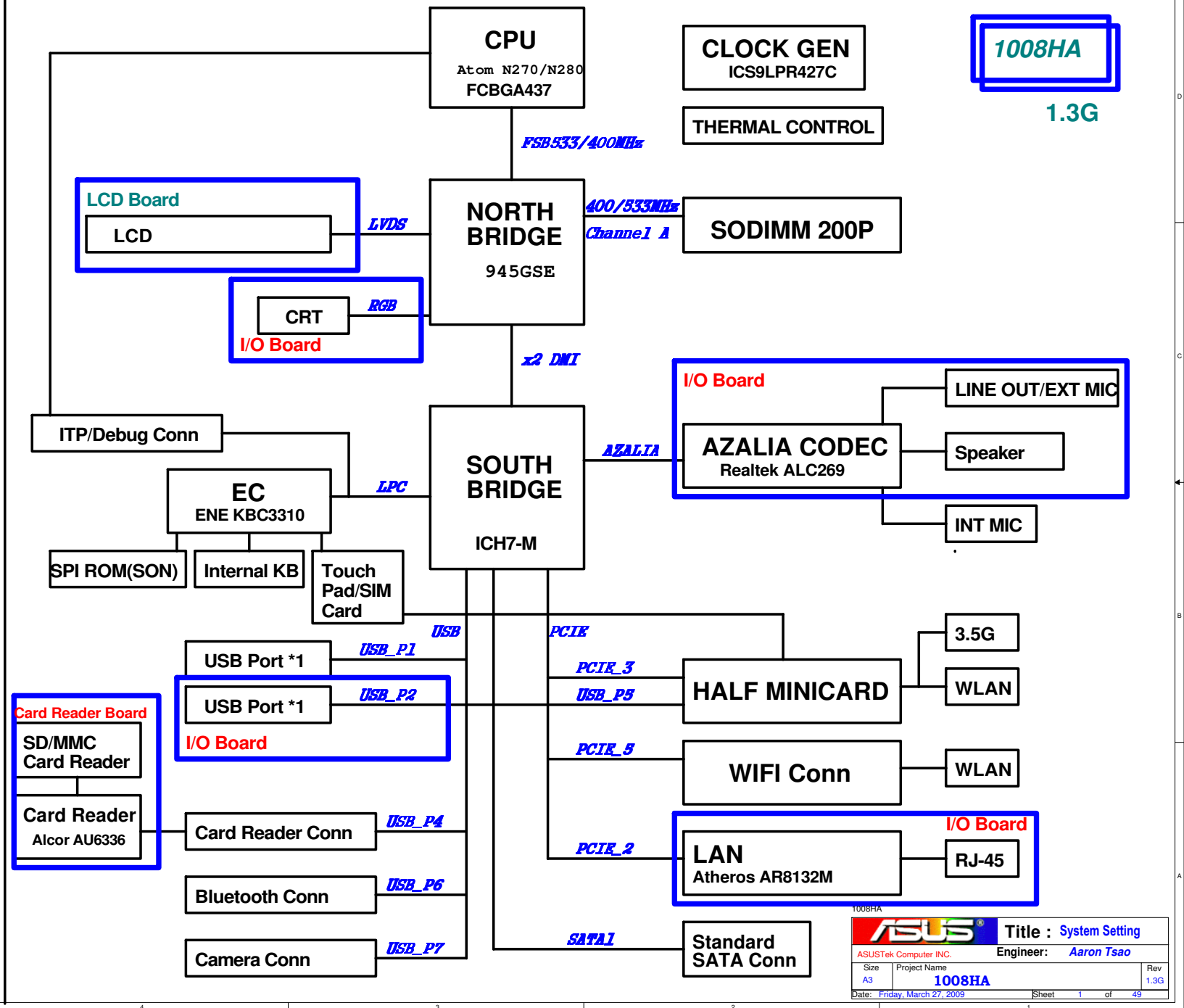


01_Block Diagram
 02_System Setting
 03_Power Sequence
 04_Clock Gen_ICS9LPR427
 05_Diamondville_BUS
 06_Diamondville_PWR
 07_NB-945GMS(HOST)
 08_NB-945GMS(DMI)
 09_NB-945GMS(GRAPHIC)
 10_NB-945GMS(DDR2)
 11_NB-945GMS(PWR)
 12_NB-945GMS(PWR2)
 13_NB-945GMS(GND)
 14_SB-ICH7M(PWR)
 15_SB-ICH7M(1)
 16_SB-ICH7M(2)
 17_SB-ICH7M(3)
 18_DDR2 SODIMM
 19_DDR2 Termination
 20_Onboard VGA
 21_LCD Conn_LID
 22_3G
 23_Mini WiFi+ BT
 24_LAN_Atheros AR8132
 25_RJ45
 26_G-Sensor
 27_USB Port
 28_Camera Conn
 29_Card Reader_AU6372A51
 30_Codec_ALC269
 31_Audio_AMP_Jack
 32_EC_ENE KB3310
 33_EC
