



5

4

3

2

1

D

D

C

C

B

B

A

A

Size	Document Number	Rev
Date:	1	Sheet of

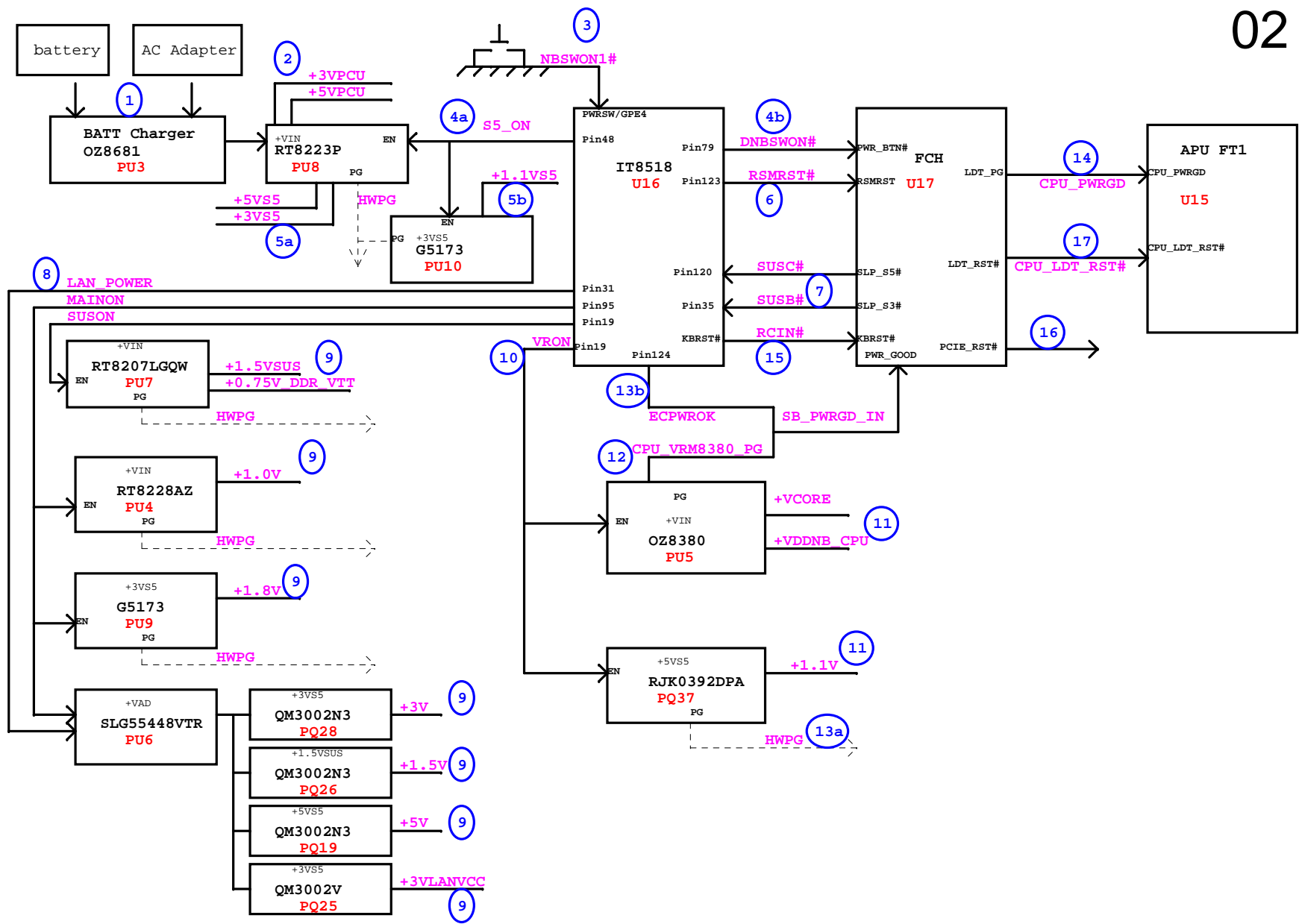
5

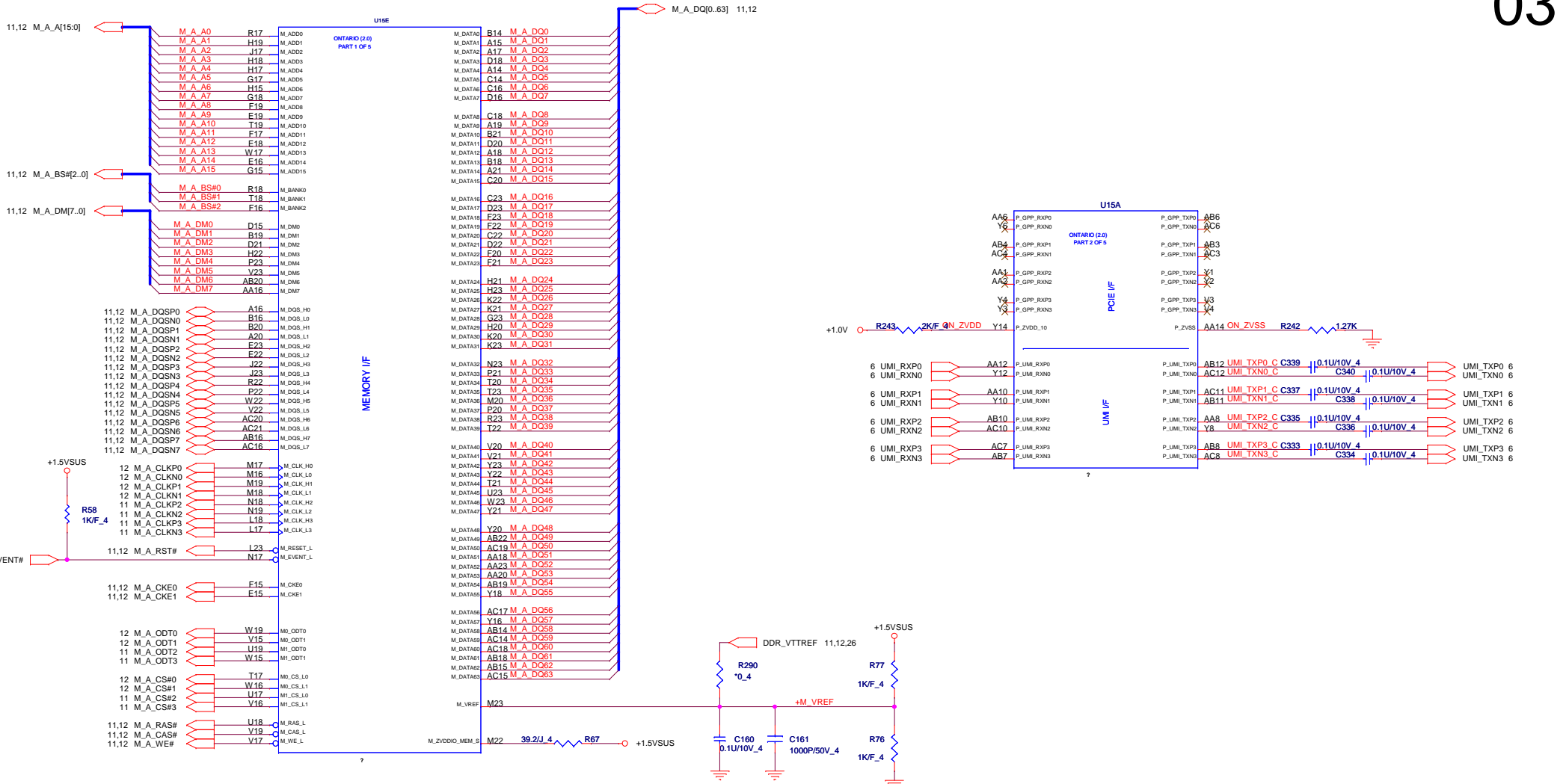
4

3

2

1





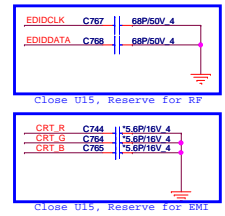
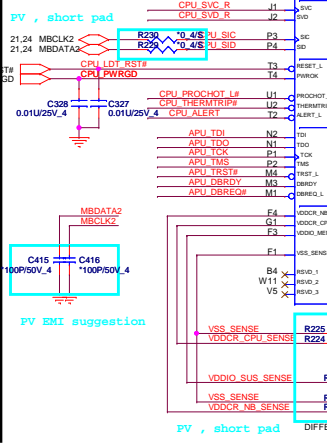
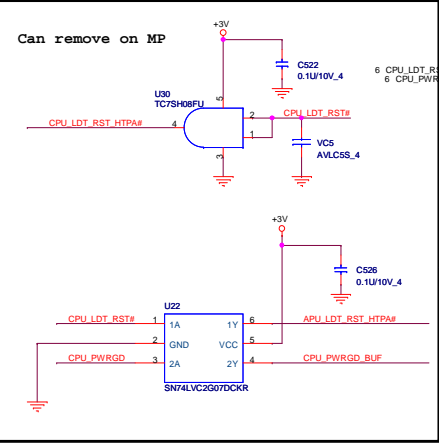
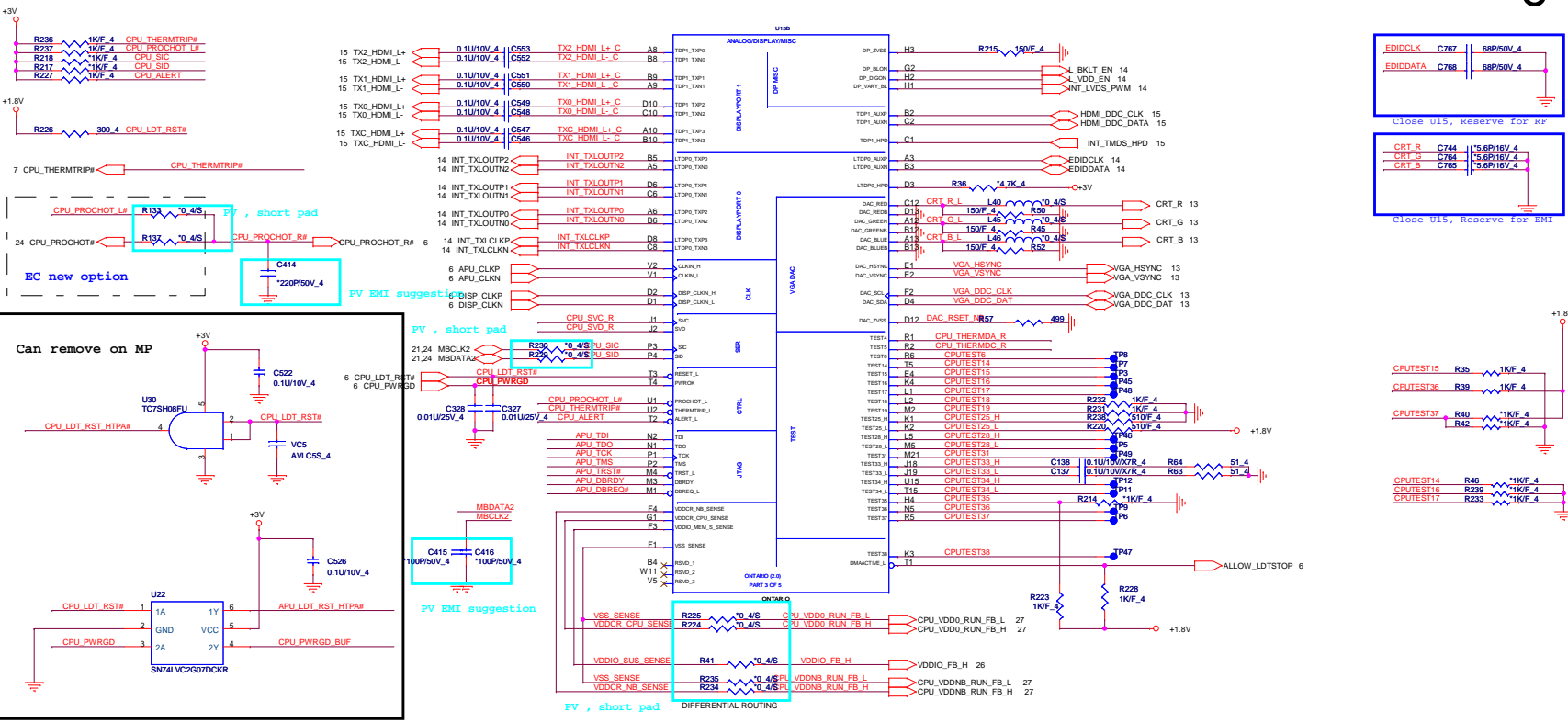
SI : del R445,R446

Quanta Computer Inc.
PROJECT : Butternut (NM9)

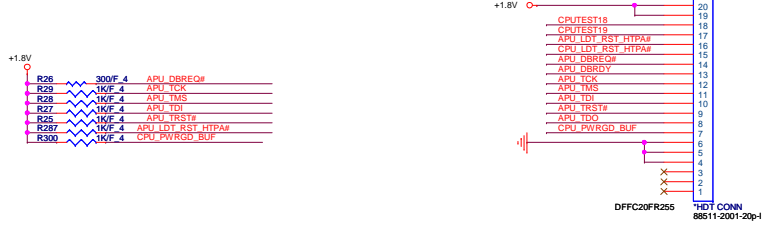
Size	Document Number	Rev
	Ontario DDRIII/PCIE(1/3)	1A
Date:	Wednesday, July 27, 2011	Sheet 3 of 31

5.10,11,12,21,26,31 +1.5VSUS
 7,8,9,10,20,21,24,25,29,31 +3VSS

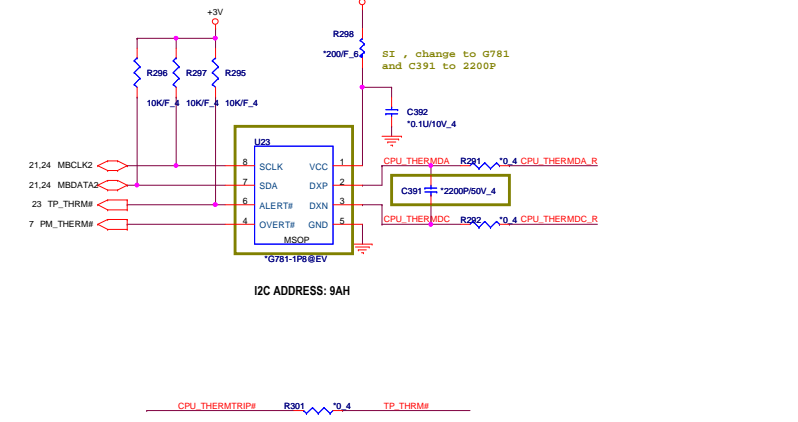
+1.8V 5,30
+3V 5,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,23,24,27,31



