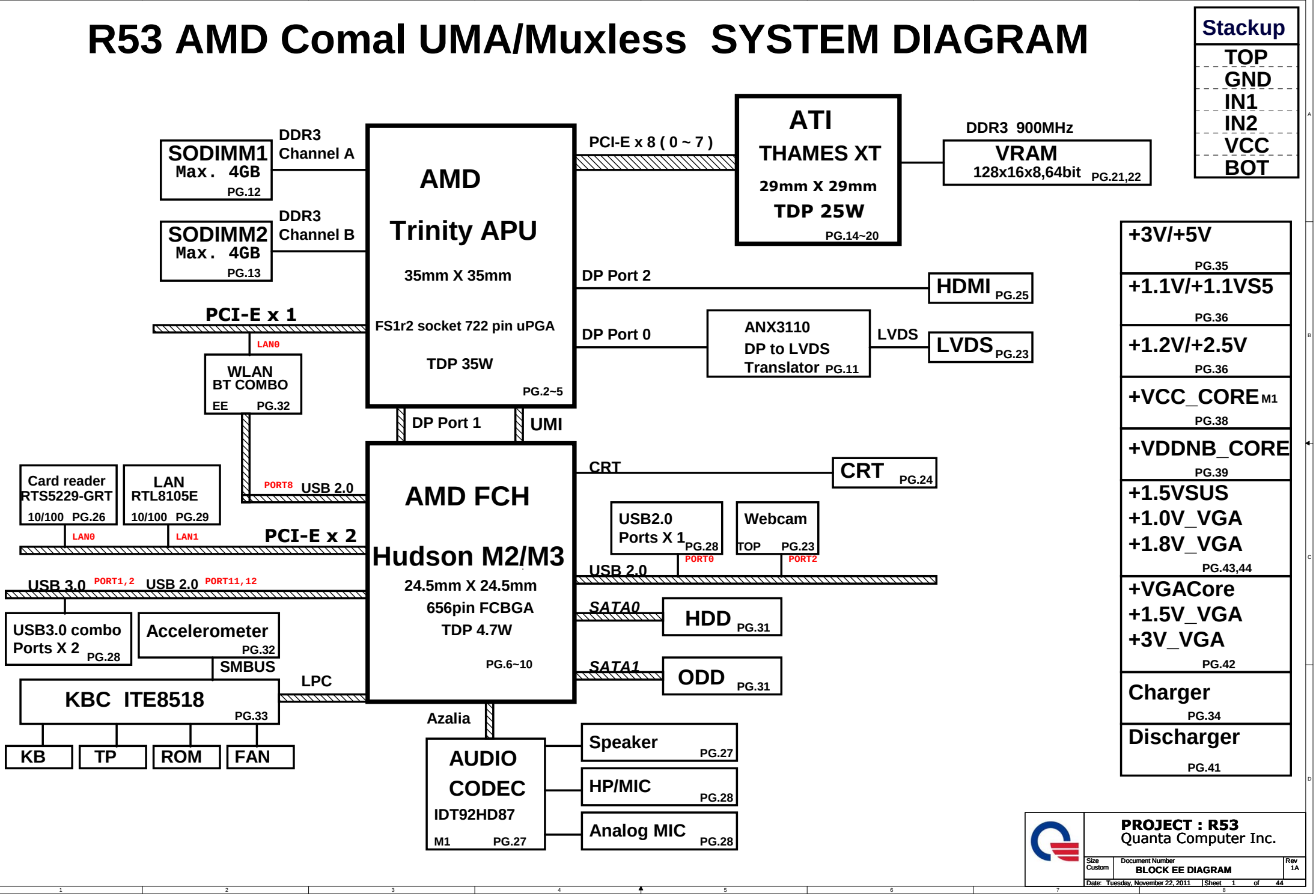
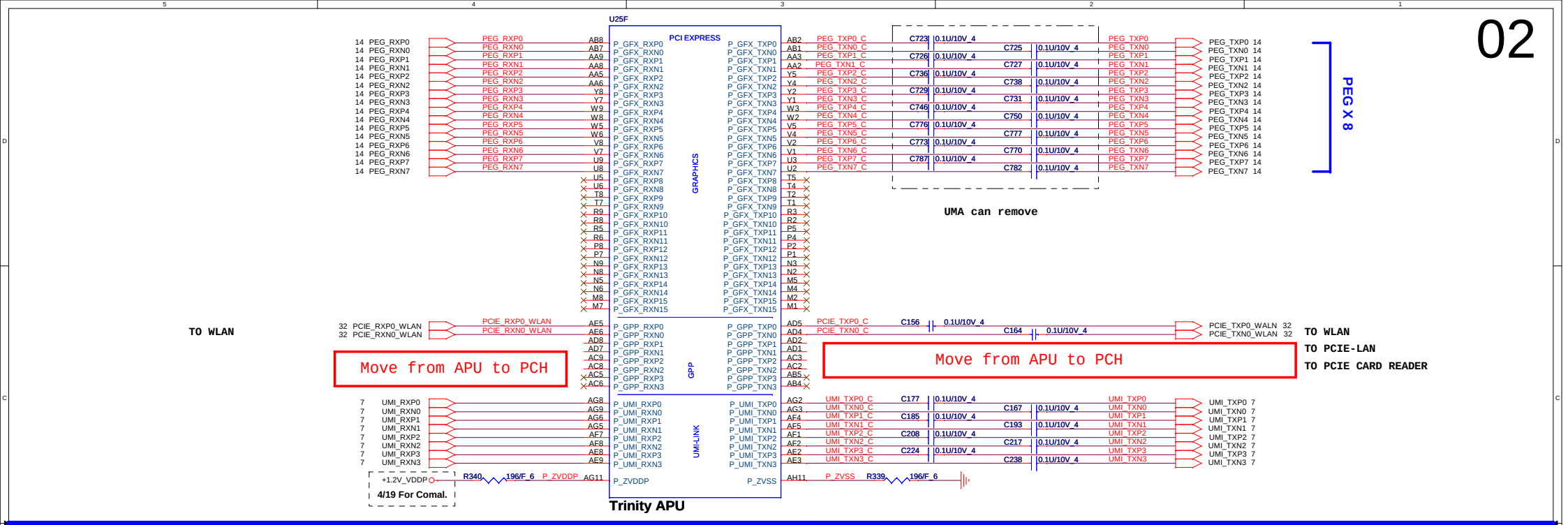
# R53 AMD Comal UMA/Muxless SYSTEM DIAGRAM



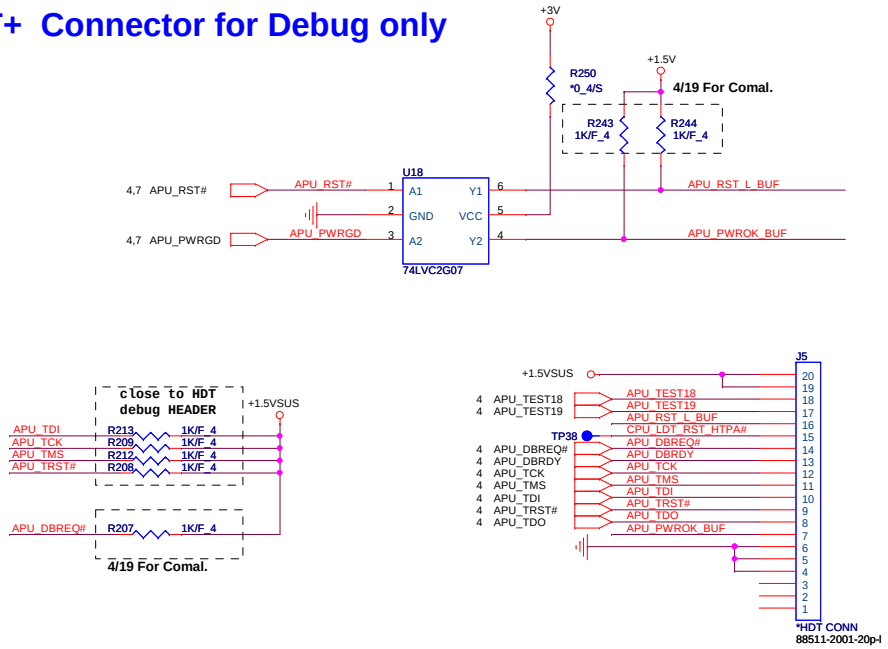

PROJECT : R53
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | BLOCK EE DIAGRAM | 1A |

Date: Tuesday, November 22, 2011 Sheet 1 of 44



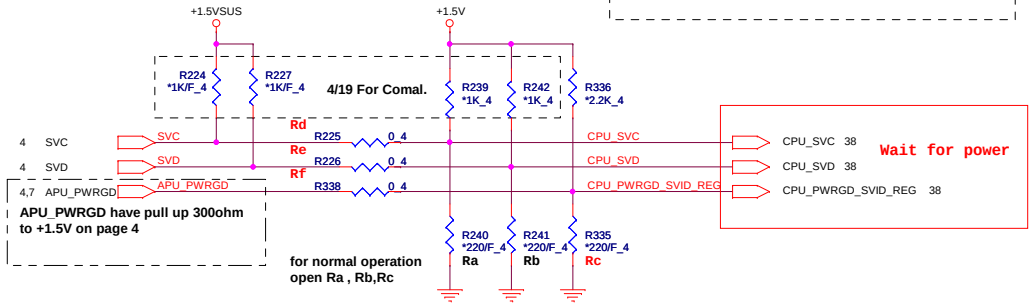

## HDT+ Connector for Debug only




## VID Override Circuit

| | BOOT VOLTAGE | | |
|---|---|---|---|
| SVC | SVD | VFIX_+VDD =VCC/GND | VFIX_+VDD =OPEN |
| 0 | 0 | 1.1 | 1.1 |
| 0 | 1 | 1.0 | 1.2 |
| 1 | 0 | 0.9 | 1.0 |
| 1 | 1 | 0.8 | 0.8 |

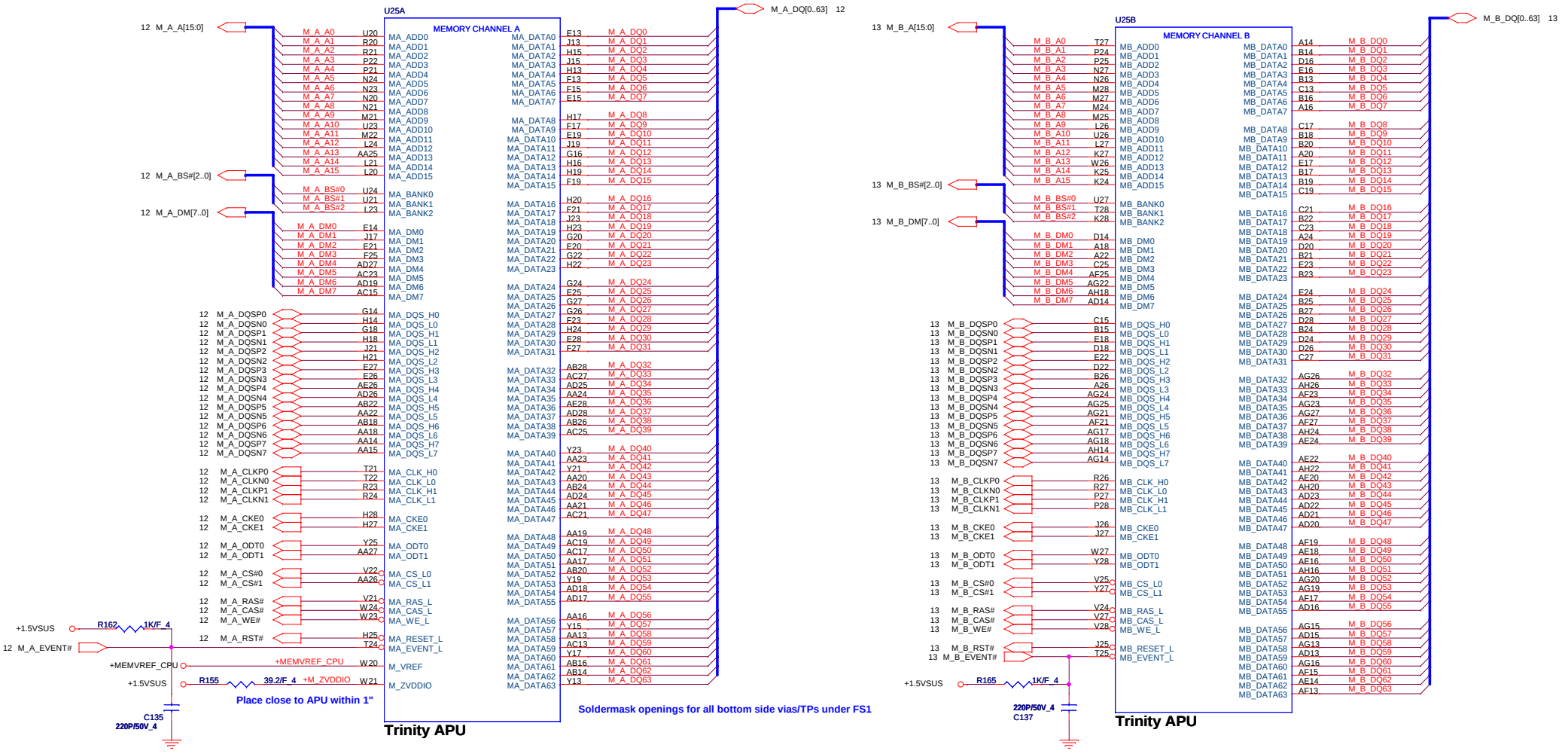
**Note:**
**To override VID,Remove Rd, Re, Rf, install Rc**
**set VID via SVC & SVD option RES.**

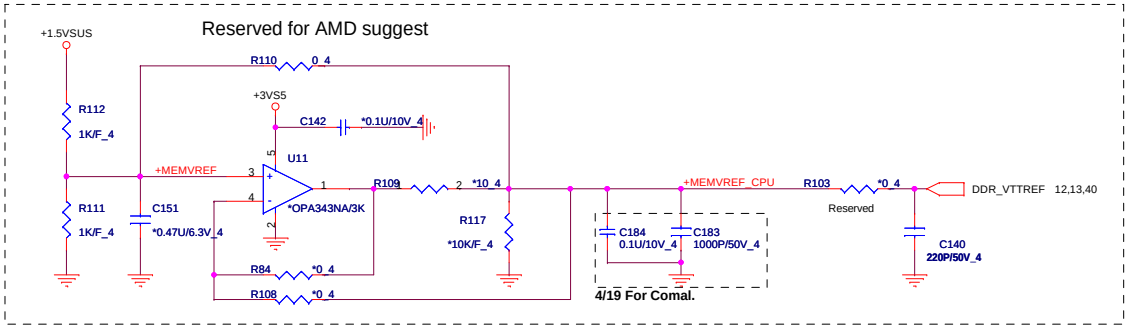



**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | Llano PCIE/UMI/GPP | 1A |

Date: Monday, November 14, 2011 Sheet 2 of 44




**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | Llano DDR3 MEM I/F | 1A |

Date: Monday, November 14, 2011 Sheet 3 of 44

Place caps with APU < 1 inch
route PCIE as 85ohm +/- 10%

DP0 output to
eDP to LVDS converter

Display port power 1.5V min 1.2v max : 1.65v

DP1 output to Hudson-M2
for VGA translator interface

4/19 HDMI change to DP2 for Comal.

DP2 output to
HDMI connector

note --HDMI P&N can not swap

Note: CLK_APU_HCLKP/N is 100MHZ SSC

Note: CLK_DP_NSSCP/N is 100MHZ non-SSC

4/19 For Comal.

4/19 For Comal.

4/19 For Comal.

4/19 For Comal,
close to APU.

Trinity APU

LVDS

VGA

HDMI

Display port power 1.5V min 1.2v max : 1.65v

SI,AMD no concern
so remove TP10,
TP17,TP18,TP16,TP23

To AMD HDT

M_TEST CONNECTION TBD

7/8 For Comal.

TEST35 PU FOR INTERNAL
TEST35 PD FOR CUSTOMER

DMAACTIVE_L controls
entry and exit from the
sleep and power states

AMD internal test only

FS1R1 signals is for detect CPU TYPE and protect it.
FS1R1 CPU this pin is N.C
FS1R2 CPU this pin is LOW
can remove it at MP

4/19 For Comal.

SI , PU SUS power
meet AMD design

Add R49 for verify this solution

reserve for leakage current verify

APU_PROCHOT# 可以當 input or output
當Low 時CPU 會降 P - STATE

to EC reserve only

4/19 For Comal.

Thermal

THERMTRIP# shutdown temperature 125度C

ADD VGA TEMP_ FAIL function is active Hi

over 120 degree C= Low

When 100K-NTC 100 C=6.164K
Thermal Trip = 120 C

**PROJECT : R53**
Quanta Computer Inc.
R23

| Size | Document Number | Rev |
|---|---|---|
| | Llano Display/Misc | 1A |
| Monday, November 14, 2011 | Sheet | of |

## APU POWER TABLE

| PIN NAME | NET NAME | VOLTAGE |
|---|---|---|
| VDD | +VCC_CORE | +1.1V |
| VDDNB | +VDDNB_CORE | ?? |
| VDDIO | +1.5VSUS | +1.5V |
| VDDP | +1.2V_VDDP | +1.2V |
| VDDR | +1.2V_VDDR | +1.2V |
| VDDA | +2.5V_VDDA | +2.5V |

SI , change to 22u for improve +VDDNB_CORE transient

4/19 For Comal.

C821 22U/6.3VS_8 C818 22U/6.3VS_8 C452 22U/6.3VS_8

C408 0.22U/10V_4 C465 0.22U/10V_4 C466 180P/50V_4 C468 180P/50V_4 C467 180P/50V_4

4/19 For Comal.

C346 22U/6.3VS_8 C380 22U/6.3VS_8 C397 180P/50V_4

SI , change to 22u for AMD ACE dynamic test,

36A
Maximum IDDspike 50A

C229 22U/6.3V_8 C271 22U/6.3V_8 C250 22U/6.3V_8 C669 22U/6.3V_8 C260 22U/6.3V_8

C286 22U/6.3V_8 C715 22U/6.3VS_8 C267 22U/6.3VS_8 C266 22U/6.3VS_8 C259 22U/6.3VS_8

4/19 For Comal.

C307 0.22U/10V_4 C306 0.22U/10V_4 C234 180P/50V_4 C239 180P/50V_4 C293 0.01U/25V_4 C304 0.01U/25V_4 C290 0.01U/25V_4

25A
Maximum IDDNBspike 33A

DECOUPLING between PROCESSOR and DIMMs Across VDDIO and VSS split

C207 0.22U/10V_4 C194 0.22U/10V_4 C195 180P/50V_4 C275 180P/50V_4

2.8A Up to DDR3-1333 @ 1.50V VDDIO

C242 0.22U/10V_4 C349 0.22U/10V_4 C255 0.22U/10V_4 C400 0.22U/10V_4 C285 0.22U/10V_4 C338 0.22U/10V_4

4/19 For Comal.

C190 180P/50V_4

4/19 For Comal.

C399 22U/6.3VS_8 C192 22U/6.3VS_8 C403 22U/6.3VS_8 C402 22U/6.3VS_8 C323 4.7U/6.3V_6 C310 4.7U/6.3V_6 C210 4.7U/6.3V_6 C398 4.7U/6.3V_6

If the VSS plane is cut to create a VDDIO plane, ceramic capacitors are connected across the VDDIO and VSS plane split as follows

VDDP = 5A

R334 *0_8/S

4/19 For Comal.

C707 22U/6.3VS_8 C674 10U/6.3V_8 C689 10U/6.3V_8 C679 10U/6.3V_8

C683 0.22U/6.3V_4 C684 0.22U/6.3V_4 C682 180P/50V_4 C685 180P/50V_4

VDDR = 3.3A ( Up to DDR3-1333 @ 1.5V )

R333 *0_8/S

C673 10U/6.3V_8 C671 10U/6.3V_8 C676 10U/6.3V_8

C680 0.22U/6.3V_4 C203 0.22U/10V_4 C675 1000P/50V_4 C678 180P/50V_4 C681 180P/50V_4

VDDA= 0.75A

L17 PBY160808T-221Y-N(220,2A)

C204 4.7U/6.3V_6 C216 0.22U/10V_4 C226 3300P/50V_4

Trinity APU

EMI suggestion

C96 470P/50V_4 C98 *470P/50V_4 C97 *470P/50V_4

Trinity APU

**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | Llano POWER/GND | 1A |

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NC,no install by default

+3VS5
R462 *2.2K_4 FCH_TEST0
R463 *2.2K_4 FCH_TEST1
R469 *2.2K_4 FCH_TEST2

+3V
R295 2.2K_4 CGCLK_SMB
R287 2.2K_4 CGDAT_SMB
to DDR3 SMBUS
SI2 , change power rail from +3V to +3VS5
+3VS5
R468 *1K_4
J6 1 2 SYS_RST#
*SOLDERJUMPER-2
SYS_RST# internal 10K pull up

GEVENT0# internal pull Hi 8.2K to +3V
GEVENT1# internal pull Hi 8.2K to +3V
GEVENT23# internal pull Hi 8.2K to +3V
GEVENT5# internal pull Hi 8.2K to +3VS5
PCIE_WAKE# no need to pull Hi resistor from check list

+3VS5
R301 10K/F_4 SCL3
R298 10K/F_4 SDA3
R290 2.2K_4 SCL2
R296 2.2K_4 SDA2
R464 2.2K_4 SCL1
R465 2.2K_4 SDA1
R284 *4.7K_4 FCH_THERMTRIP#
C582 *0.01U/25V_4
R272 10K/F_4 DNBSWON#

CLK_REQ2# internal pull Hi 8.2K to +3V
CLK_REQ3# internal pull Hi 8.2K to +3V
CLK_REQ4# internal pull Hi 8.2K to +3V

SI2 , HP request Image sensor SMBUS reserve to FCH

This pin is used to power down VGA DAC regulators when CRT no connected

GEVENT16# internal pull Hi 8.2K to +3VS5
GEVENT15# internal pull Hi 8.2K to +3VS5

## To Azalia

ACZ_SDOUT_R R454 33_4 ACZ_SDOUT_AUDIO 27
ACZ_SYNC_R R481 33_4 ACZ_SYNC_AUDIO 27
ACZ_BCLK_R R450 33_4 BIT_CLK_AUDIO 27
ACZ_RST#_R R479 33_4 ACZ_RST#_AUDIO 27
ACZ_SDIN0 ACZ_SDIN0 27

Pure UMA can remove
CLK_REQ# already internal pull up 8.2K
44 VGA_REQ 1 2 CLKREQ1#
D10 RB501V-40

remove PCIE_RST2# from AMD recommend

TP45 TP98 PCIE_RST2# RI#
33 SUSB# SUSC#
33 SUSC#
33 DNBSWON#
10 FCH_PWRGD
SUSB# SUSC# DNBSWON# FCH_PWRGD

4/19 For Comal.
TP51 FCH_TEST0 FCH_TEST1 FCH_TEST2
33 EC_A20GATE
33 EC_RCIN#
EC_A20GATE EC_RCIN#
TP50 FCH_PME#
33 SIO_EXT_SMI#
33 SIO_EXT_SCI#
R447 *0_4/S
SIO_EXT_SMI# GEVENT5# SYS_RST#
29,32 PCIE_WAKE#
C879 *100P/50V_4
PCIE_WAKE# FCH_THERMTRIP#
4 FCH_THERMTRIP#
+3V
R286 10K/F_4 WD_PWRGD
33 RSMRST#
RSMRST#
26 PCIE_CARD_CLKREQ#
29 PCIE_LAN_CLKREQ#
PCIE_CARD_CLKREQ# PCIE_LAN_CLKREQ#

27 ACZ_SPKR
R505 *0_4/S FCH_GPIO66
12,13 CGCLK_SMB
12,13 CGDAT_SMB
30 SCL1
30 SDA1
32 PCIE_MINI_CLKREQ#
CGCLK_SMB CGDAT_SMB SCL1 SDA1 PCIE_MINI_CLKREQ#
CLKREQ1#

LLB# Not Implemented ,left unconnected.
TP94 LLB#
TP64 SMARTVOLT2
9 VGA_POWER_DOWN
R283 0_4
VGA_PD
TP49 GBE_LED0
Remove Card EECS function form Vendor mail
SI
TP63

TP93 TP97
31 ODD_PLUGIN#
31 ODD_DA#_FCH
ODD_PLUGIN# ODD_DA#_FCH
4/19 For Comal.
TP48 TP99
FCH_JTAG_TCK FCH_JTAG_TDI
TP95 TP46
FCH_JTAG_RST#
For Zero ODD

HD audio interface is +3V_S5 voltage
R484 *10K/F_4 ACZ_BCLK_R
R476 *10K/F_4 ACZ_SDOUT_R
R467 *10K/F_4 ACZ_SDIN0
R470 *10K/F_4 ACZ_SDIN1
R466 *10K/F_4 ACZ_SDIN2_R
ACZ_SDIN3_R
ACZ_SYNC_R
ACZ_RST#_R

