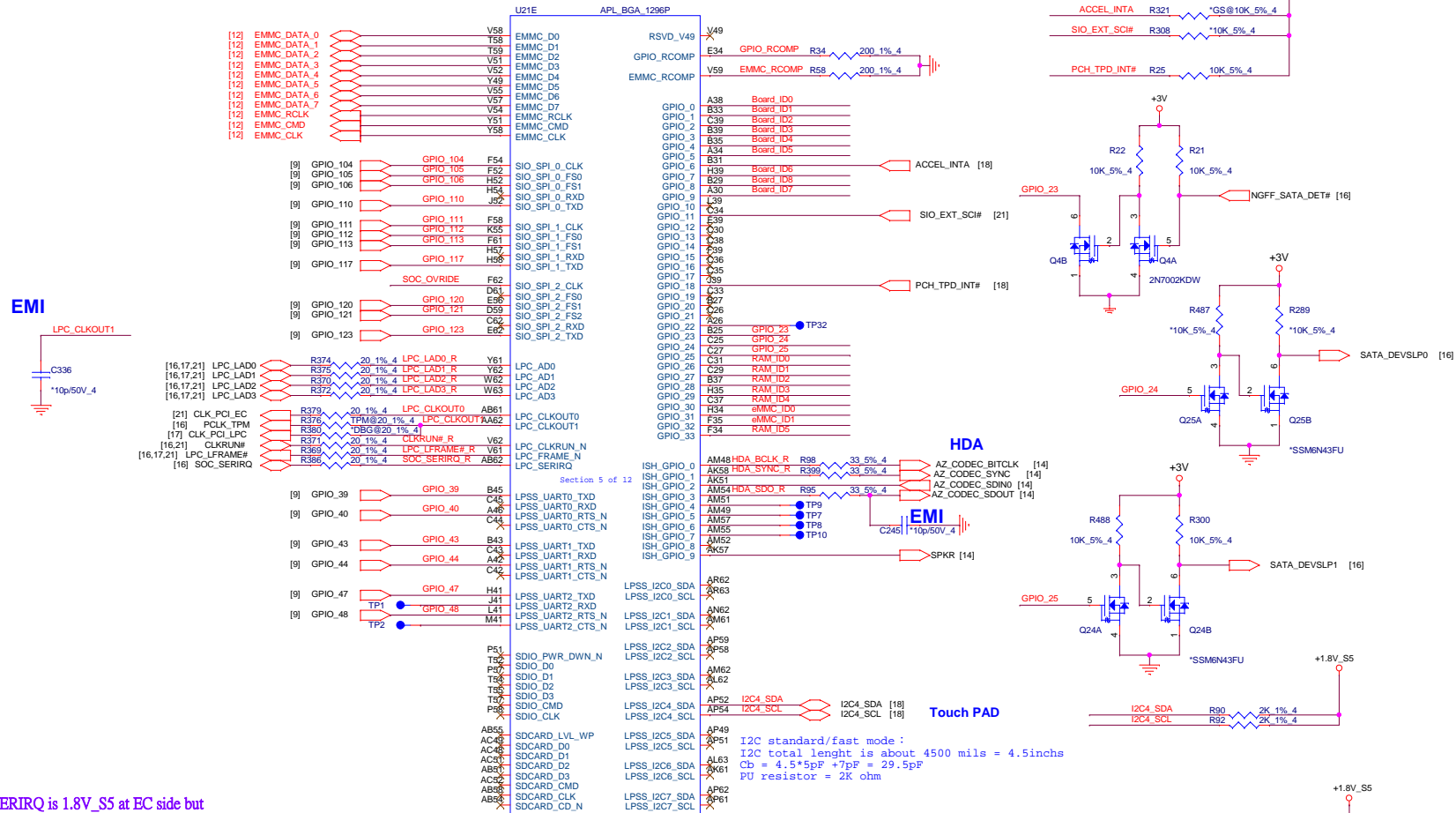
ZAJ/Z8P/Z8PA SYSTEM BLOCK DIAGRAM



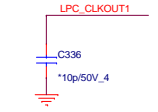
| | |
|---|---|
| BQ24737RGR Battery Charger P22 | RT8231BGQW +1.35VSUS P25 |
| SY8286 & SY8288 +3VPCU/+5VPCU P23 | G5719CTB1U G5719CTB1U G9661MF11U |
| M5671RE1U +1.05V P24 | +1.8V_S5 / +1.24VSUS/+1.5V P28 |
| ISL95859HRTZ-T +VCCGI / +VNN P26-27 | Thermal Protection Discharger P29 |







EMI



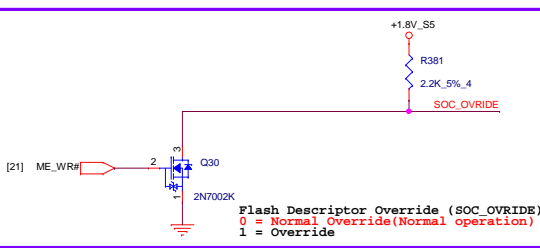
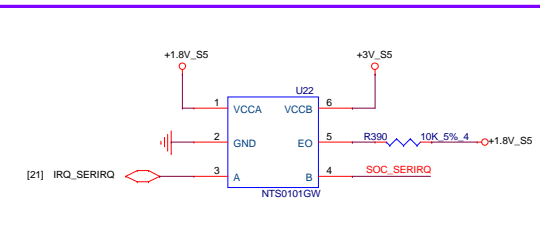
HDA



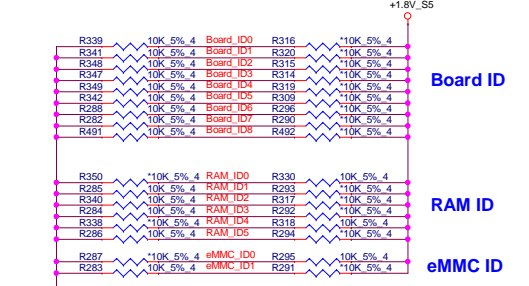
Touch PAD

I2C standard/fast mode:
I2C total length is about 4500 mils = 4.5inches
Cb = 4.5*5pF + 7pF = 29.5pF
PU resistor = 2K ohm

SERIRQ is 1.8V_S5 at EC side but 3V_S5 at CPU/TPM side



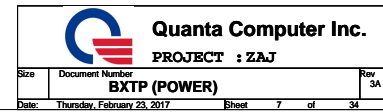
Flash Descriptor Override (SOC_OVRIDE)
0 = Normal Override(Normal operation)
1 = Override

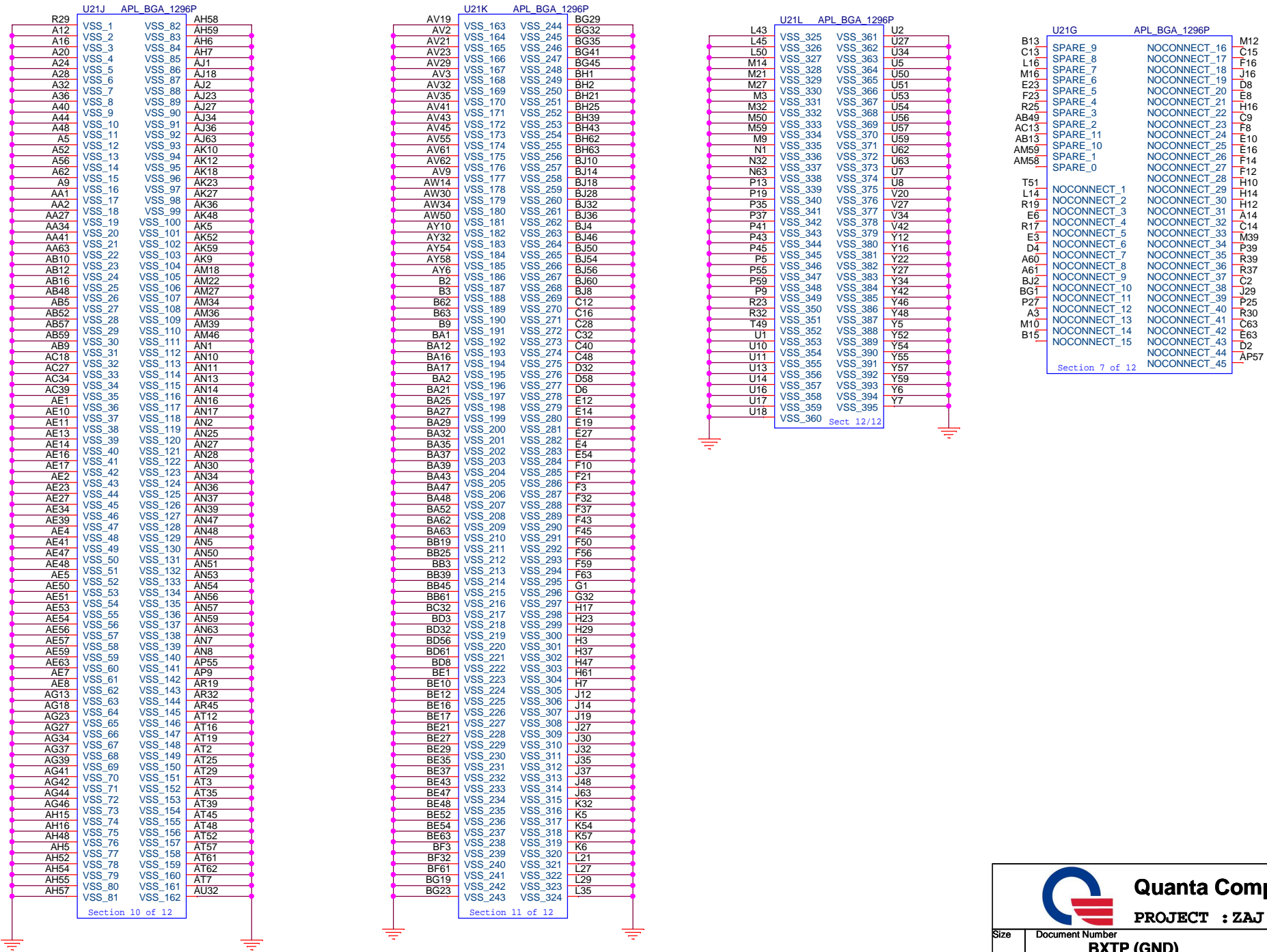


| RAM_ID5 | RAM_ID4 | RAM_ID3 | Vender | Quanta PN | Description |
|---------|---------|---------|------------|-------------|--|
| 0 | 0 | 0 | Miron-2GB | AKD5J08TL08 | IC: SDRAM(96P)MT41K256M16HA-125:E STNBSQ |
| 0 | 0 | 1 | Miron-2GB | AKD5908TL12 | IC: SDRAM(96P)MT41K256M16TW-107:P STNBSQ |
| 0 | 1 | 0 | Hynix-2GB | AKD5P08W29 | IC: SDRAM(96P)H5TC4063EPR-PBA(FR) STNBSQ |
| 0 | 1 | 1 | Samung-2GB | AKD5J00T504 | IC: SDRAM(96P)K4B4G1646B-BYK0(FR) STNBSQ |

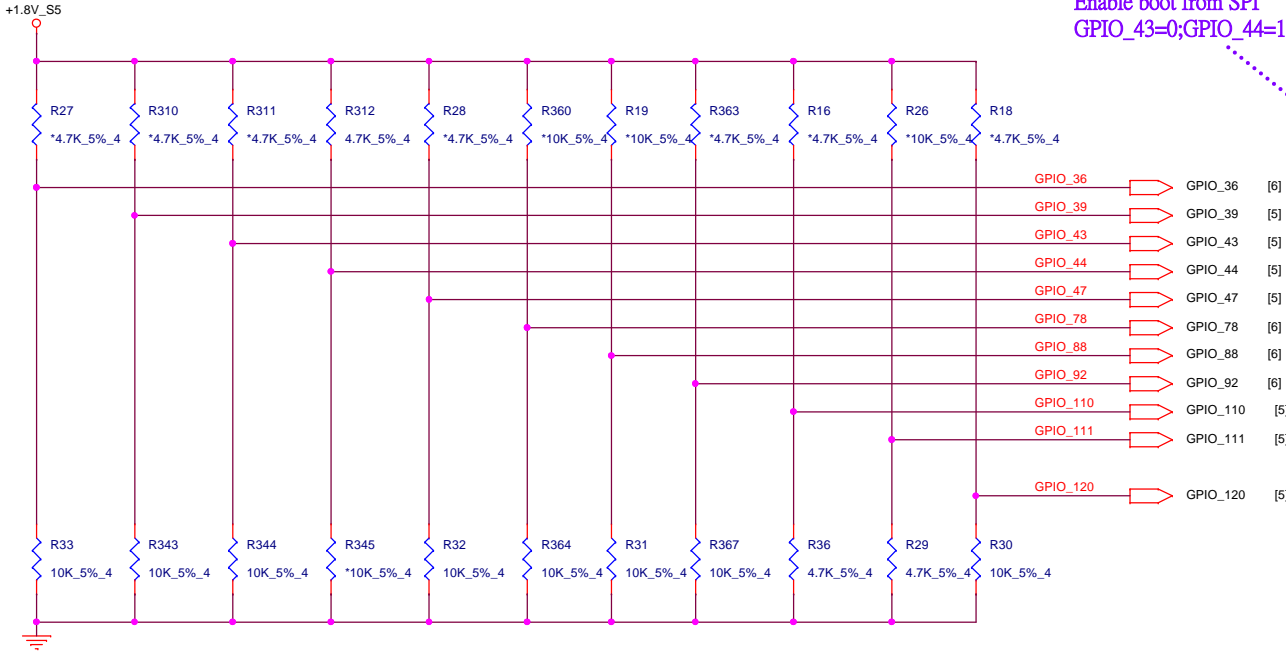
| eMMC_ID1 | eMMC_ID0 | Vender |
|----------|----------|------------------|
| 0 | 0 | Samung 32/64GB |
| 0 | 1 | Hynix 32/64GB |
| 1 | 0 | Kingston 32/64GB |

Quanta Computer Inc.
PROJECT : ZAJ
BxTP (EMMC/LPC/SMB/ISH)
Date: Thursday, February 23, 2017 Sheet 5 of 34



