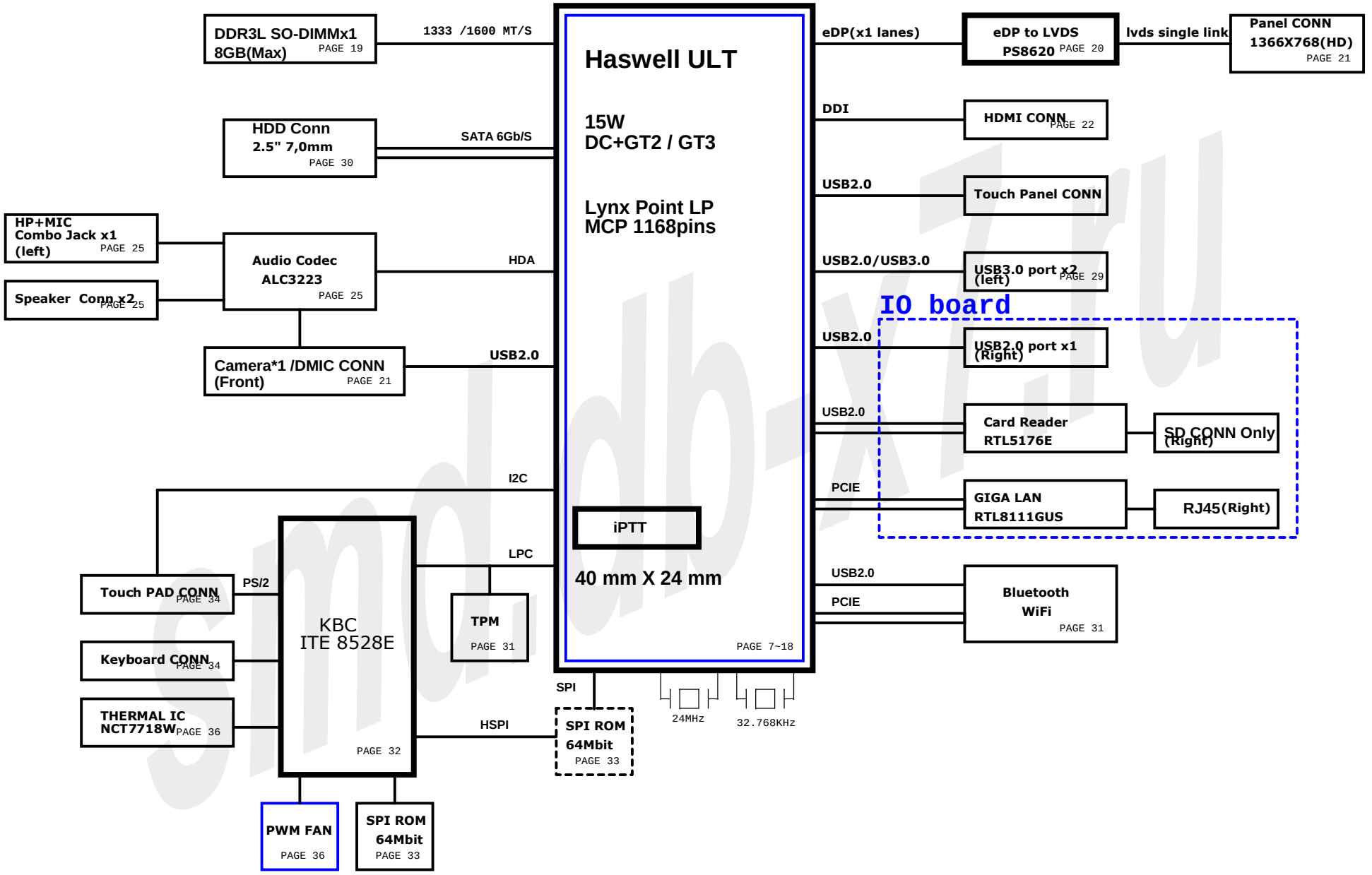
MODEL	REV	CHANGE LIST
ZM3 MB	3A	Reference to ECN E201307-3790

Model / Page	ZM3 MB FROM	ZM3 MB TO
1		3A
2		3A
3		3A
4		3A
5		3A
6		3A
7		3A
8		3A
9		3A
10		3A
11		3A
13		3A
14		3A
15		3A
16		3A
17		3A
18		3A
19		3A
20		3A
21		3A
22		3A
23		3A
24		3A
25		3A
26		3A
27		3A
28		3A
29		3A
30		3A
31		3A
32		3A
33		3A
34		3A
35		3A
36		3A
37		3A
38		3A
39		3A
40		3A
41		3A
42		3A
43		3A
44		3A
45		3A

QUANTA COMPUTER	PROJECT : ZM3	DOC. NO. 204	REV: 3A	ASSY: 31ZM3MB0090/31ZM3MB00A0
	APPROVED BY : Kent Weng	CHECKED BY : Kent Weng	DRAWN BY : Edison Hsu	DATE : 7, 18, 2013 SHEET 1 OF 1

ZM3 BLOCK DIAGRAM



Quanta Computer Inc.
PROJECT : ZM3

Size	Document Number	Rev
	Block Diagram	3A

Date: Thursday, July 18, 2013 Sheet 1 of 47

HSIO Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14
USB3.0	USB3_1 Port 1	USB3_2 Port 2	USB3_3 X	USB3_4 X										
PCIE			PCIE1 X	PCIE2 X	PCIE3 GIGA LAN	PCIE4 WIFI	PCIE5 X	PCIE5 X	PCIE5 X	PCIE5 X	PCIE6 X	PCIE6 X	PCIE6 X	PCIE6 X
SATA											SATA3 X	SATA2 X	SATA1 HDD	SATA0 X

USB2.0	USB2_0 Port 1	USB2_1 Port 2	USB2_2 Port 3	USB2_3 Cardreader	USB2_4 Camera	USB2_5 X	USB2_6 BT	USB2_7 Touch Panel

CLK:

Port	0	1	2	3	4	5
CLK	CLK0 X	CLK1 X	CLK2 GIGA LAN	CLK3 WIFI	CLK4 X	CLK5 X

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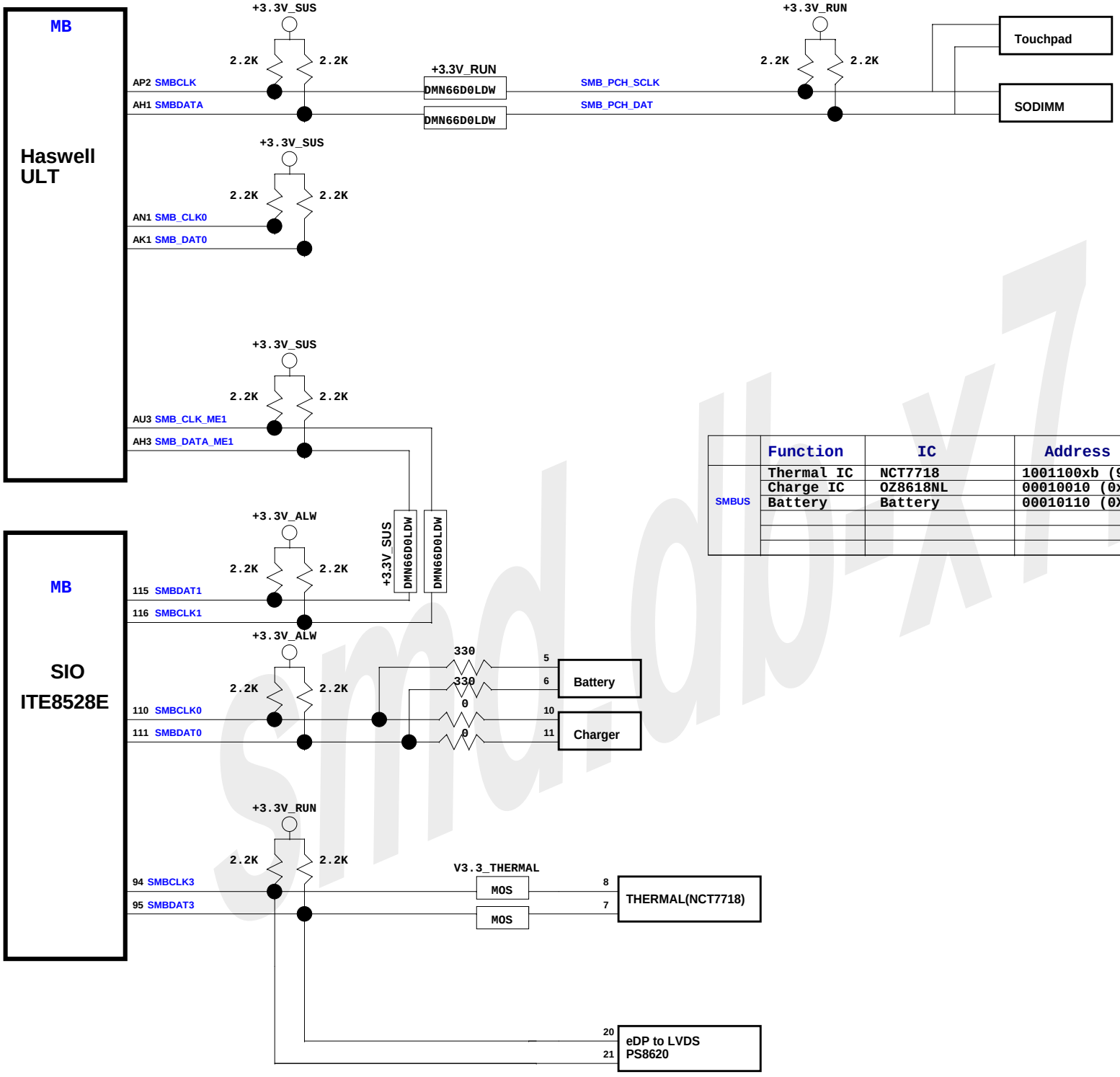
PROJECT : ZM3

Size	Document Number	Rev
	PORT ASSIGNMENT	3A

Date: Thursday, July 18, 2013 Sheet 2 of 47



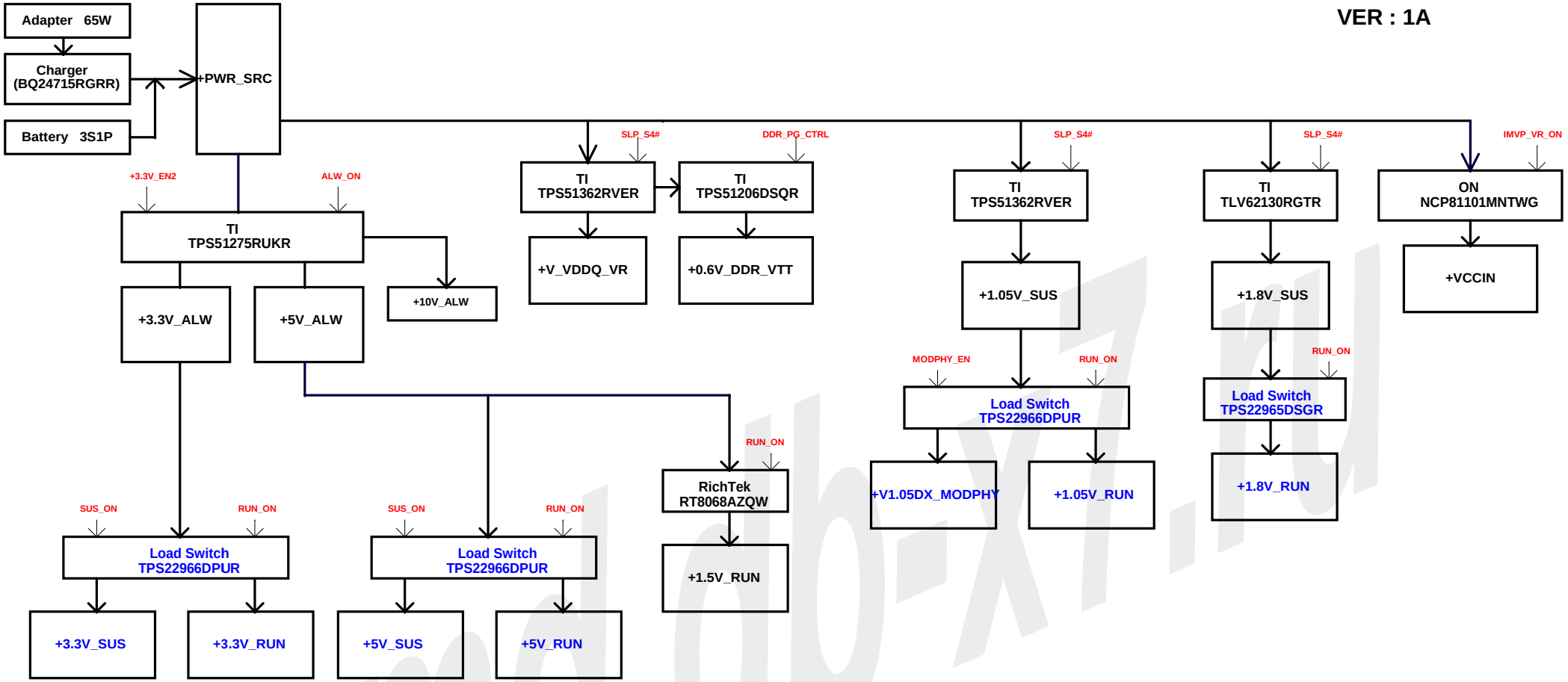
	Function	IC	Address
SMBUS	Thermal IC	NCT7718	1001100xb (98h)
	Charge IC	OZ8618NL	00010010 (0x12h)
	Battery	Battery	00010110 (0X16h)

Quanta Computer Inc.
PROJECT : ZM3

Size	Document Number	Rev
	SMBUS	3A

Date: Thursday, July 18, 2013 Sheet 3 of 47

VER : 1A

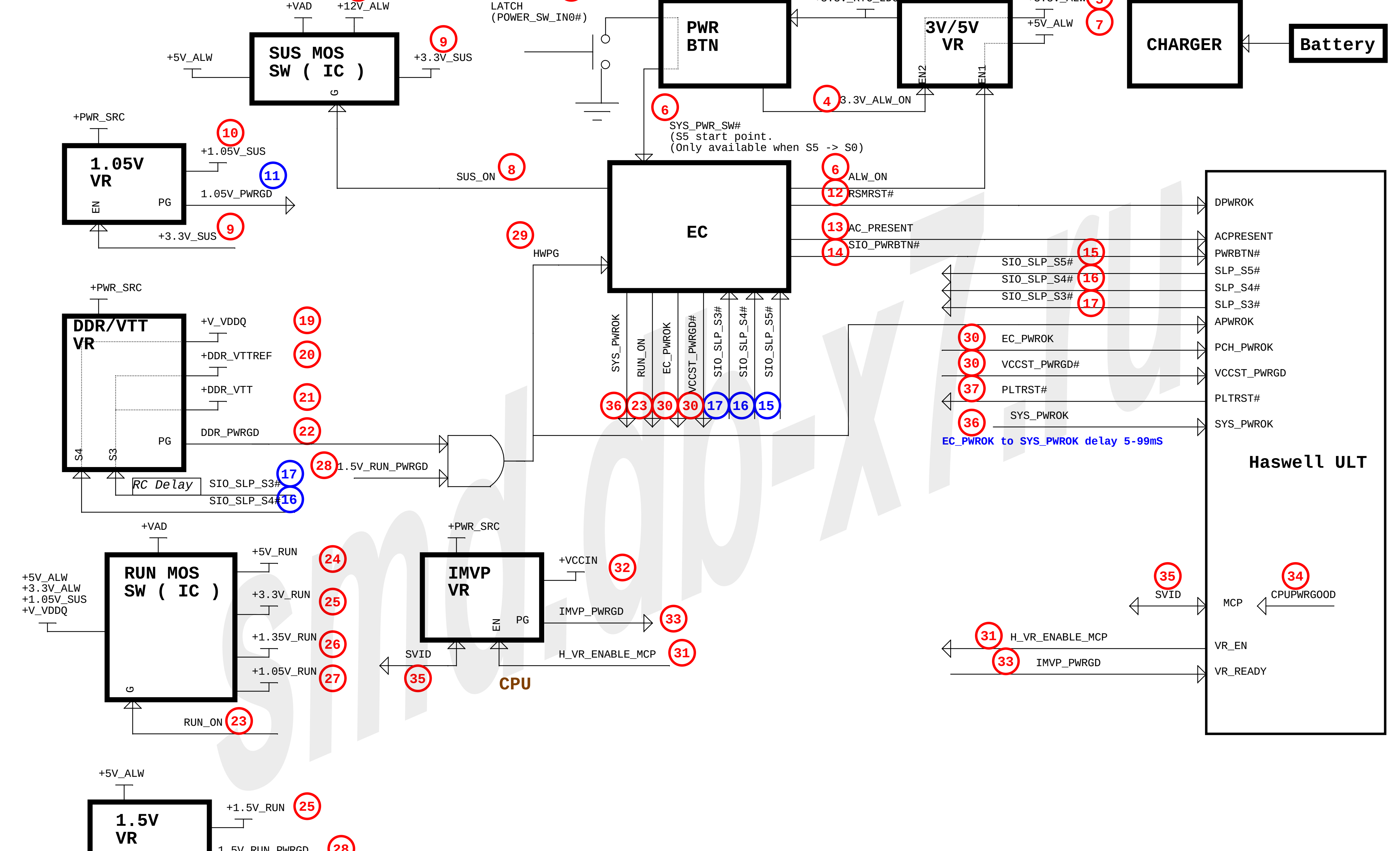


Quanta Computer Inc.
PROJECT : ZM3

Size	Document Number	Rev
	Power Block Diagram	3A

Date: Thursday, July 18, 2013 Sheet 4 of 47

Battery Mode



Quanta Computer Inc.