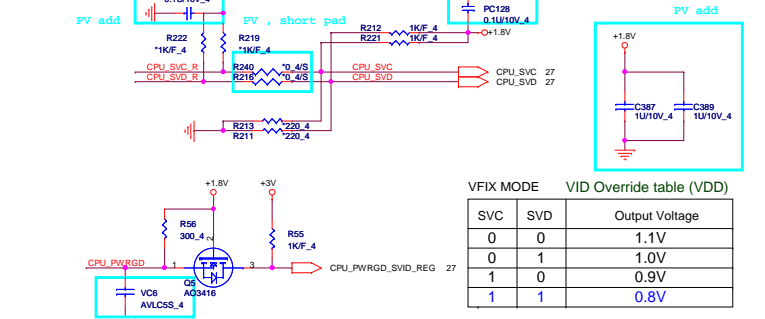
HDT(Hardware Debug Tool) Connector

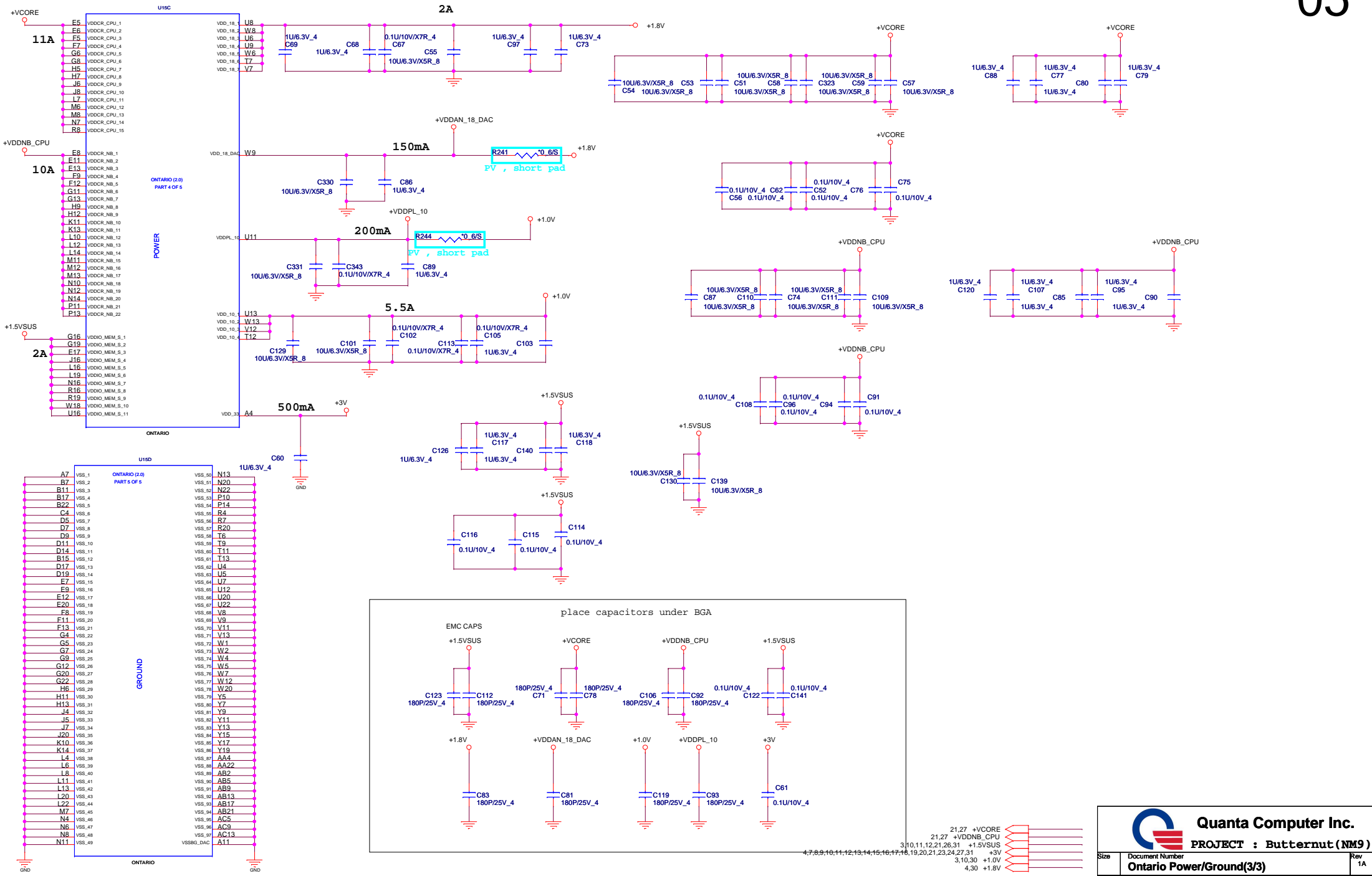


Thermal Sensor



Serial VID



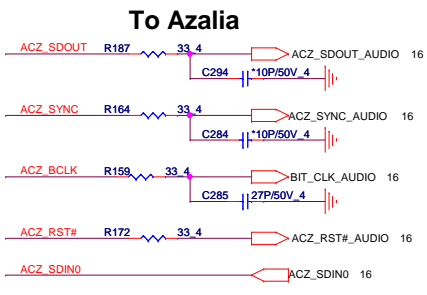
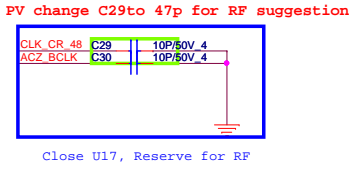
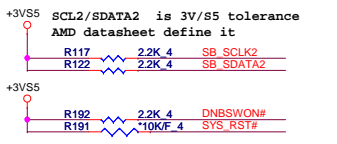
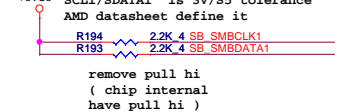
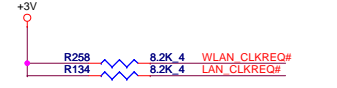
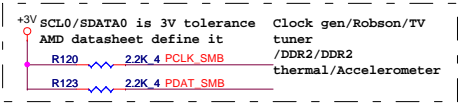
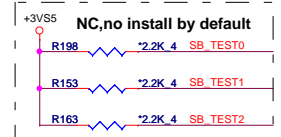


Quanta Computer Inc.

PROJECT : Butternut (NM9)

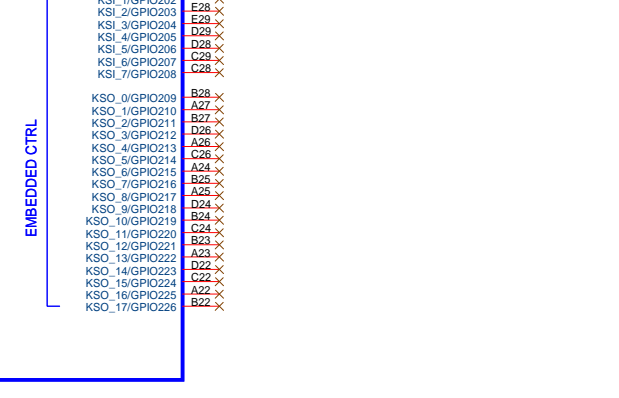
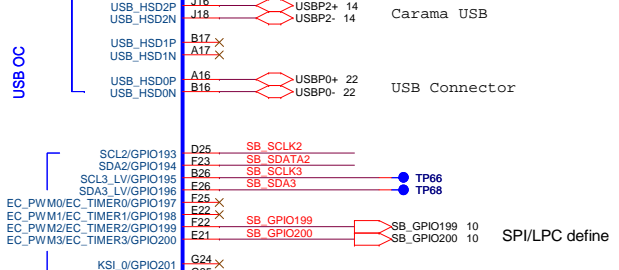
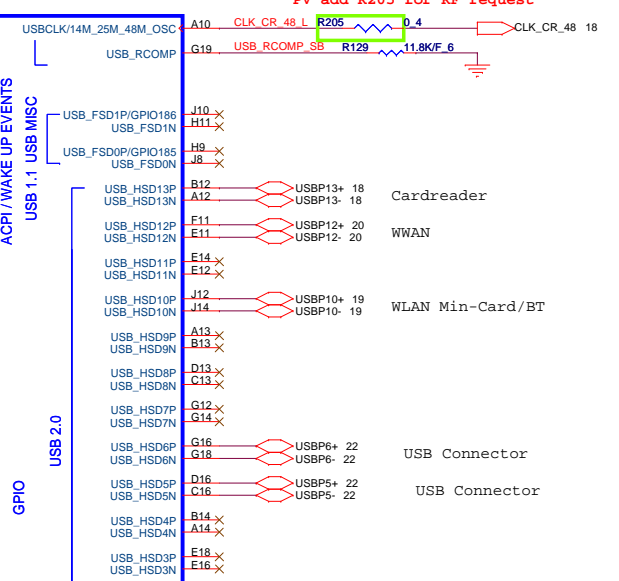
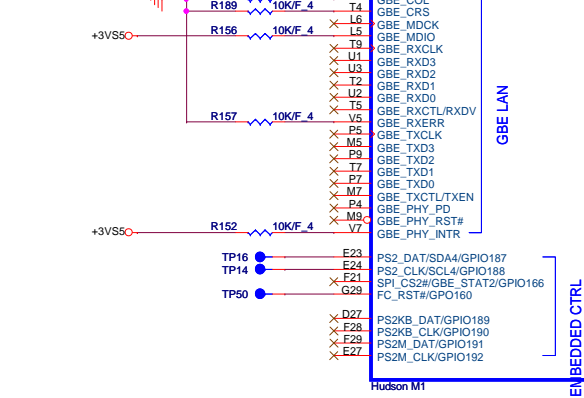
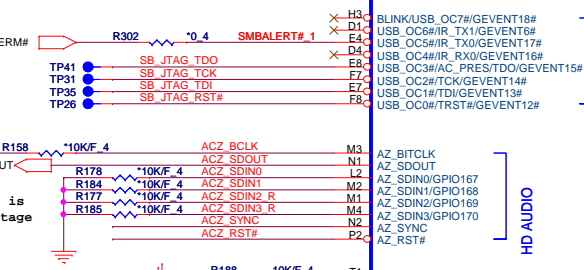
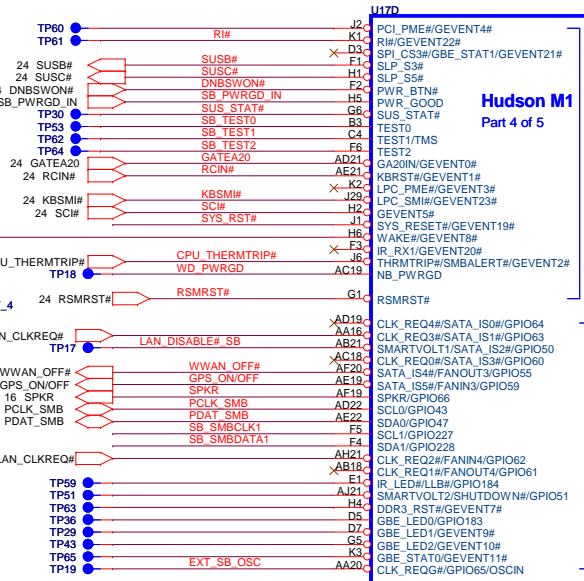
Size	Document Number	Rev
	Ontario Power/Ground(3/3)	1A

Date: Wednesday, July 27, 2011 Sheet 5 of 31



TP30, TP53, TP62, TP64 need on top

DB stage , change to reserve only FCH GPIO 61 already internal pull up



Quanta Computer Inc.
PROJECT : Butternut (NM9)

Size: Document Number: **Hudson GPIO/HDA/USB(2/4)** Rev: 1A
 Date: Wednesday, July 27, 2011 Sheet 7 of 31

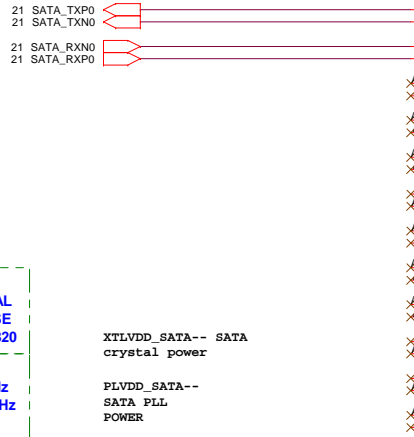
4,5,8,9,10,11,12,13,14,15,16,17,18,19,20,21,23,24,27,31
 8,9,10,20,21,24,25,29,31



SATA PORT 0,1,2,3
can support AHCI
mode

PLACE SATA AC COUPLING
CAPS CLOSE TO SB820

SATA1 HDD

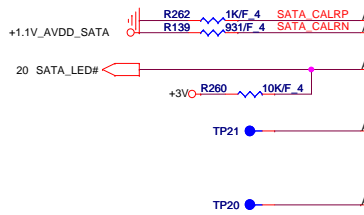


PLACE SATA_CAL
RES VERY CLOSE
TO BALL OF SB820

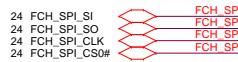
NOTE:
R361 IS 1K 1% FOR 25MHz
XTAL, 4.99K 1% FOR 100MHz
INTERNAL CLOCK

XTLVDD_SATA-- SATA
crystal power

PLVDD_SATA--
SATA PLL
POWER

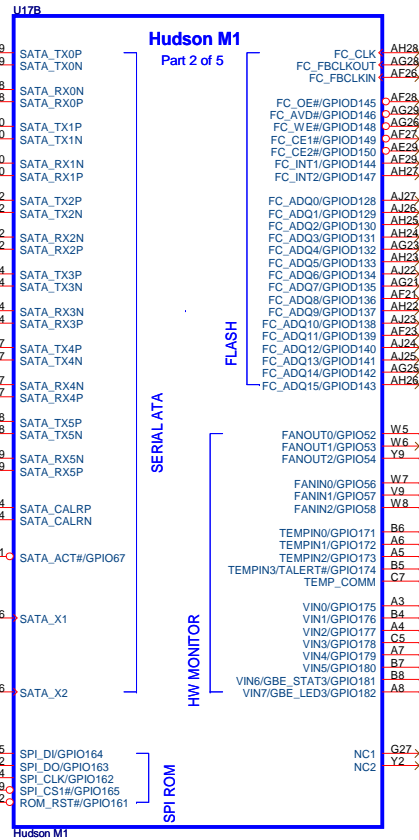


SI: change SPI mode



PV, short pad

IF THERE IS NO IDE, TEST
POINTS FOR DEBUG BUS
IS MANDATORY



Hudson M1
Part 2 of 5

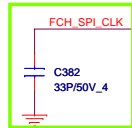
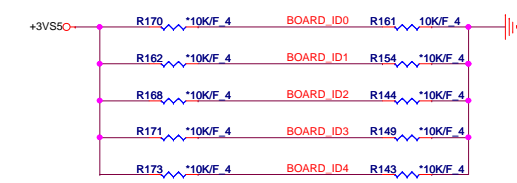
SERIAL ATA

FLASH

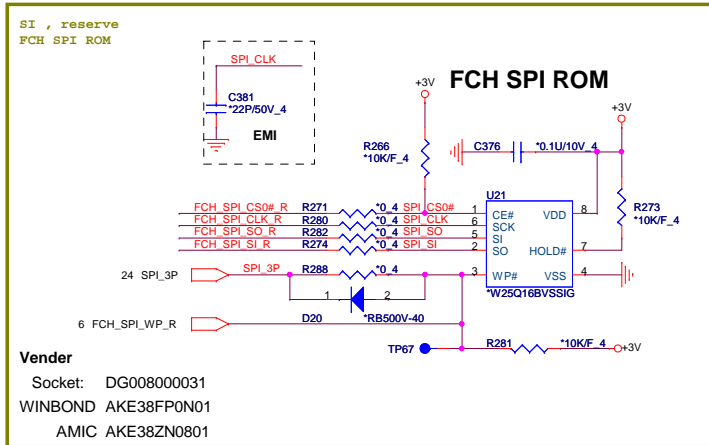
HW MONITOR

SPI ROM

Board ID 0	
0	E450 (1333MHz)
1	E300 (1066MHz)

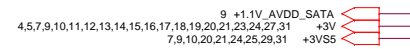


PV for EMI suggestion



Vender

Socket: DG008000031
WINBOND AKE38FP0N01
AMIC AKE38ZN0801

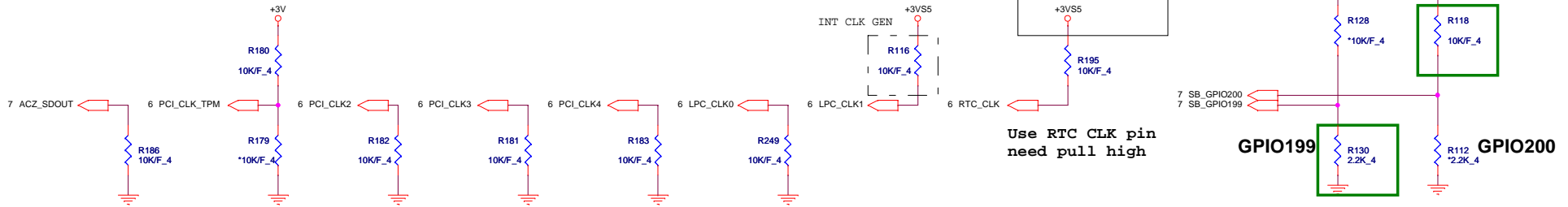


Quanta Computer Inc.
PROJECT : Butternut (NM9)

Size	Document Number	Rev
	Hudson IDE/SATA/SPI(3/4)	1A
Date:	Wednesday, July 27, 2011	Sheet 8 of 31

OVERLAP COMMON PADS WHERE POSSIBLE FOR DUAL-OP RESISTORS.

