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

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
PORT1 → USB 2.0 Ports (DB) PG.30
PORT2 → HD CAM PG.26
PORT3
PORT4
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 — LPC
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

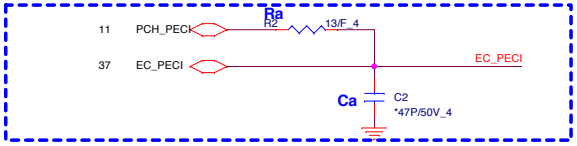
PROJECT : G37A/G37B
Quanta Computer Inc.
Size: Custom | Document Number: 01 – Block Diagram | Rev: 1A
Date: Monday, December 28, 2015 | Sheet 1 of 51

SKYLAKE Processor (CLK,MISC,JTAG)

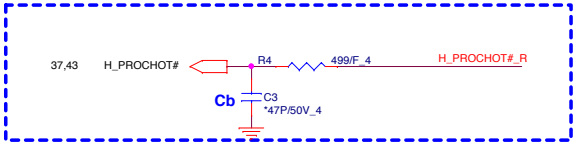
02

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

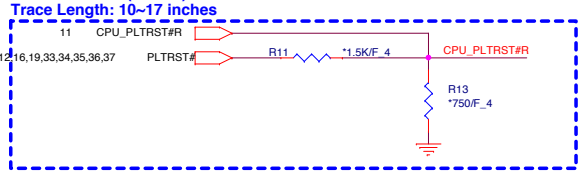
H_PECI (50ohm)
Trace Length: <0.5 iches
Ra,Ca need placement close to PCH.



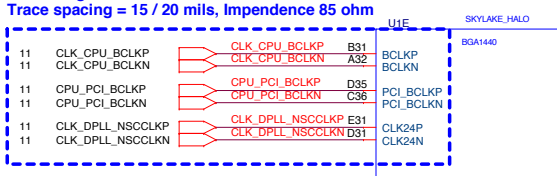
PROCHOT# (50ohm)
Trace Length <11 inches
Cb need placment near VR



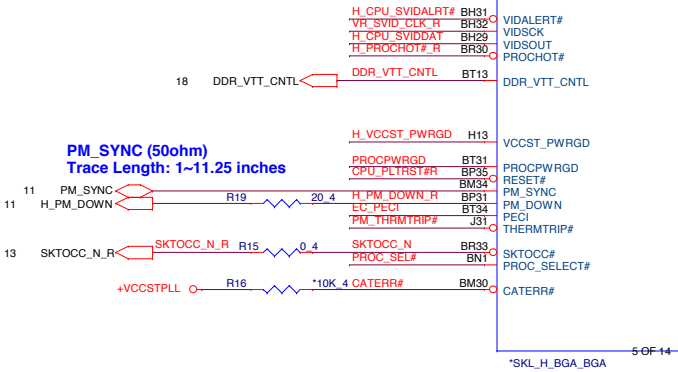
CPU_PLTRST# (50ohm)
Trace Length: 10~17 inches



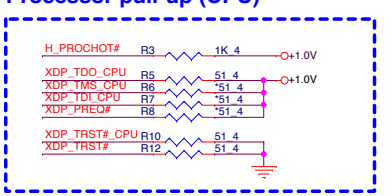
Host CLK:
Trace length < 11000 mils
Trace spacing = 15 / 20 mils, Impendence 85 ohm



U1E SKYLAKE_HALO
BGA1440



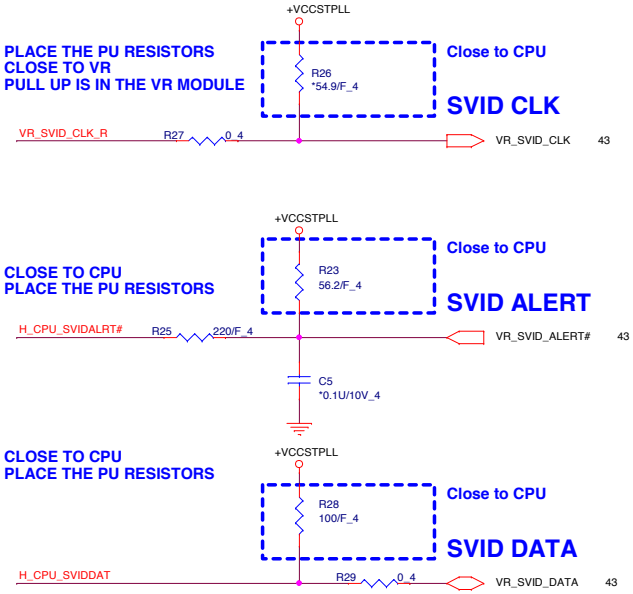
PM_SYNC (50ohm)
Trace Length: 1~11.25 inches



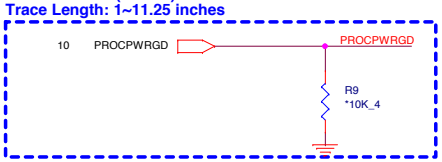
Processor pull-up (CPU)

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

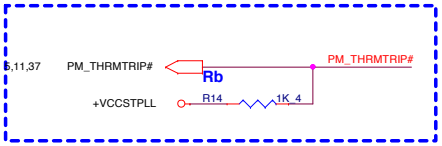
CPU CORE SVID
Layout note:
1.Need routing together
2.ALERT need between CLK and DATA.



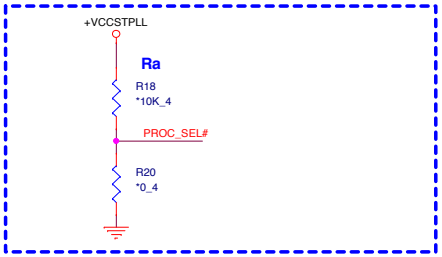
PROCPWRGD (50ohm)
Trace Length: 1~11.25 inches



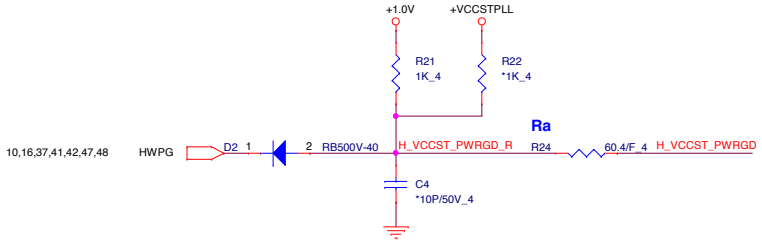
THERMTRIP# (50ohm)
Trace Length: 1.1~12 inches
Rb need placment near PCH



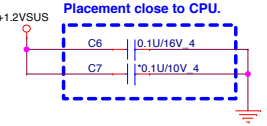
Ra(R10804) Not install in SKL-H



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.

Size	Document Number	Rev
Custom	02 -- SKL 1/7 (JTAG/MISC)	1A

Date: Monday, December 28, 2015 Sheet 2 of 51

+VCCIO 6,16,48

SKYLAKE Processor (DMI,PEG,FDI)

U1C SKYLAKE_HALO BGA1440

BOM:
DIS : Stuff
UMA: Un-Stuff

dGPU

19	PEG_RXP0	E25	PEG_RXP[0]	PEG_TXP[0]	B25	PEG_TXP0_C	C8	0.22U/10V_4	PEG_TXP0 19
19	PEG_RXN0	D25	PEG_RXN[0]	PEG_TXN[0]	A25	PEG_TXN0_C	C9	0.22U/10V_4	PEG_TXN0 19
19	PEG_RXP1	E24	PEG_RXP[1]	PEG_TXP[1]	B24	PEG_TXP1_C	C10	0.22U/10V_4	PEG_TXP1 19
19	PEG_RXN1	F24	PEG_RXN[1]	PEG_TXN[1]	C24	PEG_TXN1_C	C11	0.22U/10V_4	PEG_TXN1 19
19	PEG_RXP2	E23	PEG_RXP[2]	PEG_TXP[2]	B23	PEG_TXP2_C	C12	0.22U/10V_4	PEG_TXP2 19
19	PEG_RXN2	D23	PEG_RXN[2]	PEG_TXN[2]	A23	PEG_TXN2_C	C13	0.22U/10V_4	PEG_TXN2 19
19	PEG_RXP3	E22	PEG_RXP[3]	PEG_TXP[3]	B22	PEG_TXP3_C	C14	0.22U/10V_4	PEG_TXP3 19
19	PEG_RXN3	F22	PEG_RXN[3]	PEG_TXN[3]	C22	PEG_TXN3_C	C15	0.22U/10V_4	PEG_TXN3 19
19	PEG_RXP4	E21	PEG_RXP[4]	PEG_TXP[4]	B21	PEG_TXP4_C	C16	0.22U/10V_4	PEG_TXP4 19
19	PEG_RXN4	D21	PEG_RXN[4]	PEG_TXN[4]	A21	PEG_TXN4_C	C17	0.22U/10V_4	PEG_TXN4 19
19	PEG_RXP5	E20	PEG_RXP[5]	PEG_TXP[5]	B20	PEG_TXP5_C	C18	0.22U/10V_4	PEG_TXP5 19
19	PEG_RXN5	F20	PEG_RXN[5]	PEG_TXN[5]	C20	PEG_TXN5_C	C19	0.22U/10V_4	PEG_TXN5 19
19	PEG_RXP6	E19	PEG_RXP[6]	PEG_TXP[6]	B19	PEG_TXP6_C	C20	0.22U/10V_4	PEG_TXP6 19
19	PEG_RXN6	D19	PEG_RXN[6]	PEG_TXN[6]	A19	PEG_TXN6_C	C21	0.22U/10V_4	PEG_TXN6 19
19	PEG_RXP7	E18	PEG_RXP[7]	PEG_TXP[7]	B18	PEG_TXP7_C	C22	0.22U/10V_4	PEG_TXP7 19
19	PEG_RXN7	F18	PEG_RXN[7]	PEG_TXN[7]	C18	PEG_TXN7_C	C23	0.22U/10V_4	PEG_TXN7 19
		D17	PEG_RXP[8]	PEG_TXP[8]	A17				
		E17	PEG_RXN[8]	PEG_TXN[8]	B17				
		F16	PEG_RXP[9]	PEG_TXP[9]	C16				
		E16	PEG_RXN[9]	PEG_TXN[9]	B16				
		D15	PEG_RXP[10]	PEG_TXP[10]	A15				
		E15	PEG_RXN[10]	PEG_TXN[10]	B15				
		F14	PEG_RXP[11]	PEG_TXP[11]	C14				
		E14	PEG_RXN[11]	PEG_TXN[11]	B14				
		D13	PEG_RXP[12]	PEG_TXP[12]	A13				
		E13	PEG_RXN[12]	PEG_TXN[12]	B13				
		F12	PEG_RXP[13]	PEG_TXP[13]	C12				
		E12	PEG_RXN[13]	PEG_TXN[13]	B12				
		D11	PEG_RXP[14]	PEG_TXP[14]	A11				
		E11	PEG_RXN[14]	PEG_TXN[14]	B11				
		F10	PEG_RXP[15]	PEG_TXP[15]	C10				
		E10	PEG_RXN[15]	PEG_TXN[15]	B10				

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	D8	DMI_RXP[0]	DMI_TXP[0]	B8	DMI_TXP0	9
9	DMI_RXN0	E8	DMI_RXN[0]	DMI_TXN[0]	A8	DMI_TXN0	9
9	DMI_RXP1	E6	DMI_RXP[1]	DMI_TXP[1]	C6	DMI_TXP1	9
9	DMI_RXN1	F6	DMI_RXN[1]	DMI_TXN[1]	B6	DMI_TXN1	9
9	DMI_RXP2	D5	DMI_RXP[2]	DMI_TXP[2]	B5	DMI_TXP2	9
9	DMI_RXN2	E5	DMI_RXN[2]	DMI_TXN[2]	A5	DMI_TXN2	9
9	DMI_RXP3	J8	DMI_RXP[3]	DMI_TXP[3]	D4	DMI_TXP3	9
9	DMI_RXN3	J9	DMI_RXN[3]	DMI_TXN[3]	B4	DMI_TXN3	9

3 OF 14
*SKL_H_BGA_BGA

U1D SKYLAKE_HALO BGA1440

eDP

K36	DDI1_TXP[0]	EDP_TXP[0]	D29	INT_EDP_TXP0	INT_EDP_TXP0 26
K37	DDI1_TXN[0]	EDP_TXN[0]	E29	INT_EDP_TXN0	INT_EDP_TXN0 26
J35	DDI1_TXP[1]	EDP_TXP[1]	F28	INT_EDP_TXP1	INT_EDP_TXP1 26
J36	DDI1_TXN[1]	EDP_TXN[1]	E28	INT_EDP_TXN1	INT_EDP_TXN1 26
H37	DDI1_TXP[2]	EDP_TXN[2]	B29	INT_EDP_TXN2	INT_EDP_TXN2 26
H36	DDI1_TXN[2]	EDP_TXP[2]	A29	INT_EDP_TXP2	INT_EDP_TXP2 26
J37	DDI1_TXP[3]	EDP_TXN[3]	B28	INT_EDP_TXN3	INT_EDP_TXN3 26
J38	DDI1_TXN[3]	EDP_TXP[3]	C28	INT_EDP_TXP3	INT_EDP_TXP3 26
D27	DDI1_AUXP	EDP_AUXP	C26	INT_eDP_AUXP	INT_eDP_AUXP 26
E27	DDI1_AUXN	EDP_AUXN	B26	INT_eDP_AUXN	INT_eDP_AUXN 26
H34	DDI2_TXP[0]				
H33	DDI2_TXN[0]				
F34	DDI2_TXP[1]	EDP_DISP_UTIL	A33	EDP_DISP_UTIL	TP3
G35	DDI2_TXN[1]				
F36	DDI2_TXP[2]	EDP_RCOMP	D37	EDP_RCOMP	R31 24.9/F_4 +VCCIO
E37	DDI2_TXN[2]				
E35	DDI2_TXP[3]				
G36	DDI2_TXN[3]				
F26	DDI2_AUXP				
E26	DDI2_AUXN				
C34	DDI3_TXP[0]				
D34	DDI3_TXN[0]				
B35	DDI3_TXP[1]				
B34	DDI3_TXN[1]				
F33	DDI3_TXP[2]				
E33	DDI3_TXN[2]				
G33	DDI3_TXP[3]				
B33	DDI3_TXN[3]				
A27	DDI3_AUXP	PROC_AUDIO_CLK	G27	AUD_AZACPU_SCLK	AUD_AZACPU_SCLK 10
B27	DDI3_AUXN	PROC_AUDIO_SDI	G25	AUD_AZACPU_SDO_R	AUD_AZACPU_SDO_R 10
		PROC_AUDIO_SDO	G29	AUD_AZACPU_SDI_R R32 20_4	AUD_AZACPU_SDI 10

4 OF 14
*SKL_H_BGA_BGA

11/05 change HDMI from APU to GPU

DP & PEG Compensation

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

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	03 – SKL 2/7 (DMI/EDP/PEG)	1A

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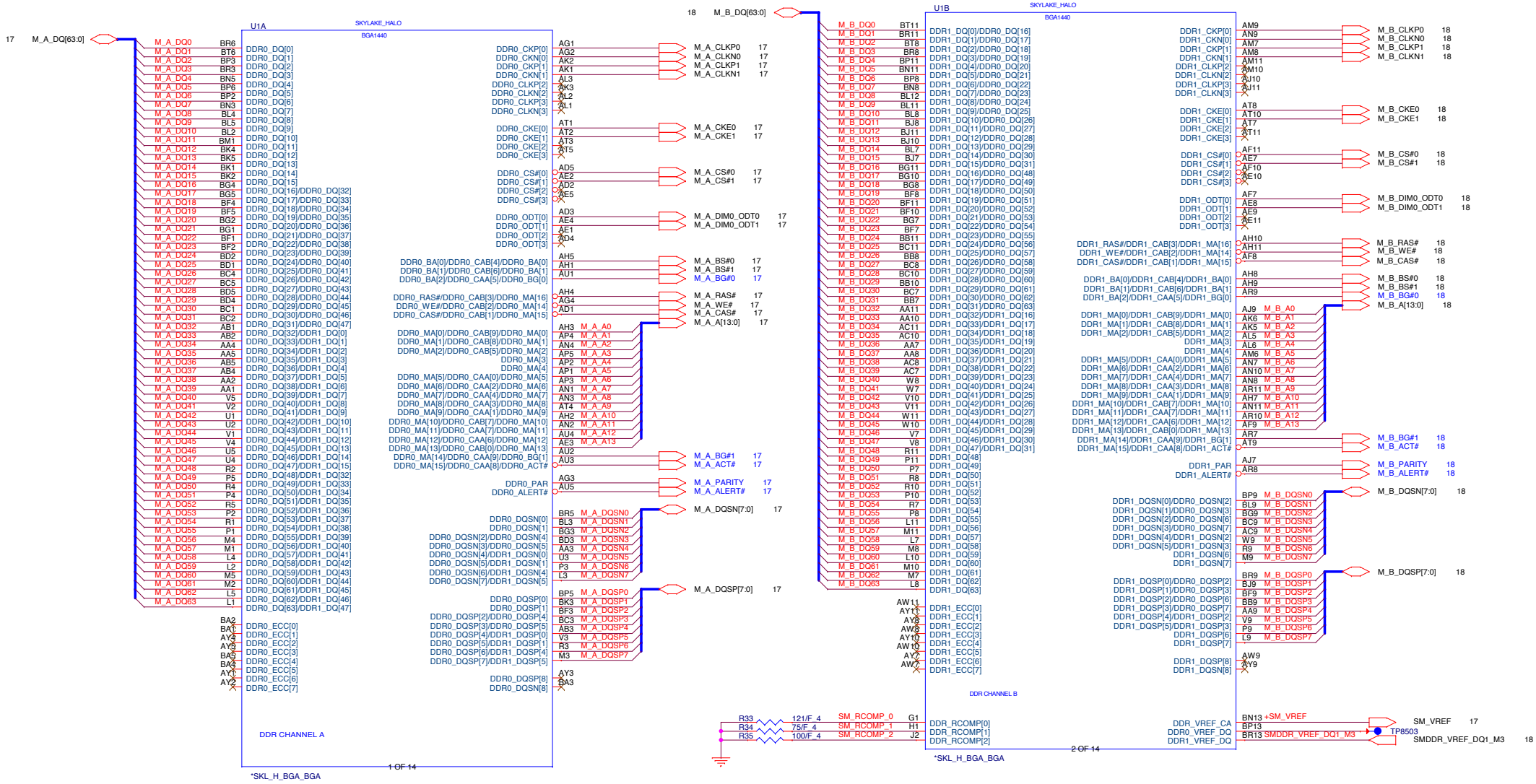
SKYLAKE Processor (DDR4)



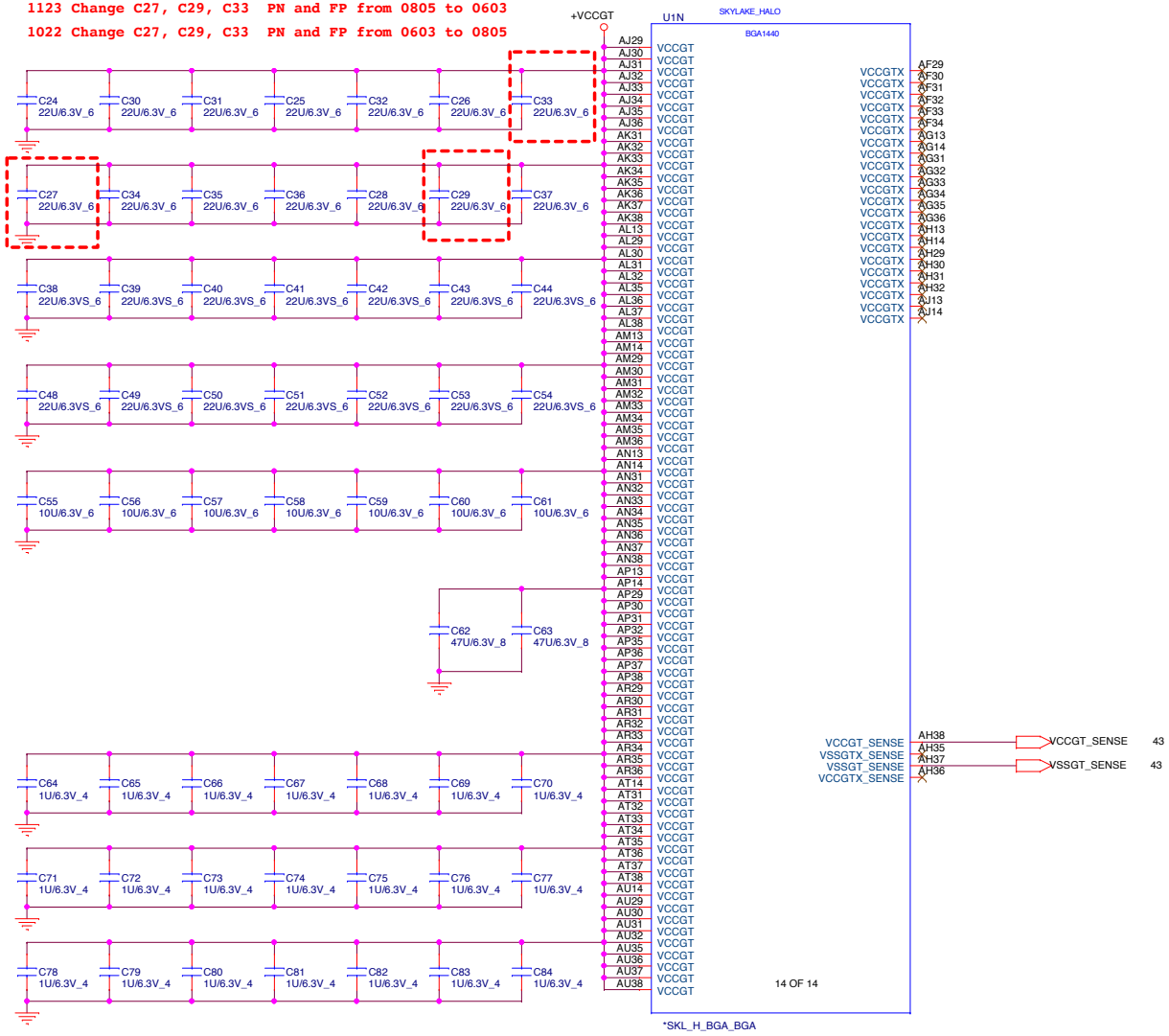
SKYLAKE Processor (POWER)

+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

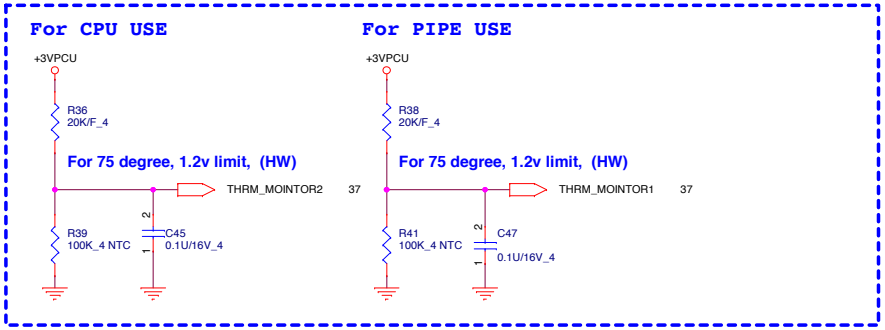
1123 Change C27, C29, C33 PN and FP from 0805 to 0603

