POWER PAVILION PARFAIT INTEL SKL / KABY -H SYSTEM DIAGRAM 01

Charge PG.40
DDR4 PG.42
CPU Core PG.43~45
+1.0V/+1.2VSUS PG.47~48
+3V/+5V S5 PG.41
+VGACORE PG.49
+1.35V_GFX PG.50

Config#3 SODIMM 1DPC

SODIMM1 Max. 8GB STD PG.17 — DDR4 2133MHz — Channel A
SODIMM2 Max. 8GB RSV PG.18 — DDR4 2133MHz — Channel B

INTEL
Sky Lake - H4+2
Kaby Lake - H4+2
Processor : Quad Core
Power : 45 (Watt)
Package : BGA1440
Size : 42 x 28 (mm)
Die Size : 13.6 x 9.1 (mm)
PG.2~8

PEG X8 Lane → NVIDIA N16P-GX / N16E-GR
Package 29 x 29mm
40W PG.19~23
VRAM gDDR5 x 4pcs 256M x16 / 256M x32 2.5GHz PG.14~25

DP portE → PS8409 re-driver IC PG.27 → HDMI v2.0 PG.27
27MHz PAGE 21

eDP (5.4Gb/s) eDP → 17" eDP Panel HD/FHD/UHD PG.26

DMI

M.2 2280-S3 SSD PG.33 — SATA 6GB/s SATA0A / PCIEx4 4GB/s LANE9,10,11,12
HDD PG.32 — SATA 6GB/s SATA1B
HDD PG.32 — SATA 6GB/s SATA2
ODD PG.32 — SATA 1.5GB/s SATA3

INTEL PCH
Lynx Point
Power : Watt
Package : FCBGA837
Size : 23 x 23 (mm)
PG.9~16

USB 3.0
PORT1 → USB 3.0 Ports PG.30
PORT2 → USB 3.0 Ports (DB) PG.30
PORT4 → USB3.0 Re-Driving IC PTN36241G PG.31 → 3D CAM Intel SR300 3D PG.31

USB 2.0
PORT3 → USB 2.0 Ports (DB) PG.30
PORT4 → HD CAM PG.26
PORT5 → HD+ IR CAM (OPTION) PG.26 +PG.34

PCI-E x 1 Gen1
LANE7 → LAN RTL8111HSH/ Gbe PG.35
LANE5 → Card Reader RTS5237S-GR PG.36
LANE6 → WLAN BT COMBO PG.33
USB 2.0 PORT7

I2C I2C0 → Touch Screen Synaptics S7817 PG.26

SPI → ROM PG.12
G-Sensor HP2DC PG.34 — SMBUS

LPC → KBC ITE IT8987E/BX PG.37
TPM 2.0 SLB9665TT2.0 (OPTION) PG.34
KB PG.38
TP PG.38
FAN PG.38

Azalia → AUDIO CODEC ALC3258-CG PG.28
Headphone amplifier HPA0022642RTJR PG.29 — Hp / MIC → Combo Jack (DB) PG.30
Speaker PG.28
Dual Digital MIC PG.28
3D CAM MIC / INT CAM MIC PG.26

STACKUP
TOP
GND
IN1
IN2
VCC
IN3
GND
BOT

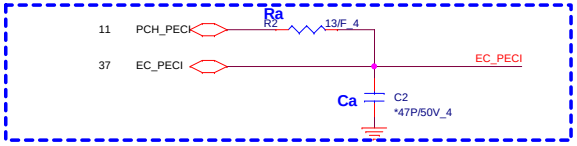
PROJECT : G37A/G37B
Quanta Computer Inc.
Size: Custom | Document Number: 01 -- Block Diagram | Rev: 1A
Date: Monday, December 28, 2015 | Sheet 1 of 51

SKYLAKE Processor (CLK,MISC,JTAG)

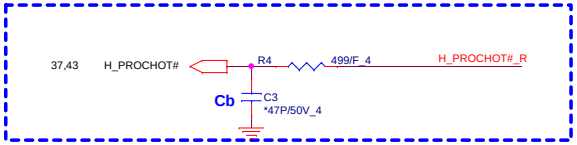
02

+1.0V 5,6,10,16,37,48
+VCCSTPLL 6,43,47

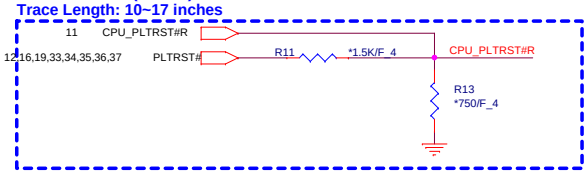
H_PECI (50ohm)
Trace Length: <0.5 iches
Ra,Ca need placement close to PCH.



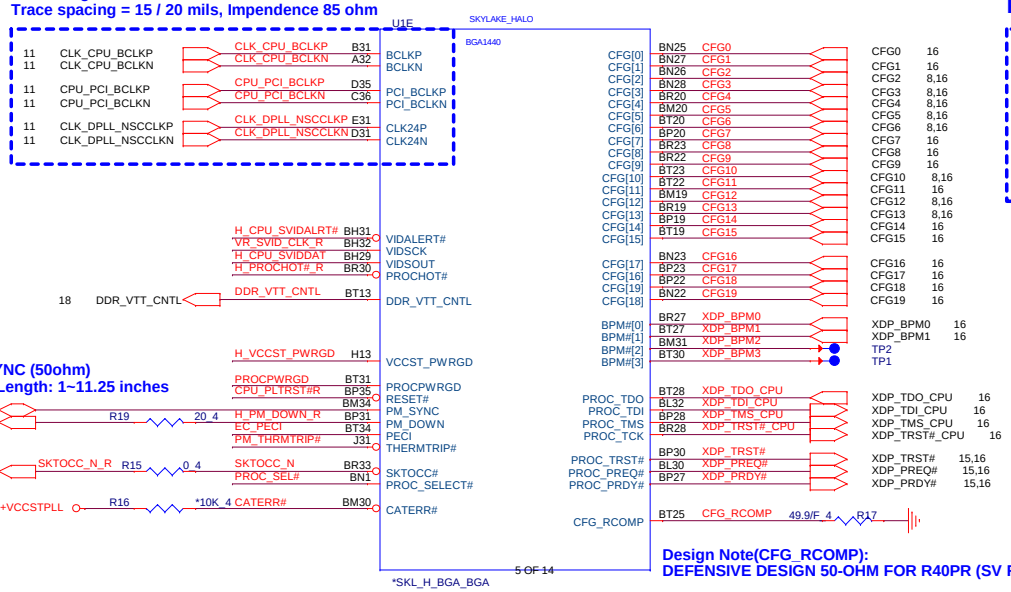
PROCHOT# (50ohm)
Trace Length <11 inches
Cb need placment near VR



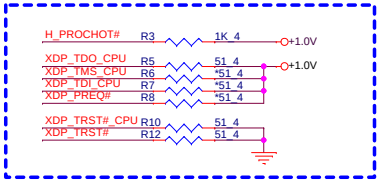
CPU_PLTRST# (50ohm)
Trace Length: 10~17 inches



Host CLK:
Trace length < 11000 mils
Trace spacing = 15 / 20 mils, Impendence 85 ohm

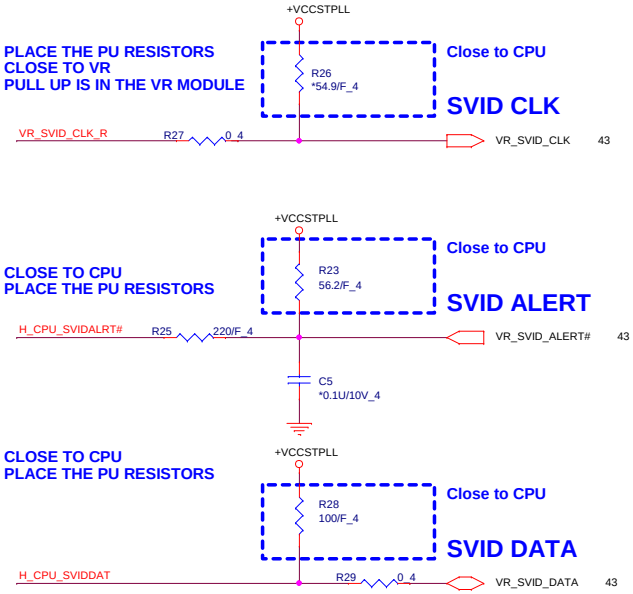


Processor pull-up (CPU)

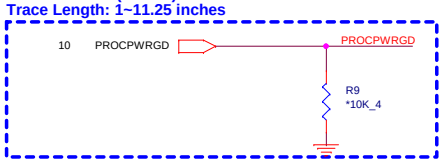


Design Note(CFG_RCOMP):
DEFENSIVE DESIGN 50-OHM FOR R40PR (SV REQ)

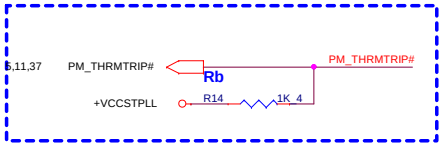
CPU CORE SVID
Layout note:
1.Need routing together
2.ALERT need between CLK and DATA.



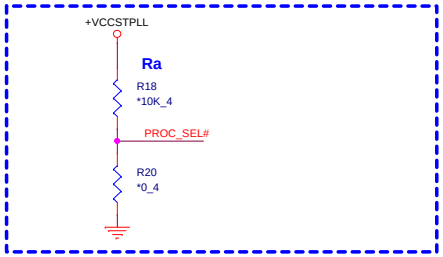
PROCPWRGD (50ohm)
Trace Length: 1~11.25 inches



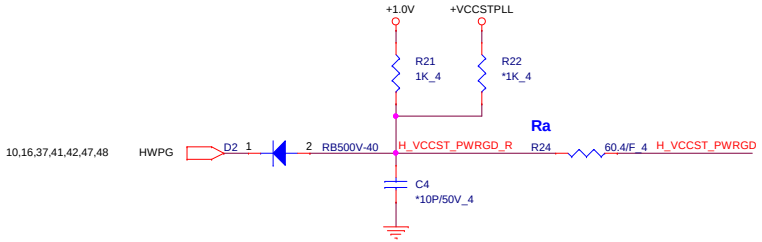
THERMTRIP# (50ohm)
Trace Length: 1.1~12 inches
Rb need placment near PCH



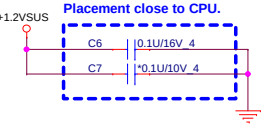
Ra(R10804) Not install in SKL-H



HWPD
Ra close to CPU side
H_VCCST_PWRGD trace 0.3" - 1.5"



CPU VDDQ
Note: please keep plane is enough for VDDQ 2.8A



PROJECT : G37A/G37B
Quanta Computer Inc.

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Custom	02 -- SKL 1/7 (JTAG/MISC)	1A
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+VCCIO 6,16,48

SKYLAKE Processor (DMI,PEG,FDI)

03

U1C SKYLAKE_HALO BGA1440

dGPU

19 PEG_RXP0 / PEG_RXN0 → E25 / D25 PEG_RXP[0] / PEG_RXN[0]
19 PEG_RXP1 / PEG_RXN1 → E24 / F24 PEG_RXP[1] / PEG_RXN[1]
19 PEG_RXP2 / PEG_RXN2 → E23 / D23 PEG_RXP[2] / PEG_RXN[2]
19 PEG_RXP3 / PEG_RXN3 → E22 / F22 PEG_RXP[3] / PEG_RXN[3]
19 PEG_RXP4 / PEG_RXN4 → E21 / D21 PEG_RXP[4] / PEG_RXN[4]
19 PEG_RXP5 / PEG_RXN5 → E20 / F20 PEG_RXP[5] / PEG_RXN[5]
19 PEG_RXP6 / PEG_RXN6 → E19 / D19 PEG_RXP[6] / PEG_RXN[6]
19 PEG_RXP7 / PEG_RXN7 → E18 / F18 PEG_RXP[7] / PEG_RXN[7]
D17 / E17 PEG_RXP[8] / PEG_RXN[8]
F16 / E16 PEG_RXP[9] / PEG_RXN[9]
D15 / E15 PEG_RXP[10] / PEG_RXN[10]
F14 / E14 PEG_RXP[11] / PEG_RXN[11]
D13 / E13 PEG_RXP[12] / PEG_RXN[12]
F12 / E12 PEG_RXP[13] / PEG_RXN[13]
D11 / E11 PEG_RXP[14] / PEG_RXN[14]
F10 / E10 PEG_RXP[15] / PEG_RXN[15]

PEG_TXP[0] / PEG_TXN[0] → B25 PEG_TXP0_C C8 0.22U/10V_4 / A25 PEG_TXN0_C C9 0.22U/10V_4 → PEG_TXP0 19 / PEG_TXN0 19
PEG_TXP[1] / PEG_TXN[1] → B24 PEG_TXP1_C C10 0.22U/10V_4 / C24 PEG_TXN1_C C11 0.22U/10V_4 → PEG_TXP1 19 / PEG_TXN1 19
PEG_TXP[2] / PEG_TXN[2] → B23 PEG_TXP2_C C12 0.22U/10V_4 / A23 PEG_TXN2_C C13 0.22U/10V_4 → PEG_TXP2 19 / PEG_TXN2 19
PEG_TXP[3] / PEG_TXN[3] → B22 PEG_TXP3_C C14 0.22U/10V_4 / C22 PEG_TXN3_C C15 0.22U/10V_4 → PEG_TXP3 19 / PEG_TXN3 19
PEG_TXP[4] / PEG_TXN[4] → B21 PEG_TXP4_C C16 0.22U/10V_4 / A21 PEG_TXN4_C C17 0.22U/10V_4 → PEG_TXP4 19 / PEG_TXN4 19
PEG_TXP[5] / PEG_TXN[5] → B20 PEG_TXP5_C C18 0.22U/10V_4 / C20 PEG_TXN5_C C19 0.22U/10V_4 → PEG_TXP5 19 / PEG_TXN5 19
PEG_TXP[6] / PEG_TXN[6] → B19 PEG_TXP6_C C20 0.22U/10V_4 / A19 PEG_TXN6_C C21 0.22U/10V_4 → PEG_TXP6 19 / PEG_TXN6 19
PEG_TXP[7] / PEG_TXN[7] → B18 PEG_TXP7_C C22 0.22U/10V_4 / C18 PEG_TXN7_C C23 0.22U/10V_4 → PEG_TXP7 19 / PEG_TXN7 19
PEG_TXP[8] / PEG_TXN[8] → A17 / B17
PEG_TXP[9] / PEG_TXN[9] → C16 / B16
PEG_TXP[10] / PEG_TXN[10] → A15 / B15
PEG_TXP[11] / PEG_TXN[11] → C14 / B14
PEG_TXP[12] / PEG_TXN[12] → A13 / B13
PEG_TXP[13] / PEG_TXN[13] → C12 / B12
PEG_TXP[14] / PEG_TXN[14] → A11 / B11
PEG_TXP[15] / PEG_TXN[15] → C10 / B10

BOM:
DIS : Stuff
UMA: Un-Stuff

dGPU

PEG_RCOMP
Trace length < 400 MILS
Trace width = 12 MILS
Trace spacing = 15 MILS

+VCCIO R30 24.9/F_4 PEG_COMP
G2 PEG_RCOMP

DMI

9 DMI_RXP0 / DMI_RXN0 → D8 / E8 DMI_RXP[0] / DMI_RXN[0]
9 DMI_RXP1 / DMI_RXN1 → E6 / F6 DMI_RXP[1] / DMI_RXN[1]
9 DMI_RXP2 / DMI_RXN2 → D5 / E5 DMI_RXP[2] / DMI_RXN[2]
9 DMI_RXP3 / DMI_RXN3 → J8 / J9 DMI_RXP[3] / DMI_RXN[3]

DMI_TXP[0] / DMI_TXN[0] → B8 / A8 → DMI_TXP0 9 / DMI_TXN0 9
DMI_TXP[1] / DMI_TXN[1] → C6 / B6 → DMI_TXP1 9 / DMI_TXN1 9
DMI_TXP[2] / DMI_TXN[2] → B5 / A5 → DMI_TXP2 9 / DMI_TXN2 9
DMI_TXP[3] / DMI_TXN[3] → D4 / B4 → DMI_TXP3 9 / DMI_TXN3 9

3 OF 14
*SKL_H_BGA_BGA

DMI

U1D SKYLAKE_HALO BGA1440

11/05 change HDMI from APU to GPU

K36 / K37 DDI1_TXP[0] / DDI1_TXN[0]
J35 / J34 DDI1_TXP[1] / DDI1_TXN[1]
H37 / H36 DDI1_TXP[2] / DDI1_TXN[2]
J37 / J38 DDI1_TXP[3] / DDI1_TXN[3]
D27 / E27 DDI1_AUXP / DDI1_AUXN
H34 / H33 DDI2_TXP[0] / DDI2_TXN[0]
F37 / G38 DDI2_TXP[1] / DDI2_TXN[1]
F35 / F34 DDI2_TXP[2] / DDI2_TXN[2]
E37 / E36 DDI2_TXP[3] / DDI2_TXN[3]
F26 / E26 DDI2_AUXP / DDI2_AUXN
C34 / D34 DDI3_TXP[0] / DDI3_TXN[0]
B36 / B35 DDI3_TXP[1] / DDI3_TXN[1]
F33 / E33 DDI3_TXP[2] / DDI3_TXN[2]
C33 / B33 DDI3_TXP[3] / DDI3_TXN[3]
A27 / B27 DDI3_AUXP / DDI3_AUXN

EDP_TXP[0] / EDP_TXN[0] → D29 INT_EDP_TXP0 / E29 INT_EDP_TXN0 → INT_EDP_TXP0 26 / INT_EDP_TXN0 26
EDP_TXP[1] / EDP_TXN[1] → F28 INT_EDP_TXP1 / E28 INT_EDP_TXN1 → INT_EDP_TXP1 26 / INT_EDP_TXN1 26
EDP_TXP[2] / EDP_TXN[2] → B29 INT_EDP_TXN2 / A29 INT_EDP_TXP2 → INT_EDP_TXN2 26 / INT_EDP_TXP2 26
EDP_TXP[3] / EDP_TXN[3] → B28 INT_EDP_TXN3 / C28 INT_EDP_TXP3 → INT_EDP_TXN3 26 / INT_EDP_TXP3 26
EDP_AUXP / EDP_AUXN → C26 INT_eDP_AUXP / B26 INT_eDP_AUXN → INT_eDP_AUXP 26 / INT_eDP_AUXN 26
EDP_DISP_UTIL → A33 EDP_DISP_UTIL → TP3
EDP_RCOMP → D37 EDP_RCOMP R31 24.9/F_4 +VCCIO

eDP

DP & PEG Compensation

eDP_RCOMP
Trace length < 100 Mils
Trace Width 20 Mils Trace Spacing 25 Mils

PROC_AUDIO_CLK / PROC_AUDIO_SDI / PROC_AUDIO_SDO → G27 AUD_AZACPU_SCLK / G25 AUD_AZACPU_SDO_R / G29 AUD_AZACPU_SDI_R R32 20_4 → AUD_AZACPU_SCLK 10 / AUD_AZACPU_SDO_R 10 / AUD_AZACPU_SDI 10

4 OF 14
*SKL_H_BGA_BGA

PROJECT : G37A/G37B	
Quanta Computer Inc.	
Size: Custom	Document Number: 03 -- SKL 2/7 (DMI/EDP/PEG)
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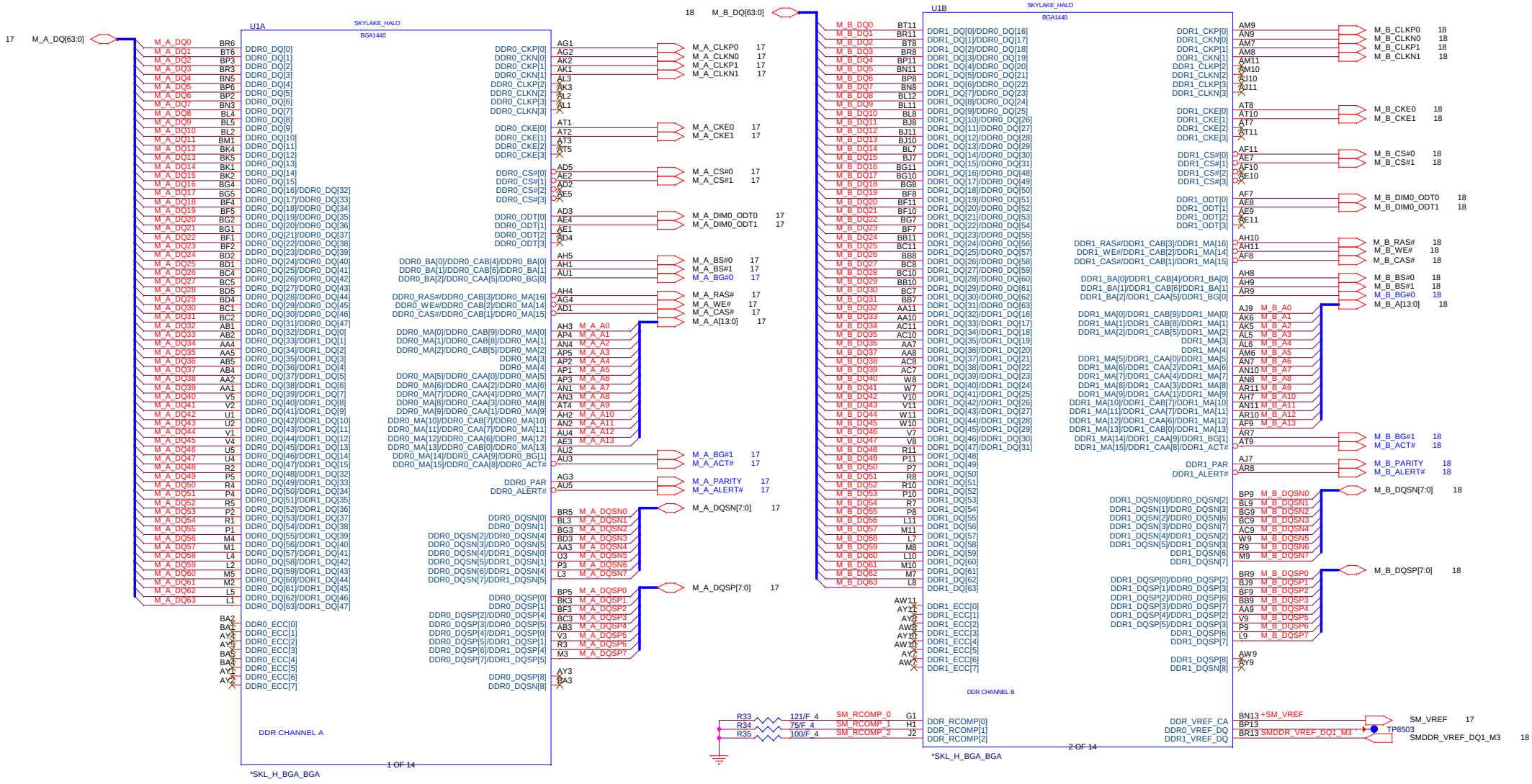
SKYLAKE Processor (DDR4)



PROJECT :	G37A/G37B
Quanta Computer Inc.	
Size: Custom	Document Number: 04 -- SKL 3/7 (DDR4 I/F)
Rev: 1A	
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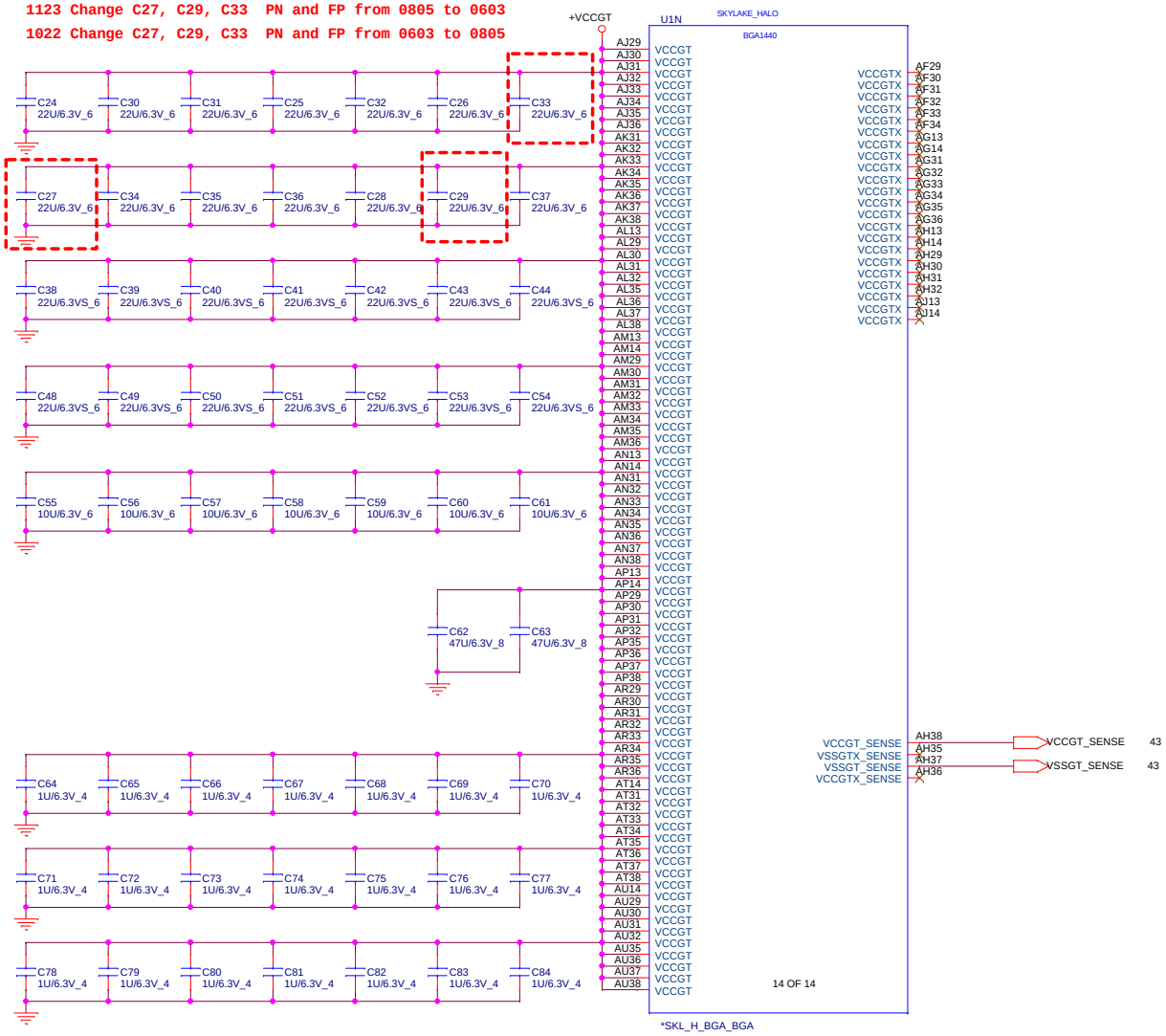
SKYLAKE Processor (POWER)

+3VPCU 10,30,33,37,38,40,41
+3V 9,10,11,12,13,14,16,17,18,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+1.0V 2,6,10,16,37,48
+VCCGT 7,43,45

Follow SKL H EDS page 133 to 45W(GT2): +VCCGT=55A

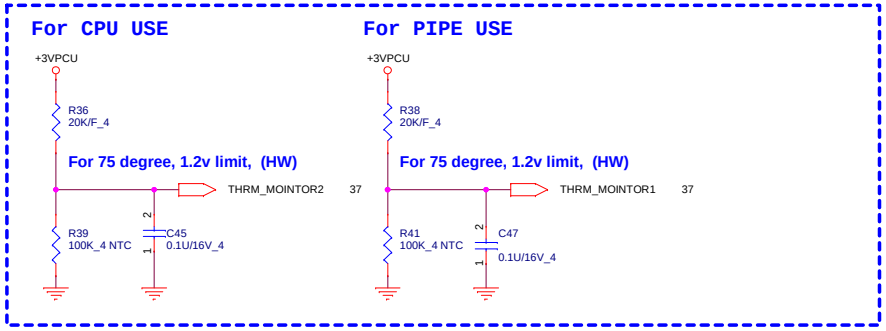
1123 Change C27, C29, C33 PN and FP from 0805 to 0603

1022 Change C27, C29, C33 PN and FP from 0805 to 0603



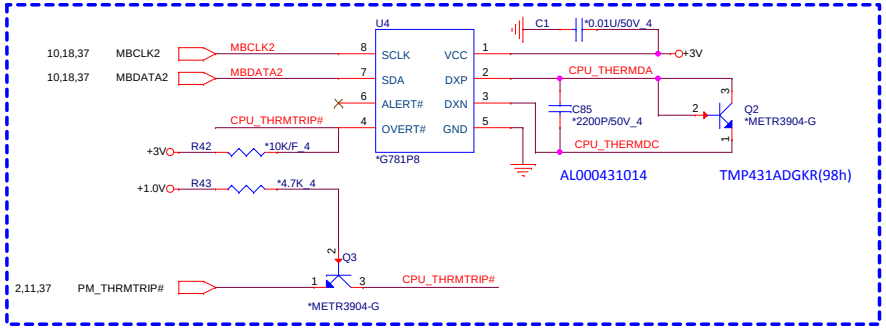
IO Thrm Protect

Location need thermal confirm



CPU Thermal Sensor

Location need thermal confirm

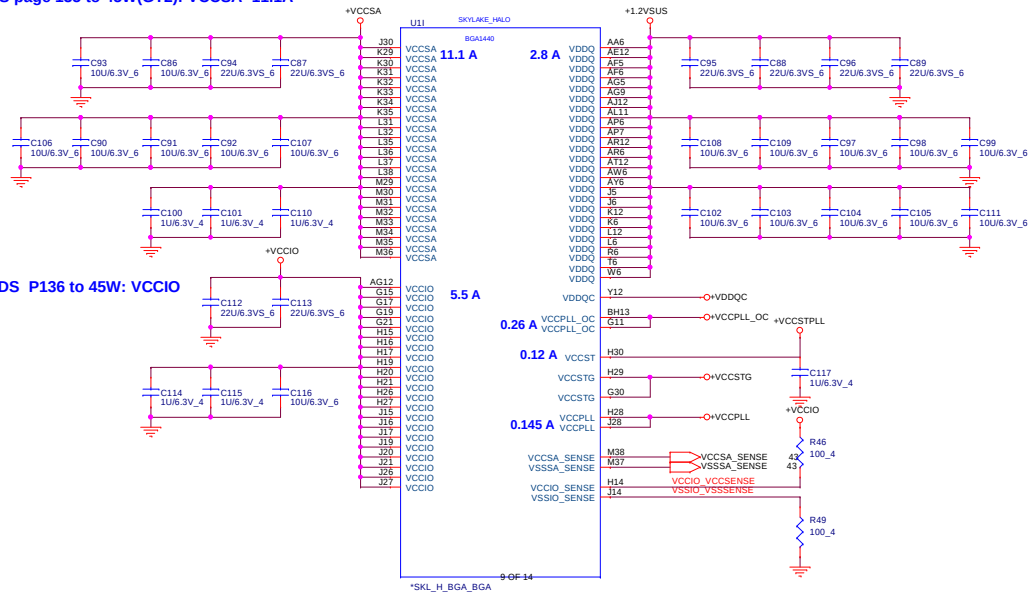


Quanta Computer Inc.	PROJECT : G37A/G37B	
Size: Custom	Document Number: 05 -- SKL 4/7 (POWER)	Rev: 1A
Date: Monday, December 28, 2015	Sheet 5 of 51	

+1.2VSUS 2,10,17,18,42,46,48,51
+VCCIO 3,16,48
+VCCSTPLL 2,43,47
+VCCSA 43,45

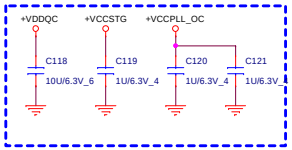
Follow SKL H EDS page 135 to 45W(GT2): VCCSA=11.1 A

Follow SKL H EDS page 135 45W: VDDQ=2.8 A

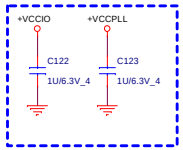


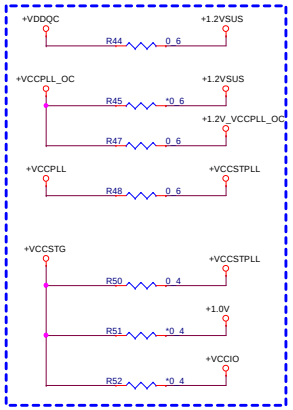
Follow SKL H EDS P136 to 45W: VCCIO +VCCIO = 0.95V

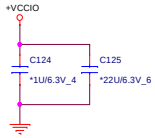
Under CPU

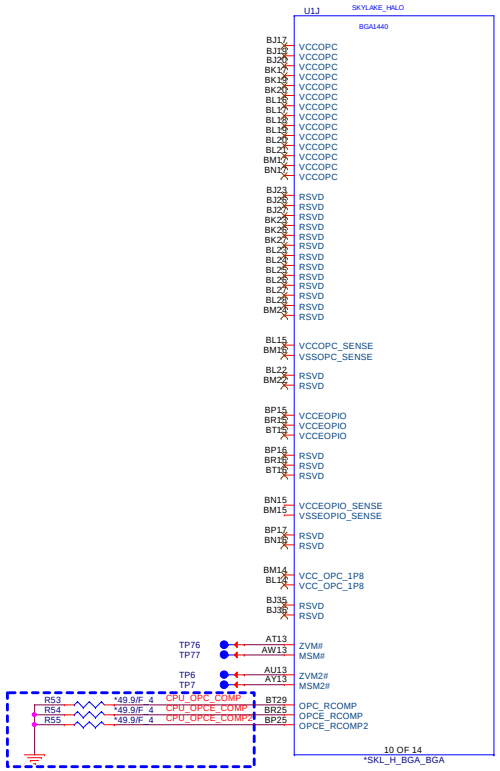


Close CPU









Unconnected for Processors without OPC.

PROJECT : G37A/G37B
Quanta Computer Inc.

