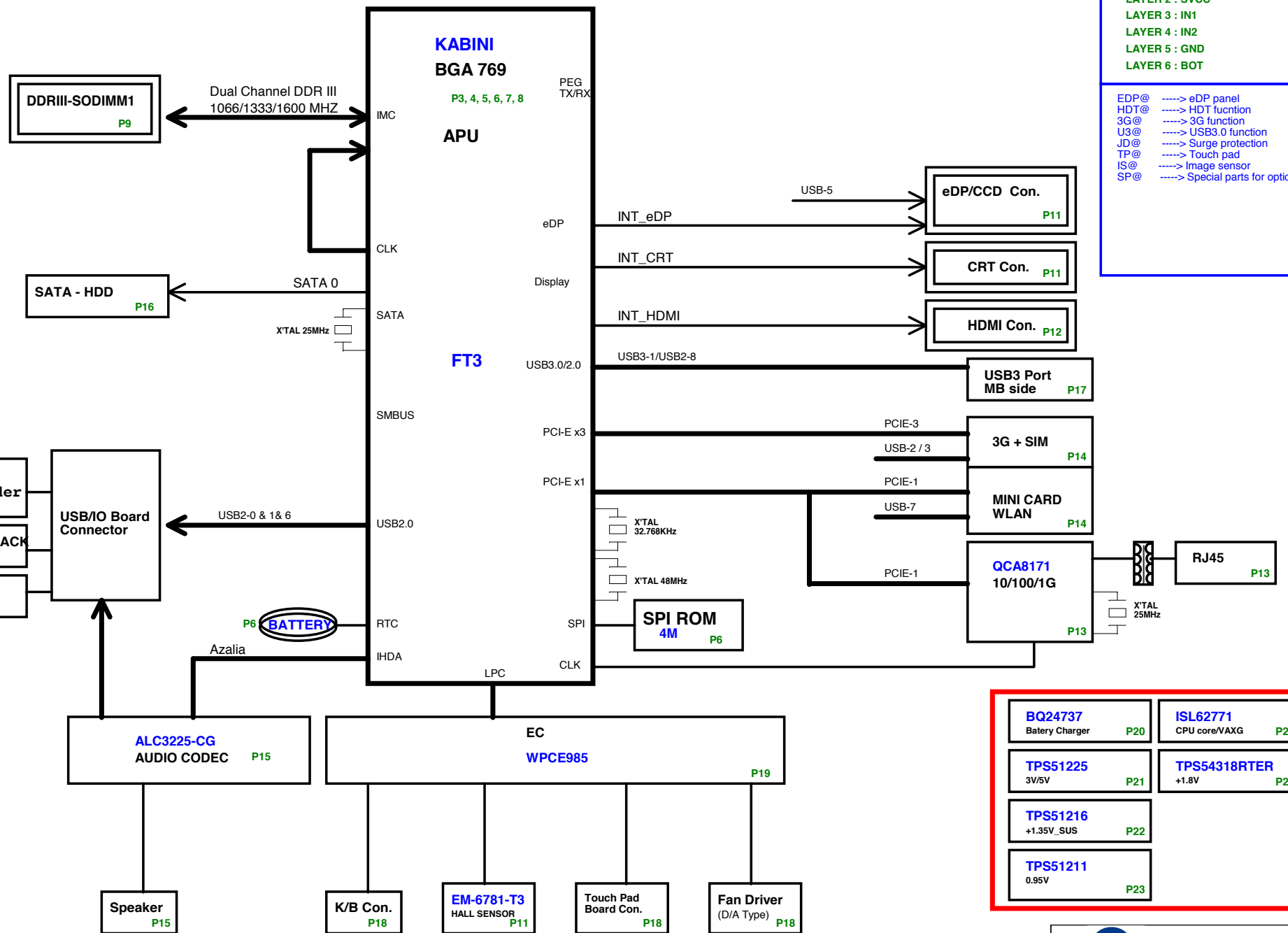


ZHL KABINI SYSTEM BLOCK DIAGRAM

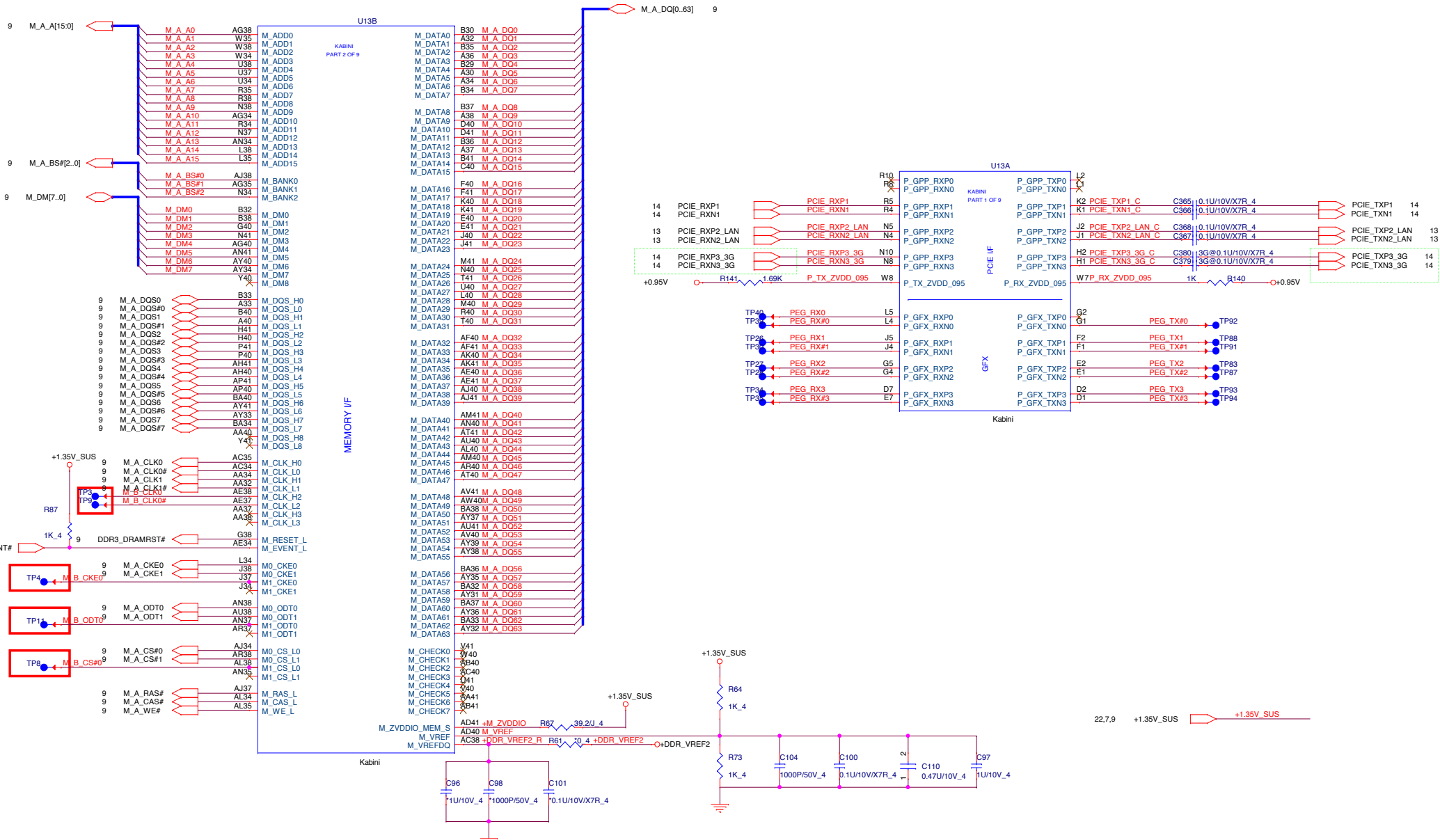



PCB STACK UP

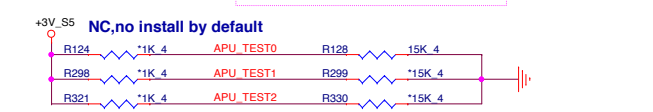
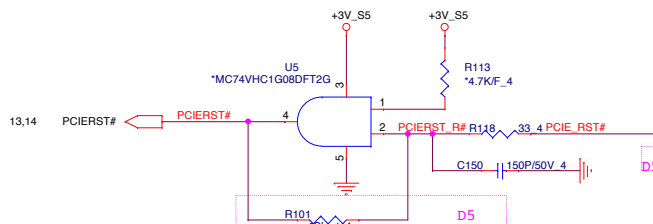
LAYER 1 : TOP
 LAYER 2 : SVCC
 LAYER 3 : IN1
 LAYER 4 : IN2
 LAYER 5 : GND
 LAYER 6 : BOT

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

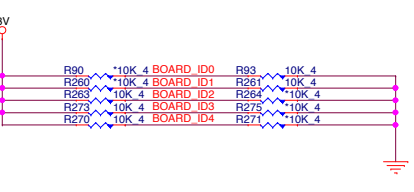
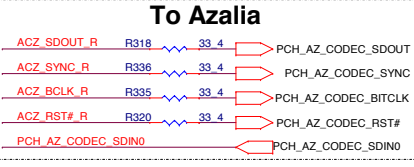
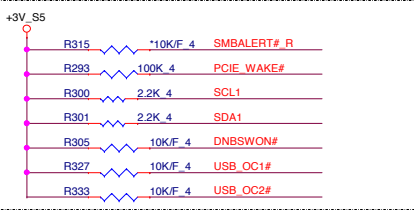
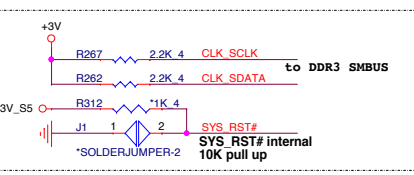
BQ24737 Battery Charger P20	ISL62771 CPU core/VAXG P24
TPS51225 3V/5V P21	TPS54318RTER +1.8V P25
TPS51216 +1.35V_SUS P22	
TPS51211 0.95V P23	