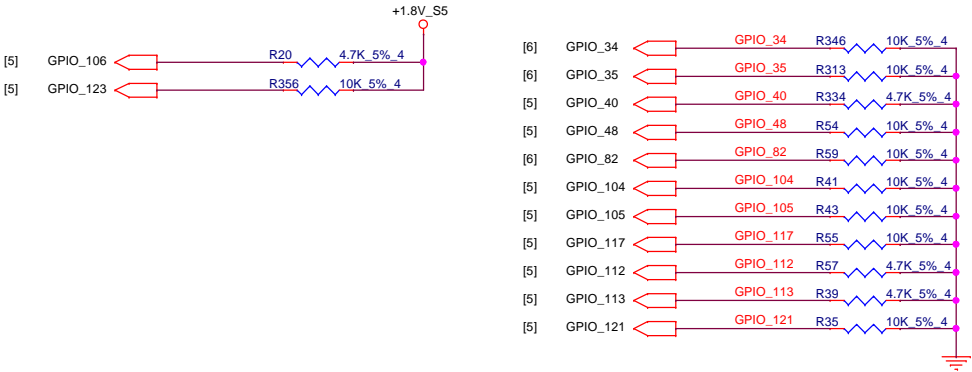



HARDWARE STRAPS



Follw APL WoW36 :
Enable boot from SPI
GPIO_43=0;GPIO_44=1

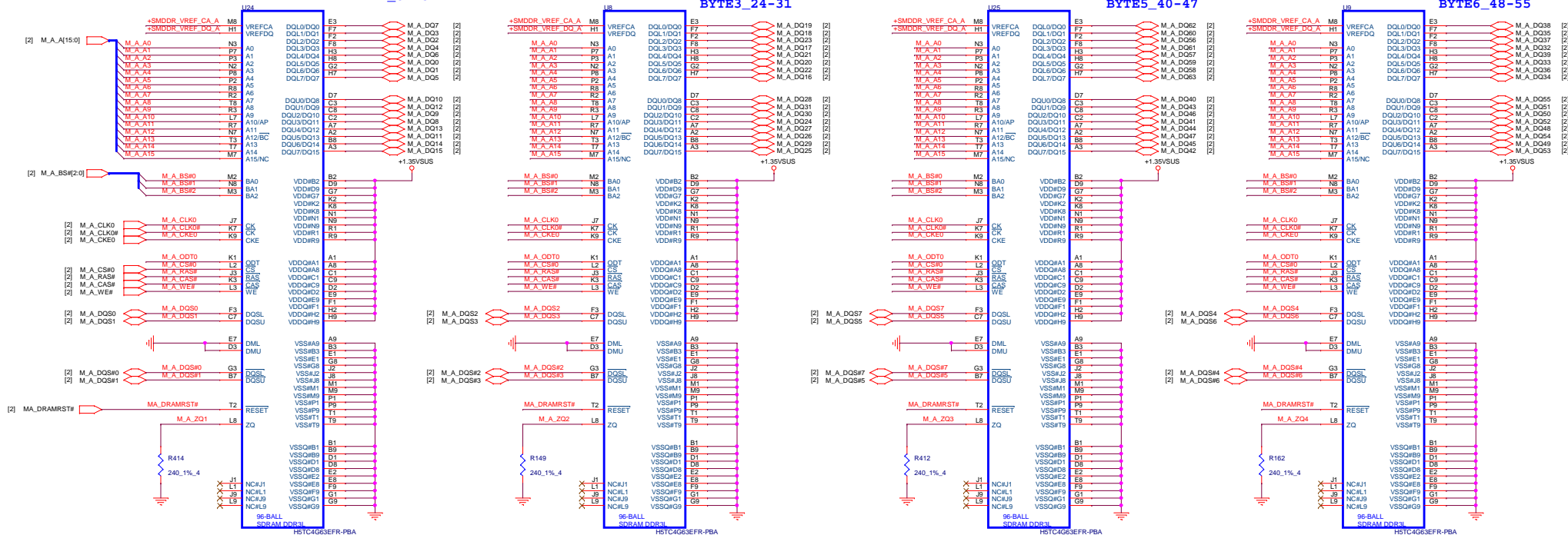
| Hardware Strap | Strap Description |
|----------------|---|
| GPIO_36 | VCC_1P24V_1P35V_A voltage select 0 = 1.24V 1 = 1.35V |
| GPIO_39 | Enable CSE(TXE3.0) ROM Bypass 0 = Disable bypass 1 = Enable Bypass |
| GPIO_43 | Allow eMMC as a boot source 0 = Disable 1 = Enable |
| GPIO_44 | Allow SPI as a boot source 0 = Disable 1 = Enable |
| GPIO_47 | Force DNX FW Load 0 = Do not force 1 = Force |
| GPIO_78 | SMBus 1.8V/3.3V mode select 0=buffers set to 3.3V 1=buffers set to 1.8V |
| GPIO_88 | PMU 1.8V/3.3V mode select 0=buffers set to 3.3V mode 1=buffers set to 1.8V mode |
| GPIO_92 | SMBus No Re-Boot 0 = Disable (default) 1 = Enable |
| GPIO_110 | LPC 1.8V/3.3V mode select 0=buffers set to 3.3V mode 1=buffers set to 1.8V mode |
| GPIO_111 | Boot BIOS Strap 0 = Boot from SPI 1 = Do not boot from SPI |
| GPIO_120 | Top swap override 0 = Disable 1 = Enable |



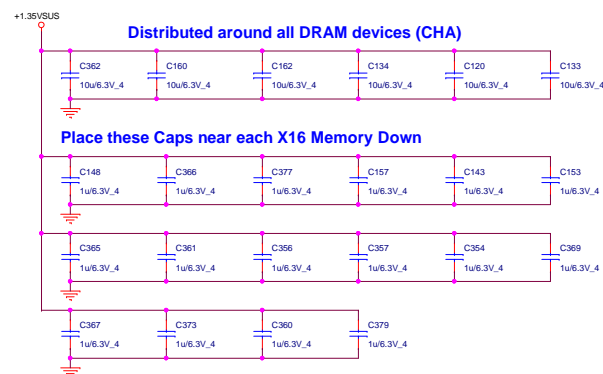


Quanta Computer Inc.
PROJECT : ZAJ

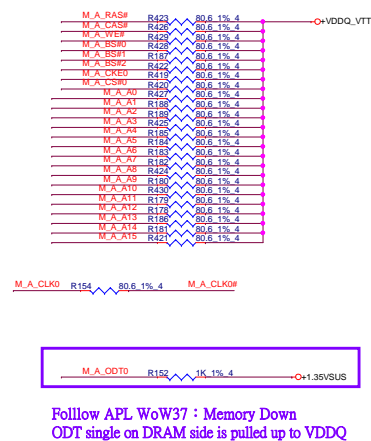
| | | |
|-------|-----------------------------|---------------|
| Size | Document Number | Rev |
| | HARDWARE STRAPS | 3A |
| Date: | Thursday, February 23, 2017 | Sheet 9 of 34 |

