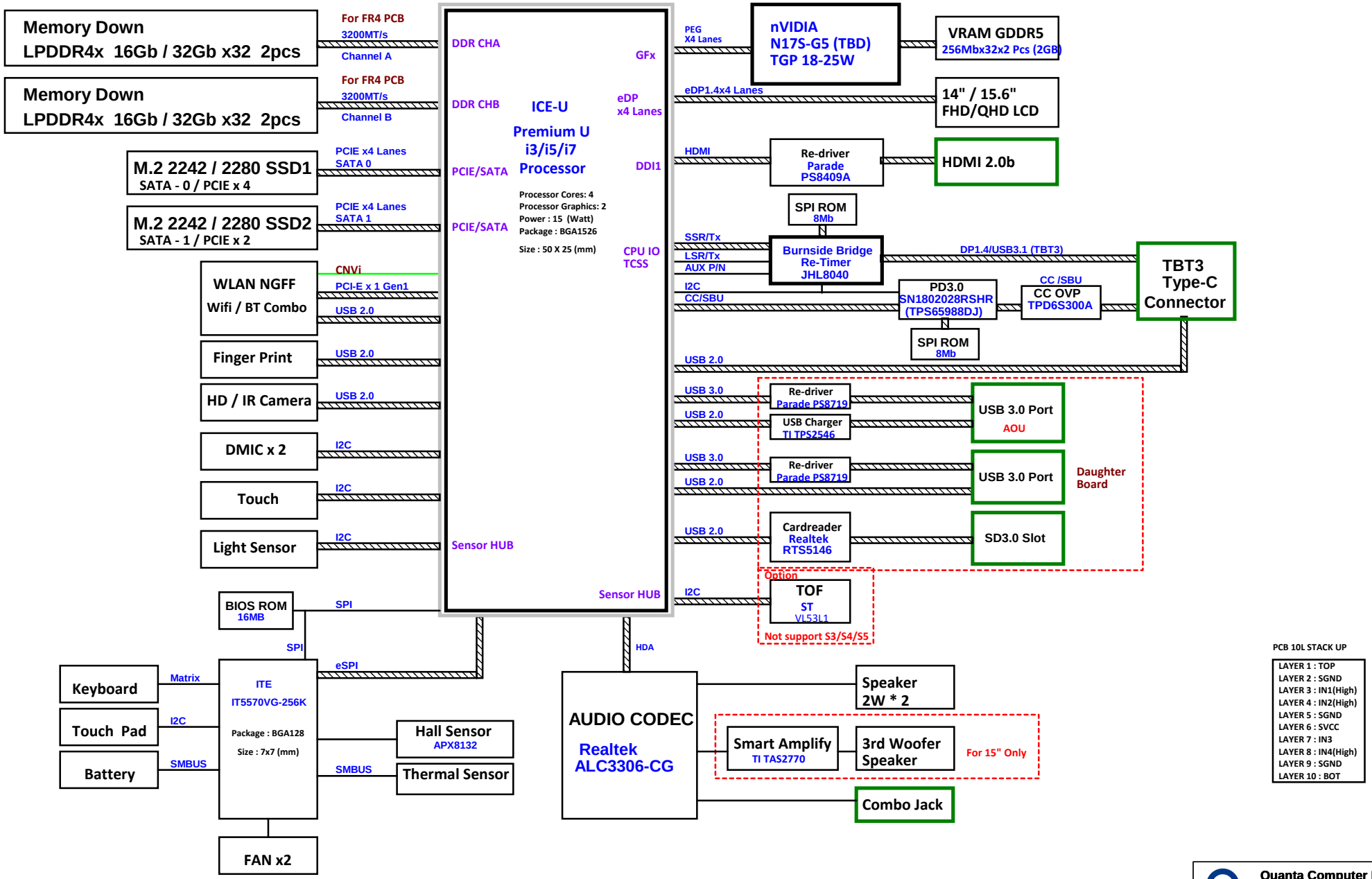
S750-14/15 Intel ICE-U Block Diagram



PCB 10L STACK UP

LAYER 1 : TOP
LAYER 2 : SGND
LAYER 3 : IN1(High)
LAYER 4 : IN2(High)
LAYER 5 : SGND
LAYER 6 : SVCC
LAYER 7 : IN3
LAYER 8 : IN4(High)
LAYER 9 : SGND
LAYER 10 : BOT

Quanta Computer Inc.

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Title: BU2

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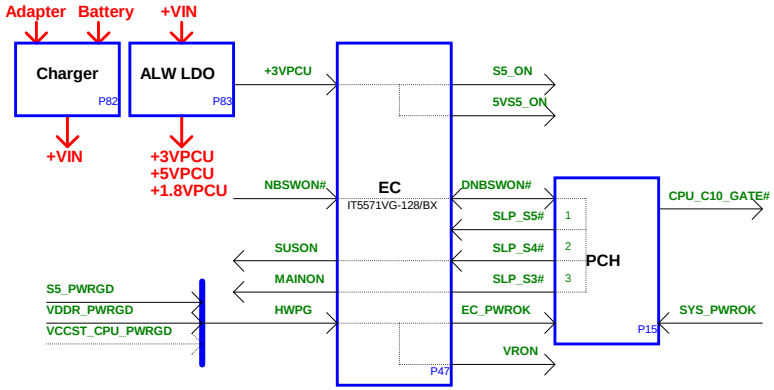

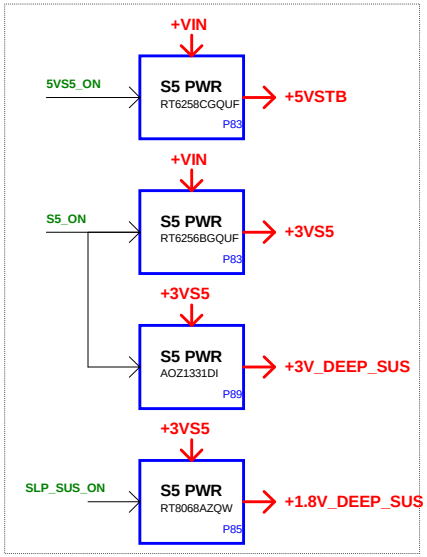

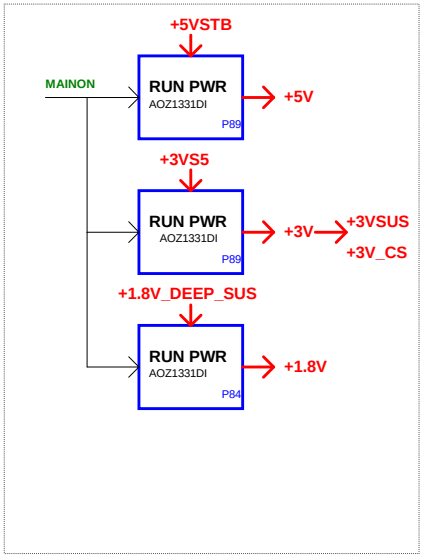

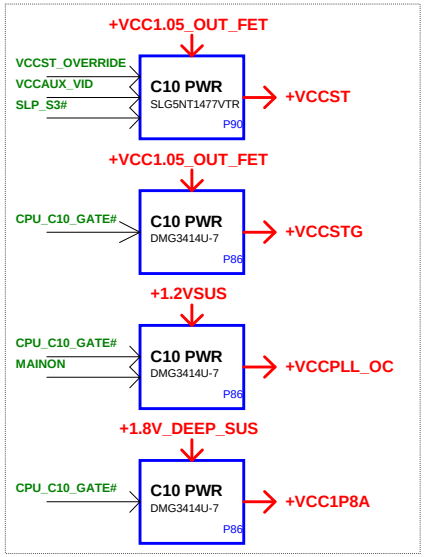

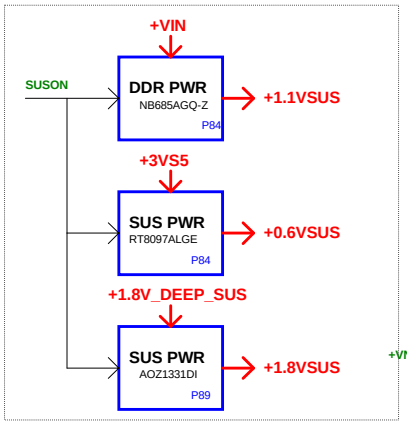

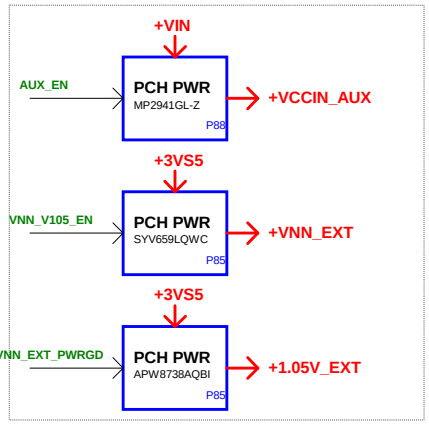

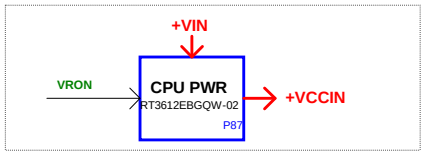

Main Power Rails

POWER PLANE	VOLTAGE	DESCRIPTION	CONTROL SIGNAL	ACTIVE IN
+3V_WLAN_P	+3.3V	WLAN Power	CNVI_EN#	
+1.8VSUS	+1.8V	LPDDR4/4X Suspend Power	SUSON	
+0.6VSUS	+0.6V	LPDDR4/4X Suspend Power	SUSON	
+1.05V_EXT	+1.05V	PCH Power	+VNN_EXT_PWRGD	
+VNN_EXT	+1.05V	PCH Power	VNN_V105_EN	
+1.1VSUS	+1.1V	LPDDR4/4X Suspend Power	SUSON	
+1.8V	+1.8V	Audio Codec power	MAINON	
+1.8V_DEEP_SUS	+1.8V	PCH power	SLP_SUS_ON	
+3V	+3.3V	3V Run Power	MAINON	
+3VSUS	+3.3V	3V Suspend Power	MAINON	
+3VS5	+3.3V	3V S5 Power	S5_ON	
+3VPCU	+3.3V	3V Always Power	+VIN	
+5V	+5V	5V Run Power	MAINON	
+5VSTB	+5V	5V S5 Power	5VS5_ON	
+5VPCU	+5V	5V Always Power	+VIN	
+VCCIN_AUX	+1.8V	PCH Power	AUX_EN	
+VCCIN	SVID +1.89V(MAX)	CPU Core Power	VRON	
+VIN	+19V	AC power input		

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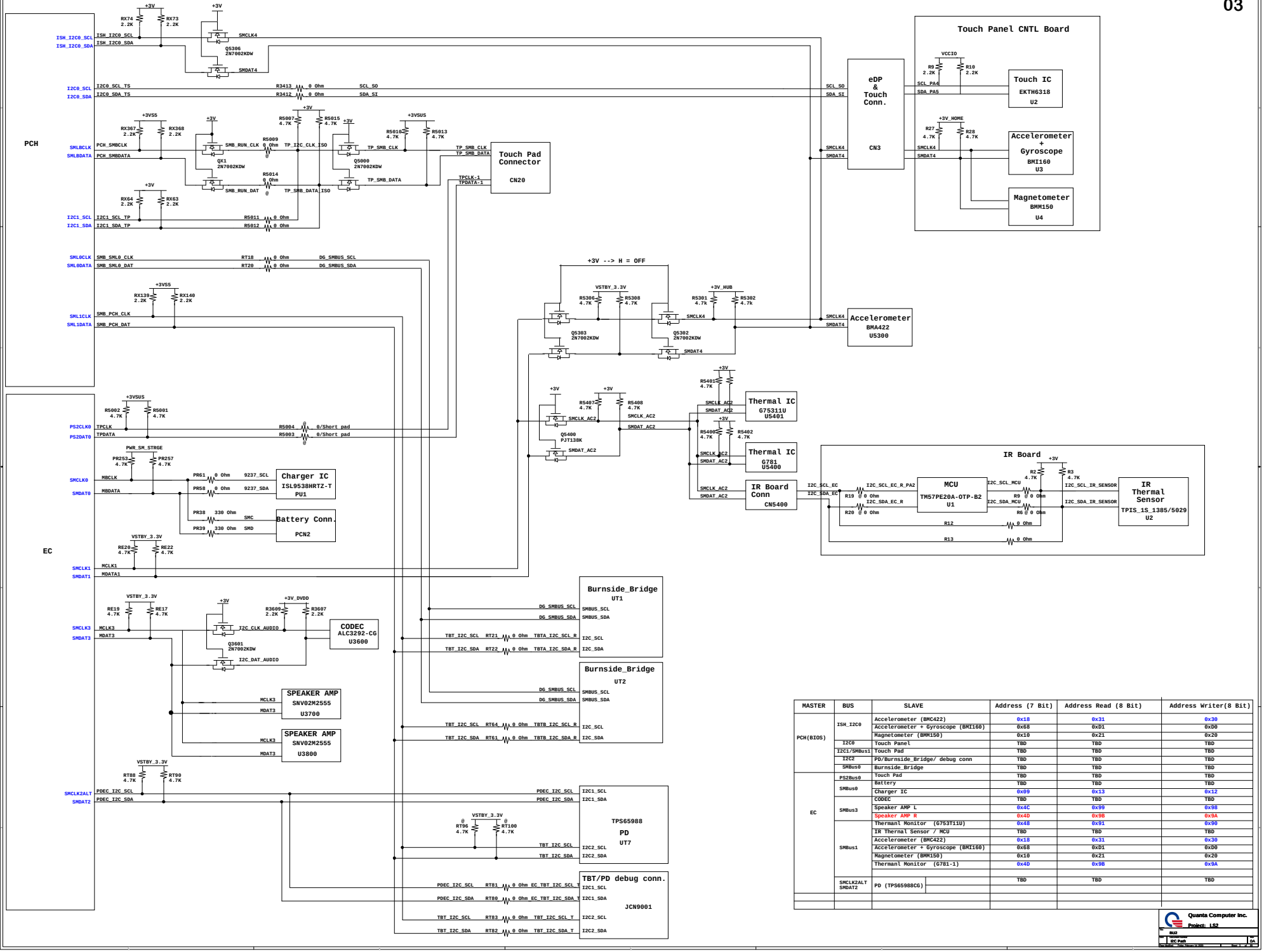
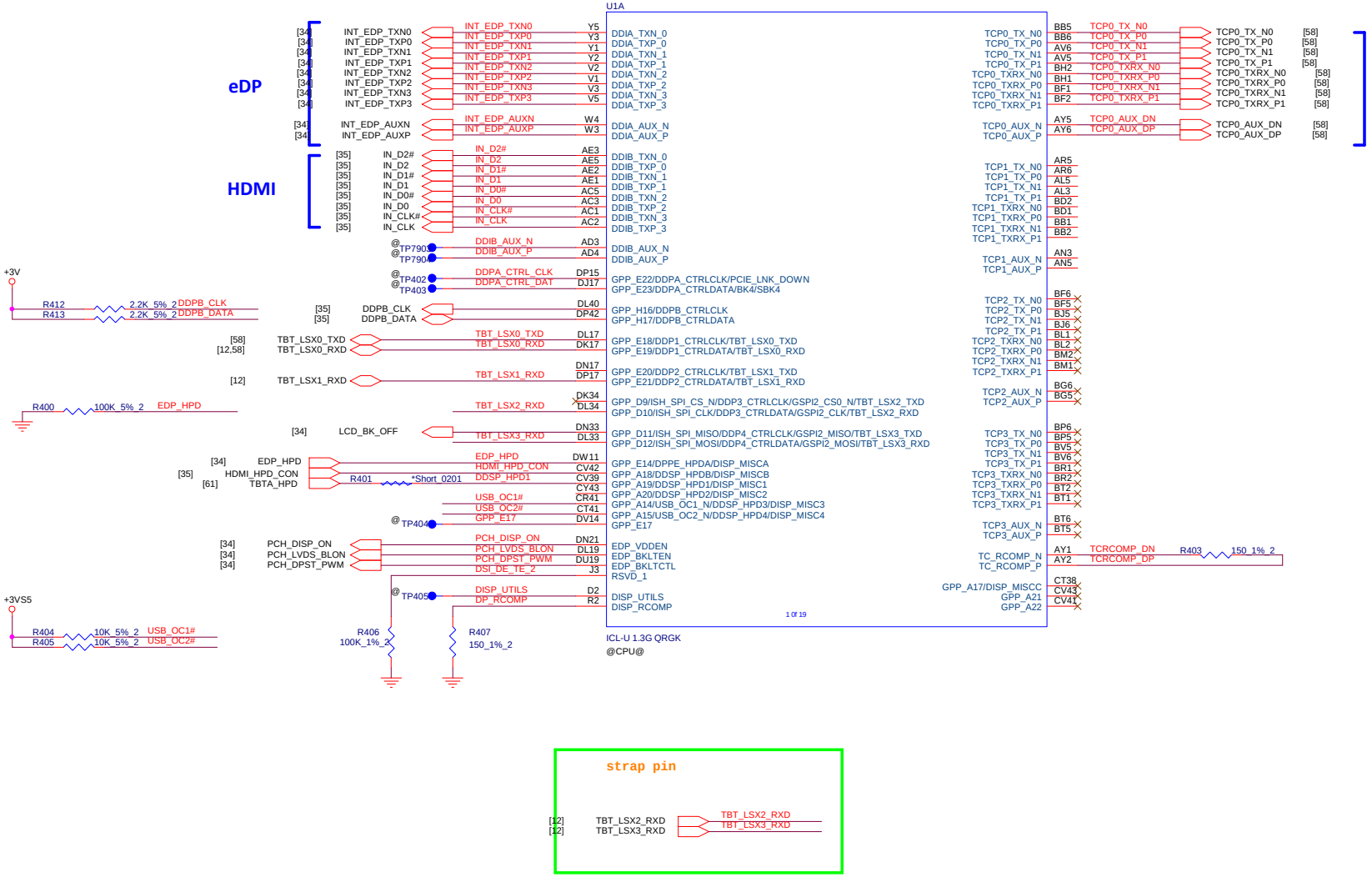


MASTER	BUS	SLAVE	Address (7 Bit)	Address Read (8 Bit)	Address Writer(8 Bit)
PCH(BIOS)	ISH_I2C0	Accelerometer (BMC422)	0x18	0x31	0x30
		Accelerometer + Gyroscope (BMI160)	0x68	0xD1	0xD0
		Magnetometer (BMM150)	0x10	0x21	0x20
	I2C0	Touch Panel	TBD	TBD	TBD
	I2C1/SMBus1	Touch Pad	TBD	TBD	TBD
	I2C2	PD/Burnside_Bridge/ debug conn	TBD	TBD	TBD
	SMBus0	Burnside_Bridge	TBD	TBD	TBD
EC	PSZBus0	Touch Pad	TBD	TBD	TBD
	SMBus0	Battery	TBD	TBD	TBD
		Charger IC	0x09	0x13	0x12
	SMBus3	CODEC	TBD	TBD	TBD
		Speaker AMP L	0x4C	0x99	0x98
		Speaker AMP R	0x4D	0x9B	0x9A
	SMBus1	Thermal Monitor (G753T11U)	0x48	0x91	0x90
		IR Thernal Sensor / MCU	TBD	TBD	TBD
		Accelerometer (BMC422)	0x18	0x31	0x30
		Accelerometer + Gyroscope (BMI160)	0x68	0xD1	0xD0
		Magnetometer (BMM150)	0x10	0x21	0x20
		Thermal Monitor (G781-1)	0x4D	0x9B	0x9A
	SMCLK2ALT SMDAT2	PD (TPS65988CG)	TBD	TBD	TBD



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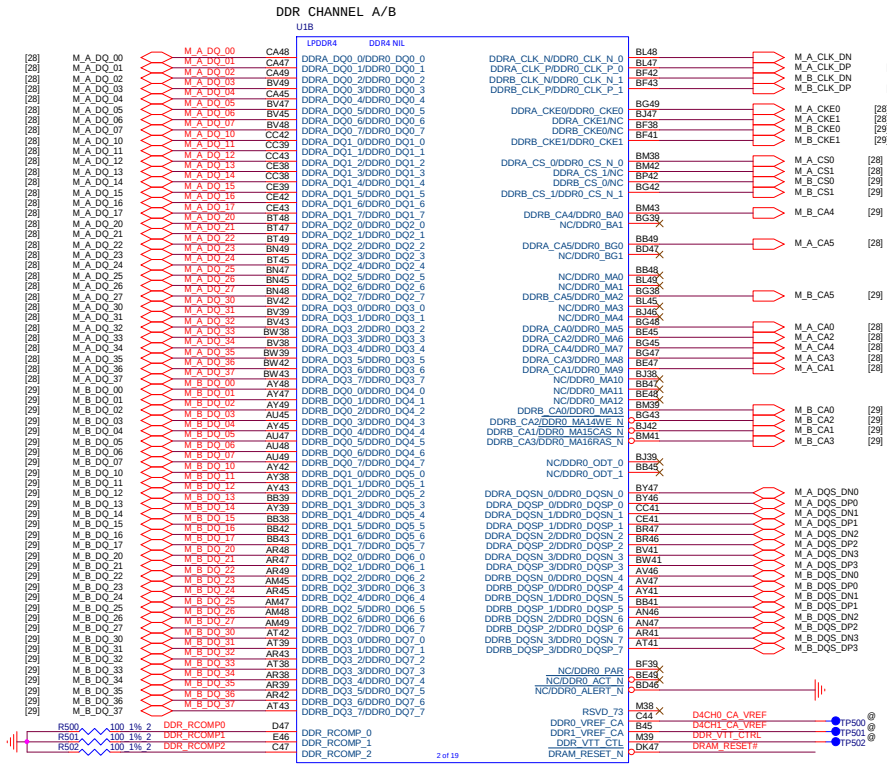
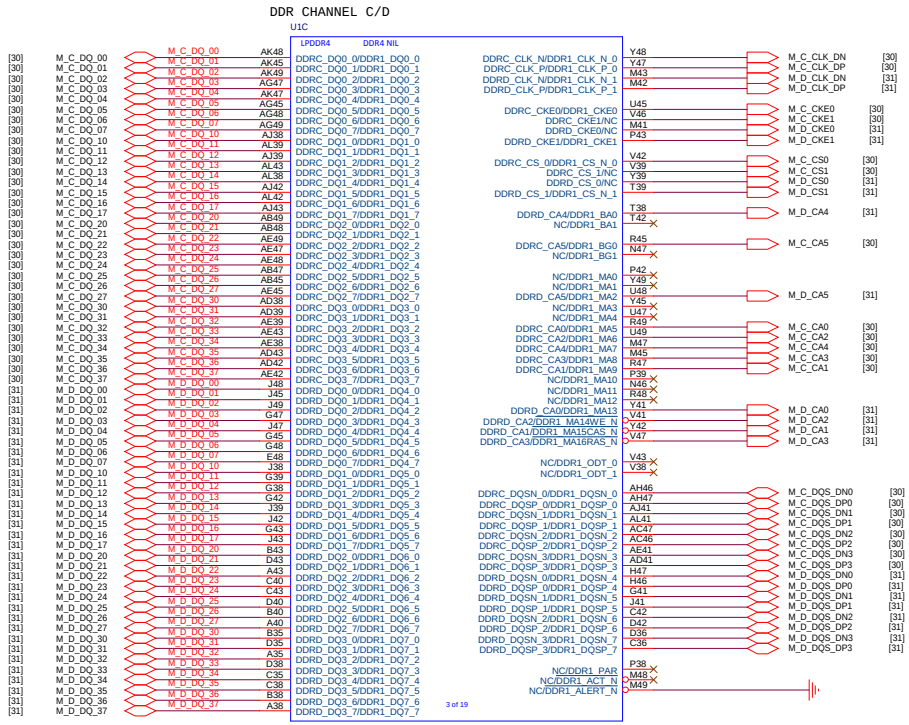
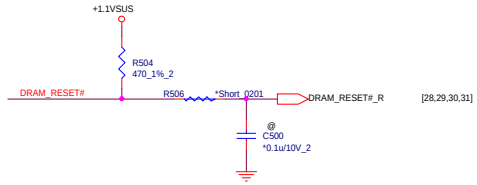
ICELAKE Processor LPDDR4/4X





01/25 Delete DDR_VTT_CTL



Quanta Computer Inc.	
Project: LS2	
Title: BU2	
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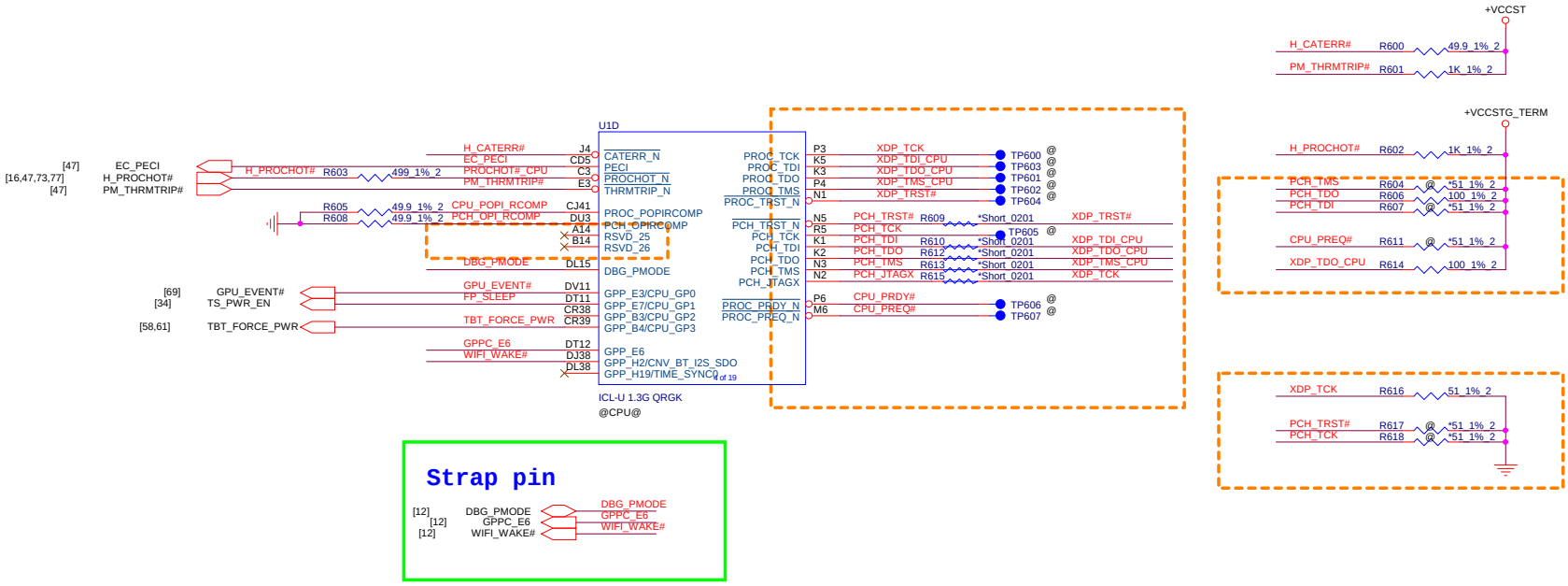

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Project: LS2

Title: BU2

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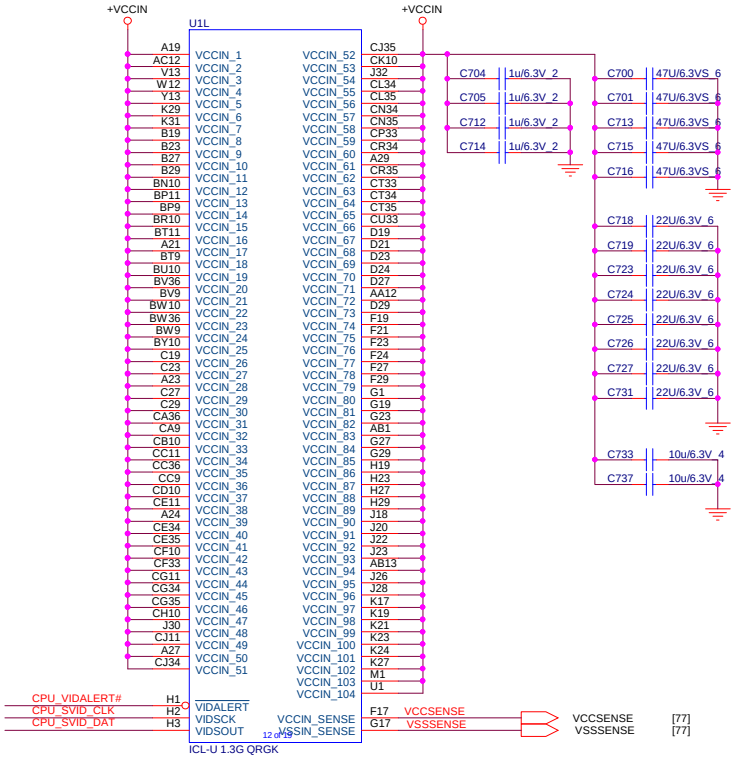
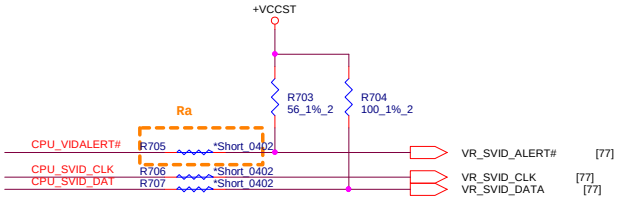
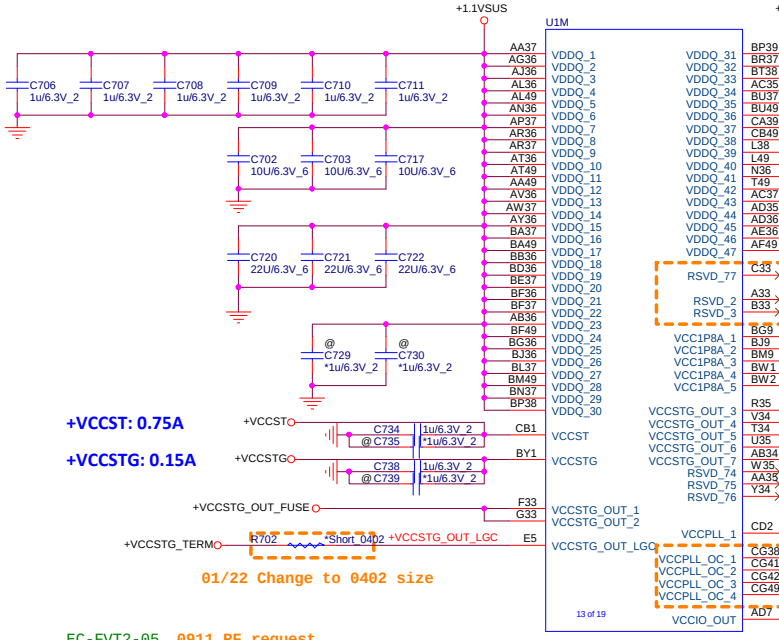
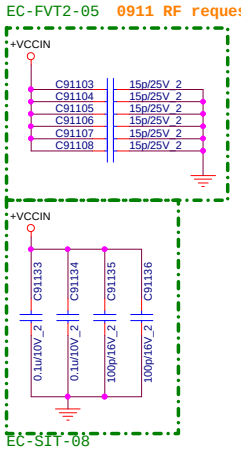
+VCCIN: 70A