TP60 TP59
32 BT_COMBO_OFF#
BT_COMBO_OFF#
14 VGA_RSTB
33 VGA_ON_SB
VGA_RSTB VGA_ON_SB

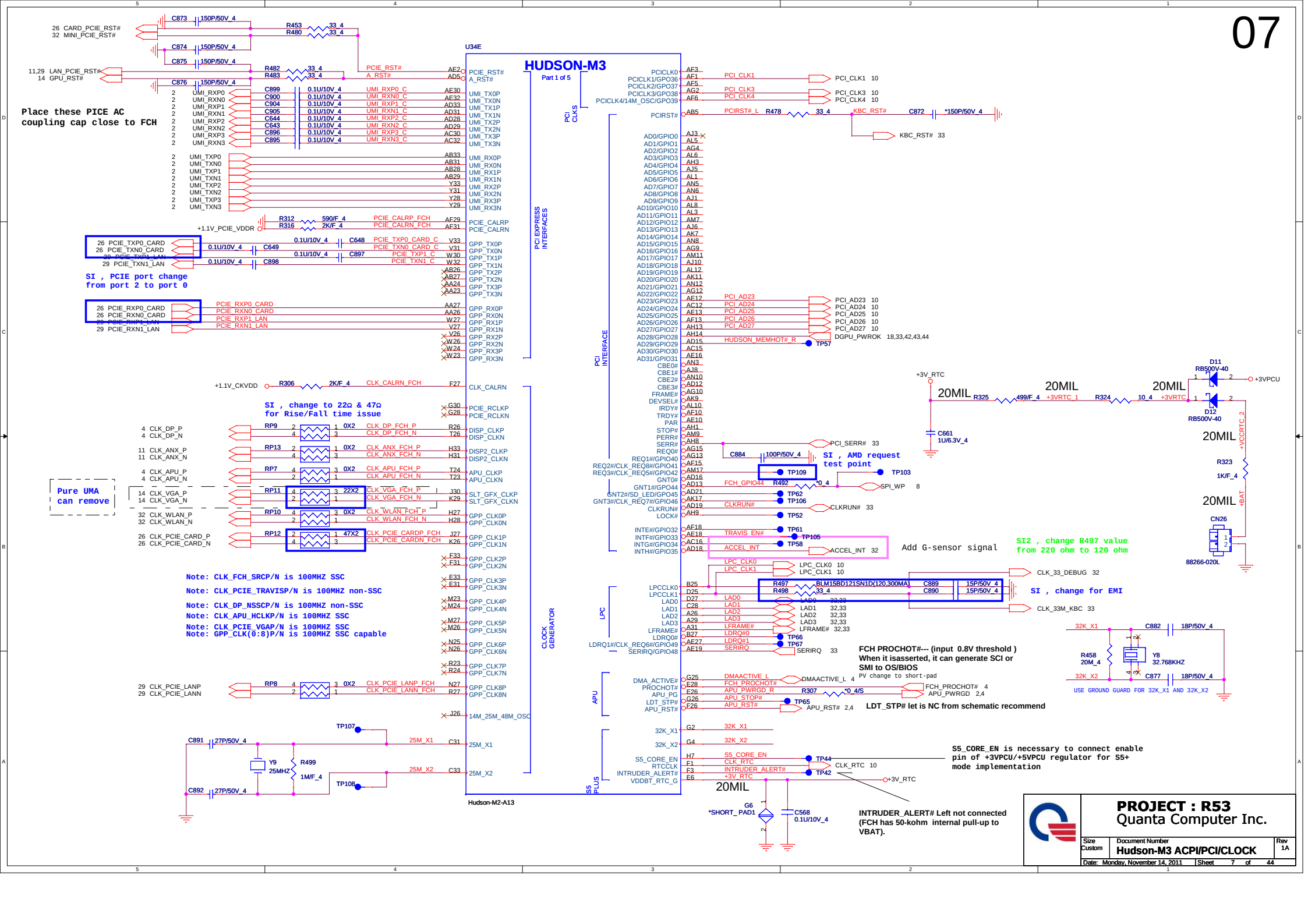
U34A
HUDSON-M3
Part 4 of 5
Hudson-M2-A13

PCIE_RST2#/GEVENT4#
RI#/GEVENT22#
SPI_CS3#/GBE_STAT1/GEVENT21#
SLP_S3#
SLP_S5#
PWR_BTN#
PWR_GOOD
TEST0
TEST1/TMS
TEST2
GA20IN/GEVENT0#
KBRST#/GEVENT1#
PME#/GEVENT3#
LPC_SMI#/GEVENT23#
LPC_PD#/GEVENT5#
SYS_RESET#/GEVENT19#
WAKE#/GEVENT8#
IR_RX1/GEVENT20#
THRMTRIP#/SMBALERT#/GEVENT2#
WD_PWRGD
RSMRST#
CLK_REQ4#/SATA_IS0#/GPIO64
CLK_REQ3#/SATA_IS1#/GPIO63
SMARTVOLT1/SATA_IS2#/GPIO50
CLK_REQ0#/SATA_IS3#/GPIO60
SATA_IS4#/FANOUT3/GPIO55
SATA_IS5#/FANIN3/GPIO59
SPKR/GPIO66
SCL0/GPIO43
SDA0/GPIO47
SCL1/GPIO227
SDA1/GPIO228
CLK_REQ2#/FANIN4/GPIO62
CLK_REQ1#/FANOUT4/GPIO61
IR_LED#/LLB#/GPIO184
SMARTVOLT2/SHUTDOWN#/GPIO51
DDR3_RST#/GEVENT7#/VGA_PD
GBE_LED0/GPIO183
SPI_HOLD#/GBE_LED1/GEVENT9#
GBE_LED2/GEVENT10#
GBE_STAT0/GEVENT11#
CLK_REQG#/GPIO65/OSCIN/IDLEEXIT#
BLINK/USB_OC7#/GEVENT18#
USB_OC6#/IR_TX1/GEVENT6#
USB_OC5#/IR_TX0/GEVENT17#
USB_OC4#/IR_RX0/GEVENT16#
USB_OC3#/AC_PRES/TDO/GEVENT15#
USB_OC2#/TCK/GEVENT14#
USB_OC1#/TDI/GEVENT13#
USB_OC0#/SPI_TPM_CS#/TRST#/GEVENT12#
AZ_BITCLK
AZ_SDOUT
AZ_SDIN0/GPIO167
AZ_SDIN1/GPIO168
AZ_SDIN2/GPIO169
AZ_SDIN3/GPIO170
AZ_SYNC
AZ_RST#
PS2_DAT/SDA4/GPIO187
PS2_CLK/CEC/SCL4/GPIO188
SPI_CS2#/GBE_STAT2/GPIO166
PS2KB_DAT/GPIO189
PS2KB_CLK/GPIO190
PS2M_DAT/GPIO191
PS2M_CLK/GPIO192
KSO_0/GPIO209
KSO_1/GPIO210
KSO_2/GPIO211
KSO_3/GPIO212
KSO_4/GPIO213
KSO_5/GPIO214
KSO_6/GPIO215
KSO_7/GPIO216
KSO_8/GPIO217
KSO_9/GPIO218
KSO_10/GPIO219
KSO_11/GPIO220
KSO_12/GPIO221
KSO_13/GPIO222
KSO_14/XDB0/GPIO223
KSO_15/XDB1/GPIO224
KSO_16/XDB2/GPIO225
KSO_17/XDB3/GPIO226
USBCLK/14M_25M_48M_OSC
USB_RCOMP
USB_FSD1P/GPIO186
USB_FSD1N
USB_FSD0P/GPIO185
USB_FSD0N
USB_HSD13P
USB_HSD13N
USB_HSD12P
USB_HSD12N
USB_HSD11P
USB_HSD11N
USB_HSD10P
USB_HSD10N
USB_HSD9P
USB_HSD9N
USB_HSD8P
USB_HSD8N
USB_HSD7P
USB_HSD7N
USB_HSD6P
USB_HSD6N
USB_HSD5P
USB_HSD5N
USB_HSD4P
USB_HSD4N
USB_HSD3P
USB_HSD3N
USB_HSD2P
USB_HSD2N
USB_HSD1P
USB_HSD1N
USB_HSD0P
USB_HSD0N
USBSS_CALRP
USBSS_CALRN
USB_SS_TX3P
USB_SS_TX3N
USB_SS_RX3P
USB_SS_RX3N
USB_SS_TX2P
USB_SS_TX2N
USB_SS_RX2P
USB_SS_RX2N
USB_SS_TX1P
USB_SS_TX1N
USB_SS_RX1P
USB_SS_RX1N
USB_SS_TX0P
USB_SS_TX0N
USB_SS_RX0P
USB_SS_RX0N
SCL2/GPIO193
SDA2/GPIO194
SCL3_LV/GPIO195
SDA3_LV/GPIO196
EC_PWM0/EC_TIMER0/GPIO197
EC_PWM1/EC_TIMER1/GPIO198
EC_PWM2/EC_TIMER2/WOL_EN/GPIO199
EC_PWM3/EC_TIMER3/GPIO200
KSI_0/GPIO201
KSI_1/GPIO202
KSI_2/GPIO203
KSI_3/GPIO204
KSI_4/GPIO205
KSI_5/GPIO206
KSI_6/GPIO207
KSI_7/GPIO208

USB_RCOMP_SB R494 11.8K/F_6
USBP6+ USBP6- → USBP12+ 28, USBP12- 28 — Left side USB Combo 3.0/2.0.
USBP5+ USBP5- → USBP11+ 28, USBP11- 28 — Left side USB Combo 3.0/2.0.
USBP8+ 32, USBP8- 32 — WLAN Min-Card
USBP7+ USBP7- → TP104 TP101
USBP2+ 23, USBP2- 23 — Camera USB
USBP0+ 28, USBP0- 28 — Right side USB 2.0 Connector
R496 1K/F_4 R495 1K/F_4 +FCH_VDD_11_SSUSB_S
USB 3.0 Not Implemented: left unconnected.
USB30_TX2+ 28, USB30_TX2- 28
USB30_RX2+ 28, USB30_RX2- 28
USB30_TX1+ 28, USB30_TX1- 28
USB30_RX1+ 28, USB30_RX1- 28
EC_PWM2 → EC_PWM2 10
No need for GPIO200

SCL3 of a TSI-capable APU's thermal bus,Pulled up to APU_VDDIO. Resistor value verified in the relevant APU design guide.

| | | |
|---|---|---|
| PROJECT : R53 Quanta Computer Inc. | | |
| Size: Custom | Document Number: Hudson-M3 GPIO/USB/AZ/RGMII | Rev: 1A |
| Date: Friday, November 11, 2011 | Sheet 6 of 44 | |




| | |
|---|---|
| PROJECT : R53 | Quanta Computer Inc. |
| Size: Custom | Document Number: Hudson-M3 ACPI/PCI/CLOCK |
| Rev: 1A | |
| Date: Monday, November 14, 2011 | Sheet 7 of 44 |

U34D

## HUDSON-M3

Part 5 of 5

GROUND

| | | | |
|---|---|---|---|
| A3 | VSS_1 | VSS_65 | T25 |
| A33 | VSS_2 | VSS_66 | T27 |
| B7 | VSS_3 | VSS_67 | U6 |
| B13 | VSS_4 | VSS_68 | U14 |
| D9 | VSS_5 | VSS_69 | U17 |
| D13 | VSS_6 | VSS_70 | U20 |
| E5 | VSS_7 | VSS_71 | U21 |
| E12 | VSS_8 | VSS_72 | U30 |
| E16 | VSS_9 | VSS_73 | U32 |
| E29 | VSS_10 | VSS_74 | V11 |
| F7 | VSS_11 | VSS_75 | V16 |
| F9 | VSS_12 | VSS_76 | V18 |
| F11 | VSS_13 | VSS_77 | W4 |
| F13 | VSS_14 | VSS_78 | W6 |
| F16 | VSS_15 | VSS_79 | W25 |
| F17 | VSS_16 | VSS_80 | W28 |
| F19 | VSS_17 | VSS_81 | Y14 |
| F23 | VSS_18 | VSS_82 | Y16 |
| F25 | VSS_19 | VSS_83 | Y18 |
| F29 | VSS_20 | VSS_84 | AA6 |
| G6 | VSS_21 | VSS_85 | AA12 |
| G16 | VSS_22 | VSS_86 | AA13 |
| G32 | VSS_23 | VSS_87 | AA14 |
| H12 | VSS_24 | VSS_88 | AA16 |
| H15 | VSS_25 | VSS_89 | AA17 |
| H29 | VSS_26 | VSS_90 | AA25 |
| J6 | VSS_27 | VSS_91 | AA28 |
| J9 | VSS_28 | VSS_92 | AA30 |
| J10 | VSS_29 | VSS_93 | AA32 |
| J13 | VSS_30 | VSS_94 | AB25 |
| J28 | VSS_31 | VSS_95 | AC6 |
| J32 | VSS_32 | VSS_96 | AC18 |
| K7 | VSS_33 | VSS_97 | AC28 |
| K16 | VSS_34 | VSS_98 | AD27 |
| K27 | VSS_35 | VSS_99 | AE6 |
| K28 | VSS_36 | VSS_100 | AE15 |
| L6 | VSS_37 | VSS_101 | AE21 |
| L12 | VSS_38 | VSS_102 | AE28 |
| L13 | VSS_39 | VSS_103 | AF8 |
| L15 | VSS_40 | VSS_104 | AF12 |
| L16 | VSS_41 | VSS_105 | AF16 |
| L21 | VSS_42 | VSS_106 | AF33 |
| M13 | VSS_43 | VSS_107 | AG30 |
| M16 | VSS_44 | VSS_108 | AG32 |
| M21 | VSS_45 | VSS_109 | AH5 |
| M25 | VSS_46 | VSS_110 | AH11 |
| N6 | VSS_47 | VSS_111 | AH18 |
| N11 | VSS_48 | VSS_112 | AH19 |
| N13 | VSS_49 | VSS_113 | AH21 |
| N23 | VSS_50 | VSS_114 | AH23 |
| N24 | VSS_51 | VSS_115 | AH25 |
| P12 | VSS_52 | VSS_116 | AH27 |
| P18 | VSS_53 | VSS_117 | AJ18 |
| P20 | VSS_54 | VSS_118 | AJ28 |
| P21 | VSS_55 | VSS_119 | AJ29 |
| P31 | VSS_56 | VSS_120 | AK21 |
| P33 | VSS_57 | VSS_121 | AK25 |
| R4 | VSS_58 | VSS_122 | AL18 |
| R11 | VSS_59 | VSS_123 | AM21 |
| R25 | VSS_60 | VSS_124 | AM25 |
| R28 | VSS_61 | VSS_125 | AN1 |
| T11 | VSS_62 | VSS_126 | AN18 |
| T16 | VSS_63 | VSS_127 | AN28 |
| T18 | VSS_64 | VSS_128 | AN33 |
| N8 | VSSAN_HWM | VSSPL_DAC | T21 |
| | | VSSAN_DAC | L28 |
| K25 | VSSXL | VSSANQ_DAC | K33 |
| | | VSSIO_DAC | N28 |
| H25 | VSSPL_SYS | EFUSE | R6 |

Hudson-M2-A13

PLACE SATA AC COUPLING CAPS CLOSE TO HUDSON-M2/M3

SATA HDD

SATA ODD

U34B

## HUDSON-M3

Part 2 of 5

| | | |
|---|---|---|
| 31 SATA_TXP0 | SATA_TXP0 | AK19 SATA_TX0P |
| 31 SATA_TXN0 | SATA_TXN0 | AM19 SATA_TX0N |
| 31 SATA_RXN0 | | AL20 SATA_RX0N |
| 31 SATA_RXP0 | | AN20 SATA_RX0P |
| 31 SATA_TXP1 | SATA_TXP1 | AN22 SATA_TX1P |
| 31 SATA_TXN1 | SATA_TXN1 | AL22 SATA_TX1N |
| 31 SATA_RXN1 | | AH20 SATA_RX1N |
| 31 SATA_RXP1 | | AJ20 SATA_RX1P |
| | | AJ22 SATA_TX2P |
| | | AH22 SATA_TX2N |
| | | AM23 SATA_RX2N |
| | | AK23 SATA_RX2P |
| | | AH24 SATA_TX3P |
| | | AJ24 SATA_TX3N |
| | | AN24 SATA_RX3N |
| | | AL24 SATA_RX3P |
| | | AL26 SATA_TX4P |
| | | AN26 SATA_TX4N |
| | | AJ26 SATA_RX4N |
| | | AH26 SATA_RX4P |
| | | AN29 SATA_TX5P |
| | | AL28 SATA_TX5N |
| | | AK27 SATA_RX5N |
| | | AM27 SATA_RX5P |
| | | AL29 NC6 |
| | | AN31 NC7 |
| | | AL31 NC8 |
| | | AL33 NC9 |
| | | AH33 NC10 |
| | | AH31 NC11 |
| | | AJ33 NC12 |
| | | AJ31 NC13 |
| | SATA_CALRP | AF28 SATA_CALRP |
| | SATA_CALRN | AF27 SATA_CALRN |
| | | AD22 SATA_ACT#/GPIO67 |
| | | AF21 SATA_X1 |
| | | AG21 SATA_X2 |

+3V

C577 *0.1U/10V_4

U23 *MC74VHC1G08DFT2G

28 SATA_LED# — R288 0_4 — SB_SATA_LED#

PLACE SATA_CAL RES VERY CLOSE TO BALL OF HUDSON-M2/M3

+1.1V_AVDD_SATA — R313 1K/F_4 — R303 931/F_4

4/19 For Comal.

+3V — R294 *220/F_6 — SB_SATA_LED#

Integrated Clock Mode: Leave unconnected.

Add GPIO for G-sensor LED control

GPIO52 internal pull Hi 8.2K to +3V
GPIO53 internal pull Hi 8.2K to +3V
GPIO54 internal pull Hi 8.2K to +3V
GPIO56 internal pull Hi 8.2K to +3V
GPIO57 internal pull Hi 8.2K to +3V
GPIO58 internal pull Hi 8.2K to +3V

| | | |
|---|---|---|
| 32 RF_OFF# | RF_OFF# | AH16 FANOUT0/GPIO52 |
| TP102 | BT_OFF# | AM15 FANOUT1/GPIO53 |
| 32 BT_COMBO_EN# | BT_COMBO_EN# | AJ16 FANOUT2/GPIO54 |
| 31 ODD_PWR | ODD_PWR | AK15 FANIN0/GPIO56 |
| 28 ACC_LED# | | AN16 FANIN1/GPIO57 |
| 23 LCD_BK | LCD_BK | AL16 FANIN2/GPIO58 |
| | TEMPIN0 | K6 TEMPIN0/GPIO171 |
| | TEMPIN1 | K5 TEMPIN1/GPIO172 |
| | TEMPIN2 | K3 TEMPIN2/GPIO173 |
| | TEMPIN3 | M6 TEMPIN3/TALERT#/GPIO174 |

R281 10K/F_4 R276 10K/F_4 R485 10K/F_4 R277 10K/F_4

TEMP( 0 - 3 )
Temp Monitor Not Implemented
10-KΩ 5% pull-up to +3VS5
or 10-KΩ 5% pull-down

Hudson-M2-A13

HW MONITOR

SD CARD

GBE LAN

SERIAL ATA

SPI ROM

VGA DAC

VGA MAINLINK

| | | |
|---|---|---|
| | SD_CLK/SCLK_2/GPIO73 | AL14 |
| | SD_CMD/SLOAD_2/GPIO74 | AN14 |
| | SD_CD#/GPIO75 | AJ12 |
| | SD_WP/GPIO76 | AH12 |
| | SD_DATA0/SDATI_2/GPIO77 | AK13 |
| | SD_DATA1/SDATO_2/GPIO78 | AM13 |
| | SD_DATA2/GPIO79 | AH15 |
| | SD_DATA3/GPIO80 | AJ14 |
| GBE_COL | GBE_COL | AC4 |
| GBE_CRS | GBE_CRS | AD3 |
| GBE_MDCK | | AD9 |
| GBE_MDIO | GBE_MDIO | W10 |
| GBE_RXCLK | | AB8 |
| GBE_RXD3 | | AH7 |
| GBE_RXD2 | | AE7 |
| GBE_RXD1 | | AD7 |
| GBE_RXD0 | | AG8 |
| GBE_RXCTL/RXDV | GBE_RXERR | AD1 |
| GBE_RXERR | | AB7 |
| GBE_TXCLK | | AF9 |
| GBE_TXD3 | | AG6 |
| GBE_TXD2 | | AE8 |
| GBE_TXD1 | | AD8 |
| GBE_TXD0 | | AB9 |
| GBE_TXCTL/TXEN | | AC2 |
| GBE_PHY_PD | | AA7 |
| GBE_PHY_RST# | | W9 |
| GBE_PHY_INTR | GBE_PHY_INTR | |
| SPI_DI/GPIO164 | SPI_SI | V6 |
| SPI_DO/GPIO163 | SPI_SO | V5 |
| SPI_CLK/GPIO162 | SPI_CLK | V3 |
| SPI_CS1#/GPIO165 | SPI_CS0# | T6 |
| ROM_RST#/SPI_WP#/GPIO161 | FCH_SPI_WP | V1 |
| VGA_RED | FCH_CRT_R | L30 |
| VGA_GREEN | FCH_CRT_G | L32 |
| VGA_BLUE | FCH_CRT_B | M29 |
| VGA_HSYNC/GPO68 | | M28 |
| VGA_VSYNC/GPO69 | | N30 |
| VGA_DDC_SDA/GPO70 | | M33 |
| VGA_DDC_SCL/GPO71 | | N32 |
| VGA_DAC_RSET | VGA_DAC_REST | K31 |
| AUX_VGA_CH_P | | V28 |
| AUX_VGA_CH_N | | V29 |
| AUXCAL | AUXCAL | U28 |
| ML_VGA_L0P | | T31 |
| ML_VGA_L0N | | T33 |
| ML_VGA_L1P | | T29 |
| ML_VGA_L1N | | T28 |
| ML_VGA_L2P | | R32 |
| ML_VGA_L2N | | R30 |
| ML_VGA_L3P | | P29 |
| ML_VGA_L3N | | P28 |
| ML_VGA_HPD/GPO229 | VGA_HPD | C29 |
| VIN0/GPIO175 | SIDE_PORT_ID0 | N2 |
| VIN1/GPIO176 | SIDE_PORT_ID1 | M3 |
| VIN2/SDATI_1/GPIO177 | SIDE_PORT_ID2 | L2 |
| VIN3/SDATO_1/GPIO178 | BOARD_ID0 | N4 |
| VIN4/SLOAD_1/GPIO179 | BOARD_ID1 | P1 |
| VIN5/SCLK_1/GPIO180 | BOARD_ID2 | P3 |
| VIN6/GBE_STAT3/GPIO181 | BOARD_ID3 | M1 |
| VIN7/GBE_LED3/GPIO182 | BOARD_ID4 | M5 |
| NC1 | | AG16 |
| NC2 | | AH10 |
| NC3 | | A28 |
| NC4 | | G27 |
| NC5 | | L4 |

6/7 for Comal.

ICT need TP2675 size test point

TP47 TP40 TP41 TP43 TP39

EC_BIOS_CS# EC_BIOS_SPI_CLK_I EC_BIOS_WR# EC_BIOS_RD#

SPI_WP

FCH_CRT_RED 24 FCH_CRT_GRE 24 FCH_CRT_BLU 24

FCH_CRT_HSYNC 24 FCH_CRT_VSYNC 24

FCH_DDCDAT 24 FCH_DDCCLK 24

APU_DP_AUXP 4 APU_DP_AUXN 4

+FCH_VDDAN_11_MLDAC

APU_DP_TXP0 4 APU_DP_TXN0 4 APU_DP_TXP1 4 APU_DP_TXN1 4 APU_DP_TXP2 4 APU_DP_TXN2 4 APU_DP_TXP3 4 APU_DP_TXN3 4

+FCH_VDDAN_33_DAC_R

VIN ( 0 - 7 )
Voltage Monitor Not Implemented
10-KΩ 5% pull-up to +3VS5
or 10-KΩ 5% pull-down

+3VS5 — R444 10K/F_4 BOARD_ID0 R445 *10K/F_4
R442 *10K/F_4 BOARD_ID1 R443 10K/F_4
R449 *10K/F_4 BOARD_ID2 R448 10K/F_4
R440 *10K/F_4 BOARD_ID3 R460 10K/F_4
R438 *10K/F_4 BOARD_ID4 R439 10K/F_4
R446 10K/F_4 SIDE_PORT_ID0 R459 *10K/F_4
R441 10K/F_4 SIDE_PORT_ID1 R461 *10K/F_4
R437 *10K/F_4 SIDE_PORT_ID2 R457 10K/F_4

| SIDE_PORT_ID2 | SIDE_PORT_ID1 | SIDE_PORT_ID0 | |
|---|---|---|---|
| 0 | 0 | 0 | Samsung |
| 0 | 0 | 1 | Hynix |
| 0 | 1 | 0 | NC |
| 0 | 1 | 1 | no supprot side port |

| ID4 | ID3 | ID2 | ID1 | ID0 | CONFIG | 31- Level BOM | Item |
|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | UMA | | 1 |
| 0 | 0 | 0 | 1 | 0 | | | 2 |
| 0 | 0 | 1 | 0 | 0 | | | 3 |
| 0 | 0 | 1 | 1 | 0 | | | 4 |
| 0 | 1 | 0 | 1 | 0 | | | 5 |
| 0 | 1 | 1 | 1 | 0 | | | 6 |
| 1 | 0 | 0 | 1 | 0 | | | 7 |
| 1 | 0 | 1 | 1 | 0 | | | 8 |
| 0 | 0 | 0 | 0 | 1 | SG / Muxless | | 9 |
| 0 | 0 | 1 | 0 | 1 | | | 10 |
| 1 | 0 | 0 | 1 | 1 | | | 11 |
| 1 | 0 | 1 | 1 | 1 | | | 12 |

| Vender | Size | P/N |
|---|---|---|
| AMIC | 2M | AKE38ZN0801 |
| WINBOND | 2M | AKE38FP0N01 |
| Socket | | DFHS08FS023 |

## FCH SPI ROM

SPI_CLK — C880 *22P/50V_4 — EMI

+3VS5 — SI , change power rail from +3V to +3VS5

R486 10K/F_4 — C881 *0.1U/10V_4

U33 *MX25L1605DM2I-12G

R487 0_4 SPI_CS0# — R472 0_4 SPI_CLK — R471 0_4 SPI_SO — R489 0_4 SPI_SI — R493 *0_4

R473 *10K/F_4

*10K/F_4 R491 +3V

R place close to PCH

FCH_CRT_R R502 150/F_4
FCH_CRT_G R501 150/F_4
FCH_CRT_B R504 150/F_4

FCH_VGA_HPD R506 *0_4 VGA_HPD

Reserve for debug

## VGA Hot-plug

SI , Q23,Q41 change to dual type MOS Q50

+3V — R508 1K/F_4 — +5V — R500 100K/F_4

4 FCH_VGA_HPD — FCH_VGA_HPD

Q50B Dual 2N7002DW-7-F Q50A Dual 2N7002DW-7-F

VGA_HPD — R309 100K/F_4

**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | Hudson-M3 SATA/HWM/SPI | 1A |
| Date: Friday, November 11, 2011 | Sheet 8 of 44 | |

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

SI, add for leakage issue

R539 0_8 Q46 *AO3416

+3V

33,34,36,40,41 MAINON

+3.3V_VDDIO

VDDQ--3.3V I/O power 102mA

C589 0.1U/10V_4 C570 22U/6.3V5_8 C586 0.1U/10V_4 C581 0.1U/10V_4 C585 0.1U/10V_4

M2 chipset need to connect to GND
M3 remove

+FCH_VDDAN_33_DAC_R

+FCH_VDDPL_33_MLDAC

+VDDPL_3.3V

R291 *0_4

+FCH_VDDPL_33_SSUSB_S

+FCH_VDDPL_33_PCIE

+FCH_VDDPL_33_SATA

L52 PBY160808T-221Y-N(220,2A) TRACE WIDTH >=15mil

C638 2.2U/6.3V_4 C639 *0.1U/10V_4

L54 PBY160808T-221Y-N(220,2A) TRACE WIDTH >=15mil

C641 2.2U/6.3V_4 C632 *0.1U/10V_4

NOTE : LDO_CAP
A11 stepping : C will install 1nf cap
A12 stepping : C will let it to NC

