

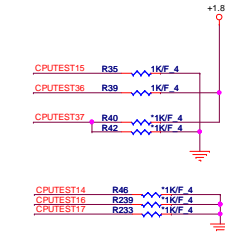
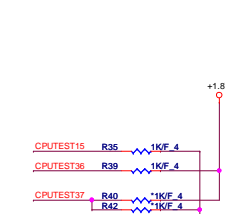
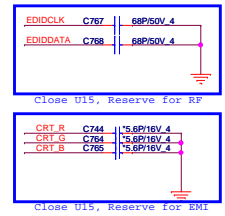
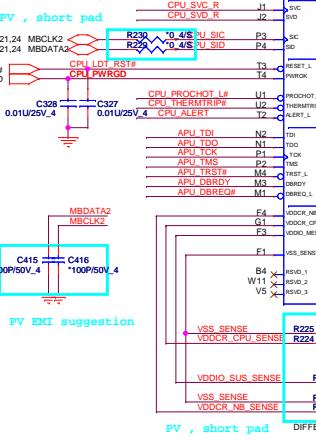
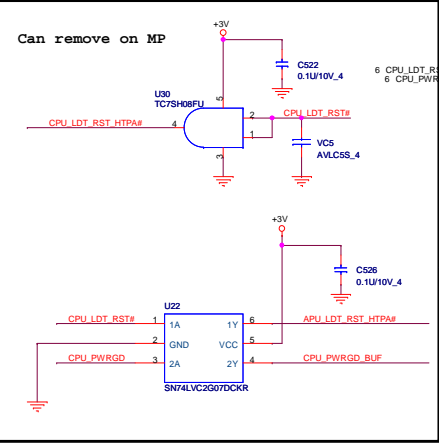
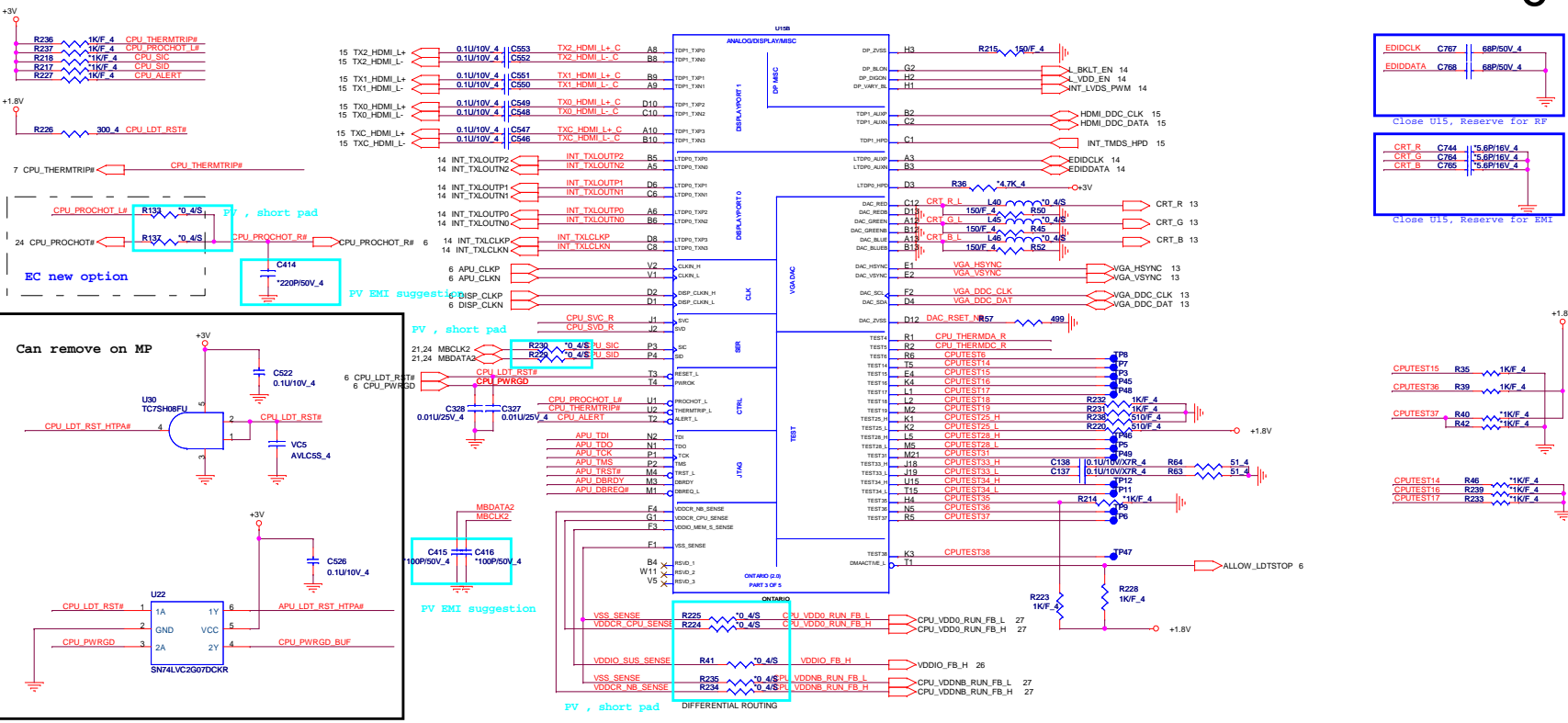
SI : del R445,R446

Quanta Computer Inc.
PROJECT : Butternut (NM9)

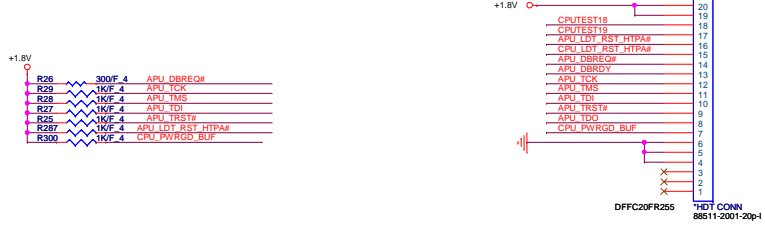
Size	Document Number	Rev
	Ontario DDRIII/PCIE(1/3)	1A
Date:	Wednesday, July 27, 2011	Sheet 3 of 31

5.10,11,12,21,26,31 +1.5VSUS
 7,8,9,10,20,21,24,25,29,31 +3VS5

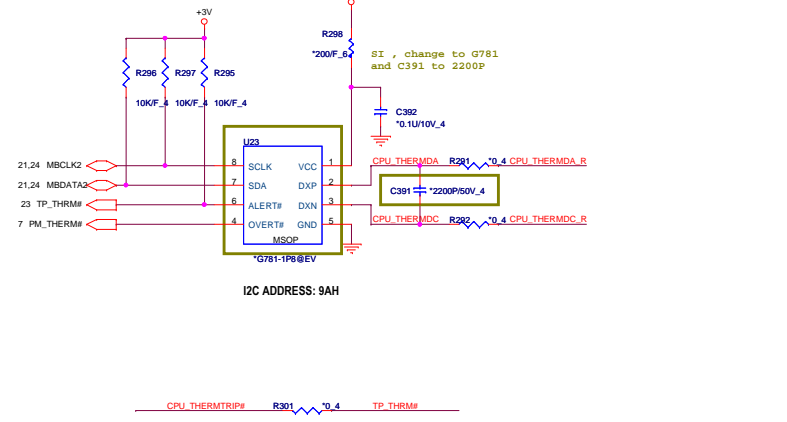
+1.8V 5,30
+3V 5,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,23,24,27,31



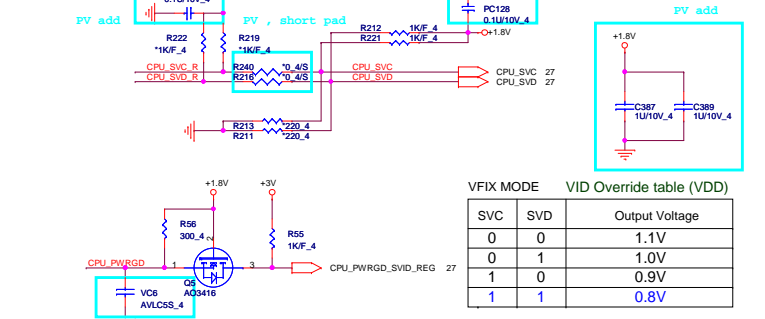
HDT(Hardware Debug Tool) Connector



Thermal Sensor

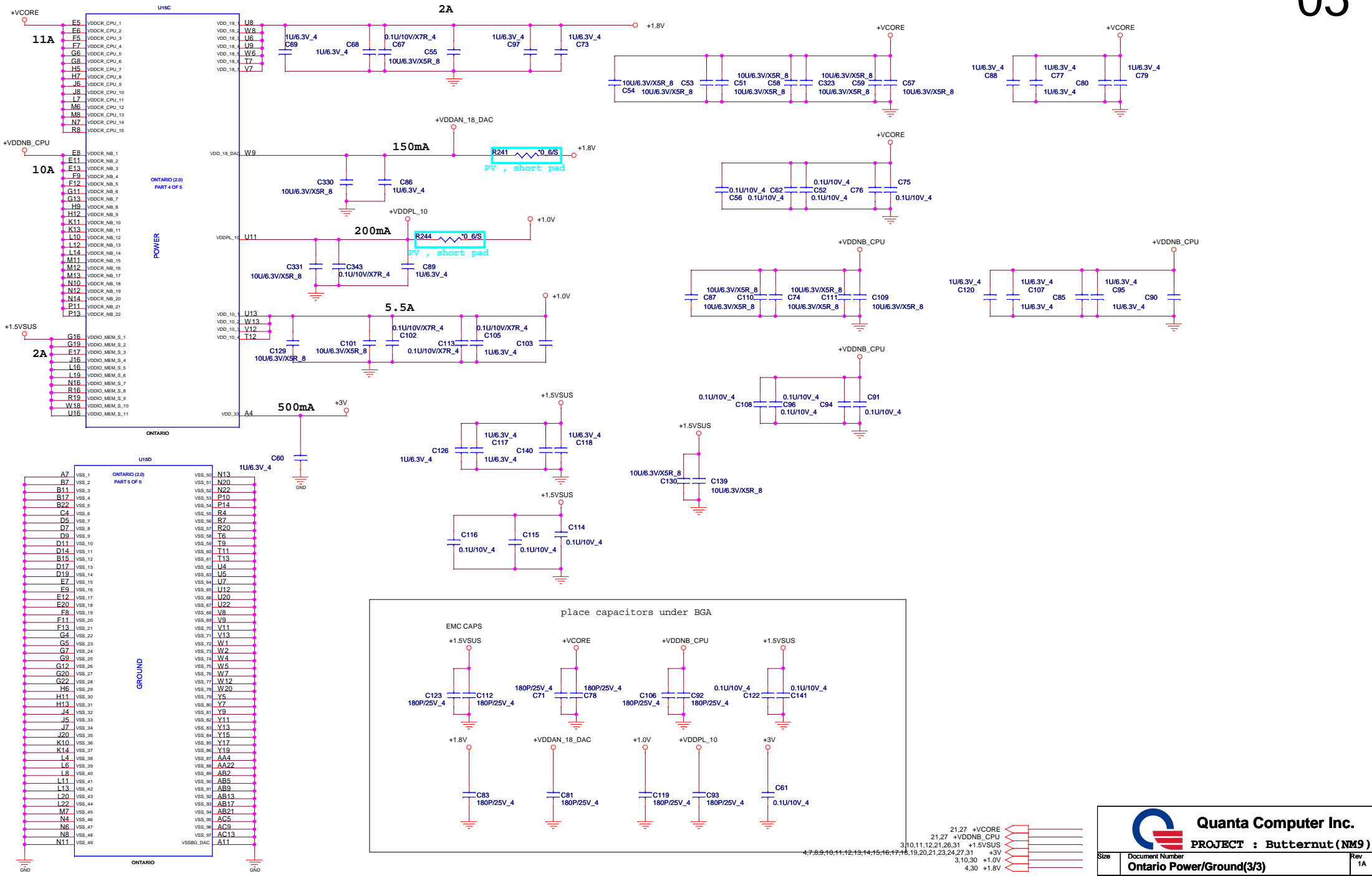


Serial VID



VFIX MODE VID Override table (VDD)

SVC	SVD	Output Voltage
0	0	1.1V
0	1	1.0V
1	0	0.9V
1	1	0.8V



Quanta Computer Inc.

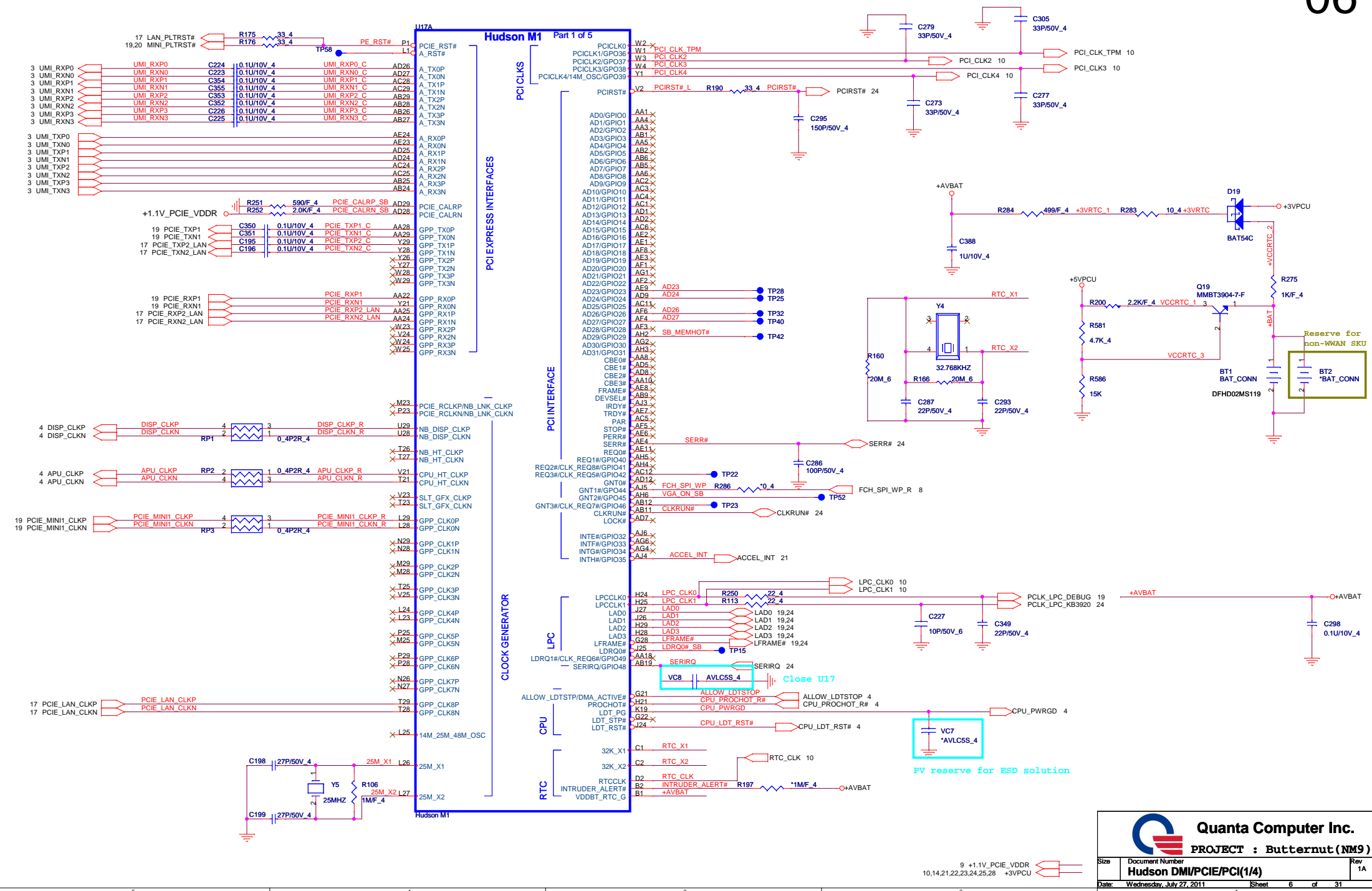
PROJECT : Butternut (NM9)

Document Number: Ontario Power/Ground(3/3)

