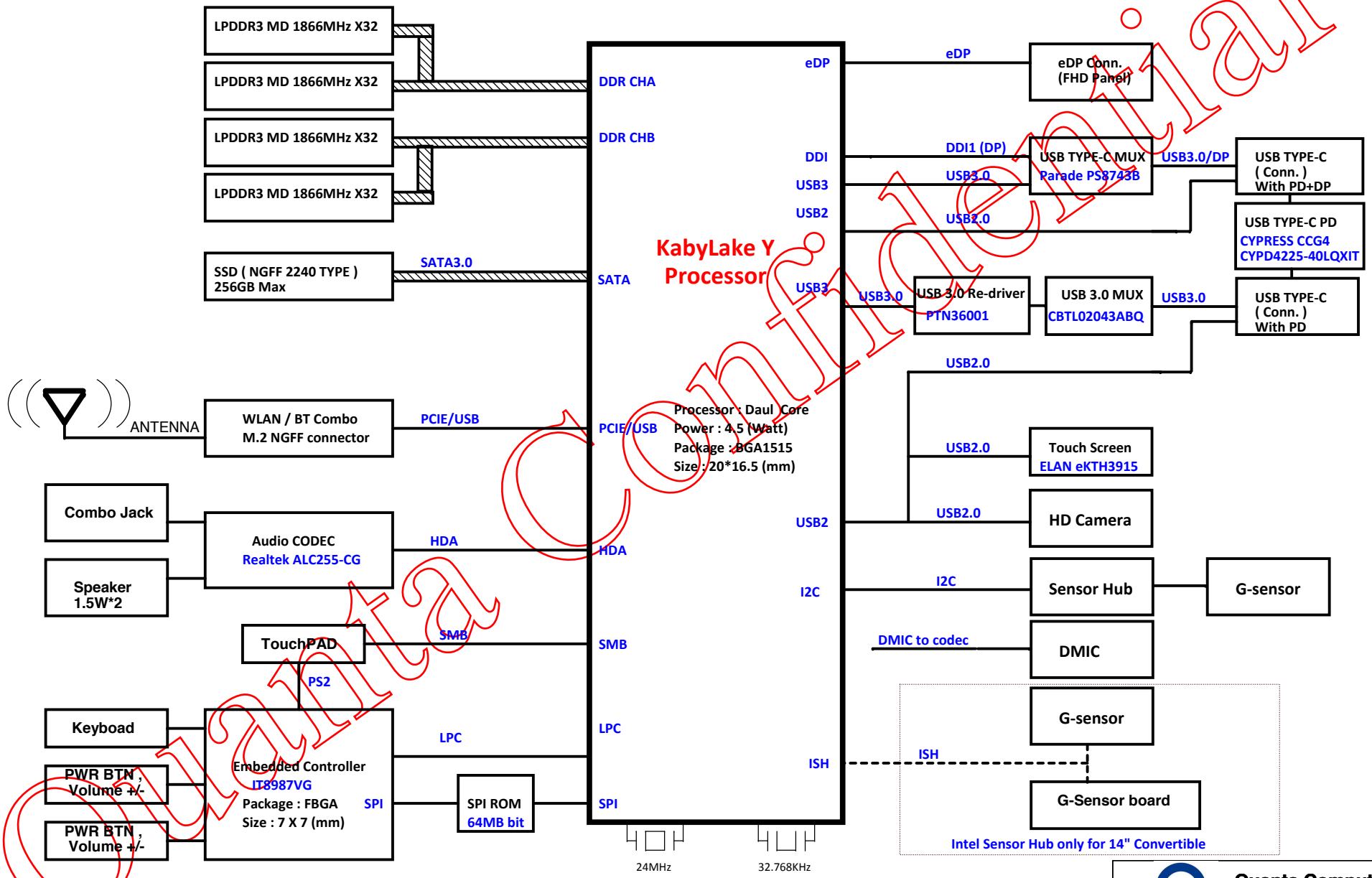
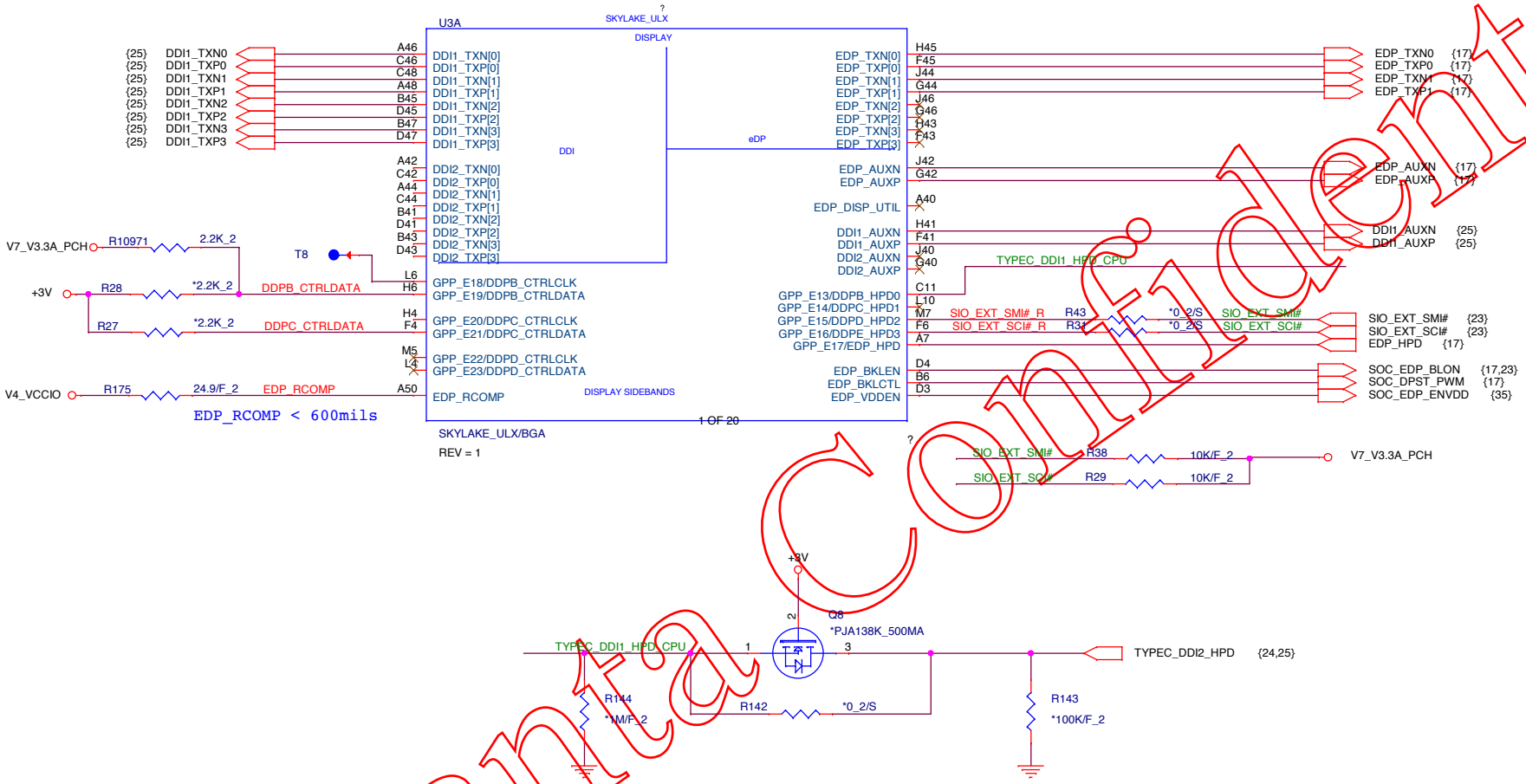
Block Diagram

01

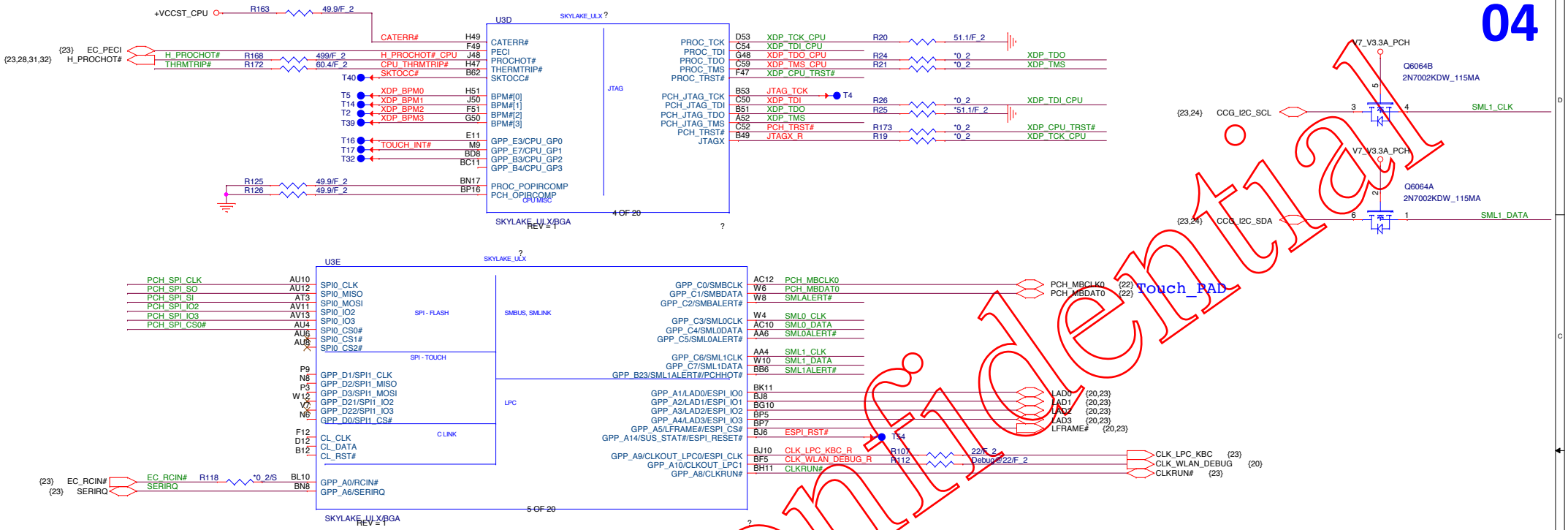


Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: Block Diagram	Rev 1A
Date: Sunday, September 11, 2016	Sheet 1 of 42	

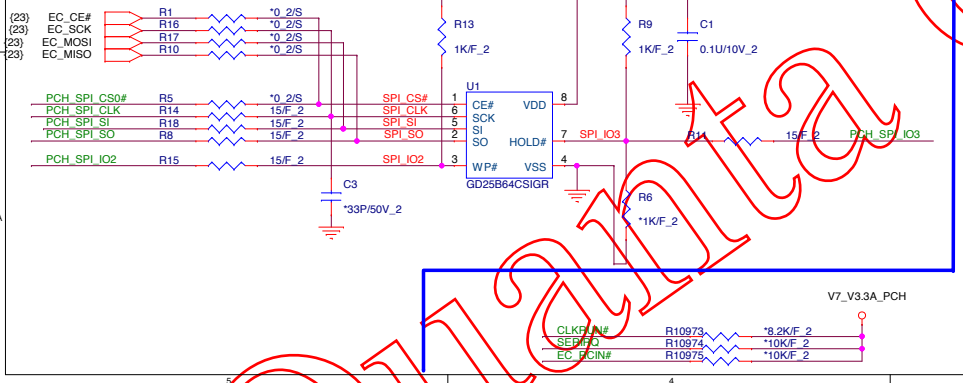


Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: SKL-Y CPU (DDI/EDP)	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 2 of 42	

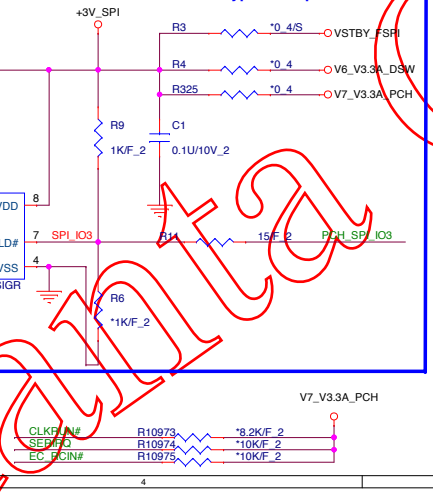
Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: SKL-Y CPU (Memory)	Rev 1A
Date: Sunday, September 11, 2016	Sheet 3 of 42	



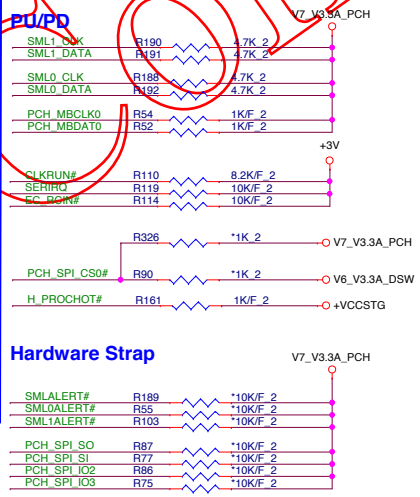
SPI ROM for EC & BIOS



USB Type C adapter

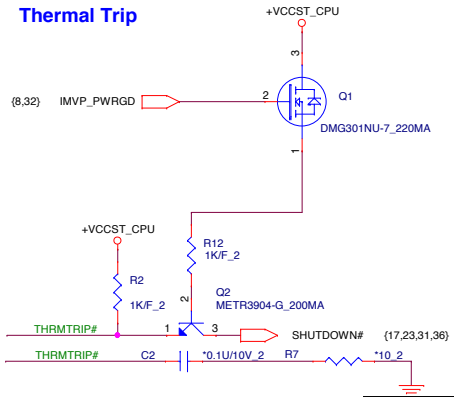


PU/PD



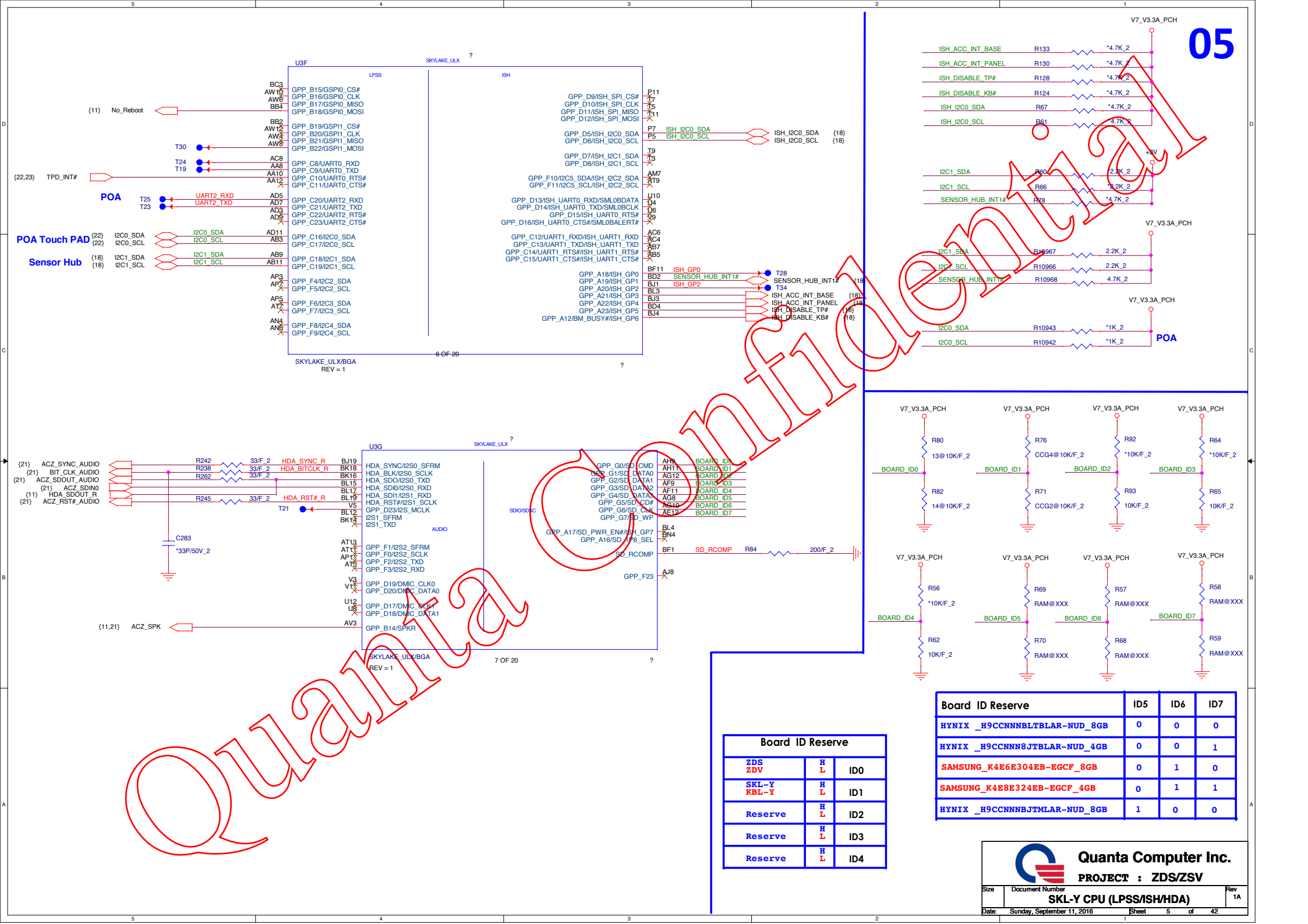
Hardware Strap

Thermal Trip



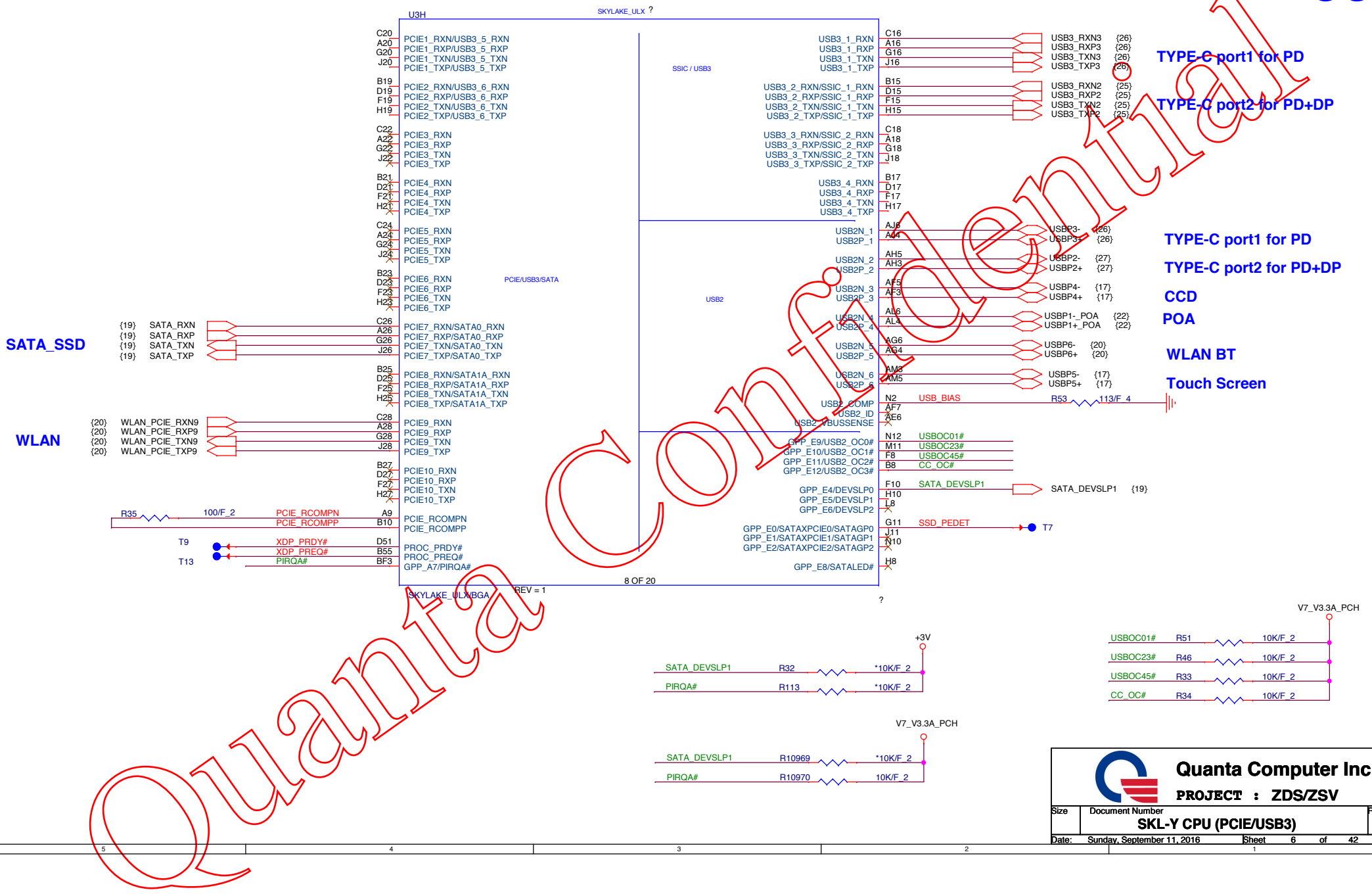
Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: CPU (MISC/JTAG/SMB)	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 4 of 42	