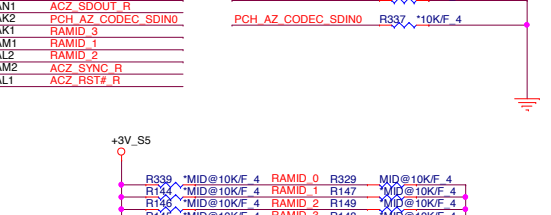
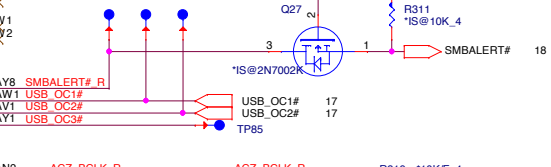
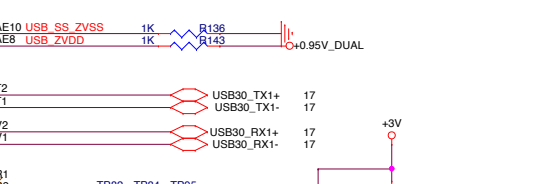
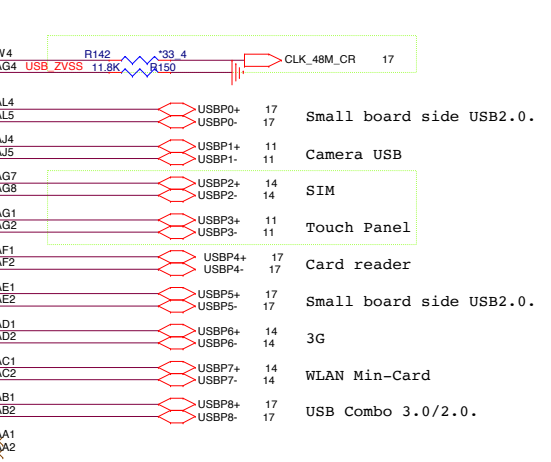
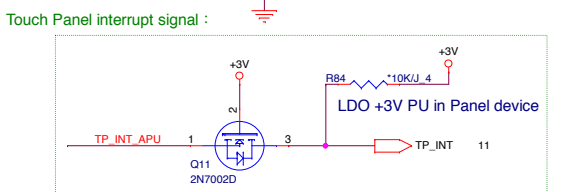
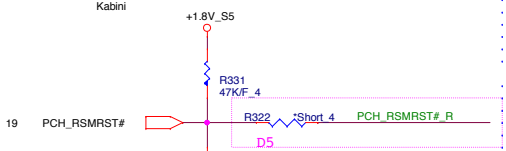
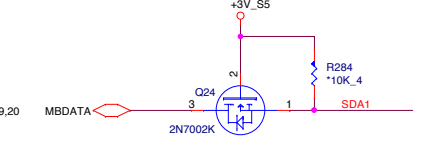
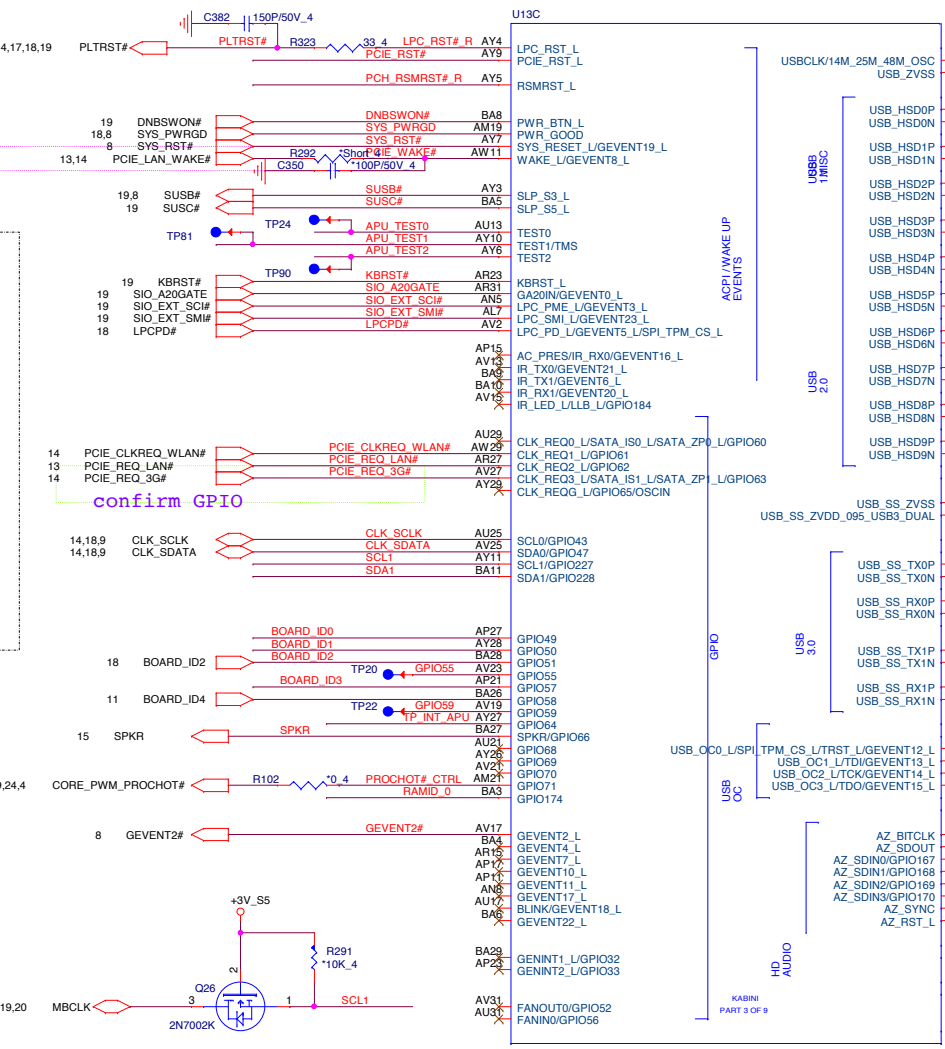
			PROJECT : KABINI FT3 Quanta Computer Inc.	
Date: Thursday, July 11, 2013			Sheet: 3	of 26



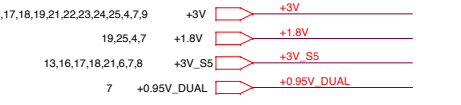
TEST2	TEST1	TEST0	Description
0	0	0	FCH TAP accessible from APU when TAPEN is asserted. FCH JTAG pins are overloaded for multiple functions, in this configuration the FCH JTAG are used as non-JTAG pins.
0	0	1	Reserved
0	1	X	Reserved
1	TMS	0	FCH JTAG multi-function pins are configured as JTAG pins, in this configuration the FCH TAP can be accessed from FCH JTAG pins.
1	TMS	1	Use on ATE only. Yuba JTAG enabled.



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



RAM	RAMID_0	RAMID_1	RAMID_2	RAMID_3
Elpida 1333 AKD5JG5T407	0	0	0	0



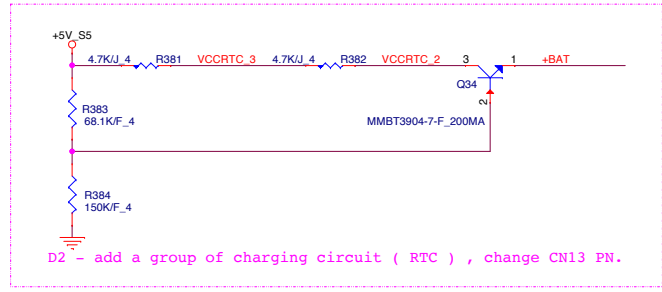
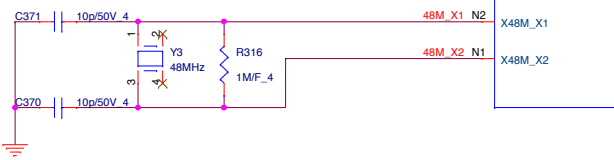
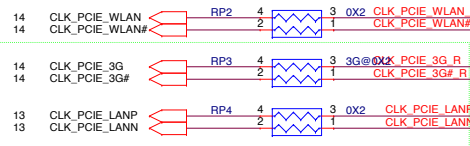
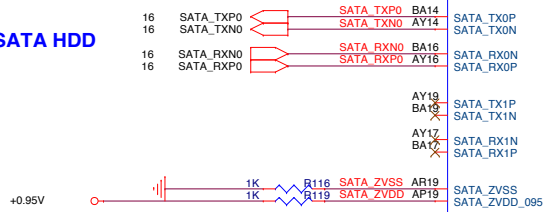
PROJECT : KABINI FT3

Quanta Computer Inc.

Size	Document Number	Rev
	GPIO/USB/AZ (3/6)	1A
Date:	Thursday, July 11, 2013	Sheet 5 of 26



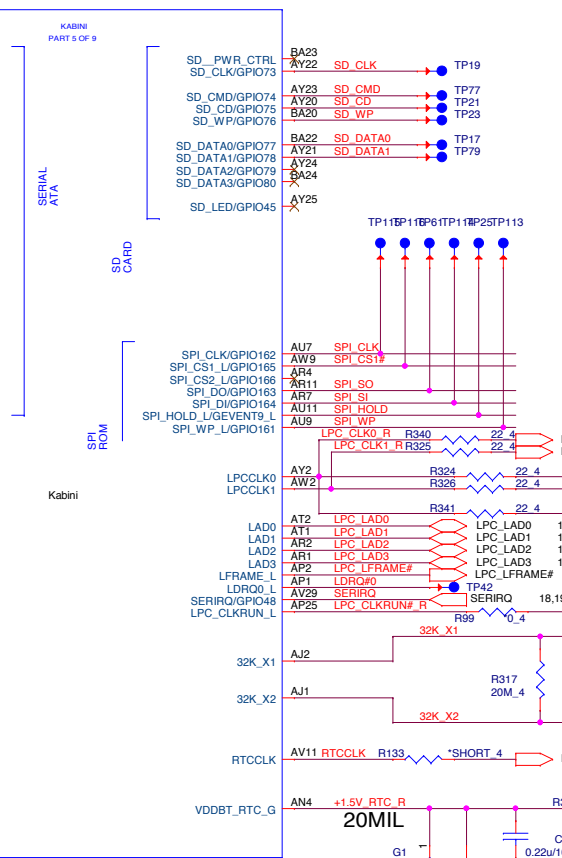
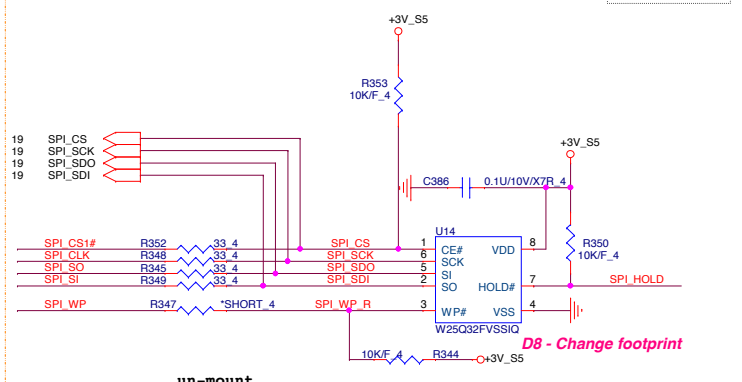
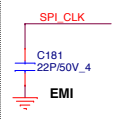
SATA HDD

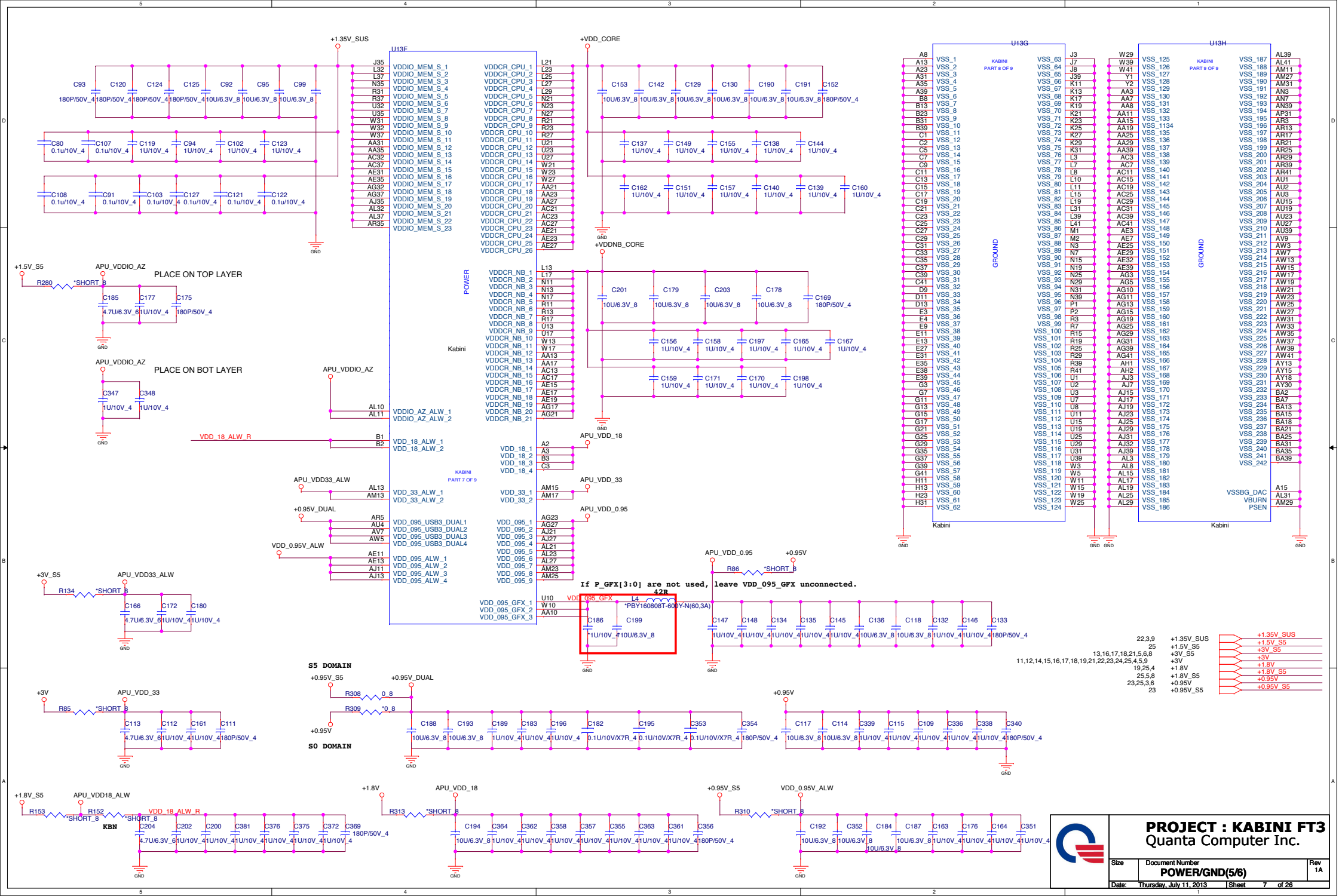


APU SPI ROM

Replace to MX25L6436E

Vendor	Size	P/N
AMIC		
WINBOND	4M	AKE39FN0N01



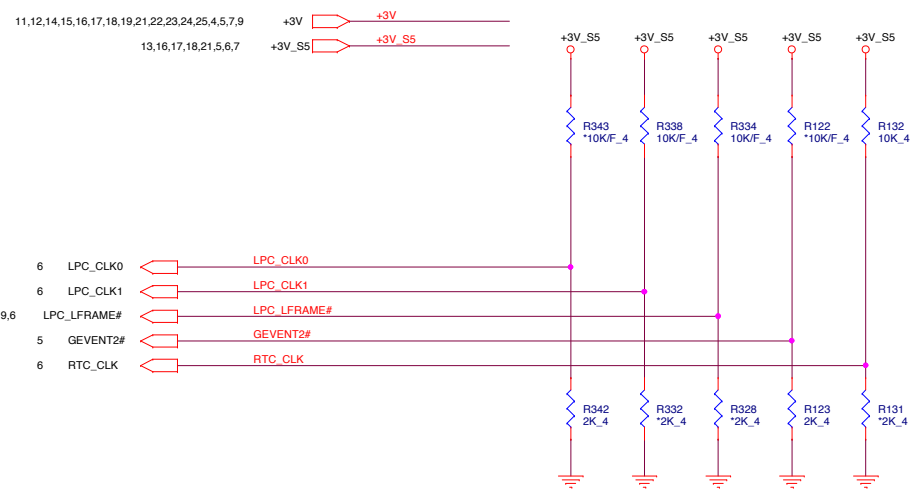


PROJECT : KABINI FT3
Quanta Computer Inc.

