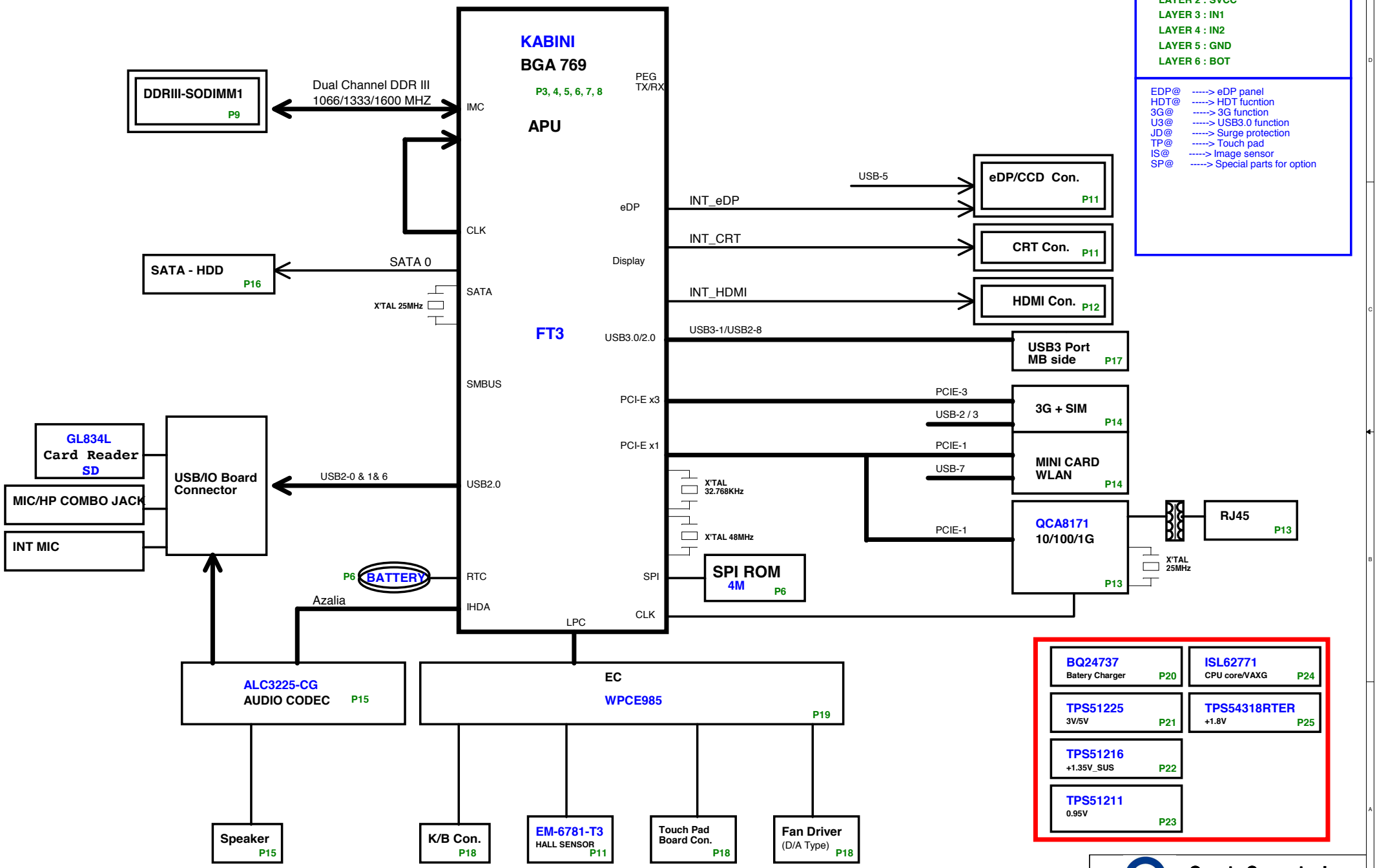
ZHL KABINI SYSTEM BLOCK DIAGRAM



PCB STACK UP

- LAYER 1 : TOP
- LAYER 2 : SVCC
- LAYER 3 : IN1
- LAYER 4 : IN2
- LAYER 5 : GND
- LAYER 6 : BOT

EDP@	-----> eDP panel
HDT@	-----> HDT fucntion
3G@	-----> 3G function
U3@	-----> USB3.0 function
JD@	-----> Surge protection
TP@	-----> Touch pad
IS@	-----> Image sensor
SP@	-----> Special parts for option

BQ24737 Batery Charger	P20	ISL62771 CPU core/VAXG	P24
TPS51225 3V/5V	P21	TPS54318RTER +1.8V	P25
TPS51216 +1.35V_SUS	P22		
TPS51211 0.95V	P23		

Quanta Computer Inc.
PROJECT : ZHL

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	Block Diagram	1A
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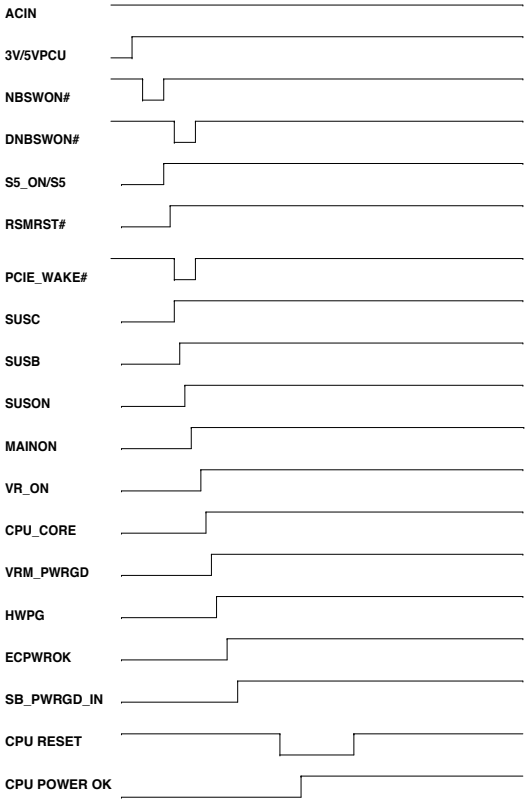
Power Sequence



KABINI FT3 SMBUS

SMBUS	Pin NO.	SMBUS Function Define	
CLK_SCLK CLK_SDATA (+3V)	AU25 AV25	DDR / Touch Pad/ WLAN	
SCL1 SDA1 (+3V_S5)	AY11 BA11	Battery / Charger/ EC	MBCLK MBDATA (+3VPCU)
SVC SVD (+3V_S5)	D27 E29	+VDDNB_CORE	
APU_SIC APU_SID (+3V)	B22 B21	APU / EC	

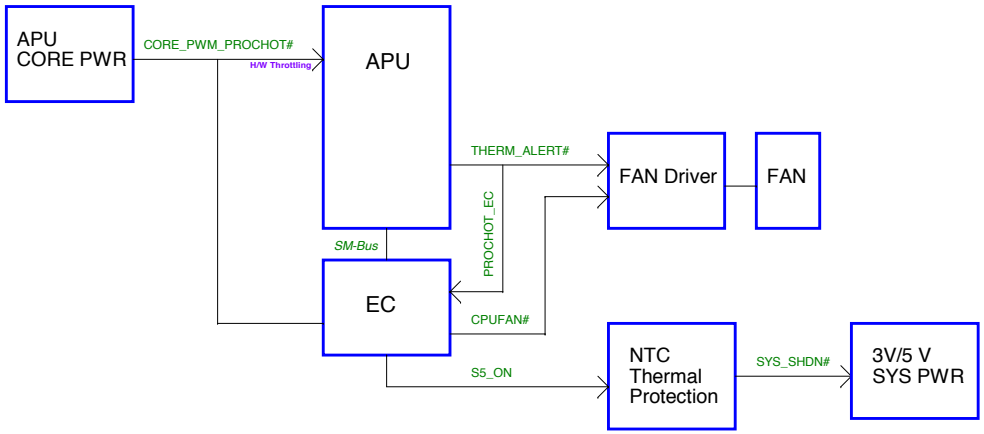
KBC(EC) SMBUS

NPCE985 SMBUS	Pin NO.	SMBUS Function Define
MBCLK MBDATA (+3VPCU)	70 69	Battery / Charger/ EC
APU_SIC_EC APU_SID_EC (+3VPCU)	67 68	APU / EC

Power States

POWER PLANE	VOLTAGE	DESCRIPTION	CONTROL SIGNAL	ACTIVE IN
VIN	+10V~+19V	MAIN POWER	ALWAYS	ALWAYS
+1.5V_RTC	+1.5V	RTC POWER	ALWAYS	ALWAYS
+3VPCU	+3.3V	EC POWER	ALWAYS	ALWAYS
+5VPCU	+5V	CHARGE POWER	ALWAYS	ALWAYS
+15V	+15V	CHARGE PUMP POWER	ALWAYS	ALWAYS
+3V_S5	+3.3V	LAN/ TPM POWER	S5_ON	S0-S5
+5V_S5	+5V	USB POWER	S5_ON	S0-S5
+1.8V_S5	+1.8V	APU/PCH/Braidwood POWER	S5_ON	S0-S5
+1.5V_S5	+1.5V	MINI CARD/NEW CARD POWER	S5_ON	S0-S5
+0.95V_S5	+0.95V	APU CORE POWER	S5_ON	S0-S5
+5V	+5V	HDD/ODD/Codec/TP/CRT/HDMI POWER	MAINON	S0
+3V	+3.3V	APU/Peripheral component /WLAN POWER	MAINON	S0
+1.5VSUS	+1.5V	CPU/SODIMM CORE POWER	SUSON	S0-S3
+0.75V_DDR_VTT	+0.75V	SODIMM Termination POWER	MAINON	S0
+1.8V	+1.8V	APU/PCH/Braidwood POWER	MAINON	S0
+1.5V	+1.5V	MINI CARD/NEW CARD POWER	MAINON	S0
+0.95V	+0.95V	APU CORE POWER	MAINON	S0
+VDDNB_CORE	variation	APU CORE POWER	VRON	S0
LCDVCC	+3.3V	LCD POWER	LVDS_VDDEN	S0

Thermal Follow Chart

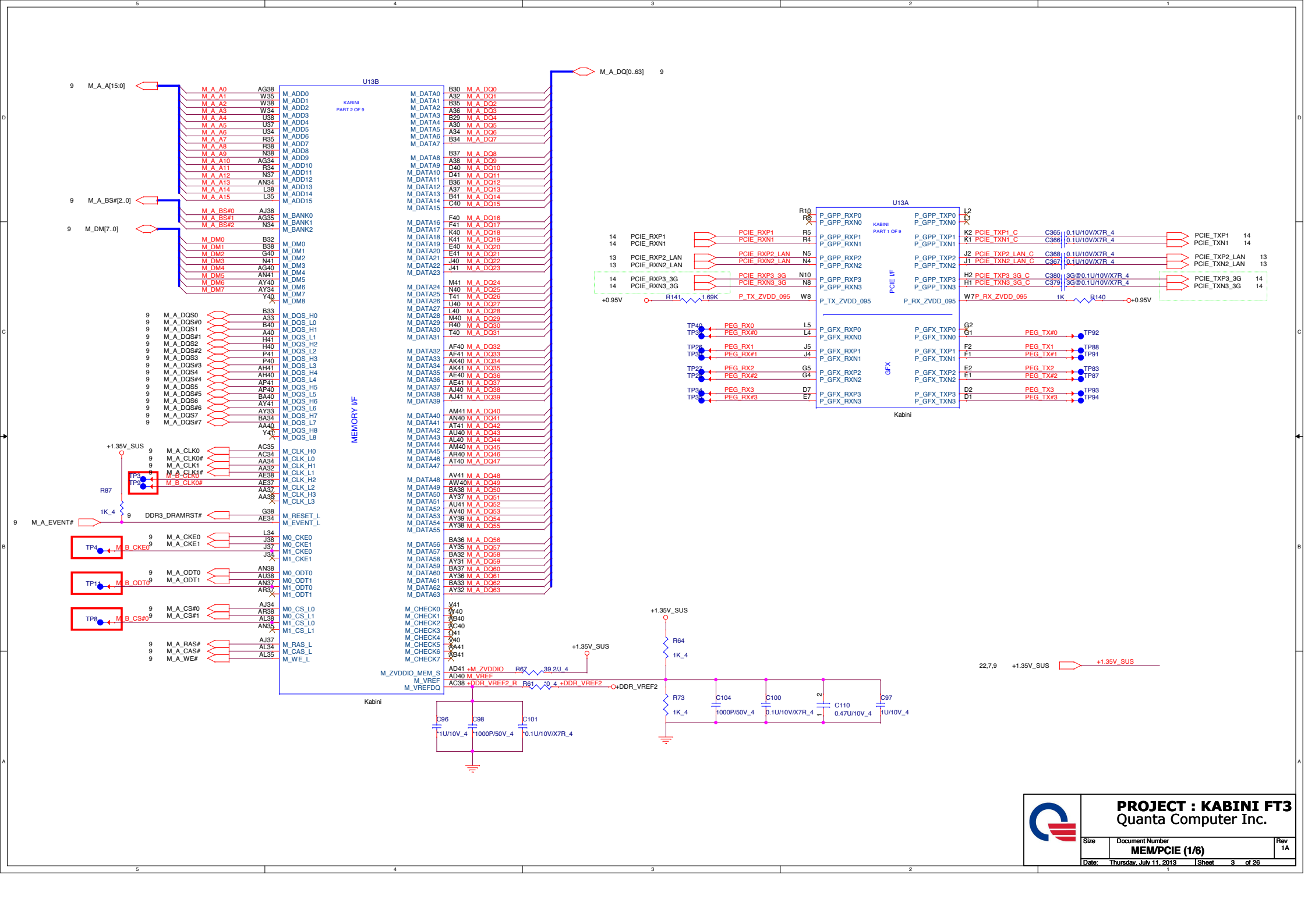


Quanta Computer Inc.