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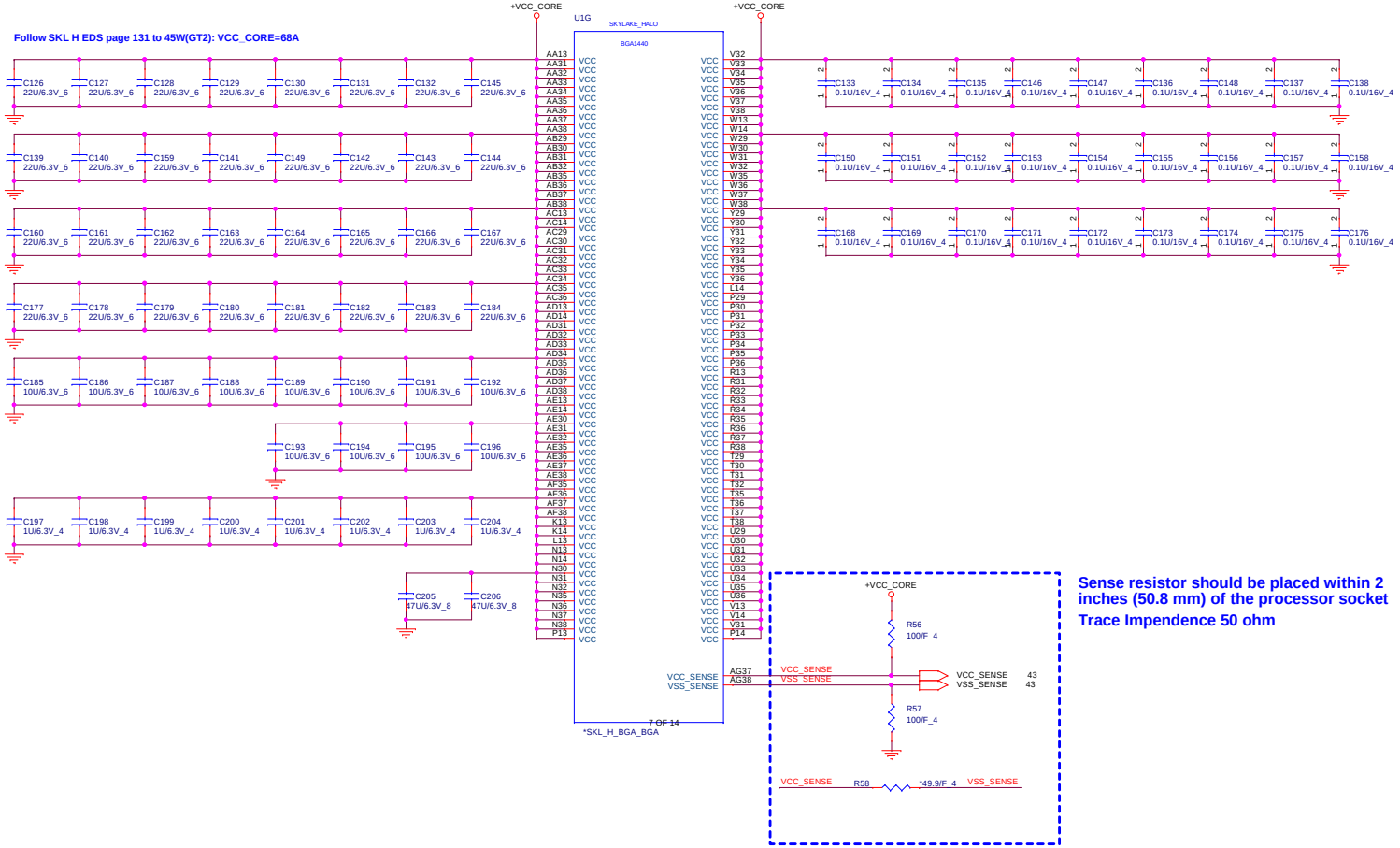
Custom	06 – SKL 5/7 (POWER&GND)	1A

Date: Monday, December 28, 2015 Sheet 6 of 51

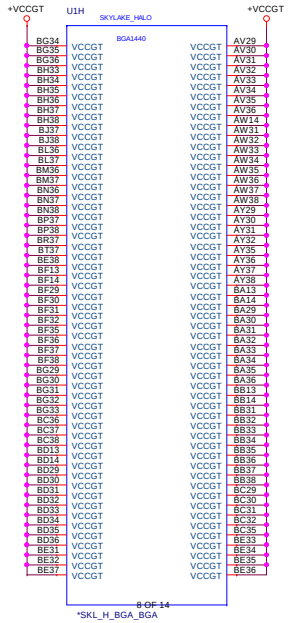
+VCC_CORE 44
+VCCGT 5,43,45

Follow SKL H EDS page 131 to 45W(GT2): VCC_CORE=68A



Sense resistor should be placed within 2 inches (50.8 mm) of the processor socket

Trace Impendence 50 ohm

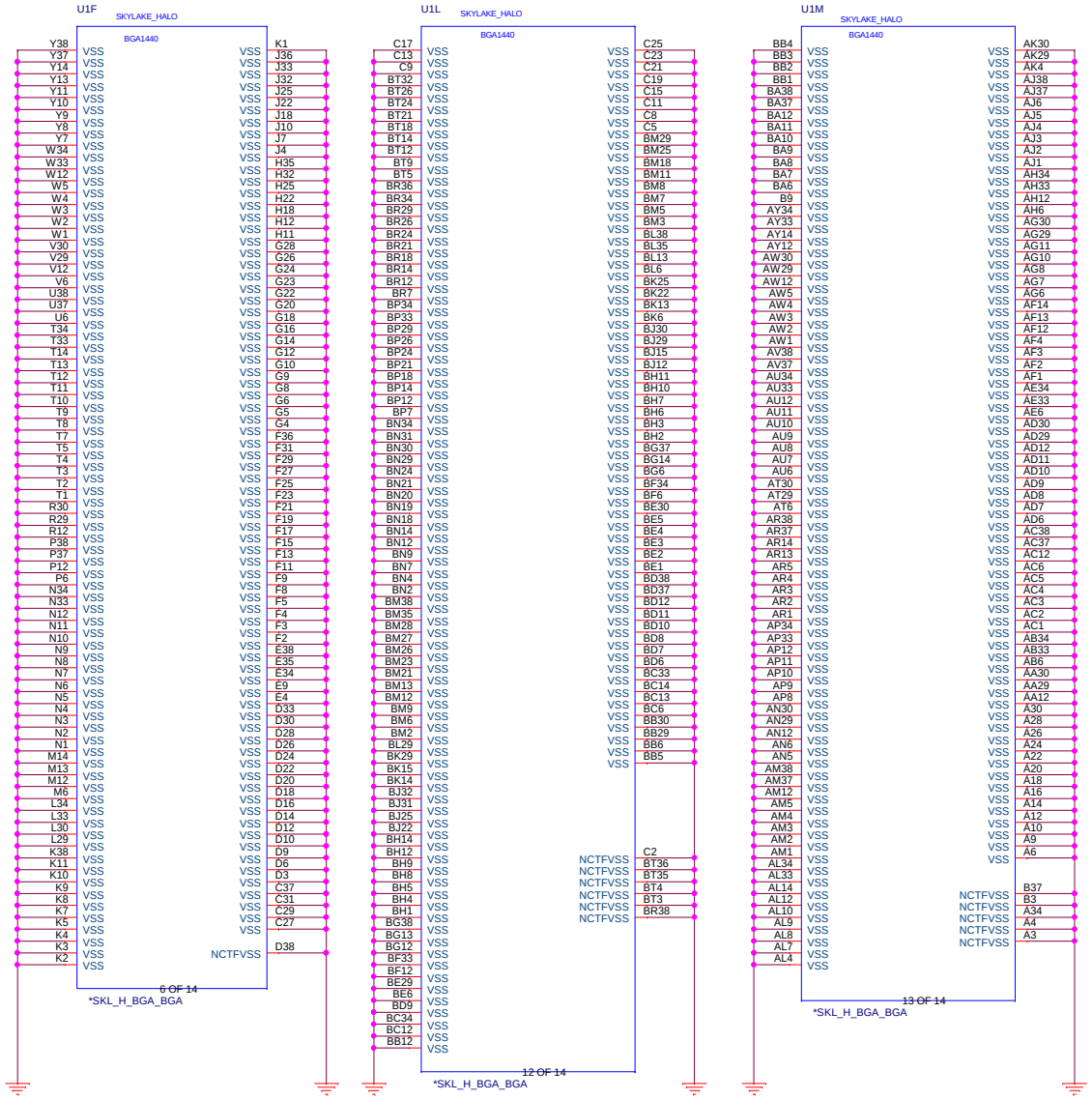


PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	07 -- SKL 6/7 (POWER&GND)	1A

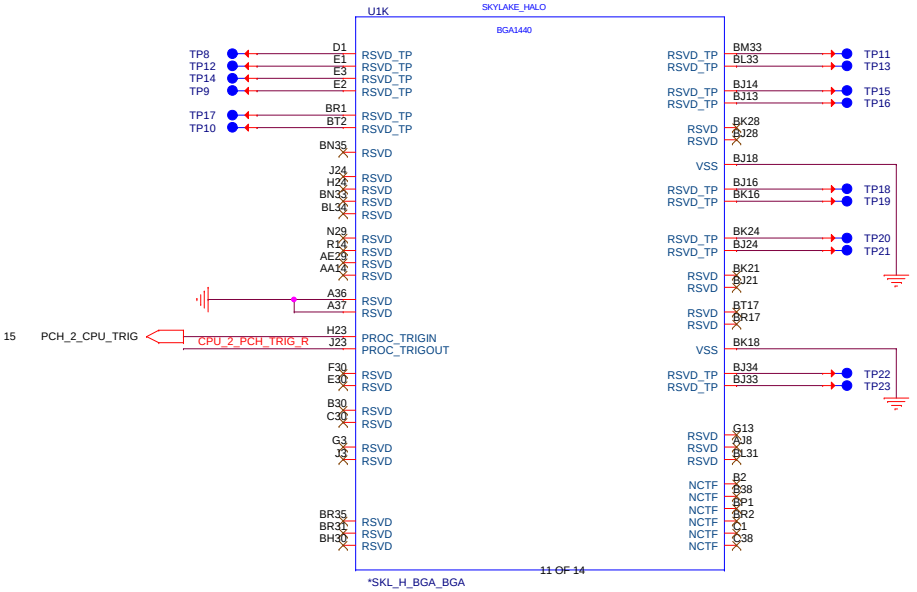
Date: Monday, December 28, 2015 Sheet 7 of 51

SKL-HProcessor (GND)



08

SKL-H Processor (RESERVED, CFG)

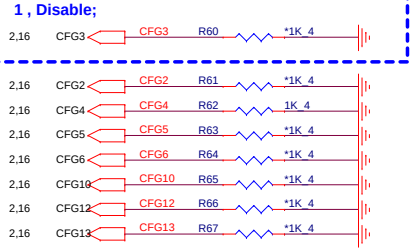


Processor Strapping

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

0 Enable; SET DFX ENABLED BIT IN DEBUG

1 , Disable;



PROJECT : G37A/G37B

Quanta Computer Inc.

Size	Document Number	Rev
Custom	08 -- SKL 7/7 (GND)	1A

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+3V_DEEP_SUS 10,12,13,14,16,18
+3V 5,10,11,12,13,14,16,17,18,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49

U2B — SPT-H_PCH

DMI_RXN0 L27 ← 3 DMI_TXN0
DMI_RXP0 N27 ← 3 DMI_TXP0
DMI_TXN0 C27 → 3 DMI_RXN0
DMI_TXP0 B27 → 3 DMI_RXP0
DMI_RXN1 E24 ← 3 DMI_TXN1
DMI_RXP1 G24 ← 3 DMI_TXP1
DMI_TXN1 B28 → 3 DMI_RXN1
DMI_TXP1 A28 → 3 DMI_RXP1
DMI_RXN2 G27 ← 3 DMI_TXN2
DMI_RXP2 E26 ← 3 DMI_TXP2
DMI_TXN2 B29 → 3 DMI_RXN2
DMI_TXP2 C29 → 3 DMI_RXP2
DMI_RXN3 L29 ← 3 DMI_TXN3
DMI_RXP3 K29 ← 3 DMI_TXP3
DMI_TXN3 B30 → 3 DMI_RXN3
DMI_TXP3 A30 → 3 DMI_RXP3

R73 100/F_4 PCIECOMP_N B18 / PCIECOMP_P C17
PCIE_RCOMPN
PCIE_RCOMPP

PCIE1_RXN/USB3_7_RXN H15
PCIE1_RXP/USB3_7_RXP G15
PCIE1_TXN/USB3_7_TXN A16
PCIE1_TXP/USB3_7_TXP B16
PCIE2_TXN/USB3_8_TXN B19
PCIE2_TXP/USB3_8_TXP C19
PCIE2_RXN/USB3_8_RXN E17
PCIE2_RXP/USB3_8_RXP G17
PCIE3_RXN/USB3_9_RXN L17
PCIE3_RXP/USB3_9_RXP K17
PCIE3_TXN/USB3_9_TXN B20
PCIE3_TXP/USB3_9_TXP C20
PCIE4_RXN/USB3_10_RXN E20
PCIE4_RXP/USB3_10_RXP G19
PCIE4_TXN/USB3_10_TXN B21
PCIE4_TXP/USB3_10_TXP A21
PCIE5_RXN K19
PCIE5_RXP L19
PCIE5_TXN D22
PCIE5_TXP C22
PCIE6_RXN G22
PCIE6_RXP E22
PCIE6_TXN B22
PCIE6_TXP A23
PCIE7_RXN L22
PCIE7_RXP K22
PCIE7_TXN C23
PCIE7_TXP B23
PCIE8_RXN K24
PCIE8_RXP L24
PCIE8_TXN C24
PCIE8_TXP B24

TP24 TP25 TP26 TP27 TP28

PCIe/USB 3

USB2N_1 AF5 → USBP1- 30
USB2P_1 AG7 → USBP1+ 30
USB2N_2 AD5 → USBP2- 30
USB2P_2 AD7 → USBP2+ 30
USB2N_3 AG8 → USBP3- 30
USB2P_3 AG10 → USBP3+ 30
USB2N_4 AE1 → USBP4- 26
USB2P_4 AE2 → USBP4+ 26
USB2N_5 AC2 → USBP5- 34
USB2P_5 AC3 → USBP5+ 34
USB2N_6 AF2
USB2P_6 AF3
USB2N_7 AB3 → USBP7- 33
USB2P_7 AB2 → USBP7+ 33
USB2N_8 AL8
USB2P_8 AL7
USB2N_9 AA1
USB2P_9 AA2
USB2N_10 AJ8
USB2P_10 AJ7
USB2N_11 Y2
USB2P_11 Y3
USB2N_12 AD3
USB2P_12 AD2
USB2N_13 Y2
USB2P_13 Y1
USB2N_14 AJ11
USB2P_14 AJ13

USB 2.0

USB2.0 Combo USB3.0 MB-1
USB2.0 Combo USB3.0 Small Board
USB2.0 USB2.0 Small Board
HD / IR CAM
IR CAM
WLAN

DIS only

GPP_E9/USB2_OC0# AD43 DGPU_HOLD_RST# → DGPU_HOLD_RST# 12,19
GPP_E10/USB2_OC1# AD42 GPU_EVENT# → GPU_EVENT# 12,22
GPP_E11/USB2_OC2# AD39 DGPU_PWR_EN → DGPU_PWR_EN 12,51
GPP_E12/USB2_OC3# AC44 DGPU_PWROK → DGPU_PWROK 12,23,37,50
GPP_F15/USB2_OC8_4 Y43 USB_OC4#
GPP_F16/USB2_OC8_5 Y41 USB_OC5#
GPP_F17/USB2_OC8_6 W44 USB_OC6#
GPP_F18/USB2_OC8_7 W43 PCH_AOCS#

USB2_COMP AG3 USB2_COMP R80 113/F_4
USB2_VBUSSENSE AD10
RSVD_AB13 AB13
USB2_ID AG2
GPD7/RSVD BD14

R405 *1K_4 R406 *1K_4

If OTG is not implemented on the platform, then USB2_ID and USB2_VBUSSENSE should both be connected to ground.

DGPU_HOLD_RST# R68 *10K_4
DGPU_PWR_EN R69 10K_4
DGPU_PWROK R70 10K_4
SIO_EXT_SMI# R71 10K_4
EC_RCIN# R72 10K_4
+3V

USB_OC4# R74 10K_4
USB_OC5# R75 10K_4
USB_OC6# R76 10K_4
PCH_AOCS# R77 10K_4
+3V_DEEP_SUS

GFX Present
Rb R78 *100K_4 GPU_EVENT#
Ra R79 10K_4 +3V
BOM:UMA only
BOM:DIS only

	SG(Default)	UMA
Stuff	Ra	Rb
NC	Rb	Ra

Cardreader
WLAN
LAN

PCIE_RXN5_CARD 36
PCIE_RXP5_CARD 36
PCIE_TXN5_CARD 36
PCIE_TXP5_CARD 36
PCIE_RXN6_WLAN 33
PCIE_RXP6_WLAN 33
PCIE_TXN6_WLAN 33
PCIE_TXP6_WLAN 33
PCIE_RXN7_LAN 35
PCIE_RXP7_LAN 35
PCIE_TXN7_LAN 35
PCIE_TXP7_LAN 35

C207 0.1U/16V_4 PCIE_TXN5_CARD_C
C208 0.1U/16V_4 PCIE_TXP5_CARD_C
C209 0.1U/16V_4 PCIE_TXN6_WLAN_C
C210 0.1U/16V_4 PCIE_TXP6_WLAN_C
C211 0.1U/16V_4 PCIE_TXN7_LAN_C
C212 0.1U/16V_4 PCIE_TXP7_LAN_C

USB 2.0 PORT	
PORT1	USB2 MB
PORT2	USB2 DB
PORT3	USB2 DB
PORT4	HD /IR CAM (OPTION)
PORT5	IR CAM (OPTION)
PORT6	NC
PORT7	WLAN
PORT8	NC
PORT9-14	NC

USB 3.0 PORT	
PORT1	USB3 MB
PORT2	USB3 DB
PORT3	NC
PORT4	3D CAMERA

U2F — SPT-H_PCH

USB3.0 (M/B-1)
USB30_TX1- 30 → USB3_1_TXN C11
USB30_TX1+ 30 → USB3_1_TXP B11
USB30_RX1- 30 → USB3_1_RXN B7
USB30_RX1+ 30 → USB3_1_RXP A7

USB3.0 (Small Board)
USB30_TX2- 30 → USB3_2_TXN/SSIC_1_TXN B12
USB30_TX2+ 30 → USB3_2_TXP/SSIC_1_TXP A12
USB30_RX2- 30 → USB3_2_RXN/SSIC_1_RXN C8
USB30_RX2+ 30 → USB3_2_RXP/SSIC_1_RXP B8

TP29 → USB3_6_TXN B15, USB3_6_TXP C15, USB3_6_RXN K15, USB3_6_RXP K13
TP30 → USB3_5_TXN B14, USB3_5_TXP C14, USB3_5_RXN G13, USB3_5_RXP H13
TP8513 → USB3_3_TXP/SSIC_2_TXP D13, USB3_3_TXN/SSIC_2_TXN C13, USB3_3_RXP/SSIC_2_RXP A9, USB3_3_RXN/SSIC_2_RXN B10

USB3.0 (3D Camera)
USB30_TX4+ 31 → USB3_4_TXP B13
USB30_TX4- 31 → USB3_4_TXN A14
USB30_RX4+ 31 → USB3_4_RXP G11
USB30_RX4- 31 → USB3_4_RXN E11

LPC/eSPI
USB
SATA

GPP_A1/LAD0/ESPI_IO0 AT22 → LAD0 33,34,37
GPP_A2/LAD1/ESPI_IO1 AV22 → LAD1 33,34,37
GPP_A3/LAD2/ESPI_IO2 AT19 → LAD2 33,34,37
GPP_A4/LAD3/ESPI_IO3 BD16 → LAD3 33,34,37
GPP_A5/LFRAME#/ESPI_CS0# BE16 → LFRAME# 33,34,37
GPP_A6/SERIRQ/ESPI_CS1# BA17 SERIRQ → SERIRQ 34,37
GPP_A7/PIRQA#/ESPI_ALERT0# AW17 BOARD_ID8 → BOARD_ID8 18
GPP_A0/RCIN#/ESPI_ALERT1# AT17 → EC_RCIN# 37
GPP_A14/SUS_STAT#/ESPI_RESET# BC18 BOARD_ID7 → BOARD_ID7 18
GPP_A9/CLKOUT_LPC0/ESPI_CLK BC17 CLK_PCI_EC_R
GPP_A10/CLKOUT_LPC1 AV19 CLK_PCI_LPC_R
GPP_G19/SMI# M45
GPP_G18/NMI# N43 → SIO_EXT_SMI# 37
GPP_E6/DEVSLP2 AE45
GPP_E5/DEVSLP1 AG43 GC6_FB_EN → GC6_FB_EN 28
GPP_E4/DEVSLP0 AG42 DEVSLP0 → DEVSLP0 33
GPP_F9/DEVSLP7 AB39
GPP_F8/DEVSLP6 AB36
GPP_F7/DEVSLP5 AB43
GPP_F6/DEVSLP4 AB42
GPP_F5/DEVSLP3 AB41

R81 8.2K_4 +3V
R82 22/F_4
R83 22/F_4
R84 *22/F_4
EC1 18P/50V_4
EC2 18P/50V_4
CLK_24M_KBC 37
CLK_24M_DEBUG 33
CLK_PCI_TPM 34
EMI(near PCH)
Ra
For SSD (SATA0A)
Place to PCH
BOM: HW TPM need Ra, Rc Stuff

SPT_PCH_H
2 OF 12
6 OF 12

+5VS5 26,28,30,41,42,43,44,45,46,47,48,49,50,51
+3V_RTC_2 12,14
+3VS5 12,14,16,26,33,37,41,42,46,47,48,51
+3V_DEEP_SUS 9,12,13,14,16,18
+3V 5,9,11,12,13,14,16,17,18,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+1.2VSUS 2,6,17,18,42,46,48,51
+1.0V 2,5,6,16,37,48

1126 Correct des. from CAP CHIP 10P 16V(+-20%,X7R,0402) to CAP CHIP 10P 50V(+-5%,C0G,0402)

HDA Bus(CLG)

28 BIT_CLK_AUDIO — R85 33_4 — ACZ_BCLK
28 ACZ_RST#_AUDIO — R86 33_4 — ACZ_RST#
28 ACZ_SDOUT_AUDIO — R88 33_4 — ACZ_SDOUT
28 ACZ_SYNC_AUDIO — R89 33_4 — ACZ_SYNC
R87 *1M_4

C213 *10P/50V_4 — Reserve for EMI

ACZ_SDIN0 28
ACZ_SDOUT 12

3 AUD_AZACPU_SDO_R — R91 30_4 — AUD_AZACPU_SDO
3 AUD_AZACPU_SDI — AUD_AZACPU_SDI
3 AUD_AZACPU_SCLK — R93 30_4 — AUD_AZACPU_SCLK_R

+3V_DEEP_SUS
R92 2.2K_4 SMB_ME0_CLK
R94 2.2K_4 SMB_ME0_DAT
R95 2.2K_4 SMB_ME1_CLK
R96 2.2K_4 SMB_ME1_DAT
R97 2.2K_4 SMB_PCH_CLK
R98 2.2K_4 SMB_PCH_DAT
R101 10K_4 RF_OFF_PCH
R103 *10K_4 SUSWARN#
R104 *10K_4 SUSACK#

37 GPIO33_EC — R110 1K_4 — ACZ_SDOUT

+3V_DEEP_SUS — R102 *4.7K_4 — ACZ_SDOUT

RTC_RST# — SRTC_RST#
16,37 EC_PWROK — 37 RSMRST# — RSMRST#
12 SML0ALERT# — DSWROK_EC_R
12 DRAMRST_CNTRL_PCH
12 SML1ALERT#_R — TP35

EMI

RSMRST# C215 *220P/50V_4
EC_PWROK C216 *220P/50V_4
BIT_CLK_AUDIO C214 *33P/50V_4

U2D (SPT-H_PCH)

HDA_BCLK, HDA_RST#, HDA_SDI0, HDA_SDI1, HDA_SDO, HDA_SYNC, RSVD_BD1, RSVD_BE2, DISPA_SDO, DISPA_SDI, DISPA_BCLK
GPP_D8/I2S0_SCLK, GPP_D7/I2S0_RXD, GPP_D6/I2S0_TXD, GPP_D5/I2S0_SFRM, GPP_D20/DMIC_DATA0, GPP_D19/DMIC_CLK0, GPP_D18/DMIC_DATA1, GPP_D17/DMIC_CLK1
RTCRST#, SRTCRST#, PCH_PWROK, RSMRST#, DSW_PWROK
GPP_C2/SMBALERT#, GPP_C0/SMBCLK, GPP_C1/SMBDATA, GPP_C5/SML0ALERT#, GPP_C3/SML0CLK, GPP_C4/SML0DATA, GPP_B23/SML1ALERT#/PCHHOT#, GPP_C6/SML1CLK, GPP_C7/SML1DATA
SMBUS, JTAG
4 OF 12
SPT_PCH_H

GPP_A12/BMBUSY#/ISH_GP6/SX_EXIT_HOLDOFF# — BB17
GPP_A8/CLKRUN# — AW22 — TP31 — CLKRUN# 37
GPD11/LANPHYPC — AR15 — LAN_DISABLE — TP32
GPD9/SLP_WLAN# — AV13 — TP33
DRAM_RESET# — BC14 — DDR4_DRAMRST# — DDR4_DRAMRST# 17,18
GPP_B2/VRALERT# — BD23 — GPP_B2
GPP_B1 — AL27
GPP_B0 — AR27
GPP_G17/ADR_COMPLETE — AM4
GPP_B11 — AN24
SYS_PWROK — AY1 — SYS_PWROK — SYS_PWROK 16
WAKE# — BC13 — PCIE_WAKE# — PCIE_WAKE# 33,35,36
GPD6/SLP_A# — BC15 — SLP_A# 16
SLP_LAN# — AV15
GPP_B12/SLP_S0# — BC26 — PCH_SLP_S0_N — PCH_SLP_S0_N 16
GPD4/SLP_S3# — AW15 — SUSB# 16,37
GPD5/SLP_S4# — BD15 — SUSC# 16,37
GPD10/SLP_S5# — BA13 — SLP_S5# 16
GPD8/SUSCLK — AN15
GPD0/BATLOW# — BD13 — RF_OFF_PCH — TP8522 — RF_OFF_PCH 33
GPP_A15/SUSACK# — BB19 — SUSACK# — R105 0_4 — SUSACK#_EC 37
GPP_A13/SUSWARN#/SUSPWRDNACK — BD19 — SUSWARN# — R106 0_4 — SUSWARN#_EC 37
R107 *0_4 SUSWARN#
GPD2/LAN_WAKE# — BD11 — LAN_WAKE#
GPD1/ACPRESENT — BB15 — AC_PRESENT_EC — AC_PRESENT_EC 37
SLP_SUS# — BB13 — SLP_SUS#_EC 37
GPD3/PWRBTN# — AT13 — DNBSWON# — DNBSWON# 37
SYS_RESET# — AW1 — SYS_RESET# 16
GPP_B14/SPKR — BD26 — ACZ_SPKR — ACZ_SPKR 12,28
PROCPWRGD — AM3 — PROCPWRGD 2
ITP_PMODE — AT2 — ITP_PMODE — R113 1K_4 — +1.0V_DEEP_SUS
JTAGX — AR3 — JTAGX_PCH — JTAGX_PCH 16
JTAG_TMS — AR2 — JTAG_TMS_PCH — JTAG_TMS_PCH 16
JTAG_TDO — AP1 — JTAG_TDO_PCH — JTAG_TDO_PCH 16
JTAG_TDI — AP2 — JTAG_TDI_PCH — JTAG_TDI_PCH 16
JTAG_TCK — AN3 — JTAG_TCK_PCH — JTAG_TCK_PCH 16

+1.2VSUS — R90 470/F_4 — DDR4_DRAMRST#
+3V — SYS_RESET# R99 10K_4 — GPP_B2 R100 10K_4
+1.0V — R111 *210/F_4, R108 *210/F_4, R109 51_4 — JTAG_TMS_PCH, JTAG_TDI_PCH, JTAG_TDO_PCH, JTAG_TCK_PCH
R115 *100/F_4, R114 *100/F_4, R116 *100/F_4, R117 *51_4

Q1 *2N7002DW
5,18,37 MBCLK2 — SMB_ME1_CLK
5,18,37 MBDATA2 — SMB_ME1_DAT

Q4 2N7002KDW
+3V R122 4.7K_4 — 16,17,18,38 SMB_RUN_DAT — SMB_PCH_DAT
+3V R123 4.7K_4 — 16,17,18,38 SMB_RUN_CLK — SMB_PCH_CLK

CPU heat pipe local thermal sensor
DDR thermal sensor
EC

Touch Pad
XDP
DDR4

System PWR_OK(CLG)

SYS_PWROK — R118 0_4 — EC_PWROK
R120 10K/F_4

For DS3 Sequence

For DS3 -->Ra
Non-DS3 -->Rb
Rb

RSMRST# — R119 *0_4
37 DSWROK_EC — R121 0_4 — DSWROK_EC_R

Ra

RTC Circuitry(RTC)

1124 Change footprint from BAT-23_2-4_2 to bat-ap-aaa-bat-054-k01-2p-smt for SMT request

RTC Power trace width 20mils.

+3V_RTC_2
R337 0_4
J1 *SOLDERJUMPER-2
R131 20K/F_4
C217 1U/6.3V_4
R135 20K/F_4
C220 1U/6.3V_4
C219 1U/6.3V_4
+3V_RTC_0 — R138 1K_4 — +3VPCU — +3V_RTC_1
D1 BAT54CW-7-F
CN2 BAT_CONN DFHS02FS027 bat-ap-aaa-bat-054-k01-2p-smt
RTC_RST# — RTC_RST# 16
Q6 2N7002K
EC_RTC_RST 37
R136 10K_4
SRTC_RST#
RTC_RST# — R139 *0_6 — SRTC_RST#

For HWPG Sequence

+5VS5 — R126 *10K_4
+1.0V — R130 15K/F_4
R128 100K_4
HWPG — HWPG 2,16,37,41,42,47,48
+1.0V_PWRGD_G2 — Q5 2N7002K
+1.0V_PWRGD_G1 — Q7 METR3904-G
R133 100K_4
C218 0.1U/16V_4
R137 100K_4

+3VS5
Add LAN_WAKE#(check)
R124 *10K_4 LAN_WAKE#
R125 1K_4 PCIE_WAKE#
R127 *10K_4 AC_PRESENT_EC
+3V — R129 8.2K/F_4 CLKRUN#

RSMRST# — R132 10K_4
DSWROK_EC — R134 100K_4

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	10 -- PCH 2/7 (HDA/SMBUS)	1A
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+3V 5,9,10,12,13,14,16,17,18,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+1.0V_DEEP_SUS 10,14,16,47,48

HSIO MUX PORT	
PCIE1-4	NC
PCIE5	Cardreader
PCIE6	Wlan
PCIE7	Lan
PCIE8	NC
PCIE9/SATA0A	SSD PCIE x 4
PCIE10	
PCIE11	
PCIE12	
PCIE13	NC
PCIE14	HDD-1
PCIE15	HDD-2
PCIE16	ODD
PCIE17	NC
PCIE18-20	NC

SSD PCIE x4 LANE

HDD-1 (SATA1B 6Gb/s)

SSD PCIE x4 LANE

SSD PCIE x4 (SATA0A) LANE

SSD PCIE x4 LANE

HDD-2 (SATA2 6Gb/s)

ODD (SATA3 3.0Gb/s)

GPIO35:
SSD SATA IF => High
SSD PCIE IF => Low

For SSD Det (SATA0A)

BOM:SSD only

The 24 MHz (50 Ohm ESR) XTAL used for Skylake-H
needs to be replaced by 38.4 MHz (30 Ohm ESR) XTAL for Cannonlake-H.

1123 Change Y1 P/N from 16pF to 20pF

Crystal Components with Surrounding 10 mil Wide GND Shield Trace
Break Out:4-10 mil Wide GND Shield Trace

Card Reader

WLAN

LAN

VGA

SSD

BOM:DIS only

BOM:SSD only

RTC Clock 32.768KHz

12/28 Change C223, C224 PN from CH01806JB07 to CH01506JB06 for XTAL vendor suggest

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	11 – PCH 3/7 (SATA/LPC/CLK)	1A
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+3V_RTC_2 10,14
+3VS5 10,14,16,26,33,37,41,42,46,47,48,51
+3V_DEEP_SUS 9,10,13,14,16,18
+3V 5,9,10,11,13,14,16,17,18,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49

U2A SPT-H_PCH

TP44 PCI_PME# BD17 GPP_A11/PME#
AG15 RSVD
AG12 RSVD
AF10 RSVD
AE11 RSVD
AR19 TP2
AN17 TP1
PCH_SPI1_SI BB29 SPI0_MOSI
PCH_SPI1_SO BE30 SPI0_MISO
PCH_SPI_CS0# BD31 SPI0_CS0#
PCH_SPI1_CLK BC31 SPI0_CLK
AW31 SPI0_CS1#
PCH_SPI_IO2 BC29 SPI0_IO2
PCH_SPI_IO3 BD30 SPI0_IO3
AT31 SPI0_CS2#
AN36 GPP_D1/SPI1_CLK
AL39 GPP_D0/SPI1_CS#
AN41 GPP_D3/SPI1_MOSI
AN38 GPP_D2/SPI1_MISO
AH43 GPP_D22/SPI1_IO3
AG42 GPP_D21/SPI1_IO2
SPT_PCH_H 1 OF 12

BB27 GPP_B13/PLTRST# PLTRST# PLTRST# 2,16,19,33,34,35,36,37
R167 100K_4
P43 GPP_G16/GSXCLK
R39 GPP_G12/GSXDOUT
R36 GPP_G13/GSXSLOAD
R42 GPP_G14/GSXDIN
R41 GPP_G15/GSXSRESET#
AF41 GPP_E3/CPU_GP0
AE44 GPP_E7/CPU_GP1
BC23 GPP_B3/CPU_GP2
BD24 GPP_B4/CPU_GP3
BC36 GPP_H18/SML4ALERT# SML4ALERT# TP45
BE34 GPP_H17/SML4DATA SMB_ME4_DAT
BD39 GPP_H16/SML4CLK SMB_ME4_CLK
BB36 GPP_H15/SML3ALERT# SML3ALERT# TP46
BA35 GPP_H14/SML3DATA SMB_ME3_DAT
BC35 GPP_H13/SML3CLK SMB_ME3_CLK
BD35 GPP_H12/SML2ALERT# SML2ALERT#
AW35 GPP_H11/SML2DATA SMB_ME2_DAT
BD34 GPP_H10/SML2CLK SMB_ME2_CLK
BE11 INTRUDER# SM_INTRUDER# R335 1M_4 +3V_RTC_2

PLTRST#(CLG)

BOM:3D CAM only

3D_FW_GPIO_R R173 0_4 TP8523 3D_FW_GPIO 31

SMB_ME4_CLK R169 499/F_4
SMB_ME4_DAT R170 499/F_4
SMB_ME3_CLK R172 499/F_4
SMB_ME3_DAT R174 499/F_4
SMB_ME2_CLK R175 499/F_4
SMB_ME2_DAT R177 499/F_4
+3V_DEEP_SUS

PCH Strap Pin

PCH SPI ROM(CLG)

TP47 PCH_SPI_CS0#_R
TP48 PCH_SPI1_CLK_R
TP49 PCH_SPI1_SI_R
TP50 PCH_SPI1_SO_R
TP51 BIOS_WP#
TP52 HOLD#

Place to BOT

37 PCH_SPI_CS0#_R → PCH_SPI_CS0#_R
37 PCH_SPI1_CLK_R → PCH_SPI1_CLK_R
37 PCH_SPI1_SI_R → PCH_SPI1_SI_R
37 PCH_SPI1_SO_R → PCH_SPI1_SO_R

PCH_SPI_CS0# R201 15/F_4 PCH_SPI_CS0#_R
PCH_SPI1_CLK R202 15/F_4 PCH_SPI1_CLK_R
PCH_SPI1_SI R203 15/F_4 PCH_SPI1_SI_R
PCH_SPI1_SO R205 15/F_4 PCH_SPI1_SO_R

U5
CE# VDD +3VSPI
SCK
SI
SO HOLD# HOLD#
WP# VSS
W25Q64FVSSIQ
AKE3EFP0N07

+3VS5 R197 *0_4
+3V_DEEP_SUS R200 0_4
R204 1K_4
R206 15/F_4
PCH_SPI_IO3
C226 0.1U/16V_4
C225 22P/50V_4
C227 1U/6.3V_4 +3VSPI R211 1K_4
PCH_SPI_IO2 R212 15/F_4 BIOS_WP#

1123 Change U5 P/N from Socket to ROM

Vender	Size	P/N
EON	8MB	AKE3EZN0Q01 (EN25QH64-104HIP)
Winbond	8MB	AKE3EFP0N07 (W25Q64FVSSIQ)
GigaDevice	8MB	AKE2EZN0Q00(GD25B64CSIGR)
Socket		DFHS08FS023

RESERVED

This strap should sample HIGH.
There should NOT be any on-board device driving it to opposite direction during strap sampling.