Size	Document Number POWER/GND(5/6)	Rev 1A
Date:	Thursday, July 11, 2013	Sheet 7 of 26

STRAPS PINS

OVERLAP COMMON PADS WHERE POSSIBLE FOR DUAL-OP RESISTORS.

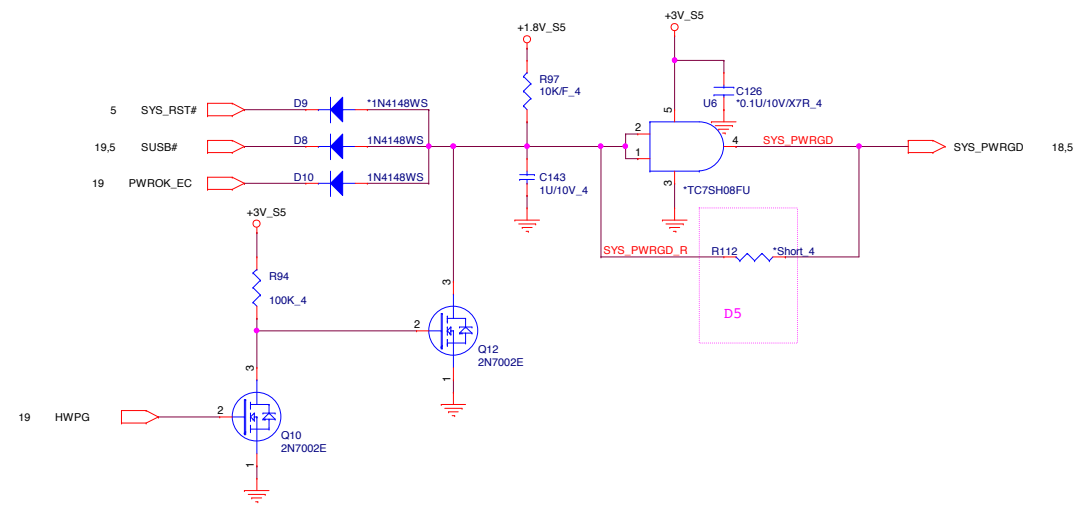


REQUIRED STRAPS

					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

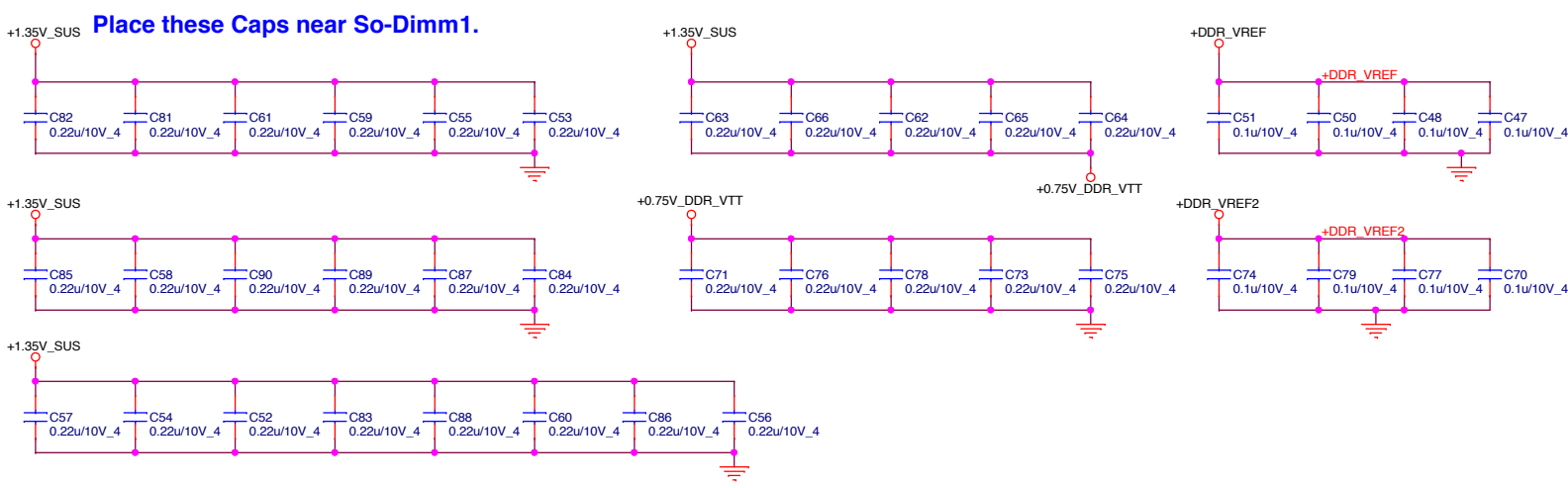
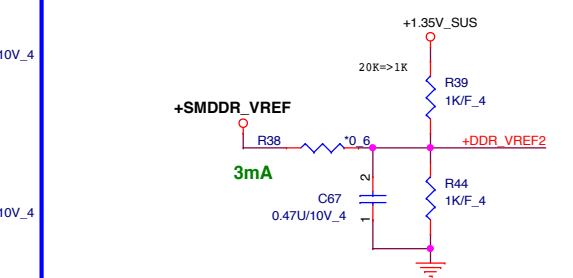
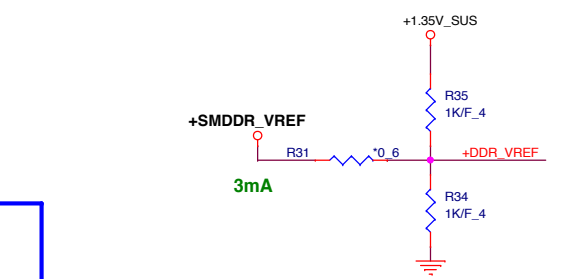
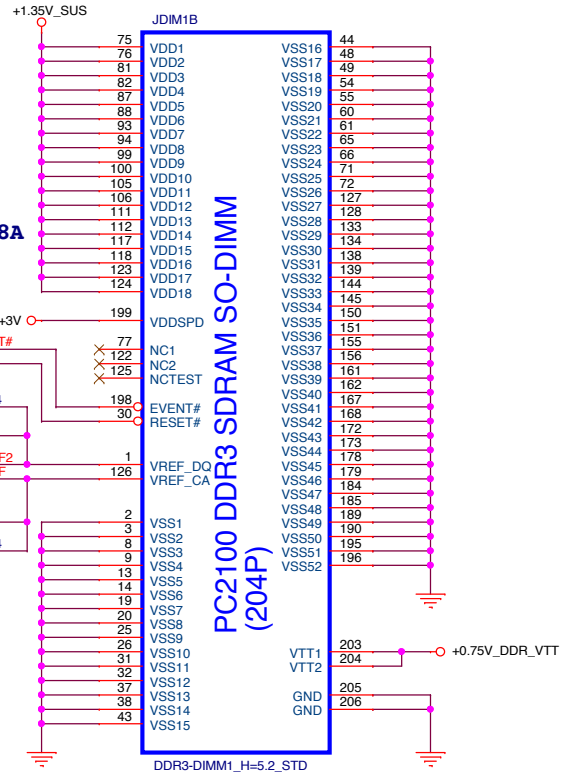
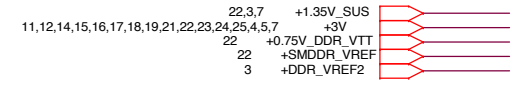
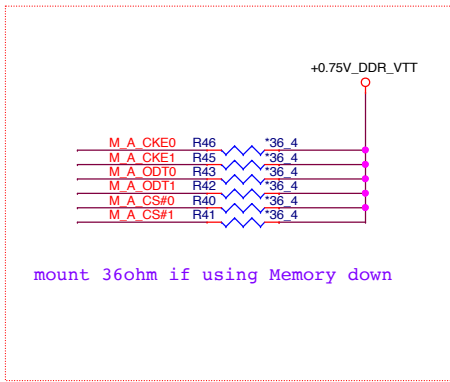
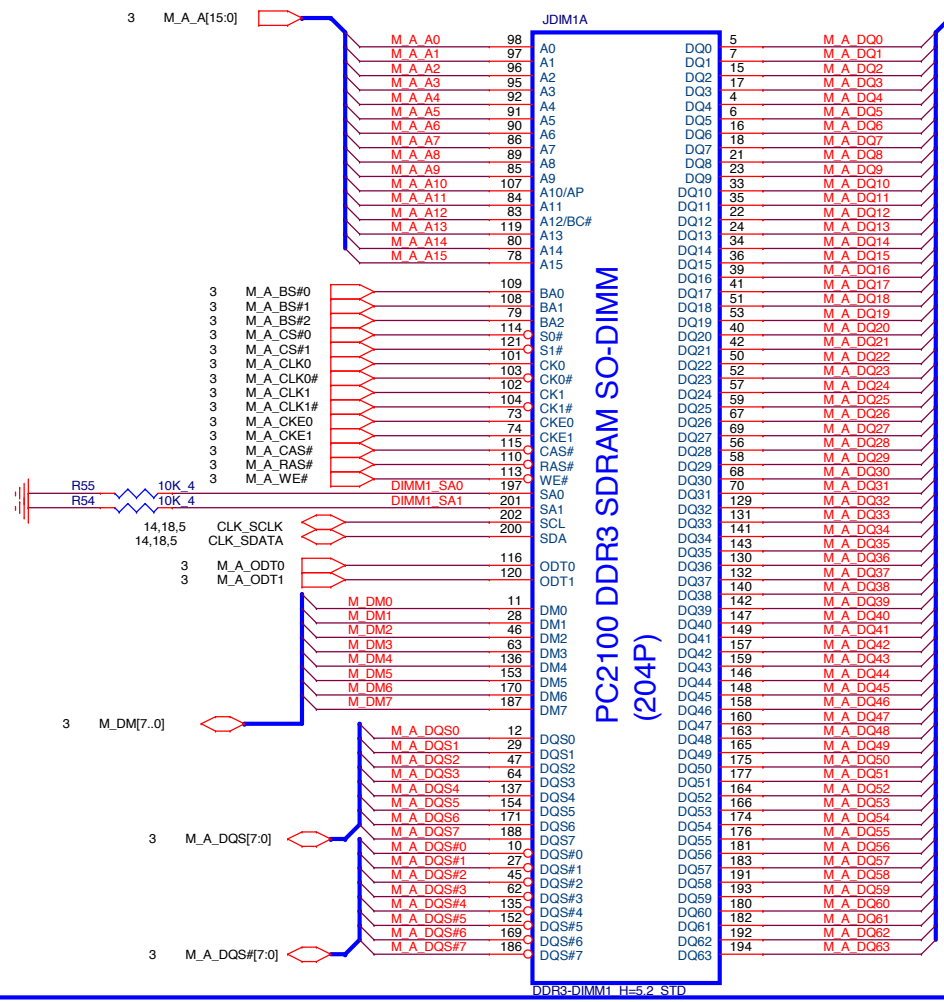
DEBUG STRAPS

SYS_PWRGD




PROJECT : KABINI FT3
Quanta Computer Inc.