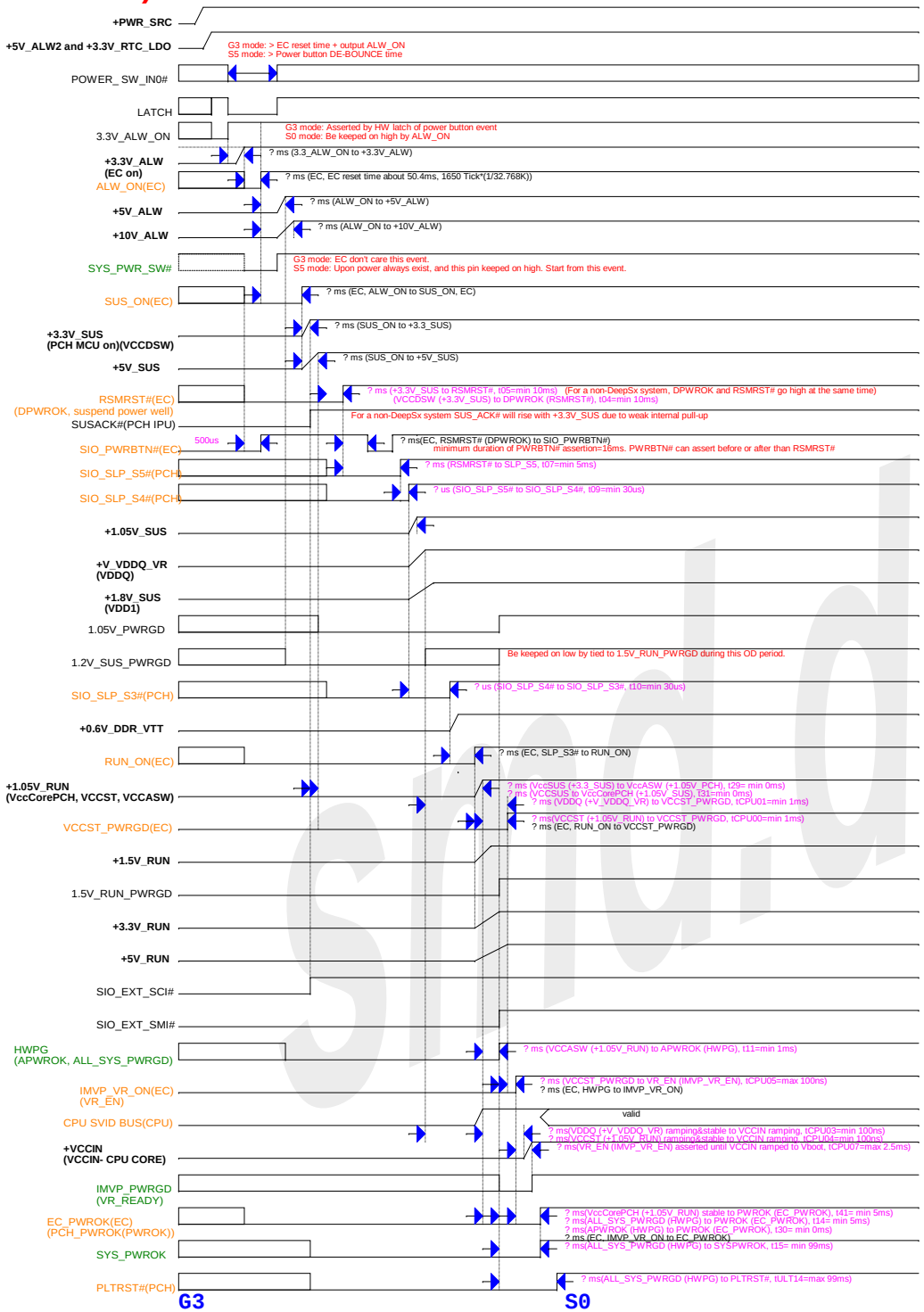
PROJECT : ZM3

Size	Document Number	Rev
	POWER SEQUENCE	3A

Date: Thursday, July 18, 2013 Sheet 5 of 47

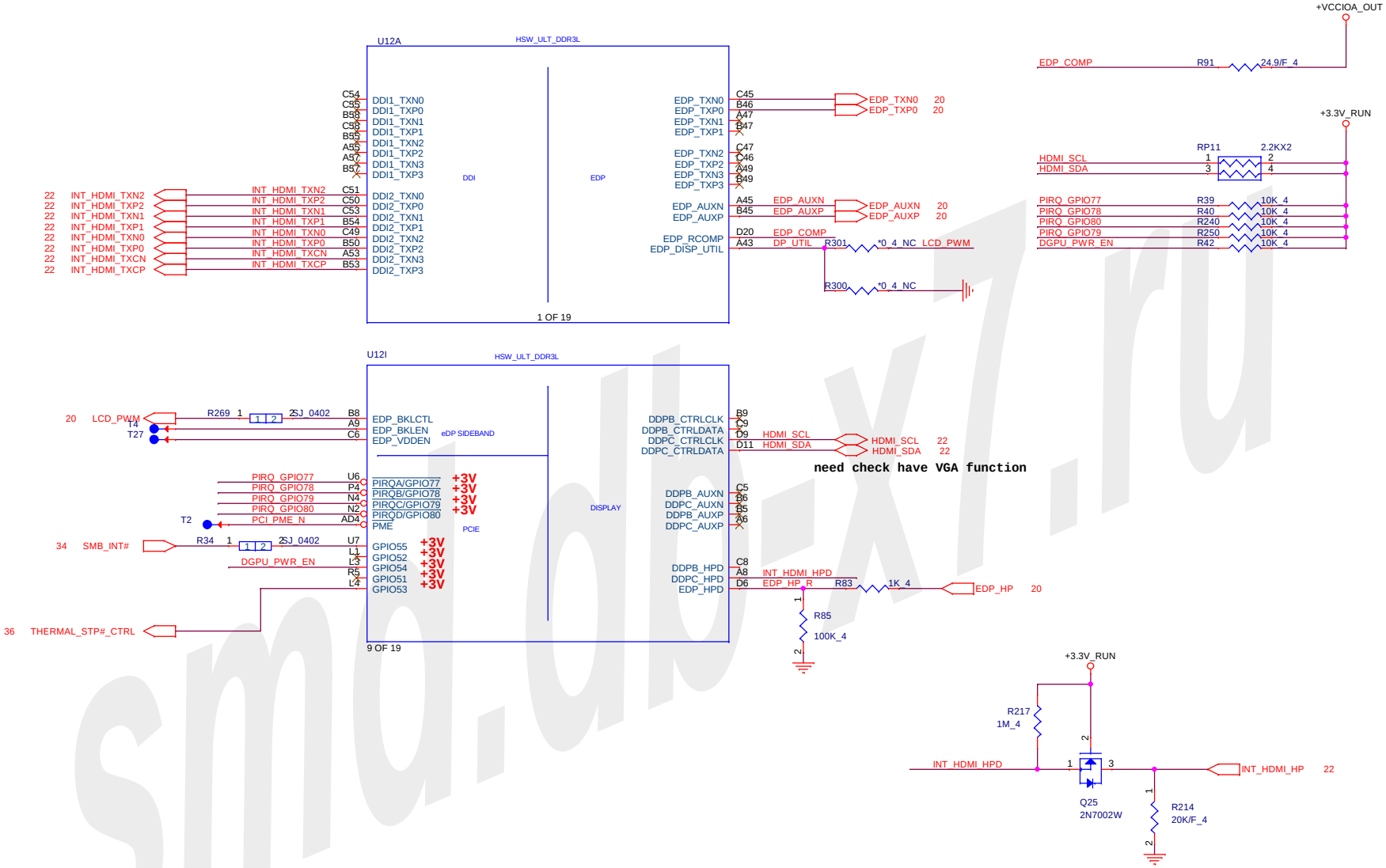
R0E Power Sequence (G3 to S0)

Shark Bay ULT PSS, 490828, Rev1.1



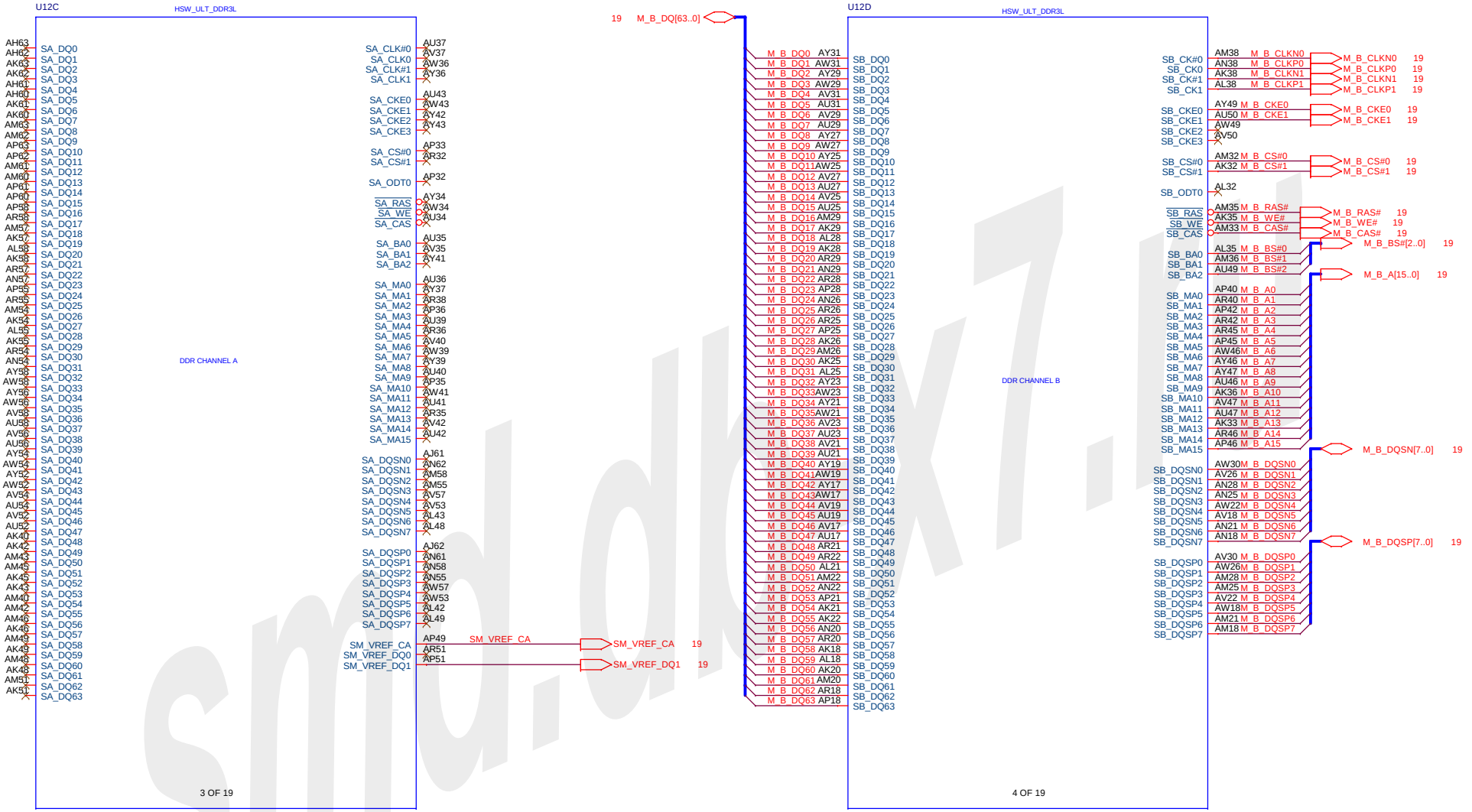
Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: G3 to S0	Rev 3A
Date: Thursday, July 18, 2013	Sheet 6 of 47	

Haswell ULT (DISPLAY)



Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: Haswell ULT 1/12	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 7 of 47	

Haswell ULT (DDR3L)

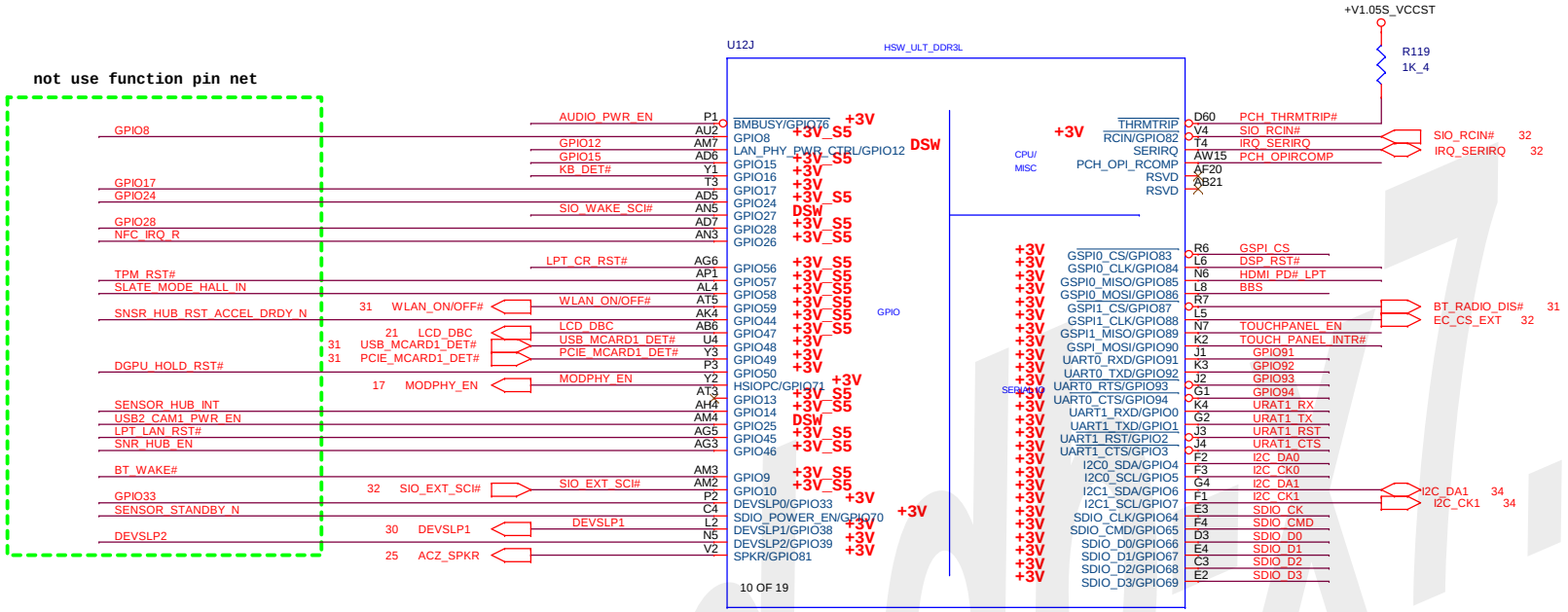


Quanta Computer Inc.

PROJECT : ZM3

Size	Document Number	Rev
	Haswell ULT 2/12	3A
Date: Thursday, July 18, 2013	Sheet 8 of 47	

Hasswell ULT(GPIO,LPIO,MISC)

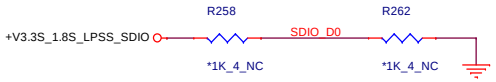


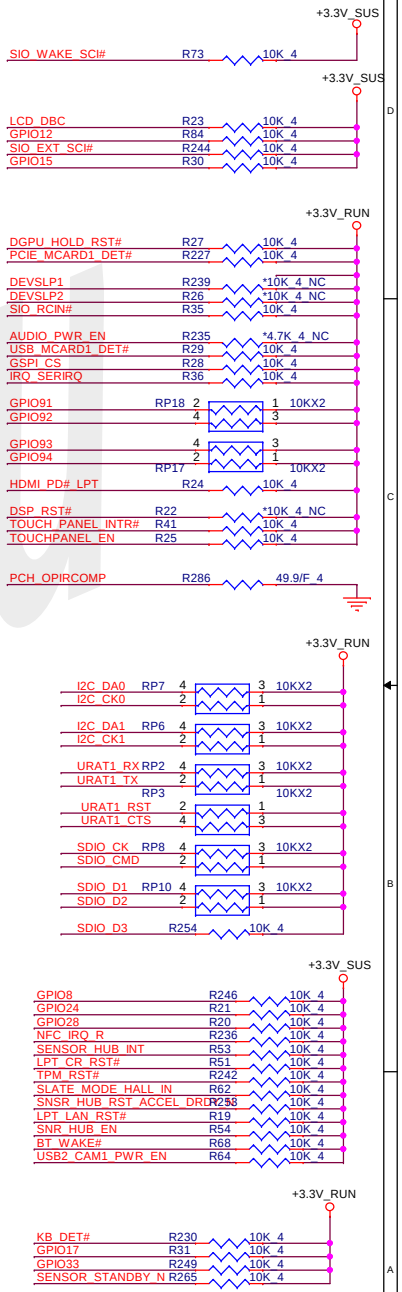
No Reboot Strap(GPIO81)	
NC	Default
PU	EN

GPIO86:Boot BIOS Strap Bit	
PU	LPC
PD	SPI (Default IPD)

TLS CONFIDENTIALITY STRAP(GPIO15)	
NC	Default
PU	EN

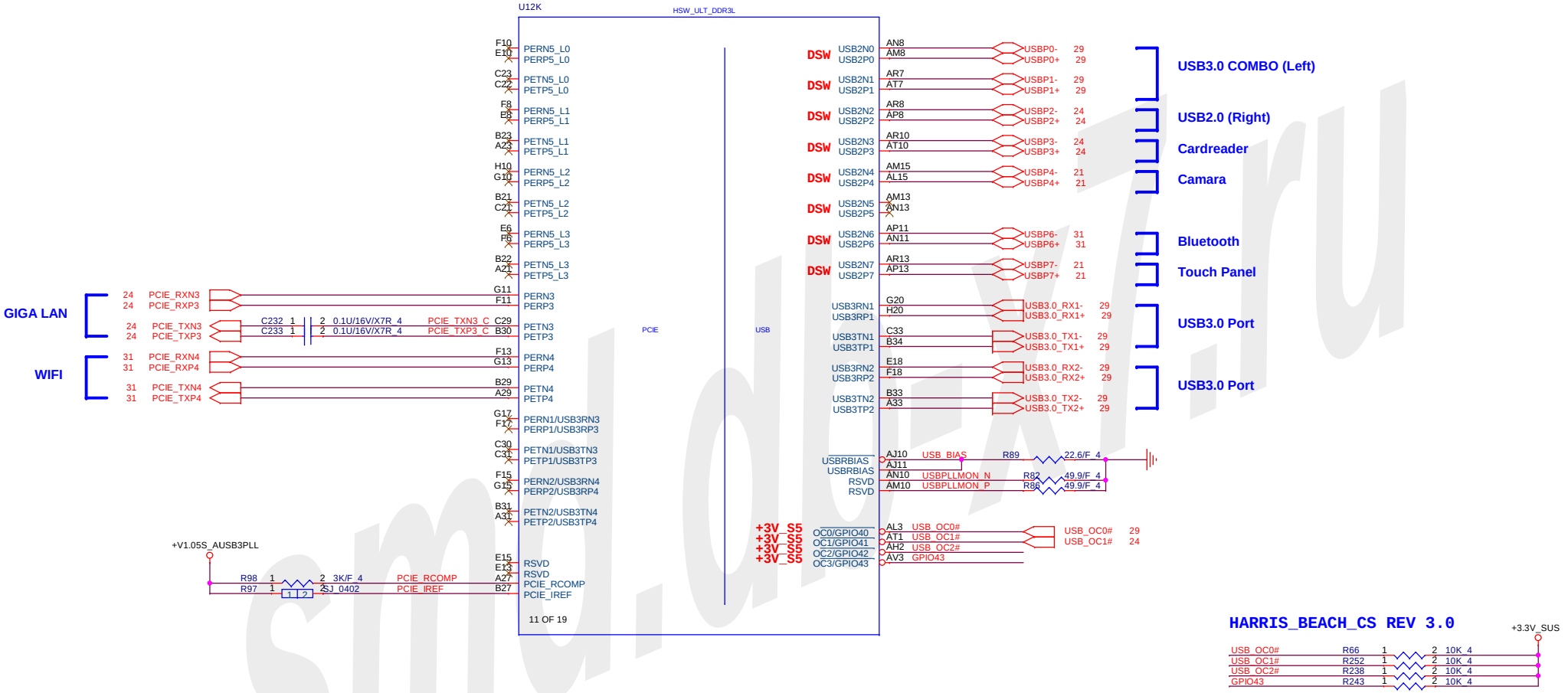
GPIO66 : Top-Block Swap	
R1547	ENABLE
R1547_NC	DISABLE(Default)





Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: Haswell ULT 3/12	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 9 of 47	

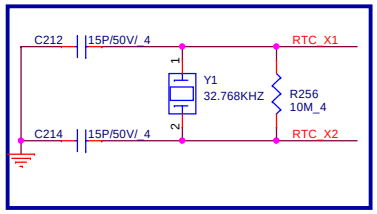
Haswell ULT (PCIE,USB)

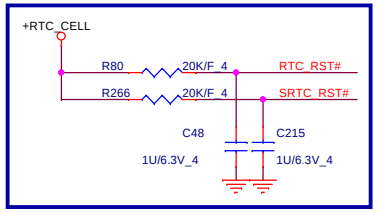


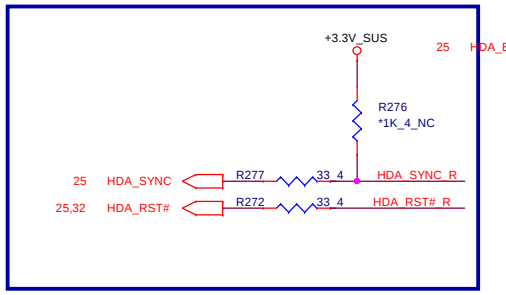
HARRIS_BEACH_CS REV 3.0

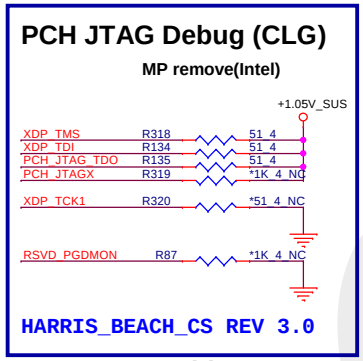
Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: Haswell ULT 4/12	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 10 of 47	

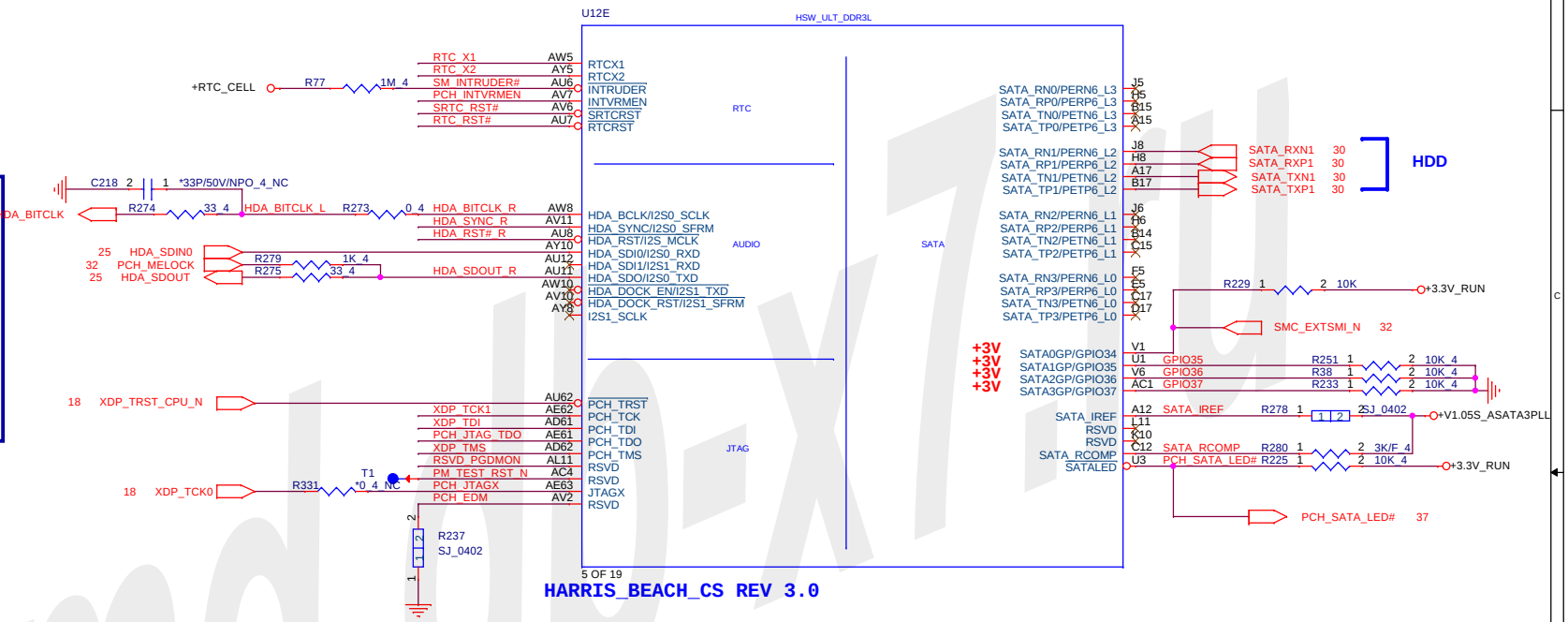
Haswell ULT (RTC, HDA, JTAG, SATA)











