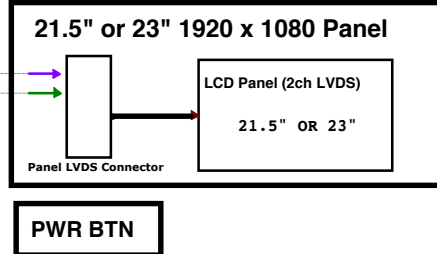
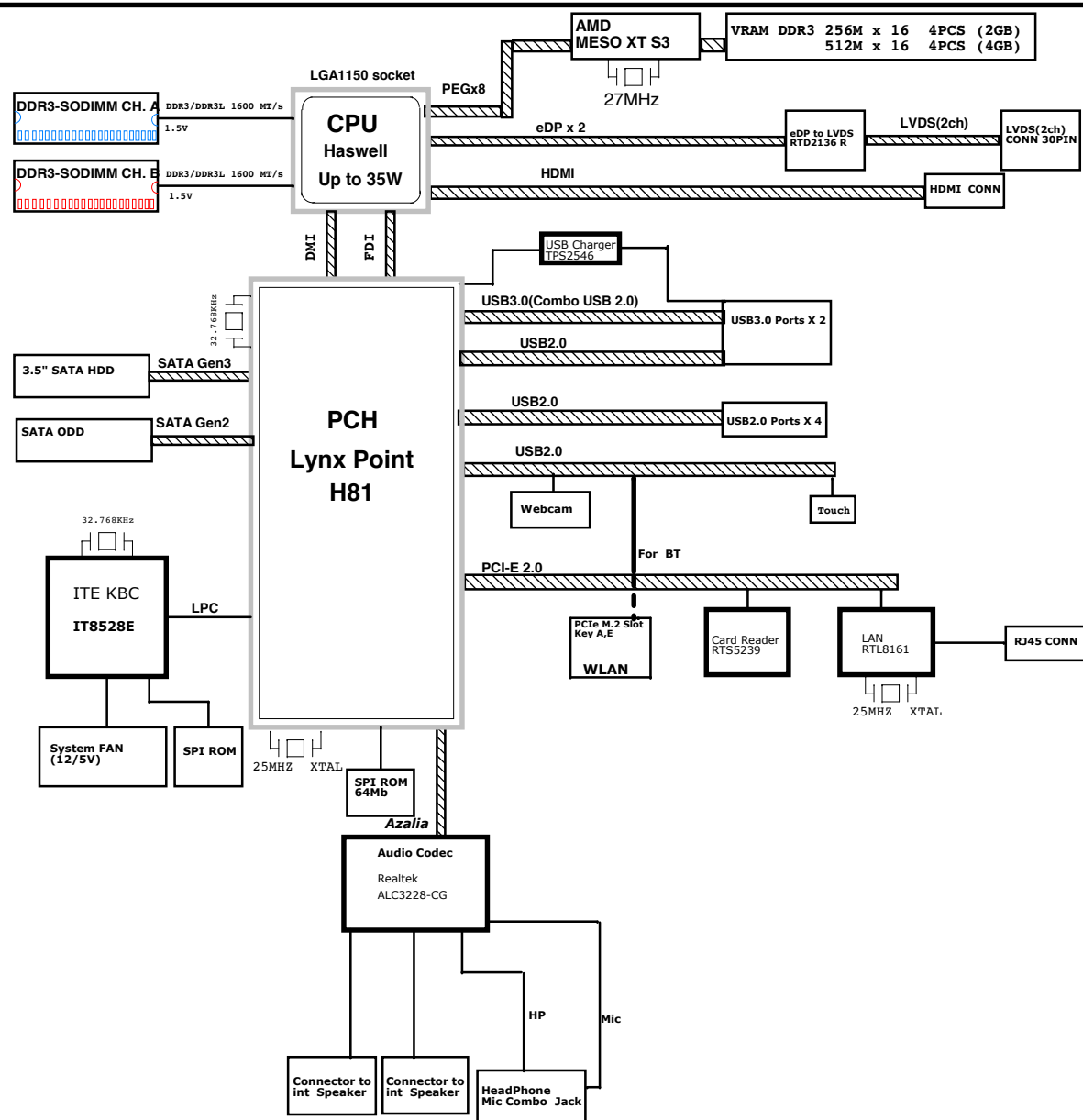


HP Marcus Amee System Block Diagram

1

M/B



HP Restricted Secret

Voltage Rails

Power Rail	Voltage	S0	S3	S4	S5	PCU	G3	Ctl Signal
RTC_VCC	3V	ON	ON	ON	ON	ON	ON	
VIN	19V	ON	ON	ON	ON	ON	OFF	Adaptor in
5V_AUX	5V	ON	ON	ON	ON	ON	OFF	AUX_ON
3V_AUX	3.3V	ON	ON	ON	ON	ON	OFF	3V/5V PWM IC_LDO
5V_S5	5V	ON	ON	ON	ON	OFF	OFF	S5_ON(S5_ON15V)
3V_S5	3.3V	ON	ON	ON	ON	OFF	OFF	S5_ON(S5_ON15V)
5V_S3	5V	ON	ON	OFF	OFF	OFF	OFF	S3_ON(SUSD)
3V_S3	3.3V	ON	ON	OFF	OFF	OFF	OFF	S3_ON(SUSD)
1.5V_S3	1.5V	ON	ON	OFF	OFF	OFF	OFF	S3_ON
SMDDR_VTERM	0.75V	ON	ON	OFF	OFF	OFF	OFF	S3_ON
5V	5V	ON	OFF	OFF	OFF	OFF	OFF	S0_ON1(S0_ON1_D)
3V	3.3V	ON	OFF	OFF	OFF	OFF	OFF	S0_ON1(S0_ON1_D)
1.05V_PCH	1.05V	ON	OFF	OFF	OFF	OFF	OFF	S0_ON1
12V	12V	ON	OFF	OFF	OFF	OFF	OFF	S0_ON1
1.5V_PCH	1.5V	ON	OFF	OFF	OFF	OFF	OFF	S0_ON1(S0_ON1_D)
3V_VGA	3.3V	ON	OFF	OFF	OFF	OFF	OFF	S0_ON1(S0_ON1_D)
VGA_CORE	0.8~1.15V	ON	OFF	OFF	OFF	OFF	OFF	0.95VGPU_PG
1.5V_VGA	1.5V	ON	OFF	OFF	OFF	OFF	OFF	S0_ON2(S0_ON2_D)
0.95V_VGA	0.95V	ON	OFF	OFF	OFF	OFF	OFF	1.8V_VGA_PG
1.8V_VGA	1.8V	ON	OFF	OFF	OFF	OFF	OFF	3V_VGA_ON
CPU_CORE	0.65~1.3V	ON	OFF	OFF	OFF	OFF	OFF	VR_ON

RTC Batt, PCH , EC

USB Charger

EC, Flash

PCH, USB

PCH, XDP, SPI flash ROM,NGFF LAN

Touch Panel

WebCAM

DDR3, CPU DDR3 I/O

DDR3

HDD, ODD,Audio AMP,Panel VCC,FAN

PCH, Audio, Card Reader, TPM

PCH, CPU

3.5" HDD

PCH

dGPU

dGPU, VRAM

dGPU

dGPU

dCPU

CPU

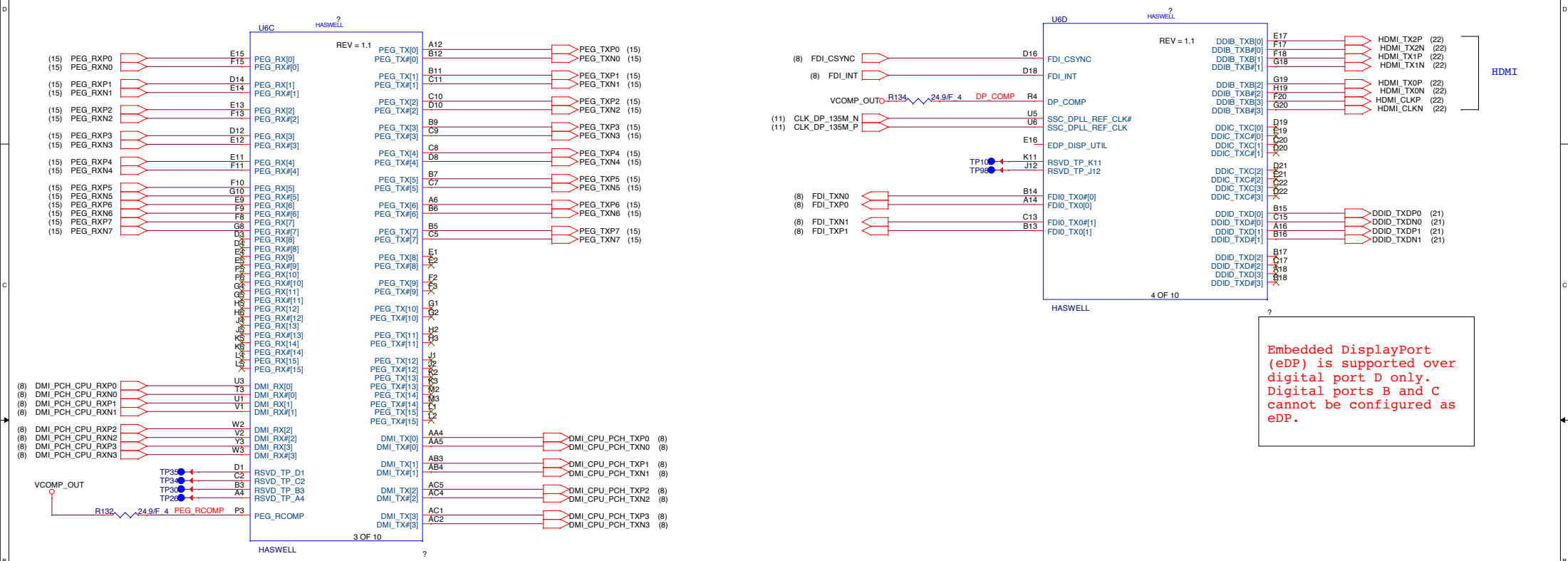
Schematic "Value" Definition

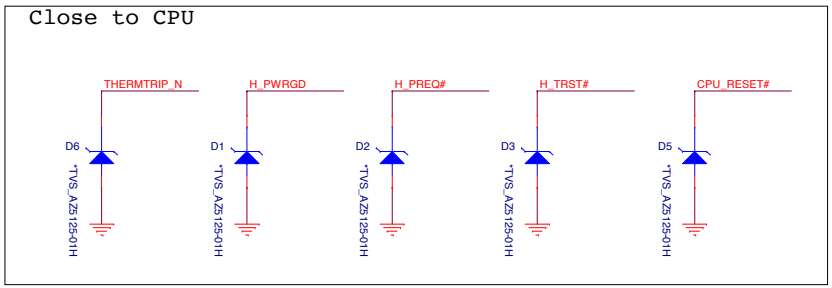
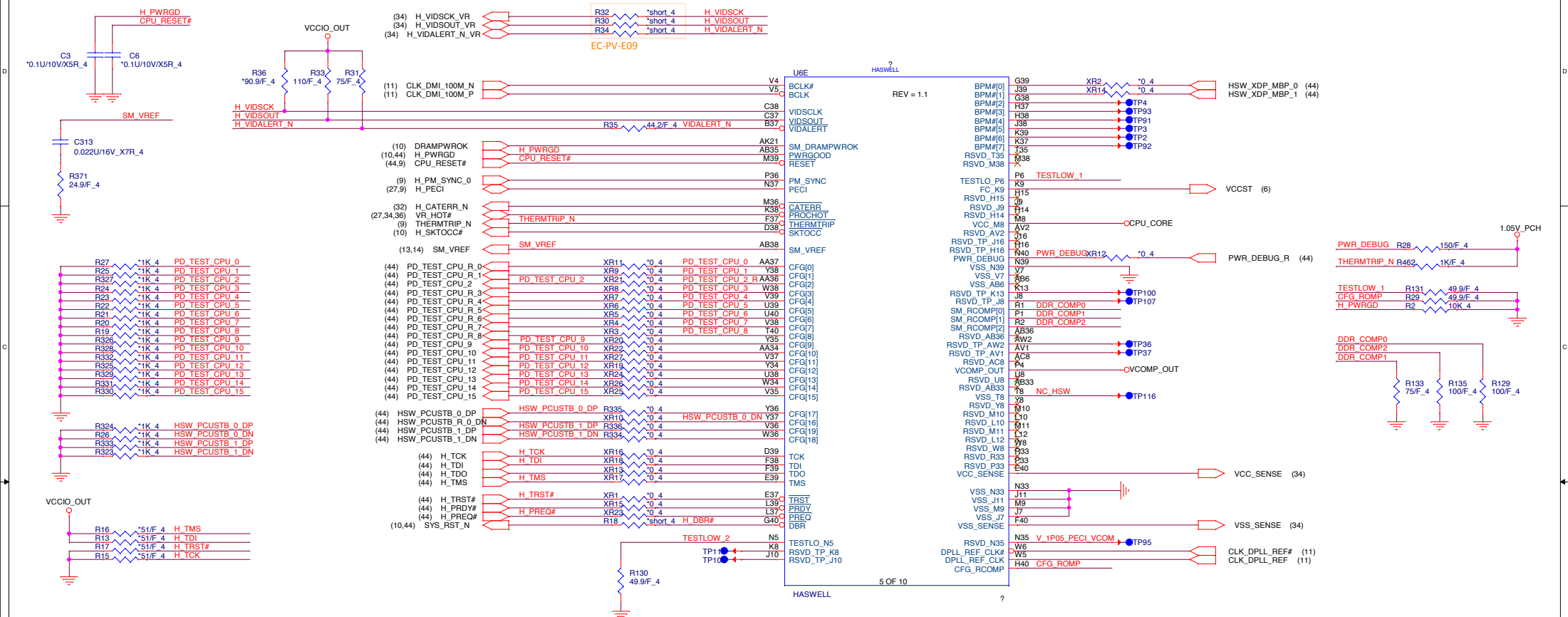
Intel Platform Crusher-G and Crusher-U			DB/SI/PV Stage			MP		
By Value format	Description	Auto BOM Control	UMA	Discrete Meso GPU	Discrete Exo GPU	UMA	Discrete Meso GPU	Discrete Exo GPU
XX	Install	V	V	V	V	V	V	V
*XX	Non-Install	V						
PROTO@XX	Install in Pre-production only	V	V	V	V			
MP@XX	Install in MP only	V				V	V	V
DIS@xx	Install Discrete (dGPU) only	V		V	V		V	V
UMA@xx	Install UMA	V	V			V		
M_DIS@xx	Install Discrete Meso GPU only	V		V			V	
E_DIS@xx	Install Discrete Exo GPU only	V			V			V

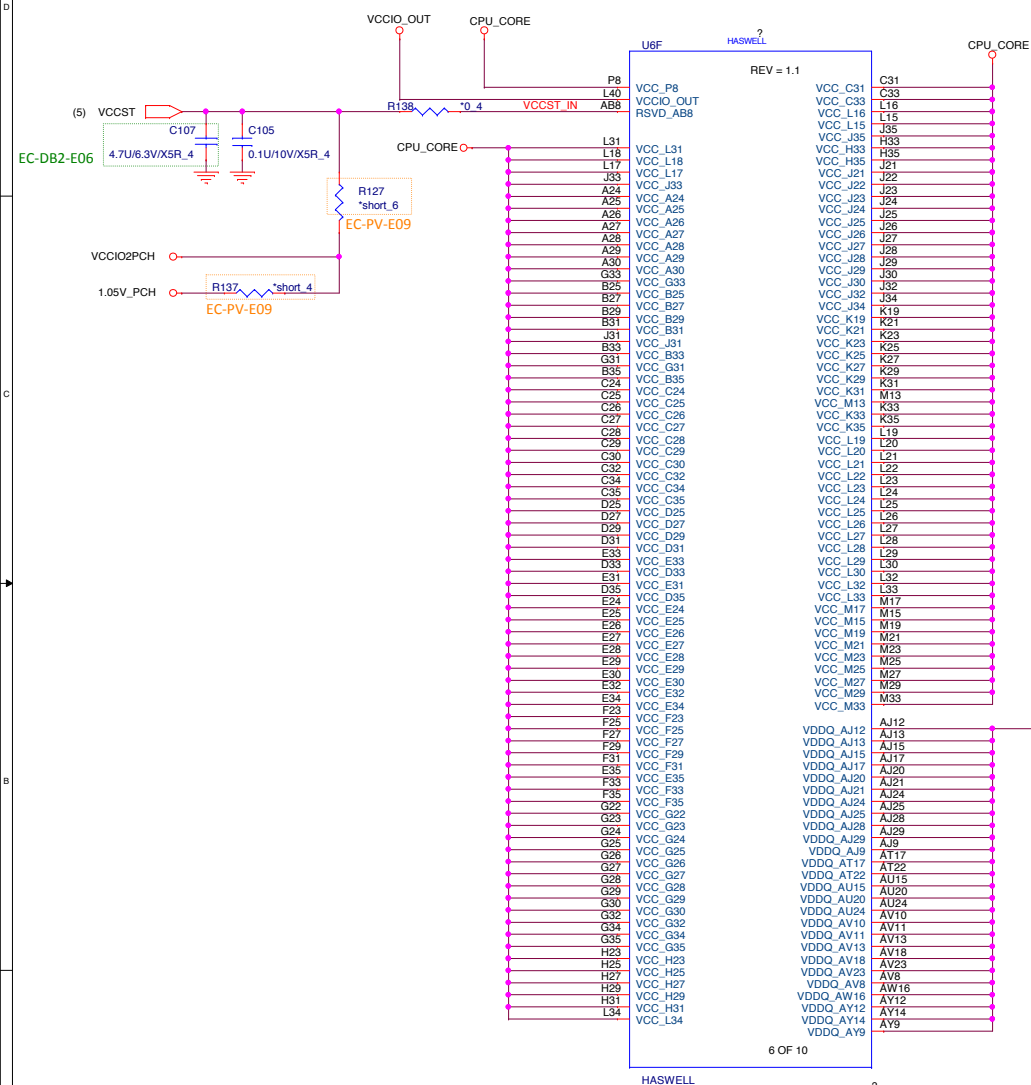
***Board ID and VRAM ID by manual control

HP Restricted Secret

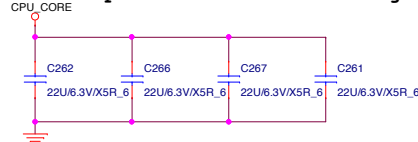
PROJECT : HP-Crusher G/U
Quanta Computer Inc.