PCH_SPI_CS0#

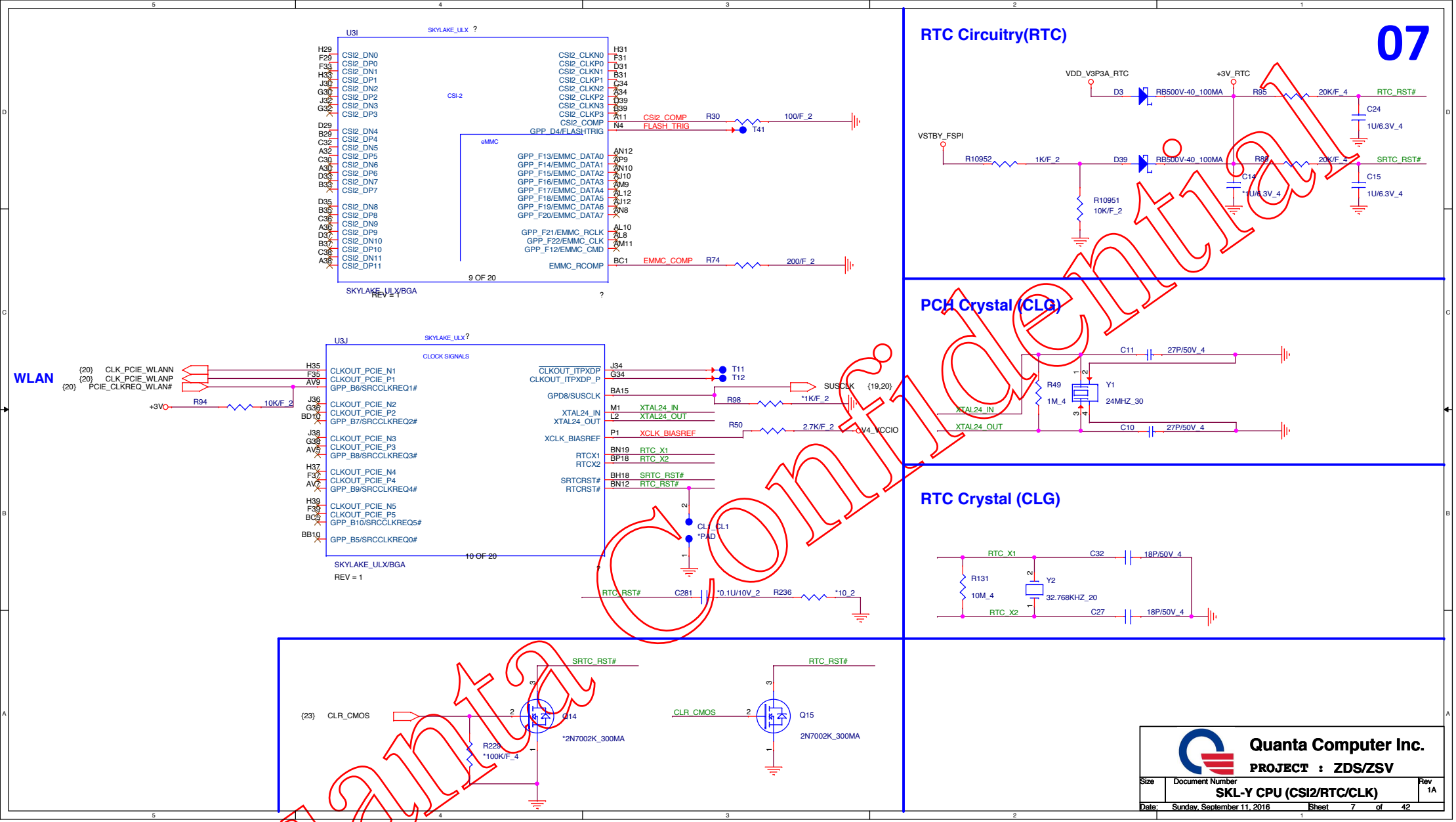


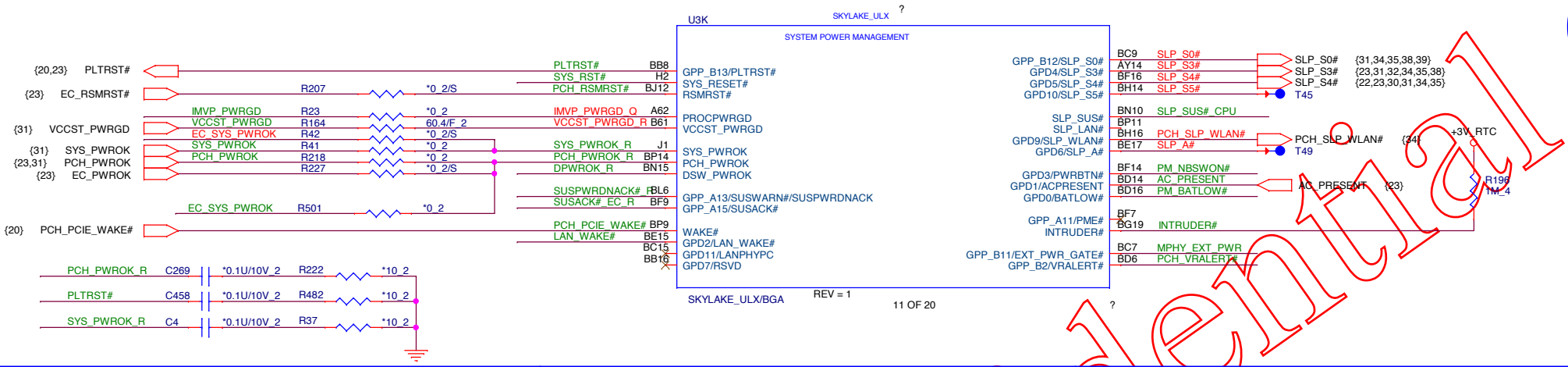
Board ID Reserve	ID5	ID6	ID7
HYNIX _H9CCNNNBLTBLAR-NUD_8GB	0	0	0
HYNIX _H9CCNNN8JTBLAR-NUD_4GB	0	0	1
SAMSUNG_K4E6E304EB-EGCF_8GB	0	1	0
SAMSUNG_K4E8E324EB-EGCF_4GB	0	1	1
HYNIX _H9CCNNNBJTMLAR-NUD_8GB	1	0	0

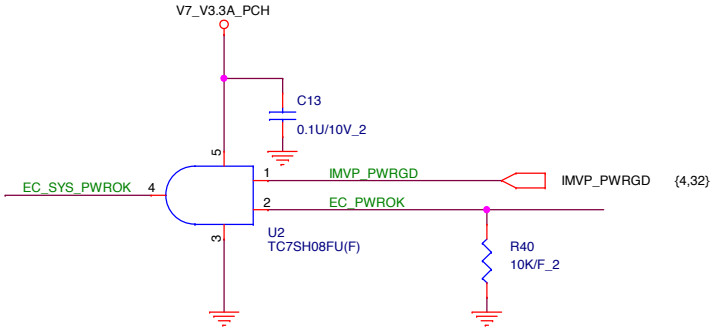
Board ID Reserve		
ZDS ZDV	H L	ID0
SKL-Y KBL-Y	H L	ID1
Reserve	H L	ID2
Reserve	H L	ID3
Reserve	H L	ID4

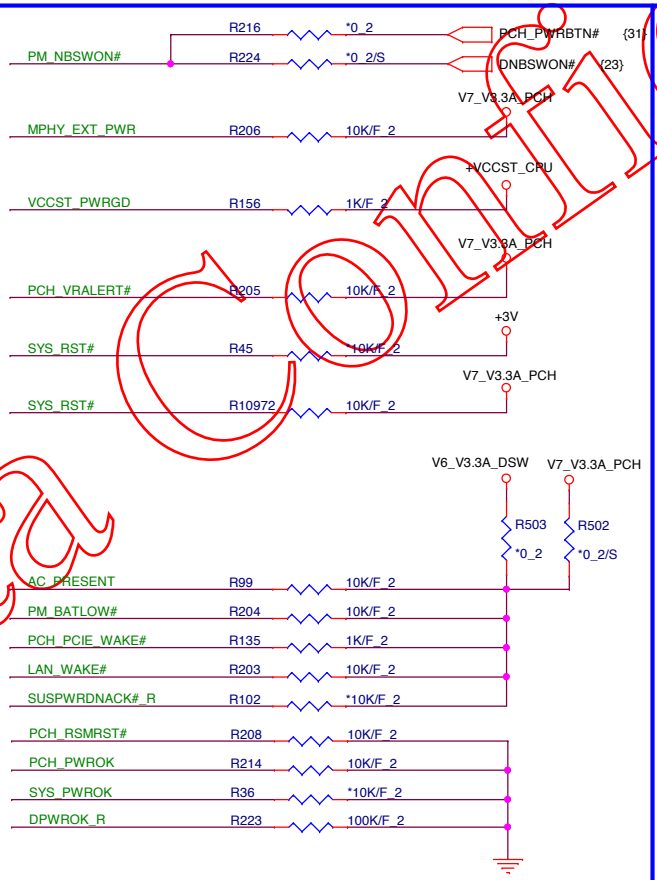


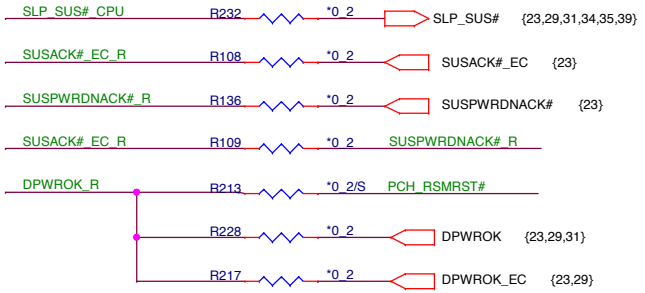
Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: SKL-Y CPU (PCIE/USB3)	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 6 of 42	


RTC Circuitry(RTC)
07
U3I
SKYLAKE_ULX
CSI-2
eMMC
9 OF 20
SKYLAKE_ULX/BGA
REV = 1
U3J
CLOCK SIGNALS
10 OF 20
WLAN
PCH Crystal (CLG)
RTC Crystal (CLG)
VDD_V3P3A_RTC
+3V_RTC
VSTBY_FSPI
RB500V-40_100MA
Y1
24MHZ_30
Y2
32.768KHZ_20
2N7002K_300MA
Quanta Computer Inc.
PROJECT : ZDS/ZSV
SKL-Y CPU (CSI2/RTC/CLK)
Sunday, September 11, 2016
Sheet 7 of 42
Rev 1A
Quanta Confidential

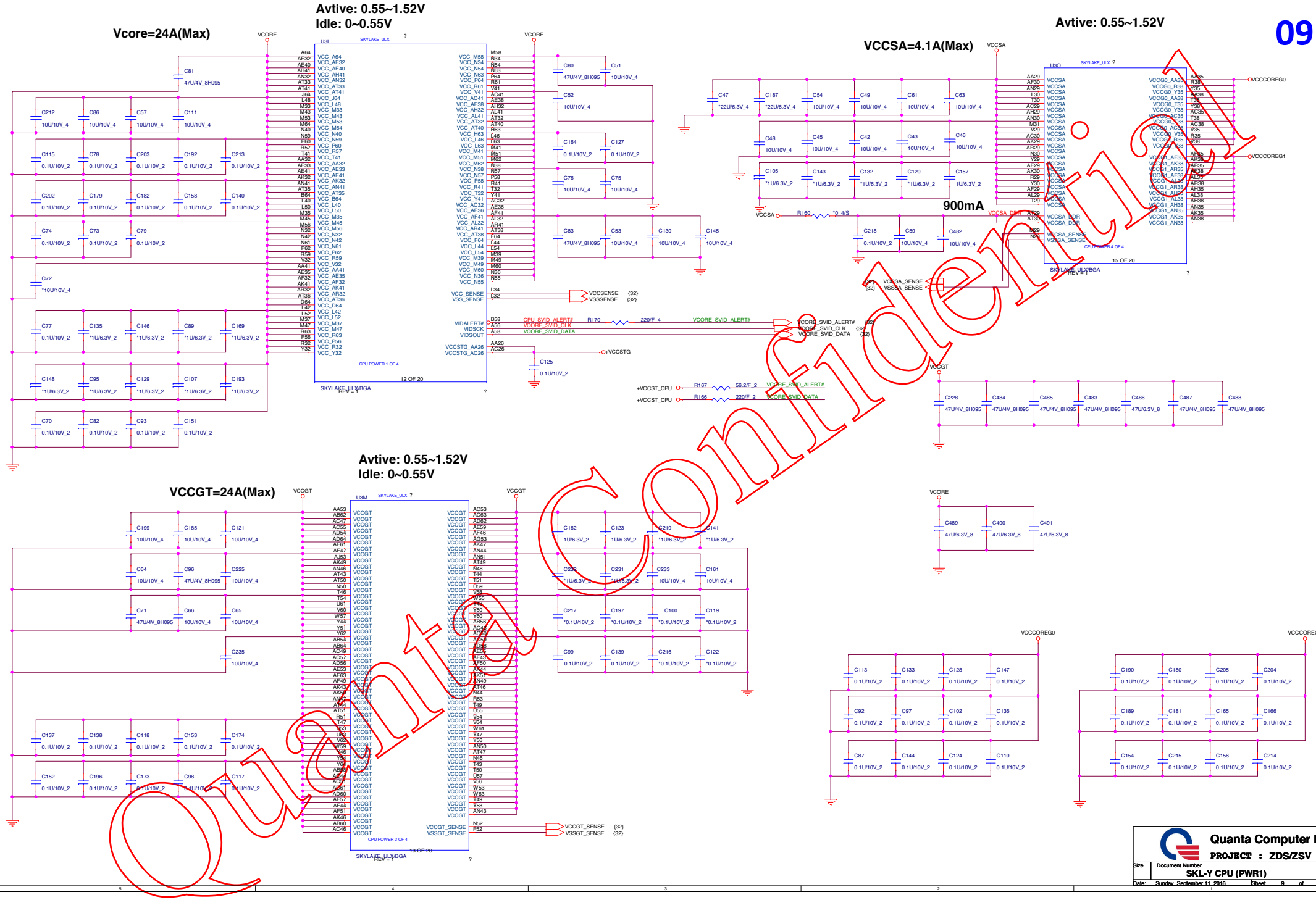


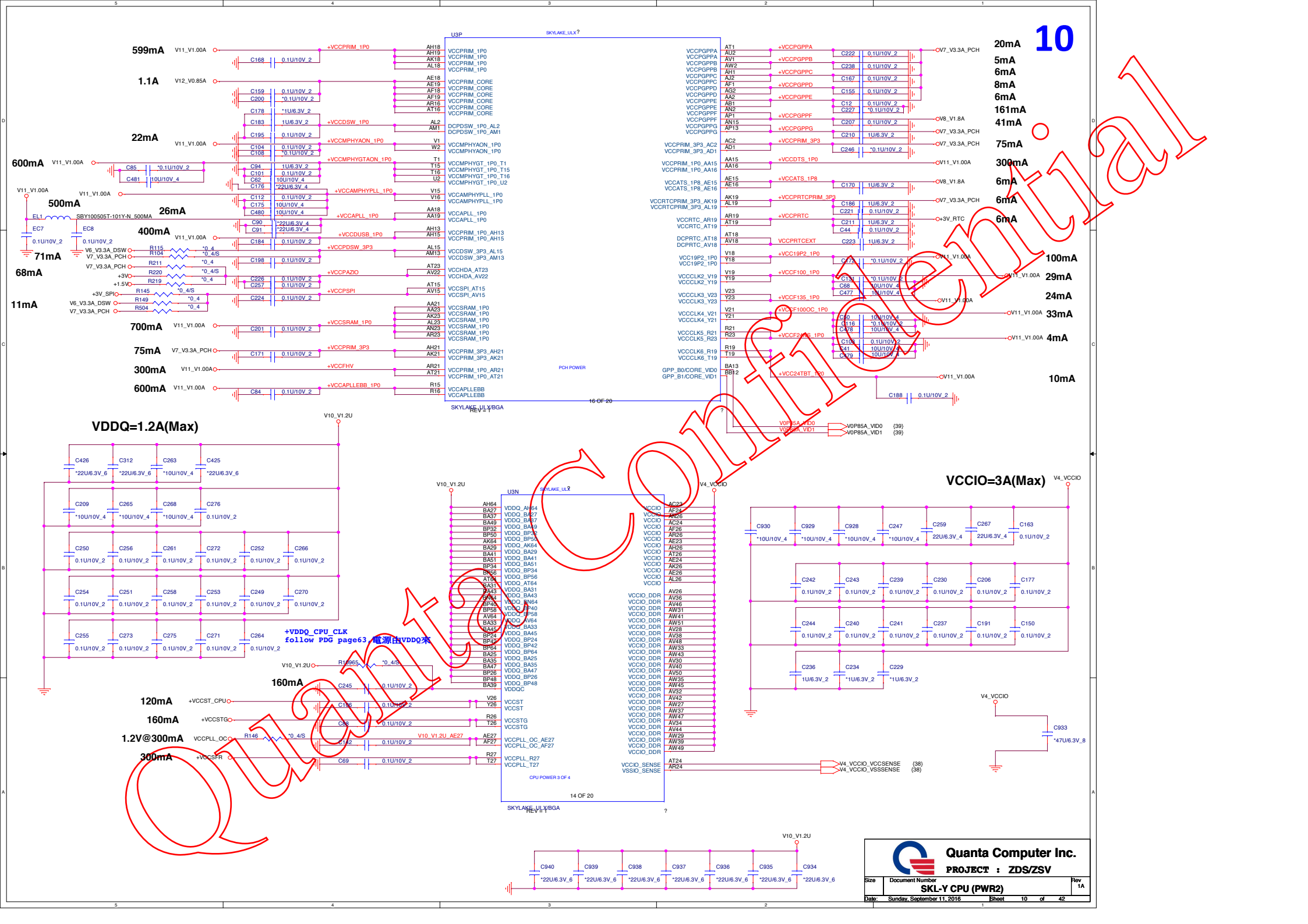


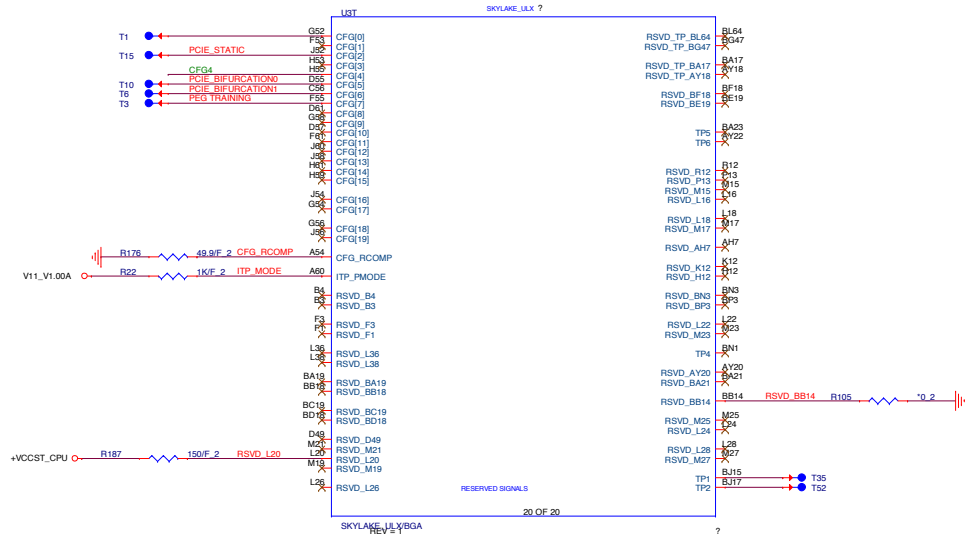




Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: SKL-Y CPU (PWR MANAGE)	Rev 1A
Date: Sunday, September 11, 2016	Sheet 8 of 42	




