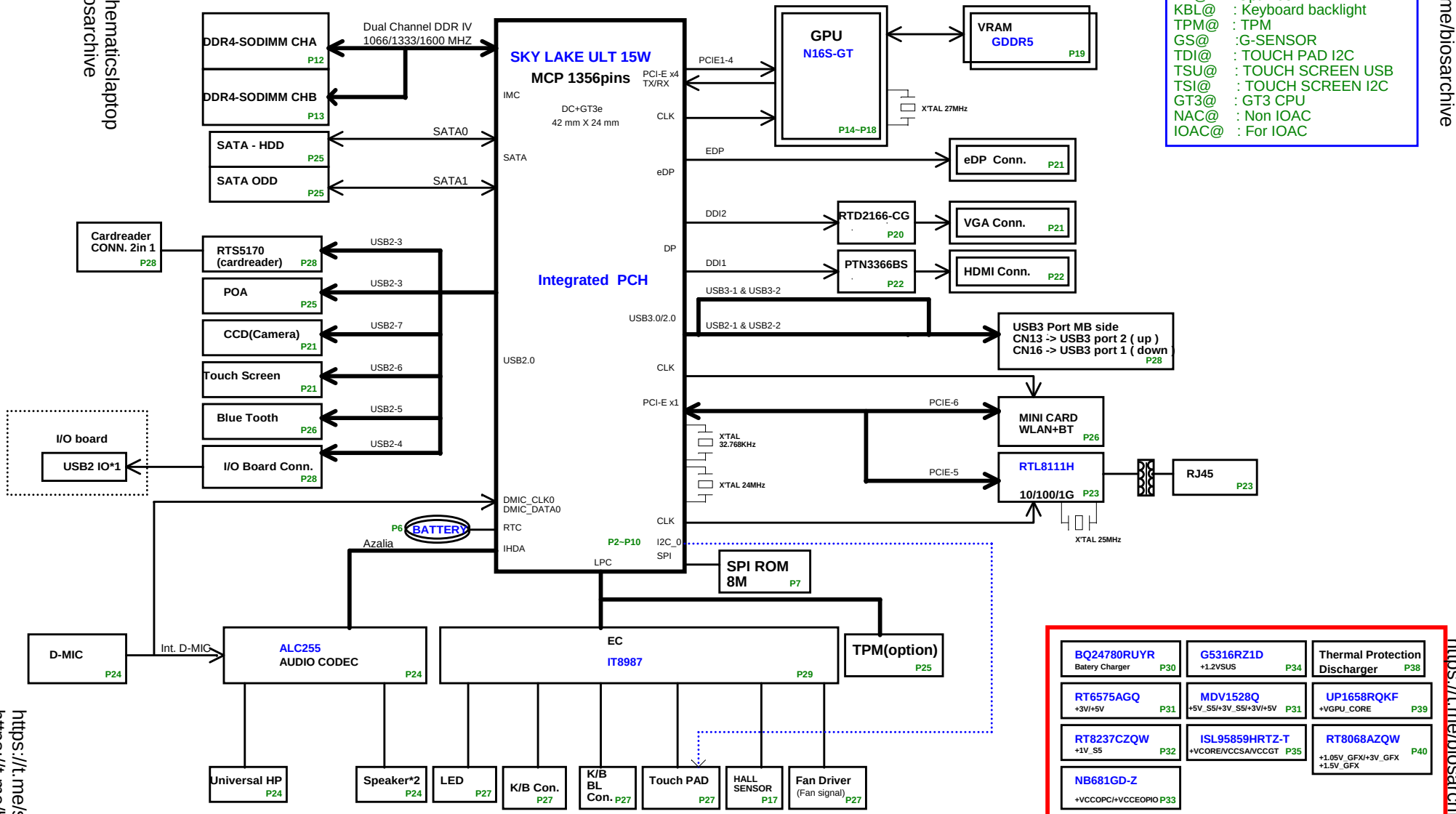
Z8V Serials SKL ULT SYSTEM BLOCK DIAGRAM

BOM

IV@ : iGPU
EV@ : Optimus
KBL@ : Keyboard backlight
TPM@ : TPM
GS@ :G-SENSOR
TDI@ : TOUCH PAD I2C
TSU@ : TOUCH SCREEN USB
TSI@ : TOUCH SCREEN I2C
GT3@ : GT3 CPU
NAC@ : Non IOAC
IOAC@ : For IOAC



BQ24780RUYR Batery Charger P30	G5316RZ1D +1.2VSUS P34	Thermal Protection Discharger P38
RT6575AGQ +3V/+5V P31	MDV1528Q +5V_S5/+3V_S5/+3V/+5V P31	UP1658RQKF +VGPU_CORE P39
RT8237CZQW +1V_S5 P32	ISL95859HRTZ-T +VCORE/VCCSA/VCCGT P35	RT8068AZQW +1.05V_GFX/+3V_GFX +1.5V_GFX P40
NB681GD-Z +VCCOPC/+VCCEOPIO P33		

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PROJECT : ZRW
Size | Document Number | Rev 1A
Block Diagram
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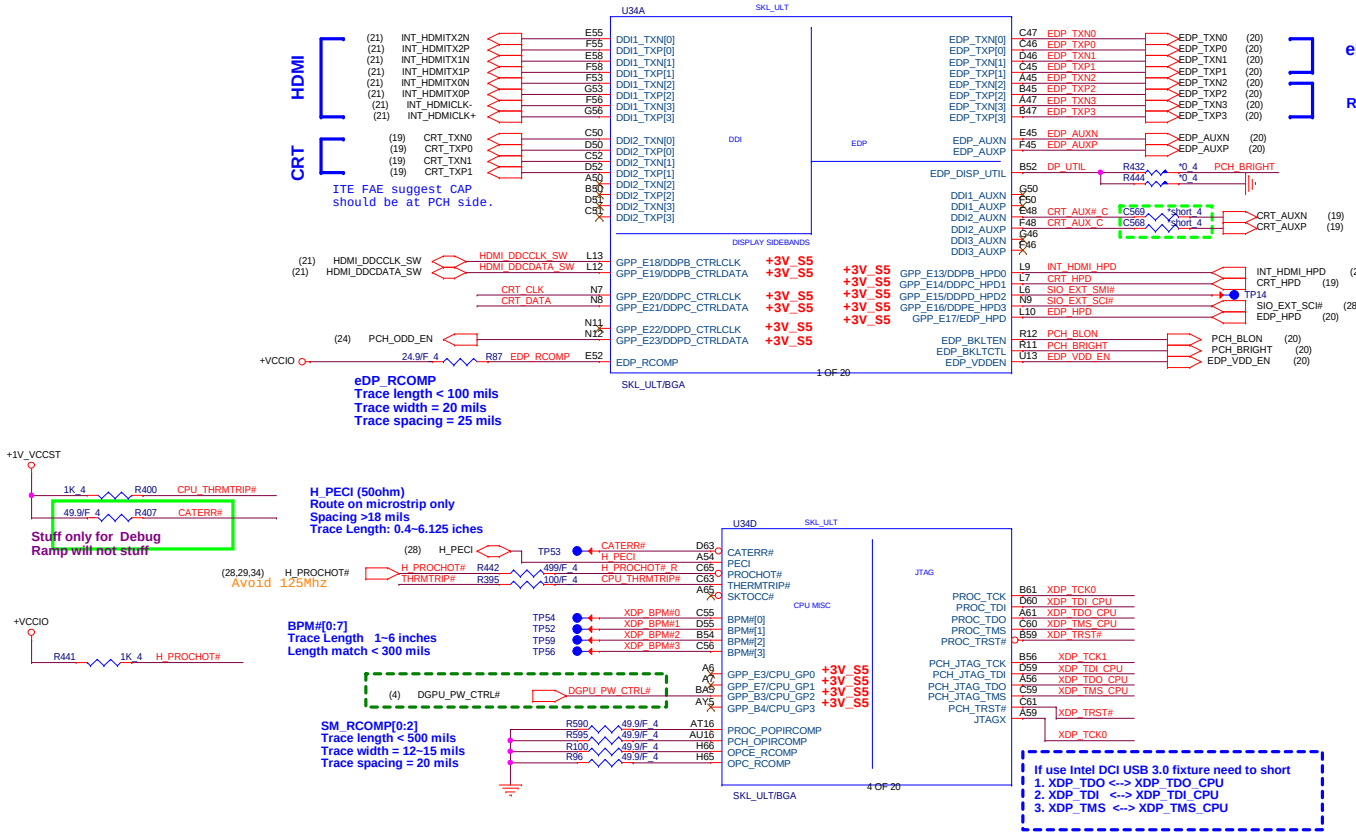
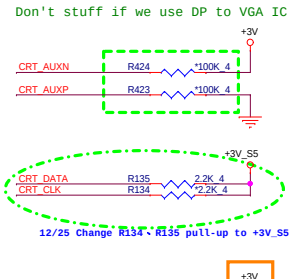
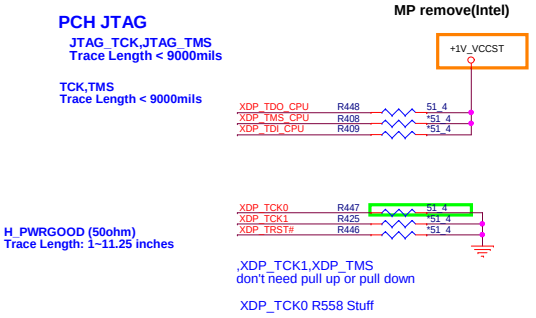
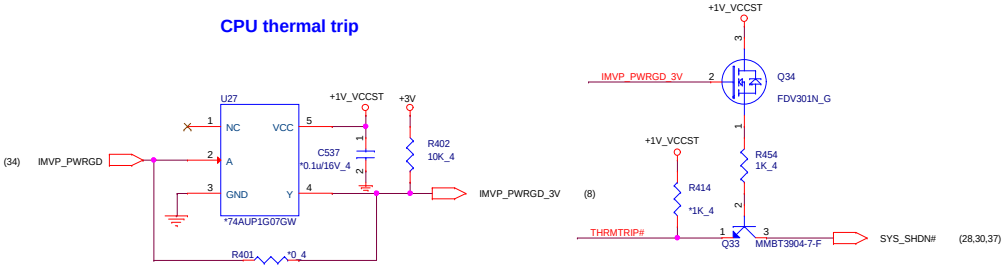
Skylake ULT (DISPLAY,eDP)

02









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Quanta Computer Inc.
PROJECT : ZRW

Size	Document Number	Rev
	Skylake 1/4 (DDI/eDP)	1A
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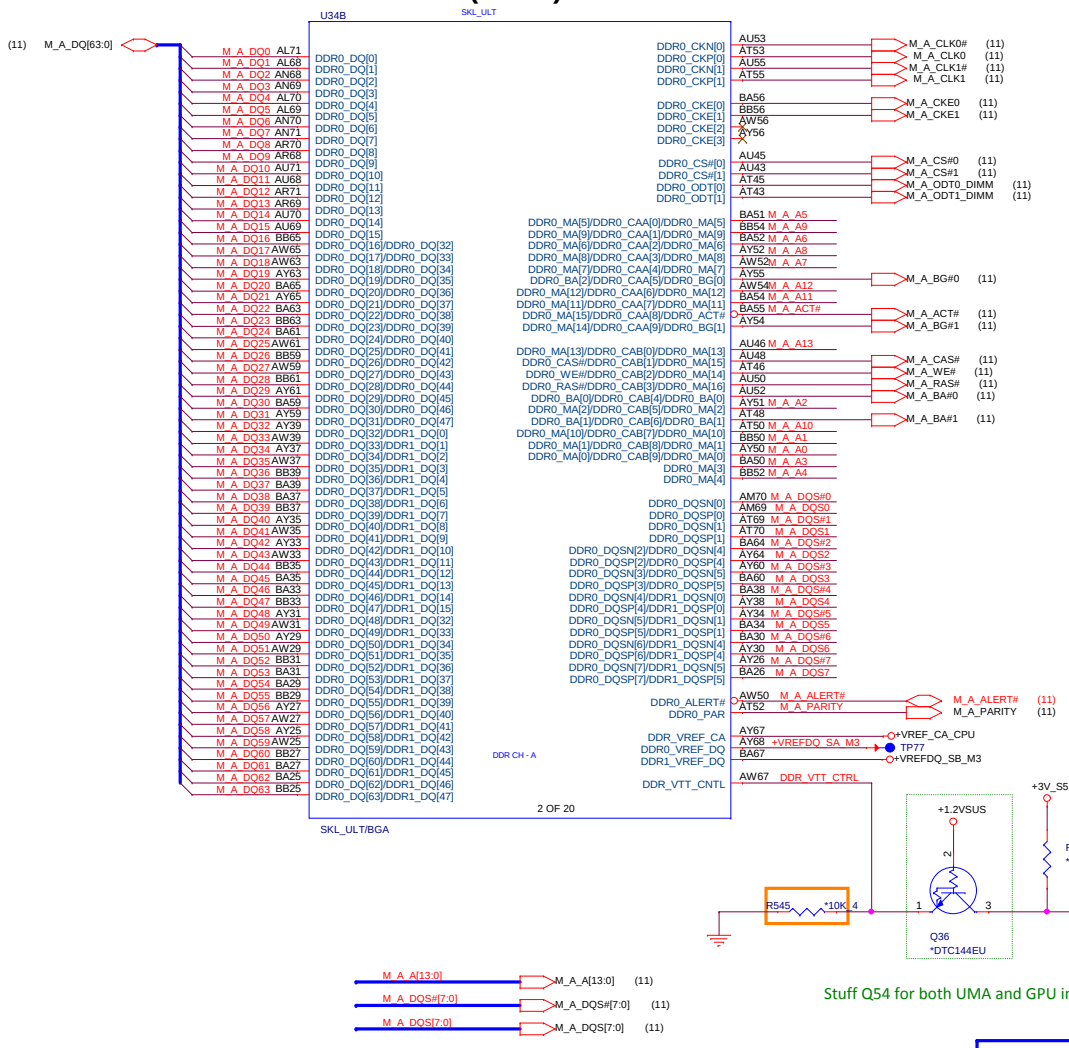
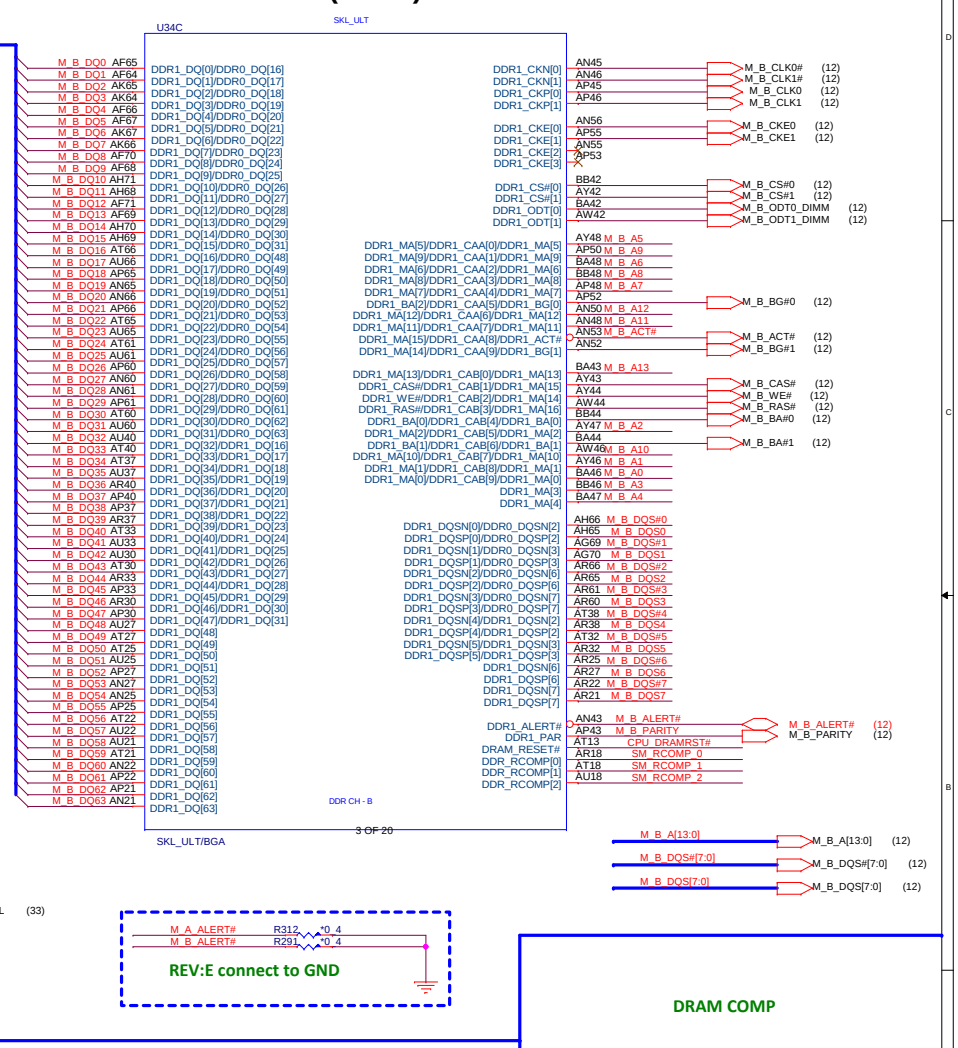
Change Data and DQS to interleave.

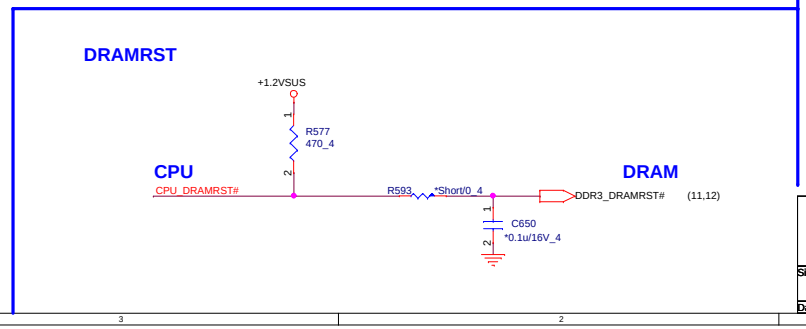
SKL ULT (DDR4)

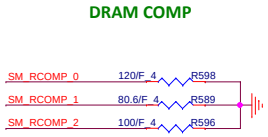


Stuff Q54 for both UMA and GPU in DDR_VTT_CNTL

SKL ULT (DDR4)







Quanta Computer Inc.		
PROJECT : ZRW		
Size	Document Number: Skylake 2/3 (DDR3 I/F)	Rev: 1A
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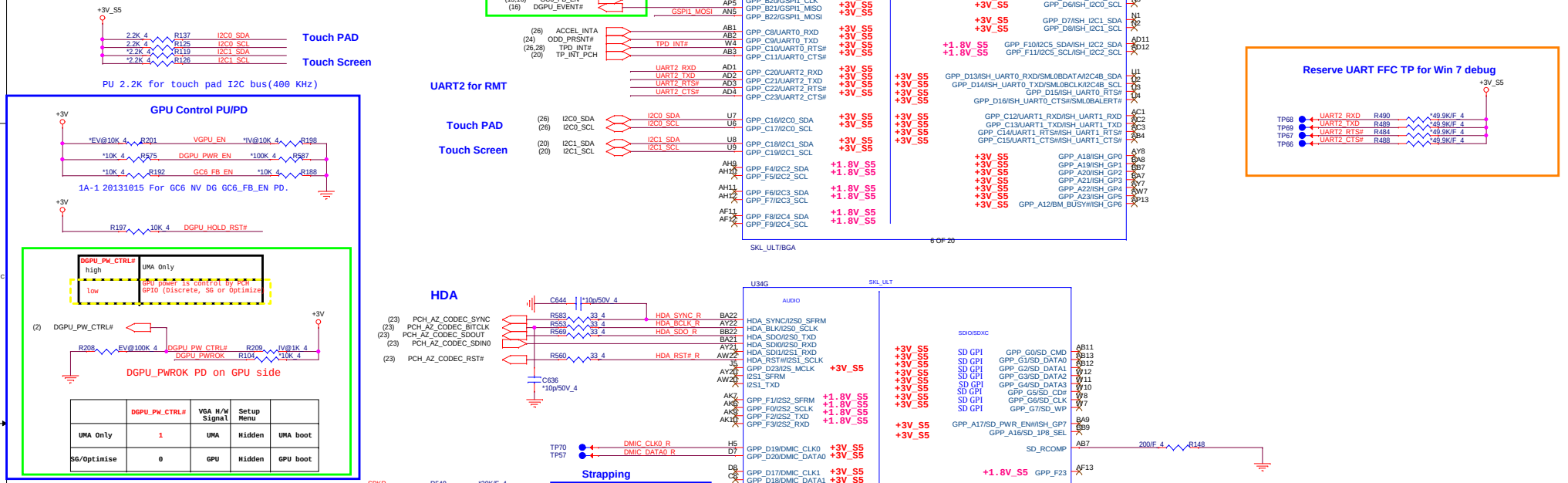
SKL ULT (SIDEBAND) GPIO

H_PECI (50ohm)
If route on microstrip,
Spacing need >18 mils
Trace Length: 2~15 iches

H_PWRGOOD (50ohm)
Trace Length: 1~11.25 inches



Skylake-U Strapping Table

Pin Name	Strap description	Sampled	Configuration	note
GPP_B14 (SPKR)	Top-Block Swap override	PCH_PWROK	**0 = *Disable Top Swap (iPD 20K)** 1 = Enable Top Swap Mode	+3V R550 *1K_4 SPKR
GPP_B18 (GSPI0_MOSI)	No reboot	PCH_PWROK	**0 = *Disable No Reboot (iPD 20K)** 1 = Enable No Reboot Mode	+3V R543 *1K_4 GSPI0_MOSI
GPP_C2 (SMBALERT#)	TLS Confidentiality	RSMRST#	**0 = *Disable Intel ME Cryp to TLS(iPD 20K)** 1 = Enable Intel ME Cryp to TLS	+3V_S5 R144 *10K_4 SMBALERT# (7)
GPP_B22 (GSPI1_MOSI)	Boot BIOS Strap Bit (BBS)	PCH_PWROK	**0 = *SPI (iPD 20K)** 1 = LPC	+3V R191 *1K_4 GSPI1_MOSI
GPP_C5 (SML0ALERT#)	eSPI or LPC	RSMRST#	**0 = *LPC is selected for EC (iPD 20K)** 1 = eSPI selected for EC	+3V_S5 R481 *1K_4 SML0ALERT# (7)
SPI0_MOSI	Reserved	RSMRST#	**(iPU 15 ~ 40K)**	
SPI0_MISO	Reserved	RSMRST#	**(iPU 15 ~ 40K)**	
GPP_B23 (SML1ALERT# /PCHHOT#)	Reserved	RSMRST#	**(iPD 20K)**	
SPI0_IO2	Reserved	RSMRST#	**(iPU 15 ~ 40K)**	
SPI0_IO3	Reserved	RSMRST#	**(iPU 15 ~ 40K)**	
HDA_SDO / I2S_TXD0	Flash Descriptor Security Override / Intel ME Debug Mode	PCH_PWROK	**0 = *Enable security in the Flash Description (iPD 20K)** 1 = Disable Flash Descriptor Security (Override)	change location to near CPU to prevent impact HDA_SDO signal HDA_SDO_R R570 *1K_4 ME_WR# (28)
GPP_E19 (DDPB_CTRLDATA)	Display Port B Detected	PCH_PWROK	**0 = *Port B is not detected (iPD 20K)** 1 =Port B is detected	
GPP_E21 (DDPC_CTRLDATA)	Display Port C Detected	PCH_PWROK	**0 = *Port C is not detected (iPD 20K)** 1 =Port C is detected	

Touchpad INT

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PROJECT : ZRW

Size	Document Number	Rev
	Skylake 6/7 (PEG/DMI/FDI)	1A
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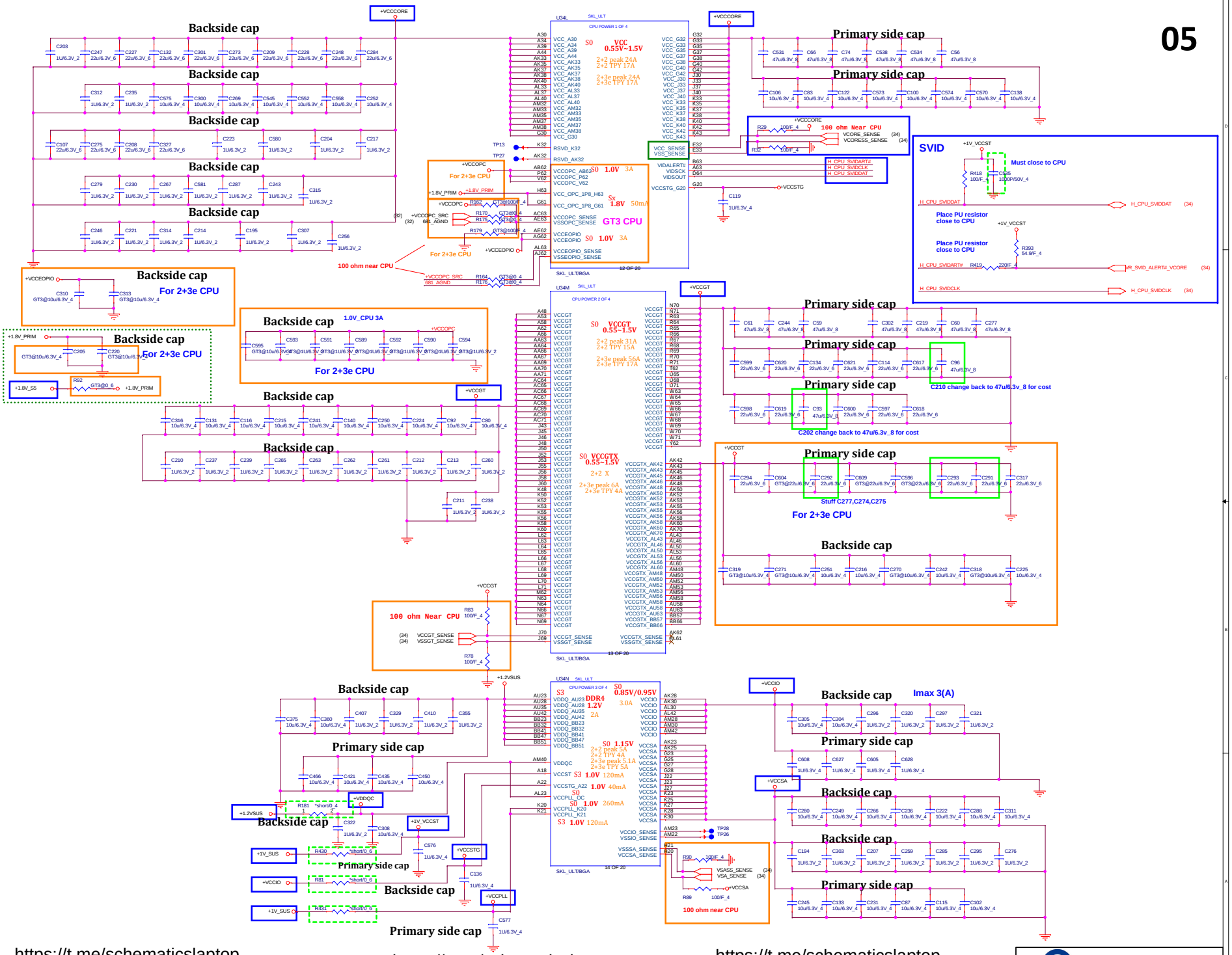
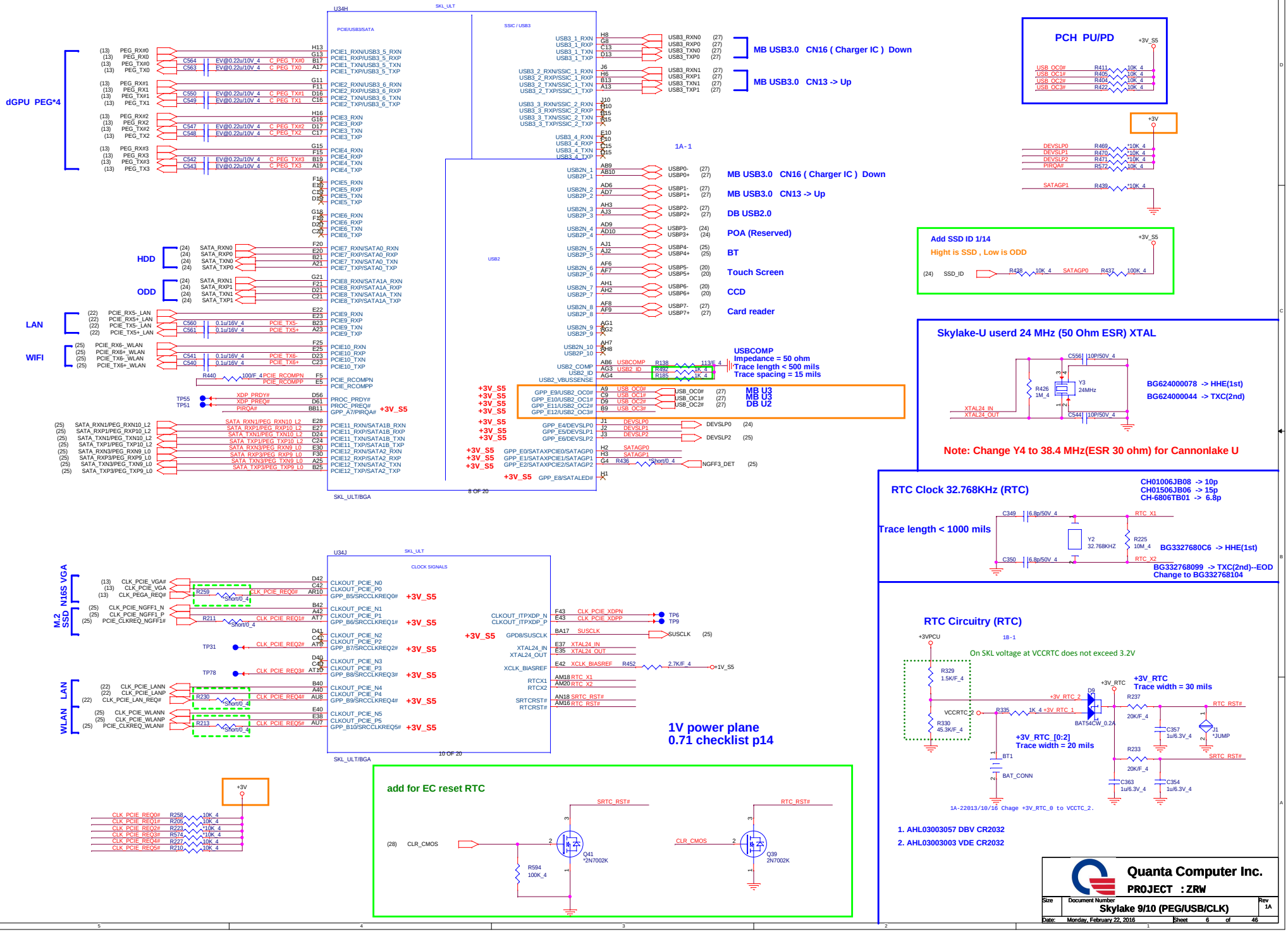
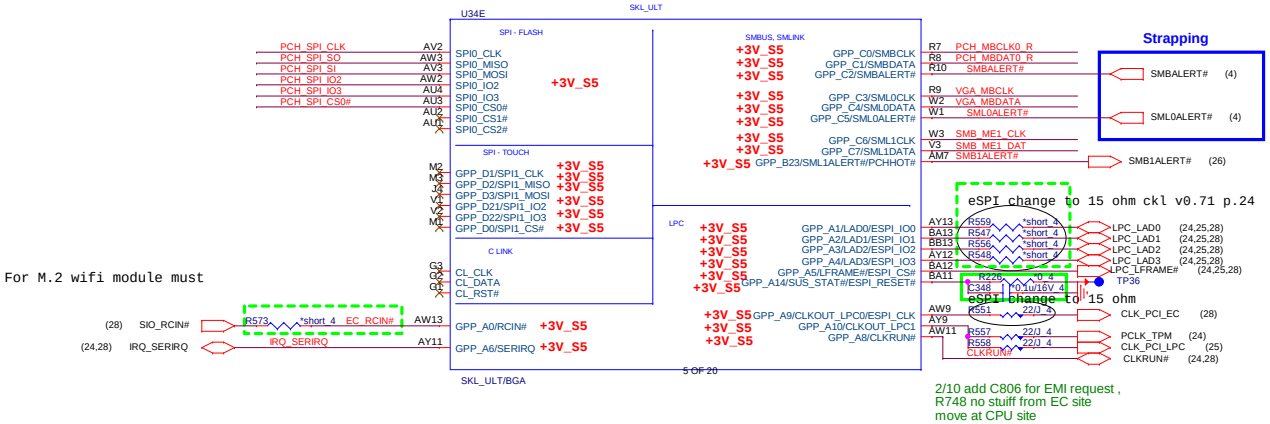