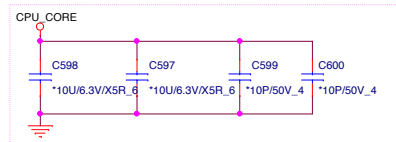
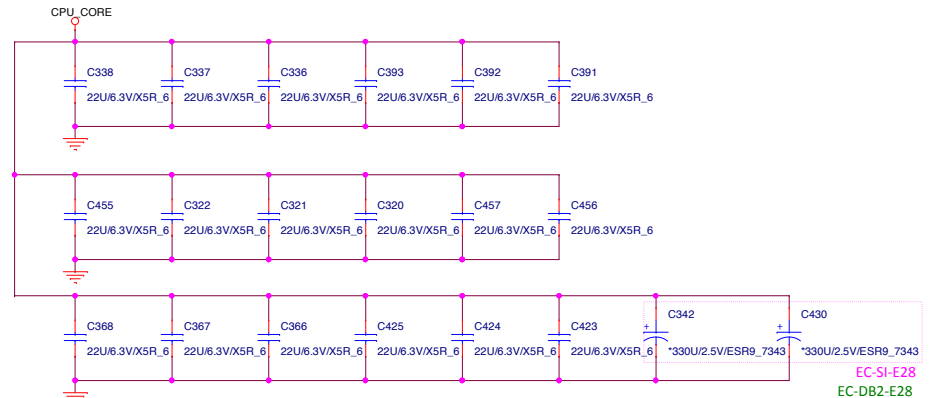




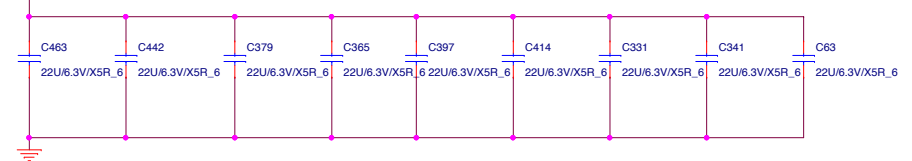
Place at topside close to socket edge



Place at topside inside socket cavity



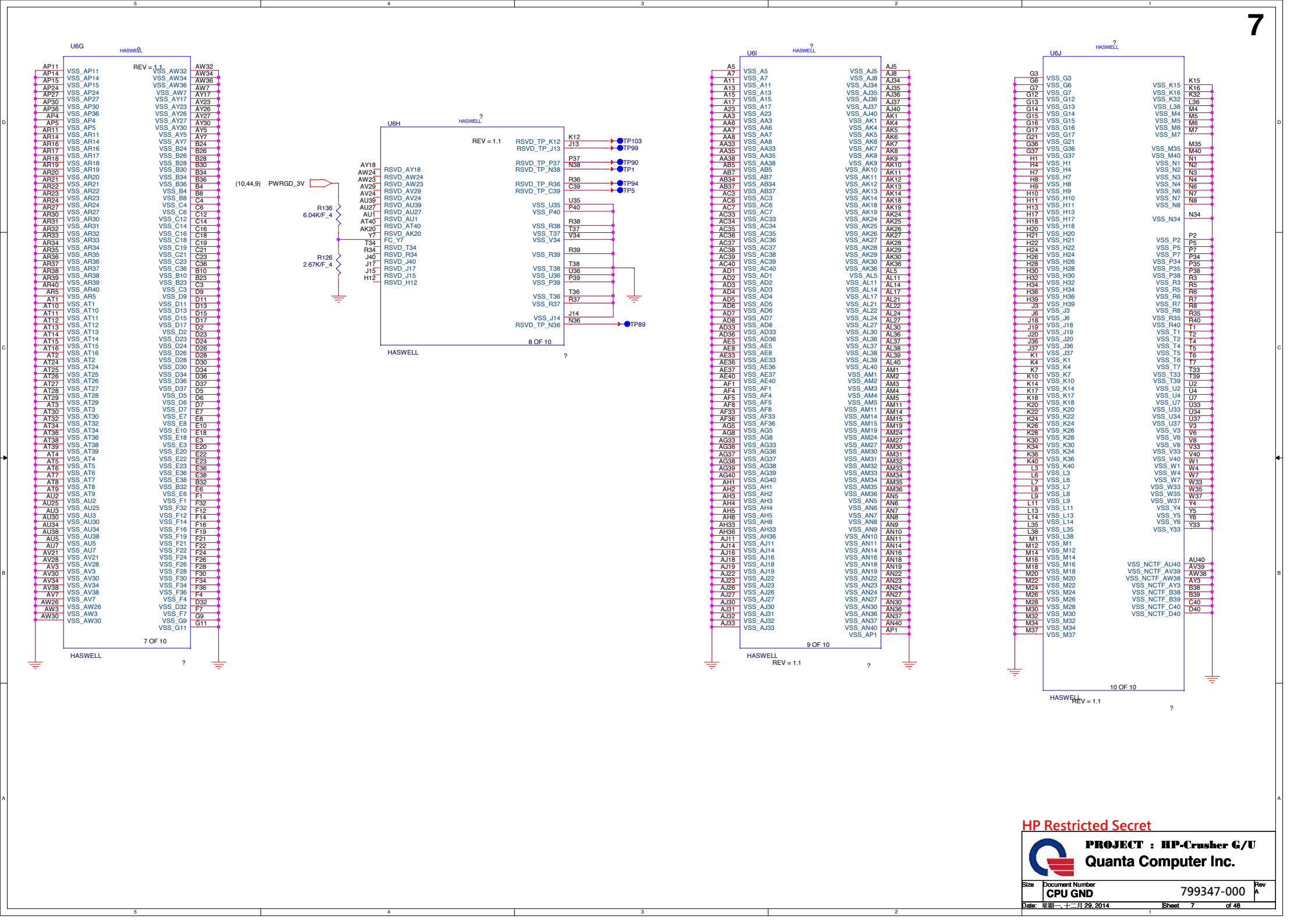
Place close to pin

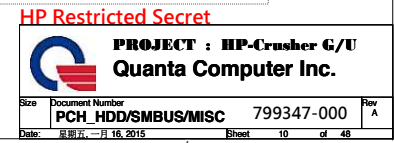


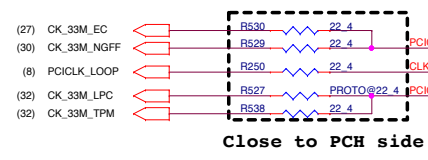
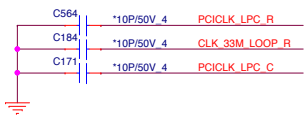
HP Restricted Secret



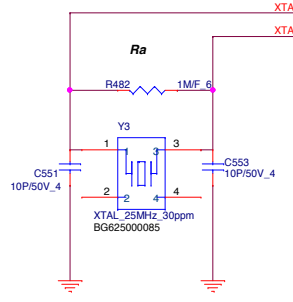
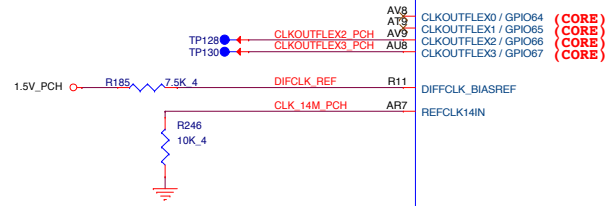
PROJECT : HP-Crusher G/UP
Quanta Computer Inc.



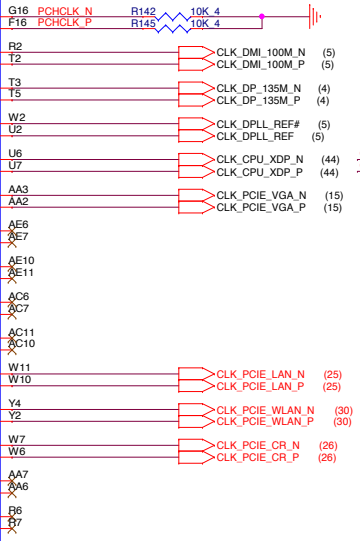
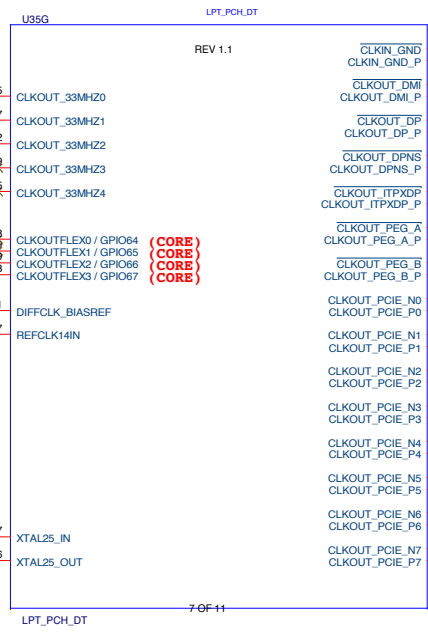




Close to PCH side



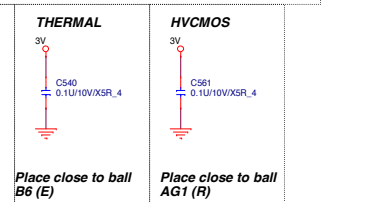
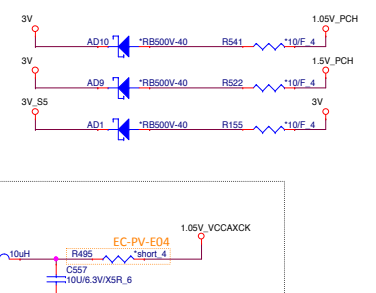
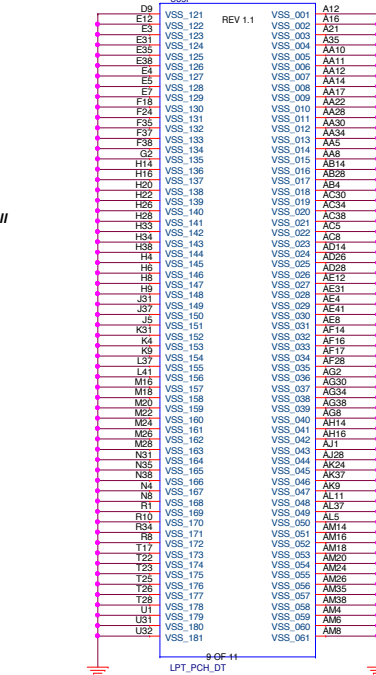
DESIGN NOTE:
STUFF ALWAYS
DESIGN NOTE:
Ra DAMPING RESISTOR DO NOT CHANGE TO 0402.



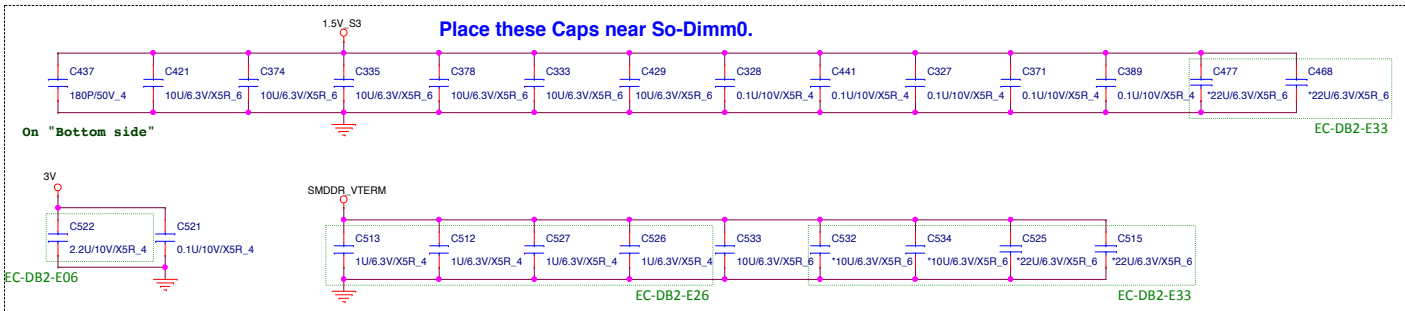
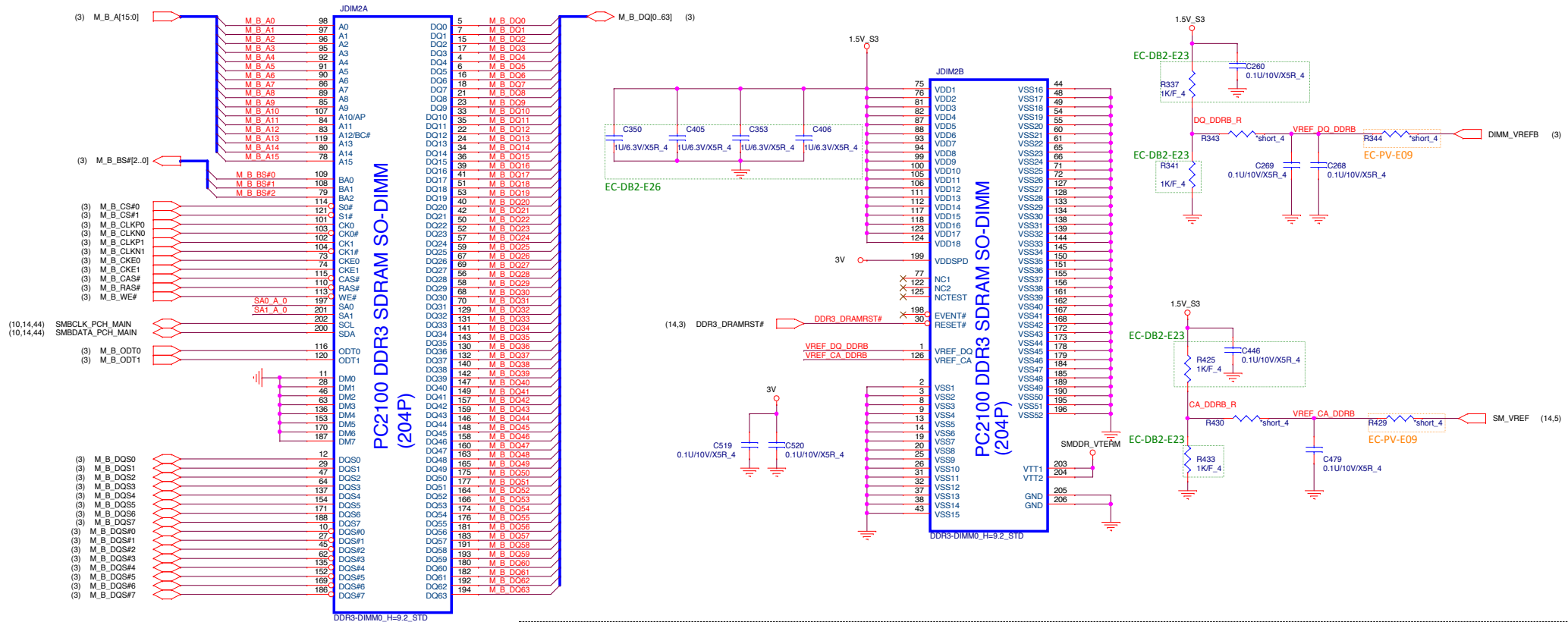
CLK_CPU_XDP_N
CLK_CPU_XDP_P

HDMI DDC

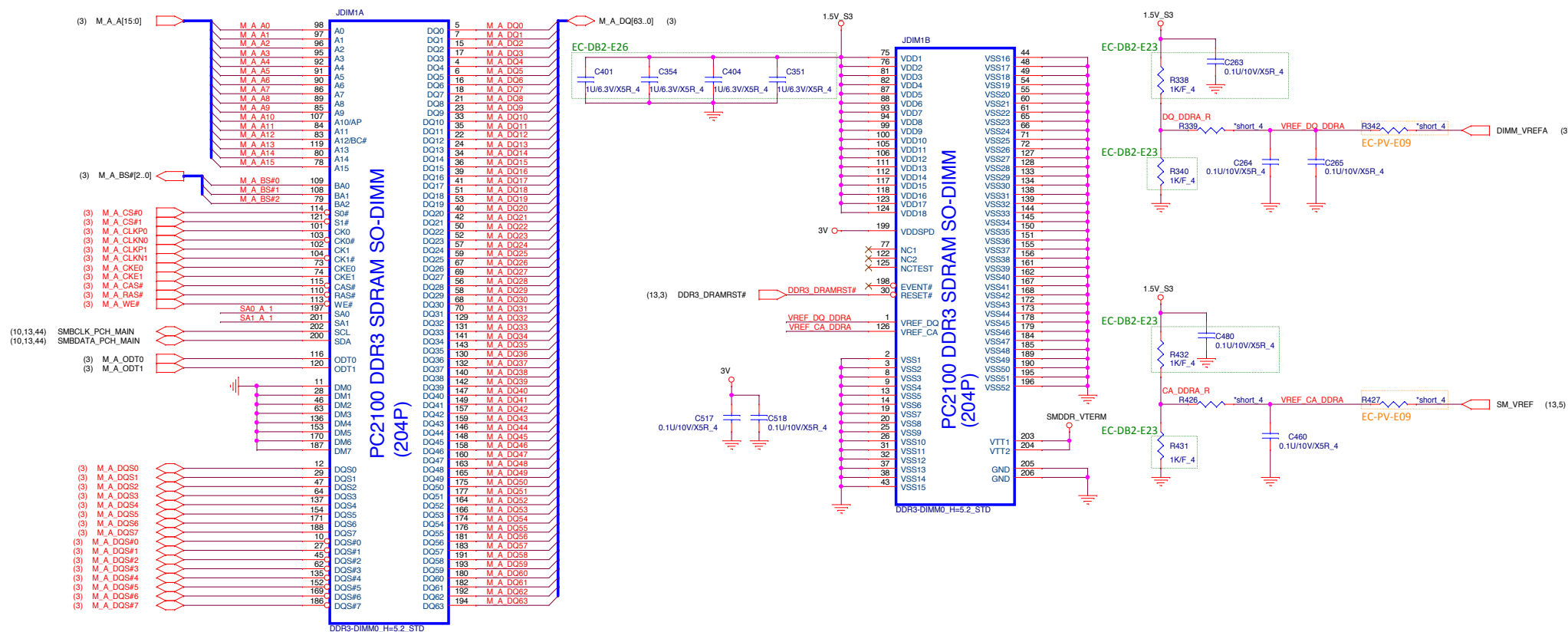
HP Restricted Secret



CHANNEL B DIMM 0 H=5.2

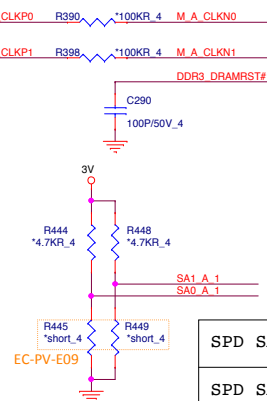


CHANNEL A DIMM 0 H=9.2



Place these Caps near So-Dimm1.

On "Bottom side"



SPD SA0	0
SPD SA1	0

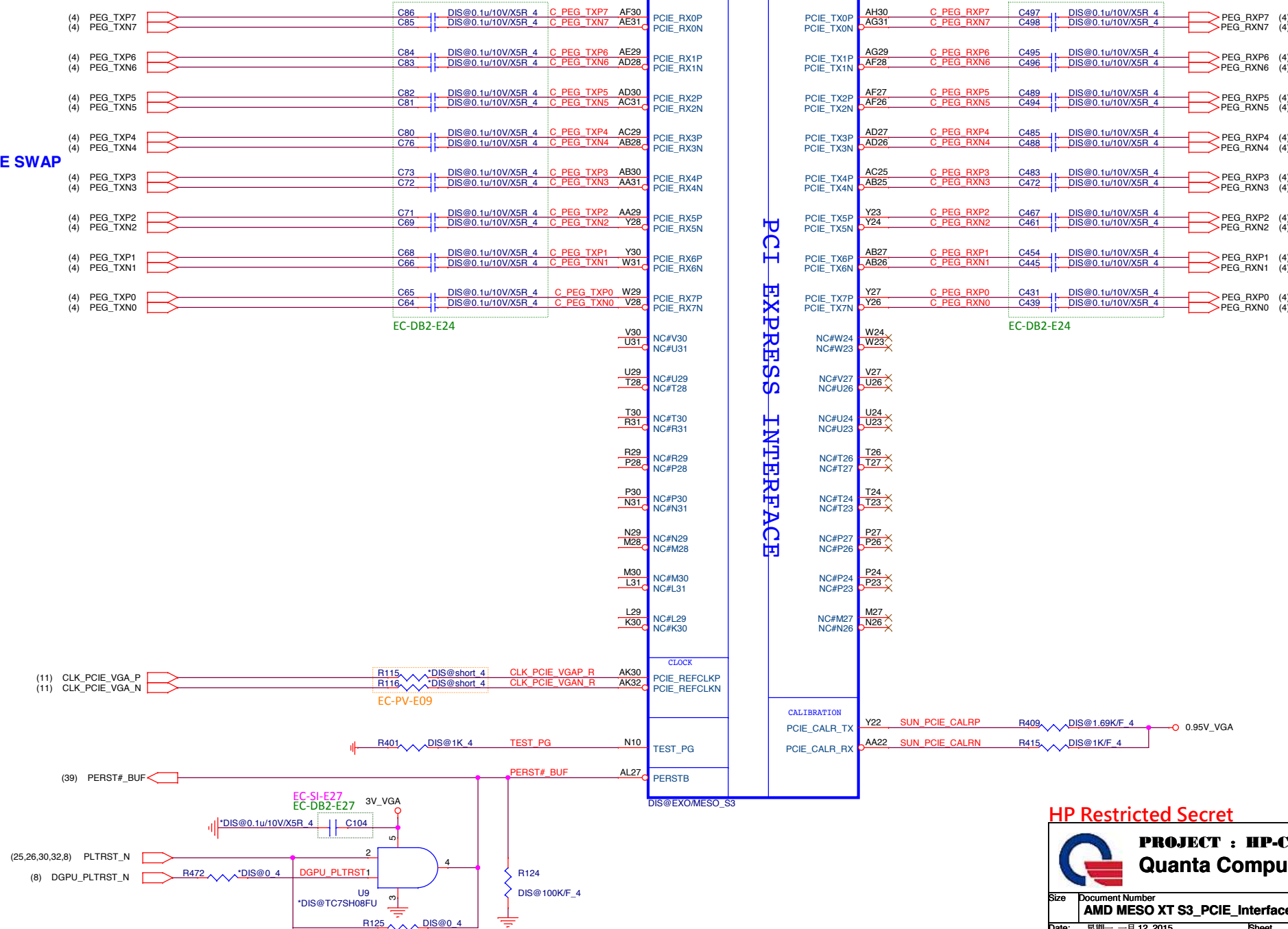
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PROJECT : HP-Crusher G/U
Quanta Computer Inc.