Date: Wednesday, July 27, 2011

Sheet 5 of 31

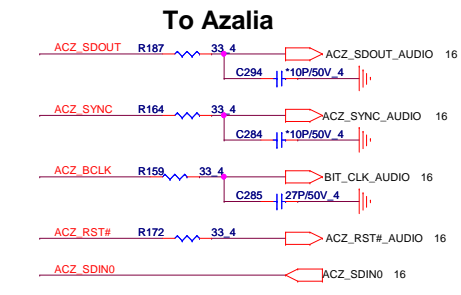
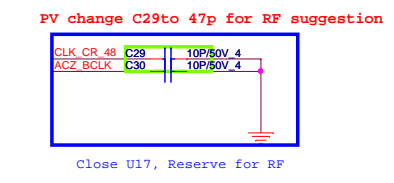
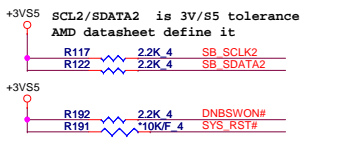
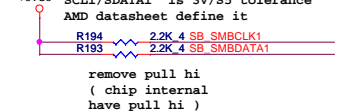
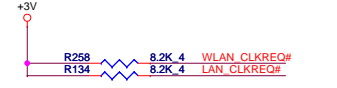
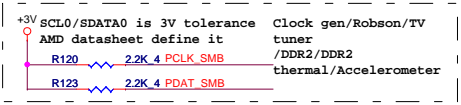
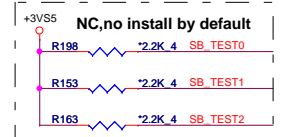
Rev: 1A



Quanta Computer Inc.
PROJECT : Butternut (NM9)

Size	Document Number	Rev
	Hudson DMI/PCIE/PCI(1/4)	1A
Date:	Wednesday, July 27, 2011	Sheet 6 of 31

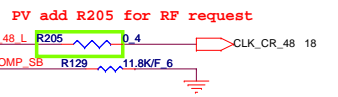
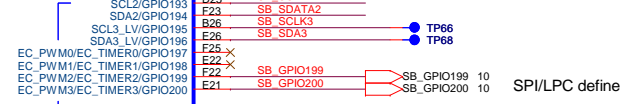
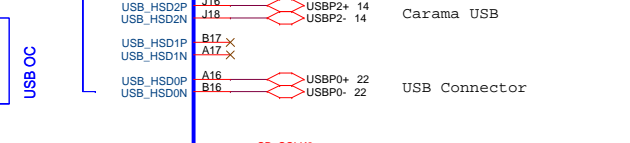
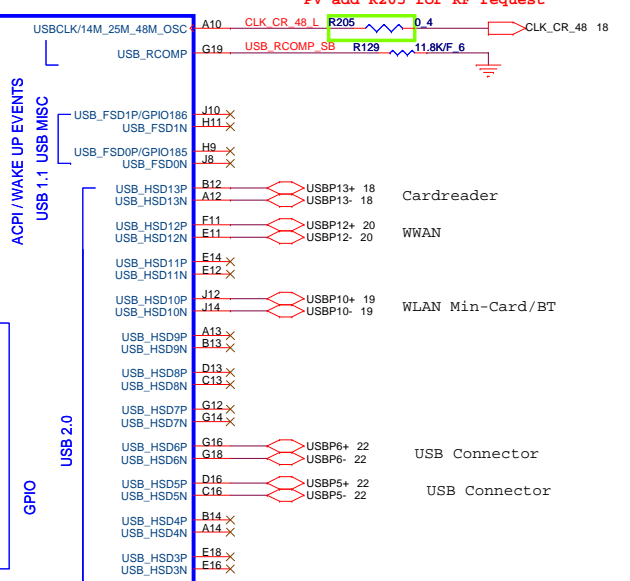
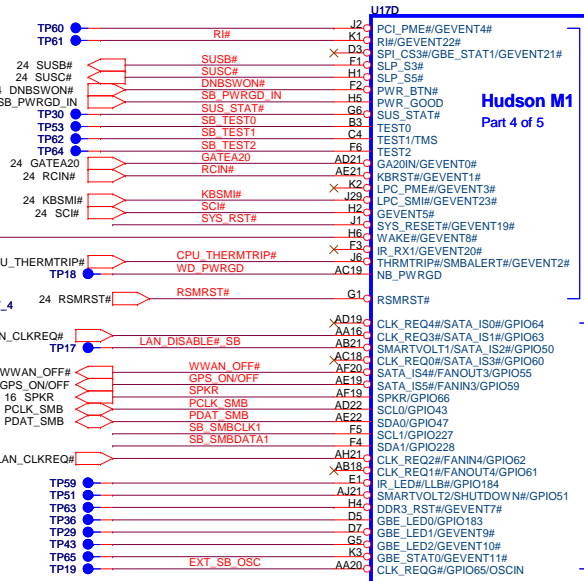
9 +1.1V_PCIE_VDDR
 10,14,21,22,23,24,25,28 +3VPCU



TP30, TP53, TP62, TP64 need on top

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

17,19,20 PCIE_LAN_WAKE#



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

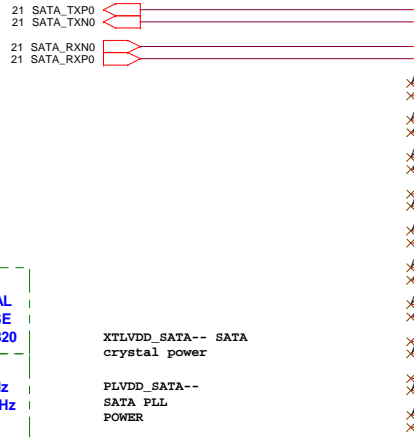
4,5,8,9,10,11,12,13,14,15,16,17,18,19,20,21,23,24,27,31
 8,9,10,20,21,24,25,29,31



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

PLACE SATA AC COUPLING
CAPS CLOSE TO SB820

SATA1 HDD

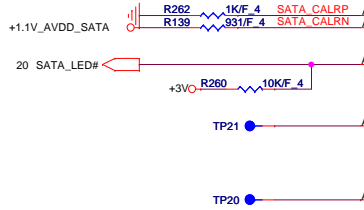


PLACE SATA_CAL
RES VERY CLOSE
TO BALL OF SB820

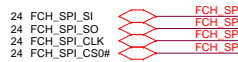
NOTE:
R361 IS 1K 1% FOR 25MHz
XTAL, 4.99K 1% FOR 100MHz
INTERNAL CLOCK

XTLVDD_SATA-- SATA
crystal power

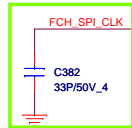
PLVDD_SATA--
SATA PLL
POWER



SI: change SPI mode

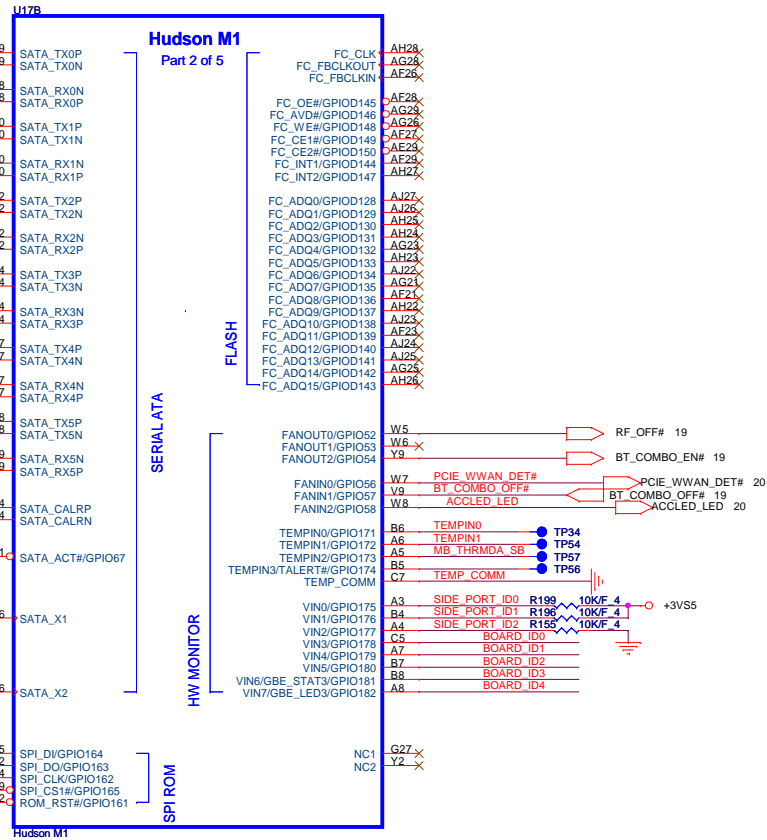


PV, short pad

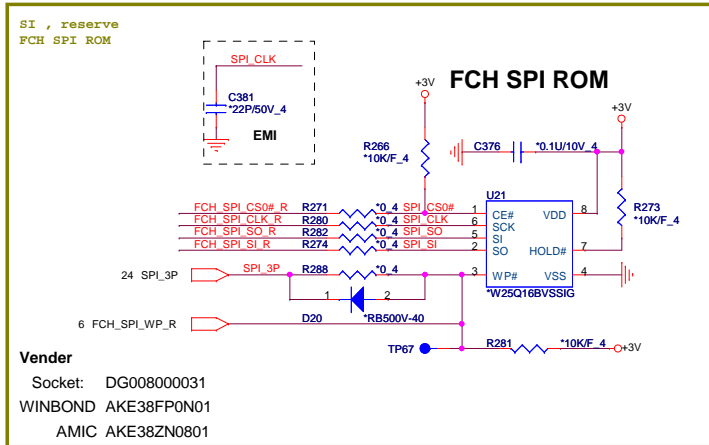
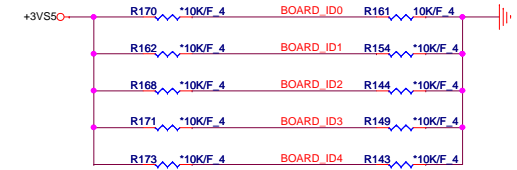


PV for EMI suggestion

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

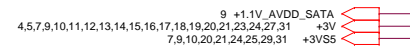


Board ID 0	
0	E450 (1333MHz)
1	E300 (1066MHz)



Vender

Socket: DG008000031
WINBOND AKE38FP0N01
AMIC AKE38ZN0801

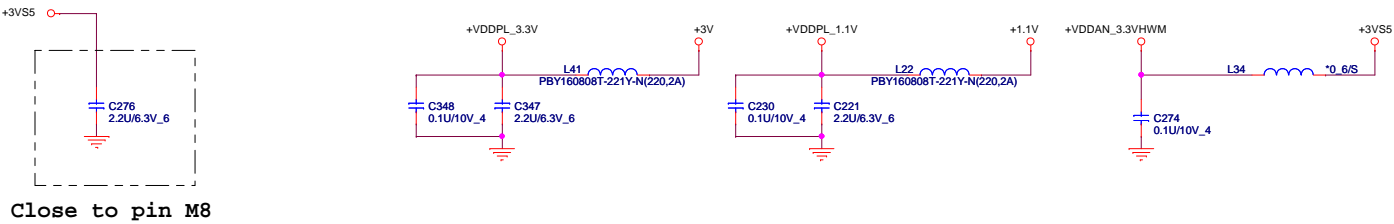
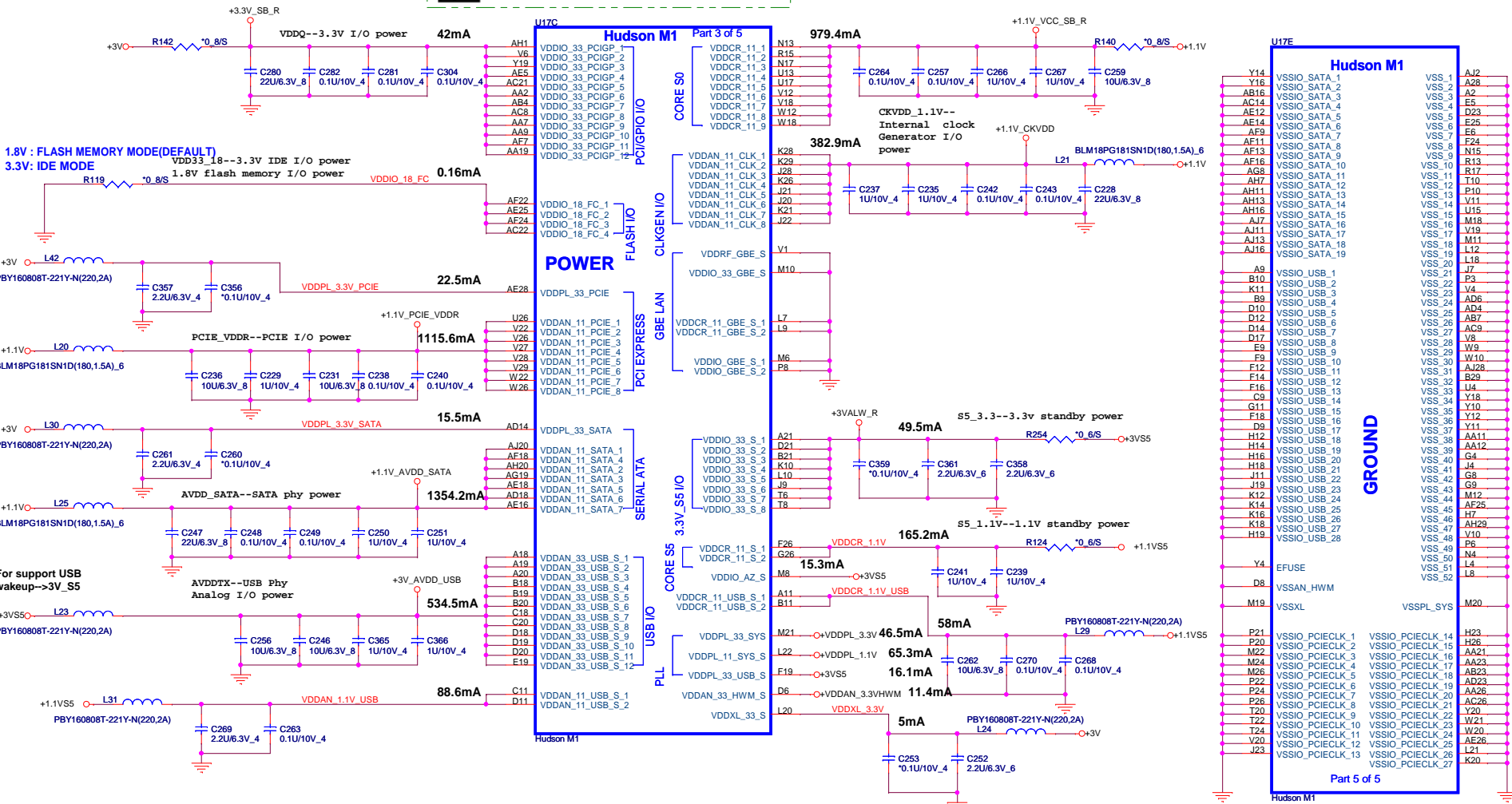


Quanta Computer Inc.
PROJECT : Butternut (NM9)

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

PLACE ALL THE DECOUPLING CAPS ON THIS SHEET CLOSE TO SB AS POSSIBLE.

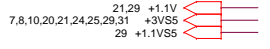
VDD-- S/B CORE power



Close to pin M8

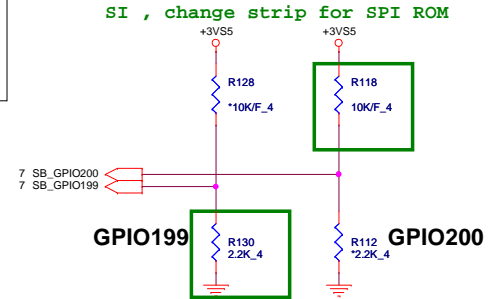
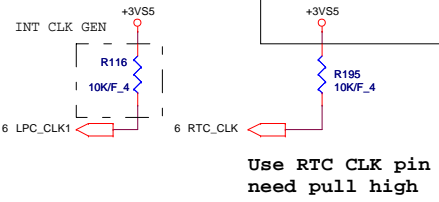
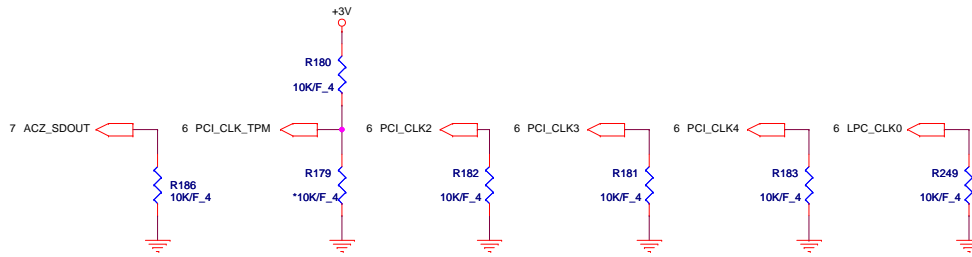
Quanta Computer Inc.
PROJECT : Butternut (NM9)

Size: Document Number: **Hudson Power/Ground(4/4)** Rev: 1A
 Date: Wednesday, July 27, 2011 Sheet 9 of 31



OVERLAP COMMON PADS WHERE POSSIBLE FOR DUAL-OP RESISTORS.