+3V_DEEP_SUS R166 *20K/F_4 PCH_SPI1_SO R171 *4.7K_4

ESPI FLASH SHARING MODE

HIGH:SLAVE ATTACEHD FLASH SHARING
LOW: 0: MASTER ATTACHED FLASH SHARING
This strap should sample LOW.
There should NOT be any on-board device driving it to opposite direction during strap sampling.

+3V_DEEP_SUS R168 *4.7K_4 SML2ALERT# R176 *20K/F_4

BOOT SELECT STRAP

HIGH:LPC
LOW: SPI. (Default)

+3V_DEEP_SUS R184 *4.7K_4 13 S_GPIO S_GPIO R186 *20K/F_4

RESERVED

This strap should sample HIGH.
There should NOT be any on-board device driving it to opposite direction during strap sampling.

+3V_DEEP_SUS R208 *20K/F_4 PCH_SPI1_SI R214 *4.7K_4

DFX TEST MODE QUALIFIER FOR OTHER DFX STRAP WHEN SAMPLED LOW

+3V_DEEP_SUS R180 *1K_4 15 PGDMON PGDMON R182 *1K_4

DFX TEST MODE

XTAL INPUT IS SINGLE ENDED IF SAMPLED LOW ELSE DIFFERENTIAL

+3V_DEEP_SUS R188 *10K_4 9,23,37,50 DGPU_PWROK DGPU_PWROK R190 *10K_4

TOP SWAP OVERRIDE STRAP

HIGH:TOP SWAP ENABLED (CRB)
LOW:TOP SWAP DISABLED(DEFAULT)

+3V R183 *150K/F_4 10,28 ACZ_SPKR ACZ_SPKR R185 *20K/F_4

TLS CONFIDENTIALITY ENABLED

HIGH: Flash Descriptor Security (override). This strap should only be asserted high using external pull-up in manufacturing/debug environments ONLY.(CRB)
LOW: security measures defined in the Flash Descriptor. (Default)

+3V_DEEP_SUS R210 *1K_4 10 ACZ_SDOUT ACZ_SDOUT R215 1K_4

RESERVED

This strap should sample HIGH.
There should NOT be any on-board device driving it to opposite direction during strap sampling.

+3V_DEEP_SUS R187 *20K/F_4 PCH_SPI_IO2 R189 *4.7K_4

RESERVED

This strap should sample HIGH.
There should NOT be any on-board device driving it to opposite direction during strap sampling.

+3V_DEEP_SUS R193 *20K/F_4 PCH_SPI_IO3 R198 *100_4

RING OSCILLATOR BYPASS

9,19 DGPU_HOLD_RST# DGPU_HOLD_RST# R194 100K_4

XTAL INPUT FREQUENCY[0]

9,22 GPU_EVENT# GPU_EVENT# R199 *10K_4

XTAL INPUT FREQUENCY[1]

9,51 DGPU_PWR_EN DGPU_PWR_EN R209 *10K_4

NO REBOOT IF SAMPLED HIGH

HIGH:TOP SWAP ENABLED (CRB)
LOW: Disable "No Reboot" mode. (Default)

+3V R191 4.7K_4 13 BBS_BIT1 BBS_BIT1 R195 *20K/F_4

ESPI/LPC SELECT STRAP

HIGH:eSPI Is selected for EC.
LOW: LPC Is selected for EC. (Default)

+3V_DEEP_SUS R192 *4.7K_4 10 DRAMRST_CNTRL_PCH DRAMRST_CNTRL_PCH R196 4.7K_4

TLS CONFIDENTIALITY ENABLED

HIGH:T Enable Intel ME Crypto Transport Layer Security (TLS) cipher suite (with confidentiality). (CRB)
LOW: Disable Intel ME Crypto Transport Layer Security (TLS) cipher suite (no confidentiality). (Default)

+3V_DEEP_SUS R207 4.7K_4 10 SML0ALERT# SML0ALERT# R213 *20K/F_4

RESERVED

This strap should sample LOW.
There should NOT be any on-board device driving it to opposite direction during strap sampling.

+3V_DEEP_SUS R178 *4.7K_4 10 SML1ALERT#_R SML1ALERT#_R R181 *20K/F_4

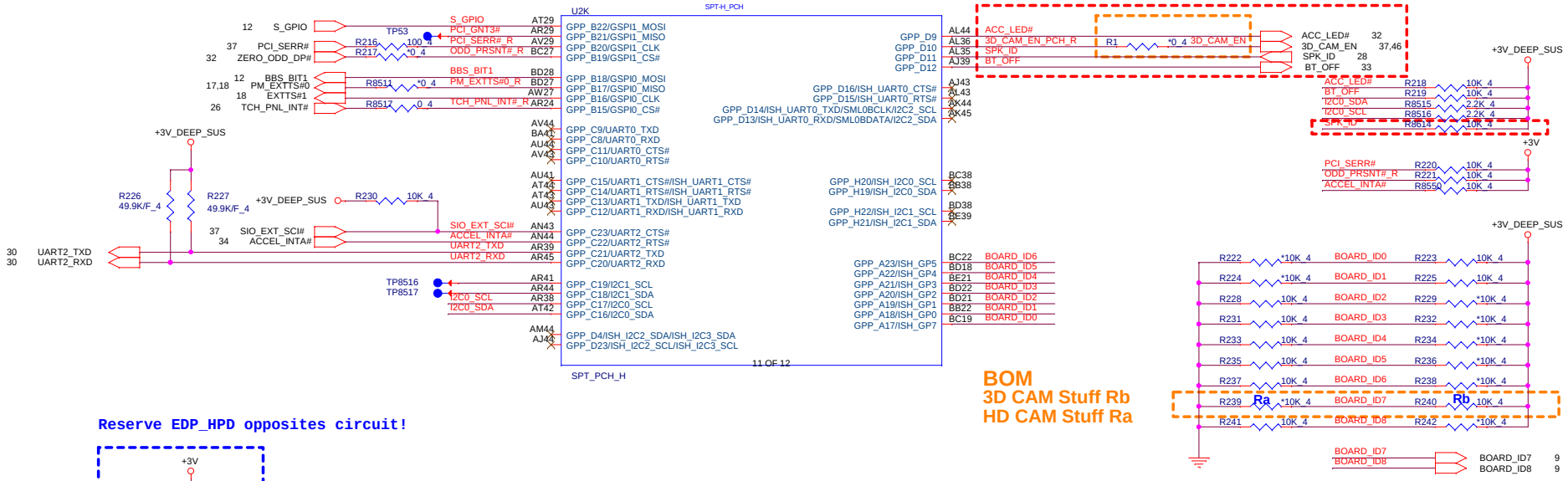
PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	12 -- PCH 4/7 (GPIO/MISC)	1A
Date: Monday, December 28, 2015	Sheet 12 of 51	

+3V_DEEP_SUS 9,10,12,14,16,18
+3V 5,9,10,11,12,14,16,17,18,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49

1123 Change PCH GPP_D11 Net name from RF_OFF to SPK_ID and PU10K to +3V_DEEP_SUS for SPK Vendor ID used

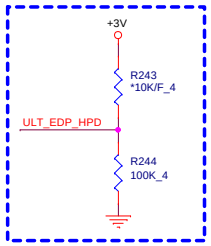
3D CAMERA
BOM: 3D CAM Un-Stuff (EN will from EC control)

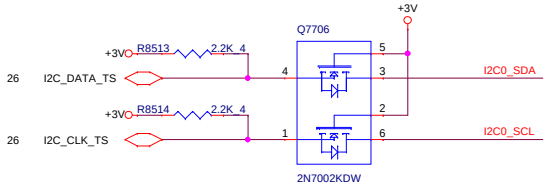


BOM
3D CAM Stuff Rb
HD CAM Stuff Ra

Ra
Rb

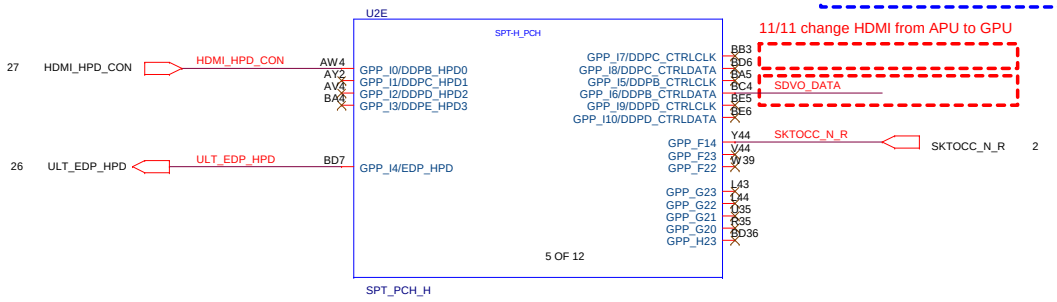
Reserve EDP_HPD opposites circuit!



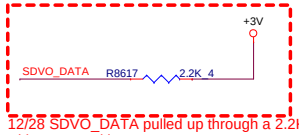


Model	BOARD_ID[8:7] ID8;ID7	BOARD_ID[6:5] ID6;ID5	Board ID [4:3] ID4;ID3	BOARD_ID[2:1] ID2;ID1	BOARD_ID0 ID0
Definition	00 Non 3D CAM 01 3D CAM	00 Reserved	Reserved	00 15" P SKL H 01 17" P SKL H 10 17" SP SKL H 11 17" KBL H	0 : UMA 1 : DIS

This signal has a weak internal pull-down.
0 = Port C and D is not detected.
1 = Port C and D is detected.



11/11 change HDMI from APU to GPU



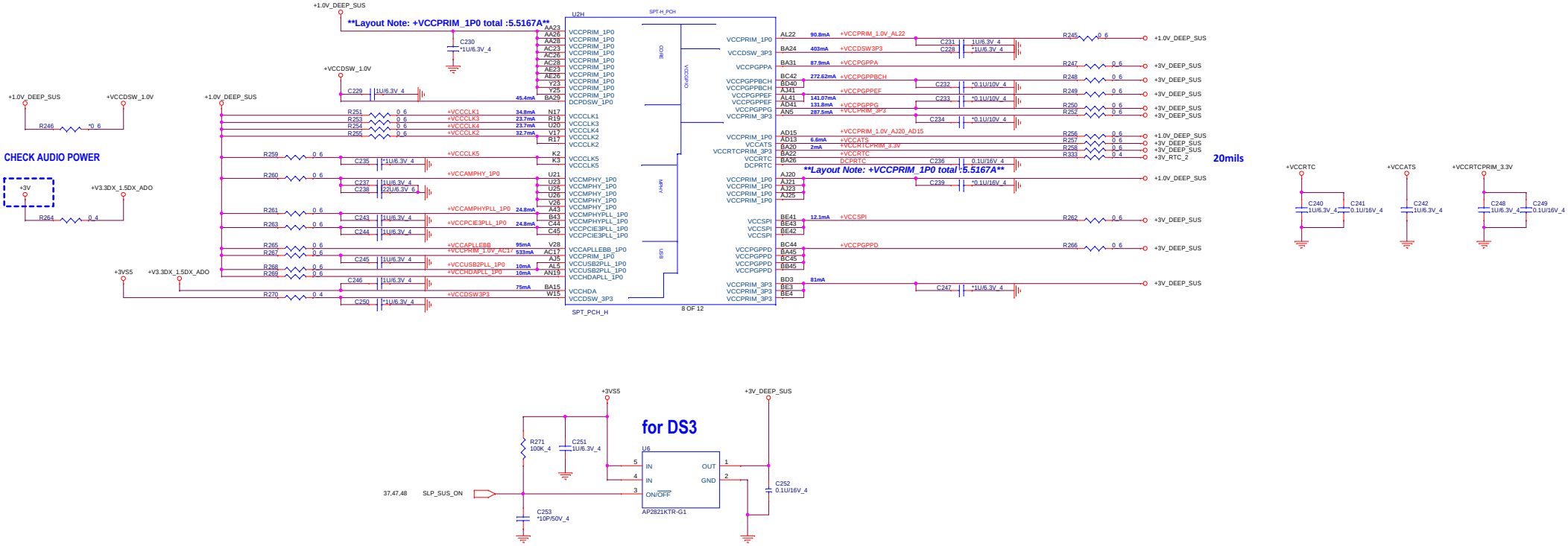
12/28 SDVO_DATA pulled up through a 2.2KΩ ±5% pull-up to 3.3V for Panel brightness without control issue

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	13 -- PCH 5/7 (GPIO)	1A

Date: Monday, December 28, 2015 Sheet 13 of 51

+3V_RTC_2 10,12
+3VS5 10,12,16,26,33,37,41,42,46,47,48,51
+3V_DEEP_SUS 9,10,12,13,16,18
+3V 5,9,10,11,12,13,16,17,18,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+1.0V_DEEP_SUS 10,11,16,47,48



PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	14 -- PCH 6/7 (POWER)	1A

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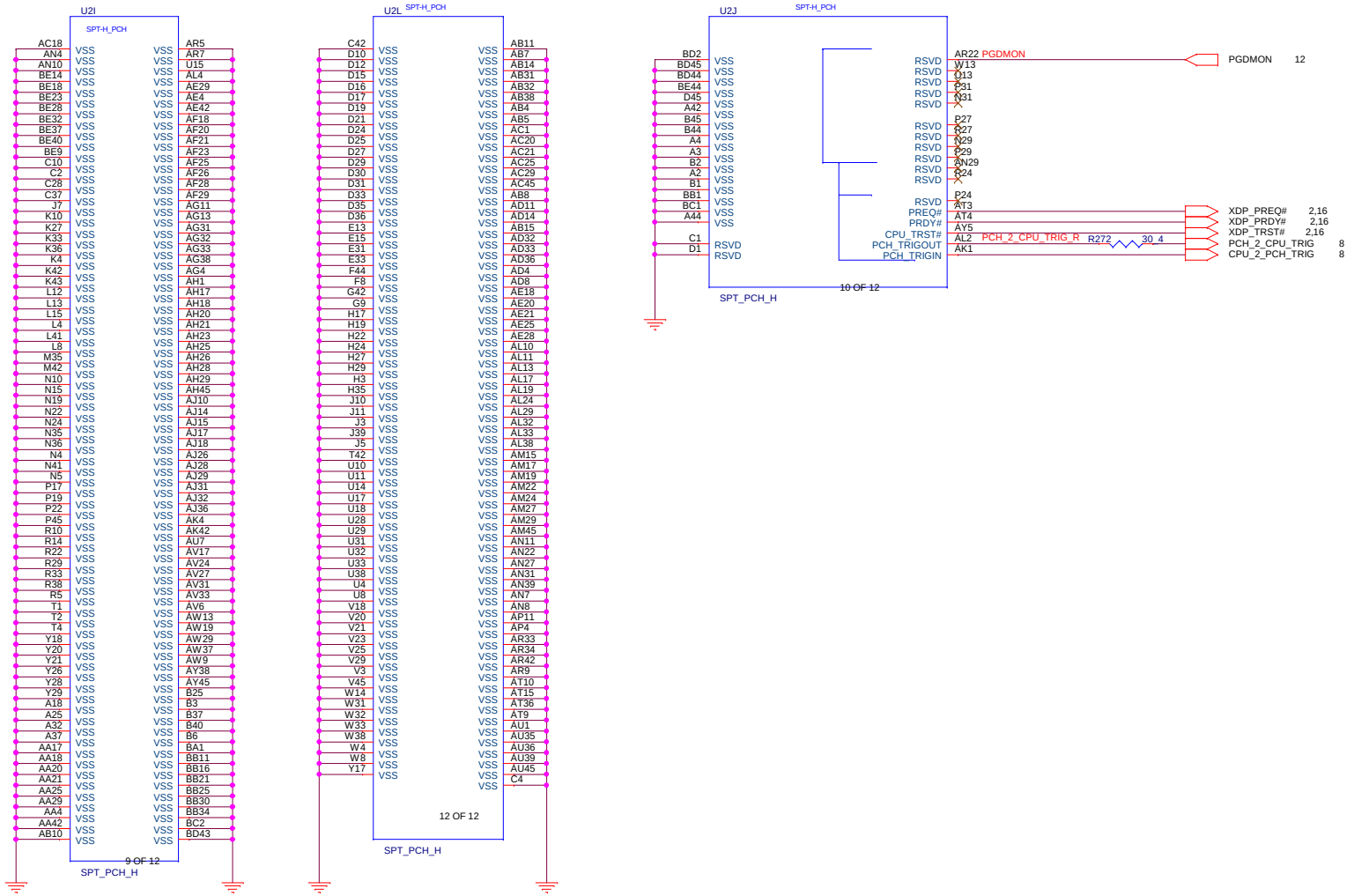

PROJECT : G37A/G37B		
Quanta Computer Inc.		
Size: Custom	Document Number: 15 -- PCH 7/7 (GND)	Rev: 1A
Date: Monday, December 28, 2015	Sheet 15 of 51	

1123 Change XDP Circuit from I to NI

+3VS5 10,12,14,26,33,37,41,42,46,47,48,51
+3V_DEEP_SUS 9,10,12,13,14,18
+3V 5,9,10,11,12,13,14,17,18,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+1.0V_DEEP_SUS 10,11,14,47,48
+VCCIO 3,6,48
+1.0V 2,5,6,10,37,48

CPU XDP

CN3 — *Samtec BSH-030-01

2,15	XDP_PREQ#	3	OBSFN_A0	VCC_OBS_CD	44
2,15	XDP_PRDY#	5	OBSFN_A1	VCC_OBS_AB	43
2	CFG0	9	OBSDATA_A0	OBSFN_B0	21
2	CFG1	11	OBSDATA_A1	OBSFN_B1	23
2,8	CFG2	15	OBSDATA_A2	OBSFN_C0	4
2,8	CFG3	17	OBSDATA_A3	OBSFN_C1	6
2,8	CFG4	27	OBSDATA_B0	OBSDATA_C0	10
2,8	CFG5	29	OBSDATA_B1	OBSDATA_C1	12
2,8	CFG6	33	OBSDATA_B2	OBSDATA_C2	16
2	CFG7	35	OBSDATA_B3	OBSDATA_C3	18
16	ON/OFFBTN_KBC#	41	HOOK1	OBSDATA_D0	22
		45	HOOK2	OBSDATA_D1	24
11	CK_XDP_P	40	ITPCLK/HOOK4	OBSDATA_D2	28
11	CK_XDP_N	42	ITPCLK#/HOOK5	OBSDATA_D3	30
10,17,18,38	SMB_RUN_DAT	48	DBR#/HOOK7	HOOK3	34
10,17,18,38	SMB_RUN_CLK	51	SDA	TCK1	36
		53	SCL	PWRGOOD/HOOK0	47
		52	TDO	RESET#/HOOK6	55
		54	TRSTN		39
		56	TDI		46
		58	TMS	GND0	1
		57	TCK0	GND1	2
		60	GND17	GND2	7
		59	GND16	GND3	8
		50	GND15	GND4	13
		49	GND14	GND5	14
		38	GND13	GND6	19
		37	GND12	GND7	20
		32	GND11	GND8	25
		31	GND10	GND9	26

R273 *1K_4 CFG0
R274 *1K_4 CFG1
R275 *1K_4 PWR_DEBUG
R276 *0_4 XDP_DBRESET_N → SMB_RUN_DAT_XDP
R277 *0_4 SMB_RUN_CLK_XDP
XDP_TDO, XDP_TRST#, XDP_TDI, XDP_TMS, XDP_TCK0

TP56, TP57, TP58

XDP_BPM0 2
XDP_BPM1 2
CFG17 2
CFG16 2
CFG8 2
CFG9 2
CFG10 2,8
CFG11 2
CFG19 2
CFG18 2
CFG12 2,8
CFG13 2,8
CFG14 2
CFG15 2
EC_PWROK 10,37
XDP_TCK1
SYS_PWROK 10,16
XDP_RST R278 *1K_4
PLTRST# 2,12,16,19,33,34,35,36,37

XDP_DBRESET_N R279 *1K_4 +3V
C254 *0.1U/16V_4

SYS_PWROK R280 *1K_4 +3V_DEEP_SUS
C257 *0.1U/16V_4

+1.0V_DEEP_SUS
C255 *0.1U/16V_4
C256 *0.1U/16V_4

+VCCIO
R281 150/F_4
PWR_DEBUG
R282 *10K_4

APS

CN1 — *ACES_88511-180N

1	+3V_DEEP_SUS	
2	+3VS5	
3		
4	SUSB#	10,16,37
5	SLP_S5#	10
6	SUSC#	10,37
7	SLP_A#	10
8		
9	RTC_RST#	10
10		
11	ON/OFFBTN_KBC#	16
12	SYS_RESET#	10
13		
14	R283 *0_4 PCH_SLP_S0_N	10
15		
16		
17		
18	SUSB#	10,16,37

+3V
C258 *0.1U/16V_4

+1.0V
R284 *51_4 XDP_TDO
2,10,37,41,42,47,48 HWPG
TP59 XDP_TDI
TP60 XDP_TMS
2,15 XDP_TRST# XDP_TRST#

U7 — *SN74CBTLV3126RGYR

14	VCC		
2	1A	1B	3 XDP_TDO_CPU 2
1	1OE		
5	2A	2B	6 XDP_TDI_CPU 2
4	2OE		
9	3A	3B	8 XDP_TMS_CPU 2
10	3OE		
12	4A	4B	11 XDP_TRST#_CPU 2
13	4OE		
		DPAD	15
		GND	7

10,16 SYS_PWROK → SYS_PWROK
2,12,16,19,33,34,35,36,37 PLTRST# R340 *1K_4 XDP_RST

+1.0V
R347 *51_4
R345 *0_4 XDP_TDO

10	JTAGX_PCH	XDP_TCK0
10	JTAG_TMS_PCH	XDP_TMS
10	JTAG_TDI_PCH	XDP_TDI
10	JTAG_TDO_PCH	XDP_TDO
		R342 *0_4 XDP_TDI
		R344 *0_4 XDP_TCK0
10	JTAG_TCK_PCH	XDP_TCK1

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
	16 -- XDP & APS	1A
Date: Monday, December 28, 2015	Sheet 16 of 51	

+3V 5,9,10,11,12,13,14,16,18,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+2.5VSUS 18,42
+1.2VSUS 2,6,10,18,42,46,48,51
DDR_VTT 18,42

4 M_A_DQ[63:0]

JDIM1A

DDR4 SODIMM 260 PIN (260P)

4 M_A_A[13:0]
M_A_A0 144 A0
M_A_A1 133 A1
M_A_A2 132 A2
M_A_A3 131 A3
M_A_A4 128 A4
M_A_A5 126 A5
M_A_A6 127 A6
M_A_A7 122 A7
M_A_A8 125 A8
M_A_A9 121 A9
M_A_A10 146 A10/AP
M_A_A11 120 A11
M_A_A12 119 A12
M_A_A13 158 A13

4 M_A_WE# 151 A14/WE#
4 M_A_CAS# 156 A15/CAS#
4 M_A_RAS# 152 A16/RAS#

TP62 162 S2#/C0
TP61 165 S3#/C1

+1.2VSUS R286 240_4 PM_EXTTS#0 13,18 PM_EXTTS#0
4 M_A_ACT# 114 ACT#
4 M_A_PARITY 143 PARITY
4 M_A_ALERT# 116 ALERT#
134 EVENT#
10,18 DDR4_DRAMRST# 108 RESET#
C259 *0.1U/16V_4

+3V
R287 *10K_4 CHA_SA0
R288 *10K_4 CHA_SA1
R289 *10K_4 CHA_SA2
R290 10K_4
R291 10K_4
R292 10K_4

4 M_A_BS#0 150 BA0
4 M_A_BS#1 145 BA1
4 M_A_BG#0 115 BG0
4 M_A_BG#1 113 BG1

4 M_A_CS#0 149 S0#
4 M_A_CS#1 157 S1#
4 M_A_CKE0 109 CKE0
4 M_A_CKE1 110 CKE1

4 M_A_CLKP0 137 CK0
4 M_A_CLKN0 139 CK0#
4 M_A_CLKP1 138 CK1
4 M_A_CLKN1 140 CK1#

4 M_A_DIM0_ODT0 155 ODT0
4 M_A_DIM0_ODT1 161 ODT1

10,16,18,38 SMB_RUN_CLK SMB_RUN_CLK 253 SCL
10,16,18,38 SMB_RUN_DAT SMB_RUN_DAT 254 SDA

CHA_SA0 256 SA0
CHA_SA1 260 SA1
CHA_SA2 166 SA2

+1.2VSUS
R294 *240_4 M_A_CB0 92 CB0
R296 *240_4 M_A_CB1 91 CB1
R297 *240_4 M_A_CB2 101 CB2
R298 *240_4 M_A_CB3 105 CB3
R299 *240_4 M_A_CB4 88 CB4
R300 *240_4 M_A_CB5 87 CB5
R301 *240_4 M_A_CB6 100 CB6
R302 *240_4 M_A_CB7 104 CB7

+1.2VSUS
12 DM0
33 DM1
54 DM2
75 DM3
178 DM4
199 DM5
220 DM6
241 DM7
96 DM8

DQ0 8 M_A_DQ1
DQ1 7 M_A_DQ0
DQ2 20 M_A_DQ3
DQ3 21 M_A_DQ2
DQ4 4 M_A_DQ4
DQ5 3 M_A_DQ5
DQ6 16 M_A_DQ7
DQ7 17 M_A_DQ6
DQ8 28 M_A_DQ10
DQ9 29 M_A_DQ11
DQ10 41 M_A_DQ15
DQ11 42 M_A_DQ12
DQ12 24 M_A_DQ14
DQ13 25 M_A_DQ8
DQ14 38 M_A_DQ13
DQ15 37 M_A_DQ9
DQ16 50 M_A_DQ21
DQ17 49 M_A_DQ20
DQ18 62 M_A_DQ22
DQ19 63 M_A_DQ19
DQ20 46 M_A_DQ17
DQ21 45 M_A_DQ16
DQ22 58 M_A_DQ23
DQ23 59 M_A_DQ18
DQ24 70 M_A_DQ24
DQ25 71 M_A_DQ28
DQ26 83 M_A_DQ31
DQ27 84 M_A_DQ27
DQ28 66 M_A_DQ25
DQ29 67 M_A_DQ29
DQ30 79 M_A_DQ26
DQ31 80 M_A_DQ30
DQ32 174 M_A_DQ32
DQ33 173 M_A_DQ37
DQ34 187 M_A_DQ35
DQ35 186 M_A_DQ39
DQ36 170 M_A_DQ33
DQ37 169 M_A_DQ36
DQ38 183 M_A_DQ34
DQ39 182 M_A_DQ38
DQ40 195 M_A_DQ40
DQ41 194 M_A_DQ44
DQ42 207 M_A_DQ46
DQ43 208 M_A_DQ42
DQ44 191 M_A_DQ45
DQ45 190 M_A_DQ41
DQ46 203 M_A_DQ47
DQ47 204 M_A_DQ43
DQ48 216 M_A_DQ54
DQ49 215 M_A_DQ52
DQ50 228 M_A_DQ55
DQ51 229 M_A_DQ50
DQ52 211 M_A_DQ49
DQ53 212 M_A_DQ48
DQ54 224 M_A_DQ53
DQ55 225 M_A_DQ51
DQ56 237 M_A_DQ60
DQ57 236 M_A_DQ58
DQ58 249 M_A_DQ57
DQ59 250 M_A_DQ63
DQ60 232 M_A_DQ62
DQ61 233 M_A_DQ56
DQ62 245 M_A_DQ61
DQ63 246 M_A_DQ59

0
1
2
3
4
5
6
7

EZIW
DQS0 13 M_A_DQSP0
DQS1 34 M_A_DQSP1
DQS2 55 M_A_DQSP2
DQS3 76 M_A_DQSP3
DQS4 179 M_A_DQSP4
DQS5 200 M_A_DQSP5
DQS6 221 M_A_DQSP6
DQS7 242 M_A_DQSP7
DQS8 97 M_A_DQSP8

M_A_DQSP[7:0] 4

DQS#0 11 M_A_DQSN0
DQS#1 32 M_A_DQSN1
DQS#2 53 M_A_DQSN2
DQS#3 74 M_A_DQSN3
DQS#4 177 M_A_DQSN4
DQS#5 198 M_A_DQSN5
DQS#6 219 M_A_DQSN6
DQS#7 240 M_A_DQSN7
DQS#8 95 M_A_DQSN8

M_A_DQSN[7:0] 4

+1.2VSUS
R293 240_4 M_A_DQSP8
R295 240_4 M_A_DQSN8

Place these Caps near So-Dimm0.

+SMDDR_VREF_DQ0
C288 *0.1U/16V_4
C289 *2.2U/10V_6

+3V
C291 0.1U/16V_4
C292 2.2U/10V_6

4 SM_VREF
+1.2VSUS
R303 1K_4
R304 2/F_6
+SMDDR_VREF_DIMM
R305 1K_4
R306 24.9/F_4
C290 0.022U/25V_4

JDIM1B

DDR4 SODIMM 260 PIN (260P)

2.48A

+1.2VSUS
VDD1 111
VDD2 112
VDD3 117
VDD4 118
VDD5 123
VDD6 124
VDD7 129
VDD8 130
VDD9 135
VDD10 136
VDD11 141
VDD12 142
VDD13 147
VDD14 148
VDD15 153
VDD16 154
VDD17 159
VDD18 160
VDD19 163

VDDSPD 255 +3V
VPP1 257 +2.5VSUS
VPP2 259
VTT 258 DDR_VTT
VREF_CA 164 +SMDDR_VREF_DQ0 R285 0_6 +SMDDR_VREF_DIMM

VSS1 1
VSS2 5
VSS3 9
VSS4 15
VSS5 19
VSS6 23
VSS7 27
VSS8 31
VSS9 35
VSS10 39
VSS11 43
VSS12 47
VSS13 51
VSS14 57
VSS15 61
VSS16 65
VSS17 69
VSS18 73
VSS19 77
VSS20 81
VSS21 85
VSS22 89
VSS23 93
VSS24 99
VSS25 103
VSS26 107
VSS27 167
VSS28 171
VSS29 175
VSS30 181
VSS31 185
VSS32 189
VSS33 193
VSS34 197
VSS35 201
VSS36 205
VSS37 209
VSS38 213
VSS39 217
VSS40 223
VSS41 227
VSS42 231
VSS43 235
VSS44 239
VSS45 243
VSS46 247
VSS47 251

VSS48 2
VSS49 6
VSS50 10
VSS51 14
VSS52 18
VSS53 22
VSS54 26
VSS55 30
VSS56 36
VSS57 40
VSS58 44
VSS59 48
VSS60 52
VSS61 56
VSS62 60
VSS63 64
VSS64 68
VSS65 72
VSS66 78
VSS67 82
VSS68 86
VSS69 90
VSS70 94
VSS71 98
VSS72 102
VSS73 106
VSS74 168
VSS75 172
VSS76 176
VSS77 180
VSS78 184
VSS79 188
VSS80 192
VSS81 196
VSS82 202
VSS83 206
VSS84 210
VSS85 214
VSS86 218
VSS87 222
VSS88 226
VSS89 230
VSS90 234
VSS91 238
VSS92 244
VSS93 248
VSS94 252

GND 261
GND 262

+2.5VSUS
C260 1U/6.3V_4
C261 1U/6.3V_4
C262 10U/6.3V_6
C263 10U/6.3V_6

+1.2VSUS
C264 10U/6.3V_6
C265 10U/6.3V_6
C266 10U/6.3V_6
C267 10U/6.3V_6
C268 10U/6.3V_6
C269 10U/6.3V_6
C270 10U/6.3V_6
C271 10U/6.3V_6
C272 1U/6.3V_4
C273 1U/6.3V_4
C274 1U/6.3V_4
C275 1U/6.3V_4
C276 1U/6.3V_4
C277 1U/6.3V_4
C278 1U/6.3V_4
C279 1U/6.3V_4

DDR_VTT
C280 1U/6.3V_4
C281 1U/6.3V_4
C282 1U/6.3V_4
C283 1U/6.3V_4
C284 10U/6.3V_6
C285 10U/6.3V_6

Place these Caps near So-Dimm0.

