ES2Q Block Diagram

01

PCB STACK UP

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

BATT CONNECTOR PG 38

AC JACK & BATT CHARGER PG 37

DC/DC +3VSUS +5VSUS PG 35

DC/DC +3VPCU +5VPCU PG32

DC/DC +1.05V +1.5V PG 34

CLK Gen. ICS9LPR600 PG 2

CLK_CPU_BCLK / CLK_CPU_BCLK#

CLK_MCH_BCLK / CLK_MCH_BCLK#

CLK_PCIE_DP0 / CLK_PCIE_DN0

Merom (479 Micro-FCPGA) PG 3,4

CPU VR PG 31

FSB 533/667/800 MHz

MEM CLK BUF ICS9P935 PG 2

SiS M672

Integraded VGA Function

847 TEBGA (35X35) PG 6,7,8,9

HDV I/F

SIS 307ELV PG 10

LVDS(1 Channel)

LCD Connector PG 20

2nd Display Conn. PG 20

CRT PG 19

DDRII-SODIMM1,2 PG 12

DDRII 667MHz with Single Channel

CLK_PCIE_ICH / CLK_PCIE_ICH#

MuTIOL 1GHz

SiS 968

570 TEBGA (27X27) PG 13,14,15,16

SATA - HDD PG 26

SATA2(3Gbps)

ODD CD-ROM PG 26

IDE

Azalia

MII I/F

PHY 10/100 RTL8201BL PG 27

TR/RJ45 PG 27

PCI-E

Mini PCI-E Card PG 28

PCI-E

Express Card PG 23

USB2.0

USB Connector PG 28

Realtek ALC268 PG 24

RTS5158 (Multi Card Controller) PG 22

SD

MMC

MS

BT PG 18

LPC

AUDIO Amplifier AN12948A PG 25

MDC Conn. PG 24

KBC IT8512 PG 29

SPI

Internal Speaker PG 25

External HP Jack PG 25

Int. & Ext. MIC Jacks PG 24

KeyBoard PG 21

Touch Pad PG 18

SPI FLASH PG 29

Switch & LED PG 21

Lid Switch PG 20

PROJECT : ES2Q

Quanta Computer Inc.

Size	Document Number	Rev
	BLOCK DIAGRAM	1A

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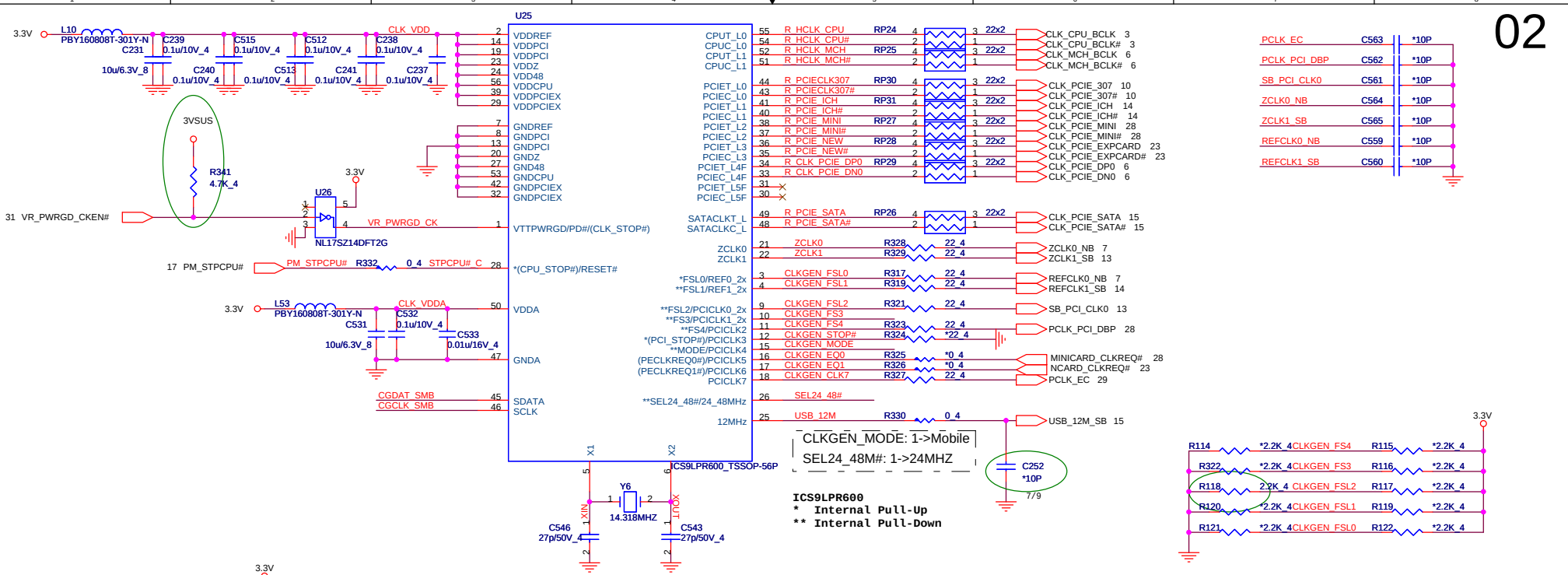
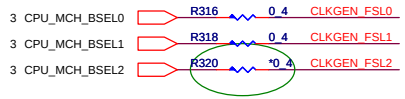
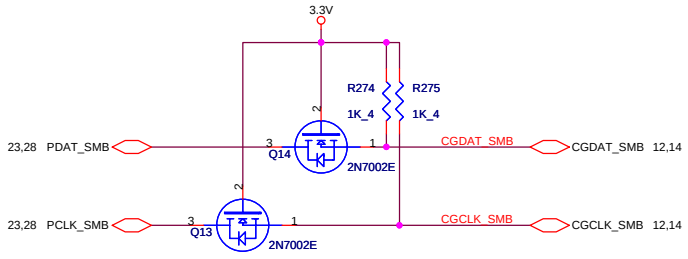
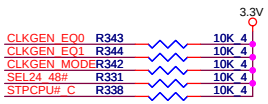






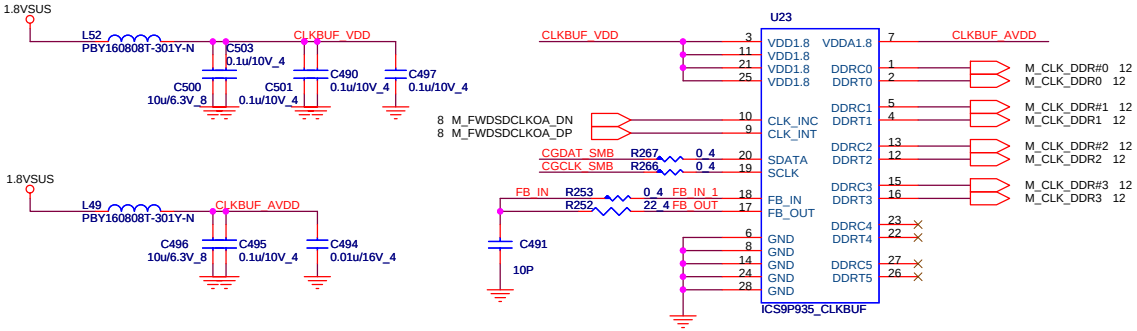
Q14 & Q13 are changed from 2N7002K to 2N7002E. 6/11

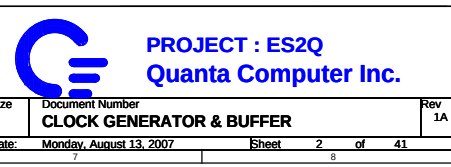


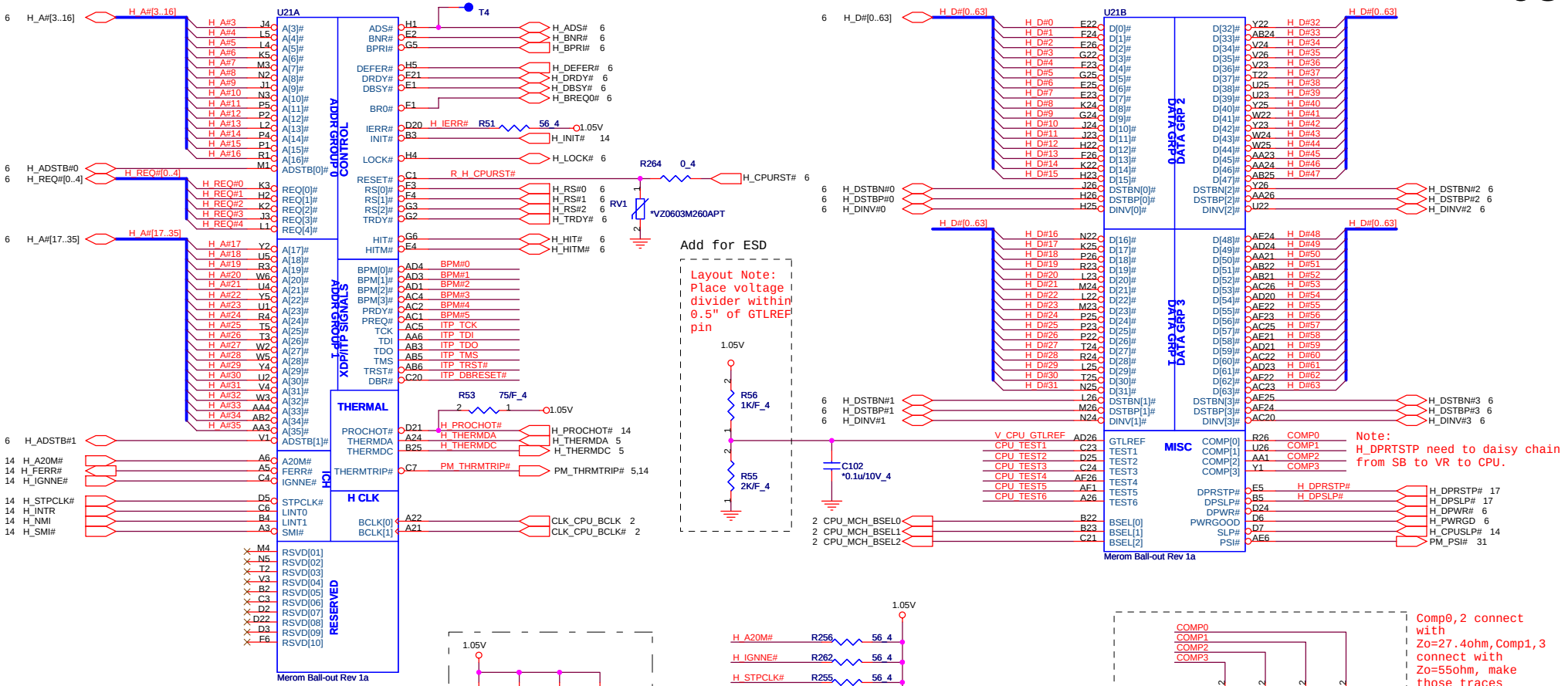
ICS9LPR600 Functionality Table

FS4	FS3	FSL2	FSL1	FSL0	CPU	PCI	ZCLK	PCIEX	SATA
Bit4	Bit3	Bit2	Bit1	Bit0	MHz	MHz	MHz	MHz	MHz
0	0	0	0	0	266	33	125	100	100
0	0	0	0	1	133	33	125	100	100
0	0	0	1	0	200	33	125	100	100
0	0	0	1	1	166	33	125	100	100
0	0	1	0	0	333	33	125	100	100
0	0	1	0	1	100	33	125	100	100
0	0	1	1	0	400	33	125	100	100
0	0	1	1	1	200	33	125	100	100
0	1	0	0	0	266	33	133	100	100
0	1	0	0	1	133	33	133	100	100
0	1	0	1	0	200	33	133	100	100
0	1	0	1	1	166	33	133	100	100
0	1	1	0	0	333	33	133	100	100
0	1	1	0	1	100	33	133	100	100
0	1	1	1	0	400	33	133	100	100
0	1	1	1	1	200	33	133	100	100

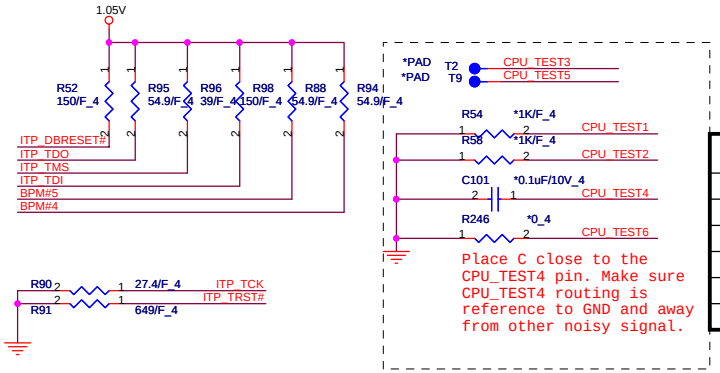
Mem CLK Buffer







Populate ITP700Flex for bringup



ITP disable guidelines

Signal	Resistor Value	Connect To	Resistor Placement
TDI	150 ohm +/- 5%	VTT	Within 2.0" of the ITP
TMS	39 ohm +/- 1%	VTT	Within 2.0" of the ITP
TRST#	500-680ohm +/- 5%	GND	Within 2.0" of the ITP
TCK	27 ohm +/- 1%	GND	Within 2.0" of the ITP
TDO	150 ohm +/- 5%	VTT	Within 2.0" of the ITP

FSB	BCLK	BSEL2	BSEL1	BSEL0
533	133	0	0	1
667	166	0	1	1
800	200	0	1	0

PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	CPU_1	1A

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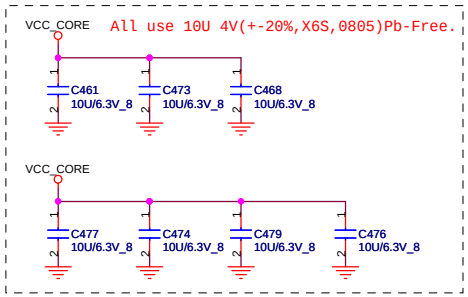

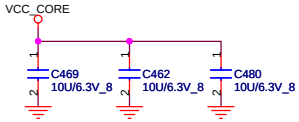

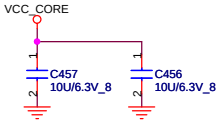

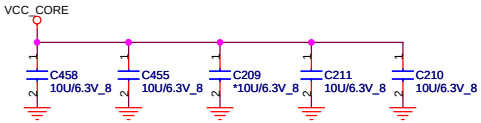

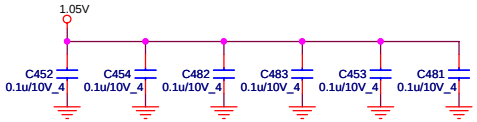

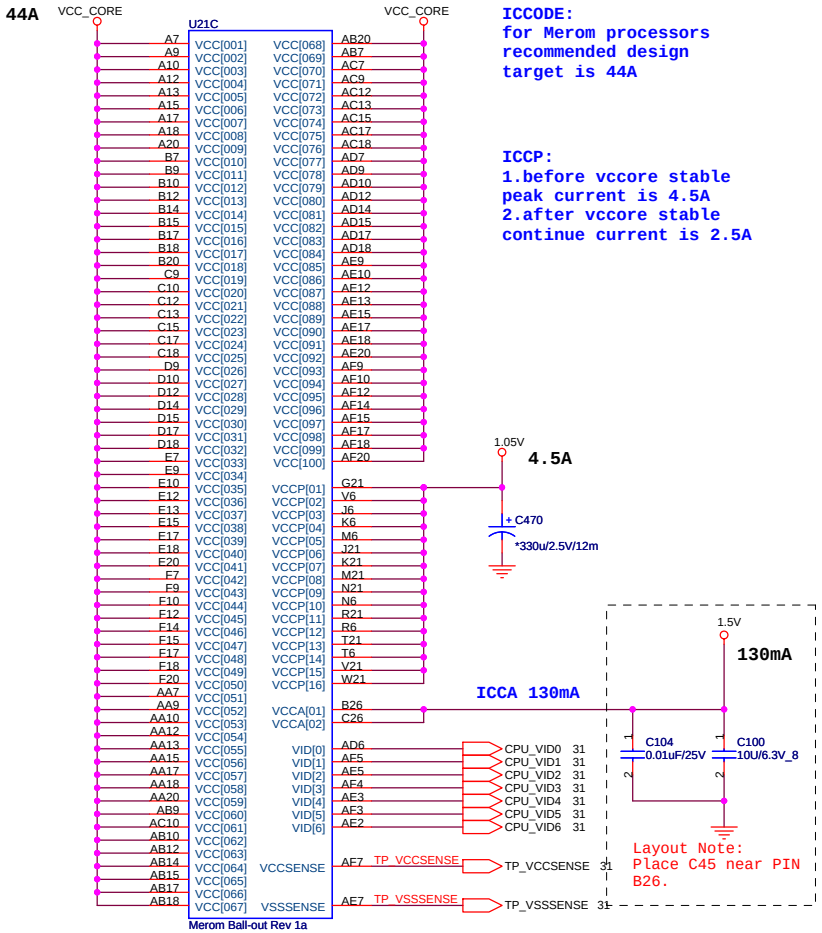

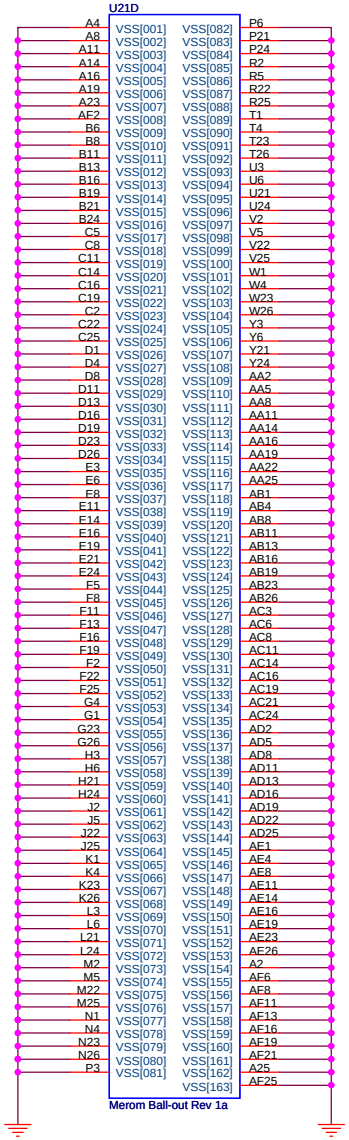

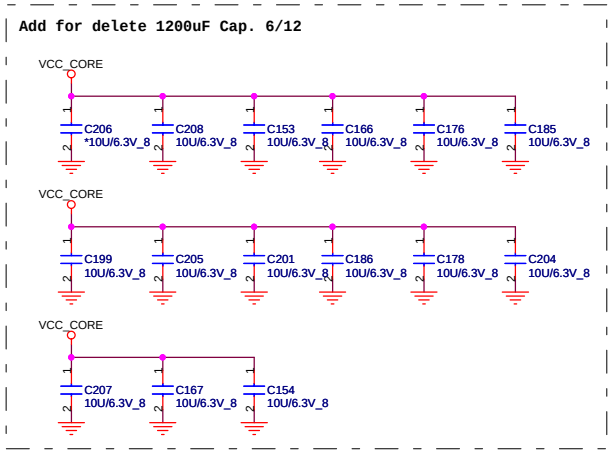

PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	CPU_2	1A
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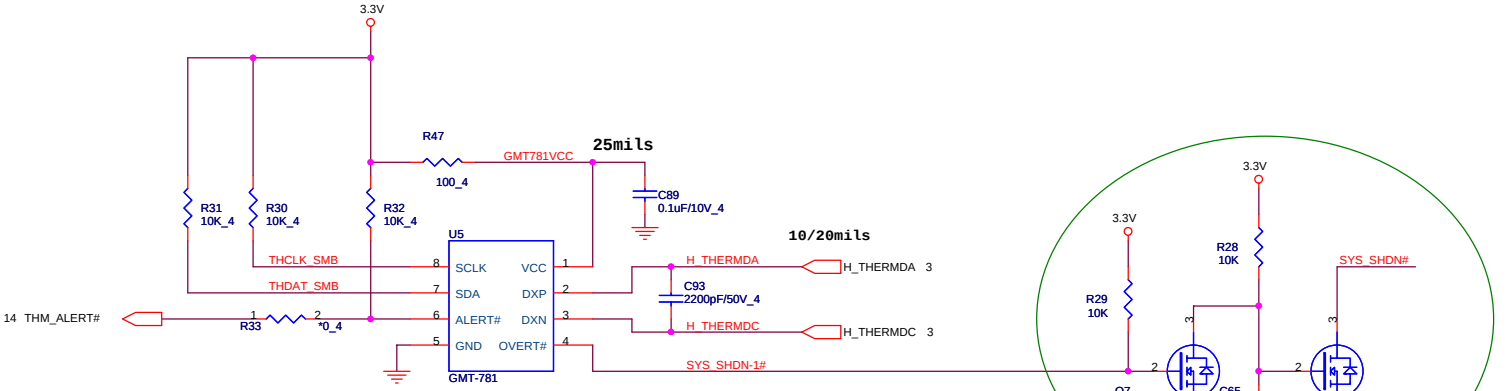