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



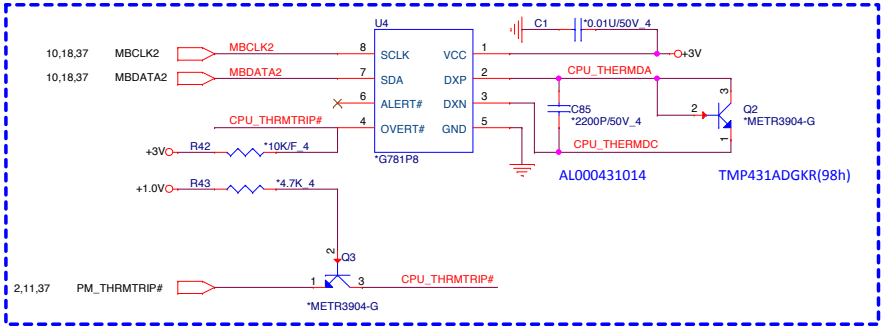
IO Thrm Protect

Location need thermal confirm



CPU Thermal Sensor

Location need thermal confirm

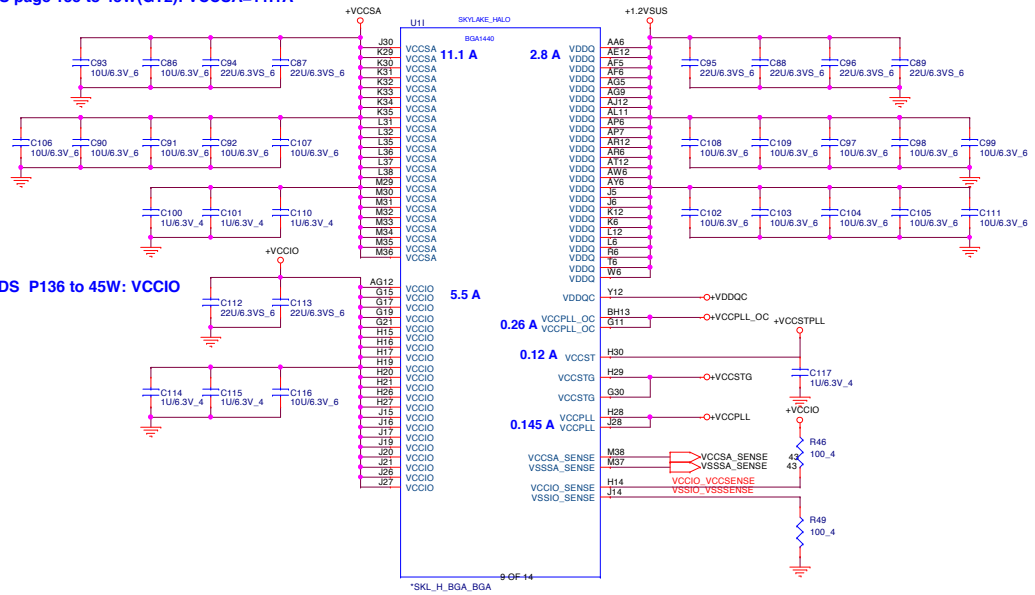


Quanta Computer Inc.	PROJECT : G37A/G37B		
Size: Custom	Document Number: 05 -- SKL 4/7 (POWER)		Rev: 1A
Date: Monday, December 28, 2015	Sheet 5 of 51		

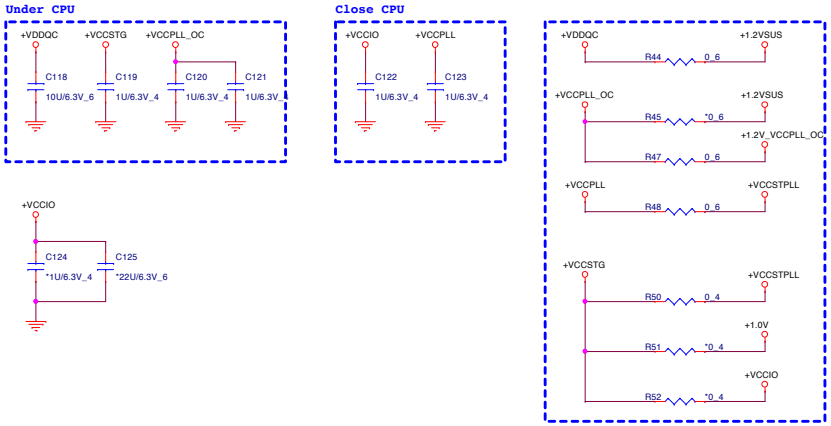
+1.2VSUS 2,10,17,18,42,46,48,51
+VCCIO 3,16,48
+VCCSTPLL 2,43,47
+VCCSA 43,45

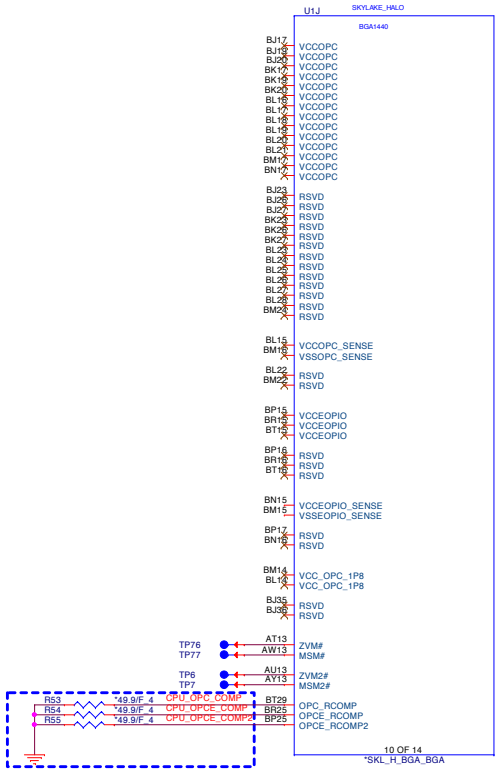
Follow SKL H EDS page 135 to 45W(GT2): VCCSA=11.1 A

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



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





Unconnected for Processors without OPC.

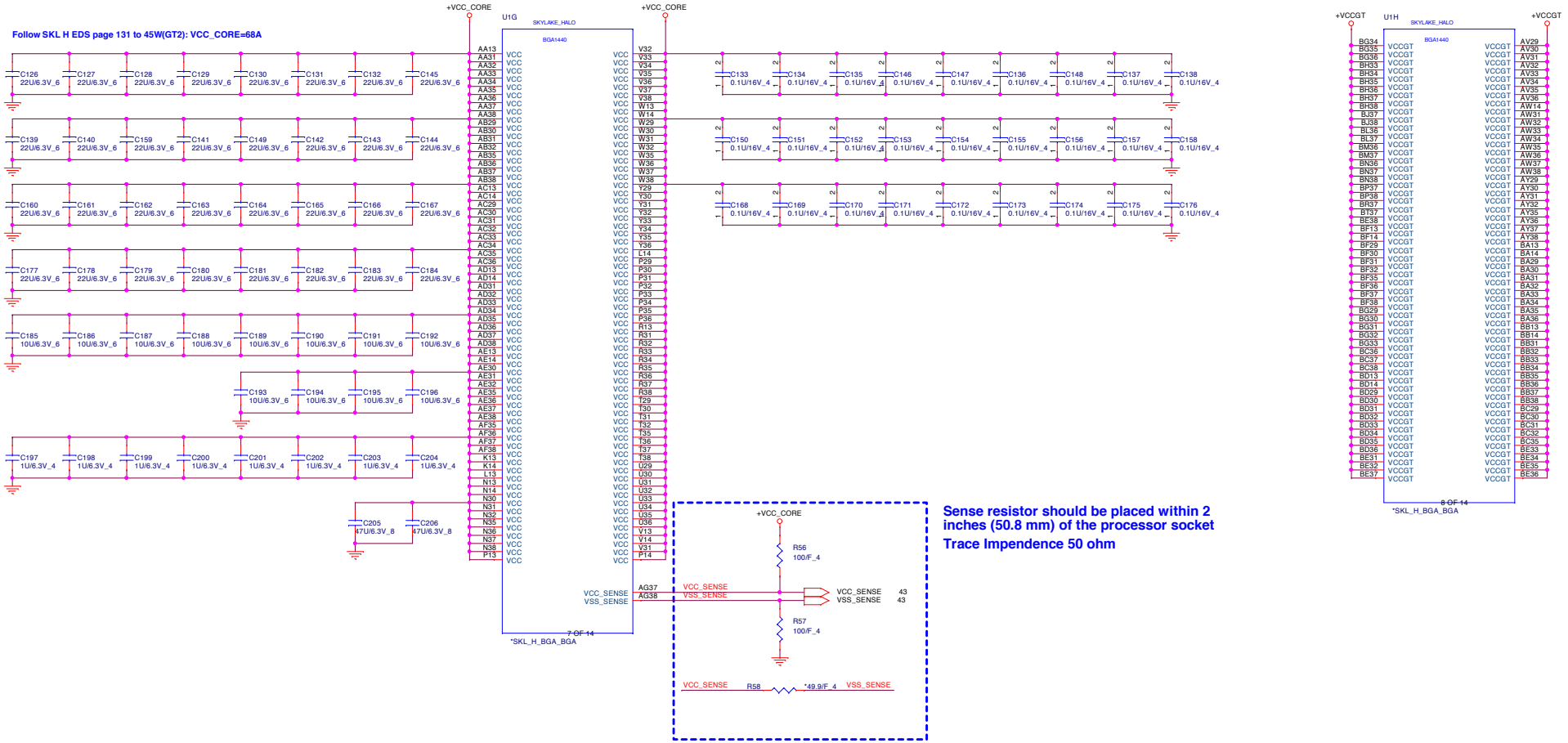
PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
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

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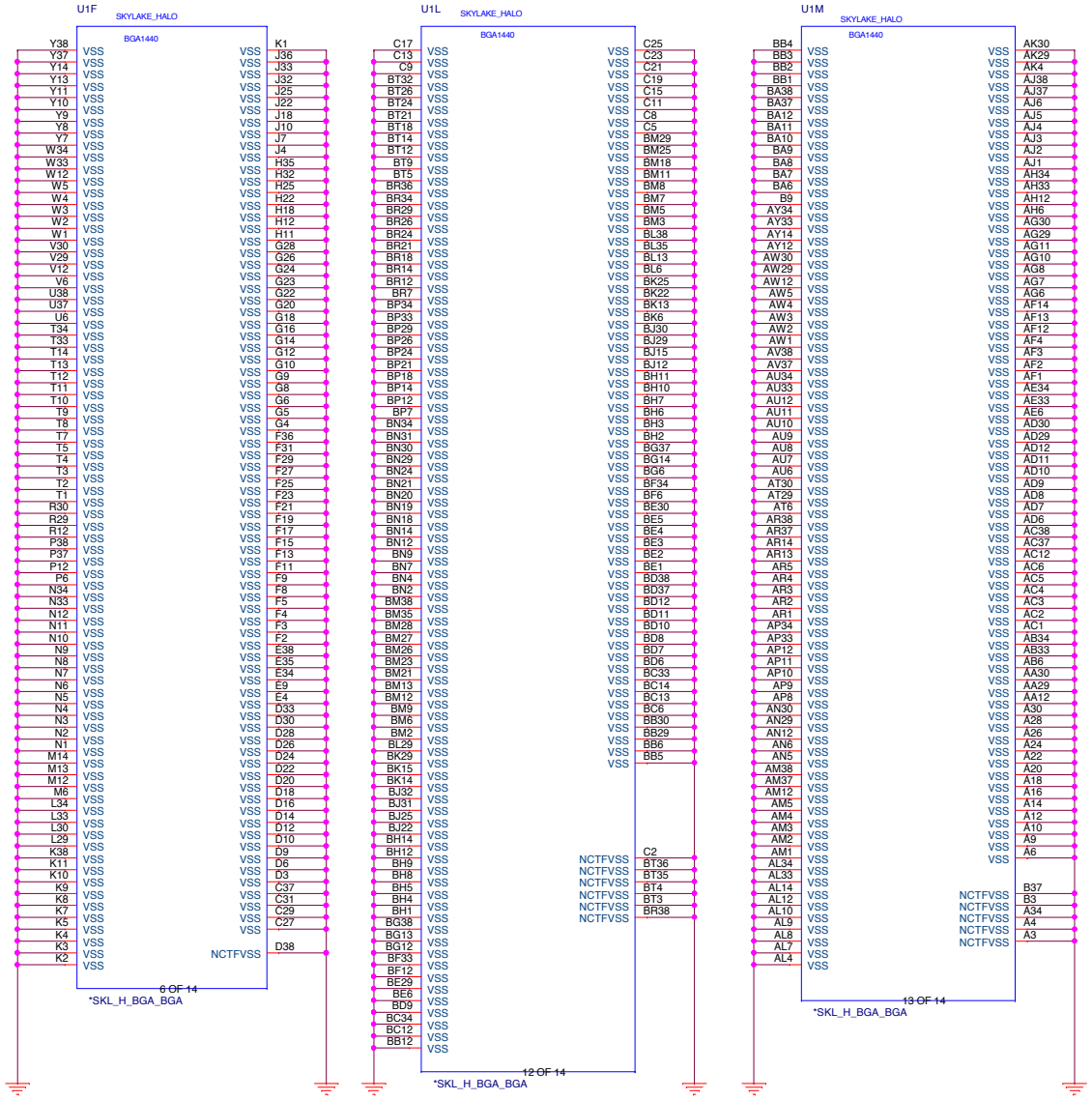
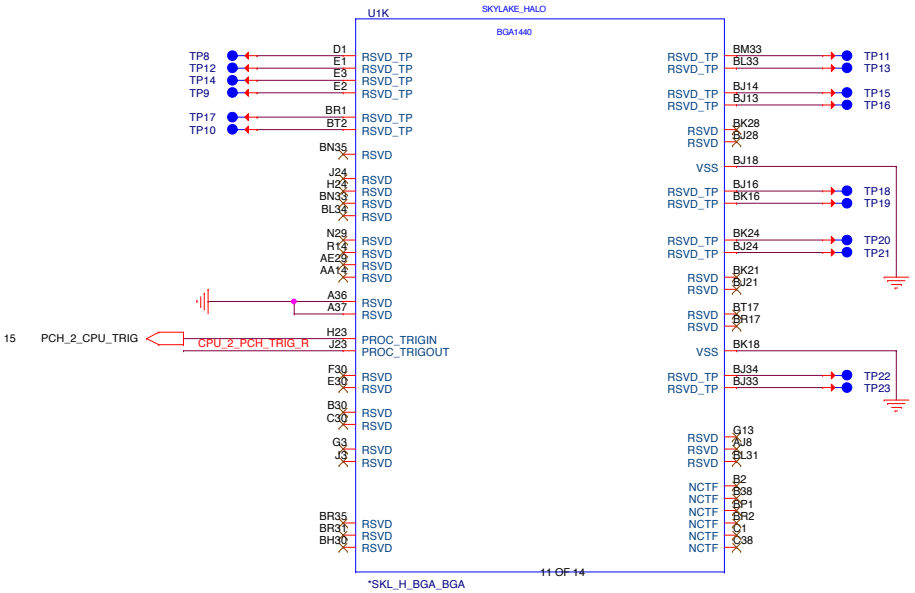
SKL-HProcessor (GND)



08

SKL-H Processor (RESERVED, CFG)

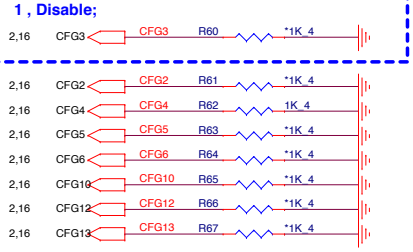


Processor Strapping

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

Date: Monday, December 28, 2015 | Sheet 8 of 51

+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 DMI_RXP0 DMI_TXN0 DMI_TXP0 DMI_RXN1 DMI_RXP1 DMI_TXN1 DMI_TXP1 DMI_RXN2 DMI_RXP2 DMI_TXN2 DMI_TXP2 DMI_RXN3 DMI_RXP3 DMI_TXN3 DMI_TXP3 (DMI)

R73 100/F_4 PCIECOMP_N PCIECOMP_P

PCIE_RCOMPN PCIE_RCOMPP

PCIE1_RXN/USB3_7_RXN … PCIE4_TXP/USB3_10_TXP (PCIe/USB 3)

TP24 TP25 TP26 TP27 TP28

USB2N_1 … USB2P_14 (USB 2.0)

USBP1- 30 USB2.0 Combo USB3.0 MB-1
USBP1+ 30
USBP2- 30 USB2.0 Combo USB3.0 Small Board
USBP2+ 30
USBP3- 30 USB2.0 USB2.0 Small Board
USBP3+ 30
USBP4- 26 HD / IR CAM
USBP4+ 26
USBP5- 34 IR CAM
USBP5+ 34
USBP7- 33 WLAN
USBP7+ 33

DIS only

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

USB2_COMP R80 113/F_4
USB2_VBUSSENSE
RSVD_AB13
USB2_ID
GPD7/RSVD

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.

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

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 … PCIE_TXP7_LAN

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

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SPT_PCH_H

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- USB30_TX1+ USB30_RX1- USB30_RX1+

USB3.0 (Small Board)
USB30_TX2- USB30_TX2+ USB30_RX2- USB30_RX2+

USB3_1_TXN … USB3_2_RXP/SSIC_1_RXP (LPC/eSPI)

TP29 TP30 TP8515

USB3_6_TXN … USB3_5_RXP (USB)

USB3.0 (3D Camera)
USB30_TX4+ USB30_TX4- USB30_RX4+ USB30_RX4-

USB3_3_TXP/SSIC_2_TXP … USB3_4_RXN (SATA)

GPP_A1/LAD0/ESPI_IO0 … GPP_A4/LAD3/ESPI_IO3 → LAD0 … LAD3 33,34,37
GPP_A5/LFRAME#/ESPI_CS0# → LFRAME# 33,34,37
GPP_A6/SERIRQ/ESPI_CS1# SERIRQ → SERIRQ 34,37 R81 8.2K_4 +3V
GPP_A7/PIRQA#/ESPI_ALERT0# BOARD_ID8
GPP_A0/RCIN#/ESPI_ALERT1# EC_RCIN# 37
GPP_A14/SUS_STAT#/ESPI_RESET# BOARD_ID7 18
GPP_A9/CLKOUT_LPC0/ESPI_CLK CLK_PCI_EC_R
GPP_A10/CLKOUT_LPC1 CLK_PCI_LPC_R
GPP_G19/SMI# SIO_EXT_SMI# 37
GPP_G18/NMI#
GPP_E6/DEVSLP2 GC6_FB_EN → GC6_FB_EN 22
GPP_E5/DEVSLP1 DEVSLP0 33
GPP_E4/DEVSLP0
GPP_F9/DEVSLP7
GPP_F8/DEVSLP6
GPP_F7/DEVSLP5
GPP_F6/DEVSLP4
GPP_F5/DEVSLP3

For SSD (SATA0A)

EC1 18P/50V_4
R82 22/F_4 CLK_24M_KBC 37
R83 22/F_4 CLK_24M_DEBUG 33
EC2 18P/50V_4 EMI(near PCH)
R84 *22/F_4 CLK_PCI_TPM 34
Ra
Place to PCH

BOM: HW TPM need Ra, Rc Stuff

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SPT_PCH_H

PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	09 -- PCH 1/7 (DMI/USB/PCIE)	1A

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+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 (28 / 12) Reserve for EMI

ACZ_SDIN0, ACZ_SDOUT

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#

12 SML0ALERT#
12 DRAMRST_CNTRL_PCH
12 SML1ALERT#_R — TP35

DSWROK_EC_R
SML0ALERT#
SMB_PCH_CLK
SMB_PCH_DAT
DRAMRST_CNTRL_PCH
SMB_ME0_CLK
SMB_ME0_DAT
SML1ALERT#_R
SMB_ME1_CLK
SMB_ME1_DAT

EMI

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

U2D (SPT-H_PCH)

AUDIO: 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
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SPT_PCH_H

GPP_A12/BMBUSY#/ISH_GP6/SX_EXIT_HOLDOFF# — TP31
GPP_A8/CLKRUN# — CLKRUN# 37
GPD11/LANPHYPC — TP32
GPD9/SLP_WLAN# — TP33
DRAM_RESET# — DDR4_DRAMRST# 17,18
GPP_B2/VRALERT#
GPP_B1
GPP_B0
GPP_G17/ADR_COMPLETE
GPP_B11 — SYS_PWROK — SYS_PWROK 16
WAKE# — PCIE_WAKE# 33,35,36
GPD6/SLP_A# — SLP_A# 16
SLP_LAN#
GPP_B12/SLP_S0# — PCH_SLP_S0_N 16
GPD4/SLP_S3# — SUSB# 16,37
GPD5/SLP_S4# — SUSC# 16,37
GPD10/SLP_S5# — SLP_S5# 16
GPD8/SUSCLK — TP8522
GPD0/BATLOW# — RF_OFF_PCH 33
GPP_A15/SUSACK# — R105 0_4 — SUSACK#_EC 37
GPP_A13/SUSWARN#/SUSPWRDNACK — R106 0_4 — SUSWARN#_EC 37
R107 *0_4 SUSWARN#
GPD2/LAN_WAKE# — LAN_WAKE#
GPD1/ACPRESENT — AC_PRESENT_EC 37
SLP_SUS# — SLP_SUS#_EC 37
GPD3/PWRBTN# — DNBSWON# 37
SYS_RESET# — SYS_RESET# 16
GPP_B14/SPKR — ACZ_SPKR 12,28
PROCPWRGD — PROCPWRGD 2
ITP_PMODE — R113 1K_4 — +1.0V_DEEP_SUS
JTAGX — JTAGX_PCH 16
JTAG_TMS — JTAG_TMS_PCH 16
JTAG_TDO — JTAG_TDO_PCH 16
JTAG_TDI — JTAG_TDI_PCH 16
JTAG_TCK — 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

CPU heat pipe local thermal sensor
DDR thermal sensor
EC

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

Touch Pad
XDP
DDR4

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

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

Add LAN_WAKE#(check)

+3VS5
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

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 — RTC_RST#
C217 1U/6.3V_4
R135 20K/F_4 — SRTC_RST#
C220 1U/6.3V_4
Q6 2N7002K
RTC_RST# — RTC_RST# 16
EC_RTC_RST 37
R136 10K_4

+3V_RTC_0 — R138 1K_4 — +3VPCU
+3V_RTC_0 — +3V_RTC_1 — D1 BAT54CW-7-F
C219 1U/6.3V_4
CN2 BAT_CONN DFHS02FS027 bat-ap-aaa-bat-054-k01-2p-smt

RTC_RST# — R139 *0_6 — SRTC_RST#

For HWPG Sequence

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

For SSD Det (SATA0A)

BOM:SSD only

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

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

RTC Clock 32.768KHz

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

Card Reader

WLAN

LAN

VGA

SSD

BOM:DIS only

BOM:SSD only

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
AG16 RSVD
AF17 RSVD
AE17 RSVD
AR19 TP2
AN17 TP1
PCH_SPI1_SI BB29 SPI0_MOSI
PCH_SPI1_SO BE30 SPI0_MISO
PCH_SPI1_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
AG43 GPP_D21/SPI1_IO2
SPT_PCH_H 1 OF 12

