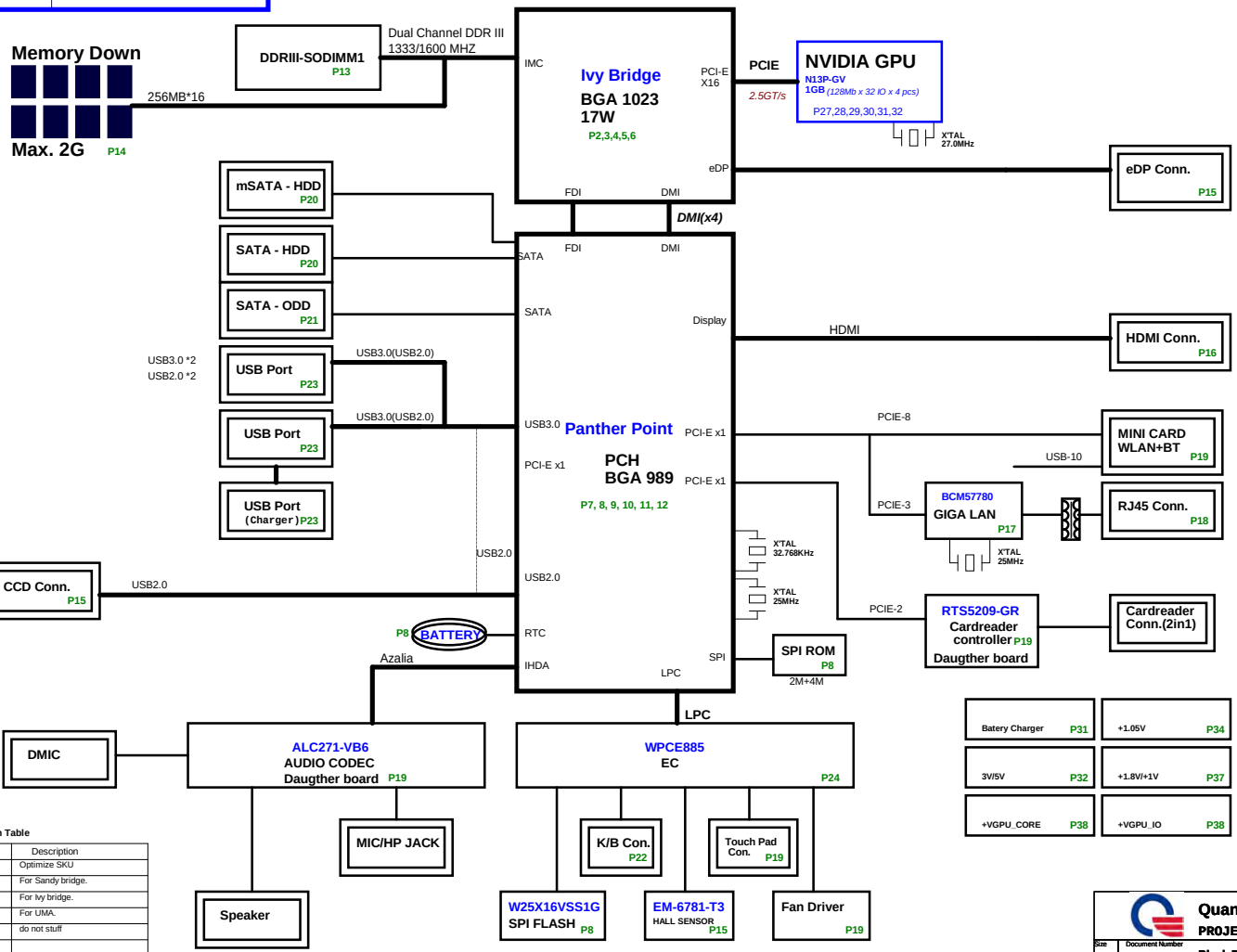
VER : 3A

BOM P/N	Description

Z09 SYSTEM BLOCK DIAGRAM



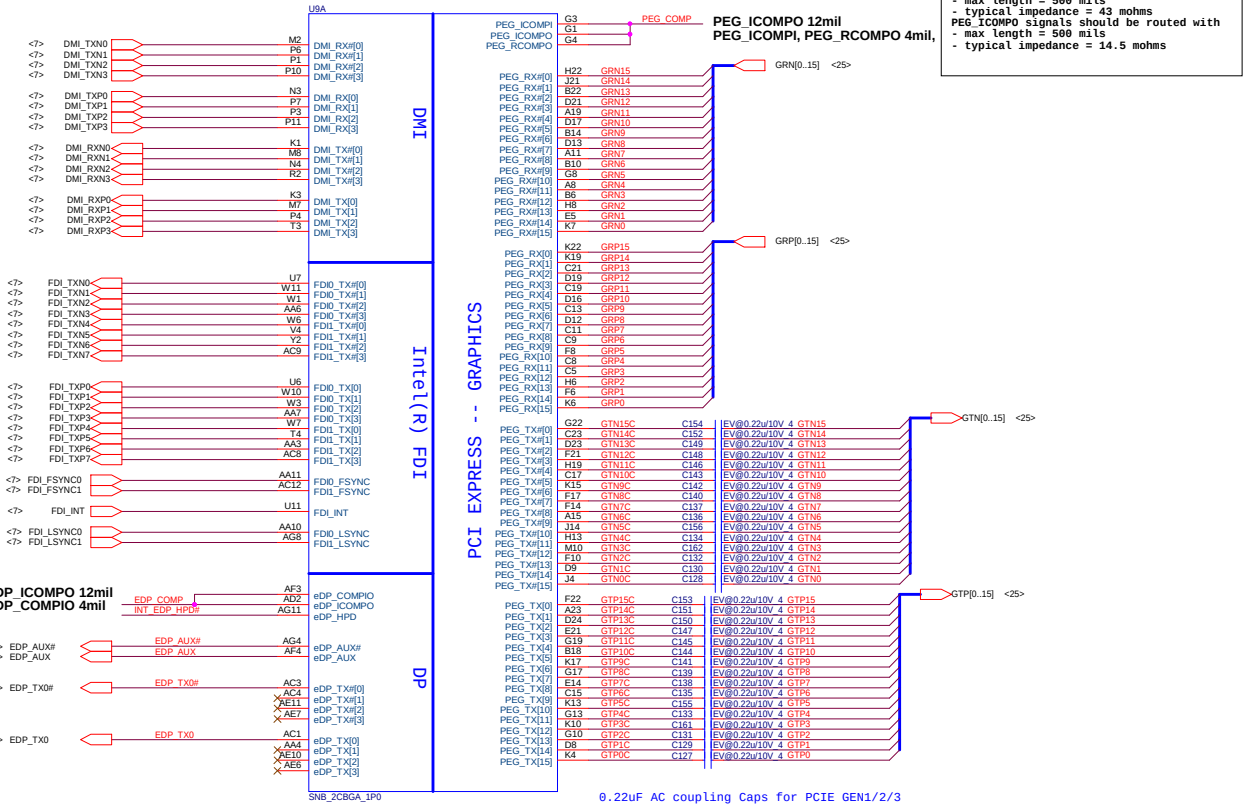
BOM Option Table

Reference	Description
EV@	Optimize SKU
SNB@	For Sandy bridge.
IVB@	For Ivy bridge.
IV@	For UMA.
*	do not stuff

Quanta Computer Inc.
PROJECT : Z09
Block Diagram
Size | Document Number | Rev 3A
Date: Monday, April 09, 2012 | Sheet 1 of 40

Ivy Bridge Processor (DMI,PEG,FDI)

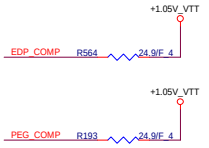
PEG_ICOMPI and RCOMPO signals
should be shorted and routed with
- max length = 500 mils
- typical impedance = 43 mohms
PEG_ICOMPO signals should be routed with
- max length = 500 mils
- typical impedance = 14.5 mohms



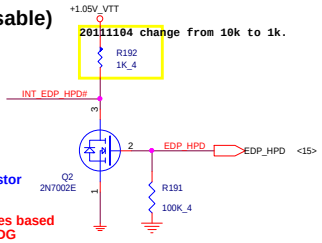
DG 1.0 :
The recommended AC cap value is changed to 220nF for compatibility with
PCIe Gen3 on future platforms.
For Gen2 only designs, it is acceptable to continue to use the 100nF capacitor.

DP_COMPIO and ICOMPO signals
should be shorted near balls and routed with
- typical impedance < 25 mohms

DP & PEG Compensation



eDP Hot-plug (Disable)

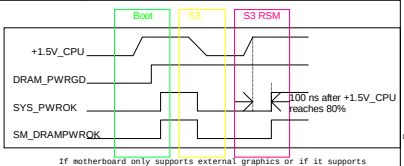


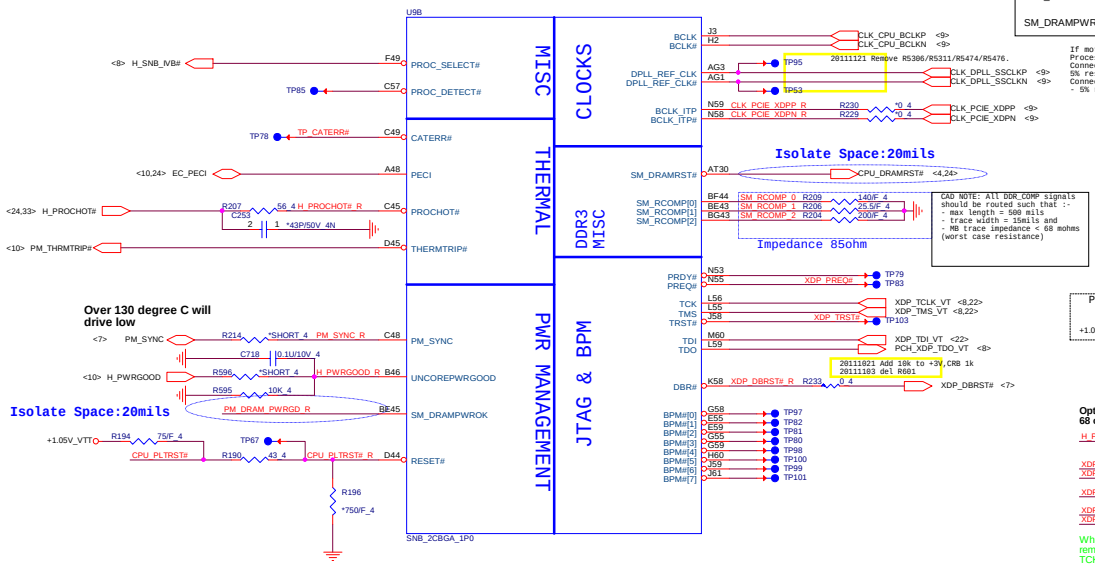
CAD Note: Place PU resistor
within 2 inches of CPU

HPD PU/PD resistor values based
on CRB and different to DG

Quanta Computer Inc.			
PROJECT : Z09			
Size	Document Number: Ivy Bridge 1/5		Rev: 3A
Date: Monday, April 09, 2012	Sheet 2 of 40		

Ivy Bridge Processor (CLK,MISC,JTAG)





If motherboard only supports external graphics or if it supports Processor Graphics but without eDP:
Connect DPLL_REF_SSCLK on Processor to GND through 1K +/- 5% resistor
Connect DPLL_REF_SSCLK# on Processor to VCCP through 1K +/ - 5% resistor

Isolate Space:20mils

Impedance 85ohm

CAD NOTE: All DDR_COMP signals should be routed such that :-
- max length = 500 mils
- trace width = 15mils and
- MB trace impedance < 68 mohms (worst case resistance)

Over 130 degree C will drive low

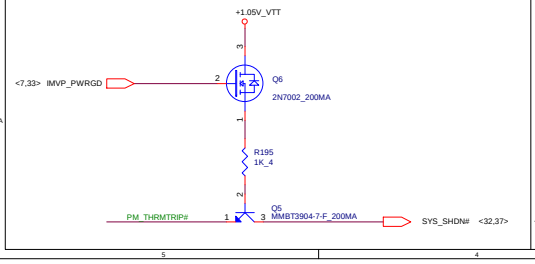
Isolate Space:20mils

Place near to XDP connector

Option for Prochot# function
68 ohm for unused, 62 ohm for used

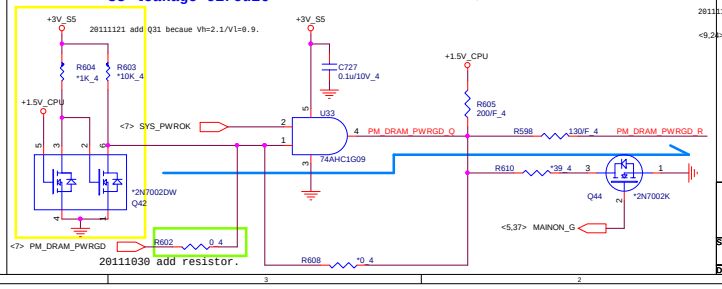
When MP, JTAG PU/PD resistor can be removed? (Yes Intel, TDI, TDO, TMS, TRST#, TCK,PREQ#, PRDY#)

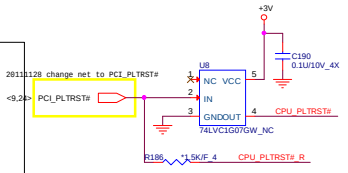
Thermal Trip <CPU>



s3 leakage circuit

If PM_DRAM_PWEGD connector,the R5180 must stuff.





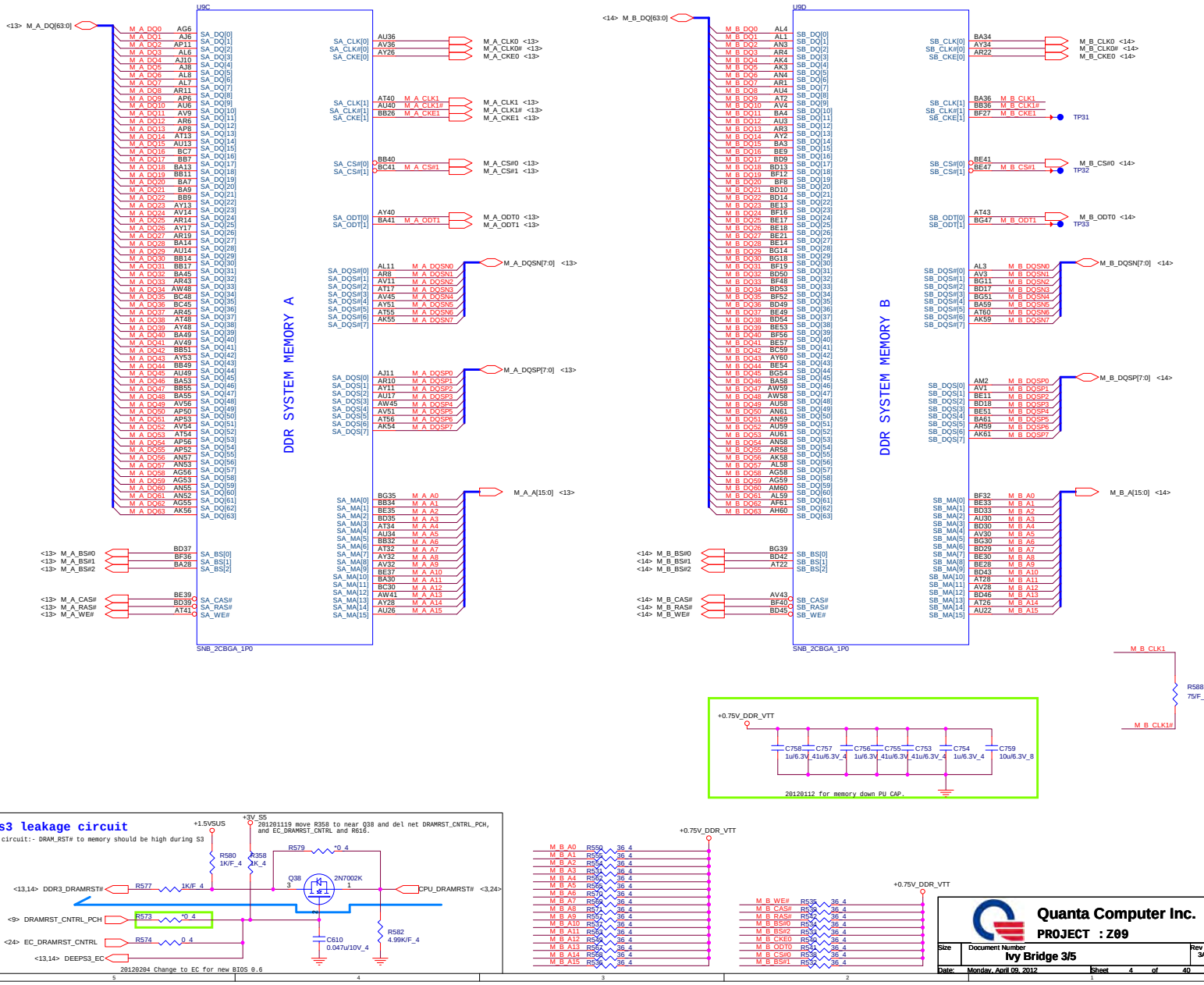
IN	OUT
L	L
H	High-Z

Quanta Computer Inc.
PROJECT : Z09

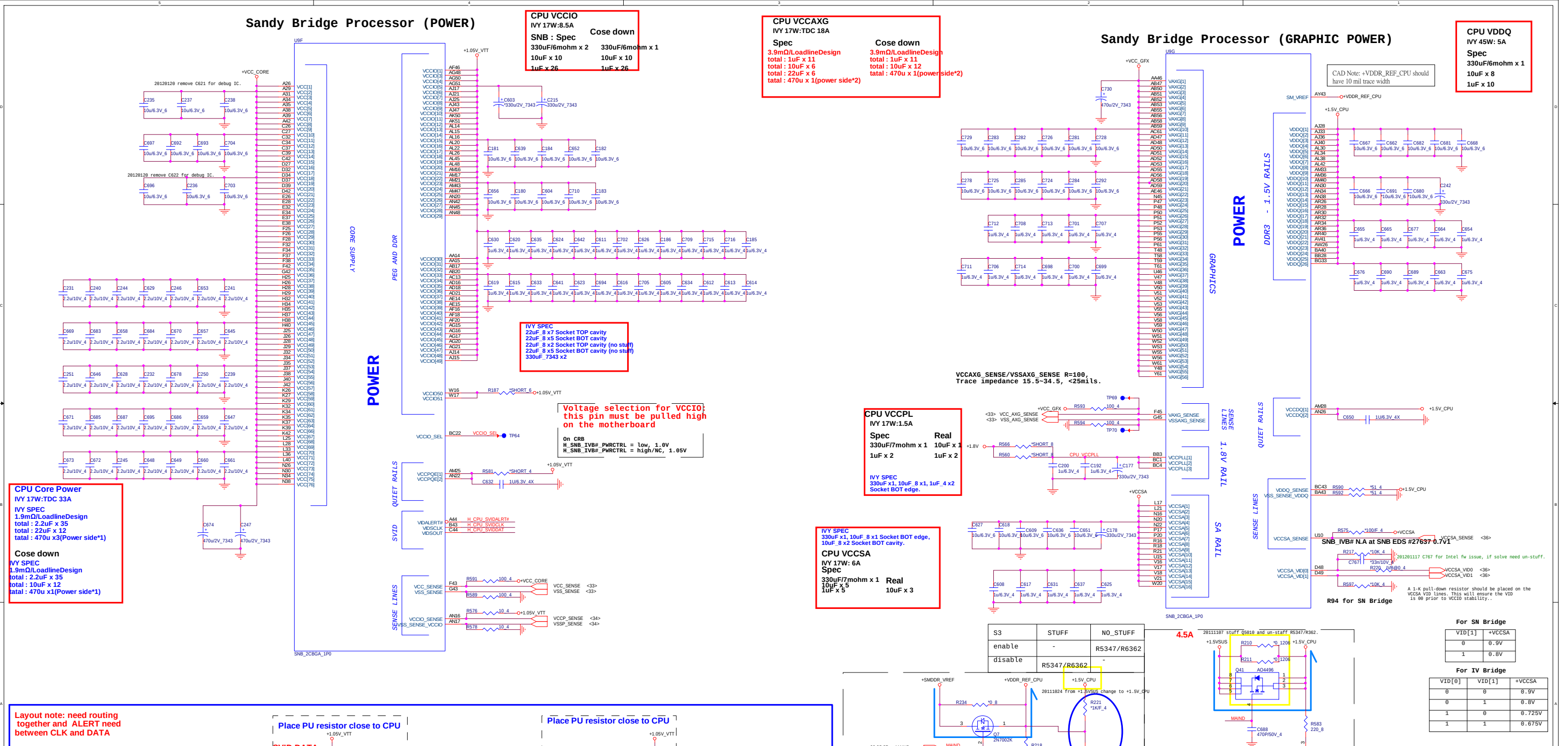
Size	Document Number	Rev
	Ivy Bridge 2/5	3A

Date: Monday, April 09, 2012 Sheet 3 of 40

Sandy Bridge Processor (DDR3)



Quanta Computer Inc.	
PROJECT : Z09	
Size	Document Number: Ivy Bridge 3/5 — Rev: 3A
Date: Monday, April 09, 2012	Sheet 4 of 40



Sandy Bridge Processor (POWER)
Sandy Bridge Processor (GRAPHIC POWER)
CPU VCCIO
IVY 17W:8.5A
SNB : Spec
Cose down
330uF/6mohm x 2
330uF/6mohm x 1
10uF x 10
10uF x 10
1uF x 26
1uF x 26
CPU VCCAXG
IVY 17W:TDC 18A
Spec
3.9mΩ/LoadlineDesign
total : 1uF x 11
total : 10uF x 6
total : 22uF x 6
tatal : 470u x 1(power side*2)
Cose down
3.9mΩ/LoadlineDesign
total : 1uF x 11
total : 10uF x 12
tatal : 470u x 1(power side*2)
CPU VDDQ
IVY 45W: 5A
Spec
330uF/6mohm x 1
10uF x 8
1uF x 10
CAD Note: +VDDR_REF_CPU should have 10 mil trace width
CORE SUPPLY
PEG AND DDR
POWER
QUIET RAILS
SVID
SENSE LINES
GRAPHICS
DDR3 - 1.5V RAILS
SENSE LINES
1.8V RAIL
SA RAIL
IVY SPEC
22uF_8 x7 Socket TOP cavity
22uF_8 x5 Socket BOT cavity
22uF_8 x2 Socket TOP cavity (no stuff)
22uF_8 x5 Socket BOT cavity (no stuff)
330uF_7343 x2
Voltage selection for VCCIO: this pin must be pulled high on the motherboard
On CRB
H_SNB_IVB#_PWRCTRL = low, 1.0V
H_SNB_IVB#_PWRCTRL = high/NC, 1.05V
CPU Core Power
IVY 17W:TDC 33A
IVY SPEC
1.9mΩ/LoadlineDesign
total : 2.2uF x 35
total : 22uF x 12
tatal : 470u x3(Power side*1)
Cose down
IVY SPEC
1.9mΩ/LoadlineDesign
total : 2.2uF x 35
total : 10uF x 12
tatal : 470u x1(Power side*1)
20120120 remove C621 for debug IC.
20120120 remove C622 for debug IC.
VCCAXG_SENSE/VSSAXG_SENSE R=100,
Trace impedance 15.5~34.5, <25mils.
CPU VCCPL
IVY 17W:1.5A
Spec
Real
330uF/7mohm x 1
10uF x 1
1uF x 2
1uF x 2
IVY SPEC
330uF x1, 10uF_8 x1, 1uF_4 x2
Socket BOT edge.
IVY SPEC
330uF x1, 10uF_8 x1 Socket BOT edge,
10uF_8 x2 Socket BOT cavity.
CPU VCCSA
IVY 17W: 6A
Spec
330uF/7mohm x 1
10uF x 5
1uF x 5
Real
10uF x 3
SNB_IVB# N.A at SNB EDS #27637 0.7v1
201201117 C767 for Intel fw issue, if solve need un-stuff.
A 1-K pull-down resistor should be placed on the VCCSA VID lines. This will ensure the VID is 00 prior to VCCIO stability..
R94 for SN Bridge
4.5A
20111107 stuff Q5010 and un-staff R5347/R362.
20111024 from +1.5VSUS change to +1.5V_CPU
change to 1K/F_4
S3 circuit: 1.5V input to IVB is gated & IVB Read Vref 0.75V is gated
Layout note: need routing together and ALERT need between CLK and DATA
SVID CLK
Place PU resistor close to CPU
SVID DATA
Place PU resistor close to CPU
SVID ALERT
SNB_2CBGA_1P0