BYTE0_0-7
BYTE1_8-15BYTE2_16-23
BYTE3_24-31BYTE7_56-63
BYTE5_40-47BYTE4_32-39
BYTE6_48-55

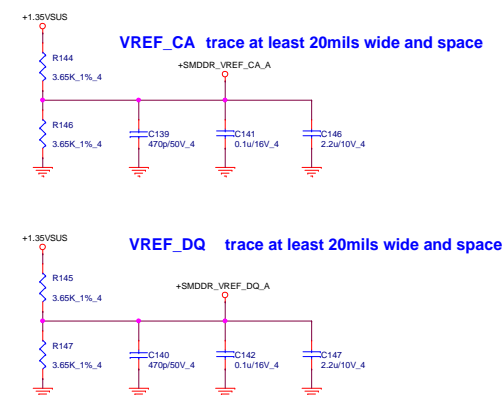
DE-CAPS FOR MEMORY CHANNEL A



VTT TERMINATIONS



VREF_CA-DQ CIRCUIT



BYTE0_0-7

BYTE2_16-23

BYTE1_8-15

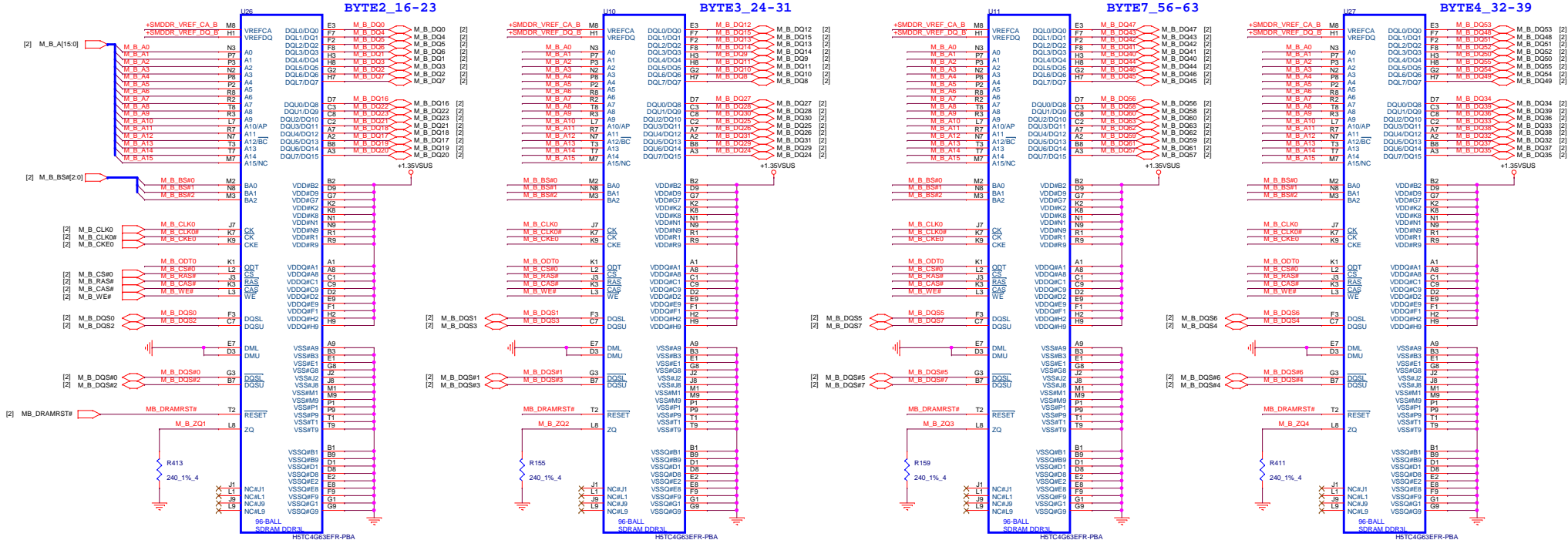
BYTE3_24-31

BYTE5_40-47

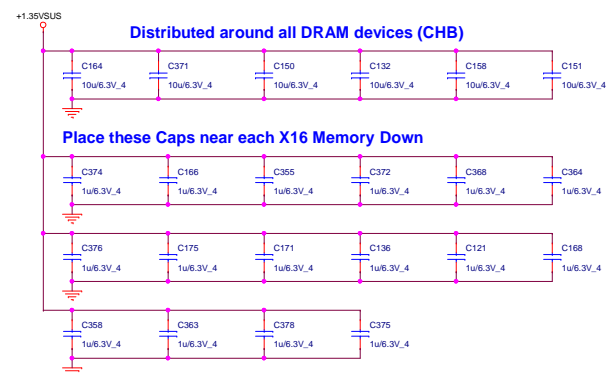
BYTE7_56-63

BYTE6_48-55

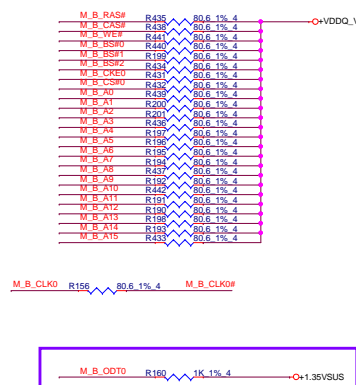
BYTE4_32-39



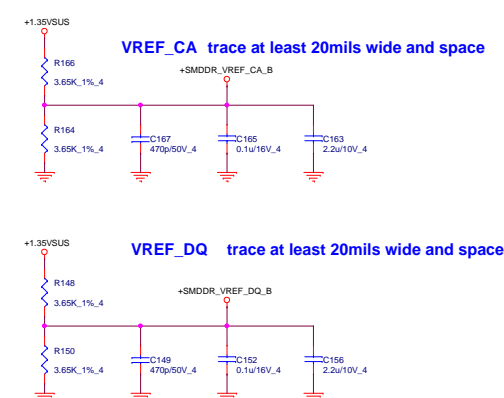
DE-CAPS FOR MEMORY CHANNEL B

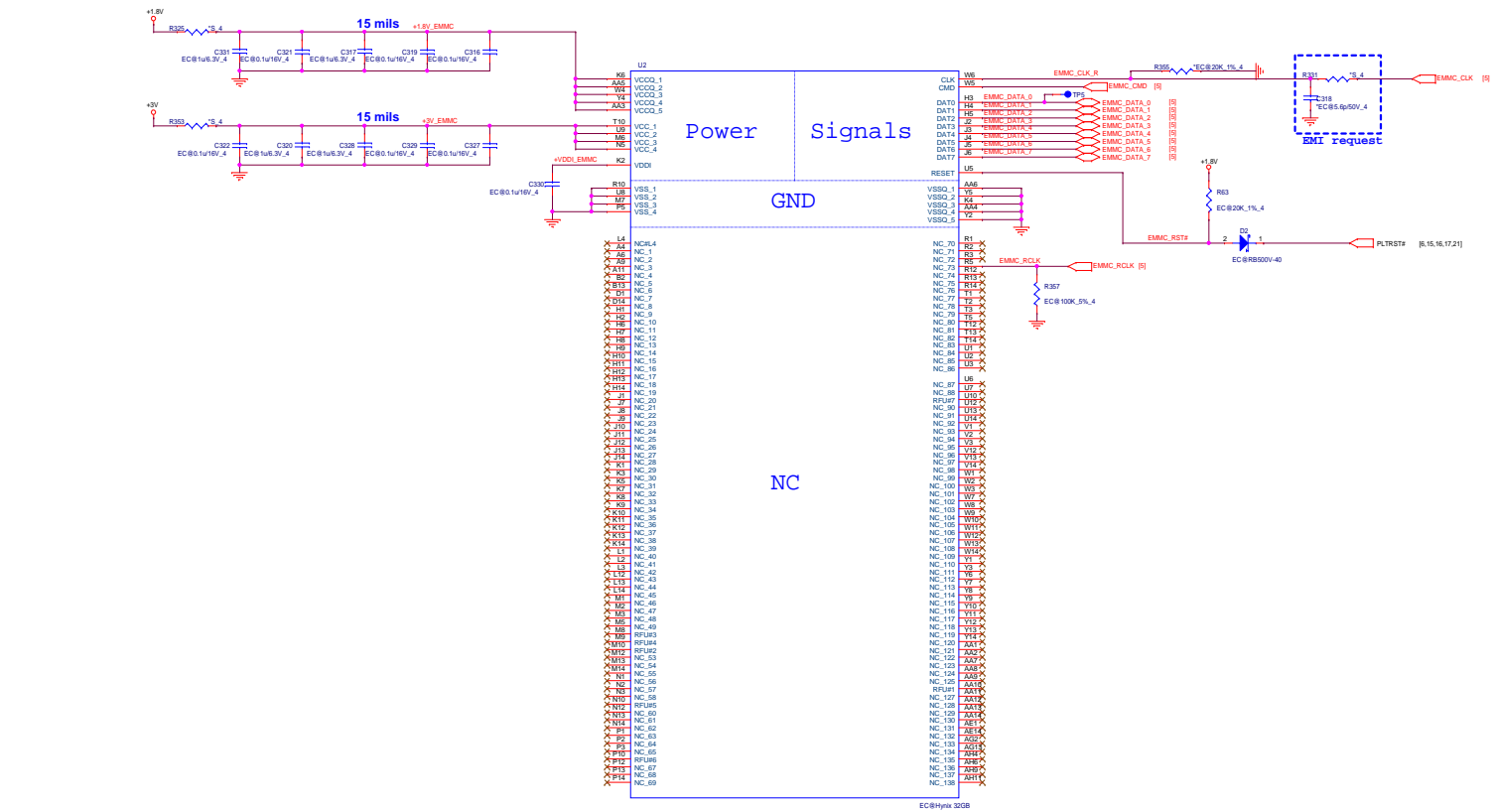


VTT TERMINATIONS

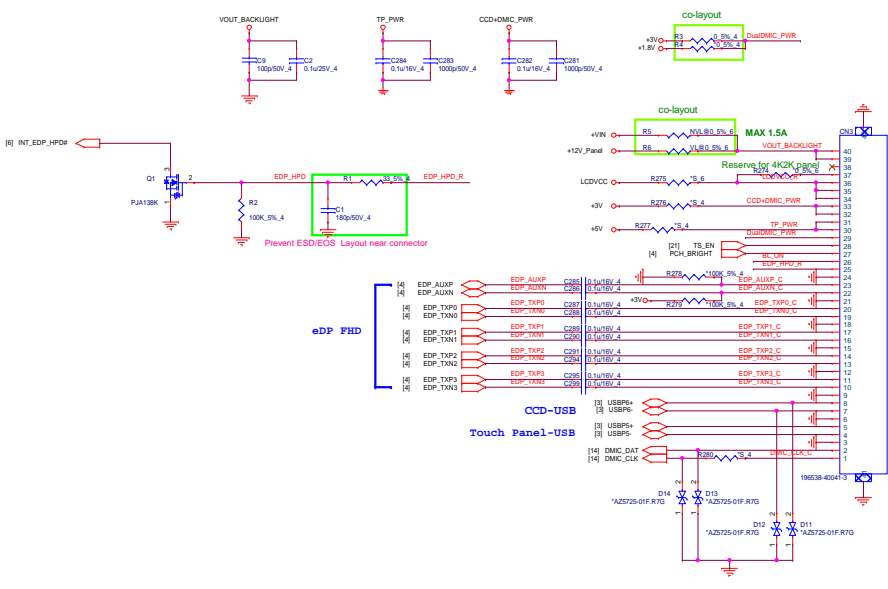


VREF_CA-DQ CIRCUIT

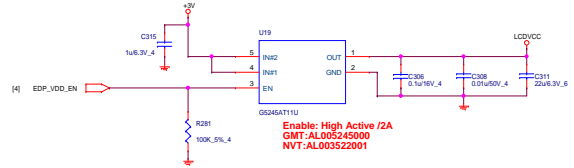




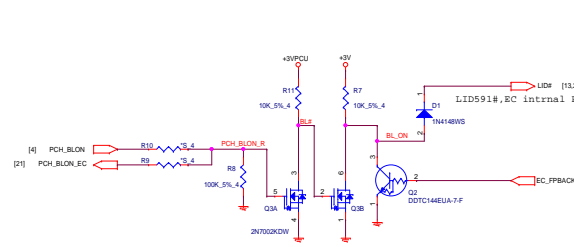
eDP CONNECTOR (LDS)



eDP Power (LDS)

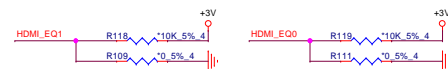
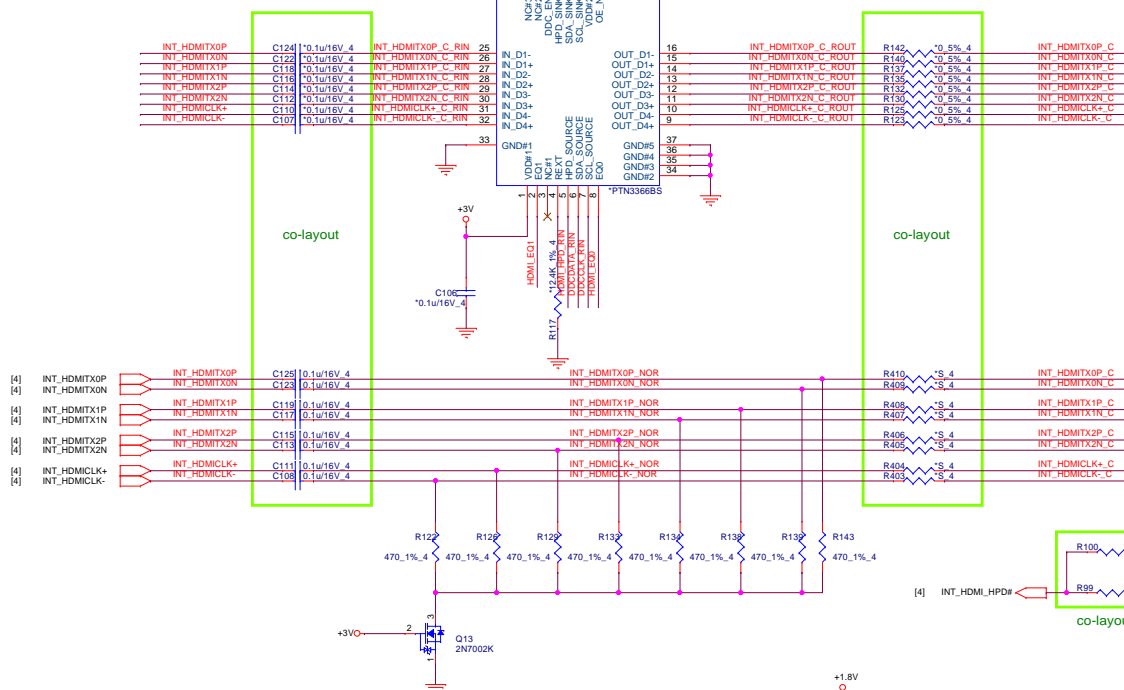
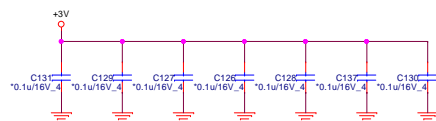


eDP Backlight (LDS)



HDMI (HDM)

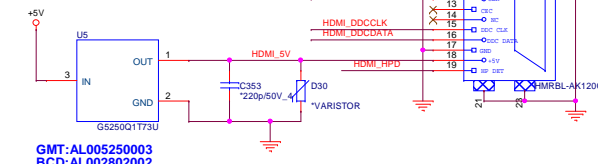
| OE_N | DDC_EN | HPD_SINK | Source output | PTN3366 power mode |
|------|--------|------------|---------------|-------------------------|
| LOW | HIGH | HIGH | source active | Active mode; DDC active |
| LOW | LOW | LOW | don't care | Standby mode |
| HIGH | LOW | don't care | don't care | Ultra low-power mode |



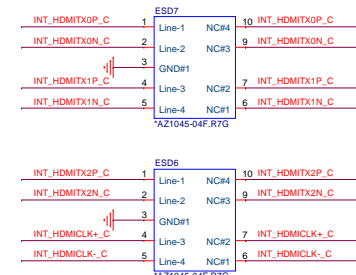
The PTN3366 supports four level equalization settings based on binary input pins EQ0 and EQ1.

Table 5. Equalizer settings

| Inputs | EQ0 | Equalization for 3 Gbit/s |
|------------------------------|--------------------------|---------------------------|
| EQ1 short to GND | short to GND | 0 dB |
| EQ1 short to GND | short to V _{DD} | 2 dB |
| EQ1 short to V _{DD} | short to GND | 4 dB |
| EQ1 short to V _{DD} | short to V _{DD} | 6 dB |

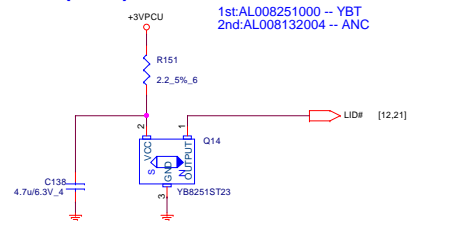


GMT:AL005250003
BCD:AL002802002

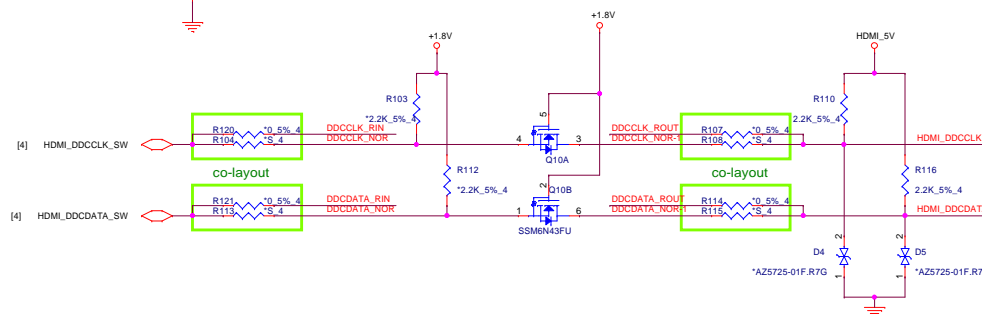


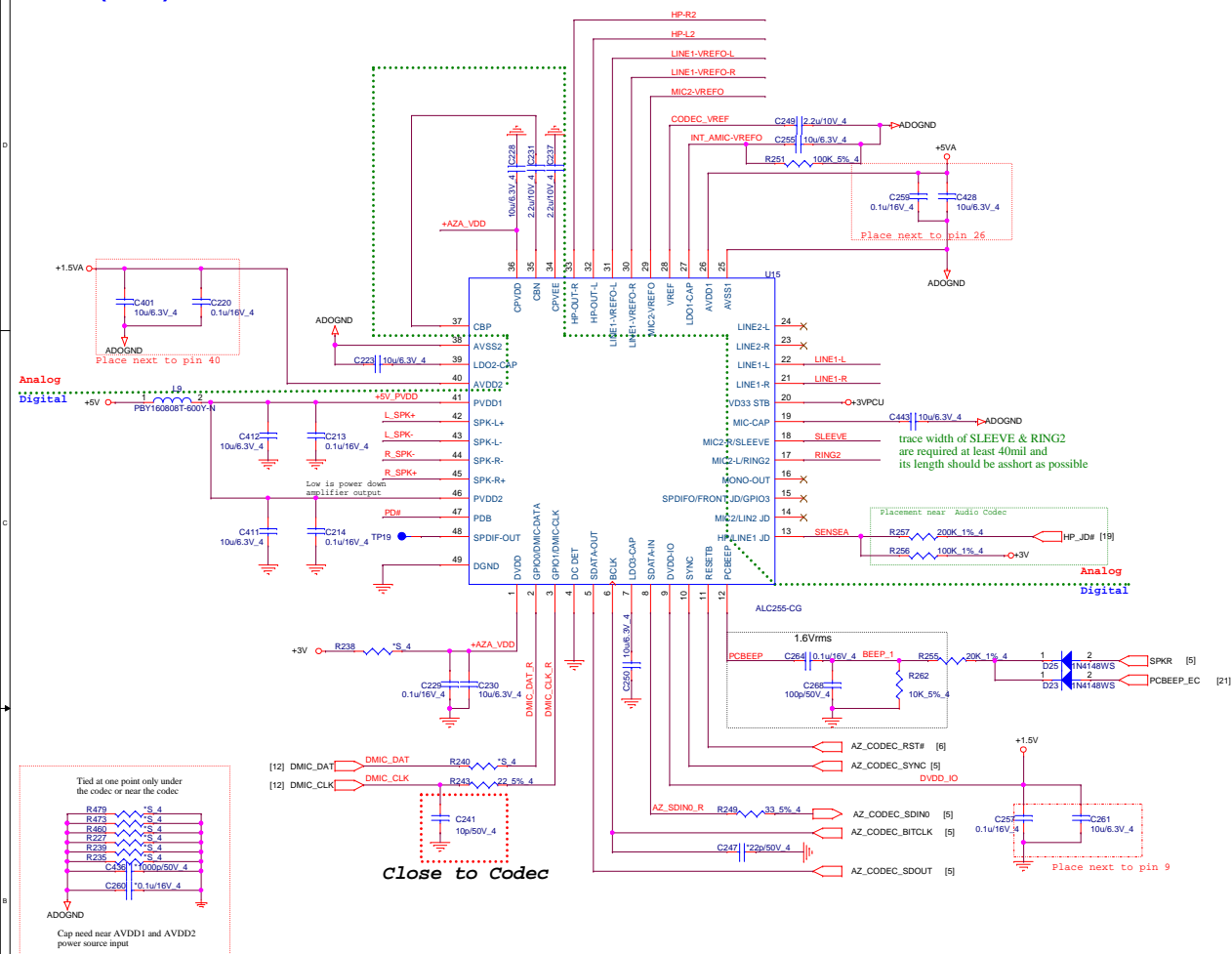
EMI

Hall Sensor (HSR)

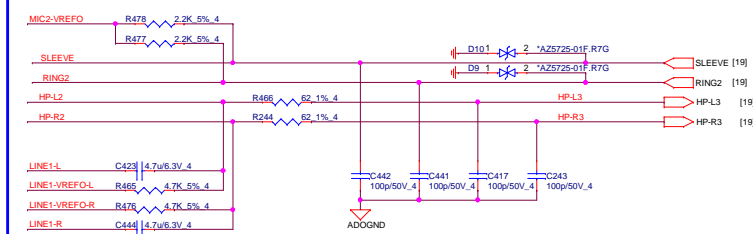


1st:AL008251000 -- YBT
2nd:AL008132004 -- ANC

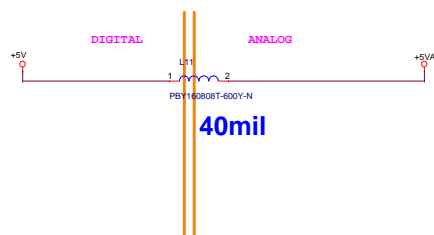




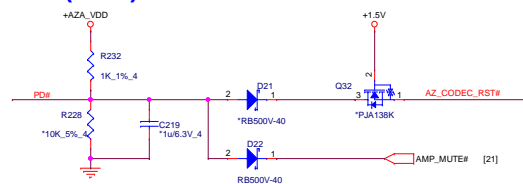
Universal Audio Jack HEADPHONE/MIC/LINE combo (ADO)



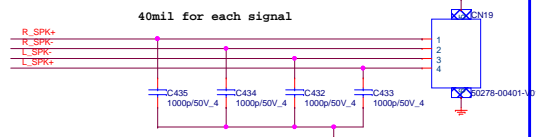
Codec PWR 5V(ADO)



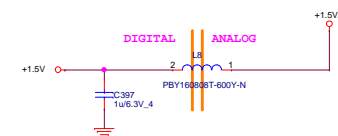
Mute(ADO)