DFXTESTMODE
HIGH - DFXTESTMODE DISABLED(DEFAULT)
LOW - DFXTESTMODE ENABLED

PCH Strap Table

Pin Name	Strap description	Sampled	Configuration	note
SPKR	No reboot mode setting	PWROK	0 = Default (weak pull-down 20K) 1 = Setting to No-Reboot mode	
HDA_SDO	Flash Descriptor Security Override / Intel ME Debug Mode	PWROK	0 = Security Effect (Int PD) 1 = Can be Override	
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up	+RTC_CELL R271 *330K_4_NC PCH_INTVRMEN R270 330K_4

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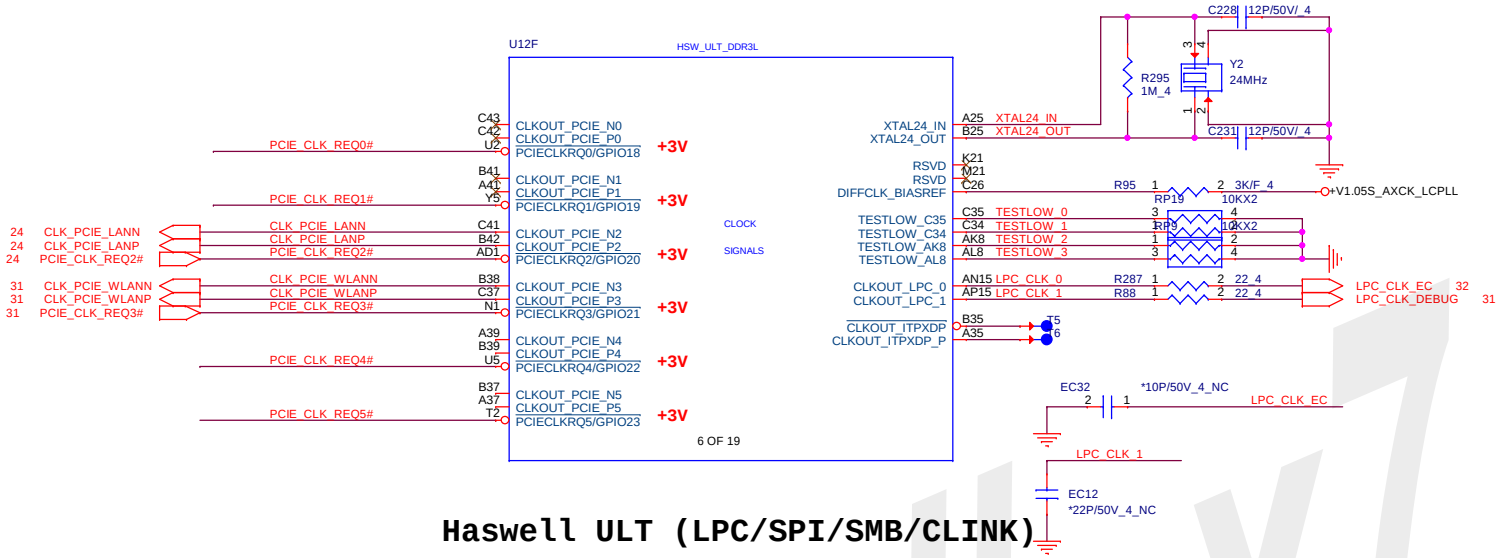
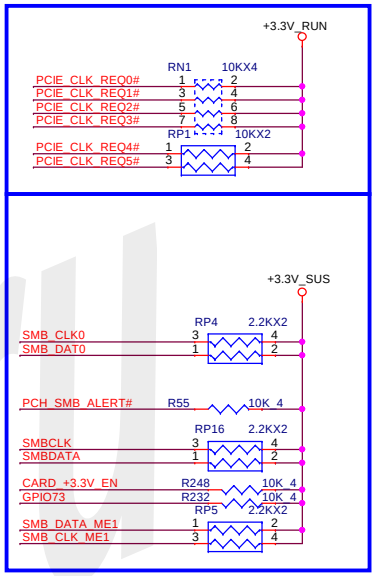
PROJECT : ZM3

Size	Document Number	Rev
	Haswell ULT 5/12	3A

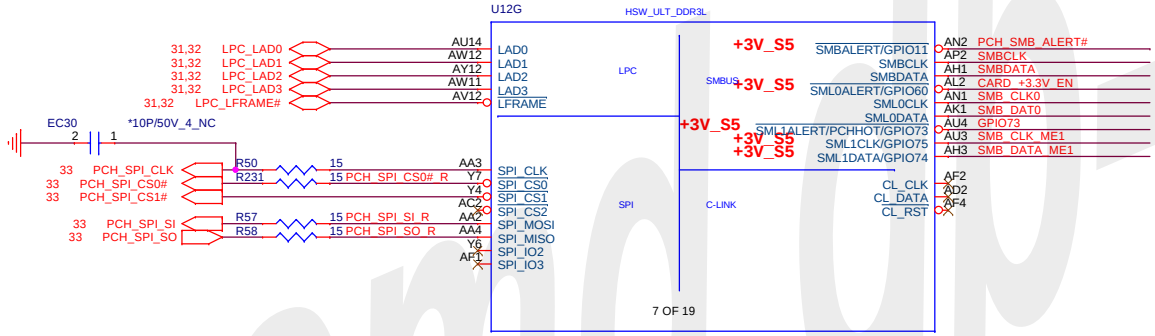
Date: Thursday, July 18, 2013 Sheet 11 of 47

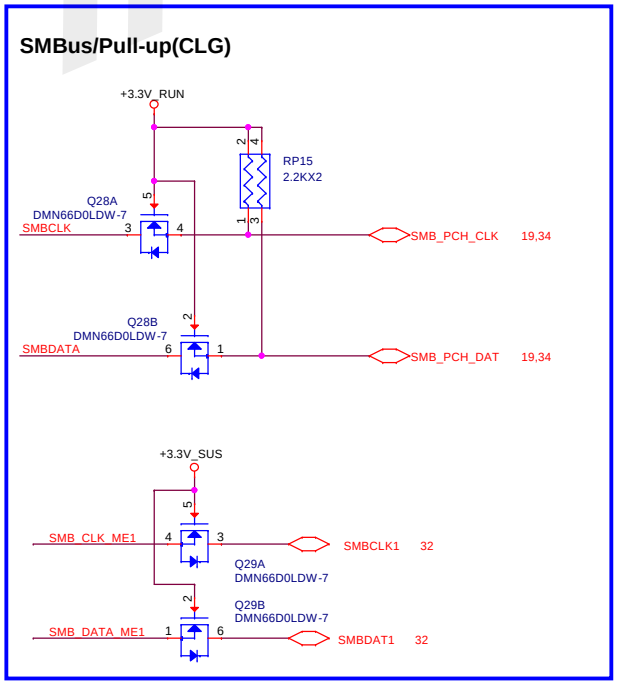
Haswell ULT (CLK)





Haswell ULT (LPC/SPI/SMB/CLINK)





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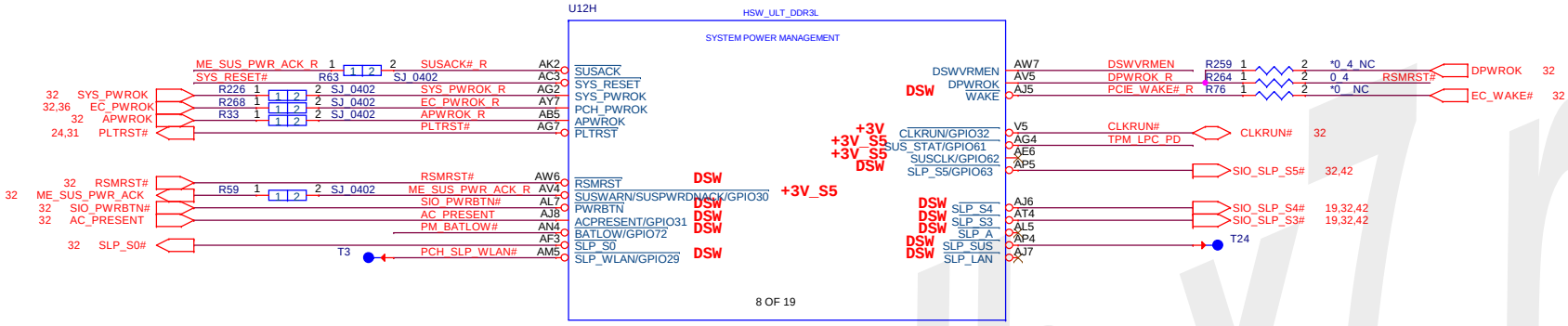
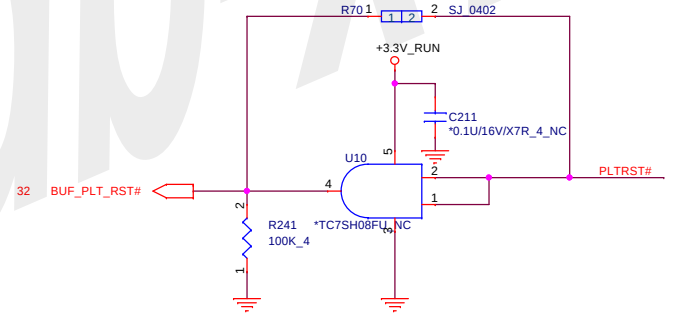
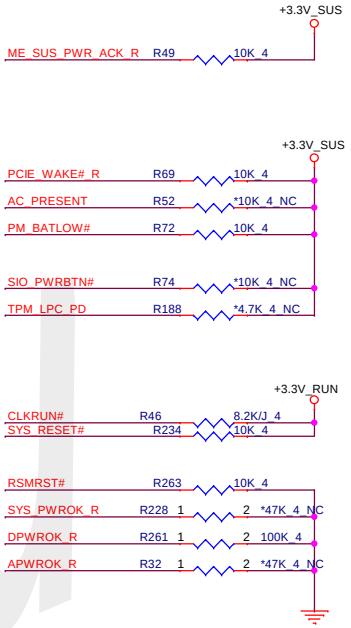
PROJECT : ZM3		
Size	Document Number: Haswell ULT 6/12	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 12 of 47	

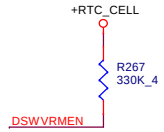
Haswell ULT (SYSTEM POWER MANAGEMENT)





PCH Pull-high/low(CLG)





On Die DSW VR Enable
High = Enable (Default)
Low = Disable

Quanta Computer Inc.

PROJECT : ZM3

Size	Document Number	Rev
	Haswell ULT 7/12	3A
Date: Thursday, July 18, 2013	Sheet 13 of 47	

Haswell ULT MCP(POWER)

CPU VDDQ

Haswell ULT 15W : 4.2A

6X10UF MLCC
4X2.2UF MLCC

1/21: 2.2Ux4 --> 1Ux2 , 0.1Ux2

1.4A

CPU VCC

1/21: 22Ux23 --> 10Ux23

Haswell ULT 15W : 32A

23 X 22UF(0805 MLCC)

32A

U12L HSW_ULT_DDR3L

HSW ULT POWER

12 OF 19

+V1.05S_VCCST

+1.05V_RUN

+V1.05S_VCCST

8

R94 SJ_0805

SVID ALERT

H_CPU_SVIDALRT# R322 43_4 R324 75_4 R329 *75_4_NC VR_SVID_ALERT# 44

SVID DATA

VR_SVID_DATA R315 130_4 R314 *130_4_NC VR_SVID_DATA 44

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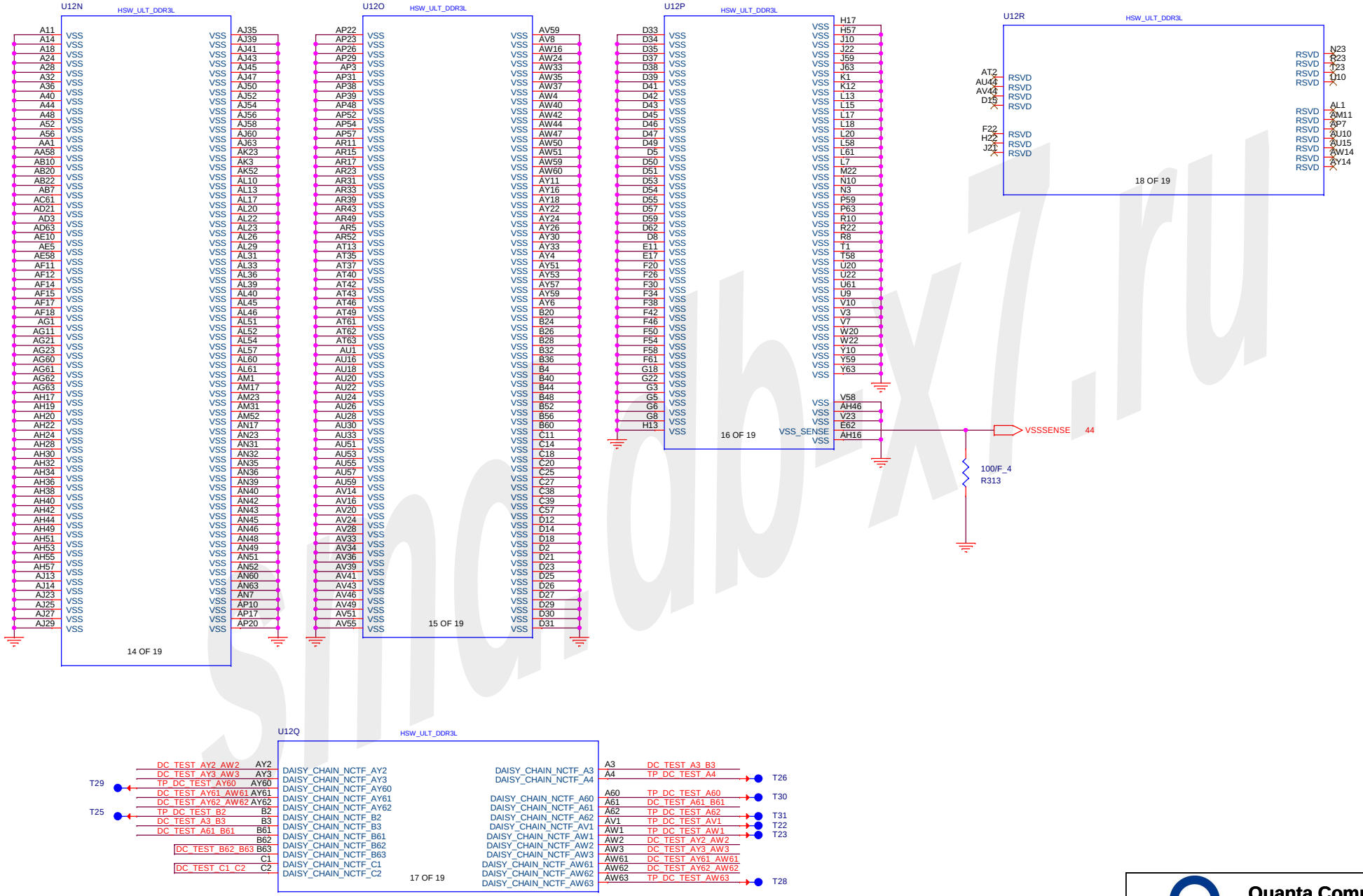
PROJECT : ZM3

Size	Document Number	Rev
	Haswell ULT 8/12	3A

Date: Thursday, July 18, 2013 Sheet 14 of 47

Haswell ULT (GND)

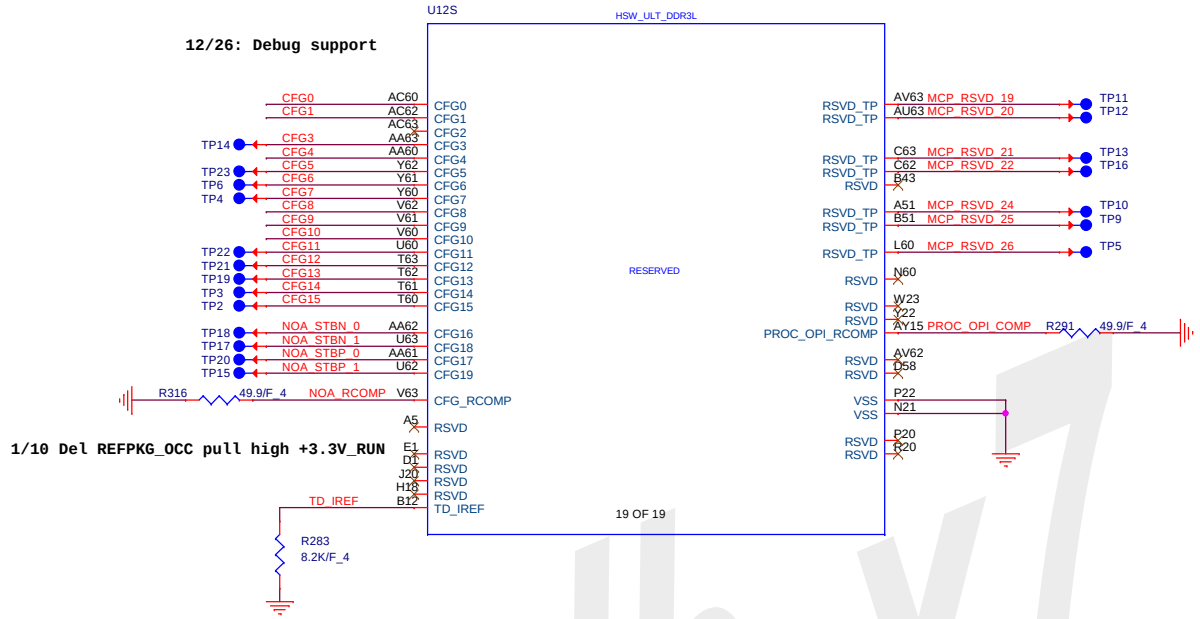


Quanta Computer Inc.