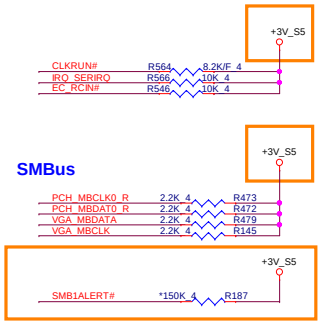
Skylake ULT (GPU, SATA , ODD, CLK ,USB2&3)

06





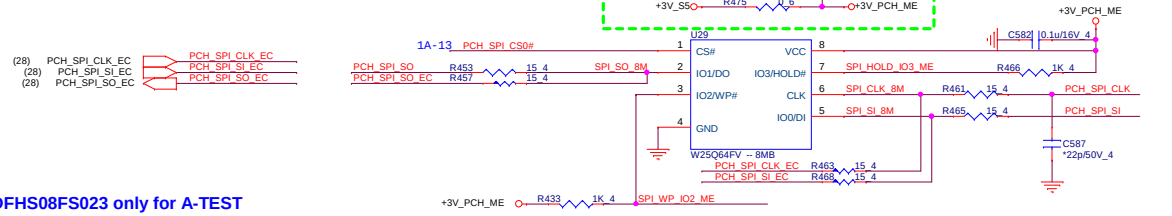
2/10 add C806 for EMI request , R748 no stuiff from EC site move at CPU site



Termination Resistor Requirement for PCH PCHHOT# Pin
Reserve PU 150K resister

PCH SPI ROM(8M)

15ohm CS01502JB12
33ohm CS03302JB29

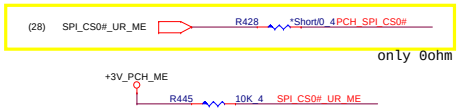


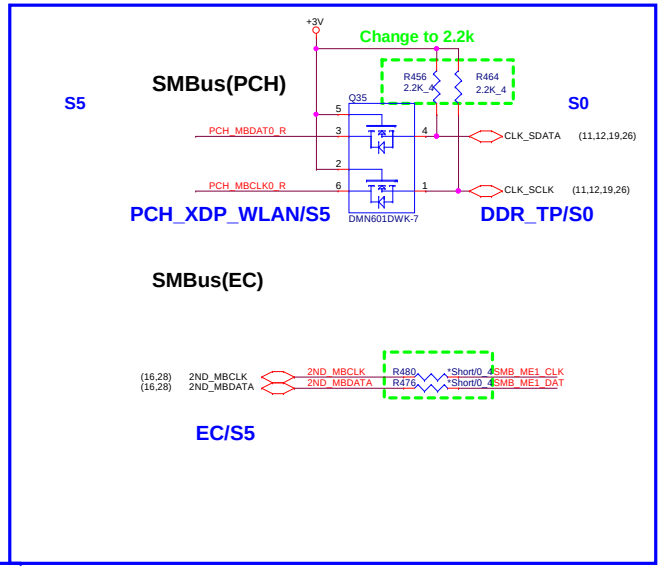
SP@ socket P/N: DFHS08FS023 only for A-TEST

SPI ROM	Vender	Size	Quanta P/N	Vender P/N
Skylake 3.3V	WND	8M	AKE3EFP0N07	W25Q64FVSSIQ
	GGD	8M	AKE2EZN0Q00	GD25B64CSIGR

3.3K is original and for no support fast read function

reserve for SPI fast read





Quanta Computer Inc.		
PROJECT : ZRW		
Size	Document Number: Skylake 5 (SATA/HDA/SPI)	Rev 1A
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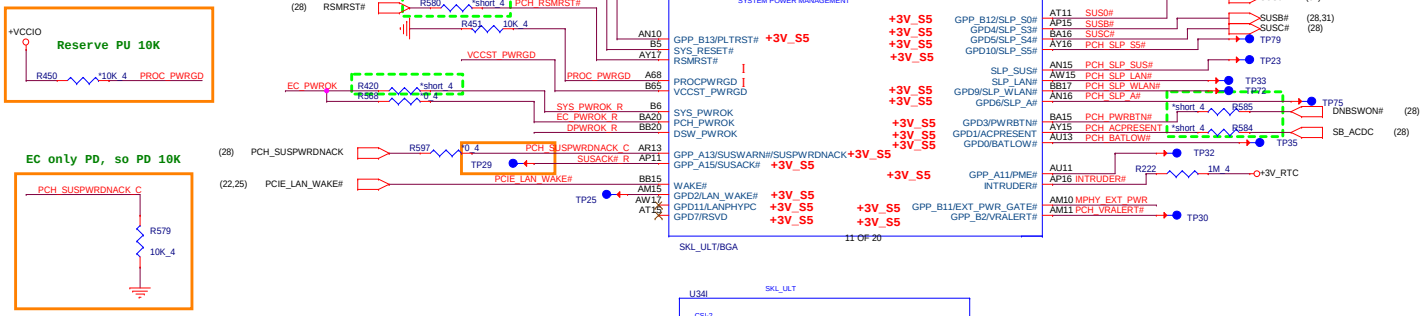
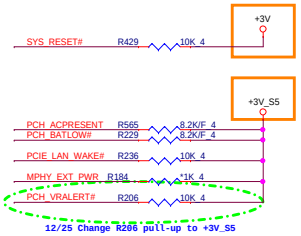
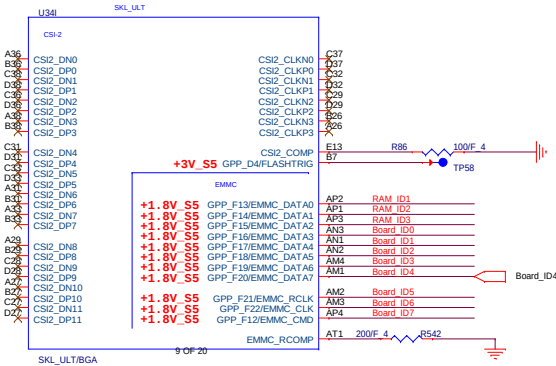
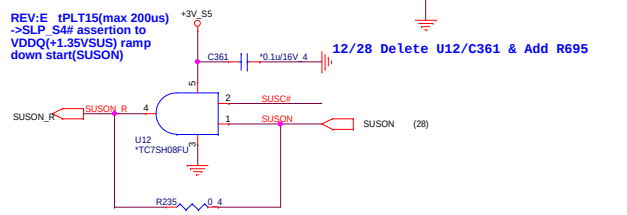
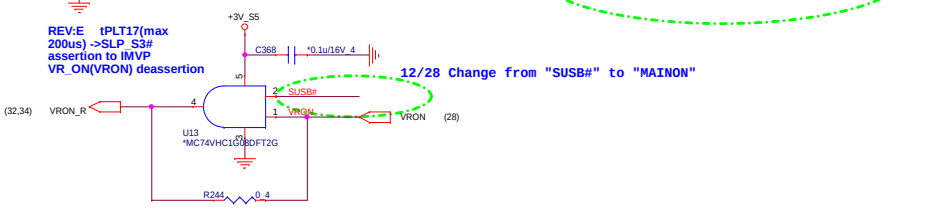


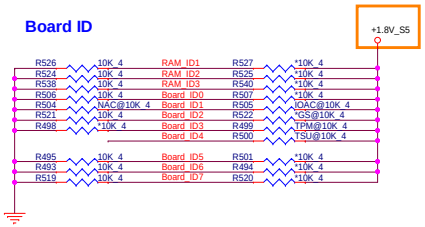








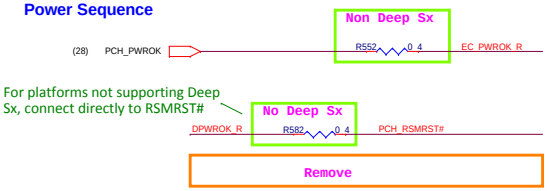
Board ID



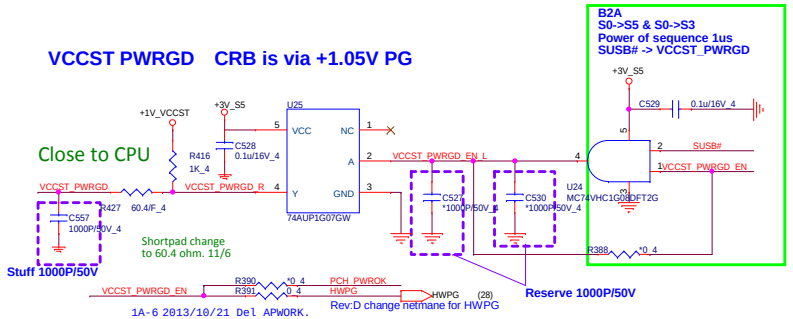
	Low	High
BOARD_ID0	VRAM X32 (R506)	VRAM X16 (R507)
BOARD_ID1	Non IOAC (R504)	IOAC (R505)
BOARD_ID2	Non G-sensor (R521)	G-sensor (R522)
BOARD_ID3	No TPM (R498)	TPM (R499)
BOARD_ID4	No-Touch panel	Touch panel (R500)

	Low	High
BOARD_ID5	For 14" (R495)	For 15" / 17" (R501)
BOARD_ID6	Reserved (Default)	Reserve
BOARD_ID7	Reserved (Default)	Reserve

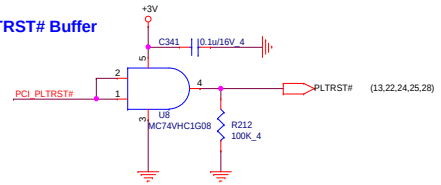
Power Sequence



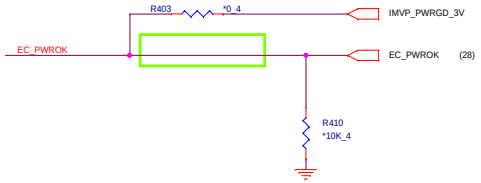
VCCST PWRGD CRB is via +1.05V PG



PLTRST# Buffer



SYSPWOK



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PROJECT : ZRW

Size	Document Number	Rev
	Skylake 9/11 (PWROK/Board_ID)	1A
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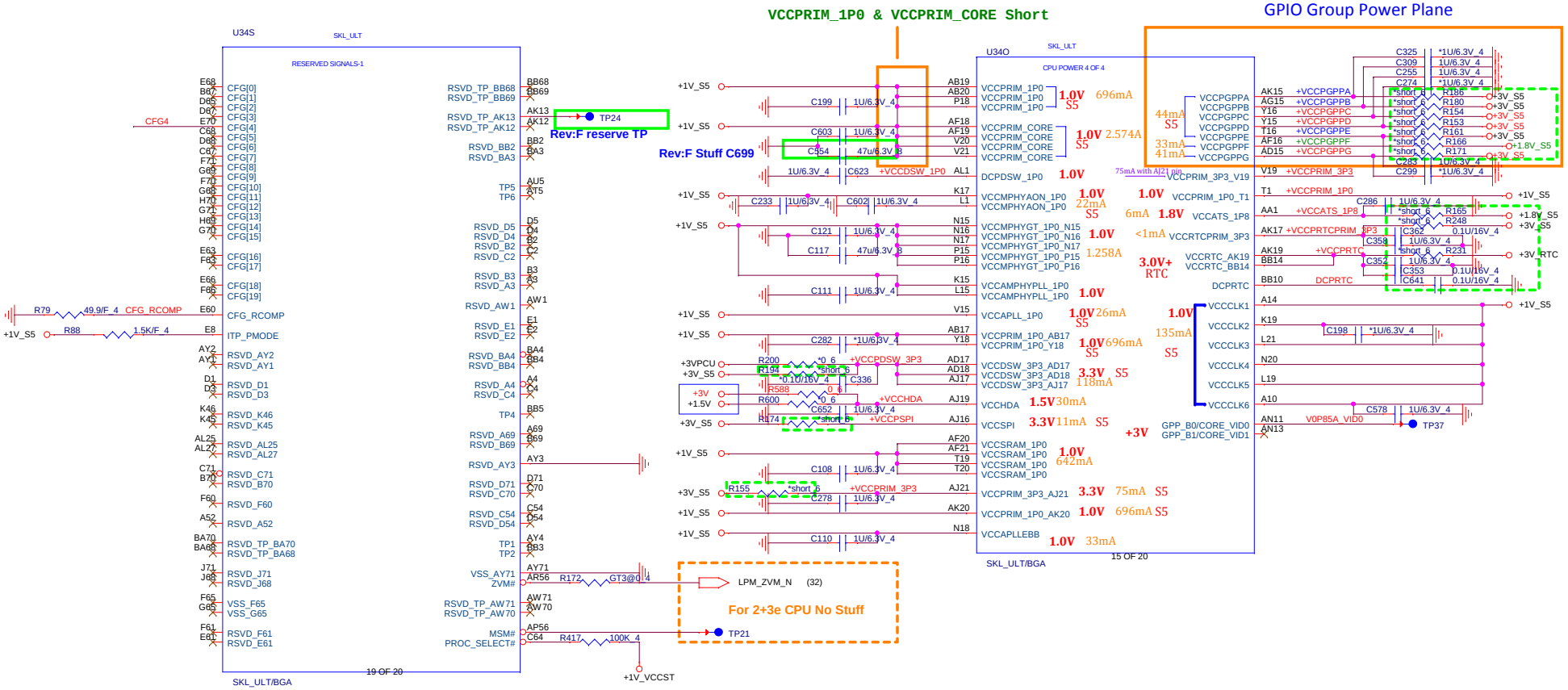

Pin Name	Strap description	Configuration	Note
CFG[0]	Stall reset sequence after PCU PLL lock until de-asserted	**1 = *Normal Operation; No stall (iPU 3K)** 0 = Stall	
CFG[1]	Reserved Configuration lane		
CFG[2]	PCI Express* Static x16 Lane Numbering Reversal	**1 = *Normal Operation(iPU 3K)** 0 = Lan number reversed	**H & S processor used only**
CFG[3]	Reserved Configuration lane		
CFG[4]	eDP enable	1 = Disabled (iPU 3K) **0 = *Enabled**	CFG4 R455 1K_4
CFG[6:5]	PCI Express* Bifunction	00 = 1x8, 2x4 PCI Express* 01 = reserved 10 = 2x8 PCI Express* 11 = 1x16 PCI Express*	**H & S processor used only**
CFG[7]	PEG Training	**1 = *PEG Train immediatedly follow RESET# de-assertion (iPU 3K)** 0 = PEG wait for BIOS for training	**H & S processor used only**
CFG[19:8]	Reserved Configuration lane		

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PROJECT : ZRW

Size	Document Number	Rev
	Skylake PCH-LP 15/19 (POWER)	1A

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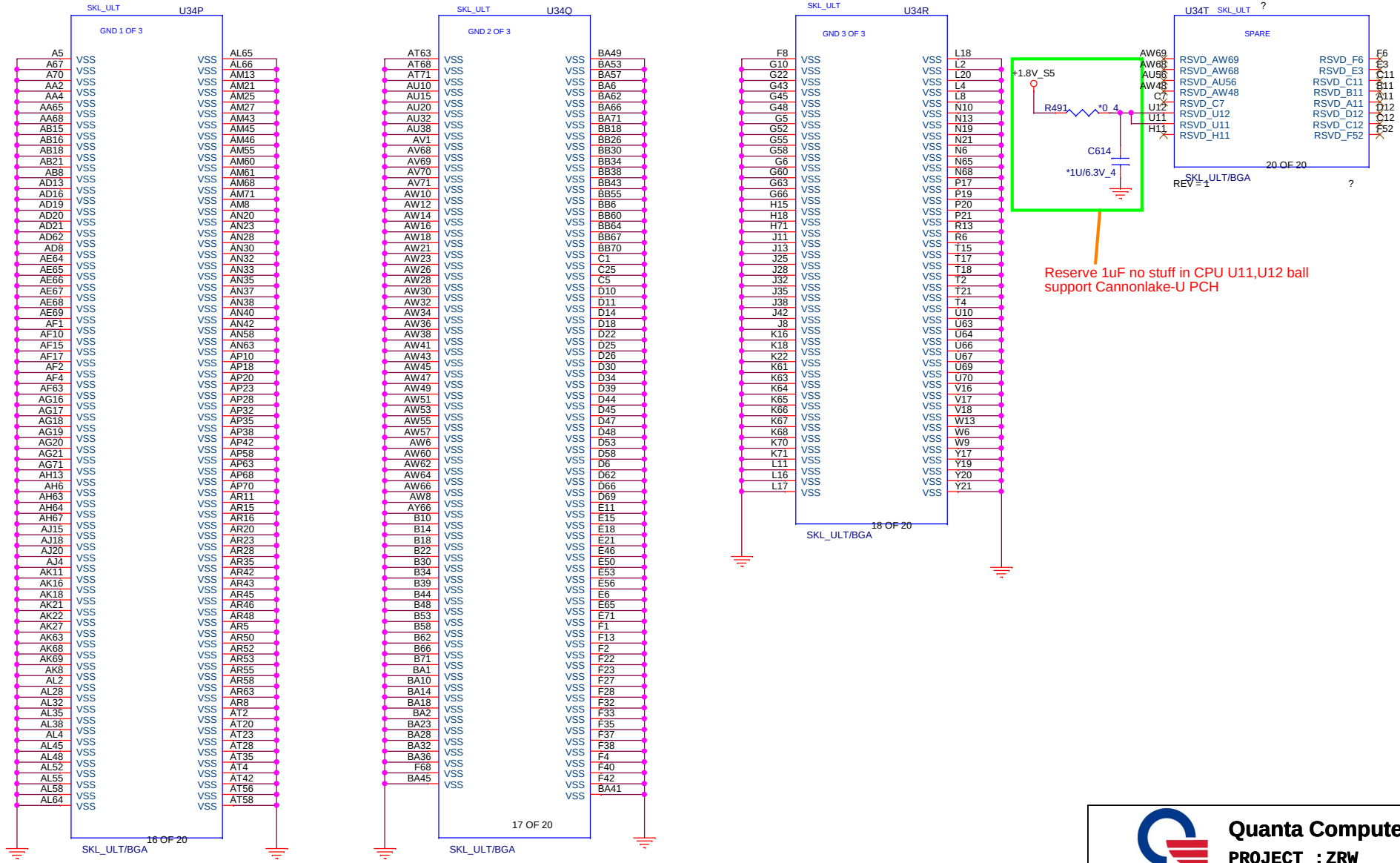
Skylake ULT (GND)



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PROJECT : ZRW		
Size	Document Number: Skylake 10/17/18 (GND)	Rev: 1A
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P/N and F/P

JDIM2A

DDR4 SODIMM 260 PIN (260P)

(3) M_A_A[13:0]

M_A_A0 144 A0
M_A_A1 133 A1
M_A_A2 132 A2
M_A_A3 131 A3
M_A_A4 128 A4
M_A_A5 126 A5
M_A_A6 127 A6
M_A_A7 122 A7
M_A_A8 125 A8
M_A_A9 121 A9
M_A_A10 146 A10/AP
M_A_A11 120 A11
M_A_A12 119 A12
M_A_A13 158 A13

(3) M_A_WE# 151 A14/WE#
(3) M_A_CAS# 156 A15/CAS#
(3) M_A_RAS# 152 A16/RAS#

TP41 162 S2#/C0
TP40 165 S3#/C1

+1.2VSUS
R315 240/F_4 M_A_EVENT#
(3) M_A_ACT# 114 ACT#
(3) M_A_PARITY 143 PARITY
(3) M_A_ALERT# 116 ALERT#
M_A_EVENT# 134 EVENT#
(3,12) DDR3_DRAMRST# 108 RESET#
C460 *0.1U/16V_4

+3V
R313 *10K_4 CHA_SA0
R311 *10K_4 CHA_SA1
R332 *10K_4 CHA_SA2
R322 10K_4 CHA_SA0
R320 10K_4 CHA_SA1
R333 10K_4 CHA_SA2

(3) M_A_BA#0 150 BA0
(3) M_A_BA#1 145 BA1
(3) M_A_BG#0 115 BG0
(3) M_A_BG#1 113 BG1

(3) M_A_CS#0 149 S0#
(3) M_A_CS#1 157 S1#
(3) M_A_CKE0 109 CKE0
(3) M_A_CKE1 110 CKE1

(3) M_A_CLK0 137 CK0
(3) M_A_CLK0# 139 CK0#
(3) M_A_CLK1 138 CK1
(3) M_A_CLK1# 140 CK1#

(3) M_A_ODT0_DIMM 155 ODT0
(3) M_A_ODT1_DIMM 161 ODT1

(7,12,19,26) CLK_SCLK 253 SCL
(7,12,19,26) CLK_SDATA 254 SDA

CHA_SA0 256 SA0
CHA_SA1 260 SA1
CHA_SA2 166 SA2

+1.2VSUS
R319 240/F_4 M_A_CB0 92 CB0
R305 240/F_4 M_A_CB1 91 CB1
R308 240/F_4 M_A_CB2 101 CB2
R309 240/F_4 M_A_CB3 105 CB3
R318 240/F_4 M_A_CB4 88 CB4
R304 240/F_4 M_A_CB5 87 CB5
R317 240/F_4 M_A_CB6 100 CB6
R316 240/F_4 M_A_CB7 104 CB7

+1.2VSUS
12 DM0
33 DM1
54 DM2
75 DM3
178 DM4
199 DM5
220 DM6
241 DM7
96 DM8

M_A_DQ0 8 DQ0
M_A_DQ1 7 DQ1
M_A_DQ3 20 DQ2
M_A_DQ6 21 DQ3
M_A_DQ5 4 DQ4
M_A_DQ4 3 DQ5
M_A_DQ7 16 DQ6
M_A_DQ2 17 DQ7
M_A_DQ9 28 DQ8
M_A_DQ8 29 DQ9
M_A_DQ11 41 DQ10
M_A_DQ10 42 DQ11
M_A_DQ13 24 DQ12
M_A_DQ12 25 DQ13
M_A_DQ14 38 DQ14
M_A_DQ15 37 DQ15
M_A_DQ21 50 DQ16
M_A_DQ16 49 DQ17
M_A_DQ19 62 DQ18
M_A_DQ22 63 DQ19
M_A_DQ17 46 DQ20
M_A_DQ20 45 DQ21
M_A_DQ23 58 DQ22
M_A_DQ18 59 DQ23
M_A_DQ25 70 DQ24
M_A_DQ28 71 DQ25
M_A_DQ27 83 DQ26
M_A_DQ30 84 DQ27
M_A_DQ24 66 DQ28
M_A_DQ29 67 DQ29
M_A_DQ26 79 DQ30
M_A_DQ31 80 DQ31
M_A_DQ33 174 DQ32
M_A_DQ37 173 DQ33
M_A_DQ35 187 DQ34
M_A_DQ34 186 DQ35
M_A_DQ36 170 DQ36
M_A_DQ32 169 DQ37
M_A_DQ38 183 DQ38
M_A_DQ39 182 DQ39
M_A_DQ45 195 DQ40
M_A_DQ41 194 DQ41
M_A_DQ46 207 DQ42
M_A_DQ42 208 DQ43
M_A_DQ44 191 DQ44
M_A_DQ40 190 DQ45
M_A_DQ47 203 DQ46
M_A_DQ43 204 DQ47
M_A_DQ52 216 DQ48
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M_A_DQ51 229 DQ51
M_A_DQ48 211 DQ52
M_A_DQ49 212 DQ53
M_A_DQ55 224 DQ54
M_A_DQ54 225 DQ55
M_A_DQ63 237 DQ56
M_A_DQ58 236 DQ57
M_A_DQ56 249 DQ58
M_A_DQ61 250 DQ59
M_A_DQ59 232 DQ60
M_A_DQ62 233 DQ61
M_A_DQ60 245 DQ62
M_A_DQ57 246 DQ63

M_A_DQ[63:0] (3)

0-7
8-15
16-23
24-31
32-39
40-47
48-55
56-63

M_A_DQS0 13 DQS0
M_A_DQS1 34 DQS1
M_A_DQS2 55 DQS2
M_A_DQS3 76 DQS3
M_A_DQS4 179 DQS4
M_A_DQS5 200 DQS5
M_A_DQS6 221 DQS6
M_A_DQS7 242 DQS7
M_A_DQS8 97 DQS8

M_A_DQS[7:0] (3)

M_A_DQS#0 11 DQS#0
M_A_DQS#1 32 DQS#1
M_A_DQS#2 53 DQS#2
M_A_DQS#3 74 DQS#3
M_A_DQS#4 177 DQS#4
M_A_DQS#5 198 DQS#5
M_A_DQS#6 219 DQS#6
M_A_DQS#7 240 DQS#7
M_A_DQS#8 95 DQS#8

M_A_DQS#[7:0] (3)

+1.2VSUS
R306 240/F_4 M_A_DQS8
R307 240/F_4 M_A_DQS#8

JDIM2B

DDR4 SODIMM 260 PIN (260P)

+1.2VSUS
2250mA

VDD1 111
VDD2 112
VDD3 117
VDD4 118
VDD5 123
VDD6 124
VDD7 129
VDD8 130
VDD9 135
VDD10 136
VDD11 141
VDD12 142
VDD13 147
VDD14 148
VDD15 153
VDD16 154
VDD17 159
VDD18 160
VDD19 163

VDDSPD 255
C379 2.2U/6.3V/X7R_6
C377 0.1U/25V_4
R271 *0_4 +2.5V
R282 *short/0_4 +3V
VPP1 257
VPP2 259
+2.5V_SUS
0.5A
I2/4 Change for +3.3V to +3V
VTT 258 +VDDQ_VTT
600mA
VREF_CA 164 VREF_CA_DIMM0

VSS1 1
VSS2 5
VSS3 9
VSS4 15
VSS5 19
VSS6 23
VSS7 27
VSS8 31
VSS9 35
VSS10 39
VSS11 43
VSS12 47
VSS13 51
VSS14 57
VSS15 61
VSS16 65
VSS17 69
VSS18 73
VSS19 77
VSS20 81
VSS21 85
VSS22 89
VSS23 93
VSS24 99
VSS25 103
VSS26 107
VSS27 167
VSS28 171
VSS29 175
VSS30 181
VSS31 185
VSS32 189
VSS33 193
VSS34 197
VSS35 201
VSS36 205
VSS37 209
VSS38 213
VSS39 217
VSS40 223
VSS41 227
VSS42 231
VSS43 235
VSS44 239
VSS45 243
VSS46 247
VSS47 251

VSS48 2
VSS49 6
VSS50 10
VSS51 14
VSS52 18
VSS53 22
VSS54 26
VSS55 30
VSS56 36
VSS57 40
VSS58 44
VSS59 48
VSS60 52
VSS61 56
VSS62 60
VSS63 64
VSS64 68
VSS65 72
VSS66 78
VSS67 82
VSS68 86
VSS69 90
VSS70 94
VSS71 98
VSS72 102
VSS73 106
VSS74 168
VSS75 172
VSS76 176
VSS77 180
VSS78 184
VSS79 188
VSS80 192
VSS81 196
VSS82 202
VSS83 206
VSS84 210
VSS85 214
VSS86 218
VSS87 222
VSS88 226
VSS89 230
VSS90 234
VSS91 238
VSS92 244
VSS93 248
VSS94 252

GND 261
GND 262

12/21 Change JDIM2 footprint to "ddr4-d4as0-26001-1p52-std-smt " for SMT requset

VREF DQ0 M1 Solution

+1.2VSUS
R321 1K/F_4
+VREF_CA_CPU
R327 2/F_6
VREF_CA_DIMM0
*0_4
R325 +VDDQ
C473 0.022U/25V_4
R328 1K/F_4
R334 24.9/F_4

Place these Caps near So-Dimm1.