10
U3P
SKYLAKE_ULX
SKYLAKE_ULX/BGA
REV = 1
16 OF 20
PCH POWER
599mA
1.1A
22mA
600mA
500mA
26mA
400mA
71mA
68mA
11mA
700mA
75mA
300mA
600mA
20mA
5mA
6mA
8mA
6mA
161mA
41mA
75mA
300mA
6mA
6mA
6mA
100mA
29mA
24mA
33mA
4mA
10mA
VDDQ=1.2A(Max)
+VDDQ_CPU_CLK
follow PDG page63 , 電源由VDDQ來
U3N
CPU POWER 3 OF 4
14 OF 20
160mA
120mA
160mA
1.2V@300mA
300mA
VCCIO=3A(Max)
Quanta Computer Inc.
PROJECT : ZDS/ZSV
SKL-Y CPU (PWR2)
Size
Document Number
Rev
1A
Date: Sunday, September 11, 2016
Sheet 10 of 42



Processor Strapping

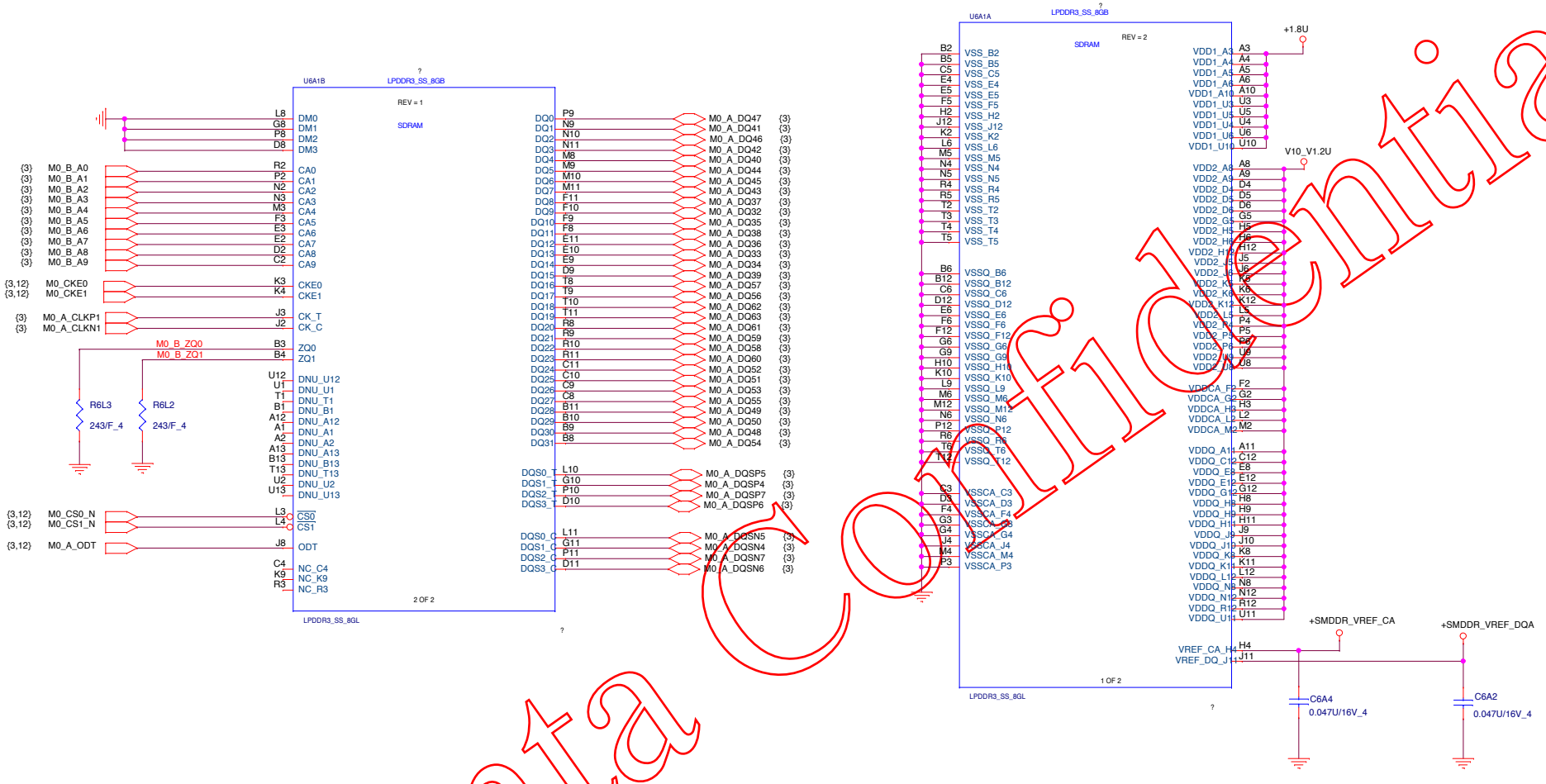
Pin Name	Strap description	Configuration	Note
CFG[0]	Stall reset sequence after PCU PLL lock until de-asserted	**1 = *Normal Operation** 0 = Stall	
CFG[1]	Reserved Configuration lane		
CFG[2]	PCI Express* Static x16 Lane Numbering Reversal	**1 = *Normal Operation** 0 = Lan number reversed	
CFG[3]	Reserved Configuration lane		
CFG[4]	eDP enable	1 = Disabled **0 = Enabled**	CFG4 R183 1K/F_2
CFG[6:5]	PCI Express* Bifunction	00 = 1x8, 2x4 PCI Express 01 = reserved 10 = 2x8 PCI Express* **11 = 1x16 PCI Express***	
CFG[7]	PEG Training	**1 = *PEG Train immediatedly follow RESET# de-assertion** 0 = PEG wait for BIOS for training	
CFG[19:8]	Reserved Configuration lane		
SPKR / GPP_B14	Top-Block Swap Override	1 = Enable **0 = Disable**	{5,21} ACZ_SPK R83 *1K_2 +3V
GSPI0_MOSI /GPP_B18	No Reboot	1 = Enable **0 = Disable**	{5} No_Reboot R97 *1K_2 +3V
SMBALERT# /GPP_C2	eSPI or LPC	1 = Enable **0 = Disable**	Reserve Pull-high on Page.4
Boot BIOS Strap Bit /GPP_B22	Boot BIOS Strap Bit (BBS)	1 = LPC **0 = SPI**	default:SPI
SML0ALERT# / GPP_C5	eSPI or LPC	1 = eSPI **0 = LPC**	Reserve Pull-high on Page.4(default:LPC)
SML1ALERT# / PCHHOT# GPP_B23			Reserve Pull-high on Page.6
GSPI0_MOSI			Reserve Pull-high on Page.4
SPI0_MISO			Reserve Pull-high on Page.4
SPI0_IO2			Reserve Pull-high on Page.4
SPI0_IO3			Reserve Pull-high on Page.4
HDA_SDO/ I2S_TXD0	Flash Descriptor Security Override	1 = Disable **0 = Enable**	{5} HDA_SDOUT_R R244 1K/F_2 ME_WR# {23}
DDPB_CTRLDATA / GPP_E19	Port B Detected	1 = Enable **0 = Disable**	Already Pull-high on Page.2
DDPC_CTRLDATA / GPP_E21	Port C Detected	1 = Enable **0 = Disable**	Reserve Pull-high on Page.2

Quanta Computer Inc.
PROJECT : ZDS/ZSV
Size | Document Number: SKL-Y CPU (VSS/CFG/RSVD) | Rev 1A
Date: Sunday, September 11, 2016 | Sheet 11 of 42

LPDDR3 MEMORY CHANNEL A-1

Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: LPDDR3 (CHA)	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 12 of 42	

LPDDR3 MEMORY CHANNEL A-2

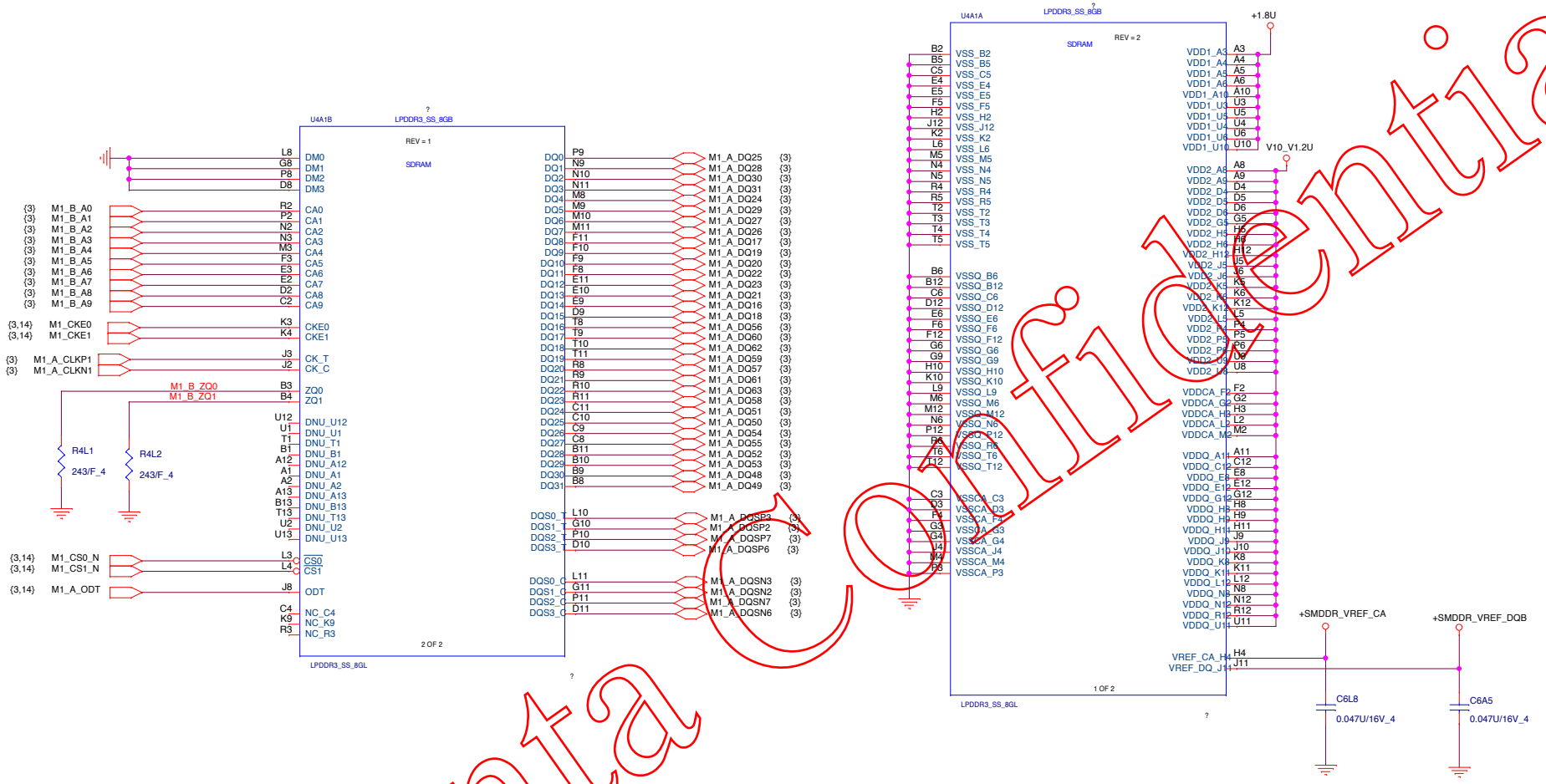


Quanta Computer Inc.	
PROJECT : ZDS/ZSV	
Size	Document Number: LPDDR3 (CHA)-2 — Rev: 1A
Date: Sunday, September 11, 2016	Sheet 13 of 42

LPDDR3 MEMORY CHANNEL B-1

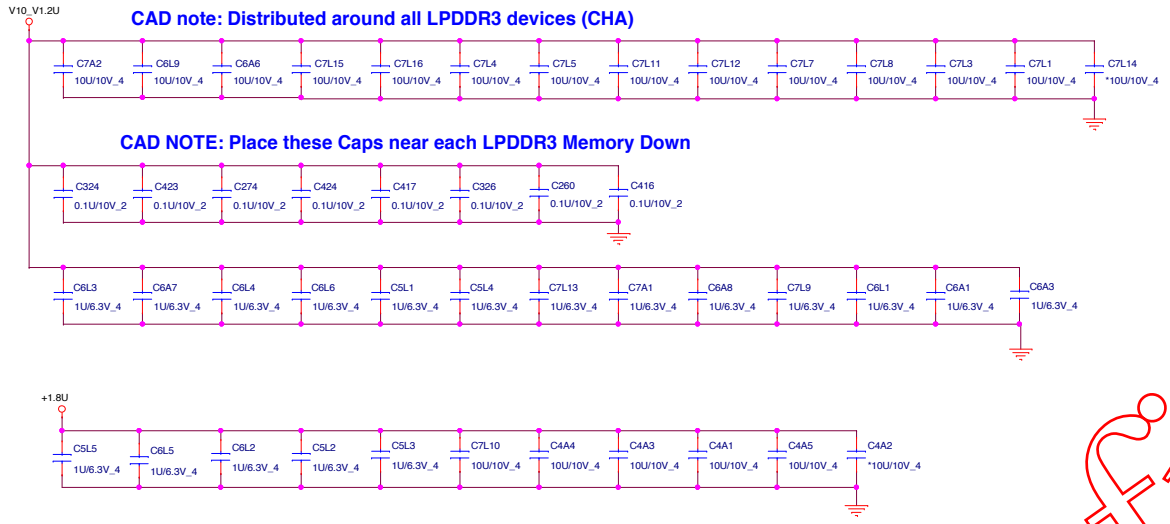
Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: LPDDR3 (CHB)-1	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 14 of 42	

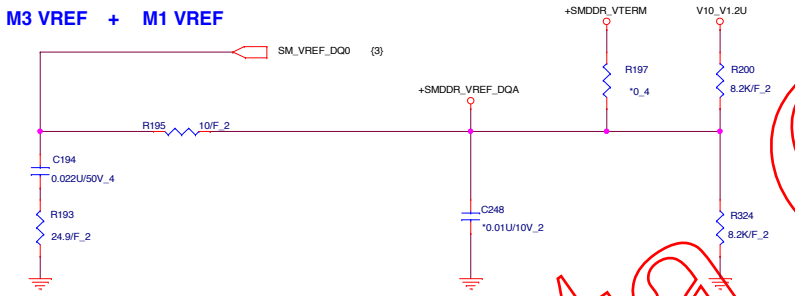
LPDDR3 MEMORY CHANNEL B-1

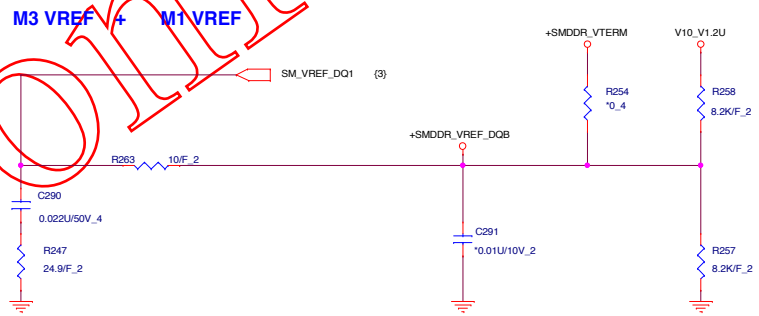


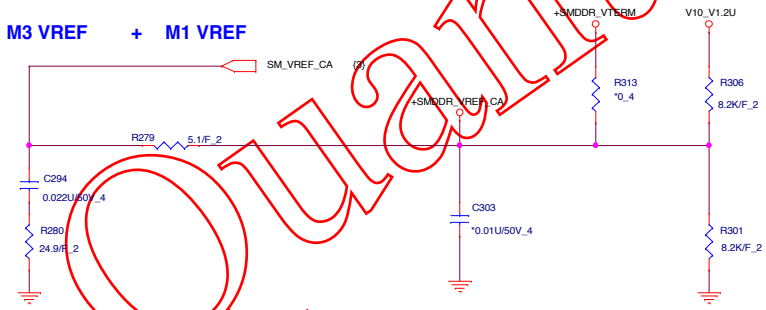
Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: LPDDR3 (CHB)-2	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 15 of 42	

DE-CAPS FOR MEMORY CHANNEL A/B





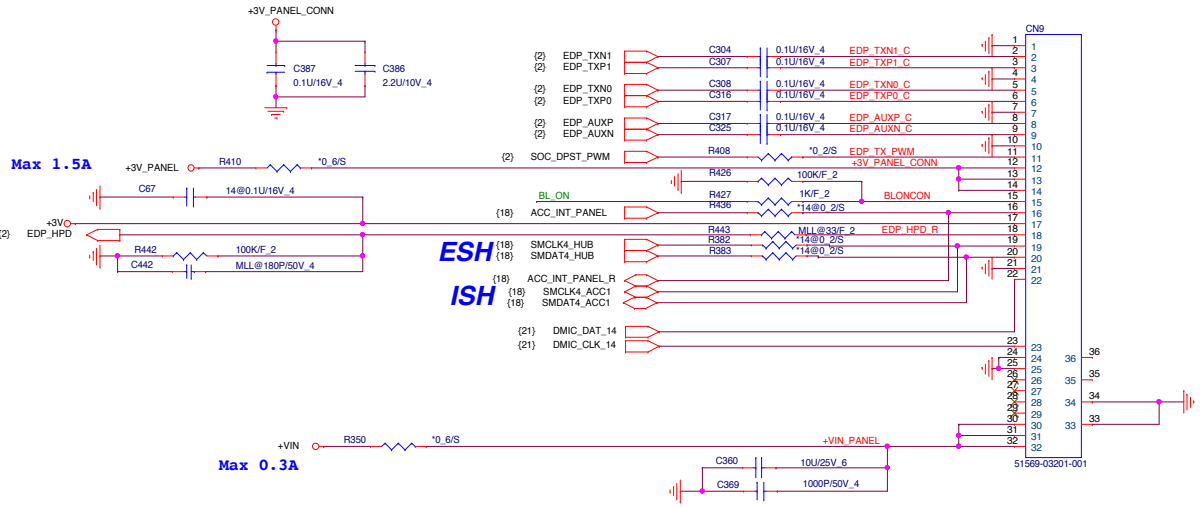




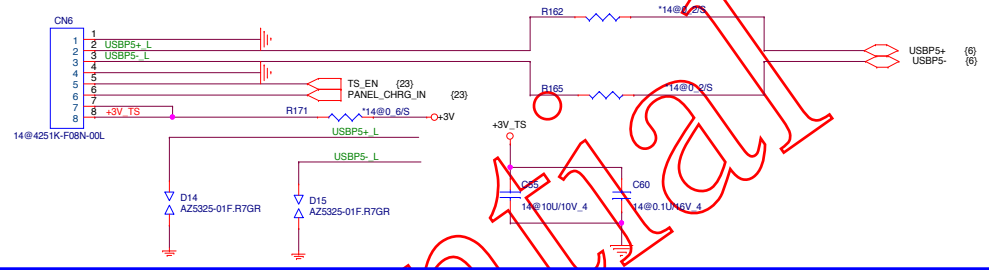
Quanta Computer Inc.
PROJECT : ZDS/ZSV

Size	Document Number	Rev
	LPDDR3 (CAP,REF)	1A
Date: Sunday, September 11, 2016	Sheet 16 of 42	

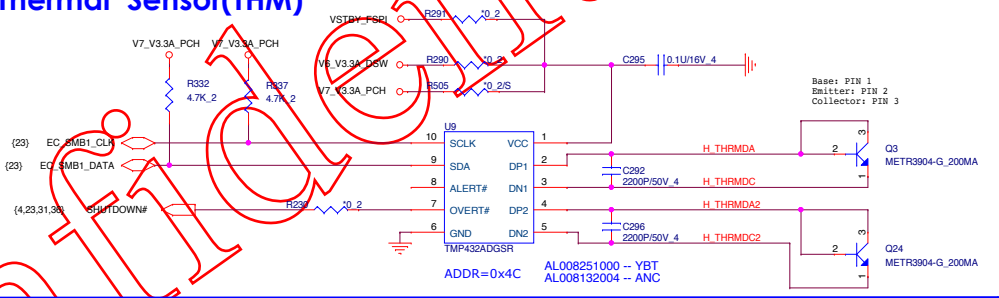
eDP/Camera Panel Conn.



