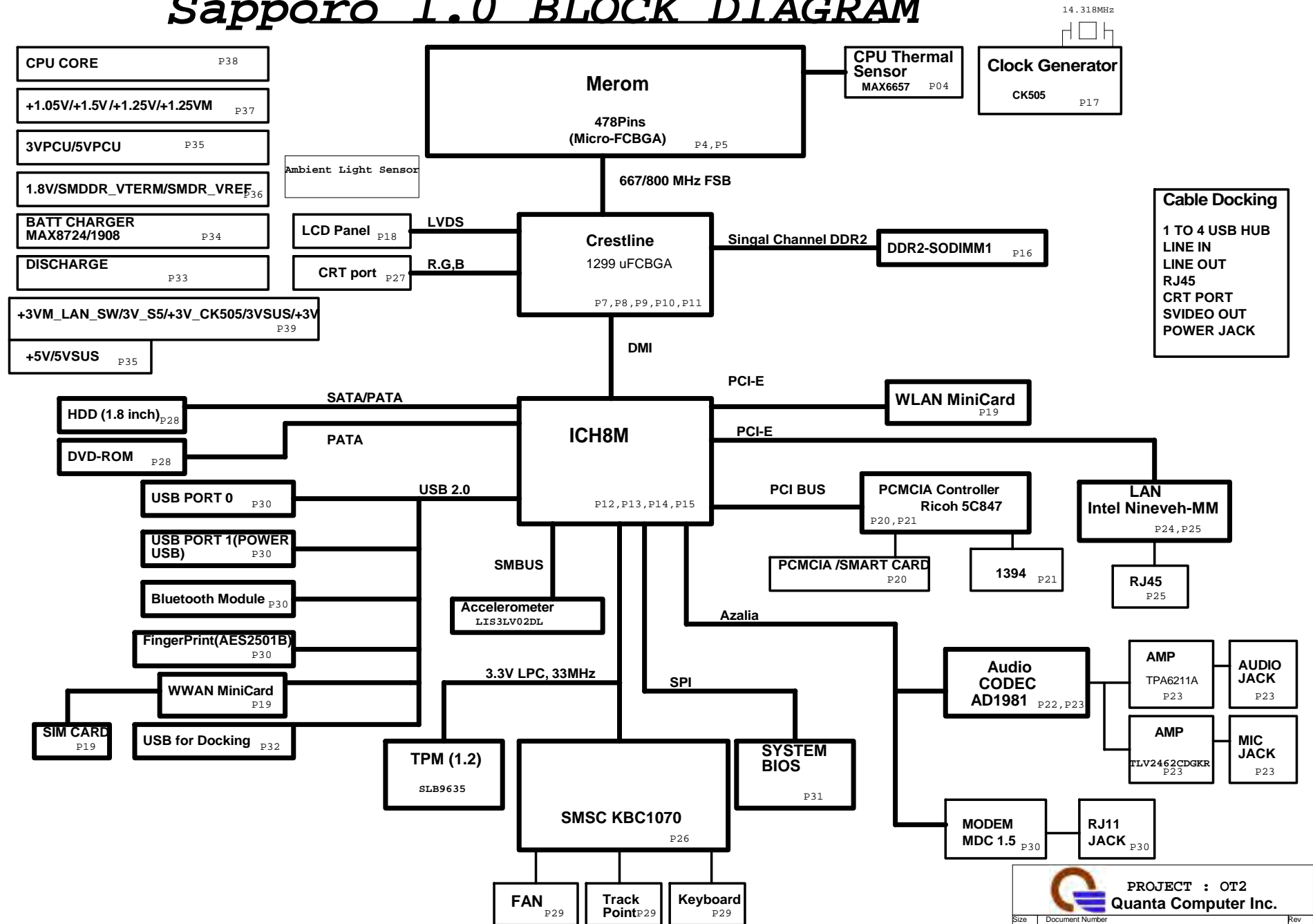


# Sapporo 1.0 BLOCK DIAGRAM



## INDEX

Pg#	Description	NOTE
1	Schematic Block Diagram	
2	System Information	
3	System Power Block Diagram	
4-5	Merom CPU/THERMAL SENSOR	
7-11	Crestline_	
12-15	ICH8_M	
16	DDR II SO-DIMM	
17	CLOCK GEN	
18	LCD CONNECTOR / LCD PWR	
19	WAN/WWAN /SIM CARD connector	
20-21	CARDBUS CONTROLLER	
22-23	AUDIO CODEC / AUDIO JACK	
24-25	LAN/TRANSFORMER	
26	KBC	
27	CRT PORT	
28	HDD / CD-ROM	
29	FAN,KB,LEDs,TRACK POINT	
30	USB,BLUE TOOTH,FINGER PRINT, MDC,TPM	
31	POWER SEQUENCE,BIOS	
32	CABLE DOCKING	
33	DISCHARGE	
34	-CHARGER(MAX1908/8724)	
35	MAX1999(3VPCU/5VPCU)	
36	MAX1992(1.8VSUS/DDR_VTERM)	
37	MAX1540 (+1.05V/+1.5V)	
38	--MAX8736	
39	+3VM/+3V_S5/1.25V_M	
40	POWER SEQUENCE	

## PCI DEVICES IRQ ROUTING

DEVICE	IDSEL #	REQ/GNT #	PCI_INT

## PCB STACK UP


LAYER 1 : TOP  
LAYER 2 : GND  
LAYER 3 : IN1  
LAYER 4 : IN2  
LAYER 5 : VCC  
LAYER 6 : IN3  
LAYER 7 : GND  
LAYER 8 : BOT

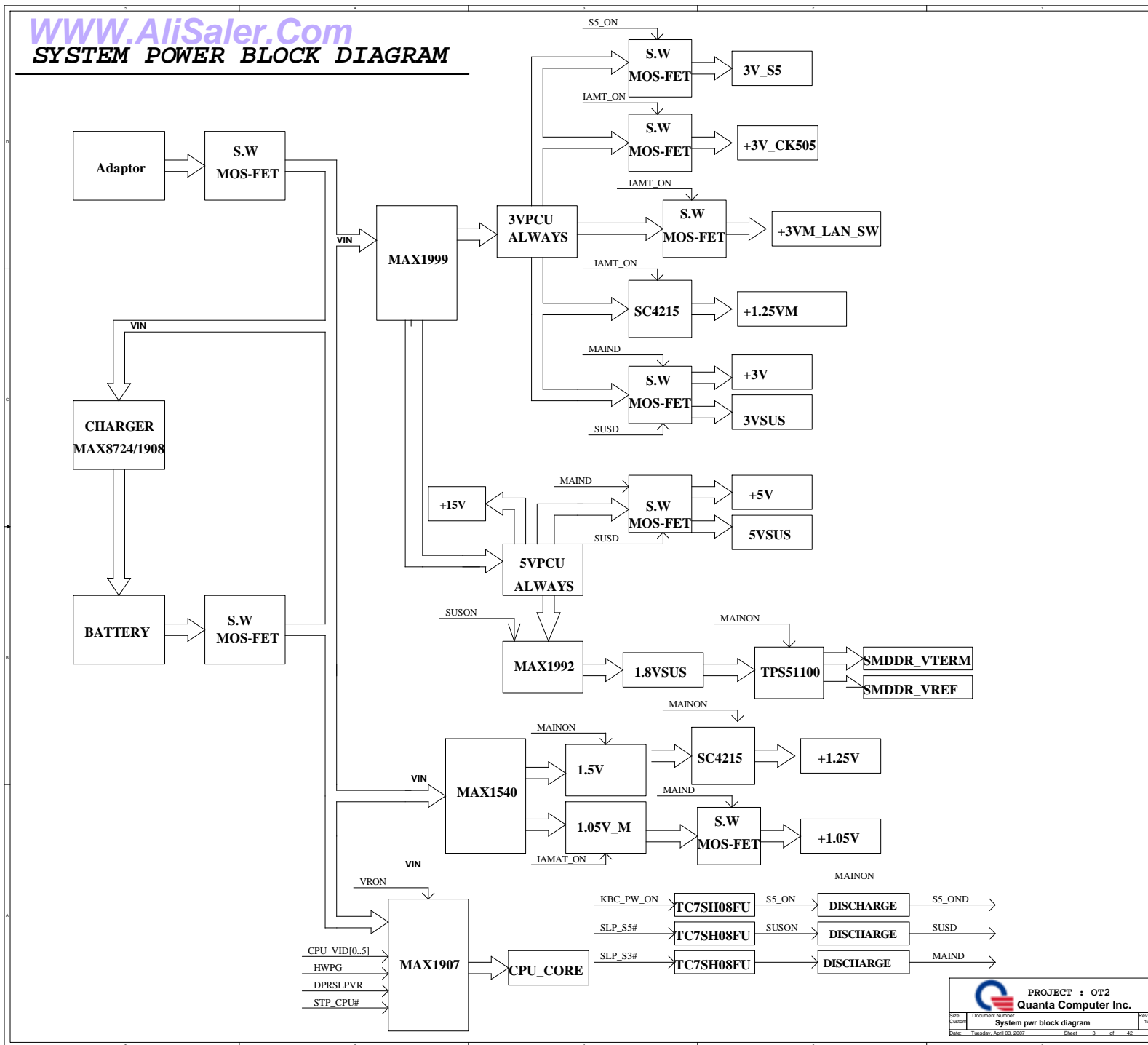
## Power & Ground

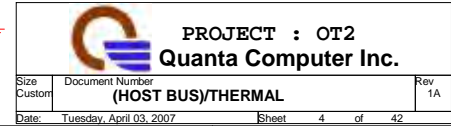
Label	ACTIVE	Description	Control Signal
VIN	S0, S3, S4, S5.M0.M1.Moff	AC ADAPTER (19V)	
MBAT	S0, S3, S4, S5.M0.M1.Moff	MAIN BATTERY + (10-17V)	
VCCRTC	S0, S3, S4, S5.M0.M1.Moff	RTC & KBC POWER ( 3_3V )	
+15V	S0, S3, S4, S5.M0.M1.Moff	+15V	
CPU_CORE	S0	CPU CORE POWER (1.25/1.15V)	VRON
+1.05V	S0	FSB POWER (1.05V)	MAIND
+1.05VM	M0.M1		IAMT_ON
+3V	S0		MAIND
3VSUS	S0, S3		SUSON
3V_S5	S0, S3, S4, S5		S5_ON
3VPCU	S0, S3, S4, S5.M0.M1.Moff	ALWAYS POWER (3V)	
+5V	S0		MAIND
5VSUS	S0, S3		SUSON
5V_S5	S0, S3, S4, S5		S5_ON
5VPCU	S0, S3, S4, S5.M0.M1.Moff	ALWAYS POWER (5V)	
+1.5V	S0		MAIND
+1.5VM	M0.M1		IAMT_ON
1.8VSUS	S0, S3	DDR CORE POWER	SUSON
+2.5V	S0		MAINON
SMDDR_VTERM	S0	DDR COMMAND & CONTROL PULL UP POWER	MAINON
SMDDR_VREF	S0, S3	DDR REF POWER	SUSON
VDDA	S0	AUDIO ANALOG POWER (5V)	MAINON
+3V_CK505	M0.M1		IAMT_ON
+3V_LAN_SW	M0.M1		IAMT_ON
+1.25V	S0		MAIND
+1.25VM	M0.M1		IAMT_ON

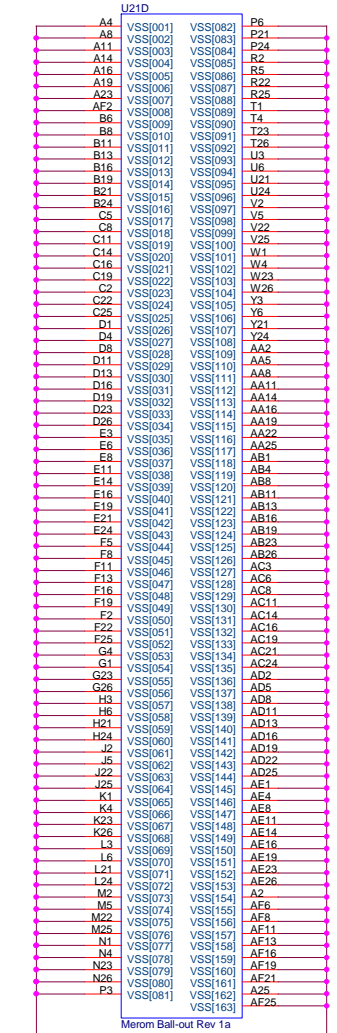
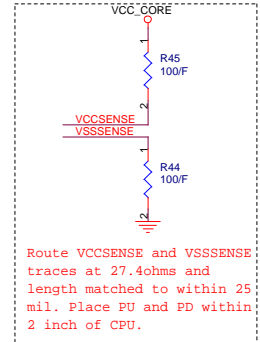
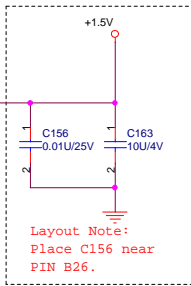
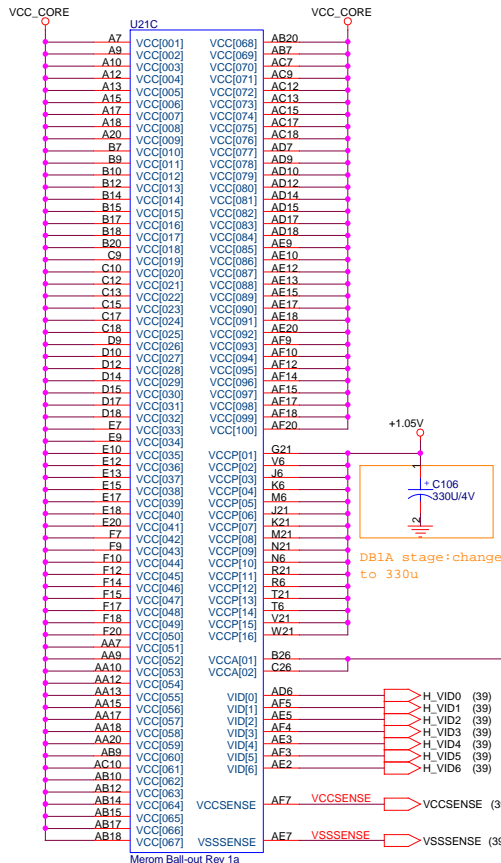
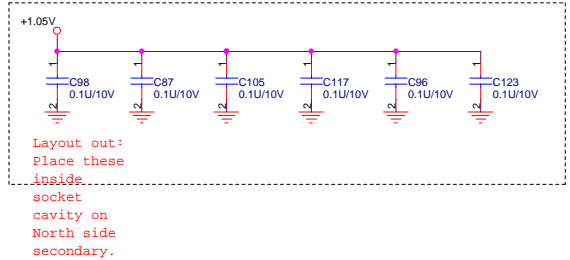
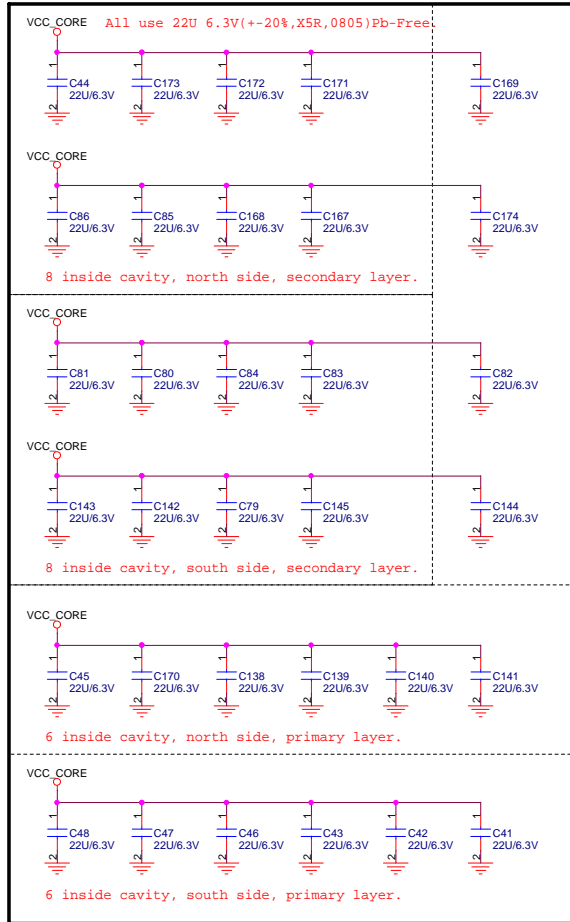
## SM BUS