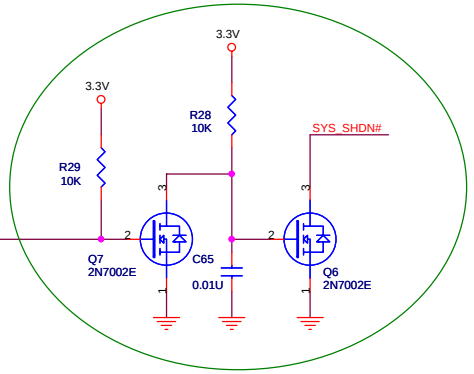

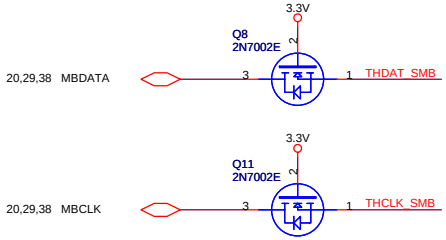

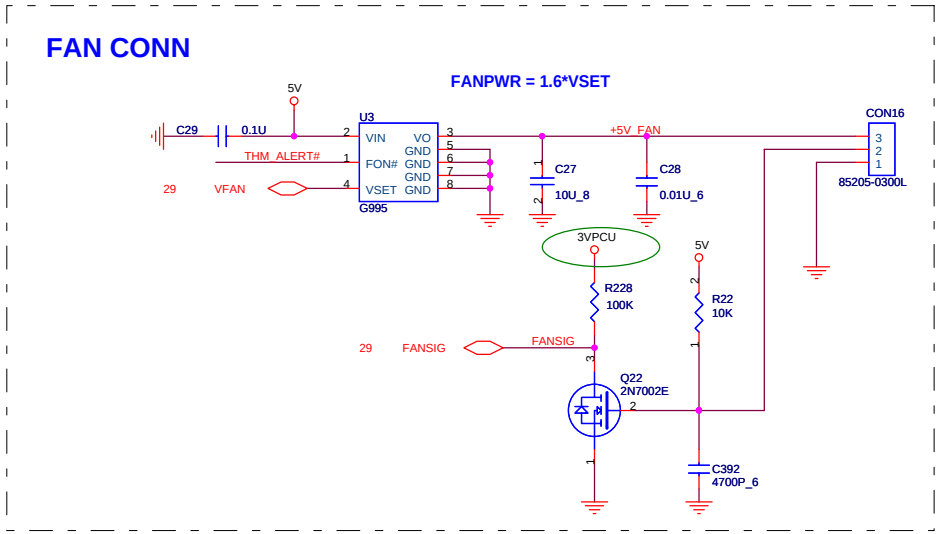

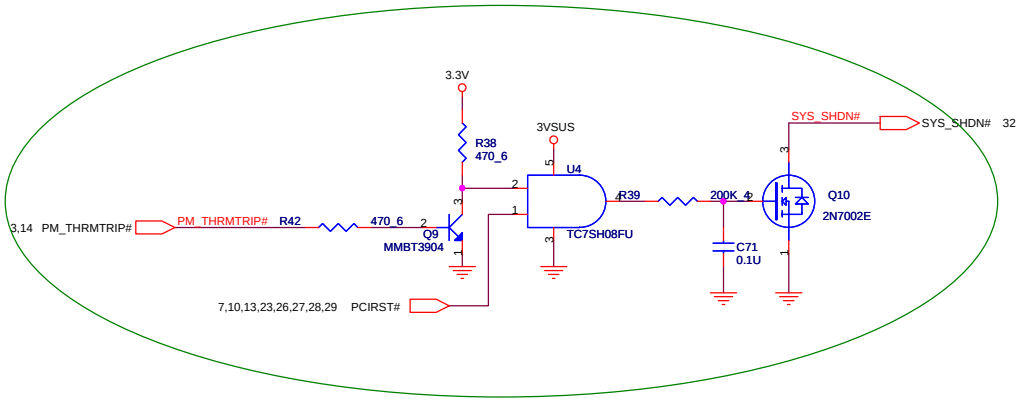

PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	THERM SENSOR & FAN	1A
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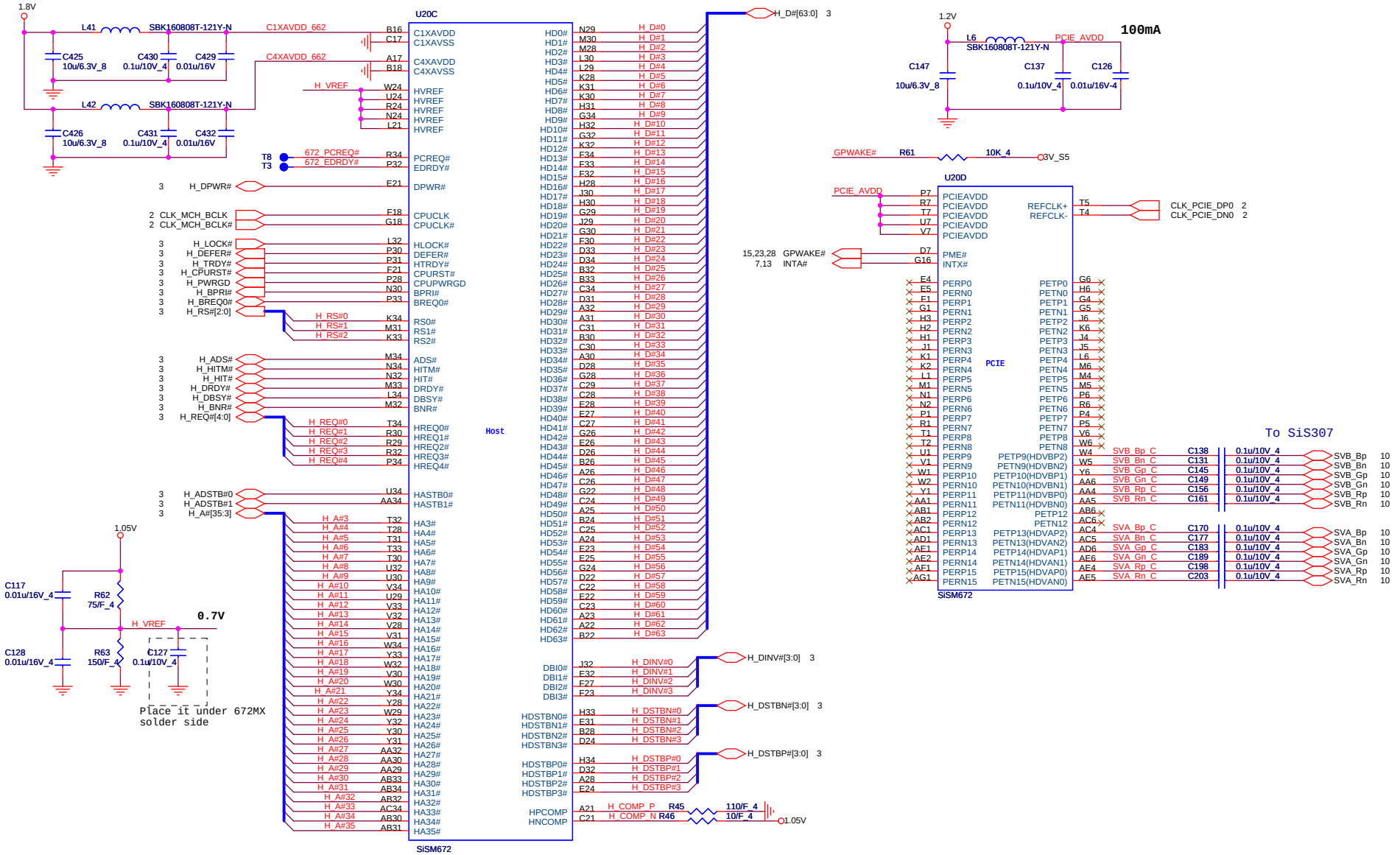

PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	NB_1	1A
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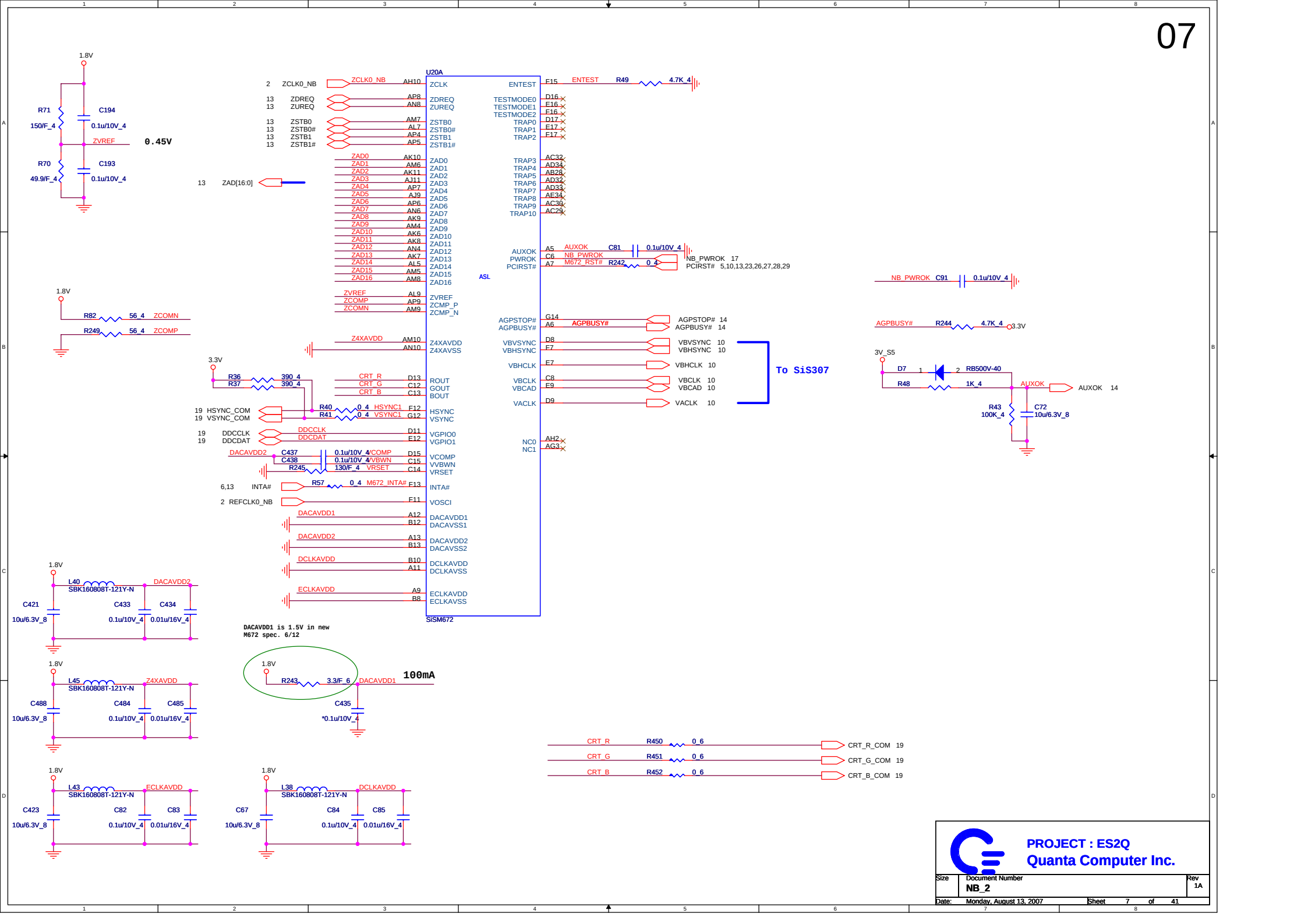
1.8V
R71 150/F_4
C194 0.1u/10V_4
ZVREF
0.45V
R70 49.9/F_4
C193 0.1u/10V_4
U20A
2 ZCLK0_NB
ZCLK0_NB AH10
ZCLK
13 ZDREQ
13 ZUREQ
AP8 ZDREQ
AN8 ZUREQ
13 ZSTB0
13 ZSTB0#
13 ZSTB1
13 ZSTB1#
AM7 ZSTB0
AL7 ZSTB0#
AP4 ZSTB1
AP5 ZSTB1#
13 ZAD[16:0]
ZAD0 AK10
ZAD1 AM6
ZAD2 AK11
ZAD3 AJ11
ZAD4 AP7
ZAD5 AJ9
ZAD6 AP6
ZAD7 AN6
ZAD8 AK9
ZAD9 AM4
ZAD10 AK6
ZAD11 AK8
ZAD12 AN4
ZAD13 AK7
ZAD14 AL5
ZAD15 AM5
ZAD16 AM8
ASL
ZVREF AL9
ZCOMP AP9
ZCOMN AM9
ZCMP_P
ZCMP_N
1.8V
R82 56_4 ZCOMN
R249 56_4 ZCOMP
Z4XAVDD AM10
AN10
Z4XAVDD
Z4XAVSS
3.3V
R36 390_4
R37 390_4
CRT_R D13
CRT_G C12
CRT_B C13
ROUT
GOUT
BOUT
19 HSYNC_COM
19 VSYNC_COM
R40 0_4 HSYNC1 F12
R41 0_4 VSYNC1 G12
HSYNC
VSYNC
19 DDCCLK
19 DDCDAT
DDCCLK D11
DDCDAT E12
VGPIO0
VGPIO1
DACAVDD2
C437 0.1u/10V_4
C438 0.1u/10V_4
R245 130/F_4
/COMP D15
/VBWN C15
/VRSET C14
VCOMP
VVBWN
VRSET
6,13 INTA#
R57 0_4 M672_INTA# F13
INTA#
2 REFCLK0_NB
F11
VOSCI
DACAVDD1 A12
B12
DACAVDD1
DACAVSS1
DACAVDD2 A13
B13
DACAVDD2
DACAVSS2
DCLKAVDD B10
A11
DCLKAVDD
DCLKAVSS
ECLKAVDD A9
B8
ECLKAVDD
ECLKAVSS
SiSM672
ENTEST F15
ENTEST R49 4.7K_4
TESTMODE0 D16
TESTMODE1 E16
TESTMODE2 F16
TRAP0 D17
TRAP1 E17
TRAP2 F17
TRAP3 AC32
TRAP4 AD34
TRAP5 AB28
TRAP6 AD32
TRAP7 AD33
TRAP8 AE34
TRAP9 AC30
TRAP10 AC29
AUXOK A5
PWROK C6
PCIRST# A7
AUXOK C81 0.1u/10V_4
NB_PWROK
M672_RST# R242 0_4
NB_PWROK 17
PCIRST# 5,10,13,23,26,27,28,29
AGPSTOP# G14
AGPBUSY# A6
AGPBUSY#
AGPSTOP# 14
AGPBUSY# 14
VBVSYNC D8
VBHSYNC F7
VBVSYNC 10
VBHSYNC 10
VBHCLK F7
VBHCLK 10
VBCLK C8
VBCAD E9
VBCLK 10
VBCAD 10
VACLK D9
VACLK 10
To SiS307
NC0 AH2
NC1 AG3
NB_PWROK C91 0.1u/10V_4
AGPBUSY# R244 4.7K_4 3.3V
3V_S5
D7 RB500V-40
R48 1K_4
AUXOK
AUXOK 14
R43 100K_4
C72 10u/6.3V_8
1.8V
L40 SBK160808T-121Y-N
DACAVDD2
C421 10u/6.3V_8
C433 0.1u/10V_4
C434 0.01u/16V_4
DACAVDD is 1.5V in new M672 spec. 6/12
1.8V
L45 SBK160808T-121Y-N
Z4XAVDD
C488 10u/6.3V_8
C484 0.1u/10V_4
C485 0.01u/16V_4
1.8V
R243 3.3/F_6
DACAVDD1
100mA
C435 *0.1u/10V_4
1.8V
L43 SBK160808T-121Y-N
ECLKAVDD
C423 10u/6.3V_8
C82 0.1u/10V_4
C83 0.01u/16V_4
1.8V
L38 SBK160808T-121Y-N
DCLKAVDD
C67 10u/6.3V_8
C84 0.1u/10V_4
C85 0.01u/16V_4
CRT_R R450 0_6 CRT_R_COM 19
CRT_G R451 0_6 CRT_G_COM 19
CRT_B R452 0_6 CRT_B_COM 19
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12 M_A_DQ[63:0] M_A_DM[7:0] 12 M_A_DQS[7:0] 12 M_A_DQS#[7:0] 12 M_A_A[14:0] 11,12

U20B

M_A_DQ0	AD31	MD0A	
M_A_DQ1	AD30	MD1A	
M_A_DQ2	AG34	MD2A	
M_A_DQ3	AE29	MD3A	
M_A_DQ4	AE32	MD4A	
M_A_DQ5	AE34	MD5A	
M_A_DQ6	AE31	MD6A	
M_A_DQ7	AE30	MD7A	
M_A_DM0	AD28	DQM0A	
M_A_DQS0	AE32	DQS0A	
M_A_DQS#0	AE33	DQS0A#	
M_A_DQ8	AE28	MD8A	
M_A_DQ9	AJ34	MD9A	
M_A_DQ10	AH31	MD10A	
M_A_DQ11	AG30	MD11A	
M_A_DQ12	AE30	MD12A	
M_A_DQ13	AG32	MD13A	
M_A_DQ14	AJ32	MD14A	
M_A_DQ15	AJ31	MD15A	
M_A_DM1	AH34	DQM1A	
M_A_DQS1	AH32	DQS1A	
M_A_DQS#1	AH33	DQS1A#	
M_A_DQ16	AK34	MD16A	
M_A_DQ17	AH30	MD17A	
M_A_DQ18	AL32	MD18A	
M_A_DQ19	AM33	MD19A	
M_A_DQ20	AK32	MD20A	
M_A_DQ21	AG29	MD21A	
M_A_DQ22	AM34	MD22A	
M_A_DQ23	AL31	MD23A	
M_A_DM2	AJ30	DQM2A	
M_A_DQS2	AK33	DQS2A	
M_A_DQS#2	AL34	DQS2A#	
M_A_DQ24	AM32	MD24A	
M_A_DQ25	AP32	MD25A	
M_A_DQ26	AP31	MD26A	
M_A_DQ27	AM29	MD27A	
M_A_DQ28	AK30	MD28A	
M_A_DQ29	AK29	MD29A	
M_A_DQ30	AJ27	MD30A	
M_A_DQ31	AK28	MD31A	
M_A_DM3	AN32	DQM3A	
M_A_DQS3	AM30	DQS3A	
M_A_DQS#3	AM31	DQS3A#	
M_A_DQ32	AK20	MD32A	
M_A_DQ33	AM20	MD33A	
M_A_DQ34	AM19	MD34A	
M_A_DQ35	AJ19	MD35A	
M_A_DQ36	AN20	MD36A	
M_A_DQ37	AJ21	MD37A	
M_A_DQ38	AP19	MD38A	
M_A_DQ39	AH20	MD39A	
M_A_DM4	AK21	DQM4A	
M_A_DQS4	AK19	DQS4A	
M_A_DQS#4	AL19	DQS4A#	
M_A_DQ40	AK18	MD40A	
M_A_DQ41	AJ17	MD41A	
M_A_DQ42	AK17	MD42A	
M_A_DQ43	AP16	MD43A	
M_A_DQ44	AH18	MD44A	
M_A_DQ45	AP18	MD45A	
M_A_DQ46	AN18	MD46A	
M_A_DQ47	AP17	MD47A	
M_A_DM5	AM18	DQM5A	
M_A_DQS5	AL17	DQS5A	
M_A_DQS#5	AM17	DQS5A#	
M_A_DQ48	AN16	MD48A	
M_A_DQ49	AK16	MD49A	
M_A_DQ50	AN14	MD50A	
M_A_DQ51	AJ15	MD51A	
M_A_DQ52	AP15	MD52A	
M_A_DQ53	AM16	MD53A	
M_A_DQ54	AK15	MD54A	
M_A_DQ55	AP14	MD55A	
M_A_DM6	AH16	DQM6A	
M_A_DQS6	AL15	DQS6A	
M_A_DQS#6	AM15	DQS6A#	
M_A_DQ56	AL13	MD56A	
M_A_DQ57	AM13	MD57A	
M_A_DQ58	AM12	MD58A	
M_A_DQ59	AJ13	MD59A	
M_A_DQ60	AM14	MD60A	
M_A_DQ61	AK14	MD61A	
M_A_DQ62	AN12	MD62A	
M_A_DQ63	AH14	MD63A	
M_A_DM7	AK13	DQM7A	
M_A_DQS7	AP12	DQS7A	
M_A_DQS#7	AP13	DQS7A#	

DRAM

SiSM672

D1XAVDD A15, D1XAVSS B15 — D1XAVDD — L39 SBK160808T-121Y-N — C428 0.01u/16V_4, C427 0.1u/10V_4, C424 10u/6.3V_8

D4XAVDD AP11, D4XAVSS AP10 — D4XAVDD — L46 SBK160808T-121Y-N — C487 0.01u/16V_4, C486 0.1u/10V_4, C489 10u/6.3V_8

1.8V

MA0A	AH24	M_A_A0
MA1A	AP25	M_A_A1
MA2A	AM25	M_A_A2
MA3A	AL25	M_A_A3
MA4A	AP26	M_A_A4
MA5A	AM26	M_A_A5
MA6A	AN26	M_A_A6
MA7A	AK25	M_A_A7
MA8A	AP27	M_A_A8
MA9A	AP28	M_A_A9
MA10A	AK24	M_A_A10
MA11A	AN24	M_A_BS#0
MA12A	AP24	M_A_BS#1
MA13A	AM28	M_A_BS#2
MA14A	AM27	M_A_A11
MA15A	AN28	M_A_A12
MA16A	AP21	M_A_A13
MA17A	AP29	M_A_A14

M_A_BS#0 11,12; M_A_BS#1 11,12; M_A_BS#2 11,12

RASA#	AM23	M_A_RAS# 11,12
CASA#	AP22	M_A_CAS# 11,12
WEA#	AJ23	M_A_WE# 11,12
FWDSDCLKOA	AK12	M_FWDSDCLKOA_DP 2
FWDSDCLKOA#	AH12	M_FWDSDCLKOA_DN 2
CS0A#	AP23	M_CS#0 11,12
CS1A#	AH22	M_CS#1 11,12
CS2A#	AM22	M_CS#2 11,12
CS3A#	AM21	M_CS#3 11,12
ODT0A	AK22	M_ODT0 11,12
ODT1A	AP20	M_ODT1 11,12
ODT2A	AN22	M_ODT2 11,12
ODT3A	AL21	M_ODT3 11,12
CKEA0	AN30	M_CKE0 11,12
CKEA1	AP30	M_CKE1 11,12
CKEA2	AH26	M_CKE2 11,12
CKEA3	AK27	M_CKE3 11,12
DDRVREF0	AD18	DDRVREF
DDRVREF1	AD23	
DDRCOMP	AJ25	M_COMP_P R72 36/F_4
DDRCOMN	AK26	M_COMP_N R78 36/F_4
OCDVREFP	AH28	M_OCDVREF_P
OCDVREFN	AJ29	M_OCDVREF_N
S3AUXSW#	B6	S3AUXSW# R44 *0_4 SUSB# 14,29

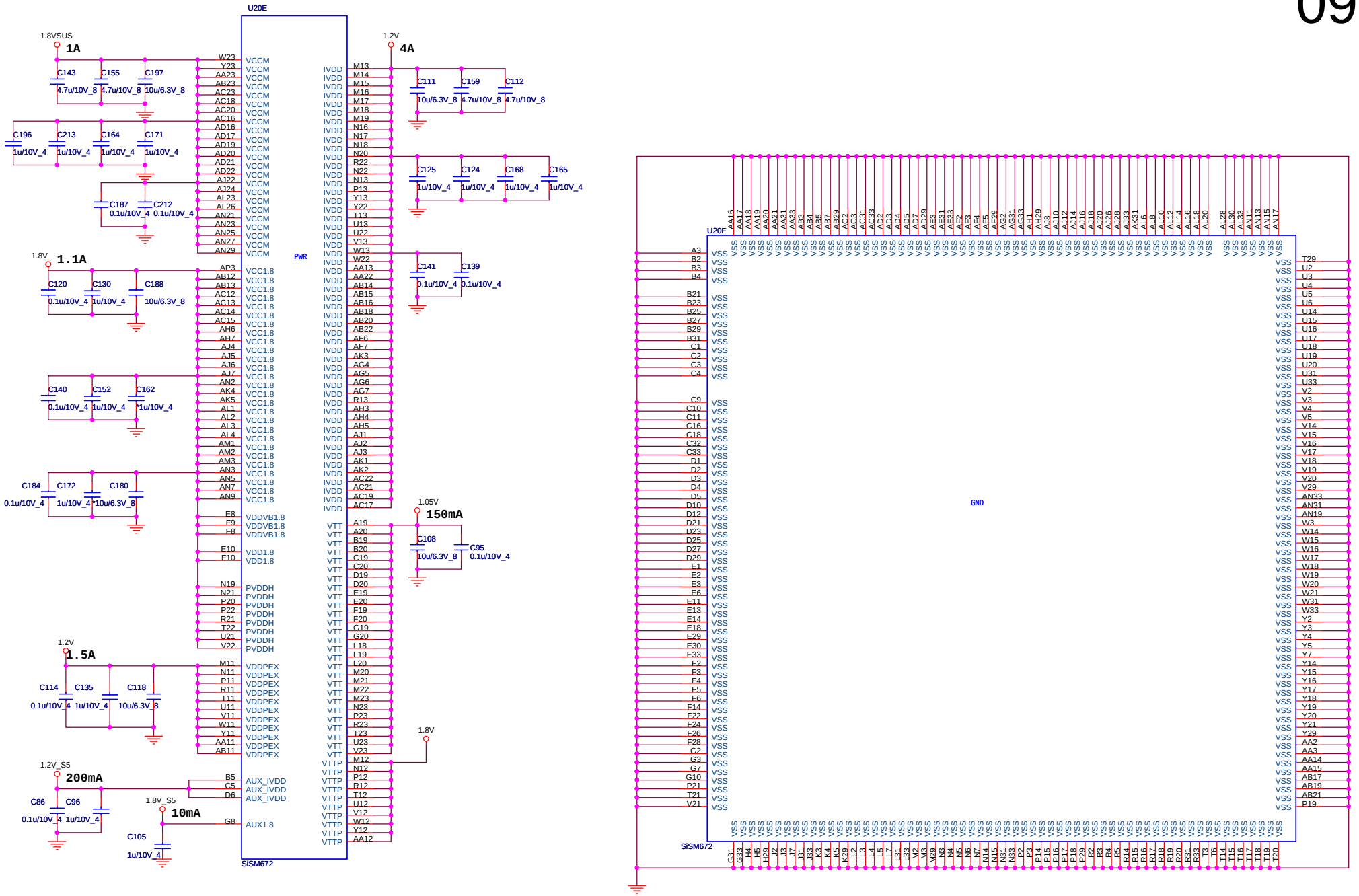
V_DDR_MCH_REF: 0.9V DDRVREF — R76 0_6; C195 *0.1u/10V_4; C192 1u/10V_4; C202 0.1u/10V_4; R69 *1K/F_4; R68 *1K/F_4; 1.8VSUS

M_OCDVREF_P: 0.85V — R74 40.2/F_4; R73 36/F_4; 1.8VSUS

M_OCDVREF_N: 0.95V — R67 36/F_4; R66 40.2/F_4; 1.8VSUS

PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	NB_3	1A
Date: Monday, August 13, 2007	Sheet 8 of 41	



PROJECT : ES2Q
Quanta Computer Inc.