 34_Switch_SPI ROM_Debug Conn
 35_Thermal Sensor_FAN
 36_KB_Touch Pad
 37_LED_THERMTRIP
 38_Discharge
 39_PWR Jack/SATA/USB Connector
 40_Srew Hole
 41_EMI
 42_POWER FLOW
 43_Vcore
 44_Power System
 45_Power_+1.8V & VTTDDR
 46_Power_VCCP
 47_Power_+1.5VS & +2.5VS
 48_Power_Charger
 49_EC Pin Define
 50_3G Power
 51_History



EEE PC 701 PCB version

GPI37	GPI38	GPI39	PCB version
0	0	0	
0	0	0	
0	0	1	
0	0	1	
0	1	0	
0	1	0	
0	1	1	
0	1	1	
1	0	0	
1	0	0	
1	0	1	
1	0	1	
1	1	0	
1	1	0	
1	1	1	
1	1	1	

USB

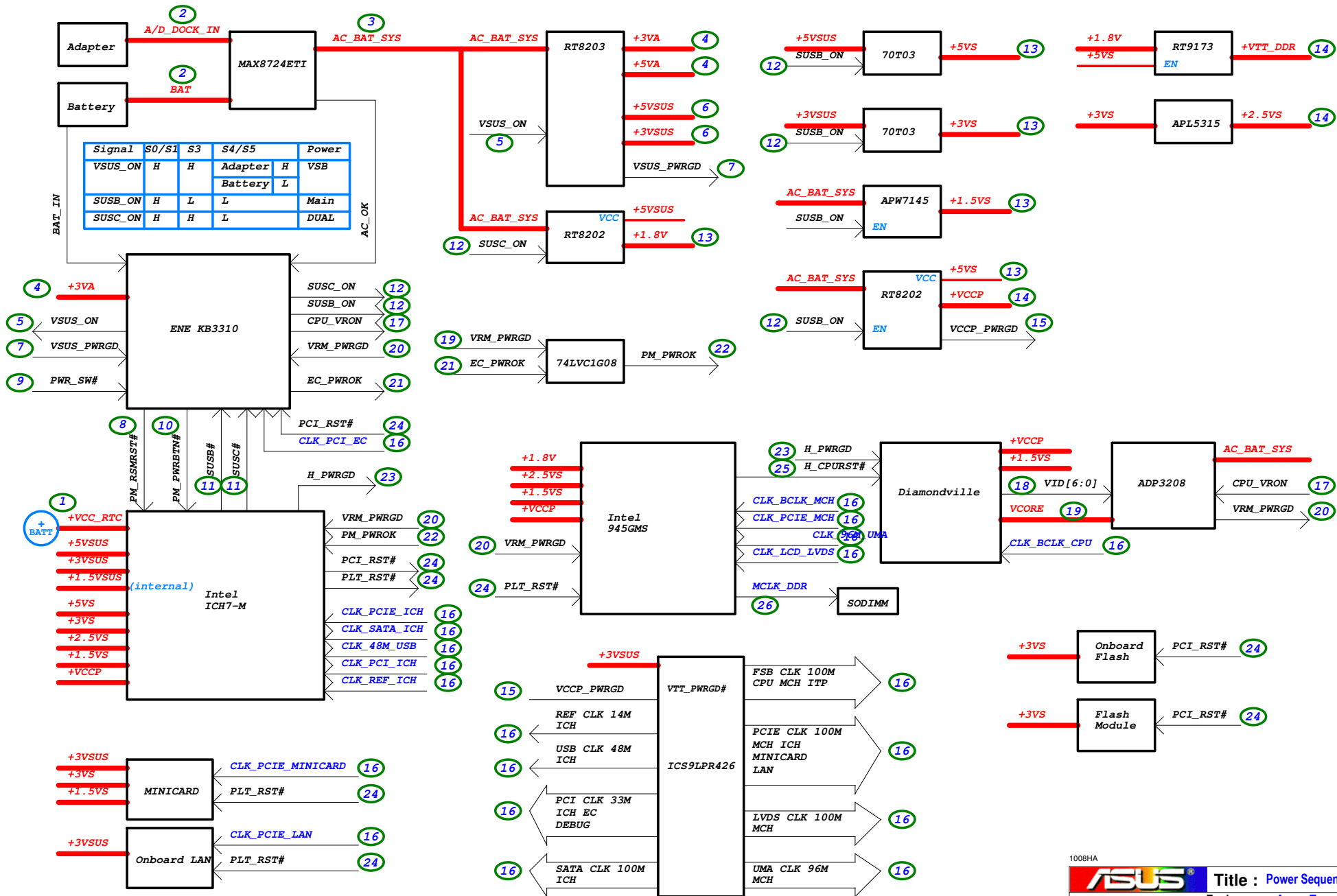
USB 0	USB Conn
USB 1	USB Conn
USB 2	NA
USB 3	NA
USB 4	Card Reader
USB 5	Minicard
USB 6	Bluetooth
USB 7	Camera