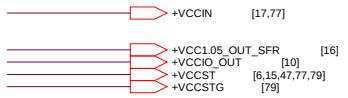


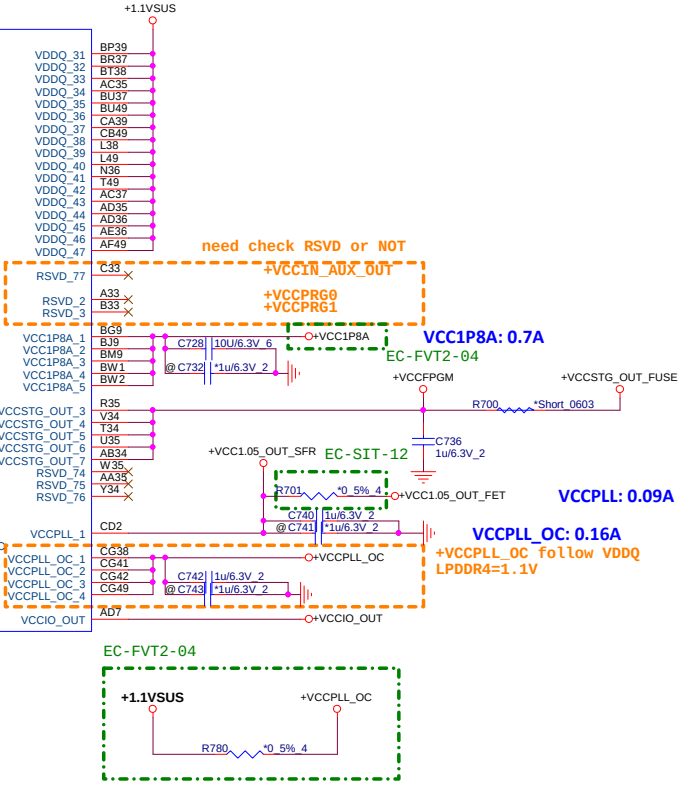


ALERT# needs to Place between CLK and DAT
Ra Neen check value









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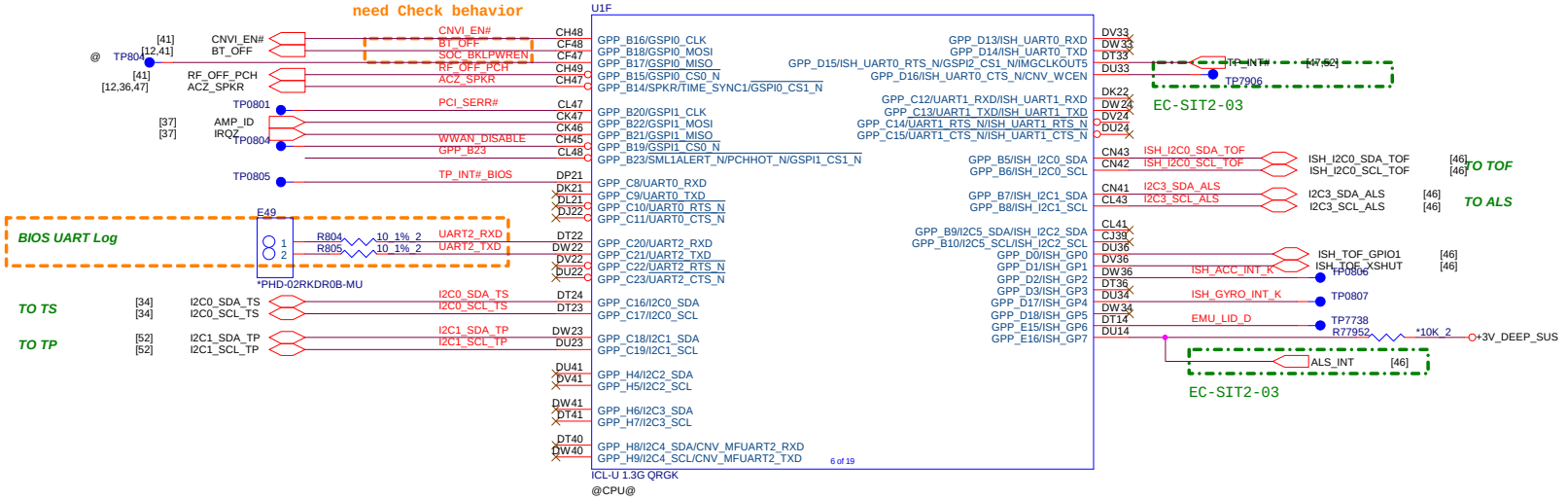
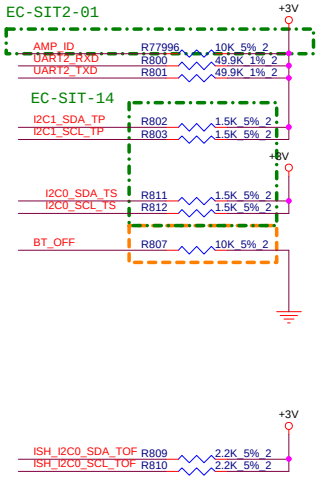
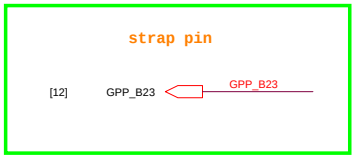
CNVI_EN# PD 75K @ WLAN side
need Check with BIOS

need Check behavior







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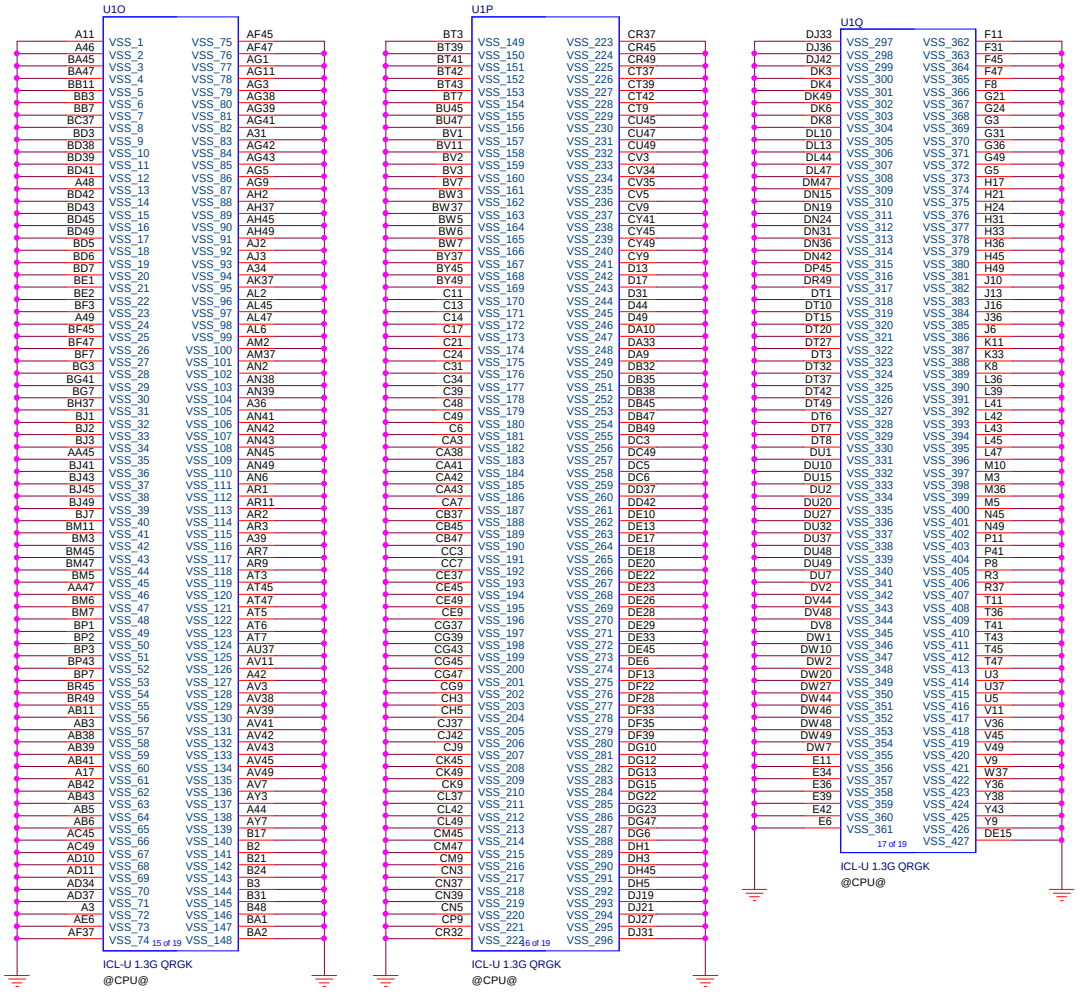

Quanta Computer Inc.

Project: LS2

Title: BU2		
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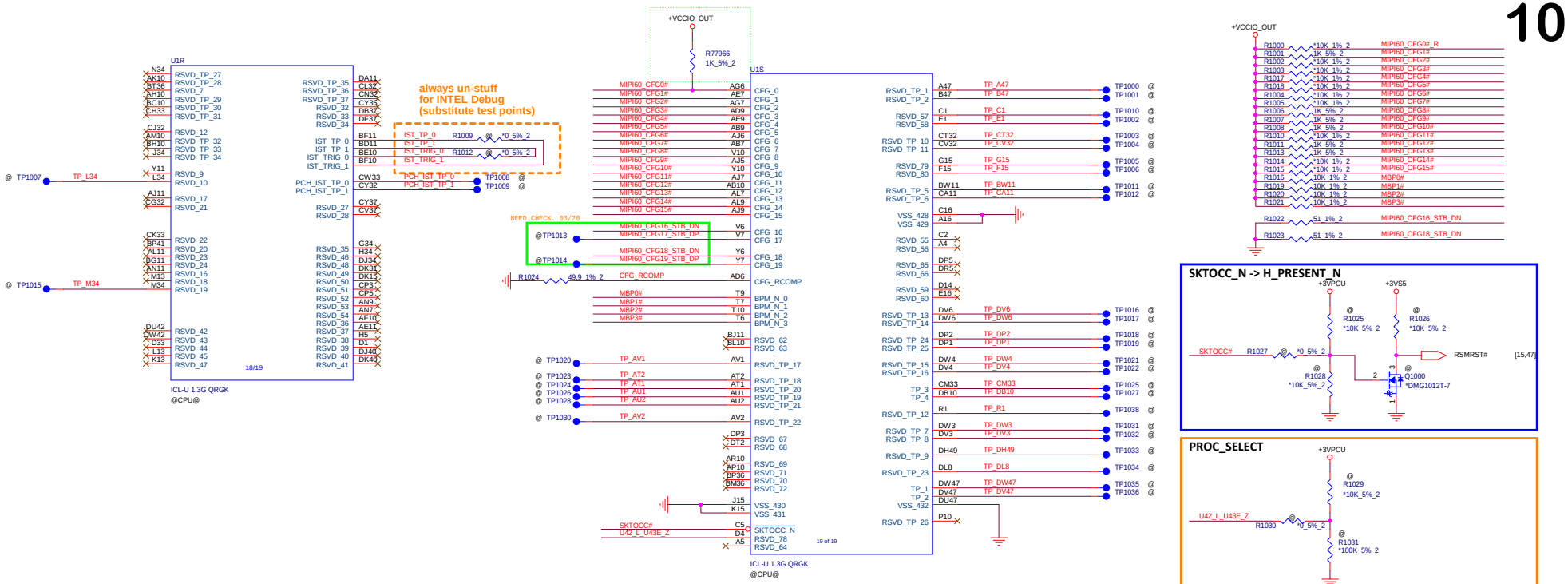
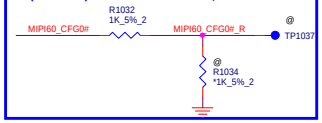


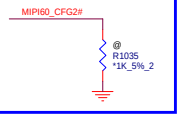
EAR-STALL/NOT STALL RESET SEQUENCE AFTER PCU PLL IS LOCKED

CFG0
1: (DEFAULT) NORMAL OPERATION; NO STALL



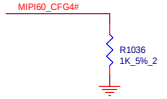
PCI EXPRESS STATIC LANE REVERSAL FOR ALL PEG PORTS

CFG2
1: (DEFAULT)NORMAL OPERATION
0: LANE REVERSAL



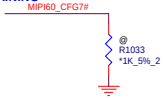
PHYSICAL_DEBUG_ENABLED(DFX PRIVACY)

CFG4
1: DISABLED
AN EXTERNAL DISPLAY PORT DEVICE IS CONNECTED TO THE EMBEDDED DISPLAY PORT
0: ENABLED
NO PHYSICAL DISPLAY PORT ATTACHED TO EMBEDDED DISPLAY PORT



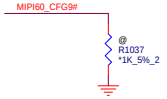
PEG DEFER TRAINING

CFG7
1: (DEFAULT) PEG TRAIN IMMEEDIATELY FOLLOWING XXRESETB DEASSERTION
0: PEG WAIT FOR BIOS FOR TRAINING



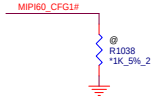
NO SVID PROTOCOL CAPABLE VR CONNECTED

CFG9
1: VRS SUPPORTING SVID PROTOCOL ARE PRESENT
0: NO VR SUPPORTING SVID IS PRESENT. THE CHIP WILL NOT GENERATE (OR RESPOND TO) SVID ACTIVITY



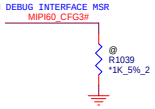
PCH/ PCH LESS MODE SELECTION

CFG1
1: (DEFAULT) NORMAL OPERATION
0: PCH-LESS MODE



PHYSICAL_DEBUG_ENABLED(DFX PRIVACY)

CFG3
1: DISABLED
0: ENABLED
SET DFX ENABLED BIT IN DEBUG INTERFACE MSR



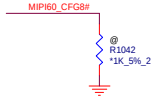
PCIE PORT BIFURCATION STRAPS

CFG[6:5]
11: DEVICE1 FUNTION 1, DEVICE 1 FUNCTION2 DISABLED
10: DEVICE1 FUNCTION1 ENABLED DEVICE1 FUNCTION 2 DISABLED
01: DEVICE 1 FUNCTION 1 DISABLED, DEVICE 1 FUNCTION 2 ENABLED
00 DEVICE 1 FUNCTION 1 ENABLED, DEVICE 1 FUNCTION 2 ENABLED

ALLOW THE USE OF NOA ON LOCKED UNITS

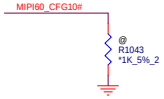
CFG8
1: DISABLED(DEFAULT): IN THHIS CASE, NOA WILL BE DISABLE IN LOCKED UNITS AND ENABLED IN UN-LOCKED UNITS

0: ENABLED: NOA WILL BE AVAILABLE REGARDLESS OF THE LOCKING OF THE UNIT



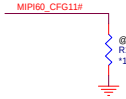
SAFE MODE BOOT

CFG10
1: POWER FEATURES ACTIVATED DURING RESETT
0: POWER FEATURES (ESPECIALLY CLOCK GATINE ARE NOT ACTIVATED



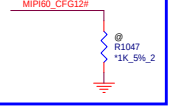
DMI AC COUPLING - JUST A PLACE HOLDER. NOT APPLICABLE FOR ULX-ULT

CFG11
1:(DEFAULT)DMI WILL BE CONFIGURED AS HALF SWING DC COUPLED
0: DMI WILL BE CONFIGURED AS FULL SWING AC COUPLED



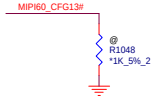
PM SYNC LEGACY

CFG12
1: (DEFAULT) PMSYNC 2.0
0: LEGACY



PMSYNC AYNC MODE- PM SYNC

CFG13
1: (DEFAULT)SYNCHCRONOUS (1 24 MHZ CYCLE PER BIT
0: ASYNC - 4-24MHZ CYCLES PER BIT



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Project: LS2

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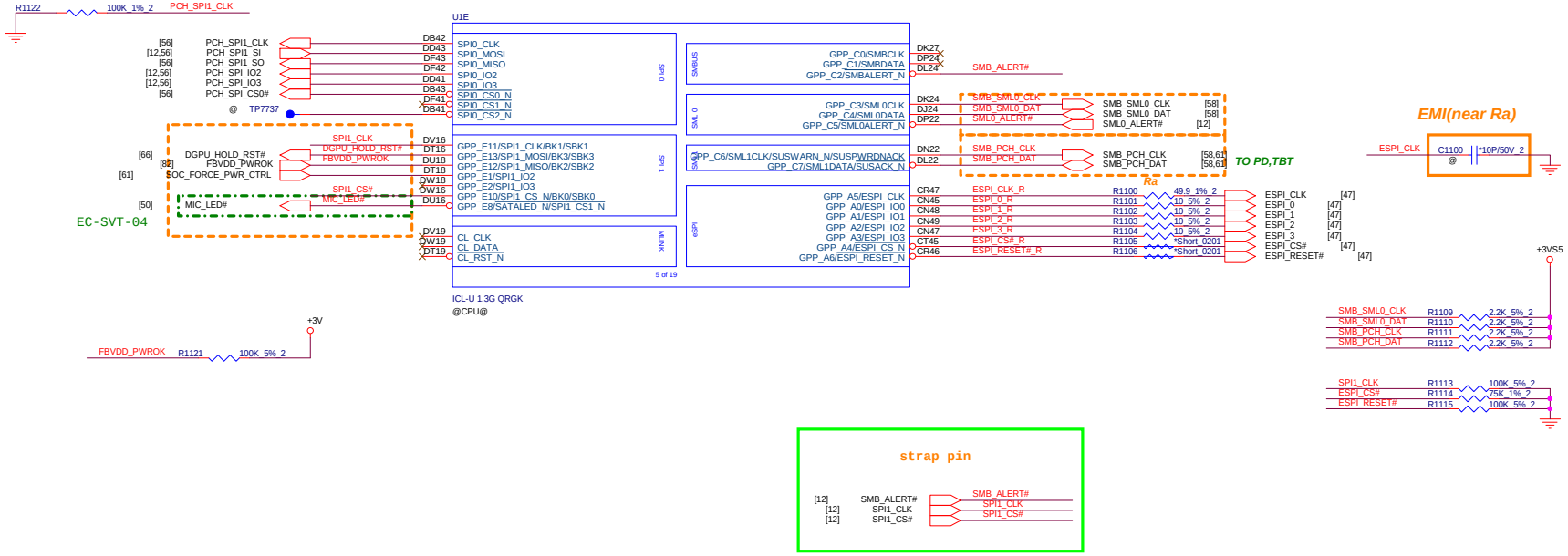

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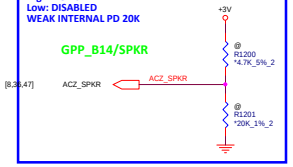
TOP SWAP OVERRIDE

High: TOP SWAP ENABLED
Low: DISABLED
WEAK INTERNAL PD 20K

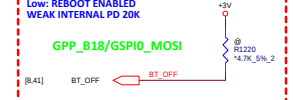
GPP_B14/SPKR



NO REBOOT

High: NO REBOOT
Low: REBOOT ENABLED
WEAK INTERNAL PD 20K

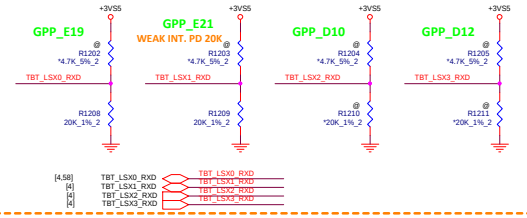
GPP_B18/GSPI0_MOSI



01/15 PD 10K at PAGE.8

TBT LSX PINS VCCIO CONFIGURATION

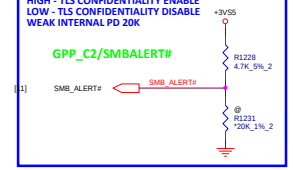
High: 3.3V
Low: 1.8V
NO INTERNAL PU/PD



TLS CONFIDENTIALITY

HIGH - TLS CONFIDENTIALITY ENABLE
LOW - TLS CONFIDENTIALITY DISABLE
WEAK INTERNAL PD 20K

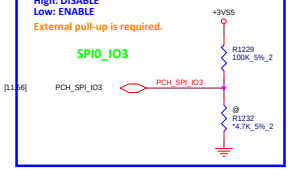
GPP_C2/SMBALERT#



(RSVD) A0 PERSONALITY STRAP

High: DISABLE
Low: ENABLE
External pull-up is required.

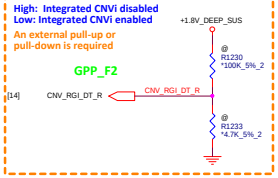
SPI0_IO3



M.2 CNVi Mode Select

High: Integrated CNVi disabled
Low: Integrated CNVi enabled
An external pull-up or pull-down is required

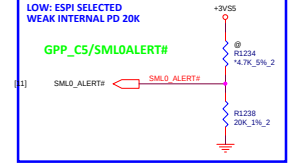
GPP_F2



ESPI OR EC LESS

HIGH: ESPI IS DISABLED
LOW: ESPI SELECTED
WEAK INTERNAL PD 20K

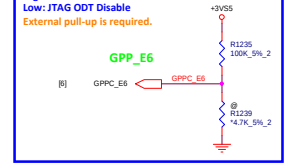
GPP_C5/SML0ALERT#



(RSVD) JTAG ODT DISABLE

High: JTAG ODT Enable
Low: JTAG ODT Disable
External pull-up is required.

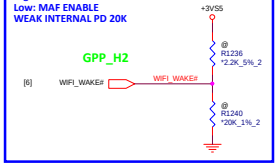
GPP_E6



MAF/SAF STRAP

High: SAF ENABLE
Low: MAF ENABLE
WEAK INTERNAL PD 20K

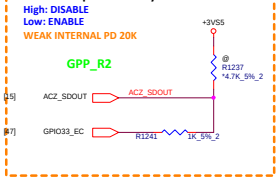
GPP_H2



Flash Descriptor Security Override

High: DISABLE
Low: ENABLE
WEAK INTERNAL PD 20K

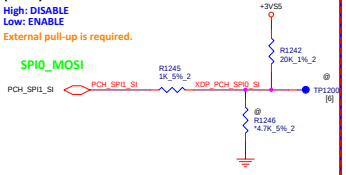
GPP_R2



(RSVD) BOOT HALT

High: DISABLE
Low: ENABLE
External pull-up is required.

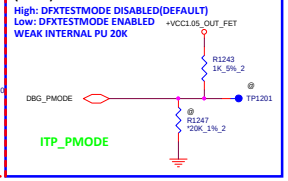
SPI0_MOSI



(RSVD) ITP PMODE

High: DFXTESTMODE DISABLED(DEFAULT)
Low: DFXTESTMODE ENABLED
WEAK INTERNAL PU 20K

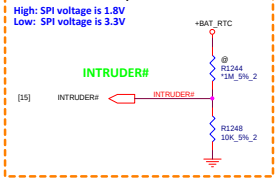
ITP_PMODE



STRAP FOR SPI 1.8V/3.3V SELECTION

High: SPI voltage is 1.8V
Low: SPI voltage is 3.3V

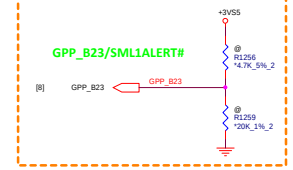
INTRUDER#



CPUNSSC CLOCK FREQ

High: 19.2MHz CLOCK FROM INTERNAL DIVIDER
Low: 38.4MHz CLOCK FROM DIRECT CRYSTAL (Default)
WEAK INTERNAL PD 20K

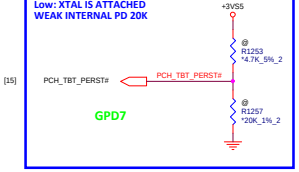
GPP_B23/SML1ALERT#



(RSVD) XTAL INPUT MODE

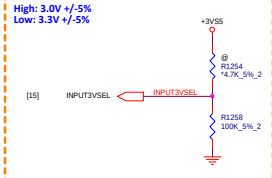
High: XTAL INPUT IS SINGLE ENDED
Low: XTAL IS ATTACHED
WEAK INTERNAL PD 20K

GPD7



3V SELECT STRAP

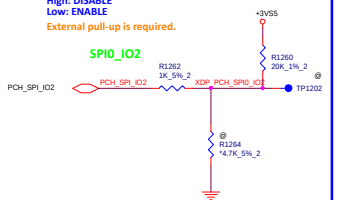
High: 3.0V +/-5%
Low: 3.3V +/-5%



(RSVD) CONSENT STRAP

High: DISABLE
Low: ENABLE
External pull-up is required.

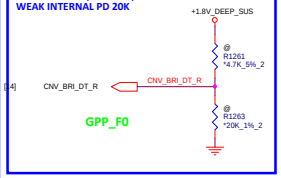
SPI0_IO2



XTAL FREQUENCE SEL

High: 24MHZ
(25 MHZ WHEN XTAL FREQ DIVIDER NON ZERO)
Low: 38.4MHZ (DEFAULT)
WEAK INTERNAL PD 20K

GPP_F0



RING OSCILLATOR BYPASS

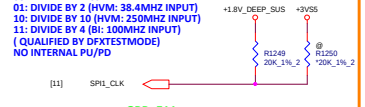
High: BYPASS MODE ENABLED
Low: RING OSCILLATOR
(QUALIFIED BY DFXTESTMODE)
NO INTERNAL PU/PD

GPP_H3

XTAL INPUT FREQUENCY [1]

00: DIVIDE BYPASS
01: DIVIDE BY 2 (HVM: 38.4MHZ INPUT)
10: DIVIDE BY 10 (HVM: 250MHZ INPUT)
11: DIVIDE BY 4 (BI: 100MHZ INPUT)
(QUALIFIED BY DFXTESTMODE)
NO INTERNAL PU/PD

HVM ONLY

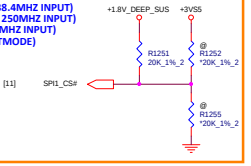


GPP_E11

XTAL INPUT FREQUENCY [0]

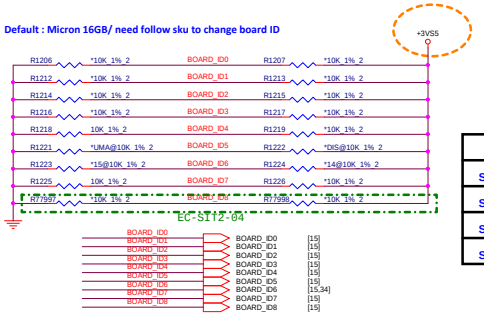
00: DIVIDE BYPASS
01: DIVIDE BY 2 (HVM: 38.4MHZ INPUT)
10: DIVIDE BY 10 (HVM: 250MHZ INPUT)
11: DIVIDE BY 4 (BI: 100MHZ INPUT)
(QUALIFIED BY DFXTESTMODE)
NO INTERNAL PU/PD

HVM ONLY



GPP_E10

Default : Micron 16GB/ need follow sku to change board ID



	BOARD_ID4	BOARD_ID7
SVT	0	0
SVT	0	1
SVT	1	0
SIT	1	1

	BOARD_ID5
DSC	1
UMA	0

	BOARD_ID6
14	1
15	0

	BOARD_ID8
WOOFER	1
NON WOOFER	0

BOARD_ID[3:0]				
ID3	ID2	ID1	ID0	
0	0	0	0	Samsung 8GB AKD5MZST519
0	0	0	1	Micron 8GB AKD5SZUTL03
0	0	1	0	Hynix 8GB AKD5RG0TW21
0	0	1	1	Samsung 16GB AKD5PZSTS38
0	1	0	0	Micron 16GB AKD5SWDTL14
0	1	0	1	Hynix 16GB AKD5SGUTW04
1	0	0	0	Samsung 12GB SIT(8G)
1	0	0	1	Micron 12GB SIT(8G)
1	0	1	0	Hynix 12GB
1	1	0	0	Samsung 12GB
1	1	0	1	Micron 12GB

Quanta Computer Inc.
Project: LS2

Title	BU2	
Size	Document Number: ICL-U 9/14 (HW STRAP)	Rev: 0A
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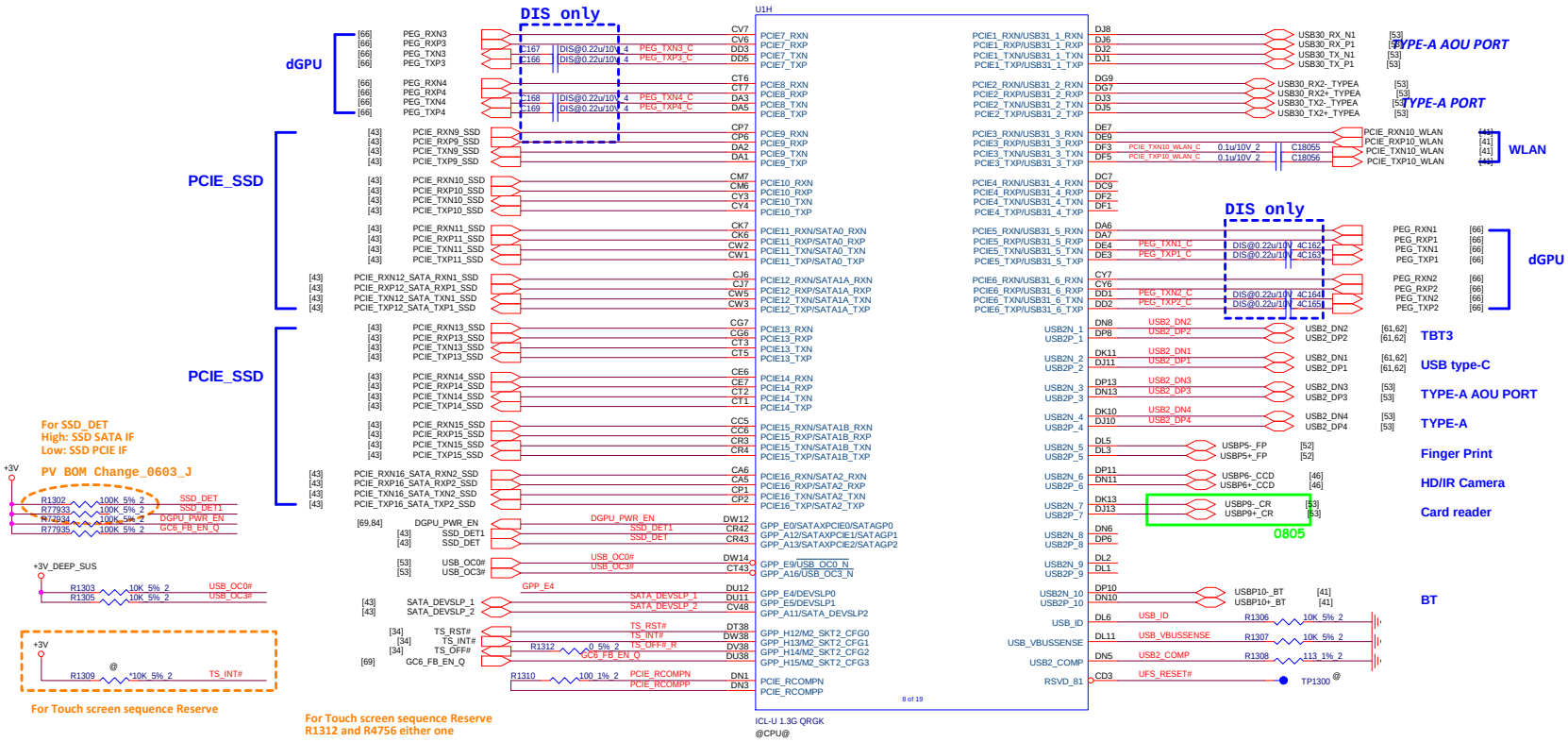

13

PCI-E Port Mapping Table

PCI-E Port	Function	CLK RQ Port	Function
Port1	Un-used		
Port2	Un-used		
Port3	WLAN	Port0	
Port4	Un-used		
Port5	dGPU	Port1	
Port6	dGPU		
Port7	dGPU		
Port8	dGPU		
Port9	SSD	Port3	
Port10	SSD		
Port11	SSD		
Port12	SSD		
Port13	SSD	Port4	
Port14	SSD		
Port15	SSD		
Port16	SSD		

USB3.0 Port Mapping Table

USB3.0	Function
PORT-1	TYPE A
PORT-2	TYPE A
PORT-3	NC
PORT-4	NC

USB2.0 Port Mapping Table

USB2.0	Function
PORT-1	USB3.1_GEN2_MB-1
PORT-2	USB type-C
PORT-3	TYPE A
PORT-4	TYPE A
PORT-5	Finger Print
PORT-6	HD/IR Camera
PORT-7	NC
PORT-8	NC
PORT-9	Card reader
PORT-10	BT

Quanta Computer Inc.