PROJECT : ZM3

Size	Document Number	Rev
	Haswell ULT 9/12	3A

Date: Thursday, July 18, 2013 Sheet 15 of 47



Processor Strapping

	1	0	
CFG0 EAR-STALL/NOT STALL RESET SEQUENCE AFTER PCU PLL IS LOCKED	(DEFAULT) NORMAL OPERATION; NO STALL	STALL	CFG0 R330 *1K_4_NC
CFG1 PCH/ PCH LESS MODE SELECTION	(DEFAULT) NORMAL OPERATION	PCH-LESS MODE	CFG1 R317 *1K_4_NC
CFG3 PHYSICAL_DEBUG_ENABLED (DFX PRIVACY)	DISABLED NO PHYSICAL DISPLAY PORT ATTACHED TO EMBEDDED DISPLAY PORT	ENABLED AN EXTERNAL DISPLAY PORT DEVICE IS CONNECTED TO THE EMBEDDED DISPLAY PORT	CFG3 R323 *1K_4_NC
CFG4 DISPLAY PORT PRESENCE STRAP	DISABLED NO PHYSICAL DISPLAY PORT ATTACHED TO EMBEDDED DISPLAY PORT	ENABLED AN EXTERNAL DISPLAY PORT DEVICE IS CONNECTED TO THE EMBEDDED DISPLAY PORT	CFG4 R133 1K_4
CFG 8 ALLOW THE USE OF NOA ON LOCKED UNITS	DISABLED(DEFAULT); IN THIS CASE, NOA WILL BE DISABLED IN LOCKED UNITS AND ENABLED IN UN-LOCKED UNITS	ENABLED; NOA WILL BE AVAILABLE REGARDLESS OF THE LOCKING OF THE UNIT	CFG8 R328 *1K_4_NC
CFG9 NO SVID PROTOCOL CAPABLE VR CONNECTED	VRS SUPPORTING SVID PROTOCOL ARE PRESENT	NO VR SUPPORTING SVID IS PRESENT. THE CHIP WILL NOT GENERATE (OR RESPOND TO) SVID ACTIVITY	CFG9 R131 *1K_4_NC
CFG10 SAFE MODE BOOT	POWER FEATURES ACTIVATED DURING RESET	POWER FEATURES (ESPECIALLY CLOCK GATINE ARE NOT ACTIVATED	CFG10 R132 *1K_4_NC

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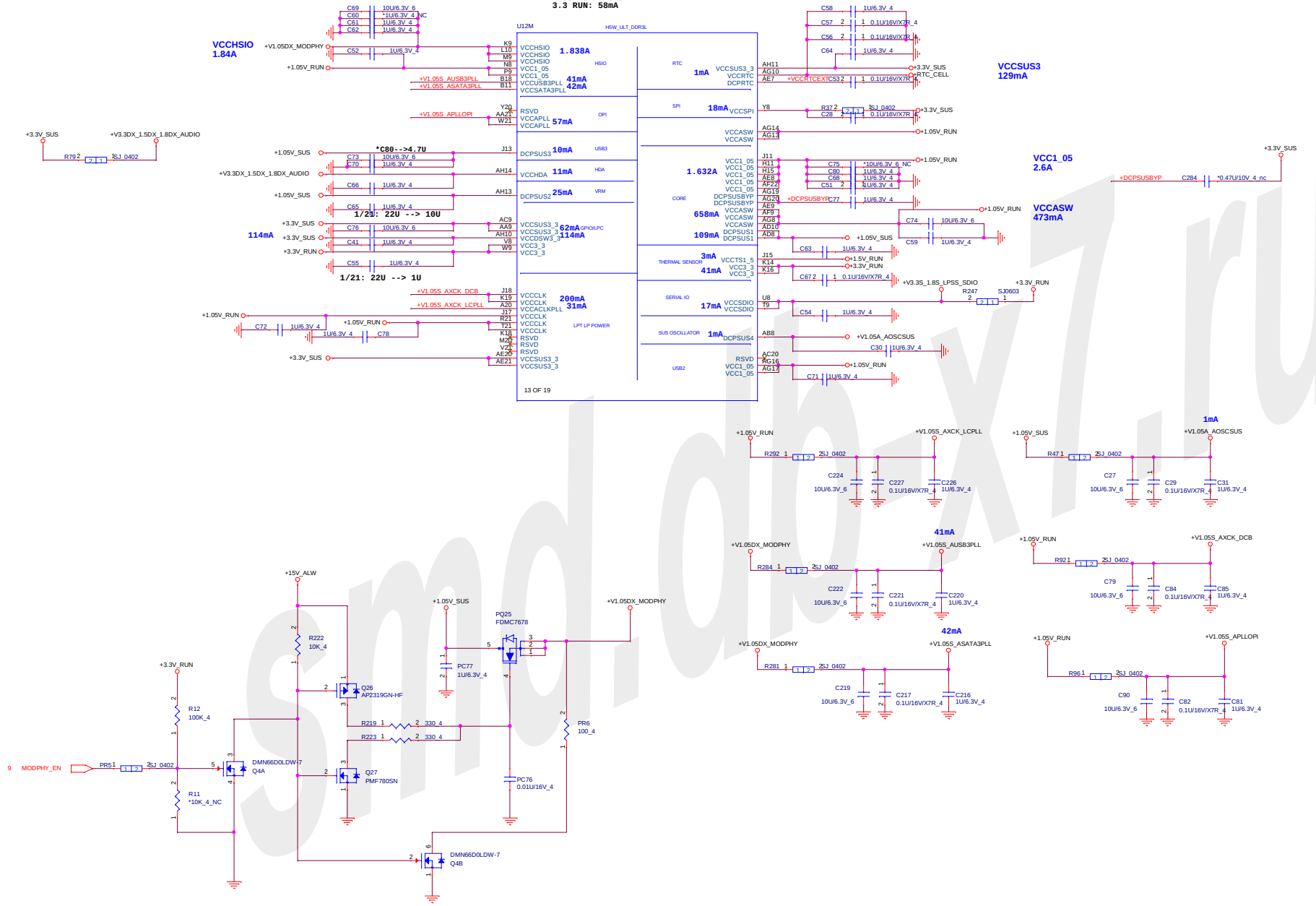
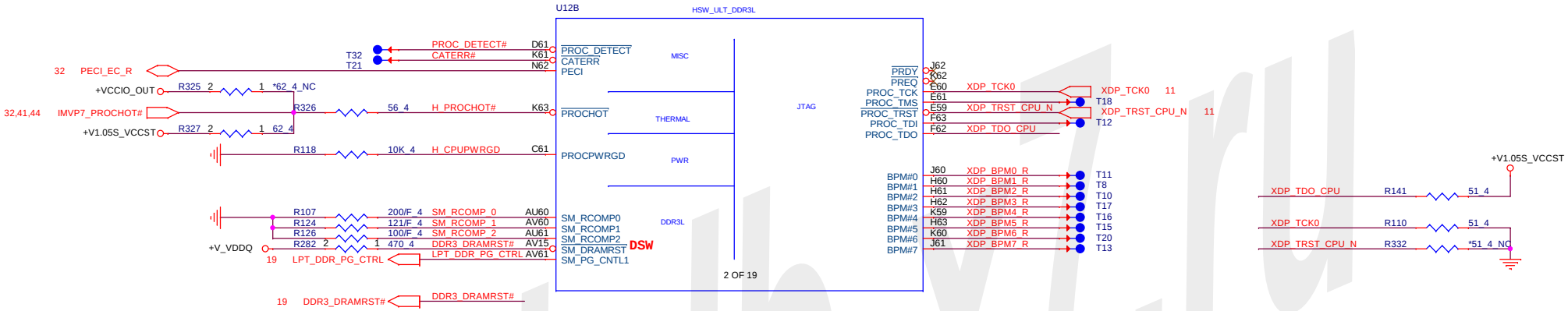
PROJECT : ZM3
Size | Document Number: Haswell ULT 10/12 | Rev: 3A
Date: Thursday, July 18, 2013 | Sheet 16 of 47

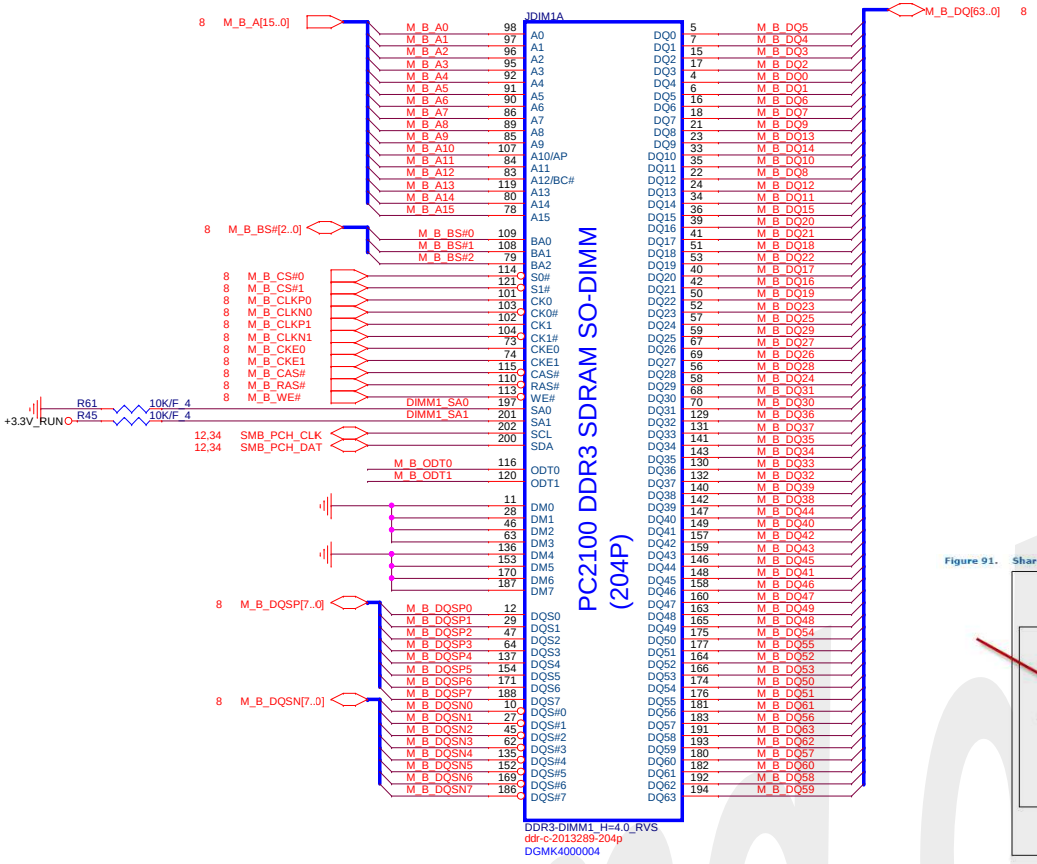
Haswell ULT PCH(POWER)

3.3 SUS: 205mA
1.05 SUS: 2066mA
1.05 RUN: 2578mA
3.3 RUN: 58mA





Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: Haswell ULT 12/12	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 18 of 47	



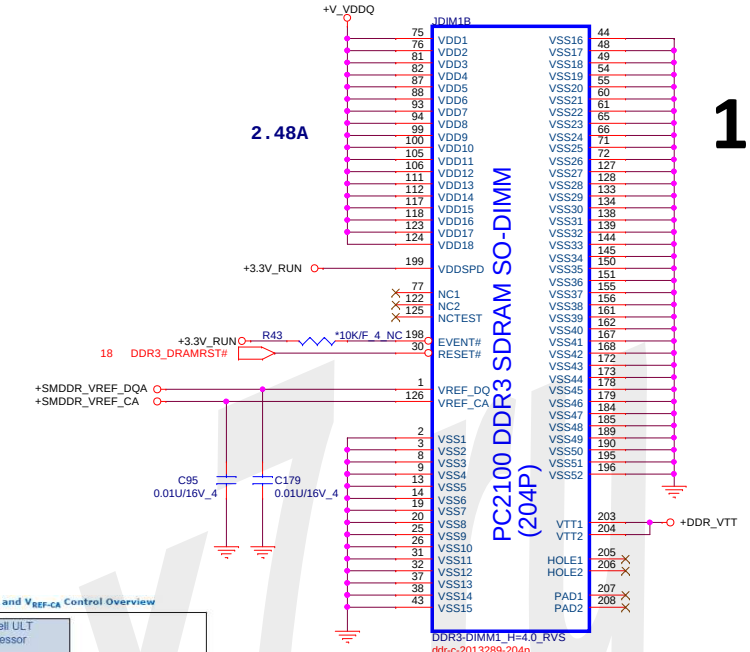
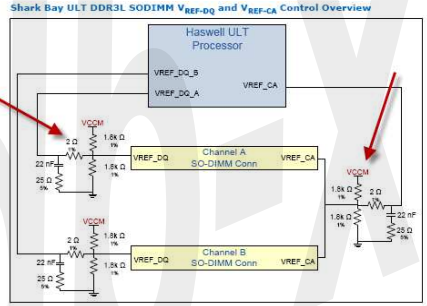
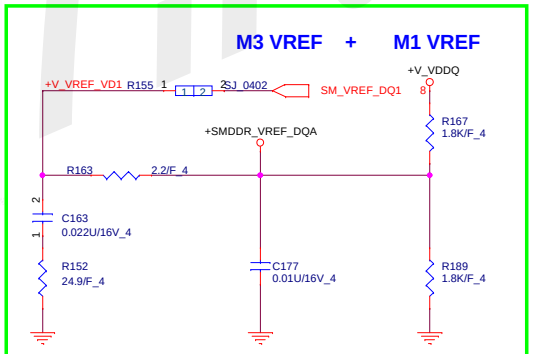
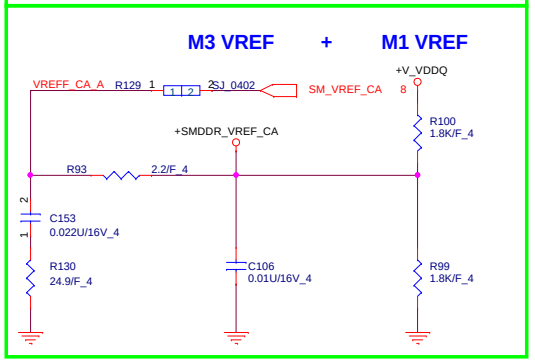


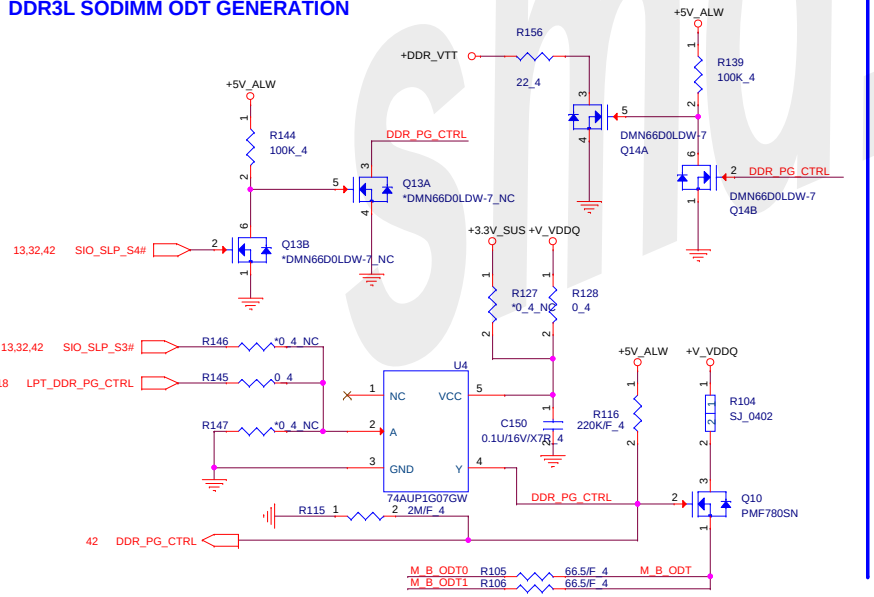
Figure 91. Shark Bay ULT DDR3L SODIMM V_{REF-DQ} and V_{REF-CA} Control Overview



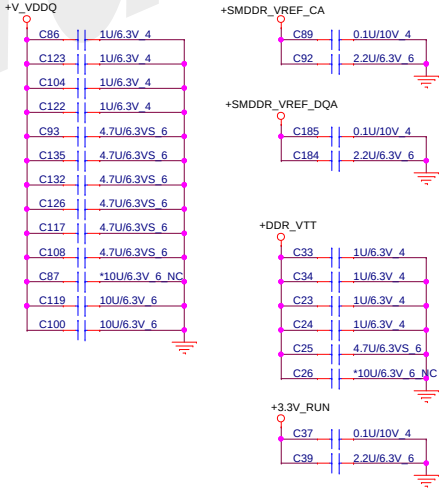


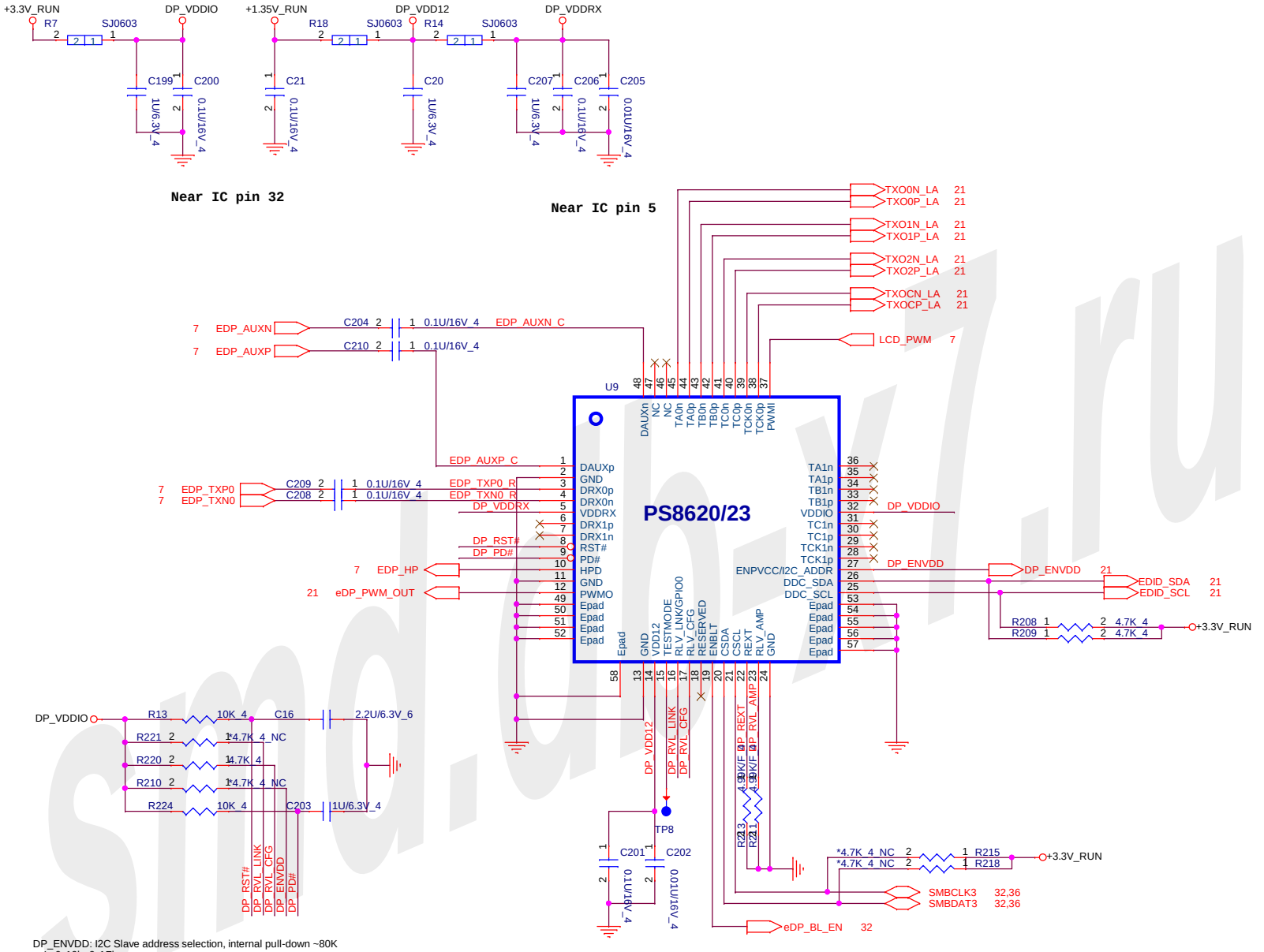


DDR3L SODIMM ODT GENERATION

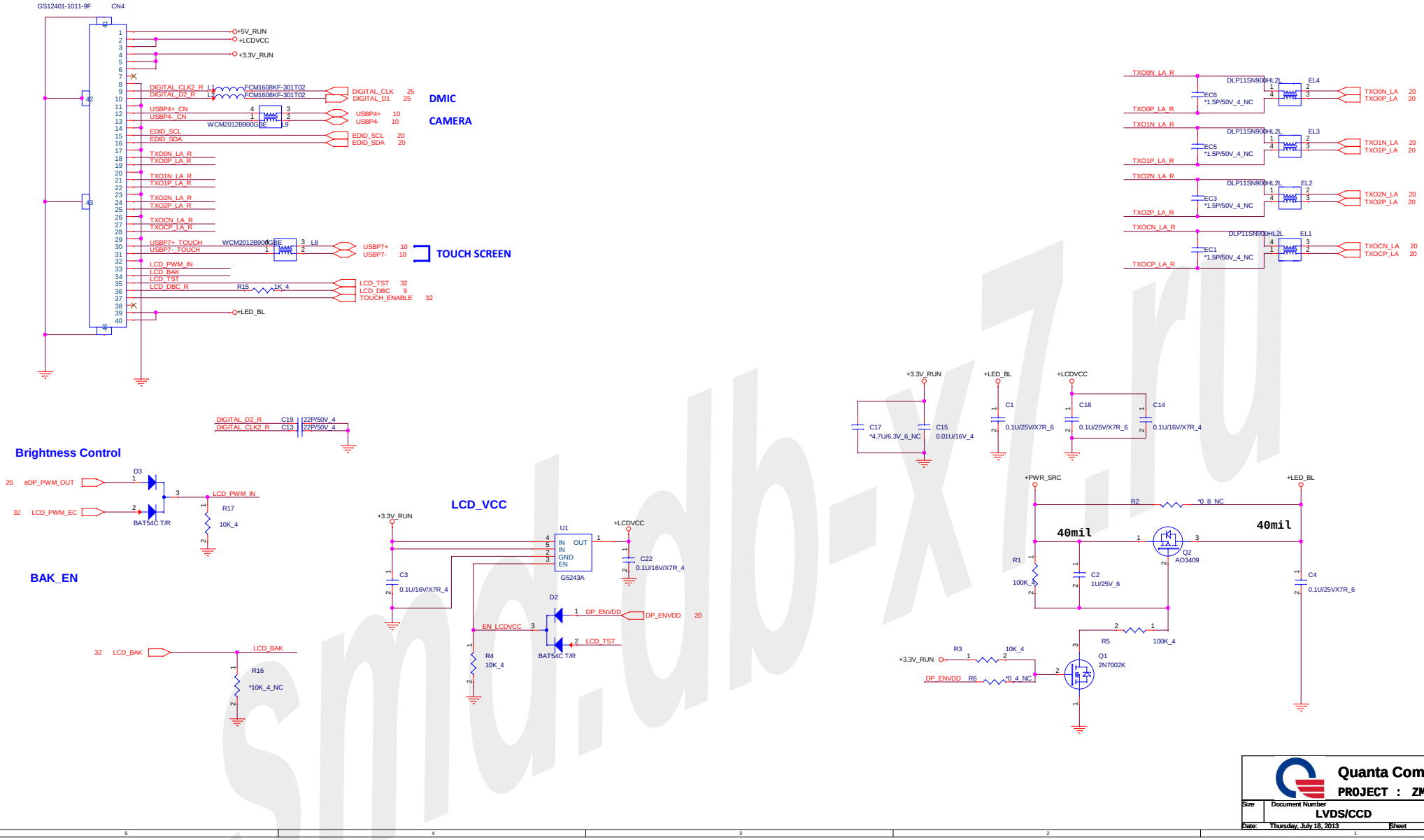


Place these Caps near So-Dimm1.





Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: eDP to LVDS (PS8620/23)	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 20 of 47	

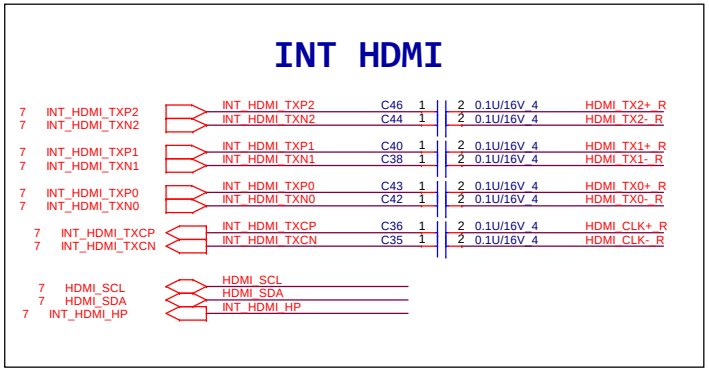


Quanta Computer Inc.

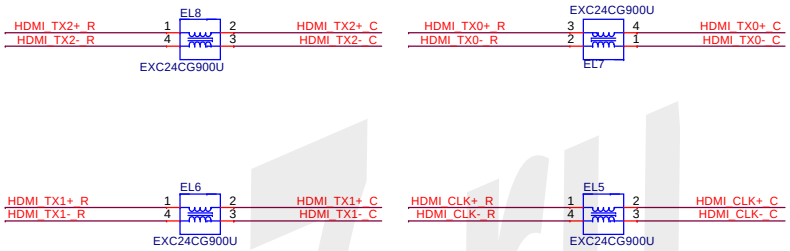
PROJECT : ZM3

Size	Document Number	Rev
	LVDS/CCD	3A
Date: Thursday, July 18, 2013	Sheet 21 of 47	

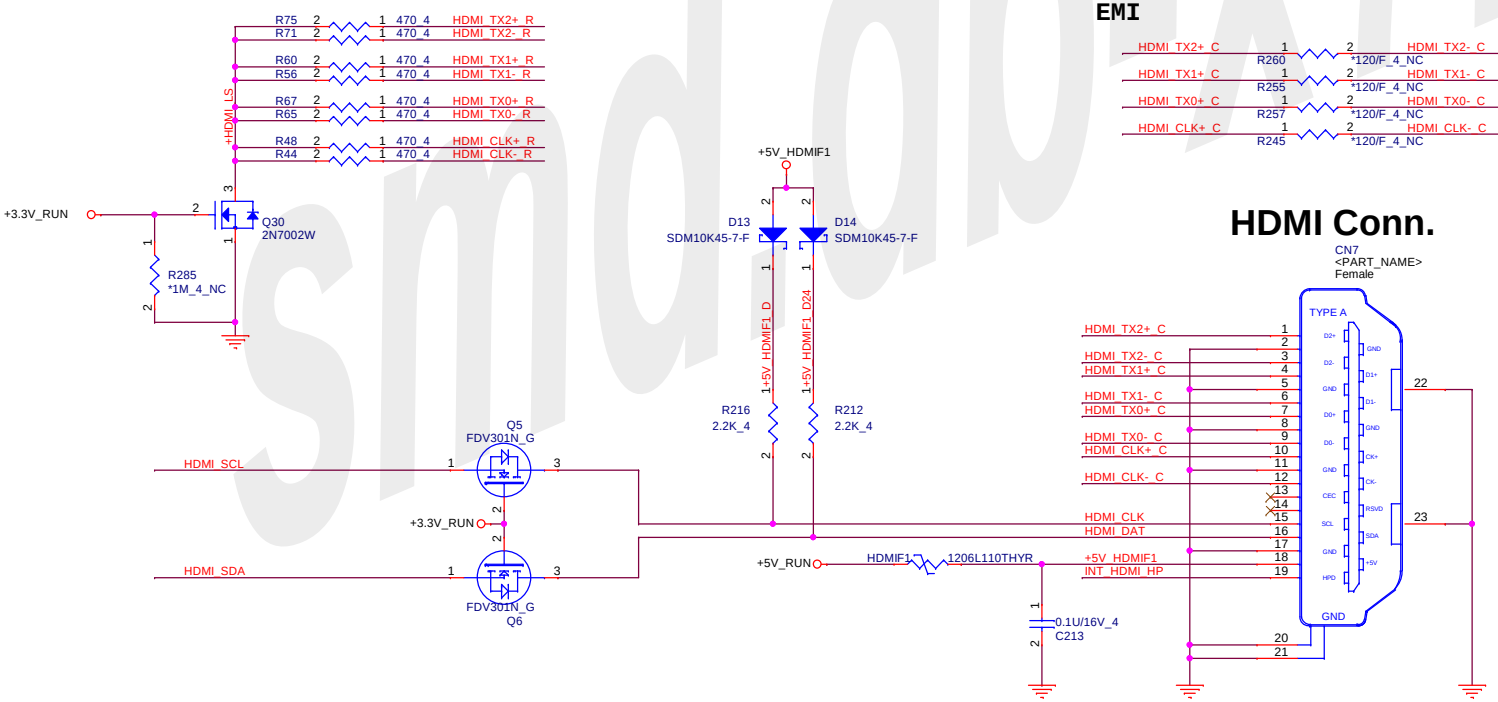
INT HDMI



Reserve for EMI and close to HDMI CONN



EMI



HDMI Conn.

Quanta Computer Inc.
PROJECT : ZM3

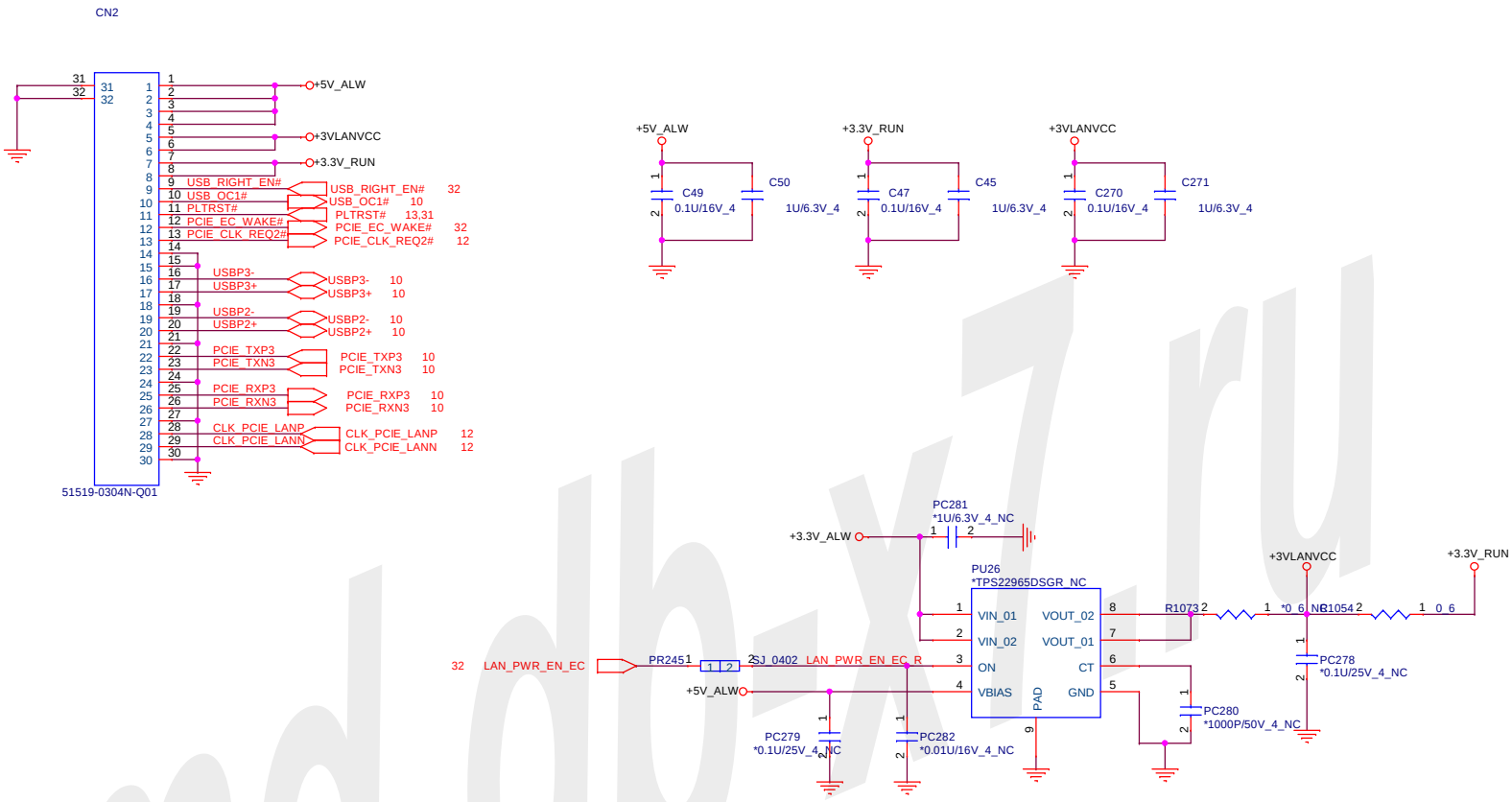
Size	Document Number	Rev
	HDMI	3A
Date: Thursday, July 18, 2013	Sheet 22 of 47	

Quanta Computer Inc.

PROJECT : ZM3

Size	Document Number	Rev
	Camera/Fingerprint Conn	3A

Date: Thursday, July 18, 2013 Sheet 23 of 47

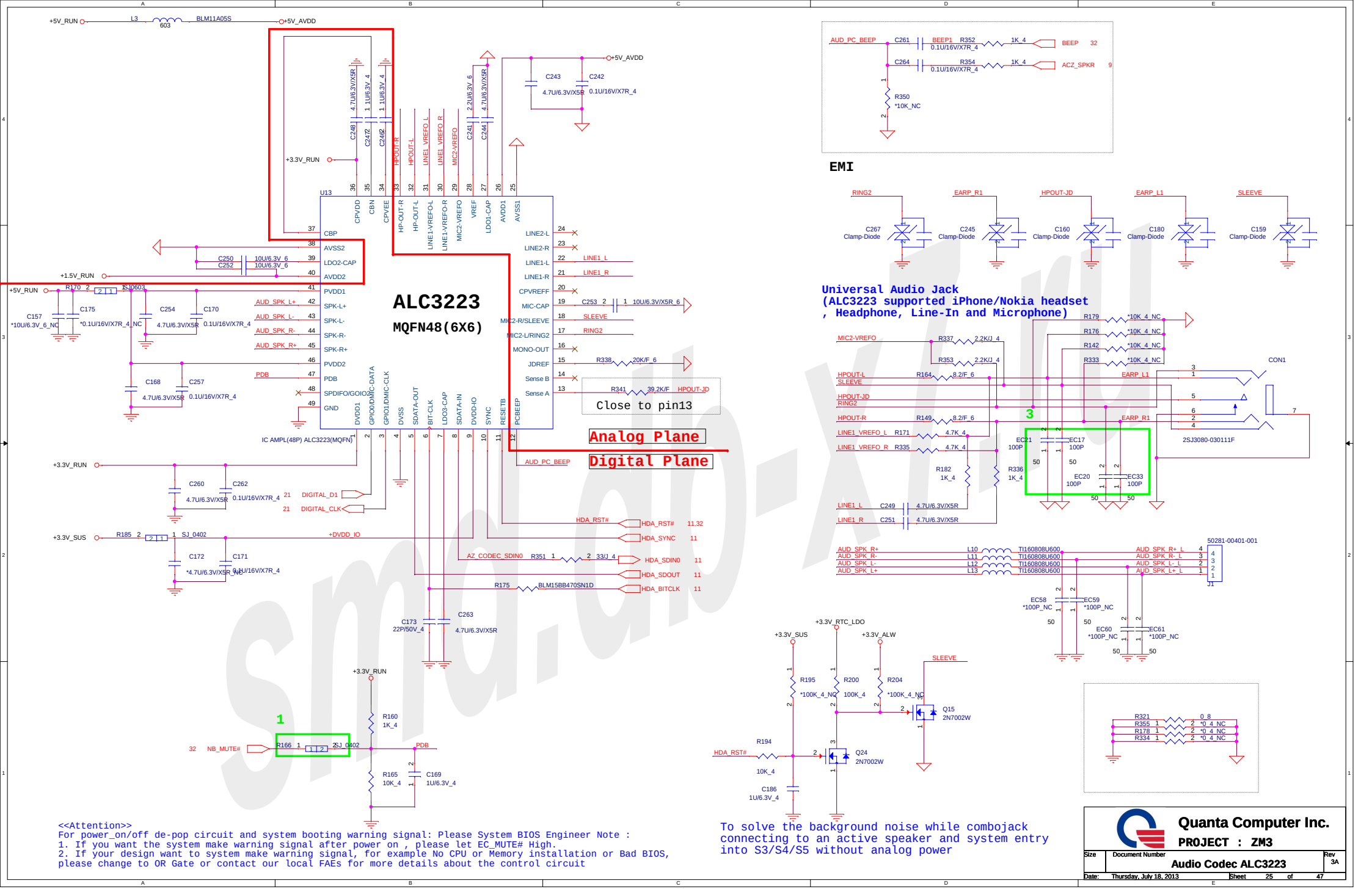


Quanta Computer Inc.

PROJECT : ZM3

Size	Document Number	Rev
	IO Conn	3A

Date: Thursday, July 18, 2013 Sheet 24 of 47


ALC3223
MQFN48(6X6)
Analog Plane
Digital Plane
Close to pin13
EMI
Universal Audio Jack
(ALC3223 supported iPhone/Nokia headset
, Headphone, Line-In and Microphone)
IC AMPL(48P) ALC3223(MQFN)
<<Attention>>
For power_on/off de-pop circuit and system booting warning signal: Please System BIOS Engineer Note :
1. If you want the system make warning signal after power on , please let EC_MUTE# High.
2. If your design want to system make warning signal, for example No CPU or Memory installation or Bad BIOS, please change to OR Gate or contact our local FAEs for more details about the control circuit
To solve the background noise while combojack connecting to an active speaker and system entry into S3/S4/S5 without analog power
Quanta Computer Inc.
PROJECT : ZM3
Audio Codec ALC3223
Size
Document Number
Rev
3A
Date: Thursday, July 18, 2013
Sheet 25 of 47

Quanta Computer Inc.

PROJECT : ZM3

Size	Document Number	Rev
	Blank	3A

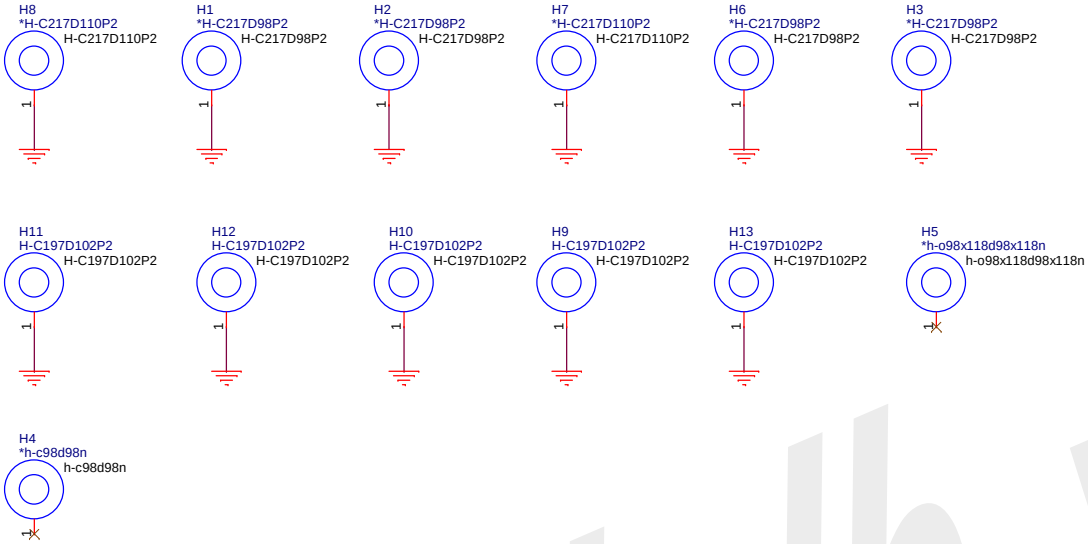
Date: Thursday, July 18, 2013 Sheet 26 of 47

Quanta Computer Inc.

PROJECT : ZM3

Size	Document Number	Rev
	Blank	3A

Date: Thursday, July 18, 2013 Sheet 27 of 47



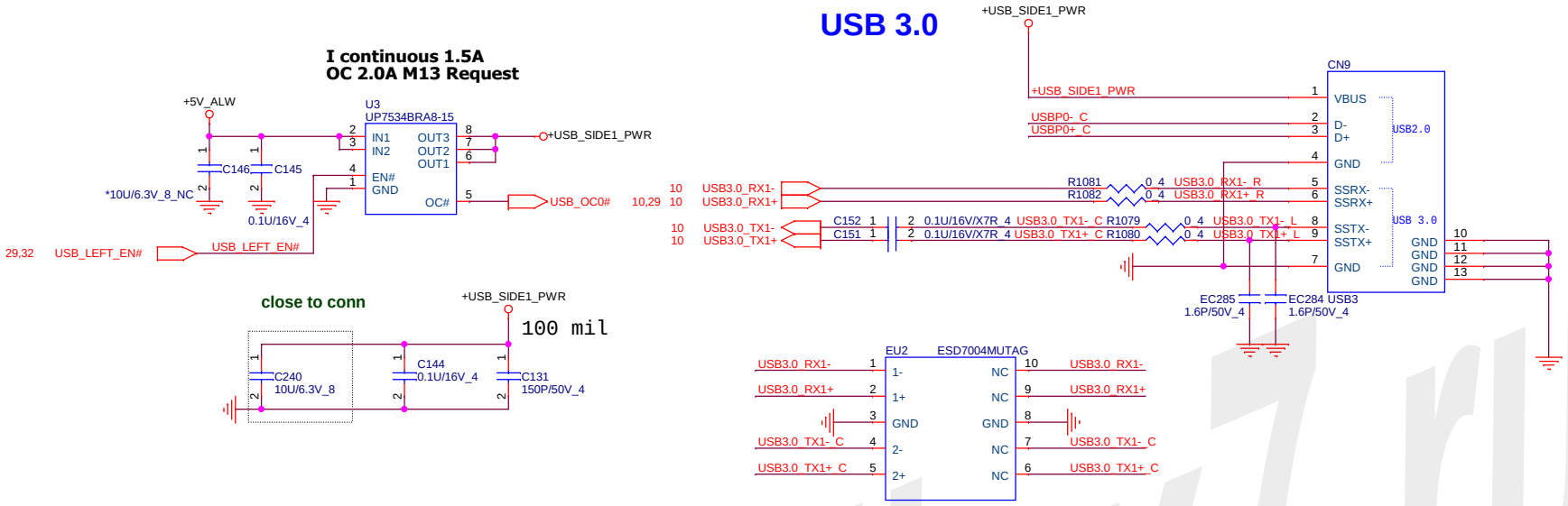
Quanta Computer Inc.

PROJECT : ZM3

Size	Document Number	Rev
	SCREW PAD	3A

Date: Thursday, July 18, 2013 Sheet 28 of 47

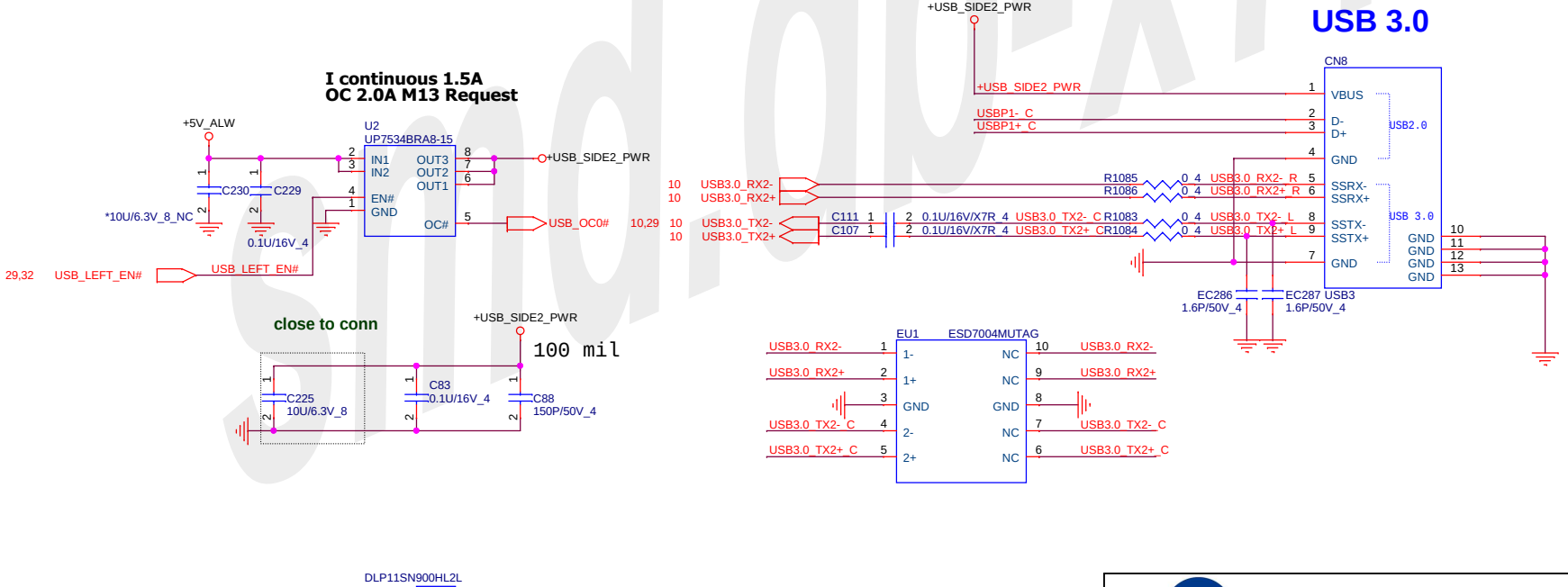
USB 3.0

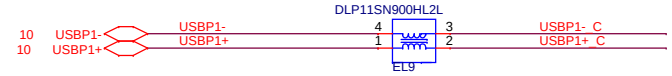


ESD Function

Place ESD diodes as close as USB connector.