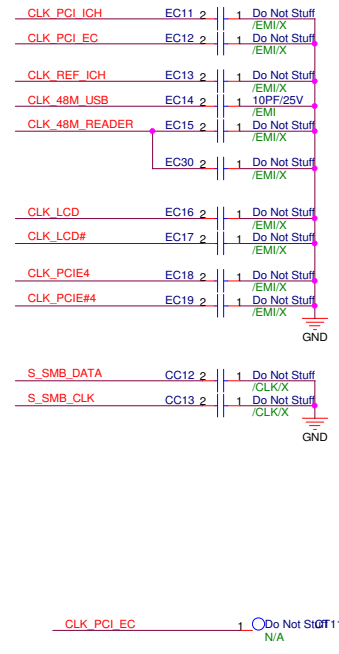
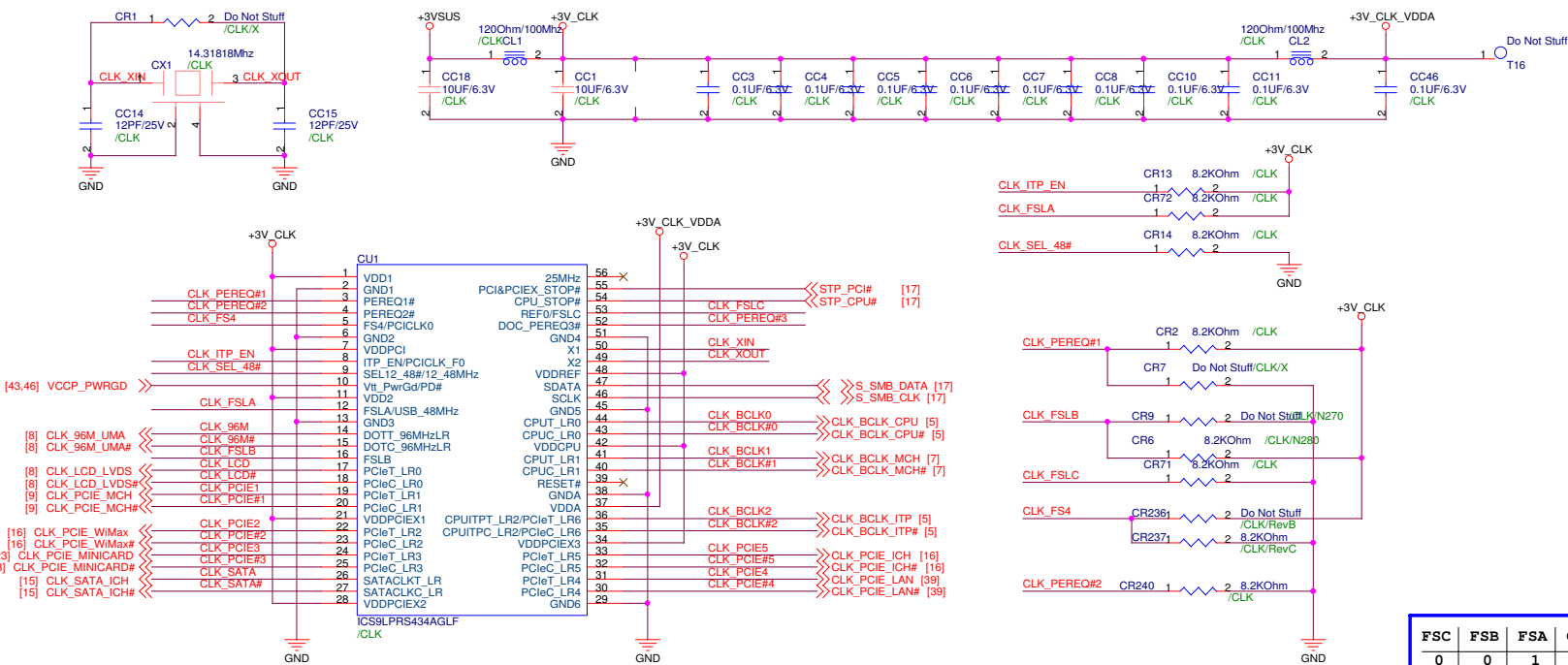
PCIE