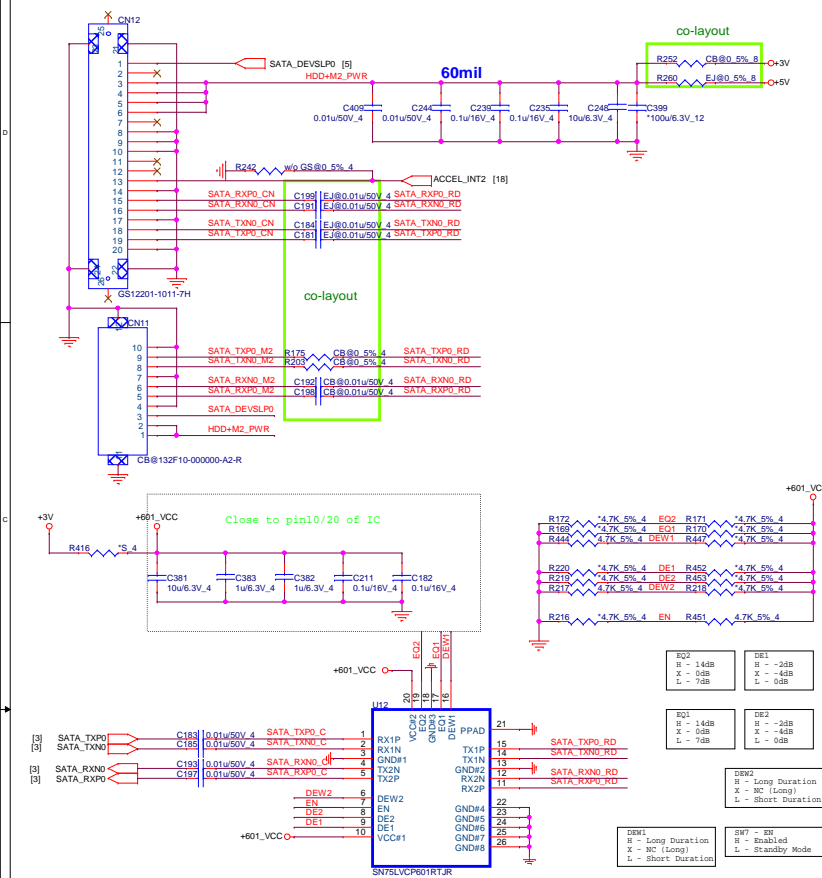
Internal Speaker



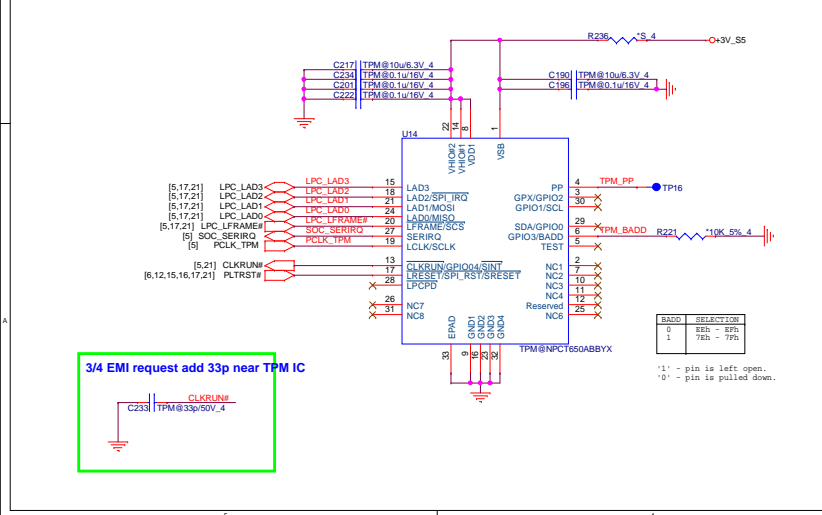
Codec PWR 1.5V(ADO)



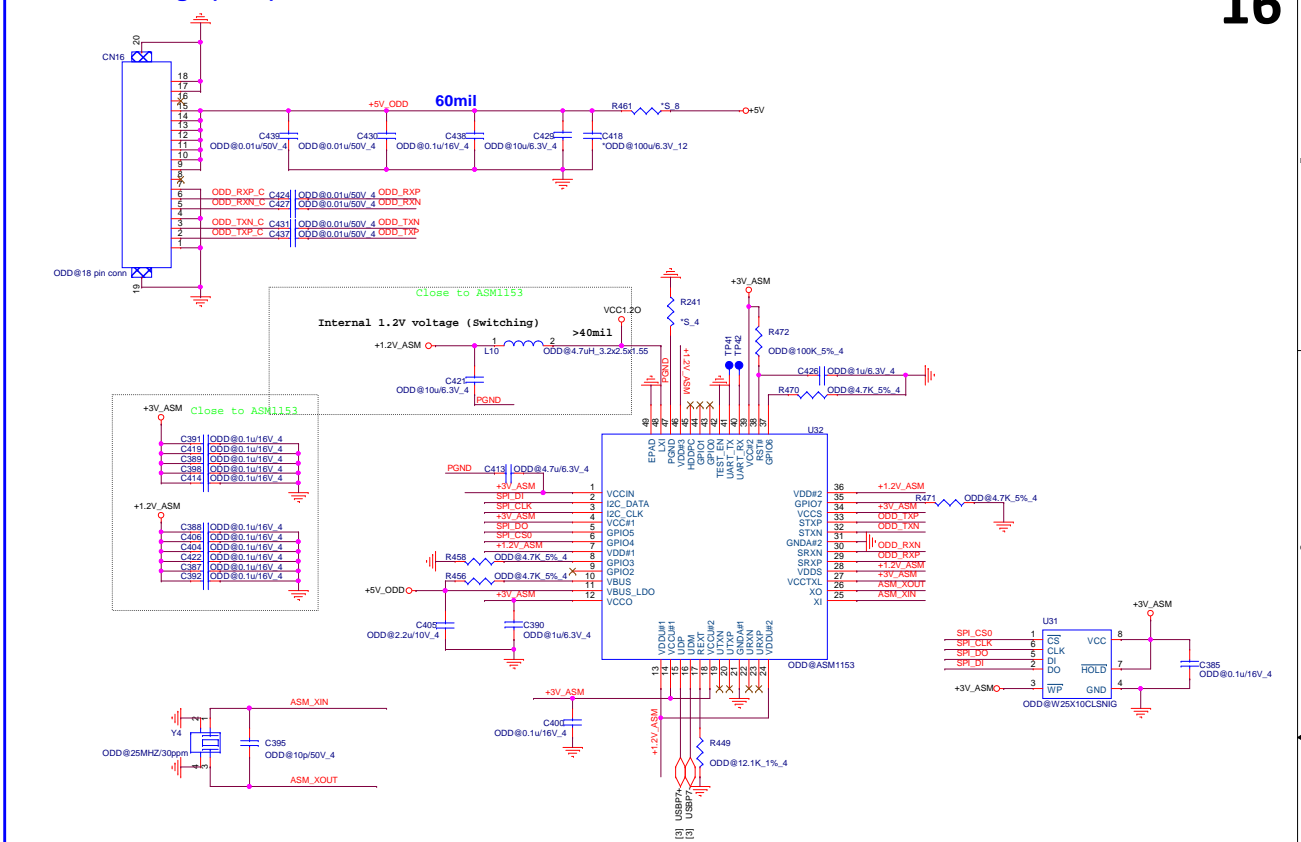
2.5" SATA HDD (HDD)



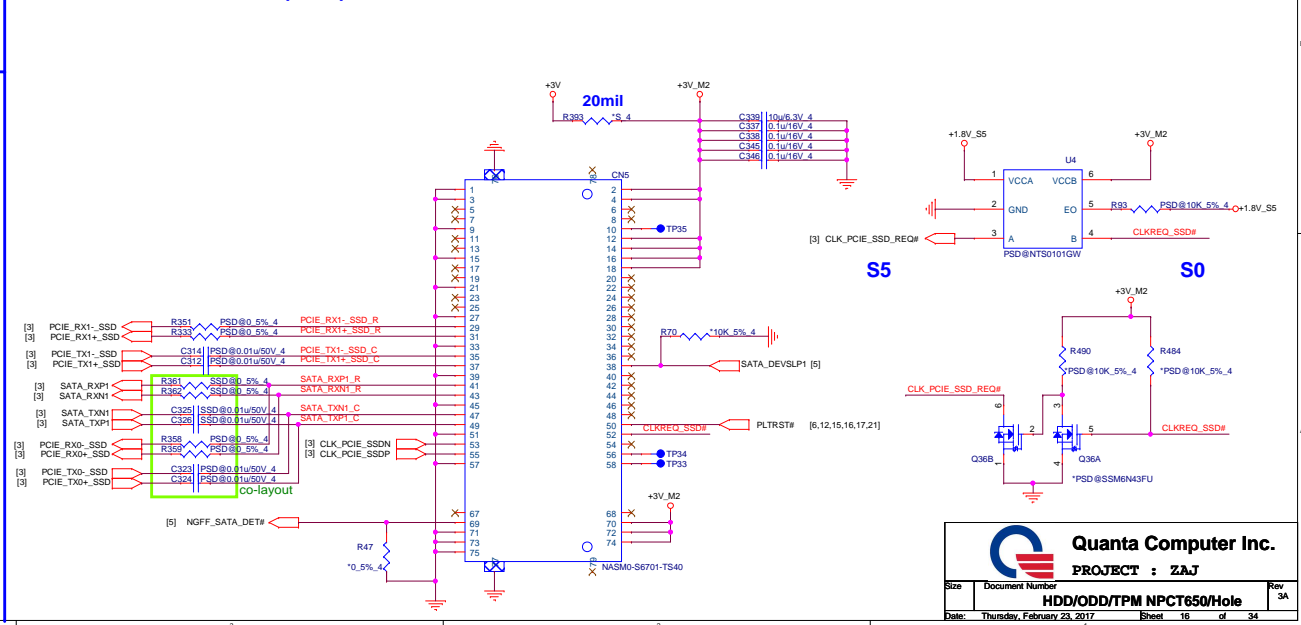
TPM NPCT650 (TPM)



USB ODD Bridge (ODD)

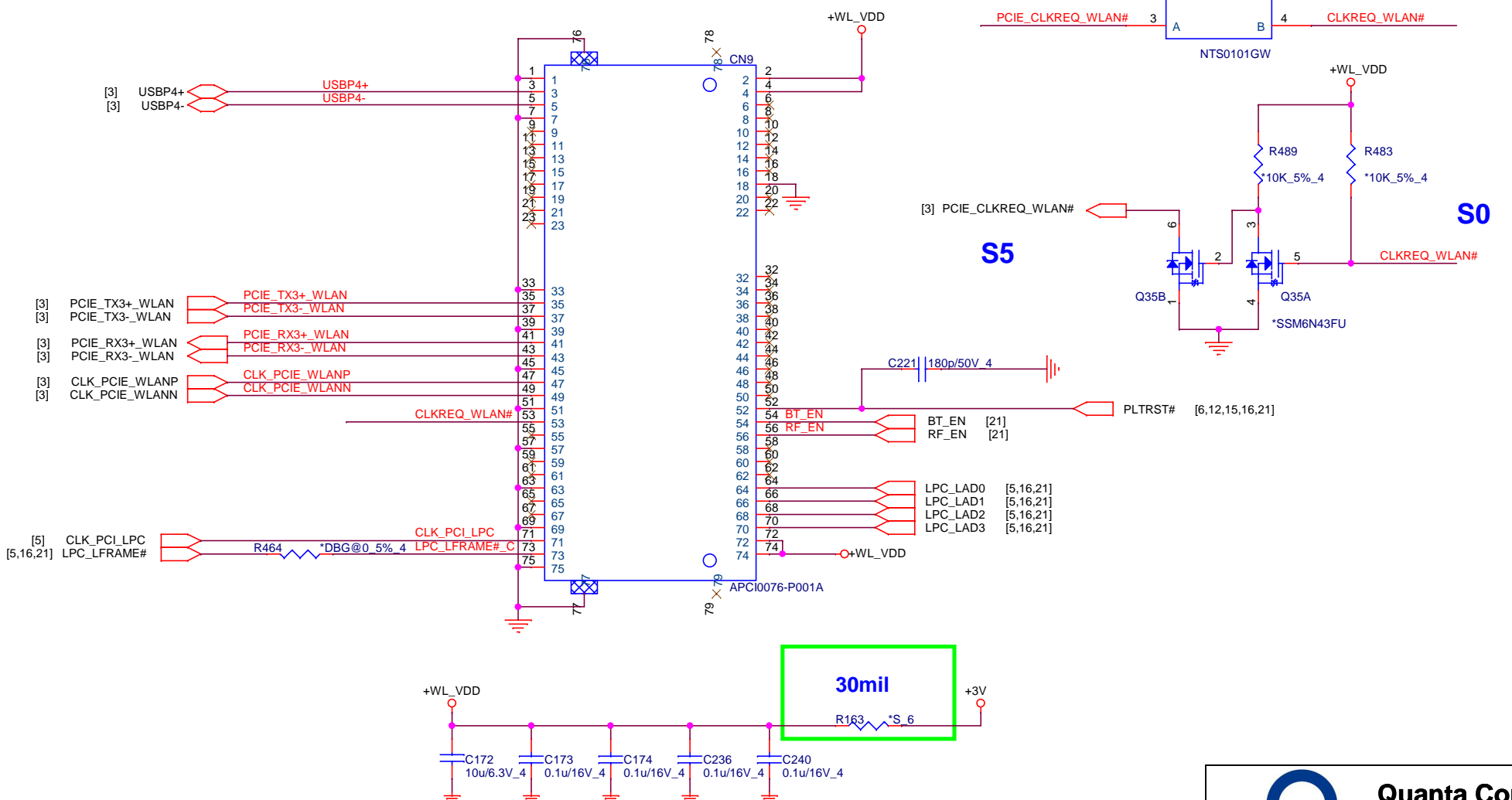


M.2 PCPIE & SATA SSD (NGF)

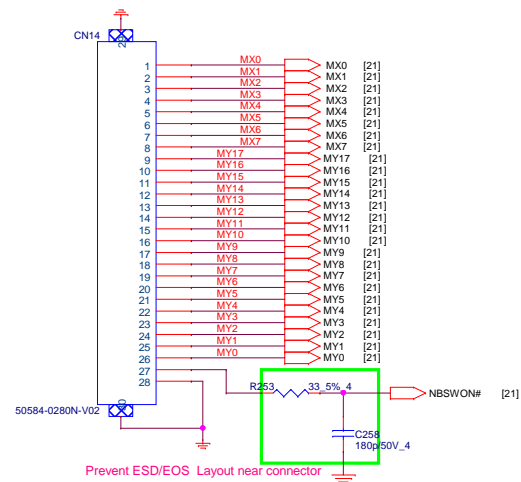


NGFF_M.2 WiFi & BT (NGF)

17

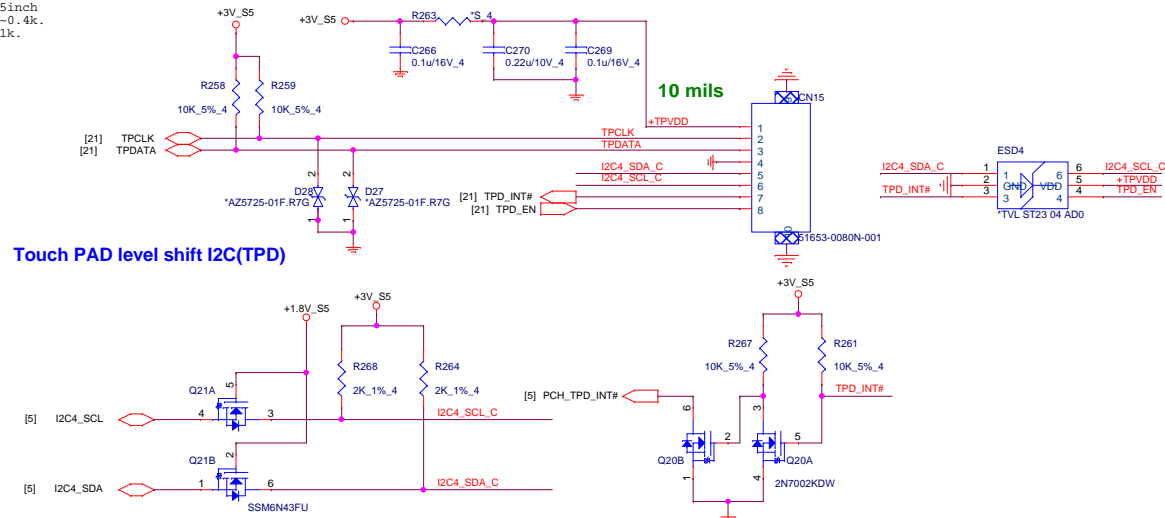


KEYBOARD (KBC)

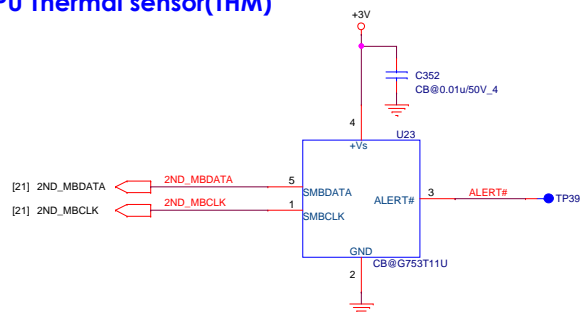


TOUCHPAD (TPD I2C/PS2 co-lay)

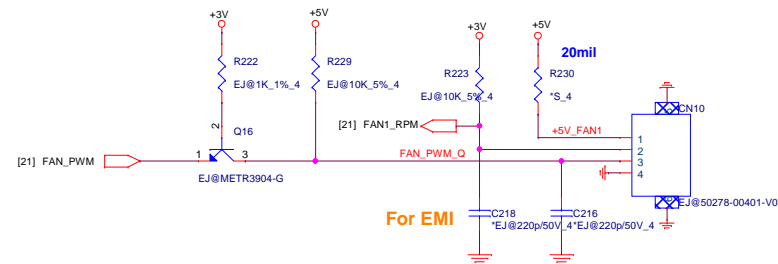
TPD->100kHz, TS=400KHz
Intel design guide suggestion
MCP PIN 10u.
Per inch 3u TS=3x5inch
400kHz10-100u =2.4-0.4k.
100KHz 10-100u=9k-1k.