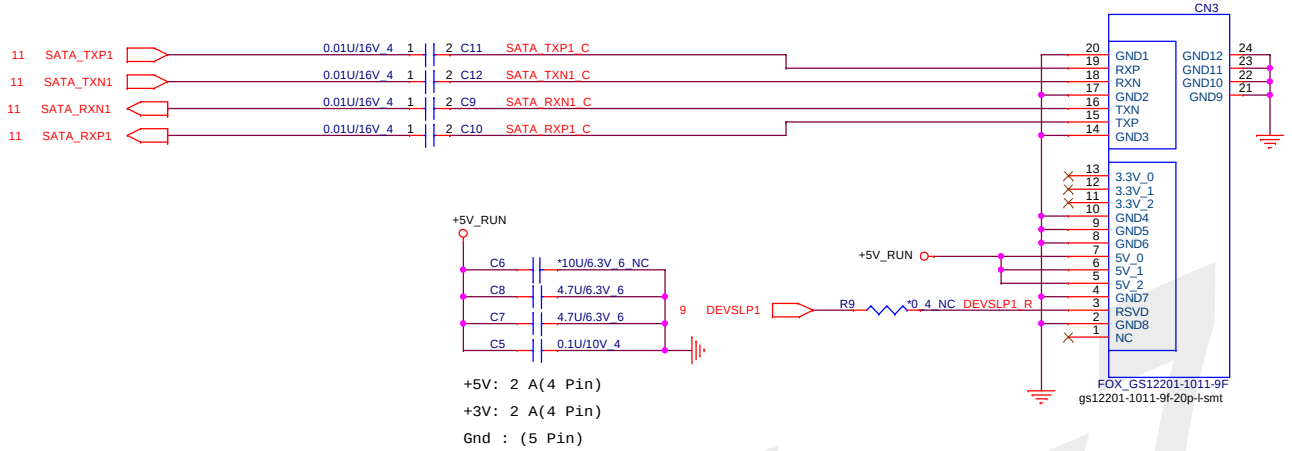
USB 3.0





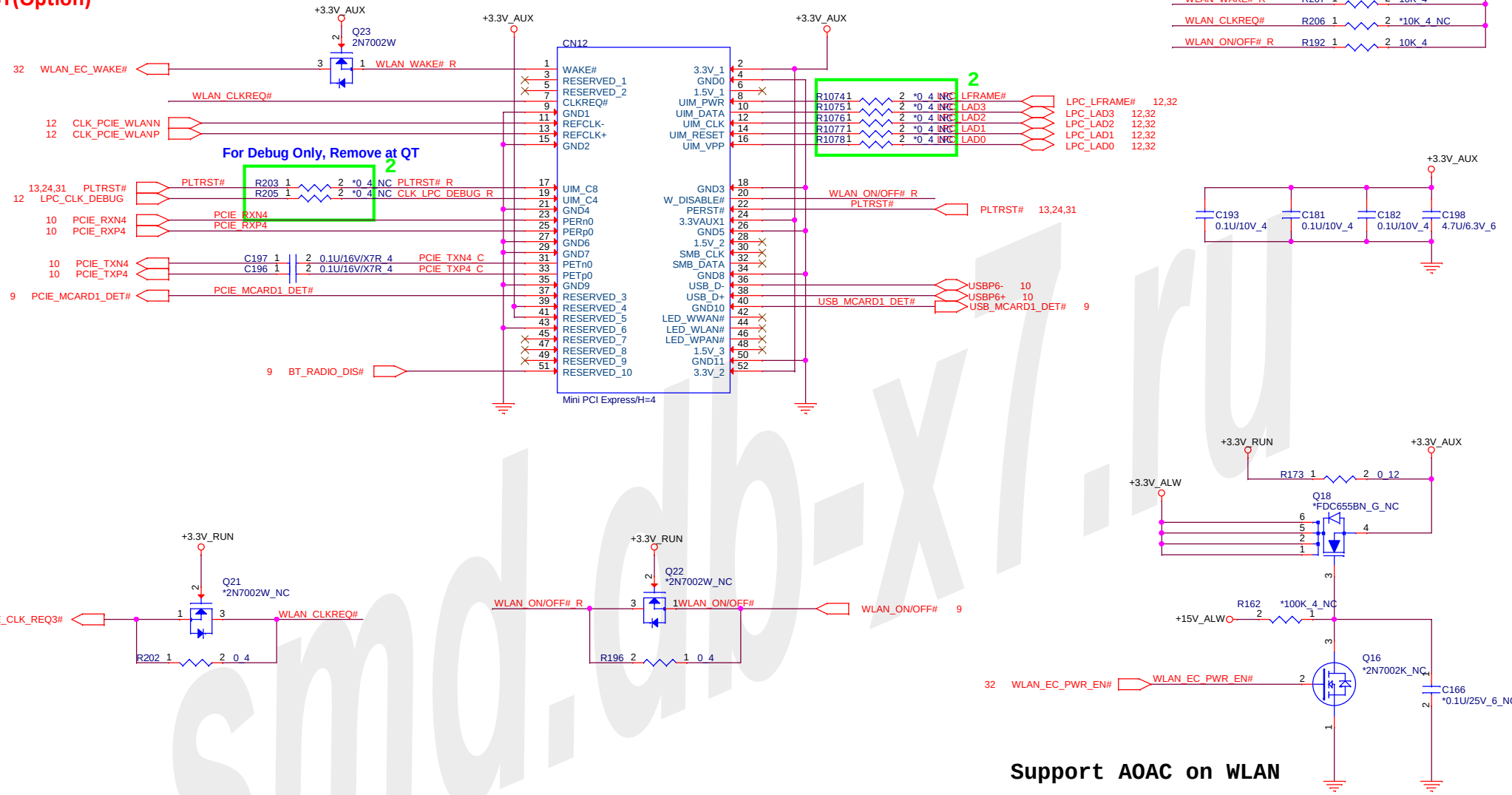
Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: USB3	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 29 of 47	

SATA HDD Connector



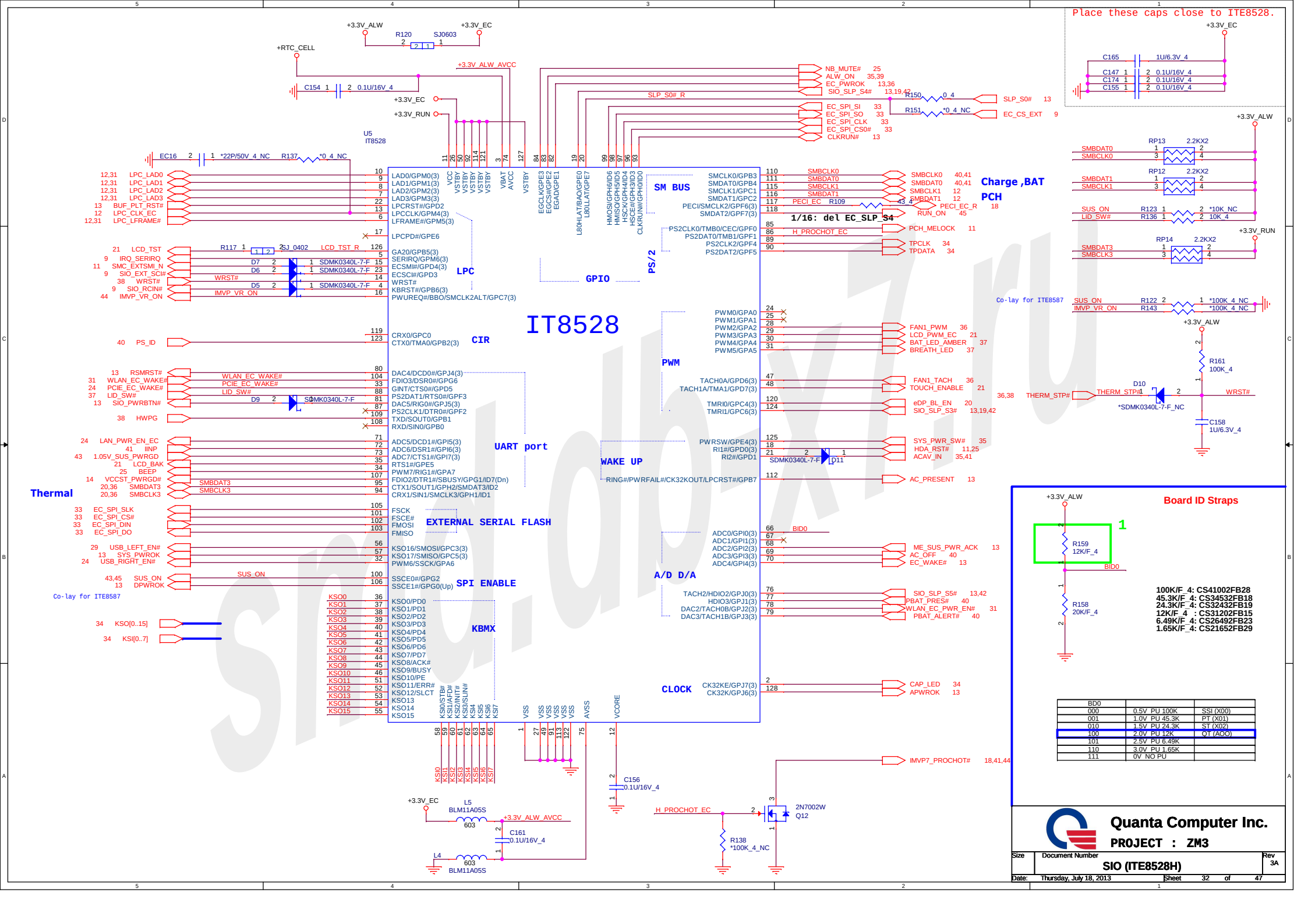
Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: SATA HDD	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 30 of 47	

Mini Card
WLAN/BT(Option)



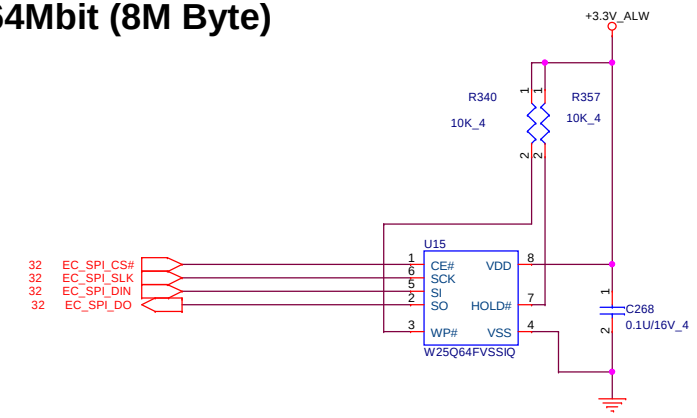
Support AOAC on WLAN

Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: WLAN/BT	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 31 of 47	

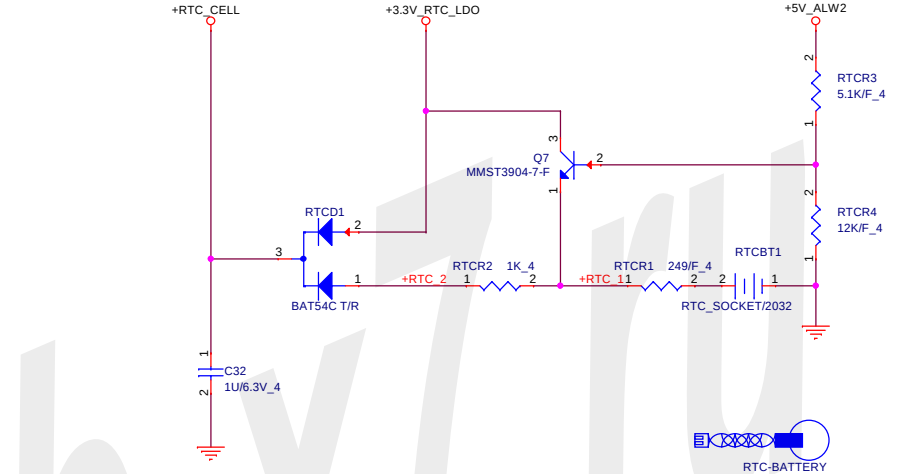


BD0		
000	0.5V PU 100K	SSI (X00)
001	1.0V PU 45.3K	PT (X01)
010	1.5V PU 24.3K	ST (X02)
100	2.0V PU 12K	QT (AQO)
101	2.5V PU 6.49K	
110	3.0V PU 1.65K	
111	0V NO PU	

For EC 64Mbit (8M Byte)

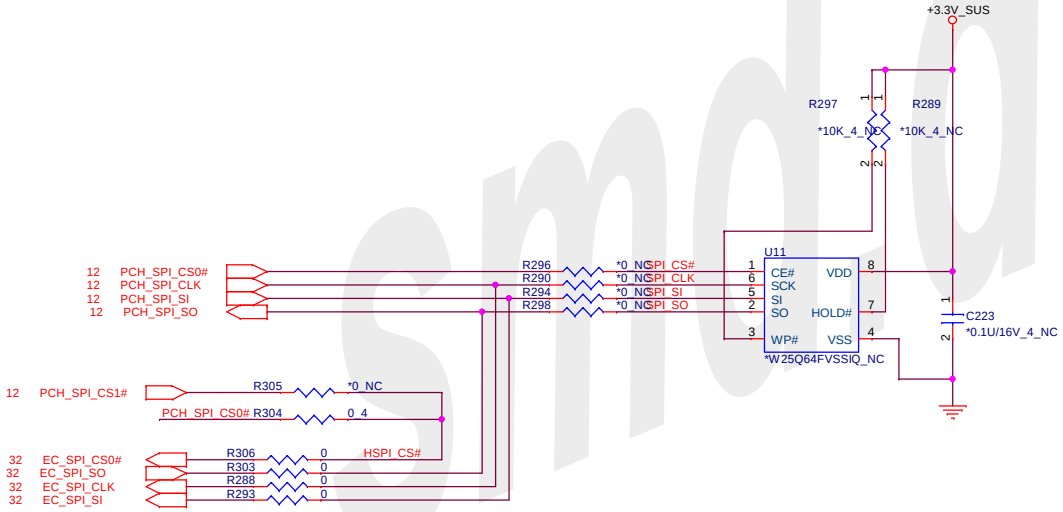


RTC BATTERY

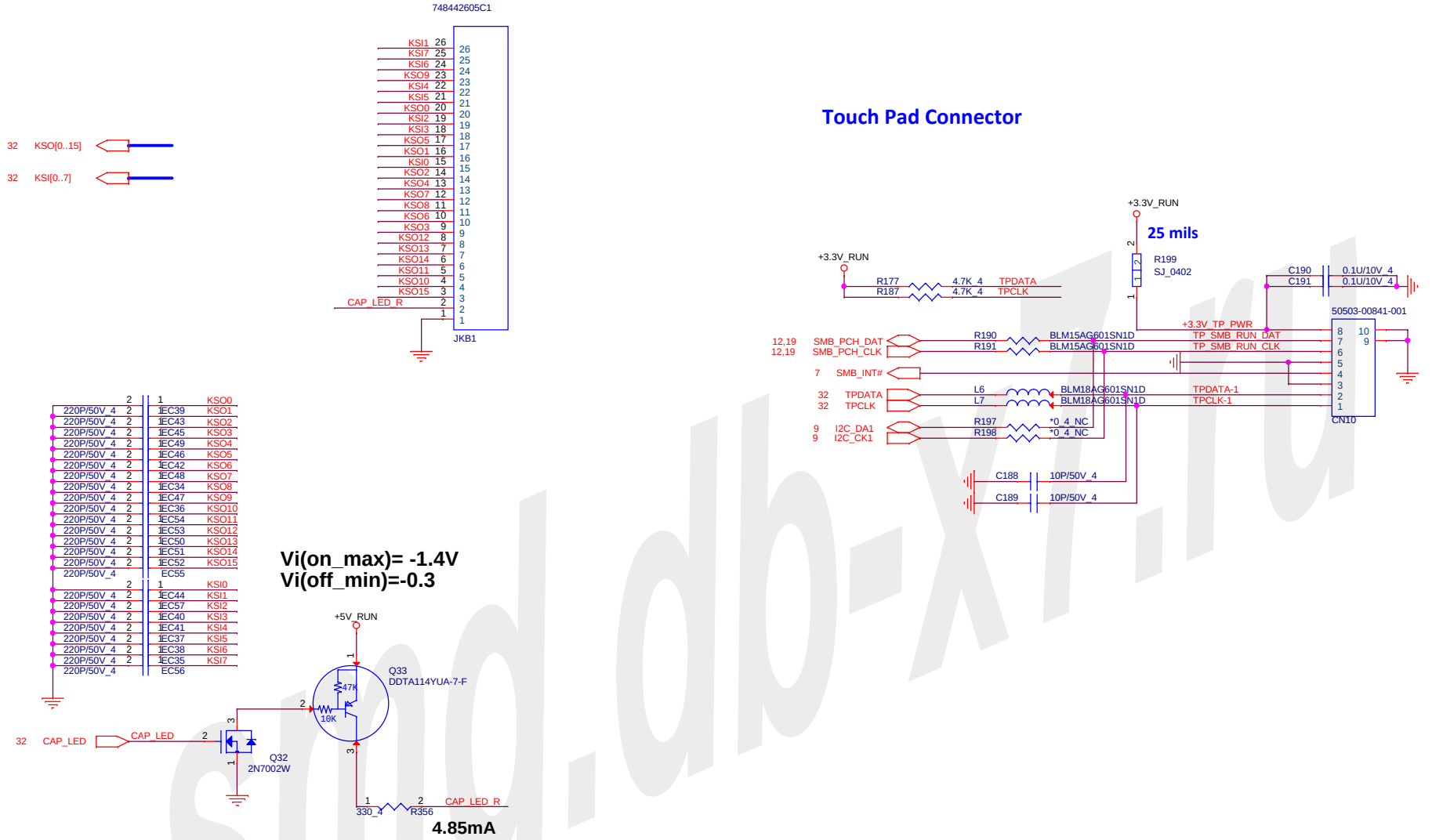


5*[12/(5.1+12)]-0.7=2.8V
RTC Battery Charger when lower than 2.8V

For PCH 64Mbit (8M Byte)

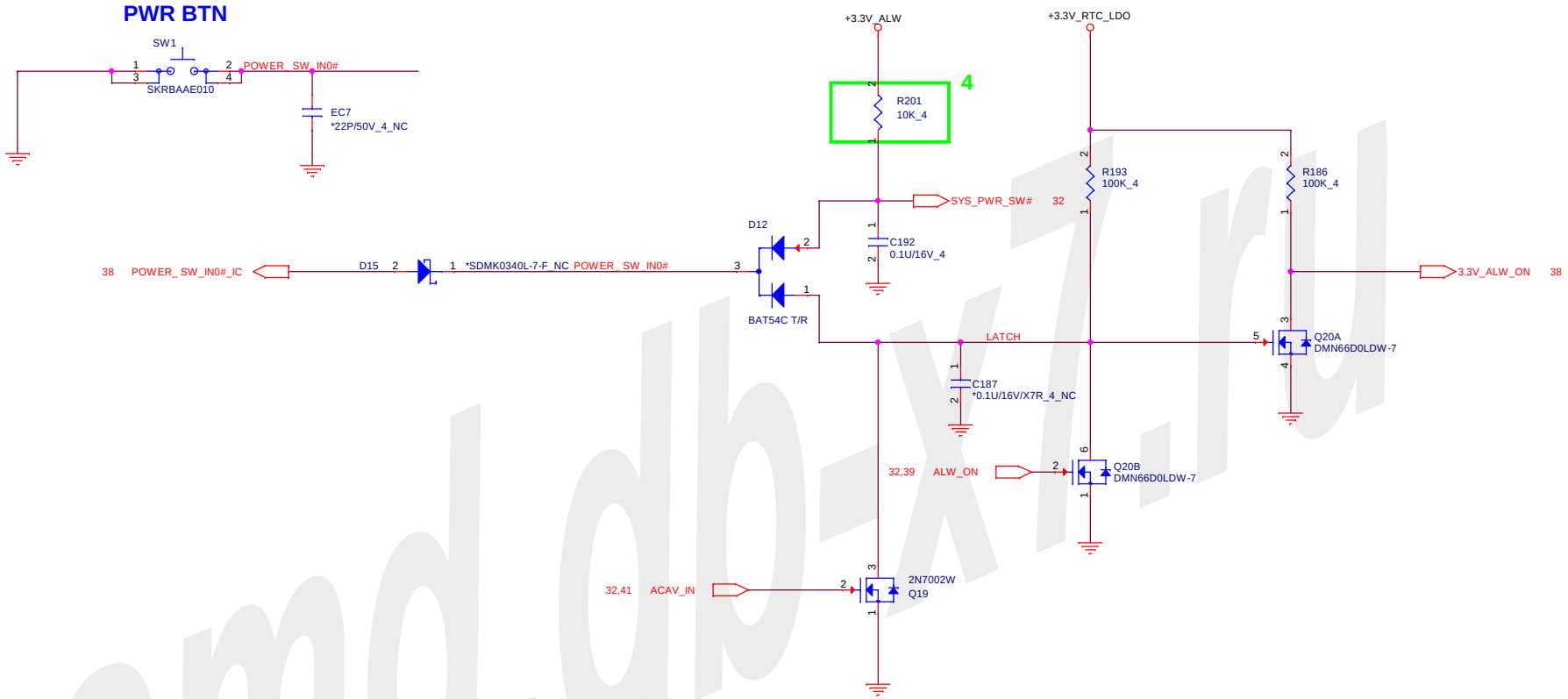


Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: FLASH / RTC	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 33 of 47	