REQUIRED STRAPS



REQUIRED STRAPS

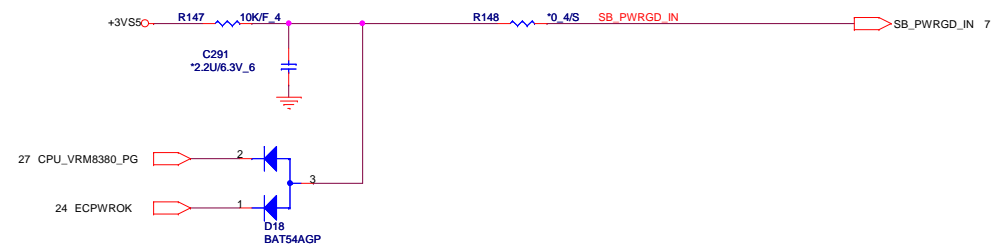
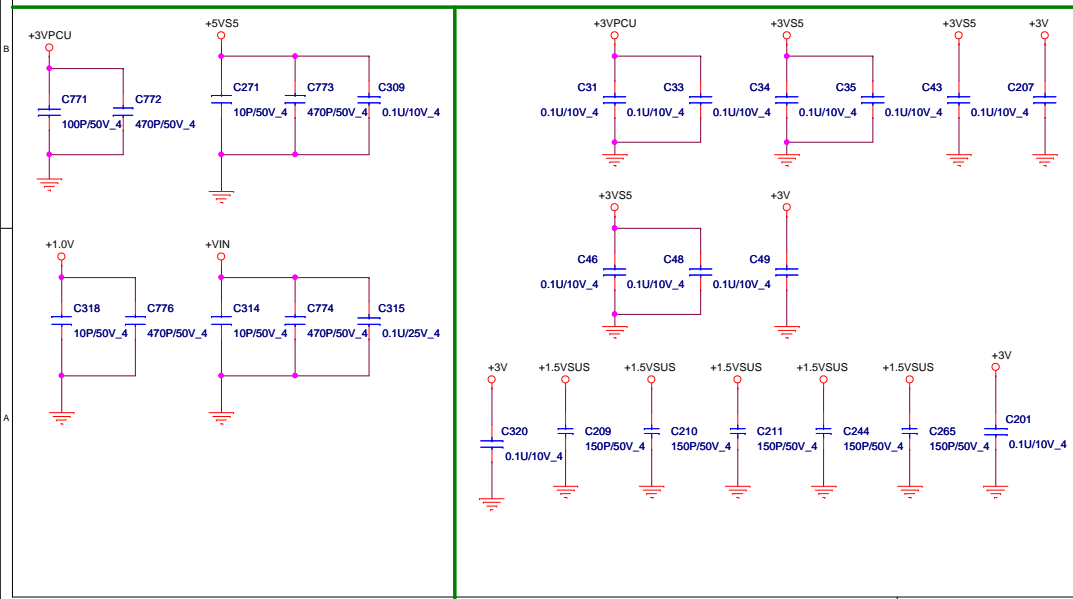
	AZ_SDOUT	PCI_CLK_TPM	PCI_CLK2	PCI_CLK3	PCI_CLK4	LPC_CLK0	LPC_CLK1	GPIO200	GPIO199
PULL HIGH	LOW POWER MODE	ALLOW PCIE Gen2	Watchdog Timer Enabled	USE DEBUG STRAP	non_Fusion CLOCK MODE	EC ENABLED	CLKGEN ENABLED DEFAULT	H,H = Reserved H,L = SPI ROM	GPIO199
PULL LOW	PERFORMANCE MODE DEFAULT	FORCE PCIE Gen1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


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)

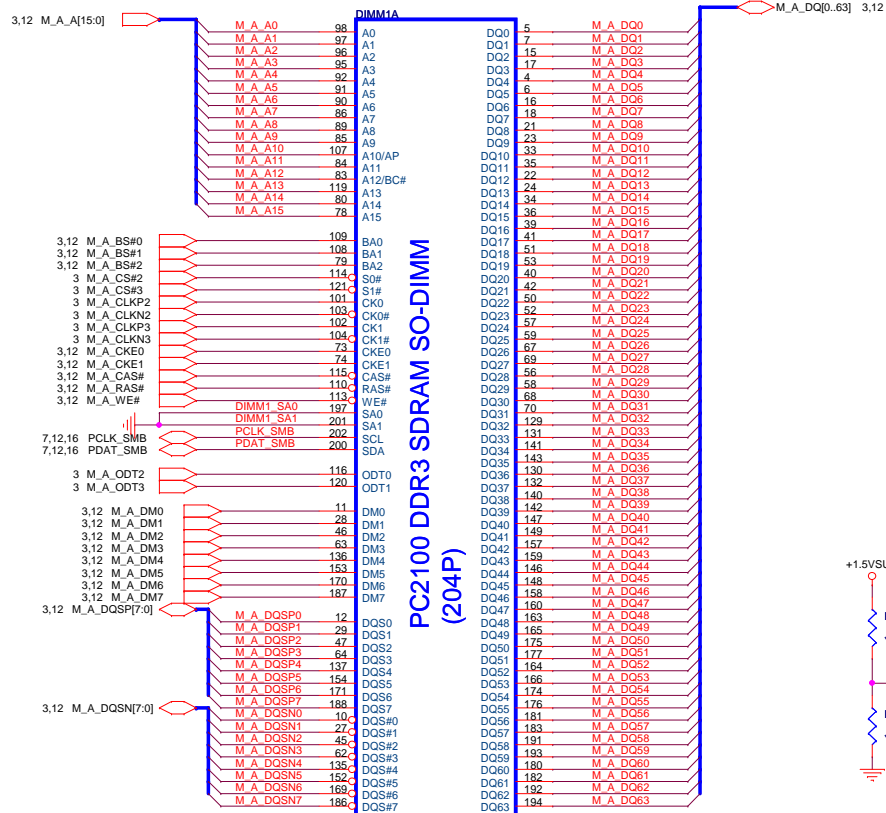



Quanta Computer Inc.
PROJECT : Butternut (NM9)
 Size Document Number Hudson HW Straps Rev 1A
 Date: Monday, July 25, 2011 Sheet 10 of 31

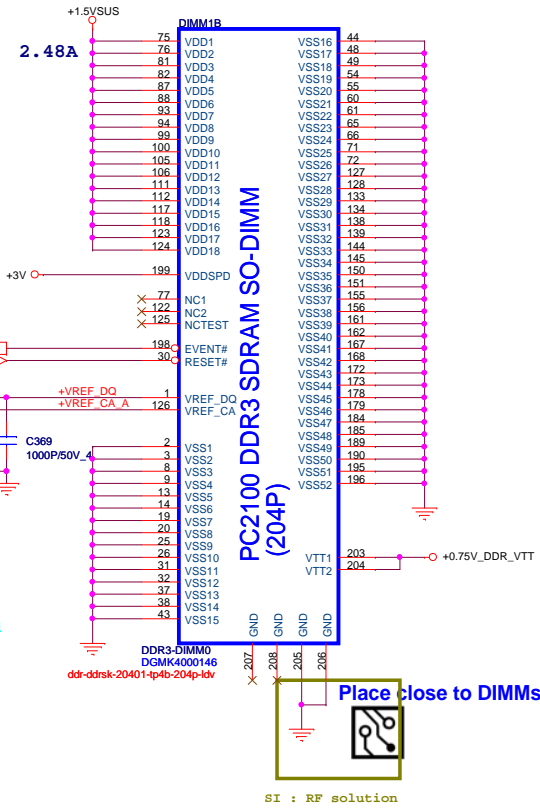
4,5,7,8,9,11,12,13,14,15,16,17,18,19,20,21,23,24,27,31
7,8,9,20,21,24,25,29,31



DDR STD (4.0mm)

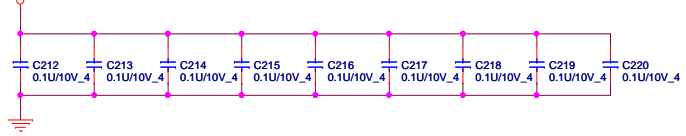


PC2100 DDR3 SDRAM SO-DIMM (204P)

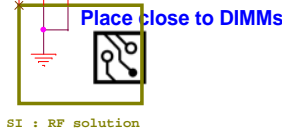
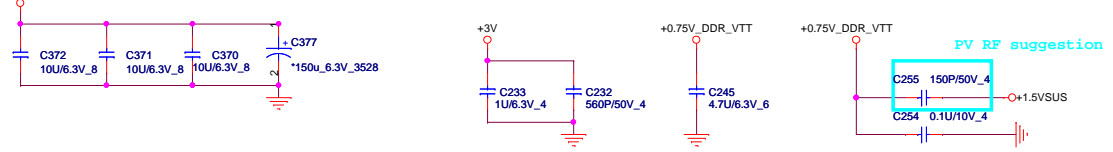


Place these Caps near So-Dimm1.
No Vias Between the Trace of PIN to CAP.

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



DE-COUPLING FOR DIMM1



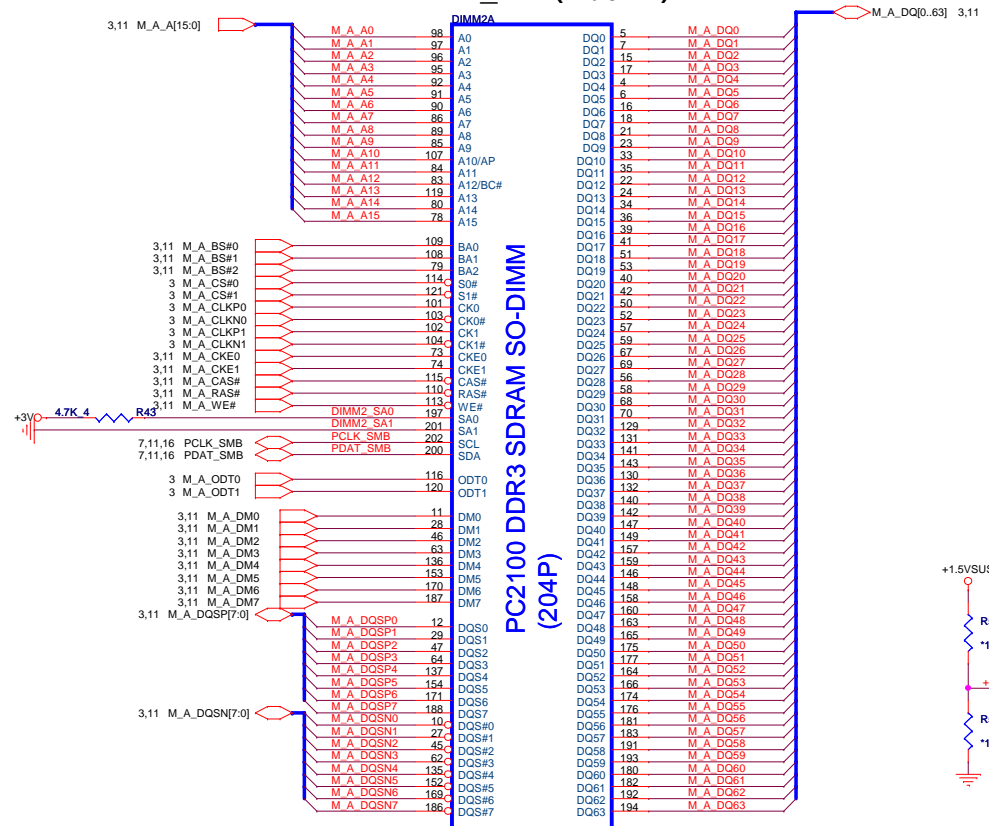
3,5,10,12,21,26,31 +1.5VSUS
 4,5,7,8,9,10,12,13,14,15,16,17,18,19,20,21,23,24,27,31 +3V
 12,26 +0.75V_DDR_VTT

Quanta Computer Inc.
PROJECT : Butternut (NM9)

Size	Document Number	Rev
	DDRIII SODIMM-1 (STD)	1A

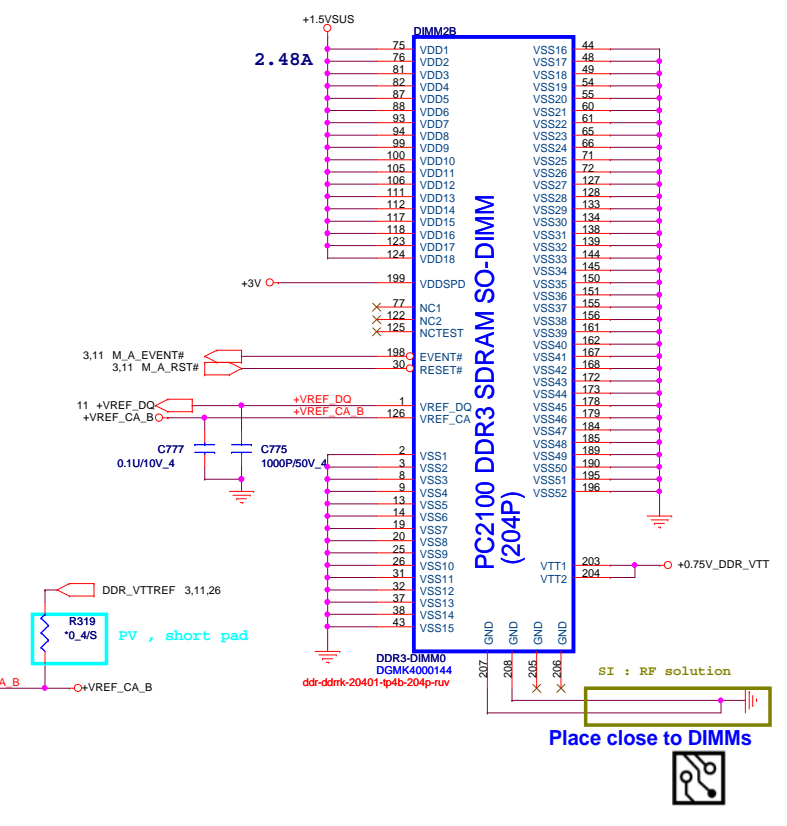
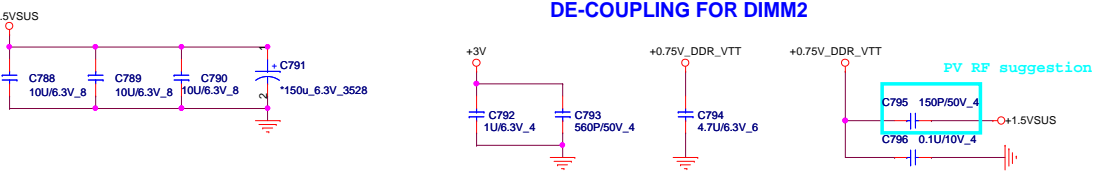
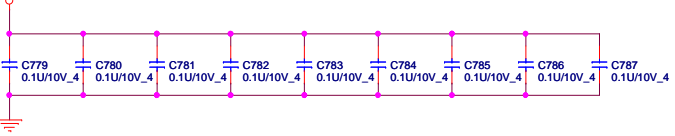
Date: Monday, July 25, 2011 Sheet 11 of 31

DDR_RVS (4.0mm)



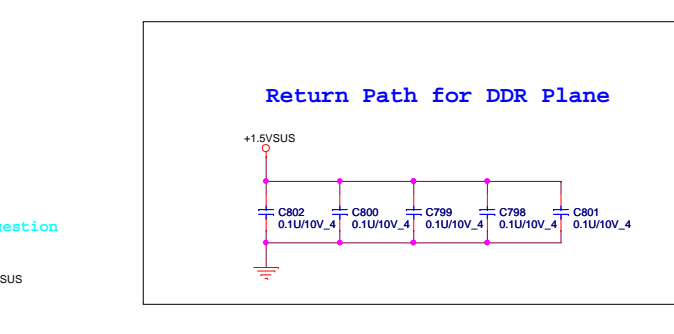
Place these Caps near So-Dimm2.
No Vias Between the Trace of PIN to CAP.

