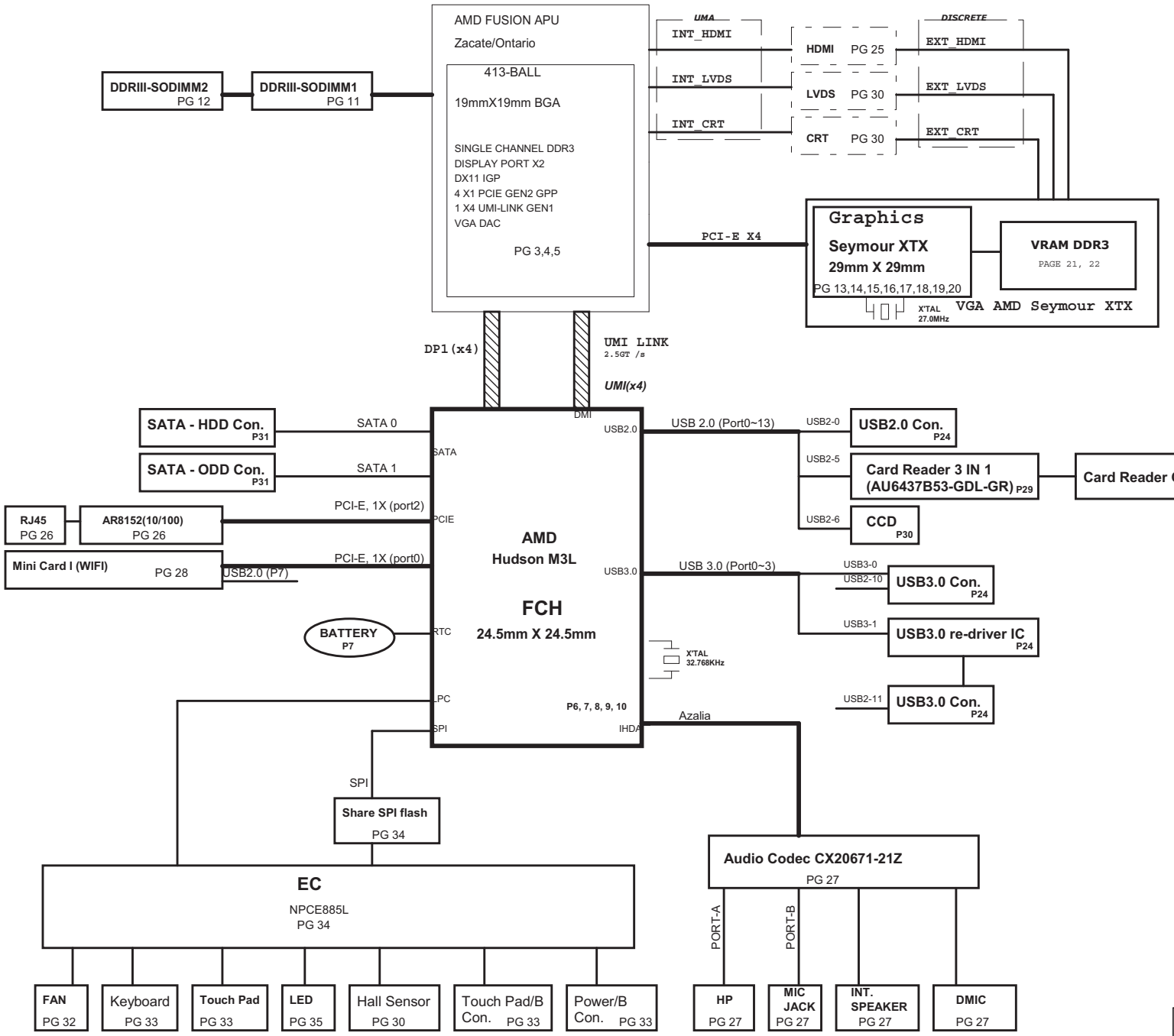
14" BY7D Brazos 2.0 Block Diagram

PCB STACK UP

- LAYER 1 : TOP
- LAYER 2 : GND
- LAYER 3 : IN1
- LAYER 4 : SVCC
- LAYER 5 : IN2
- LAYER 6 : IN3
- LAYER 7 : GND
- LAYER 8 : BOT



POWER SYSTEM

ISL88731CHRTZ-T	P36
RT8223P	P37
TPS51216RUKR	P38
TPS51211DSCR	P39
TPS51211DSCR	P40
TPS51211DSCR	P40
OZ8380ALN	P41
ISL95870AHRUZ	P42

CHARGER P36

+15V P37
+3VPCU
+3V_S5
+3V
+3V_GPU
+5VPCU
+5V_S5
+5V
DISCHARGE

+SMDDR_VTERM P38
+SMDDR_VREF
+1.5VSUS
+1.5V
+1.5V_GPU

+1.0V P39
+1.0V_GPU

+1.1V_S5 P40
+1.1V
+1.8V
+1.8V_GPU

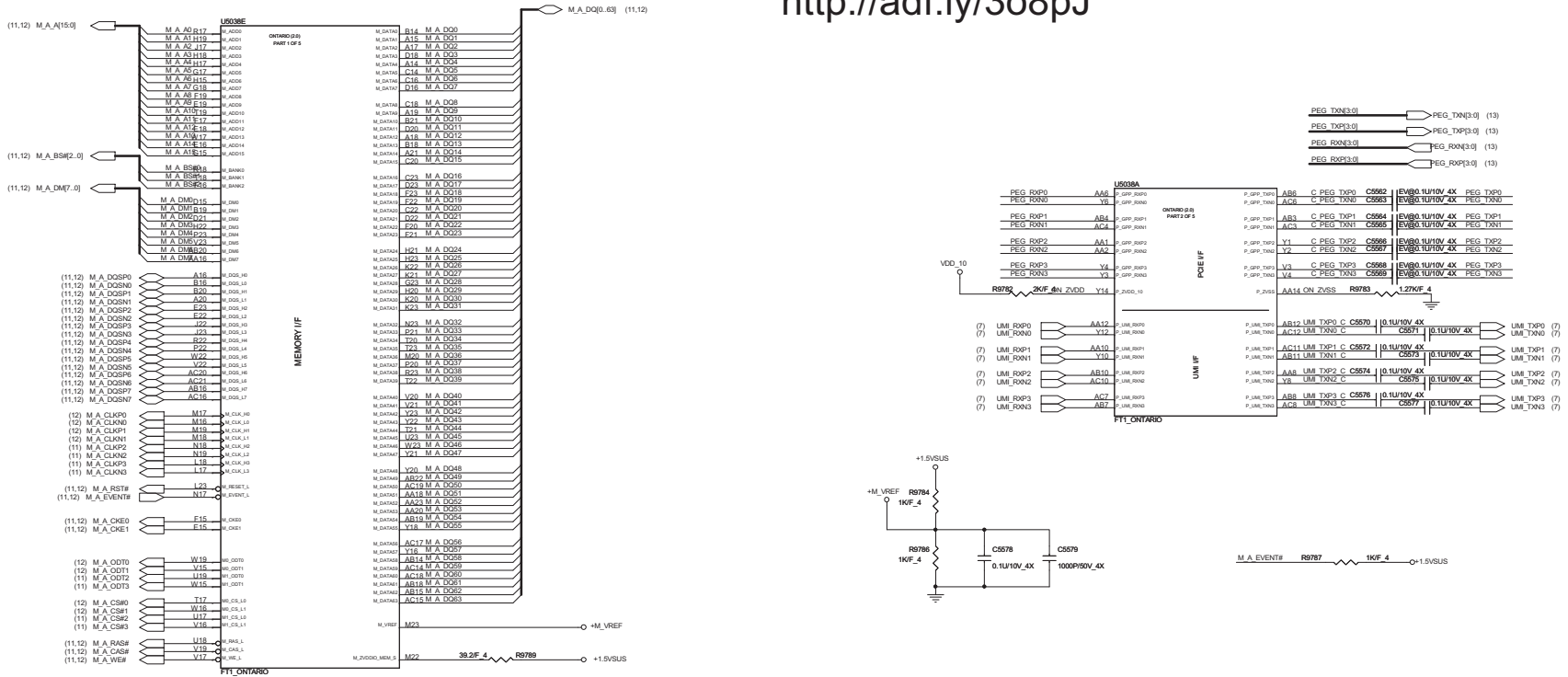
CPU_CORE P41
CPU_VDDNB_CORE

+VGPU_CORE P42

Quanta Computer Inc.
PROJECT : BY7D
Size | Document Number: Block Diagram | Rev 1A
Date: Monday, March 12, 2012 | Sheet 1 of 45

http://adf.ly/3o8pJ

03

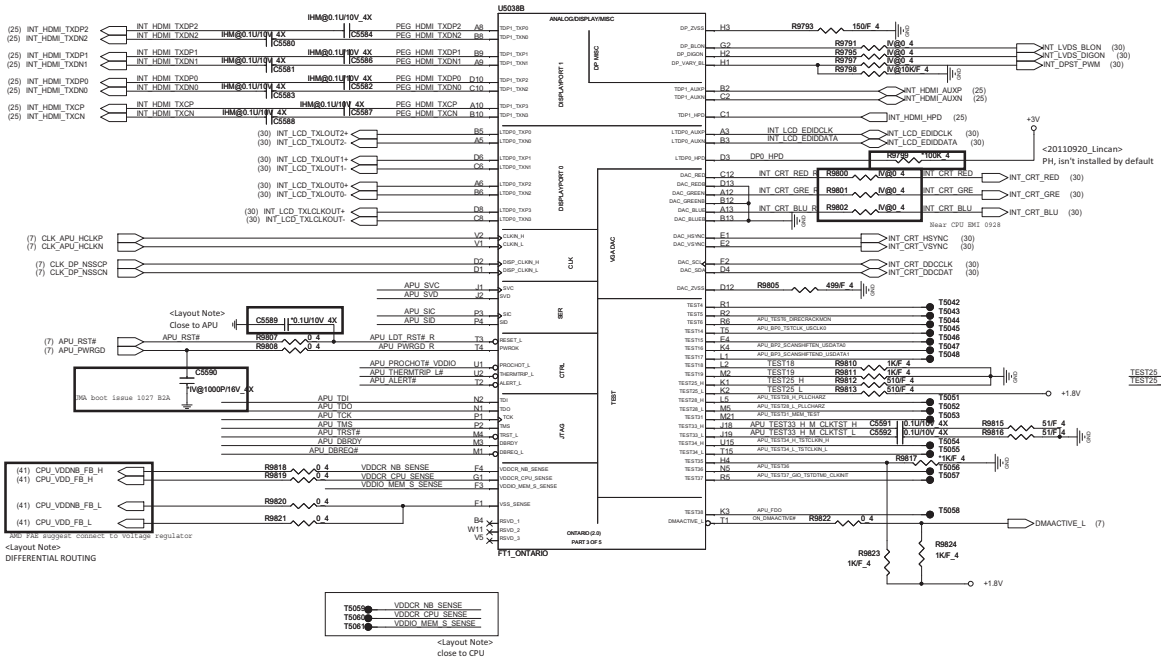


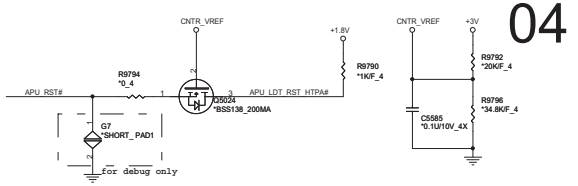
Quanta Computer Inc.

PROJECT : BY7D

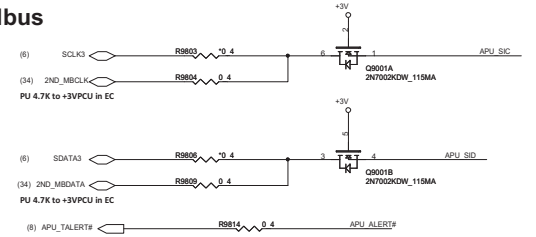
Size	Document Number	Rev
	ONTARIO MEM & PCIE I/F(1/3)	1A
Date: Wednesday, March 21, 2012	Sheet 3 of 45	

http://adf.ly/3o8pJ

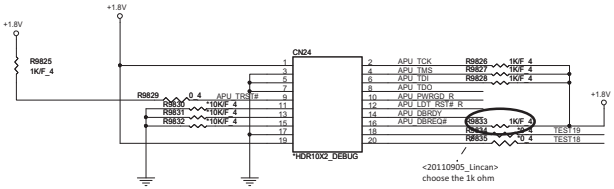




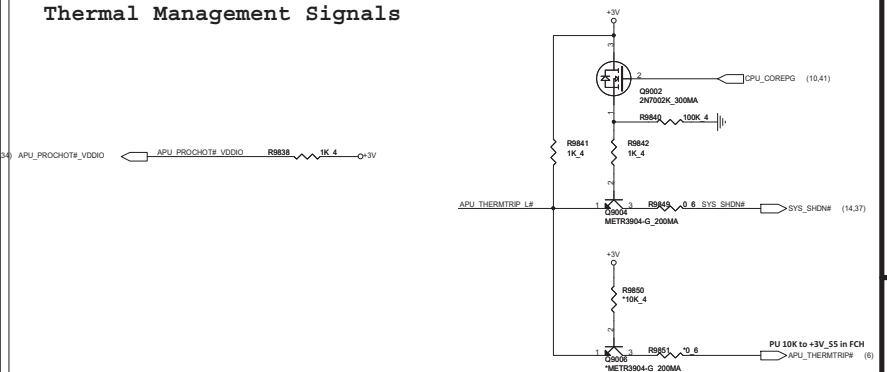
SMbus



HDT(Hardware Debug Tool) Connector



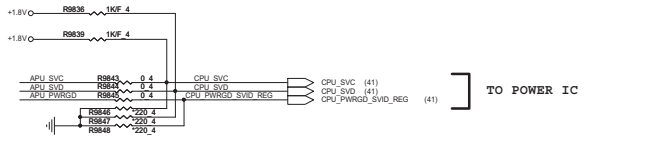
Thermal Management Signals



Serial VID

SI Change from AMD request

PV stage:add +1.5VSUS option
R540 R541 for Caspian CPU
power leakge issue

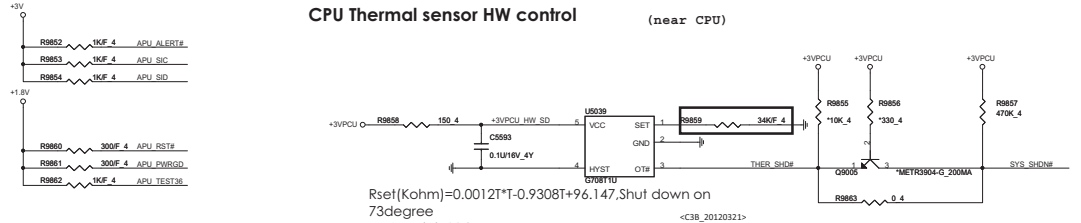


To indicate SVI interface is active

VFIX MODE — VID Override Circuit

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

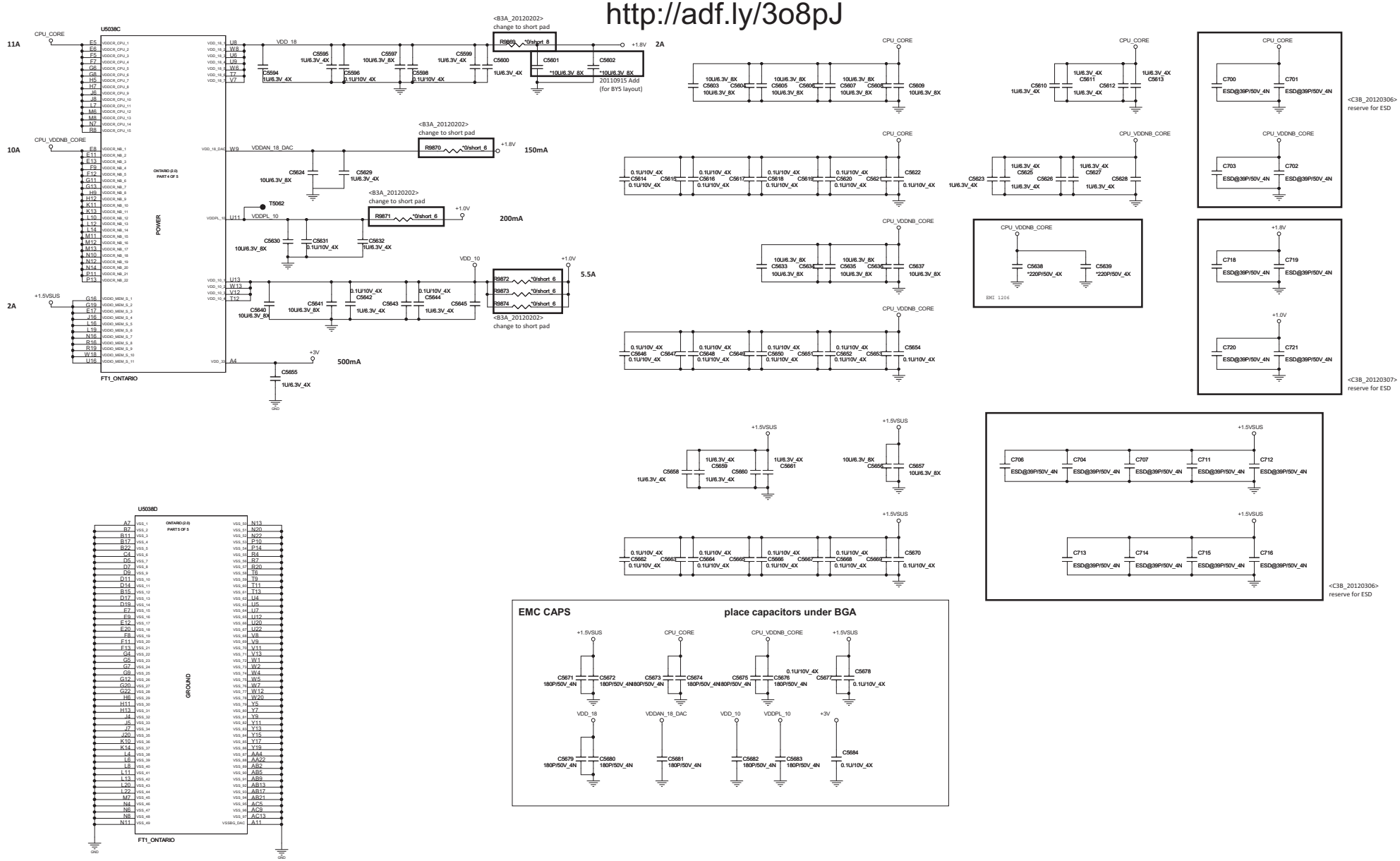
CPU Thermal sensor HW control (near CPU)



Rset(Kohm)=0.0012T*T-0.9308T+96.147,Shut down on 73degree
Hysteresis is 30C

<C3B_20120321>
change R9859 to 34K ohm for thermal
(Thermal shutdown temperature: UMA is 73 degree, DIS is 74degree)

Quanta Computer Inc.	PROJECT : BY7D	
Size	Document Number: ONTATIO DISPLAY/CLK/MI(2/3)	Rev: 1A
Date: Wednesday, March 21, 2012	Sheet 4 of 45	



Quanta Computer Inc.			
PROJECT : BY7D			
Size	Document Number		Rev
	ONTARIO POWER & DECOUP(3/3)		1A
Date: Wednesday, March 21, 2012	Sheet 5	of	48

http://adf.ly/3o8pJ

06

Note :
PCIE_RST2# asserted during transition to S3/S4/S5
to reset PCIE devices in the FCH

NC,no install by default

+3V_S5
R383 *2.2K_4 FCH_TEST0
R382 *2.2K_4 FCH_TEST1
R344 *2.2K_4 FCH_TEST2

For Dimm

+3V
R272 2.2K_4 SMB_RUN_CLK
R270 2.2K_4 SMB_RUN_DAT
R271 *10K_4 GPIO65

CLK_REQG# Not Implemented: leave unconnected

For Lan&WiFi

+3V_S5
R396 2.2K_4 SMB_LAN_CLK
R384 2.2K_4 SMB_LAN_DAT

Note:
SCL0/SDA0: for SMBUS in the S0 power domain
SCL1/SDA1: for SMBUS in the S5 power domain

+3V_S5
R685 10K_4 APU_THERMTRIP#
R368 10K_4 USB_SC_OC#
R374 10K_4 USB_NORMAL_OC#
R377 10K_4 FCH_JTAG_TCK

+3V_S5
R407 10K_4 PCIE_WAKE#
R375 2.2K_4 PWR_BTN#

Note:
LLB#, WAKE# and PWR_BTN need pull up to +3VPCU only if S5+ mode is supported

<B3A_20120130>
add for EMI (BOT: -9090, 5240)
SMB_LAN_CLK
C601
E@2200P/50V_4X

Note: M3L doesn't have VGA_PD function
Note :
GPIO[48:65] integrated PU 8.2K to +3V

Note :
Gevent[12:18]# integrated PU 10K to +3V_S5
(Integrated PU is not supported when the pin is configured for USB over current function)

T92 FCH_JTAG_TCK
T93 FCH_JTAG_TDI
T94 FCH_JTAG_RST#

To Azalia

HDaudio interface are +3V_S5

(27) ACZ_SDOUT ACZ_SDOUT R392 33_4 ACZ_SDOUT_R
(27) ACZ_SYNC ACZ_SYNC R391 33_4 ACZ_SYNC_R
(27) ACZ_BITCLK ACZ_BITCLK R406 33_4 ACZ_BCLK_R
C571 *22P/50V_4N
(27) ACZ_RST# ACZ_RST# R357 33_4 ACZ_RST#_R
(27) ACZ_SDIN0 ACZ_SDIN0

+3V_S5
R662 10K_4
G2 *SHORT_PAD

+3V_S5
R286 *10K_4
G5 *SHORT_PAD

For LAN,WLAN
(26,28) FCH_PCIE_RST# R678 33_4
(7,28,29,34) PLTRST# D43 B130LAW-7-F_1A
R438 *0_4
C844 150P/50V_4N

T84 GEVENT22#
T77 GEVENT21#
(34) SLP_S3# SLP_S3#
(34) SLP_S5# SLP_S5#
(34) DNBSWON# DNBSWON# R682 0_4 PWR_BTN#
(10) FCH_PWRGD FCH_PWRGD
FCH_TEST0
T95 FCH_TEST1
FCH_TEST2
(34) EC_A20GATE EC_A20GATE
(34) EC_KBRST# EC_KBRST#
(34) EC_EXT_SCI# EC_EXT_SCI#
T100 GEVENT23#
(34) LPCPD# LPCPD#
SYS_RST#
(26,28) PCIE_WAKE# PCIE_WAKE#
T80 GEVENT20#
(4) APU_THERMTRIP# APU_THERMTRIP#
C379 33P/50V_4N
+3VO R288 10K/F_4 WD_PWRGD
(34) RSMRST_GATE# R430 0_4 RSMRST#
R432 22K_4

(26) FCH_PCIE_LAN_CLKREQ# FCH_PCIE_LAN_CLKREQ#
(8) BOARD_ID8 BOARD_ID8
(8) BOARD_ID9 BOARD_ID9
(27) PCBEEP PCBEEP
(11,12,33) SMB_RUN_CLK SMB_RUN_CLK
(11,12,33) SMB_RUN_DAT SMB_RUN_DAT
(26,28) SMB_LAN_CLK SMB_LAN_CLK
(26,28) SMB_LAN_DAT SMB_LAN_DAT
T34 GPIO62
(28) FCH_PCIE_WLAN_CLKREQ# FCH_PCIE_WLAN_CLKREQ#
T29 GPIO51
(8) SPI_HOLD# SPI_HOLD#
GPIO65

T81 FCH_BLINK
T79 GEVENT6#
T83 GEVENT17#
T86 GEVENT18#
T87 FCH_JTAG_TDO
FCH_JTAG_TCK
FCH_JTAG_TDI
(24,34) USB_SC_OC# USB_SC_OC# R711 *0_4
(24,34) USB_NORMAL_OC# USB_NORMAL_OC# R710 *0_4
FCH_JTAG_RST#