REQUIRED STRAPS



REQUIRED STRAPS

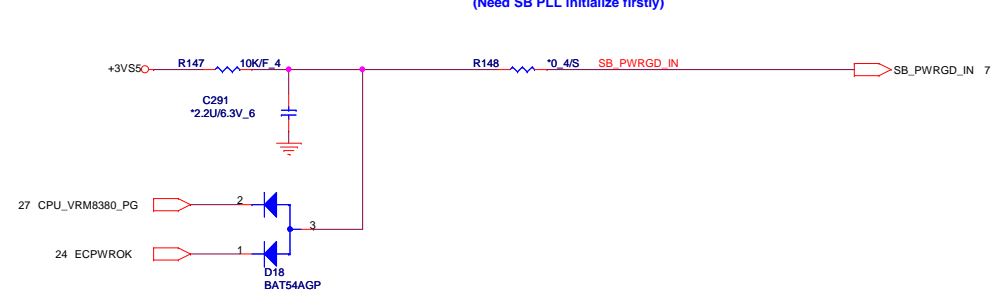
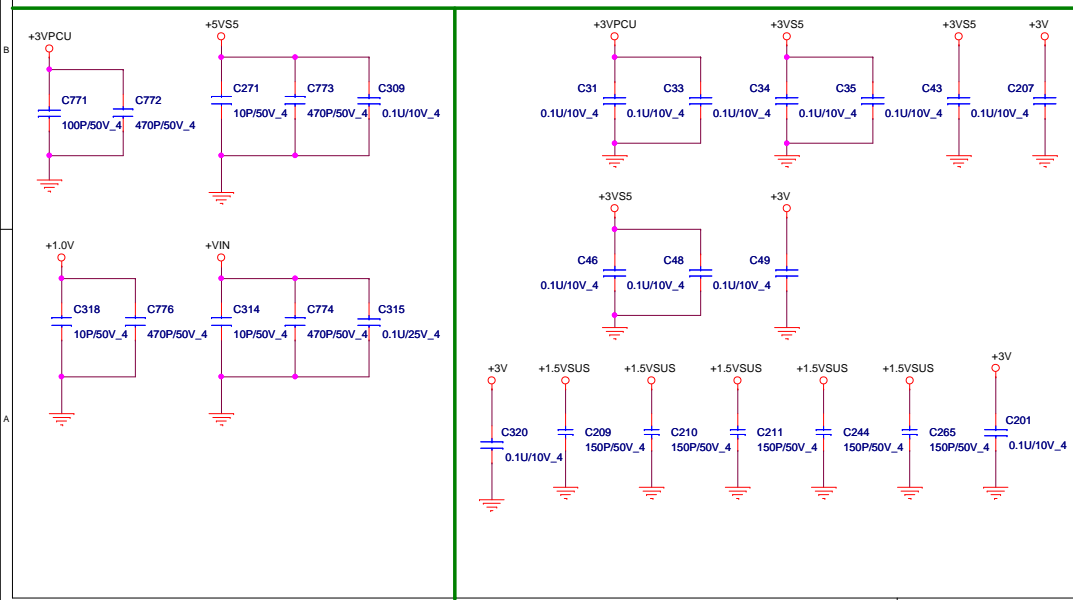
	AZ_SDOUT	PCI_CLK_TPM	PCI_CLK2	PCI_CLK3	PCI_CLK4	LPC_CLK0	LPC_CLK1	GPIO200	GPIO199
PULL HIGH	LOW POWER MODE	ALLOW PCIE Gen2	Watchdog Timer Enabled	USE DEBUG STRAP	non_Fusion CLOCK MODE	EC ENABLED	CLKGEN ENABLED DEFAULT	H,H = Reserved H,L = SPI ROM	
PULL LOW	PERFORMANCE MODE DEFAULT	FORCE PCIE Gen1 DEFAULT	Watchdog Timer Disabled DEFAULT	IGNORE DEBUG STRAP DEFAULT	FUSION CLOCK MODE DEFAULT	EC DISABLED DEFAULT	CLKGEN DISABLED	L,H = LPC ROM (Default) L,L = FWH ROM	

TYPE	GPIO199	GPIO200
FWH	pull down	pull down
LPC	pull high	pull down
SPI	pull down	pull high
RSVD	pull high	pull high

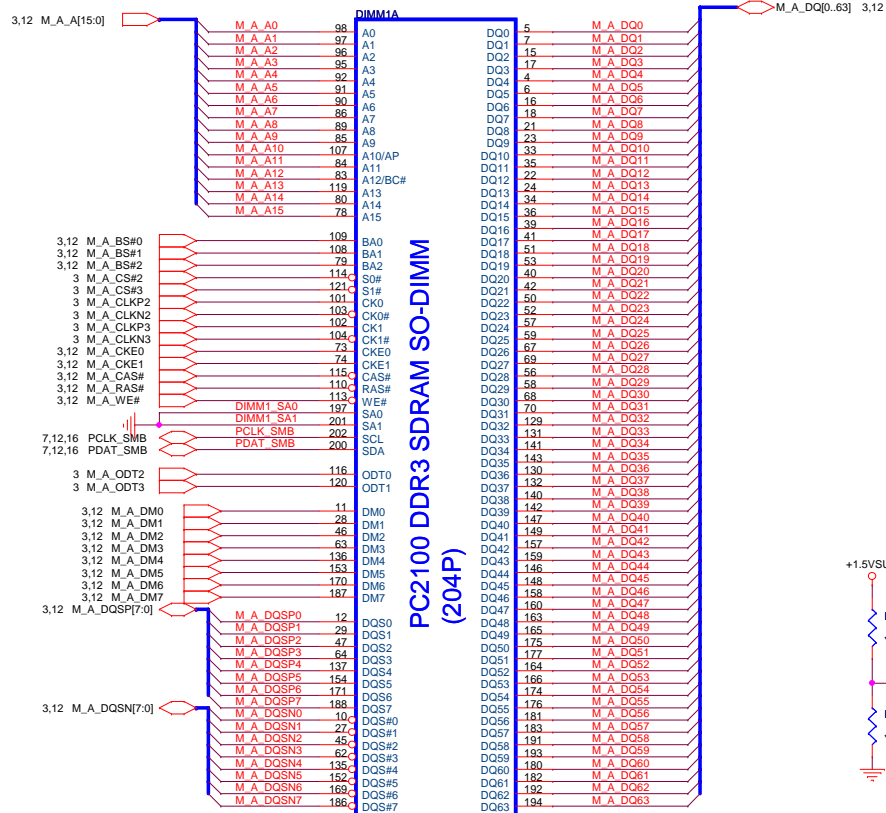
RF solution

EMI solution

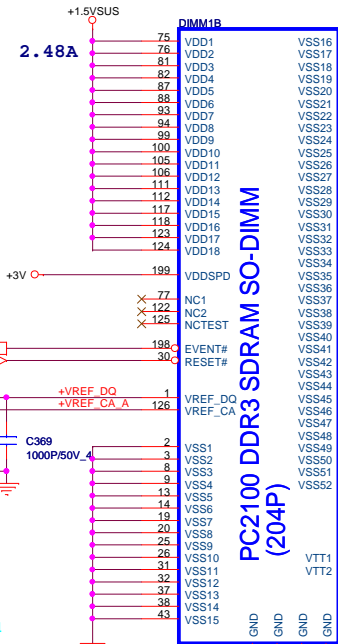
NB_PWRGD_IN:
RS780/RX780 = 1.8V; RS740 = 3.3V
Do NOT share it with SB_PWRGD when use Internal Clk Gen
(Need SB PLL initialize firstly)



DDR STD (4.0mm)



PC2100 DDR3 SDRAM SO-DIMM (204P)

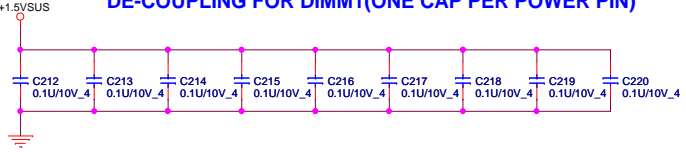


Place close to DIMMs

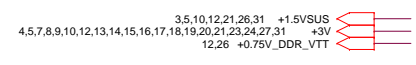
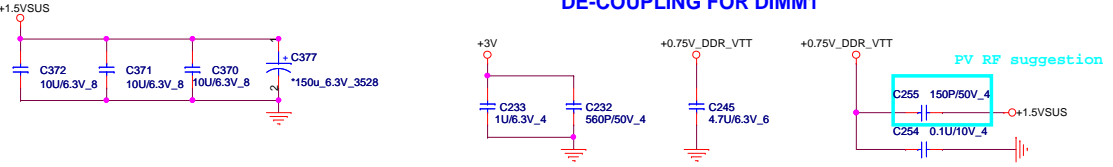
SI : RF solution

Place these Caps near So-Dimm1.
No Vias Between the Trace of PIN to CAP.

DE-COUPLING FOR DIMM1(ONE CAP PER POWER PIN)

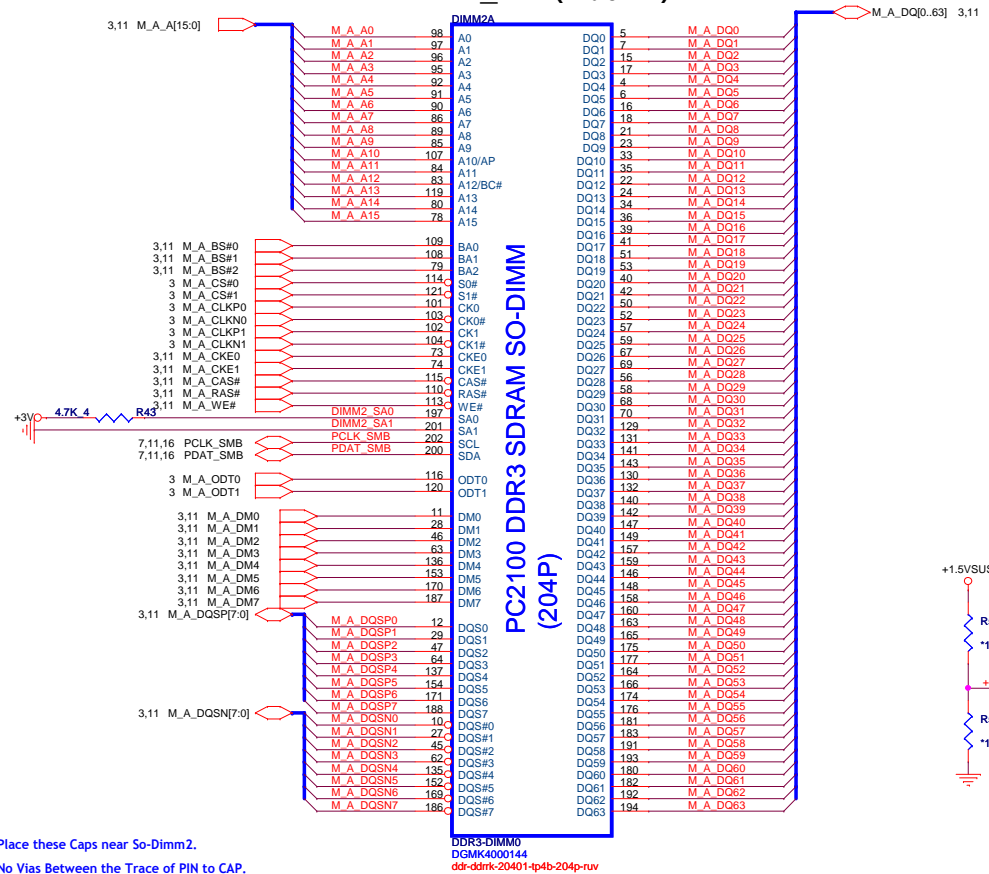


DE-COUPLING FOR DIMM1

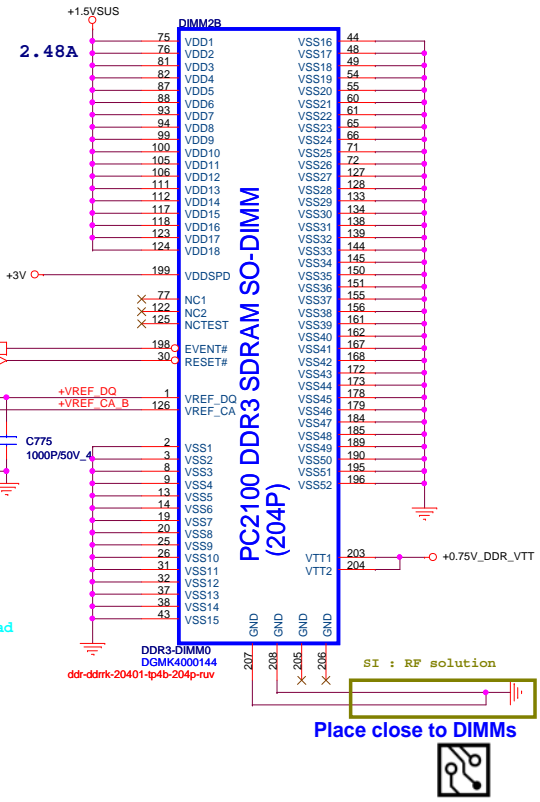
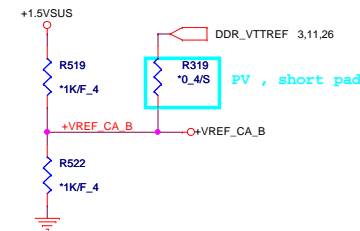


Quanta Computer Inc.
PROJECT : Butternut (NM9)
Document Number
DDRIII SODIMM-1 (STD)
Rev: 1A
Date: Monday, July 25, 2011 Sheet 11 of 31

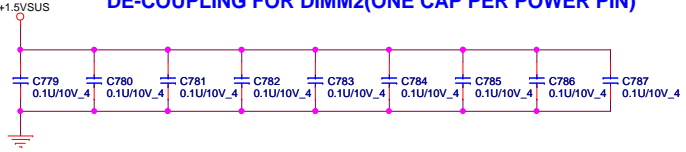
DDR_RVS (4.0mm)



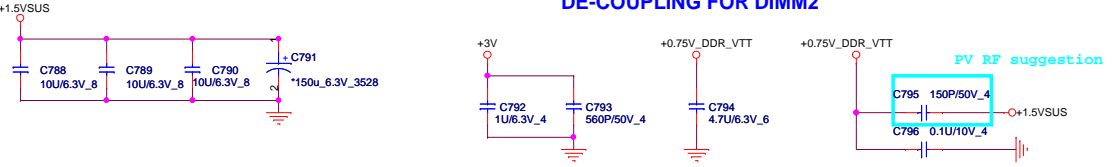
Place these Caps near So-Dimm2.
No Vias Between the Trace of PIN to CAP.