GPP_B13/PLTRST# BB27 PLTRST# → PLTRST# 2,16,19,33,34,35,36,37
R167 100K_4
GPP_G16/GSXCLK P43
GPP_G12/GSXDOUT P39
GPP_G13/GSXSLOAD P36
GPP_G14/GSXDIN P42
GPP_G15/GSXSRESET# P41
GPP_E3/CPU_GP0 AF41
GPP_E7/CPU_GP1 AE44
GPP_B3/CPU_GP2 BC23
GPP_B4/CPU_GP3 BD24
GPP_H18/SML4ALERT# BC36 SML4ALERT# TP45
GPP_H17/SML4DATA BE34 SMB_ME4_DAT
GPP_H16/SML4CLK BD39 SMB_ME4_CLK
GPP_H15/SML3ALERT# BB36 SML3ALERT# TP46
GPP_H14/SML3DATA BA35 SMB_ME3_DAT
GPP_H13/SML3CLK BC35 SMB_ME3_CLK
GPP_H12/SML2ALERT# BD35 SML2ALERT#
GPP_H11/SML2DATA AW35 SMB_ME2_DAT
GPP_H10/SML2CLK BD34 SMB_ME2_CLK
INTRUDER# BE11 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

+3V_DEEP_SUS
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

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_SPI_SO R205 15/F_4 PCH_SPI1_SO_R

U5
1 CE# VDD 8 +3VSPI
2 SO SCK 6
3 WP# SI 5
4 VSS HOLD# 7 HOLD#
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

BOOT SELECT STRAP
HIGH:LPC
LOW: SPI. (Default)
+3V_DEEP_SUS R184 *4.7K_4
13 S_GPIO → S_GPIO
R186 *20K/F_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

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

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

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

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

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

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

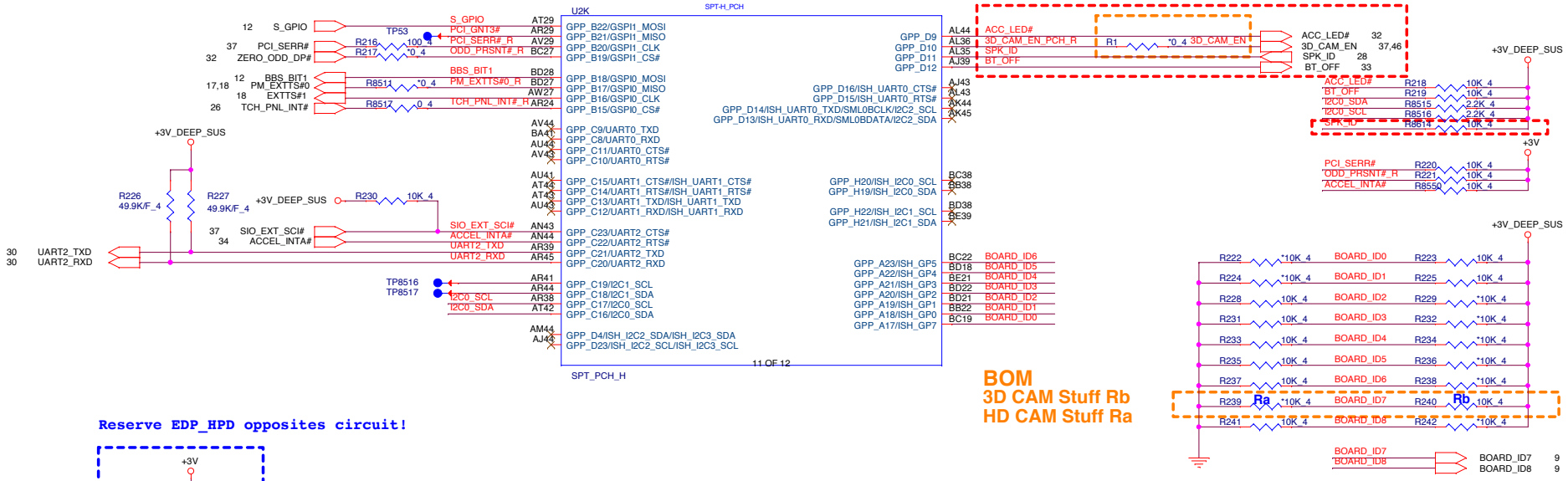
PROJECT : G37A/G37B
Quanta Computer Inc.

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

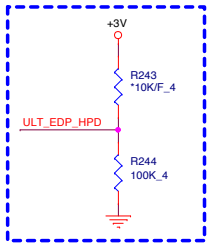
1123 Change PCH GPP_D11 Net name from RF_OFF to SPK_ID and PU10K to +3V_DEEP_SUS for SPK Vendor ID used

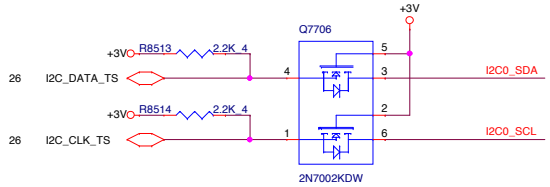
3D CAMERA
BOM: 3D CAM Un-Stuff (EN will from EC control)



BOM
3D CAM Stuff Rb
HD CAM Stuff Ra

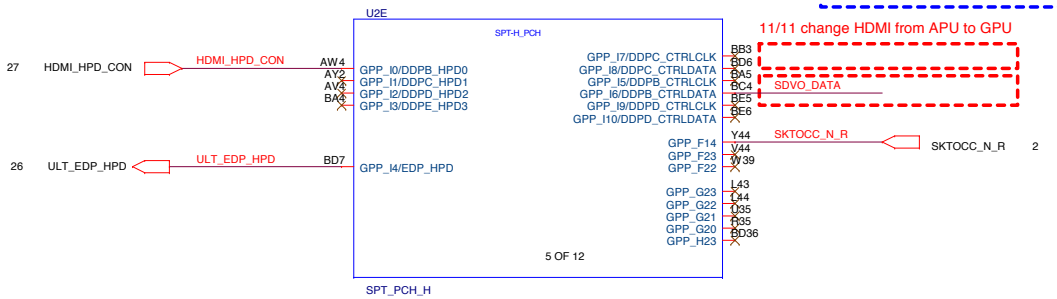
Reserve EDP_HPD opposites circuit!





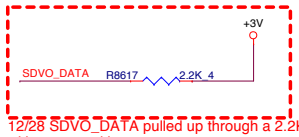
Model	BOARD_ID[8:7] ID8;ID7	BOARD_ID[6:5] ID6;ID5	Board ID [4:3] ID4;ID3	BOARD_ID[2:1] ID2;ID1	BOARD_ID0 ID0
Definition	00 Non 3D CAM 01 3D CAM	00 Reserved	Reserved	00 15" P SKL H 01 17" P SKL H 10 17" SP SKL H 11 17" KBL H	0 UMA 1 DIS

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

SDVO_DATA
SKTOCC_N_R
SKTOCC_N_R 2



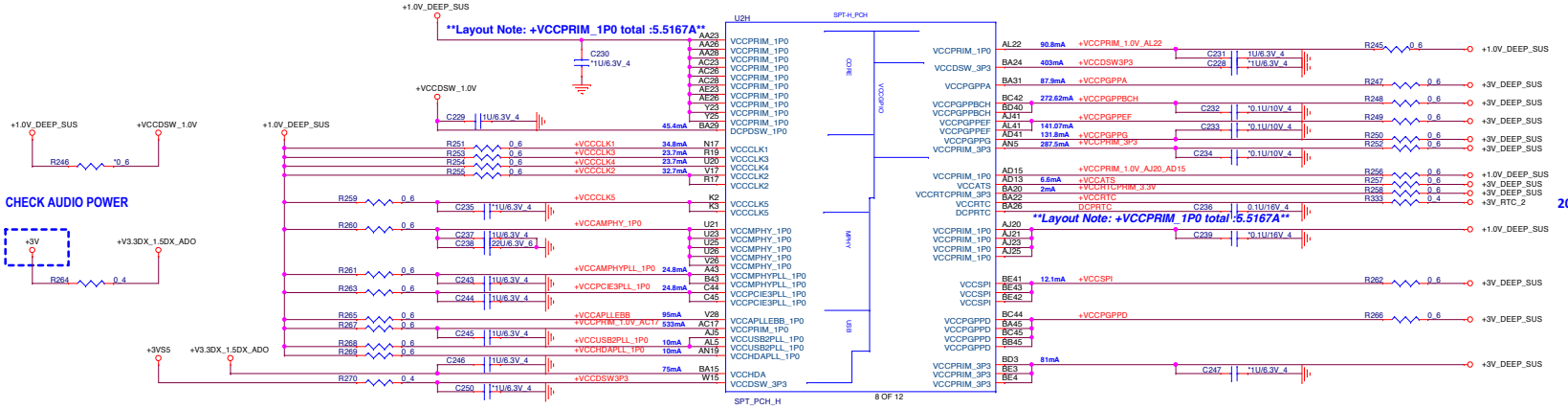
12/28 SDVO_DATA pulled up through a 2.2KΩ ±5% pull-up to 3.3V for Panel brightness without control issue

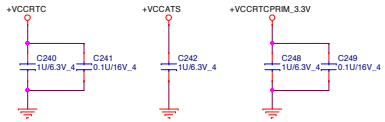
PROJECT : G37A/G37B
Quanta Computer Inc.

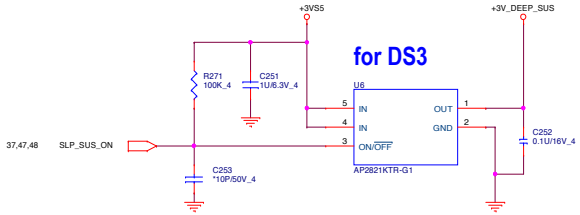
Size	Document Number	Rev
Custom	13 -- PCH 5/7 (GPIO)	1A

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

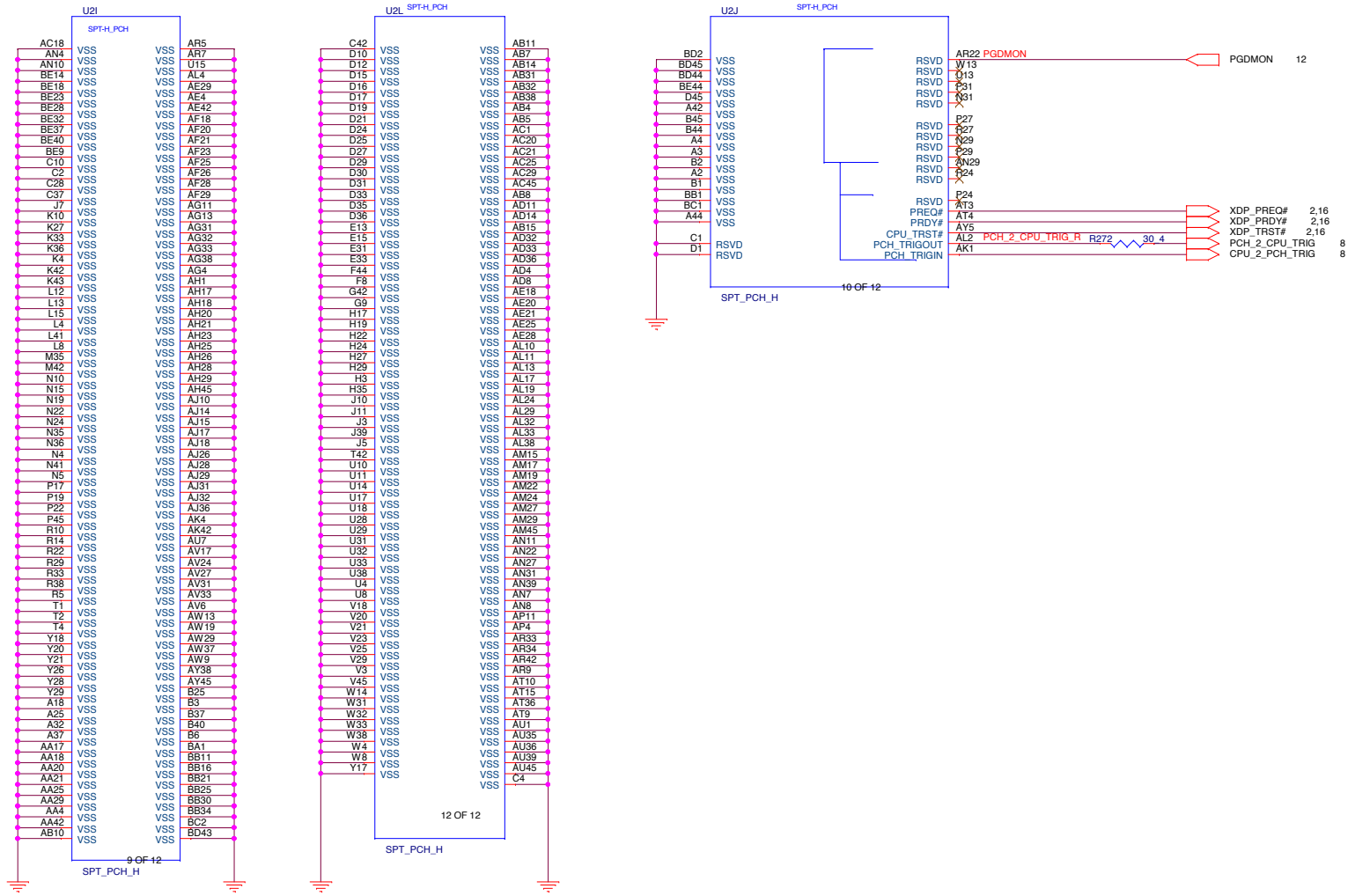
+3V_RTC_2 10,12
+3VS5 10,12,16,26,33,37,41,42,46,47,48,51
+3V_DEEP_SUS 9,10,12,13,16,18
+3V 5,9,10,11,12,13,16,17,18,19,22,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+1.0V_DEEP_SUS 10,11,16,47,48







PROJECT : G37A/G37B	
Quanta Computer Inc.	
Size: Custom	Document Number: 14 -- PCH 6/7 (POWER)
Rev: 1A	
Date: Monday, December 28, 2015	Sheet 14 of 51



PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	15 -- PCH 7/7 (GND)	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#
2,15 XDP_PRDY#
2 CFG0
2 CFG1
2,8 CFG2
2,8 CFG3
2,8 CFG4
2,8 CFG5
2,8 CFG6
2 CFG7
16 ON/OFFBTN_KBC#
11 CK_XDP_P
11 CK_XDP_N
10,17,18,38 SMB_RUN_DAT
10,17,18,38 SMB_RUN_CLK

R273 *1K_4
R274 *1K_4
CFG0 R275 *1K_4 PWR_DEBUG
R276 *0_4 SMB_RUN_DAT_XDP
R277 *0_4 SMB_RUN_CLK_XDP
XDP_DBRESET_N
XDP_TDO
XDP_TRST#
XDP_TDI
XDP_TMS
XDP_TCK0
TP58

OBSFN_A0 OBSFN_A1 OBSDATA_A0 OBSDATA_A1 OBSDATA_A2 OBSDATA_A3 OBSDATA_B0 OBSDATA_B1 OBSDATA_B2 OBSDATA_B3 HOOK1 HOOK2 ITPCLK/HOOK4 ITPCLK#/HOOK5 DBR#/HOOK7 SDA SCL TDO TRSTN TDI TMS TCK0 GND17 GND16 GND15 GND14 GND13 GND12 GND11 GND10

+1.0V_DEEP_SUS
VCC_OBS_CD VCC_OBS_AB OBSFN_B0 OBSFN_B1 OBSFN_C0 OBSFN_C1 OBSDATA_C0 OBSDATA_C1 OBSDATA_C2 OBSDATA_C3 OBSFN_D0 OBSFN_D1 OBSDATA_D0 OBSDATA_D1 OBSDATA_D2 OBSDATA_D3 HOOK3 TCK1 PWRGOOD/HOOK0 RESET#/HOOK6 GND0 GND1 GND2 GND3 GND4 GND5 GND6 GND7 GND8 GND9

TP56
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
TP57
SYS_PWROK
XDP_RST
R278 *1K_4
SYS_PWROK 10,16
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

+3V_DEEP_SUS
+3VS5
CN1 *ACES_88511-180N

SUSB# 10,16,37
SLP_S5# 10
SUSC# 10,37
SLP_A# 10
RTC_RST# 10
ON/OFFBTN_KBC# 16
SYS_RESET# 10
R283 *0_4 PCH_SLP_S0_N 10
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
VCC 1A 1OE 2A 2OE 3A 3OE 4A 4OE DPAD GND
1B 2B 3B 4B

XDP_TDO_CPU 2
XDP_TDI_CPU 2
XDP_TMS_CPU 2
XDP_TRST#_CPU 2

10,16 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
10,18 DDR4_DRAMRST# C259 *0.1U/16V_4

4 M_A_ACT# 114 ACT#
4 M_A_PARITY 143 PARITY
4 M_A_ALERT# 116 ALERT#
134 EVENT#
108 RESET#

+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

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

2.48A

JDIM1B

DDR4 SODIMM 260 PIN (260P)

+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
M_B_A1 133 A1
M_B_A2 132 A2
M_B_A3 131 A3
M_B_A4 128 A4
M_B_A5 126 A5
M_B_A6 127 A6
M_B_A7 122 A7
M_B_A8 125 A8
M_B_A9 121 A9
M_B_A10 146 A10/AP
M_B_A11 120 A11
M_B_A12 119 A12
M_B_A13 158 A13

4 M_B_WE# 151 A14/WE#
4 M_B_CAS# 156 A15/CAS#
4 M_B_RAS# 152 A16/RAS#

TP63 162 S2#/C0
TP64 165 S3#/C1

4 M_B_ACT# 114 ACT#
4 M_B_PARITY 143 PARITY
4 M_B_ALERT# 116 ALERT#
13,17 PM_EXTTS#0 134 EVENT#
10,17 DDR4_DRAMRST# 108 RESET#

C300 *0.1U/16V_4

4 M_B_BS#0 150 BA0
4 M_B_BS#1 145 BA1
4 M_B_BG#0 115 BG0
4 M_B_BG#1 113 BG1

4 M_B_CS#0 149 S0#
4 M_B_CS#1 157 S1#
4 M_B_CKE0 109 CKE0
4 M_B_CKE1 110 CKE1

4 M_B_CLKP0 137 CK0
4 M_B_CLKN0 139 CK0#
4 M_B_CLKP1 136 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

M_B_DQ5 8 DQ0
M_B_DQ1 7 DQ1
M_B_DQ6 20 DQ2
M_B_DQ3 21 DQ3
M_B_DQ4 4 DQ4
M_B_DQ0 3 DQ5
M_B_DQ7 16 DQ6
M_B_DQ2 17 DQ7
M_B_DQ10 28 DQ8
M_B_DQ9 29 DQ9
M_B_DQ12 41 DQ10
M_B_DQ11 42 DQ11
M_B_DQ14 24 DQ12
M_B_DQ8 25 DQ13
M_B_DQ15 38 DQ14
M_B_DQ13 37 DQ15
M_B_DQ17 50 DQ16
M_B_DQ22 49 DQ17
M_B_DQ19 62 DQ18
M_B_DQ20 63 DQ19
M_B_DQ18 46 DQ20
M_B_DQ16 45 DQ21
M_B_DQ23 58 DQ22
M_B_DQ21 59 DQ23
M_B_DQ25 70 DQ24
M_B_DQ30 71 DQ25
M_B_DQ26 83 DQ26
M_B_DQ29 84 DQ27
M_B_DQ28 66 DQ28
M_B_DQ27 67 DQ29
M_B_DQ31 79 DQ30
M_B_DQ24 80 DQ31
M_B_DQ39 174 DQ32
M_B_DQ35 173 DQ33
M_B_DQ37 187 DQ34
M_B_DQ32 186 DQ35
M_B_DQ38 170 DQ36
M_B_DQ34 169 DQ37
M_B_DQ36 183 DQ38
M_B_DQ33 182 DQ39
M_B_DQ45 195 DQ40
M_B_DQ41 194 DQ41
M_B_DQ47 207 DQ42
M_B_DQ43 208 DQ43
M_B_DQ44 191 DQ44
M_B_DQ40 190 DQ45
M_B_DQ46 203 DQ46
M_B_DQ42 204 DQ47
M_B_DQ54 216 DQ48
M_B_DQ48 215 DQ49
M_B_DQ55 228 DQ50
M_B_DQ53 229 DQ51
M_B_DQ52 211 DQ52
M_B_DQ51 212 DQ53
M_B_DQ50 224 DQ54
M_B_DQ49 225 DQ55
M_B_DQ59 237 DQ56
M_B_DQ57 236 DQ57
M_B_DQ58 249 DQ58
M_B_DQ56 250 DQ59
M_B_DQ61 232 DQ60
M_B_DQ62 233 DQ61
M_B_DQ63 245 DQ62
M_B_DQ60 246 DQ63

M_B_DQSP0 13 DQS0
M_B_DQSP1 34 DQS1
M_B_DQSP2 55 DQS2
M_B_DQSP3 76 DQS3
M_B_DQSP4 179 DQS4
M_B_DQSP5 200 DQS5
M_B_DQSP6 221 DQS6
M_B_DQSP7 242 DQS7
M_B_DQSP8 97 DQS8

M_B_DQSN0 11 DQS#0
M_B_DQSN1 32 DQS#1
M_B_DQSN2 53 DQS#2
M_B_DQSN3 74 DQS#3
M_B_DQSN4 177 DQS#4
M_B_DQSN5 198 DQS#5
M_B_DQSN6 219 DQS#6
M_B_DQSN7 240 DQS#7
M_B_DQSN8 95 DQS#8

0
1
2
3
4
5
6
7

M_B_DQSP[7:0] 4
M_B_DQSN[7:0] 4

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

+1.2VSUS
R314 *240_4 M_B_CB0
R315 *240_4 M_B_CB1
R316 *240_4 M_B_CB2
R317 *240_4 M_B_CB3
R318 *240_4 M_B_CB4
R320 *240_4 M_B_CB5
R321 *240_4 M_B_CB6
R322 *240_4 M_B_CB7

+1.2VSUS
R319 240_4 M_B_DQSP8
R323 240_4 M_B_DQSN8

+1.2VSUS
2.48A

JDIM2B

DDR4 SODIMM 260 PIN (260P)

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

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

VDDSPD 255 +3V
VPP1 257 +2.5VSUS
VPP2 259
VTT 258 DDR_VTT
VREF_CA 164 +SMDDR_VREF_DQ1 R307 0_6 SMDDR_VREF_DQ1_M1

+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
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

4 SMDDR_VREF_DQ1_M3

+1.2VSUS
+3V_DEEP_SUS
R327 *47K/F_4
R328 *47K/F_4
R329 *47K/F_4
Q8 *DRC5144E0L
2 DDR_VTT_CNTL
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