S3	STUFF	NO_STUFF
enable	-	R5347/R6362
disable	R5347/R6362	-

For SN Bridge

VID[1]	+VCCSA
0	0.9V
1	0.8V

For IV Bridge

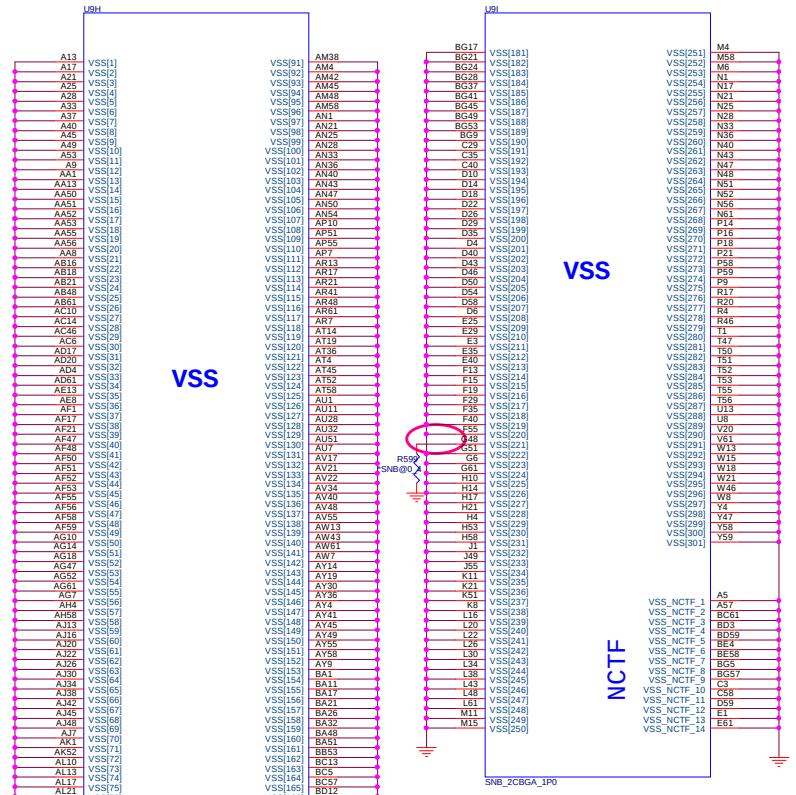
VID[0]	VID[1]	+VCCSA
0	0	0.9V
0	1	0.8V
1	0	0.725V
1	1	0.675V

Quanta Computer Inc.
PROJECT : Z09

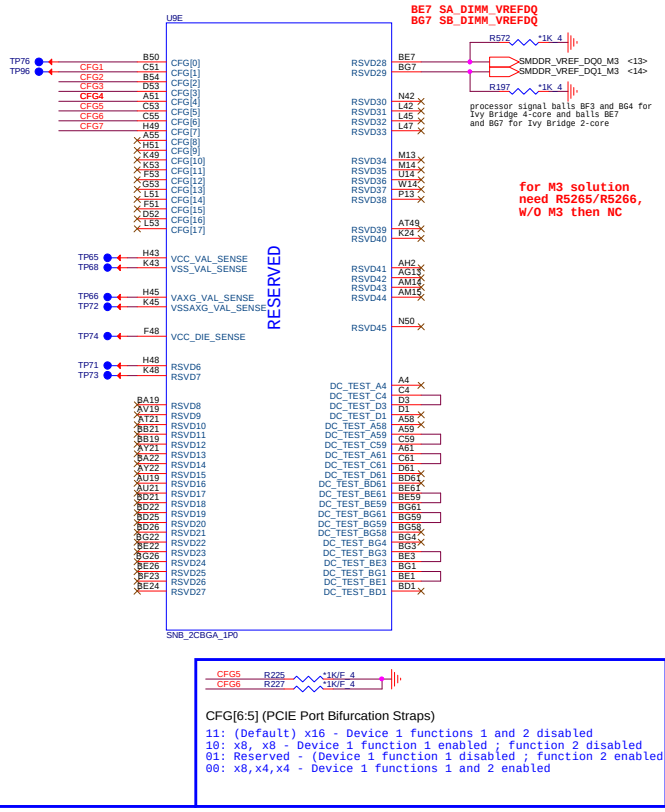
Size	Document Number	Rev
	Ivy Bridge 4/5	3A

Date: Monday, April 09, 2012 Sheet 5 of 40

Sandy Bridge Processor (GND)



Sandy Bridge Processor (RESERVED, CFG)



Processor Strapping

The CFG signals have a default value of '1' if not terminated on the board.

	1	0
CFG2 (PCI-E Static x16 Lane Reversal)	Normal Operation	**Lane Reversed**
CFG3 (PCI-E Static x4 Lane Reversal)	**Normal Operation**	Lane Reversed
CFG4 (DP Presence Strap)	Disable; No physical DP attached to eDP	**Enable; An ext DP device is connected to eDP**
CFG7 (PEG Defer Training)	**PEG train immediately following xxRESETB de assertion**	PEG wait for BIOS training

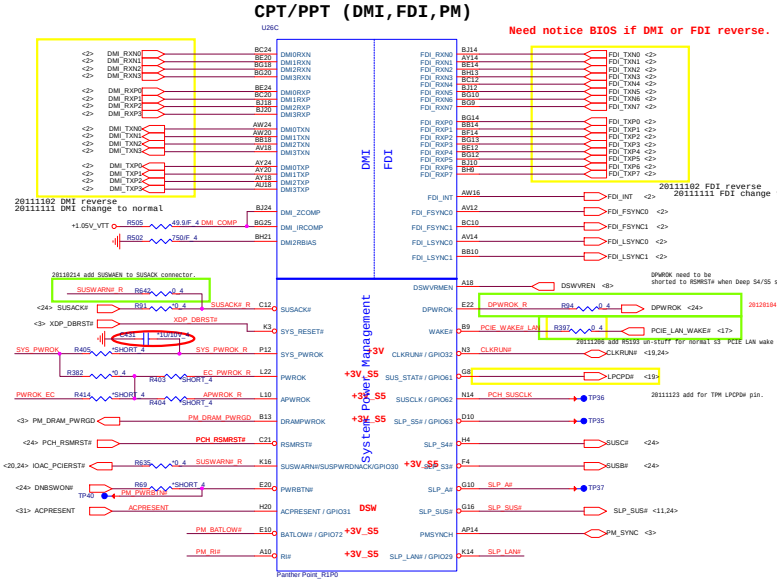
CFG2 R226 1K/F_4
20111102 stuff for revers
CFG3 R224 *1K/F_4
CFG4 R223 1K/F_4
CFG7 R222 *1K/F_4

Quanta Computer Inc.
PROJECT : Z09

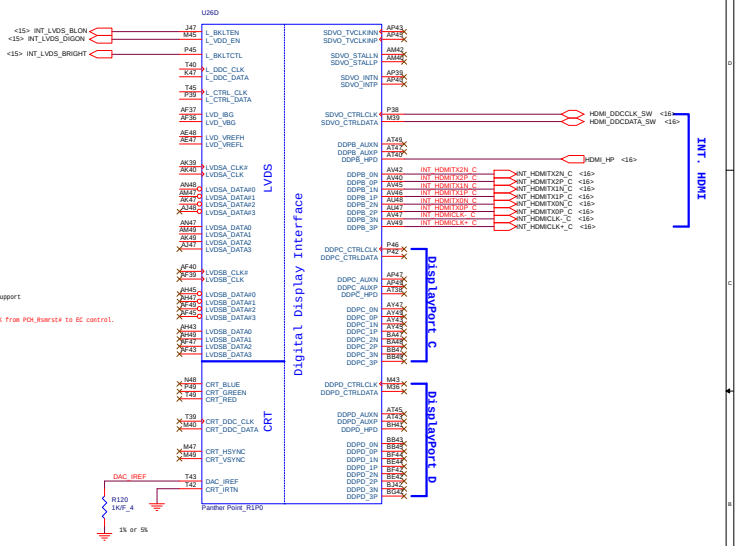
Size	Document Number	Rev
	Ivy Bridge 5/5	3A

Date: Monday, April 09, 2012 Sheet 6 of 40

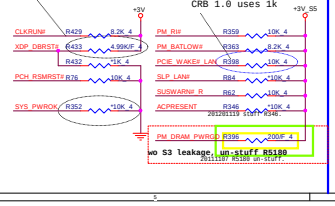
CPT/PPT (DMI,FDI,PM)



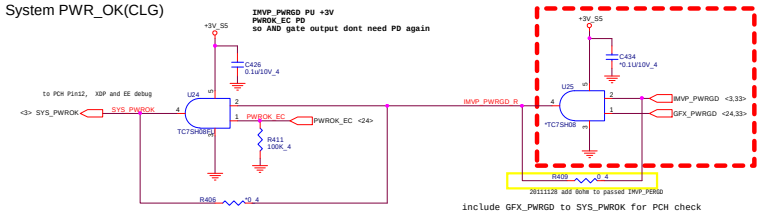
CPT/PPT (LVDS,DDI)



PCH Pull-high/low(CLG)



System PWR_OK(CLG)

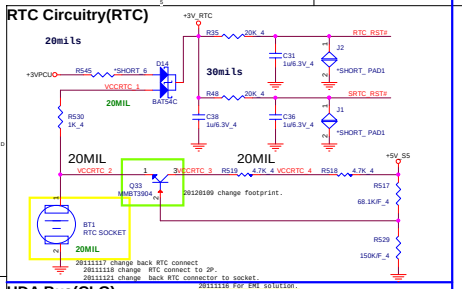


Quanta Computer Inc.
PROJECT : Z09

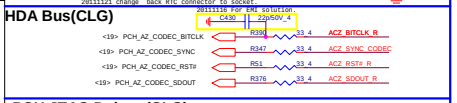
Size	Document Number	Rev
	Panther Point 1/6	3A

Date: Monday, April 09, 2012 Sheet 7 of 40

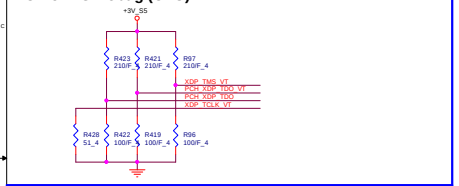
RTC Circuitry(RTC)



HDA Bus(CLG)



PCH JTAG Debug (CLG)

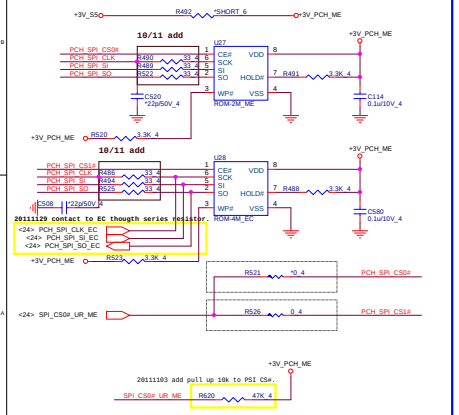


PCH Dual SPI (CLG)

(Default for WIN8)

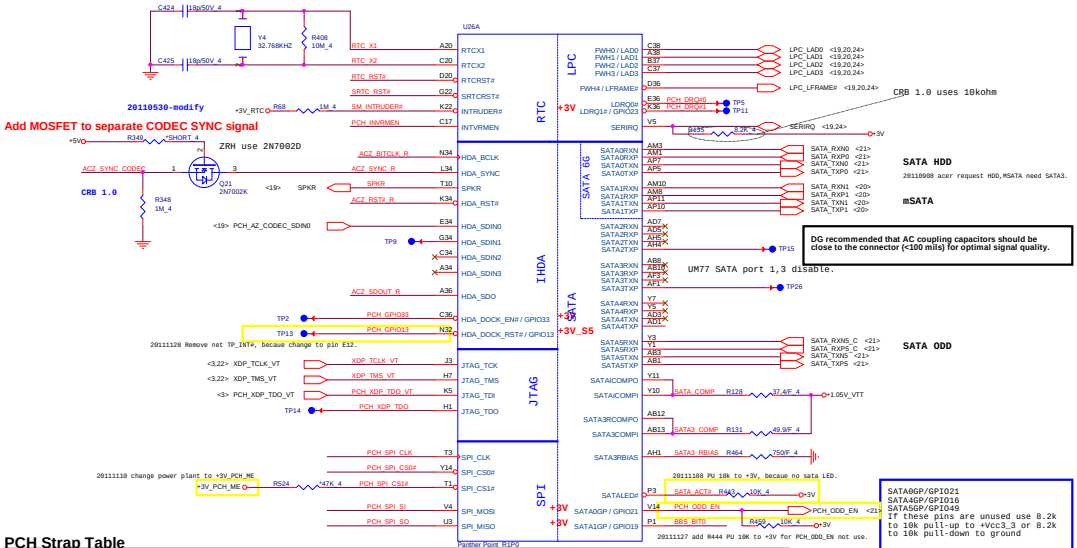
W25Q32BVSSIG / AKE391P0N00------>4MB

W25Q16BVSSIG / AKE38FP0N01----->2MB



PCH2(CLG)

CPT/PPT (HDA,JTAG,SATA)



SATA0GP/GPIO21
SATA4GP/GPIO16
SATA5GP/GPIO49
If these pins are unused use 8.2k to 10k pull-up to +Vcc3_3 or 8.2k to 10k pull-down to ground

PCH Strap Table

Pin Name	Strap description	Sampled	Configuration
SPKR	No reboot mode setting	PWROK	0 = Default (weak pull-down 20K) 1 = Setting to No-Reboot mode
GNT3# / GPIO55	Top-Block Swap Override	PWROK	0 = "top-block swap" mode 1 = Default (weak pull-up 20K)
INTVRMEN	Integrated 1.05V VRM enable	ALWAYS	Should be always pull-up
GNT1# / GPIO51	Boot BIOS Selection 1 [bit-1]	PWROK	GNT1# / GNT0# / Boot Location: 1 / 1 / SPI *; 0 / 0 / LPC
GPIO19	Boot BIOS Selection 0 [bit-0]	PWROK	
HDA_SDO	Flash Descriptor Security	RSMRST	0 = effect (default)(weak pull-down 20K) 1 = overridden
DF_TVS	DMI/FDI Termination voltage	PWROK	0 = Set to Vss (weak pull-down 20K) 1 = Set to Vcc
GPIO28	On-die PLL Voltage Regulator	RSMRST#	0 = Disable 1 = Enable (weak pull-up 20K)
HDA_SYNC	On-Die PLL VR Voltage Select	RSMRST	0 = Support by 1.8V (weak pull-down) 1 = Support by 1.5V
GPIO15	Intel ME Crypto Transport Layer Security (TLS) cipher suite internal PD	RSMRST	0 = Disable (Default) 1 = Enable
DSWVREN	DEEP S4/S5 well On Die DSW VR Enable	DSW	High = Enable (Default) Low = Disable
NV_ALE	Intel Anti-Theft HDD protection Only for Interposer	PWROK	0 = Disable (Internal pull-down 20kohm)

Used as GPIO only. at chklist 1.2

Default weak pull-up on GNT0/1#
[Need external pull-down for LPC BIOS]

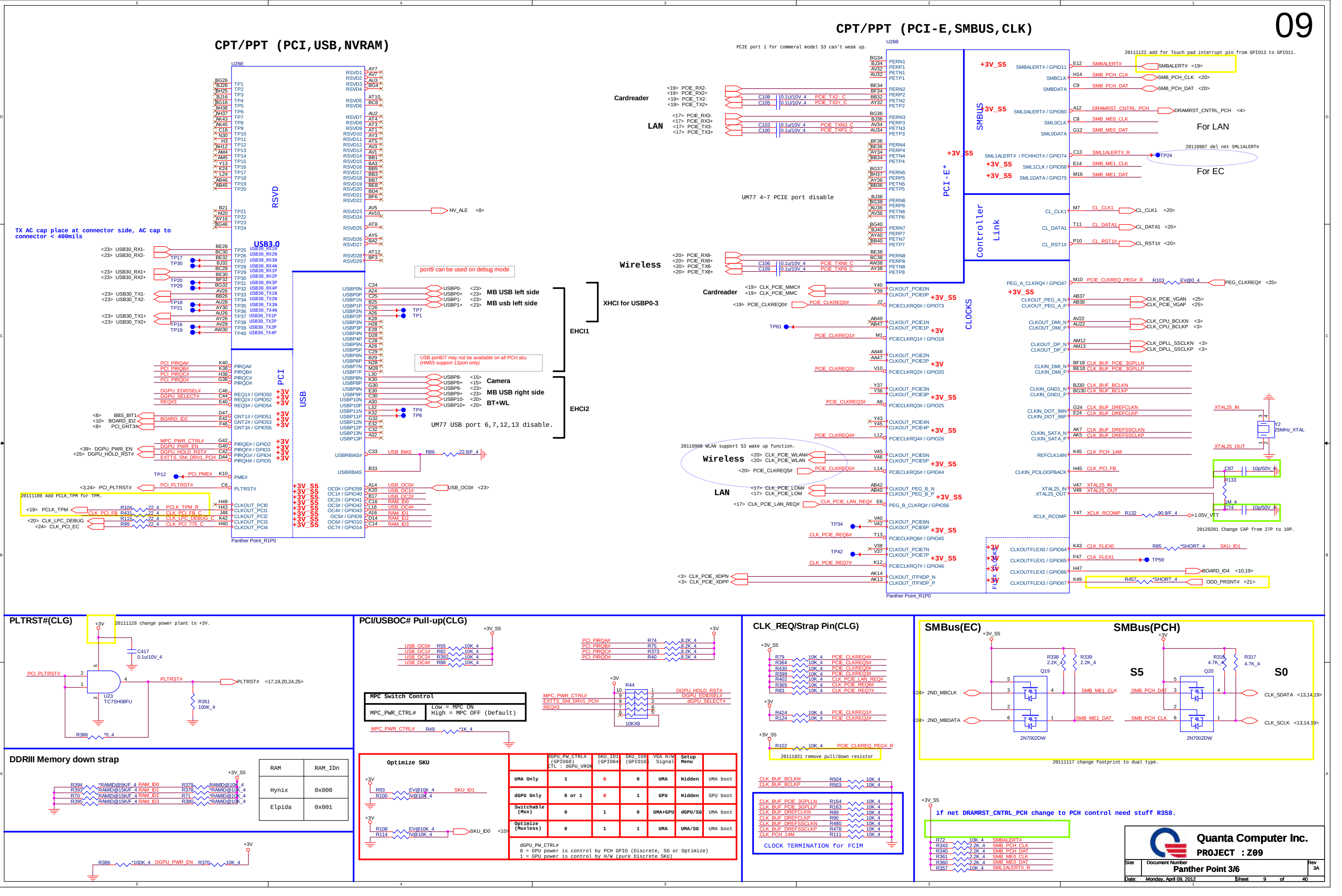
ME_WR default EC setting folating

for future CPU, Sandy Bridge NC
DF_TVS needs to be pulled up to VccDFTERM power rail through 2.2 kOhm ±5% - R8361 change to 0 or not??