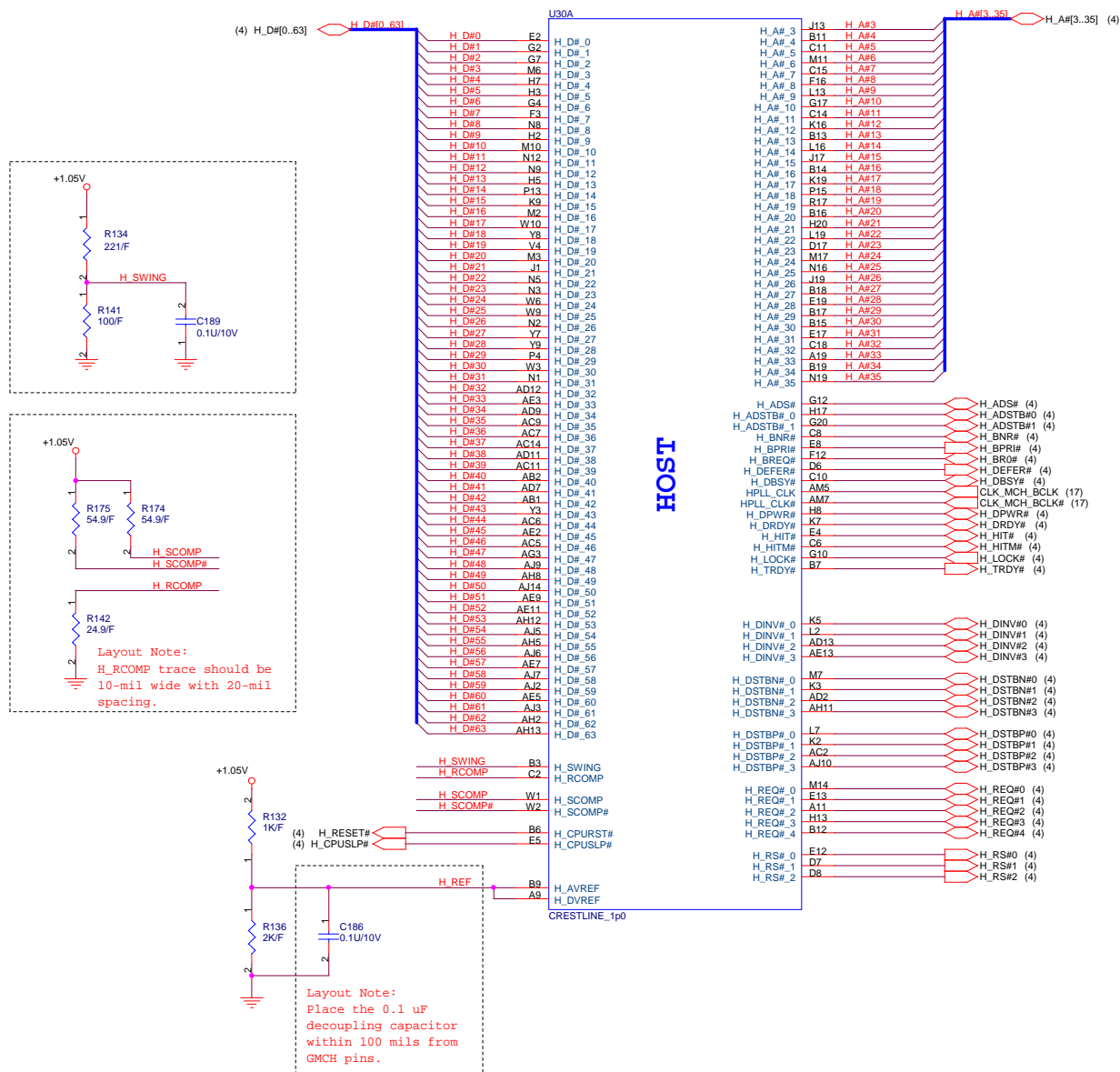
DEVICE	ADDRESS	BUS
CLOCK GENERATOR		
DDR II		
Accelemtter sensor		
CHARGER		
CPU THERMAL SENSOR		

 <b>PROJECT : OT2</b> <b>Quanta Computer Inc.</b>		Rev 1A
Date: Tuesday, April 03, 2007	Sheet 2 of 42	