LANE SWAP

LANE SWAP

PCI EXPRESS INTERFACE



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PROJECT : HP-Crusher G/U
Quanta Computer Inc.

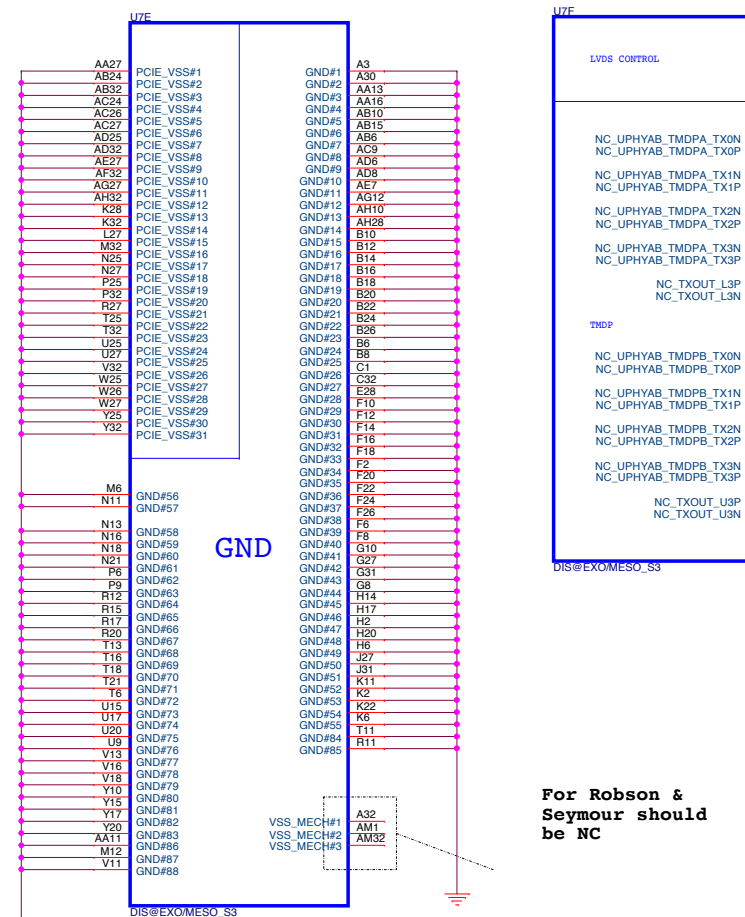
Size	Document Number	Rev
	AMD MESO XT S3_PCIE_Interface 799347-000	A
Date:	星期一, 一月 12, 2015	Sheet 15 of 48



PS_3[3:1]	Vendor	Type	Vendor P/N	R128	R123
000	Micron	256Mx16 *4, 1000Mhz	MT41J256M16HA-093G:E	NC	4.75K
001	Hynix	256Mx16 *4, 1000Mhz	H5TC4G63CPR-NOC	8.45K	2K
010	Micron	512Mx16 *4, 1000Mhz	MT41K512M16HA-107G:A	4.53K	2K

Cap Value(nF)	Bits [5:4]
680	00
82	01
10	10
NC	11

Cap Value(nF)	Bits [5:4]
680	00
82	01
10	10
NC	11



CONFIGURATION STRAPS-- SEE EACH DATABOOK FOR STRAP DETAILS ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOs ARE USED, THEY MUST NOT CONFLICT DURING RESET			RECOMMENDED SETTINGS 0= DO NOT INSTALL RESISTOR 1 = INSTALL 3K RESISTOR X = DESIGN DEPENDANT NA = NOT APPLICABLE
STRAPS	PIN	DESCRIPTION OF DEFAULT SETTINGS	
TX_PWRS_ENB	GPIO0	PCIE FULL TX OUTPUT SWING	
TX_DEEMPH_EN	GPIO1	PCIE TRANSMITTER DE-EMPHASIS ENABLED	0
RSVD			X
RSVD	GPIO2 GPIO8	RESERVED RESERVED	0 0
BIF_VGA_DIS	GPIO9	VGA ENABLED	0
RSVD	GPIO21	RESERVED	0
BIOS_ROM_EN	GPIO_22_ROMCSB	ENABLE EXTERNAL BIOS ROM	0
ROMIDCFG(2:0)	GPIO[13:11]	SERIAL ROM TYPE OR MEMORY APERTURE SIZE SELECT	0 0 1
VIP_DEVICE_STRAP_ENA	V2SYNC	IGNORE VIP DEVICE STRAPS (Removed on Seymour/Whistler)	0
RSVD	H2SYNC	RESERVED	0
AUD[1] AUD[0]	HSYNC VSYNC	SEE DATABOOK FOR DETAIL SEE DATABOOK FOR DETAIL	0 0
RSVD	GENERICC	RESERVED	0

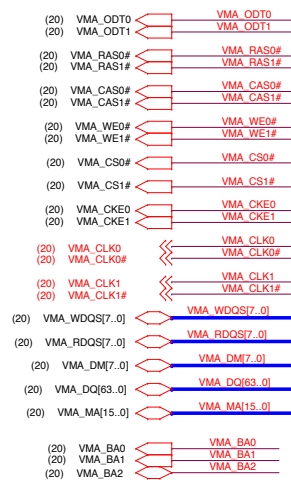
NOTE1: AMD RESERVED CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS BUT DO NOT INSTALL RESISTOR. IF THESE GPIOs ARE USED, THEY MUST KEEP "LOW" AND NOT CONFLICT DURING RESET.

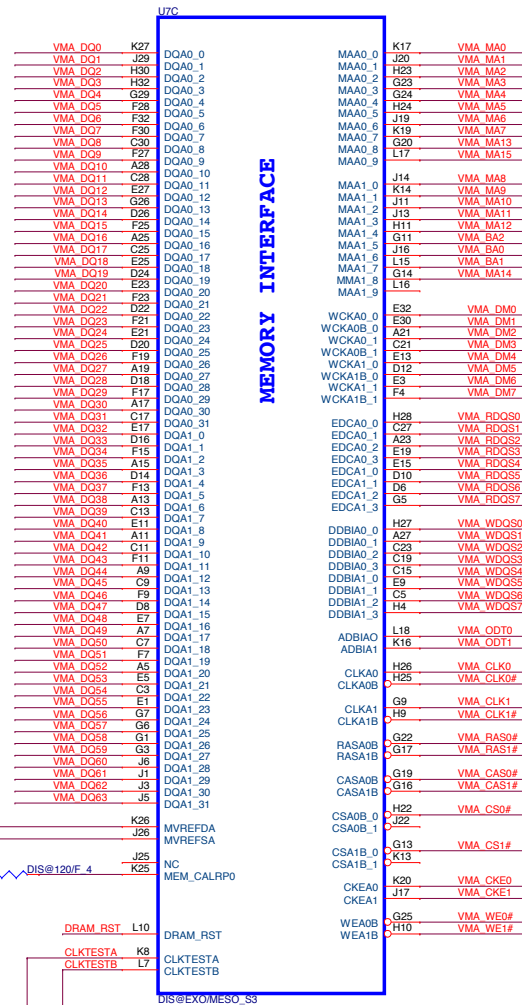
GPIO21 H2SYNC GENERICC GPIO8 GPIO2

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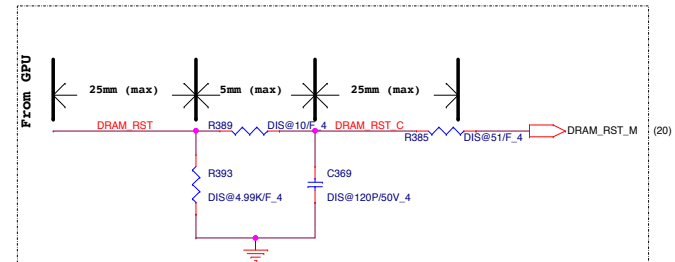




support 1Gbit
VRAM (64M x 16)

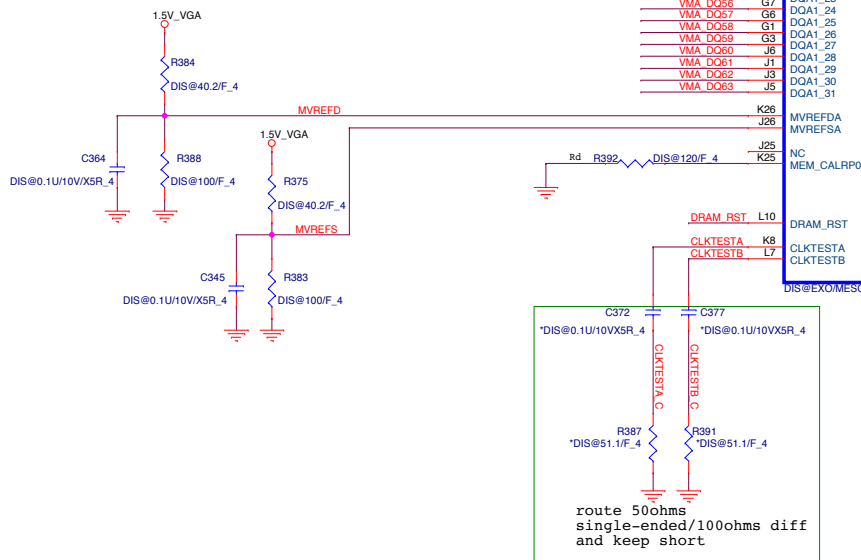


MEMORY INTERFACE



Place all these components very close to GPU (Within 25mm) and keep all component close to each Other (within 5mm) except Rser2

This basic topology should be used for DRAM_RST for DDR3/GDDR5. These Capacitors and Resistor values are an example only. The Series R and || Cap values will depend on the DRAM load and will have to be calculated for different Memory ,DRAM Load and board to pass Reset Signal Spec.

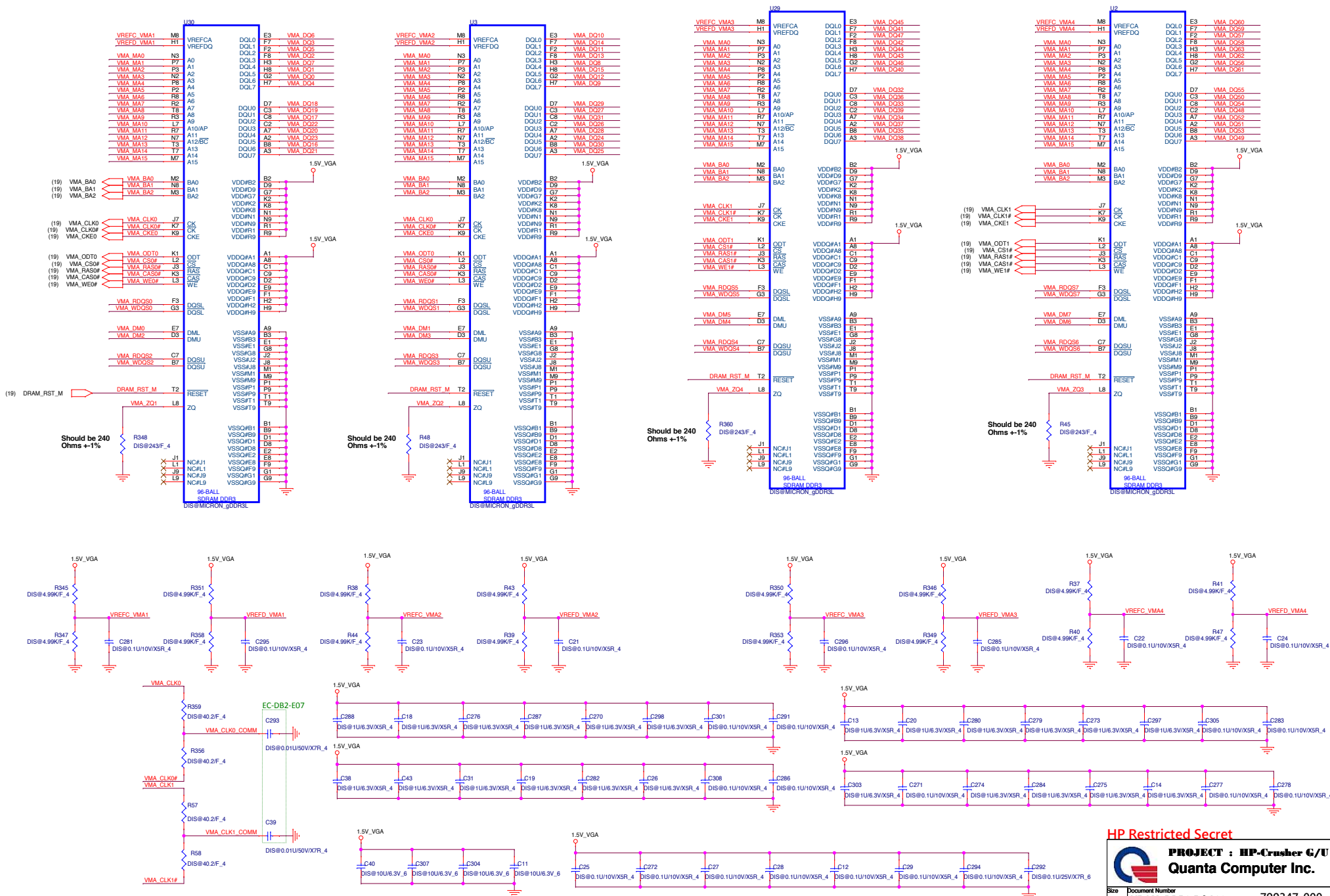


HP Restricted Secret

2GB gDDR3L

(19) VMA_MA[15:0] VMA_MA[15:0]
 (19) VMA_DM[7:0] VMA_DM[7:0]

(19) VMA_DQ[63:0] VMA_DQ[63:0]
 (19) VMA_WDQS[7:0] VMA_WDQS[7:0]

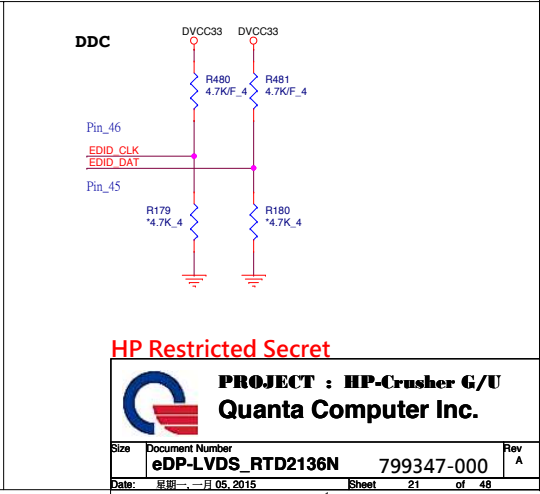
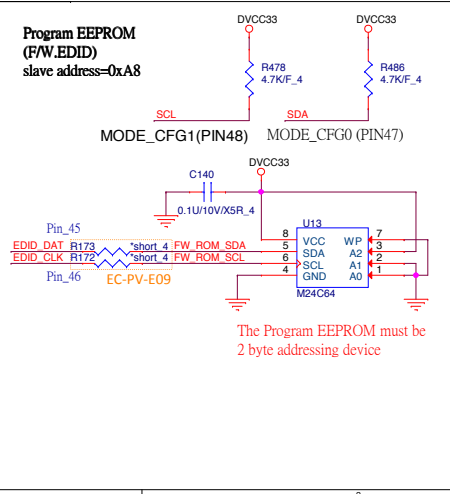
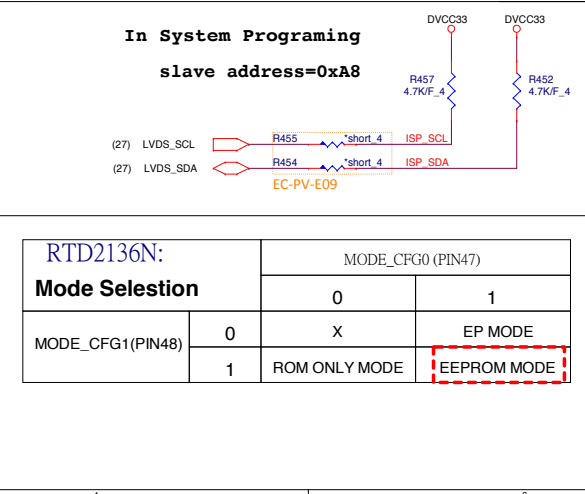
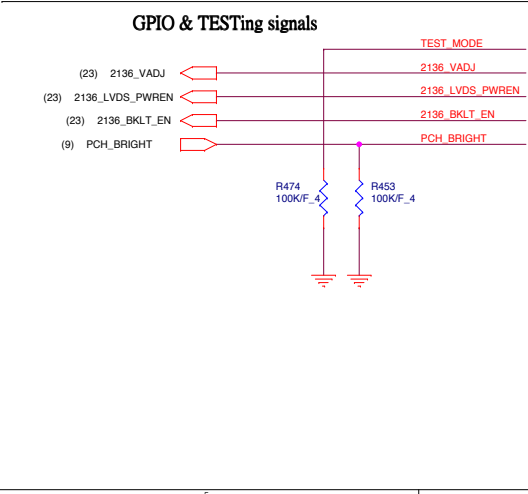
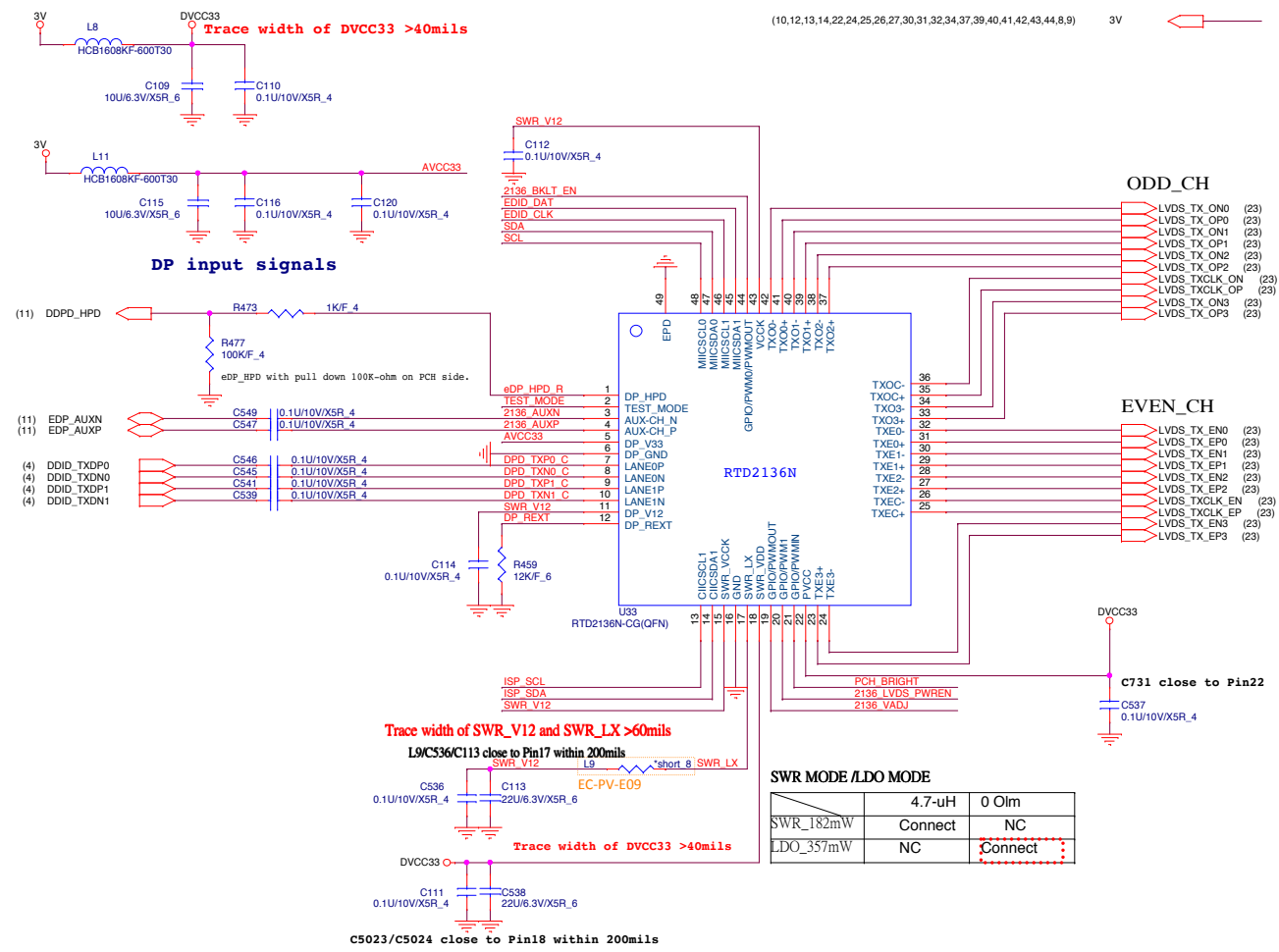


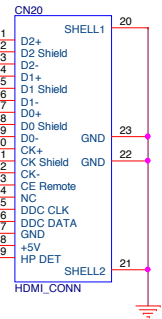
HP Restricted Secret

PROJECT : HP-Crusher G/U
 Quanta Computer Inc.

