POWER PAVILION PUFF 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
SkyLake - 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
27MHz PAGE 21

VRAM gDDR5 x 4pcs
128M x32 / 256M x32
2.5GHz
PG.14~25

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 — SATA0 6GB/s SATA0A; PCIEx4 32GB/s LANE9,10,11,12

HDD PG.32 — SATA0 6GB/s SATA1B

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 Camera Intel F200 3D PG.31

USB 2.0
PORT1 — USB 2.0 Ports (DB) PG.30
PORT2 — HD CAM PG.26
PORT3 — HD + IR CAM (OPTION) PG.26,34
PORT5 — Touch Screen Synaptics S7817 PG.26
PORT8

PCI-E x 1 Gen1
LANE7 — LAN RTL8107ESH/ 10/100 RTL8111HSH/ Gbe PG.35
LANE5 — Card Reader RTS5237S-GR PG.36
LANE6 — WLAN BT COMBO PG.33

USB 2.0 PORT7

SPI — G-Sensor HP2DC PG.34; ROM PG.12

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

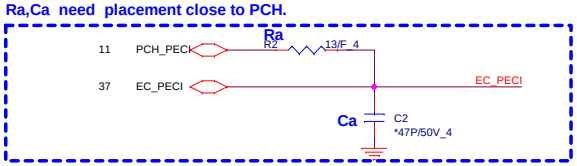
Speaker PG.28
Dual Digital MIC PG.28
3D CAM MIC
INT CAM MIC
PG.26

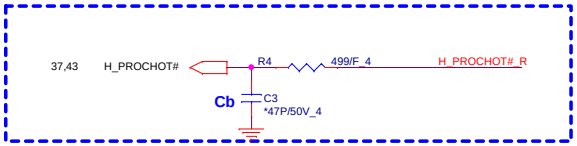
STACKUP
TOP
GND
IN1
IN2
VCC
IN3
GND
BOT

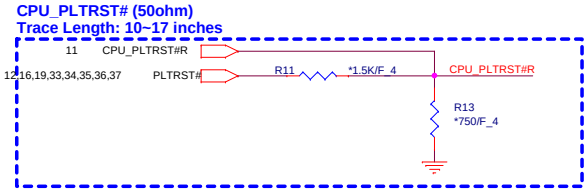
For Quanta review only

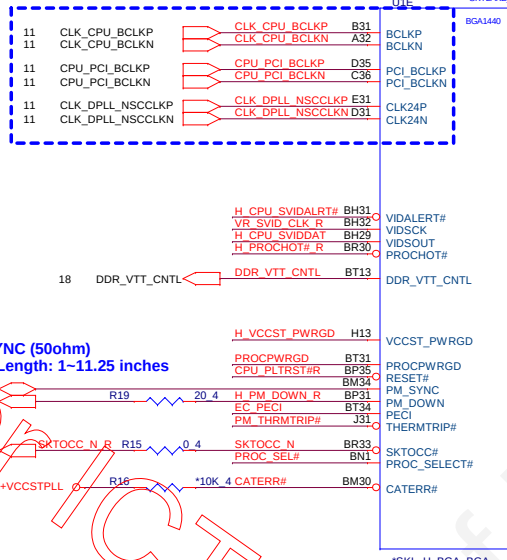
PROJECT : G35
Quanta Computer Inc.
Size: Custom | Document Number: 01 -- Block Diagram | Rev: 1A
Date: Tuesday, December 01, 2015 | Sheet 1 of 51

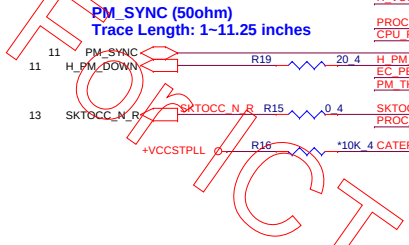
SKYLAKE Processor (CLK,MISC,JTAG)

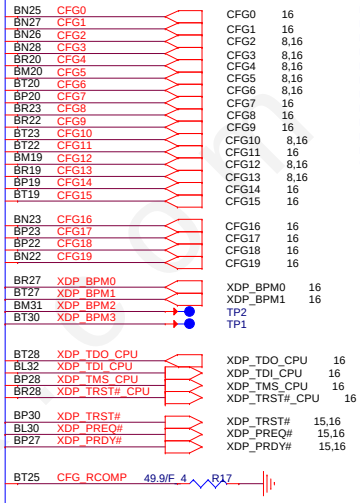




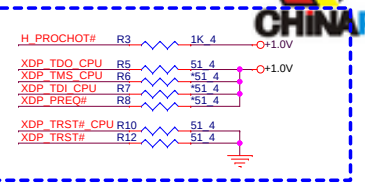






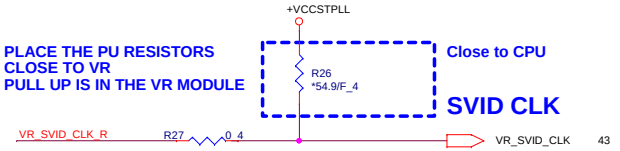


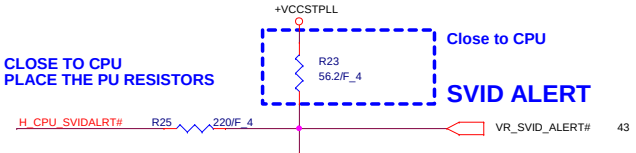
Design Note(CFG_RCOMP):
DEFENSIVE DESIGN 50-OHM FOR R40PR (SV REQ)

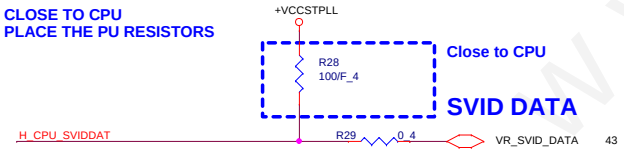


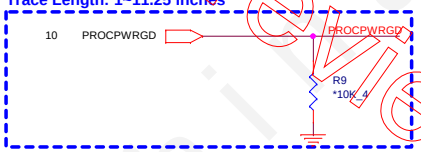
CPU CORE SVID

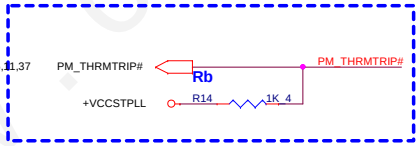
Layout note:
1.Need routing together
2.ALERT need between CLK and DATA.

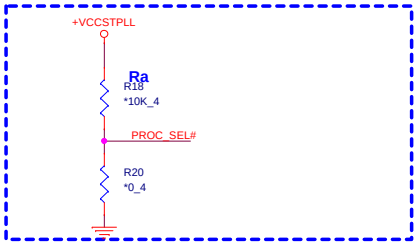






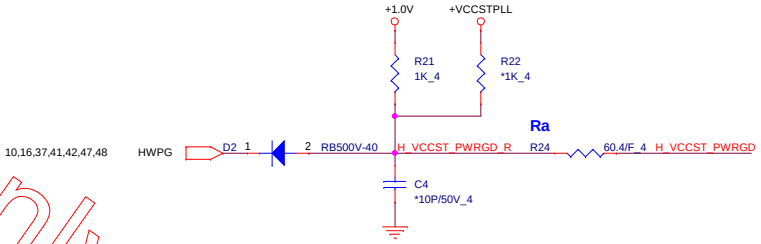






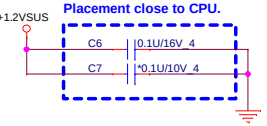
HWPD

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 : G35
Quanta Computer Inc.

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Custom	02 -- SKL 1/7 (JTAG/MISC)	1A

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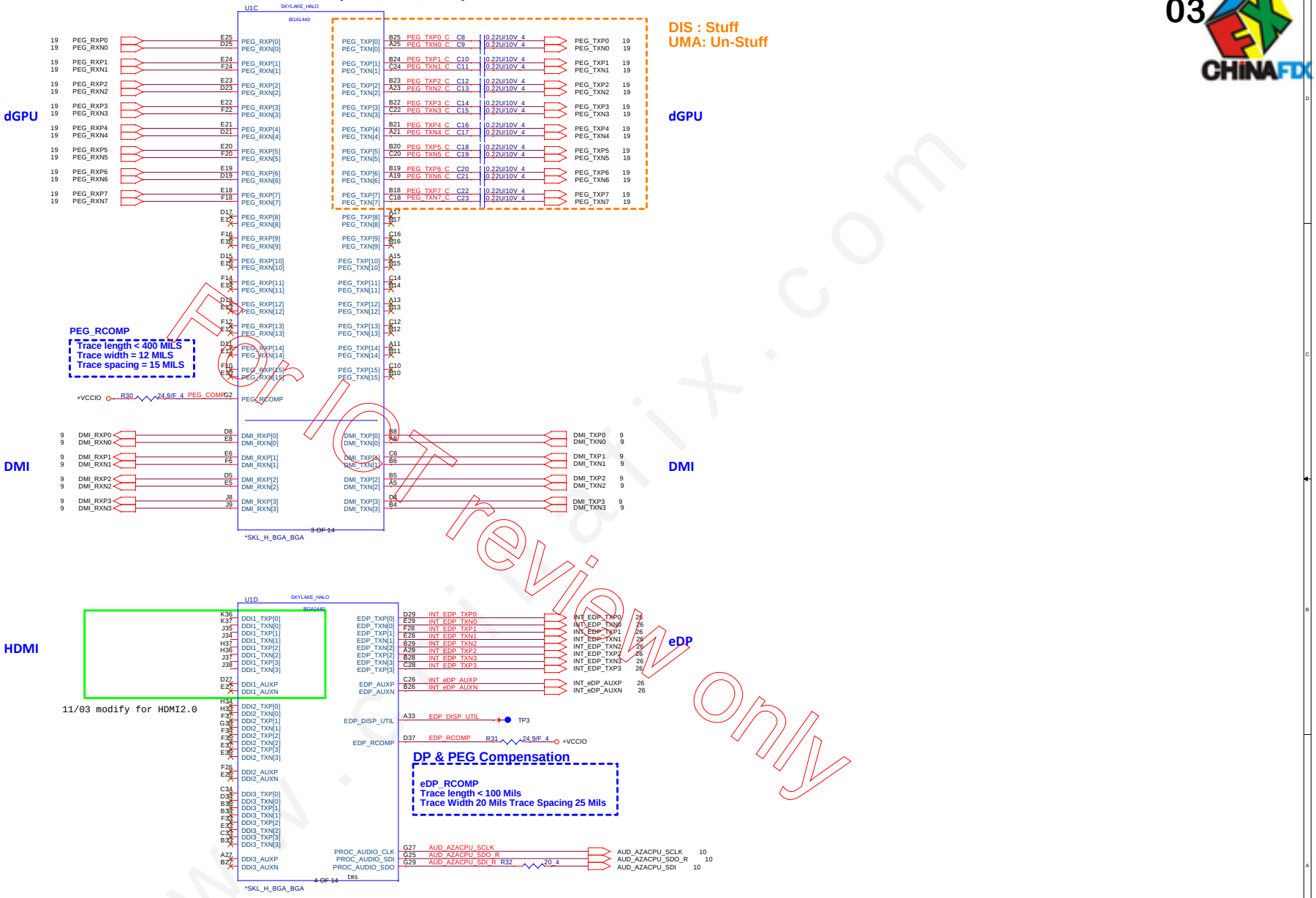
SKYLAKE Processor (DMI,PEG,FDI)



+1.2VSUS 2,6,10,17,18,42,48,51
+3VS5 10,12,14,16,26,33,37,41,42,46,
+3V 5,9,10,11,12,13,14,16,17,18,19,22,

PROJECT : G35		
Quanta Computer Inc.		
Size: Custom	Document Number: 03 – SKL 2/7 (DMI/EDP/PEG)	Rev: 1A
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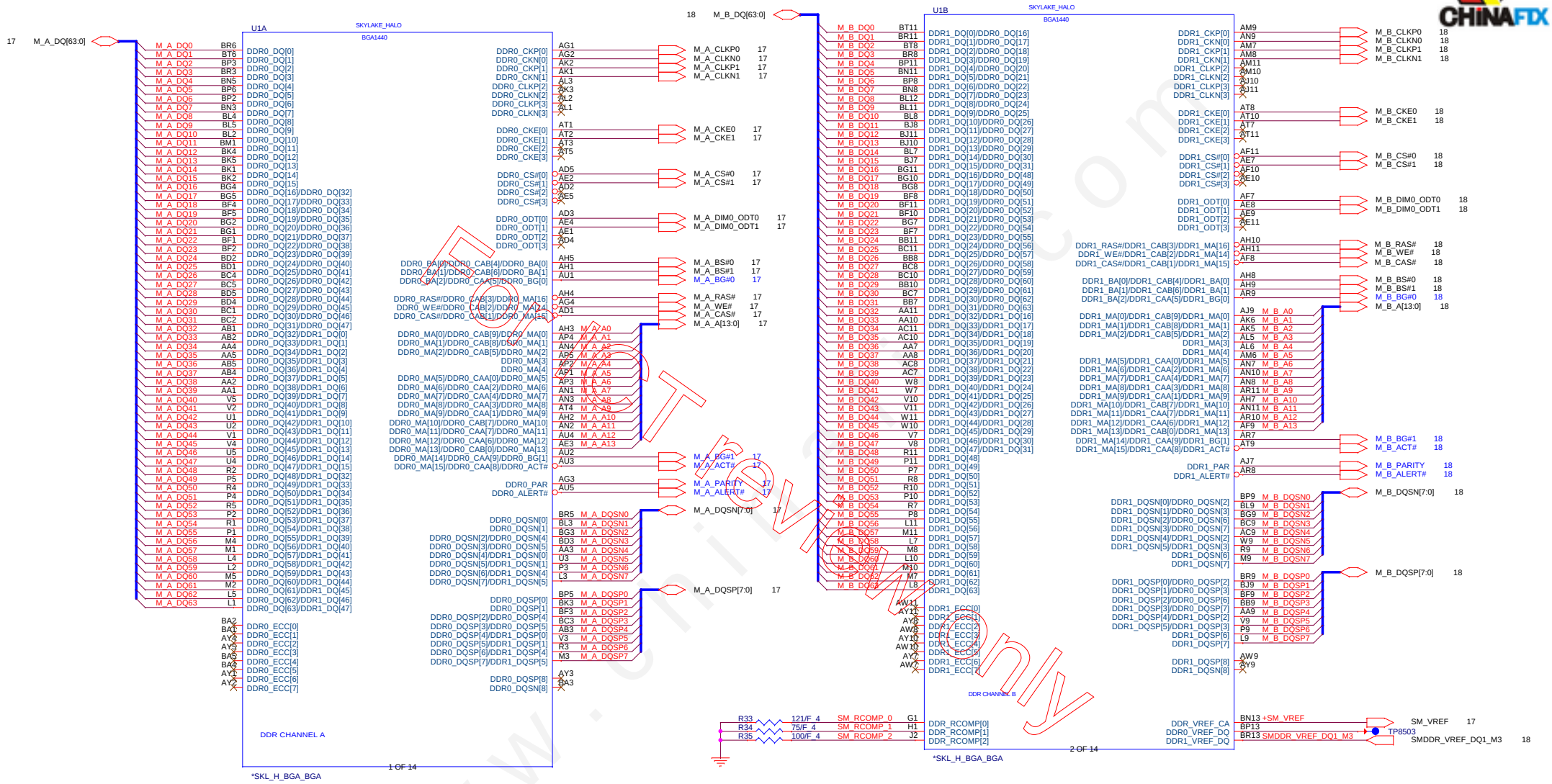
SKYLAKE Processor (DDR4)



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

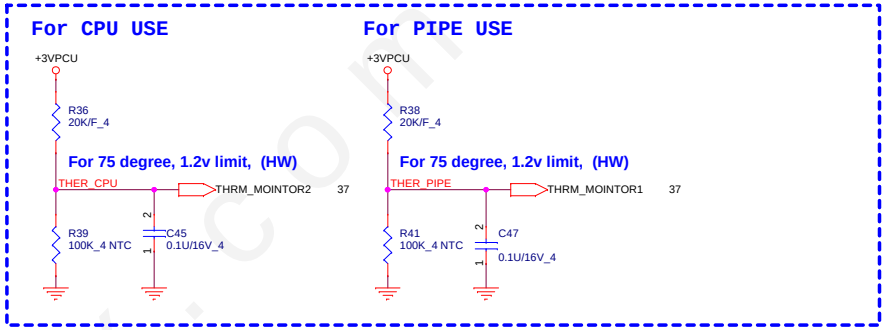
05

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

+VCC_CORE 7,43,44
+1.2VSUS 2,6,10,17,18,42,43

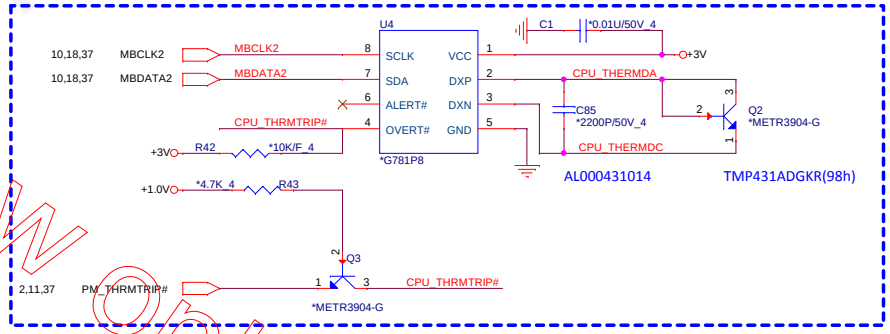
IO Thrm Protect

Location need thermal confirm



CPU Thermal Sensor

Location need thermal confirm



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Quanta Computer Inc.			
Size: Custom	Document Number: 05 -- SKL 4/7 (POWER)		Rev: 1A
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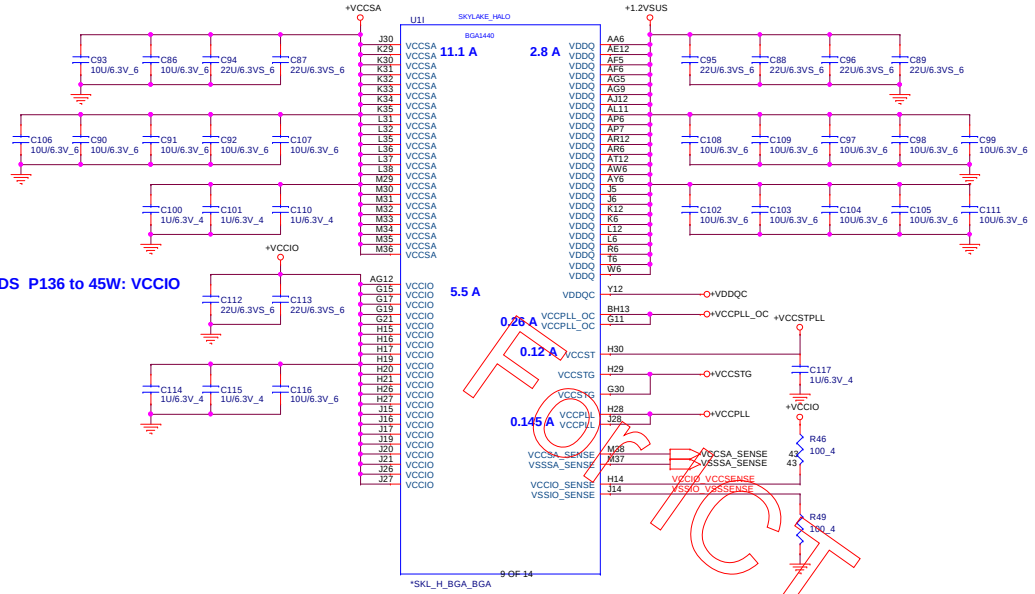
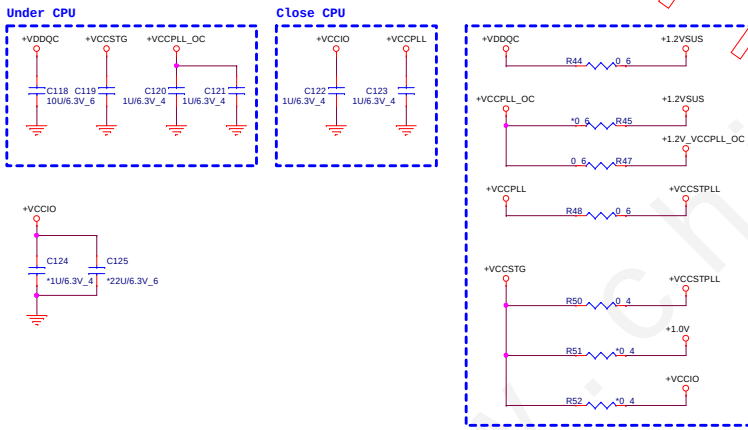
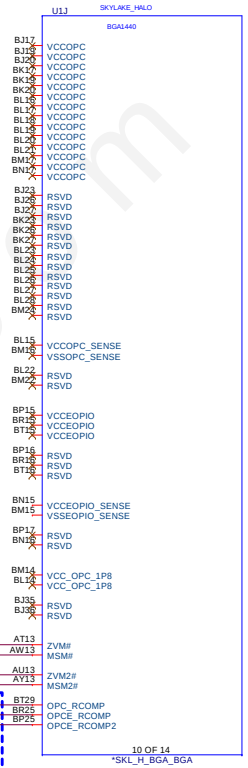
Follow SKL H EDS page 135 to 45W(GT2): VCCSA=11.1A

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.

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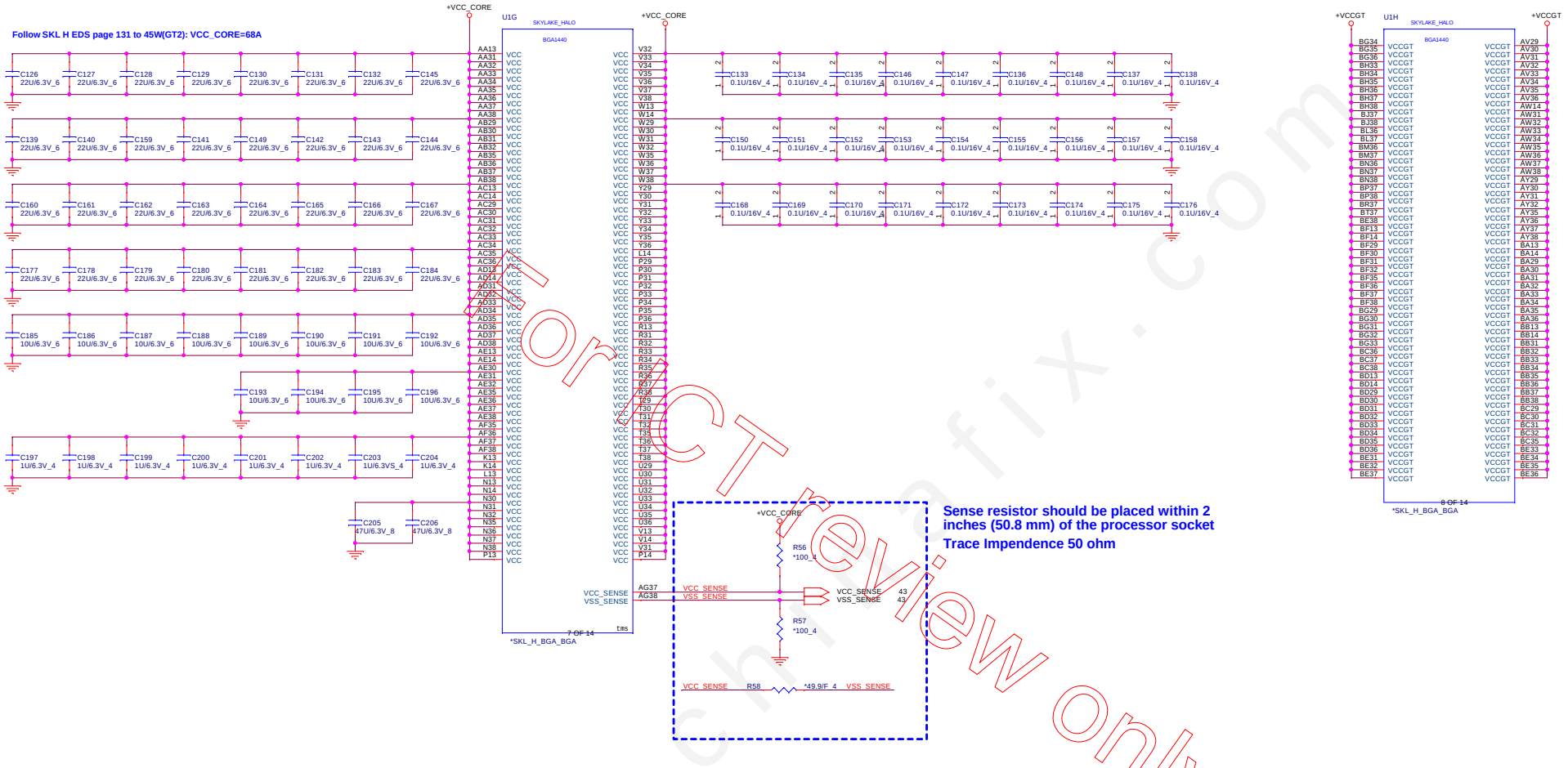
PROJECT : G35
Quanta Computer Inc.