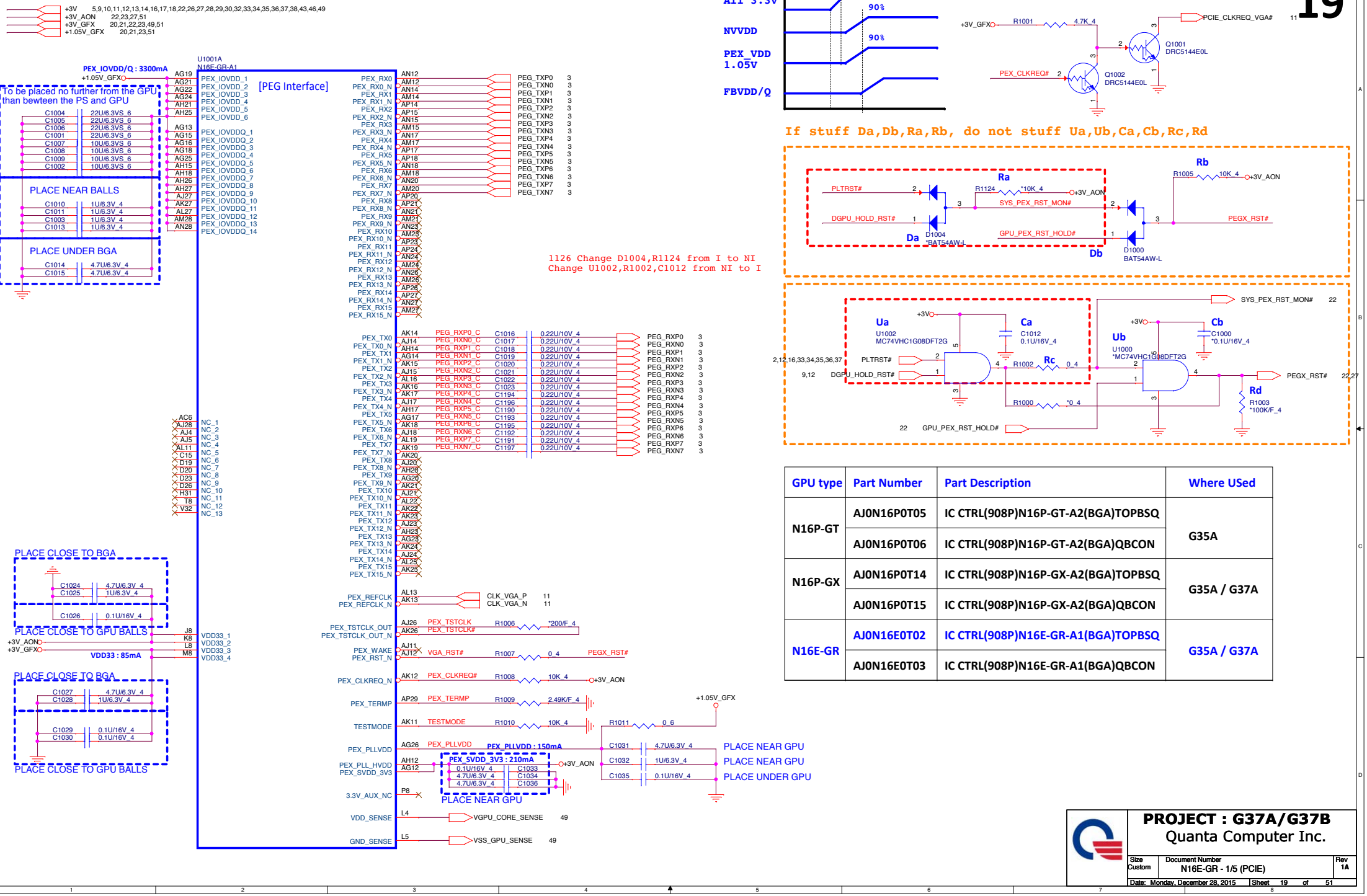
U8 *TMP431ADGKR Need Check PN(EOD)
5,10,37 MBCLK2 8 SCLK
5,10,37 MBDATA2 7 SDA
PM_EXTTS#0 6 ALERT#
+3V R332 10K/F_4 EXTTS#1 4 OVERT#
13 EXTTS#1
VCC 1
DXP 2
DXN 3
GND 5
C327 *0.01U/50V_4 +3V
DDR_THERMDA
C328 *2200P/50V_4
DDR_THERMDC
Q9 *METR3904-G

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	



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

PLACE CLOSE TO BGA

MUST BE on GPU ball

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	Document Number	Rev
Custom	N16P-GX/GT - 2/5 (Memory)	1A

Date: Monday, December 28, 2015 | Sheet 20 of 51

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

U1001D
N16E-GR-A1

[IFPA/B_LVDS]
AH8 IFPAB_PLLVDD
AG8 IFPA_IOVDD
AG9 IFPB_IOVDD
AJ8 IFPAB_RSET
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/D_TMDS]
IFPC_PLLVDD AF7
IFPD_PLLVDD AG7
IFPC_IOVDD AF6
IFPD_IOVDD AG6
IFPC_RSET AF8
IFPD_RSET AN2
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

[IFPE/F_DP]
IFPEF_PLLVDD AB8
IFPE_IOVDD AC7
IFPF_IOVDD AC8
IFPEF_RSET AD6
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
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

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

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
PLACE AT BALLS
C8598 0.1U/16V_4
C8597 4.7U/6.3V_6
C8596 1U/6.3V_4
PLACE OUTSIDE OF BALL
+3V_GFX L7517 FCM1005KF-301T03 IFPC_PLLVDD
0.25A
0.3A
+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

11/05 change HDMI from APU to GPU

[DACA/B_CRT]
AG10 DACA_VDD
AP9 DACA_VREF
AP8 DACA_RSET
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
C1059 22U/6.3VS_6
C1060 0.1U/16V_4
SP_PLLVDD AE8
+1.05V_GFX L1003 HCB1005KF-181T15 VID_PLLVDD AD7
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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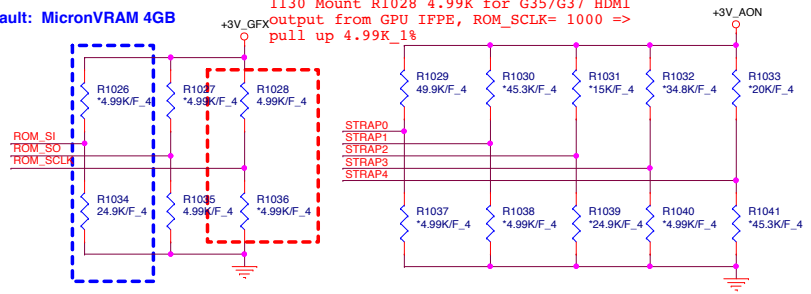
+3V 5,9,10,11,12,13,14,16,17,18,19,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+3V_AON 19,23,27,51
+3V_GFX 19,20,21,23,49,51

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

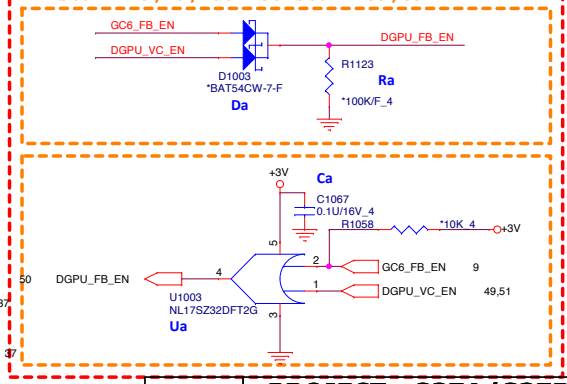
Vendor	TOP B/S / QBCON	Mfr. P/N	SIZE	ROM_SI
Hynix	AKG5PWUTW19	H5GC4H24AJR-T2C	256Mx16	0x6 0110 PD 34.8K
	AKG5PWUTW20			
Micron	AKG5PW0TL05	EDW4032BABG-60-F-D		0x4 0100 PD 24.9K
	AKG5PW0TL06			

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]

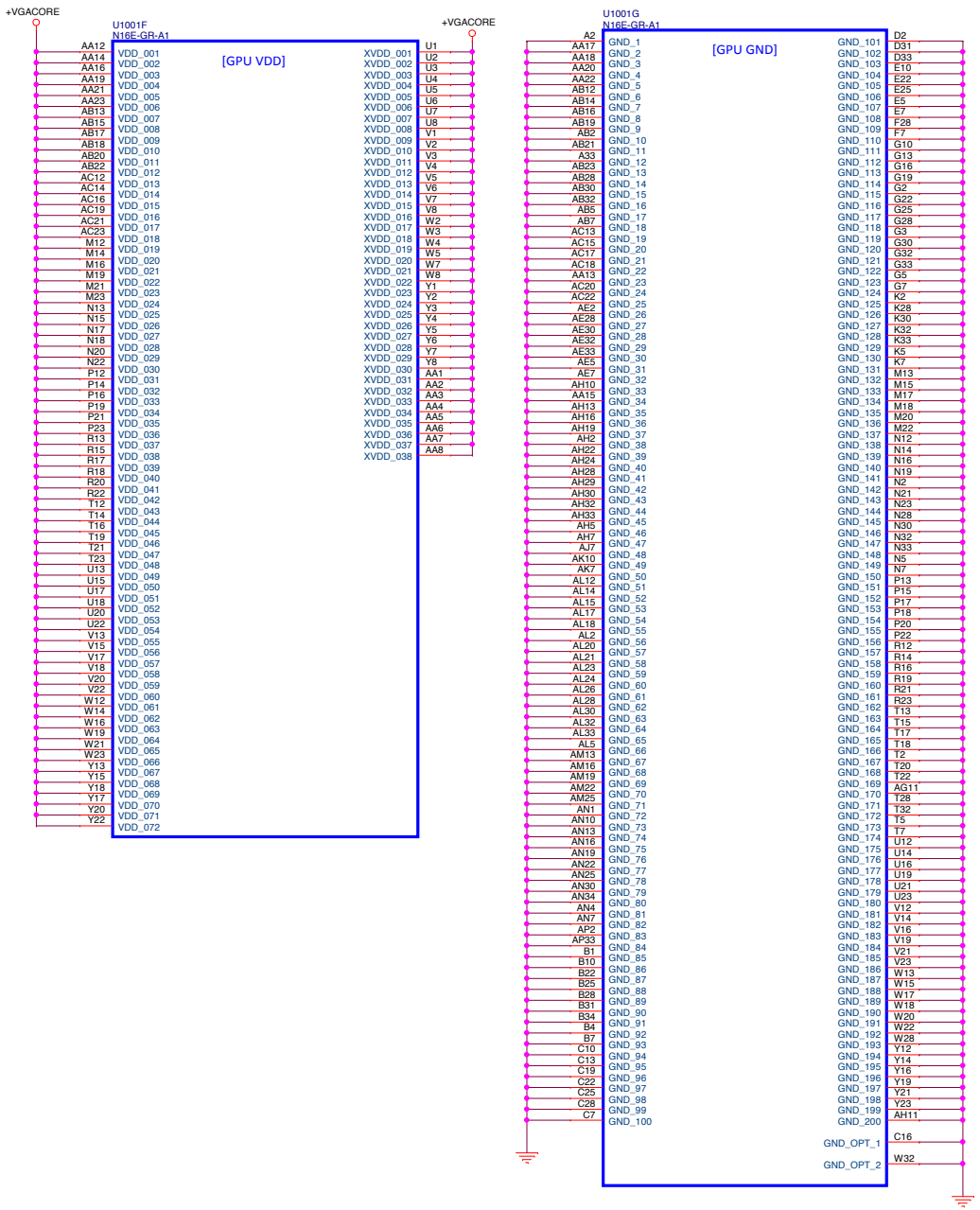
GPU_EVENT# should be connected to PCH GPIO pin for GC6 2.0 function.

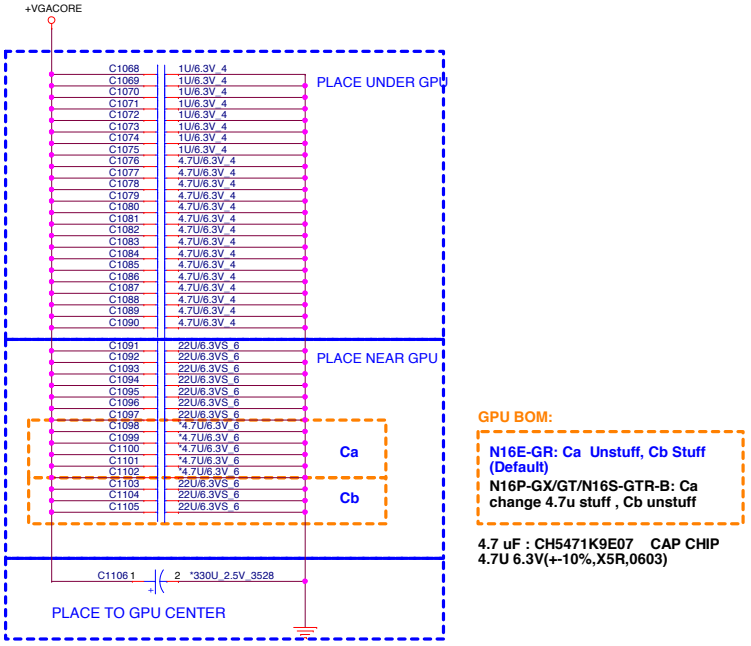
GFx SMBus Isolation

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



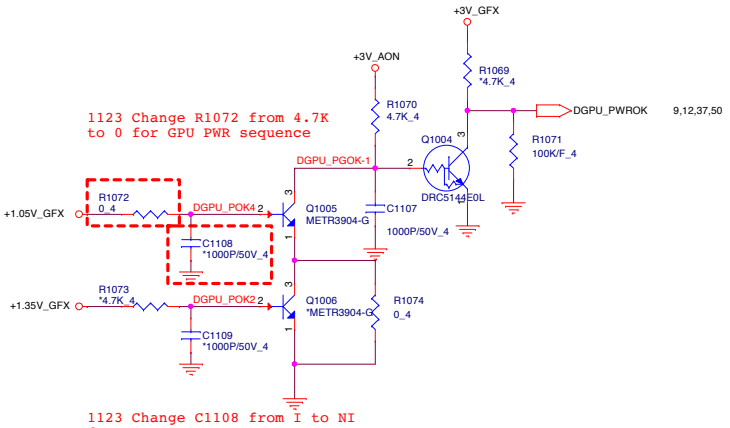


GPU BOM:

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

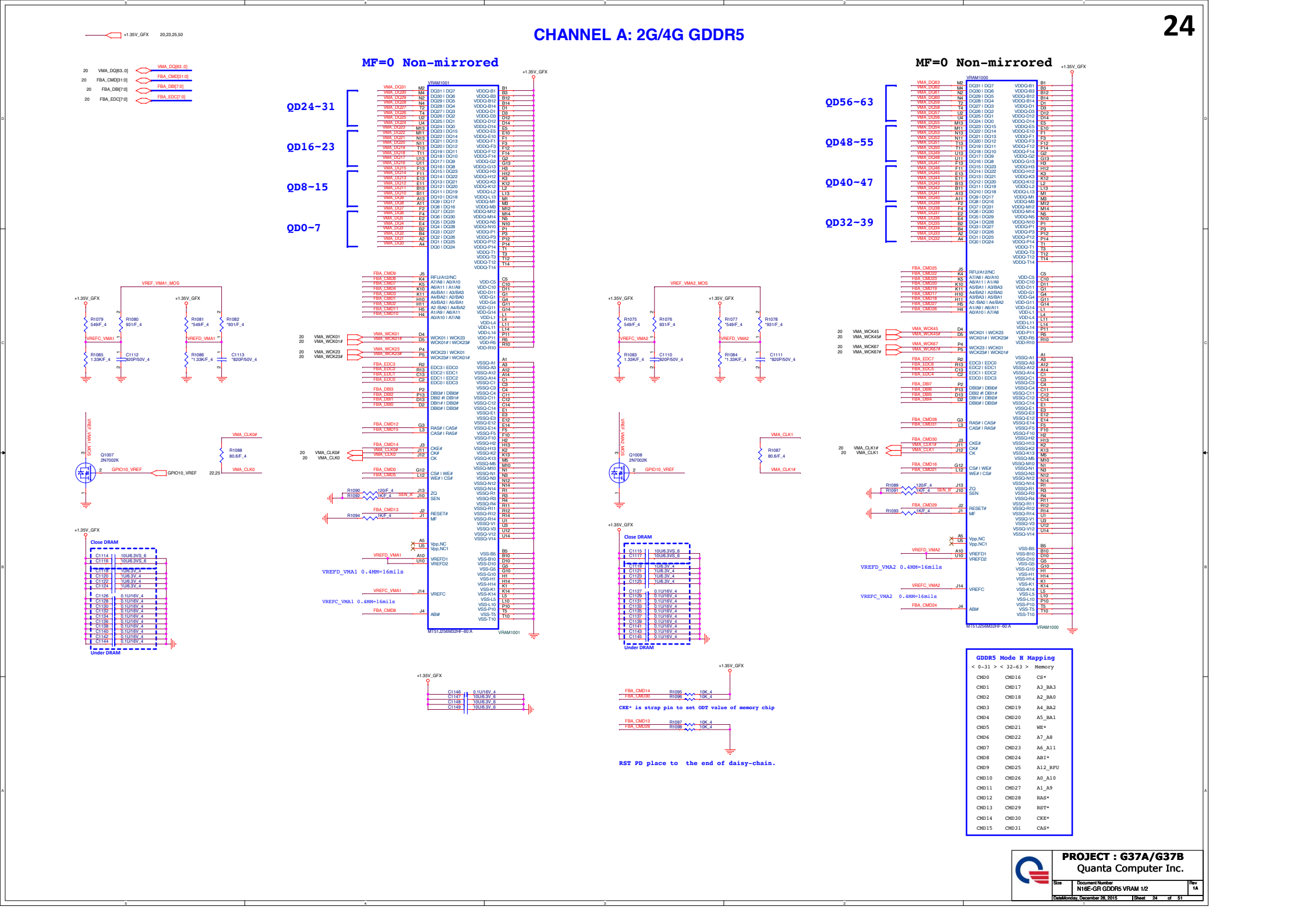


PROJECT : G37A/G37B
Quanta Computer Inc.

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

Date: Monday, December 28, 2015 Sheet 23 of 51

CHANNEL A: 2G/4G GDDR5



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

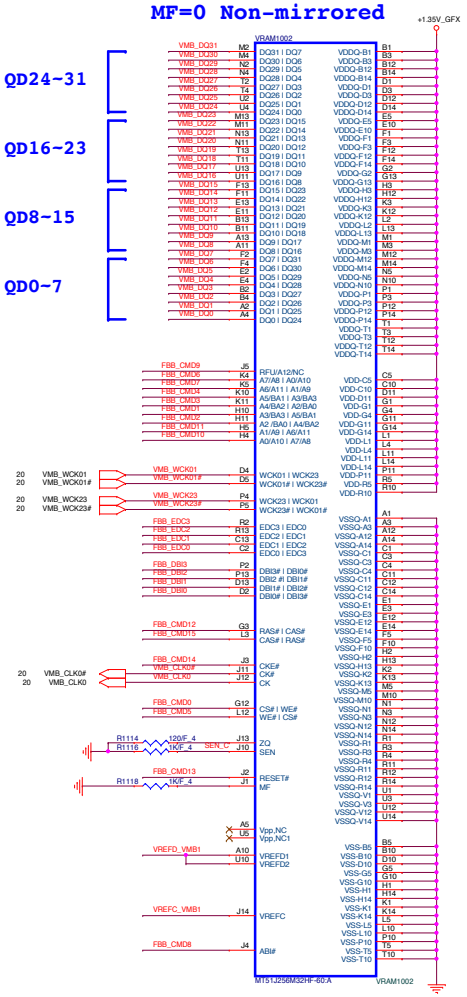
20 VMB_DQ[63:0] VMB_DQ[63:0]
20 FBB_CMD[31:0] FBB_CMD[31:0]
20 FBB_DB[7:0] FBB_DB[7:0]
20 FBB_EDC[7:0] FBB_EDC[7:0]

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

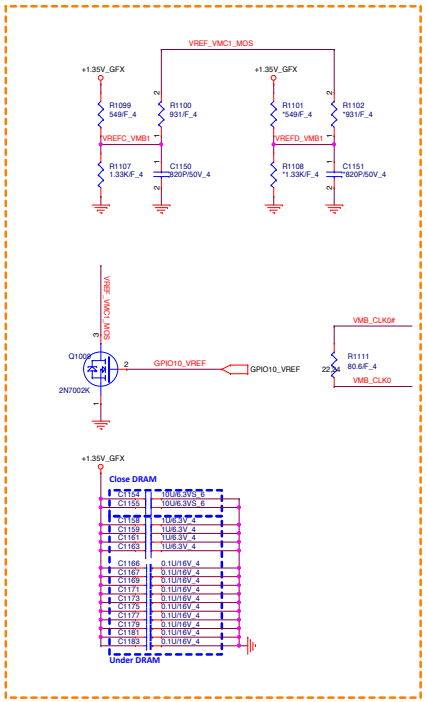
MF=0 Non-mirrored

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

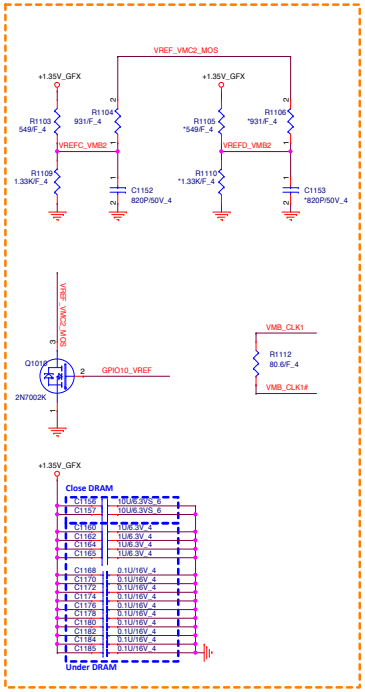
VRAM1002



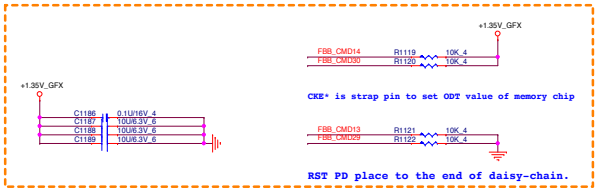
N16S-GTR-B: unstuff VRAM
N16P-GX/GT/N16E-GR: stuff VRAM (Default)



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)

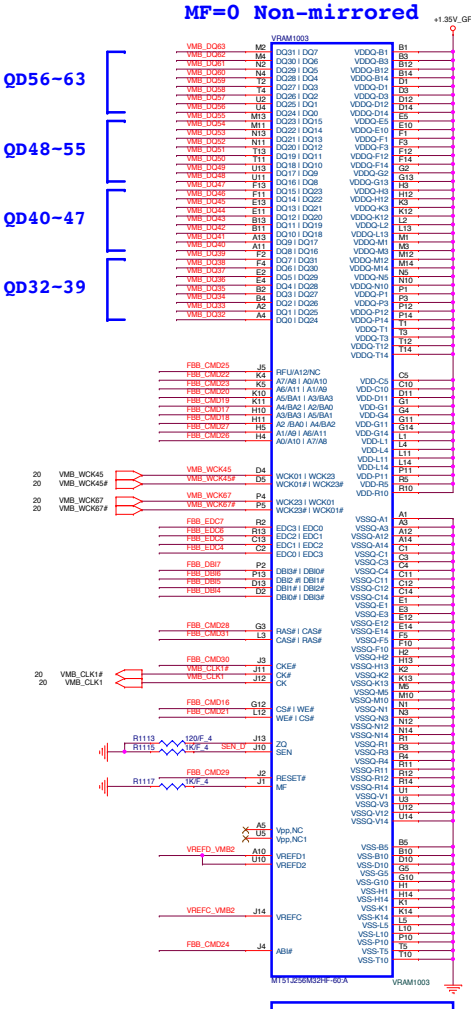


N16S-GTR-B: unstuff VRAM
N16P-GX/GT/N16E-GR: stuff VRAM (Default)