PCIE 1	NC
PCIE 2	LAN
PCIE 3	Minicard
PCIE 4	SSD

Azalia

ACZ_SDIN0	CODEC
ACZ_SDIN1	NC
ACZ_SDIN2	NC

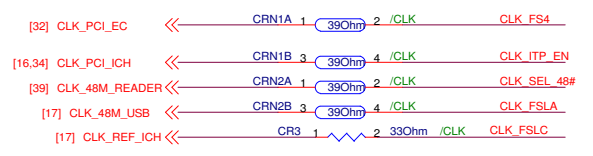
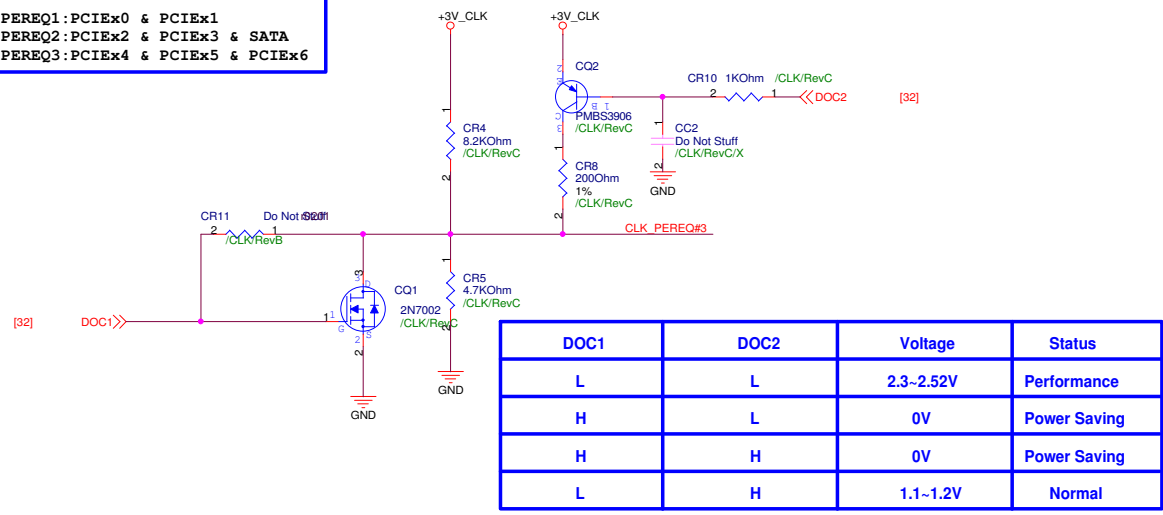