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



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

Return Path for DDR Plane



Quanta Computer Inc.
PROJECT : Butternut (NM9)

Size: 4,5,7,8,9,10,11,13,14,15,16,17,18,19,20,21,23,24,27,31
Document Number: 11.26 +0.75V_DDR_VTT
Date: Monday, July 25, 2011
Sheet: 12 of 31

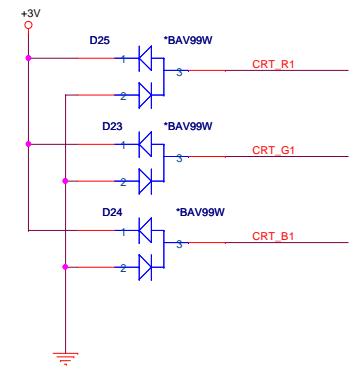
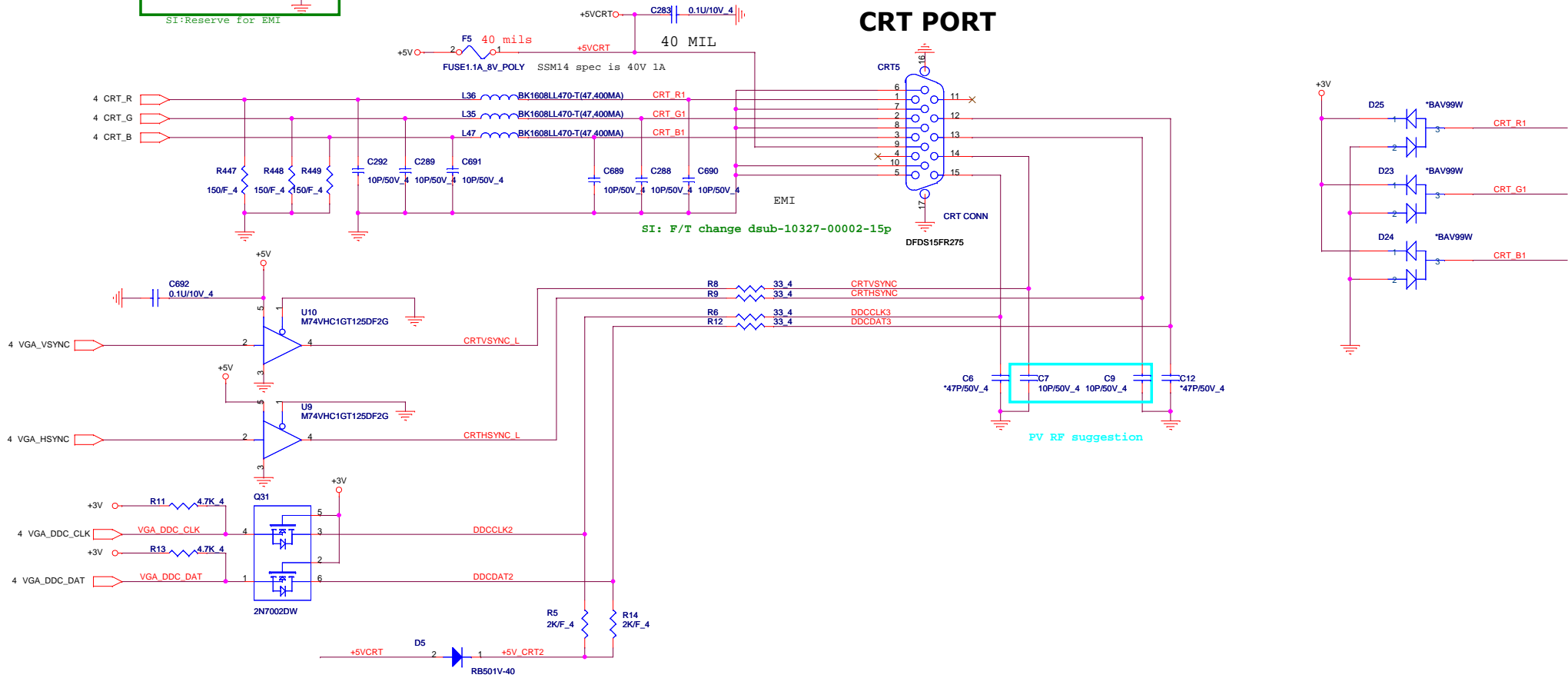
Rev: 1A

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

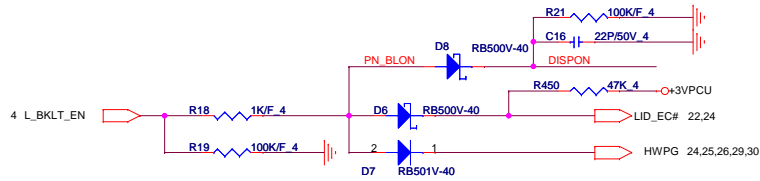
CRT_R	C803	5.6P/16V_4
CRT_G	C778	5.6P/16V_4
CRT_B	C797	5.6P/16V_4

SI: Reserve for EMI

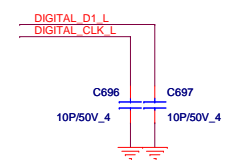
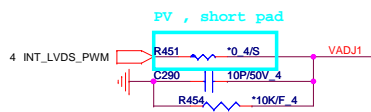
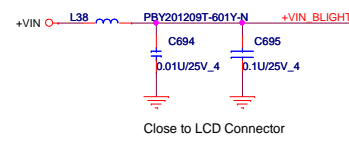
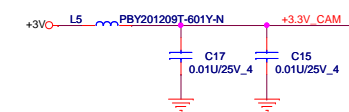
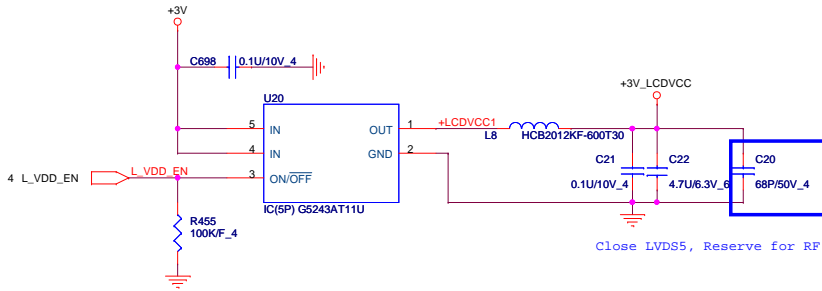
CRT PORT



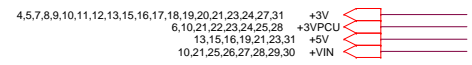
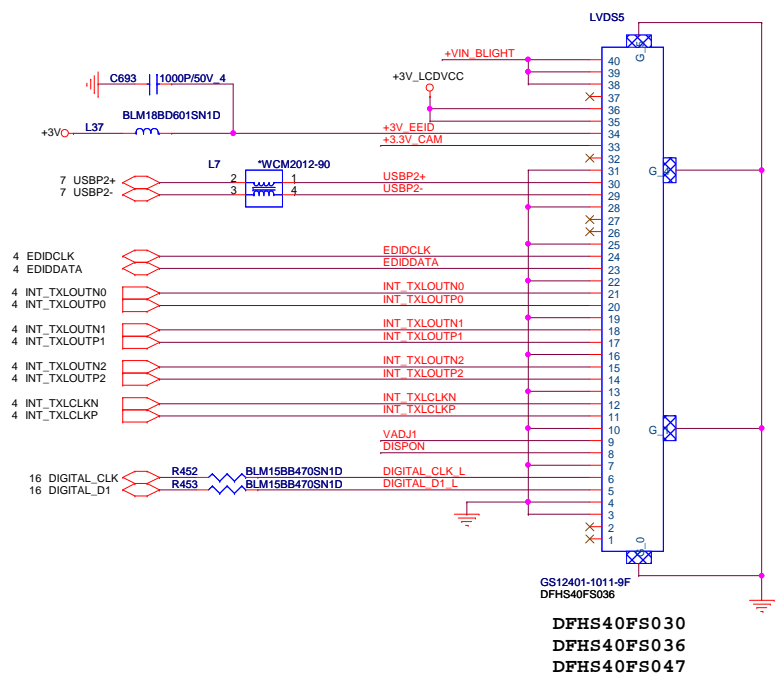
Backlight Control(LDS)



LCD POWER SWITCH

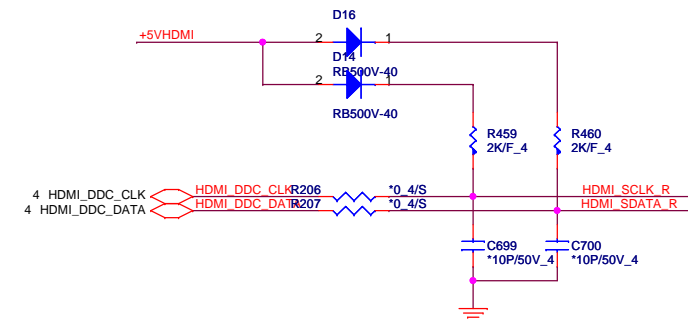
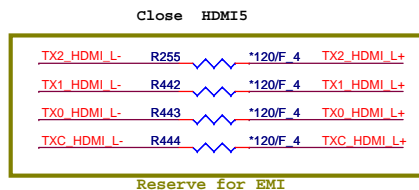
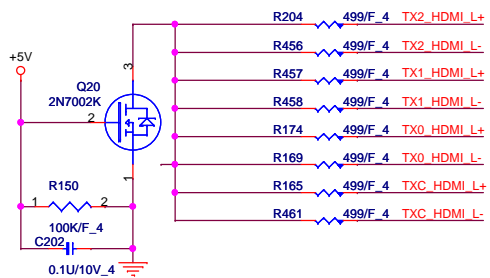


LED Panel(LDS)

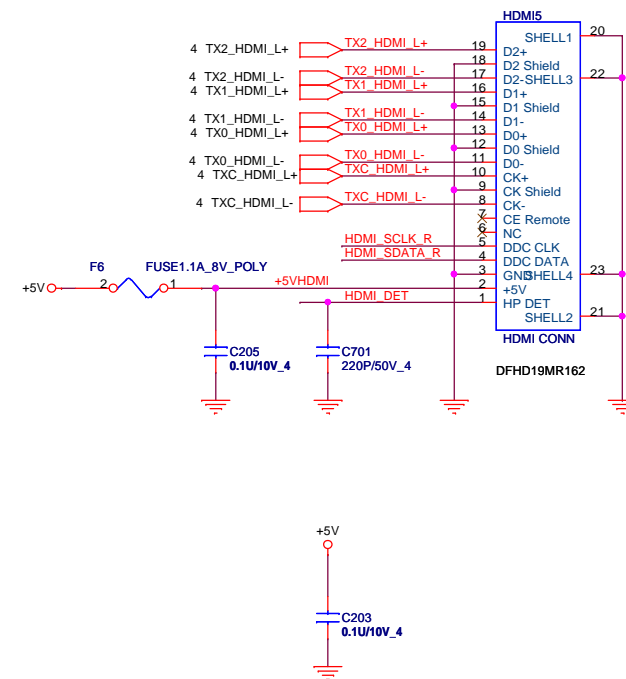
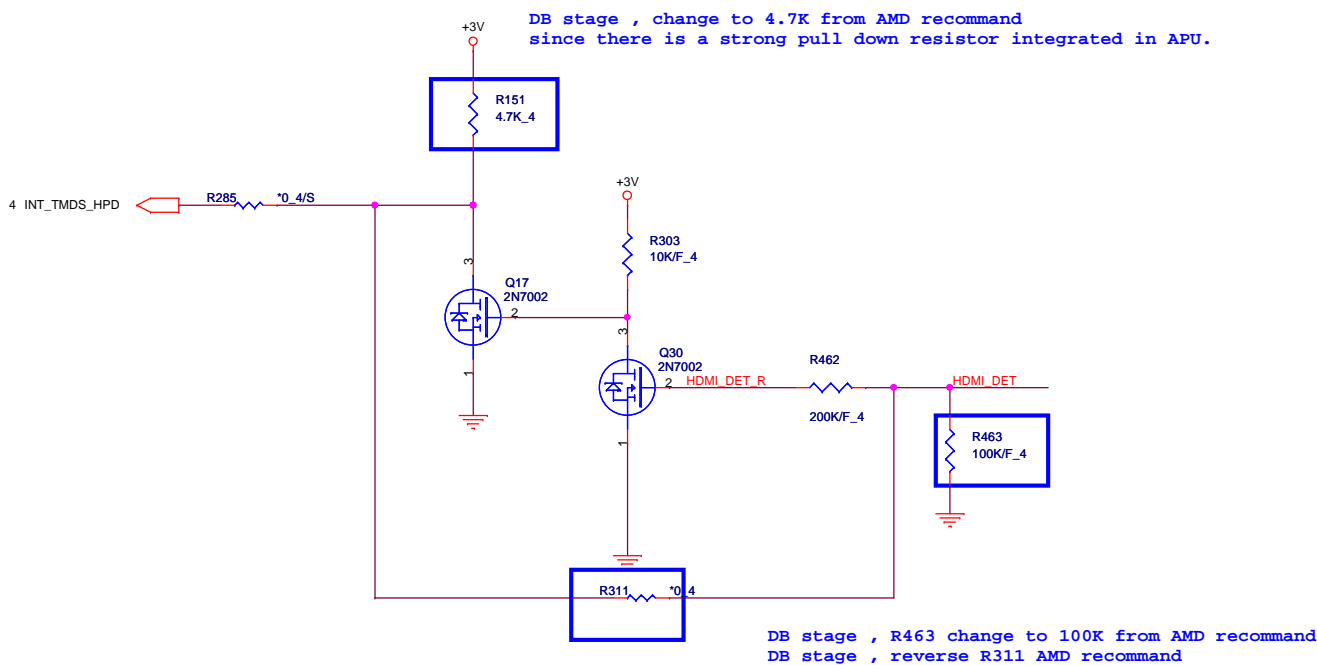


Quanta Computer Inc.
PROJECT : Butternut (NM9)

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



HDMI HPD SENSE

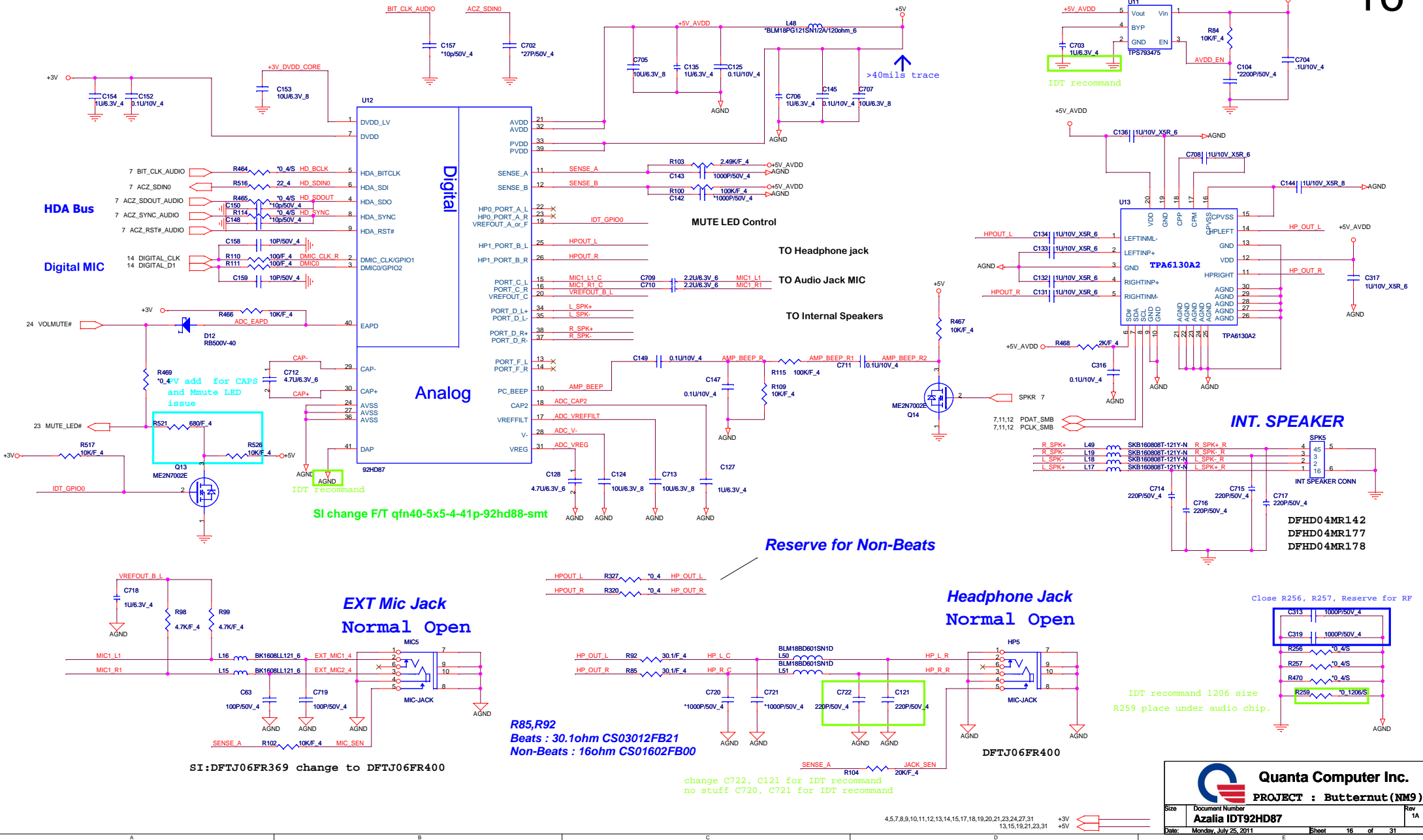


Quanta Computer Inc.
PROJECT : Butternut (NM9)

