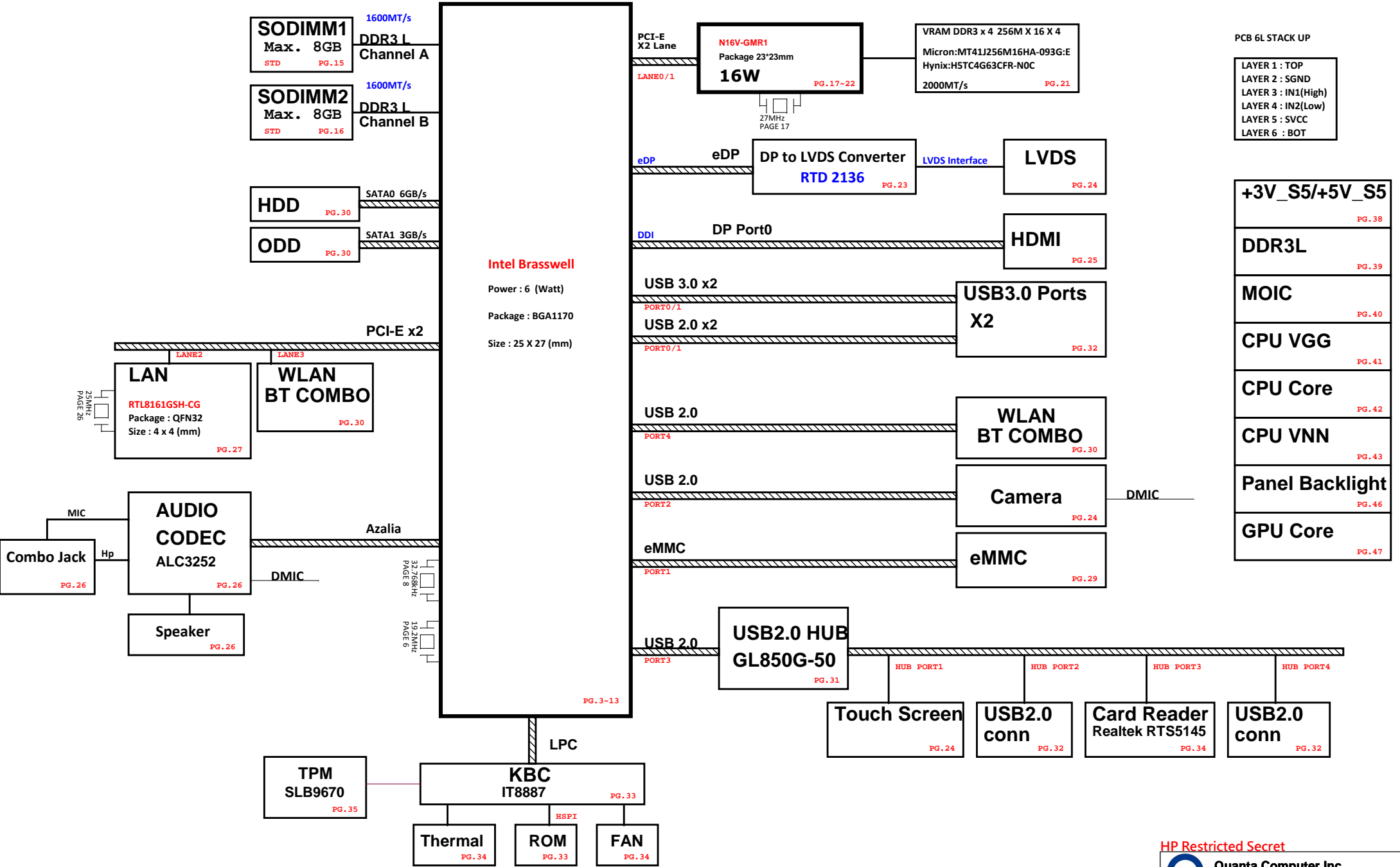




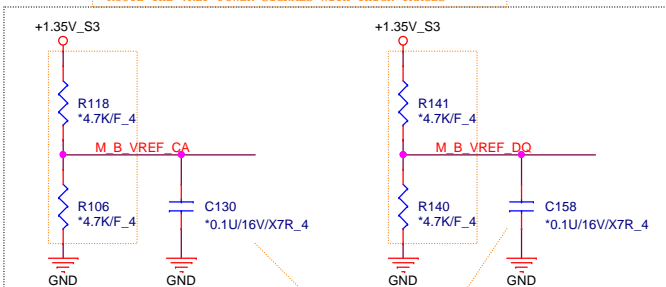
# Molokai Intel Brasswell-M Platform Block Diagram





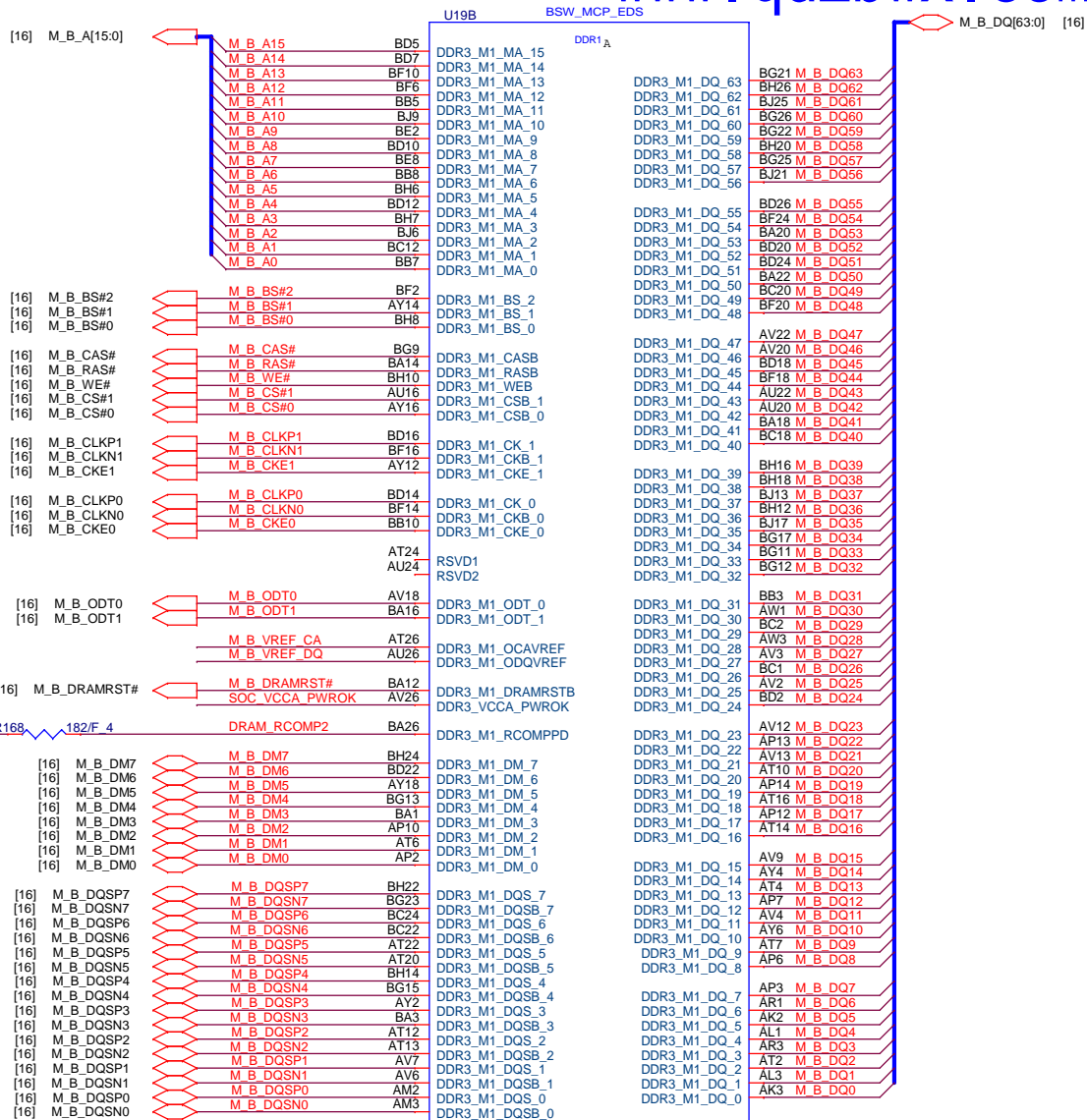
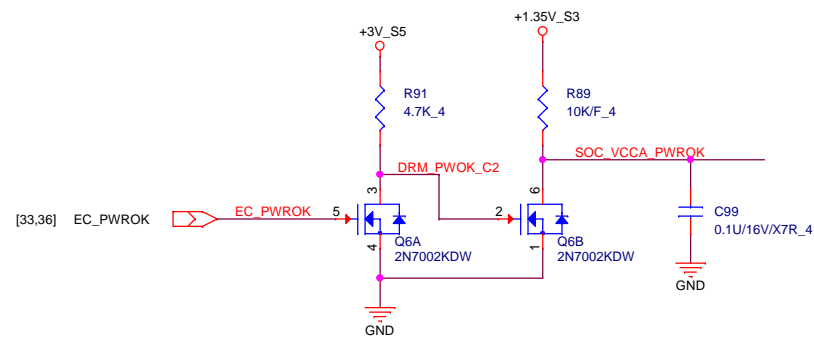
ROUTE ALL VREF POWER SIGNALS AS THICK TRACES

PLACE TWO 4.7K RESISTORS CLOSE TO CPU PINS ON M\_VREF  
ROUTE THE VREF POWER SIGNALS WITH THICK TRACES



No\_Staff Vref circuitry from SOC pages.  
VOLTAGE DIVIDER FOR VREF IS FOR DDR3L DIMMS ONLY. SOC DOES NOT DRIVE VREF.  
FOLLOW TO BRASWELL SOC EDS AND PDG FOR MORE DETAILS ABOUT DDR VREF

VREF signals are not used for  
DDR3L designs.



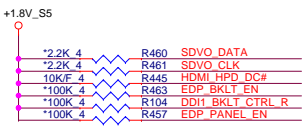
[3,5,6,11,14,22,24,27,30,31,32,33,35,36,37,38,40,41,42,43,44,48] +1.35V\_S3  
+3V\_S5

**HP Restricted Secret**

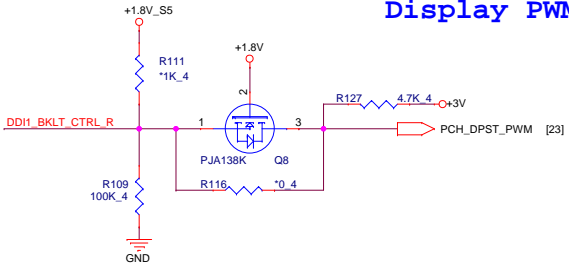
**Quanta Computer Inc.**

**PROJECT: HP-MoLokai**

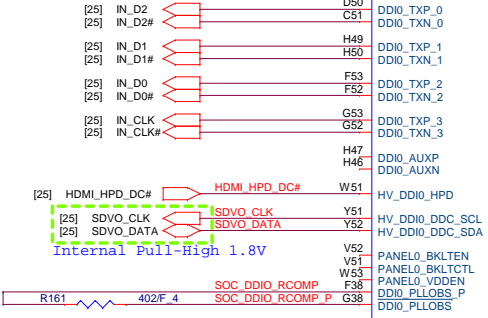
Size	Document Number	Rev
Custom	Braswell (DDR3)	1A
Date:	Monday, January 18, 2016	Sheet 4 of 54



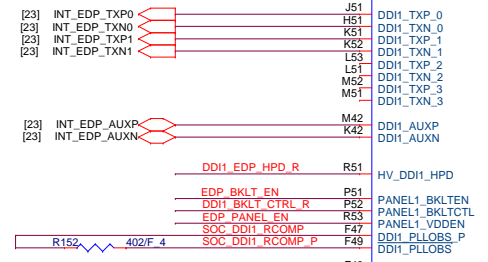
### Display PWM



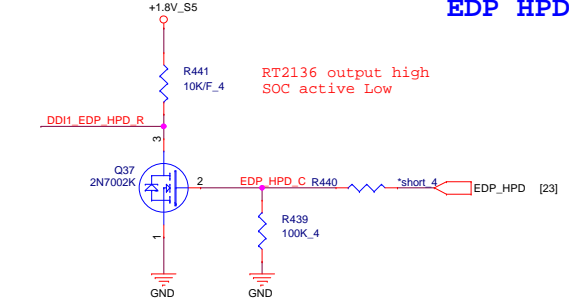
### HDMI



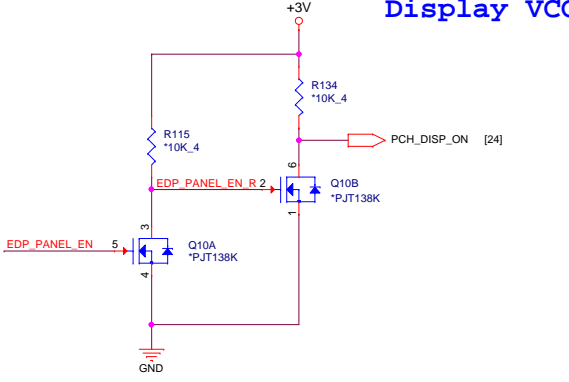
### LVDS



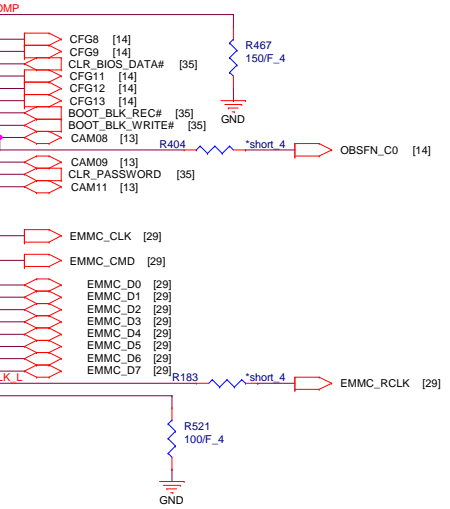
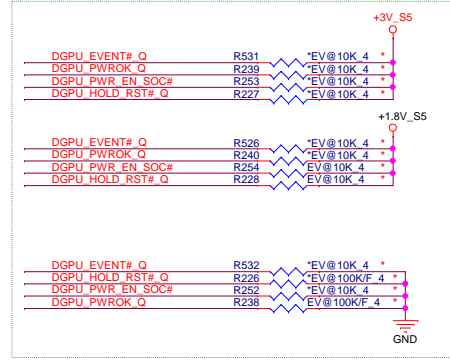
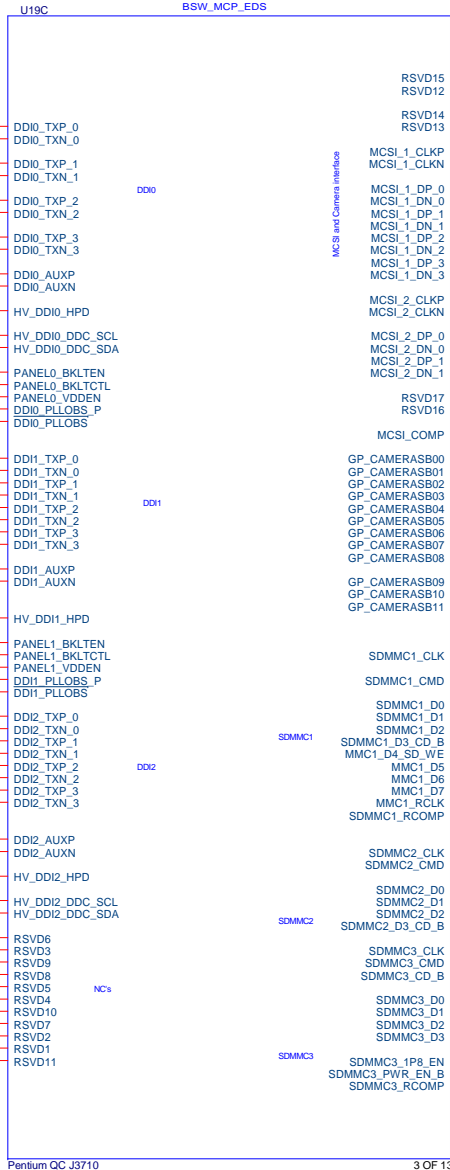
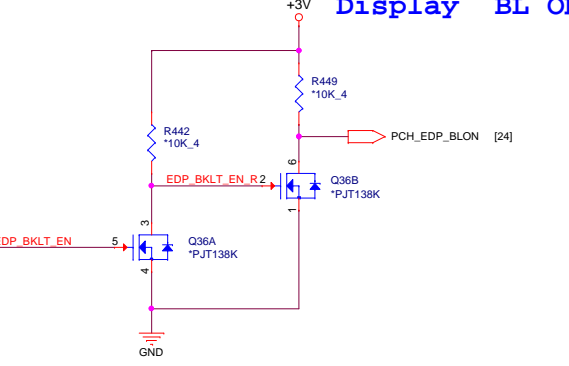
### EDP HPD



### Display VCC



### Display BL ON

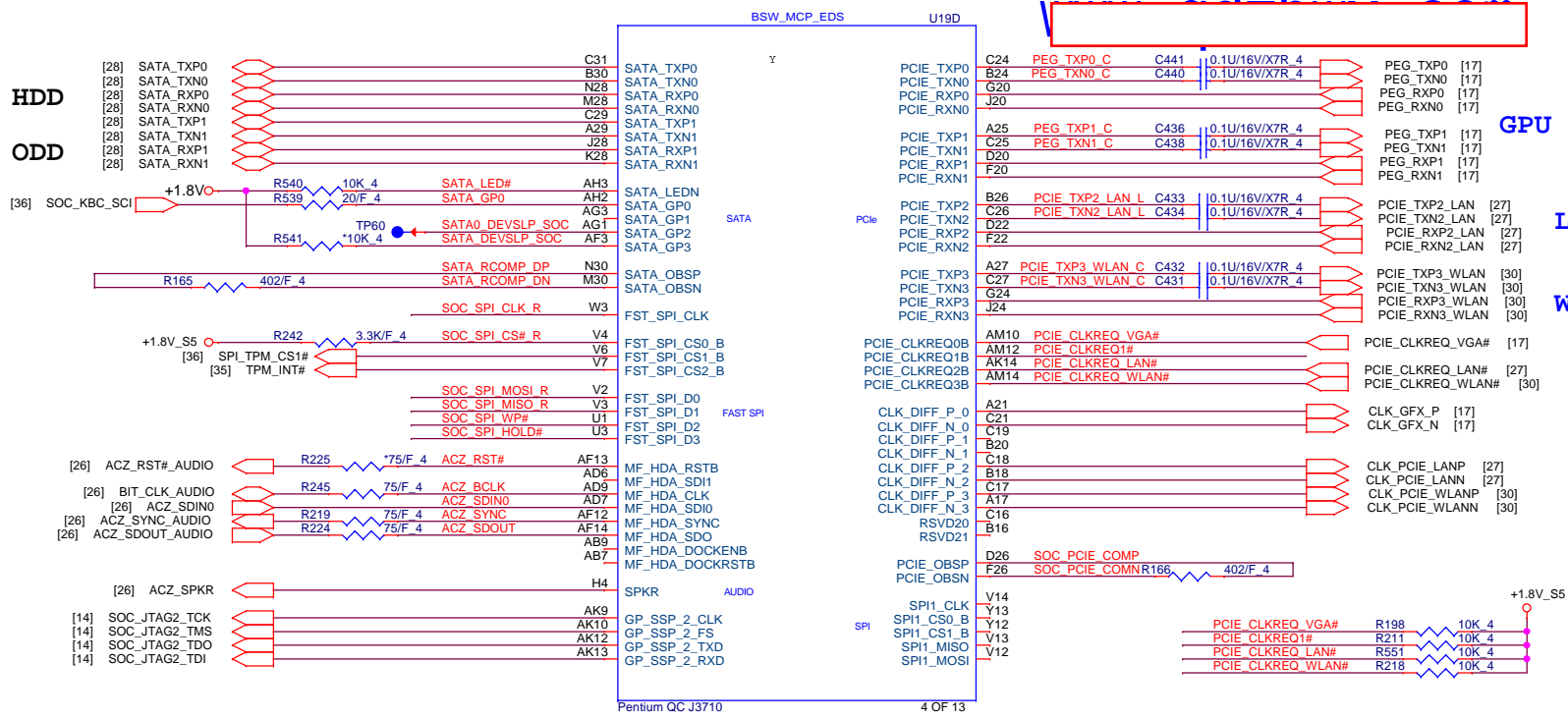


EDS: +1.8V5/3.3V5 OUTPUT

GPU

LAN

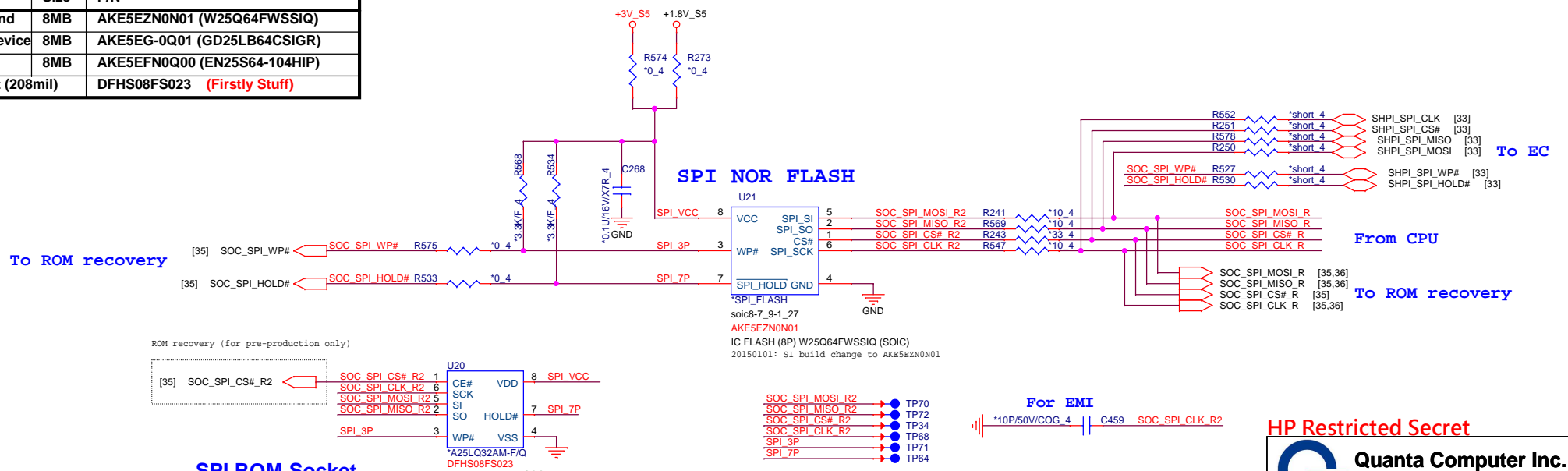
WIFI



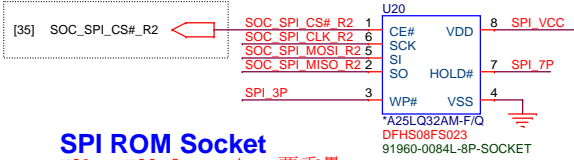
[34] SATA\_LED# ← SATA\_LED#

GND || C257 || \*22P/50V/NPO\_4

Vender	Size	P/N
Winbond	8MB	AKE5EZN0N01 (W25Q64FWSSIQ)
GigaDevice	8MB	AKE5EG-0Q01 (GD25LB64CSIGR)
EON	8MB	AKE5EFN0Q00 (EN25S64-104HIP)
Socket (208mil)		DFHS08FS023 (Firstly Stuff)



ROM recovery (for pre-production only)



**SPI ROM Socket**  
U21 & U22 footprint 要重疊

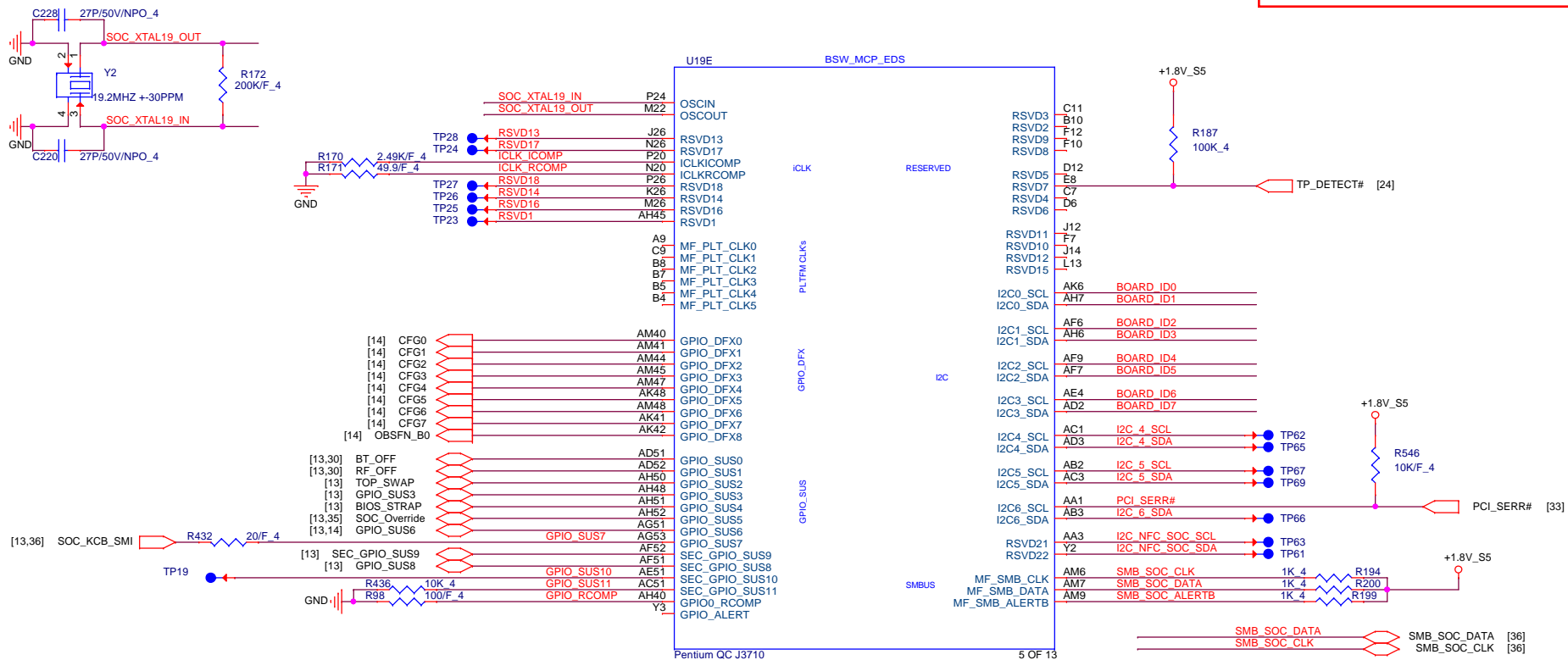
**HP Restricted Secret**

**Quanta Computer Inc.**

PROJECT: HP-Molokai

Size Custom	Document Number	Rev 1A
	<b>Braswell (SP/PC/SA/AU)</b>	

Date: Monday, January 18, 2016 Sheet 6 of 54

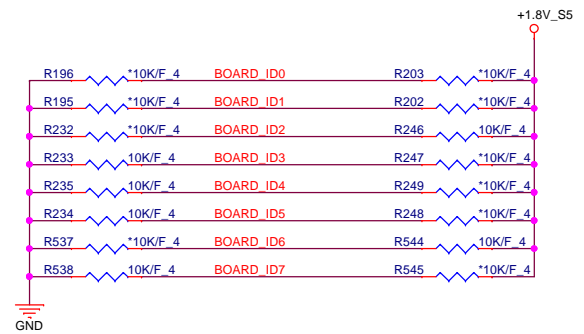


### BOARD ID SETTING

Board ID (Default = 00)		
Model	BOARD_ID7	BOARD_ID6
BC-SI-03		
All EVT	0	0
All DVT	0	1
PVT1	1	0
PVT2+	1	1
MVB,A	0	0
1st Major ECN	0	1
2nd Major ECN	1	0
3rd Major ECN	1	1

Board ID (Default = 00)		
eMMC	BOARD_ID5	BOARD_ID4
W/O	0	0
Hynix	0	1
Samsung	1	0
Reserved	1	1

Board ID (Default = 00)				
VRAM	BOARD_ID3	BOARD_ID2	BOARD_ID1	BOARD_ID0
UMA	0	0		
Hynix	0	1		
Mircon	1	0		
Reserved	1	1		



**HP Restricted Secret**

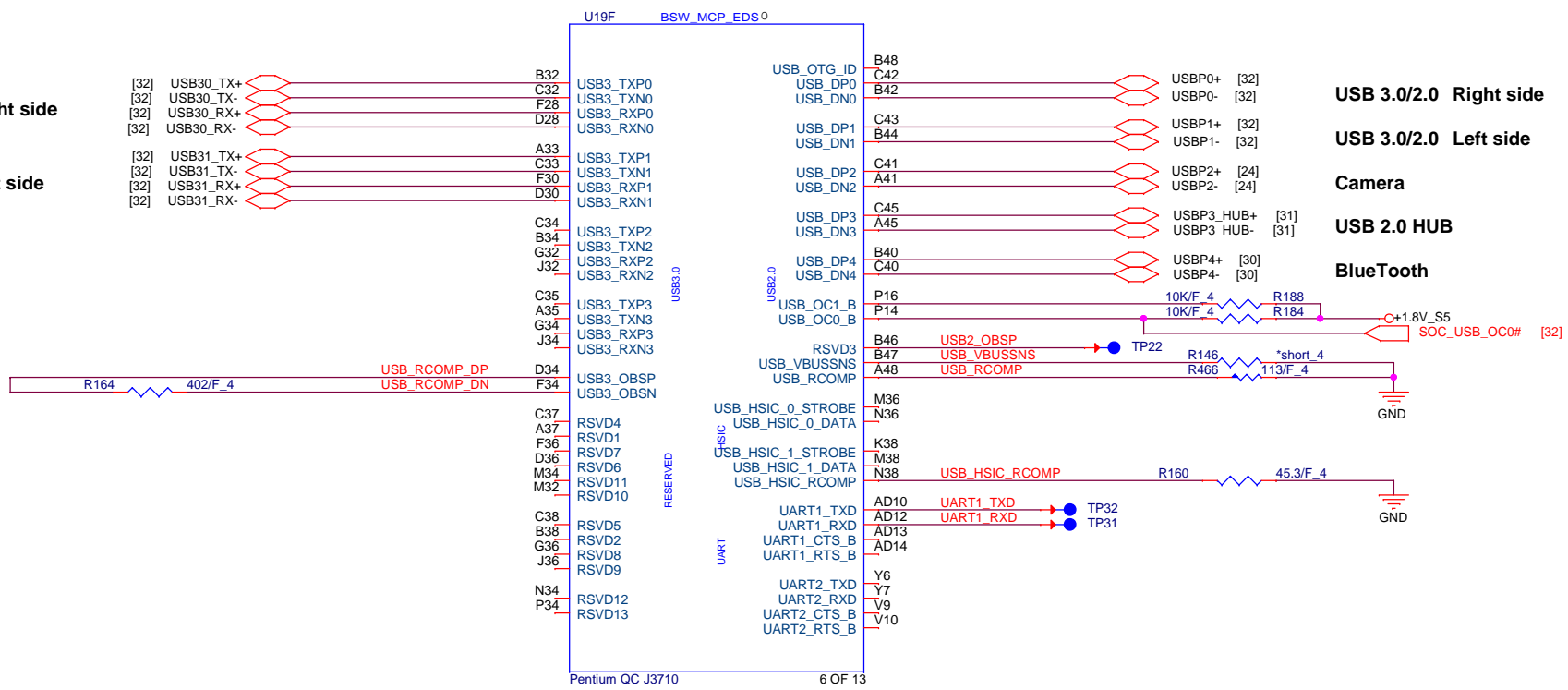
**Quanta Computer Inc.**  
PROJECT: HP-Molokai