1uF/10uF 4pcs on each side of connector

+1.2VSUS
C399 1U/6.3V_4
C391 1U/6.3V_4
C408 1U/6.3V_4
C381 1U/6.3V_4
C449 1U/6.3V_4
C414 1U/6.3V_4
C427 1U/6.3V_4
C438 1U/6.3V_4
C392 10U/6.3V_6
C385 10U/6.3V_6
C383 10U/6.3V_6
C382 10U/6.3V_6
C393 10U/6.3V_6
C426 10U/6.3V_6
C416 10U/6.3V_6
C386 10U/6.3V_6

+VDDQ_VTT
C425 1U/6.3V_4
C412 1U/6.3V_4
C423 1U/6.3V_4
C415 1U/6.3V_4
C409 10U/6.3V_6
+3V
C444 0.1U/16V_4
C441 2.2U/6.3V_6

VREF_CA_DIMM0
C465 0.1U/16V_4
C464 2.2U/6.3V_6

+2.5V_SUS
C374 0.1U/16V_4
C378 2.2U/6.3V_6

(3,5,12,33) +1.2VSUS
(12,33) +VDDQ_VTT
(2,4,6,7,8,9,12,13,15,19,20,21,22,23,24,25,26,27,28,30,31,32,33,34,37,38,39) +3V

Quanta Computer Inc.
PROJECT : ZRW

Size	Document Number	Rev
	DDR4 DIMM-RVS(5.2H) CHA	1A
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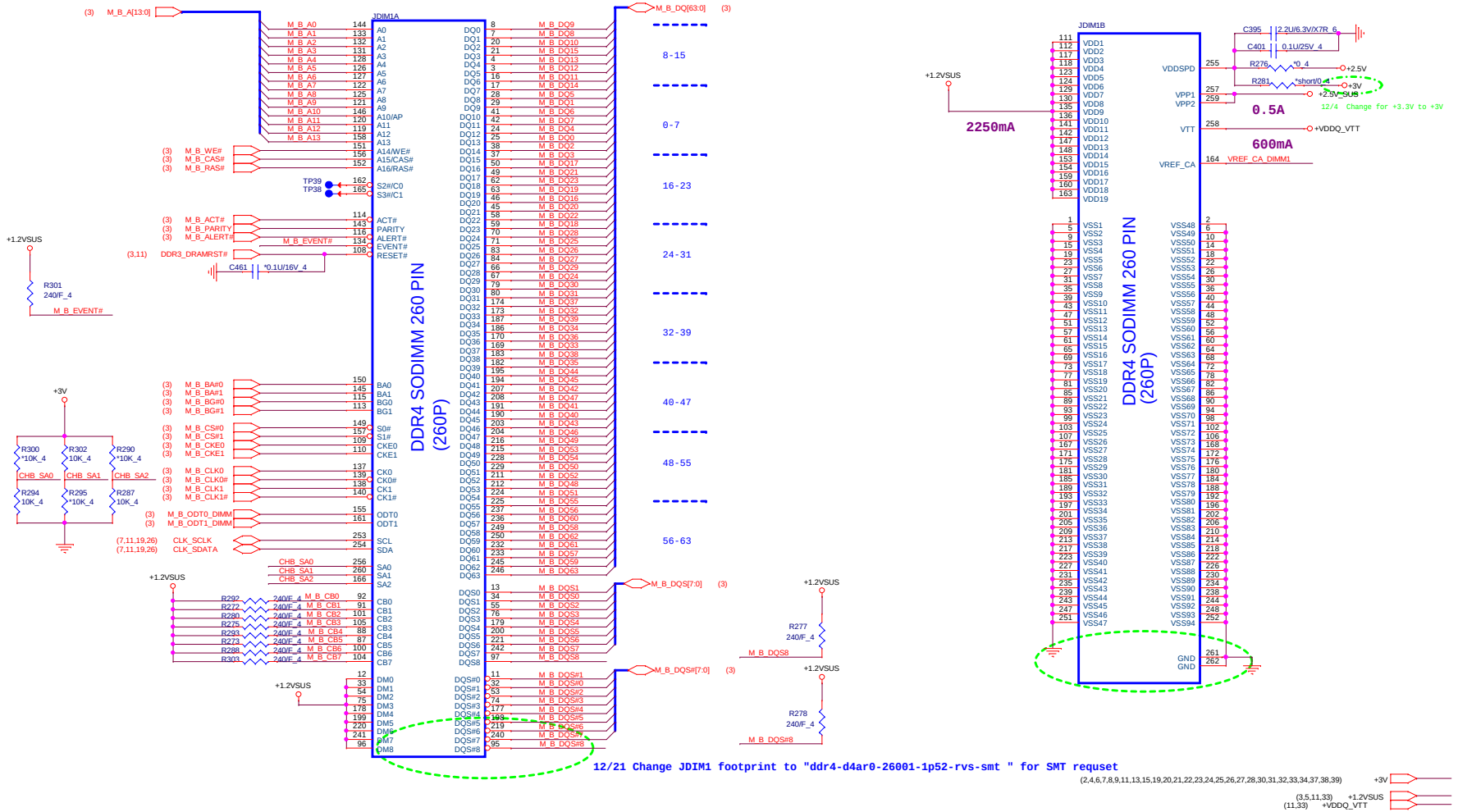


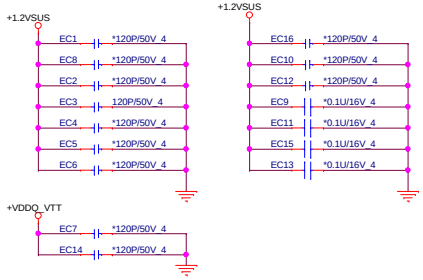
12/21 Change JDIM1 footprint to "ddr4-d4ar0-26001-1p52-rvs-smt " for SMT requset

(2,4,6,7,8,9,11,13,15,19,20,21,22,23,24,25,26,27,28,30,31,32,33,34,37,38,39) +3V

(3,5,11,33) +1.2VSUS

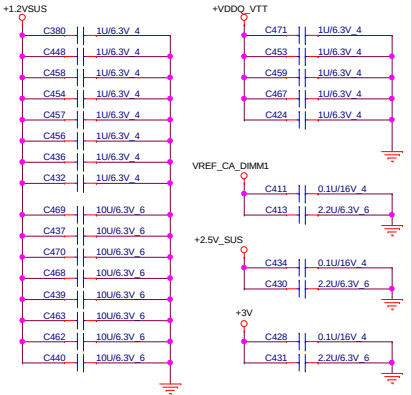
(11,33) +VDDQ_VTT

For EMI RESERVE

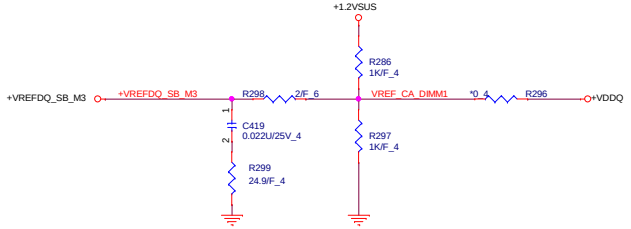


Place these Caps near So-Dimm0.

1uF/10uF 4pcs on each side of connector



VREF DQ1 M1 Solution



Quanta Computer Inc.

PROJECT : ZRW

Size	Document Number	Rev
	DDR4 DIMM-STD(5.2H) CHB	1A

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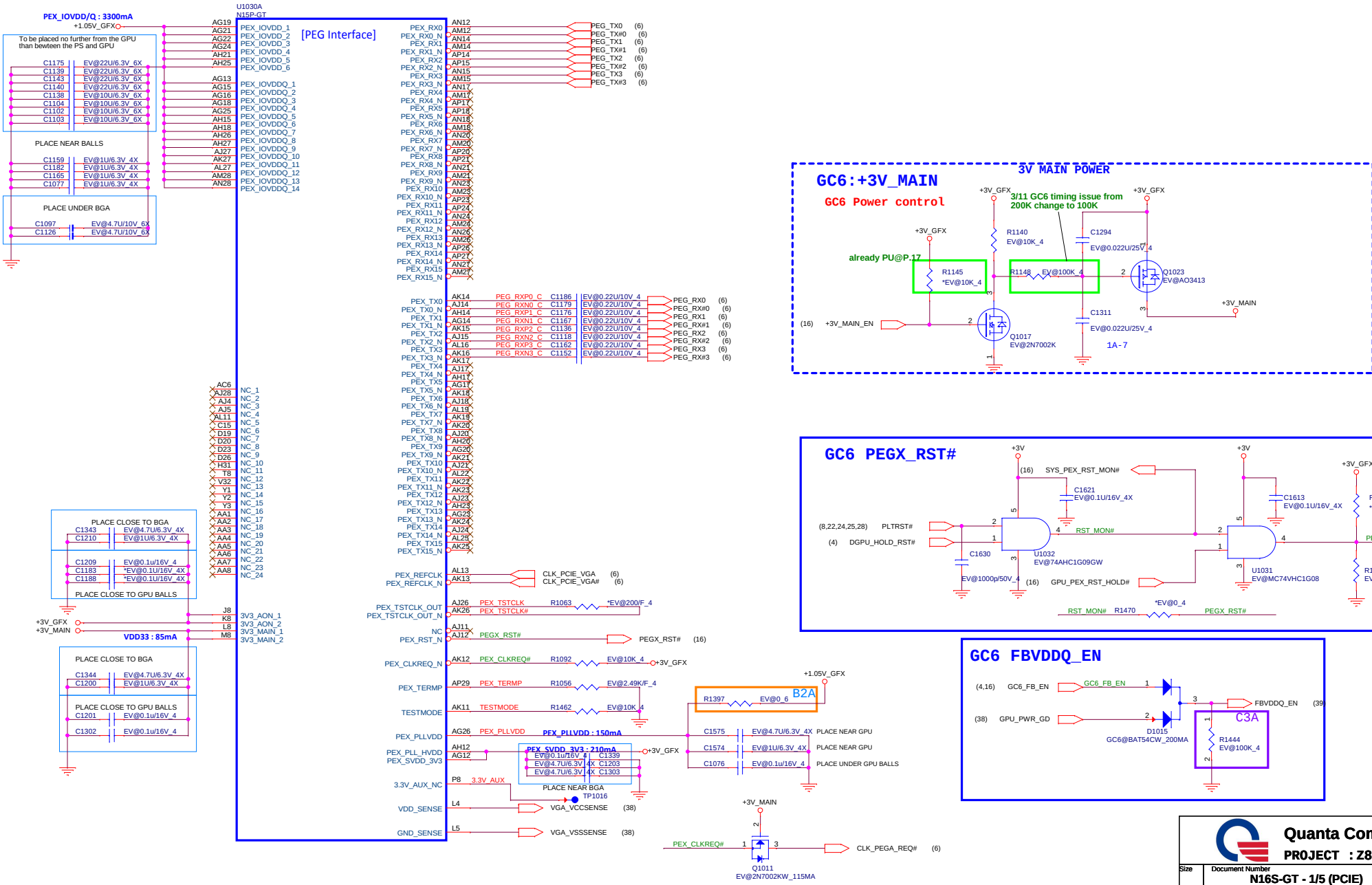
PEX_IOVDD/Q : 3300mA
+1.05V_GFX
To be placed no further from the GPU than bewteen the PS and GPU
PLACE NEAR BALLS
PLACE UNDER BGA
U1030A
N15P-GT
[PEG Interface]
PEX_IOVDD_1
PEX_IOVDD_2
PEX_IOVDD_3
PEX_IOVDD_4
PEX_IOVDD_5
PEX_IOVDD_6
PEX_IOVDDQ_1
PEX_IOVDDQ_2
PEX_IOVDDQ_3
PEX_IOVDDQ_4
PEX_IOVDDQ_5
PEX_IOVDDQ_6
PEX_IOVDDQ_7
PEX_IOVDDQ_8
PEX_IOVDDQ_9
PEX_IOVDDQ_10
PEX_IOVDDQ_11
PEX_IOVDDQ_12
PEX_IOVDDQ_13
PEX_IOVDDQ_14
PEX_RX0
PEX_RX0_N
PEX_RX1
PEX_RX1_N
PEX_RX2
PEX_RX2_N
PEX_RX3
PEX_RX3_N
PEX_RX4
PEX_RX4_N
PEX_RX5
PEX_RX5_N
PEX_RX6
PEX_RX6_N
PEX_RX7
PEX_RX7_N
PEX_RX8
PEX_RX8_N
PEX_RX9
PEX_RX9_N
PEX_RX10
PEX_RX10_N
PEX_RX11
PEX_RX11_N
PEX_RX12
PEX_RX12_N
PEX_RX13
PEX_RX13_N
PEX_RX14
PEX_RX14_N
PEX_RX15
PEX_RX15_N
PEG_TX0 (6)
PEG_TX#0 (6)
PEG_TX1 (6)
PEG_TX#1 (6)
PEG_TX2 (6)
PEG_TX#2 (6)
PEG_TX3 (6)
PEG_TX#3 (6)
PEX_TX0
PEX_TX0_N
PEX_TX1
PEX_TX1_N
PEX_TX2
PEX_TX2_N
PEX_TX3
PEX_TX3_N
PEX_TX4
PEX_TX4_N
PEX_TX5
PEX_TX5_N
PEX_TX6
PEX_TX6_N
PEX_TX7
PEX_TX7_N
PEX_TX8
PEX_TX8_N
PEX_TX9
PEX_TX9_N
PEX_TX10
PEX_TX10_N
PEX_TX11
PEX_TX11_N
PEX_TX12
PEX_TX12_N
PEX_TX13
PEX_TX13_N
PEX_TX14
PEX_TX14_N
PEX_TX15
PEX_TX15_N
PEG_RXP0_C C1186 EV@0.22U/10V_4
PEG_RXN0_C C1179 EV@0.22U/10V_4
PEG_RXP1_C C1176 EV@0.22U/10V_4
PEG_RXN1_C C1167 EV@0.22U/10V_4
PEG_RXP2_C C1136 EV@0.22U/10V_4
PEG_RXN2_C C1118 EV@0.22U/10V_4
PEG_RXP3_C C1162 EV@0.22U/10V_4
PEG_RXN3_C C1152 EV@0.22U/10V_4
PEG_RX0 (6)
PEG_RX#0 (6)
PEG_RX1 (6)
PEG_RX#1 (6)
PEG_RX2 (6)
PEG_RX#2 (6)
PEG_RX3 (6)
PEG_RX#3 (6)
NC_1
NC_2
NC_3
NC_4
NC_5
NC_6
NC_7
NC_8
NC_9
NC_10
NC_11
NC_12
NC_13
NC_14
NC_15
NC_16
NC_17
NC_18
NC_19
NC_20
NC_21
NC_22
NC_23
NC_24
PLACE CLOSE TO BGA
PLACE CLOSE TO GPU BALLS
PLACE CLOSE TO BGA
PLACE CLOSE TO GPU BALLS
+3V_GFX
+3V_MAIN
VDD33 : 85mA
3V3_AON_1
3V3_AON_2
3V3_MAIN_1
3V3_MAIN_2
PEX_REFCLK
PEX_REFCLK_N
CLK_PCIE_VGA (6)
CLK_PCIE_VGA# (6)
PEX_TSTCLK_OUT
PEX_TSTCLK_OUT_N
PEX_TSTCLK
PEX_TSTCLK#
R1063
*EV@200/F_4
NC
PEX_RST_N
PEGX_RST#
PEGX_RST# (16)
PEX_CLKREQ_N
PEX_CLKREQ#
R1092
EV@10K_4
PEX_TERMP
R1056
EV@2.49K/F_4
TESTMODE
R1462
PEX_PLLVDD
PEX_PLLVDD : 150mA
PEX_PLL_HVDD
PEX_SVDD_3V3
PEX_SVDD_3V3 : 210mA
3.3V_AUX_NC
3.3V_AUX
VDD_SENSE
VGA_VCCSENSE (38)
GND_SENSE
VGA_VSSSENSE (38)
R1397
EV@0_6
B2A
C1575 EV@4.7U/6.3V_4X PLACE NEAR GPU
C1574 EV@1U/6.3V_4X PLACE NEAR GPU
C1076 EV@0.1u/16V_4 PLACE UNDER GPU BALLS
C1339 EV@0.1u/16V_4
C1203 EV@4.7U/6.3V_4X
C1303 EV@4.7U/6.3V_4X
PLACE NEAR BGA
TP1016
Q1011
EV@2N7002KW_115MA
CLK_PEGA_REQ# (6)
GC6:+3V_MAIN
GC6 Power control
3V MAIN POWER
3/11 GC6 timing issue from 200K change to 100K
already PU@P.17
R1140 EV@10K_4
R1145 *EV@10K_4
R1148 EV@100K_4
C1294 EV@0.022U/25V_4
C1311 EV@0.022U/25V_4
Q1023 EV@AO3413
Q1017 EV@2N7002K
(16) +3V_MAIN_EN
1A-7
GC6 PEGX_RST#
(16) SYS_PEX_RST_MON#
C1621 EV@0.1U/16V_4X
C1613 EV@0.1U/16V_4X
R1471 *EV@10K_4
(8,22,24,25,28) PLTRST#
(4) DGPU_HOLD_RST#
C1630 EV@1000p/50V_4
U1032 EV@74AHC1G09GW
U1031 EV@MC74VHC1G08
R1469 EV@100K_4
(16) GPU_PEX_RST_HOLD#
RST_MON#
R1470 *EV@0_4
GC6 FBVDDQ_EN
(4,16) GC6_FB_EN
(38) GPU_PWR_GD
D1015 GC6@BAT54CW_200MA
R1444 EV@100K_4
FBVDDQ_EN (39)
C3A
Quanta Computer Inc.
PROJECT : Z8V
Size
Document Number
N16S-GT - 1/5 (PCIE)
Rev 1A
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U1030B
N15P-GT

[MEMORY I/F A]

U1030C
N15P-GT

MEMORY I/F C

GDDR5 NO USE

PLACE CLOSE TO GPU BALLS

PLACE CLOSE TO BGA

+FB_PLLAVDD : 62mA

C574 close to K27 (under GPU)

C575 close to U27 (under GPU)

C576 near to GPU

WCK only for GDDR5

C262 close to H27 (under GPU)

PLACE CLOSE TO GPU BALLS

Quanta Computer Inc.	
PROJECT : Z8V	
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U1030D
N15P-GT

[IFPA/B_LVDS]
IFPAB_PLLVDD AH8
IFPA_IOVDD AG8
IFPB_IOVDD AG9
IFPAB_RSET AJ8
IFPA_TXC AM6
IFPA_TXC_N AN6
IFPA_TXD0 AP3
IFPA_TXD0_N AN3
IFPA_TXD1 AN5
IFPA_TXD1_N AM5
IFPA_TXD2 AL6
IFPA_TXD2_N AK6
IFPA_TXD3 AJ6
IFPA_TXD3_N AH6
IFPB_TXC AJ9
IFPB_TXC_N AH9
IFPB_TXD4 AP6
IFPB_TXD4_N AP5
IFPB_TXD5 AM7
IFPB_TXD5_N AL7
IFPB_TXD6 AN8
IFPB_TXD6_N AM8
IFPB_TXD7 AK8
IFPB_TXD7_N AL8

[IFPC/D_TMDS]
IFPC_PLLVDD AF7
IFPD_PLLVDD AG7
IFPC_IOVDD AF6
IFPD_IOVDD AG6
IFPC_RSET AF8
NC AN2
IFPC_AUX_I2CW_SCL AG3
IFPC_AUX_I2CW_SDA_N AG2
IFPC_L0 AK1
IFPC_L0_N AJ1
IFPC_L1 AJ3
IFPC_L1_N AJ2
IFPC_L2 AH3
IFPC_L2_N AH4
IFPC_L3 AG5
IFPC_L3_N AG4
IFPD_AUX_I2CX_SCL AK3
IFPD_AUX_I2CX_SDA_N AK2
IFPD_L0 AM1
IFPD_L0_N AM2
IFPD_L1 AM3
IFPD_L1_N AM4
IFPD_L2 AL3
IFPD_L2_N AL4
IFPD_L3 AK4
IFPD_L3_N AK5

[IFPE/F_DP]
IFPEF_PLLVDD AB8
IFPE_IOVDD AC7
IFPF_IOVDD AC8
IFPEF_RSET AD6
IFPE_AUX_I2CY_SCL AB3
IFPE_AUX_I2CY_SDA_N AB4
IFPE_L0 AD2
IFPE_L0_N AD3
IFPE_L1 AD1
IFPE_L1_N AC1
IFPE_L2 AC2
IFPE_L2_N AC3
IFPE_L3 AC4
IFPE_L3_N AC5
IFPF_AUX_I2CZ_SCL AF3
IFPF_AUX_I2CZ_SDA_N AF2
IFPF_L0 AE3
IFPF_L0_N AE4
IFPF_L1 AF4
IFPF_L1_N AF5
IFPF_L2 AD4
IFPF_L2_N AD5
IFPF_L3 AG1
IFPF_L3_N AF1

[DACA/B_CRT]
DACA_VDD AG10
DACA_VREF AP9
DACA_RSET AP8
DACA_RED AK9
DACA_GREEN AL10
DACA_BLUE AL9
DACA_HSYNC AM9
DACA_VSYNC AN9
I2CA_SCL
I2CA_SDA

[XTAL IN]
XTAL_IN
XTAL_OUT
XTAL_OUTBUFF
XTAL_SSIN

3V_MAIN_PWGD

+3V_GFX
+3V
+3V_MAIN
R1121 EV@4.7K_4
C1245 *1000p/50V_4
Q1019 EV@MMBT3904-7-F
R1192 EV@4.7K_4
C1347 EV@1000p/50V_4
R1184 EV@1.5K/F_4
Q1026 EV@DTC144EU
R1182 *100K/F_4
3V_MAIN_PWGD
3V_MAIN_PWGD (38,39)

+1.05V_GFX and GPU core power EN

2/16 Reserve R1539 for DGPU_PWROK doesn't have any sequence requirement

R1539 *0_4
DGPU_PGOK-1
+3V_GFX
+3V
R1105 EV@4.7K_4
R1088 EV@4.7K_4
R1082 EV@4.7K_4
DGPU_POK2
Q1010 EV@METR3904-G
C1187 *1000P/50V_4
C1181 EV@1000P/50V_4
Q1012 EV@DTC144EUA
R1098 EV@100K/F_4
DGPU_PWROK (4)
(39) HWPG_1.35VGFX

R4 I2CA_SCL EV@1.8K/F_4 R1499
R5 I2CA_SDA EV@1.8K/F_4 R1129

Reserve
+3V_GFX
XTAL_OUTBUFF R1146 *EV@10K_4

BG627000039 -> HHE(1st)
BG627000035 -> TXC(2nd)

XTAL27_IN
XTAL27_OUT
Y1004
EV@27MHZ_10
C1637 EV@10P/50V_4C
C1638 EV@10P/50V_4C
B2A

H3 XTAL27_IN
H2 XTAL27_OUT
J4 XTAL_OUTBUFF R1147 EV@10K_4
H1 XTAL_SSIN R1523 EV@10K_4

PLACE CLOSE TO GPU
PLACE CLOSE TO BALLS
PLLVDD : 200mA
+1.05V_GFX
L1006 EV@HCB1005KF-330T30
C1253 EV@22U/6.3V_6X
NV_PLLVDD AD8
B2A
C1213 EV@0.1U/16V_4X
PLLVDD
AE8 SP_PLLVDD
C5092 Close to AE8
C5090 Close to AD7
+1.05V_GFX
L1005 EV@HCB1005KF_1.5A
C1242 EV@22U/6.3V_6X
C1204 EV@4.7U/6.3V_4X
AD7 VID_PLLVDD
B2A
C1214 EV@0.1U/16V_4X
C1231 EV@0.1U/16V_4X

Quanta Computer Inc.
PROJECT : Z8V
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N16S-GT - 3/5 (Display)
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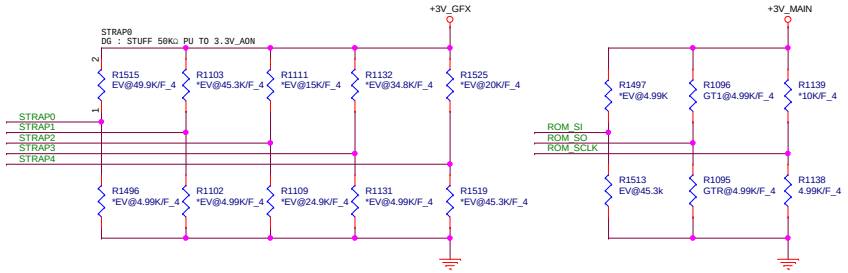
Resistor P/N
4.99K---> CS24992FB26
10K ---> CS31002FB26
15K ---> CS31502FB24
20K ---> CS32002FB29
24.9K --->CS32492FB16
30.1K --->CS33012FB18
34.8K---> CS33482FB22
45.3K ---> CS34532FB18 GM
49.9K ---> CS34992FB10 GT

	Package	DevID
N16S-GT1-KB	GB4b-128	0x179C
N16S-GTR	GB4b-128	0x134D



	PU +3V_MAIN	PD
4.99K	1000	0000
10K	1001	0001
15K	1010	0010
20K	1011	0011
24.9K	1100	0100
30.1K	1101	0101
34.8K	1110	0110
45.3K	1111	0111

Mutil-level mode strapping:
For N16S-GT1-KB-A2 :
R490=40.2k PD
1.ROM_SCLK =4.99K PD
2.ROM_SO = 4.99K PU (N16S-GTR = 4.99KPD)
3.ROM_SI= Memory strap setting
4.STRAP0 = 49.9k PU
5.Strap4~1 = Reserve Pull up and Pull down

	N16S-GT1-KB-A2	N16S-GTR
ROM_SO	R93 PU 4.99K	R92 PD 4.99K
ROM_SI	As below configuration table	

N16S-GT1-KB-A2 VRAM Configuration Table:

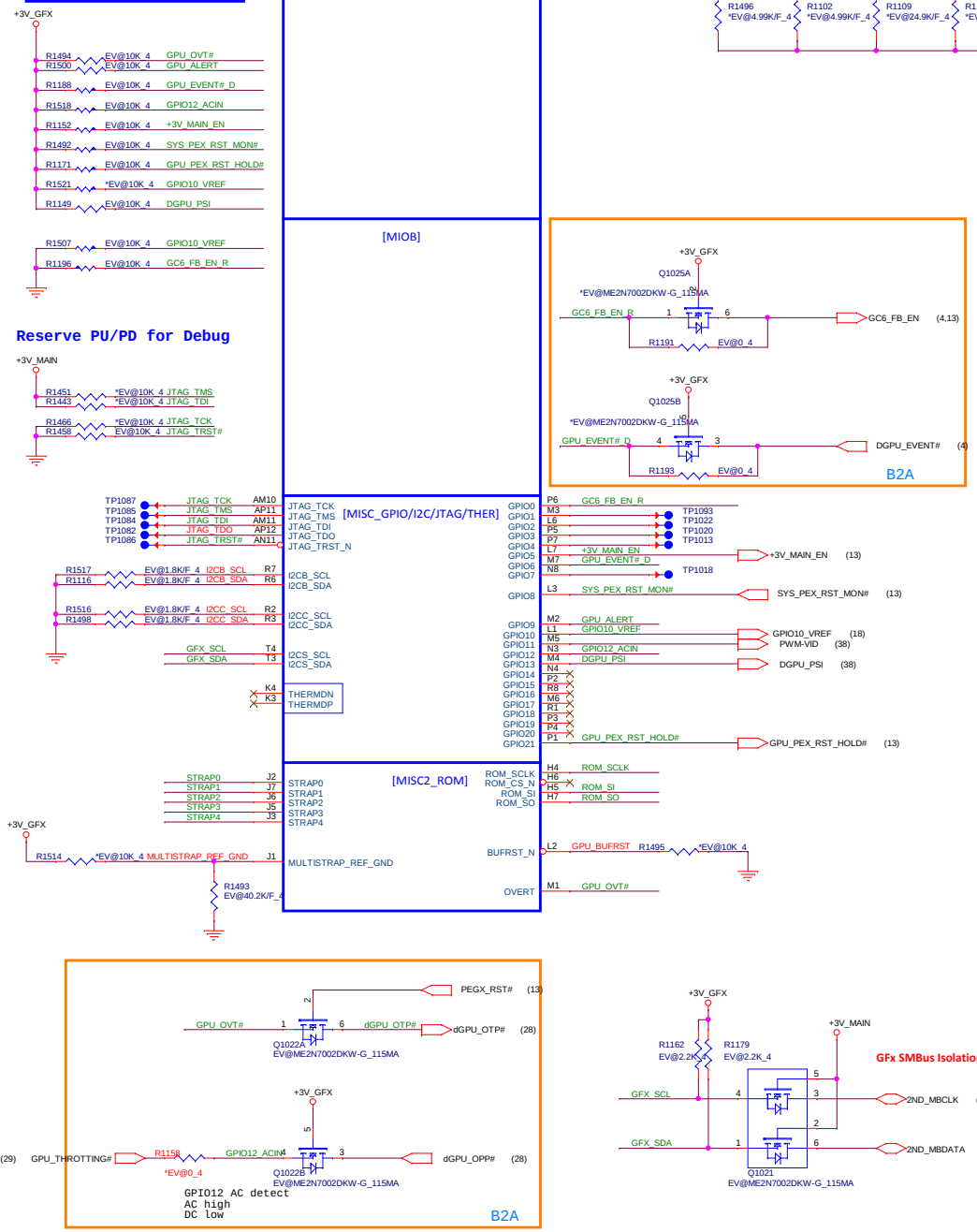
	ROM_SI	DESCRIPTION	Vendor	Vendor P/N	STN P/N	ROM_SI
4GbX2 (1GB)	0011 (0x3) 0110 (0x6)	GDDR5 128MBx32,2500MHz GDDR5 128MBx32,2500MHz	SAMSUNG HYNIX	K4G41325FC-HC03 --C die H5GC4H24AJR-T2C --A die	AKG5PGDT505 AKG5PWUTW21	20K Pull down 34.8K Pull down
4GbX4 (2GB)	0011 (0x3) 0110 (0x6)	GDDR5 256MBx16,2500MHz GDDR5 256MBx16,2500MHz	SAMSUNG HYNIX	K4G41325FC-HC03 --C die H5GC4H24AJR-T2C --A die	AKG5PGDT505 AKG5PWUTW21	20K Pull down 34.8K Pull down
8GbX2 (2GB)	0000 (0x8) 0001 (0x9)	GDDR5 256MBx32,2500MHz GDDR5 256MBx32,2500MHz	SAMSUNG MICRON	K4G80325FB-HC03 --B die MT51J256M32HF-60:A--A die	AKG5QGDT502 AKG5LGUTL04	4.99K Pull up 10K Pull up
8GbX4 (4GB)	0000 (0x8) 0001 (0x9)	GDDR5 512MBx16,2500MHz GDDR5 512MBx16,2500MHz	SAMSUNG MICRON	K4G80325FB-HC03 --B die MT51J256M32HF-60:A--A die	AKG5QGDT502 AKG5LGUTL04	4.99K Pull up 10K Pull up

N16S-GTR VRAM Configuration Table:

	ROM_SI	DESCRIPTION	Vendor	Vendor P/N	STN P/N	ROM_SI
4GbX2 (1GB)	0011 (0x3) 0110 (0x6)	GDDR5 128MBx32,2500MHz GDDR5 128MBx32,2500MHz	SAMSUNG HYNIX	K4G41325FC-HC03 --C die H5GC4H24AJR-T2C --A die	AKG5PGDT505 AKG5PWUTW21	20K Pull down 34.8K Pull down
4GbX4 (2GB)	0011 (0x3) 0110 (0x6)	GDDR5 256MBx16,2500MHz GDDR5 256MBx16,2500MHz	SAMSUNG HYNIX	K4G41325FC-HC03 --C die H5GC4H24AJR-T2C --A die	AKG5PGDT505 AKG5PWUTW21	20K Pull down 34.8K Pull down
8GbX2 (2GB)	0000 (0x0) 0001 (0x1)	GDDR5 256MBx32,2500MHz GDDR5 256MBx32,2500MHz	SAMSUNG MICRON	K4G80325FB-HC03 --B die MT51J256M32HF-60:A--A die	AKG5QGDT502 AKG5LGUTL04	4.99K Pull down 10K Pull down
8GbX4 (4GB)	0000 (0x0) 0001 (0x1)	GDDR5 512MBx16,2500MHz GDDR5 512MBx16,2500MHz	SAMSUNG MICRON	K4G80325FB-HC03 --B die MT51J256M32HF-60:A--A die	AKG5QGDT502 AKG5LGUTL04	4.99K Pull down 10K Pull down

N16S-GT1-KB-A2 (GB4b-128)

	Logical Strapping Bit3	Logical Strapping Bit2	Logical Strapping Bit1	Logical Strapping Bit0	
ROM_SCLK	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED	0000
ROM_SI	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]	XXXX
ROM_SO	DEVID_SEL	PCIE_CFG	SMB_ALT_ADDR	VGA_DEVICE	0000
STRAP0	Keep footprint to PU to 3V3_AON and PD to GND [Stuff 49.9K PU]				0001
STRAP1	Keep footprint to PU to 3V3_AON and PD to GND [Do Not Stuff				
STRAP2					
STRAP3					
STRAP4					



Quanta Computer Inc.
PROJECT : Z8V

Size	Document Number	Rev
	N16S-GT - 4/5 (MISC)	1A

Date: Monday, February 22, 2016 Sheet 16 of 45

VDD/XVDD : 43A

+VGPU_CORE

U1030F
N15P-GT

[GPU VDD]

AA12	VDD_001	XVDD_001	U1
AA14	VDD_002	XVDD_002	U2
AA16	VDD_003	XVDD_003	U3
AA19	VDD_004	XVDD_004	U4
AA21	VDD_005	XVDD_005	U5
AA23	VDD_006	XVDD_006	U6
AB13	VDD_007	XVDD_007	U7
AB15	VDD_008	XVDD_008	U8
AB17	VDD_009	XVDD_009	V1
AB18	VDD_010	XVDD_010	V2
AB20	VDD_011	XVDD_011	V3
AB22	VDD_012	XVDD_012	V4
AC12	VDD_013	XVDD_013	V5
AC14	VDD_014	XVDD_014	V6
AC16	VDD_015	XVDD_015	V7
AC19	VDD_016	XVDD_016	V8
AC21	VDD_017	XVDD_017	W2
AC23	VDD_018	XVDD_018	W3
M12	VDD_019	XVDD_019	W4
M14	VDD_020	XVDD_020	W5
M16	VDD_021	XVDD_021	W7
M19	VDD_022	XVDD_022	W8
M21	VDD_023	XVDD_026	Y4
M23	VDD_024	XVDD_027	Y5
N13	VDD_025	XVDD_028	Y6
N15	VDD_026	XVDD_029	Y7
N17	VDD_027	XVDD_030	Y8
N18	VDD_028		
N20	VDD_029		
N22	VDD_030		
P12	VDD_031		
P14	VDD_032		
P16	VDD_033		
P19	VDD_034		
P21	VDD_035		
P23	VDD_036		
R13	VDD_037		
R15	VDD_038		
R17	VDD_039		
R18	VDD_040		
R20	VDD_041		
R22	VDD_042		
T12	VDD_043		
T14	VDD_044		
T16	VDD_045		
T19	VDD_046		
T21	VDD_047		
T23	VDD_048		
U13	VDD_049		
U15	VDD_050		
U17	VDD_051		
U18	VDD_052		
U20	VDD_053		
U22	VDD_054		
V13	VDD_055		
V15	VDD_056		
V17	VDD_057		
V18	VDD_058		
V20	VDD_059		
V22	VDD_060		
W12	VDD_061		
W14	VDD_062		
W16	VDD_063		
W19	VDD_064		
W21	VDD_065		
W23	VDD_066		
Y13	VDD_067		
Y15	VDD_068		
Y18	VDD_069		
Y17	VDD_070		
Y20	VDD_071		
Y22	VDD_072		

+VGPU_CORE

U1030G
N15P-GT

[GPU GND]

A2	GND_1	GND_101	D2
AA17	GND_2	GND_102	D31
AA18	GND_3	GND_103	D33
AA20	GND_4	GND_104	E10
AA22	GND_5	GND_105	E22
AB12	GND_6	GND_106	E25
AB14	GND_7	GND_107	E5
AB16	GND_8	GND_108	E7
AB19	GND_9	GND_109	F28
AB2	GND_10	GND_110	F7
AB21	GND_11	GND_111	G10
A33	GND_12	GND_112	G13
AB23	GND_13	GND_113	G16
AB28	GND_14	GND_114	G19
AB30	GND_15	GND_115	G2
AB32	GND_16	GND_116	G22
AB5	GND_17	GND_117	G25
AB7	GND_18	GND_118	G28
AC13	GND_19	GND_119	G3
AC15	GND_20	GND_120	G30
AC17	GND_21	GND_121	G32
AC18	GND_22	GND_122	G33
AA13	GND_23	GND_123	G5
AC20	GND_24	GND_124	G7
AC22	GND_25	GND_125	K2
AE2	GND_26	GND_126	K28
AE28	GND_27	GND_127	K30
AE30	GND_28	GND_128	K32
AE32	GND_29	GND_129	K33
AE33	GND_30	GND_130	K5
AE5	GND_31	GND_131	K7
AE7	GND_32	GND_132	M13
AH10	GND_33	GND_133	M15
AA15	GND_34	GND_134	M17
AH13	GND_35	GND_135	M18
AH16	GND_36	GND_136	M20
AH19	GND_37	GND_137	M22
AH2	GND_38	GND_138	N12
AH22	GND_39	GND_139	N14
AH24	GND_40	GND_140	N16
AH28	GND_41	GND_141	N19
AH29	GND_42	GND_142	N2
AH30	GND_43	GND_143	N21
AH32	GND_44	GND_144	N23
AH33	GND_45	GND_145	N28
AH5	GND_46	GND_146	N30
AH7	GND_47	GND_147	N32
AJ7	GND_48	GND_148	N33
AK10	GND_49	GND_149	N5
AK7	GND_50	GND_150	N7
AL12	GND_51	GND_151	P13
AL14	GND_52	GND_152	P15
AL15	GND_53	GND_153	P17
AL17	GND_54	GND_154	P18
AL18	GND_55	GND_155	P20
AL2	GND_56	GND_156	P22
AL20	GND_57	GND_157	R12
AL21	GND_58	GND_158	R14
AL23	GND_59	GND_159	R16
AL24	GND_60	GND_160	R19
AL26	GND_61	GND_161	R21
AL28	GND_62	GND_162	R23
AL30	GND_63	GND_163	T13
AL32	GND_64	GND_164	T15
AL33	GND_65	GND_165	T17
AL5	GND_66	GND_166	T18
AM13	GND_67	GND_167	T2
AM16	GND_68	GND_168	T20
AM19	GND_69	GND_169	T22
AM22	GND_70	GND_170	AG11
AM25	GND_71	GND_171	T28
AN1	GND_72	GND_172	T32
AN10	GND_73	GND_173	T5
AN13	GND_74	GND_174	T7
AN16	GND_75	GND_175	U12
AN19	GND_76	GND_176	U14
AN22	GND_77	GND_177	U16
AN25	GND_78	GND_178	U19
AN30	GND_79	GND_179	U21
AN34	GND_80	GND_180	U23
AN4	GND_81	GND_181	V12
AN7	GND_82	GND_182	V14
AP2	GND_83	GND_183	V16
AP33	GND_84	GND_184	V19
B1	GND_85	GND_185	V21
B10	GND_86	GND_186	V23
B22	GND_87	GND_187	W13
B25	GND_88	GND_188	W15
B28	GND_89	GND_189	W17
B31	GND_90	GND_190	W18
B34	GND_91	GND_191	W20
B4	GND_92	GND_192	W22
B7	GND_93	GND_193	W28
C10	GND_94	GND_194	Y12
C13	GND_95	GND_195	Y14
C19	GND_96	GND_196	Y16
C22	GND_97	GND_197	Y19
C25	GND_98	GND_198	Y21
C28	GND_99	GND_199	Y23
C7	GND_100	GND_200	AH11
		GND_OPT_1	C16
		GND_OPT_2	W32

+VGPU_CORE

PLACE UNDER GPU

C1158	EV@1U/6.3V_4X	
C1206	EV@1U/6.3V_4X	
C1114	EV@1U/6.3V_4X	
C1094	EV@1U/6.3V_4X	
C1091	EV@1U/6.3V_4X	
C1089	EV@1U/6.3V_4X	
C1092	EV@1U/6.3V_4X	
C1160	EV@1U/6.3V_4X	
C1168	EV@4.7U/6.3V_6X	
C1197	EV@4.7U/6.3V_6X	
C1172	EV@4.7U/6.3V_6X	
C1098	EV@4.7U/6.3V_6X	
C1166	EV@4.7U/6.3V_6X	
C1196	*EV@4.7U/6.3V_6X	B2A
C1112	EV@4.7U/6.3V_6X	
C1267	EV@4.7U/6.3V_6X	
C1099	EV@4.7U/6.3V_6X	
C1180	*EV@4.7U/6.3V_6X	B2A
C1142	EV@4.7U/6.3V_6X	
C1170	*EV@4.7U/6.3V_6X	B2A
C1205	*EV@4.7U/6.3V_6X	
C1133	EV@4.7U/6.3V_6X	
C1122	EV@4.7U/6.3V_6X	

PLACE NEAR GPU

C1131	2 1	EV@22U/6.3V_6X	B2A
C1111	2 1	EV@22U/6.3V_6X	
C1190	2 1	EV@22U/6.3V_6X	
C1171	2 1	EV@22U/6.3V_6X	
C1155	2 1	EV@22U/6.3V_6X	
C1173	2 1	EV@22U/6.3V_6X	
C1177	2 1	EV@22U/6.3V_6X	
C1189		EV@4.7U/10V_6X	
C1184		EV@4.7U/10V_6X	
C1639		*EV@4.7U/10V_6X	B2A
C1277		EV@4.7U/10V_6X	
C1185		EV@4.7U/10V_6X	
C1641		330u/2V_7343	

Quanta Computer Inc.
PROJECT : Z8V

Size	Document Number	Rev
	N16S-GT - 5/5 (Power)	1A

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CHANNEL A: 1G/2G GDDR5x32

(14) VMA_DQ[63..0] — VMA_DQ[63..0]
(14) FBA_DBI[7..0] — FBA_DBI[7..0]
(14) FBA_EDC[7..0] — FBA_EDC[7..0]

Channel 0 <0-31> — **MF=0 Non-mirrored**

LOWER HALF

Channel 0 <32-63> — **MF=1 mirrored**

QD24~31
QD16~23
QD8~15
QD0~7

QD32~39
QD40~47
QD48~55
QD56~63

U1022 — EV@GDDR5 — U1022

U1021 — EV@GDDR5 — U1021

+1.35V_GFX

VREF_VMA1_MOS

VMA_CLK0 — R1046 EV@80.6/F_4 — VMA_CLK0#
VMA_CLK1 — R1047 EV@80.6/F_4 — VMA_CLK1#

R1037 EV@549/F_4 — R1038 EV@931/F_4 — R1372 *EV@549/F_4 — R1373 *EV@931/F_4 — VREFC_VMA1 — VREFD_VMA1 — R1042 EV@1.33K/F_4 — R1371 *EV@1.33K/F_4

R1039 EV@549/F_4 — R1040 EV@931/F_4 — R1368 *EV@549/F_4 — R1369 *EV@931/F_4 — VREFC_VMA2 — VREFD_VMA2 — R1048 EV@1.33K/F_4 — R1370 *EV@1.33K/F_4

Q1031 — GPIO10_VREF (16)

EV@2N7002K

C1529 EV@330u/2V_7343
C1029 EV@0.1u/16V_4
C1025 EV@10U/6.3V_6
C1055 EV@10U/6.3V_6
C1070 EV@10U/6.3V_6

20120117 Add C764 for EMI suggestion.

C1535 EV@1u/6.3V_4
C1536 EV@1u/6.3V_4
C1041 EV@1u/6.3V_4
C1059 EV@0.047u/10V_4
C1049 EV@0.047u/10V_4
C1032 EV@0.1u/16V_4
C1056 EV@0.1u/16V_4
C1027 EV@0.1u/16V_4
C1037 EV@0.1u/16V_4

C1038 EV@1u/6.3V_4
C1054 EV@1u/6.3V_4
C1039 EV@1u/6.3V_4
C1062 EV@1u/6.3V_4
C1058 EV@0.047u/10V_4
C1064 EV@0.047u/10V_4
C1033 EV@0.1u/16V_4
C1043 EV@0.1u/16V_4
C1052 EV@0.1u/16V_4
C1055 EV@0.1u/16V_4

C1066 EV@1u/6.3V_4
C1031 EV@1u/6.3V_4
C1068 EV@1u/6.3V_4
C1026 EV@1u/6.3V_4
C1074 EV@0.1u/16V_4
C1052 EV@0.1u/16V_4
C1040 EV@0.1u/16V_4
C1063 *EV@0.1u/16V_4
C1042 *EV@0.1u/16V_4
C1035 *EV@0.1u/16V_4

C1050 EV@0.1u/16V_4
C1044 EV@1u/6.3V_4
C1054 EV@1u/6.3V_4
C1057 EV@1u/6.3V_4
C1047 EV@0.047u/10V_4
C1530 EV@0.047u/10V_4
C1030 EV@0.1u/16V_4
C1036 EV@0.1u/16V_4
C1045 EV@0.1u/16V_4
C1031 EV@0.1u/16V_4

FBA_CMD14 — R1053 — EV@10K_4
FBA_CMD30 — R1054 — EV@10K_4

CKE* is strap pin to set ODT value of memory chip

FBA_CMD13 — R1041 — EV@10K_4
FBA_CMD29 — R1043 — EV@10K_4

RST PD place @ the end of daisy-chain.

GDDR5 Mode H Mapping

< 0-31 >	< 32-63 >	Memory
CMD0	CMD16	CS*
CMD1	CMD17	A3_BA3
CMD2	CMD18	A2_BA0
CMD3	CMD19	A4_BA2
CMD4	CMD20	A5_BA1
CMD5	CMD21	WE*
CMD6	CMD22	A7_A8
CMD7	CMD23	A6_A11
CMD8	CMD24	ABI*
CMD9	CMD25	A12_RFU
CMD10	CMD26	A0_A10
CMD11	CMD27	A1_A9
CMD12	CMD28	RAS*
CMD13	CMD29	RST*
CMD14	CMD30	CKE*
CMD15	CMD31	CAS*

Quanta Computer Inc.
PROJECT : Z8V

Size	Document Number	Rev
	N13PGV GDDR5x32-VRAM	1A

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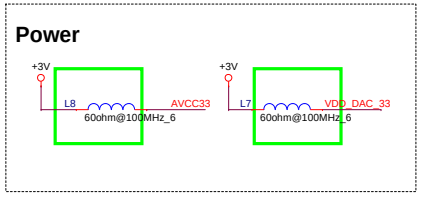
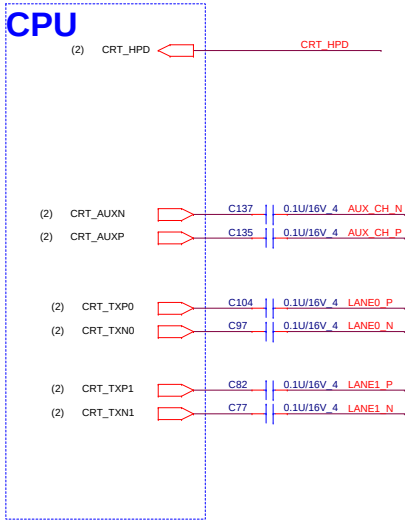
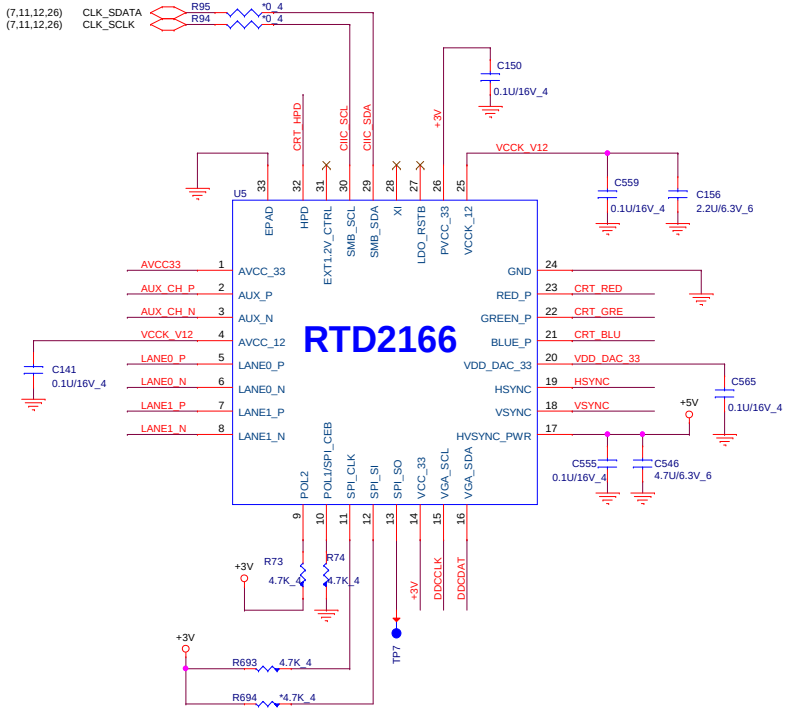
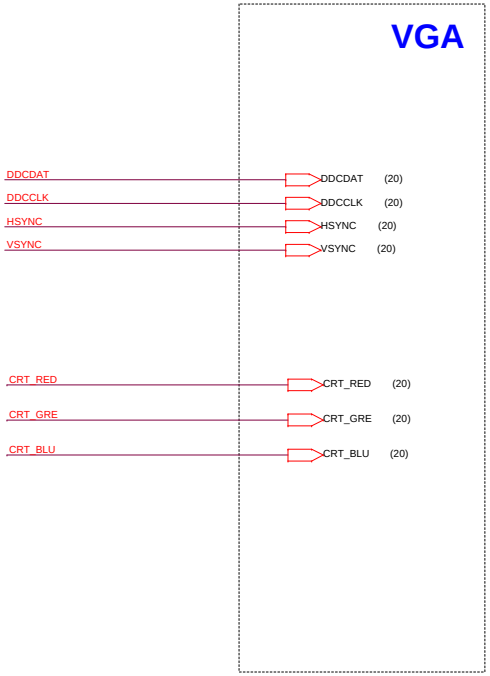
DP TO VGA









Note:

1- C1,C3,C4,C5,C11,C16, C21 should be placed close to chip
2- C5 shold be X5R material
3- R6, R7, R8 should be 75 ohm with +/-1%
4- Suggest to connect Pin 29 and Pin 30 to PCH SMBUS for debug purpose.
5- This configuration is for internal ROM mode and using embedded LDO mode.

(2,4,6,7,8,9,11,12,13,15,20,21,22,23,24,25,26,27,28,30,31,32,33,34,37,38,39) +3V
(20,21,23,24,26,30,37) +5V

Quanta Computer Inc.
PROJECT : ZRW

Size	Document Number	Rev
	DP to VGA iT6165	1A
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CRT

RTD2166 integrate 5V HSYNC/VSYNC buffer inside IC

12/24 Delete R449

12/18 Change R412 to 47ohm for vendor requset

12/24 Delete R396

12/18 Change R399 to 47ohm for vendor requset

Co-Layout

Realtek FAE suggest close to connector

Close to RTD2166 IC

12/18 Change to BLM15BB220SN1D (CX5BB220005) for vendor requset

12/18 Un-Stuff C95/C128/C148 for vendor requset

12/21 Change CN5 footprint to "dsub-95-0005-01-15p" for layout requset

Power trace tracking

12/18 Un-Stuff C539/C551 for vendor requset

LCD CONNECTOR

2013/12/12 change eDP pin define
colayout FHD Panel for A2 stage

Prevent ESD/EOS Layout near device

eDP FHD

Touch Panel-I2C

Touch Panel-USB

eDP 4k*2k

CCD-USB

MAX 1.5A

Prevent ESD/EOS Layout near device

1C1-2 2014/03/11 Add R698 for TS_EN short TP_INT, for issue debug.

Touch Panel interrupt

Hall Sensor (HSR)

1st:AL009249000 -- BCD
2nd:AL009132001 -- ANC

LCD Power

1st : AL005245000---GMT
2nd : AL007553000---UPI

Touch screen level shift I2C(reserve)

S5

S0

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

LID591#,EC intrnal PU

1B-3 2013/12/10 change Q3.3 from +3V to +3VPCU.