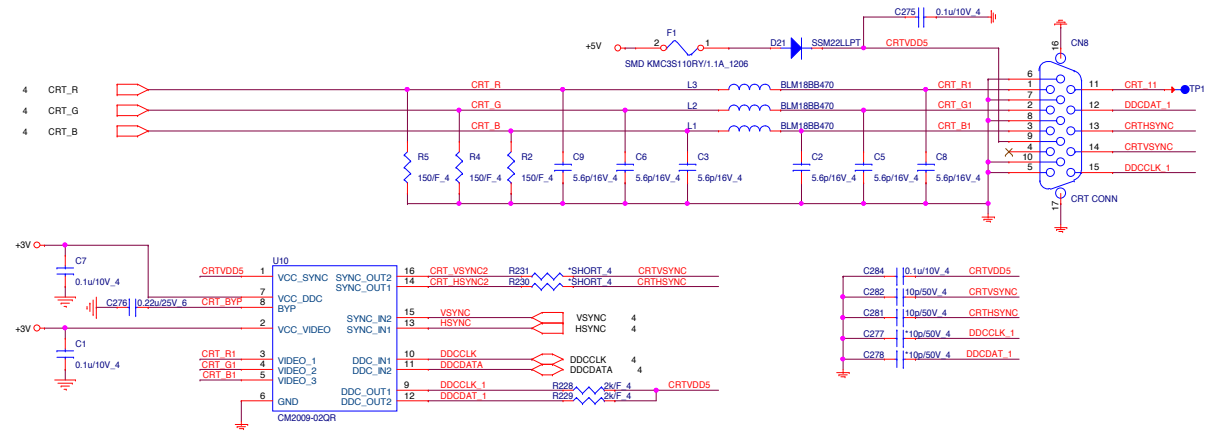
Size	Document Number	Rev
	STRAP (6/6)	1A
Date: Thursday, July 11, 2013 Sheet 8 of 26		



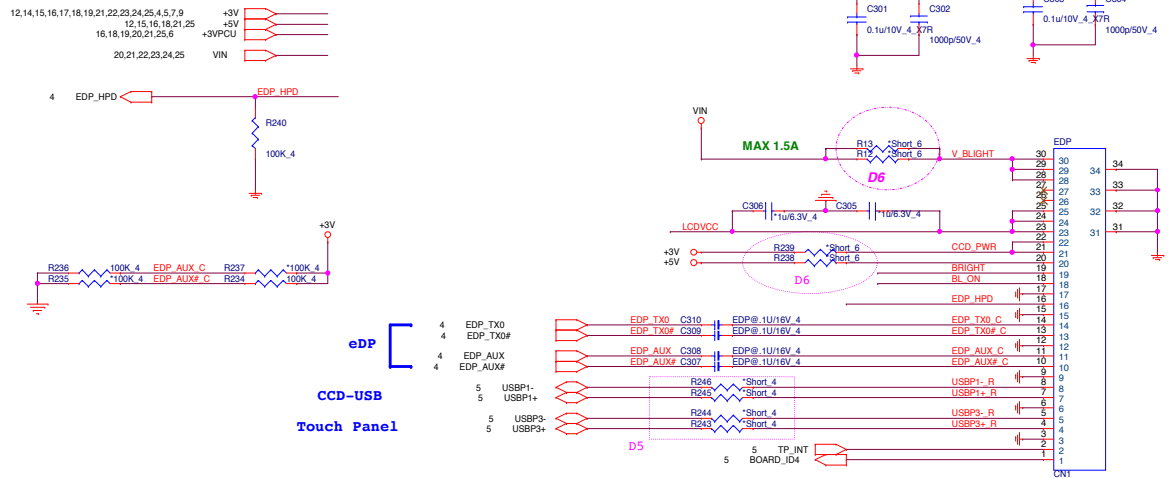
Quanta Computer Inc.
PROJECT : ZHL

Size	Document Number	Rev
	DDR3 SO-DIMM-1	1A
Date:	Thursday, July 11, 2013	Sheet 9 of 26

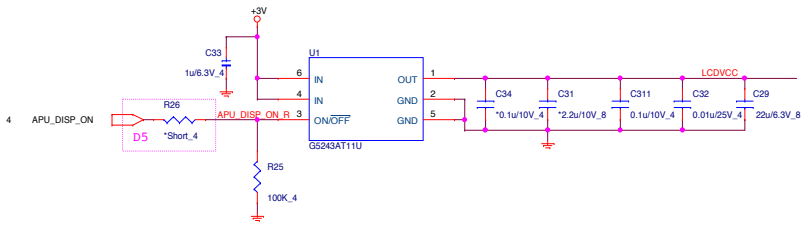
		Quanta Computer Inc.
		PROJECT : ZBL
Size	Document Number	Rev
	DDR3 MEMORY DOWN X 16	1A
Date	Thursday, July 11, 2014	Sheet 10 of 28



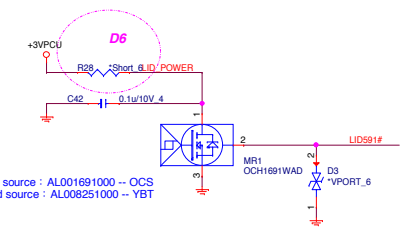
LCD CONNECTOR



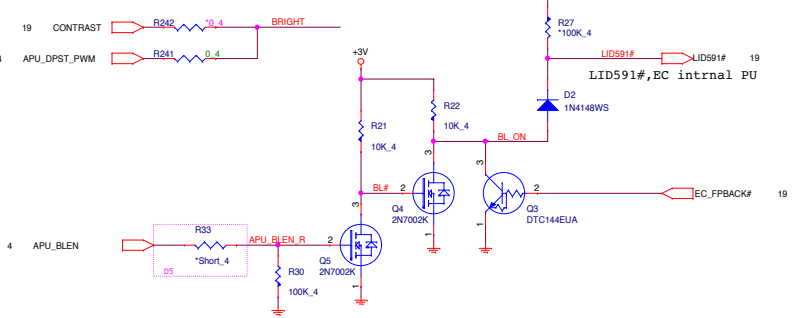
LCD Power



Lid Switch (Hall sensor)

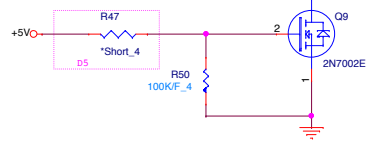
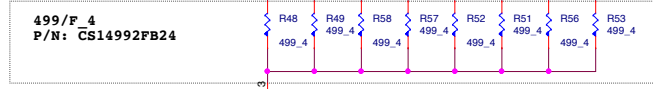
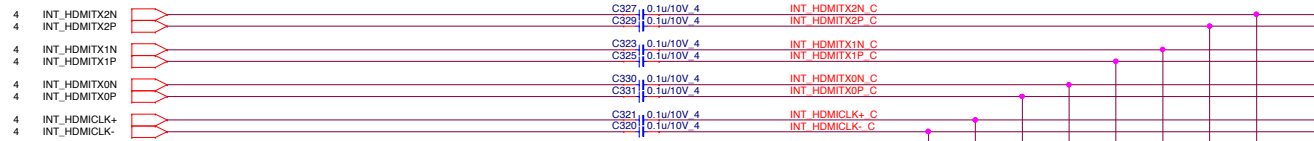


Backlight Control

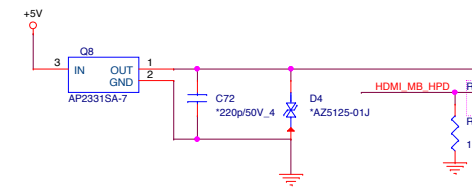
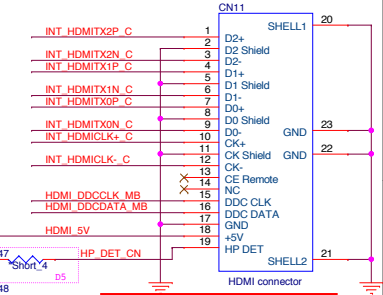


HDMI

From PCH

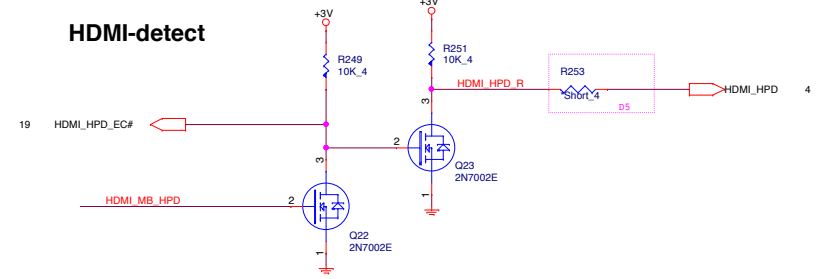


HDMI connector



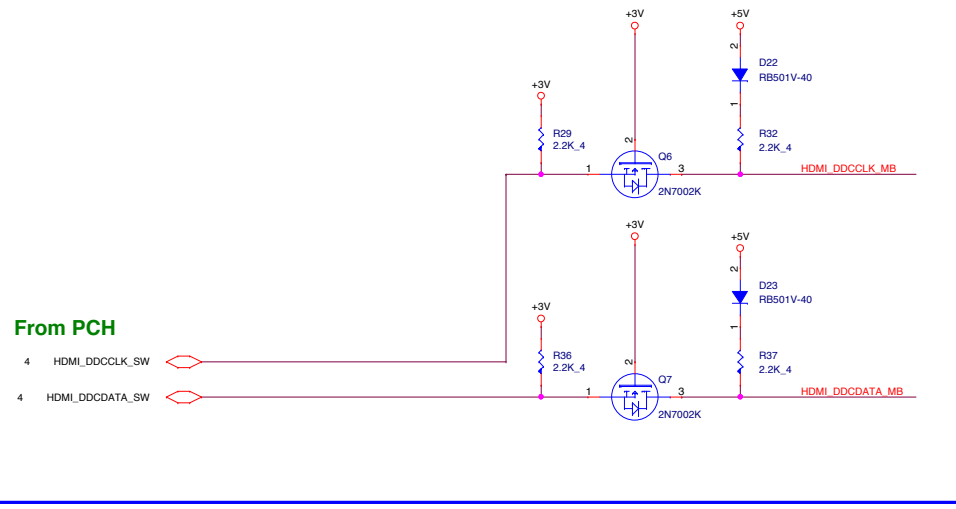
C01- change footprint

HDMI-detect

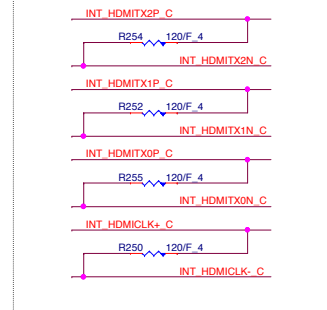



I2C

From PCH



EMI



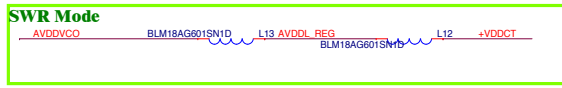
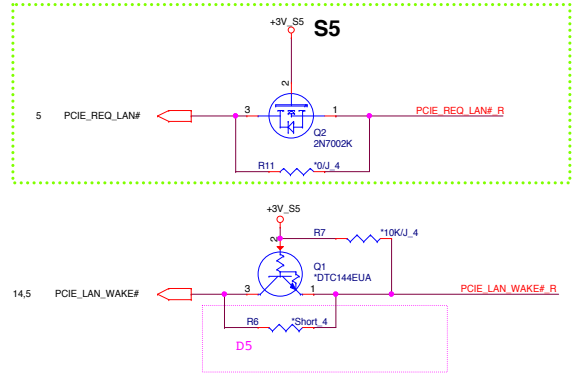
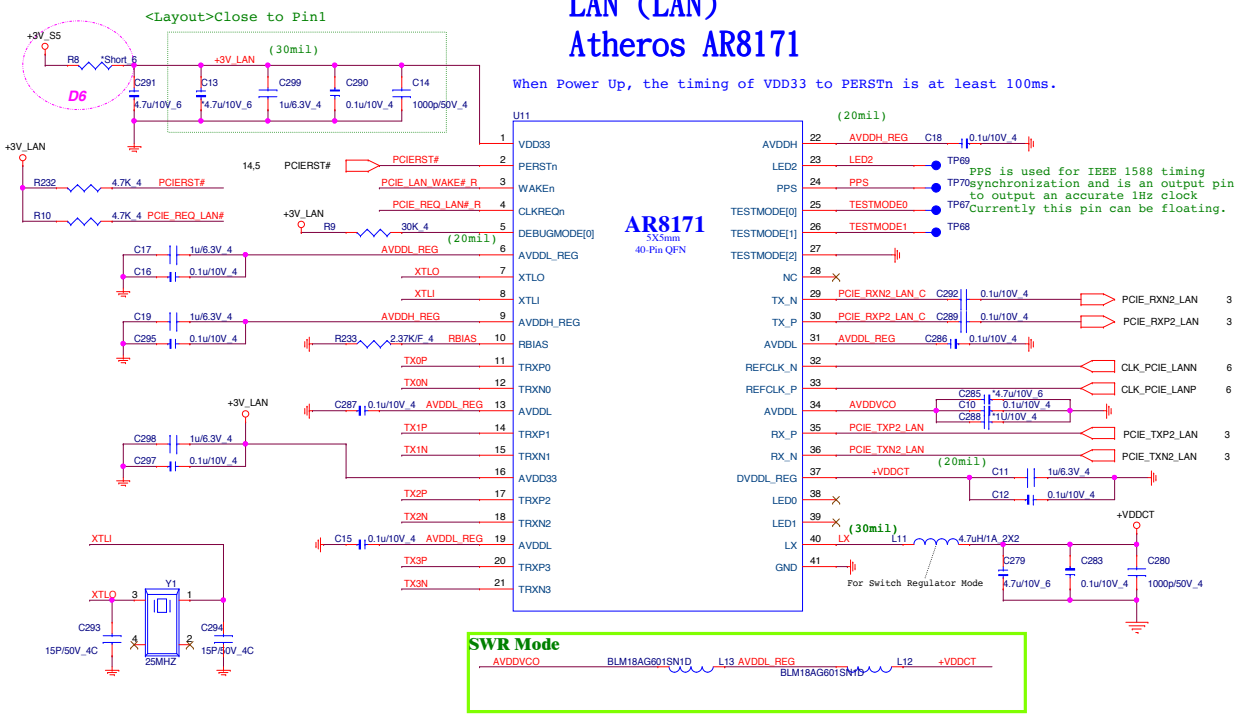