Size Custom Document Number **Braswell (I2C/GPIO/CLK)** Rev 2A

Date: Monday, January 18, 2016 Sheet 7 of 54

Right side

Left side



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**Quanta Computer Inc.**

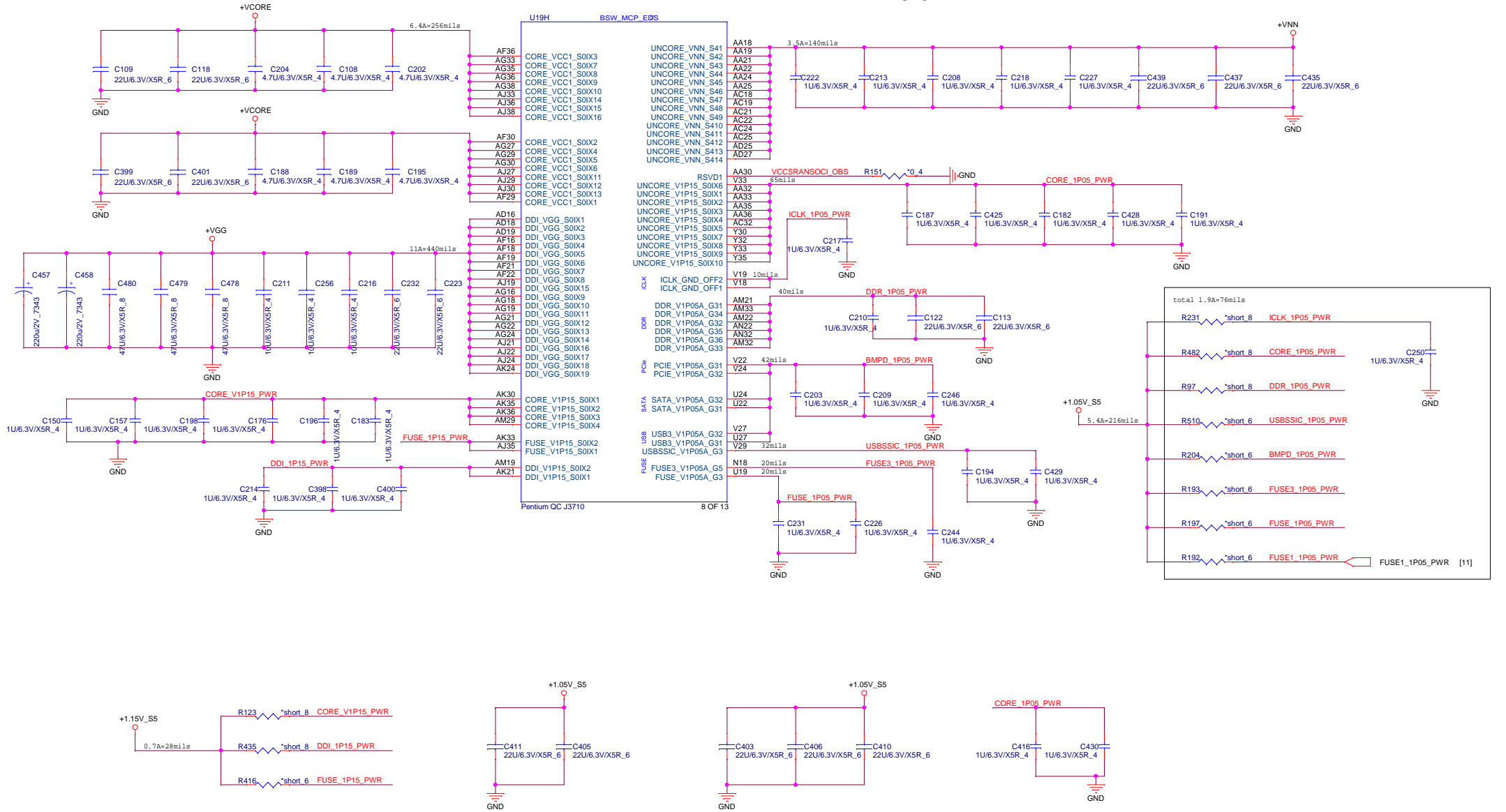
PROJECT: HP-Molokai

Size Custom	Document Number	Braswell (USB/URAT)	Rev 1A
Date:	Monday, January 18, 2016	Sheet 8 of 54	






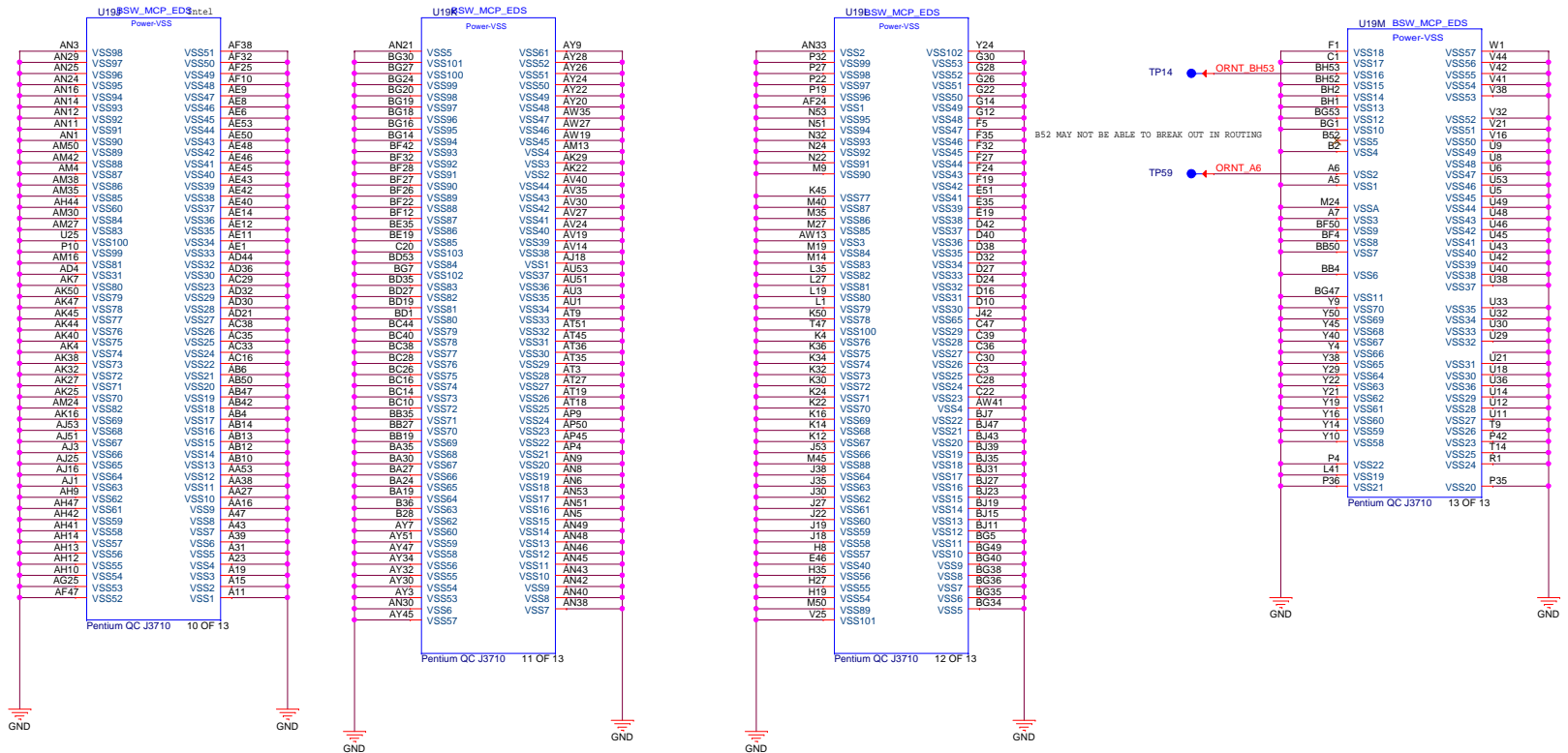
VNN can optionally be merged with V1P05A  
if display resolution is 2560 x1600 @ 60Hz or lower.





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**Quanta Computer Inc.**  
 PROJECT: HP-Molokai  
 Size: Custom    Document Number: Braswell (Power 2)    Rev: 1A  
 Date: Monday, January 18, 2016    Sheet: 11 of 54

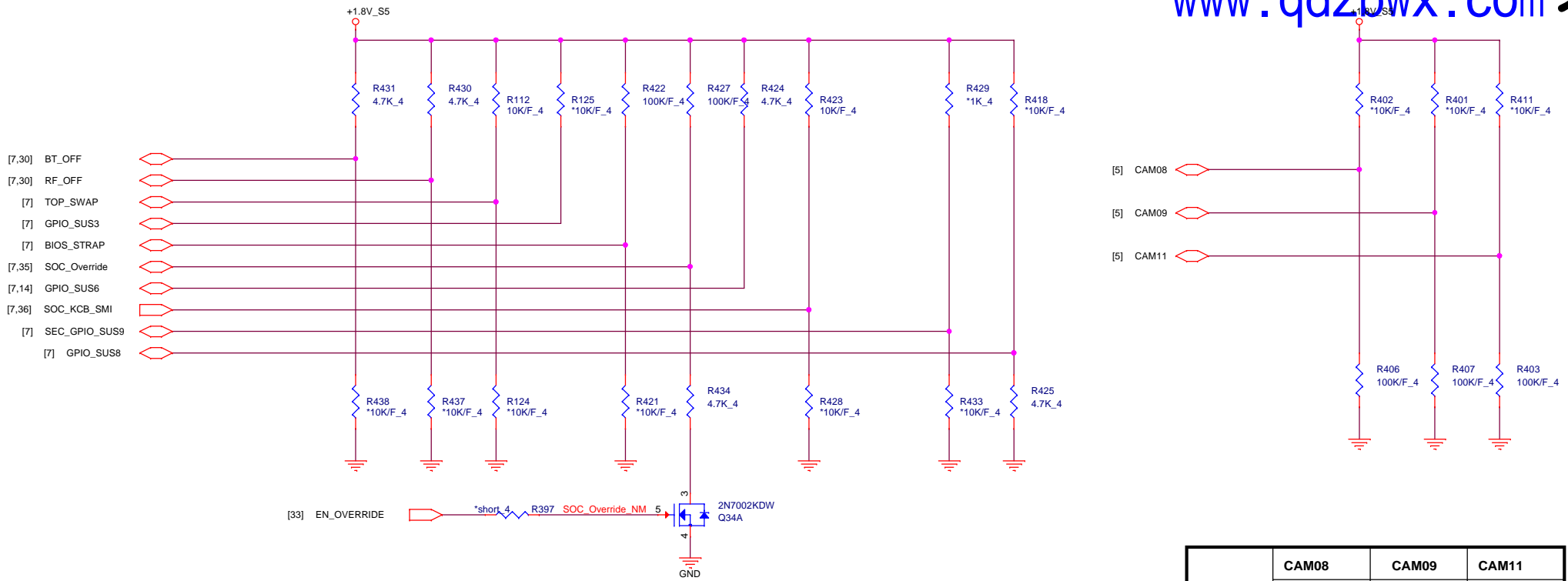


**HP Restricted Secret**

**Quanta Computer Inc.**

PROJECT: HP-Molokai

Size	Document Number	Rev
Custom	Braswell (GND)	1A
Date:	Monday, January 18, 2016	Sheet 12 of 54



**REQUIRED STRAPS**

	GPIO_SUS0	GPIO_SUS1	TOP_SWAP	GPIO_SUS3	BIOS_STRAP	SOC_Override	GPIO_SUS6	SOC_KCB_SMI	GPIO_SUS8
<b>PULL HIGH</b>	DDI0 detected DEFAULT	DDI1 detected DEFAULT	Normal Operation DEFAULT	Reserve 10 KΩ PU DEFAULT	SPI DEFAULT	Normal Operation DEFAULT 20150209 PV change	10 KΩ PU to 1.8V DEFAULT	Reserve 10 KΩ PU DEFAULT	Supply is 1.35V
<b>PULL LOW</b>	DDI0 not detected	DDI1 not detected	Change Boot Loader address		LPC	Override			Supply is 1.25V DEFAULT

	CAM08	CAM09	CAM11
<b>PULL HIGH</b>	ICLK Xtal OSC Bypass	CCU SUS RO Bypass	RTC OSC Bypass
<b>PULL LOW</b>	ICLK Xtal OSC No Bypass DEFAULT	CCU SUS RO No Bypass DEFAULT	RTC OSC No Bypass DEFAULT

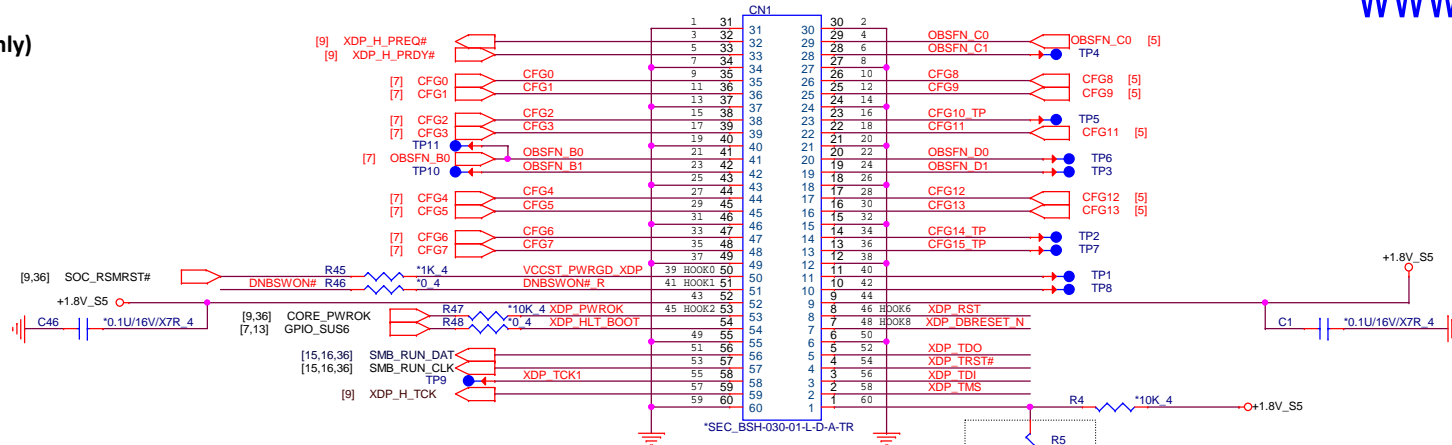
HP Restricted Secret

**Quanta Computer Inc.**  
 PROJECT: HP-Molokai

Size Custom	Document Number	Rev 1A
Braswell (Strap)		
Date: Monday, January 18, 2016	Sheet 13 of 54	

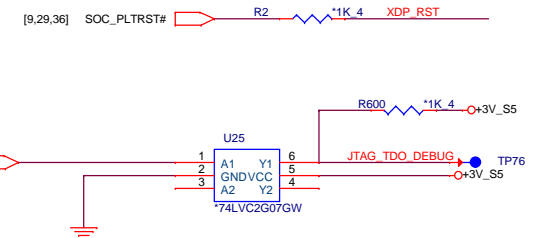
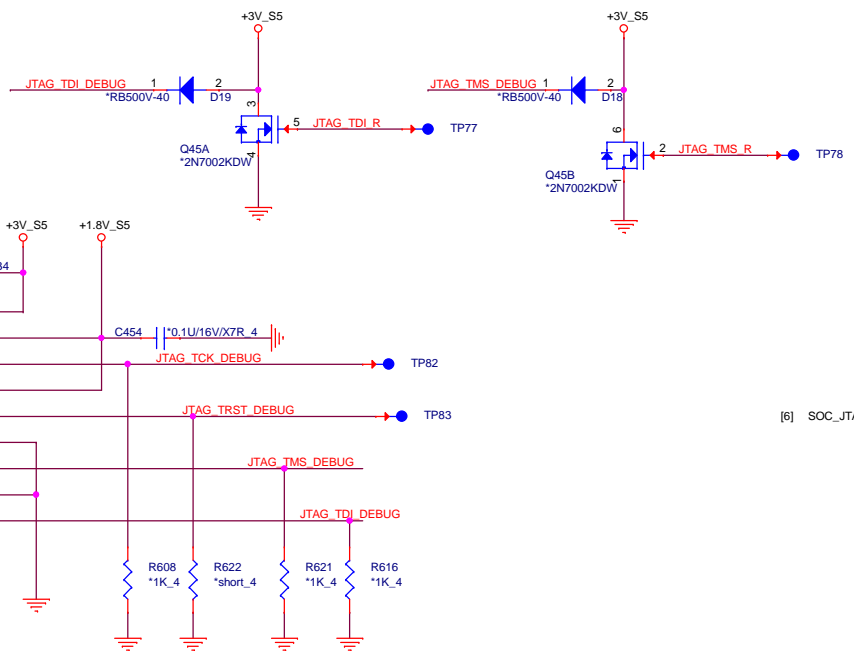
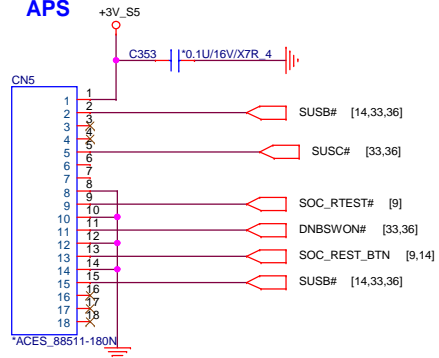
# XDP

(for pre-production only)



If XDP Pin 60 is not used as XDP\_PRESENT# signal, tie it directly to system ground within 0.25 inches from the XDP connector.

## APS



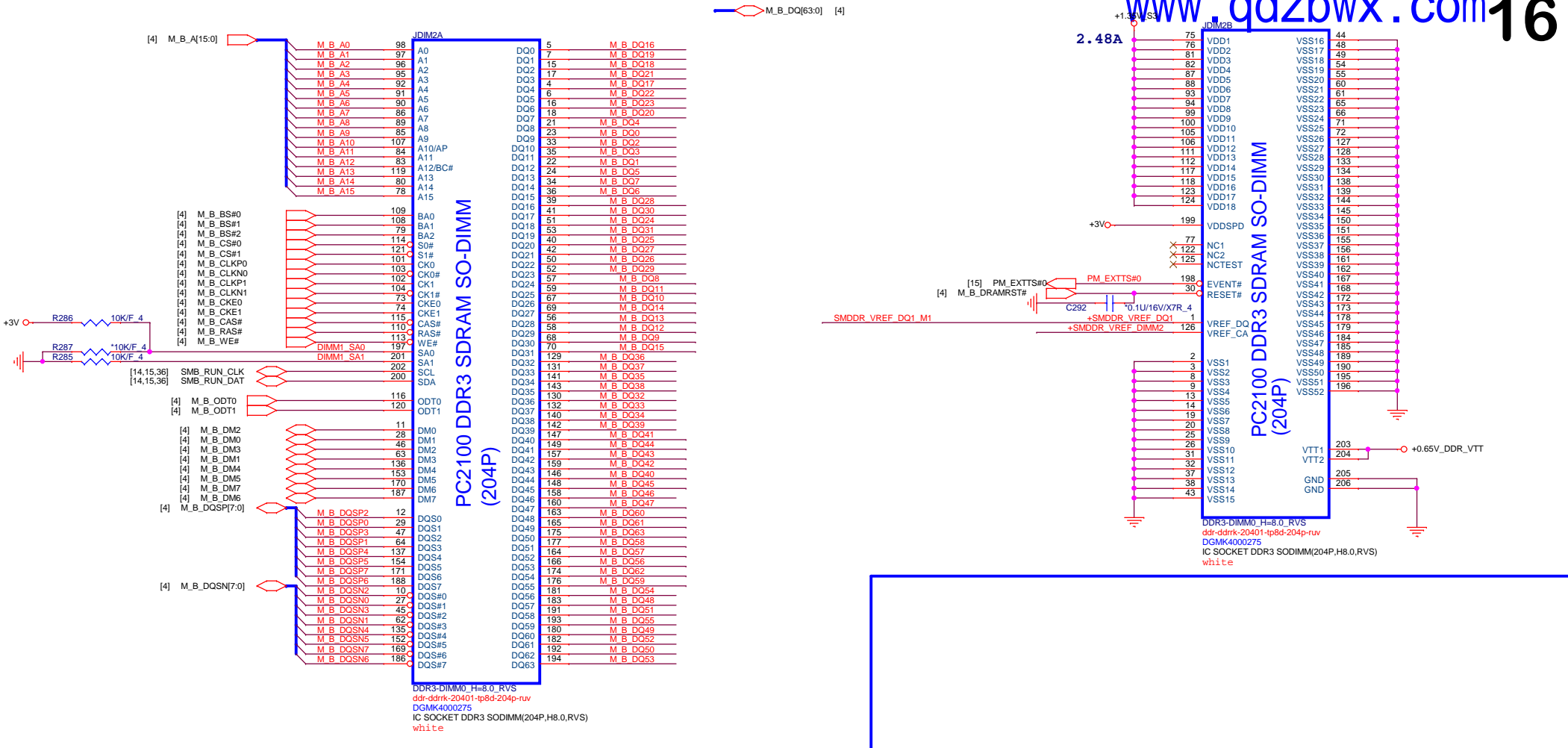
**HP Restricted Secret**

**Quanta Computer Inc.**  
 PROJECT: HP-Molokai

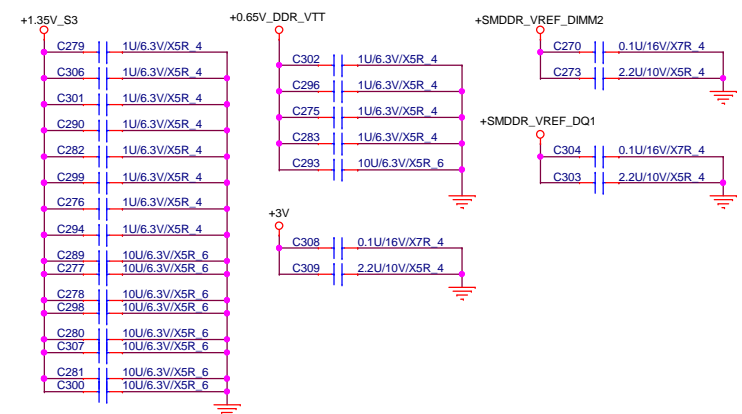
Size	Document Number	Rev
Custom	BSW XDP	1A
Date:	Monday, January 18, 2016	Sheet 14 of 54



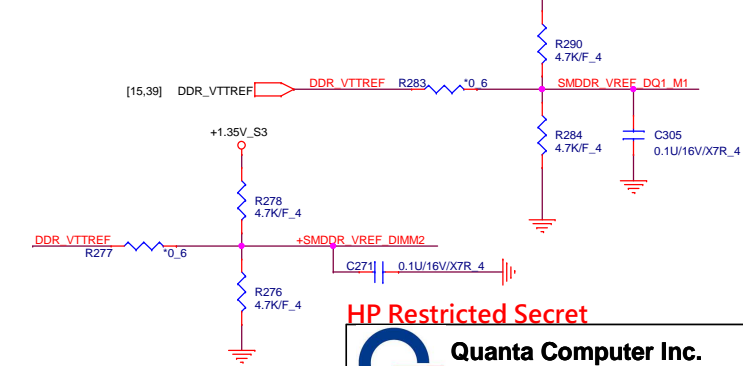




**Place these Caps near So-Dimm1.**  
 1uF/10uF 4pcs on each side of connector



**VREF DQ1 M1 Solution**

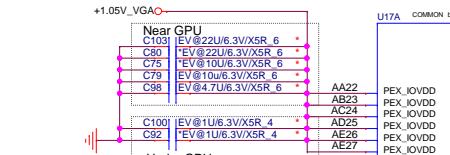


**HP Restricted Secret**

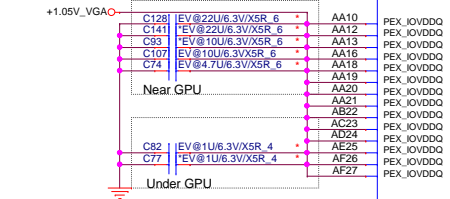
**Quanta Computer Inc.**  
 PROJECT: HP-Molokai

Size	Document Number	Rev
Custom	DDR3L DIMM1-RV5(8.0H)	1A
Date:	Monday, January 18, 2016	Sheet 16 of 54

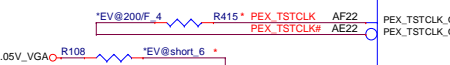
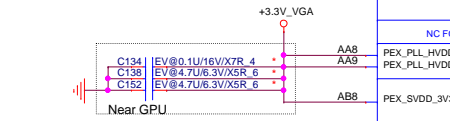




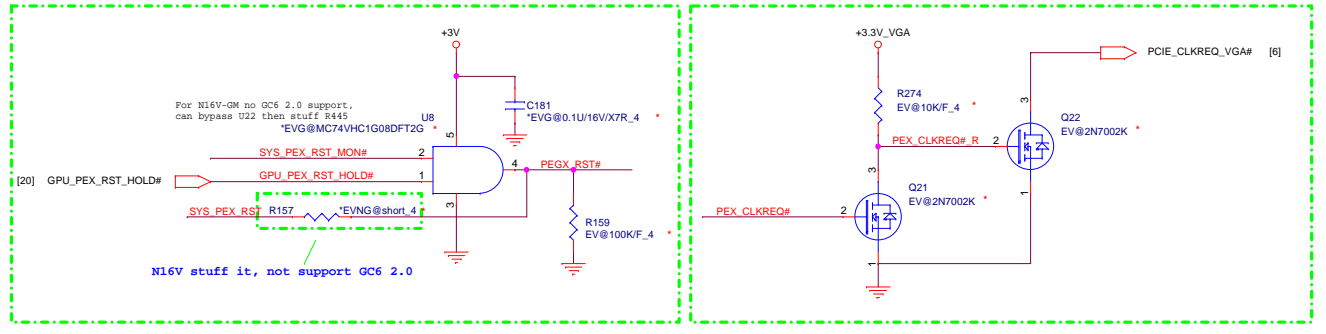
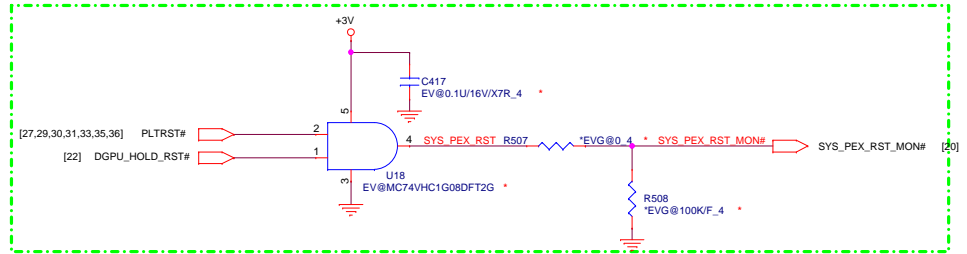
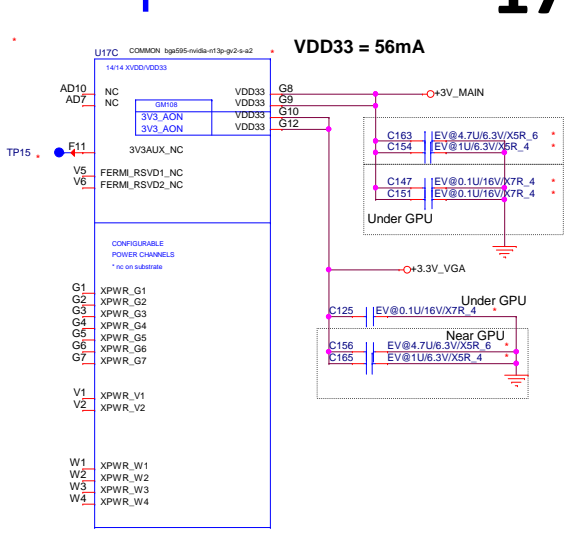
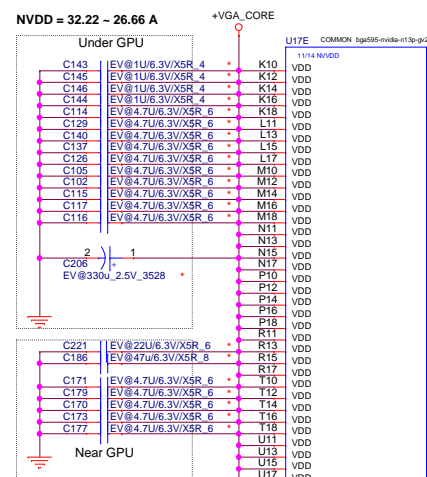
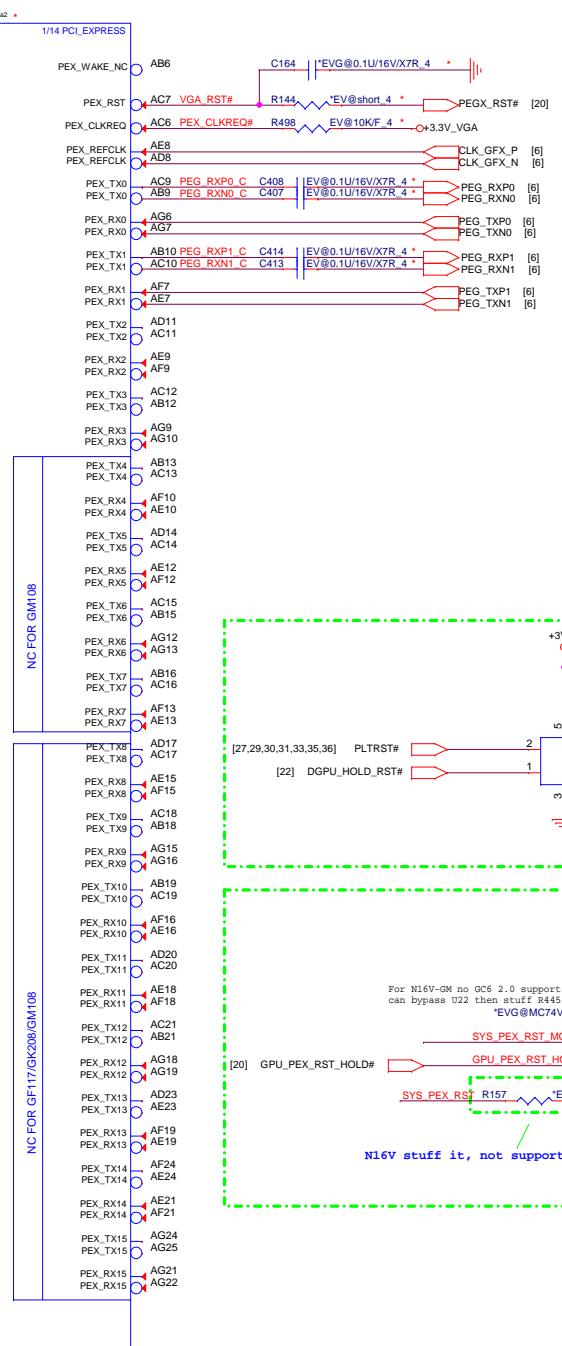
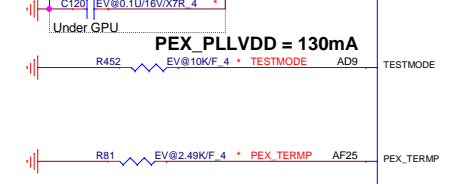
PEX\_IOVDD + PEX\_IOVDDQ = 1.042A