Size	Document Number	Rev
Custom	06 – SKL 5/7 (POWER&GND)	1A

Date: Monday, November 30, 2015 Sheet 6 of 51



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PROJECT : G35		
Quanta Computer Inc.		
Size: Custom	Document Number: 07 -- SKL 6/7 (POWER&GND)	Rev: 1A
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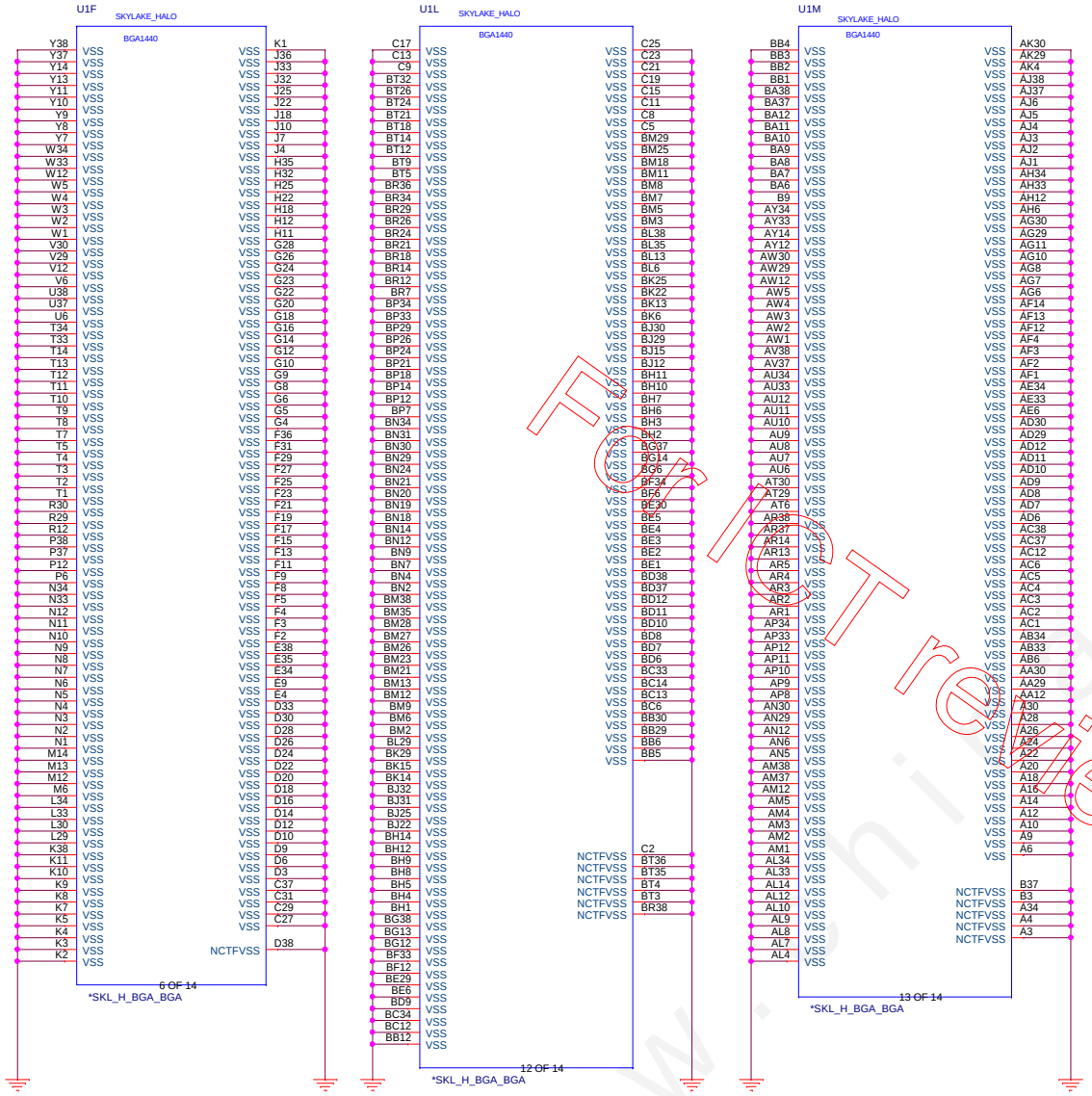
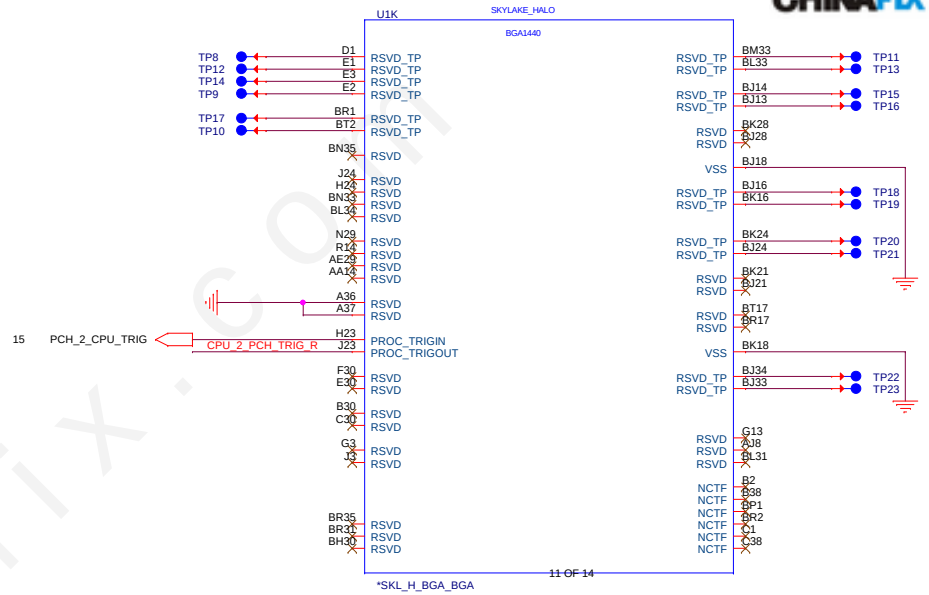
SKL-HProcessor (GND)



SKL-H Processor (RESERVED, CFG)

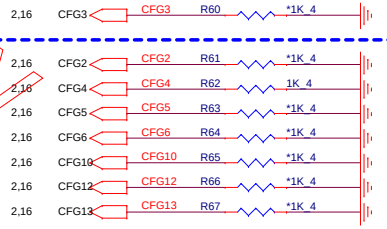


Processor Strapping

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;



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PROJECT : G35

Quanta Computer Inc.

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

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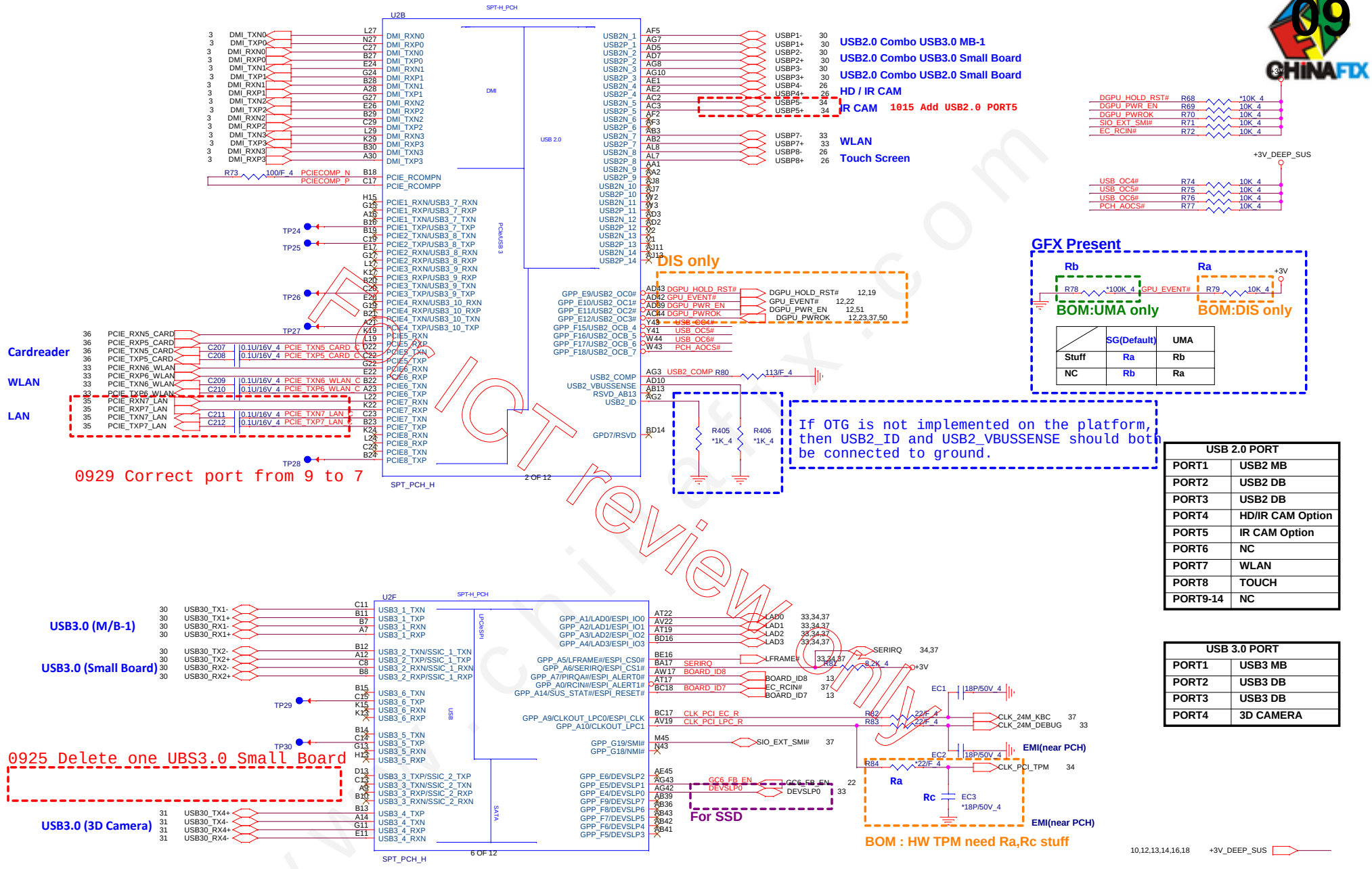
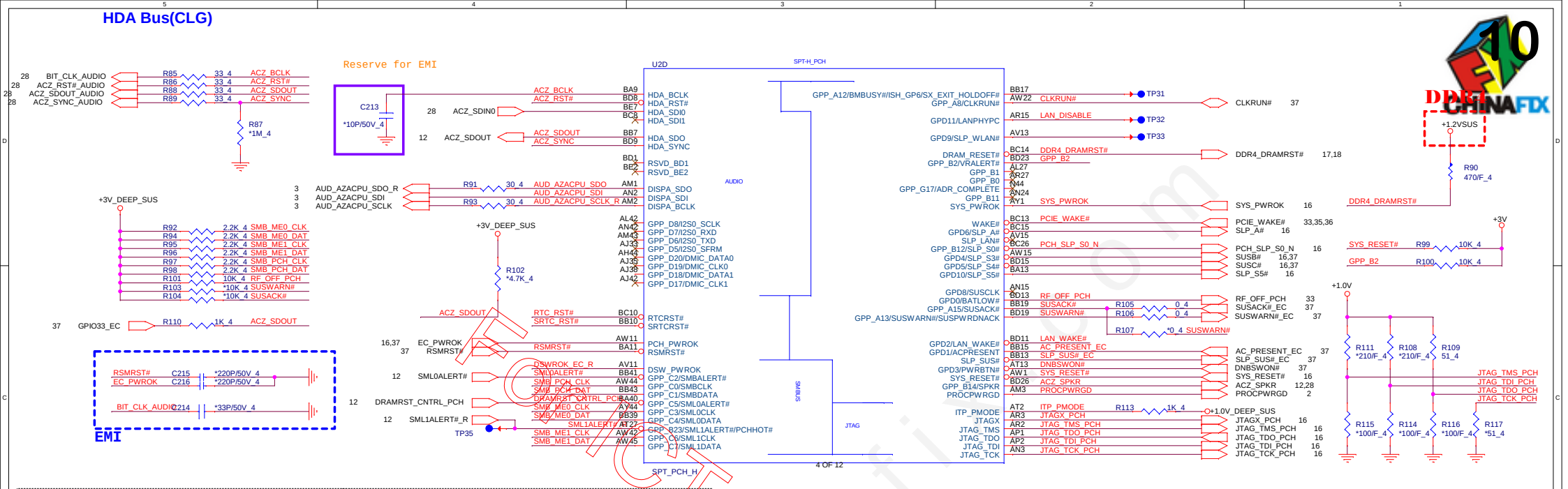
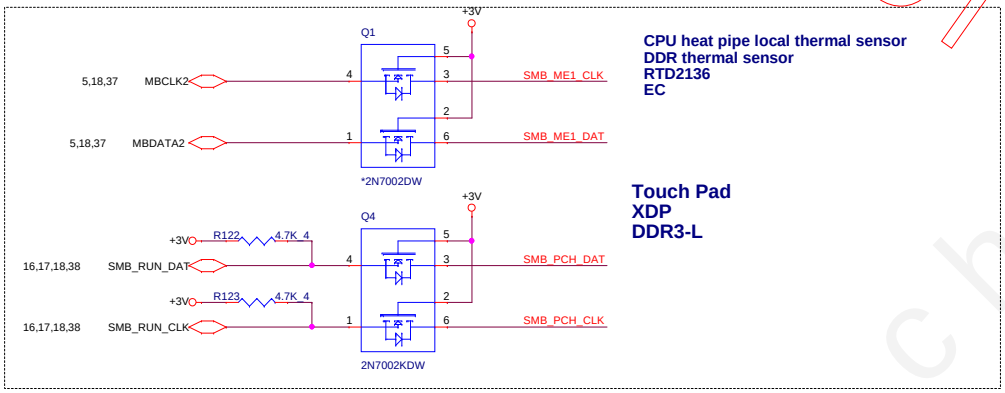
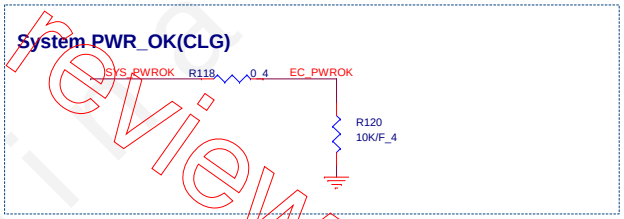
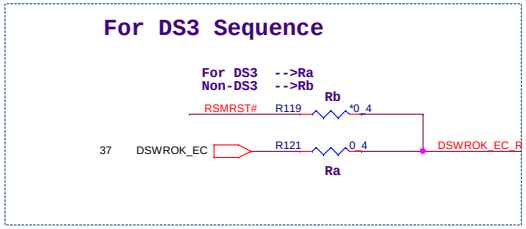

SPT-H_PCH
U2B
DMI_RXN0
DMI_RXP0
DMI_TXN0
DMI_TXP0
DMI_RXN1
DMI_RXP1
DMI_TXN1
DMI_TXP1
DMI_RXN2
DMI_RXP2
DMI_TXN2
DMI_TXP2
DMI_RXN3
DMI_RXP3
DMI_TXN3
DMI_TXP3
DMI
PCIE_RCOMPN
PCIE_RCOMPP
R73 100/F_4 PCIECOMP_N PCIECOMP_P
PCIE1_RXN/USB3_7_RXN
PCIE1_RXP/USB3_7_RXP
PCIE1_TXN/USB3_7_TXN
PCIE1_TXP/USB3_7_TXP
PCIE2_TXN/USB3_8_TXN
PCIE2_TXP/USB3_8_TXP
PCIE2_RXN/USB3_8_RXN
PCIE2_RXP/USB3_8_RXP
PCIE3_RXN/USB3_9_RXN
PCIE3_RXP/USB3_9_RXP
PCIE3_TXN/USB3_9_TXN
PCIE3_TXP/USB3_9_TXP
PCIE4_RXN/USB3_10_RXN
PCIE4_RXP/USB3_10_RXP
PCIE4_TXN/USB3_10_TXN
PCIE4_TXP/USB3_10_TXP
PCIE5_RXN
PCIE5_RXP
PCIE5_TXN
PCIE5_TXP
PCIE6_RXN
PCIE6_RXP
PCIE6_TXN
PCIE6_TXP
PCIE7_RXN
PCIE7_RXP
PCIE7_TXN
PCIE7_TXP
PCIE8_RXN
PCIE8_RXP
PCIE8_TXN
PCIE8_TXP
PCIe/USB 3
TP24
TP25
TP26
TP27
TP28
2 OF 12
SPT_PCH_H
USB 2.0
USB2N_1
USB2P_1
USB2N_2
USB2P_2
USB2N_3
USB2P_3
USB2N_4
USB2P_4
USB2N_5
USB2P_5
USB2N_6
USB2P_6
USB2N_7
USB2P_7
USB2N_8
USB2P_8
USB2N_9
USB2P_9
USB2N_10
USB2P_10
USB2N_11
USB2P_11
USB2N_12
USB2P_12
USB2N_13
USB2P_13
USB2N_14
USB2P_14
USBP1- 30
USBP1+ 30
USBP2- 30
USBP2+ 30
USBP3- 30
USBP3+ 30
USBP4- 26
USBP4+ 26
USBP5- 34
USBP5+ 34
USBP7- 33
USBP7+ 33
USBP8- 26
USBP8+ 26
USB2.0 Combo USB3.0 MB-1
USB2.0 Combo USB3.0 Small Board
USB2.0 Combo USB2.0 Small Board
HD / IR CAM
IR CAM 1015 Add USB2.0 PORT5
WLAN
Touch Screen
DIS only
GPP_E9/USB2_OC0#
GPP_E10/USB2_OC1#
GPP_E11/USB2_OC2#
GPP_E12/USB2_OC3#
GPP_F15/USB2_OC8_4
GPP_F16/USB2_OC8_5
GPP_F17/USB2_OC8_6
GPP_F18/USB2_OC8_7
DGPU_HOLD_RST# 12,19
GPU_EVENT# 12,22
DGPU_PWR_EN 12,51
DGPU_PWROK 12,23,37,50
USB_OC4#
USB_OC5#
USB_OC6#
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.
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
Ra
R78 *100K_4 GPU_EVENT# R79 10K_4
BOM:UMA only
BOM:DIS only
SG(Default) UMA
Stuff Ra Rb
NC Rb Ra
Cardreader
WLAN
LAN
PCIE_RXN5_CARD
PCIE_RXP5_CARD
PCIE_TXN5_CARD
PCIE_TXP5_CARD
PCIE_RXN6_WLAN
PCIE_RXP6_WLAN
PCIE_TXN6_WLAN
PCIE_TXP6_WLAN
PCIE_RXN7_LAN
PCIE_RXP7_LAN
PCIE_TXN7_LAN
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
C212 0.1U/16V_4 PCIE_TXP7_LAN
0929 Correct port from 9 to 7
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 TOUCH
PORT9-14 NC
USB3.0 (M/B-1)
USB3.0 (Small Board)
USB3.0 (3D Camera)
USB30_TX1-
USB30_TX1+
USB30_RX1-
USB30_RX1+
USB30_TX2-
USB30_TX2+
USB30_RX2-
USB30_RX2+
USB30_TX4+
USB30_TX4-
USB30_RX4+
USB30_RX4-
U2F
USB3_1_TXN
USB3_1_TXP
USB3_1_RXN
USB3_1_RXP
USB3_2_TXN/SSIC_1_TXN
USB3_2_TXP/SSIC_1_TXP
USB3_2_RXN/SSIC_1_RXN
USB3_2_RXP/SSIC_1_RXP
USB3_6_TXN
USB3_6_TXP
USB3_6_RXN
USB3_6_RXP
USB3_5_TXN
USB3_5_TXP
USB3_5_RXN
USB3_5_RXP
USB3_3_TXP/SSIC_2_TXP
USB3_3_TXN/SSIC_2_TXN
USB3_3_RXP/SSIC_2_RXP
USB3_3_RXN/SSIC_2_RXN
USB3_4_TXP
USB3_4_TXN
USB3_4_RXP
USB3_4_RXN
USB
SATA
LPC/eSPI
TP29
TP30
6 OF 12
SPT_PCH_H
0925 Delete one UBS3.0 Small Board
GPP_A1/LAD0/ESPI_IO0
GPP_A2/LAD1/ESPI_IO1
GPP_A3/LAD2/ESPI_IO2
GPP_A4/LAD3/ESPI_IO3
LAD0 33,34,37
LAD1 33,34,37
LAD2 33,34,37
LAD3 33,34,37
GPP_A5/LFRAME#/ESPI_CS0#
GPP_A6/SERIRQ/ESPI_CS1#
GPP_A7/PIRQA#/ESPI_ALERT0#
GPP_A0/RCIN#/ESPI_ALERT1#
GPP_A14/SUS_STAT#/ESPI_RESET#
LFRAME# 33,34,37
SERIRQ 34,37
BOARD_ID8 13
EC_RCIN# 37
BOARD_ID7 13
R81 8.2K_4
+3V
GPP_A9/CLKOUT_LPC0/ESPI_CLK
GPP_A10/CLKOUT_LPC1
CLK_PCI_EC_R
CLK_PCI_LPC_R
R82 22/F_4
R83 22/F_4
CLK_24M_KBC 37
CLK_24M_DEBUG 33
EC1 18P/50V_4
EC2 18P/50V_4
EMI(near PCH)
GPP_G19/SMI#
GPP_G18/NMI#
SIO_EXT_SMI# 37
R84 22/F_4
CLK_PCI_TPM 34
GPP_E6/DEVSLP2
GPP_E5/DEVSLP1
GPP_E4/DEVSLP0
GPP_F9/DEVSLP7
GPP_F8/DEVSLP6
GPP_F7/DEVSLP5
GPP_F6/DEVSLP4
GPP_F5/DEVSLP3
GC6_FB_EN
DEVSLP0 33
For SSD
Ra
Rc
EC3 *18P/50V_4
EMI(near PCH)
BOM : HW TPM need Ra,Rc stuff
USB 3.0 PORT
PORT1 USB3 MB
PORT2 USB3 DB
PORT3 USB3 DB
PORT4 3D CAMERA
10,12,13,14,16,18 +3V_DEEP_SUS
PROJECT : G35
Quanta Computer Inc.
Size Custom
Document Number 09 -- PCH 1/7 (DMI/USB/PCIE)
Rev 1A
Date: Monday, November 30, 2015 Sheet 9 of 51

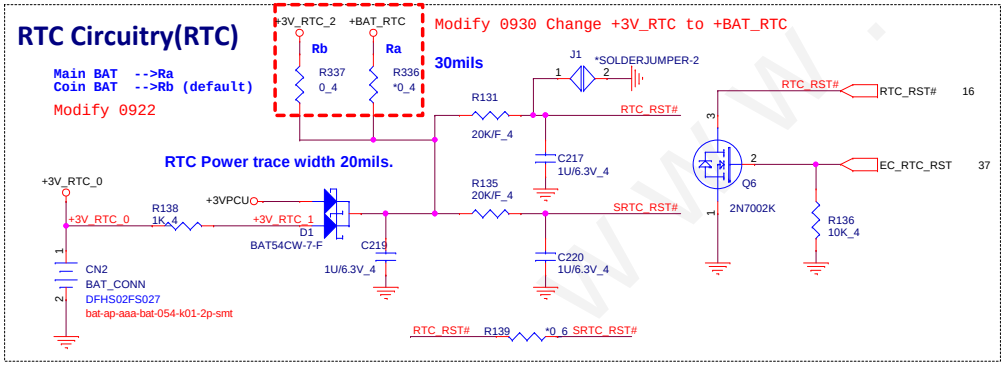
HDA Bus(CLG)

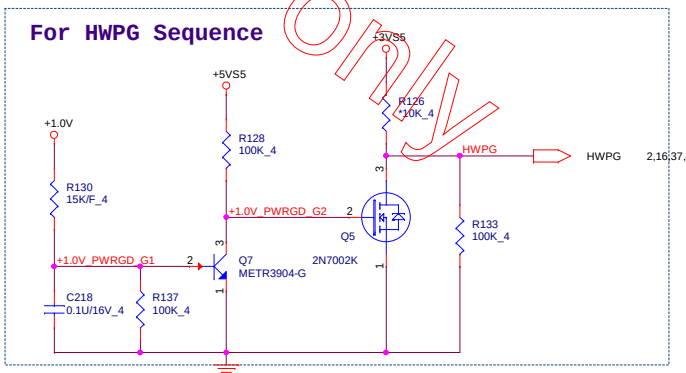


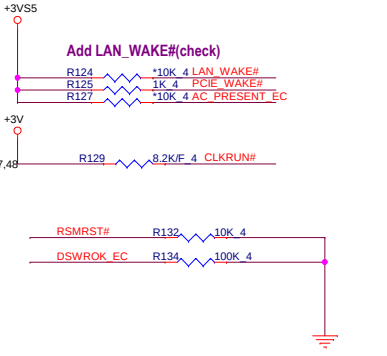












9,12,13,14,16,18 +3V_DEEP_SUS

PROJECT : G35
Quanta Computer Inc.

Size	Document Number	Rev
Custom	10 -- PCH 2/7 (HDA/SMBUS)	1A
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Chiri review only

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

SSD PCIE x4 LANE

Modify 1005 Change HDD SATA Port2 to port1B

HDD1 (SATA1B 6Gb/s)

SSD PCIE x4 LANE

SSD PCIE x4 LANE

SSD PCIE x4 LANE

ODD (SATA2 3.0Gb/s)

HDD2 (SATA3 6Gb/s)

For SSD Det (SATA0A)

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

1002 add

BOM:SSD only

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

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

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

RTC Clock 32.768KHz

32.768KHz
BG332768453 CRYSTAL SMD 32.768KHZ(+-20PPM,12.5PF)
footprint: xtl-3_2X1_5-2_5-0_8h

Card Reader

WLAN

LAN

VGA

SSD

BOM:DIS only

BOM:SSD only

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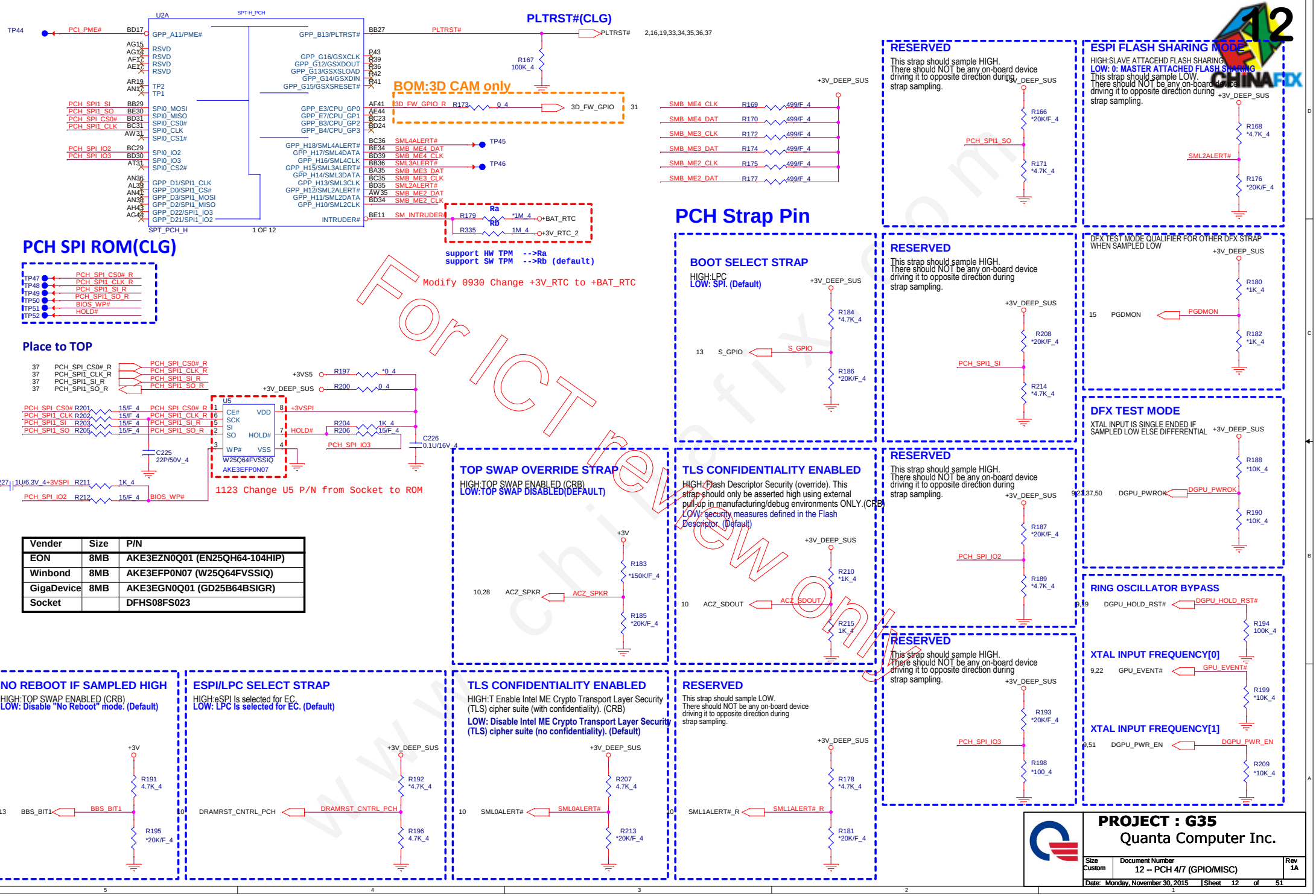
PROJECT : G35
Quanta Computer Inc.