PROJECT : ZHL

Size	Document Number	Rev
	PWR Status & GPU PWR CRL & THRM	1A

Date: Thursday, July 11, 2013 Sheet 2 of 26


U13B
KABINI
PART 2 OF 9
MEMORY I/F
Kabini
U13A
KABINI
PART 1 OF 9
PCIE I/F
GFX
Kabini
PROJECT : KABINI FT3
Quanta Computer Inc.
MEM/PCIE (1/6)
Size
Document Number
Rev
1A
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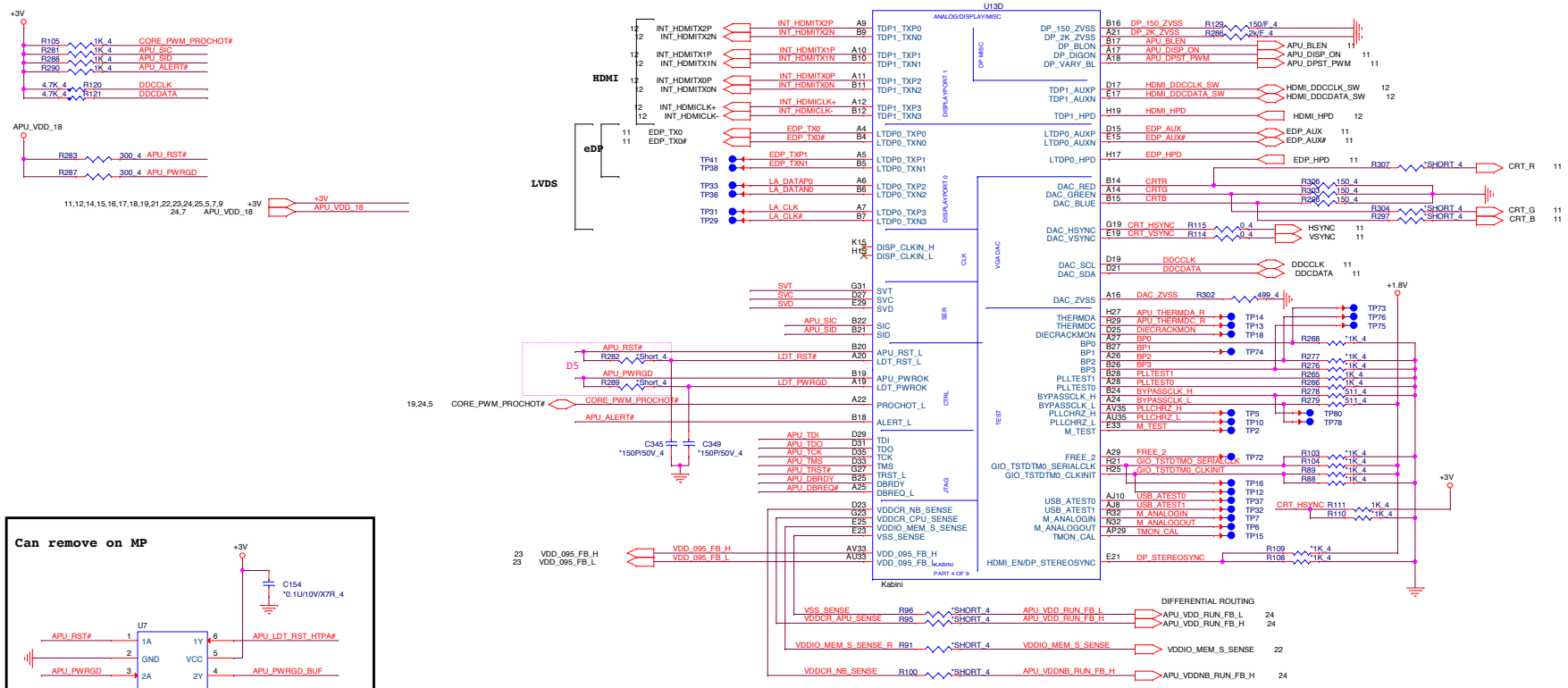
U13D
ANALOG/DISPLAY/MISC
HDMI
eDP
LVDS
DISPLAYPORT 1
DISPLAYPORT 0
DP MISC
CLK
VGA DAC
SER
CTRL
TEST
JTAG
Kabini
PART 4 OF 9
Can remove on MP
U7
*SN74LVC2G07DCKR
HDT+ HEADER / PLACE ON TOP
CN2
*HDT@HDT
DIFFERENTIAL ROUTING
SMBUS
2N7002K
MMST3904-7-F
Serial VID
VFIX MODE
VID Override table (VDD)
SVC SVD Boot Voltage
0 0 1.1V
0 1 1.0V
1 0 0.9V
1 1 0.8V
PROJECT : KABINI FT3
Quanta Computer Inc.
DIS/MI (2/6)
Rev 1A
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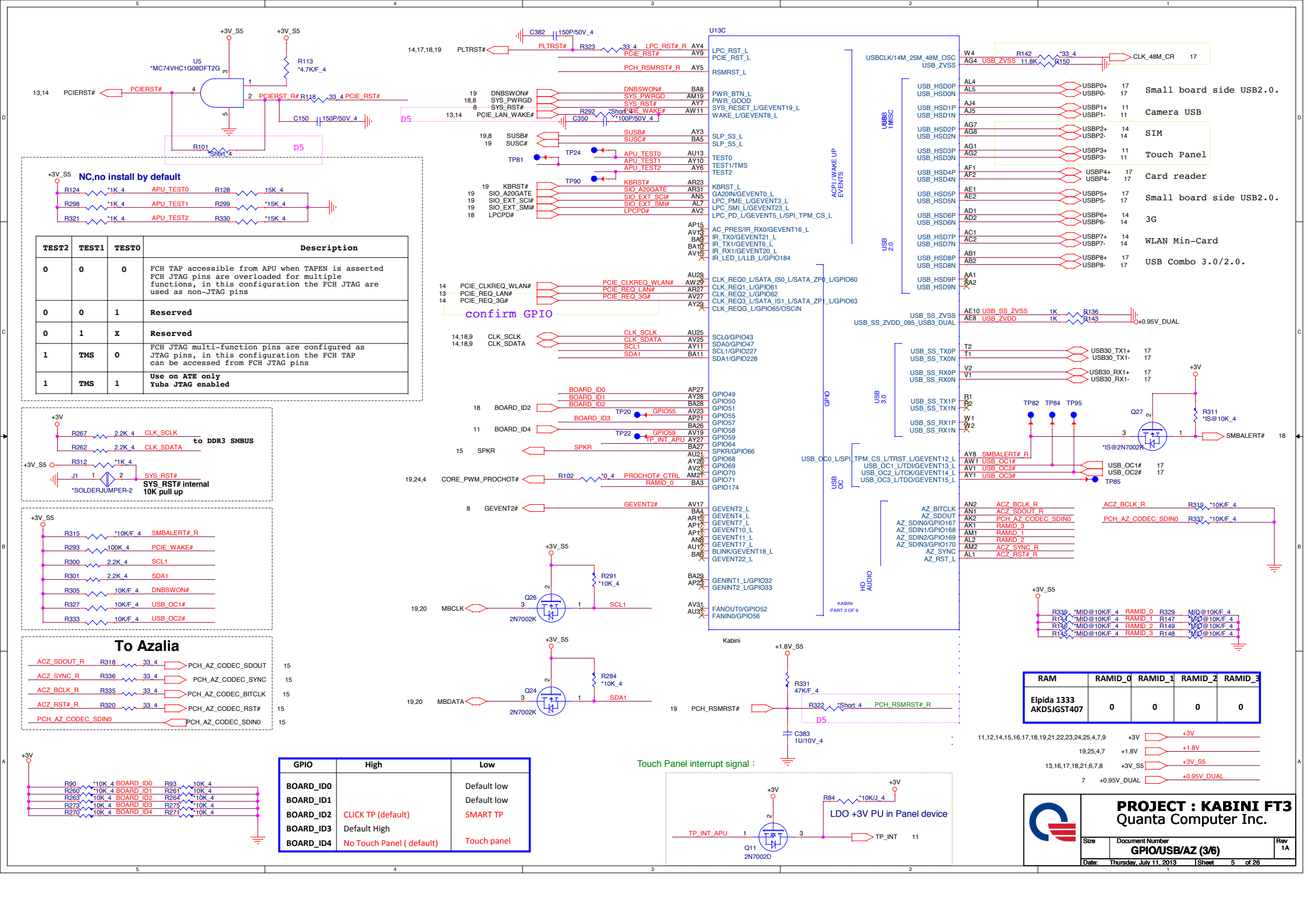

U5
*MC74VHC1G08DFT2G
PCIERST#
R113
*4.7K/F_4
C150
150P/50V_4
R101
Short_4
D5
NC,no install by default
R124 *1K_4 APU_TEST0 R128 15K_4
R298 *1K_4 APU_TEST1 R299 *15K_4
R321 *1K_4 APU_TEST2 R330 *15K_4
TEST2 TEST1 TEST0 Description
0 0 0 FCH TAP accessible from APU when TAPEN is asserted FCH JTAG pins are overloaded for multiple functions, in this configuration the FCH JTAG are used as non-JTAG pins
0 0 1 Reserved
0 1 X Reserved
1 TMS 0 FCH JTAG multi-function pins are configured as JTAG pins, in this configuration the FCH TAP can be accessed from FCH JTAG pins
1 TMS 1 Use on ATE only Yuba JTAG enabled
R267 2.2K_4 CLK_SCLK
R262 2.2K_4 CLK_SDATA
to DDR3 SMBUS
R312 *1K_4
J1 *SOLDERJUMPER-2
SYS_RST# internal 10K pull up
R315 *10K/F_4 SMBALERT#_R
R293 100K_4 PCIE_WAKE#
R300 2.2K_4 SCL1
R301 2.2K_4 SDA1
R305 10K/F_4 DNBSWON#
R327 10K/F_4 USB_OC1#
R333 10K/F_4 USB_OC2#
To Azalia
ACZ_SDOUT_R R318 33_4 PCH_AZ_CODEC_SDOUT
ACZ_SYNC_R R336 33_4 PCH_AZ_CODEC_SYNC
ACZ_BCLK_R R335 33_4 PCH_AZ_CODEC_BITCLK
ACZ_RST#_R R320 33_4 PCH_AZ_CODEC_RST#
PCH_AZ_CODEC_SDIN0 PCH_AZ_CODEC_SDIN0
R90 *10K_4 BOARD_ID0 R93 10K_4
R260 *10K_4 BOARD_ID1 R261 10K_4
R263 10K_4 BOARD_ID2 R264 *10K_4
R273 10K_4 BOARD_ID3 R275 *10K_4
R270 10K_4 BOARD_ID4 R271 *10K_4
GPIO High Low
BOARD_ID0 Default low
BOARD_ID1 Default low
BOARD_ID2 CLICK TP (default) SMART TP
BOARD_ID3 Default High
BOARD_ID4 No Touch Panel (default) Touch panel
U13C
PLTRST# R323 33_4 LPC_RST#_R
PCIE_RST#
PCH_RSMRST#_R
RSMRST_L
DNBSWON# SYS_PWRGD SYS_RST# PCIE_WAKE#
PWR_BTN_L PWR_GOOD SYS_RESET_L/GEVENT19_L WAKE_L/GEVENT8_L
SUSB# SUSC#
SLP_S3_L SLP_S5_L
TP24 TP81 TP90
APU_TEST0 APU_TEST1 APU_TEST2
TEST0 TEST1/TMS TEST2
KBRST# SIO_A20GATE SIO_EXT_SCI# SIO_EXT_SMI# LPCPD#
KBRST_L GA20IN/GEVENT0_L LPC_PME_L/GEVENT3_L LPC_SMI_L/GEVENT23_L LPC_PD_L/GEVENT5_L/SPI_TPM_CS_L
AC_PRES/IR_RX0/GEVENT16_L IR_TX0/GEVENT21_L IR_TX1/GEVENT6_L IR_RX1/GEVENT20_L IR_LED_L/LLB_L/GPIO184
ACPI / WAKE UP EVENTS
PCIE_CLKREQ_WLAN# PCIE_REQ_LAN# PCIE_REQ_3G#
CLK_REQ0_L/SATA_IS0_L/SATA_ZP0_L/GPIO60 CLK_REQ1_L/GPIO61 CLK_REQ2_L/GPIO62 CLK_REQ3_L/SATA_IS1_L/SATA_ZP1_L/GPIO63 CLK_REQG_L/GPIO65/OSCIN
confirm GPIO
CLK_SCLK CLK_SDATA SCL1 SDA1
SCL0/GPIO43 SDA0/GPIO47 SCL1/GPIO227 SDA1/GPIO228
BOARD_ID0 BOARD_ID1 BOARD_ID2 BOARD_ID3 BOARD_ID4 SPKR GPIO55 GPIO59 TP_INT_APU PROCHOT#_CTRL RAMID_0
GPIO49 GPIO50 GPIO51 GPIO55 GPIO57 GPIO58 GPIO59 GPIO64 SPKR/GPIO66 GPIO68 GPIO69 GPIO70 GPIO71 GPIO174
GPIO
USB_OC0_L/SPI_TPM_CS_L/TRST_L/GEVENT12_L USB_OC1_L/TDI/GEVENT13_L USB_OC2_L/TCK/GEVENT14_L USB_OC3_L/TDO/GEVENT15_L
USB OC
GEVENT2# GEVENT4_L GEVENT7_L GEVENT10_L GEVENT11_L GEVENT17_L BLINK/GEVENT18_L GEVENT22_L
GENINT1_L/GPIO32 GENINT2_L/GPIO33
FANOUT0/GPIO52 FANIN0/GPIO56
KABINI PART 3 OF 9
AZ_BITCLK AZ_SDOUT AZ_SDIN0/GPIO167 AZ_SDIN1/GPIO168 AZ_SDIN2/GPIO169 AZ_SDIN3/GPIO170 AZ_SYNC AZ_RST_L
HD AUDIO
USBCLK/14M_25M_48M_OSC USB_ZVSS
CLK_48M_CR
USB_HSD0P USB_HSD0N USBP0+ USBP0- Small board side USB2.0.
USB_HSD1P USB_HSD1N USBP1+ USBP1- Camera USB
USB_HSD2P USB_HSD2N USBP2+ USBP2- SIM
USB_HSD3P USB_HSD3N USBP3+ USBP3- Touch Panel
USB_HSD4P USB_HSD4N USBP4+ USBP4- Card reader
USB_HSD5P USB_HSD5N USBP5+ USBP5- Small board side USB2.0.
USB_HSD6P USB_HSD6N USBP6+ USBP6- 3G
USB_HSD7P USB_HSD7N USBP7+ USBP7- WLAN Min-Card
USB_HSD8P USB_HSD8N USBP8+ USBP8- USB Combo 3.0/2.0.
USB_HSD9P USB_HSD9N
USB 2.0 MISC
USB_SS_ZVSS USB_SS_ZVDD_095_USB3_DUAL
+0.95V_DUAL
USB_SS_TX0P USB_SS_TX0N USB30_TX1+ USB30_TX1-
USB_SS_RX0P USB_SS_RX0N USB30_RX1+ USB30_RX1-
USB_SS_TX1P USB_SS_TX1N
USB_SS_RX1P USB_SS_RX1N
USB 3.0
TP82 TP84 TP95
Q27 2N7002K
R311 *IS@10K_4
SMBALERT#
*IS@2N7002K
SMBALERT#_R USB_OC1# USB_OC2# USB_OC3#
USB_OC1# USB_OC2#
TP85
ACZ_BCLK_R R319 *10K/F_4
PCH_AZ_CODEC_SDIN0 R337 *10K/F_4
R339 *MID@10K/F_4 RAMID_0 R329 MID@10K/F_4
R144 *MID@10K/F_4 RAMID_1 R147 MID@10K/F_4
R146 *MID@10K/F_4 RAMID_2 R149 MID@10K/F_4
R145 *MID@10K/F_4 RAMID_3 R148 MID@10K/F_4
RAM RAMID_0 RAMID_1 RAMID_2 RAMID_3
Elpida 1333 AKD5JGST407 0 0 0 0
MBCLK Q26 2N7002K R291 *10K_4 SCL1
MBDATA Q24 2N7002K R284 *10K_4 SDA1
PCH_RSMRST# R331 47K/F_4 R322 *Short_4 PCH_RSMRST#_R
C383 1U/10V_4
Touch Panel interrupt signal :
TP_INT_APU Q11 2N7002D R84 *10K/J_4
LDO +3V PU in Panel device
TP_INT
+3V
+1.8V
+3V_S5
+0.95V_DUAL
PROJECT : KABINI FT3
Quanta Computer Inc.
Size Document Number GPIO/USB/AZ (3/6) Rev 1A
Date: Thursday, July 11, 2013 Sheet 5 of 26

APU SPI ROM

Replace to MX25L6436E

Vender	Size	P/N
AMIC		
WINBOND	4M	AKE39FN0N01

SPI_CLK — C181 22P/50V_4 — EMI

SATA HDD

U13E — KABINI PART 5 OF 9

SATA_TXP0 BA14 — SATA_TX0P
SATA_TXN0 AY14 — SATA_TX0N
SATA_RXN0 BA16 — SATA_RX0N
SATA_RXP0 AY16 — SATA_RX0P
AY19 — SATA_TX1P
BA19 — SATA_TX1N
AY17 — SATA_RX1N
BA17 — SATA_RX1P
+0.95V — 1K R116 SATA_ZVSS AR19 — SATA_ZVSS
1K R119 SATA_ZVDD AP19 — SATA_ZVDD_095
TP71 — SATA_ACT# BA30 — SATA_ACT_L/GPIO67
C344 *10p/50V_4 — Y2 *25MHZ — R285 *1M/F_4 — C346 *10p/50V_4
SATA_X1 AY12 — SATA_X1
SATA_X2 BA12 — SATA_X2
U4 U5 — GFX_CLKP GFX_CLKN
AC8 AC10 — GPP_CLK0P GPP_CLK0N
14 CLK_PCIE_WLAN — RP2 — 0X2 CLK_PCIE_WLAN_R AE4 — GPP_CLK1P
14 CLK_PCIE_WLAN# — CLK_PCIE_WLAN#_R AE5 — GPP_CLK1N
14 CLK_PCIE_3G — RP3 — 3G@0X2 CLK_PCIE_3G_R AC4 — GPP_CLK2P
14 CLK_PCIE_3G# — CLK_PCIE_3G#_R AC5 — GPP_CLK2N
13 CLK_PCIE_LANP — RP4 — 0X2 CLK_PCIE_LANP_R AA5 — GPP_CLK3P
13 CLK_PCIE_LANN — CLK_PCIE_LANN_R AA4 — GPP_CLK3N
AP13 — X14M_25M_48M_OSC
C371 10p/50V_4 — Y3 48MHz — R316 1M/F_4 — C370 10p/50V_4
48M_X1 N2 — X48M_X1
48M_X2 N1 — X48M_X2

SERIAL ATA

SD_PWR_CTRL BA23
SD_CLK/GPIO73 AY22 — SD_CLK — TP19
SD_CMD/GPIO74 AY23 — SD_CMD — TP77
SD_CD/GPIO75 AY20 — SD_CD — TP21
SD_WP/GPIO76 BA20 — SD_WP — TP23
SD_DATA0/GPIO77 BA22 — SD_DATA0 — TP17
SD_DATA1/GPIO78 AY21 — SD_DATA1 — TP79
SD_DATA2/GPIO79 AY24
SD_DATA3/GPIO80 BA24
SD_LED/GPIO45 AY25