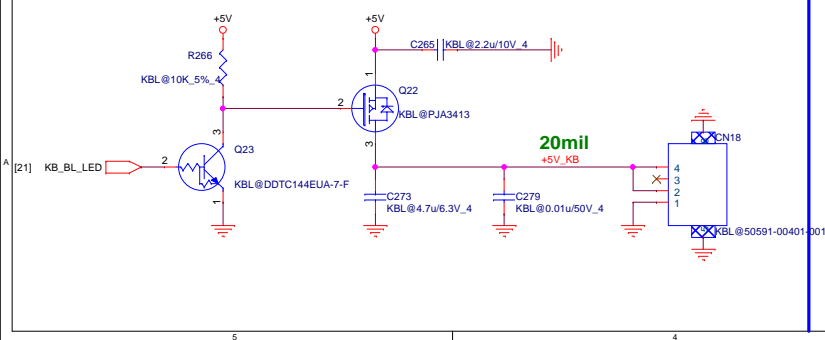
CPU Thermal sensor (THM)



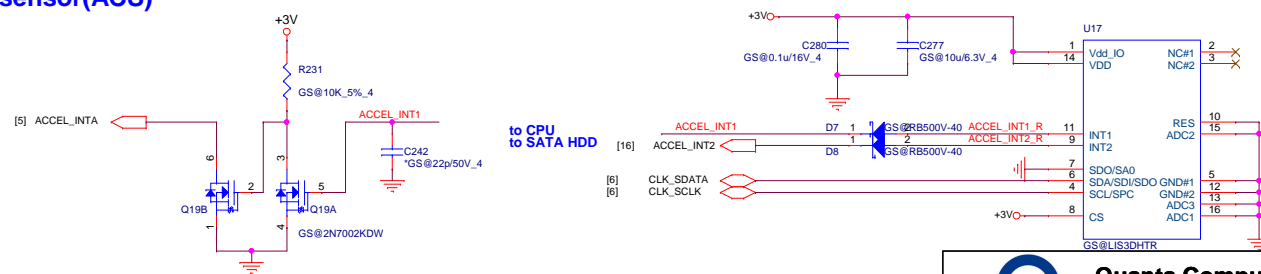
CPU FAN (THM)



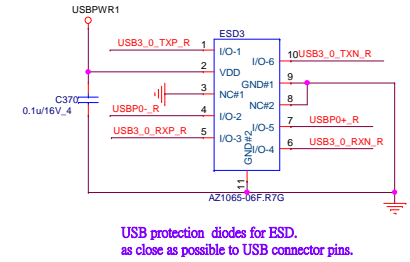
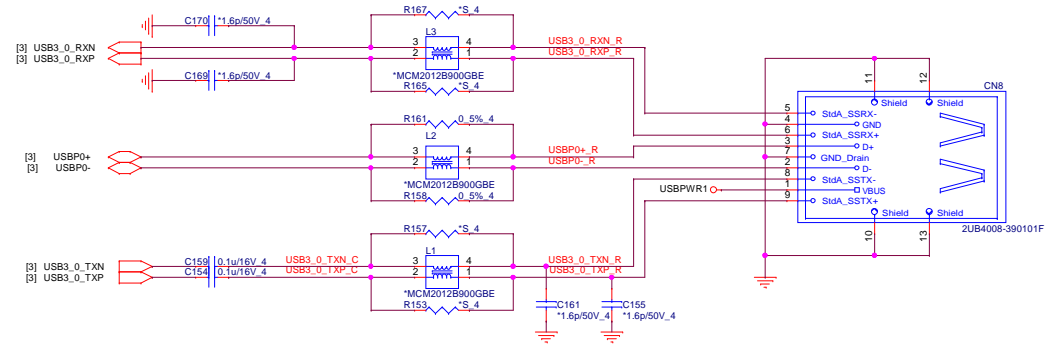
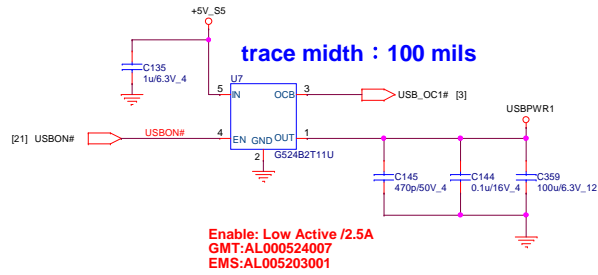
Keyboard backlight (KBL)



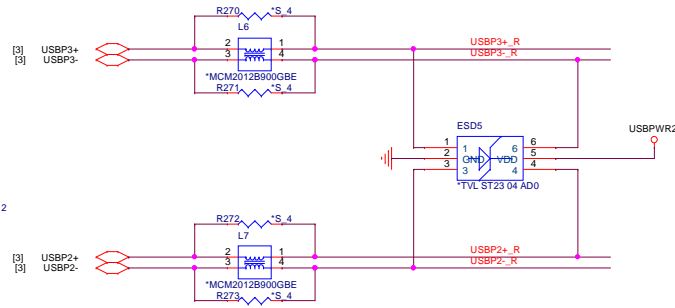
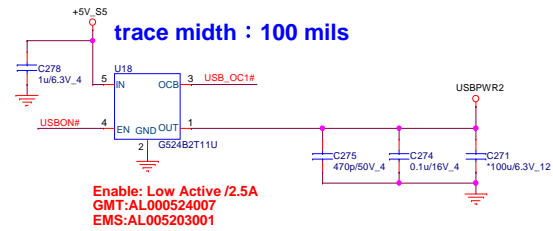
G-sensor (ACS)



USB 3.0 (UB3)

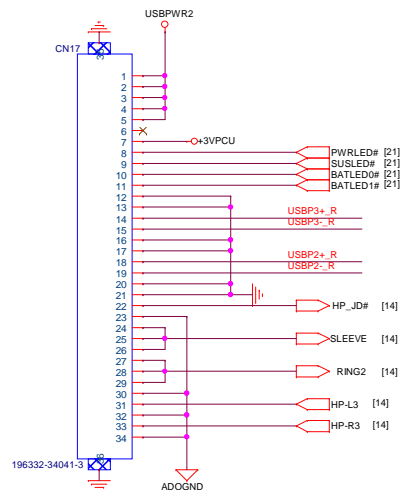


USB 2.0 (UB2)

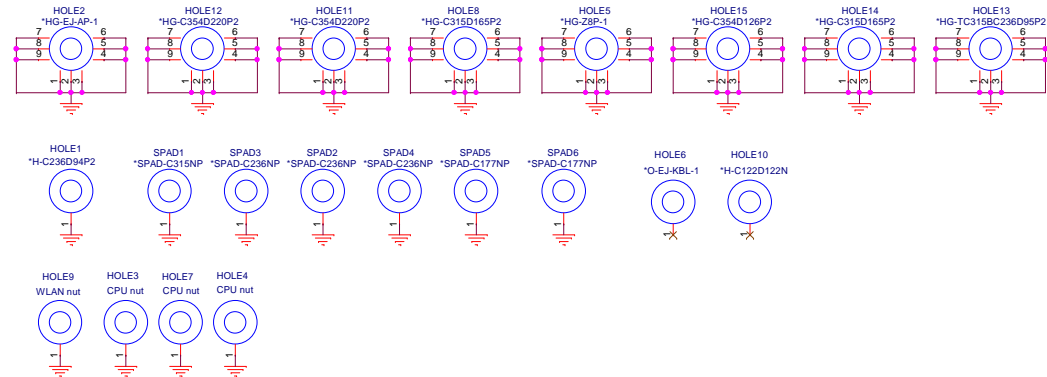


Stitch cap (EMC)

USB 2.0/LED/AUDIO JACK DB (UB2)



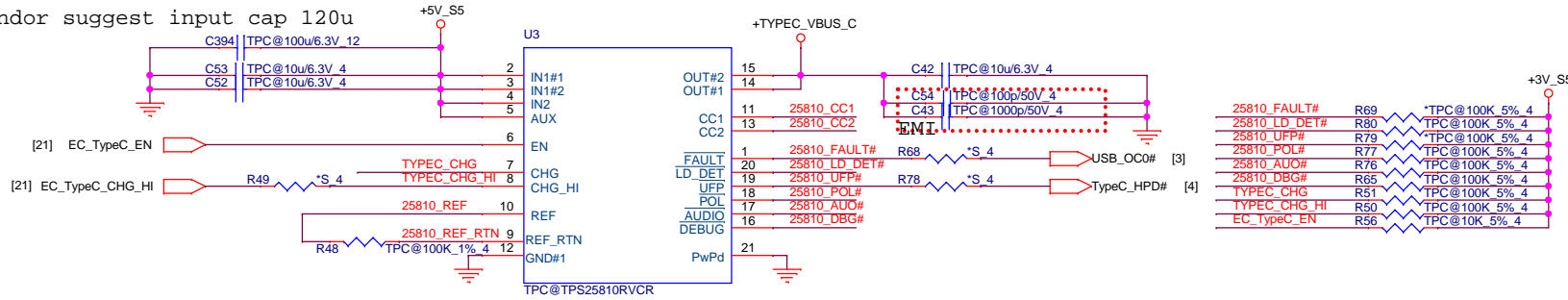
HOLE(OTH)



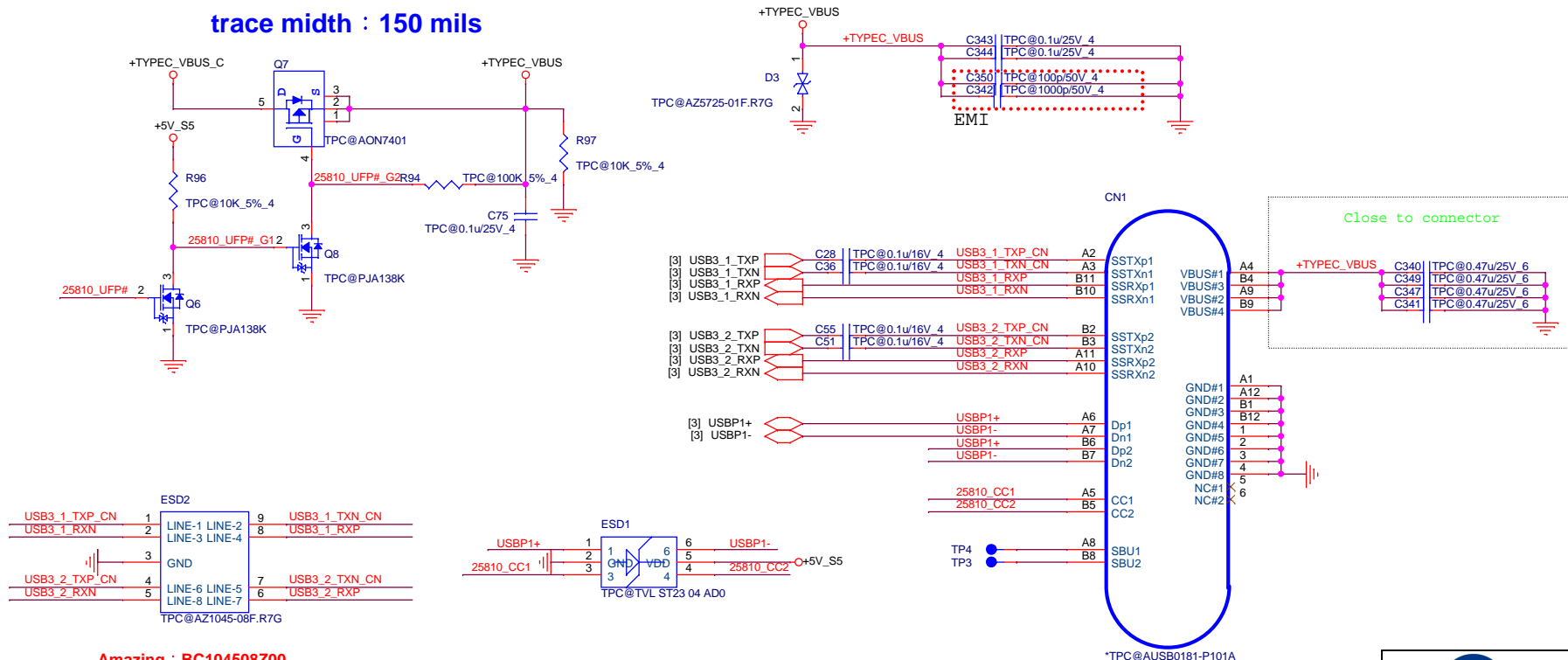
USB TYPE-C (UB3)