C635 *1000P/50V_4 +LDO_CAP

+FCH_VDDAN_11_MLDAC

+FCH_VDDAN_11_DAC

VDDAN_11_ML -- UMI 1.1V analog power

+FCH_VDDAN_11_ML

C609 0.1U/10V_4 C617 1U/6.3V_4 C631 4.7U/6.3V_6 C613 0.1U/10V_4

VDDPL_33_USB_S : USB PHY PLL analog power

L53 PBY160808T-221Y-N(220,2A)

C640 2.2U/6.3V_4 C615 0.1U/10V_4

+3V_AVDD_USB

L67 PBY160808T-221Y-N(220,2A)

+FCH_VDDPL_33_SUSB_S

C885 2.2U/6.3V_4 C886 1U/6.3V_4

VDDAN_33_USB_S : USB PHY I/O analog power

L68 PBY160808T-221Y-N(220,2A) TRACE WIDTH >=50mil

C574 0.1U/10V_4 C583 10U/6.3V_8 C887 10U/6.3V_8 C567 1U/6.3V_4 C575 1U/6.3V_4

VDDAN_11_USB_S : USB PHY PLL analog power

L70 PBY160808T-221Y-N(220,2A)

C979 0.1U/10V_4 C572 2.2U/6.3V_4 C587 0.1U/10V_4

SI , AMD SR tool review need one more 0.1u

VDDCR_11_USB_S : USB PHY core power

L69 PBY160808T-221Y-N(220,2A)

C573 0.1U/10V_4 C579 0.1U/10V_4 C888 10U/6.3V_8

SI , AMD SR tool review

M3 chipset need to stuff for support USB3.0

L48 PBY160808T-221Y-N(220,2A)

R293 *0_8/S

VDDAN_11_SSUSB_S : USB3.0 PHY PLL analog power

R289 *0_4 R300 *0_8/S

M2 chipset need to connect to GND M3 remove

C605 1U/6.3V_4 C607 0.1U/10V_4 C606 0.1U/10V_4 C604 1U/6.3V_4 C627 10U/6.3V_8 C630 1U/6.3V_4 C629 0.1U/10V_4 C628 0.1U/10V_4

VDDCR_11_SSUSB_S : USB3.0 PHY core power

M3 chipset need to stuff for support USB3.0

if support Modem wake up should be change pull hi to S5 power

L50 PBY160808T-221Y-N(220,2A)

C633 2.2U/6.3V_6 C634 0.1U/10V_4

M3 chipset need to stuff for support USB3.0

+3V R477 *0_4/S +VDDIO_AZ

VDDIO_AZ_S -- HD Audio Interface I/O power

C563 2.2U/6.3V_4

U34C

HUDSON-M3 Part 3 of 5

| | | | |
|---|---|---|---|
| AB17 | VDDIO_33_PCIGP_1 | PCI/GPIO I/O | 47mA |
| AB18 | VDDIO_33_PCIGP_2 | | |
| AE9 | VDDIO_33_PCIGP_3 | | |
| AD10 | VDDIO_33_PCIGP_4 | | |
| AG7 | VDDIO_33_PCIGP_5 | | |
| AC13 | VDDIO_33_PCIGP_6 | | |
| AB12 | VDDIO_33_PCIGP_7 | | |
| AB13 | VDDIO_33_PCIGP_8 | | |
| AB14 | VDDIO_33_PCIGP_9 | | |
| AB16 | VDDIO_33_PCIGP_10 | | |
| H24 | VDDPL_33_SYS | CLKGEN I/O | 20mA |
| V22 | VDDPL_33_DAC | | 20mA |
| U22 | VDDPL_33_ML | | 30mA |
| T22 | VDDAN_33_DAC | | 11mA |
| L18 | VDDPL_33_SSUSB_S | | 14mA |
| D7 | VDDPL_33_USB_S | | 11mA |
| AH29 | VDDPL_33_PCIE | | 12mA |
| AG28 | VDDPL_33_SATA | | |
| M31 | LDO_CAP | | |
| V21 | VDDPL_11_DAC | | 7mA |
| Y22 | VDDAN_11_ML_1 | MAIN LINK/ EXPRESS | 226mA |
| V23 | VDDAN_11_ML_2 | | |
| V24 | VDDAN_11_ML_3 | | |
| V25 | VDDAN_11_ML_4 | | |
| AB10 | VDDIO_33_GBE_S | GBE LAN SERIAL ATA | |
| AB11 | VDDCR_11_GBE_S_1 | | |
| AA11 | VDDCR_11_GBE_S_2 | | |
| AA9 | VDDIO_GBE_S_1 | | |
| AA10 | VDDIO_GBE_S_2 | | |
| G7 | VDDAN_33_USB_S_1 | USB | 470mA |
| H8 | VDDAN_33_USB_S_2 | | |
| J8 | VDDAN_33_USB_S_3 | | |
| K8 | VDDAN_33_USB_S_4 | | |
| K9 | VDDAN_33_USB_S_5 | | |
| M9 | VDDAN_33_USB_S_6 | | |
| M10 | VDDAN_33_USB_S_7 | | |
| N9 | VDDAN_33_USB_S_8 | | |
| N10 | VDDAN_33_USB_S_9 | | |
| M12 | VDDAN_33_USB_S_10 | | |
| N12 | VDDAN_33_USB_S_11 | | |
| M11 | VDDAN_33_USB_S_12 | | |
| U12 | VDDAN_11_USB_S_1 | | 140mA |
| U13 | VDDAN_11_USB_S_2 | | |
| T12 | VDDCR_11_USB_S_1 | | 42mA |
| T13 | VDDCR_11_USB_S_2 | | |
| P16 | VDDAN_11_SSUSB_S_1 | USB SS | 282mA |
| M14 | VDDAN_11_SSUSB_S_2 | | |
| N14 | VDDAN_11_SSUSB_S_3 | | |
| P13 | VDDAN_11_SSUSB_S_4 | | |
| P14 | VDDAN_11_SSUSB_S_5 | | |
| N16 | VDDCR_11_SSUSB_S_1 | | 424mA |
| N17 | VDDCR_11_SSUSB_S_2 | | |
| P17 | VDDCR_11_SSUSB_S_3 | | |
| M17 | VDDCR_11_SSUSB_S_4 | | |
| T14 | VDDCR_11_1 | CORE S0 | 1007mA for M3 902mA for M2 |
| T17 | VDDCR_11_2 | | |
| T20 | VDDCR_11_3 | | |
| U16 | VDDCR_11_4 | | |
| U18 | VDDCR_11_5 | | |
| V14 | VDDCR_11_6 | | |
| V17 | VDDCR_11_7 | | |
| V20 | VDDCR_11_8 | | |
| Y17 | VDDCR_11_9 | | |
| H26 | VDDAN_11_CLK_1 | CLKGEN I/O | 340mA |
| J25 | VDDAN_11_CLK_2 | | |
| K24 | VDDAN_11_CLK_3 | | |
| L22 | VDDAN_11_CLK_4 | | |
| M22 | VDDAN_11_CLK_5 | | |
| N21 | VDDAN_11_CLK_6 | | |
| N22 | VDDAN_11_CLK_7 | | |
| P22 | VDDAN_11_CLK_8 | | |
| AB24 | VDDAN_11_PCIE_1 | MAIN LINK/ EXPRESS | 1088mA |
| Y21 | VDDAN_11_PCIE_2 | | |
| AE25 | VDDAN_11_PCIE_3 | | |
| AD24 | VDDAN_11_PCIE_4 | | |
| AB23 | VDDAN_11_PCIE_5 | | |
| AA22 | VDDAN_11_PCIE_6 | | |
| AE26 | VDDAN_11_PCIE_7 | | |
| AG27 | VDDAN_11_PCIE_8 | | |
| AA21 | VDDAN_11_SATA_1 | SERIAL ATA | 1337mA |
| Y20 | VDDAN_11_SATA_4 | | |
| AB21 | VDDAN_11_SATA_2 | | |
| AB22 | VDDAN_11_SATA_3 | | |
| AC22 | VDDAN_11_SATA_5 | | |
| AC21 | VDDAN_11_SATA_6 | | |
| AA20 | VDDAN_11_SATA_7 | | |
| AA18 | VDDAN_11_SATA_8 | | |
| AB20 | VDDAN_11_SATA_9 | | |
| AC19 | VDDAN_11_SATA_10 | | |
| N18 | VDDIO_33_S_1 | 3.3V_S5 I/O | 59mA |
| L19 | VDDIO_33_S_2 | | |
| M18 | VDDIO_33_S_3 | | |
| V12 | VDDIO_33_S_4 | | |
| V13 | VDDIO_33_S_5 | | |
| Y12 | VDDIO_33_S_6 | | |
| Y13 | VDDIO_33_S_7 | | |
| W11 | VDDIO_33_S_8 | | |
| G24 | VDDXL_33_S | | 5mA |
| N20 | VDDCR_11_S_1 | | 187mA |
| M20 | VDDCR_11_S_2 | | |
| J24 | VDDPL_11_SYS_S | | 70mA |
| M8 | VDDAN_33_HWM_S | | 12mA |
| AA4 | VDDIO_AZ_S | | 26mA |

POWER

Hudson-M2-A13

1007mA for M3
902mA for M2

+1.1V_VDDCR

VDDCR-- S/B CORE power

TRACE WIDTH >=100mil

C588 0.1U/10V_4 C597 0.1U/10V_4 C598 1U/6.3V_4 C590 1U/6.3V_4 C591 10U/6.3V_8

+1.1V_CKVDD

VDDAN_11_CLK-- Internal clock Generator I/O power

TRACE WIDTH >=30mil

C626 1U/6.3V_4 C618 1U/6.3V_4 C622 0.1U/10V_4 C624 0.1U/10V_4 C916 22U/6.3VS_8

R514 0_8 Q42 *AO3416 L72 BLM18PG181SN1D(180,1.5A)_6 +1.1V

MAINON 33,34,36,40,41

Reserve for VDDAN_11_CL leakage current issue

+1.1V_PCIE_VDDR

VDDAN_11_PCIE --PCIE/UMI analog power

TRACE WIDTH >=100mil

L56 BLM18PG181SN1D(180,1.5A)_6 +1.1V

C610 0.1U/10V_4 C620 0.1U/10V_4 C621 1U/6.3V_4 C623 1U/6.3V_4 C642 22U/6.3VS_8

+1.1VS5

VDDPL_11_SYS_S : System Clock Gen PLLs analog power

+VDDPL_1.1V

L47 PBY160808T-221Y-N(220,2A)

C608 2.2U/6.3V_4 C614 0.1U/10V_4

+1.1V_AVDD_SATA

VDDAN_11_SATA--SATA PHY analog/IO power

TRACE WIDTH >=50mil

L45 BLM18PG181SN1D(180,1.5A)_6 +1.1V

C596 1U/6.3V_4 C611 1U/6.3V_4 C599 0.1U/10V_4 C595 0.1U/10V_4 C600 22U/6.3VS_8

if support USB 3.0 wake up should be change pull hi to S5 power

VDDAN_33_HWM_S -- Hardware monitor interface I/O power

+VDDAN_3.3V_HWM

+3VS5 L66 PBY160808T-221Y-N(220,2A)

C878 2.2U/6.3V_4 C566 0.1U/10V_4

+VDDIO_3.3V

VDDIO_33_S-- 3.3v S5 I/O power

TRACE WIDTH >=20mil

C593 *0.1U/10V_4 C576 2.2U/6.3V_4 C594 1U/6.3V_4 C584 1U/6.3V_4 C603 1U/6.3V_4 C580 1U/6.3V_4

+3VS5

if support USB 3.0 wake up should be change pull hi to S5 power

VDDXL_33_S-- 25MHZ XTAL IO power

+VDDXL_3.3V

VDDCR_1.1_S-- 1.1V S5 Core power

L49 PBY160808T-221Y-N(220,2A)

C625 *0.1U/10V_4 C612 2.2U/6.3V_4

+VDDCR_1.1V

TRACE WIDTH >=15mil

+1.1VS5

C601 1U/6.3V_4 C616 2.2U/6.3V_4

+VDDPL_1.1V

+VDDAN_3.3V_HWM

+VDDIO_AZ

Trace width >=20 mil

This circuit is for switch DAC and UMI analog power

32 mA Max

+3V Q25 AO3404

+FCH_VDDAN_33_DAC_R

C915 2.2U/6.3V_4 C914 0.1U/10V_4

+FCH_VDDAN_33_DAC L71 PBY160808T-221Y-N(220,2A)

+12VALW R315 330K_6

+FCH_VGA_PWR_EN

Q24 ME2N7002E

VGA will power down when CRT no insert

6 VGA_POWER_DOWN VGA_POWER_DOWN

VGA_PD is generated from FCH

R282 2.2K_4 C569 1U/6.3V_4 C637 0.022U/25V_4

+1.1V Q26 AO3404

+FCH_VDDAN_33_DAC_R +FCH_VDDPL_33_MLDAC

R511 *0_8/S

C901 2.2U/6.3V_4 C893 0.1U/10V_4

233 mA Max

+VDDAN_11_MLDAC L55 PBY160808T-221Y-N(220,2A) +FCH_VDDAN_11_MLDAC

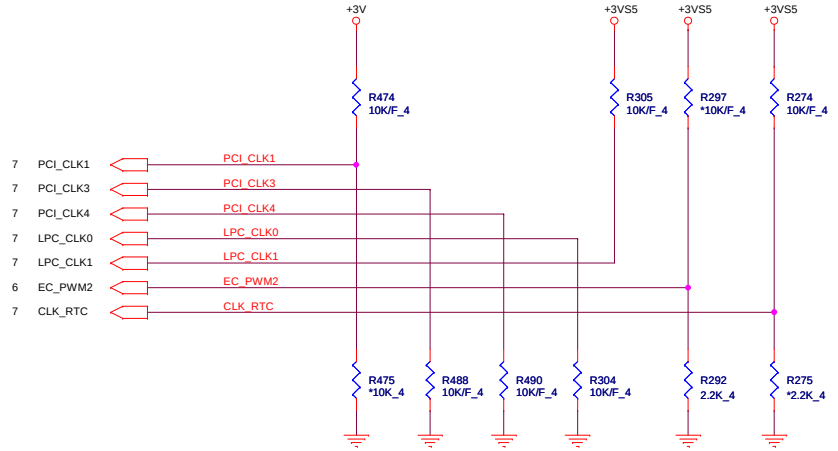
SI2 , remove discharge circuit

SI , reserve for leakage issue

| | | |
|---|---|---|
| PROJECT : R53 | | |
| Quanta Computer Inc. | | |
| Size: Custom | Document Number: Hudson-M3 POWER/GND | Rev: 1A |
| Date: Friday, November 11, 2011 | Sheet 9 of 44 | |

# STRAPS PINS

OVERLAP COMMON PADS WHERE POSSIBLE FOR DUAL-OP RESISTORS.




**REQUIRED STRAPS**

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

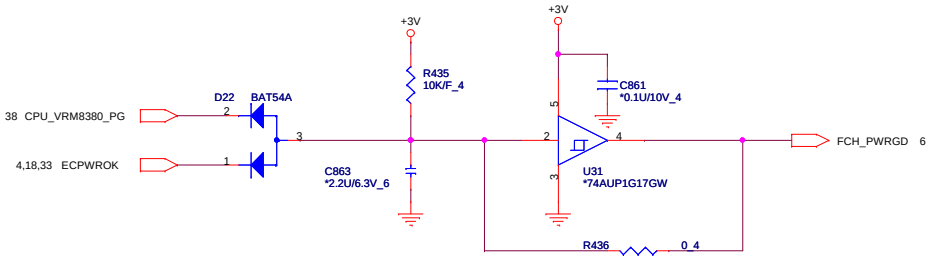
# DEBUG STRAPS



FCH has 15K Internal Pull Up 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 |

# FCH PWRGD

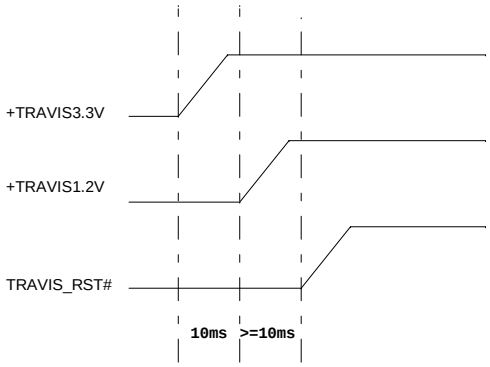


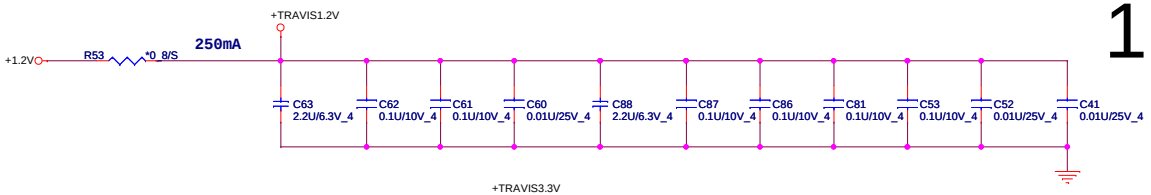

**PROJECT : R53**
Quanta Computer Inc.

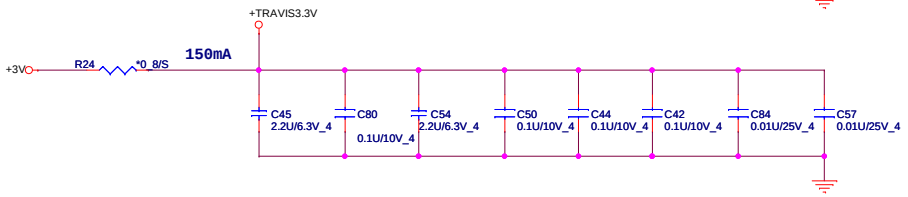
| Size | Document Number | Rev |
|---|---|---|
| Custom | Hudson-M3 STRAP/PWRGD | 1A |

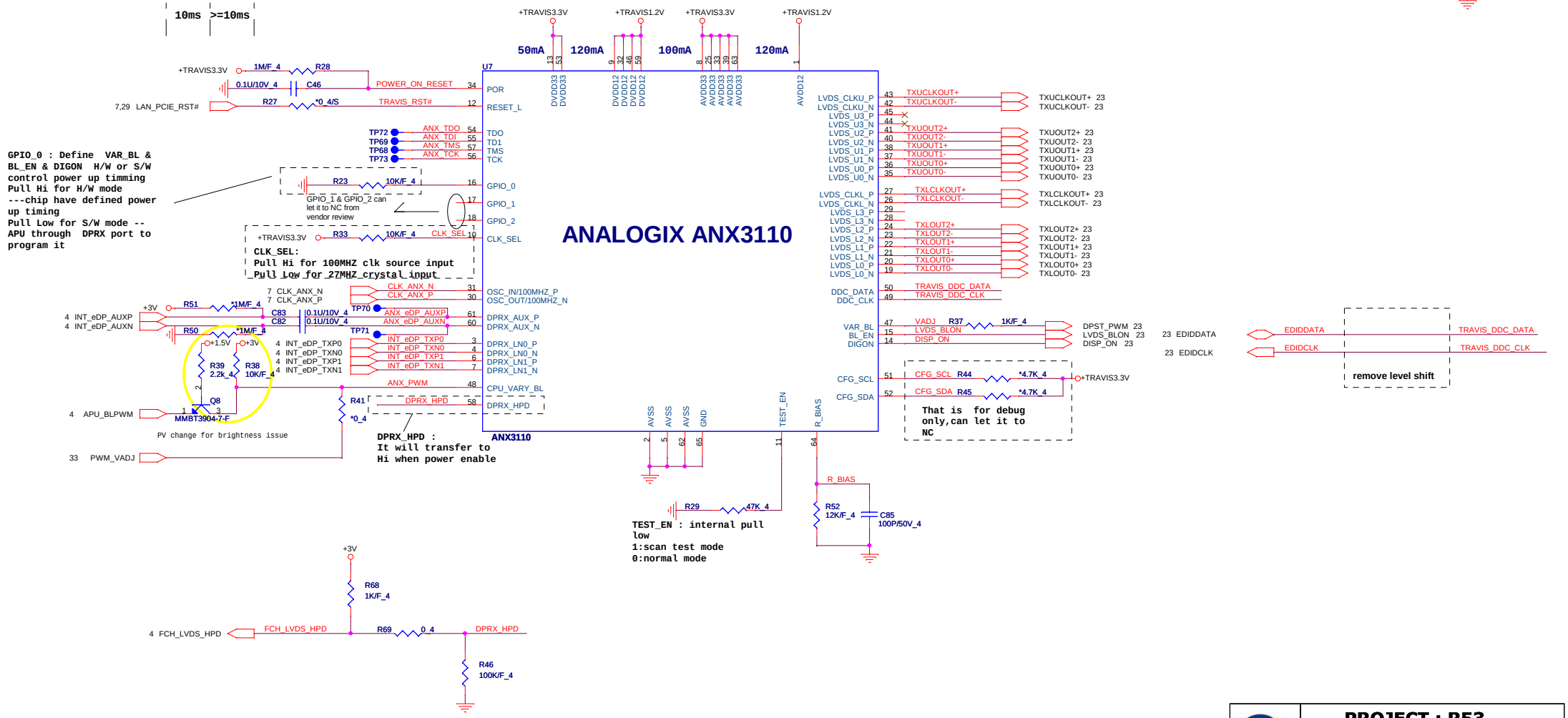
Date: Friday, November 11, 2011 Sheet 10 of 44

# ANX3110 Power Up Sequence



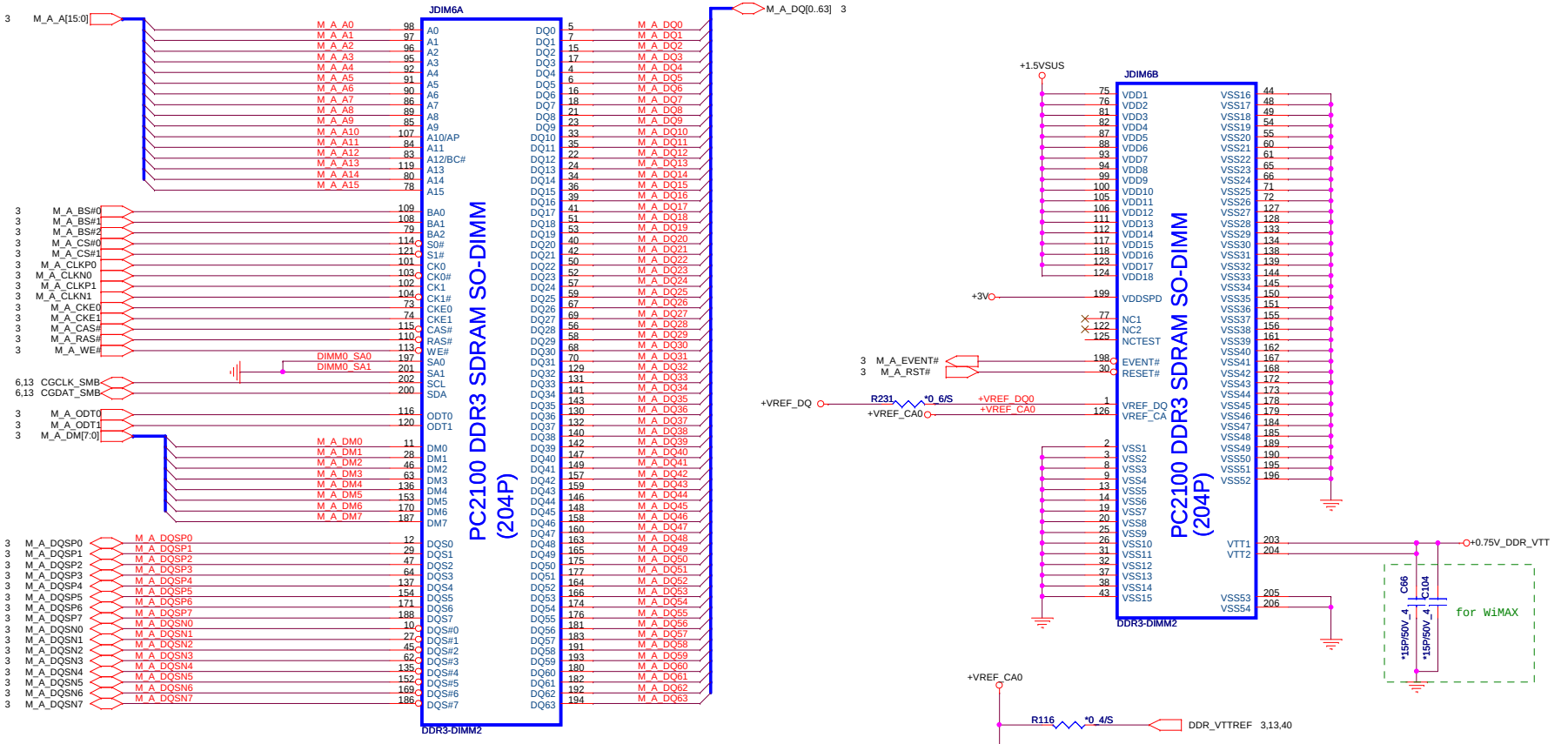





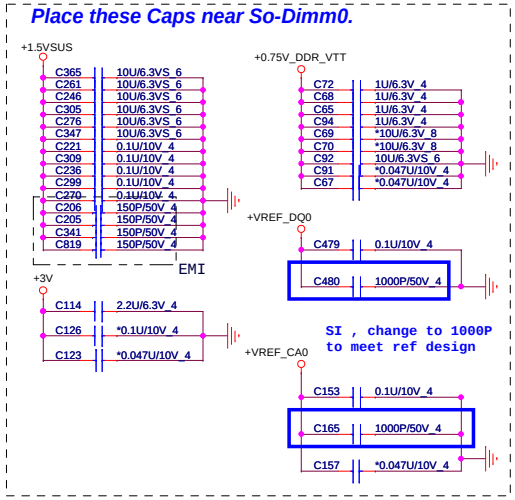
**PROJECT : R53**
Quanta Computer Inc.