Quanta Computer Inc.
PROJECT : ZHL
HDMI (PS8101)
 Date: Thursday, July 11, 2013 Sheet 12 of 26

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

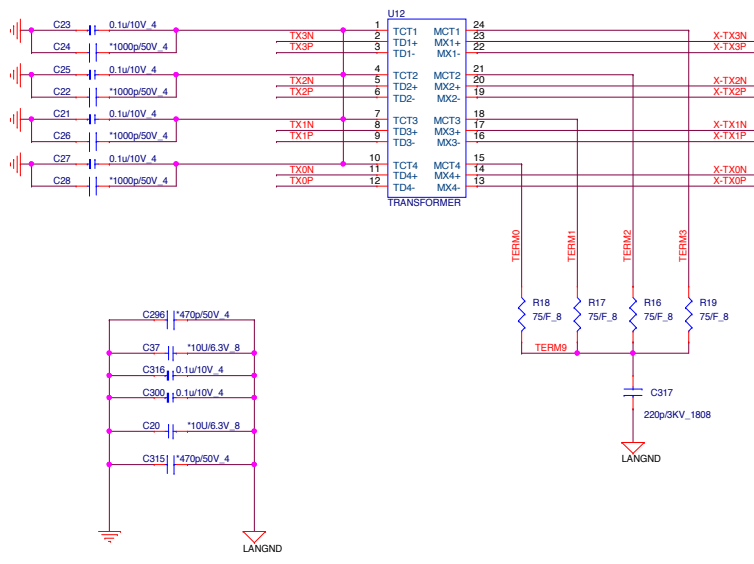


LAN (LAN) Atheros AR8171

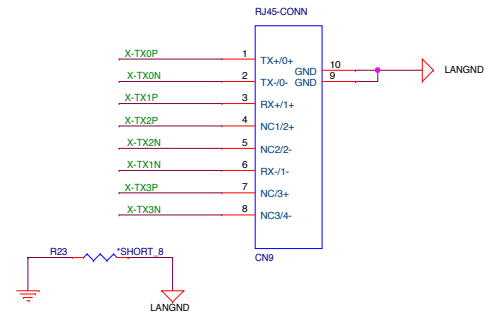
When Power Up, the timing of VDD33 to PERSTn is at least 100ms.



TRANSFORMER(LAN)



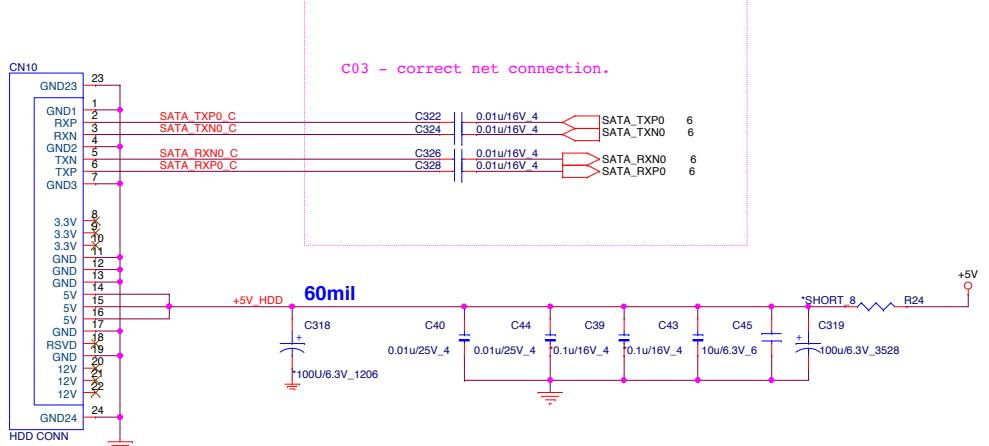
RJ45(LAN)



Quanta Computer Inc.
PROJECT : ZHL

Size	Document Number	Rev
	LAN/LED/EMI/HOLE	1A
Date:	Thursday, July 11, 2013	Sheet 13 of 25

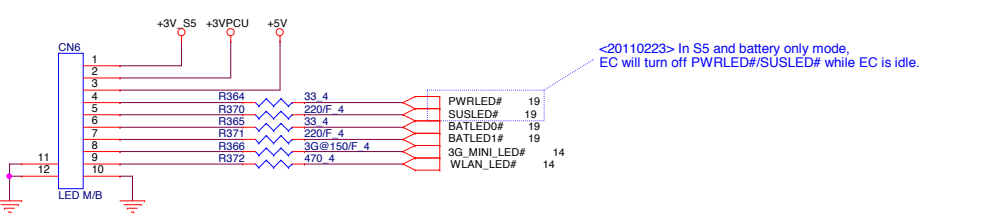
2.5" SATA HDD (HDD)



Power Sequence Connector(CPU)

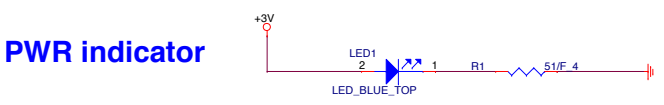
1	GND	11	SUSON	21	VRON
2	NBSWON#	12	MAINON	22	RESERVE
3	S5_ON	13	RESERVE	23	CPU_COREPG
4	RESERVE	14	RESERVE	24	PWROK_EC
5	RESERVE	15	RESERVE	25	RESERVE
6	RESERVE	16	RESERVE	26	APU_PWRGD
7	PCH_RSMRST#	17	RESERVE	27	RESERVE
8	DNBSWON#	18	RESERVE	28	LDT_RST#
9	SUSC#	19	RESERVE	29	A_RST#_R
10	SUSB#	20	HWPG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


LED DB (UIF)



Stitching Cap(EMC)

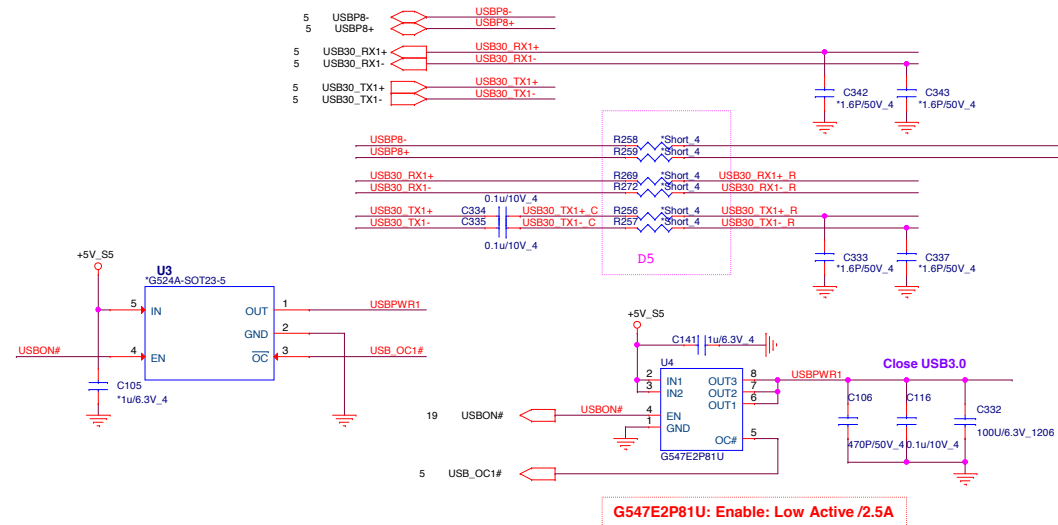
POWER LED(UIF)





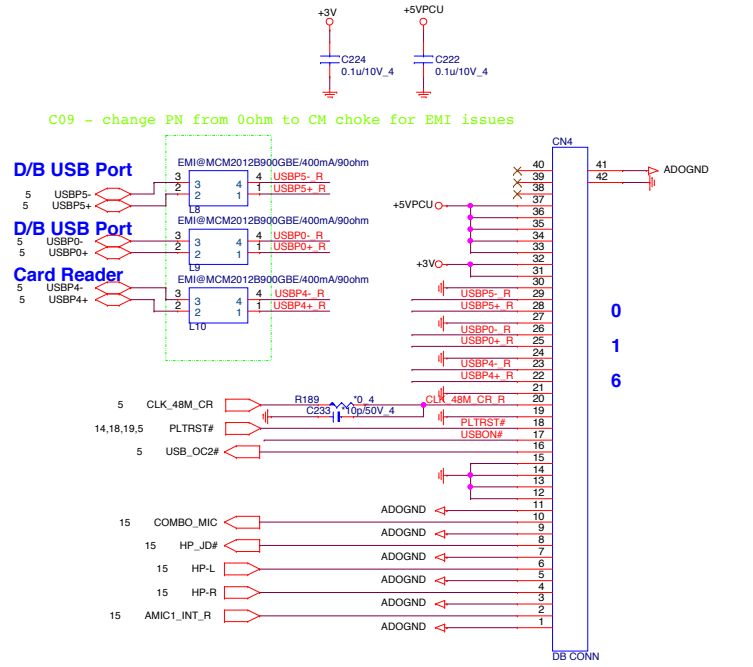
Quanta Computer Inc.
PROJECT : ZHL

Size	Document Number	Rev
Date: Thursday, July 11, 2013	SATA HDD/LED/SW	1A
Sheet	16	of 26

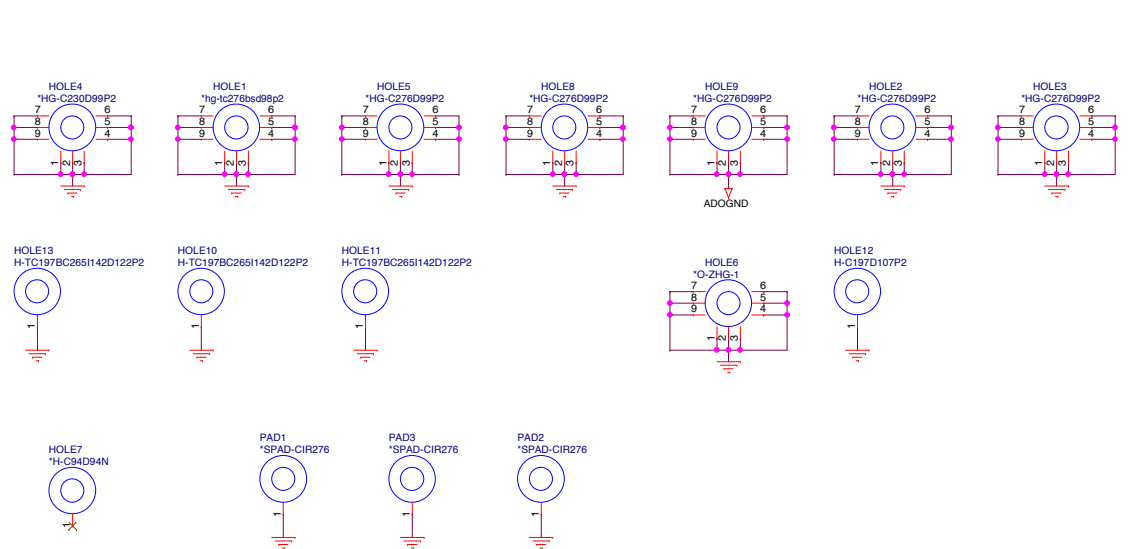


G547E2P81U: Enable: Low Active /2.5A

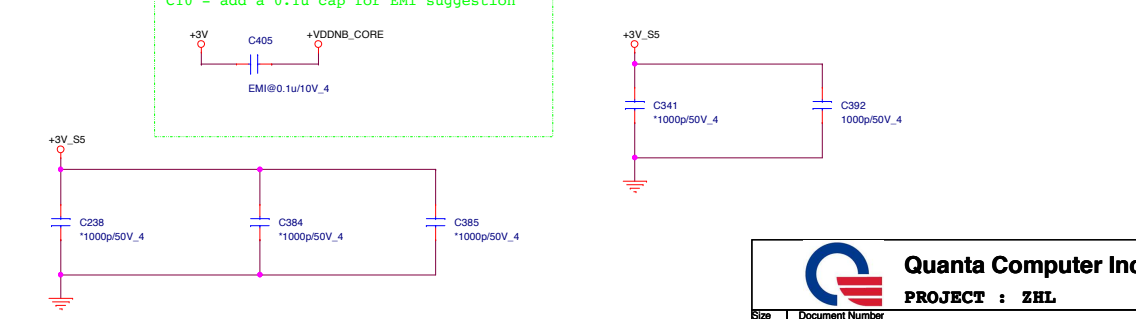
IO D/B (UIF)