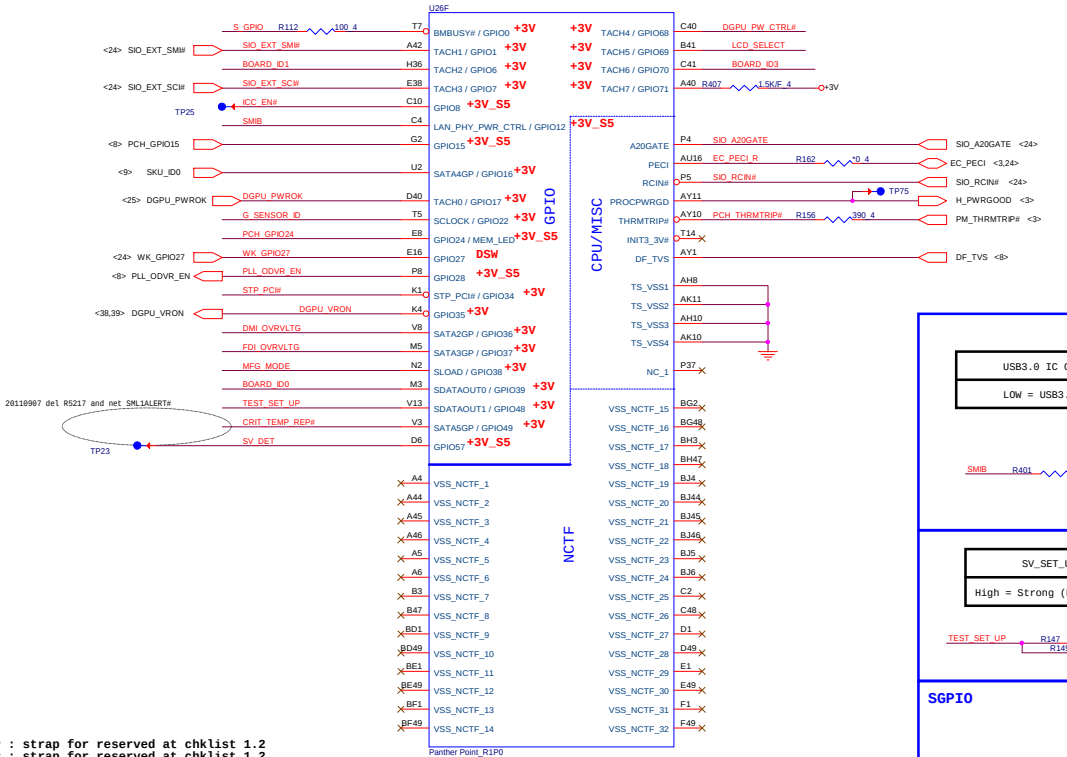
Needs to be pulled High for Huron River platform. chklist 1.2

Quanta Computer Inc.
PROJECT :Z09

Size	Document Number	Rev
	Panther Point 2/6	3A
Date: Monday, April 09, 2012	Sheet 8 of 49	

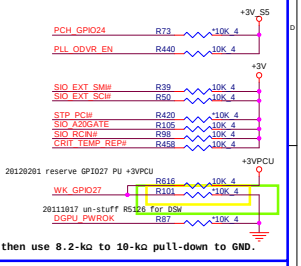

09
CPT/PPT (PCI,USB,NVRAM)
CPT/PPT (PCI-E,SMBUS,CLK)
PCIE port 1 for commeral model S3 can't weak up.
20111122 add for Touch pad interrupt pin from GPIO13 to GPIO11.
TX AC cap place at connector side, AC cap to connector < 400mils
USB3.0
RSVD
PCI
USB
port9 can be used on debug mode
MB USB left side
MB usb left side
XHCI for USBP0-3
EHCI1
USB port6/7 may not be available on all PCH sku (HM55 support 12port only)
Camera
MB USB right side
BT+WL
EHCI2
UM77 USB port 6,7,12,13 disable.
20111108 Add PCLK_TPM for TPM.
Cardreader
LAN
Wireless
UM77 4~7 PCIE port disable
PCI-E*
SMBUS
Controller Link
CLOCKS
FLEX CLOCKS
For LAN
For EC
20110907 del net SML1ALERT#
20110908 WLAN support S3 wake up function.
20120201 Change CAP from 27P to 10P.
Panther Point_R1P0
PLTRST#(CLG)
20111128 change power plant to +3V.
PCI/USBOC# Pull-up(CLG)
MPC Switch Control
MPC_PWR_CTRL#
Low = MPC ON
High = MPC OFF (Default)
CLK_REQ/Strap Pin(CLG)
20111021 remove pull/down resistor
CLOCK TERMINATION for FCIM
SMBus(EC)
SMBus(PCH)
S5
S0
20111117 change footprint to dual type.
if net DRAMRST_CNTRL_PCH change to PCH control need stuff R358.
DDRIII Memory down strap
RAM | RAM_IDn
Hynix | 0x000
Elpida | 0x001
Optimize SKU
DGPU_PWR_CTRL# (GPIO68) CTL : dGPU_VRON | SKU_ID1 (GPIO64) | SKU_ID0 (GPIO16) | VGA H/W Signal | Setup Menu
UMA Only | 1 | 0 | 0 | UMA | Hidden | UMA boot
dGPU Only | 0 or 1 | 0 | 1 | GPU | Hidden | GPU boot
Switchable (Mux) | 0 | 1 | 0 | UMA+GPU | dGPU/SG | UMA boot
Optimize (Muxless) | 0 | 1 | 1 | UMA/SG | UMA/SG | UMA boot
dGPU_PW_CTRL#
0 = GPU power is control by PCH GPIO (Discrete, SG or Optimize)
1 = GPU power is control by H/W (pure Discrete SKU)
Quanta Computer Inc.
PROJECT : Z09
Panther Point 3/6
Monday, April 09, 2012
Sheet 9 of 40
Rev 3A

CPT/PPT (GPIO,VSS_NCTF,RSVD)



SATA2GP : strap for reserved at chklist 1.2
SATA3GP : strap for reserved at chklist 1.2
NOTE: The internal pull-down is disabled after PLTRST# deasserts.
NOTE: This signal should not be pulled high when strap is sampled.

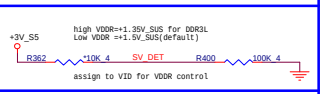
GPIO Pull-up/Pull-down(CLG)



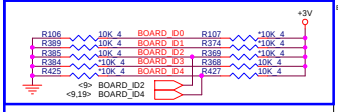
GPIO27 : If not used then use 8.2-kΩ to 10-kΩ pull-down to GND.

USB3.0 IC CTL
LOW = USB3.0 IC

DMI TERMINATION VOLTAGE OVERRIDE	Low = Tx, Rx terminated to same voltage (DC Coupling Mode) (DEFAULT)

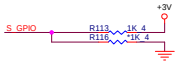


SV_SET_UP
High = Strong (Default)

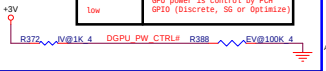


Board_ID4 Hight=Symatic, LOW=ELAN.

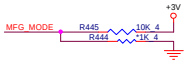
SGPIO



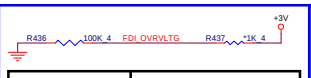
high	GPU power is control by H/W (pure Discrete SKU)
low	GPU power is control by PCH GPIO (Discrete, SG or Optimize)



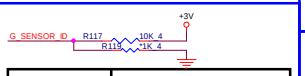
MFG-TEST



LVDS = Pull HIGH eDP = Pull LOW



FDI TERMINATION VOLTAGE OVERRIDE	LOW - Tx, Rx terminated to same voltage



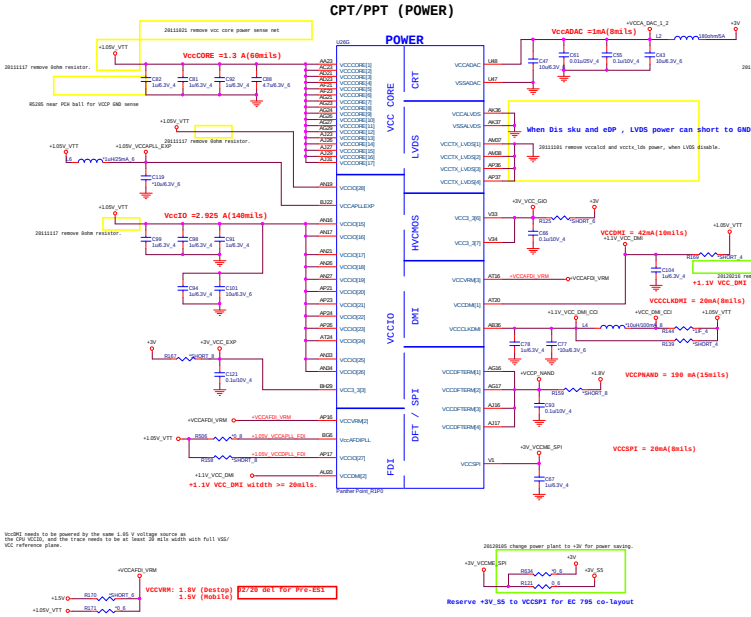
G_SENSOR_ID	High = Disable (Default) Low = Enable

Quanta Computer Inc.

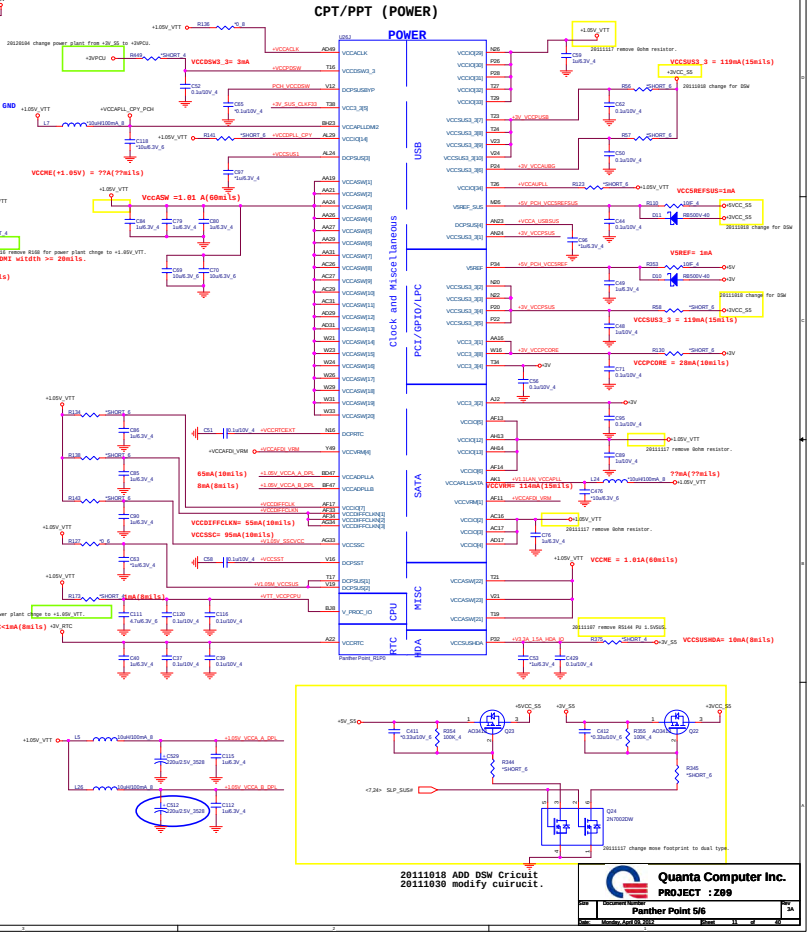
PROJECT : Z09

Size	Document Number	Rev
	Panther Point 4/6	3A
Date: Monday, April 09, 2012	Sheet 10 of 40	

CPT/PPT (POWER)



CPT/PPT (POWER)



20111021 remove vcc core power sense net

20111117 remove 0ohm resistor.

20111117 remove 0ohm resistor.

20111117 remove 0ohm resistor.

20111101 remove vccadcl and vcctx_ldo power, when LVDS disable.

20120104 change power plant from +3V_S5 to +3VPCU.

20120216 remove R168 for power plant chnge to +1.05V_VTT.

20120105 change power plant to +3V for power saving.

20120216 remove R172 for power plant chnge to +1.05V_VTT.

20111030 change for DSW

20111030 change for DSW

20111030 change for DSW

20111117 remove 0ohm resistor.

20111117 remove 0ohm resistor.

20111117 remove 0ohm resistor.

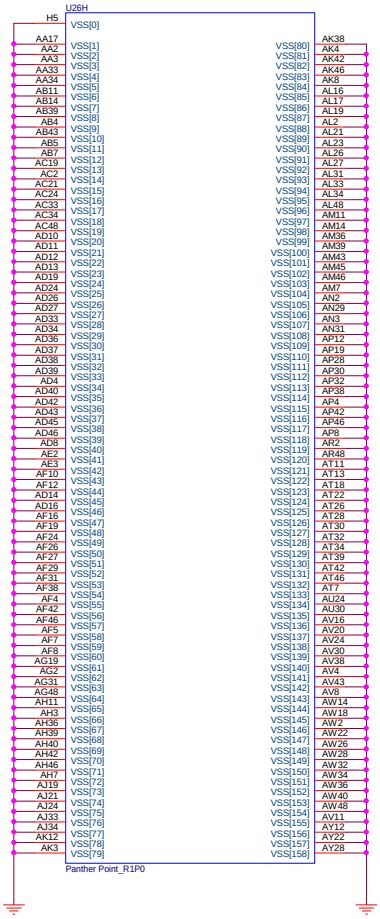
20111107 remove RS144 PU 1.5VSUS

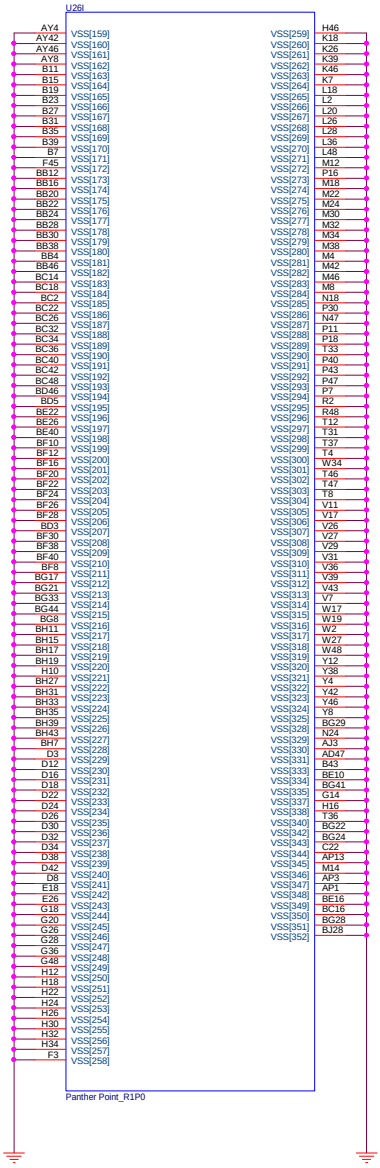
20111117 change move footprint to dual type.

20111018 ADD DSW Cricuit
20111030 modify cuirucit.

Quanta Computer Inc.
PROJECT :Z09
Panther Point 5/6
Rev: 3A
Date: Monday, April 09, 2012 Sheet 11 of 48

IBEX PEAK-M (GND)





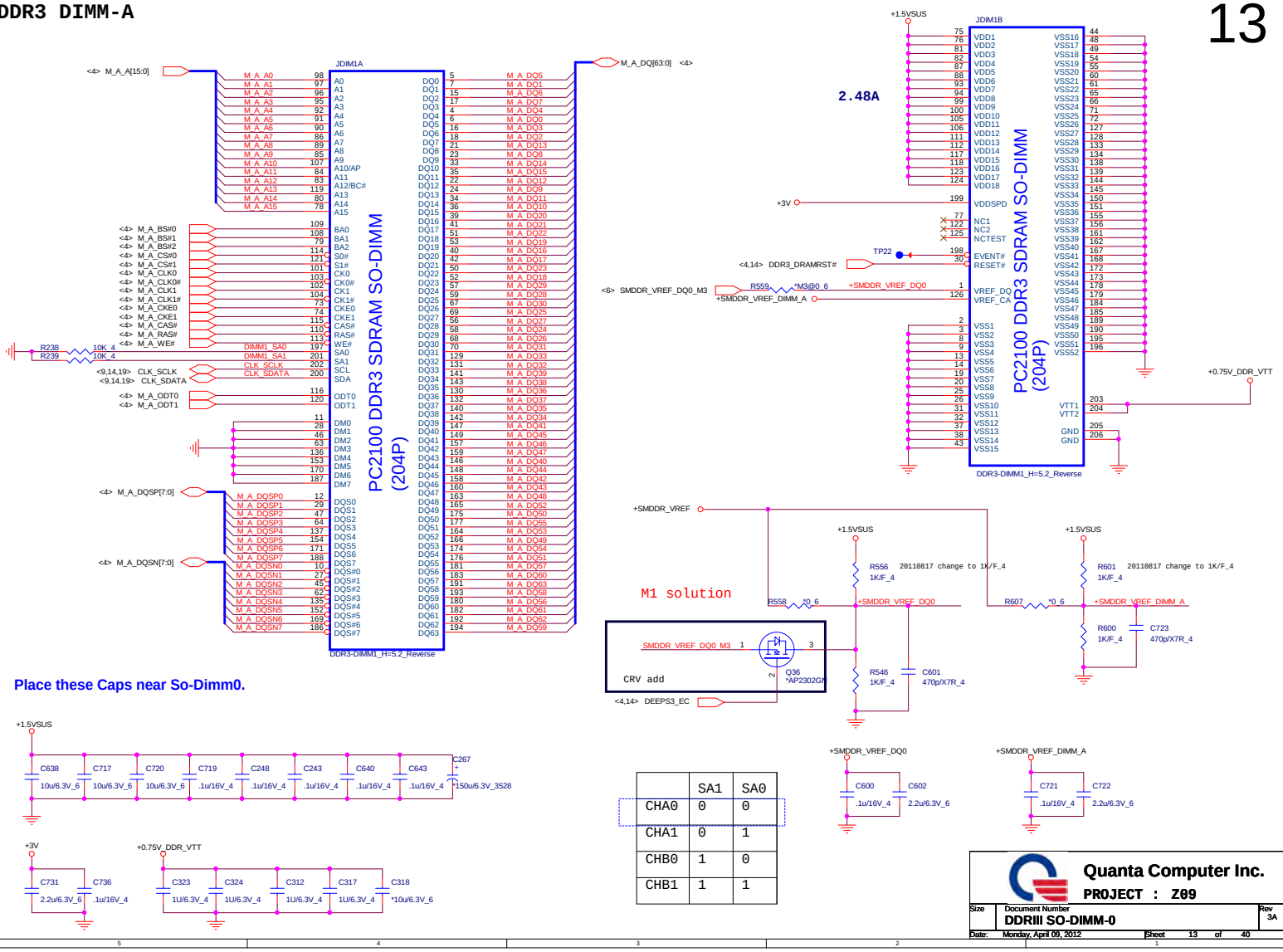
Quanta Computer Inc.

PROJECT : Z09

Size	Document Number	Rev
	Panther Point 6/6	3A

Date: Monday, April 09, 2012 Sheet 12 of 40

DDR3 DIMM-A



Place these Caps near So-Dimm0.

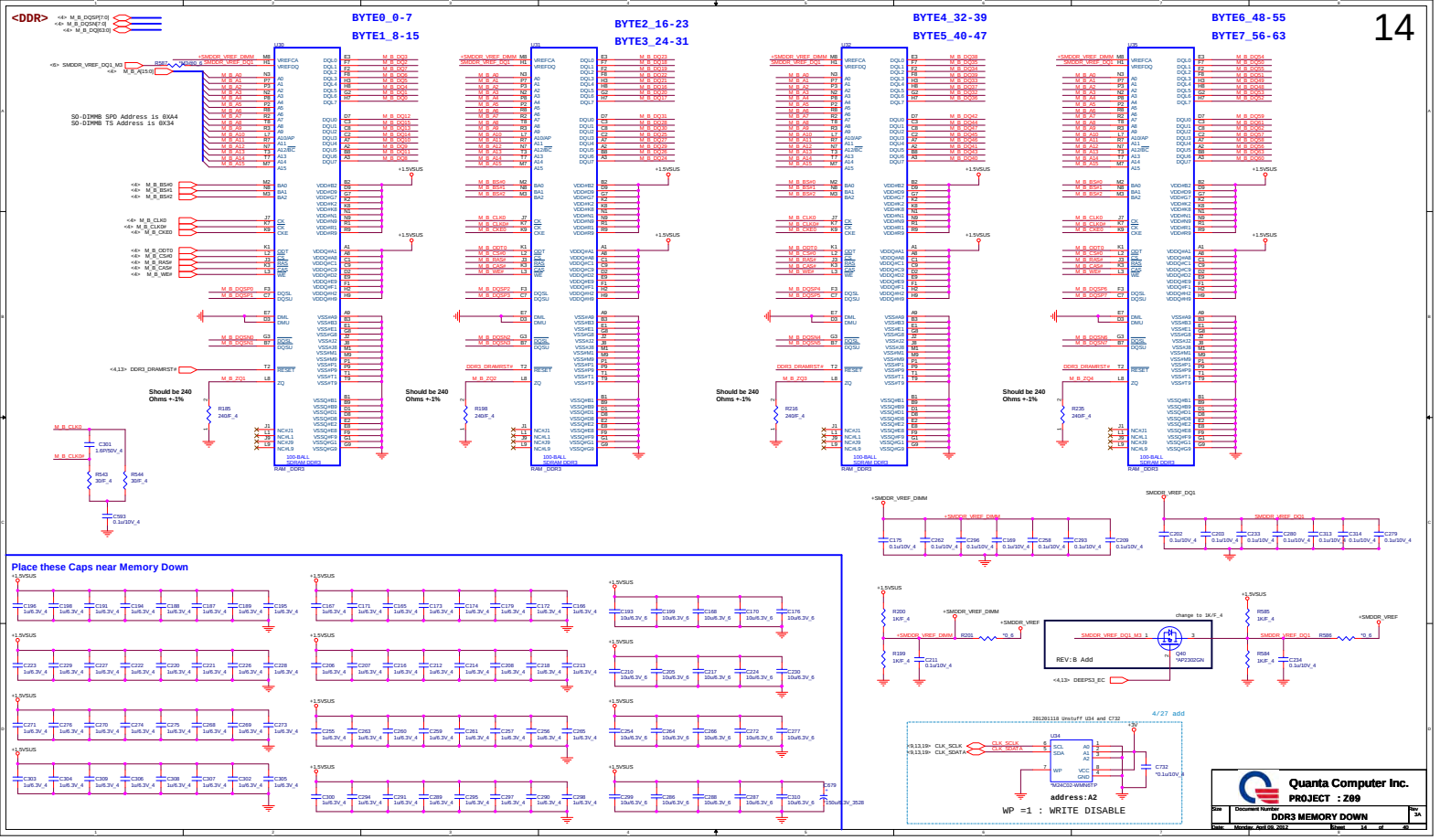
	SA1	SA0
CHA0	0	0
CHA1	0	1
CHB0	1	0
CHB1	1	1

Quanta Computer Inc.

PROJECT : Z09

Size	Document Number	Rev
	DDRIII SO-DIMM-0	3A

Date: Monday, April 09, 2012 Sheet 13 of 40

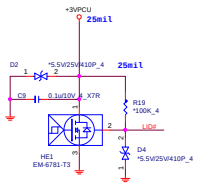


Quanta Computer Inc.
PROJECT : Z09

Size	Document Number	Rev
	DDR3 MEMORY DOWN	3A

Date: Monday, April 09, 2012 Sheet 14 of 40

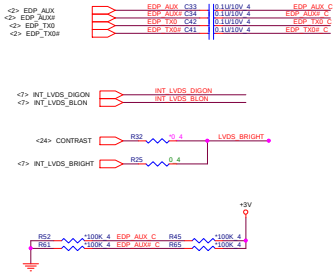
Lid Switch (Hall sensor)



PT3661-BB : AL003661003

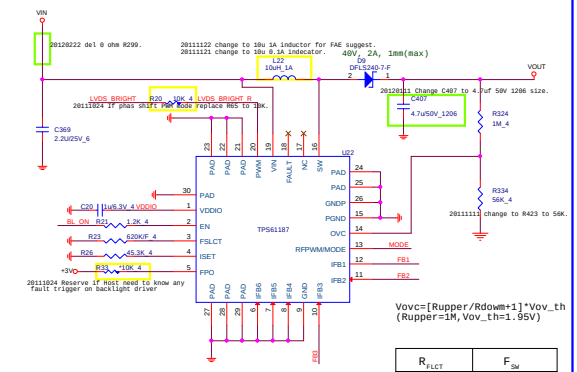
eDP

7/28 modify



LED Driver-IC

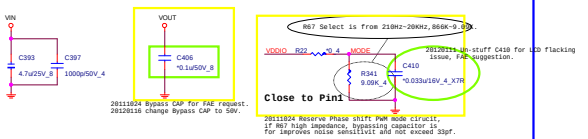
Penal SPEC:
Iout:78~79.5mA
Vout:32~34V



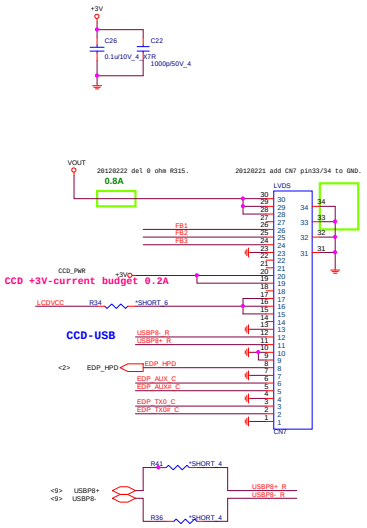
Vovc=[Rupper/Rdownm+1]*Vov_th
(Rupper=1M,Vov_th=1.95V)

R_{FLCT}	F_{SW}
833K	600KHz
625K	800KHz
499K	1MHz

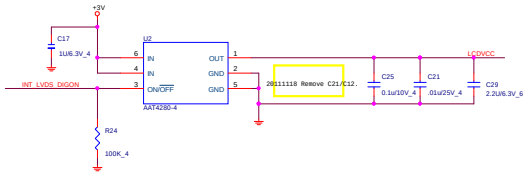
20111013 Create LED D-IC



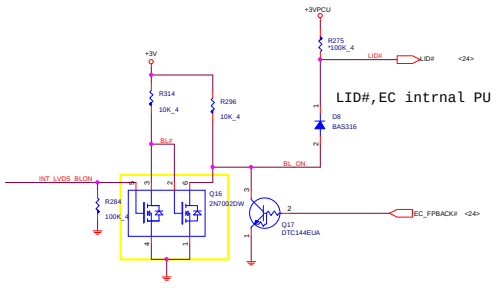
LCD CONNECTOR



LCD Power



Backlight Control



20111117 change mose footprint to dual type.