Selected through the I2C
1:Disable
0:Enable

PEREQ1:PCIEx0 & PCIEx1
PEREQ2:PCIEx2 & PCIEx3 & SATA
PEREQ3:PCIEx4 & PCIEx5 & PCIEx6

FSC	FSB	FSA	CPU	PCIE	SATA
0	0	1	133	100	100
1	0	1	100	100	100



DOC1	DOC2	Voltage	Status
L	L	2.3~2.52V	Performance
H	L	0V	Power Saving
H	H	0V	Power Saving
L	H	1.1~1.2V	Normal

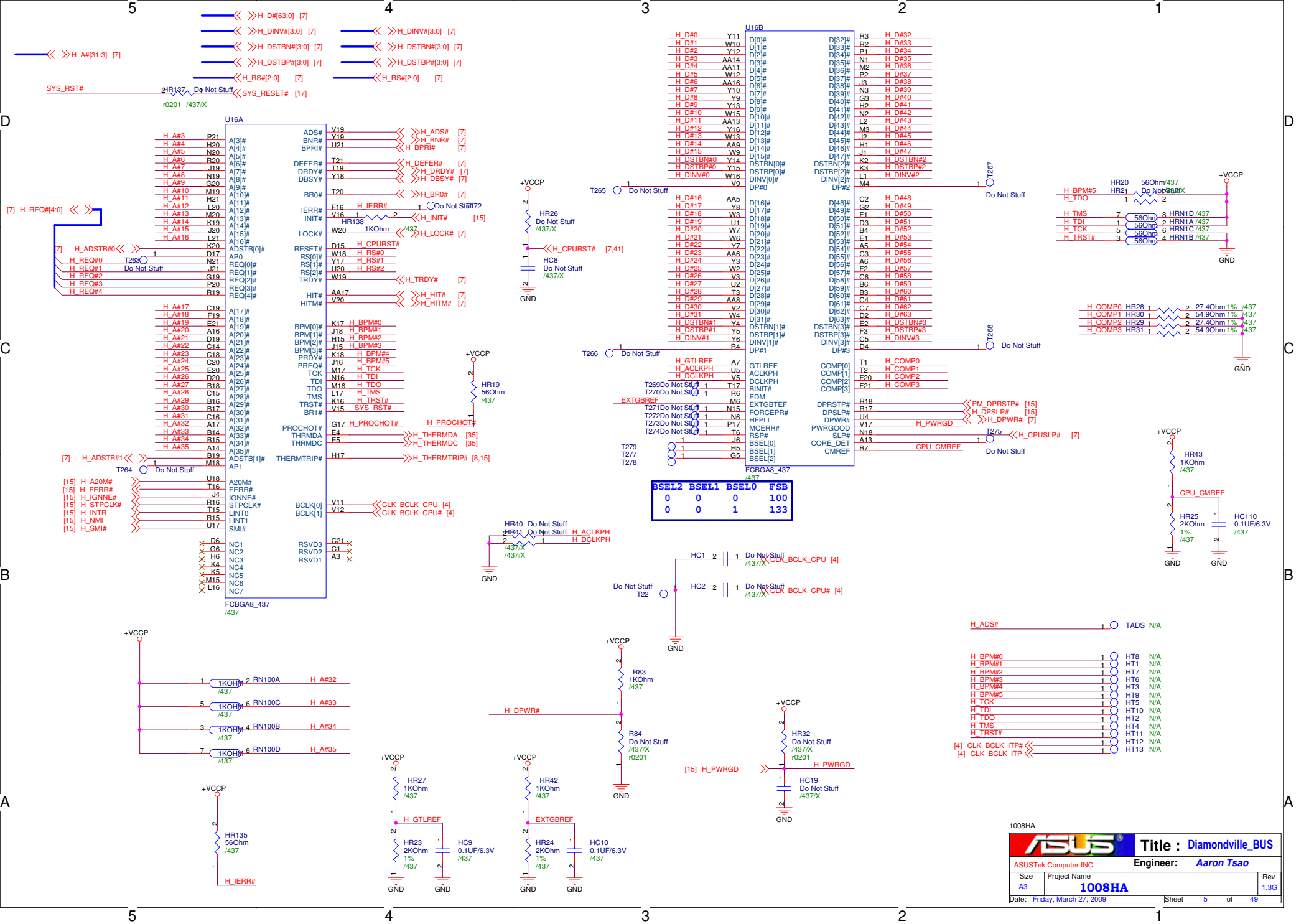
1008HA

Title :Clock ICS9LPRS427

ASUSTek Computer INC. **Engineer: Aaron Tsao**

Size A3 **1008HA** Project Name Rev 1.3G

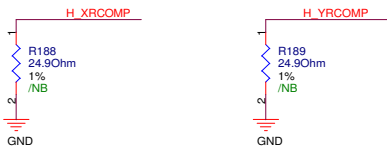
Date: Friday, March 27, 2009 Sheet 4 of 49