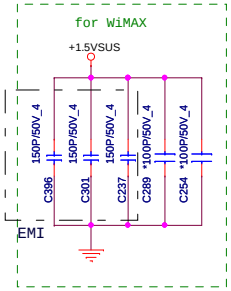
| Size | Document Number | Rev |
|---|---|---|
| Custom | ANX3110 | 1A |

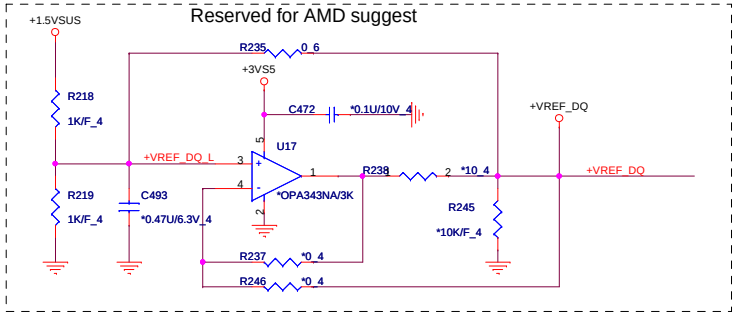
Date: Friday, November 11, 2011 Sheet 11 of 44




**H9.2mm**



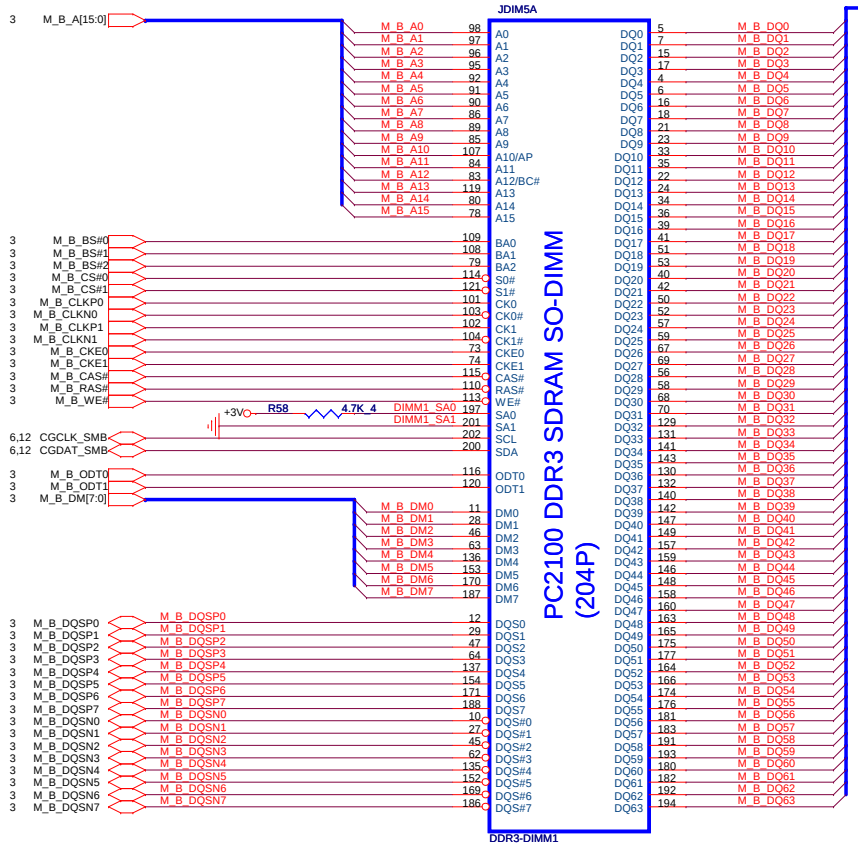



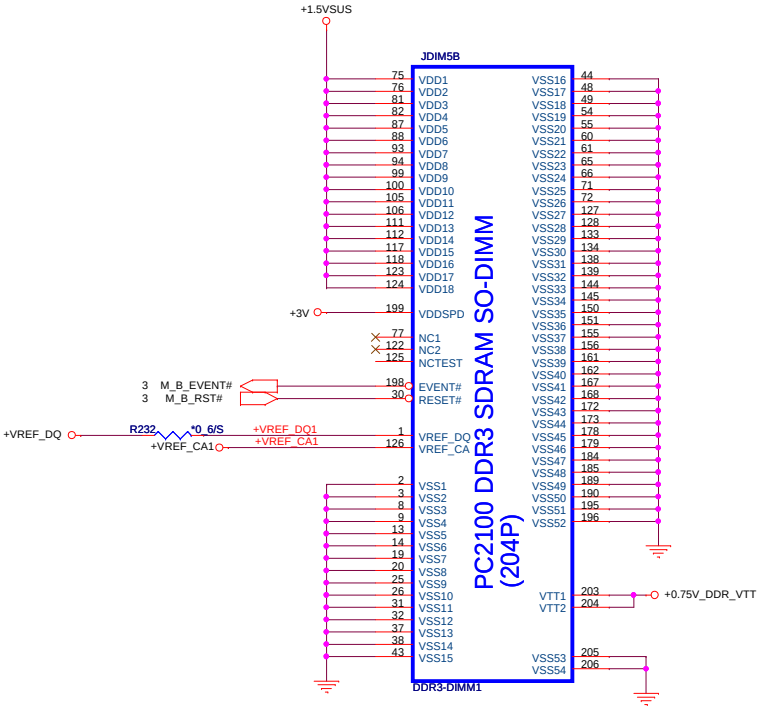

13,40 +0.75V_DDR_VTT
2,3,4,5,13,40,41,44 +1.5VSUS
2,4,6,8,9,10,11,13,14,18,23,24,25,26,27,28,29,30,31,32,33,41,42,44 +3V

**PROJECT : R53**
Quanta Computer Inc.

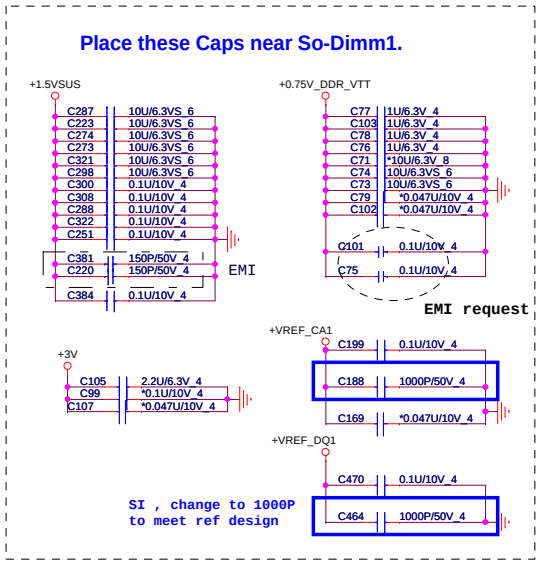
| Size | Document Number | Rev |
|---|---|---|
| Custom | DDR3 DIMM-0 | 1A |

Date: Friday, November 11, 2011 Sheet 12 of 44




**H5.2mm**




12,40 +0.75V_DDR_VTT
2,3,4,5,12,40,41,44 +1.5VSUS
2,4,6,8,9,10,11,12,14,18,23,24,25,26,27,28,29,30,31,32,33,41,42,44 +3V

**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | DDR3 DIMM-1 | 1A |

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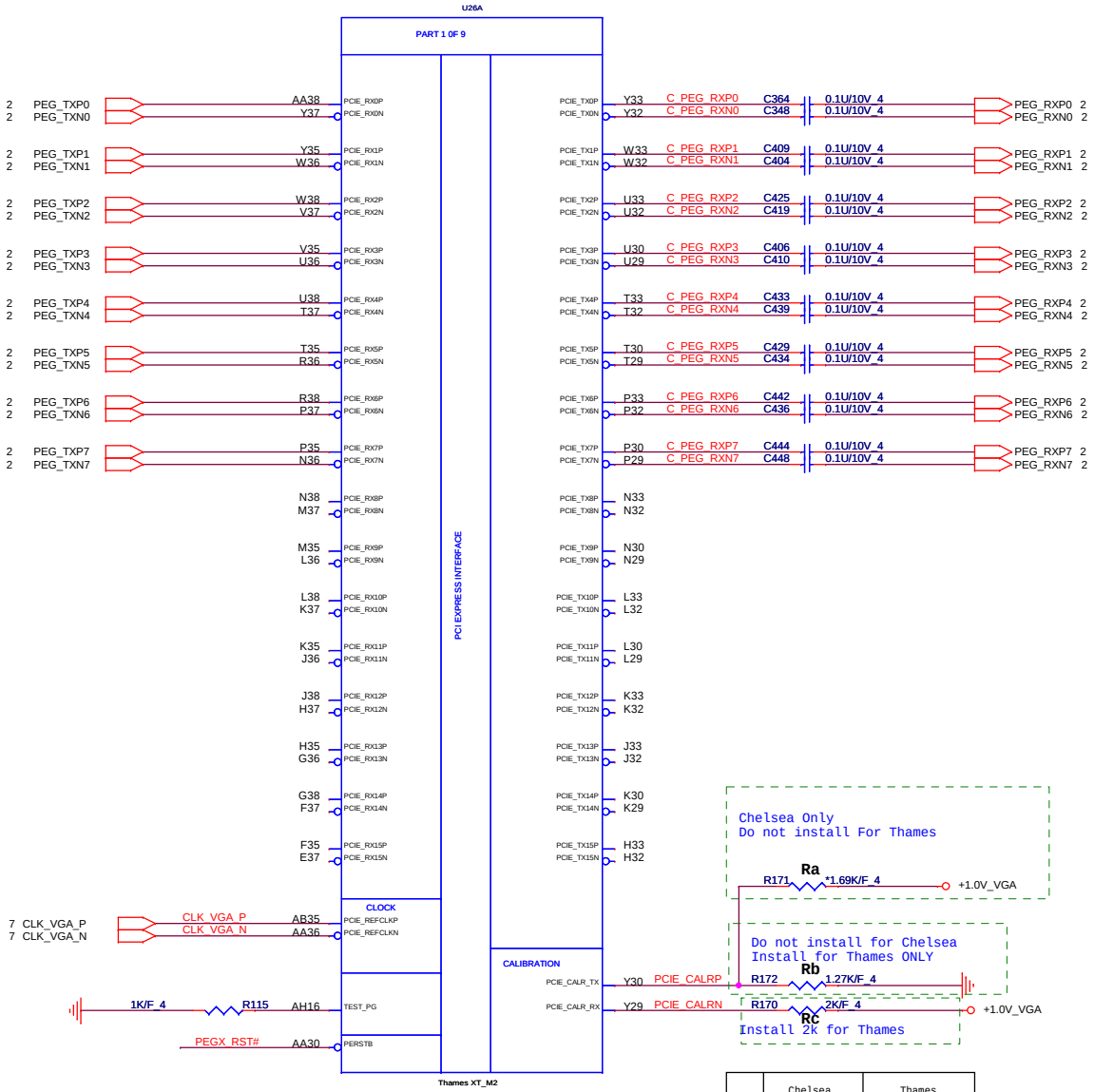



| | Chelsea | Thames |
|---|---|---|
| Ra | 1.69K | n/a |
| Rb | n/a | 1.27K |
| Rc | 1K | 2K |

16,18,19,44 +1.0V_VGA → +1.0V_VGA
15,16,18,19,43 +1.8V_VGA → +1.8V_VGA

**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | Chelsea_PCIE_Interface | 1A |

Date: Monday, November 14, 2011 Sheet 14 of 44

| MEM_ID[3:0] | Vendor | Type | Vendor P/N |
|---|---|---|---|
| 0000 | Hynix- D die | 64Mx16 *8, 900Mhz | H5TQ1G63DFR-11C |
| 0001 | Micron- G die | 64Mx16 *8, 900Mhz | MT41J64M16JT-107G:G |
| 0010 | Samsung- G die | 64Mx16 *8, 900Mhz | K4W1G1646G-BC11 |
| 0011 | Hynix- D die | 128Mx16 *8, 900Mhz | H5TQ2G63DFR-11C |
| 0100 | Micron- D die | 128Mx16 *8, 900Mhz | MT41J128M16HA-107G:D |
| 0101 | Samsung- C die | 128Mx16 *8, 900Mhz | K4W2G1646C-HC11 |
| 0110 | | | |
| 0111 | | | |
| 1000 | | | |
| 1001 | | | |
| 1010 | | | |
| 1011 | | | |
| 1100 | | | |
| 1101 | | | |
| 1110 | | | |
| 1111 | | | |

**GPIO16 GPIO20 GPIO15**

| Thames-XT | PWRCNTL 2 | PWRCNTL 1 | PWRCNTL 0 | VGA CORE |
|---|---|---|---|---|
| L | 0 | 0 | 0 | 1.0V |
| M | 0 | 0 | 1 | 0.9V |
| H | 0 | 1 | 0 | 0.875V |
| | 0 | 1 | 1 | 0.85V |
| | 1 | 0 | 0 | 0.8V |
| | 1 | 0 | 1 | 0.75V |

Memory ID

Access to SMBBus ans SDA/SCL is mandatory on all designs
Add test points on SMBBus and SDA/SCL for debug

GPIO22(ROMCS#)
3-k external pull up is required
if an external BIOS ROM chip is used.
Must be unconnected if no external
BIOS ROM chip is used

GPIO29, GPIO30 are NC on Thames

Reserve for Power Play

SI, update P/N for EOD issue

Reserve for AMD debug only

SI , change to short pad

SI , change to DNI

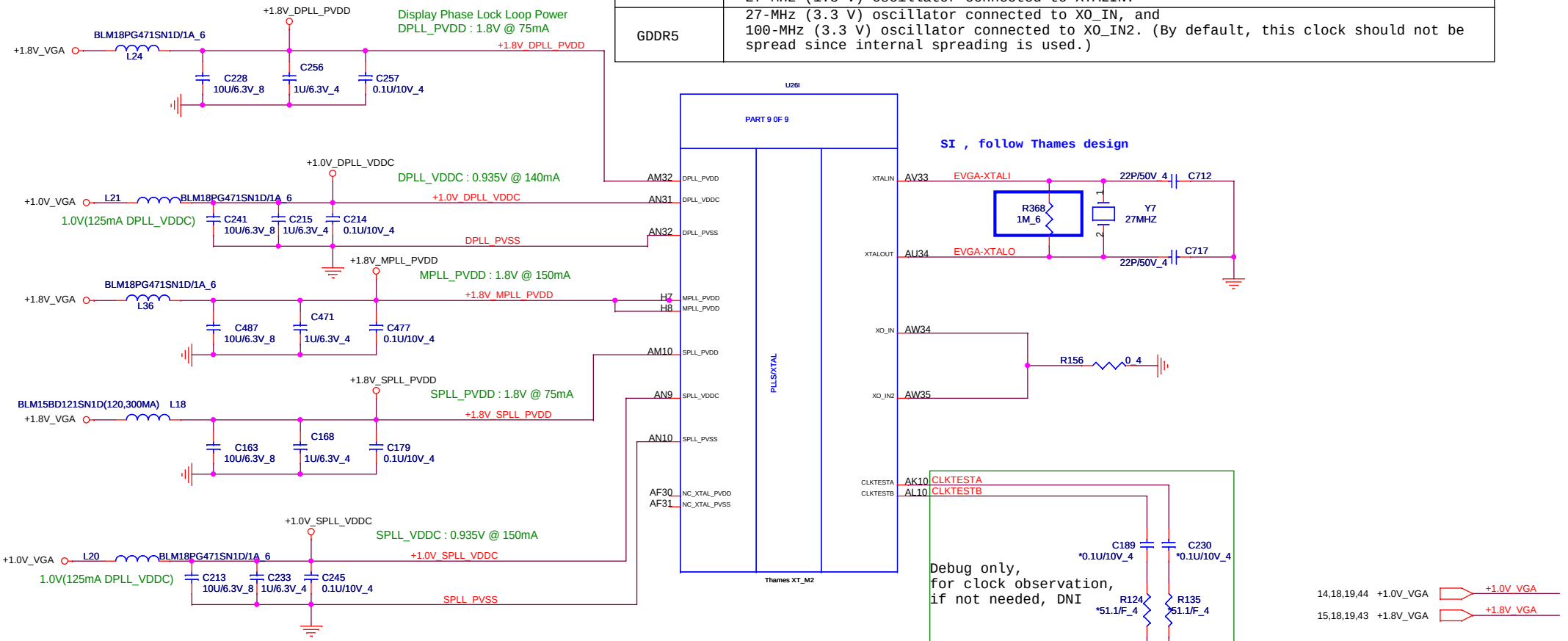
Thames INSTALL, do not install for Chelsea
PS_0 should be tied to GND on Thames

**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | Chelsea_Main & GND | 1A |

Date: Friday, November 11, 2011 | Sheet 15 of 44

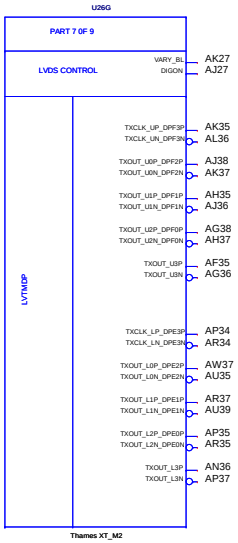
| Memory Type | |
|---|---|
| DDR3 | 27-MHz (± 30 ppm) crystal connected to XTALIN/XTALOUT, or<br>27-MHz (1.8 V) oscillator connected to XTALIN. |
| GDDR5 | 27-MHz (3.3 V) oscillator connected to XO_IN, and<br>100-MHz (3.3 V) oscillator connected to XO_IN2. (By default, this clock should not be spread since internal spreading is used.) |




**PROJECT : R53**
Quanta Computer Inc.

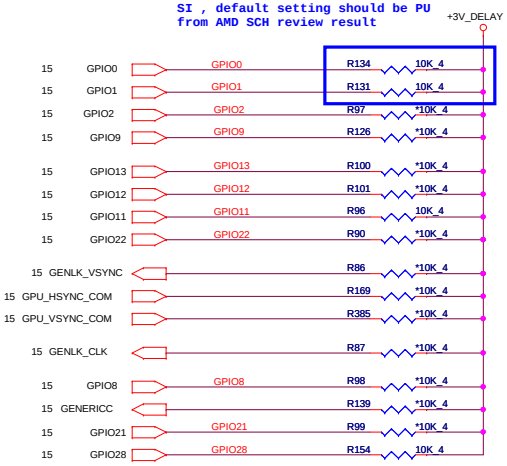
| Size | Document Number | Rev |
|---|---|---|
| Custom | Chelsea_XTAL | 1A |

Date: Monday, November 14, 2011 Sheet 16 of 44




| CONFIGURATION STRAPS -- SEE EACH DATABOOK FOR STRAP DETAILS<br>ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED,<br>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<br>0: Enable MLPS, disable GPIO PINSTRAP<br>1: Disable MLPS, enable GPIO PINSTRAP | X |
| TX_PWRS_ENB | PS_1[4] | GPIO0 | Transmitter Power Savings Enable<br>0: 50% Tx output swing<br>1: Full Tx output swing | X |
| TX_DEEMPH_EN | PS_1[5] | GPIO1 | PCIE Transmitter De-emphasis Enable<br>0: Tx de-emphasis disabled<br>1: Tx de-emphasis enabled | X |
| BIF_GEN3_EN_A | PS_1[1] | GPIO2 | PCIE Gen3 Enable (NOTE: RESERVED for Thames/Whistler/Seymour)<br>0: GEN3 not supported at power-on<br>1: GEN3 supported at power-on | 1 |
| BIF_VGA DIS | PS_2[4] | GPIO9 | VGA Control<br>0: VGA controller capacity enabled<br>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<br><br>If GPIO22 = 0, defines memory aperture size<br>If GPIO22 = 1, defines ROM type<br>100 - 512Kbit M25P05A (ST)<br>101 - 1Mbit M25P10A (ST)<br>101 - 2Mbit M25P20 (ST)<br>101 - 4Mbit M25P40 (ST)<br>101 - 8Mbit M25P80 (ST)<br>100 - 512Kbit Pm25LV512 (Chingis)<br>101 - 1Mbit Pm25LV010 (Chingis) | XXX |
| BIOS_ROM_EN | PS_2[3] | GPIO22 | Enable external BIOS ROM device<br>0: Disabled<br>1: Enabled | X |
| AUD[1]<br>AUD[0] | NA<br>NA | HSYNC<br>VSYNC | 00 - No audio function<br>01 - Audio for DP only<br>10 - Audio for DP and HDMI if dongle is detected<br>11 - Audio for both DP and HDMI<br>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<br>0: Disabled<br>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<br>RESERVED<br>RESERVED<br>RESERVED | PS_1[3]<br>PS_1[2]<br>NA<br>NA | GENLK_CLK<br>GPIO8<br>GPIO21<br>GENERICC | Reserved<br>Reserved<br>Reserved<br>Reserved (for Thames/Whistler/Seymour only) | 0<br>0<br>0<br>0 |
| AUD_PORT_CONN_PINSTRAP[2]<br>AUD_PORT_CONN_PINSTRAP[1]<br>AUD_PORT_CONN_PINSTRAP[0] | PS_3[5]<br>PS_3[4]<br>PS_0[5] | NA<br>NA<br>NA | STRAPS TO INDICATE THE NUMBER OF AUDIO CAPABLE DISPLAY OUTPUTS<br>111 = 0 usable endpoints<br>110 = 1 usable endpoints<br>101 = 2 usable endpoints<br>100 = 3 usable endpoints<br>011 = 4 usable endpoints<br>010 = 5 usable endpoints<br>001 = 6 usable endpoints<br>000 = all endpoints are usable | XXX |

**SI , default setting should be PU from AMD SCH review result**

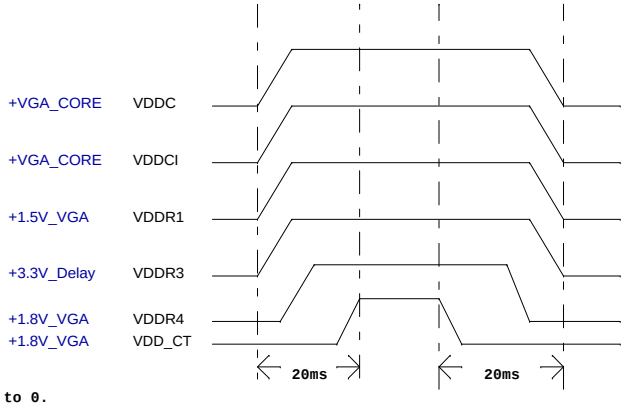



## Memory Aperture size

| GPIO9<br>BIOSROM | | GPIO13<br>ROMIDCFG2 | GPIO12<br>ROMIDCFG1 | GPIO11<br>ROMIDCFG0 |
|---|---|---|---|---|
| 0 | 128M | 0 | 0 | 0 |
| 0 | 256M | 0 | 0 | 1 |
| 0 | 64M | 0 | 1 | 0 |
| 0 | 32M | 0 | 1 | 1 |
| 0 | 512M | 1 | 0 | 0 |
| 0 | 1G | 1 | 0 | 1 |
| 0 | 2G | 1 | 1 | 0 |
| 0 | 4G | 1 | 1 | 1 |

**It is a shared pin strap with CONFIG[2:0] if BIOS_ROM_EN is set to 0.**

## Power Up/Down Sequence




**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | Chelsea_LVDS / STRAP | 1A |

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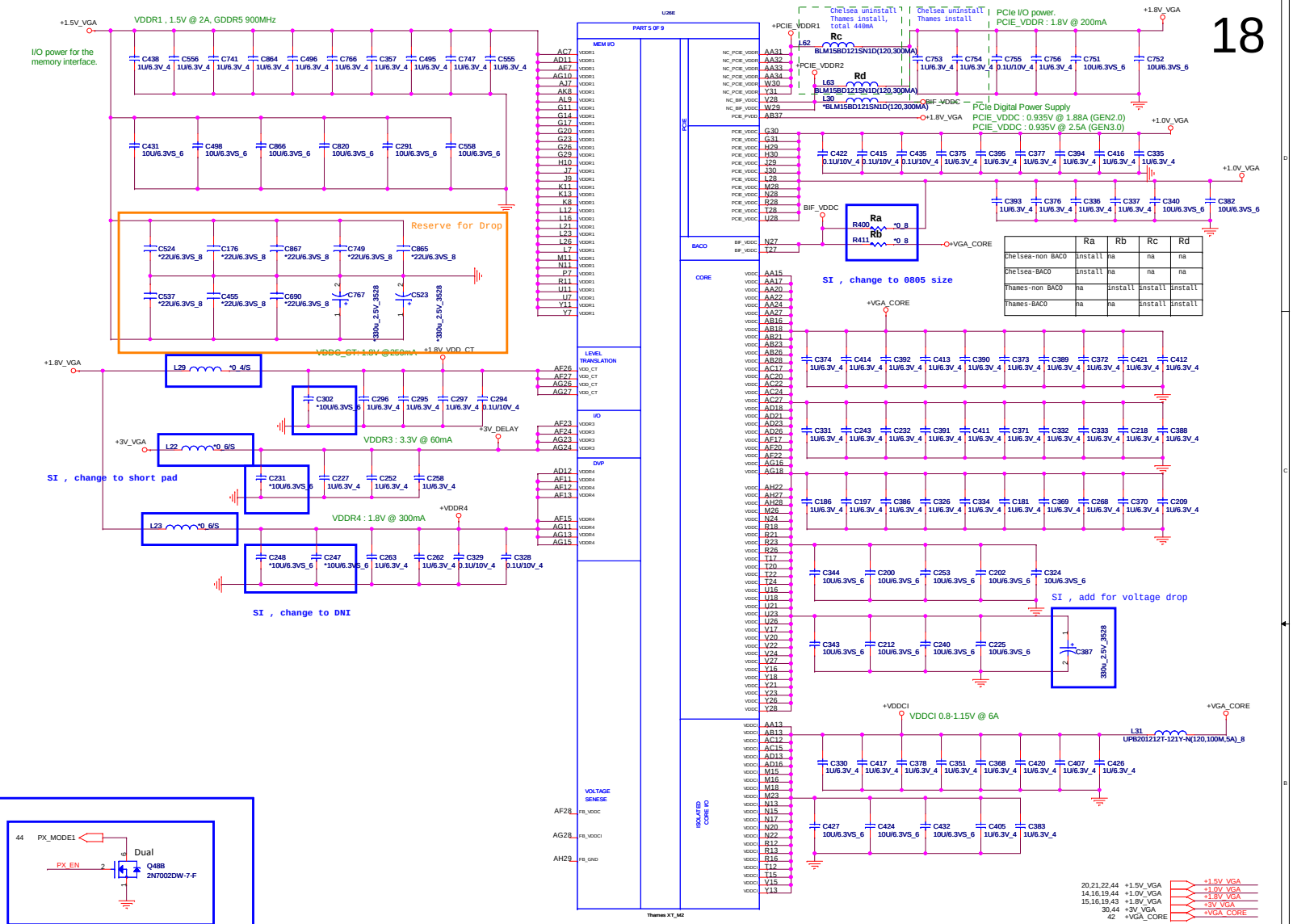
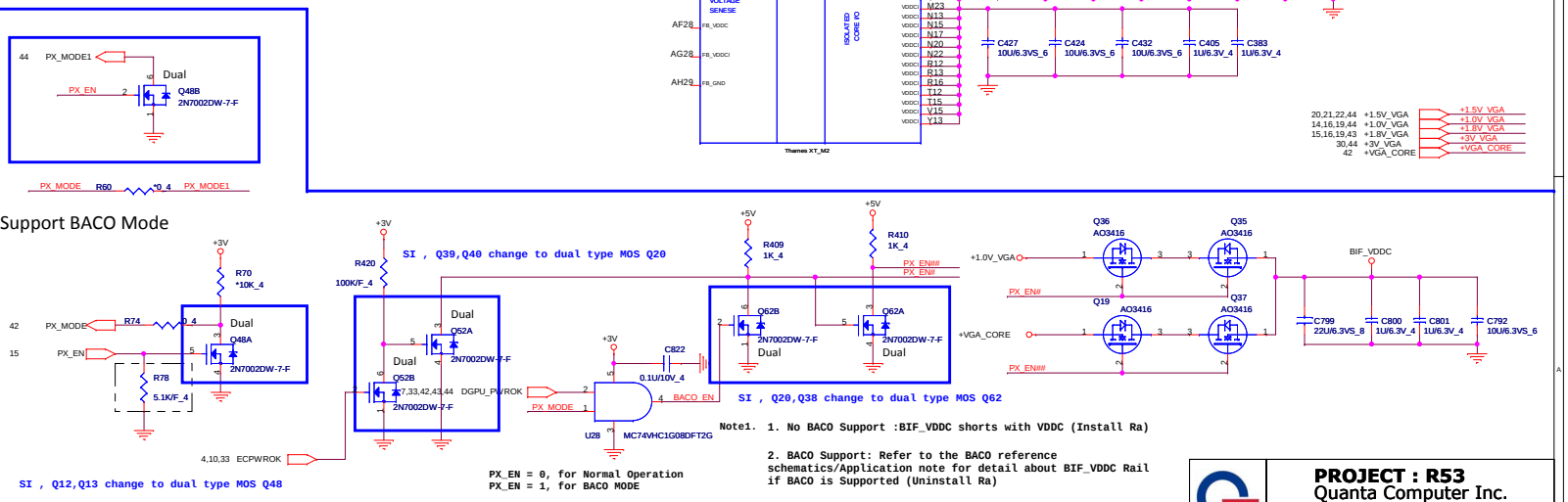



| | Ra | Rb | Rc | Rd |
|---|---|---|---|---|
| Chelsea-non BACO | install | na | na | na |
| Chelsea-BACO | install | na | na | na |
| Thames-non BACO | na | install | install | install |
| Thames-BACO | na | na | install | install |