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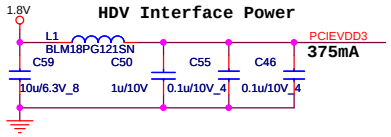
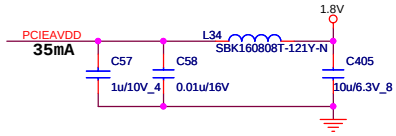
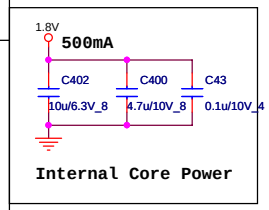
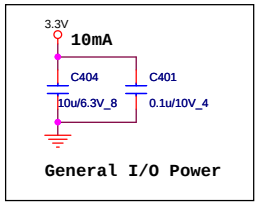
HDV Signals

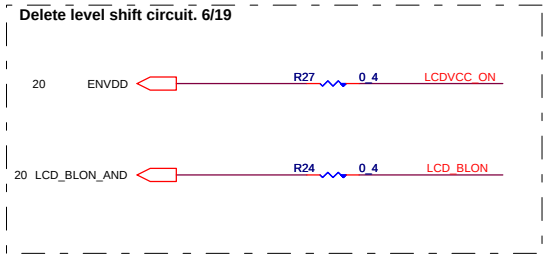
HDV Interface Power

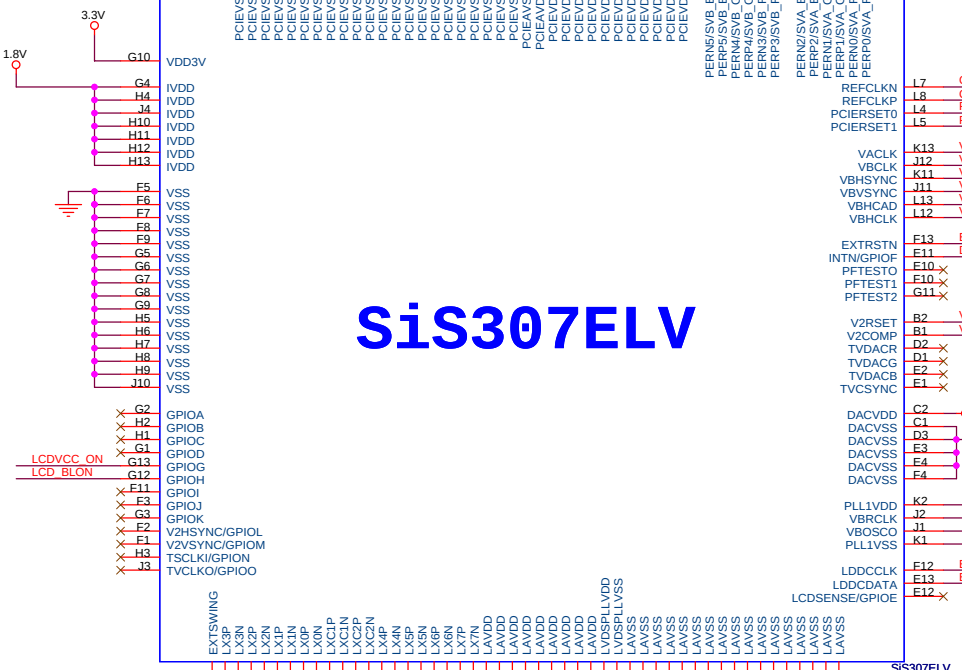


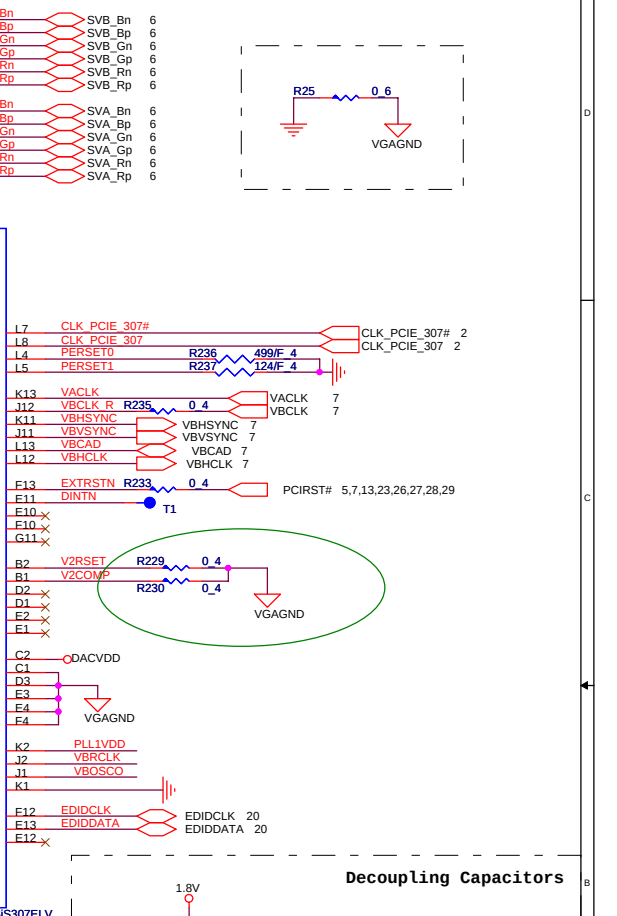




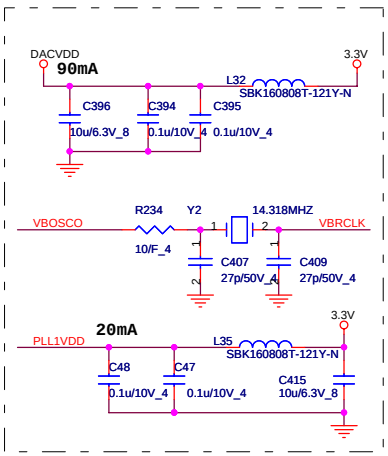




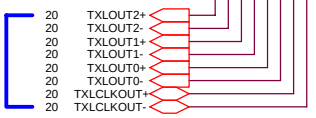


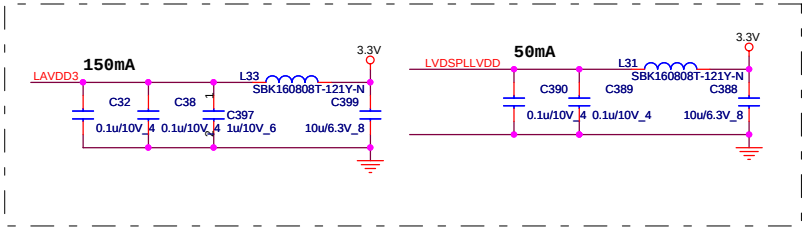


SiS307ELV

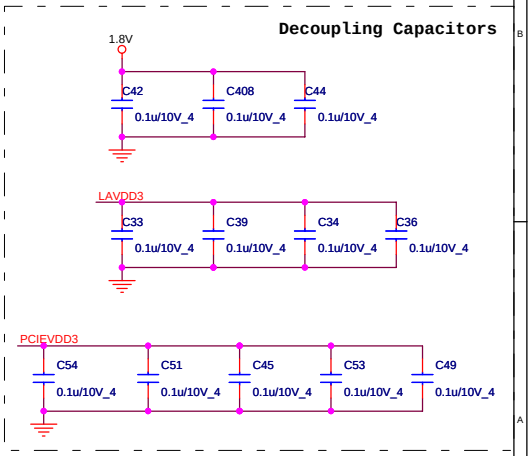


Single Channel to LCD





Decoupling Capacitors



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Quanta Computer Inc.

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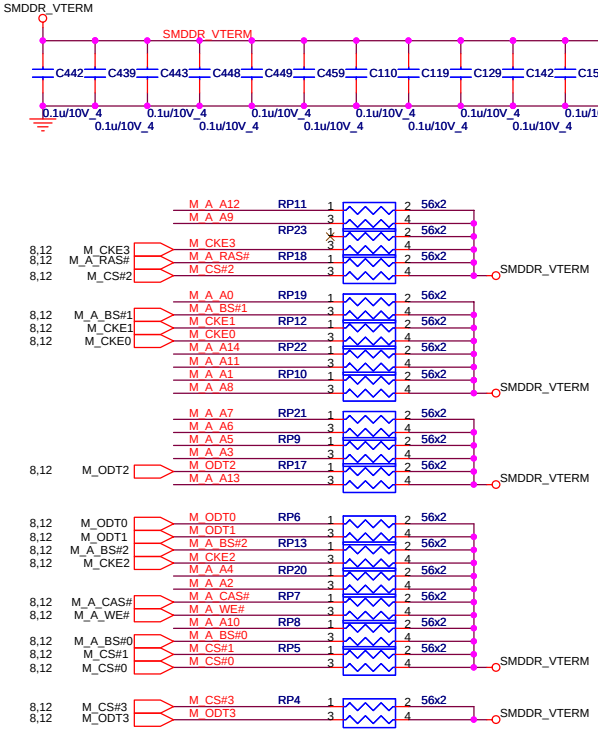
DDRII SINGLE CHANNEL.

DDRII DIMM 1

M_A_A[14..0] → M_A_A[14..0] 8,12

SMDDR_VTERM

C442 C439 C443 C448 C449 C459 C110 C119 C129 C142 C157 C173 C115 — 0.1u/10V_4



DDRII DIMM 2

SMDDR_VTERM

C191 C106 C190 C471 C134 C169 C97 C90 C88 C98 C200 C99 C113 — 0.1u/10V_4

Layout note: Place one cap close to every 2 pullup resistors terminated to SMDDR_VTERM

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M_A_DM[0..7] 8
M_A_DQ[0..63] 8
M_A_DQS[0..7] 8
M_A_DQS#[0..7] 8
M_A_A[0..14] 8,11

1.8VSUS

C222 0.1u/10V_4
R100 *1K/F_4
C220 0.1u/10V_4
R99 *1K/F_4

0.9V
650mA
SMDDR_VREF_DIMM

V_DDR_MCH_REF
R103 0_6
SMDDR_VREF_DIMM

Place close to CON23/CON24

CON21

DDR2_SODIMM(1-1734074-1)

SMDDR_VREF_DIMM
VREF VSS46 2
VSS47 DQ4 4
DQ0 DQ5 6
DQ1 VSS15 8
VSS37 DM0 10
DQS#0 VSS5 12
DQS0 DQ6 14
VSS48 DQ7 16
DQ2 VSS16 18
DQ3 DQ12 20
VSS38 DQ13 22
DQ8 VSS17 24
DQ9 DM1 26
VSS49 VSS53 28
DQS#1 CK0 30 M_CLK_DDR0 2
DQS1 CK0# 32 M_CLK_DDR#0 2
VSS39 VSS41 34
DQ10 DQ14 36
DQ11 DQ15 38
VSS50 VSS54 40
VSS18 VSS20 42
DQ16 DQ20 44
DQ17 DQ21 46
VSS1 VSS6 48
DQS#2 NC3 50
DQS2 DM2 52
VSS19 VSS21 54
DQ18 DQ22 56
DQ19 DQ23 58
VSS22 VSS24 60
DQ24 DQ28 62
DQ25 DQ29 64
VSS23 VSS25 66
DM3 DQS#3 68
NC4 DQS3 70
VSS9 VSS10 72
DQ26 DQ30 74
DQ27 DQ31 76
VSS4 VSS8 78
CKE0 CKE1 80 M_CKE1 8,11
VDD7 VDD8 82
NC1 A15 84
A16_BA2 A14 86
VDD9 VDD11 88
A12 A11 90
A9 A7 92
A8 A6 94
VDD5 VDD4 96
A5 A4 98
A3 A2 100
A1 A0 102
VDD10 VDD12 104
A10/AP BA1 106
BA0 RAS# 108
WE# S0# 110
VDD2 VDD1 112
CAS# ODT0 114
S1# A13 116
VDD3 VDD6 118
ODT1 NC2 120
VSS11 VSS12 122
DQ32 DQ36 124
DQ33 DQ37 126
VSS26 VSS28 128
DQS#4 DM4 130
DQS4 VSS42 132
VSS2 DQ38 134
DQ34 DQ39 136
DQ35 VSS55 138
VSS27 DQ44 140
DQ40 DQ45 142
DQ41 VSS43 144
VSS29 DQS#5 146
DM5 DQS5 148
VSS51 VSS56 150
DQ42 DQ46 152
DQ43 DQ47 154
VSS40 VSS44 156
DQ48 DQ52 158
DQ49 DQ53 160
VSS52 VSS57 162
NCTEST CK1 164 M_CLK_DDR1 2
VSS30 CK1# 166 M_CLK_DDR#1 2
DQS#6 VSS45 168
DQS6 DM6 170
VSS31 VSS32 172
DQ50 DQ54 174
DQ51 DQ55 176
VSS33 VSS35 178
DQ56 DQ60 180
DQ57 DQ61 182
VSS3 VSS7 184
DM7 DQS#7 186
VSS34 DQS7 188
DQ58 VSS36 190
DQ59 DQ62 192
VSS14 DQ63 194
SDA VSS13 196
SCL SA0 198
VDD(SPD) SA1 200

PC4800 DDR2 SDRAM SO-DIMM1 (200P)

1.8VSUS 6.72A

8,11 M_CKE0 — M_CKE0
8,11 M_A_BS#2 — M_A_BS#2
H=5.2
8,11 M_A_BS#0 — M_A_BS#0
8,11 M_A_WE# — M_A_WE#
8,11 M_A_CAS# — M_A_CAS#
8,11 M_CS#1 — M_CS#1
8,11 M_ODT1 — M_ODT1
3.3V

M_A_BS#1 8,11
M_A_RAS# 8,11
M_CS#0 8,11
M_ODT0 8,11
M_A_A13

CGDAT_SMB
CGCLK_SMB
R34 10K_4
R35 10K_4
SMbus address A0

CLOCK 0,1
CKE 0,1

	SA1	SA0
CON24	0	0
CON23	0	1

CON20

DDR2_SODIMM(2-1734073-2)

SMDDR_VREF_DIMM
VREF VSS46 2
VSS47 DQ4 4
DQ0 DQ5 6
DQ1 VSS15 8
VSS37 DM0 10
DQS#0 VSS5 12
DQS0 DQ6 14
VSS48 DQ7 16
DQ2 VSS16 18
DQ3 DQ12 20
VSS38 DQ13 22
DQ8 VSS17 24
DQ9 DM1 26
VSS49 VSS53 28
DQS#1 CK0 30 M_CLK_DDR2 2
DQS1 CK0# 32 M_CLK_DDR#2 2
VSS39 VSS41 34
DQ10 DQ14 36
DQ11 DQ15 38
VSS50 VSS54 40
VSS18 VSS20 42
DQ16 DQ20 44
DQ17 DQ21 46
VSS1 VSS6 48
DQS#2 NC3 50
DQS2 DM2 52
VSS19 VSS21 54
DQ18 DQ22 56
DQ19 DQ23 58
VSS22 VSS24 60
DQ24 DQ28 62
DQ25 DQ29 64
VSS23 VSS25 66
DM3 DQS#3 68
NC4 DQS3 70
VSS9 VSS10 72
DQ26 DQ30 74
DQ27 DQ31 76
VSS4 VSS8 78
CKE0 CKE1 80 M_CKE3 8,11
VDD7 VDD8 82
NC1 A15 84
A16_BA2 A14 86
VDD9 VDD11 88
A12 A11 90
A9 A7 92
A8 A6 94
VDD5 VDD4 96
A5 A4 98
A3 A2 100
A1 A0 102
VDD10 VDD12 104
A10/AP BA1 106
BA0 RAS# 108
WE# S0# 110
VDD2 VDD1 112
CAS# ODT0 114
S1# A13 116
VDD3 VDD6 118
ODT1 NC2 120
VSS11 VSS12 122
DQ32 DQ36 124
DQ33 DQ37 126
VSS26 VSS28 128
DQS#4 DM4 130
DQS4 VSS42 132
VSS2 DQ38 134
DQ34 DQ39 136
DQ35 VSS55 138
VSS27 DQ44 140
DQ40 DQ45 142
DQ41 VSS43 144
VSS29 DQS#5 146
DM5 DQS5 148
VSS51 VSS56 150
DQ42 DQ46 152
DQ43 DQ47 154
VSS40 VSS44 156
DQ48 DQ52 158
DQ49 DQ53 160
VSS52 VSS57 162
NCTEST CK1 164 M_CLK_DDR3 2
VSS30 CK1# 166 M_CLK_DDR#3 2
DQS#6 VSS45 168
DQS6 DM6 170
VSS31 VSS32 172
DQ50 DQ54 174
DQ51 DQ55 176
VSS33 VSS35 178
DQ56 DQ60 180
DQ57 DQ61 182
VSS3 VSS7 184
DM7 DQS#7 186
VSS34 DQS7 188
DQ58 VSS36 190
DQ59 DQ62 192
VSS14 DQ63 194
SDA VSS13 196
SCL SA0 198
VDD(SPD) SA1 200

PC4800 DDR2 SDRAM SO-DIMM2 (200P)

1.8VSUS

8,11 M_CKE2 — M_CKE2
H=9.2
8,11 M_CS#3 — M_CS#3
8,11 M_ODT3 — M_ODT3
2,14 CGDAT_SMB — CGDAT_SMB
2,14 CGCLK_SMB — CGCLK_SMB
3.3V

M_CS#2 8,11
M_ODT2 8,11
M_A_A13

R240 10K_4
R241 *10K_4
R239 *10K_4
R238 10K_4
3.3V
Address A2 option

CLOCK 2,3
CKE 2,3

1.8VSUS
C174 2.2u/6.3V_6
C158 2.2u/6.3V_6
C144 2.2u/6.3V_6
C116 2.2u/6.3V_6
C121 2.2U/6.3V_6

1.8VSUS
C440 0.1u/10V_4
C444 0.1u/10V_4
C446 0.1u/10V_4
C450 0.1u/10V_4

SMDDR_VREF_DIMM
C224 0.1u/10V_4
C223 2.2u/6.3V_6

3.3V
C69 2.2u/6.3V_6
C68 0.1u/10V_4

Place these Caps near SO-DIMM1.
No Vias Between the Trace of PIN to CAP.

1.8VSUS
C122 2.2u/6.3V_6
C146 2.2u/6.3V_6
C123 2.2u/6.3V_6
C160 2.2u/6.3V_6
C175 2.2U/6.3V_6

1.8VSUS
C179 0.1u/10V_4
C163 0.1u/10V_4
C148 0.1u/10V_4
C136 0.1u/10V_4

SMDDR_VREF_DIMM
C221 0.1u/10V_4
C218 2.2u/6.3V_6

3.3V
C66 2.2u/6.3V_6
C64 0.1u/10V_4

Place these Caps near SO-DIMM2.
No Vias Between the Trace of PIN to CAP.

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Quanta Computer Inc.

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	DDRII_2	1A
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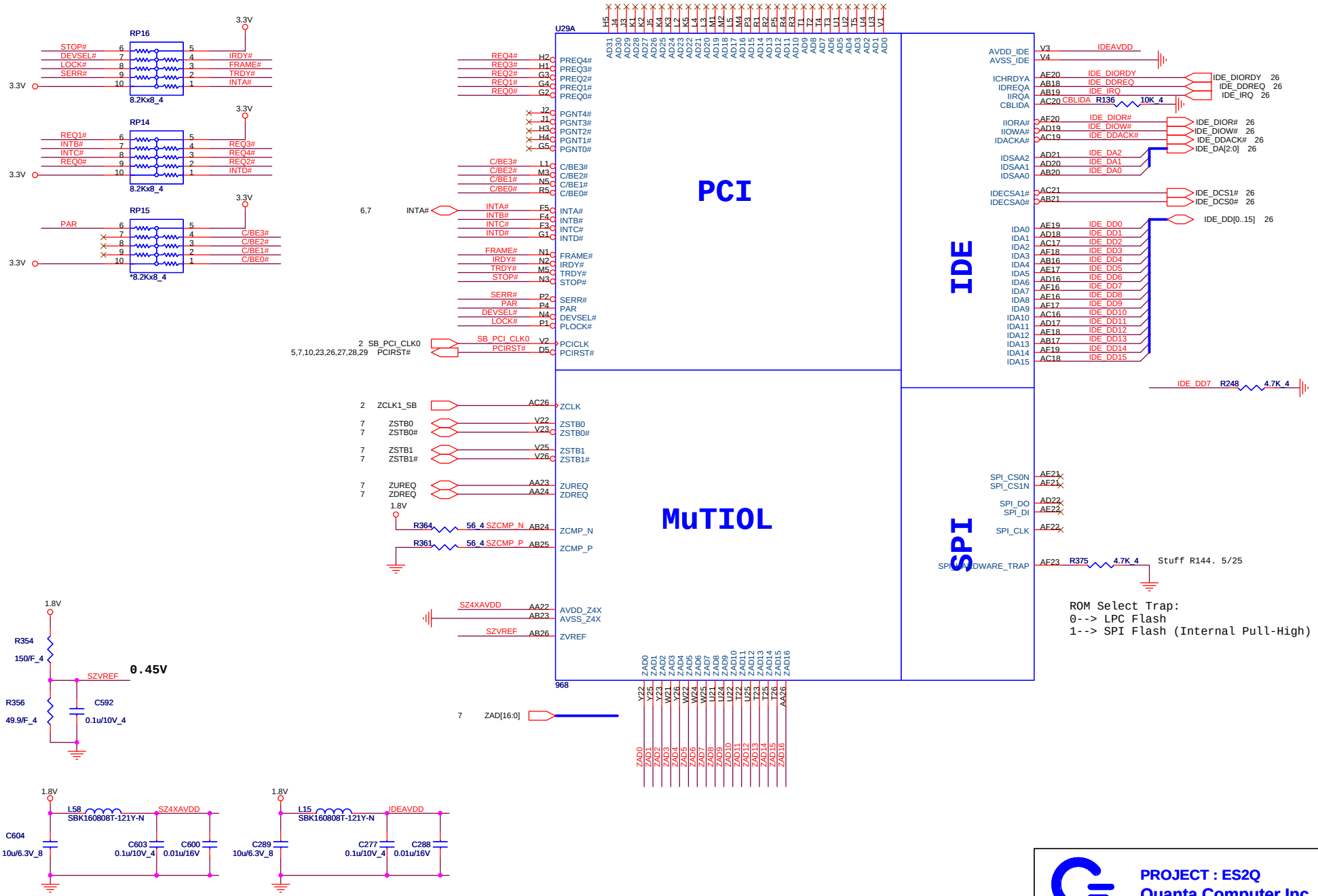