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

4,5,7,8,9,10,11,12,13,14,16,17,18,19,20,21,23,24,27,31
13,16,19,21,23,31





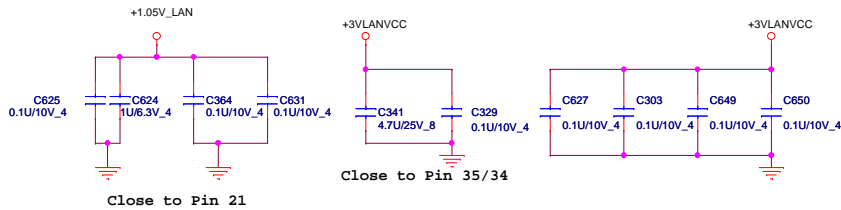
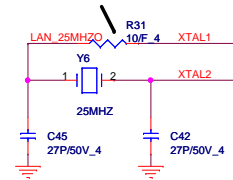
Quanta Computer Inc.
PROJECT : Butternut (NM9)

Size	Document Number	Rev
	10kAL	1A
Azalia IDT92HD87		
Date:	Monday, July 25, 2011	Sheet 16 of 31

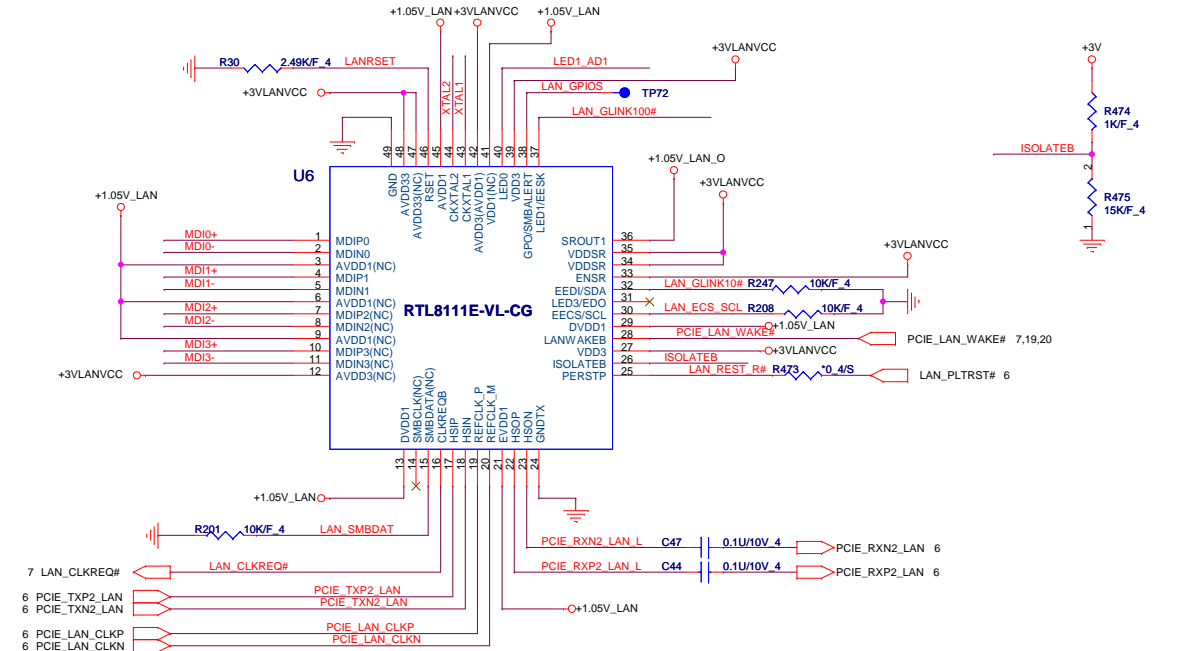
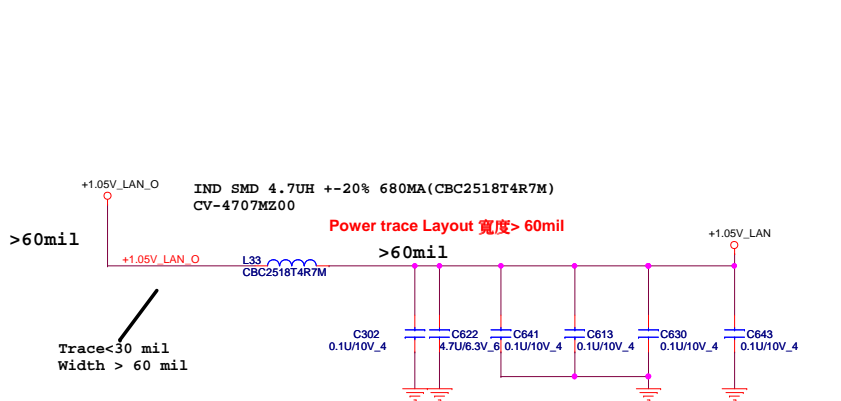
4,5,7,8,9,10,11,12,13,14,15,17,18,19,20,21,23,24,27,31
 13,15,19,21,23,31

+3V
 +5V

For EMI 0 ~ 22 ohm

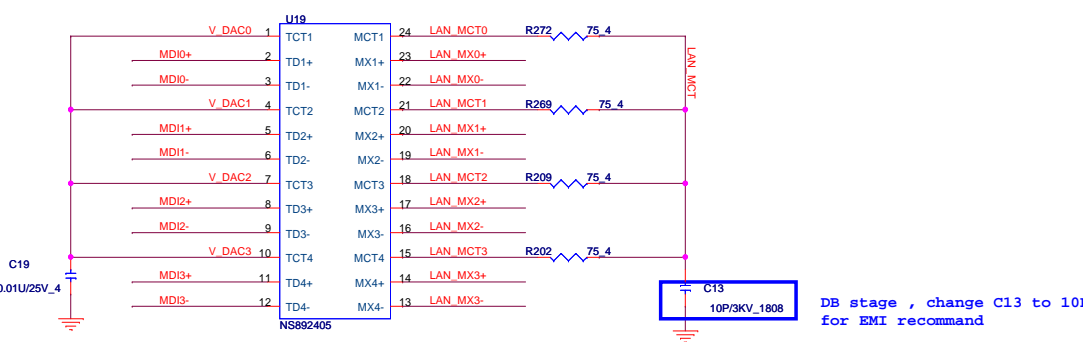


EEDI must 10K pull down for autoload
EECS must 10K pull down for test mode

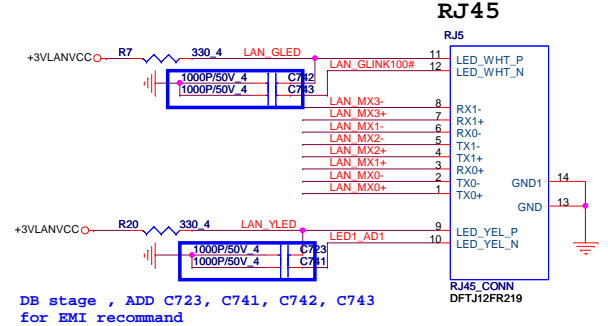


Transformer for 10/100/1000

AL08111DB00 RTL8111DL-GR



PV stage, del for EMI recommend



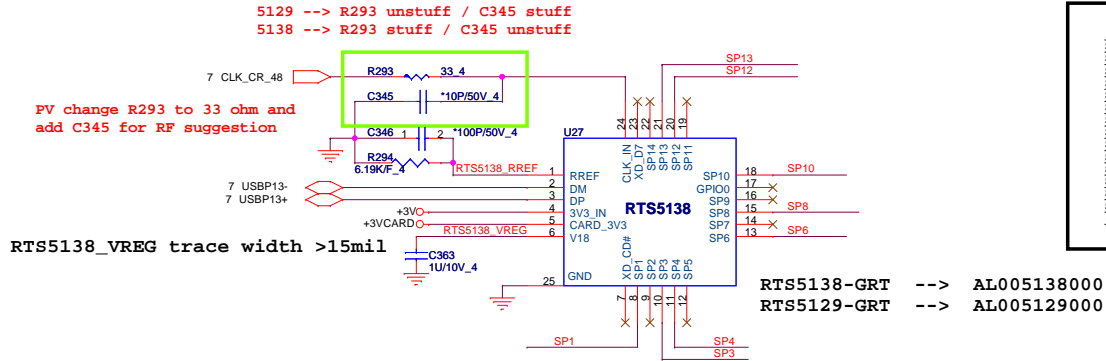
DB stage, ADD C723, C741, C742, C743 for EMI recommend

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PROJECT : Butternut (NM9)

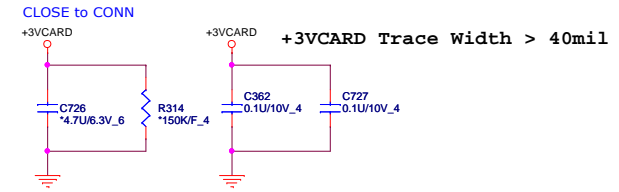
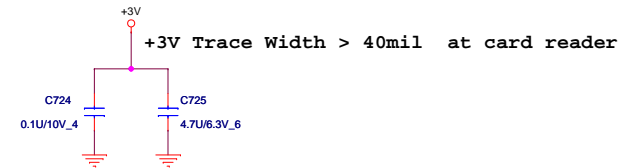
Size	Document Number	Rev
	RTL8105T-VC/RJ45	1A
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Share Pin

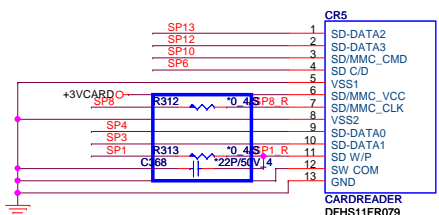
	XD_CD#			
SP1	XD_RDY	SD_WP	MS_CLK	
SP2	XD_RE#		MS_INS#	
SP3	XD_CE#	SD_D1		
SP4	XD_CLE	SD_D0	MS_D7	
SP5	XD_ALE	SD_D7	MS_D3	
SP6	XD_WE#	SD_CD#		
SP7	XD_WP	SD_D6	MS_D6	
SP8	XD_D0	SD_CLK	MS_D2	
SP9	XD_D1	SD_D5	MS_D0	
SP10	XD_D2	SD_CMD		
SP11	XD_D3	SD_D4	MS_D4	
SP12	XD_D4	SD_D3	MS_D1	
SP13	XD_D5	SD_D2	MS_D5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



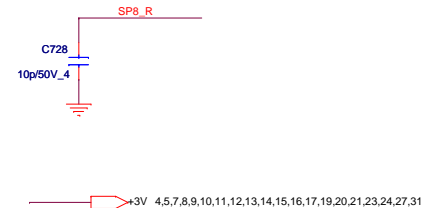
RTS5138-GRT --> AL005138000
 RTS5129-GRT --> AL005129000



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

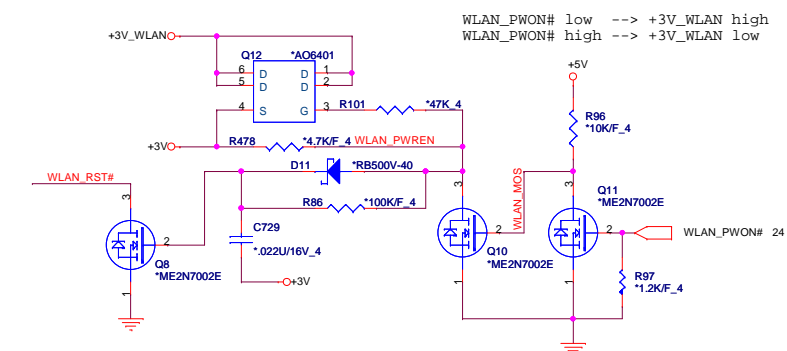
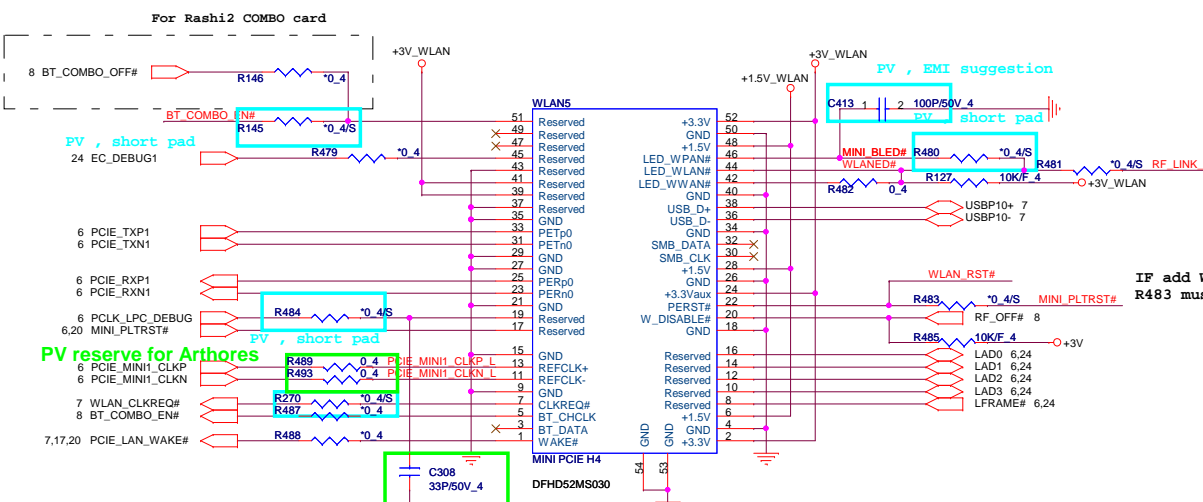
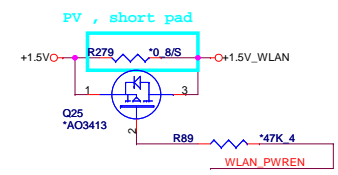
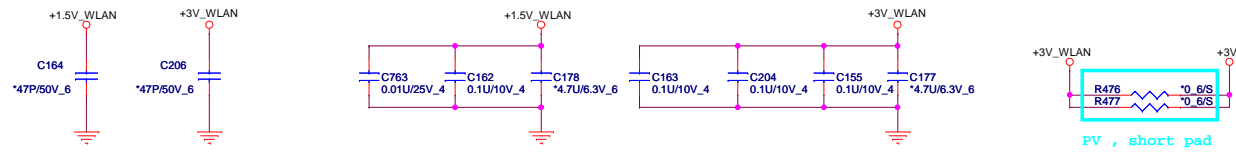


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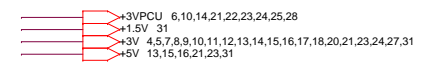
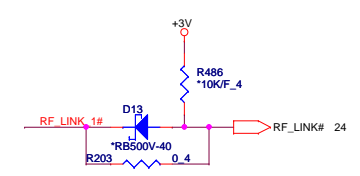
Size	Document Number	Rev
	RTS5129/5138/Card Reader	1A
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Mini PCI-E Card 1 Half Mini PCI-E WLAN

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.