Quanta Computer Inc.
PROJECT : ZRW

Size	Document Number	Rev
	CRT/LVDS/CAMERA/LID	1A

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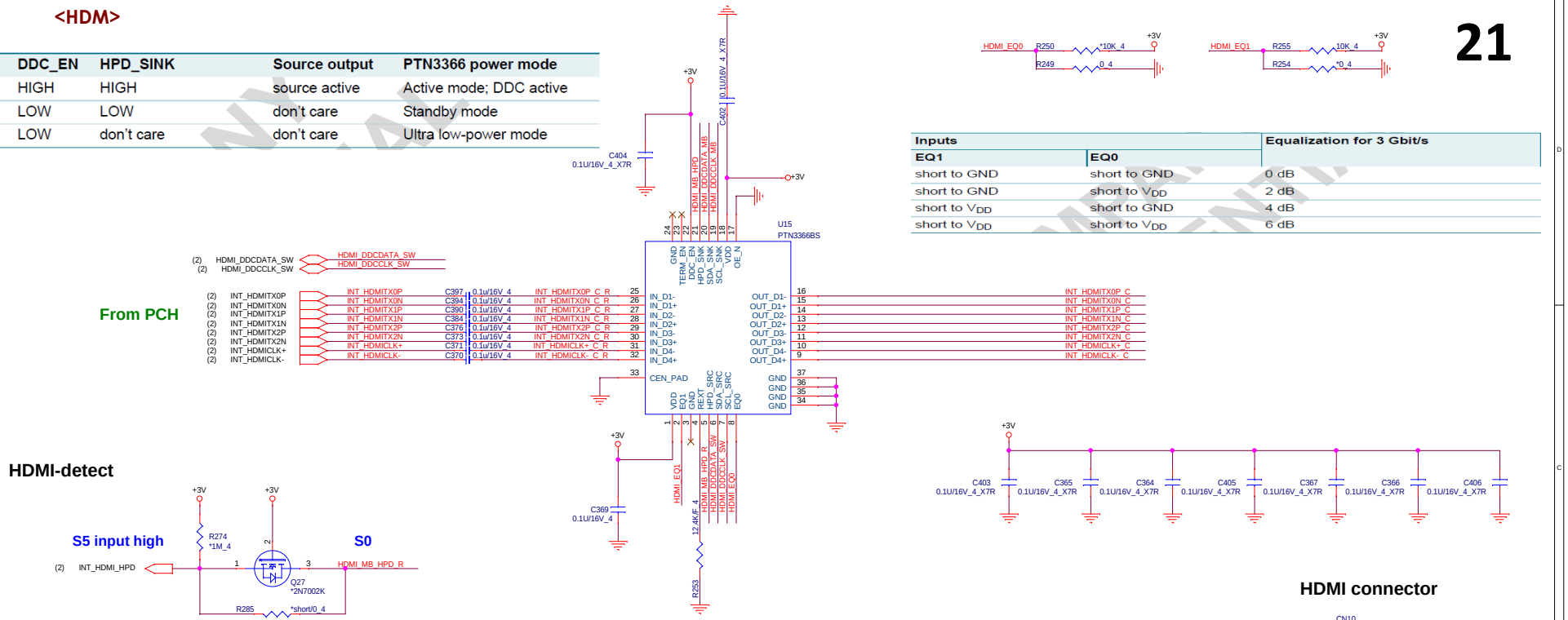
HDMI

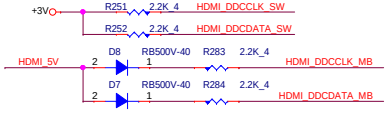
<HDM>

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

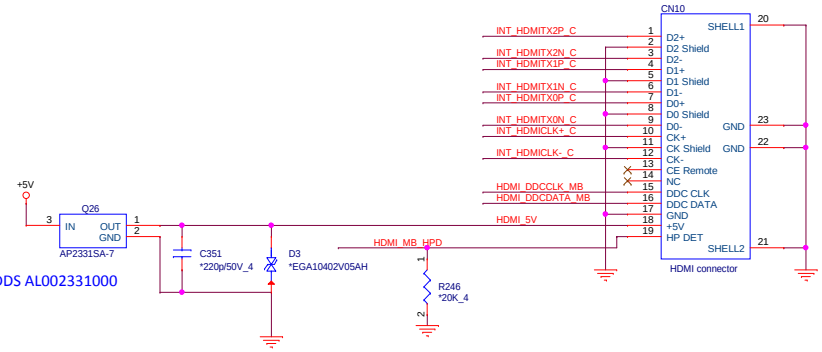
Inputs		Equalization for 3 Gbit/s
EQ1	EQ0	
short to GND	short to GND	0 dB
short to GND	short to V_{DD}	2 dB
short to V_{DD}	short to GND	4 dB
short to V_{DD}	short to V_{DD}	6 dB



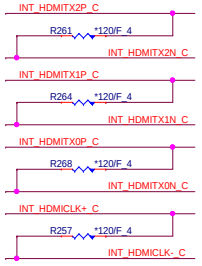
HDMI-detect



HDMI connector



EMI



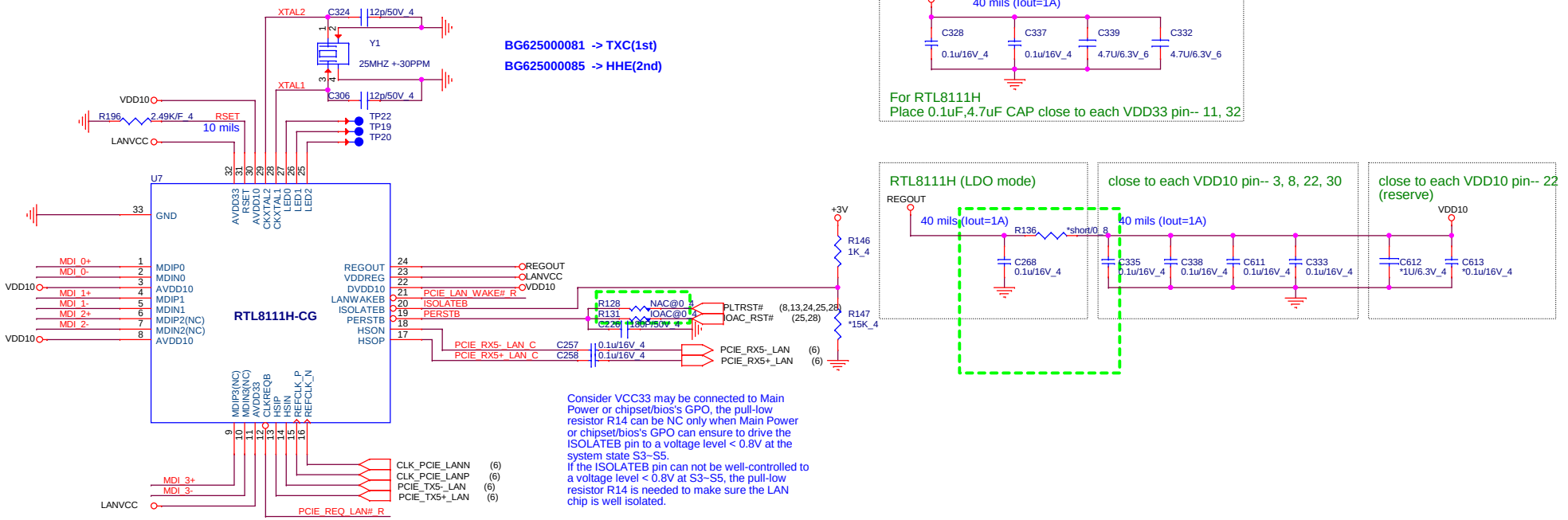
Power trace tracking

(2,4,6,7,8,9,11,12,13,15,19,20,22,23,24,25,26,27,28,30,31,32,33,34,37,38,39) +3V
(19,20,23,24,26,30,37) +5V

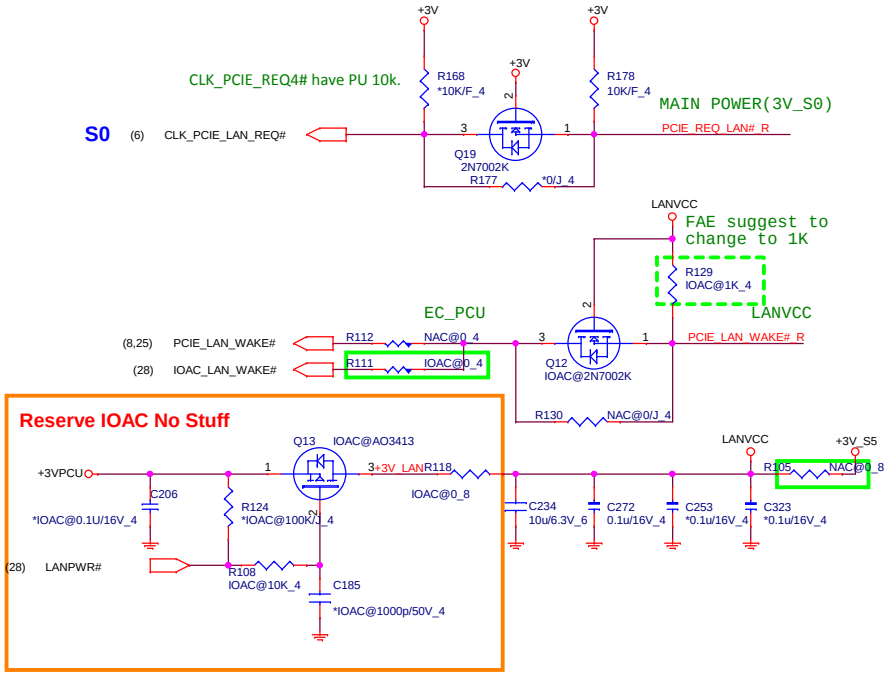
Quanta Computer Inc.
PROJECT : ZRW

Size	Document Number	Rev
	HDMI (PS8407 4k*2k)	1A
Date: Monday, February 22, 2016	Sheet 21 of 46	

Giga LAN (LAN)

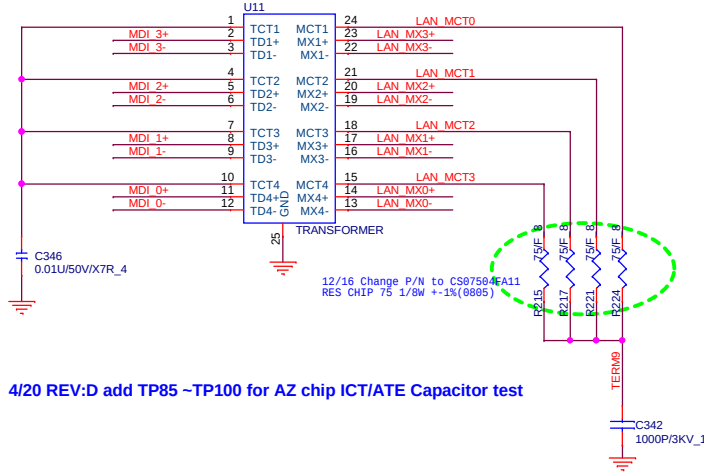


Leakage circuit (MPC)



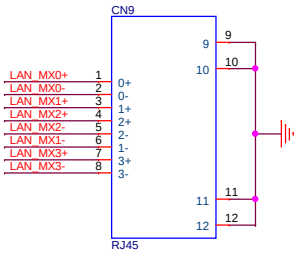
Tramsformer

Layout:All termination signal should have 30 mil trace



4/20 REV:D add TP85 ~TP100 for AZ chip ICT/ATE Capacitor test

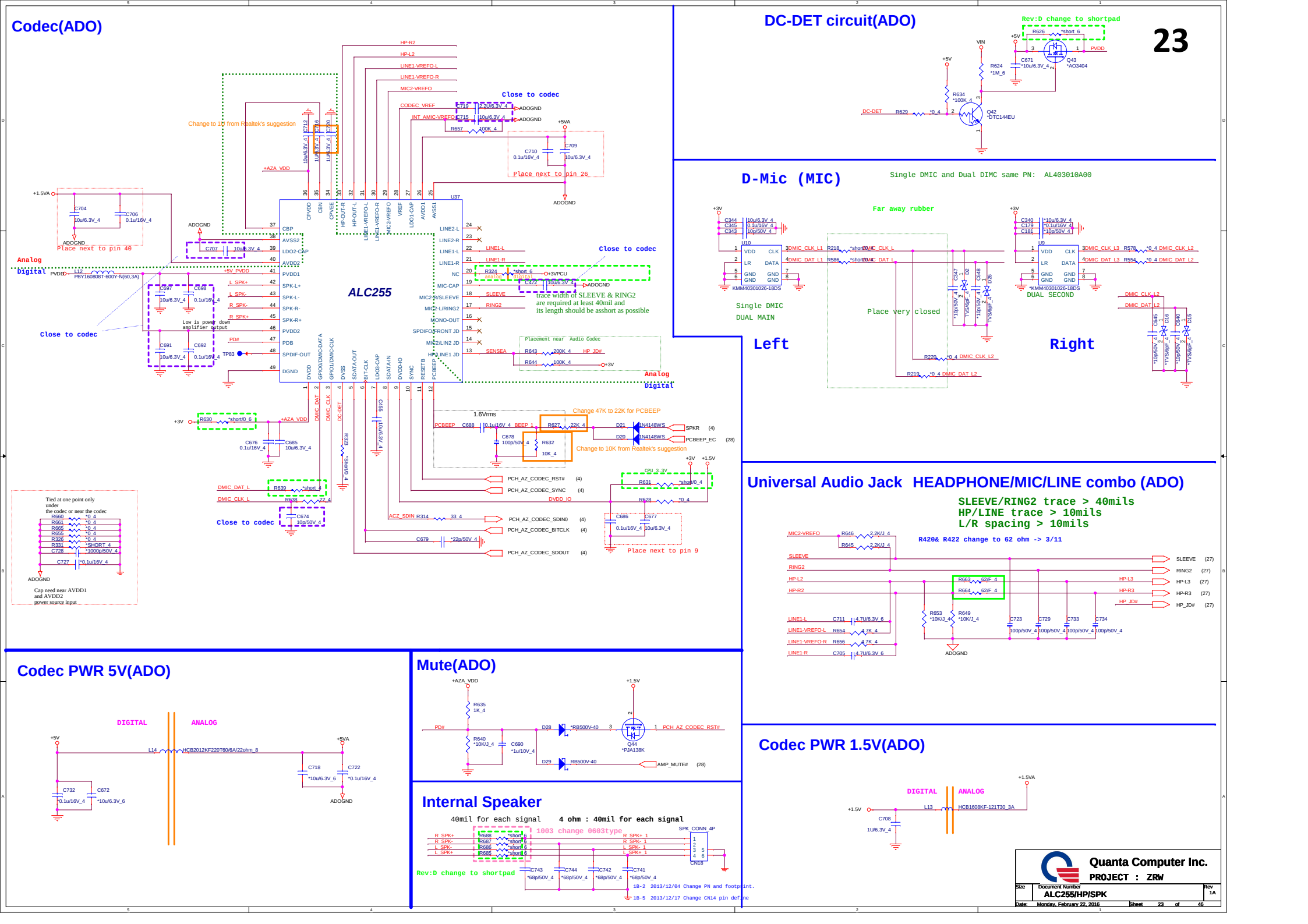
RJ45 Connector



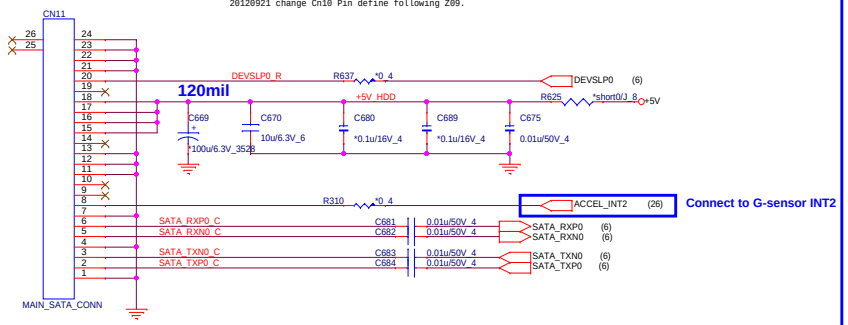
Quanta Computer Inc.

PROJECT : ZRW

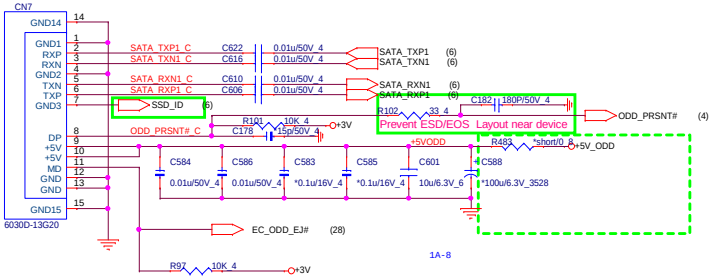
Size	Document Number	Rev
	LAN(RTL8111H)	1A
Date: Monday, February 22, 2016	Sheet 22 of 46	


Codec(ADO)
DC-DET circuit(ADO)
Rev:D change to shortpad
23
D-Mic (MIC)
Single DMIC and Dual DIMC same PN: AL403010A00
Far away rubber
Single DMIC
DUAL MAIN
Left
Place very closed
Right
DUAL SECOND
ALC255
Close to codec
Analog
Digital
Place next to pin 40
Place next to pin 26
Place next to pin 9
Change to 1u from Realtek's suggestion
trace width of SLEEVE & RING2 are required at least 40mil and its length should be asshort as possible
Placement near Audio Codec
Change 47K to 22K for PCBEEP
Change to 10K from Realtek's suggestion
Low is power down amplifier output
Tied at one point only under the codec or near the codec
Cap need near AVDD1 and AVDD2 power source input
Universal Audio Jack HEADPHONE/MIC/LINE combo (ADO)
SLEEVE/RING2 trace > 40mils
HP/LINE trace > 10mils
L/R spacing > 10mils
R420& R422 change to 62 ohm -> 3/11
Codec PWR 5V(ADO)
DIGITAL
ANALOG
Mute(ADO)
Internal Speaker
40mil for each signal
4 ohm : 40mil for each signal
1003 change 0603type
Codec PWR 1.5V(ADO)
Quanta Computer Inc.
PROJECT : ZRW
Size
Document Number
ALC255/HP/SPK
Rev
1A
Date: Monday, February 22, 2016
Sheet 23 of 46

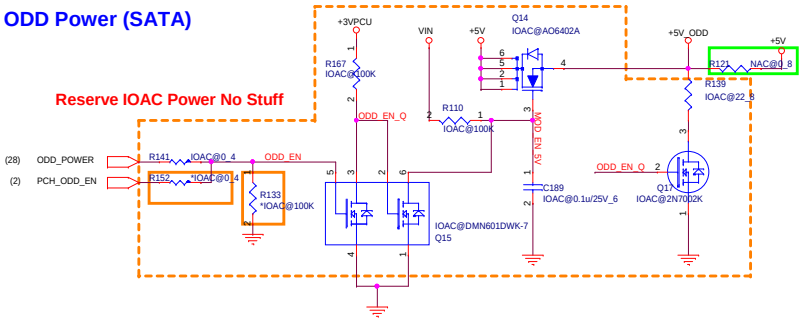
SATA HDD



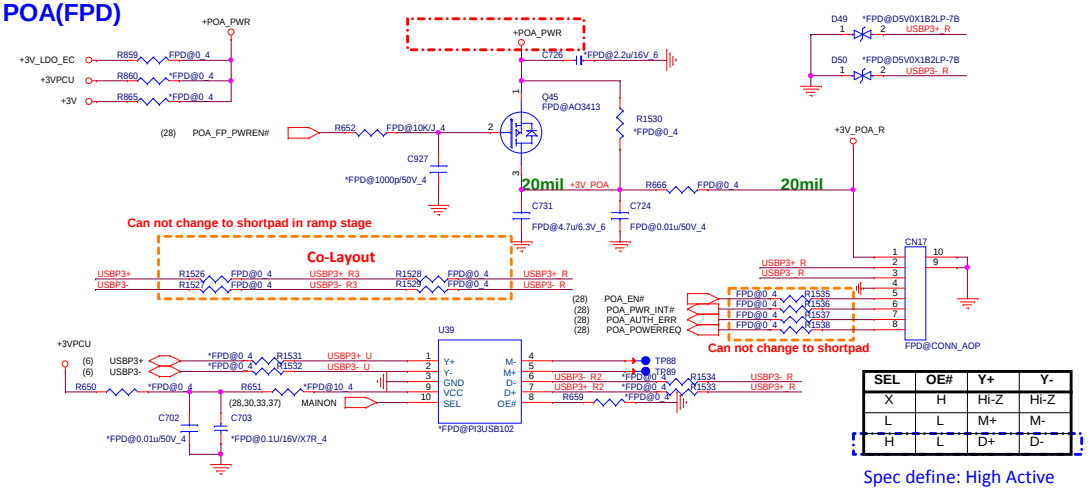
SATA ODD Connector



ODD Power (SATA)



POA(FPD)



SEL	OE#	Y+	Y-
X	H	Hi-Z	Hi-Z
L	L	M+	M-
H	L	D+	D-

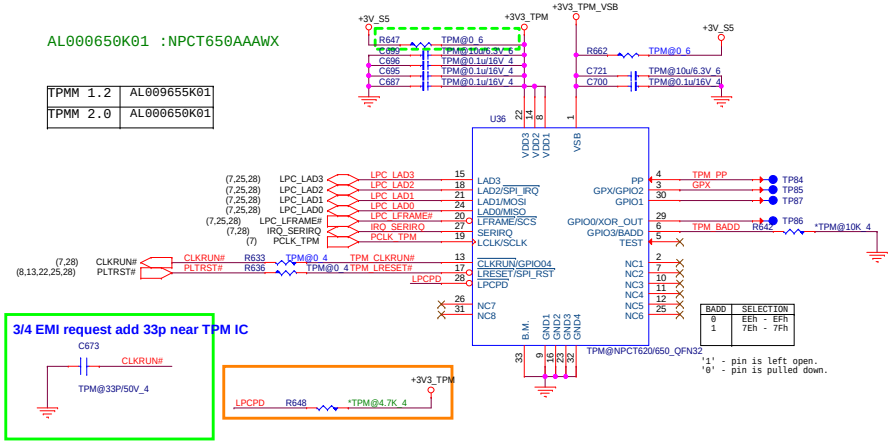
Spec define: High Active

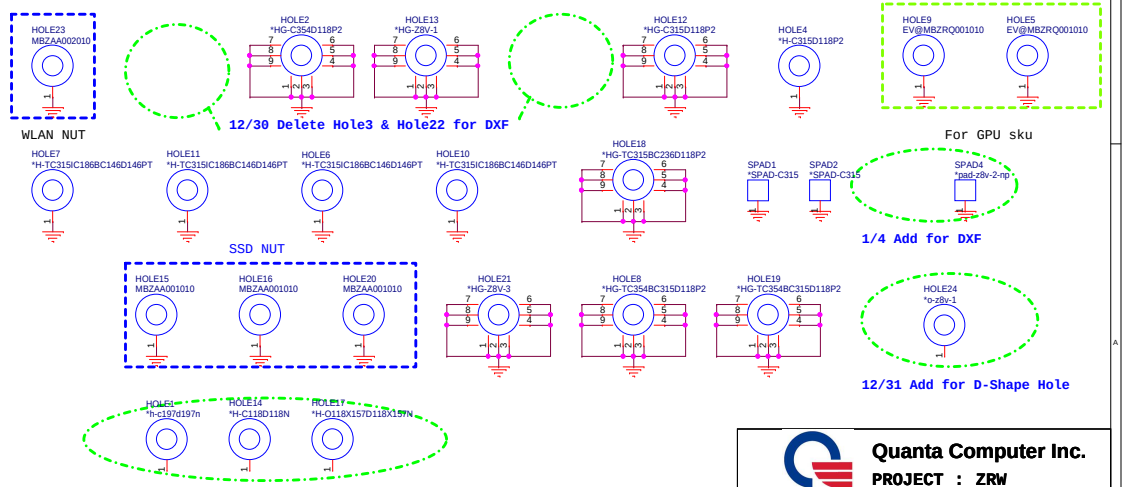
TPM NPCT650 (TPM)

SP@ BOM周邊上NPCT650
A,B,C P/N:AL009655K01(SLB9655TT1.2- FW4.31)
RAMP P/N: AL000650K01 (NPCT650AAAWX)

AL000650K01 :NPCT650AAAWX

TPMM 1.2	AL009655K01
TPMM 2.0	AL000650K01

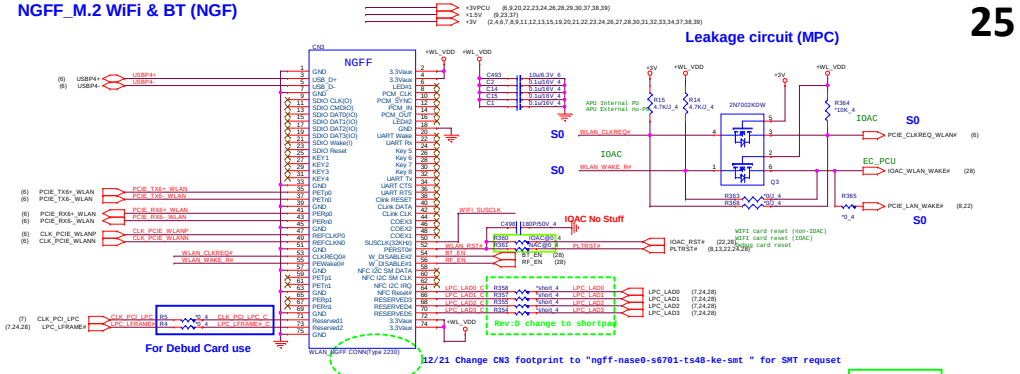




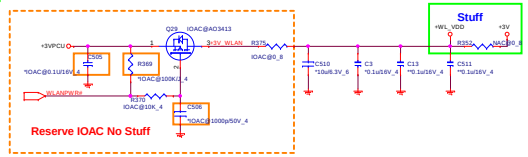
Quanta Computer Inc.
PROJECT : ZRW

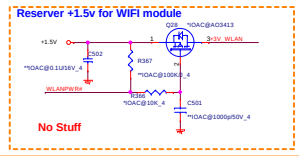
Size	Document Number	Rev
	HDD/ODD/TPM NPCT650	1A
Date: Monday, February 22, 2016	Sheet 24 of 46	

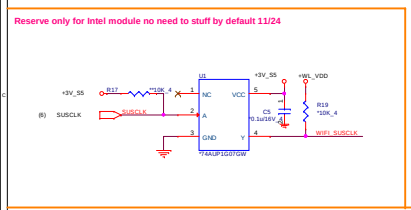
NGFF_M.2 WiFi & BT (NGF)



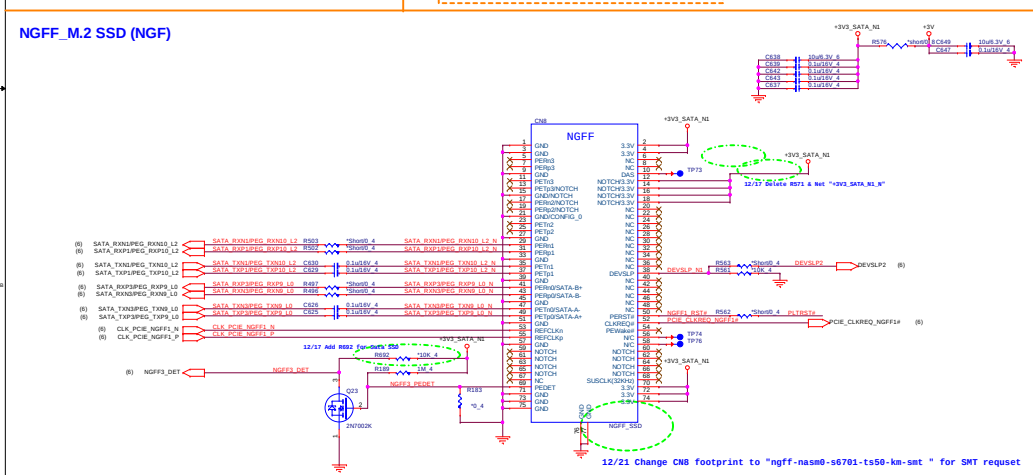
Low	Mini card +3V power enable
High	Mini card +3V power disable



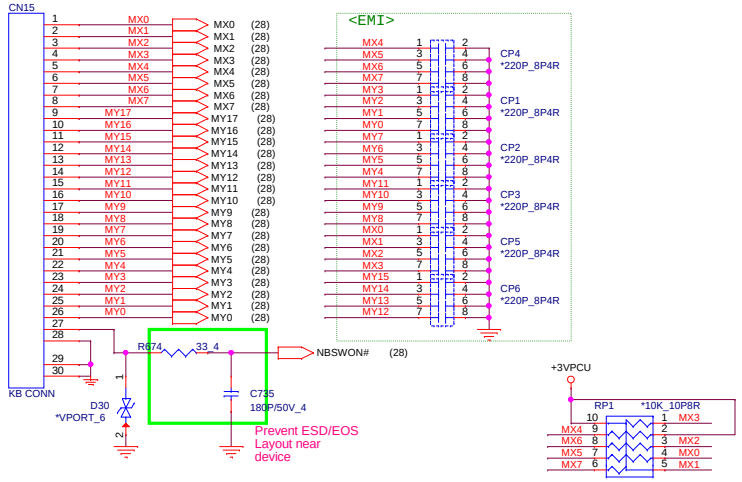




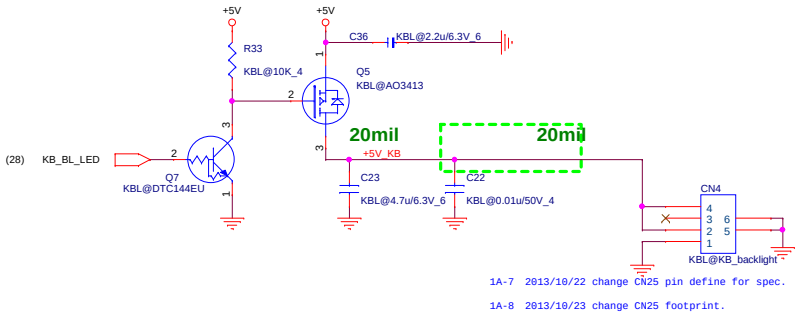
NGFF_M.2 SSD (NGF)



KEYBOARD (KBC)



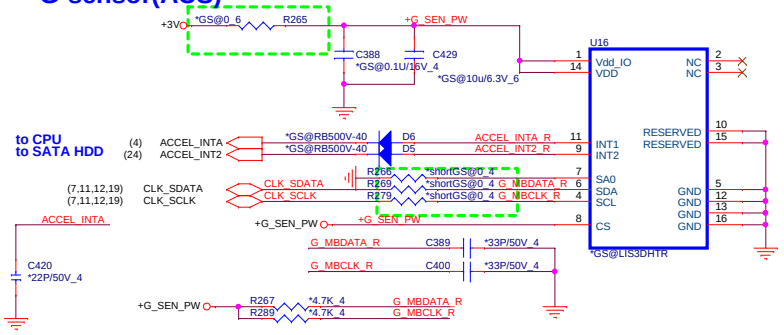
KB_BL LED (KBC)



1A-7 2013/10/22 change CN25 pin define for spec.