Size	Document Number	Rev
Custom	11 – PCH 3/7 (SATA/LPC/CLK)	1A

Date: Monday, November 30, 2015 Sheet 11 of 51



Vender	Size	P/N
EON	8MB	AKE3EZN0Q01 (EN25QH64-104HIP)
Winbond	8MB	AKE3EFP0N07 (W25Q64FVSSIQ)
GigaDevice	8MB	AKE3EGN0Q01 (GD25B64BSIGR)
Socket		DFHS08FS023

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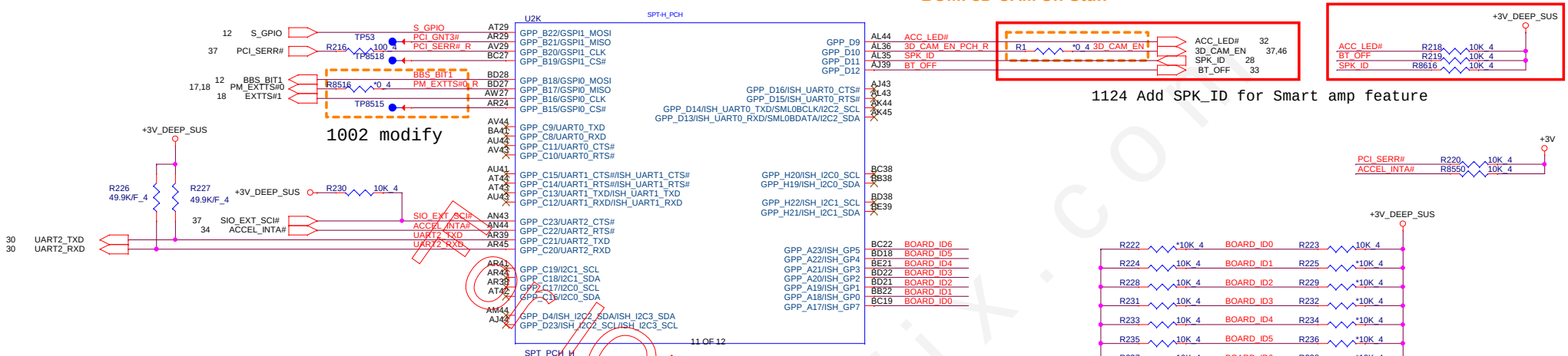
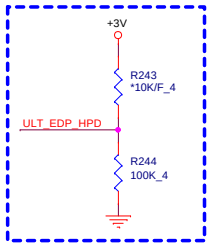
3D CAMERA
BOM: 3D CAM Un-Stuff

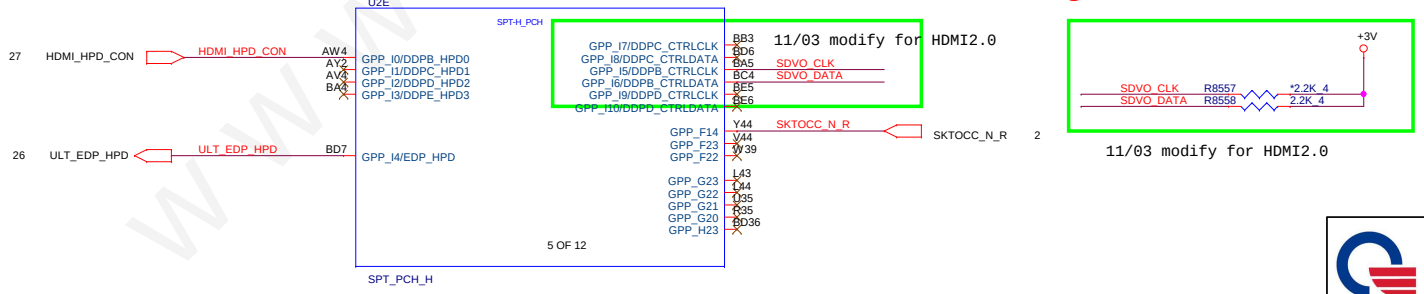


Reserve EDP_HPD opposites circuit!



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 SKU 01 3D SKU	00 Reserve	00 Reserve	00 15" 01 17" 10 17" SP	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.



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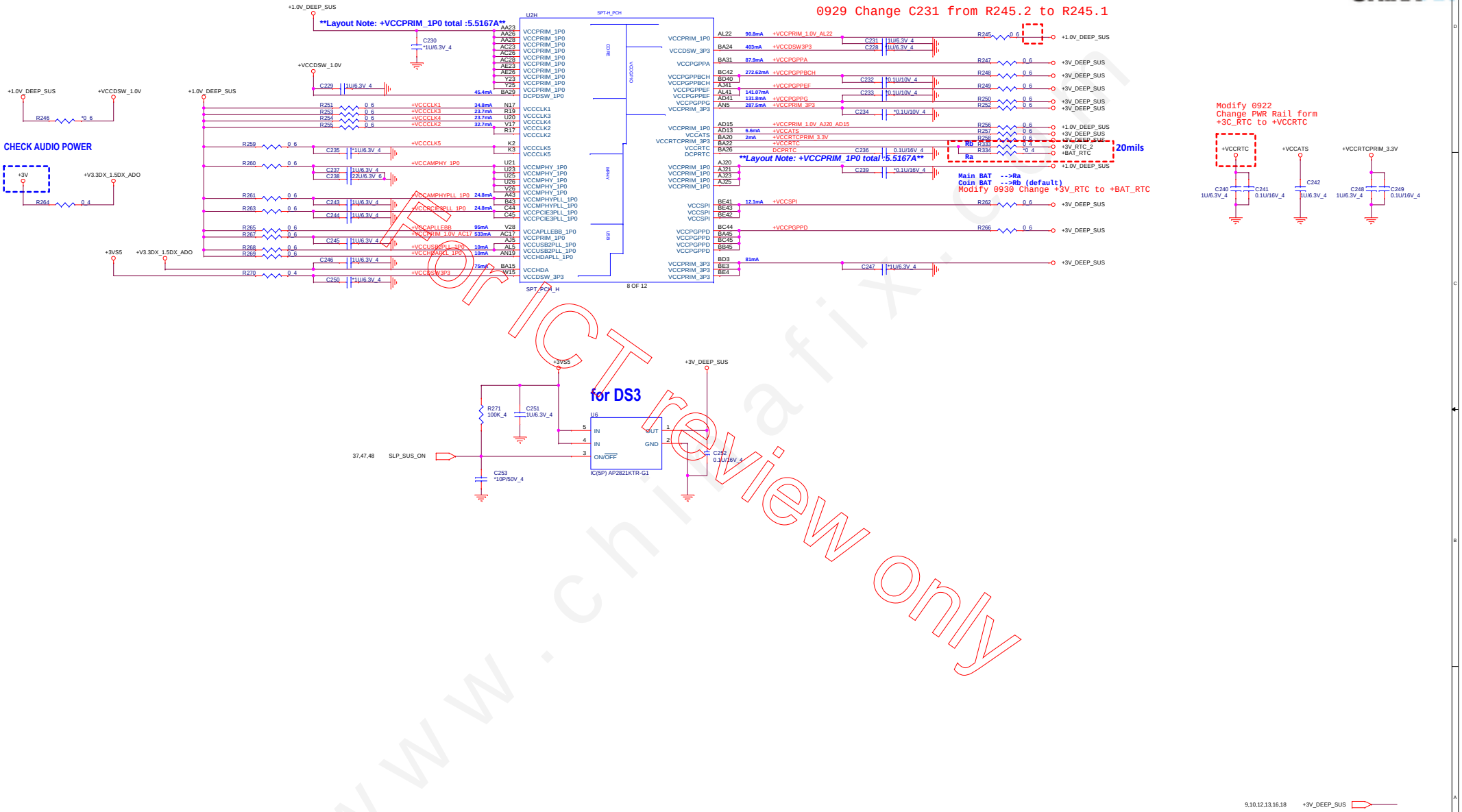
PROJECT : G35	Quanta Computer Inc.
Size: Custom	Document Number: 13 -- PCH 5/7 (GPIO)
Rev: 1A	
Date: Monday, November 30, 2015	Sheet 13 of 51



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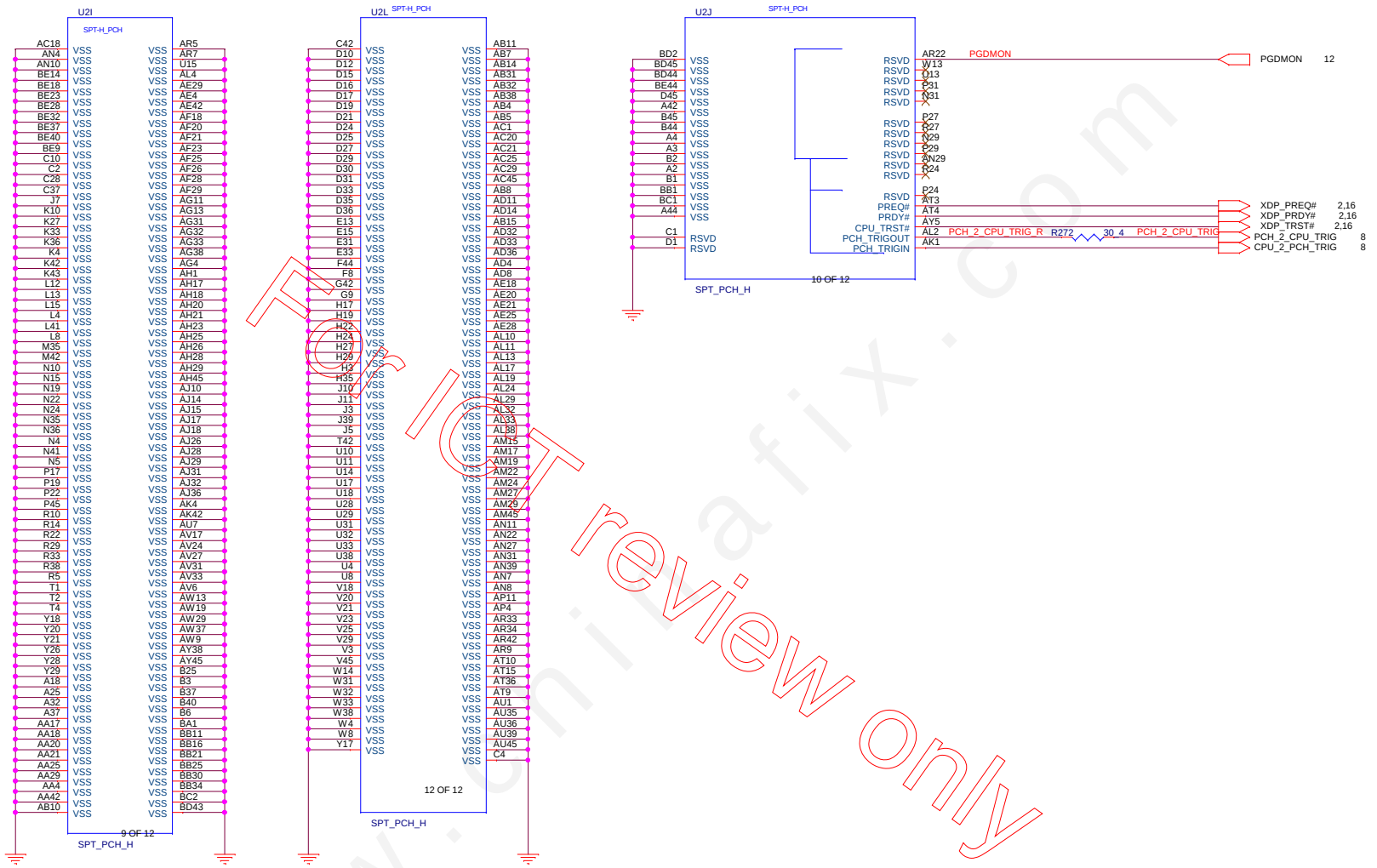
PROJECT : G35 Quanta Computer Inc.		
Size: Custom	Document Number: 14 -- PCH 6/7 (POWER)	Rev: 1A
Date: Monday, November 30, 2015	Sheet 14 of 51	



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PROJECT : G35		
Quanta Computer Inc.		
Size: Custom	Document Number: 15 -- PCH 7/7 (GND)	Rev: 1A
Date: Monday, November 30, 2015	Sheet 15 of 51	

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

CPU XDP

CN3 *Samtec BSH-030-01

2,15	XDP_PREQ#	3	OBSFN_A0	VCC_OBS_CD	44
2,15	XDP_PRDY#	5	OBSFN_A1	VCC_OBS_AB	43
2	CFG0	9	OBSDATA_A0	OBSFN_B0	21
2	CFG1	11	OBSDATA_A1	OBSFN_B1	23
2,8	CFG2	15	OBSDATA_A2	OBSFN_C0	4
2,8	CFG3	17	OBSDATA_A3	OBSFN_C1	6
2,8	CFG4	27	OBSDATA_B0	OBSDATA_C0	10
2,8	CFG5	29	OBSDATA_B1	OBSDATA_C1	12
2,8	CFG6	33	OBSDATA_B2	OBSDATA_C2	16
2	CFG7	35	OBSDATA_B3	OBSDATA_C3	18
16	ON/OFFBTN_KBC#	41	HOOK1	OBSDATA_D0	22
		45	HOOK2	OBSFN_D1	24
11	CK_XDP_P	40	ITPCLK/HOOK4	OBSDATA_D0	28
11	CK_XDP_N	42	ITPCLK#/HOOK5	OBSDATA_D1	30
		48	DBR#/HOOK7	OBSDATA_D2	34
10,17,18,38	SMB_RUN_DAT	51	SDA	OBSDATA_D3	36
10,17,18,38	SMB_RUN_CLK	53	SCL	HOOK3	47
		52	TDO	TCK1	55
		54	TRSTN	PWRGOOD/HOOK0	39
		56	TDI	RESET#/HOOK6	46
		58	TMS	GND0	1
		57	TCK0	GND1	2
		60	GND17	GND2	7
		59	GND16	GND3	8
		50	GND15	GND4	13
		49	GND14	GND5	14
		38	GND13	GND6	19
		37	GND12	GND7	20
		32	GND11	GND8	25
		31	GND10	GND9	26

R273 *1K_4 CFG0
R274 *1K_4 CFG1
CFG0 R275 *1K_4 PWR_DEBUG
XDP_DBRESET_N
R276 *0_4 SMB_RUN_DAT_XDP
R277 *0_4 SMB_RUN_CLK_XDP
XDP_TDO
XDP_TRST#
XDP_TDI
XDP_TMS
XDP_TCK0
TP58
+1.0V_DEEP_SUS
TP56
TP57
XDP_TCK1
SYS_PWROK
XDP_RST R278 *1K_4

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

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

1	SUSB#	10,16,37
3	SLP_S5#	10
5	SUSC#	10,37
7	SLP_A#	10
9	RTC_RST#	10
11	ON/OFFBTN_KBC#	16
13	SYS_RESET#	10
15	PCH_SLP_S0_N	10
17	SUSB#	10,16,37

R283 *0_4

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

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 : G35
Quanta Computer Inc.

Size	Document Number	Rev
	16 -- XDP & APS	1A

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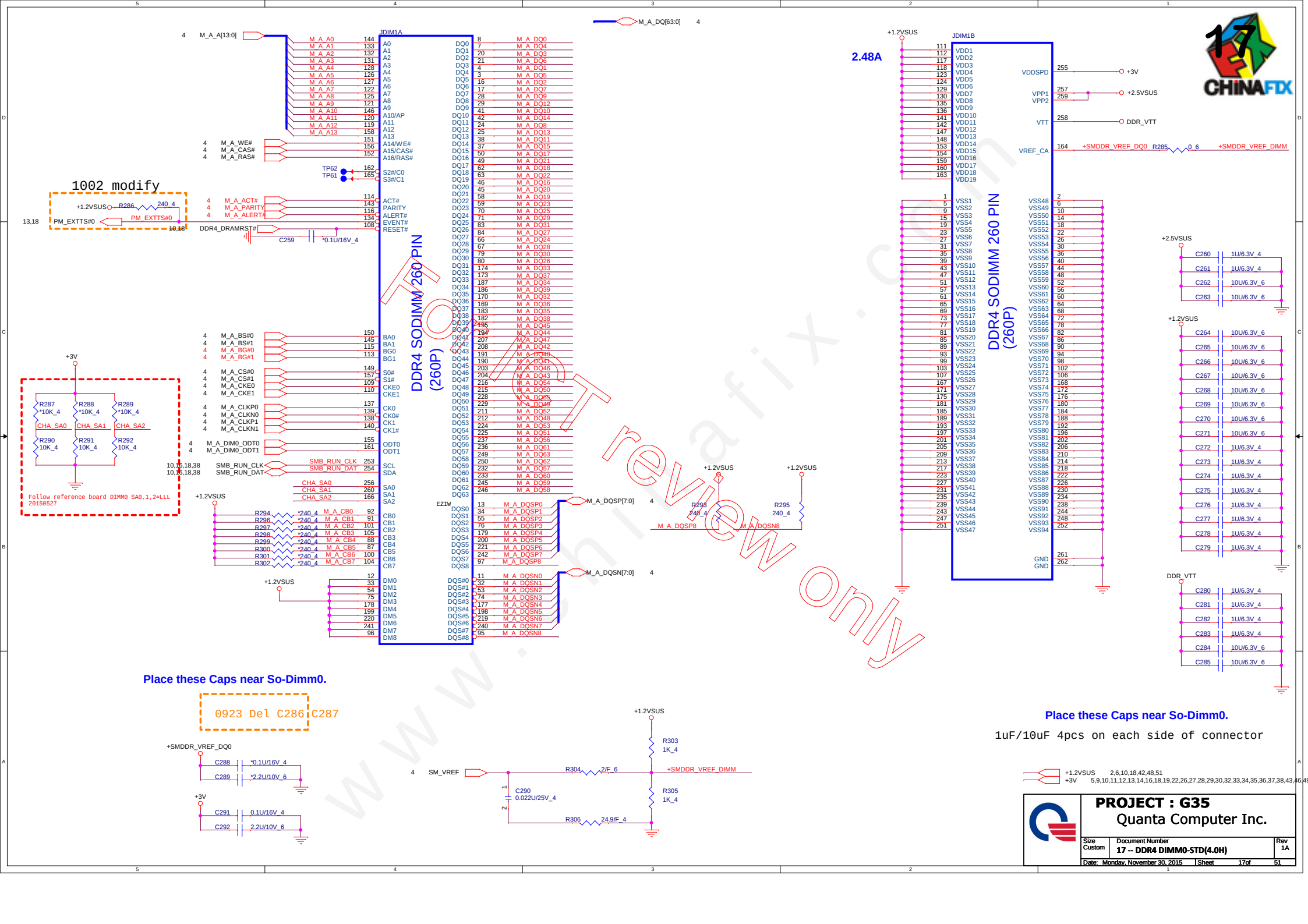
JDIM1A
DDR4 SODIMM 260 PIN
(260P)
JDIM1B
DDR4 SODIMM 260 PIN
(260P)
2.48A
1002 modify
Follow reference board DIMM0 SA0,1,2=LLL
20150527
Place these Caps near So-Dimm0.
0923 Del C286 C287
Place these Caps near So-Dimm0.
1uF/10uF 4pcs on each side of connector
PROJECT : G35
Quanta Computer Inc.
17 -- DDR4 DIMM0-STD(4.0H)
Date: Monday, November 30, 2015
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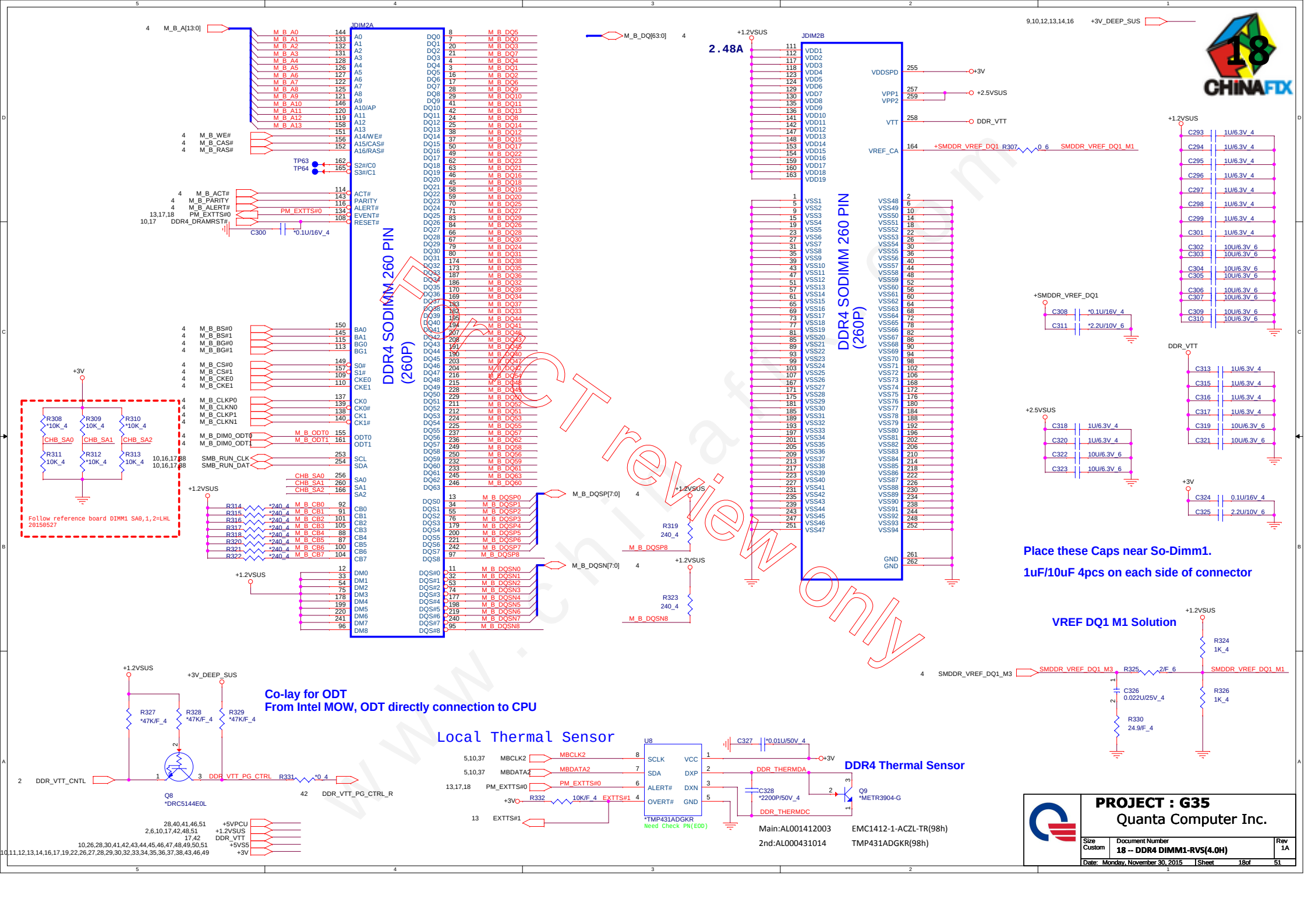
JDIM2A
DDR4 SODIMM 260 PIN (260P)
JDIM2B
DDR4 SODIMM 260 PIN (260P)
2.48A
Follow reference board DIMM1 SA0,1,2=LHL 20150527
Co-lay for ODT
From Intel MOW, ODT directly connection to CPU
Local Thermal Sensor
DDR4 Thermal Sensor
*TMP431ADGKR
Need Check PN(EOD)
Place these Caps near So-Dimm1.
1uF/10uF 4pcs on each side of connector
VREF DQ1 M1 Solution
Main:AL001412003
2nd:AL000431014
EMC1412-1-ACZL-TR(98h)
TMP431ADGKR(98h)
PROJECT : G35
Quanta Computer Inc.
Size Custom
Document Number
18 -- DDR4 DIMM1-RVS(4.0H)
Rev 1A
Date: Monday, November 30, 2015
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CHINAFDX
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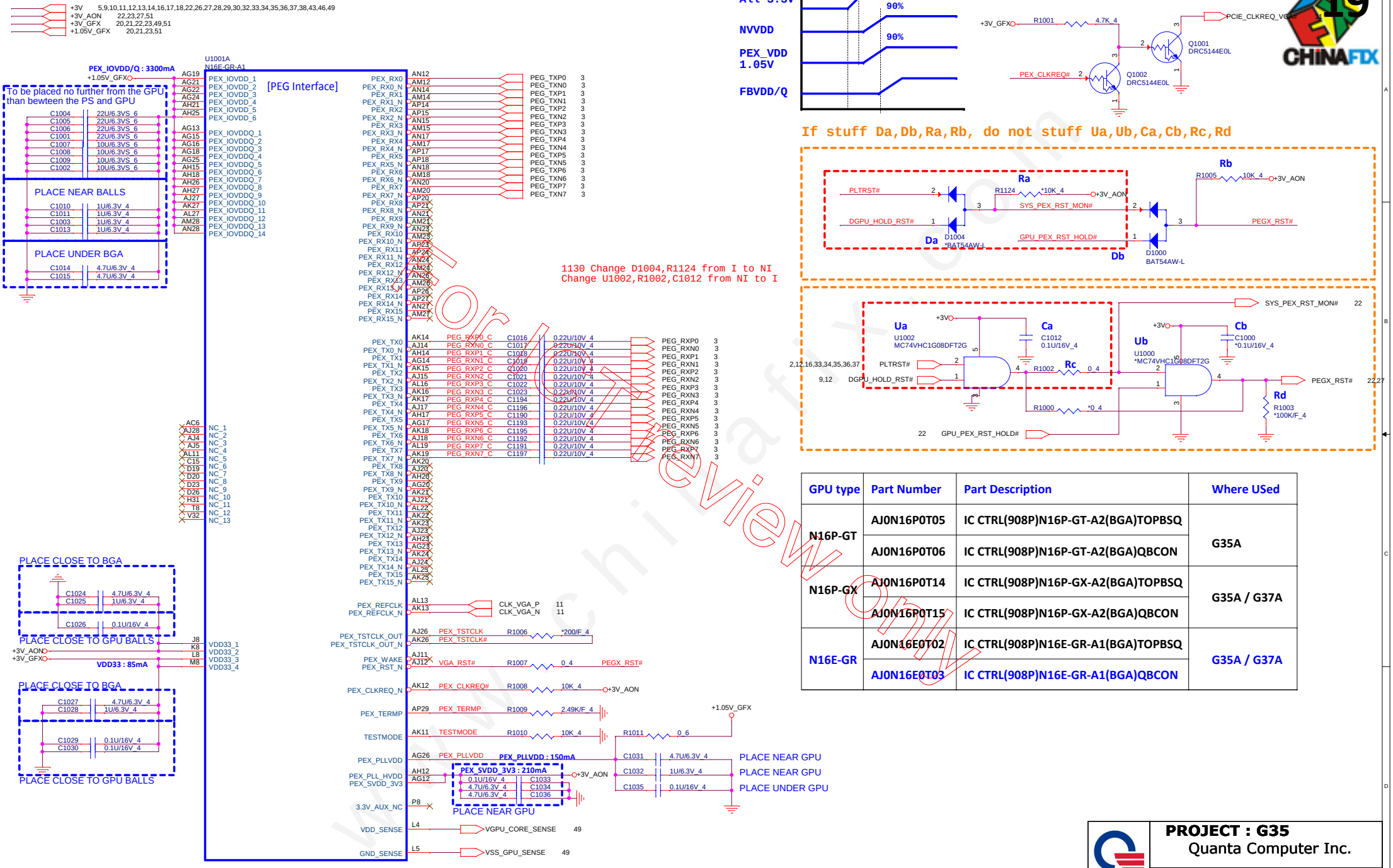

GPU type	Part Number	Part Description	Where USed
N16P-GT	AJ0N16P0T05	IC CTRL(908P)N16P-GT-A2(BGA)TOPBSQ	G35A
	AJ0N16P0T06	IC CTRL(908P)N16P-GT-A2(BGA)QBCON	
N16P-GX	AJ0N16P0T14	IC CTRL(908P)N16P-GX-A2(BGA)TOPBSQ	G35A / G37A
	AJ0N16P0T15	IC CTRL(908P)N16P-GX-A2(BGA)QBCON	
N16E-GR	AJ0N16E0T02	IC CTRL(908P)N16E-GR-A1(BGA)TOPBSQ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

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PROJECT : G35
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Size	Document Number	Rev
Custom	N16P-GX/GT - 1/5 (PCIE)	1A

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+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

1029 Change

+FB_PLLAVDD : 62mA

PROJECT : G35
Quanta Computer Inc.