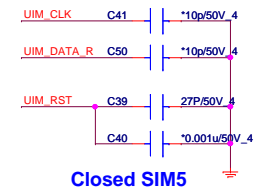
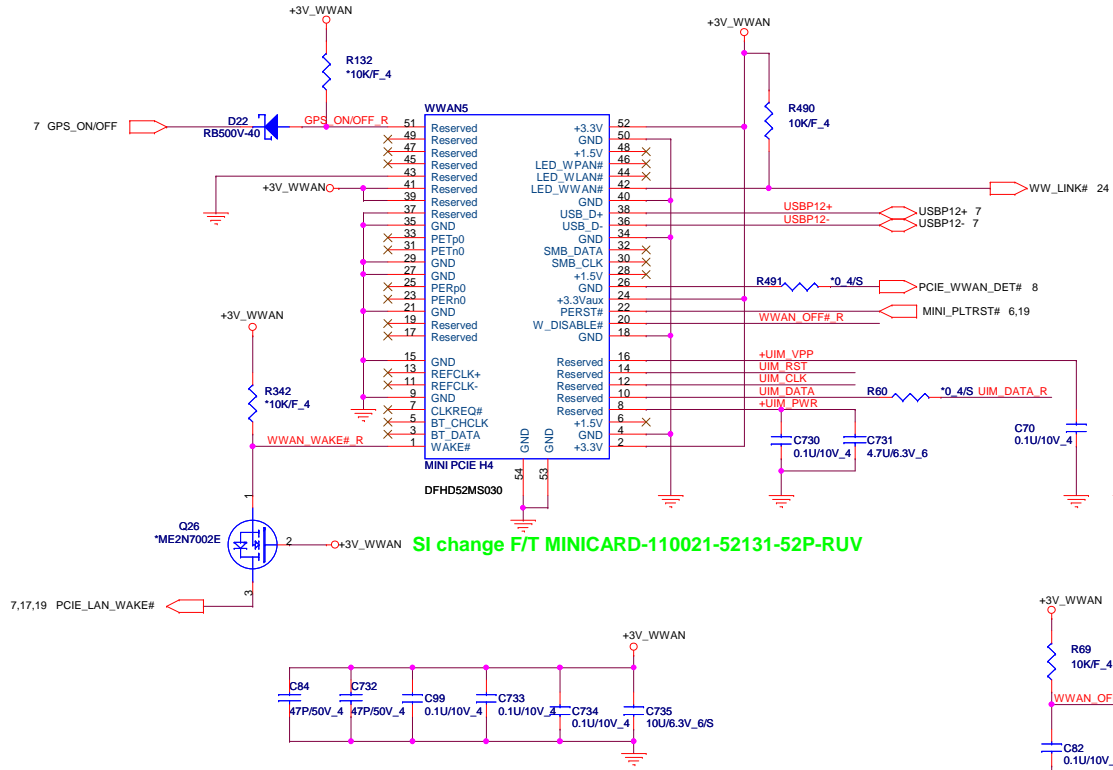
IF add WLAN_RST# schematic
R483 must change to 10K



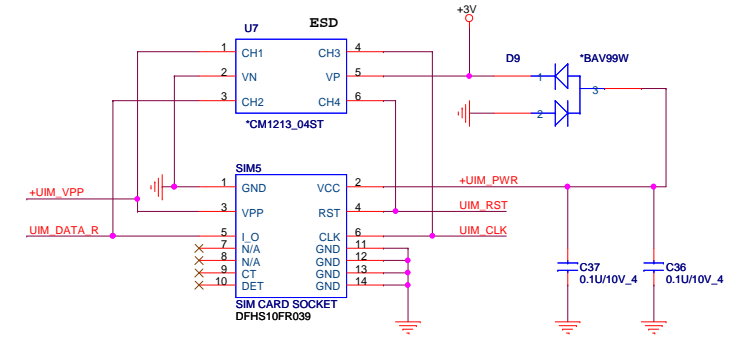
Quanta Computer Inc.
PROJECT : Butternut (NM9)

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

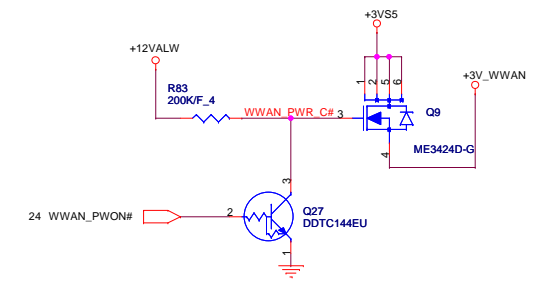
Full mini PCIE for WWAN Mini PCI-E Card 2



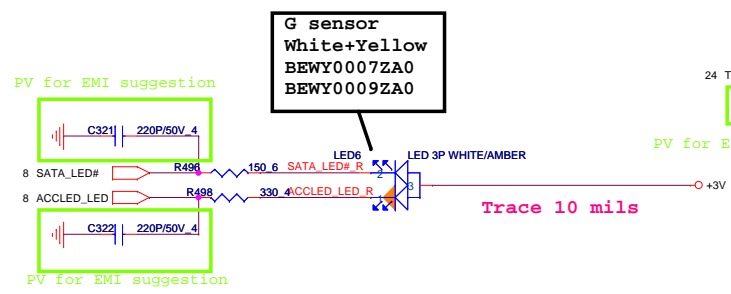
SIM CARD SIGNALS ROUTE PARALLEL



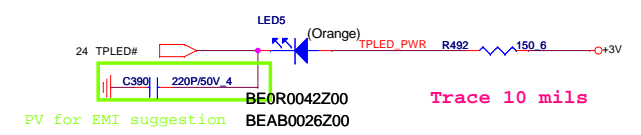
SIM CARD



SATA/G sensor LED



Touchpad LED



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PROJECT : Butternut (NM9)

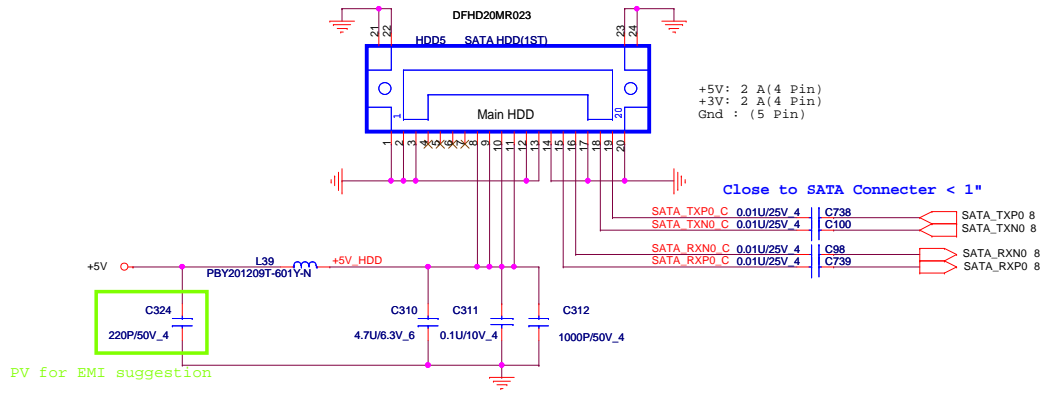
Size Document Number Rev 1A

Mini PCIE(WWAN)/LED/LID

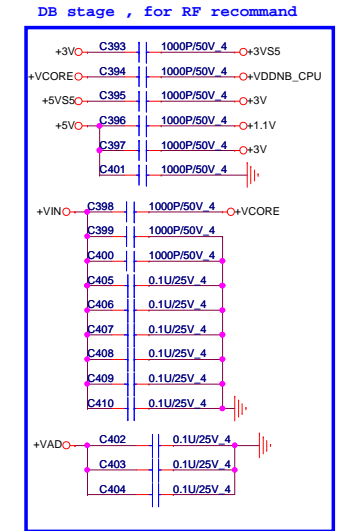
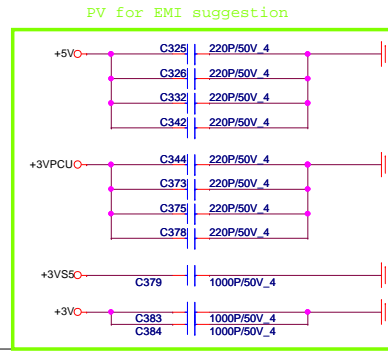
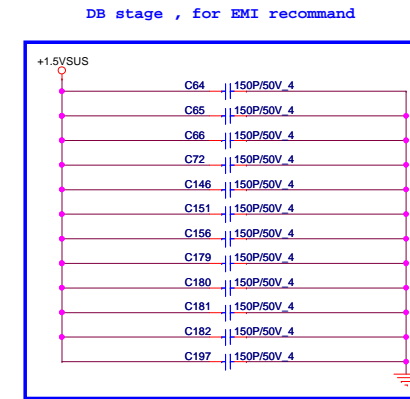
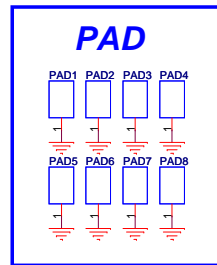
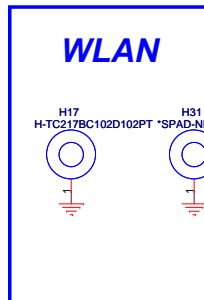
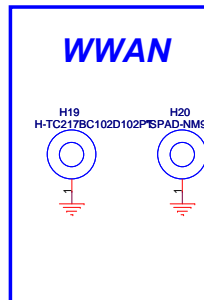
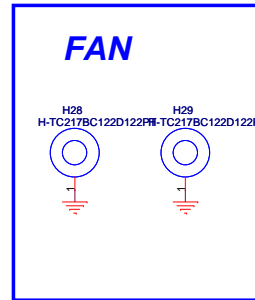
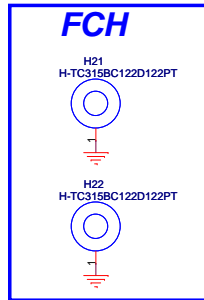
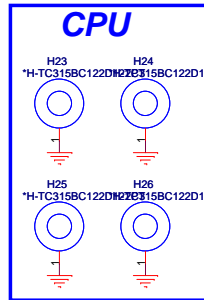
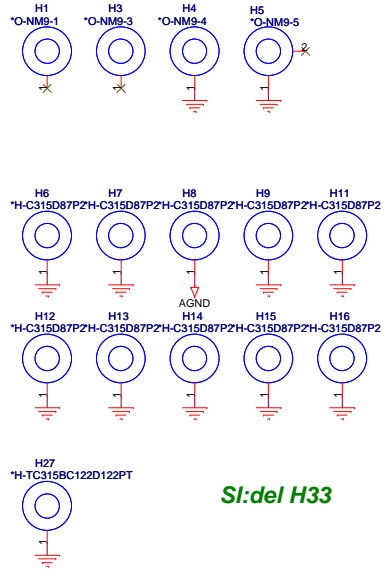
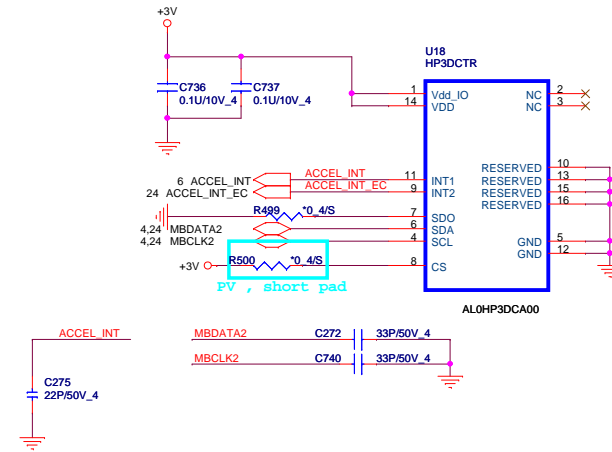
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2.5" SATA HDD OR SSD(TOSHIBA)

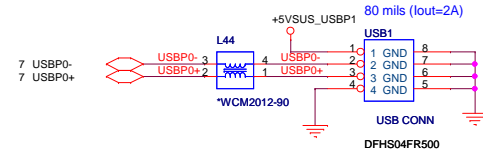
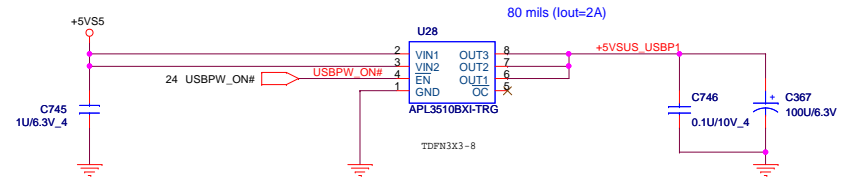
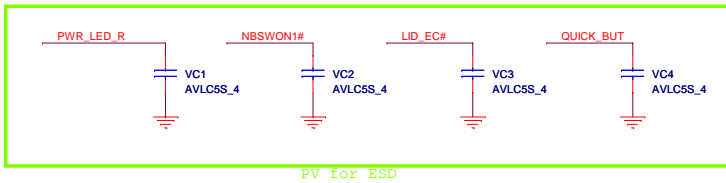
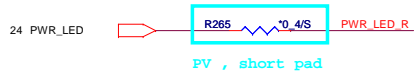
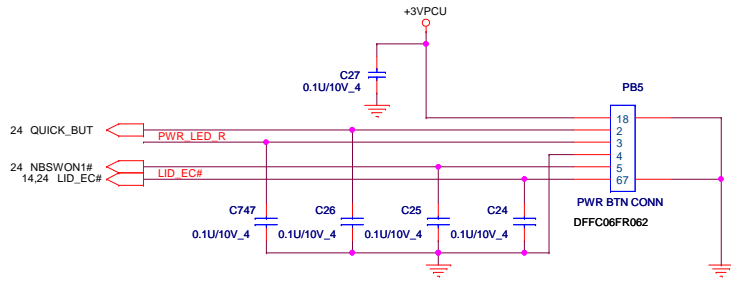
DC Current rating: 0.5 A



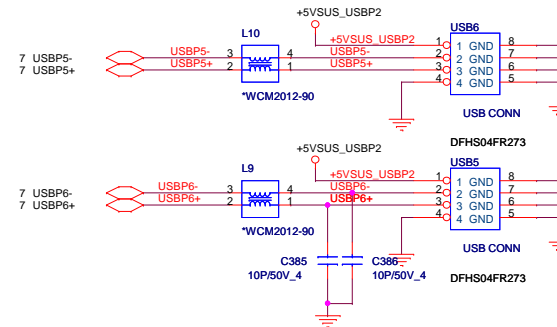
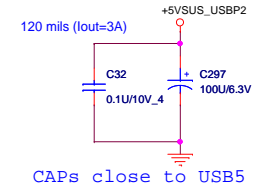
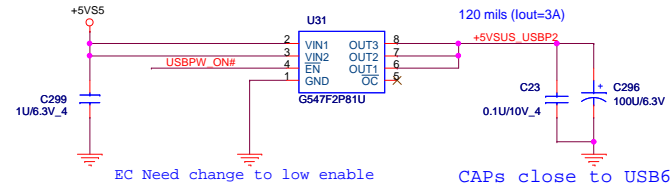
Accelerometer Sensor



1x Left side USB port supports Keyed USB.