ACZ_BCLK_R
ACZ_SDOUT_R
ACZ_SDIN0
ACZ_SDIN1
ACZ_SDIN2_R
ACZ_SDIN3_R
ACZ_SYNC_R
ACZ_RST#_R
R734 *10KX8
(8,33) BOARD_ID10
T65
T42

KSO_5
T71

T66 T67 T68 T69 T70 T72 T73 T74 T75 T76 T78 T82 T85 T88 T89 T90 T91

KSO_[17:0] provided test points (follow checklist)

U3A
HUDSON-M3
Part 4 of 5
Hudson-M3

PCIE_RST2# AB6
GEVENT22# R2
GEVENT21# W2
SLP_S3# T3
SLP_S5# W3
PWR_BTN# J4
PWR_GOOD N7
FCH_TEST0 T9
FCH_TEST1 T10
FCH_TEST2 V9
EC_A20GATE AE22
EC_KBRST# AG19
EC_EXT_SCI# R8
GEVENT23# C26
LPCPD# T5
SYS_RST# U4
PCIE_WAKE# K1
GEVENT20# V7
APU_THERMTRIP# R10
RSMRST# U2
FCH_PCIE_LAN_CLKREQ# AG24
BOARD_ID8 AE25
BOARD_ID9 AF22
PCBEEP AH17
SMB_RUN_CLK AG18
SMB_RUN_DAT AD26
SMB_LAN_CLK AD25
SMB_LAN_DAT T7
GPIO62 AG25
FCH_PCIE_WLAN_CLKREQ# AG22
GPIO51 J2
SPI_HOLD# AG26
GPIO65 AF25
FCH_BLINK M7
GEVENT6# R6
GEVENT17# T1
GEVENT18# P6
FCH_JTAG_TDO F5
FCH_JTAG_TCK P5
FCH_JTAG_TDI J7
FCH_JTAG_RST# T8
ACZ_BCLK_R AB3
ACZ_SDOUT_R AB1
ACZ_SDIN0 AA2
ACZ_SDIN1 Y5
ACZ_SDIN2_R Y3
ACZ_SDIN3_R Y1
ACZ_SYNC_R AD6
ACZ_RST#_R AE4
BOARD_ID10 K19
PS2_DAT/SDA4/GPIO187 J19
PS2_CLK/CEC/SCL4/GPIO188 J21
SPI_CS2#/GBE_STAT2/GPIO166 D21
PS2KB_DAT/GPIO189 C20
PS2KB_CLK/GPIO190 D23
PS2M_DAT/GPIO191 C22
PS2M_CLK/GPIO192
KSO_0/GPIO209 F21
KSO_1/GPIO210 E20
KSO_2/GPIO211 F20
KSO_3/GPIO212 A22
KSO_4/GPIO213 E18
KSO_5/GPIO214 A20
KSO_6/GPIO215 J18
KSO_7/GPIO216 H18
KSO_8/GPIO217 G18
KSO_9/GPIO218 B21
KSO_10/GPIO219 K18
KSO_11/GPIO220 D18
KSO_12/GPIO221 A18
KSO_13/GPIO222 C18
KSO_14/XDB0/GPIO223 B19
KSO_15/XDB1/GPIO224 B17
KSO_16/XDB2/GPIO225 A24
KSO_17/XDB3/GPIO226 D17

USBCLK/14M_25M_48M_OSC G8
USB_RCOMP B9 R647 11.8K/F_6
USB_FSD1P/GPIO186 H1 T157
USB_FSD1N H3 T156
USB_FSD0P/GPIO185 H6 T159
USB_FSD0N H5 T158
USB_HSD13P H10
USB_HSD13N G10
USB_HSD12P K10
USB_HSD12N J12
USB_HSD11P G12 USBP11+ USBP11+ (24)
USB_HSD11N F12 USBP11- USBP11- (24)
USB_HSD10P K12 USBP10+ USBP10+ (24)
USB_HSD10N K13 USBP10- USBP10- (24)
USB_HSD9P B11
USB_HSD9N D11
USB_HSD8P E10
USB_HSD8N F10
USB_HSD7P C10 USBP7+ USBP7+ (28)
USB_HSD7N A10 USBP7- USBP7- (28)
USB_HSD6P H9 USBP6+ LCD USBP6+_LCD (30)
USB_HSD6N G9 USBP6- LCD USBP6-_LCD (30)
USB_HSD5P A8 USBP5+ USBP5+ (29)
USB_HSD5N C8 USBP5- USBP5- (29)
USB_HSD4P F8
USB_HSD4N E8
USB_HSD3P C6
USB_HSD3N A6
USB_HSD2P C5 USBP2+ T170
USB_HSD2N A5 USBP2- T171
USB_HSD1P C1
USB_HSD1N C3
USB_HSD0P E1 USBP0+ USBP0+ (24)
USB_HSD0N E3 USBP0- USBP0- (24)
USBSS_CALRP C16 USBSS_CALRP R646 1K@1K/F_4
USBSS_CALRN A16 USBSS_CALRN R642 1K@1K/F_4
+FCH_VDD_11_SSUSB_S
USB_SS_TX3P A14
USB_SS_TX3N C14
USB_SS_RX3P C12
USB_SS_RX3N A12
USB_SS_TX2P D15
USB_SS_TX2N B15
USB_SS_RX2P E14
USB_SS_RX2N F14
USB_SS_TX1P F15 USB3_TXP1 USB3_TXP1 (24)
USB_SS_TX1N G15 USB3_TXN1 USB3_TXN1 (24)
USB_SS_RX1P H13 USB3_RXP1 USB3_RXP1 (24)
USB_SS_RX1N G13 USB3_RXN1 USB3_RXN1 (24)
USB_SS_TX0P J16 USB3_TXP0 USB3_TXP0 (24)
USB_SS_TX0N H16 USB3_TXN0 USB3_TXN0 (24)
USB_SS_RX0P J15 USB3_RXP0 USB3_RXP0 (24)
USB_SS_RX0N K15 USB3_RXN0 USB3_RXN0 (24)
SCL2/GPIO193 H19 SMB_EC_CLK R318 *0_4 MBCLK MBCLK (34,36)
SDA2/GPIO194 G19 SMB_EC_DAT R315 *0_4 MBDATA MBDATA (34,36)
SCL3_LV/GPIO195 G22 SCLK3 SCLK3 (4)
SDA3_LV/GPIO196 G21 SDATA3 SDATA3 (4)
EC_PWM0/EC_TIMER0/GPIO197 F22
EC_PWM1/EC_TIMER1/GPIO198 H22
EC_PWM2/EC_TIMER2/WOL_EN/GPIO199 J22 EC_PWM2 EC_PWM2 (10)
EC_PWM3/EC_TIMER3/GPIO200 H21
KSI_0/GPIO201 K21
KSI_1/GPIO202 K22
KSI_2/GPIO203 F22
KSI_3/GPIO204 F24
KSI_4/GPIO205 E24
KSI_5/GPIO206 B23
KSI_6/GPIO207 C24
KSI_7/GPIO208 F18

USB 2.0/1.1 MISC
USB 2.0 GPIO
USB 3.0 OC
USB 3.0 ALDIO
ACPI / WAKE UP EVENTS
EMBEDDED CTRL

HUB3
Reserve USB2.0/3.0 option (Left Up)
USB3.0 S&C (Right)

HUB2
WLAN
CCD on LVDS
Card Reader

HUB1
USB2.0 debug port (Left Down)

USB_SS_TX/RX[3,2]P/N,USB_HSD[13, 12, 9, 4]P/N,USB_FSD[1,0]P/N signal pairs do not exist on Hudson-M3L/D3L

USB3.0 Port 2
USB3.0 S&C

Note :
USB 2.0 and USB 3.0 signal pair combinations to a single USB 3.0 connector:
- USB_SS_TX/RX1P/N and USB_HSD11P/N
- USB_SS_TX/RX0P/N and USB_HSD10P/N

<Layout Note>
USB P/N pairs with trace lengths up to 10"

Note:
SCL2/SDA2: for SMBUS in the S5 power domain
SCL3/SDA3: for SMBUS in the S5 power domain

+3V_S5 R15 0_4 R599 10K_4 SMB_EC_CLK
R600 10K_4 SMB_EC_DAT
+3V_S5 R14 0_4 R593 10K_4 SCLK3
+3V R594 *0_4 R595 10K_4 SDATA3

SCL2/SDA2:
SMBUS Implemented: PU 2.2K to +3V_S5
SMBUS Not Implemented: PU 10K to +3V_S5
SCL3/SDA3:
Low Voltage SMBUS Implemented: PU 10K to APU_VDDIO (+3V)
Low Voltage SMBUS Not Implemented: PU 10K to +3V_S5

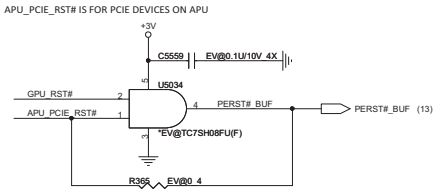
EC will Conflict with FCH, did not mount R315&R318

EC	FCH	Device	I2C_Device(S)		
I2Ce_1(M)	I2Cf_2(M)	Charger	Battery		ALL/S5
I2Ce_2(M)		EEPROM	APU		ALL
I2Ce_3(M)		VGA Thermal			
	I2Cf_3(M)			APU	S5
	I2Cf_1(M)	Lan	WLan		S5
	I2Cf_0(M)	Dimm	Clk Gen		S0

Quanta Computer Inc.
PROJECT : BY7D
Size | Document Number: FCH 1/5(GPIO/USB/AZ) | Rev: 1A
Date: Wednesday, March 21, 2012 | Sheet 6 of 45

Note :
PCIE_RST# asserted during transition to S3/S4/S5 to reset PCIE devices in the APU
A_RST# asserted during transition to S3/S4/S5 to reset all devices in the FCH or connected to it, except the ACPI logic in the FCH.

APU_PCIE_RST# IS FOR PCIE DEVICES ON APU



RTC Circuitry(RTC)

Net	GPIO		I/O	Power Well	DOS
GFXPG_1V_EN	GPIO28	DGPU_PWRGD	I	+3.3V	"0->1"
PE_GPIO0	GPIO44	DGPU_RST#	O	+3.3V	"0->1"
PE_GPIO1	GPIO45	DGPU_PWREN	O	+3.3V	"0->1"

For EMI

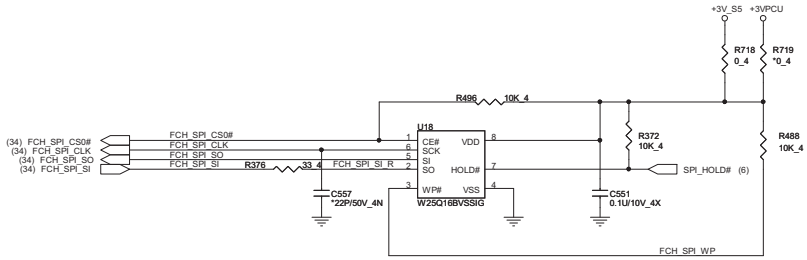
S5_CORE_EN is necessary to connect enable pin of +3VPCU/+5VPCU regulator for S5+ mode implementation

INTRUDER_ALERT# Left not connected (FCH has 50-kohm internal pull-up to VBAT).

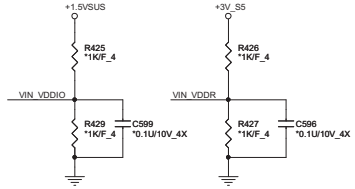
Quanta Computer Inc.		
PROJECT : BY7D		
Size	Document Number: FCH 2/5(ACPI/PCI/CLK)	Rev: 1A
Date: Wednesday, March 21, 2012	Sheet 7 of 45	

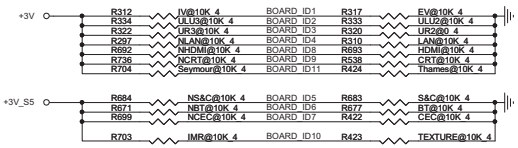
http://adf.ly/3o8pJ

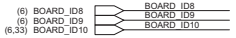
SPI Shared Flash



W25Q32BVSSIG:AKE391P0N00
W25Q16BVSSIG:AKE38FP0N01
A-stage Socket: DG008000031 91960-0084L

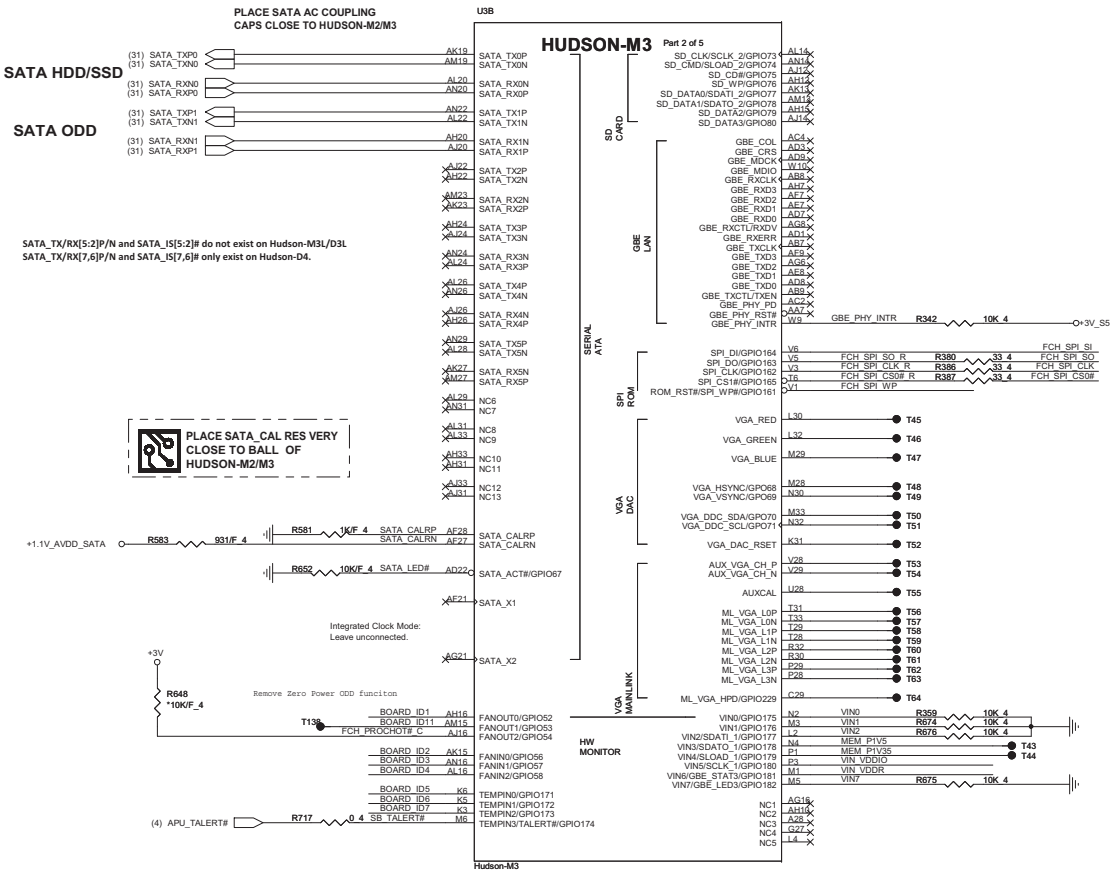




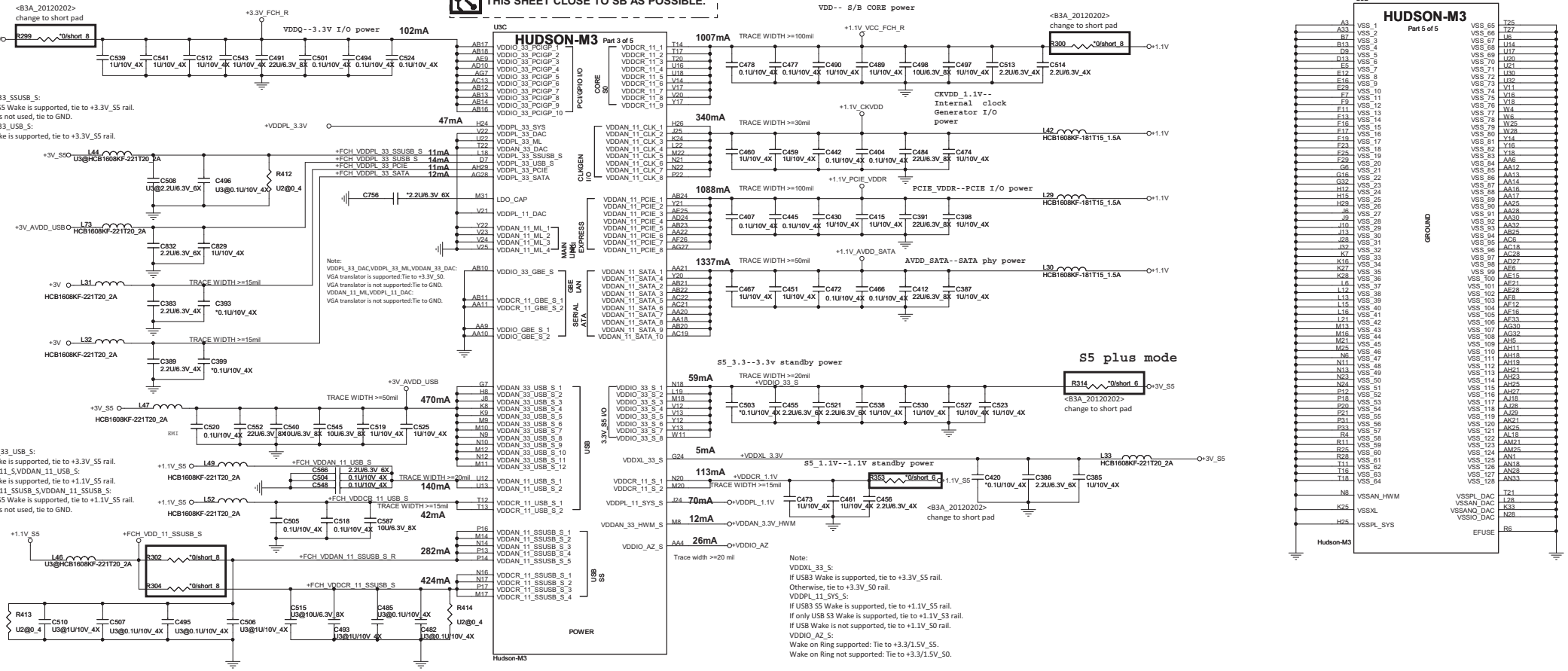


BOARD ID SETTING

Board ID	ID1	ID2	ID3	ID4	ID5	ID6	ID7	ID8	ID9	ID10	ID11
UMA SKU VGA SKU	H L										
ULU3 ULU2		H L									
UR3 UR2			H L								
W/O LAN W LAN				H L							
W/O S&C W S&C					H L						
W/O BT W BT						H L					
W/O CEC W CEC							H L				
W/O HDMI W HDMI								H L			
W/O CRT W CRT									H L		
Metal/IMR TEXTURE										H L	
Seymour Thames											H L



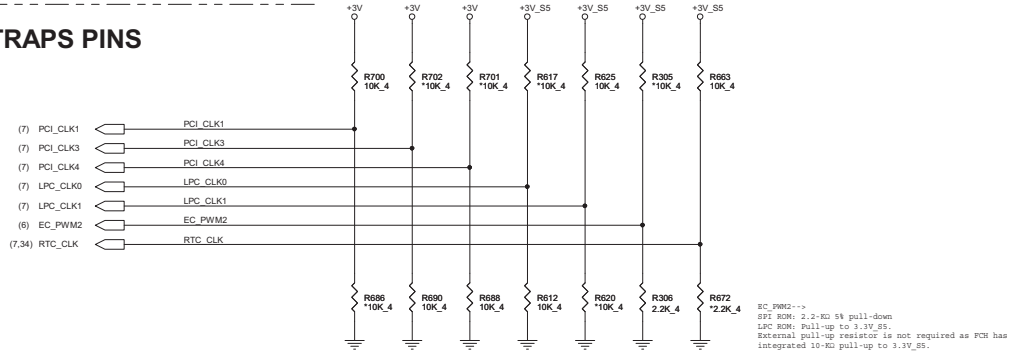
PLACE ALL THE DECOUPLING CAPS ON THIS SHEET CLOSE TO SB AS POSSIBLE.



Quanta Computer Inc.			
PROJECT : BY7D			
Size	Document Number: FCH 4/5(POWER)		Rev: 1A
Date: Wednesday, March 21, 2012	Sheet 9 of 45		

OVERLAP COMMON PADS WHERE POSSIBLE FOR DUAL-OP RESISTORS.

STRAPS PINS

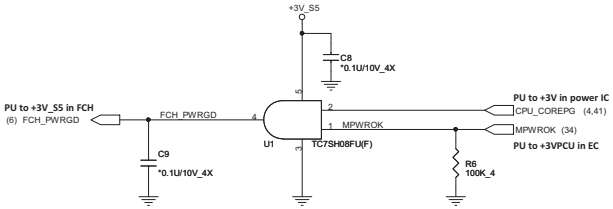


Remove PCI_CLK2 function

REQUIRED STRAPS

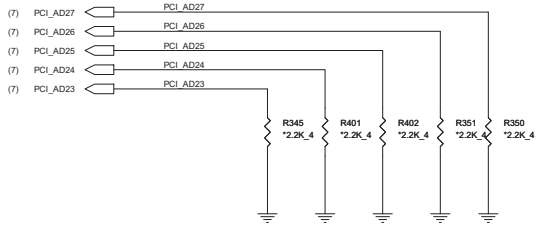
	--------	PCI_CLK1	PCI_CLK2	PCI_CLK3	PCI_CLK4	LPC_CLK0	LPC_CLK1	EC_PWM2	RTC_CLK
PULL HIGH	--------	ALLOW PCIE Gen2 DEFAULT	--------	USE DEBUG STRAP	non_Fusion CLOCK MODE	EC ENABLED	CLKGEN ENABLED DEFAULT	LPC ROM	S5 PLUS MODE DISABLED DEFAULT
PULL LOW	--------	FORCE PCIE Gen1	--------	IGNORE DEBUG STRAP DEFAULT	FUSION CLOCK MODE DEFAULT	EC DISABLED DEFAULT	CLKGEN DISABLED	SPI ROM DEFAULT	S5 PLUS MODE ENABLED

FCH POWER GOOD CIRCUIT

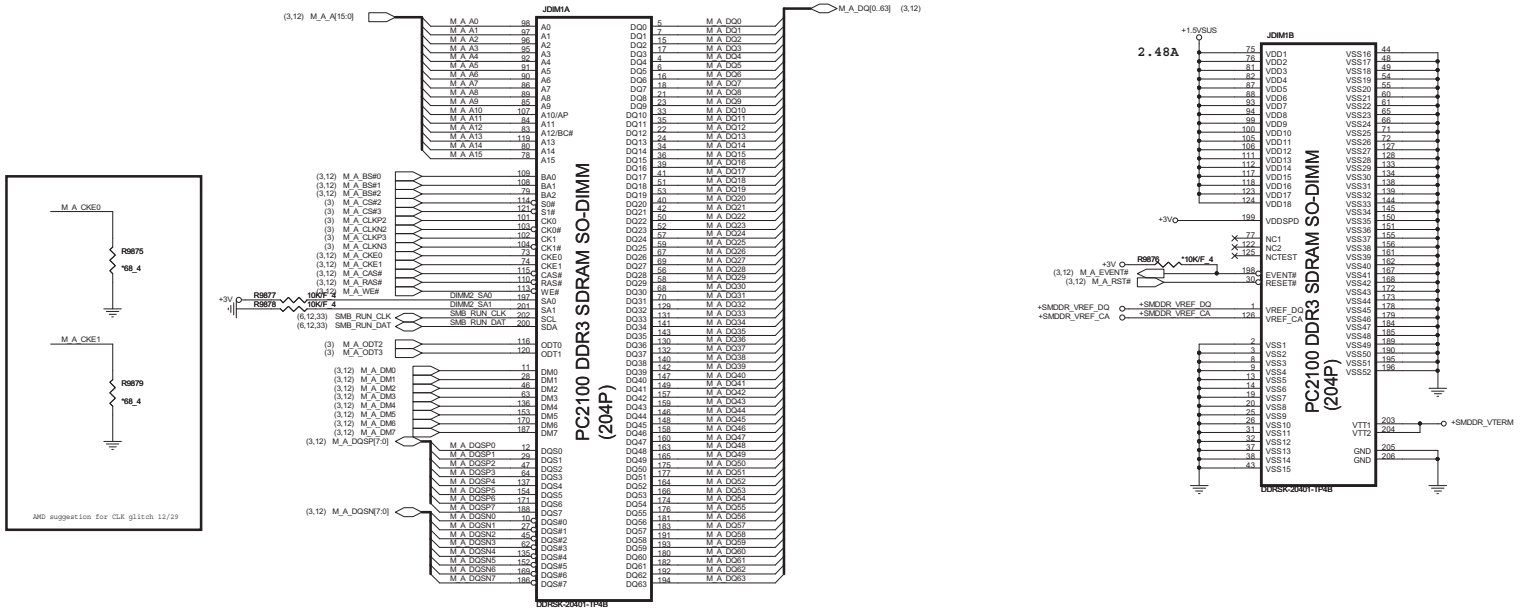


DEBUG STRAPS

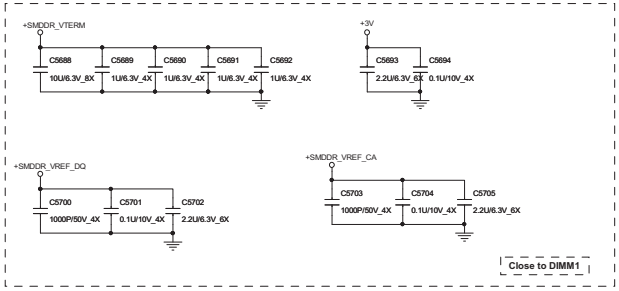
FCH HAS 15K INTERNAL PU FOR PCI_AD[27:23]