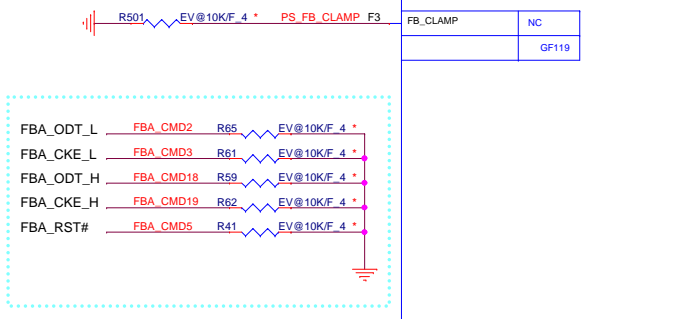
PEX\_PLL\_HVDD + PEX\_SVDD\_3V3 = 143mA



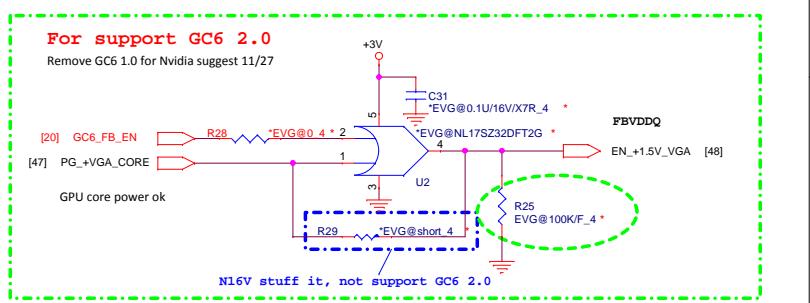
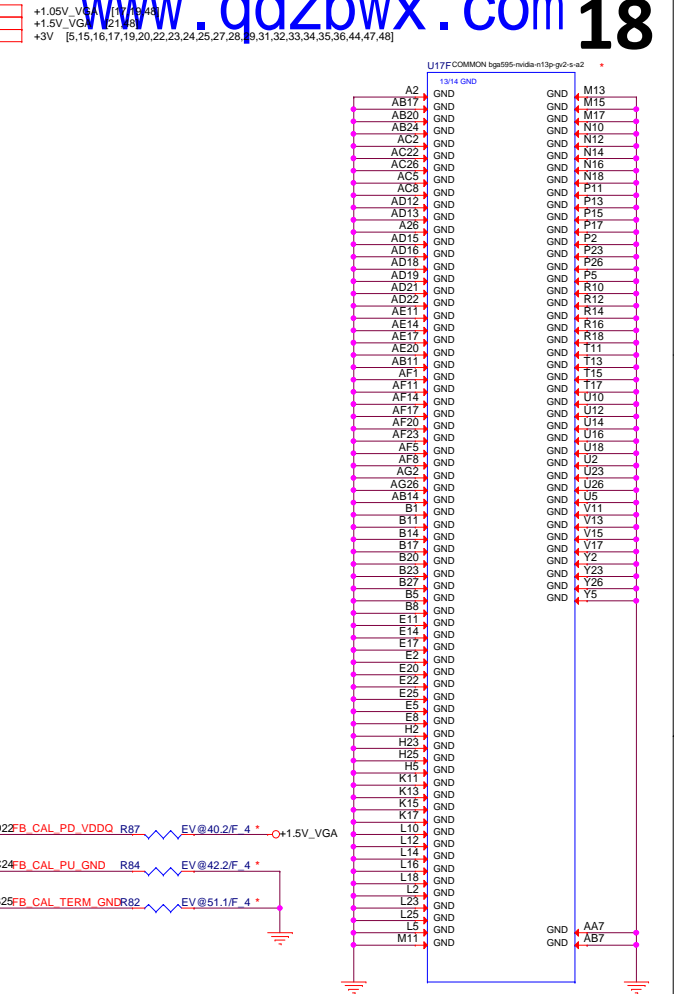
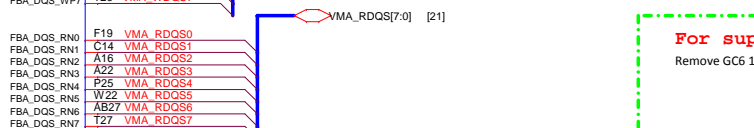
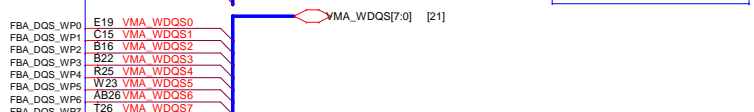
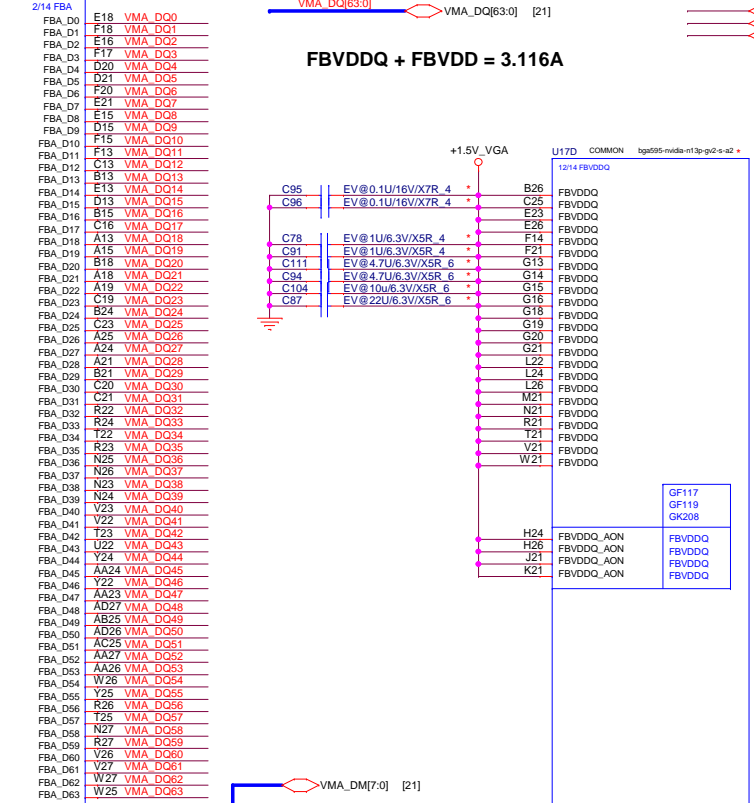
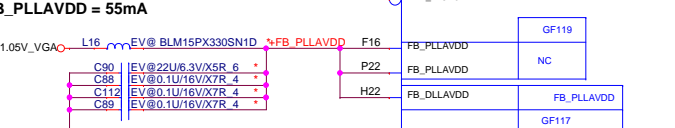
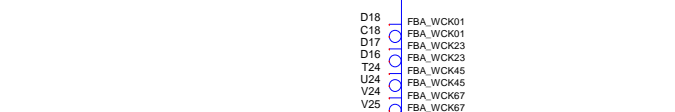
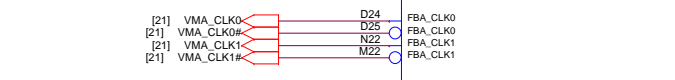
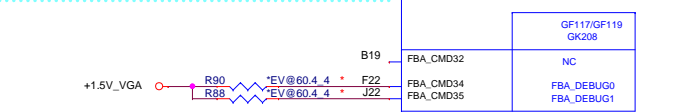
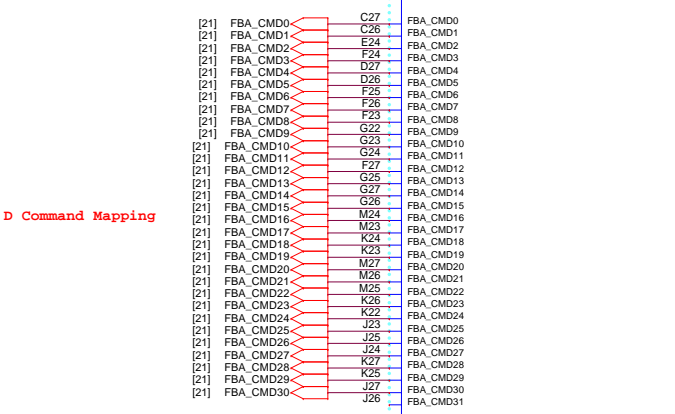
PEX\_PLLVDD = 130mA

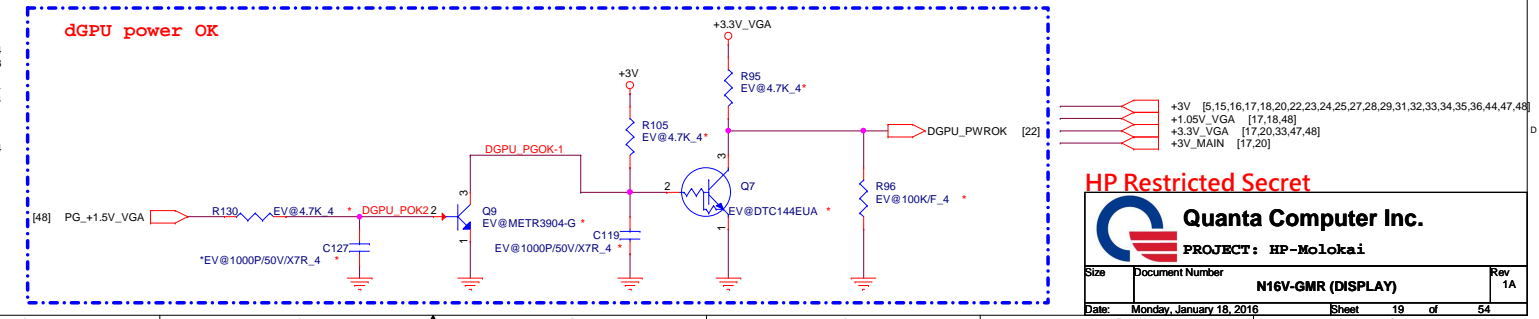
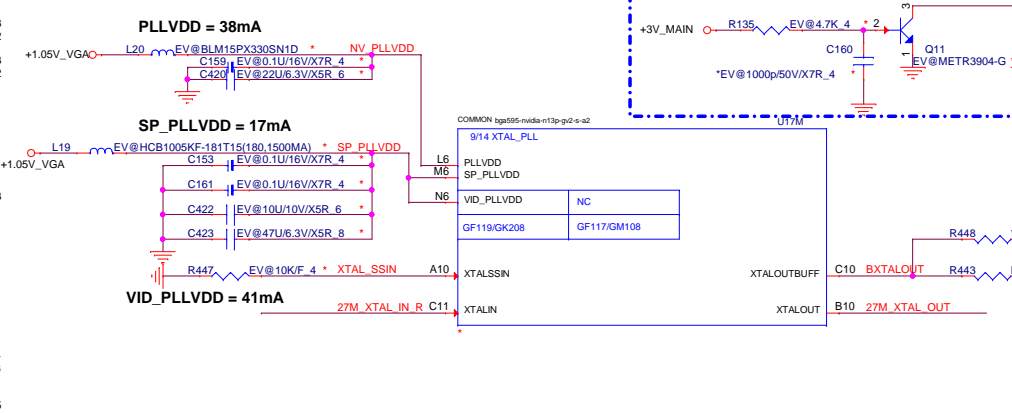
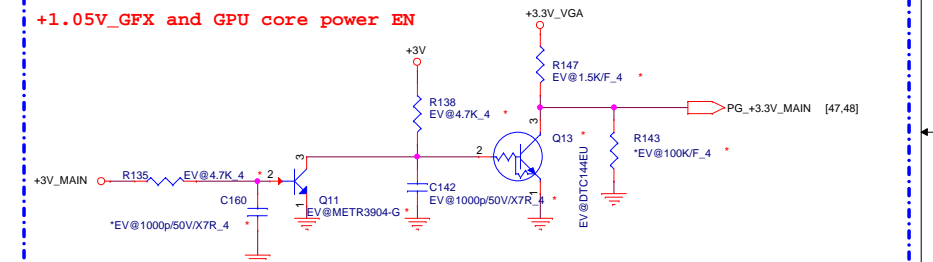
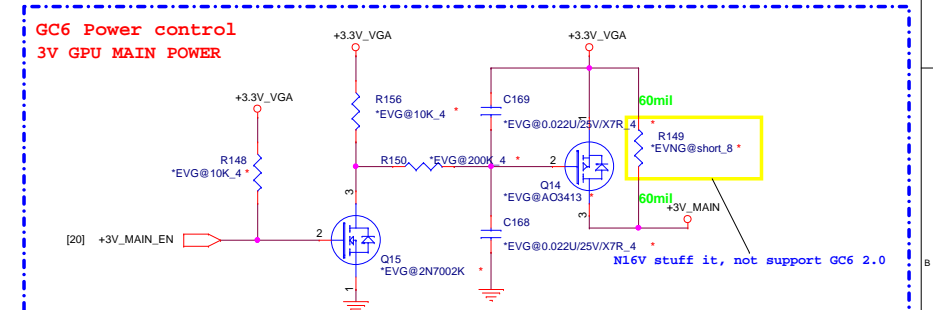
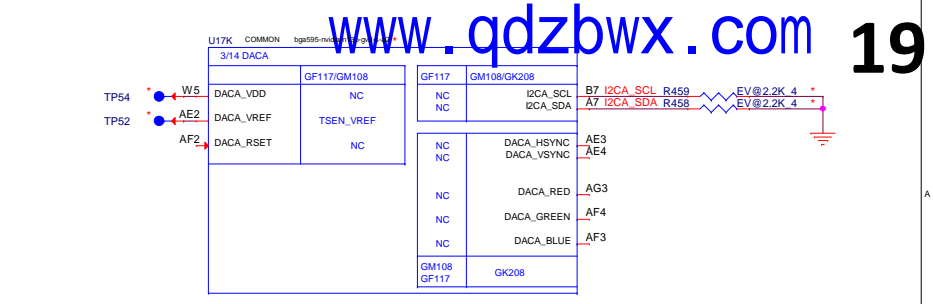
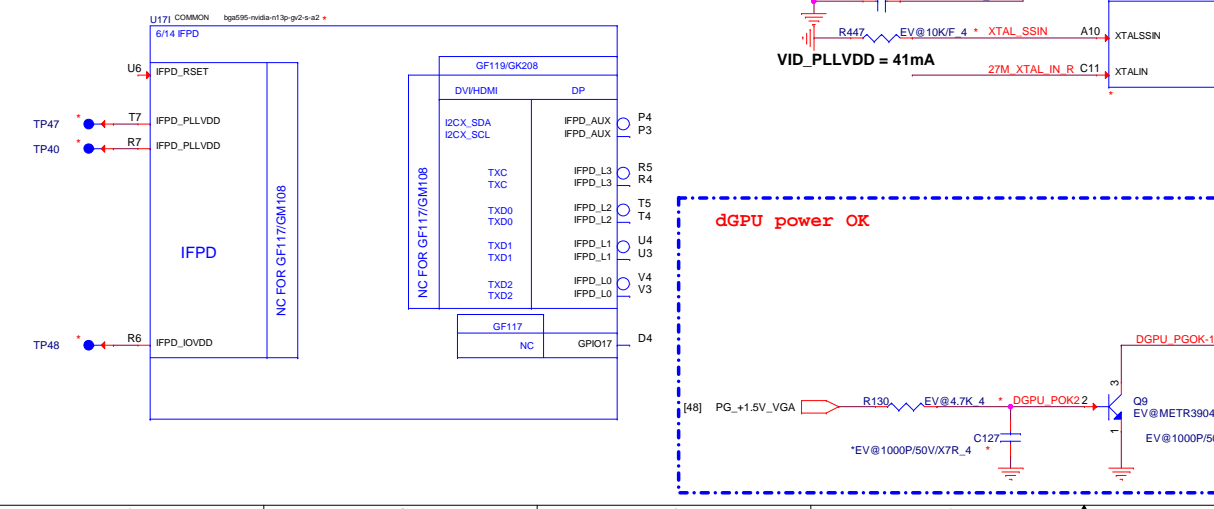
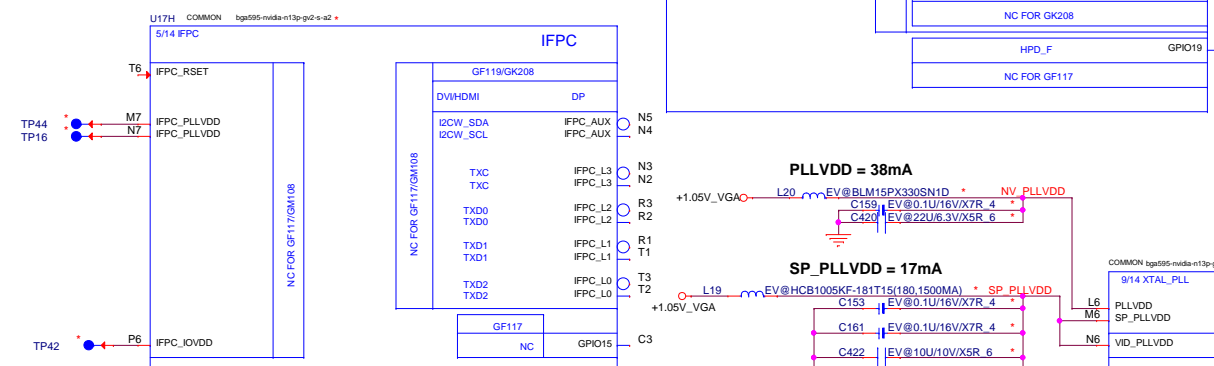
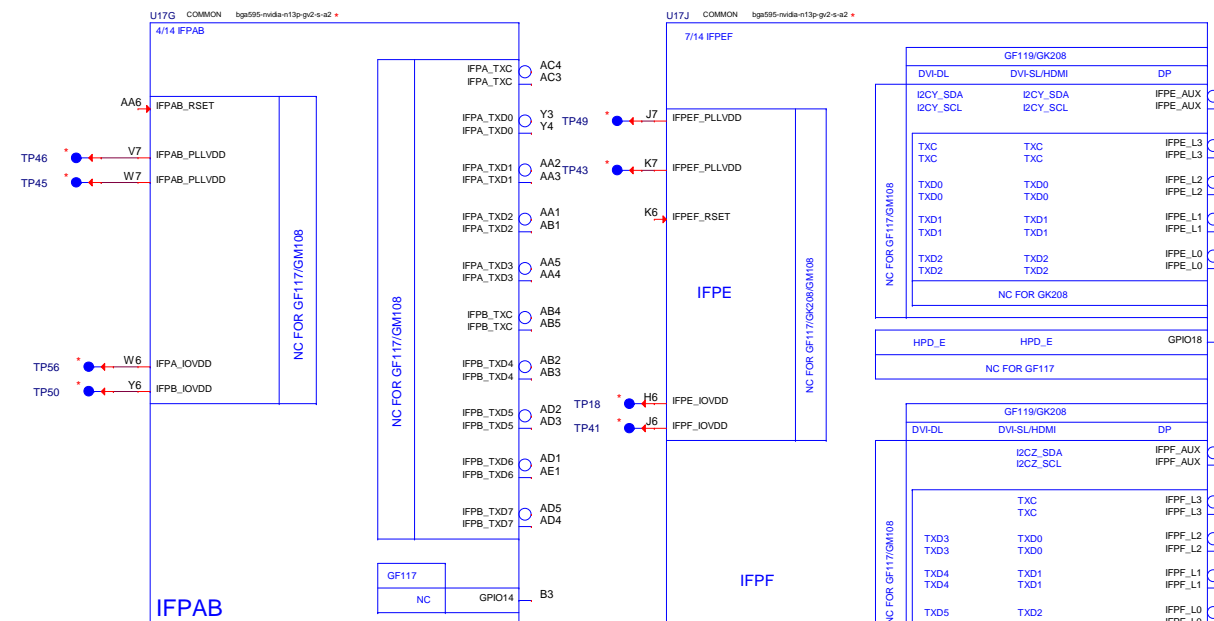


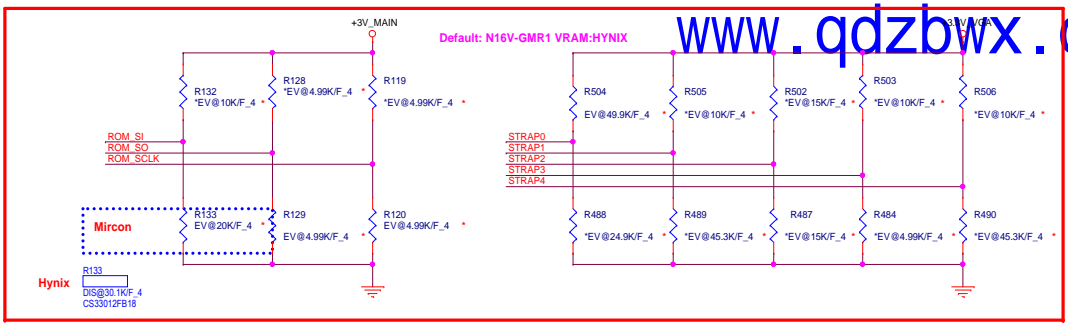
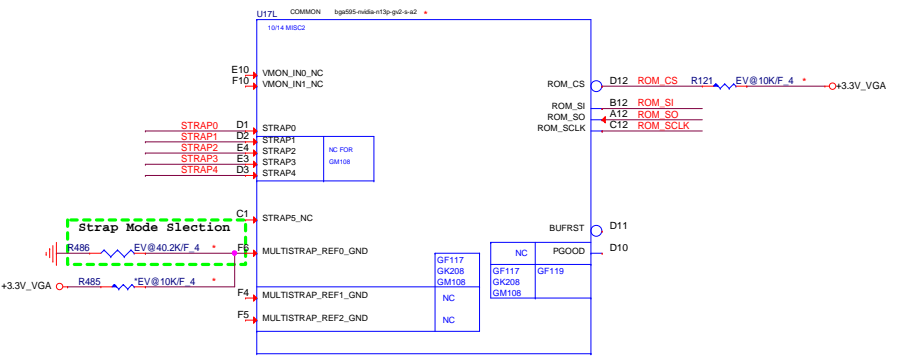
- +1.05V\_VGA [18,19,48]
- +3.3V\_VGA [19,20,33,47,48]
- +3V [5,15,16,18,19,20,22,23,24,25,27,28,29,31,32,33,34,35,36,44,47,48]
- +3V\_MAIN [19,20]
- +VGA\_CORE [47,48]



Mode D is optimized for DDR3 single rank designs







### N16S-GT DID=0x1347

ROM\_SCLK = Stuff 4.99K pull down  
 ROM\_SO = Stuff 4.99K pull down  
 STRAP0 = Stuff 49.9K pull up  
 STRAP1 = NC  
 STRAP2 = NC  
 STRAP3 = NC  
 STRAP4 = NC  
 ROM\_SI = VRAM Configuration follow below table

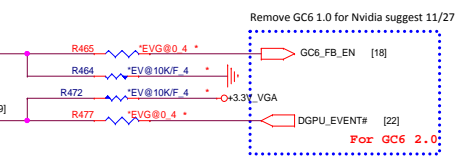
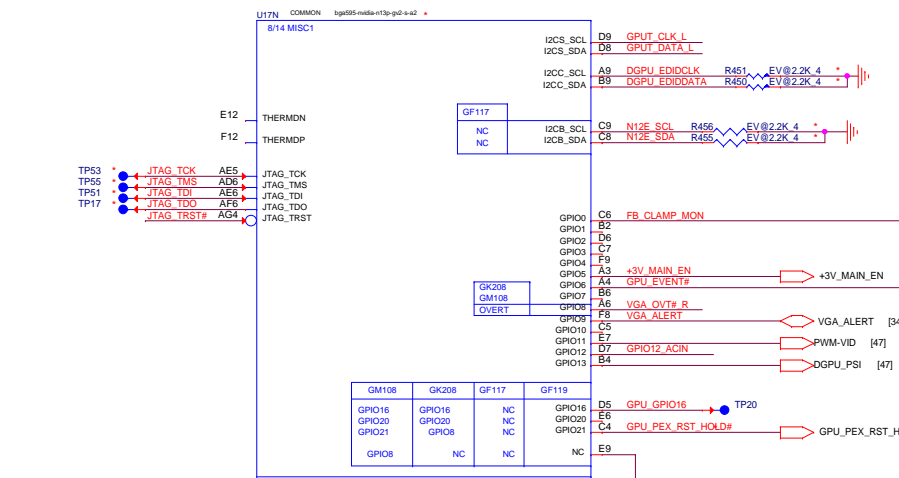
### N16V-GM DID=0x1299

ROM\_SCLK = Stuff 4.99K pull up  
 ROM\_SO = Stuff 4.99K pull up  
 STRAP0 = Stuff 45.3k pull up. (EDID Panel)  
 STRAP1 = Stuff 4.99k pull down. (Gen3 support)  
 STRAP2 = Stuff 10k pull up. (DID 0x1299)  
 STRAP3 = Stuff 4.99k pull down. (No display out)  
 STRAP4 = Stuff 45.3k pull down. (Gen3/max speed)  
 ROM\_SI = VRAM Configuration follow below table

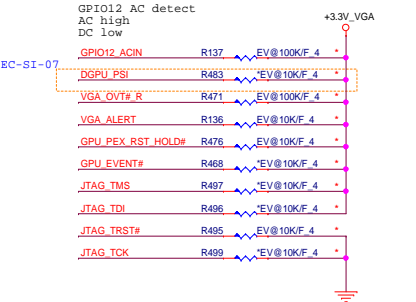
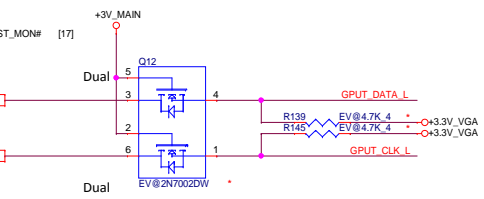
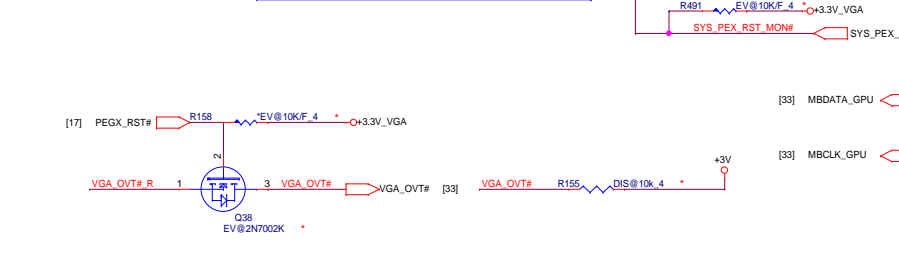
### N16V-GL DID=0x129A

ROM\_SCLK = Stuff 4.99K pull up  
 ROM\_SO = Stuff 4.99K pull up  
 STRAP0 = Stuff 45.3k pull up. (EDID Panel)  
 STRAP1 = Stuff 4.99k pull down. (Gen3 support)  
 STRAP2 = Stuff 15k pull up. (DID 0x129A)  
 STRAP3 = Stuff 4.99k pull down. (No display out)  
 STRAP4 = Stuff 45.3k pull down. (Gen3/max speed)  
 ROM\_SI = VRAM Configuration follow below table

Note: GC6 2.0 is supported by N16x GPU in the GB2B, GB4B-128, and GB3B-256 packages.