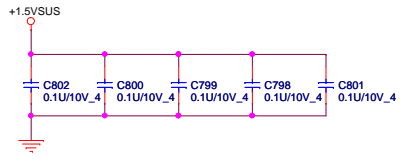
DE-COUPLING FOR DIMM2(ONE CAP PER POWER PIN)



DE-COUPLING FOR DIMM2



Return Path for DDR Plane



Quanta Computer Inc.
PROJECT : Butternut (NM9)

Size Document Number
DDRIII SODIMM-1 (RVS) Rev: 1A

Date: Monday, July 25, 2011 Sheet 12 of 31

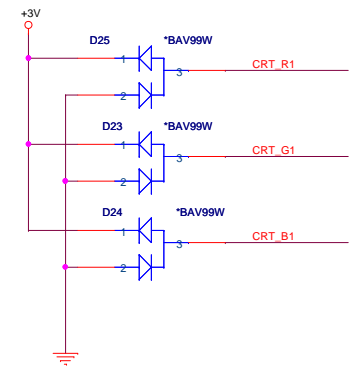
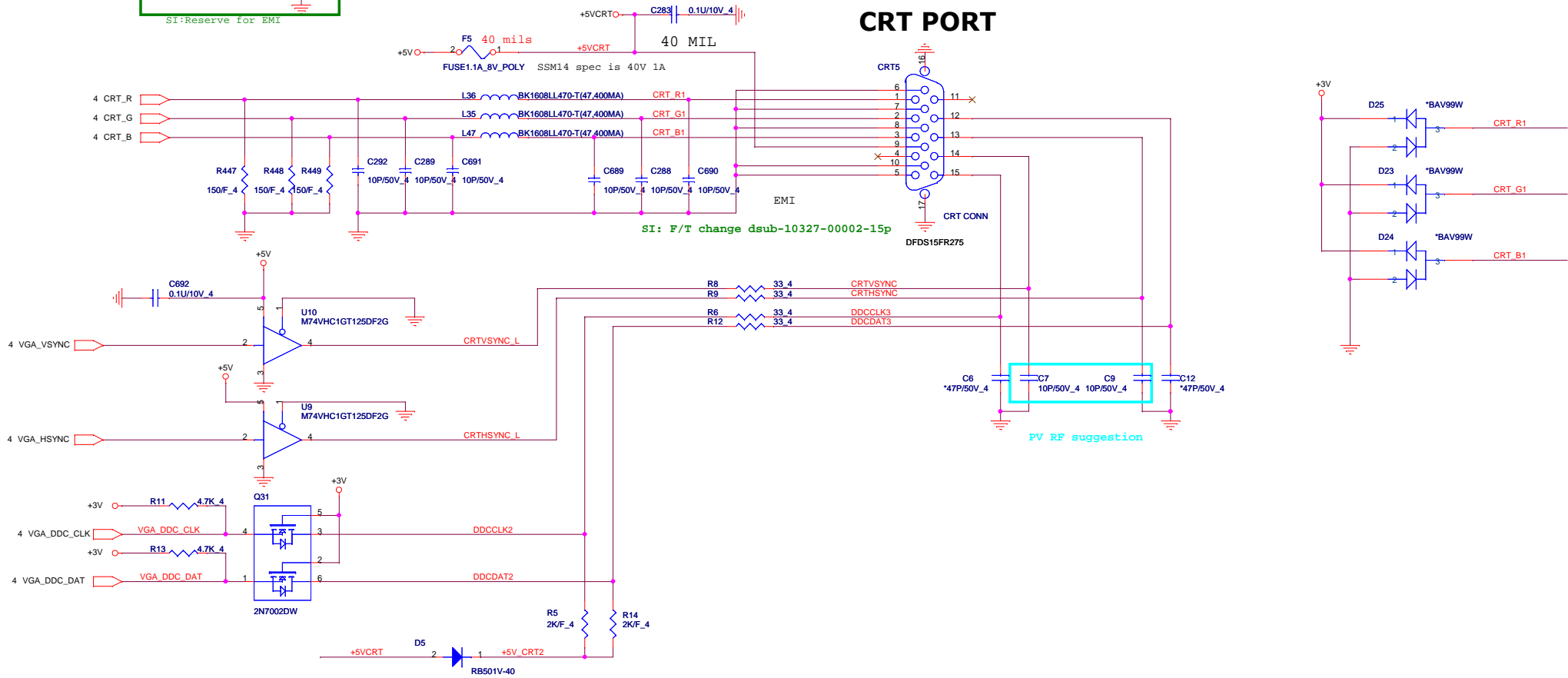
4,5,7,8,9,10,11,13,14,15,16,17,18,19,20,21,23,24,27,31 +3V
11,26 +0.75V_DDR_VTT
3,5,10,11,21,26,31 +1.5V/SUS

4,5,7,8,9,10,11,12,14,15,16,17,18,19,20,21,23,24,27,31 +3V
15,16,19,21,23,31 +5V

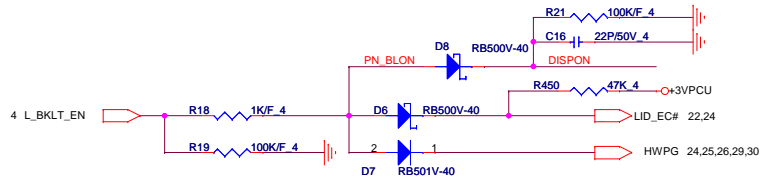
CRT_R	C803	5.6P/16V_4
CRT_G	C778	5.6P/16V_4
CRT_B	C797	5.6P/16V_4

SI: Reserve for EMI

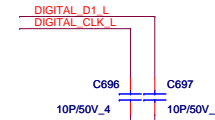
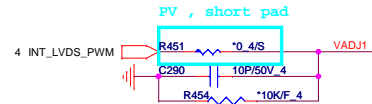
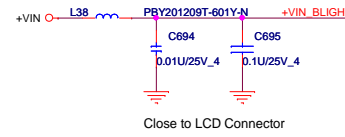
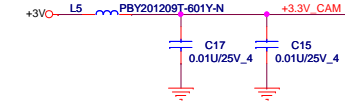
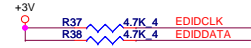
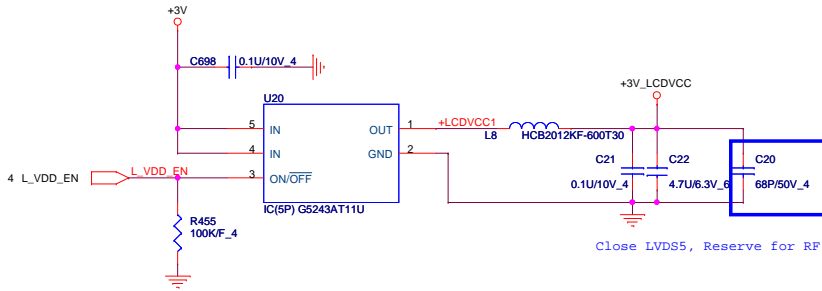
CRT PORT



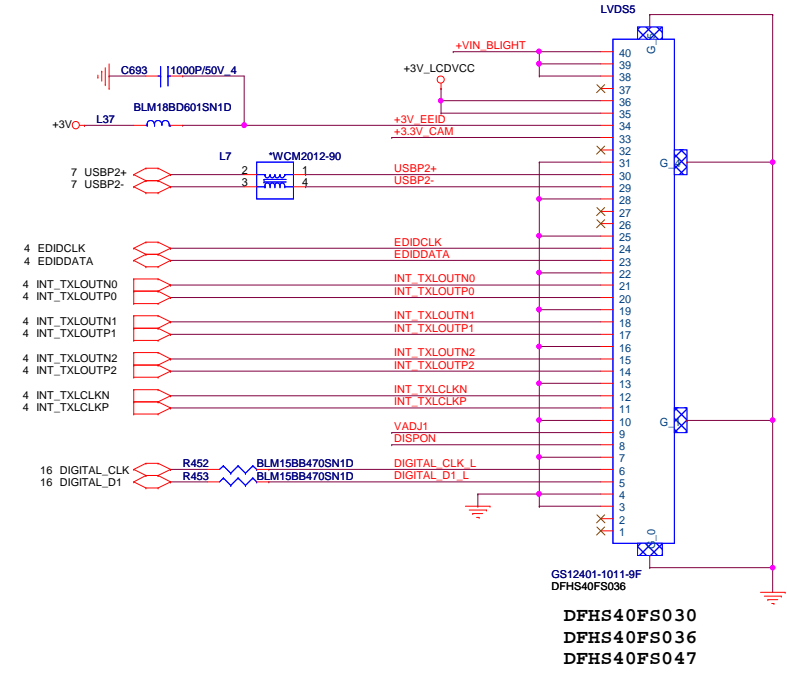
Backlight Control(LDS)



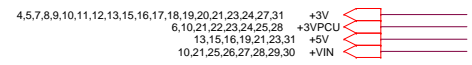
LCD POWER SWITCH



LED Panel(LDS)

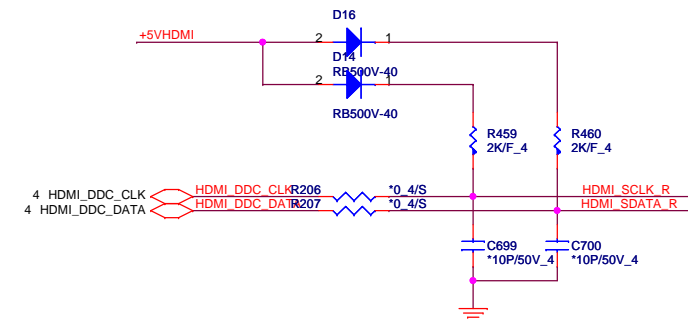
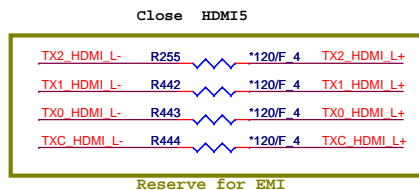
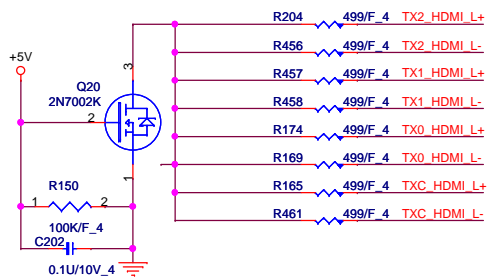


DFHS40FS030
DFHS40FS036
DFHS40FS047

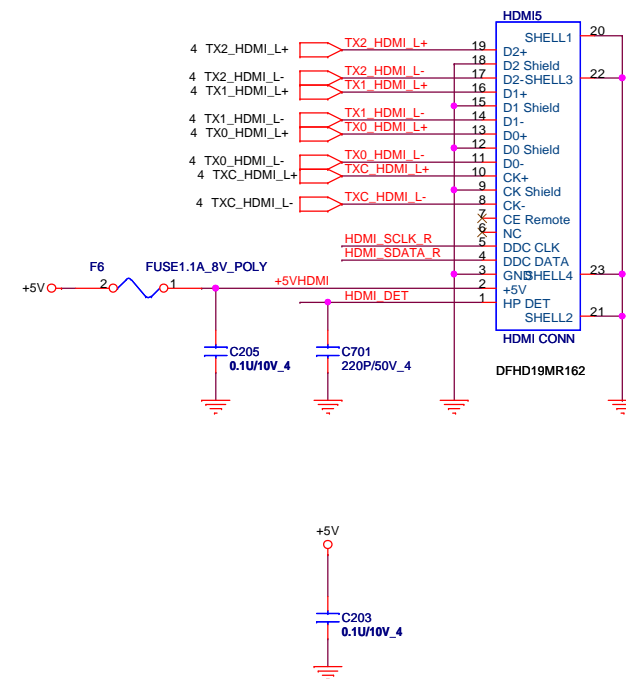
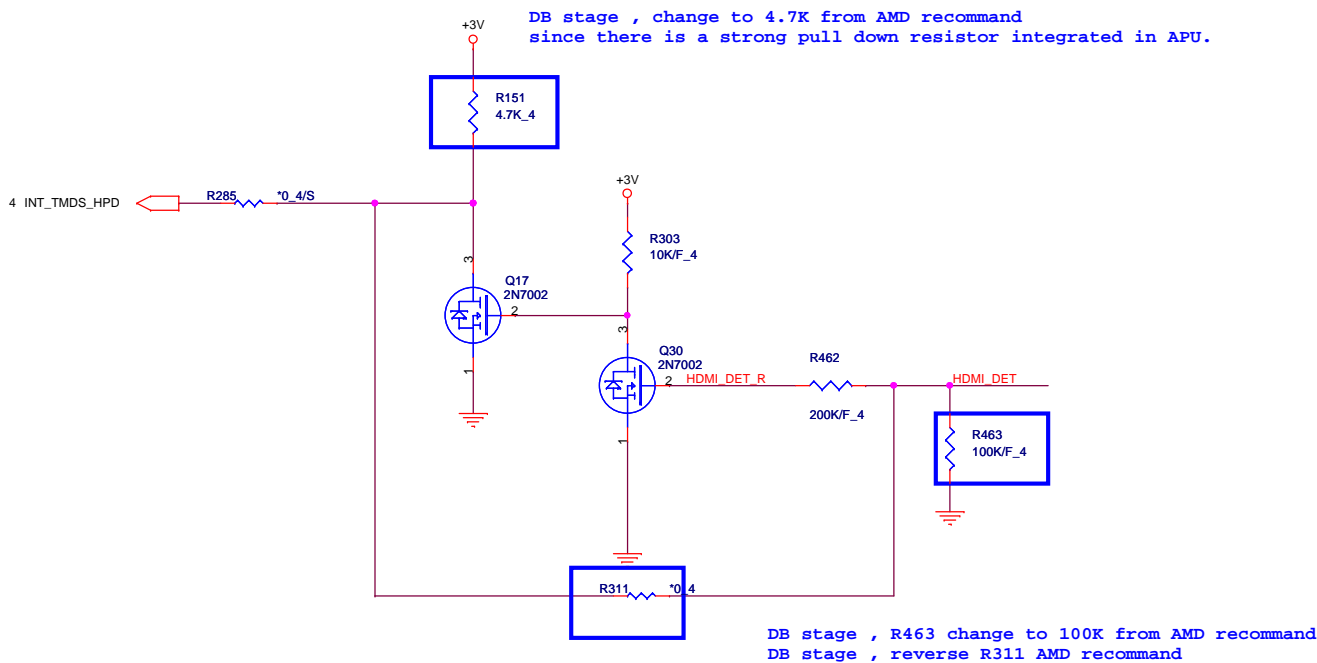


Quanta Computer Inc.
PROJECT : Butternut (NM9)

Size	Document Number	Rev
	LCD Panel/Camera/TP Screen	1A
Date:	Monday, July 25, 2011	Sheet 14 of 31

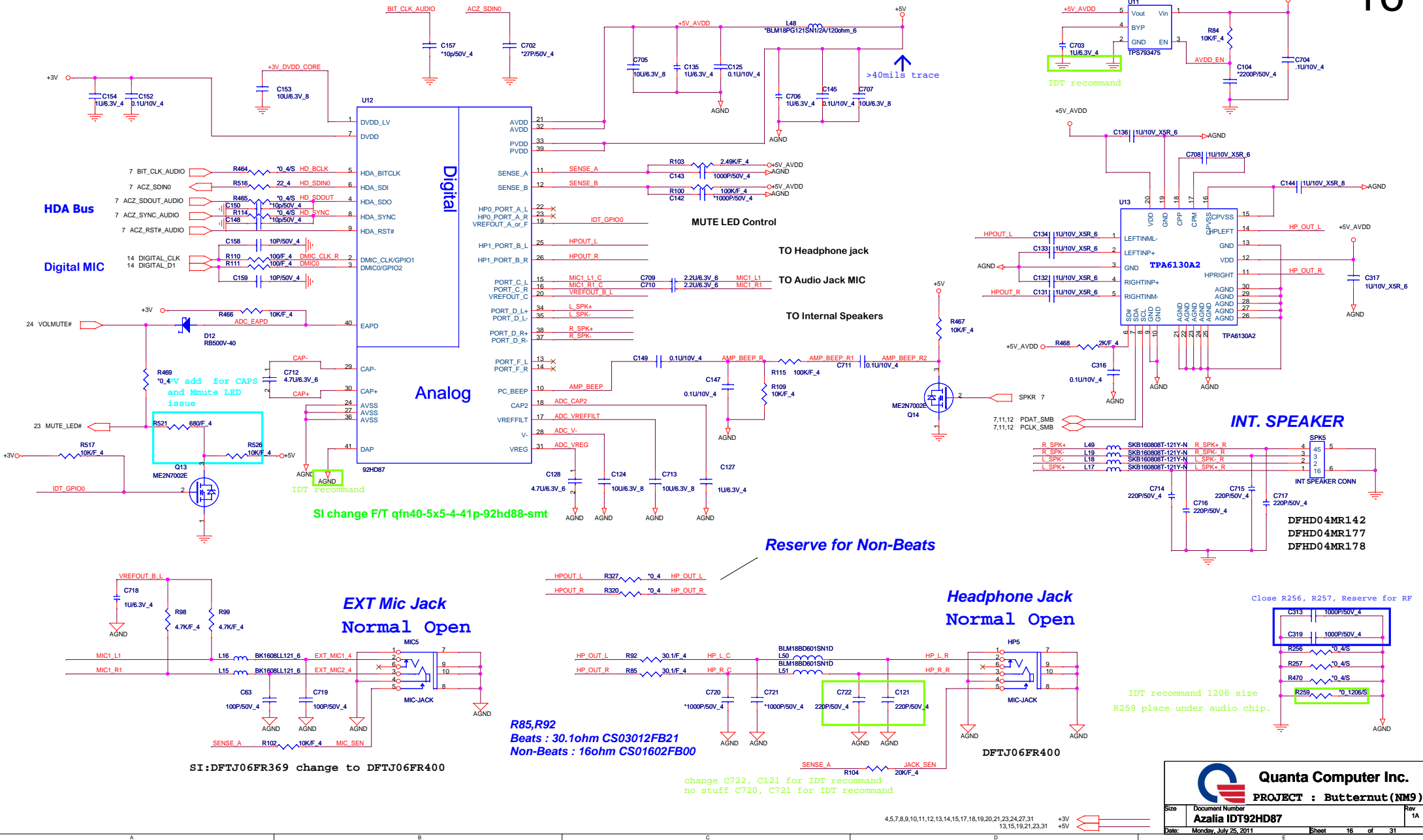


HDMI HPD SENSE



Quanta Computer Inc.
PROJECT : Butternut (NM9)

Size	Document Number	Rev
	HDMI Connector	1A
Date:	Monday, July 25, 2011	Sheet 15 of 31



HDA Bus

Digital MIC

Digital

Analog

MUTE LED Control

TO Headphone jack

TO Audio Jack MIC

TO Internal Speakers

INT. SPEAKER

Reserve for Non-Beats

Headphone Jack Normal Open

Close R256, R257, Reserve for RF

SI:DFTJ06FR369 change to DFTJ06FR400

R85,R92 Beats : 30.1ohm CS03012FB21 Non-Beats : 16ohm CS01602FB00

change C722, C121 for IDT recommend no stuff C720, C721 for IDT recommend

IDT recommend 1206 size R259 place under audio chip.