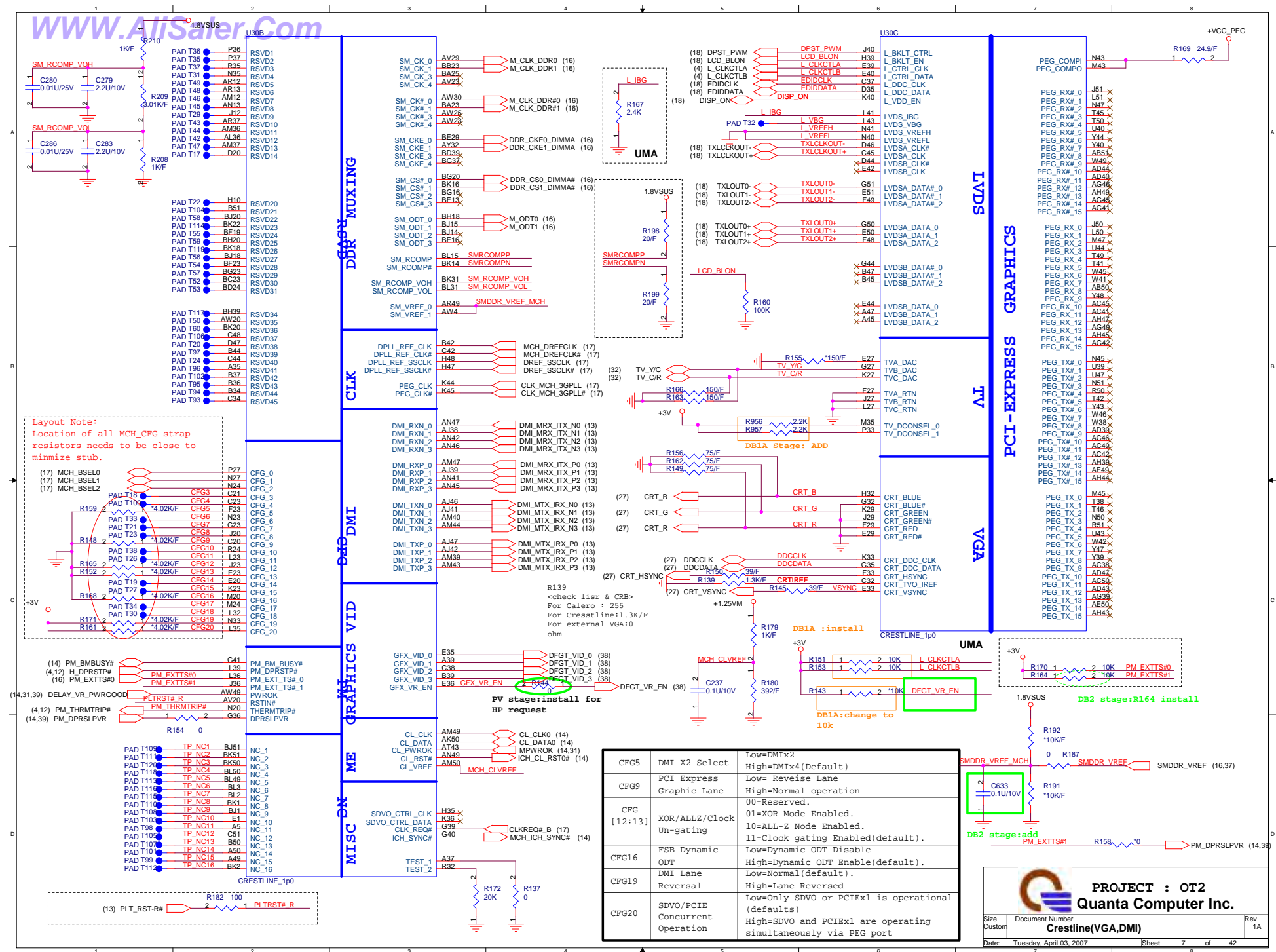


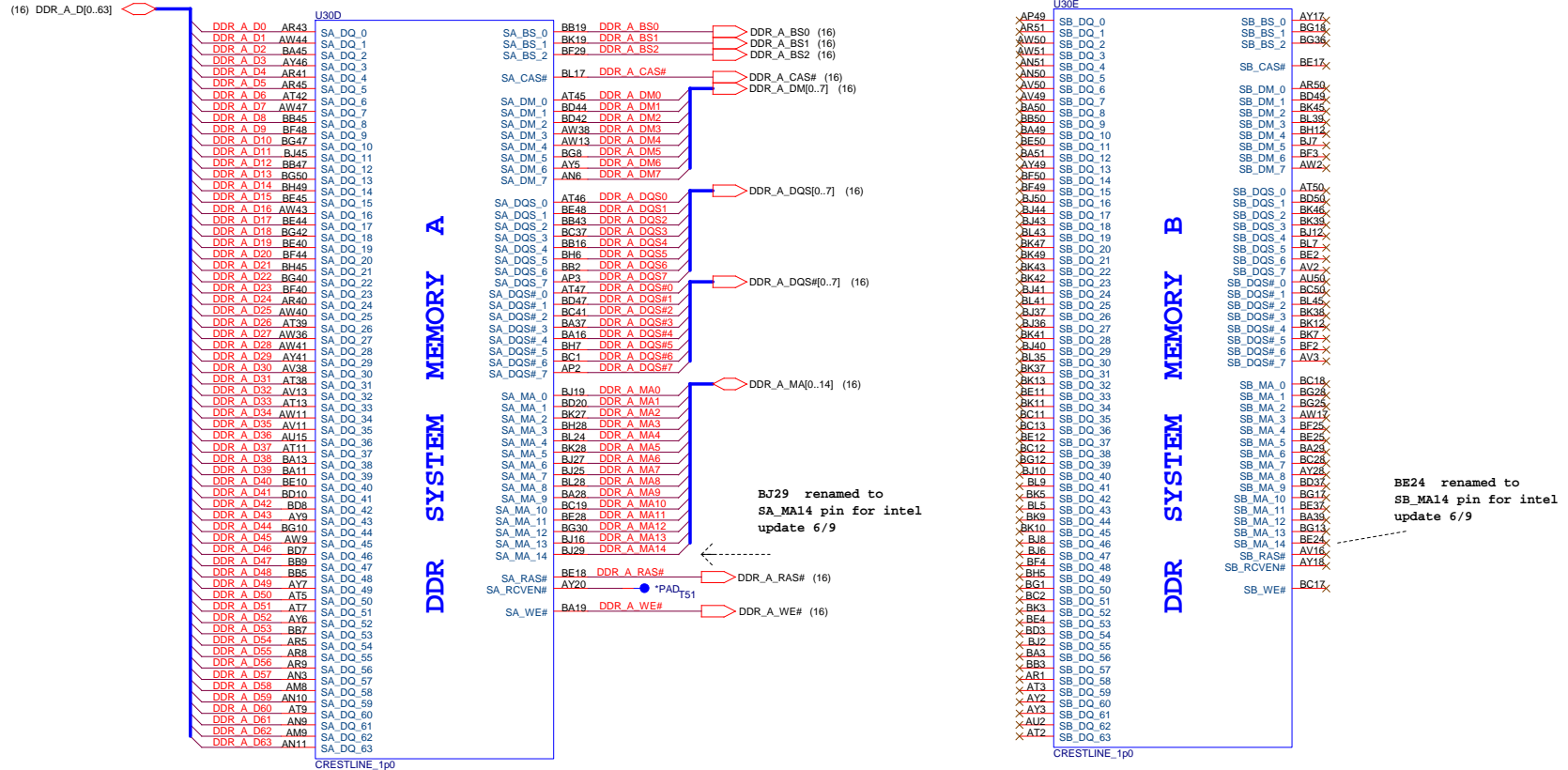




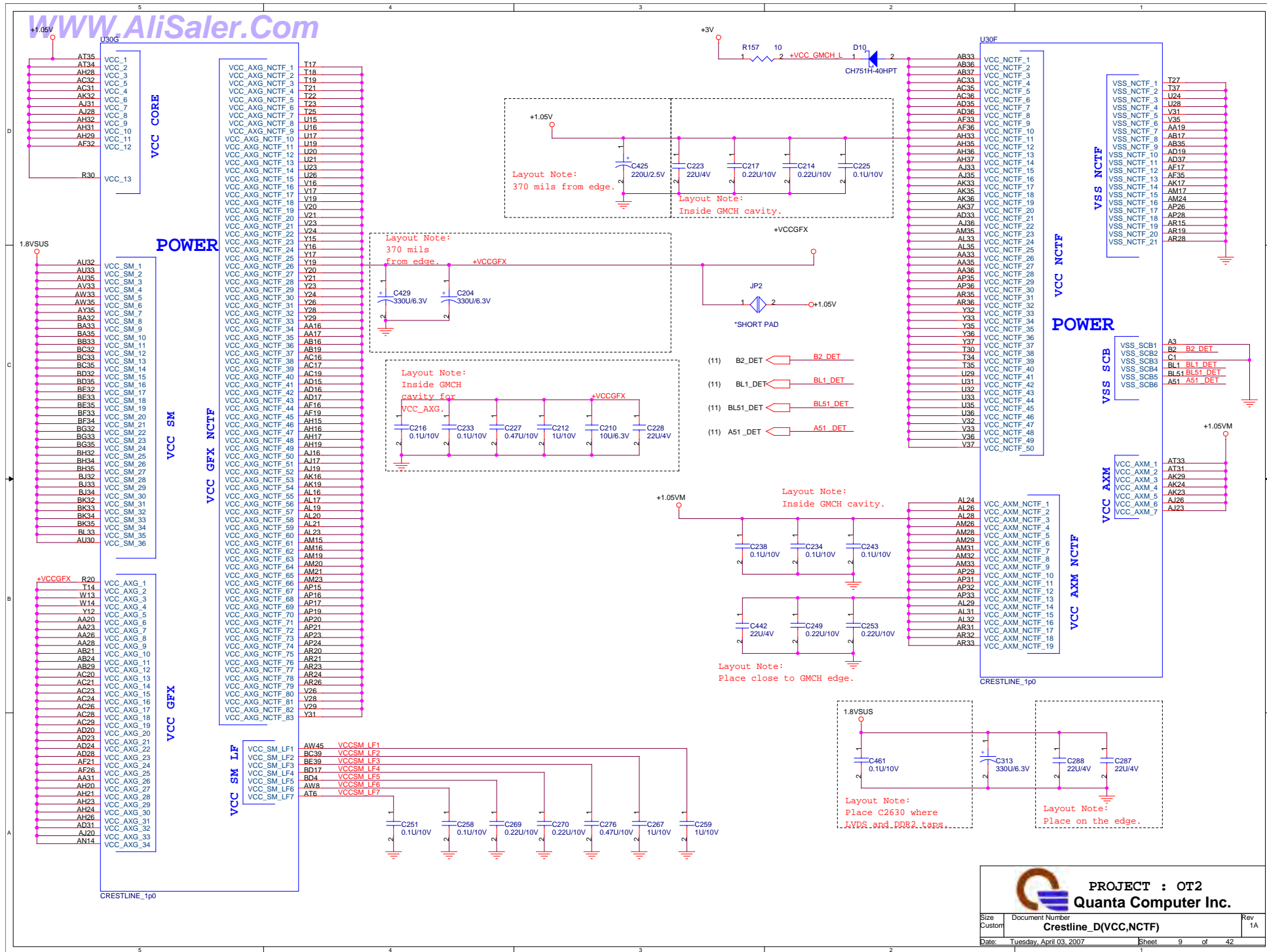


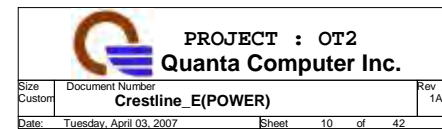


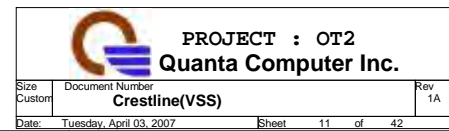


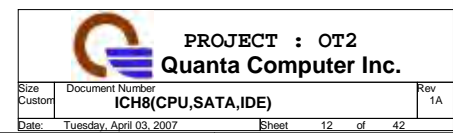










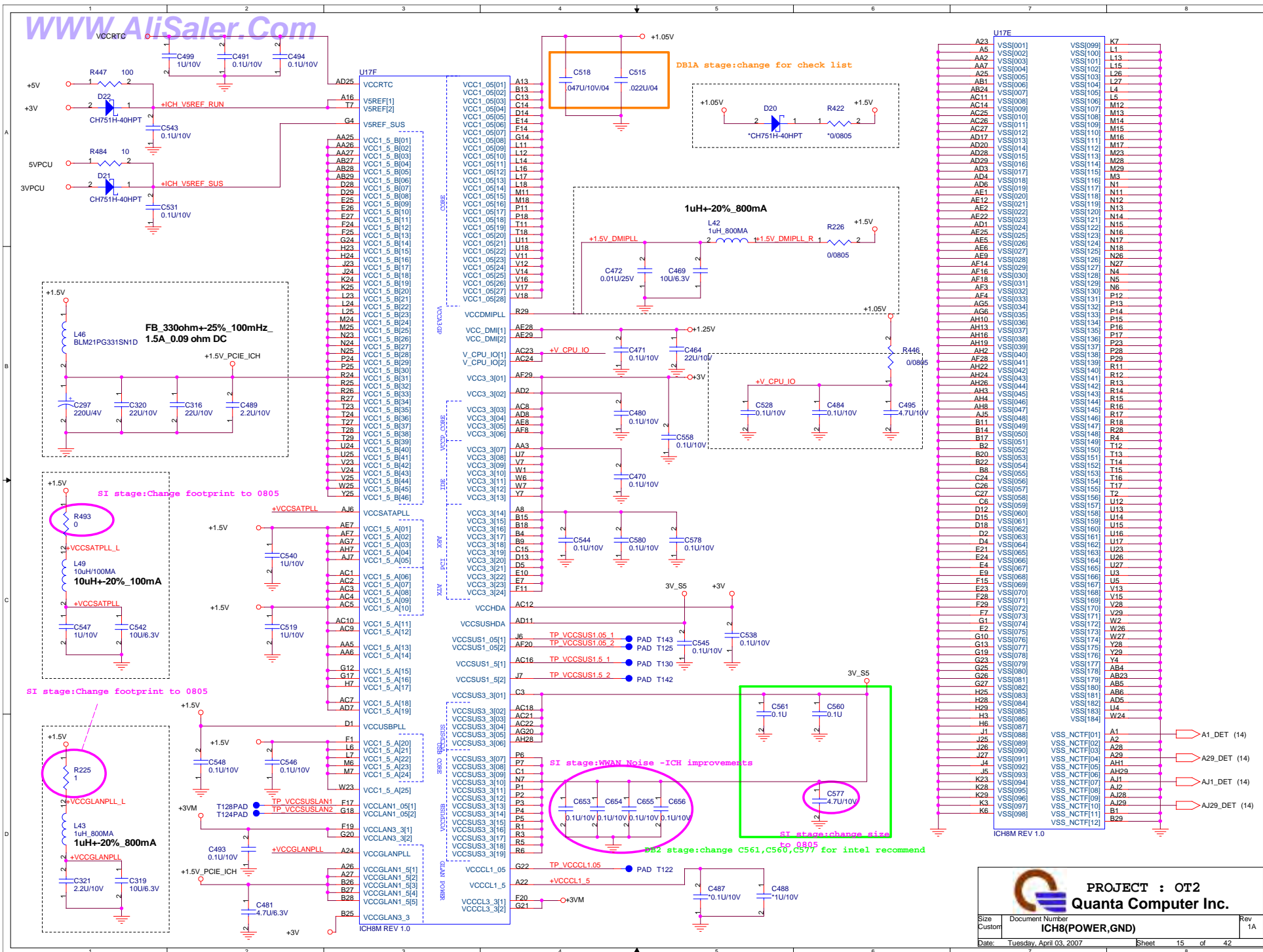




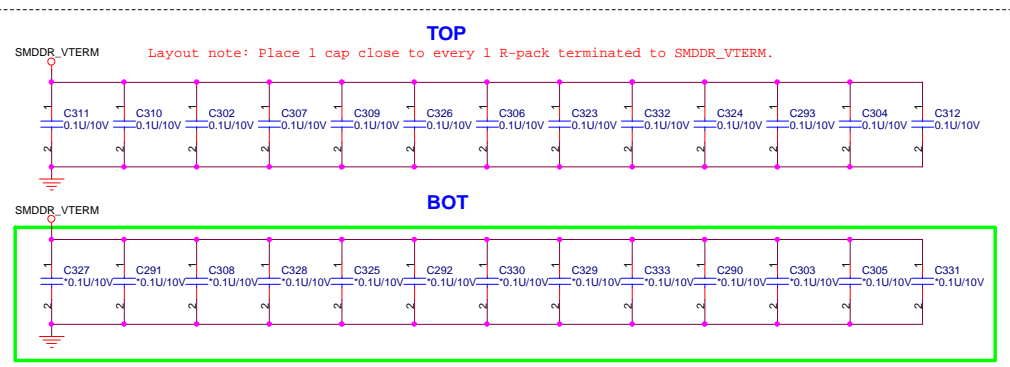
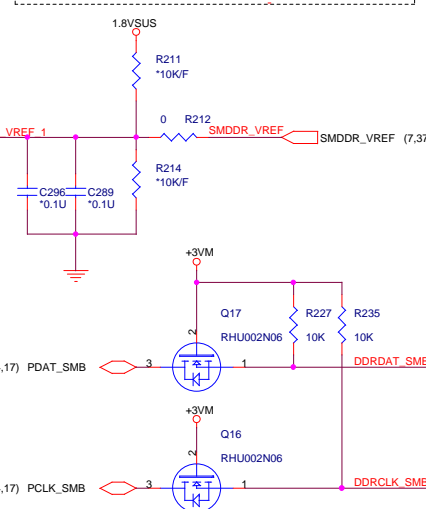
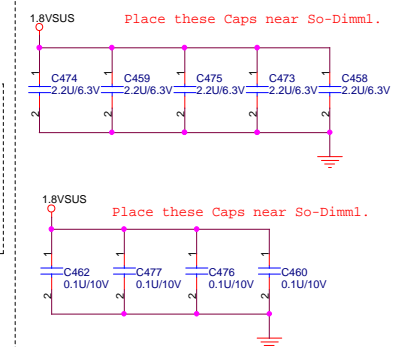
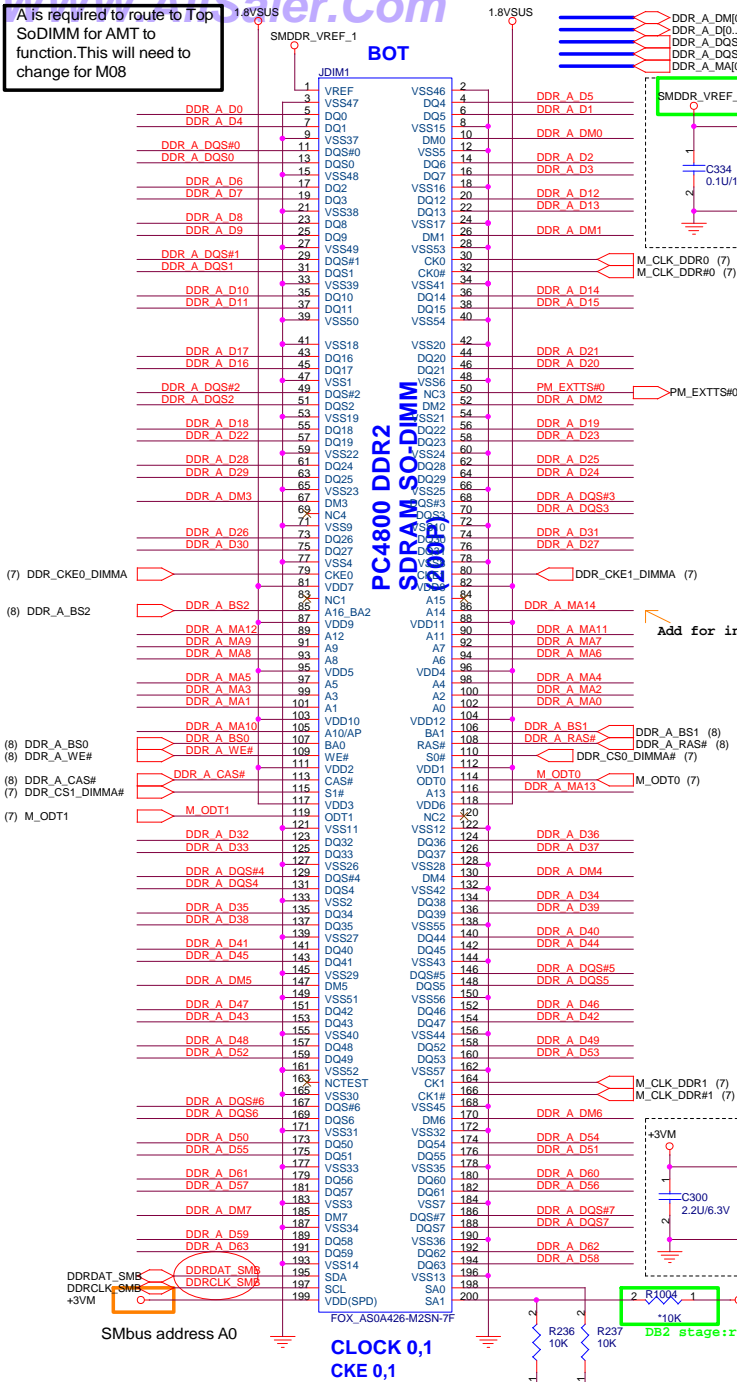




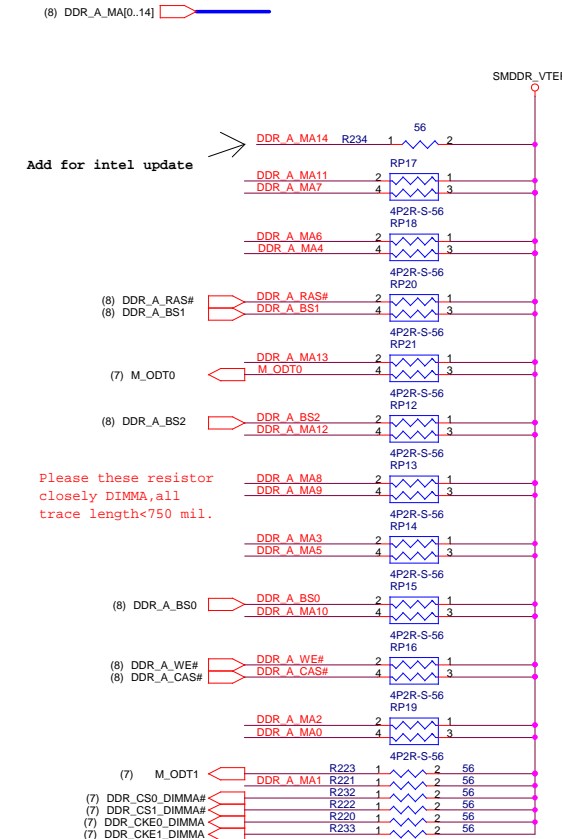




A is required to route to Top SoDIMM for AMT to function. This will need to change for M08

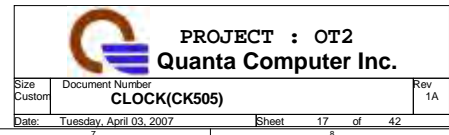


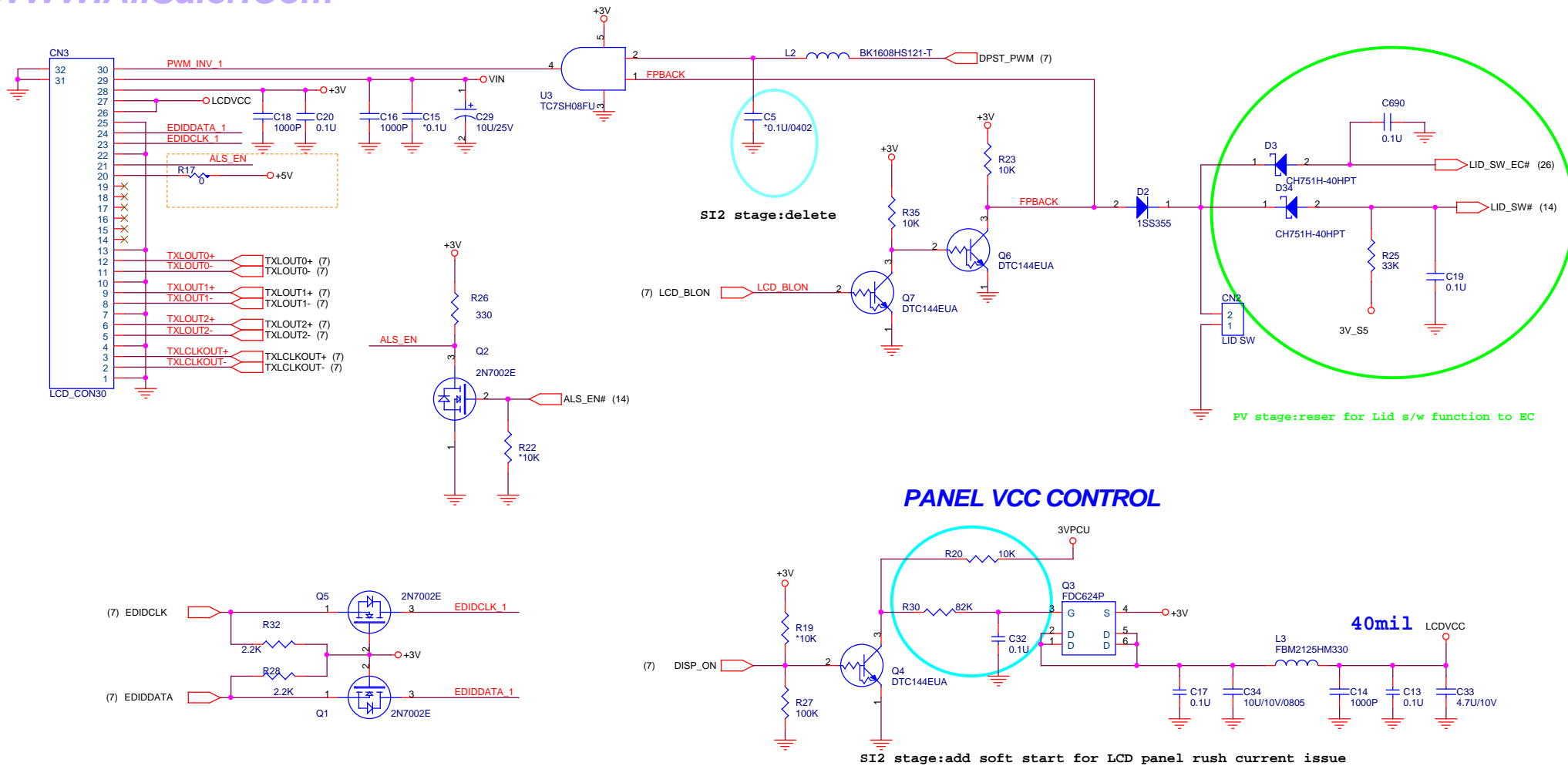
DB2 stage: on install for C327, C219---C331 for only one channel DIMM