1A-8 2013/10/23 change CN25 footprint.

G-sensor(ACS)



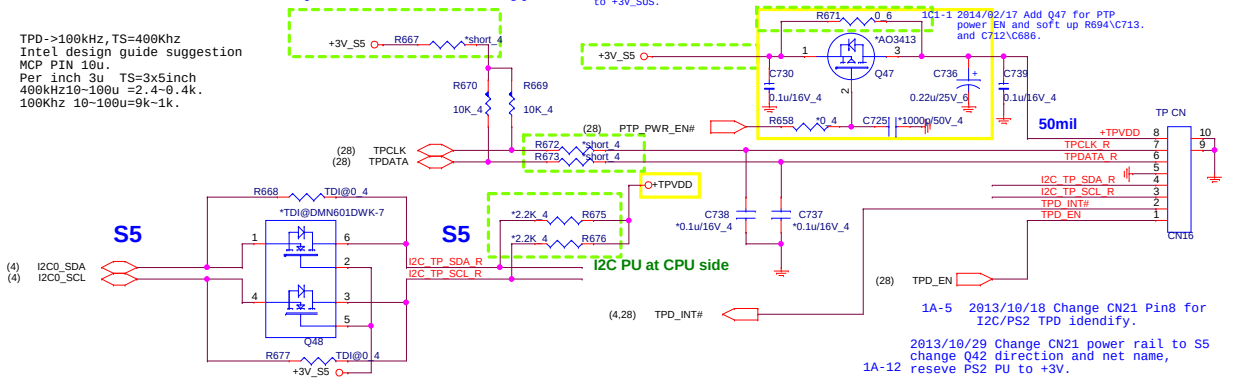
TOUCHPAD BOARD CONN (TPD I2C/PS2 co-lay)

1C-2 2014/01/13 Change TP power rail from +3V_S5 to +3V_SUS.

1C-4 2014/01/15 reserve TP power rail +3V_S5.

1C1-1 2014/02/17 Add Q47 for PTP power EN and soft up R694\C713. and C712\C686.

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



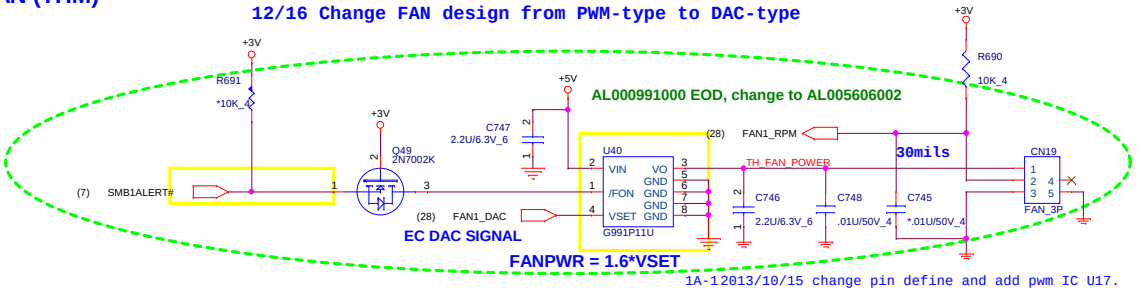
1A-5 2013/10/18 Change CN21 Pin8 for I2C/PS2 TPD idendify.

2013/10/29 Change CN21 power rail to S5 change Q42 direction and net name,

1A-12 reseve PS2 PU to +3V.

CPU FAN (THM)

12/16 Change FAN design from PWM-type to DAC-type



1A-1 2013/10/15 change pin define and add pwm IC U17.

1A-4 2013/10/17 Change U17 to G991P11U and PU U17 pin1.

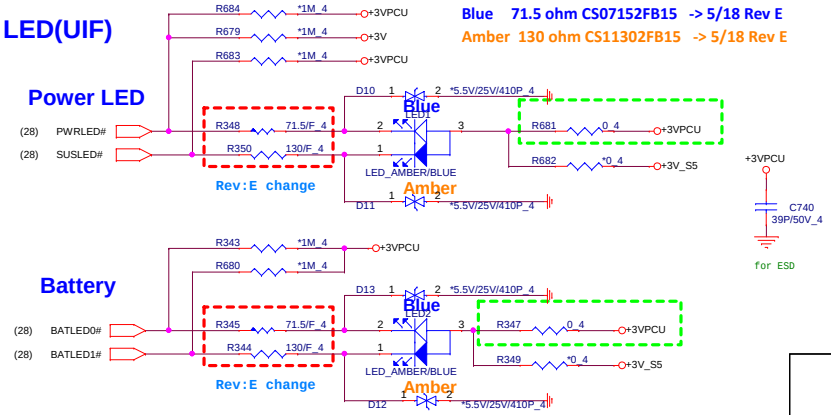
1A-9 2013/10/24 Add alert on U17.1 for CPU themal tempture.

1A-13 2013/10/31CN15 Pin2/3 swap.

POWER LED(UIF)

Blue 71.5 ohm CS07152FB15 -> 5/18 Rev E

Amber 130 ohm CS11302FB15 -> 5/18 Rev E



Quanta Computer Inc.

PROJECT : ZRW

Size	Document Number	Rev
	KB/TP/FAN	1A

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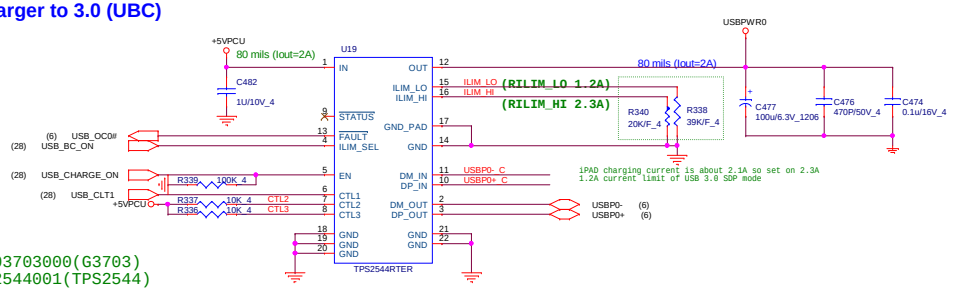
USB Charger to 3.0 (UBC)



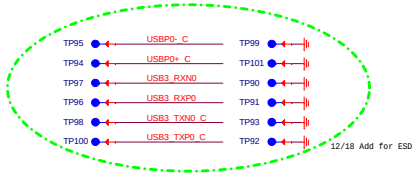
	CTL1	CTL2	CTL3	ILIM_SEL
SDP	1	1	1	0
CDP	1	1	1	1
DCP	0	1	1	X

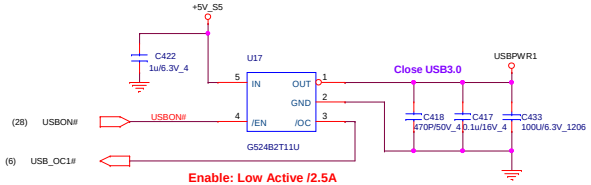
RILIM_LO is optional and the ILIM_LO pin may be left unconnected if the following conditions are met:
1. ILIM_SEL is always set high
2. Load Detection - Port Power Management is not used
3. Mouse / Keyboard wake function is not used
If conditions 1 and 2 are met but the mouse / keyboard wake function is also desired, it is recommended to use RILIM_LO < 80.6 kΩ.
The following equation programs the typical current limit:
(1)
RILIM_XX corresponds to either RILIM_HI or RILIM_LO as appropriate.

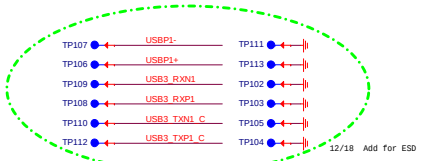
$$IOS\_typ(mA) = 50{,}250/\{RILIM\_XX(K\Omega)+0.1\}$$

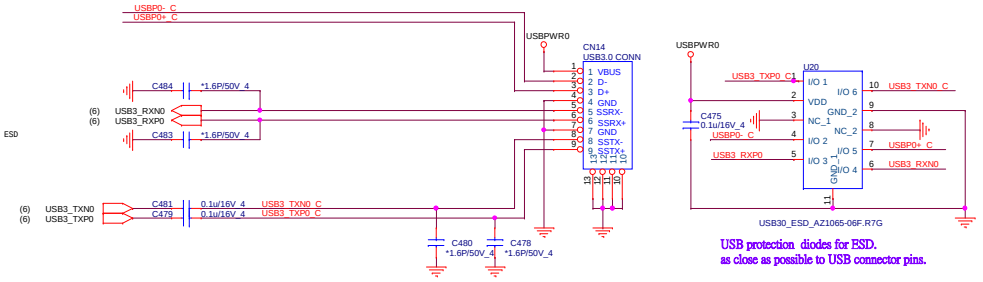
GMT:AL003703000(G3703)
TI:AL002544001(TPS2544)
Silergy: AL055544000 (SLGC55544VTR)

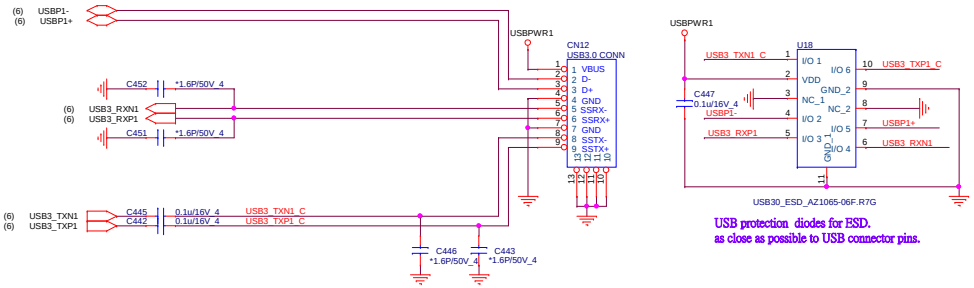
USB 3.0 Connector (UB3)



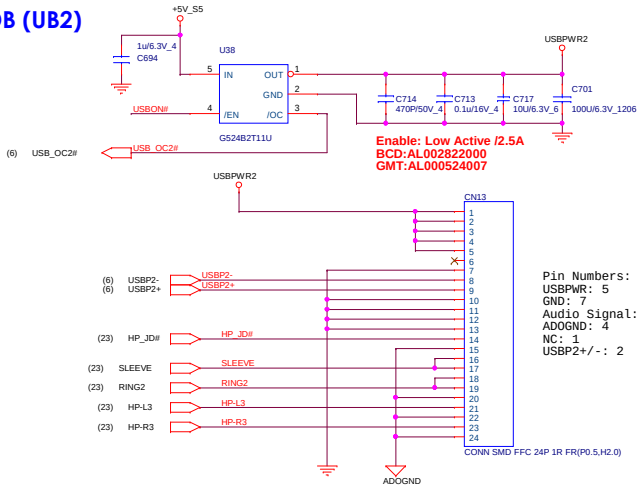






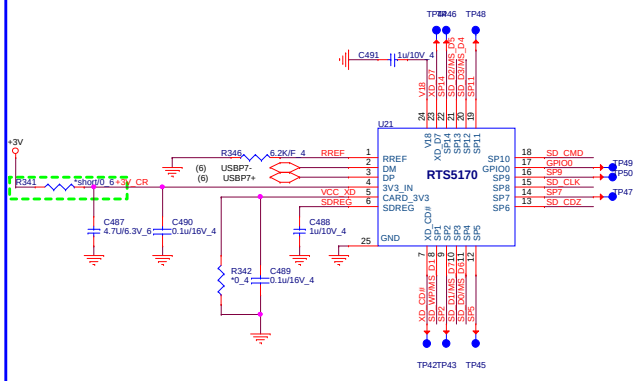


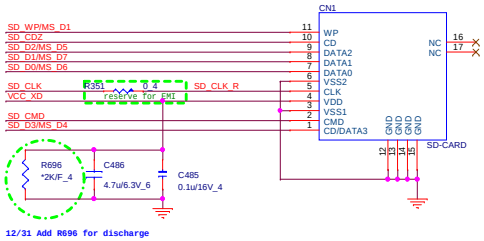
USB2.0 DB (UB2)



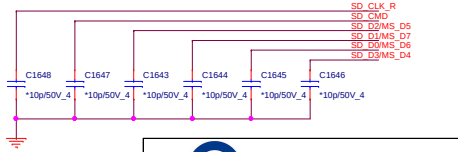
Pin Numbers:
USBPWR: 5
GND: 7
Audio Signal: 5
ADOGND: 4
NC: 1
USBP2+/-: 2

Card Reader (CRD)





EMI



Quanta Computer Inc.
PROJECT : ZRW

Size	Document Number	Rev
	USB3/Charger/CR/USB2 DB	1A

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EC(KBC)

IT8987E/CX
LQFP

AJ089870F02 IT8987E/CX

SM BUS ARRANGEMENT TABLE

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

SM BUS PU(KBC)

Battery module

UMA& VGA SKU
Need Stuff

HWPG(KBC)

DDR=1.5V, D1 DNP and D2 POP
DDR=1.35V, D1 POP and D2 DNP

Reset SW (FSW)

Battery Detect Switch

Reserve no stuff

Reserve switch for test
(MP remove)

Quanta Computer Inc.		
PROJECT : ZRW		
Size	Document Number	Rev
	KBC IT8587	1A
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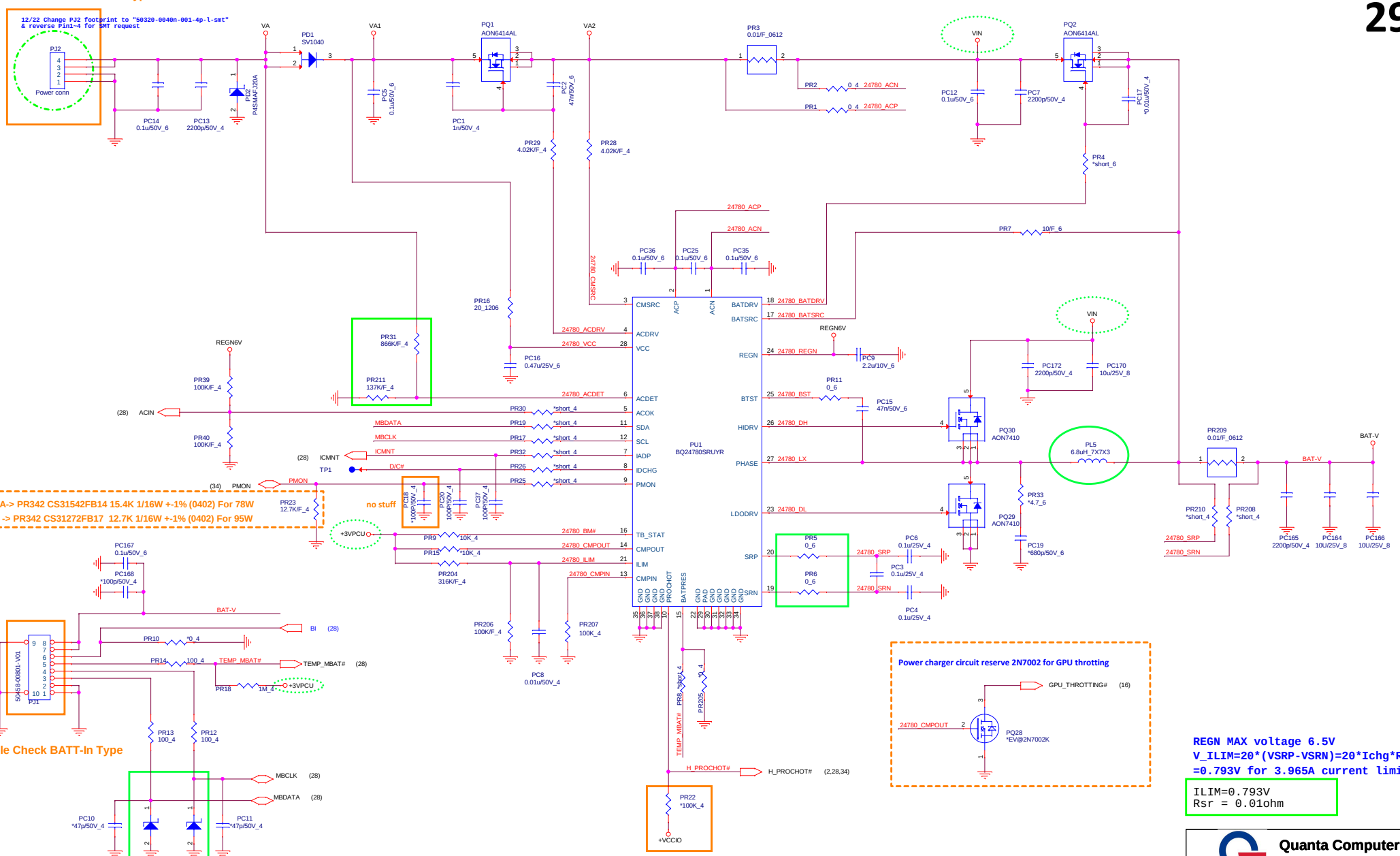
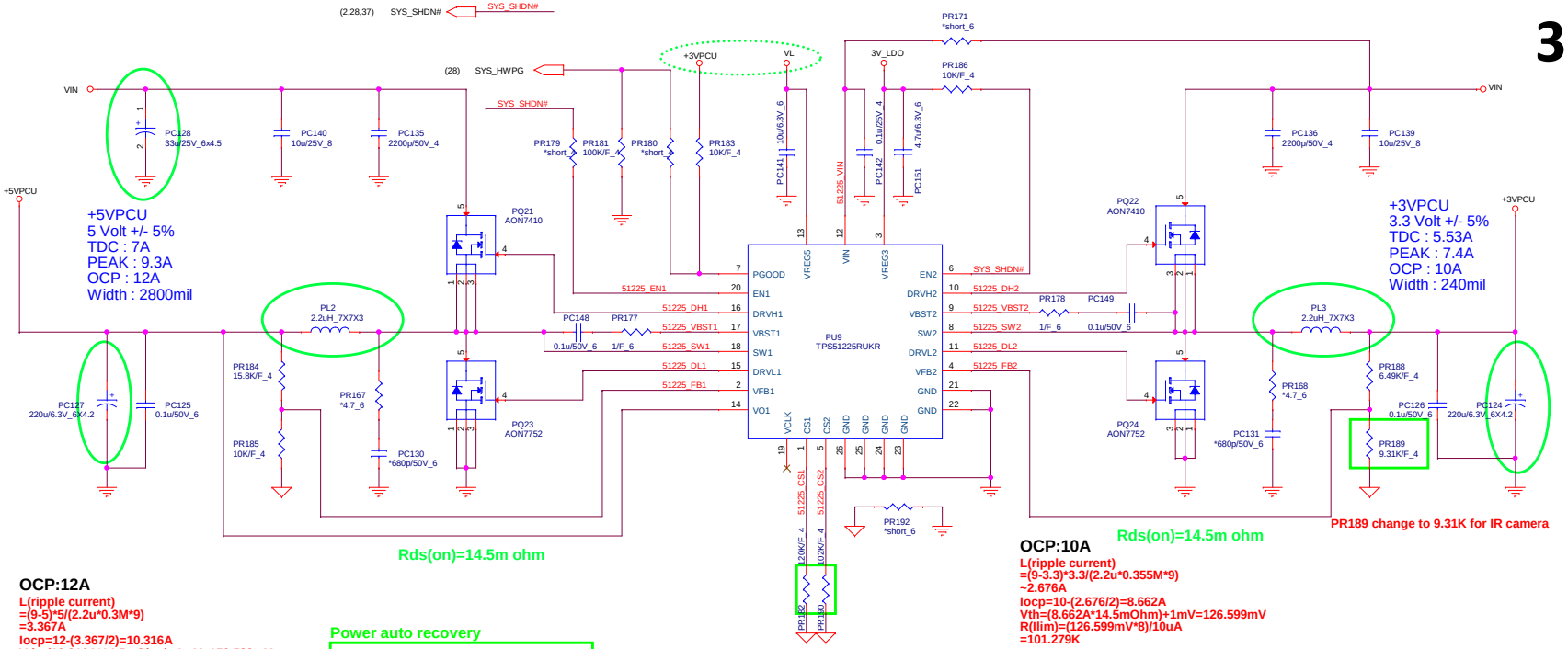
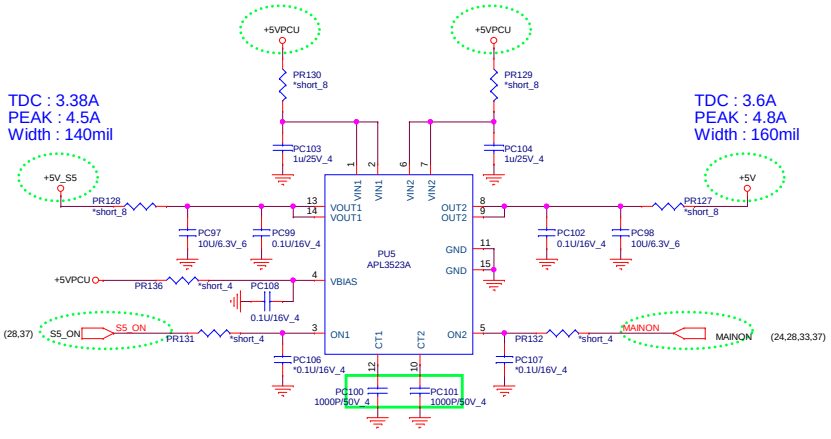
Double Check ADP-In Type



Quanta Computer Inc.			
PROJECT : ZRW			
Size	Document Number: Charger (BQ24780S)		Rev 1A
Date: Monday, February 22, 2016	Sheet 29 of 46		

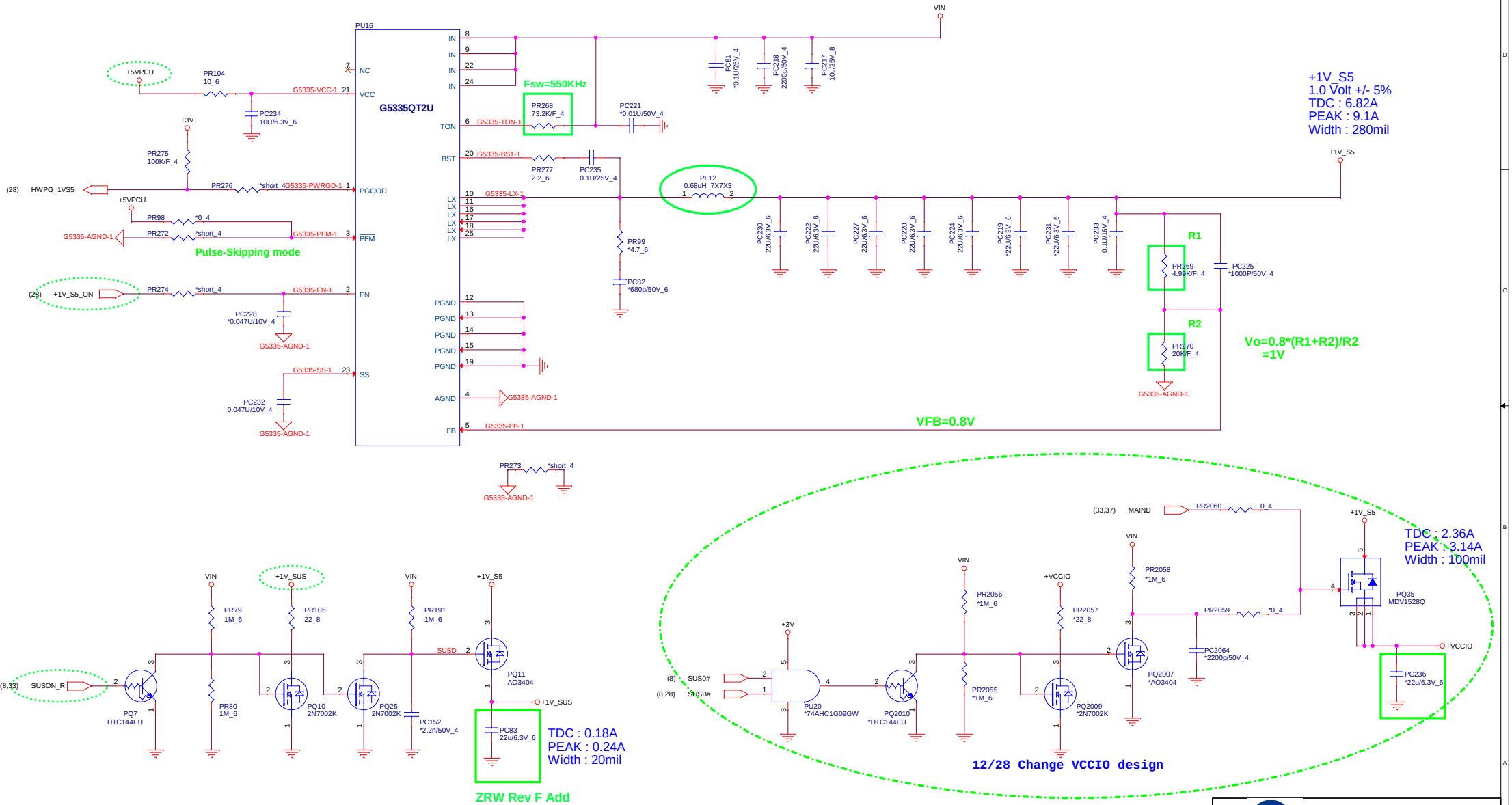




Quanta Computer Inc.