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	SB_1	1A
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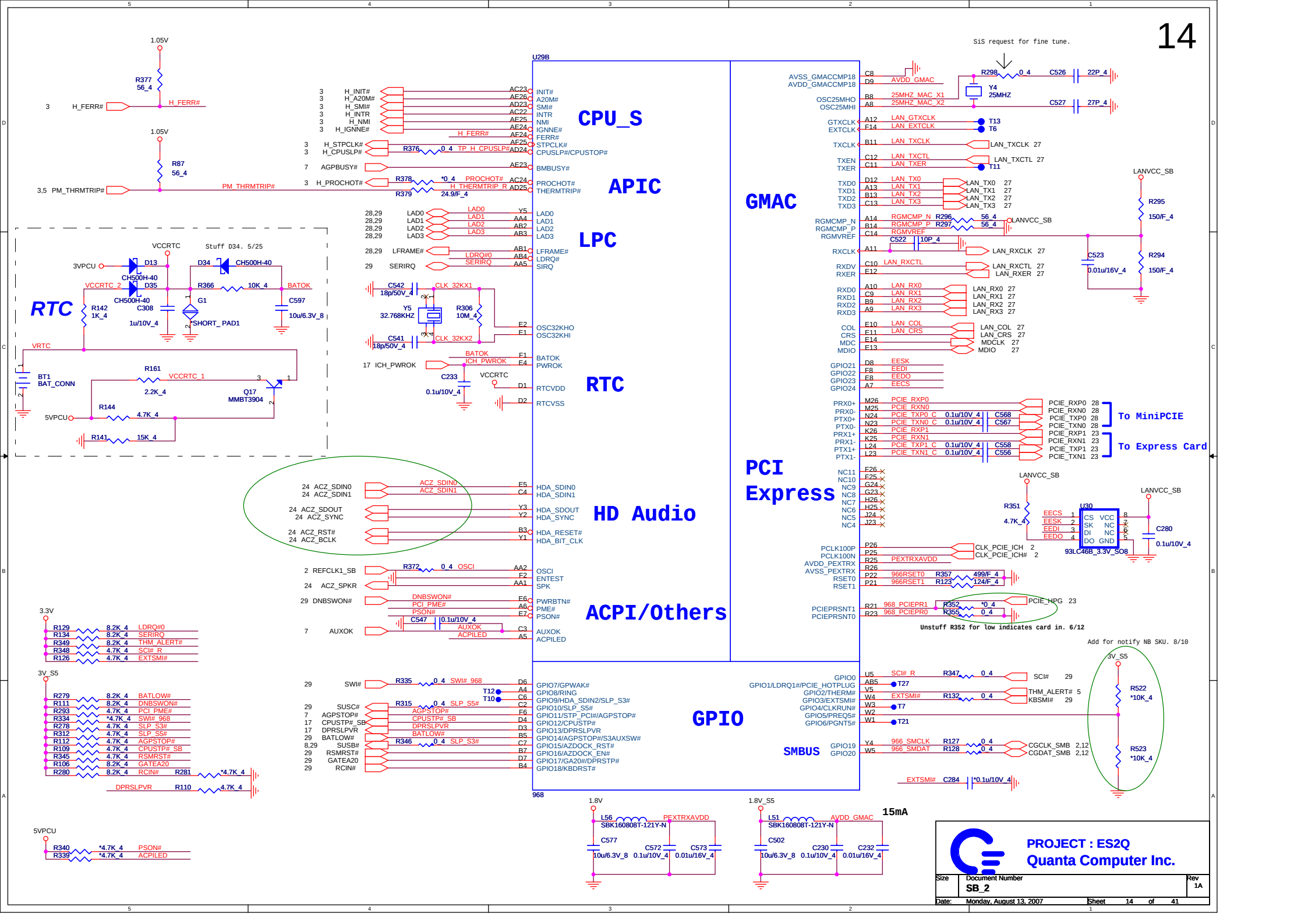
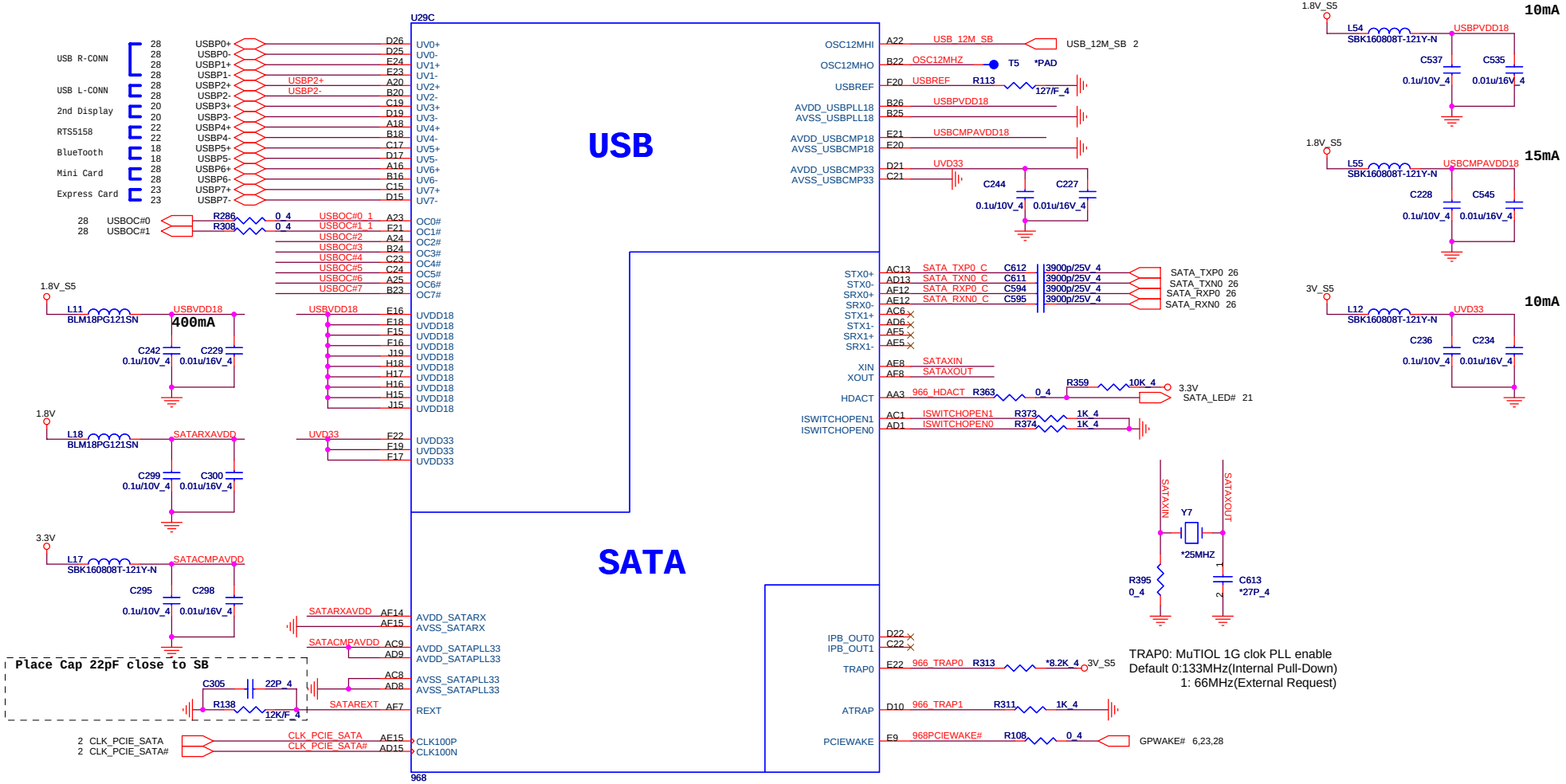

U29B
CPU_S
APIC
LPC
RTC
HD Audio
ACPI/Others
GPIO
SMBUS
GMAC
PCI Express
RTC
Stuff D34. 5/25
SiS request for fine tune.
To MiniPCIE
To Express Card
Unstuff R352 for low indicates card in. 6/12
Add for notify NB SKU. 8/10
15mA
PROJECT : ES2Q
Quanta Computer Inc.
SB_2
Monday, August 13, 2007



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Quanta Computer Inc.		
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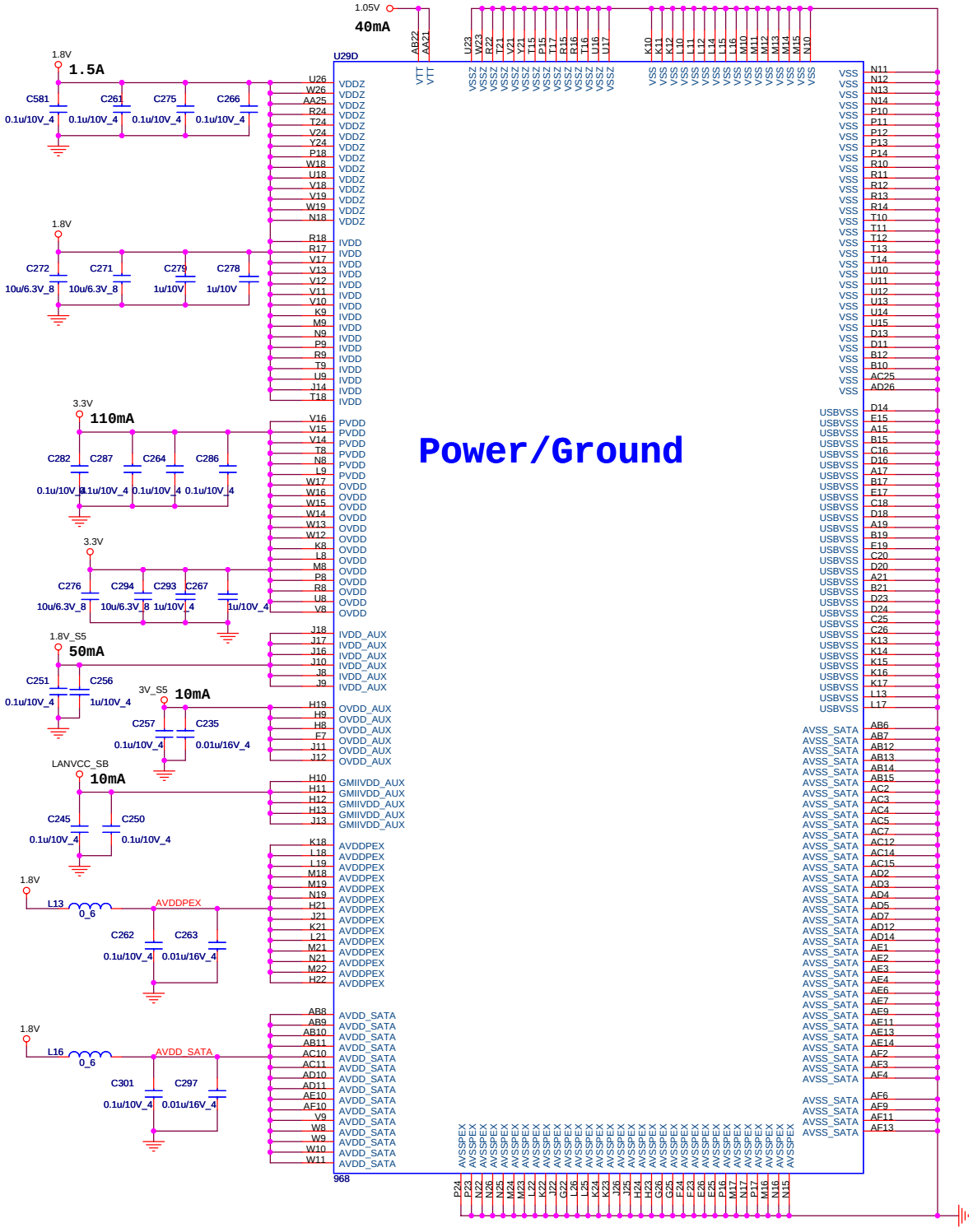
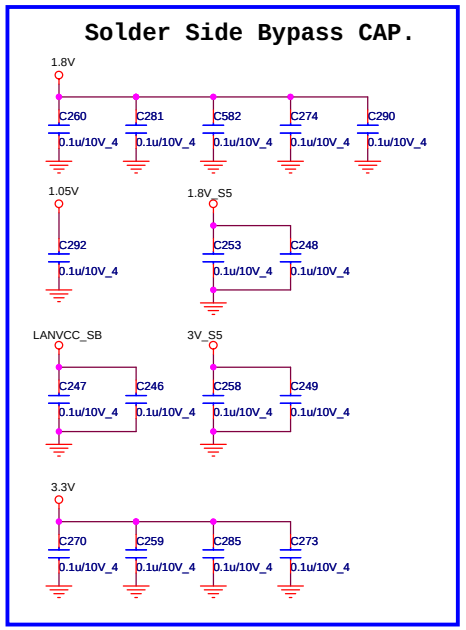
Power/Ground



Solder Side Bypass CAP.



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	SB_4	1A
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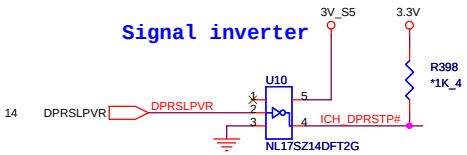

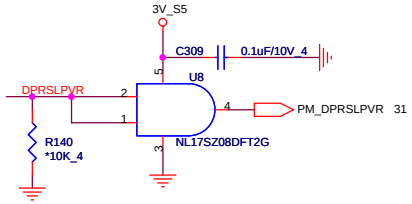

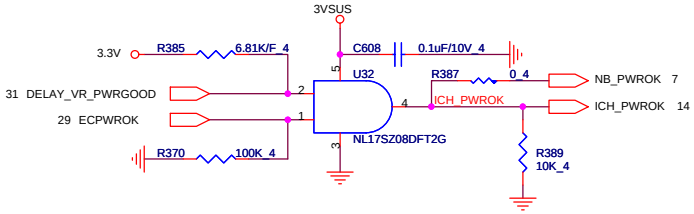

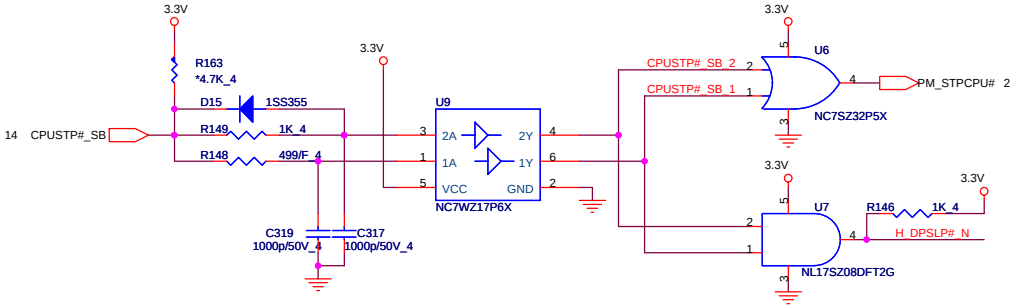

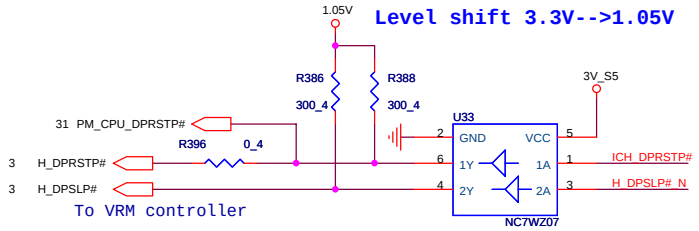

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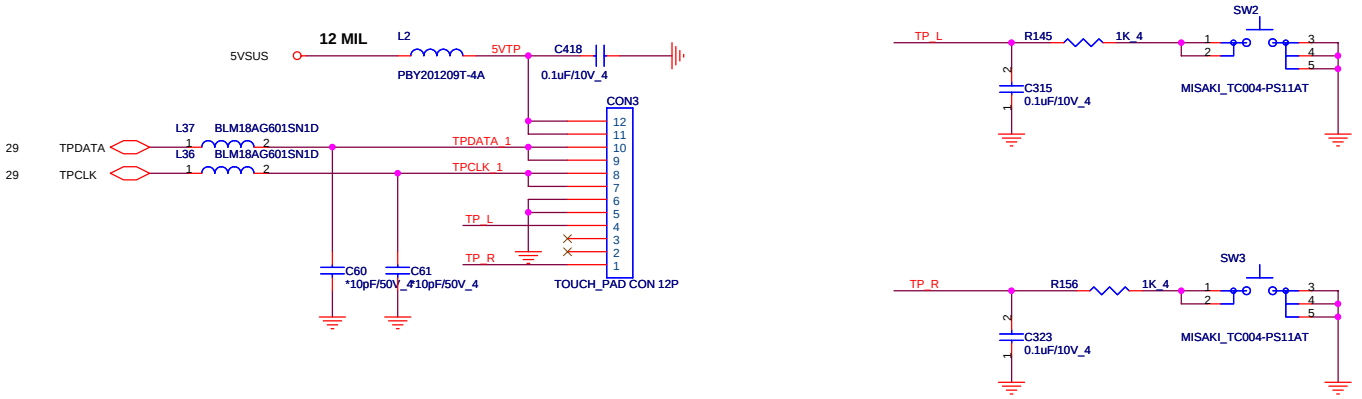
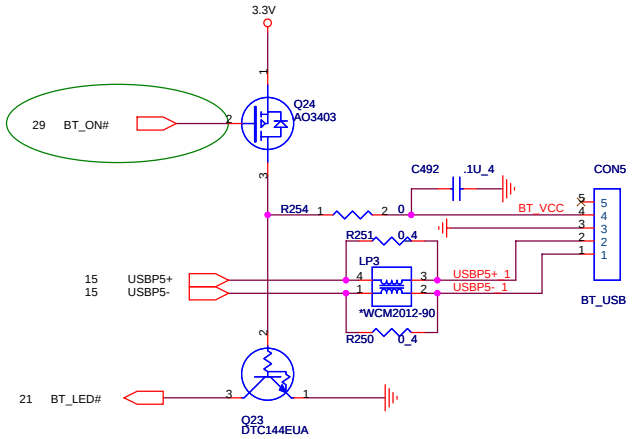
TouchPad



BlueTooth



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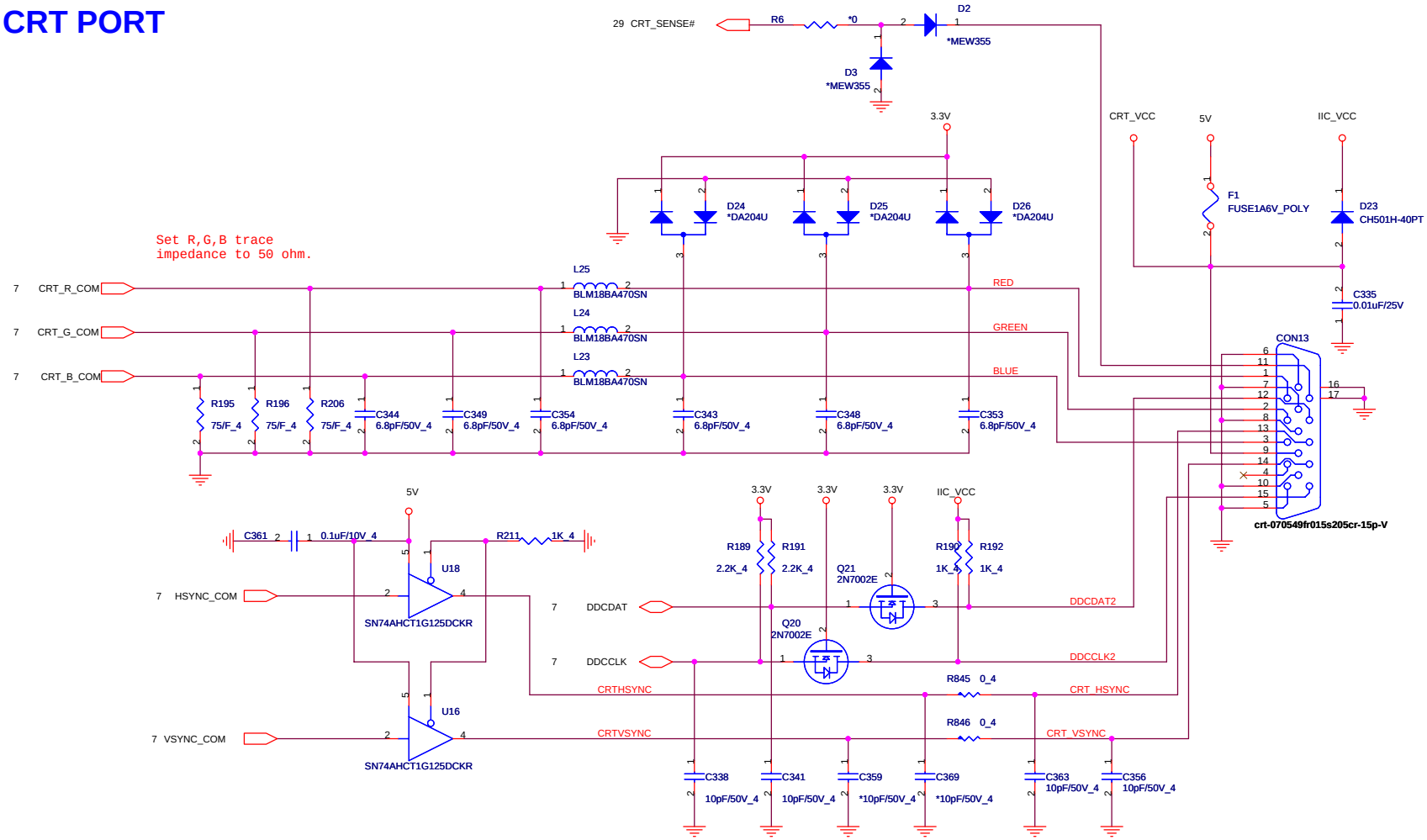
CRT PORT



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Quanta Computer Inc.

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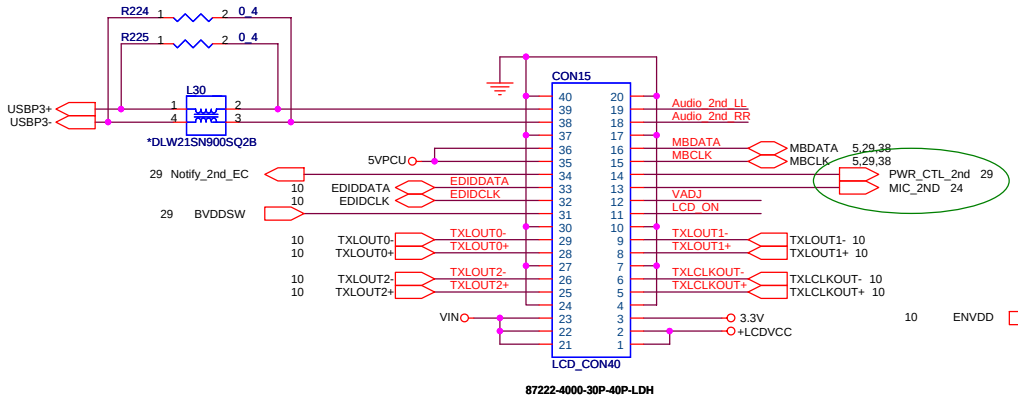
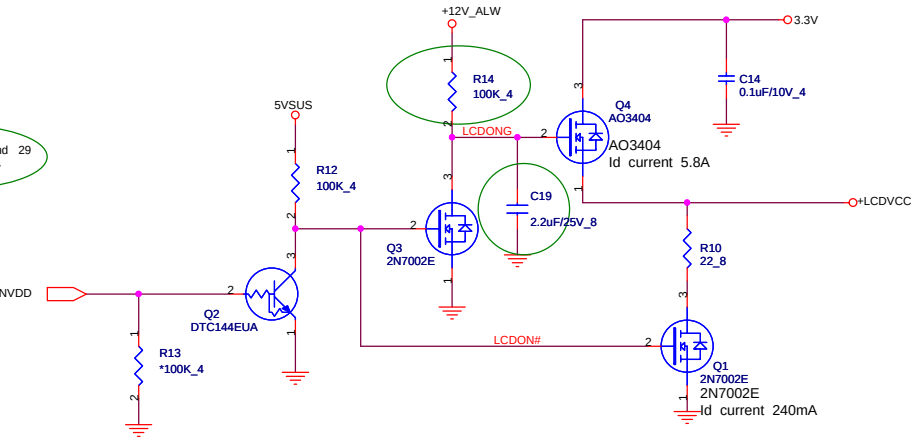
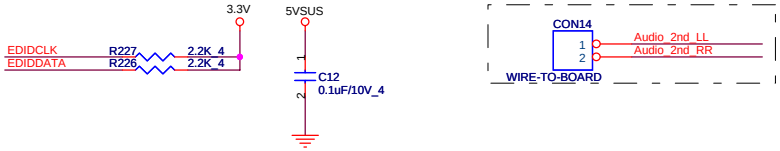
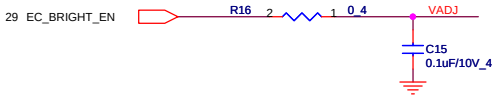
LCD & 2nd display Connector