Note1. 1. No BACO Support :BIF_VDDC shorts with VDDC (Install Ra)

2. BACO Support: Refer to the BACO reference schematics/Application note for detail about BIF_VDDC Rail if BACO is Supported (Uninstall Ra)

**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | Chelsea_Power & BACO | 1A |
| Date: Monday, November 14, 2011 | Sheet 18 of 44 | |

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

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

U26H

PART 8 0F 9

DP_VDDR

DP_VDDC

DP GND

CALIBRATION

Thames XT_M2

DP/TMDS/LVDS Transmitter Power
HDMI mode: 1.8V@237mA per port
DP mode: 1.8V@188mA per port

+1.8V_VGA

DPAB_VDD18

L59 *0_4/S

C709 *10U/6.3VS_6 | C711 1U/6.3V_4 | C714 0.1U/10V_4

AN24 DP_VDDR
AP24 DP_VDDR
AP25 DP_VDDR
AP26 DP_VDDR
AU28 DP_VDDR
AV29 DP_VDDR

DPCD_VDD18

L57 *0_4/S

C699 *10U/6.3VS_6 | C708 1U/6.3V_4 | C702 0.1U/10V_4

AP20 DP_VDDR
AP21 DP_VDDR
AP22 DP_VDDR
AP23 DP_VDDR
AU18 DP_VDDR
AV19 DP_VDDR

DPEF_VDD18

L61 *0_4/S

C732 *10U/6.3VS_6 | C728 1U/6.3V_4 | C733 0.1U/10V_4

AH34 DP_VDDR
AJ34 DP_VDDR
AF34 DP_VDDR
AG34 DP_VDDR
AM37 DP_VDDR
AL38 DP_VDDR

SI , change to short pad

SI , change to DNI

R150 150/F_4 AW28 DPAB_CALR

R365 150/F_4 AW18 DPCD_CALR

R377 150/F_4 AM39 DPEF_CALR

DP_VDDC AP31
DP_VDDC AP32
DP_VDDC AN33
DP_VDDC AP33

DP_VDDC AP13
DP_VDDC AT13
DP_VDDC AP14
DP_VDDC AP15

DP_VDDC AL33
DP_VDDC AM33
DP_VDDC AK33
DP_VDDC AK34

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

DPAB_VDD10

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

+1.0V_VGA

*0_4/S L60

C722 0.1U/10V_4 | C721 1U/6.3V_4 | C720 *10U/6.3VS_6

DPCD_VDD10

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

+1.0V_VGA

*0_4/S L58

C710 0.1U/10V_4 | C706 1U/6.3V_4 | C700 *10U/6.3VS_6

SI , change to short pad

DPEF_VDD10

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

+1.0V_VGA

*0_4/S L28

C279 0.1U/10V_4 | C278 1U/6.3V_4 | C277 *10U/6.3VS_6

SI , change to DNI

**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | Chelsea_DP Powers | 1A |

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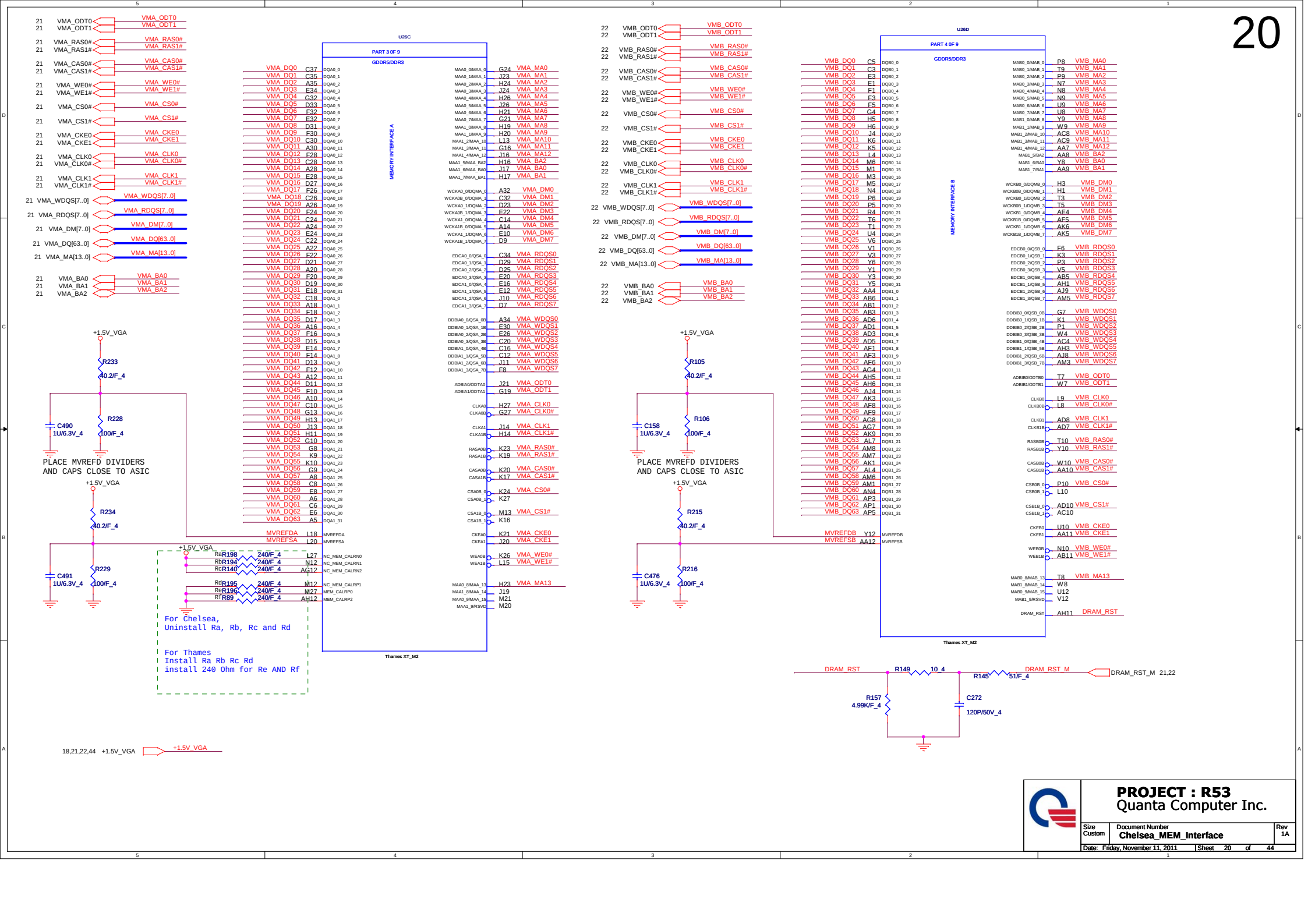
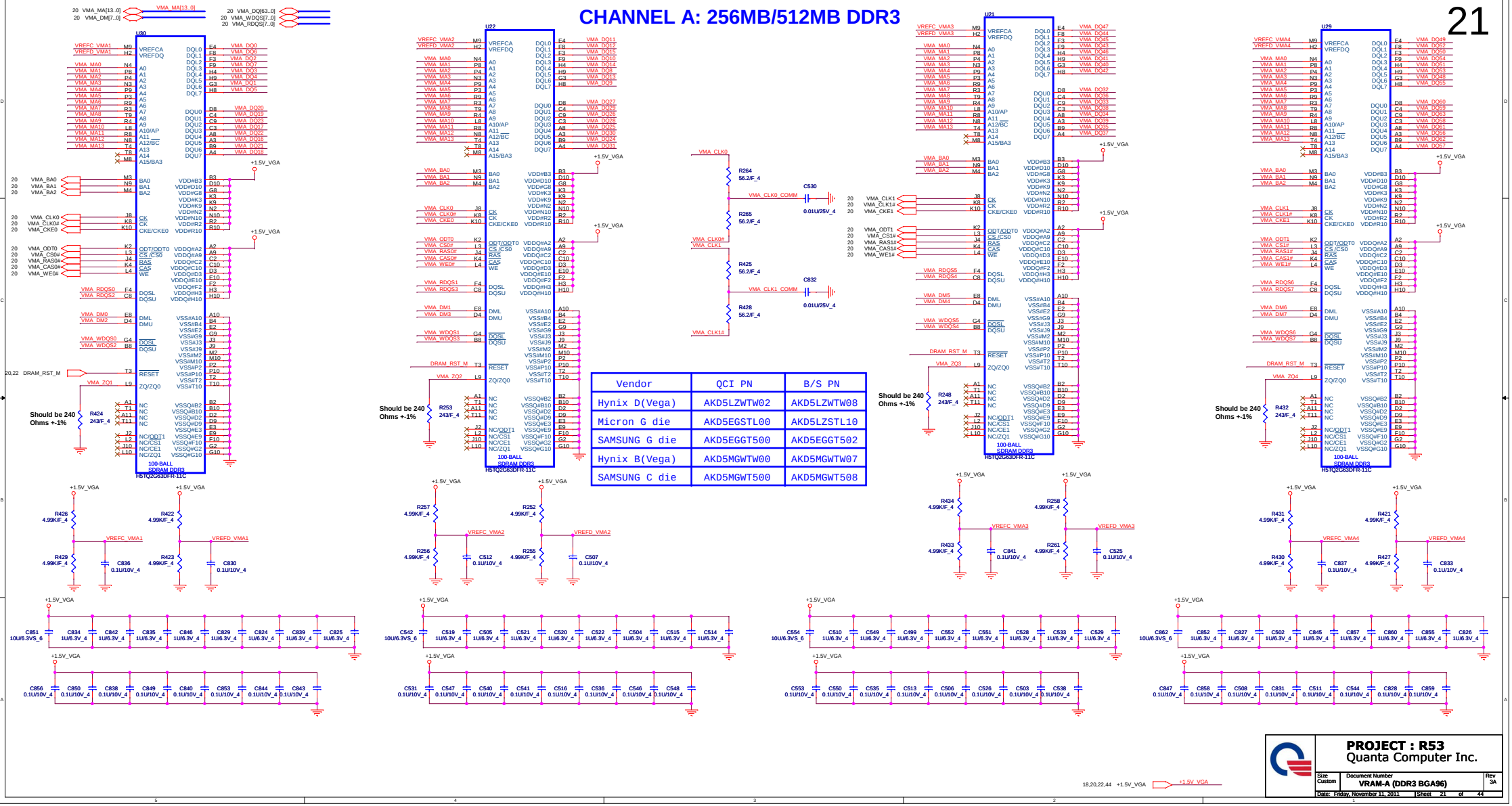



| | |
|---|---|
| PROJECT : R53 | Quanta Computer Inc. |
| Size: Custom | Document Number: Chelsea_MEM_Interface |
| Rev: 1A | |
| Date: Friday, November 11, 2011 | Sheet 20 of 44 |

# CHANNEL A: 256MB/512MB DDR3






| Vendor | QCI PN | B/S PN |
|---|---|---|
| Hynix D(Vega) | AKD5LZWTW02 | AKD5LZWTW08 |
| Micron G die | AKD5EGSTL00 | AKD5LZSTL10 |
| SAMSUNG G die | AKD5EGGT500 | AKD5EGGT502 |
| Hynix B(Vega) | AKD5MGWTW00 | AKD5MGWTW07 |
| SAMSUNG C die | AKD5MGWT500 | AKD5MGWT508 |

18,20,22,44 +1.5V_VGA +1.5V_VGA

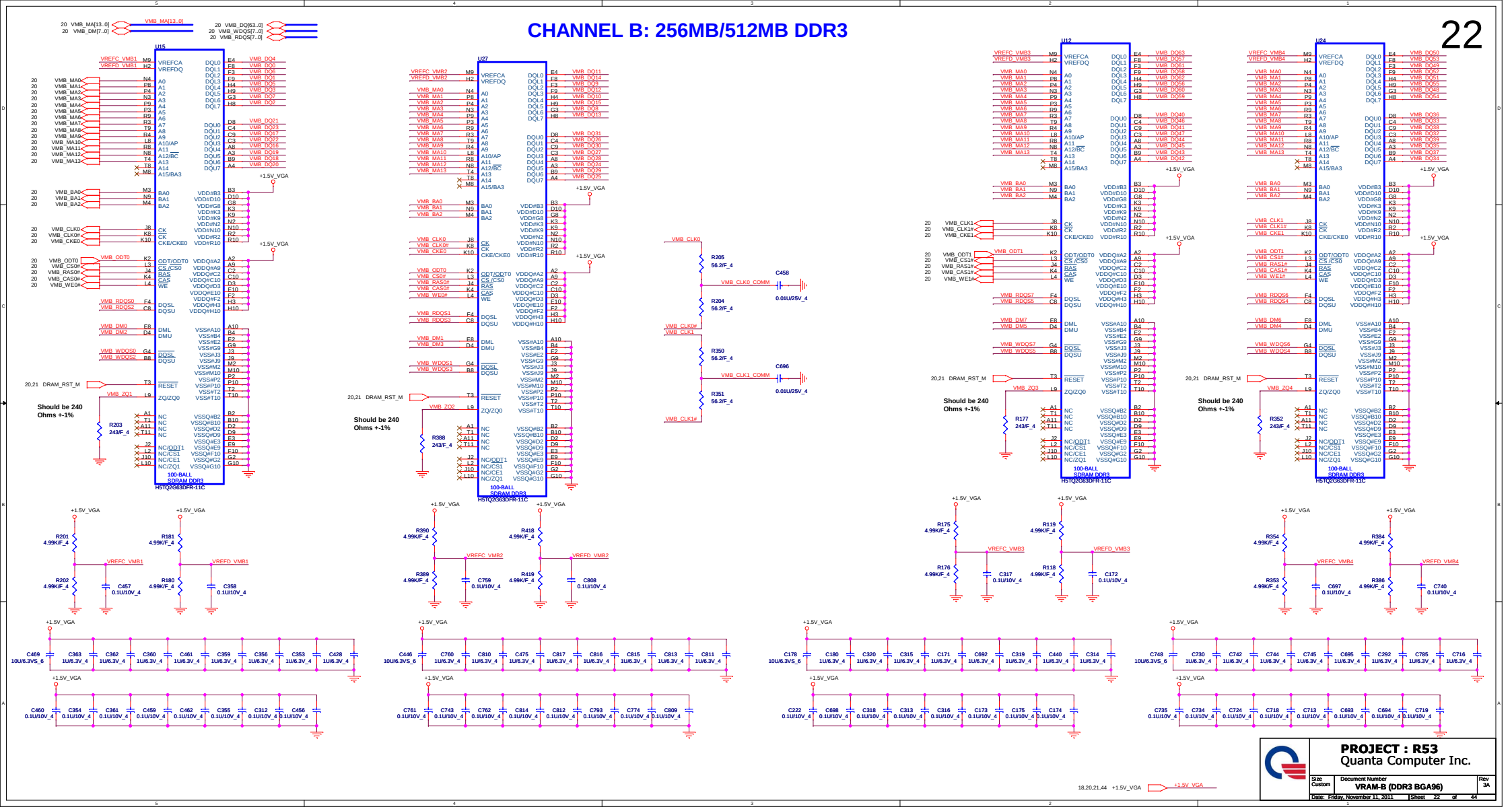
**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | VRAM-A (DDR3 BGA96) | 3A |

Date: Friday, November 11, 2011 Sheet 21 of 44

# CHANNEL B: 256MB/512MB DDR3



























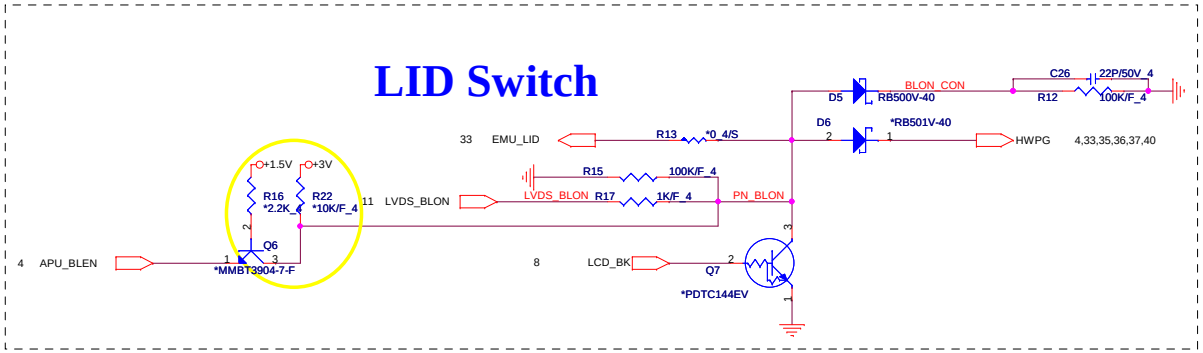


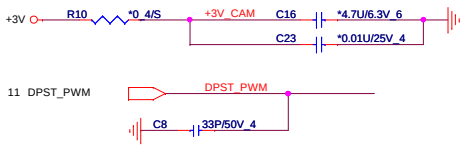

18,20,21,44 +1.5V_VGA +1.5V_VGA

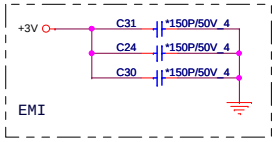
**PROJECT : R53**
Quanta Computer Inc.

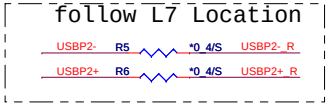
| Size | Document Number | Rev |
|---|---|---|
| Custom | VRAM-B (DDR3 BGA96) | 3A |
| Date: Friday, November 11, 2011 | Sheet 22 of 44 | |

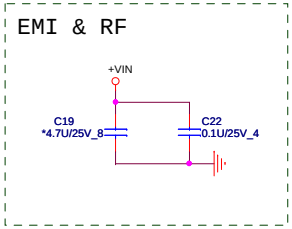
# LID Switch

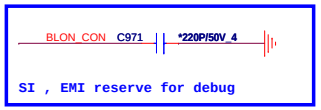


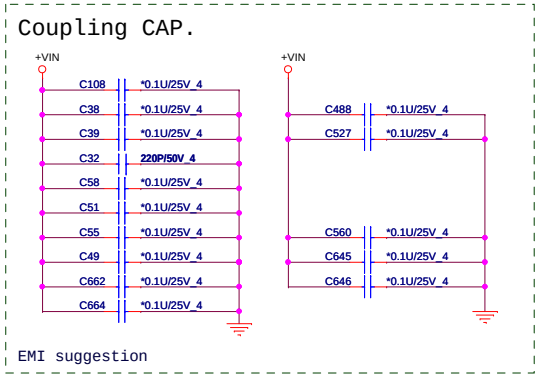



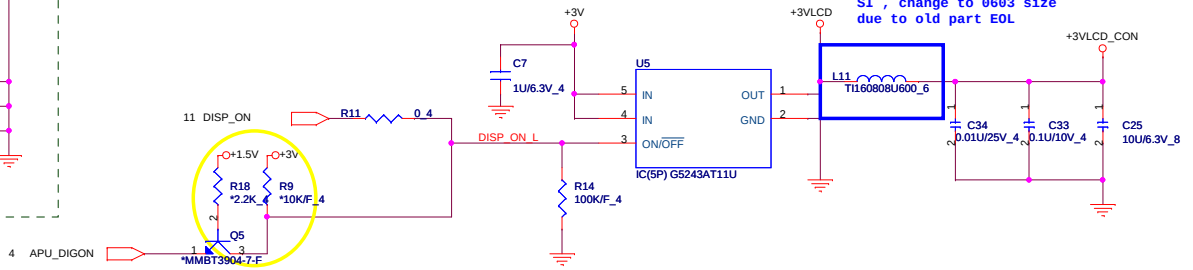



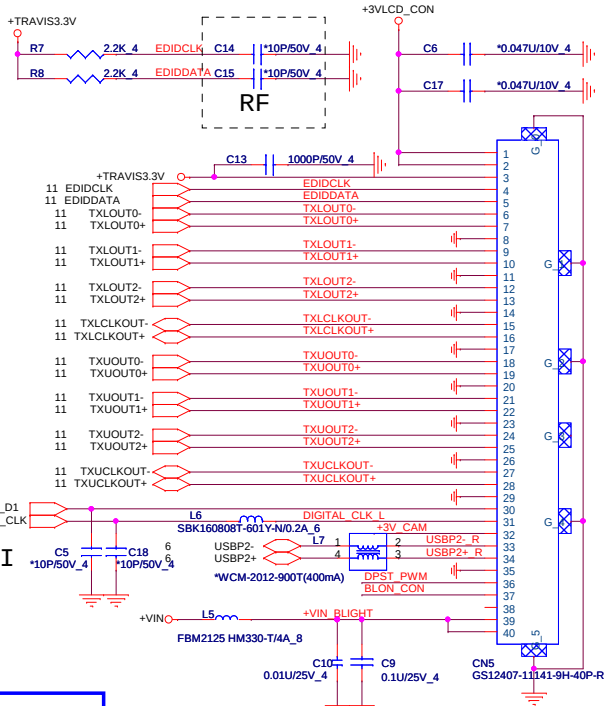



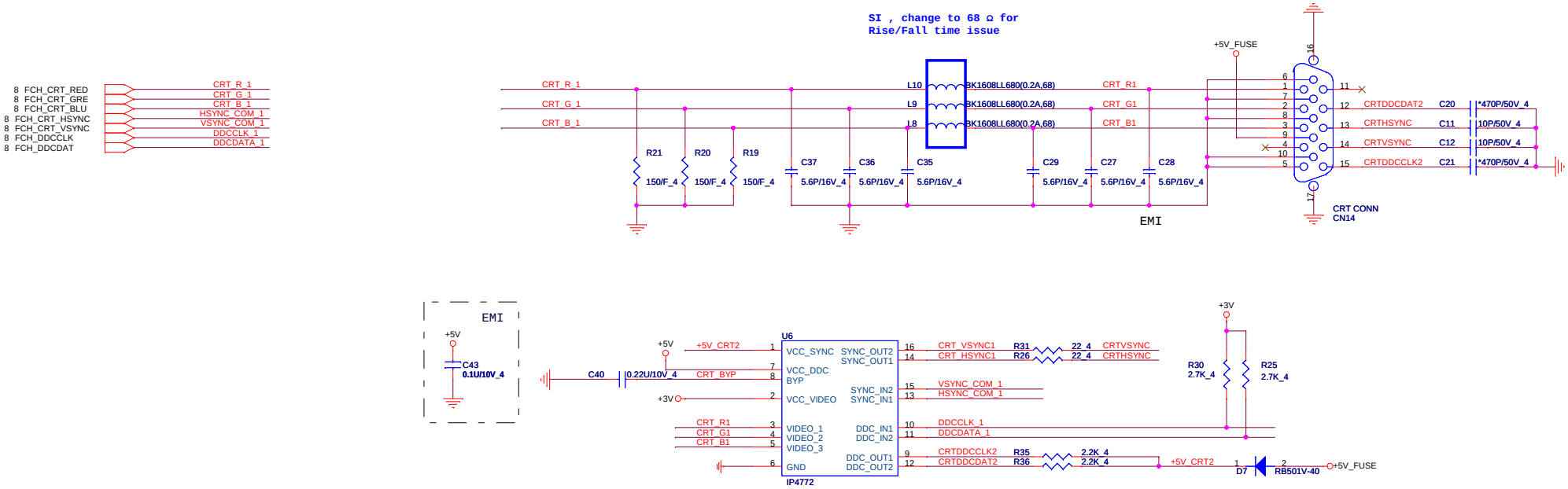

4,7,30,33,34,35 +3VPCU
2,4,6,8,9,10,11,12,13,14,18,24,25,26,27,28,29,30,31,32,33,41,42,44 +3V
9,34,41,44 +12VALW
34,35,36,37,39,40,41,42,44 +VIN