Project: LS2

Title: BU2

Size | Document Number: ICL-U 10/14(USB/PCIE/SAT) | Rev: 0A

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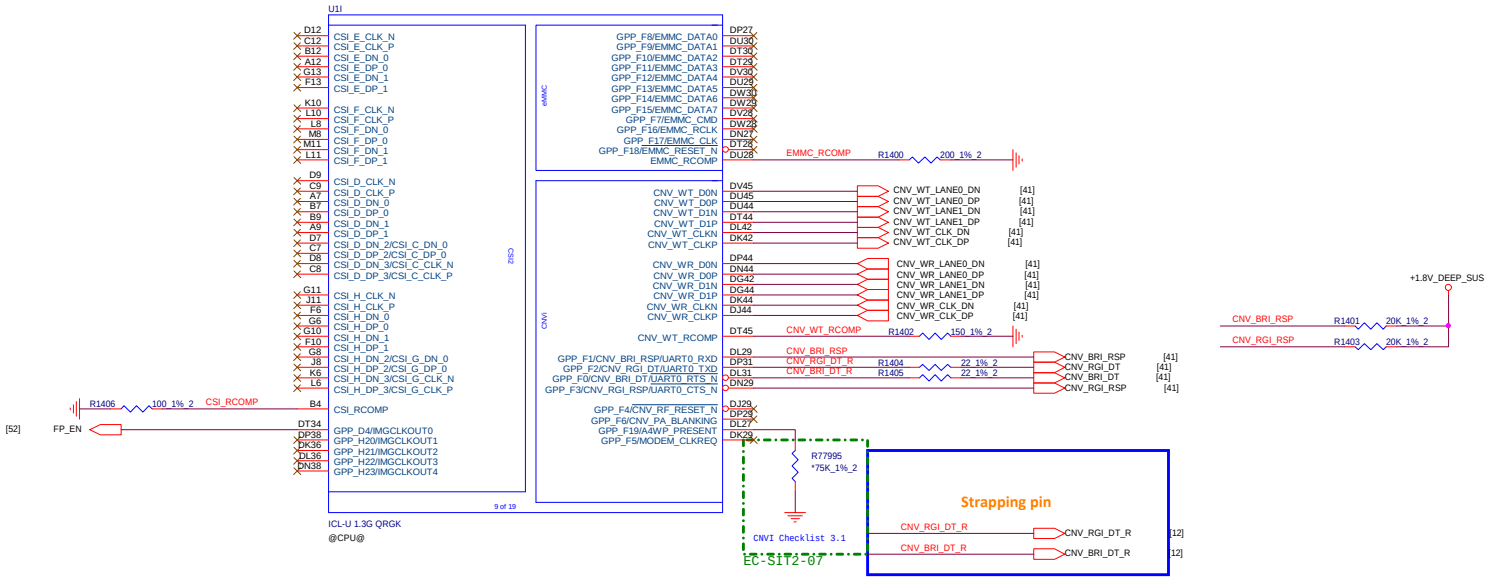
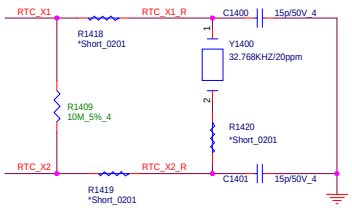
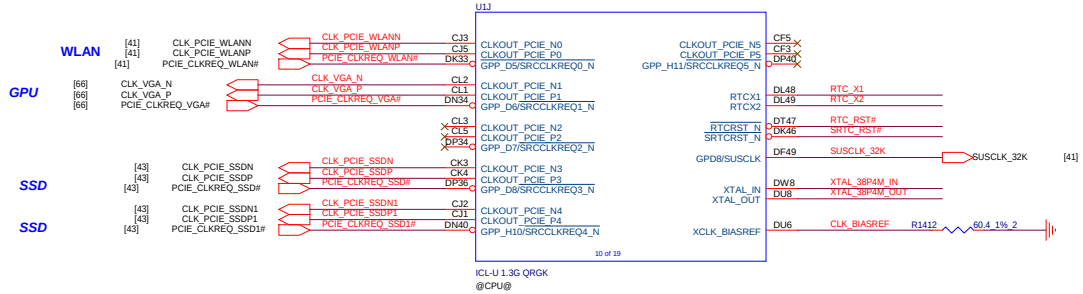


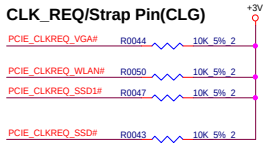
Crystal Components with Surrounding 10 mil Wide GND Shield Trace
Break Out:4-10 mil Wide GND Shield Trace

RTC Clock 32.768KHz





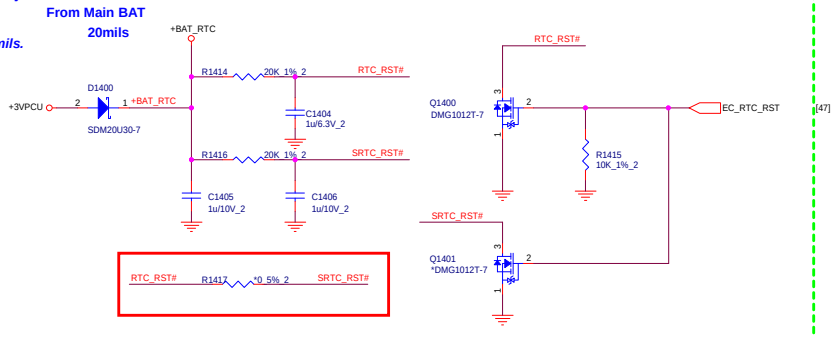
CLK_REQ/Strap Pin(CLG)



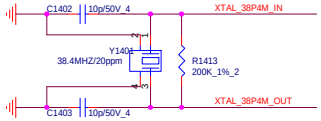
RTC Circuitry(RTC)

From Main BAT
20mils

RTC Power trace width 20mils.



Crystal 38.4MHz



Quanta Computer Inc.

Project: LS2

Title: BU2		
Size	Document Number: ICL-U 11/14(CSI/CNVi/CLK)	Rev: 0A
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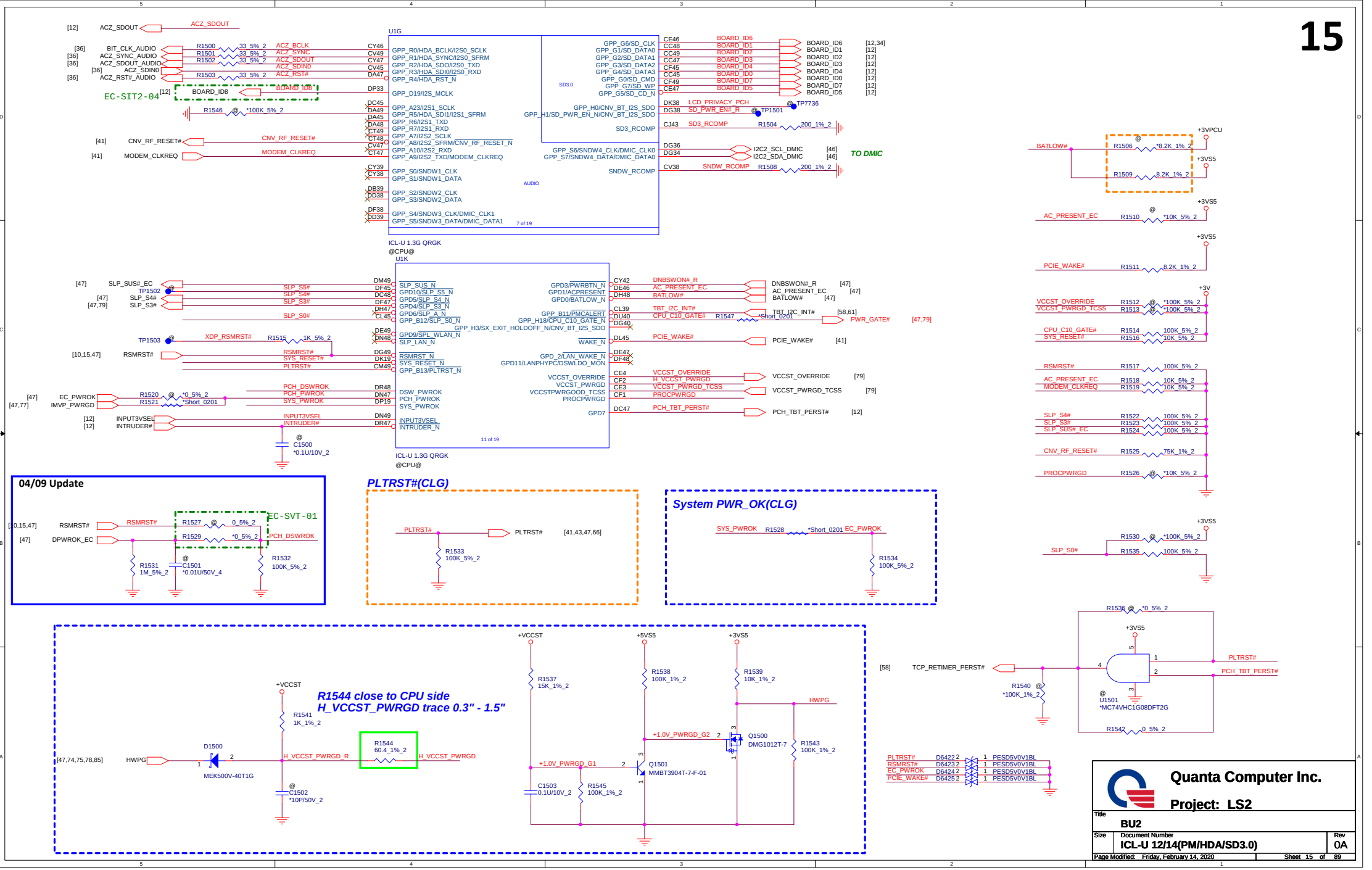
U1G
ACZ_SDOUT
BIT_CLK_AUDIO
ACZ_SYNC_AUDIO
ACZ_SDOUT_AUDIO
ACZ_SDIN0
ACZ_RST#_AUDIO
R1500 33_5%_2
R1501 33_5%_2
R1502 33_5%_2
R1503 33_5%_2
ACZ_BCLK
ACZ_SYNC
ACZ_SDOUT
ACZ_SDIN0
ACZ_RST#
EC-SIT2-04
BOARD_ID8
BOARD_ID8
R1546 @ *100K_5%_2
CNV_RF_RESET#
MODEM_CLKREQ
GPP_R0/HDA_BCLK/I2S0_SCLK
GPP_R1/HDA_SYNC/I2S0_SFRM
GPP_R2/HDA_SDO/I2S0_TXD
GPP_R3/HDA_SDI0/I2S0_RXD
GPP_R4/HDA_RST_N
GPP_D19/I2S_MCLK
GPP_A23/I2S1_SCLK
GPP_R5/HDA_SDI1/I2S1_SFRM
GPP_R6/I2S1_TXD
GPP_R7/I2S1_RXD
GPP_A7/I2S2_SCLK
GPP_A8/I2S2_SFRM/CNV_RF_RESET_N
GPP_A10/I2S2_RXD
GPP_A9/I2S2_TXD/MODEM_CLKREQ
GPP_S0/SNDW1_CLK
GPP_S1/SNDW1_DATA
GPP_S2/SNDW2_CLK
GPP_S3/SNDW2_DATA
GPP_S4/SNDW3_CLK/DMIC_CLK1
GPP_S5/SNDW3_DATA/DMIC_DATA1
7 of 19
SD3.0
AUDIO
GPP_G6/SD_CLK
GPP_G1/SD_DATA0
GPP_G2/SD_DATA1
GPP_G3/SD_DATA2
GPP_G4/SD_DATA3
GPP_G0/SD_CMD
GPP_G7/SD_WP
GPP_G5/SD_CD_N
GPP_H0/CNV_BT_I2S_SDO
GPP_H1/SD_PWR_EN_N/CNV_BT_I2S_SDO
SD3_RCOMP
GPP_S6/SNDW4_CLK/DMIC_CLK0
GPP_S7/SNDW4_DATA/DMIC_DATA0
SNDW_RCOMP
BOARD_ID6
BOARD_ID1
BOARD_ID2
BOARD_ID3
BOARD_ID4
BOARD_ID0
BOARD_ID7
BOARD_ID5
LCD_PRIVACY_PCH
SD_PWR_EN#_R
TP7736
TP1501
SD3_RCOMP
R1504 200_1%_2
I2C2_SCL_DMIC
I2C2_SDA_DMIC
TO DMIC
SNDW_RCOMP
R1508 200_1%_2
ICL-U 1.3G QRGK
@CPU@
U1K
SLP_S5#
SLP_S4#
SLP_S3#
SLP_S0#
TP1502
TP1503
XDP_RSMRST#
R1515 1K_5%_2
RSMRST#
PLTRST#
SLP_SUS#_EC
SLP_SUS_N
GPD10/SLP_S5_N
GPD5/SLP_S4_N
GPD4/SLP_S3_N
GPD6/SLP_A_N
GPP_B12/SLP_S0_N
GPD9/SPI_WLAN_N
SLP_LAN_N
RSMRST_N
SYS_RESET_N
GPP_B13/PLTRST_N
GPD3/PWRBTN_N
GPD1/ACPRESENT
GPD0/BATLOW_N
GPP_B11/PMCALERT
GPP_H18/CPU_C10_GATE_N
GPP_H3/SX_EXIT_HOLDOFF_N/CNV_BT_I2S_SDO
WAKE_N
GPD_2/LAN_WAKE_N
GPD11/LANPHYPC/DSWLDO_MON
VCCST_OVERRIDE
VCCST_PWRGD
VCCSTPWRGOOD_TCSS
PROCPWRGD
GPD7
DSW_PWROK
PCH_PWROK
SYS_PWROK
INPUT3VSEL
INTRUDER_N
11 of 19
DNBSWON#_R
AC_PRESENT_EC
BATLOW#
TBT_I2C_INT#
CPU_C10_GATE#
R1547 *Short_0201
PWR_GATE#
PCIE_WAKE#
VCCST_OVERRIDE
H_VCCST_PWRGD
VCCST_PWRGD_TCSS
PROCPWRGD
PCH_TBT_PERST#
EC_PWROK
IMVP_PWRGD
R1520 @ *0_5%_2
R1521 *Short_0201
PCH_DSWROK
PCH_PWROK
SYS_PWROK
INPUT3VSEL
INTRUDER#
C1500 *0.1U/10V_2
ICL-U 1.3G QRGK
@CPU@
+3VPCU
BATLOW#
R1506 @ *8.2K_1%_2
R1509 8.2K_1%_2
+3VS5
AC_PRESENT_EC
R1510 @ *10K_5%_2
PCIE_WAKE#
R1511 8.2K_1%_2
+3V
VCCST_OVERRIDE
VCCST_PWRGD_TCSS
R1512 @ *100K_5%_2
R1513 @ *100K_5%_2
CPU_C10_GATE#
SYS_RESET#
R1514 100K_5%_2
R1516 10K_5%_2
RSMRST#
R1517 100K_5%_2
AC_PRESENT_EC
MODEM_CLKREQ
R1518 10K_5%_2
R1519 10K_5%_2
SLP_S4#
SLP_S3#
SLP_SUS#_EC
R1522 100K_5%_2
R1523 100K_5%_2
R1524 100K_5%_2
CNV_RF_RESET#
R1525 75K_1%_2
PROCPWRGD
R1526 @ *10K_5%_2
04/09 Update
EC-SVT-01
R1527 @ 0_5%_2
R1529 *0_5%_2
R1531 1M_5%_2
C1501 *0.01U/50V_4
R1532 100K_5%_2
PLTRST#(CLG)
R1533 100K_5%_2
System PWR_OK(CLG)
SYS_PWROK
R1528 *Short_0201
EC_PWROK
R1534 100K_5%_2
R1530 @ *100K_5%_2
SLP_S0#
R1535 100K_5%_2
R1544 close to CPU side
H_VCCST_PWRGD trace 0.3" - 1.5"
+VCCST
R1541 1K_1%_2
D1500
MEK500V-40T1G
H_VCCST_PWRGD_R
R1544 60.4_1%_2
H_VCCST_PWRGD
C1502 *10P/50V_2
R1537 15K_1%_2
R1538 100K_1%_2
R1539 10K_1%_2
HWPG
+1.0V_PWRGD_G2
+1.0V_PWRGD_G1
Q1501 MMBT3904T-7-F-01
Q1500 DMG1012T-7
R1543 100K_1%_2
C1503 0.1U/10V_2
R1545 100K_1%_2
R1536 @ *0_5%_2
R1540 @ *100K_1%_2
R1542 0_5%_2
U1501 *MC74VHC1G08DFT2G
TCP_RETIMER_PERST#
PLTRST#
PCH_TBT_PERST#
D6422 D6423 D6424 D6425
PESD5V0V1BL
RSMRST#
EC_PWROK
PCIE_WAKE#
Quanta Computer Inc.
Project: LS2
Title
BU2
Size
Document Number
ICL-U 12/14(PM/HDA/SD3.0)
Rev
0A
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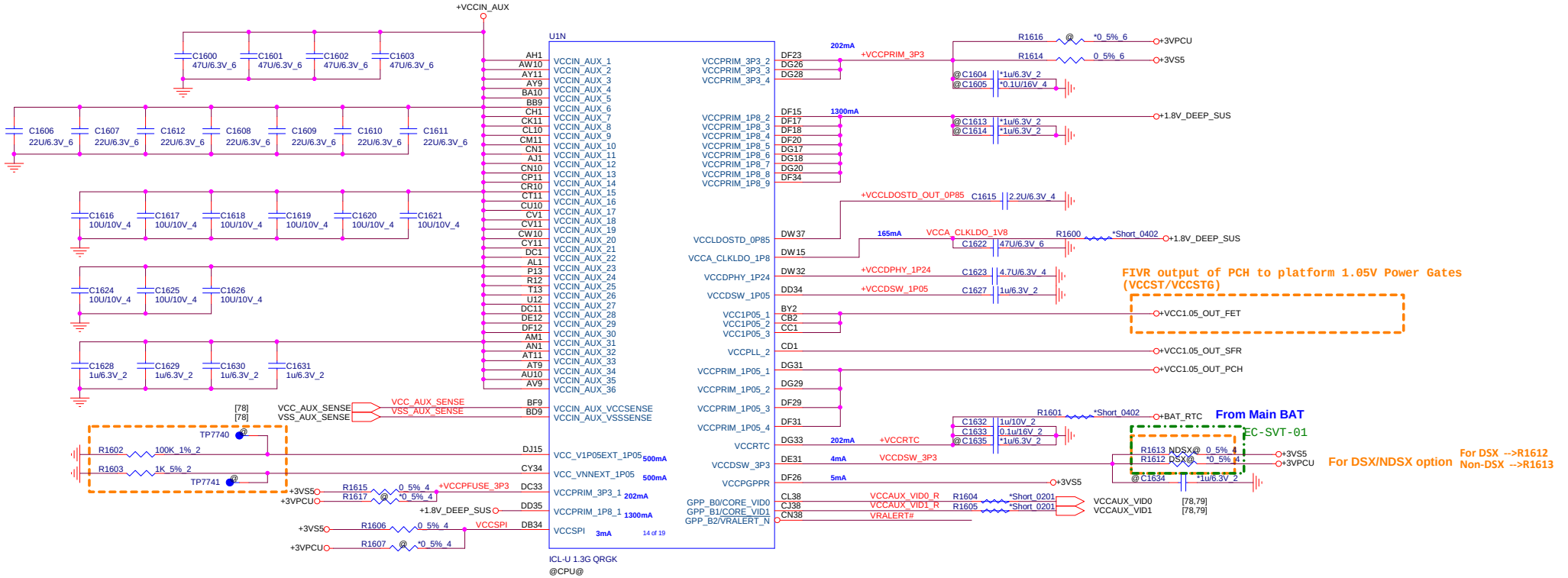
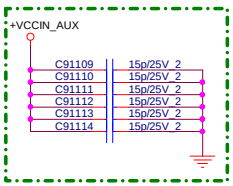
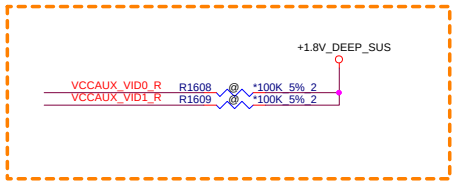
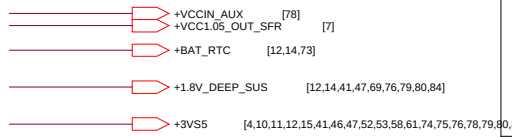
+VCCIN_AUX: 32A

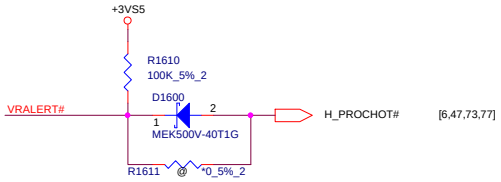


EC-FVT2-05 0911 RF request









Quanta Computer Inc.

Project: LS2

Title: BU2		
Size	Document Number: ICL-U 13/14(PCH POWER)	Rev: 0A
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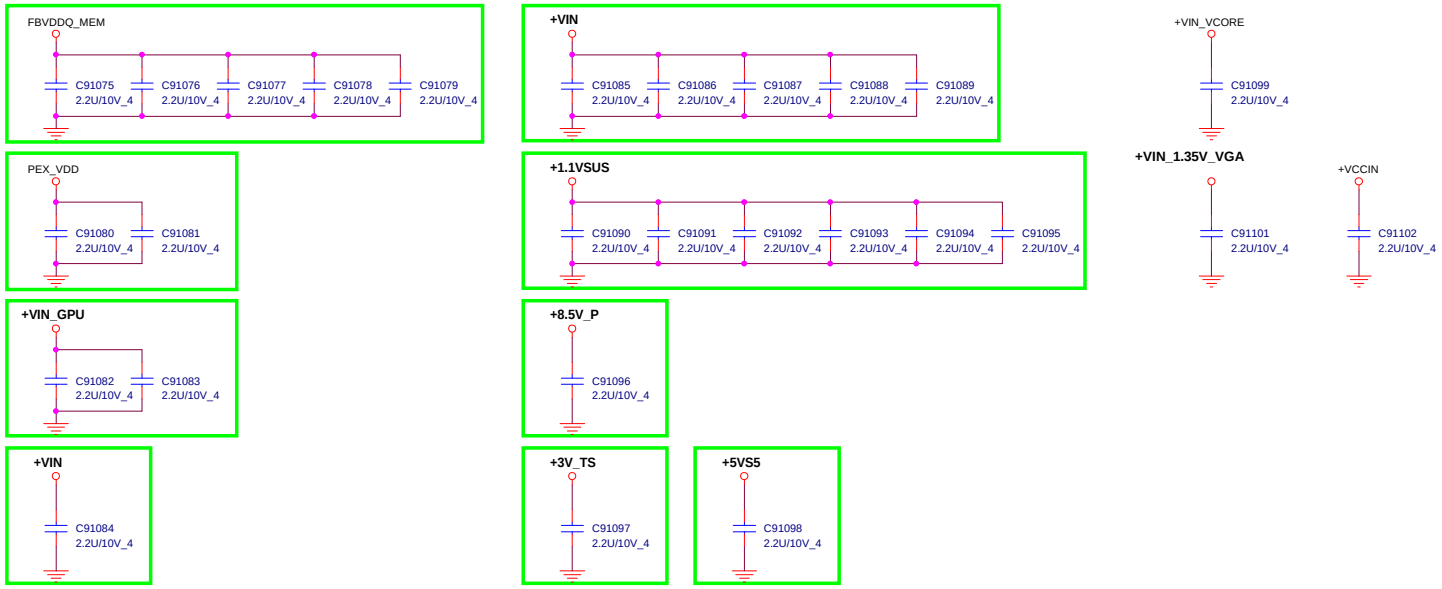
0814



Quanta Computer Inc.

Project: LS2

Title		
	BU2	
Size	Document Number: ICL-U 14/14 (BLANK)	Rev: 0A
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EC_VSTBY0
Slave Addresses:1000000

CO-LAY WITH R4740

EC
Slave Addresses:1000001

CO-LAY WITH L4700

EC
Slave Addresses:1000010

CO-LAY WITH L4701

TBD
Slave Addresses:

+VNN_EXT
Slave Addresses:1000100

TBD
Slave Addresses:

TBD
Slave Addresses:

+VCC1P8A
Slave Addresses:1000111

TBD
Slave Addresses:

TBD
Slave Addresses:

Table 7. INA231 Address Pins and Slave Addresses

A1	A0	SLAVE ADDRESS
GND	GND	1000000
GND	V_S	1000001
GND	SDA	1000010
GND	SCL	1000011
V_S	GND	1000100
V_S	V_S	1000101
V_S	SDA	1000110
V_S	SCL	1000111
SDA	GND	1001000
SDA	V_S	1001001
SDA	SDA	1001010
SDA	SCL	1001011
SCL	GND	1001100
SCL	V_S	1001101
SCL	SDA	1001110
SCL	SCL	1001111

TBD
Slave Addresses:

TBD
Slave Addresses:

TBD
Slave Addresses:

TBD
Slave Addresses:

TBD
Slave Addresses:

TBD
Slave Addresses:

eDP
Slave Addresses:1001100

LCD Backlight
Slave Addresses:1000101

TBD
Slave Addresses:

Touch Screen Board sensor
Slave Addresses:1000011

TBD
Slave Addresses:

TBD
Slave Addresses:

Codec
Slave Addresses:1000110

USB-A
Slave Addresses:1001101

WWAN
Slave Addresses:1001000

CO-LAY WITH R5735

CO-LAY WITH R4217

Quanta Computer Inc.

Project: LS2

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Battery
Slave Addresses:1001001
Placed close PR51

+VCCST
Slave Addresses:1001010

TBD
Slave Addresses:

TBD
Slave Addresses:

TBD
Slave Addresses:

TBD
Slave Addresses:

TBD
Slave Addresses:

TBD
Slave Addresses:

SSD
Slave Addresses:1000000
CO-LAY WITH R4300

WLAN
Slave Addresses:1000001
CO-LAY WITH R4110

TBD
Slave Addresses:

Card Reader
Slave Addresses:1000011
CO-LAY WITH R5510

BBR1
Slave Addresses:1000100
CO-LAY WITH L5800

BBR2
Slave Addresses:1000101
CO-LAY WITH L5900

TBD
Slave Addresses:

+5VS5
Slave Addresses:1000111
Placed close PR9162

Quanta Computer Inc.
Project: LS2

Title: BU2

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+1.1VSUS

Slave Addresses:1001000

+0.6VSUS

Slave Addresses:1001001

+5V

Slave Addresses:1001010

TBD

Slave Addresses:

TBD

Slave Addresses:

TBD

Slave Addresses:

TBD

Slave Addresses:

TBD

Slave Addresses:

Quanta Computer Inc.			
Project: LS2			
Title: BU2			
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Reserve

Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: CURRENT SENSOR-5	Rev: 0A
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Reserve

Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: PCH /NC	Rev: 0A
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Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: PCH /NC	Rev: 0A
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Reserve

Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: PCH /NC	Rev: 0A
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Reserve

Quanta Computer Inc.		
Project: LS2		
Title: BU2		
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Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: PCH Hardware strappin /NC	Rev: 0A
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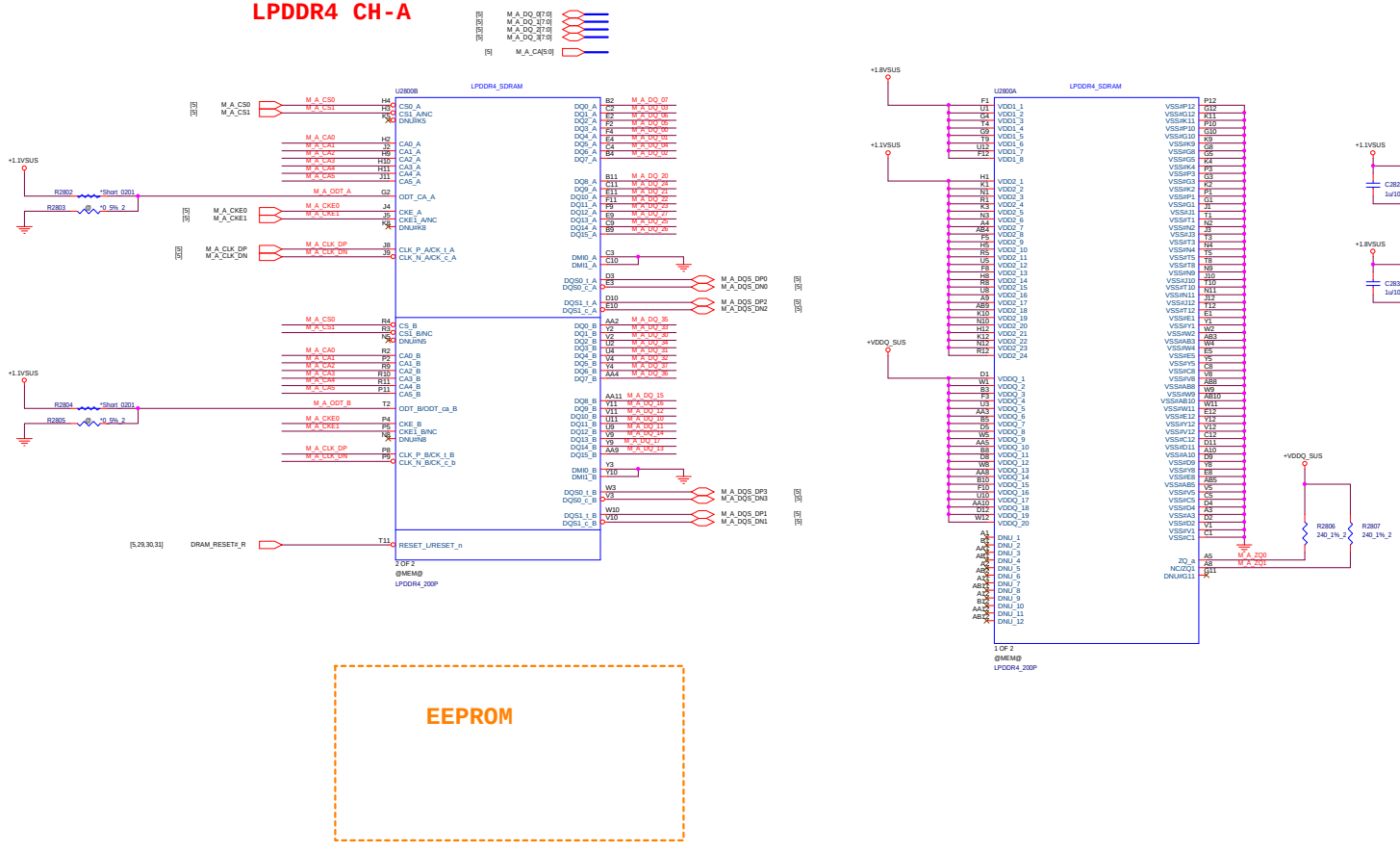
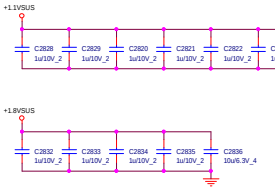
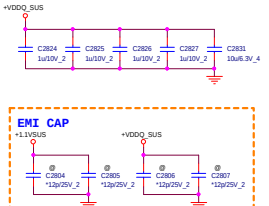
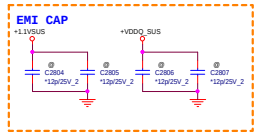
Non-NB Footprint:bga200-hynix-h9hcnnnbkmalhr-0_5s

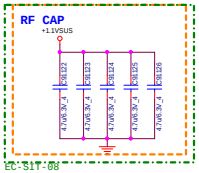
LPDDR4 CH-A



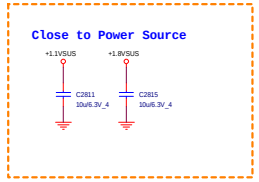


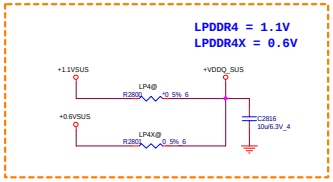






EC-S1T-08





EEPROM

Quanta Computer Inc.			
Project: LS2			
Title: BU2			
Size	Document Number: MEMORY_A_LPDDR4		Rev: 0A
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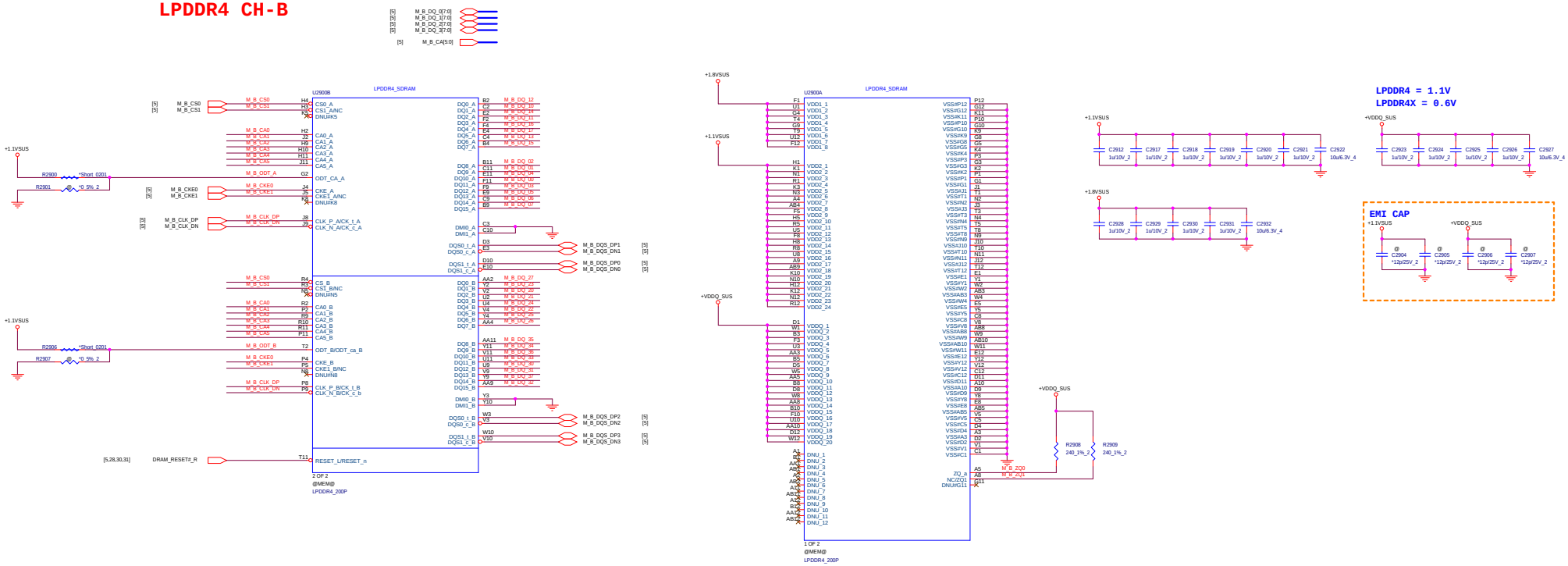
Non-NB Footprint:bga200-hynix-h9hcnnnbkmalhr-0_5s