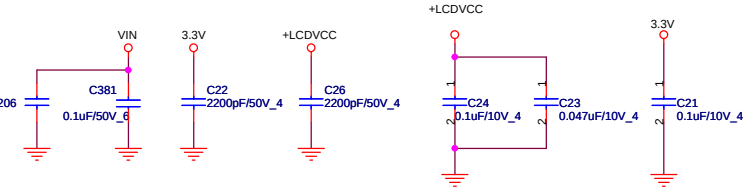




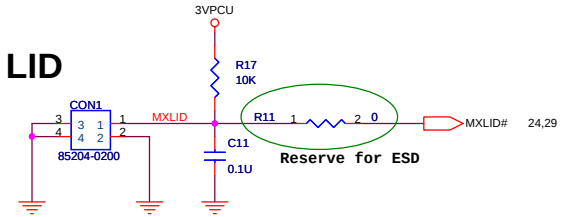
BACKLIGHT CONTROL

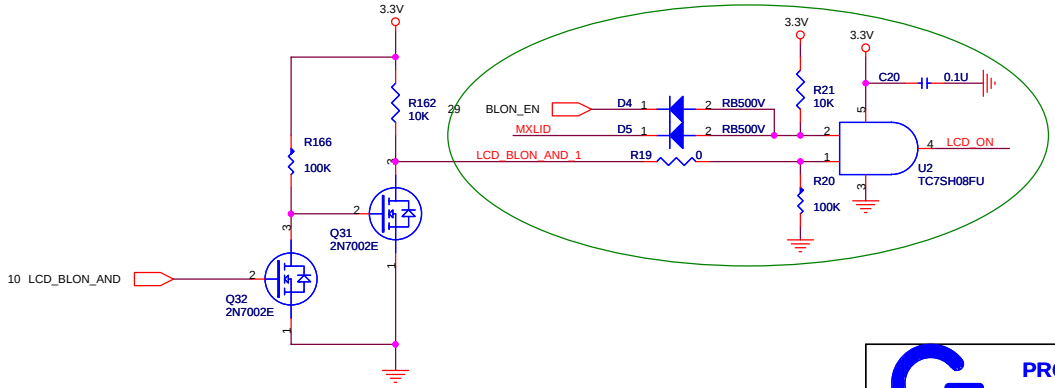


Close to Connector



LID





PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	LCD CONNECTOR	1A
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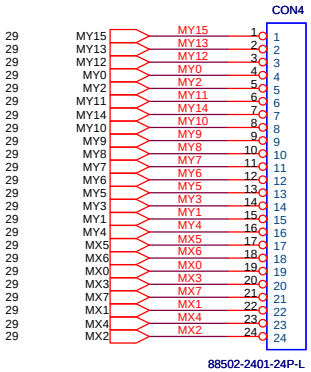
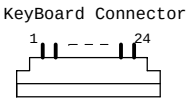
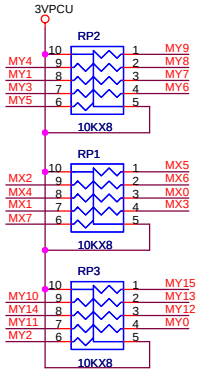
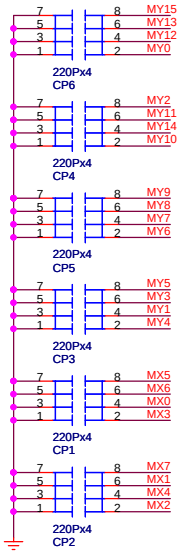
Keyboard

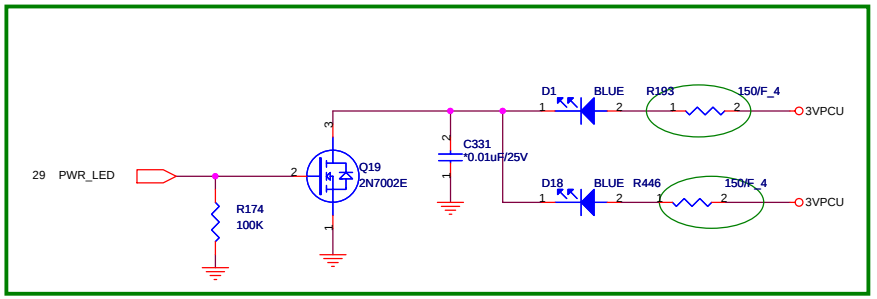


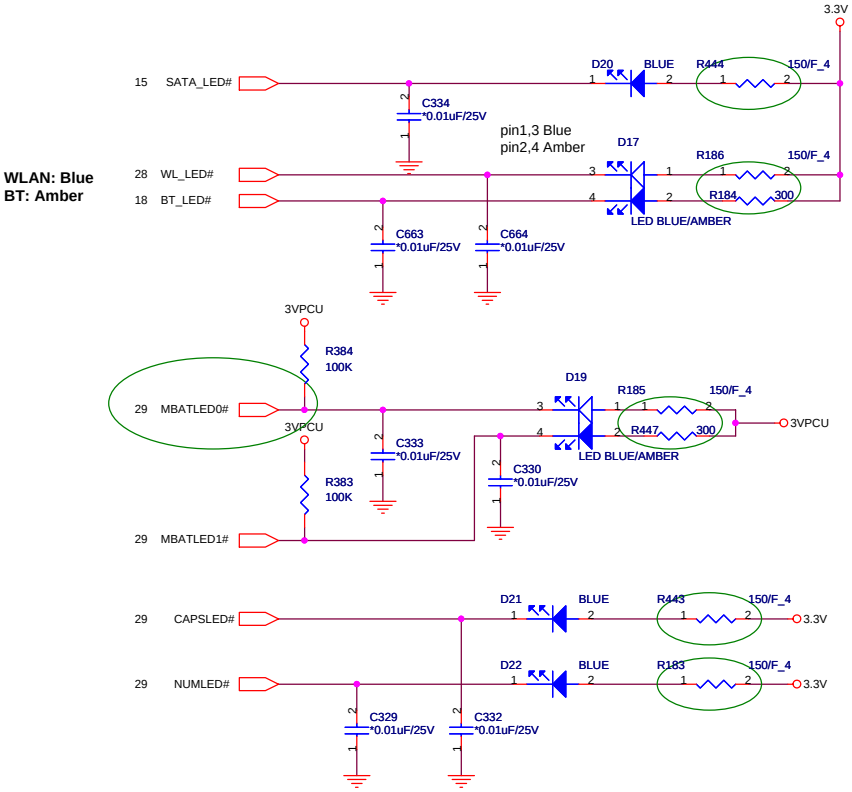






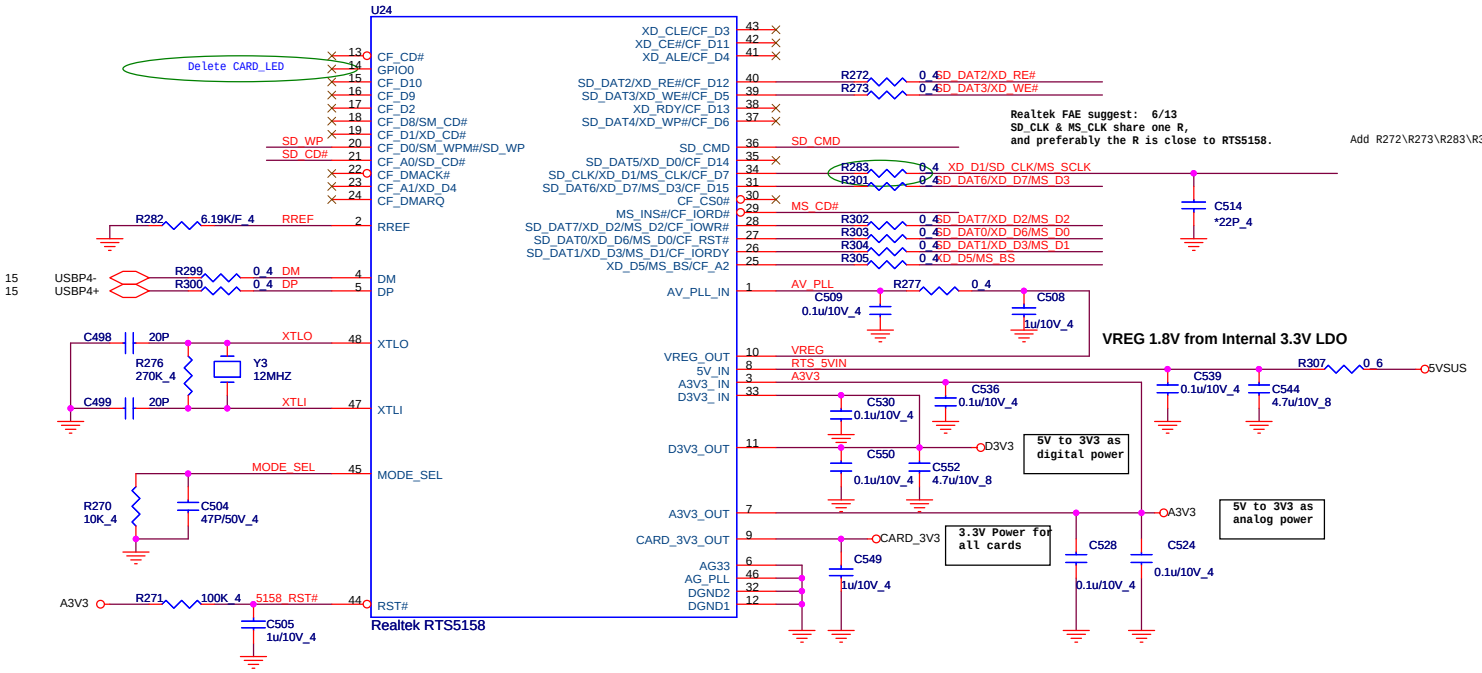
System LEDs



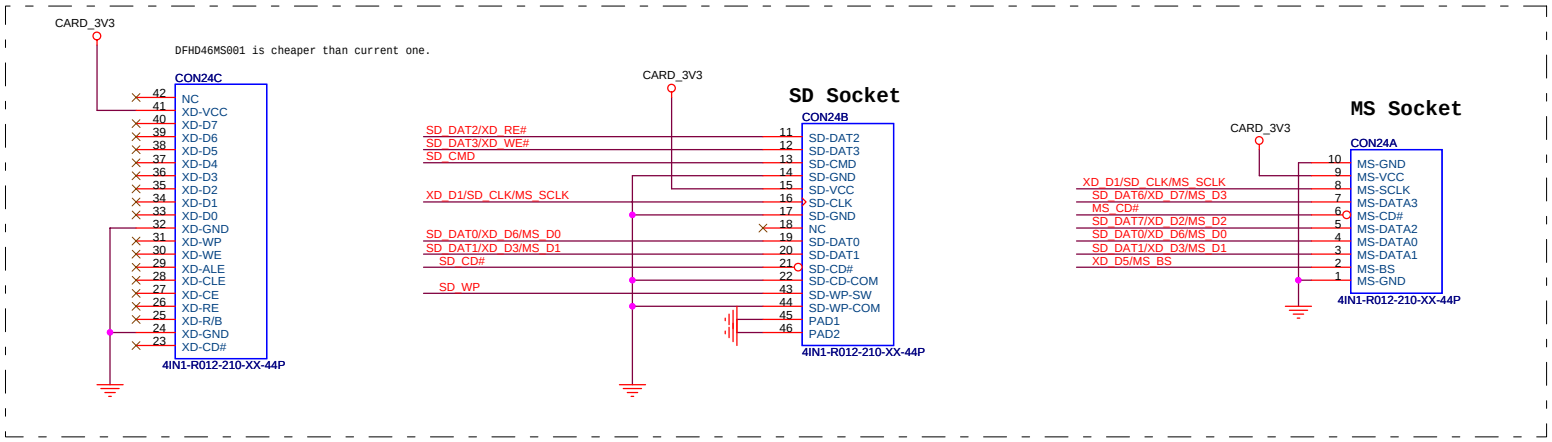


PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	LED/KB	1A
Date: Monday, August 13, 2007	Sheet 21 of 41	



Support SD/MMC/MS/MSPRO cards.



Realtek FAE suggest: 6/13
1. Delete R276/277/278/279/286.
For they are internally pulled up/down in RTS5158.
2. Delete C416/417/418/419/420, R281/282/284/285.
For they may influence the timing.

PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	CardBus Controller	1A
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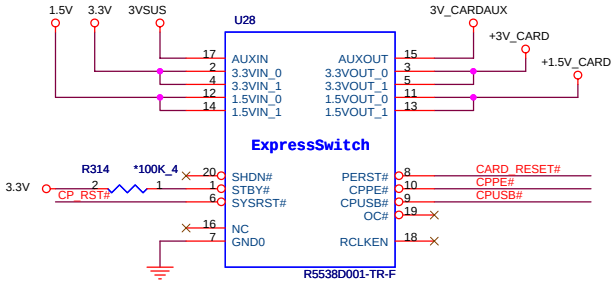
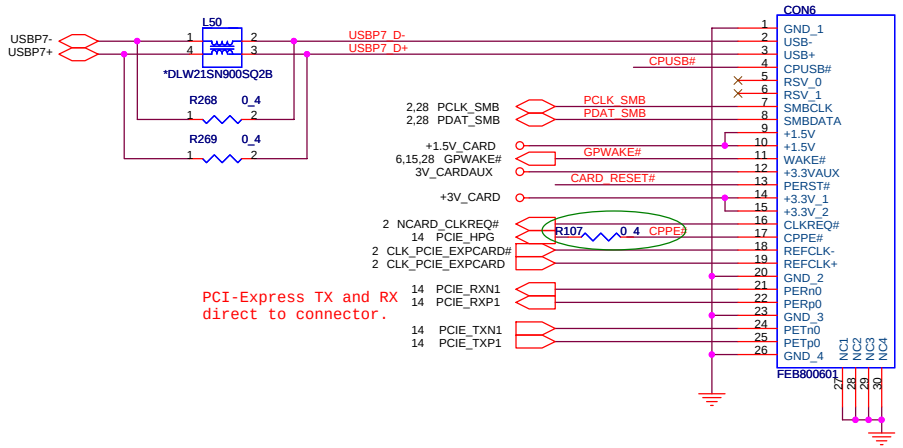
Express Card Conn.

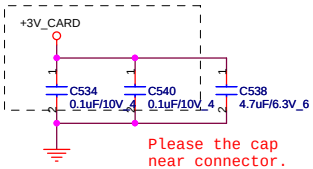


* CPPE#、CPUSB# & SYSRST# are internally pulled up to AUXIN.

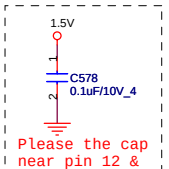
+1.5V_CARD Max. 650mA, Average 500mA.
+3V_CARD Max. 1300mA, Average 1000mA.



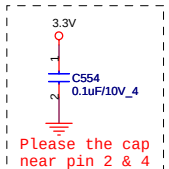
PCI-Express TX and RX direct to connector.



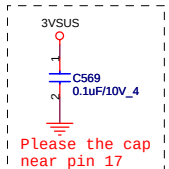
Please the cap near connector.



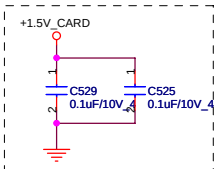
Please the cap near pin 12 & 14(1.5VIN).



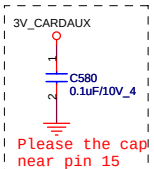
Please the cap near pin 2 & 4 (3.3VIN).



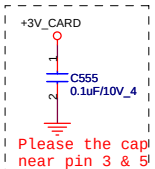
Please the cap near pin 17 (AUXIN).



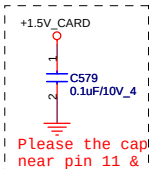
Please the cap near connector.



Please the cap near pin 15 (AUXOUT).



Please the cap near pin 3 & 5 (3.3VOUT).



Please the cap near pin 11 & 13(1.5VOUT).

PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	EXPRESS CARD	1A
Date: Monday, August 13, 2007	Sheet 23 of 41	

MIC BIAS

ALC883

Ext. MIC

Int. MIC

MDC Module Conn.

HD Audio to Codec and Modem

S	A connected to
L	B0
H	B1

Near S/B

Pin swapped for Layout. 6/11

PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	AUDIO-CODEC & MIC	1A
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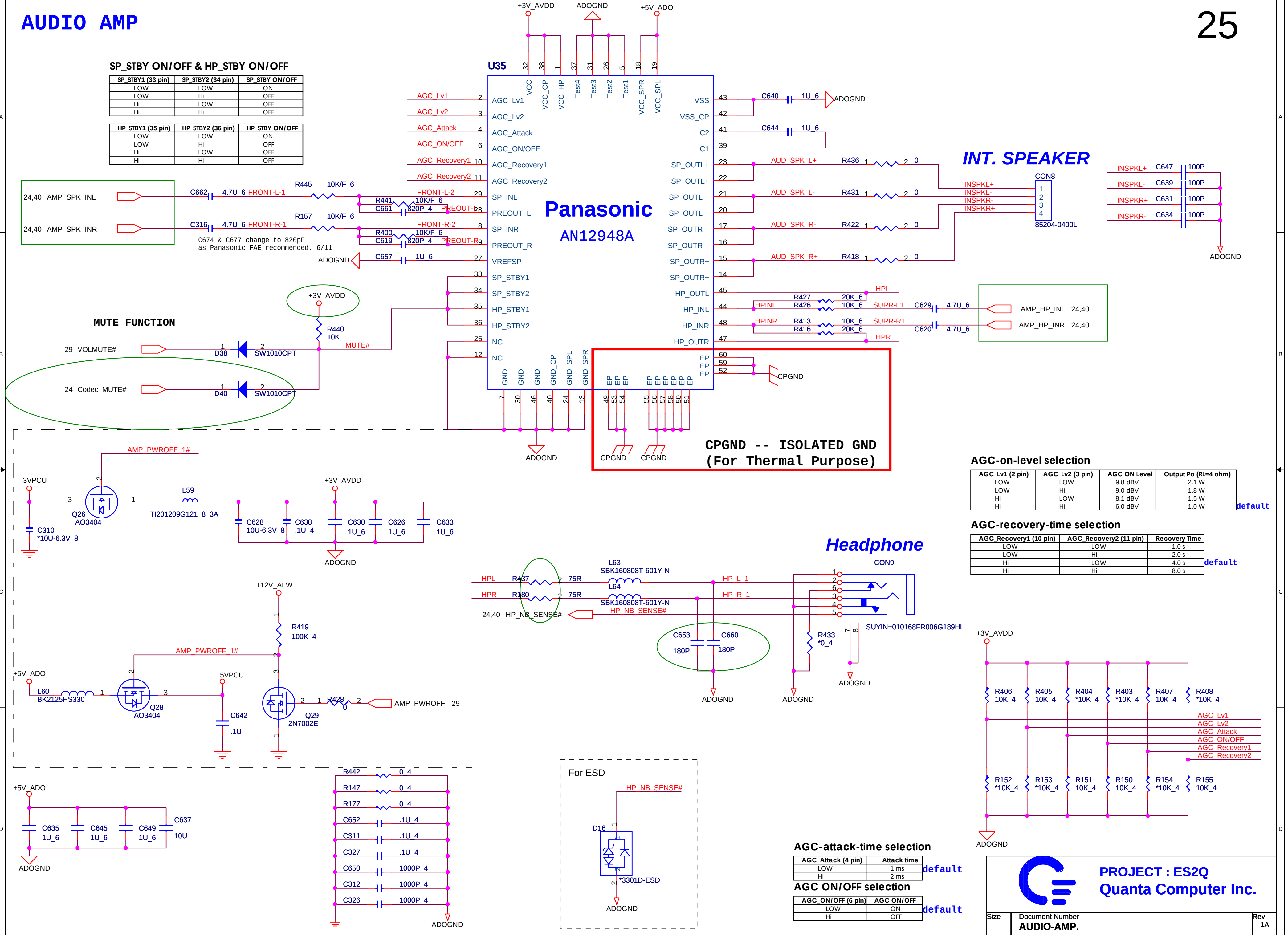
AUDIO AMP

SP_STBY ON/OFF & HP_STBY ON/OFF

SP_STBY1 (33 pin)	SP_STBY2 (34 pin)	SP_STBY ON/OFF
LOW	LOW	ON
LOW	Hi	OFF
Hi	LOW	OFF
Hi	Hi	OFF

HP_STBY1 (35 pin)	HP_STBY2 (36 pin)	HP_STBY ON/OFF
LOW	LOW	ON
LOW	Hi	OFF
Hi	LOW	OFF
Hi	Hi	OFF



U35
Panasonic
AN12948A
+3V_AVDD
ADOGND
+5V_ADO
VCC VCC_CP VCC_HP Test4 Test3 Test2 Test1 VCC_SPR VCC_SPL
AGC_Lv1 AGC_Lv2 AGC_Attack AGC_ON/OFF AGC_Recovery1 AGC_Recovery2
SP_INL PREOUT_L SP_INR PREOUT_R VREFSP SP_STBY1 SP_STBY2 HP_STBY1 HP_STBY2 NC NC
VSS VSS_CP C2 C1 SP_OUTL+ SP_OUTL+ SP_OUTL SP_OUTL SP_OUTR SP_OUTR SP_OUTR+ SP_OUTR+ HP_OUTL HP_INL HP_INR HP_OUTR EP EP EP
GND GND GND GND_CP GND_SPL GND_SPR
24,40 AMP_SPK_INL
24,40 AMP_SPK_INR
C662 4.7U_6 FRONT-L-1
C316 4.7U_6 FRONT-R-1
R445 10K/F_6
R157 10K/F_6
R441 10K/F_6
R400 10K/F_6
C661 820P_4
C619 820P_4
FRONT-L-2 PREOUT-L
FRONT-R-2 PREOUT-R
C674 & C677 change to 820pF
as Panasonic FAE recommended. 6/11
C657 1U_6
C640 1U_6
C644 1U_6
INT. SPEAKER
AUD_SPK_L+ R436 0
AUD_SPK_L- R431 0
AUD_SPK_R- R422 0
AUD_SPK_R+ R418 0
INSPKL+ INSPKL- INSPKR- INSPKR+
CON8
85204-0400L
C647 100P
C639 100P
C631 100P
C634 100P
HPL HPINL HPINR HPR
R427 20K_6
R426 10K_6
R413 10K_6
R416 20K_6
SURR-L1 SURR-R1
C629 4.7U_6
C620 4.7U_6
AMP_HP_INL 24,40
AMP_HP_INR 24,40
CPGND
CPGND -- ISOLATED GND
(For Thermal Purpose)
MUTE FUNCTION
29 VOLMUTE#
24 Codec_MUTE#
D38 SW1010CPT
D40 SW1010CPT
R440 10K
MUTE#
AMP_PWROFF_1#
3VPCU
Q26 AO3404
L59 TI201209G121_8_3A
C310 *10U-6.3V_8
C628 10U-6.3V_8
C638 .1U_4
C630 1U_6
C626 1U_6
C633 1U_6
+12V_ALW
R419 100K_4
+5V_ADO
L60 BK2125HS330
Q28 AO3404
5VPCU
C642 .1U
Q29 2N7002E
R428 0
AMP_PWROFF 29
C635 1U_6
C645 1U_6
C649 1U_6
C637 10U
R442 0_4
R147 0_4
R177 0_4
C652 .1U_4
C311 .1U_4
C327 .1U_4
C650 1000P_4
C312 1000P_4
C326 1000P_4
Headphone
CON9
HPL R437 75R
HPR R180 75R
L63 SBK160808T-601Y-N
L64 SBK160808T-601Y-N
HP_L_1
HP_R_1
24,40 HP_NB_SENSE#
C653 180P
C660 180P
R433 *0_4
SUYIN=010168FR006G189HL
For ESD
HP_NB_SENSE#
D16
*3301D-ESD
R406 10K_4
R405 10K_4
R404 *10K_4
R403 *10K_4
R407 10K_4
R408 *10K_4
R152 *10K_4
R153 *10K_4
R151 10K_4
R150 10K_4
R154 *10K_4
R155 10K_4
AGC_Lv1 AGC_Lv2 AGC_Attack AGC_ON/OFF AGC_Recovery1 AGC_Recovery2