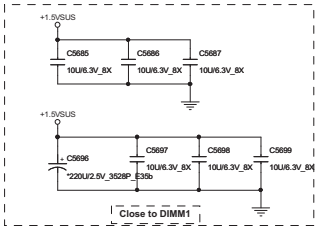
	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	USE PCI PLL DEFAULT	DISABLE ILA AUTORUN DEFAULT	USE FC PLL DEFAULT	USE DEFAULT PCIE STRAPS DEFAULT	DISABLE PCI MEM BOOT DEFAULT
PULL LOW	BYPASS PCI PLL	ENABLE ILA AUTORUN	BYPASS FC PLL	USE EEPROM PCIE STRAPS	ENABLE PCI MEM BOOT

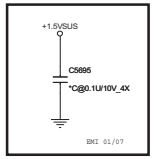


TERMINATOR DECOUPLING CAPACITOR



9.12A(VCC plane from source)





Quanta Computer Inc.		
PROJECT : BY7D		
Size	Document Number	Rev
	DDRIII SODIMM1	1A
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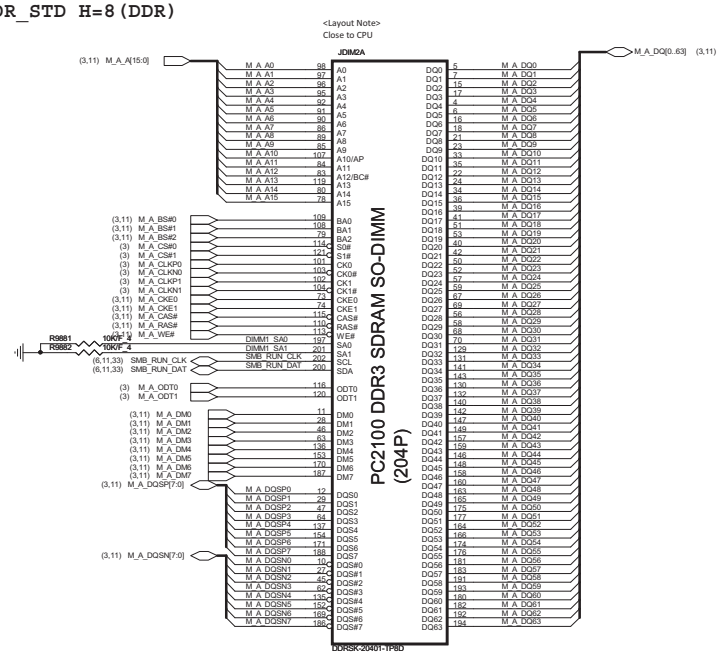
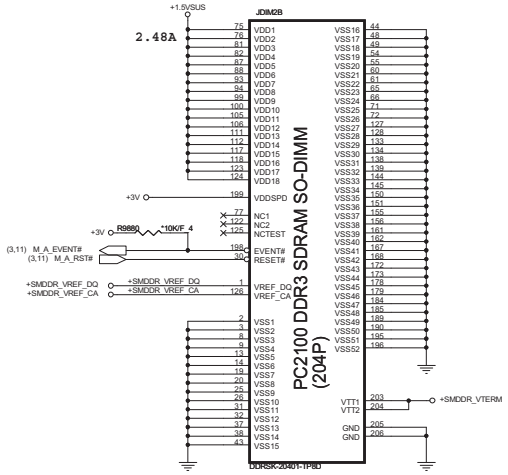
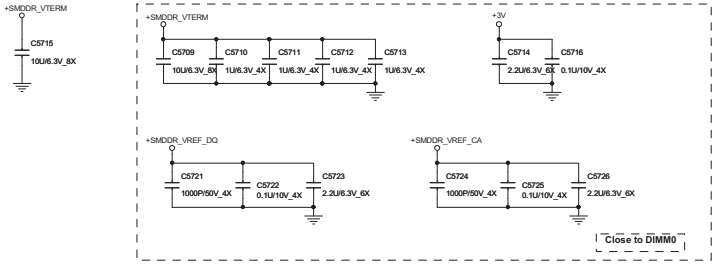
DDR_STD H=8(DDR)

http://adf.ly/3o8pJ

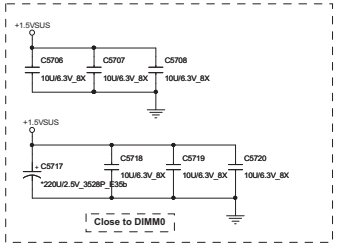


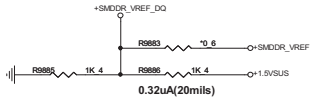


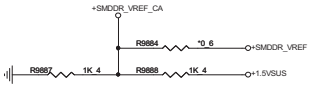
TERMINATOR DECOUPLING CAPACITOR



9.12A(VCC plane from source)







Quanta Computer Inc.		
PROJECT : BY7D		
Size	Document Number	Rev
	DDRIII SODIMM2	1A
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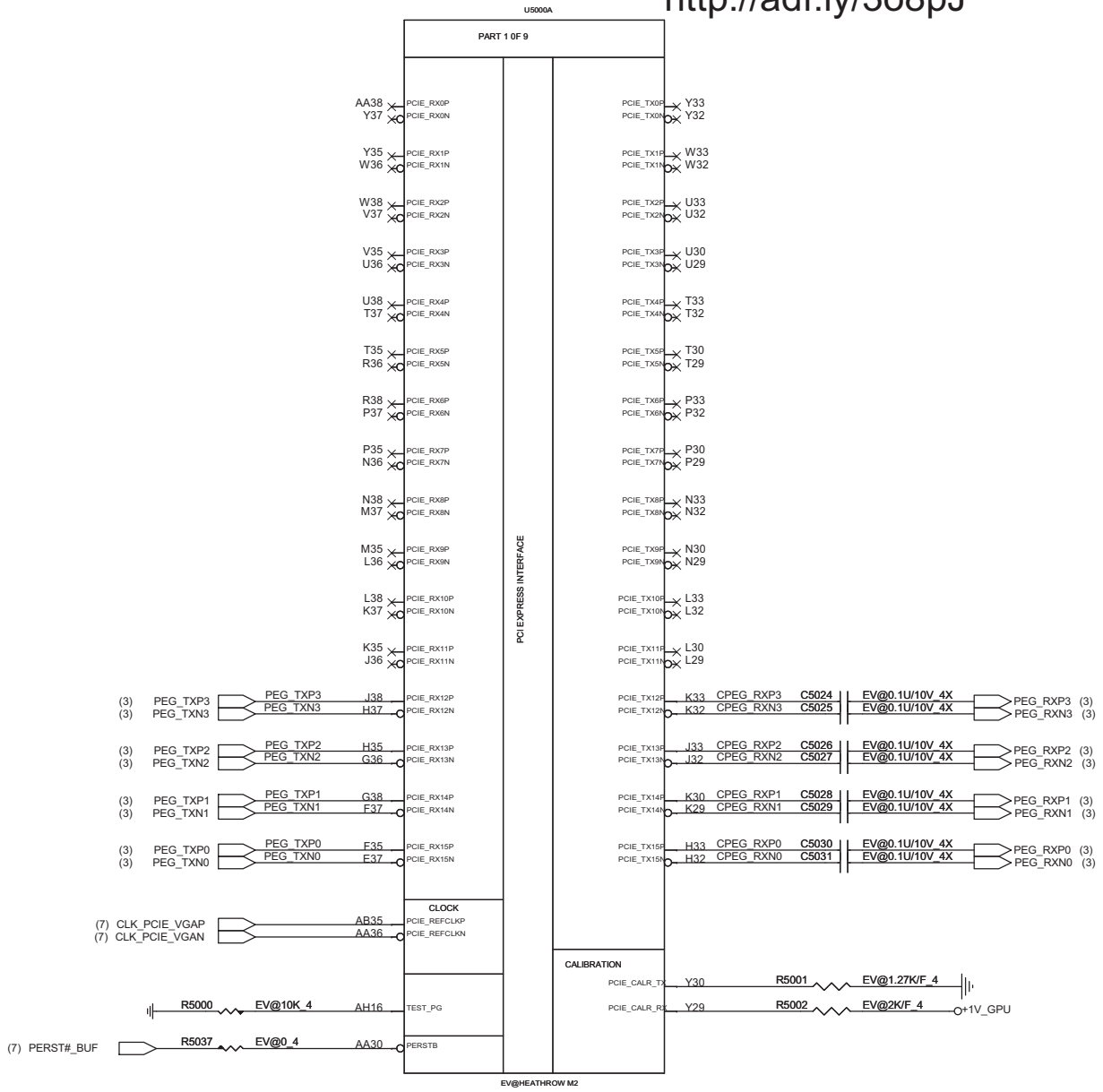

Seymour Power-on sequence

1 => +1V_GPU
2 => +3V_GPU
3 => +VGPU_CORE,+1.5V_GPU
4 => +1.8V_GPU

PEG

Intel platform: Lane0 ~ Lane15
Brazos platform: Lane12 ~ Lane15
Comal and Sabine platform: Lane8 ~Lane15

Quanta Computer Inc.

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Size	Document Number	Rev
	Seymour_M2/ PEG*16	1A
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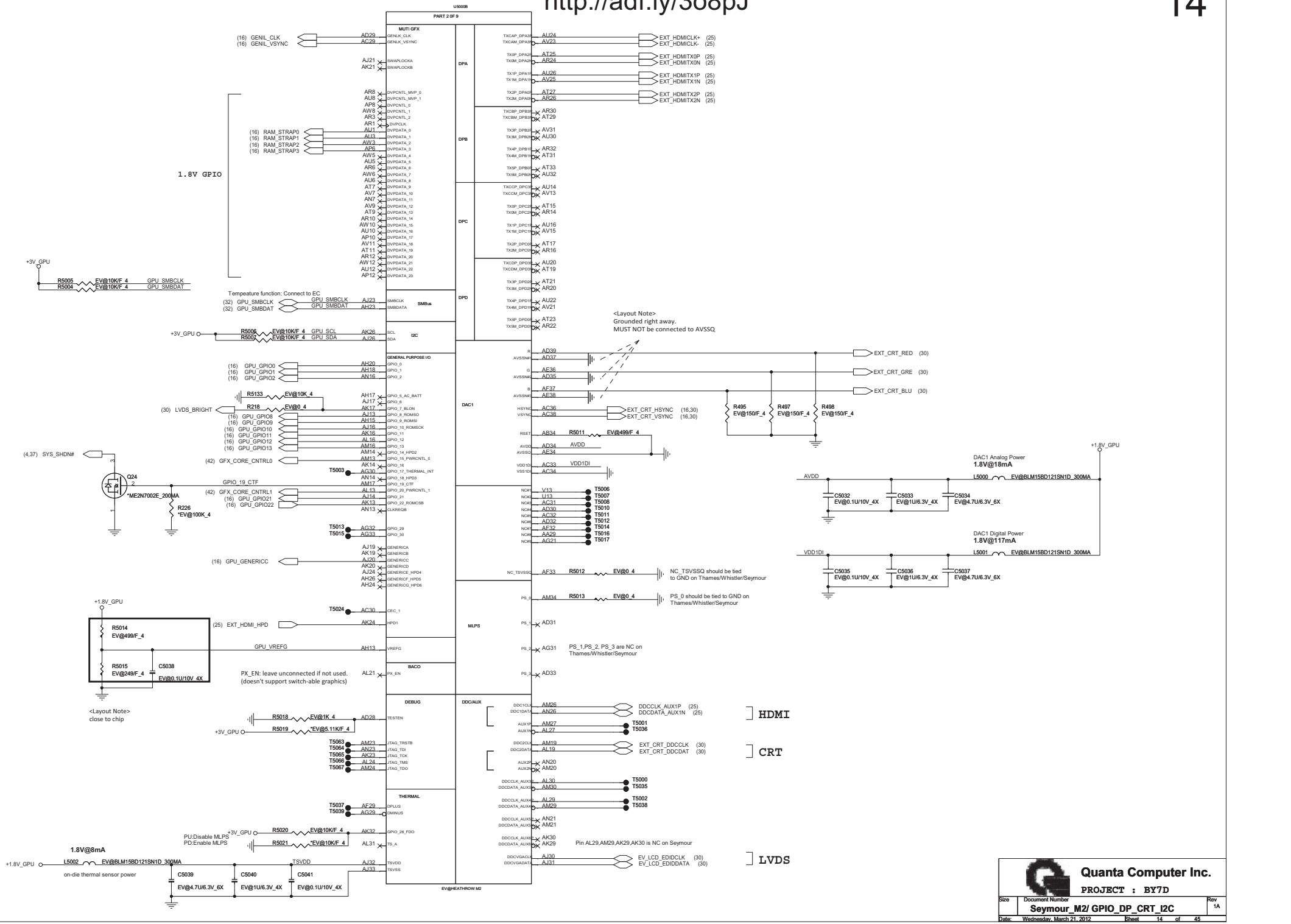
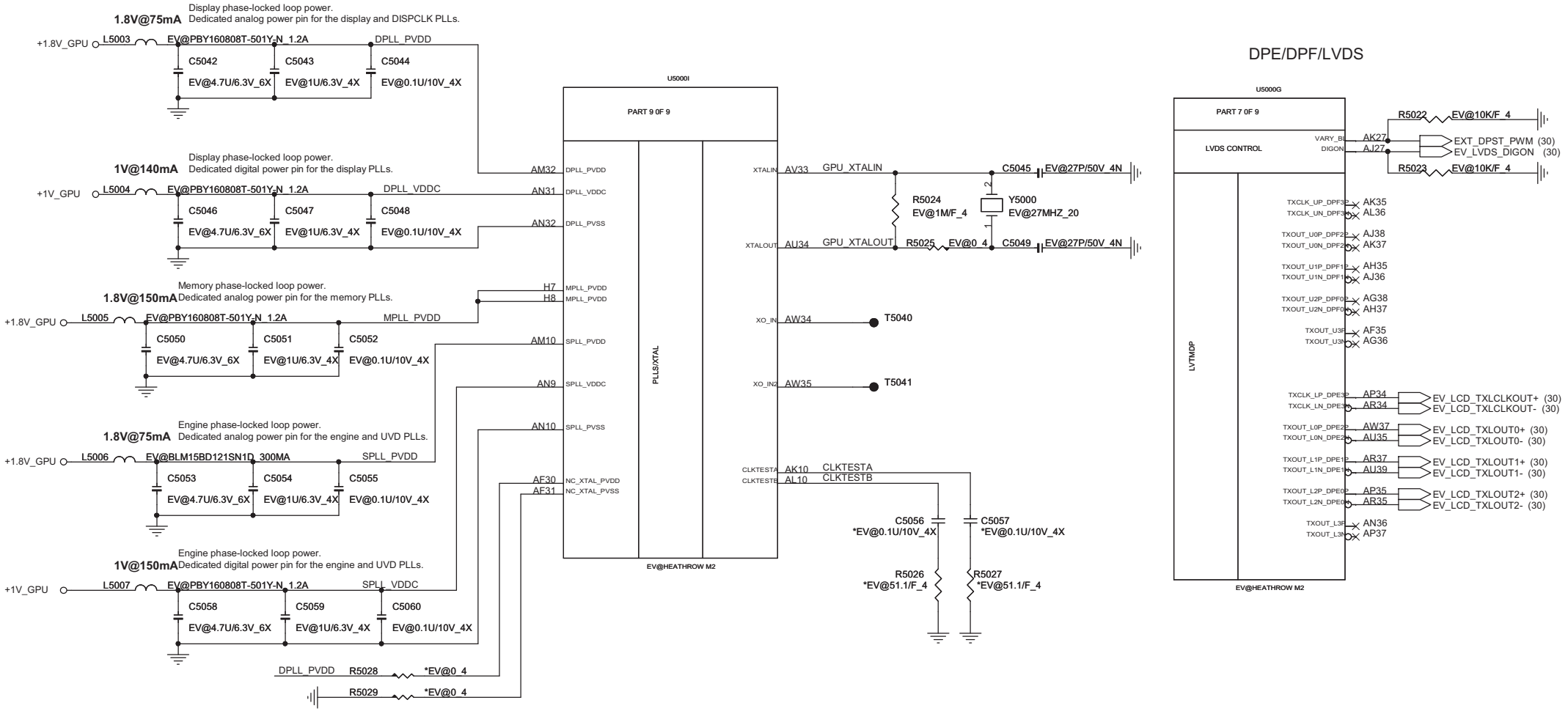

U5000B
PART 2 OF 9
MUTI GFX
DPA
DPB
DPC
DPD
SMBus
I2C
GENERAL PURPOSE I/O
DAC1
MLPS
BACO
DEBUG
DDC/AUX
THERMAL
1.8V GPIO
(16) GENIL_CLK
(16) GENIL_VSYNC
(16) RAM_STRAP0
(16) RAM_STRAP1
(16) RAM_STRAP2
(16) RAM_STRAP3
+3V_GPU
R5005 EV@10K/F_4 GPU_SMBCLK
R5004 EV@10K/F_4 GPU_SMBDAT
Tempeature function: Connect to EC
(32) GPU_SMBCLK
(32) GPU_SMBDAT
R5006 EV@10K/F_4 GPU_SCL
R5007 EV@10K/F_4 GPU_SDA
(16) GPU_GPIO0
(16) GPU_GPIO1
(16) GPU_GPIO2
R5133 EV@10K_4
R218 EV@0_4
(30) LVDS_BRIGHT
(16) GPU_GPIO8
(16) GPU_GPIO9
(16) GPU_GPIO10
(16) GPU_GPIO11
(16) GPU_GPIO12
(16) GPU_GPIO13
(4,37) SYS_SHDN#
(42) GFX_CORE_CNTRL0
T5003
Q24
*ME2N7002E_200MA
GPIO_19_CTF
(42) GFX_CORE_CNTRL1
(16) GPU_GPIO21
(16) GPU_GPIO22
R226 *EV@100K_4
T5013
T5015
(16) GPU_GENERICC
+1.8V_GPU
R5014 EV@499/F_4
R5015 EV@249/F_4
C5038 EV@0.1U/10V_4X
(25) EXT_HDMI_HPD
GPU_VREFG
PX_EN: leave unconnected if not used.
(doesn't support switch-able graphics)
<Layout Note>
close to chip
T5024
R5018 EV@1K_4
R5019 *EV@5.11K/F_4
T5063
T5064
T5065
T5066
T5067
T5037
T5039
R5020 EV@10K/F_4
R5021 *EV@10K/F_4
PU:Disable MLPS
PD:Enable MLPS
1.8V@8mA
L5002 EV@BLM15BD121SN1D_300MA
on-die thermal sensor power
C5039 EV@4.7U/6.3V_6X
C5040 EV@1U/6.3V_4X
C5041 EV@0.1U/10V_4X
TSVDD
EV@HEATHROW M2
<Layout Note>
Grounded right away.
MUST NOT be connected to AVSSQ
EXT_CRT_RED (30)
EXT_CRT_GRE (30)
EXT_CRT_BLU (30)
R495 EV@150/F_4
R497 EV@150/F_4
R498 EV@150/F_4
EXT_CRT_HSYNC (16,30)
EXT_CRT_VSYNC (16,30)
R5011 EV@499/F_4
AVDD
VDD1DI
T5006
T5007
T5008
T5010
T5011
T5012
T5014
T5016
T5017
R5012 EV@0_4
NC_TSVSSQ should be tied to GND on Thames/Whistler/Seymour
R5013 EV@0_4
PS_0 should be tied to GND on Thames/Whistler/Seymour
PS_1,PS_2, PS_3 are NC on Thames/Whistler/Seymour
Pin AL29,AM29,AK29,AK30 is NC on Seymour
DAC1 Analog Power
1.8V@18mA
L5000 EV@BLM15BD121SN1D_300MA
C5032 EV@0.1U/10V_4X
C5033 EV@1U/6.3V_4X
C5034 EV@4.7U/6.3V_6X
DAC1 Digital Power
1.8V@117mA
L5001 EV@BLM15BD121SN1D_300MA
C5035 EV@0.1U/10V_4X
C5036 EV@1U/6.3V_4X
C5037 EV@4.7U/6.3V_6X
T5001
T5036
T5000
T5035
T5002
T5038
DDCCLK_AUX1P (25)
DDCDATA_AUX1N (25)
EXT_CRT_DDCCLK (30)
EXT_CRT_DDCDAT (30)
EV_LCD_EDIDCLK (30)
EV_LCD_EDIDDATA (30)
HDMI
CRT
LVDS



Quanta Computer Inc.		
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Size	Document Number: Seymour_M2/ XTAL_LVDS	Rev 1A
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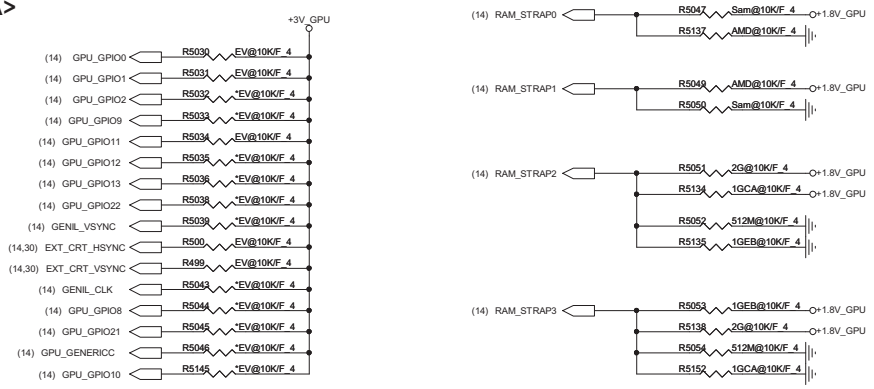
<VGA>



CONFIGURATION STRAPS -- SEE EACH DATABOOK FOR STRAP DETAILS
ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED,
THEY MUST NOT CONFLICT DURING RESET