LPDDR4 CH-B



Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: MEMORY_B_LPDDR4	Rev: 0A
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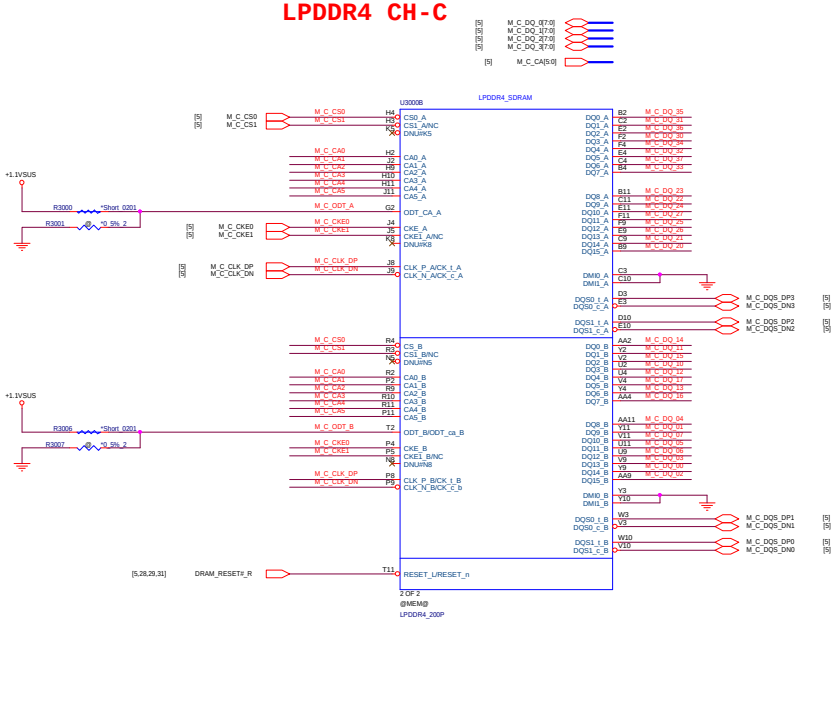
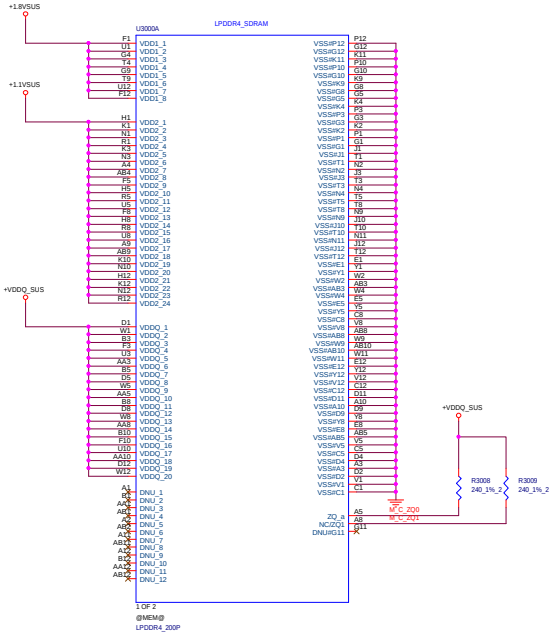
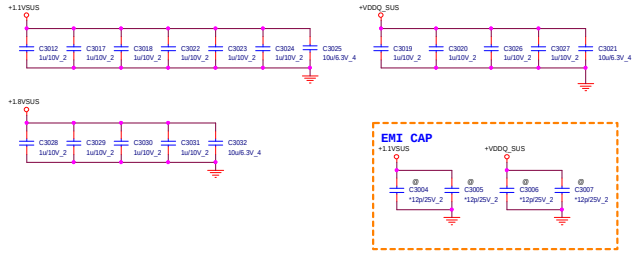
Non-NB Footprint:bga200-hynix-h9hcnnnbkmalhr-0_5s

LPDDR4 CH-C







Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: MEMORY_C_LPDDR4	Rev: 0A
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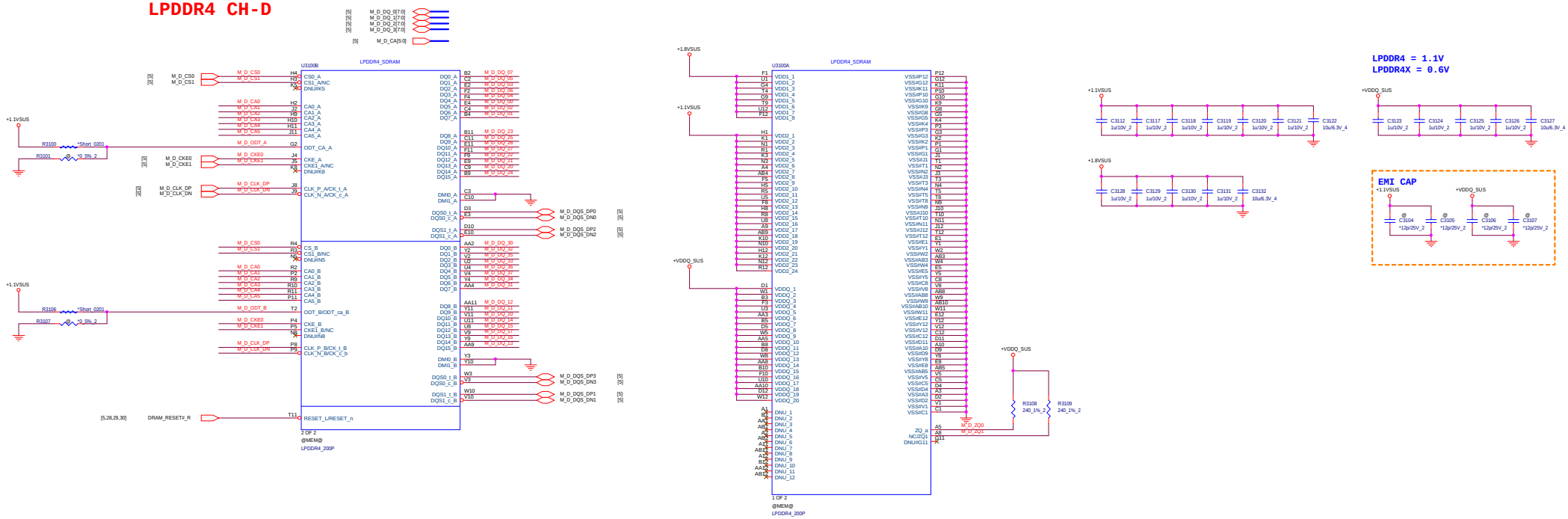
Non-NB Footprint:bga200-hynix-h9hcnnnbkmalhr-0_5s

LPDDR4 CH-D



Quanta Computer Inc.			
Project: LS2			
Title: BU2			
Size	Document Number: MEMORY_D_LPDDR4	Rev: 0A	
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Reserve

Quanta Computer Inc.

Project: LS2

Title: BU2

Size | Document Number: MEMORY /NC | Rev: 0A

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Reserve

Quanta Computer Inc.		
Project: LS2		
Title: BU2		
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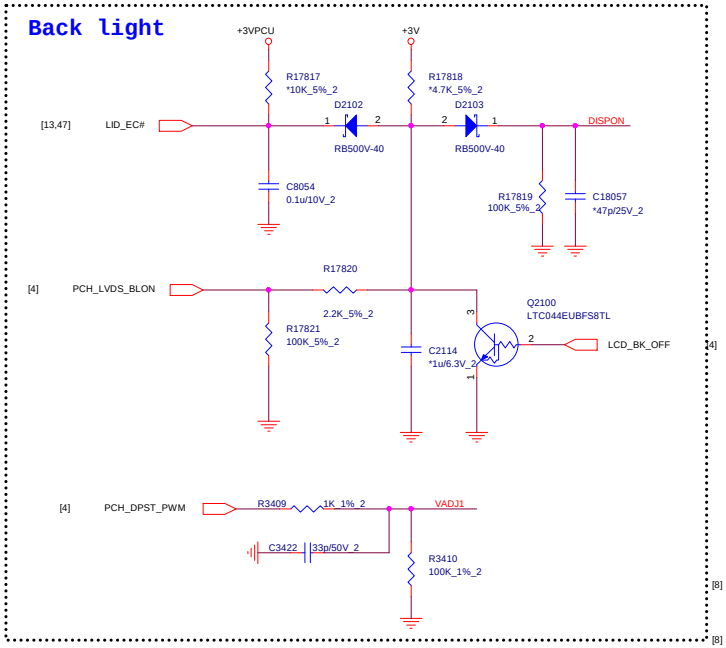
+3V [4,8,11,12,13,14,15,35,36,37,46,47,50,52,53,54,58,61,66,69,77,80,87]
+3VPCU [10,14,15,16,41,46,47,50,52,53,61,73,74,75,76,80,83,85]
+5V [35,36,47,50,54,80,87]
+VIN [17,50,73,74,75,77,78,81,82,84,86,87,88]

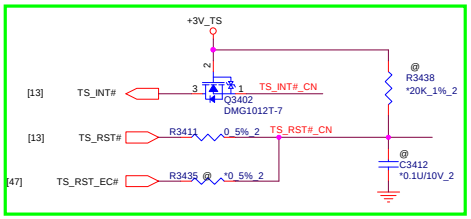
34

eDP Connector

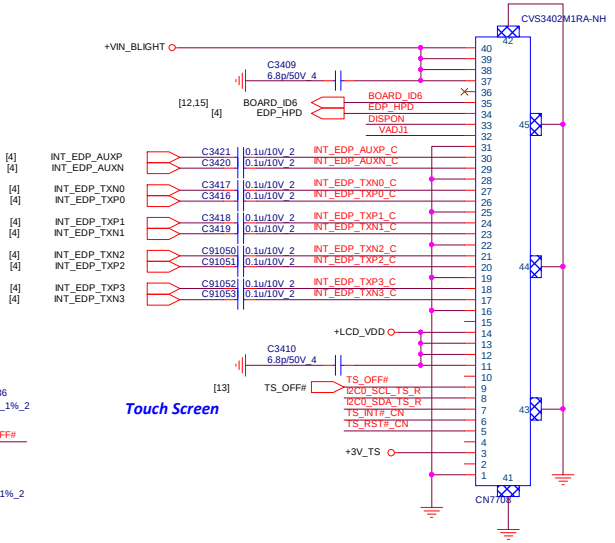
Back light



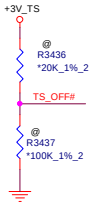
Nomal Touch Screen



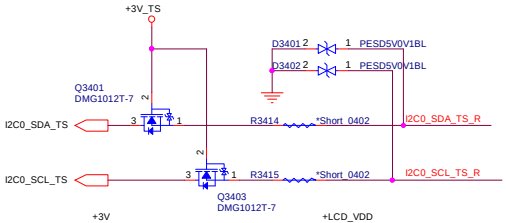
Panel



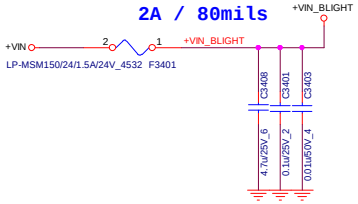
Touch Screen

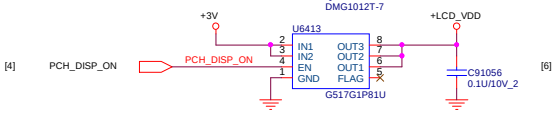


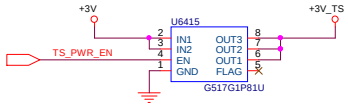
For Touch screen sequence Reserve

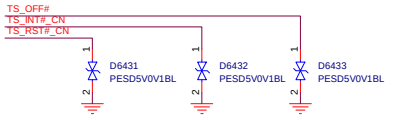


2A / 80mils









Quanta Computer Inc.

Project: LS2

Title: BU2		
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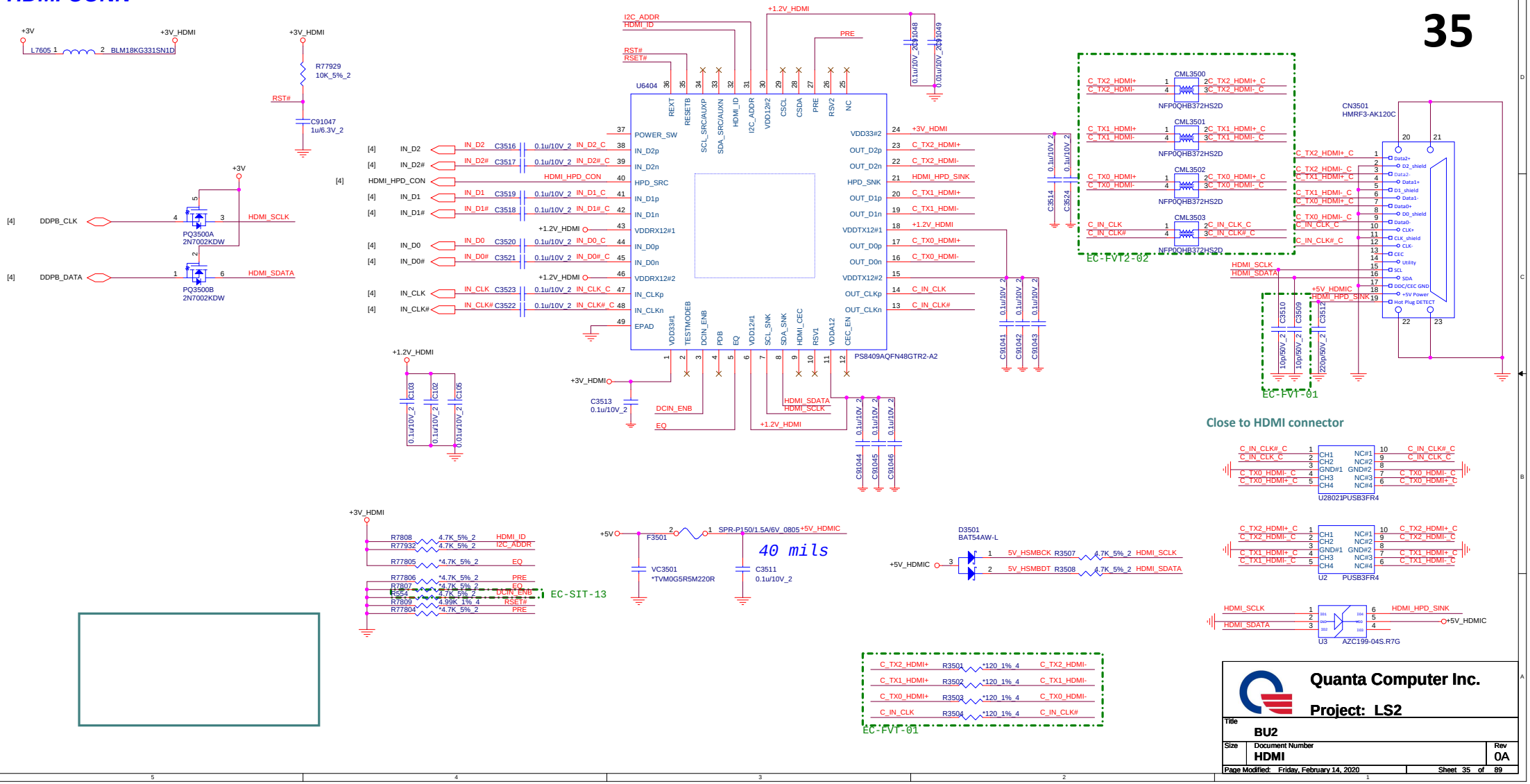
HDMI CONN



Quanta Computer Inc.

Project: LS2

Title	BU2	
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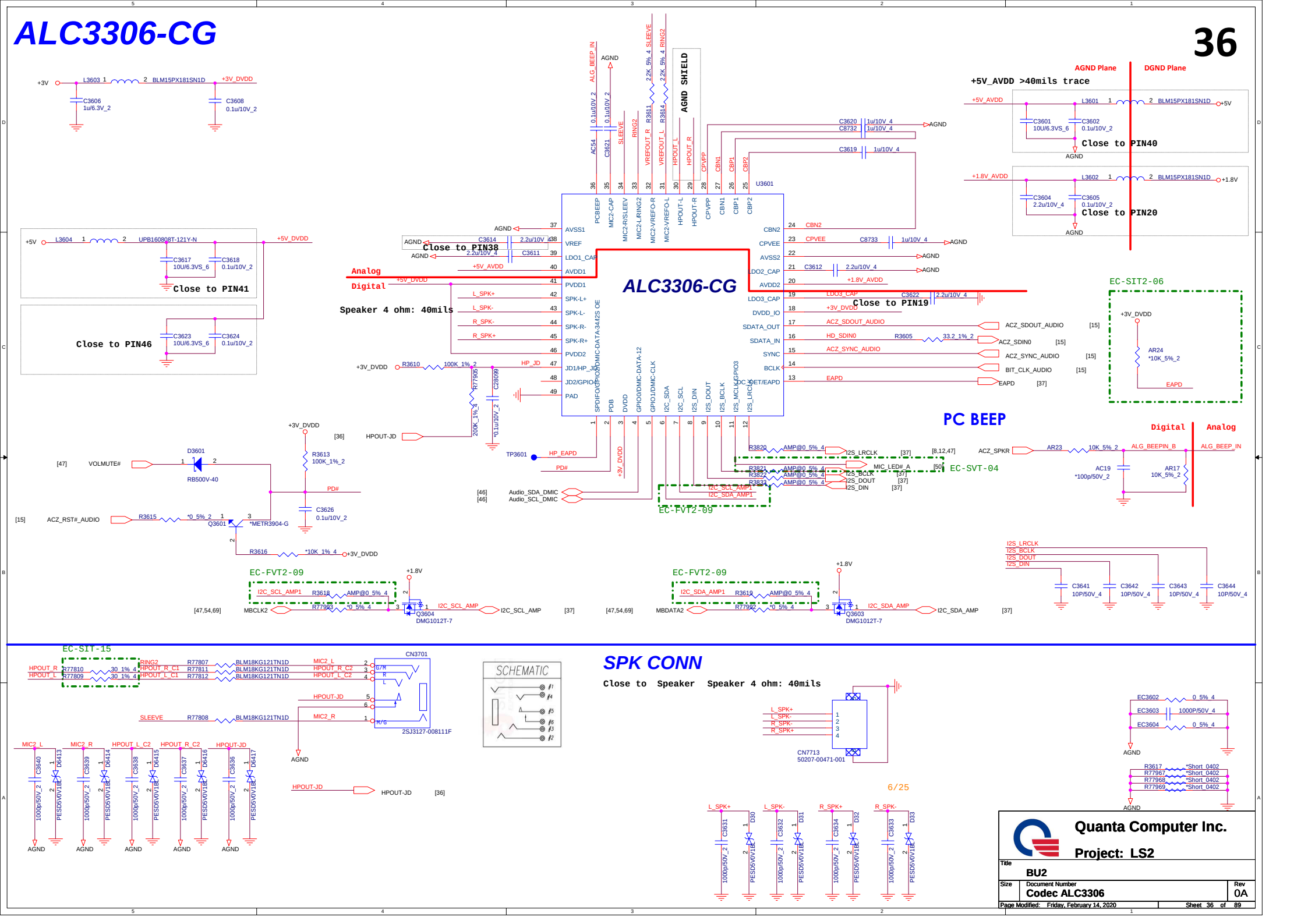
ALC3306-CG


ALC3306-CG
AGND SHIELD
AGND Plane
DGND Plane
+5V_AVDD >40mils trace
Close to PIN40
Close to PIN20
Close to PIN41
Close to PIN46
Close to PIN38
Close to PIN19
Analog
Digital
Speaker 4 ohm: 40mils
PC BEEP
EC-SIT2-06
EC-SVT-04
EC-FVT2-09
EC-SIT-15
SPK CONN
Close to Speaker Speaker 4 ohm: 40mils
SCHEMATIC
Quanta Computer Inc.
Project: LS2
BU2
Codec ALC3306
0A
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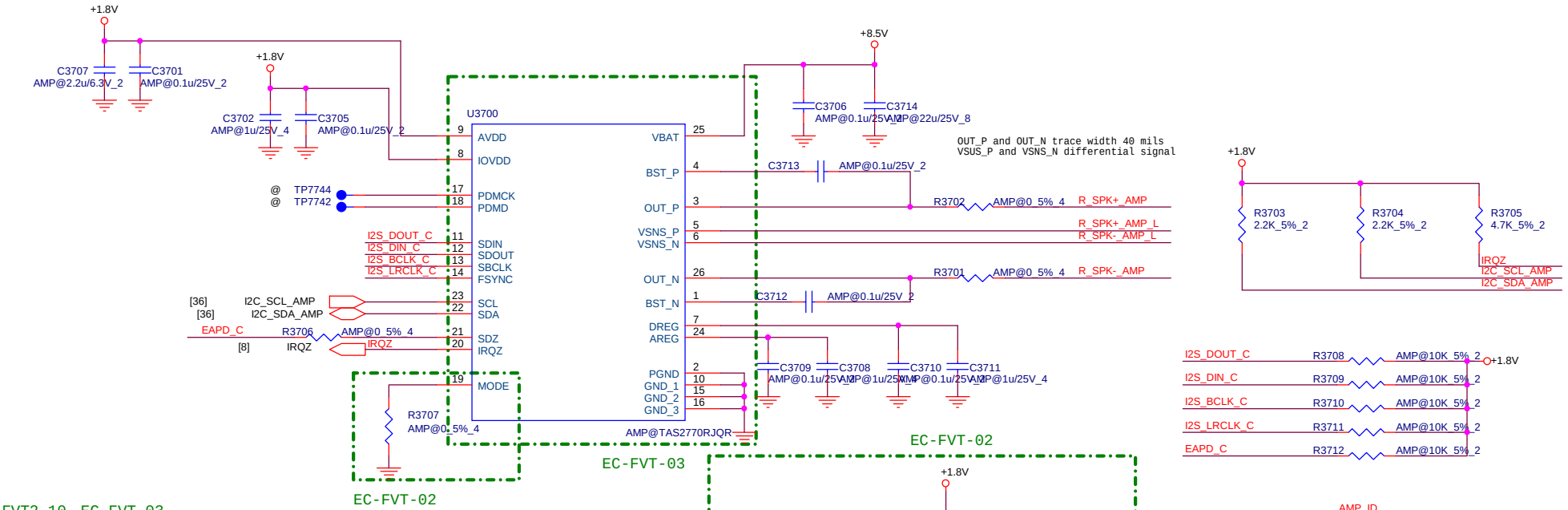
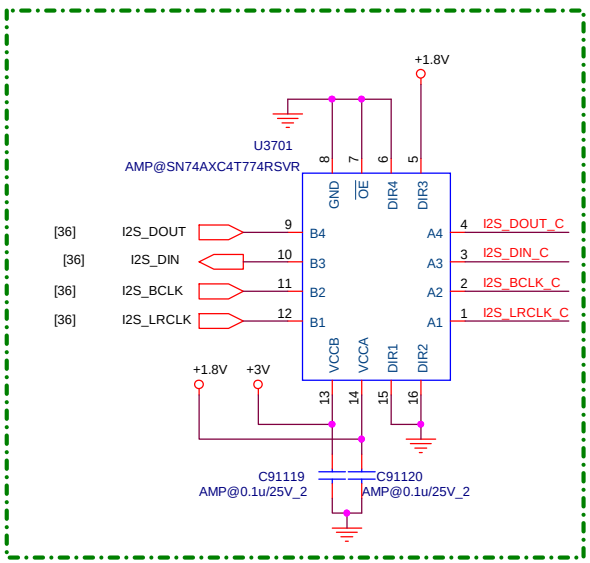
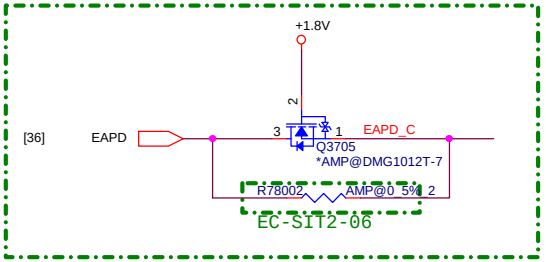
+VIN [17,34,50,73,74,75,77,78,81,82,84,86,87,88]
+3V [4,8,11,12,13,14,15,34,35,36,46,47,50,52,53,54,58,61,66,69,77,80,87]
+1.8V [36,80]

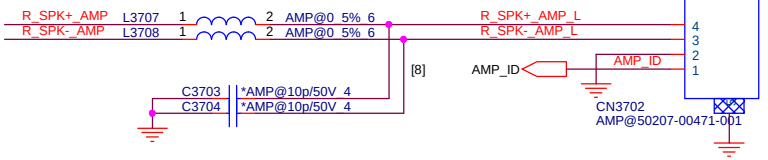


EC-FVT-03

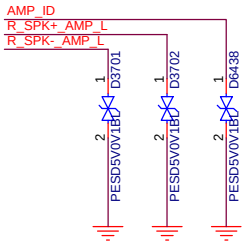
EC-FVT-02







SPK-AMP-R



Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: SPEAKER AMP-TAS2770	Rev: 0A
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Reserve

Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: Speaker AMP_R	Rev: 0A
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Reserve

Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: Headphone /NC	Rev: 0A
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Reserve

Quanta Computer Inc.		
Project: LS2		
Title: BU2		
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WLAN

Mini Card
WLAN/BT(Option)

C91121 close to CN7703.74
1008 RF request

EC-SIT-08

100mils

C91121 3.3p/50V_4 | C4101 0.1u/16V_4 | C4102 0.1u/16V_4 | C4103 0.1u/16V_4 | C4104 10u/6.3V_6 | C28067 3.3p/50V_4 | C28100 22u/6.3V_6

+3V_WLAN_P

2019/05/01 EE-FVT-31

2019/04/18 EE-FVT-05

EC-SIT-11

+3VPCU
R4101 10K_5%_2
R4102 10K_5%_2
R4104 200K_5%_2
Q4101 PJA3415
+3VS5
+3V_WLAN_P
R2311 *Short_0805
+3V_AOCS
100mils
C4106 0.022u/25V_4
C4107 0.1U/16V_4
Q4102A 2N7002KDW
Q4102B 2N7002KDW
[8] CNVi_EN#
R4110 75K_1%_2
[47,74,75,79,80,85,86,87] MAINON

EC-SIT-08
1008 RF request

+3V_WLAN_P
R4113 10K_5%_2
[15] PCIE_WAKE#
MINICAR_PME#
Q4103 LTC044EUBFS8TL

CN7703
NGFF EKEY

[13] USBP10+_BT	1 GND#3	2 3.3Vaux#1	
[13] USBP10-_BT	3 USB_D+	4 3.3Vaux#2	
	5 USB_D-	6 LED#1	
	7 GND#4	8 PCM_CLK	
[14] CNV_WR_LANE1_DN	9 SDIO CLK(O)	10 PCM_SYNC	CNV_RF_RESET#_L
[14] CNV_WR_LANE1_DP	11 SDIO CMD(IO)	12 PCM_IN	
	13 SDIO DAT0(IO)	14 PCM_OUT	MODEM_CLKREQ_L
[14] CNV_WR_LANE0_DN	15 SDIO DAT1(IO)	16 LED#2	
[14] CNV_WR_LANE0_DP	17 SDIO DAT2(IO)	18 GND#13	
	19 SDIO DAT3(IO)	20 UART Wake	
[14] CNV_WR_CLK_DN	21 SDIO Wake(I)	22 UART Rx	CNV_BRI_RSP_L
[14] CNV_WR_CLK_DP	23 SDIO Reset		
		32 UART Tx	
[13] PCIE_TXP10_WLAN	33 GND#5	34 UART RTS	
[13] PCIE_TXN10_WLAN	35 PETp0	36 UART CTS	
	37 PETn0	38 Clink RESET	
[13] PCIE_RXP10_WLAN	39 GND#6	40 CLink DATA	
[13] PCIE_RXN10_WLAN	41 PERp0	42 CLink CLK	
	43 PERn0	44 COEX3	
[14] CLK_PCIE_WLANP	45 GND#7	46 COEX2	
[14] CLK_PCIE_WLANN	47 REFCLKP0	48 COEX1	
	49 REFCLKN0	50 SUSCLK(32KHz)	
[14] PCIE_CLKREQ_WLAN#	51 GND#8	52 PERST0#	
MINICAR_PME#	53 CLKREQ0#	54 W_DISABLE2#	BT_OFF#
	55 PEWake0#	56 W_DISABLE1#	RF_OFF#
[14] CNV_WT_LANE1_DN	57 GND#9	58 NFC_I2C_SM_DATA	
[14] CNV_WT_LANE1_DP	59 PETp1	60 NFC_I2C_SM_CLK	
	61 PETn1	62 NFC_I2C_IRQ	
[14] CNV_WT_LANE0_DN	63 GND#10	64 GPIO0_NFC_RESET#	PULSAR_38P4M_REFCLK_R1
[14] CNV_WT_LANE0_DP	65 PERp1	66 UIM_SWP/PERST1#	
	67 PERn1	68 UIM_POWER_SNK	
[14] CNV_WT_CLK_DN	69 GND#11	70 UIM_POWER_SRC	
[14] CNV_WT_CLK_DP	71 Reserved1	72 3.3Vaux#3	
	73 Reserved2	74 3.3Vaux#4	
	75 GND#12		
	79 NC#2	78 NC#1	76 GND#1	77 GND#2

APCI0076-P001A

CNV_BRI_RSP_L — R4106 22_1%_2 — CNV_BRI_RSP [14]

CNVi RBI_RSP, RGI_RSP 22 Ohm, to be placed close to the connector.
CNVi RBI_DT, RGI_DT 75 Ohm, to be placed close to the PCH.