PROJECT : ZRW

Size	Document Number	Rev
	SYSTEM 5V/3V (TPS51225R)	1A
Date: Monday, February 22, 2016	Sheet 30 of 46	



Quanta Computer Inc.		
PROJECT : ZRW		
Size	Document Number	Rev
	+1V_S5 (G5335QT2U)	1A
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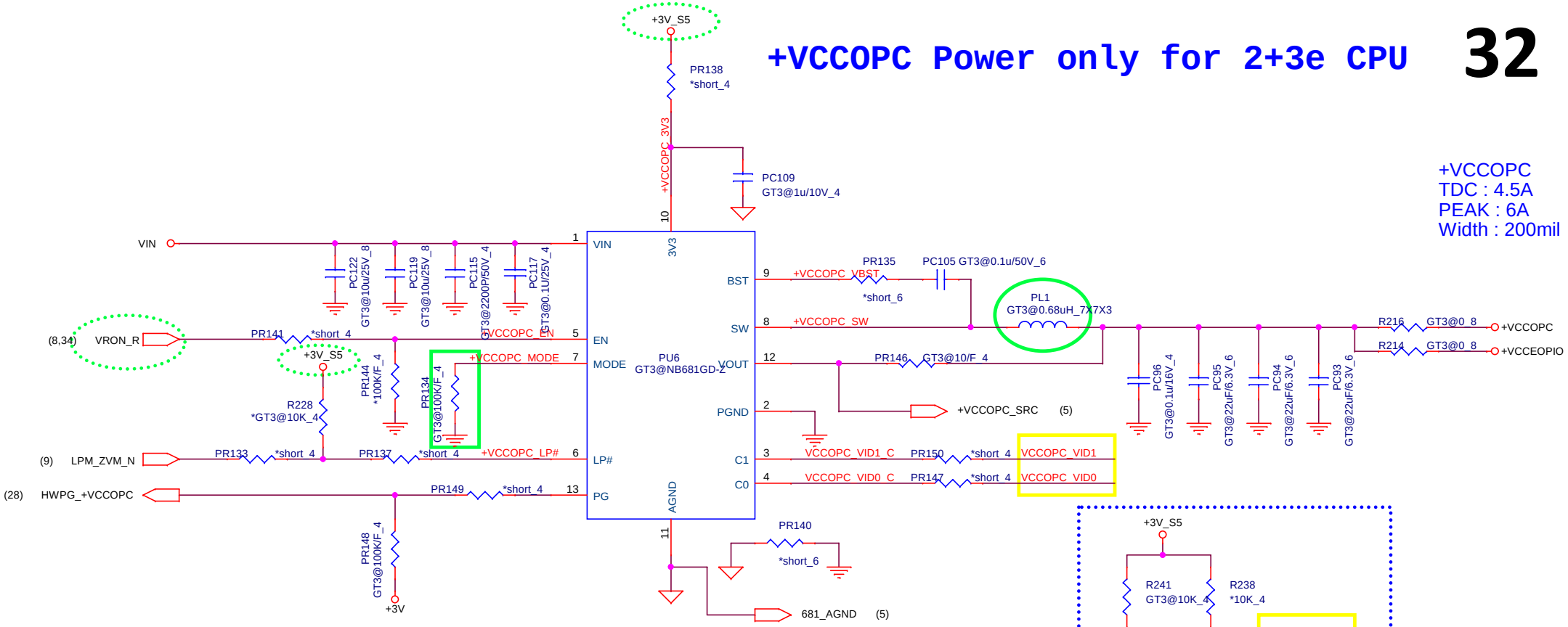
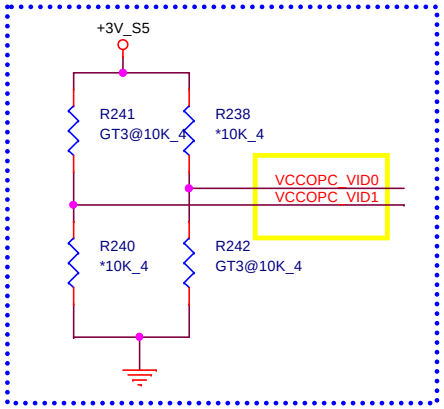
+VCCOPC Power only for 2+3e CPU

+VCCOPC
TDC : 4.5A
PEAK : 6A
Width : 200mil





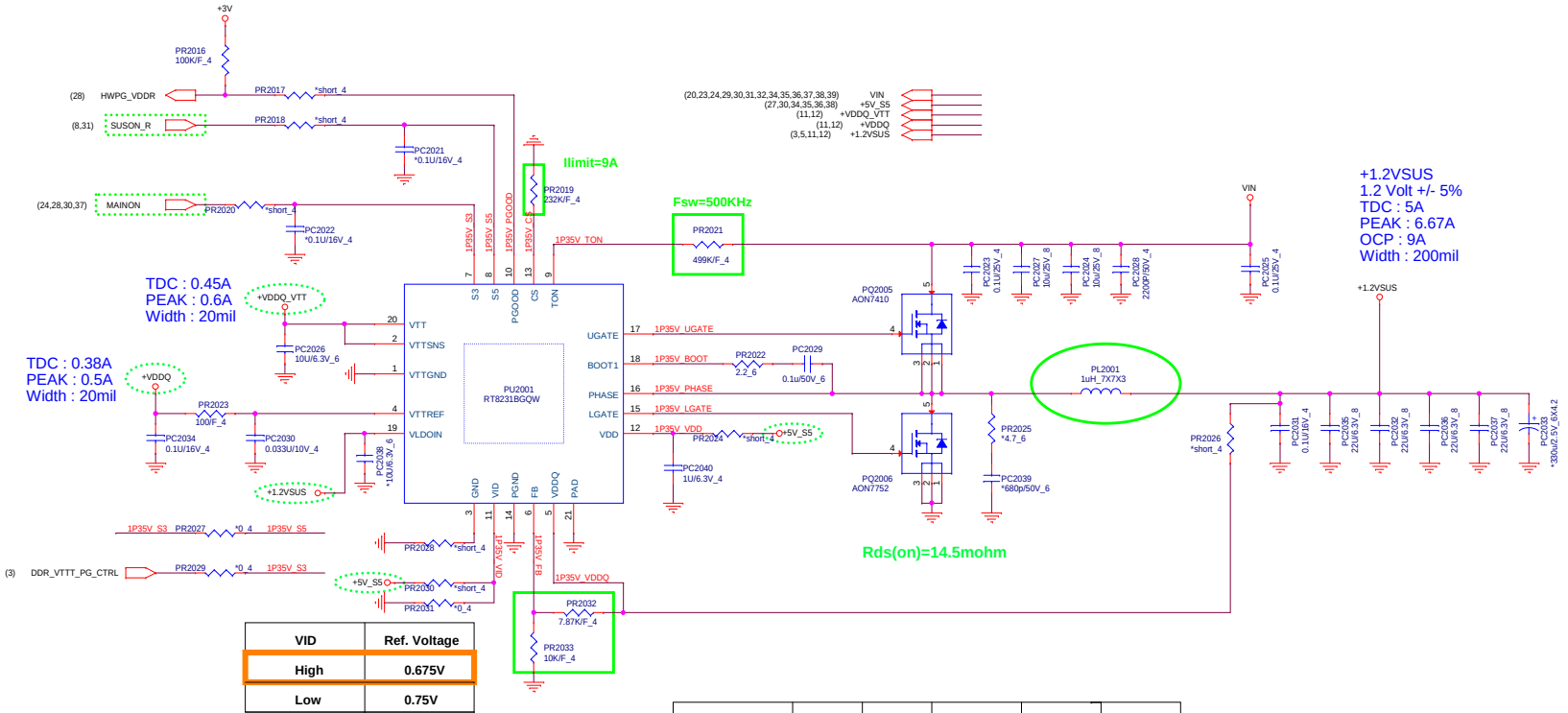
Mode	VR Rail
0 ohm	VCCIO
Floating	PRIMCORE
100K	EDRAM/EOPIO
150K	Other

	LP#	C1	C0	Vo
VCCEDRAM	0	X	X	0V
	1	0	0	0.8V(MSM)
	1	0	1	0.95V
	1	1	0	1.0V
	1	1	1	1.05V

(5) +VCCOPC
(20,23,24,29,30,31,33,34,35,36,37,38,39) VIN
(2,4,6,7,8,9,11,12,13,15,19,20,21,22,23,24,25,26,27,28,30,31,33,34,37,38,39) +3V
(2,3,4,6,7,8,9,22,24,25,26,28,30,33,38) +3V_S5

Quanta Computer Inc.
PROJECT : ZRW

Size	Document Number	Rev
	+VCCOPC (NB681GD-Z)	1A
Date: Monday, February 22, 2016	Sheet 32 of 46	



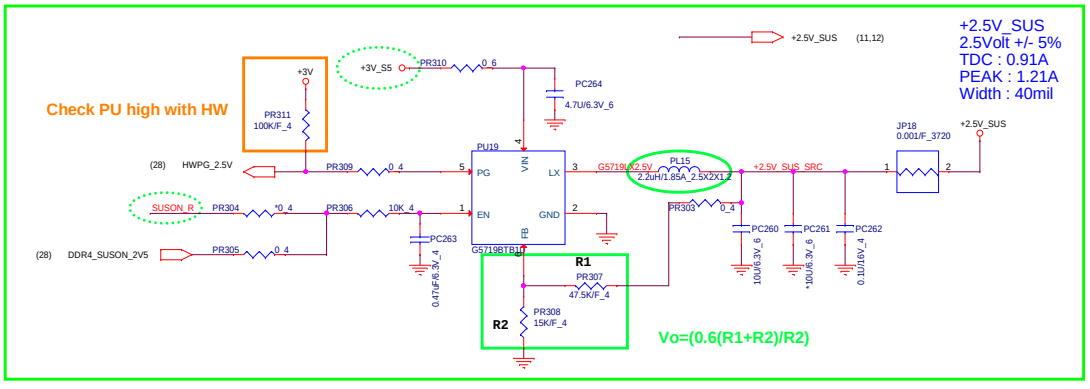
VID	Ref. Voltage
High	0.675V
Low	0.75V

OCP=9A
L ripple current
=(19-1.2)*1.2/(1u*500k*19)
=2.248A
Vtrip=9-(2.248/2)*14.5mohm
=114.202mV
Rlimit=114.202mV/5uA*10=228.4Kohm

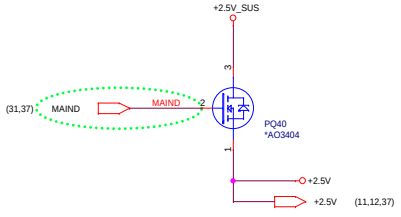
DDR=1.2V
PR2032=7.87K/F_4
PR2033=10K/F_4

	S3	S5	VDDQ	VTTREF	VTT
S0	1	1	ON	ON	ON
S3 (mainon off)	0	1	ON	ON	OFF
S4/S5	0	0	OFF	OFF	OFF

+2.5VSUS Power Rail For DDR4



10/26 Reserve +2.5V for DDR4 VDDSPD



Quanta Computer Inc.
PROJECT : ZRW

Size	Document Number	Rev
	DDR4_+1.2VSUS (G5316RZ1D)	1A

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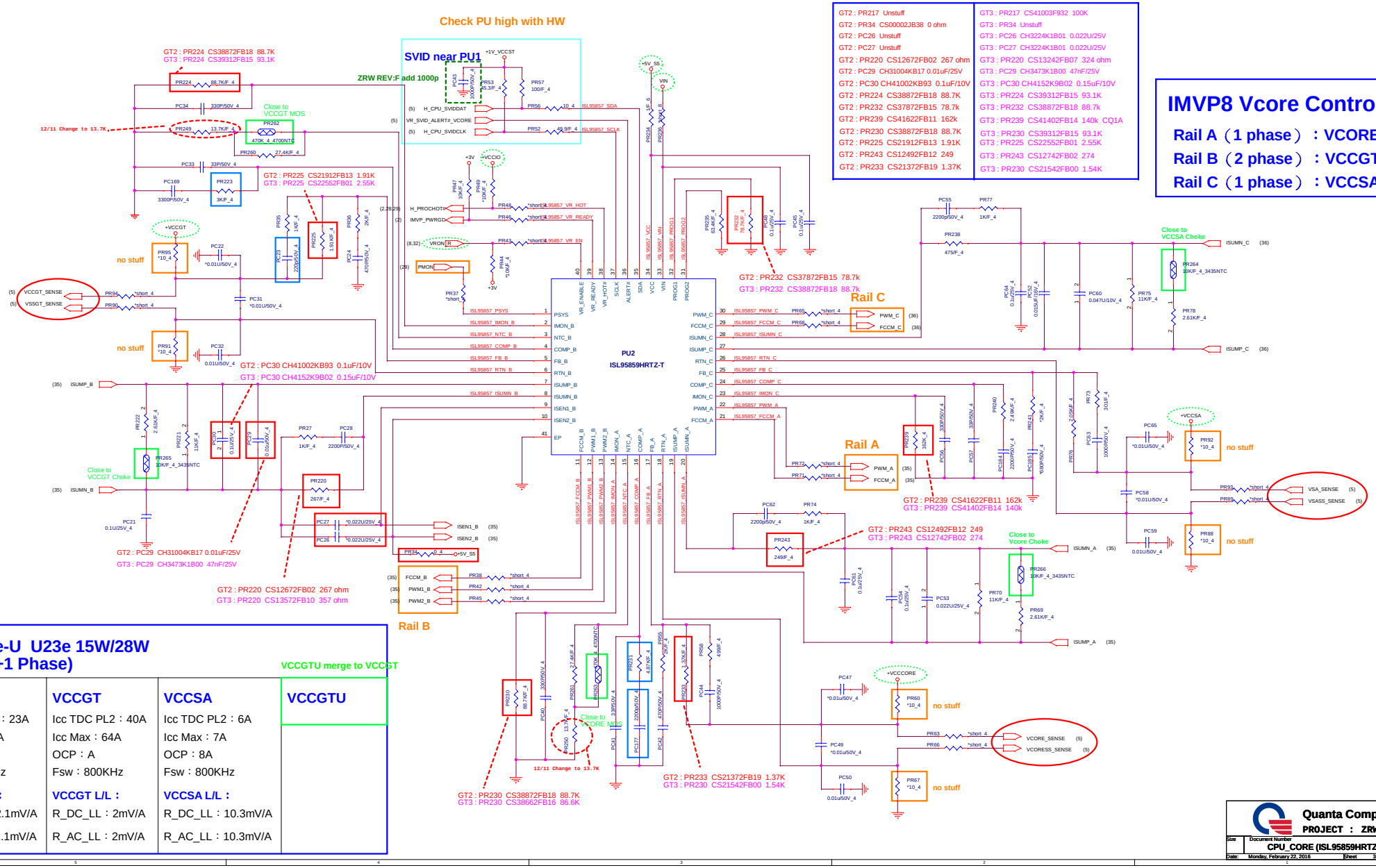

GT2 : PR217 Unstuff	GT3 : PR217 CS41003F932 100K
GT2 : PR34 CS00002JB38 0 ohm	GT3 : PR34 Unstuff
GT2 : PC26 Unstuff	GT3 : PC26 CH3224K1B01 0.022U/25V
GT2 : PC27 Unstuff	GT3 : PC27 CH3224K1B01 0.022U/25V
GT2 : PR220 CS12672FB02 267 ohm	GT3 : PR220 CS13242FB07 324 ohm
GT2 : PC29 CH31004KB17 0.01uF/25V	GT3 : PC29 CH3473K1B00 47nF/25V
GT2 : PC30 CH41002KB93 0.1uF/10V	GT3 : PC30 CH4152K9B02 0.15uF/10V
GT2 : PR224 CS38872FB18 88.7K	GT3 : PR224 CS39312FB15 93.1K
GT2 : PR232 CS37872FB15 78.7k	GT3 : PR232 CS38872FB18 88.7k
GT2 : PR239 CS41622FB11 162k	GT3 : PR239 CS41402FB14 140k CQ1A
GT2 : PR230 CS38872FB18 88.7K	GT3 : PR230 CS39312FB15 93.1K
GT2 : PR225 CS21912FB13 1.91K	GT3 : PR225 CS22552FB01 2.55K
GT2 : PR243 CS12492FB12 249	GT3 : PR243 CS12742FB02 274
GT2 : PR233 CS21372FB19 1.37K	GT3 : PR230 CS21542FB00 1.54K

IMVP8 Vcore Controller

- Rail A（1 phase）：VCORE
- Rail B（2 phase）：VCCGT
- Rail C（1 phase）：VCCSA

Skylake-U U23e 15W/28W (1+2+1+1 Phase)

VCORE	VCCGT	VCCSA	VCCGTU
Icc TDC PL2：23A	Icc TDC PL2：40A	Icc TDC PL2：6A	
Icc Max：32A	Icc Max：64A	Icc Max：7A	
OCP：35A	OCP：A	OCP：8A	
Fsw：800KHz	Fsw：800KHz	Fsw：800KHz	
VCORE L/L：	**VCCGT L/L：**	**VCCSA L/L：**	
R_DC_LL：2.1mV/A	R_DC_LL：2mV/A	R_DC_LL：10.3mV/A	
R_AC_LL：2.1mV/A	R_AC_LL：2mV/A	R_AC_LL：10.3mV/A	

Quanta Computer Inc.				
PROJECT : ZRW				
Size	Document Number			Rev
	CPU_CORE (ISL95859HRTZ-T)			1A
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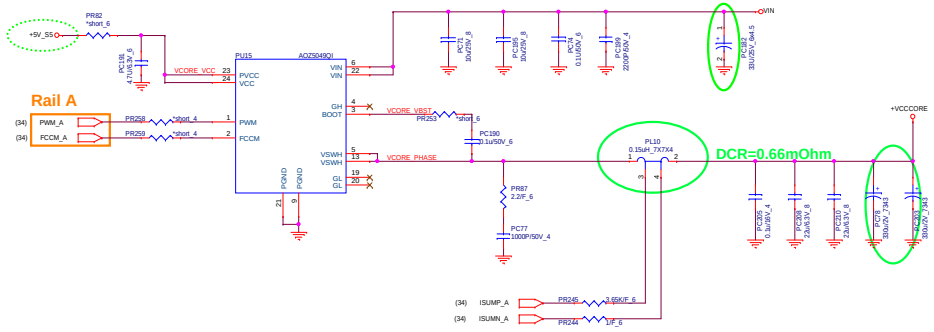
GT2 : PR19 Unstuff	GT3 : PR19 CS41003F932 100K

VCORE



VCORE

Icc TDC PL2：23A

Icc Max：29A

OCP：35A

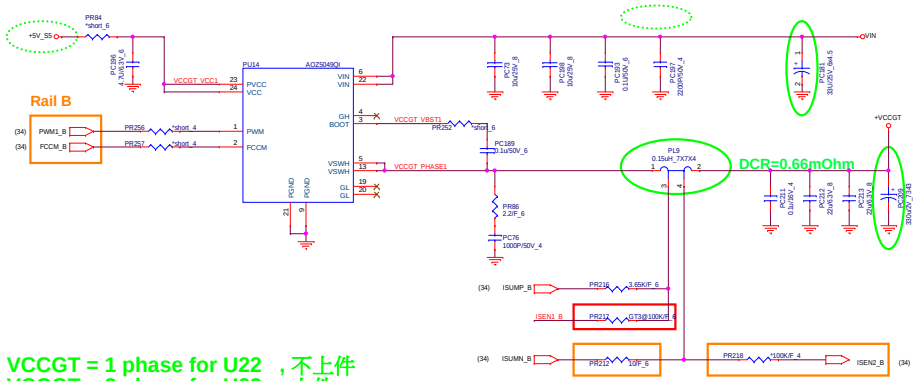
Fsw：800KHz

VCORE L/L：

R_DC_LL：2.1mV/A

R_AC_LL：2.1mV/A

VCCGT



VCCGT

Icc TDC PL2：40A

Icc Max：64A

OCP：A

Fsw：800KHz

VCCGT L/L：

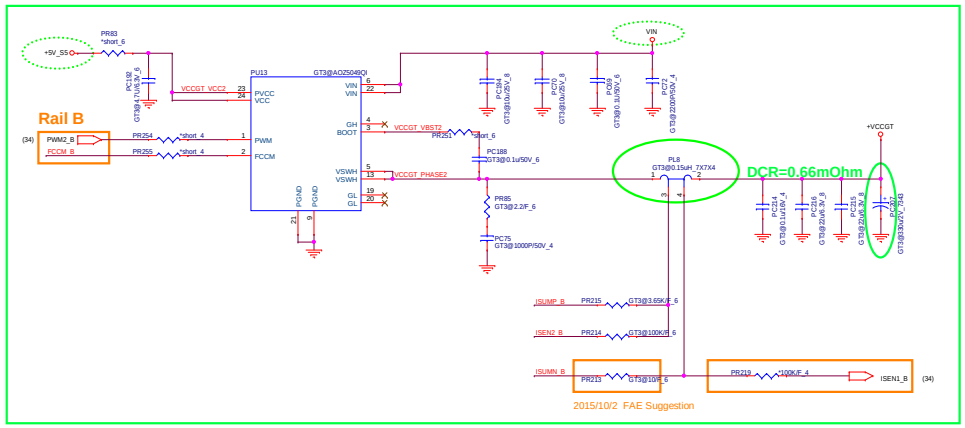
R_DC_LL：2mV/A

R_AC_LL：2mV/A

VCCGT = 1 phase for U22 ，不上件

VCCGT = 2 phase for U23e , 上件

2015/10/2 FAE Suggestion



2015/10/2 FAE Suggestion

(5,34) +VCCCORE

(20,23,24,29,30,31,32,33,34,36,37,38,39) VIN

(5,34) +VCCGT

(27,30,33,34,36,38) +5V_S5

Quanta Computer Inc.		
PROJECT : ZRW		
Size	Document Number: VCORE/VCCGT (ISL95808HRZ-T)	Rev: 1A
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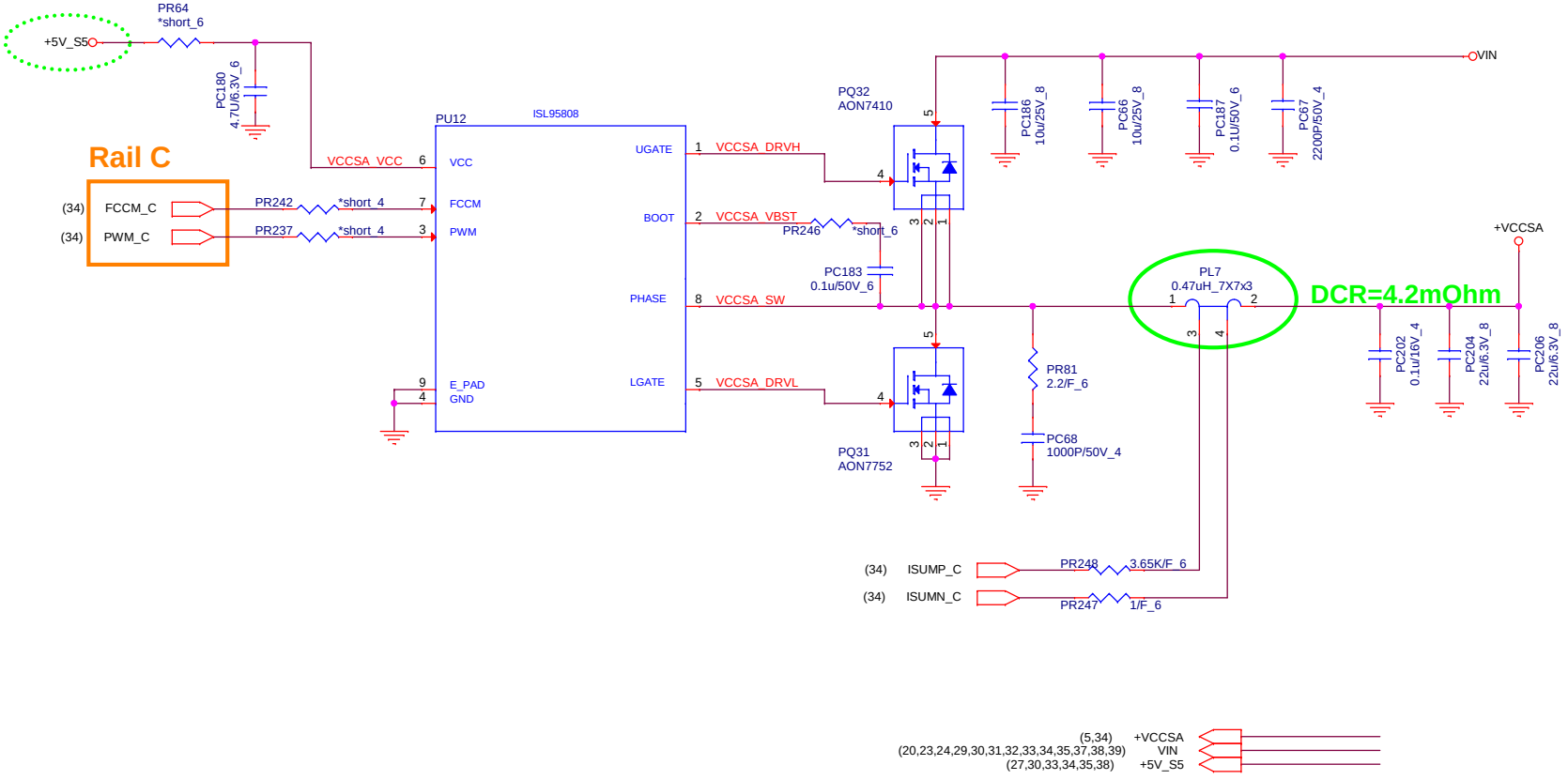
VCCSA



VCCSA

Icc TDC PL2：5A

Icc Max：5A

OCP：6A

Fsw：800KHz

VCCSA L/L：

R_DC_LL：10.3mV/A

R_AC_LL：10.3mV/A

Quanta Computer Inc.		
PROJECT : ZRW		
Size	Document Number: VCCSA (ISL95808HRZ-T)	Rev: 1A
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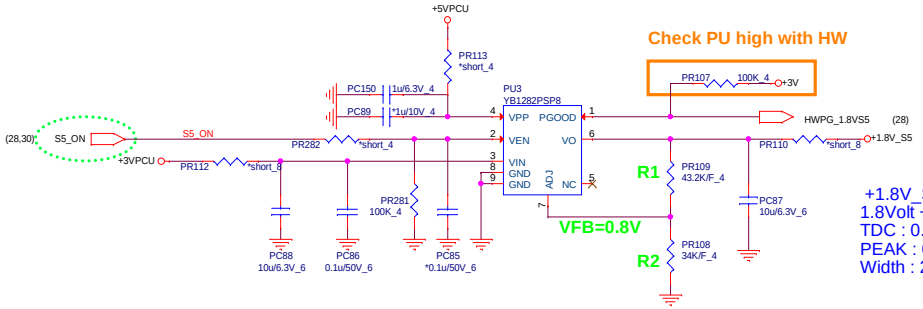
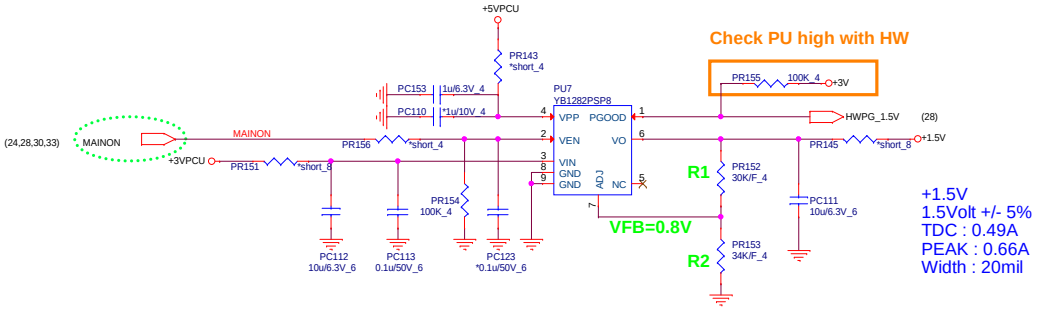
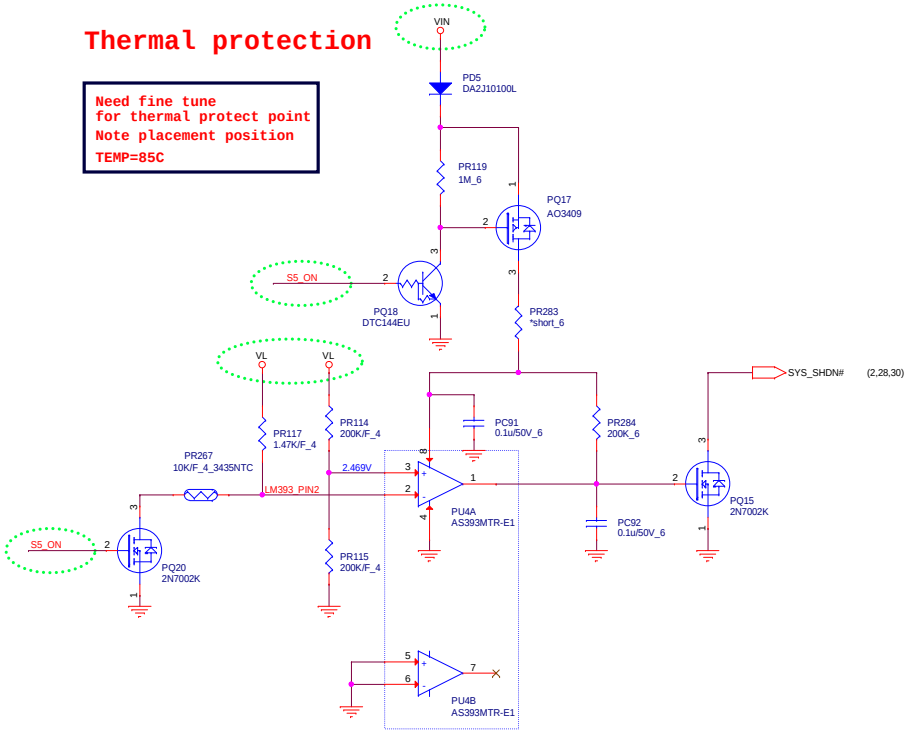
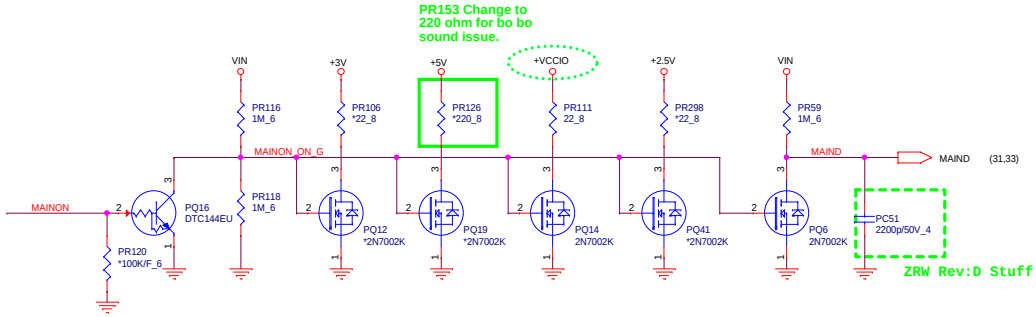






For EC control thermal protection (output 3.3V)



Quanta Computer Inc.