STRAPS	MLPS	GPIO PIN	DESCRIPTION OF DEFAULT SETTINGS	Default Setting
MLPS_DISABLE	NA	GPIO_28_FDO	Enable MLPS, NA for Thames/Whistler/Seymour 0: Enable MLPS, disable GPIO PINSTRAP 1: Disable MLPS, enable GPIO PINSTRAP	X
TX_PWRS_ENB	PS_1[4]	GPIO0	Transmitter Power Savings Enable 0: 50% Tx output swing 1: Full Tx output swing	X
TX_DEEMPH_EN	PS_1[5]	GPIO1	PCIE Transmitter De-emphasis Enable 0: Tx de-emphasis disabled 1: Tx de-emphasis enabled	X
BIF_GEN3_EN_A	PS_1[1]	GPIO2	PCIE Gen3 Enable (NOTE: RESERVED for Thames/Whistler/Seymour) 0: GEN3 not supported at power-on 1: GEN3 supported at power-on	1
BIF_VGA DIS	PS_2[4]	GPIO9	VGA Control 0: VGA controller capacity enabled 1: VGA controller capacity disabled (for multi-GPU)	0
ROMIDCFG[2:0]	PS_0[3..1]	GPIO[13:11]	Serial ROM type or Memory Aperture Size Select If GPIO22 = 0, defines memory aperture size If GPIO22 = 1, defines ROM type 100 - 512Kbit M25P05A (ST) 101 - 1Mbit M25P10A (ST) 101 - 2Mbit M25P20 (ST) 101 - 4Mbit M25P40 (ST) 101 - 8Mbit M25P80 (ST) 100 - 512Kbit Pm25LV512 (Chingis) 101 - 1Mbit Pm25LV010 (Chingis)	XXX
BIOS_ROM_EN	PS_2[3]	GPIO22	Enable external BIOS ROM device 0: Disabled 1: Enabled	X
AUD[1] AUD[0]	NA NA	HSYNC VSYNC	00 - No audio function 01 - Audio for DP only 10 - Audio for DP and HDMI if dongle is detected 11 - Audio for both DP and HDMI HDMI must only be enabled on systems that are legally entitled, It is the responsibility of the system designer to ensure that the system is entitled to support this feature.	XX
CEC_DIS	PS_0[4]	GENLK_VSYNC	Enable CEC function. Reserved for Thames/Whistler/Seymour 0: Disabled 1: Enabled	X
			NOTE: ALLOW FOR PULLUP PADS FOR THE RESERVED STRAPS BUT DO NOT INSTALL RESISTOR IF THESE GPIOS ARE USEED, THEY MUST KEEP LOW AND NOT CONFLICT DURING RESET	
RESERVED	PS_1[3]	GENLK_CLK	Reserved	0
RESERVED	PS_1[2]	GPIO8	Reserved	0
RESERVED	NA	GPIO21	Reserved	0
RESERVED	NA	GENERICC	Reserved (for Thames/Whistler/Seymour only)	0
AUD_PORT_CONN_PINSTRAP[2] AUD_PORT_CONN_PINSTRAP[1] AUD_PORT_CONN_PINSTRAP[0]	PS_3[5] PS_3[4] PS_0[5]	NA NA NA	STRAPS TO INDICATE THE NUMBER OF AUDIO CAPABLE DISPLAY OUTPUTS 111 = 0 usable endpoints 110 = 1 usable endpoints 101 = 2 usable endpoints 100 = 3 usable endpoints 011 = 4 usable endpoints 010 = 5 usable endpoints 001 = 6 usable endpoints 000 = all endpoints are usable	XXX

DDR3 Memory TYPE

Vendor	Vendor P/N	STN B/S P/N	Size	RAM_STRAP3 DVPDATA_3	RAM_STRAP2 DVPDATA_2	RAM_STRAP1 DVPDATA_1	RAM_STRAP0 DVPDATA_0
Samsung	K4W1G1646G-BC11 (64M*16)	AKD5EGGT500 * 4	512MB	0	0	0	1
	K4W2G1646C-HC11 (128M*16,C-die)	AKD5MGWT500 * 4	1GB	0	1	0	1
	K4W2G1646E-HC11 (128M*16,E-die)	AKD5MGWT500 * 4	1GB	1	0	0	1
	K4W2G1646C-HC11 (128M*16)	AKD5MGWT500 * 8	2GB	1	1	0	1
AMD	23EY2387MC11 (64M*16)	AKD5EZWT700 * 4	512MB	0	0	1	0
	23EY4187MA11 (128M*16,A-die)	AKD5DZWT700 * 4	1GB	0	1	1	0
	23EY4187MB11 (128M*16,B-die)	TBD * 4	1GB	1	0	1	0
	23EY4187MA11 (128M*16)	AKD5DZWT700 * 8	2GB	1	1	1	0

System Memory Aperture size

GPIO9 BIOSROM		GPIO13 ROMIDCFG2	GPIO12 ROMIDCFG1	GPIO11 ROMIDCFG0
0	128M	0	0	0
0	256M	0	0	1
0	64M	0	1	0
0	32M	0	1	1

EEPROM

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	Seymour_M2/ STRAPS_Thermal	1A
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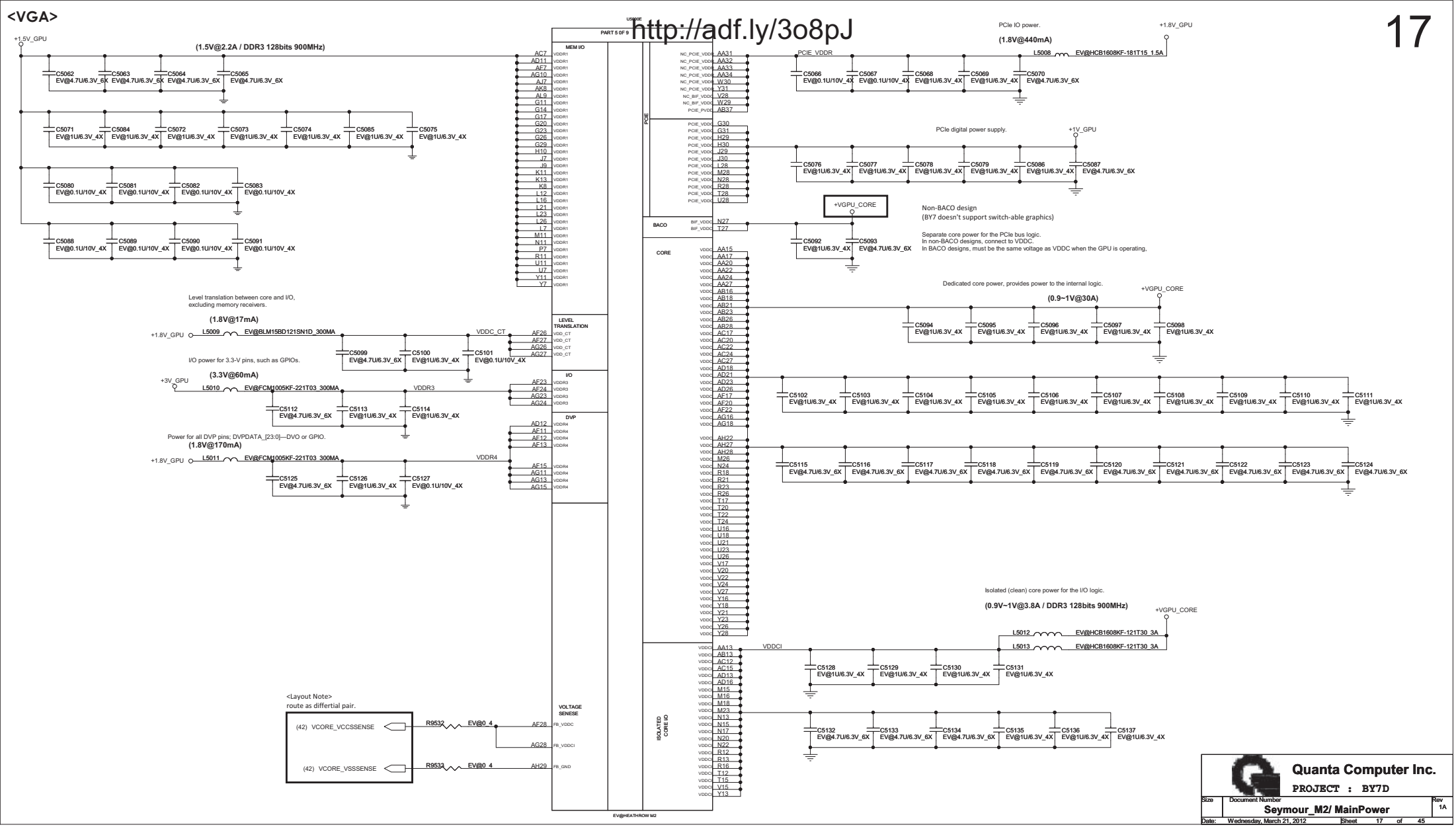

Quanta Computer Inc.

PROJECT : BY7D

Size	Document Number	Rev
	Seymour_M2/ MainPower	1A
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<VGA>

For Thames/Whistler/Seymour
a dedicated BEAD is required
for each DPAB_VDD18, DPCD_VDD18, DPEF_VDD18

For Thames/Whistler/Seymour
a dedicated BEAD is required
for each DPAB_VDD10, DPCD_VDD10, DPEF_VDD10

DP/TMDS/LVDS Transmitter Power
0.935V@222mA per port

U5000H
PART 8 0F 9
DP_VDDR
DP_VDDC
DP GND
CALIBRATION

DP/TMDS/LVDS Transmitter Power

DP mode: 1.8V@188mA per port
HDMI mode: 1.8V@237mA per port

(1.8V@237mA)
+1.8V_GPU — L5015 EV@PBY160808T-501Y-N_1.2A — DPAB_VDD18
C5138 EV@4.7U/6.3V_6X | C5139 EV@1U/6.3V_4X | C5140 EV@0.1U/10V_4X

(1.8V@237mA)
+1.8V_GPU — L5018 EV@PBY160808T-501Y-N_1.2A — DPCD_VDD18
C5150 EV@4.7U/6.3V_6X | C5151 EV@1U/6.3V_4X | C5152 EV@0.1U/10V_4X

(1.8V@237mA)
+1.8V_GPU — L5019 EV@PBY160808T-501Y-N_1.2A — DPEF_VDD18
C5153 EV@4.7U/6.3V_6X | C5154 EV@1U/6.3V_4X | C5155 EV@0.1U/10V_4X

DP_VDDR: AN24, AP24, AP25, AP26, AU28, AV29, AP20, AP21, AP22, AP23, AU18, AV19, AH34, AJ34, AF34, AG34, AM37, AL38

DP_VDDC: AP31, AP32, AN33, AP33, AP13, AT13, AP14, AP15, AL33, AM33, AK33, AK34

DP_VSSR: AN27, AP27, AP28, AW24, AW26, AN29, AP29, AP30, AW30, AW32, AN17, AP16, AP17, AW14, AW16, AN19, AP18, AP19, AW20, AW22, AN34, AP39, AR39, AU37, AF39, AH39, AK39, AL34, AV27, AR28, AV17, AR18, AN38, AM35

R5057 EV@150/F_4 — AW28 DPAB_CALR
R5058 EV@150/F_4 — AW18 DPCD_CALR
R5059 EV@150/F_4 — AM39 DPEF_CALR

(1V@222mA)
DPAB_VDD10 — L5014 EV@PBY160808T-501Y-N_1.2A — +1V_GPU
C5141 EV@4.7U/6.3V_6X | C5142 EV@1U/6.3V_4X | C5143 EV@0.1U/10V_4X

(1V@222mA)
DPCD_VDD10 — L5016 EV@PBY160808T-501Y-N_1.2A — +1V_GPU
C5144 EV@4.7U/6.3V_6X | C5145 EV@1U/6.3V_4X | C5146 EV@0.1U/10V_4X

(1V@222mA)
DPEF_VDD10 — L5017 EV@PBY160808T-501Y-N_1.2A — +1V_GPU
C5147 EV@4.7U/6.3V_6X | C5148 EV@1U/6.3V_4X | C5149 EV@0.1U/10V_4X

EV@HEATHROW M2

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	Seymour_M2/ DP_Powers	1A
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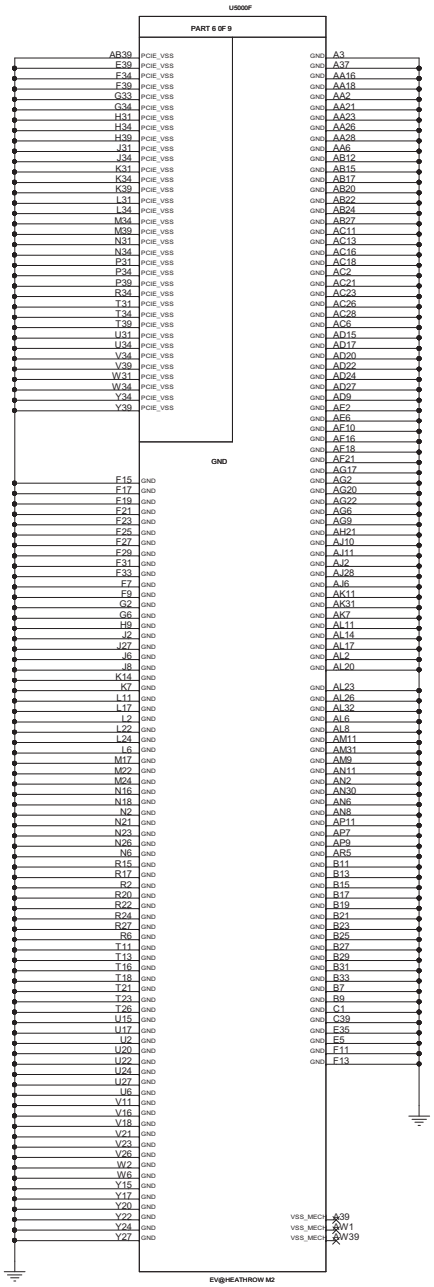

Quanta Computer Inc.		
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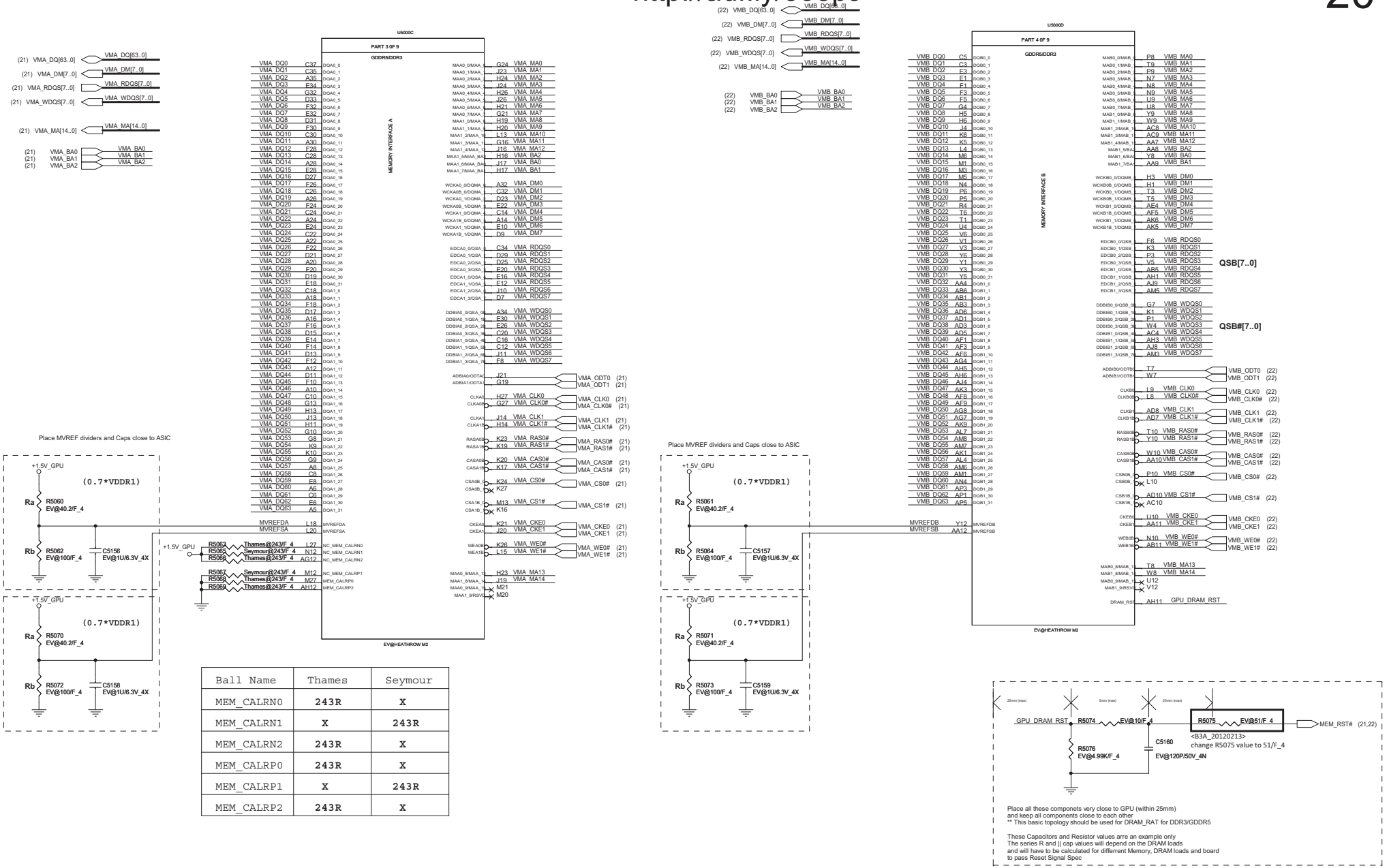

Ball Name	Thames	Seymour
MEM_CALRN0	243R	X
MEM_CALRN1	X	243R
MEM_CALRN2	243R	X
MEM_CALRP0	243R	X
MEM_CALRP1	X	243R
MEM_CALRP2	243R	X

Place all these componets very close to GPU (within 25mm)
and keep all components close to each other
** This basic topology should be used for DRAM_RAT for DDR3/GDDR5

These Capacitors and Resistor values arre an example only
The series R and || cap values will depend on the DRAM loads
and will have to be calculated for differrent Memory, DRAM loads and board
to pass Reset Signal Spec

Quanta Computer Inc.

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Size	Document Number	Rev
	Seymour_M2/ MEM Interface	1A
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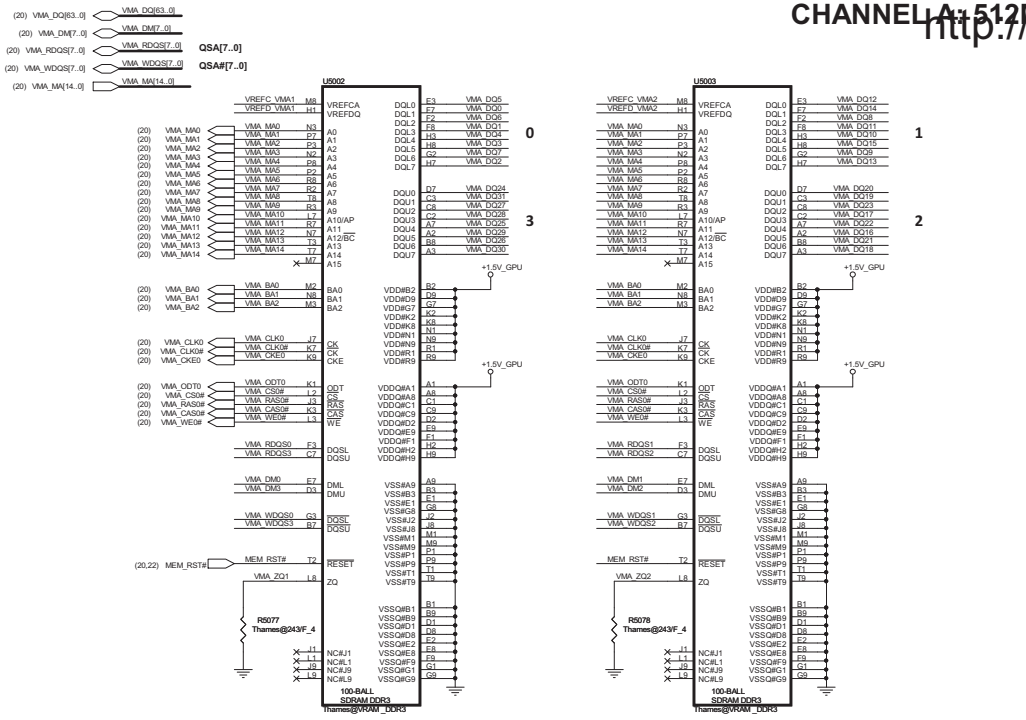
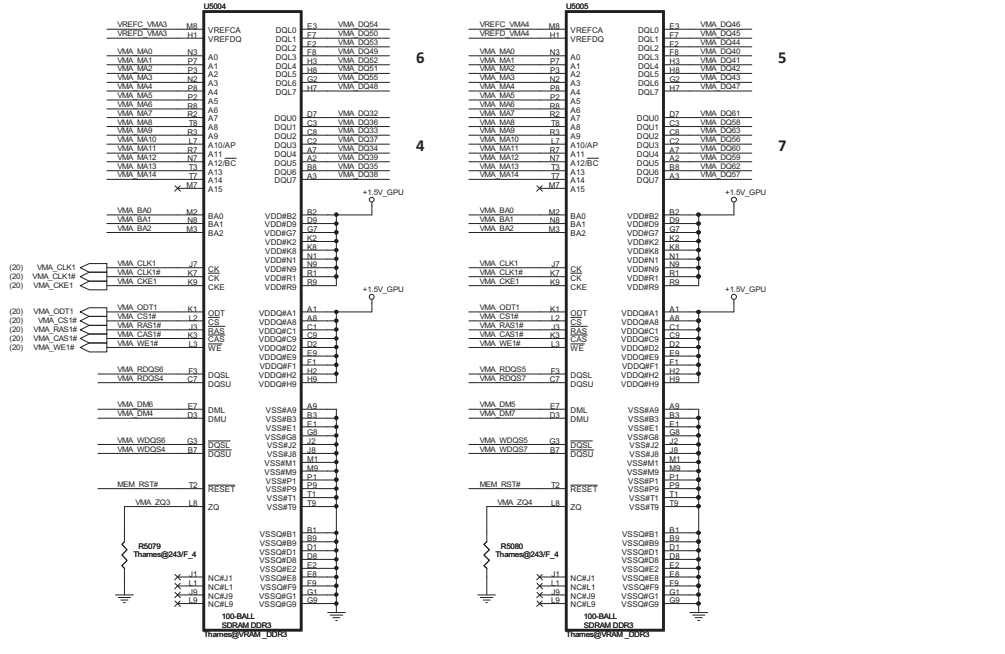
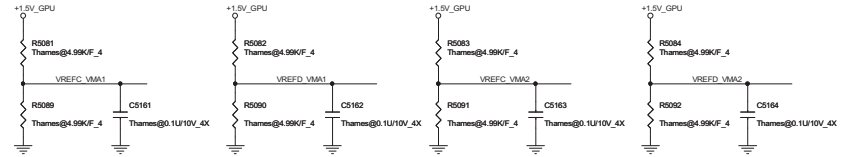
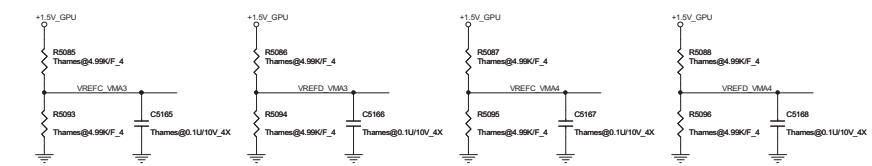
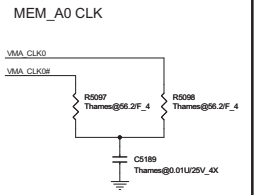
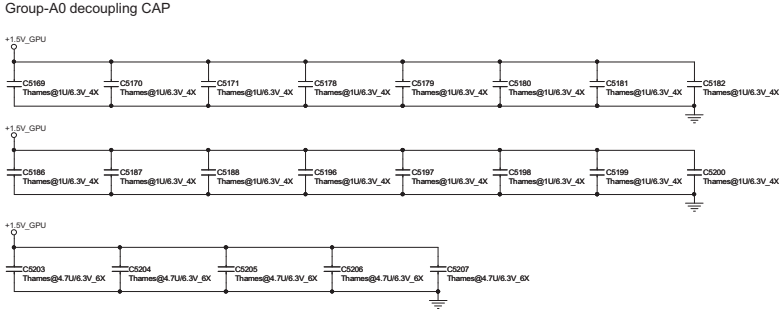