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

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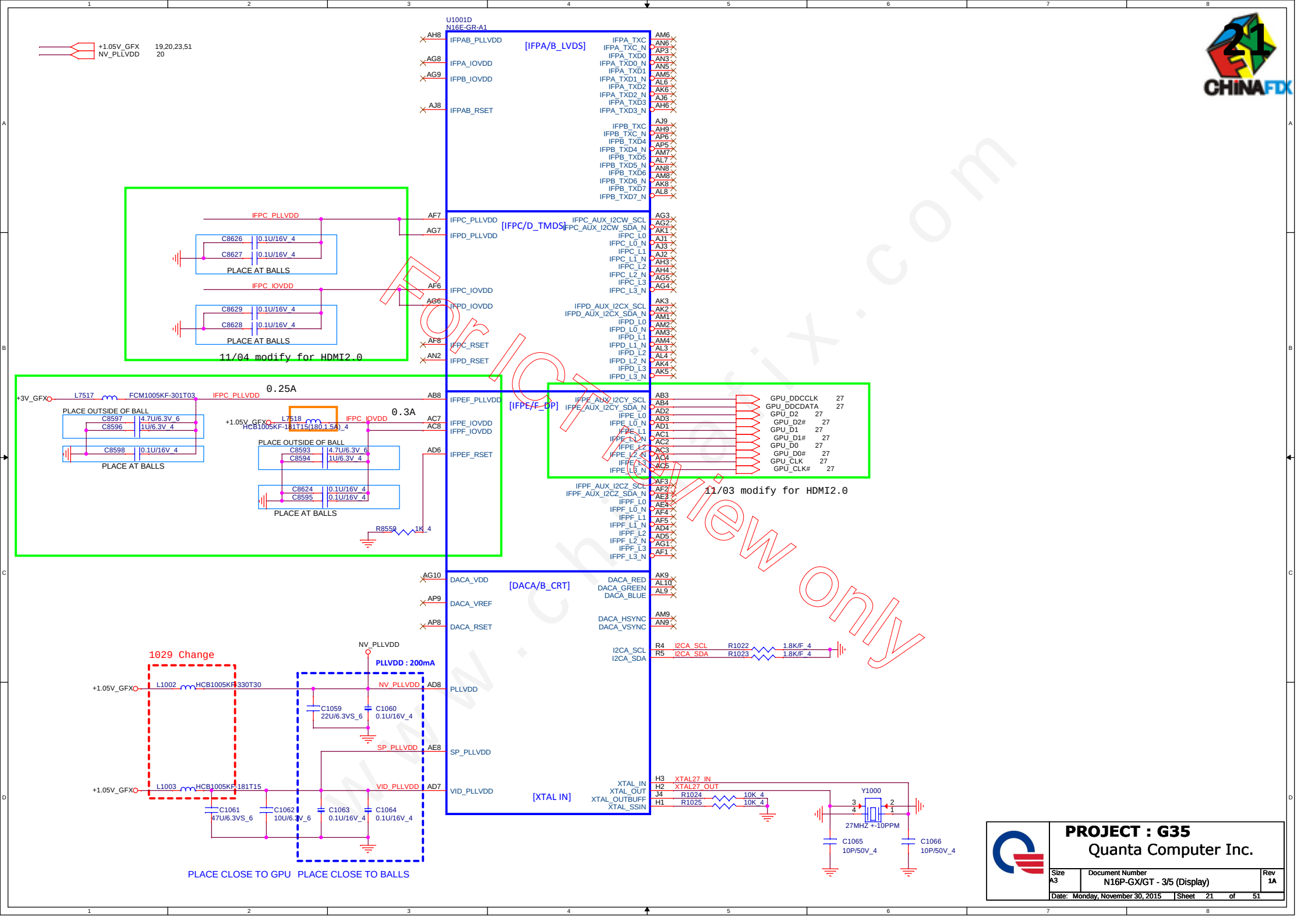
+1.05V_GFX 19,20,23,51
NV_PLLVDD 20
U1001D
N16E-GR-A1
[IFPA/B_LVDS]
IFPAB_PLLVDD
IFPA_IOVDD
IFPB_IOVDD
IFPAB_RSET
IFPA_TXC
IFPA_TXC_N
IFPA_TXD0
IFPA_TXD0_N
IFPA_TXD1
IFPA_TXD1_N
IFPA_TXD2
IFPA_TXD2_N
IFPA_TXD3
IFPA_TXD3_N
IFPB_TXC
IFPB_TXC_N
IFPB_TXD4
IFPB_TXD4_N
IFPB_TXD5
IFPB_TXD5_N
IFPB_TXD6
IFPB_TXD6_N
IFPB_TXD7
IFPB_TXD7_N
[IFPC/D_TMDS]
IFPC_PLLVDD
IFPD_PLLVDD
IFPC_IOVDD
IFPD_IOVDD
IFPC_RSET
IFPD_RSET
IFPC_AUX_I2CW_SCL
IFPC_AUX_I2CW_SDA_N
IFPC_L0
IFPC_L0_N
IFPC_L1
IFPC_L1_N
IFPC_L2
IFPC_L2_N
IFPC_L3
IFPC_L3_N
IFPD_AUX_I2CX_SCL
IFPD_AUX_I2CX_SDA_N
IFPD_L0
IFPD_L0_N
IFPD_L1
IFPD_L1_N
IFPD_L2
IFPD_L2_N
IFPD_L3
IFPD_L3_N
[IFPE/F_DP]
IFPEF_PLLVDD
IFPE_IOVDD
IFPF_IOVDD
IFPEF_RSET
IFPE_AUX_I2CY_SCL
IFPE_AUX_I2CY_SDA_N
IFPE_L0
IFPE_L0_N
IFPE_L1
IFPE_L1_N
IFPE_L2
IFPE_L2_N
IFPE_L3
IFPE_L3_N
IFPF_AUX_I2CZ_SCL
IFPF_AUX_I2CZ_SDA_N
IFPF_L0
IFPF_L0_N
IFPF_L1
IFPF_L1_N
IFPF_L2
IFPF_L2_N
IFPF_L3
IFPF_L3_N
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
11/03 modify for HDMI2.0
[DACA/B_CRT]
DACA_VDD
DACA_VREF
DACA_RSET
DACA_RED
DACA_GREEN
DACA_BLUE
DACA_HSYNC
DACA_VSYNC
I2CA_SCL
I2CA_SDA
R4 I2CA_SCL R1022 1.8K/F_4
R5 I2CA_SDA R1023 1.8K/F_4
[XTAL IN]
XTAL_IN
XTAL_OUT
XTAL_OUTBUFF
XTAL_SSIN
H3 XTAL27_IN
H2 XTAL27_OUT
J4 R1024 10K_4
H1 R1025 10K_4
Y1000
27MHZ +-10PPM
C1065 10P/50V_4
C1066 10P/50V_4
IFPC_PLLVDD
C8626 0.1U/16V_4
C8627 0.1U/16V_4
PLACE AT BALLS
IFPC_IOVDD
C8629 0.1U/16V_4
C8628 0.1U/16V_4
PLACE AT BALLS
11/04 modify for HDMI2.0
0.25A
+3V_GFX
L7517 FCM1005KF-301T03
IFPC_PLLVDD
PLACE OUTSIDE OF BALL
C8597 4.7U/6.3V_6
C8596 1U/6.3V_4
C8598 0.1U/16V_4
PLACE AT BALLS
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
R8559 1K_4
1029 Change
NV_PLLVDD
PLLVDD : 200mA
+1.05V_GFX
L1002 HCB1005KF-330T30
C1059 22U/6.3VS_6
C1060 0.1U/16V_4
SP_PLLVDD
L1003 HCB1005KF-181T15
VID_PLLVDD
C1061 47U/6.3VS_6
C1062 10U/6.3V_6
C1063 0.1U/16V_4
C1064 0.1U/16V_4
PLACE CLOSE TO GPU
PLACE CLOSE TO BALLS
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PROJECT : G35
Quanta Computer Inc.
Size A3
Document Number N16P-GX/GT - 3/5 (Display)
Rev 1A
Date: Monday, November 30, 2015
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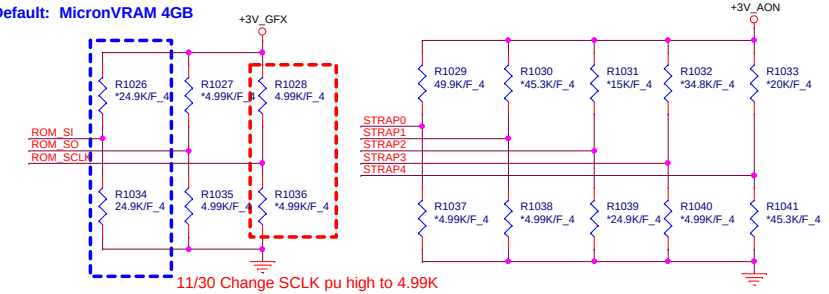
+3V 5,9,10,11,12,13,14,16,17,18,19,26,27,28,29,30,32,33,34,35,36,37,38,43,46,49
+3V_AON 19,23,27,51
+3V_GFX 19,20,21,23,49,51

Default: MicronVRAM 4GB



11/30 Change SCLK pu high to 4.99K

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 PD	4.99K PD	4.99K PD
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-R		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-R		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 0110 PD 4.99K
	AKG5PWUTW20			
Micron	AKG5PW0TL05	EDW4032BABG-60-F-R		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			

U1001E
N16E-GR-A1

[MIOA]

[MIOB]

[MISC_GPIO/I2C/JTAG/THER]

[MISC2_ROM]

+3V_AON
GPU_EVENT# GPU R1042 10K_4
VGA_OVT# R1043 10K_4
ALERT R1044 10K_4
PWR_LEVEL R1045 10K_4
+3V_MAIN_EN R1046 10K_4
SYS_PEX_RST_MON# R1047 *10K_4
GPU_PEX_RST_HOLD# R1048 10K_4

GPIO10_VREF R1049 100K/F_4
JTAG_TRST# R1050 10K_4
GC6_FB_EN R1051 10K_4

TP1002 TP1003 TP1004 TP1005
JTAG_TCK JTAG_TMS JTAG_TDI JTAG_TDO JTAG_TRST_N
AM10 AP11 AM11 AP12 AN11

1.8K/F_4 R1053 I2CB_SCL R7 I2CB_SCL
1.8K/F_4 R1054 I2CB_SDA R6 I2CB_SDA
1.8K/F_4 R1055 I2CC_SCL R2 I2CC_SCL
1.8K/F_4 R1056 I2CC_SDA R3 I2CC_SDA
GFx_SCL T4 I2CS_SCL
GFx_SDA T3 I2CS_SDA
K4 THERMDP
K3 THERMDN

+3V_AON
R1059 *40.2K/F_4
R1063 40.2K/F_4
STRAP0 J2
STRAP1 J7
STRAP2 J6
STRAP3 J5
STRAP4 J3
J1 MULTISTRAP_REF_GND

GPIO0 GPIO1 GPIO2 GPIO3 GPIO4 GPIO5 GPIO6 GPIO7 GPIO8 GPIO9 GPIO10 GPIO11 GPIO12 GPIO13 GPIO14 GPIO15 GPIO16 GPIO17 GPIO18 GPIO19 GPIO20 GPIO21

P6 GPIO0 R1052 0_4 GC6_FB_EN

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

GPU_EVENT# GPU D1001 RB500V-40 +3V_MAIN_EN 49,51 GPU_EVENT# 9,12
VGA_OVT# M2 ALERT
GPIO10_VREF L1 GPIO10_VREF GPIO10_VREF 24,25
PWR_LEVEL D1002 RB500V-40 GPU_VID 49 DGPU_PROCHOT_EC# 37,49 PSI 49
R1057 10K_4 +3V_AON
R8567 0_4 HDMI_HPD_GPU 27
GPU_PEX_RST_HOLD# 19 R8568 100K/F_4

11/04 modify for HDMI2.0

ROM_SCLK H4 ROM_SCLK
ROM_CS_N H6
ROM_SI H5 ROM_SI
ROM_SO H7 ROM_SO
BUFRST_N L2
CEC L3 R1064 0_4 SYS_PEX_RST_MON# 19 +3V_AON R1067 4.7K_4 R1068 *0_4
R1066 10K_4

1129 Change R1066 from NI to I

PEGX_RST# PEGX_RST# 19,27
VGA_OVT# 1 Q1000 *2N7002K 3 DGPU_OVT# 37

GFx SMBus Isolation

+3V_AON R1060 0_4
R1061 4.7K_4 R1062 *0_4
GFx_SCL Q1003 2N7002KDW GPUT_CLK
GFx_SDA GPUT_DATA

1130 Change D1003, R1123 from I to NI
Change U1003, C1067 from NI to I

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

GC6_FB_EN DGPU_VC_EN D1003 *BAT54CW-7-F Da
DGPU_FB_EN R1123 Ra *100K/F_4

+3V Ca C1067 0.1U/16V_4
R1058 *10K_4 +3V
50 DGPU_FB_EN U1003 NL17SZ32DFT2G Ua
GC6_FB_EN 9
DGPU_VC_EN 49,51
37 37

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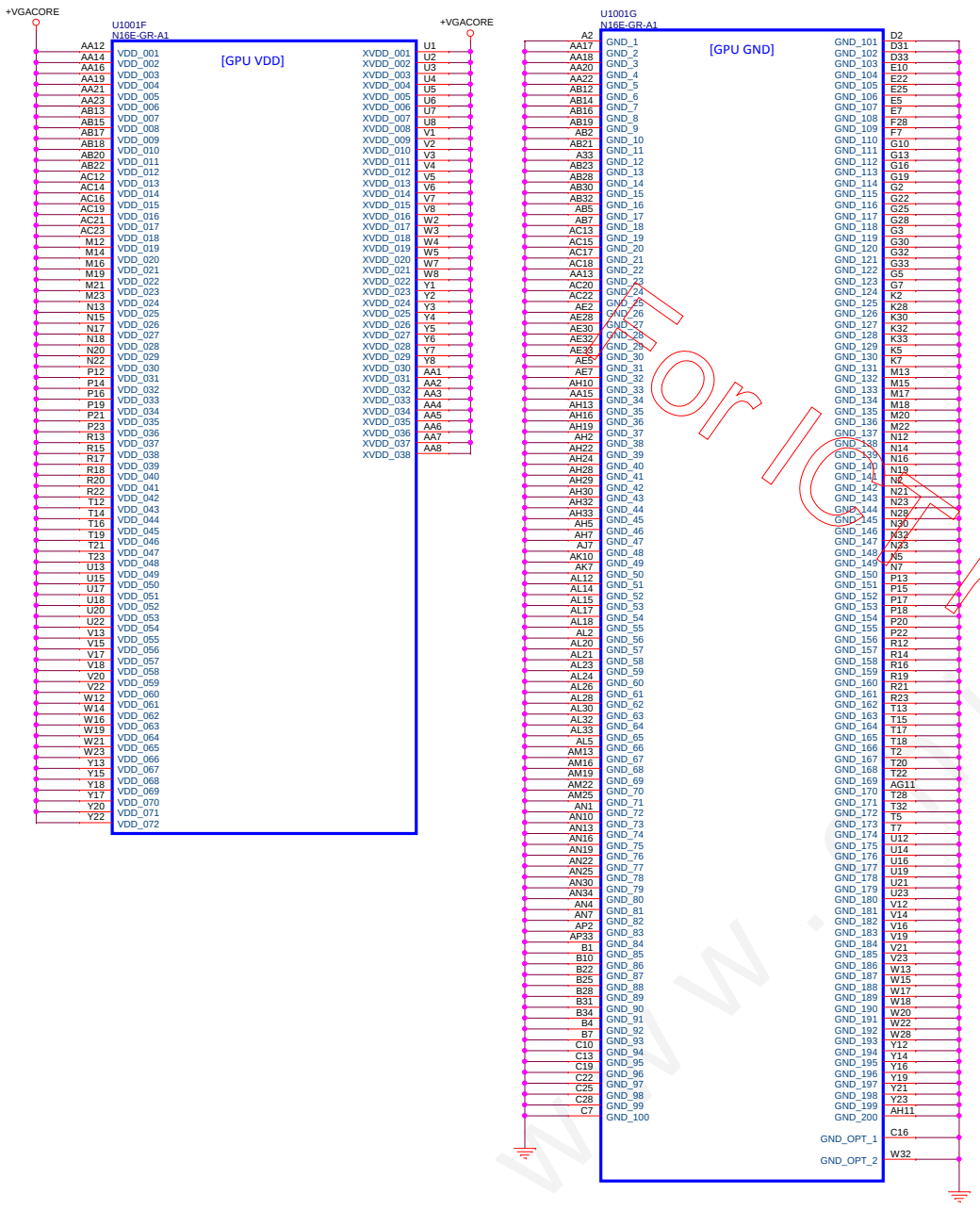
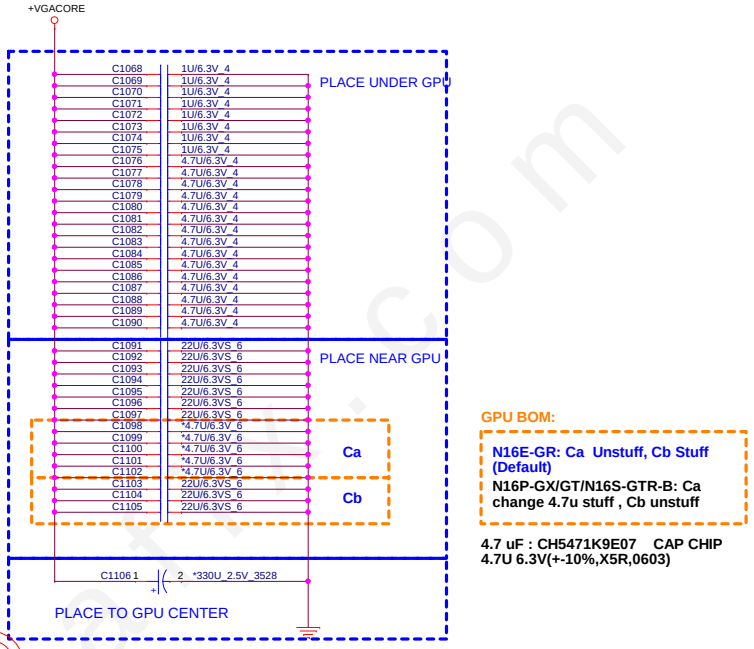
+3V_AON 19,22,27,51
+3V_GFX 19,20,21,22,49,51
+1.35V_GFX 20,24,25,50
+1.05V_GFX 19,20,21,51
+VGACORE 49

VDD/XVDD : 62A



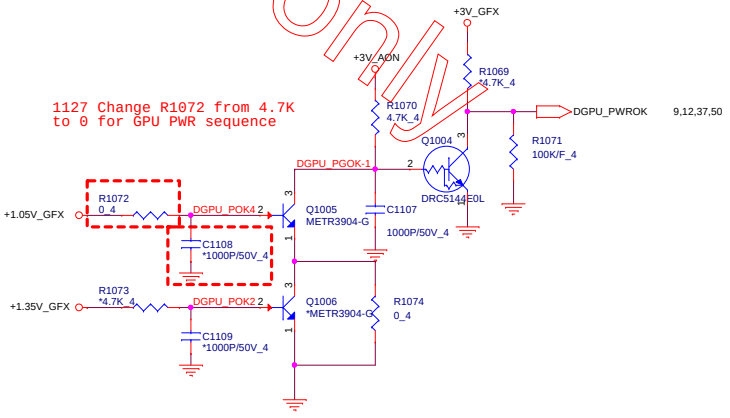


GPU BOM:

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



1127 Change C1108 from I to NI for GPU PWR sequence

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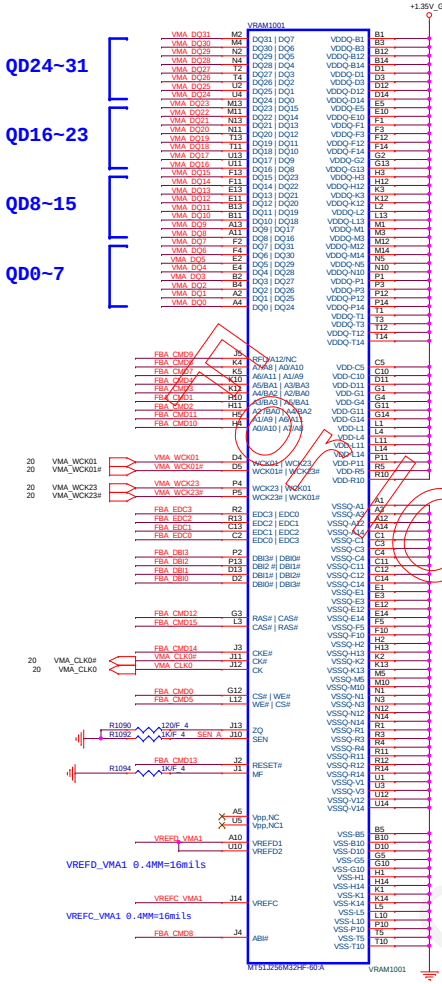
Quanta Computer Inc.		
Size: Custom	Document Number: N16P-GX/GT - 5/5 (Power)	Rev: 1A
Date: Monday, November 30, 2015	Sheet 23 of 51	

CHANNEL A: 2G/4G GDDR5

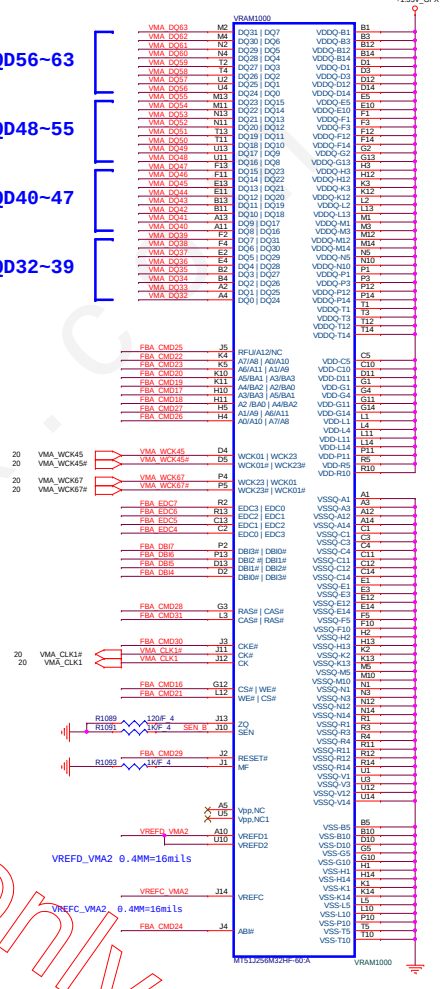
MF=0 Non-mirrored

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



MF=0 Non-mirrored

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



VREFD_VMA1 0.4MM=16mils

VREFC_VMA1 0.4MM=16mils

VREFD_VMA2 0.4MM=16mils

VREFC_VMA2 0.4MM=16mils

Close DRAM

Under DRAM

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

RST PD place to the end of daisy-chain.