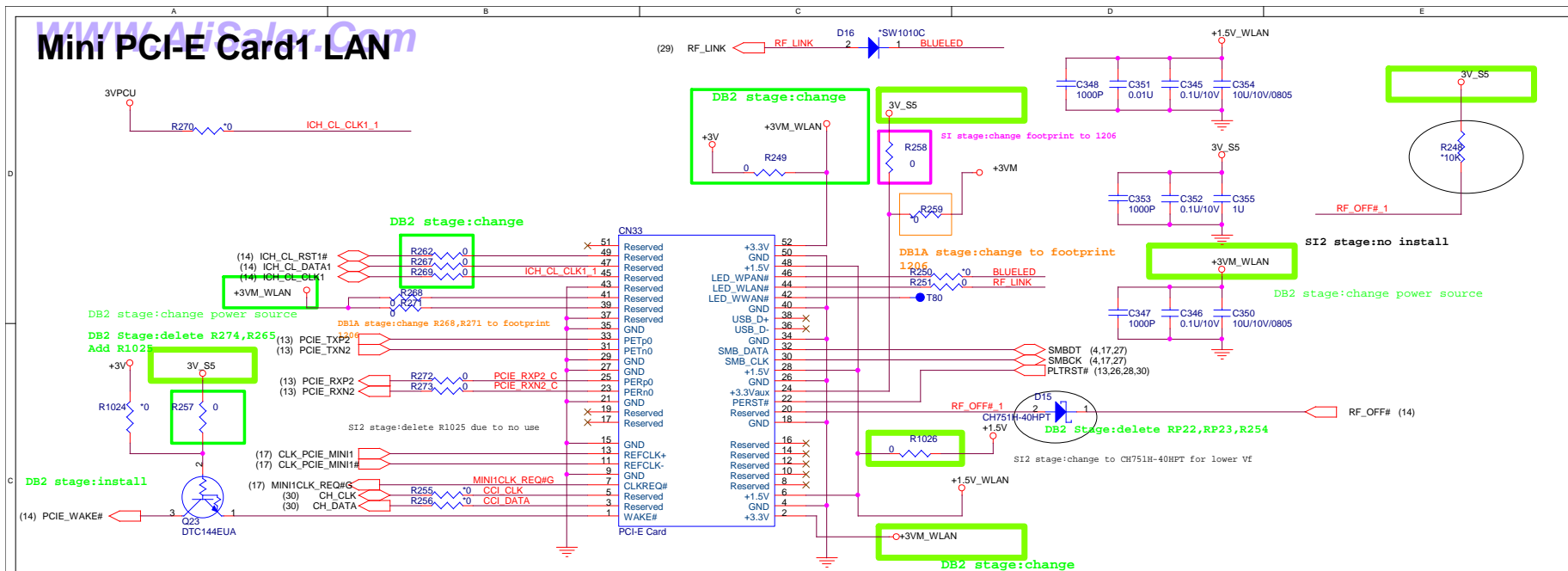


**PROJECT : OT2**  
**Quanta Computer Inc.**

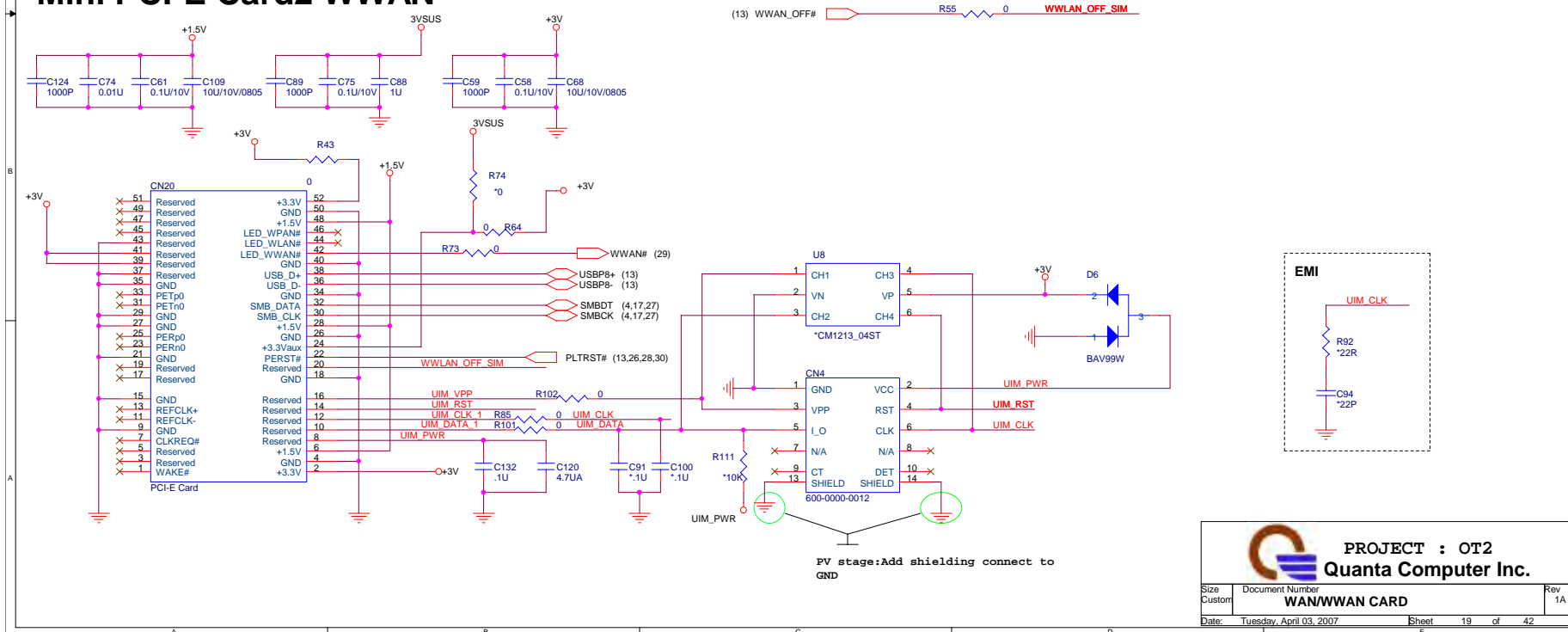
Size: Custom  
 Document Number: **DDR2 SO-DIMM(200P)**  
 Date: Tuesday, April 03, 2007  
 Sheet: 16 of 42

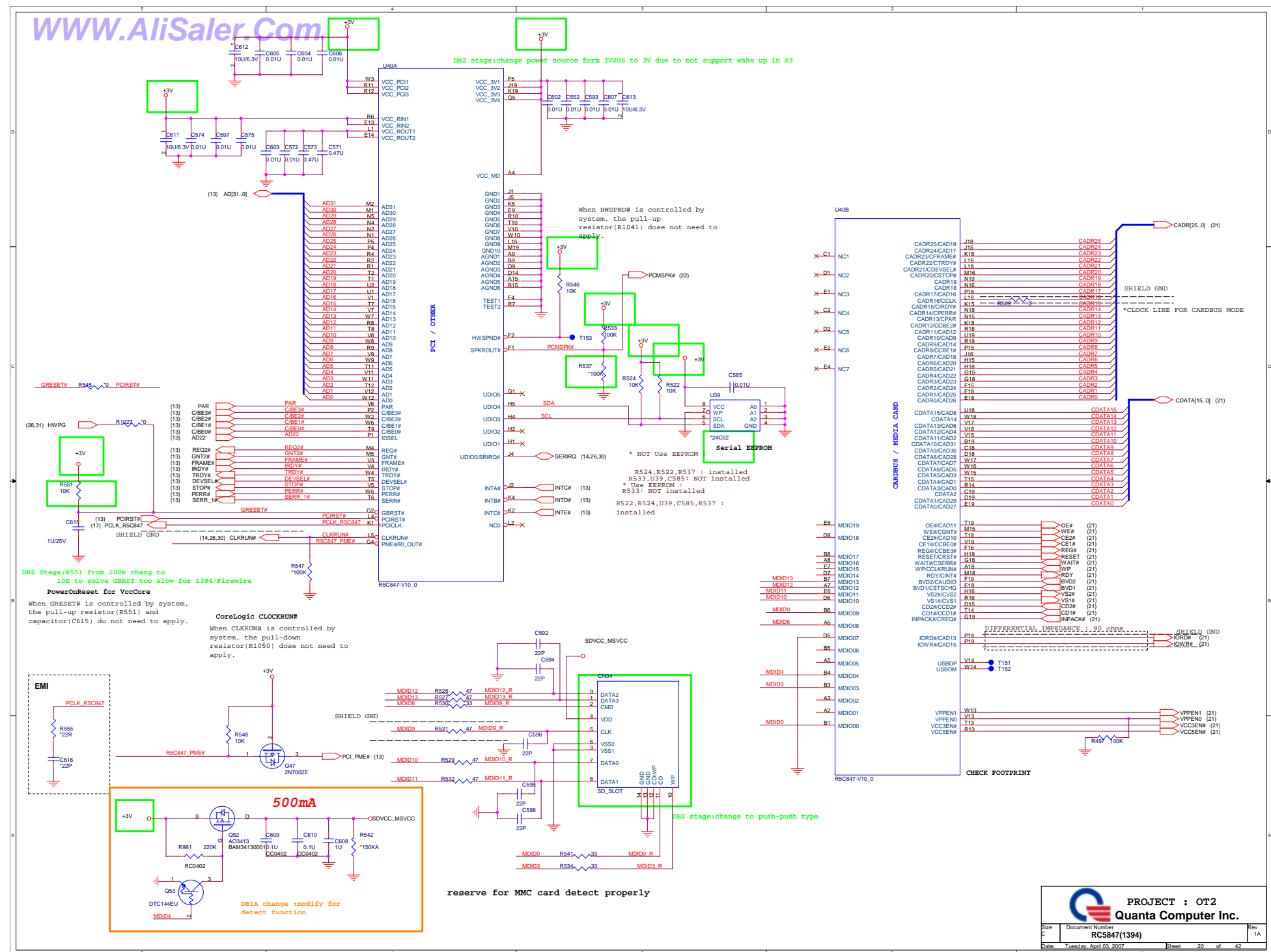




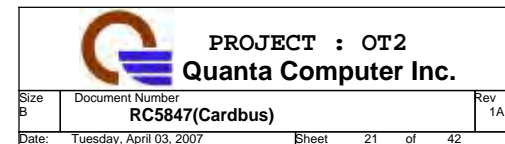


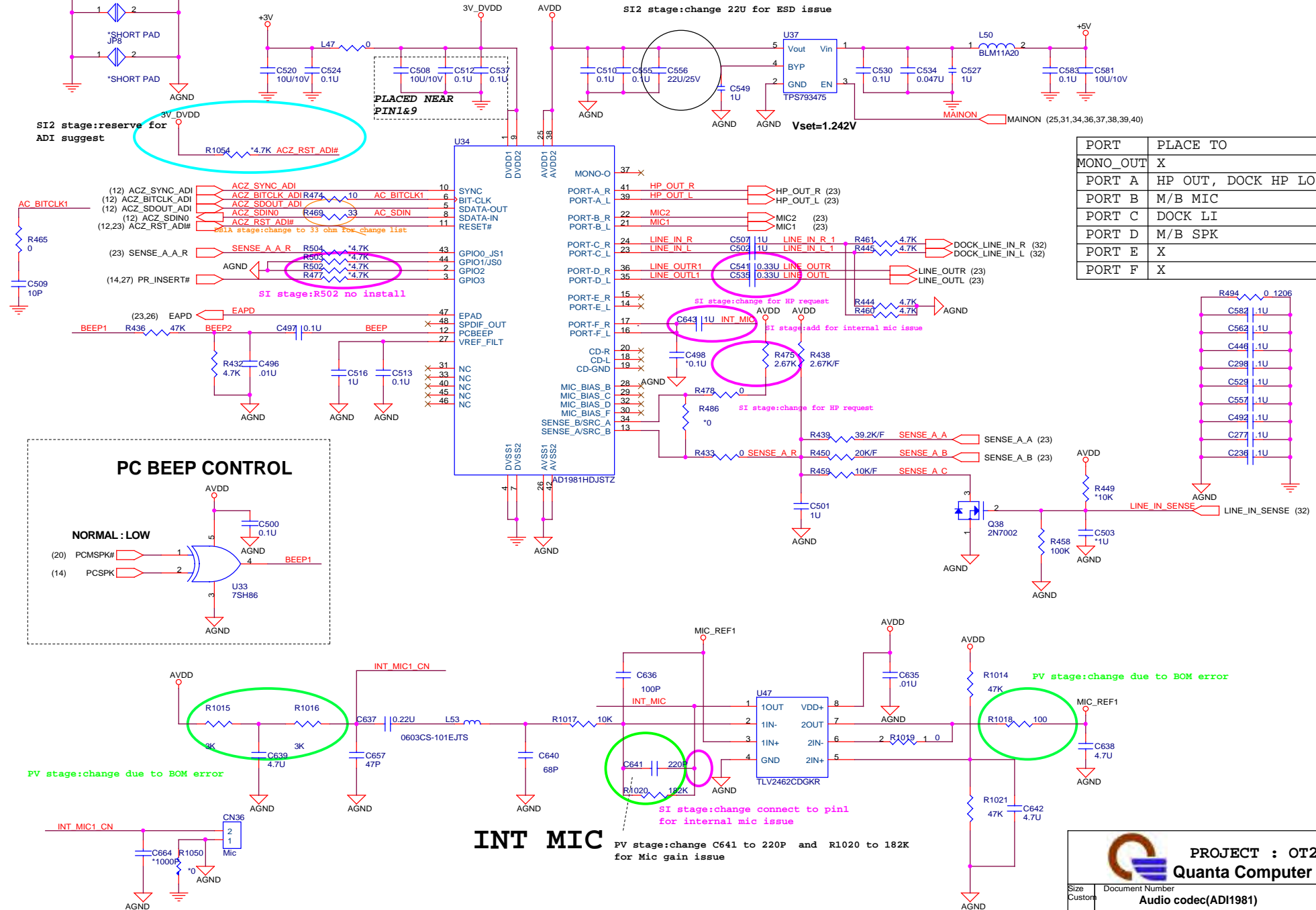
## Mini PCI-E Card2 WWAN

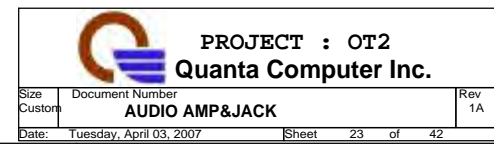




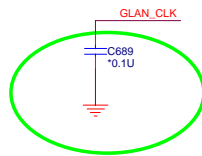






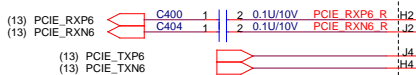


Layout Note:  
Place termination resistors close to LAN controller(less than 0.25").