trace width : 150 mils

Vendor suggest input cap 120u

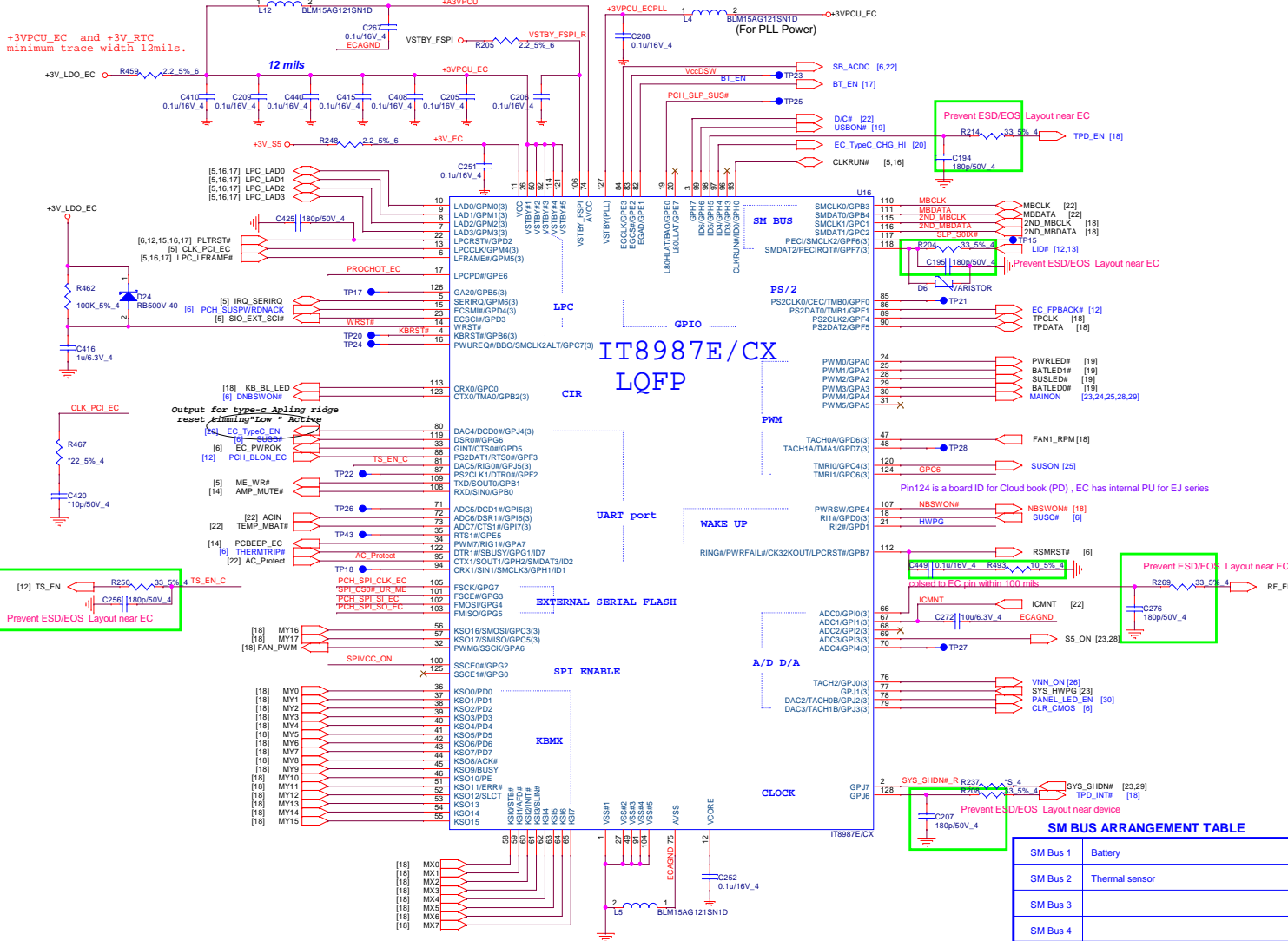


trace width : 150 mils

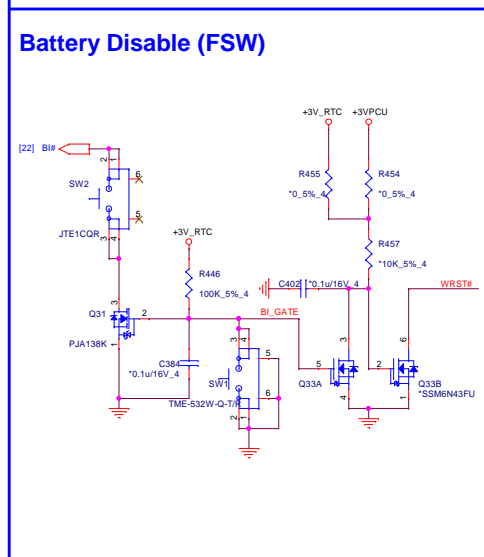
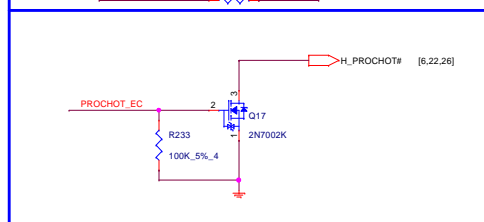
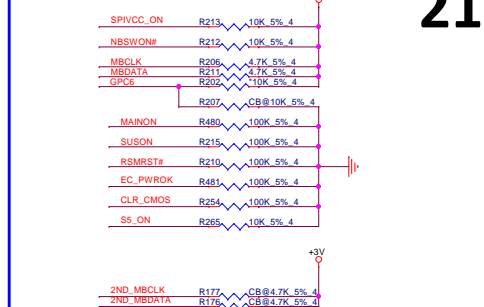


Amazing : BC104508Z00
PJT : BC605S8QZ00
INPAQ : BC38109LZ00

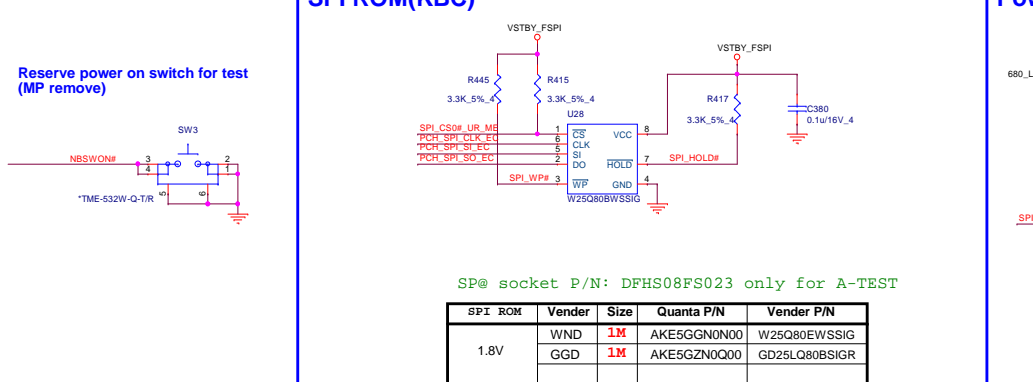
EC(KBC)



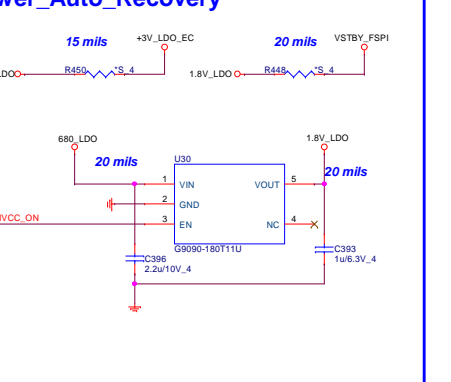
PU/PD (KBC)



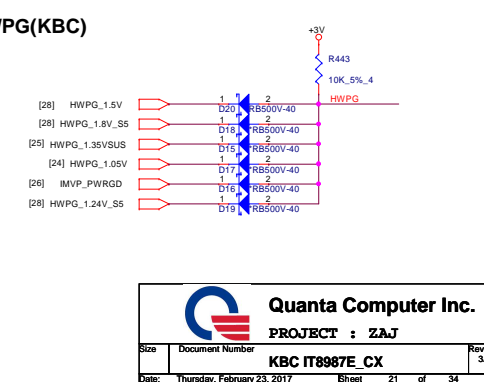
SPI ROM(KBC)




Power_Auto_Recovery



HWPG(KBC)





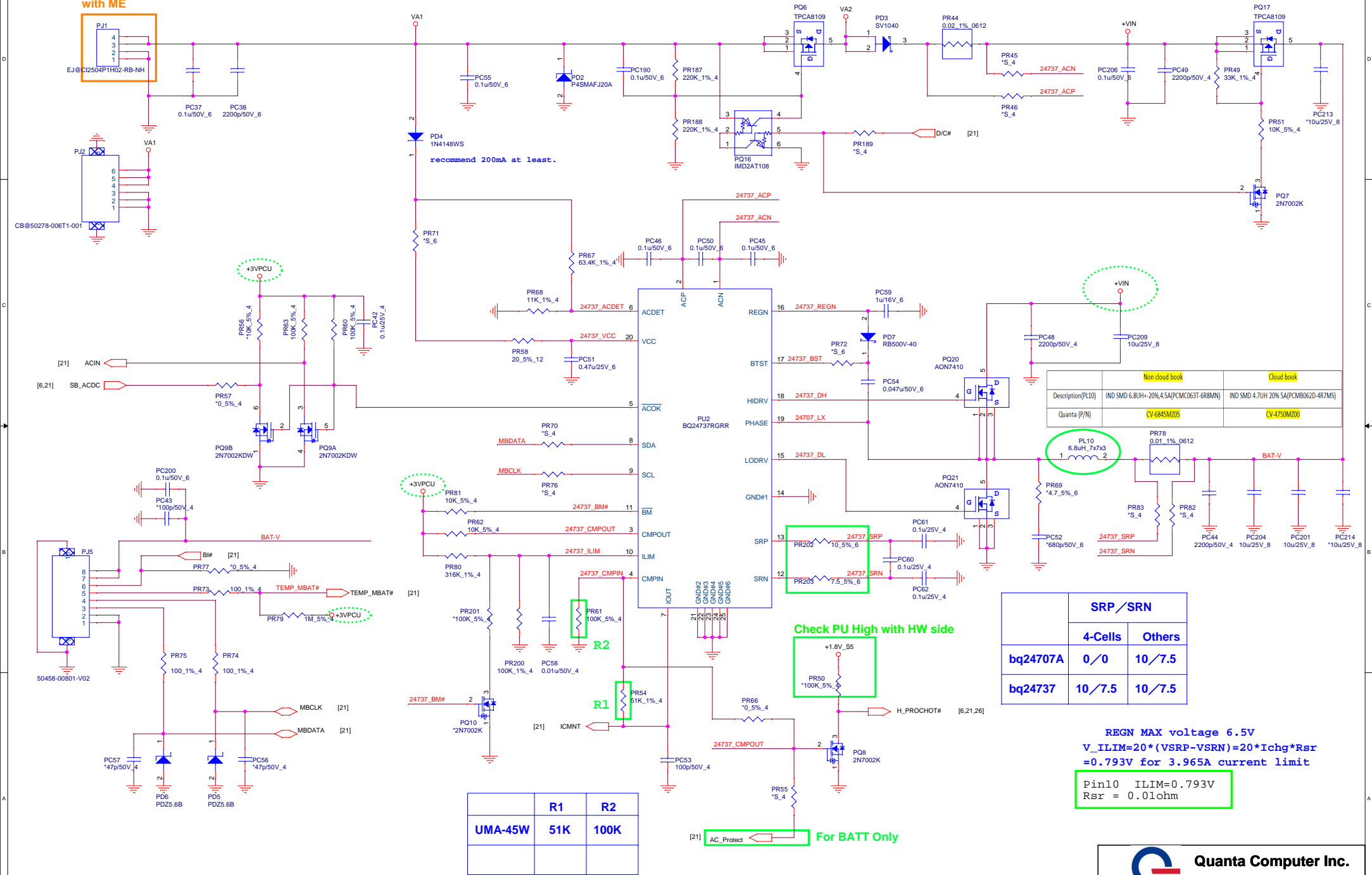
PROJECT : ZAJ

KBC IT8987E_CX

Thursday, February 23, 2017

| Size | Document Number | Rev |
|------|-----------------|-----|
| | | 3A |

Double Check ADP-IN Connector with ME



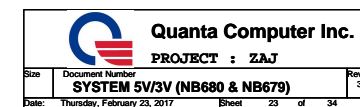
| | Non cloud book | Cloud book |
|--------------------|--|--------------------------------------|
| Description (PL10) | IND SMD 6.8uH±20%,4.5A(PCMC063T-6R8MN) | IND SMD 4.7uH 20% 5A(PCMB062D-4R7MS) |
| Quanta (P/N) | CV-6845M205 | CV-4750M200 |

| | SRP / SRN | |
|----------|-----------|----------|
| | 4-Cells | Others |
| bq24707A | 0 / 0 | 10 / 7.5 |
| bq24737 | 10 / 7.5 | 10 / 7.5 |

REGN MAX voltage 6.5V
 $V_{ILIM} = 20 * (VSRP - VSRN) = 20 * Ichg * Rsr$
 $= 0.793V$ for 3.965A current limit

Pin10 ILIM=0.793V
 $Rsr = 0.01ohm$

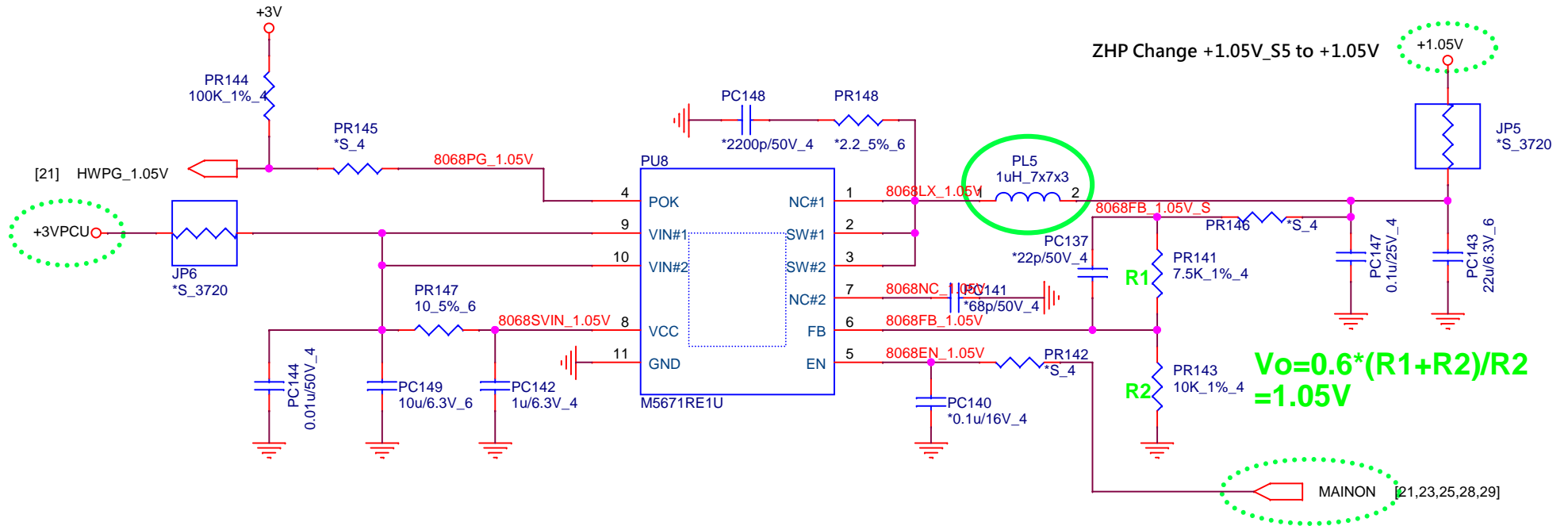
| | R1 | R2 |
|---------|-----|------|
| UMA-45W | 51K | 100K |