PROJECT : ZRW

Size	Document Number	Rev
	+1.8V/+1.5V/Thermal Protect	1A

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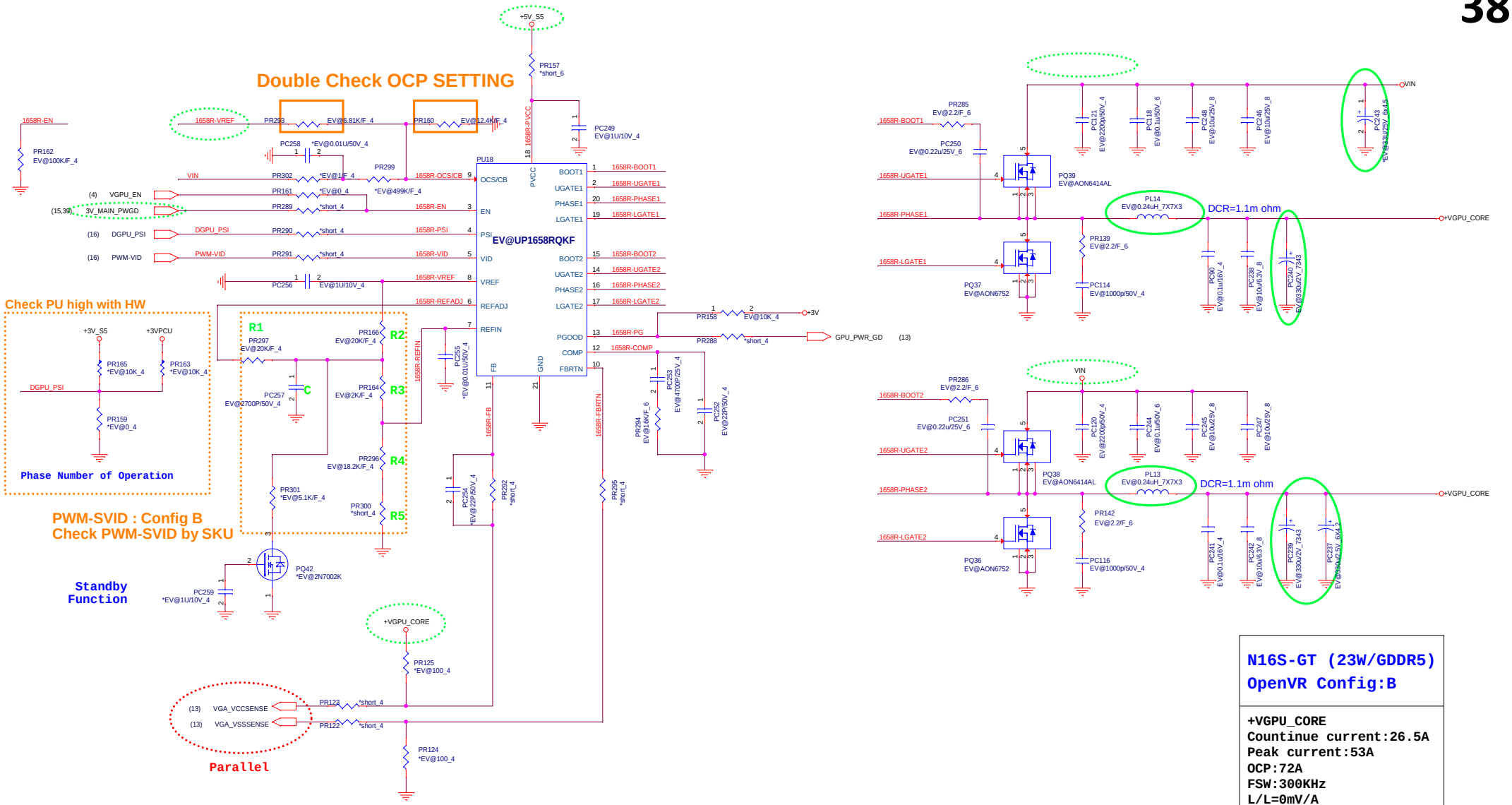
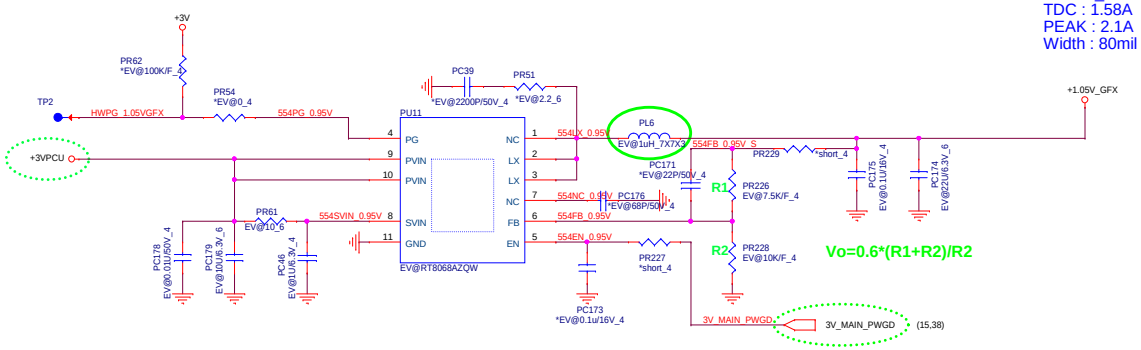
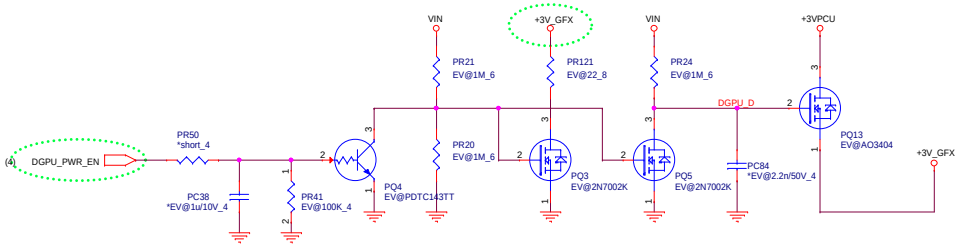

Double Check OCP SETTING
Check PU high with HW
Phase Number of Operation
PWM-SVID : Config B
Check PWM-SVID by SKU
Standby Function
Parallel
EV@UP1658RQKF
DCR=1.1m ohm
DCR=1.1m ohm
N16S-GT (23W/GDDR5)
OpenVR Config:B
+VGPU_CORE
Countinue current:26.5A
Peak current:53A
OCP:72A
FSW:300KHz
L/L=0mV/A
Quanta Computer Inc.
PROJECT : ZRW
+VGPU_CORE(UP1658RQKF)
Monday, February 22, 2016

(13,14,15) +1.05V_GFX
(13,15,16,28) +3V_GFX
(14,18) +1.35V_GFX

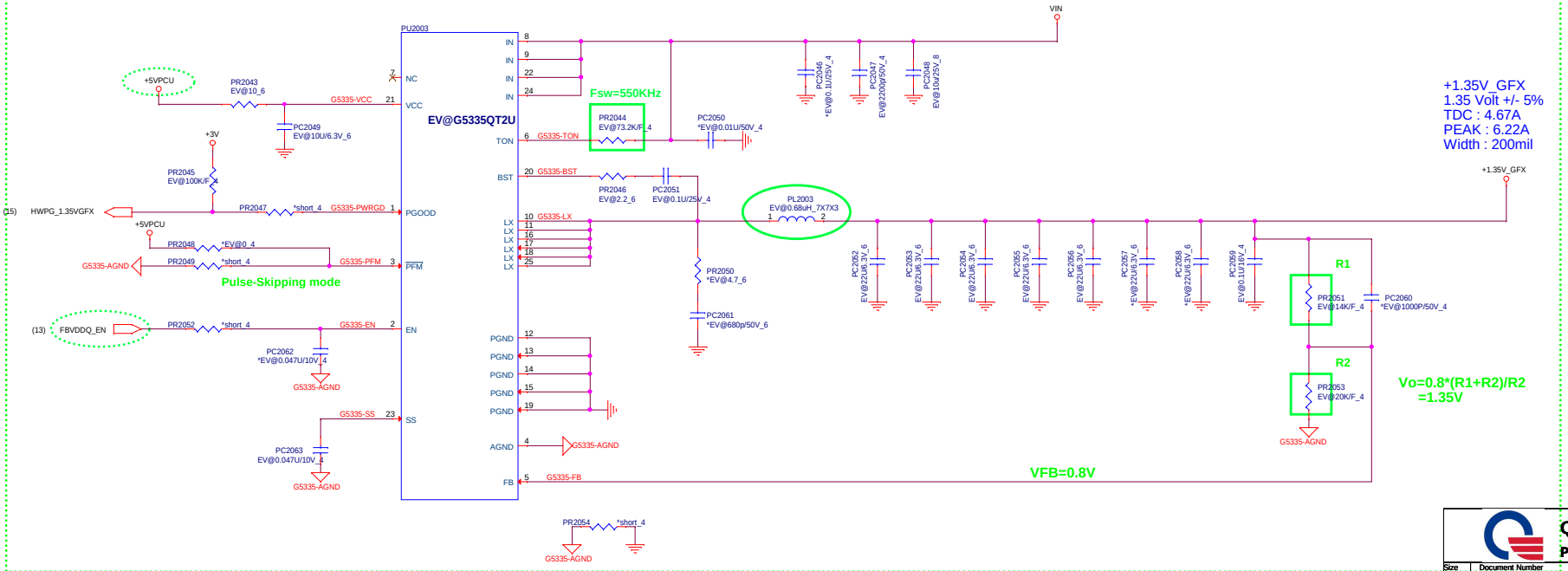
+1.05V_GFX
TDC : 1.58A
PEAK : 2.1A
Width : 80mil





+3V_GFX
TDC : 0.05A
PEAK : 0.06A
Width : 20mil

+1.35V_GFX for GDDR5



+1.35V_GFX
1.35 Volt +/- 5%
TDC : 4.67A
PEAK : 6.22A
Width : 200mil

Quanta Computer Inc.
PROJECT : ZRW

Size	Document Number	Rev
	+1.35V_GFX/+1.05V_GFX/+3V_GFX	1A
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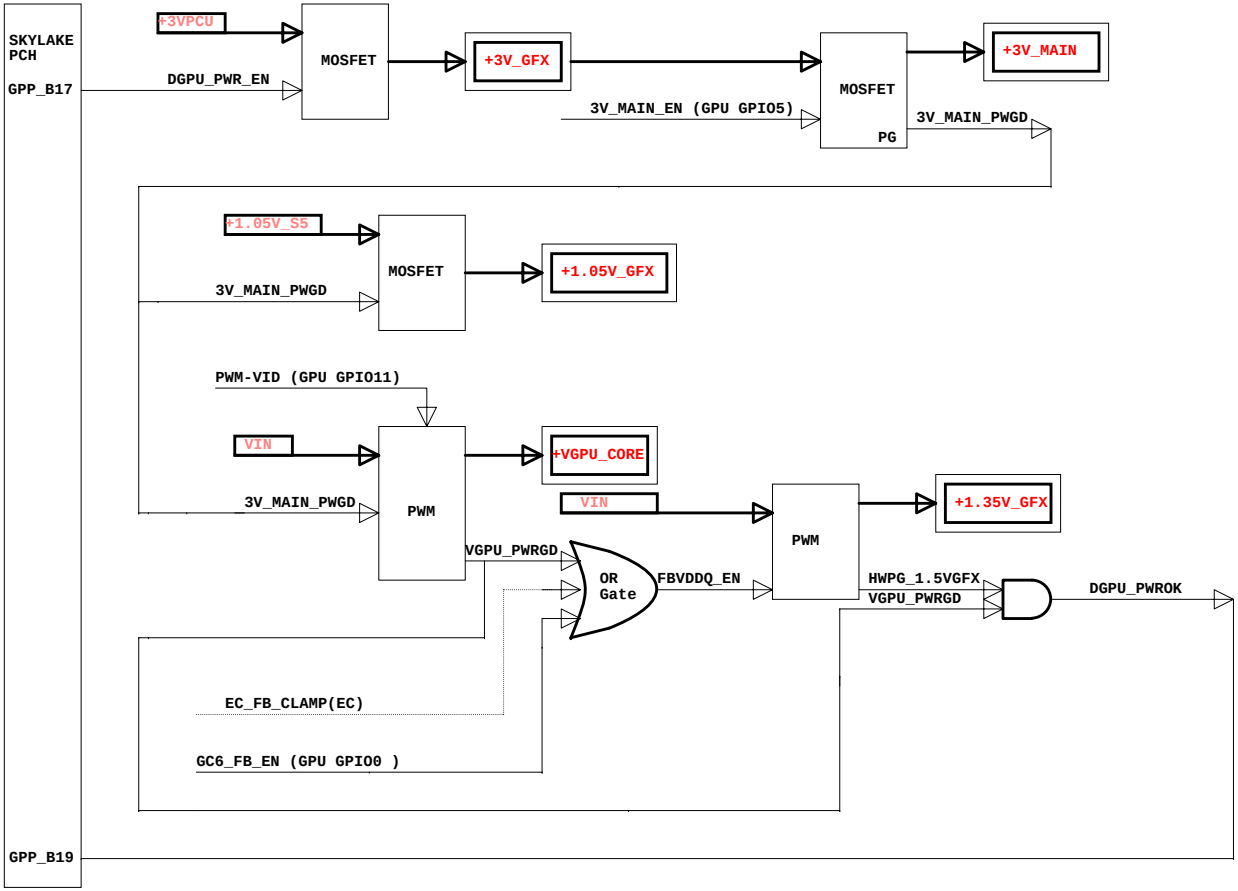
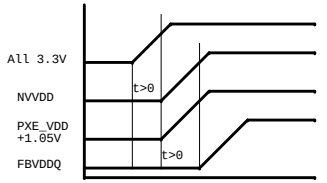
VGA power up sequence

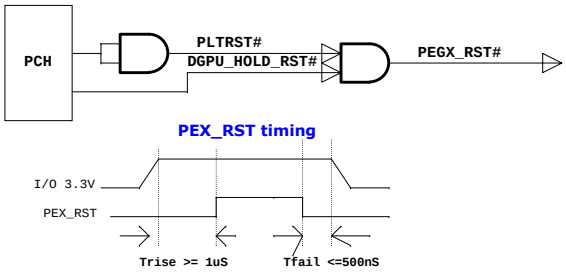




N15x Power on sequance

Notes: -All 3.3V includes all rails powered at 3.3V
-PEX_VDD 1.05V inculdes all rails that are shared

VGA Reset



Quanta Computer Inc.
PROJECT : ZRW

Size	Document Number	Rev
	GPU PWR CRL	1A

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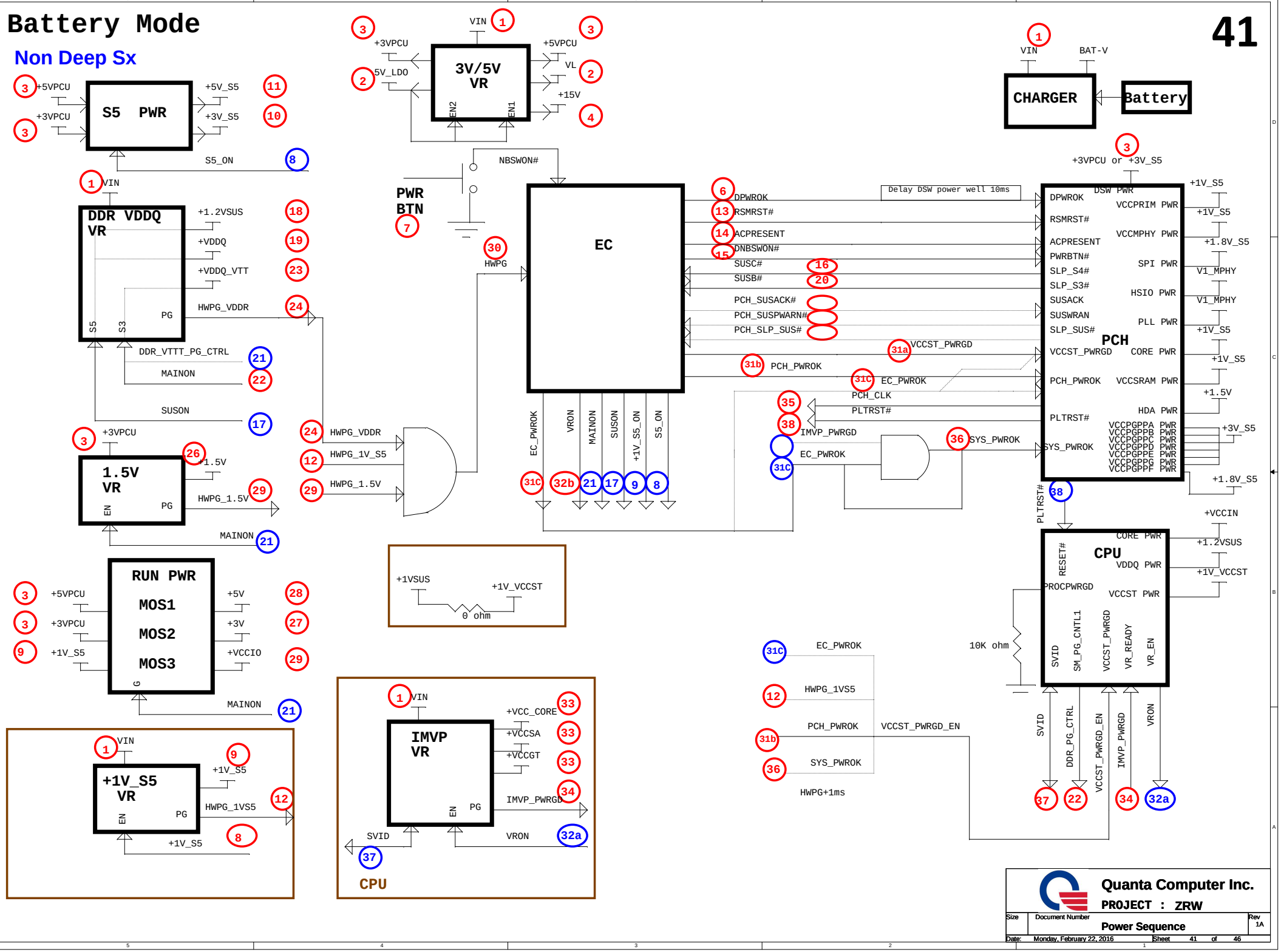
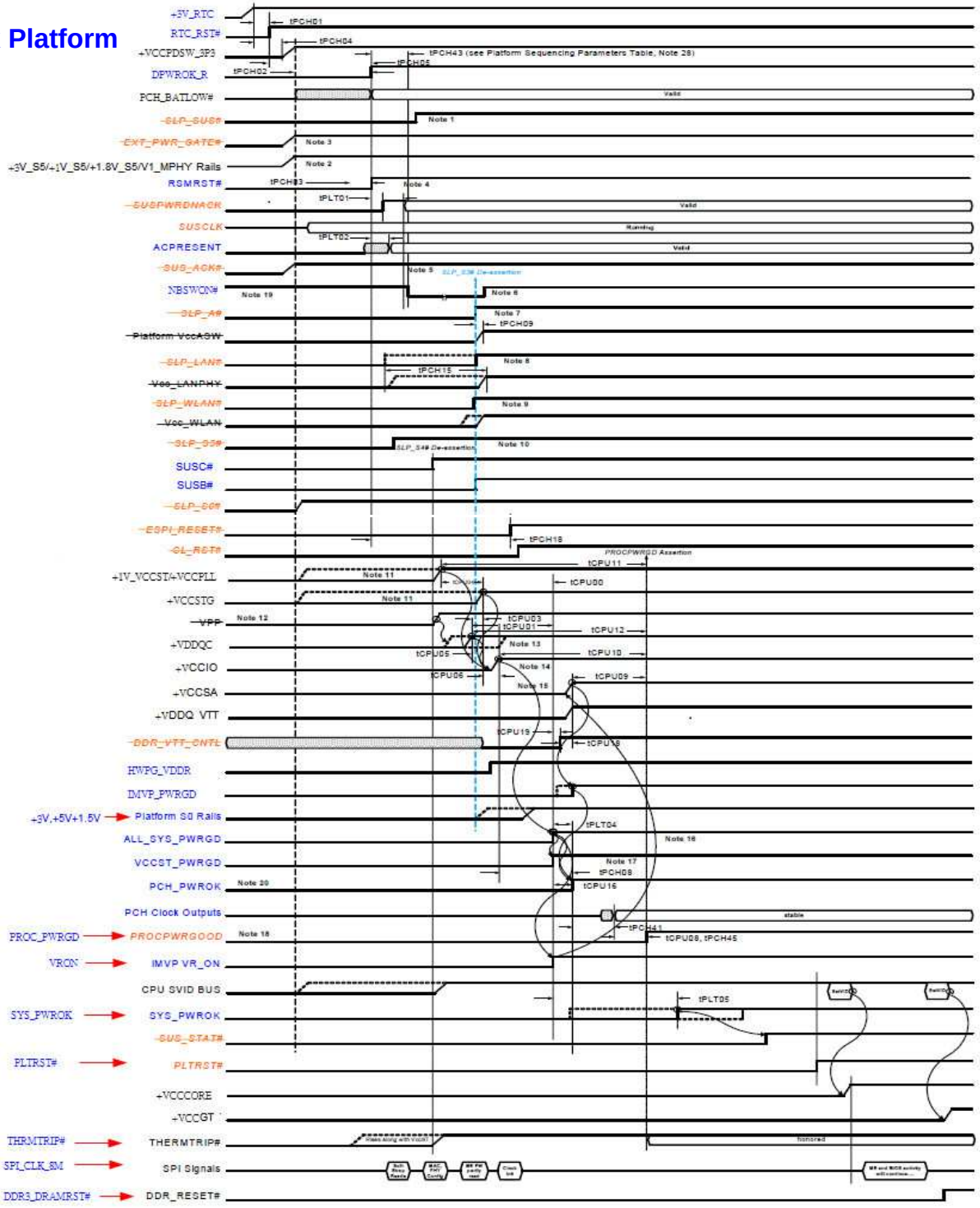
Battery Mode

Non Deep Sx



Skylake U Non-Deep Sx Platform Power on sequence



Quanta Computer Inc. PROJECT : ZRW			
Size	Document Number: Power on Sequence		Rev: 1A
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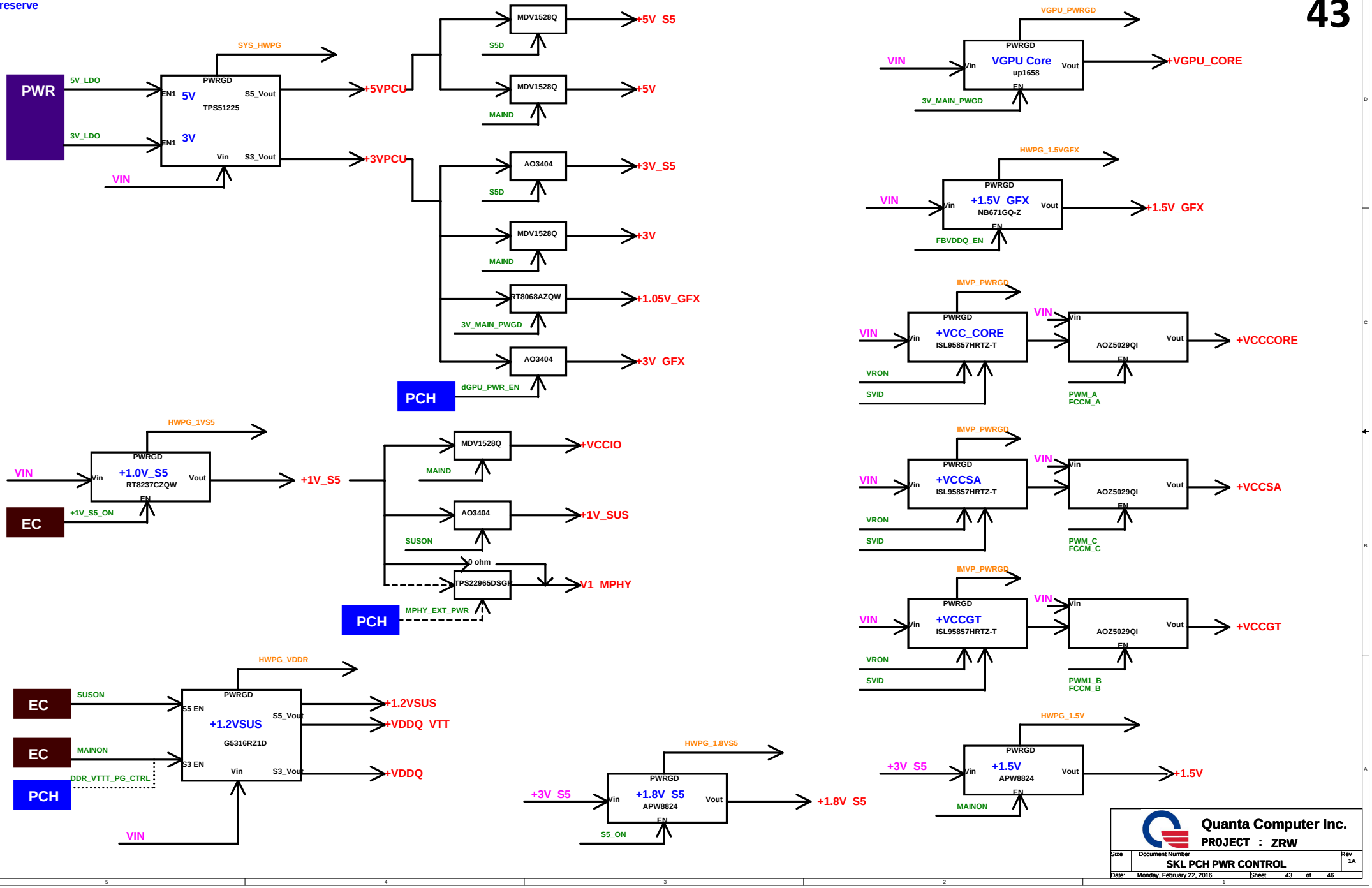
實線表default
虛線表reserve



Quanta Computer Inc.
PROJECT : ZRW

Size	Document Number	Rev
	SKL PCH PWR CONTROL	1A

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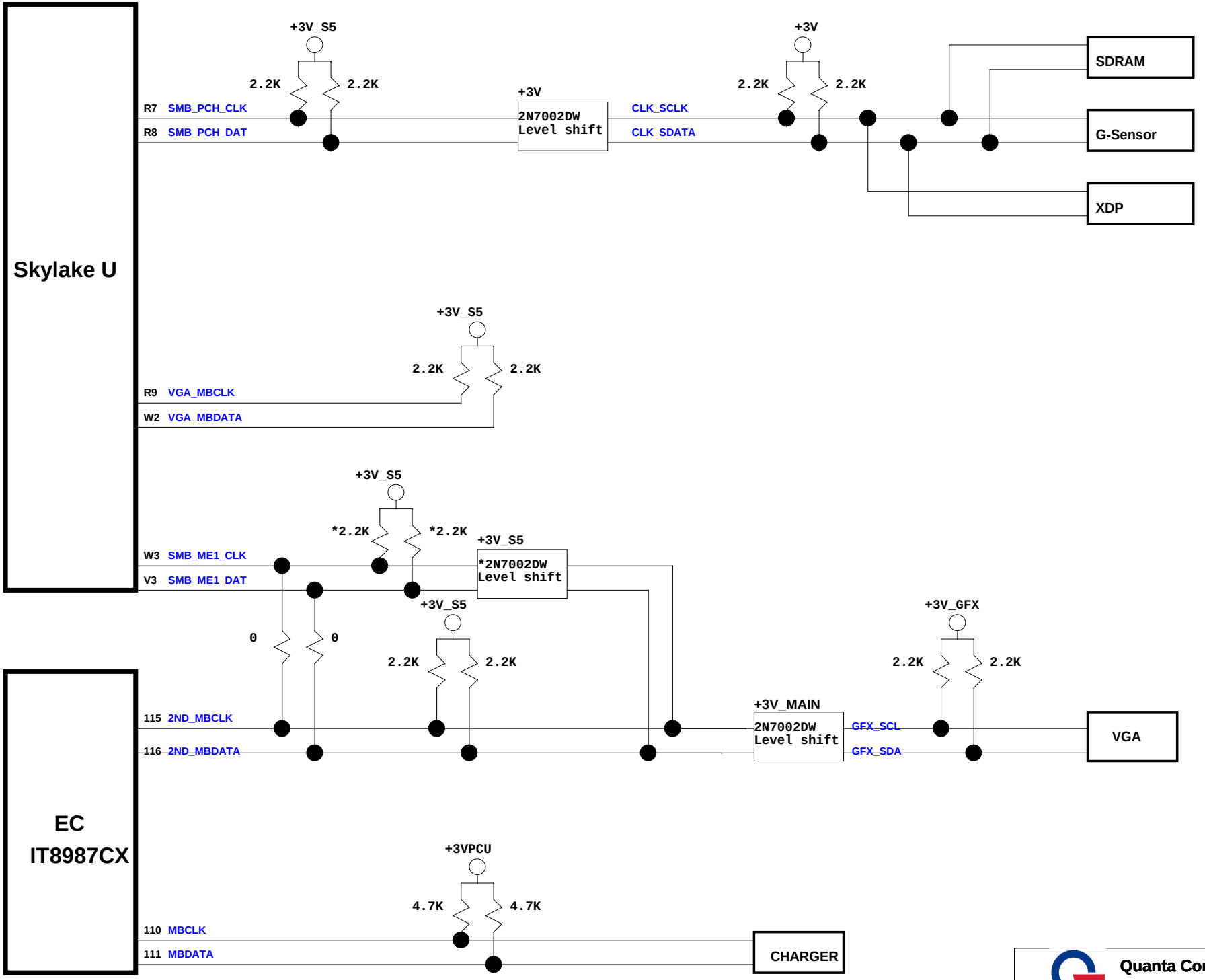

Quanta Computer Inc.
PROJECT : ZRW

Size	Document Number	Rev
	SMBUS Block Diagram	1A

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