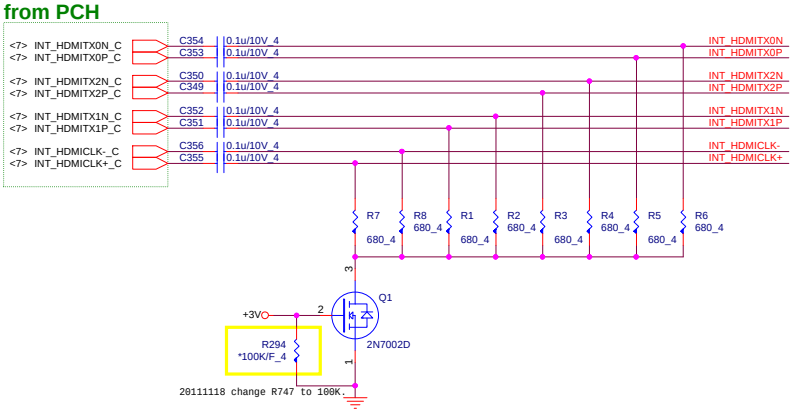
Quanta Computer Inc.
PROJECT : Z09

Size	Document Number	Rev
	LVDS/CAMERA/LID	3A

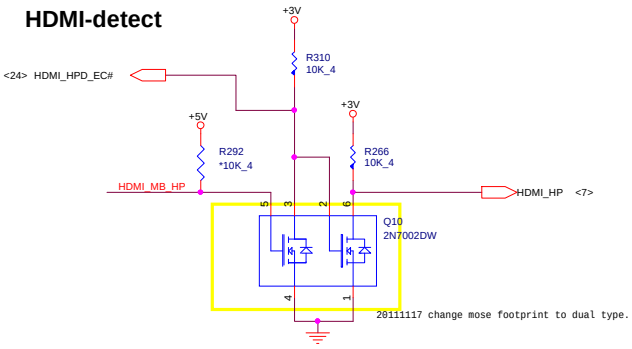
Date: Monday, April 09, 2012 Sheet 15 of 40

HDMI

from PCH

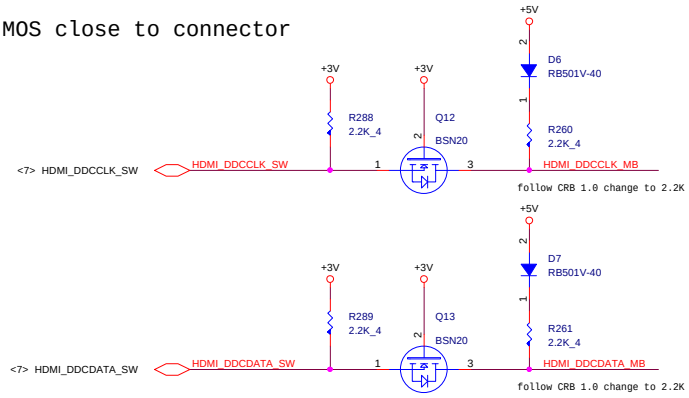


HDMI-detect

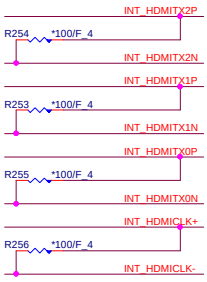


I2C

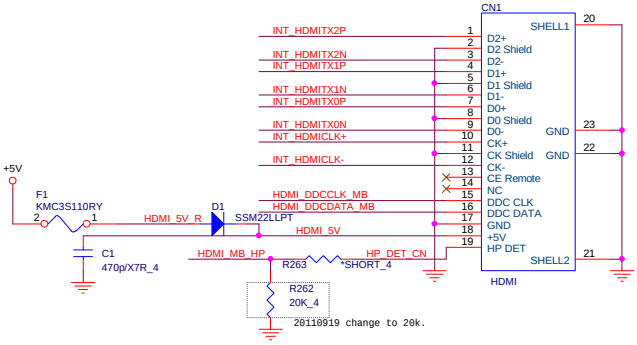
MOS close to connector



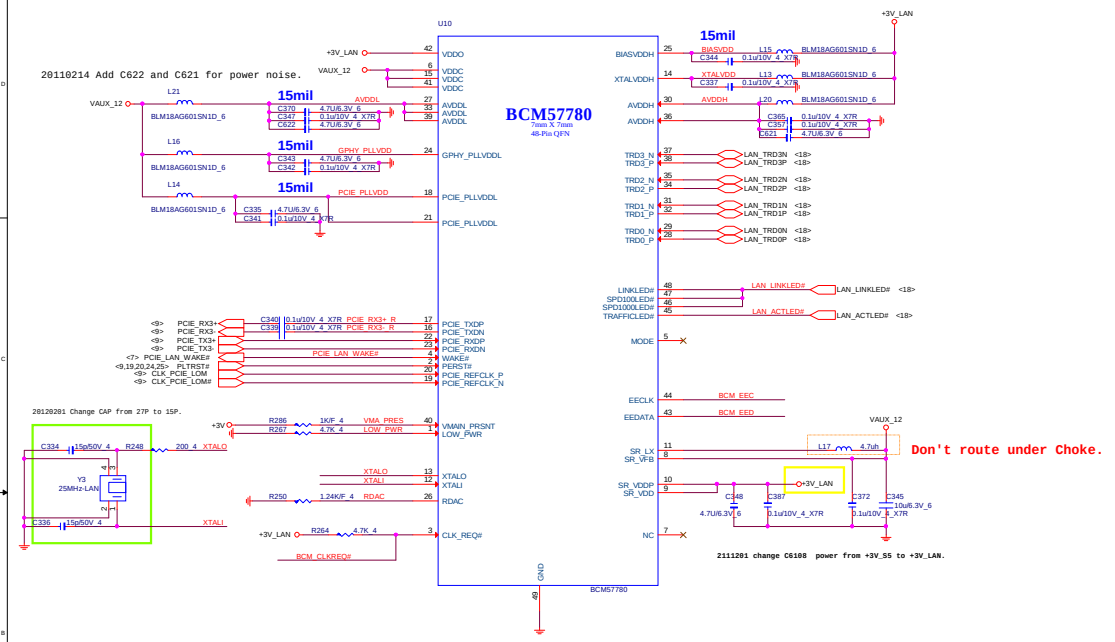
EMI



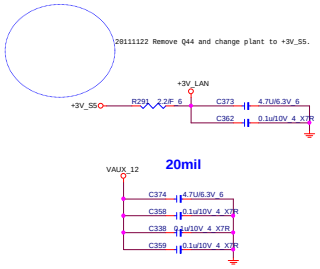
HDMI connector



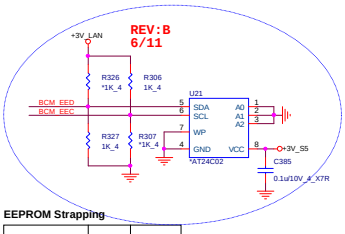
Quanta Computer Inc.		
PROJECT : Z09		
Size	Document Number	Rev
	HDMI (PS8101)	3A
Date: Monday, April 09, 2012	Sheet 16 of 40	



LAN POWER

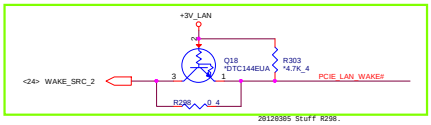


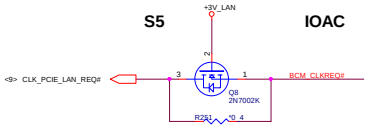
EEPROM



EEPROM Strapping

EEPROM Type	EECLK	EEDATA
24LC02	1	1
Internal	1	0

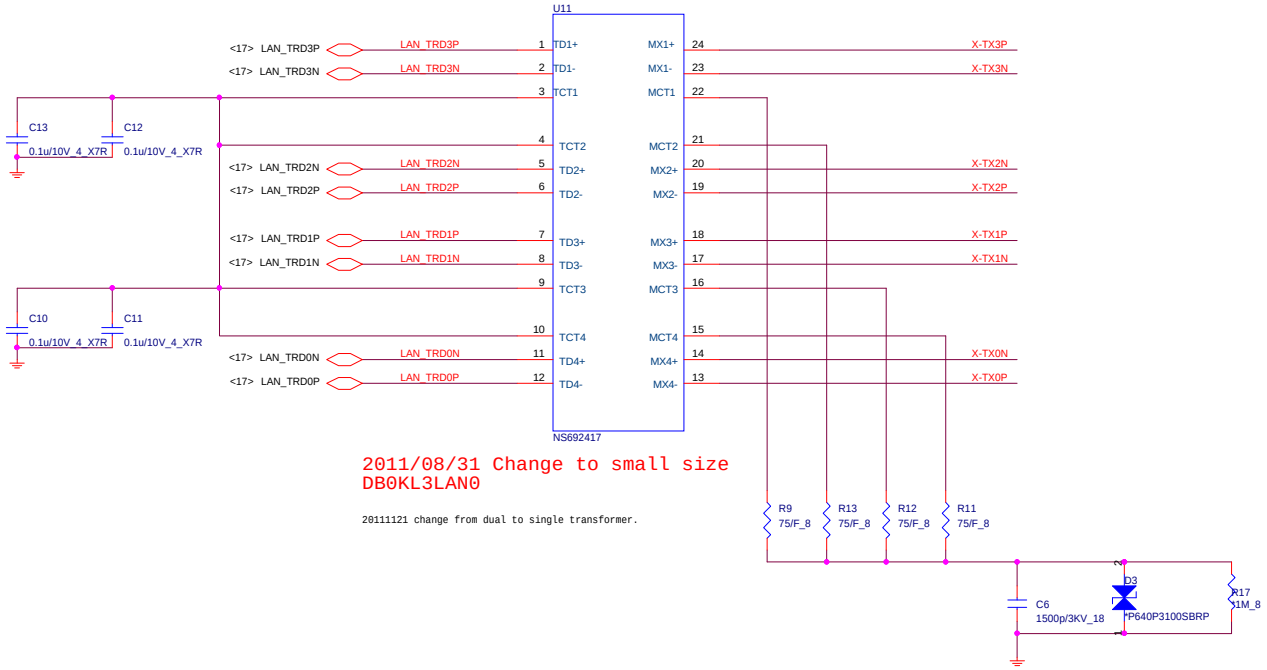




Quanta Computer Inc.
PROJECT : Z09

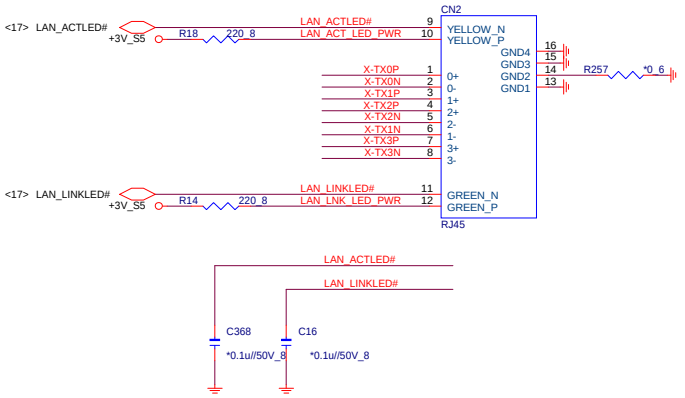
Size	Document Number	Rev
	GLAN BCM57780	3A
Date: Monday, April 09, 2012	Sheet 17 of 40	

TRANSFORMER

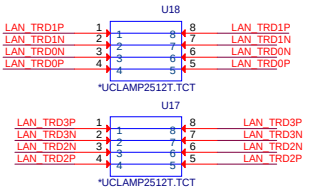


2011/08/31 Change to small size
DB0KL3LAN0

20111121 change from dual to single transformer.

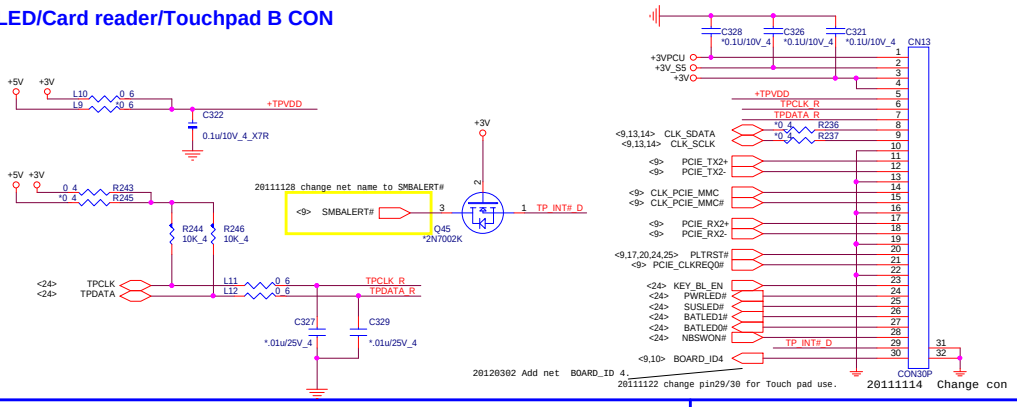


For EMI

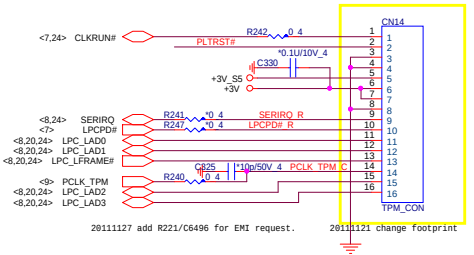


Quanta Computer Inc.		
PROJECT : Z09		
Size	Document Number	Rev
	LAN Transformer and RJ45	3A
Date: Monday, April 09, 2012	Sheet 18 of 40	

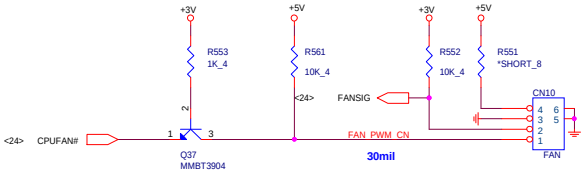
LED/Card reader/Touchpad B CON



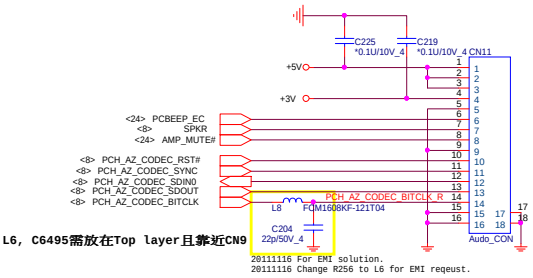
TPM



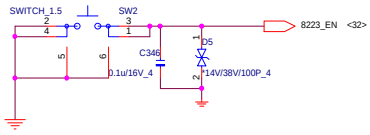
CPU FAN



Audio Connector



3/5VPCU reset switch



Quanta Computer Inc.

PROJECT : Z09

Size	Document Number	Rev
	mSATA/CR/LED	3A
Date: Monday, April 09, 2012	Sheet 19 of 40	

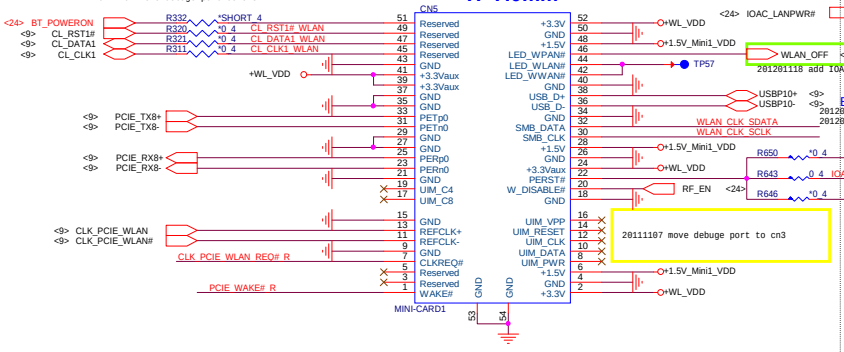
MINI-CARD WLAN(MPC)

+3.3V: 1000mA
+3.3Vaux:330mA
+1.5V:500mA

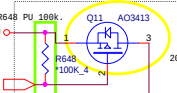
20111207 change Pin51 net name to BT_POWERON
20111107 move debuge port to cn3

Check LED signal. (active high or low)

H=7.0mm



20120217 reserve R648 PU 100k.



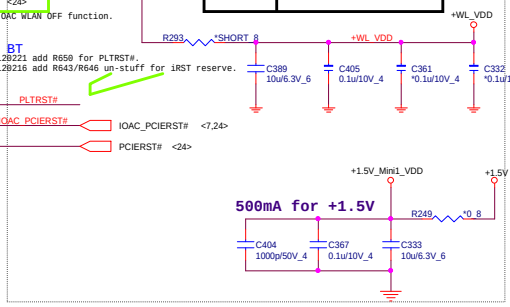
20111122 change to Pmose

high	Mini card +3V power enable
low	Mini card +3V power disable

<24> IOAC_LANPWR#

20120118 add IOAC WLAN OFF function.

20120221 add R650 for PLTRST#.
20120216 add R643/R646 un-stuff for iRST reserve.



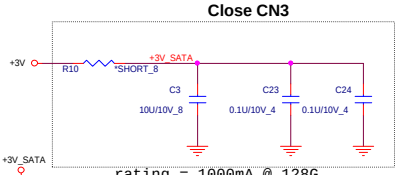
20111107 move debuge port to cn3

2011017 : stuff q21 to enable wake function on WLAN for IOAC
check IOAC power rail can reduce Q21

Close CN13

mSATA

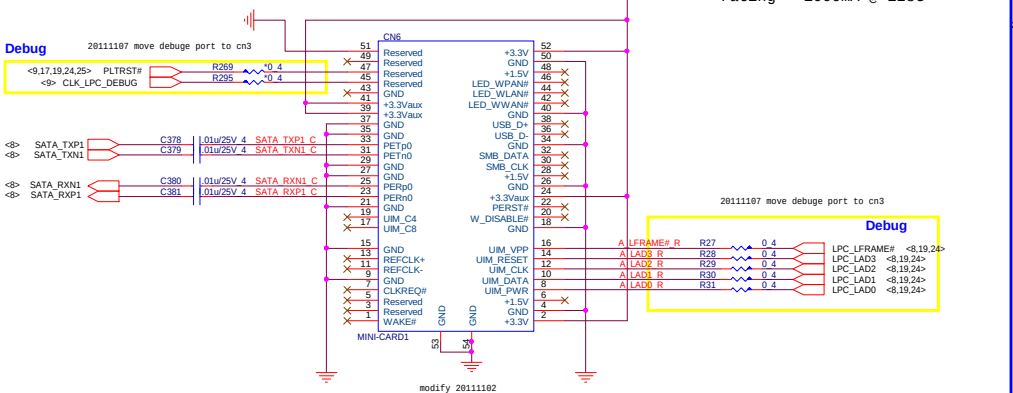
Close CN3



rating = 1000mA @ 128G

Debug

20111107 move debuge port to cn3



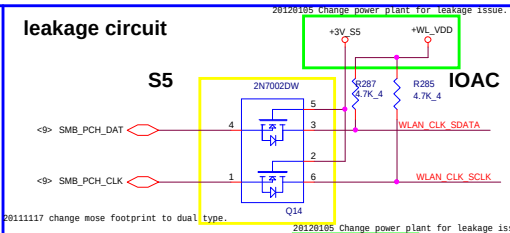
20111107 move debuge port to cn3

Debug

modify 20111102

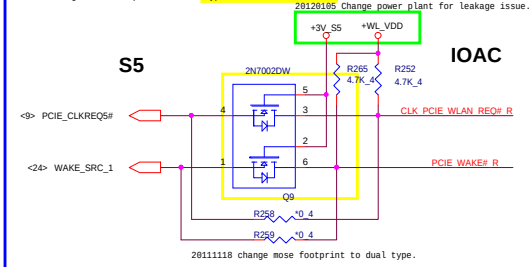
leakage circuit

20120105 Change power plant for leakage issue.



20111117 change mose footprint to dual type.

20120105 Change power plant for leakage issue.



20111118 change mose footprint to dual type.

Quanta Computer Inc.
PROJECT : Z09

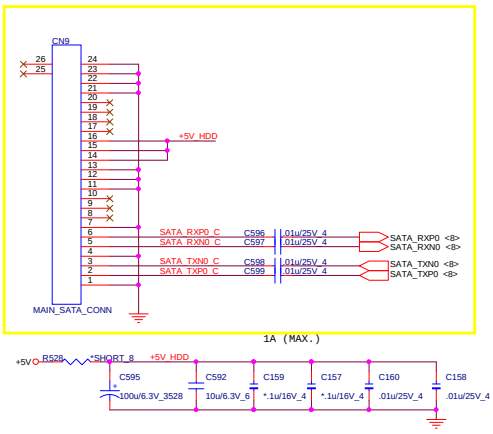
Size	Document Number	Rev
	MINI PCI-E card/TV	3A

Date: Monday, April 09, 2012 Sheet 20 of 40

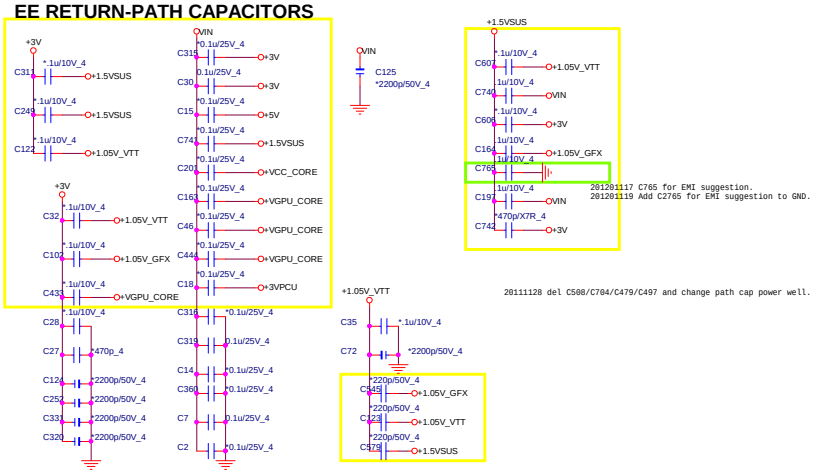
MAIN SATA HDD RE-DRIVER

MAIN SATA HDD

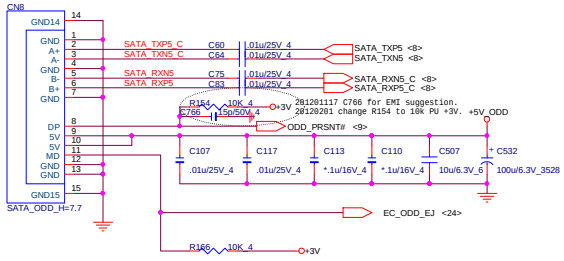
21111207 change Cn12 Pin define following ZHA.