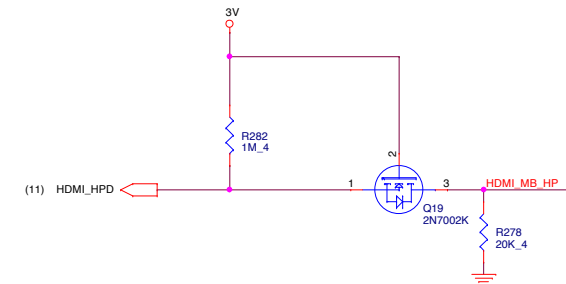
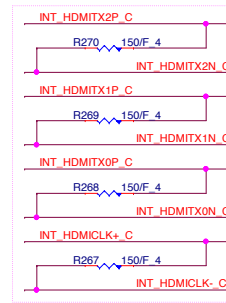
Size Document Number 799347-000 Rev A
 VRAM_DDR3 BGA96
 Date: 星期, 一月 15, 2015 Sheet 20 of 48

eDP to LVDS (RTD2136N-CG)

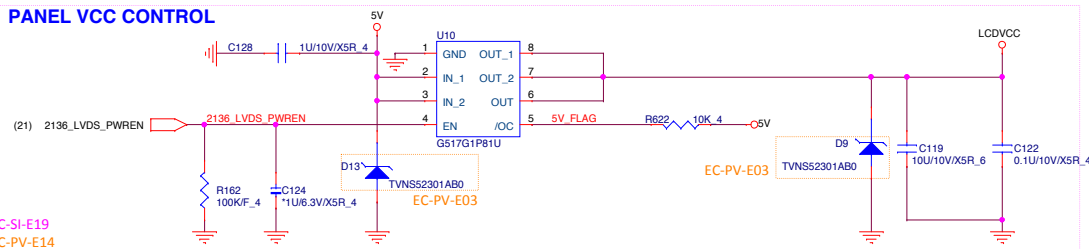




HDMI-detect

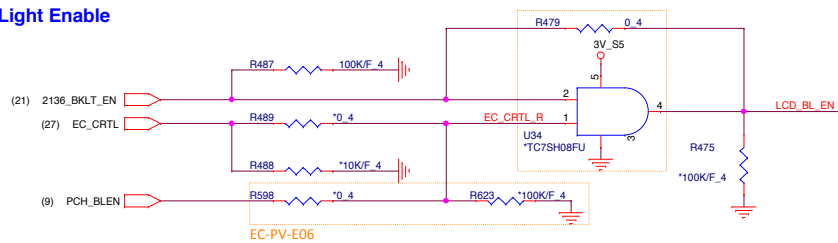


PANEL VCC CONTROL

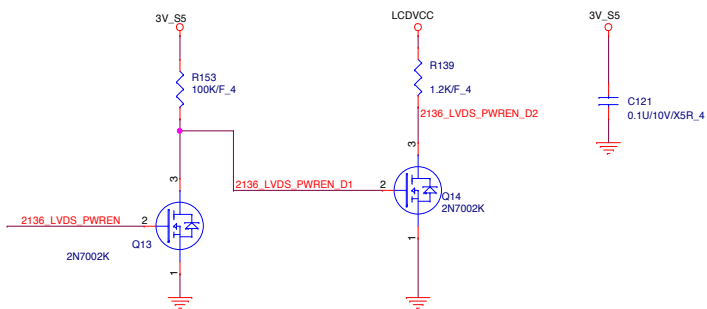


EC-SI-E19
EC-PV-E14

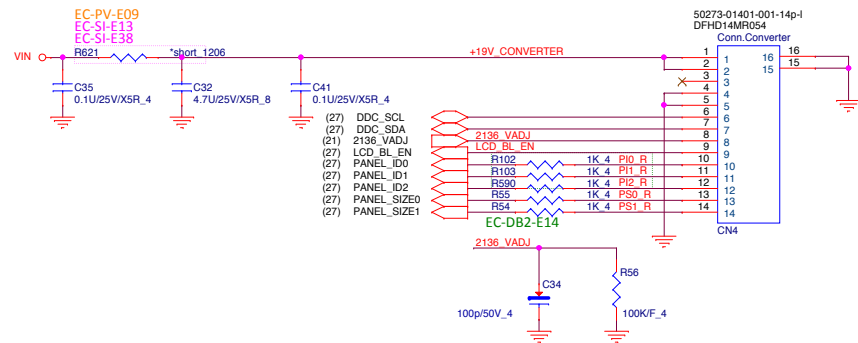
BackLight Enable



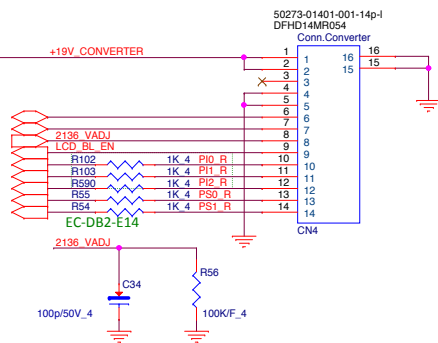
LCDVCC Discharge Circuit



PANEL VCC CONTROL



CONVERTER CONN

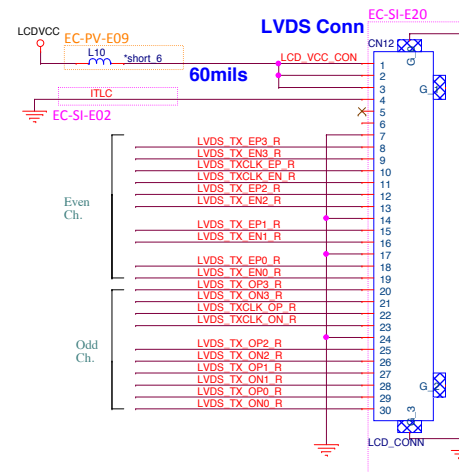
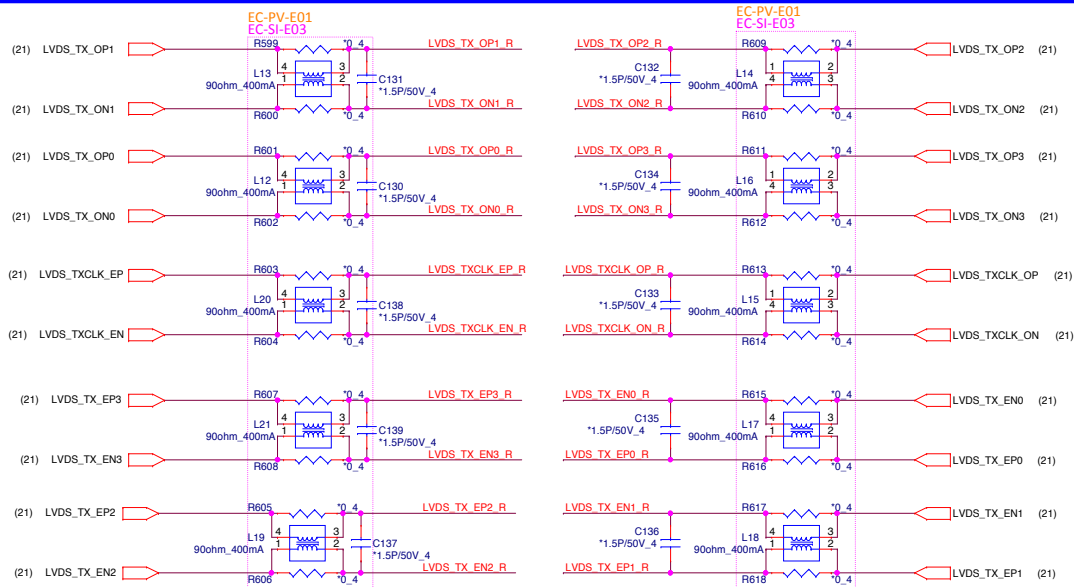


PANEL_Size Table

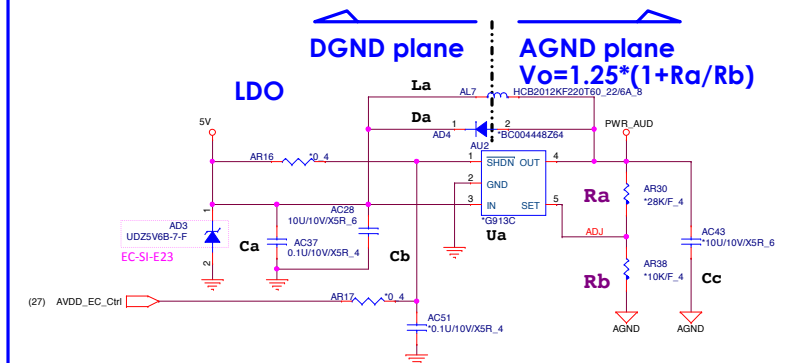
PANEL_Size[1:0]	Size
10	23"
11	21.5"
01	27"

PANEL_ID Table

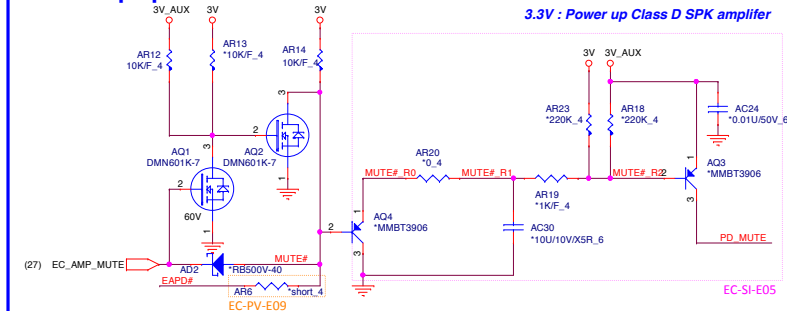
PANEL_ID[2:0]	Panel model
000	Reserve
001	SDC LTM215HL01_H02
010	SDC LTM230HL08 LTM215HL01_H01 LTM270HL02
011	Reserve
100	LGD LM230WF3 LM215WF3 LM270WF5
101	Reserve
110	Reserve
111	No Connect



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0V : Power down Class D SPK amplifier
3.3V : Power up Class D SPK amplifier



(10,9) SPKR

AR10
18kF_4

ALG_BEEP_IN_B

AC15

0.1u/10V/XSR_4

ALG_BEEP_IN

AC14
100pF_4

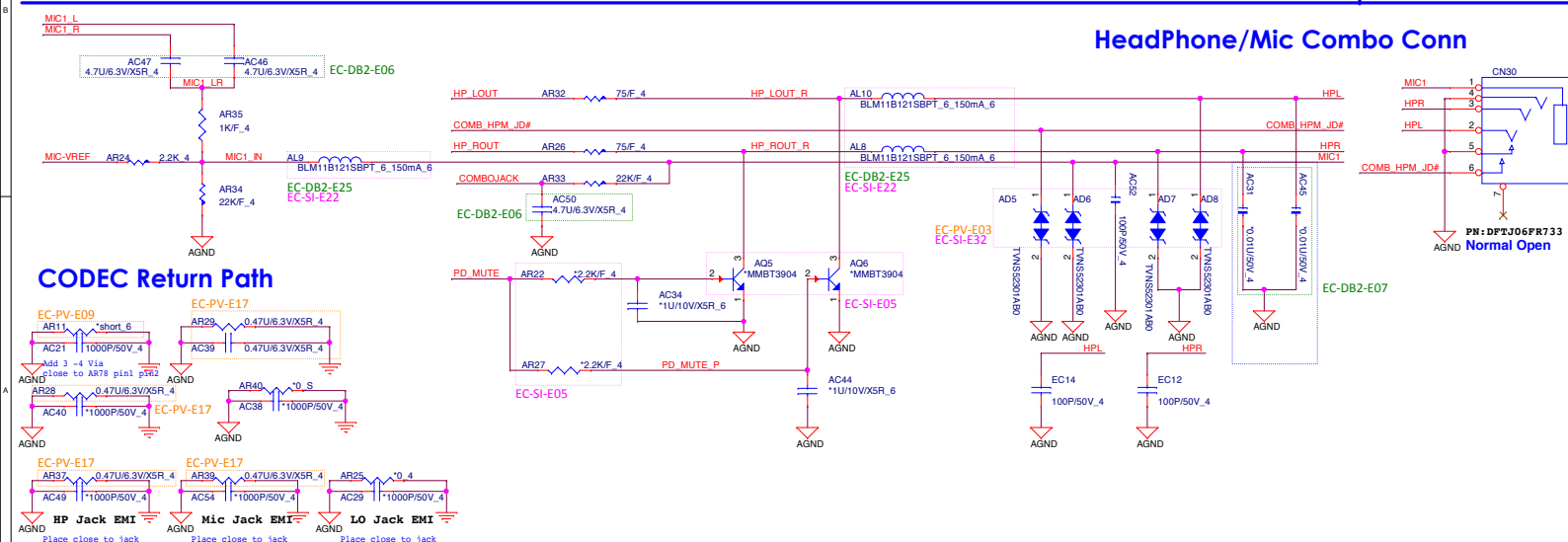
AR9
2kF_4

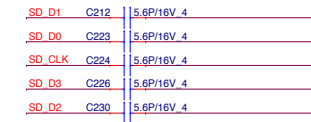
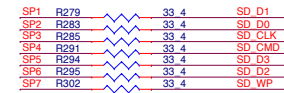
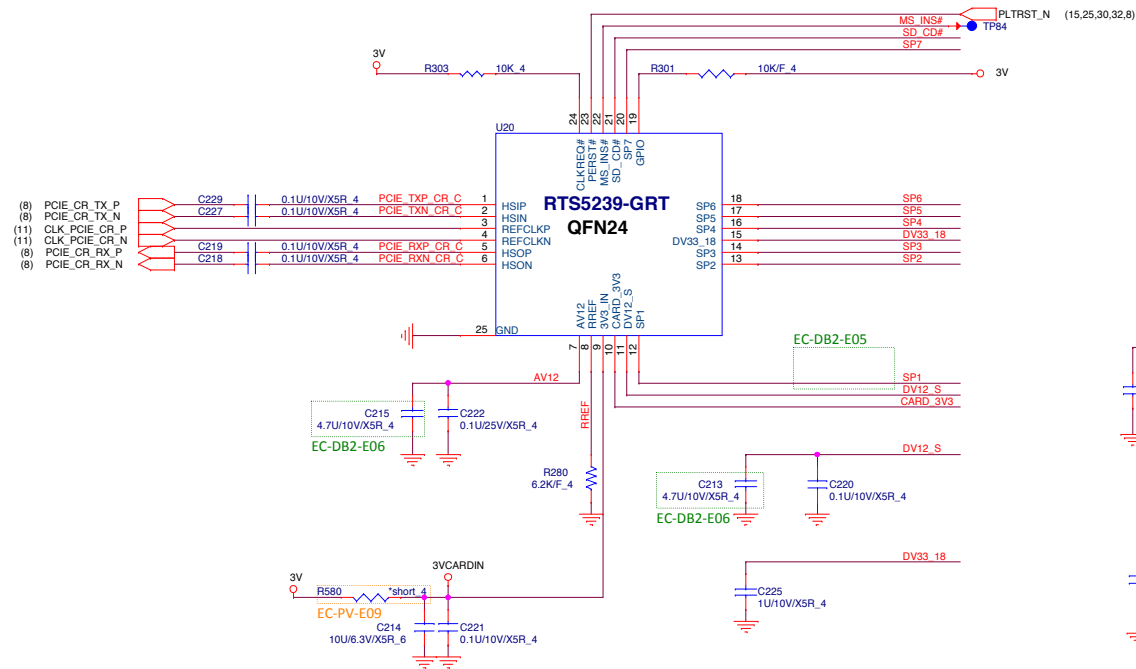
AC16
0.1u/10V/XSR_4



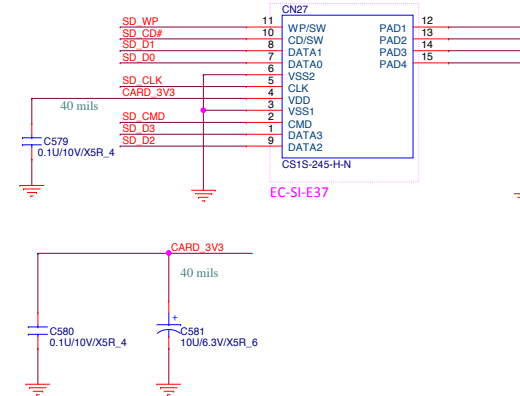
PROJECT : HP-Crusher G/U
Quanta Computer Inc.