AGC-on-level selection

AGC_Lv1 (2 pin)	AGC_Lv2 (3 pin)	AGC ON Level	Output Po (RL=4 ohm)
LOW	LOW	9.8 dBV	2.1 W
LOW	Hi	9.0 dBV	1.8 W
Hi	LOW	8.1 dBV	1.5 W
Hi	Hi	6.0 dBV	1.0 W

default

AGC-recovery-time selection

AGC_Recovery1 (10 pin)	AGC_Recovery2 (11 pin)	Recovery Time
LOW	LOW	1.0 s
LOW	Hi	2.0 s
Hi	LOW	4.0 s
Hi	Hi	8.0 s

default

AGC-attack-time selection

AGC_Attack (4 pin)	Attack time
LOW	1 ms
Hi	2 ms

default

AGC ON/OFF selection

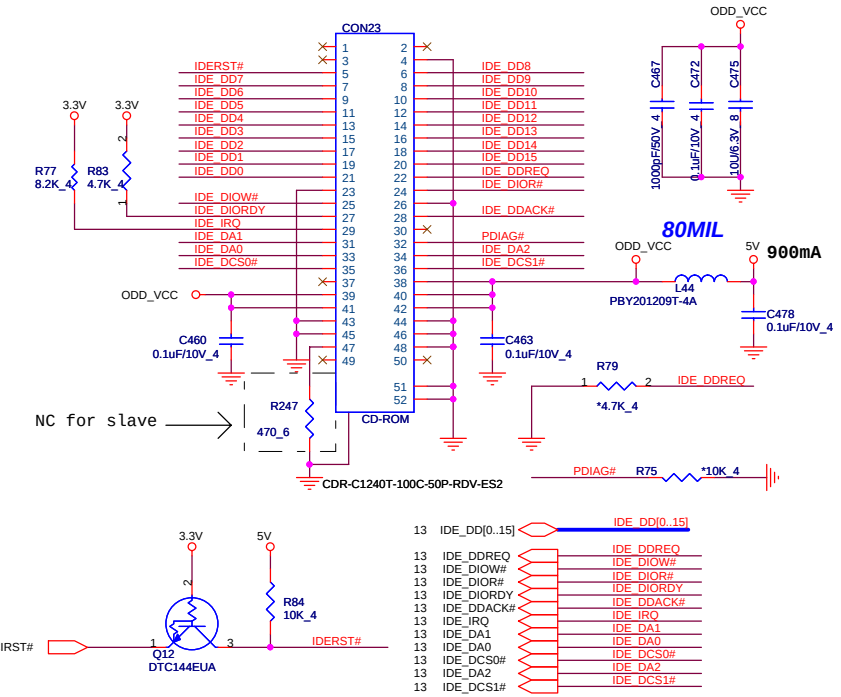
AGC_ON/OFF (6 pin)	AGC ON/OFF
LOW	ON
Hi	OFF

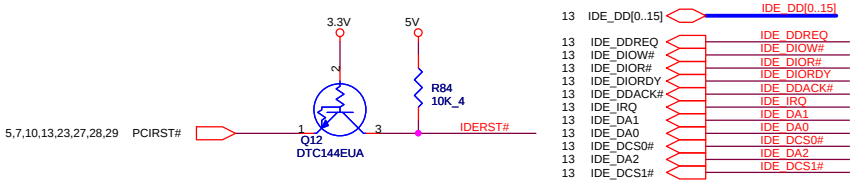
default

PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	AUDIO-AMP.	1A

ODD CONNECTOR

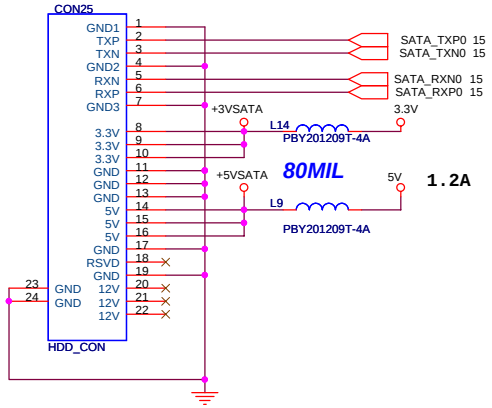


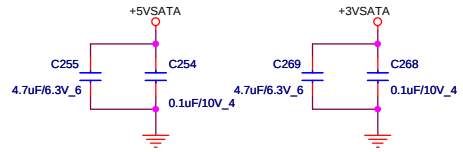


13 IDE_DD[0..15] — IDE_DD[0..15]

13	IDE_DDREQ	IDE_DDREQ
13	IDE_DIOW#	IDE_DIOW#
13	IDE_DIOR#	IDE_DIOR#
13	IDE_DIORDY	IDE_DIORDY
13	IDE_DDACK#	IDE_DDACK#
13	IDE_IRQ	IDE_IRQ
13	IDE_DA1	IDE_DA1
13	IDE_DA0	IDE_DA0
13	IDE_DCS0#	IDE_DCS0#
13	IDE_DA2	IDE_DA2
13	IDE_DCS1#	IDE_DCS1#

SATA Connector.





PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	HDD & ODD CON.	1A
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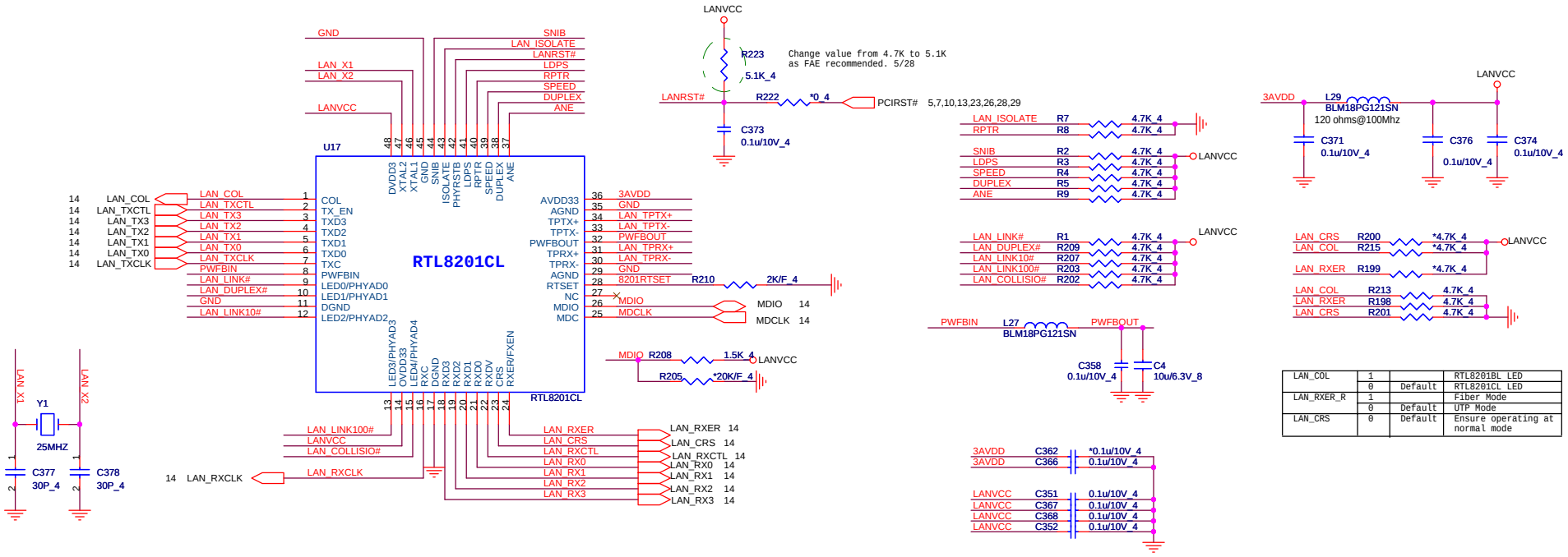
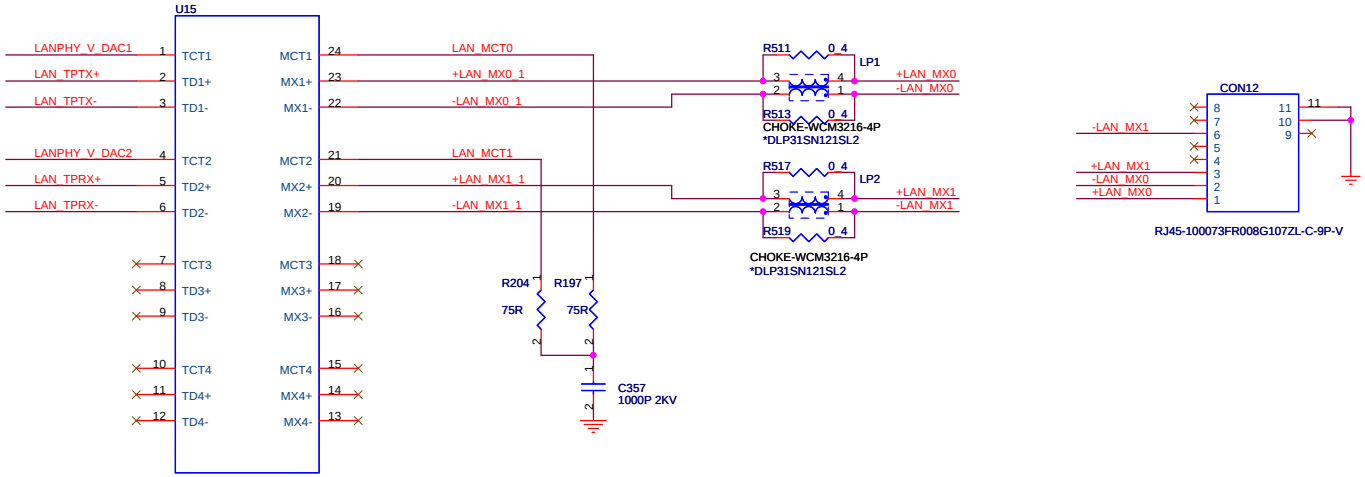


LAN_COL	1		RTL8201BL LED
	0	Default	RTL8201CL LED
LAN_RXER_R	1		Fiber Mode
	0	Default	UTP Mode
LAN_CRS	0	Default	Ensure operating at normal mode



PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	LAN PHY, Trans & Conn.	1A

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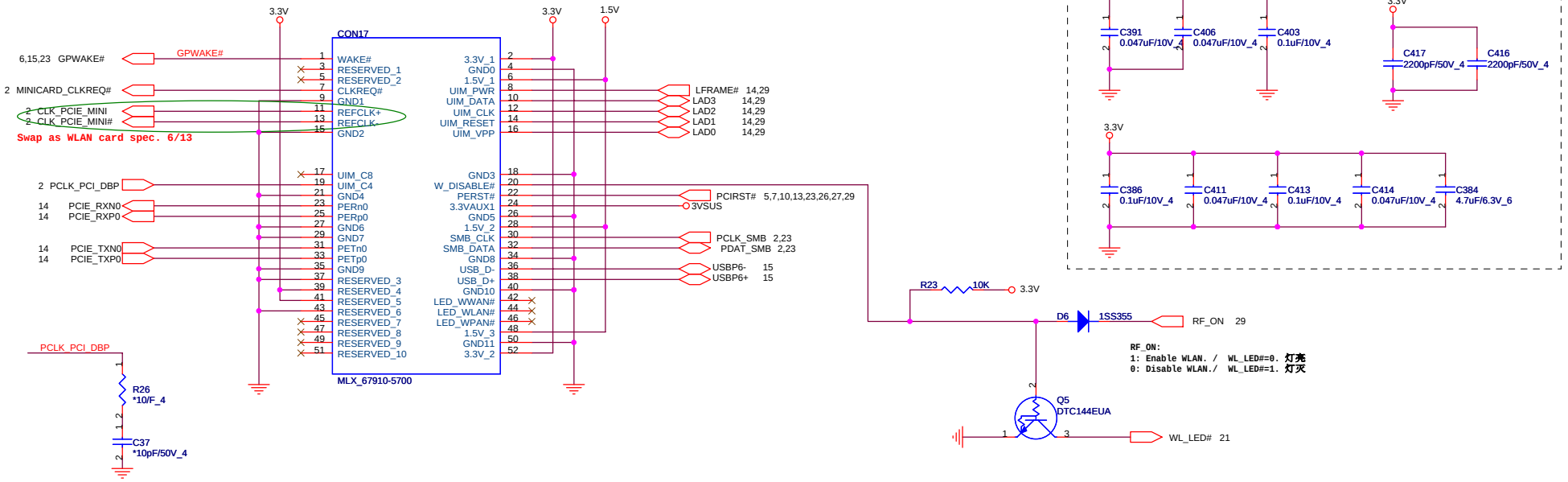
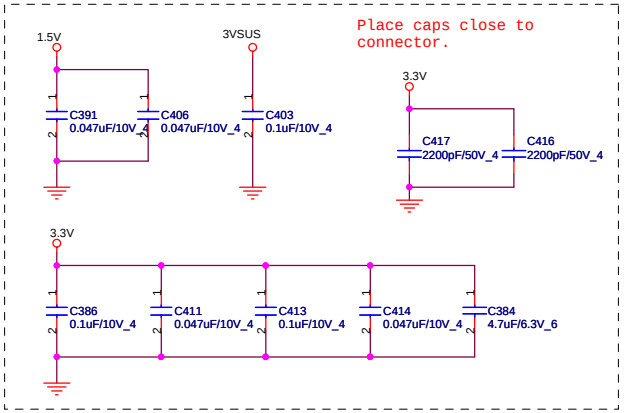
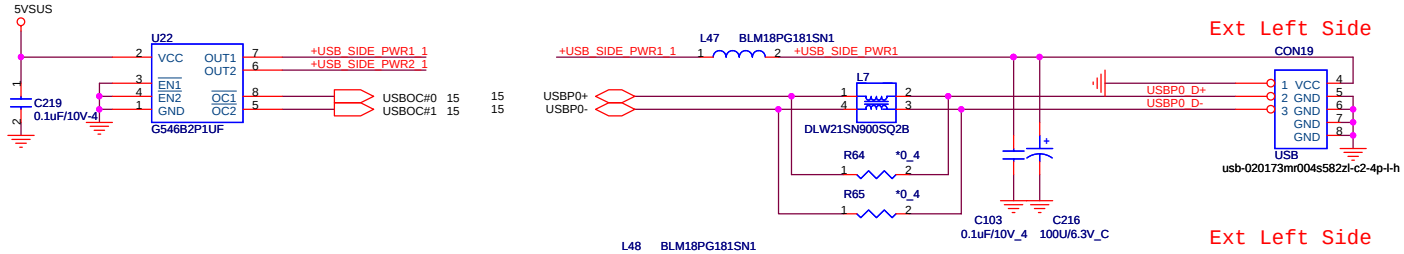
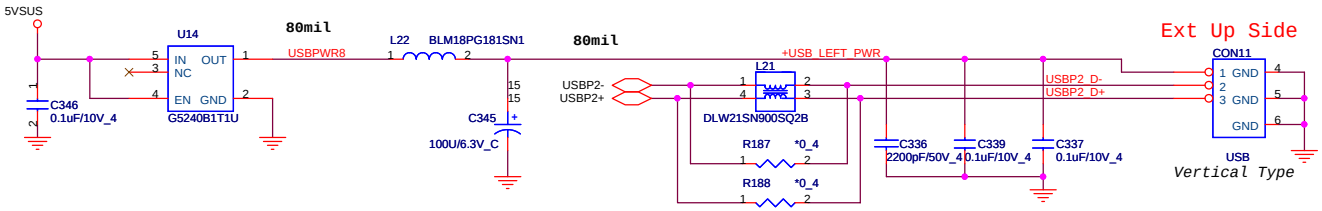
MiniCard WLAN connector





USB





PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	WLAN & USB	1A
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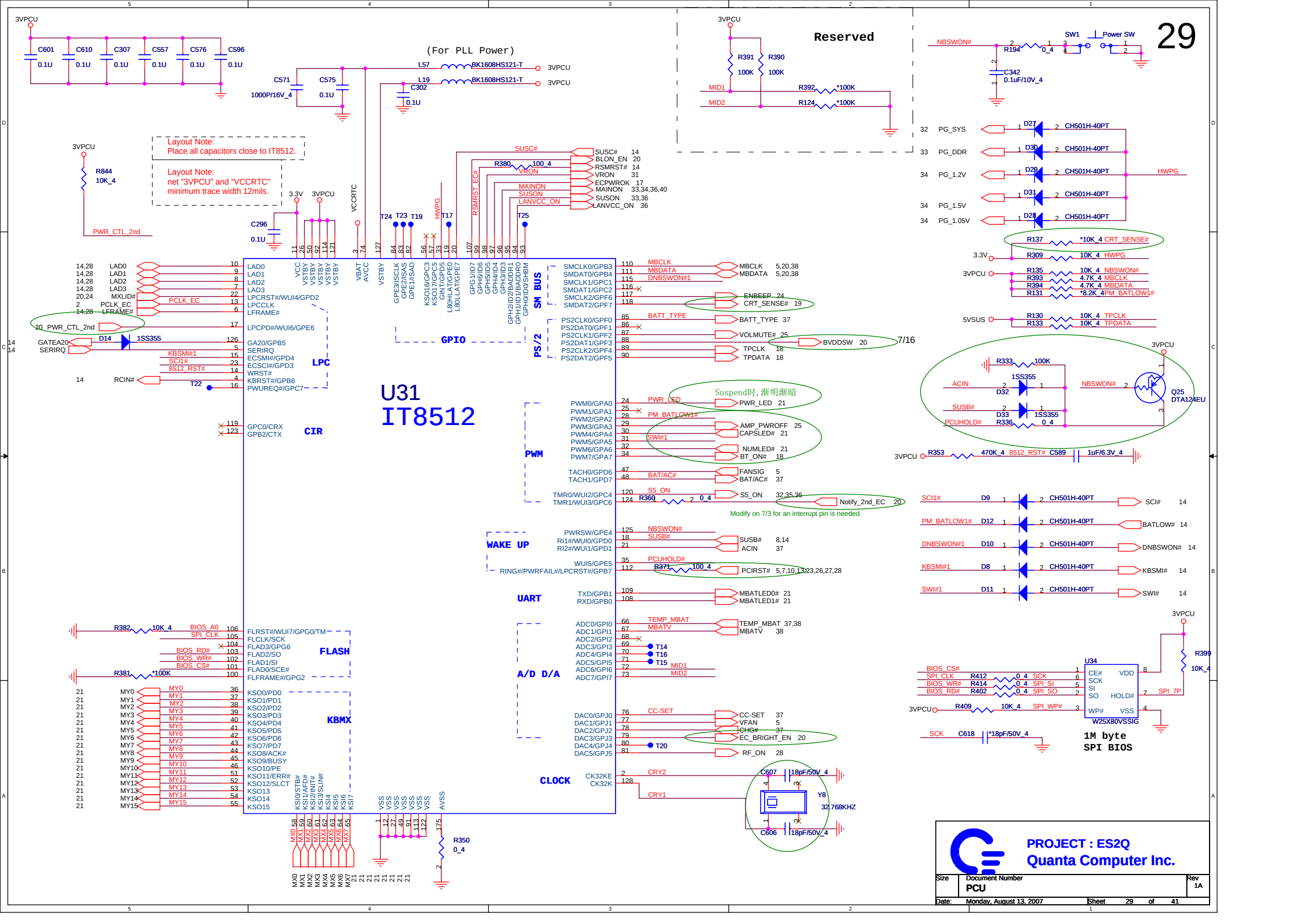
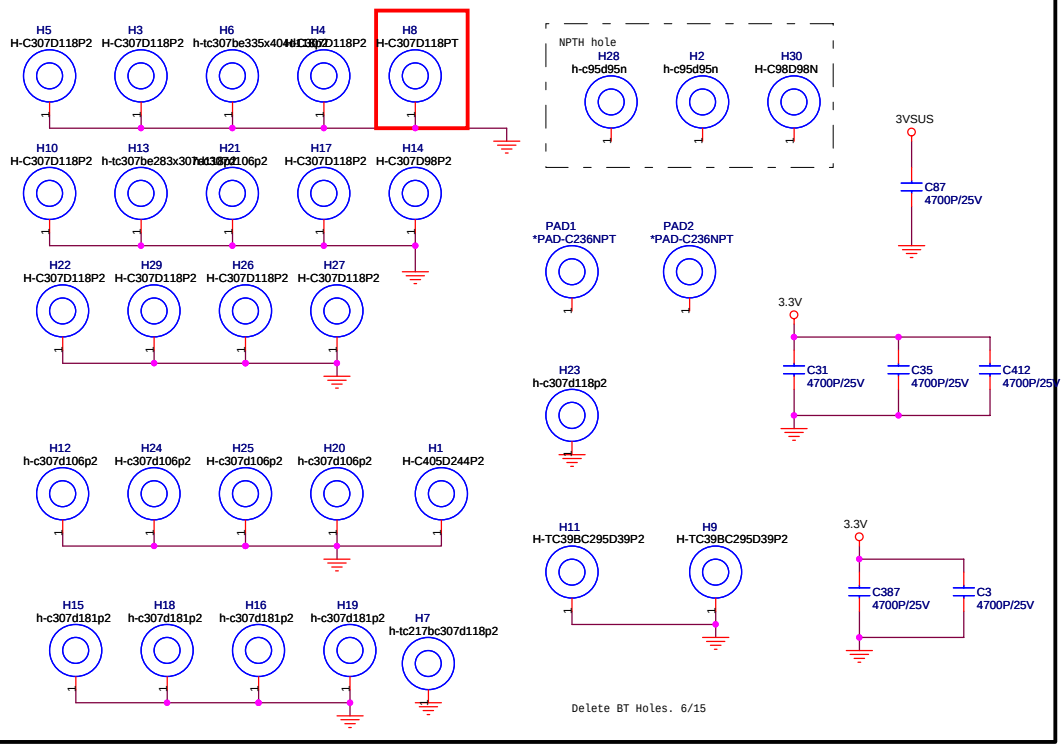
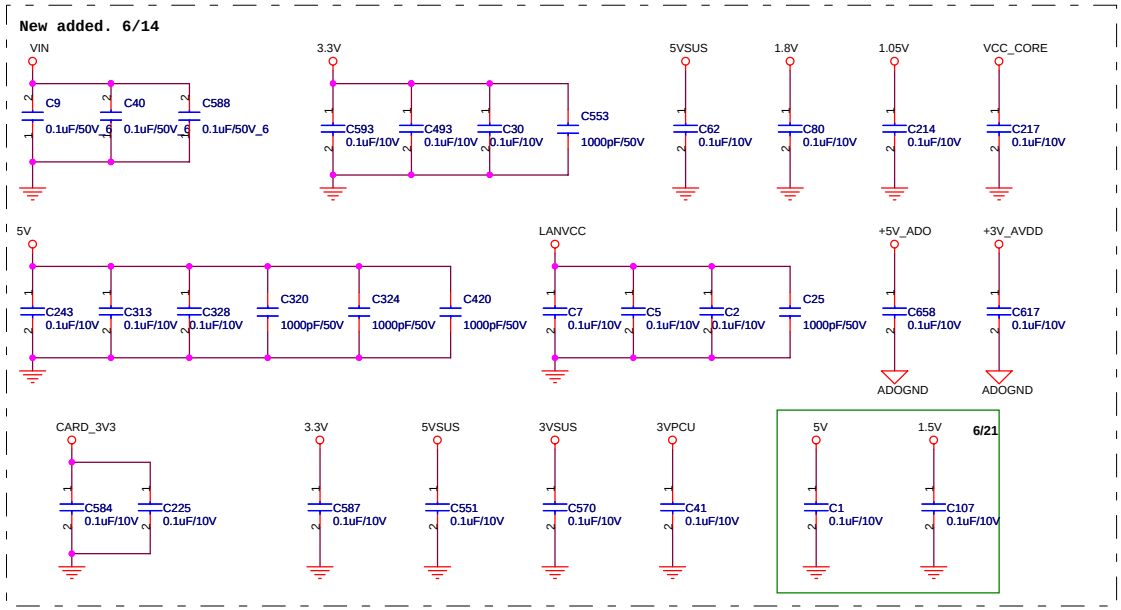
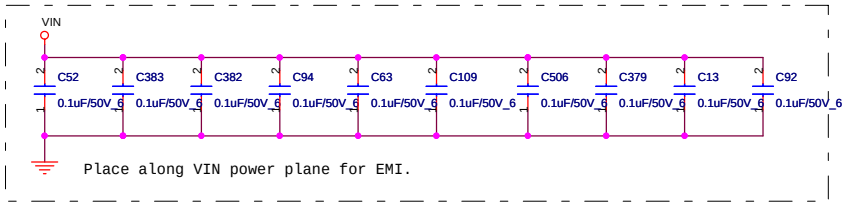

29
U31
IT8512
Reserved
(For PLL Power)
Layout Note:
Place all capacitors close to IT8512.
Layout Note:
net "3VPCU" and "VCCRTC"
minimum trace width 12mils.
Suspend时, 渐明渐暗
Modify on 7/3 for an interrupt pin is needed.
1M byte
SPI BIOS
PROJECT : ES2Q
Quanta Computer Inc.
PCU
Monday, August 13, 2007

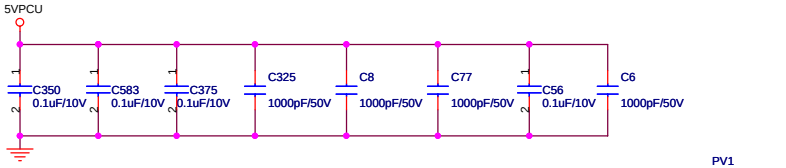
Screw Holes

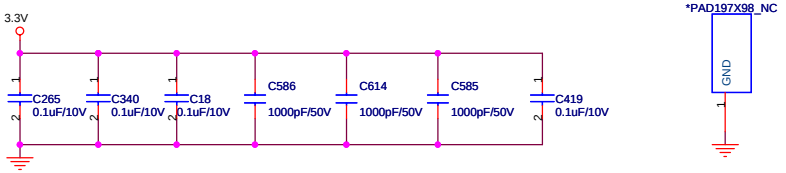


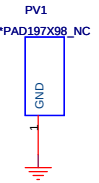
EMI

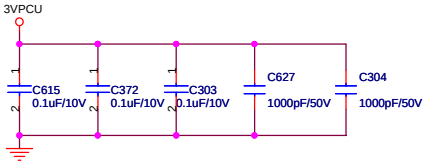


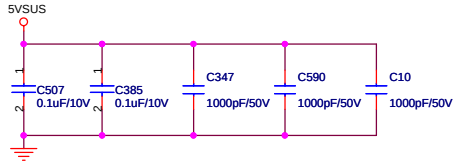




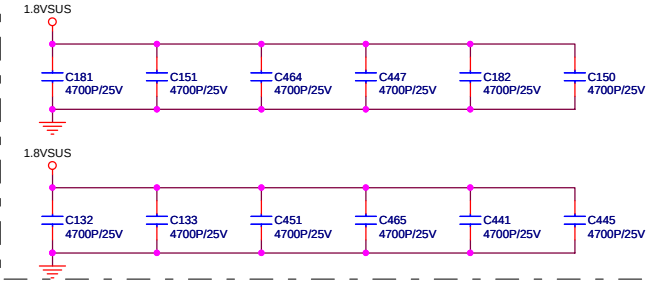








EMI for DDR DIMM.