[6,12,13,14,19,21,22,23,28] +3VPCU
 [6,7,26] +1.05V
 [4,5,6,12,13,14,15,16,17,18,21,23,25,26,28,29] +3V

+1.05V
 1.05Volt +/- 5%
 TDC : 2.025A
 PEAK : 2.7A
 Width : 100mil

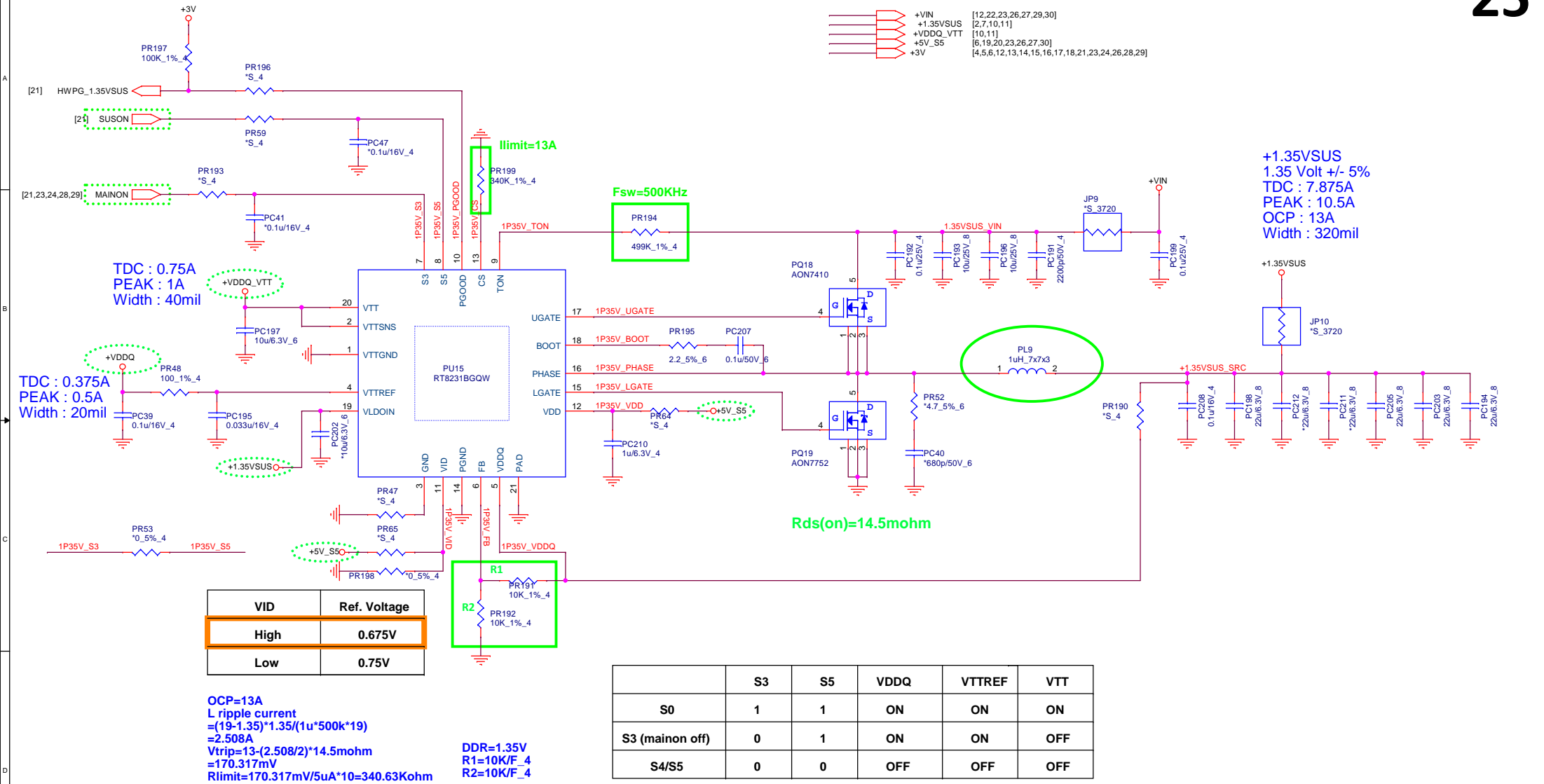
ZHP Change +1.05V_S5 to +1.05V



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PROJECT :

| | | |
|-------|-----------------------------|----------------|
| Size | Document Number | Rev |
| | +1.05V (M5671RE1U) | 3A |
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Size Document Number
DDR3L (RT8231BGQW) Rev 3A

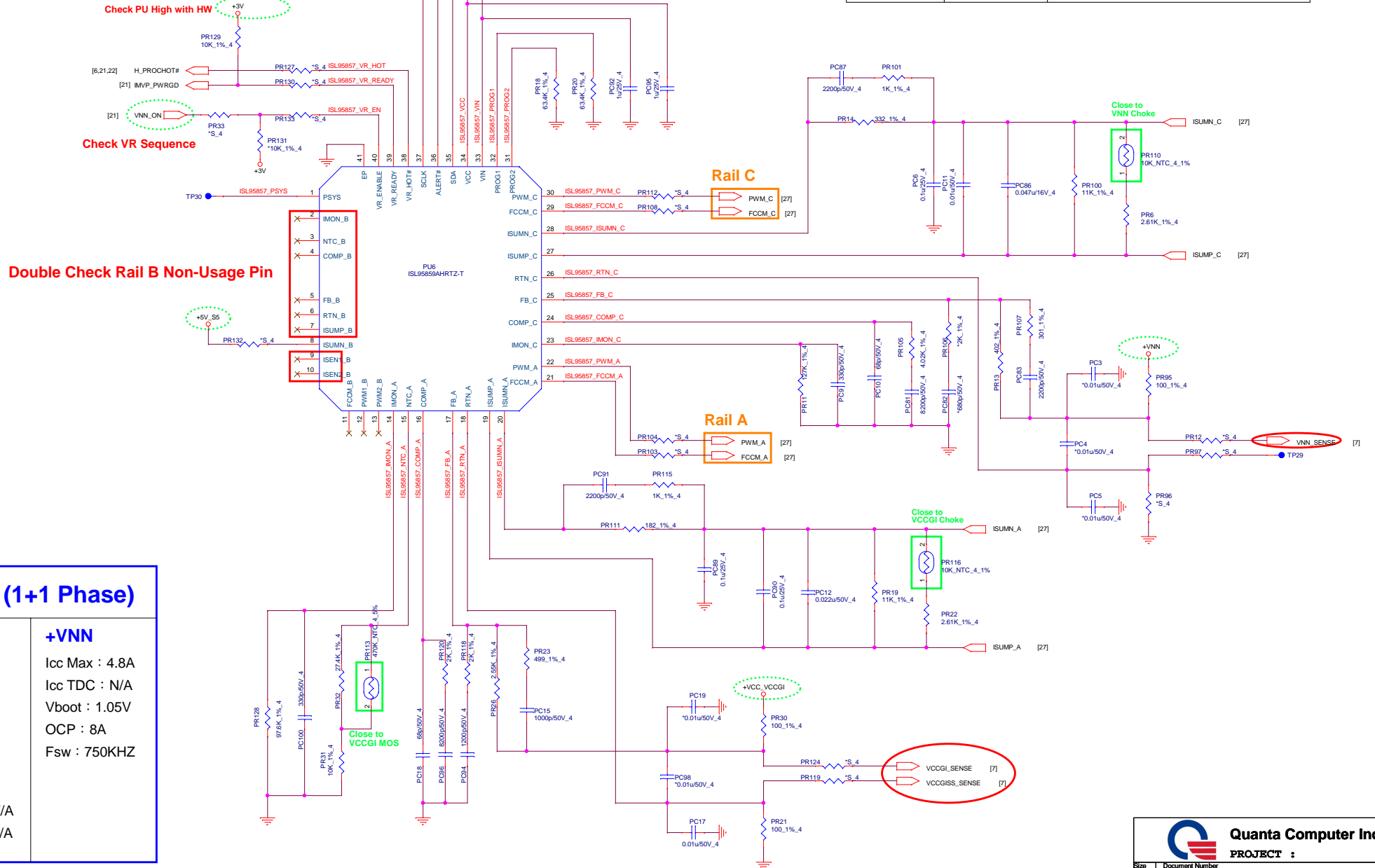
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SVID_CLK : UP:85 ohm Series:95 ohm
 SVID_ALERT : UP:68 ohm Series:220 ohm
 SVID_DATA : UP:170 ohm Series:20 ohm

IMVP8 VR Controller

Rail A (1 phase) : +VCCGI
 Rail C (1 phase) : +VNN

| Cloud book | P/N | Description |
|------------|-------------|--------------------------------------|
| PR14 | CS16342FB17 | RES CHIP 634 (1/16W +-1%0402) |
| PC86 | CH3226K1B00 | CAP CHIP 0.022U 50V(+/-10%,X7R,0402) |
| PR111 | CS12322FB09 | RES CHIP 232 1/16W +-1%(0402) |
| PC90 | CH3683K9B00 | CAP CHIP 0.068U 16V(+/-10%,X5R,0402) |



R_AC_LL : 6mV/A

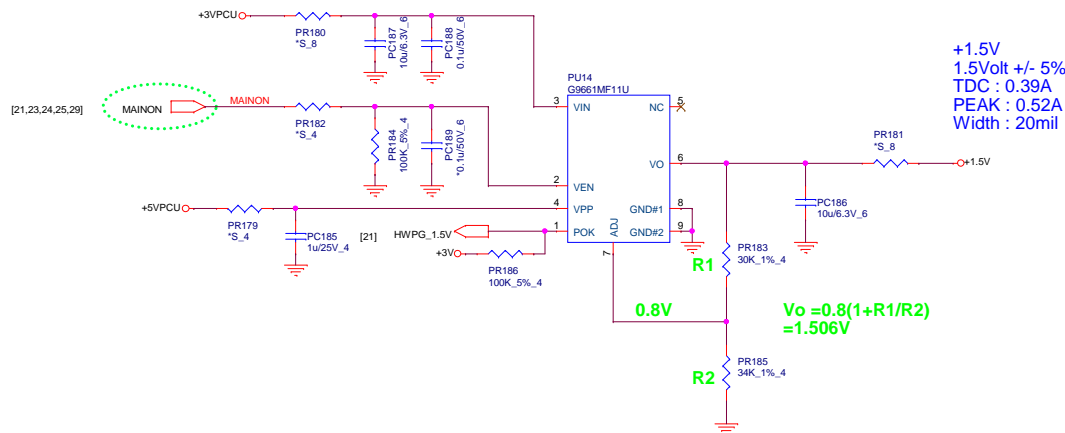
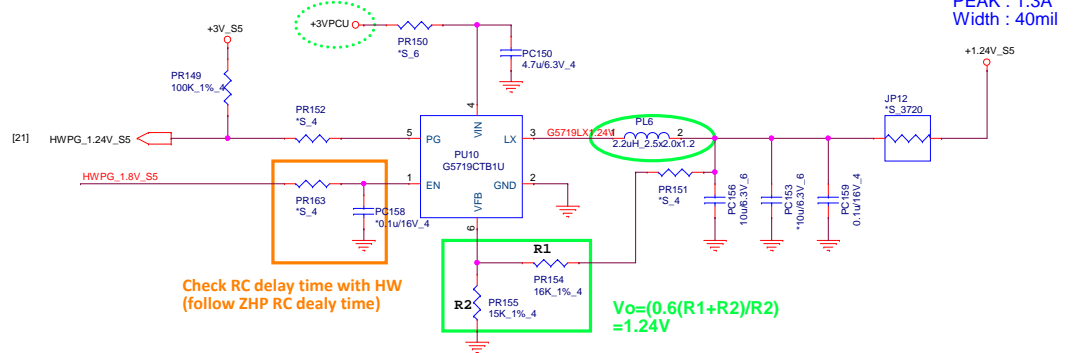
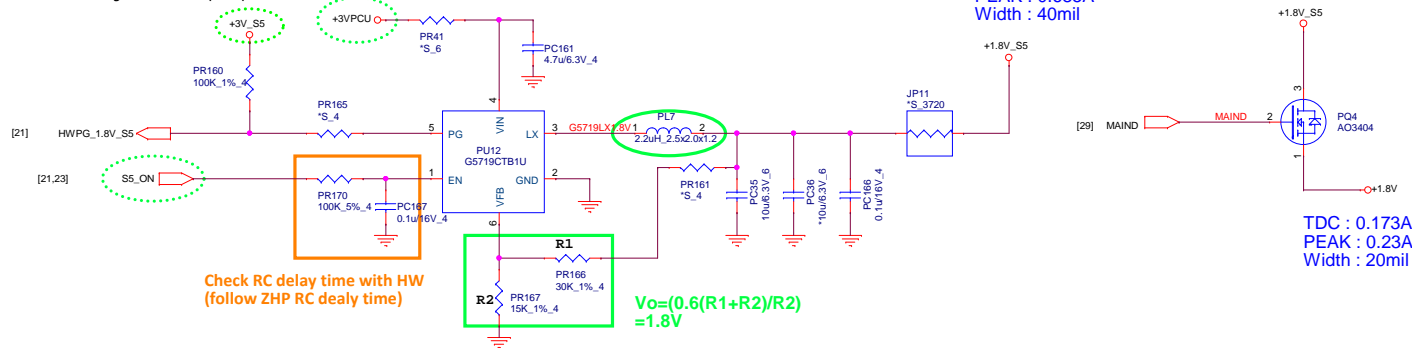
Rail C

DCCR=4.2mOhm

7x22uF for VNN

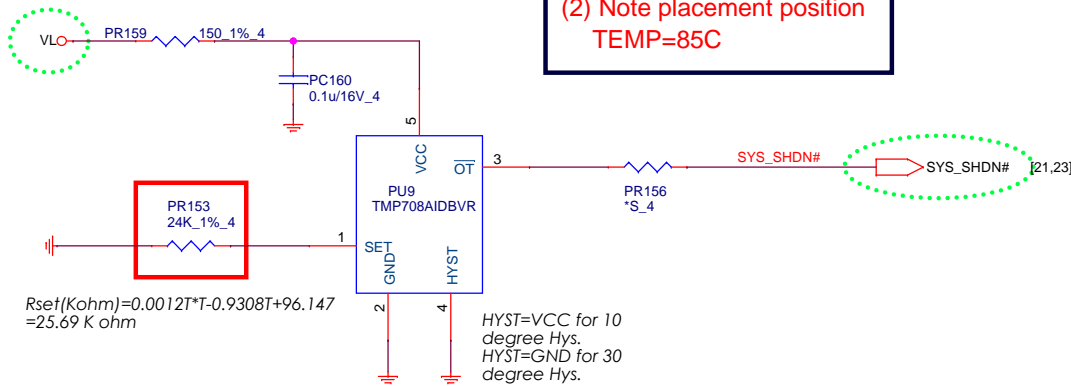


ZHP change +1.8V_S5 PG pull up to +3V_S5

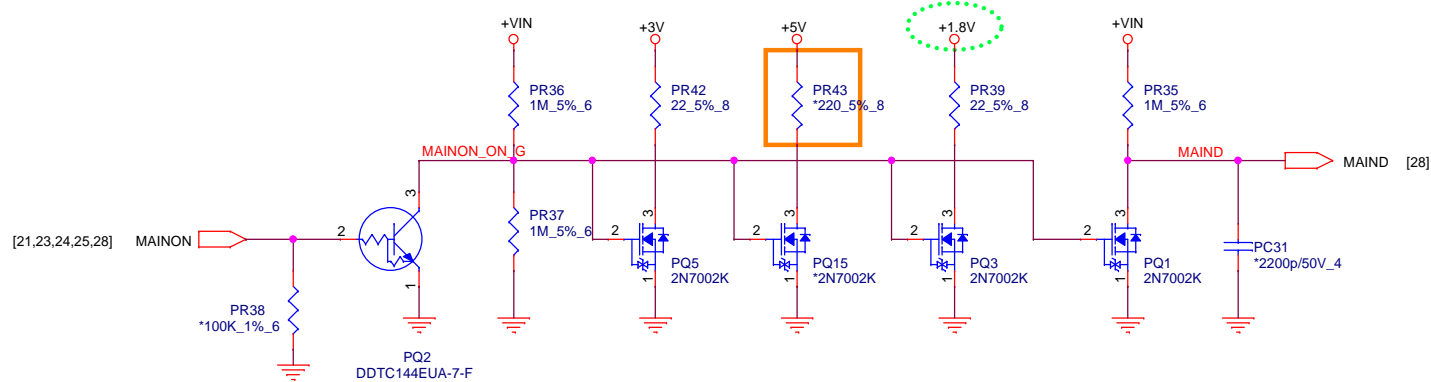


Thermal Protection

- (1) Need fine tune for thermal protect point
- (2) Note placement position
TEMP=85C



+5V PU High R= 220 ohm for Bo-Bo sound issue.