MF=0 Non-mirrored

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

VRAM1003



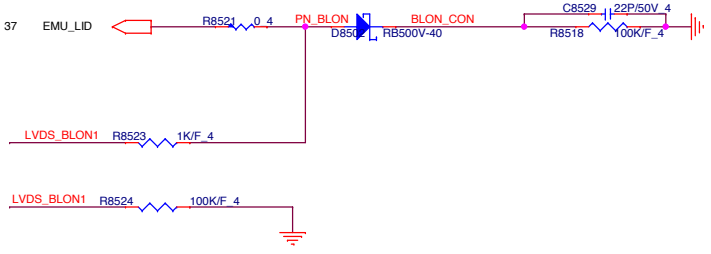
GDDR5 Mode H Mapping

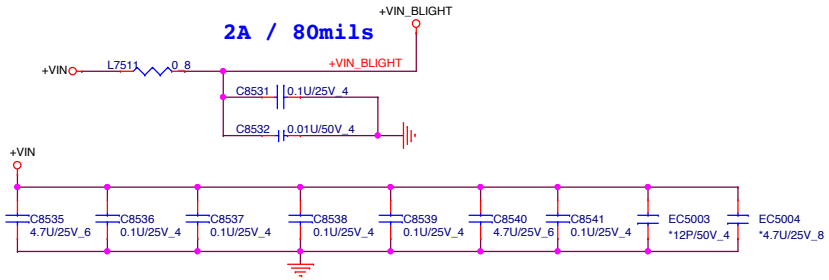
< 0-31 >	< 32-63 >	Memory
CMD0	CMD16	CS*
CMD1	CMD17	A3_BA3
CMD2	CMD18	A2_BA0
CMD3	CMD19	A4_BA2
CMD4	CMD20	A5_BA1
CMD5	CMD21	WE*
CMD6	CMD22	A7_A8
CMD7	CMD23	A6_A11
CMD8	CMD24	ABI*
CMD9	CMD25	A12_RFU
CMD10	CMD26	A0_A10
CMD11	CMD27	A1_A9
CMD12	CMD28	RAS*
CMD13	CMD29	RST*
CMD14	CMD30	CKE*
CMD15	CMD31	CAS*

PROJECT : G37A/G37B
Quanta Computer Inc.
Size | Document Number: N16E-GR GDDR5 VRAM 2/2 | Rev: 1A
Date: Monday, December 28, 2015 | Sheet 25 of 51

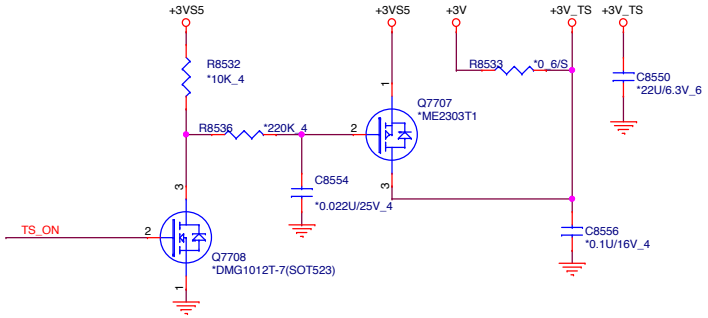
+VIN 32,38,39,40,41,42,43,44,45,47,48,49,50
+5VS5 10,28,30,41,42,43,44,45,46,47,48,49,50,51
+5V 27,28,29,31,32,38,46,49
+3VS5 10,12,14,16,33,37,41,42,46,47,48,51
+3V 5,9,10,11,12,13,14,16,17,18,19,22,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+3V_CAM 34

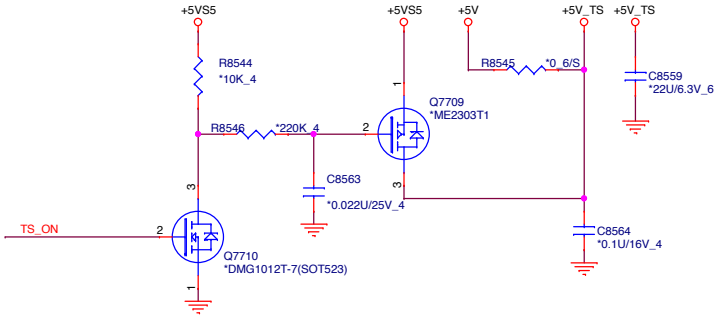
LID Switch





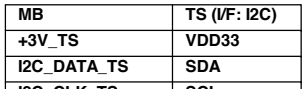
Touch screen





eDP Conn.

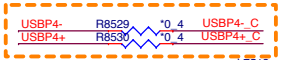
51519-0400T-V02
51519-0400t-v02-40p-l
DFFC40FR081
CN7703

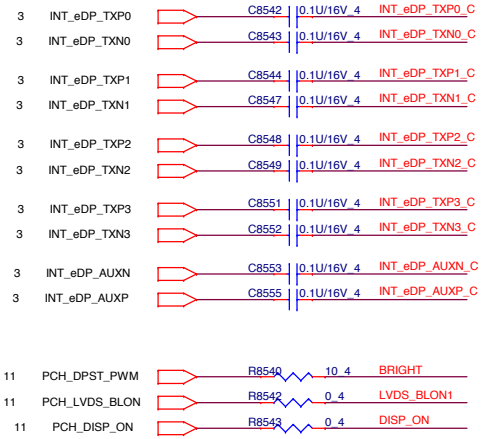


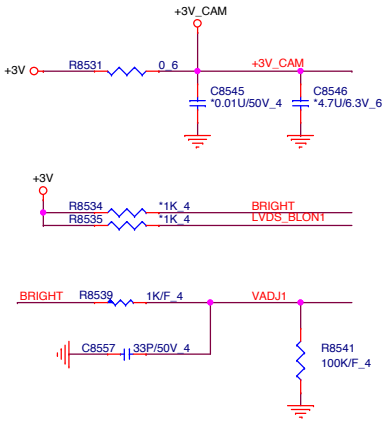
MB	TS (I/F: I2C)
+3V_TS	VDD33
I2C_DATA_TS	SDA
I2C_CLK_TS	SCL
TCH_PNL_RST#_EC	EXRESETN
TCH_PNL_INT#	ATTN
TS_ON	Report_Switch
GND	GND

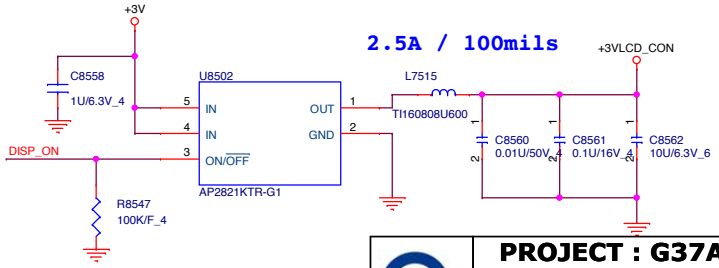
BOM: HD CAM Stuff

BOM: 3D CAM Un-Stuff







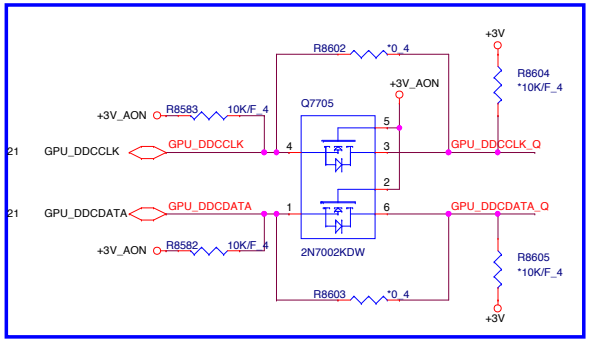


PROJECT : G37A/G37B
Quanta Computer Inc.

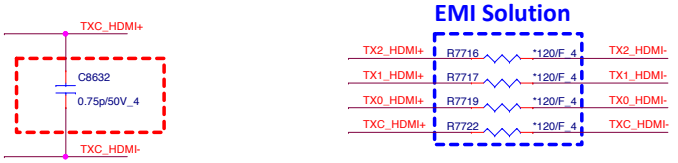
Size	Document Number	Rev
Custom	26 -- LCD CONN/LID/CAM/D-MIC/TS	1A
Date: Monday, December 28, 2015	Sheet 26 of 51	

+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

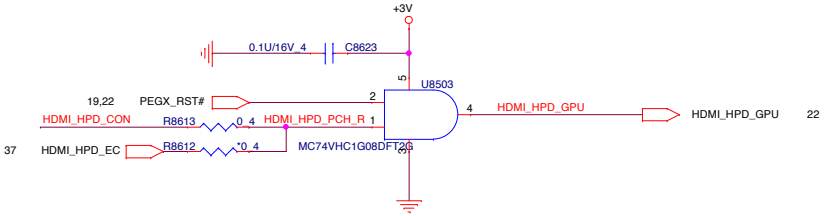
Prevent current leakage when GPU is power off

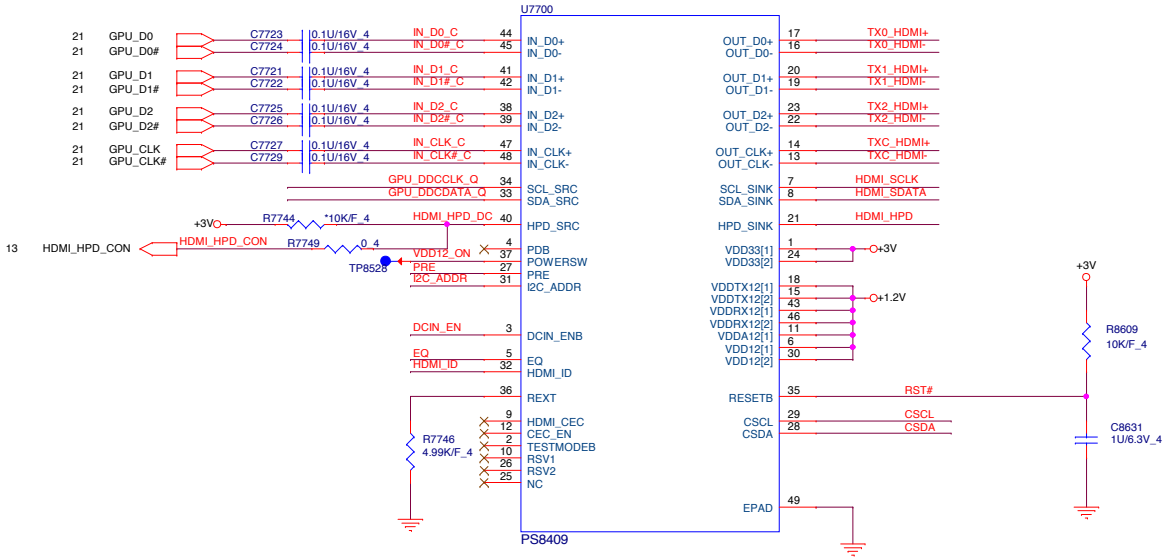


EMI Solution

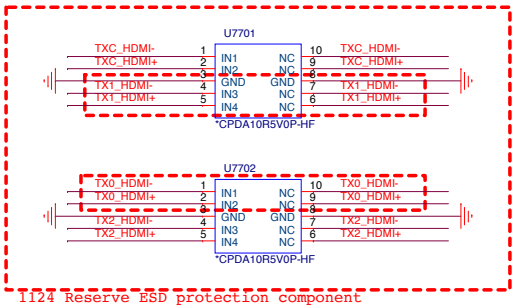


1127 Change P/N from CH+7506XB02 to CH+7506TB01



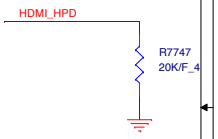


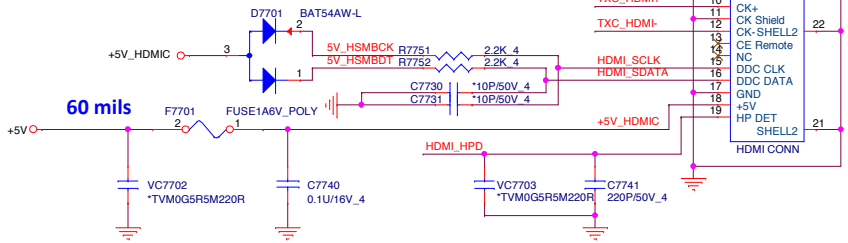
ESD



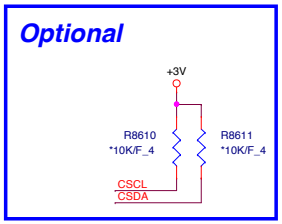
1124 Reserve ESD protection component

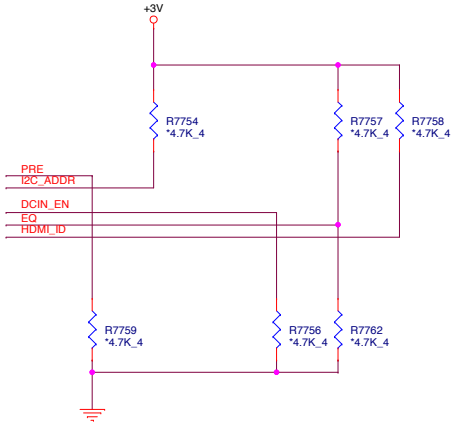
1124 SWAP for Layout

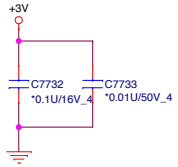


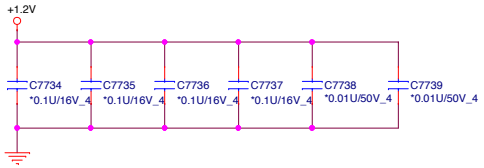


Optional









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

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

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

10 BIT_CLK_AUDIO
10 ACZ_SYNC_AUDIO
10 ACZ_SDIN0
10 ACZ_SDOUT_AUDIO
R2006 0_4 HD_BCLK 14
R2007 22/F_4 ACZ_SYNC_AUDIO 15
HD_SDIN0 16
ACZ_SDOUT_AUDIO 17
BCLK
SYNC
SDATA-IN
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
I2C_DATA 6
I2C_CLK 7
I2S_IN 8
I2S_OUT 9
I2S_BCLK 10
I2S_MCLK 11
I2S_LRCK 12
DC-DET/EAPD 13
I2S-IN/I2S-OUT-JD(JD2) 47
HP/LINE1-JD(JD1) 48
SENSE_A_R 48
SPK-OUT-L+ 42
SPK-OUT-L- 43
SPK-OUT-R- 44
SPK-OUT-R+ 45
Thermal Pad 49

+3V_DVDD
R8554 *100K/F_4
30 SENSE_A
R8553 0_4

Digital

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 32 C2029 10U/6.3VS_6 AGND
MIC2-CAP 25 C2026 2.2U/10V_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 R2008 0_4 EXT_MIC_L EXT_MIC_L 30
MIC2-VREFO-L 28 MUTE_LED_CNTL_L MUTE_LED_CNTL 38
HPOUT-L(PORT-I-L) 27 HPOUT_L 29
HPOUT-R(PORT-I-R) 26 HPOUT_R 29
AGND SHIELD

ALC3258-CG x QFN48

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 3
CN2000 1 2 3 4
SPEAKER CONN
SPK-L
Wire White
Wire Black

CN2001 2 1
88266-020L
SPK-R
Wire Black
Wire Red
R_SPK-_R
R_SPK+_R

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

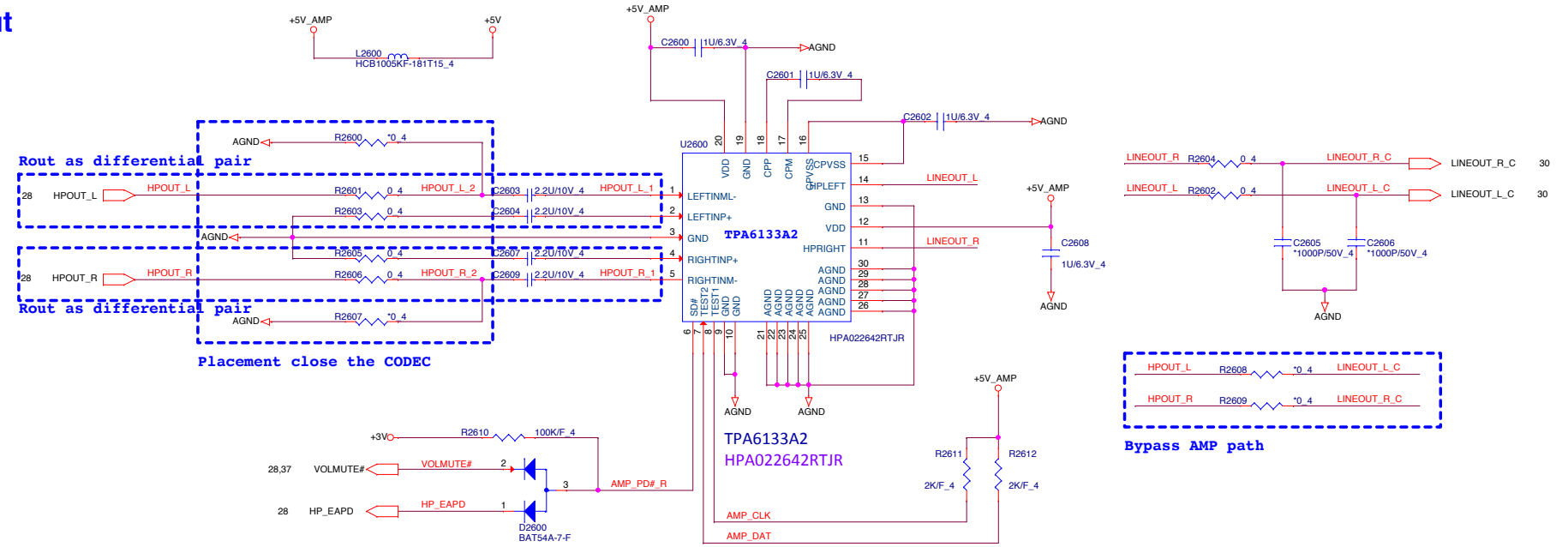
29,37 VOLMUTE#
D2000 RB500V-40
+3V_DVDD
R2013 100K/F_4
PD#
Q2001 METR3904-G
10 ACZ_RST#_AUDIO
R2017 0_4
C8566 0.1U/16V_4
R2019 10K/F_4 +3V_DVDD

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



TPA6133A2
HPA022642RTJR

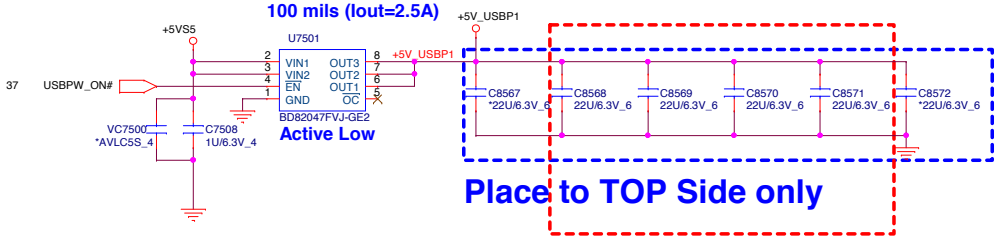
Size Custom	Document Number 29-- HP AMP HPA022642RTJR		Rev 1A
Date: Monday, December 28, 2015	Sheet 29 of 51		

PROJECT : G37A/G37B
Quanta Computer Inc.

+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

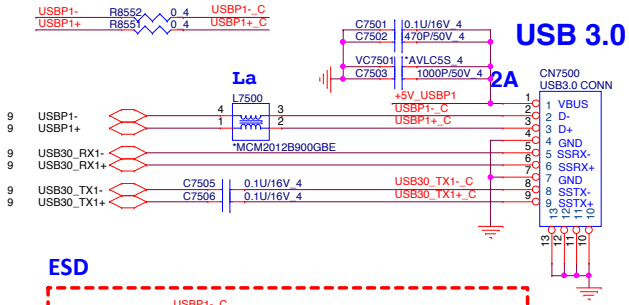
USB 2.0/3.0 Combo

100 mils (Iout=2.5A)

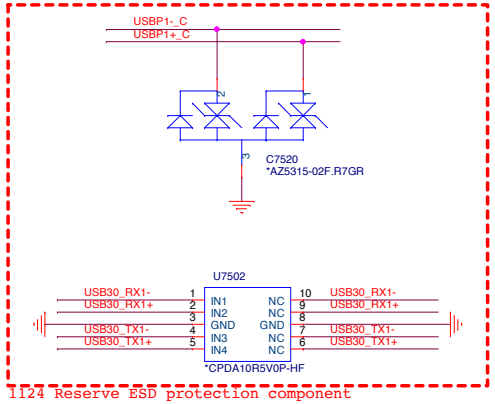


Place to TOP Side only

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

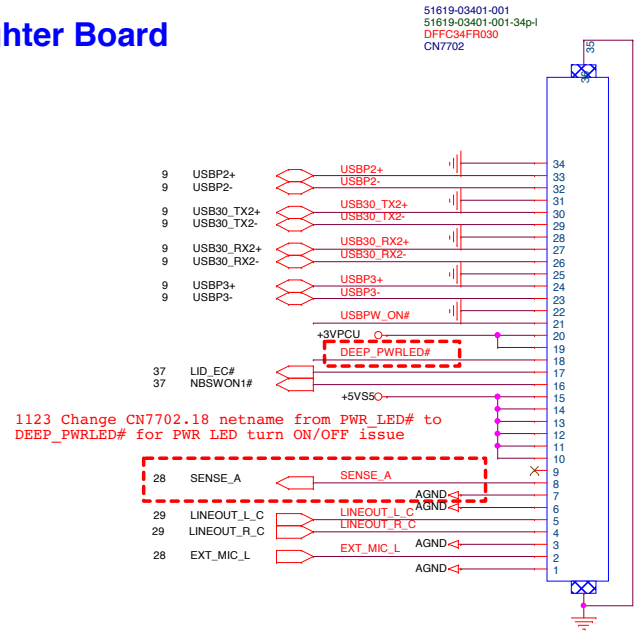


ESD



1124 Reserve ESD protection component

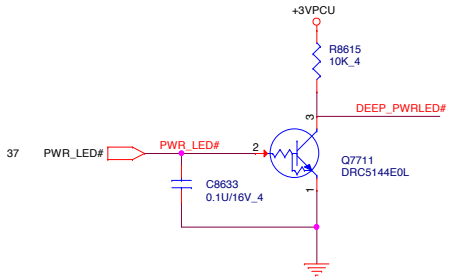
Daughter Board



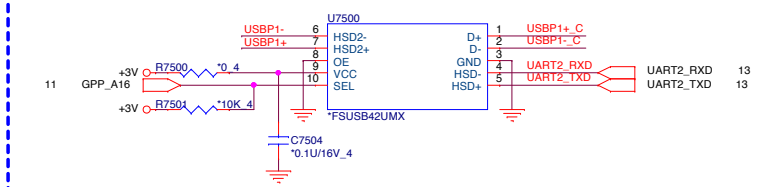
1123 Change CN7702.18 netname from PWR_LED# to DEEP_PWRLED# for PWR LED turn ON/OFF issue

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

1123 Add PWR LED MOS Circuit



UART for Win7 WHQL DEBUG



Place Back to Back La

PROJECT : G37A/G37B
Quanta Computer Inc.