Power :
+VCCP

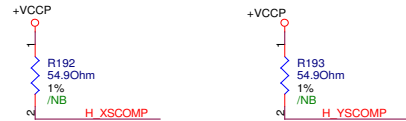
RCOMP

For Calibrating the FSB I/O Buffer



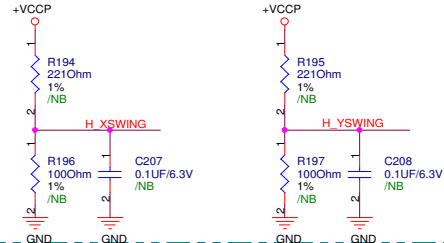
SCOMP

For Slew Rate Compensation on the FSB

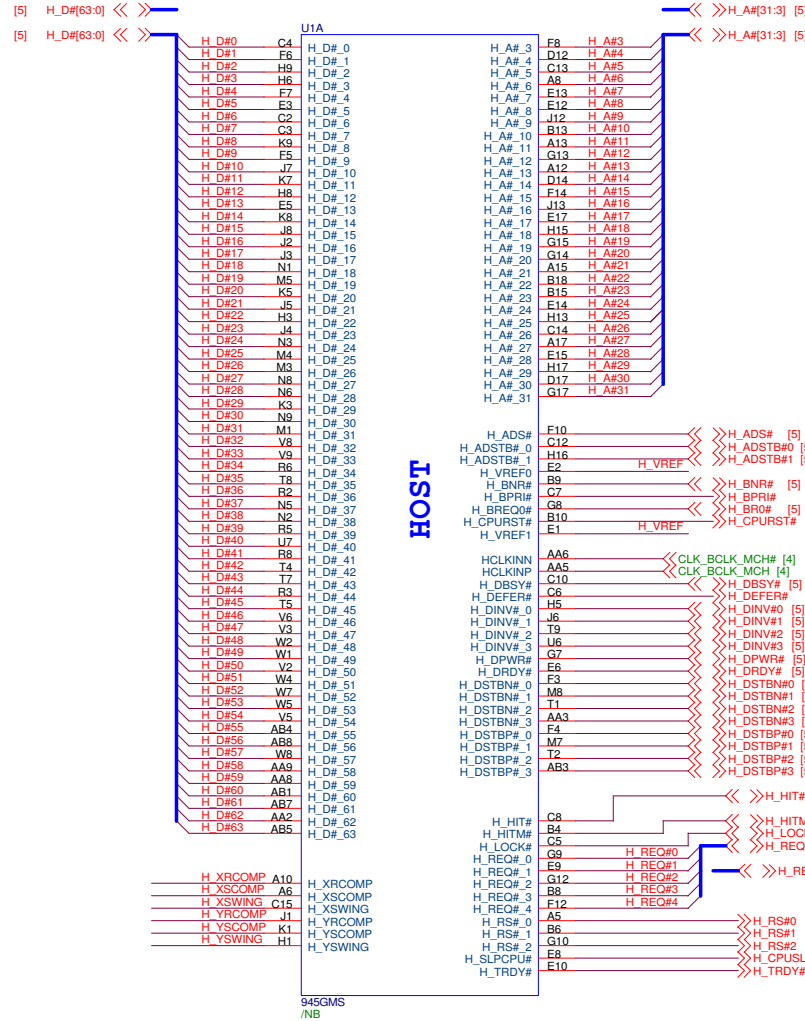


Voltage Swing

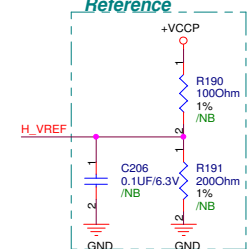
For Providing a Reference Voltage to The FSB RCOMP circuits



Signal voltage level =
0.3125*VCCP
Trace should be 10 mil wide
with 20 mil spacing