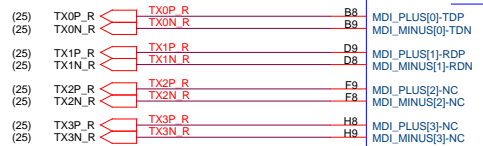


```
GLCI
Runing
Idle
Idle
Idle
Power down
```

SI stage:change to 1%

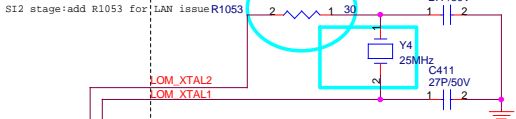
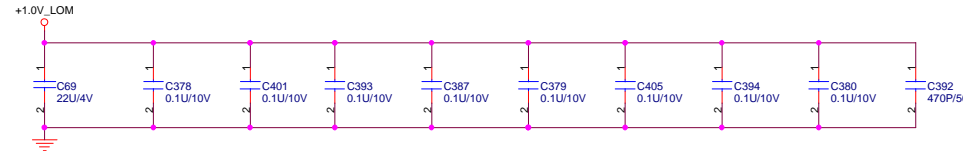
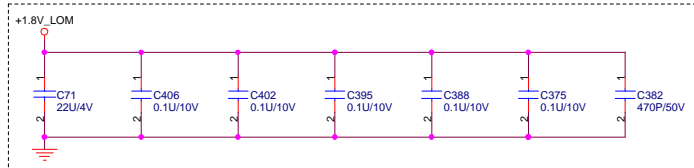
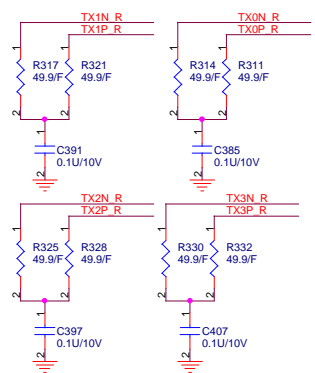
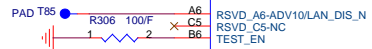
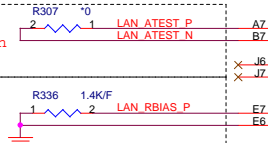


Layout Note:  
Place the resistors less than 1" from LAN controller

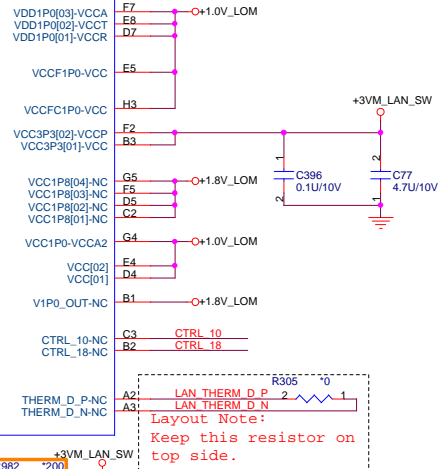
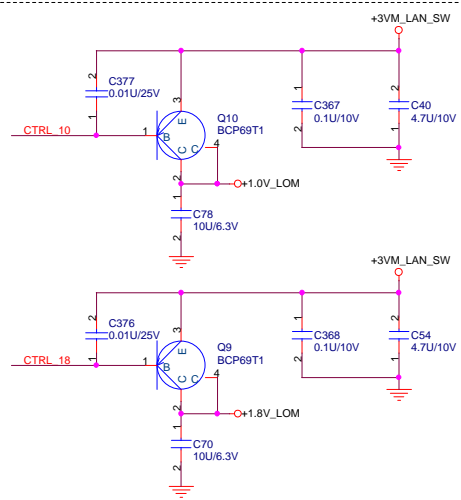


Layout Note:  
Keep this resistor on  
top side.

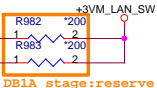
Layout Note:  
Connect the resistor  
to GND near ball E6



```
DB2 stage:change to vender: KDS for
intel recommend
```

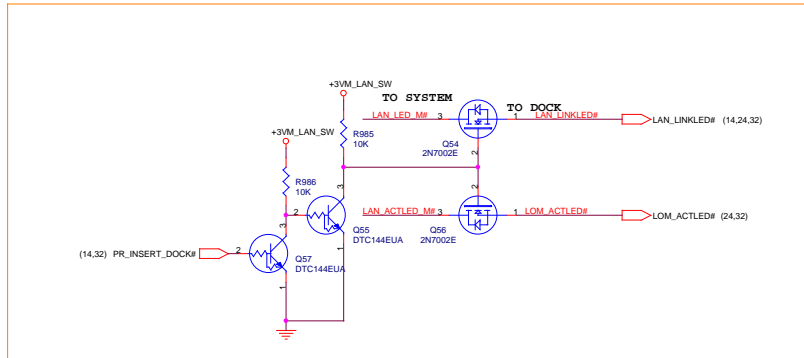


Layout Note:  
Keep this resistor on  
top side.

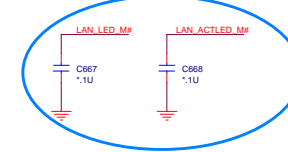
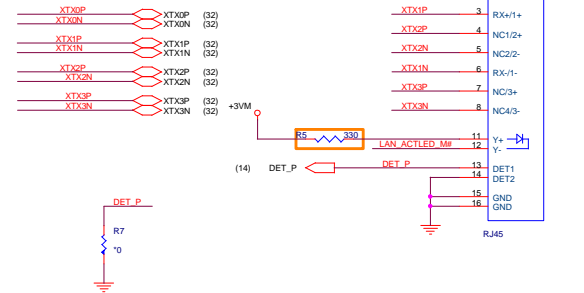


## RJ45 Connector

SI2 stage:EMI suggest

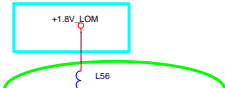


DB2 stage:change to 330 ohm for intel recommend

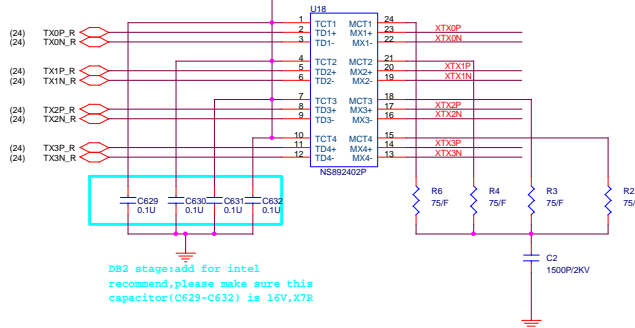


DB1A stage:Remove U1, RP24, RP25, RP26, RP27, and RP1, C24, C26, C28, R941-R951

DB2 stage:change to +1.8V\_LOM for intel recommend



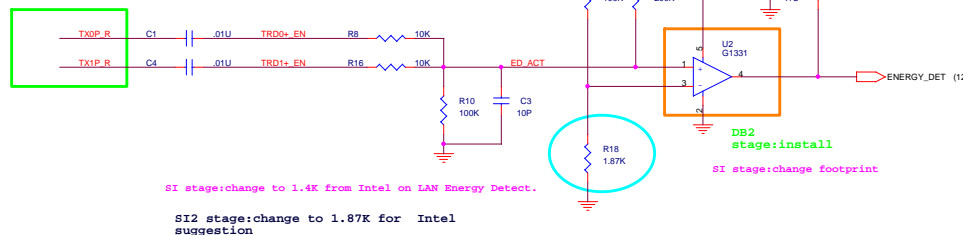
## LAN TRANSFORMER



DB2 stage:add for intel recommend, please make sure this capacitor (C629-C632) is 16V, X7R

## LAN Energy Detect circuit

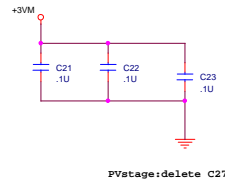
82556 Support Deep Smart Power Down Feature for power saving



SI stage:change to 1.4K from Intel on LAN Energy Detect.

SI2 stage:change to 1.87K for Intel suggestion

SI2 stage:change power source for HP request



PV stage:delete C27

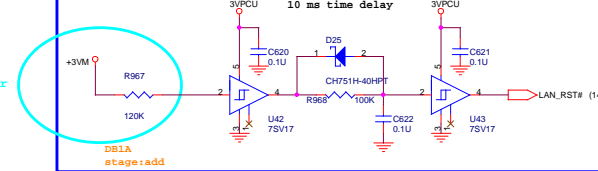
PV stage:change to +3V\_M for ACBS issue



DB2 stage:install

SI stage:change footprint

## LAN RESET

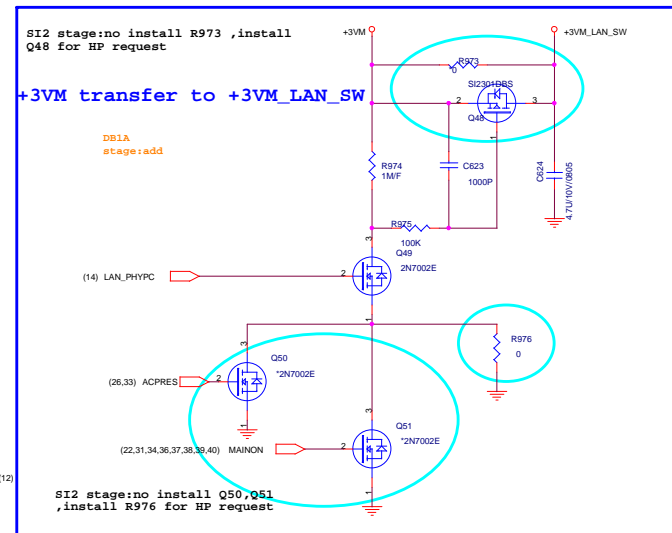


DB1A stage:add

SI2 stage:no install R973, install Q48 for HP request

+3V\_M transfer to +3V\_M LAN\_SW

DB1A stage:add



SI2 stage:no install Q50, Q51, install R976 for HP request



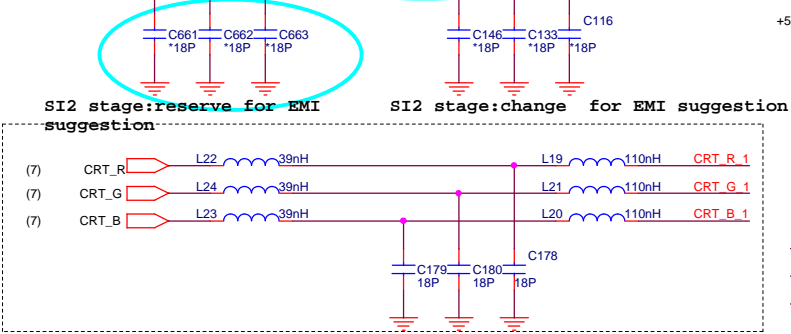
PROJECT : OT2  
Quanta Computer Inc.

Size	Document Number	Rev
C	Transformer&RJ45	1A
Date	Tuesday, April 03, 2007	Sheet 25 of 42

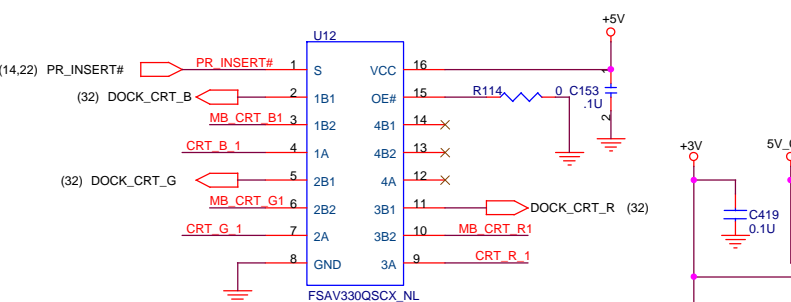




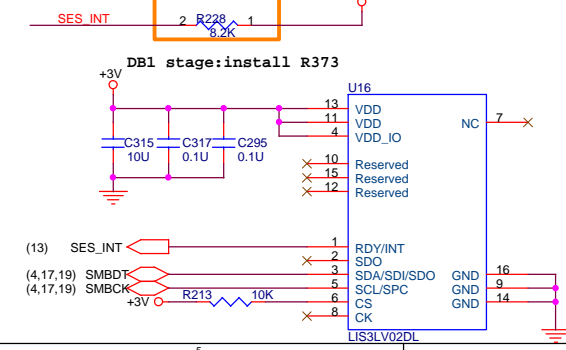
WWW.AliSaler.Com



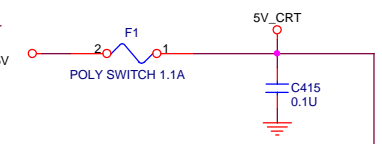
close to Northbridge



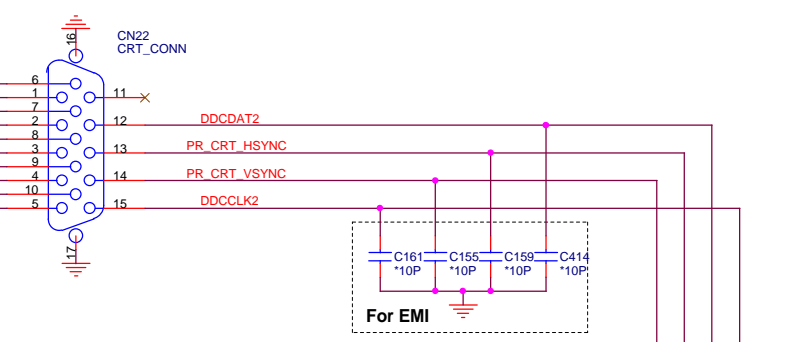
### Accelerometer Sensor



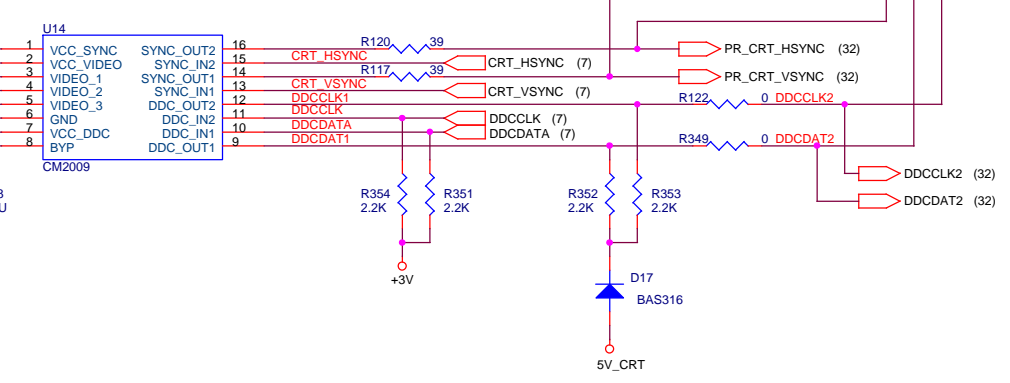
S	OE#	Function
L	L	A=B1
H	L	A=B2




### CRT PORT



### ESD PROTECTION

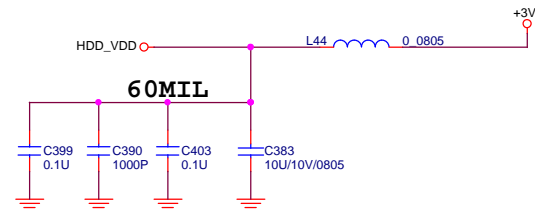
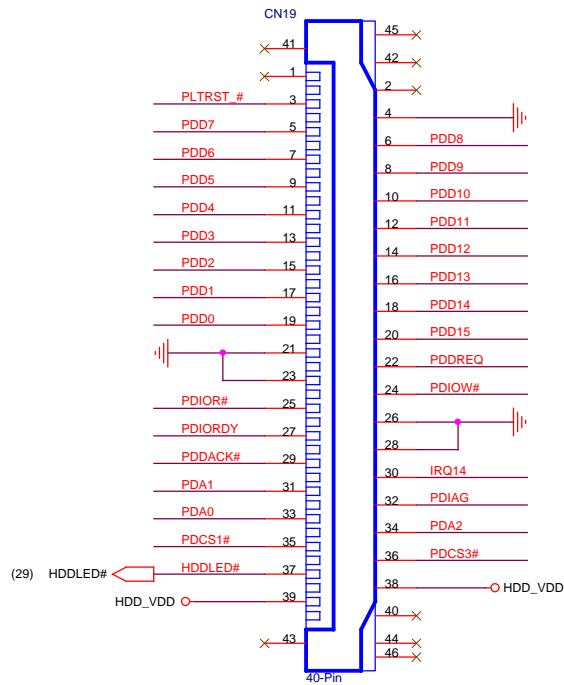
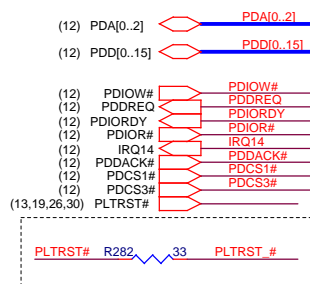