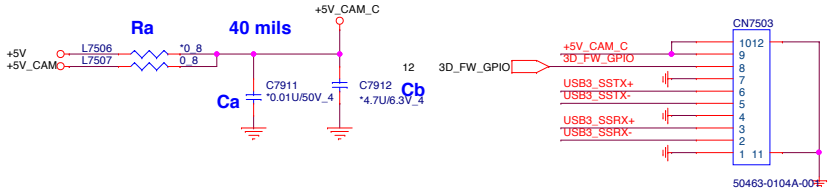
Size	Document Number	Rev
Custom	30 – USB3.0/DB	1A

Date: Monday, December 28, 2015 Sheet 30 of 51

+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

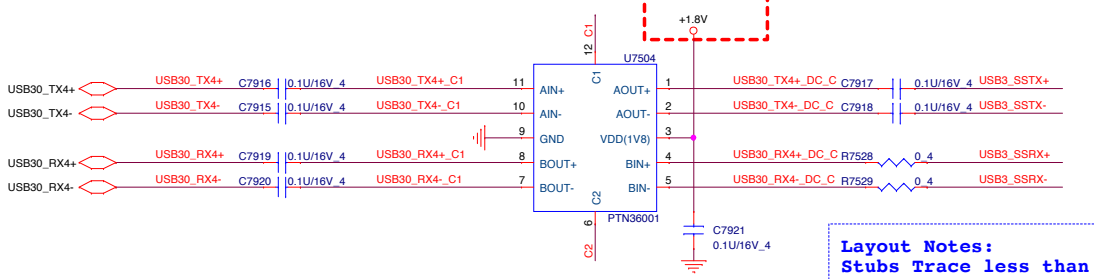
USB3.0 Re-driver IC

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

HOST

USB3.0 re-driver IC

DEVICE



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

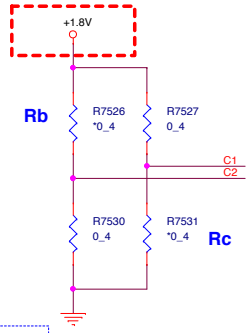


Table 4. C1 pin controls long/medium/short traces

State	Channel type	Pin C1 state	Channel B	Channel A	
			EQ[1]	DE[2]	OS[3]
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[3]
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

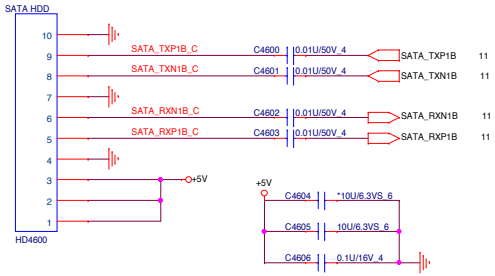
Layout Notes:
Stubs Trace less than 150mil

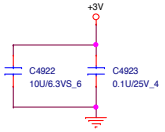
PROJECT : G37A/G37B
Quanta Computer Inc.

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

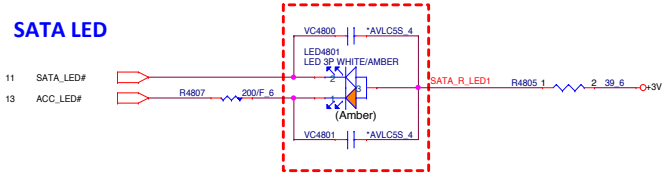
+VIN 26,38,39,40,41,42,43,44,45,47,48,49,50
+5V 26,27,28,29,31,38,46,49
+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,27,28,29,30,33,34,35,36,37,38,43,46,49

HDD



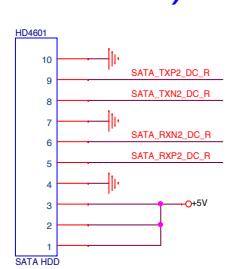


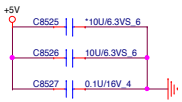
SATA LED

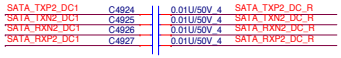


1124 Correct footprint ledltw-326dskf-5a-3p-smt

HDD (Close to ODD)

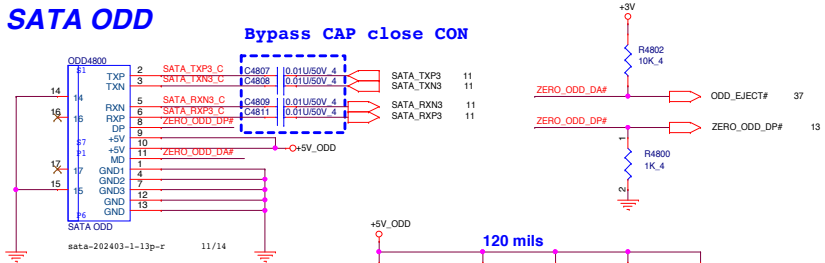


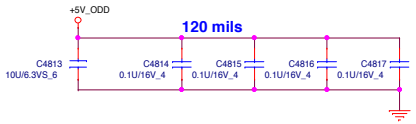


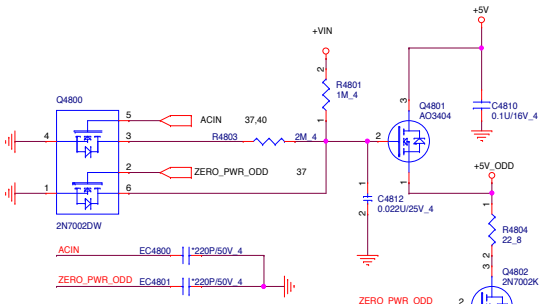


SATA ODD

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

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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)		
73	GND	3.3Vaux	70
75	GND	3.3Vaux	72
	GND	3.3Vaux	74

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

100 mils

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

+3V 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

+3V R4907 100K/F_4
R4908 0_8 +3V
TP8521

EC4901 470P/50V_4
EC4900 10U/6.3V_6
EC4902 10U/6.3V_6

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

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

Support Wake Function(Reserve)

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

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	GND	76
	GND	GND	77

WLAN_NGFF CONN (E-Key)

+3V_WLAN_P
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#

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#
PLTRST#
INT_BT_OFF#
INT_RF_OFF#
R5006 10K_4
R5007 10K_4 +3V_WLAN_P

LAD0 9,34,37
LAD1 9,34,37
LAD2 9,34,37
LAD3 9,34,37

9 CLK_24M_DEBUG
9,34,37 LFRAME#
LFRAME#

For EMI Suggestion

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

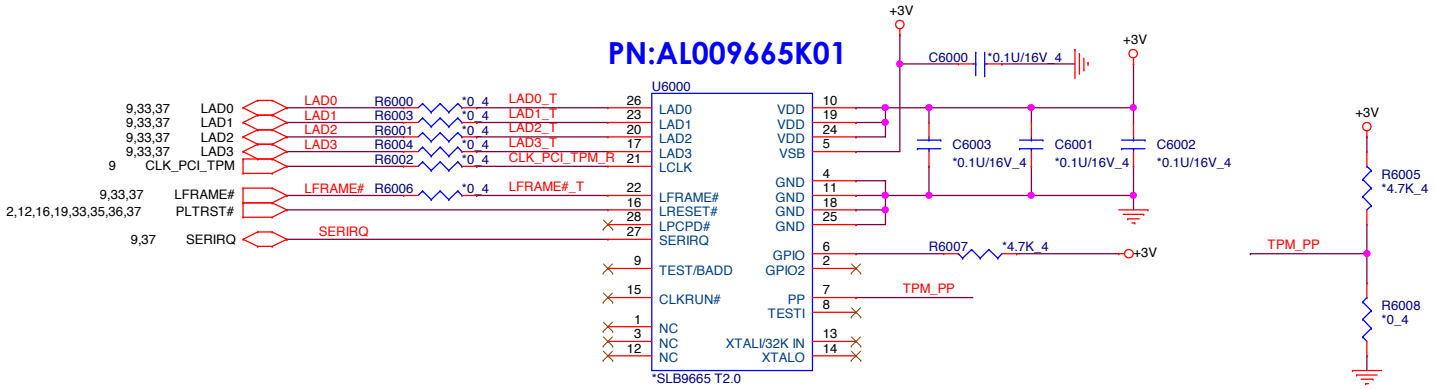
PROJECT : G37A/G37B
Quanta Computer Inc.

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)

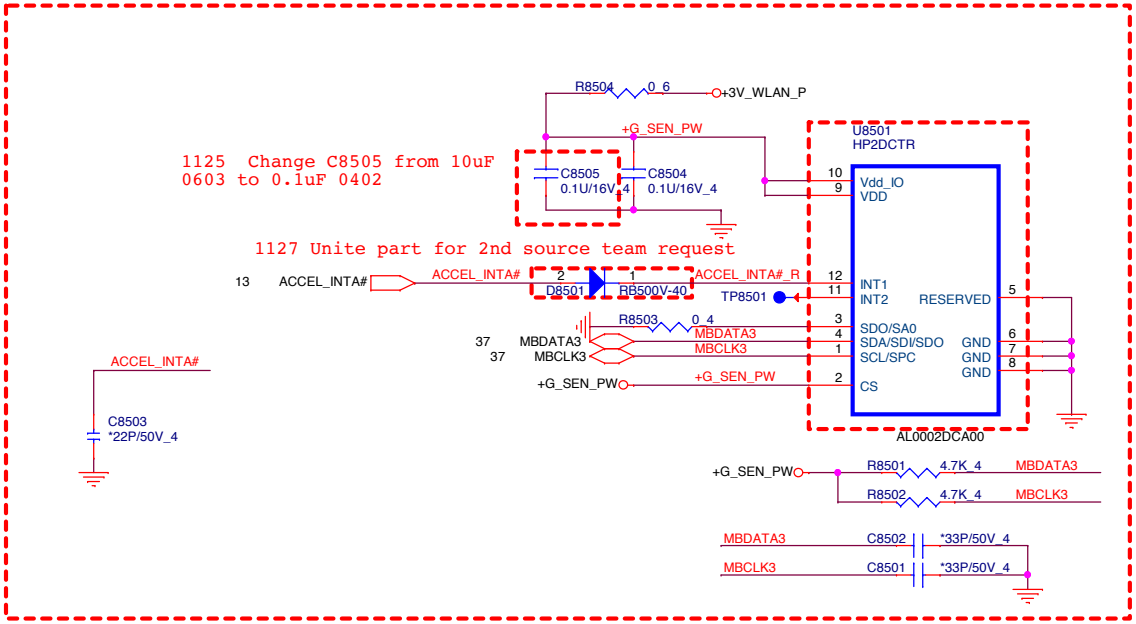
PN:AL009665K01



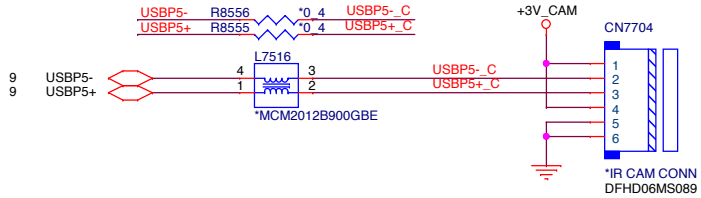
Accelerometer Sensor

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

LAN & RJ45

+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

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 >60mil >60mil

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

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

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

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

LAN_AMBLED# Ra R3003 0_4 LAN_WLED#
Rb R3004 *0_4 LAN_WLED#

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

U3000 RTL8107ESH-CG
Please add 9 GND VIAs connection with thermal PAD
MDI0+ MDI0- MDI1+ MDI1- MDI2+ MDI2-
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

RTL8111HSH-CG
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

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

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
Cj C3025 *0.1U/16V_4 Ci C3013 0.1U/16V_4 Cm C3014 0.1U/16V_4 Ck C3015 *4.7U/6.3VS_4 Cn C3016 *4.7U/6.3VS_4

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

For 10/100
Ua U3001
MDI1-_1 MDI1+_1 LAN_MCTG1 MDI0-_1 MDI0+_1 LAN_MCTG0
TD+ TD- CT RD+ RD- CT GND
TX+ CMT TX- RX- CT RX+
MDI1- TRA_V_DAC MDI1+ MDI0+ TRA_V_DAC MDI0-
*NS681684 DB0LE6LAN20
C3022 0.01U/50V_4
1st Source NS681684 DB0LE6LAN20
2nd Source NS892407 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 LAN_MCTG1 LAN_MCTG2 LAN_MCTG3
Ra R3011 Rb R3012 Rc R3014 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 MDI3-_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

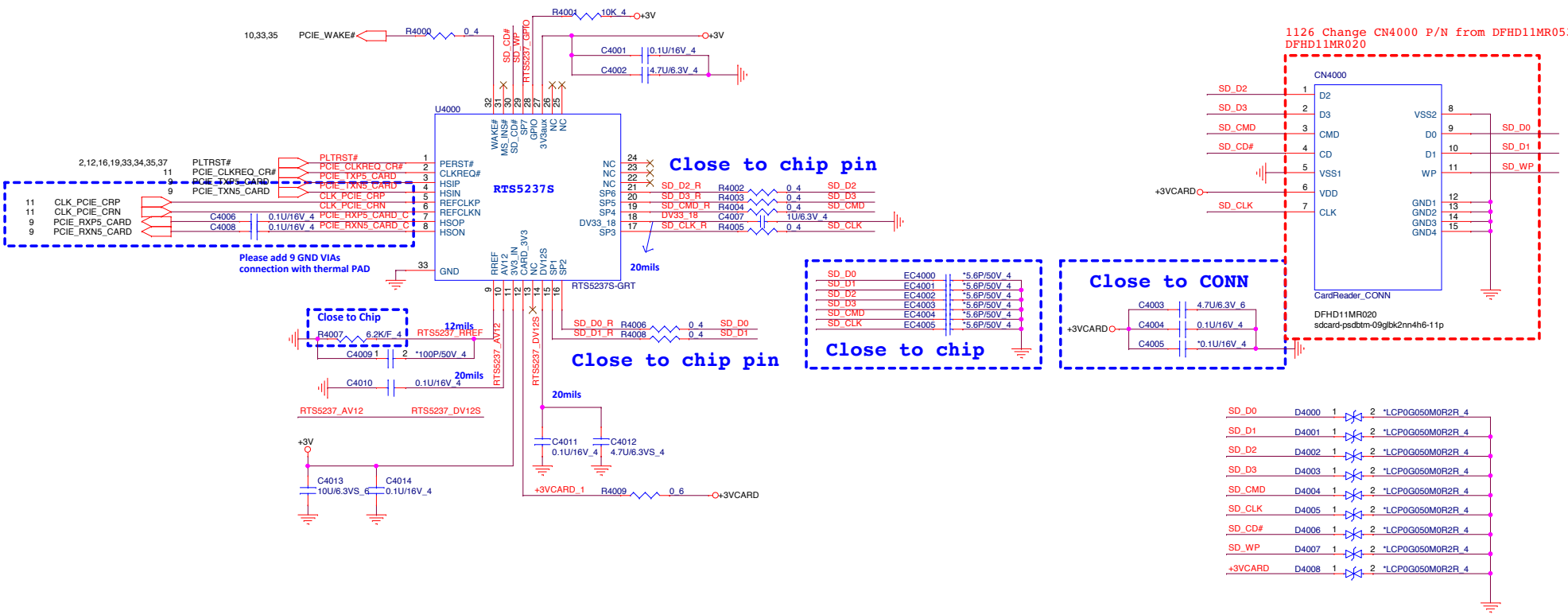
+3V 5,9,10,11,12,13,14,16,17,18,19,22,26,27,28,29,30,32,33,34,35,37,38,43,46,49

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: Custom	Document Number: 36 – CR RTS5237S/CR SOCKET	Rev: 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

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
For GPU thermal
for Battery charge/charge
for DDR Thermal IC

EC_PECI (50ohm)
Trace Length: <0.5 iches

1006 Delete BAT_I and Reserved TP

BOM: 3D CAMERA

Open Drain need pu high

Adapter select for EC

Ra / Rb

	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

BOM:DIS only

For HW Throttling

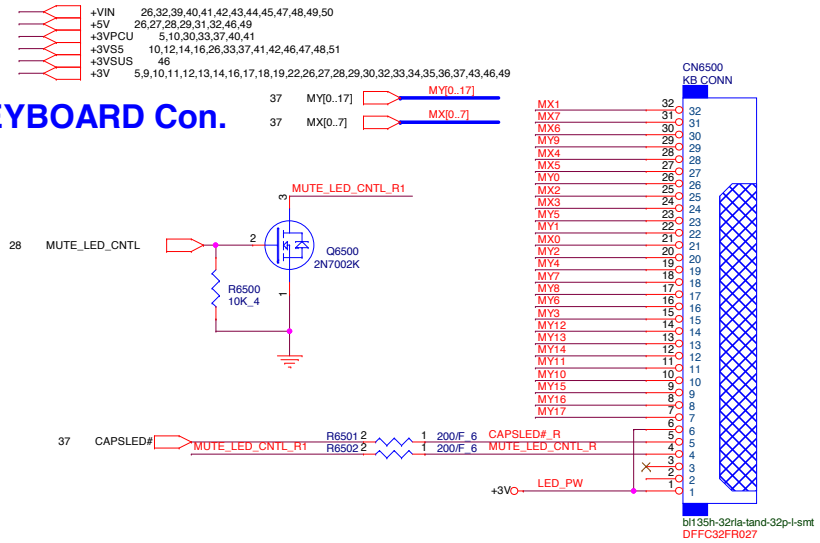
	AC_PRESENT_EC	H_PROCHOT#_EC	H_PROCHOT#
AC IN: AC mode Operation	H	L	H
AC remove: AC mode to DC mode	L	L	L
DC mode recover from PROCHOT	L	H	H

CLOSE to EC Pin

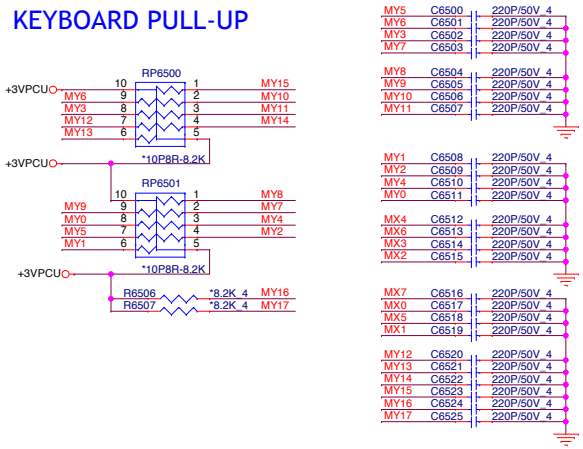
PROJECT : G37A/G37B
Quanta Computer Inc.

Size	Document Number	Rev
Custom	37 -- EC (IT8987)	1A
Date: Monday, December 28, 2015	Sheet 37of 51	

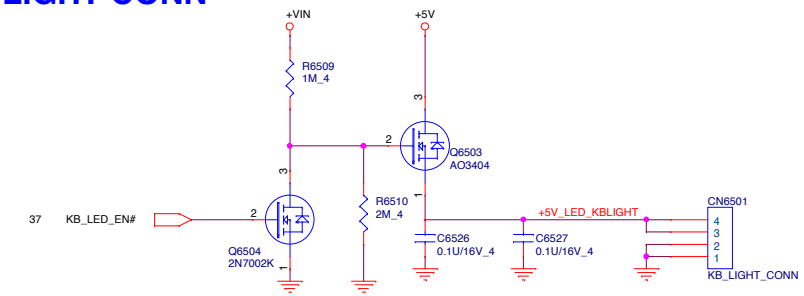
KEYBOARD Con.



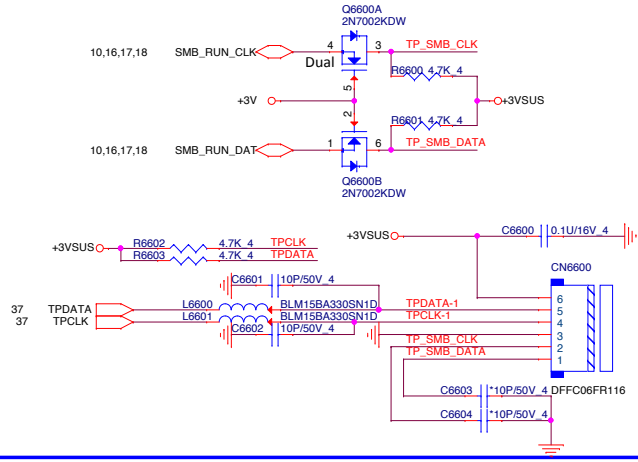
KEYBOARD PULL-UP



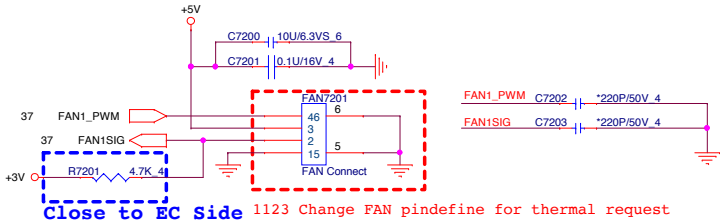
KB LIGHT CONN



Touch Pad Connector



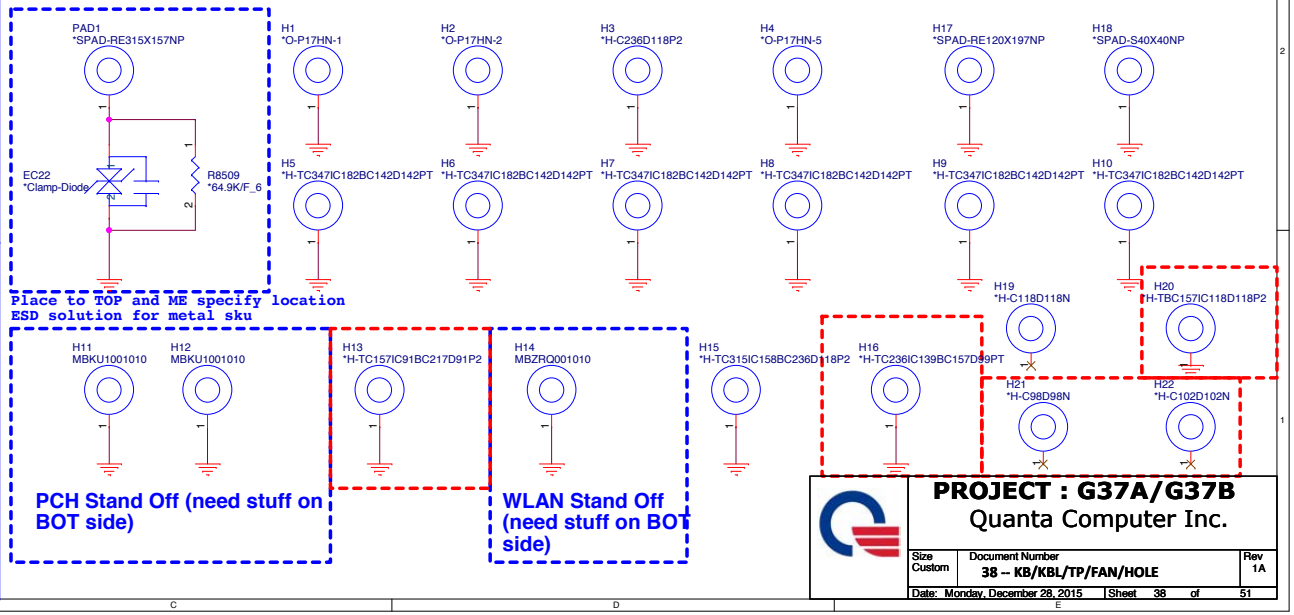
FAN



Close to EC Side

1123 Change FAN pindefine for thermal request

HOLE



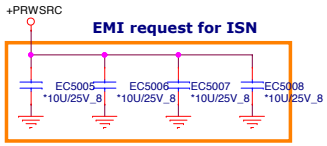
Place to TOP and ME specify location
ESD solution for metal sku

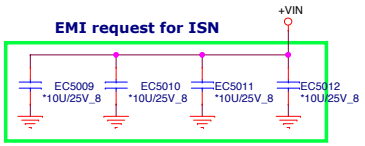
PCH Stand Off (need stuff on BOT side)