SD CARD

TP115 TP116 TP61 TP114 TP25 TP113

SPI ROM

SPI_CLK/GPIO162 AU7 — SPI_CLK
SPI_CS1_L/GPIO165 AW9 — SPI_CS1#
SPI_CS2_L/GPIO166 AR4
SPI_DO/GPIO163 AR11 — SPI_SO
SPI_DI/GPIO164 AR7 — SPI_SI
SPI_HOLD_L/GEVENT9_L AU11 — SPI_HOLD
SPI_WP_L/GPIO161 AU9 — SPI_WP

Kabini

LPC_CLK0_R R340 22_4 — LPC_CLK0 8
LPC_CLK1_R R325 22_4 — LPC_CLK1 8
LPCCLK0 AY2
LPCCLK1 AW2
R324 22_4 — C377 *15P/50V_4 — C378 *15P/50V_4 — TP119
R326 22_4 — CLK_PCI_775 19 — CLK_LPC_DEBUG 14
R341 22_4
LAD0 AT2 — LPC_LAD0 — LPC_LAD0 14,18,19
LAD1 AT1 — LPC_LAD1 — LPC_LAD1 14,18,19
LAD2 AR2 — LPC_LAD2 — LPC_LAD2 14,18,19
LAD3 AR1 — LPC_LAD3 — LPC_LAD3 14,18,19
LFRAME_L AP2 — LPC_LFRAME# — LPC_LFRAME# 14,18,19,8
LDRQ0_L AP1 — LDRQ#0 — TP42
SERIRQ/GPIO48 AV29 — SERIRQ — SERIRQ 18,19
LPC_CLKRUN_L AP25 — LPC_CLKRUN#_R — R99 0_4 — LPC_CLKRUN# 18

32K_X1 AJ2 — 32K_X1 — C373 15p/50V_4
32K_X2 AJ1 — 32K_X2 — R317 20M_4 — Y4 32.768KHZ — C374 15p/50V_4
RTCCLK AV11 — RTCCLK — R133 *SHORT_4 — RTC_CLK 8
USE GROUND GUARD FOR 32K_X1 AND 32K_X2
VDDBT_RTC_G AN4 — +1.5V_RTC_R — 20MIL — G1 *SHORT_ PAD1 — C359 0.1U/10V/X7R_4 — R314 10K_4 — 20MIL — C360 0.22u/10V_4 — C128 1u/10V_4

Q15 AP2138N-1.5TRG1 — 20MIL — +3VRTC — 20MIL — C131 1u/10V_4
D6 BAT54C — D5 — R92 Short_4 — +3VPCU
+VCCRTC_2 — R117 1K/F_4 — 20MIL

C11 - Change CN13 FP & PN

R295 *SHORT_4 — +BAT — +BAT_1 — CN16 *SP@RTC _CON2
+BAT — CN13 SP@RTC_ML2032 — D2
20MIL

3G ---> mount SP@RTC_Cable_CONN

w/o 3G ---> mount SP@RTC_CON2

+5V_S5 — 4.7K/J_4 R381 VCCRTC_3 — 4.7K/J_4 R382 VCCRTC_2 — Q34 MMBT3904-7-F_200MA — +BAT
R383 68.1K/F_4
R384 150K/F_4

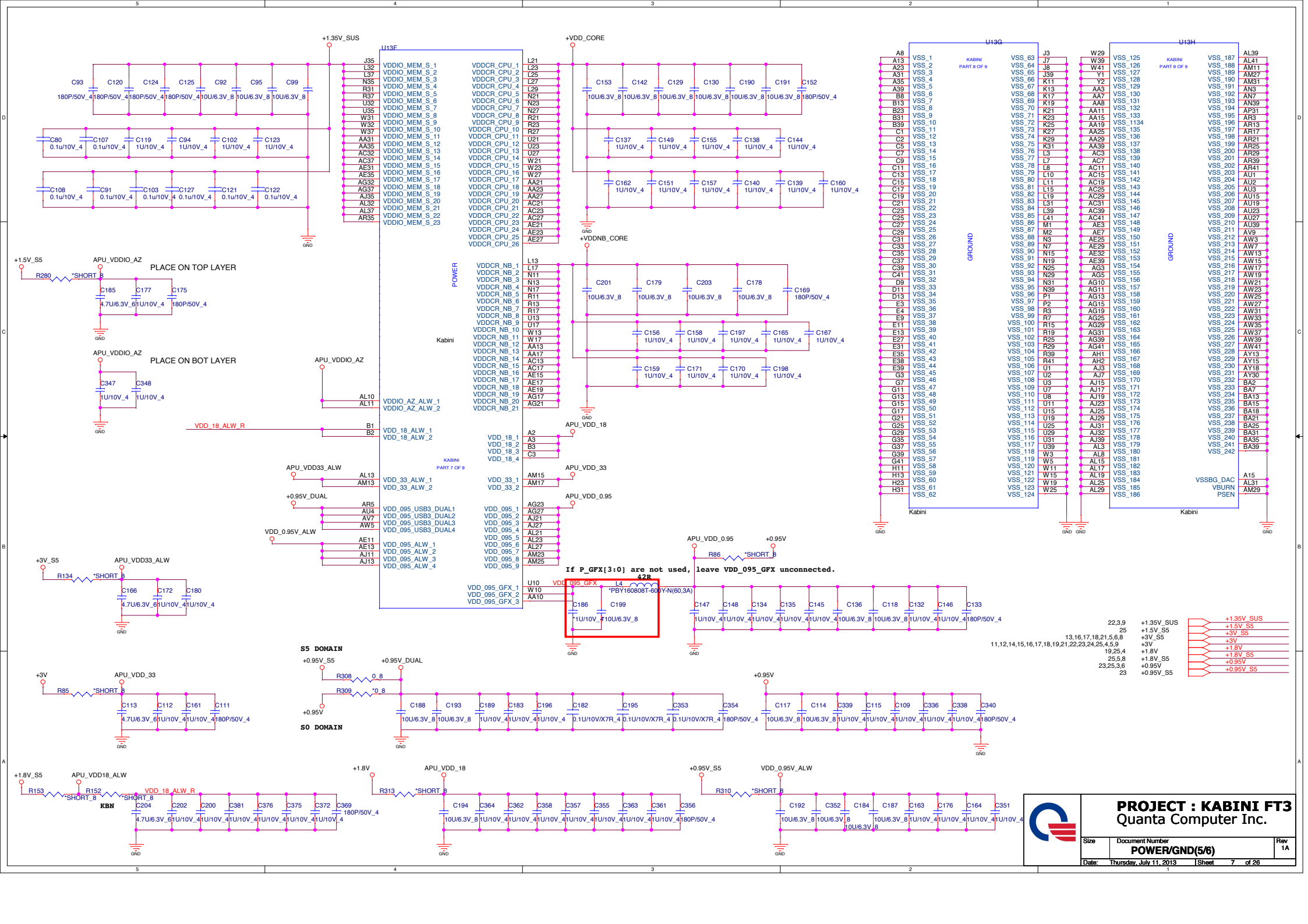
D2 - add a group of charging circuit (RTC) , change CN13 PN.

+3V_S5 — R353 10K/F_4 — C386 0.1U/10V/X7R_4 — R350 10K/F_4 — SPI_HOLD
SPI_CS1# R352 33_4 — SPI_CS — U14 W25Q32FVSSIQ
SPI_CLK R348 33_4 — SPI_SCK
SPI_SO R345 33_4 — SPI_SDO
SPI_SI R349 33_4 — SPI_SDI
SPI_WP R347 *SHORT_4 — SPI_WP_R
10K/F_4 R344 +3V_S5

D8 - Change footprint

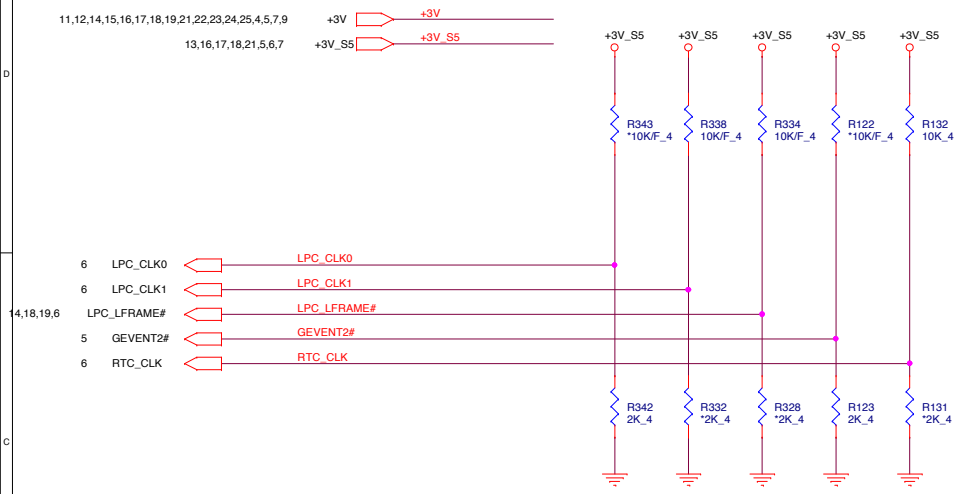
un-mount

PROJECT :	KABINI FT3
	Quanta Computer Inc.
Size	Document Number: SATA/CLK (4/6) — Rev 1A
Date: Thursday, July 11, 2013	Sheet 6 of 26


+1.35V_SUS
U13F
+VDD_CORE
+VDDNB_CORE
APU_VDDIO_AZ
PLACE ON TOP LAYER
PLACE ON BOT LAYER
APU_VDD18
APU_VDD33_ALW
APU_VDD_33
APU_VDD_0.95
+0.95V_DUAL
VDD_0.95V_ALW
Kabini
POWER
KABINI PART 7 OF 9
U13G
U13H
KABINI PART 8 OF 9
KABINI PART 9 OF 9
GROUND
If P_GFX[3:0] are not used, leave VDD_095_GFX unconnected.
S5 DOMAIN
S0 DOMAIN
+3V_S5
+3V
+1.8V_S5
APU_VDD18_ALW
KBN
PROJECT : KABINI FT3
Quanta Computer Inc.
POWER/GND(5/6)
Rev 1A
Thursday, July 11, 2013
Sheet 7 of 26

STRAPS PINS

OVERLAP COMMON PADS WHERE POSSIBLE FOR DUAL-OP RESISTORS.

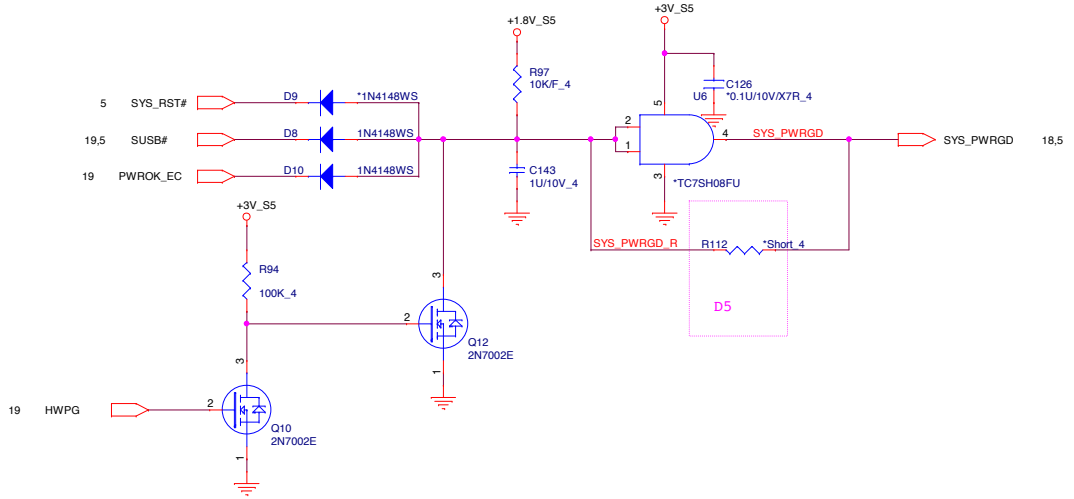


REQUIRED STRAPS

						LPC_CLK0	LPC_CLK1	LFRAME#	GEVENT2#
PULL HIGH						BOOT FAIL TIMER ENABLED	CLKGEN ENABLED DEFAULT	SPI ROM DEFAULT	1.8V SPI ROM
PULL LOW						BOOT FAIL TIMER DISABLED DEFAULT	CLKGEN DISABLED	LPC ROM	3.3V SPI ROM DEFAULT

DEBUG STRAPS

SYS PWRGD



PROJECT : KABINI FT3
Quanta Computer Inc.

Size	Document Number	Rev
	STRAP (6/6)	1A
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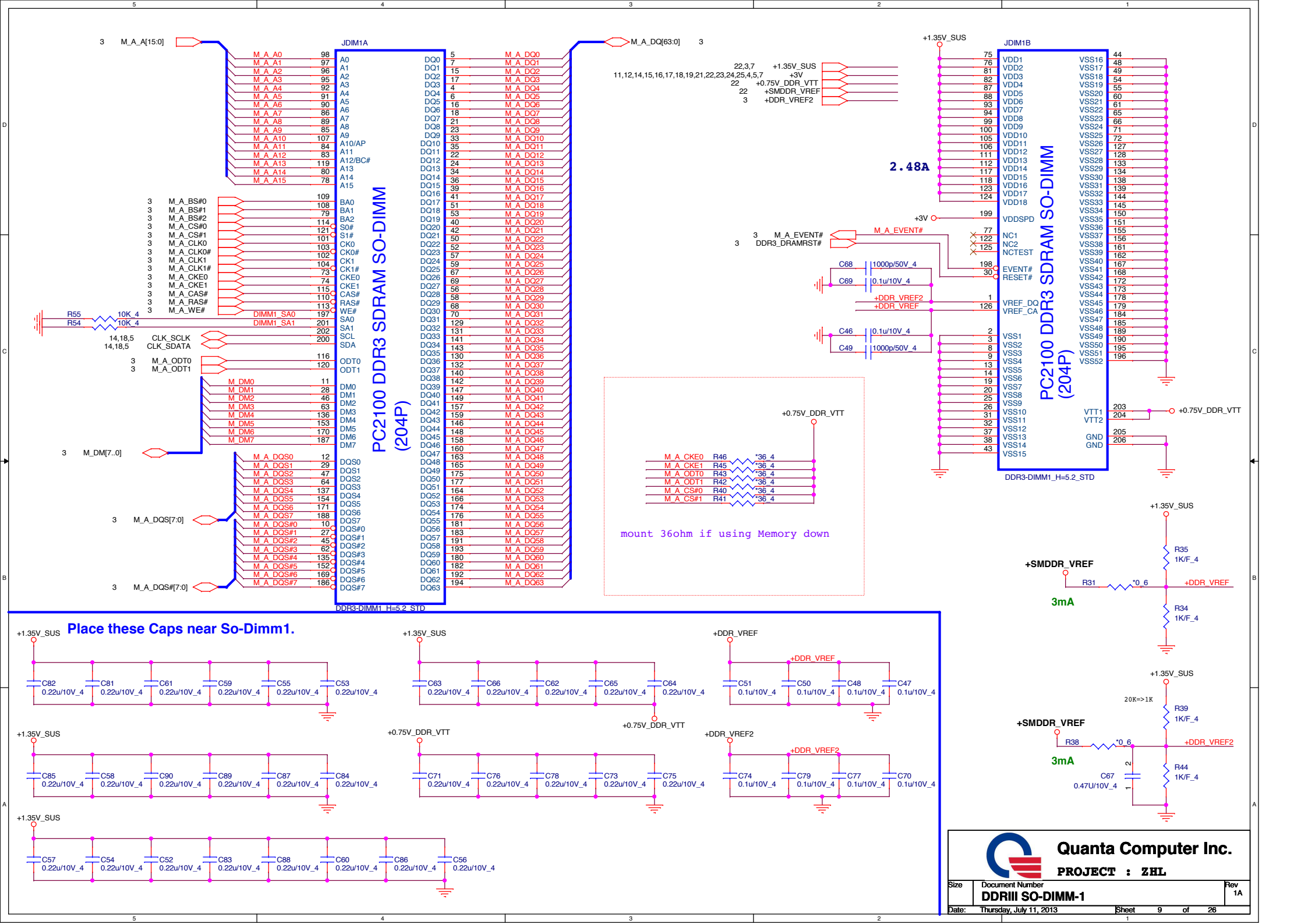
JDIM1A
PC2100 DDR3 SDRAM SO-DIMM (204P)
DDR3-DIMM1_H=5.2_STD
JDIM1B
PC2100 DDR3 SDRAM SO-DIMM (204P)
DDR3-DIMM1_H=5.2_STD
2.48A
mount 36ohm if using Memory down
Place these Caps near So-Dimm1.
+1.35V_SUS
+0.75V_DDR_VTT
+DDR_VREF
+DDR_VREF2
+SMDDR_VREF
3mA
Quanta Computer Inc.
PROJECT : ZHL
DDRIII SO-DIMM-1
Rev 1A
Thursday, July 11, 2013
Sheet 9 of 26

DDR ON BOARD RAM (DDR)

Quanta Computer Inc.