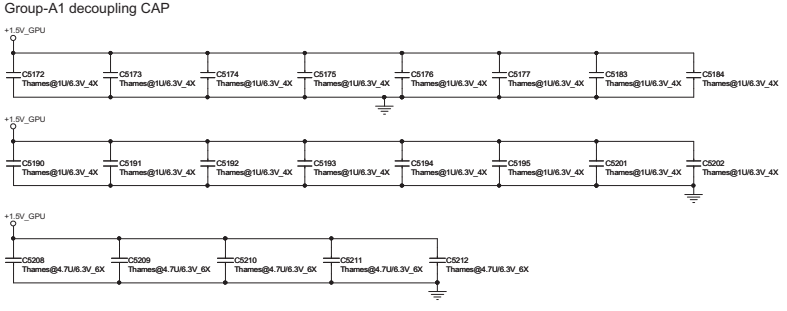


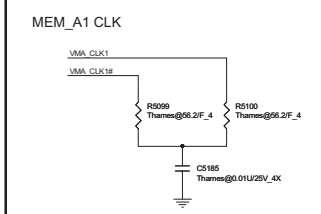








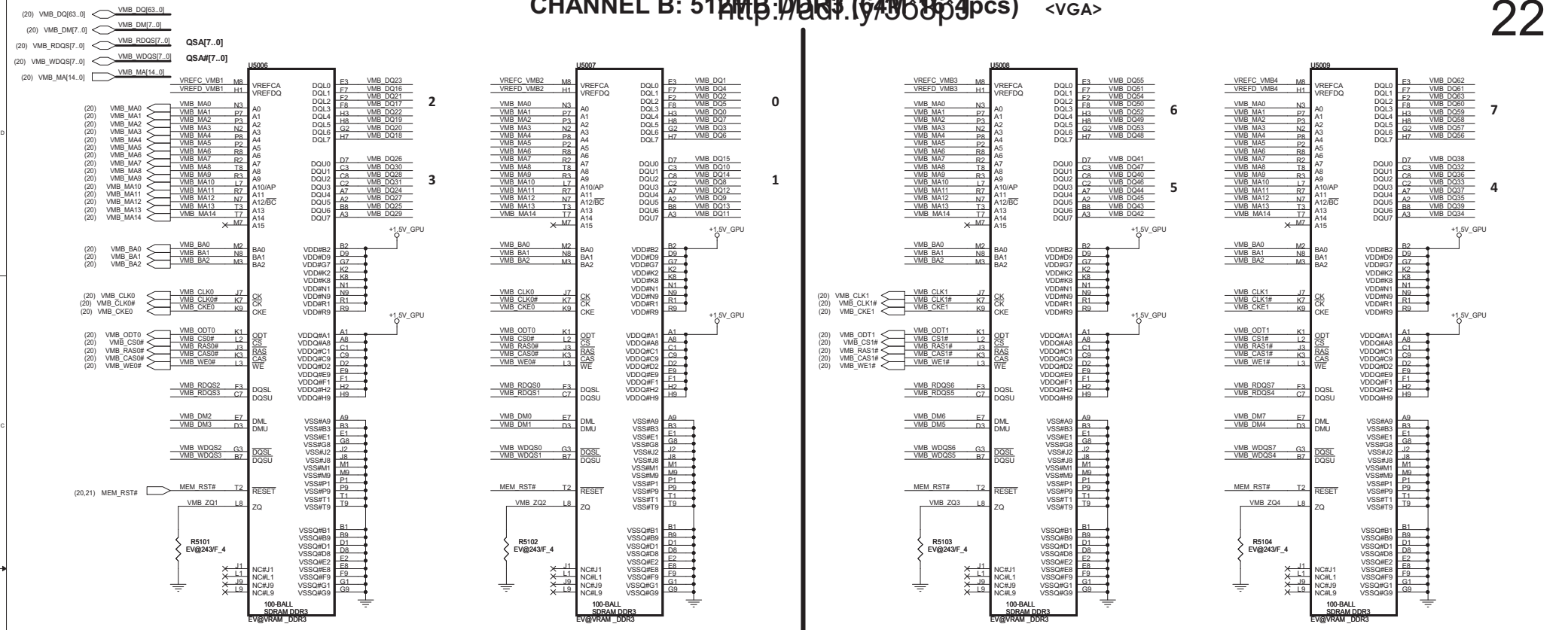




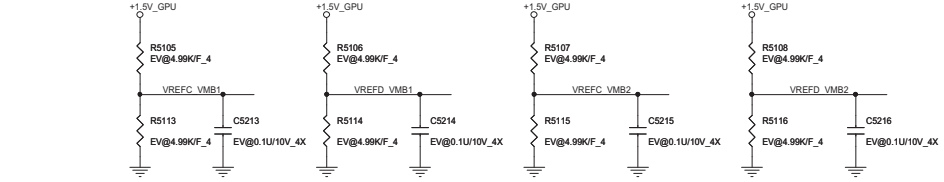
Quanta Computer Inc.
PROJECT : BY7D

Size	Document Number	Rev
	VRAM_A: DDR3*4PCS	1A
Date: Monday, March 19, 2012	Sheet 21 of 45	

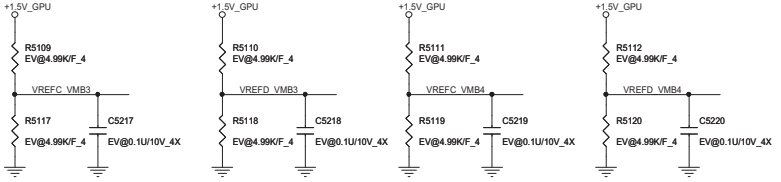
CHANNEL B: 512MB DDR3 (64M*8*4pcs) <VGA>



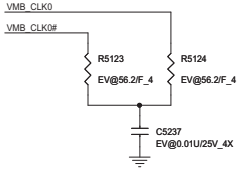
Group-B0 VREF



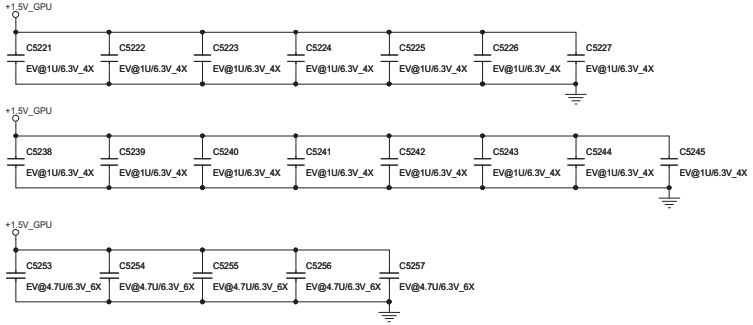
Group-B1 VREF



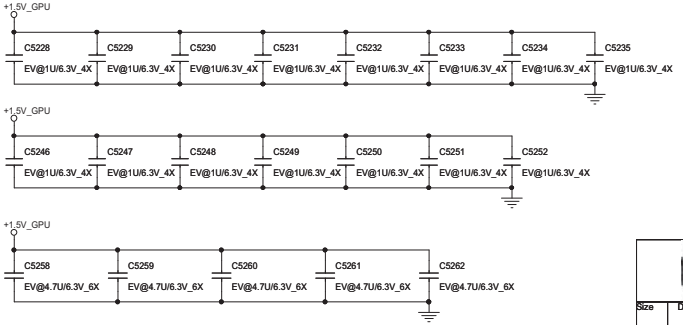
MEM_B0 CLK



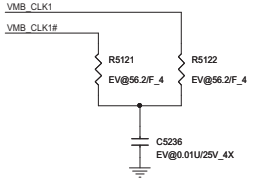
Group-B0 decoupling CAP



Group-B1 decoupling CAP



MEM_B1 CLK



Quanta Computer Inc.

PROJECT : BY7D

Size	Document Number	Rev
	VRAM_B: DDR3*4PCS	1A
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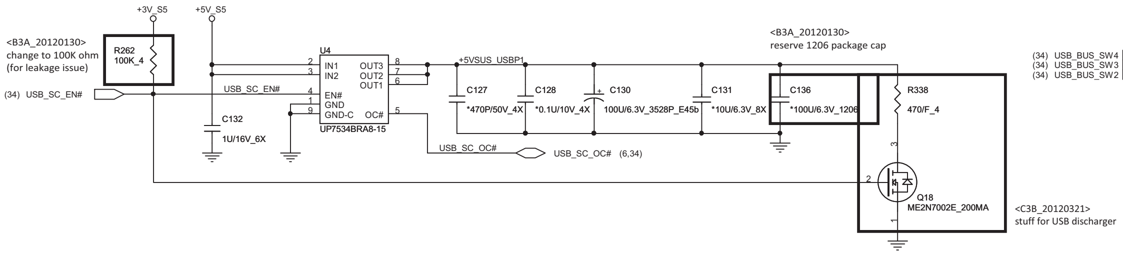
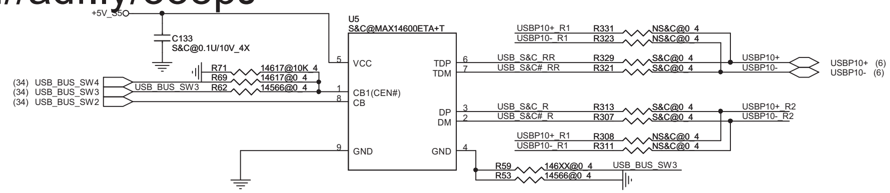
http://adf.ly/3o8pJ

Non-BACO design
(Brazos doesn't support Muxless Switch-able Graphics)

USB 3.0 Power switch <USB> <U3B>



USB w/ S&C MAXIM solution <SLC>

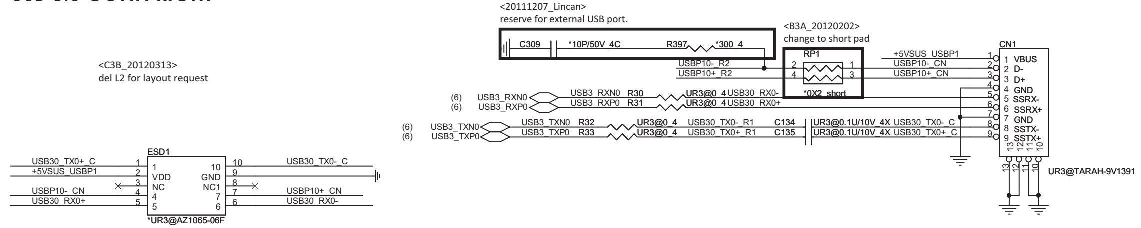


	R69	R62	R59	R53	R71
14566		V		V	
14600			V		
14617(with CB2)	V		V		
14617(no CB2)			V		V

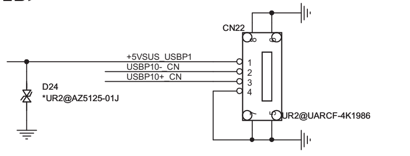
14566/14600		
CB0	CB1	Status
0	0	Auto mode
0	1	Force dedicated charger mode
1	X	Pass-Through(USB) mode: Connect DP/DM to TDP/TDM for 14566
1	0	Pass-Through(USB) mode for 14600
1	1	pass-through(USB) with CDP Emulation for 14600

14617			
CB0	CB1	CB2	Status
X	X	1	Force Apple 2A Charger Mode
0	0	0	Autodetection charger mode
0	1	0	Force-Dedicated Charger Mode
1	0	0	USB Pass-Through Mode Connect DP/DM to TDP/TDM
1	1	0	USB Pass-Through Mode with CDP Emulation.Auto connect DP/DM to TDP/TDM depending on CDP status

USB 3.0 CONN RIGHT <U3B> <USB> <EMI>

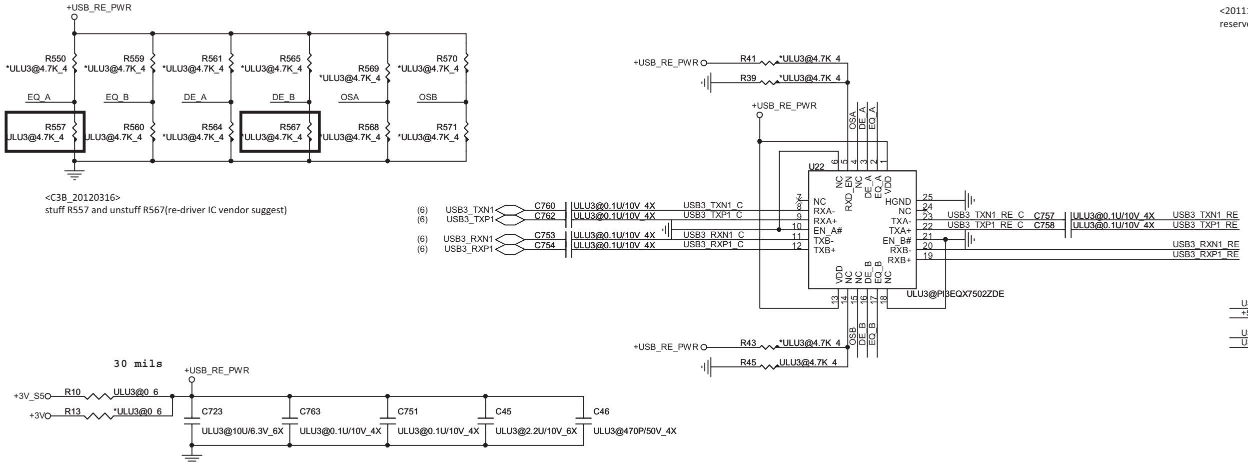


USB 2.0 CONN RIGHT <U3B> <U2B>



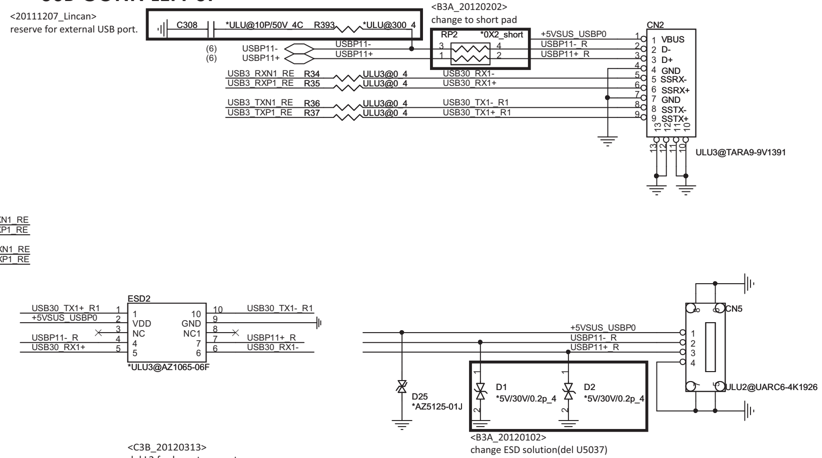
USB3.0 UR-3@TARAH-9V1391
USB2.0 UR-2@UARCF-4K1986

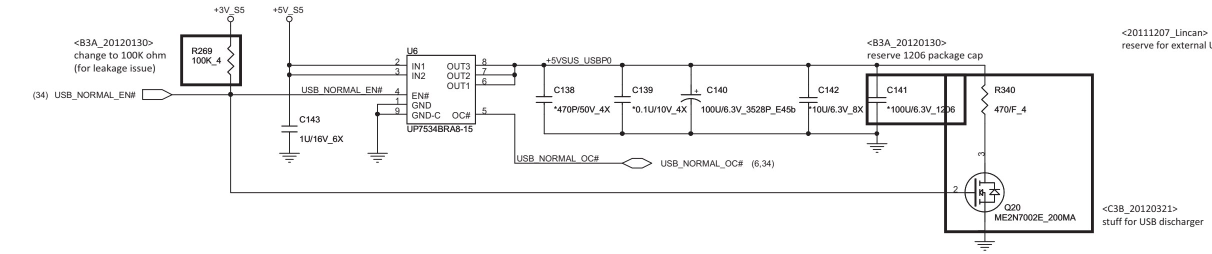
USB 3.0 Power switch



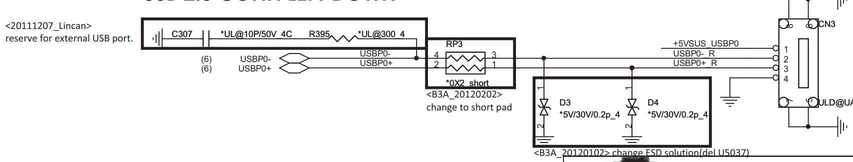
USB CONN LEFT UP

USB3.0 DFHS09FR085 ULU3@TARA9-9V1391
USB2.0 DFHS04FR487 ULU2@UARC6-4K1926





USB 2.0 CONN LEFT DOWN



<C3B_20120313> del L4 for layout request

Quanta Computer Inc.		
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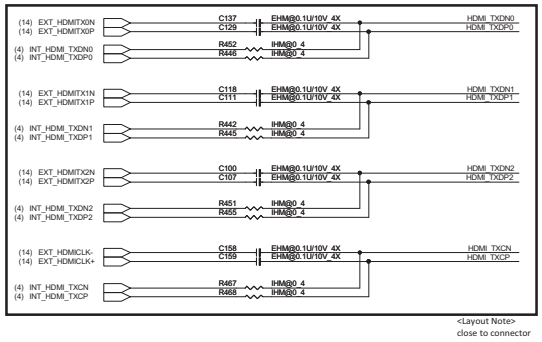
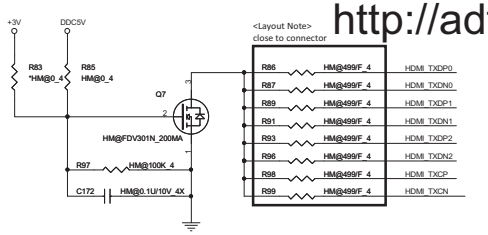
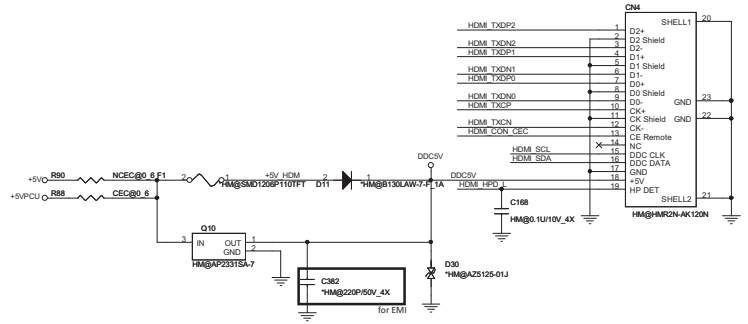
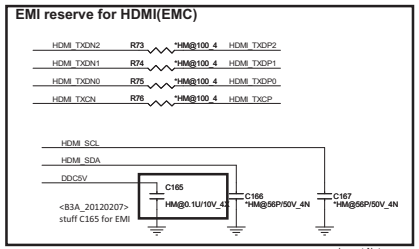
HDMI

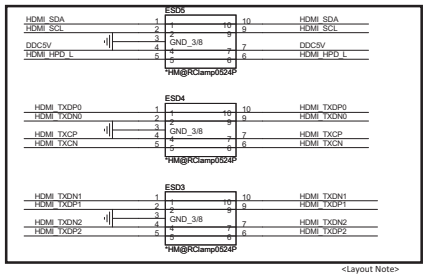


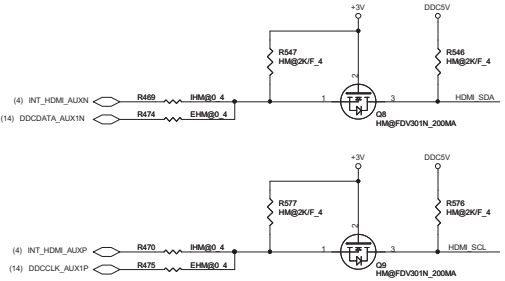




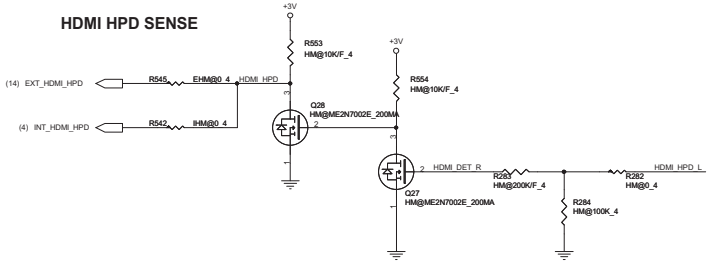
EMI reserve for HDMI(EMC)



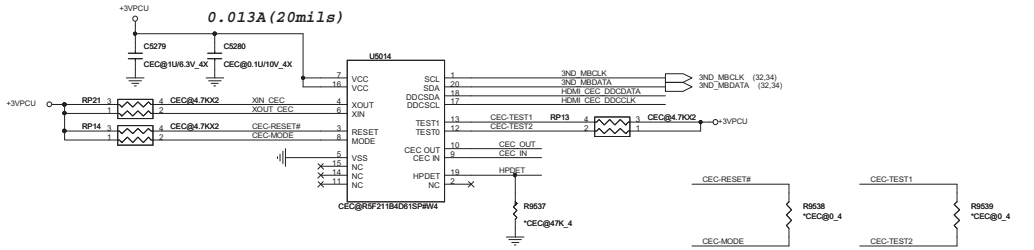




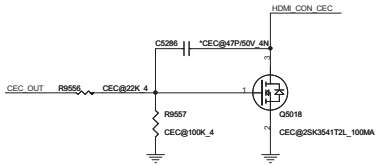
HDMI HPD SENSE



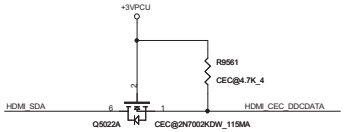
HDMI *CEC* <CEC>



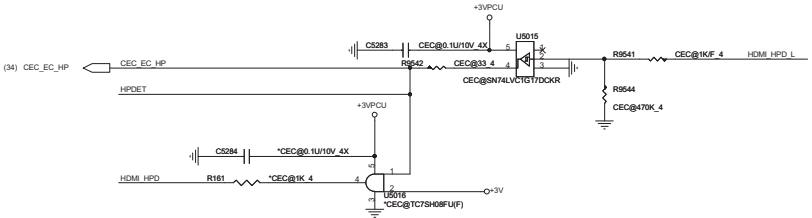
CEC Output <CEC> (To Connect)



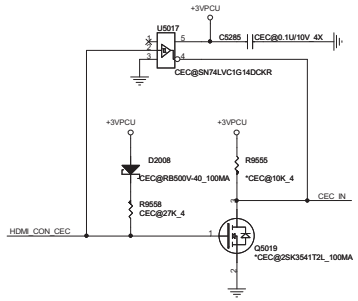
CEC SMBus Level Shift <CEC> (To CECC)

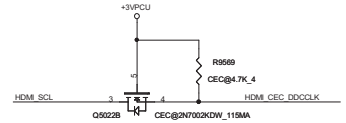


CEC HotPlug <CEC>



CEC Input <CEC> (To CECC)





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	HDMI/CEC	1A
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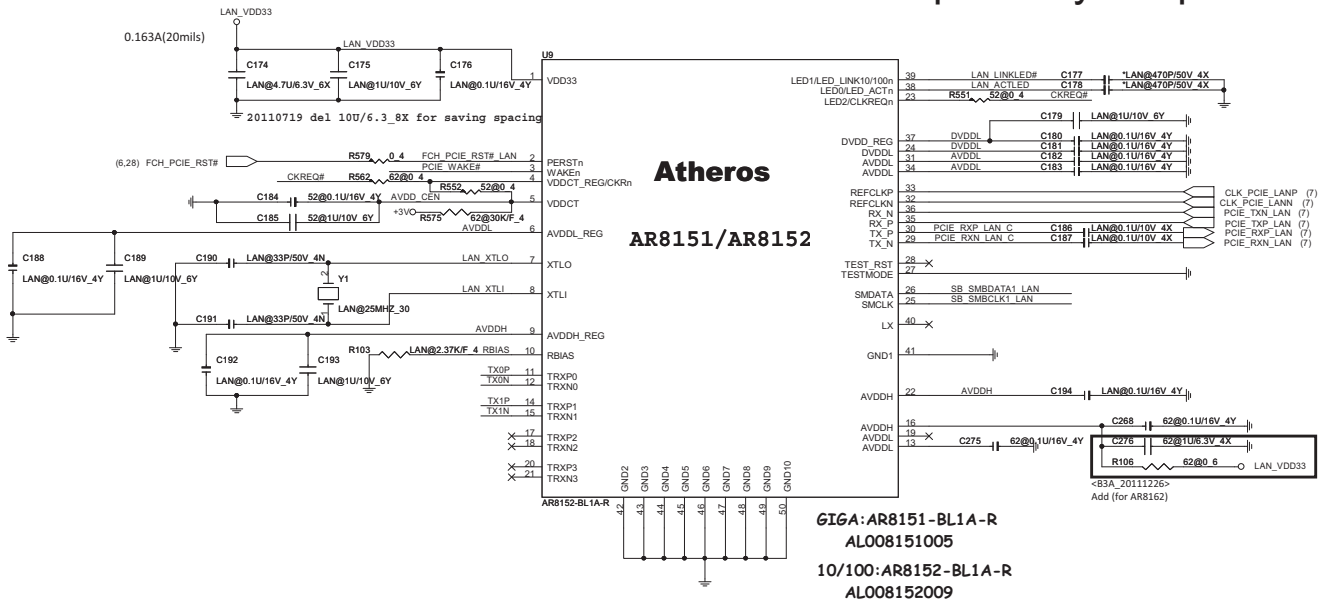
Atheros Lan <LAN> <LNG>