**PROJECT : OT2**  
**Quanta Computer Inc.**

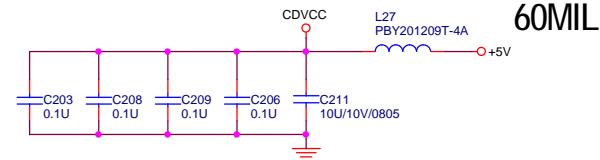
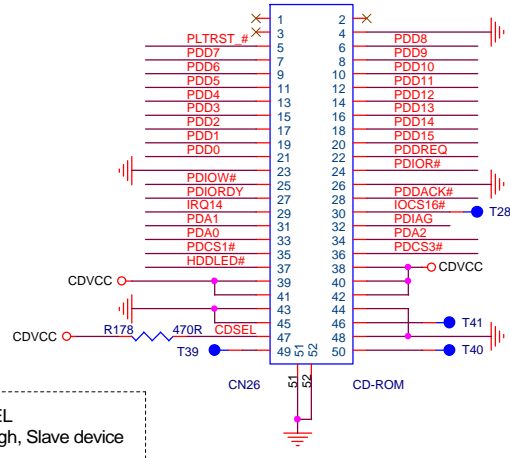
Size B	Document Number <b>CRT PORT</b>	Rev 1A
Date: Tuesday, April 03, 2007		Sheet 27 of 42


## 1.8 inch HDD CONNECTOR



DB2 Stage:delete CN9,R463,C533,C532,C522,C523,C511,R488

## CD-ROM

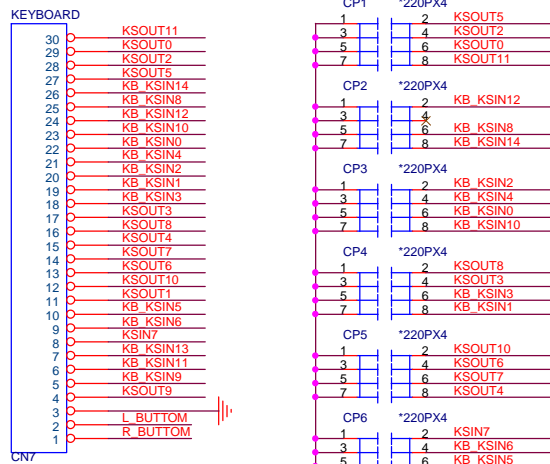




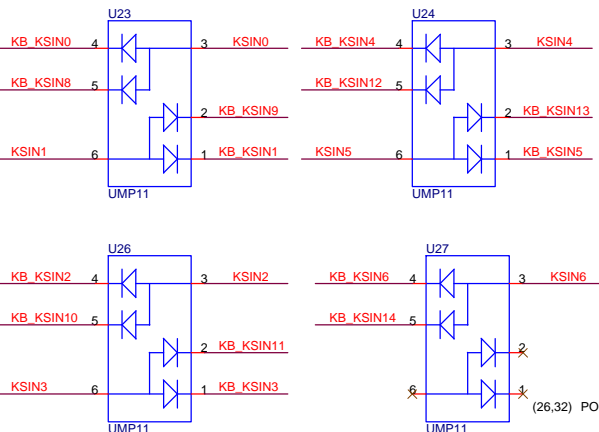
**PROJECT : OT2**  
**Quanta Computer Inc.**

Size B	Document Number <b>HDD,CD-ROM</b>	Rev 1A
Date: Tuesday, April 03, 2007		
Sheet 28 of 42		

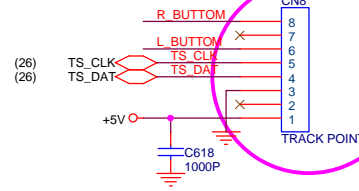
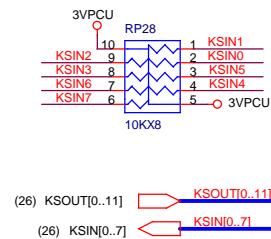
# KEYBOARD



DB2 stage:change K/B footprint

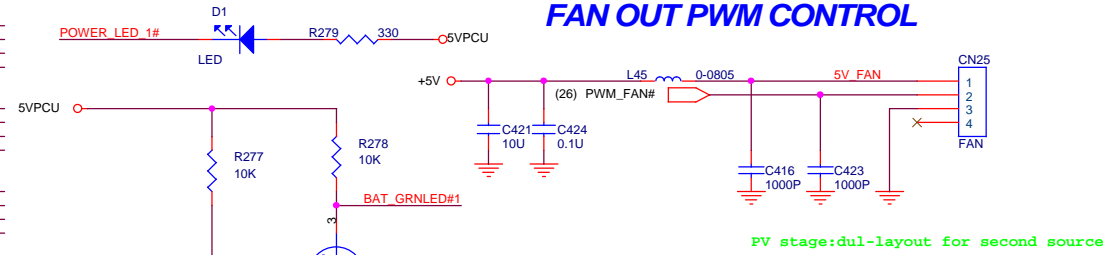


## TRACK POINT

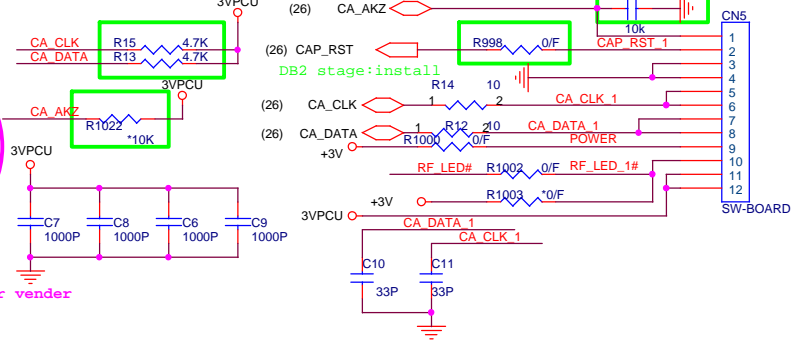


SI stage: change footprint for another vender

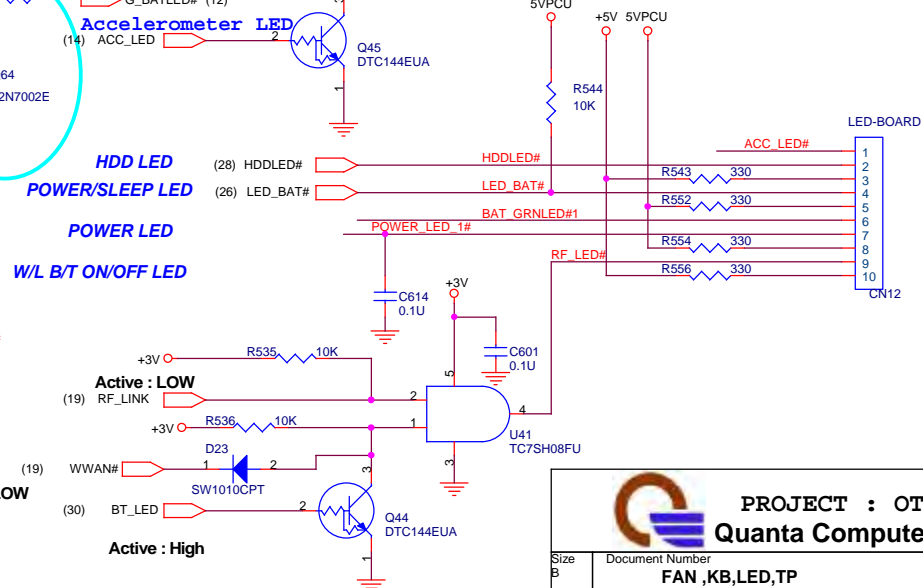
## FAN OUT PWM CONTROL



## APPLICATION BUTTON BOARD



## LED BOARD

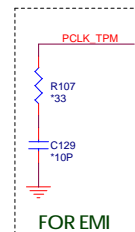
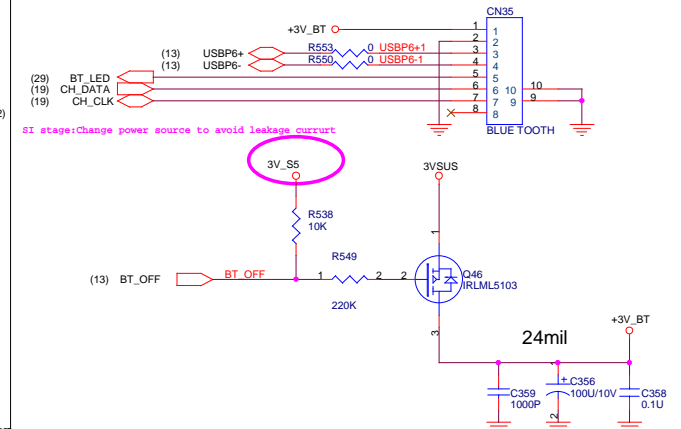
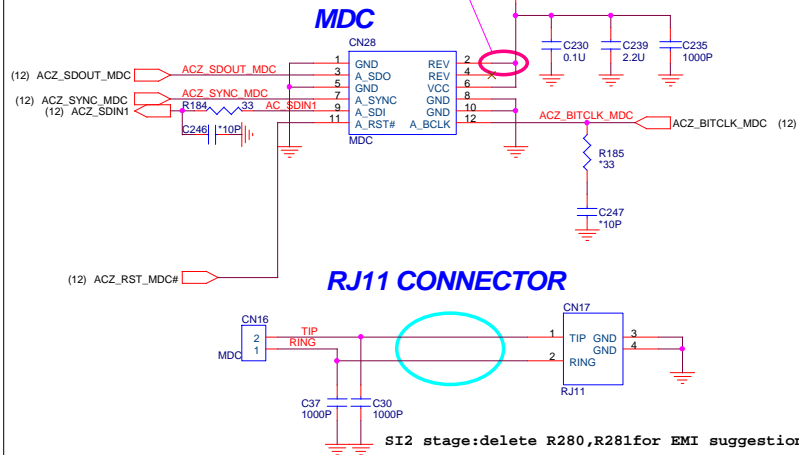


**PROJECT : OT2**  
**Quanta Computer Inc.**

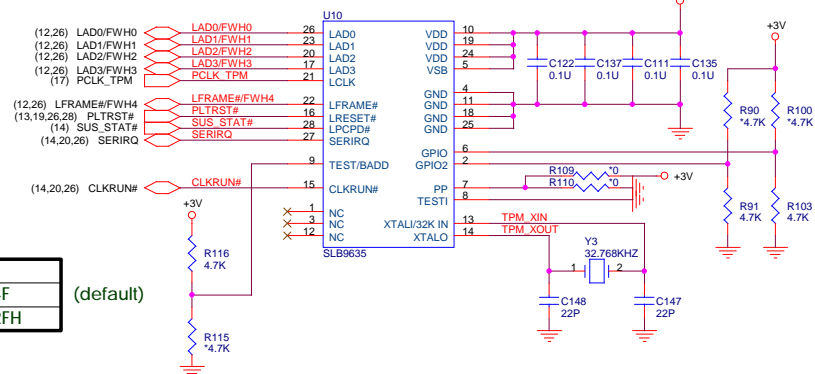
Size B	Document Number	Rev 1A
<b>FAN ,KB,LED,TP</b>		
Date: Tuesday, April 03, 2007	Sheet 29 of 42	

**BLUE TOOTH**

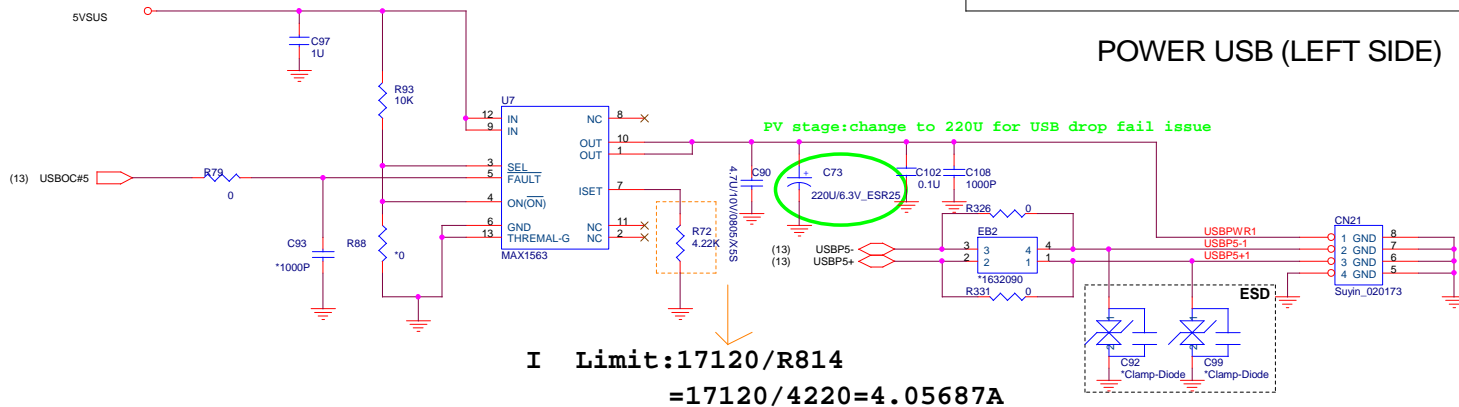
SI stage:it make for a much smoother transition when modems transition to deriving the IO voltage from that pin