GDDR5 Mode H Mapping

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

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Quanta Computer Inc.
Size | Document Number: N16P-GX/GT GDDR5 VRAM 1/2 | Rev: 1A
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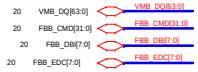
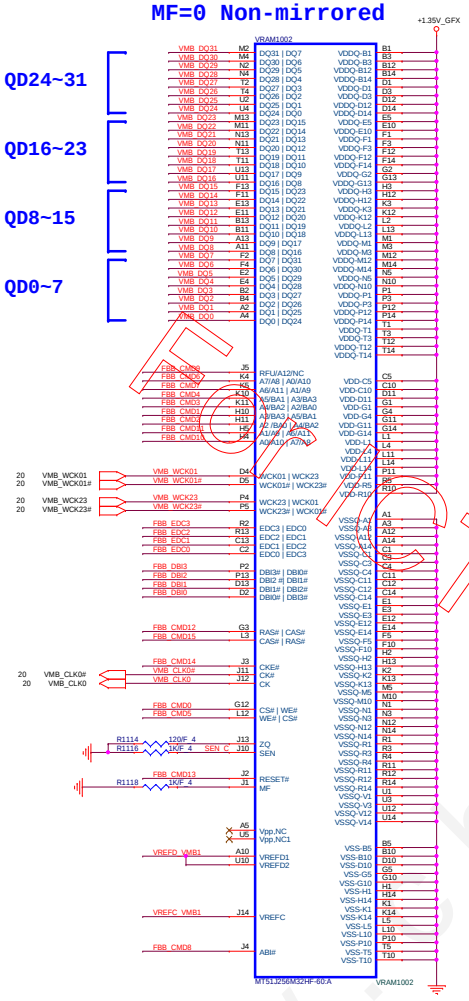


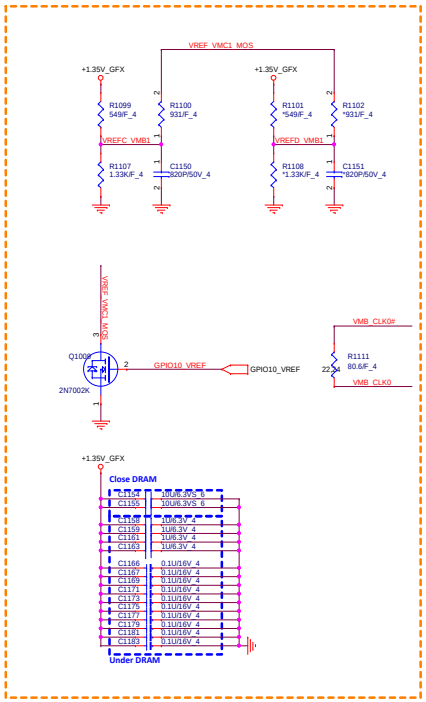
N16S-GTR-B: unstuff VRAM
N16P-GX/GT/N16E-GR: stuff VRAM (Default)

MF=0 Non-mirrored

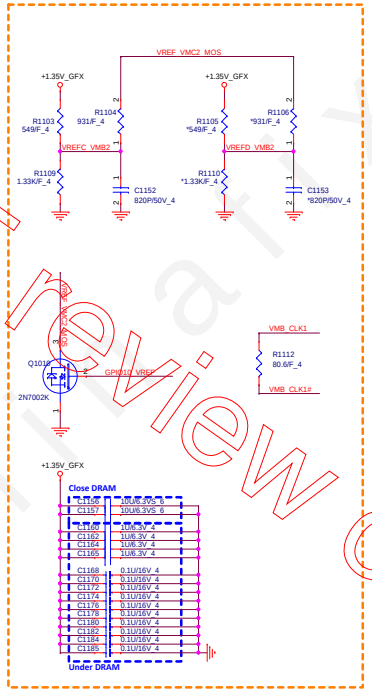
QD24~31
QD16~23
QD8~15
QD0~7



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



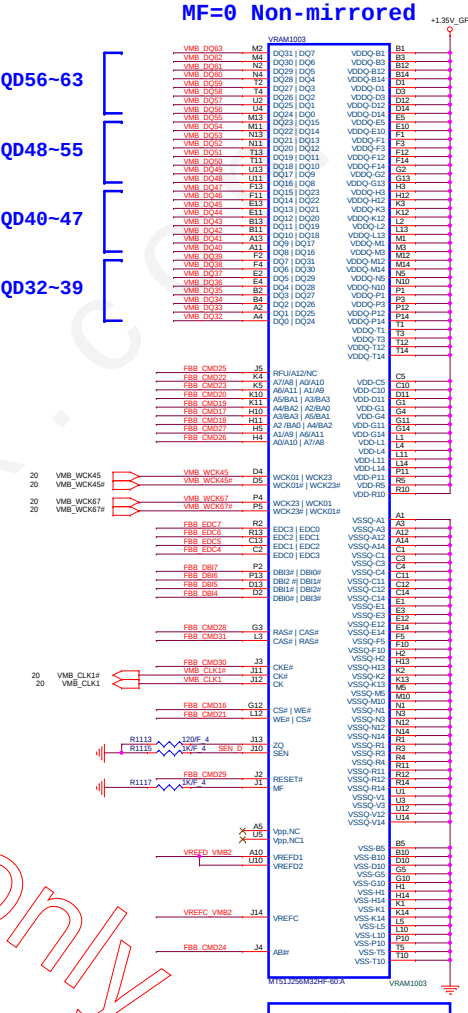
N16S-GTR-B: unstuff VRAM
N16P-GX/GT/N16E-GR: stuff VRAM (Default)



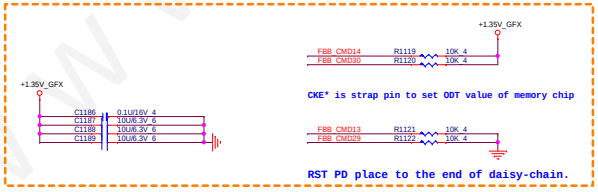
N16S-GTR-B: unstuff VRAM
N16P-GX/GT/N16E-GR: stuff VRAM (Default)

MF=0 Non-mirrored

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



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



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*

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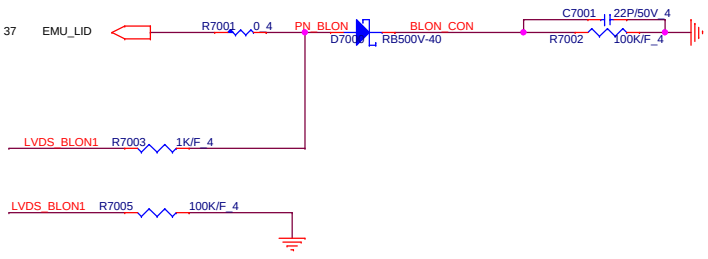
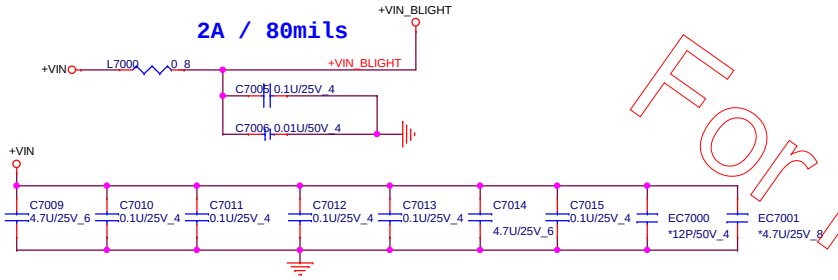
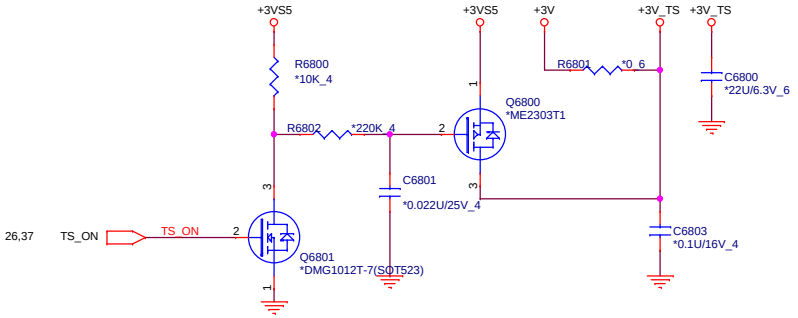
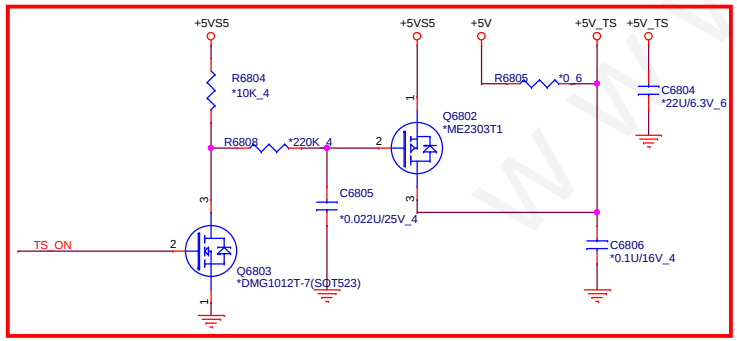
LID Switch





Touch screen



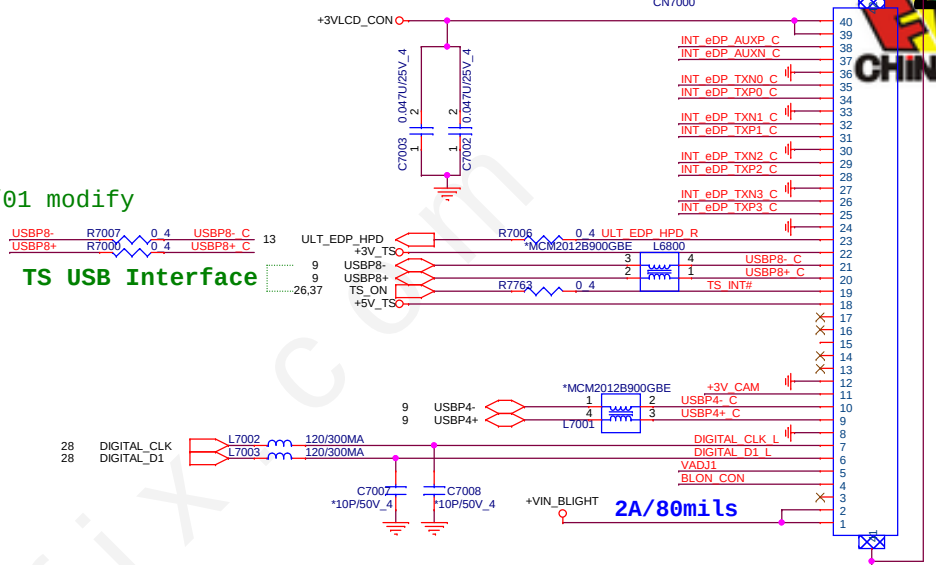


eDP Conn.

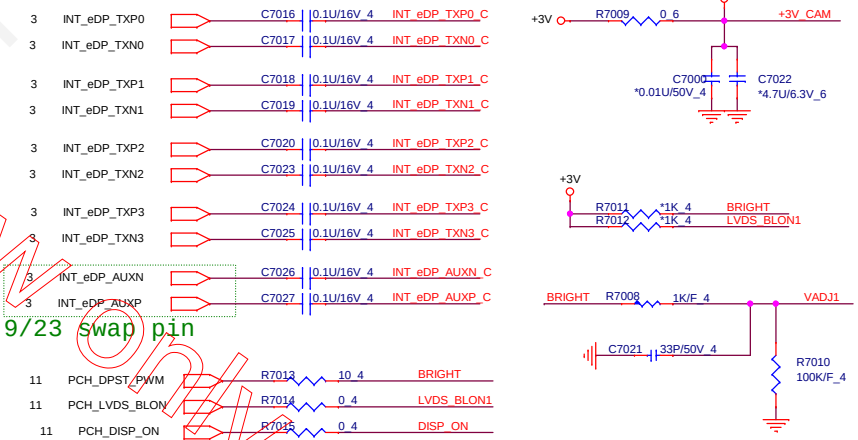
GS12401-1011-9H
51519-0400t-v02-40p-l
DFFC40FR081
CN7000

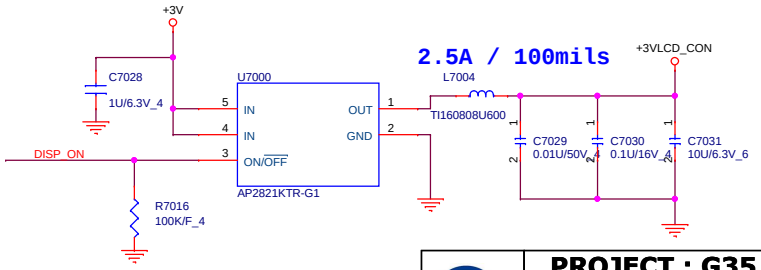
10/01 modify

TS USB Interface



9/23 swap pin





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
5,10,30,33,37,38,40,41 +3VPCU
27,28,29,31,32,38,46,49 +5V
38,39,40,41,42,43,44,45,46,47,48,49,50 +VIN

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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 +3V

26,28,29,31,32,38,46,49 +5V

11/26 change to 6.8 ohm for NV suggest

TX2_HDMI+	6.8/F_4	R8574		TX2_HDMI+CN
TX2_HDMI-	6.8/F_4	R8571		TX2_HDMI-CN
TX1_HDMI+	6.8/F_4	R8573		TX1_HDMI+CN
TX1_HDMI-	6.8/F_4	R8576		TX1_HDMI-CN
TX0_HDMI+	6.8/F_4	R8572		TX0_HDMI+CN
TX0_HDMI-	6.8/F_4	R8569		TX0_HDMI-CN
TXC_HDMI+	6.8/F_4	R8575		TXC_HDMI+CN
TXC_HDMI-	6.8/F_4	R8570		TXC_HDMI-CN

11/04 modify for HDMI2.0

EMI Solution

TX2_HDMI+	R7716	120/F_4	TX2_HDMI-
TX1_HDMI+	R7717	120/F_4	TX1_HDMI-
TX0_HDMI+	R7719	120/F_4	TX0_HDMI-
TXC_HDMI+	R7722	120/F_4	TXC_HDMI-

11/04 modify for HDMI2.0

DGPU_CL_HDMIP — Q7704 2N7002K — +3V_AON

R7727	499/F_4	TX2_HDMI+	
R7728	499/F_4	TX2_HDMI-	
R7729	499/F_4	TX1_HDMI+	
R7730	499/F_4	TX1_HDMI-	
R7733	499/F_4	TX0_HDMI+	
R7734	499/F_4	TX0_HDMI-	
R7737	499/F_4	TXC_HDMI+	
R7738	499/F_4	TXC_HDMI-	

R7741 1M_4 — C7728 0.1U/16V_4

11/03 modify for HDMI2.0

21 GPU_D0	C7723	0.1U/16V_4	TX0_HDMI+	
21 GPU_D0#	C7724	0.1U/16V_4	TX0_HDMI-	
21 GPU_D1	C7721	0.1U/16V_4	TX1_HDMI+	
21 GPU_D1#	C7722	0.1U/16V_4	TX1_HDMI-	
21 GPU_D2	C7725	0.1U/16V_4	TX2_HDMI+	
21 GPU_D2#	C7726	0.1U/16V_4	TX2_HDMI-	
21 GPU_CLK	C7727	0.1U/16V_4	TXC_HDMI+	
21 GPU_CLK#	C7729	0.1U/16V_4	TXC_HDMI-	
21 GPU_DDCCLK				
21 GPU_DDCDATA				

+3V — C8625 0.1U/16V_4 — U8503 (TC7SH08FU(F))

19,22 PEGX_RST# — HDMI_HPD_CON — HDMI_HPD_GPU — HDMI_HPD_GPU 22

11/04 modify for HDMI2.0

HDMI SMBus Isolation

Close to HDMI connector

+3V — R7745 1M_4 — Q7700 2N7002 — 13 HDMI_HPD_CON — HDMI_HPD — R7747 20K/F_4

11/03 modify for HDMI2.0

+3V_AON — R7748 10K_4 — GPU_DDCCLK — Q7705 — HDMI_SCLK

GPU_DDCDATA — R7750 10K_4 — 2N7002KDW — HDMI_SDATA

ESD

U7701 *CPDA10R5V0P-HF

TX0_HDMI-CN	1	IN1	NC 10	TX0_HDMI-CN
TX0_HDMI+CN	2	IN2	NC 9	TX0_HDMI+CN
	3	GND	GND 8	
TXC_HDMI-CN	4	IN3	NC 7	TXC_HDMI-CN
TXC_HDMI+CN	5	IN4	NC 6	TXC_HDMI+CN

U7702 *CPDA10R5V0P-HF

TX1_HDMI-CN	1	IN1	NC 10	TX1_HDMI-CN
TX1_HDMI+CN	2	IN2	NC 9	TX1_HDMI+CN
	3	GND	GND 8	
TX2_HDMI-CN	4	IN3	NC 7	TX2_HDMI-CN
TX2_HDMI+CN	5	IN4	NC 6	TX2_HDMI+CN

1125 Reserve ESD protection component

1125 SWAP

D7701 BAT54AW-L — +5V_HDMIC — 5V_HSMBCK R7751 2.2K_4 — 5V_HSMBDT R7752 2.2K_4

C7730 *10P/50V_4 — C7731 *10P/50V_4

40 mils — F7701 FUSE1A6V_POLY — +5V

VC7702 *TVM0G5R5M220R — C7740 0.1U/16V_4

VC7703 *TVM0G5R5M220R — C7741 220P/50V_4

CN7701 HDMI CONN

TX2_HDMI+CN	1	SHELL1	20
	2	D2+	
TX2_HDMI-CN	3	D2 Shield	
TX1_HDMI+CN	4	D2-	
	5	D1+	
TX1_HDMI-CN	6	D1 Shield	
TX0_HDMI+CN	7	D1-	
	8	D0+SHELL2	23
TX0_HDMI-CN	9	D0 Shield	
TXC_HDMI+CN	10	D0-	
	11	CK+	
TXC_HDMI-CN	12	CK Shield	
	13	CK-SHELL2	22
	14	CE Remote	
HDMI_SCLK	15	NC	
HDMI_SDATA	16	DDC CLK	
	17	DDC DATA	
	18	GND	
+5V_HDMIC	19	+5V	
HDMI_HPD		HP DET	
		SHELL2	21

0925 Del Net HDMI_DET_C

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Quanta Computer Inc.

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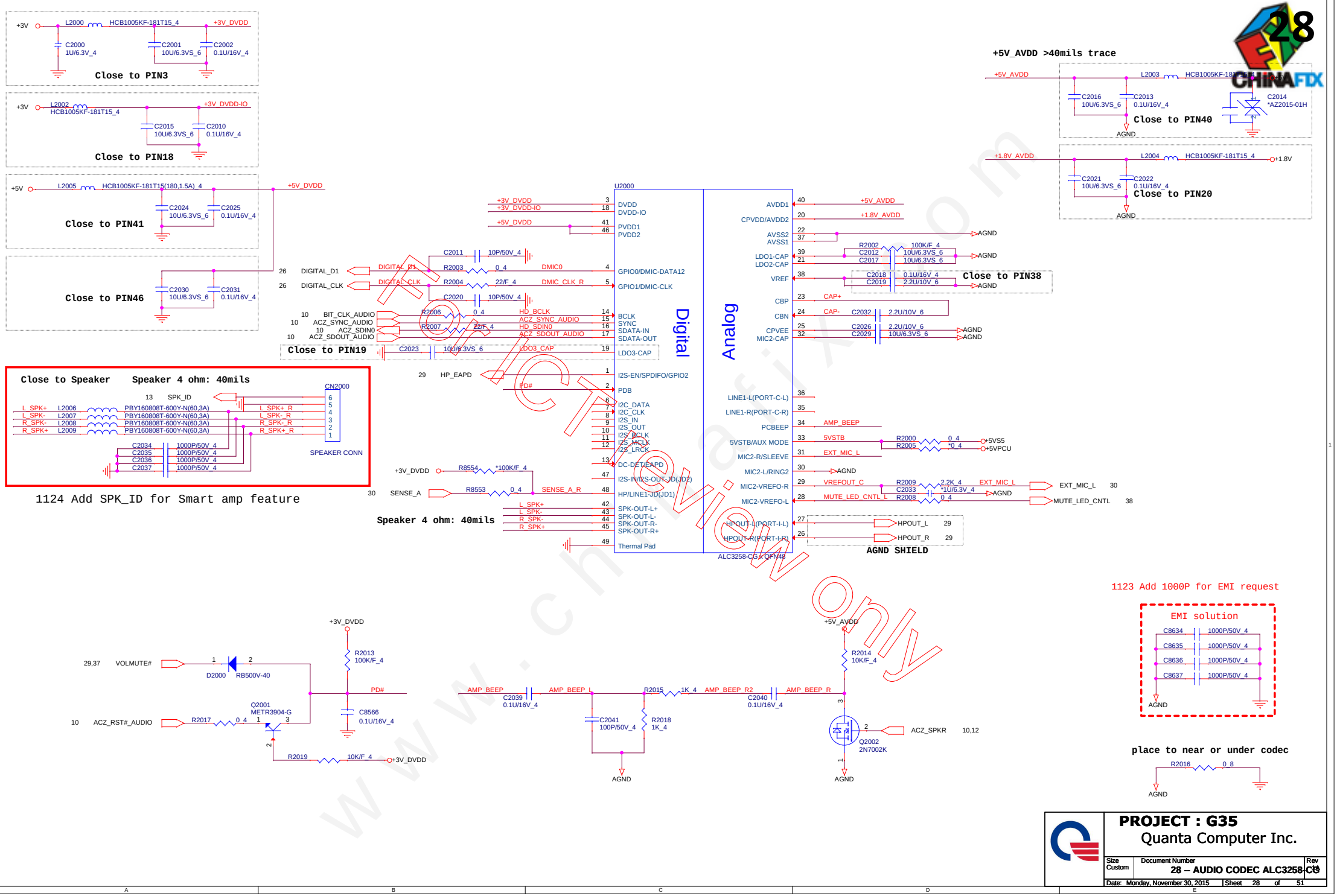

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Quanta Computer Inc.	
Size: Custom	Document Number: 28 – AUDIO CODEC ALC3258-CG
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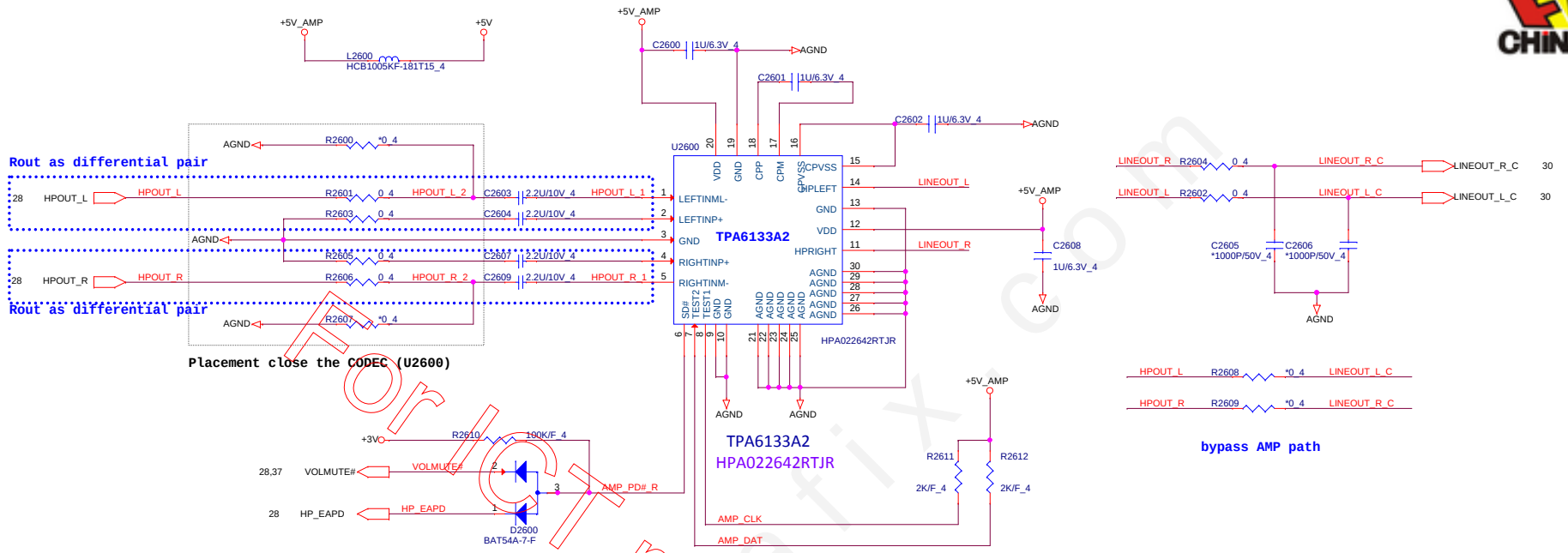
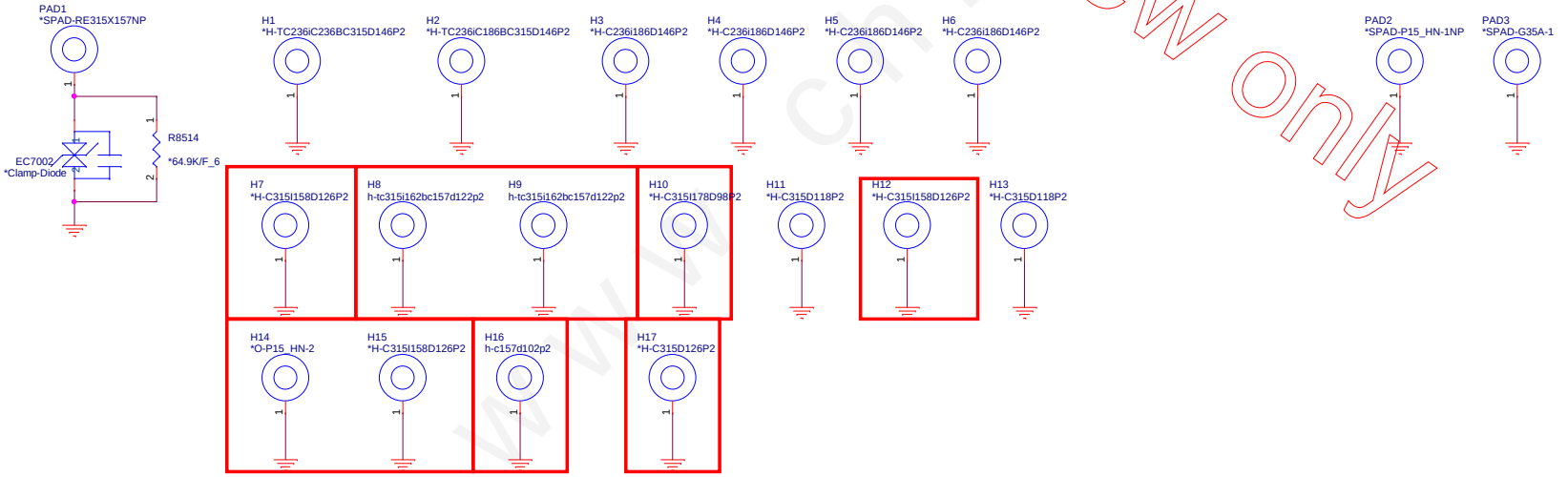
Head Phone out



HOLE



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Size: Custom	Document Number: 29-- HP AMP HPA022642RTJR	Rev: 1A
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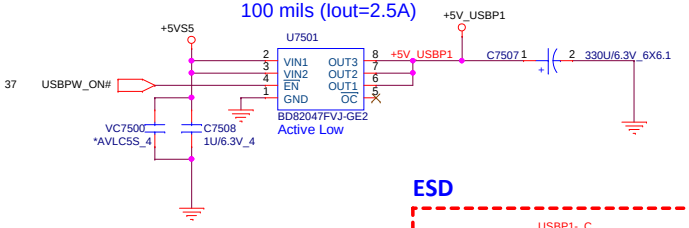
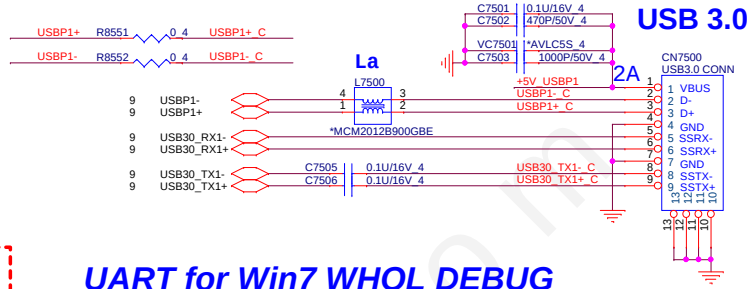
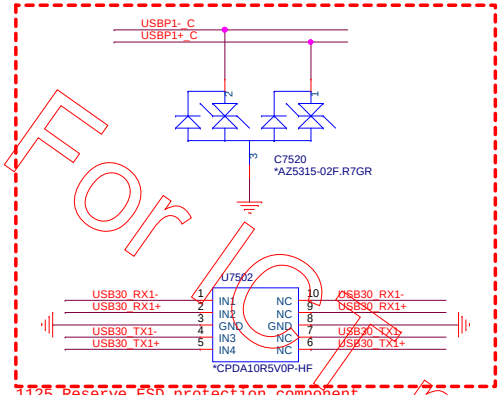
USB 2.0/3.0 Combo

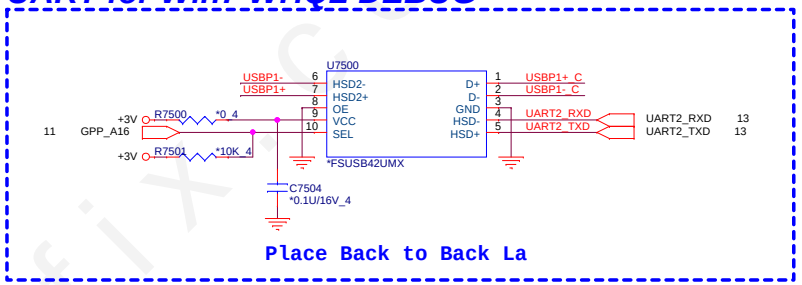




ESD

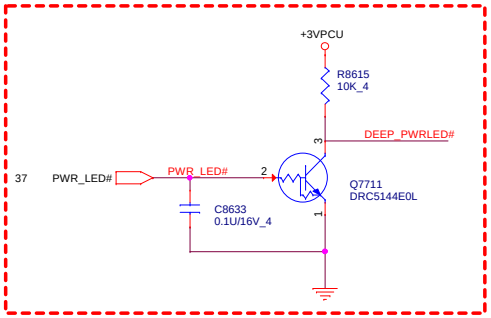


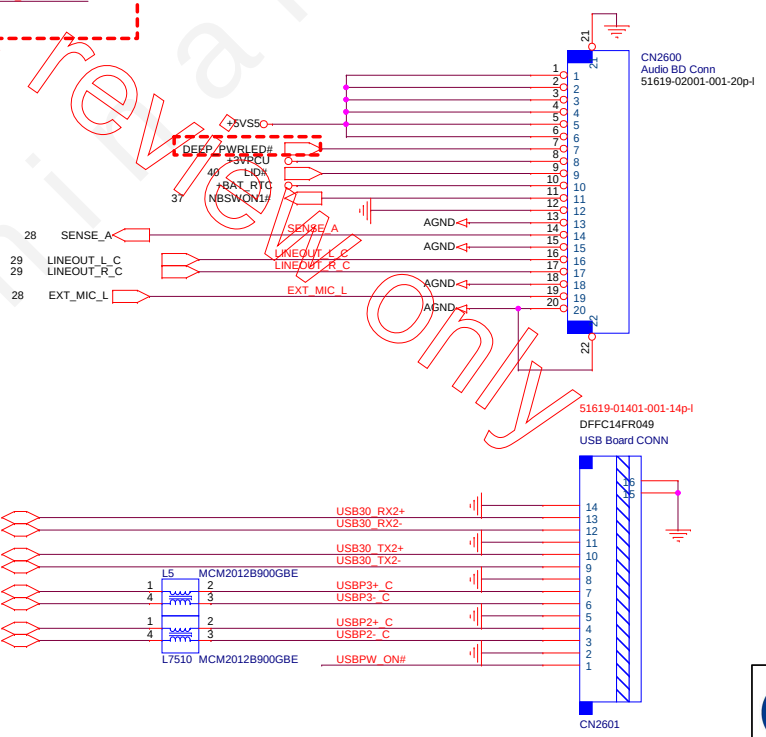
UART for Win7 WHQL DEBUG

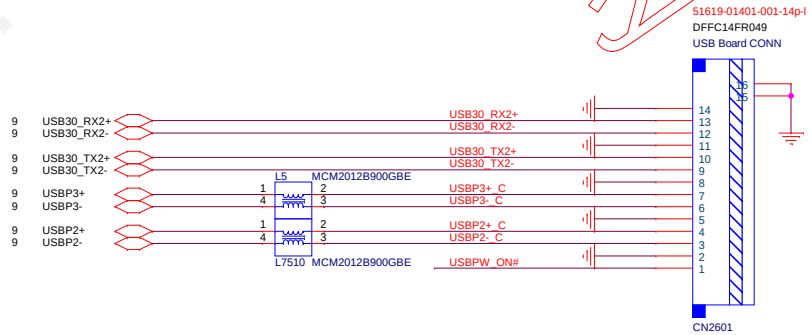


Daughter Board

1123 Add PWR LED MOS Circuit







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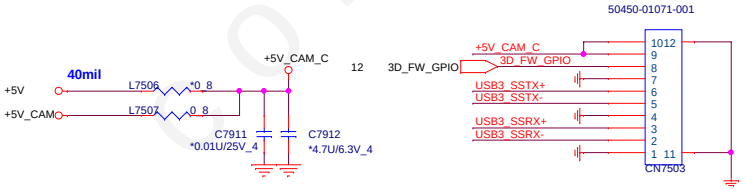
3D CAMERA

10/08 3D Camera MIC combine in LCD CONN

3D Camera Conn.