1uF/10uF 4pcs on each side of connector

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	17 -- DDR4 DIMM0-STD(4.0H)	1A
Date: Monday, December 28, 2015	Sheet 17of 51	

+3V_DEEP_SUS 9,10,12,13,14,16
+3V 5,9,10,11,12,13,14,16,17,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+2.5VSUS 17,42
+1.2VSUS 2,6,10,17,42,46,48,51
DDR_VTT 17,42

4 M_B_A[13:0]

4 M_B_DQ[63:0]

JDIM2A

DDR4 SODIMM 260 PIN (260P)

M_B_A0	144	A0	DQ0	8	M_B_DQ5
M_B_A1	133	A1	DQ1	7	M_B_DQ1
M_B_A2	132	A2	DQ2	20	M_B_DQ6
M_B_A3	131	A3	DQ3	21	M_B_DQ0
M_B_A4	128	A4	DQ4	4	M_B_DQ4
M_B_A5	126	A5	DQ5	3	M_B_DQ7
M_B_A6	127	A6	DQ6	16	M_B_DQ2
M_B_A7	122	A7	DQ7	17	M_B_DQ10
M_B_A8	125	A8	DQ8	28	M_B_DQ9
M_B_A9	121	A9	DQ9	29	M_B_DQ12
M_B_A10	146	A10/AP	DQ10	41	M_B_DQ11
M_B_A11	120	A11	DQ11	42	M_B_DQ14
M_B_A12	119	A12	DQ12	24	M_B_DQ8
M_B_A13	158	A13	DQ13	25	M_B_DQ15
4 M_B_WE#	151	A14/WE#	DQ14	38	M_B_DQ13
4 M_B_CAS#	156	A15/CAS#	DQ15	37	M_B_DQ17
4 M_B_RAS#	152	A16/RAS#	DQ16	50	M_B_DQ22
TP63	162	S2#/C0	DQ17	49	M_B_DQ19
TP64	165	S3#/C1	DQ18	62	M_B_DQ20
			DQ19	63	M_B_DQ18
			DQ20	46	M_B_DQ16
			DQ21	45	M_B_DQ23
	114	ACT#	DQ22	58	M_B_DQ21
4 M_B_PARITY	143	PARITY	DQ23	59	M_B_DQ25
4 M_B_ALERT#	116	ALERT#	DQ24	70	M_B_DQ30
13,17 PM_EXTTS#0	134	EVENT#	DQ25	71	M_B_DQ26
10,17 DDR4_DRAMRST#	108	RESET#	DQ26	83	M_B_DQ29
			DQ27	84	M_B_DQ28
			DQ28	66	M_B_DQ27
			DQ29	67	M_B_DQ31
			DQ30	79	M_B_DQ24
			DQ31	80	M_B_DQ39
			DQ32	174	M_B_DQ35
			DQ33	173	M_B_DQ37
			DQ34	187	M_B_DQ32
			DQ35	186	M_B_DQ38
			DQ36	170	M_B_DQ34
			DQ37	169	M_B_DQ36
			DQ38	183	M_B_DQ33
			DQ39	182	M_B_DQ45
			DQ40	195	M_B_DQ41
			DQ41	194	M_B_DQ47
			DQ42	207	M_B_DQ43
			DQ43	208	M_B_DQ44
			DQ44	191	M_B_DQ40
			DQ45	190	M_B_DQ46
			DQ46	203	M_B_DQ42
			DQ47	204	M_B_DQ54
			DQ48	216	M_B_DQ48
			DQ49	215	M_B_DQ55
			DQ50	228	M_B_DQ53
			DQ51	229	M_B_DQ52
			DQ52	211	M_B_DQ51
			DQ53	212	M_B_DQ50
			DQ54	224	M_B_DQ49
			DQ55	225	M_B_DQ59
			DQ56	237	M_B_DQ57
			DQ57	236	M_B_DQ58
			DQ58	249	M_B_DQ56
			DQ59	250	M_B_DQ61
			DQ60	232	M_B_DQ62
			DQ61	233	M_B_DQ63
			DQ62	245	M_B_DQ60
			DQ63	246	
4 M_B_BS#0	150	BA0	DQS0	13	M_B_DQSP0
4 M_B_BS#1	145	BA1	DQS1	34	M_B_DQSP1
4 M_B_BG#0	115	BG0	DQS2	55	M_B_DQSP2
4 M_B_BG#1	113	BG1	DQS3	76	M_B_DQSP3
			DQS4	179	M_B_DQSP4
			DQS5	200	M_B_DQSP5
			DQS6	221	M_B_DQSP6
			DQS7	242	M_B_DQSP7
			DQS8	97	M_B_DQSP8
4 M_B_CS#0	149	S0#	DQS#0	11	M_B_DQSN0
4 M_B_CS#1	157	S1#	DQS#1	32	M_B_DQSN1
4 M_B_CKE0	109	CKE0	DQS#2	53	M_B_DQSN2
4 M_B_CKE1	110	CKE1	DQS#3	74	M_B_DQSN3
			DQS#4	177	M_B_DQSN4
			DQS#5	198	M_B_DQSN5
			DQS#6	219	M_B_DQSN6
			DQS#7	240	M_B_DQSN7
			DQS#8	95	M_B_DQSN8
4 M_B_CLKP0	137	CK0			
4 M_B_CLKN0	139	CK0#			
4 M_B_CLKP1	138	CK1			
4 M_B_CLKN1	140	CK1#			
4 M_B_DIM0_ODT0	155	ODT0			
4 M_B_DIM0_ODT1	161	ODT1			
10,16,17,38 SMB_RUN_CLK	253	SCL			
10,16,17,38 SMB_RUN_DAT	254	SDA			
CHB_SA0	256	SA0			
CHB_SA1	260	SA1			
CHB_SA2	166	SA2			
M_B_CB0	92	CB0			
M_B_CB1	91	CB1			
M_B_CB2	101	CB2			
M_B_CB3	105	CB3			
M_B_CB4	88	CB4			
M_B_CB5	87	CB5			
M_B_CB6	100	CB6			
M_B_CB7	104	CB7			
	12	DM0			
	33	DM1			
	54	DM2			
	75	DM3			
	178	DM4			
	199	DM5			
	220	DM6			
	241	DM7			
	96	DM8			

0 1 2 3 4 5 6 7

C300 *0.1U/16V_4

+3V
R308 *10K_4 R309 10K_4 R310 *10K_4
CHB_SA0 CHB_SA1 CHB_SA2
R311 10K_4 R312 *10K_4 R313 10K_4

+1.2VSUS
R314 *240_4 R315 *240_4 R316 *240_4 R317 *240_4 R318 *240_4 R320 *240_4 R321 *240_4 R322 *240_4

M_B_DQSP[7:0] 4 +1.2VSUS R319 240_4 M_B_DQSP8
M_B_DQSN[7:0] 4 +1.2VSUS R323 240_4 M_B_DQSN8

+1.2VSUS
2.48A

JDIM2B

DDR4 SODIMM 260 PIN (260P)

	111	VDD1	VDDSPD	255	+3V
	112	VDD2			
	117	VDD3	VPP1	257	+2.5VSUS
	118	VDD4	VPP2	259	
	123	VDD5			
	124	VDD6	VTT	258	DDR_VTT
	129	VDD7			
	130	VDD8			
	135	VDD9			
	136	VDD10	VREF_CA	164	+SMDDR_VREF_DQ1 R307 0_6 SMDDR_VREF_DQ1_M1
	141	VDD11			
	142	VDD12			
	147	VDD13			
	148	VDD14			
	153	VDD15			
	154	VDD16			
	159	VDD17			
	160	VDD18			
	163	VDD19			
	1	VSS1	VSS48	2	
	5	VSS2	VSS49	6	
	9	VSS3	VSS50	10	
	15	VSS4	VSS51	14	
	19	VSS5	VSS52	18	
	23	VSS6	VSS53	22	
	27	VSS7	VSS54	26	
	31	VSS8	VSS55	30	
	35	VSS9	VSS56	36	
	39	VSS10	VSS57	40	
	43	VSS11	VSS58	44	
	47	VSS12	VSS59	48	
	51	VSS13	VSS60	52	
	57	VSS14	VSS61	56	
	61	VSS15	VSS62	60	
	65	VSS16	VSS63	64	
	69	VSS17	VSS64	68	
	73	VSS18	VSS65	72	
	77	VSS19	VSS66	78	
	81	VSS20	VSS67	82	
	85	VSS21	VSS68	86	
	89	VSS22	VSS69	90	
	93	VSS23	VSS70	94	
	99	VSS24	VSS71	98	
	103	VSS25	VSS72	102	
	107	VSS26	VSS73	106	
	167	VSS27	VSS74	168	
	171	VSS28	VSS75	172	
	175	VSS29	VSS76	176	
	181	VSS30	VSS77	180	
	185	VSS31	VSS78	184	
	189	VSS32	VSS79	188	
	193	VSS33	VSS80	192	
	197	VSS34	VSS81	196	
	201	VSS35	VSS82	202	
	205	VSS36	VSS83	206	
	209	VSS37	VSS84	210	
	213	VSS38	VSS85	214	
	217	VSS39	VSS86	218	
	223	VSS40	VSS87	222	
	227	VSS41	VSS88	226	
	231	VSS42	VSS89	230	
	235	VSS43	VSS90	234	
	239	VSS44	VSS91	238	
	243	VSS45	VSS92	244	
	247	VSS46	VSS93	248	
	251	VSS47	VSS94	252	
			GND	261	
			GND	262	

+SMDDR_VREF_DQ1
C308 *0.1U/16V_4
C311 *2.2U/10V_6

+2.5VSUS
C318 1U/6.3V_4
C320 1U/6.3V_4
C322 10U/6.3V_6
C323 10U/6.3V_6

+1.2VSUS
C293 1U/6.3V_4
C294 1U/6.3V_4
C295 1U/6.3V_4
C296 1U/6.3V_4
C297 1U/6.3V_4
C298 1U/6.3V_4
C299 1U/6.3V_4
C301 1U/6.3V_4
C302 10U/6.3V_6
C303 10U/6.3V_6
C304 10U/6.3V_6
C305 10U/6.3V_6
C306 10U/6.3V_6
C307 10U/6.3V_6
C309 10U/6.3V_6
C310 10U/6.3V_6

DDR_VTT
C313 1U/6.3V_4
C315 1U/6.3V_4
C316 1U/6.3V_4
C317 1U/6.3V_4
C319 10U/6.3V_6
C321 10U/6.3V_6

+3V
C324 0.1U/16V_4
C325 2.2U/10V_6

Place these Caps near So-Dimm1.
1uF/10uF 4pcs on each side of connector

VREF DQ1 M1 Solution

+1.2VSUS
R324 1K_4
4 SMDDR_VREF_DQ1_M3 SMDDR_VREF_DQ1_M3 R325 2/F_6 SMDDR_VREF_DQ1_M1
C326 0.022U/25V_4
R326 1K_4
R330 24.9/F_4

+1.2VSUS +3V_DEEP_SUS
R327 *47K/F_4 R328 *47K/F_4 R329 *47K/F_4
2 DDR_VTT_CNTL
Q8 *DRC5144E0L
DDR_VTT_PG_CTRL
R331 *0_4
42 DDR_VTT_PG_CTRL_R

Co-lay for ODT
From Intel MOW, ODT directly connection to CPU

Local Thermal Sensor

U8 *TMP431ADGKR Need Check PN(EOD)

5,10,37 MBCLK2 MBCLK2 8 SCLK
5,10,37 MBDATA2 MBDATA2 7 SDA
PM_EXTTS#0 6 ALERT#
+3V R332 10K/F_4 EXTTS#1 4 OVERT#
13 EXTTS#1
VCC 1 +3V
DXP 2 DDR_THERMDA
DXN 3 DDR_THERMDC
GND 5
C327 *0.01U/50V_4
C328 *2200P/50V_4
Q9 *METR3904-G

DDR4 Thermal Sensor

Main:AL001412003 EMC1412-1-ACZL-TR(98h)
2nd:AL000431014 TMP431ADGKR(98h)

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	18 -- DDR4 DIMM1-RVS(4.0H)	1A
Date: Monday, December 28, 2015	Sheet 18of 51	

+3V 5,9,10,11,12,13,14,16,17,18,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+3V_AON 22,23,27,51
+3V_GFX 20,21,22,23,49,51
+1.05V_GFX 20,21,23,51

All 3.3V
NVVDD
PEX_VDD 1.05V
FBVDD/Q
90%

+3V_GFX R1001 4.7K_4 PCIE_CLKREQ_VGA# 11
PEX_CLKREQ# Q1001 DRC5144E0L Q1002 DRC5144E0L

If stuff Da,Db,Ra,Rb, do not stuff Ua,Ub,Ca,Cb,Rc,Rd

Ra R1124 *10K_4 +3V_AON
PLTRST# SYS_PEX_RST_MON#
DGPU_HOLD_RST# Da D1004 *BAT54AW-L GPU_PEX_RST_HOLD# Db D1000 BAT54AW-L
Rb R1005 10K_4 +3V_AON PEGX_RST#

Ua U1002 MC74VHC1G08DFT2G Ca C1012 0.1U/16V_4
2,12,16,33,34,35,36,37 PLTRST# R1002 Rc 0_4
9,12 DGPU_HOLD_RST# R1000 *0_4
Ub U1000 *MC74VHC1G08DFT2G Cb C1000 *0.1U/16V_4
SYS_PEX_RST_MON# 22
PEGX_RST# 22,27
Rd R1003 *100K/F_4
22 GPU_PEX_RST_HOLD#

1126 Change D1004,R1124 from I to NI
Change U1002,R1002,C1012 from NI to I

U1001A N16E-GR-A1 [PEG Interface]

PEX_IOVDD/Q : 3300mA +1.05V_GFX
To be placed no further from the GPU than bewteen the PS and GPU
C1004 22U/6.3VS_6
C1005 22U/6.3VS_6
C1006 22U/6.3VS_6
C1001 22U/6.3VS_6
C1007 10U/6.3VS_6
C1008 10U/6.3VS_6
C1009 10U/6.3VS_6
C1002 10U/6.3VS_6
PLACE NEAR BALLS
C1010 1U/6.3V_4
C1011 1U/6.3V_4
C1003 1U/6.3V_4
C1013 1U/6.3V_4
PLACE UNDER BGA
C1014 4.7U/6.3V_4
C1015 4.7U/6.3V_4

AG19 AG21 AG22 AG24 AH21 AH25 PEX_IOVDD_1..6
AG13 AG15 AG16 AG18 AG25 AH15 AH18 AH26 AH27 AJ27 AK27 AL27 AM28 AN28 PEX_IOVDDQ_1..14

PEX_RX0..15 PEG_TXP0..7 PEG_TXN0..7
PEX_TX0..15 PEG_RXP0..7 PEG_RXN0..7
PEG_RXP0_C..PEG_RXN7_C C1016..C1197 0.22U/10V_4

AC6 AJ28 AJ4 AJ5 AL11 C15 D19 D20 D23 D26 H31 T8 V32 NC_1..13

PLACE CLOSE TO BGA
C1024 4.7U/6.3V_4
C1025 1U/6.3V_4
C1026 0.1U/16V_4
PLACE CLOSE TO GPU BALLS
+3V_AON +3V_GFX
VDD33 : 85mA
J8 K8 L8 M8 VDD33_1..4
PLACE CLOSE TO BGA
C1027 4.7U/6.3V_4
C1028 1U/6.3V_4
C1029 0.1U/16V_4
C1030 0.1U/16V_4
PLACE CLOSE TO GPU BALLS

PEX_REFCLK PEX_REFCLK_N AL13 AK13 CLK_VGA_P 11 CLK_VGA_N 11
PEX_TSTCLK_OUT PEX_TSTCLK_OUT_N AJ26 AK26 PEX_TSTCLK PEX_TSTCLK# R1006 *200/F_4
PEX_WAKE PEX_RST_N AJ11 AJ12 VGA_RST# R1007 0_4 PEGX_RST#
PEX_CLKREQ_N AK12 PEX_CLKREQ# R1008 10K_4 +3V_AON
PEX_TERMP AP29 PEX_TERMP R1009 2.49K/F_4
TESTMODE AK11 TESTMODE R1010 10K_4
PEX_PLLVDD AG26 PEX_PLLVDD PEX_PLLVDD : 150mA
PEX_PLL_HVDD PEX_SVDD_3V3 AH12 AG12 PEX_SVDD_3V3 : 210mA +3V_AON
0.1U/16V_4 C1033
4.7U/6.3V_4 C1034
4.7U/6.3V_4 C1036
3.3V_AUX_NC P8
PLACE NEAR GPU
VDD_SENSE L4 VGPU_CORE_SENSE 49
GND_SENSE L5 VSS_GPU_SENSE 49

+1.05V_GFX
R1011 0_6
C1031 4.7U/6.3V_4 PLACE NEAR GPU
C1032 1U/6.3V_4 PLACE NEAR GPU
C1035 0.1U/16V_4 PLACE UNDER GPU

GPU type	Part Number	Part Description	Where USed
N16P-GT	AJ0N16P0T05	IC CTRL(908P)N16P-GT-A2(BGA)TOPBSQ	G35A
	AJ0N16P0T06	IC CTRL(908P)N16P-GT-A2(BGA)QBCON	
N16P-GX	AJ0N16P0T14	IC CTRL(908P)N16P-GX-A2(BGA)TOPBSQ	G35A / G37A
	AJ0N16P0T15	IC CTRL(908P)N16P-GX-A2(BGA)QBCON	
N16E-GR	AJ0N16E0T02	IC CTRL(908P)N16E-GR-A1(BGA)TOPBSQ	G35A / G37A
	AJ0N16E0T03	IC CTRL(908P)N16E-GR-A1(BGA)QBCON	

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	N16E-GR - 1/5 (PCIE)	1A
Date: Monday, December 28, 2015	Sheet 19 of 51	

+3V_GFX 19,21,22,23,49,51
+1.35V_GFX 23,24,25,50
+1.05V_GFX 19,21,23,51
NV_PLLVDD 21

U1001B
N16E-GR-A1

[MEMORY I/F A]

U1001C
N16E-GR-A1

MEMORY I/F C

GDDR5 NO USE

GDDR5 NO USE

PLACE CLOSE TO GPU BALLS

C1037 4.7U/6.3V_4
C1038 4.7U/6.3V_4
C1039 4.7U/6.3V_4
C1040 4.7U/6.3V_4
C1041 1U/6.3V_4
C1042 1U/6.3V_4
C1043 1U/6.3V_4
C1044 1U/6.3V_4
C1045 0.1U/16V_4
C1046 0.1U/16V_4
C1047 0.1U/16V_4
C1048 0.1U/16V_4

PLACE CLOSE TO BGA

C1049 10U/6.3V_6
C1050 10U/6.3V_6
C1051 22U/6.3VS_6
C1052 22U/6.3VS_6

MUST BE on GPU ball

C1053 *22U/6.3V_6
C1055 *22U/6.3V_6

BOM
N16E-GR: Ra (Default)
N16P-GX/GT/N16S-GTR-B: Rb

BOM
N16E-GR: La (Default)
N16P-GX/GT/N16S-GTR-B: Lb

PLACE CLOSE TO GPU

PLACE CLOSE TO BALL

PROJECT :	G37A/G37B
Quanta Computer Inc.	
Size: Custom	Document Number: N16P-GX/GT - 2/5 (Memory)
Rev: 1A	
Date: Monday, December 28, 2015	Sheet 20 of 51

+1.05V_GFX 19,20,23,51
NV_PLLVDD 20

U1001D
N16E-GR-A1

AH8 IFPAB_PLLVDD
AG8 IFPA_IOVDD
AG9 IFPB_IOVDD
AJ8 IFPAB_RSET

[IFPA/B_LVDS]

IFPA_TXC AM6
IFPA_TXC_N AN6
IFPA_TXD0 AP3
IFPA_TXD0_N AN3
IFPA_TXD1 AN5
IFPA_TXD1_N AM5
IFPA_TXD2 AL6
IFPA_TXD2_N AK6
IFPA_TXD3 AJ6
IFPA_TXD3_N AH6

IFPB_TXC AJ9
IFPB_TXC_N AH9
IFPB_TXD4 AP6
IFPB_TXD4_N AP5
IFPB_TXD5 AM7
IFPB_TXD5_N AL7
IFPB_TXD6 AN8
IFPB_TXD6_N AM8
IFPB_TXD7 AK8
IFPB_TXD7_N AL8

IFPC_PLLVDD
C8626 0.1U/16V_4
C8625 0.1U/16V_4
PLACE AT BALLS
C8628 0.1U/16V_4
C8627 0.1U/16V_4
IFPC_IOVDD

AF7 IFPC_PLLVDD
AG7 IFPD_PLLVDD
AF6 IFPC_IOVDD
AG6 IFPD_IOVDD

[IFPC/D_TMDS]

IFPC_AUX_I2CW_SCL AG3
IFPC_AUX_I2CW_SDA_N AG2
IFPC_L0 AK1
IFPC_L0_N AJ1
IFPC_L1 AJ3
IFPC_L1_N AJ2
IFPC_L2 AH3
IFPC_L2_N AH4
IFPC_L3 AG5
IFPC_L3_N AG4

IFPD_AUX_I2CX_SCL AK3
IFPD_AUX_I2CX_SDA_N AK2
IFPD_L0 AM1
IFPD_L0_N AM2
IFPD_L1 AM3
IFPD_L1_N AM4
IFPD_L2 AL3
IFPD_L2_N AL4
IFPD_L3 AK4
IFPD_L3_N AK5

PLACE AT BALLS
C8598 0.1U/16V_4
C8597 4.7U/6.3V_6
C8596 1U/6.3V_4
PLACE OUTSIDE OF BALL

AF8 IFPC_RSET
AN2 IFPD_RSET

+3V_GFX L7517 FCM1005KF-301T03 IFPC_PLLVDD
0.3A 0.25A
+1.05V_GFX L7518 HCB1005KF-181T15(180,1.5A)_4 IFPC_IOVDD
PLACE OUTSIDE OF BALL
C8593 4.7U/6.3V_6
C8594 1U/6.3V_4
C8624 0.1U/16V_4
C8595 0.1U/16V_4
PLACE AT BALLS
IFPE_RSET
R8567 1K_4

AB8 IFPEF_PLLVDD
AC7 IFPE_IOVDD
AC8 IFPF_IOVDD
AD6 IFPEF_RSET

[IFPE/F_DP]

IFPE_AUX_I2CY_SCL AB3
IFPE_AUX_I2CY_SDA_N AB4
IFPE_L0 AD2
IFPE_L0_N AD3
IFPE_L1 AD1
IFPE_L1_N AC1
IFPE_L2 AC2
IFPE_L2_N AC3
IFPE_L3 AC4
IFPE_L3_N AC5

GPU_DDCCLK 27
GPU_DDCDATA 27
GPU_D2 27
GPU_D2# 27
GPU_D1 27
GPU_D1# 27
GPU_D0 27
GPU_D0# 27
GPU_CLK 27
GPU_CLK# 27

11/05 change HDMI from APU to GPU

IFPF_AUX_I2CZ_SCL AF3
IFPF_AUX_I2CZ_SDA_N AF2
IFPF_L0 AE3
IFPF_L0_N AE4
IFPF_L1 AF4
IFPF_L1_N AF5
IFPF_L2 AD4
IFPF_L2_N AD5
IFPF_L3 AG1
IFPF_L3_N AF1

11/05 change HDMI from APU to GPU

AG10 DACA_VDD
AP9 DACA_VREF
AP8 DACA_RSET

[DACA/B_CRT]

DACA_RED AK9
DACA_GREEN AL10
DACA_BLUE AL9

DACA_HSYNC AM9
DACA_VSYNC AN9

I2CA_SCL R4 I2CA_SCL R1022 1.8K/F_4
I2CA_SDA R5 I2CA_SDA R1023 1.8K/F_4

NV_PLLVDD
PLLVDD : 200mA
+1.05V_GFX L1002 HCB1005KF-330T30 NV_PLLVDD AD8 PLLVDD
C1059 22U/6.3VS_6
C1060 0.1U/16V_4
SP_PLLVDD AE8 SP_PLLVDD
+1.05V_GFX L1003 HCB1005KF-181T15 VID_PLLVDD AD7 VID_PLLVDD
C1061 47U/6.3VS_6
C1062 10U/6.3V_6
C1063 0.1U/16V_4
C1064 0.1U/16V_4

PLACE CLOSE TO GPU PLACE CLOSE TO BALLS

[XTAL IN]

XTAL_IN H3 XTAL27_IN
XTAL_OUT H2 XTAL27_OUT
XTAL_OUTBUFF J4 R1024 10K_4
XTAL_SSIN H1 R1025 10K_4
Y1000
27MHZ +-10PPM
C1065 10P/50V_4
C1066 10P/50V_4

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
A3	N16E-GR - 3/5 (Display)	1A

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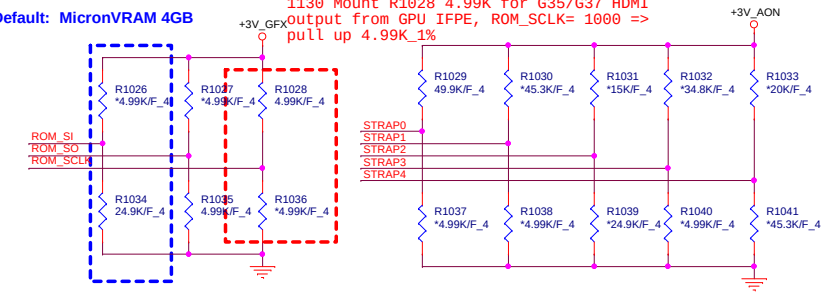
+3V 5,9,10,11,12,13,14,16,17,18,19,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+3V_AON 19,23,27,51
+3V_GFX 19,20,21,23,49,51

Default: MicronVRAM 4GB

1130 Mount R1028 4.99K for G35/G37 HDMI output from GPU IFPE, ROM_SCLK= 1000 => pull up 4.99K_1%



Resistor Values	PU to 3V3_MAIN	PD to GND
4.99K OHM	1000	0000
10K OHM	1001	0001
15K OHM	1010	0010
20K OHM	1011	0011
24.9K OHM	1100	0100
30.1K OHM	1101	0101
34.8K OHM	1110	0110
45.3K OHM	1111	0111

GPU / Netname	N16P-GT	N16P-GX	N16E-GR
ROM_SO	4.99K PD	4.99K PD	4.99K PD
ROM_SCLK	4.99K PU	4.99K PU	4.99K PU
STRAP0	49.9K PU	49.9K PU	49.9K PU
STRAP1	NC	NC	NC
STRAP2	NC	NC	NC
STRAP3	NC	NC	NC
STRAP4	NC	NC	NC

4.99K/F_4: CS24992FB26 RES CHIP 4.99K 1/16W +1%(0402)
10K/F_4: CS31002FB26 RES CHIP 10K 1/16W +1% (0402)
15K/F_4: CS31502FB24 RES CHIP 15K 1/16W +1% (0402)
20K/F_4: CS32002FB29 RES CHIP 20K 1/16W +-1%(0402)
24.9K/F_4: CS32492FB16 RES CHIP 24.9K 1/16W +-1%(0402)
30.1K/F_4: CS33012FB18 RES CHIP 30.1K 1/16W +-1%(0402)
34.8K/F_4: CS33482FB22 RES CHIP 34.8K 1/16W +-1% (0402)
45.3K/F_4: CS34532FB18 RES CHIP 45.3K 1/16W +-1% (0402)

VRAM Table of N16P-GX N16P-GX device ID = 0x139B

Vendor	TOP B/S / QBCON	Mfr. P/N	SIZE	ROM_SI
Hynix	AKG5PWUTW19	H5GC4H24AJR-T2C	256Mx16	0x6 0110 PD 34.8K
	AKG5PWUTW20			
Micron	AKG5PW0TL05	EDW4032BABG-60-F-D		0x4 0100 PD 24.9K
	AKG5PW0TL06			
Micron	AKG5LGUTL02	MT51J256M32HF-60:A	256Mx32	0x9 1001 PU 10K
	AKG5LGUTL03			
Samsung	AKG5QGDT503	K4G80325FB-HC03		0x8 1000 PU 4.99K
	AKG5QGDT504			

VRAM Table of N16P-GT N16P-GT device ID = 0x139A

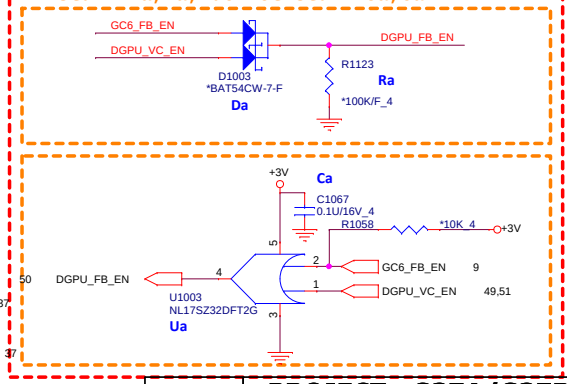
Vendor	TOP B/S / QBCON	Mfr. P/N	SIZE	ROM_SI
Hynix	AKG5PWUTW19	H5GC4H24AJR-T2C	256Mx16	0x6 0110 PD 34.8K
	AKG5PWUTW20			
Micron	AKG5PW0TL05	EDW4032BABG-60-F-D		0x4 0100 PD 24.9K
	AKG5PW0TL06			

VRAM Table of N16E-GR N16E-GR device ID = 0x1427

Vendor	TOP B/S / QBCON	Mfr. P/N	SIZE	ROM_SI
Hynix	AKG5PWUTW19	H5GC4H24AJR-T2C	256Mx16	0x0 0000 PD 4.99K
	AKG5PWUTW20			
Micron	AKG5PW0TL05	EDW4032BABG-60-F-D		0x1 0001 PD 10K
	AKG5PW0TL06			
Micron	AKG5LGUTL02	MT51J256M32HF-60:A	256Mx32	0x4 0100 PD 24.9K
	AKG5LGUTL03			
Samsung	AKG5QGDT503	K4G80325FB-HC03		0x3 0011 PD 20K
	AKG5QGDT504			

1126 Change D1003, R1123 from I to NI
Change U1003, C1067 from NI to I

If stuff Da,Ra, do not stuff Ua,Ca



U1001E
N16E-GR-A1

[MIOA]

[MIOB]

[MISC_GPIO/I2C/JTAG/THER]

[MISC2_ROM]

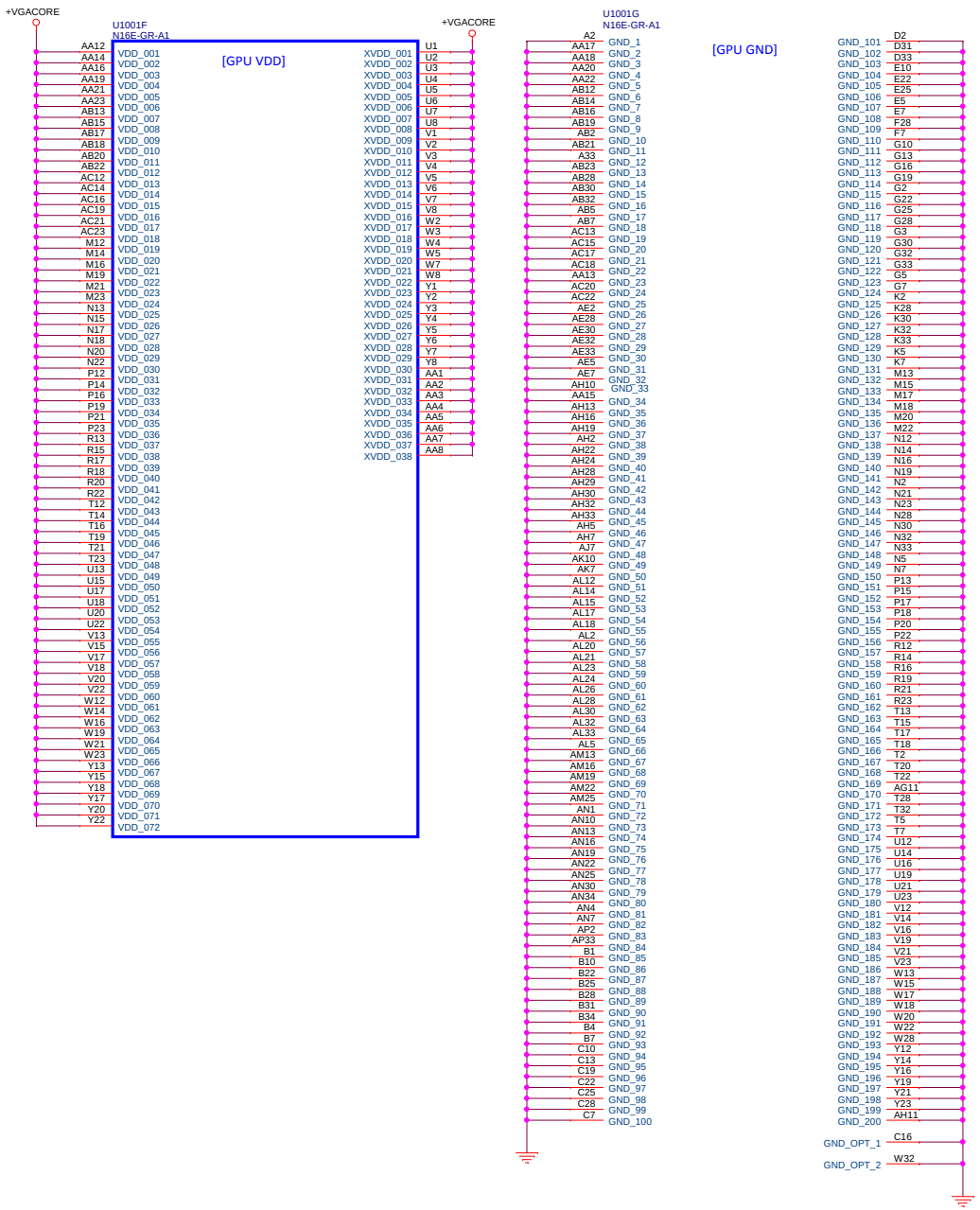
GPU_EVENT# should be connected to PCH GPIO pin for GC6 2.0 function.