**PROJECT : R53**
Quanta Computer Inc.

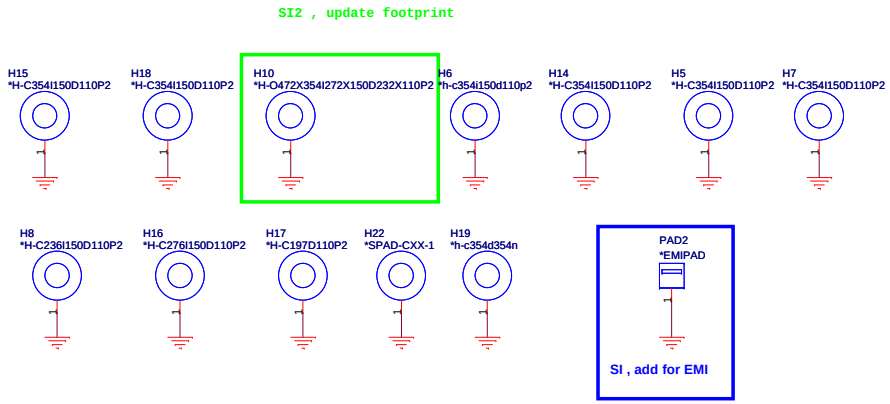
| Size | Document Number | Rev |
|---|---|---|
| Custom | LCD CONN/LID/CAM | 1A |
| Date: Friday, November 11, 2011 | Sheet 23 of 44 | |

# CRT PORT



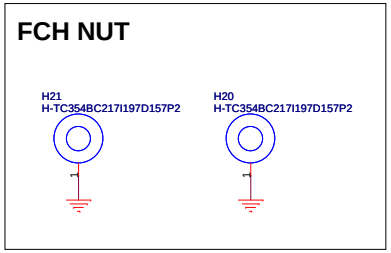


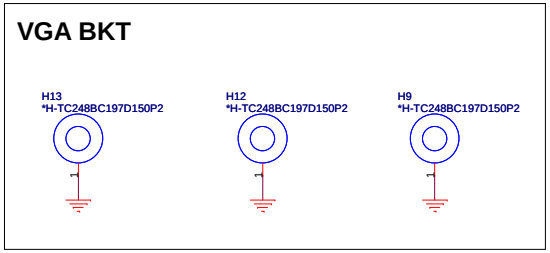

# HOLE

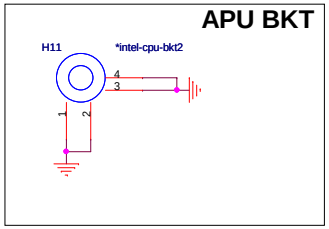








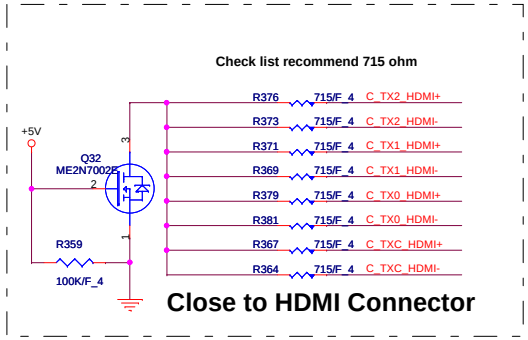



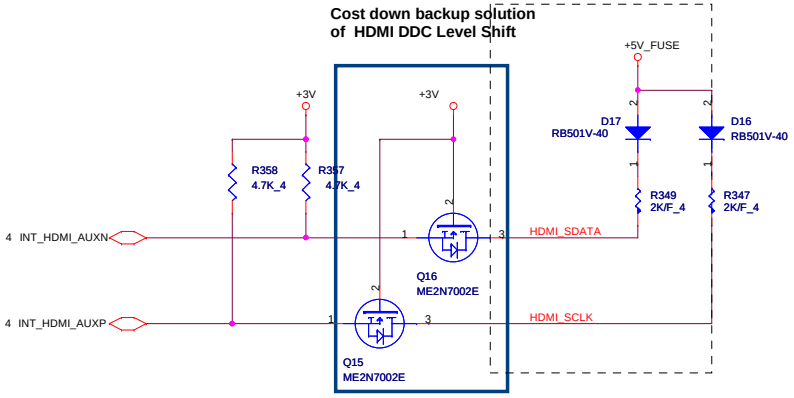

**PROJECT : R53**
Quanta Computer Inc.

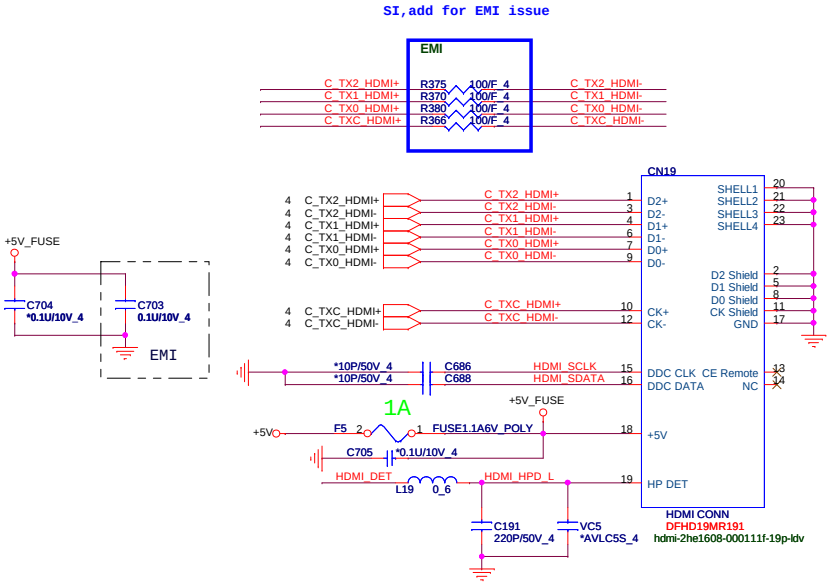
| Size | Document Number | Rev |
|---|---|---|
| Custom | CRT,Hole | 1A |
| Date: Friday, November 11, 2011 | Sheet 24 of 44 | |

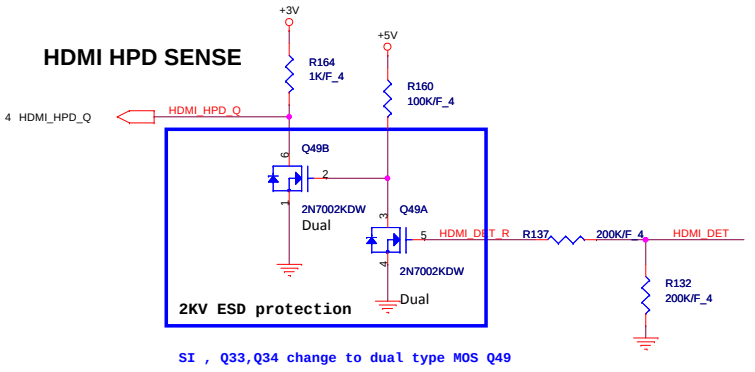
# HDMI PORT





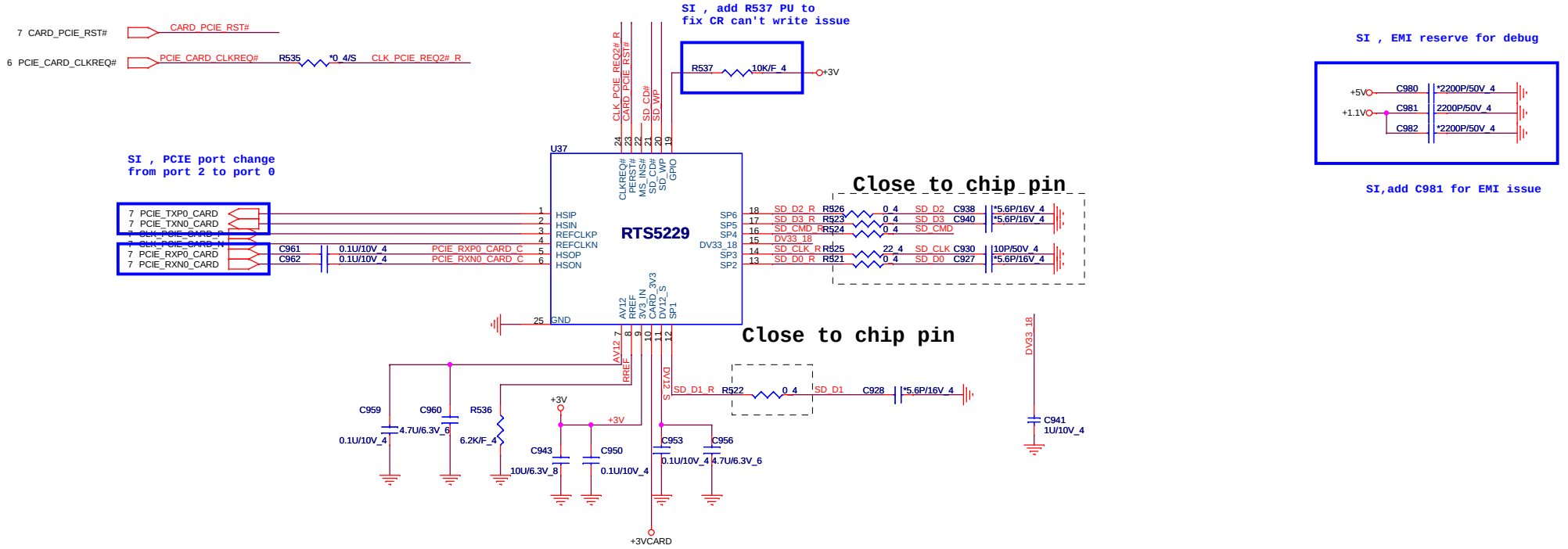




SI , Q33,Q34 change to dual type MOS Q49

**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | HDMI CONN | 1A |

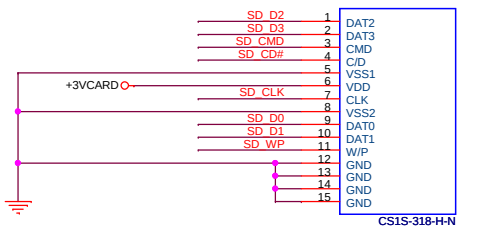
Date: Friday, November 11, 2011 Sheet 25 of 44

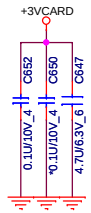






## SD / MMC CARD READER

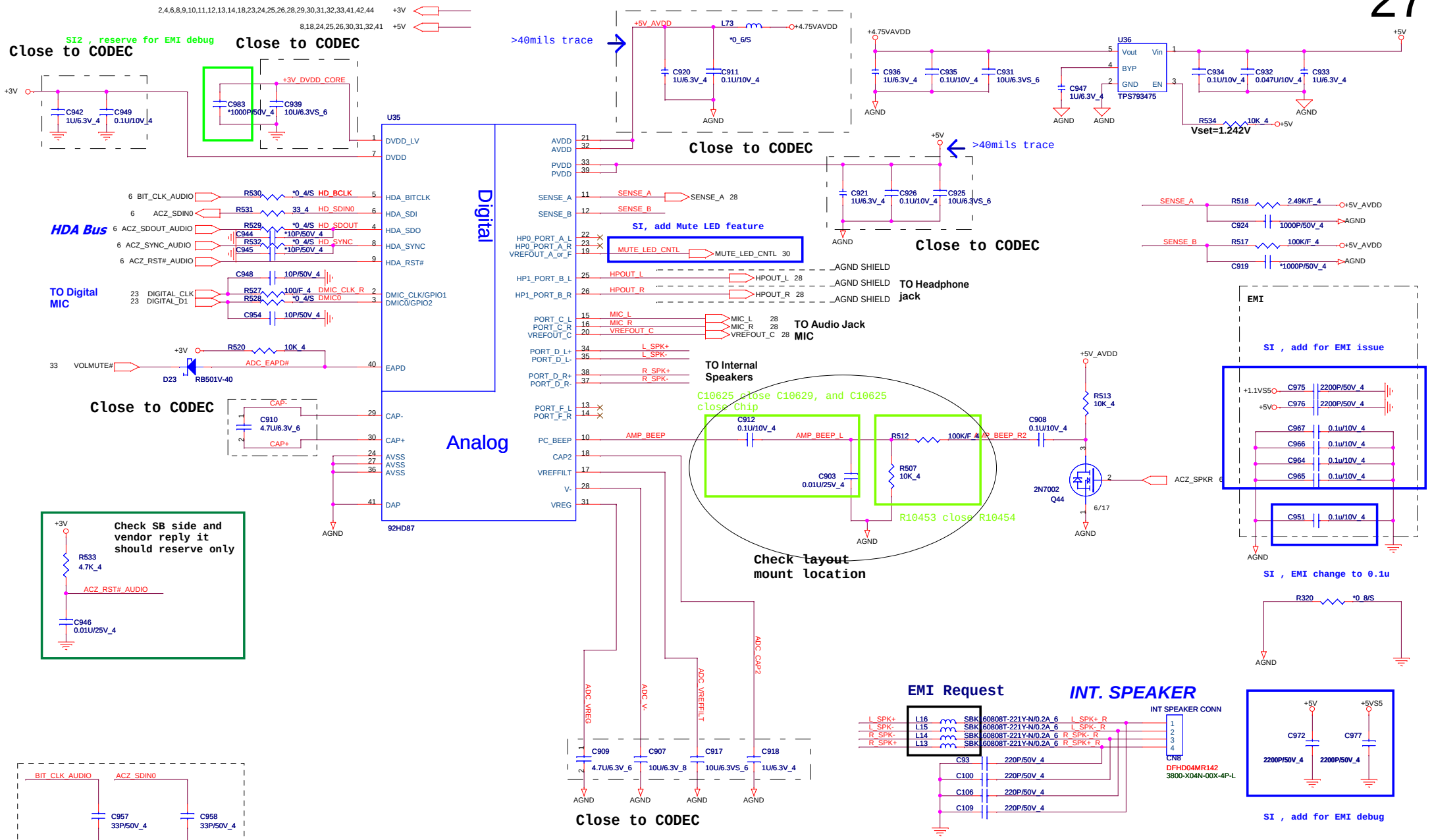



CLOSE CONN

**PROJECT : R53**
Quanta Computer Inc.

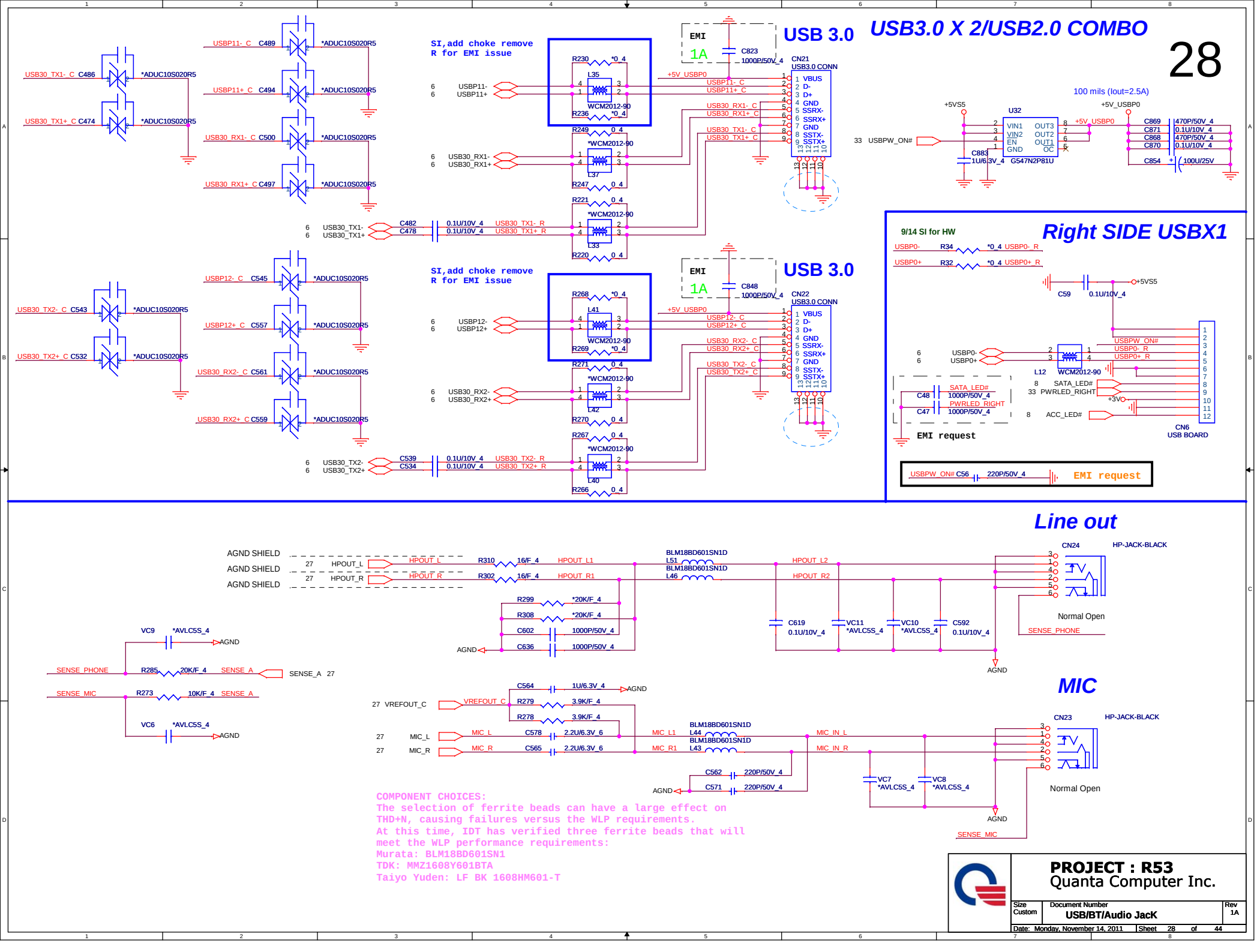
| Size | Document Number | Rev |
|---|---|---|
| Custom | RTS5219 & CR SOCKET &HOLE | 1A |
| Date: Monday, November 14, 2011 | Sheet 26 of 44 | |




**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | Azalia 92HD80 | 1A |

Date: Friday, November 11, 2011 Sheet 27 of 44


USB3.0 X 2/USB2.0 COMBO
28
USB 3.0
USB 3.0
SI,add choke remove R for EMI issue
SI,add choke remove R for EMI issue
EMI
1A
C823 1000P/50V_4
C848 1000P/50V_4
CN21 USB3.0 CONN
CN22 USB3.0 CONN
VBUS
D-
D+
GND
SSRX-
SSRX+
SSTX-
SSTX+
+5V_USBP0
100 mils (Iout=2.5A)
U32
G547N2P81U
+5VS5
33 USBPW_ON#
Right SIDE USBX1
9/14 SI for HW
USBP0-
USBP0+
CN6 USB BOARD
EMI request
USBPW_ON# C56 220P/50V_4 EMI request
Line out
AGND SHIELD
HPOUT_L
HPOUT_R
CN24 HP-JACK-BLACK
Normal Open
SENSE_PHONE
SENSE_MIC
SENSE_A
MIC
CN23 HP-JACK-BLACK
Normal Open
COMPONENT CHOICES:
The selection of ferrite beads can have a large effect on THD+N, causing failures versus the WLP requirements.
At this time, IDT has verified three ferrite beads that will meet the WLP performance requirements:
Murata: BLM18BD601SN1
TDK: MMZ1608Y601BTA
Taiyo Yuden: LF BK 1608HM601-T
PROJECT : R53
Quanta Computer Inc.
Size Custom
Document Number USB/BT/Audio JacK
Rev 1A
Date: Monday, November 14, 2011
Sheet 28 of 44

For EMI 0 ~ 22 ohm

R72 10_4 LAN_XTAL1 XTAL1
Y5 25MHz XTAL2
C130 33P/50V_4
C129 33P/50V_4

+3VLANVCC
+3V_LAN
C127 0.1U/10V_4
C134 0.1U/10V_4
C131 0.1U/10V_4
C148 0.1U/10V_4

+1.05V_LAN
R71 2.49K/F_4 LANRSET
+3V_LAN
GND VIA x 9 Pcs
LAN_TX#
LAN_GPIOS R73 1K/F_4 +3V_LAN
LAN_GLINK100#

U10 RTL8105E
GND AVDD33 AVDD33 RSET AVDD10 CKXTAL2 CKXTAL1 AVDD33 DVDD10(NC) LED1 DVDD33 GPO/SMBALERT LED1/EESK
MDI0+ MDI0- MDI1+ MDI1-
MDIP0 MDIN0 AVDD10 MDIP1 MDIN1 AVDD10(NC) MDIP2(NC) MDIN2(NC) AVDD10(NC) MDIP3(NC) MDIN3(NC) AVDD33(NC)
REGOUT VDDREG VDDREG ENSWREG EEDI LED3/EEDO EECS DVDD10 LANWAKEB DVDD33 ISOLATEB PERSTB
LAN_GLINK10# R82 10K/F_4
LAN_ECS_SCL R80 10K/F_4
+1.05V_LAN
PCIE_WAKE# PCIE_WAKE# 6,32
+3V_LAN
ISOLATEB
LAN_PCIE_RST# LAN_PCIE_RST# 7,11
DVDD10 SMBCLK(NC) SMBDATA(NC) CLKREQB HSIP HSIN REFCLK_P REFCLK_N DVDD10 HSOP HSON GND
LAN_CLKRQ

+1.05V_LAN
PCIE_LAN_CLKREQ# R107 *0_4/S
PCIE_TXP1_LAN
PCIE_TXN1_LAN
CLK_PCIE_LANP
CLK_PCIE_LANN
PCIE_RXN1_LAN_L C161 0.1U/10V_4 PCIE_RXN1_LAN 7
PCIE_RXP1_LAN_L C160 0.1U/10V_4 PCIE_RXP1_LAN 7
+1.05V_LAN

+3V
R104 1K_4
ISOLATEB
R94 15K/F_4

if ISOLATEB pin pull-low,the LAN chip will not drive it's PCI-E outputs ( excluding PCIE_WAKE# pin )

U9 NS681684
LAN_MX0+ LAN_MX0- LAN_MCT1 LAN_MX1+ LAN_MX1- LAN_MCT0
TD+ TD- CT RD+ RD- CT
TX+ CMT TX- RX- CT RX+
MDI0+ V_DAC2 MDI0- MDI1- V_DAC1 MDI1+
75_4 R47 C89 0.01U/100V_0603
75_4 R48 C90 0.01U/100V_0603
C64 10P/3KV_1808
C95 0.01U/25V_4
6 PCIE_LAN_CLKREQ#
7 PCIE_TXP1_LAN
7 PCIE_TXN1_LAN
7 CLK_PCIE_LANP
7 CLK_PCIE_LANN

IND SMD 4.7UH +-20% 680MA(CBC2518T4R7M)
CV-4707MZ00

Power trace Layout 寬度> 60mil
>60mil

+1.05V_LAN
C112 1U/6.3V_4
C159 0.1U/10V_4
C149 0.1U/10V_4
C132 0.1U/10V_4
C145 0.1U/10V_4

+1.05V_LAN
C146 0.1U/10V_4
C155 0.1U/10V_4
C125 0.1U/10V_4
C115 0.1U/10V_4

LAN_GLINK100# LAN_GLED#
LAN_TX# LAN_YLED#
Link
C764 *1000P/50V_4
C789 *1000P/50V_4

RJ45
CN20
+3V_LAN R405 330_4 C791 1000P/50V_4
LAN_YLED LAN_YLED#
LED_AMBER_P LED_AMBER_N
LAN_MX1-
LAN_MX1+ LAN_MX0- LAN_MX0+
RX1- RX1+ RX0- TX1- TX1+ RX0+ TX0- TX0+
GND1 C797 180P/50V_4
GND C757 180P/50V_4
+3V_LAN R391 330_4
LAN_GLED LAN_GLED#
LED_WHITE_P LED_WHITE_N
RJ45_CONN
C779 180P/50V_4
C758 1000P/50V_4

PROJECT : R53
Quanta Computer Inc.
Size Custom | Document Number RTL 8105E/RJ45 | Rev 1A
Date: Monday, November 14, 2011 | Sheet 29 of 44

# POWER BOTTON CONNECT

SI , reserve for Lid
+3VPCU noise

100mA

C963 *4.7U/6.3V_6
C122 1U/6.3V_4
C121 0.1U/10V_4

+3VPCU

33 LID_EC#
33 NBSWON1#
33 PWR_LED#

PWR_LED#

CN7
PWR BTN CONN

1. +3VPCU(LIDSWITCH PWR)
2. +3VPCU(LIDSWITCH PWR)
3. LIDSWITCH
4.POWERON#
5. PWRLED#
6. GND

SI , contact to +3VPCU

C117 PWR_LED# 0.1U/10V_4
C119 LID_EC# 0.1U/10V_4

SI , delete C120 for QB button drop

C118 NBSWON1# 0.1U/10V_4

SI , delete G5 for space save

# KEYBOARD Con.

MY5 C141 220P/50V_4
MY6 C166 220P/50V_4
MY3 C170 220P/50V_4
MY7 C154 220P/50V_4

MY8 C162 220P/50V_4
MY9 C124 220P/50V_4
MY10 C211 220P/50V_4
MY11 C201 220P/50V_4

MY1 C143 220P/50V_4
MY2 C147 220P/50V_4
MY4 C150 220P/50V_4
MY0 C136 220P/50V_4

MX4 C128 220P/50V_4
MX6 C116 220P/50V_4
MX3 C139 220P/50V_4
MX2 C138 220P/50V_4

MX7 C113 220P/50V_4
MX0 C144 220P/50V_4
MX5 C133 220P/50V_4
MX1 C110 220P/50V_4

MY12 C182 220P/50V_4
MY13 C187 220P/50V_4
MY14 C196 220P/50V_4
MY15 C219 220P/50V_4
MY16 C235 220P/50V_4
MY17 C244 220P/50V_4

33 MY[0..17] MY[0..17]
33 MX[0..7] MX[0..7]

SI , mount for EMI

CN9

MX1 1
MX7 2
MX6 3
MY9 4
MX4 5
MX5 6
MY0 7
MX2 8
MX3 9
MY5 10
MY1 11
MX0 12
MY2 13
MY4 14
MY7 15
MY8 16
MY6 17
MY3 18
MY12 19
MY13 20
MY14 21
MY11 22
MY10 23
MY15 24
MY16 25
MY17 26
27
28
29
30
31
32