PROJECT : ZHL

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	DDR3 MEMORY DOWN X 16	1A
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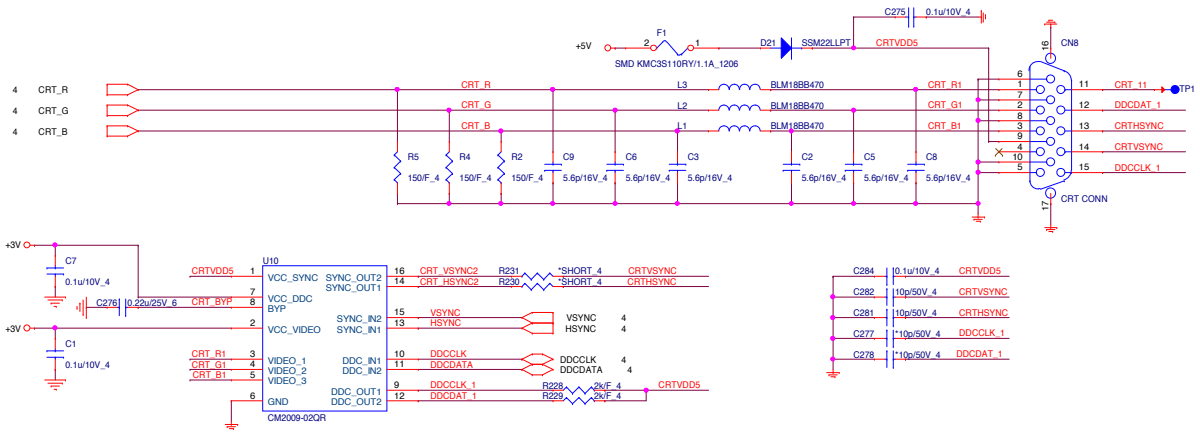
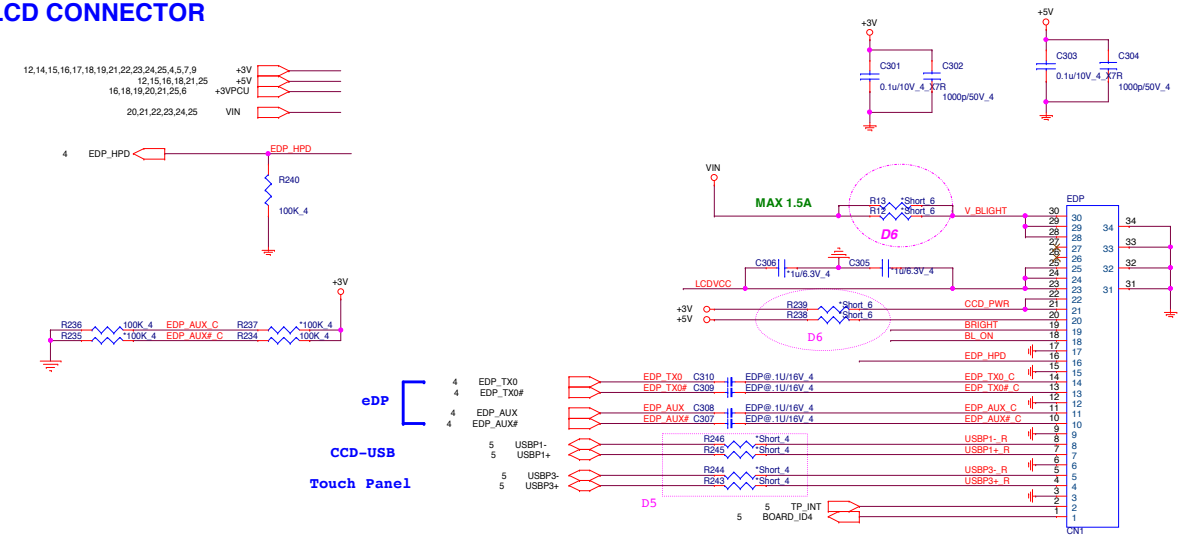
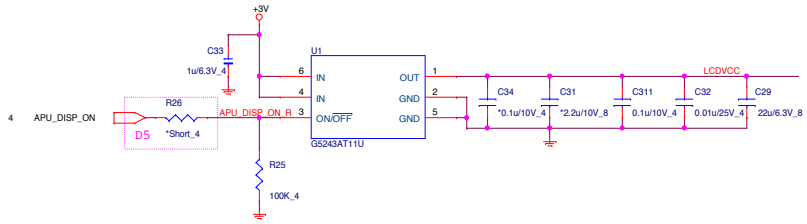
CRT



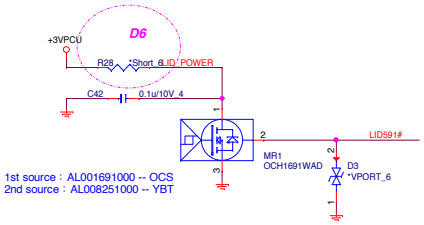
LCD CONNECTOR



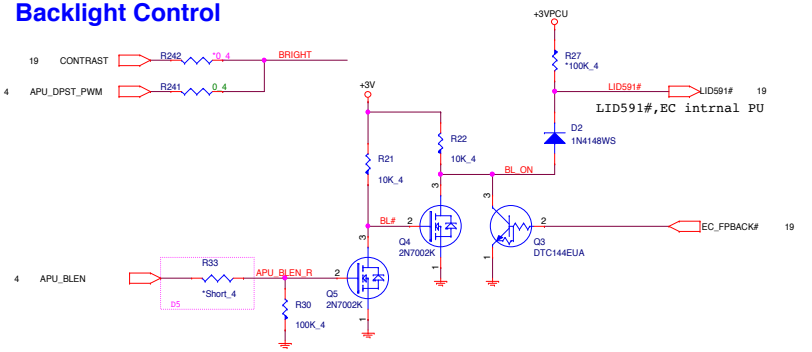
LCD Power



Lid Switch (Hall sensor)



Backlight Control



Quanta Computer Inc. PROJECT : ZHL			
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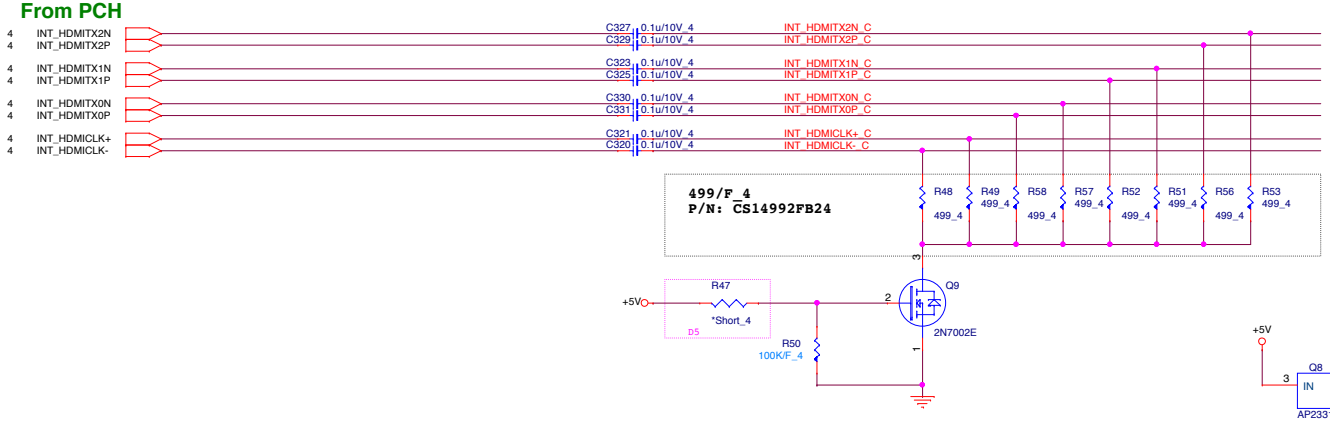
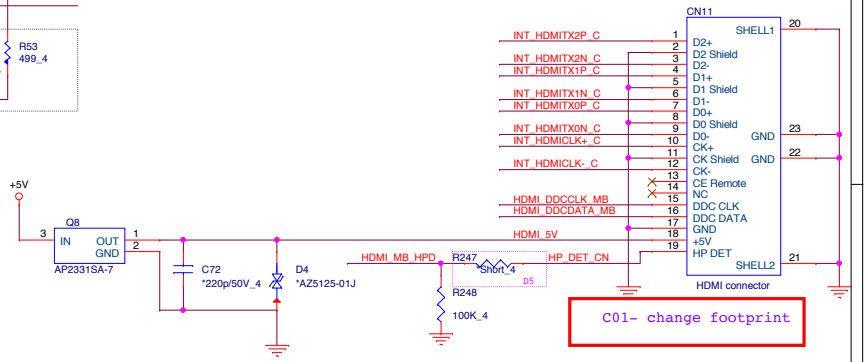
HDMI

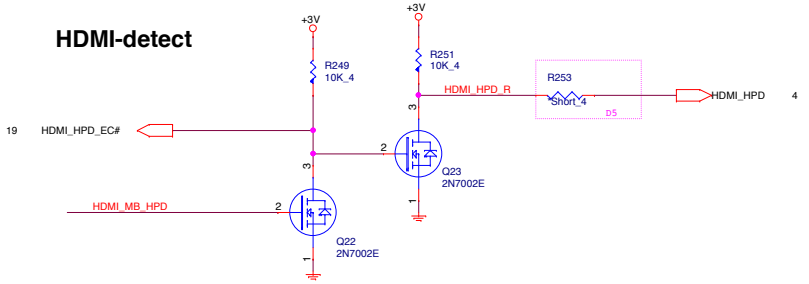
From PCH



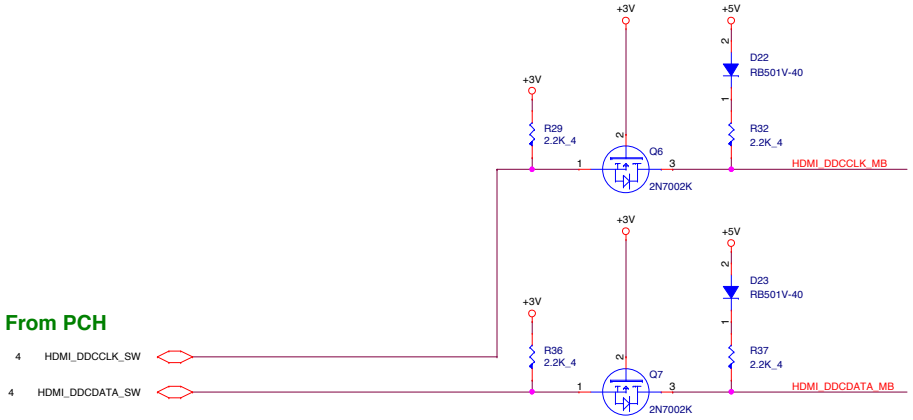
HDMI connector



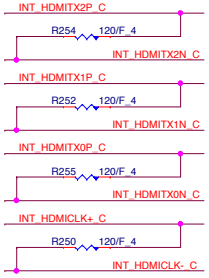
HDMI-detect



I2C



EMI



11,14,15,16,17,18,19,21,22,23,24,25,4,5,7,9 +3V
11,15,16,18,21,25 +5V

Quanta Computer Inc.
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Size	Document Number	Rev
	HDMI (PS8101)	1A
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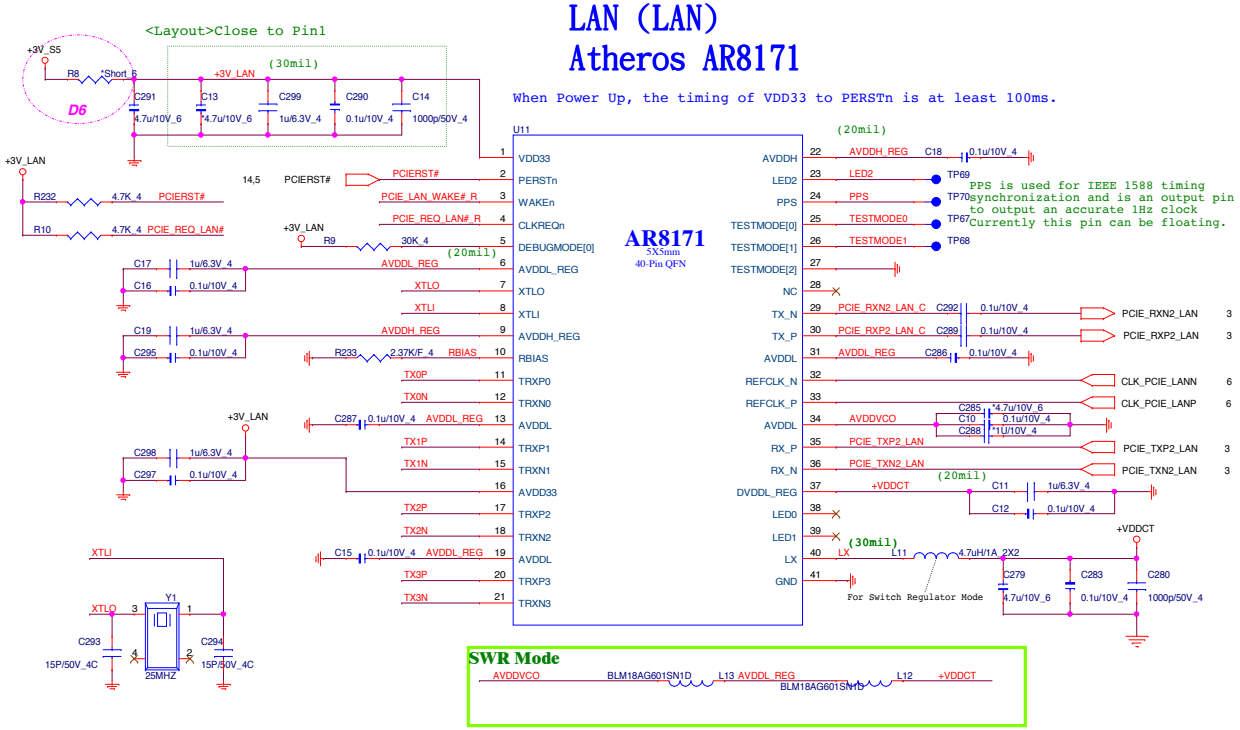
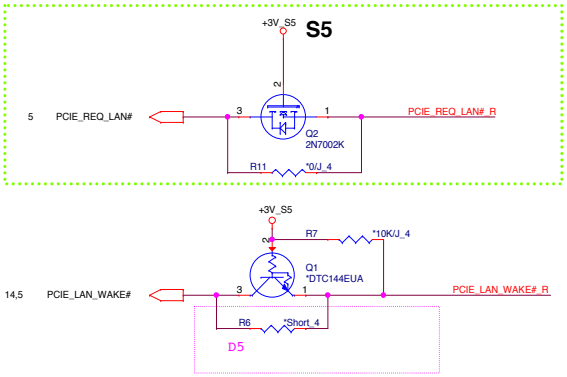
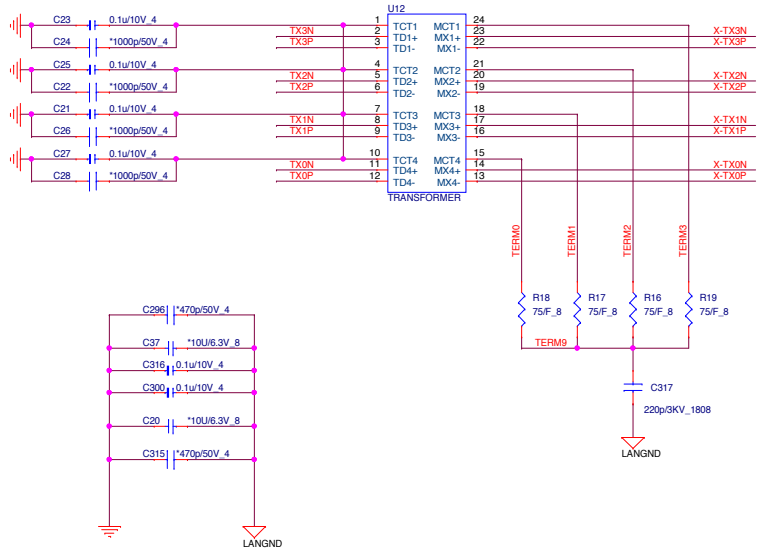
LAN (LAN)
Atheros AR8171