Size	Document Number	799347-000	Rev A
Audio ALC3228-CG			
Date:	星期五, 一月 16, 2015	Sheet	24 of 48





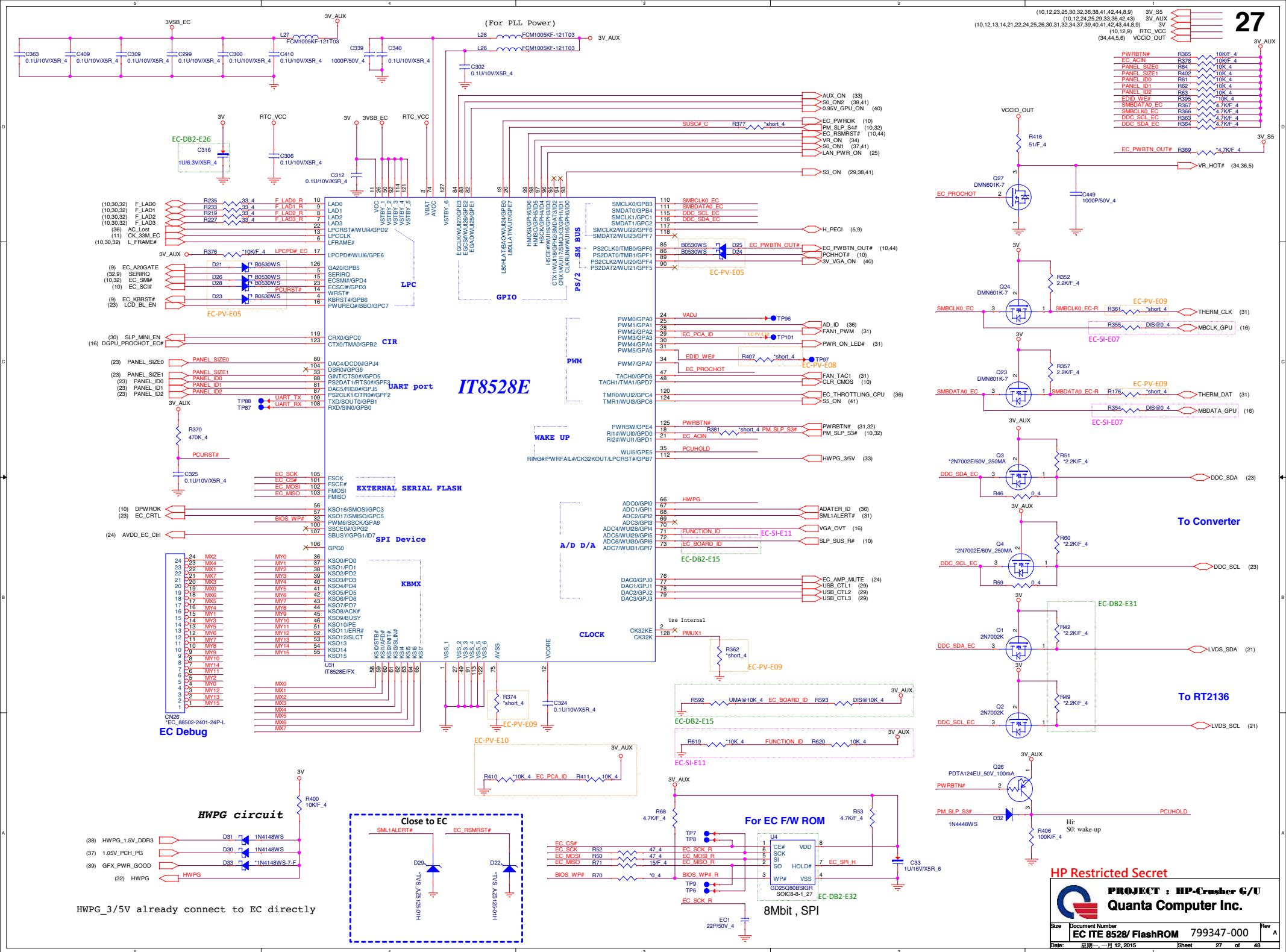
SD connector



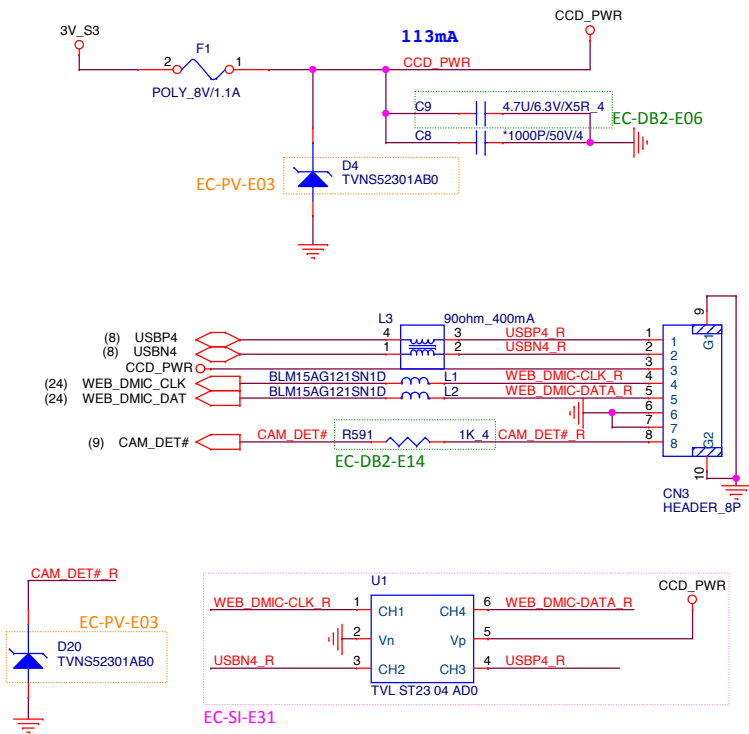
HP Restricted Secret



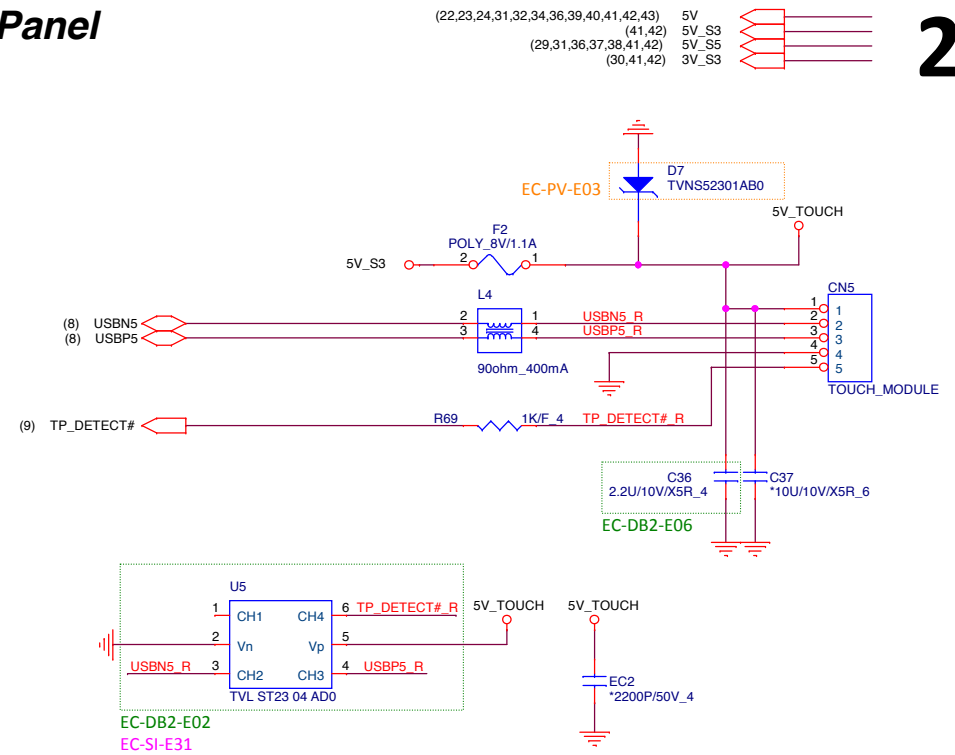
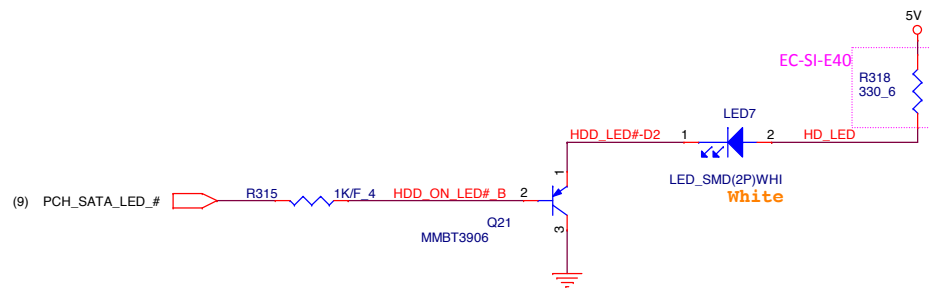
PROJECT : HP-Crusher G/U
Quanta Computer Inc.



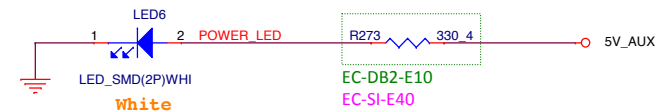
WEBCAM



Touch Panel

**SATA LED**

DC_IN LED



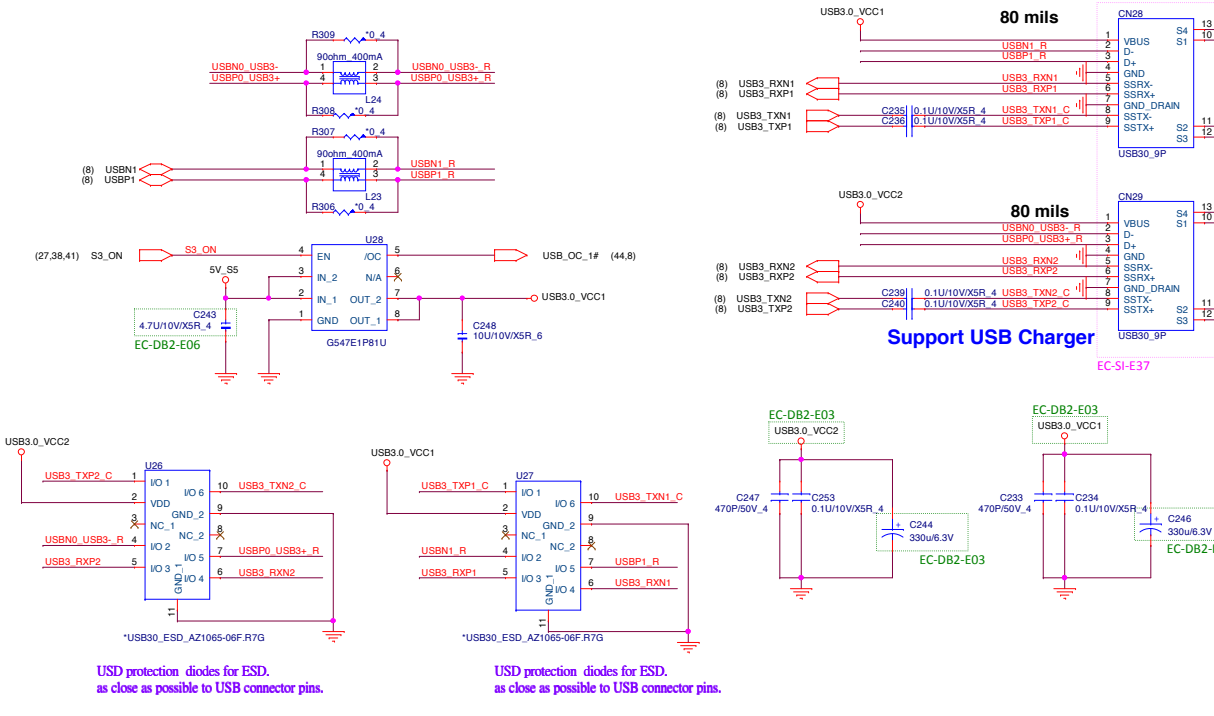
HP Restricted Secret



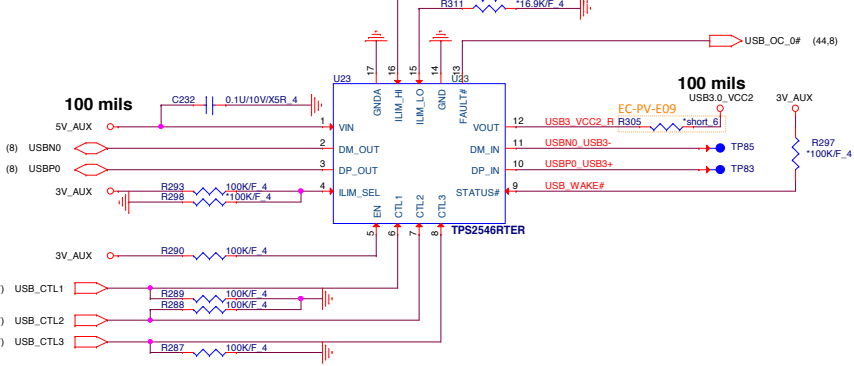
PROJECT : HP-Crusher G/U
Quanta Computer Inc.

Size	Document Number Web-Cam/Touch/LED	799347-000	Rev A
Date:	星期一, 一月 12, 2015	Sheet	28 of 48

USB3.0 *2



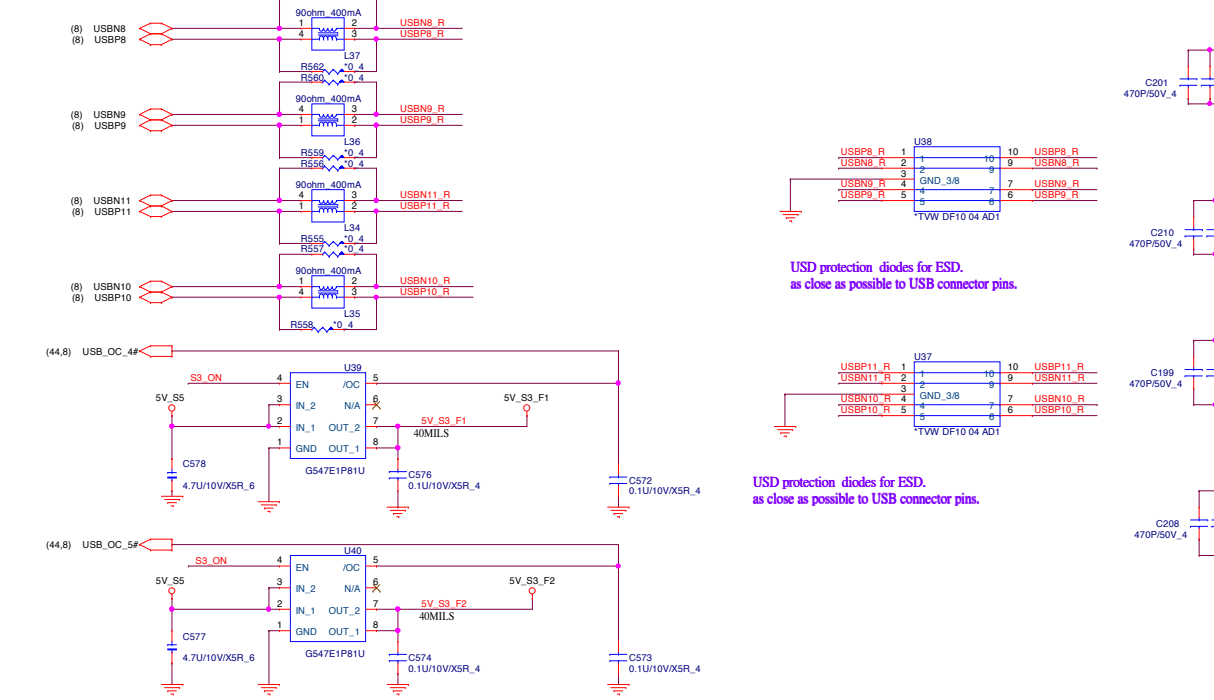
USB Charger



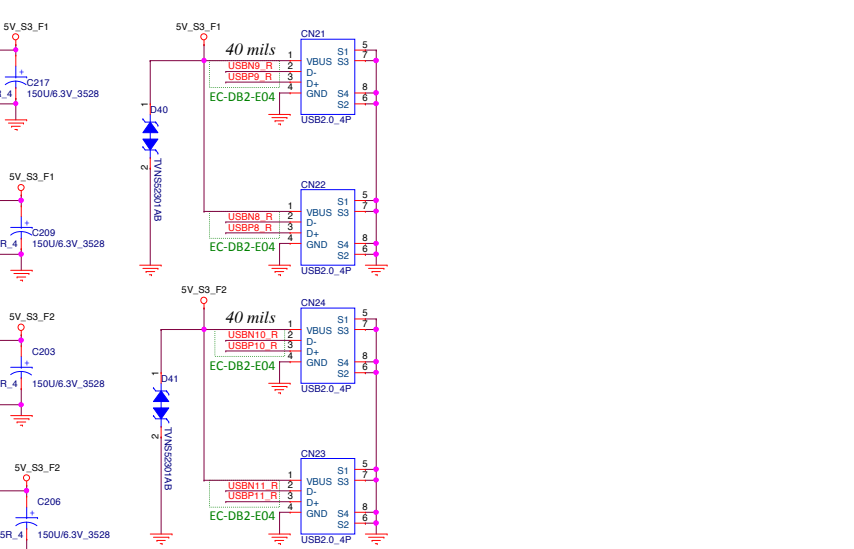
SDP : Standard Downstream Port
CDP : Charging downstream port
DCP : Dedicated Charging Port
Enable/Disable : setting by BIOS

POWER STATE	TPS2546 CHARGING MODE	CTRL1	CTRL2	CTRL3	ILIM
S0	CDP LOAD DETECTION WITH ILIM_LO +60mA THRESHOLDS OR IF A BC1.2 PRIMARY DETECTION OCCURS	1	1	1	1
S3	AUTO MODE, LOAD DETECTION WITH POWER WAKE THRESHOLDS	0	1	1	1
S4/S5	AUTO MODE, KEYBOARD/ MOUSE WAKE-UP, LOAD DETECTION WITH ILIM_LO +60mA THRESHOLDS	0	0	1	1

USB2.0 X 4



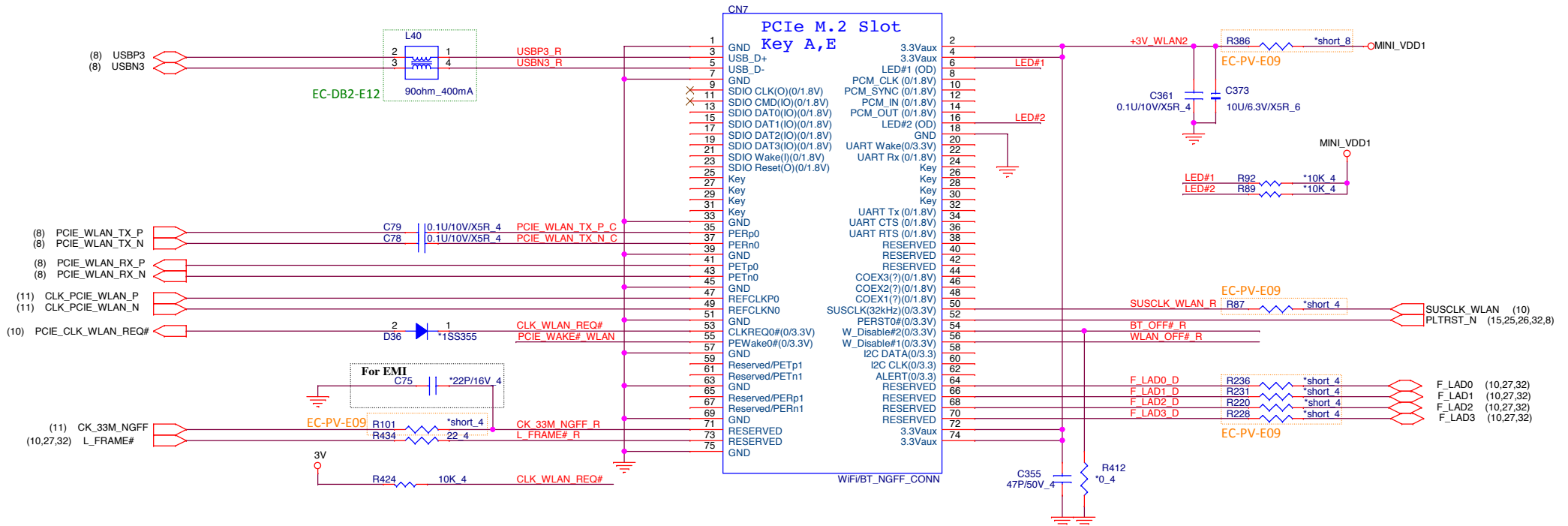
USB2.0 Conn



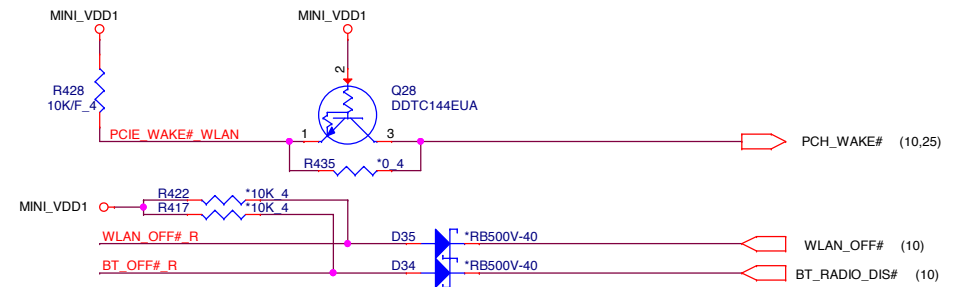
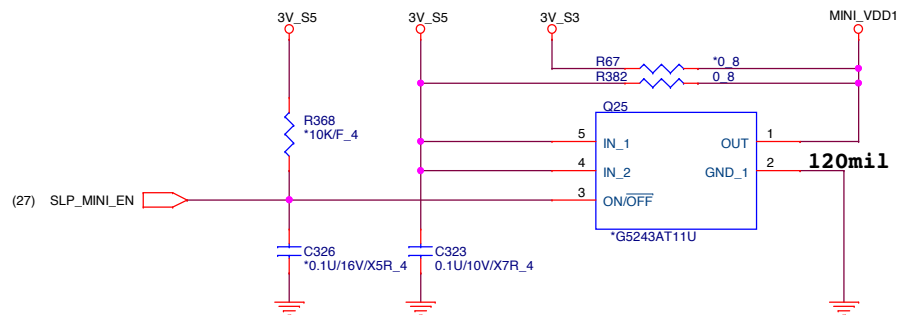
HP Restricted Secret