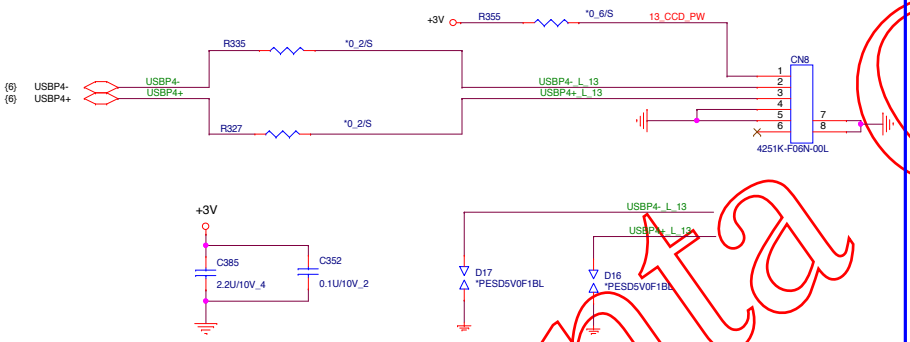
Touch Screen on DB



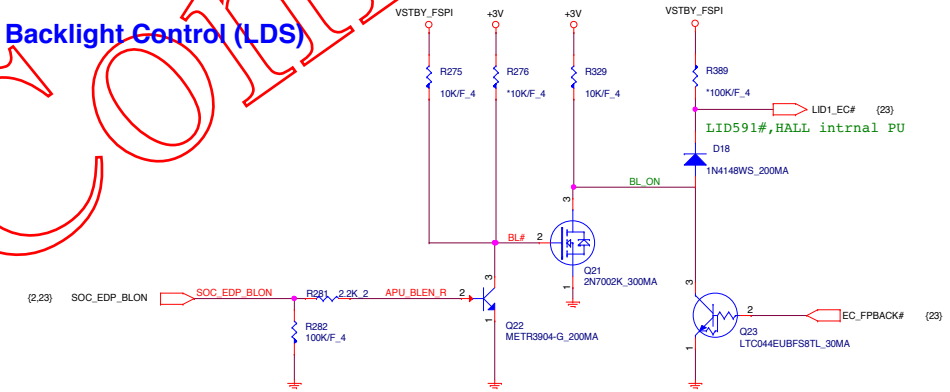
Thermal Sensor(THM)



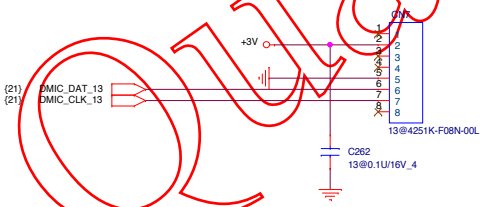
CCD



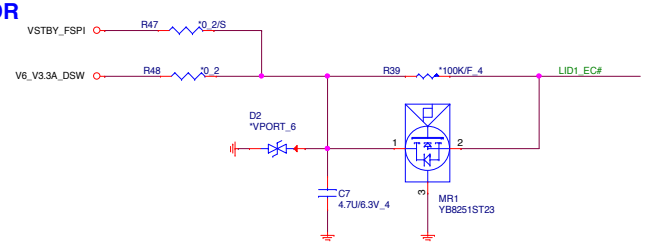
Backlight Control (LDS)



13" Daul MIC



LID1 SENSOR

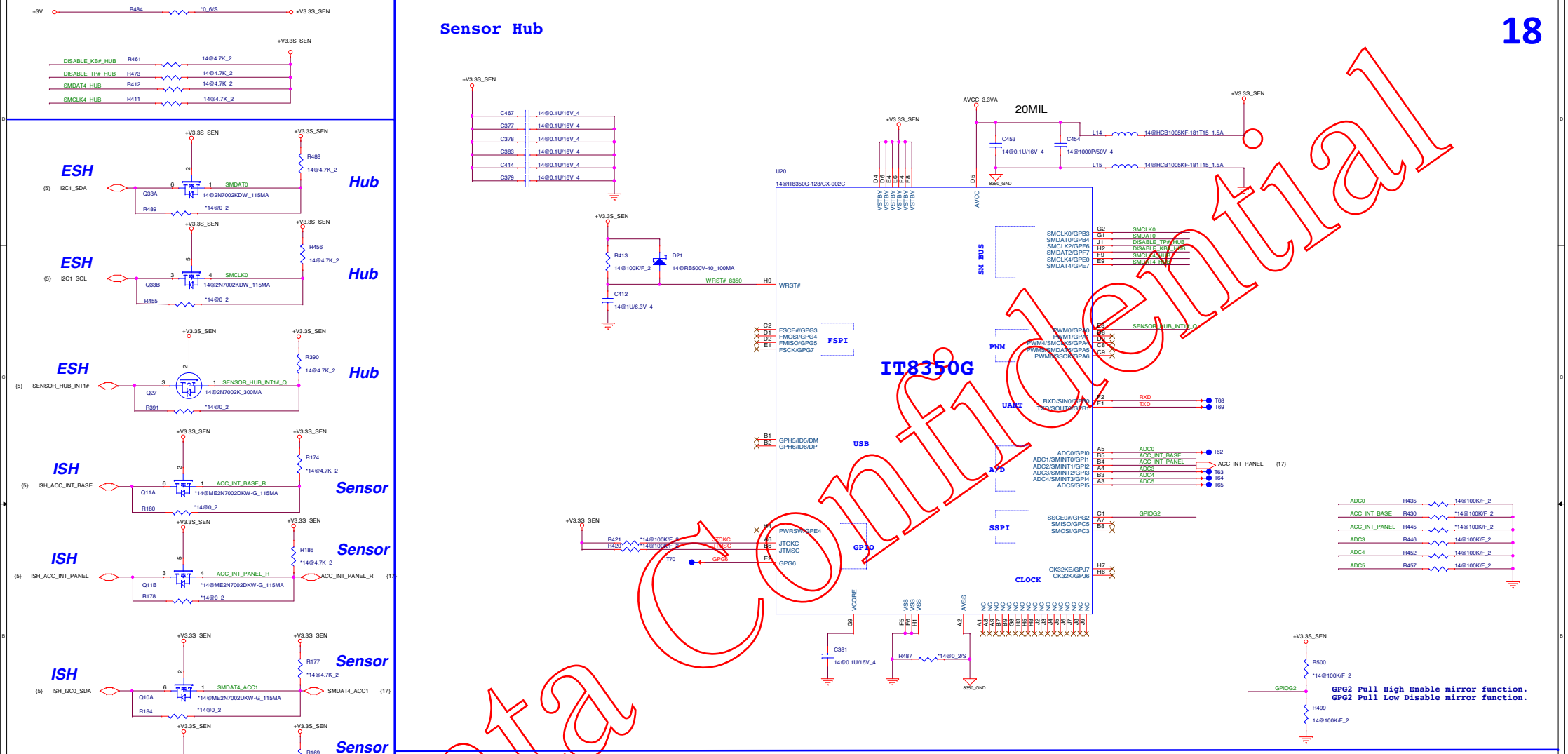


Quanta Computer Inc.
PROJECT : ZDS/ZSV

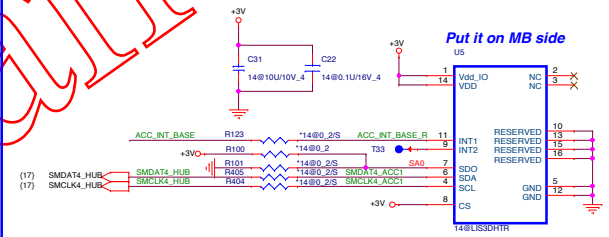
Size	Document Number	Rev
	eDP / Camera	1A

Date: Sunday, September 11, 2016 Sheet 17 of 42

Sensor Hub



Accelerometer Sensor on MB

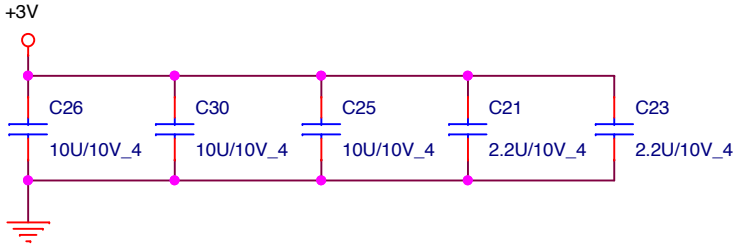


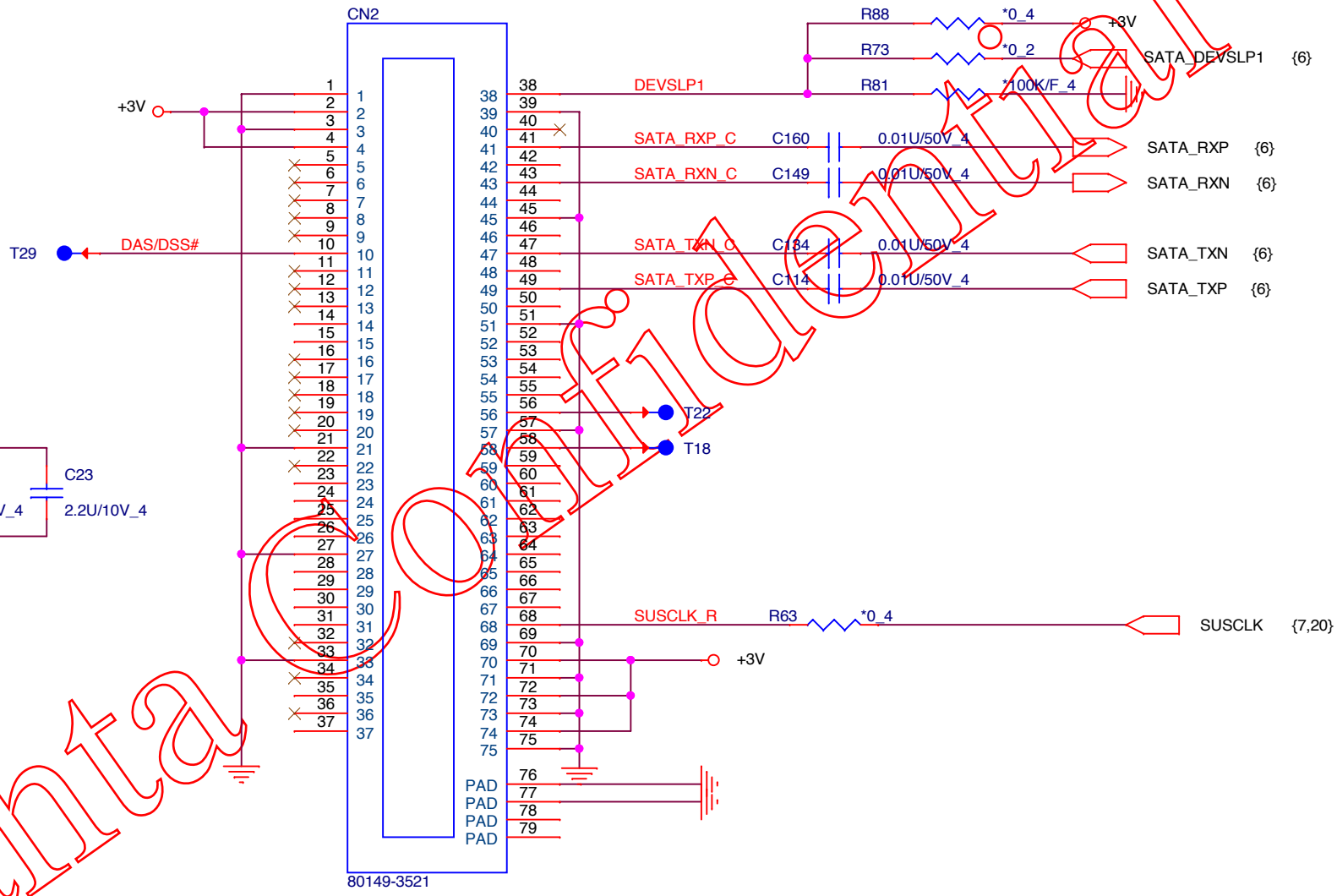
Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: Button	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 18 of 42	

CONN: B KEY
MODULE: B KEY

Func.	CPU TX	CPU RX
PCIE2	0.1uF	0ohm
PCIE3	0.22uF	0ohm
SATA	0.01uF	0.01uF
PCIE2/SATA	0.1uF	0ohm
PCIE3/SATA	0.22uF	0ohm

2.8A(Max)





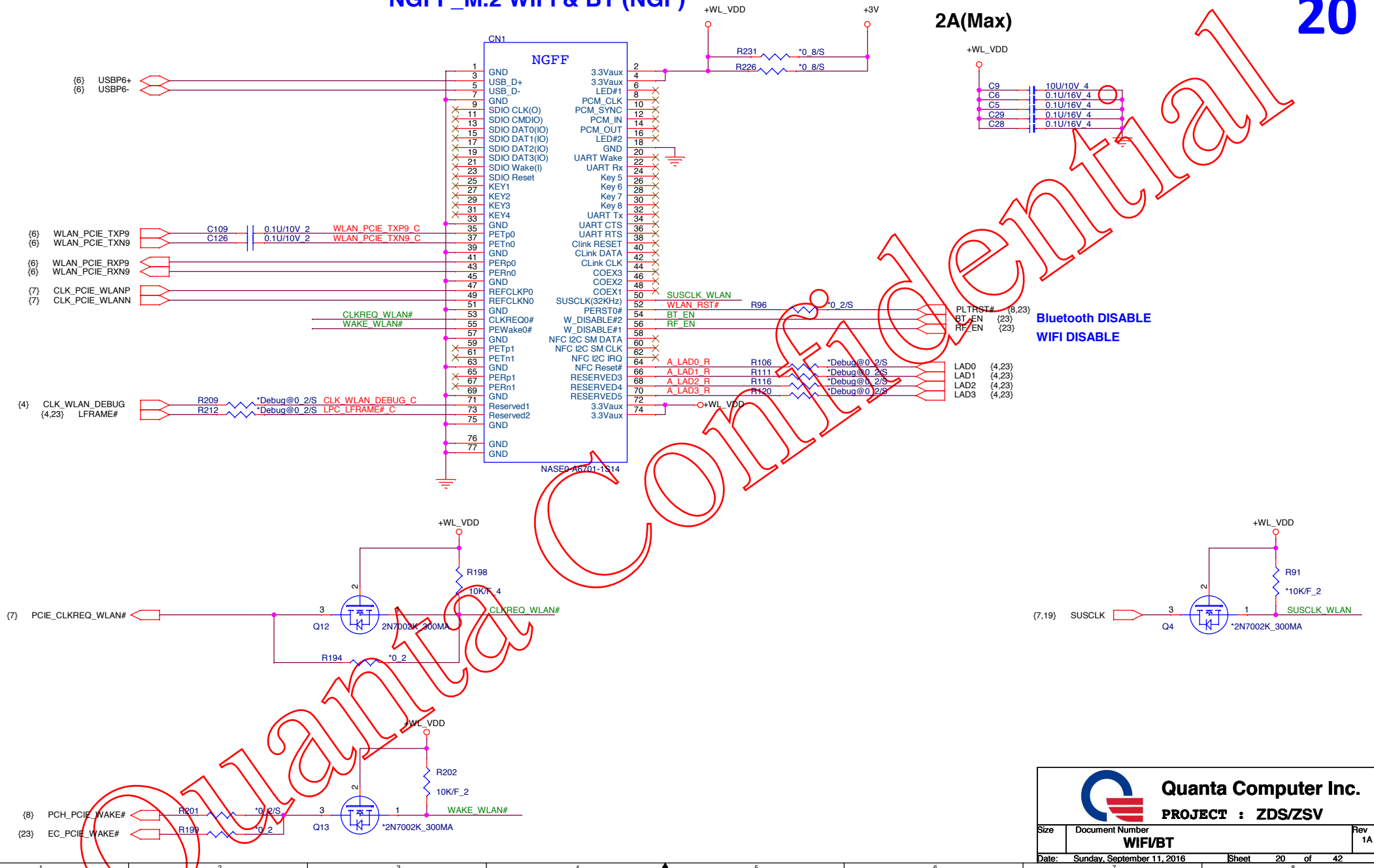
Quanta Computer Inc.

PROJECT : ZDS/ZSV

Size	Document Number	Rev
	SSD (NGFF CONN)	1A
Date: Sunday, September 11, 2016	Sheet 19 of 42	

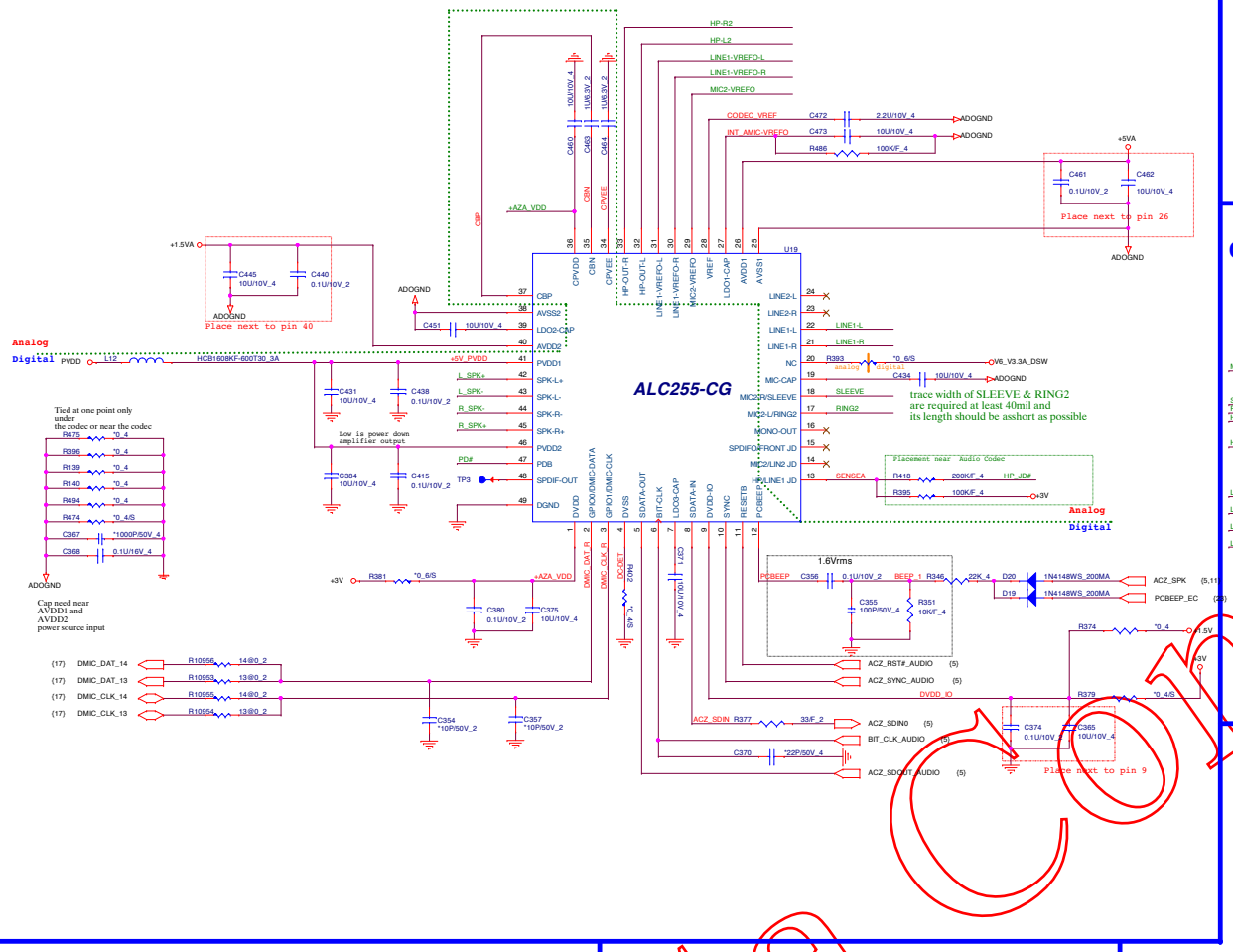
NGFF_M.2 WiFi & BT (NGF)

2A(Max)

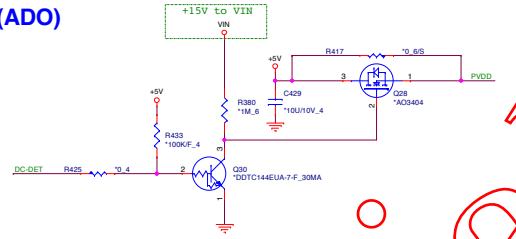


Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: WIFI/BT	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 20 of 42	