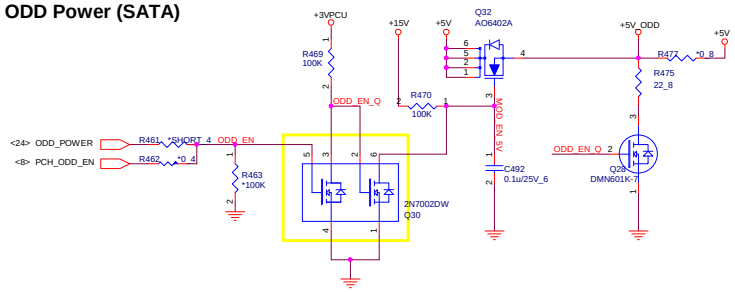
EE RETURN-PATH CAPACITORS



ODD (SATA)

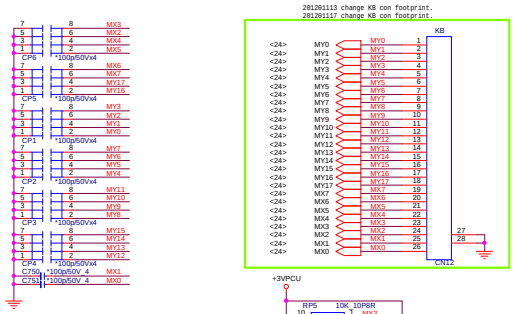


ODD Power (SATA)

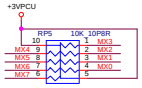


Quanta Computer Inc.		
PROJECT : Z09		
Size	Document Number: SATA-HDD/ODD/USB-ESATA	Rev: 3A
Date: Monday, April 09, 2012	Sheet 21 of 40	

K/B

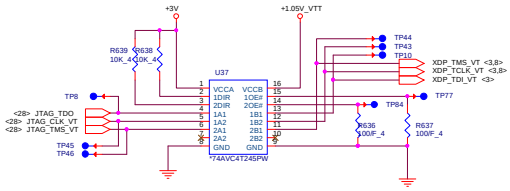


201201113 change KB con footprint.
201201117 change KB con footprint.

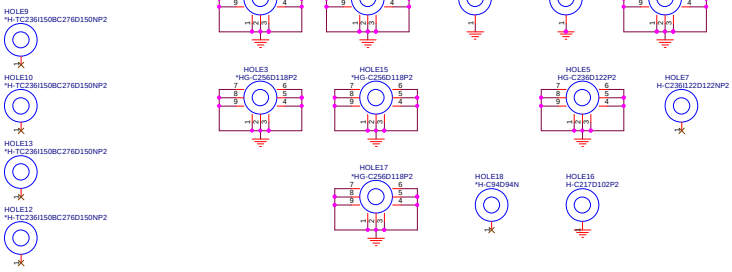


20111125 modify pin define

ICT TEST FIXTURE(VOLTAGE TRANSLATOR)



SCREW HOLE

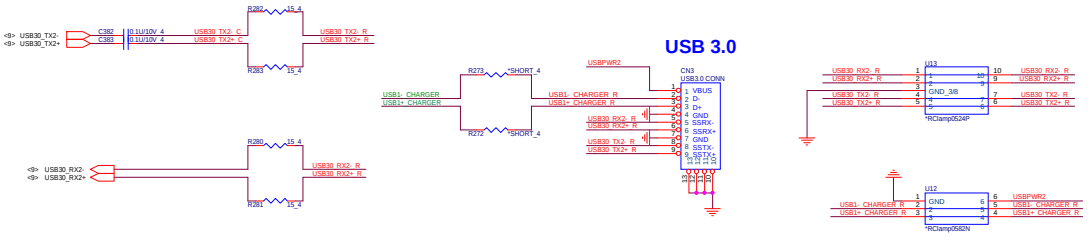


BATT Enable short pad

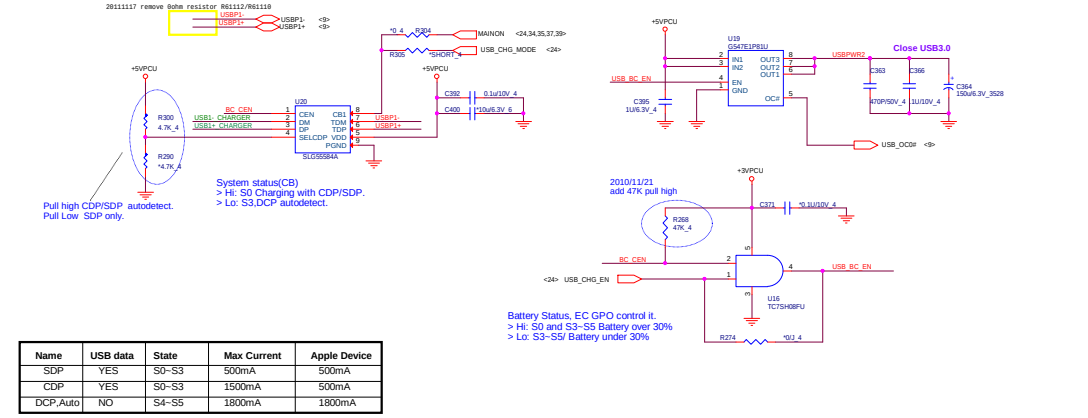
20111208 Change Hole8 to BATT short pad.

Quanta Computer Inc.		
PROJECT : Z09		
Size	Document Number: XDP/ Hole	Rev: 3A
Date: Monday, April 09, 2012	Sheet 22 of 40	

USB3.0 CONN

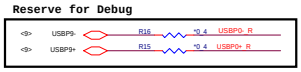


USB charger

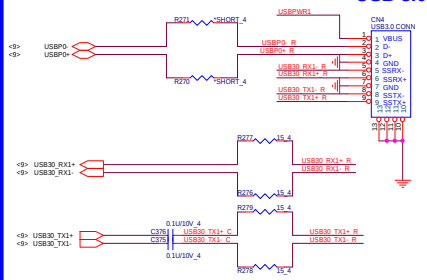


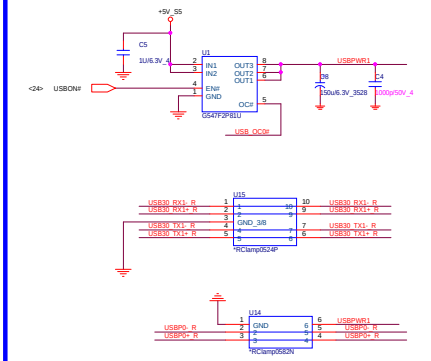
Name	USB data	State	Max Current	Apple Device
SDP	YES	S0~S3	500mA	500mA
CDP	YES	S0~S3	1500mA	500mA
DCP,Auto	NO	S4~S5	1800mA	1800mA

Reserve for Debug



USB 3.0





Quanta Computer Inc.
PROJECT : Z09

Size	Document Number	Rev
	USB 3.0	3A

Date: Monday, April 09, 2012 Sheet 23 of 40

EC(KBC)

30mil

0.03A(30mils)

Reserve for writing ME ROM

VTT - the power supply for the PECI signal
PECI - the PECI 3.0 data bus, bidirectional signal.

DG0.9 and chklist 0.9 apply one series 43ohm near EC side

pin14 +VCC_GFX
pin22 +3V_D for ATI
pin24 +1V for ATI
pin26 +1.8V_GPU for ATI
pin28 GPU_RST#
pin13 GFX_PWRGD
pin21 dGPU_VRON
pin23 +VGPU_CORE
pin25 +1.5V_GPU
pin27 dGPU_PWROK

SM BUS ARRANGEMENT TABLE

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

SM BUS PU(KBC)

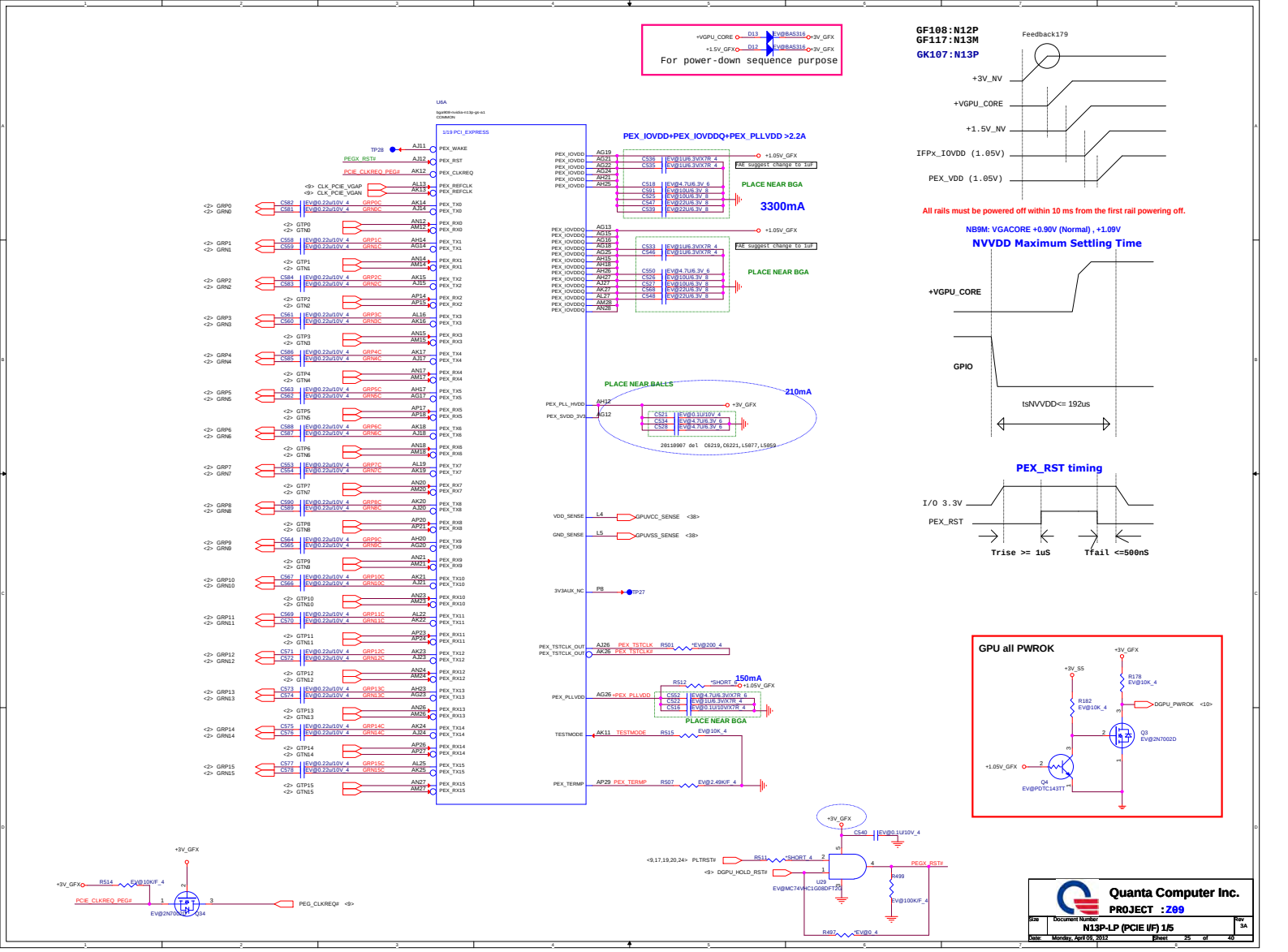
HWPG(KBC)

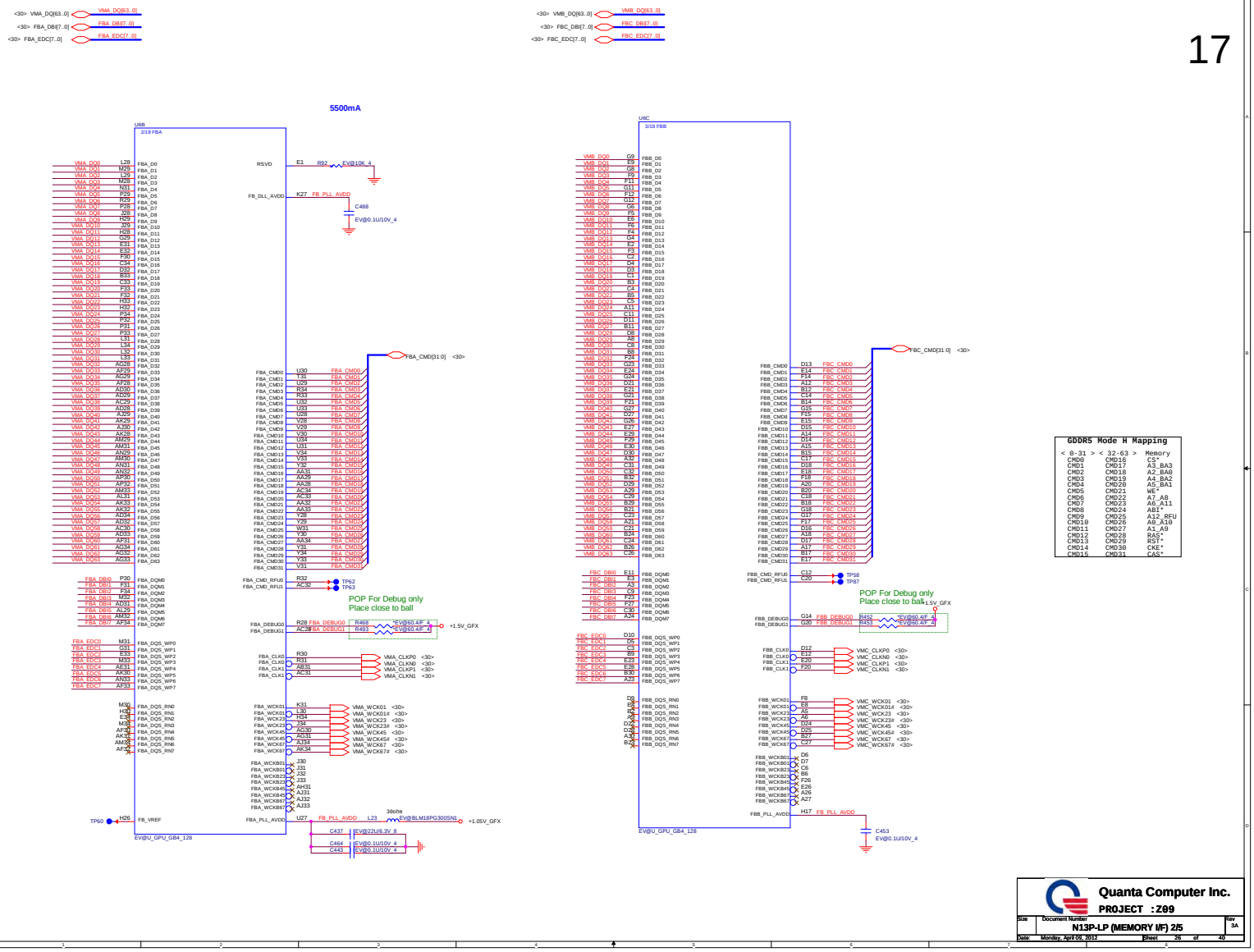
RSVD for power on

iRST

Q5006 need Replacement at BOT layer.

Quanta Computer Inc.	
PROJECT : Z09	
Size	Document Number: WPCE791 & FLASH
Rev: 1A	
Date: Monday, April 09, 2012	Sheet 24 of 40


+VGPU_CORE
+1.5V_GFX
D13
D12
EV@BAS316
EV@BAS316
+3V_GFX
+3V_GFX
For power-down sequence purpose
GF108:N12P
GF117:N13M
GK107:N13P
Feedback179
+3V_NV
+VGPU_CORE
+1.5V_NV
IFPx_IOVDD (1.05V)
PEX_VDD (1.05V)
All rails must be powered off within 10 ms from the first rail powering off.
NB9M: VGACORE +0.90V (Normal) , +1.09V
NVVDD Maximum Settling Time
+VGPU_CORE
GPIO
tsNVVDD<= 192us
PEX_RST timing
I/O 3.3V
PEX_RST
Trise >= 1uS
Tfail <=500nS
GPU all PWROK
+3V_GFX
+3V_S5
R178
EV@10K_4
R182
EV@10K_4
DGPU_PWROK <10>
Q3
EV@2N7002D
+1.05V_GFX
Q4
EV@PDTC143TT
USA
1/19 PCI_EXPRESS
PEX_IOVDD+PEX_IOVDDQ+PEX_PLLVDD >2.2A
PLACE NEAR BGA
3300mA
PLACE NEAR BALLS
210mA
150mA
PLACE NEAR BGA
TP28
PEGX_RST#
PCIE_CLKREQ_PEG#
CLK_PCIE_VGAP
CLK_PCIE_VGAN
GTP0
GTN0
GTP1
GTN1
GTP2
GTN2
GTP3
GTN3
GTP4
GTN4
GTP5
GTN5
GTP6
GTN6
GTP7
GTN7
GTP8
GTN8
GTP9
GTN9
GTP10
GTN10
GTP11
GTN11
GTP12
GTN12
GTP13
GTN13
GTP14
GTN14
GTP15
GTN15
PEX_WAKE
PEX_RST
PEX_CLKREQ
PEX_REFCLK
PEX_REFCLK
PEX_TX0
PEX_RX0
PEX_TX1
PEX_RX1
PEX_TX2
PEX_RX2
PEX_TX3
PEX_RX3
PEX_TX4
PEX_RX4
PEX_TX5
PEX_RX5
PEX_TX6
PEX_RX6
PEX_TX7
PEX_RX7
PEX_TX8
PEX_RX8
PEX_TX9
PEX_RX9
PEX_TX10
PEX_RX10
PEX_TX11
PEX_RX11
PEX_TX12
PEX_RX12
PEX_TX13
PEX_RX13
PEX_TX14
PEX_RX14
PEX_TX15
PEX_RX15
PEX_IOVDD
PEX_IOVDDQ
PEX_PLL_HVDD
PEX_SVDD_3V3
VDD_SENSE
GND_SENSE
3V3AUX_NC
PEX_TSTCLK_OUT
PEX_TSTCLK_OUT
PEX_PLLVDD
TESTMODE
PEX_TERMP
+1.05V_GFX
AE suggest change to 1uF
GPUVCC_SENSE <38>
GPUVSS_SENSE <38>
TP27
PEX_TSTCLK
PEX_TSTCLK#
PEX_PLLVDD
TESTMODE
PEX_TERMP
+3V_GFX
PLTRST#
DGPU_HOLD_RST#
PEGX_RST#
U29
EV@MC74VHC1G08DFT2G
+3V_GFX
PEG_CLKREQ# <9>
Quanta Computer Inc.
PROJECT : Z09
Size
Document Number
N13P-LP (PCIE I/F) 1/5
Rev
3A
Date: Monday, April 09, 2012
Sheet 25 of 40

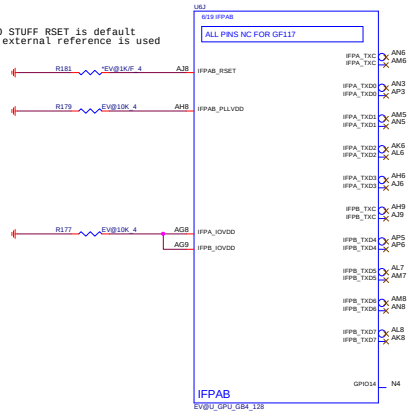


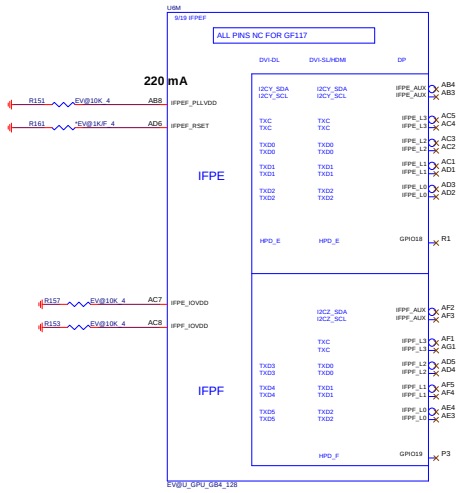
Quanta Computer Inc.
PROJECT : Z09

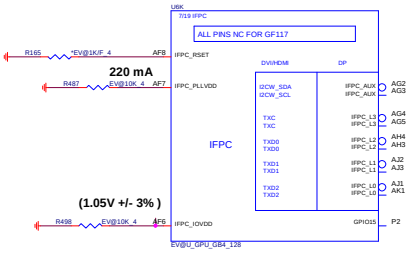
Size	Document Number	Rev
	N13P-LP (MEMORY I/F) 2/5	3A

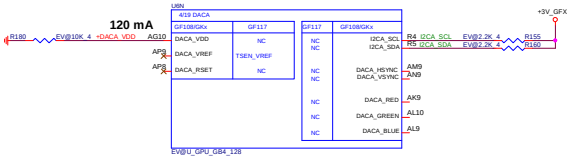
Date: Monday, April 09, 2012 Sheet 26 of 40

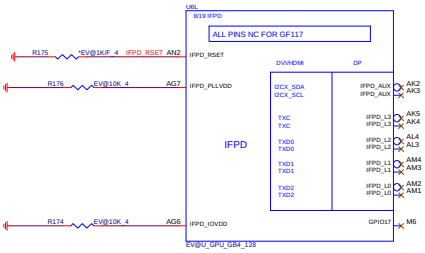
IFPAB ONLY: NO STUFF RSET is default
Required when external reference is used

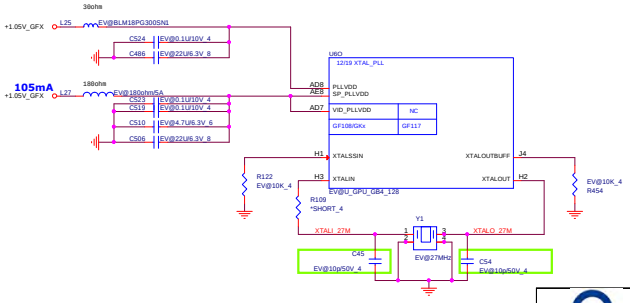










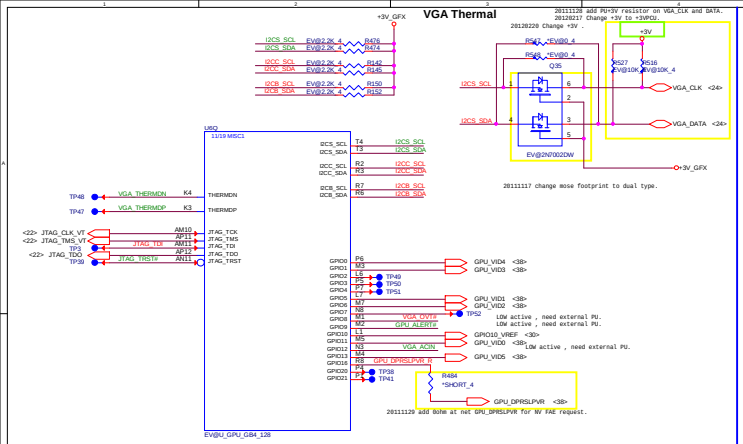


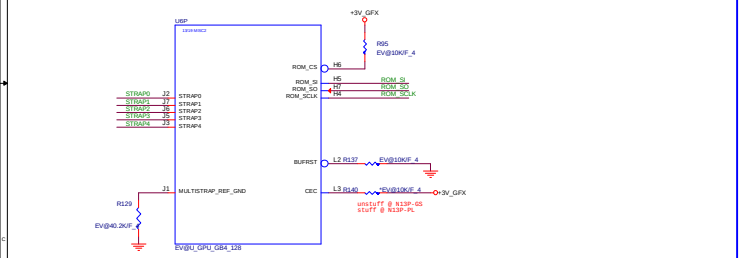
20120201 Change CAP from 27P to 18P.