AR8152,AR8162 Co-Lay

http://adf.ly/3o8pJ

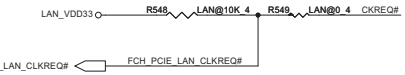


<B3A_20111226>
Add (for AR8162)

GIGA:AR8151-BL1A-R
AL008151005

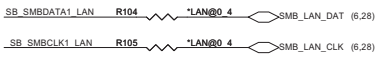
10/100:AR8152-BL1A-R
AL008152009

<LAN> <LNG> <LN1>

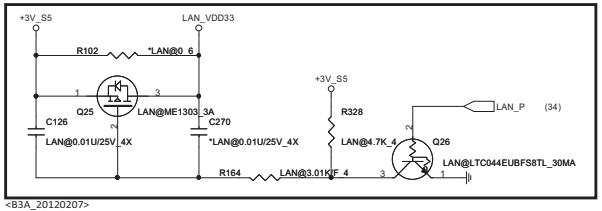


LAN-Wake up function <LAN>

LAN-SM-Bus <LAN>



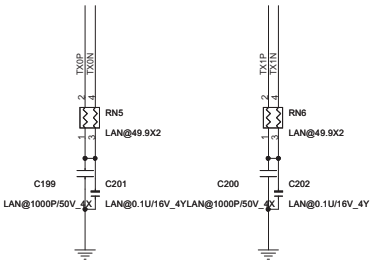
separate LAN power for RTC wakeup support on S5



<B3A_20120207>
stuff C126,Q25,R164,R328,Q26
unstuff R102

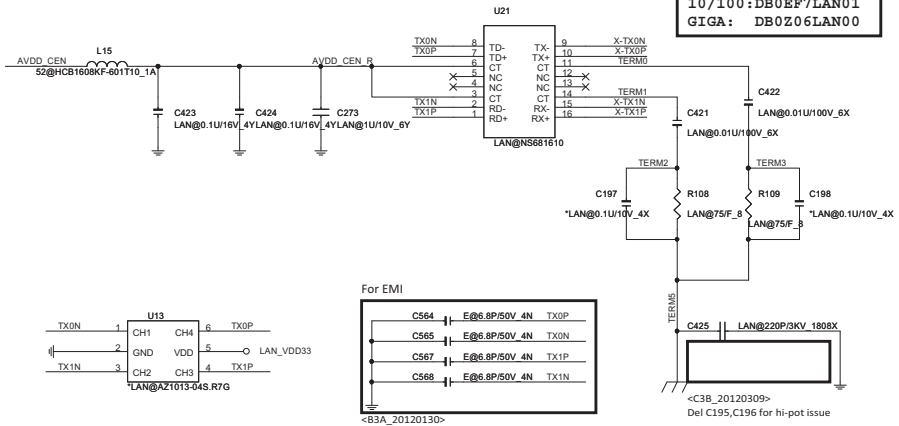
PLACE NEAR LAN IC SIDE

<LAN> <LNG>



TRANSFORMER CONN <LAN> <LNG>

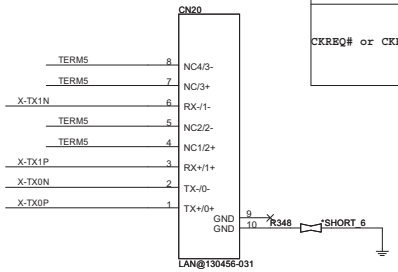
10/100:DB0EF7LAN01
GIGA: DB0Z06LAN00



<B3A_20120130>
stuff for EMI

<C3B_20120309>
Del C195,C196 for hi-pot issue

RJ45 <LAN> <LNG> <LN1>



LED0 = LAN_ACTLED	1	Over-clocking enable (default = 1)
	0	Over-clocking disable
LED1 = LAN_LINKLED#	1	SWR switch-mode regulator select Giga LAN pull High (default = 1)
	0	LDO linear regulator select 10/100M LAN pull Low
CKREQ# or CKREQ_G#	1	Normal function
	0	ATE test mode

Power on Strapping pin

LAN_ACTLED R110 LAN@5.1K/F_6

LAN_LINKLED# R111 LAN@5.1K/F_6

Quanta Computer Inc.

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Size	Document Number	Rev
	ATHEROS LAN (AR8152B)	1A
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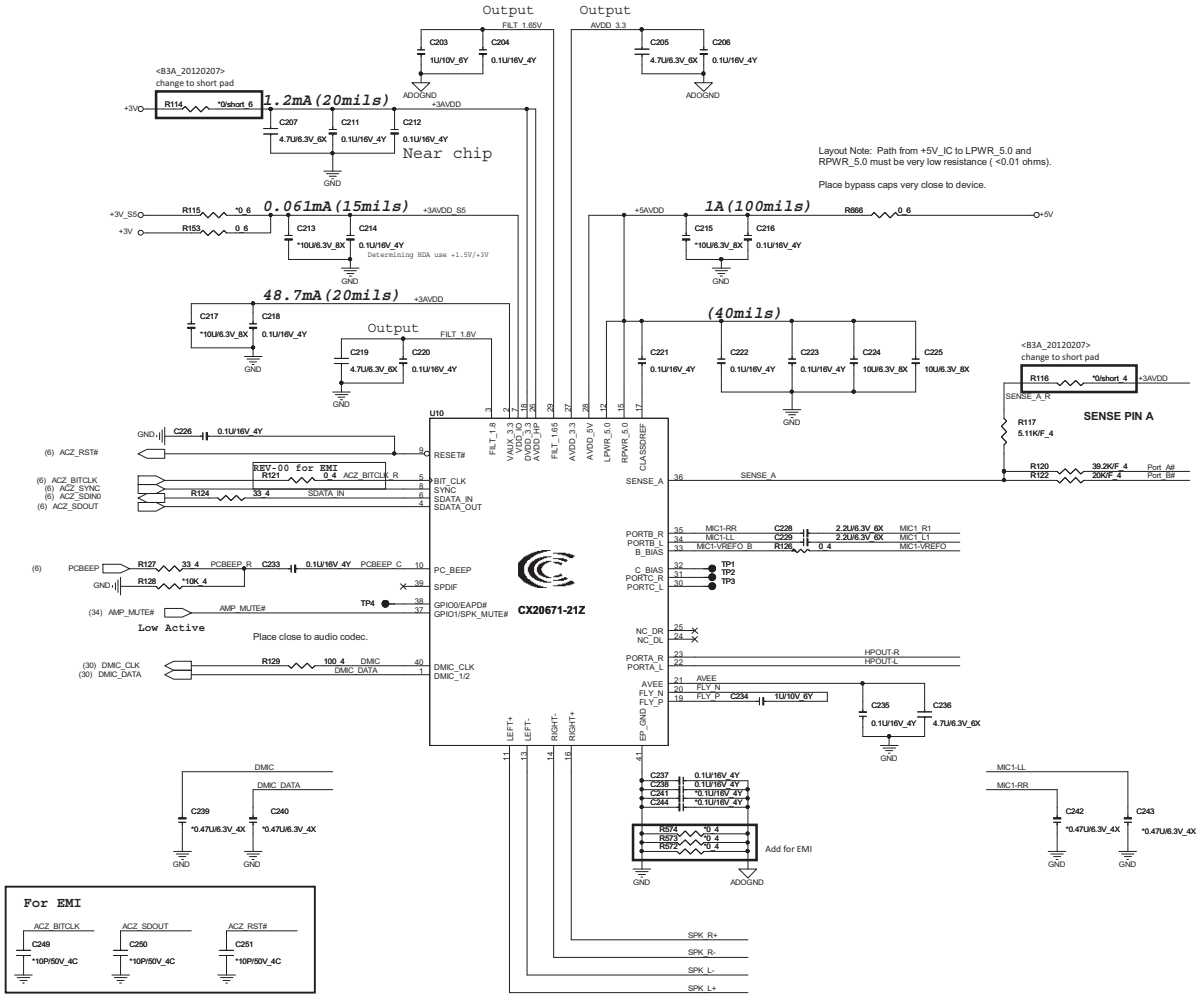
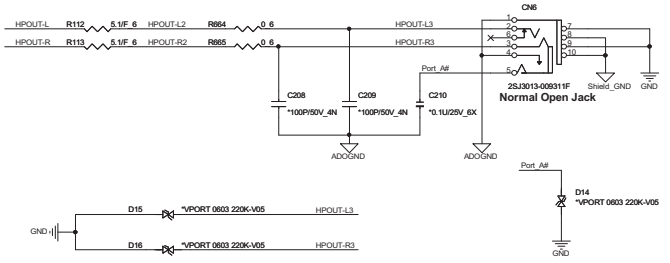
Codec (CX20671-21Z) <ADO> <EMI>

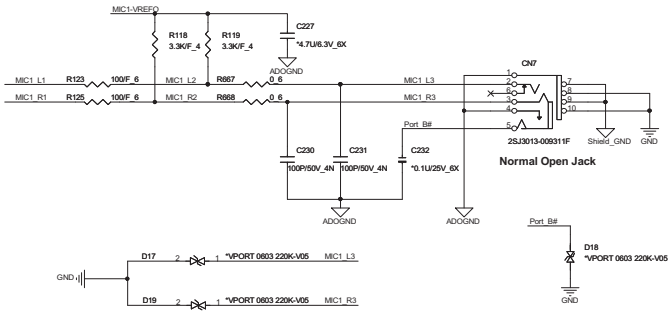
http://adf.ly/3o8pJ



HP <ADO> <EMC>

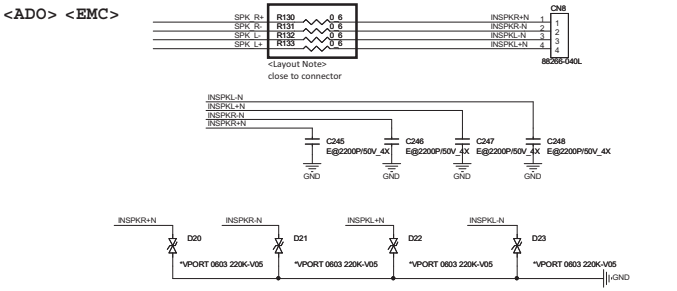


External MIC <ADO> <EMC>



Internal Speaker

<ADO> <EMC>



Quanta Computer Inc.

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Size	Document Number	Rev
	AUDIO CODEC (CX20671-21Z)	1A
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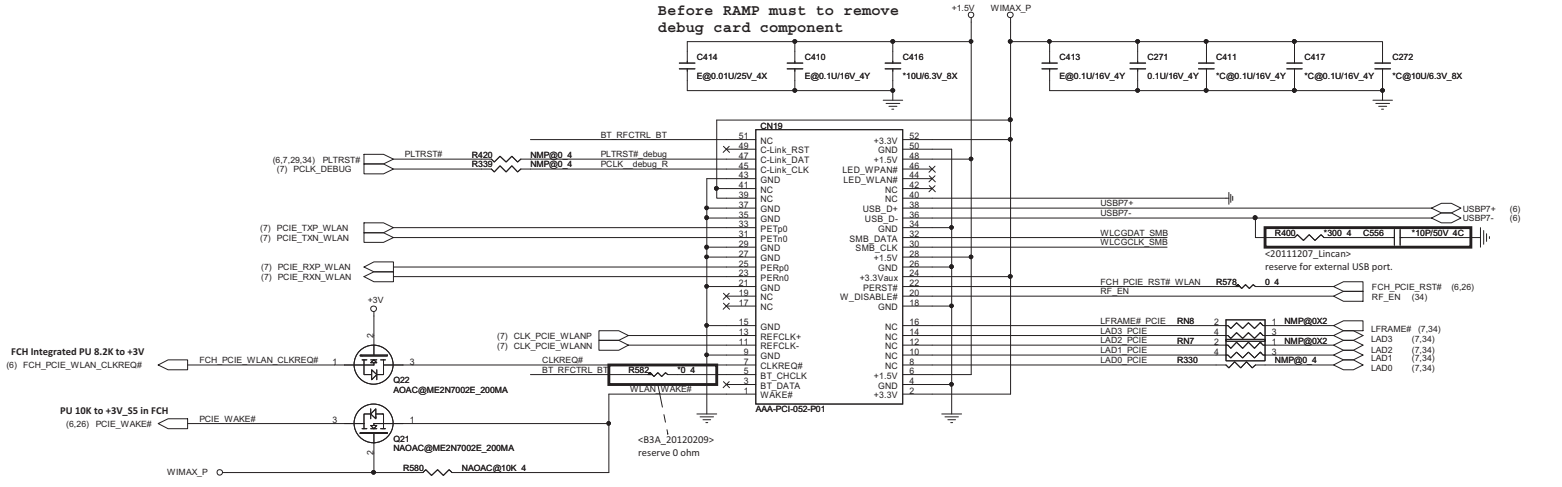
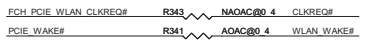
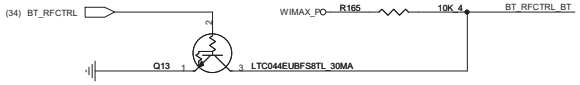
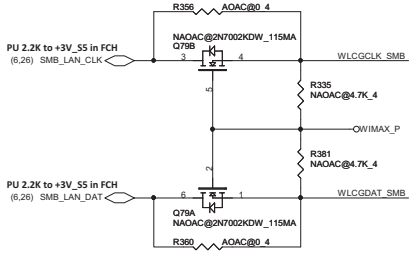
Before RAMP must to remove debug card component

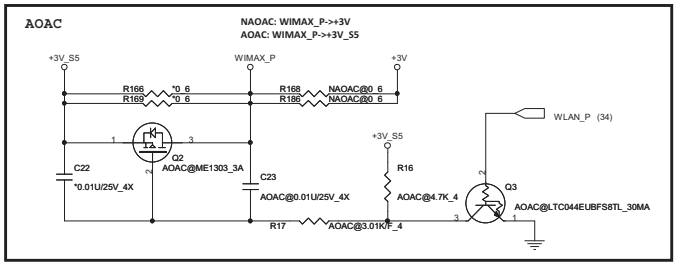






SMBus





Quanta Computer Inc.

PROJECT : BY7D

Size	Document Number	Rev
	MINI CARD	1A

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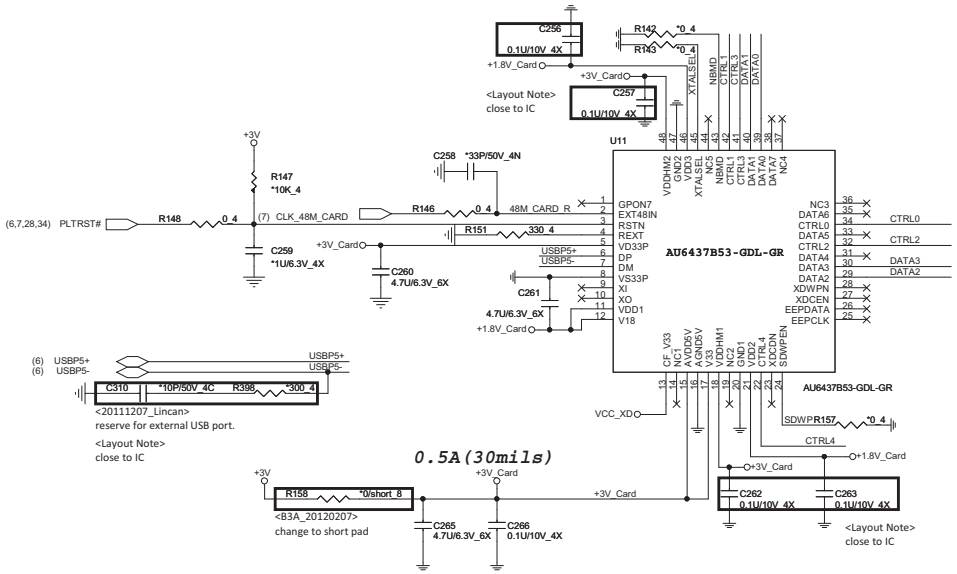
2 IN 1 CARD READER (Type: MMC/SD)

<MMC>

http://adf.ly/3o8pJ

Card Reader (AU6437B53-GDL-GR)



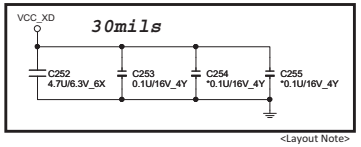
Clock input selection
1 : 48MHz input (default)
0 : 12MHz input

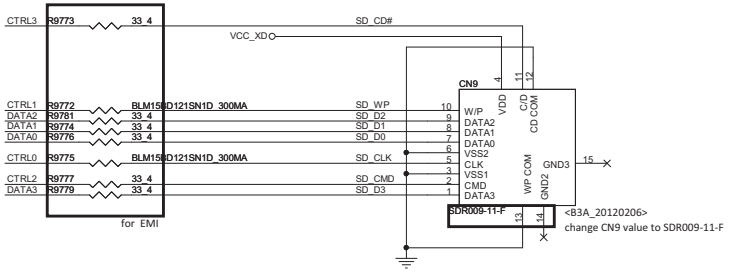
NBMD Power saving mode enable
1 : enable (default)
0 : disable

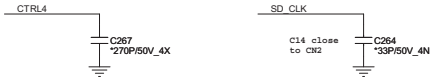
CTRL0 trace surround with GND

	SD	XD	MS
CTRL0	SDCLK	XDALE	MSBS
CTRL1	SDWP	XDCLE	MSCLK
CTRL2	SDCMD	XDRBD	
CTRL3	SDCDN	XDWRN	
CTRL4		XDRDN	MSINS

SD write protect enable
1 : decided by SDWP(default)
0 : SD always write-able







Quanta Computer Inc.

PROJECT : BY7D

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	CARD READER	1A
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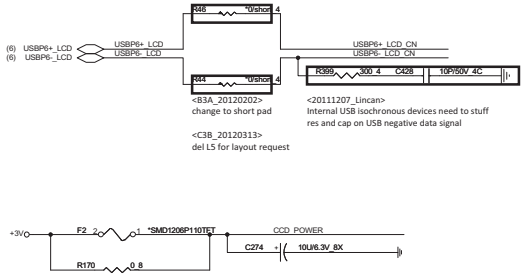
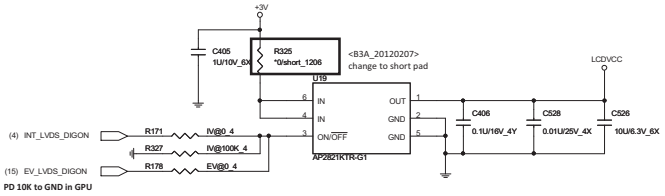
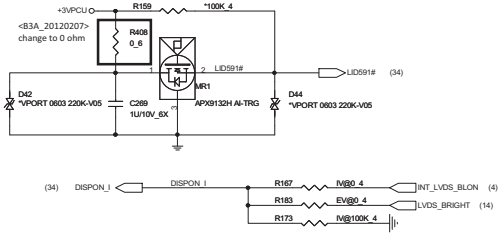
CCD [CCD]



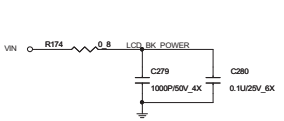
LCD POWER SWITCH <LDS>



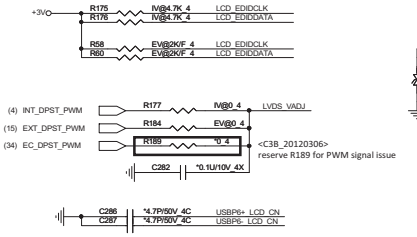
HALL SENSOR&BACK LIGHT SWITCH <HSR>

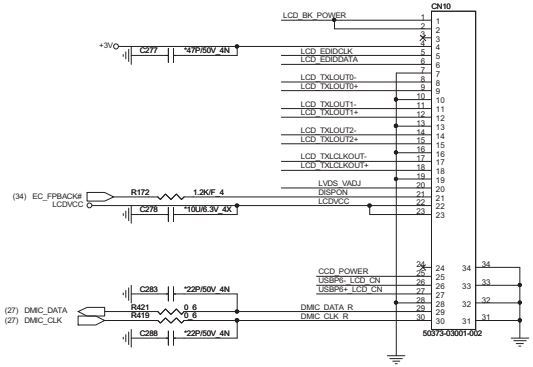


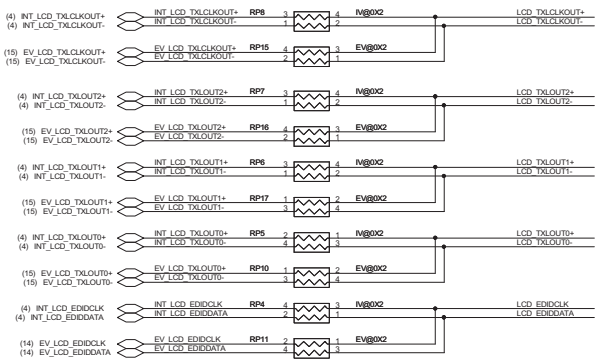
LCD Panel Module [LDS]

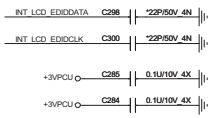


LVDS Enable

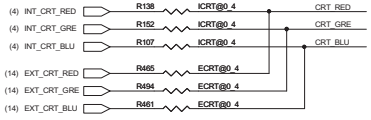


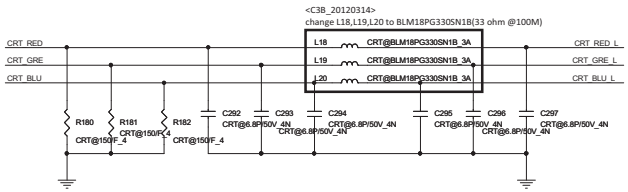


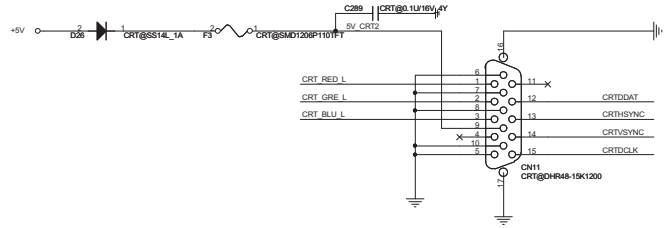


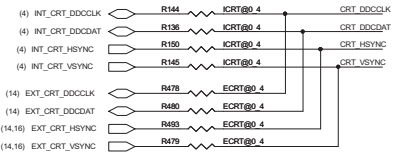


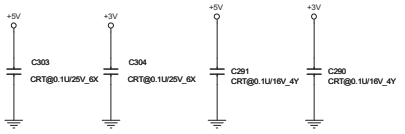
CRT [CRT]

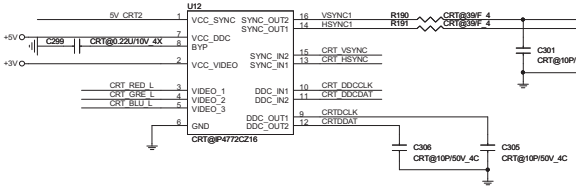


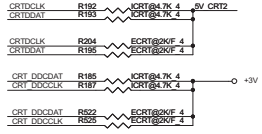












Quanta Computer Inc.