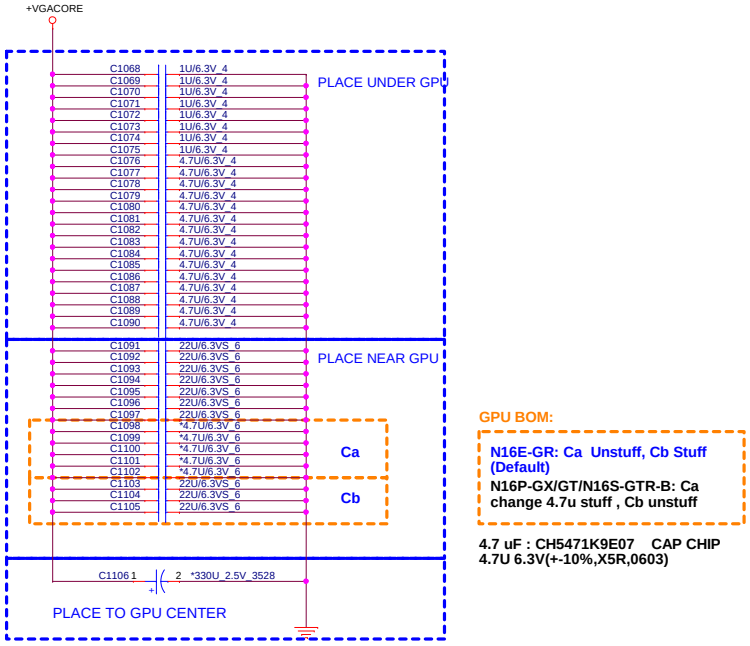
GFx SMBus Isolation

1129 Change R1066 from NI to I

+3V_AON 19,22,27,51
+3V_GFX 19,20,21,22,49,51
+1.35V_GFX 20,24,25,50
+1.05V_GFX 19,20,21,51
+VGACORE 49

VDD/XVDD : 62A



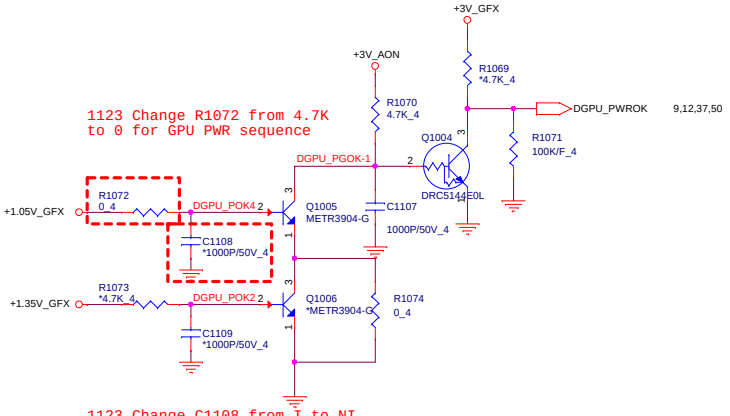


GPU BOM:

N16E-GR: Ca Unstuff, Cb Stuff (Default)
N16P-GX/GT/N16S-GTR-B: Ca change 4.7u stuff , Cb unstuff

4.7 uF : CH5471K9E07 CAP CHIP 4.7U 6.3V(+-10%,X5R,0603)

For meet Power down sequence for +3V_GFX



PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	N16E-GR - 5/5 (Power)	1A

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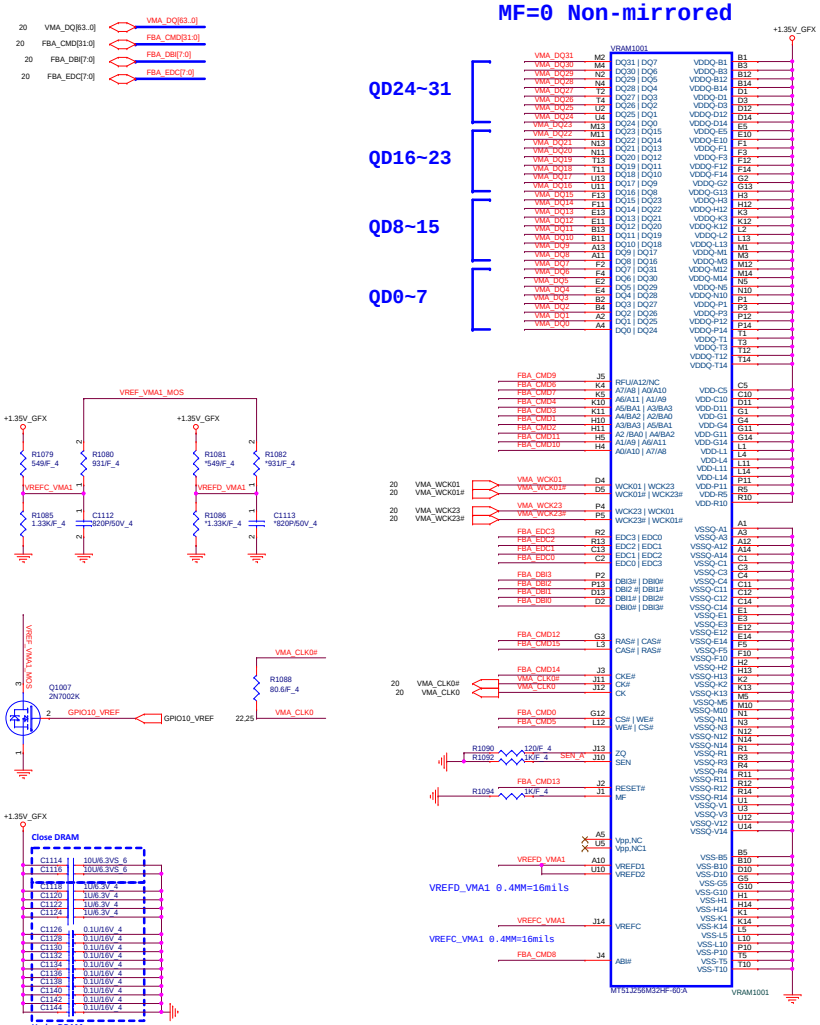
CHANNEL A: 2G/4G GDDR5

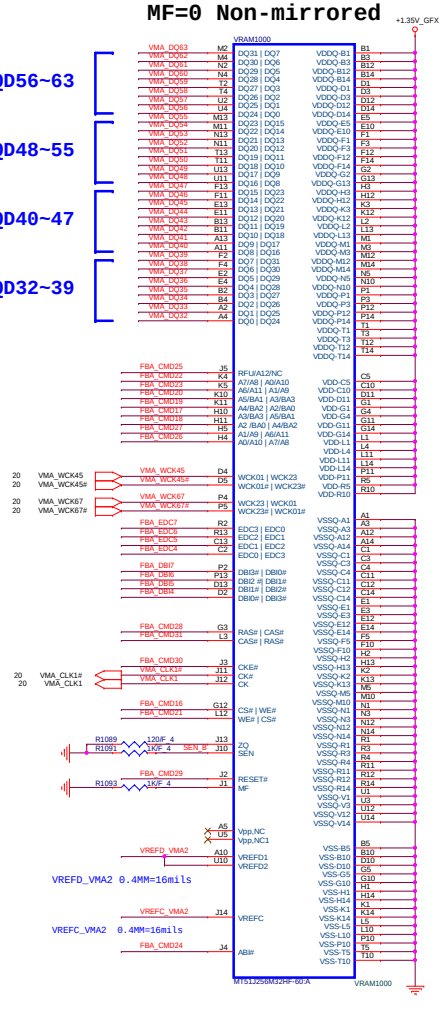
MF=0 Non-mirrored

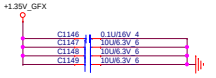
QD24~31
QD16~23
QD8~15
QD0~7

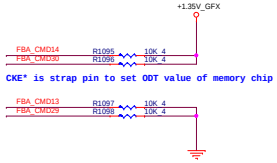


MF=0 Non-mirrored

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







GDDR5 Mode H Mapping

< 0-31 >	< 32-63 >	Memory
CMD0	CMD16	CS*
CMD1	CMD17	A3_BA3
CMD2	CMD18	A2_BA0
CMD3	CMD19	A4_BA2
CMD4	CMD20	A5_BA1
CMD5	CMD21	WE*
CMD6	CMD22	A7_A8
CMD7	CMD23	A6_A11
CMD8	CMD24	ABI*
CMD9	CMD25	A12_RFU
CMD10	CMD26	A0_A10
CMD11	CMD27	A1_A9
CMD12	CMD28	RAS*
CMD13	CMD29	RST*
CMD14	CMD30	CKE*
CMD15	CMD31	CAS*

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
	N16E-GR GDDR5 VRAM 1/2	1A

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+1.35V_GFX 20,23,24,50

VMB_DQ[63:0] 20
FBB_CMD[31:0] 20
FBB_DBI[7:0] 20
FBB_EDC[7:0] 20

N16S-GTR-B: unstuff VRAM
N16P-GX/GT/N16E-GR: stuff VRAM (Default)

MF=0 Non-mirrored

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

VRAM1002
MT51J256M32HF-60:A

N16S-GTR-B: unstuff VRAM
N16P-GX/GT/N16E-GR: stuff VRAM (Default)

MF=0 Non-mirrored

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

VRAM1003
MT51J256M32HF-60:A

N16S-GTR-B: unstuff VRAM
N16P-GX/GT/N16E-GR: stuff VRAM (Default)

N16S-GTR-B: unstuff VRAM
N16P-GX/GT/N16E-GR: stuff VRAM (Default)

N16S-GTR-B: unstuff VRAM
N16P-GX/GT/N16E-GR: stuff VRAM (Default)

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

RST PD place to the end of daisy-chain.

GDDR5 Mode H Mapping

< 0-31 >	< 32-63 >	Memory
CMD0	CMD16	CS*
CMD1	CMD17	A3_BA3
CMD2	CMD18	A2_BA0
CMD3	CMD19	A4_BA2
CMD4	CMD20	A5_BA1
CMD5	CMD21	WE*
CMD6	CMD22	A7_A8
CMD7	CMD23	A6_A11
CMD8	CMD24	ABI*
CMD9	CMD25	A12_RFU
CMD10	CMD26	A0_A10
CMD11	CMD27	A1_A9
CMD12	CMD28	RAS*
CMD13	CMD29	RST*
CMD14	CMD30	CKE*
CMD15	CMD31	CAS*

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
	N16E-GR GDDR5 VRAM 2/2	1A

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+VIN 32,38,39,40,41,42,43,44,45,47,48,49,50
+5VS5 10,28,30,41,42,43,44,45,46,47,48,49,50,51
+5V 27,28,29,31,32,38,46,49
+3VS5 10,12,14,16,33,37,41,42,46,47,48,51
+3V 5,9,10,11,12,13,14,16,17,18,19,22,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+3V_CAM 34

LID Switch

37 EMU_LID — R8521 0_4 — PN_BLON — D8501 RB500V-40 — BLON_CON — C8529 22P/50V_4 — R8518 100K/F_4

LVDS_BLON1 — R8523 1K/F_4

LVDS_BLON1 — R8524 100K/F_4

2A / 80mils

+VIN_BLIGHT

+VIN — L7511 0_8 — +VIN_BLIGHT

C8531 0.1U/25V_4

C8532 0.01U/50V_4

+VIN

C8535 4.7U/25V_6 | C8536 0.1U/25V_4 | C8537 0.1U/25V_4 | C8538 0.1U/25V_4 | C8539 0.1U/25V_4 | C8540 4.7U/25V_6 | C8541 0.1U/25V_4 | EC5003 *12P/50V_4 | EC5004 *4.7U/25V_8

Touch screen

+3VS5 — R8532 *10K_4 — R8536 *220K_4 — C8554 *0.022U/25V_4 — Q7707 *ME2303T1 — +3V — R8533 *0_6/S — +3V_TS — C8550 *22U/6.3V_6 — C8556 *0.1U/16V_4

TS_ON — Q7708 *DMG1012T-7(SOT523)

+5VS5 — R8544 *10K_4 — R8546 *220K_4 — C8563 *0.022U/25V_4 — Q7709 *ME2303T1 — +5V — R8545 *0_6/S — +5V_TS — C8559 *22U/6.3V_6 — C8564 *0.1U/16V_4

TS_ON — Q7710 *DMG1012T-7(SOT523)

eDP Conn.

+3V_TS — R8519 10K_4 — TCH_PNL_INT#

MB	TS (I/F: I2C)
+3V_TS	VDD33
I2C_DATA_TS	SDA
I2C_CLK_TS	SCL
TCH_PNL_RST#_EC	EXRESETN
TCH_PNL_INT#	ATTN
TS_ON	Report_Switch
GND	GND

BOM: HD CAM Stuff

BOM: 3D CAM Un-Stuff

USBP4- R8529 *0_4 USBP4- C

USBP4+ R8530 *0_4 USBP4+ C

28 DIGITAL_CLK

28 DIGITAL_D1

L7513 120/300MA

L7514 120/300MA

C8533 *10P/50V_4

C8534 *10P/50V_4

51519-0400T-V02
51519-0400t-v02-40p-l
DFFC40FR081
CN7703

+3VLCD_CON — **2.5A / 100mils**

C8530 0.047U/25V_4

C8528 0.047U/25V_4

INT_eDP_AUXP_C
INT_eDP_AUXN_C
INT_eDP_TXN0_C
INT_eDP_TXP0_C
INT_eDP_TXN1_C
INT_eDP_TXP1_C
INT_eDP_TXN2_C
INT_eDP_TXP2_C
INT_eDP_TXN3_C
INT_eDP_TXP3_C

13 ULT_EDP_HPD — R8525 0_4 — ULT_EDP_HPD_R

+3V_TS

37 TS_ON — R7763 0_4

+5V_TS

37 TCH_PNL_RST#_EC — R8527 0_4 — TCH_PNL_RST#

13 I2C_DATA_TS — R8528 0_4

13 I2C_CLK_TS

13 TCH_PNL_INT#

9 USBP4- — L7512 — +3V_CAM — USBP4- C

9 USBP4+ — *MCM2012B900GBE — USBP4+ C

DIGITAL_CLK_L
DIGITAL_D1_L
VADJ1
BLON_CON

+VIN_BLIGHT — **2A / 80mils**

3 INT_eDP_TXP0 — C8542 0.1U/16V_4 — INT_eDP_TXP0_C

3 INT_eDP_TXN0 — C8543 0.1U/16V_4 — INT_eDP_TXN0_C

3 INT_eDP_TXP1 — C8544 0.1U/16V_4 — INT_eDP_TXP1_C

3 INT_eDP_TXN1 — C8547 0.1U/16V_4 — INT_eDP_TXN1_C

3 INT_eDP_TXP2 — C8548 0.1U/16V_4 — INT_eDP_TXP2_C

3 INT_eDP_TXN2 — C8549 0.1U/16V_4 — INT_eDP_TXN2_C

3 INT_eDP_TXP3 — C8551 0.1U/16V_4 — INT_eDP_TXP3_C

3 INT_eDP_TXN3 — C8552 0.1U/16V_4 — INT_eDP_TXN3_C

3 INT_eDP_AUXN — C8553 0.1U/16V_4 — INT_eDP_AUXN_C

3 INT_eDP_AUXP — C8555 0.1U/16V_4 — INT_eDP_AUXP_C

11 PCH_DPST_PWM — R8540 10_4 — BRIGHT

11 PCH_LVDS_BLON — R8542 0_4 — LVDS_BLON1

11 PCH_DISP_ON — R8543 0_4 — DISP_ON

+3V_CAM — +3V — R8531 0_6 — C8545 *0.01U/50V_4 — C8546 *4.7U/6.3V_6

+3V — R8534 *1K_4 — R8535 *1K_4 — BRIGHT — LVDS_BLON1

BRIGHT — R8539 1K/F_4 — VADJ1 — C8557 33P/50V_4 — R8541 100K/F_4

+3V — C8558 1U/6.3V_4 — U8502 AP2821KTR-G1 (IN, IN, ON/OFF, OUT, GND) — L7515 TI160808U600 — +3VLCD_CON

DISP_ON — R8547 100K/F_4

2.5A / 100mils

C8560 0.01U/50V_4 | C8561 0.1U/16V_4 | C8562 10U/6.3V_6

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	26 -- LCD CONN/LID/CAM/D-MIC/TS	1A
Date: Monday, December 28, 2015	Sheet 26 of 51	

+5V 26,28,29,31,32,38,46,49
+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,28,29,30,32,33,34,35,36,37,38,43,46,49
+1.2V 46

Prevent current leakage when GPU is power off

R8602 *0_4
R8604 *10K/F_4
R8583 10K/F_4
Q7705
R8605 *10K/F_4
R8582 10K/F_4
R8603 *0_4
2N7002KDW
21 GPU_DDCCLK
21 GPU_DDCDATA
GPU_DDCCLK_Q
GPU_DDCDATA_Q

EMI Solution

TXC_HDMI+
C8632 0.75p/50V_4
TXC_HDMI-
TX2_HDMI+ R7716 *120/F_4 TX2_HDMI-
TX1_HDMI+ R7717 *120/F_4 TX1_HDMI-
TX0_HDMI+ R7719 *120/F_4 TX0_HDMI-
TXC_HDMI+ R7722 *120/F_4 TXC_HDMI-

1127 Change P/N from CH+7506XB02 to CH+7506TB01

C8623 0.1U/16V_4
U8503 MC74VHC1G08DFT2G
19,22 PEGX_RST#
HDMI_HPD_CON R8613 0_4 HDMI_HPD_PCH_R
37 HDMI_HPD_EC R8612 *0_4
HDMI_HPD_GPU

U7700 PS8409

21 GPU_D0 C7723 C7724 0.1U/16V_4 IN_D0_C IN_D0#_C
21 GPU_D1 C7721 C7722 IN_D1_C IN_D1#_C
21 GPU_D2 C7725 C7726 IN_D2_C IN_D2#_C
21 GPU_CLK C7727 C7729 IN_CLK_C IN_CLK#_C
GPU_DDCCLK_Q GPU_DDCDATA_Q
SCL_SRC SDA_SRC
HDMI_HPD_DC HDMI_HPD_CON R7744 *10K/F_4 R7749 0_4 TP8528
VDD12_ON PRE I2C_ADDR DCIN_EN EQ HDMI_ID REXT R7746 4.99K/F_4
HDMI_CEC CEC_EN TESTMODEB RSV1 RSV2 NC
IN_D0+ IN_D0- IN_D1+ IN_D1- IN_D2+ IN_D2- IN_CLK+ IN_CLK-
OUT_D0+ OUT_D0- OUT_D1+ OUT_D1- OUT_D2+ OUT_D2- OUT_CLK+ OUT_CLK-
TX0_HDMI+ TX0_HDMI- TX1_HDMI+ TX1_HDMI- TX2_HDMI+ TX2_HDMI- TXC_HDMI+ TXC_HDMI-
SCL_SINK SDA_SINK HDMI_SCLK HDMI_SDATA HPD_SINK HDMI_HPD
VDD33[1] VDD33[2] +3V
VDDTX12[1] VDDTX12[2] VDDRX12[1] VDDRX12[2] VDDA12[1] VDD12[1] VDD12[2] +1.2V
RESETB RST# R8609 10K/F_4 C8631 1U/6.3V_4
CSCL CSDA
EPAD

ESD

U7701 *CPDA10R5V0P-HF
U7702 *CPDA10R5V0P-HF
1124 Reserve ESD protection component
1124 SWAP for Layout

HDMI_HPD R7747 20K/F_4

Optional

R8610 *10K/F_4
R8611 *10K/F_4
CSCL CSDA

R7754 *4.7K_4
R7757 *4.7K_4
R7758 *4.7K_4
R7759 *4.7K_4
R7756 *4.7K_4
R7762 *4.7K_4
PRE I2C_ADDR
DCIN_EN
EQ
HDMI_ID

C7732 *0.1U/16V_4
C7733 *0.01U/50V_4

C7734 *0.1U/16V_4
C7735 *0.1U/16V_4
C7736 *0.1U/16V_4
C7737 *0.1U/16V_4
C7738 *0.01U/50V_4
C7739 *0.01U/50V_4

D7701 BAT54AW-L
+5V_HDMIC
5V_HSMBCK R7751 2.2K_4
5V_HSMBDT R7752 2.2K_4
C7730 *10P/50V_4
C7731 *10P/50V_4
60 mils
F7701 FUSE1A6V_POLY
+5V
VC7702 *TVM0G5R5M220R
C7740 0.1U/16V_4
VC7703 *TVM0G5R5M220R
C7741 220P/50V_4

CN7701 HDMI CONN
SHELL1 D2+ D2 Shield D2- D1+ D1 Shield D1- D0+SHELL2 D0 Shield D0- CK+ CK Shield CK- SHELL2 CE Remote NC DDC CLK DDC DATA GND +5V HP DET SHELL2
HDMI_SCLK HDMI_SDATA

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	27 -- HDMI/HDMI REDRIVER	1A
Date: Monday, December 28, 2015	Sheet 27of 51	

+5V 26,27,29,31,32,38,46,49
+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,27,29,30,32,33,34,35,36,37,38,43,46,49
+1.8V 31,47

+3V L2000 HCB1005KF-181T15_4 +3V_DVDD
C2000 1U/6.3V_4 C2001 10U/6.3VS_6 C2002 0.1U/16V_4
Close to PIN3

+3V L2002 HCB1005KF-181T15_4 +3V_DVDD-IO
C2015 10U/6.3VS_6 C2010 0.1U/16V_4

+5V L2005 HCB1005KF-181T15(180,1.5A)_4 +5V_DVDD
C2024 10U/6.3VS_6 C2025 0.1U/16V_4
Close to PIN41

C2030 10U/6.3VS_6 C2031 0.1U/16V_4
Close to PIN46

+5V_AVDD >40mils trace

+5V_AVDD L2003 HCB1005KF-181T15_4 +5V
C2016 10U/6.3VS_6 C2013 0.1U/16V_4 C2014 *AZ2015-01H
Close to PIN40
AGND

+1.8V_AVDD L2004 HCB1005KF-181T15_4 +1.8V
C2021 10U/6.3VS_6 C2022 0.1U/16V_4
Close to PIN20
AGND

U2000

Digital

+3V_DVDD 3 DVDD
+3V_DVDD-IO 18 DVDD-IO
+5V_DVDD 41 PVDD1
46 PVDD2

26 DIGITAL_D1 R2003 0_4 DMIC0 4 GPIO0/DMIC-DATA12
26 DIGITAL_CLK R2004 22/F_4 DMIC_CLK_R 5 GPIO1/DMIC-CLK
C2011 10P/50V_4
C2020 10P/50V_4

10 BIT_CLK_AUDIO R2006 0_4 HD_BCLK 14 BCLK
10 ACZ_SYNC_AUDIO ACZ_SYNC_AUDIO 15 SYNC
10 ACZ_SDIN0 R2007 22/F_4 HD_SDIN0 16 SDATA-IN
10 ACZ_SDOUT_AUDIO ACZ_SDOUT_AUDIO 17 SDATA-OUT

Close to PIN19 C2023 10U/6.3VS_6 LDO3_CAP 19 LDO3-CAP

29 HP_EAPD 1 I2S-EN/SPDIFO/GPIO2
PD# 2 PDB
6 I2C_DATA
7 I2C_CLK
8 I2S_IN
9 I2S_OUT
10 I2S_BCLK
11 I2S_MCLK
12 I2S_LRCK
13 DC-DET/EAPD
47 I2S-IN/I2S-OUT-JD(JD2)
30 SENSE_A R8553 0_4 SENSE_A_R 48 HP/LINE1-JD(JD1)
L_SPK+ 42 SPK-OUT-L+
L_SPK- 43 SPK-OUT-L-
R_SPK- 44 SPK-OUT-R-
R_SPK+ 45 SPK-OUT-R+
49 Thermal Pad

+3V_DVDD R8554 *100K/F_4

ALC3258-CG x QFN48

Analog

AVDD1 40 +5V_AVDD
CPVDD/AVDD2 20 +1.8V_AVDD
AVSS2 22 AGND
AVSS1 37
LDO1-CAP 39 R2002 100K/F_4 C2012 10U/6.3VS_6 C2017 10U/6.3VS_6 AGND
LDO2-CAP 21
VREF 38 C2018 0.1U/16V_4 C2019 2.2U/10V_6 AGND
Close to PIN38
CBP 23 CAP+
CBN 24 CAP- C2032 2.2U/10V_6
CPVEE 25 C2026 2.2U/10V_6 AGND
MIC2-CAP 32 C2029 10U/6.3VS_6 AGND

LINE1-L(PORT-C-L) 36
LINE1-R(PORT-C-R) 35
PCBEEP 34 AMP_BEEP
5VSTB/AUX MODE 33 5VSTB R2000 0_4 +5VS5 R2005 *0_4 +5VPCU
MIC2-R/SLEEVE 31 EXT_MIC_L
MIC2-L/RING2 30 AGND
MIC2-VREFO-R 29 VREFOUT_C R2009 2.2K_4 C2033 *1U/6.3V_4 AGND EXT_MIC_L EXT_MIC_L 30
MIC2-VREFO-L 28 MUTE_LED_CNTL_L R2008 0_4 MUTE_LED_CNTL MUTE_LED_CNTL 38
HPOUT-L(PORT-I-L) 27 HPOUT_L 29
HPOUT-R(PORT-I-R) 26 HPOUT_R 29
AGND SHIELD

Speaker 4 ohm: 40mils

L_SPK+ L2006 PBY160808T-600Y-N(60,3A)
L_SPK- L2007 PBY160808T-600Y-N(60,3A)
C2034 1000P/50V_4
C2035 1000P/50V_4

R_SPK- L2008 PBY160808T-600Y-N(60,3A)
R_SPK+ L2009 PBY160808T-600Y-N(60,3A)
C2036 1000P/50V_4
C2037 1000P/50V_4

EMI Components place near CODEC

1123 Change CN2000 P/N and FP 2Pin to 4Pin for SPK Vendor ID used

L_SPK+_R L_SPK-_R SPK_ID 13
CN2000 SPK-L Wire White Wire Black
SPEAKER CONN

CN2001 SPK-R Wire Black Wire Red
R_SPK-_R R_SPK+_R
88266-020L

Speaker 4 ohm: 40mils

place to near or under codec
1125 Add R8616 0603size short pad under codec for EMI request
R8616 *0_6/S
R2016 0_8
AGND

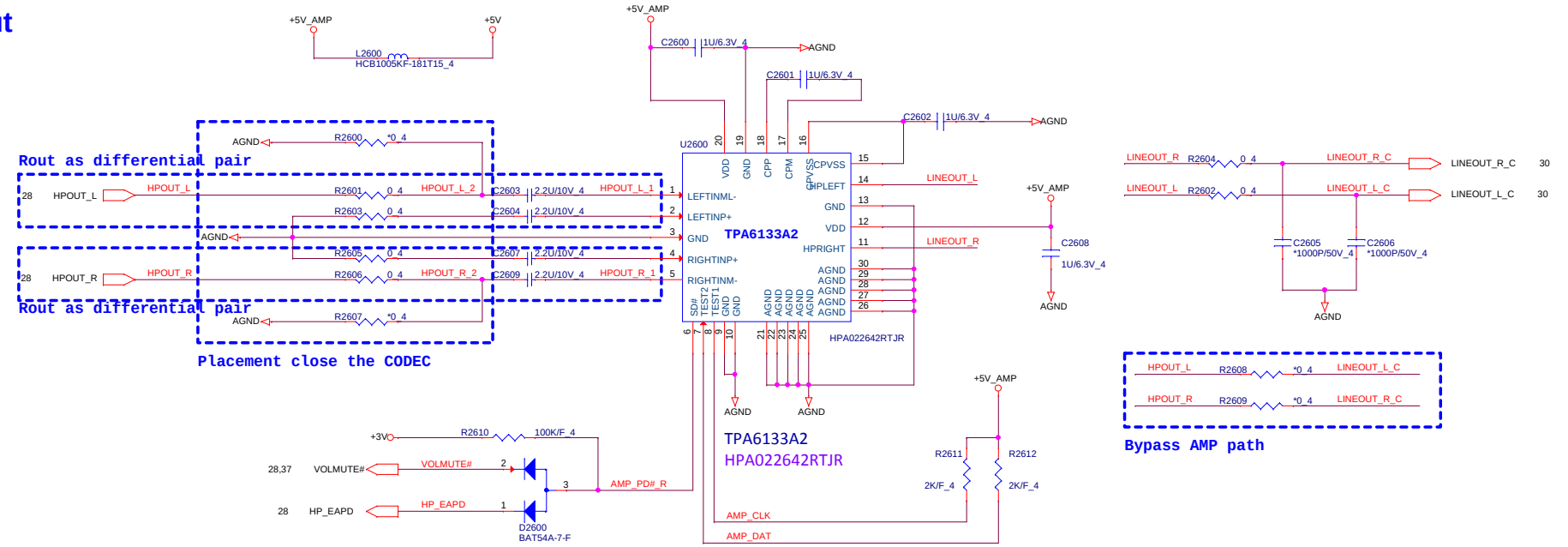
29,37 VOLMUTE#
D2000 RB500V-40
+3V_DVDD R2013 100K/F_4
PD#
10 ACZ_RST#_AUDIO R2017 0_4 Q2001 METR3904-G
C8566 0.1U/16V_4
R2019 10K/F_4 +3V_DVDD

AMP_BEEP C2039 0.1U/16V_4 AMP_BEEP_L R2015 1K_4 AMP_BEEP_R C2040 0.1U/16V_4
C2041 100P/50V_4 R2018 1K_4
AGND

+5V_AVDD R2014 10K/F_4
Q2002 2N7002K
ACZ_SPKR 10,12
AGND

+5V 26,27,28,31,32,38,46,49
+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,27,28,30,32,33,34,35,36,37,38,43,46,49

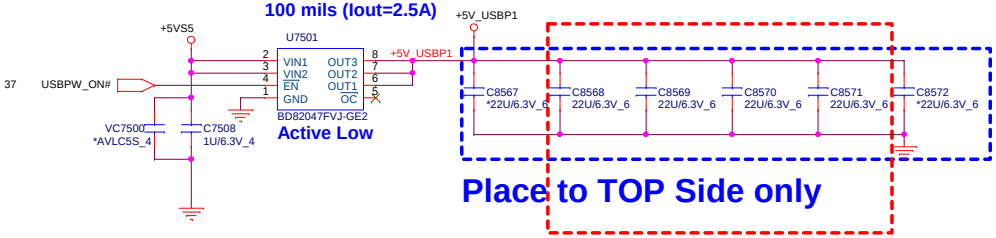
Head Phone out



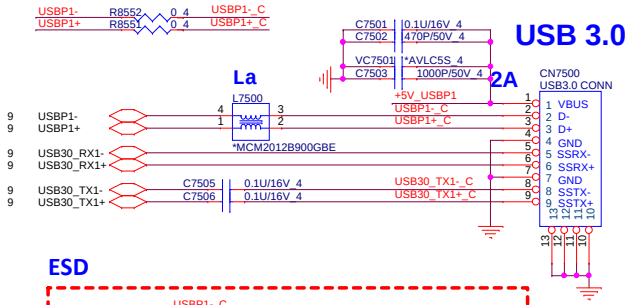
PROJECT : G37A/G37B Quanta Computer Inc.		
Size: Custom	Document Number: 29-- HP AMP HPA022642RTJR	Rev: 1A
Date: Monday, December 28, 2015	Sheet 29 of 51	

+5VS5 10,26,28,41,42,43,44,45,46,47,48,49,50,51
+3VPCU 5,10,33,37,38,40,41
+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,27,28,29,32,33,34,35,36,37,38,43,46,49
+1.8V 28,31,47

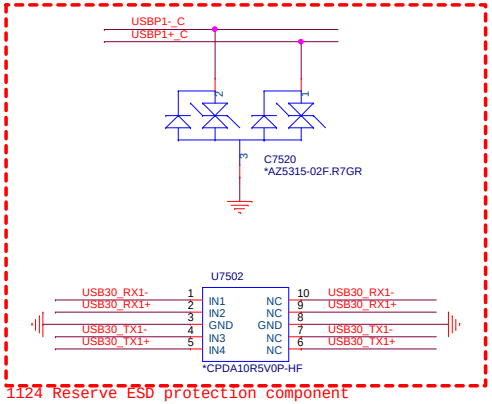
USB 2.0/3.0 Combo



1125 Mount C8568,C8569,C8570,C8571 for SVTP USB ports Short Test

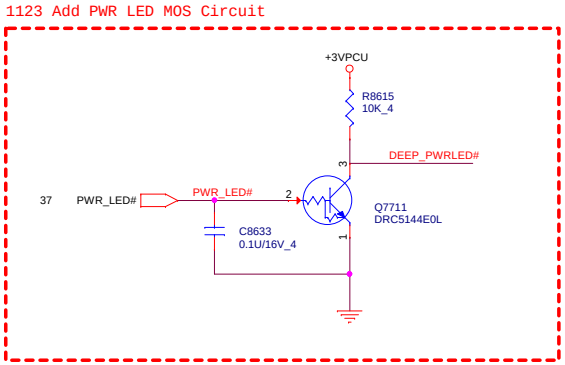


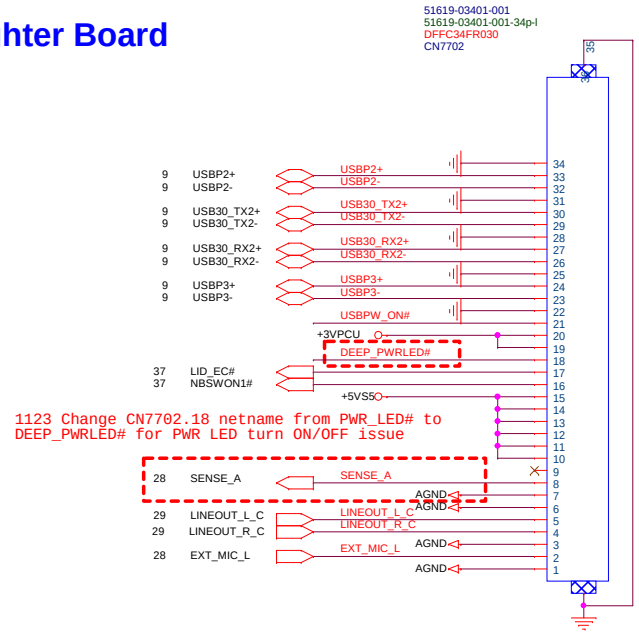
ESD



1124 Reserve ESD protection component

Daughter Board

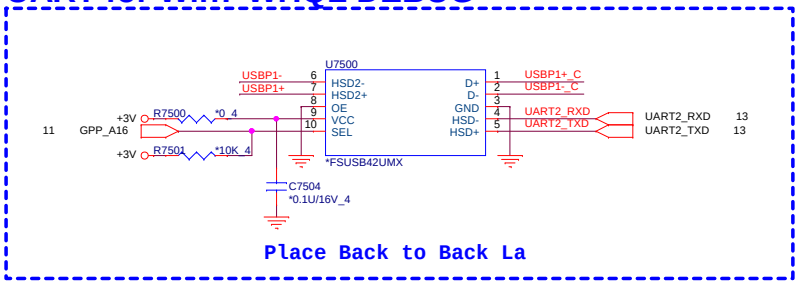




1123 Change CN7702.18 netname from PWR_LED# to DEEP_PWRLED# for PWR LED turn ON/OFF issue

1124 Pin7 and Pin8 need SWAP due to SENSE_A is refer to DGND so

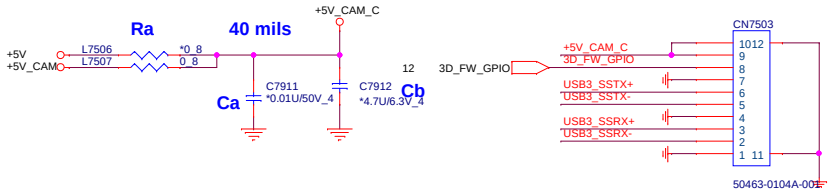
UART for Win7 WHQL DEBUG



+5V 26,27,28,29,32,38,46,49
+3VPCU 5,10,30,33,37,38,40,41
+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+1.8V 28,47

BOM: 3D CAm Stuff (except Ra,Ca,Cb)
BOM: HD CAm Un- Stuff

3D Camera Conn.