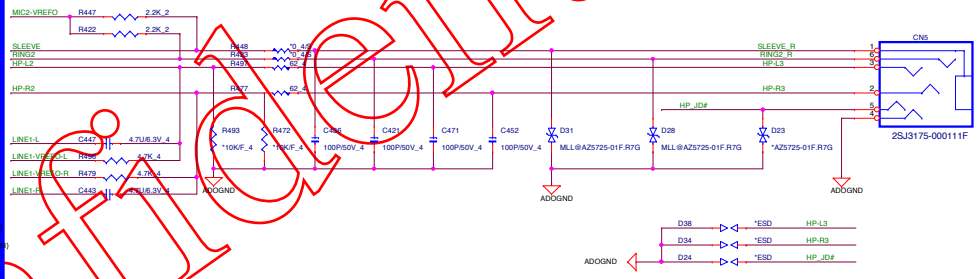
Codec(ADO)



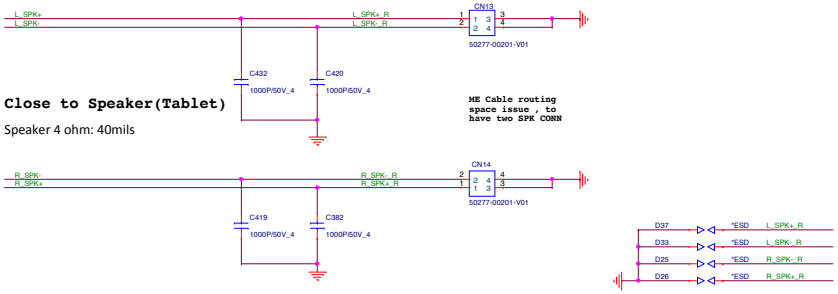
DC-DET circuit(ADO)



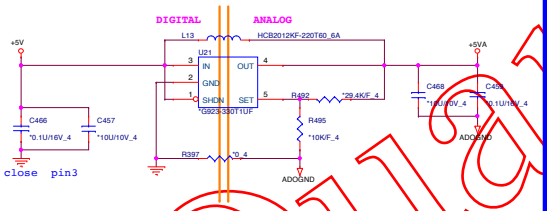
CTIA JACK (ADO)



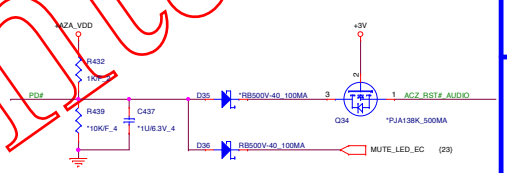
Internal Speaker(ADO)



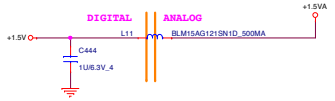
Codec PWR 5V(ADO)



Mute(ADO)



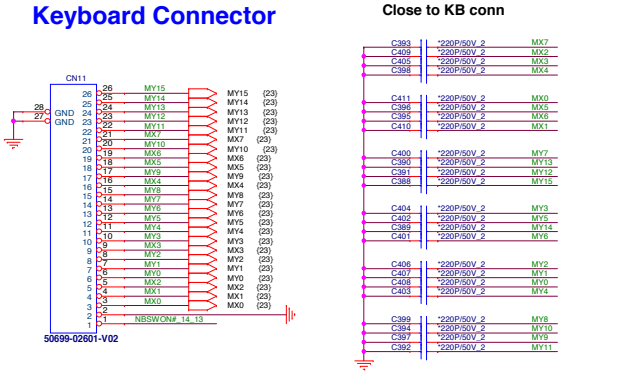
Codec PWR 1.5V(ADO)



Quanta Computer Inc.
PROJECT : ZDS/ZSV
Size | Document Number: AUDIO CODEC_CX20724 | Rev: 1A
Date: Sunday, September 11, 2016 | Sheet 21 of 42

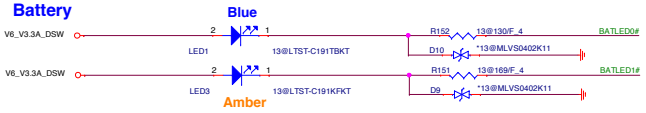
Keyboard Connector

Close to KB conn



13" LED

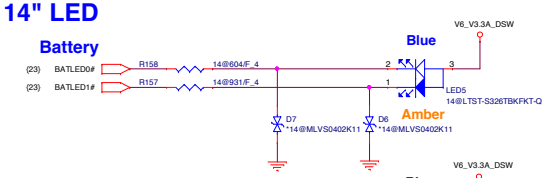
Battery



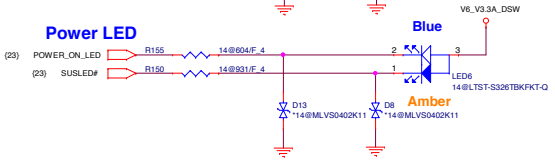
Power LED

14" LED

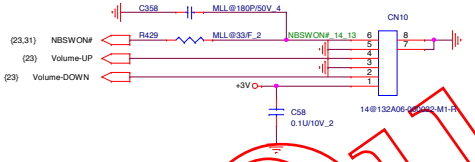
Battery



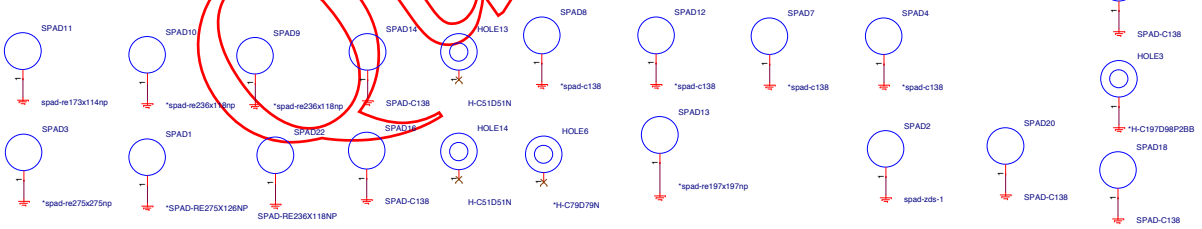
Power LED



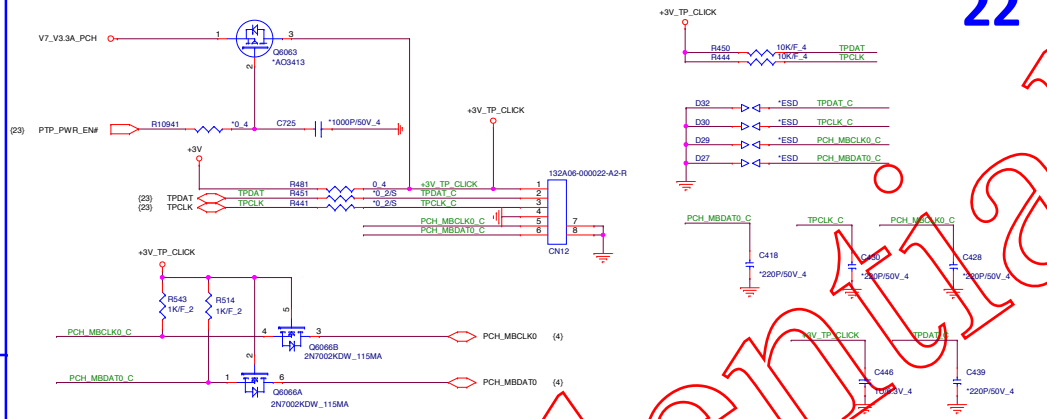
Switch Board Connector



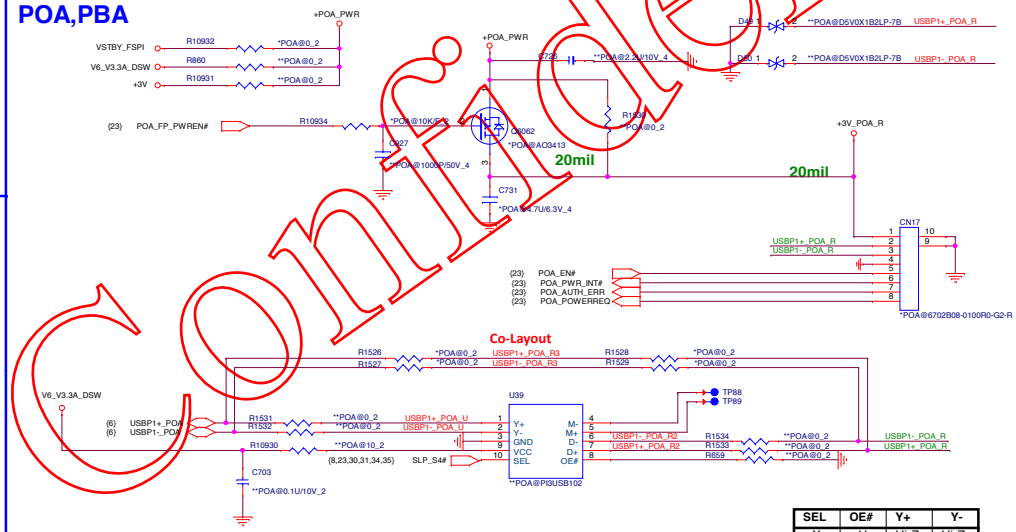
HOLE



Touch Pad Connector

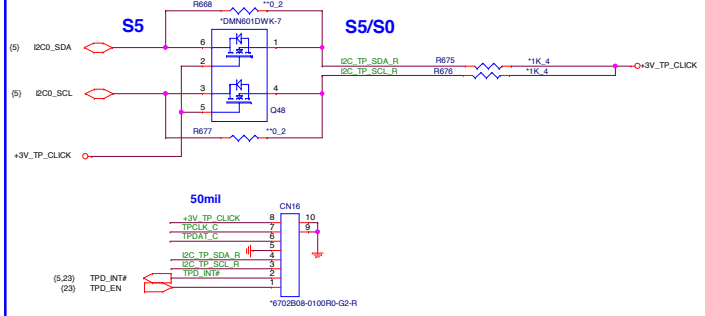


POA,PBA

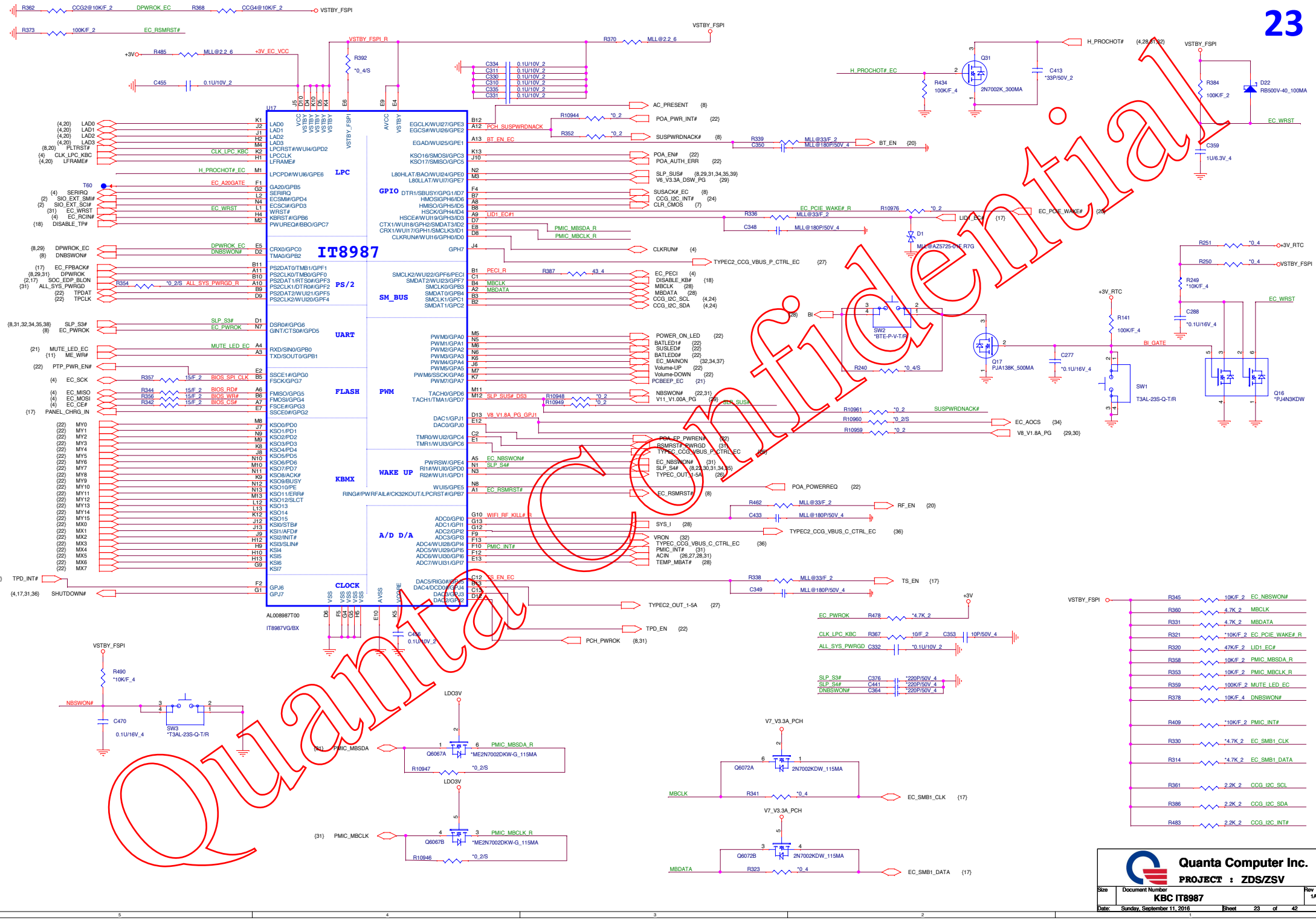


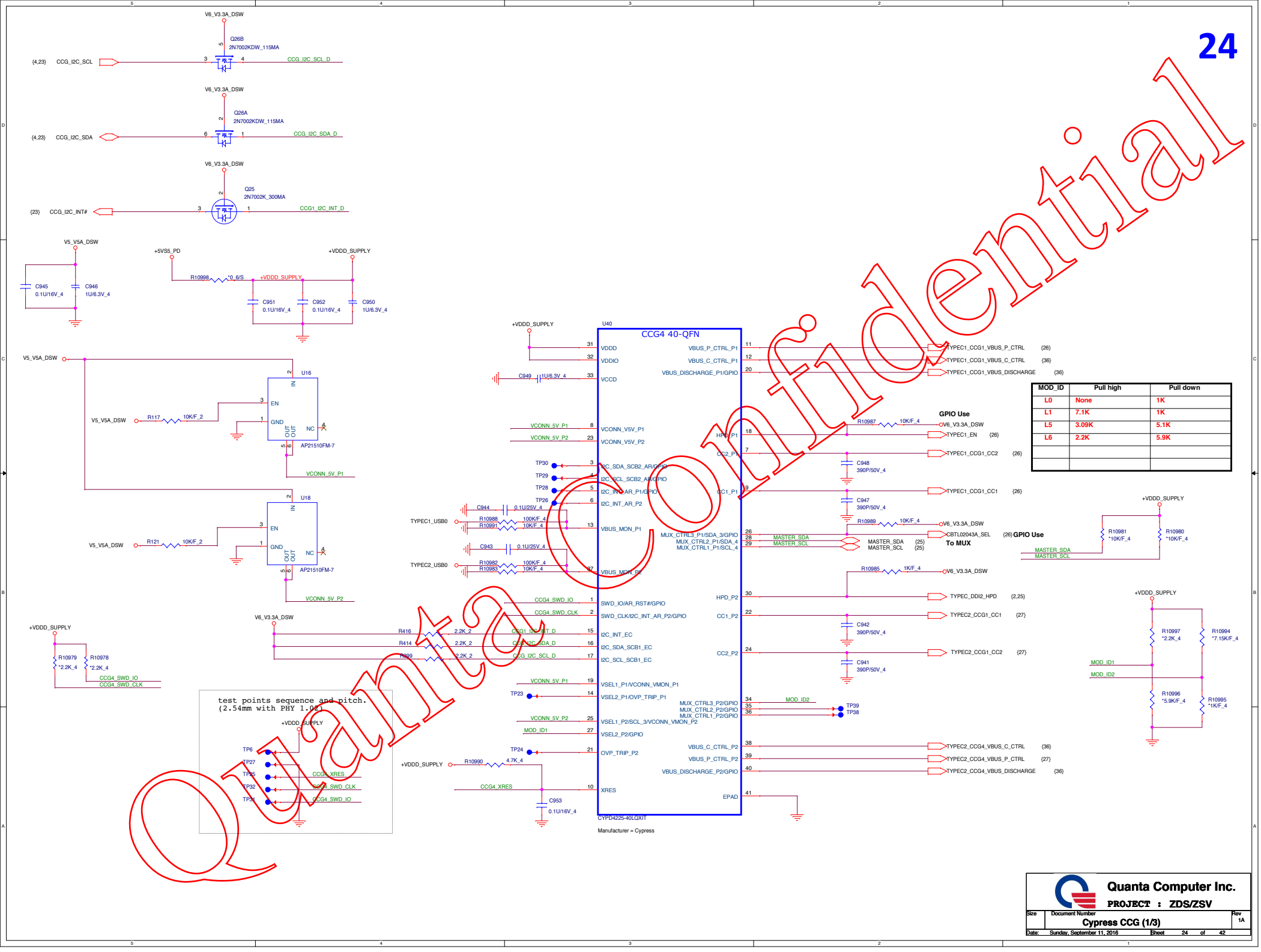
SEL	OE#	Y+	Y-
X	H	Hi-Z	Hi-Z
L	L	M+	M-
H	L	D+	D-

Spec define: High Active



Quanta Computer Inc.
PROJECT : ZDS/ZSV
Size | Document Number | Rev
KB/TP/THERMAL/LID | 1A
Date: Sunday, September 11, 2016 | Sheet 22 of 42

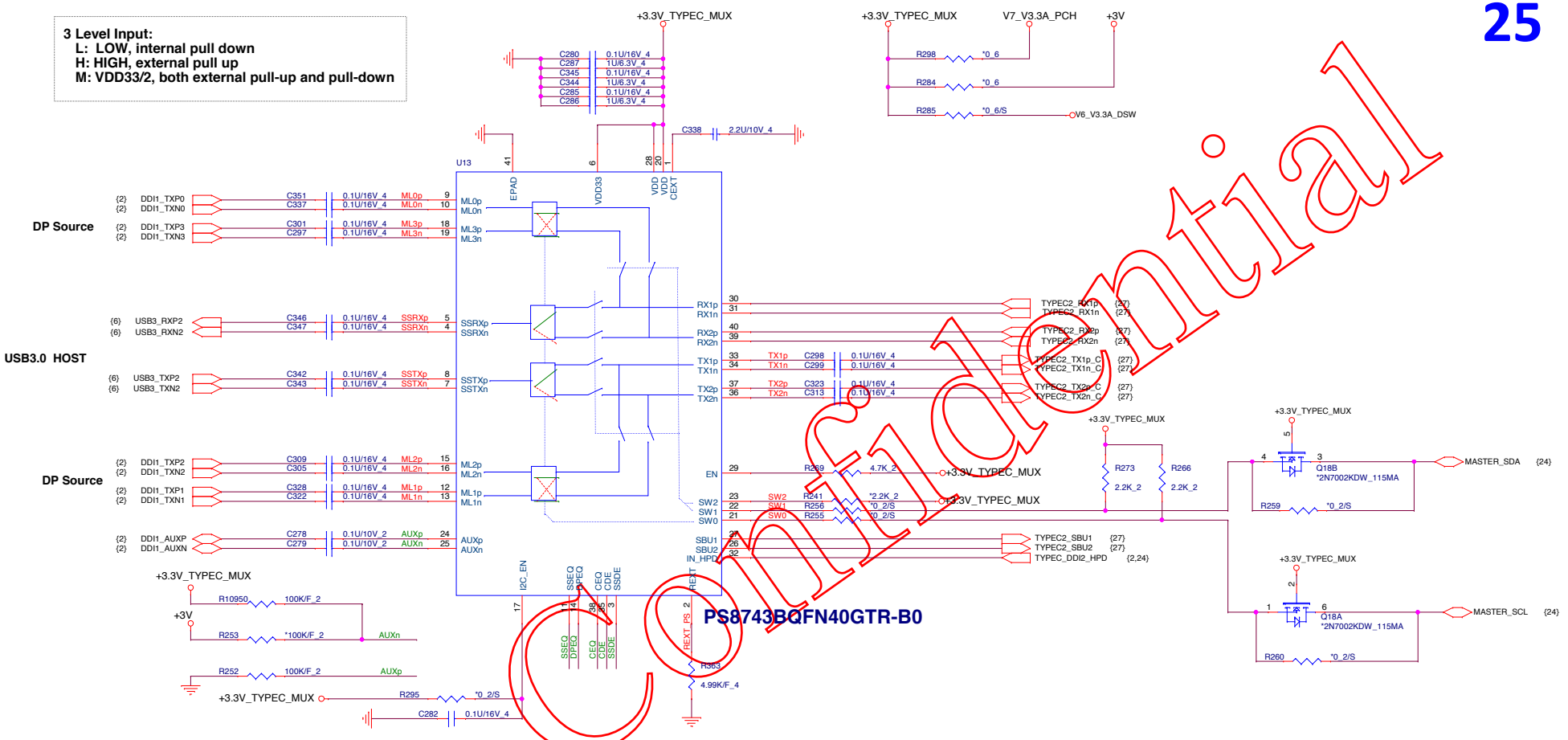


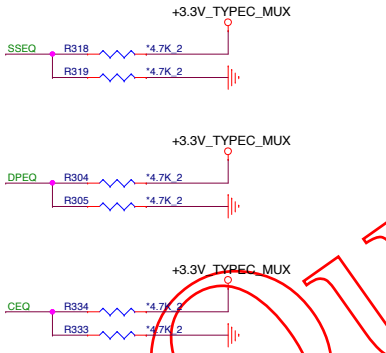


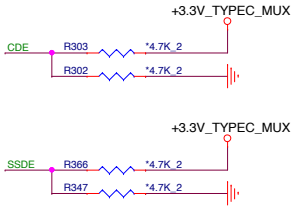
MOD_ID	Pull high	Pull down
L0	None	1K
L1	7.1K	1K
L5	3.09K	5.1K
L6	2.2K	5.9K