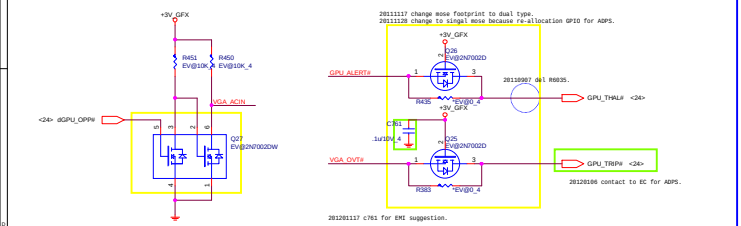
Quanta Computer Inc.
PROJECT : Z09

Size	Document Number	Rev
	N13P-LP (DISPLAY) 3/5	3A

Date: Monday, April 09, 2012 Sheet 27 of 40







ADDRESS:
98H

	Logical Strapping Bit3	Logical Strapping Bit2	Logical Strapping Bit1	Logical Strapping Bit0	N13P-GS	N13P-GL
ROM_SO	N13P-LP FB[1] N13P-GL XCLK_417	N13P-LP FB[0] N13P-GL FB_0_BAR_SIZE	SMB_ALT_ADDR	VGA_DEVICE	1001	
ROM_SCLK	PCI_DEVIDE[4]	SUB_VENDOR	N13P-LP PCI_DEVIDE[5] N13P-GL SLOT_CLK_CFG	PEX_PLL_EN_TERM	1010	
ROM_SI	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]	xxxx	
STRAP0	USER[3]	USER[2]	USER[1]	USER[0]	1111	
STRAP1	3GIO_PADCFG[3]	3GIO_PADCFG[2]	3GIO_PADCFG[1]	3GIO_PADCFG[0]	0110	
STRAP2	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]	0011	
STRAP3	SOR_EXPOSED[3]	SOR_EXPOSED[2]	SOR_EXPOSED[1]	SOR_EXPOSED[0]	0000	
STRAP4	Reserve	PCIE_SPEED CHANGE_GEN3	PCI_MAX_SPEED	DP_PLL_VDD33V	0001	

	PU to VDD33	PD to GND
4.99K	1000	0000
10K	1001	0001
15K	1010	0010
20K	1011	0011
24.9K	1100	0100
30.1K	1101	0101
34.8K	1110	0110
45.3K	1111	0111

VRAM Configuration Table

RAMCFG [3:0]	DESCRIPTION	Quanta PN(Q buy)	Quanta PN(W buy)	Vendor PN
0x1(0001)	1250MHz 2GB(64M*32) Samsung	AKG5MWDT505		K4G20325FD-FC04
0x0(0000)	1250MHz 2GB(64M*32) Hynix	AKG5MWUTW01		H5GQ2H24MFR-T2C
0x0(0100)	1250MHz 2GB(64M*32) Hynix	AKG5MWUTW10		H5GQ2H24AFR-T2C
	1250MHz 2GB(64M*32) Elpida	AKG5MGUT400		EDW2032BBBG-50-F

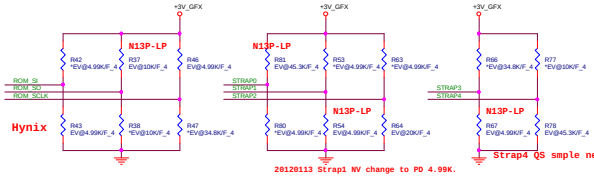
Elpida Need confirmation with NV RVL
Hynix H5GQ2H24AFR-T2C will build next or MP.

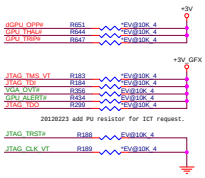
	Register value
ROM_SO	N13P-LP 10K pull up.
ROM_SCLK	N13P-LP need 4.99K pull up;
ROM_SI	2G:Hynix =4.99k pull down(M-die) 2G:Hynix =24.9k pull down(A-die)
STRAP0	N13P-LP 45.3K pull high
STRAP1	N13P-LP 4.99k pull down
STRAP2	N13P-LP need 20K pull down.
STRAP3	STRAP3 N13P-LP need 4.99K pull down.
STRAP4	STRAP4 N13P-LP need 45.3K pull down for GEN3.

```
4.99K/F_4 ==> CS24992FB26
10K/F_4 ==> CS31002FB26
15K/F_4 ==> CS31502FB24
20K/F_4 ==> CS32002FB29
24.9K/F_4 ==> CS32492FB16
30.1K/F_4 ==> CS33012FB18
34.8K/F_4 ==> CS33482FB22
35.7K/F_4 ==> CS33572FB13
45.3K/F_4 ==> CS34532FB18
```

GF108:N12P
GF117:N13M
GK107:N13P

ROM_SI Strap Bit for RAM Mapping N13P-LP DID => 0X0FD3

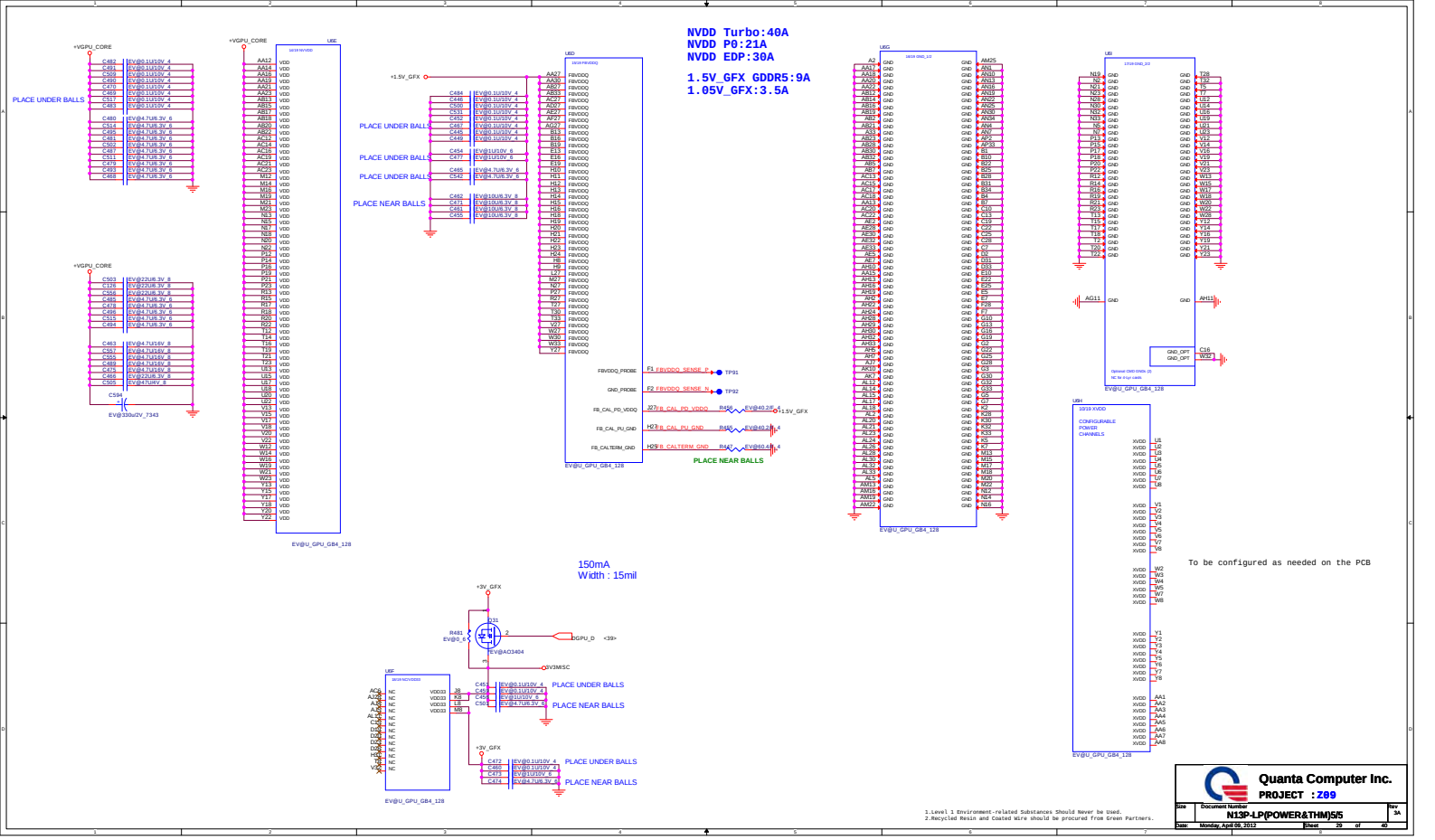




GPIO ASSIGNMENTS

GPIO	I/O	ACTIVE	USAGE
0	**OUT**	N/A	NVVDD VID4
1	OUT	N/A	NVVDD VID3
2	OUT	HIGH	PANEL BACKLIGHT PWM
3	OUT	HIGH	PANEL POWER ENABLE
4	OUT	HIGH	PANEL BACKLIGHT ENABLE
5	OUT	N/A	NVVDD VID1
6	OUT	N/A	NVVDD VID2
7	OUT	N/A	3D STEREO
8	I/O	LOW	GPU Overtemp
9	I/O	LOW	GPU ALERT
10	OUT	N/A	FB Vref Control (not used sDDR3)
11	OUT	N/A	NVVDD VID0
12	IN	N/A	PWR_Level AC Detect
13	OUT	N/A	NVVDD VID5
14	IN	N/A	HPD for IFP AB (not used)
15	IN	N/A	HPD for IFP C (HDMI)
16	OUT	N/A	MEM_VDD_CTL
17	IN	N/A	HPD for IFP D (not used)
18	IN	N/A	HPD for IFP E (TMDS)
19	IN	N/A	HPD for IFP F (not used)
20	N/A	N/A	NVGEM Debug GPIO13
21	N/A	N/A	NVGEM Debug GPIO14

Quanta Computer Inc.
PROJECT : Z09
Size | Document Number | Rev 3A
N13P-LP (GPIO&STRAPS)4/5
Date: Monday, April 09, 2012 | Sheet 28 of 40



1.Level 1 Environment-related Substances Should Never be Used.
2.Recycled Resin and Coated Wire should be procured from Green Partners.

Quanta Computer Inc.			
PROJECT : Z09			
Size	Document Number		Rev
	N13P-LP(POWER&THM)S/S		3A
Date: Monday, April 09, 2012	Sheet 29 of 40		

CHANNEL A: 1024MB GDDR5x32

LOWER HALF

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

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

Channel 0 <32-63>
MF=1 Mirrored

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

UPPER HALF

Channel 1 <0-31>
MF=0 Non-mirrored

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

Channel 1 <32-63>
MF=1 Mirrored

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

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

RST PD place @ the end of daisy-chain.

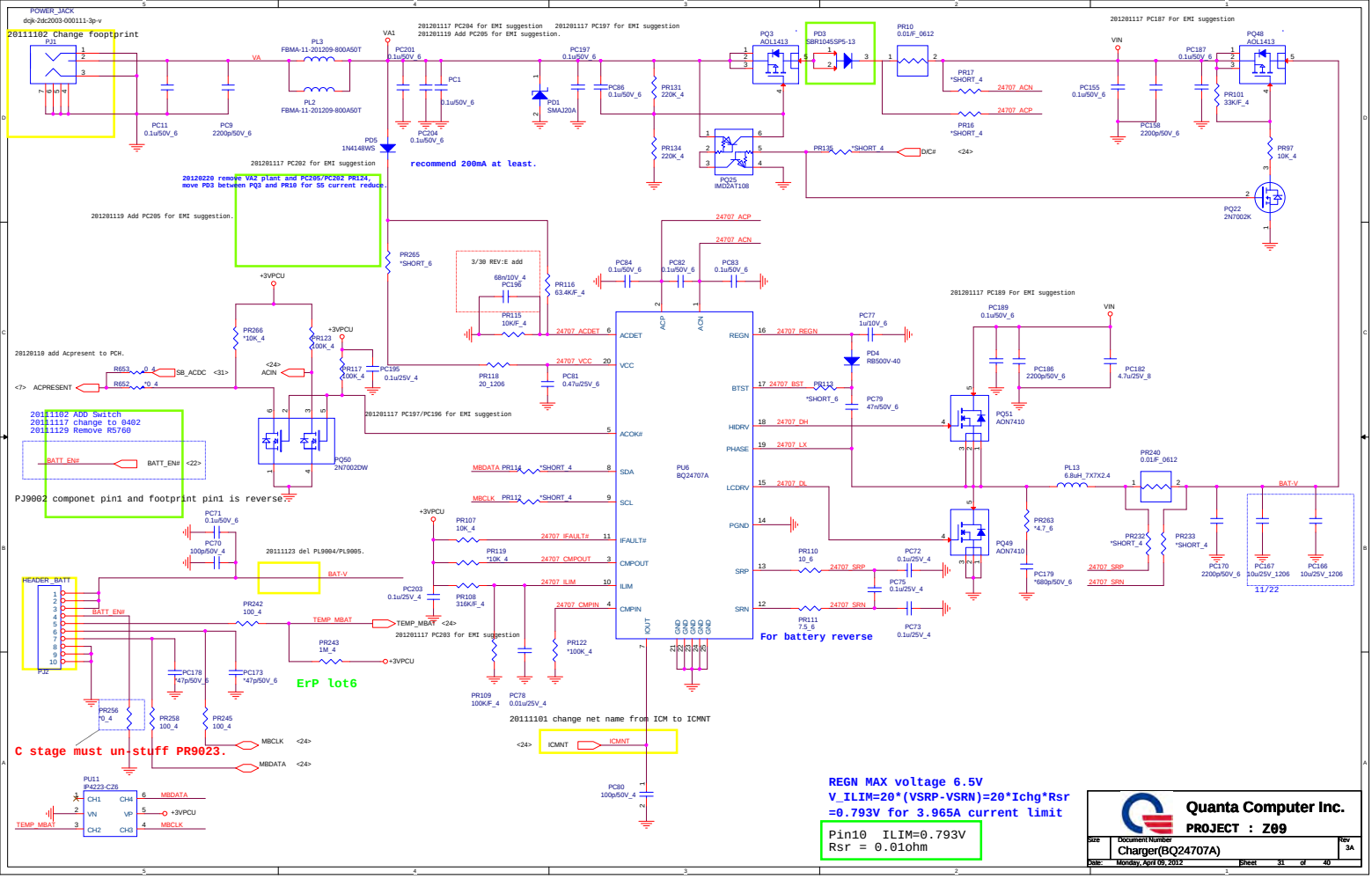
GDDR5 Mode H Mapping

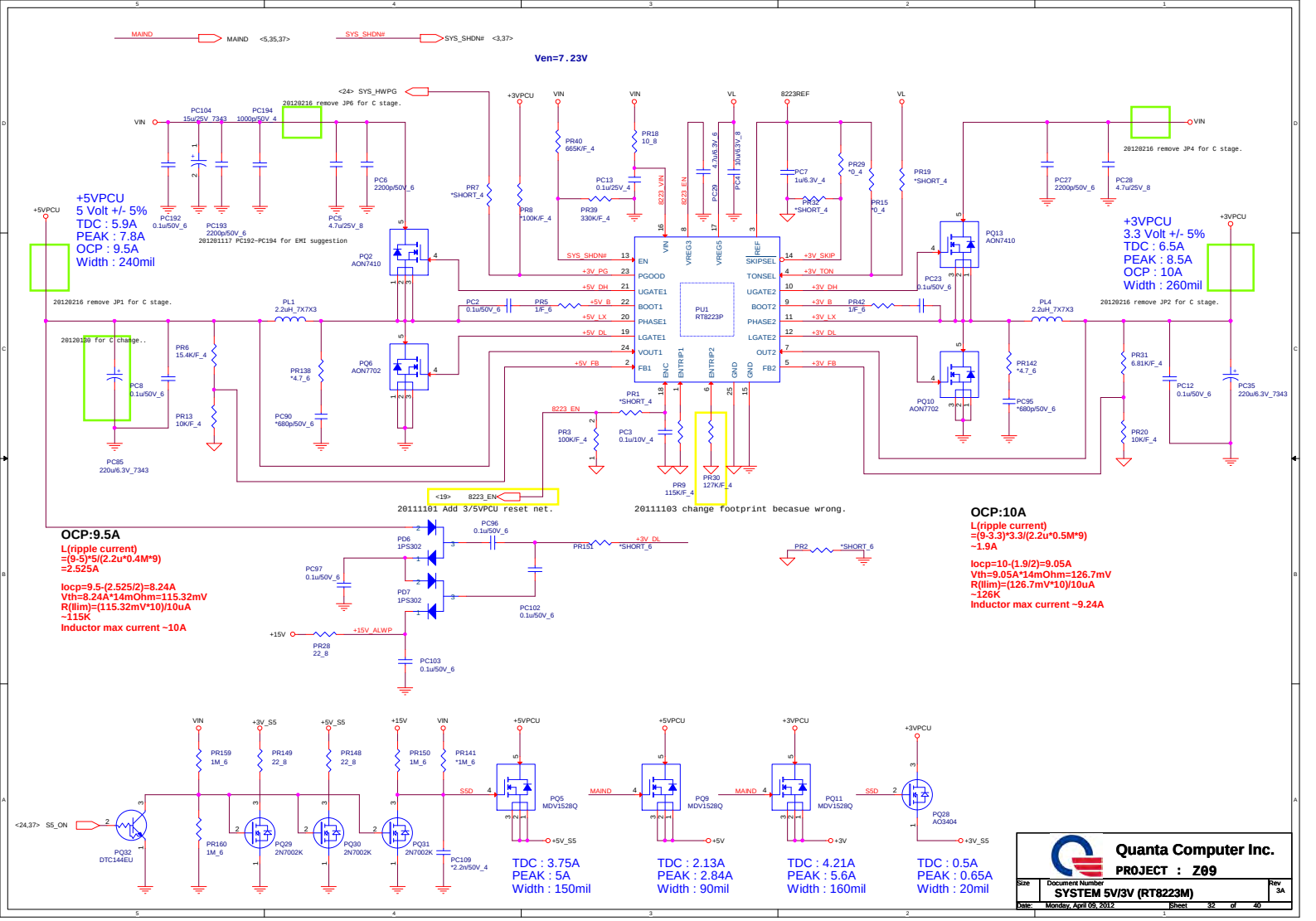
< 8-31 > < 32-63 >	Memory
CMD0	CMD16	CS*
CMD1	CMD17	A3_BA3
CMD2	CMD18	A2_BA0
CMD3	CMD19	A4_BA2
CMD4	CMD20	A5_BA1
CMD5	CMD21	WE*
CMD6	CMD22	A7_A8
CMD7	CMD23	A6_A11
CMD8	CMD24	ABI*
CMD9	CMD25	A12_RFU
CMD10	CMD26	A0_A10
CMD11	CMD27	A1_A9
CMD12	CMD28	RAS*
CMD13	CMD29	RST*
CMD14	CMD30	CKE*
CMD15	CMD31	CAS*

Quanta Computer Inc.
PROJECT : Z09

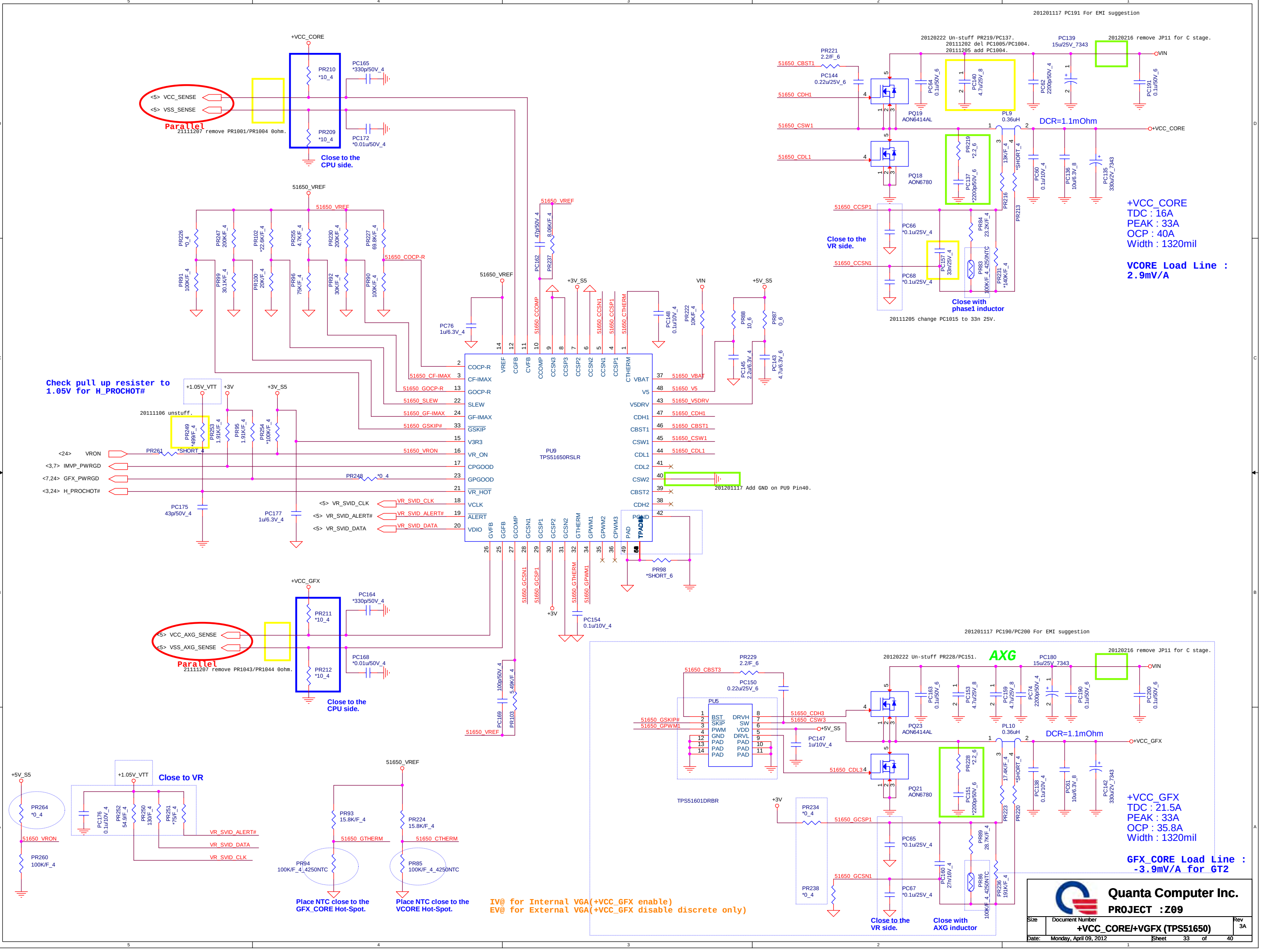
Size	Document Number	Rev
	N13PGV GDDR5x32-VRAM	3A