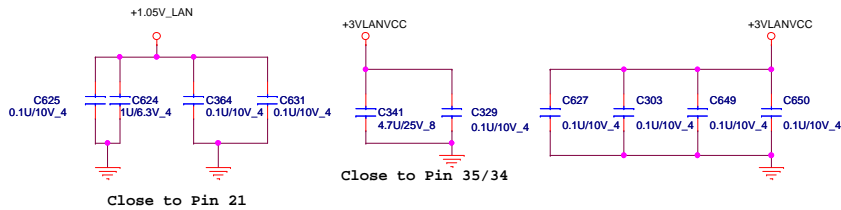
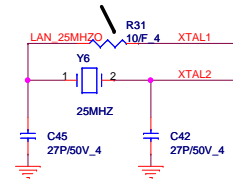
Quanta Computer Inc.
PROJECT : Butternut (NM9)

Size	Document Number	Rev
	Azalia IDT92HD87	1A
Date:	Monday, July 25, 2011	Sheet 16 of 31

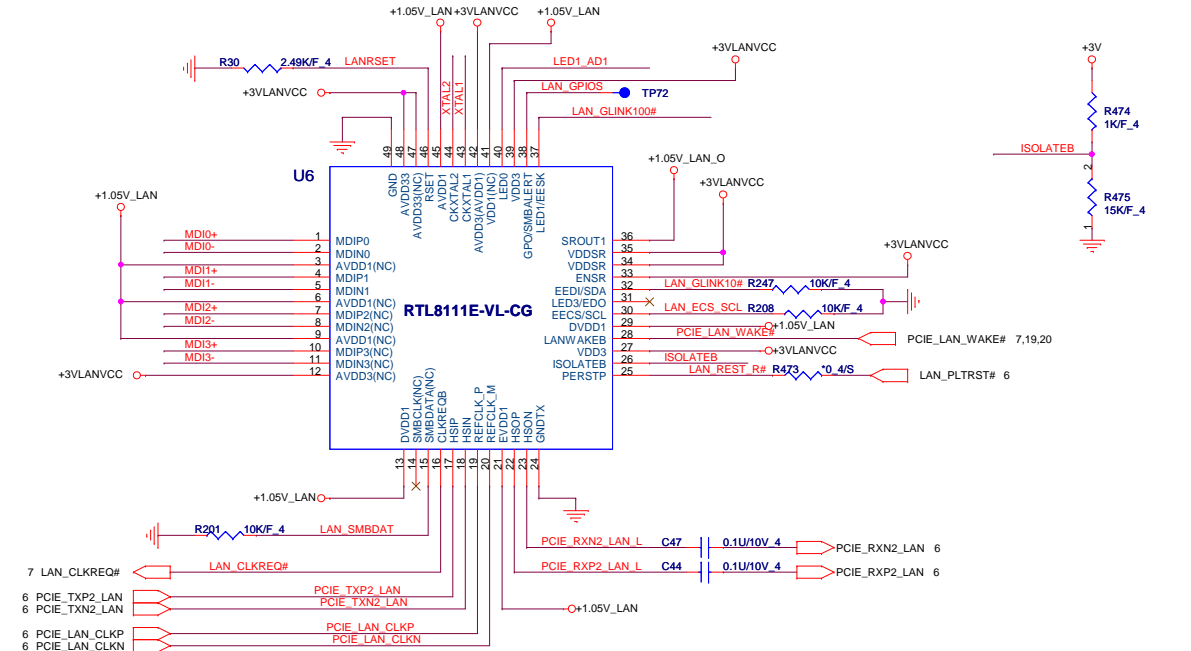
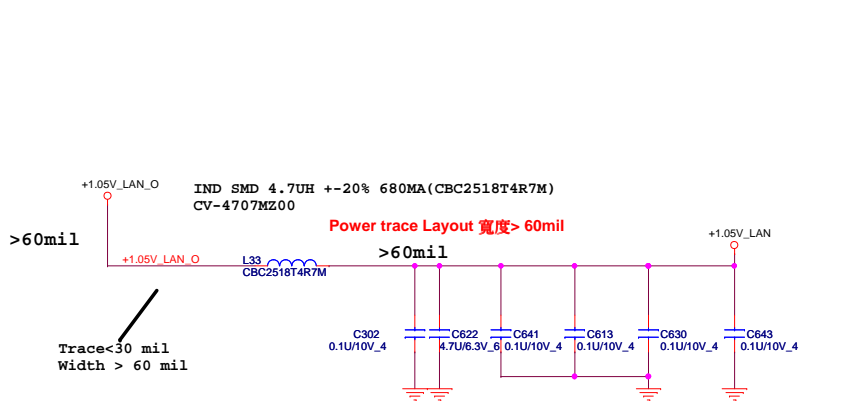
4,5,7,8,9,10,11,12,13,14,15,17,18,19,20,21,23,24,27,31 13,15,19,21,23,31

+3V +5V

For EMI 0 ~ 22 ohm

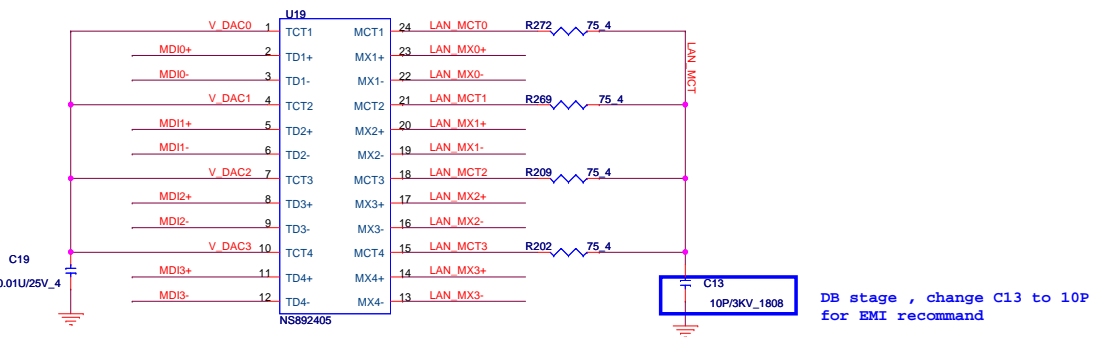


EEDI must 10K pull down for autoload
EECS must 10K pull down for test mode

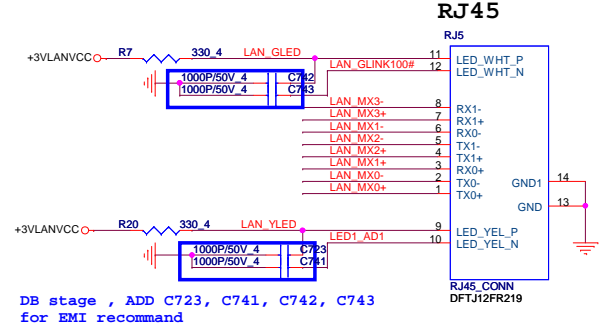


Transformer for 10/100/1000

AL08111DB00 RTL8111DL-GR



PV stage, del for EMI recommend



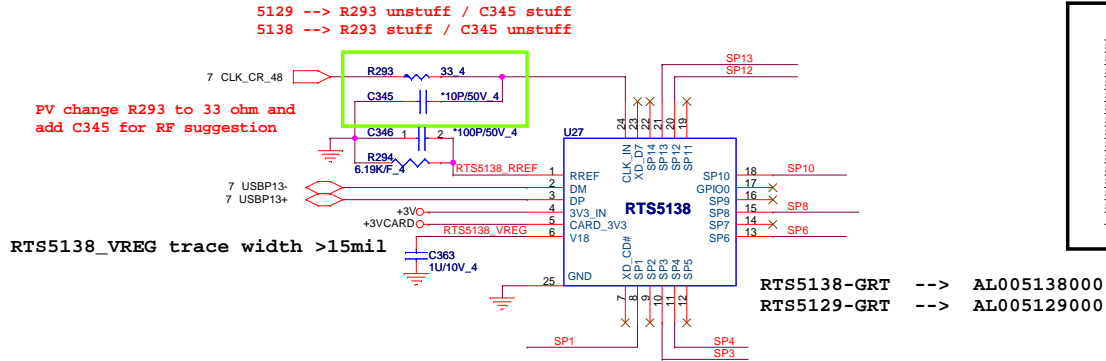
DB stage, ADD C723, C741, C742, C743 for EMI recommend

Quanta Computer Inc.
PROJECT : Butternut (NM9)

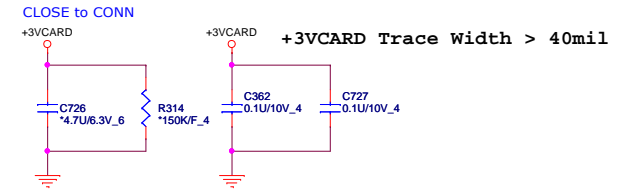
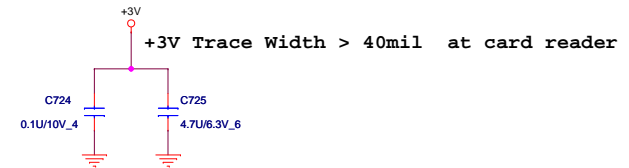
Size	Document Number	Rev
	RTL8105T-VC/RJ45	1A
Date:	Monday, July 25, 2011	Sheet 17 of 31

Share Pin

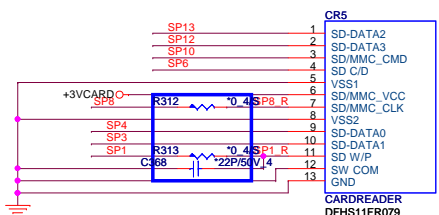
	XD_CD#			
SP1	XD_RDY	SD_WP	MS_CLK	
SP2	XD_RE#		MS_INS#	
SP3	XD_CE#	SD_D1		
SP4	XD_CLE	SD_D0	MS_D7	
SP5	XD_ALE	SD_D7	MS_D3	
SP6	XD_WE#	SD_CD#		
SP7	XD_WP	SD_D6	MS_D6	
SP8	XD_D0	SD_CLK	MS_D2	
SP9	XD_D1	SD_D5	MS_D0	
SP10	XD_D2	SD_CMD		
SP11	XD_D3	SD_D4	MS_D4	
SP12	XD_D4	SD_D3	MS_D1	
SP13	XD_D5	SD_D2	MS_D5	
SP14	XD_D6		MS_BS	
	XD_D7			



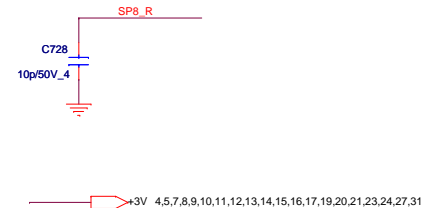
RTS5138-GRT --> AL005138000
 RTS5129-GRT --> AL005129000



SD / MMC
CARD READER



DB stage , ADD R312, R313, C368 for EMI recommend
 PV change R312, R313, to short pad for EMI recommend
 DFHS11FR011
 DFHS11FR033

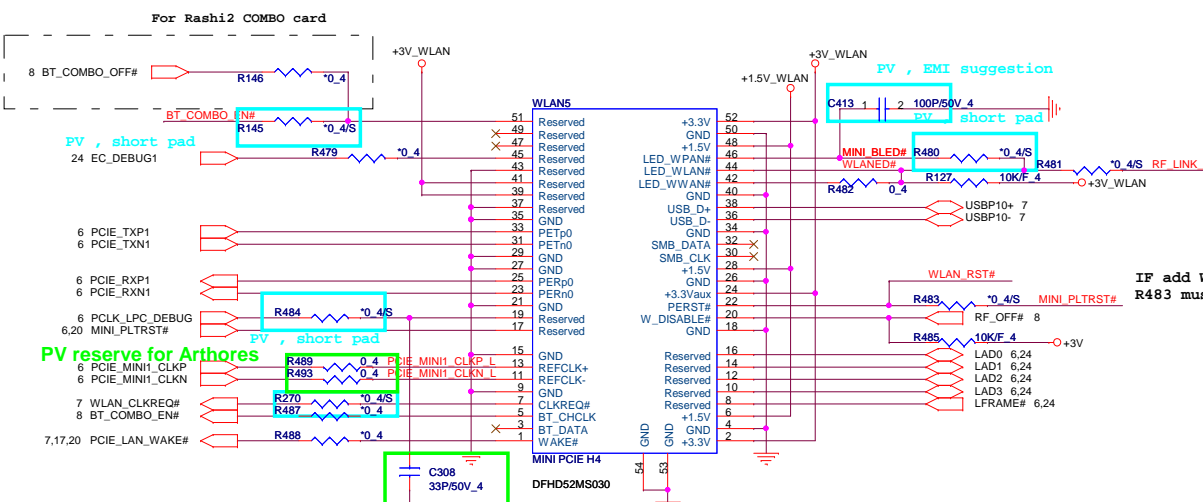
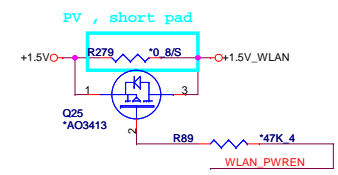
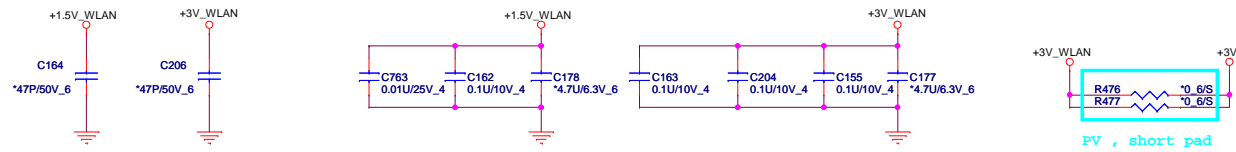


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 PROJECT : Butternut (NM9)

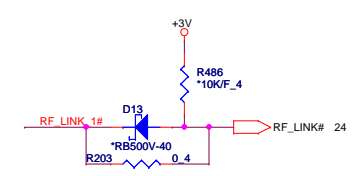
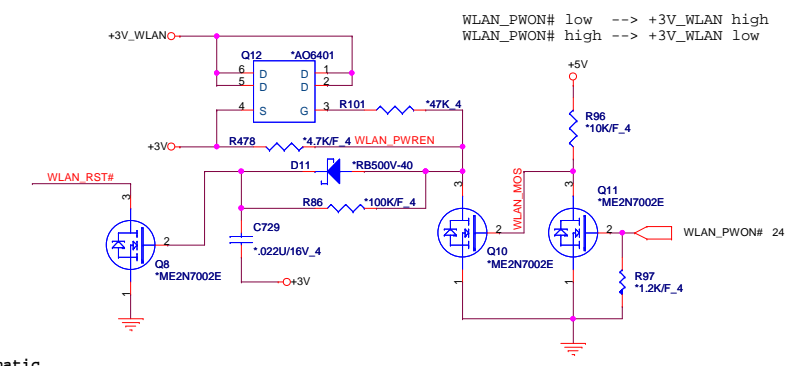
Size	Document Number	Rev
	RTS5129/5138/Card Reader	1A
Date:	Monday, July 25, 2011	Sheet 18 of 31

Mini PCI-E Card 1 Half Mini PCI-E WLAN

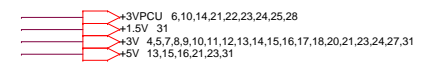
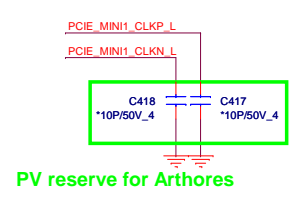
The value of the capacitor is suggest by Siemens HQ expert.
For against 900MHz RF interference. The value of capacitor is 27pF.
For against 1800MHz RF interference. The value of capacitor is 10pF.
1nF/10nF value capacitor use for against ESD purpose.