	BADD
HIGH	4EH/4F
LOW	2EH/2FH



### POWER USB (LEFT SIDE)


$$=17120/4220=4.05687A$$

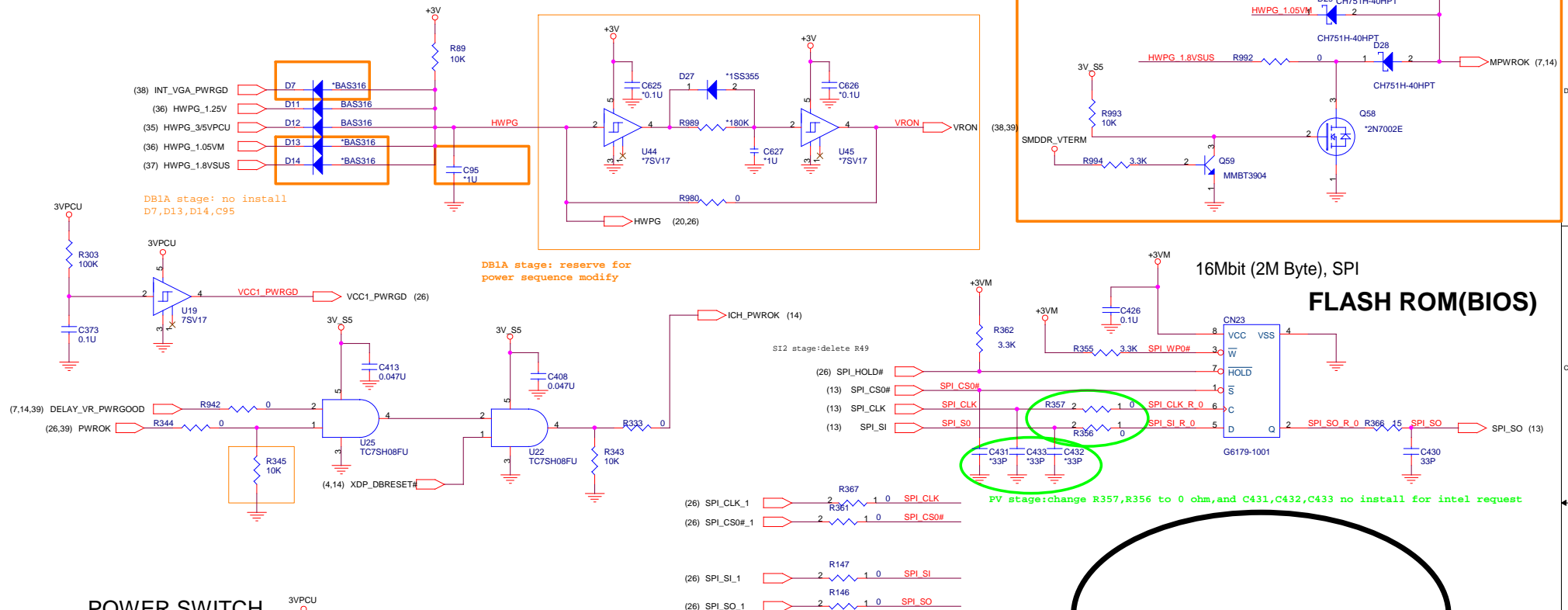
USB 2



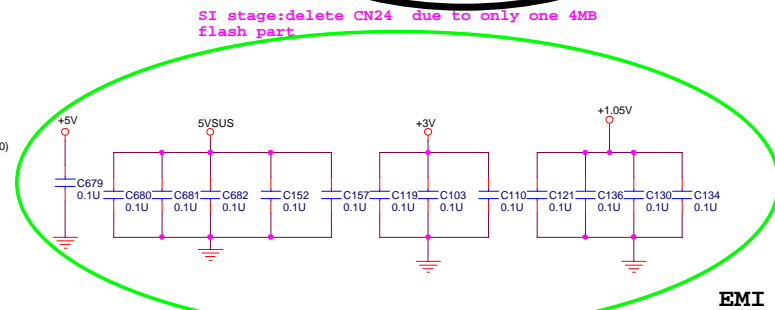
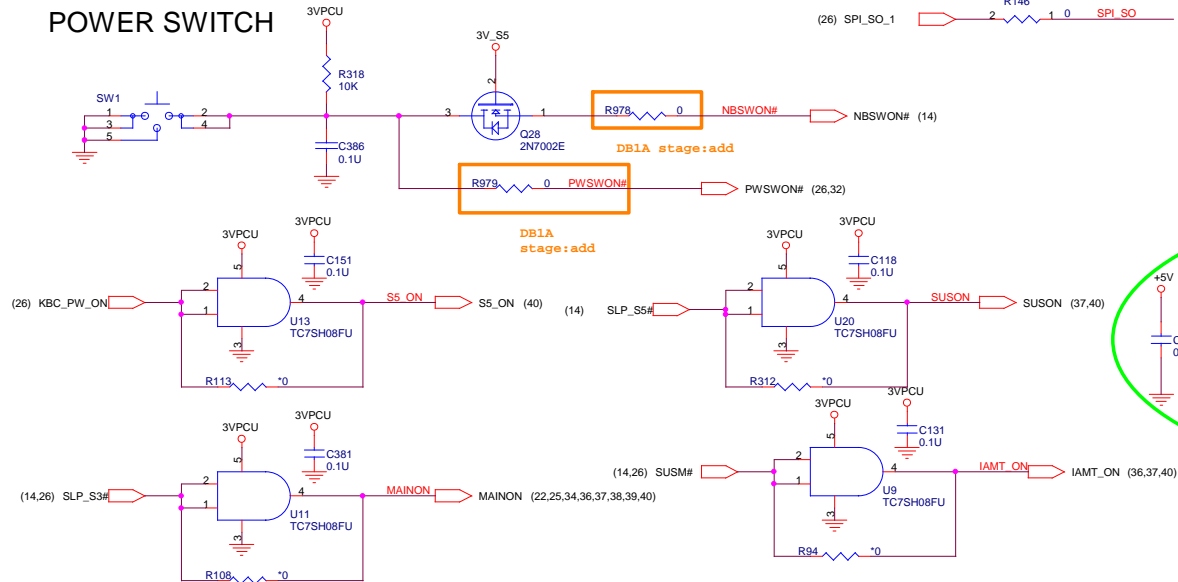
PROJECT : OT2  
Quanta Computer Inc.

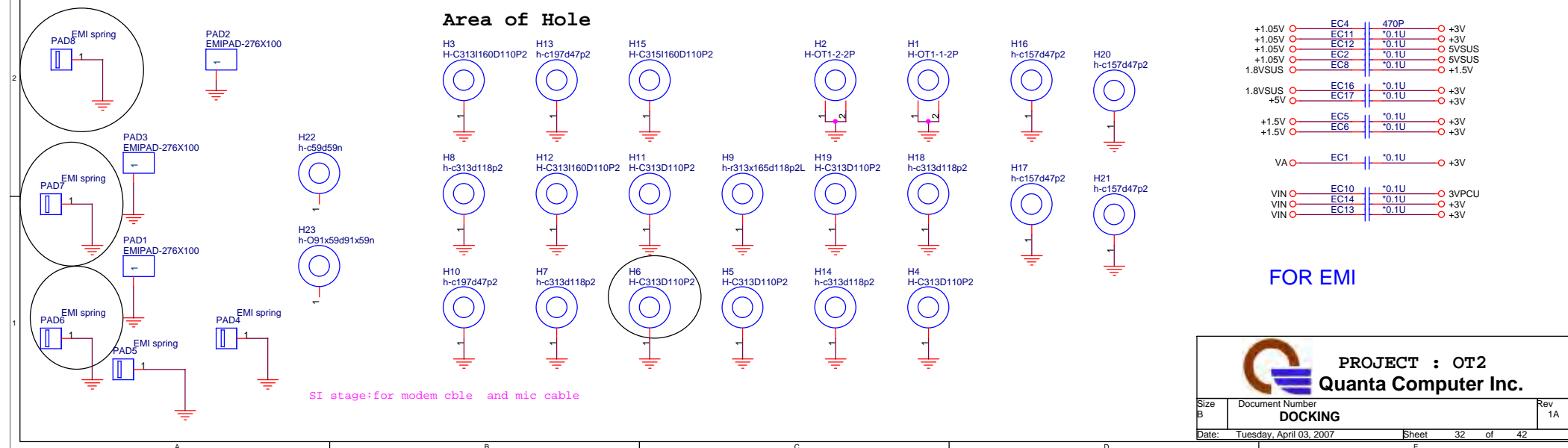
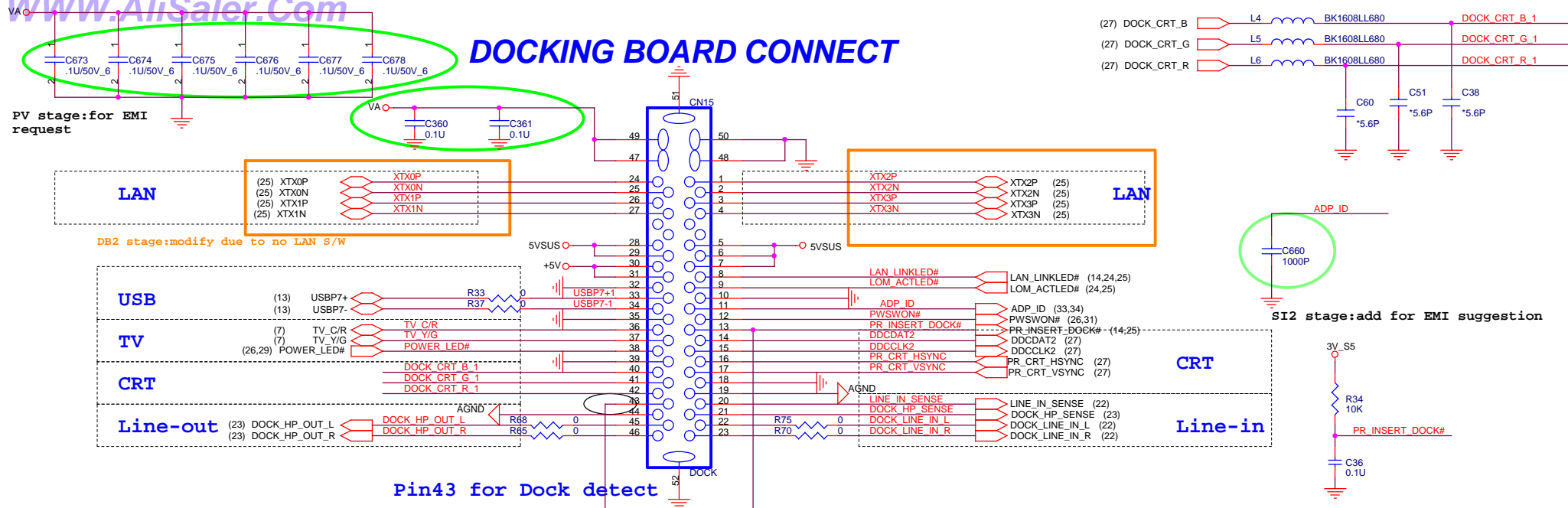
Size Custom	Document Number <b>USB,BT,FP,TPM,MDC</b>	Rev 1A
Date:	Tuesday, April 03, 2007	Sheet 30 of 42