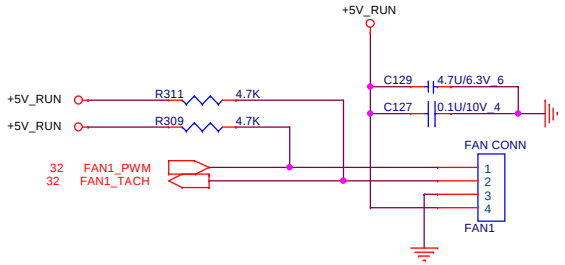
Quanta Computer Inc.			
PROJECT : ZM3			
Size	Document Number		Rev
	KB/TP		3A
Date: Thursday, July 18, 2013	Sheet 34 of 47		

3VALW ON POWER LOGIC

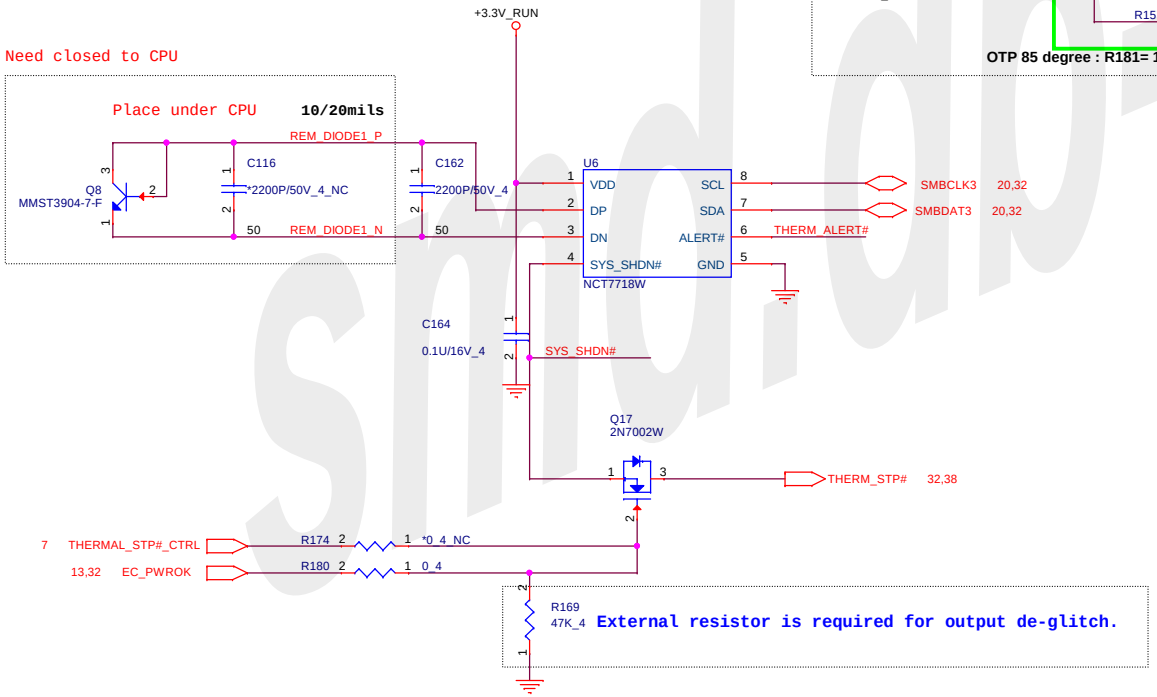


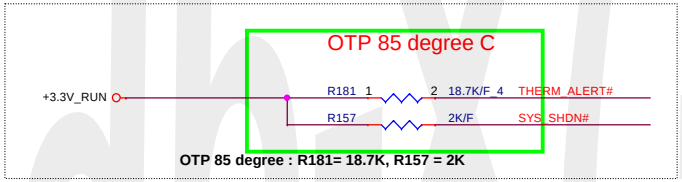
Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: 3VALW ON POWER LOGIC	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 35 of 47	

FAN CONN



THERMAL IC





SYS_SHD# / ALERT#	2K	7.5K	10.5K	14K	18.7K
2K	77'C	87'C	97'C	107'C	117'C
7.5K	79'C	89'C	99'C	109'C	119'C
10.5K	81'C	91'C	101'C	111'C	121'C
14K	83'C	93'C	103'C	113'C	123'C
18.7K	85'C	95'C	105'C	115'C	125'C

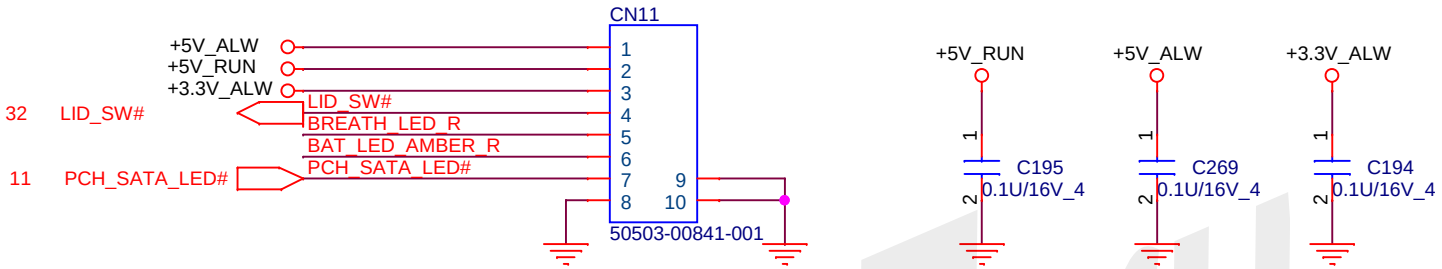
Quanta Computer Inc.
PROJECT : ZM3

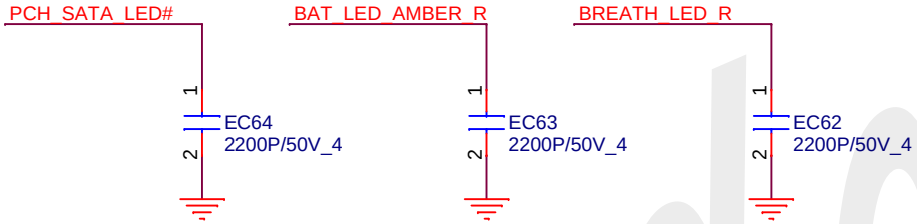
Size	Document Number	Rev
	FAN & THERMAL	3A

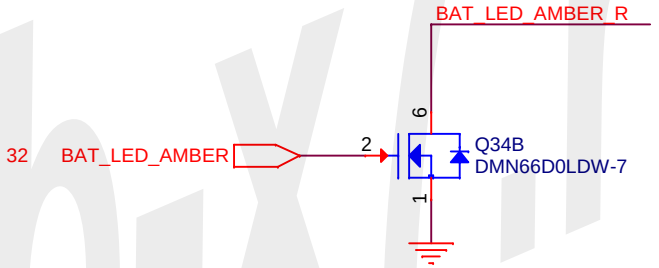
Date: Thursday, July 18, 2013 Sheet 36 of 47

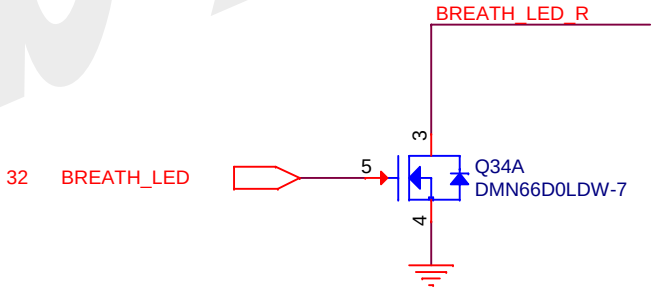
LED Status

Battrey charger LED
HDD access LED





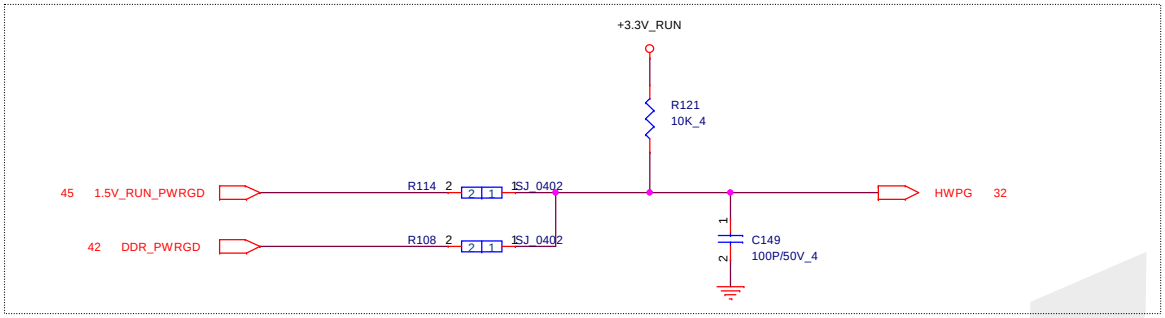


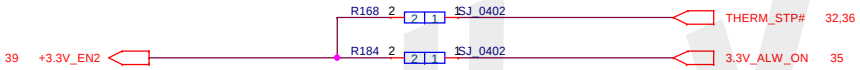


Quanta Computer Inc.