IF add WLAN_RST# schematic
R483 must change to 10K



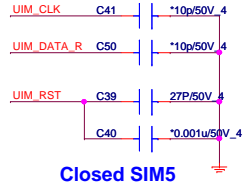
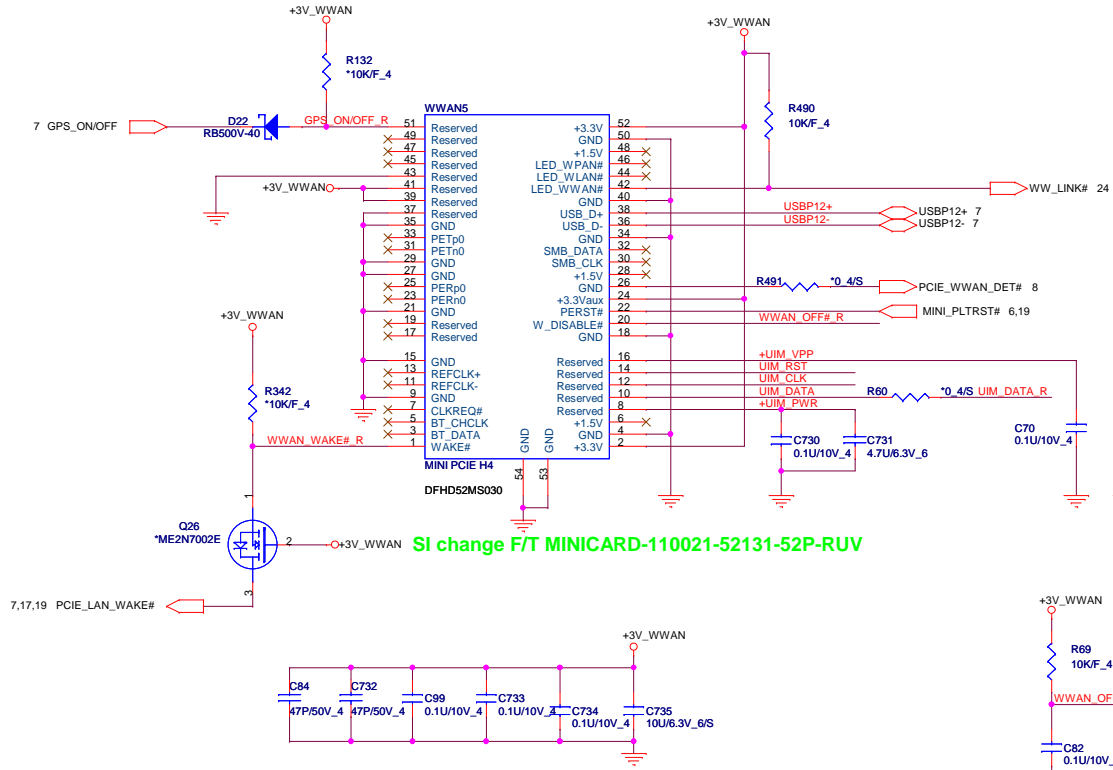
SI change F/T MINICARD-110021-52131-52P-RUV



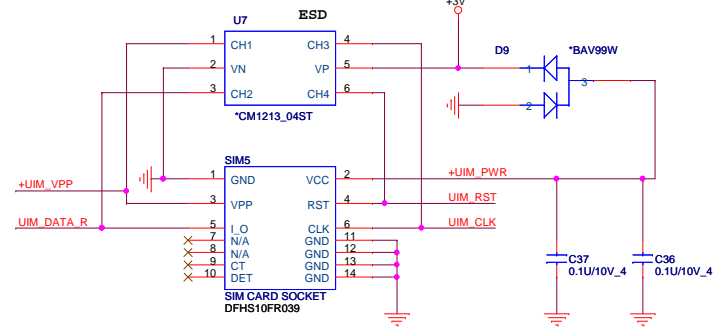
Quanta Computer Inc.
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Size	Document Number	Rev
	Mini PCI-E(WLAN)	1A
Date:	Monday, July 25, 2011	Sheet 19 of 31

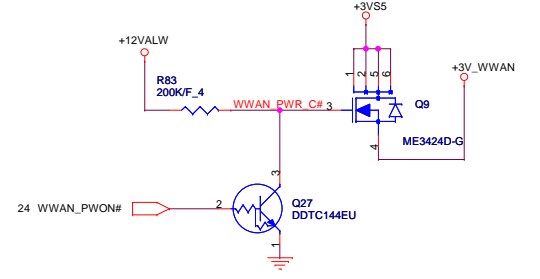
Full mini PCIE for WWAN Mini PCI-E Card 2



SIM CARD SIGNALS ROUTE PARALLEL



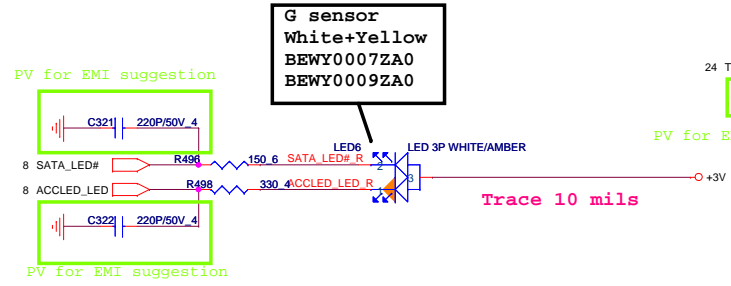
SIM CARD



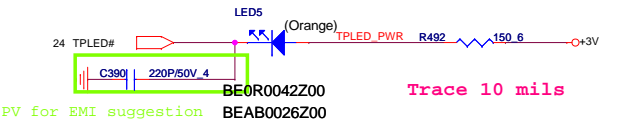
Si change F/T MINICARD-110021-52131-52P-RUV

PV for EMI suggestion

SATA/G sensor LED



Touchpad LED

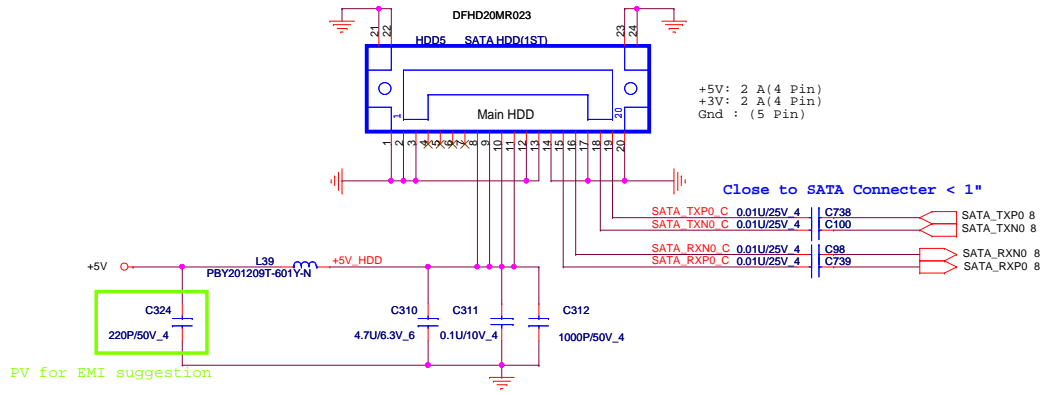


Quanta Computer Inc.
PROJECT : Butternut (NM9)

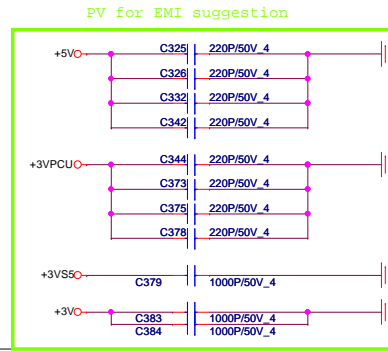
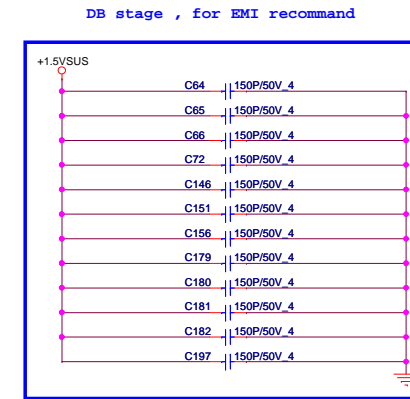
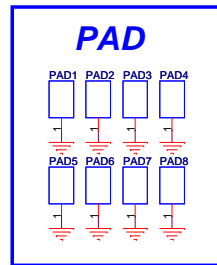
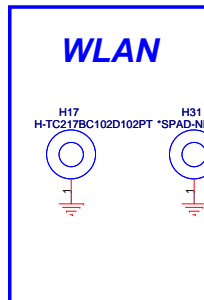
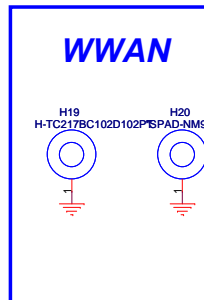
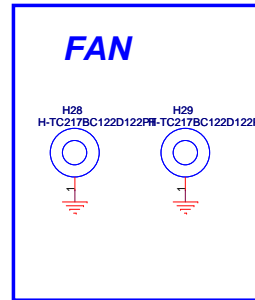
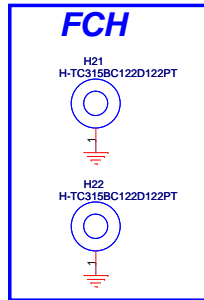
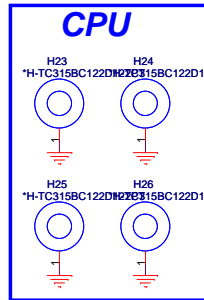
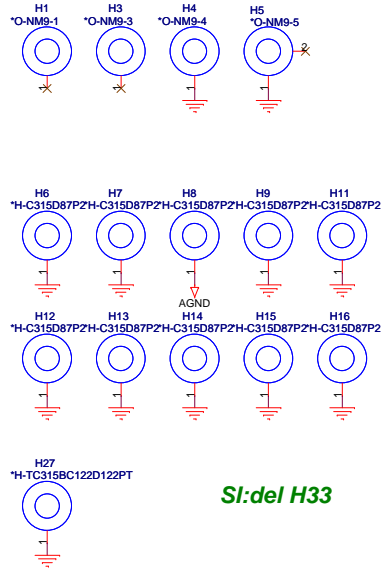
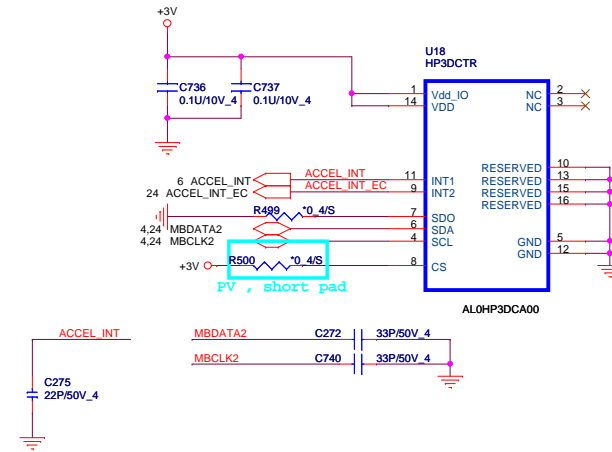
Size	Document Number	Rev
	Mini PCIE(WWAN)/LED/LID	1A
Date:	Monday, July 25, 2011	Sheet 20 of 31

2.5" SATA HDD OR SSD(TOSHIBA)

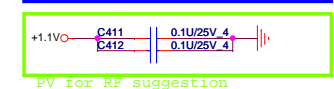
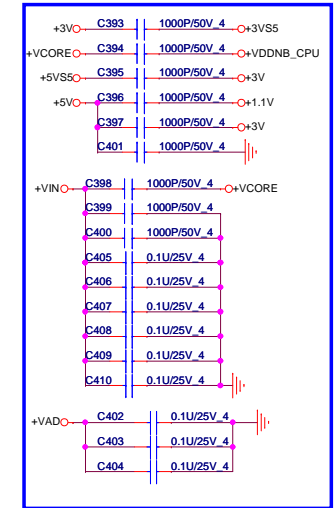
DC Current rating: 0.5 A



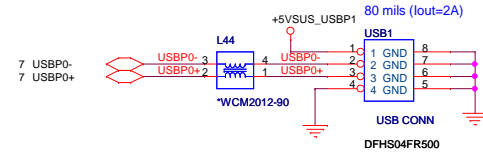
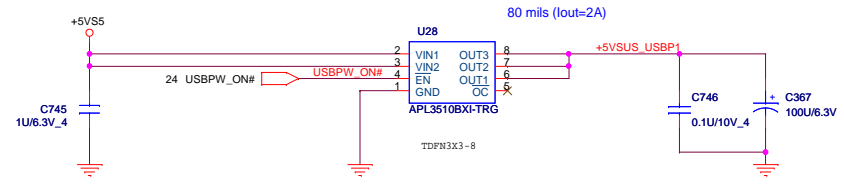
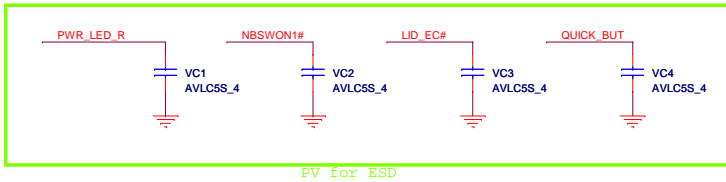
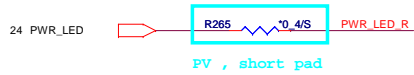
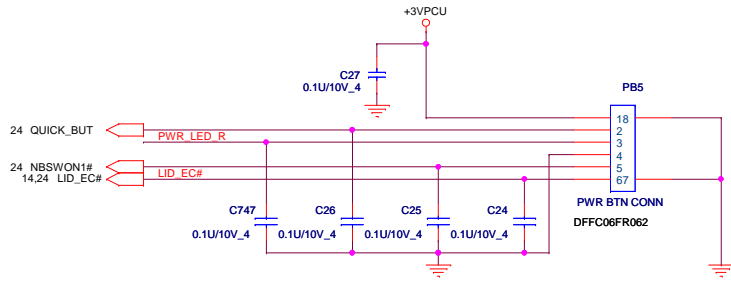
Accelerometer Sensor



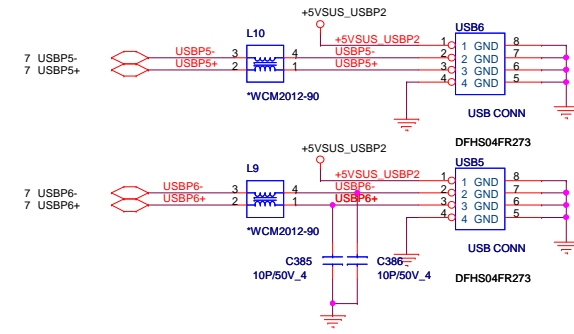
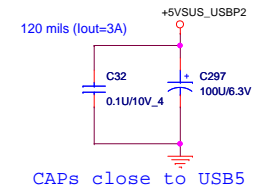
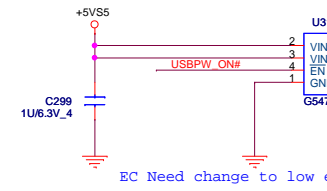
DB stage , for RF recommend



1x Left side USB port supports Keyed USB.