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

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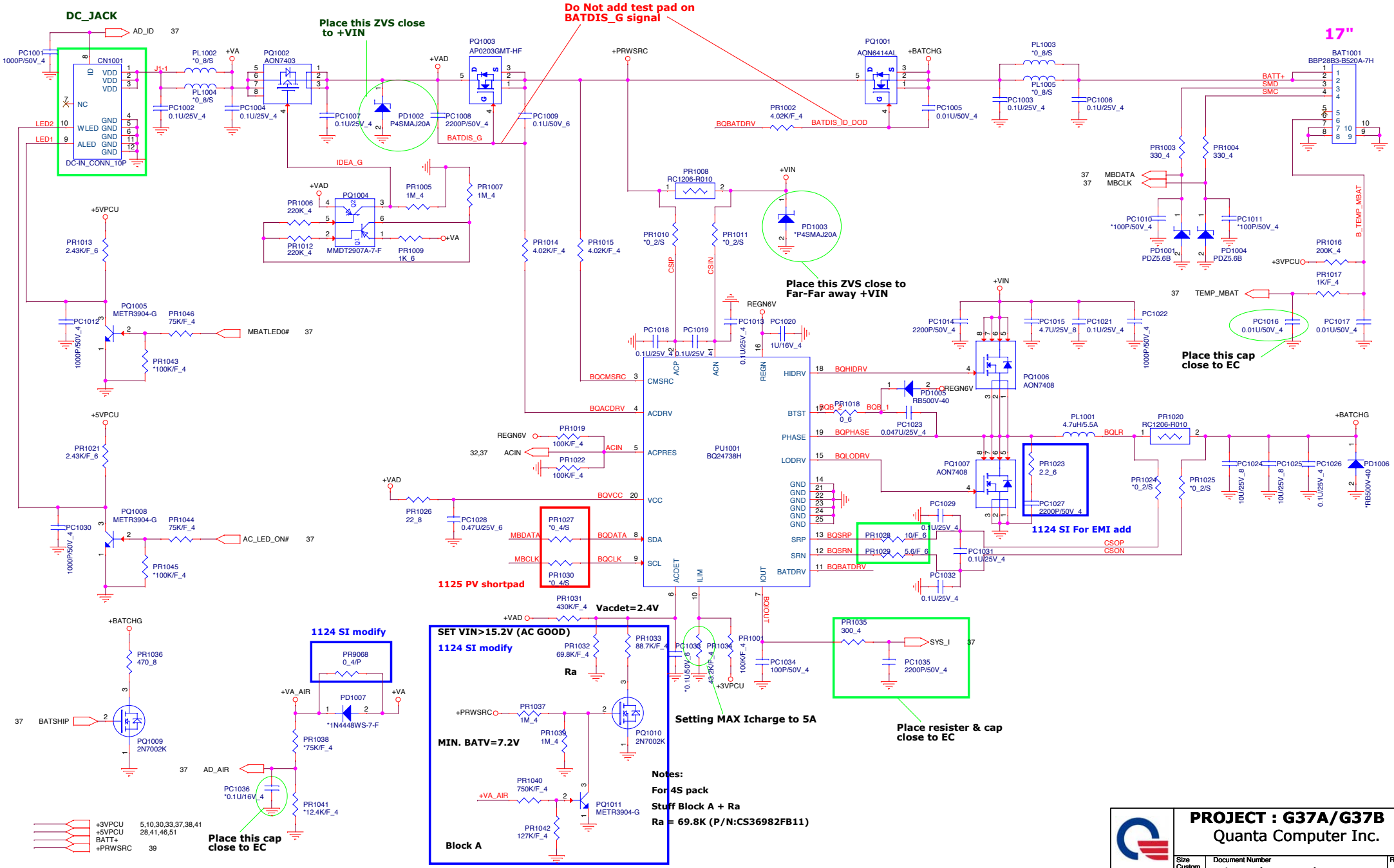
DC_JACK
Place this ZVS close to +VIN
Do Not add test pad on BATDIS_G signal
17"
Place this ZVS close to Far-Far away +VIN
Place this cap close to EC
1124 SI For EMI add
1125 PV shortpad
1124 SI modify
SET VIN>15.2V (AC GOOD)
Vacdet=2.4V
Setting MAX Icharge to 5A
Place resister & cap close to EC
MIN. 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
PROJECT : G37A/G37B
Quanta Computer Inc.
Charger (BQ24738H)
Rev 1A
Date: Monday, December 28, 2015
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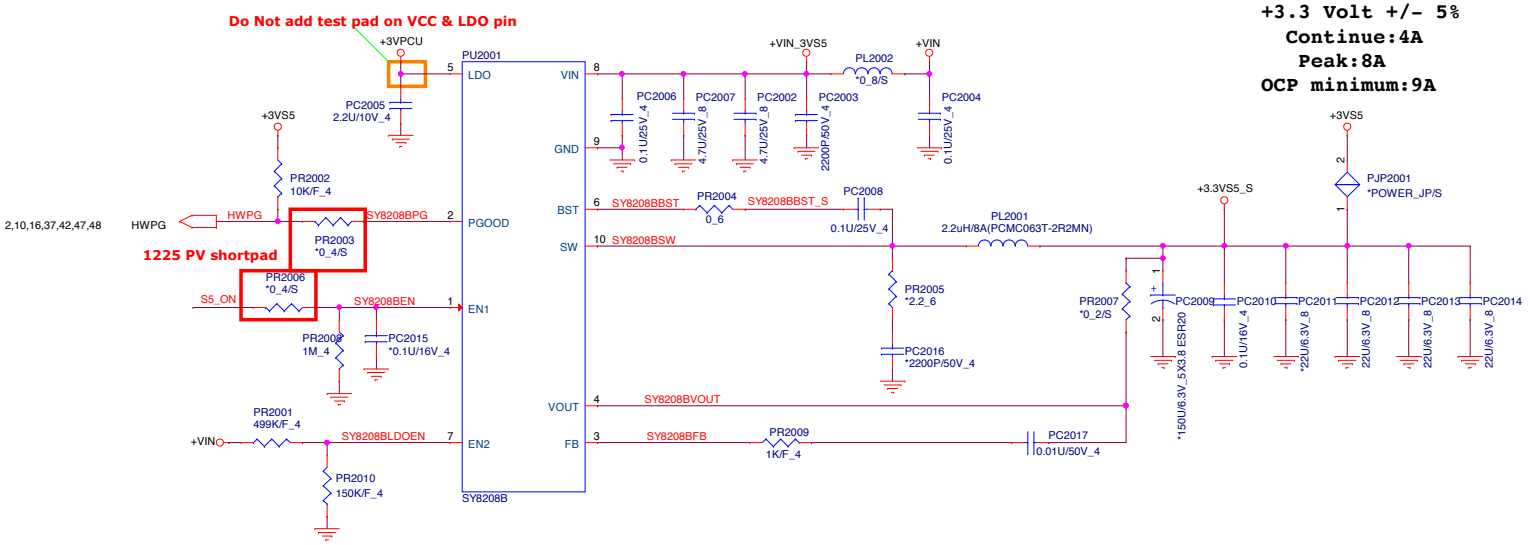
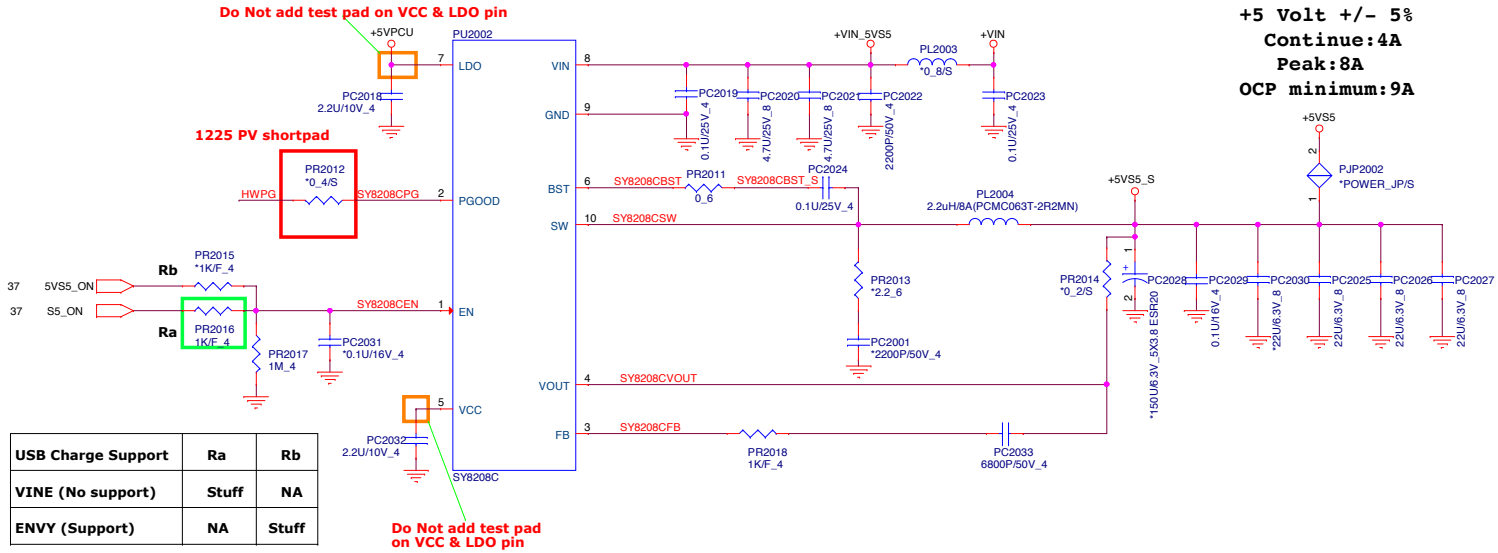




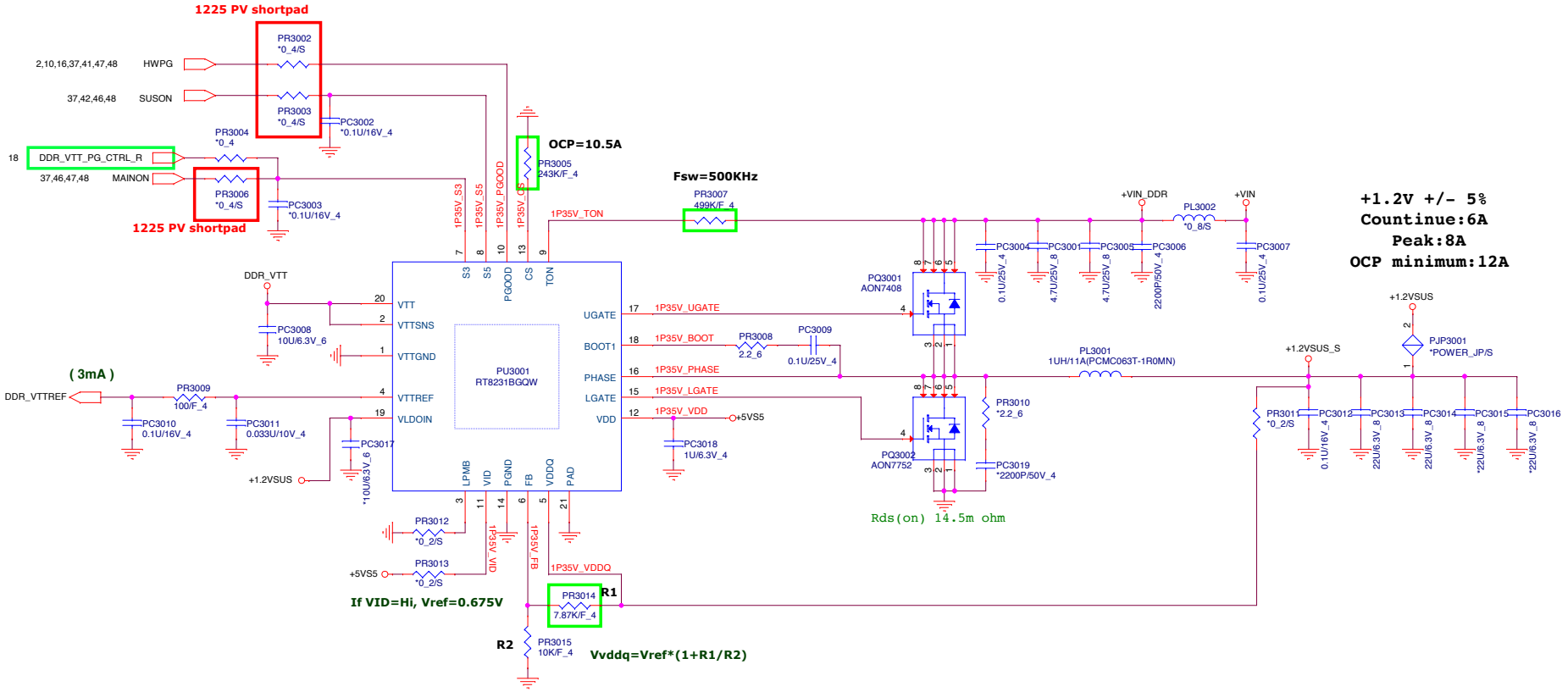
USB Charge Support	Ra	Rb
VINE (No support)	Stuff	NA
ENVY (Support)	NA	Stuff

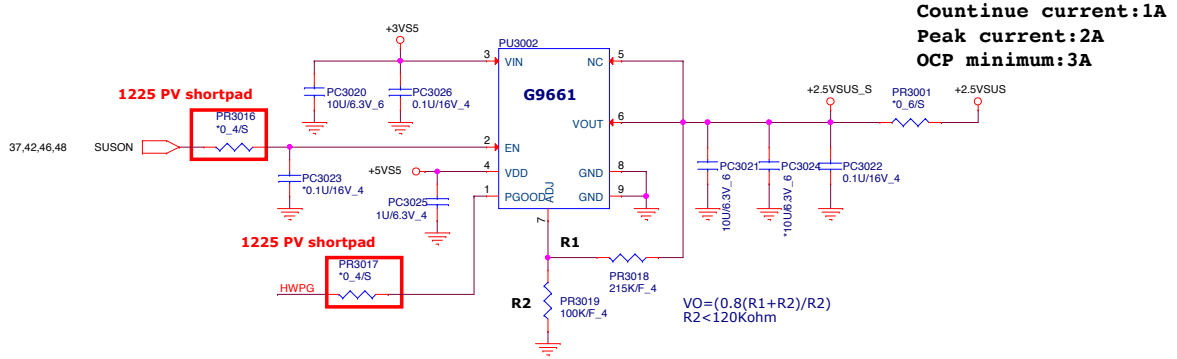
Do Not add test pad on VCC & LDO pin

+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.

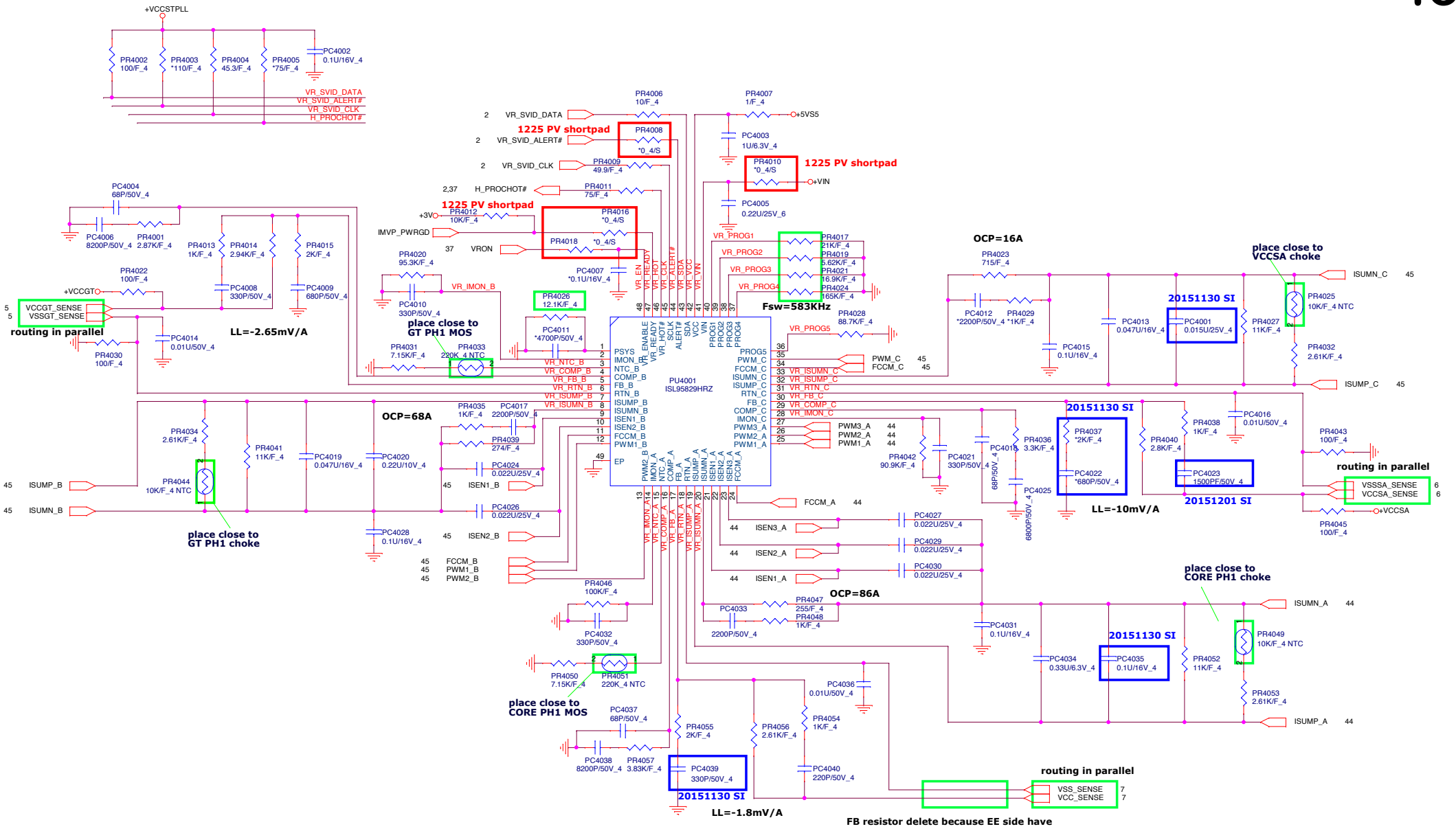
Size	Document Number	Rev
Custom	3/5VS5 (SY8208B/SY8208C)	1A
Date: Monday, December 28, 2015	Sheet 41 of 51	



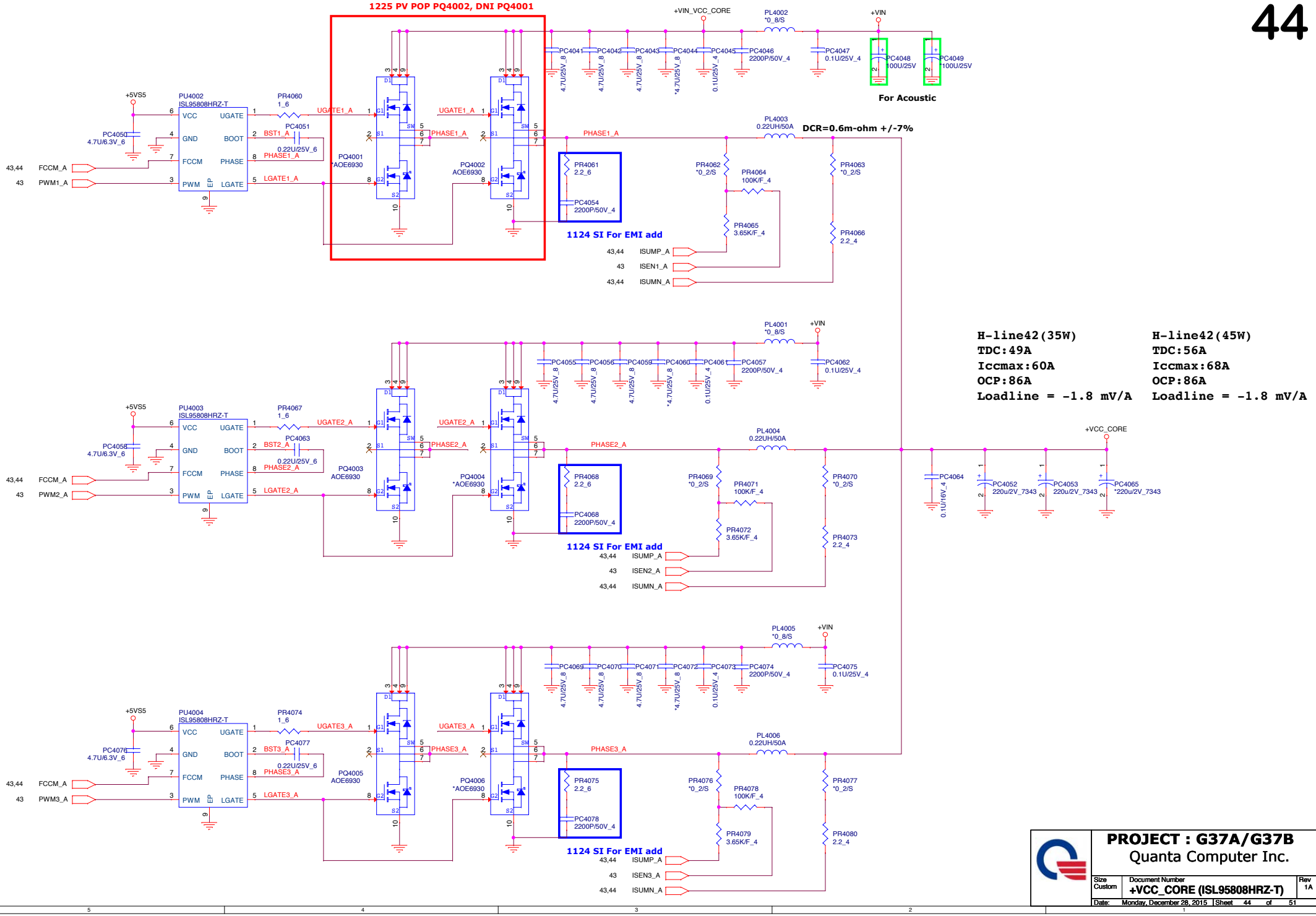


+VIN 26,32,38,39,40,41,43,44,45,47,48,49,50
+5VS5 10,26,28,30,41,43,44,45,46,47,48,49,50,51
+1.2VSUS 2,6,10,17,18,46,48,51
DDR_VTT 17,18
+2.5VSUS 17,18