PROJECT : ES2Q
Quanta Computer Inc.

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	SCREW HOLES & EMI PAD	1A
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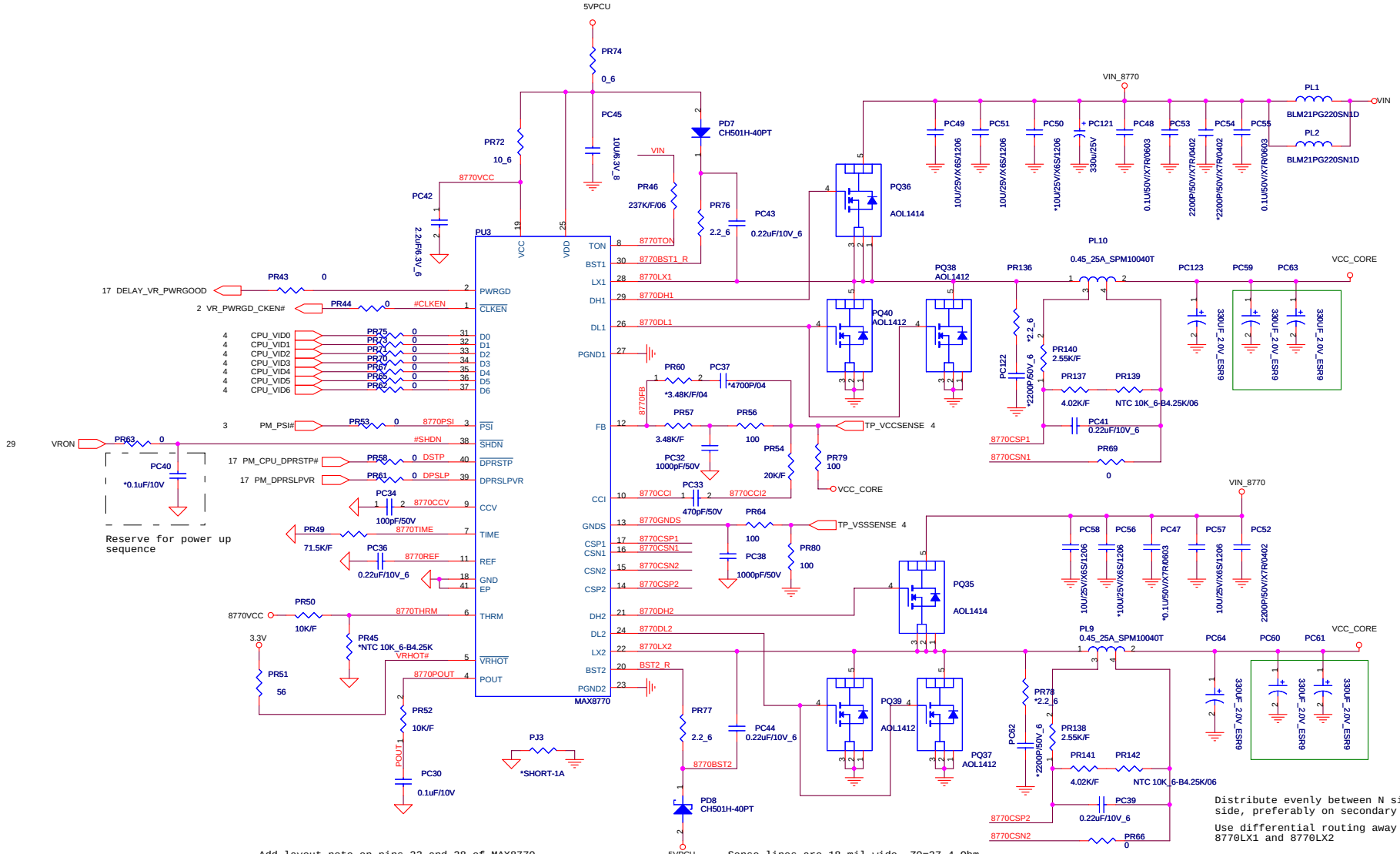

VCC_CORE/44A

OCP=50A

Add layout note on pins 22 and 28 of MAX8770 controller. These nets have large voltage swings. Need to route them away from the sensitive areas that are trying to detect small changes in voltage, such as the voltage sense VccSense VssSense lines.

Sense lines are 18 mil wide, Z0=27.4 Ohm. Use differential routing with 7 mil spacing. Route external layer with solid GND reference (no split planes). Use 25 mil separation from any other signal.

Distribute evenly between N side and S side, preferably on secondary side.

Use differential routing away from switch nodes 8770LX1 and 8770LX2

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	VCORE	1A
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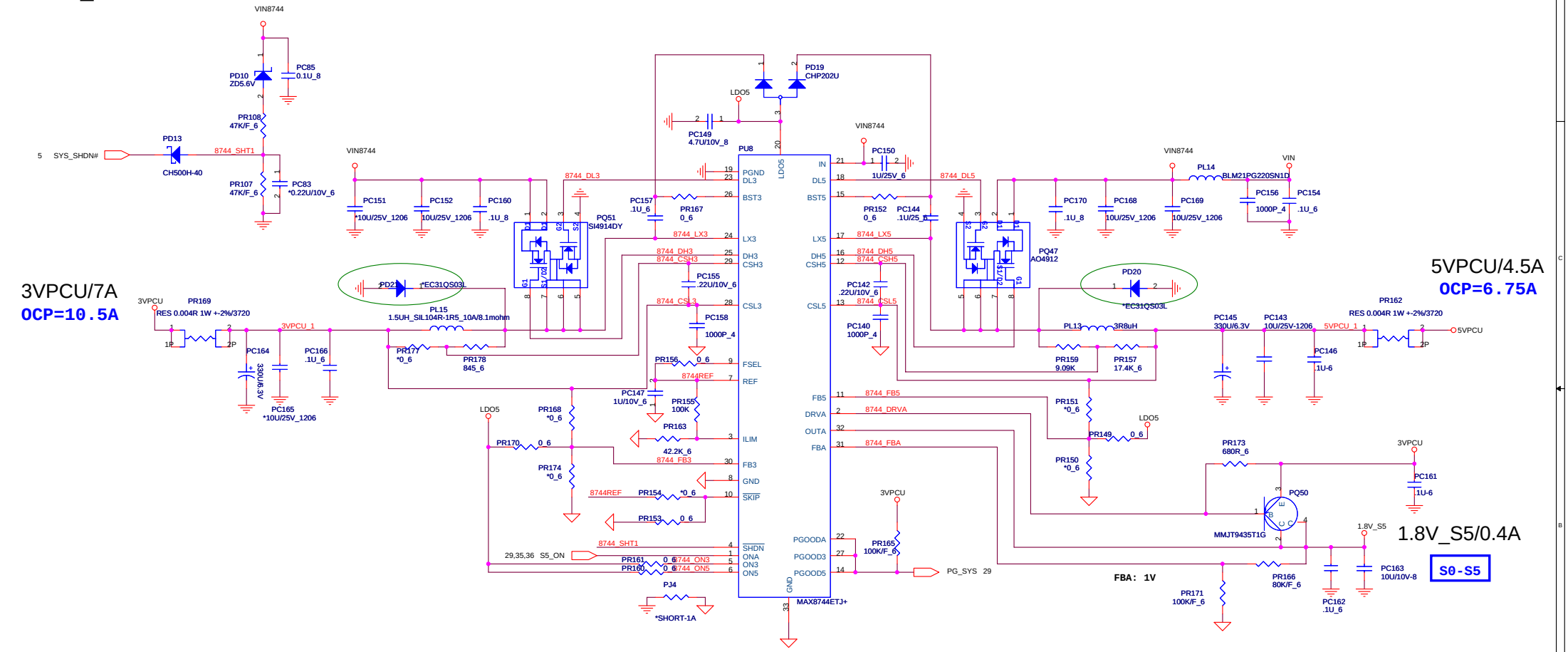
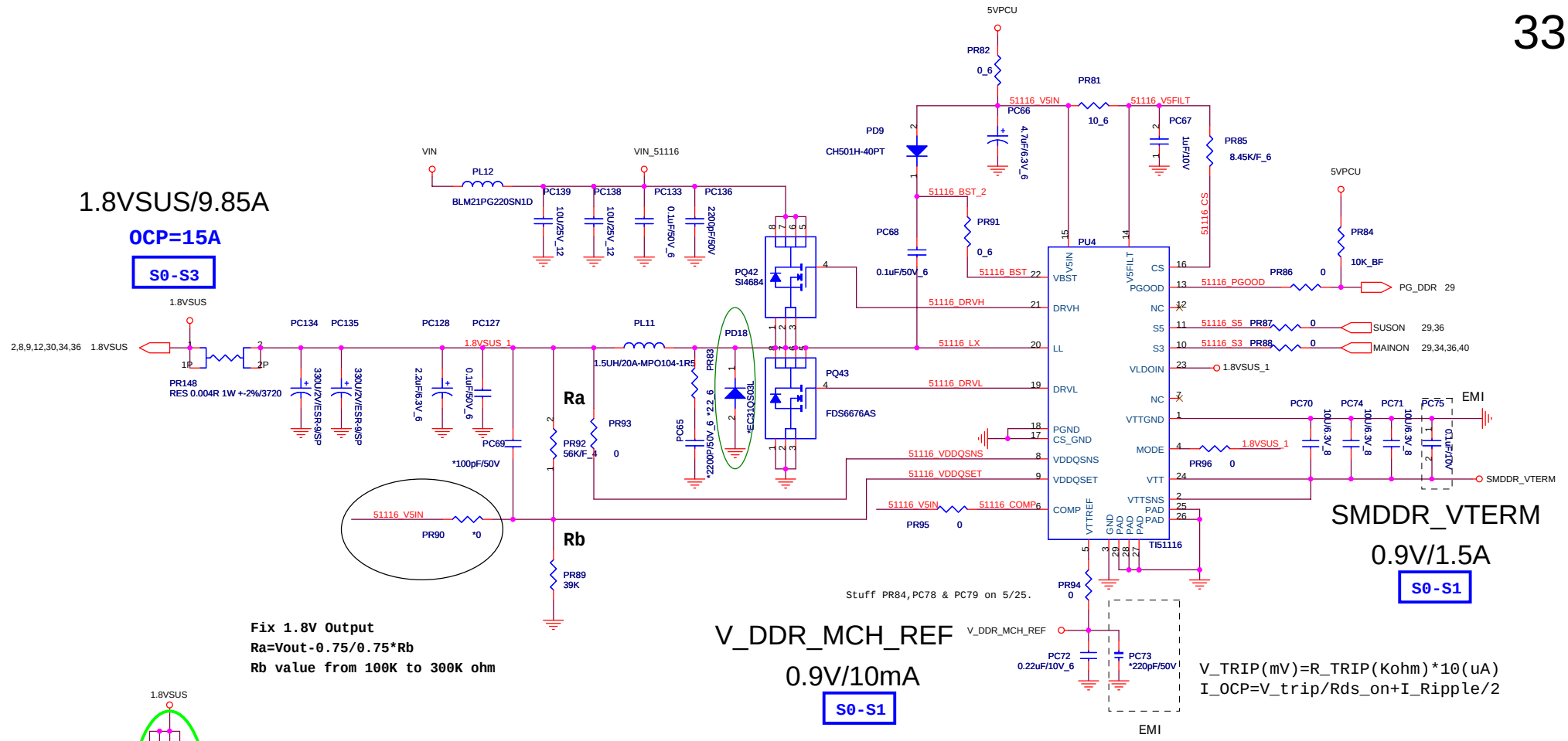
DC/DC +3V_ALW/+5V_ALW/+5V_ALW2 /+12V_ALW



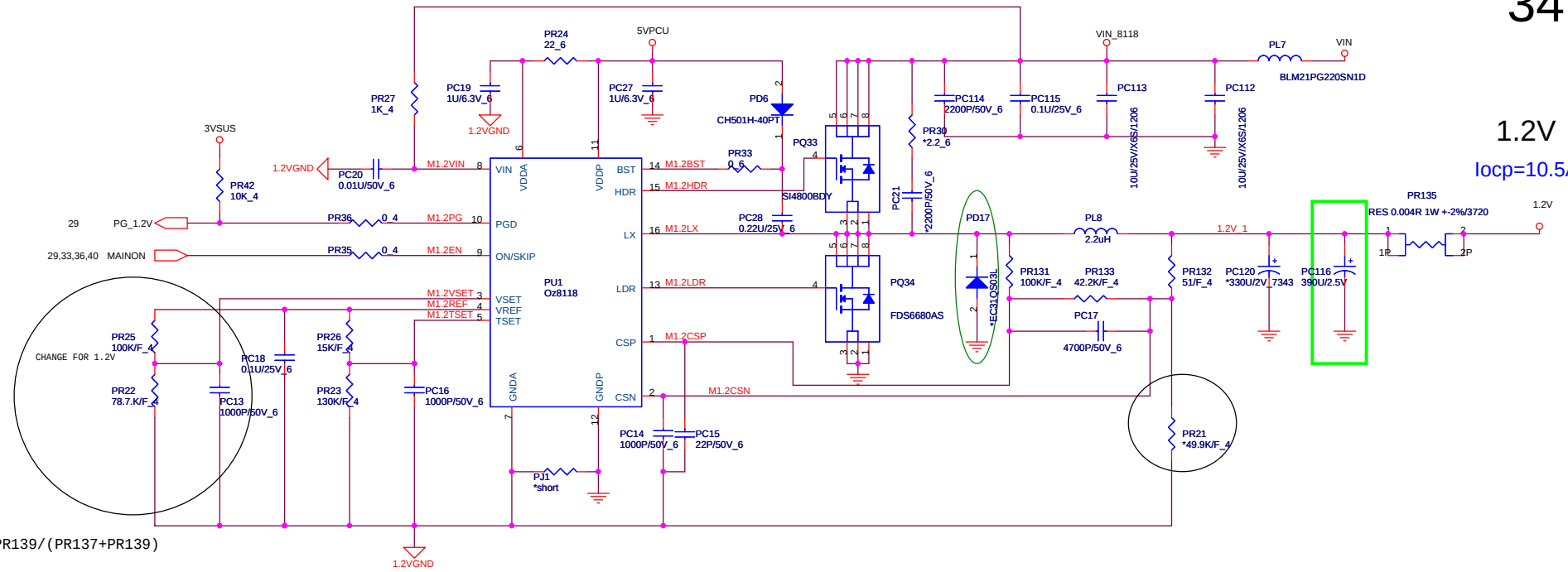


Mode	Discharge Mode
V5IN	No discharge
VDDQ	Tracking discharge
Gnd	Non-tracking discharge

VDDQSET	VDDQ(V)	VTTREF and Vtt	Note
GND	2.5	V_ vddqsns/2	DDR
V5IN	1.8	V _vddqsns/2	DDR2
FB	adjustable	V_VDDQSNS/2	1.5V<VDDQ<3V

1.2V

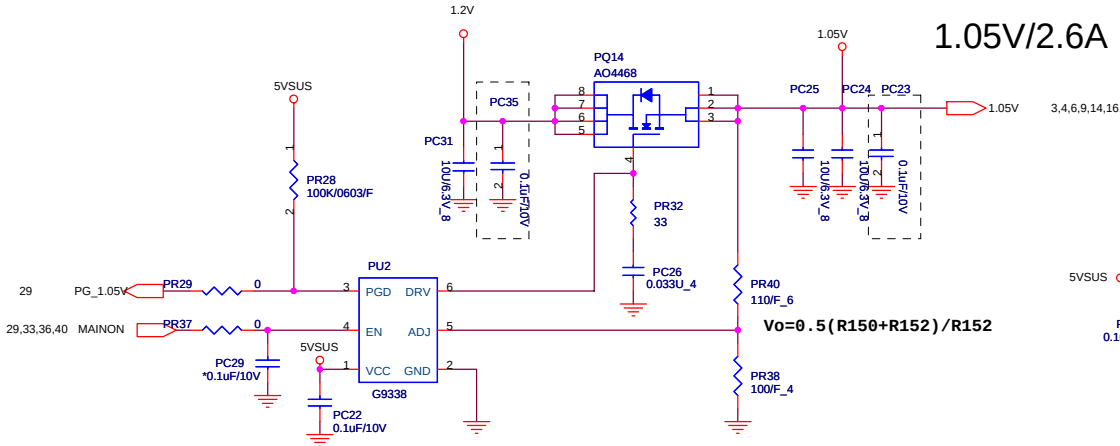
Iocp=10.5A



VSET=VREF*PR139/(PR137+PR139)

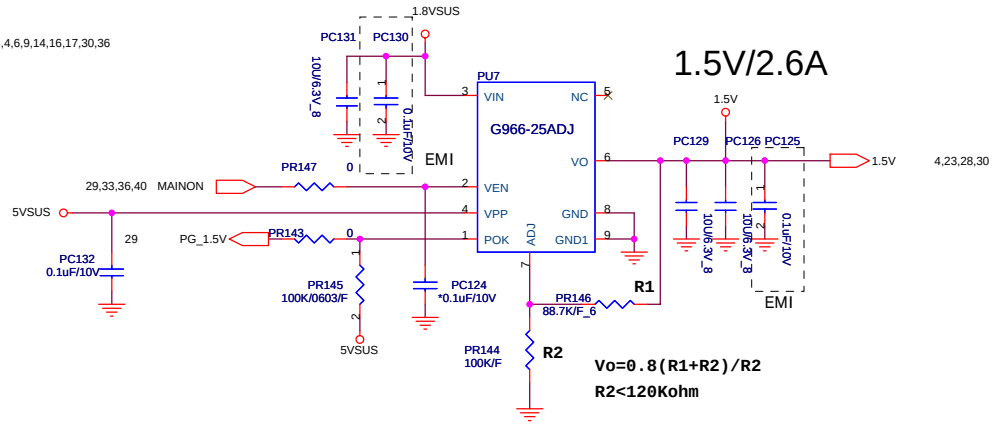
VREF=2.75V

1.05V/2.6A



Vo=0.5(R150+R152)/R152

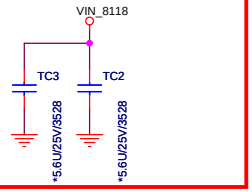
1.5V/2.6A



Vo=0.8(R1+R2)/R2

R2<120Kohm

Add Polymer Cap for C4 noise.



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Quanta Computer Inc.

Size	Document Number	Rev
	1.5V/1.2V/1.05V	1A
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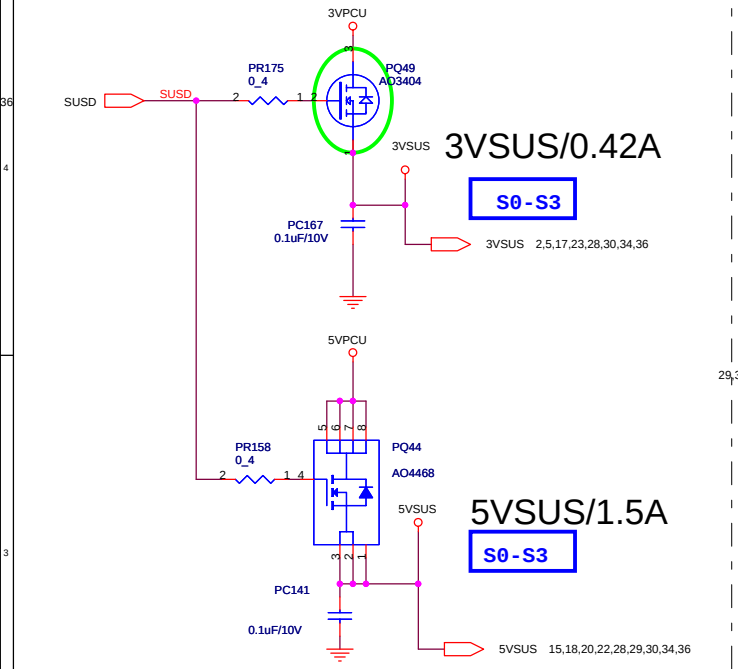
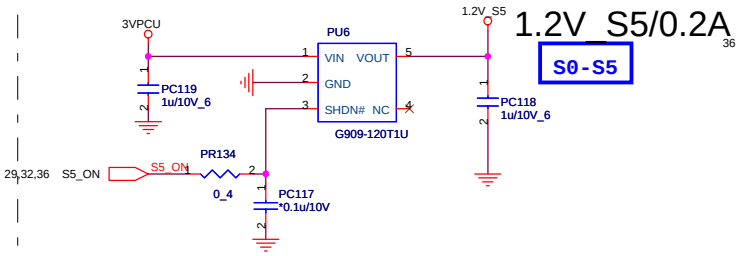