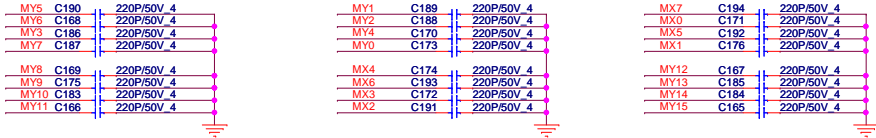


For Right 2xUSB Ports PWR

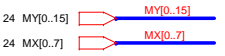
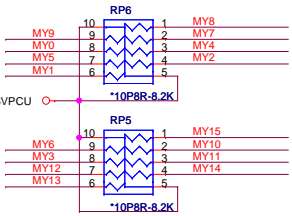


+3VPCU 6,10,14,21,23,24,25,28
 +3V 4,5,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,23,24,27,31

Keyboard (KBC)

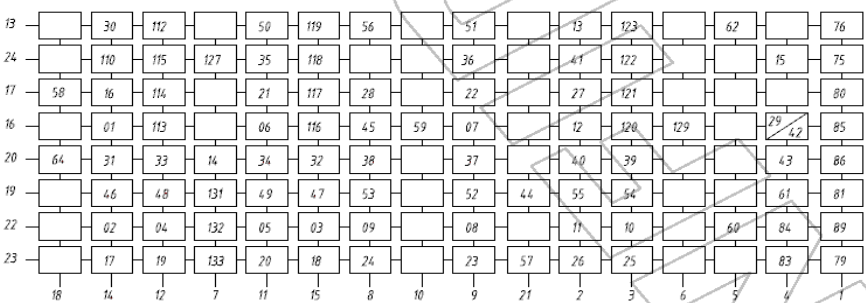
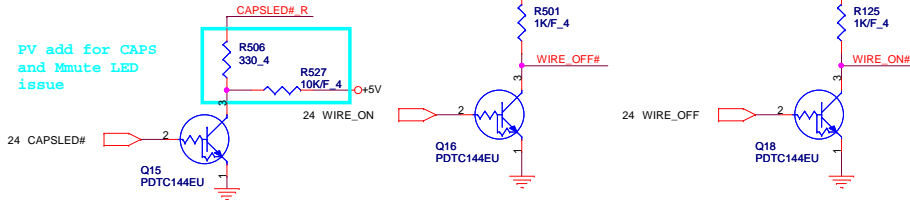


KEYBOARD PULL-UP



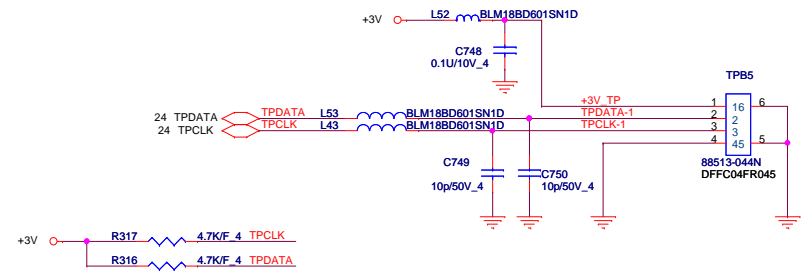
SI change KB5 F/T 50692-03041-001-30p-l-smt

Enable WLAN --> wire_on high and wire_off low
 Disable WLAN --> wire_on low and wire_off high
 CAPSLED# high --> LED light
 CAPSLED# low --> LED non-light

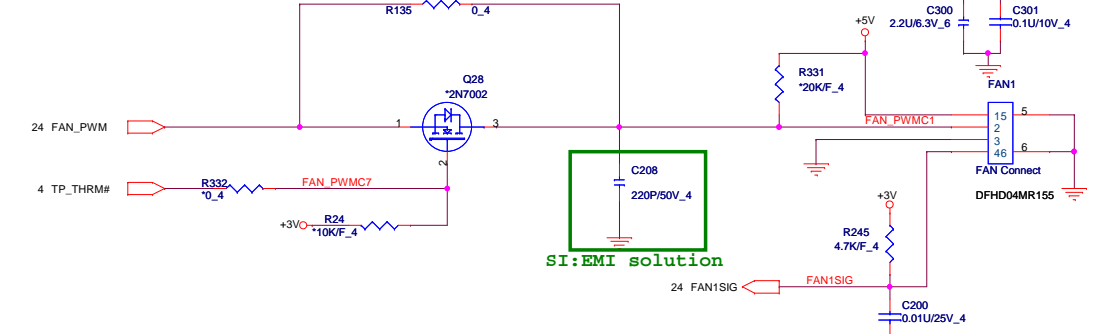


US MATRIX

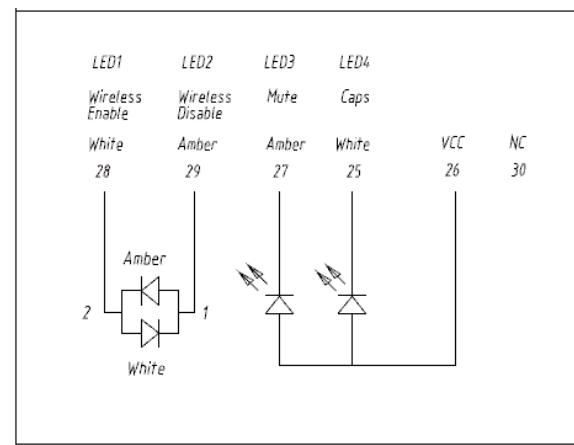
TOUCH PAD CONN



CPU FAN



SI:EMI solution

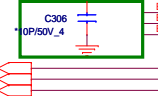
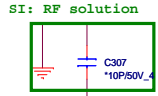
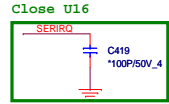
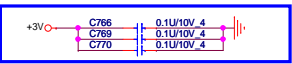


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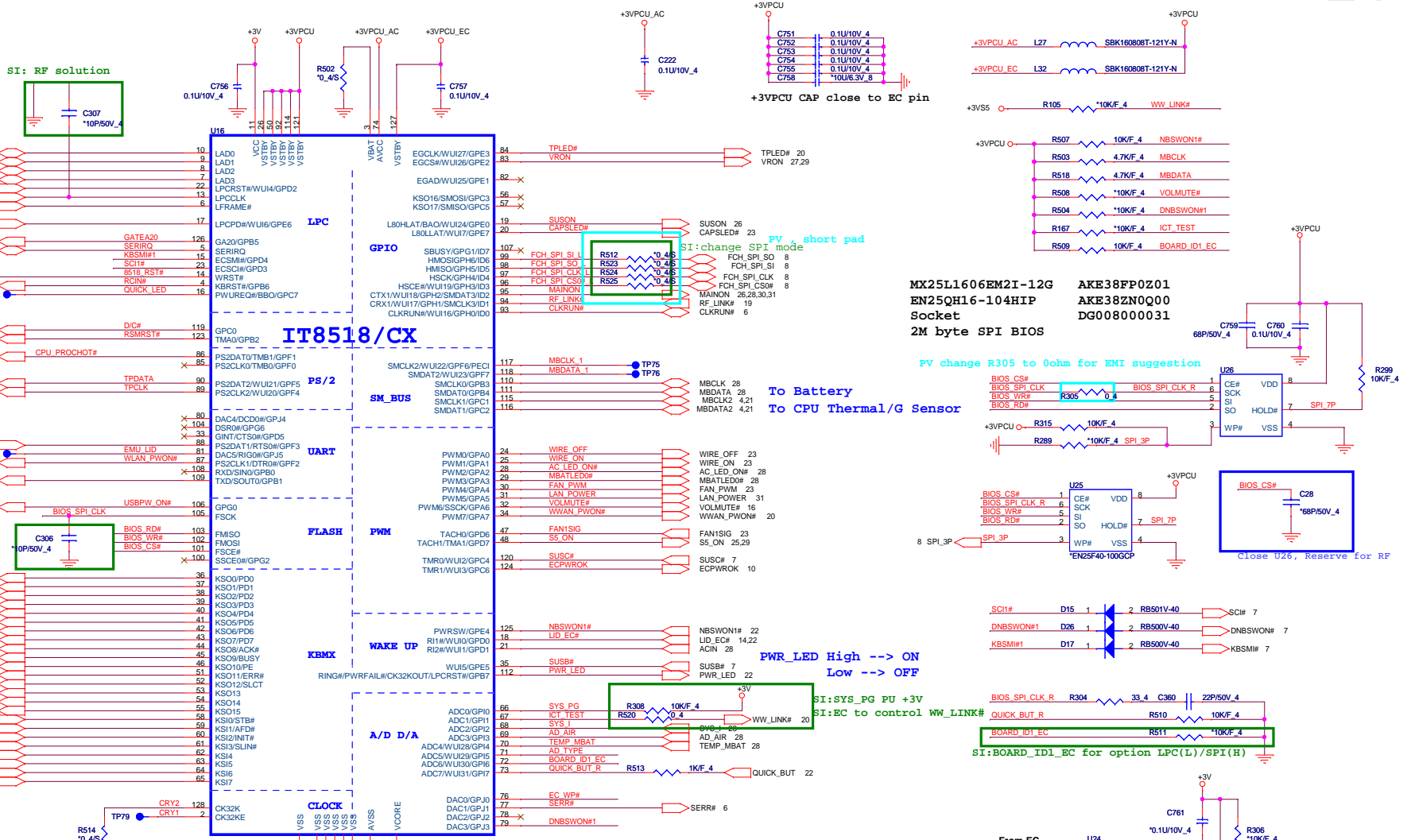
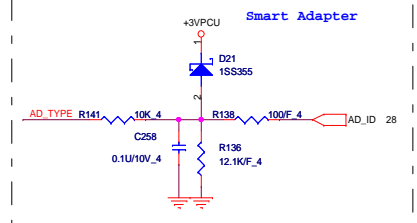
Size	Document Number	Rev
	KB/TP/CPU FAN	1A

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DB stage, for EMI recommend
Close U16



PIN 100,104,106
can not pull Hi
to +3VPCU, EC
will into test
mode when those
pin pull Hi to
+3VPCU



MX25L1606EM2I-12G
EN25QH16-104HIP
Socket
2M byte SPI BIOS

AKE38FP0Z01
AKE38ZNQ000
DG008000031

PV change R305 to 0ohm for EMI suggestion

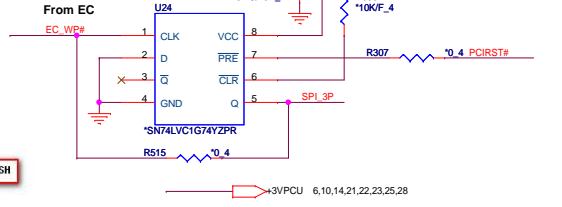
To Battery
To CPU Thermal/G Sensor

PWR_LED High --> ON
Low --> OFF

SI:SYS_PG PU +3V
SI:EC to control WW_LINK#

SI:BOARD_ID1_EC for option LPC(L)/SPI(H)

INPUTS		OUTPUTS			
PRE	CLR	CLK	D	Q	Q ₀
L	H	X	X	H	L
H	L	X	X	L	H
L	L	X	X	H _(n)	H _(n)
H	H	↑	H	H	L
H	H	↑	L	L	H
H	H	L	X	Q _n	Q _n



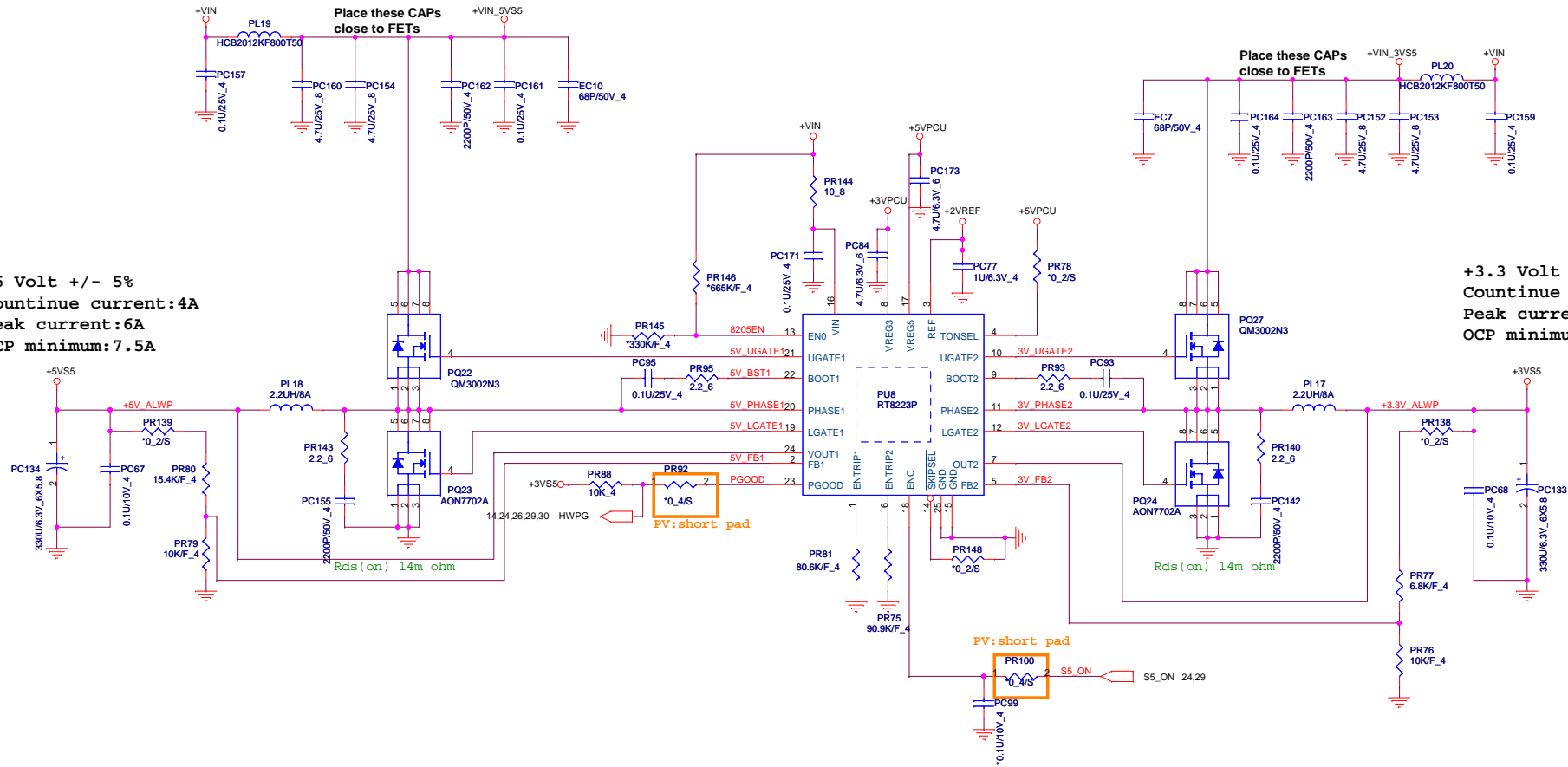
Quanta Computer Inc.
PROJECT : Butternut(NM9)