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Size	Document Number	Rev
	LVDS/CCD/DRT	1A
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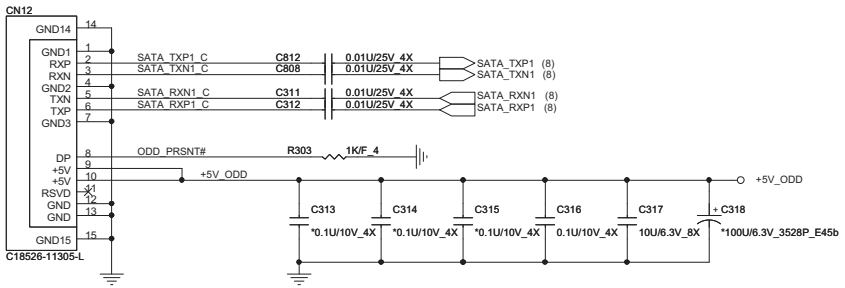
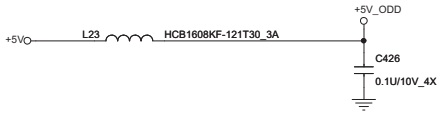
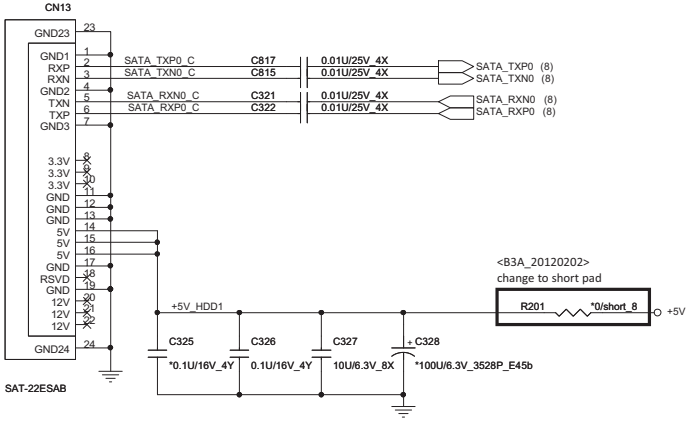
SATA ODD [ODD]



ODD Zero power [OZP]



SATA HDD [HDD]



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Size	Document Number	Rev
	HDD/ODD	1A

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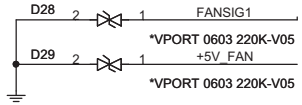
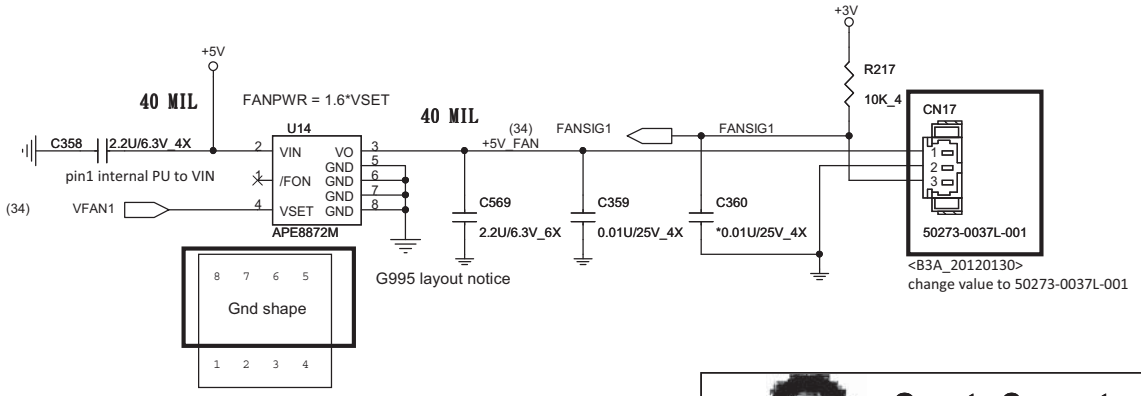
Thermal Sensor <THC>

Thermal	dGPU Int Thermal
EC(M) 3ND_SMB	
EC(M) 3ND_SMB	dGPU int SMBUS
dGPU(M) SMB	dGPU int SMBUS

FAN Control <THC>





Quanta Computer Inc.

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	THERMAL	1A
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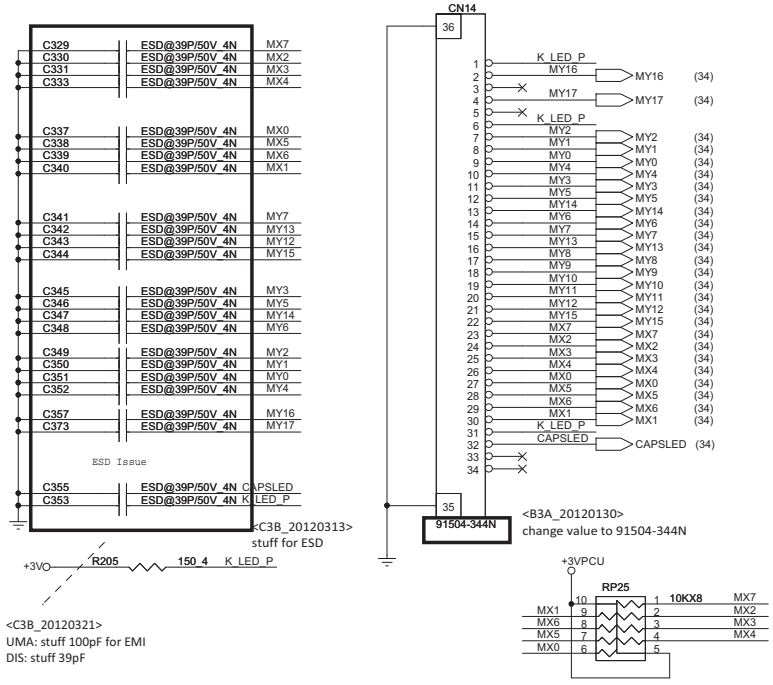
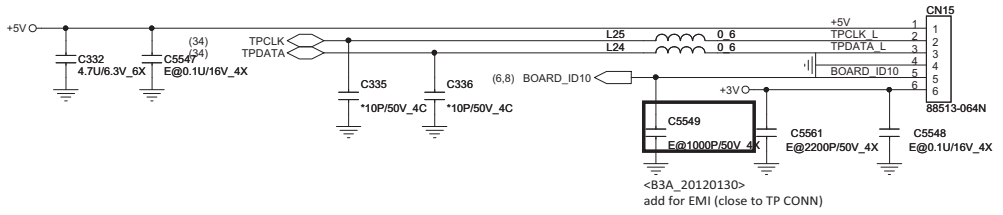
KEY BOARD Connector <KBC> <EMI>

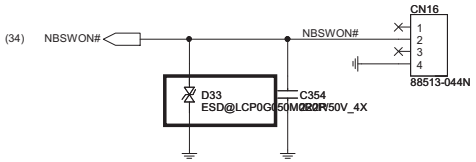


TOUCH PAD BOARD <TPD> <EMI>



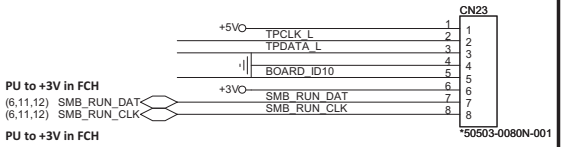
ID_Detect	default
Metal/IMR	H
TEXTURE	L

Power Board (UIF) <PSW>

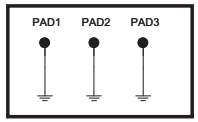


<C3B_20120316>
stuff ESD solution for power board

TP board <TPD>

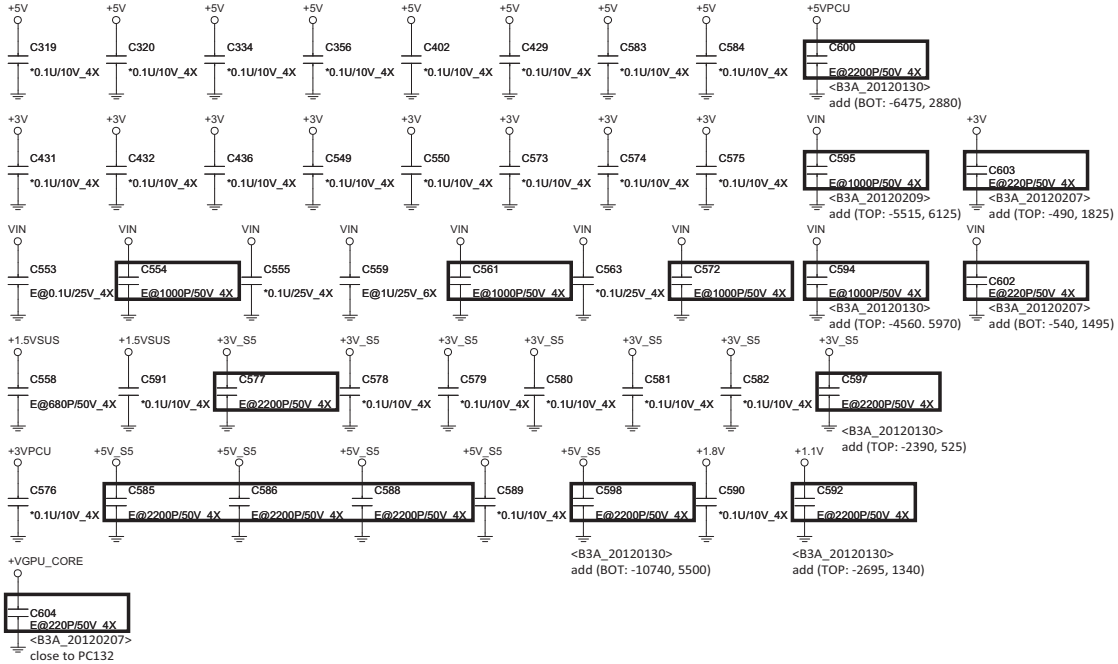


EMI Pad <OTH>

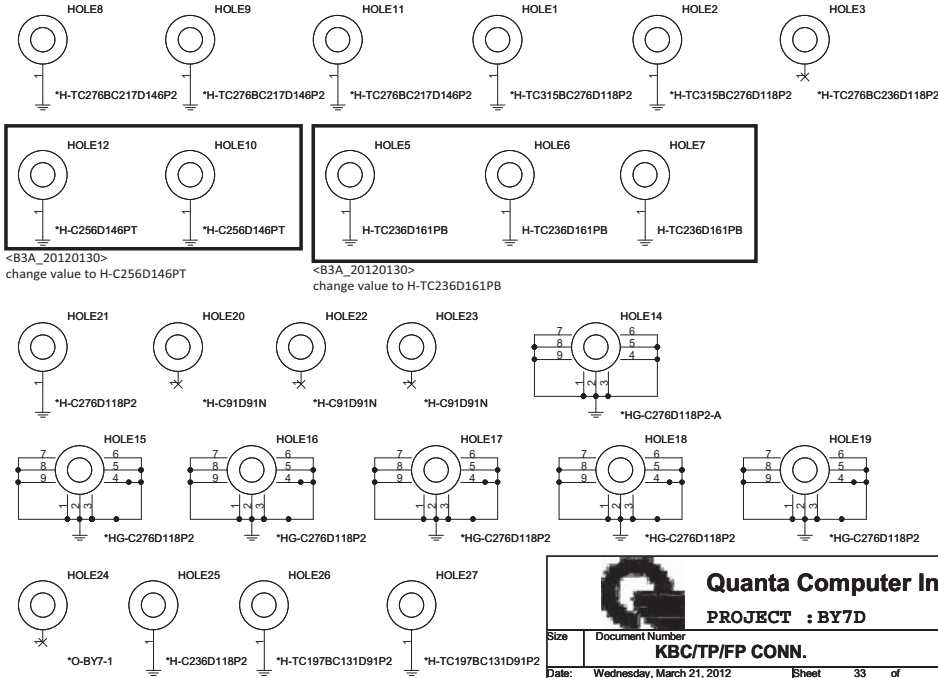


<C3B_20120312>
add Pad1 for EMI

EMI PAD <EMI>



HOLE <OTH>



Quanta Computer Inc.

PROJECT : BY7D

Size	Document Number	Rev
	KBC/TP/FP CONN.	1A

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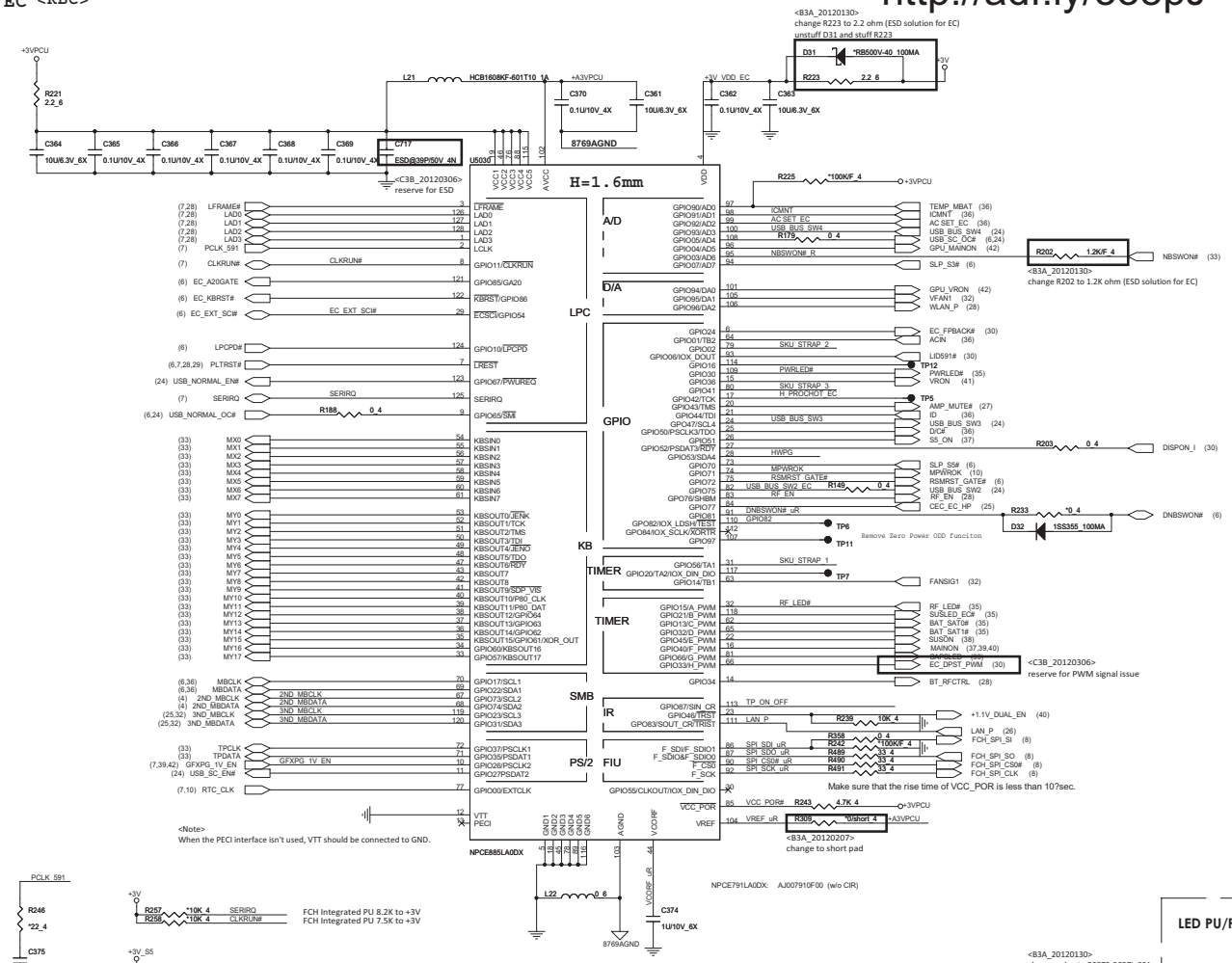
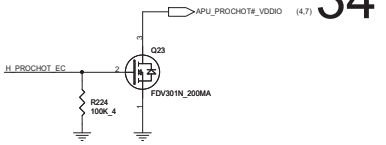
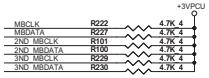
EC <KBC>



Intel Turbo mode only <CPU>



SM BUS PU <KBC>

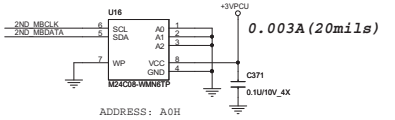


SMBUS Table

SMBUS	Devices	Address
1	Battery	
2	PCH SML1	
	3D Sensor	32H
	EC EEPROM	A0H
3	VGA Board Thermal Sensor	98H
	Touch Sensor	58H
	HDMI CEC	34H
	Light Sensor	52H

Strap <KBC> *SHBM*

ID EEPROM <KBC>

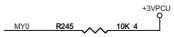


SPI FLASH <KBC>

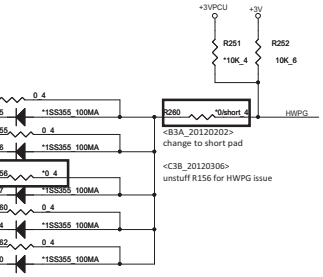
BY6-A1A Del SPI ROM

MX25L3205DM2I-12G: AKE39FP0Z00
W25Q16BVSSIG: AKE38FP0N01

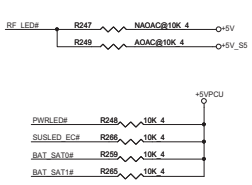
INTERNAL KEYBOARD STRIP SET <KBC>



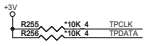
HWPG circuit <KBC>

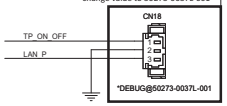


LED PU/PD <LED>



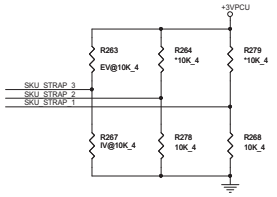
TP interface PU <KBC>



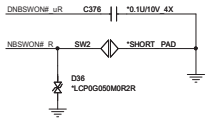


SKU strap pin <KBC>

SKU_STRAP_1(GPIO56)	SKU_STRAP_2(GPIO02)	SKU_STRAP_3(GPIO41)	SKU
0	0	0	Brazos UMA
0	0	1	Brazos DIS
0	1	0	COMAL UMA
0	1	1	COMAL DIS
1	0	0	Deccan UMA
1	0	1	Deccan DIS

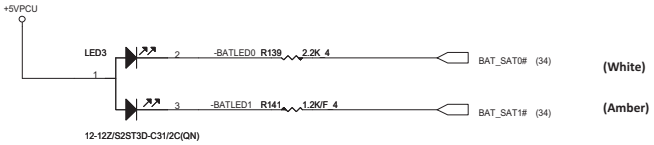


Power Button <KBC>

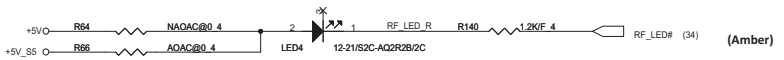


LED <LED>

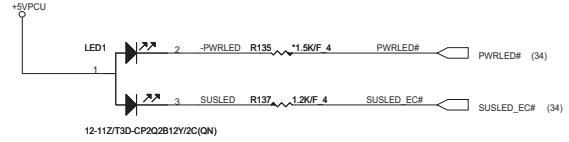
BATERRY



RF LED <LED>

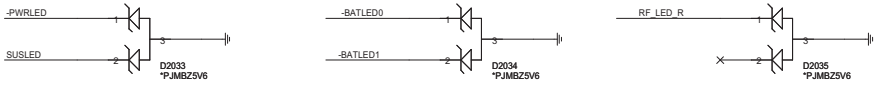


POWER <LED>



LED P/N	Behavior	res
BEWY0007ZA0 (White/Amber)	power on: White LED bright sleep: Amber LED blink	R135: stuff 1.5K R137: stuff 1.2K
BEWH0051Z00 (White)	power on: White LED bright sleep: White LED blink	R135: unstuff R137: stuff 1.5K

ESD Protect <ESD>



Quanta Computer Inc.

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	LED	1A

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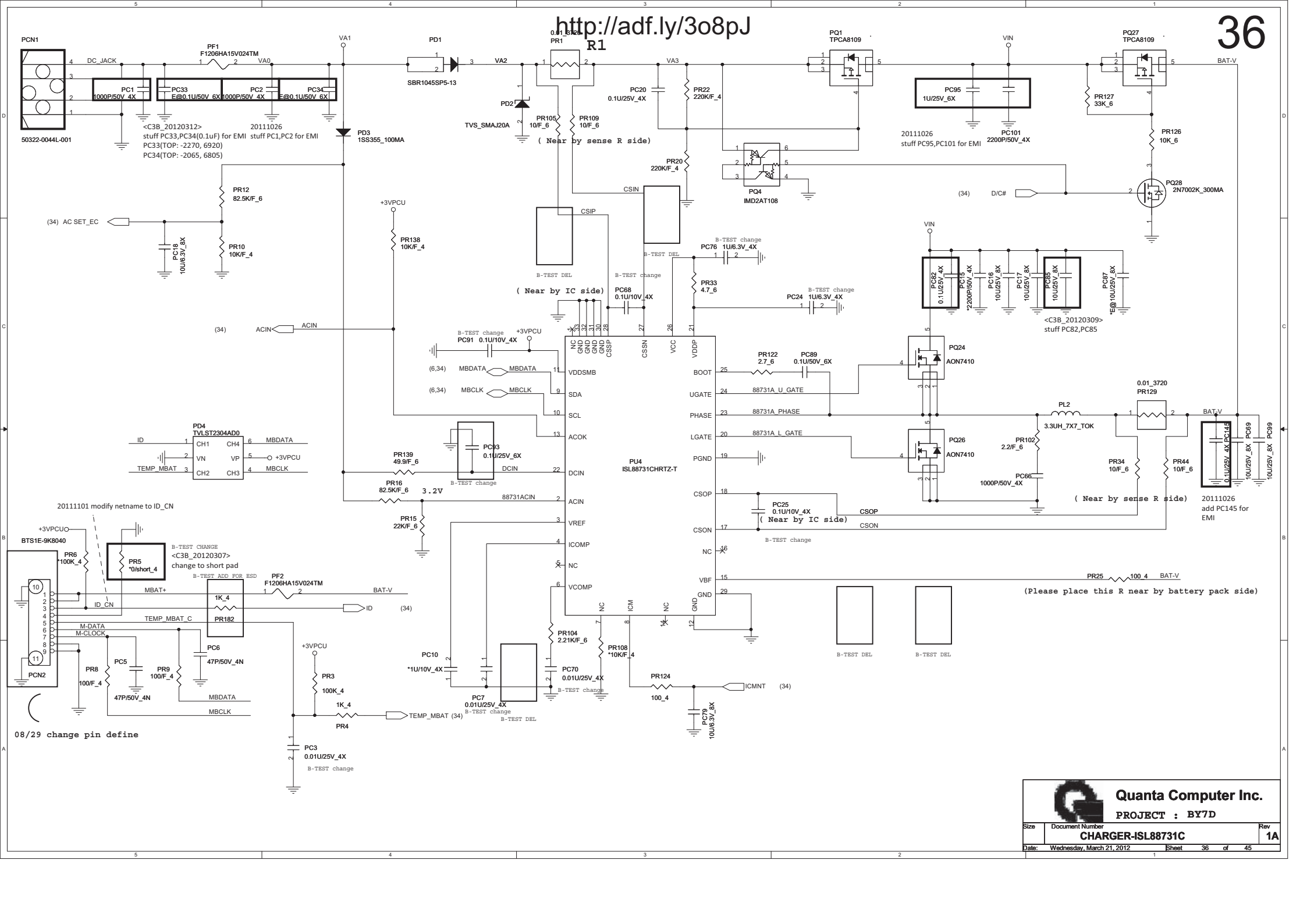