Date: Monday, April 09, 2012 Sheet 30 of 40


POWER_JACK
dcjk-2dc2003-000111-3p-v
20111102 Change footprint
PJ1
PL3
FBMA-11-201209-800A50T
PL2
FBMA-11-201209-800A50T
VA
VA1
PC201
0.1u/50V_6
PC1
0.1u/50V_6
PC204
0.1u/50V_6
PC11
0.1u/50V_6
PC9
2200p/50V_6
PD5
1N4148WS
recommend 200mA at least.
20120220 remove VA2 plant and PC205/PC202 PR124, move PD3 between PQ3 and PR10 for 5S current reduce.
201201119 Add PC205 for EMI suggestion.
201201117 PC202 for EMI suggestion
201201117 PC204 for EMI suggestion
201201119 Add PC205 for EMI suggestion.
201201117 PC197 for EMI suggestion
PC197
0.1u/50V_6
PD1
SMAJ20A
PC86
0.1u/50V_6
PR131
220K_4
PR134
220K_4
PQ3
AOL1413
PD3
SBR1045SP5-13
PR10
0.01/F_0612
PR17
*SHORT_4
PR16
*SHORT_4
24707_ACN
24707_ACP
PQ25
IMD2AT108
PR135
*SHORT_4
D/C#
<24>
201201117 PC187 For EMI suggestion
VIN
PC155
0.1u/50V_6
PC158
2200p/50V_6
PC187
0.1u/50V_6
PQ48
AOL1413
PR101
33K/F_4
PR97
10K_4
PQ22
2N7002K
PR265
*SHORT_6
3/30 REV:E add
68n/10V_4
PC196
PR115
10K/F_4
PR116
63.4K/F_4
PC84
0.1u/50V_6
PC82
0.1u/50V_6
PC83
0.1u/50V_6
24707_ACP
24707_ACN
+3VPCU
PR266
*10K_4
PR123
100K_4
20120110 add Acpresent to PCH.
R653
0_4
R652
*0_4
SB_ACDC
<31>
<7>
ACPRESENT
<24>
ACIN
PR117
100K_4
PC195
0.1u/25V_4
PR118
20_1206
PC81
0.47u/25V_6
24707_VCC
24707_ACDET
20111102 ADD Switch
20111117 change to 0402
20111129 Remove R5760
BATT_EN#
BATT_EN#
<22>
PJ9002 componet pin1 and footprint pin1 is reverse.
PQ60
2N7002DW
201201117 PC197/PC196 for EMI suggestion
MBDATA PR114
*SHORT_4
MBCLK PR112
*SHORT_4
PU6
BQ24707A
ACDET
VCC
ACOK#
SDA
SCL
IFAULT#
CMPOUT
ILIM
CMPIN
IOUT
ACP
ACN
REGN
BTST
HIDRV
PHASE
LCDRV
PGND
SRP
SRN
24707_REGN
24707_BST
24707_DH
24707_LX
24707_DL
24707_IFAULT#
24707_CMPOUT
24707_ILIM
24707_CMPIN
PC77
1u/10V_6
PD4
RB500V-40
PR113
*SHORT_6
PC79
47n/50V_6
201201117 PC189 For EMI suggestion
PC189
0.1u/50V_6
PC186
2200p/50V_6
PC182
4.7u/25V_8
PQ51
AON7410
PQ49
AON7410
PL13
6.8uH_7X7X2.4
PR240
0.01/F_0612
BAT-V
PR263
*4.7_6
PC179
*680p/50V_6
PR110
10_6
PC72
0.1u/25V_4
PC75
0.1u/25V_4
PR111
7.5_6
PC73
0.1u/25V_4
24707_SRP
24707_SRN
PR232
*SHORT_4
PR233
*SHORT_4
PC170
2200p/50V_6
PC167
10u/25V_1206
PC166
10u/25V_1206
11/22
For battery reverse
PC71
0.1u/50V_6
PC70
100p/50V_4
20111123 del PL9004/PL9005.
BAT-V
HEADER_BATT
BATT_EN#
PR242
100_4
TEMP_MBAT
TEMP_MBAT
<24>
PR243
1M_4
+3VPCU
PC178
*47p/50V_6
PC173
*47p/50V_6
ErP lot6
PR256
*0_4
PR258
100_4
PR245
100_4
C stage must un-stuff PR9023.
MBCLK
<24>
MBDATA
<24>
PU11
IP4223-CZ6
CH1
CH4
VN
VP
CH2
CH3
MBDATA
+3VPCU
MBCLK
TEMP_MBAT
PR107
10K_4
PR119
*10K_4
PR108
316K/F_4
PC203
0.1u/25V_4
PR109
100K/F_4
PC78
0.01u/25V_4
PR122
*100K_4
20111101 change net name from ICM to ICMNT
<24>
ICMNT
ICMNT
PC80
100p/50V_4
REGN MAX voltage 6.5V
V_ILIM=20*(VSRP-VSRN)=20*Ichg*Rsr
=0.793V for 3.965A current limit
Pin10 ILIM=0.793V
Rsr = 0.01ohm
Quanta Computer Inc.
PROJECT : Z09
Size
Document Number
Charger(BQ24707A)
Rev
3A
Date: Monday, April 09, 2012
Sheet 31 of 40



Quanta Computer Inc.			
PROJECT : Z09			
Size	Document Number: SYSTEM 5V/3V (RT8223M)		Rev: 3A
Date: Monday, April 09, 2012	Sheet 32 of 40		

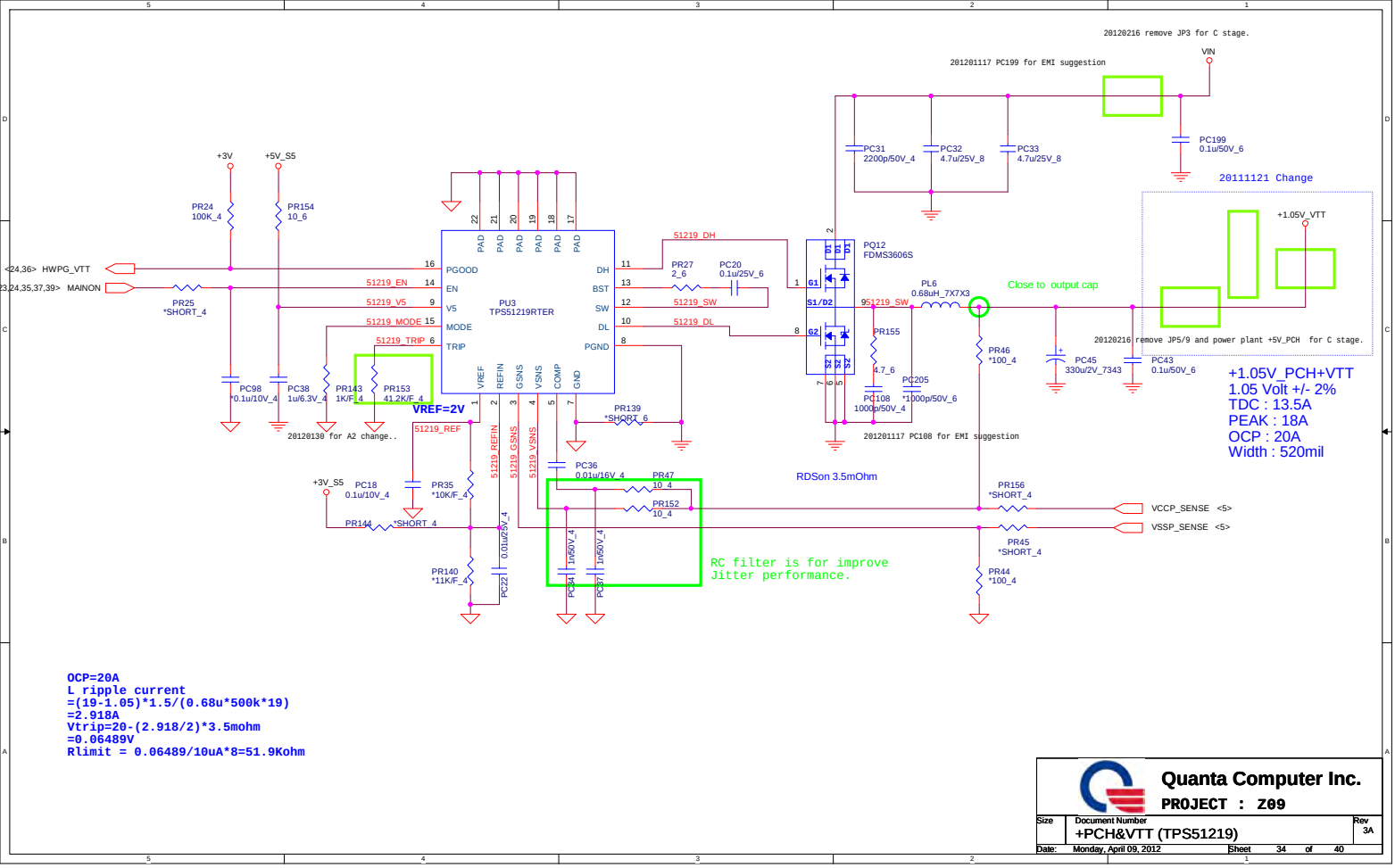


Quanta Computer Inc.

PROJECT :Z09

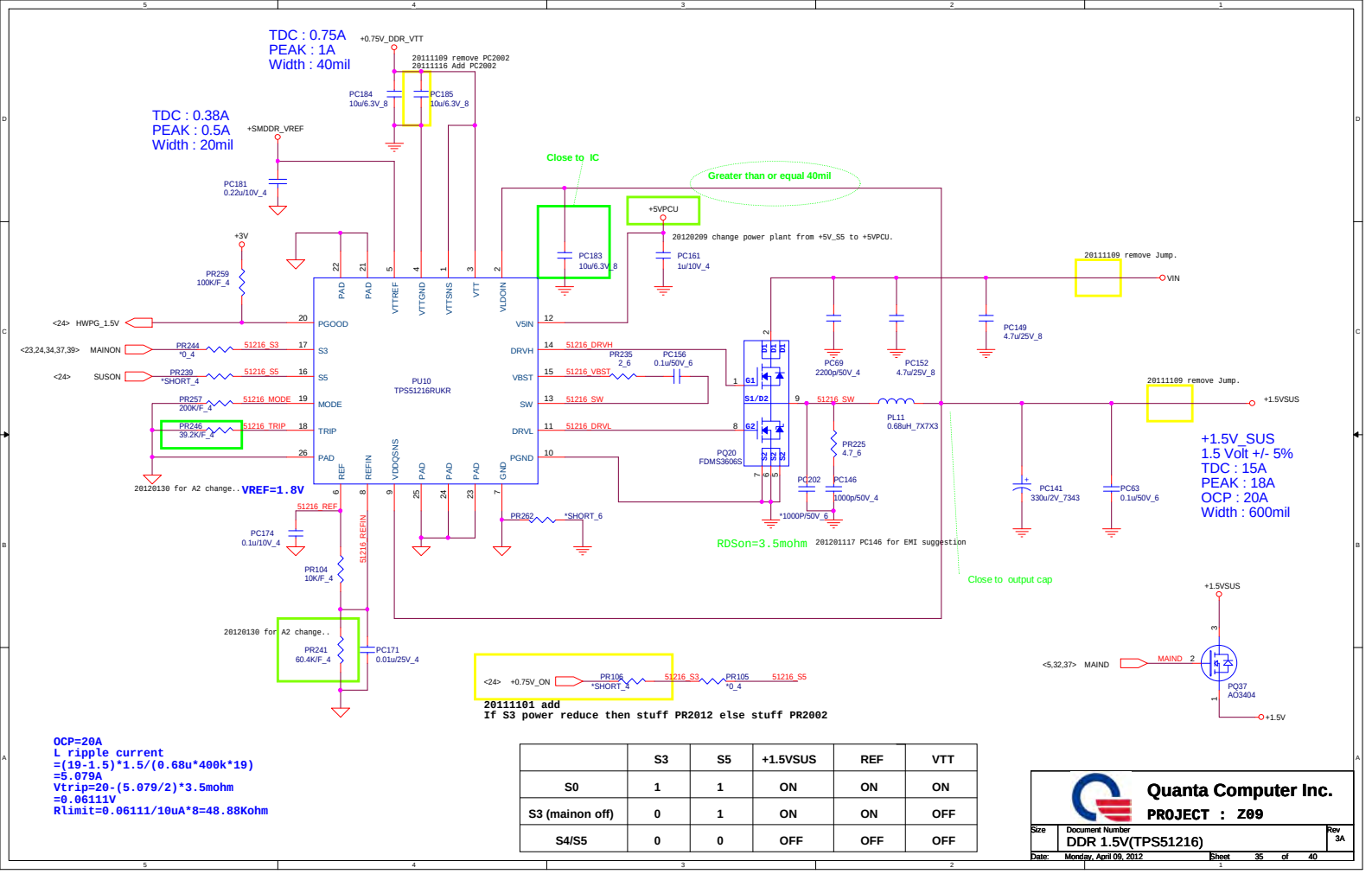
Size	Document Number	Rev
	+VCC_CORE/+VGFX (TPS51650)	3A

Date: Monday, April 09, 2012 | Sheet 33 of 40



OCP=20A
L ripple current
=(19-1.05)*1.5/(0.68u*500k*19)
=2.918A
Vtrip=20-(2.918/2)*3.5mohm
=0.06489V
Rlimit = 0.06489/10uA*8=51.9Kohm

Quanta Computer Inc.		
PROJECT : Z09		
Size	Document Number: +PCH&VTT (TPS51219)	Rev: 3A
Date: Monday, April 09, 2012	Sheet 34 of 40	



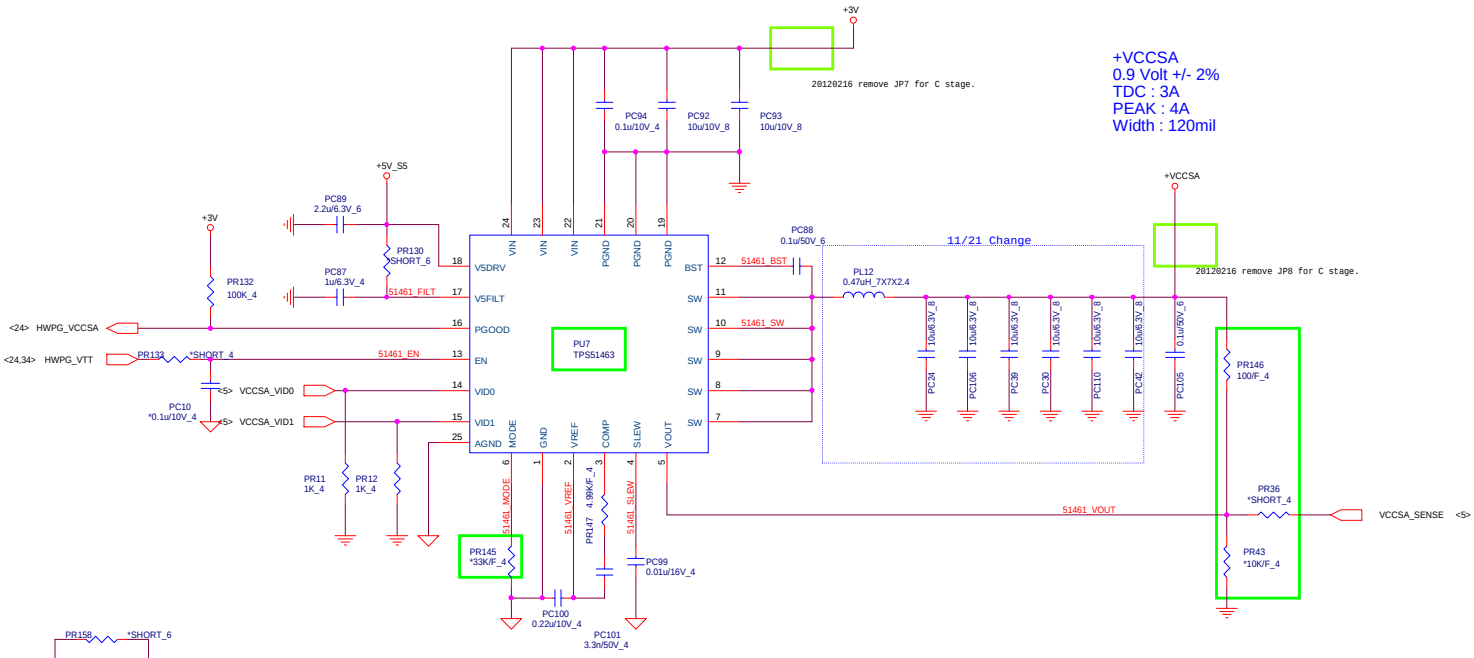
OCP=20A
L ripple current
=(19-1.5)*1.5/(0.68u*400k*19)
=5.079A
Vtrip=20-(5.079/2)*3.5mohm
=0.06111V
Rlimit=0.06111/10uA*8=48.88Kohm

	S3	S5	+1.5VSUS	REF	VTT
S0	1	1	ON	ON	ON
S3 (mainon off)	0	1	ON	ON	OFF
S4/S5	0	0	OFF	OFF	OFF

Quanta Computer Inc.
PROJECT : Z09

Size	Document Number	Rev
	DDR 1.5V(TPS51216)	3A

Date: Monday, April 09, 2012 Sheet 35 of 40



201201117 PR146 change to 365ohm,un-stuff PR36,stuff PR43,stuff PR145, PU7 change to TPS51463.
20120220 PR145 un-stuff,PR145 change to 100,PR43 un-stuff, PR36 short pad.

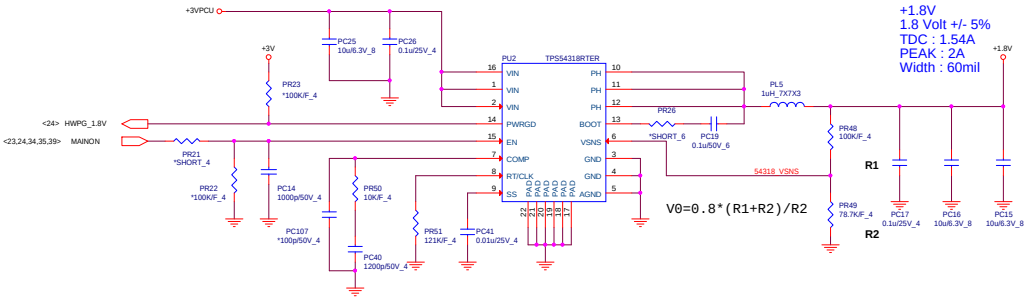
VID0	VID1	+VCCSA
0	0	0.9V
0	1	0.85V
1	0	0.775V
1	1	0.75V

default 0.9V

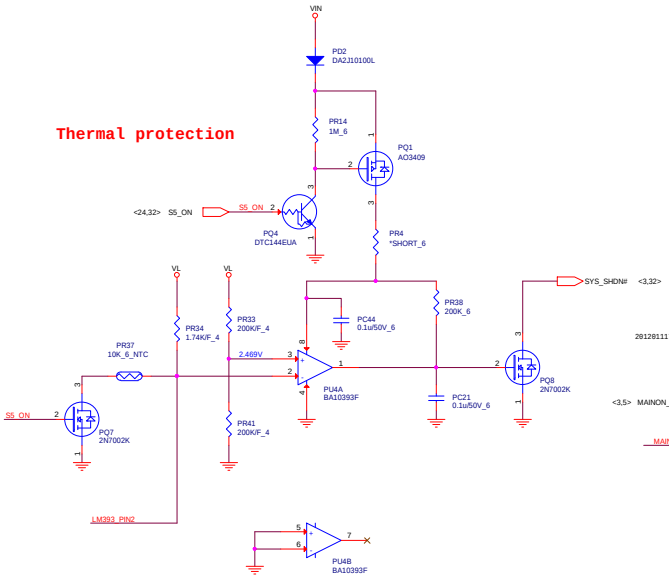
PR145 33kohm
PR146 change to 365ohm
PR36 nc
PR43 10kohm
PU7 Change to 51463

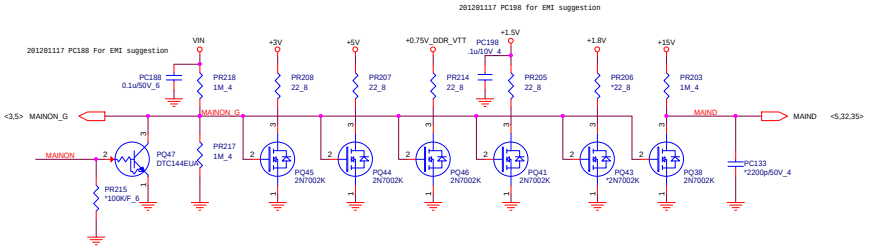
Quanta Computer Inc.
PROJECT : Z09

Size	Document Number	Rev
	VCCSA(TPS51461)	3A
Date: Monday, April 09, 2012	Sheet 36 of 40	