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|------|-----------------|
|------|-----------------|

Thermal / Discharge

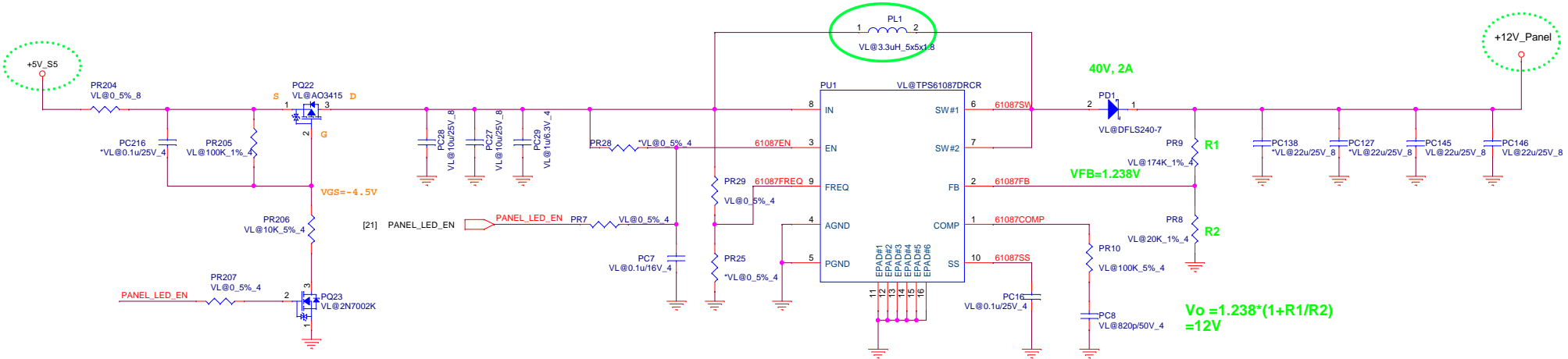
| | |
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| Rev | 3A |
|-----|----|

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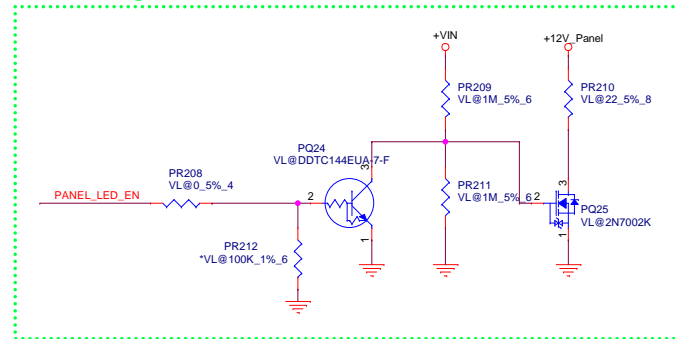
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Panel Spec (TFT-LCD 14")
 VLED : 6V~21V (Typ:12V)
 Power Consumption : 3W (MAX)

+12V_Panel
 12 Volt +/- 5%
 PEAK : 0.35A
 Width : 20mil



BL Discharge Circuit

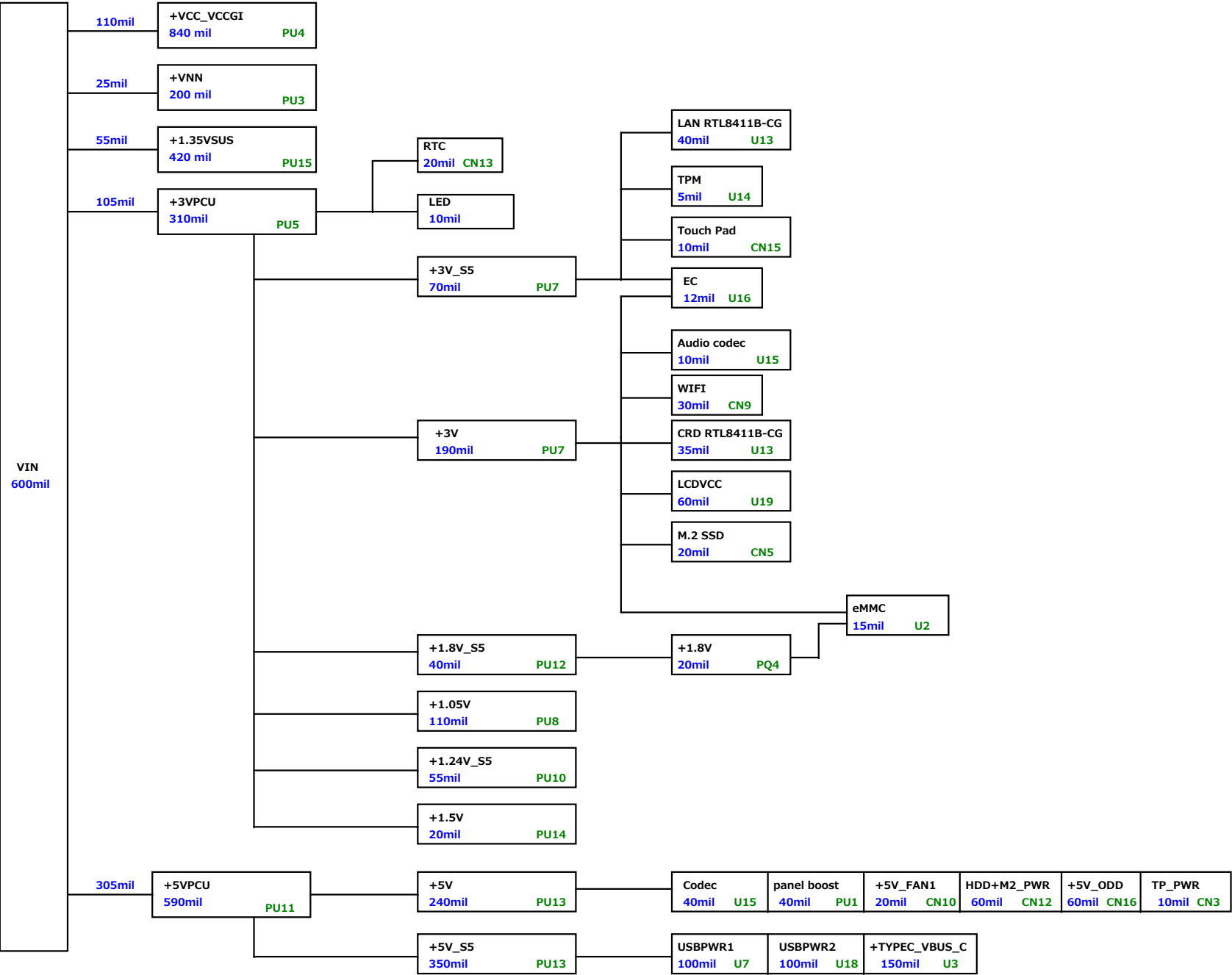


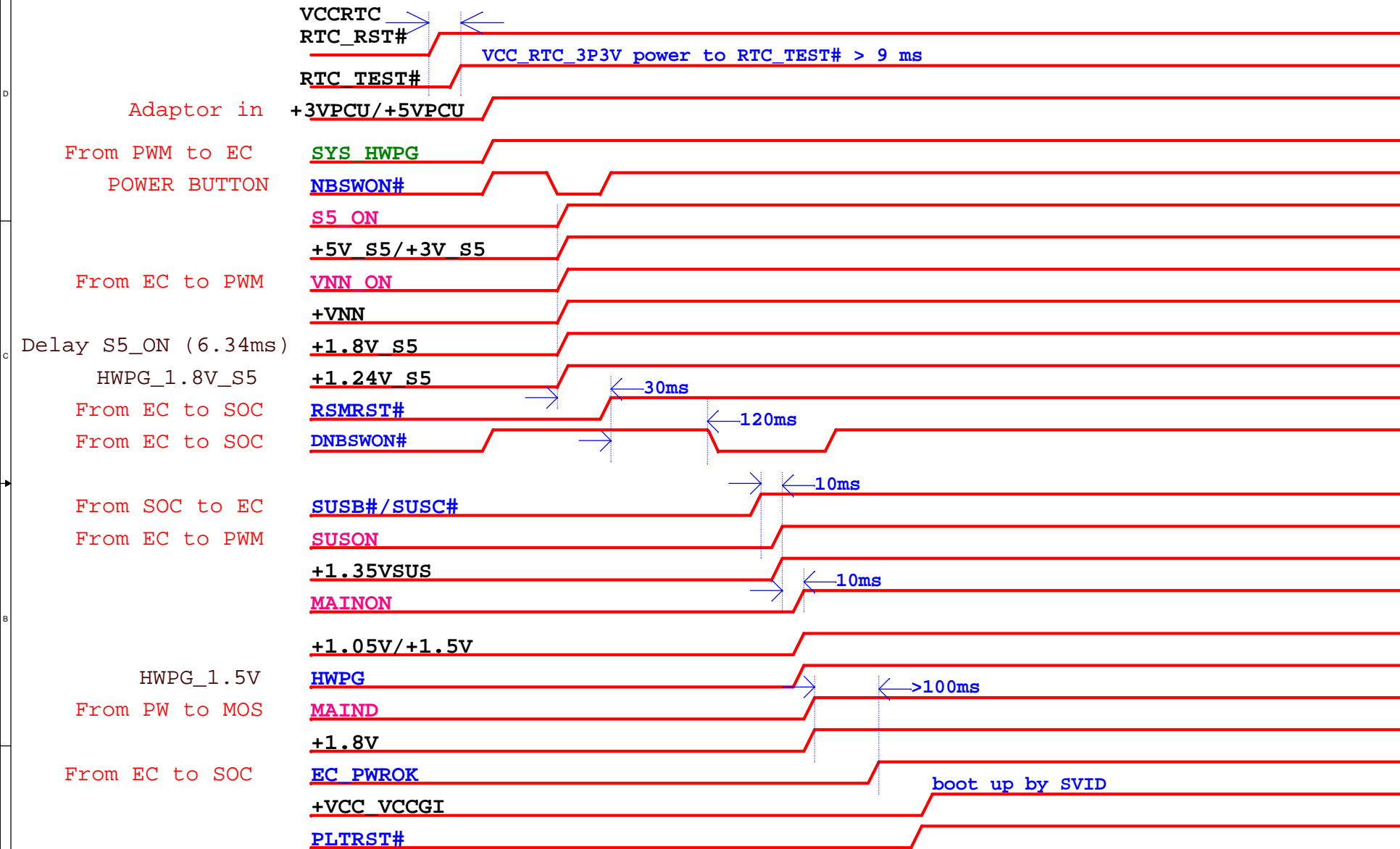
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LED Panel (TPS61087)

| | | |
|-----------------------------------|-----------------|----------|
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| | | 3A |
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PROJECT : ZAJ

| Size | Document Number | Rev |
|------|-------------------|-----|
| | Power on Sequence | 3A |

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| Power plane | Description | S0 | S3 | S5 |
|-------------|---|----|-----|-----|
| +VIN | Adaptor power supply | ON | ON | ON |
| +VCC_VCCGI | Variable voltage supply to CPU and Graphics Core and ISP logic | ON | OFF | OFF |
| +VNN | Variable voltage supply to other (non core) logic | ON | OFF | OFF |
| +1.05V | Fixed voltage rail for SRAM,I/O,internal Logic | ON | OFF | OFF |
| +1.24V_S5 | Fixed voltage rail for SoC L2/ Audio & ISH I/O Logic and PLLs MPHY Logic/ USB2-I/O/MIPI I/Os | ON | ON | ON |
| +1.8V_S5 | Fixed voltage rail for all GPIOs | ON | ON | ON |
| +1.35VSUS | Fixed voltage rail for DDR3L IO | ON | ON | OFF |
| +3V_RTC | Fixed Voltage rail for RTC (Real Time Clock) | ON | ON | ON |
| +1.8V | 1.8V S0 power rail | ON | OFF | OFF |
| +1.5V | 1.5V S0 power rail | ON | OFF | OFF |
| +5VPCU | 5V always on power rail | ON | ON | ON |
| +5V_S5 | 5V S5 power rail | ON | ON | ON |
| +5V | 5V S0 power rail | ON | OFF | OFF |
| +3VPCU | 3V always on power rail | ON | ON | ON |
| +3V_S5 | 3V S5 power rail | ON | ON | ON |
| +3V | 3V S0 power rail | ON | OFF | OFF |

| Model | Date | CHANGE LIST |
|-----------|-------|---|
| ZAJ REV.D | 02/10 | 1.Remove U33/R482 2.Change 0 ohm to shortpad : R403,R404,R405,R406,R407,R408,R409,R410,R104,R113,R108,R115,R99,R402,R167,R165,R161,R158,R157,R153,R270,R271,R272,R273 3.Change C34 from 18pF to 15pF 4.Un-stuff R380/R464 (debug card circuit) 5.Change PR5/PR16 from 1% to 5% |
| | 02/16 | 1.Remove HDMI EMI resistor -R131/R136/R141/R124 |
| | 02/18 | 1.Unstuff SW3 2.Update SW2 FP to "sw-ds-a40e-4p-smt" by SMT request 3.Update CN2 FP to "sdcard-156-1001902602-11p-smt" by SMT request 4.Update CN9 FP to "nglfl-apci0076-p001a-75p-ke-smt" by SMT request |
| | 02/20 | 1.Un stuff PC211&PC212 then stuff PC203&PC194 by power team request 2.Un stuff PC107&PC112 then stuff PC121&PC122 by power team request 3.Change R158/R161 from shortpad to 0 ohm 4.Add C449&R493 for RSMRST# |
| | 02/23 | 1.Modify Q31/Q33 from 2N7002 (Vgs=2.5V) to PJA138K (Vgs=1.5V) 2.Change CN14 QPN and FP to DFFC28FR029 -- "50584-0280n-v02-28p-I" by PDC request 3.Change CN17 QPN and FP to DFFC34FR026 -- "196332-34041-3-34p-I" by PDC request |