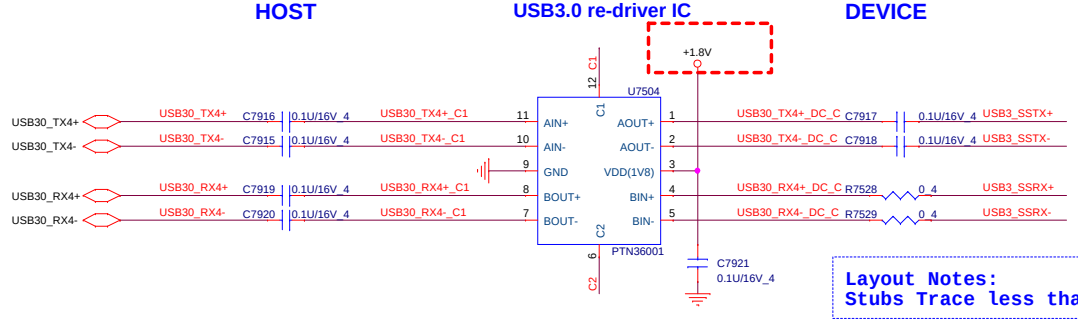


BOM: 3D CAm Stuff (except Rb, Rc)
BOM: HD CAm Un-Stuff

USB3.0

USB3.0 Re-driver IC

1123 Change UB3 re driver power rail from +1.8V_DEEP_SUS to +1.8V



Layout Notes:
Stubs Trace less than 150mil

1123 Change UB3 re driver power rail from +1.8V_DEEP_SUS to +1.8V

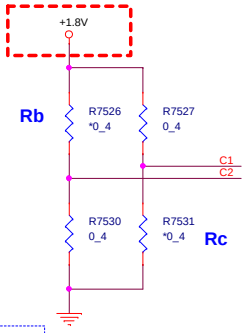


Table 4. C1 pin controls long/medium/short traces

State	Channel type	Pin C1 state	Channel B	Channel A	
			EQ[1]	DE[2]	OS[2]
H	Long	H	9 dB	–5.3 dB	1.1 V
high-Z	Medium	high-Z	6 dB	–3.1 dB	1.0 V
L	Short	L	3 dB	0 dB	0.9 V

Table 5. C2 pin controls long/medium/short traces

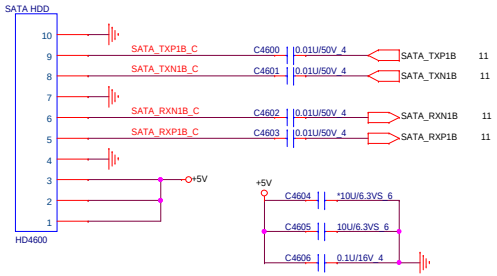
State	Channel type	Pin C2 state	Channel A	Channel B	
			EQ[1]	DE[2]	OS[2]
H	Long	H	9 dB	–5.3 dB	1.1 V
high-Z	Medium	high-Z	6 dB	–3.1 dB	1.0 V
L	Short	L	3 dB	0 dB	0.9 V

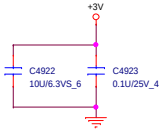
PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	31 – 3D CAM/REDRIVER	1A
Date: Monday, December 28, 2015	Sheet 31 of 51	

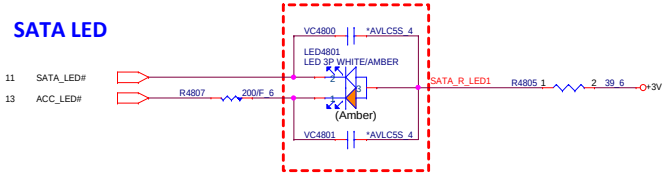
+VIN 26,38,39,40,41,42,43,44,45,47,48,49,50
+5V 26,27,28,29,31,38,46,49
+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,27,28,29,30,33,34,35,36,37,38,43,46,49

HDD



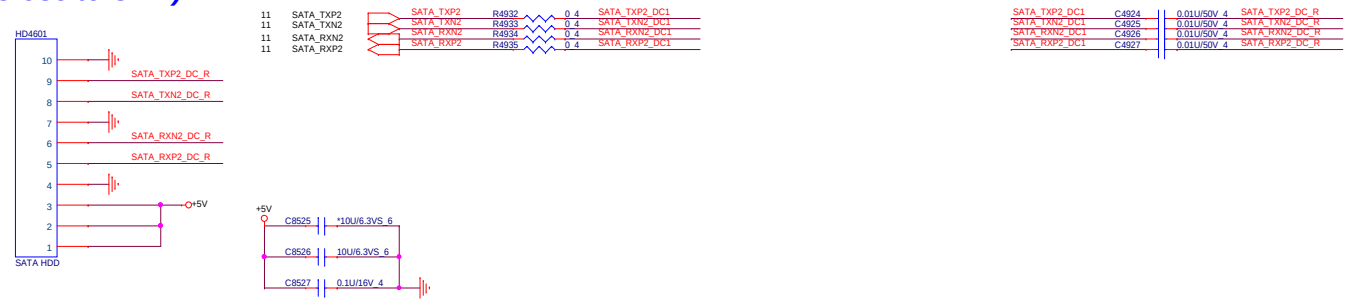


SATA LED



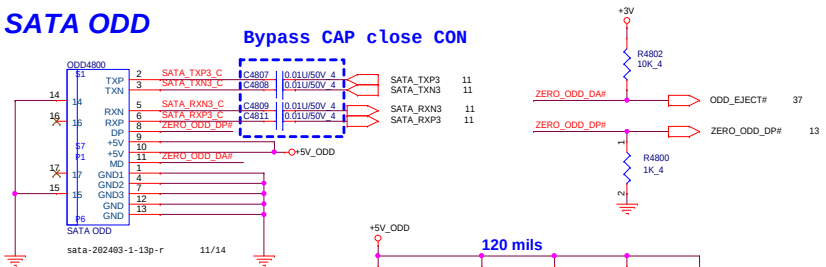
1124 Correct footprint ledltw-326dskf-5a-3p-smt

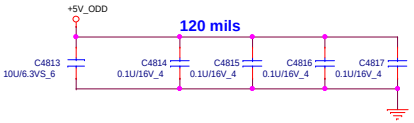
HDD (Close to ODD)

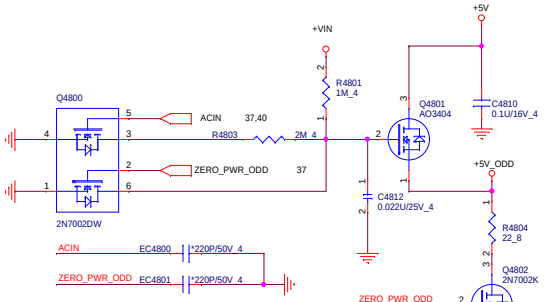


SATA ODD

Bypass CAP close CON







ZERO_PWR_ODD:
High : ODD power down
Low : ODD power on

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
C	32 -- HDD/ODD	1A

Date: Monday, December 28, 2015 Sheet 32 of 51

SSD

+3VPCU 5,10,30,37,38,40,41
+3VS5 10,12,14,16,26,37,41,42,46,47,48,51
+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,27,28,29,30,32,34,35,36,37,38,43,46,49

CN4900
NGFF-M-key

NGFF

1	CONFIG3/GND	3.3Vaux	2
3	GND	3.3Vaux	4
5	PERN3	N/A	6
7	PERP3	N/A	8
9	GND	DAS/DSS#(O)(OD)	10
11	PETN3	3.3Vaux	12
13	PETP3	3.3Vaux	14
15	GND	3.3Vaux	16
17	PERN2	3.3Vaux	18
19	PERP2	N/A	20
21	CONFIG0/GND	N/A	22
23	PETN2	N/A	24
25	PETP2	N/A	26
27	GND	N/A	28
29	PERN1	N/A	30
31	PERP1	N/A	32
33	GND	N/A	34
35	PETN1	N/A	36
37	PETP1	DEVSLP	38
39	GND	N/A	40
41	SATA RX+/PERN0	N/A	42
43	SATA RX-/PERP0	N/A	44
45	GND	N/A	46
47	SATA TX-/PETN0	N/A	48
49	SATA TX+/PETP0	PERST#	50
51	GND	CLKREQ#	52
53	REFCLKN	PEWAKE#/NC	54
55	REFCLKP	MFGDAT	56
57	GND	MFGCLK	58
59	KEY	KEY	60
61	KEY	KEY	62
63	KEY	KEY	64
65	KEY	KEY	66
67	KEY	KEY	68
69	N/A	SUSCLK	
71	PEDET(NC-PCIE/GND-SATA)	3.3Vaux	70
73	GND	3.3Vaux	72
75	GND	3.3Vaux	74

ngff-as0bc56-r06qm-7h-75p-km

100 mils
+3V_SSD R4901 0_8
C4905 0.01U/50V_4
C4902 0.1U/25V_4
C4903 4.7U/6.3V_6
TP4900

R8549 10K_4
R4902 *0_4 DEVSLP0 9

R4905 0_4 PLTRST# 2,12,16,19,34,35,36,37
R4906 0_4 PCIE_CLKREQ_SSD# 11

R4907 100K/F_4
R4908 0_8
TP8521
EC4901 470P/50V_4
EC4900 10U/6.3V_6
EC4902 10U/6.3V_6

11 PCIE_SATA_RXN12
11 PCIE_SATA_RXP12
C4901 0.22U/10V_4 PCIE_SATA_TXN12_C
C4904 0.22U/10V_4 PCIE_SATA_TXP12_C
11 PCIE_SATA_TXN12
11 PCIE_SATA_TXP12
11 PCIE_SATA_RXN11
11 PCIE_SATA_RXP11
C4906 0.22U/10V_4 PCIE_SATA_TXN11_C
C4907 0.22U/10V_4 PCIE_SATA_TXP11_C
11 PCIE_SATA_TXN11
11 PCIE_SATA_TXP11
11 PCIE_SATA_RXN10
11 PCIE_SATA_RXP10
C4908 0.22U/10V_4 PCIE_SATA_TXN10_C
C4909 0.22U/10V_4 PCIE_SATA_TXP10_C
11 PCIE_SATA_TXN10
11 PCIE_SATA_TXP10
R4903 0_4 PCIE_SATA_RXP9_C
R4904 0_4 PCIE_SATA_RXN9_C
11 PCIE_SATA_RXP9
11 PCIE_SATA_RXN9
C4910 0.22U/10V_4 PCIE_SATA_TXN9_C
C4911 0.22U/10V_4 PCIE_SATA_TXP9_C
11 PCIE_SATA_TXN9
11 PCIE_SATA_TXP9
11 CLK_PCIE_SSDN
11 CLK_PCIE_SSDP

11 GPIO35 R4909 0_4 R4910 *0_4 PEDET
Q4900 2N7002K

Mini Card WLAN/BT(Option)

+3VPCU R5001 10K_4
R5003 200K_4
Q5001 AO3409
Q5002 2N7002K
37 EC_AOCS
C5005 0.022U/25V_4
100mils +3V_AOCS
+3VS5 +3V_WLAN_P
C5000 *0.1U/16V_4

Support Wake Function(Reserve)

+3V_WLAN_P R5008 *10K_4
Q5000 *DRC5144E0L
10,35,36 PCIE_WAKE#
MINICAR_PME#

100 mils
+3V_WLAN_P
C5001 0.1U/16V_4
C5002 0.1U/16V_4
C5003 0.1U/16V_4
C5004 10U/6.3VS_6
9 USBP7+
9 USBP7-

CN5000

NGFF

1	GND	3.3Vaux	2
3	USB_D+	3.3Vaux	4
5	USB_D-	LED#1	6
7	GND	PCM_CLK	8
9	SDIO CLK(O)	PCM_SYNC	10
11	SDIO CMDIO)	PCM_IN	12
13	SDIO DAT0(IO)	PCM_OUT	14
15	SDIO DAT1(IO)	LED#2	16
17	SDIO DAT2(IO)	GND	18
19	SDIO DAT3(IO)	UART Wake	20
21	SDIO Wake(I)	UART Rx	22
23	SDIO Reset	Key 5	24
25	KEY1	Key 6	26
27	KEY2	Key 7	28
29	KEY3	Key 8	30
31	KEY4	UART Tx	32
33	GND	UART CTS	34
35	PETp0	UART RTS	36
37	PETn0	Clink RESET	38
39	GND	CLink DATA	40
41	PERp0	CLink CLK	42
43	PERn0	COEX3	44
45	GND	COEX2	46
47	REFCLKP0	COEX1	48
49	REFCLKN0	SUSCLK(32KHz)	50
51	GND	PERST0#	52
53	CLKREQ0#	W_DISABLE2#	54
55	PEWake0#	W_DISABLE1#	56
57	GND	NFC I2C SM DATA	58
59	PETp1	NFC I2C SM CLK	60
61	PETn1	ALERT#	62
63	GND	RESERVED	64
65	PERp1	UIM_SWP/PERST1#	66
67	PERn1	UIM_POWER_SNK	68
69	GND	UIM_POWER_SRC	70
71	Reserved1	3.3Vaux	72
73	Reserved2	3.3Vaux	74
75	GND	GND	76
		GND	77

WLAN_NGFF CONN (E-Key)

9 PCIE_TXP6_WLAN
9 PCIE_TXN6_WLAN
9 PCIE_RXP6_WLAN
9 PCIE_RXN6_WLAN
11 CLK_PCIE_WLANP
11 CLK_PCIE_WLANN
11 PCIE_CLKREQ_WLAN#
R5005 0_4 REQ_WLAN#
MINICAR_PME#
9 CLK_24M_DEBUG
9,34,37 LFRAME#

WLAN_LED# R5002 4.7K_4 +3V_WLAN_P
R5004 0_4
Q5003 2N7002DW
BT_OFF 13
INT_BT_OFF#
RF_OFF_PCH 10
INT_RF_OFF#
PLTRST#
INT_BT_OFF# R5006 10K_4 +3V_WLAN_P
INT_RF_OFF# R5007 10K_4
LAD0 9,34,37
LAD1 9,34,37
LAD2 9,34,37
LAD3 9,34,37

For EMI Suggestion

CLK_24M_DEBUG R5000 *0_4 EC5001 *33P/50V_4
PCIE_WAKE# EC5002 *220P/50V_4

PROJECT : G37A/G37B
Quanta Computer Inc.

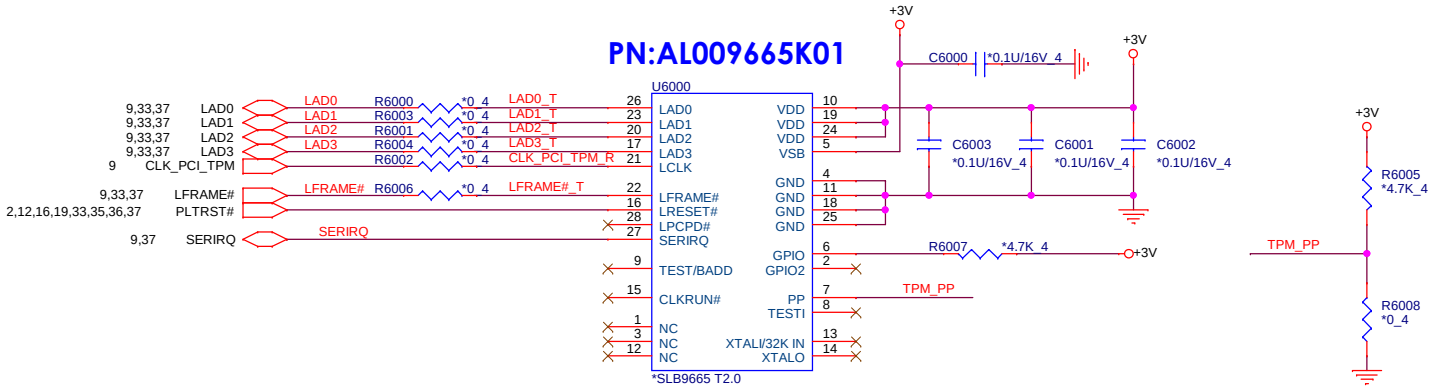
Size	Document Number	Rev
Custom	33 -- SSD/WLAN	1A

Date: Monday, December 28, 2015 Sheet 33 of 51

+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,27,28,29,30,32,33,35,36,37,38,43,46,49
+3V_CAM 26

TPM (2.0)

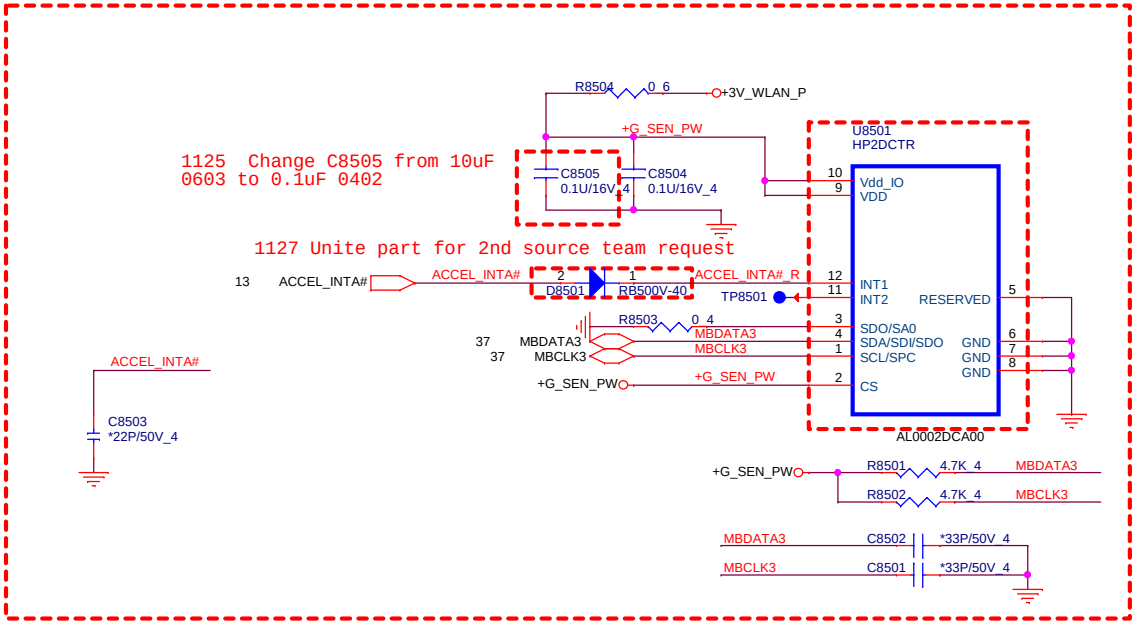
PN:AL009665K01



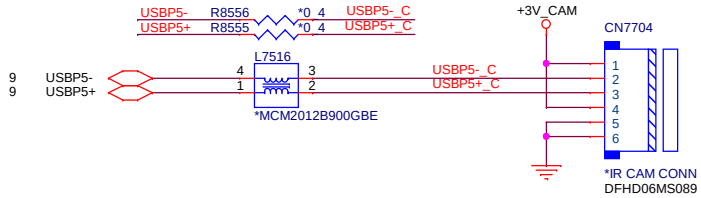
Accelerometer Sensor

1124 Modify Accelerometer Sensor circuit follow HP2DCTR_1124.DSN

1126 Change G sensor footprint from lga12-2x2-5 to lga12-2x2-5-hp2dctr



IR CAM



PROJECT : G37A/G37B
Quanta Computer Inc.

<Title>

Size	Document Number	Rev
B	34 -- TPM/G-Sensor	1A

Date: Monday, December 28, 2015 Sheet 34 of 51

+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,27,28,29,30,32,33,34,36,37,38,43,46,49
+3VLANVCC 46

LAN & RJ45

For SWR mode support RTL8111HSH/RTL8107ESH
Stuff La, Ca ,Cb

* Place Cc,Cd,Ce,Cf for RTL8111H(S) & RTL8107E(S) close to each VDD10 pin-- 3, 22, 8 , 30
* Place Cg,Ch for RTL8111H(S) & RTL8107E(S) close to each VDD10 pin-- 22(reserved)

Power trace Layout 寬度> 60mil
>60mil >60mil

+1.05V_LAN_REGOUT L3000 4.7UH,+-20%,650MA_1210 La
Ca C3004 0.1U/16V_4
Cb C3005 4.7U/6.3VS_4
Cc PIN3 C3006 0.1U/16V_4
Cd PIN8 C3007 0.1U/16V_4
Ce PIN30 C3008 0.1U/16V_4
Cf PIN22 C3009 0.1U/16V_4
Cg PIN22 C3010 1U/6.3V_4
Ch PIN22 C3011 0.1U/16V_4
Cq PIN30 C3023 *1U/6.3V_4
Cr PIN30 C3024 *0.1U/16V_4
+1.05V_LAN

LAN_XTAL1 R3000 10_4 XTAL1
Y3000 25MHZ +-30PPM
XTAL2
C3000 10P/50V_4
C3001 10P/50V_4

R3001 2.49K/F_4

LAN_AMBLED# TP3000
LAN_LED1 TP3001
LED2 TP3002

+1.05V_LAN
+3V_LAN
LAN_AMBLED#
R3003 Ra 0_4 LAN_WLED#
R3004 Rb *0_4 LAN_WLED#

+3V
R3002 1K_4
ISOLATEB
R3005 15K/F_4

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

For GbE
* Place Ra
For 10/100
* Place Rb

U3000
Please add 9 GND VIAs connection with thermal PAD
RTL8107ESH-CG
MDI0+ MDI0- MDI1+ MDI1- MDI2+ MDI2-
MDIP0 MDIN0 AVDD10(NC) MDIP1 MDIN1 MDIP2(NC) MDIN2(NC) AVDD10
REGOUT(NC) VDDREG(VDD33) DVDD10(NC) LANWAKEB ISOLATEB PERSTB HSON HSOP
+1.05V_LAN_REGOUT 60 mils 40 mils +1.05V_LAN_REGOUT
+3V_LAN
+1.05V_LAN
PCIE_WAKE#_R R3006 0_4 PCIE_WAKE# 10,33,36
ISOLATEB
PCIE_RXN7_LAN_L C3002 0.1U/16V_4 PCIE_RXN7_LAN 9
PCIE_RXP7_LAN_L C3003 0.1U/16V_4 PCIE_RXP7_LAN 9
PLTRST# 2,12,16,19,33,34,36

For GbE
* Place RTL8111HSH-CG
For 10/100
* Place RTL8107ESH-CG/RTL8166EH-CG

RTL8111HSH-CG
MDIP3(NC) MDIN3(NC) AVDD33(NC) CLKREQB HSIP HSIN REFCLK_P REFCLK_N
MDI3+ MDI3-
+3V_LAN
11 PCIE_CLKREQ_LAN# PCIE_CLKREQ_LAN#
CLK_PCIE_LANN CLK_PCIE_LANP PCIE_TXN7_LAN PCIE_TXP7_LAN
CLK_PCIE_LANN 11
CLK_PCIE_LANP 11
PCIE_TXN7_LAN 9
PCIE_TXP7_LAN 9

Place to TOP
+3VLANVCC 360_4 R3017 LED3000 3P AMBER LED LAN_AMBLED#
VC3000 *AVLC5S_4

Place to BOT
+3VLANVCC 360_4 R3018 LED3001 3P WHITE LED LAN_WLED#
VC3001 *AVLC5S_4

For 10/100 stuff only
MDI3-_1 R3007 *0_4
MDI3+_1 R3008 *0_4
MDI2-_1 R3009 *0_4
MDI2+_1 R3010 *0_4
C3012 68P/50V_4

* Place Cj and Ck, close to each VDD33 pin-- 11, 32 for RTL8111H(S) & RTL8107E(S)
* For surge improvement, place Cm and Cn, close to each VDD33 pin-- 11, 32(optional)

+3VLANVCC +3V_LAN
PIN23 C3025 *0.1U/16V_4 Ci
PIN11 C3013 0.1U/16V_4 Cj
PIN32 C3014 0.1U/16V_4 Ck
PIN11 C3015 *4.7U/6.3VS_4 Cm
PIN32 C3016 *4.7U/6.3VS_4 Cn

PIN23 C3017 4.7U/6.3VS_4 Co
PIN23 C3018 0.1U/16V_4 Cp
For SWR mode support RTL8111HSH/RTL8107ESH
Stuff Co, Cp

For 10/100：Ua
For Giga：Ub

Ua U3001
MDI1-_1 MDI1+_1 LAN_MCTG1 MDI0-_1 MDI0+_1 LAN_MCTG0
TD+ TD- CT RD+ RD- CT GND
TX+ TX- RX- CT RX+
MDI1- TRA_V_DAC MDI1+ MDI0+ TRA_V_DAC MDI0-
C3022 0.01U/50V_4
*NS681684
DB0LE6LAN20

1st source：NS681684 DB0LE6LAN20
2nd source：N-3110M DB0Y11LAN00

Ub U3002
MDI2+ MDI2- MDI3- MDI3+ MDI0+ MDI0- MDI1+ MDI1-
TD1+ TD1- TD2+ TD2- TD3+ TD3- TD4+ TD4-
MX1+ MX1- MX2+ MX2- MX3+ MX3- MX4+ MX4-
MDI2+_1 MDI2-_1 MDI3-_1 MDI3+_1 MDI0+_1 MDI0-_1 MDI1+_1 MDI1-_1
TRA_V_DAC TRA_V_DAC TRA_V_DAC TRA_V_DAC TRA_V_DAC
TCT1 TCT2 TCT3 TCT4 GND
MCT1 MCT2 MCT3 MCT4 MCT1
LAN_MCTG0 Ra R3011 75/F_4
LAN_MCTG1 Rb R3012 75/F_4
LAN_MCTG2 Rc R3014 75/F_4
LAN_MCTG3 Rd R3016 75/F_4
NS892407
C3020 10P/3KV_1808

For 10/100：Ra,Rb
For Giga：Ra,Rb,Rc,Rd

For GiGA BOT:GST5009B LF,DB0Z06LAN00
FCE :NS892407 ,DB0LL1LAN00

RJ45
CN3000
MDI3-_1 MDI3+_1 MDI1-_1 MDI2-_1 MDI2+_1 MDI1+_1 MDI0-_1 MDI0+_1
RX1- RX1+ RX0- TX1- TX1+ RX0+ TX0- TX0+
GND2 GND1
R3013 0_6
R3015 0_6
RJ45_CONN
DFTJ08FR475
rj45-c10220-10833-l-8p

1125 Change CN3000 PN from DFTJ08FR335 to DFTJ08FR475

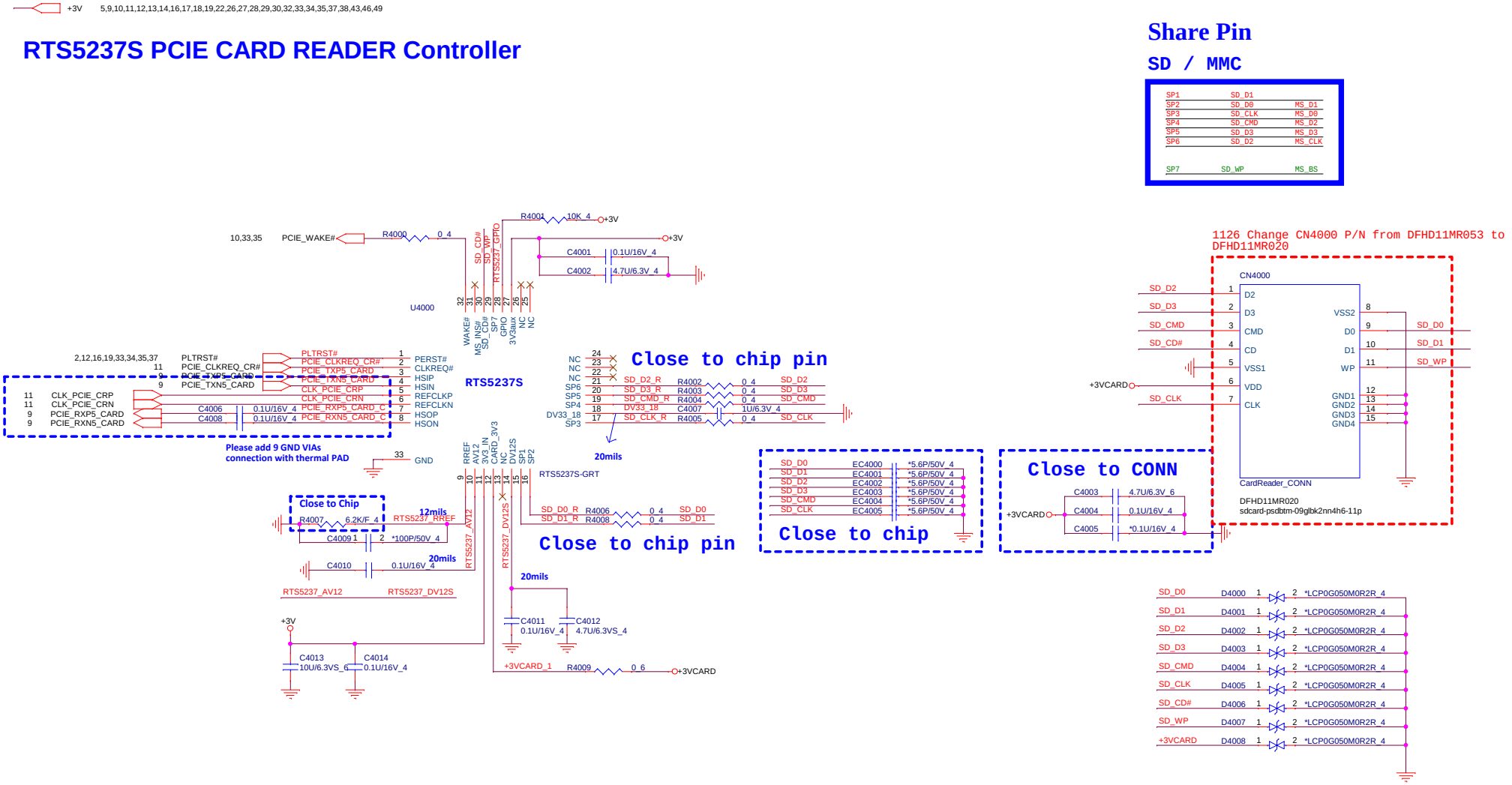
PROJECT : G37A/G37B
Quanta Computer Inc.
Size Custom | Document Number 35 – LAN RTL8107ESH-CG/RJ45 | Rev 1A
Date: Monday, December 28, 2015 | Sheet 35 of 51

RTS5237S PCIE CARD READER Controller

Share Pin

SD / MMC

SP1	SD_D1	
SP2	SD_D0	MS_D1
SP3	SD_CLK	MS_D0
SP4	SD_CMD	MS_D2
SP5	SD_D3	MS_D3
SP6	SD_D2	MS_CLK
SP7	SD_WP	MS_BS



PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	36 – CR RTS5237S/CR SOCKET	1A

Date: Monday, December 28, 2015 Sheet 36 of 51

TCH_PNL_RST#_EC: Dedicated active low reset pin; Has internal pullup to TS VDDBUS (+3.3V).
Carefully set to prevent leakage (S3/S4/S5)

IT8987

U5100

LPC: LAD0, LAD1, LAD2, LAD3, PLTRST#, CLK_24M_KBC, LFRAME#, TCH_PNL_RST#_EC, DC_PROCHOT_OFF, DC_PROCHOT_OFF_R, SERIRQ, SIO_EXT_SMI#, SIO_EXT_SCI#, EC_WRST, EC_RCIN#, GPUT_CLK

GPIO: EGCLK/WUI27/GPE3, EGCS#/WUI26/GPE2, EGAD/WUI25/GPE1, KSO16/SMOSI/GPC3, KSO17/SMISO/GPC5, L80HLAT/BAO/WUI24/GPE0, L80LLAT/WUI7/GPE7, DTR1/SBUSY/GPG1/ID7, HMOSIGPH6/ID6, HMISO/GPH5/ID5, HSCK/GPH4/ID4, HSCE#/WUI19/GPH3/ID3, CTX1/WUI18/GPH2/SMDAT3/ID2, CRX1/WUI17/GPH1/SMCLK3/ID1, CLKRUN#/WUI16/GPH0/ID0, GPH7

PS/2: PS2DAT0/TMB1/GPF1, PS2CLK0/TMB0/GPF0, PS2DAT1/RTS0#/GPF3, PS2CLK1/DTR0#/GPF2, PS2DAT2/WUI21/GPF5, PS2CLK2/WUI20/GPF4

SM_BUS: SMCLK2/WUI22/GPF6/PECI, SMDAT2/WUI23/GPF7, SMCLK0/GPB3, SMDAT0/GPB4, SMCLK1/GPC1, SMDAT1/GPC2

UART: DSR0#/GPG6, GINT/CTS0#/GPD5, RXD/SIN0/GPB0, TXD/SOUT0/GPB1

FLASH: SSCE1#/GPG0, FSCK/GPG7, FMISO/GPG5, FMOSI/GPG4, FSCE#/GPG3, SSCE0#/GPG2

PWM: PWM0/GPA0, PWM1/GPA1, PWM2/GPA2, PWM3/GPA3, PWM4/GPA4, PWM5/GPA5, PWM6/SSCK/GPA6, PWM7/GPA7, TACH0/GPD6, TACH1/TMA1/GPD7, DAC1/GPJ1, DAC0/GPJ0, TMR0/WUI2/GPC4, TMR1/WUI3/GPC6

KBMX: KSO0/PD0, KSO1/PD1, KSO2/PD2, KSO3/PD3, KSO4/PD4, KSO5/PD5, KSO6/PD6, KSO7/PD7, KSO8/ACK#, KSO9/BUSY, KSO10/PE, KSO11/ERR#, KSO12/SLCT, KSO13, KSO14, KSO15, KSI0/STB#, KSI1/AFD#, KSI2/INIT#, KSI3/SLIN#, KSI4, KSI5, KSI6, KSI7

WAKE UP: PWRSW/GPE4, RI1#/WUI0/GPD0, RI2#/WUI1/GPD1, WUI5/GPE5, RING#/PWRFAIL#/CK32KOUT/LPCRST#/GPB7

A/D D/A: ADC0/GPI0, ADC1/GPI1, ADC2/GPI2, ADC3/GPI3, ADC4/WUI28/GPI4, ADC5/WUI29/GPI5, ADC6/WUI30/GPI6, ADC7/WUI31/GPI7

CLOCK: GPJ6, GPJ7, DAC5/RIG0#/GPJ5, DAC4/DCD0#/GPJ4, DAC3/GPJ3, DAC2/GPJ2

IT8987E/BX
AJ089870F01

For Touch-Pad

Close to BIOS

For Gsensor

H_PECI (50ohm)
Route on microstrip only
Spacing >18 mils
Trace Length: 0.4~6.125 iches