N16S (GC2.0) -> GPIO0 stuff R130/R137 and un-stuff Q19/R138  
 GPIO6 stuff R111/R110 and un-stuff Q20/R122



### GPIO ASSIGNMENTS

GPIO	I/O	PIN	USAGE
0	IN	FB_CLAMP_MON	FB Clamp monitor (GC6 1.0)
0	OUT	GC6_FB_EN	GC6 FB Enable (GC6 2.0)
5	OUT	+3V_MAIN_EN	Enable GC6 +3V_MAIN
6	OUT	FB_CLAMP_REQ#	Active low FB Clamp toggle request (GC6 1.0)
6	IN	DGPU_EVENT#	DGPU EVENT from CPU (GC6 2.0)
8	OUT	VGA_OVT#	ACTIVE LOW THERMAL OVER TEMP
9	OUT	ALERT	ACTIVE LOW THERMAL ALERT
11	OUT	PWR_VID	GPU CORE_VDD PWM Control signal
12	IN	PWR_LEVEL	AC Power detect or power supply overdraw input
13	OUT	PSI	Phase Shedding

### N16S-GM-GT/LP VRAM Configuration Table

RAMCFG [3:0]	DESCRIPTION	1.5V DDR3	Vendor	Vendor P/N	ROM_SI	STN B/S	Configuration
0000	256Mx16	DDR3L 256Mx16, 64bit, 4Gb, 1000MHz	HYNIX	H5TC4G63AFR-11C	PD 4.9K ohm	AKD5PGWTW13	Single Rank or Single Rank stuffing
0001	256Mx16	DDR3L 256Mx16, 64bit, 4Gb, 1000MHz	SAMSUNG	MT41J256M16HA-093G:E	PD 10K ohm	AKD5PZSTL05	for Dual Rank
0010	256Mx16	DDR3L 256Mx16, 64bit, 4Gb, 1000MHz	SAMSUNG	K4W4G1646D-BC1A	PD 15K ohm	AKD5PGWT504	Dual Rank

### N16V-GM/GL VRAM Configuration Table

RAMCFG [3:0]	DESCRIPTION	1.5V DDR3	Vendor	Vendor P/N	ROM_SI	STN B/S	Configuration
0001	256Mx16	DDR3L 256Mx16, 64bit, 4Gb, 1000MHz	Micron	MT41J256M16HA-093G:E	PD 10K ohm	AKD5PZSTL05	Single Rank or Single Rank stuffing
0010	256Mx16	DDR3L 256Mx16, 64bit, 4Gb, 1000MHz	HYNIX	H5TC4G63AFR-11C	PD 15K ohm	AKD5PGWTW13	for Dual Rank
0100	256Mx16	DDR3L 256Mx16, 64bit, 4Gb, 1000MHz	SAMSUNG	K4W4G1646D-BC1A	PD 24.9K ohm	AKD5PGWT504	for Dual Rank
1001	256Mx16	DDR3L 256Mx16, 64bit, 4Gb, 1000MHz	HYNIX	H5TC4G63CFR-N0C	PU 10K ohm	AKD5PZDTW03	for Dual Rank

### Logical Strap Bit Mapping

	PU-VDD	PD	QCI P/N
4.99K	1000	0000	CS24992FB26
10K	1001	0001	CS31002FB26
15K	1010	0010	CS31502FB24
20K	1011	0011	CS32002FB29
24.9K	1100	0100	CS32492FB18
30.1K	1101	0101	CS33012FB18
34.8K	1110	0110	CS33482FB06
45.3K	1111	0111	CS34532FB18

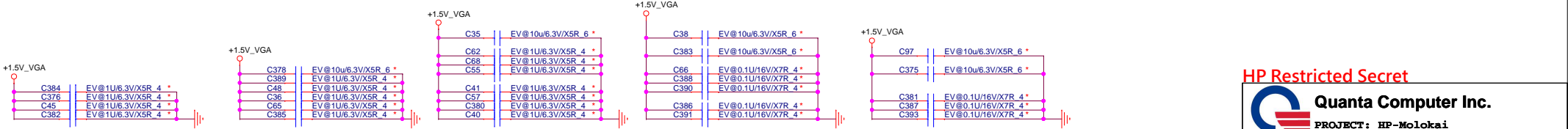
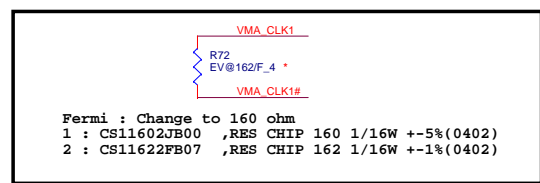
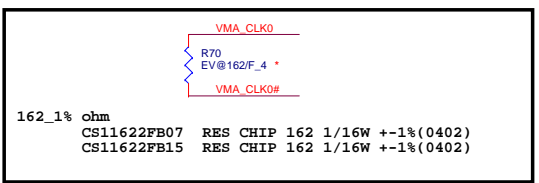
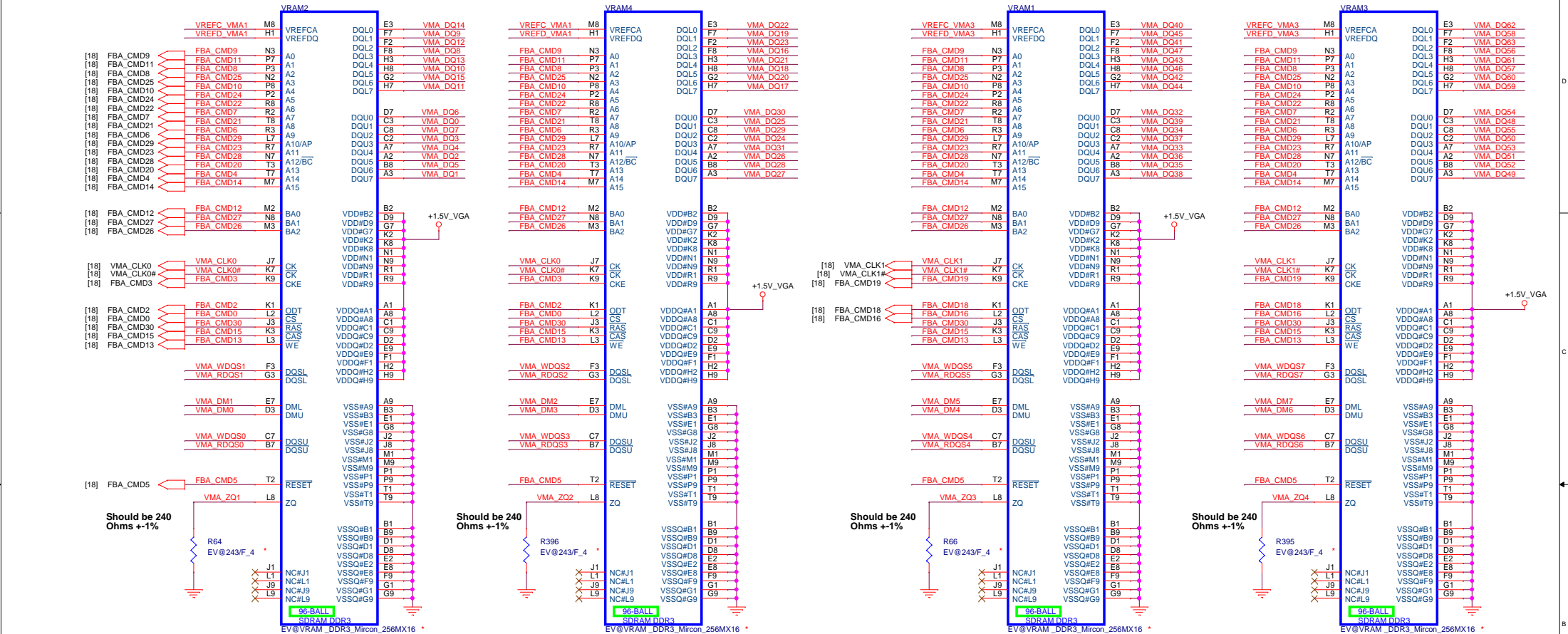
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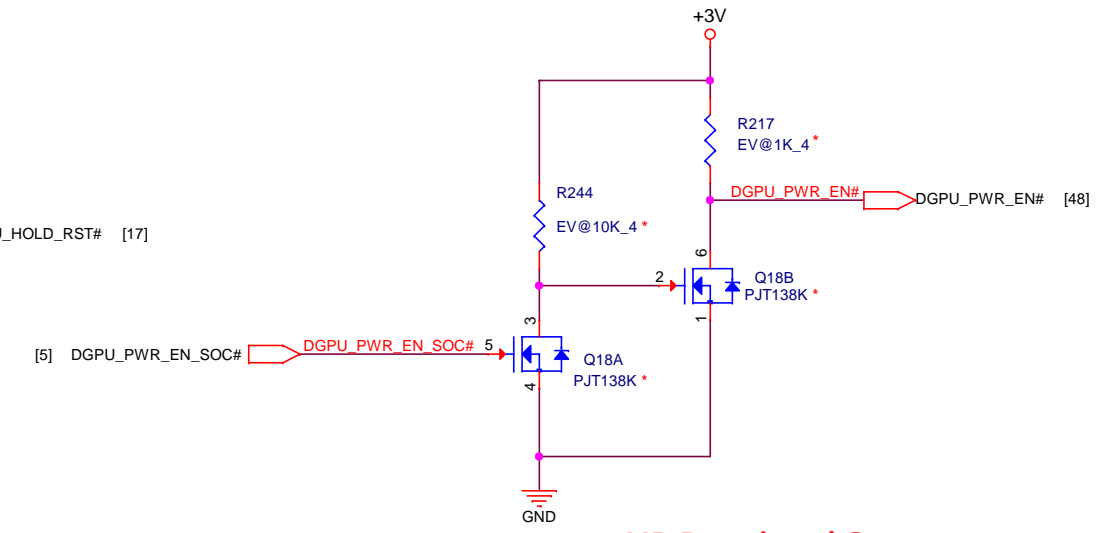
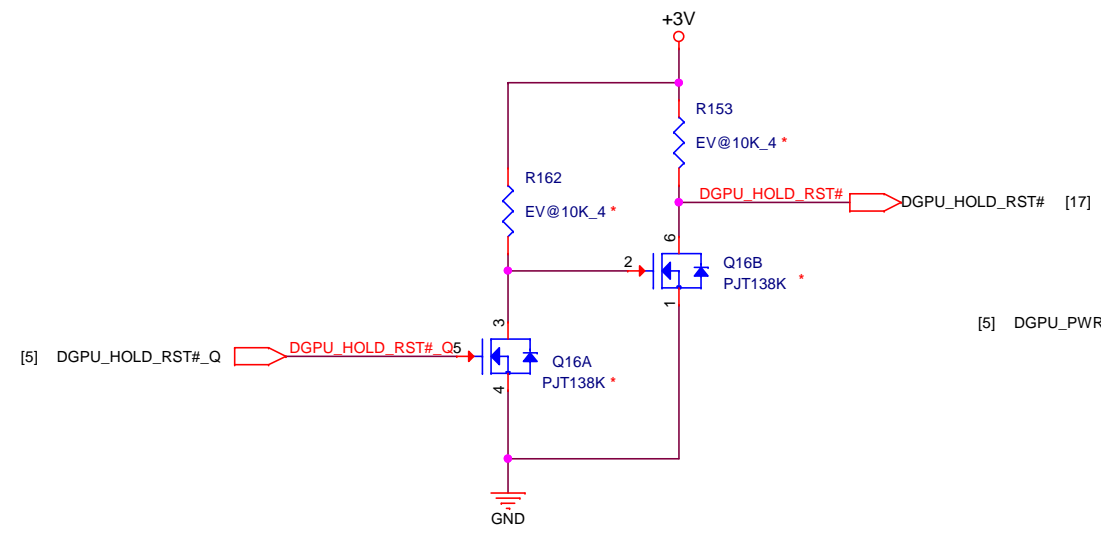
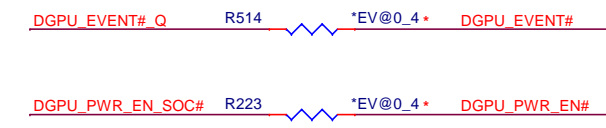
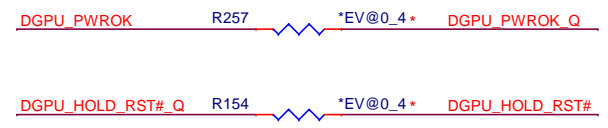
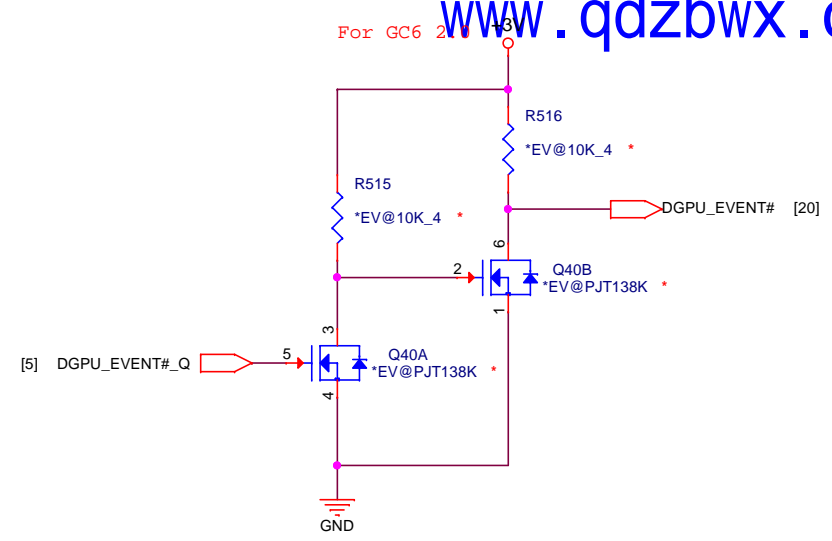
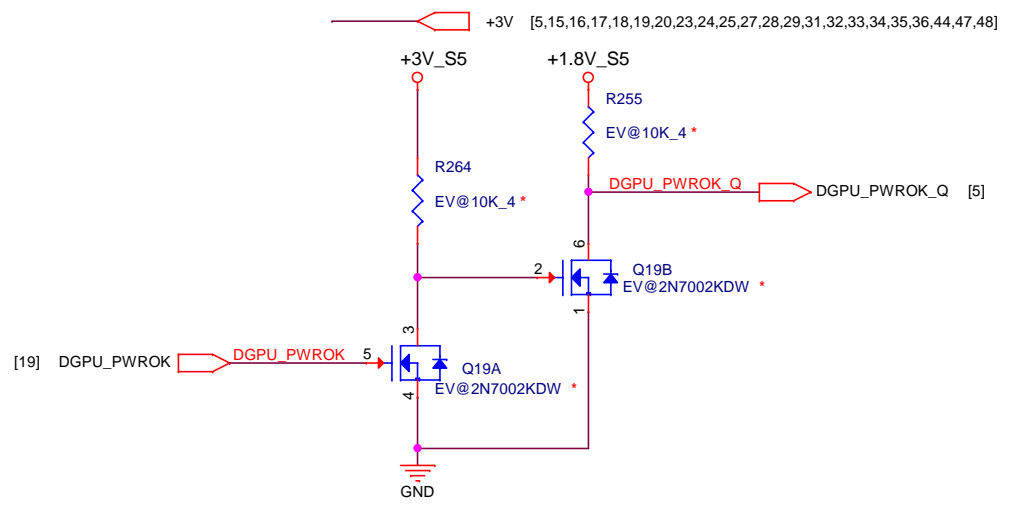
**Quanta Computer Inc.**  
 PROJECT: HP-Mo1oka1  
 Size: Document Number: N16V-GMR (GPIO/STRAPS) Rev 2A  
 Date: Monday, January 18, 2016 Sheet 20 of 54



HYU 256Mx16, H5TC4G63AFR-11C STN B/S PN : AKD5PGWTW13
MIC 256Mx16, MT41J256M16HA-093GE STN B/S PN : AKD5PZSTL05
SAM 256Mx16, K4W4G1646D-BC1A STN B/S PN : AKD5PGWT504

[18] VMA\_DQ[63..0]
[18] VMA\_DM[7..0]
[18] VMA\_WDQS[7..0]
[18] VMA\_RDQS[7..0]

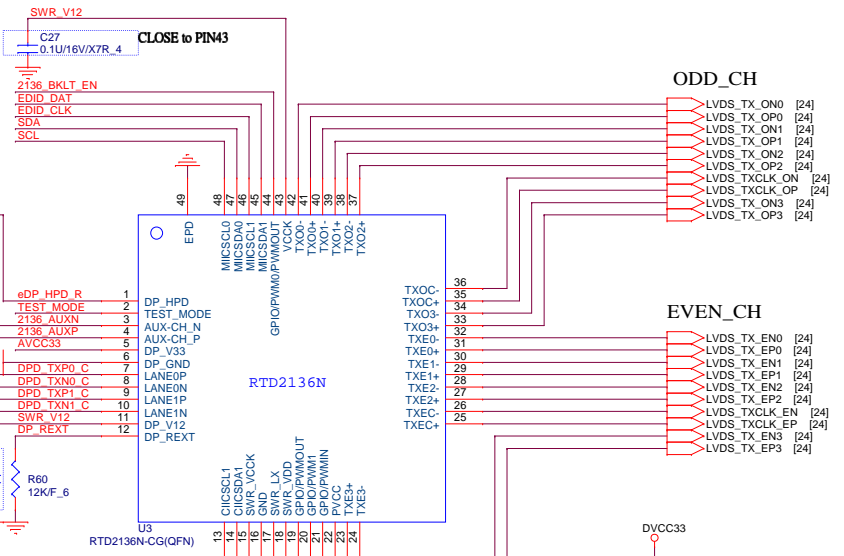
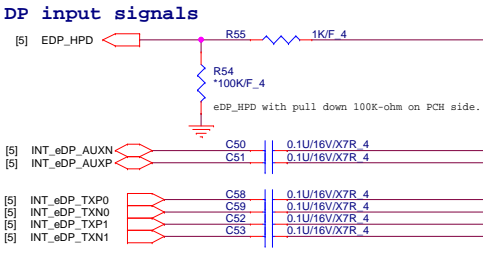
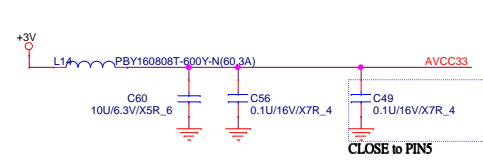
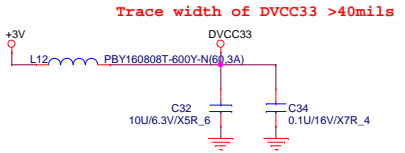




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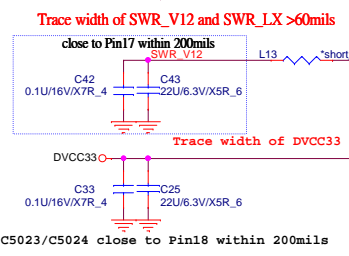
<b>Quanta Computer Inc.</b> PROJECT: HP-Molokai	
Size	Document Number
<b>dGPU Level Shift</b>	
Date:	Monday, January 18, 2016
Sheet	22 of 54
Rev	1A





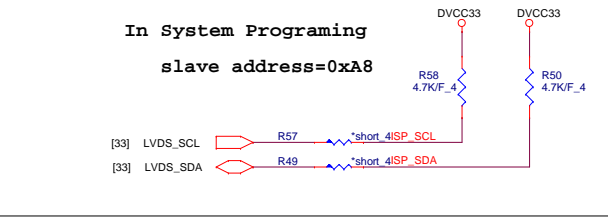
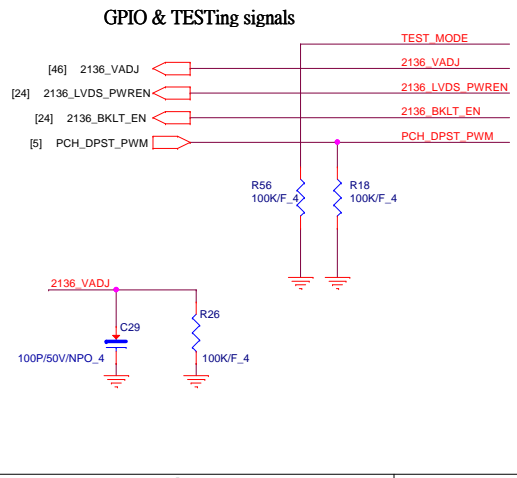
- ODD\_CH
- LVDS\_TX\_ON0 [24]
  - LVDS\_TX\_OP0 [24]
  - LVDS\_TX\_ON1 [24]
  - LVDS\_TX\_OP1 [24]
  - LVDS\_TX\_ON2 [24]
  - LVDS\_TX\_OP2 [24]
  - LVDS\_TXCLK\_ON [24]
  - LVDS\_TXCLK\_OP [24]
  - LVDS\_TX\_ON3 [24]
  - LVDS\_TX\_OP3 [24]

- EVEN\_CH
- LVDS\_TX\_EN0 [24]
  - LVDS\_TX\_EP0 [24]
  - LVDS\_TX\_EN1 [24]
  - LVDS\_TX\_EP1 [24]
  - LVDS\_TX\_EN2 [24]
  - LVDS\_TX\_EP2 [24]
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  - LVDS\_TX\_EP3 [24]



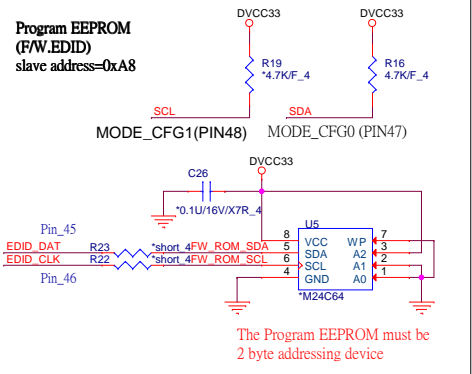
SWR MODE /LDO MODE

	4.7-uH	0 Ohm
SWR_182mW	Connect	NC
LDO_357mW	NC	Connect

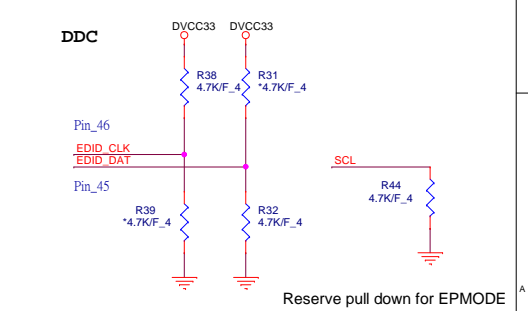


RTD2136N:

Mode Selection	MODE_CFG0 (PIN47)	
	0	1
MODE_CFG1(PIN48)	0	X
	1	ROM ONLY MODE
		EEPROM MODE



The Program EEPROM must be 2 byte addressing device



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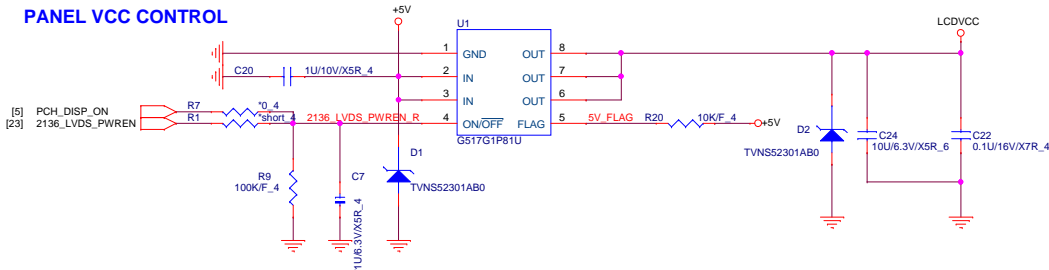
Quanta Computer Inc.

PROJECT: HP-Molokai

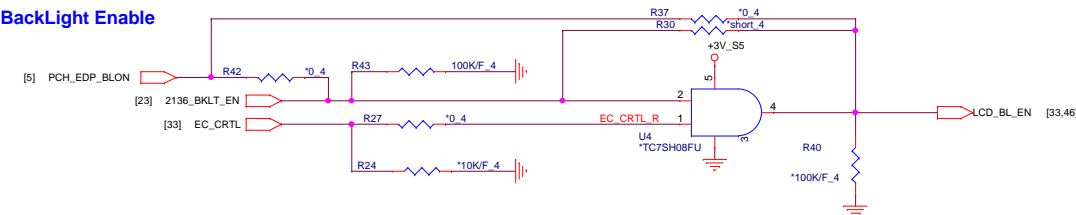
Size: Custom Document Number: LVDS converter RTD2136 Rev 1A

Date: Monday, January 18, 2016 Sheet 23 of 54

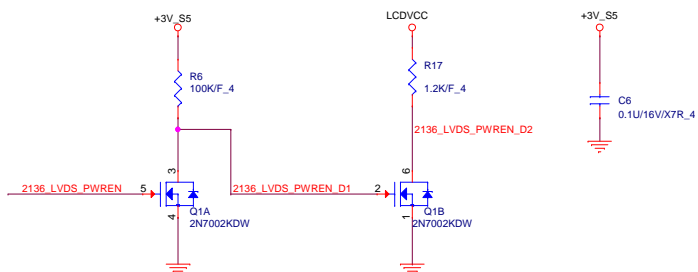
**PANEL VCC CONTROL**



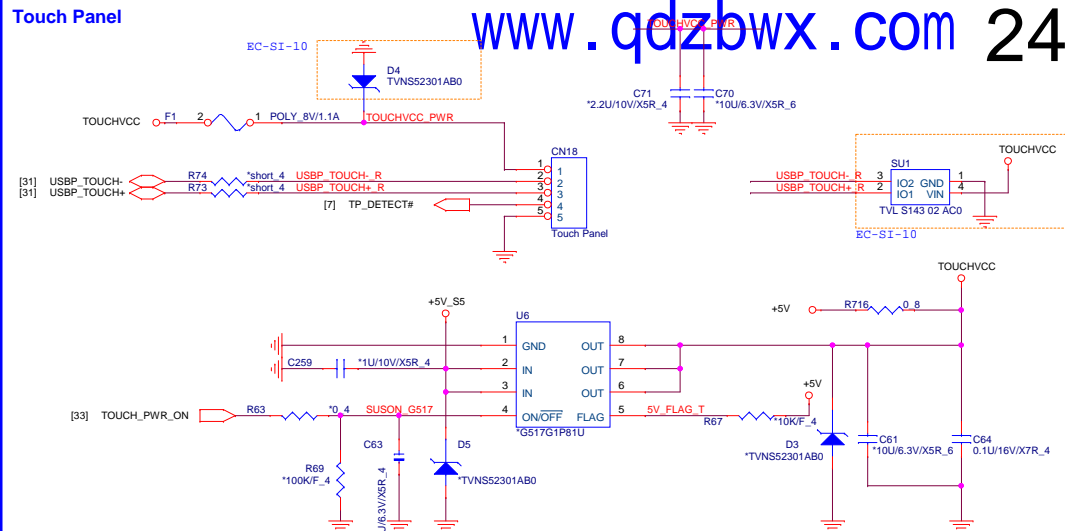
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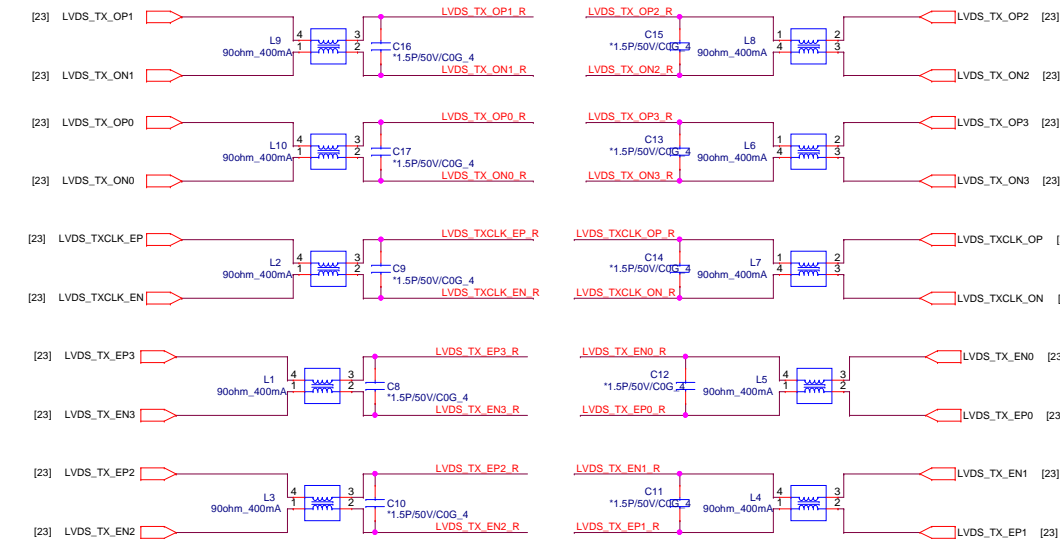
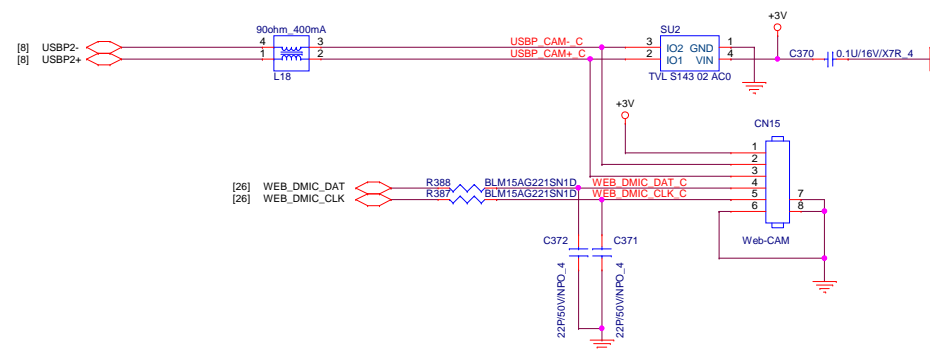
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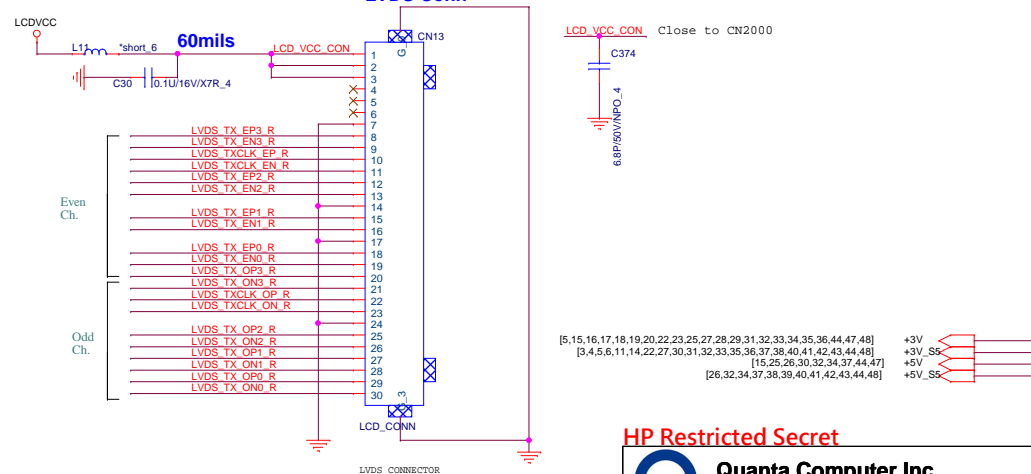
**Touch Panel**