Quanta Computer Inc.
PROJECT : ZDS/ZSV
Size | Document Number: Cypress CCG (1/3) | Rev 1A
Date: Sunday, September 11, 2016 | Sheet 24 of 42

3 Level Input:
L: LOW, internal pull down
H: HIGH, external pull up
M: VDD33/2, both external pull-up and pull-down



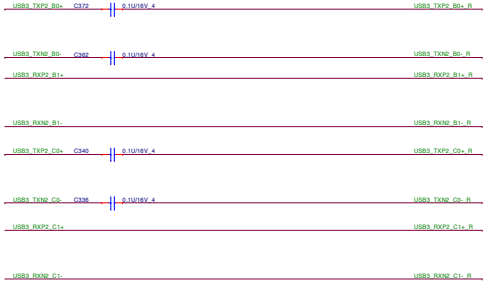




Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number	Rev
	PS8740B Pin Control (2/3)	1A
Date: Sunday, September 11, 2016	Sheet 25 of 42	

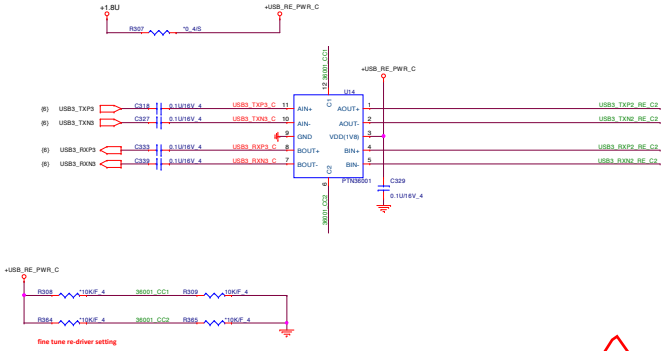
USB2.0 ESD

Type C1_HSIO_ ESD

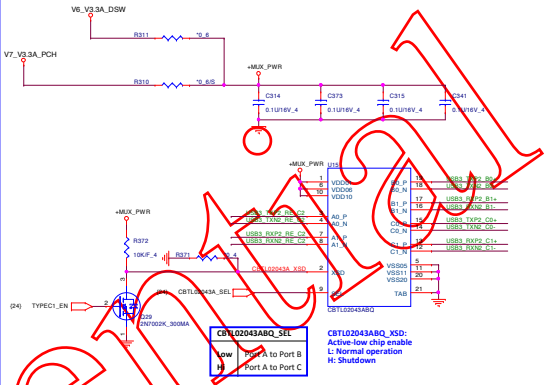


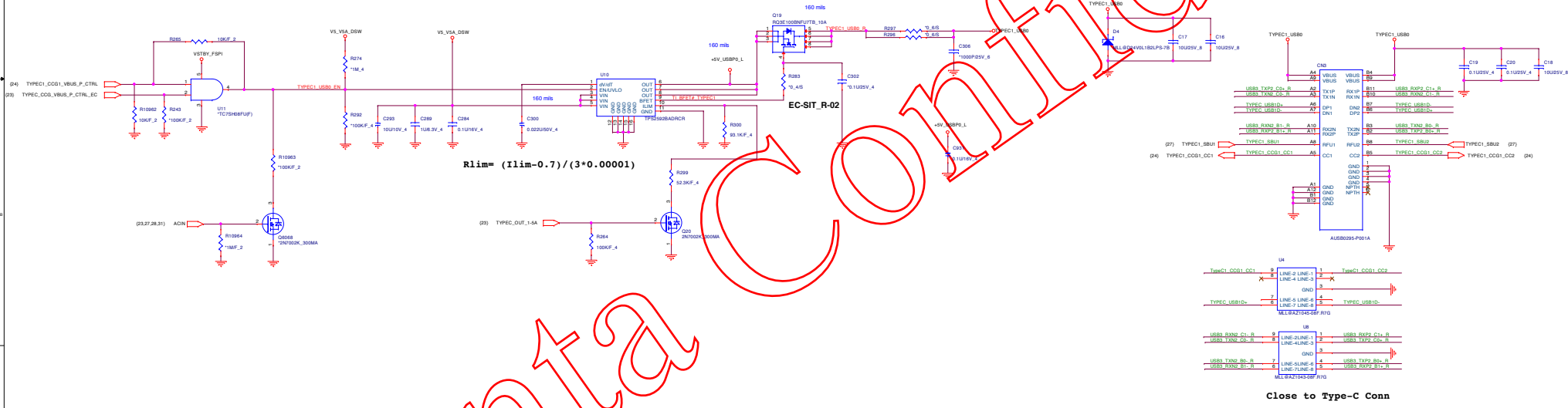
USB Type C (UTC)

USB 3.0 redriver



Type-C MUX





Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number	Rev
	USB TYPE-C (3/3)	1A
Date: Sunday, September 11, 2016	Sheet 26 of 42	

USB2.0 ESD

{6} USBP2+ → TYPEC_USB2D+
{6} USBP2- → TYPEC_USB2D-

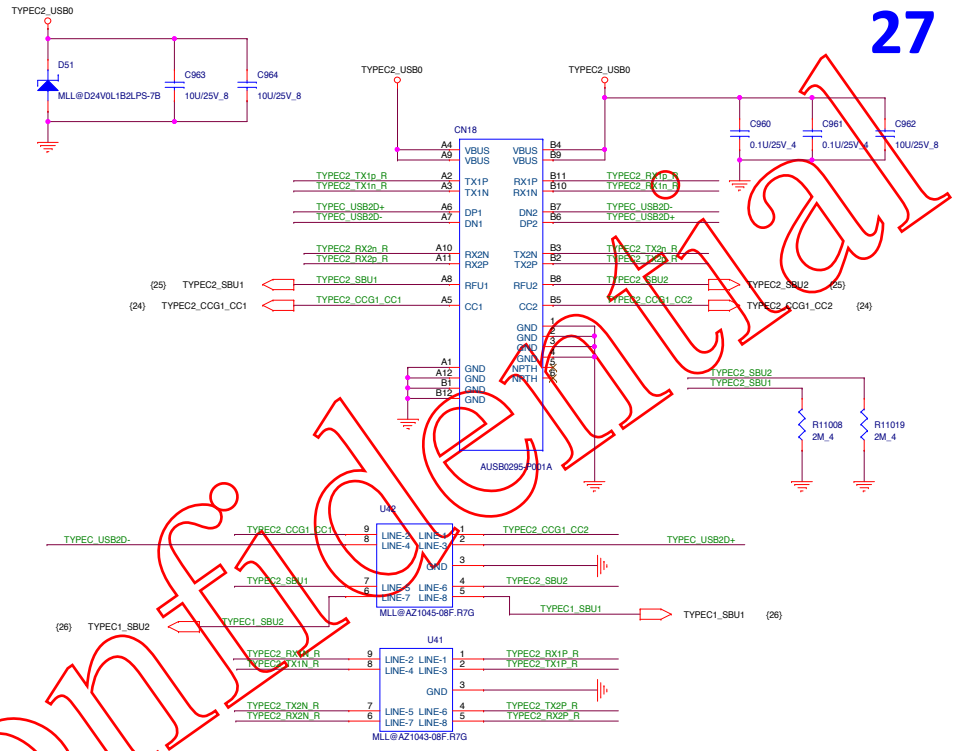
TYPE-C_HSIO_ ESD

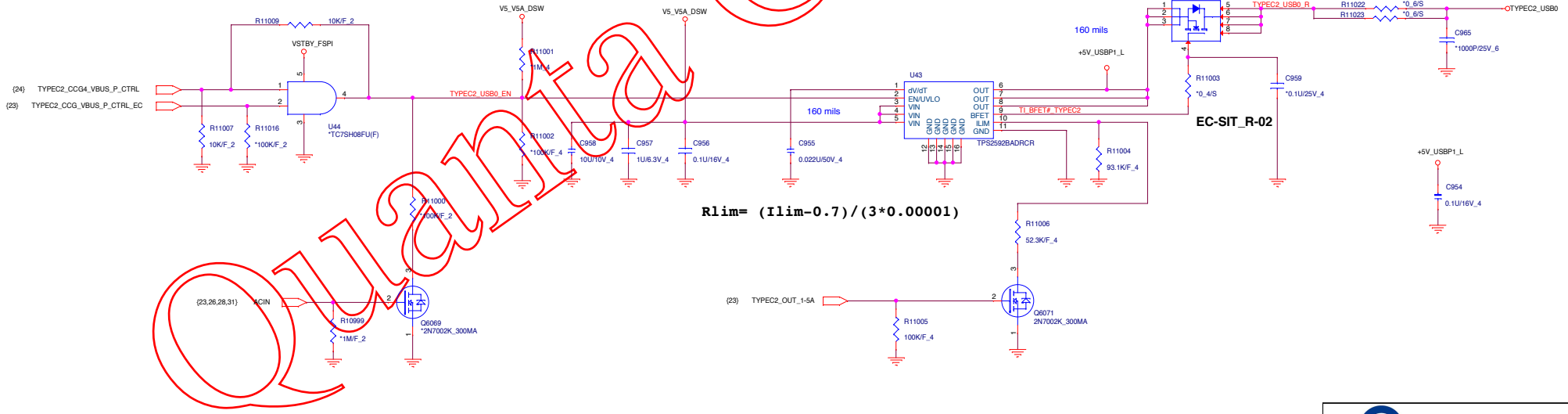
{25} TYPEC2_TX1p_C → TYPEC2_TX1p_R
{25} TYPEC2_TX1n_C → TYPEC2_TX1n_R

{25} TYPEC2_RX2n → TYPEC2_RX2n_R
{25} TYPEC2_RX2p → TYPEC2_RX2p_R

{25} TYPEC2_TX2p_C → TYPEC2_TX2p_R
{25} TYPEC2_TX2n_C → TYPEC2_TX2n_R

{25} TYPEC2_RX1n → TYPEC2_RX1n_R
{25} TYPEC2_RX1p → TYPEC2_RX1p_R





Quanta Computer Inc.	PROJECT : ZDS/ZSV	
Size	Document Number: Sensor Hub	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 27 of 42	

Do Not add test pad on BATDIS_G signal

ACDET=17.55V

VIDCHG = 8 or 16 × (VSRN – VSRP)

V_ PMON=K*Total*R
1.2V=1uA*Adapter*R

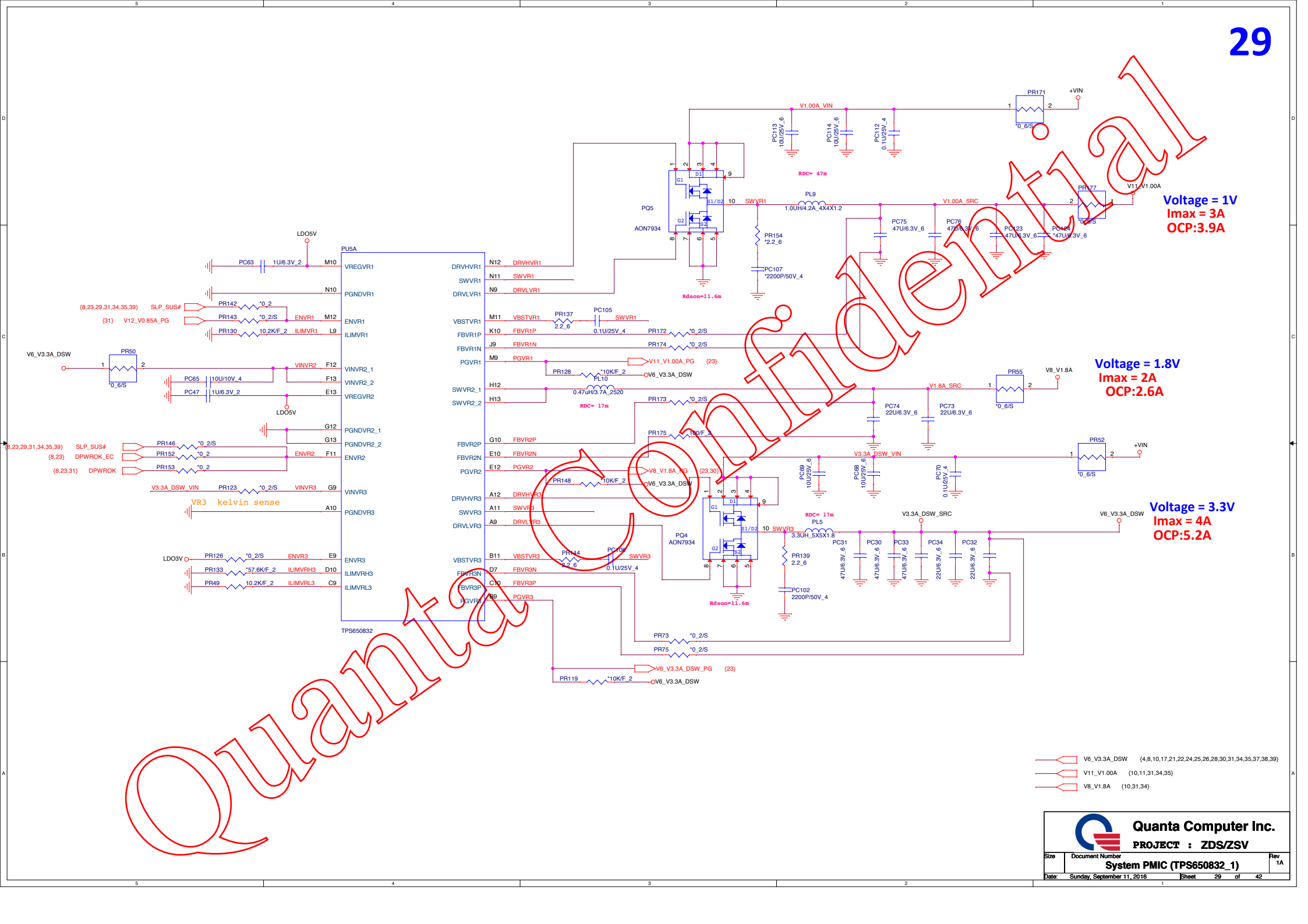
Max current : 2.37A

Place this cap close to EC

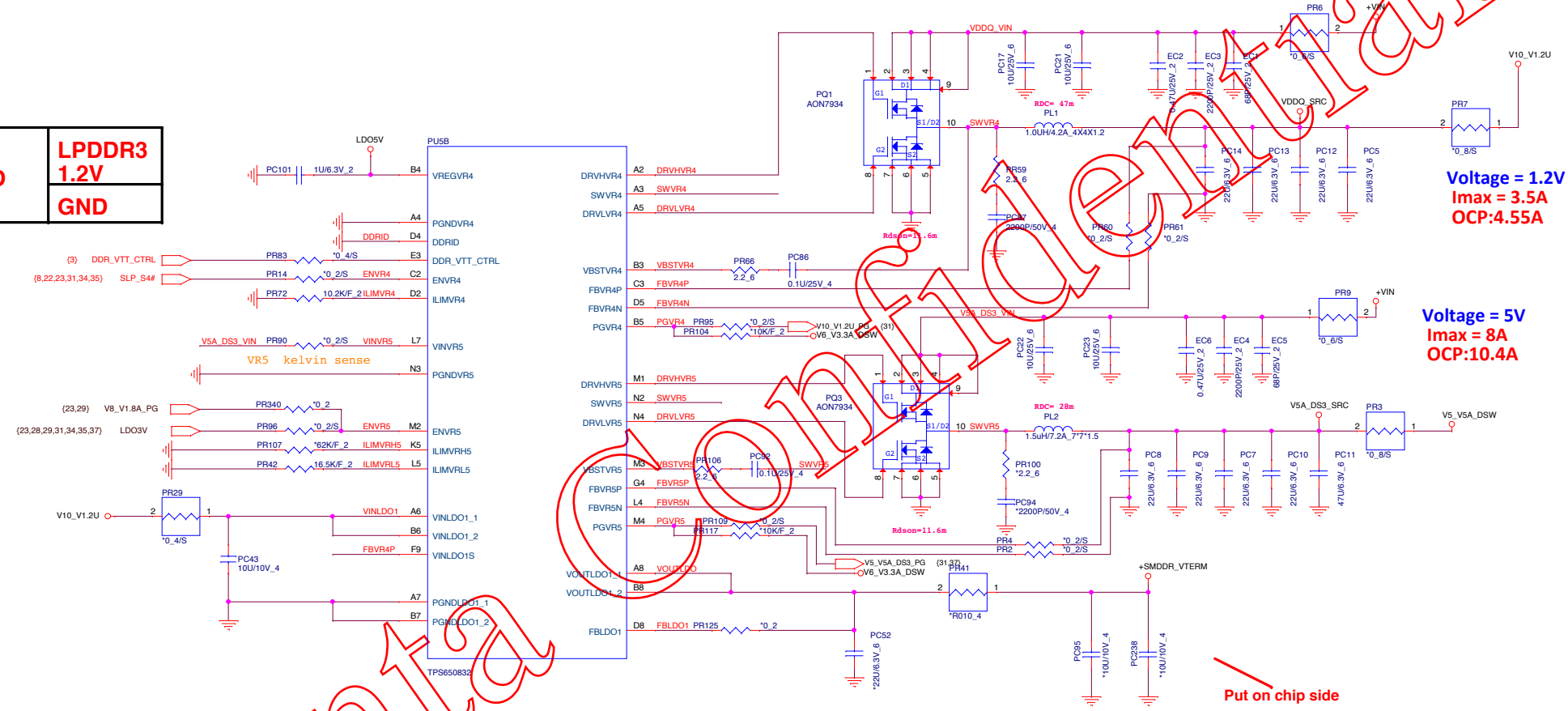
Place this cap close to EC

Place this cap close to EC

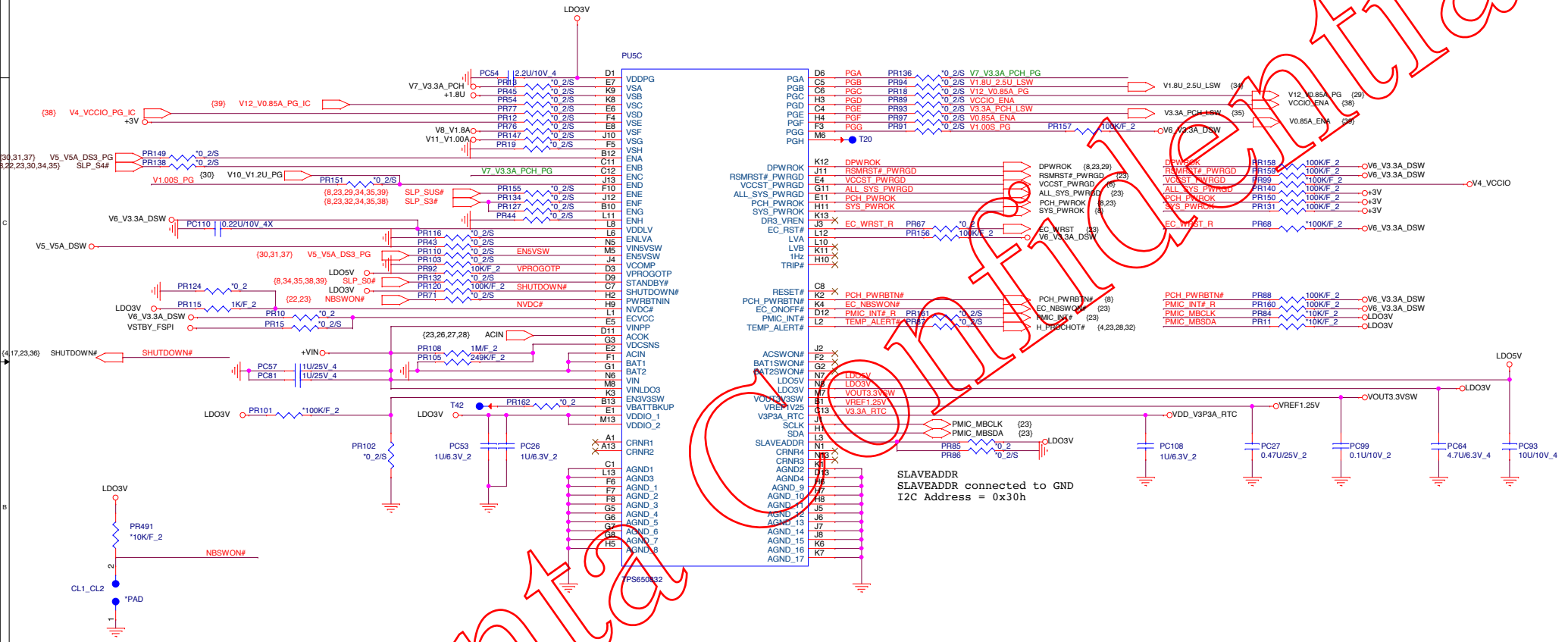
Quanta Computer Inc.
PROJECT : ZDS/ZSV
Size | Document Number: Charger (BQ24780S) | Rev 1A
Date: Sunday, September 11, 2016 | Sheet 28 of 42