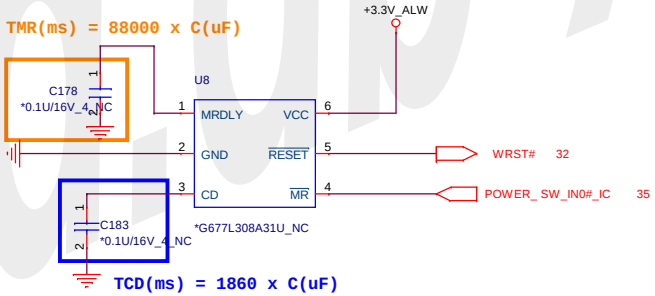
PROJECT : ZM3

Size	Document Number	Rev
	LED	3A
Date: Thursday, July 18, 2013	Sheet 37 of 47	



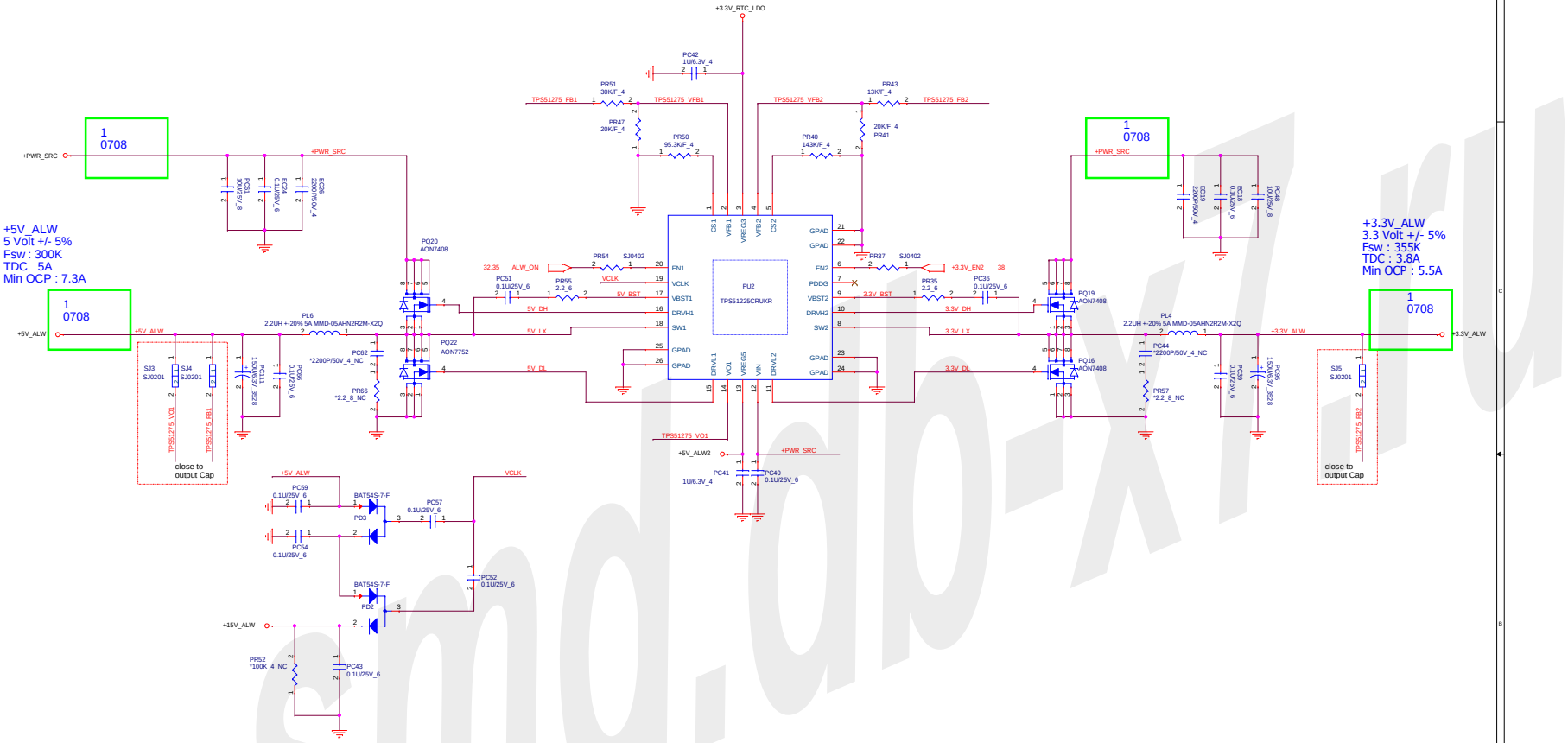


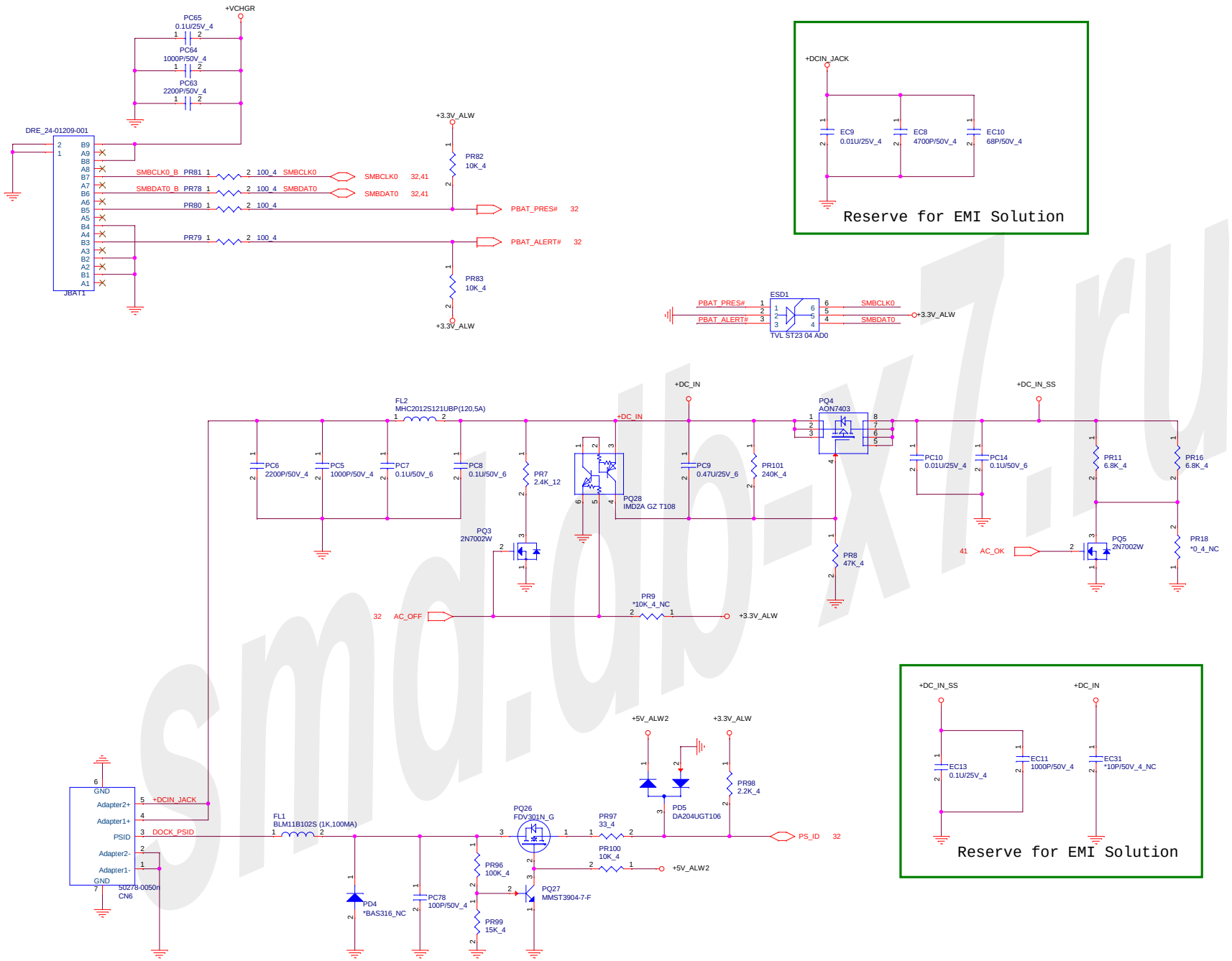
HW reset IC



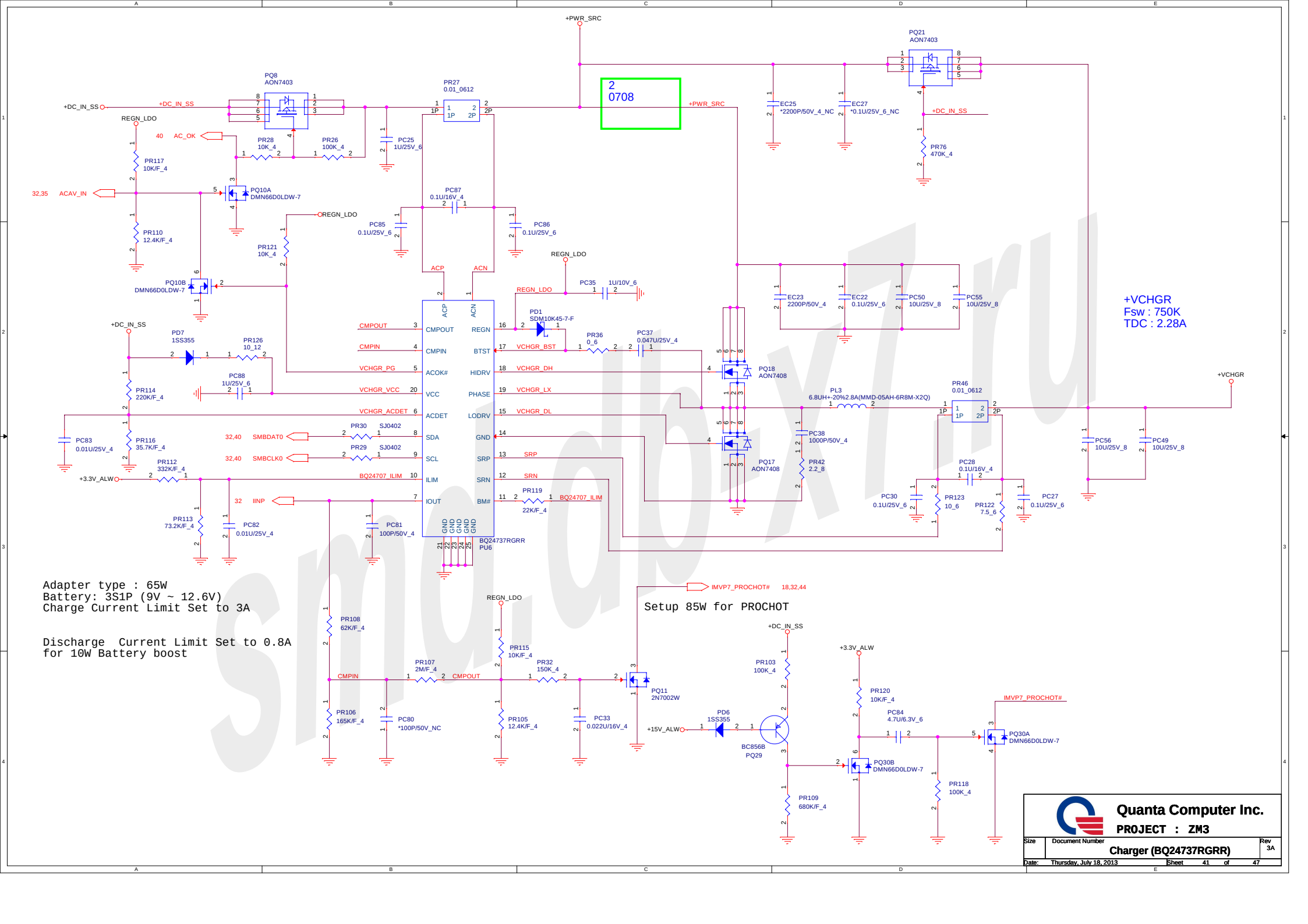
Quanta Computer Inc.
PROJECT : ZM3

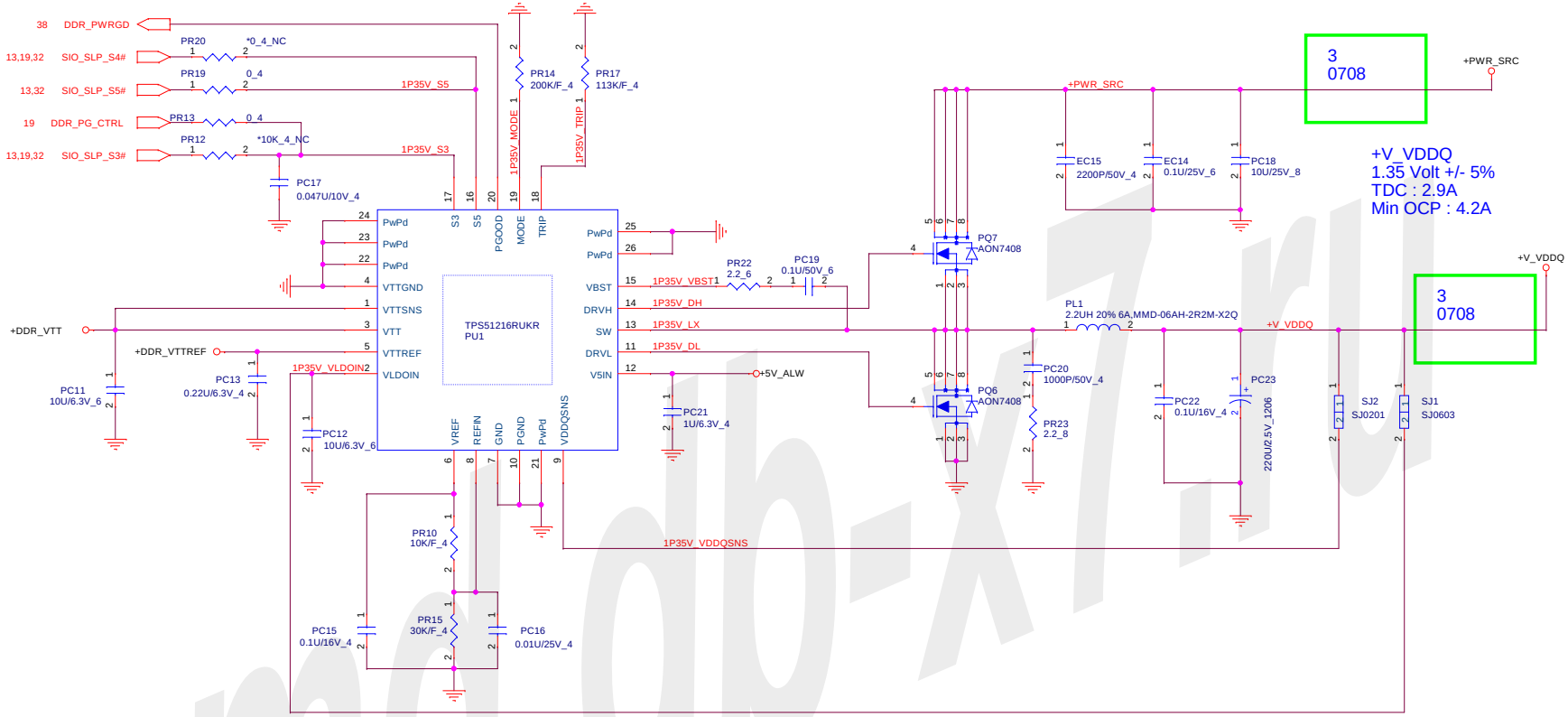
Size	Document Number	Rev
	System Reset Circuit	3A
Date: Thursday, July 18, 2013	Sheet 38 of 47	


+5V_ALW
5 Volt +/- 5%
Fsw : 300K
TDC 5A
Min OCP : 7.3A
+3.3V_ALW
3.3 Volt +/- 5%
Fsw : 355K
TDC : 3.8A
Min OCP : 5.5A
+3.3V_RTC_LDO
PU2
TPS51225CRUKR
PQ20 AON7408
PQ22 AON7752
PQ19 AON7408
PQ16 AON7408
PL6 2.2UH +-20% 5A MMD-05AHNR2M-X2Q
PL4 2.2UH +-20% 5A MMD-05AHNR2M-X2Q
close to output Cap
close to output Cap
+PWR_SRC
+5V_ALW
+3.3V_ALW
+15V_ALW
VCLK
5V_DH
5V_LX
5V_DL
3.3V_DH
3.3V_LX
3.3V_DL
5V_BST
3.3V_BST
TPS51275_VFB1
TPS51275_VFB2
TPS51275_FB1
TPS51275_FB2
TPS51275_VO1
+5V_ALW2
ALW_ON
+3.3V_EN2
PR51 30K/F_4
PR47 20K/F_4
PR50 95.3K/F_4
PR43 13K/F_4
PR41 20K/F_4
PR40 143K/F_4
PR54 SJ0402
PR37 SJ0402
PR55 2.2_6
PR35 2.2_6
PR62 *2200P/50V_4_NC
PR66 *2.2_8_NC
PR57 *2.2_8_NC
PR52 *100K_4_NC
PC42 1U/6.3V_4
PC51 0.1U/25V_6
PC36 0.1U/25V_6
PC44 *2200P/50V_4_NC
PC59 0.1U/25V_6
PC54 0.1U/25V_6
PC57 0.1U/25V_6
PC52 0.1U/25V_6
PC43 0.1U/25V_6
PC41 1U/6.3V_4
PC40 0.1U/25V_6
PD3 BAT54S-7-F
PD2 BAT54S-7-F
SJ3 SJ0201
SJ4 SJ0201
SJ5 SJ0201
Quanta Computer Inc.
PROJECT : ZM3
3V/5V (TPS51225CRUKR)
Rev 3A
Thursday, July 18, 2013
Sheet 39 of 47

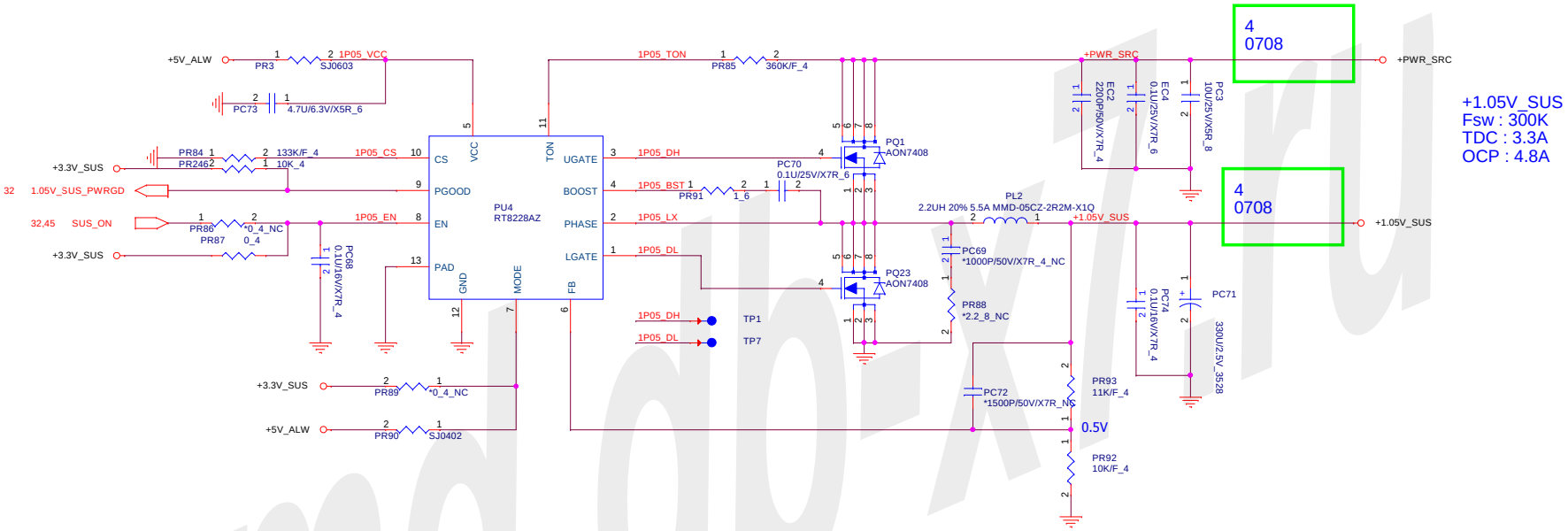


Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: DCin & Bat	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 40 of 47	

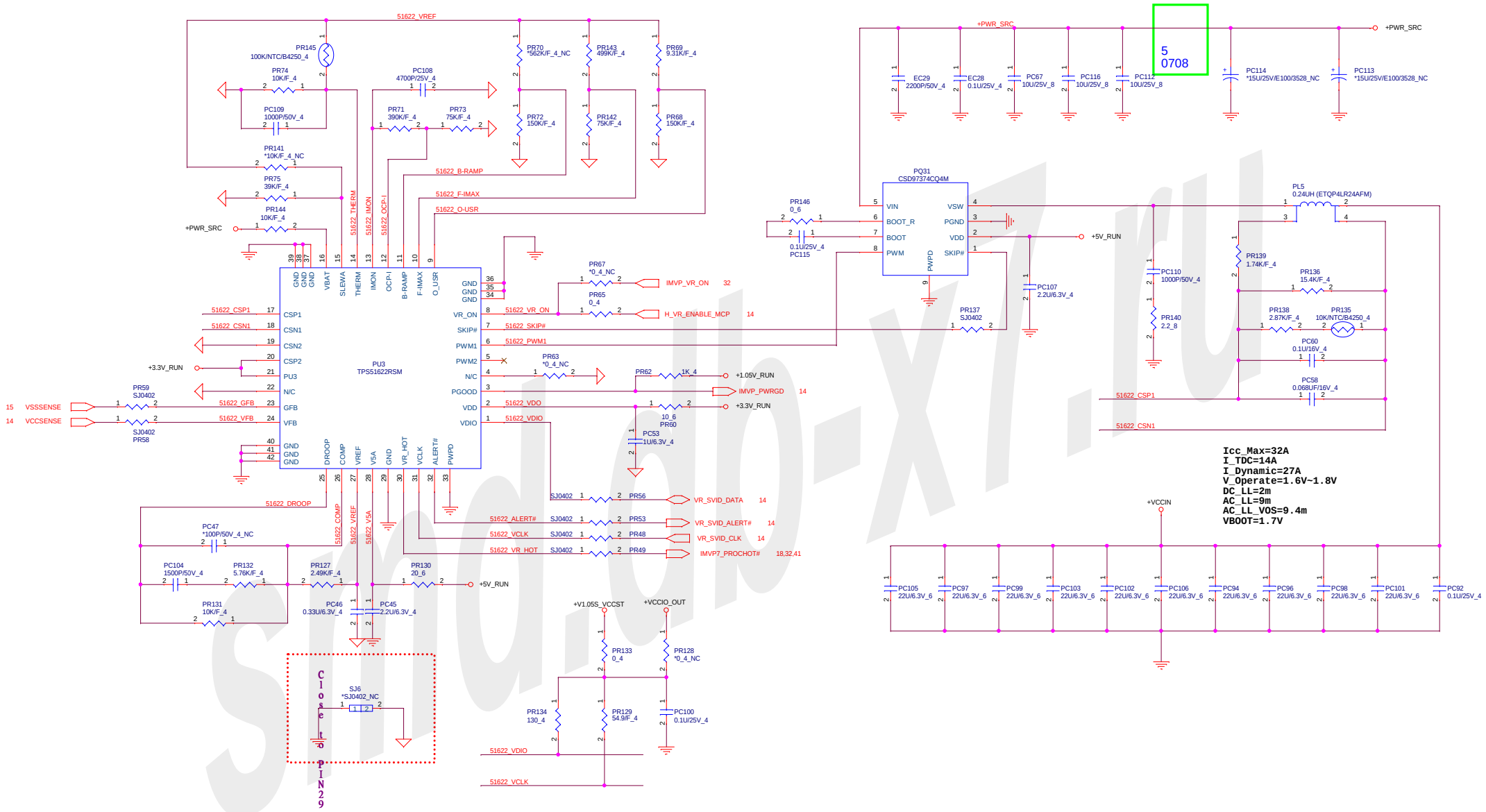

+PWR_SRC
+DC_IN_SS
REGN_LDO
PQ8 AON7403
PR27 0.01_0612
2
0708
PQ21 AON7403
EC25 *2200P/50V_4_NC
EC27 *0.1U/25V_6_NC
PR76 470K_4
PR117 10K/F_4
PR28 10K_4
PR26 100K_4
PC25 1U/25V_6
40 AC_OK
32,35 ACAV_IN
PQ10A DMN66D0LDW-7
PR110 12.4K/F_4
PC87 0.1U/16V_4
PC85 0.1U/25V_6
PC86 0.1U/25V_6
PR121 10K_4
PQ10B DMN66D0LDW-7
ACP
ACN
PC35 1U/10V_6
EC23 2200P/50V_4
EC22 0.1U/25V_6
PC50 10U/25V_8
PC55 10U/25V_8
+VCHGR
Fsw : 750K
TDC : 2.28A
PD1 SDM10K45-7-F
PR36 0_6
PC37 0.047U/25V_4
PD7 1SS355
PR126 10_12
PC88 1U/25V_6
PR114 220K/F_4
PC83 0.01U/25V_4
PR116 35.7K/F_4
PR112 332K/F_4
PR113 73.2K/F_4
PC82 0.01U/25V_4
PC81 100P/50V_4
PR30 SJ0402
PR29 SJ0402
32,40 SMBDAT0
32,40 SMBCLK0
32 IINP
CMPOUT
CMPIN
VCHGR_PG
VCHGR_VCC
VCHGR_ACDET
BQ24707_ILIM
CMPOUT
CMPIN
ACOK#
VCC
ACDET
ILIM
IOUT
SDA
SCL
REGN
BTST
HIDRV
PHASE
LODRV
GND
SRP
SRN
BM#
VCHGR_BST
VCHGR_DH
VCHGR_LX
VCHGR_DL
SRP
SRN
BQ24737RGRR
PU6
PQ18 AON7408
PQ17 AON7408
PL3 6.8UH+-20%2.8A(MMD-05AH-6R8M-X2Q)
PR46 0.01_0612
PC38 1000P/50V_4
PR42 2.2_8
PR119 22K/F_4
PC28 0.1U/16V_4
PC30 0.1U/25V_6
PR123 10_6
PR122 7.5_6
PC27 0.1U/25V_6
PC56 10U/25V_8
PC49 10U/25V_8
+3.3V_ALW
Adapter type : 65W
Battery: 3S1P (9V ~ 12.6V)
Charge Current Limit Set to 3A
Discharge Current Limit Set to 0.8A
for 10W Battery boost
IMVP7_PROCHOT# 18,32,44
Setup 85W for PROCHOT
PR108 62K/F_4
PR107 2M/F_4
PR115 10K/F_4
PR32 150K_4
PR106 165K/F_4
PC80 *100P/50V_NC
PR105 12.4K/F_4
PC33 0.022U/16V_4
PQ11 2N7002W
+15V_ALW
PD6 1SS355
BC856B PQ29
PR103 100K_4
PR120 10K/F_4
PC84 4.7U/6.3V_6
PQ30A DMN66D0LDW-7
PQ30B DMN66D0LDW-7
PR118 100K_4
PR109 680K/F_4
Quanta Computer Inc.
PROJECT : ZM3
Charger (BQ24737RGRR)
Size
Document Number
Rev 3A
Date: Thursday, July 18, 2013
Sheet 41 of 47



Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: DDR3L (TPS51216RUKR)	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 42 of 47	



Quanta Computer Inc.		
PROJECT : ZM3		
Size	Document Number: +1.05V_SUS (RT8228AZ)	Rev: 3A
Date: Thursday, July 18, 2013	Sheet 43 of 47	

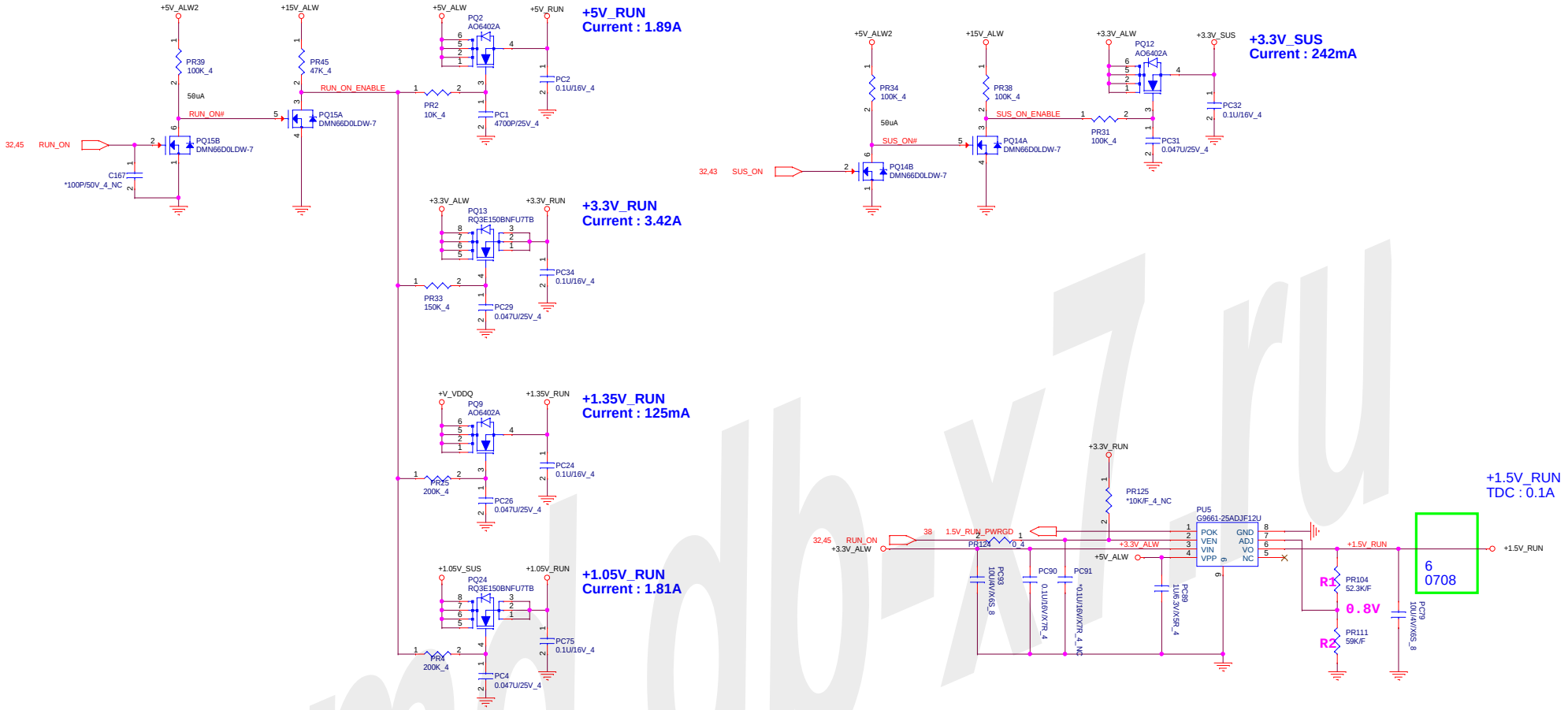


Quanta Computer Inc.

PROJECT : ZM3

Size	Document Number	Rev
	CPU Core (TPS51622RSM)	3A

Date: Thursday, July 18, 2013 Sheet 44 of 47



Quanta Computer Inc.

PROJECT : ZM3

Size	Document Number	Rev
	SUS_RUN Power Switch	3A

Date: Thursday, July 18, 2013 Sheet 45 of 47