PCIe M.2 Slot Key A,E

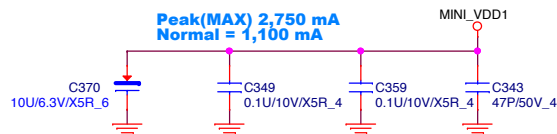
H=9.0



PCIe M.2_power(S5)



Peak(MAX) 2,750 mA
Normal = 1,100 mA



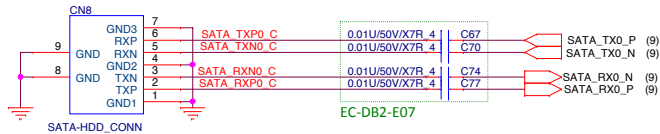
HP Restricted Secret



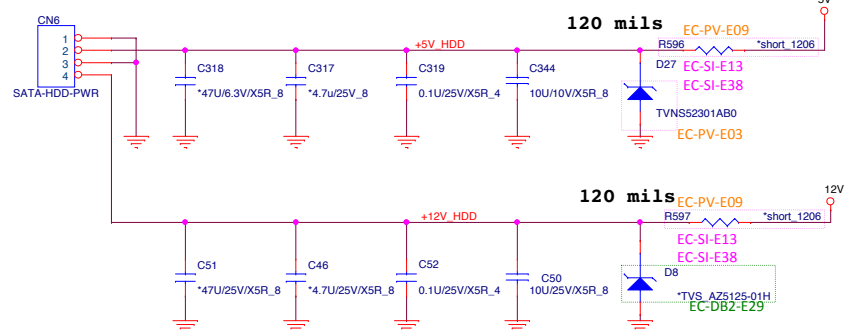
PROJECT : HP-Crusher G/U
Quanta Computer Inc.

Size	Document Number	Rev
	PCIe M.2 Key A/E WLAN 799347-000	A
Date:	星期一, 一月 05, 2015	Sheet 30 of 48

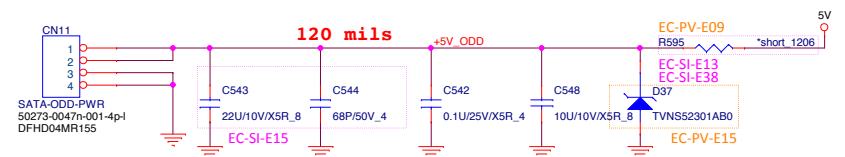
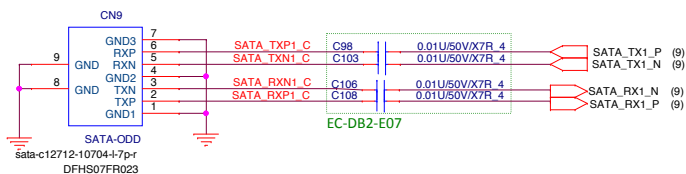
HDD SATA Conn.



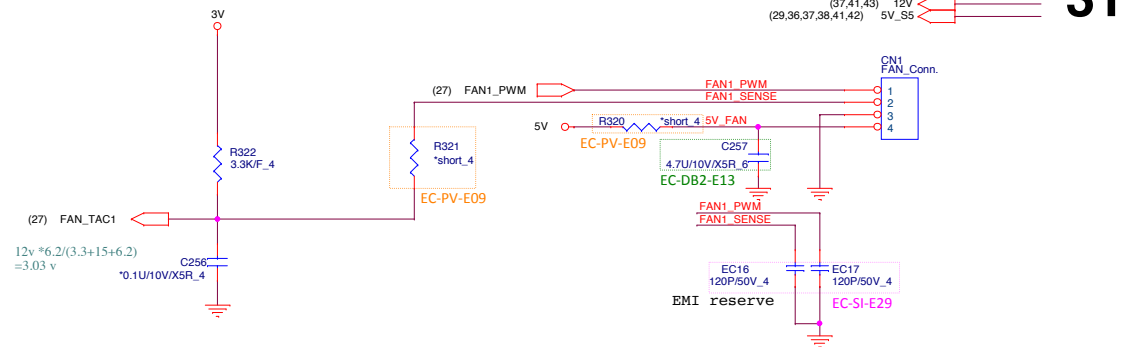
DIP_H type



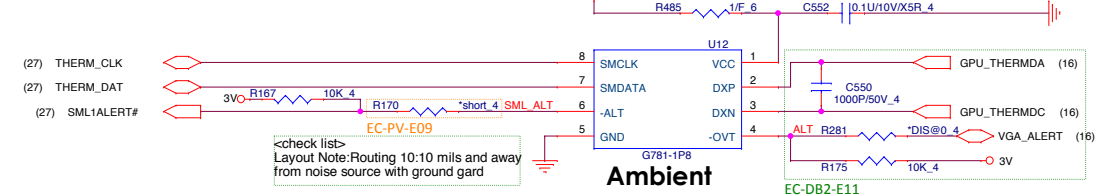
ODD SATA Conn.



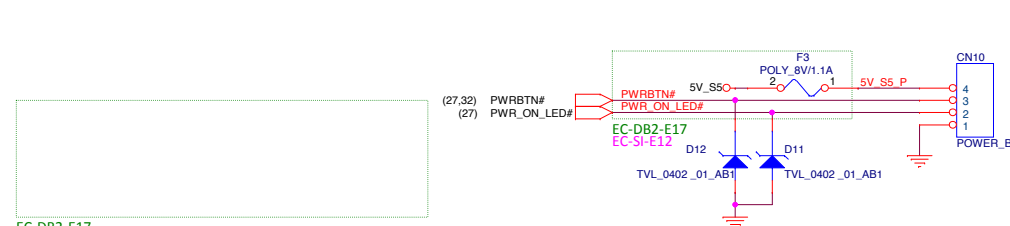
SYSTEM FAN



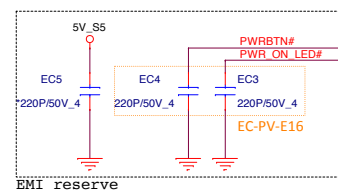
THERMAL SENSOR



Power Button CONN



EC-DB2-E17
EC-SI-E12

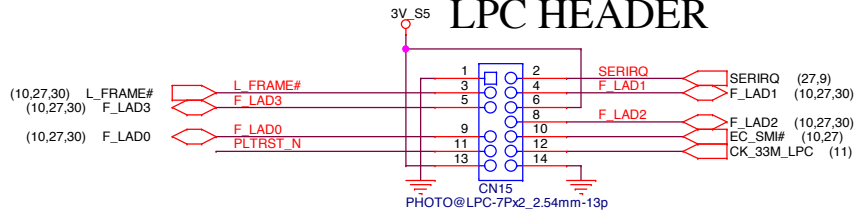


HP Restricted Secret

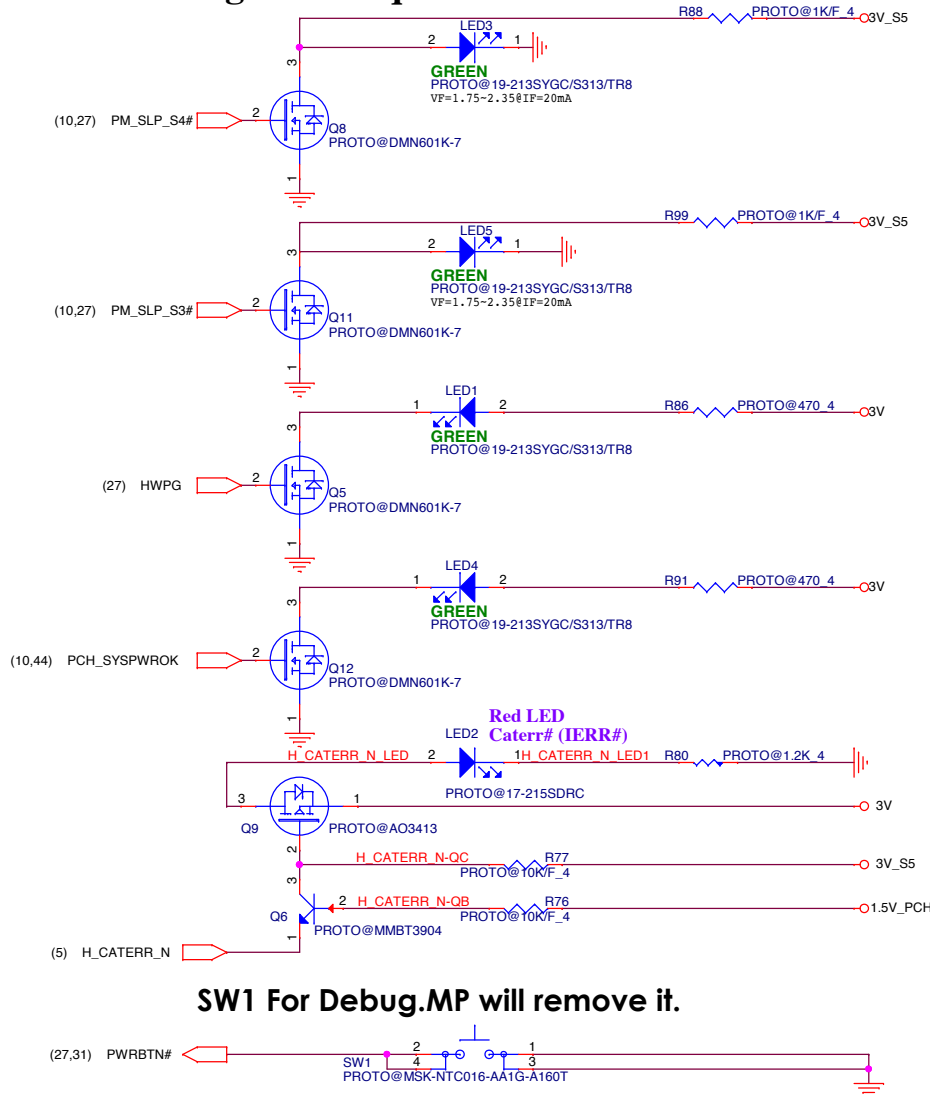
PROJECT : HP-Crusher G/U			
Quanta Computer Inc.			
Size	Document Number	799347-000	Rev A
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LEDs/LPC HEADER

LPC HEADER



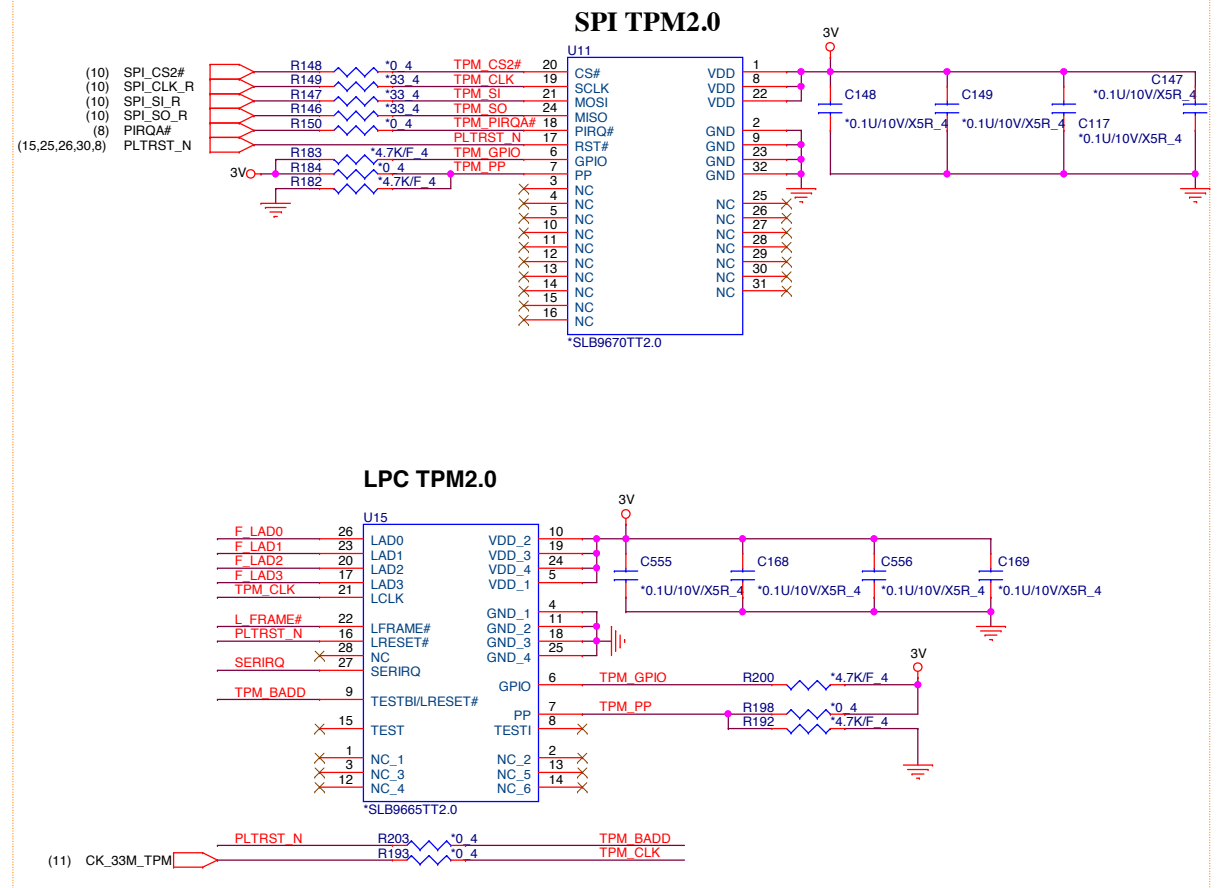
PCA debug LED requirement:



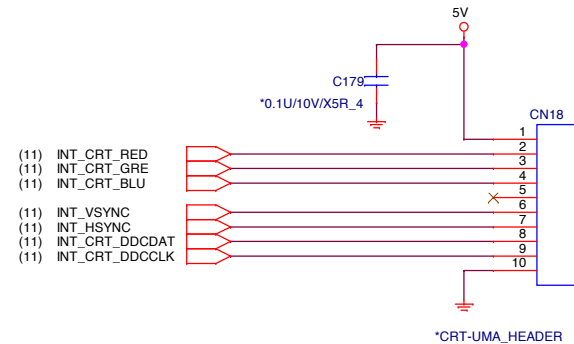
SW1 For Debug.MP will remove it.

TPM2.0

EC-PV-E11



CRT for UMA Debug



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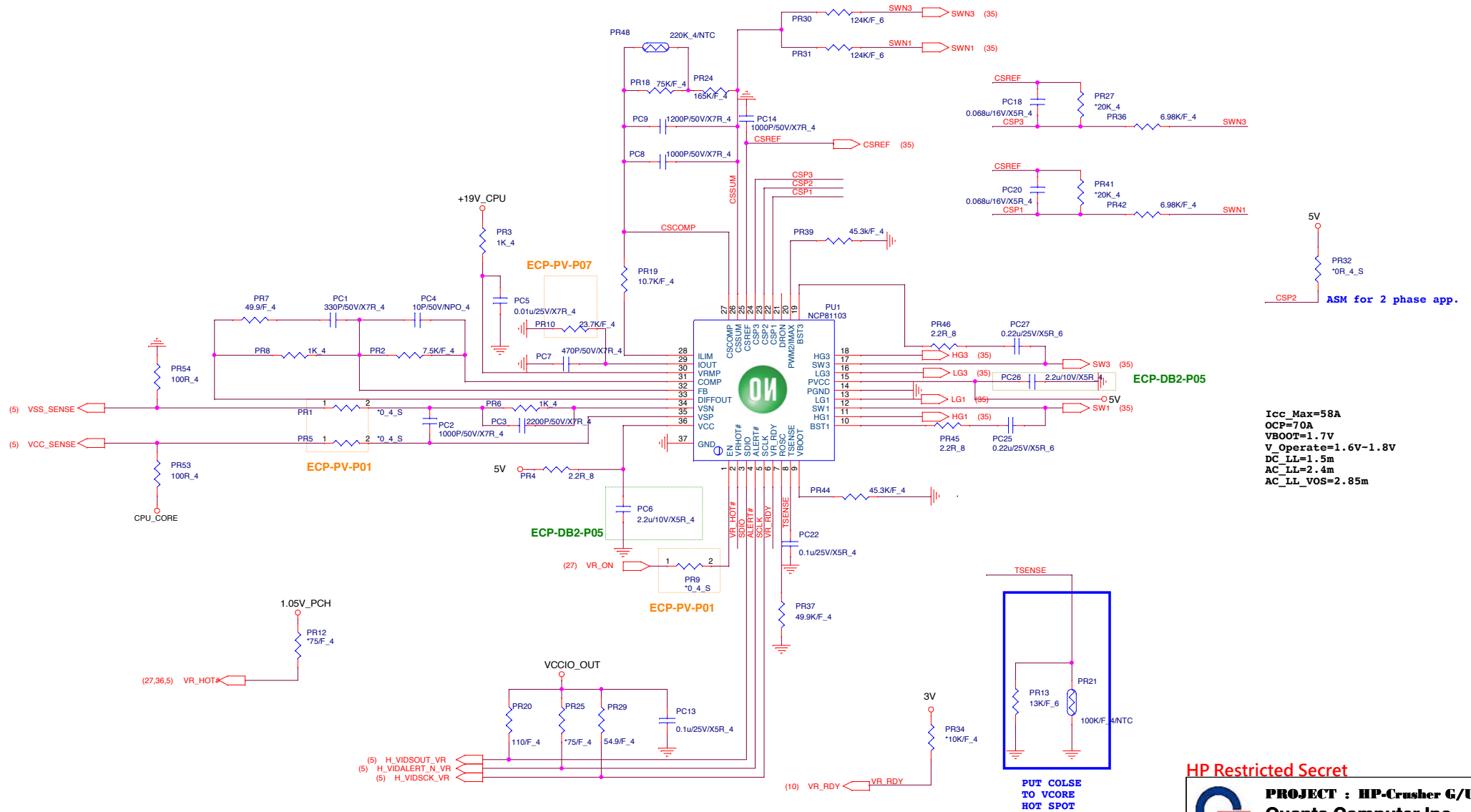
PROJECT : HP-Crusher G/U
Quanta Computer Inc.