DDRID	LPDDR3 1.2V
	GND

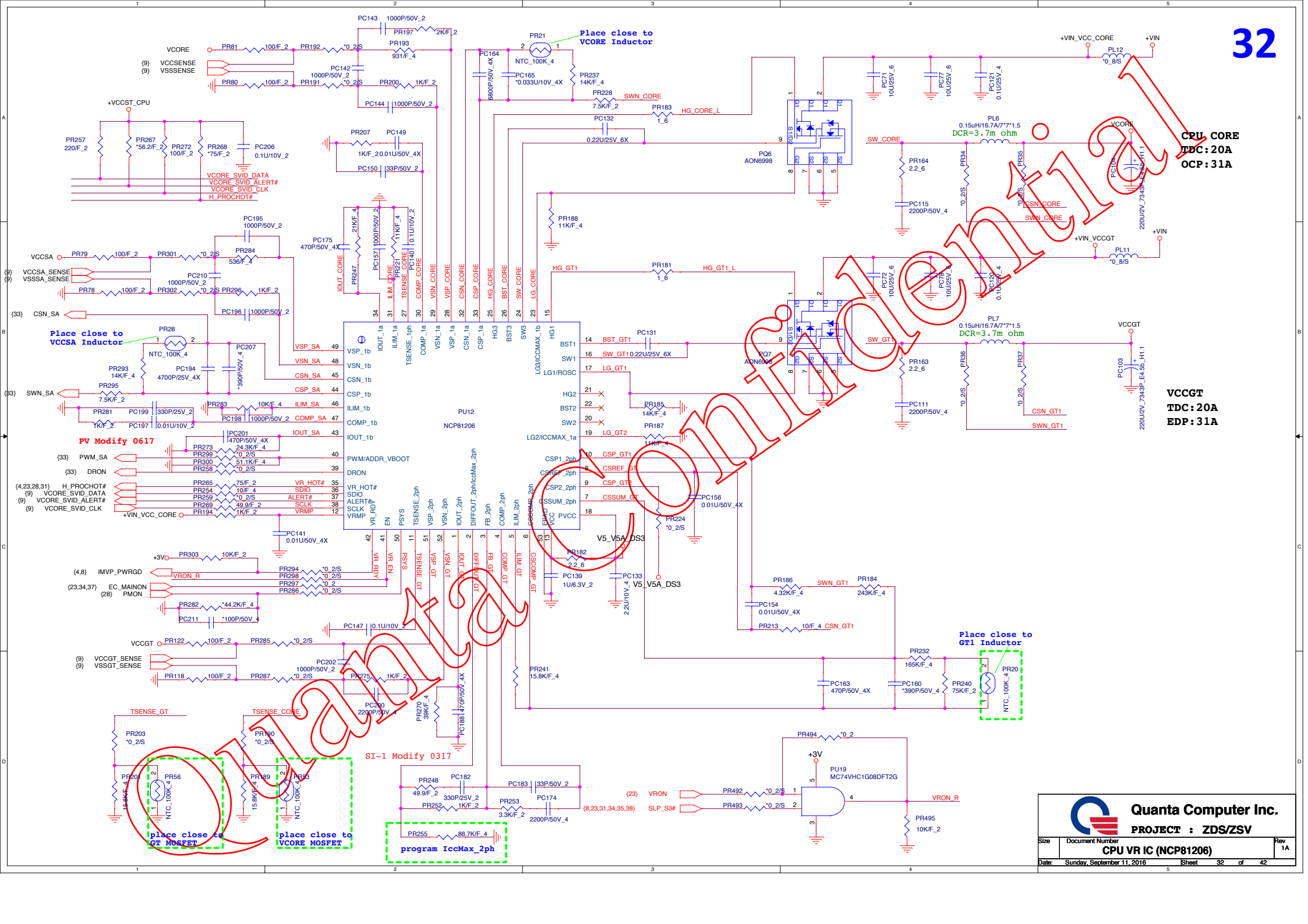


Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: System PMIC (TPS650832_2)	Rev 1A
Date: Sunday, September 11, 2016	Sheet 30 of 42	



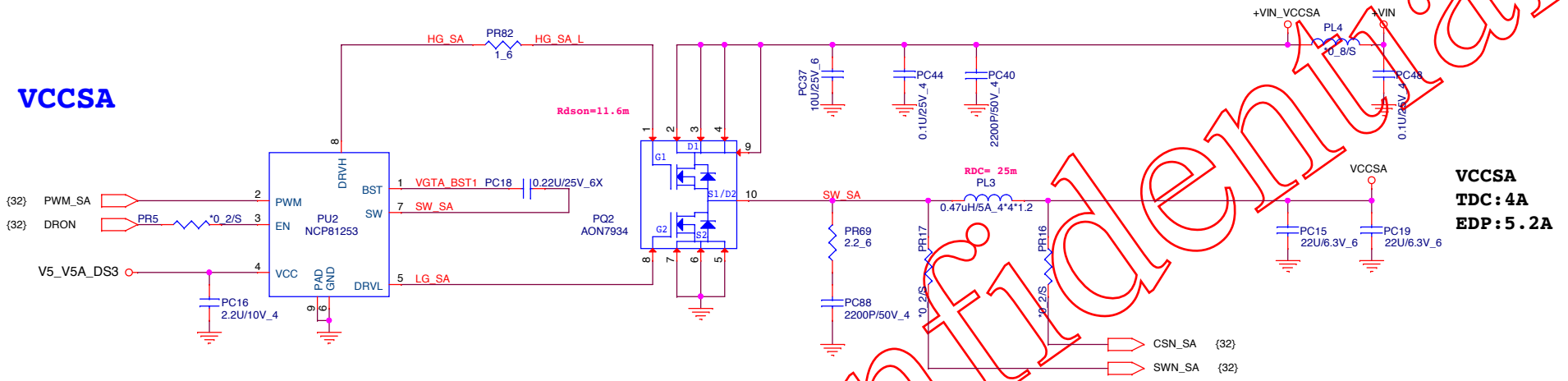
LDO3V — LDO3V {23,28,29,30,34,35,37}

Quanta Computer Inc.			
PROJECT : ZDS/ZSV			
Size	Document Number		Rev
	System PMIC (TPS650832_3)		1A
Date: Sunday, September 11, 2016		Sheet 31 of 42	



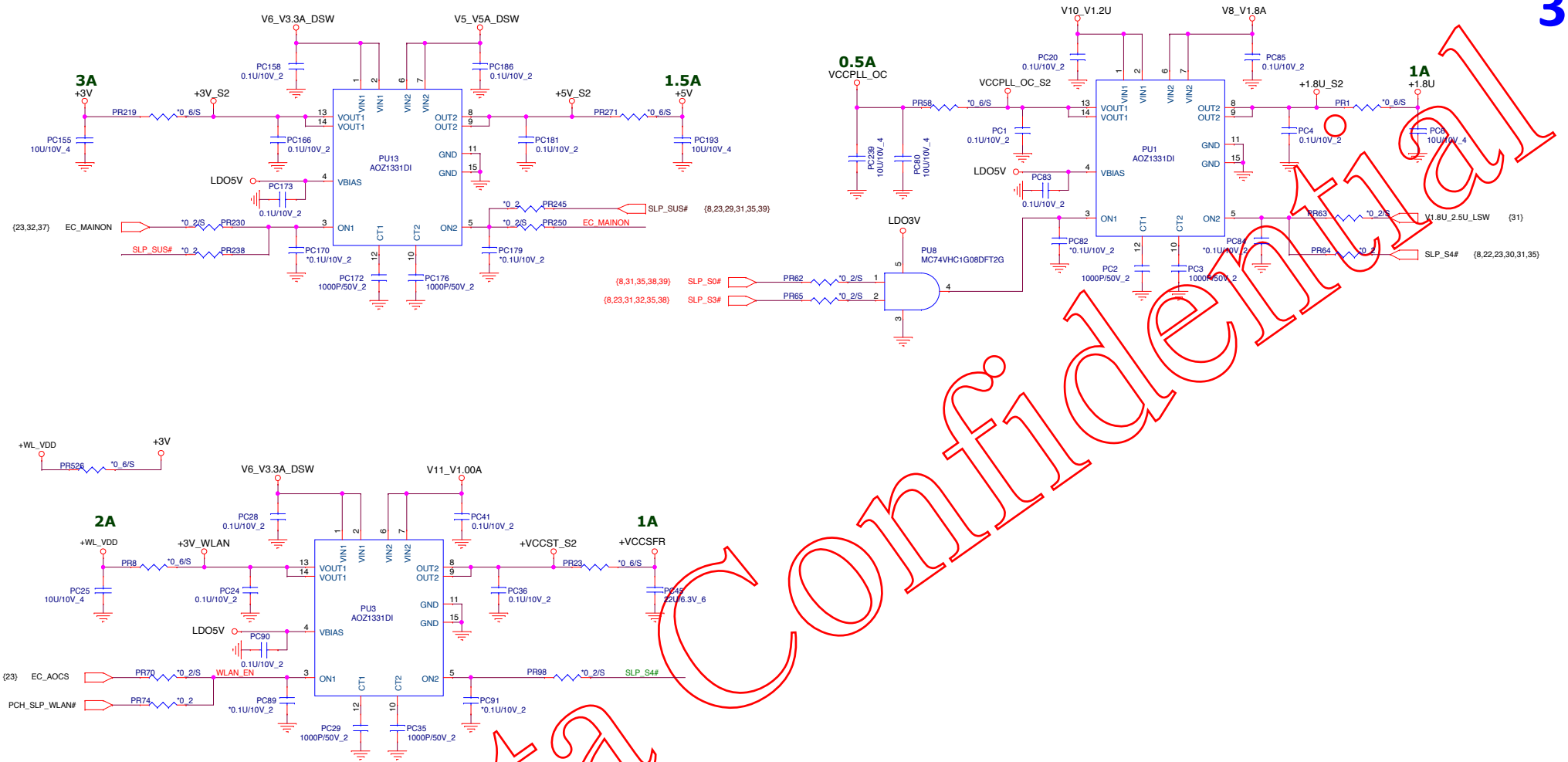
Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: CPU VR IC (NCP81206)	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 32 of 42	

VCCSA



VCCSA
TDC:4A
EDP:5.2A

Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: +VCCSA (NCP81253)	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 33 of 42	

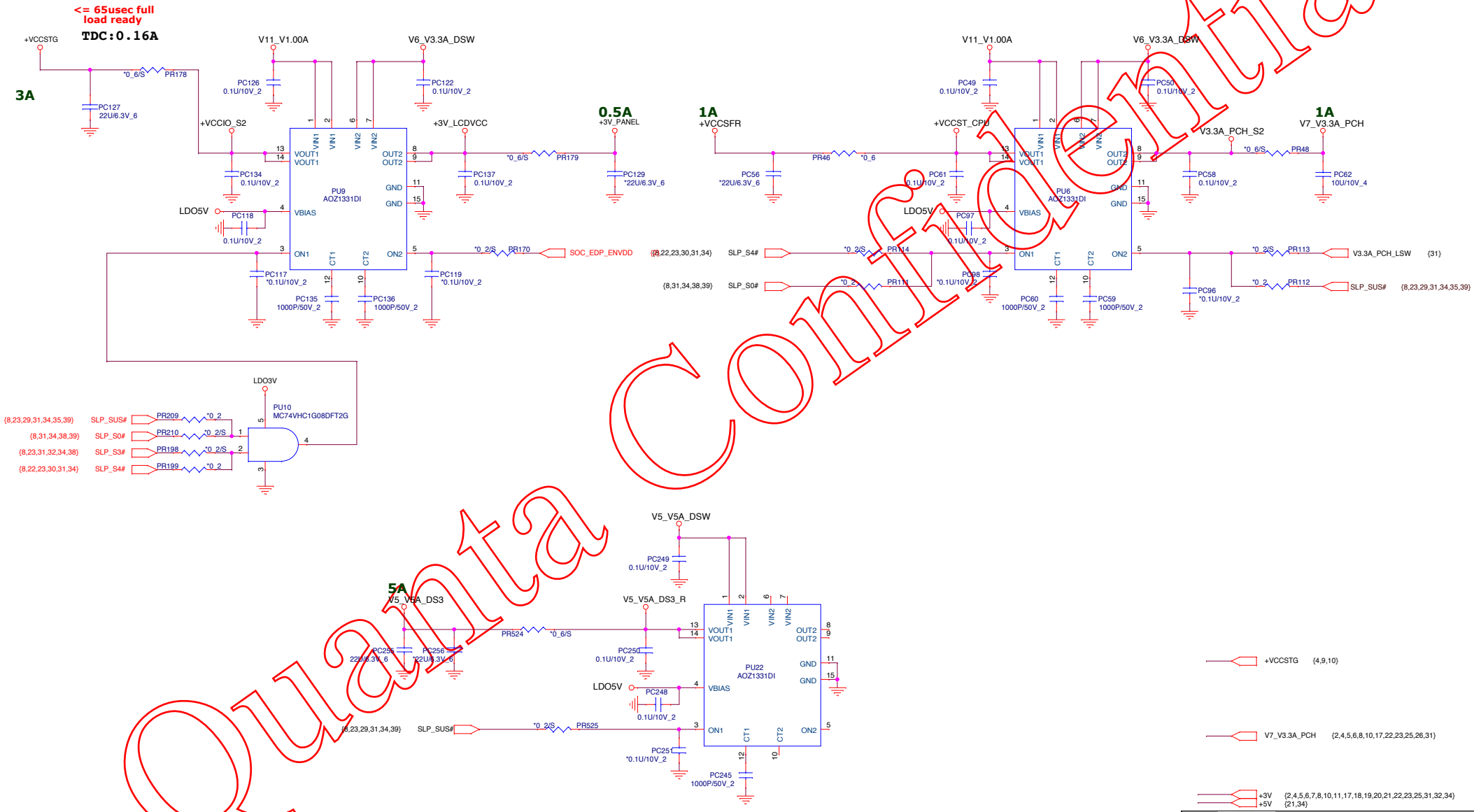


+WL_VDD {20}

+3V {2,4,5,6,7,8,10,11,17,18,19,20,21,22,23,25,31,32}

+5V {21}

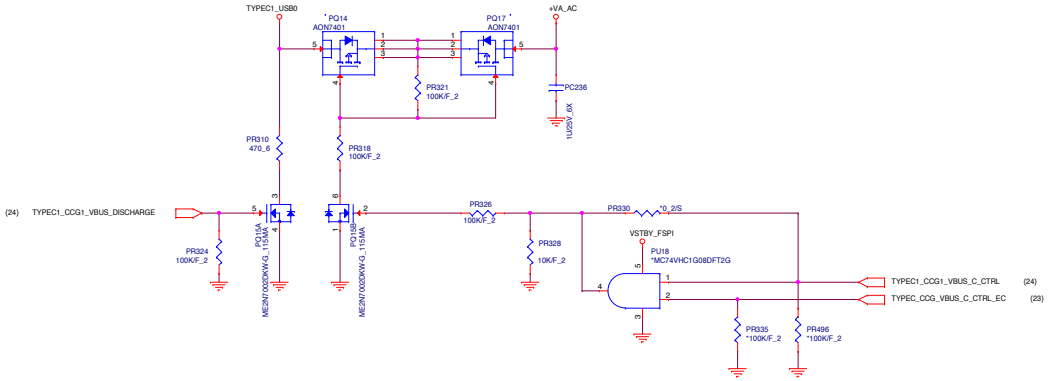
Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: Load switch IC (APL3523A)	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 34 of 42	



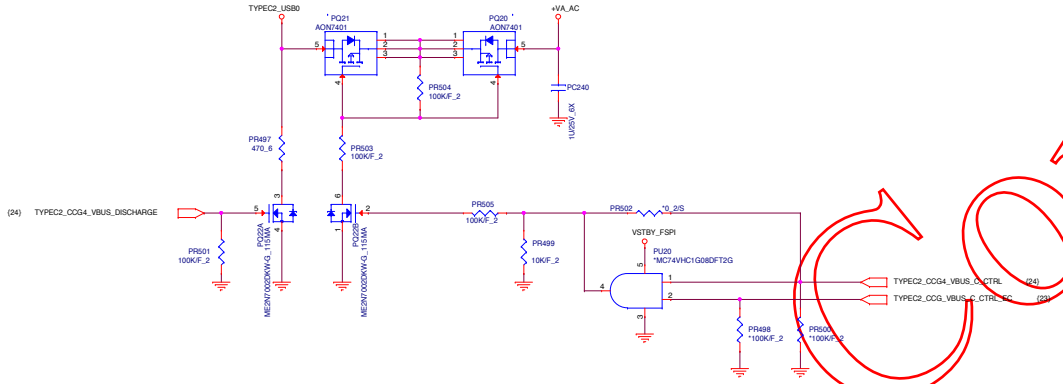
Quanta Computer Inc.
PROJECT : ZDS/ZSV

Size	Document Number	Rev
	Load switch IC (APL3523A)	1A
Date: Sunday, September 11, 2016	Sheet 35 of 42	