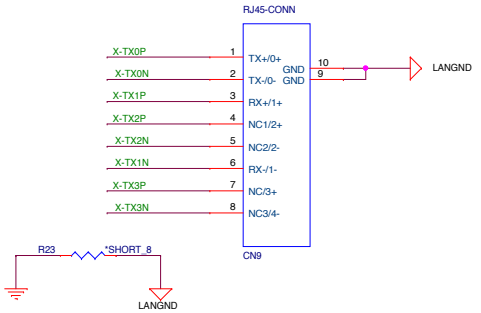




TRANSFORMER(LAN)



RJ45(LAN)



Quanta Computer Inc.			
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Size	Document Number		Rev
	LAN/LED/EMI/HOLE		1A
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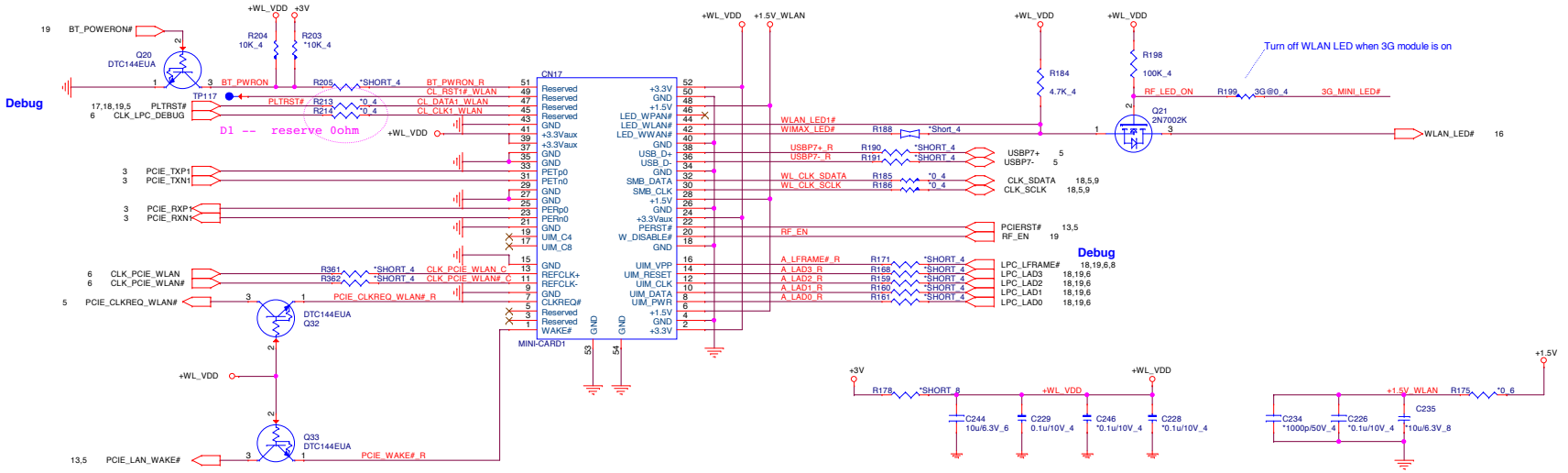
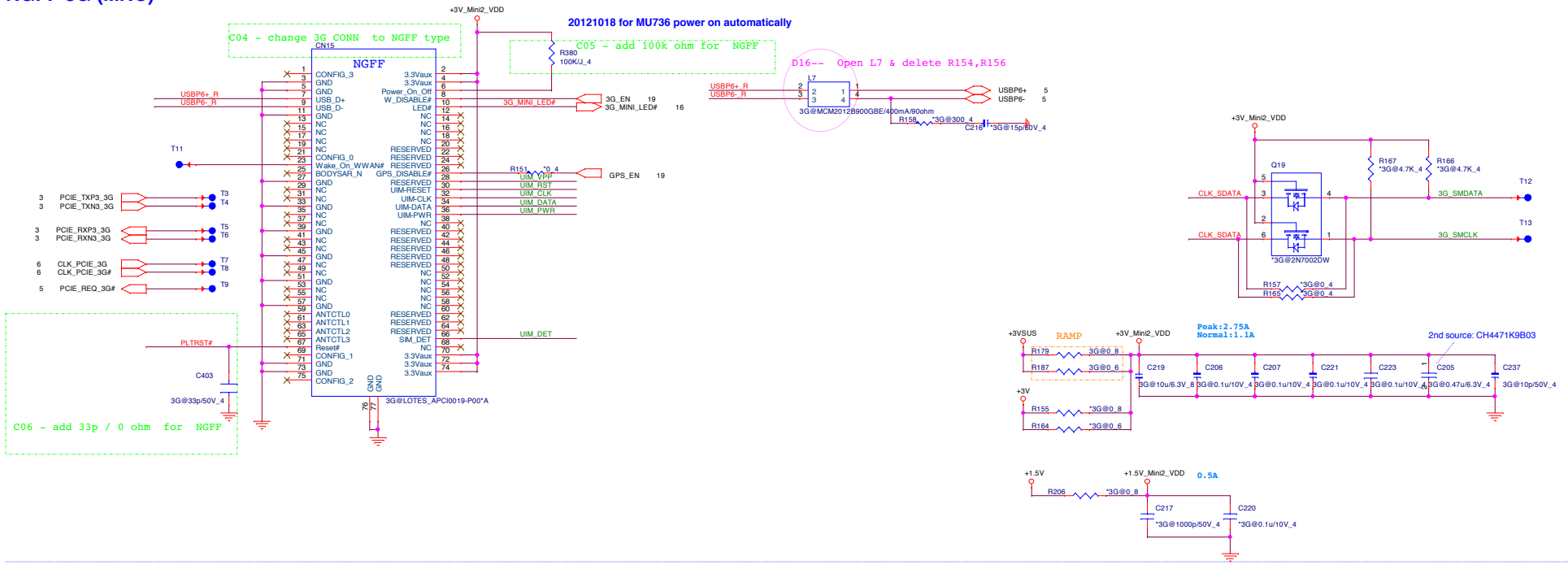
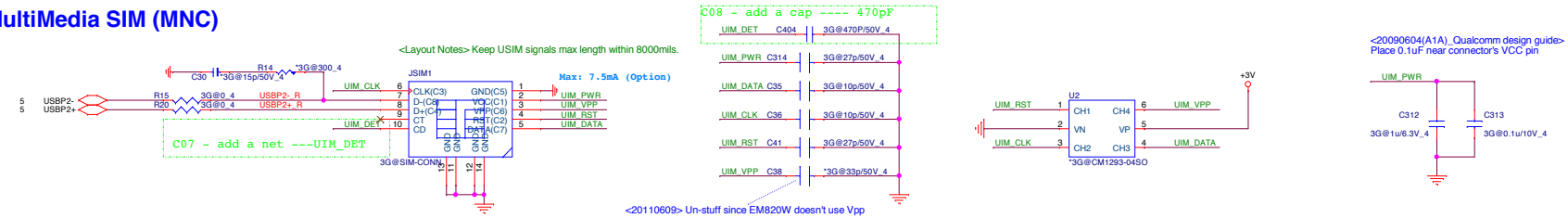
Mini Card 1 (MPC)



NGFF 3G (MNC)



MultiMedia SIM (MNC)



Quanta Computer Inc.

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Size	Document Number	Rev
	Mini-Card/WL/3G/SIM	1A

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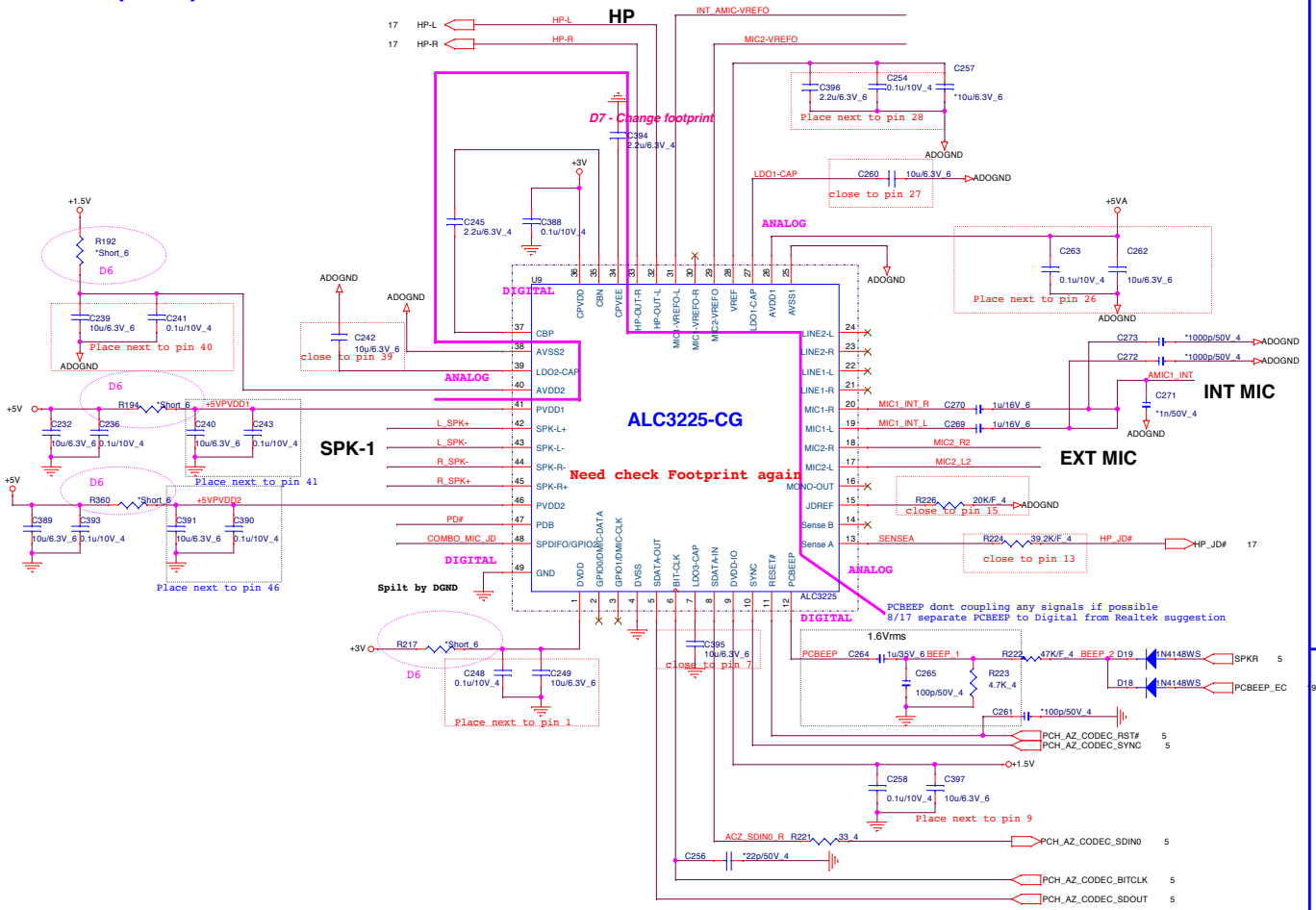
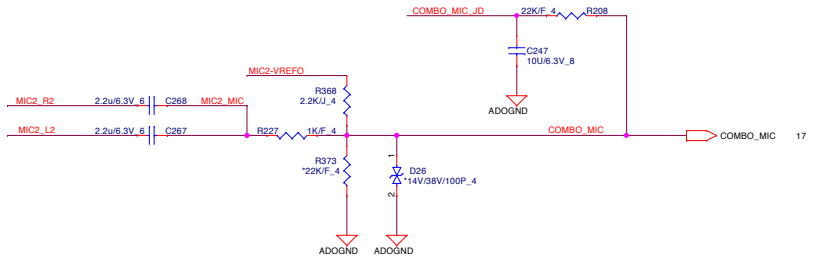
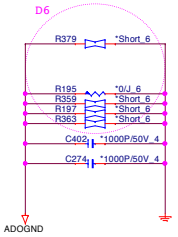
Codec (ADO)



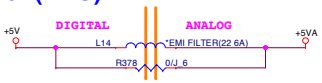
HEADPHONE/Mic combo



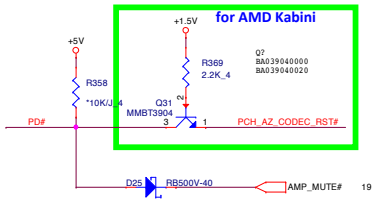
GND



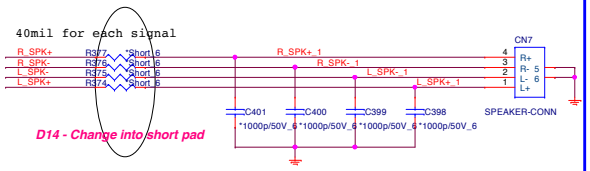
Power (ADO)



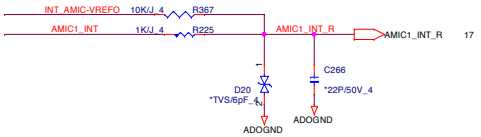
Mute (ADO)



Internal Speaker (AMP)



INT DIP AMIC array



cap place close to MIC-connector

Quanta Computer Inc.		
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	Codec ALC3225-CG	1A
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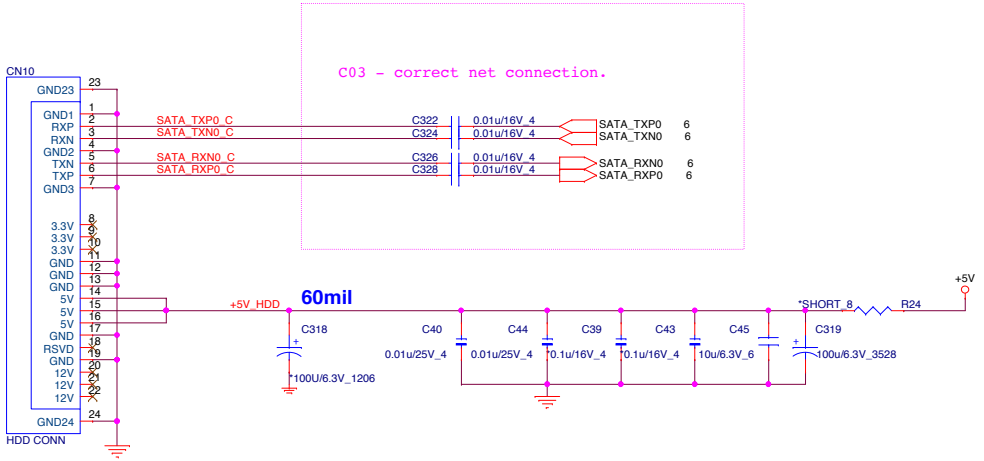
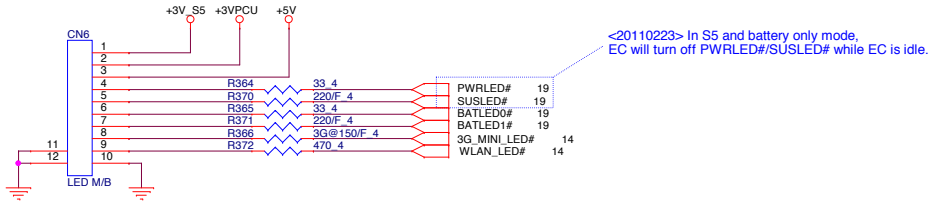
2.5" SATA HDD (HDD)



Power Sequence Connector(CPU)

1	GND	11	SUSON	21	VRON
2	NBSWON#	12	MAINON	22	RESERVE
3	S5_ON	13	RESERVE	23	CPU_COREPG
4	RESERVE	14	RESERVE	24	PWROK_EC
5	RESERVE	15	RESERVE	25	RESERVE
6	RESERVE	16	RESERVE	26	APU_PWRGD
7	PCH_RSMRST#	17	RESERVE	27	RESERVE
8	DNBSWON#	18	RESERVE	28	LDT_RST#
9	SUSC#	19	RESERVE	29	A_RST#_R
10	SUSB#	20	HWPG	30	RESERVE

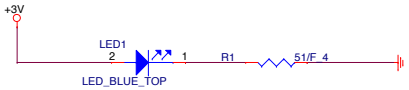
LED DB (UIF)



Stitching Cap(EMC)

POWER LED(UIF)

PWR indicator



Quanta Computer Inc.