MOSFET	Package	ID (Ta=25°C)	Rds_on_max
TPCC8067-H	DFN3x3	9A	26m
TPCC8062-H	DFN3x3	27A	7.1m

EN0	ENC	REF	VREG3	VREG5	SMPS1	SMPS2
LOW	LOW	OFF	OFF	OFF	OFF	OFF
> 2.4V	LOW	ON	ON	ON	OFF	OFF
> 2.4V	> 2.4V	ON	ON	ON	ON	ON

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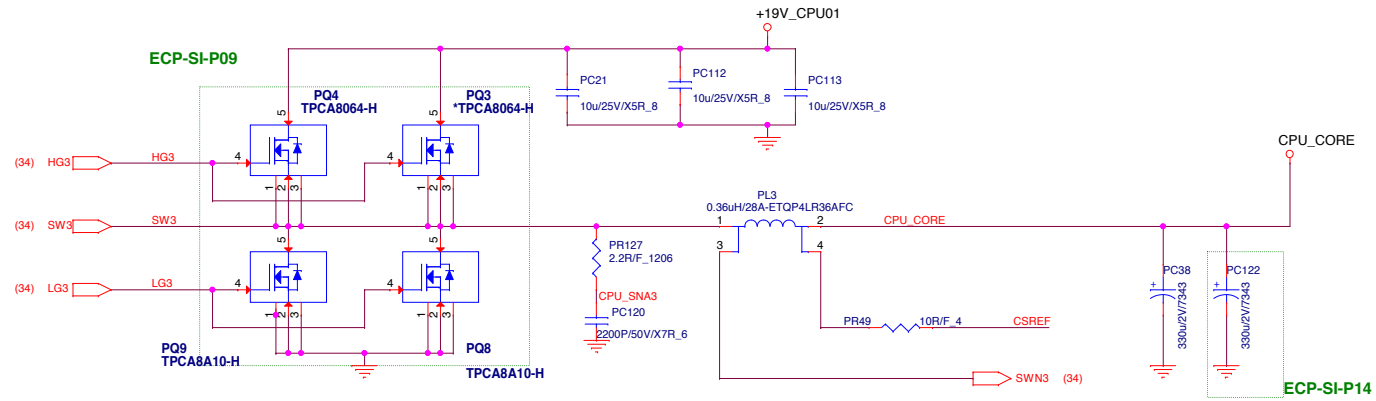
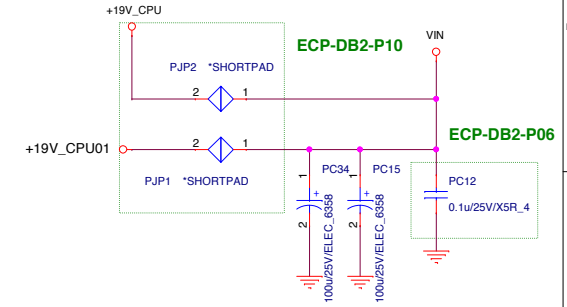
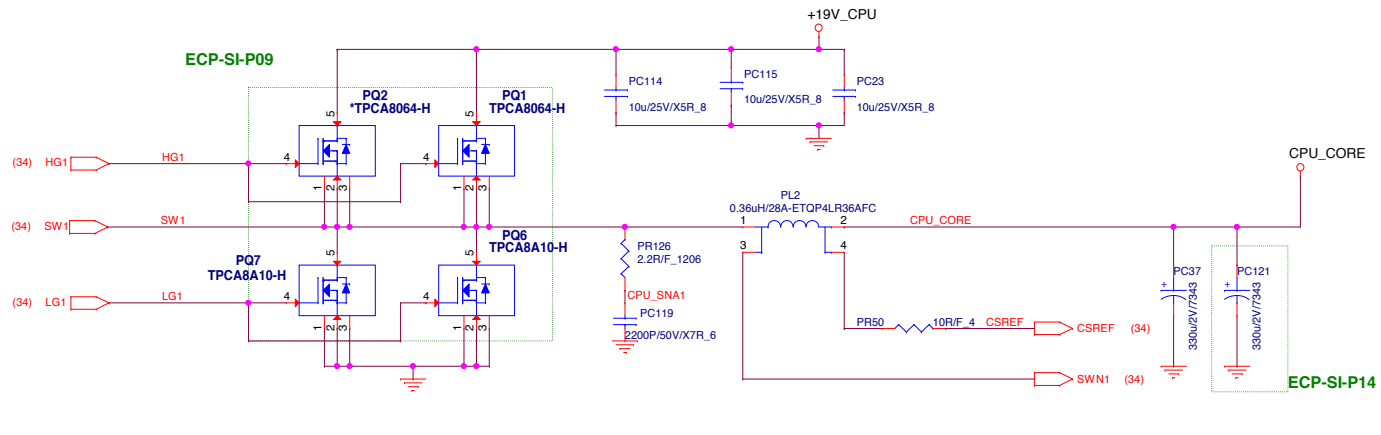


HP Restricted Secret



PROJECT : HP-Crusher G/U
Quanta Computer Inc.

Size	Document Number	Rev
	CPU NCP81103	A
Date: 星期一, 一月 12, 2015	799347-000	Sheet 34 of 48

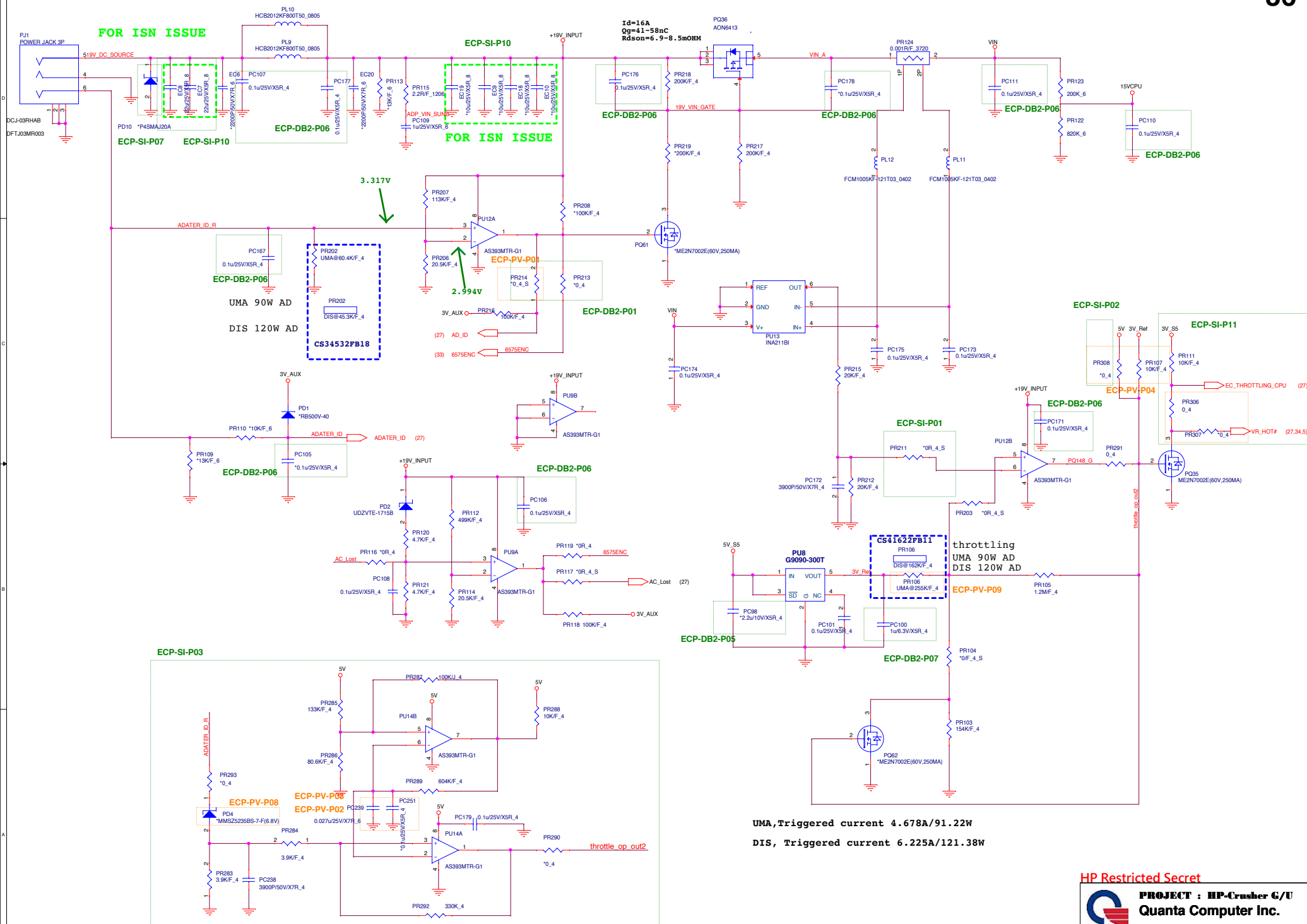


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PROJECT : HP-Crusher G/U
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Size	Document Number	Rev
	CPU NCP81103 MOSFET	A
Date: 星期二, 二月 12, 2015	799347-000	Sheet 35 of 48



UMA, Triggered current 4.678A/91.22W

DIS, Triggered current 6.225A/121.38W

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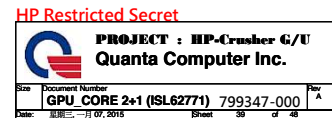


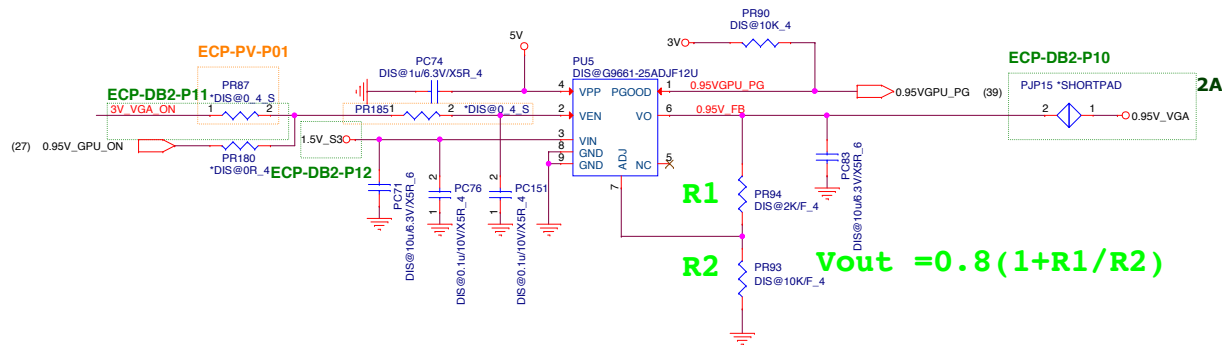
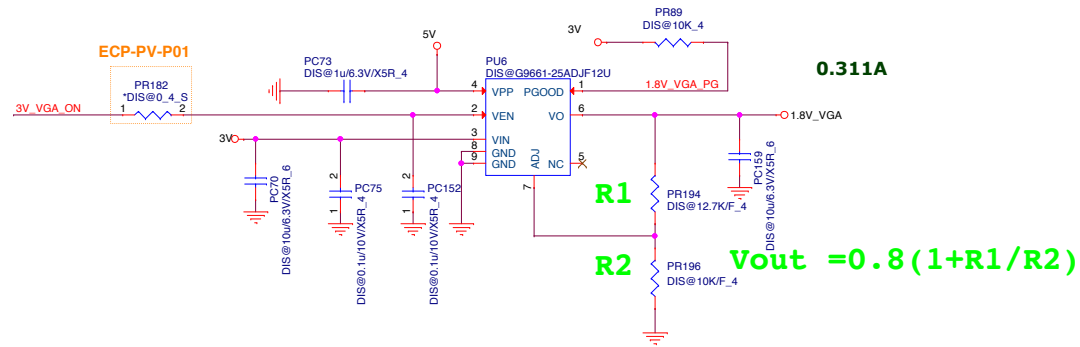
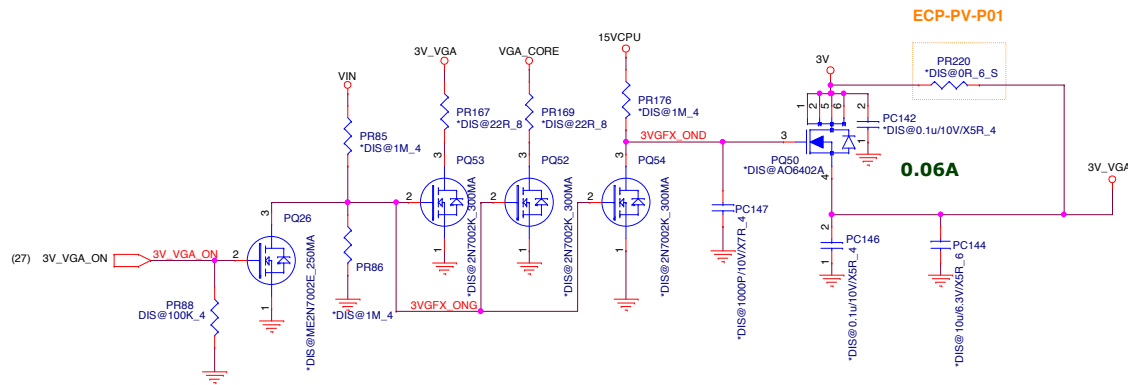
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Quanta Computer Inc.

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	DC-IN	A
	799347-000	
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CONFIDENTIAL



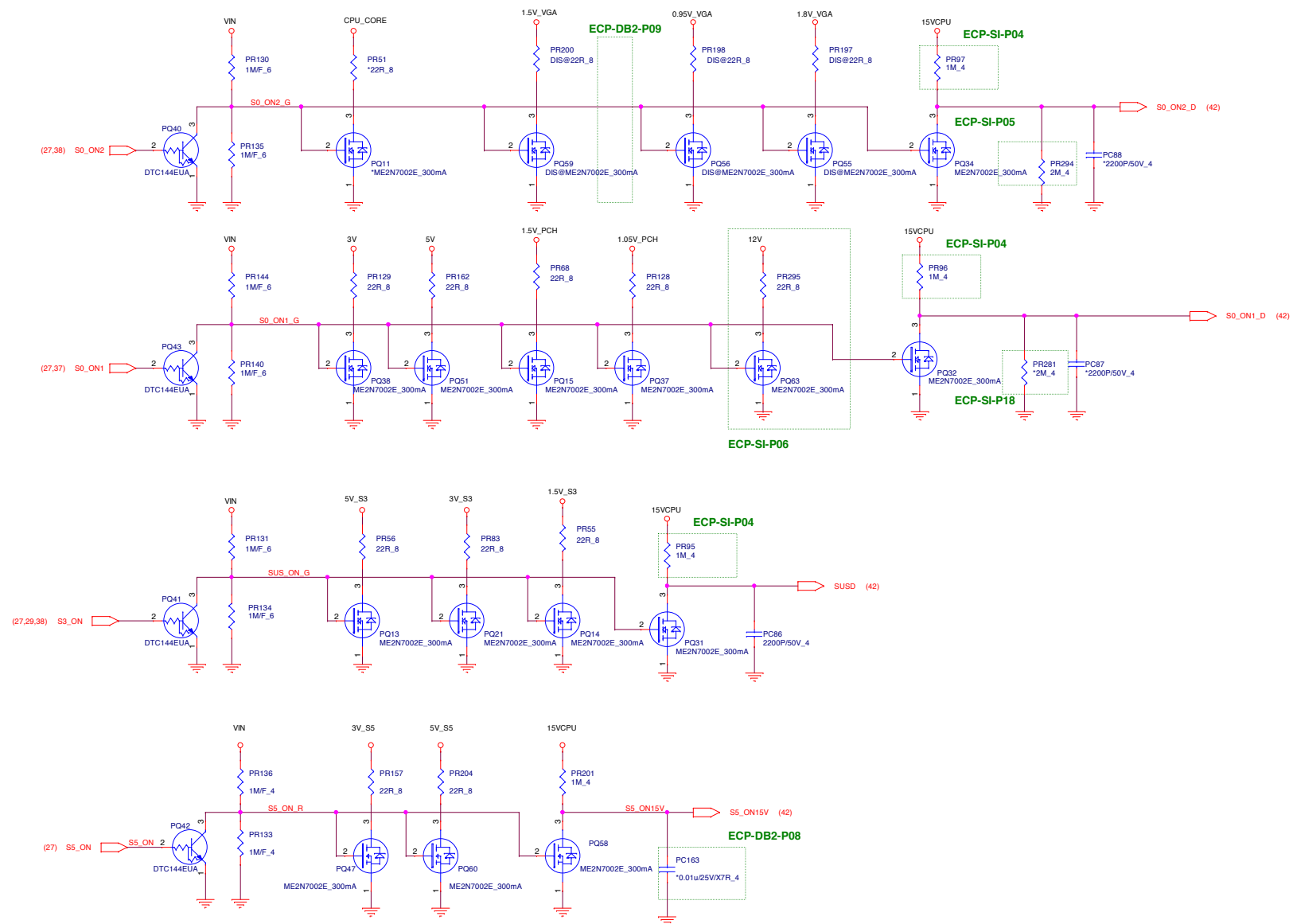


HP Restricted Secret



PROJECT : HP-Crusher G/U
Quanta Computer Inc.

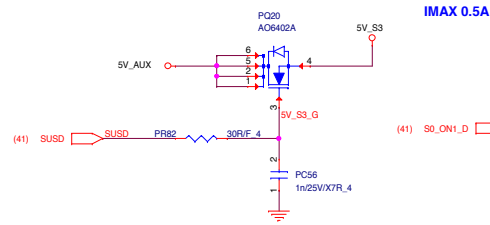
Size	Document Number	799347-000	Rev
			A
Date	星期二, 一月 07, 2015	Sheet	40 of 48



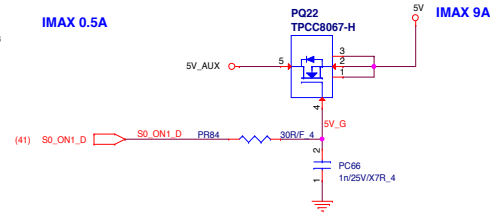
HP Restricted Secret

Load Switch

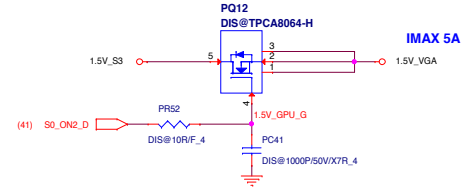
S3 ON Load SW



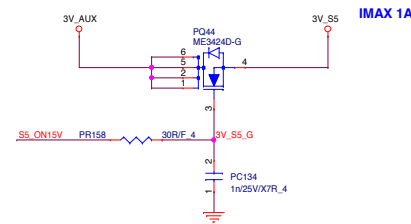
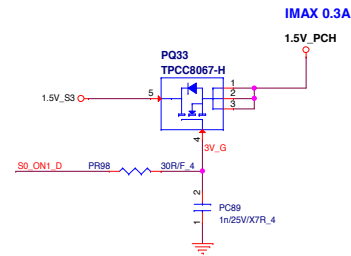
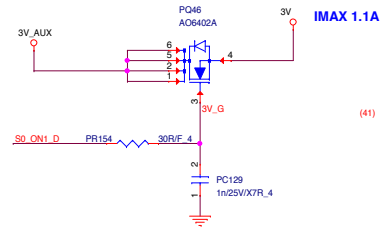
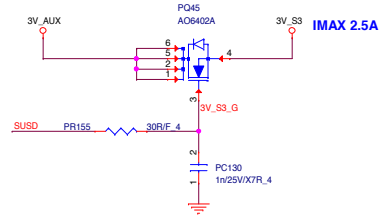
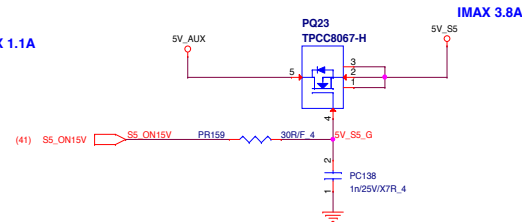
S0 ON_1 Load SW



S0 ON_1 Load SW



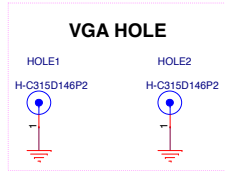
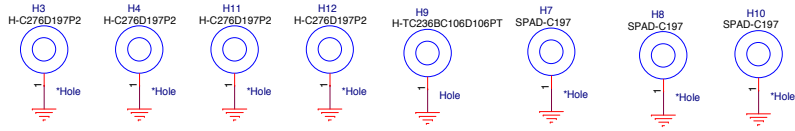
S5 ON Load SW