R4107 *Short_0402 — CNV_RGI_DT [14]
R4108 22_1%_2 — CNV_RGI_RSP [14]
R4109 *Short_0402 — CNV_BRI_DT [14]

EC-SIT2-02

SUSCLK_32K [14]
PLTRST# [15,43,47,66]
BT_OFF#
RF_OFF#
PULSAR_38P4M_REFCLK_R1 — TP4101@

+3V_WLAN_P
R2316 10K_1%_2
BT_OFF# — Q2302A 2N7002KDW — BT_OFF
R2327 10K_1%_2
RF_OFF# — Q2302B 2N7002KDW — [8,12] RF_OFF_PCH [8]
R2328 100K_5%_2

SUSCLK_32K — R4118 *100K_1%_4
PULSAR_38P4M_REFCLK_R1 — R4120 *10K_5%_4

+1.8V_DEEP_SUS
CNV_BRI_RSP — R4122 *20K_1%_2
CNV_RGI_RSP — R4125 *20K_1%_2
CNV_RGI_DT — R17822 20K_1%_2

+1.8V_DEEP_SUS
U4101 NL17SZ08DFT2G
MODEM_CLKREQ_L — MODEM_CLKREQ [15]
R2305 71.5K_1%_2

+1.8V_DEEP_SUS
U4102 NL17SZ08DFT2G
CNV_RF_RESET#_L — CNV_RF_RESET# [15]
R4126 75K_1%_2

Quanta Computer Inc.
Project: LS2

Title	BU2	
Size	Document Number: NGFF WLAN E Key	Rev: 0A
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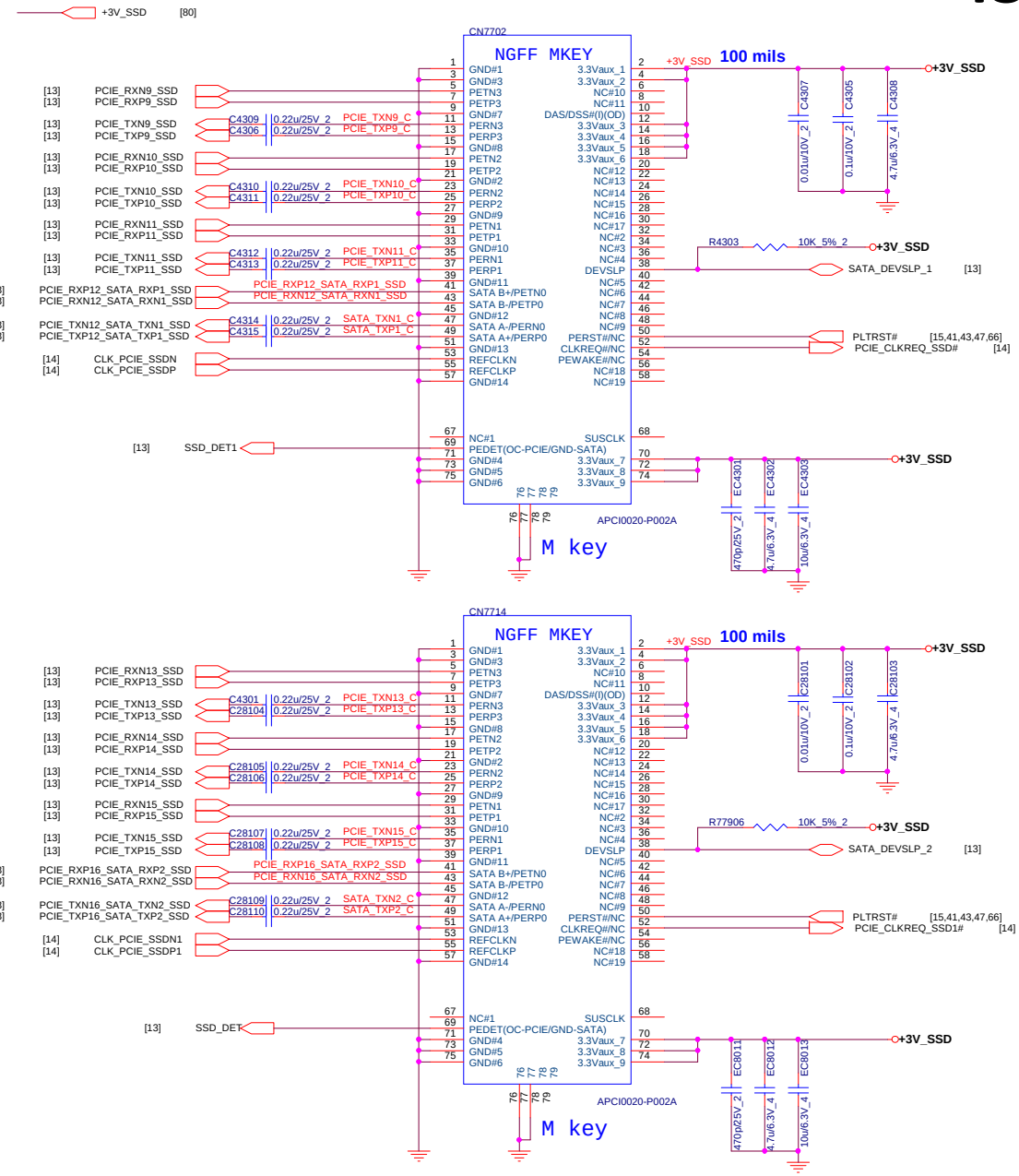
WWAN

Reserve

SATA SSD

43



Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: NGFF SSD M Key	Rev: 0A
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Reserve

Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: HDD / ODD /NC	Rev: 0A
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Reserve

Quanta Computer Inc.

Project: LS2

Title: BU2		
Size	Document Number: eMMC /NC	Rev: 0A
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IR CAM PWR

CAMERA CONN

46

+3V
+3V_IR_CAM
F4601
SPR-P150/1.5A/6V_0805
C4613 22u/6.3V_4
C4614 0.1U/10V_2
close CN4600

IR CAM PWR For SFH4770S

EC-SVT-05

EC-SVT-02

EC-FVT2-08

20455-030E-76D
CN4600

DFHD16MR050
50376-01601-001-16p-l

TOF
ALS
DMIC
Lid

U6412
G517G1P81U
CAM_PWR_EN

Audio_SCL_DMIC
Audio_SDA_DMIC
I2C2_SCL_DMIC
I2C2_SDA_DMIC
CODEC
PCH(default)

Place together

EC-SVT-05

U28027
SN74AVC2T245RSWR

Webcam
MCM2012B900GBE
L4601

U28024PUSB3FR4
U28026PUSB3FR4
U28025PUSB3FR4

EC-SVT-05

EC-SIT-02

D6434 PESD5V0V1BL
D6435 PESD5V0V1BL
D6436 PESD5V0V1BL
D6437 PESD5V0V1BL

Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: Camera	Rev: 0A
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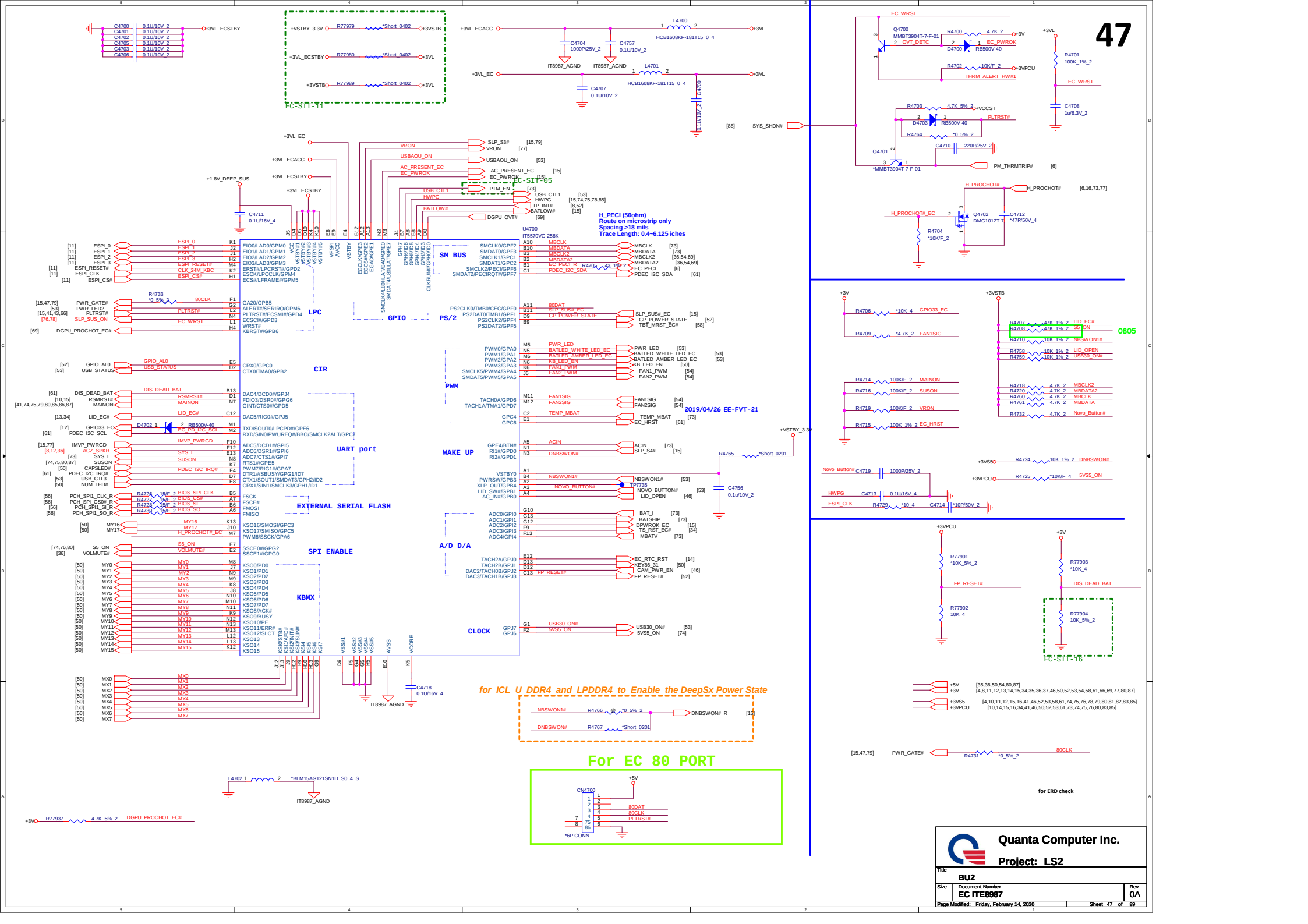
47
EC-SIT-11
EC-SIT-05
LPC
GPIO
PS/2
SM BUS
CIR
UART port
EXTERNAL SERIAL FLASH
SPI ENABLE
KBMX
PWM
WAKE UP
A/D D/A
CLOCK
2019/04/26 EE-FVT-21
0805
EC-SIT-16
for ICL U DDR4 and LPDDR4 to Enable the DeepSx Power State
For EC 80 PORT
for ERD check
Quanta Computer Inc.
Project: LS2
BU2
EC ITE8987
0A
Friday, February 14, 2020
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Quanta Computer Inc.

Project: LS2

Title: BU2		
Size	Document Number: EC /NC	Rev: 0A
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Reserve

Quanta Computer Inc.		
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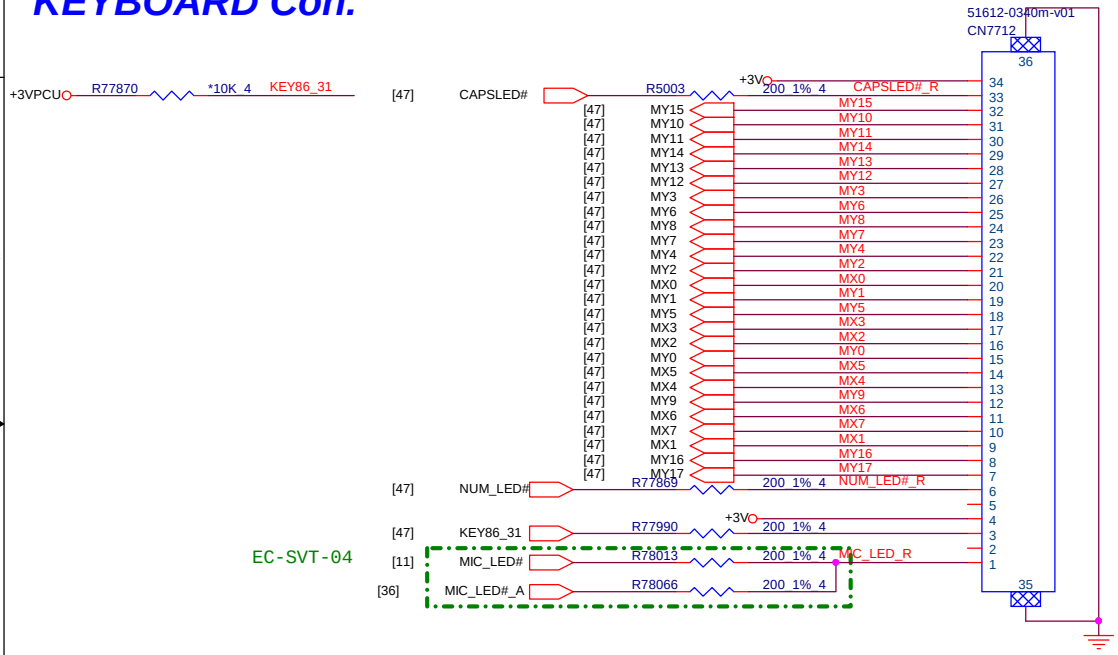
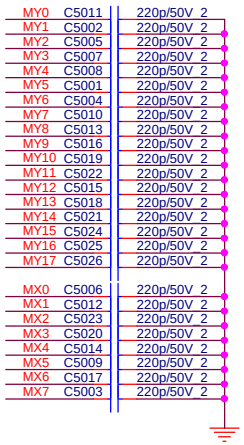
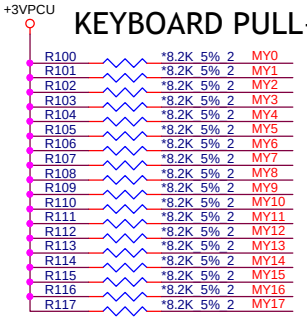
+3VS5 [4,10,11,12,15,16,41,46,47,52,53,58,61,74,75,76,78,79,80,81,82,83,85]
+3V [4,8,11,12,13,14,15,34,35,36,37,46,47,52,53,54,58,61,66,69,77,80,87]
+5VS5 [15,17,53,61,74,77,78,79,80,81,82,83,85]

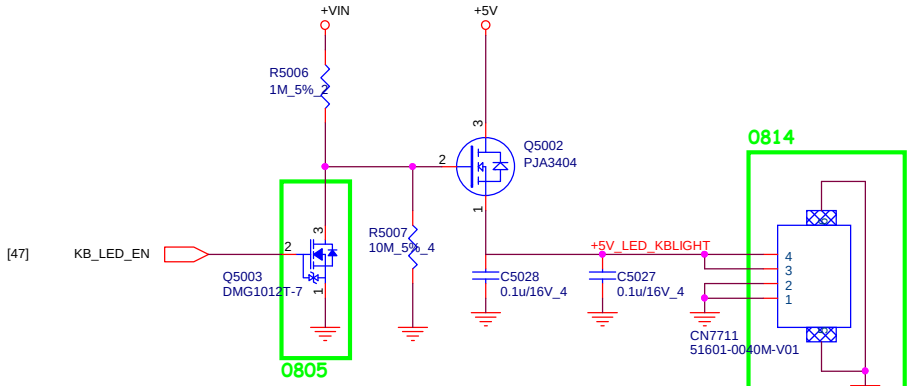
KB LIGHT CONN (14")

KEYBOARD Con.









Quanta Computer Inc.			
Project: LS2			
Title: BU2			
Size	Document Number: Kerboard/Keyboard Backlight		Rev: 0A
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Quanta Computer Inc.

Project: LS2

Title: BU2

Size | Document Number: TPM | Rev: 0A

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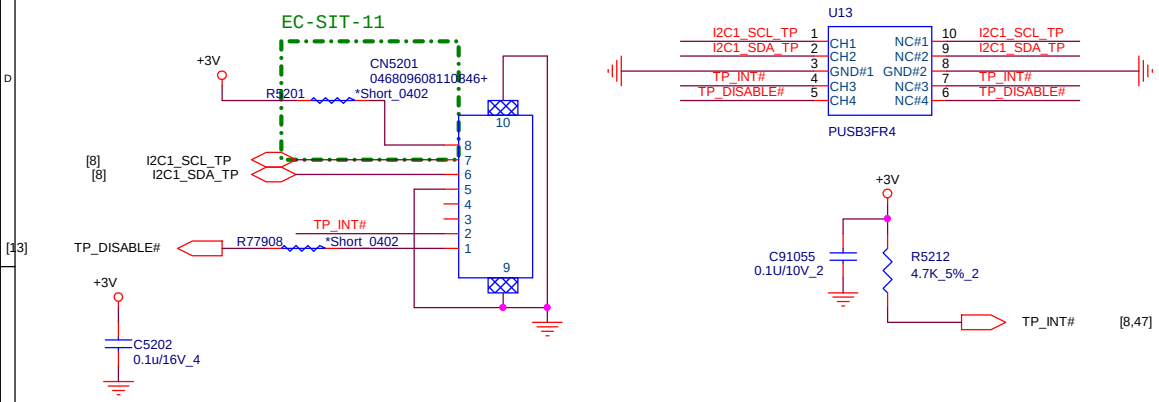
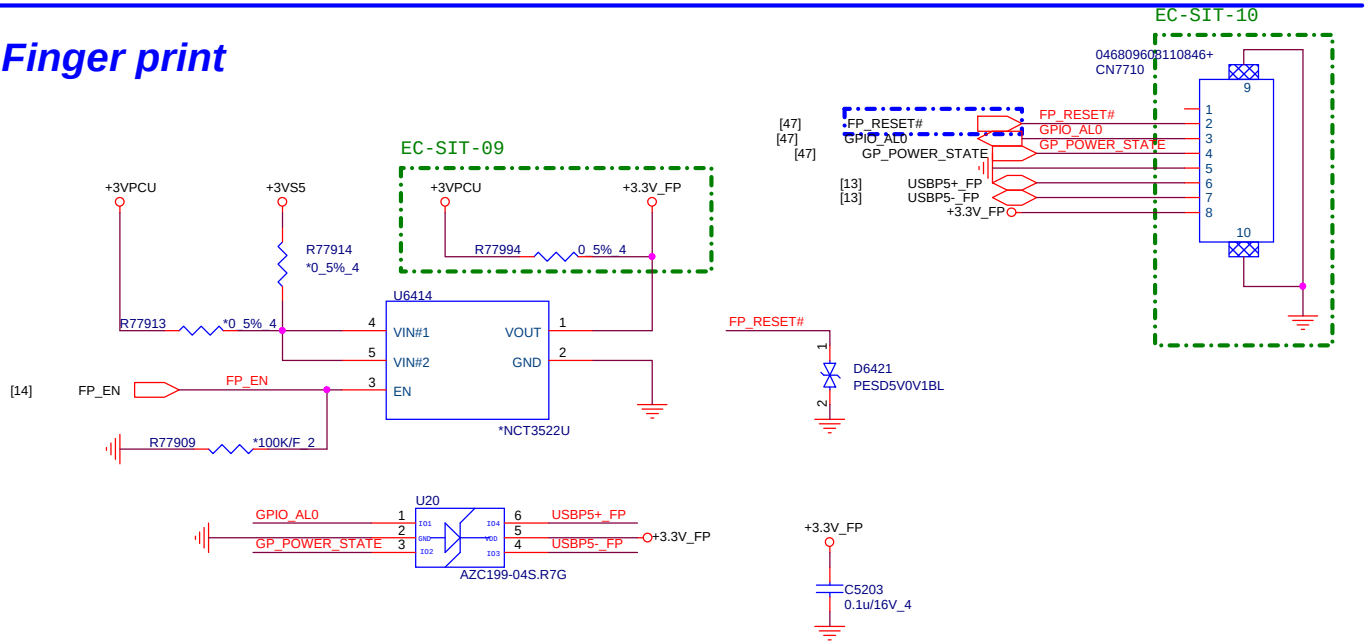
Touch Pad



Finger print



Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: Touch Pad/Fingerprint	Rev: 0A
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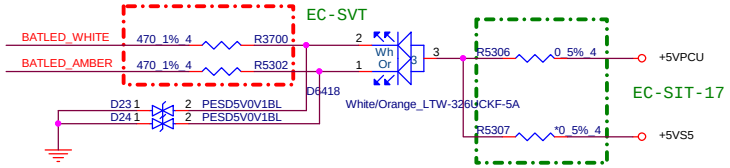
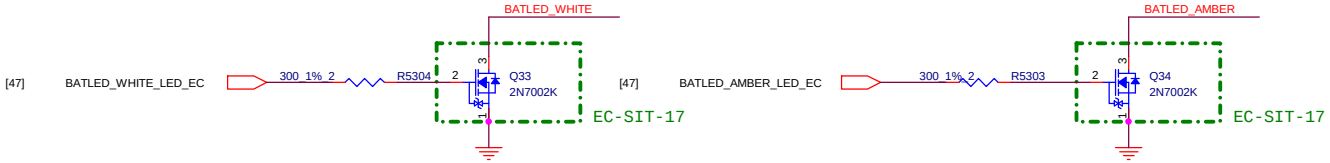




Daughter Board

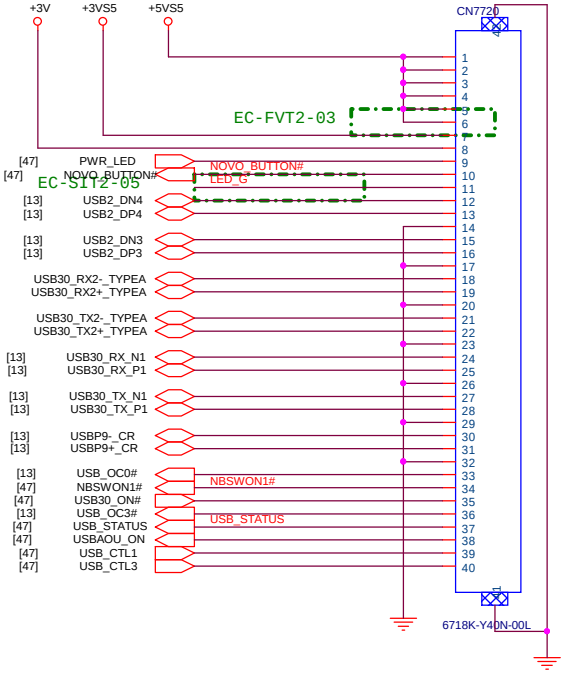
U2B TYPE A

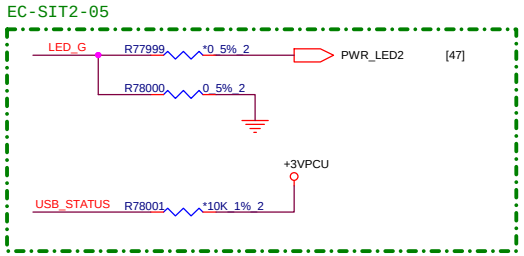
U2B TYPE A AOU

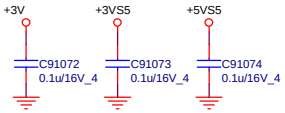
U3B TYPE A

U3B TYPE A AOU

U2B CR







Quanta Computer Inc.

Project: LS2

Title	BU2	
Size	Document Number: Switch/DB/LED	Rev: 0A
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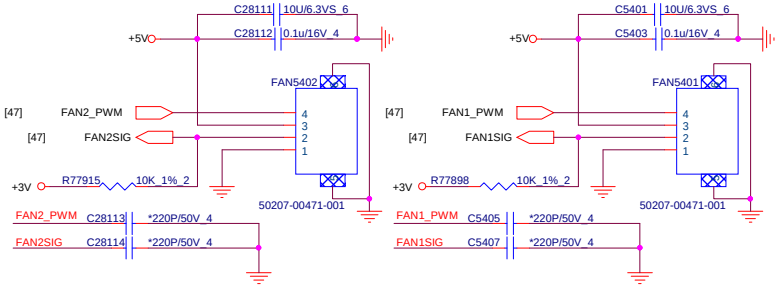
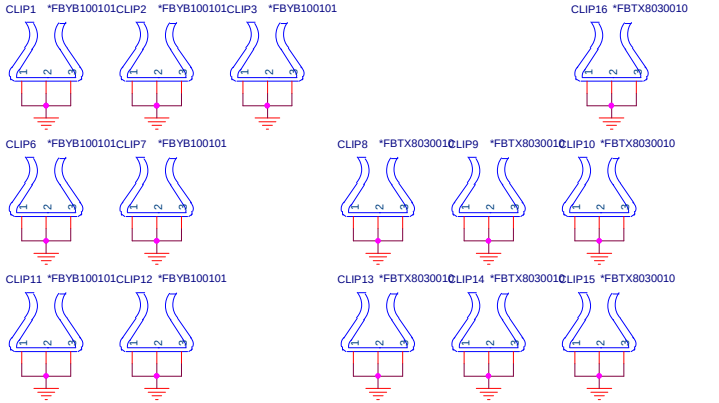
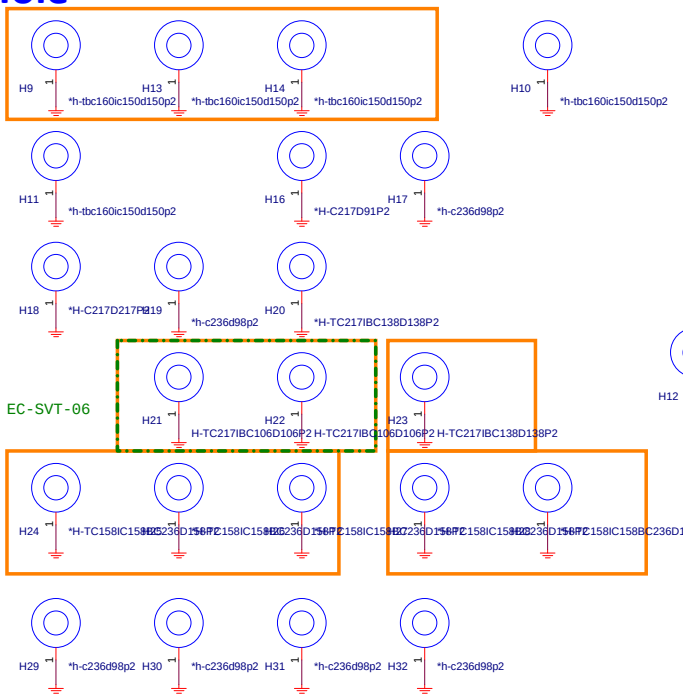
FAN/Thermal

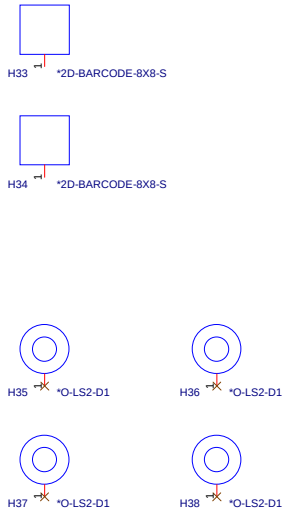
FAN





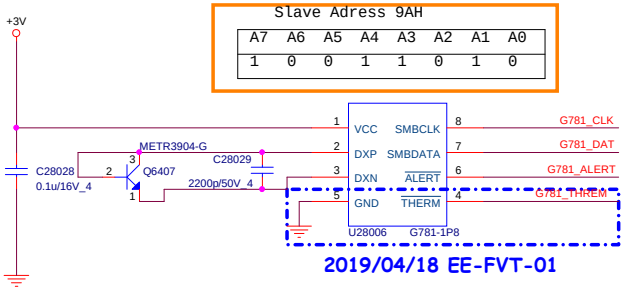
Hole

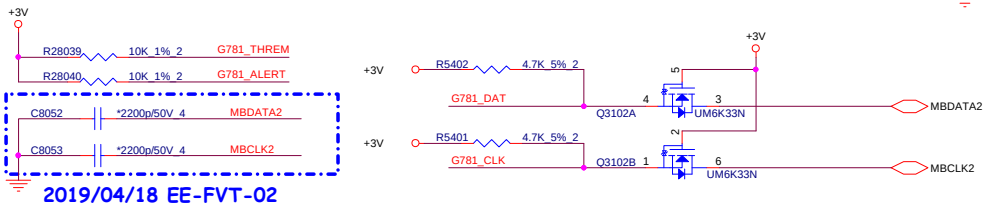


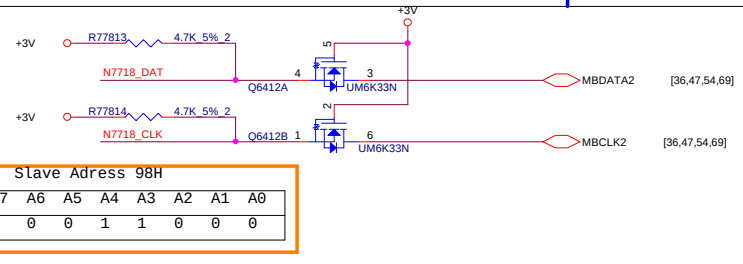


54

Thermal Sensor

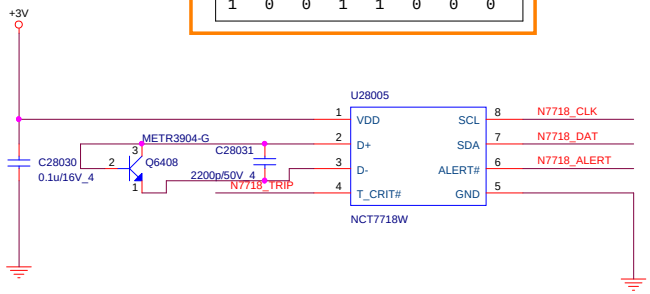


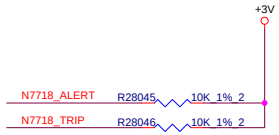




Slave Adress 98H

A7	A6	A5	A4	A3	A2	A1	A0
1	0	0	1	1	0	0	0





Nuvoton	NCT7718W	SMBus Address 98h	AL007718001
Nuvoton	W83L771AWG-2	SMBus Address 9Ah	AL83L771K03
GMT	G781P8	SMBus Address 98h	AL000781012
GMT	G781-1P8	SMBus Address 9Ah	AL000781039

[36,47,54,69]

[36,47,54,69]

Quanta Computer Inc.

Project: LS2

Title: BU2

Size | Document Number: FAN/Thermal Sensor | Rev: 0A

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Quanta Computer Inc.

Project: LS2

Title: BU2

Size | Document Number: Card Reader | Rev: 0A

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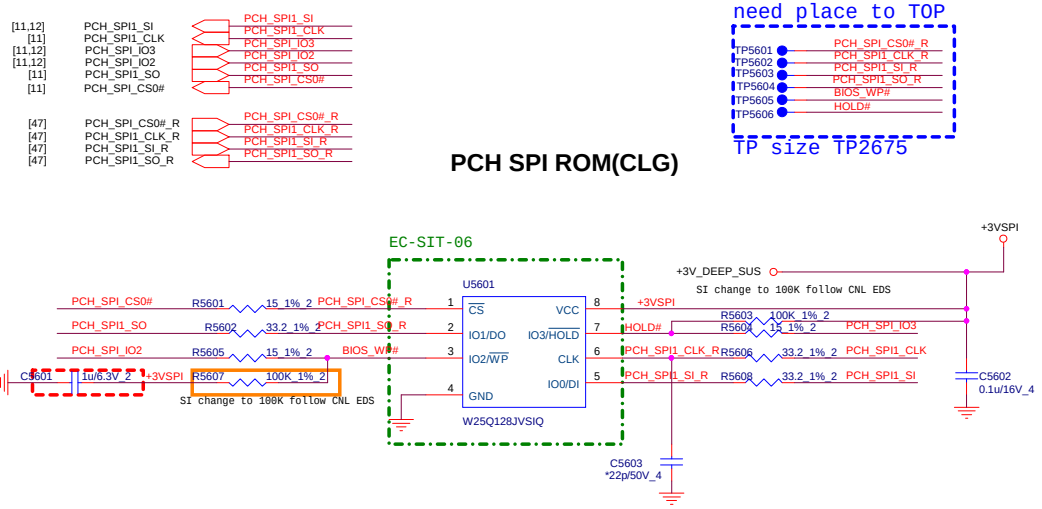
FLASH ROM

PCH SPI ROM

Vender	Size	P/N
MXIC	16MB	AKE3DZN0Z08(MX25L12872FM2I-10G)
Winbond	16MB	AKE3DF-KN01(W25Q128JVSIQ)
	16MB	
Socket		DG008000011



Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: FLASH ROM	Rev: 0A
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Quanta Computer Inc.

Project: LS2

Title: BU2

Size | Document Number: USB type A | Rev: 0A

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AJ0QURW0U01

TBT PORTS

U5800D

Port B - TypeC Side

Port A - Host Side

JHL8040R QURW 4/4

EC-FVT2-01

EC-SVT-03

PD master

TO PCH/PD/BB1

Follow PDG

HW Pull-Up/Pull-Down of BBR#1

TCP0_RESET#:
For PD based systems,TCP0_RESET# should be output from PD.
For TCPC based systems,TCP0_RESET# should be output from SOC/EC.

TCP0_GPIO_6:
Indication to S0 state for Re-timer

TBT_FORCE_PWR:
Connect to EC/PCH for FW update
'0' - by default
'1' - for debug only/FW update

TCP0_FLASH_SHARE_EN (iPU):
'0' - Flash isn't shared, 1 Flash per Re-timer.
'1' - Flash is shared between 2 Re-timers

TCP0_FLASH_MSTR_SLV (iPU):
Should be used only when TCP0_FLASH_SHARE_EN is High.
'0' - Set Re-timer to be Slave on shared flash SPI I/F.
'1' - Set Re-timer to be Master on shared flash SPI I/F

U5800A

MISC & DEBUG

JHL8040R QURW 1/4

TCP0_GPIO_12 have iPU

Place as close as possible to pins

+/- 0.5%

EC-FVT-03

U5801

TPS22924CYZPR

Footprint: BGA6-TEXAS-CD3271-6P-TEST

370mA

U5800B

Power

JHL8040R QURW 2/4

80mA

850mA Output

Close to LT2

EC-SIT-06

U5803,U5802 co-lay

U5802

W25Q80DVSNIG

Flash is shared between 2 Re-timers

U5800C

GND

JHL8040R QURW 3/4

TP5805~TP5811 need place to All BOT or All TOP

Quanta Computer Inc.	
Project: LS2	
Title: BU2	
Size	Document Number: Burnside Bridge Re-timer 1
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Quanta Computer Inc.