KB CONN

SI2 , for mute LED issue

+3V
33 CAPSLED#
R541 10K/F_4
27 MUTE_LED_CNTL
Q47 2N7002
C984 *220P/50V_4
R392 *10K/F_4

SI, add Mute LED feature

SI2 , reserve for EMI

R152 +3V 200/F_6 CAPSLED# R
R153 200/F_6 MUTE_LED_CNTL_R
WIRELESS_ON_R
WIRELESS_OFF_R

+5V
R159 1K/F_4
R158 *200/F_6
WIRELESS_ON_R
33 WIRELESS_ON
Q17 PDTC144EU

+5V
R161 1K/F_4
R163 *200/F_6
WIRELESS_OFF_R
33 WIRELESS_OFF
Q18 PDTC144EU

## KEYBOARD PULL-UP

RP6
+3VPCU
MY13 MY12 MY3 MY6
MY14 MY11 MY10 MY15
*10P8R-8.2K

RP5
+3VPCU
MY1 MY5 MY0 MY9
MY2 MY4 MY7 MY8
*10P8R-8.2K

R142 *8.2K_4 MY16
R148 *8.2K_4 MY17

# TOUCH PAD Con.

TP_LED# C970 *220P/50V_4
SMB_ACC_DAT C968 *220P/50V_4
SMB_ACC_CLK C969 *220P/50V_4

+5VS5
C973 *220P/50V_4
C974 *220P/50V_4
C978 *2200P/50V_4

SI , EMI reserve for debug

change to +3VSUS
close conn

+3VSUS
R254 4.7K_4 TPCLK
R251 4.7K_4 TPDATA

33 TPCLK
33 TPDATA
C509 10P/50V_4
L39 BLM18BA470SN1D/0.3A_6
L38 BLM18BA470SN1D/0.3A_6
C501 10P/50V_4

33 TPLED#
TP_LED#
TPCLK-1
TPDATA-1
SMB_ACC_DAT
SMB_ACC_CLK

CN11
8 7 6 5 4 3 2 1

25 mils

+3VSUS C492 0.1U/10V_4

TOUCH PAD CONN
DFFC08FR026
50503-0080n-001-8p-l

4,7,33,34,35 +3VPCU
8,18,24,25,26,27,31,32,41 +5V
32,41 +3VSUS
2,4,6,8,9,10,11,12,13,14,18,23,24,25,26,27,28,29,31,32,33,41,42,44 +3V

Q51A 2N7002KDW
Dual
15 GPUT_CLK
SMB_ACC_CLK
SMB_ACC_CLK 33
R263 4.7K_4
+3V_VGA
+3VSUS
R262 4.7K_4
SMB_ACC_DAT 33
15 GPUT_DATA
SMB_ACC_DAT
Dual
Q51B 2N7002KDW

2KV ESD protection

SI , Q21,Q22 change to dual type MOS Q51

Q64A *2N7002KDW
Dual
SMB_ACC_CLK
SCL1 6
+3VSUS
SMB_ACC_DAT
SDA1 6
Dual
Q64B *2N7002KDW

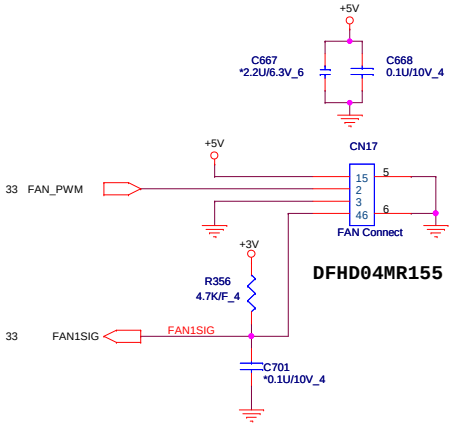
SI2 , HP request Image sensor
SMBUS reserve to FCH

**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | KB/SW/TP | 1A |

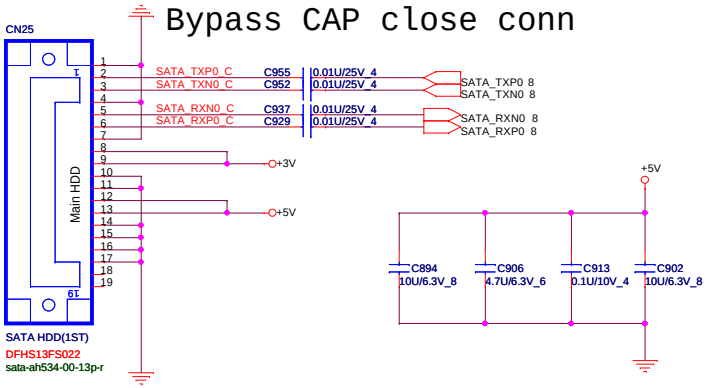
Date: Friday, November 11, 2011 Sheet 30 of 44

# CPU FAN



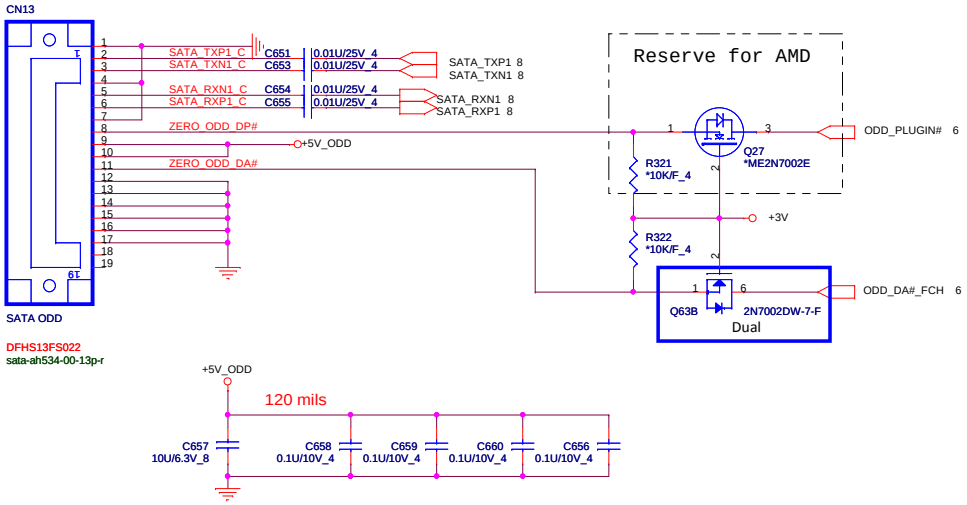

# SATA HDD CONNECTOR

Bypass CAP close conn



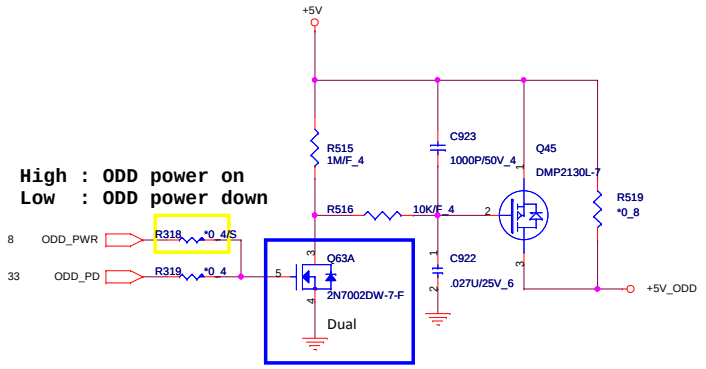

# SATA ODD CONNECTOR

## SATA ODD










SI , Q28,Q43 change to dual type MOS Q63

**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | HDD/ODD/FAN | 1A |

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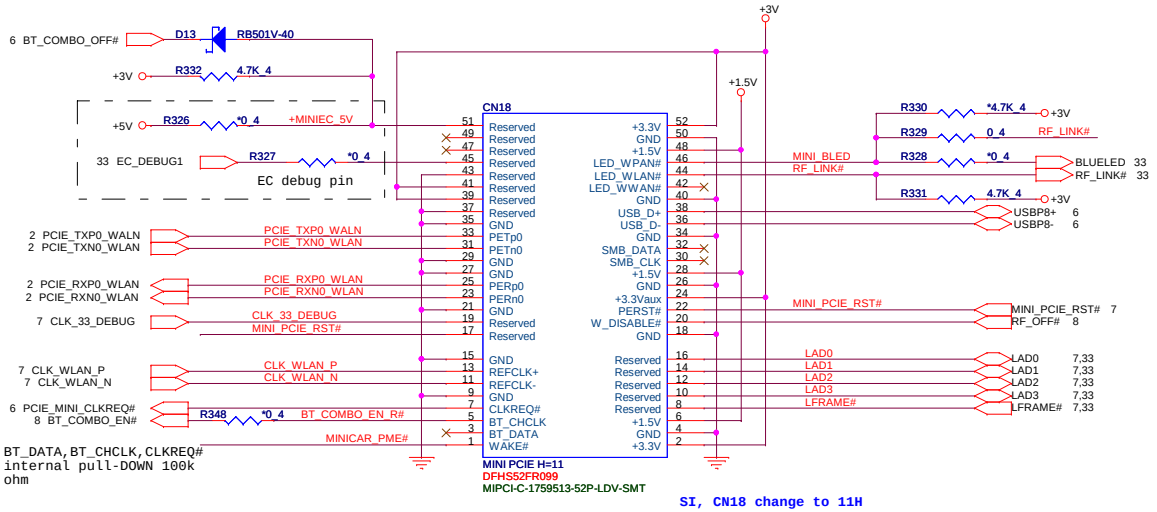
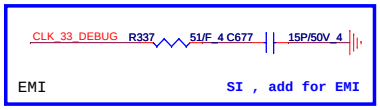
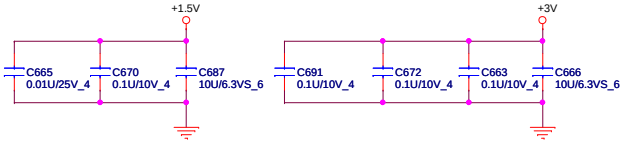
# Mini PCI-E Card 1 WLAN

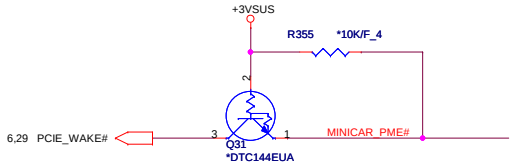


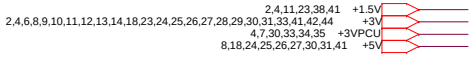

SI, CN18 change to 11H



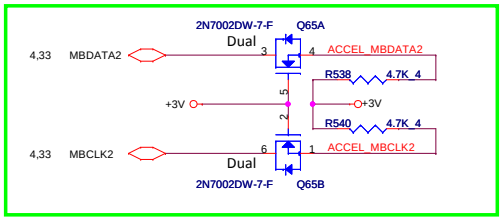




INTEL WLAN CARD PIN 20 W_DISABLE# have internal pull-up 110k ohm

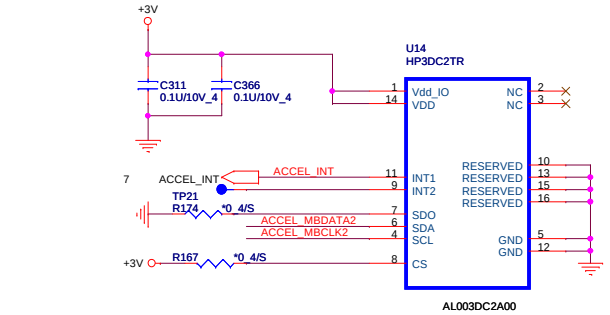


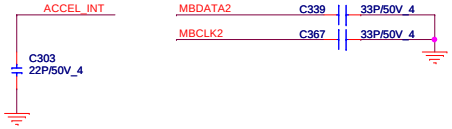




# Accelerometer Sensor




SI2 , add for avoid leakage from SUS power




**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | MINI PCIE & G-sensor | 1A |
| Date: Friday, November 11, 2011 | Sheet 32 of 44 | |

ITE pin 100 , 104 , 106 default can not pull up to +3VPCU it will cause chip into test mode

+3VPCU CAP close to EC pin

## Smart adapter Type check

Change to 1SS355 as Current loss

D18 1SS355

## Change to RB500 as Current loss

500mA

SI , del QB button PU resistor R392

SI2,change to +3VS5 for leakage issue

For +VIN noise

| Vender | Size | P/N |
|---|---|---|
| AMIC | 4M | AKE39F-0800 |
| EON | 4M | AKE39ZN0Q02 |
| Socket | | DFHS08FS023 |

## 4M SPI EC ROM

U20 EN25Q32B-104HIP AKE39ZN0Q02 SOIC8-8-1_27

SI , add for EMI

## 128K byte SPI EC ROM

U19 *DFHS08FS023 SOIC8-6-1_27

ICT need TP2675 size test point

TP place on top lay for ICT request

## IT8518E/HX

AJ085180F04

IT8518E/HX

SI, remove NUMLED#

Add TP SMBUS signal

Add G-sensor SMBUS signal

For GPU thermal

for Battery charge/discharge

for CPU themal

SI , drop QB button feature

from power button

## Adapter select

Hi ==> DIS/SG
Low ==>UMA

| Platform model | GPIO42 | adapter |
|---|---|---|
| SG/DIS | High | 90W |
| UMA | Low | 65W |

**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | EC (KB3926)/ROM | 1A |

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DC_JACK 90W

Do Not add test pad on BATDIS_G signal

Place this ZVS close to Diode away +VIN

Place this ZVS close to Far-Far away +VIN

To PWR LED

Place this cap close to EC

Place this cap close to EC

Place this cap close to EC

Place this cap close to EC

ACDET=13V

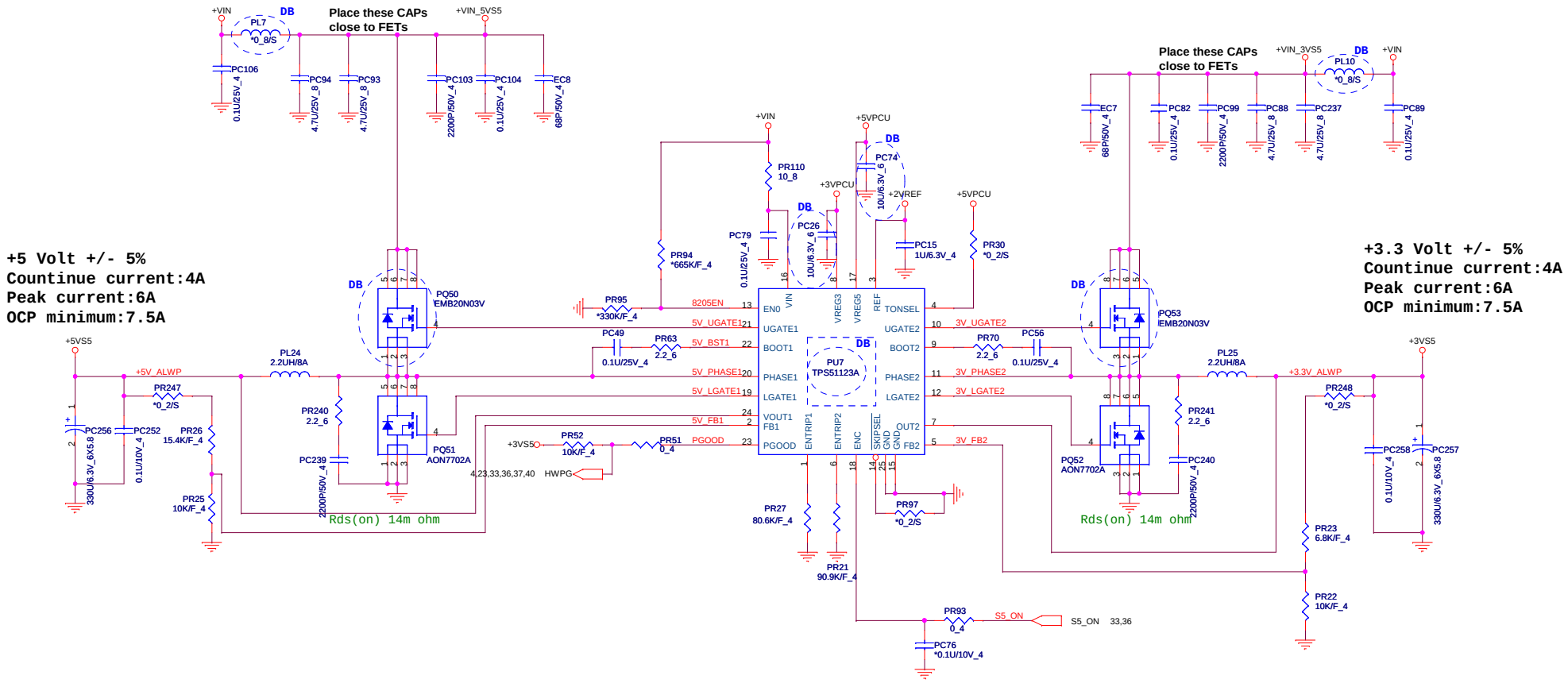
MIN. BATV=7.2V

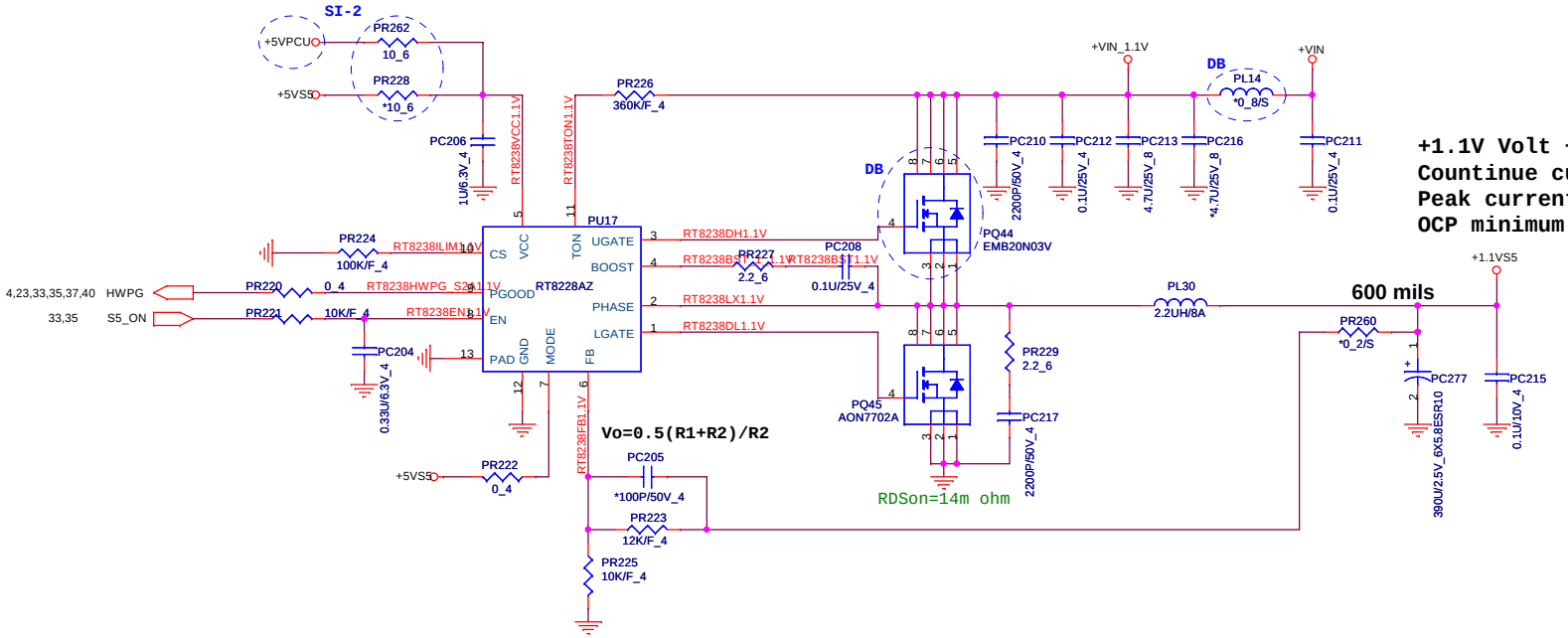
BQ24728

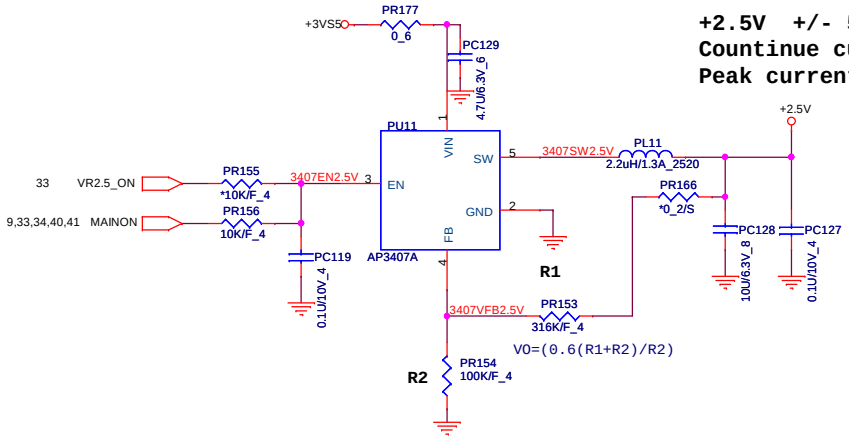
PROJECT : R53
Quanta Computer Inc.

Size: Custom | Document Number: Charger (BQ24728) | Rev: 1A

Date: Friday, November 11, 2011 | Sheet 34 of 44

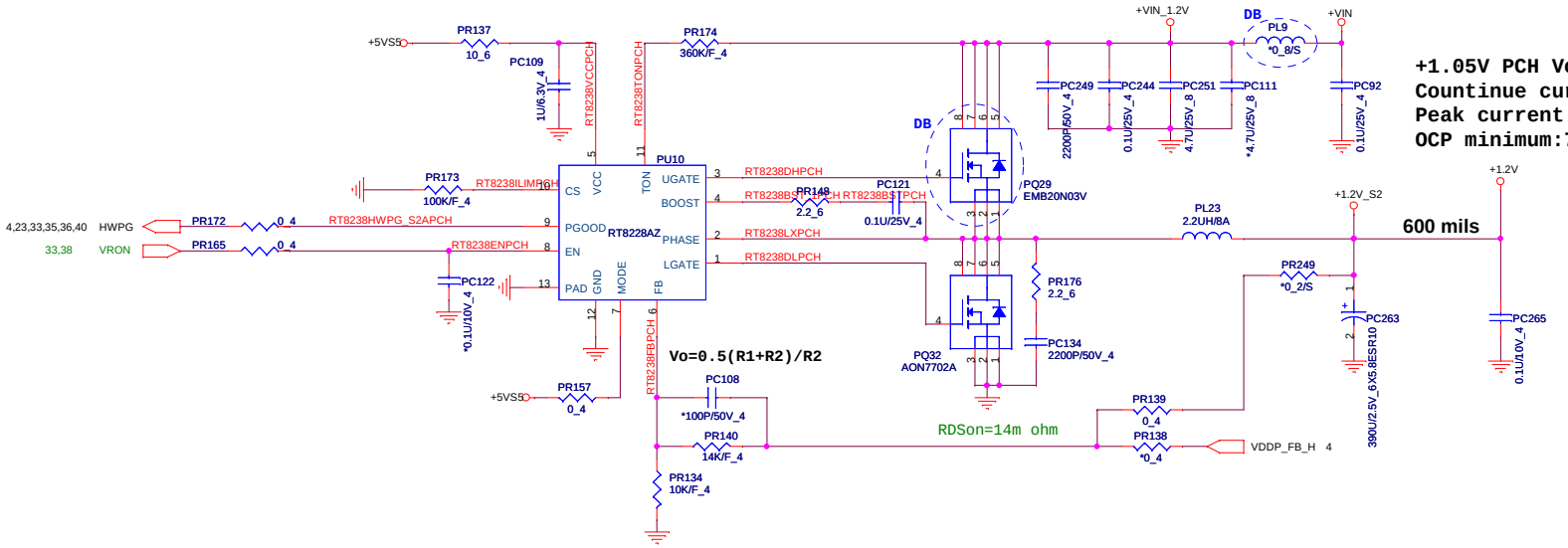

+5 Volt +/- 5%
Countinue current:4A
Peak current:6A
OCP minimum:7.5A
+3.3 Volt +/- 5%
Countinue current:4A
Peak current:6A
OCP minimum:7.5A
Place these CAPs close to FETs
Place these CAPs close to FETs
DB for prevent interference
PU7 TPS51123A
PQ50 EMB20N03V
PQ51 AON7702A
PQ52 AON7702A
PQ53 EMB20N03V
Rds(on) 14m ohm
Rds(on) 14m ohm
PROJECT : R53
Quanta Computer Inc.
3/5VPCU(TPS51123A)
Friday, November 11, 2011