PROJECT : ZHL

Size	Document Number	Rev
	SATA HDD/LED/SW	1A

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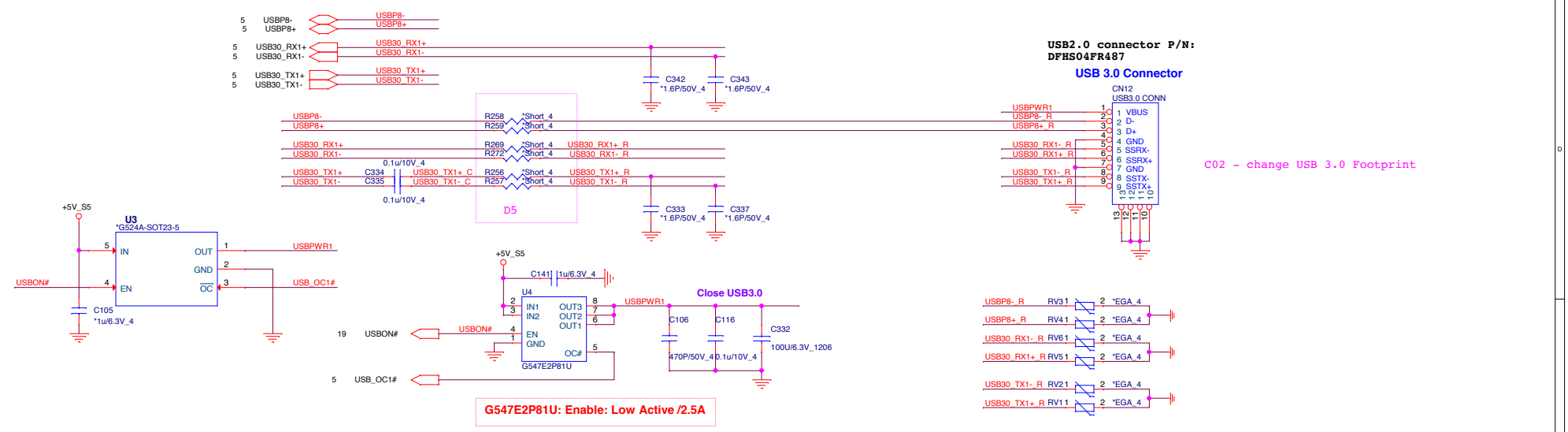
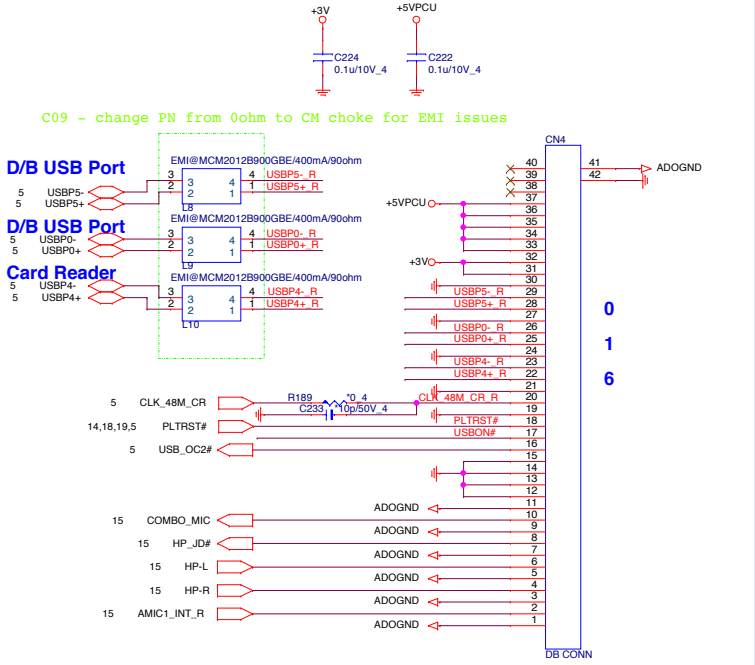
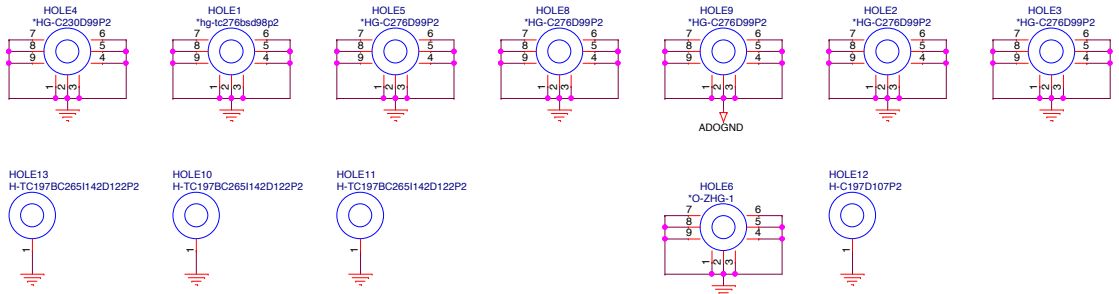


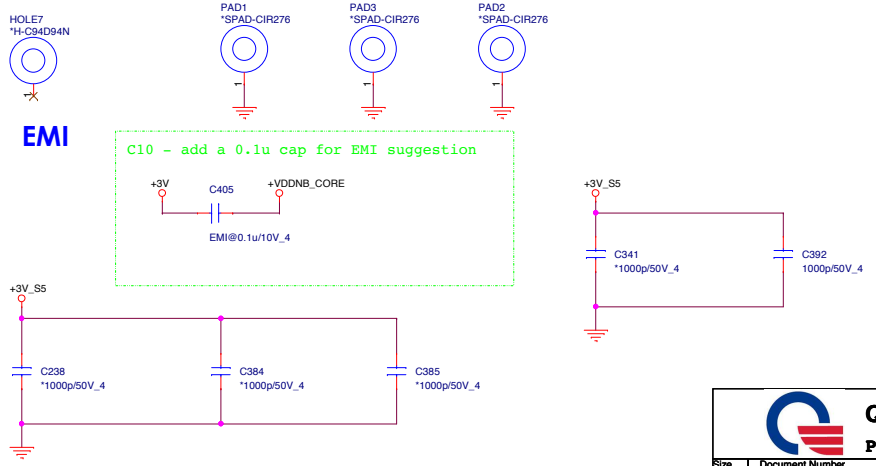
IO D/B (UIF)



HOLE(OTH)



EMI



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Size	Document Number: USB Port/ DB	Rev: 1A
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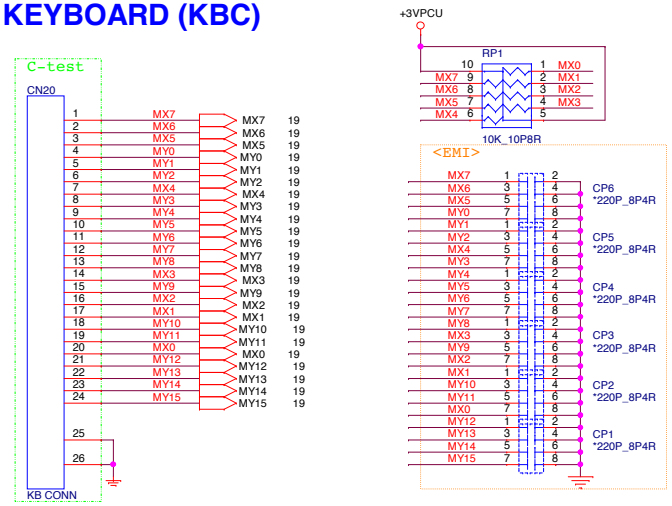
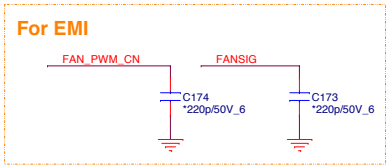
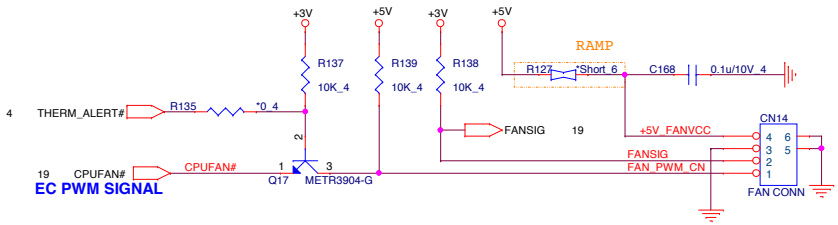
KEYBOARD (KBC)

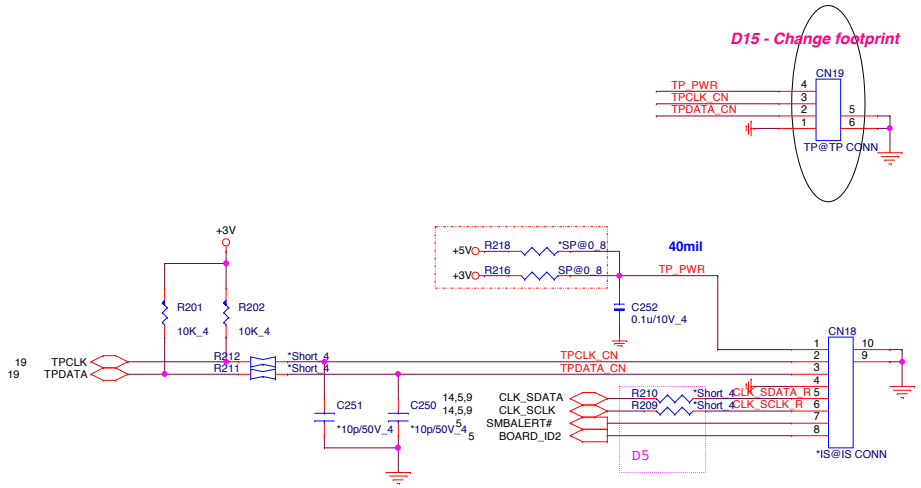


CPU FAN CTRL(THM)

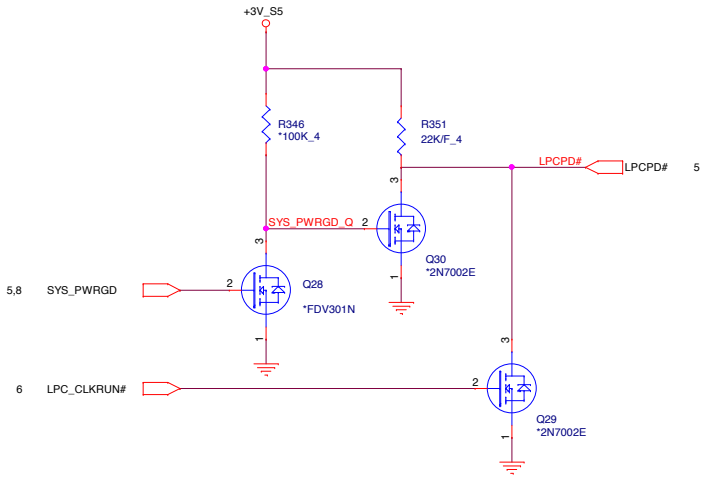


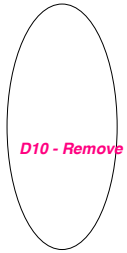


TOUCH PAD(TPD)



TPM (TPM)





Quanta Computer Inc.		
PROJECT : ZHL		
Size	Document Number: KB/BT/TP/LED/Power Connector	Rev: 1A
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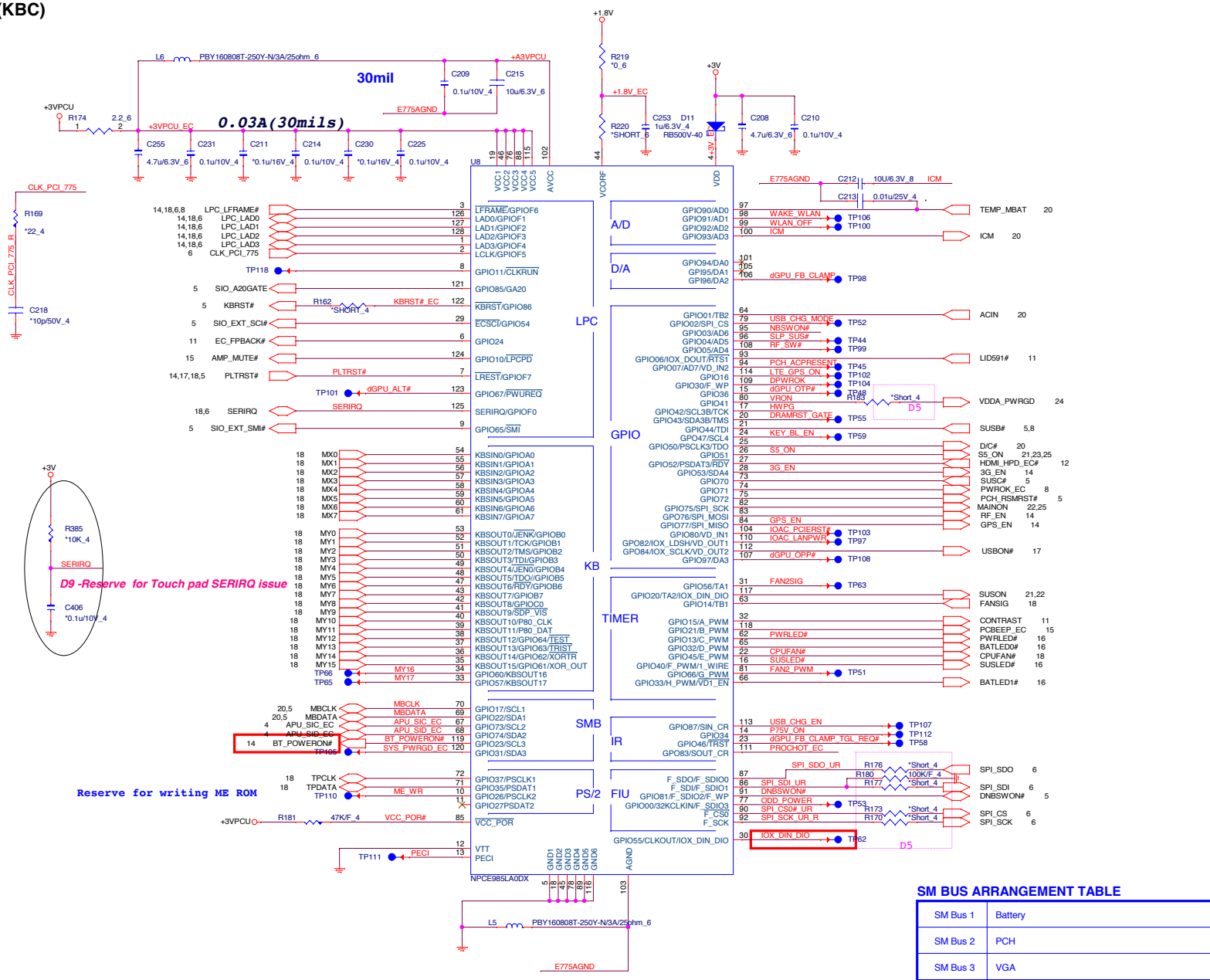
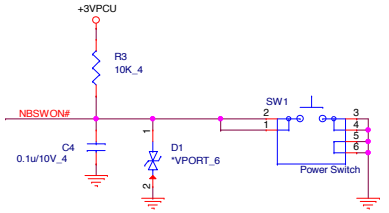
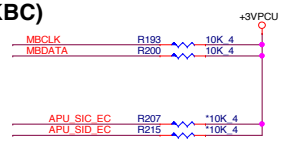
EC(KBC)

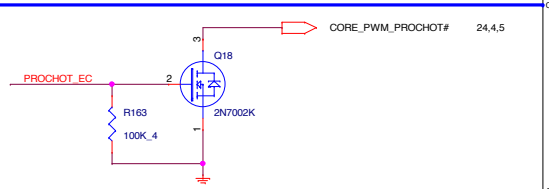


Power on button

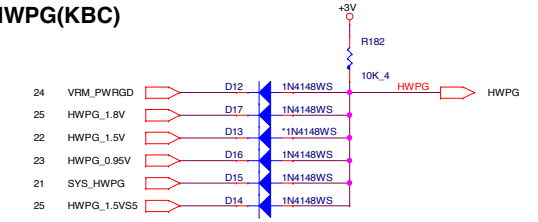


SM BUS PU(KBC)





HWPG(KBC)