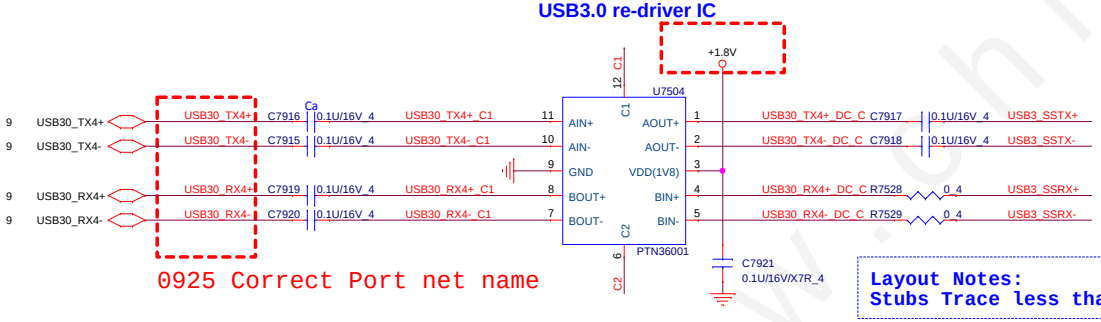


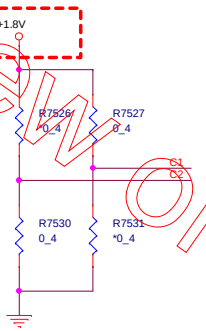
USB3.0

USB3.0 Re-driver IC

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

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





Layout Notes:
Stubs Trace less than 150mil

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

28,40,41,46,51 +5VPCU
5,10,30,33,37,38,40,41 +3VPCU
28,47 +1.8V

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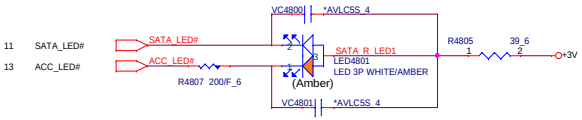
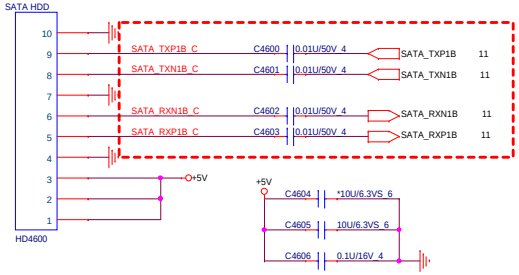
+3V
+5V
+3VPCU

SATA LED



HDD



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C	32 -- HDD/ODD	1A

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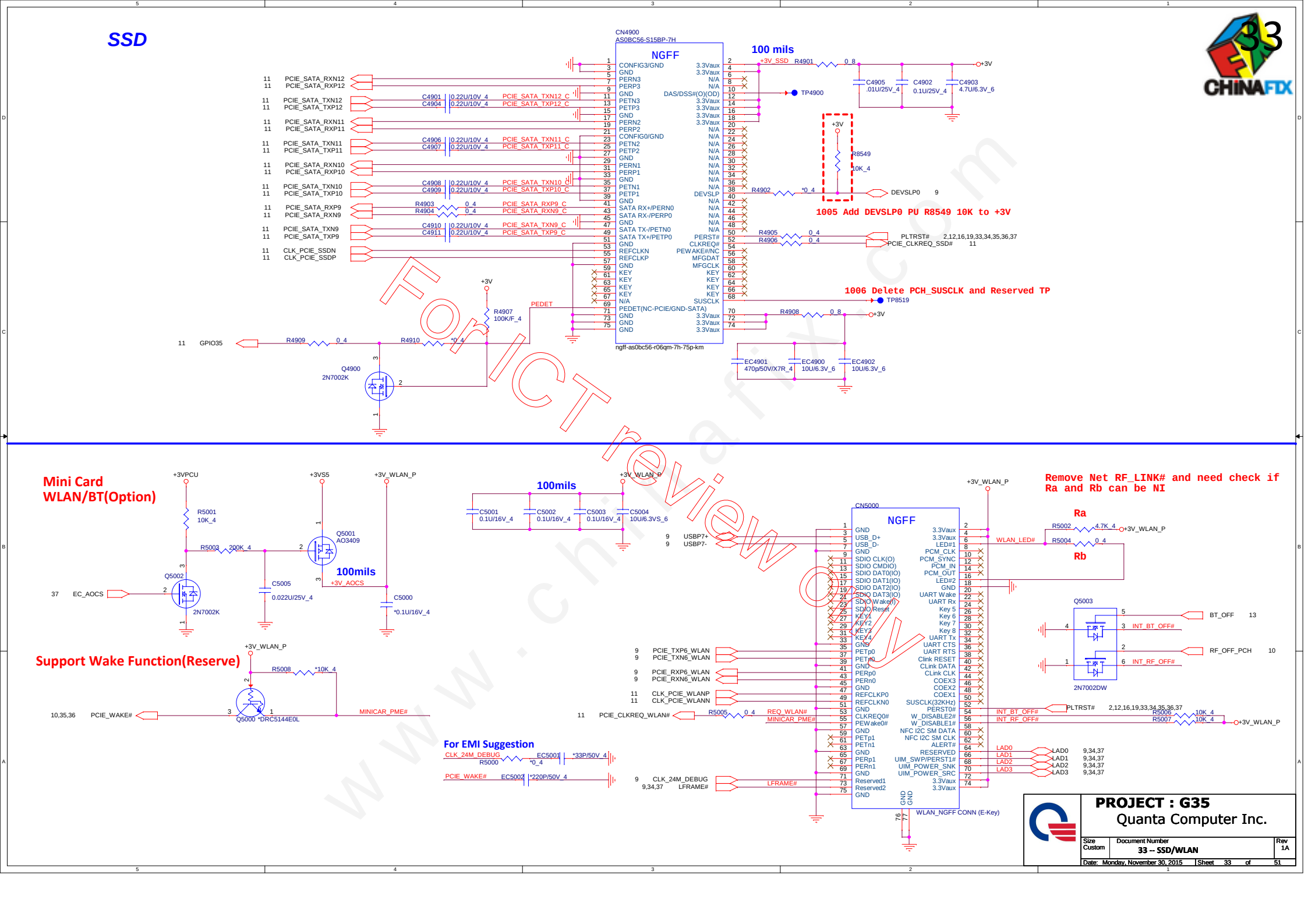
SSD
CN4900
AS0BC56-S15BP-7H
NGFF
100 mils
1005 Add DEVSLP0 PU R8549 10K to +3V
1006 Delete PCH_SUSCLK and Reserved TP
ngff-as0bc56-r06qm-7h-75p-km
Mini Card
WLAN/BT(Option)
100mils
Support Wake Function(Reserve)
For EMI Suggestion
CN5000
Remove Net RF_LINK# and need check if Ra and Rb can be NI
Ra
Rb
WLAN_NGFF CONN (E-Key)
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Size Custom
Document Number 33 -- SSD/WLAN
Rev 1A
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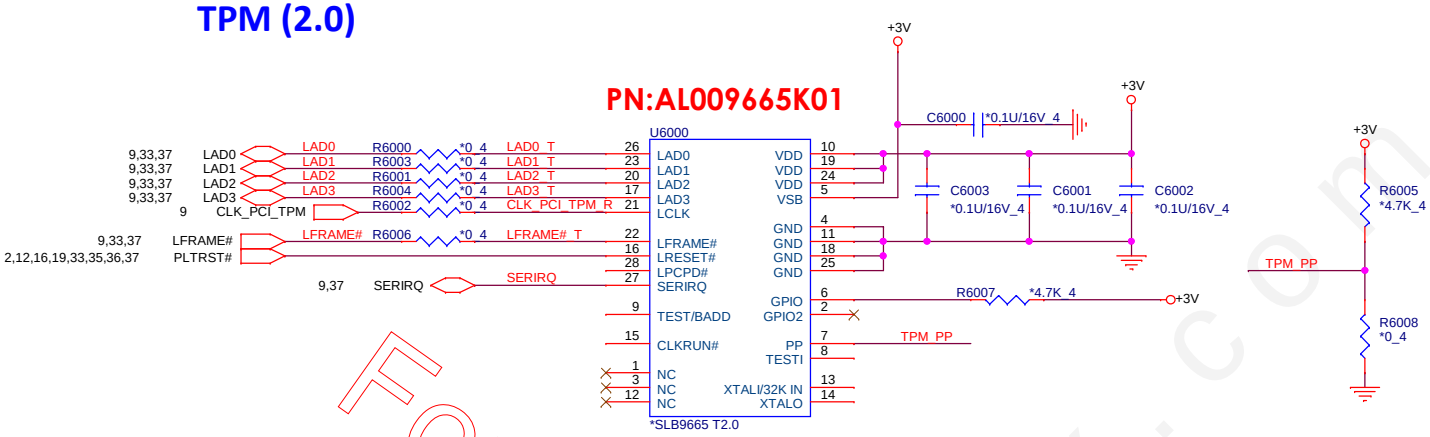
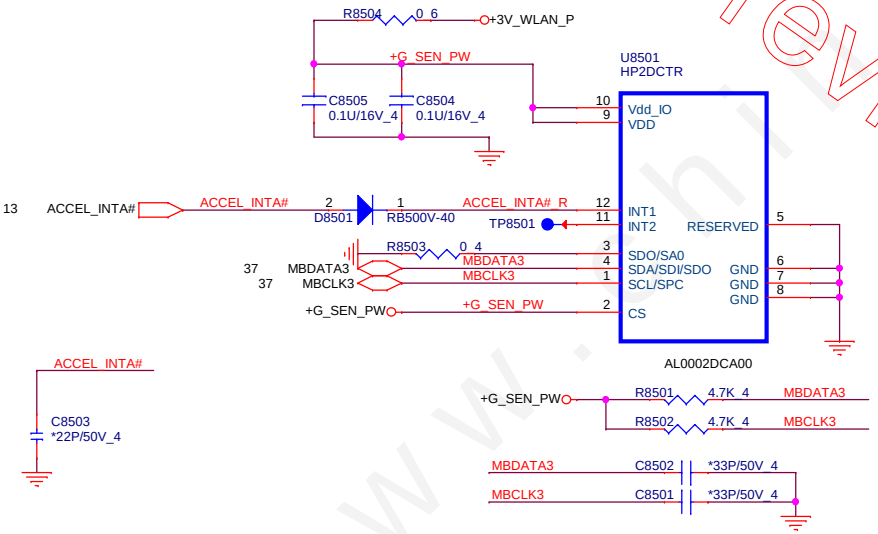
TPM (2.0)

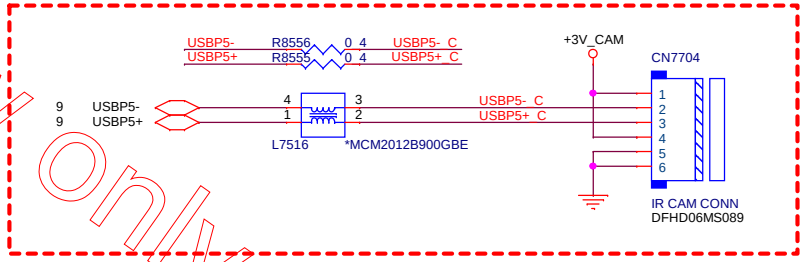
PN:AL009665K01



Accelerometer Sensor



IR CAM



1015 Add IR CAM circuit

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Quanta Computer Inc.		
B	Document Number	1A Rev
34 - TPM/Sensor		
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LAN & RJ45

For SWR mode support RTL8111HSH/RTL8107ESH

Stuff La, Ca ,Cb

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

* Place Cg,Ch for RTL8111H(S) & RTL8107E(S) close to each VDD10 pin-- 22(reserved)

Power trace Layout 寬度> 60mil

>60mil >60mil

+1.05V_LAN_REGOUT L3000 4.7UH,+-20%,650MA_1210 La

Ca C3004 0.1U/16V_4

Cb C3005 4.7U/6.3VS_4

PIN3 Cc C3006 0.1U/16V_4

PIN8 Cd C3007 0.1U/16V_4

PIN30 Ce C3008 0.1U/16V_4

PIN22 Cf C3009 0.1U/16V_4

PIN22 Cg C3010 1U/6.3V_4

PIN22 Ch C3011 0.1U/16V_4

+1.05V_LAN

LAN_XTAL1 R3000 10_4 XTAL1

Y3000 25MHZ +-10PPM

XTAL2

C3000 10P/50V_4

C3001 10P/50V_4

1028 Change Y3000 footprint to xtl-2x1_6-1_35x1_05

LAN_AMBLED# TP3000

LAN_LED1 TP3001

LED2 TP3002

+1.05V_LAN

R3001 2.49K/F_4

+3V_LAN

LAN_AMBLED#

R3003 0_4 LAN_WLED# Ra

R3004 *0_4 LAN_WLED# Rb

+3V

R3002 1K_4

ISOLATEB

R3005 15K/F_4

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

For GbE

* Place Ra

For 10/100

* Place Rb

U3000

Please add 9 GND VIAs connection with thermal PAD

GND

MDI0+ MDI0- MDI1+ MDI1- MDI2+ MDI2-

MDIP0 MDIN0 AVDD10(NC) MDIP1 MDIN1 MDIP2(NC) MDIN2(NC) AVDD10

RTL8107ESH-CG

AVDD33 RSET AVDD10 CKXTAL2 CKXTAL1 LED0 LED1/GPO LED2(LED1)

REGOUT(NC) VDDREG(VDD33) DVDD10(NC) LANWAKEB ISOLATEB PERSTB HSON HSOP

MDIP3(NC) MDIN3(NC) AVDD33(NC) CLKREQB HSIP HSIN REFCLK_P REFCLK_N

RTL8111HSH-CG

+1.05V_LAN_REGOUT +3V_LAN +1.05V_LAN

PCIE_WAKE# R R3006 0_4 PCIE_WAKE# 10,33,36

ISOLATEB

PLTRST# 2,12,16,19,33,34,36

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

0929 correct port from 9 to 7

For GbE

* Place RTL8111HSH-CG

For 10/100

* Place RTL8107ESH-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

0929 Correct port from 9 to 7

+3VLANVCC R3017 360_4 LED3000 3P AMBER LED LAN_AMBLED#

VC3000 *AVLC5S_4

+3VLANVCC R3018 360_4 LED3001 3P WHITE LED LAN_WLED#

VC3001 *AVLC5S_4

For 10/100 stuff only Close RJ45

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

PIN11 C3013 0.1U/16V_4 Cj

PIN32 C3014 0.1U/16V_4 Ck

PIN11 C3015 *4.7U/6.3VS_4 Cm

PIN32 C3016 *4.7U/6.3VS_4 Cn

PIN23 C3017 4.7U/6.3VS_4 Co

PIN23 C3018 0.1U/16V_4 Cp

For SWR mode support RTL8111HSH/RTL8107ESH

Stuff Co, Cp

For 10/100：Ua

For Giga：Ub

Ua U3001

MDI1+_1 MDI1-_1 LAN_MCTG1 MDI0+_1 MDI0-_1 LAN_MCTG0

TD+ TD- CT RD+ RD- CT GND

TX+ CMT TX- RX- CT RX+

MDI1+ TRA_V_DAC MDI1- MDI0- TRA_V_DAC MDI0+

C3022 0.01U/50V_4

*NS681684

DB0LE6LAN20

1st source：NS681684 DB0LE6LAN20

2nd source：N-3110M DB0Y11LAN00

Ub U3002

MDI2+ MDI2- MDI3- MDI3+ MDI0- MDI0+ MDI1- MDI1+

TD1+ TD1- TD2+ TD2- TD3+ TD3- TD4+ TD4-

MX1+ MX1- MX2+ MX2- MX3+ MX3- MX4+ MX4-

MDI2+_1 MDI2-_1 MDI3-_1 MDI3+_1 MDI0-_1 MDI0+_1 MDI1-_1 MDI1+_1

TRA_V_DAC TRA_V_DAC TRA_V_DAC TRA_V_DAC TRA_V_DAC

TCT1 TCT2 TCT3 TCT4 GND

MCT1 MCT2 MCT3 MCT4 MCT1

LAN_MCTG0 Ra R3011 75/F_4

LAN_MCTG1 Rb R3012 75/F_4

LAN_MCTG2 Rc R3014 75/F_4

LAN_MCTG3 Rd R3016 75/F_4

NS892407

For GiGA

BOT:GST5009B LF,DB0Z06LAN00

FCE :NS892407 ,DB0LL1LAN00

For 10/100：Ra,Rb

For Giga：Ra,Rb,Rc,Rd

C3020 10P/3KV_1808

RJ45

CN3000

MDI3-_1 MDI3+_1 MDI1-_1 MDI2-_1 MDI2+_1 MDI1+_1 MDI0-_1 MDI0+_1

RX1- RX1+ RX0- TX1- TX1+ RX0+ TX0- TX0+

GND2 GND1

R3013 0_6

R3015 0_6

RJ45_CONN

DFTJ08FR335

rj45-c10220-10833-I-8p

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

46 +3V +3VLANVCC

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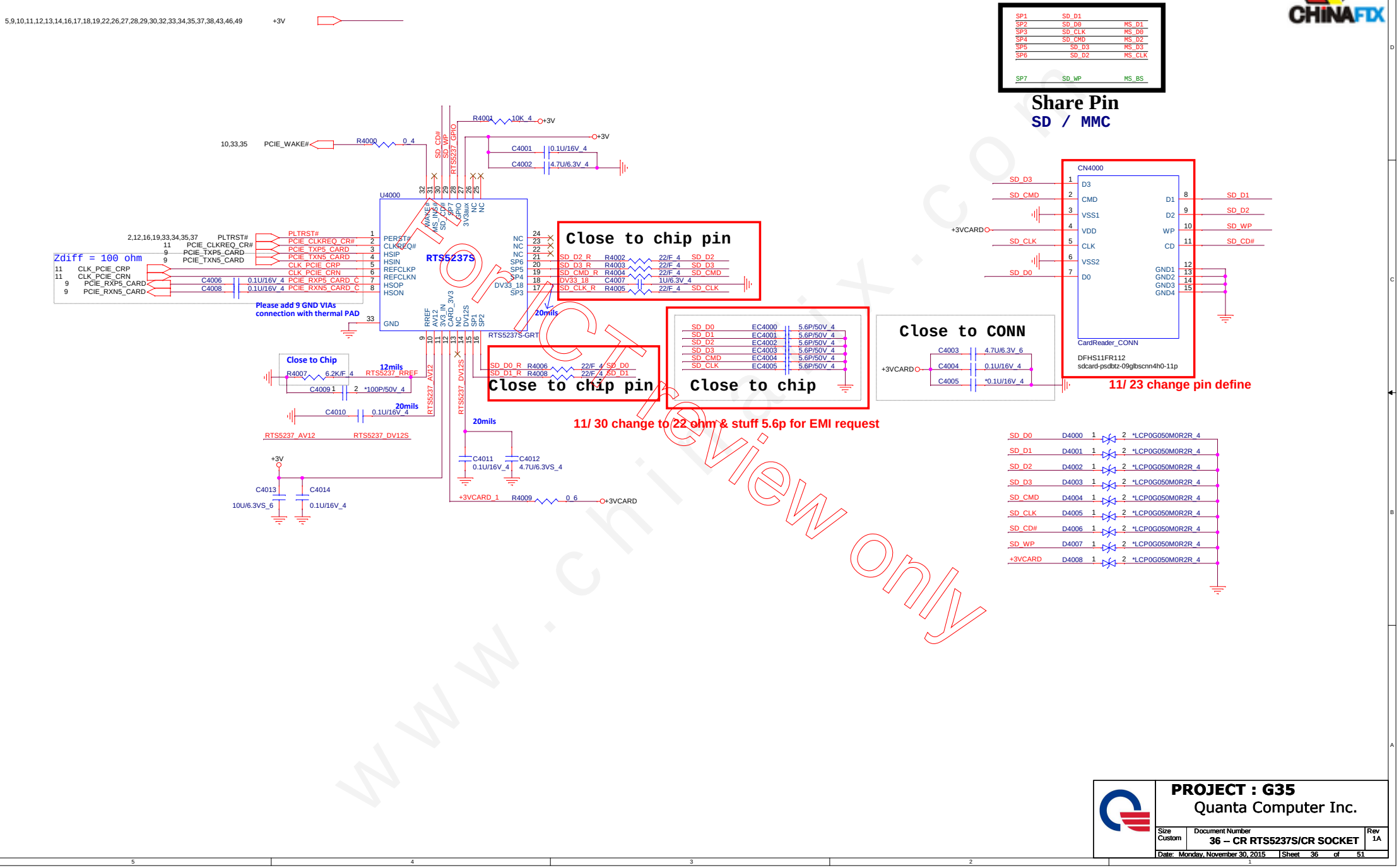
RTS5237S PCIE CARD READER Controller



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Quanta Computer Inc.		
Size: Custom	Document Number: 36 – CR RTS5237S/CR SOCKET	Rev: 1A
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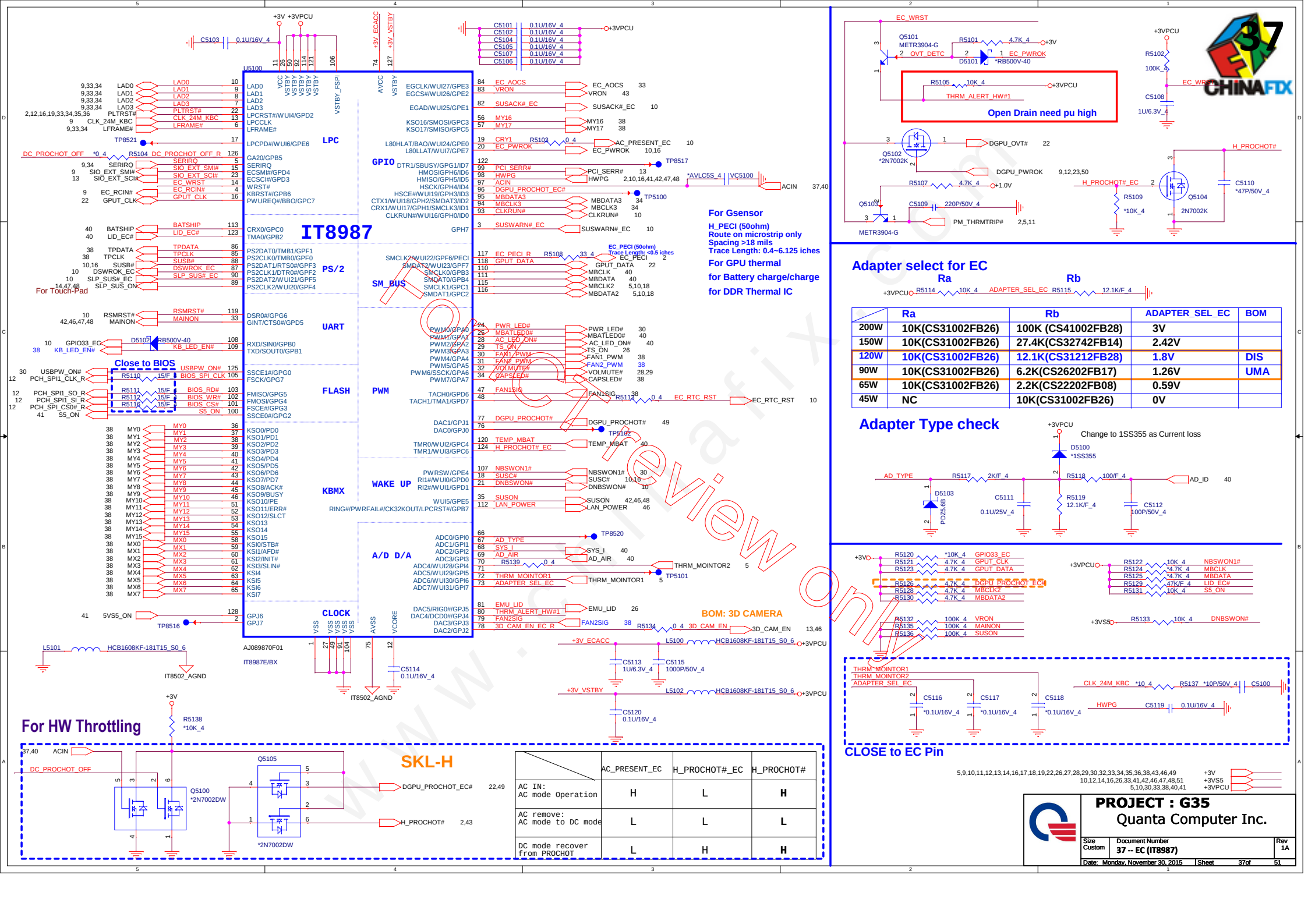

	Ra	Rb	ADAPTER_SEL_EC	BOM
200W	10K(CS31002FB26)	100K (CS41002FB28)	3V	
150W	10K(CS31002FB26)	27.4K(CS32742FB14)	2.42V	
120W	10K(CS31002FB26)	12.1K(CS31212FB28)	1.8V	DIS
90W	10K(CS31002FB26)	6.2K(CS26202FB17)	1.26V	UMA
65W	10K(CS31002FB26)	2.2K(CS22202FB08)	0.59V	
45W	NC	10K(CS31002FB26)	0V	

	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

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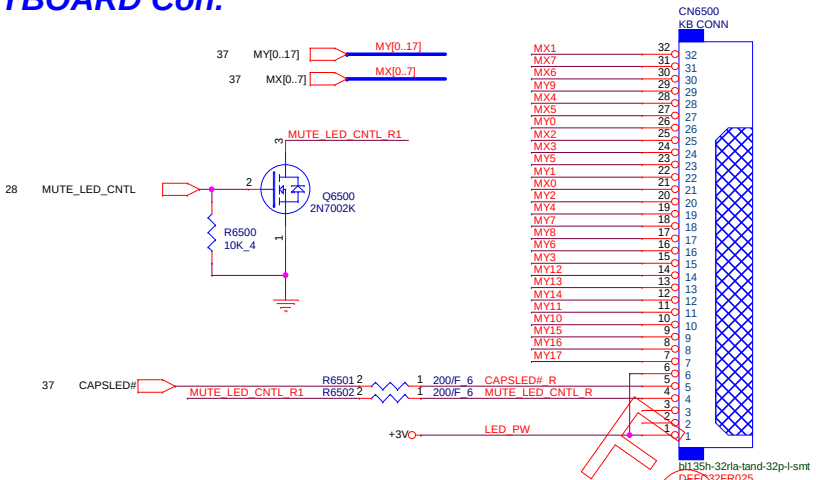
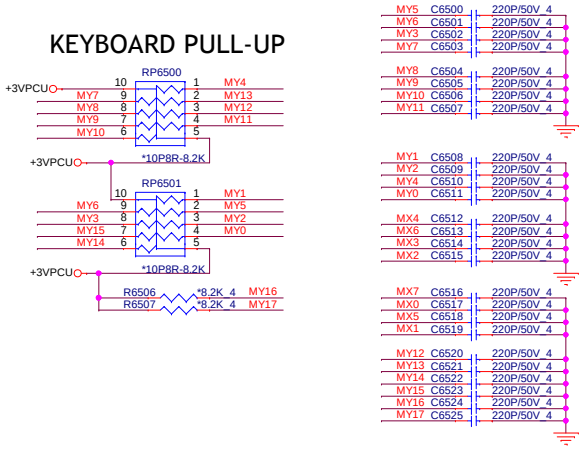
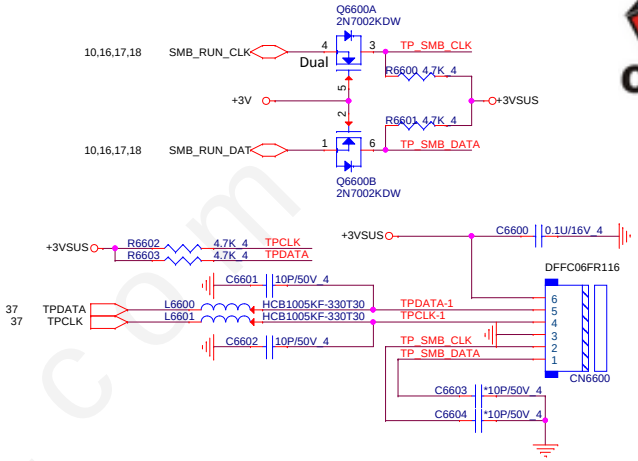
KEYBOARD Con.