3VSUS/0.42A

S0-S3

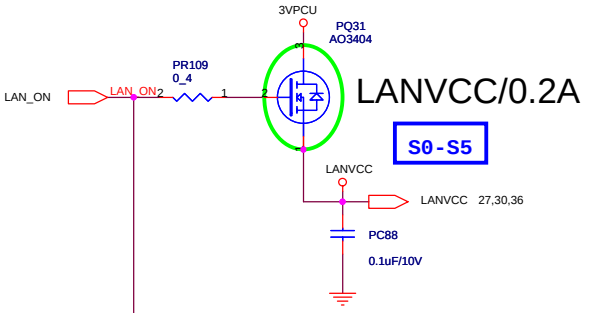
5VSUS/1.5A

S0-S3



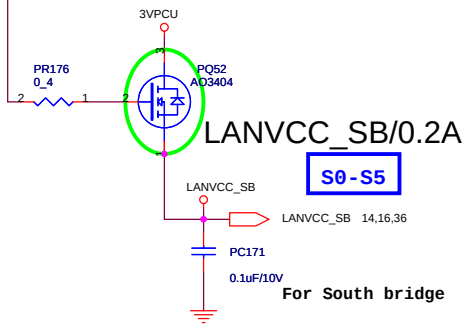
1.2V_S5/0.2A

S0-S5



LANVCC/0.2A

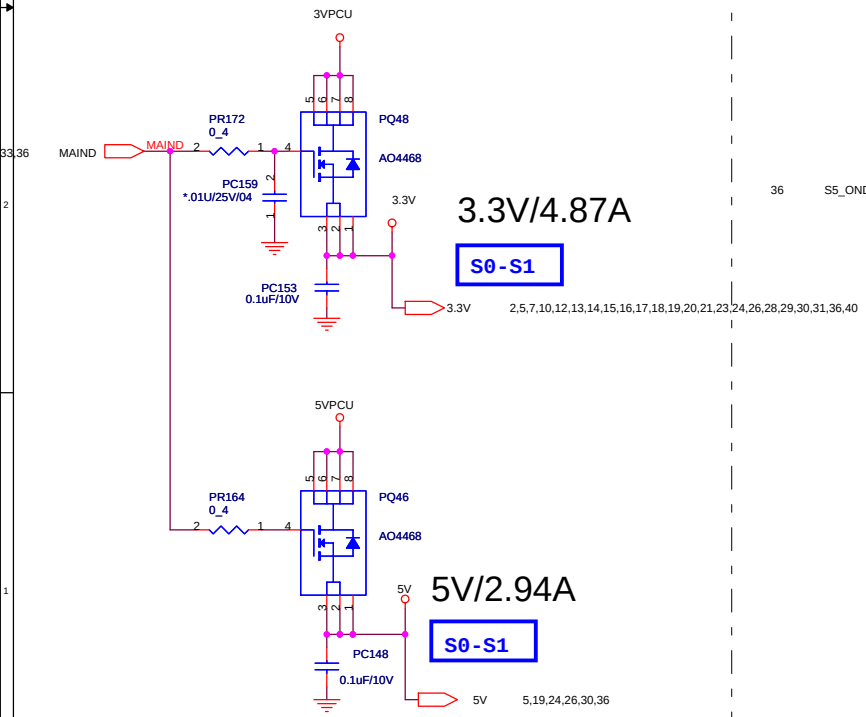
S0-S5



LANVCC_SB/0.2A

S0-S5

For South bridge

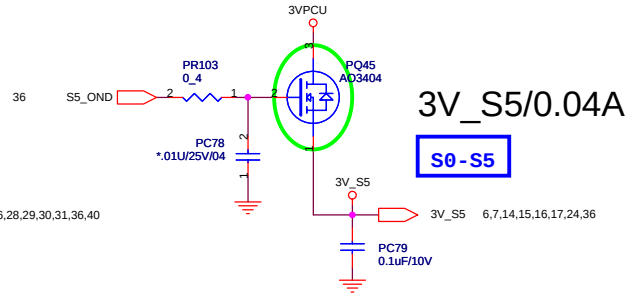


3.3V/4.87A

S0-S1

5V/2.94A

S0-S1



3V_S5/0.04A

S0-S5

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Quanta Computer Inc.		
Size	Document Number: **Power Switch**	Rev: 1A
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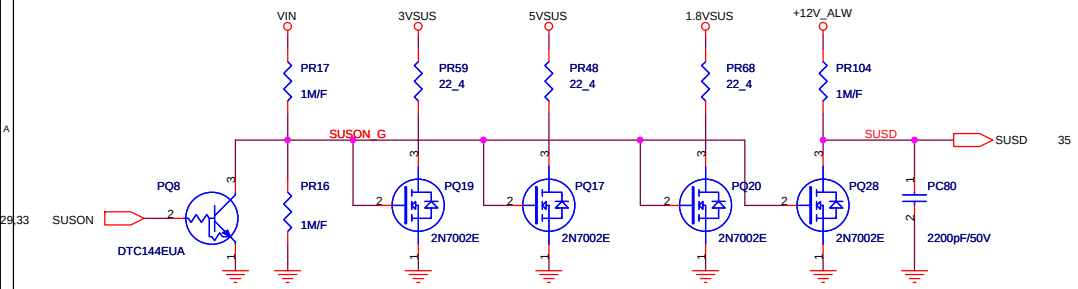

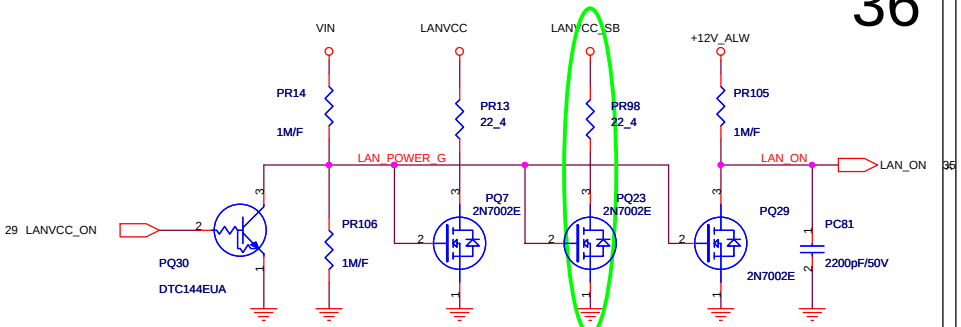

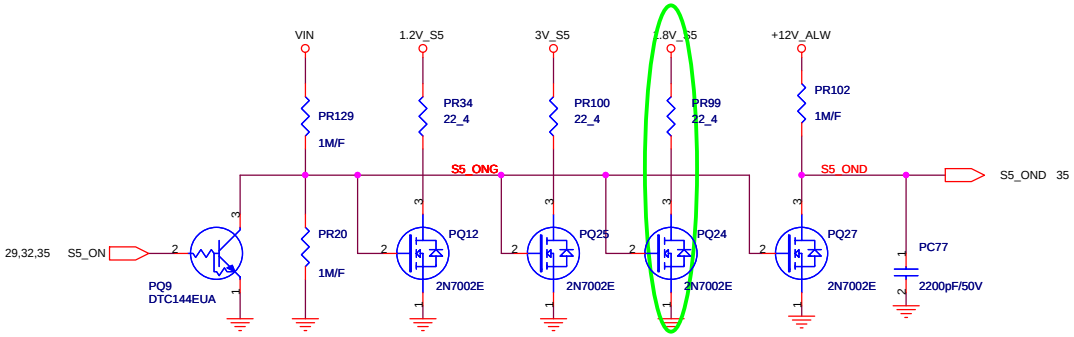

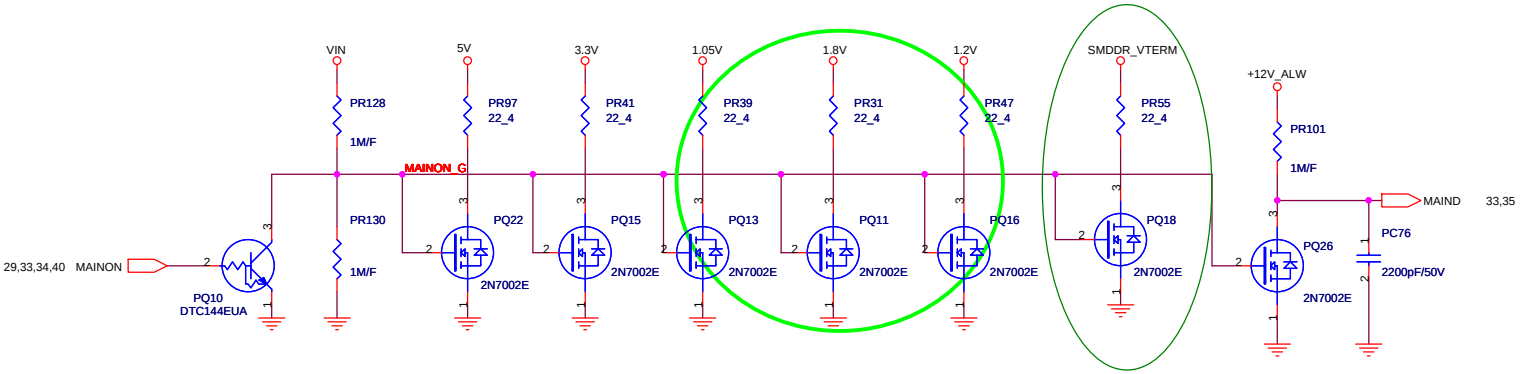

PROJECT : ES2Q
Quanta Computer Inc.

Size	Document Number	Rev
	DISCHARGE	1A
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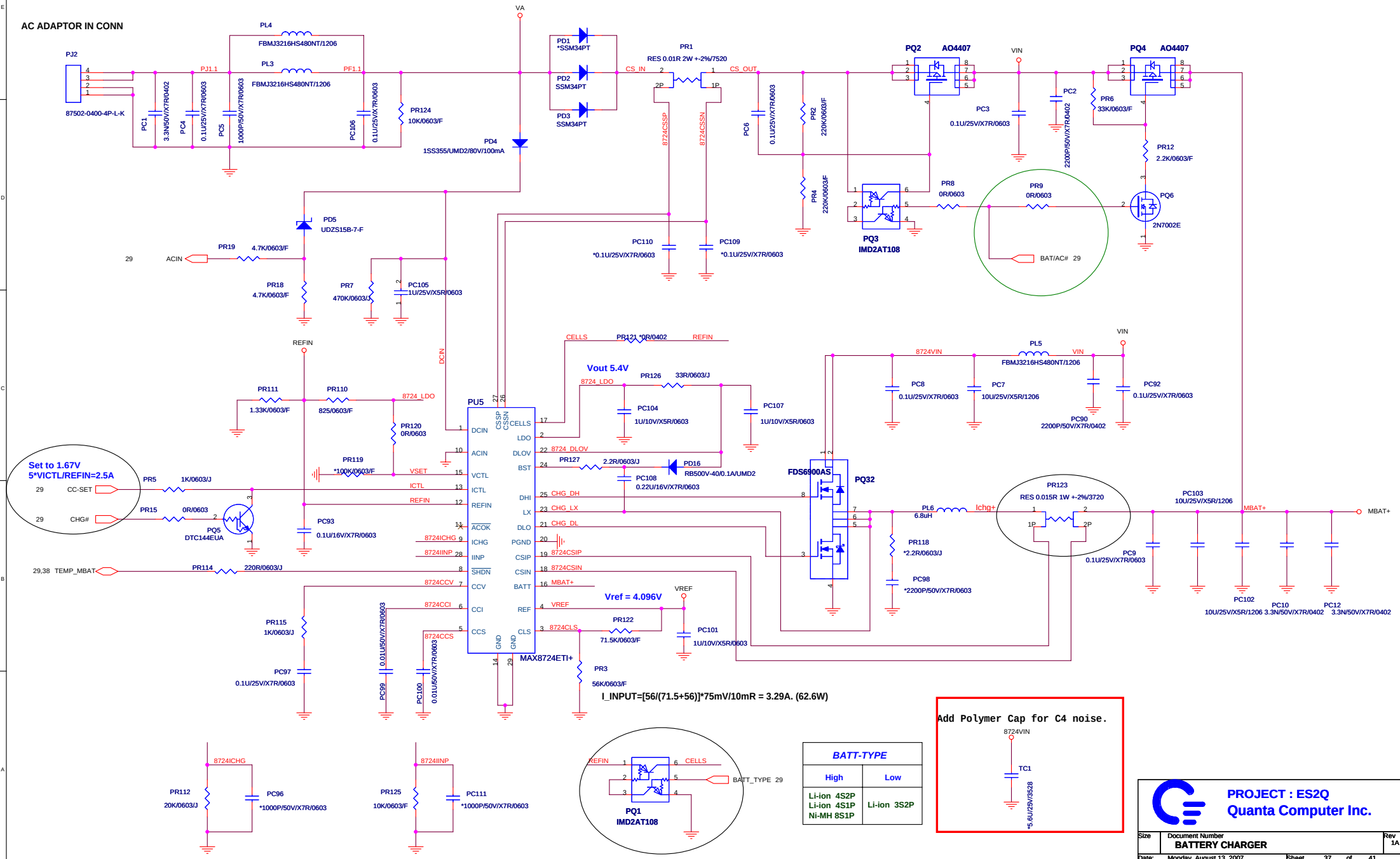
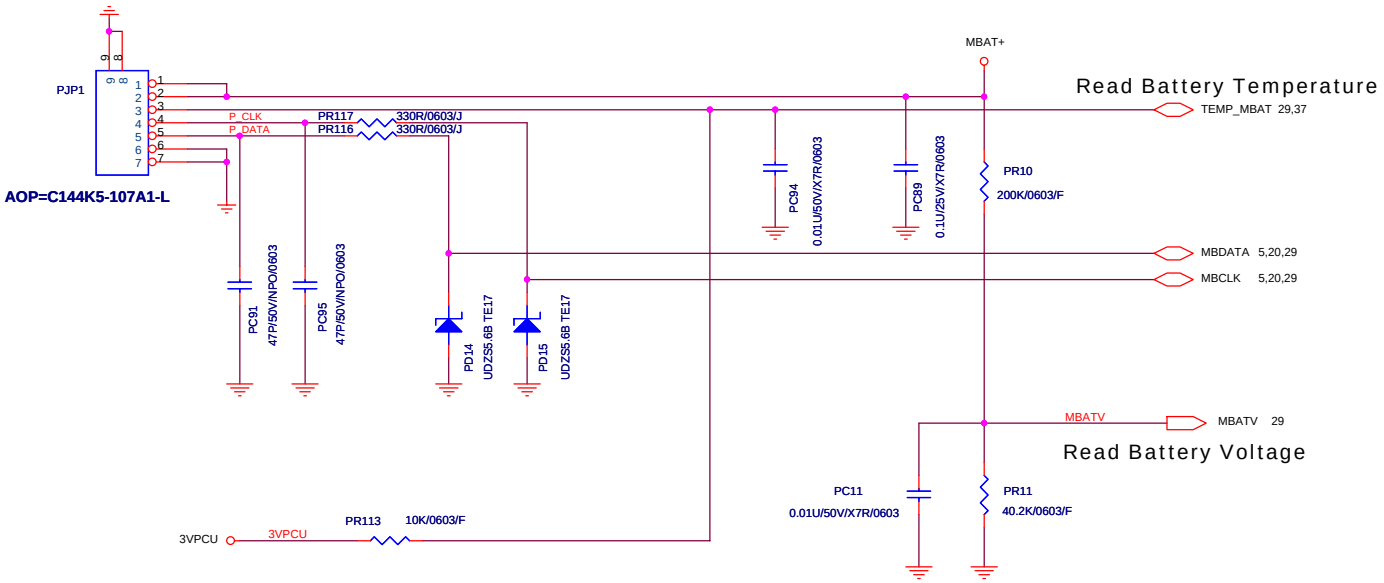
Battery Charger



Battery Connector

Battery Connector



TEMP_MBAT voltage :		
	System Off	System On
Battery	0V	1.6V
Adapter	3.3V	3.3V
Battery+Adapter	1.6V	1.6V

MBATV voltage :	
Li-ion 4S*P	16.8V*40.2/(200+40.2)= 2.812V 12.0V*40.2/(200+40.2)= 2.008V
Ni-MH 8S1P	8.0V*40.2/(200+40.2)= 1.34V

MBATV voltage :

16.8V*40.2/(200+40.2)= 2.812V

12.0V*40.2/(200+40.2)= 2.008V

8.0V*40.2/(200+40.2)= 1.34V

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	BATTERY CNN	1A
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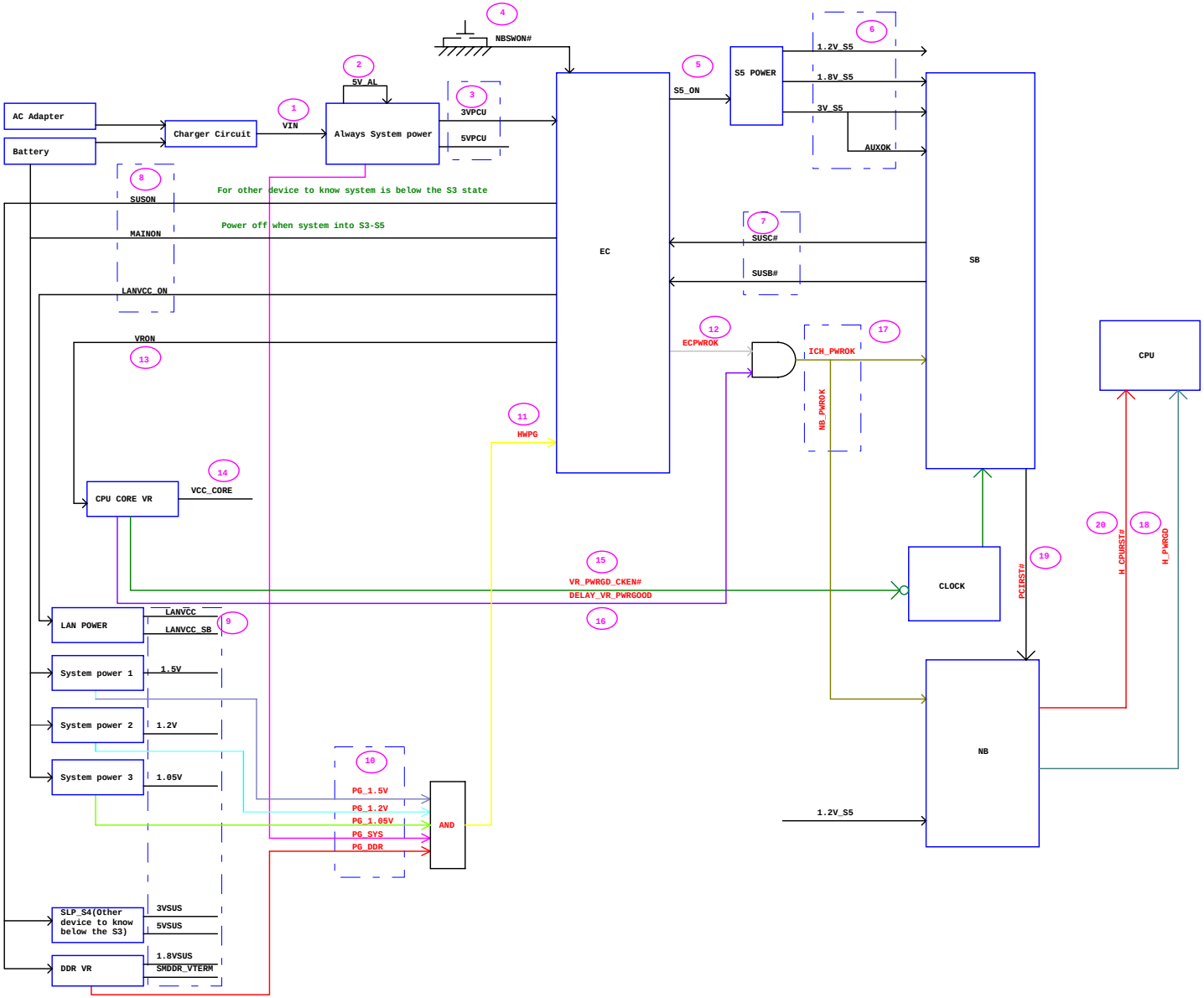
SLP_S3#(SUSB#):Control non-critical power plane when system into S3(Suspend to RAM)/S4(Suspend to Disk)/S5(Soft off).

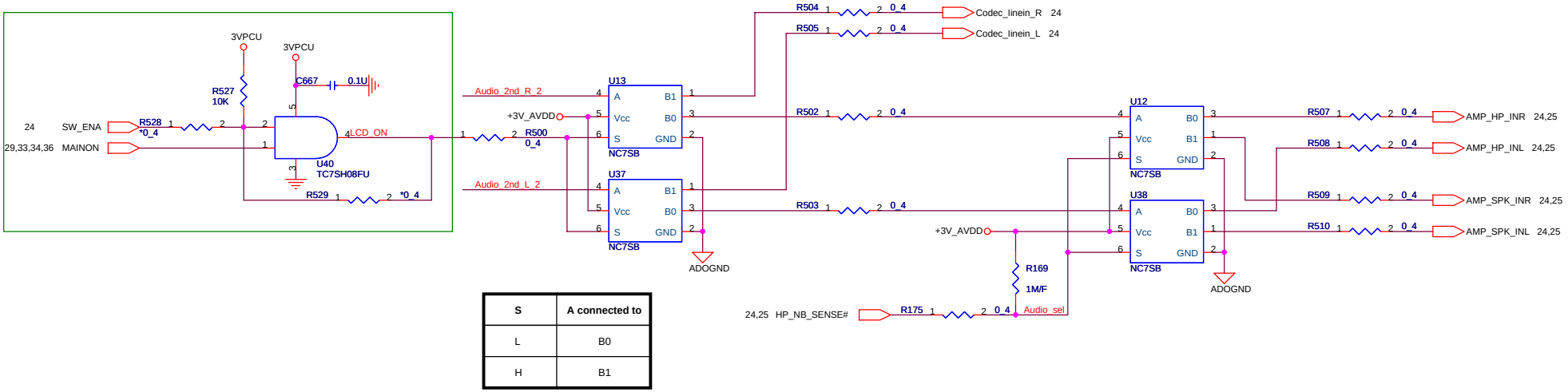
SLP_S4#(SUSC#):1.Control non-critical power plane when system into S4(Suspend to Disk)/S5(Soft off).Used to control DRAM power



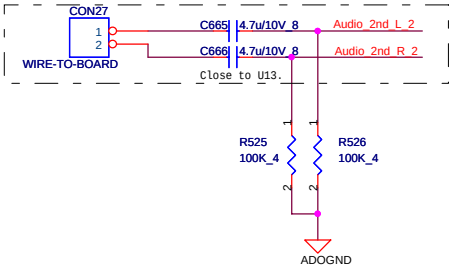
PROJECT : ES2Q
Quanta Computer Inc.

POWER SEQUENCE

2nd display audio output:
1. S0: Codec Linein.
2. S3~S5: Amplifier in.



S	A connected to
L	B0
H	B1



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	2nd audio output sel	1A
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ES2Q change list:

Item	Stage	Remark
1	EVT	Change C252 from 0.1uF to 10pF. C252 unstuff.
2	EVT	Unstuff C102 for in Merom spec this decompling C is not recommended.
3	EVT	Del U1、R15、R18、C16、C17.
4	EVT	Stuff R107 for Express-LAN and Express-1394 use.
5	EVT	Change Q15.1 connection from 5VPCU to 3VPCU.
6	EVT	Del D39 and net AMP_Mute_2nd#.
7	EVT	Del R430 and net AMP_PWROFF_2nd.
8	EVT	Change U31.89 connection to U31.124 for an interrupt pin is needed here to notify EC the 2nd display is on. U31.89 NC.
9	EVT	Del net: AudSel_EC_2nd、AMPIN_Sel_EC and AMPIN_Sel_2nd.
10	EVT	Del D36. Connect net SERIRQ directly to U31.5.
11	EVT	Stuff PD19.
12	EVT	Change C606 and C607 from 27pF to 18pF.
13	EVT	Del: U11、R158、R162、R164~R168、R170~R173、R176、R178、R179、R181、R415 and R420.
14	EVT	Del Q18. Change R169 from 100K to 1M ohm.
15	EVT	Add: Q30、R4100、R4102~R4111.
16	EVT	Change the connection of U13 and U12.
17	EVT	Del R104.
18	EVT	Change Codec from ALC268 to ALC883 for A-A funtion used in 2nd display.
19	EVT	PC123 and PC135 stuff.
20	EVT	Del R143、R182、R506.
21	EVT	Add C665 and C666.
22	EVT	Del D37 and R425 for ALC883 do not have EAPD function.
23	EVT	Unstuff C514 for SDHC card cannot work because of clk error.
24	EVT	Del C566 and U27.
25	EVT	Change L3、L4、L5 to R450、R451、R452 (0 ohm). Unstuff C73、C74、C75、C76、C78、C79.
26	EVT	Unstuff TC1~TC9.
27	EVT	Add D40 for an-ti pop function.
28	EVT	Change R437 and R180 from 33ohm to 75ohm.
29	EVT	Add Q31\Q32\R162\R166 for level shift.
30	EVT	Change C19 from 0.01uF to 2.2uF for LCD power sequence.
31	EVT	Unstuff R320 and stuff R118 for CLKGEN_FSL2's level was pulled down to about 2V.
32	EVT	Change R193、R446、R444、R186、R185、R443、R183 from 100ohm to 150ohm.
33	EVT	Add R511/R513/R517/R519 for LAN EMI debug.
34	EVT	Add PWR_CTL_2nd to EC pin 17 for notifying EC the 2nd diaplay power-on/off switch status.
35	DVT	Del C355 for EMI.
36	DVT	Change U12/U13 to analog switch and add U37 and U38 for full function.
37	DVT	Add R522 and R523 for different NB skus.
38	DVT	Del C73/C74/C75/C76/C78/C79 former for EMI.
39	DVT	Change L28 and L26 to R845 and R846. Del C422/C436/C70. For water-wave display with projector.
40	DVT	Add a connection to LCD connector for 2nd display Mic input to Codec.
41	DVT	Add U39 and R524 for Int. Mic on M/B and on 2nd display selection.
38	DVT	Del C73/C74/C75/C76/C78/C79 former for EMI.
38	DVT	Del C73/C74/C75/C76/C78/C79 former for EMI.

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	Change List	1A
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