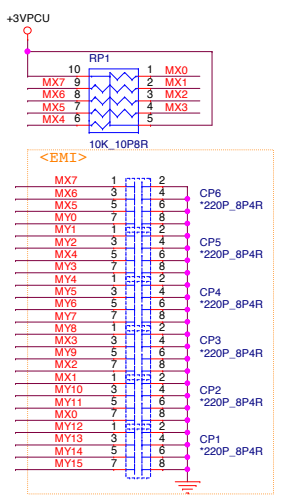
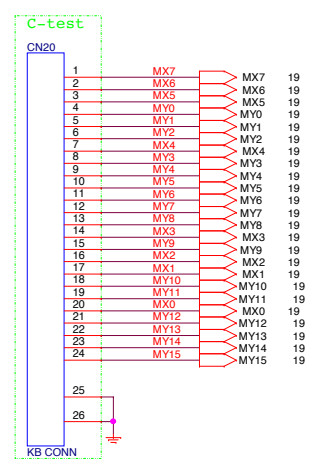
HOLE(OTH)



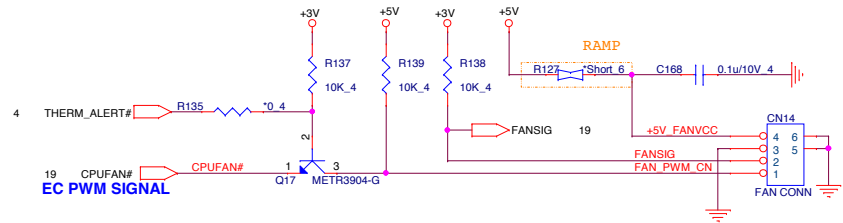
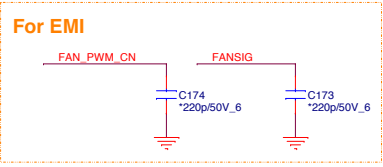
EMI



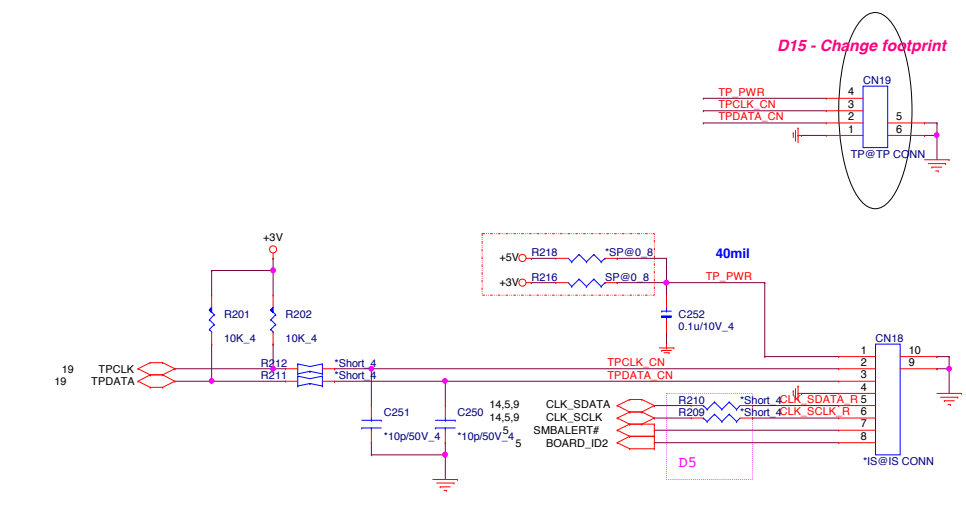
KEYBOARD (KBC)



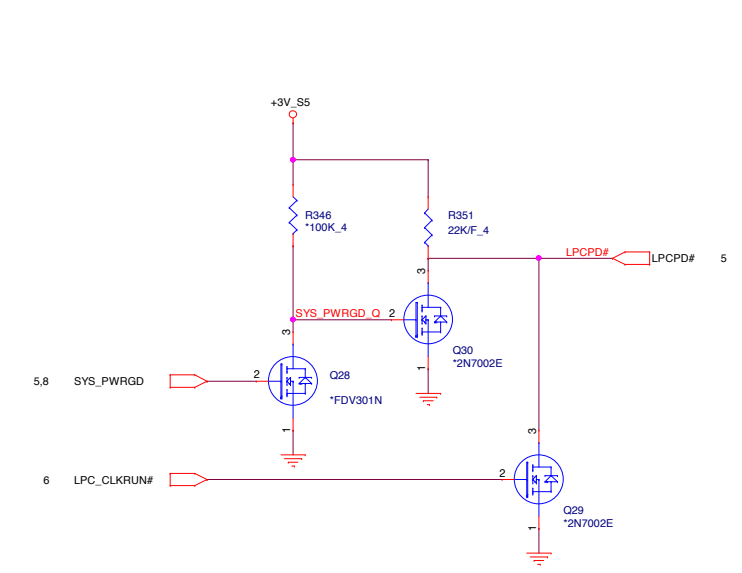
CPU FAN CTRL (THM)



TOUCH PAD (TPD)

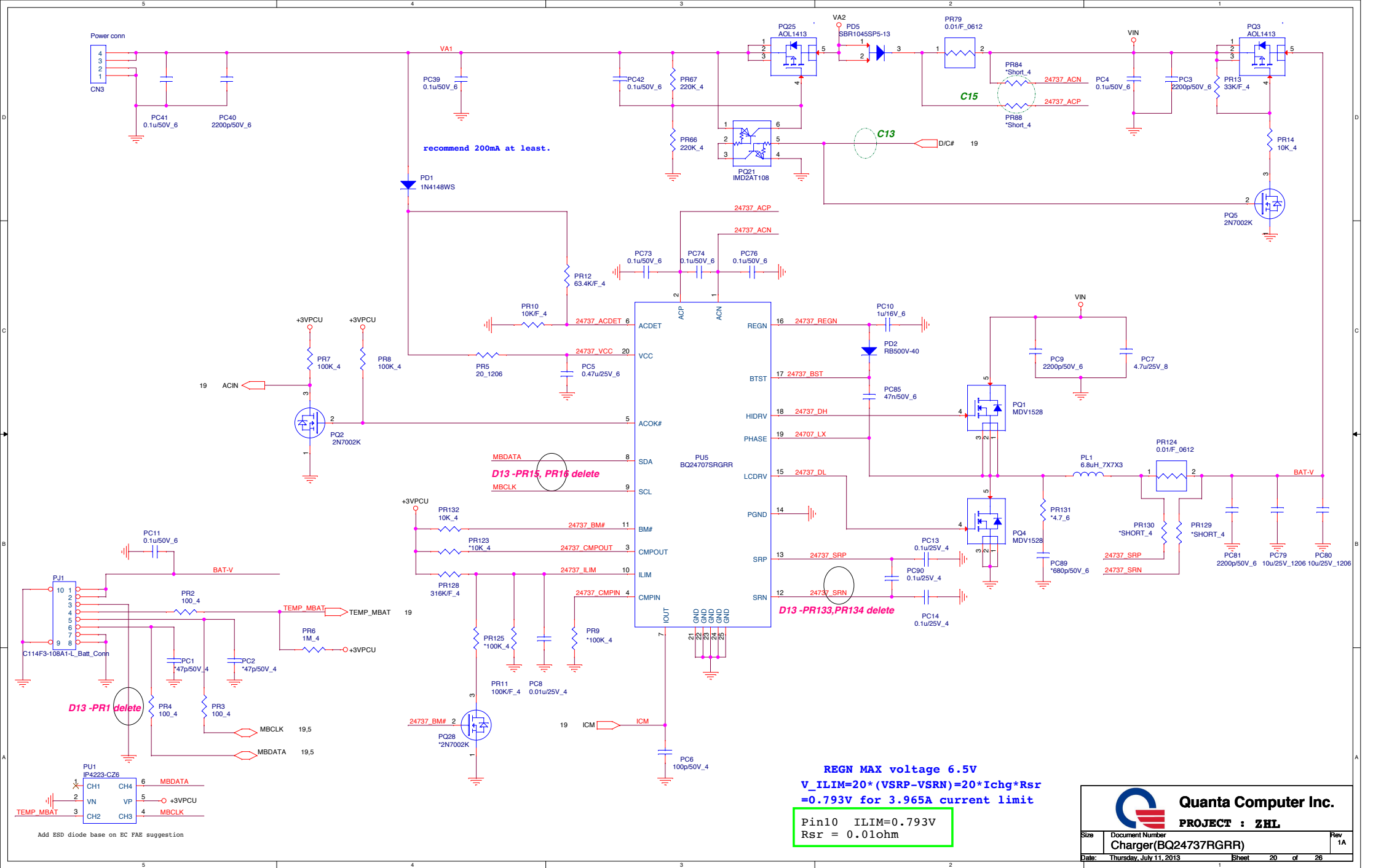


TPM (TPM)




Quanta Computer Inc.
PROJECT : ZHL

Size	Document Number	Rev
	KB/BT/TP/LED/Power Connector	1A
Date:	Thursday, July 11, 2013	Sheet 18 of 26

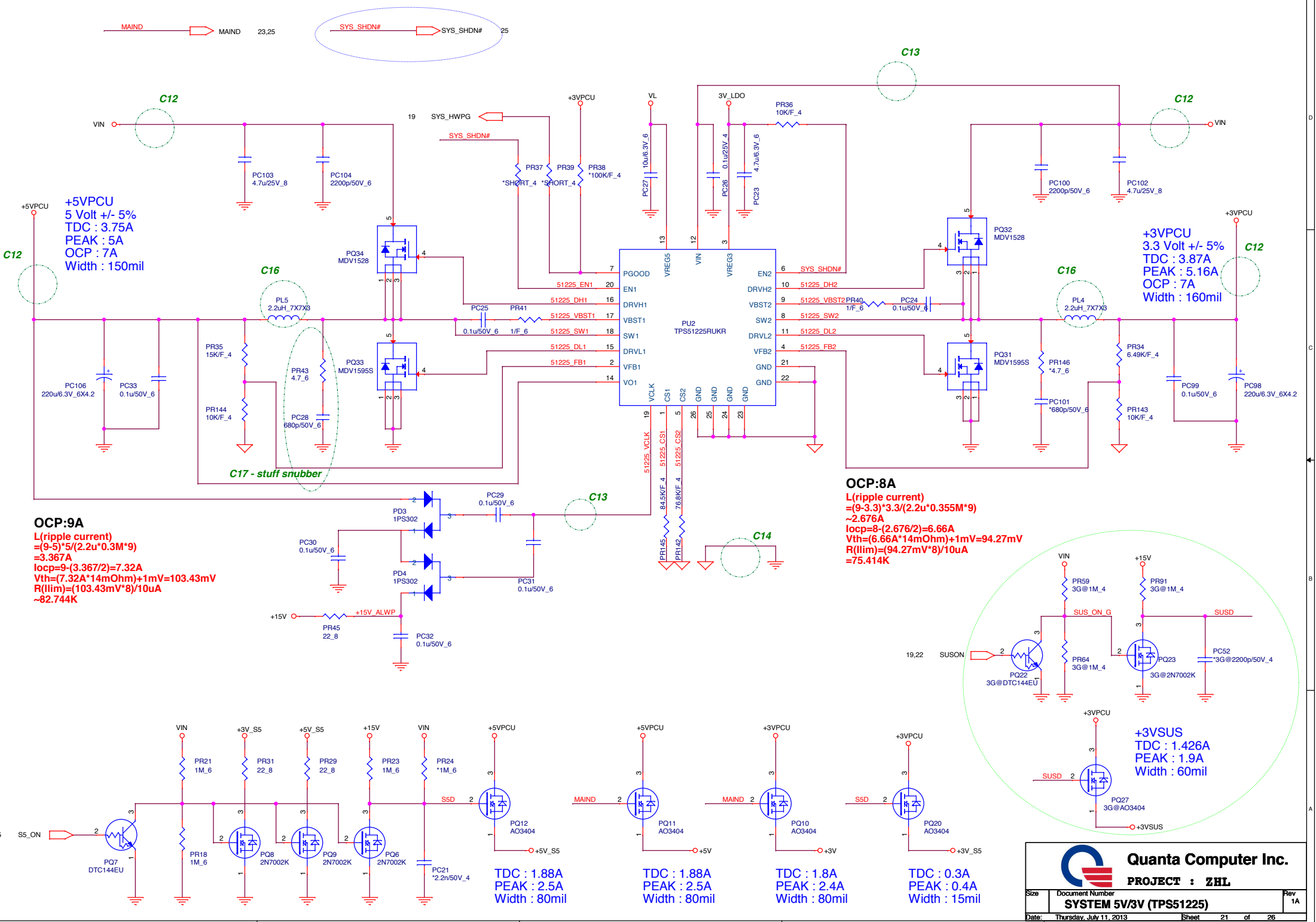


recommend 200mA at least.