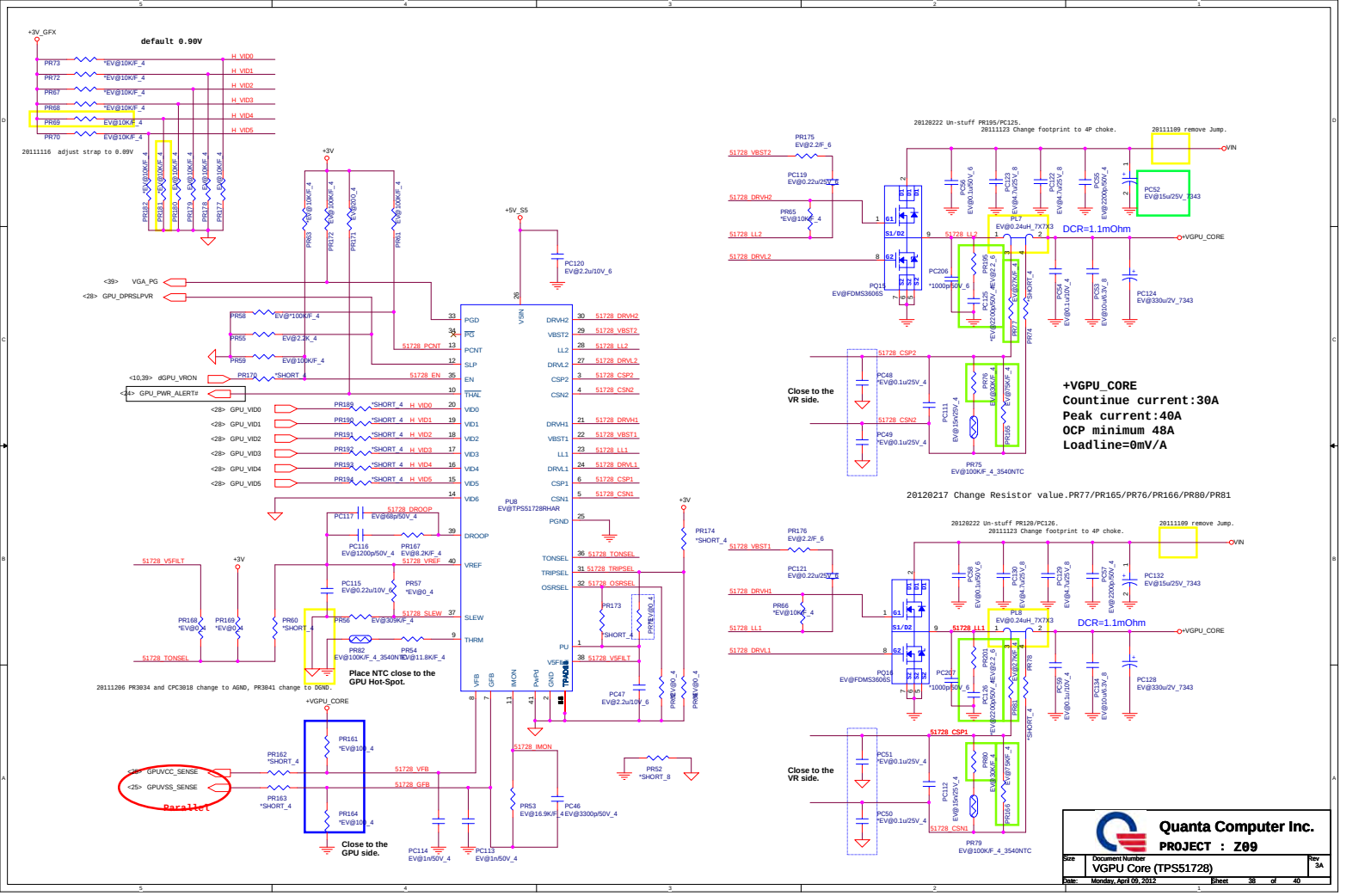
Thermal protection





For EC control thermal protection (output 3.3V)

Quanta Computer Inc.			
PROJECT : Z09			
Size	Document Number	+1.8V/Discharge/Thermal	Rev 3A
Date: Monday, April 09, 2012	Sheet 37 of 40		

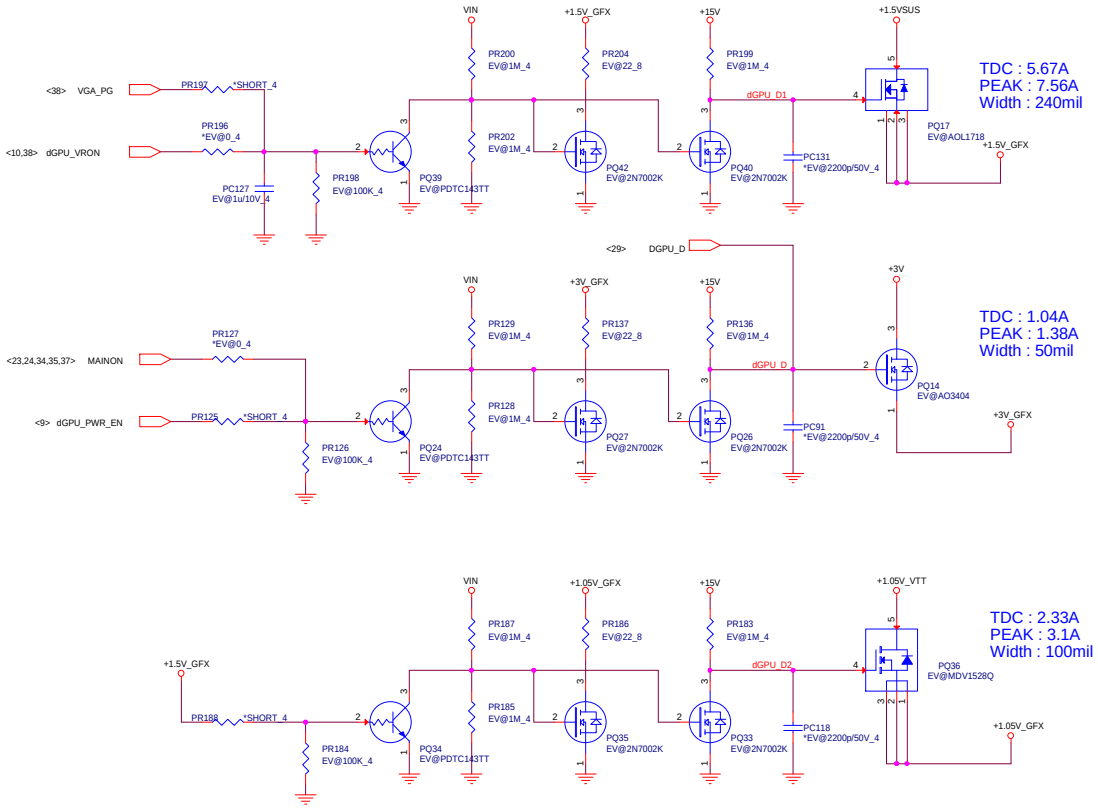


Quanta Computer Inc.

PROJECT : Z09

Size	Document Number	Rev
	VGPU Core (TPS51728)	3A

Date: Monday, April 09, 2012 Sheet 38 of 40



Quanta Computer Inc.

PROJECT : Z09

Size	Document Number	Rev
	GPU_PWR	3A

Date: Monday, April 09, 2012 Sheet 39 of 40

CHANGE LIST

MODEL Z09

Model	REV	CHANGE LIST	FROM	To
	10.28	FIRST RELEASED		
Z09	1A	1. 20111031 Modify U18 symbol(Add PAD gnd*9).		
		2. 20111031 Page 19 Add LED/Cardreader con.(only Power and Battery)		
		3. 20111031 Page 20/21 remove mSATA/Mian HDD re-driver IC.		
		4. 20111031 Page24 Change U5039 USB power switch power well from +5VPCU to +5V_S5.		
		5. 20111031 Page 24 Un-staff USB9+/- resistor because it si reserve only debug use.		
		6. 20111031 Page 11 Add Q18/19 mose for DSW circuit.		
		7. 201111101 Page 07 Remove LVDS Data/clock.		
		8. 201111101 Page 03 Add Resistor R182/R185.		
		9. 201111101 Page 20 stuff R304 for BT power.		
		10. 201111101 Page 32~40 Power updata circuit.		
		12. 201111102 Page17 Change R554 from 0ohm to 2.2ohm for Prevent EDS issue.		
		13. 20111102 del R160		
		14. 20111102 page7 FDI and DMI reverse.		
		15. 20111102 page6 R5757 stuff for PGE reverse.		
		16. 20111102 page6 Ball G48 connect test point.		
		17. 20111102 update connector list without LVDS/HDMI/Audio/USB3/RJ45/ODD/KB.		
		18. 20111102 Page 02 Reverse PEG.		
		19. 20111103 page 25 add pull up 10k R305 to PSI CS#.		
		20. 20111103 page 9 remove dGPU_PWM_SELECT# change to dGPU_PRW_RN PD.		
		21. 20111104 page 3 R5332 PU from +1.5VSUS TO +1.5V_CPU becaue leakage issue.		
		22. 20111104 page 40,41 add memory down.		
		23. 20111104 page 26~31 change GPU solution from 13P-GV to 13P-PL.		
		24. 20111104 page 02 change R5459 from 10K to 1K PU.PR1029		
		25. 20111106 page 32 Un-stuf PR1029.base on CRB.20111107 R5180 un-stuff.		
		26. 20111107 page 07 R5180 un-stuff. because DRAMPWEGD change to +5V_CPU.		
		27. 20111107 page 14 unstuff R5347/R362 and stuff Q5010 for Deep S3.		
		28. 20111107 page 14 remove R5144 PU +1.5VSUS.		
		28. 20111107 page 20 move debuge port to CN3.		
		29. 20111107 page 07 R469 change from 10k to 4.99k.		
		30. 20111108 page08 PU 10k to +3V, becaue no sata LED.		
		31. 20111108 page15 add feature board con.		
		32. 20111108 page19 add TPM con.		
		33. 20111109 page09 VCC core CAP change to. total : 22uF x 12 tatal : 470u x 3(power side*1) AXG: tatal : 470u x 1(power side*1)		
		34. 20111109 page36 remove PC2002 and JUMP.		
		35. 20111109 page39 remove JUMP.		
		36. 20111109 page14 remove XDP.		
		37. 20111109 page02 add PEG tox16.		
		38. 20111110 page07 remove R600/R601.		
		39. 20111110 page08 R411 change power plant to +3V_PCH_ME		
		40. 20111110 Move R6168 to page04.		
		41. 20111111 page07 Reverse DMI/FDI to normal.		
		42. 20111111 page16 R423 change to 56K(Vout=36V,R65 to 10K, R36 un-stuff,stuff R67/C27 and R67 change to 9.09K (for phas shif mode). R5312	2A	3A
		43. 20111111 page07 add 0ohm R5312 on DRB#.	2A	3A
		44. 20111111 Remove codec to DB board.	2A	3A
		45. 20111111 page20 Remove Feature con and CRT cricuit, add RJ45.	2A	3A
		46. 20111114 Update CN25,CN5008,CN5007 footprint .	2A	3A
		47. 20111114 Page19 Un-stuff D8/R45.	2A	3A
		48. 20111114 Page20 CN17 from 24pin change to 30pin, add TP function and add TPM and Audio connector	2A	3A
		49. 20111115 Update CN23 footprint.	2A	3A
		50. 20111116 page36 add PC2002.	2A	3A
		51. 20111116 page08 Base on EMI request add C2494 22P on PCH BlTCLK and R256/C6495 and Stuff R411.	2A	3A
		52. 20111116 page25 EC add GPIO36 dGPU_OVT# to GPU for ADPS,Change net name GPIO87 to USB_CHG_EN, GPIO97 to USB_CHG_MODE,GPIO43 net name change to GPU_THAL#.	2A	3A
		53. 20111116 page19 change transfromer from GigaLan to 10/100*2, remove ESD U8/12.	3A	3B
		54. 20111116 page08 Change RTC connector and un-stuff Q36,R415,R416,R422,R414.	3A	3B
		55. 20111116 page08 Change back RTC connector and stuff Q36,R415,R416,R422,R414.	3A	3B
		56. 20111117 page32 BTT_EN# from push button change to short pad and connect to DB board.	3A	3B
		57. 20111117 page11 Remove 0ohm short pad,R5051/R5044/R5034/R5149/R5220/R5039/R5042.	3A	3B
		58. 20111117 update CN3/Cn18/CN12/CN17/SW2 footprint.	3A	3B
		59. 20111117 page24 remove R61112/R61110 no charge option.R5176,del PQ35 change Q48 for dul mose type.	3A	3B
		60. 20111117 page09 R5176 change to singal resistor becaue GPIO40~42 GPIO9 for memory down ID.	3A	3B
		61. 20111117 change Q5003/Q29/Q16/Q30/Q26/Q41/Q4040/Q5043 footprint to dual type mose Del Q17/Q31/Q27/Q42/Q5041/Q5045.	3A	3B
		62. 20111117 page20 Change R256 to L6 for EMI reqeust.	3A	3B
		63. 20111118 page17 Change R474 to 100kohm.	3A	3B
		64. 20111118 page16 Remove LCD power C21/C12	3A	3B
		65. 20111118 page16 Change RTC connector.	3A	3B
		66. 20111118 change Q21/Q39 footprint to dual type mose Del Q43/Q40, mose return back to Q26/Q27.	3A	3B
		67. 20111118 page09 GPIO40~42,GPIO09 change net name to RAM_ID0~3.	3A	3B
		68. 20111121 page08 Change RTC battery back to socket.	3A	3B
		69. 20111121 page21 change back transformer to single giga LAN.	3A	3B
		70. 20111121 page23 Add screw hole*13.	3A	3B
		71. 20111121 page16 change L96 to 10u 0.1A .	3A	3B
		72. 20111121 page03 remove R5306/R5311/R5474/R5475 .CX12B900000	3A	3B
		73. 20111121 page16 L2 change P/N to CX12B900000.	3A	3B
		74. 20111121 page06 add R95 for G48 ball to GND for sandy bridge.	3A	3B
		75. 20111121 page03 add Q31 and R182 to 1k/R185 10K.	3A	3B
		76. 20111121 page20 change CN8 footprint and update CN9 footprint.	3A	3B
		77. 20111121 page23 modify all hole footprint.	3A	3B
		78. 20111122 page19 Swap U5103 pin define for layout.	3A	3B
		79. 20111122 page20 modify CN6/cn17 pin define, cn17 pin29/30 for TP.	3A	3B
		80. 20111122 Update footprint PJ9002.	3A	3B
		81. 20111122 page35 add a jump JP6008 at 1.05V.	3A	3B
		82. 20111122 Q37 change to P mose and remove Q44 change power plant to +3V_S5.		
		83. 20111122 page16 L97 Change inductor to 1A for FAE reqeust.		
		83. 20111122 page08 add net TP_INT# pin at CN17 pin29 to PCH N32 and add Q5005 and R444 for leakage issue..		
		84. 20111123 page20 CN8 add LPCPD# net to PCH G8.		
		85. 20111123 change PJ9002 pin define.		
		86. 20111123 update Hole3/4/10 footprint.		
		87. 20111123 page39 PL3002/PL3001 change footprint to 4pin.		
		88. 20111123 page32 Del PL9004/PL9005.		
		89. 20111123 page23 modify Keyboard Pin define for match matrix.		
		90. 20111124 midfy CN5008/CN5007 USB footprint.		
		91. 20111124 page09 modify RAM_ID from GPIO40~42,GPIO09 change to GPIO42,9,10,14.		
		92. 20111124 page14 DDRIII on board RAM change to 256x16.		
		93. 20111125 Update Cn11/JDIM1/RJ45 footprint.		
		94. 20111125 Update KB pin define.		
		95. 20111128 Update CN5010/CN2/U32~U35 footprint.		
		96. 20111128 page28 change Q5044 to dual mose and del Q5042, GPIO12 ACIN high DC low prevent backdriver add mose. add PU +3V resistor R5306/R5308 reserve.		
		97. 20111128 page08 change net TP_INT# to pin E12 GPIO11 and net name to SMBALERTL, add R444 10K to PCH_ODD_EN not use.		
		98. 20111128 page19 add R221/C6496 for EMI request and change Cn8 pin9 to LPC_LFRAME#,Pin10,pin12 to GND,Pin11 PCLK_TPM.		
		99. 20111129 page29 change Q5043 to singal mose and add back Q5045, VGA_OVT# connect to SYS_SHDN# un-stuff, GPU_ALERT# to EC GPU_THAL, DGPU_OPP# to VGA_ACIN.		
		100. 20111129 page22 Remove BKT1 and add hole14~16.		
		101. 20111129 page03 change U5013.3 net to PCI_PLTRST#.		
		102. 20111129 page09 change U5001 power plant to +3V.		
		103. 20111129 page21 change path cap power well and del C497/C704/C479/C508.		
		104. 20111129 page28 add R27 0ohm at net GPU_DPRSLPVR.		
		105. 20111129 page31remove R5068 becasue double connect GND.		
		106. 20111129 page24 add R437~R439 SPI series resistor,and SPI net contact to SPI 4M ROM.		
		107. 20111130 page22 add hole18.		
		108. 20111130 page18 CN5010 add two GND pin15/16.		
		108. 20111130 page09 change PCIE_CLKREQ5# PU +3V_S5, PCIE_CLKREQ2# PU +3V.		
		109. 20111201 page17 change C6108 power from +3V_S5 to +3V_LAN.		
		110. 20111201 page19 update CN8 footprint.		
		111. 20111201 Power Update : a.PL3001 and PL3002 change to 0.24uH inductor. b.PR3019 and PR3046 change to 26.14kohm. c.PR3021 and PR3049 change to 29.65kohm. d.PR3023 and PR3053 change to 76.49kohm. e.PC3013 and PC3030 change to 15nF. f.Change PR3040 to 312.5kohm. g.Change PR3055 to 17kohm. h.Change PR3031 to 8.2kohm. i.Change PC3016 to 1200PF. j.Change PC3015 to 68PF. k.change PR3011 to 200ohm. l.Change PR1007 to 13.07khom. m.Change PR1015 to 23.02kohm. n.Change PR1022 to 30kohm o.Change PR1013 to 201.8kohm. p.Add PR1066 for default test mode.		
		112. 20111202 Hole18 change Footprint to HG-C256D118P2-V3		
		113. 20111202 page03 ADD NET DEEPS3_EC .connect to Q15 , Q5050.		
		114. 20111202 page33 Del PC1004/PC1005 for Power reqeust.		
		115. 20111205 page19 Change CN8 pin define and add 0ohm R222 on net SERIRQ.		
		116. 20111205 page33 add back PC1004.		
		117. 20111206 page38 PR3034 and CPC3018 change to AGND, PR3041 change to DGND.		
		118. 20111206 page07 add R5193 un-stuff for normal s3 PCIE LAN wake up.		
		119. 20111207 page33 remove PR1001/PR1004/ PR1043/PR1044 0ohm		
		120. 20111207 page21 Modify CN12 Pin define following up ZHA.		
		121. 20111207 page20 CN3 Pin51 to GND.		
		122. 20111207 page20 change CN13 Pin5/U5006.11 net name BT_POWERON# to BT_POWERON.		
		123. 20111207 page38 swap PR3042 and PR3041.		
		124. 20111207 page08 Change Y5000 footprint.		
		125. 20111207 page22 modify hole8 footprint and add net BATT_EN at Pin2.		
		126. 20111207 page22 modify hole8 footprint and change net BATT_EN to Pin3.		
	1B	1. 20120104 page11 VCCDSW3_3 change power plant to +3VPCU.		
		2. 20120104 page07 Change DPWEOK from REREST# to EC.		
		3. 20120109 page08 change Q33 footprint.		
		4. 20120105 page11 +3V_VCCM_SPI change to +3V_S5 and reserve +3V.		
		5. 20120105 page20 Q14/Q9 change transistor direct and power plant to +3V_S5.		
		6. 20120111 page15 Change C407 to 50V CAP and un-stuff C410 and change C406 to 50V 0805 size.		
		7. 20120112 page04 Add C753~C758 1uf CAP on +0.75V_DDR_VTT.		
		8. 20120113 page22 Change KB con footprint.		
		9. 20120113 page28 Change Q25.2 to GPU_TRIP# EC.		
		10. 20120113 page28 Change GPU Strap1 PD4.99k,strap4 PD 45.3k.		
		11. 20120113 page31 stuff PR256 for Battery enable, change PQ50 to dual mose of ACIN to EC and PCH acpresent# pin.		
		13. 20120117 Update EMI CAP.		
		11. 20120117 page24 Add net WLAN_OFF for IOAC on U36.81 to CN5.64.		
		12. 20120117 page36 PR146 change to 365ohm,un-stuff PR36,stuff PR43,stuff PR145, PU7 change to TPS51463.		
		13. 20120118 page22 Change CN12 footprint.		
		14. 20120118 page22 Add u37 for ICT test use.		
		15. 20120119 page24 Add Q46 to EC U36.114.		
		16. 20120119 Unstuff PR266 and stuff R346 .		
		17. 20120119 move R358 to near Q38 and del net DRAMRST_CNTRL_PCH,and EC_DRAMRST_CNTRL and R616.		
		18. 20120119 Change PR266 from 100k to 10k .		
		19. 20120120 Remove C644/C621/C622.		
		20. 20120120 Page 24 change R640/R61 power plant to +3V_S5.		
		21. 20120120 unstuff R573 and stuff R574 for DS3 function.		
	1C	1. 20120214 Page17Add c613 and c614 for LAN power noise.		
		2. 20120214 Page07 Add R642 between SUSWARN to SUSACK.		
		3. 20120216 Page24 Add iRST Gate and change 108pin SUSWRAN# to IOAC_PCIERST#.		
		4. 20120216 Page20 CN5 pin22 reserve IOAC_PCIERST# solution.		
		5. 20120217 Page28 un-stuff R547/R548, stuff Q35,un-stuff R383/R435, stuff Q26/Q25,add PU 10k +3V GPU_THAL# and GPU_TRIP#. R543/R548 PU from+3V to +3VPCU, for S5 current reduce.		
		6. 20120217 Page38 change PR77/PR81 to 27k,PR165/PR166 to 75k,PR76/PR80 to 30k		
		7. 20120217 change 0ohm to short pad.		
		8. 20120220 page 31 remove VA2 plant and PC205/PC202 PR124, move PD3 between PQ3 and PR10 for S5 current reduce.		
		9. 20120220 change PQ11, PQ2, PQ6, PQ10, PQ13, PQ5, PQ9, PQ49, PQ51 footprint to WDFN5-3_05X3_05-65.		
		10. 20120220 page7 Change net suswarn# to suswarn#_R PU.		
		11. 20120220 page36 PR145 un-stuff,PR145 change to 100,PR43 un-stuff, PR36 short pad.		
		12. 20120220 page24 add U36.105 GPIO KB_BL_EN pin to CN13.23.		
		13. 20120220 page20 Change Cn6 footprint		
		14. 20120221 page28 R527/R516 change power plant to +3V.		
		15. 20120221 page08 Change R620/R534 to 47K and stuff R620, R524 un-stuff		
		16. 20120221 page20 Add R650 for iRST selection.		
		17. 20120221 page15 CN7 pin33/34 connect to GND.		
		18. 20120222 page38 Unstuff PR219/PC137/PR288PC151.		
		19. 20120222 page38 Unstuff PR195/PC125/PR201/PC126.		
		20. 20120222 page15 del R299/R315.		
		21. 20120222 page14 Change Footprint U30/31/32/35.		
		22. 20120223 page15 Change Footprint L22.		
		23. 20120223 page08 Change JTAG TDI form CPU TDO, TCK and TMS form U37 and CPU .		
		24. 20120223 page28 add dGPU_OPP# PU reserve R651.		
		25. 20120223 page28 add JTAG_TDO PU reserve R299.		
	2C	1. 20120302 page19 add CN13.30 net to BIOAED_ID4.		
		2. 20120305 page07 R397 from short pad to RC0402 footprint.		
		3. 20120322 page23 Remove RP1/RP2/RP3/RP4/L18/L19		
		4. 20120322 page31&37 , delete PR120 & PR121.		
		5. 20120322 page32 Reserve PC196 for PU1_PIN13		
		6. 20120322 page15 delete L1		
		7. 20120322 page24&31 Add NET<SB_ACDC> , add R653,Unstuff PR266 & R652 Wait for EC confirm by the result.		
		8. 20120328 page32 Remove PC196		
		9. 20120328 page35 Reserve PC202		
		10. 20120328 page34 Reserve PC205		
		11. 20120328 page38 Reserve PC206 , PC207		
		12. 20120328 page3 R204,R605 CS12002FB00 change to CS12002FB25		
		13. 20120328 page22 HOLE14 follow Hole11		
		14. 20120329 page22 HOLE11,HOLE14 footprint change to H-TE256X256I118BC256D118P2		
		14. 20120330 page23 R280/R281/R282/R283/R276/R277/R278/R279 change back to 0 ohm resistor.		
		15. 20120330 page31 PC196 add		
		15. 20120405 page23 R276,R277,R278,R279,R280,R281,R282,R283 change to 15 ohm		