For TypeC PORT1

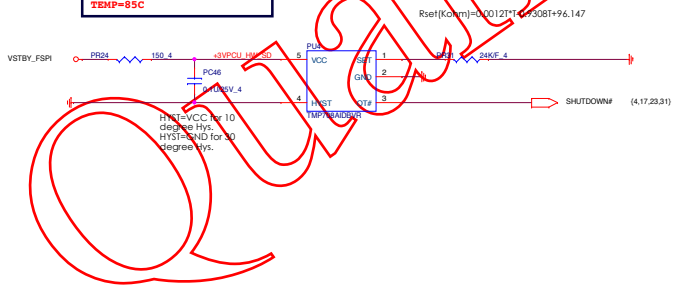


For TypeC PORT2

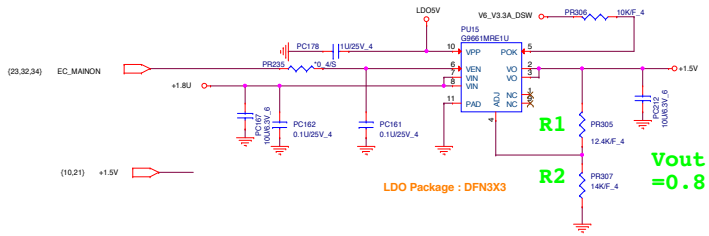


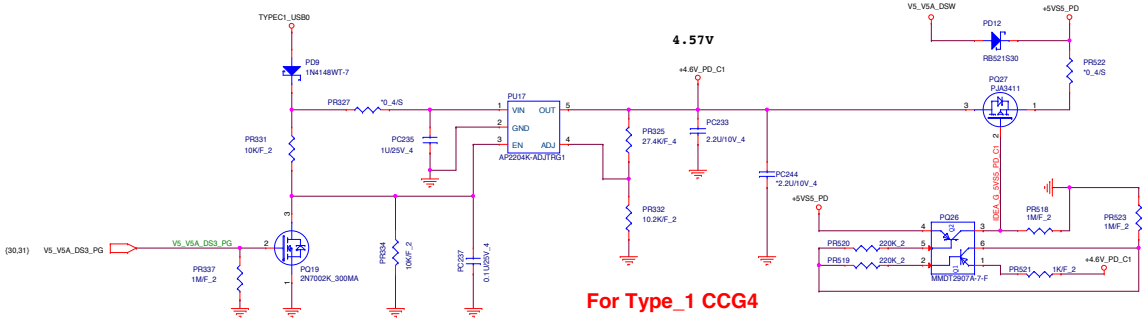
Thermal protection

For thermal protect point
Note placement position
TEMP=85C

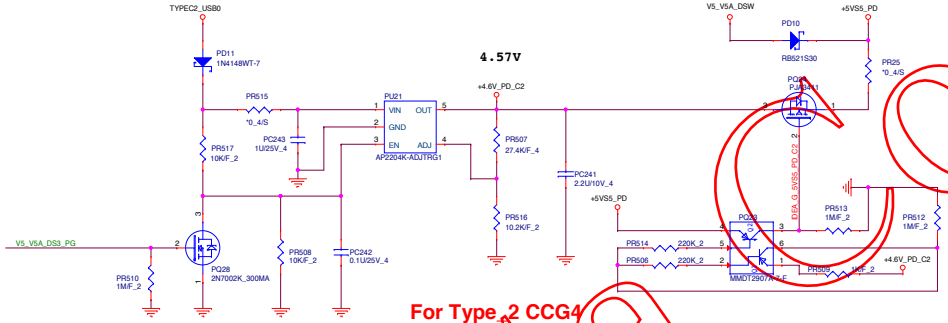


Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: USB TYPE-C Plug	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 36 of 42	

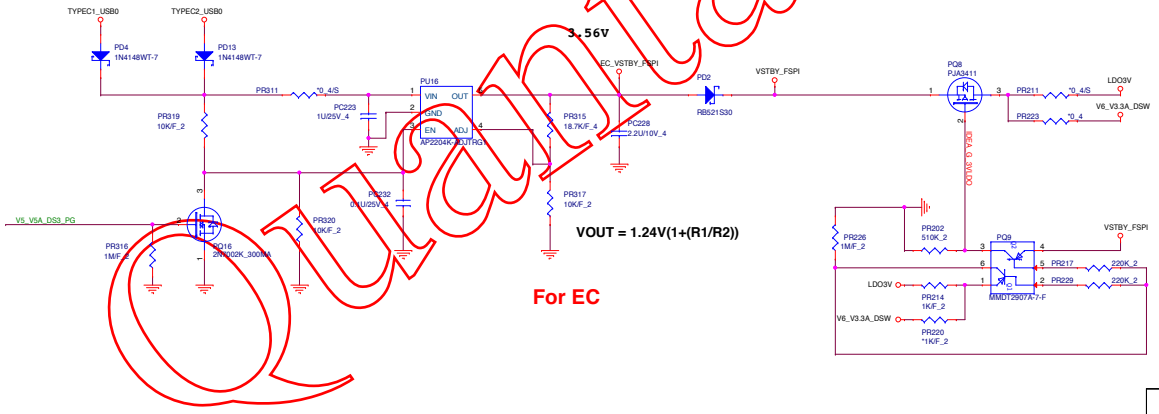




For Type_1 CCG4

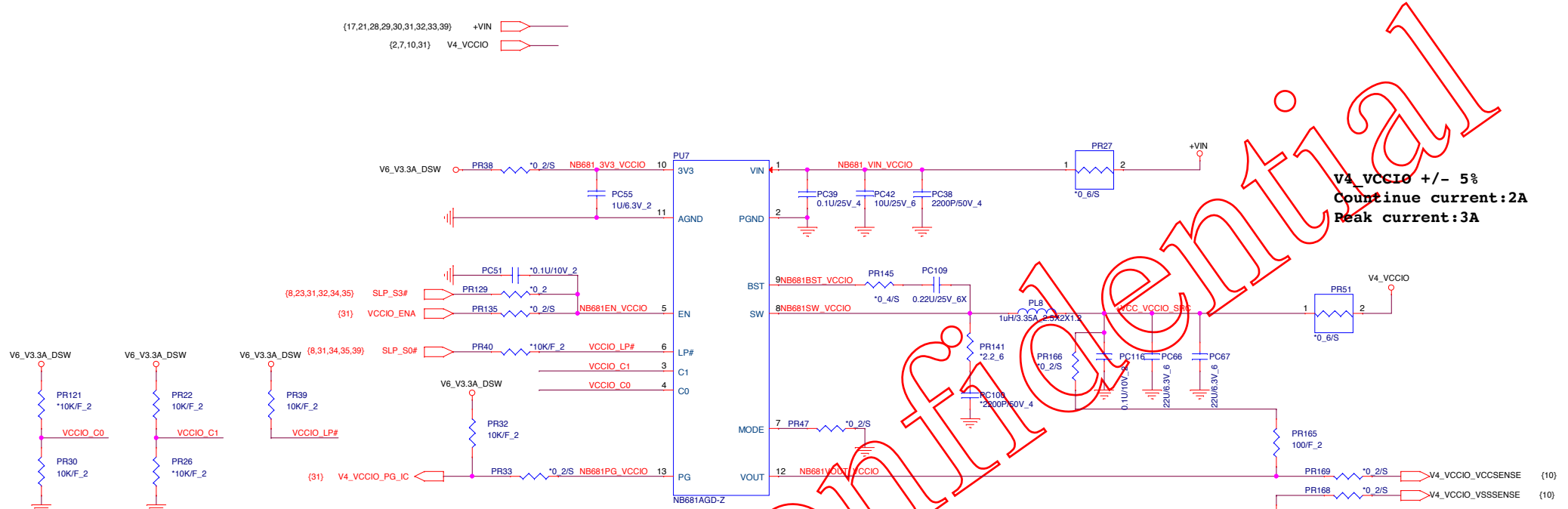


For Type_2 CCG4



For EC

Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: Dead Battery	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 37 of 42	



V4_VCCIO +/- 5%
Countinue current:2A
Peak current:3A

VCC_VCCIO

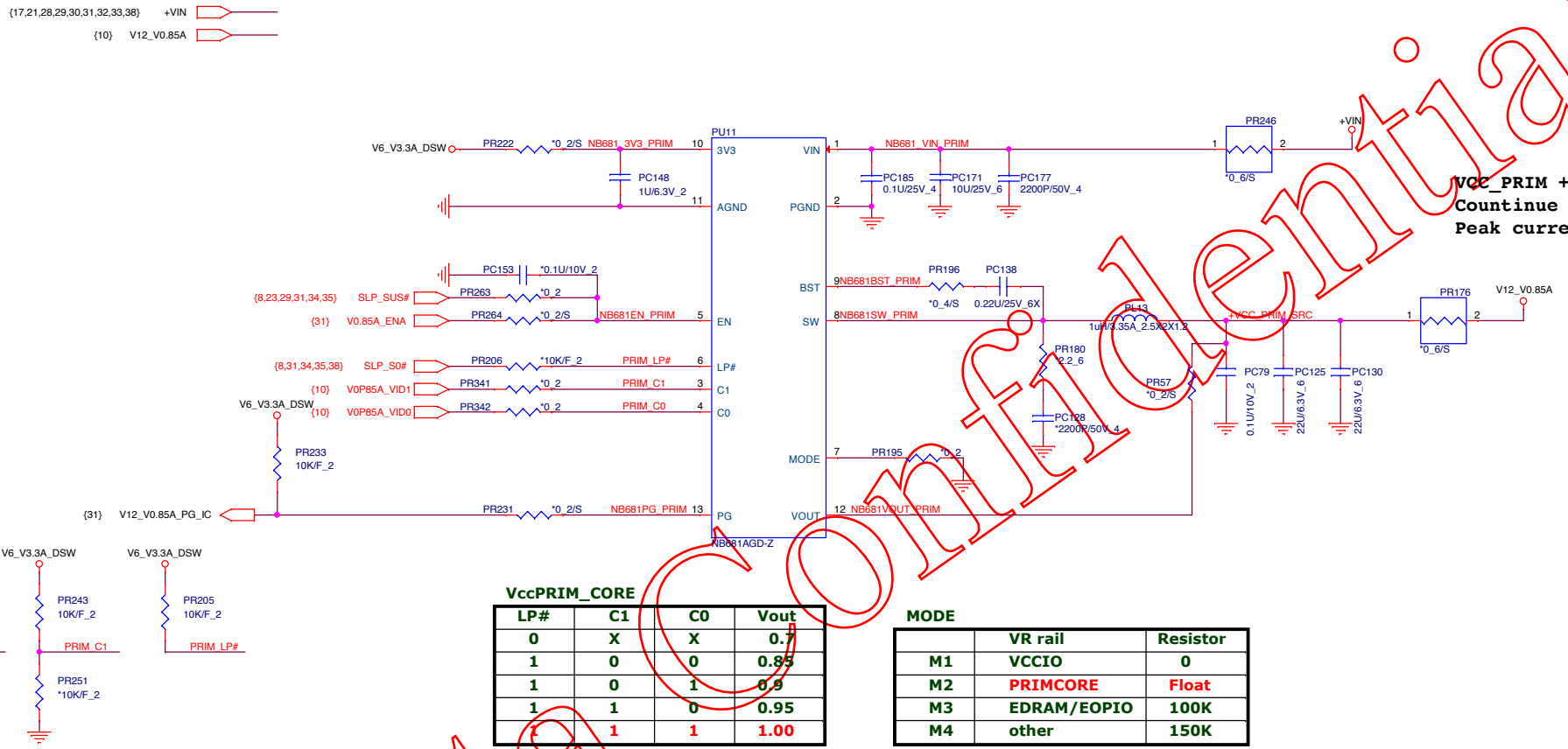
LP#	C1	C0	Vout
0	X	X	0
1	0	0	0.85
1	0	1	0.875
1	1	0	0.95
1	1	1	0.975

MODE

	VR rail	Resistor
M1	VCCIO	0
M2	PRIMCORE	Float
M3	EDRAM/EOPIO	100K
M4	other	150K

Quanta Computer Inc.
PROJECT : ZDS/ZSV

Size	Document Number	Rev
	+VCC_VCCIO (NB681)	1A
Date: Sunday, September 11, 2016	Sheet 38 of 42	



VCC_PRIM +/- 5%
Countinue current:1A
Peak current:1.5A

VccPRIM_CORE

LP#	C1	C0	Vout
0	X	X	0.7
1	0	0	0.85
1	0	1	0.9
1	1	0	0.95
1	1	1	1.00

MODE

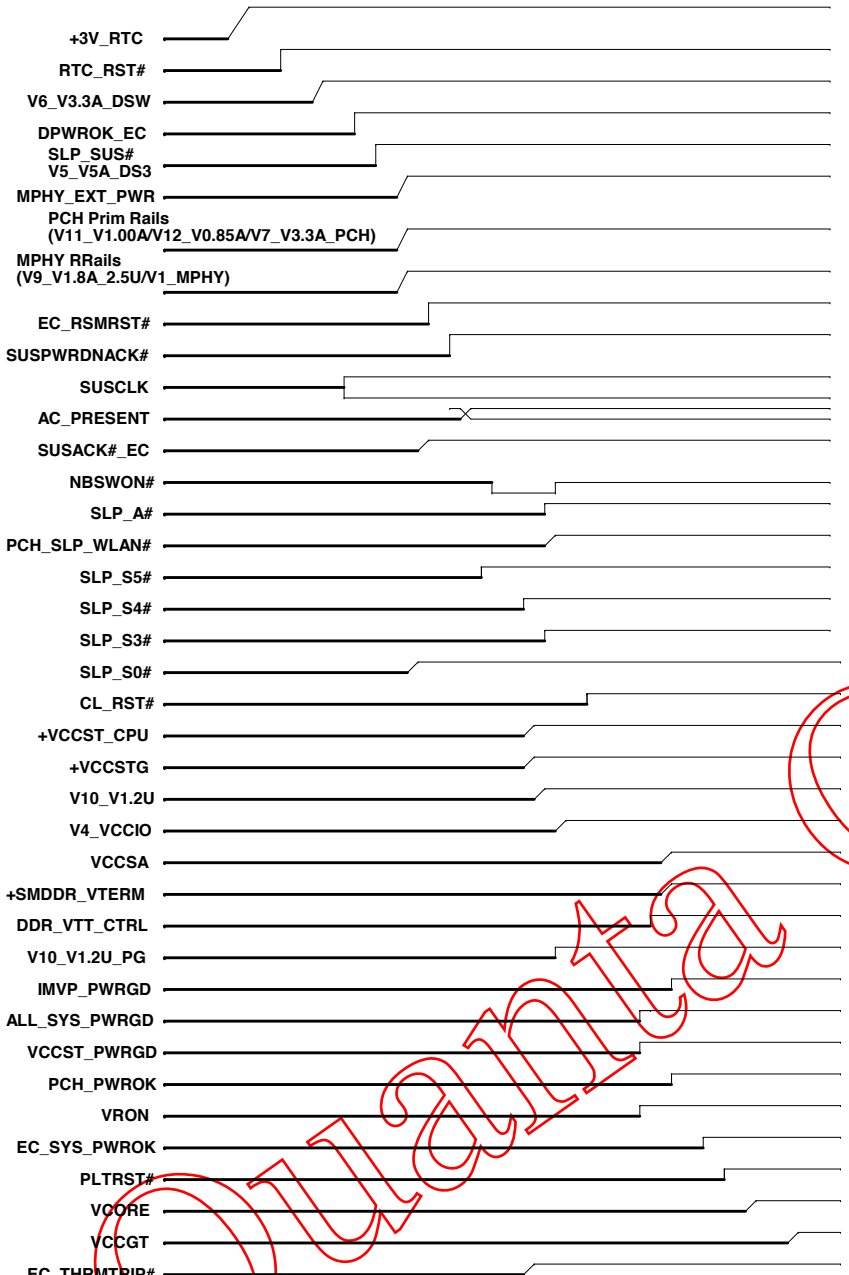
	VR rail	Resistor
M1	VCCIO	0
M2	PRIMCORE	Float
M3	EDRAM/EOPIO	100K
M4	other	150K

Quanta Computer Inc.
PROJECT : ZDS/ZSV

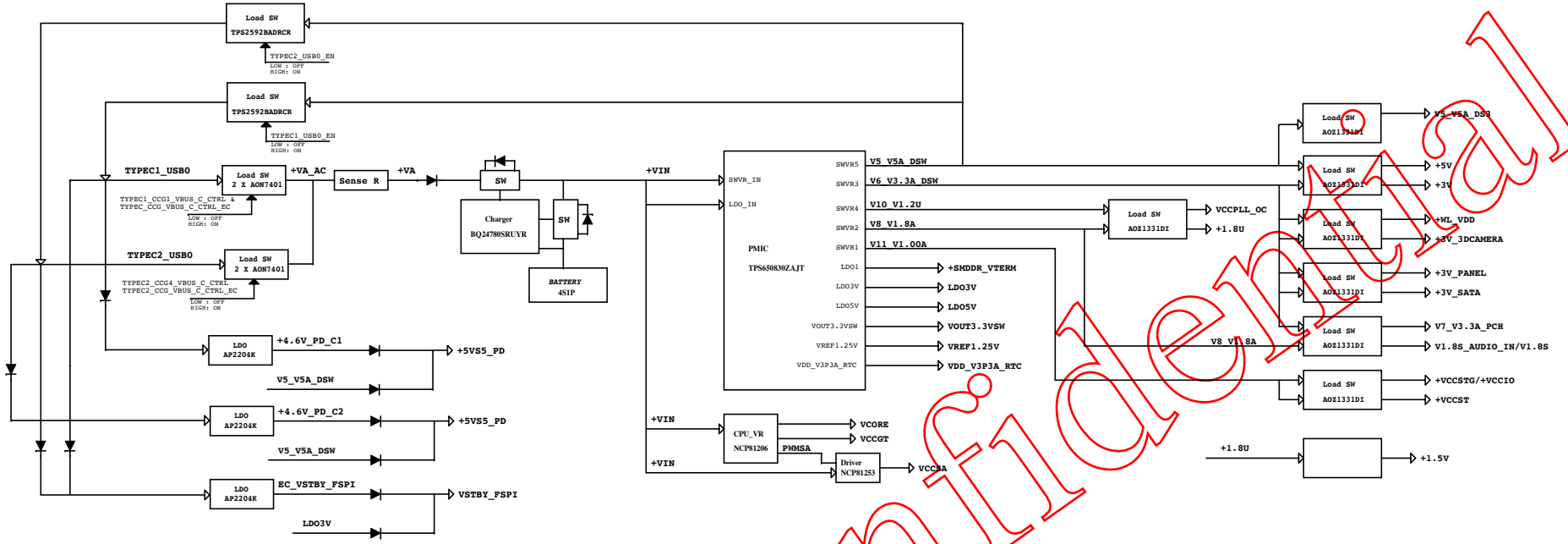
Size	Document Number	Rev
	+VCC_PRIM (NB681)	1A
Date: Sunday, September 11, 2016	Sheet 39 of 42	

Power up sequence

40



Quanta Computer Inc.		
PROJECT : ZDS/ZSV		
Size	Document Number: Power Sequence	Rev: 1A
Date: Sunday, September 11, 2016	Sheet 40 of 42	



Quanta Computer Inc.
PROJECT : ZDS/ZSV
Power Tree

Model	Date	CHANGE LIST
ZDS/ZDV REV:A	4/27	1. FIRST RELEASED
ZDS/ZDV REV:B	6/1	1. Change PR284/PR193/PR247/PR283/PR273/PR187/PR240 Value for CPU transient and load line 2. Add PR492/PR493/PU19/PR495 for sequence 3. Add Q6064 for EC read PCH temperature 4. Change R52/R54 Value from 4.7K to 1K ohm for Touch pad 5. Add R10592/R10591/D39 for RTC voltage 6. Change R291/R47 PU netname from VSTBY_FSP to VSTBY_FSPI for netname wrong 7. Add R10953/R10954/R10955/R10956 for separate Boxster and Dino MIC signals 8. Stuff R309 for USB RX
ZDS/ZDV REV:C1	7/10	1. Remove R28 / Add R10971 to link V7_V3.3A_PCH for leakage current issue 2. Remove R133,R130,R128,R124,R67,R61 and Add R10967,R10966,R10968 to link V7_V3.3A_PCH for leakage current issue 3. Reverse POA/PBA circuit for customer requirement 4. Remove R32,R113 and Add Add R10970 to link V7_V3.3A_PCH for leakage current issue 5. Change C81/C80/C83//C96/C228/C484/C485/C483/C487/C488 Value t0 47U/4V_8H095 for ID height-Z limitation 6. Add C51/C52/C53/C121/C185/C199/C225/C64//C65/C66/C235/C161/C233 for VCCGT voltage stable 7. Add C259/C267 for V4_VCCIO voltage stable 8. Add C940/C939/C938/C937/C936/C935/C934/C312/C425/C426 for V10_V1.2U voltage stable 9. Change 13" ZDS Dual MIC connector from 4pin to 8 pin for FA issue 10. Add D14/D15 for ESD fail 11. Remove R391/R455/R489 and mount Q33/Q27/R390/R456/R488 for leakage current issue 12 Change Audio Jack CN5 from 5 pin to 7 pin for noise issue 13. Change R151/R152/R153/R154/R150/R155/R157/R158 Value for LED brightness issue 14. Change PR292/PR274 Value for ACDet 15. Change PL5 from 1UH to 3.3UH for Noise issue
ZDS/ZDV REV:C2	7/27	1. Change PD circuit from CCG2 to CCG4 for support PD*2
ZDS/ZDV REV:C3	8/10	1. Del R330,R314,R323,R341,R291 and add Q6072,R332,R337,R505 to V7_V3.3A_PCH for S5 leakage current issue 2. Change R150,R151,R152,R153,R154,R157 PN to fine tune LED brightness for ME ID Len change Lens color issue 3. Del R10980,R10981,R298,Q18,R311 and add R285,R273,R266,R259,R260,R295,R310,C282 and change Change U16,U18,R117,R121 to V5_V5A_DSW for S4 resume TYPE C device detect detect issue
ZDS/ZDV REV: Ramp	8/22	1. Change 0 ohm to shortpad

Quanta Computer Inc.
PROJECT : ZDS/ZDV
Size | Document Number: Change list | Rev 1A
Date: Sunday, September 11, 2016 | Sheet 42 of 42