## POWER SEQUENCE

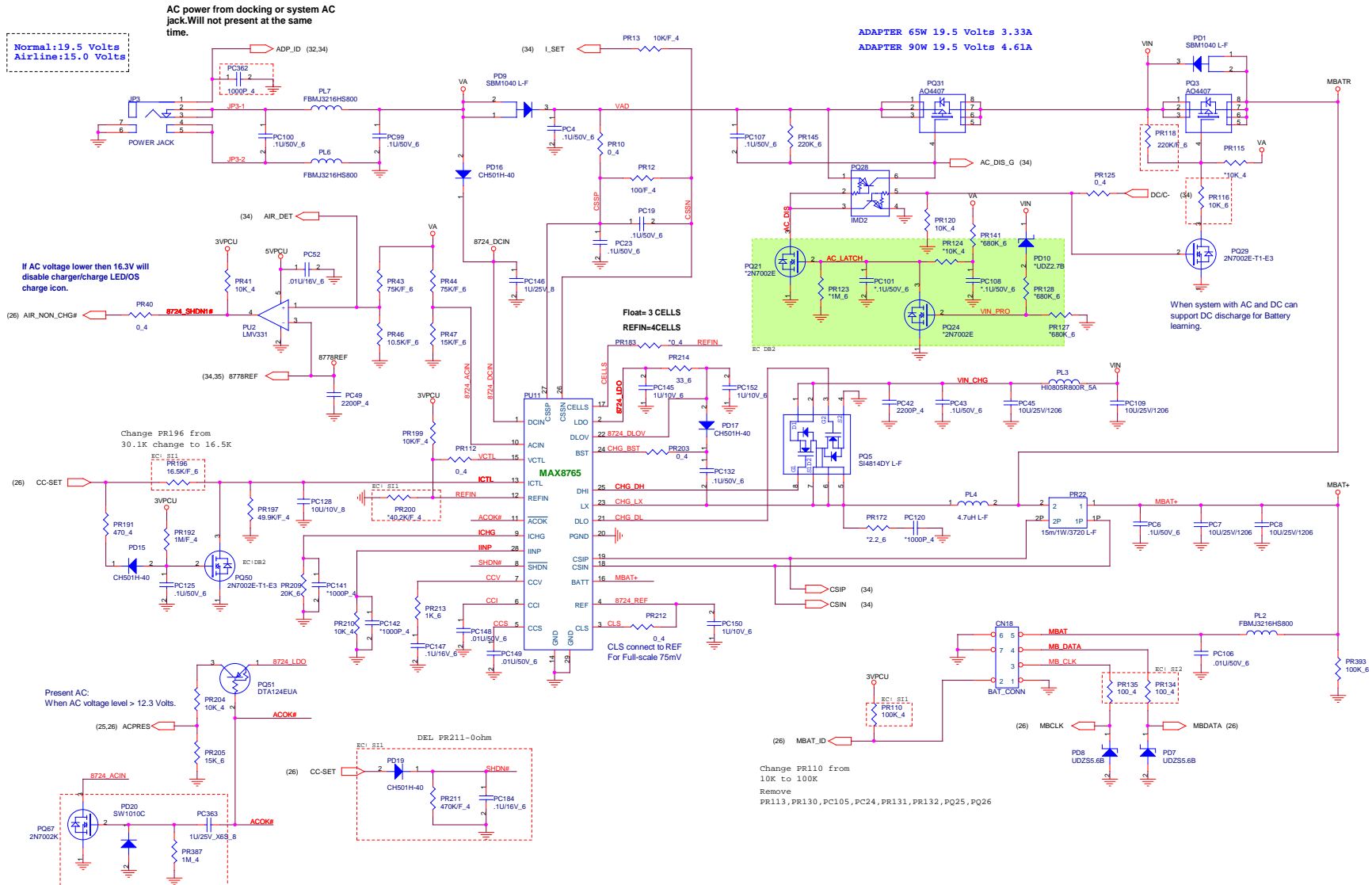


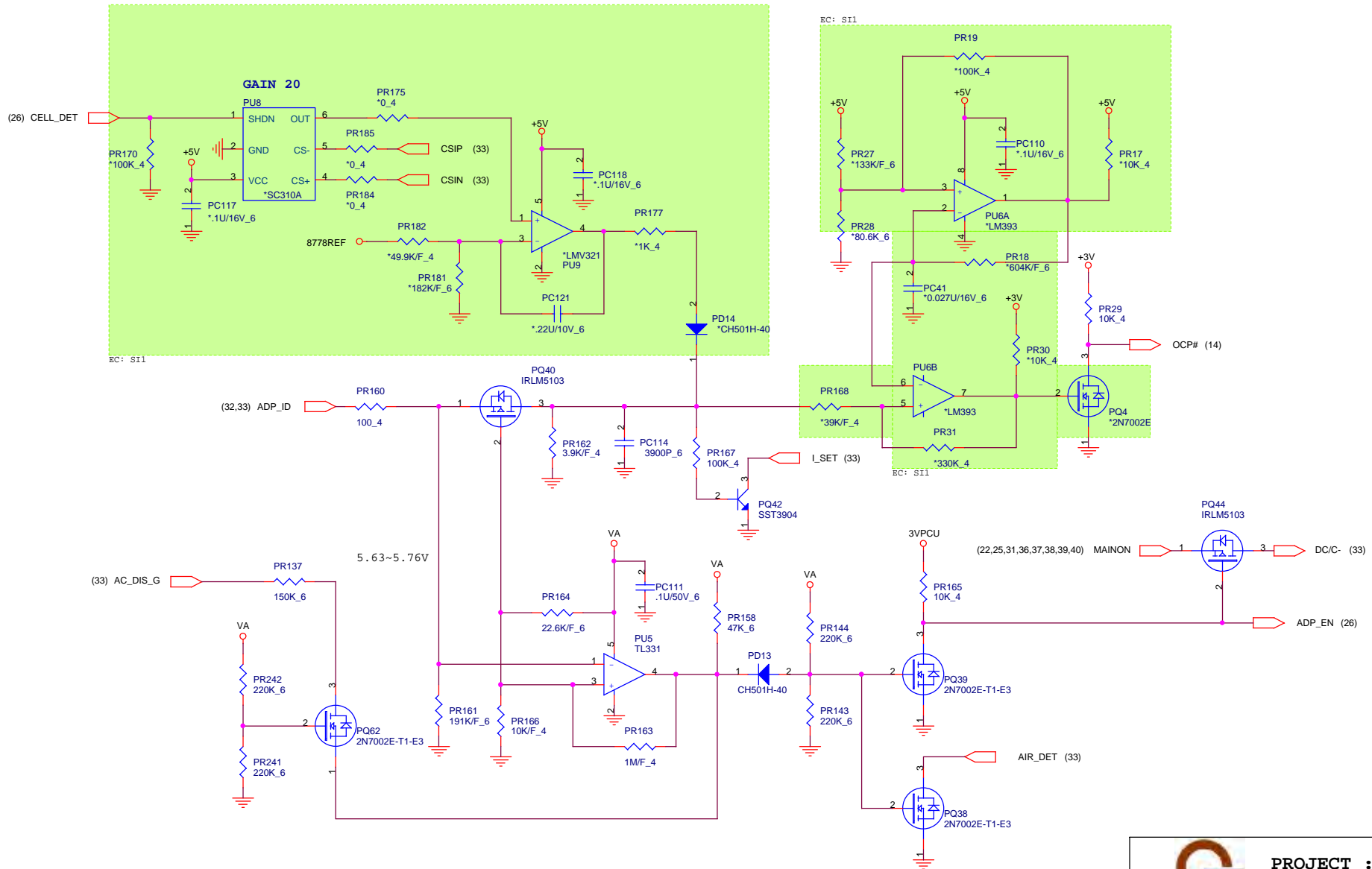
## POWER SWITCH

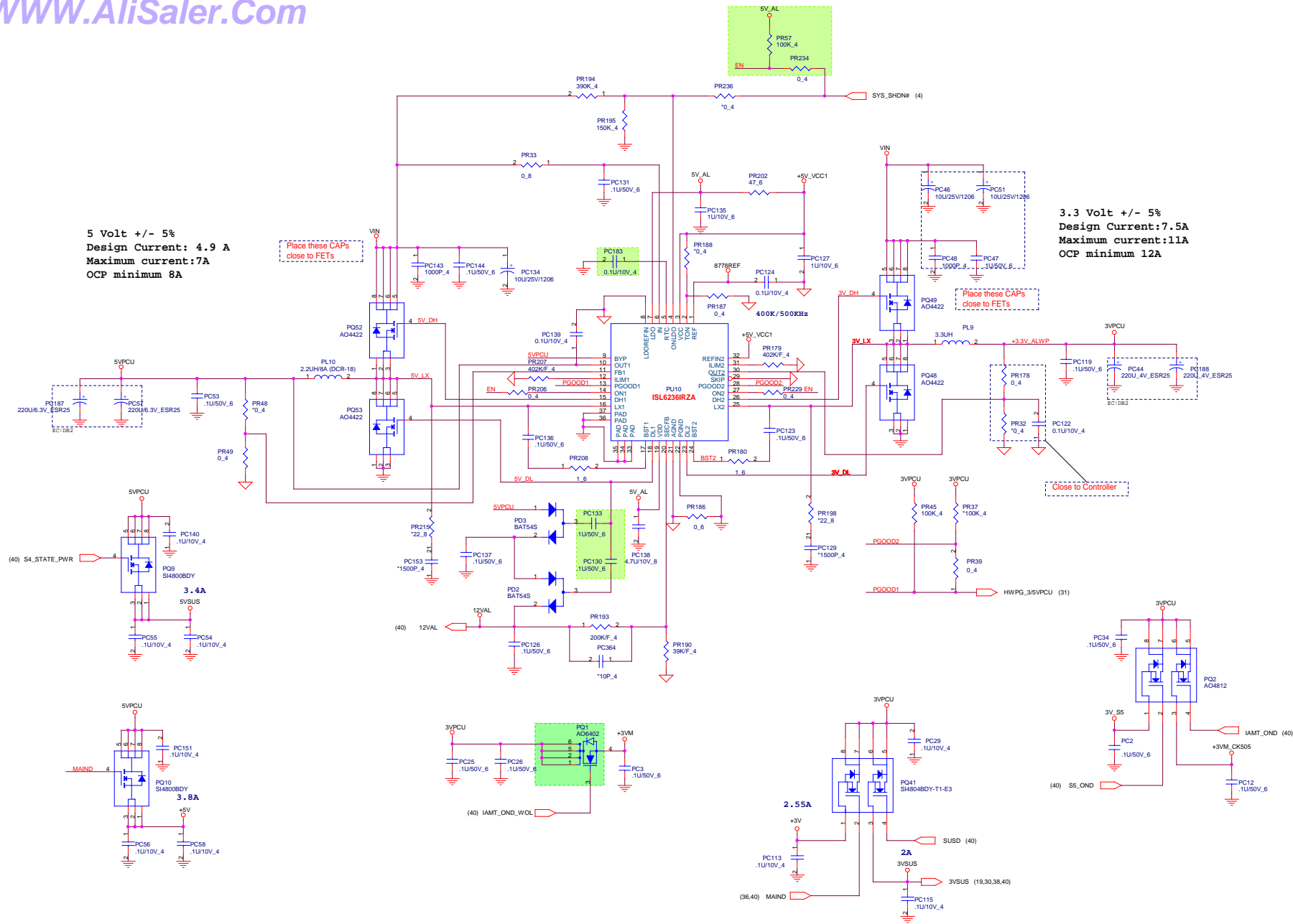


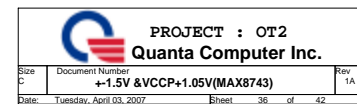


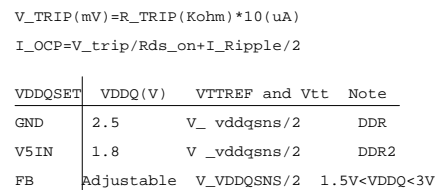




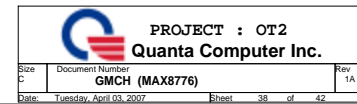






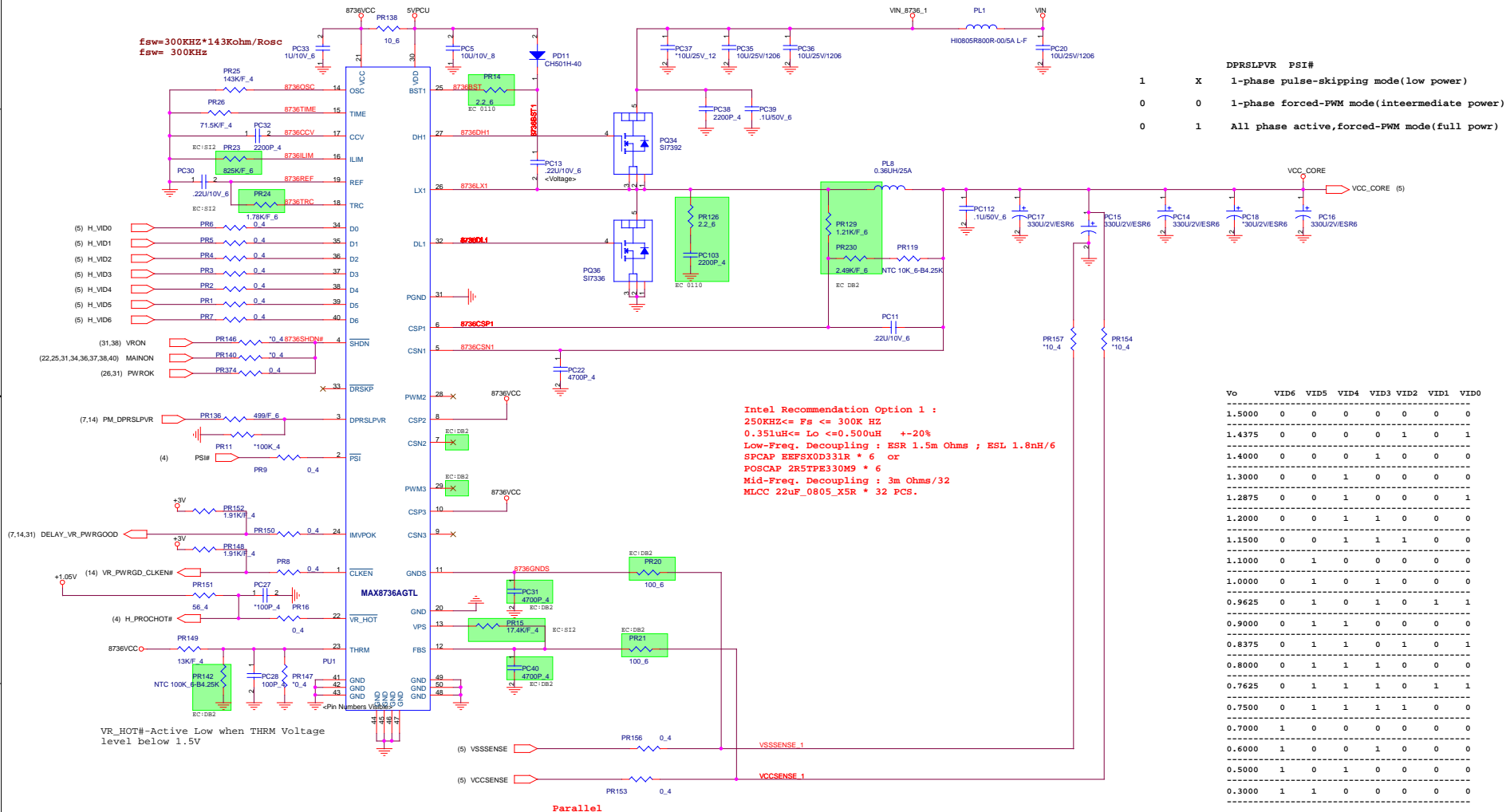


Mode	Discharge Mode
V5IN	No discharge
VDDQ	Tracking discharge
Gnd	Non-tracking discharge

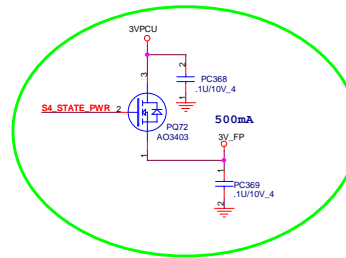
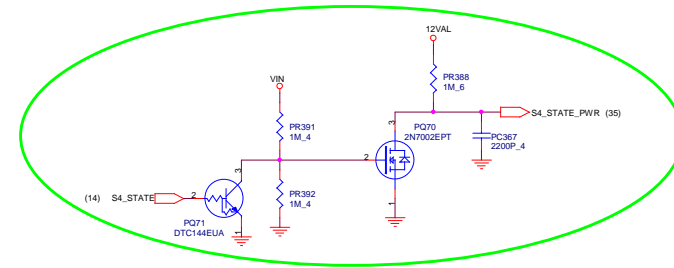
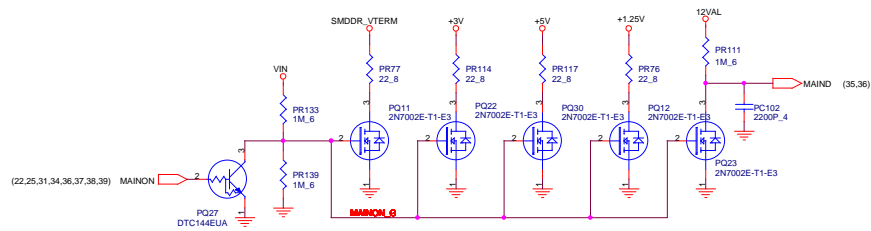
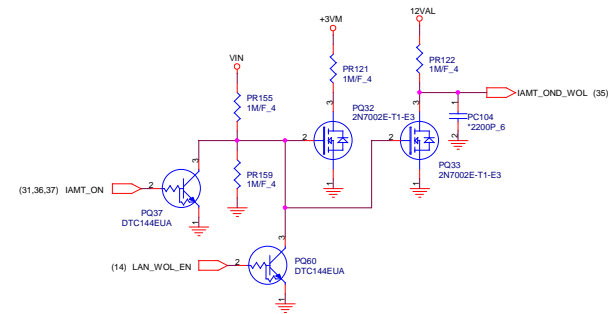
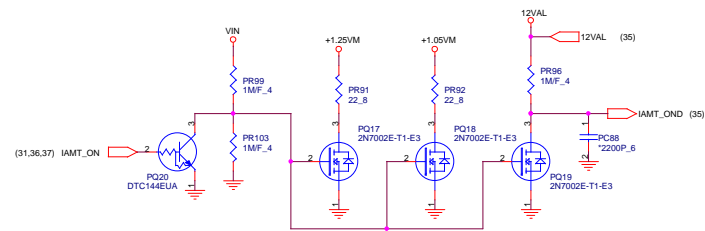




DPRSLPVR	DPRSTP#	PSI#	State	CPU Current
1	0	0	Deeper Sleep	< 3A
1	0	1	Deeper Sleep	> 3A
0	1	0	Active Mode	< 18A
0	1	1	Active Mode	> 15A

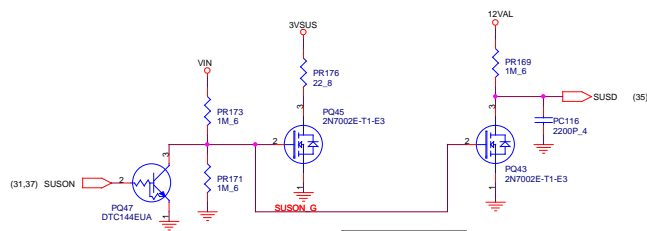


Vo	VID6	VID5	VID4	VID3	VID2	VID1	VID0
1.5000	0	0	0	0	0	0	0
1.4375	0	0	0	0	1	0	1
1.4000	0	0	0	1	0	0	0
1.3000	0	0	1	0	0	0	0
1.2875	0	0	1	0	0	0	1
1.2000	0	0	1	1	0	0	0
1.1500	0	0	1	1	1	0	0
1.1000	0	1	0	0	0	0	0
1.0000	0	1	0	1	0	0	0
0.9625	0	1	0	1	0	1	1
0.9000	0	1	1	0	0	0	0
0.8375	0	1	1	0	1	0	1
0.8000	0	1	1	1	0	0	0
0.7625	0	1	1	1	0	1	1
0.7500	0	1	1	1	1	0	0
0.7000	1	0	0	0	0	0	0
0.6000	1	0	0	1	0	0	0
0.5000	1	0	1	0	0	0	0
0.3000	1	1	0	0	0	0	0

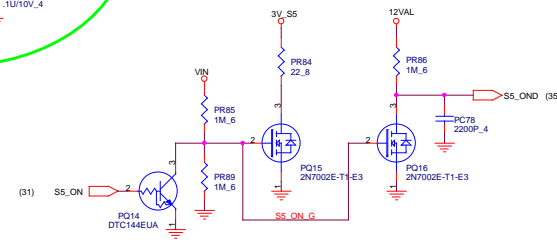


PV stager:add for HP request

PV stager:add for HP request



DEL PR174, PQ46  
For S4-STATE



# CHANGE LIST

DB2 --->SI

OT2 MB  
31OT2MBXXXX

Date

Reason for change

Page

modify list

2006.11

change from 5VSUS to +5v due to not support wake up from suspend

change U35 pin13,15 to +5V

change footprint to 0805 to easy prepare material

change U2, C577 footprint

avoid leakage current

change power plan from 3VSUS to 3V\_S5 at RP31, R241, R448, R538, change card bus switch power from 5VSUS to 5V  
R452 Install, R46 on install; delete R496, Add D32  
Add D33, D34; delete R293, and add Q60

EC VCC2 pin is used in a comparator to sample when Vcc2 is going up or down. It will draw some current. Approx 300ua

R1005 install, R297 no install

For auto boot issue

reserve R1029, add R1028, Q62 for auto power issue

remove Kill switch function

remove Q37, R443, R426, CN1, R977

add for EA team easy test

add R1031, R1032

for internal mic issue

add C643, and modify pin 1 for U47 OP circuit and add C657

modify footprint from right angle type to straight type

CN36

change footprint for another vendor for easy insert

change footprint for track point connector CN8

move D31 close to ICH8 to solve battery LED issue, else it will cause LED function abnormally

D31 close to ICH8 and pull up 10k(R1035) to +3V

WWAN noise --- ICH improvement

reserve L53, L54, add R1033, R1034

due to use 4MB flash part

delete CN24

add strapping options for CPU\_BSEL{0:2} so we can hardwire the clock to the FSB frequency if needed

R1036-R1044

PUL3.11, add IAMT\_ON control signal option with 0-Ohm NO INSTALL to control power up of 0.9V  
This is to save system power in S3 when IAMT is disabled.

add PR385

For ENERGY\_DET, Change R18 to 1.4K, this is a change from Intel on LAN Energy Detect.

R18

DB2 --->SI2

Date

2007.1

schematic error and change to avoid leakage voltage

RP31 pin10 from 3V\_S5 to 3VSUS

change Lan crystal layout for intel suggestion

Lan crystal layout

to avoid the ripple for signal CLK\_PWRGD

add R1049 for intel suggestion

tune Adp\_Id signal for layout. to avoid overlay

for EMI suggestion

for EMI suggestion

reserve C661, C662, C663

for EMI suggestion(CRT)

L8, L10, L14 change to BK1608LL680

for EMI suggestion(internal Mic)

reserve R664, R1050 for Mic

for EMI suggestion(modem)

delete R280, R281 due to useless

PWM signal(LCD) to avoid work abnormally


C5 no install

change to 1.87K for Intel suggestion

change R18 to 1.87k

Q61, D32 is for leakage voltage issue, but will influence LAN function, change to 0 ohm

delete Q61, add R1051, delete D32, Add R1052

 <b>PROJECT : OT2</b> <b>Quanta Computer Inc.</b>		Rev
		1A
Size	Document Number	
Custom	change list-1	
Date:	Tuesday, April 03, 2007	Sheet 41 of 42

MODEL

CHANGE LIST

DB2 --->SI2

OT2 MB  
31OT2MBXXXX

Date

Reason for change

Page

modify list

2007.1

For LCD rush current issue

change R30 to 82K,C32 to 0.1u ,and change R20 power source to 3VPCU

due to no use

delete R341,R1025,L9,L13,L15,L8,L10,L14,R342,R95,R81

SI2--->PV

2007.1