EC_PECI (50ohm)
Trace Length: <0.5 iches

For GPU thermal

for Battery charge/charge

for DDR Thermal IC

1006 Delete BAT_I and Reserved TP

BOM: 3D CAMERA

For HW Throttling

Q5100 *2N7002DW
Q5105 *2N7002DW

	AC_PRESENT_EC	H_PROCHOT#_EC	H_PROCHOT#
AC IN: AC mode Operation	H	L	H
AC remove: AC mode to DC mode	L	L	L
DC mode recover from PROCHOT	L	H	H

Adapter select for EC

Ra: R5114 10K/F_4 ADAPTER_SEL_EC
Rb: R5115 12.1K/F_4

	Ra	Rb	ADAPTER_SEL_EC	BOM
200W	10K(CS31002FB26)	100K (CS41002FB28)	3V	
150W	10K(CS31002FB26)	27.4K(CS32742FB14)	2.42V	
120W	10K(CS31002FB26)	12.1K(CS31212FB28)	1.8V	DIS
90W	10K(CS31002FB26)	6.2K(CS26202FB17)	1.26V	UMA
65W	10K(CS31002FB26)	2.2K(CS22202FB08)	0.59V	
45W	NC	10K(CS31002FB26)	0V	

Adapter Type check

D5100 *1SS355
D5103 PDZ5.6B
AD_TYPE R5117 2K/F_4 R5118 100/F_4 AD_ID
C5111 0.1U/25V_4
R5119 12.1K/F_4
C5112 100P/50V_4

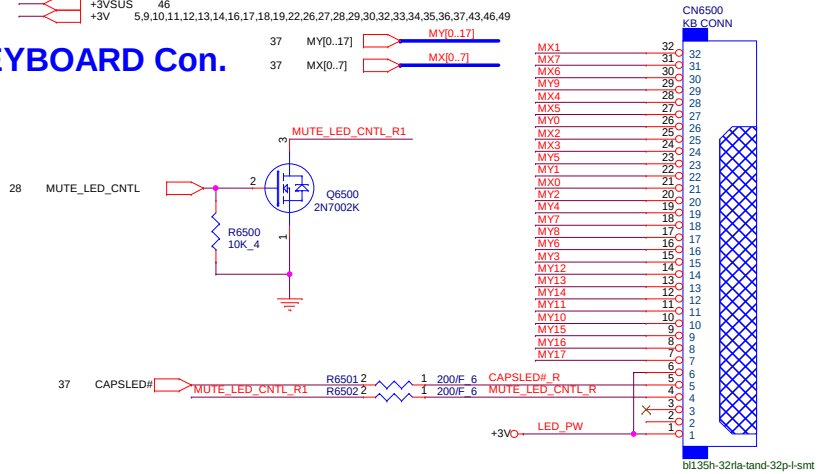
BOM:DIS only

CLOSE to EC Pin

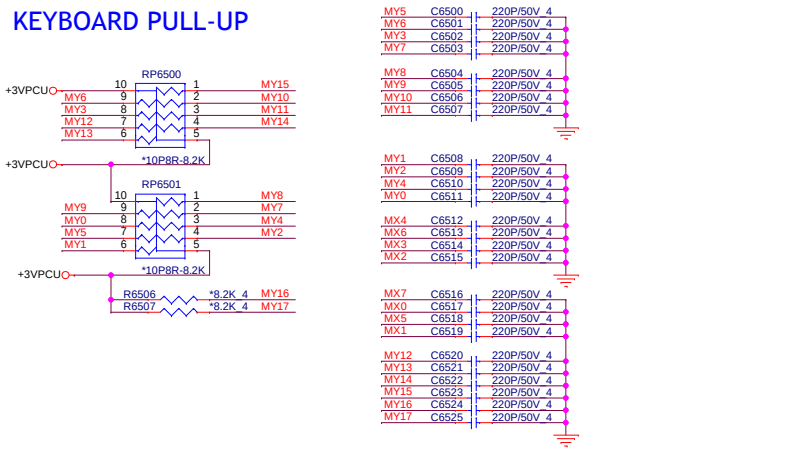
PROJECT : G37A/G37B
Quanta Computer Inc.
Size: Custom | Document Number: 37 -- EC (IT8987) | Rev: 1A
Date: Monday, December 28, 2015 | Sheet: 37of 51

+VIN 26,32,39,40,41,42,43,44,45,47,48,49,50
+5V 26,27,28,29,31,32,46,49
+3VPCU 5,10,30,33,37,40,41
+3VS5 10,12,14,16,26,33,37,41,42,46,47,48,51
+3VSUS 46
+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,27,28,29,30,32,33,34,35,36,37,43,46,49

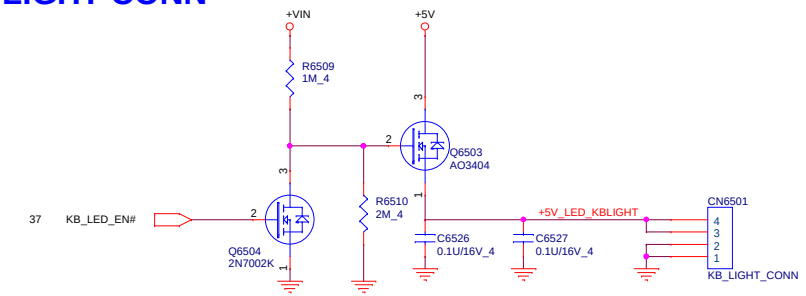
KEYBOARD Con.



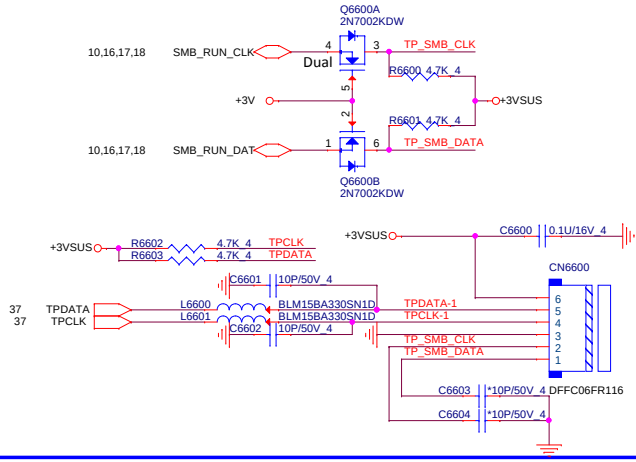
KEYBOARD PULL-UP



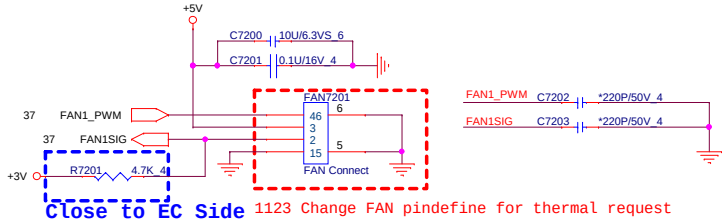
KB LIGHT CONN



Touch Pad Connector

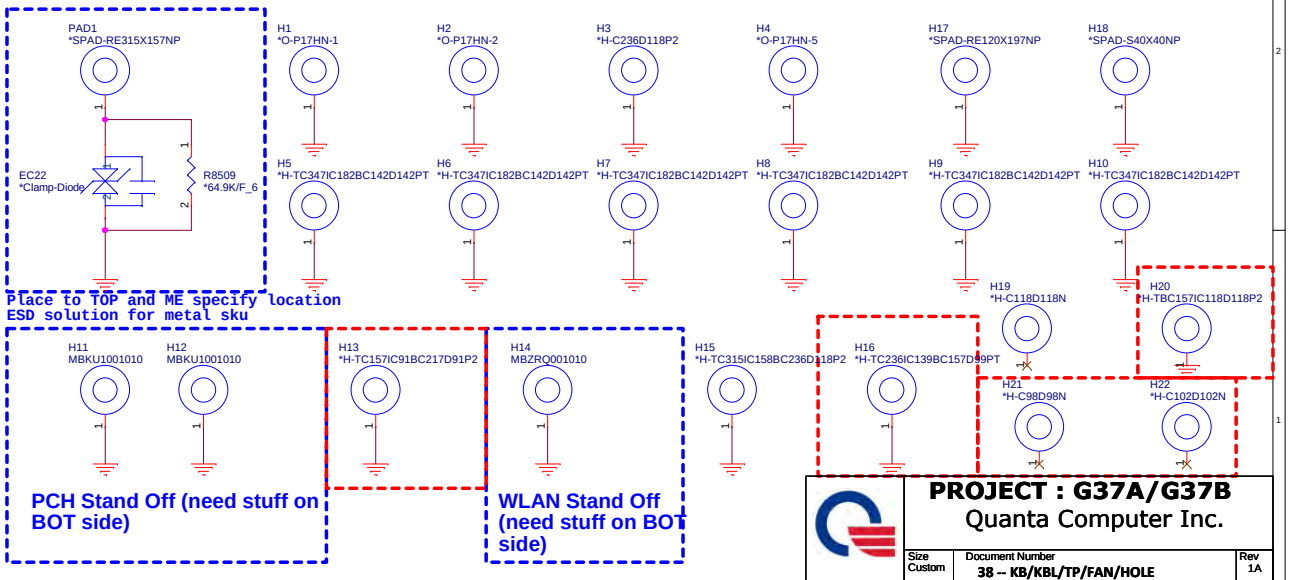


FAN



Close to EC Side 1123 Change FAN pindefine for thermal request

HOLE



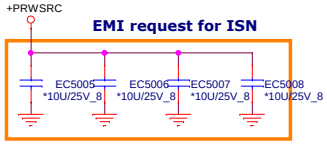
Place to TOP and ME specify location
ESD solution for metal sku

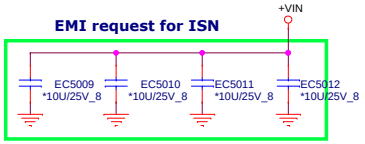
PCH Stand Off (need stuff on BOT side)

WLAN Stand Off (need stuff on BOT side)

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	38 -- KB/KBL/TP/FAN/HOLE	1A
Date: Monday, December 28, 2015	Sheet 38 of 51	

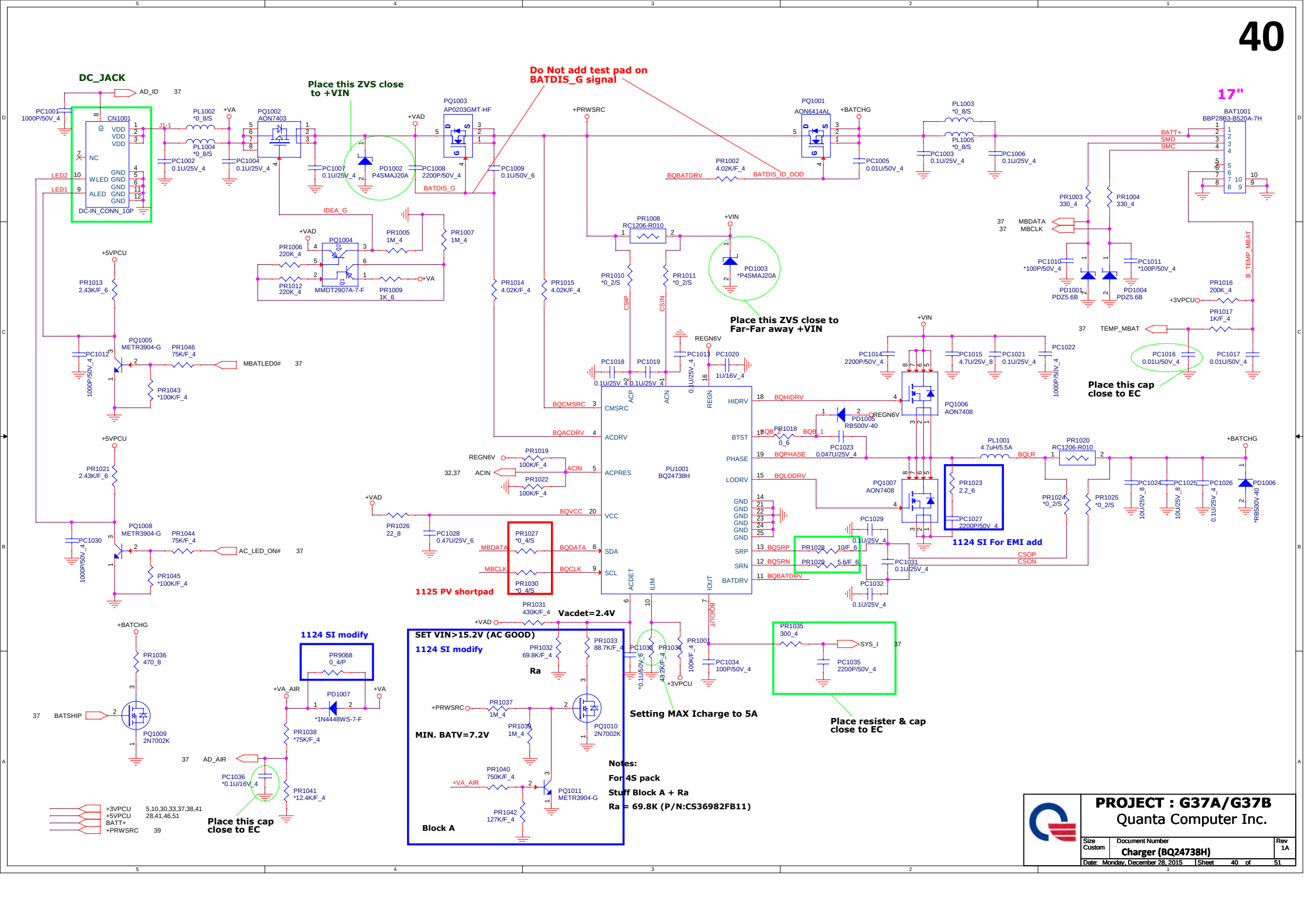


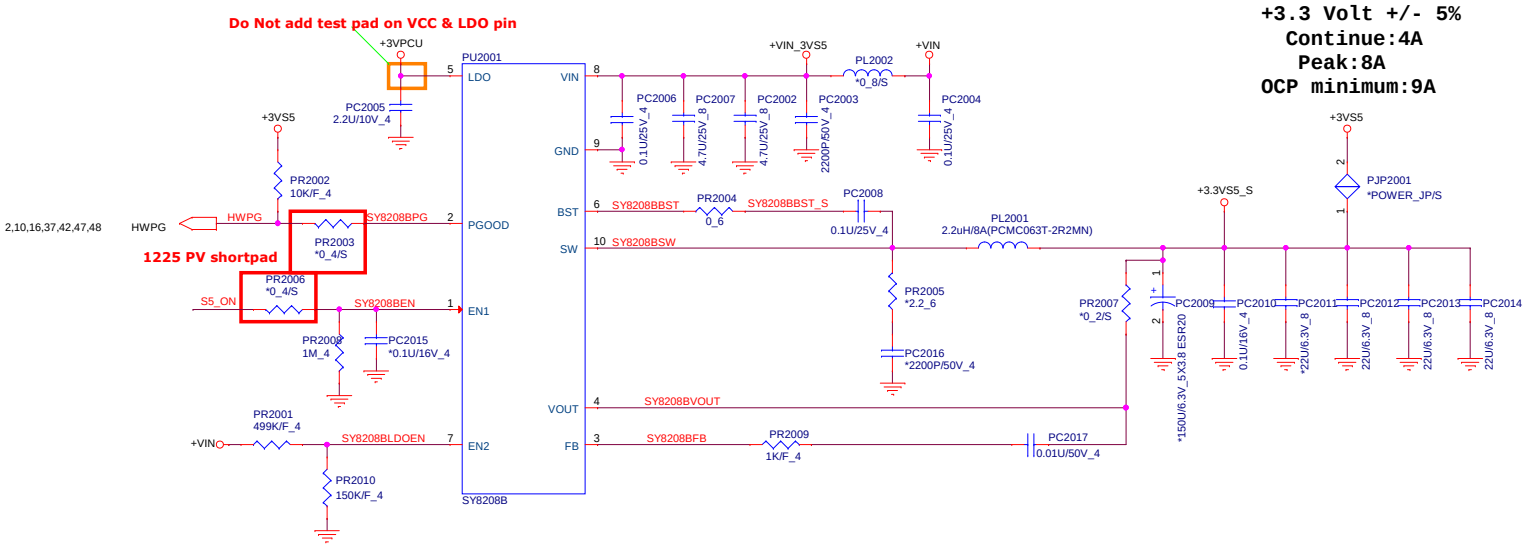


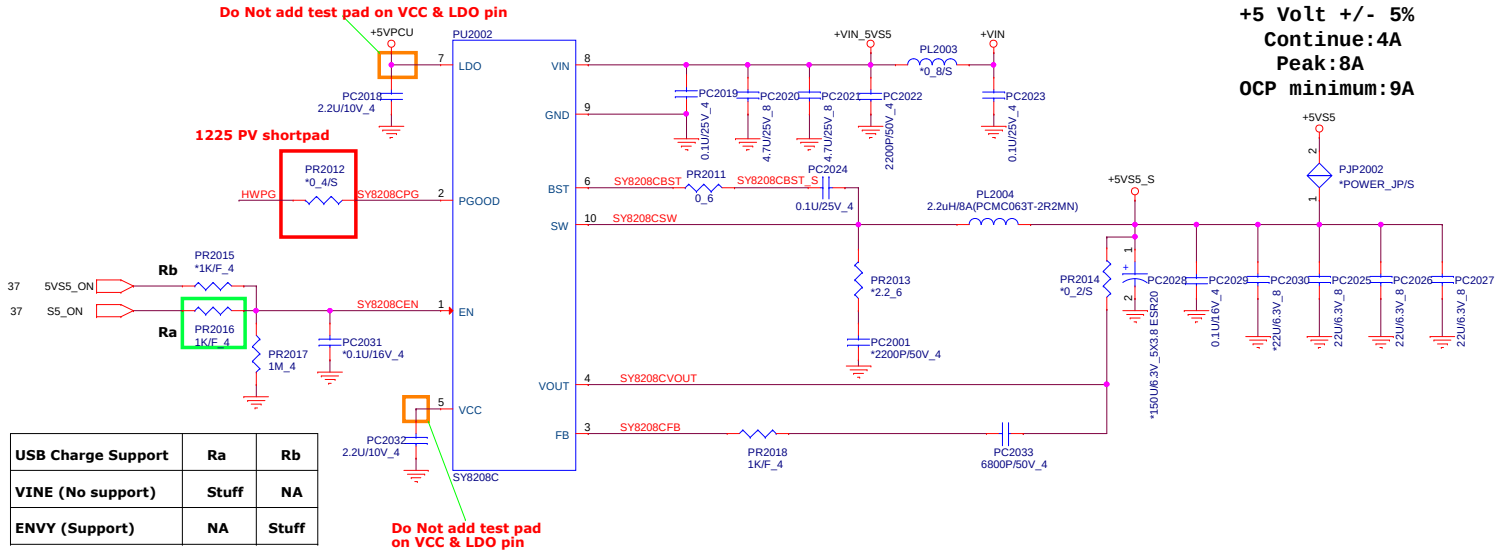
PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	RF Solution	1A

Date: Monday, December 28, 2015 | Sheet 39of 51


DC_JACK
Place this ZVS close to +VIN
Do Not add test pad on BATDIS_G signal
17"
Place this ZVS close to Far-Far away +VIN
Place this cap close to EC
1124 SI For EMI add
1125 PV shortpad
1124 SI modify
SET VIN>15.2V (AC GOOD)
1124 SI modify
Vacdet=2.4V
Setting MAX Icharge to 5A
Place resister & cap close to EC
MIN. BATV=7.2V
Notes:
For 4S pack
Stuff Block A + Ra
Ra = 69.8K (P/N:CS36982FB11)
Block A
Place this cap close to EC
PU1001
BQ24738H
PROJECT : G37A/G37B
Quanta Computer Inc.
Charger (BQ24738H)
Size Custom
Rev 1A
Date: Monday, December 28, 2015
Sheet 40 of 51





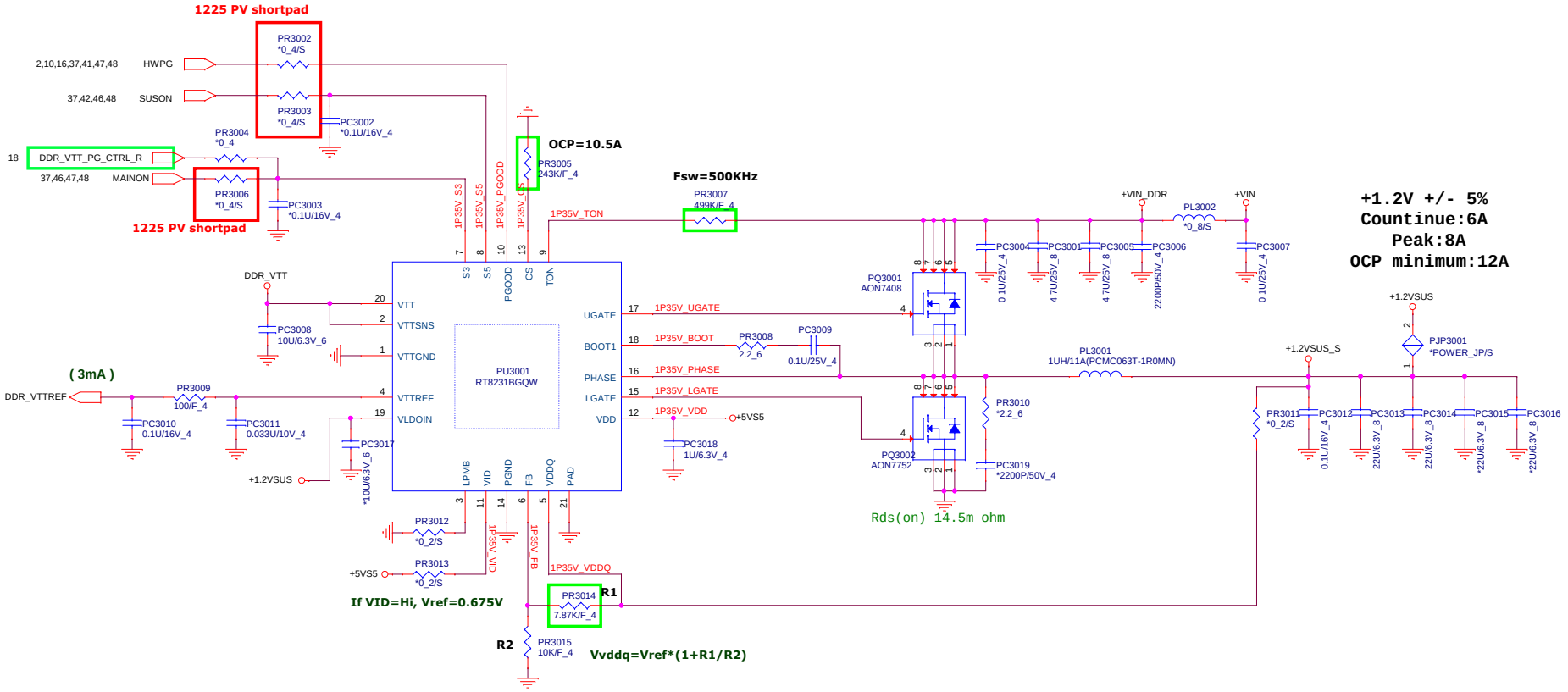
USB Charge Support	Ra	Rb
VINE (No support)	Stuff	NA
ENVY (Support)	NA	Stuff

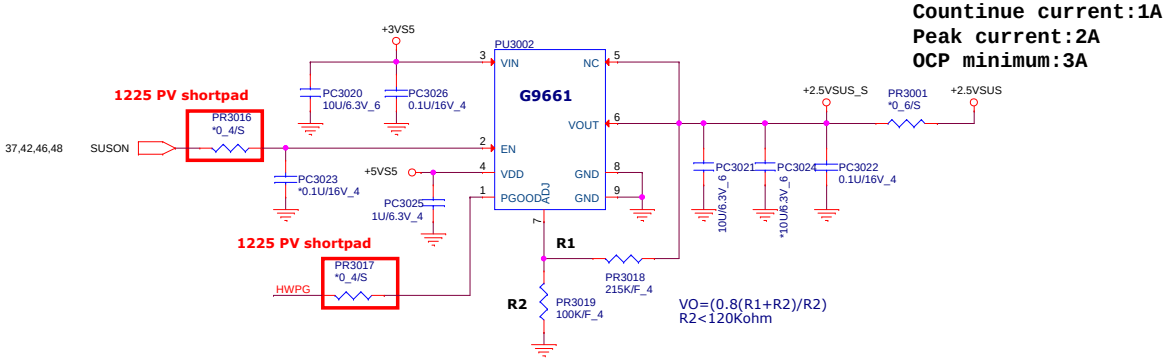
Do Not add test pad on VCC & LDO pin

+VIN	26,32,38,39,40,42,43,44,45,47,48,49,50
+3VS5	10,12,14,16,26,33,37,42,46,47,48,51
+5VS5	10,26,28,30,42,43,44,45,46,47,48,49,50,51
+3VPCU	5,10,30,33,37,38,40
+5VPCU	28,40,46,51

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	3/5VS5 (SY8208B/SY8208C)	1A
Date: Monday, December 28, 2015	Sheet 41 of 51	





+VIN	26,32,38,39,40,41,43,44,45,47,48,49,50
+5VS5	10,26,28,30,41,43,44,45,46,47,48,49,50,51
+1.2VSUS	2,6,10,17,18,46,48,51
DDR_VTT	17,18
+2.5VSUS	17,18

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
	DDR3 (RT8231B)	1A

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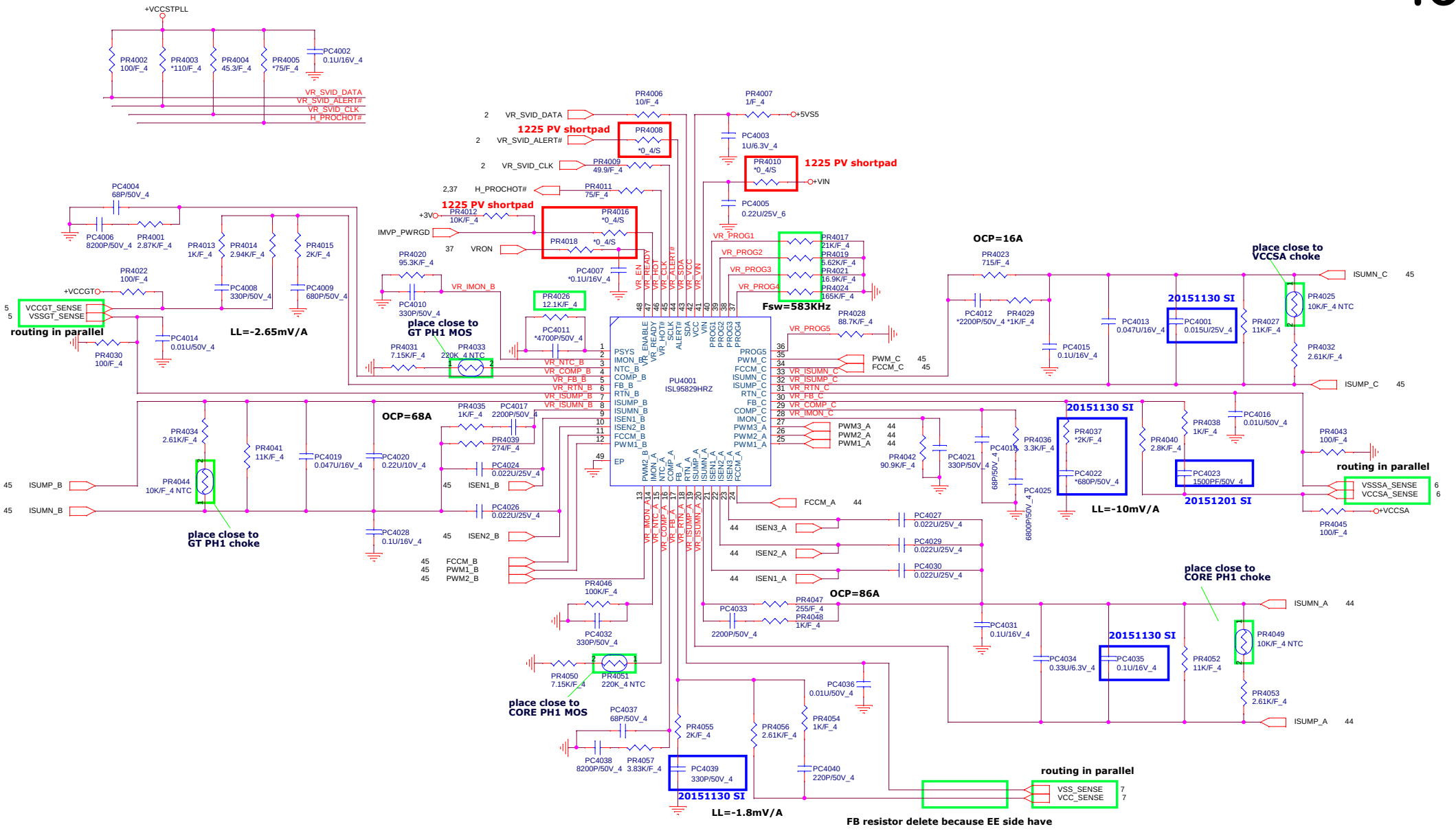
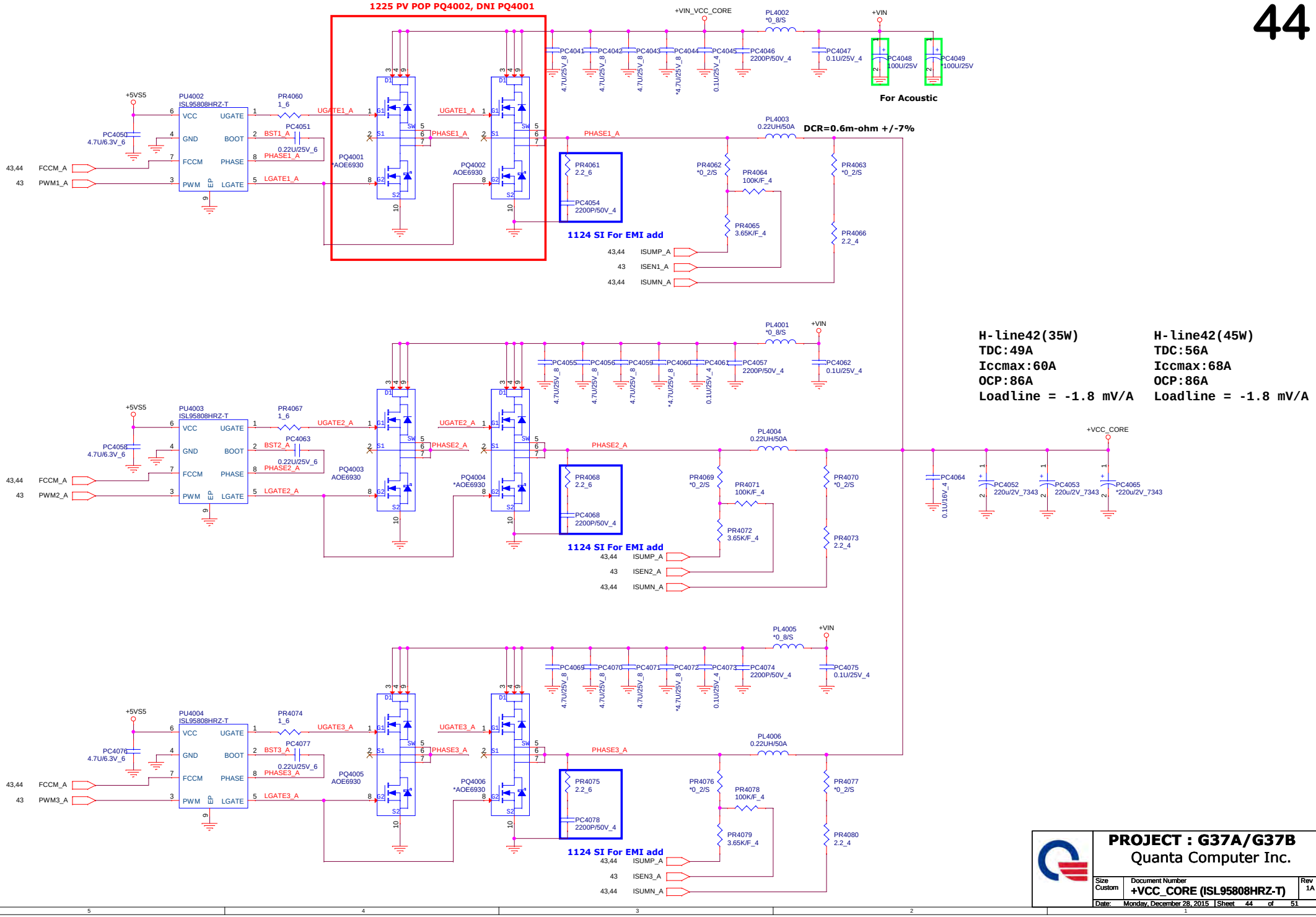