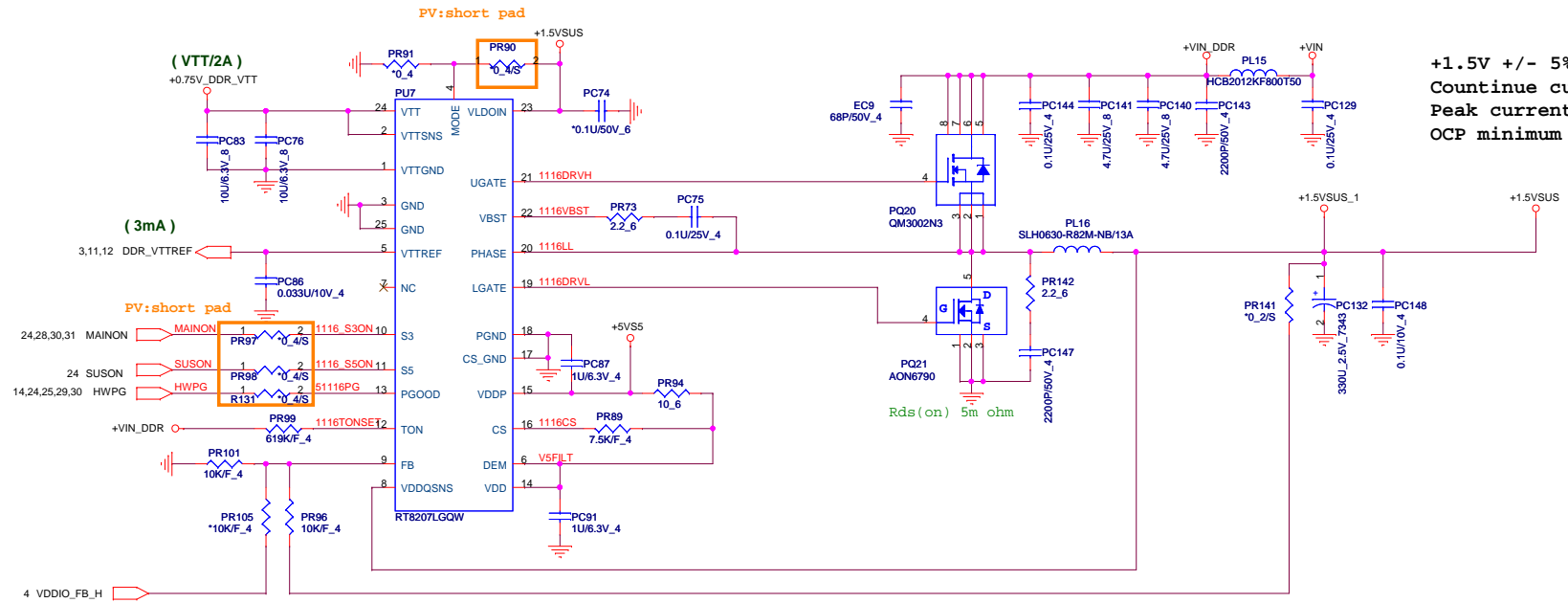
Size Document Number
KBC ITE8518/ROM Rev 1A

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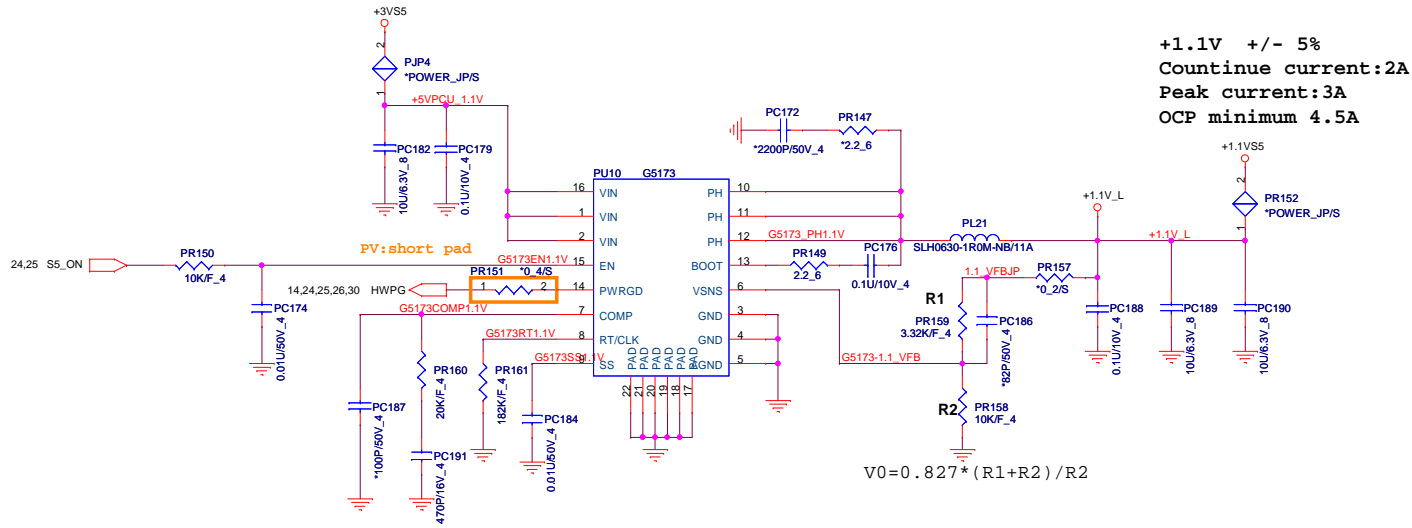
+5 Volt +/- 5%
Countinue current:4A
Peak current:6A
OCP minimum:7.5A

+3.3 Volt +/- 5%
Countinue current:4A
Peak current:6A
OCP minimum:7.5A

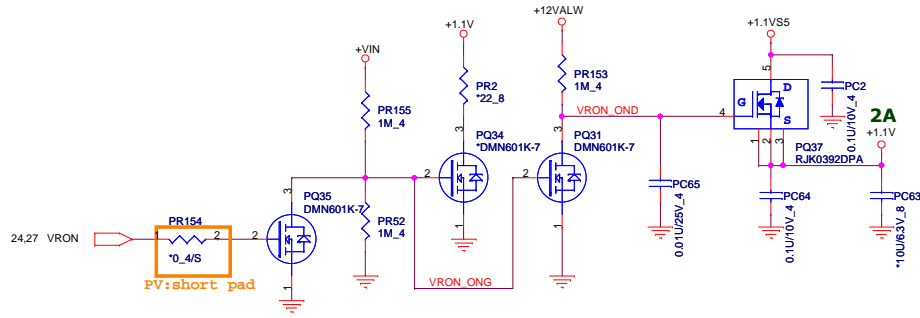


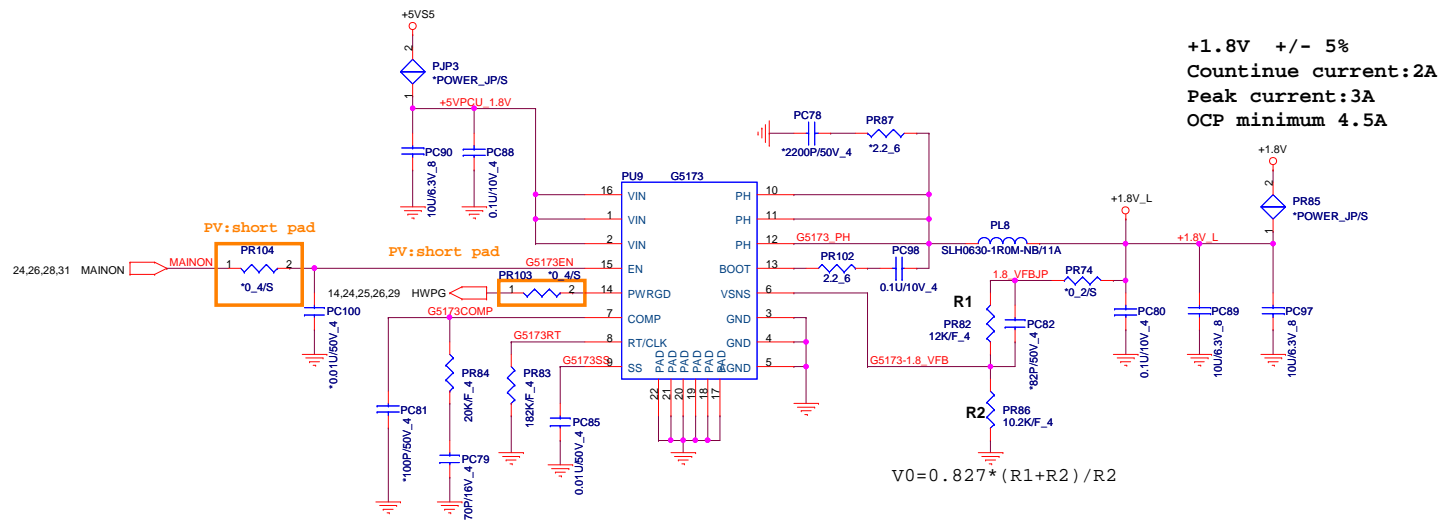
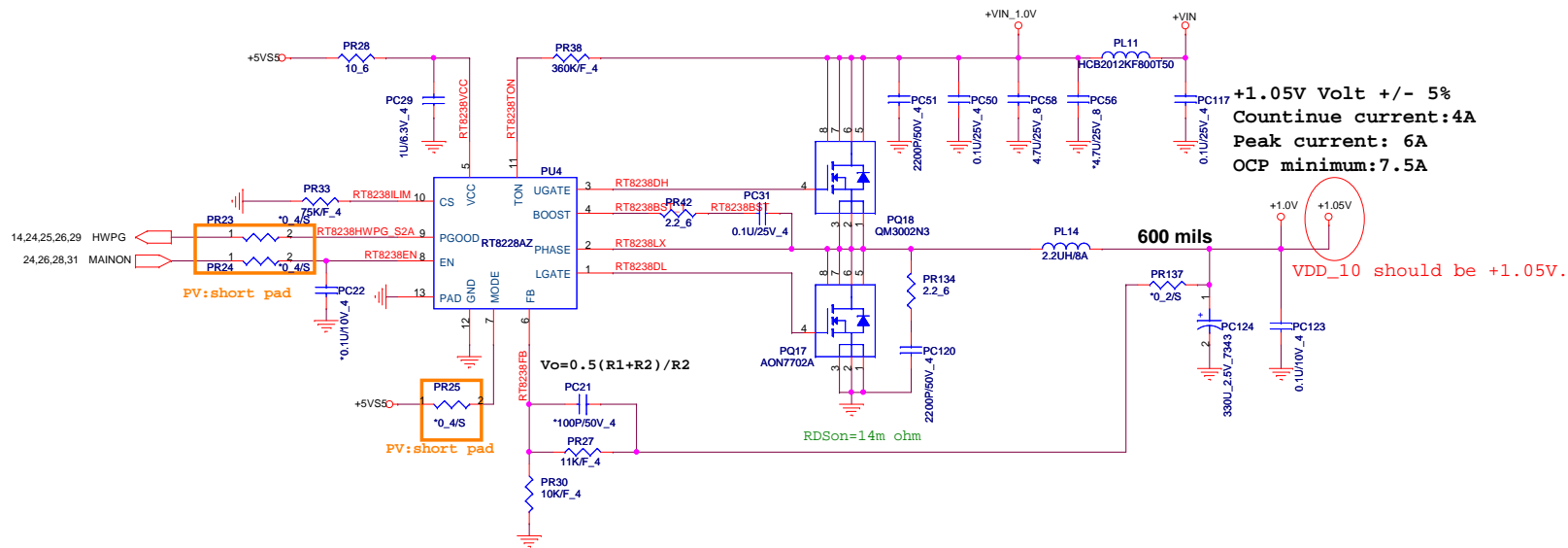


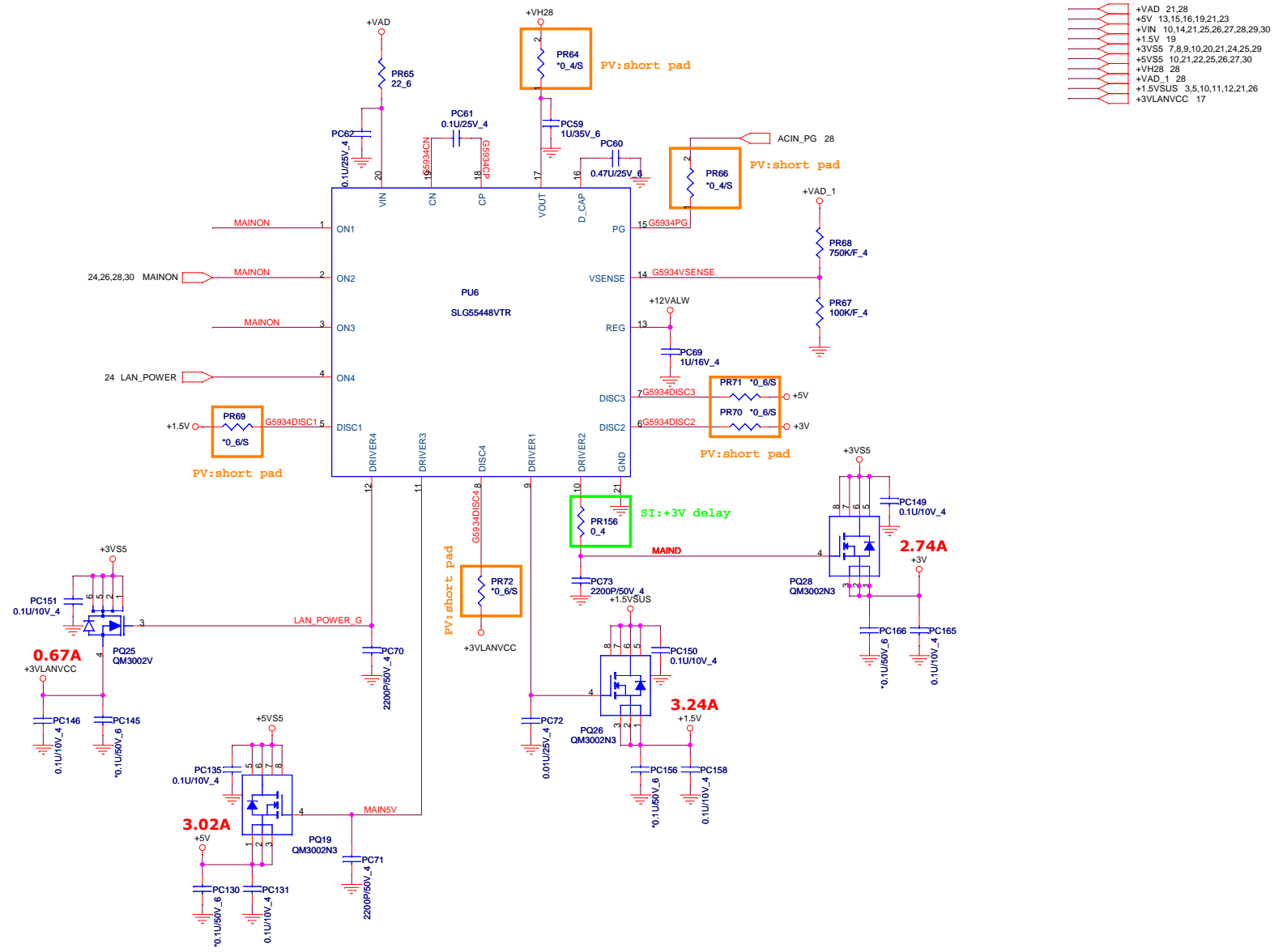
+1.5V +/- 5%
 Countinue current:10A
 Peak current:12A
 OCP minimum 15A




+1.1V +/- 5%
 Continue current: 2A
 Peak current: 3A
 OCP minimum 4.5A







- +VAD 21,28
- +5V 13,15,16,19,21,23
- +VIN 10,14,21,25,26,27,28,29,30
- +1.5V 19
- +3V5S5 7,8,9,10,20,21,24,25,29
- +5V5S 10,21,22,25,26,27,30
- +VH28 28
- +VAD_1 28
- +1.5VSUS 3,5,10,11,12,21,26
- +3VLANVCC 17

 Quanta Computer Inc. PROJECT : Butternut (NM9)		Rev. 1A
Date: Wednesday, July 27, 2011	Sheet 31 of 31	