**CCD CONN**



**LVDS Conn**

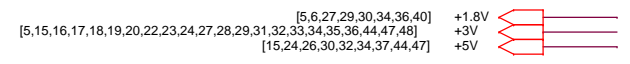
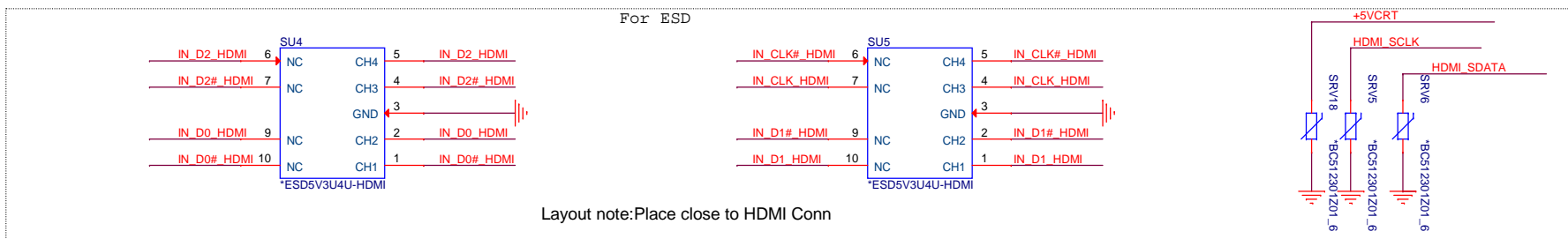
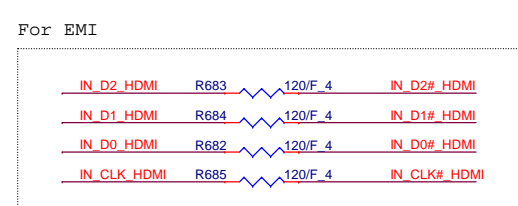
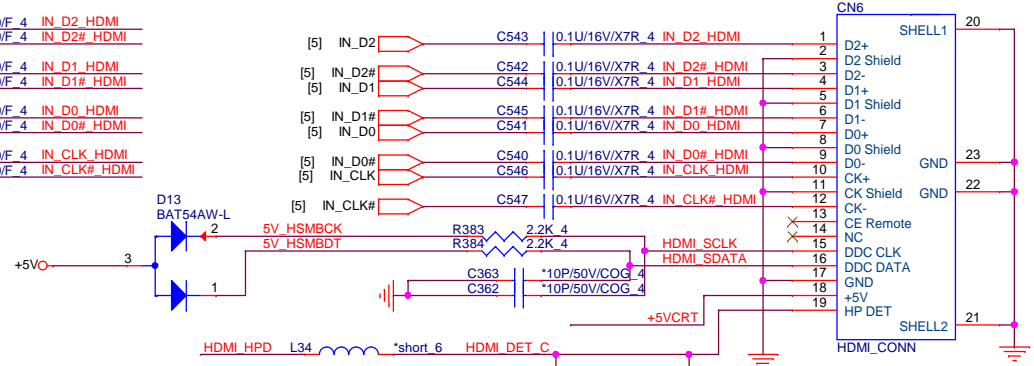
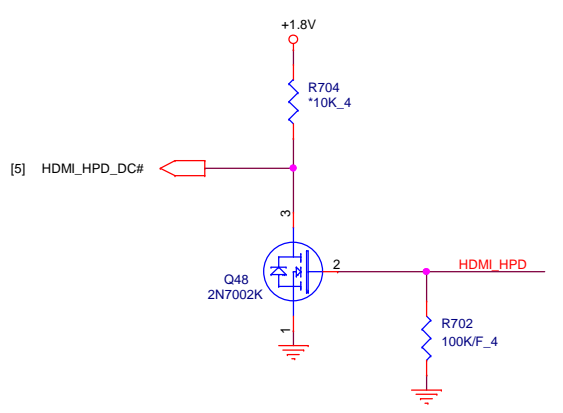
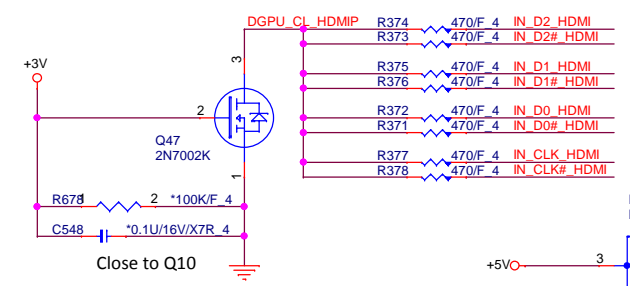
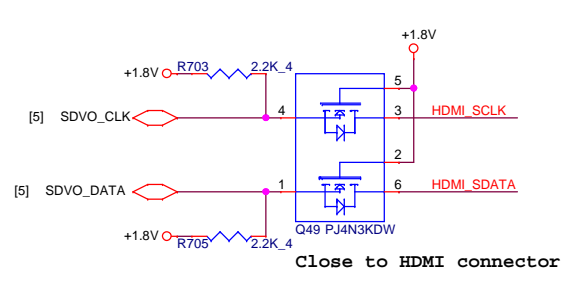


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**PROJECT: HP-Molokai**  
 Size: Custom  
 Document Number: LCD CONN/CCD/TouchPanel  
 Date: Monday, January 25, 2016  
 Sheet: 24 of 54  
 Rev: 2A



# HDMI CONN



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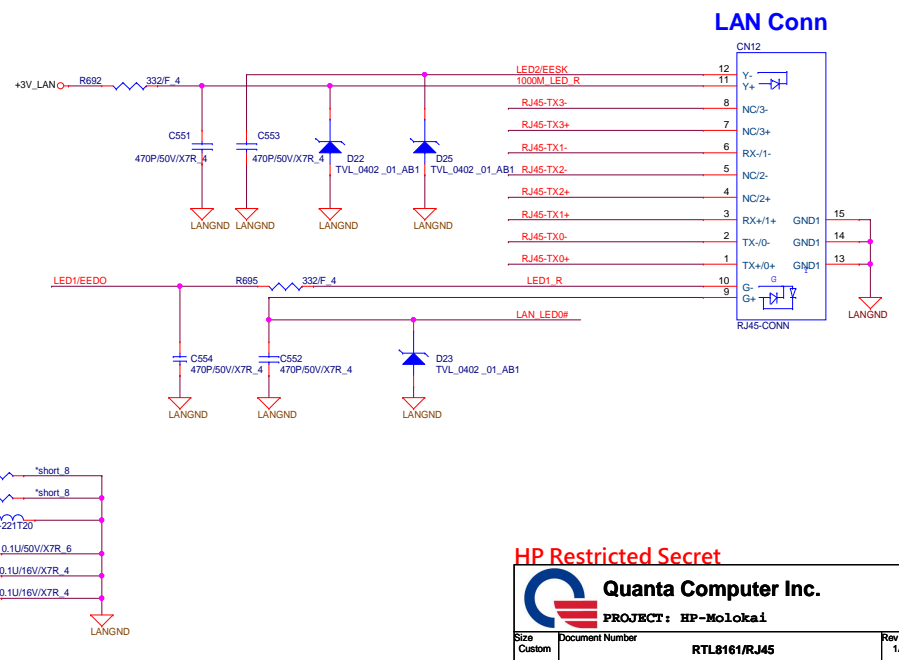
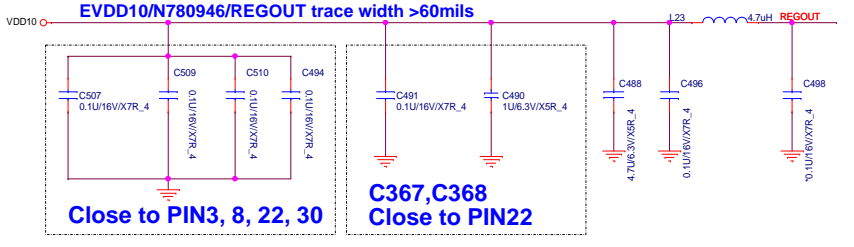
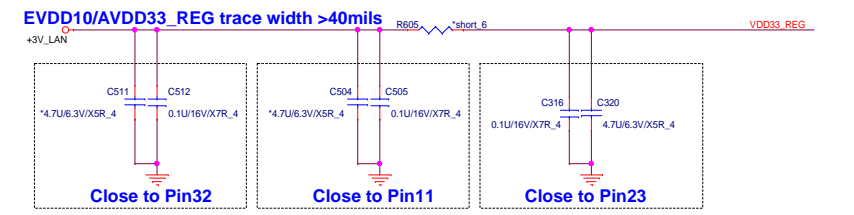
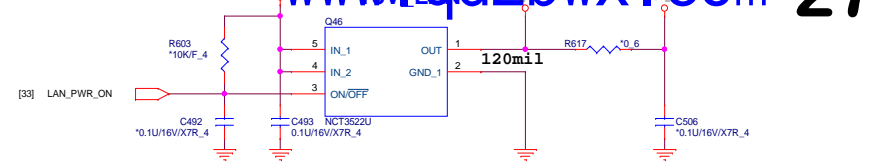
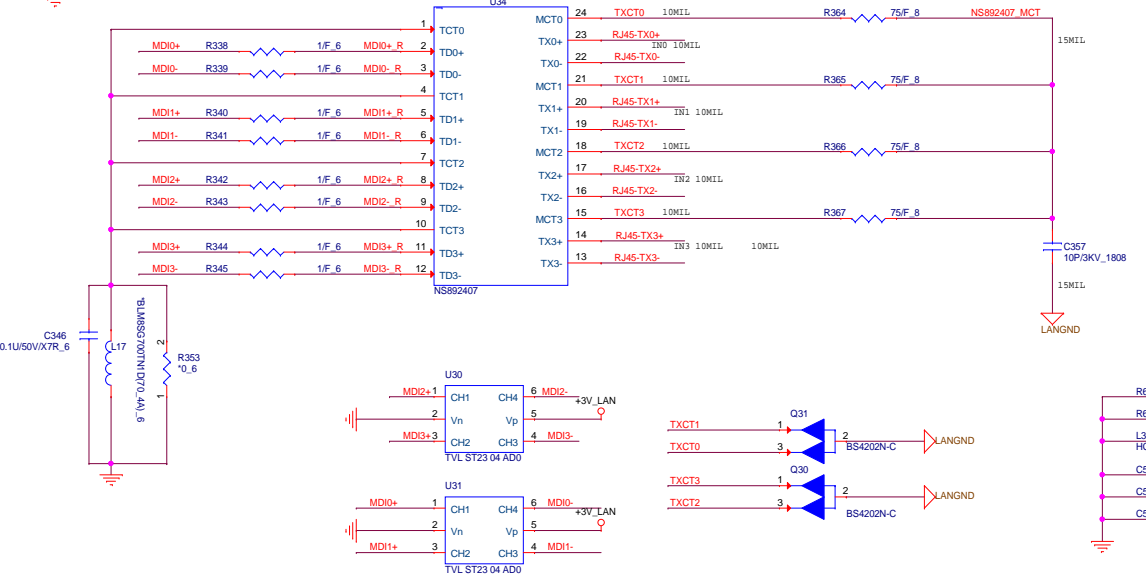
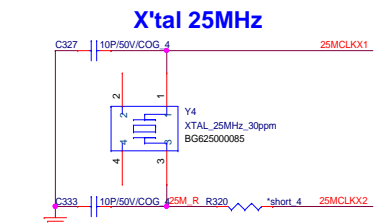
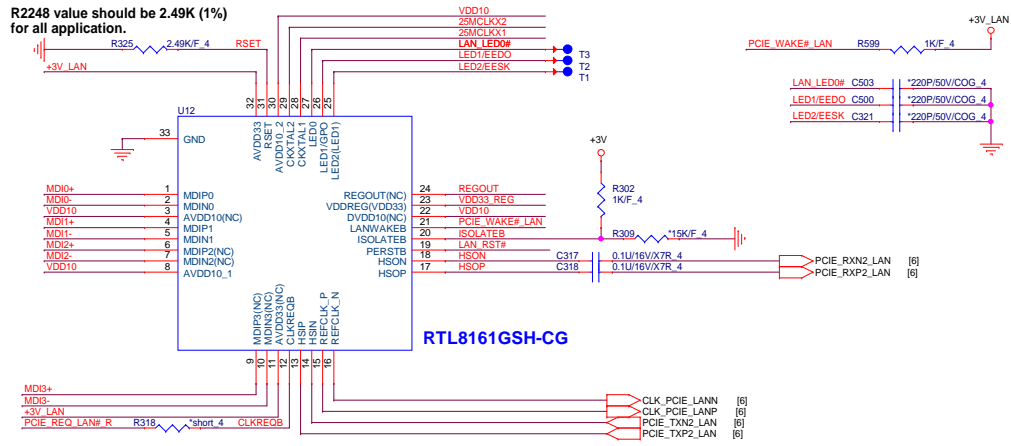
**Quanta Computer Inc.**

PROJECT: HP-Molokai

Size	Document Number	Sheet	25	of	54
Custom	HDMI	Date:	Monday, January 18, 2016	Rev	1A

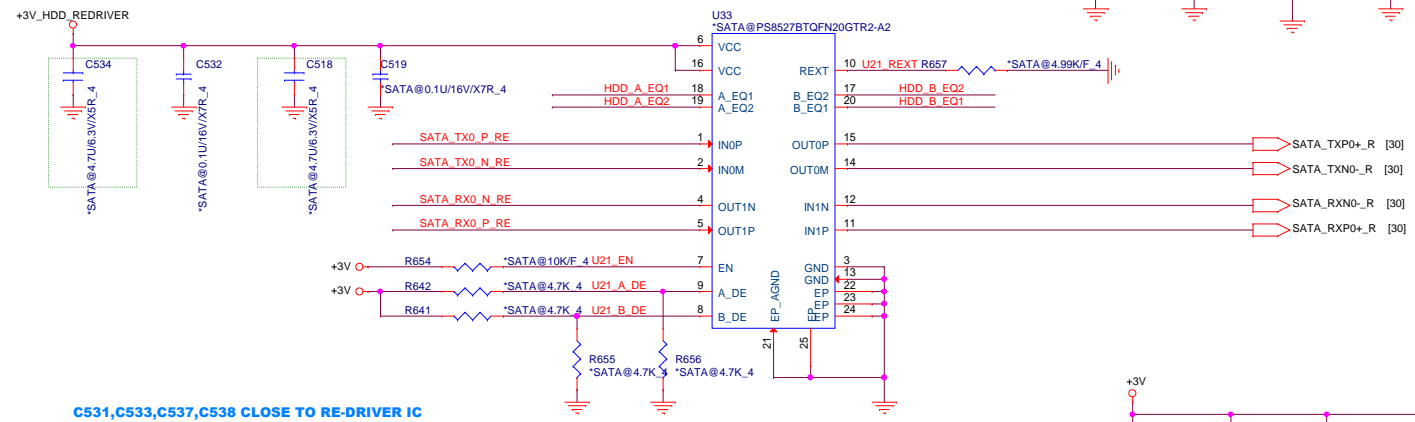
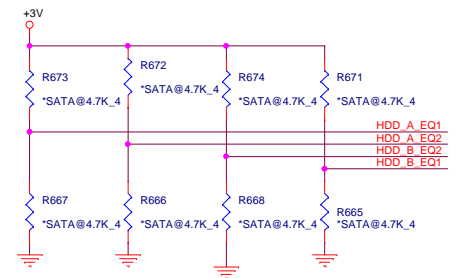
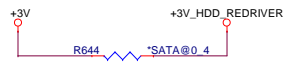
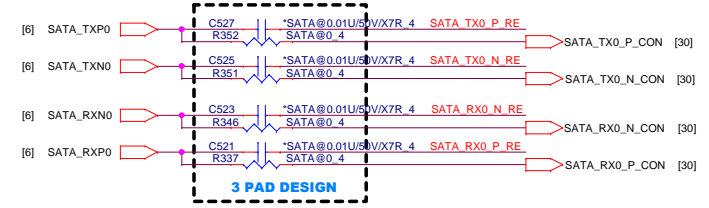


R2248 value should be 2.49K (1%) for all application.



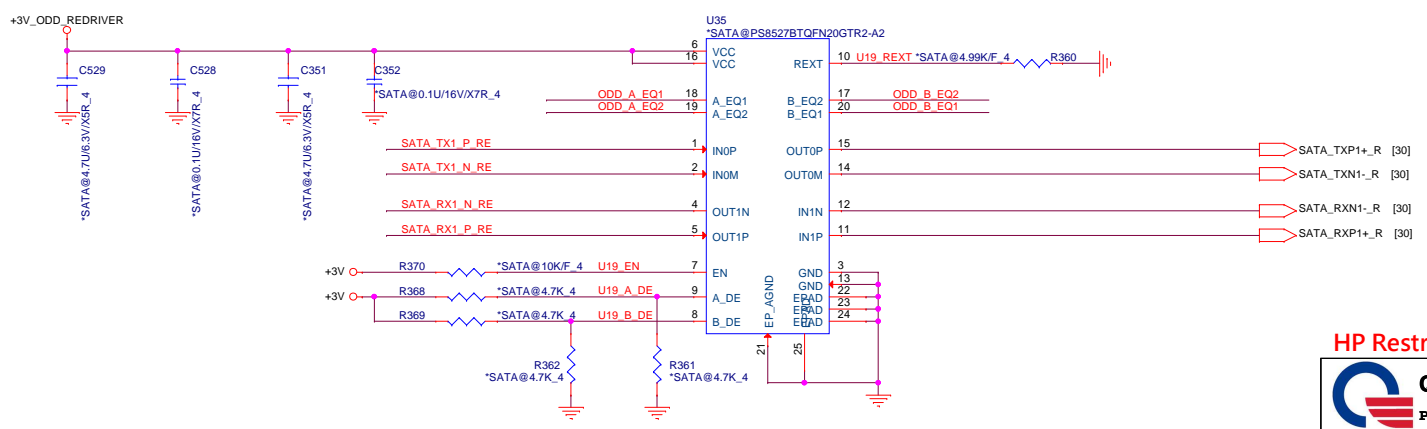
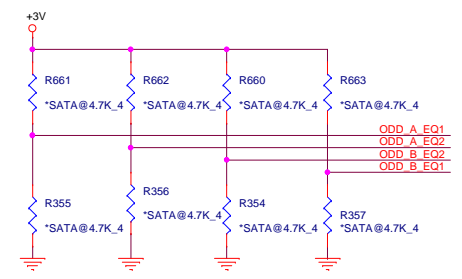
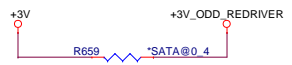
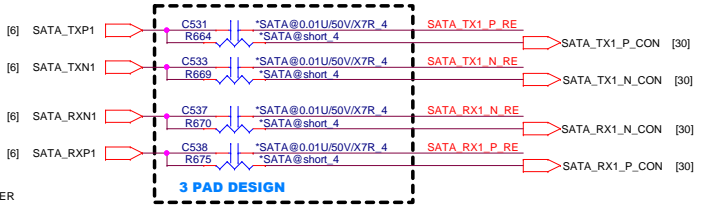
# HDD REDRIVER

C521,C523,C525,C527 CLOSE TO RE-DRIVER IC



# ODD REDRIVER

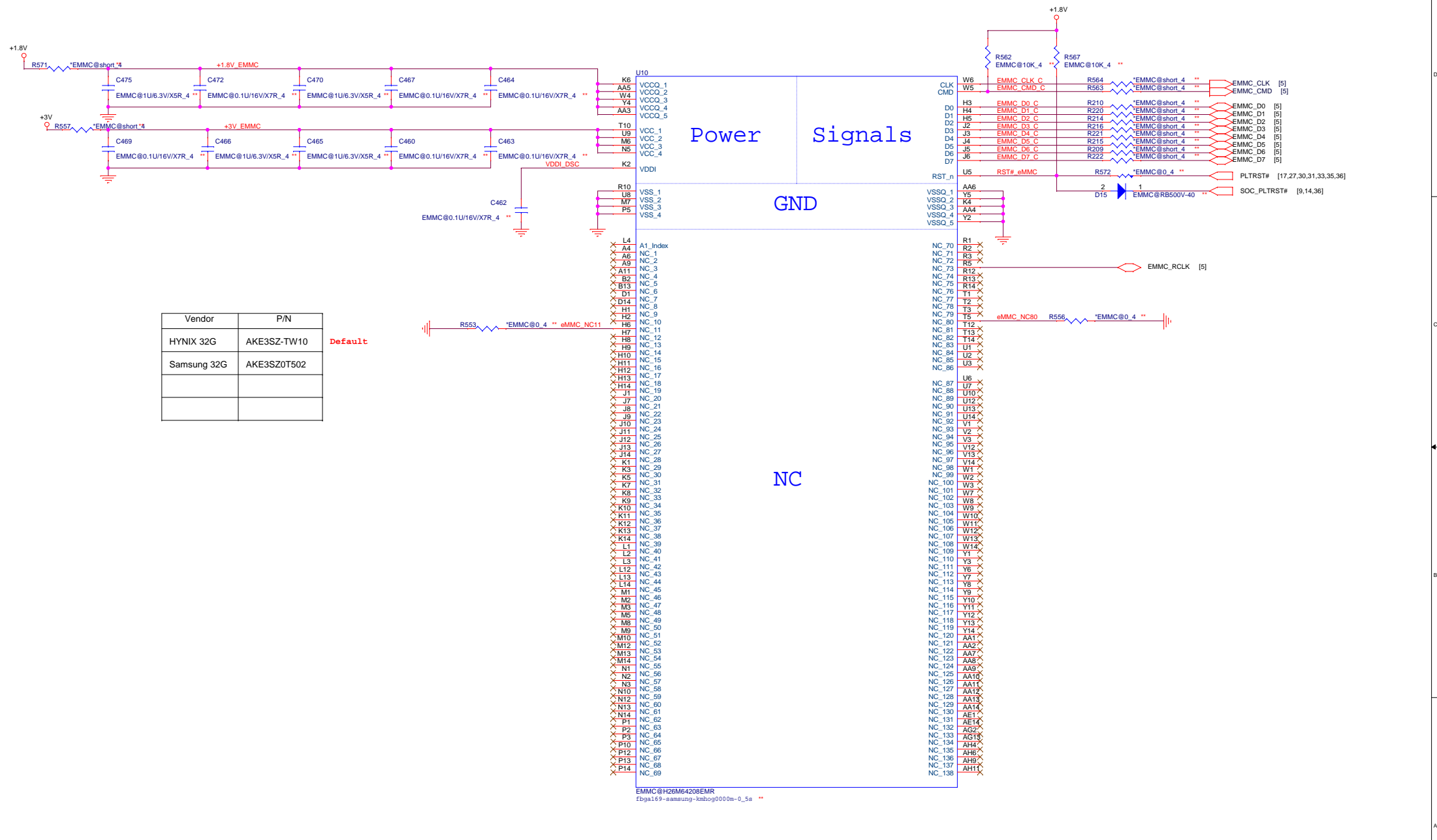
C531,C533,C537,C538 CLOSE TO RE-DRIVER IC



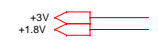
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 PROJECT: HP-Molokai

Size Custom	Document Number <b>SATA RE-DEIVER</b>	Rev 1A
Date: Monday, January 18, 2016	Sheet 28	of 54



[5,15,16,17,18,19,20,22,23,24,25,27,28,31,32,33,34,35,36,44,47,48]  
[5,6,25,27,30,34,36,40]



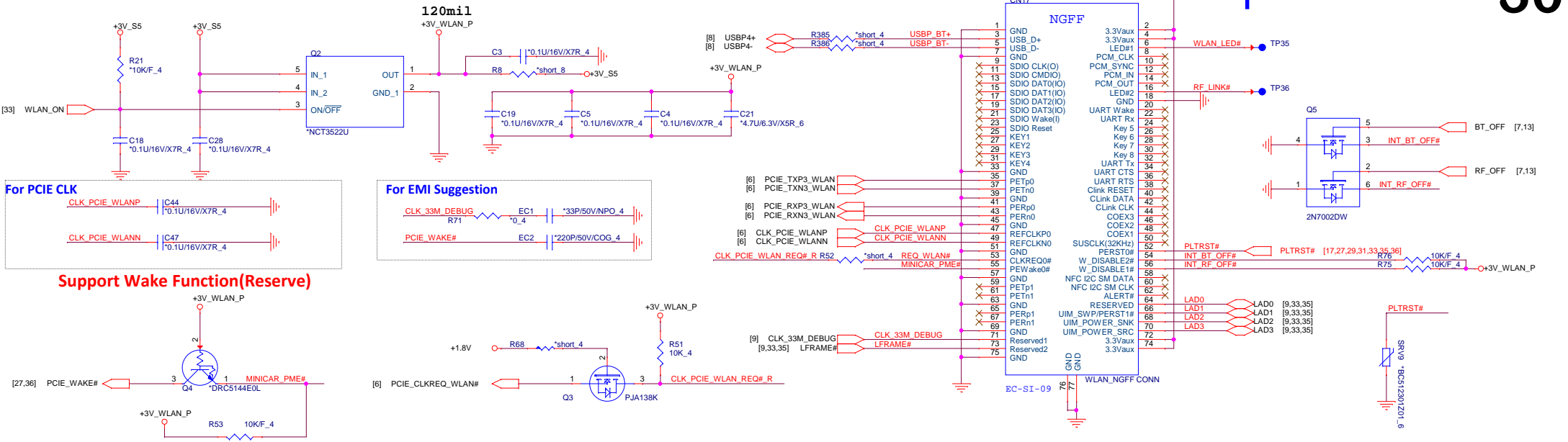
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PROJECT: HP-Molokai

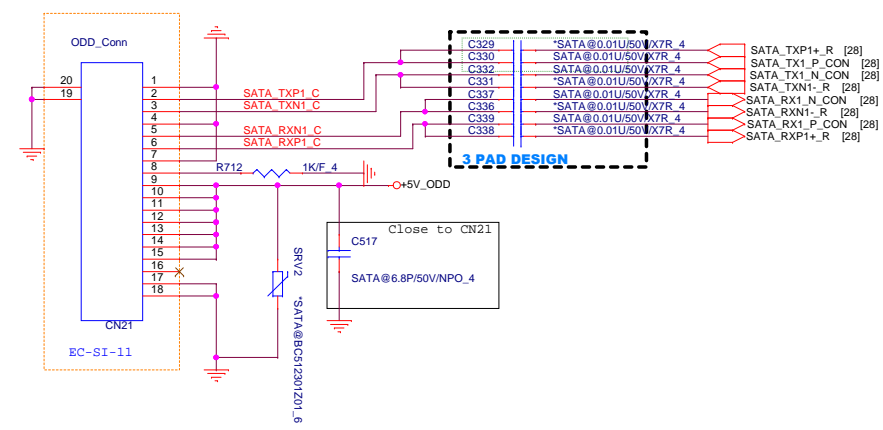
Size	Document Number	eMMC	Rev 1A
Custom			

Date: Monday, January 18, 2016 Sheet 29 of 54

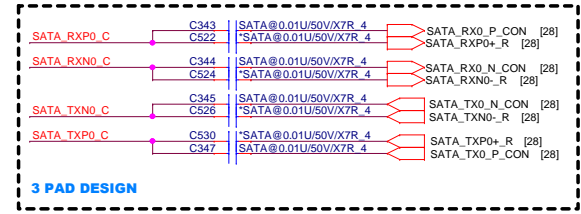
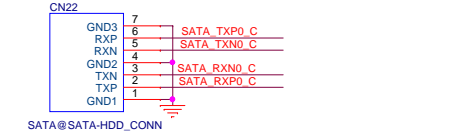
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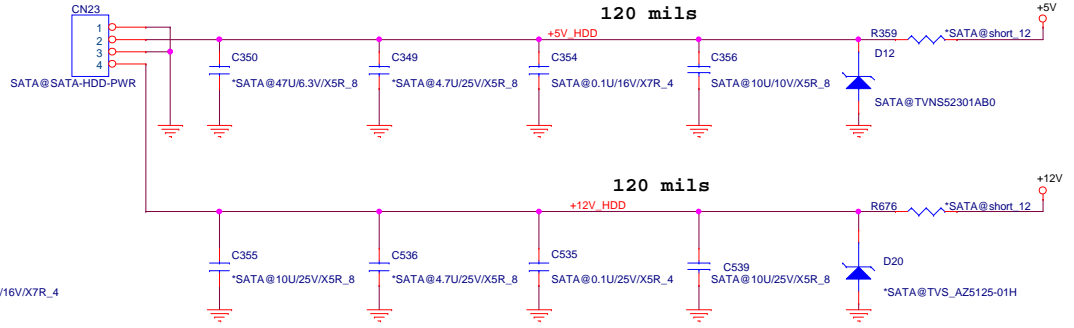
## ODD