REGN MAX voltage 6.5V
 $V_{ILIM} = 20 * (V_{SRP} - V_{SRN}) = 20 * I_{chg} * R_{sr}$
 $= 0.793V$ for 3.965A current limit
Pin10 ILIM=0.793V
Rsr = 0.01ohm

 Quanta Computer Inc. PROJECT : ZHL		Size	Document Number	Rev
			Charger(BQ24737RGR)	1A
Date:	Thursday, July 11, 2013	Sheet	20	of 26

Add ESD diode base on EC FAB suggestion

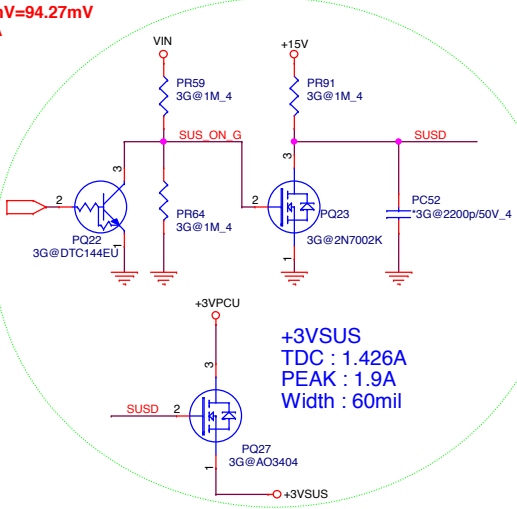


+5VPCU
 5 Volt +/- 5%
 TDC : 3.75A
 PEAK : 5A
 OCP : 7A
 Width : 150mil

+3VPCU
 3.3 Volt +/- 5%
 TDC : 3.87A
 PEAK : 5.16A
 OCP : 7A
 Width : 160mil

OCP:9A
 L(ripple current)
 $= (9-5) \cdot 5 / (2.2 \mu \cdot 0.3M \cdot 9)$
 $= 3.367A$
 $I_{ocp} = 9 - (3.367/2) = 7.32A$
 $V_{th} = (7.32A \cdot 14m\Omega) + 1mV = 103.43mV$
 $R(I_{lim}) = (103.43mV \cdot 8) / 10\mu A$
 $\approx 82.744K$

OCP:8A
 L(ripple current)
 $= (9-3.3) \cdot 3.3 / (2.2 \mu \cdot 0.355M \cdot 9)$
 $\approx 2.676A$
 $I_{ocp} = 8 - (2.676/2) = 6.66A$
 $V_{th} = (6.66A \cdot 14m\Omega) + 1mV = 94.27mV$
 $R(I_{lim}) = (94.27mV \cdot 8) / 10\mu A$
 $= 75.414K$



+3VSUS
 TDC : 1.426A
 PEAK : 1.9A
 Width : 60mil

TDC : 1.88A
 PEAK : 2.5A
 Width : 80mil

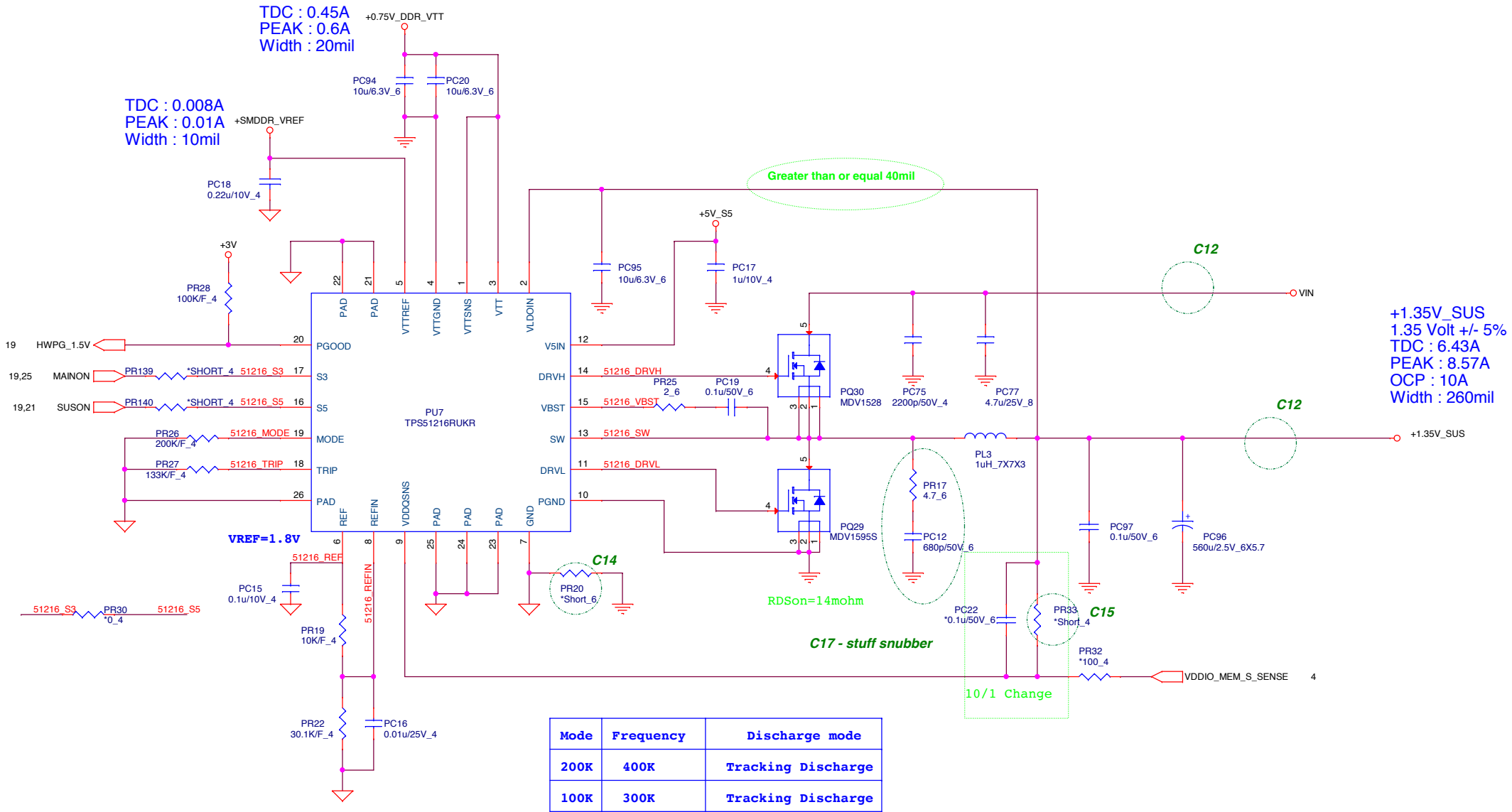
TDC : 1.88A
 PEAK : 2.5A
 Width : 80mil

TDC : 1.8A
 PEAK : 2.4A
 Width : 80mil

TDC : 0.3A
 PEAK : 0.4A
 Width : 15mil

TDC : 0.45A
 PEAK : 0.6A
 Width : 20mil

TDC : 0.008A
 PEAK : 0.01A
 Width : 10mil



+1.35V_SUS
 1.35 Volt +/- 5%
 TDC : 6.43A
 PEAK : 8.57A
 OCP : 10A
 Width : 260mil

VREF=1.8V

Greater than or equal 40mil

RDSon=14mohm

C17 - stuff snubber

10/1 Change

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

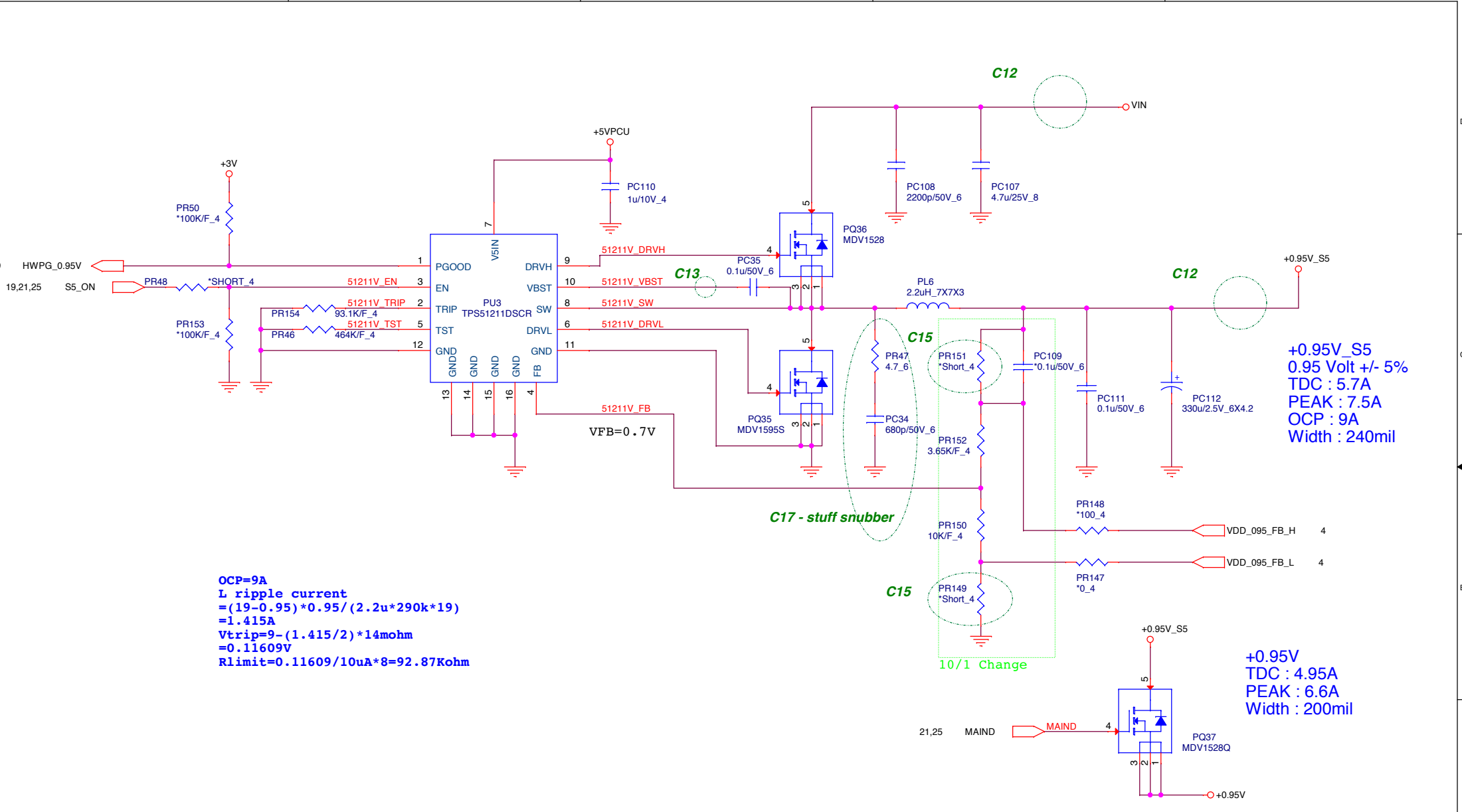
	S3	S5	+1.35VSUS	REF	VTT
S0	1	1	ON	ON	ON
S3 (mainon off)	0	1	ON	ON	OFF
S4/S5	0	0	OFF	OFF	OFF