+VCCSTPLL
PR4002 100/F_4
PR4003 *110/F_4
PR4004 45.3/F_4
PR4005 *75/F_4
PC4002 0.1U/16V_4
VR_SVID_DATA
VR_SVID_ALERT#
VR_SVID_CLK
H_PROCHOT#
PR4006 10/F_4
PR4007 1/F_4
+5VS5
PC4003 1U/6.3V_4
1225 PV shortpad
PR4008 *0_4/S
PR4009 49.9/F_4
PR4010 *0_4/S
1225 PV shortpad
+VIN
PC4005 0.22U/25V_6
PR4011 75/F_4
PR4012 10K/F_4
+3VO
1225 PV shortpad
PR4016 *0_4/S
IMVP_PWRGD
PR4018 *0_4/S
VRON
PR4020 95.3K/F_4
PC4007 *0.1U/16V_4
VR_IMON_B
PC4010 330P/50V_4
place close to GT PH1 MOS
PR4026 12.1K/F_4
PC4011 *4700P/50V_4
PR4031 7.15K/F_4
PR4033 220K_4 NTC
VR_NTC_B
VR_COMP_B
VR_FB_B
VR_RTN_B
VR_ISUMP_B
VR_ISUMN_B
PU4001 ISL95829HRZ
PSYS
IMON_B
NTC_B
COMP_B
FB_B
RTN_B
ISUMP_B
ISUMN_B
ISEN1_B
ISEN2_B
FCCM_B
PWM1_B
EP
VR_EN
VR_READY
VR_HOT#
VR_SCLK
VR_ALERT#
VR_SDA
VR_VCC
VR_VIN
PROG1
PROG2
PROG3
PROG4
PROG5
PWM_C
FCCM_C
VR_ISUMN_C
VR_ISUMP_C
VR_RTN_C
VR_FB_C
VR_COMP_C
VR_IMON_C
PWM3_A
PWM2_A
PWM1_A
VR_PROG1
VR_PROG2
VR_PROG3
VR_PROG4
VR_PROG5
PR4017 21K/F_4
PR4019 5.62K/F_4
PR4021 16.9K/F_4
PR4024 165K/F_4
Fsw=583KHz
PR4028 88.7K/F_4
PC4004 68P/50V_4
PC4006 8200P/50V_4
PR4001 2.87K/F_4
PR4013 1K/F_4
PR4014 2.94K/F_4
PR4015 2K/F_4
PR4022 100/F_4
+VCCGT
VCCGT_SENSE
VSSGT_SENSE
routing in parallel
PC4008 330P/50V_4
PC4009 680P/50V_4
PC4014 0.01U/50V_4
PR4030 100/F_4
LL=-2.65mV/A
OCP=16A
PR4023 715/F_4
PC4012 *2200P/50V_4
PR4029 *1K/F_4
PC4013 0.047U/16V_4
PC4015 0.1U/16V_4
20151130 SI
PC4001 0.015U/25V_4
PR4027 11K/F_4
place close to VCCSA choke
PR4025 10K/F_4 NTC
PR4032 2.61K/F_4
ISUMN_C
ISUMP_C
OCP=68A
PR4035 1K/F_4
PC4017 2200P/50V_4
PR4039 274/F_4
PC4024 0.022U/25V_4
PC4026 0.022U/25_4
PR4034 2.61K/F_4
PR4044 10K/F_4 NTC
PR4041 11K/F_4
PC4019 0.047U/16V_4
PC4020 0.22U/10V_4
PC4028 0.1U/16V_4
ISUMP_B
ISUMN_B
ISEN1_B
ISEN2_B
FCCM_B
PWM1_B
PWM2_B
place close to GT PH1 choke
PR4042 90.9K/F_4
PC4021 330P/50V_4
PC4015 68P/50V_4
PR4036 3.3K/F_4
PC4025 6800P/50V_4
PR4037 *2K/F_4
PC4022 *680P/50V_4
LL=-10mV/A
PR4038 1K/F_4
PC4016 0.01U/50V_4
PC4023 1500PF/50V_4
20151201 SI
PR4043 100/F_4
routing in parallel
VSSSA_SENSE
VCCSA_SENSE
+VCCSA
PR4045 100/F_4
FCCM_A
ISEN3_A
ISEN2_A
ISEN1_A
PC4027 0.022U/25V_4
PC4029 0.022U/25V_4
PC4030 0.022U/25V_4
OCP=86A
PC4033 2200P/50V_4
PR4047 255/F_4
PR4048 1K/F_4
PC4031 0.1U/16V_4
PR4046 100K/F_4
PC4032 330P/50V_4
PR4050 7.15K/F_4
PR4051 220K_4 NTC
place close to CORE PH1 MOS
place close to CORE PH1 choke
ISUMN_A
ISUMP_A
PC4034 0.33U/6.3V_4
PC4035 0.1U/16V_4
20151130 SI
PR4049 10K/F_4 NTC
PR4052 11K/F_4
PR4053 2.61K/F_4
PC4036 0.01U/50V_4
PC4037 68P/50V_4
PR4055 2K/F_4
PR4056 2.61K/F_4
PR4054 1K/F_4
PC4038 8200P/50V_4
PR4057 3.83K/F_4
PC4039 330P/50V_4
PC4040 220P/50V_4
20151130 SI
LL=-1.8mV/A
routing in parallel
VSS_SENSE
VCC_SENSE
FB resistor delete because EE side have



H-line42(35W)
TDC:49A
Iccmax:60A
OCP:86A
Loadline = -1.8 mV/A

H-line42(45W)
TDC:56A
Iccmax:68A
OCP:86A
Loadline = -1.8 mV/A

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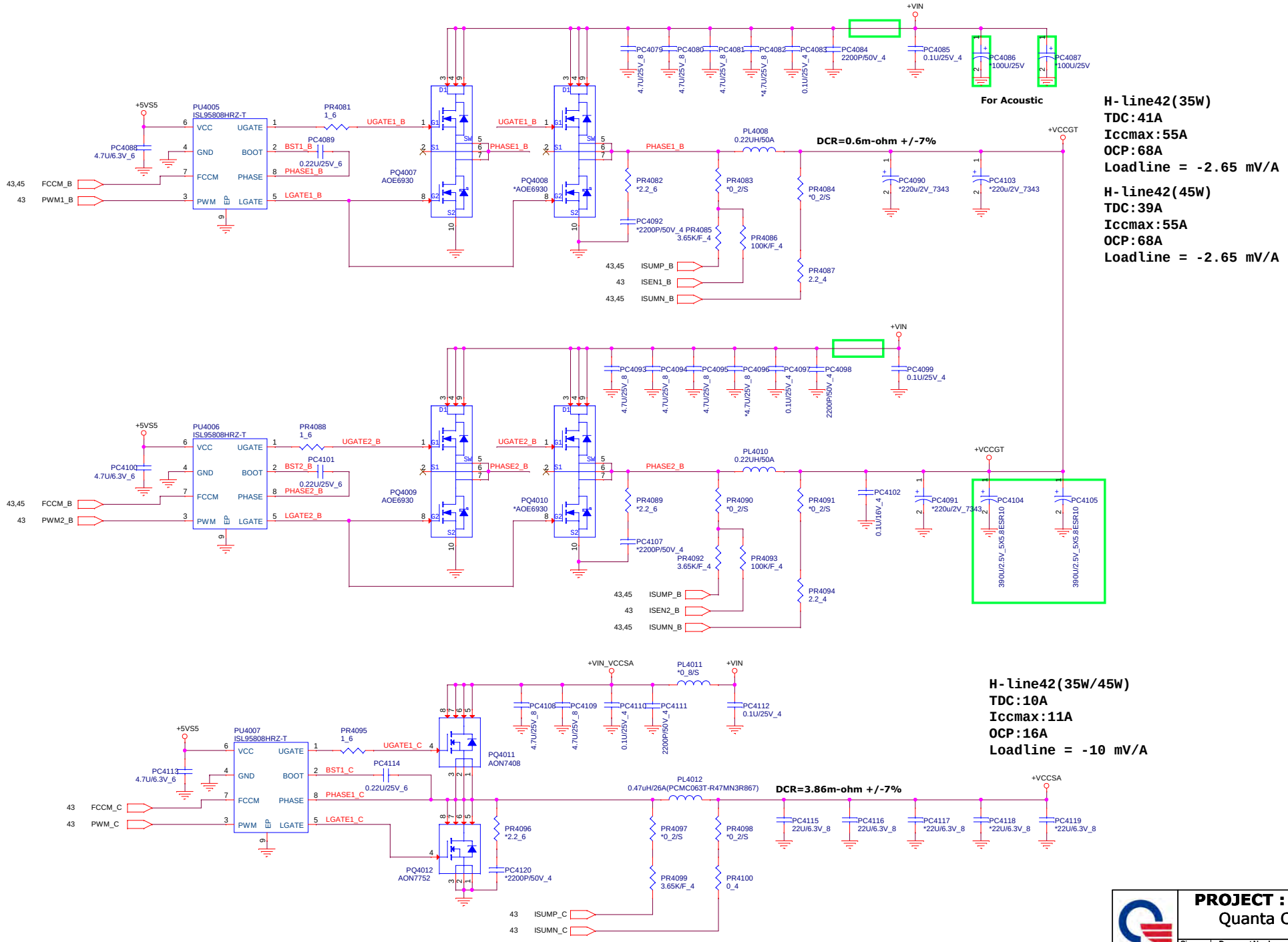
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+VCC_CORE (ISL95808HRZ-T)	1A
Date: Monday, December 28, 2015	Sheet 44 of 51	



PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+VCCGT/SA (ISL95808HRZ-T)	1A

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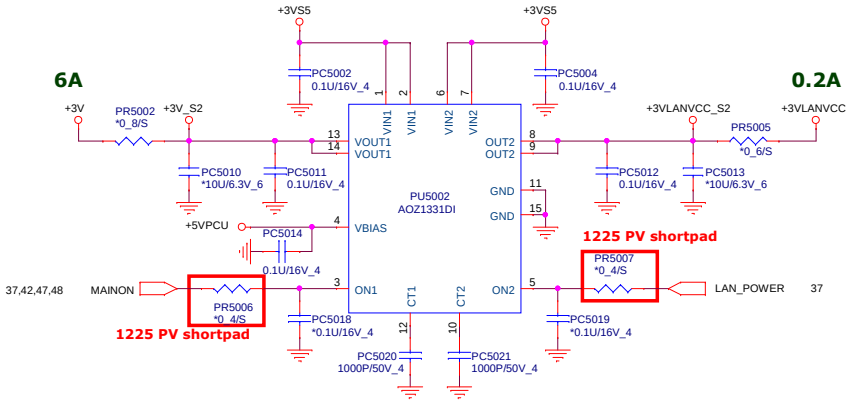
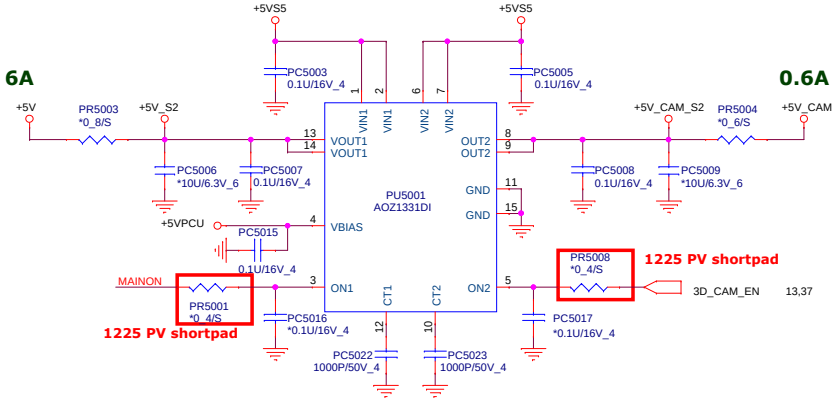
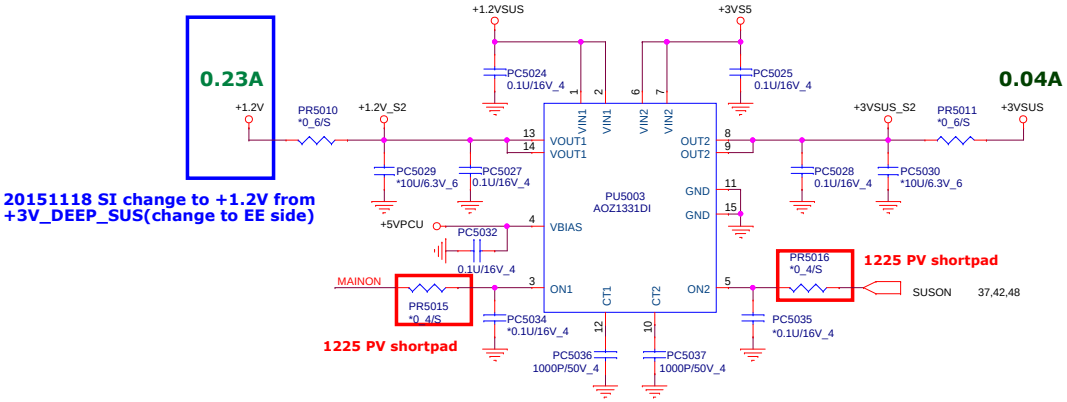






20151118 SI del +1.5V and add +1.2V

+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,49
+5V 26,27,28,29,31,32,38,49
+3VS5 10,12,14,16,26,33,37,41,42,47,48,51
+5VS5 10,26,28,30,41,42,43,44,45,47,48,49,50,51
+3VSUS 38
+3VLANVCC 35
+5V_CAM 31
+1.2V 27
+3V_DEEP_SUS 9,10,12,13,14,16,18

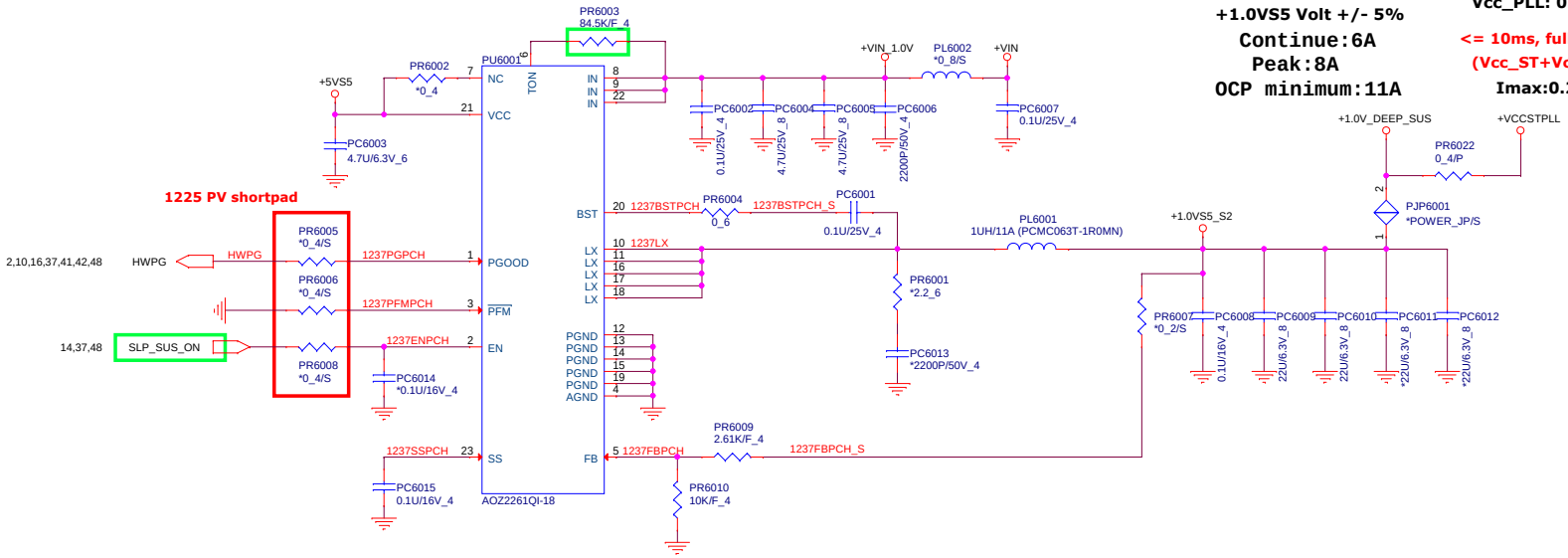
PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	Load switch IC (AOZ1331D)	1A
Date: Monday, December 28, 2015	Sheet 46 of 51	

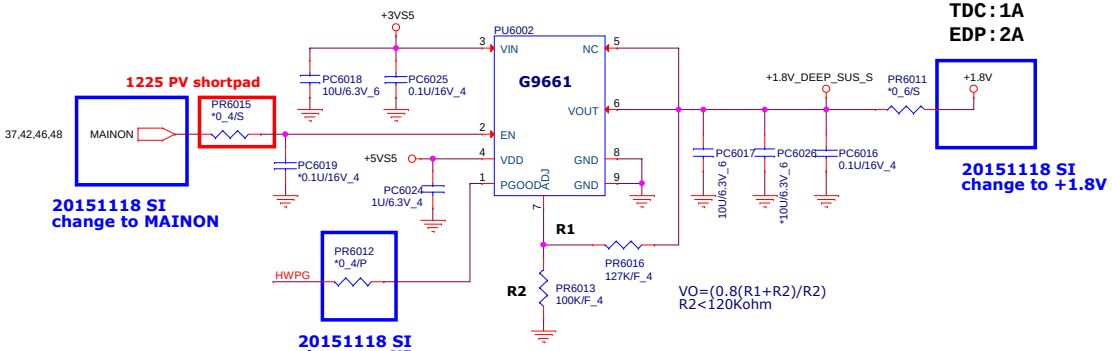
Volume Segment
Vcc_ST: 0.12A
Vcc_PLL: 0.12A

(V1.00A+V1.00_MODPHY+VccPRIM_CORE)
+1.0VS5 Volt +/- 5%
Continue:6A
Peak:8A
OCP minimum:11A

<= 10ms, full load ready
(Vcc_ST+Vcc_PLL)
Imax:0.24A



+1.8V +/- 5%
TDC:1A
EDP:2A



20151118 SI del

+VIN	26,32,38,39,40,41,42,43,44,45,48,49,50
+3VS5	10,12,14,16,26,33,37,41,42,46,48,51
+5VS5	10,26,28,30,41,42,43,44,45,46,48,49,50,51
+1.0V_DEEP_SUS	10,11,14,16,48
+1.8V	28,31
+VCCSTPLL	2,6,43

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+1.0_DEEP_SUS	1A
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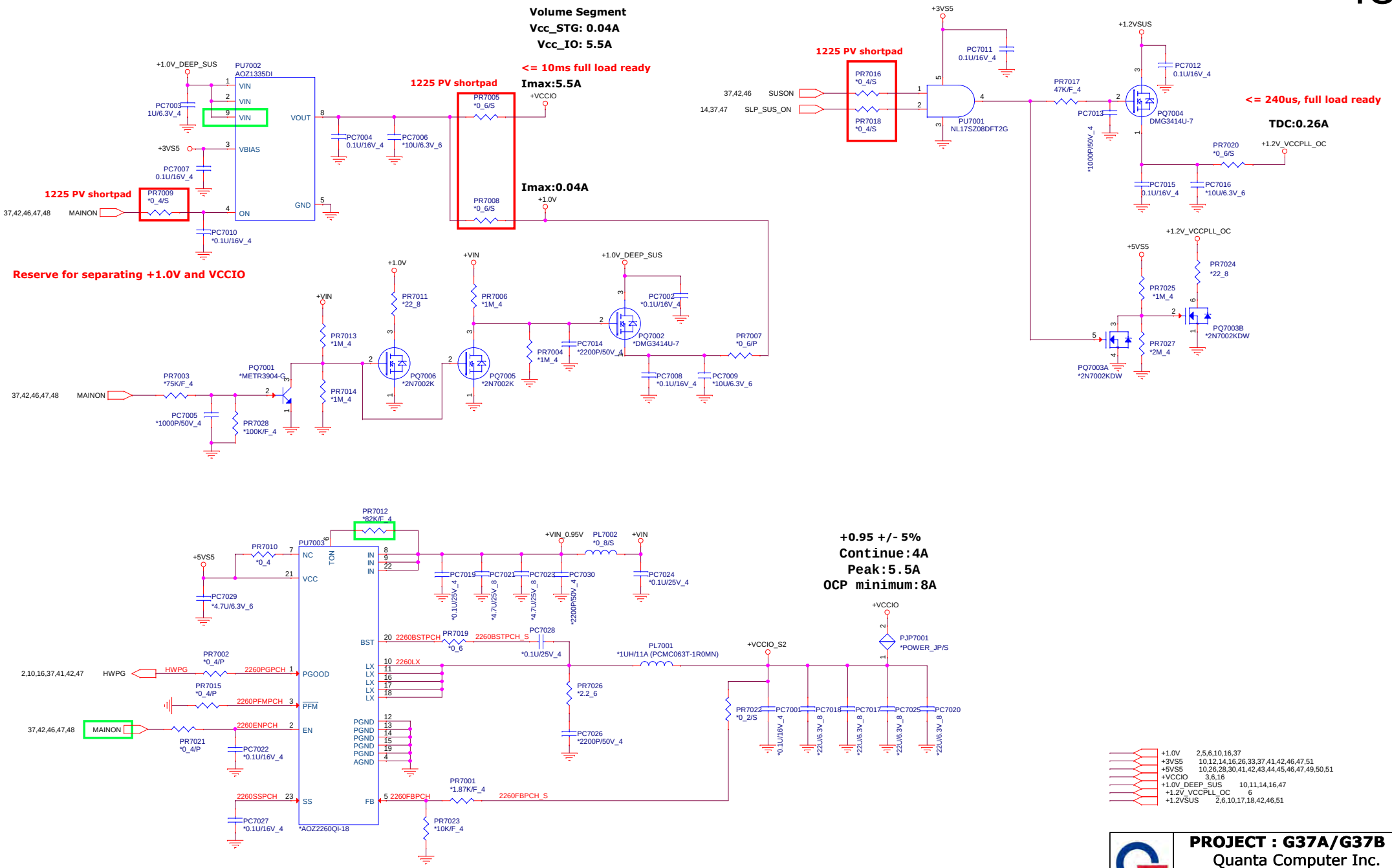

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+1.0V/+VCCSTPLL/+VCCIO	1A

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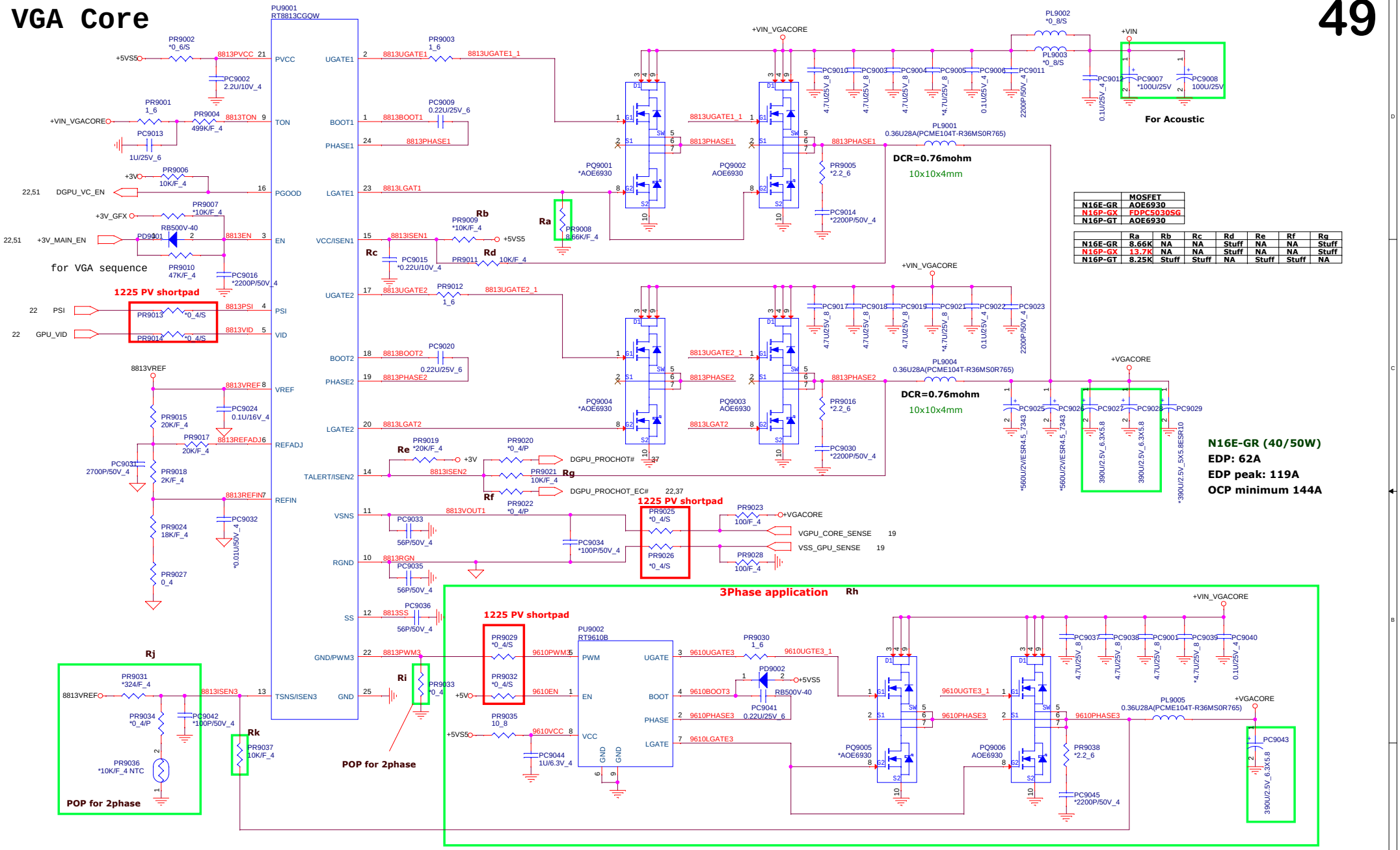
VGA Core



	MOSFET
N16E-GR	AOE6930
N16P-GX	FDPC5030SG
N16P-GT	AOE6930

	Ra	Rb	Rc	Rd	Re	Rf	Rg
N16E-GR	8.66K	NA	NA	Stuff	NA	NA	Stuff
N16P-GX	13.7K	NA	NA	Stuff	NA	NA	Stuff
N16P-GT	8.25K	Stuff	Stuff	NA	Stuff	Stuff	NA

	Rh	Ri	Rj	Rk
N16E-GR	Stuff	NA	NA	Stuff
N16P-GX	Stuff	NA	NA	Stuff
N16P-GT	NA	Stuff	Stuff	NA

+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46
+VIN 26,32,38,39,40,41,42,43,44,45,47,48,50
+5VS5 10,26,28,30,41,42,43,44,45,46,47,48,50,51
+3V_GFX 19,20,21,22,23,51
+VGACORE 23

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+VGACORE (RT8813C)	1A

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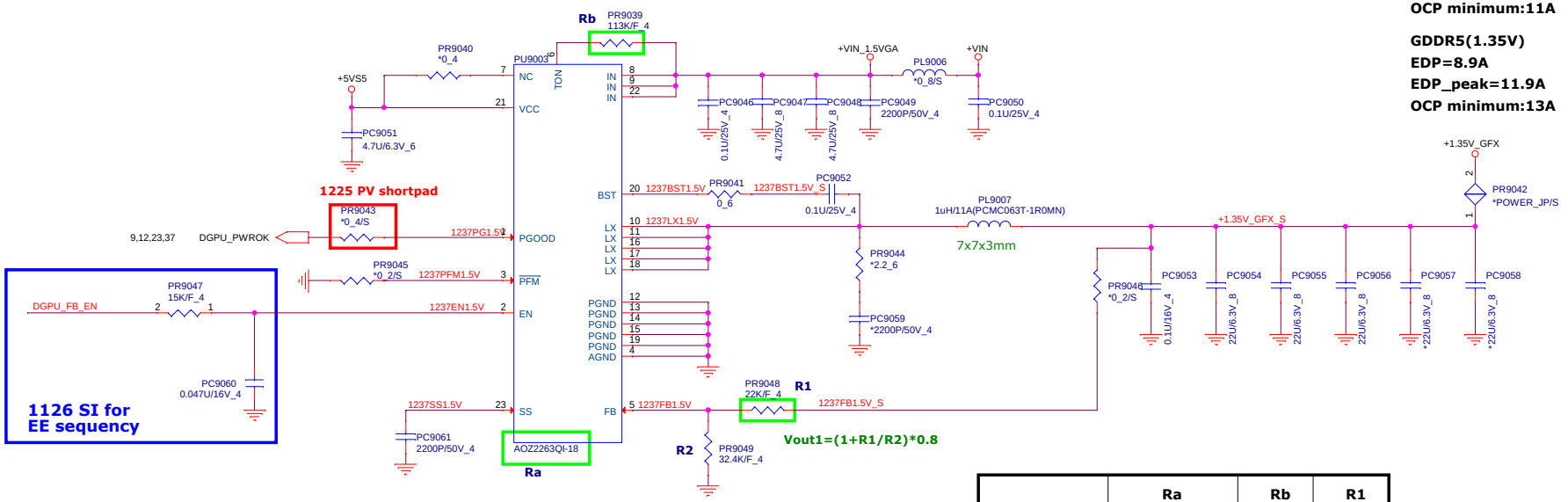
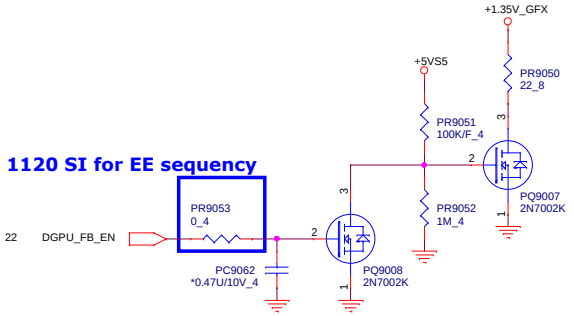
DDR3(1.5V / 1.35V)
EDP=4.18A
EDP_peak=6.54A
OCP minimum:11A

GDDR5(1.35V)
EDP=8.9A
EDP_peak=11.9A
OCP minimum:13A



	Ra	Rb	R1
DDR3 (1.5V)	AOZ2261QI-18	127K	28.7K
DDR3 (1.35V)	AOZ2261QI-18	113K	22K
GDDR5(1.35V)	AOZ2263QI-18	113K	22K



+VIN 26,32,38,39,40,41,42,43,44,45,47,48,49
+5VS5 10,26,28,30,41,42,43,44,45,46,47,48,49,51
+1.35V_GFX 20,23,24,25

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Quanta Computer Inc.

Size	Document Number	Rev
Custom	+1.35V_GFX (AOZ2263QI-18)	1A

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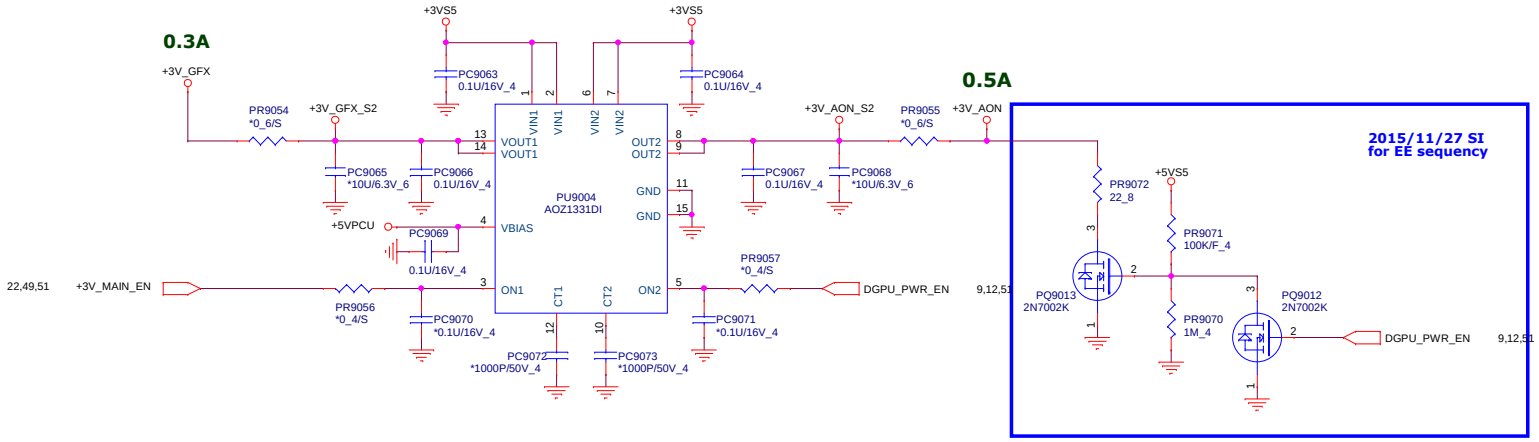
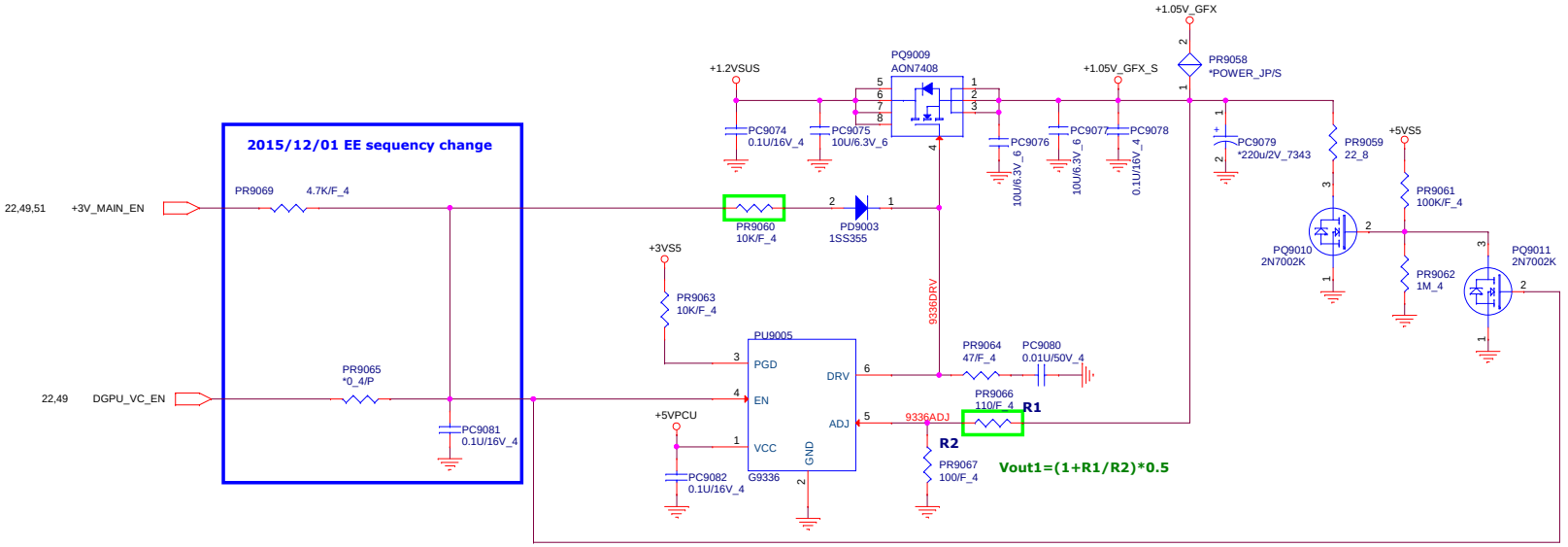


+1.05V_GFX Volt +/- 5%
EDP=2.38A
EDP_peak = 2.45A



+VIN	26,32,38,39,40,41,42,43,44,45,47,48,49,50
+3VS5	10,12,14,16,26,33,37,41,42,46,47,48
+5VS5	10,26,28,30,41,42,43,44,45,46,47,48,49,50
+3V_GFX	19,20,21,22,23,49
+3V_AON	19,22,23,27
+1.2VSUS	2,6,10,17,18,42,46,48
+1.05V_GFX	19,20,21,23

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+3V/+1.05V_GFX(AOZ1331DI)	1A
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