SM BUS ARRANGEMENT TABLE

SM Bus 1	Battery
SM Bus 2	PCH
SM Bus 3	VGA
SM Bus 4	HDMI

Power sequence

Quanta Computer Inc.	PROJECT : ZHL	
Size	Document Number	Rev
	WPCE885 & FLASH	1A
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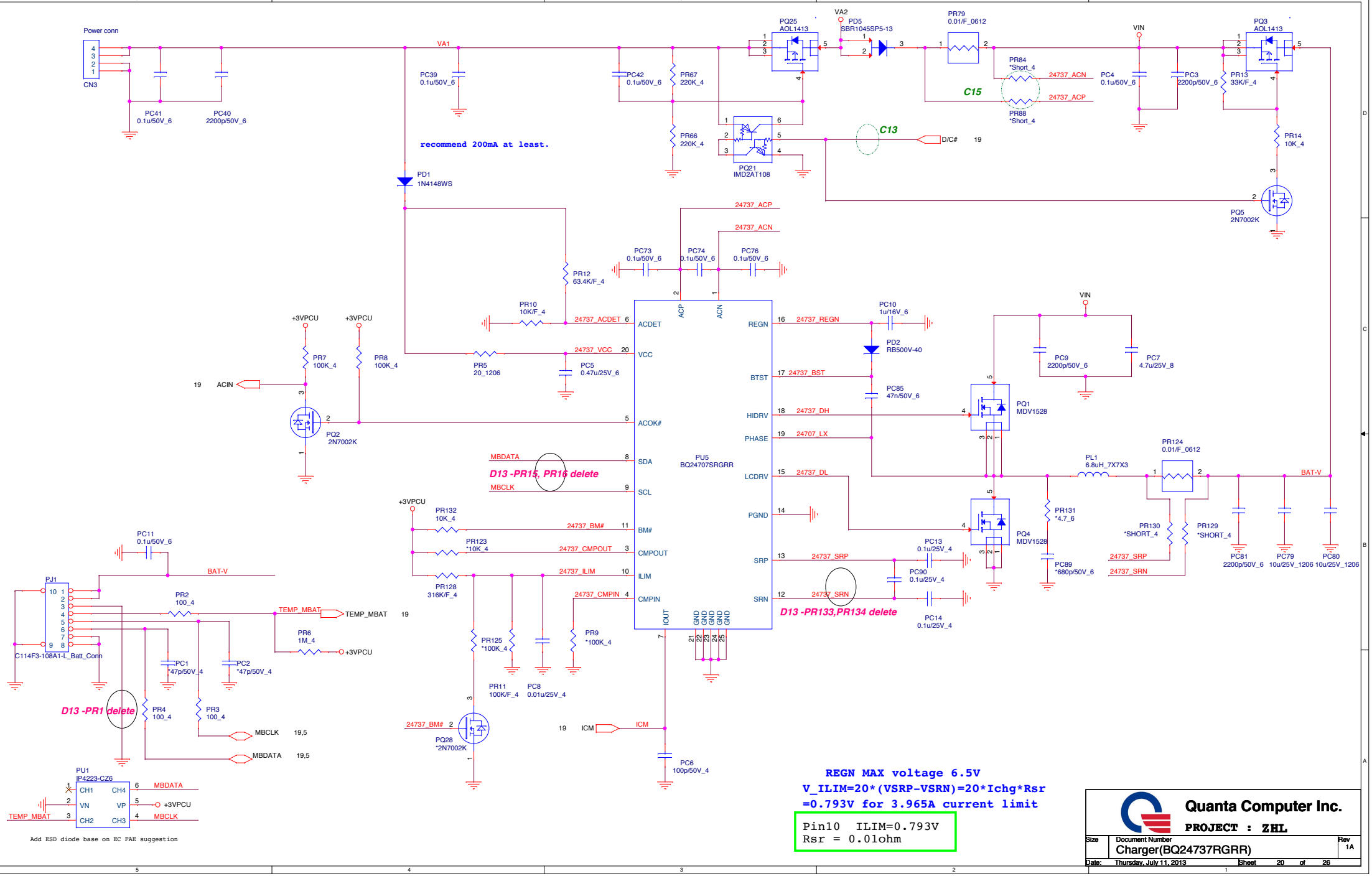
Power conn
CN3
PC41 0.1u/50V_6
PC40 2200p/50V_6
VA1
PC39 0.1u/50V_6
recommend 200mA at least.
PD1 1N4148WS
PC42 0.1u/50V_6
PR67 220K_4
PR66 220K_4
PQ25 AOL1413
VA2
PD5 SBR1045SP5-13
PR79 0.01/F_0612
C15
PR84 *Short_4
PR88 *Short_4
24737_ACN
24737_ACP
PQ21 IMD2AT108
C13
D/C# 19
VIN
PC4 0.1u/50V_6
PC3 2200p/50V_6
PQ3 AOL1413
PR13 33K/F_4
PR14 10K_4
PQ5 2N7002K
PR12 63.4K/F_4
PC73 0.1u/50V_6
PC74 0.1u/50V_6
PC76 0.1u/50V_6
PR10 10K/F_4
PR5 20_1206
PC5 0.47u/25V_6
+3VPCU
PR7 100K_4
PR8 100K_4
19 ACIN
PQ2 2N7002K
PU5 BQ24707SRGRR
ACDET
VCC
ACOK#
SDA
SCL
BM#
CMPOUT
ILIM
CMPIN
IOUT
ACP
ACN
REGN
BTST
HIDRV
PHASE
LCDRV
PGND
SRP
SRN
GND
24737_ACDET
24737_VCC
24737_REGN
24737_BST
24737_DH
24707_LX
24737_DL
24737_SRP
24737_SRN
MBDATA
MBCLK
24737_BM#
24737_CMPOUT
24737_ILIM
24737_CMPIN
PC10 1u/16V_6
PD2 RB500V-40
PC85 47n/50V_6
PC9 2200p/50V_6
PC7 4.7u/25V_8
PQ1 MDV1528
PQ4 MDV1528
PL1 6.8uH_7X7X3
PR124 0.01/F_0612
PR131 *4.7_6
PC89 *680p/50V_6
PR130 *SHORT_4
PR129 *SHORT_4
PC81 2200p/50V_6
PC79 10u/25V_1206
PC80 10u/25V_1206
BAT-V
PC13 0.1u/25V_4
PC90 0.1u/25V_4
PC14 0.1u/25V_4
D13 -PR15, PR16 delete
D13 -PR133,PR134 delete
PR132 10K_4
PR123 *10K_4
PR128 316K/F_4
PR125 *100K_4
PR9 *100K_4
PR11 100K/F_4
PC8 0.01u/25V_4
PQ28 *2N7002K
PC6 100p/50V_4
ICM
PC11 0.1u/50V_6
PJ1
C114F3-108A1-L_Batt_Conn
PR2 100_4
TEMP_MBAT
PR6 1M_4
PC1 *47p/50V_4
PC2 *47p/50V_4
D13 -PR1 delete
PR4 100_4
PR3 100_4
MBCLK 19,5
MBDATA 19,5
PU1 IP4223-CZ6
CH1
CH4
VN
VP
CH2
CH3
Add ESD diode base on EC FAE suggestion
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
Quanta Computer Inc.
PROJECT : ZHL
Size
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Charger(BQ24737RGRR)
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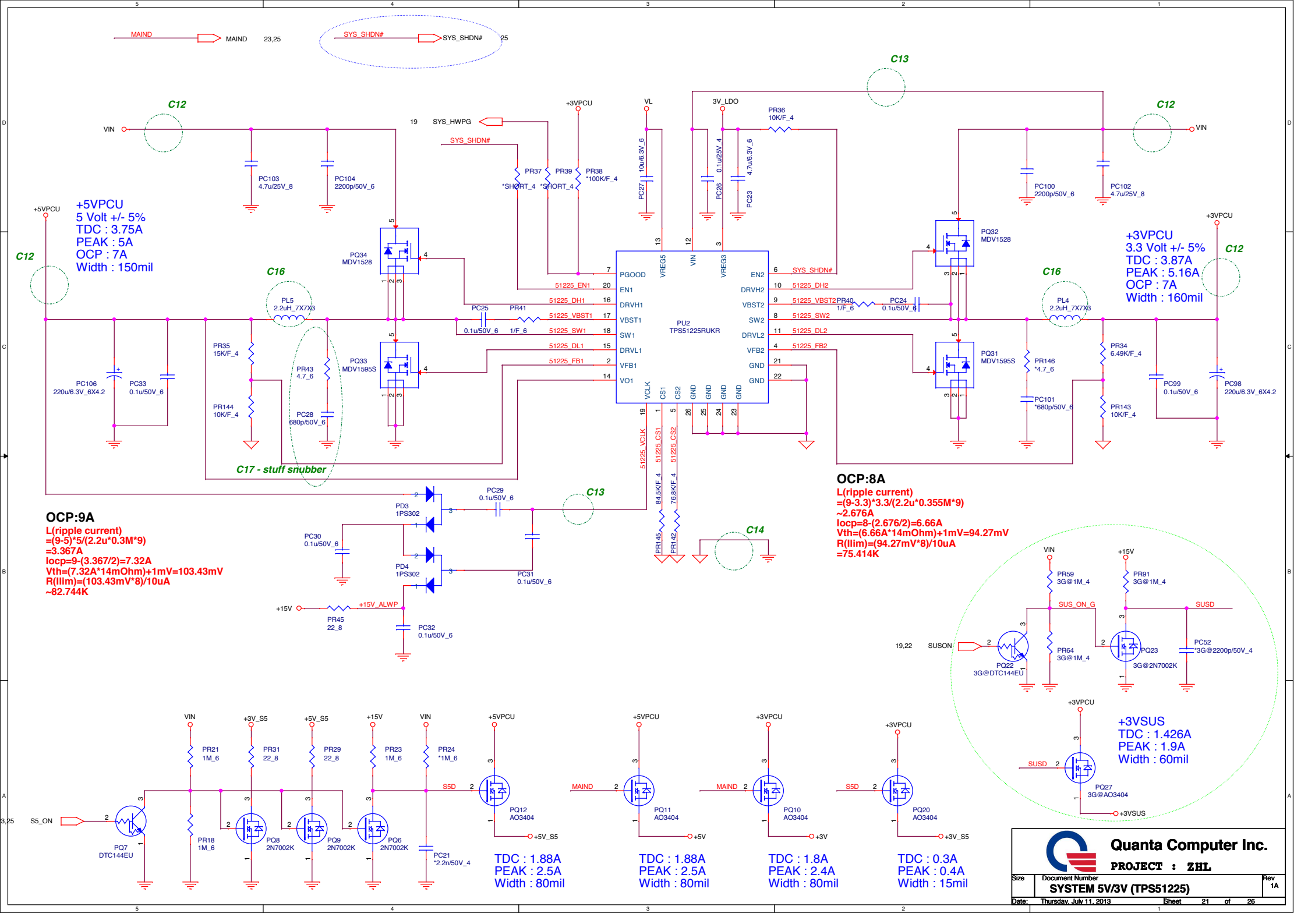
MAIND
MAIND 23,25
SYS_SHDN#
SYS_SHDN# 25
+5VPCU
5 Volt +/- 5%
TDC : 3.75A
PEAK : 5A
OCP : 7A
Width : 150mil
+3VPCU
3.3 Volt +/- 5%
TDC : 3.87A
PEAK : 5.16A
OCP : 7A
Width : 160mil
OCP:9A
L(ripple current)
=(9-5)*5/(2.2u*0.3M*9)
=3.367A
Iocp=9-(3.367/2)=7.32A
Vth=(7.32A*14mOhm)+1mV=103.43mV
R(Ilim)=(103.43mV*8)/10uA
~82.744K
OCP:8A
L(ripple current)
=(9-3.3)*3.3/(2.2u*0.355M*9)
~2.676A
Iocp=8-(2.676/2)=6.66A
Vth=(6.66A*14mOhm)+1mV=94.27mV
R(Ilim)=(94.27mV*8)/10uA
=75.414K
C17 - stuff snubber
PU2
TPS51225RUKR
+3VSUS
TDC : 1.426A
PEAK : 1.9A
Width : 60mil
TDC : 1.88A
PEAK : 2.5A
Width : 80mil
TDC : 1.88A
PEAK : 2.5A
Width : 80mil
TDC : 1.8A
PEAK : 2.4A
Width : 80mil
TDC : 0.3A
PEAK : 0.4A
Width : 15mil
Quanta Computer Inc.
PROJECT : ZHL
SYSTEM 5V/3V (TPS51225)
Rev 1A
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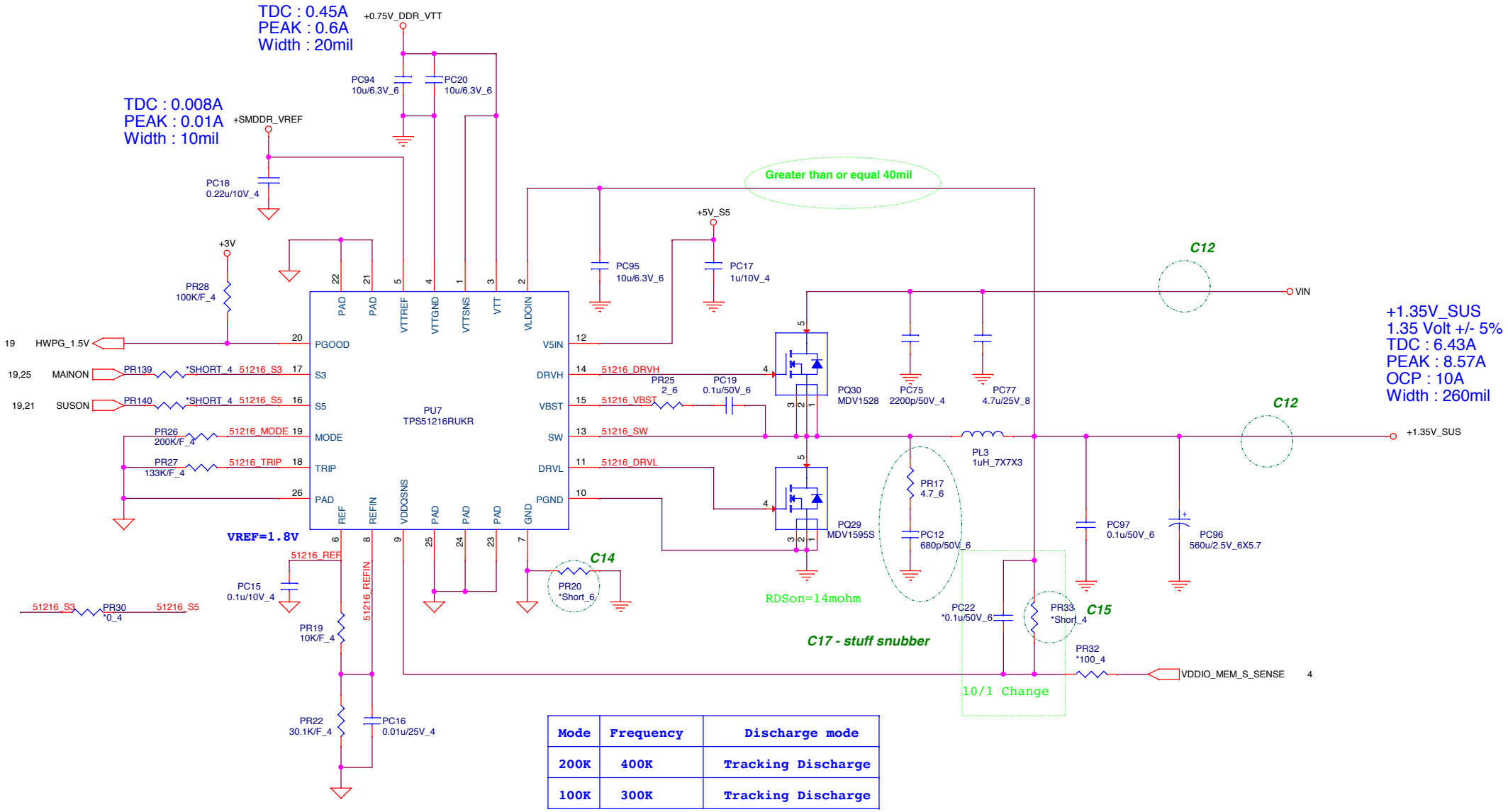

Mode	Frequency	Discharge mode
200K	400K	Tracking Discharge
100K	300K	Tracking Discharge

OCP=11A
L ripple current
=(19-1.35)*1.35/(2.2u*400k*19)
=1.425A
Vtrip=11-(1.425/2)*14mohm
=10.98967V
Rlimit=10.98967/10uA*8=137.37Kohm