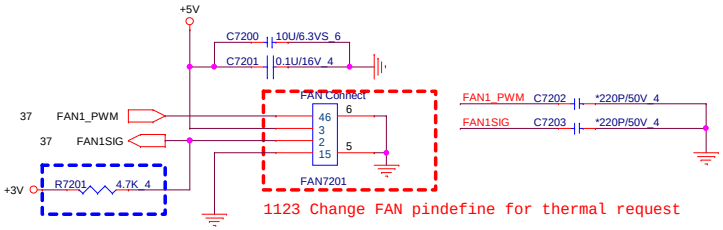
KEYBOARD PULL-UP

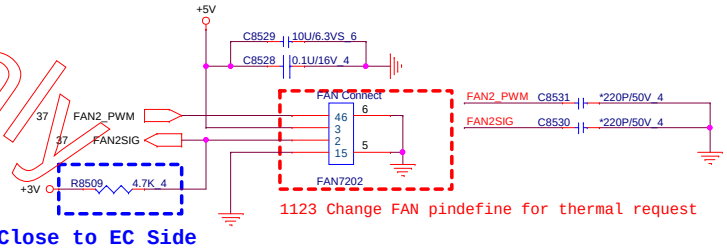


Touch Pad Connector

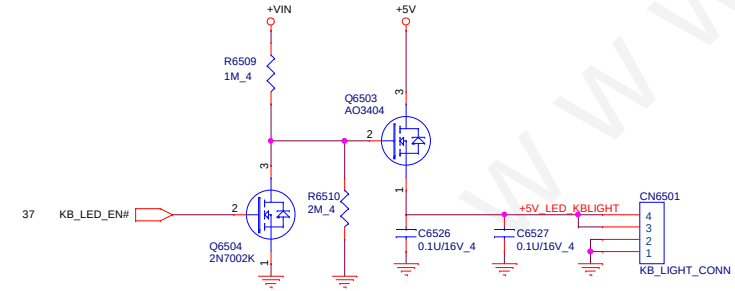


FAN





KB LIGHT CONN



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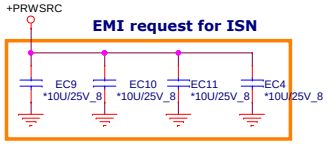
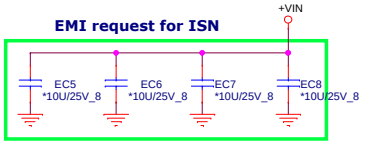
PROJECT : G35		
Quanta Computer Inc.		
Size: Custom	Document Number: 38 -- KB/TP/FAN/HOLE	Rev: 1A
Date: Monday, November 30, 2015	Sheet 38 of 51	





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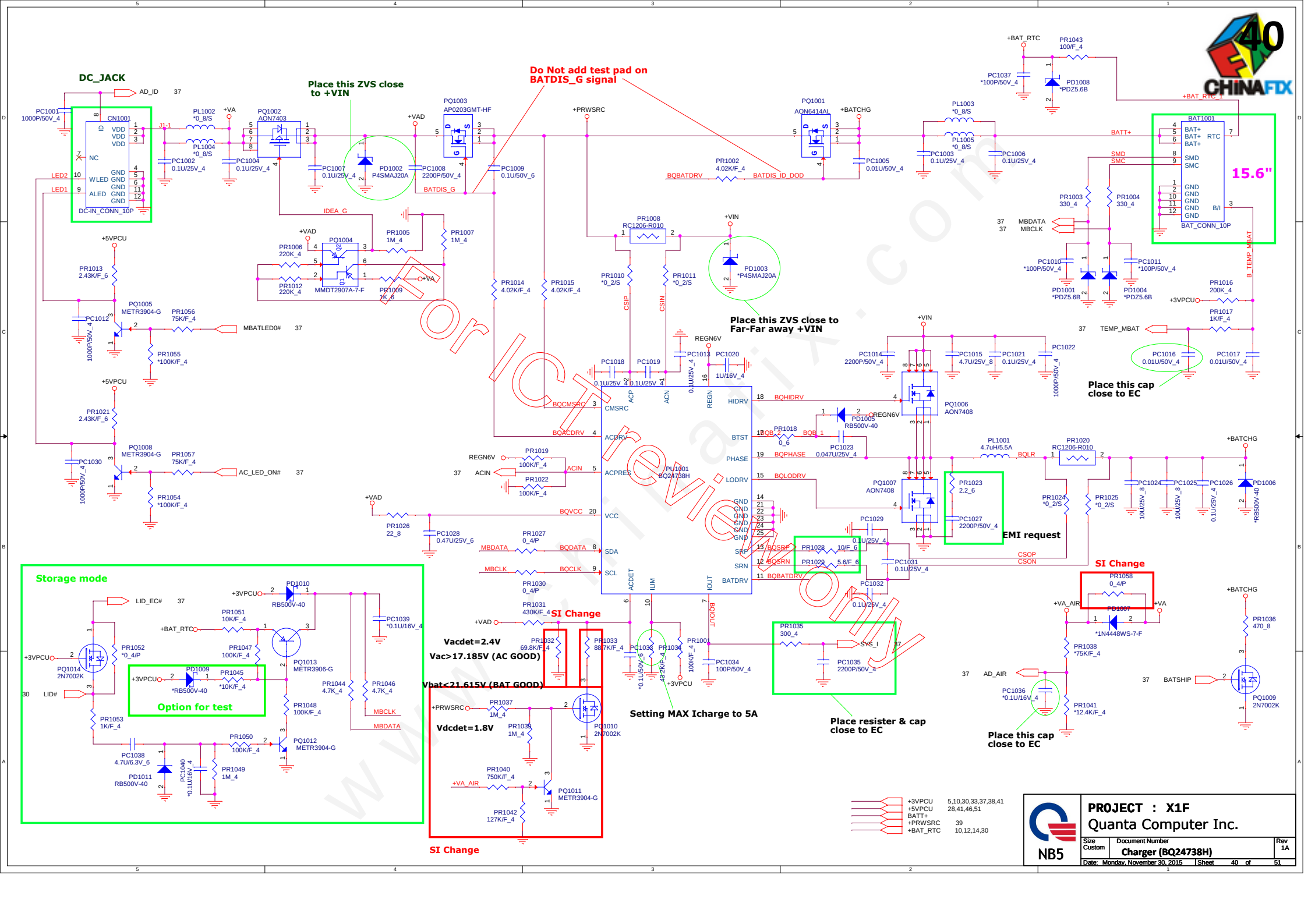
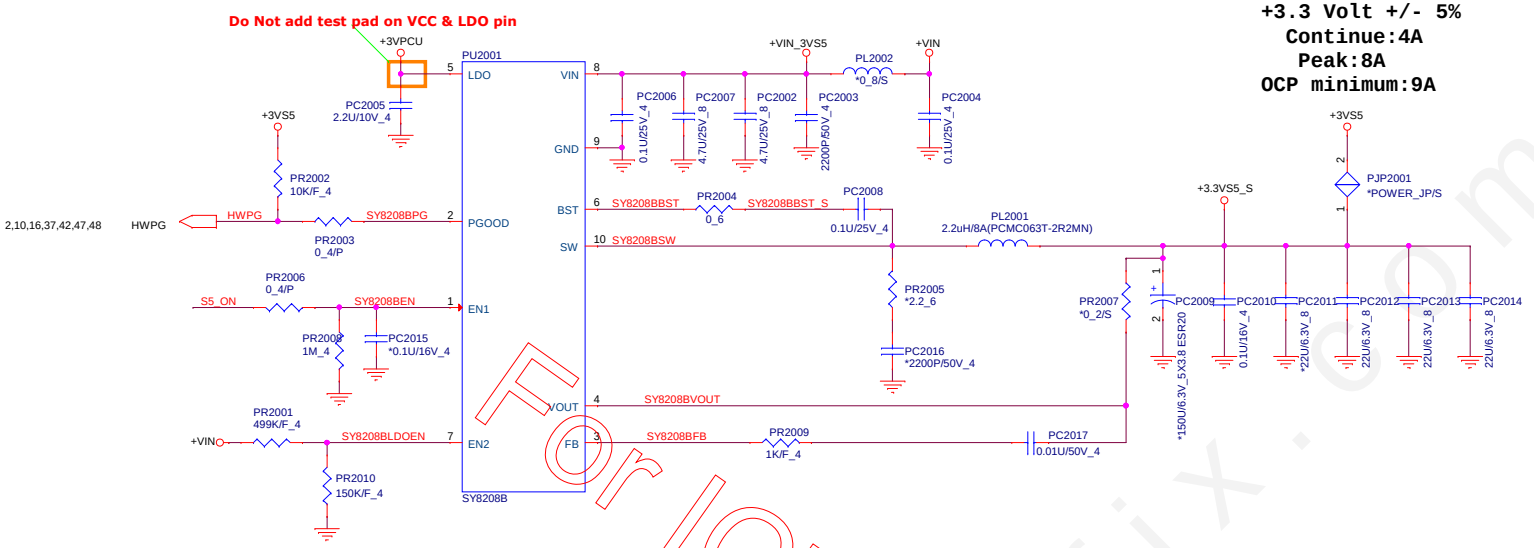
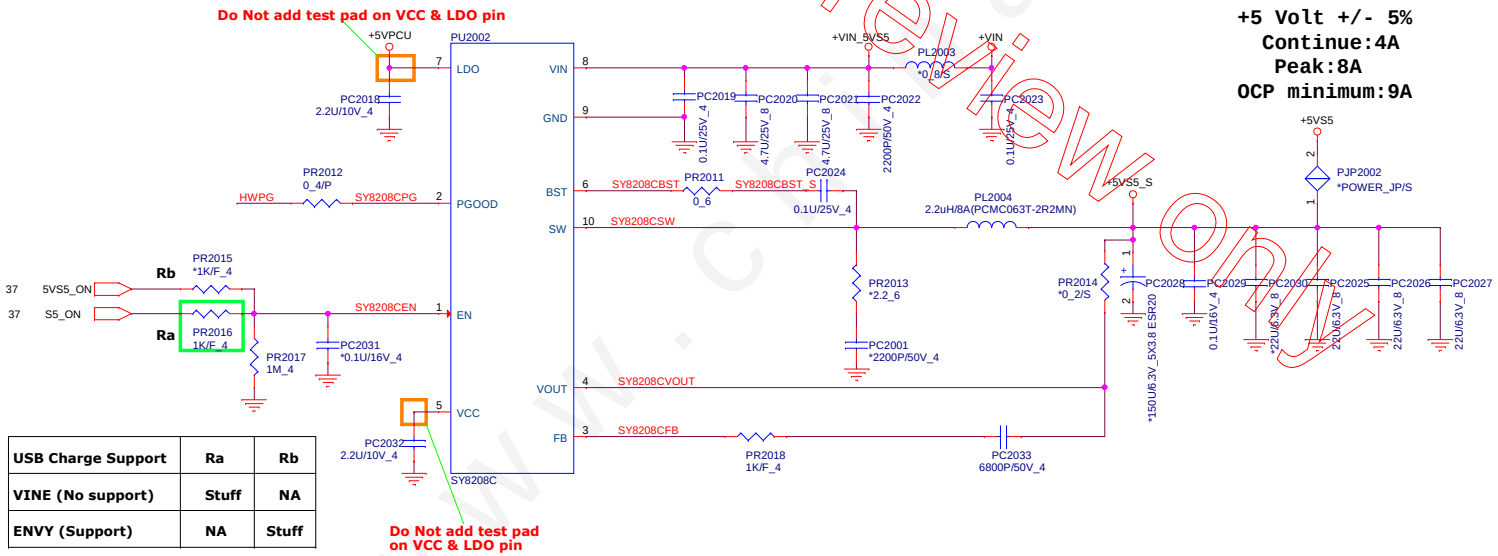
NB5	PROJECT : X1F Quanta Computer Inc.	
Size: Custom	Document Number: RF Solution	Rev: 1A
Date: Monday, November 30, 2015	Sheet 39of 51	


DC_JACK
Place this ZVS close to +VIN
Do Not add test pad on BATDIS_G signal
Place this ZVS close to Far-Far away +VIN
Place this cap close to EC
EMI request
SI Change
Storage mode
Option for test
Vacdet=2.4V
Vac>17.185V (AC GOOD)
Vbat<21.615V (BAT GOOD)
Vdcdet=1.8V
Setting MAX Icharge to 5A
Place resister & cap close to EC
Place this cap close to EC
15.6"
PROJECT : X1F
Quanta Computer Inc.
NB5
Charger (BQ24738H)
Date: Monday, November 30, 2015
Sheet 40 of 51
Rev 1A
+3VPCU 5,10,30,33,37,38,41
+5VPCU 28,41,46,51
BATT+ 39
+PRWSRC
+BAT_RTC 10,12,14,30



+3.3 Volt +/- 5%
Continue:4A
Peak:8A
OCP minimum:9A



+5 Volt +/- 5%
Continue:4A
Peak:8A
OCP minimum:9A

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

Do Not add test pad on VCC & LDO pin

+VIN	26,38,39,40,42,43,44,45,46,47,48,49,50
+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

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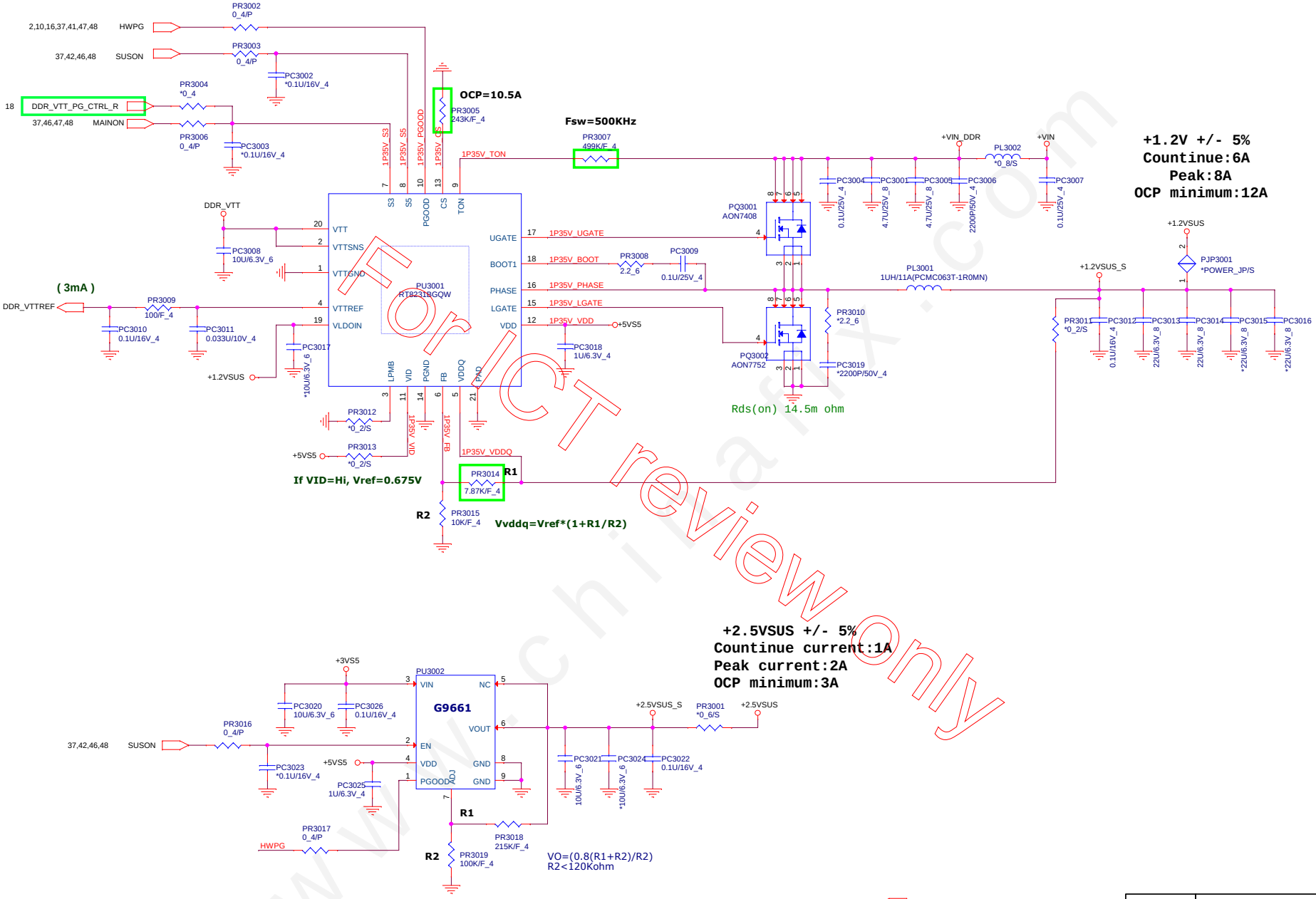
NB5

PROJECT : X1F
Quanta Computer Inc.

Size	Document Number	Rev
Custom	3/5VS5 (SY8208B/SY8208C)	1A
Date: Monday, November 30, 2015	Sheet 41 of 51	



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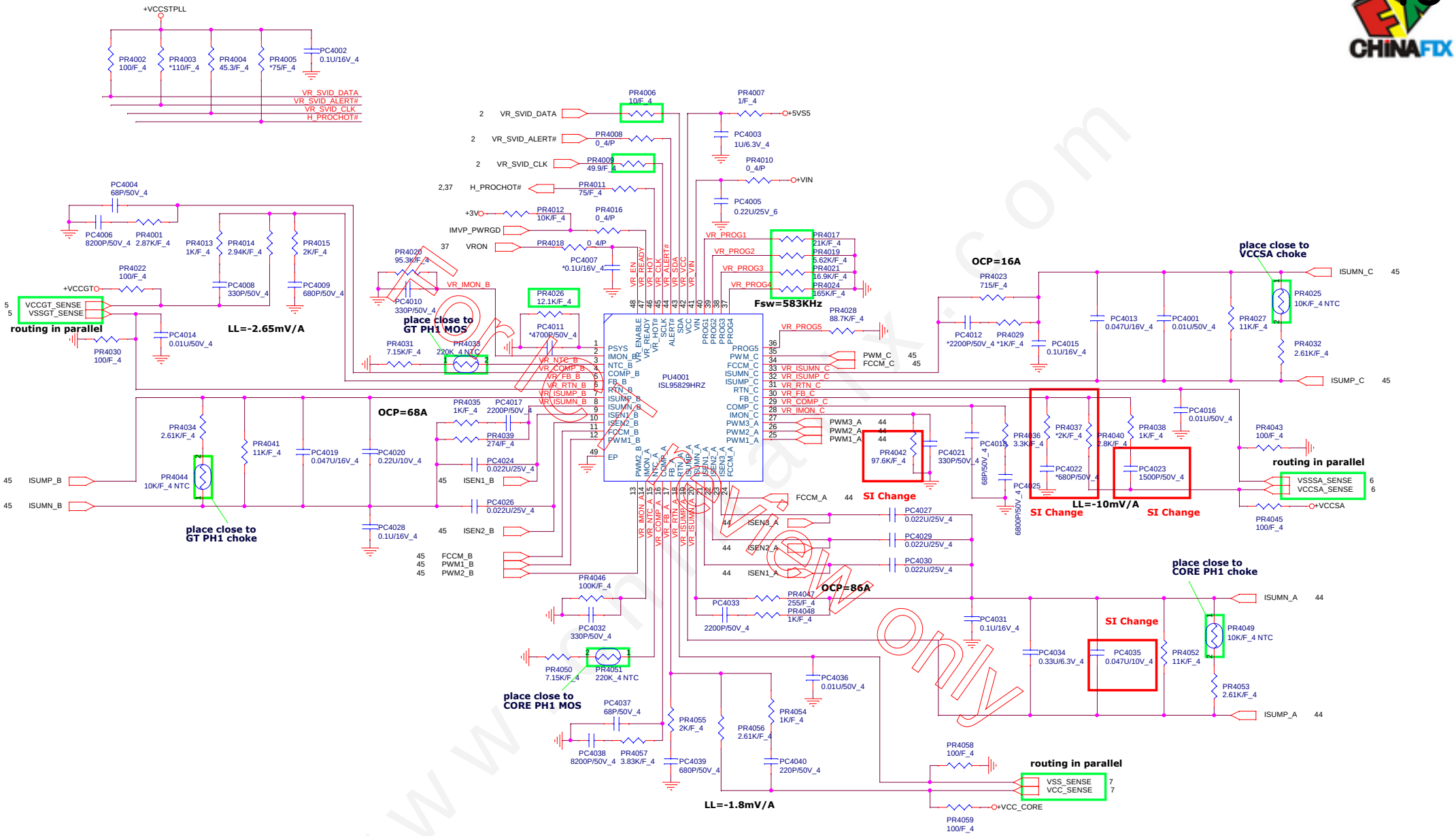
+VIN	26,38,39,40,41,43,44,45,46,47,48,49,50
+5VS5	10,26,28,30,41,43,44,45,46,47,48,49,50,51
+1.2VSUS	2,6,10,17,18,48,51
DDR_VTT	17,18
+2.5VSUS	17,18

PROJECT : X1F		
Quanta Computer Inc.		
NB5	Size	Document Number: DDR3 (RT8231B) — Rev: 1A
Monday, November 30, 2015	Sheet 42	of 51



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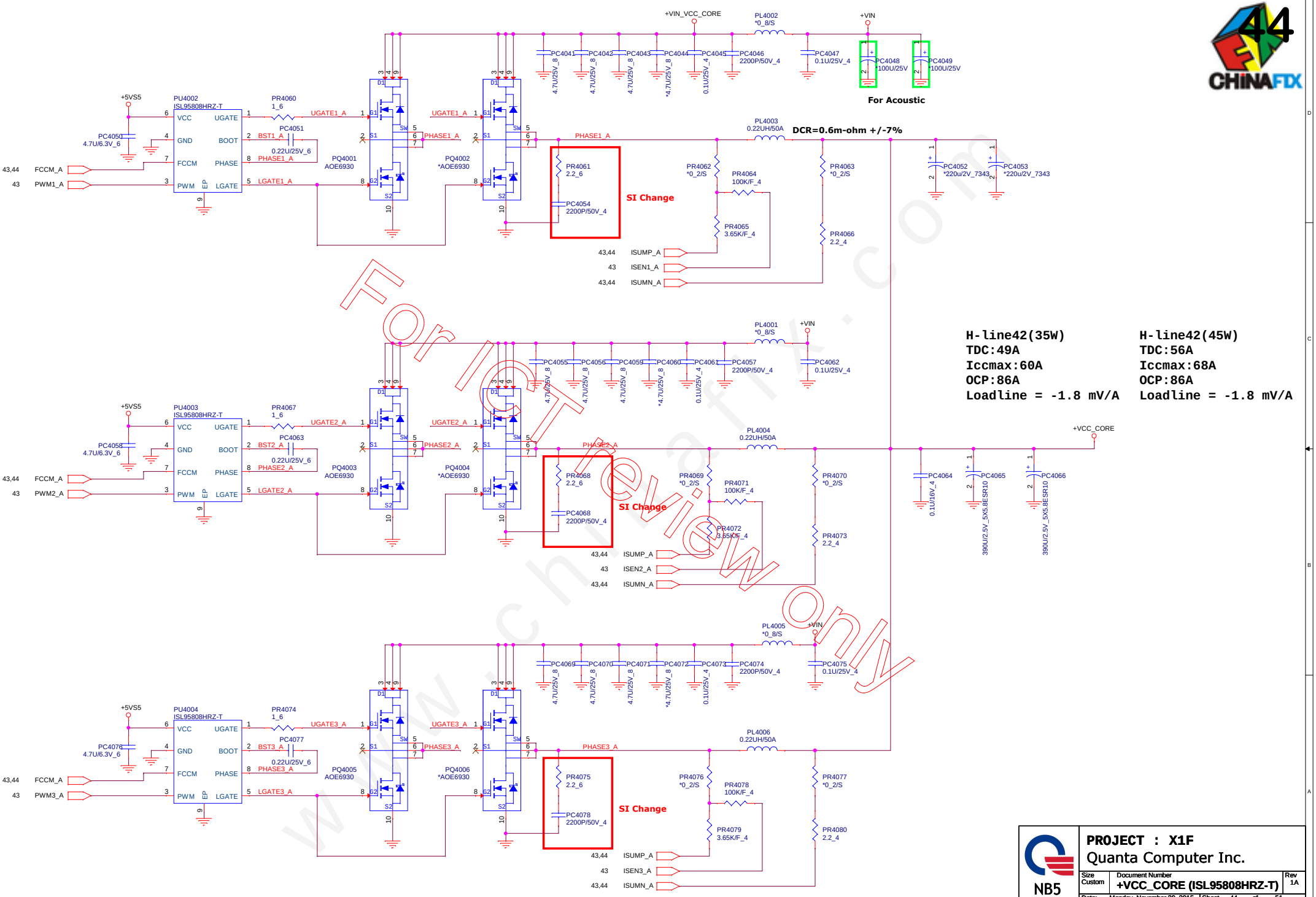
NB5	PROJECT : X1F Quanta Computer Inc.	
	Size: Custom Document Number: CPU VR IC (ISL95829HRZ)	Rev: 1A
	Date: Monday, November 30, 2015	Sheet 43 of 51