## HDD SATA signal for 3.5"

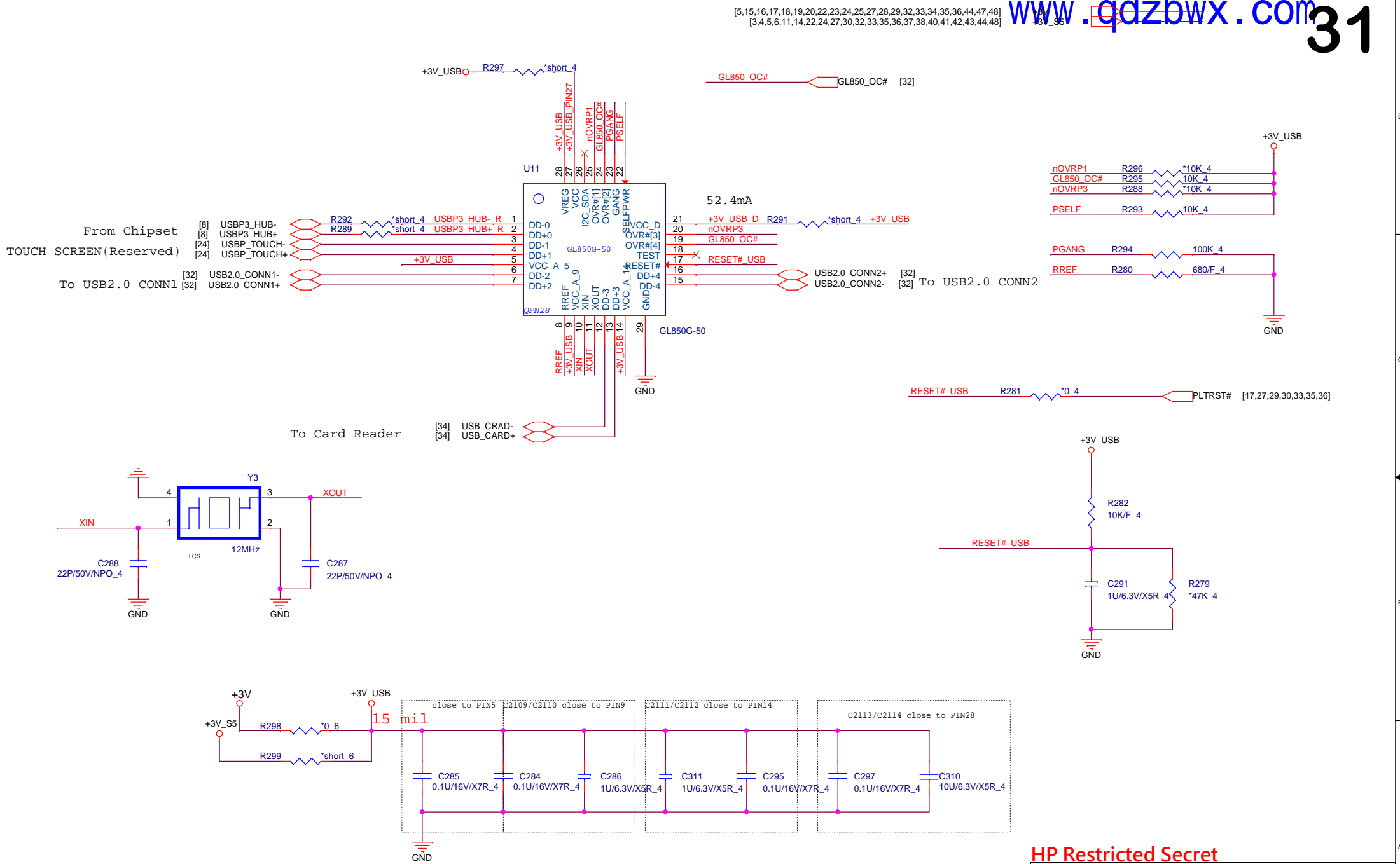


## HDD SATA power for 3.5"



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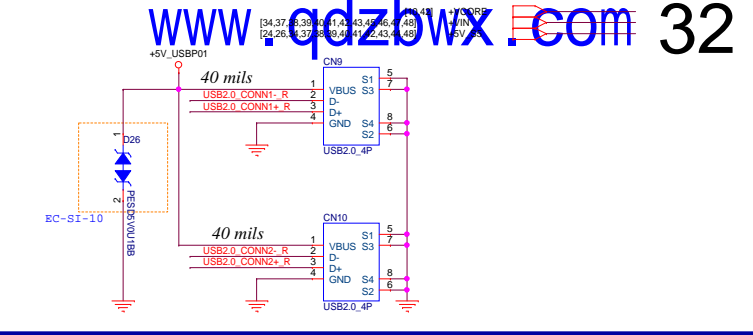
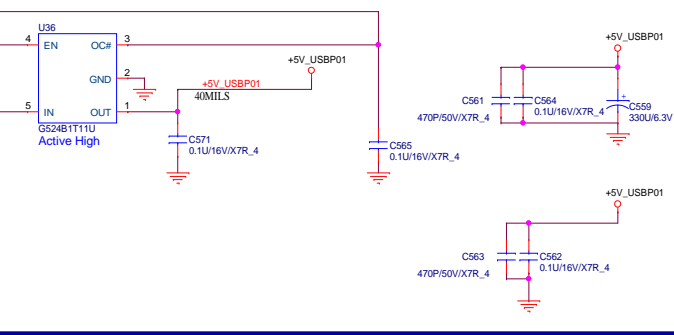
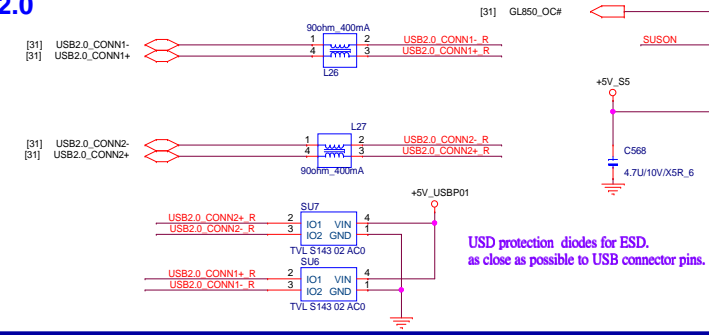


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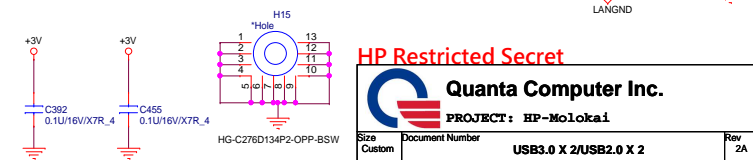
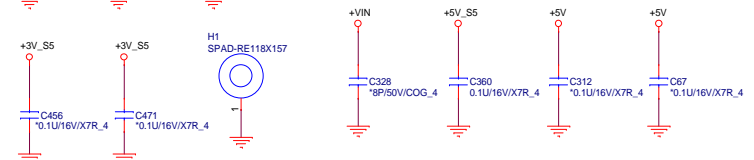
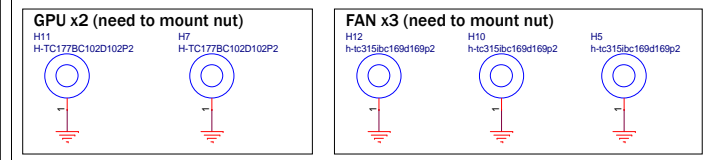
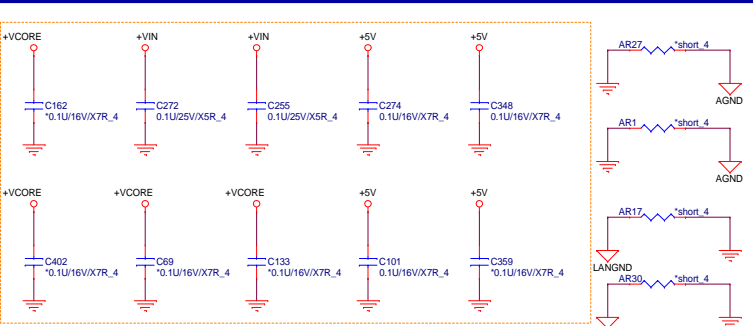
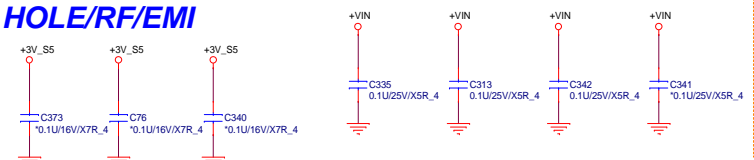
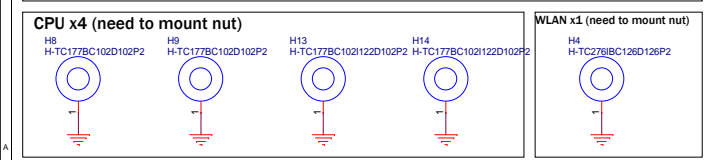
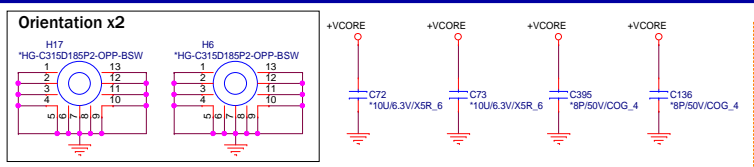
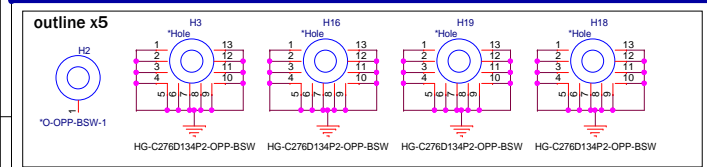
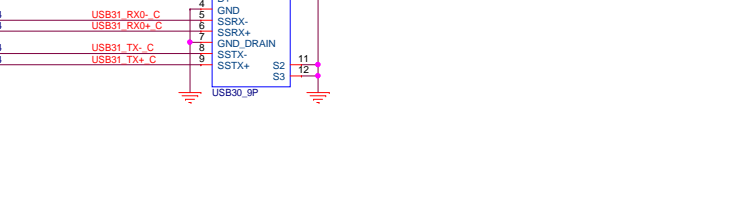
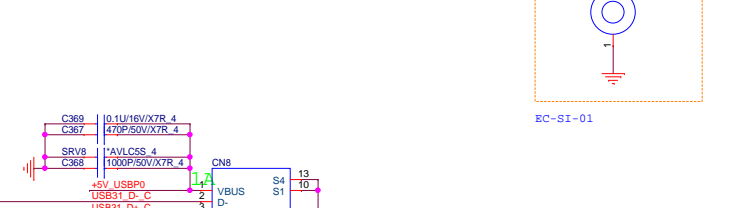
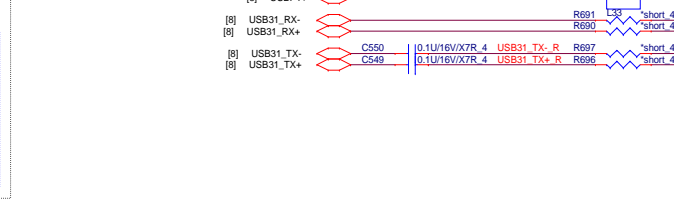
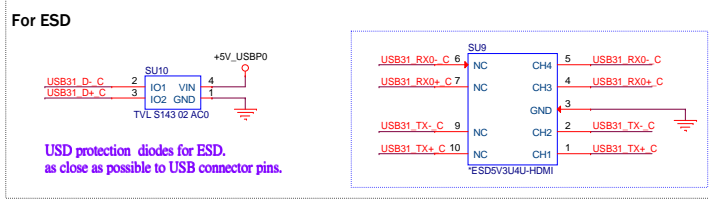
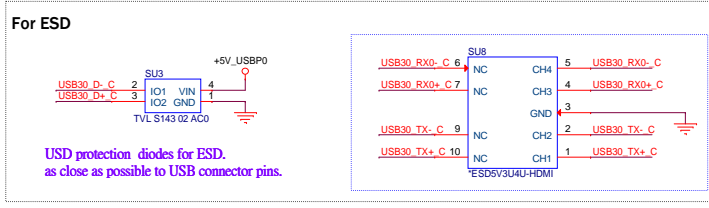
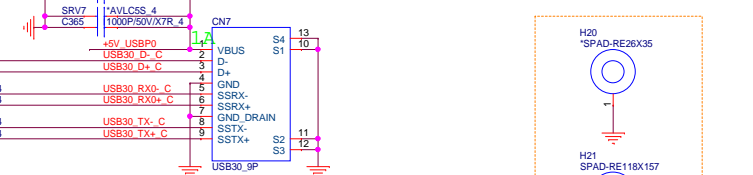
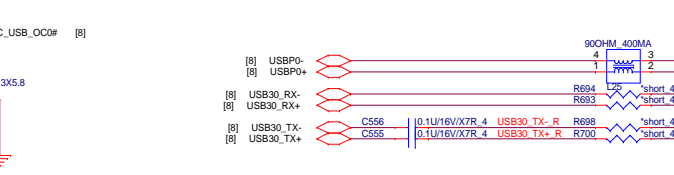
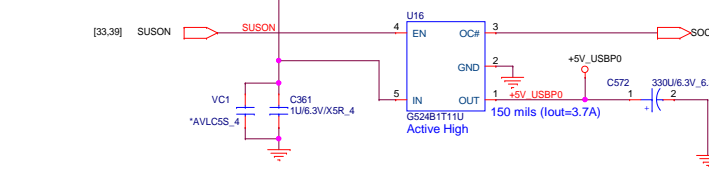
**Quanta Computer Inc.**

**PROJECT: HP-Molokai**

Size Custom	Document Number	Rev 1A
	<b>USB20 HUB GL850G-50</b>	
Date: Monday, January 18, 2016	Sheet 31 of 54	



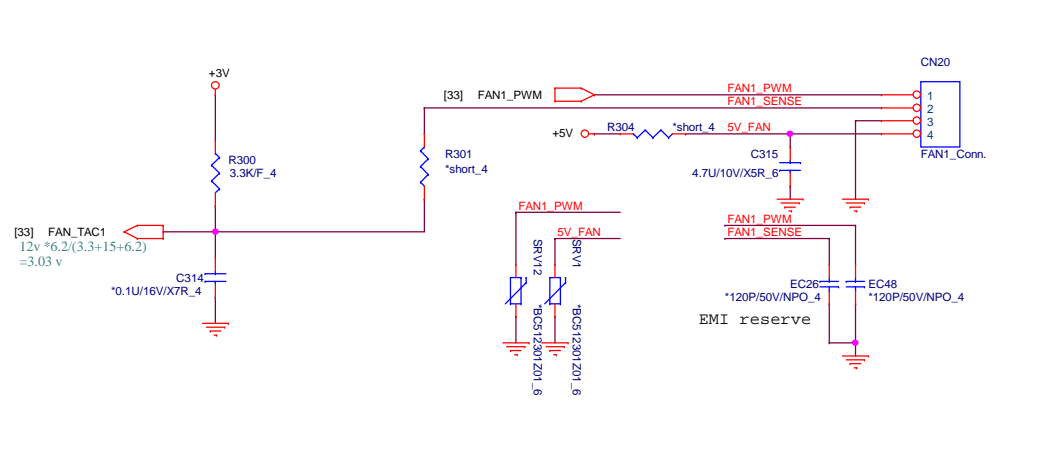
USB 2.0/3.0 Combo



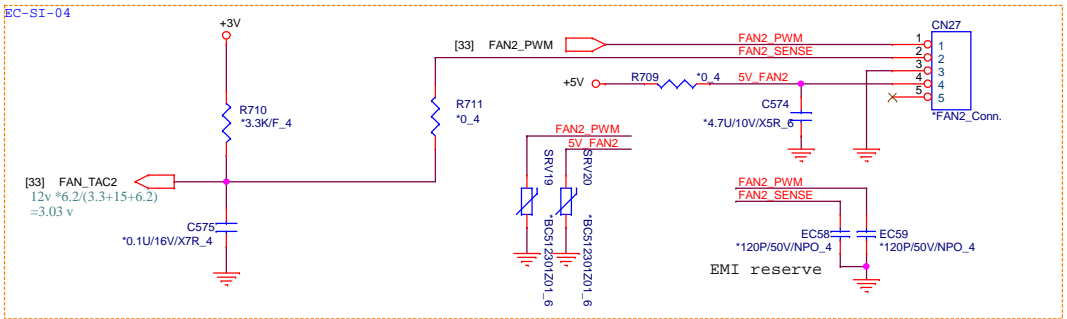
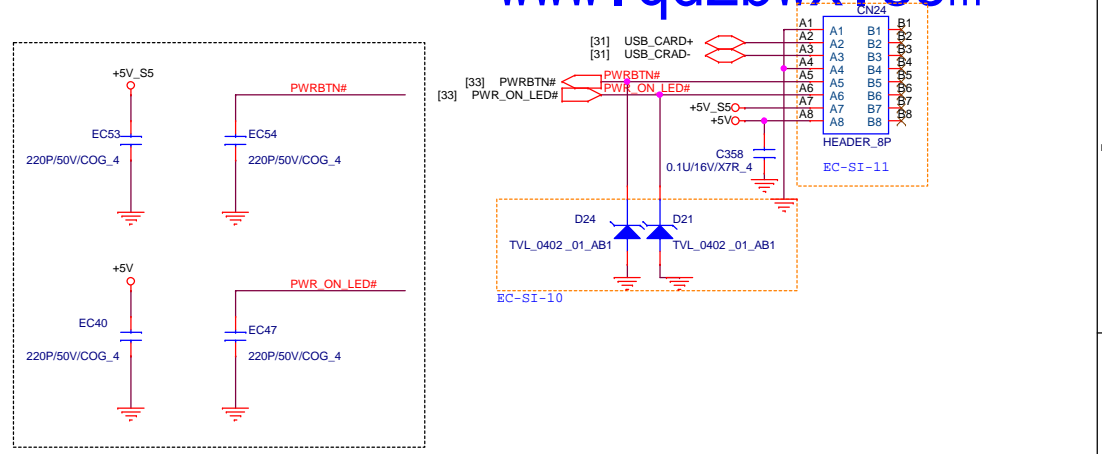




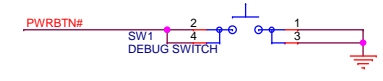
# SYSTEM FAN



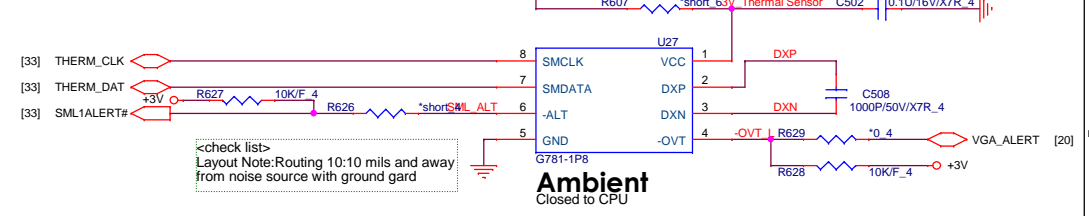
# Card reader/Power button conn



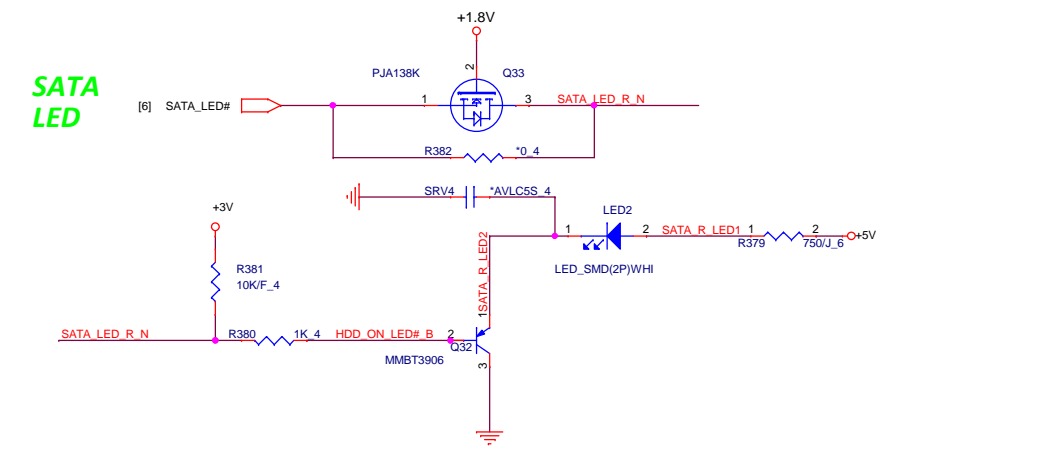
SW1 For Debug.MP will remove it.



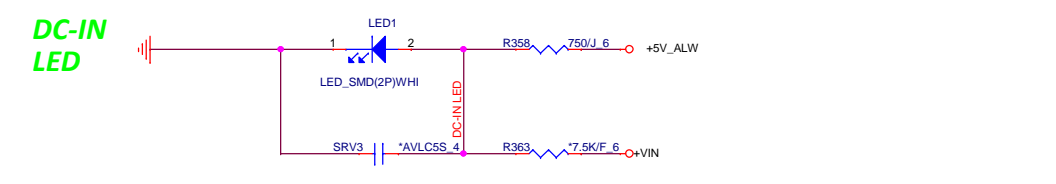
# THERMAL SENSOR



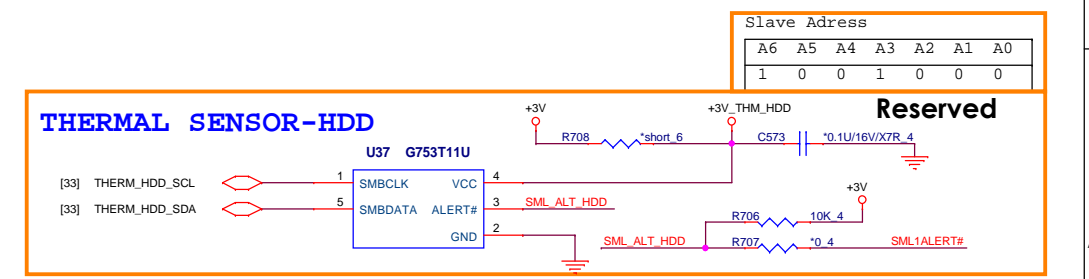
# SATA LED



# DC-IN LED



# THERMAL SENSOR-HDD



**HP Restricted Secret**

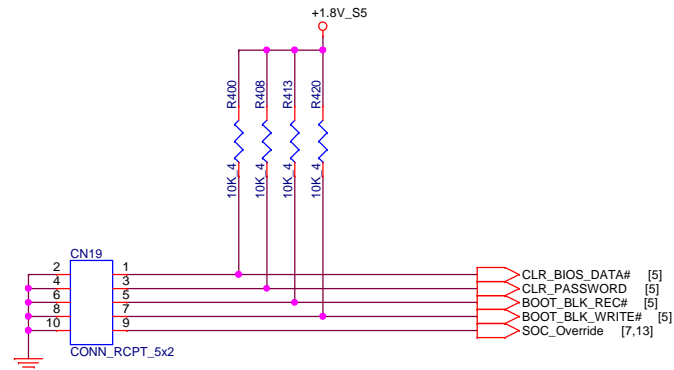
**Quanta Computer Inc.**  
PROJECT: HP-Molokai

Size	Document Number	Rev
Custom	Thermal/FAN/LEDs	2A
Date:	Monday, January 18, 2016	Sheet 34 of 54

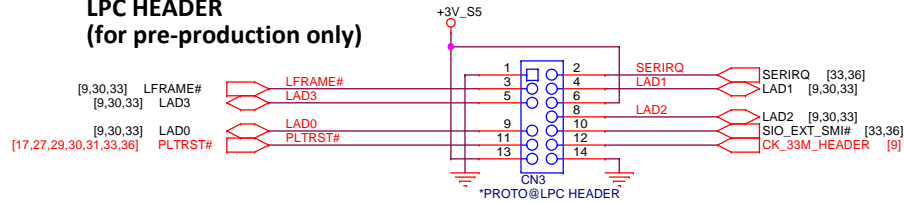
### CLR\_CMOS

Jumper	Pre-production	Production
<b>BOOT_BLK_Recovery</b>	<b>X</b>	<b>X</b>
<b>BOOT_BLK_Enable</b>	<b>O</b>	<b>X</b>

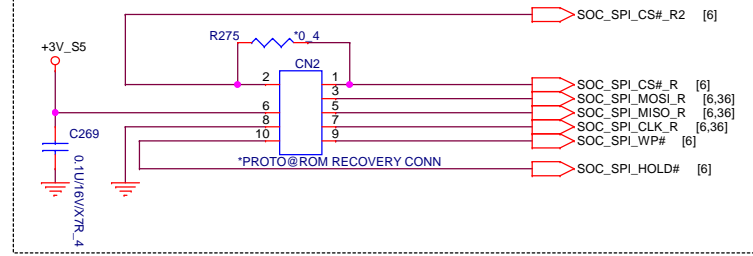
Jumper	Type
<b>Pop CLR_BIOS_DAT</b>	
<b>Pop CLR_PASSWD</b>	
<b>Pop BOOT_BLK_Recovery</b>	
<b>Pop BOOT_BLK_Enable</b>	



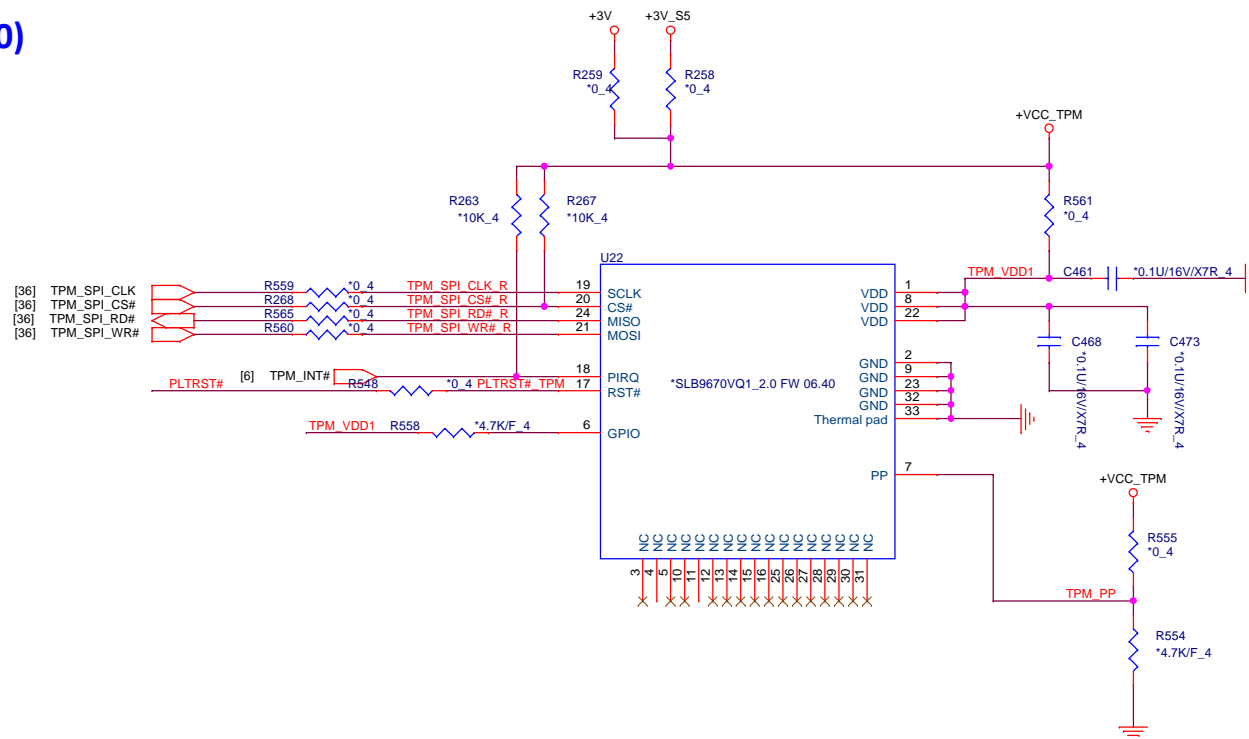
### LPC HEADER (for pre-production only)



### ROM recovery (for pre-production only)



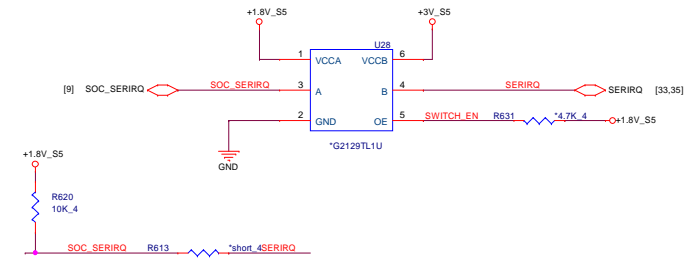
### TPM (1.2 or 2.0)



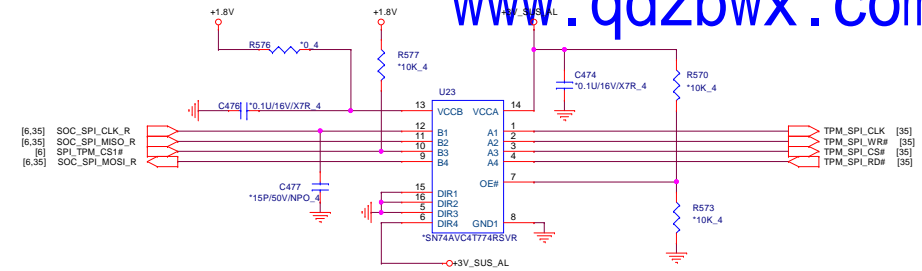
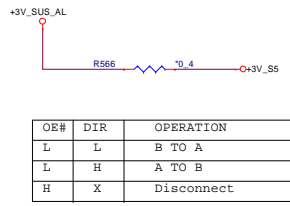
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**Quanta Computer Inc.**  
 PROJECT: HP-Molokai

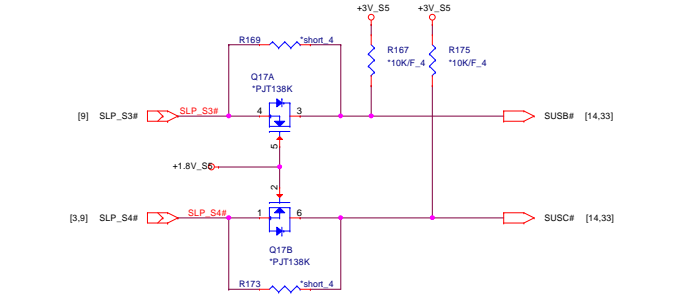
Size Custom	Document Number	Rev 1A
JUMPER/LPCHeader		
Date: Monday, January 18, 2016	Sheet 35 of 54	