	S3	S5	+1.35VSUS	REF	VTT
S0	1	1	ON	ON	ON
S3 (mainon off)	0	1	ON	ON	OFF
S4/S5	0	0	OFF	OFF	OFF

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PROJECT : ZHL

Size	Document Number	Rev
	DDR 1.5V(TPS51216)	1A

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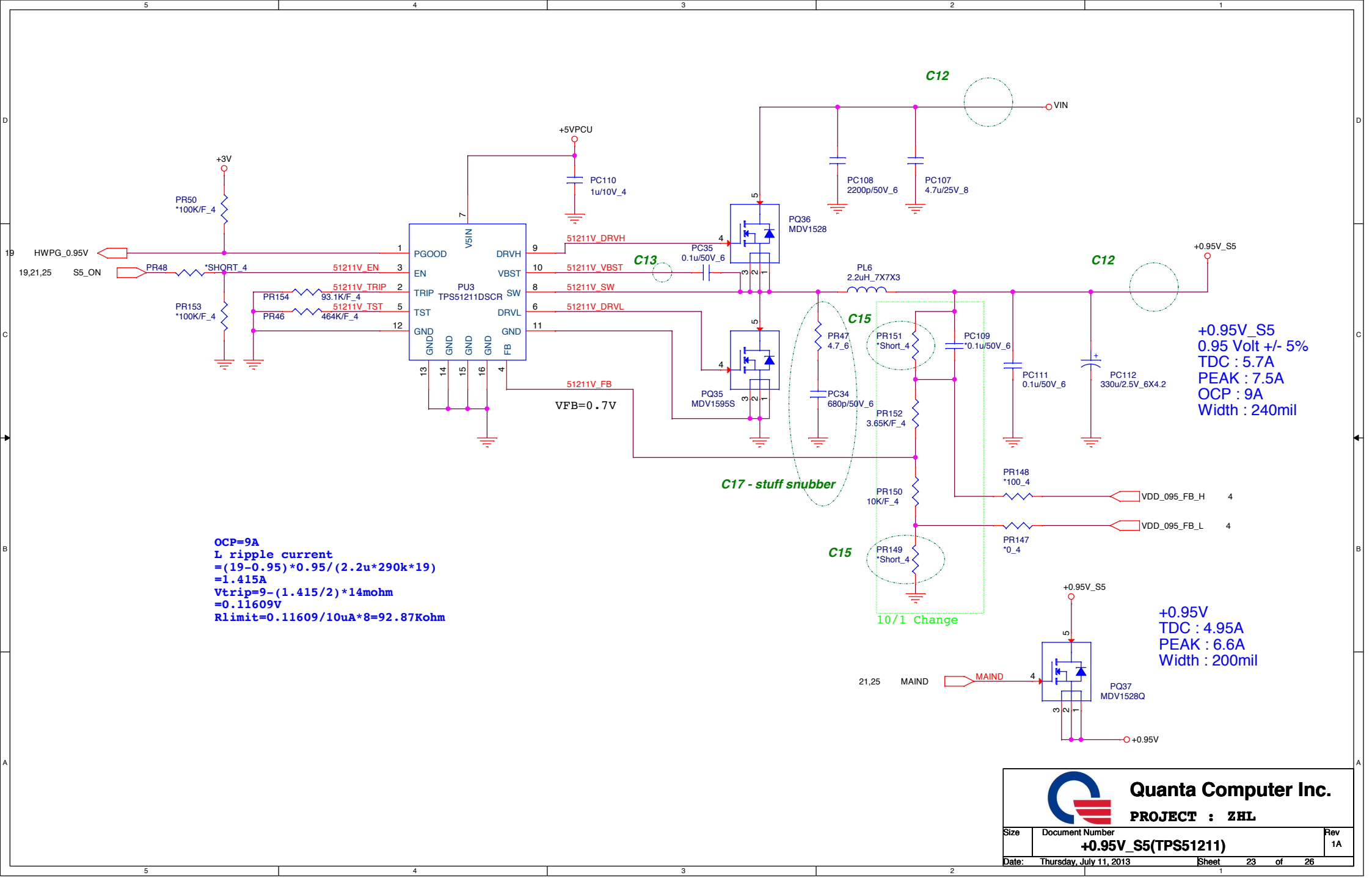
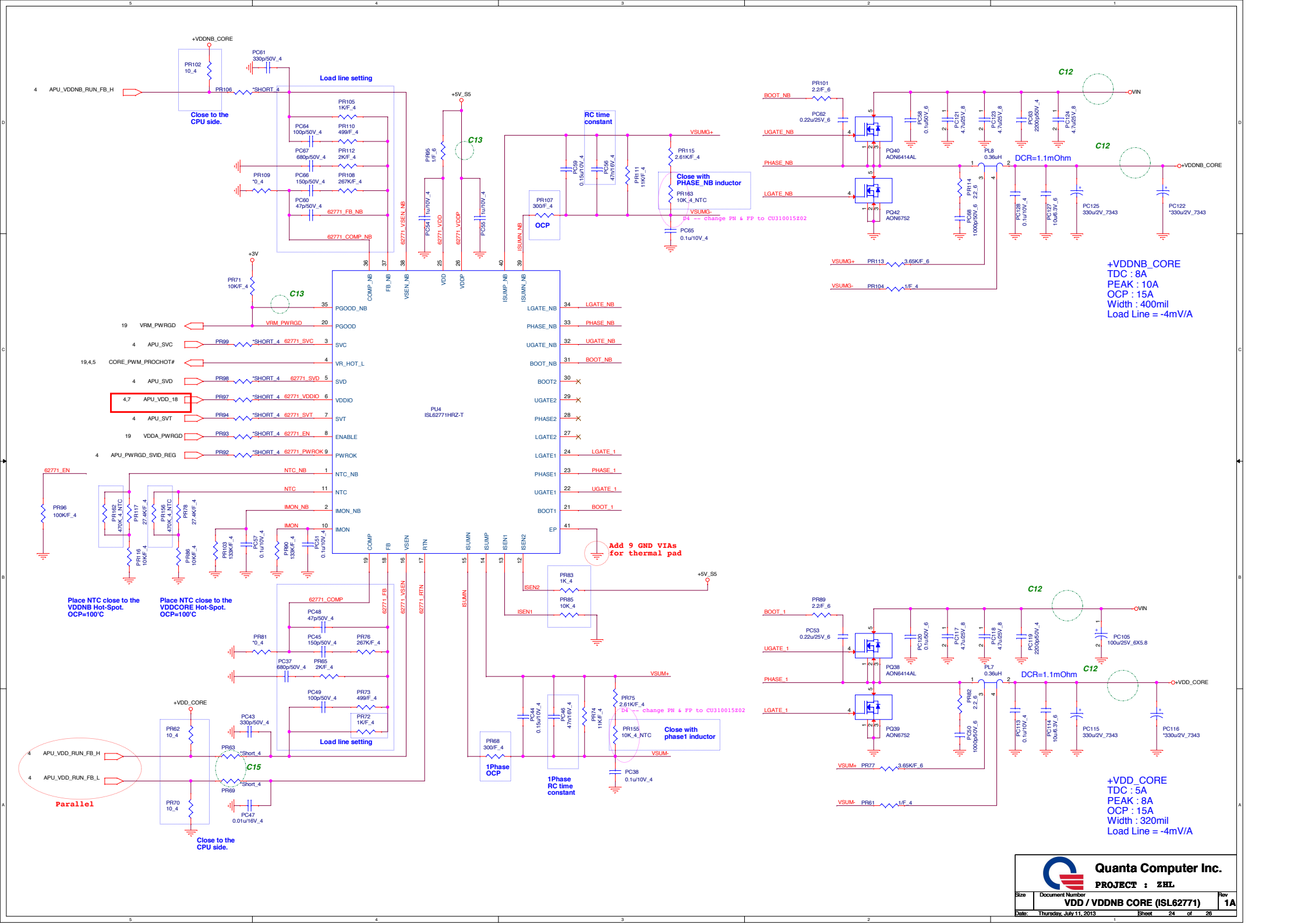
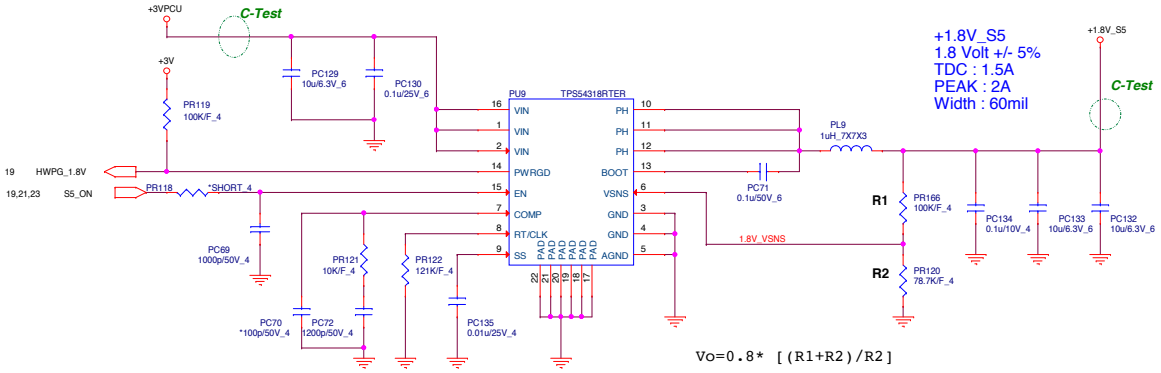
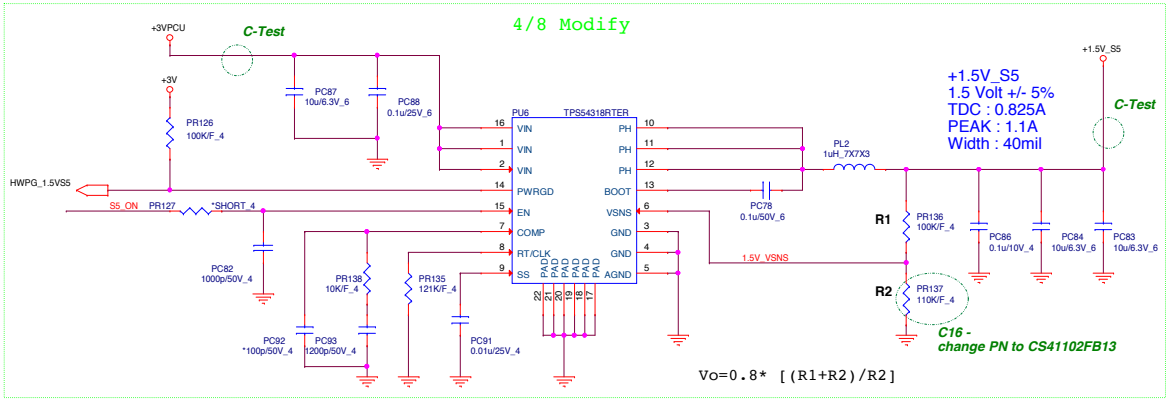


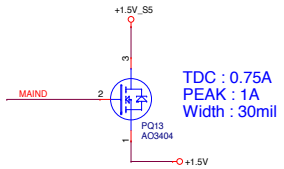
Quanta Computer Inc.		
PROJECT : ZHL		
Size	Document Number: +0.95V_S5(TPS51211)	Rev: 1A
Date: Thursday, July 11, 2013	Sheet 23 of 26	

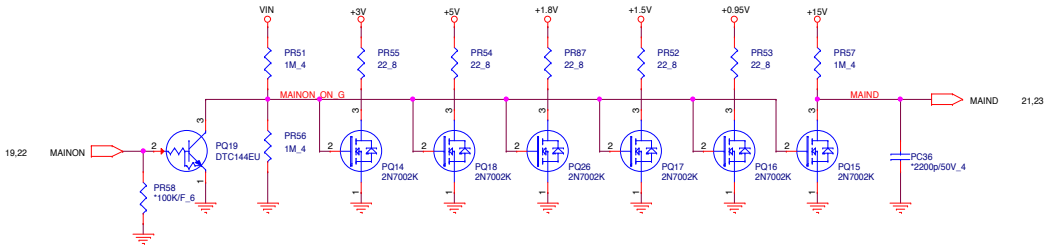


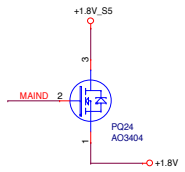
Quanta Computer Inc.		
PROJECT : ZHL		
Size	Document Number: VDD / VDDNB CORE (ISL62771)	Rev: 1A
Date: Thursday, July 11, 2013	Sheet 24 of 26	



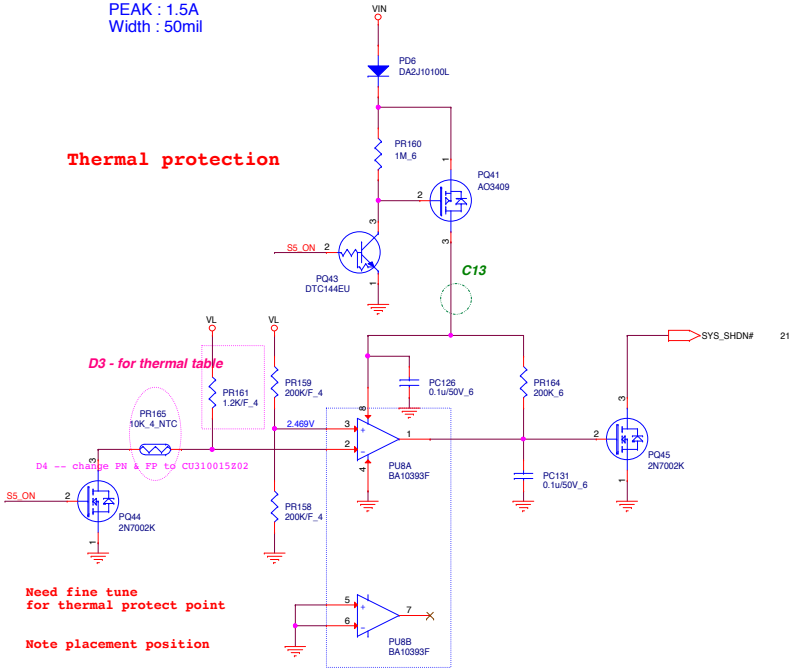








TDC : 1.13A
PEAK : 1.5A
Width : 50mil



For EC control thermal protection (output 3.3V)

Quanta Computer Inc.

PROJECT : ZHL

Size	Document Number	Rev
	+10.5V (MP2139DD)	1A
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MODEL	REV	CHANGE LIST
ZHL M/B	A	First Release
	C	C01 - Change HDMI footprint C02 - Change USB3.0 footprint C03 - correct net connection. C04 - change 3G CONN to NGFF type C05 - add 100k ohm for NGFF C06 - add 33p for NGFF C07 - add a net --- UIM_DET C08 - add a cap ---- 470pF C09 - change PN from 0ohm to CM choke for EMI issues C10 - add a 0.1u cap for EMI suggestion C11 - Change CN13 FP & PN C12 - Delete JP12,JP3,JP2,JP11,JP1,JP10,JP4,JP13,JP6,JP15,JP5,JP14,JP16,JP7,JP8,JP9 C13 - Delete PR42,PR44,PR49,PR100,PR80,PR157,PR60 C14 - Change PR141,PR20 to *Short_6 C15 - Change PR149,PR151,PR33,PR84,PR88,PR63,PR69 to *Short_4 C16 - change PL5/PL4 from 3.3uH to 2.2uH C17 - stuff snubber
	RAMP	D1 - reserve 0ohm D2 - add a group of charging circuit (RTC) , change CN13 PN. D3 - for thermal table D4 - change PN & FP to CU310015Z02 D5 - Change 0OHM 0402 SIZE to *Short_4 D6 - Change R12,R13,R238,R239,R28,R8,R192,R194,R217,R360 to *Short_6 D7 - Change C394 footprint from 0603 to 0402 size D8 - Change U14 footprint D9 - Add C406 (100p) & R385 (10K) for Toutch pad serirq issue (Reserve). D10 - Remove TPM connector & some parts D11 - Change footprint to short pad (R178,R347,R133,R220,R23,R134,R152,R153,R280,R313,R310,R85,R86) D12 - Change power footprint to short pad (PR37,PR39,PR48,PR92,PR93,PR94,PR97,PR98,PR99,PR106,PR118,PR127,PR129,PR130,PR139,PR140) D13 - Delete / Derectly short (PR1,PR5,PR16,PR133,PR134) D14 - Change R374,R375,R376,R377 into short pad D15 - Change CN19 footprint for EOL D16 - Open L7 & delete R154,R156

Model	ZHL MB BOARD	
Page	From	To
1	1A	3A
2	1A	3A
3	1A	3A
4	1A	3A
5	1A	3A
6	1A	3A
7	1A	3A
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ZHL	PCBA NO : 31ZHLMB0010	REV: A	DOC. NO : 206
APPROVED BY : Johnny O	CHECK BY : Pony Kao	DRAWING BY : Kenneth Huang	DATE : 2013/06/13

Quanta Computer Inc.

PROJECT : ZHL

Size	Document Number	Rev
	CHANGE LIST	1A

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