Quanta Computer Inc.		
PROJECT : BY7D		
Size	Document Number: CHARGER-ISL88731C	Rev: 1A
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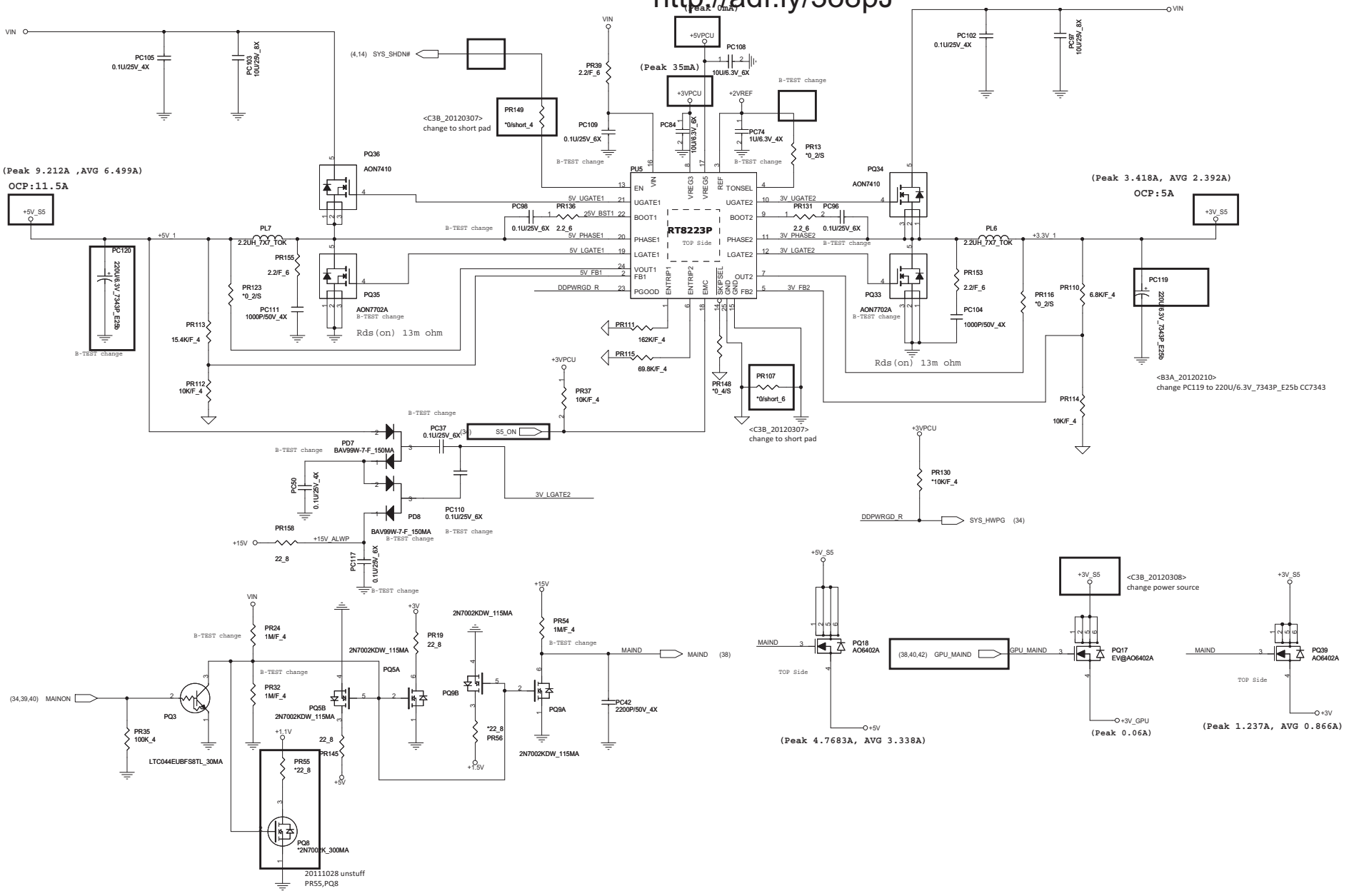

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PROJECT : BY7D			
Size	Document Number		Rev
	System 3V/5V(TPS51123A)		1A
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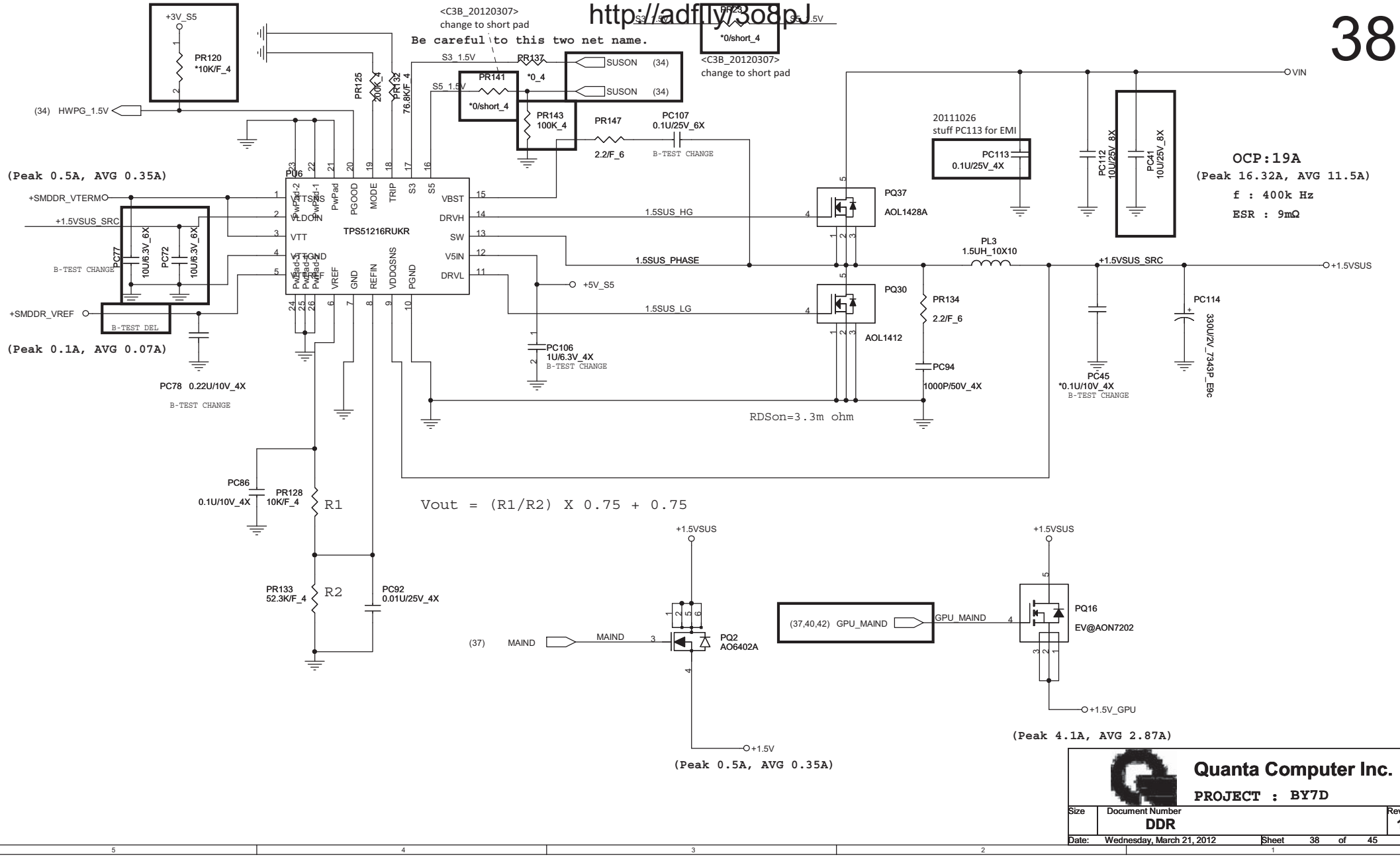

Quanta Computer Inc.		
PROJECT : BY7D		
Size	Document Number: DDR	Rev: 1A
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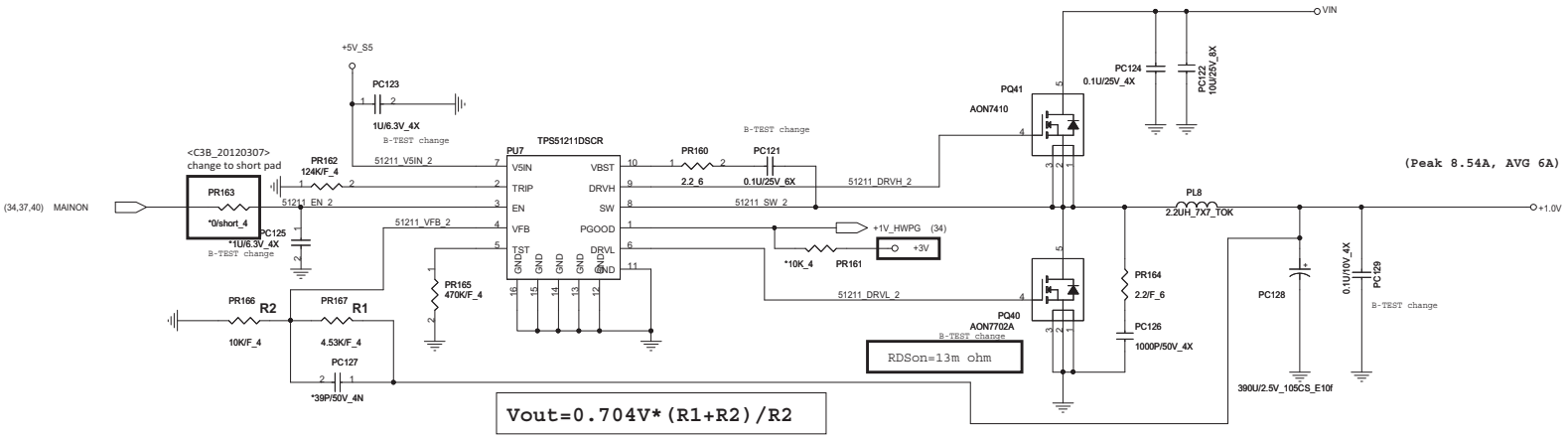

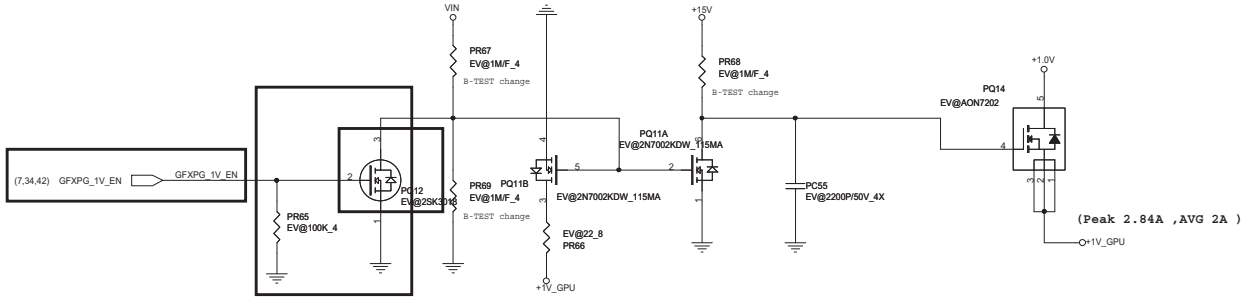

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	+1.0V	1A

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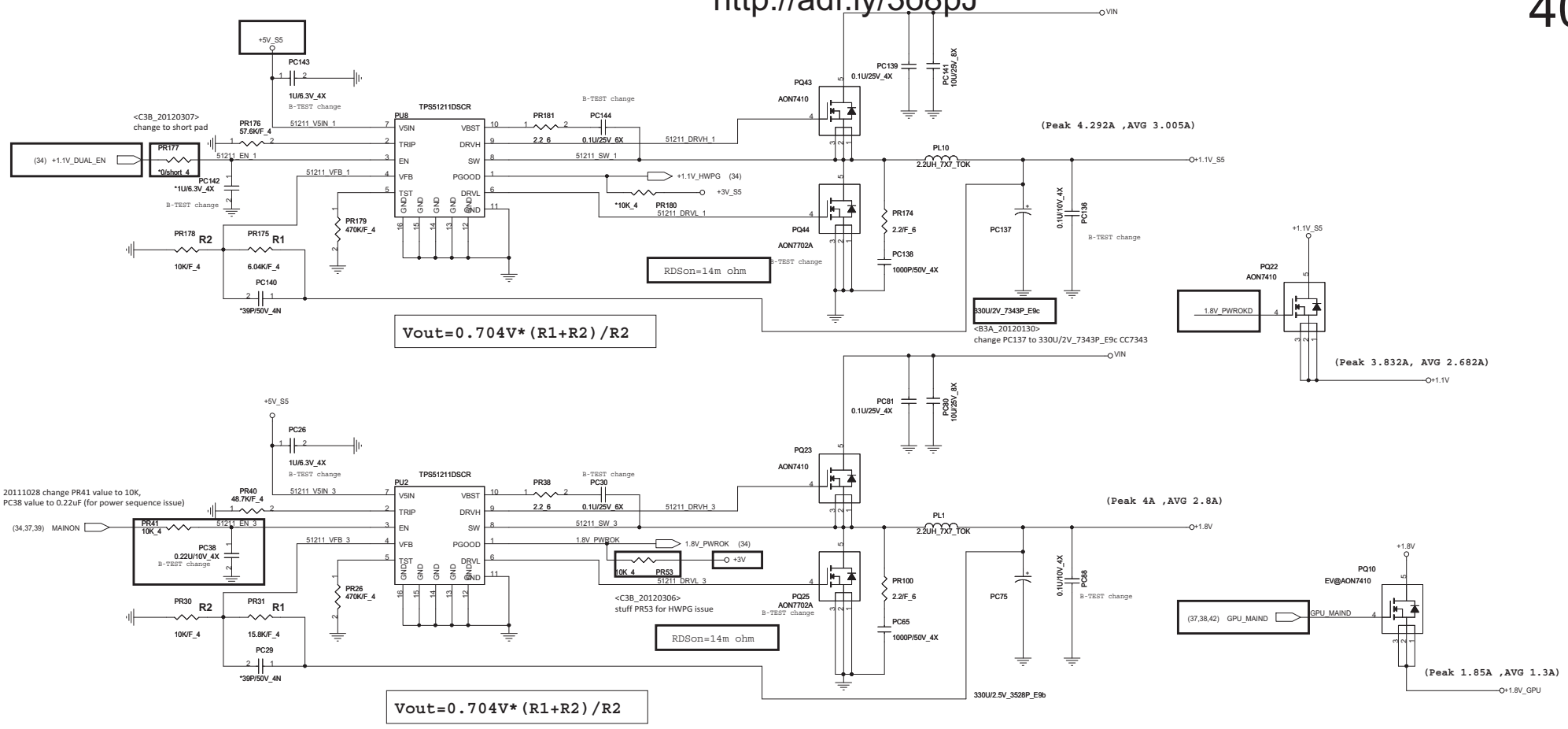

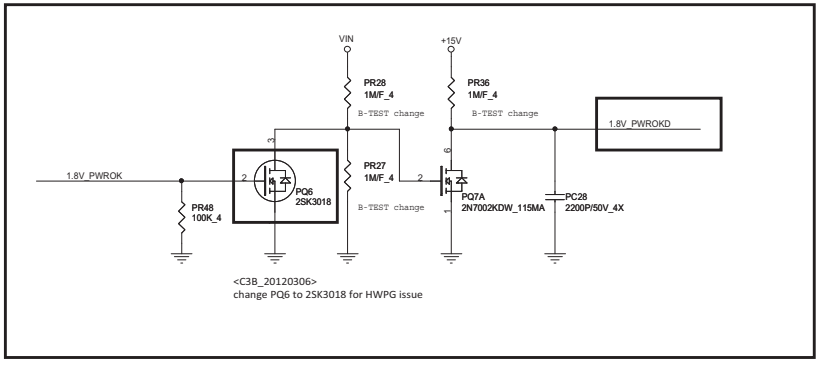

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Size	Document Number: +1.1V/+1.8V	Rev: 1A
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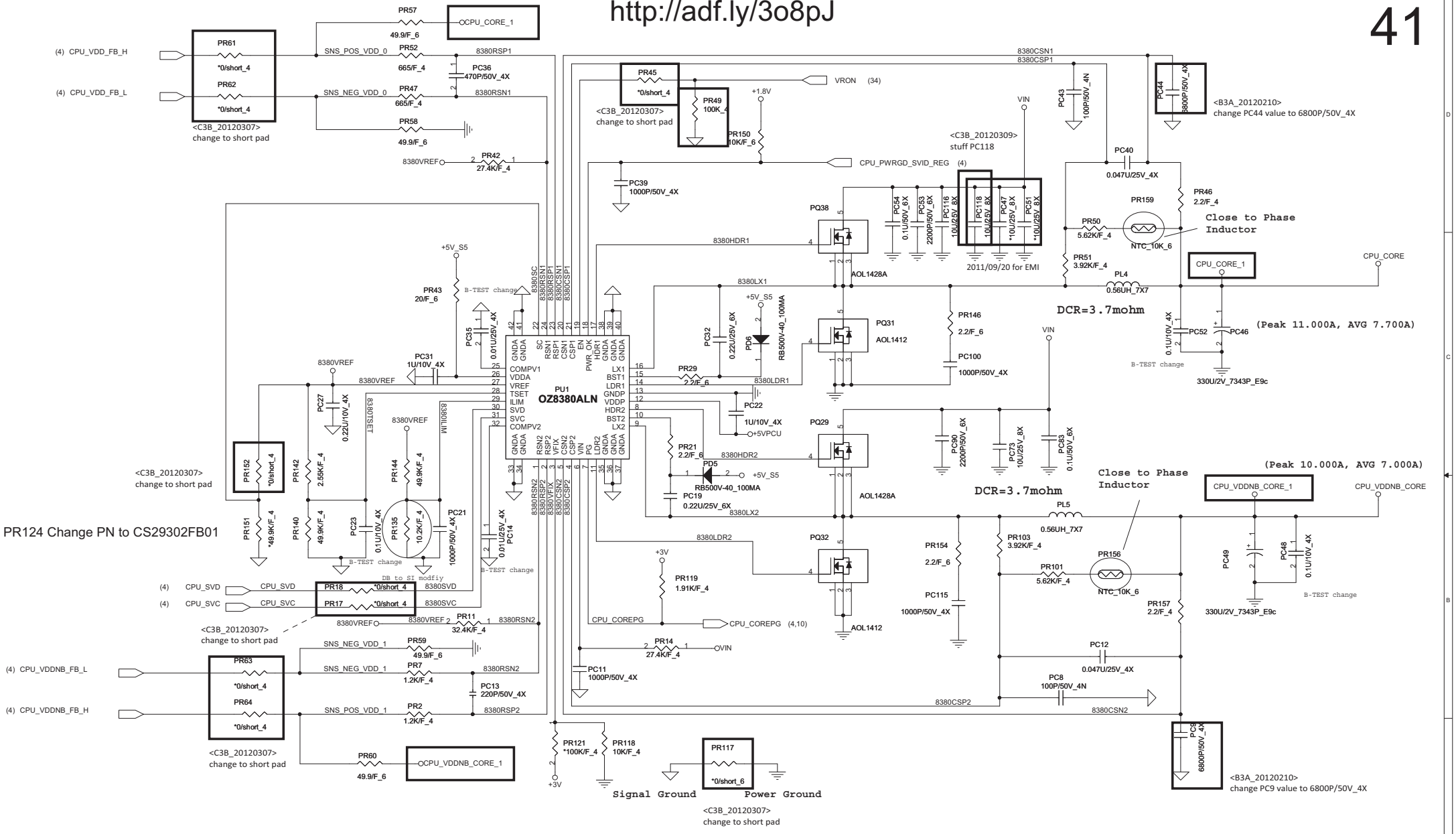
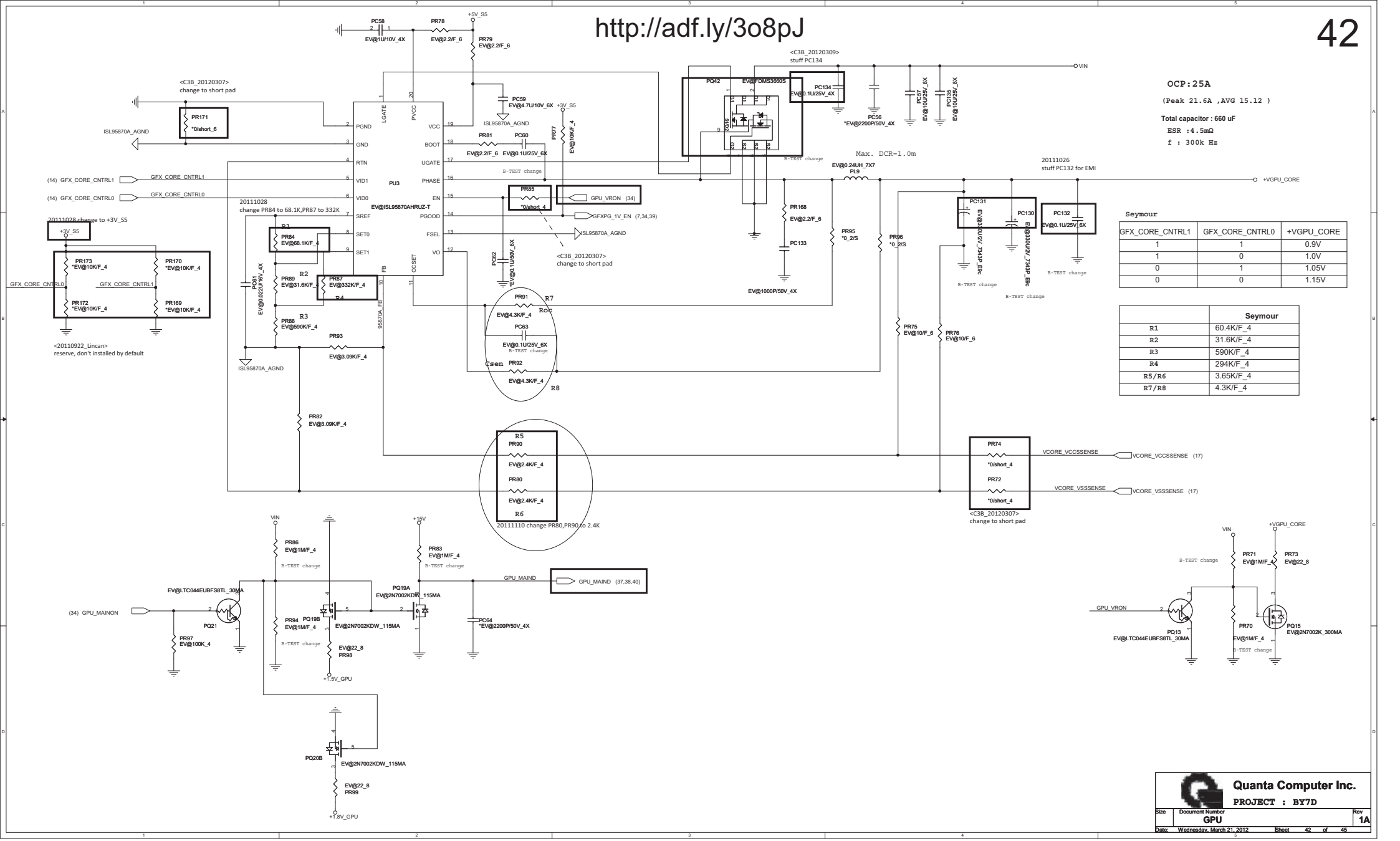

PU1
OZ8380ALN
COMPV1
VDDA
VREF
TSET
ILIM
SVD
SVC
COMPV2
LX1
BST1
LDR1
GNDP
VDDP
HDR2
BST2
LX2
PR124 Change PN to CS29302FB01
DCR=3.7mohm
(Peak 11.000A, AVG 7.700A)
(Peak 10.000A, AVG 7.000A)
Close to Phase Inductor
2011/09/20 for EMI
Signal Ground
Power Ground
Quanta Computer Inc.
PROJECT : BY7D
CPU CORE
Wednesday, March 21, 2012



Seymour

GFX_CORE_CNTRL1	GFX_CORE_CNTRL0	+VGPU_CORE
1	1	0.9V
1	0	1.0V
0	1	1.05V
0	0	1.15V

	Seymour
R1	60.4K/F_4
R2	31.6K/F_4
R3	590K/F_4
R4	294K/F_4
R5/R6	3.65K/F_4
R7/R8	4.3K/F_4

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