Project: LS2

Title: BU2

Size | Document Number: Burnside Bridge Re-timer 2 | Rev: 0A

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Quanta Computer Inc.

Project: LS2

Title: BU2

Size | Document Number: Thunderbolt & Type C | Rev: 0A

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U6100 AL065988011 TPS65988DJRSHR(VQFN)
qfn56-7x7-4-78p

For TBT/PD debug

always un-stuff for TBT/PD debug
01/15 Debug Resistance placed together

DIV	I2C UNIQUE ADDRESS [3:1]	
	ADDR DECODE C1	ADDR DECODE C2
0.6 - 1	011b	111b

Check with EC

R2/(R1+R2)=0.9 for BP nowait
R2/(R1+R2)=0.95

TP6100~TP6106 need place to All BOT or All TOP

Quanta Computer Inc.	
Project: LS2	
Title: BU2	
Size:	Document Number: TPS65988 — Rev: 0A
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Thunderbolt

65W,20V,3.25A
130MIL

130MIL

EC-FVT2-01

CN6202

+TYPEC_VBUS

D6200 P4SMAFJ20A

TBTA_TX1_P
TBTA_TX1_N
TBTA_RX1_P
TBTA_RX1_N
TBTA_TX2_P
TBTA_TX2_N
TBTA_RX2_P
TBTA_RX2_N

MCM2012B900GBE
L7621

[13,61] USB2_DP2
[13,61] USB2_DN2
USB2_DP2_C
USB2_DN2_C

EC-FVT2-06

TBTA_CC1_C
TBTA_CC2_C
TBTA_SBU1_C
TBTA_SBU2_C

C91115 0.1u/50V_4
C91116 0.1u/50V_4

AUSB0444-P104A

C6200 0.47U/25V_4
C6201 0.47U/25V_4
C6202 0.47U/25V_4
C6203 0.47U/25V_4
D6210 AZ4520-01F.R7G

LDO_3V3

[61] TBTA_CC1
[61] TBTA_CC2
[58] TBTA_SBU1
[58] TBTA_SBU2

U28008
TPD6S300ARUKR

C28043 0.1u/10V_2
C28044 1u/6.3V_2

FLT#1

EC-FVT2-01

ESD reqiure close U28008

USB Type-C

65W,20V,3.25A
130MIL

EC-FVT2-01

LDO_3V3

R6208 100K_1%_2
R6209 100K_1%_2
FLT#1
FLT#2

CN6203

+ADP_VBUS

D6209 P4SMAFJ20A

MCM2012B900GBE
L7626

[13,61] USB2_DP1
[13,61] USB2_DN1
USB2_DP1_C
USB2_DN1_C

EC-FVT2-06

USBC_CC1_C
USBC_CC2_C

D6430 PESD5V0H1BSF
D6429 PESD5V0H1BSF

C91117 0.1u/50V_4
C91118 0.1u/50V_4

AUSB0444-P104A

C6204 0.47U/25V_4
C6205 0.47U/25V_4
C6206 0.47U/25V_4
C6207 0.47U/25V_4

LDO_3V3

[61] USBC_CC1
[61] USBC_CC2

U28023
TPD6S300ARUKR

C91070 0.1u/10V_2
C91071 1u/6.3V_2

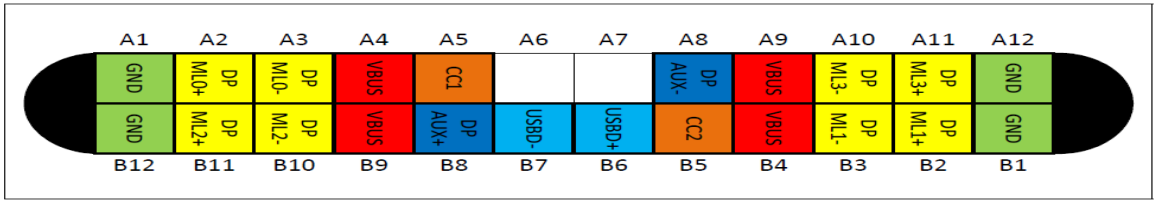
FLT#2

EC-FVT2-01

USB2_DP2_C D6201 PESD5V0H1BSF
USB2_DN2_C D6202 PESD5V0H1BSF
TBTA_CC1_C D6203 PESD5V0H1BSF
TBTA_CC2_C D6204 PESD5V0H1BSF
TBTA_SBU1_C D6205 PESD5V0H1BSF
TBTA_SBU2_C D6206 PESD5V0H1BSF
USB2_DP1_C D6207 PESD5V0H1BSF
USB2_DN1_C D6208 PESD5V0H1BSF

ESD reqiure close U28023

USB and DP x 4 USB Type-C Connector Mapping (Up Side Down)



Quanta Computer Inc.

Project: LS2

Title	BU2	
Size	Document Number: USB TYPE-C_Port A,B	Rev: 0A
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Quanta Computer Inc.

Project: LS2

Title

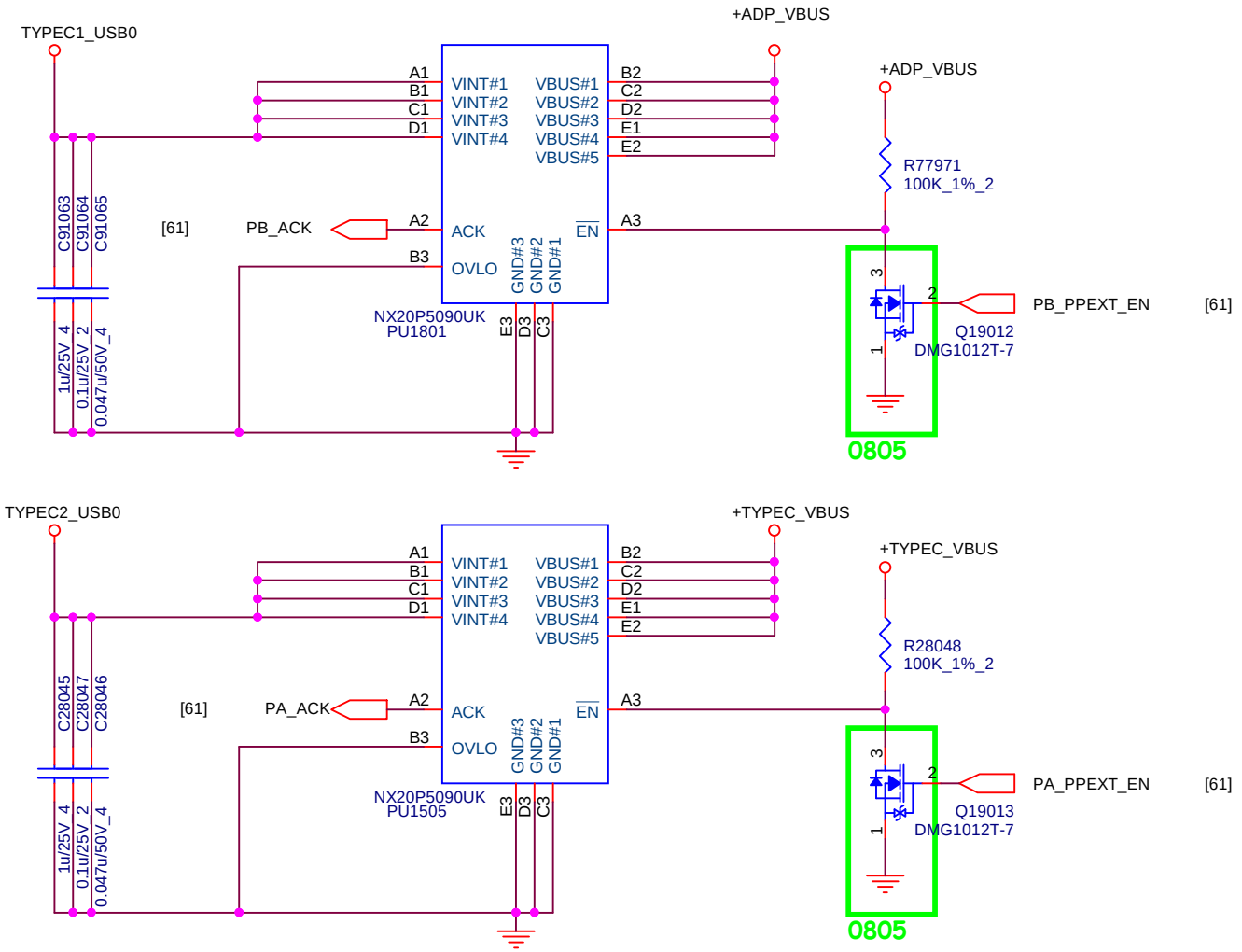
BU2

Size	Document Number	Rev
	TYPE C S/W EE	0A

Page Modified: Friday, February 14, 2020

TYPE-C Load Switch

64



Quanta Computer Inc.		
Project: LS2		
Title: BU2		
Size	Document Number: TYPE-C NXP Load Switch	Rev: 0A
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Reserve

Quanta Computer Inc.

Project: LS2

Title: BU2		
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	L1000
N16	
N17	V

PEX_IOVDD + PEX_IOVDDQ = 1.042A

PEX_PLL_HVDD + PEX_SVDD_3V3 = 143mA

PEX_PLLVDD = 130mA

	R6614	R6611
N16		V
N17	V	

	R6619	R6615	R6616
N16		V	V
N17	V		

	R6604
N16	V
N17	

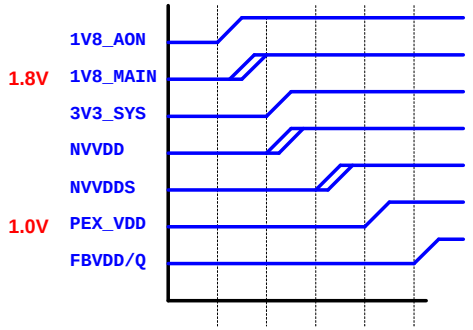
	U1000	R6609
N16	V	
N17		V

NVDD = 32.22 ~ 26.66 A

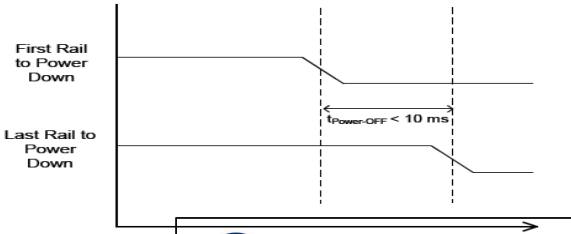
VDD33 = 56mA

20170718 change R62 PU 1V8_MAIN

Power up sequence



Power down sequence



Quanta Computer Inc.

Project: LS2

Title		
BU2		
Size	Document Number	Rev
	N17S-G1-A1(PCIE I/F)/NVDD	0A
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FBVDDQ + FBVDD = 3.116A

FB_PLLAVDD = 55mA

FB_DLLAVDD = 15mA

For support GC6 2.0

Quanta Computer Inc.	
Project: LS2	
Title: BU2	
Size	Document Number: N17S-G1-A1(MEMORY/GND) — Rev: 0A
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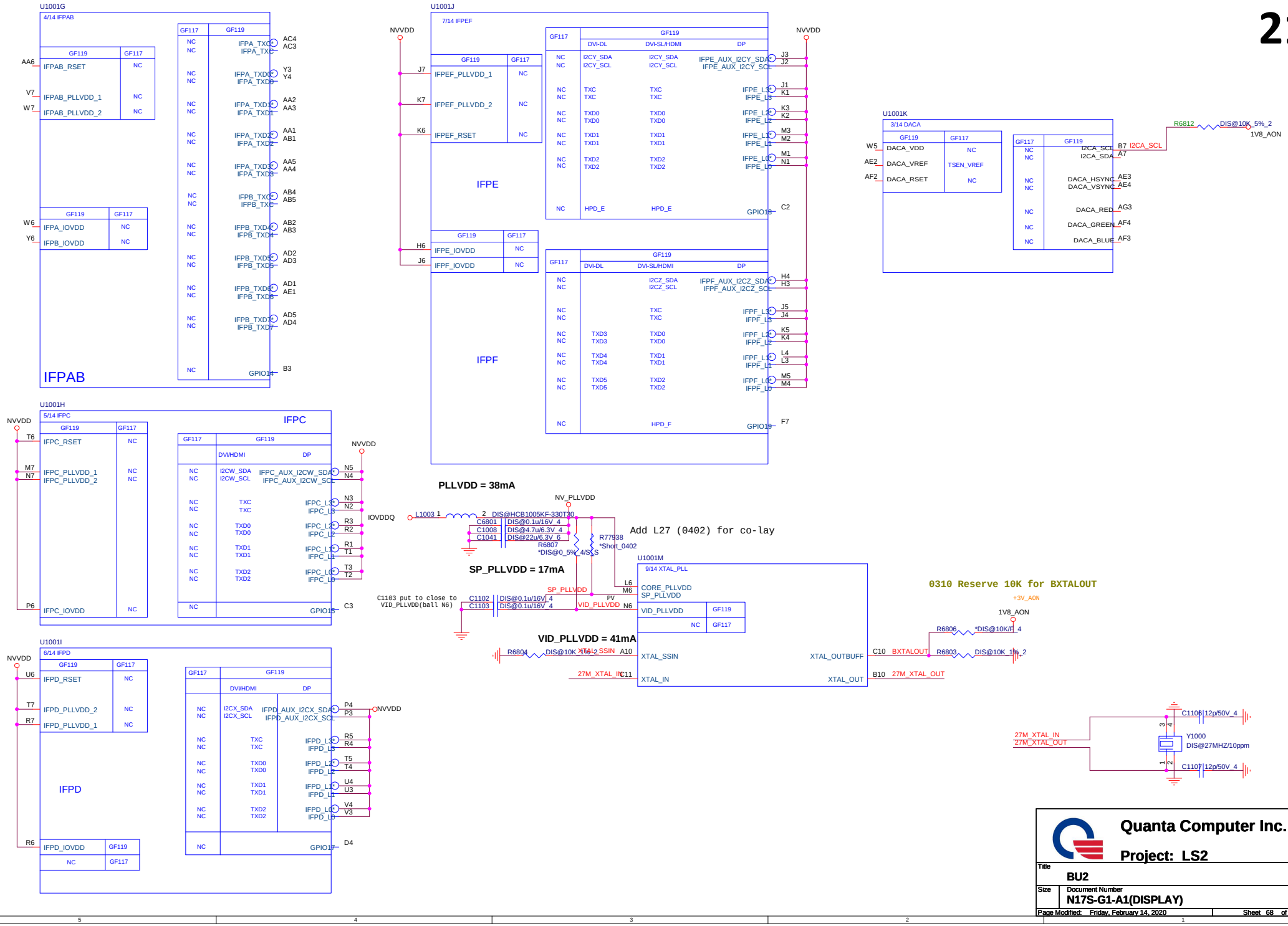
U1001G
4/14 IFPAB
IFPAB
U1001J
7/14 IFPEF
IFPE
IFPF
U1001K
3/14 DACA
U1001H
5/14 IFPC
IFPC
U1001I
6/14 IFPD
IFPD
U1001M
9/14 XTAL_PLL
NVVDD
PLLVDD = 38mA
SP_PLLVDD = 17mA
VID_PLLVDD = 41mA
Add L27 (0402) for co-lay
0310 Reserve 10K for BXTALOUT
Quanta Computer Inc.
Project: LS2
BU2
N17S-G1-A1(DISPLAY)
0A
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U1001L

10/14 MISC2

VMON_IN0 E10
VMON_IN1 F10

STRAP0 D1
STRAP1 D2
STRAP2 E4
STRAP3 E3
STRAP4 D3
STRAP5 C1

GF119	GF117
STRAP5	NC

F6 MULTI_STRAP_REF0_GND

GF119	GF117
MULTI_STRAP_REF1_GND	NC
MULTI_STRAP_REF2_GND	NC

F4 MULTI_STRAP_REF1_GND
F5 MULTI_STRAP_REF2_GND

	R1064
N16	V
N17	

ROM_CS D12 → ROM_CS → TP6906@
ROM_SI B12
ROM_SO A12
ROM_SCLK C12
BUFRST D11
PGOOD D10
CEC E9

	R1066	R1067	R1074
N16	V		V
N17		V	

	R6905	R6906
N16		V
N17	V	

R1065 *DIS@10K_1%_2 +3V_AON → 1V8_AON

1V8_AON R6905 *Short_0402

R6904 DIS@100K_5%_4
R6902 DIS@100K_5%_4
R6618 DIS@100K_5%_4
R1049 *DIS@100K_5%_4
R1050 *DIS@100K_5%_4
R1051 *DIS@100K_5%_4
R1052 *DIS@100K_5%_4
R1053 *DIS@100K_5%_4
R1054 *DIS@100K_5%_4

ROM_SI
ROM_SO
ROM_SCLK

STRAP0
STRAP1
STRAP2
STRAP3
STRAP4
STRAP5

R1055 *DIS@30.1K_1%_4
R1056 DIS@100K_5%_4
R1057 DIS@100K_5%_4
R1058 *DIS@100K_5%_4
R1059 *DIS@100K_5%_4
R1060 *DIS@100K_5%_4
R1061 *DIS@100K_5%_4
R1062 *DIS@100K_5%_4
R1063 *DIS@100K_5%_4

N17S strap setting

```
ROM_SI    =  Stuff 100K Pull Up    CS41002JB20
ROM_SO    =  Stuff 100K Pull Up    CS41002JB20
ROM_SCLK  =  Stuff 100K Pull Up and 100K Pull Down
                                   CS41002JB20
STRAP0    =  VRAM Configuration follow VRAM table
STRAP1    =  VRAM Configuration follow VRAM table
STRAP2    =  VRAM Configuration follow VRAM table
STRAP3    =  Stuff 100K Pull Down  CS41002JB20
STRAP4    =  Stuff 100K Pull Down  CS41002JB20
STRAP5    =  Stuff 100K Pull Down  CS41002JB20
```

U1001N

8/14 MISC1

I2CS_SCL D9 GPUT_CLK_L
I2CS_SDA D8 GPUT_DATA_L
I2CC_SCL A9 DGPU_EDIDCLK
I2CC_SDA B9 DGPU_EDIDDATA

R1070 DIS@1.8K_5%_4
R1071 DIS@1.8K_5%_4
*Short_0402 [36,47,54] MBCLK2

I2CB_SCL C9 N12E_SCL
I2CB_SDA C8 N12E_SDA
R1072 DIS@1.8K_5%_4
R1073 DIS@1.8K_5%_4

GF117	GF119
NC	I2CB_SCL
NC	I2CB_SDA

DIS@PJT138K Q1005
[36,47,54] MBDATA2
R1068 DIS@2.2K_5%_2 1V8_AON
GPUT_DATA_L
GPUT_CLK_L
R1069 DIS@2.2K_5%_2 1V8_AON
+3V_AON +3V_GFX +3V_AON

THERM- E12 → THERMDN
THERM+ F12 → THERMDP

JTAG_TCK AE5
JTAG_TMS AD6
JTAG_TDI AE6
JTAG_TDO AF6
JTAG_TRST# AG4

GPIO0 C6 GPU_GPIO0
GPIO1 B2 GC6_FB_EN_N17
GPIO2 D6 GPU_GPIO2
GPIO3 C7
GPIO4 F9 1V8_MAIN_EN_N17
GPIO5 A3
GPIO6 A4 GPU_GPIO6
GPIO7 B6
GPIO8/OVERT A6 VGA_OVT#
GPIO9 F8 ALERT
GPIO10 C5 GPIO10_VREF
GPIO11 E7
GPIO12 D7 PWR_LEVEL
GPIO13 B4

R1075 *Short_0402 GPU_VID → GPU_VID [81]
R1077 *Short_0402 GC6_FB_EN
R1078 *Short_0402 GPU_EVENT#_GPU
D1001 DIS@MEK500V-40T1G → GPU_EVENT# [6]
R1080 *Short_0402 1V8_MAIN_EN → 1V8_MAIN_EN [84]
R1083 *Short_0402 PSI → PSI [81]
GPIO10_VREF [70]
D1002 DIS@MEK500V-40T1G → DGPU_PROCHOT_EC# [47]

GF117	GF119
NC	GPIO16
NC	GPIO20
NC	GPIO21

D5 GPU_GPIO16
R1090 *DIS@0_5%_4
R7572 *DIS@10K/F_4 1V8_AON → SYS_PEX_RST_MON# [66]
GPU_PEX_RST_HOLD# [66]

EC_EVT2_07

STRAP[2:0] VRAM Table for N17S-G0/G2/G3/G4 GDDR5 Recommended Memories

RAMCFG [2:0]	DESCRIPTION	Vendor	Vendor P/N		
0x9	GDDR5 256Mx32	Micron	MT51J256M32HF-80	AKG5QGUTL27	
0xA	GDDR5 256Mx32	Hynix	H5GC8H24AJR-R2C	AKG5QGUTW18	
0x3	GDDR5 256Mx32	Samsung	K4G80325FC-HC25	AKG5QGUT500	

	STRAP2	STRAP1	STRAP0	
Micron	L	M	L	0x9
Hynix	L	M	H	0xA
Samsung	L	H	H	0x3

	STRAP2	STRAP1	STRAP0	
Micron	L	M	L	0x9
Hynix	L	M	H	0xA
Samsung	L	H	M	0xB

STRAP[2:0] VRAM Table for N17S-G5 GDDR5 Recommended Memories

RAMCFG [2:0]	DESCRIPTION	Vendor	Vendor P/N		
0x9	GDDR5 256Mx32	Micron	MT51J256M32HF-80	AKG5QGUTL27	
0xA	GDDR5 256Mx32	Hynix	H5GC8H24AJR-R2C	AKG5QGUTW18	
0x3	GDDR5 256Mx32	Samsung	K4G80325FC-HC25	AKG5QGUT500	

1V8_AON R1095 *DIS@0_4 PV
PEGX_RST# R1096 *DIS@0_5%_4/S_S
R1097 DIS@4.7K_5%_2 +3V
VGA_OVT# → DGPU_OVT# → DGPU_OVT# [47]
C91069 DIS@0.01u/16V_4
Q1007 DIS@DMG1012T-7

+3V
R1098 DIS@10K_5%_2
GC6_FB_EN_Q → GC6_FB_EN_Q [13]
Q1006 DIS@DMG1012T-7
GC6_FB_EN
Q1008 DIS@DMG1012T-7

PEGX_RST#
DGPU_OVT#
R6908 DIS@10K_5%_2
D1003 DIS@MEK500V-40T1G
1V8_AON
NVVDD_PG_LOOP_OVT
Q1009 DIS@DMG1012T-7
R6907 DIS@10K_5%_2
Q1010 DIS@DMG1012T-7
Q1011 DIS@DMG1012T-7
[67,69,81] NVVDDPG

D1004 DIS@MEK500V-40T1G
NVVDD_CORE1_EN → NVVDD_CORE1_EN [81]
R6903 DIS@100K_1%_2
R6901 *DIS@1.21K_4
C1112 DIS@2200p/50V_4

[67] GC6_FB_EN
D1005 DIS@MEK500V-40T1G
PEXVDD_EN [83]
EC_EVT2_07
R6911 DIS@12K_1%_4
R6910 *DIS@12.1K/F_4
C1113 DIS@0.033u/16V_4

1V8_AON
C91068 DIS@0.1u/16V_4
DGPU_PWR_EN
1V8_MAIN_EN
U28022 DIS@NL17SZ08DFT2G

		N16	N17
GPIO0	R1076	V	
	R1075		V
GPIO1	R1077		V
GPIO2	R1078		V
GPIO4	R1080		V
GPIO5	R1081	V	
GPIO6	R1083		V
	R1084	V	
GPIO11	R1086	V	
GPIO13	R1088	V	
GPIO16	R1090		V
GPIO21	R1092	V	

+3V_AON 1V8_AON
PWR_LEVEL R1079 DIS@100K_1%_2
PSI R1082 DIS@10K_1%_2 [84]
VGA_OVT# R1085 DIS@10K_1%_2
ALERT R1087 DIS@10K_1%_2
GPU_PEX_RST_HOLD# R1089 DIS@10K_1%_2
GPU_EVENT#_GPU R1091 DIS@10K_1%_2
1V8_MAIN_EN R1093 DIS@4.7K_5%_2
EC_SIT_04

SI
GC6_FB_EN R1094 DIS@10K_1%_2
JTAG_TRST# R6909 DIS@10K_1%_2
GPIO10_VREF R6912 DIS@100K_1%_2

R9182 *Short_0402 +1.8V_DEEP_SUS
U1004 DIS@NL17SZ32DFT2G
1V8_AON_EN [84]
DGPU_PWR_EN [13,84]
NVVDDPG [67,69,81]

	R9182	R9181
N16		V
N17	V	

NVVDD POWER GOOD LOOPBACK

Overt temp ckt for NVVDD and NVVDDS

Quanta Computer Inc.
Project: LS2

Title: BU2
Size: Document Number: N17S-G1-A1(GPIO/STRAPS) Rev: 0A
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CHANNEL A: 2G GDDR5

Channel A <0-31>
MF=0 Non-mirrored

Channel A <32-63>
MF=0 Non-mirrored

23

QD24~31

QD16~23

QD8~15

QD0~7

QD56~63

QD48~55

QD40~47

QD32~39

VMA_DQ[63..0]

FBA_CMD[31:0]

FBA_DBI[7:0]

FBA_EDC[7:0]

FBVDDQ_MEM

VRAM1004

VRAM1005

DIS@GDDR5

VREFC_VMA1 0.4MM=16mils

VREFC_VMA2 0.4MM=16mils

RF CAP

EC-S11-08

Quanta Computer Inc.	
Project: LS2	
Title: BU2	
Size	Document Number: 23 -- VRAM GDDR5 - RANK1 — Rev: 0A
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Table 9.5 GDDR5 DEBUG Command Lines

Command Ball on GPU	DRAM Signal Definition
FBA_CMD32 (do not connect to DRAM)	(not used)
FBA_CMD33 (do not connect to DRAM)	(not used)
FBA_CMD34 (do not connect to DRAM)	DEBUG0
FBA_CMD35 (do not connect to DRAM)	DEBUG1

Table 9.4 GDDR5 Command Mapping (GB4C-128 & GB2C-64 packages)

Command Ball on GPU		DRAM Signal Definition
For DRAM(s) tied to DQ[31:0]	For DRAM(s) tied to DQ[63:32]	
FBA_CMD0	FBA_CMD16	CS*
FBA_CMD1	FBA_CMD17	A3_BA3
FBA_CMD2	FBA_CMD18	A2_BA0
FBA_CMD3	FBA_CMD19	A4_BA2
FBA_CMD4	FBA_CMD20	A5_BA1
FBA_CMD5	FBA_CMD21	WE*
FBA_CMD6	FBA_CMD22	A7_A8
FBA_CMD7	FBA_CMD23	A6_A11
FBA_CMD8	FBA_CMD24	ABI*
FBA_CMD9	FBA_CMD25	A12_RFU
FBA_CMD10	FBA_CMD26	A0_A10
FBA_CMD11	FBA_CMD27	A1_A9
FBA_CMD12	FBA_CMD28	RAS*
FBA_CMD13	FBA_CMD29	RST*
FBA_CMD14	FBA_CMD30	CKE*
FBA_CMD15	FBA_CMD31	CAS*

Table 4. N17S-LG/-G1 GDDR5 Recommended Memories

Memory Density	Allowed Memory Configuration	FBVDD/Q	Vendor	Manufacturer Part Number	Die Revision	Strap	Memory Speed Grade	Date Code Alert	Qual Plan	Status
8 Gb	256Mx32	1.35V	Samsung	K4G80325FB-HC28	B-die	0x0	7 Gbps	N/A	Full	Production candidate
			Micron	MT51J256M32HF-70:A	A-die	0x1	7 Gbps	N/A	Full	Production candidate
			Hynix	H5GC8H24MJR-R0C	M-die	0x2	7 Gbps	N/A	Full	Post production candidate
4 Gb	128Mx32	1.35V	Hynix	H5GC4H24AJR-R0C	A-die	0x6	7 Gbps	N/A	Full	Production candidate
			Samsung	K4G41325FE-HC28	E-die	0x7	7 Gbps	N/A	Full	Production candidate
			Micron	EDW4032BABG-70-F	A-die	0x8	7 Gbps	N/A	Full	Post production candidate

Morgan Chang NVIDIA Corp 2016-02-29
Morgan Chang NVIDIA Corp HP Notebook 2016-02-29
Confidential 2016-12-06

Quanta Computer Inc.
Project: LS2
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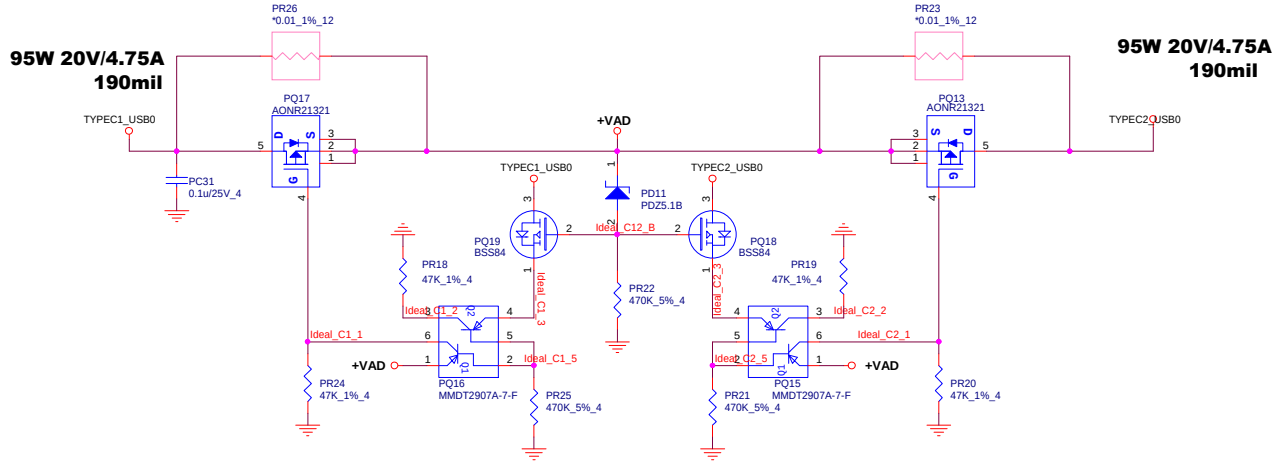
For TypeC PORT1

For TypeC PORT2

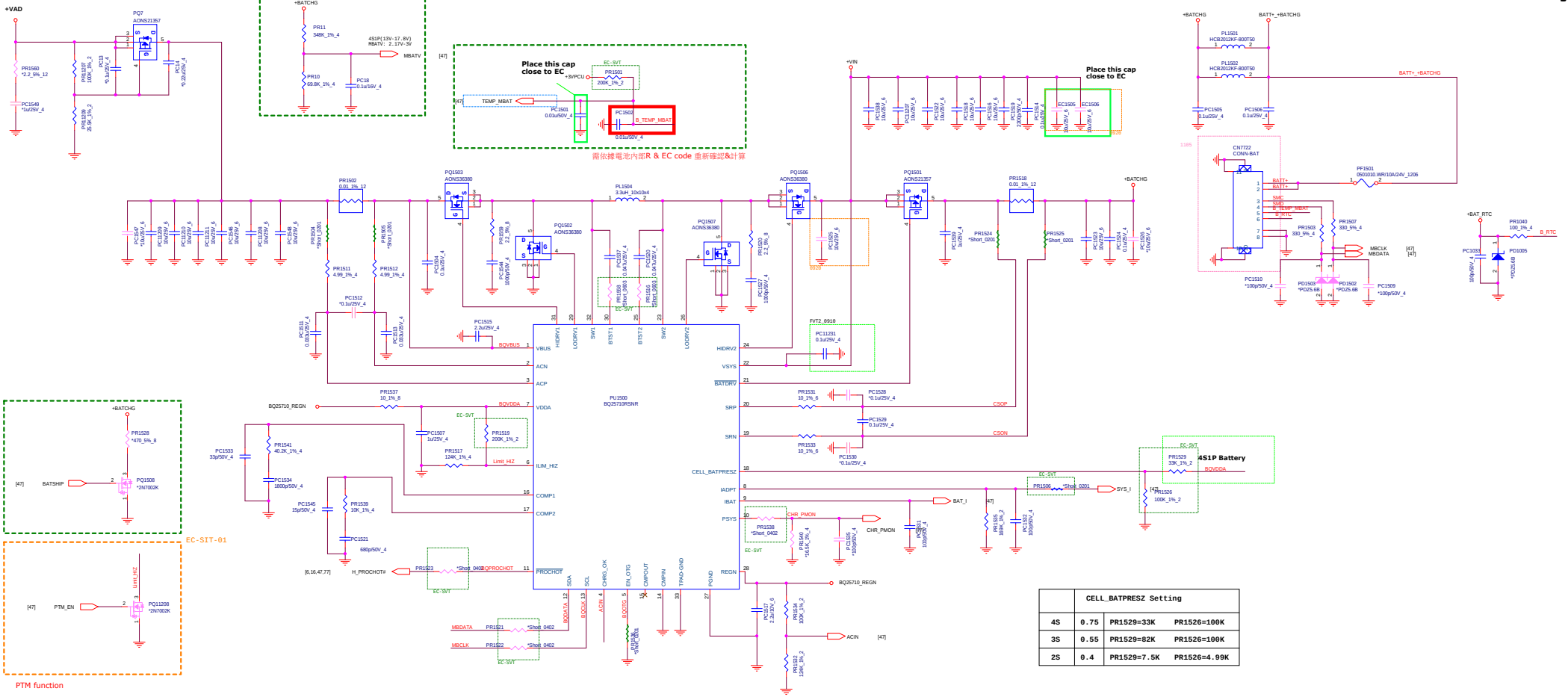


BU5

PROJECT : X36A
Quanta Computer Inc.