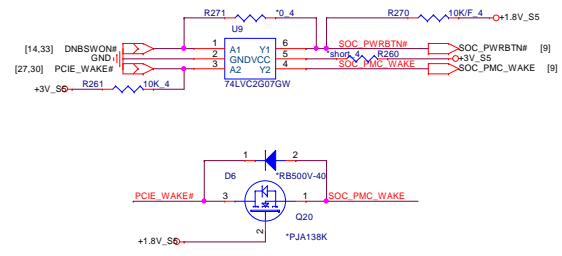
TPM level shift



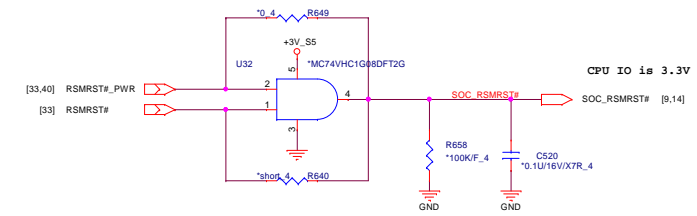
SUSB/C#



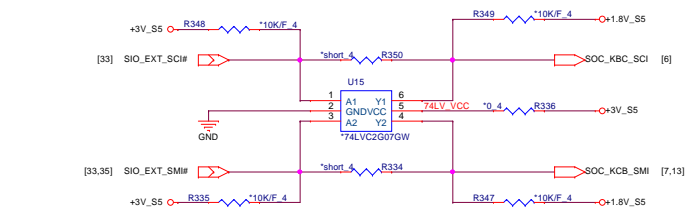
PWRBTN#/PCIE\_WAKE#



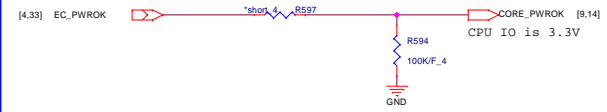
RSMRST#



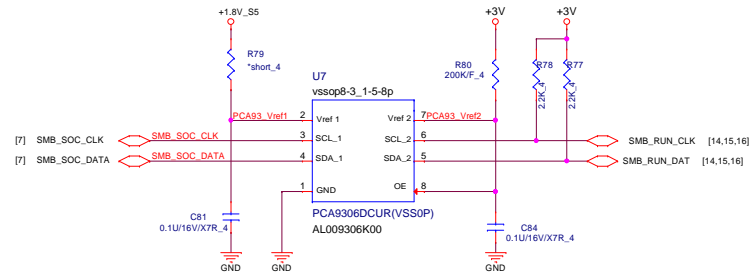
SCI#/SMI#



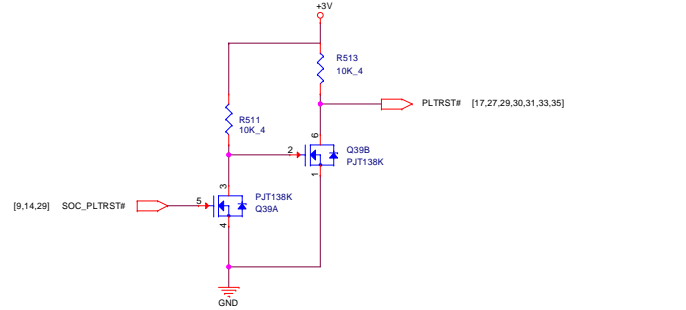
SYS PWRGD



SO-DIMM/XDP SMBUS



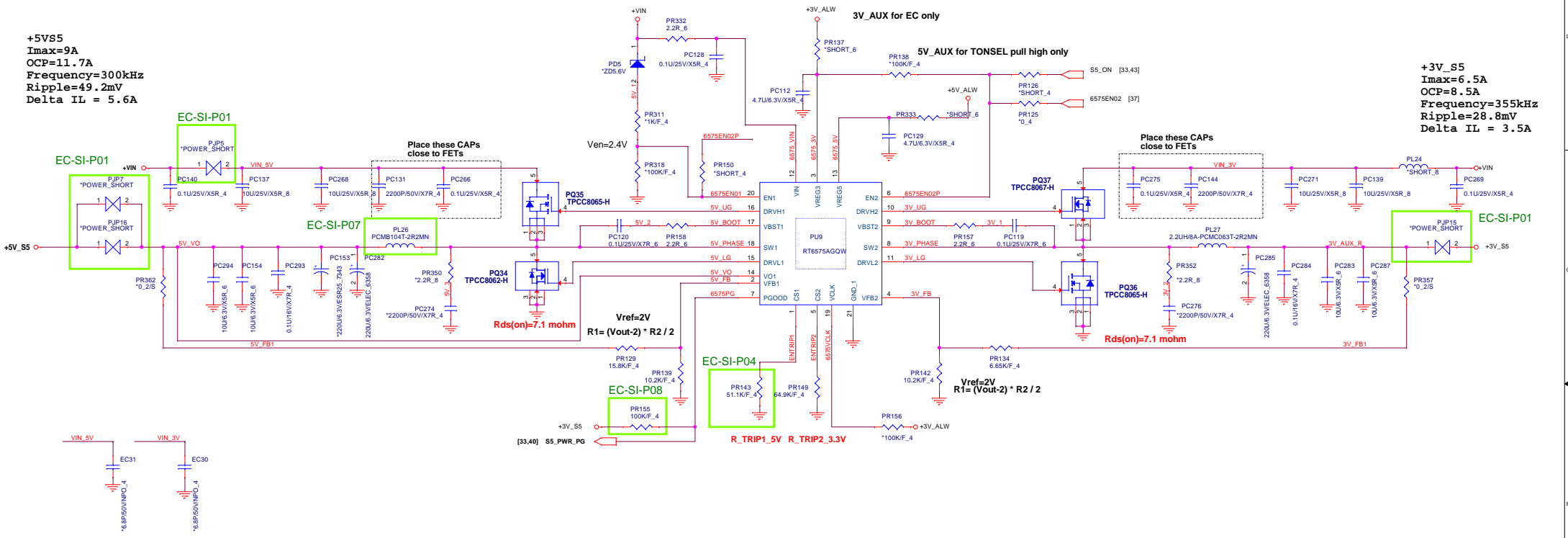
PLTRST#





+5VS5  
 I<sub>max</sub>=9A  
 OCP=11.7A  
 Frequency=300kHz  
 Ripple=49.2mV  
 Delta IL = 5.6A

+3V\_S5  
 I<sub>max</sub>=6.5A  
 OCP=8.5A  
 Frequency=355kHz  
 Ripple=28.8mV  
 Delta IL = 3.5A



L/S Mosfet parameter

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

Power On sequencing

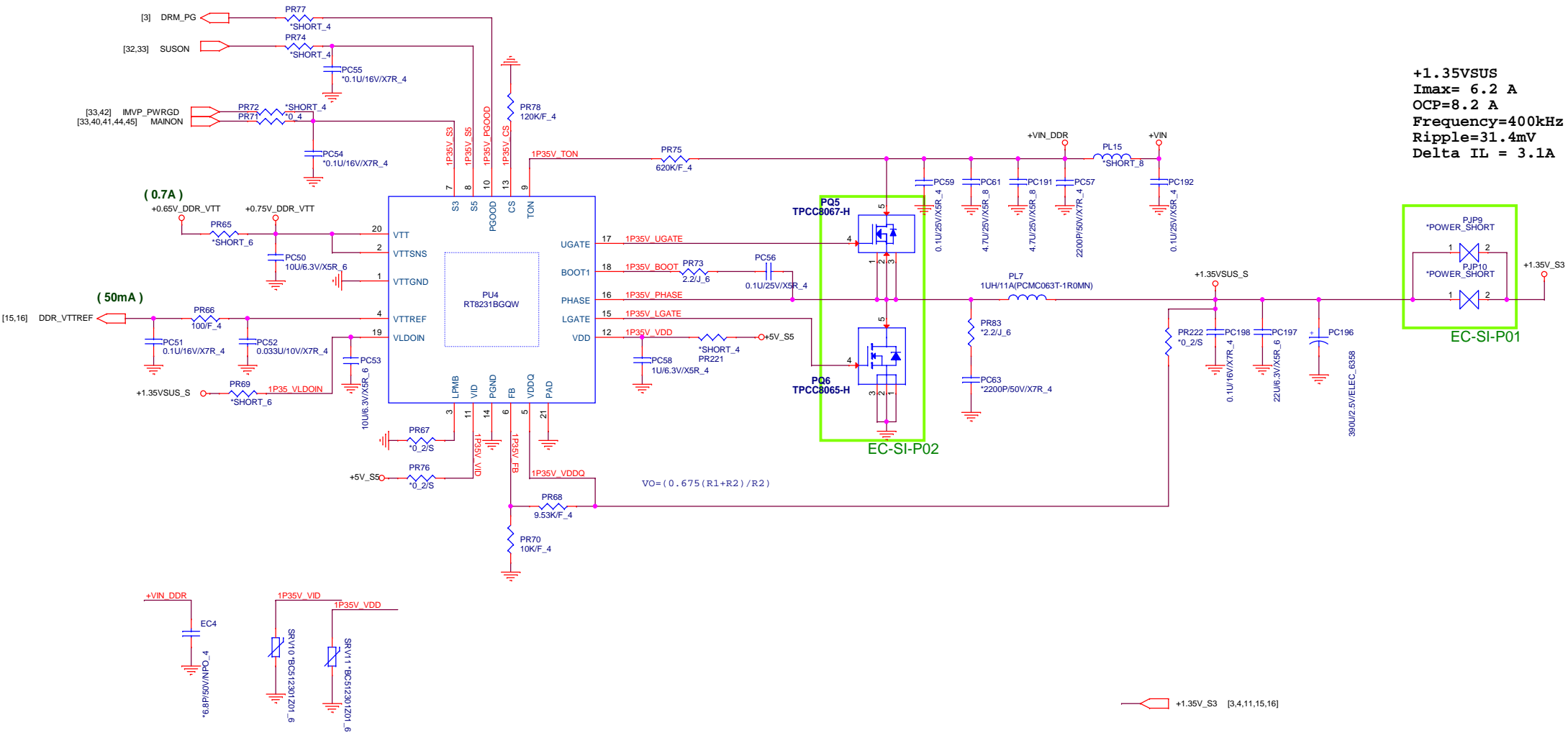
EN0	ENC	REF	VREG3	VREG5	SMPS1	SMPS2
LOW	LOW	OFF	OFF	OFF	OFF	OFF
> 2.4V	LOW	ON	ON	ON	OFF	OFF
> 2.4V	> 2.4V	ON	ON	ON	ON	ON

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**Quanta Computer Inc.**  
 PROJECT: HP-Molokai

Size: Custom	Document Number: +3V5S+5V5S(RT6575AGQW)	Rev: 2A
Date: Monday, January 18, 2016		Sheet: 38 of 54

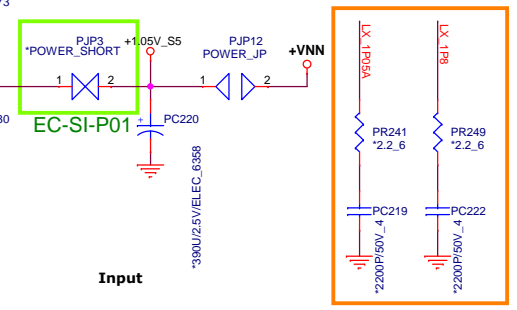
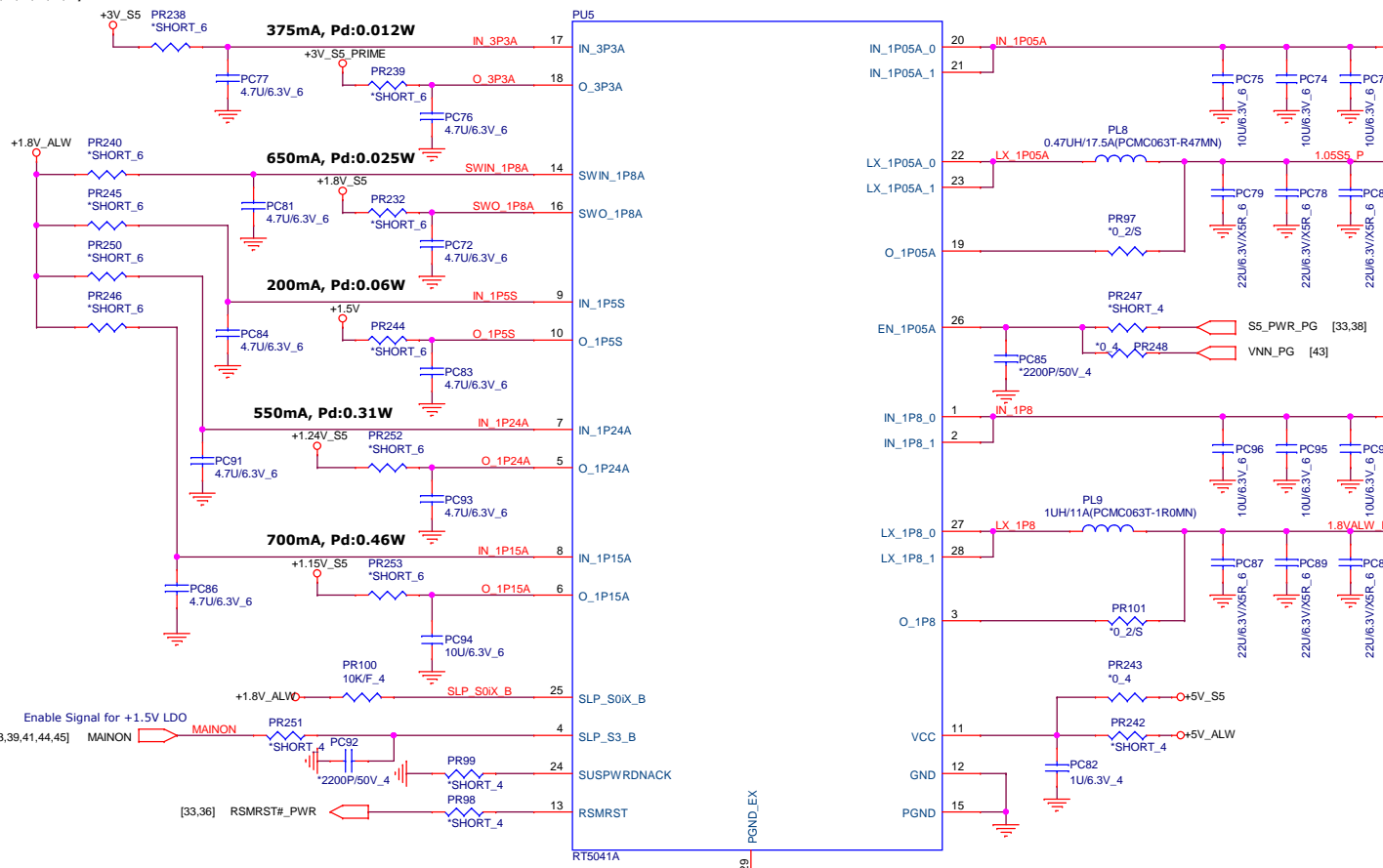
+1.35VSUS  
 I<sub>max</sub>= 6.2 A  
 OCP=8.2 A  
 Frequency=400kHz  
 Ripple=31.4mV  
 Delta IL = 3.1A



$$VO = (0.675 (R1+R2) / R2)$$

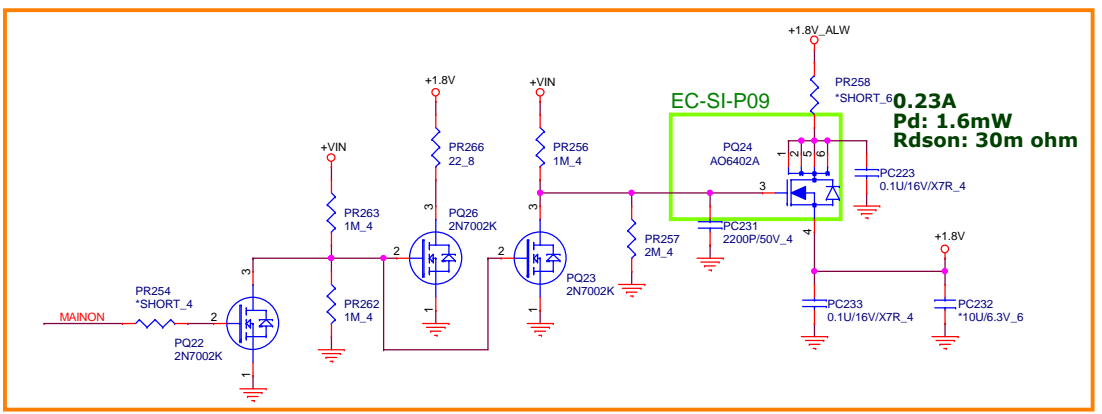
- +3V\_S5 [3,4,5,6,11,14,22,24,27,30,31,32,33,35,36,37,38,41,42,43,44,48]
- +1.8V\_S5 [5,6,7,8,9,11,13,14,22,23,33,35,36,41]
- +3V\_S5\_PRIME [11,33]
- +1.5V [11,26]
- +1.24V\_S5 [11]
- +1.15V\_S5 [10]
- +5V\_ALW [26,34,38]
- +1.05V\_S5 [9,10,41,42]
- +1.8V [5,6,25,27,29,30,34,36]

**+1.05VS5**  
**Imax= 2 A**  
**OCF=6 A**  
**Frequency=1.2MHz**  
**Ripple=5mV**  
**Delta IL = 1.3A**



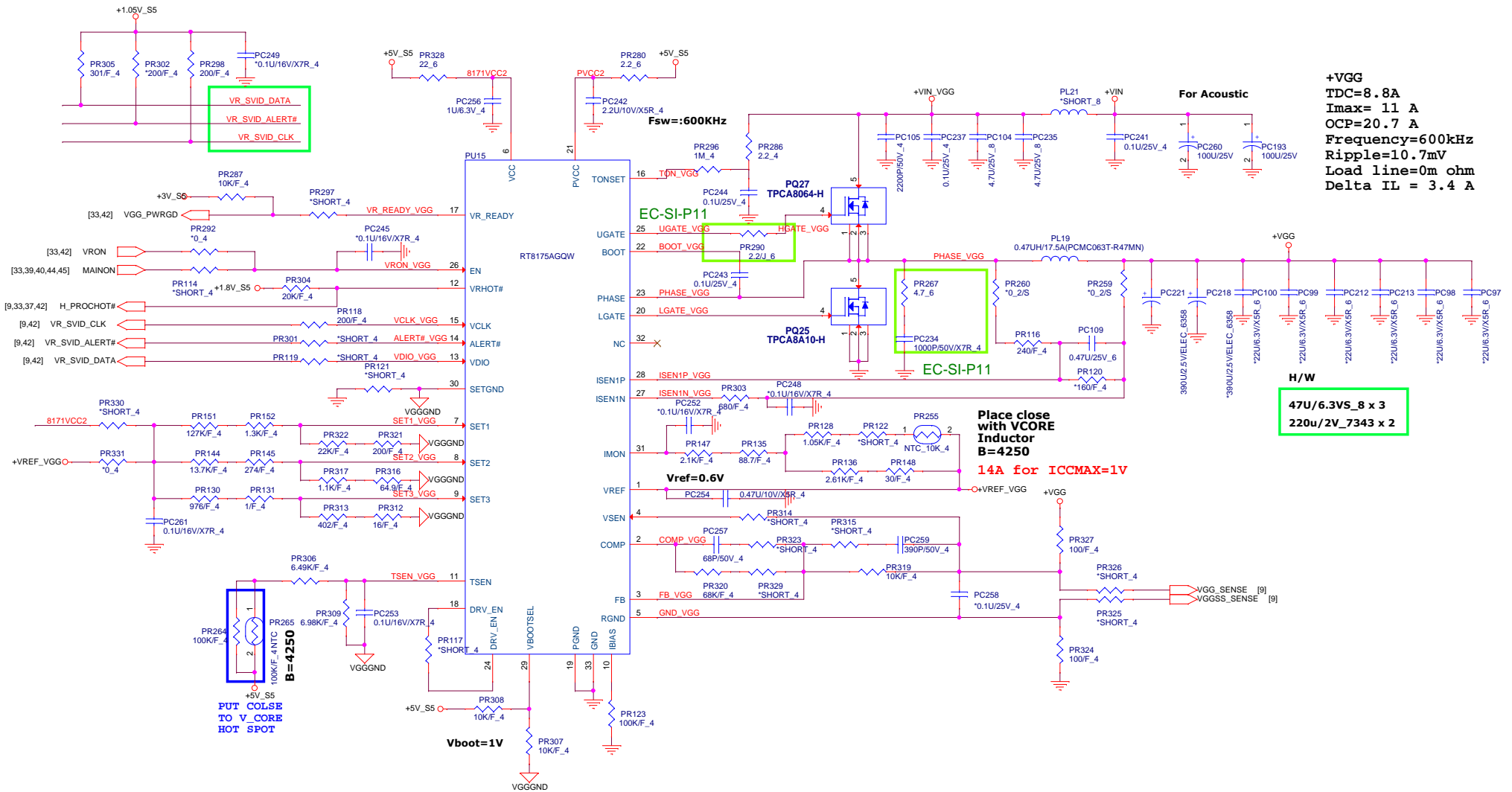
**Snubber**

**+1.8VALW**  
**Imax= 3.1 A**  
**OCF=6 A**  
**Frequency=1.2MHz**  
**Ripple=6.8mV**  
**Delta IL = 0.68 A**



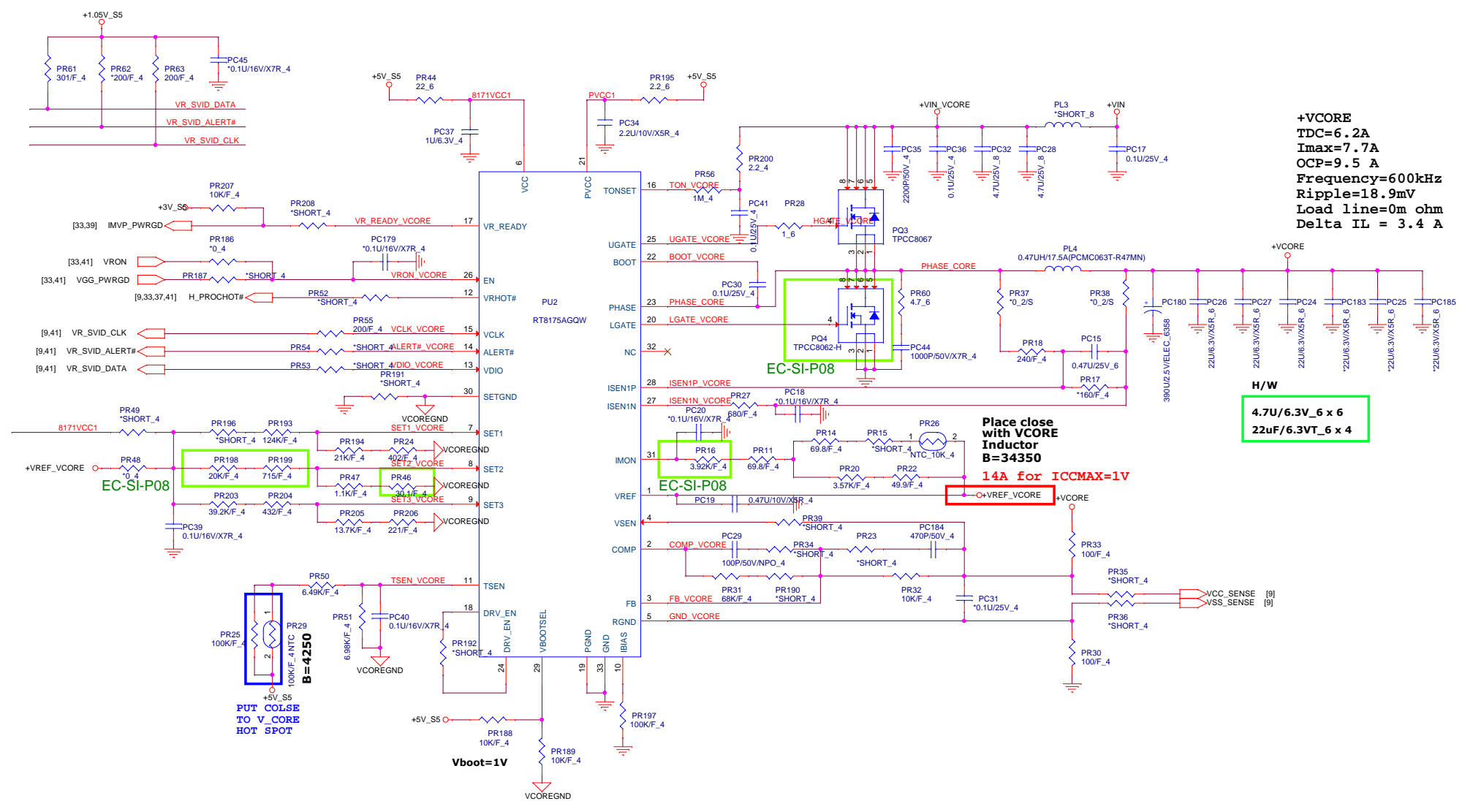


- +3V\_S5 [3,4,5,6,11,14,22,24,27,30,31,32,33,35,36,37,38,40,42,43,44,48]
- +1.05V\_S5 [9,10,40,42]
- +5V\_S5 [24,26,32,34,37,38,39,40,42,43,44,48]
- +VGG [10]
- +VIN [32,34,37,38,39,40,42,43,45,46,47,48]



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		Quanta Computer Inc. PROJECT: HP-Molokai
Size: Custom Document Number: VGG CORE (RT8175A)	Rev: 2A	
Date: Monday, January 18, 2016		Sheet: 41 of 54



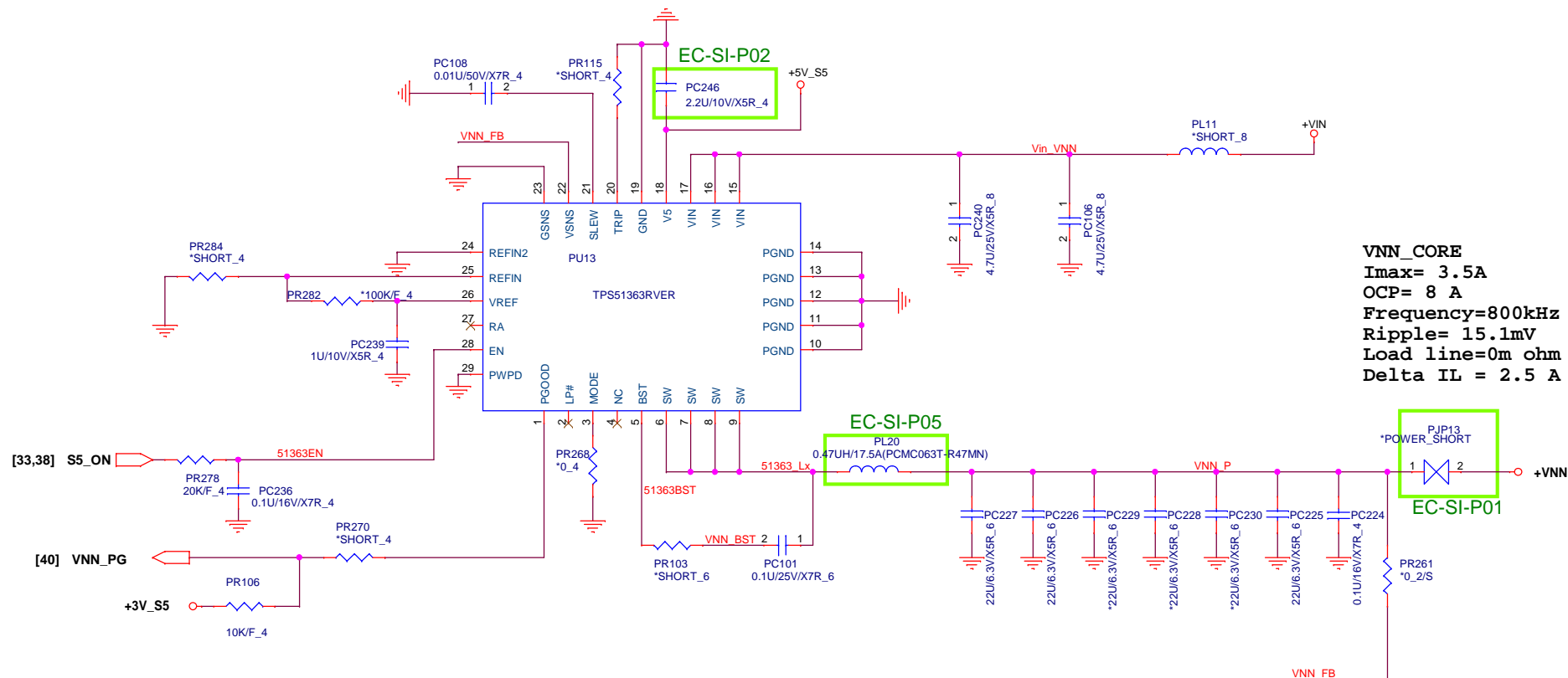
**+VCORE**  
 TDC=6.2A  
 I<sub>max</sub>=7.7A  
 OCP=9.5 A  
 Frequency=600kHz  
 Ripple=18.9mV  
 Load line=0m ohm  
 Delta IL = 3.4 A

**H/W**  
 4.7U/6.3V<sub>6</sub> x 6  
 22uF/6.3V<sub>6</sub> x 4

Place close with VCORE Inductor  
**B=34350**  
 14A for ICCMAX=1V

PUT COLSE TO V CORE HOT SPOT  
**B=4250**

**Vboot=1V**



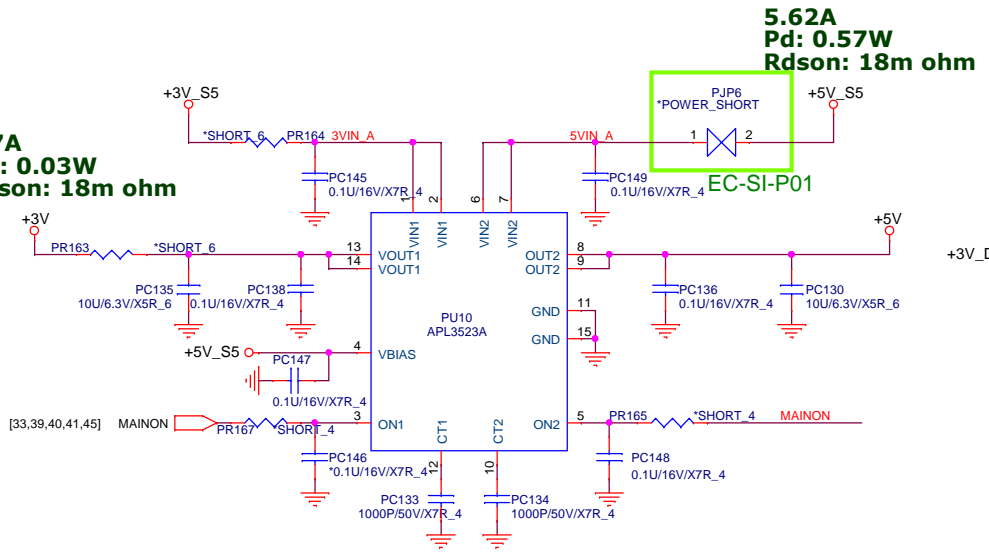
VNN\_CORE  
 I<sub>max</sub> = 3.5A  
 OCP = 8 A  
 Frequency = 800kHz  
 Ripple = 15.1mV  
 Load line = 0m ohm  
 Delta IL = 2.5 A

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**Quanta Computer Inc.**  
 PROJECT: HP-MoIokai

Size	Document Number	VNN CORE(TPS51363)	Rev	2A
Date:	Monday, January 18, 2016	Sheet	43 of	54