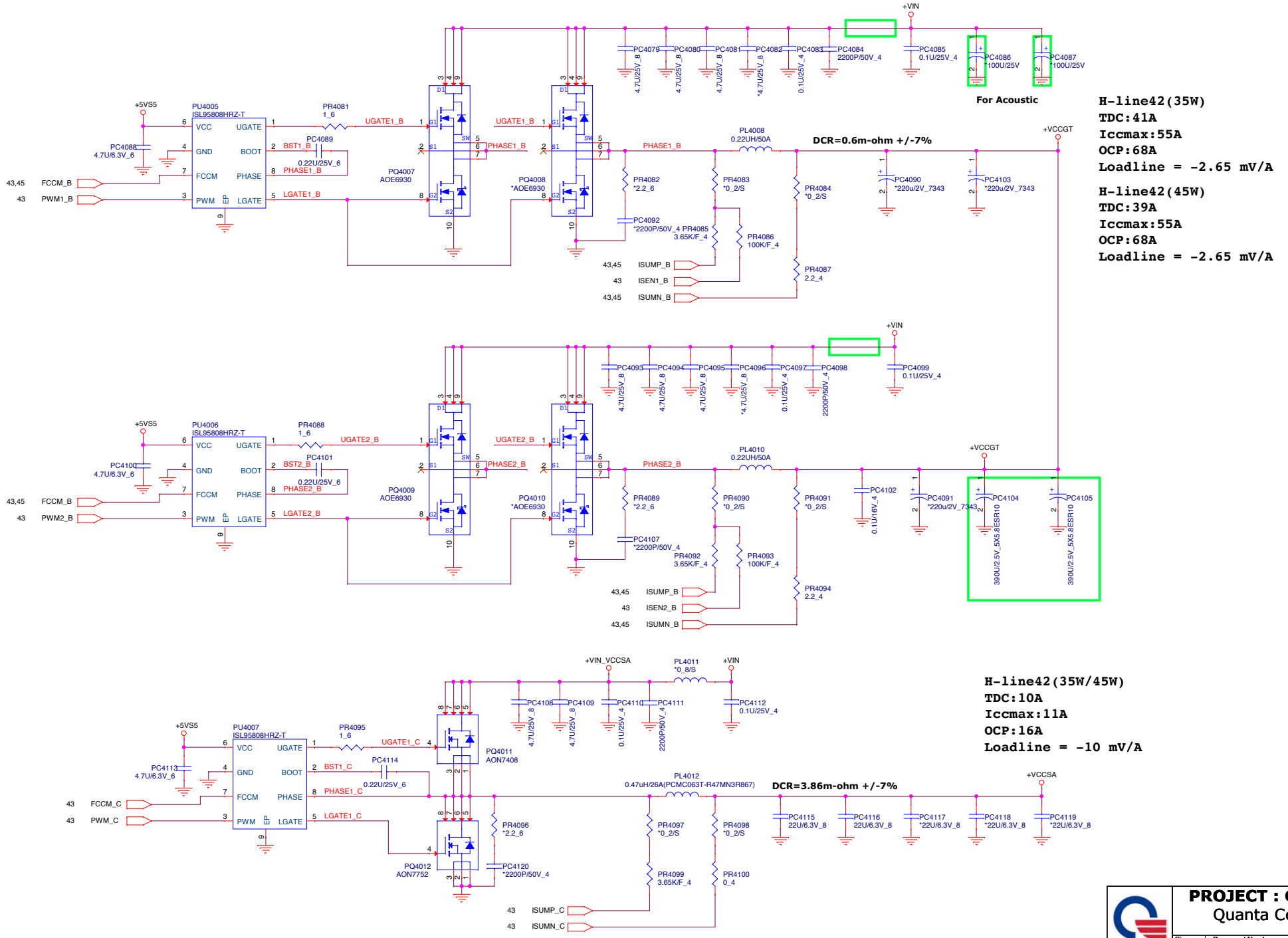
PROJECT : G37A/G37B Quanta Computer Inc.		
Size	Document Number DDR3 (RT8231B)	Rev 1A
Monday, December 28, 2015	Sheet 42 of 51	



PROJECT : G37A/G37B	
Quanta Computer Inc.	
Size: Custom	Document Number: CPU VR IC (ISL95829HRZ)
Rev: 1A	
Date: Monday, December 28, 2015	Sheet 43 of 51



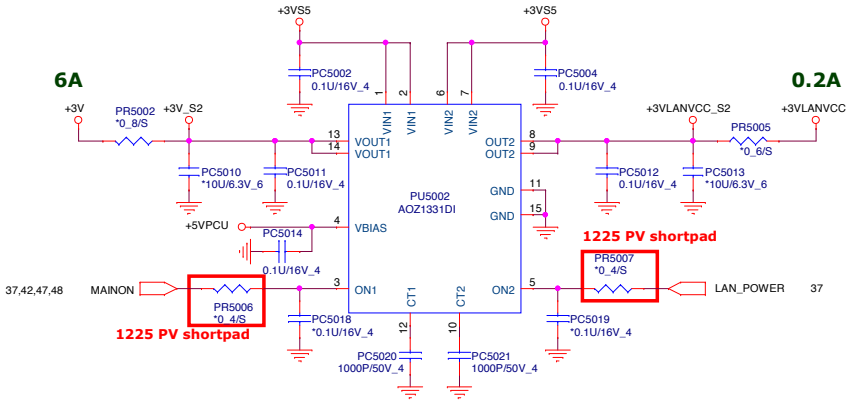
PROJECT : G37A/G37B	
Quanta Computer Inc.	
Size: Custom	Document Number: +VCC_CORE (ISL95808HRZ-T)
Rev: 1A	
Date: Monday, December 28, 2015	Sheet 44 of 51

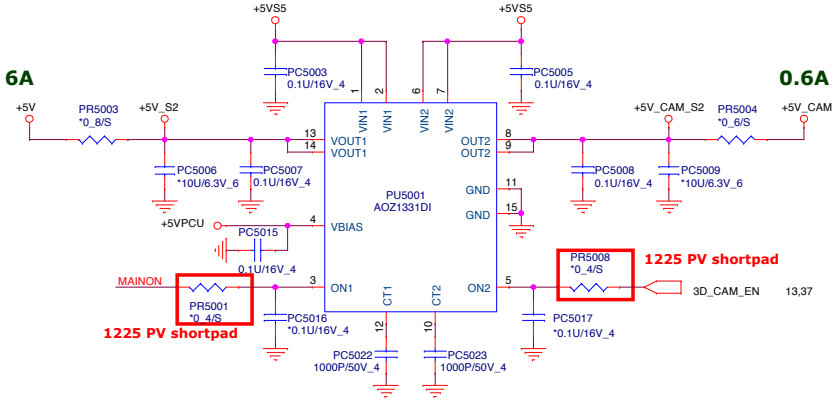


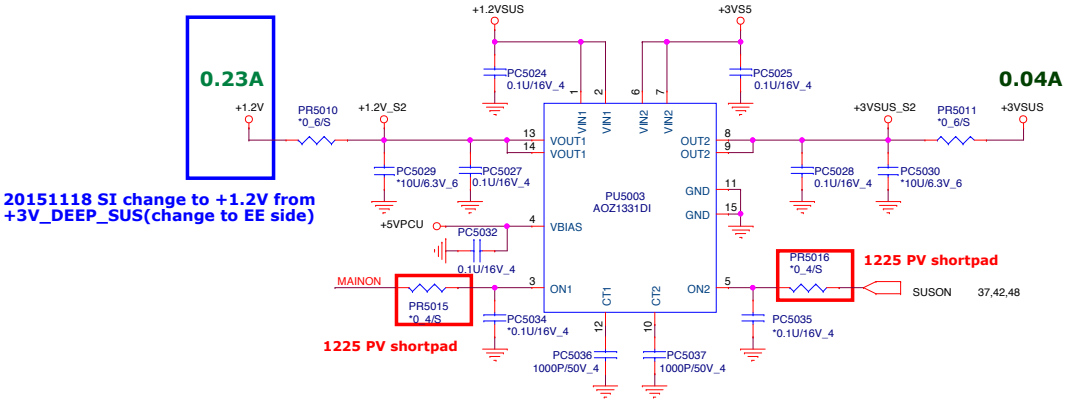
PROJECT : G37A/G37B
Quanta Computer Inc.

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

Date: Monday, December 28, 2015 Sheet 45 of 51







20151118 SI change to +1.2V from +3V_DEEP_SUS(change to EE side)

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	

(V1.00A+V1.00_MODPHY+VccPRIM_CORE)

+1.0VS5 Volt +/- 5%

Continue:6A

Peak:8A

OCP minimum:11A

Volume Segment

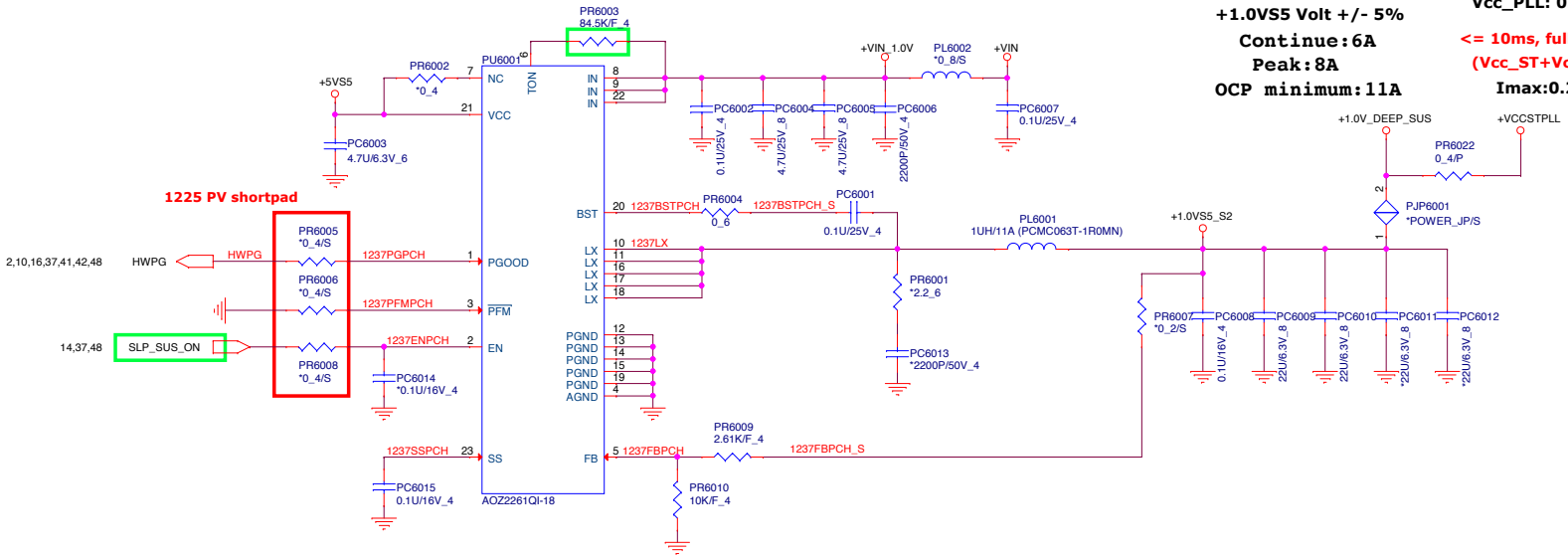
Vcc_ST: 0.12A

Vcc_PLL: 0.12A

<= 10ms, full load ready

(Vcc_ST+Vcc_PLL)

Imax:0.24A

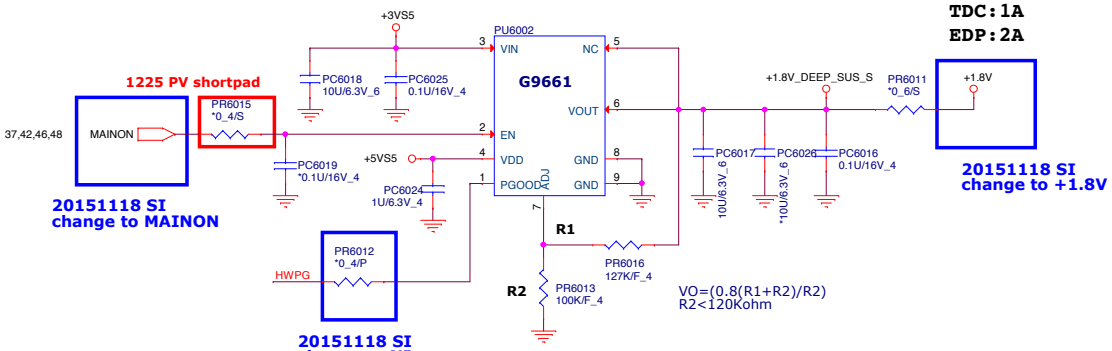


20151118 SI del

+1.8V +/- 5%

TDC:1A

EDP:2A



+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

Date: Monday, December 28, 2015 Sheet 47 of 51

Volume Segment
Vcc_STG: 0.04A
Vcc_IO: 5.5A

<= 10ms full load ready
Imax:5.5A
Imax:0.04A

1225 PV shortpad

Reserve for separating +1.0V and VCCIO

+0.95 +/- 5%
Continue:4A
Peak:5.5A
OCP minimum:8A

<= 240us, full load ready
TDC:0.26A

+1.0V 2,5,6,10,16,37
+3VS5 10,12,14,16,26,33,37,41,42,46,47,51
+5VS5 10,26,28,30,41,42,43,44,45,46,47,49,50,51
+VCCIO 3,6,16
+1.0V_DEEP_SUS 10,11,14,16,47
+1.2V_VCCPLL_OC 6
+1.2VSUS 2,6,10,17,18,42,46,51

PROJECT : G37A/G37B
Quanta Computer Inc.

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

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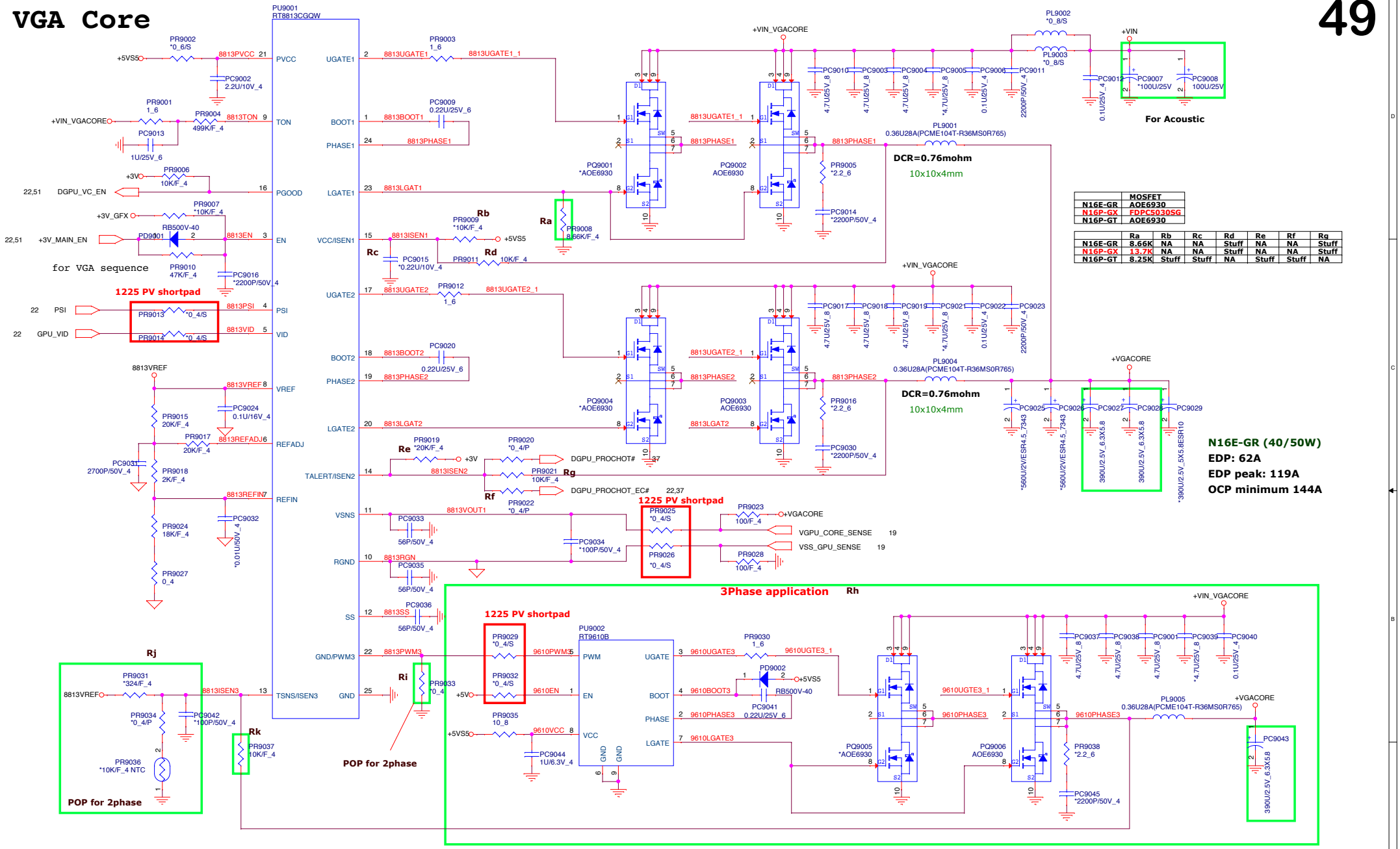
VGA Core



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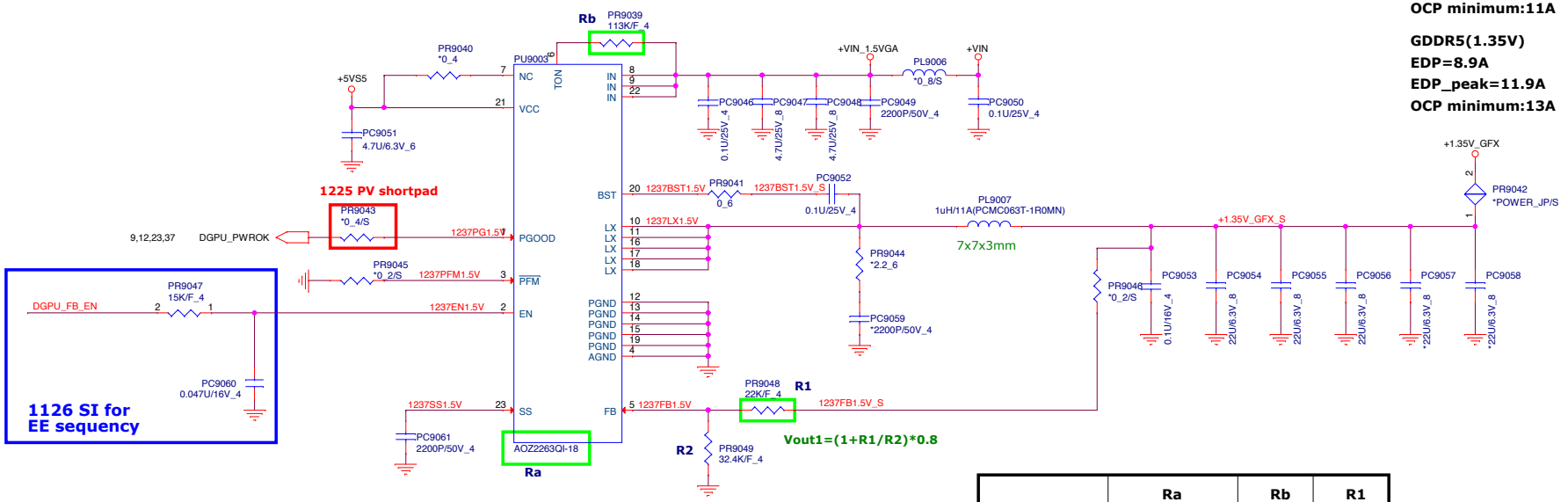
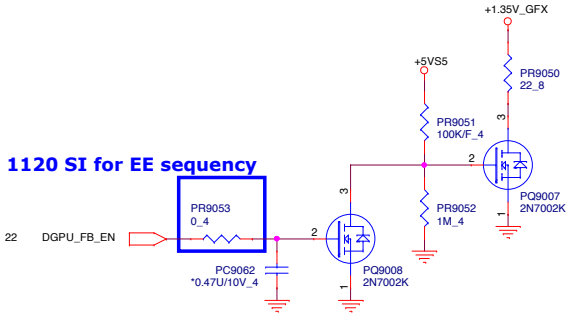
DDR3(1.5V / 1.35V)
EDP=4.18A
EDP_peak=6.54A
OCP minimum:11A

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

PROJECT : G37A/G37B
Quanta Computer Inc.

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

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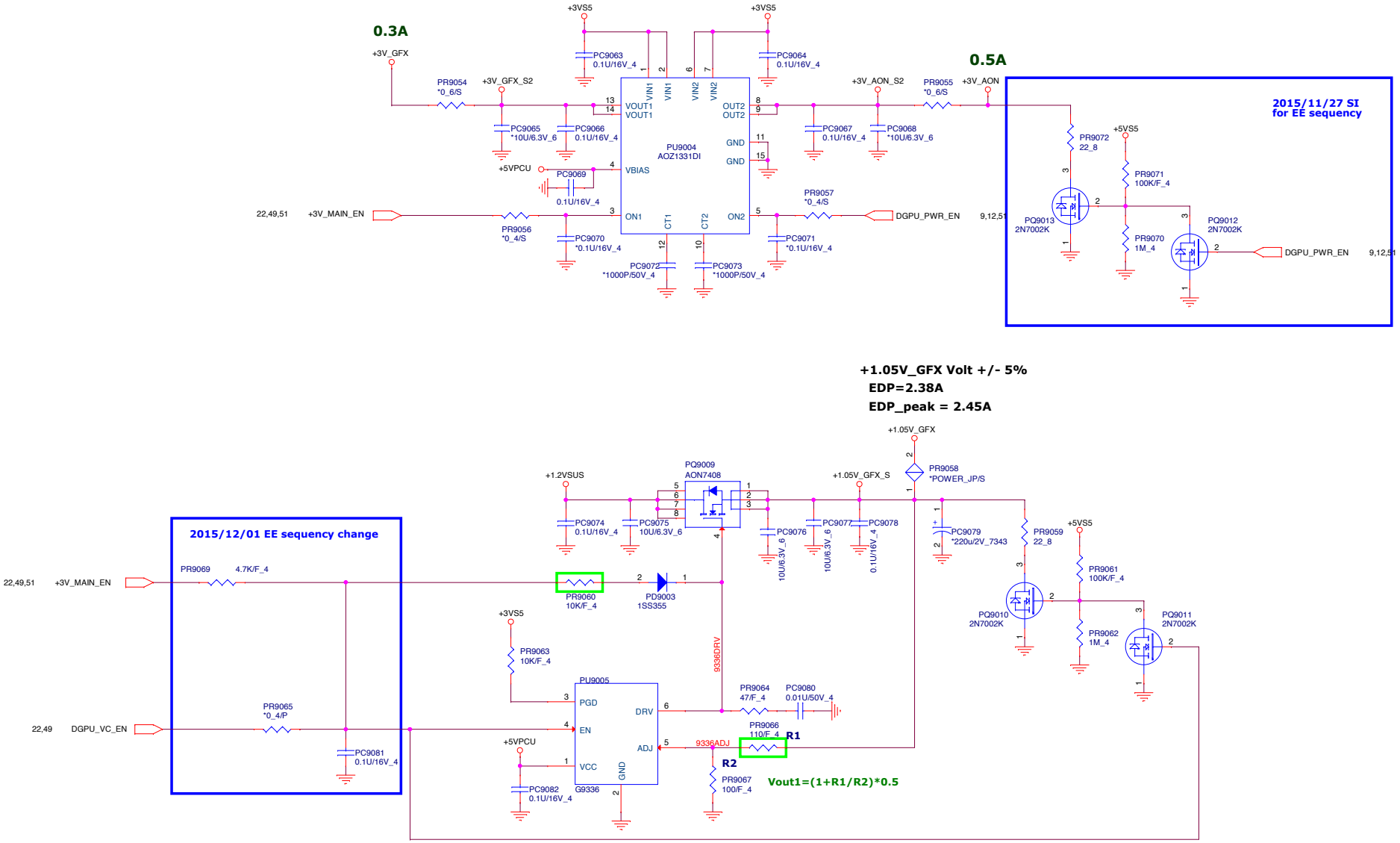

+VIN	26,32,38,39,40,41,42,43,44,45,47,48,49,50
+3VS5	10,12,14,16,26,33,37,41,42,46,47,48
+5VS5	10,26,28,30,41,42,43,44,45,46,47,48,49,50
+3V_GFX	19,20,21,22,23,49
+3V_AON	19,22,23,27
+1.2VSUS	2,6,10,17,18,42,46,48
+1.05V_GFX	19,20,21,23

PROJECT : G37A/G37B
Quanta Computer Inc.

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