For Right 2xUSB Ports PWR

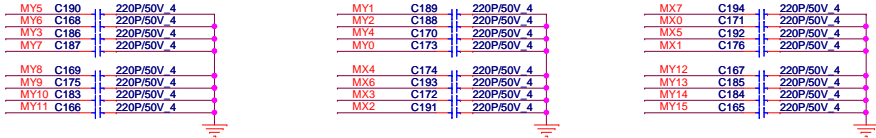


+3VPCU 6,10,14,21,23,24,25,28
+3V 4,5,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,23,24,27,31

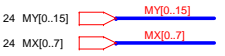
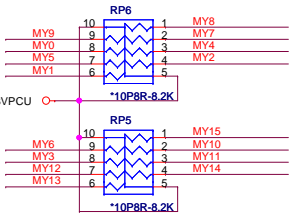
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PROJECT : Butternut (NM9)

Size	Document Number	Rev
	Power Board/USB	1A
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Keyboard (KBC)

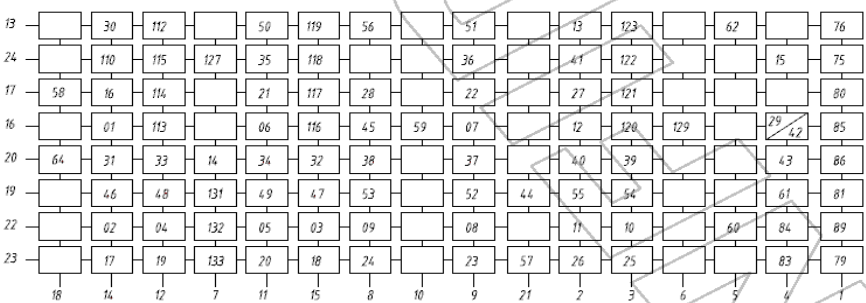
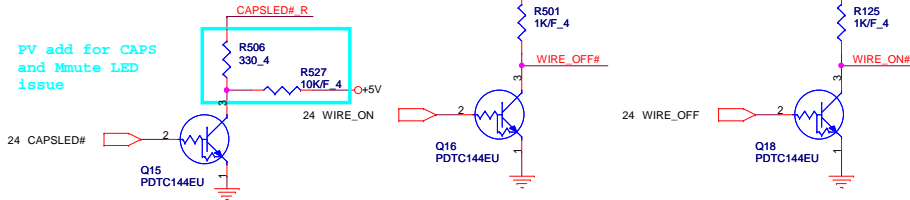


KEYBOARD PULL-UP



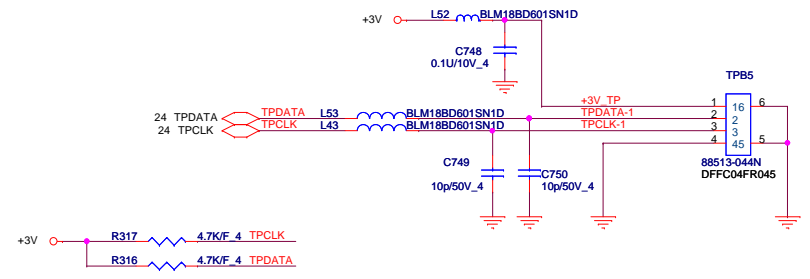
SI change KB5 F/T 50692-03041-001-30p-l-smt

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

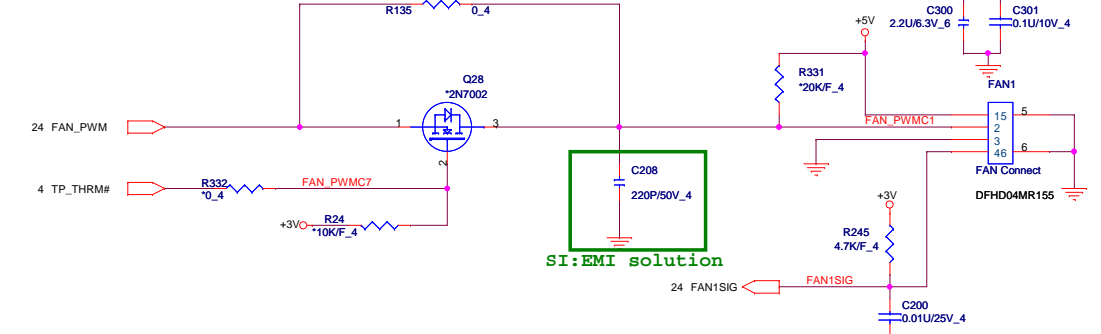


US MATRIX

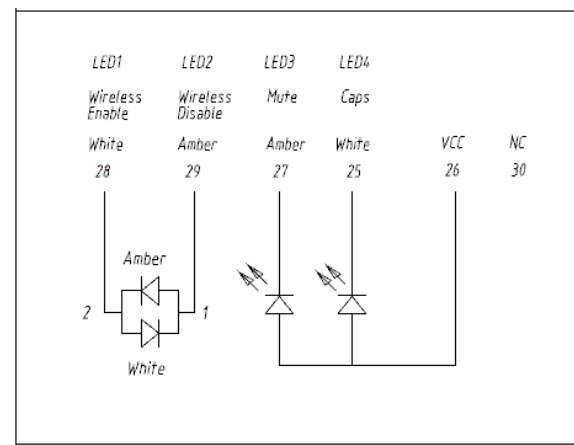
TOUCH PAD CONN



CPU FAN



SI:EMI solution



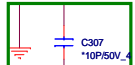
Quanta Computer Inc.
PROJECT : Butternut (NM9)

Size: Document Number: **KB/TP/CPU FAN** Rev: 1A
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DB stage, for EMI recommend
Close U16



SI: RF solution

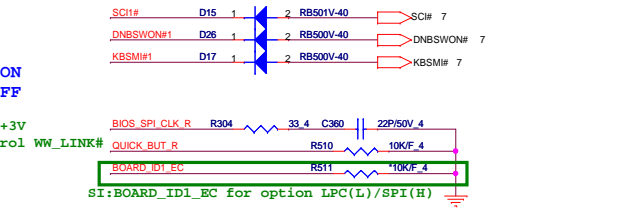
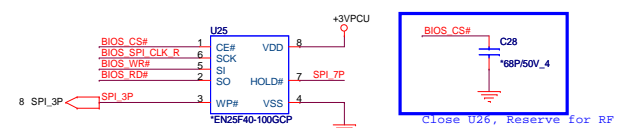
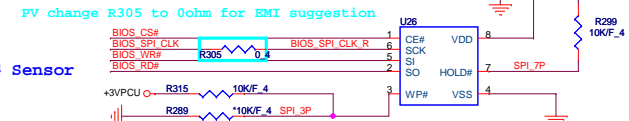
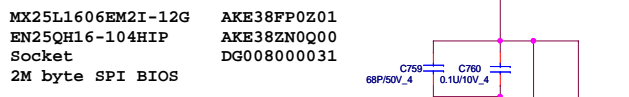
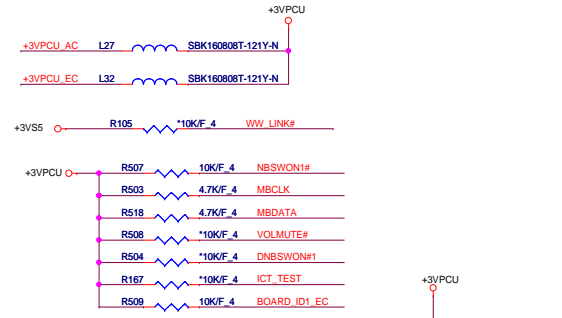
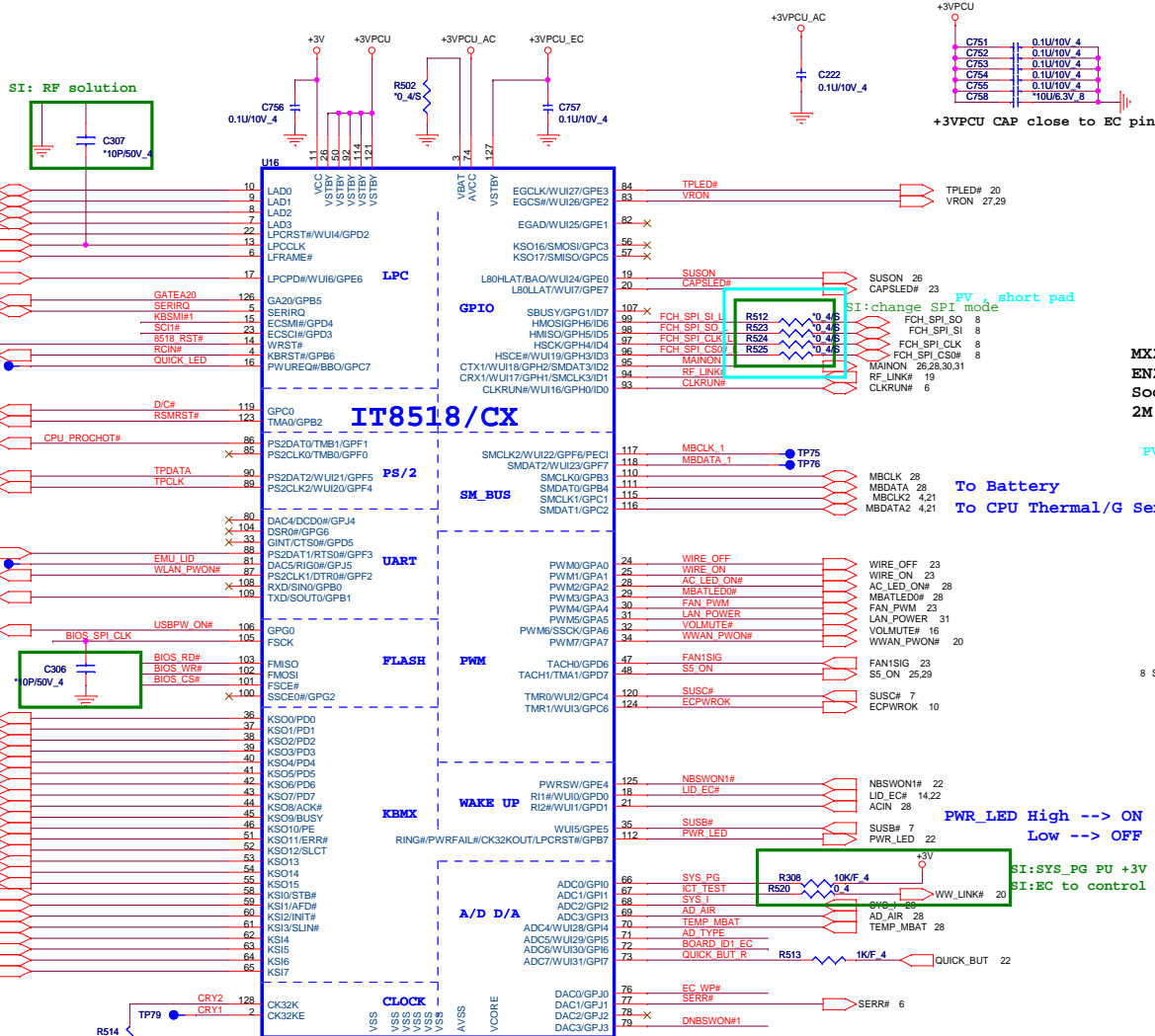
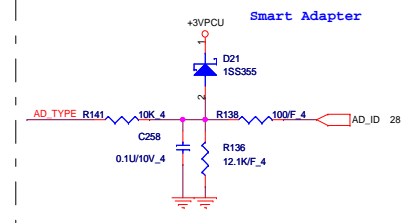