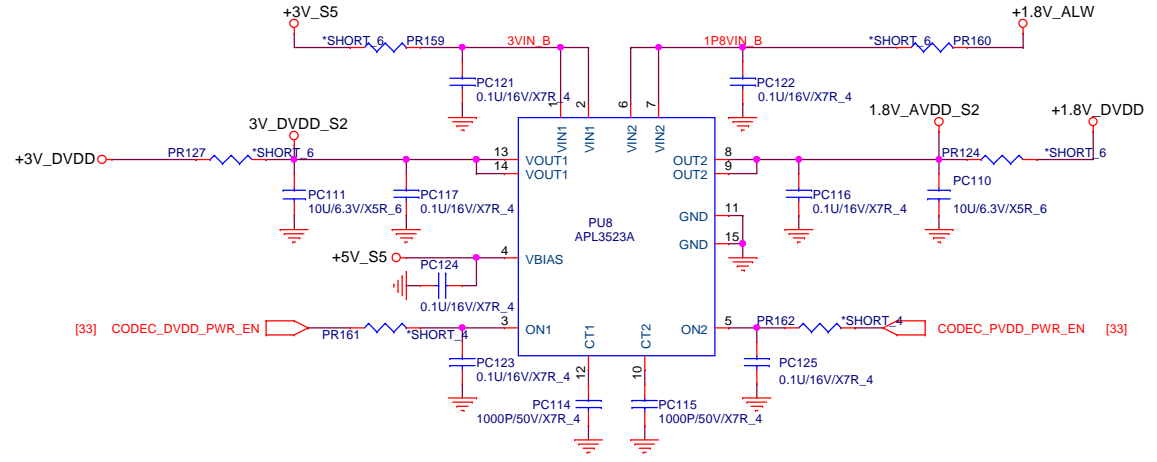
**1.7A**  
**Pd: 0.03W**  
**Rdson: 18m ohm**




**5.62A**  
**Pd: 0.57W**  
**Rdson: 18m ohm**

**0.5A**  
**Pd: 0.01W**  
**Rdson: 18m ohm**

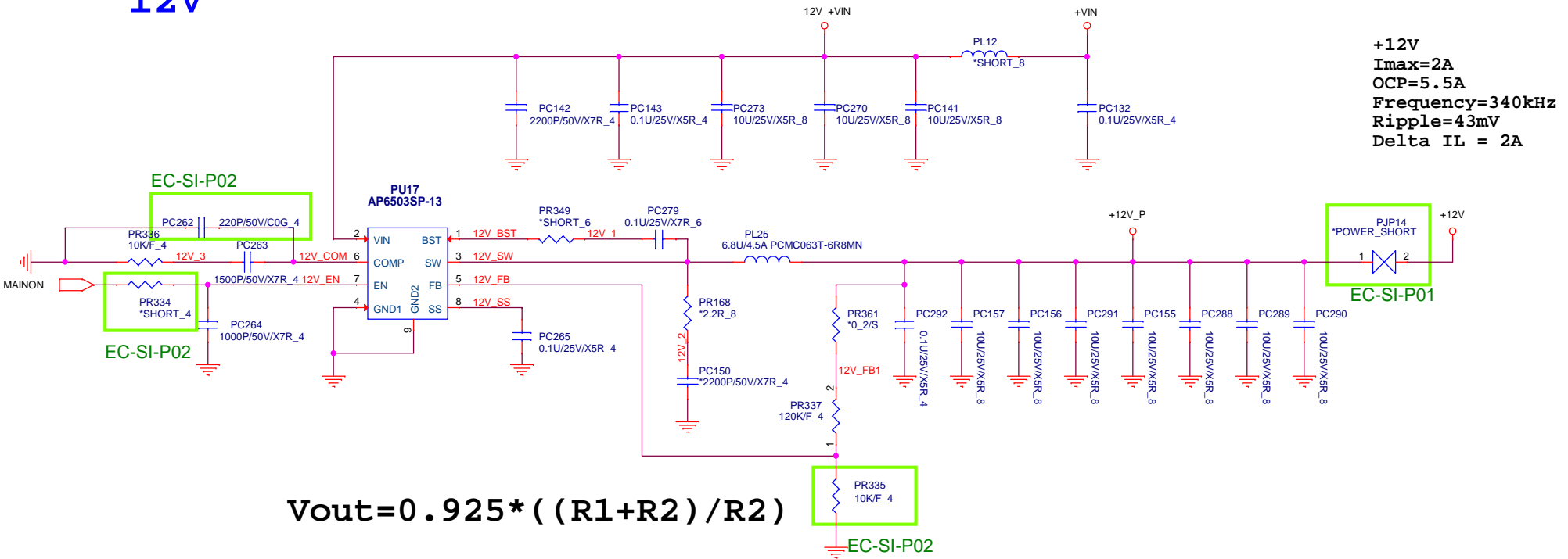
**0.03A**  
**Pd: 0.01W**  
**Rdson: 18m ohm**



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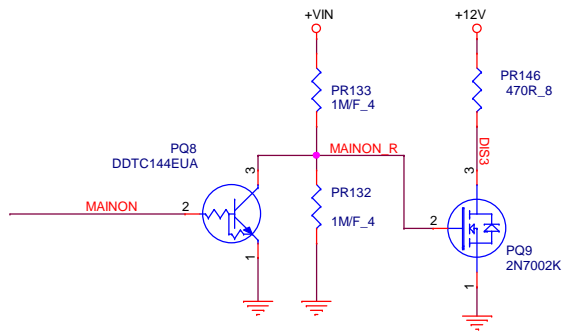
 <b>Quanta Computer Inc.</b> PROJECT: HP-Molokai		Rev
		2A
Size	Document Number	
Custom		
Date:	Monday, January 18, 2016	Sheet 44 of 54

12V



+12V  
 I<sub>max</sub>=2A  
 OCP=5.5A  
 Frequency=340kHz  
 Ripple=43mV  
 Delta I<sub>L</sub> = 2A

$$V_{out} = 0.925 * ((R1 + R2) / R2)$$

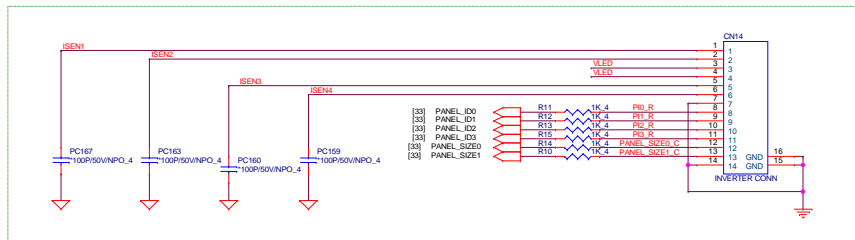
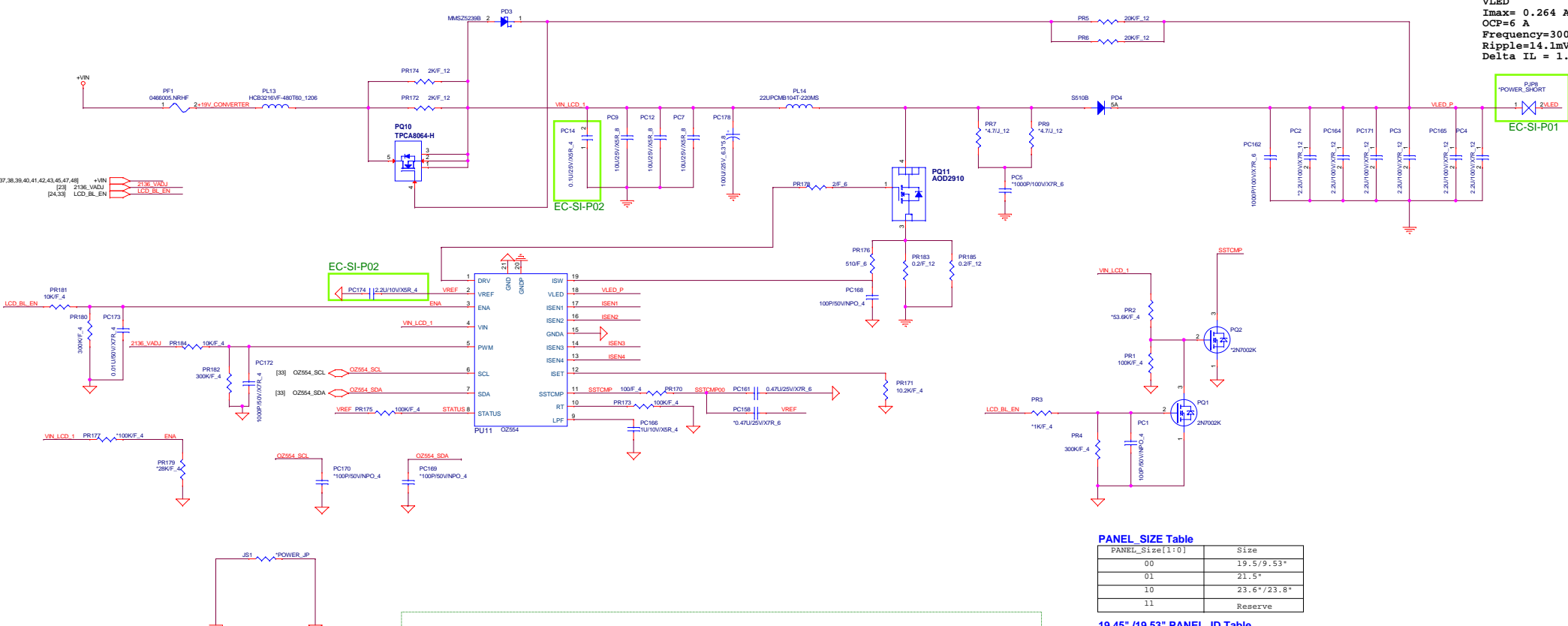


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**Quanta Computer Inc.**  
 PROJECT: HP-Molokai

Size B	Document Number	+12V	Rev 2A
Date: Monday, January 18, 2016	Sheet	45	of 54

VLED  
 I<sub>max</sub>= 0.264 A  
 OCP=6 A  
 Frequency=300kHz  
 Ripple=14.1mV  
 Delta IL = 1.5A



PANEL\_SIZE Table

PANEL_Size[1:0]	Size
00	19.5"/9.53"
01	21.5"
10	23.6"/23.8"
11	Reserve

19.45" /19.53" PANEL\_ID Table

PANEL_ID[3:0]	Panel model
1111	No Connect
1110	INX M200HJ-L20 FHD
1101	AUO M195RTN01.0 HD+
1100	LGD LM195MD1-TL1A1 HD+
1010	Reserve

21.5" PANEL\_ID Table

PANEL_ID[3:0]	Panel model
1111	No Connect
1110	INX M215HJK-L3B FHD eDP
1101	SDC LTM215HL01 FHD
1100	LGD LM215WF3-SLN1 FHD
1011	Reserve

23.6" /23.8" PANEL\_ID Table

PANEL_ID[3:0]	Panel model
1111	No Connect
1110	INX M236HJK-L5B FHD eDP
1101	AUO M238HAN01.0 FHD
1100	LGD LM238WF1-SLE1 FHD
1011	SDC LTM238HL02 FHD
1010	Reserve

Panel\_id[3:0] = 1111 & Panel\_size[1:0] = 11 is reserved for cabling detection by "No connection".

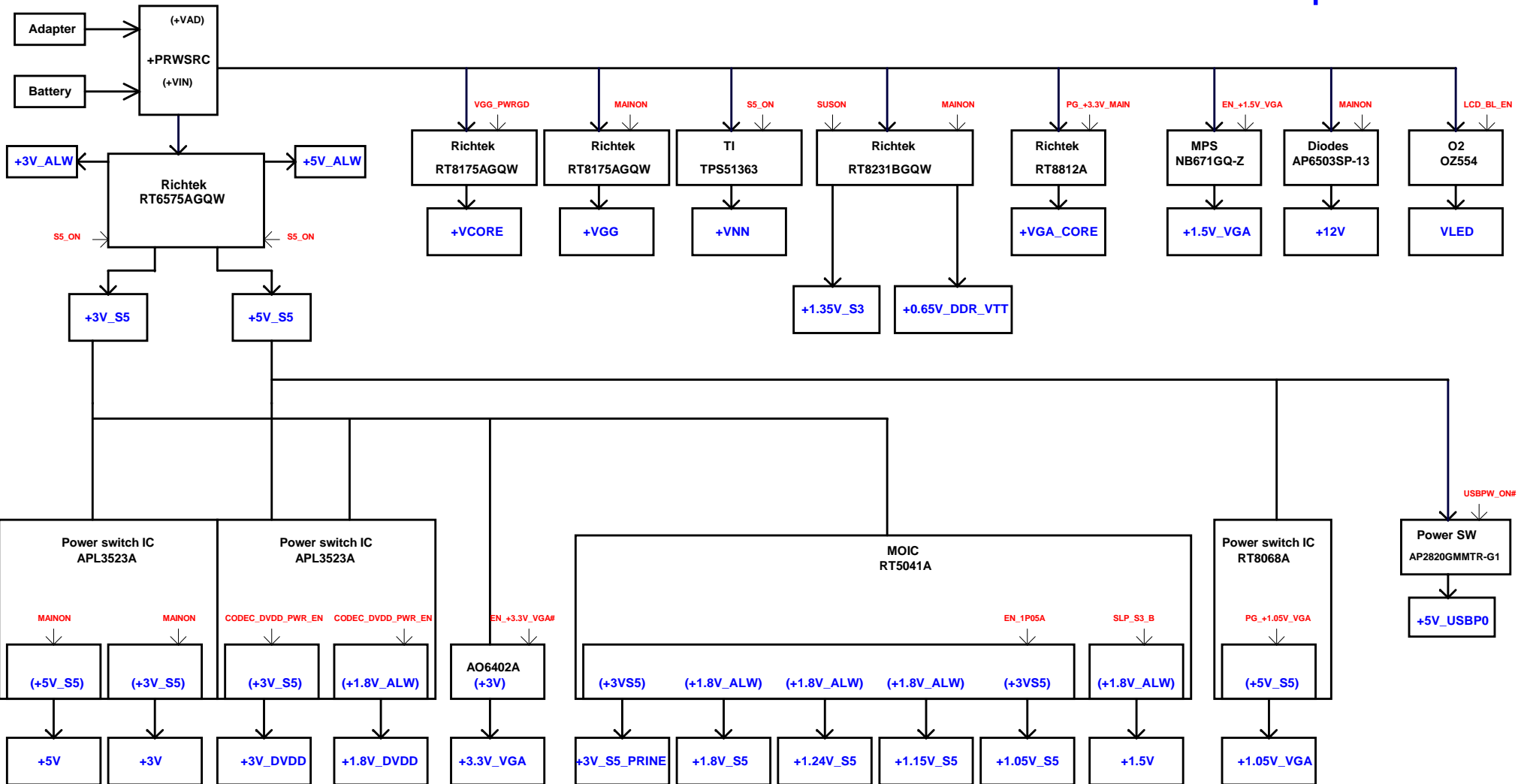
HP Restricted Secret

Quanta Computer Inc.

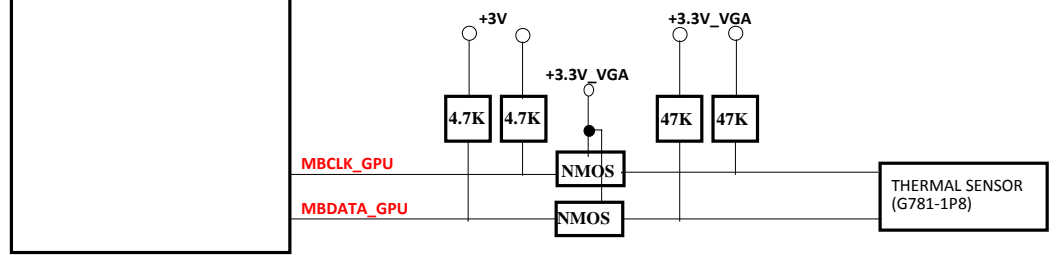
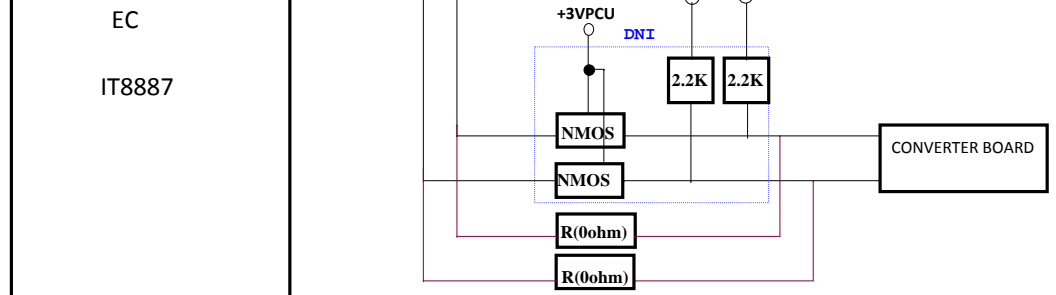
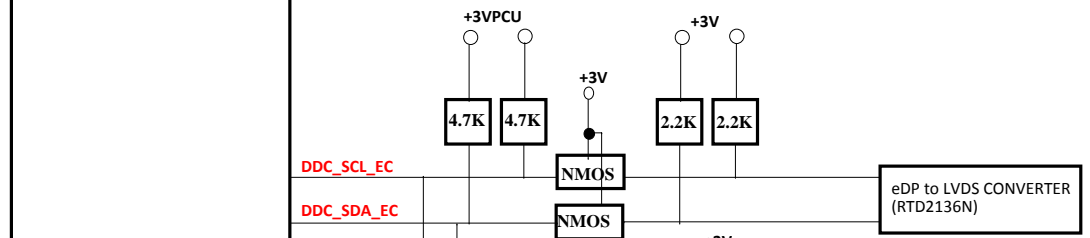
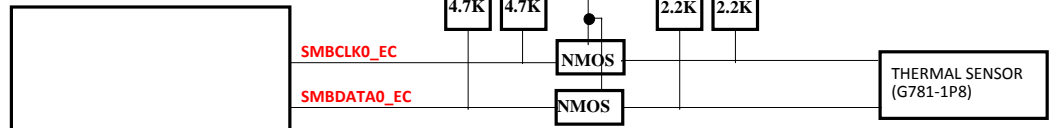
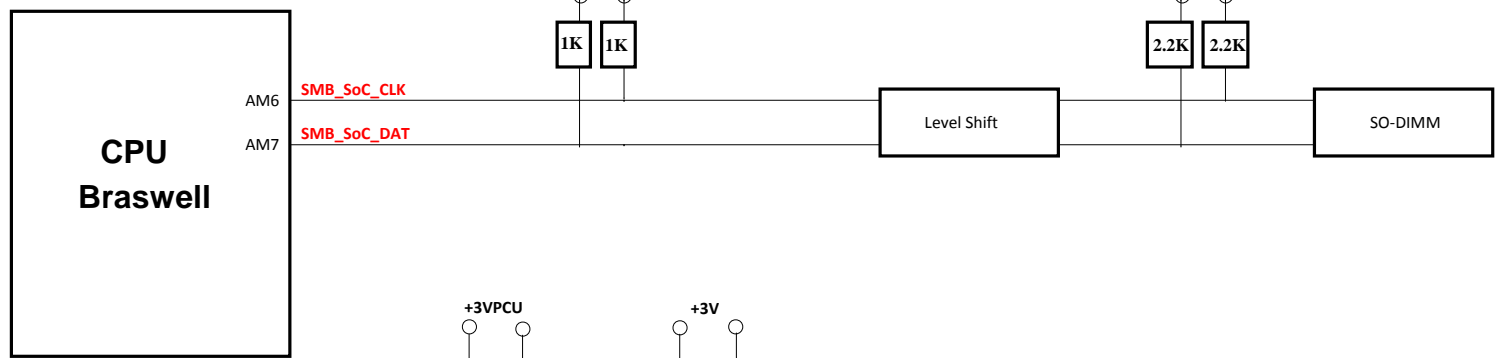


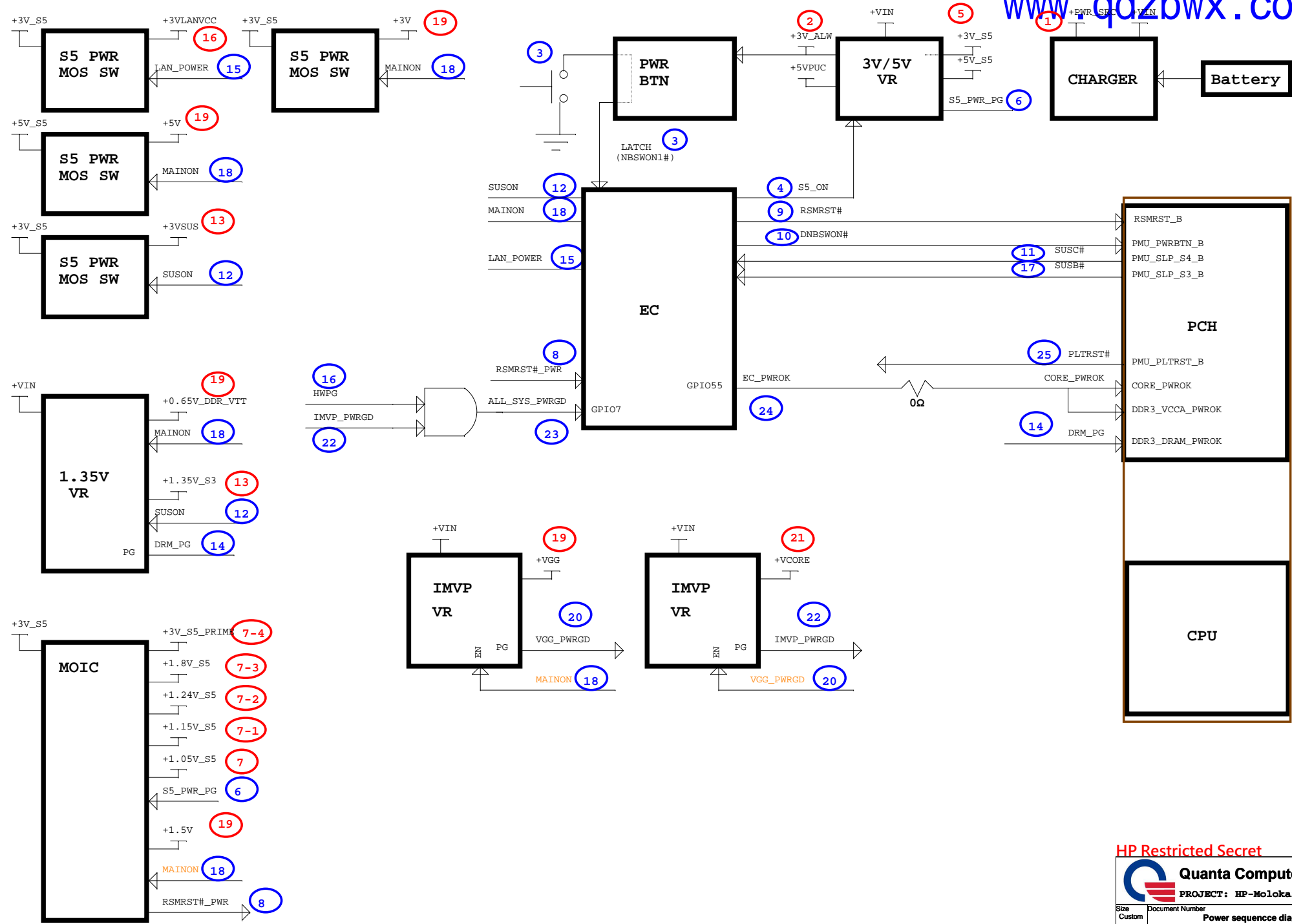


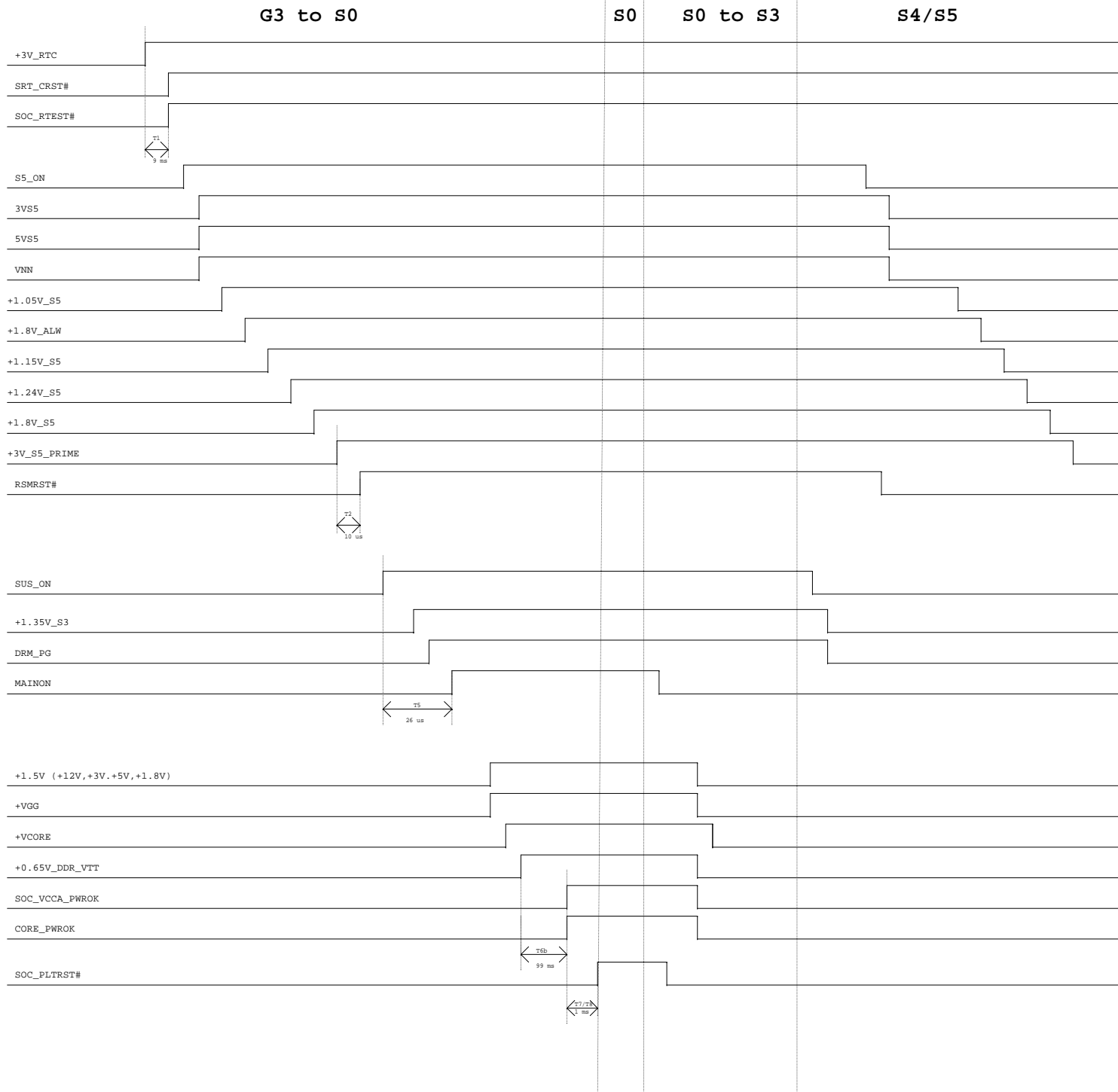




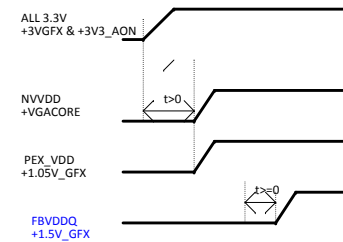
HP Restricted Secret



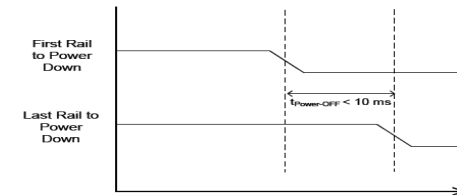




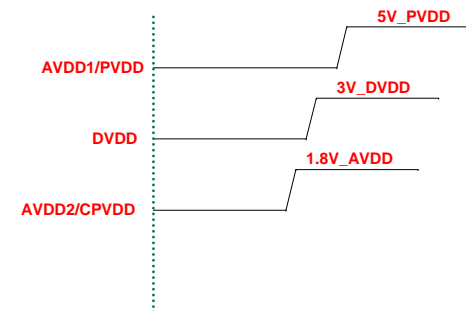
N16V Power up sequence



N16V Power down sequence



AUDIO POWER SEQUENCE



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Quanta Computer Inc.  
 PROJECT: HP-Molokai  
 Power on/off sequence  
 Date: Monday, January 18, 2016 Sheet 52 of 54

**N91A EE Schematic EC Tracking Record DB to SI version**

EC #	Page	Description	Part Affected
EC-SI-01	32	add GND PAD for EMI	H20,H21
EC-SI-02	26	change Audio speaker connector from 1 4pin to 2 2pin	CN25,CN26
EC-SI-03	07	change board ID for SI stage, R537 no stuff, R544 stuff	R537,R544
EC-SI-04	34	add second fan function	CN27,R709,C574,EC58,EC59,R710,R711,C575
EC-SI-05	33	add ADPID3 for smart adapter	U26.pin4,PQ38,PR295
EC-SI-06	15	add EC60 for EMI	EC60
EC-SI-07	20	remove R483 double pull high for PSI	R483
EC-SI-08	33	add EMMC_DETECTfunction for EC check sku	R714,R715
EC-SI-09	30	change CN17 footprint	CN17
EC-SI-10	24,34	change D4,SU1,D21,D24,D26 to stuff for ESD	D4,SU1,D21,D24,D26
EC-SI-11	30	Change ODD connector to 18 pin	CN21
EC-SI-12	34	Change connector to FFC type of card reader daughter board	CN24
EC-SI-12	26	change AL6/AL7/AL9/AL10 to 0 ohm for Realtek suggestion	AL6,AL7,AL9,AL10

**N91A Power Schematic EC Tracking Record DB to SI version**

EC #	Page	Description	Part Affected
EC-SI-P01	38-48	Change default open to default short	PJP1~PJP11, PJP13~16
EC-SI-P02	39,43,45,46,48	Downsize components	PC246, PR334, PR335, PC262, PC14, PC174, PQ5, PQ6 PC21, PC181,PC6
EC-SI-P03	47, 48	Correct connection	
EC-SI-P04	38,47	Fine tune OCP function	PR143,PR86
EC-SI-P05	43,47	Change choke for transient	PL17, PL20
EC-SI-P06	48	Fine tune offset voltage	PR21
EC-SI-P07	38, 47	Change components for ripple voltage	PL26, PC65
EC-SI-P08	42	Change components CPU 6.5W	PQ4, PR16, PR46, PR198, PR199
EC-SI-P09	40,47,48	Change components for common part using	PQ24, PR227, PR231, PQ12, PQ14, PQ16
EC-SI-P10	47	Fine tune soft start	PR90, PC208
EC-SI-P11	43	Reducing VGG Ring Voltage	PR290, PR267, PC234
EC-SI-P12	37	Add components for SMART ID function	PR281, PR300, PR295, PR291, PR310, PR271, PR285, PR407 PQ29, PQ31, PQ38