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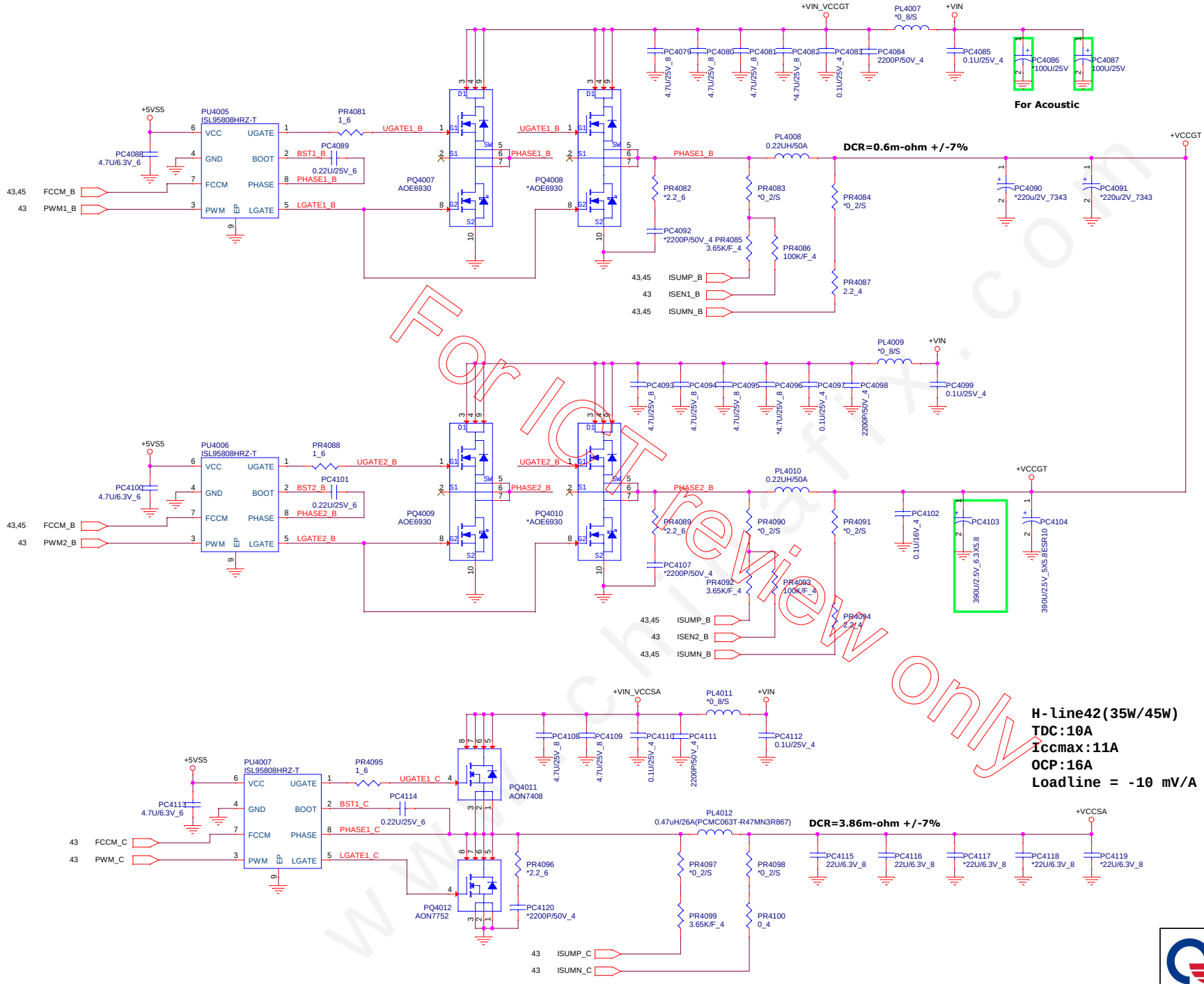
NB5	PROJECT : X1F Quanta Computer Inc.	
Size: Custom	Document Number: +VCC_CORE (ISL95808HRZ-T)	Rev: 1A
Date: Monday, November 30, 2015	Sheet 44 of 51	



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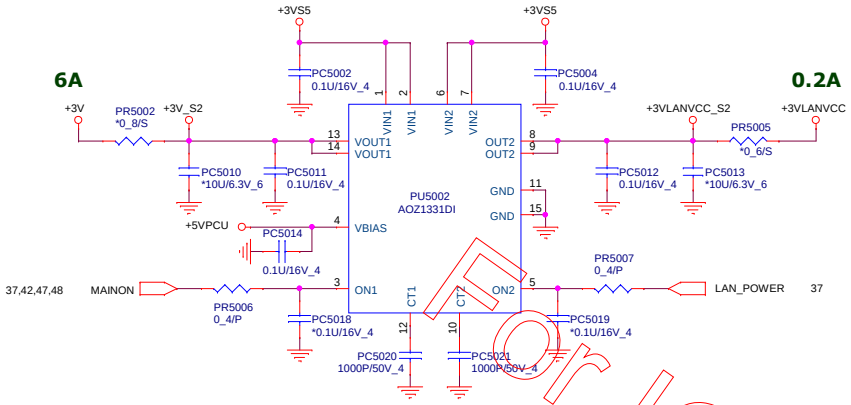
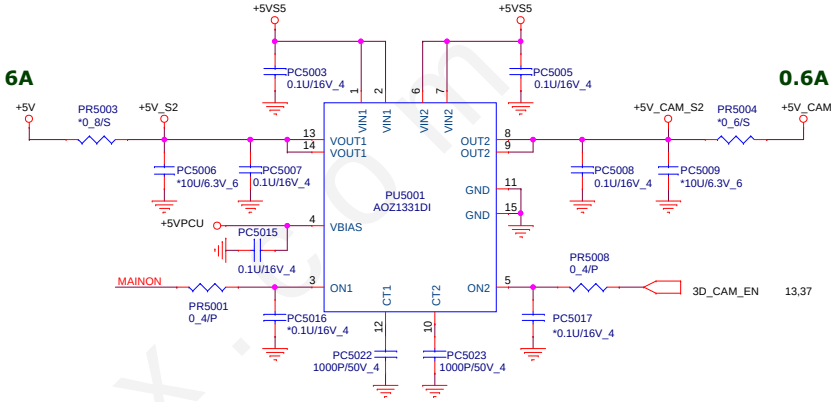
NB5

PROJECT : X1F
Quanta Computer Inc.

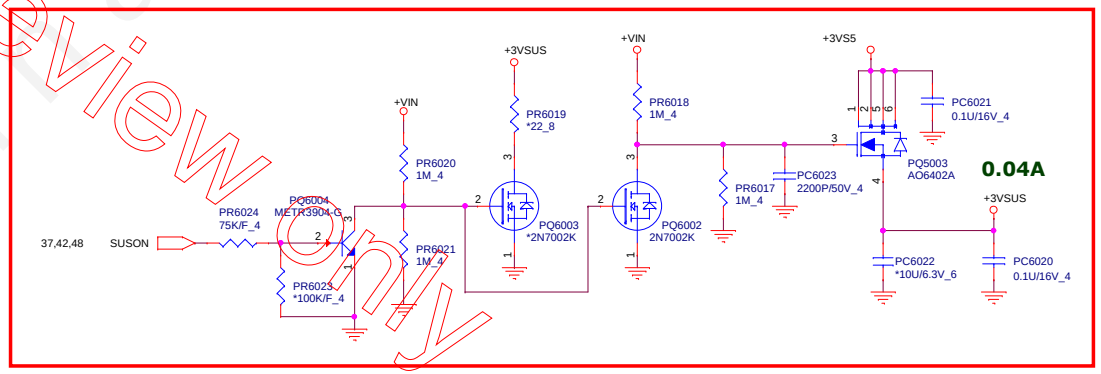
Size	Document Number	Rev
Custom	+VCCGT/SA (ISL95808HRZ-T)	1A

Date: Monday, November 30, 2015 Sheet 45 of 51





SI Change



+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
+3V_DEEP_SUS	9,10,12,13,14,16,18

NB5

PROJECT : X1F

Quanta Computer Inc.

Size	Document Number	Rev
Custom	Load switch IC (AOZ1331D)	1A

Date: Monday, November 30, 2015 Sheet 46 of 51

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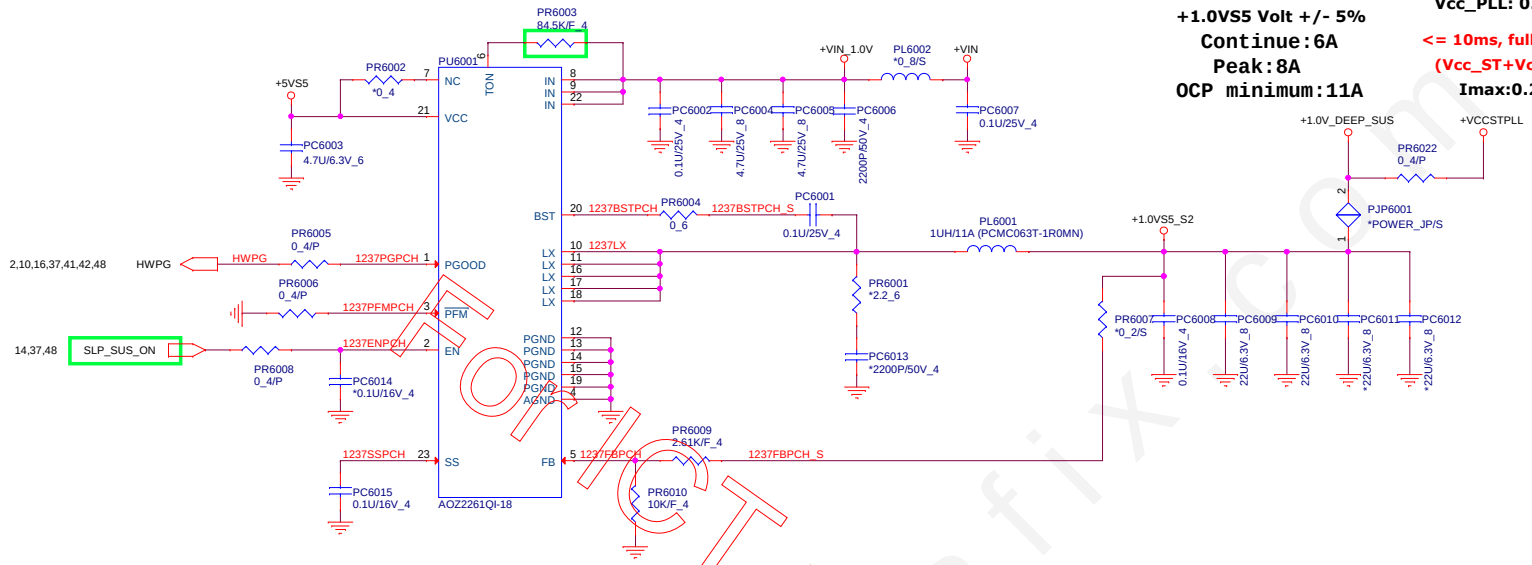
(V1.00A+V1.00_MODPHY+VccPRIM_CORE)

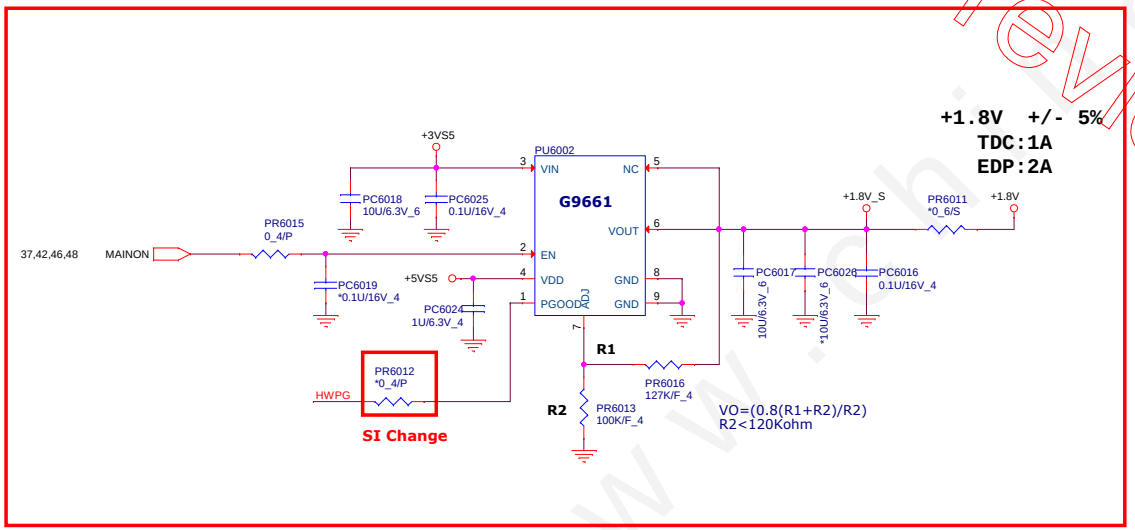
+1.0VS5 Volt +/- 5%
Continue:6A
Peak:8A
OCP minimum:11A

Volume Segment
Vcc_ST: 0.12A
Vcc_PLL: 0.12A

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



SI Change



+VIN	26,38,39,40,41,42,43,44,45,46,48,49,50
+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_DEEP_SUS	
+1.8V	28,31
+VCCSTPLL	2,6,43

PROJECT : X1F
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+1.0_DEEP_SUS	1A
Date: Monday, November 30, 2015	Sheet 47 of 51	

NB5

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Volume Segment
Vcc_STG: 0.04A
Vcc_IO: 5.5A

<= 10ms full load ready
Imax:5.5A

Imax:0.04A

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

Reserve for separating +1.0V and VCCIO

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

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+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	2,6,10,17,18,42,51

NB5	**PROJECT : X1F** Quanta Computer Inc.	
	Size: Custom Document Number: +1.0V/+VCCSTPLL/+VCCIO	Rev: 1A
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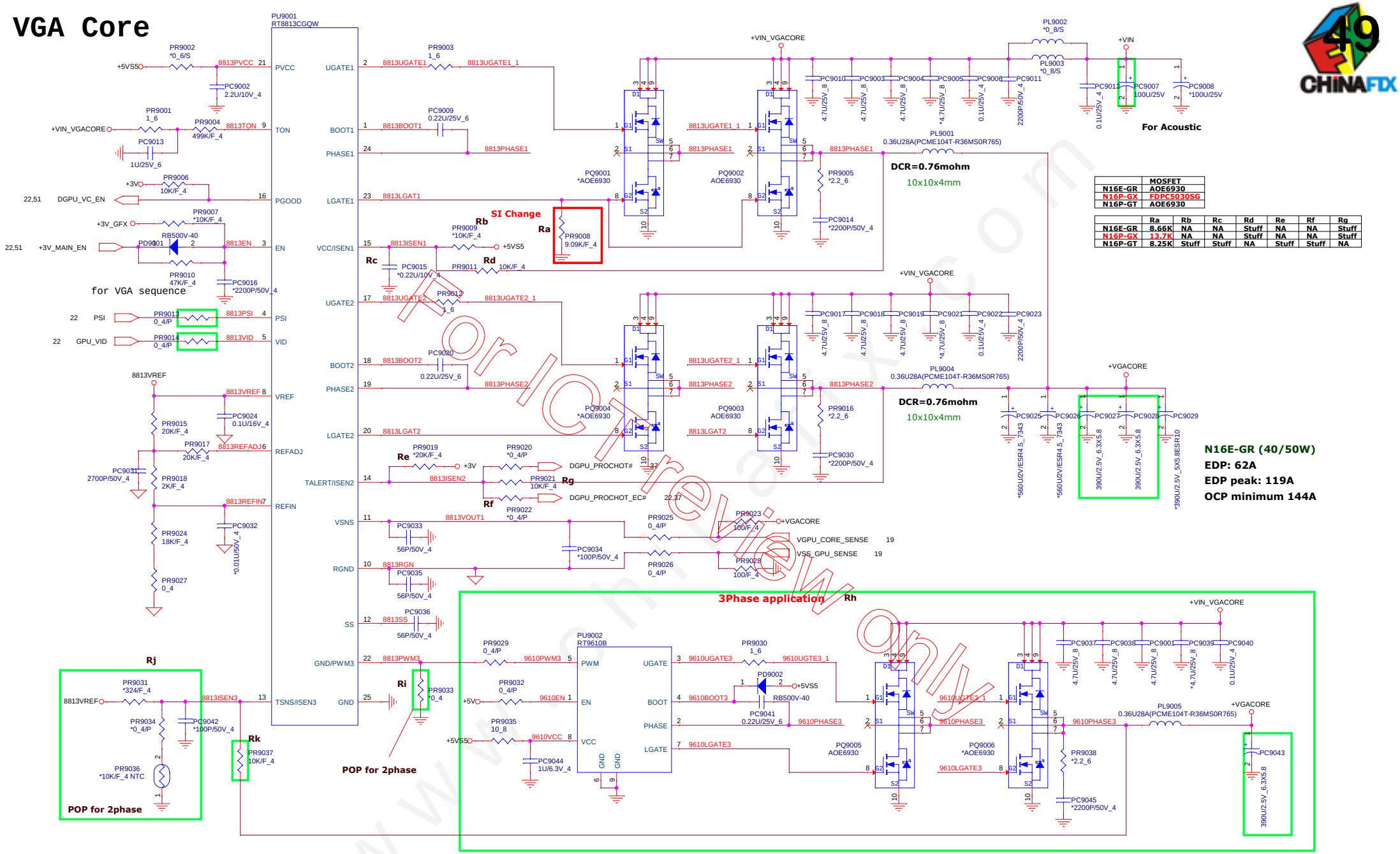
VGA Core



	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 26,38,39,40,41,42,43,44,45,46,47,48,50
+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

NB5

PROJECT : X1Q
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+VGACORE (RT8813C)	1A
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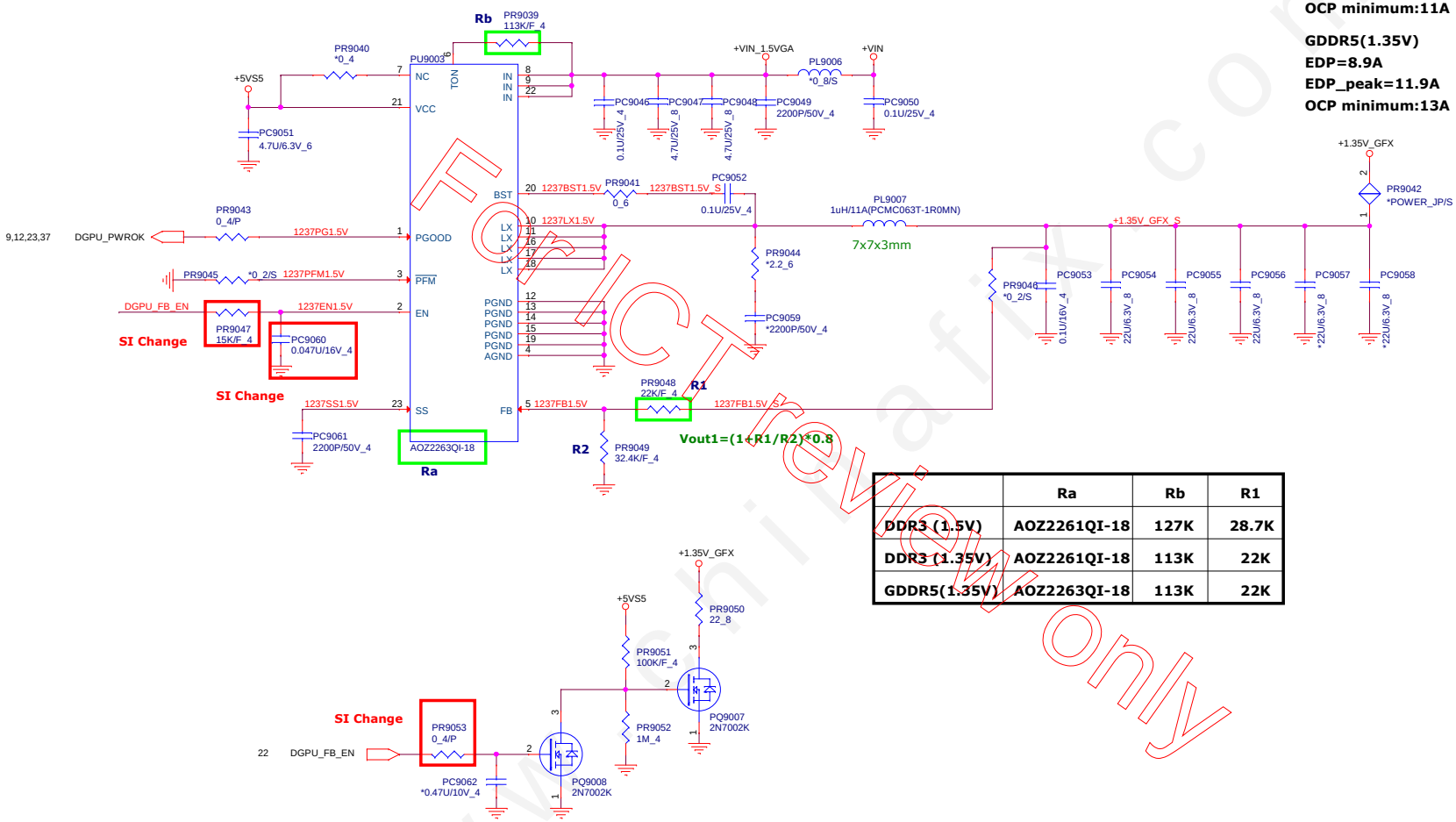
DDR3(1.5V / 1.35V)
EDP=4.18A
EDP_peak=6.54A
OCP minimum:11A

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

PROJECT : X1Q
Quanta Computer Inc.

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

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NB5

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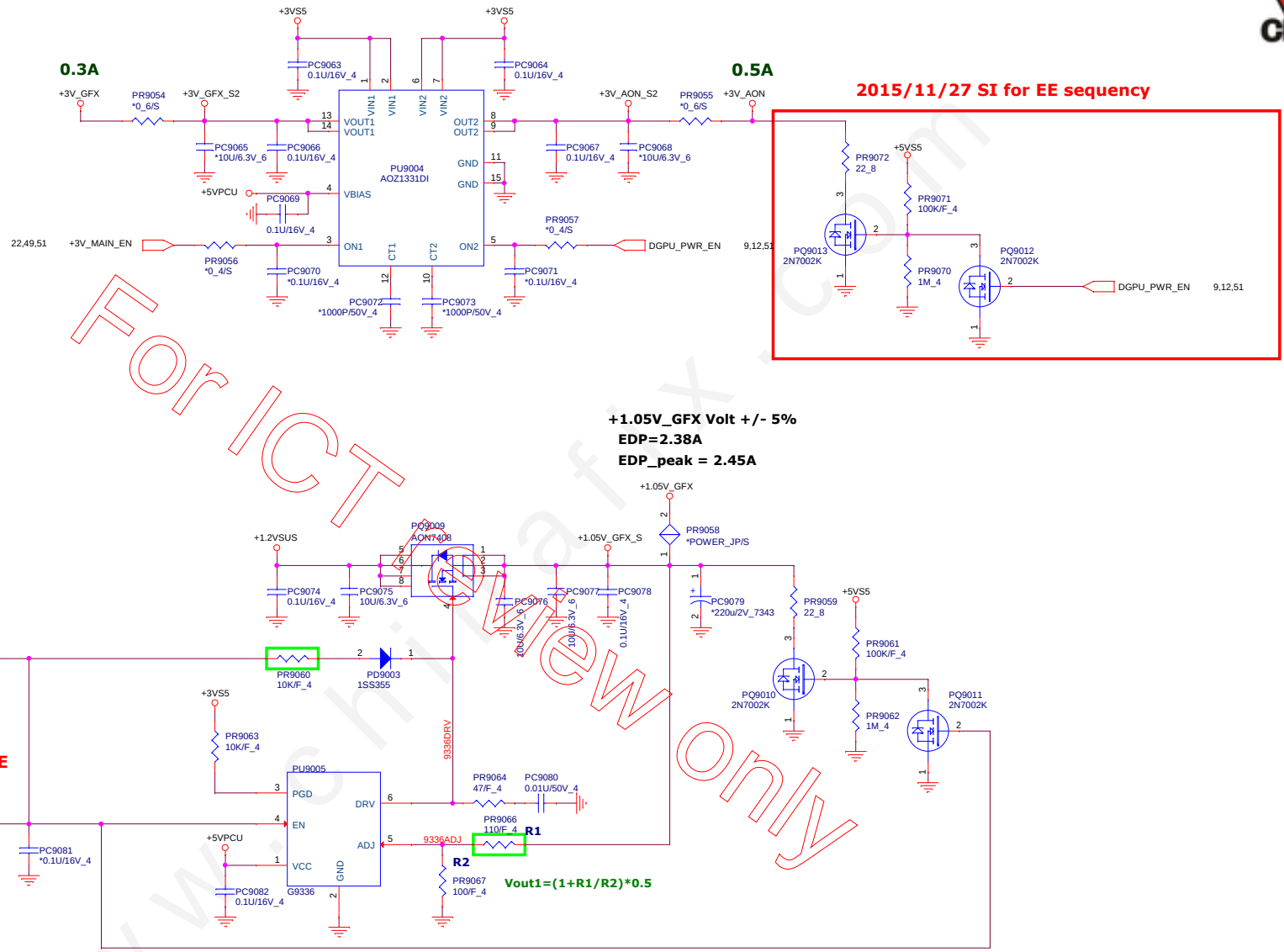

+VIN 26,38,39,40,41,42,43,44,45,46,47,48,49,50
+3VS5 10,12,14,16,26,33,37,41,42,46,47,48
+5VS5 10,26,28,30,41,42,43,44,45,46,47,48,49,50
+3V_GFX 19,20,21,22,23,49
+3V_AON 19,22,23,27
+1.2VSUS 2,6,10,17,18,42,48
+1.05V_GFX 19,20,21,23

NB5

PROJECT : X1Q
Quanta Computer Inc.

Size	Document Number	Rev
Custom	+3V/+1.05V_GFX(AOZ1331DI)	1A
Date: Monday, November 30, 2015	Sheet 51 of 51	

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