OCP=11A
 I ripple current
 $= (19-1.35) * 1.35 / (2.2u * 400k * 19)$
 $= 1.425A$
 $V_{trip} = 11 - (1.425 / 2) * 14mohm$
 $= 10.98967V$
 $R_{limit} = 10.98967 / 10uA * 8 = 137.37Kohm$

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	DDR 1.5V(TPS51216)	1A

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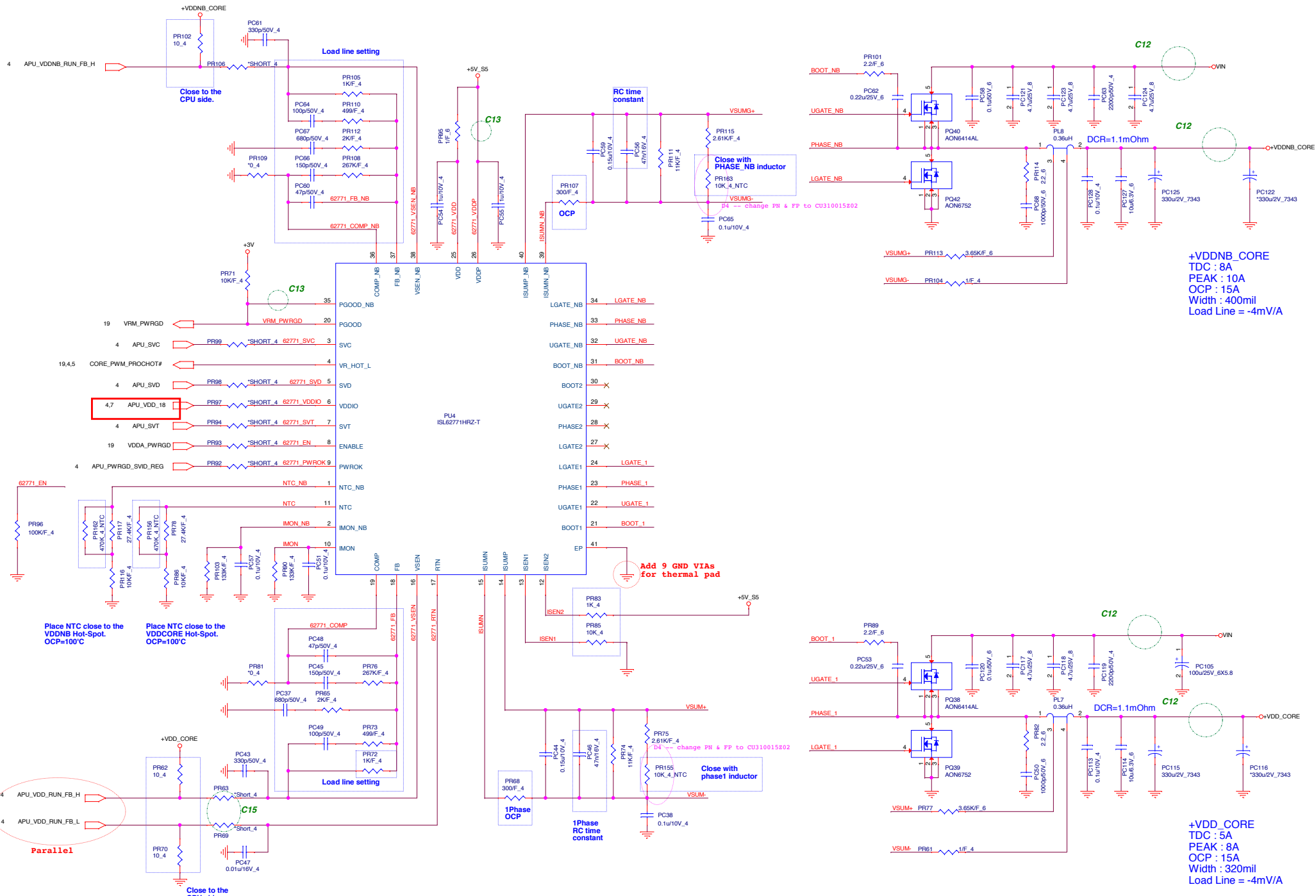
OCP=9A
L ripple current
 $= (19 - 0.95) * 0.95 / (2.2u * 290k * 19)$
 $= 1.415A$
 $V_{trip} = 9 - (1.415 / 2) * 14mohm$
 $= 0.11609V$
 $R_{limit} = 0.11609 / 10uA * 8 = 92.87Kohm$

+0.95V_S5
 0.95 Volt +/- 5%
 TDC : 5.7A
 PEAK : 7.5A
 OCP : 9A
 Width : 240mil

+0.95V
 TDC : 4.95A
 PEAK : 6.6A
 Width : 200mil

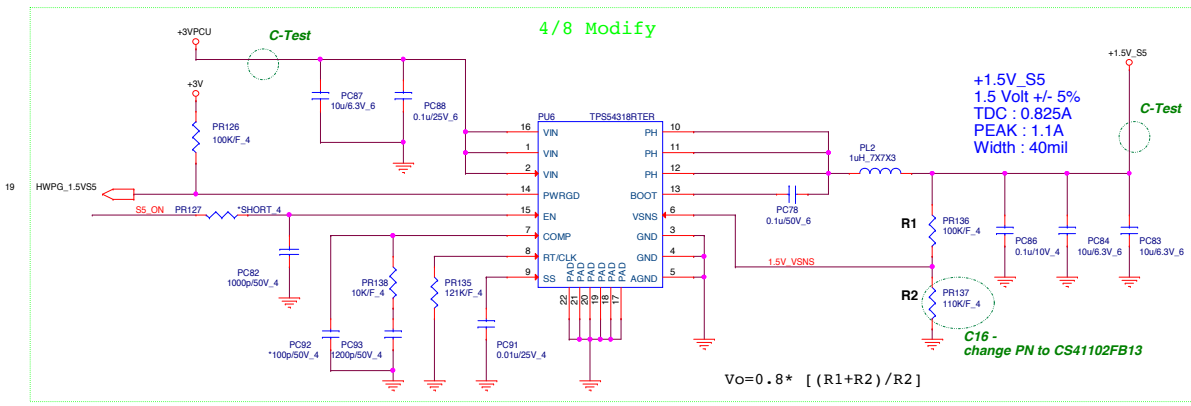
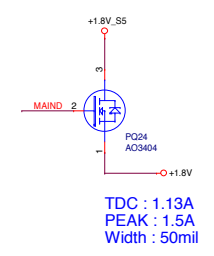
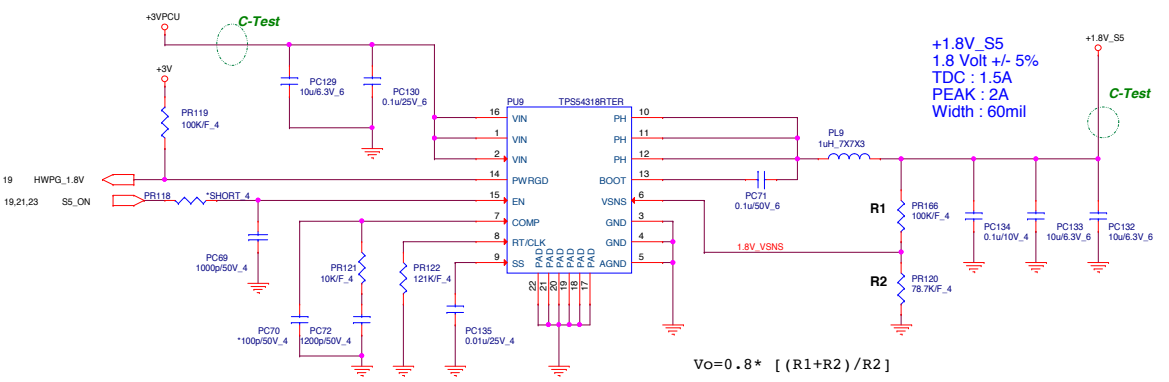
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Size	Document Number	Rev
	+0.95V_S5(TPS51211)	1A
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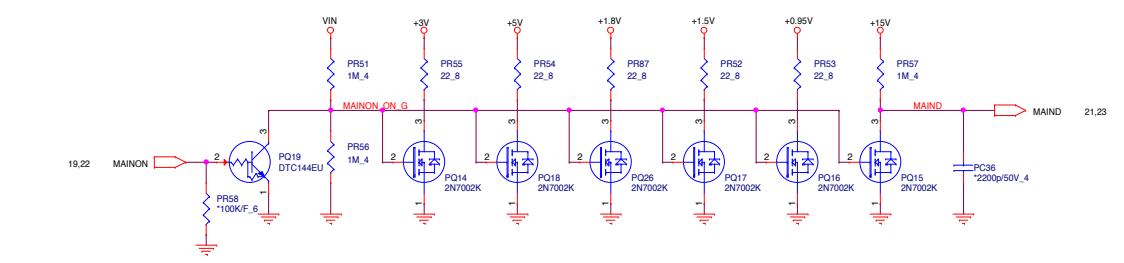
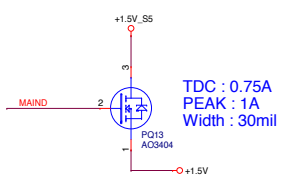
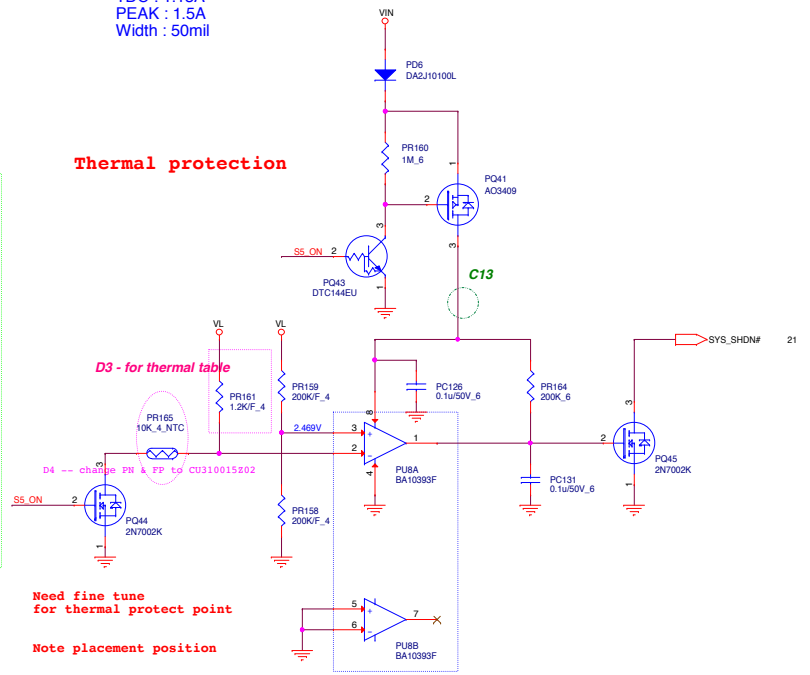


+VDDNB_CORE
 TDC : 8A
 PEAK : 10A
 OCP : 15A
 Width : 400mil
 Load Line = -4mV/A

+VDD_CORE
 TDC : 5A
 PEAK : 8A
 OCP : 15A
 Width : 320mil
 Load Line = -4mV/A




Thermal protection



MODEL	REV	CHANGE LIST	Model	ZHL MB BOARD	
			Page	From	To
ZHL M/B	A	First Release	1	1A	3A
			2	1A	3A
			3	1A	3A
	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	4	1A	3A
			5	1A	3A
			6	1A	3A
			7	1A	3A
			8	1A	3A
			9	1A	3A
			10	1A	3A
			11	1A	3A
			12	1A	3A
			13	1A	3A
			14	1A	3A
			15	1A	3A
			16	1A	3A
			17	1A	3A
			18	1A	3A
			19	1A	3A
			20	1A	3A
			21	1A	3A
			22	1A	3A
			23	1A	3A
			24	1A	3A
			25	1A	3A
			26	1A	3A
			27	1A	3A
			28	1A	3A
			29		
			30		
			31		
			32		
			33		
			34		
			35		
			36		
			37		
38					
39					
40					
41					
	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 00HM 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 Touch pad serirg 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 / Derecoy 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			

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



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Size Document Number Rev
CHANGE LIST 1A

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