Close U16



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

SI: RF solution



INPUTS		OUTPUTS			
PRE	CLR	CLK	D	Q	Q̄
L	H	X	X	H	L
H	L	X	X	L	H
L	L	X	X	H	H
H	H	↑	H	H	L
H	H	↑	L	L	H
H	H	L	X	Q	Q̄

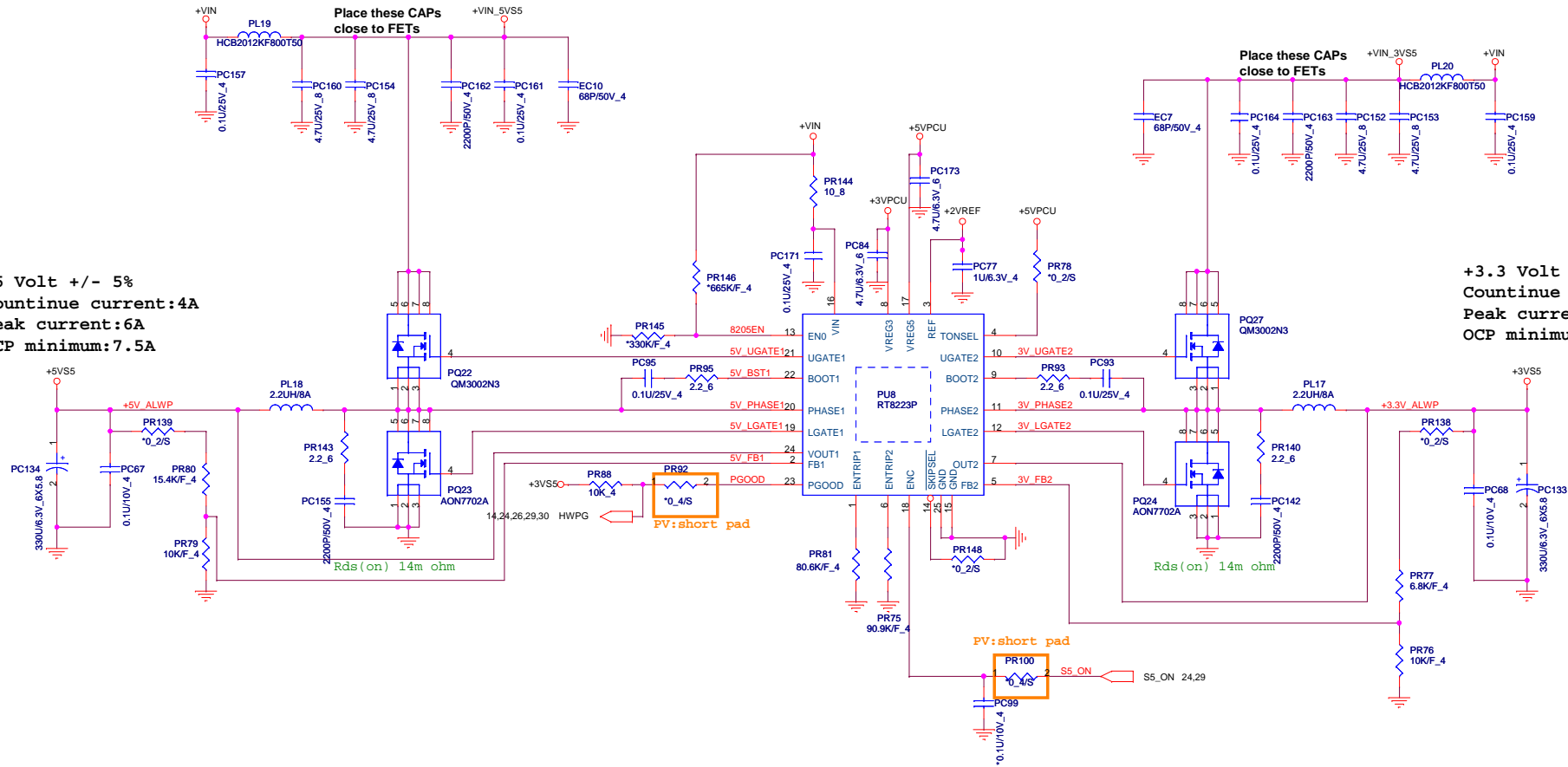
FLASH

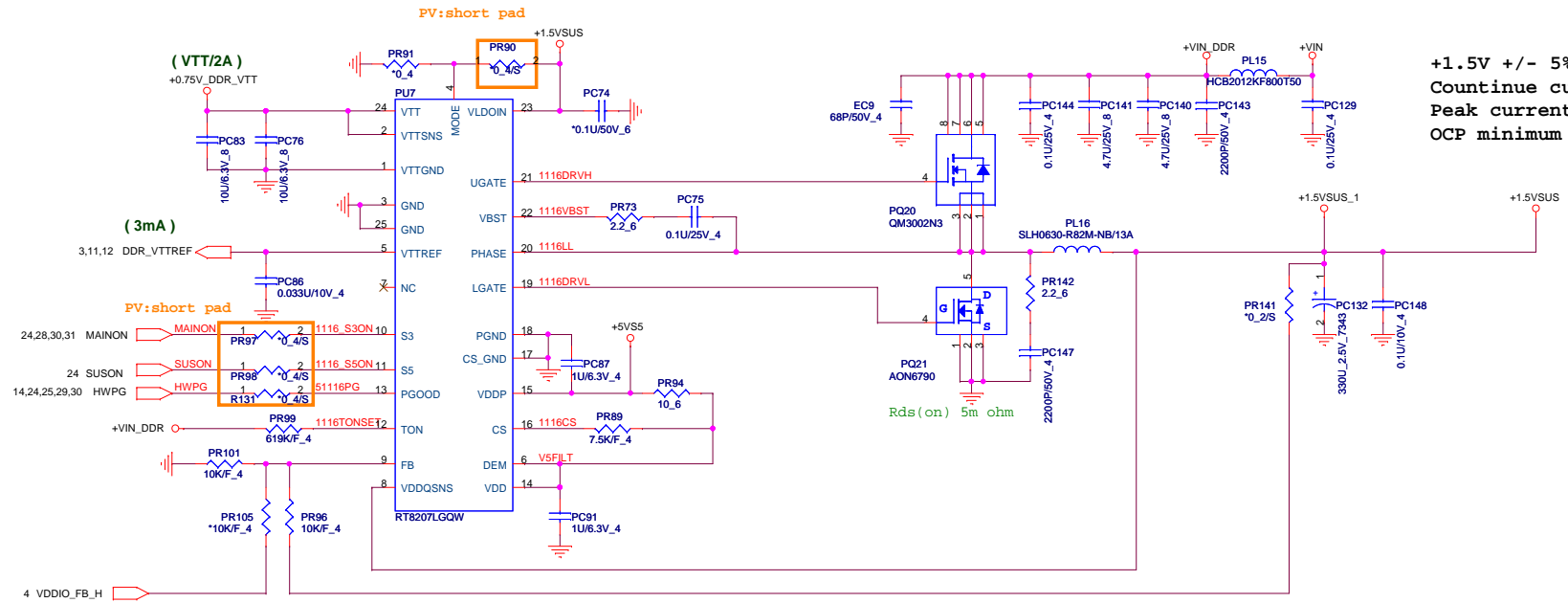
LOCK

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KBC ITE8518/ROM
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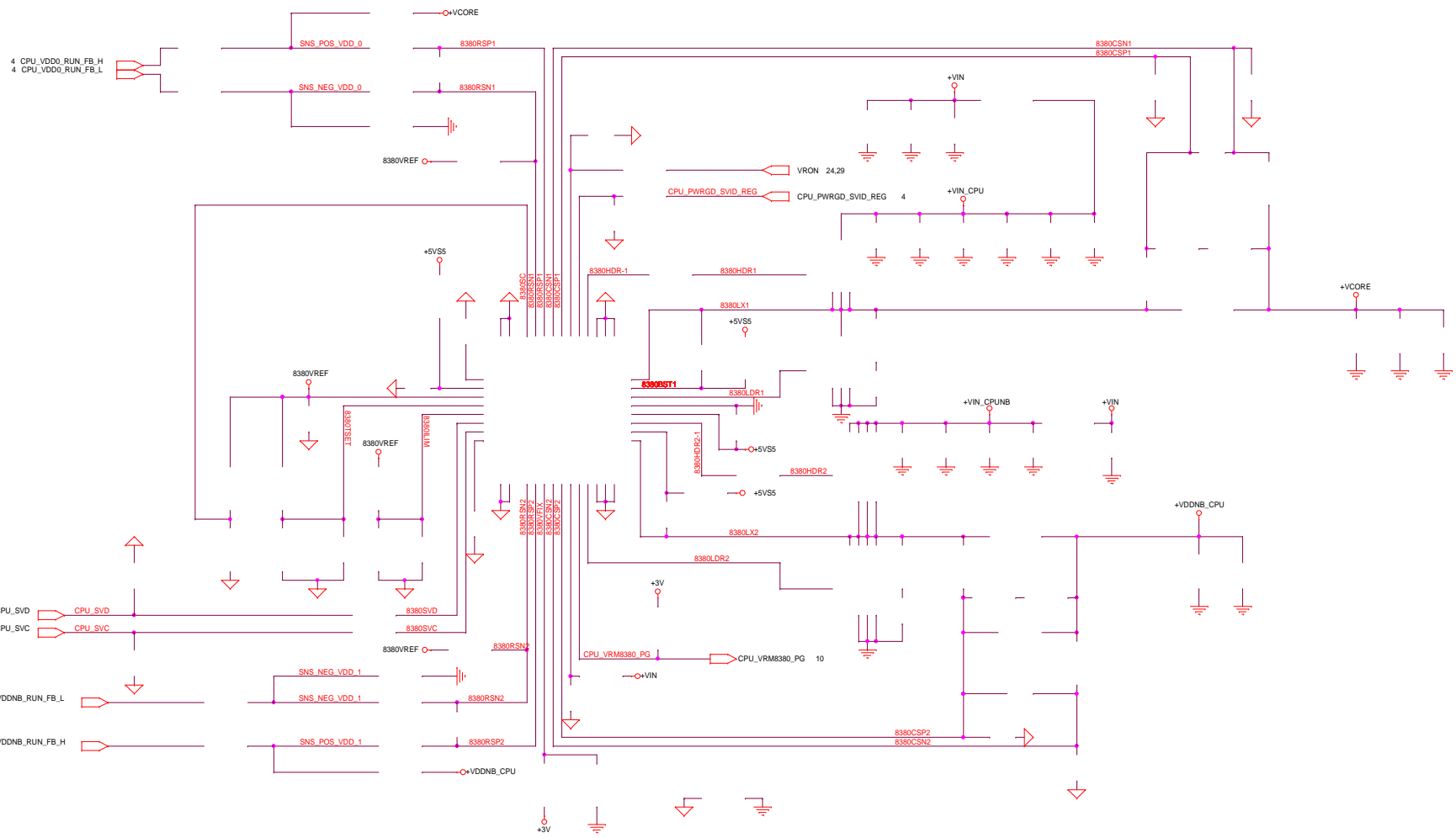
+5 Volt +/- 5%
Countinue current:4A
Peak current:6A
OCP minimum:7.5A

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



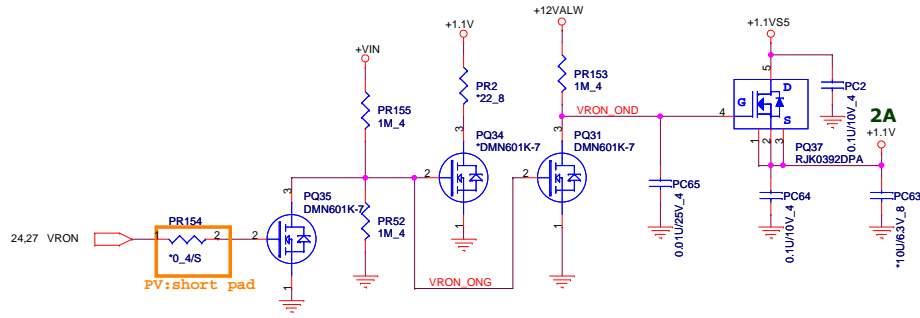
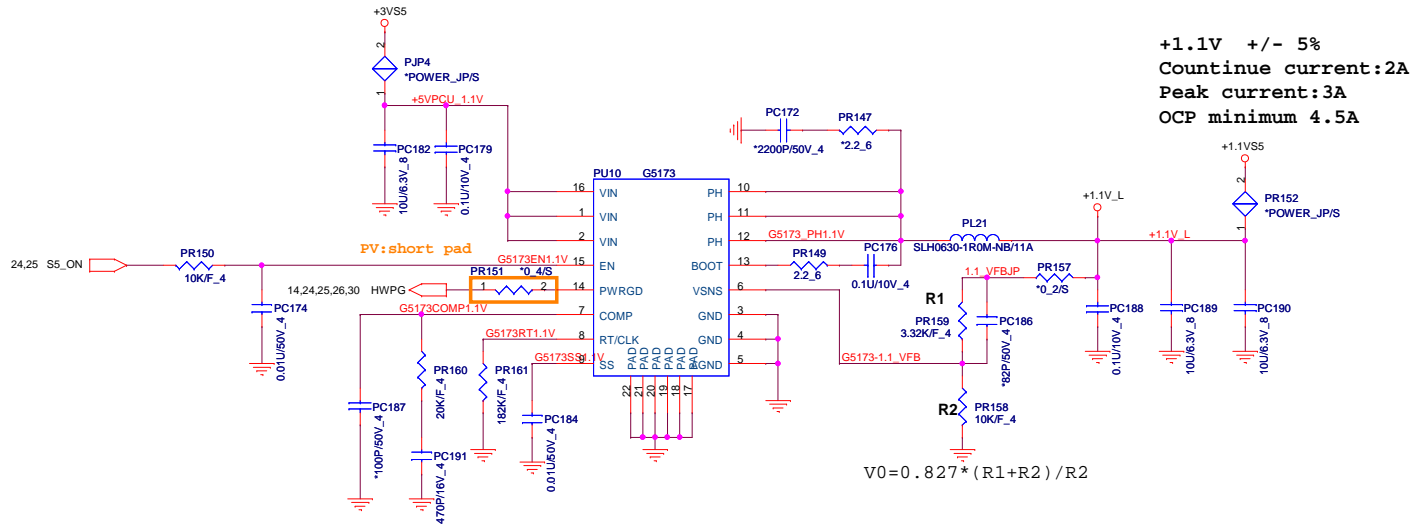


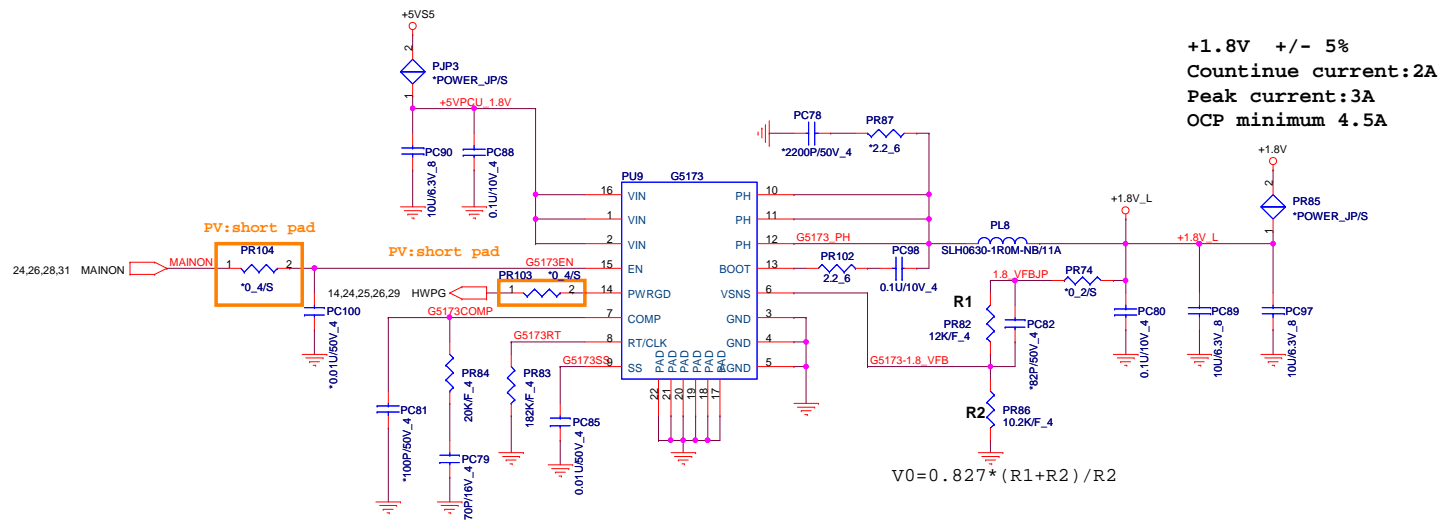
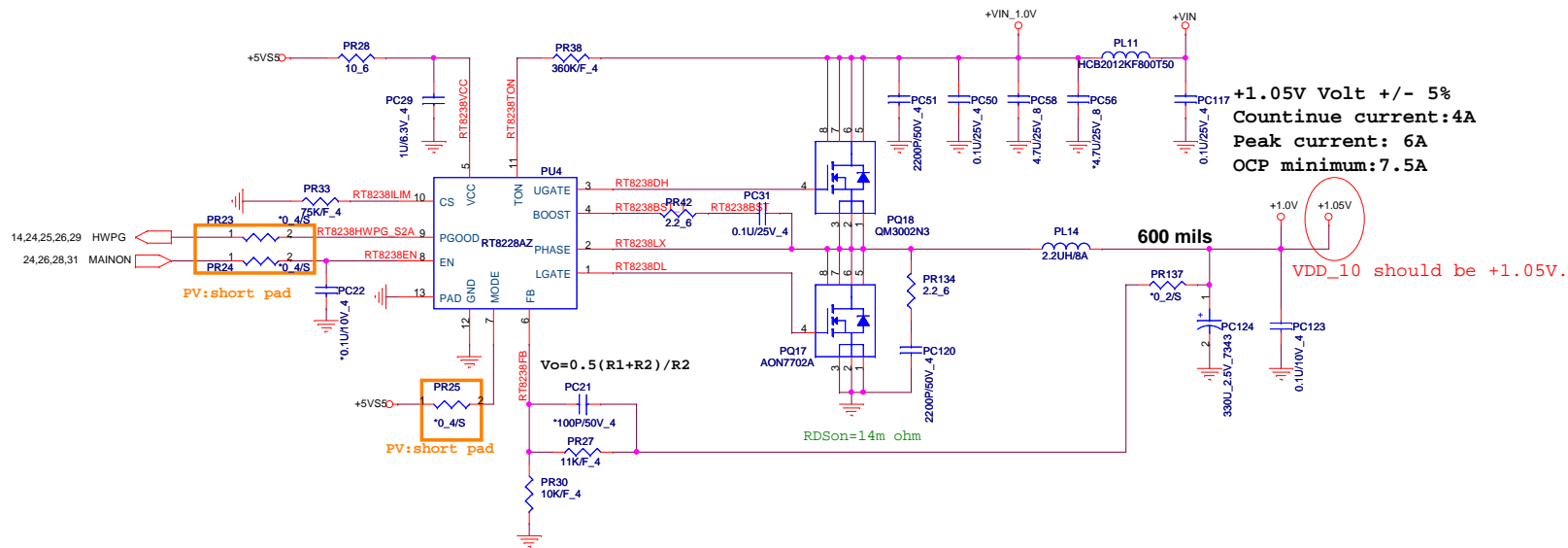
+1.5V +/- 5%
 Countinue current:10A
 Peak current:12A
 OCP minimum 15A

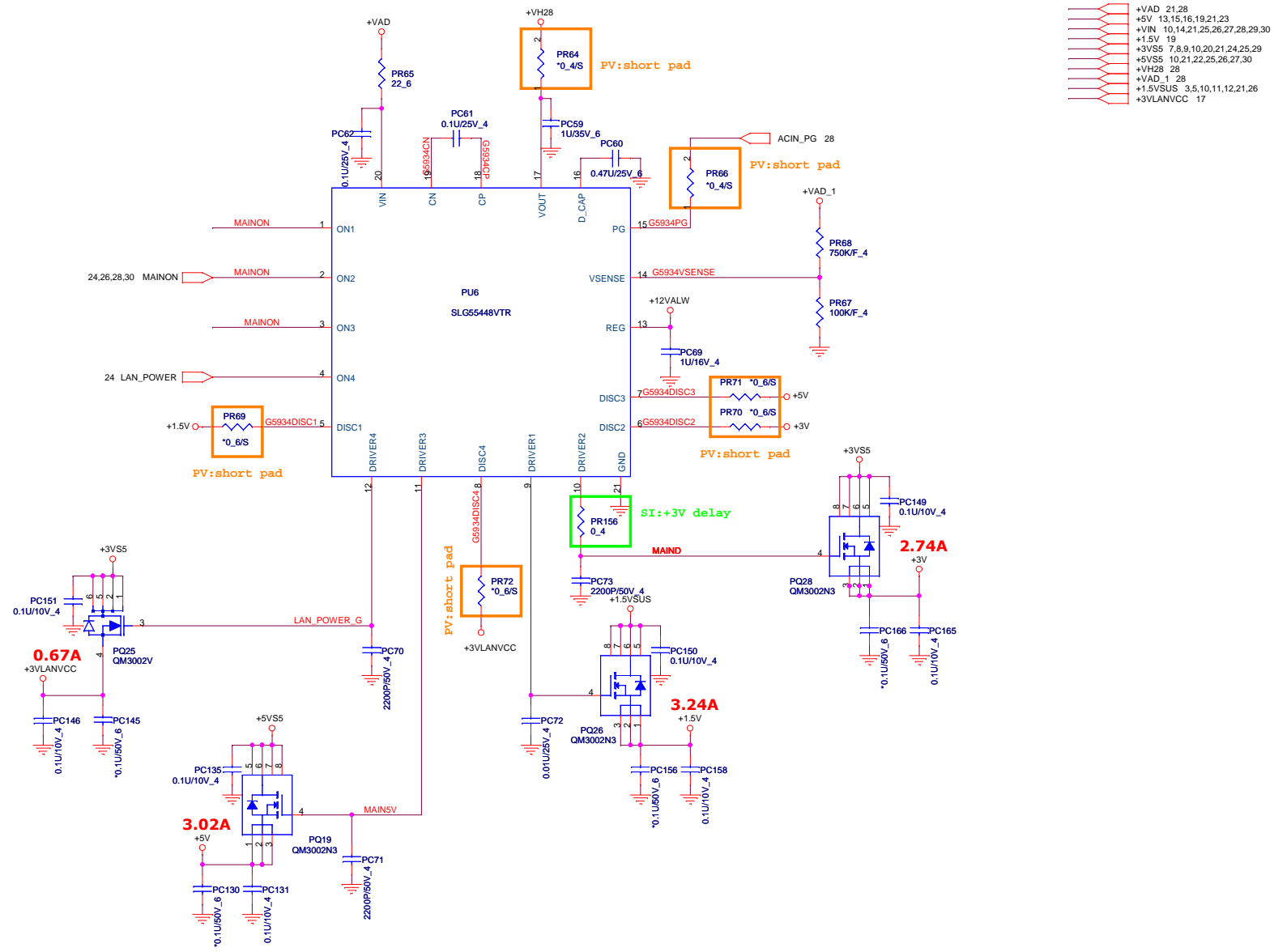


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Size	Document Number	Rev
Date	Sheet	of







- +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

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