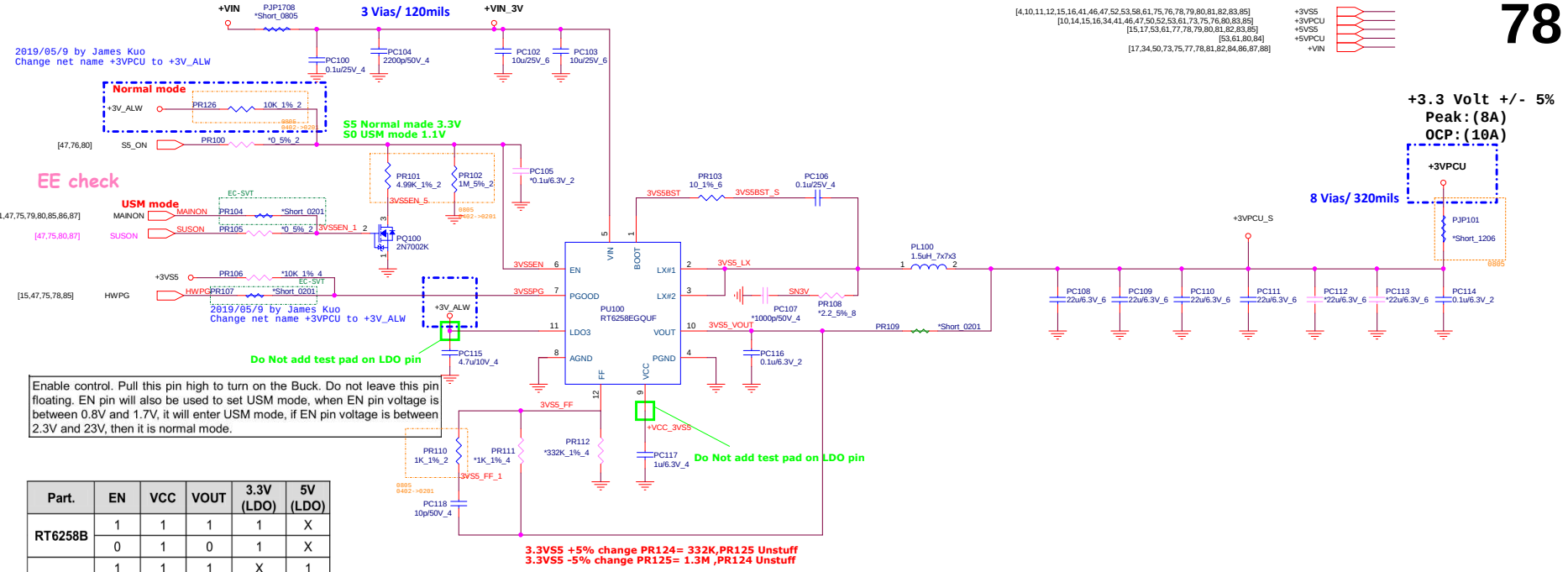
Size	Document Number	Rev
Custom	TYPEC load switch MOSFET	1A

Date: Friday, February 14, 2020 | Sheet 72 of 89



	CELL_BATPRESZ Setting		
4S	0.75	PR1529=33K	PR1526=100K
3S	0.55	PR1529=82K	PR1526=100K
2S	0.4	PR1529=7.5K	PR1526=4.99K

PROJECT :LVC
Quanta Computer Inc.
Size | Document Number: Charger (BQ25710RSNR) | Rev: 1A
Custom: BU2
Friday, February 14, 2020
Sheet

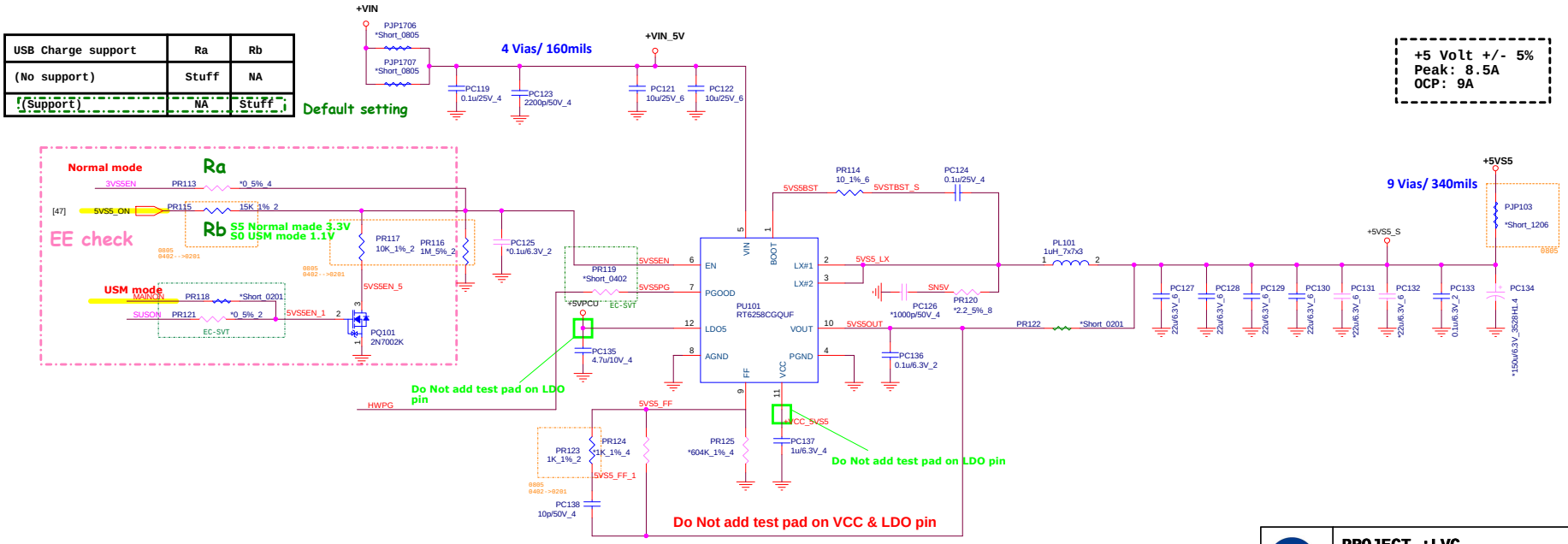


Part.	EN	VCC	VOUT	3.3V (LDO)	5V (LDO)
RT6258B	1	1	1	1	X
	0	1	0	1	X
RT6258C	1	1	1	X	1
	0	1	0	X	1

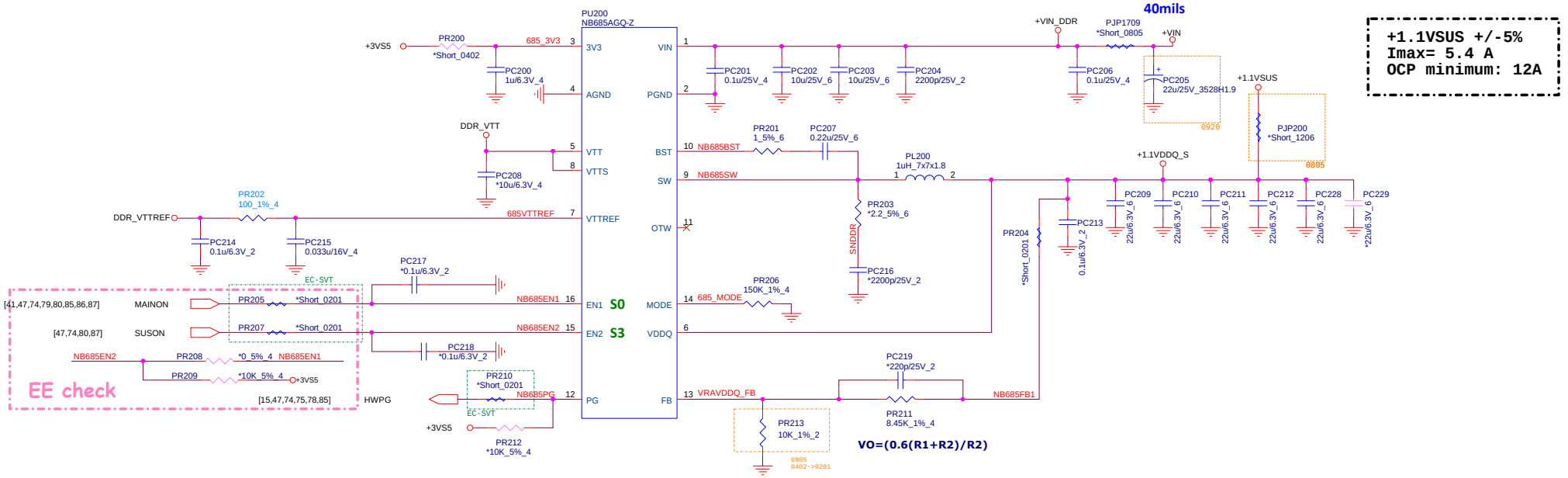
Enable control. Pull this pin high to turn on the Buck. Do not leave this pin floating. EN pin will also be used to set USM mode, when EN pin voltage is between 0.8V and 1.7V, it will enter USM mode, if EN pin voltage is between 2.3V and 23V, then it is normal mode.

USB Charge support	Ra	Rb
(No support)	Stuff	NA
(Support)	NA	Stuff

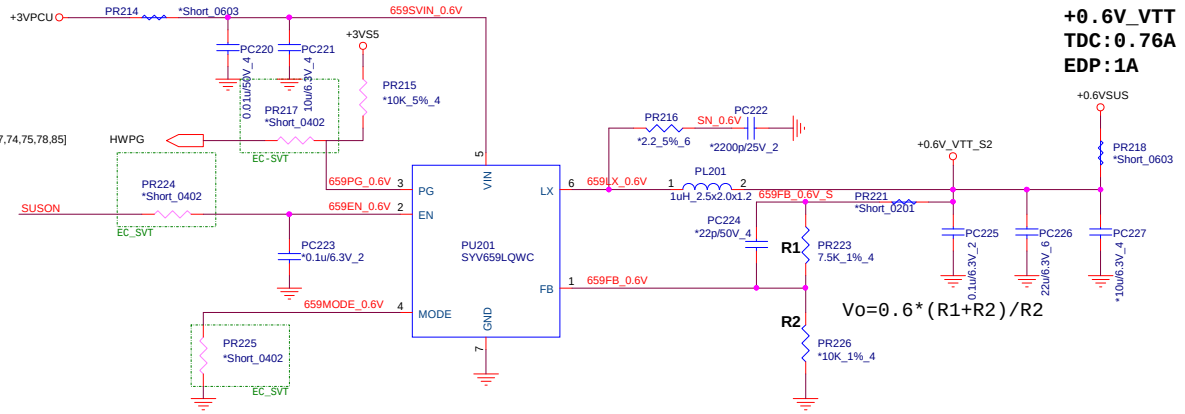
Default setting



Custom	PROJECT : LVC Quanta Computer Inc.
Size: BU2	Document Number: +3/5VS5 (RT6256B/RT6258C) Rev: 1A
Date: Friday, February 14, 2020	Sheet 60



+1.1VSUS +/-5%
Imax= 5.4 A
OCP minimum: 12A



+0.6V_VTT +/- 3%
TDC:0.76A
EDP:1A

BU5	PROJECT : X3A Quanta Computer Inc.	
Size	Document Number LPDDR4X (NB685A)	Rev 1A
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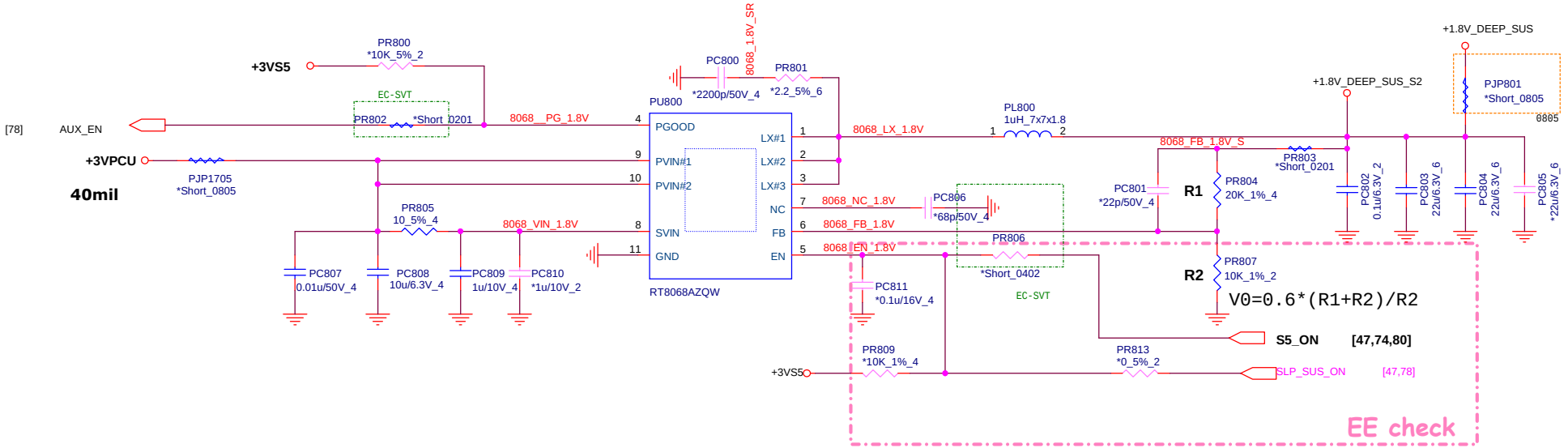
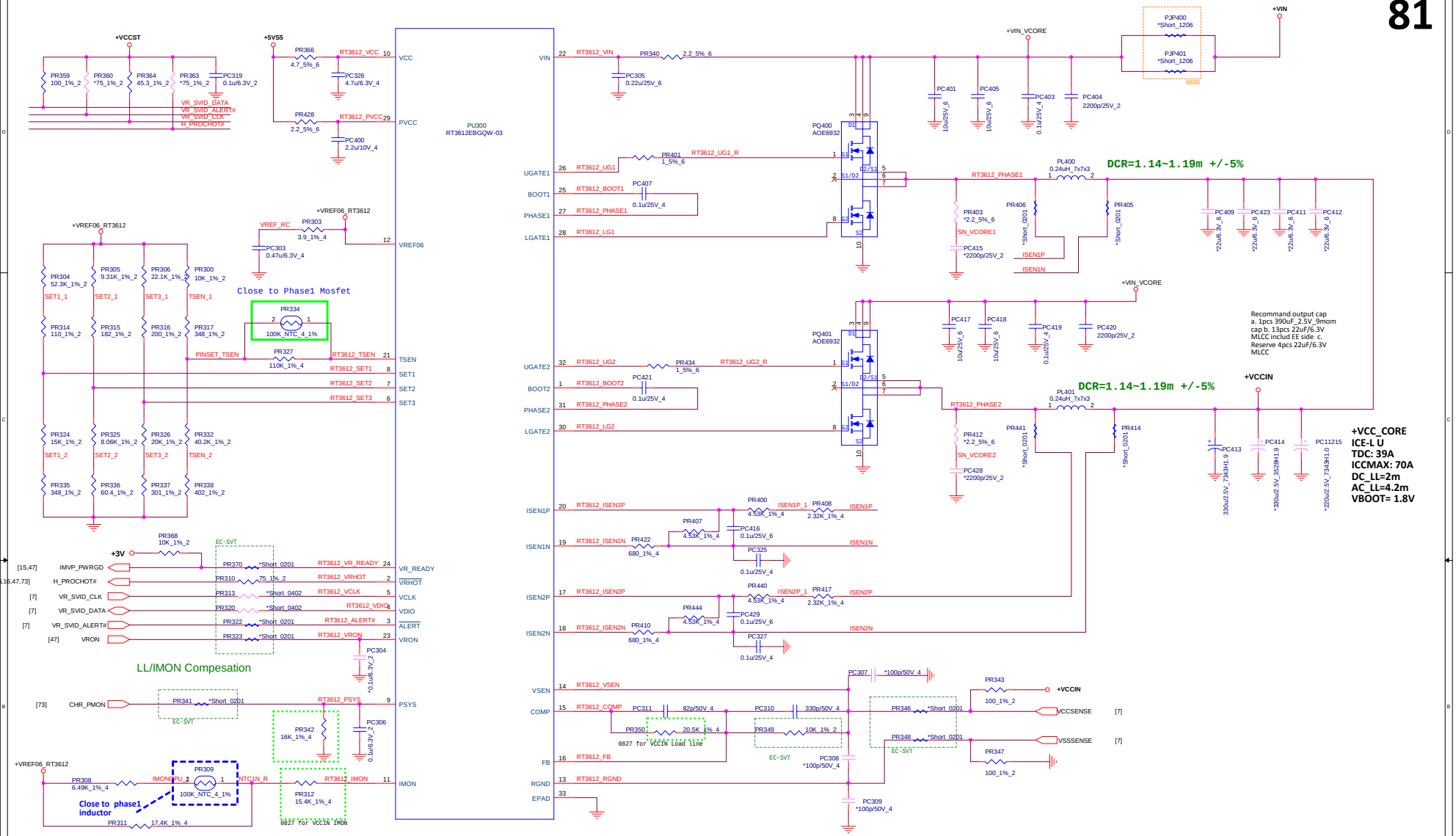
[10,14,15,16,34,41,46,47,50,52,53,61,73,74,75,80,83,85]
[4,10,11,12,15,16,41,46,47,52,53,58,61,74,75,78,79,80,81,82,83,85]
[12,14,16,41,47,69,79,80,84]

+3VPCU
+3VS5
+1.8V_DEEP_SUS

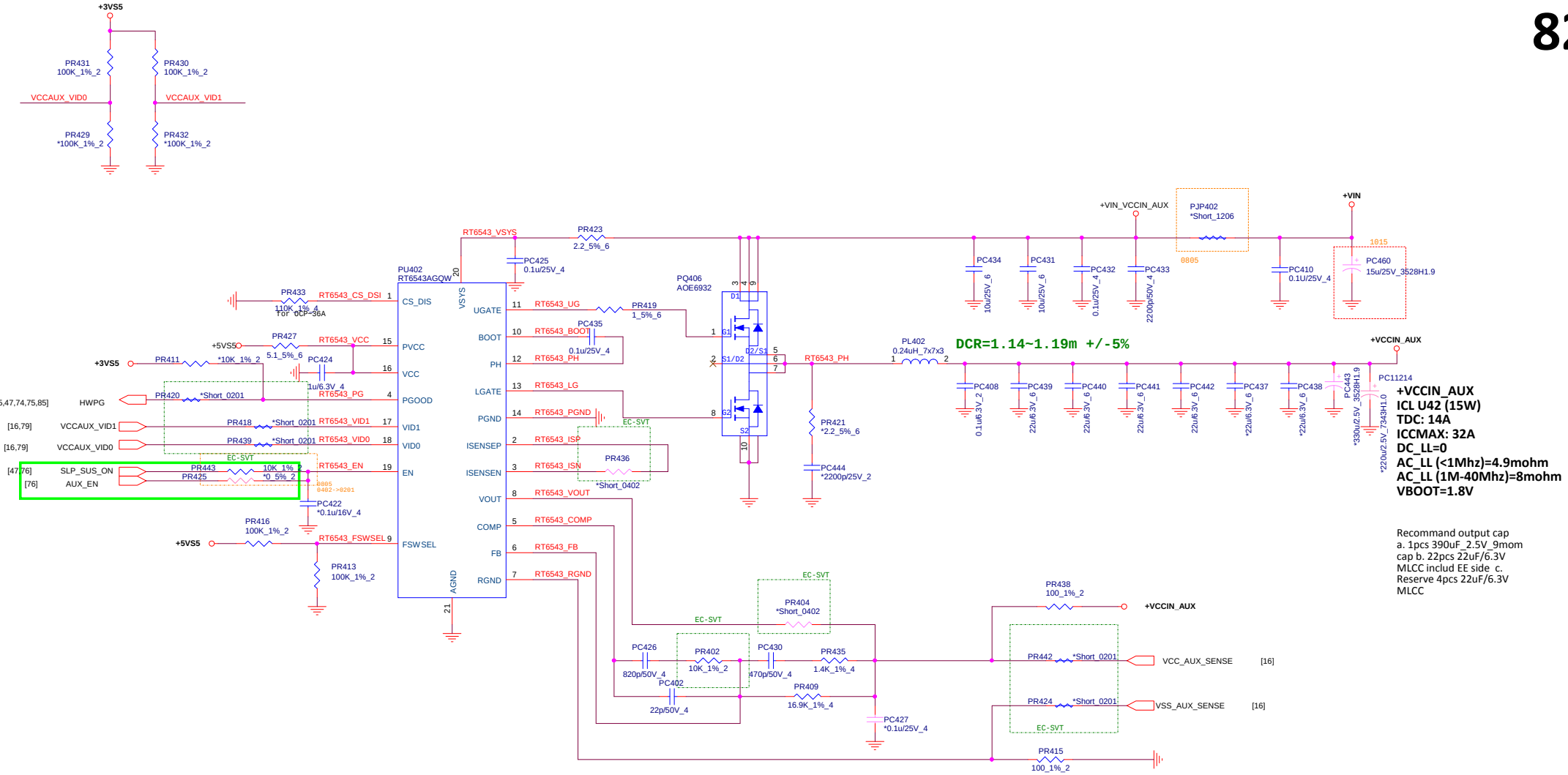
+1.8V_DEEP_SUS
Peak: 3A
OCP: 4A



Custom	**PROJECT : LVC** Quanta Computer Inc.	
BU2	Size: — Document Number: +1.8V_DEEP_SUS(RT8968)	Rev: 1A
Friday, February 14, 2020	Sheet 80 of 85	

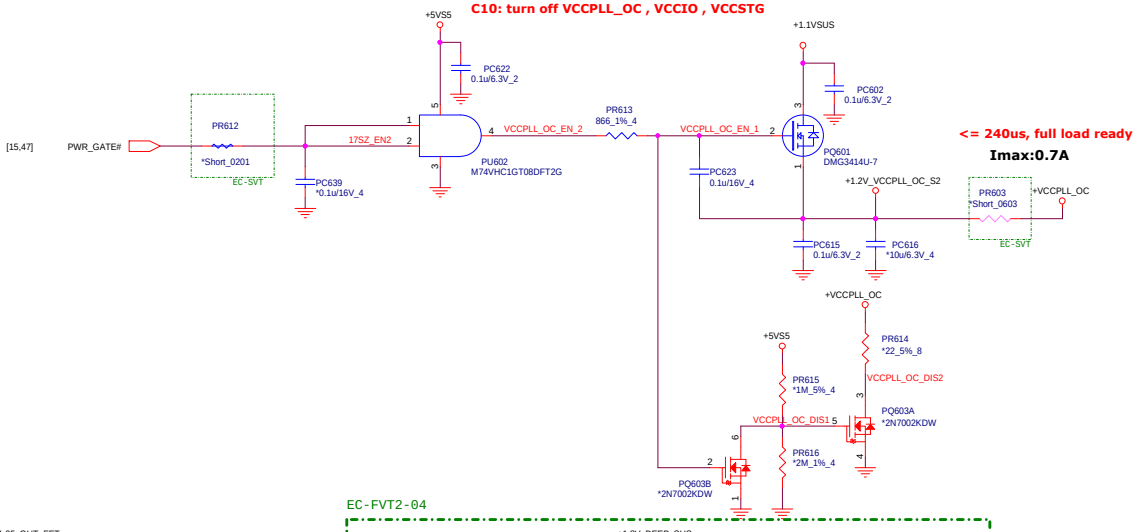


PROJECT	:LVC
Quanta Computer Inc.	
BU2	
Size: Custom	Document Number: CPU VR IC (RT3612EBGQW-03)
Rev: 1A	
Date: Friday, February 14, 2020	Sheet 77 of 89

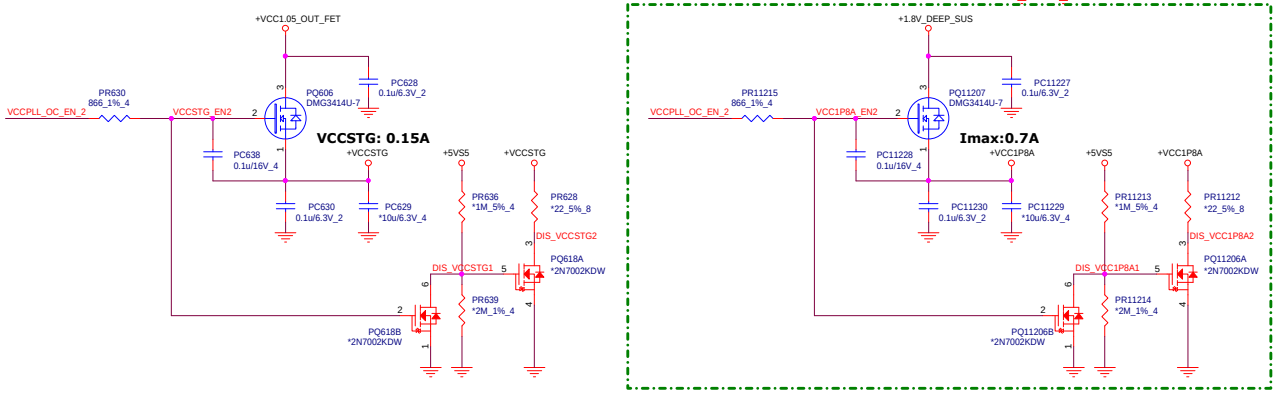


PROJECT : LVC	
Quanta Computer Inc.	
BU2	Size: Custom; Document Number: VCCIN_AUX IC (MP2941); Rev: 1A
Date: Friday, February 14, 2020	Sheet 78 of 89

C10: turn off VCCPLL_OC , VCCIO , VCCSTG



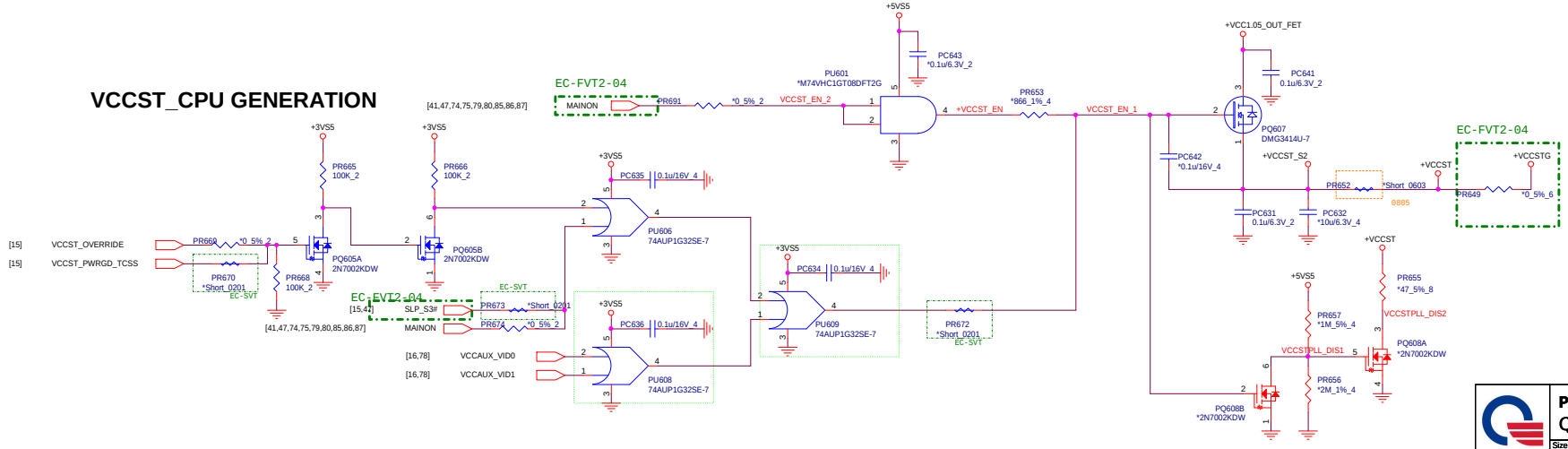
EC-FVT2-04



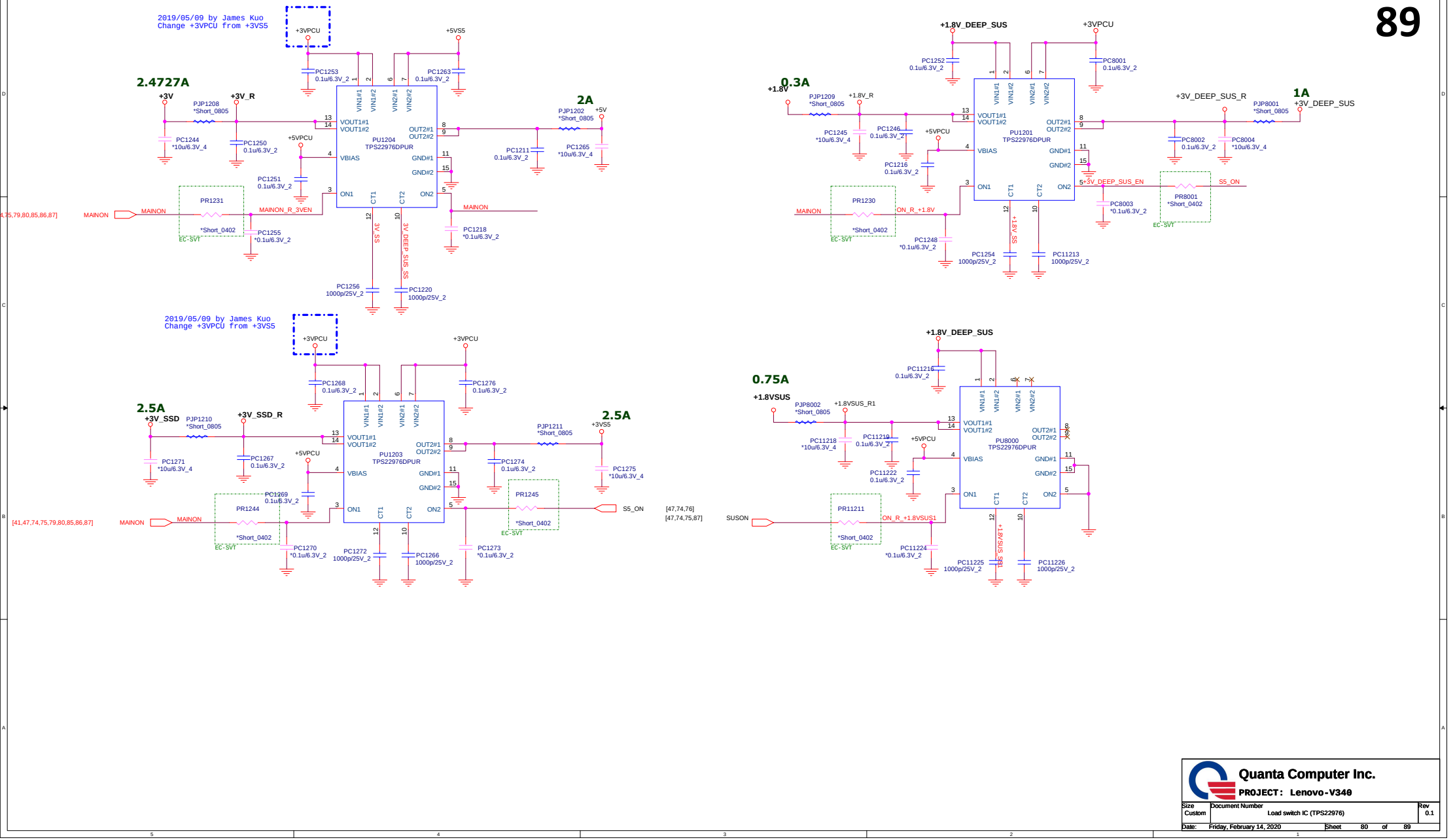
Volume Segment
ICL U42

Volume Segment
VCCST: 0.65A
<= 65us full load ready

VCCST_CPU GENERATION



BU2	PROJECT : LVC Quanta Computer Inc.		
	Size: C	Document Number: +1.0V/+VCCSTPLL	Rev: 1A
	Date: Friday, February 14, 2020	Sheet 79 of 89	



Quanta Computer Inc.