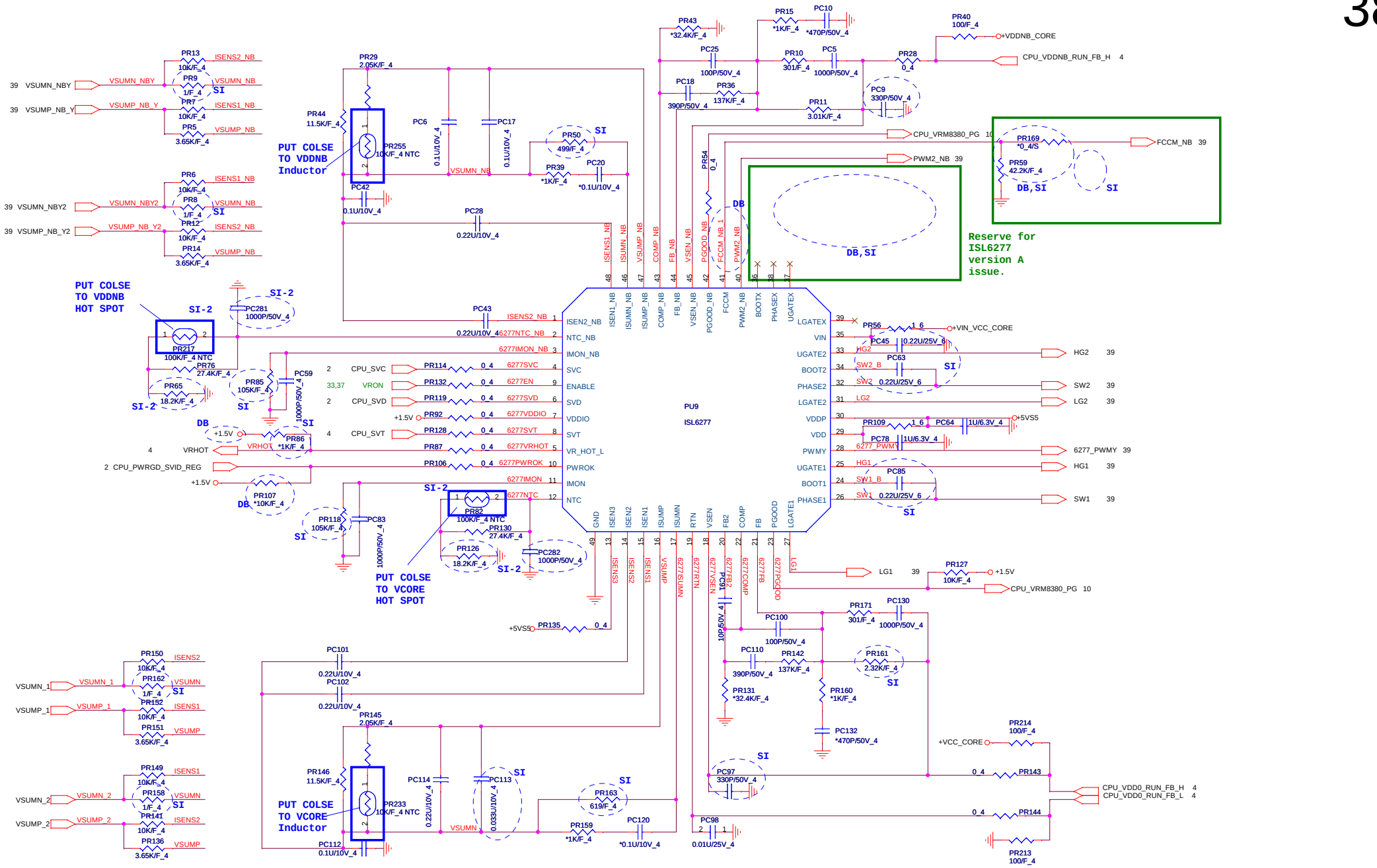



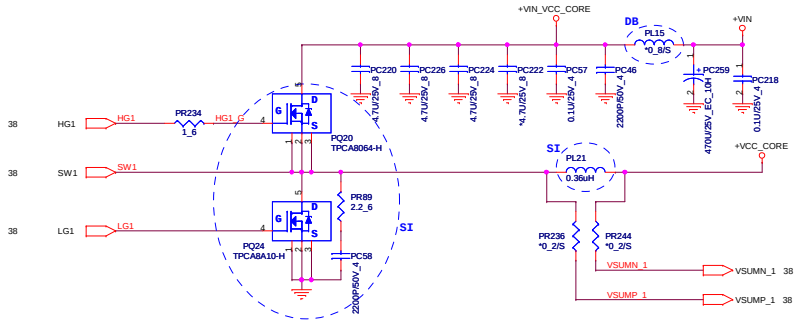

**PROJECT : R53**
Quanta Computer Inc.

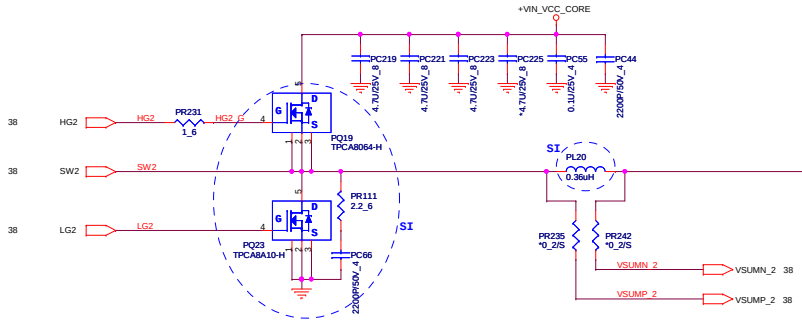
| Size | Document Number | Rev |
|---|---|---|
| Custom | +1.1VS5 (RT8228)/2.5V | 1A |
| Date: Friday, November 11, 2011 | Sheet 36 of 44 | |



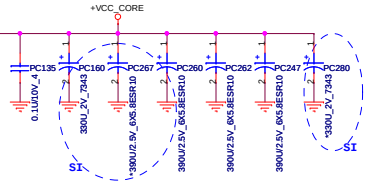

| | |
|---|---|
| PROJECT : R53 | Quanta Computer Inc. |
| Size: Custom | Document Number: +1.2V (RT8228) |
| Rev: 1A | |
| Date: Friday, November 11, 2011 | Sheet 37 of 44 |

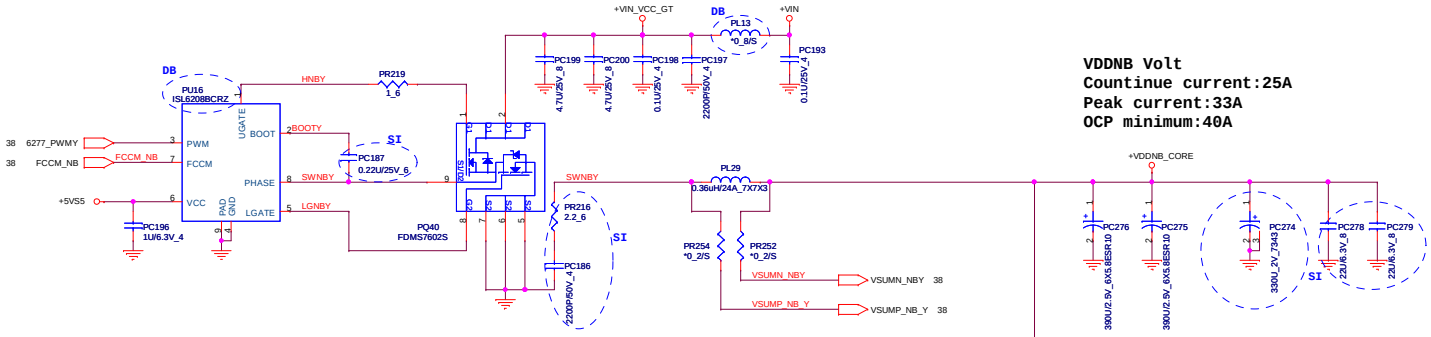

PU9
ISL6277
Reserve for ISL6277 version A issue.
PUT COLSE TO VDDNB Inductor
PUT COLSE TO VDDNB HOT SPOT
PUT COLSE TO VCORE HOT SPOT
PUT COLSE TO VCORE Inductor
DB,SI
SI
SI-2
DB




**CPU CORE Volt**
**Countinue current:36A**
**Peak current:50A**
**OCP minimum:60A**

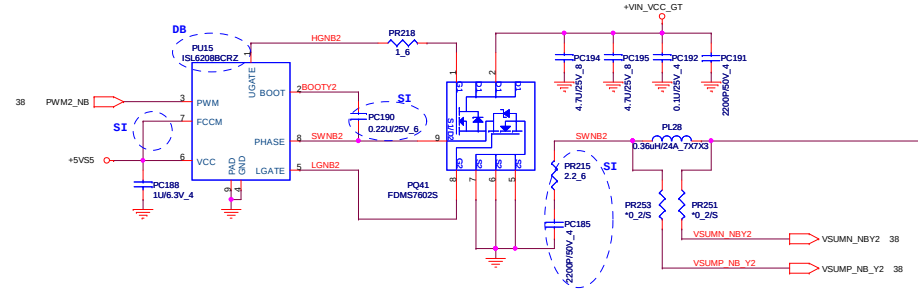






**VDDNB Volt**
**Countinue current:25A**
**Peak current:33A**
**OCP minimum:40A**




**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | ISL6208 | 1A |

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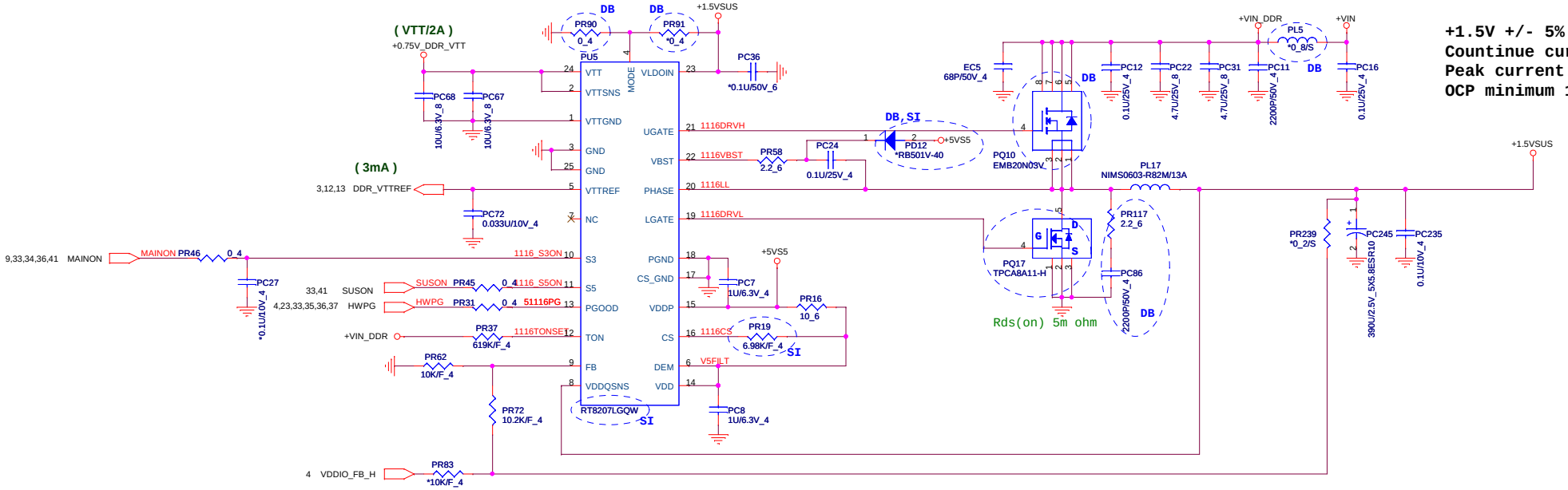
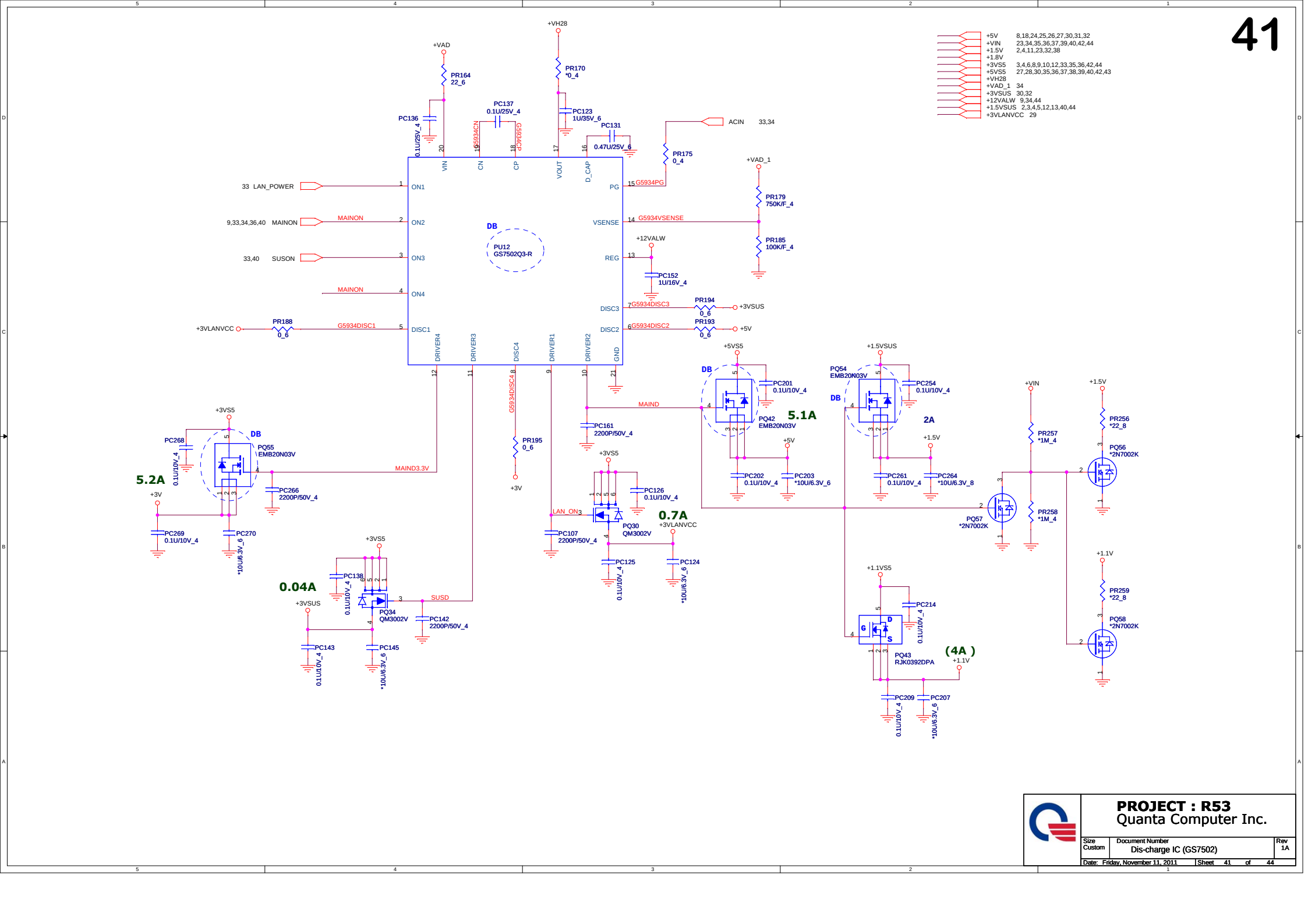



**+1.5V +/- 5%**
**Countinue current:10A**
**Peak current:12A**
**OCP minimum 15A**

**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | DDRIII(G5616) | 1A |
| Date: Friday, November 11, 2011 | Sheet 40 of 44 | |




**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | Dis-charge IC (GS7502) | 1A |

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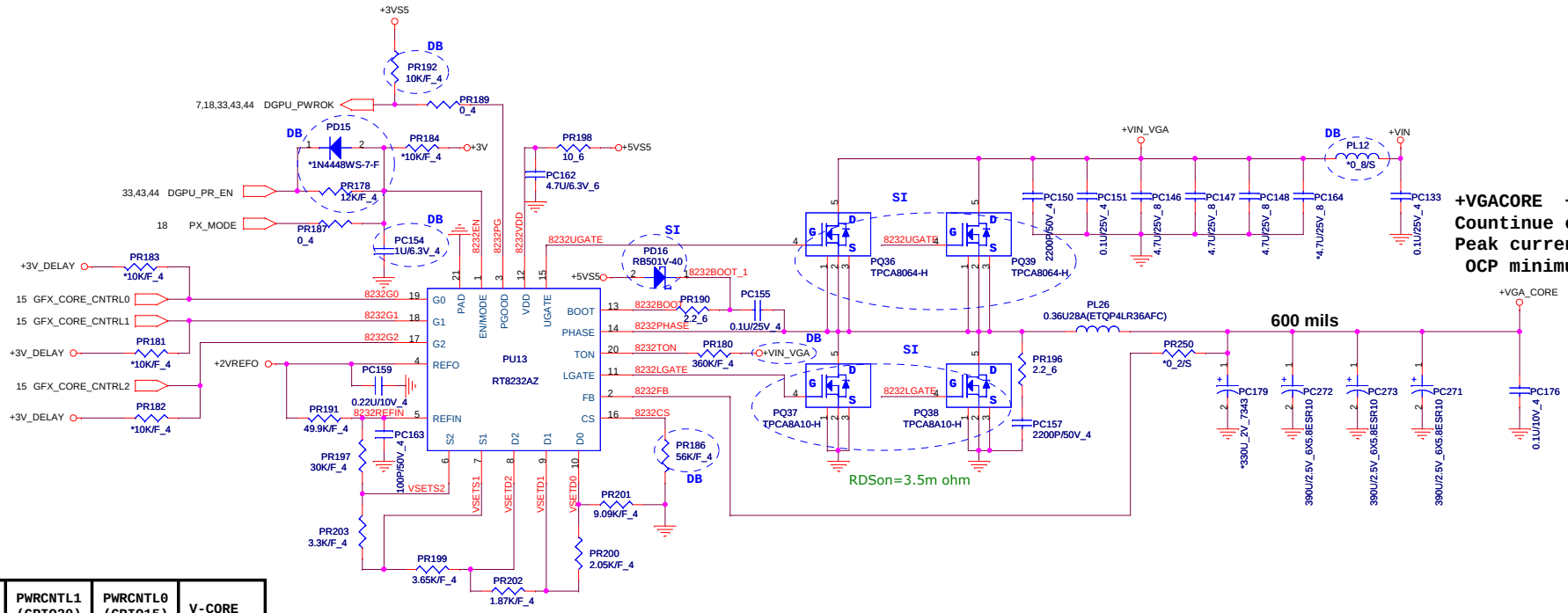
# VGA Core






+VGACORE +/- 5%
Countinue current:20A
Peak current:23A
OCP minimum 33A

| Symour-XT | PWRCNTL2 (GPIO16) | PWRCNTL1 (GPIO20) | PWRCNTL0 (GPIO15) | V-CORE |
|---|---|---|---|---|
| L | 0 | 0 | 0 | 1.0V |
| M | 0 | 0 | 1 | 0.9V |
| H | 0 | 1 | 0 | 0.875V |
| | 0 | 1 | 1 | 0.85V |
| | 1 | 0 | 0 | 0.8V |
| | 1 | 0 | 1 | 0.75V |

**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | +VGACORE (RT8232AZ) | 1A |

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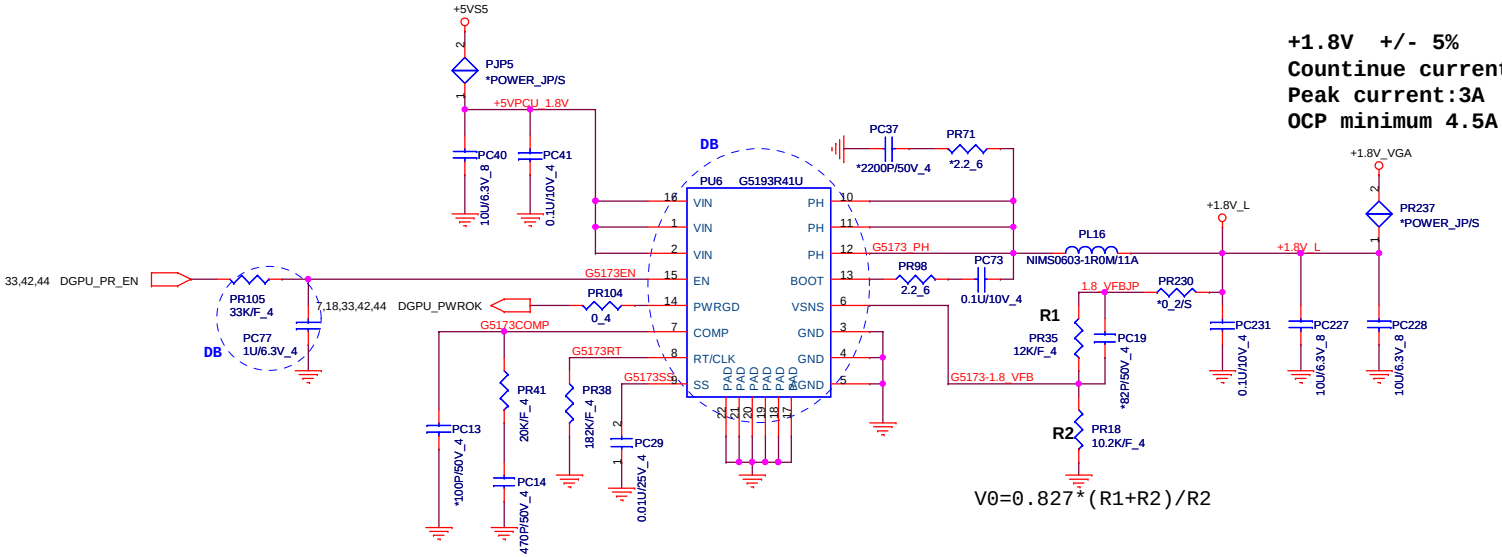
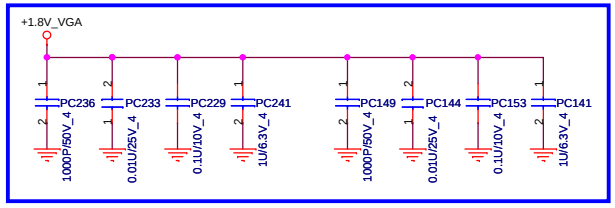


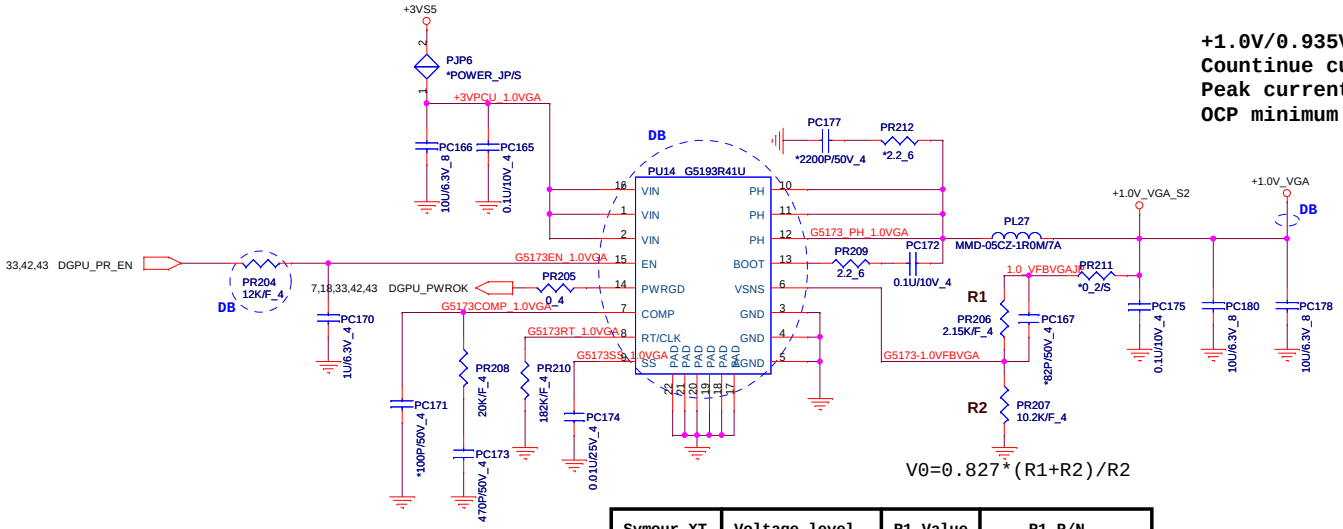

DB for prevent interference




**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | +1.8V_VGA (G5193) | 1A |

Date: Friday, November 11, 2011 | Sheet 43 of 44

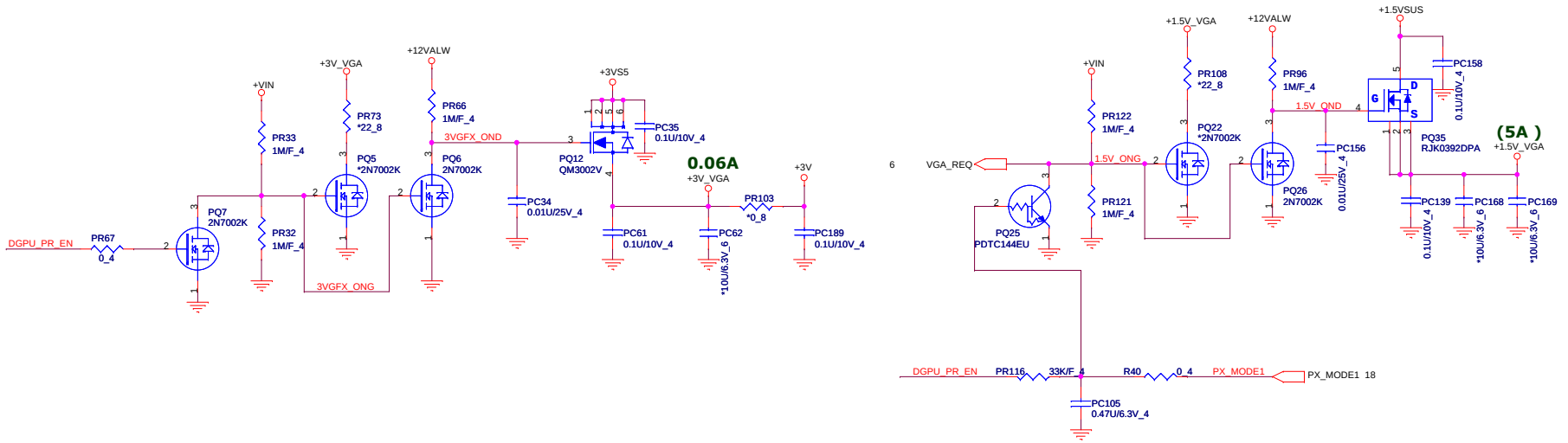



**+1.0V/0.935V +/- 5%**
**Countinue current:2A**
**Peak current:3A**
**OCP minimum 4.5A**

| | |
|---|---|
| +3V | 2,4,6,8,9,10,11,12,13,14,18,23,24,25,26,27,28,29,30,31,32,33,41,42 |
| +VIN | 23,34,35,36,37,39,40,41,42 |
| +3VS5 | 3,4,6,8,9,10,12,33,35,36,41,42 |
| +5VS5 | 27,28,30,35,36,37,38,39,40,41,42,43 |
| +3V_VGA | 18,30 |
| +12VALW | 9,34,41 |
| +1.5VSUS | 2,3,4,5,12,13,40,41 |
| +1.5V_VGA | 18,20,21,22 |

$$V0=0.827*(R1+R2)/R2$$

| Symour-XT | Voltage level | R1 Value | R1 P/N |
|---|---|---|---|
| 17W | 1.0V | 2.15K | CS22152FB07 |
| 25W | 0.935V | 1.37K | CS21372FB19 |




**PROJECT : R53**
Quanta Computer Inc.

| Size | Document Number | Rev |
|---|---|---|
| Custom | +1.0V_VGA (G5193) | 1A |
| Date: Friday, November 11, 2011 | Sheet 44 of 44 | |