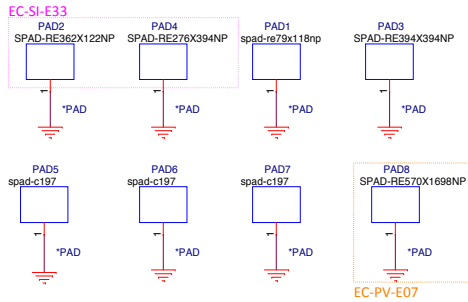
Mosfet parameter

Mosfet	Package	ID(Ta=25C)	Rds_on_max	Vgs_max
ME3424D-G	TSOP-6	5.0A/6.7A	42m	+/- 20V
TPCC8067-H	3x3	9A	26m	+/- 20V
TPCA8064-H	SO-8	20A	7.9m	+/- 20V

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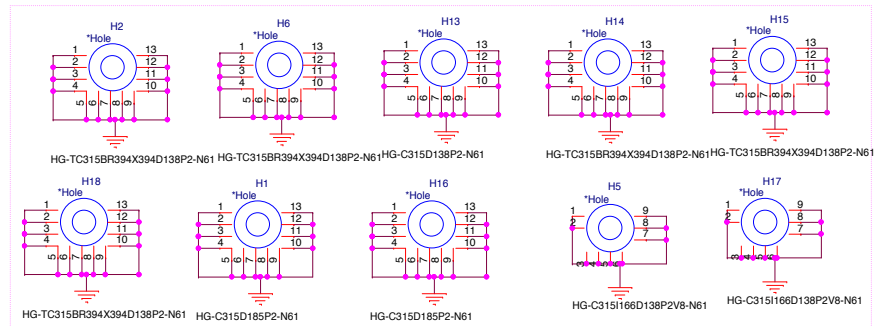
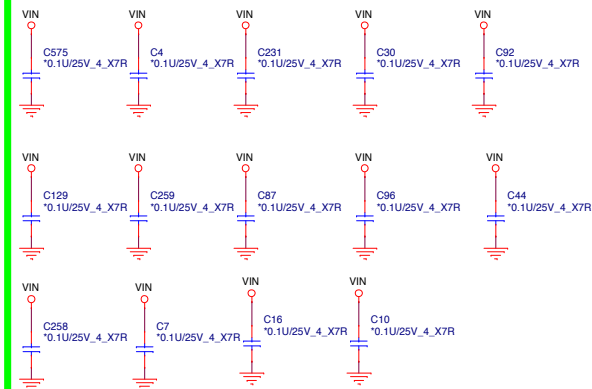


EC-SI-E33



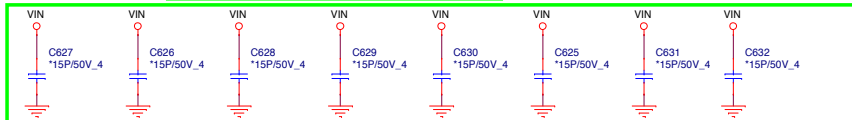
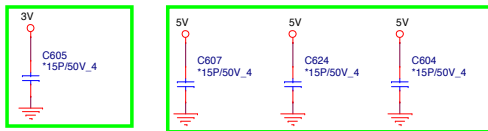
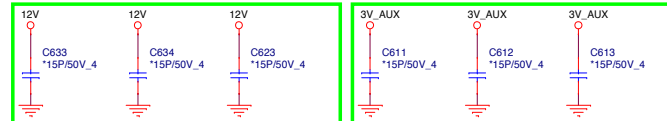
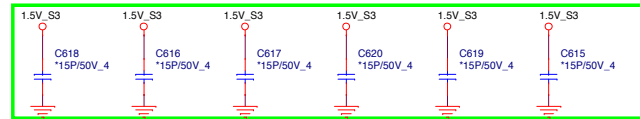
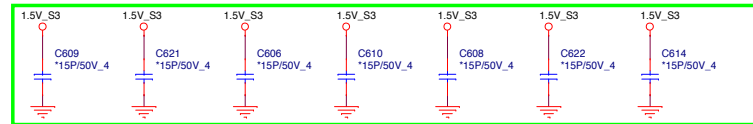
EC-PV-E07

Place around VIN trace



EC-SI-E33

EC-SI-E30

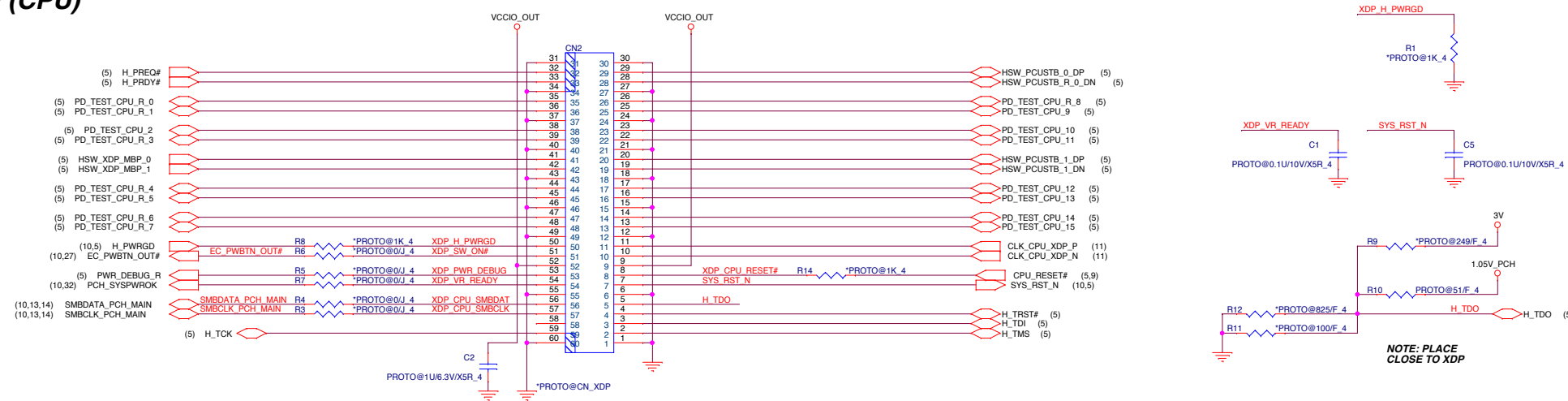


HP Restricted Secret

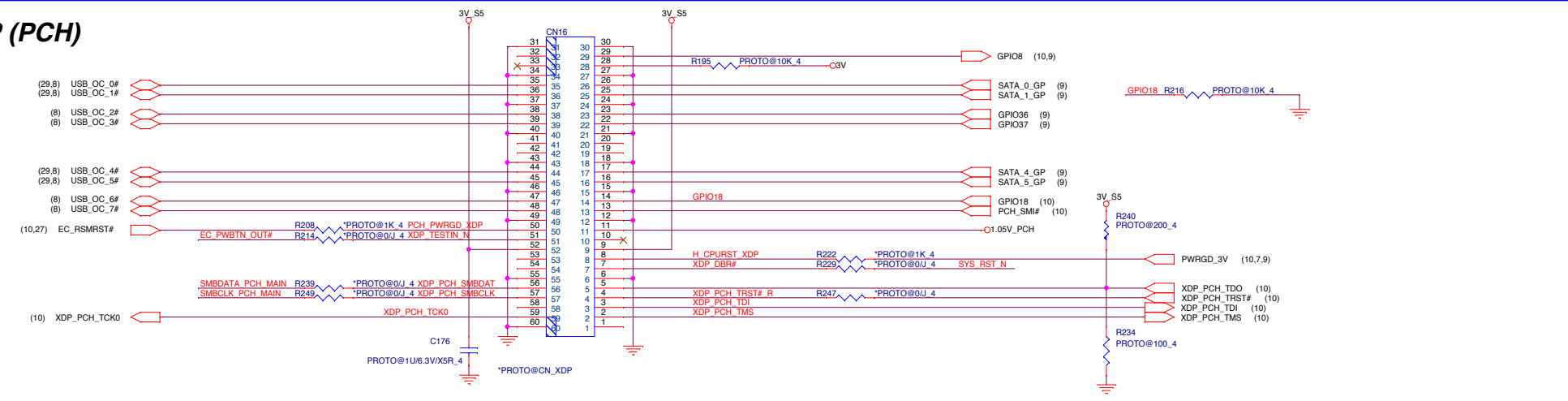


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XDP (CPU)

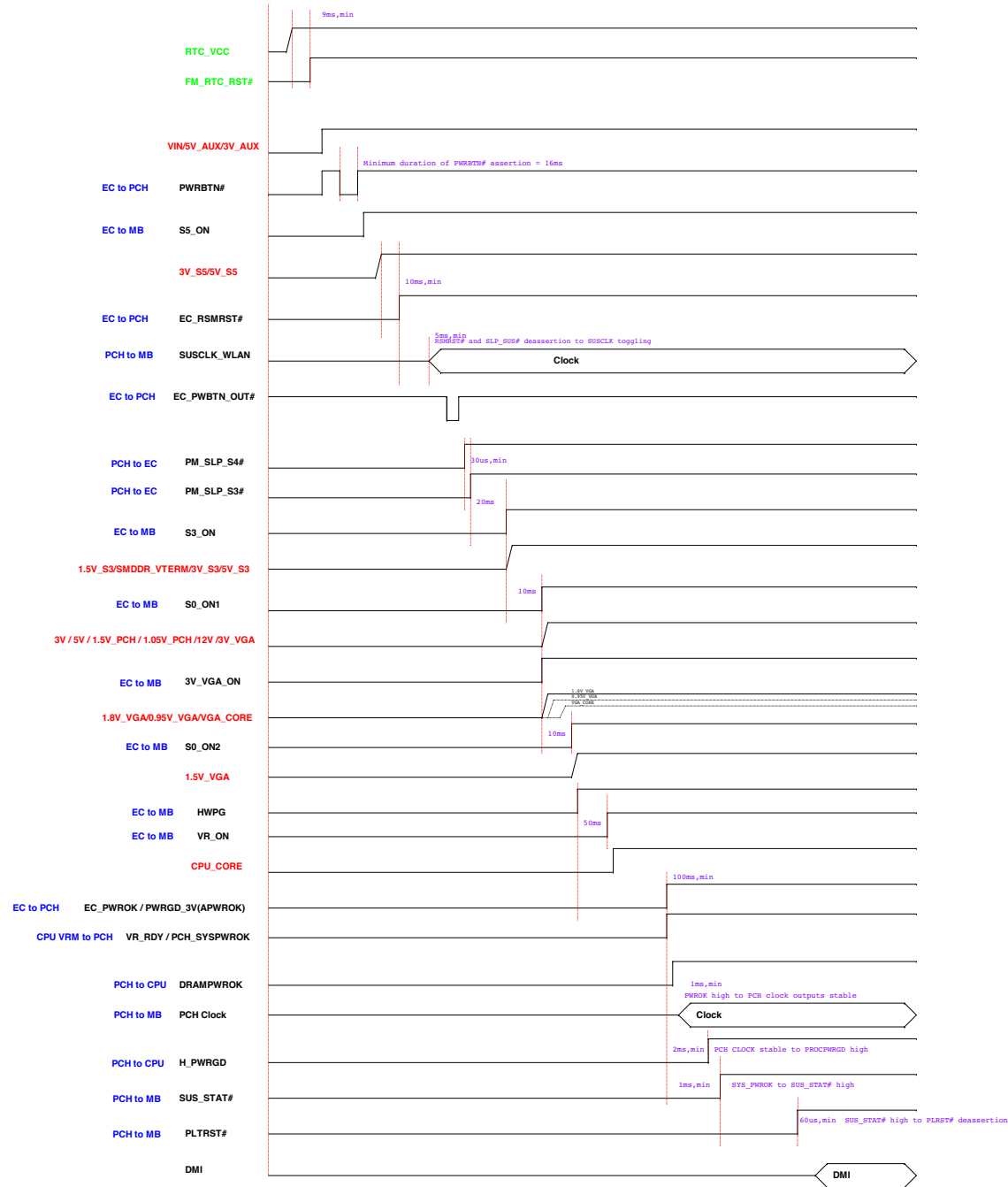


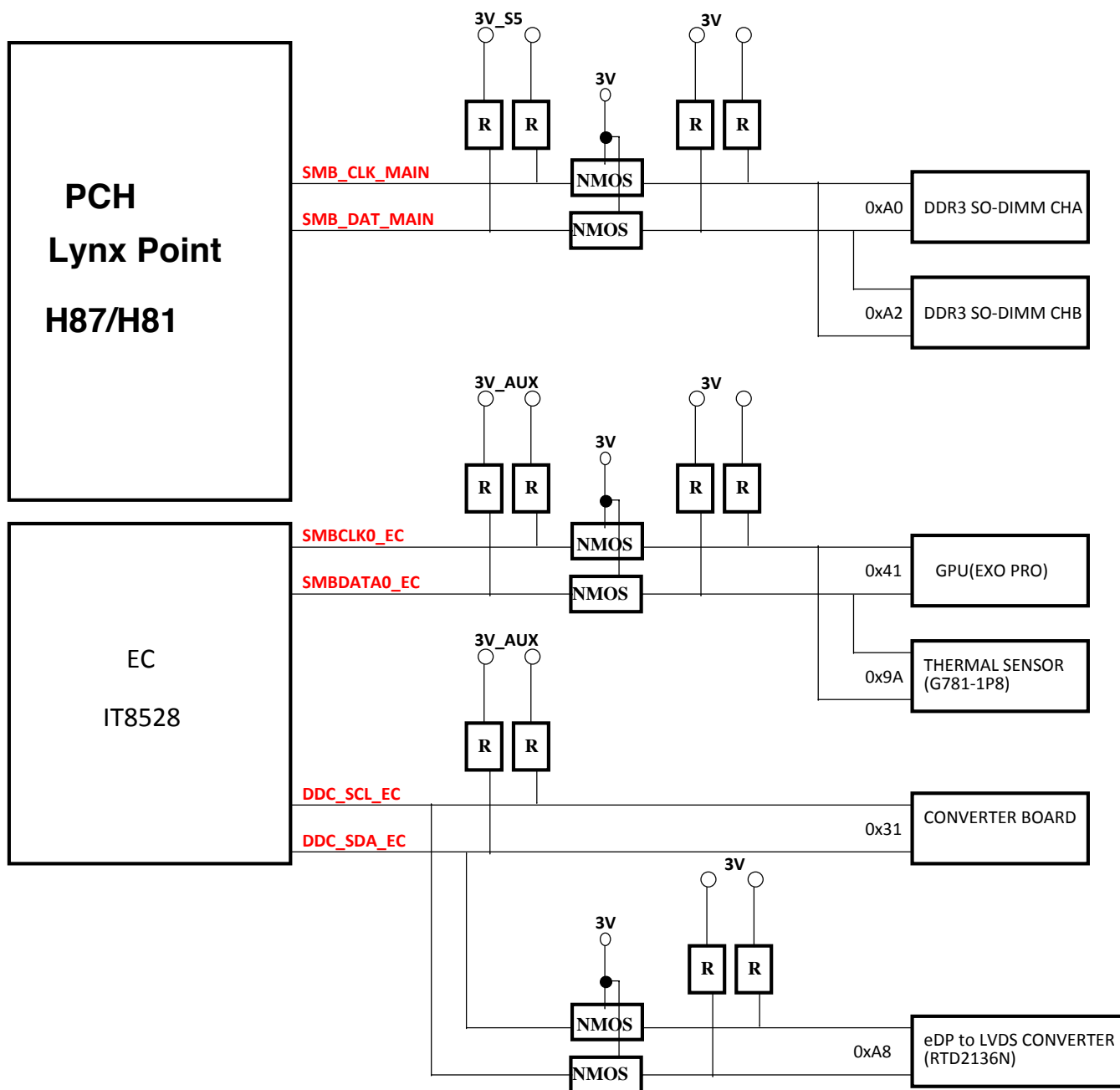
XDP (PCH)



POWER SEQUENCE

45





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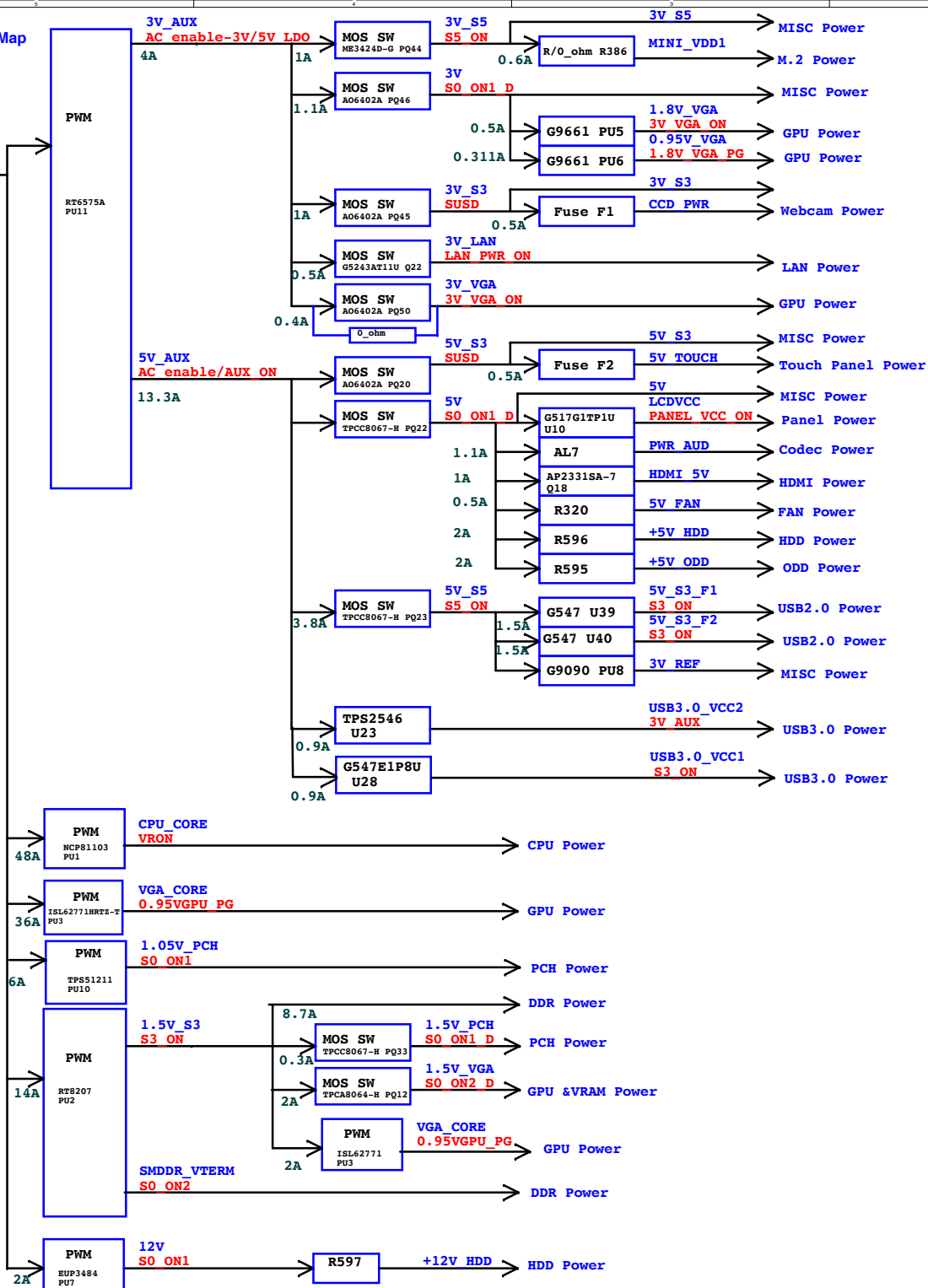


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Power Delivery Map

Adapter

VIN



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PROJECT : HP-Crasher G/U
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Power Delivery Map				
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