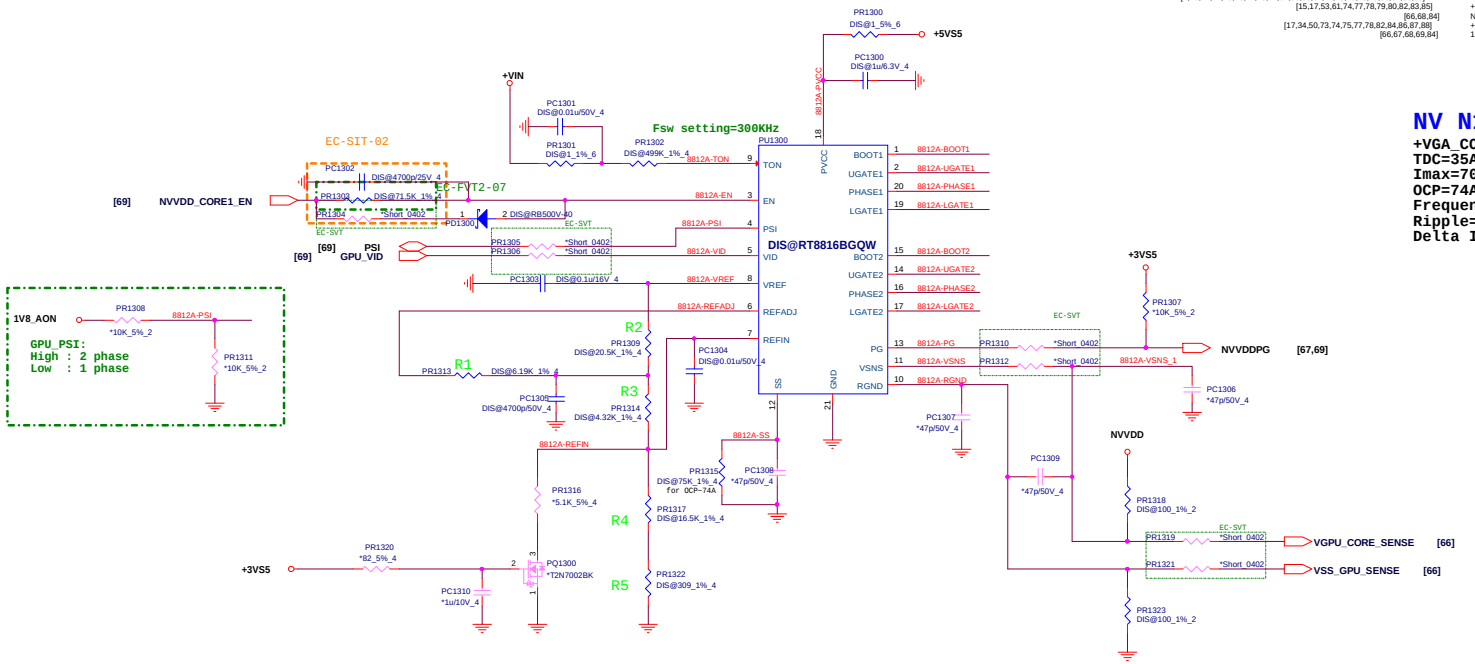
PROJECT: Lenovo-V340

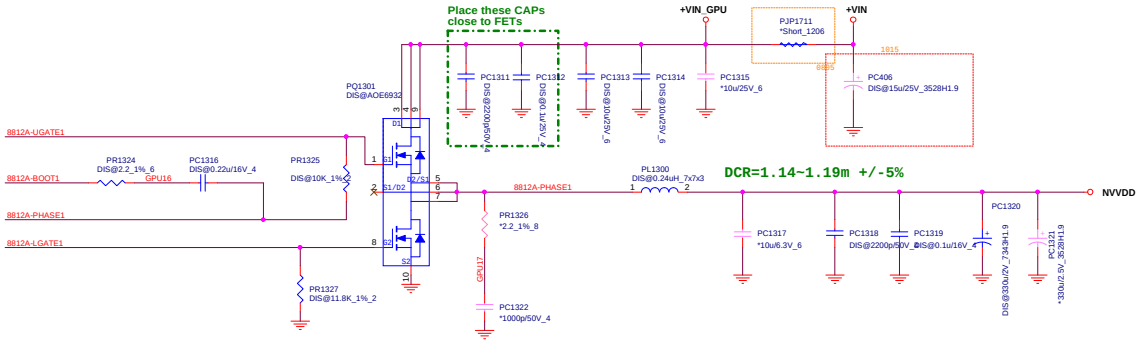
Size	Document Number	Rev
Custom	Load switch IC (TPS22976)	0.1
Date: Friday, February 14, 2020	Sheet 80 of 89	

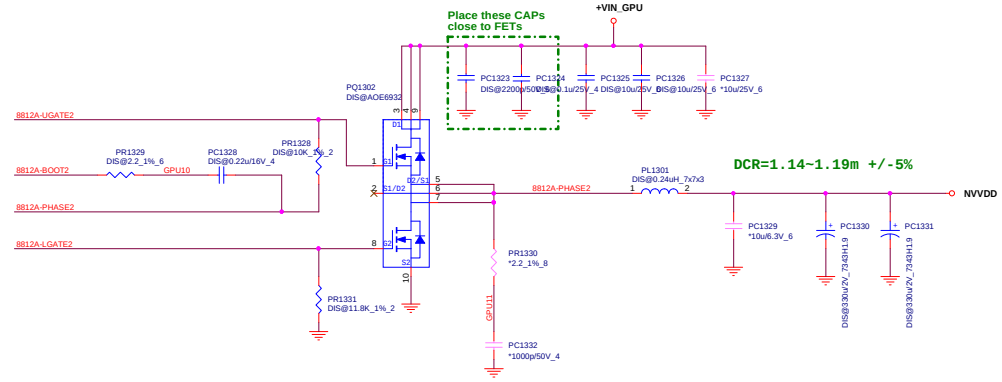
[4,10,11,12,15,16,41,46,47,52,53,58,61,74,75,76,78,79,80,82,83,85] +3VS5
[15,17,53,61,74,77,78,79,80,82,83,85] +5VS5
[66,68,84] NVVDD
[17,34,50,73,74,75,77,78,82,84,86,87,88] +VIN
[66,67,68,69,84] 1V8_AON

NV N17S-G5

+VGA_CORE
TDC=35A
Imax=70A
OCP=74A
Frequency=300kHz
Ripple=36mV
Delta IL = 11.9A







HP Restricted Secret

Quanta Computer Inc.

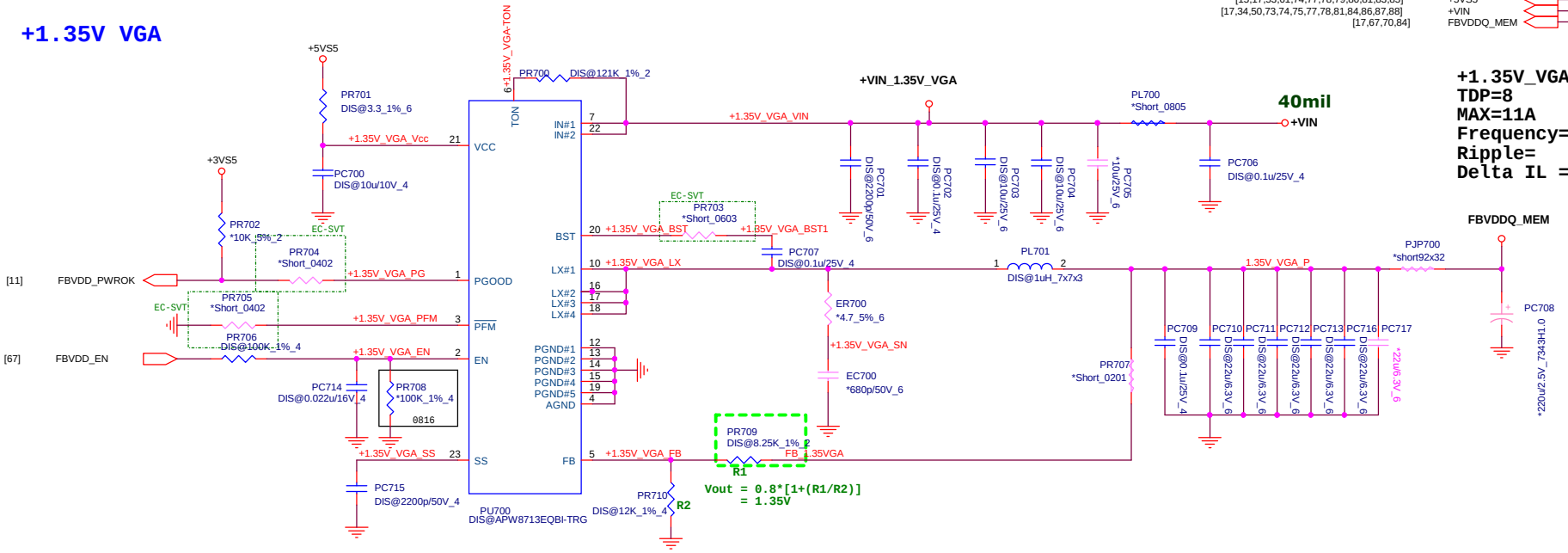
Project: N17S-G0-A1-16b

Title	08 - GPU_CORE (RT8812A)	
Size	Document Number L17314-001	Rev DB
Page Modified: Friday, February 14, 2020		Sheet 81 of 89

+1.35V VGA

[4,10,11,12,15,16,41,46,47,52,53,58,61,74,75,76,78,79,80,81,83,85]
[15,17,53,61,74,77,78,79,80,81,83,85]
[17,34,50,73,74,75,77,78,81,84,86,87,88]
[17,67,70,84]

+3VS5
+5VS5
+VIN
FBVDDQ_MEM

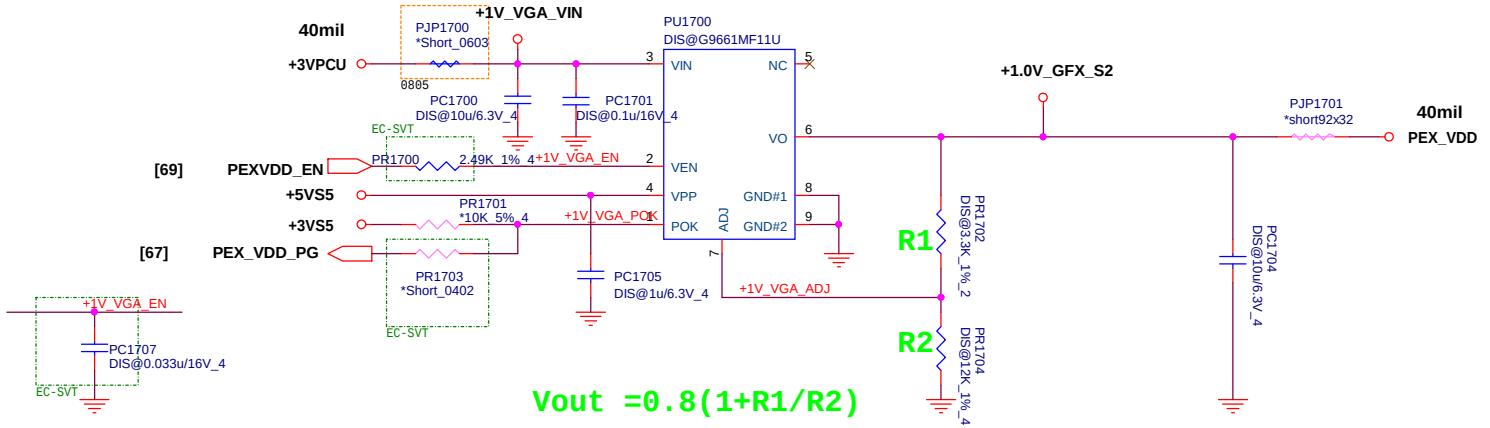


+1.35V_VGA
TDP=8
MAX=11A
Frequency=440kHz
Ripple=
Delta IL =

Quanta Computer Inc.	
Project:	
Title	+1.35V_VGA(APW8713EQBI-TRG)
Size	Document Number: -- / Rev: A
Page Modified: Friday, February 14, 2020	Sheet 82 of 89

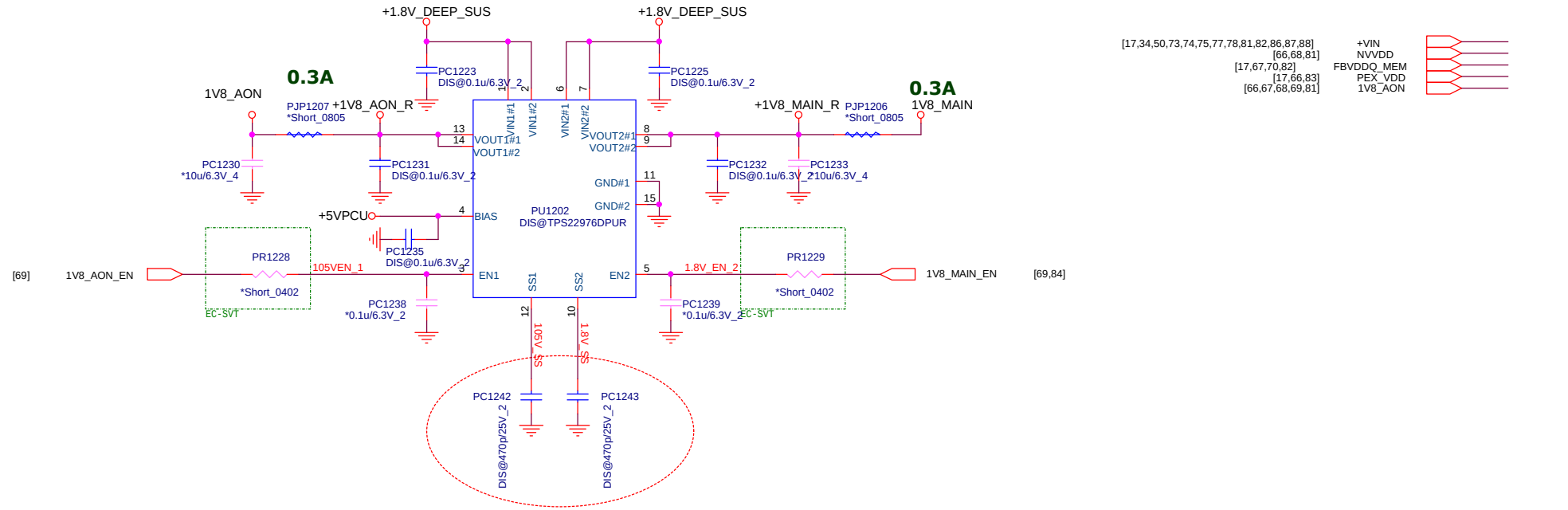
[17,66,84] PEX_VDD
[10,14,15,16,34,41,46,47,50,52,53,61,73,74,75,76,80,85] +3VPCU
[15,17,53,61,74,77,78,79,80,81,82,85] +5VS5
[4,10,11,12,15,16,41,46,47,52,53,58,61,74,75,76,78,79,80,81,82,85] +3VS5

+1V_VGA
Peak:0.4A
OCP: 3A

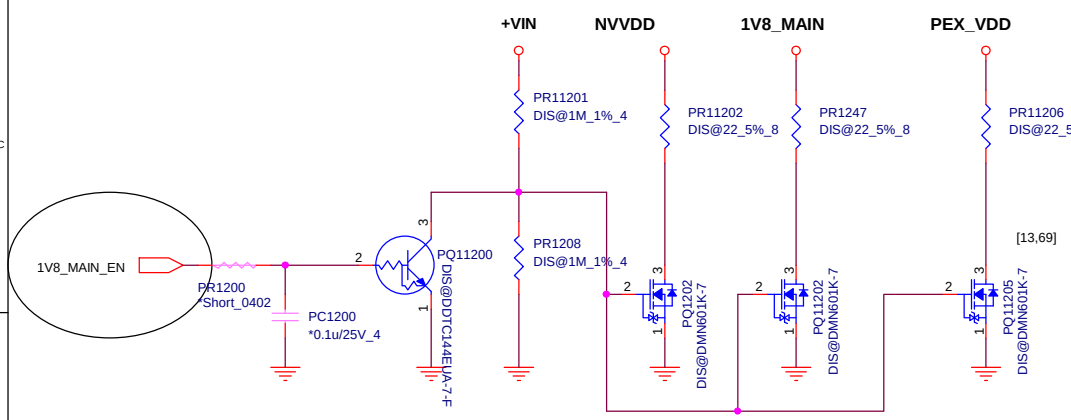


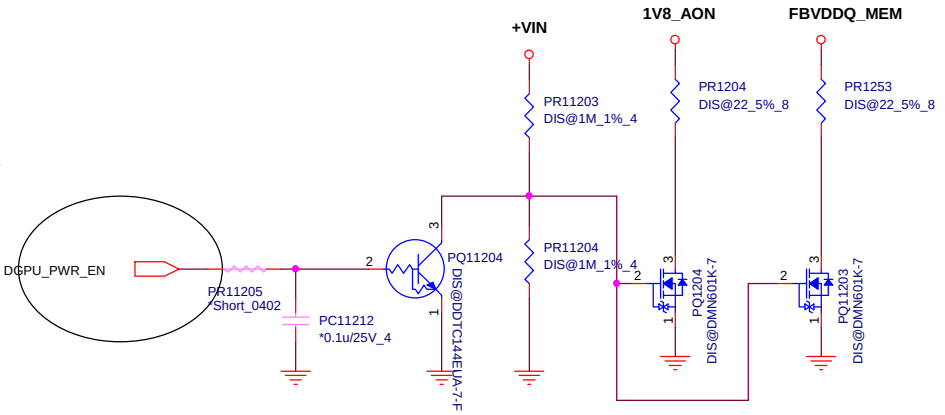
PROJECT :LVC
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+1.8V_S5 (RT8068AZQW)	1A
BU2	Date: Friday, February 14, 2020	Sheet 69



[17,34,50,73,74,75,77,78,81,82,86,87,88] +VIN
[66,68,81] NVVDD
[17,67,70,82] FBVDDQ_MEM
[17,66,83] PEX_VDD
[66,67,68,69,81] 1V8_AON





PROJECT : LVC
Quanta Computer Inc.

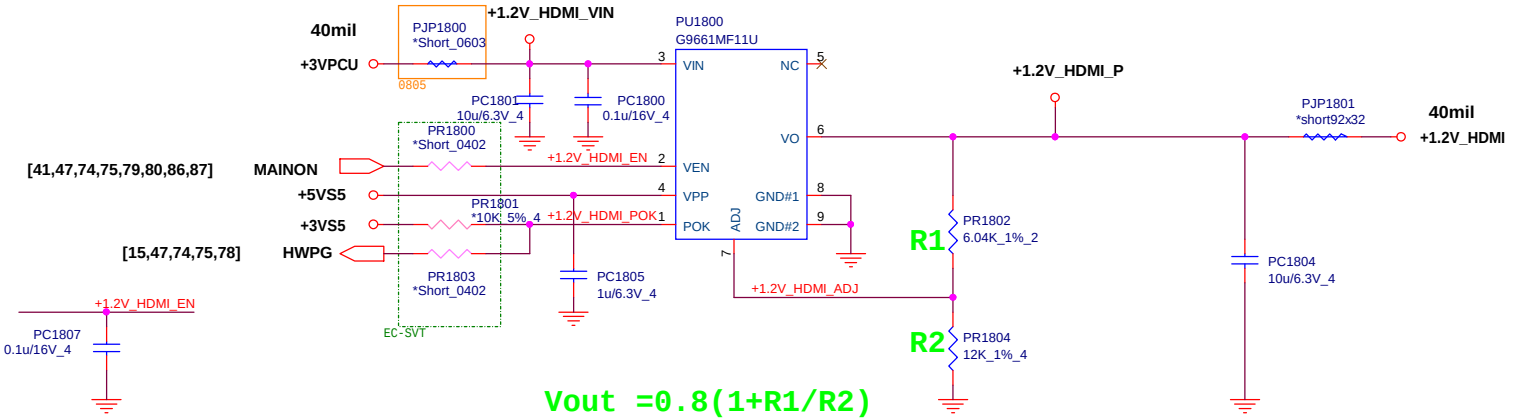
Size	Document Number	Rev
B	+1.8V_GFX(RT8068)/+3V_GFX	1A

BU2

Friday, February 14, 2020 Sheet 69

[10,14,15,16,34,41,46,47,50,52,53,61,73,74,75,76,80,83] +3VPCU
[15,17,53,61,74,77,78,79,80,81,82,83] +5VS5
[4,10,11,12,15,16,41,46,47,52,53,58,61,74,75,76,78,79,80,81,82,83] +3VS5

+1.2V_HDMI
Peak:0.3A
OCP: 3A



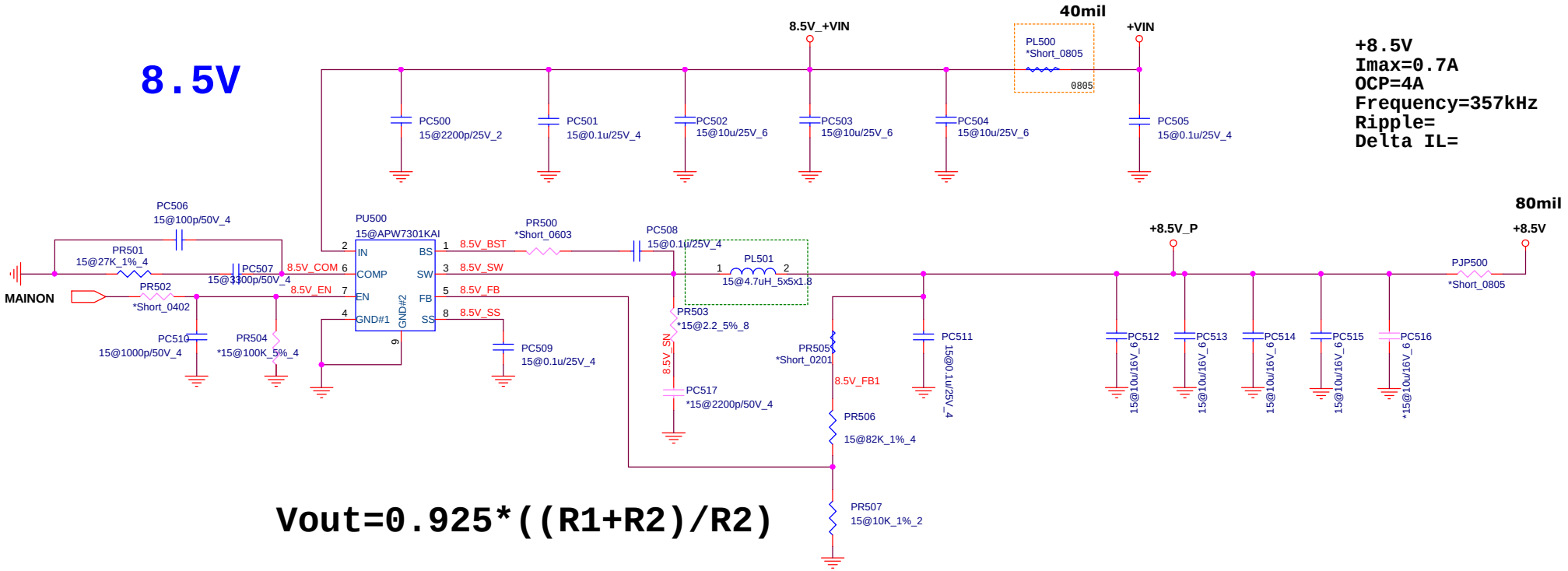
Vout =0.8(1+R1/R2)

PROJECT :LVC
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+1.8V_S5 (RT8068AZQW)	1A
BU2	Date: Friday, February 14, 2020	Sheet 85 of 89

[17,34,50,73,74,75,77,78,81,82,84,87,88] +VIN

8.5V



Vout=0.925*((R1+R2)/R2)

HP Restricted Secret

Quanta Computer Inc.
Project: HP-MONK-P/D

Title		
+12V		
Size	Document Number	Rev
	--	A1A
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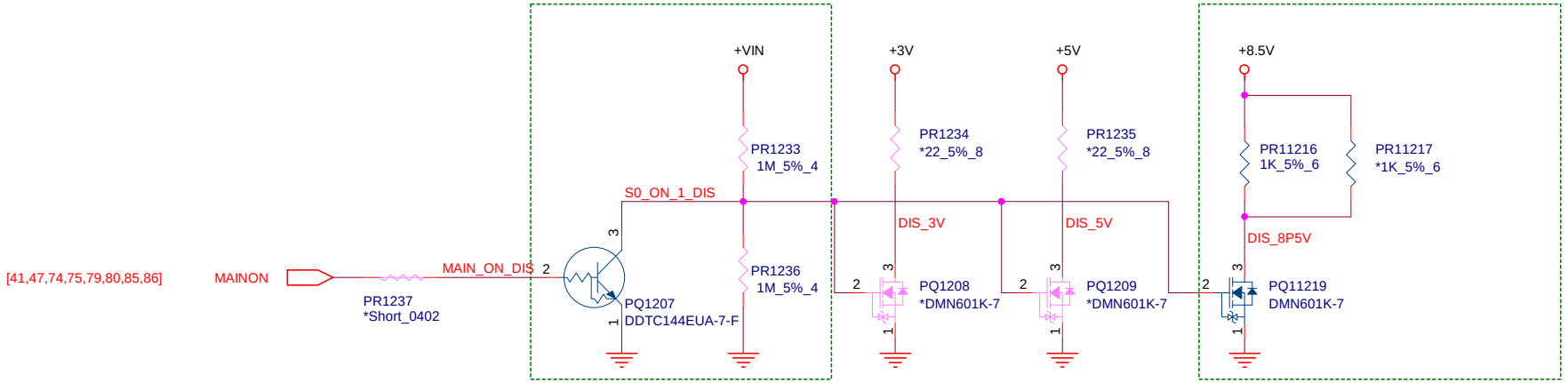
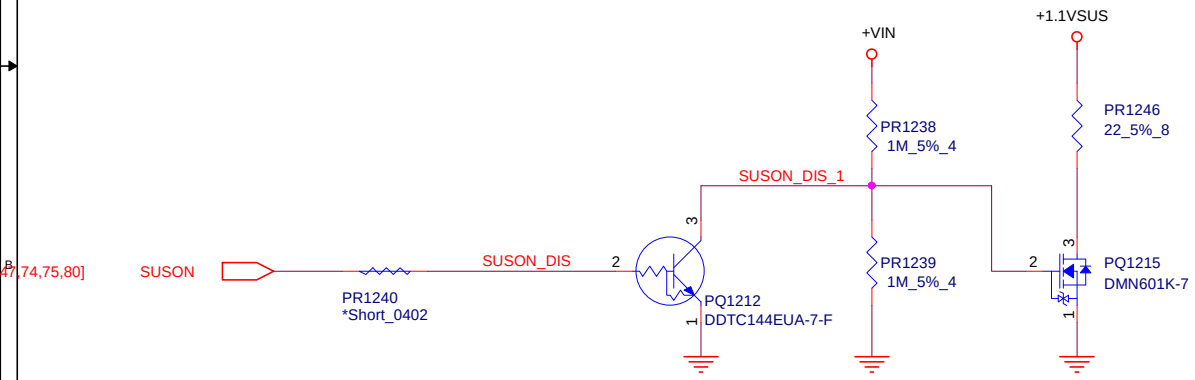
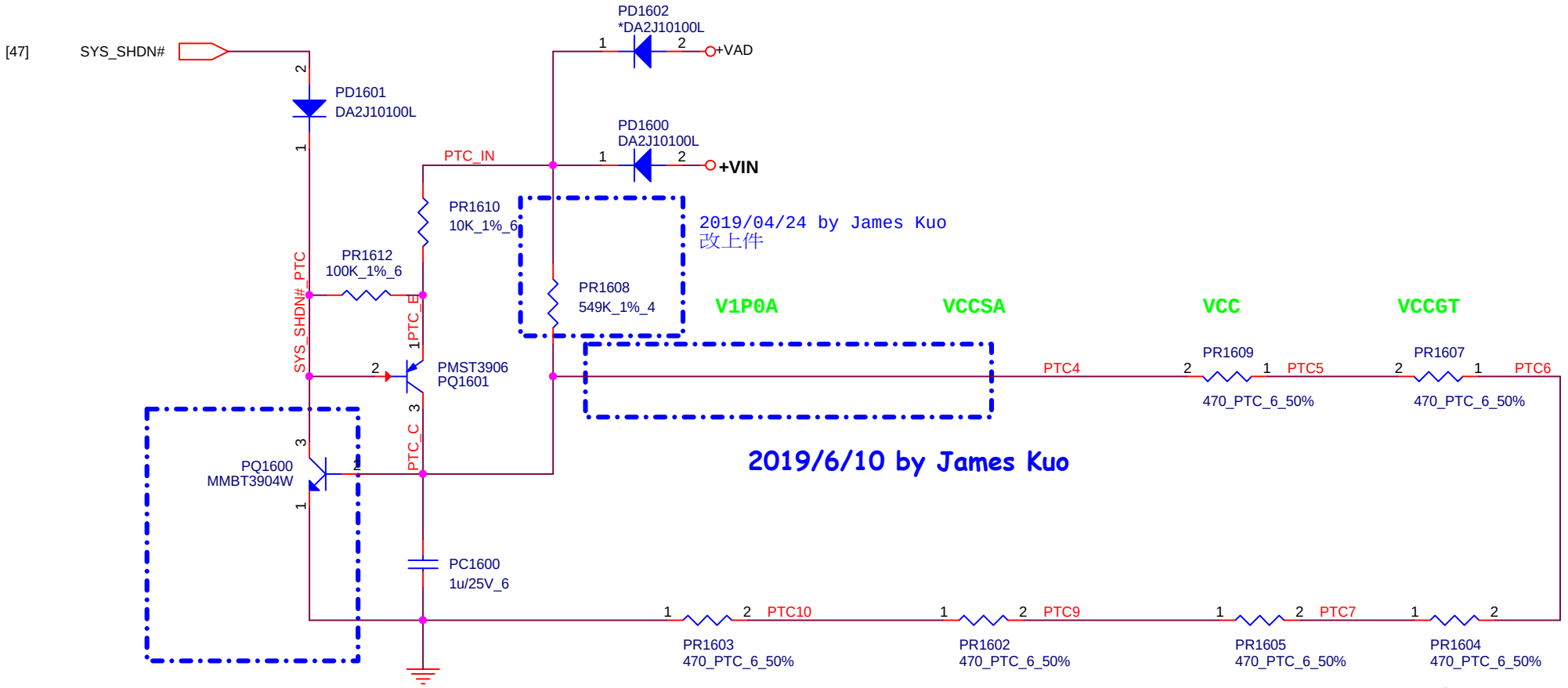
Power rail discharge





Custom	**PROJECT : LVC** Quanta Computer Inc.	
BU2	Size: Document Number: Discharge	Rev: 1A
Friday, February 14, 2020	Date:	Sheet 87 of 89



2019/04/23 by James Kuo
PQ1600 change to BA039040019 from BA0390400B1

Custom	PROJECT : LVC Quanta Computer Inc.	
Size	Document Number PTC Circuit	Rev 1A
Date: Friday, February 14, 2020	Sheet 69 of 69	

POWER BLOCK DIAGRAM