AGTL+ I/O Voltage Reference

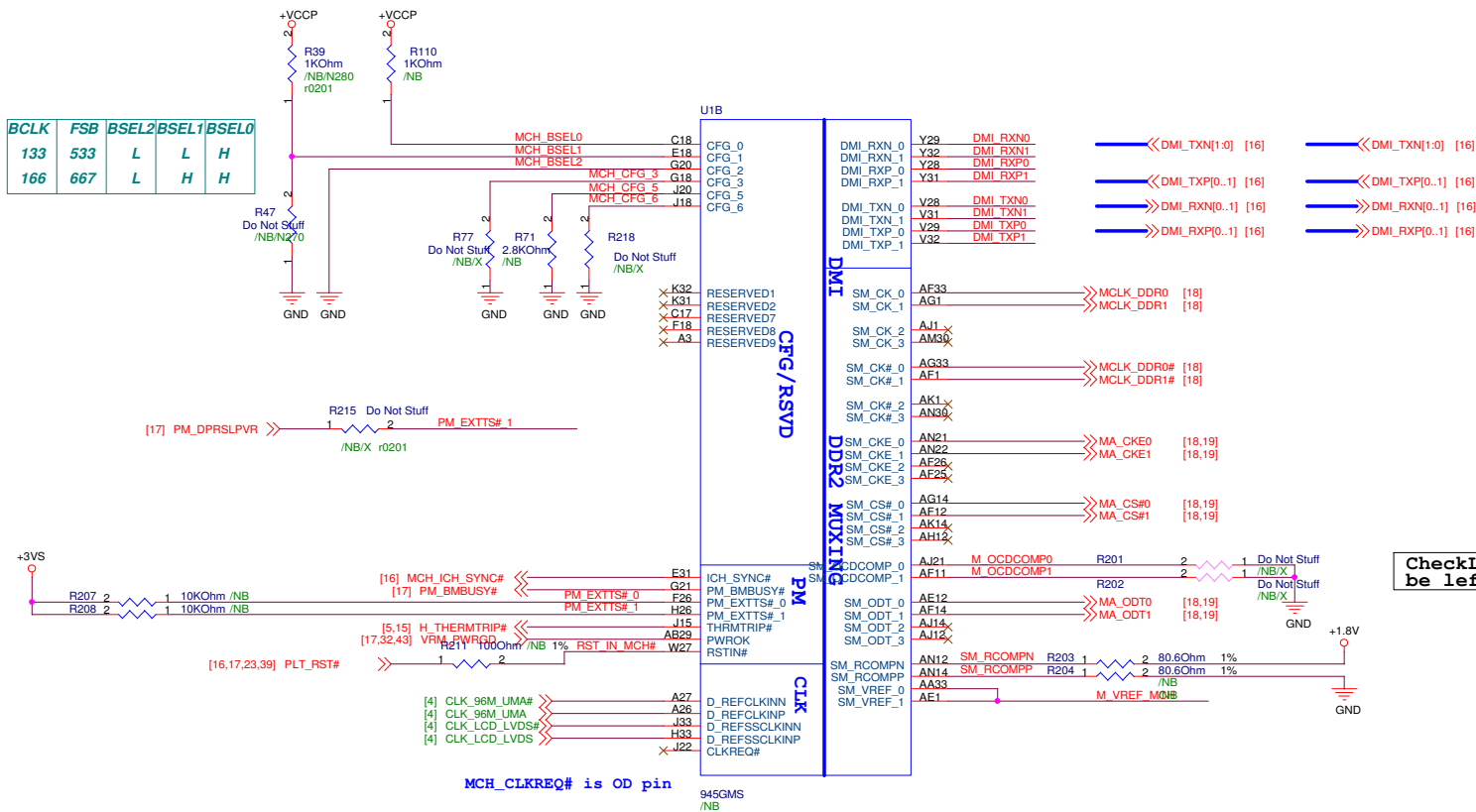


Layout Note:
0.1uF should be placed 100mils or
less from GMCH pin.

1008HA

ASUS		Title : NB-945GMS(HOST)	
ASUSTek COMPUTER INC.		Engineer: Aaron Tsao	
Size A3	Project Name 1008HA	Rev 1.3G	
Date: Friday, March 27, 2009		Sheet 7 of 49	

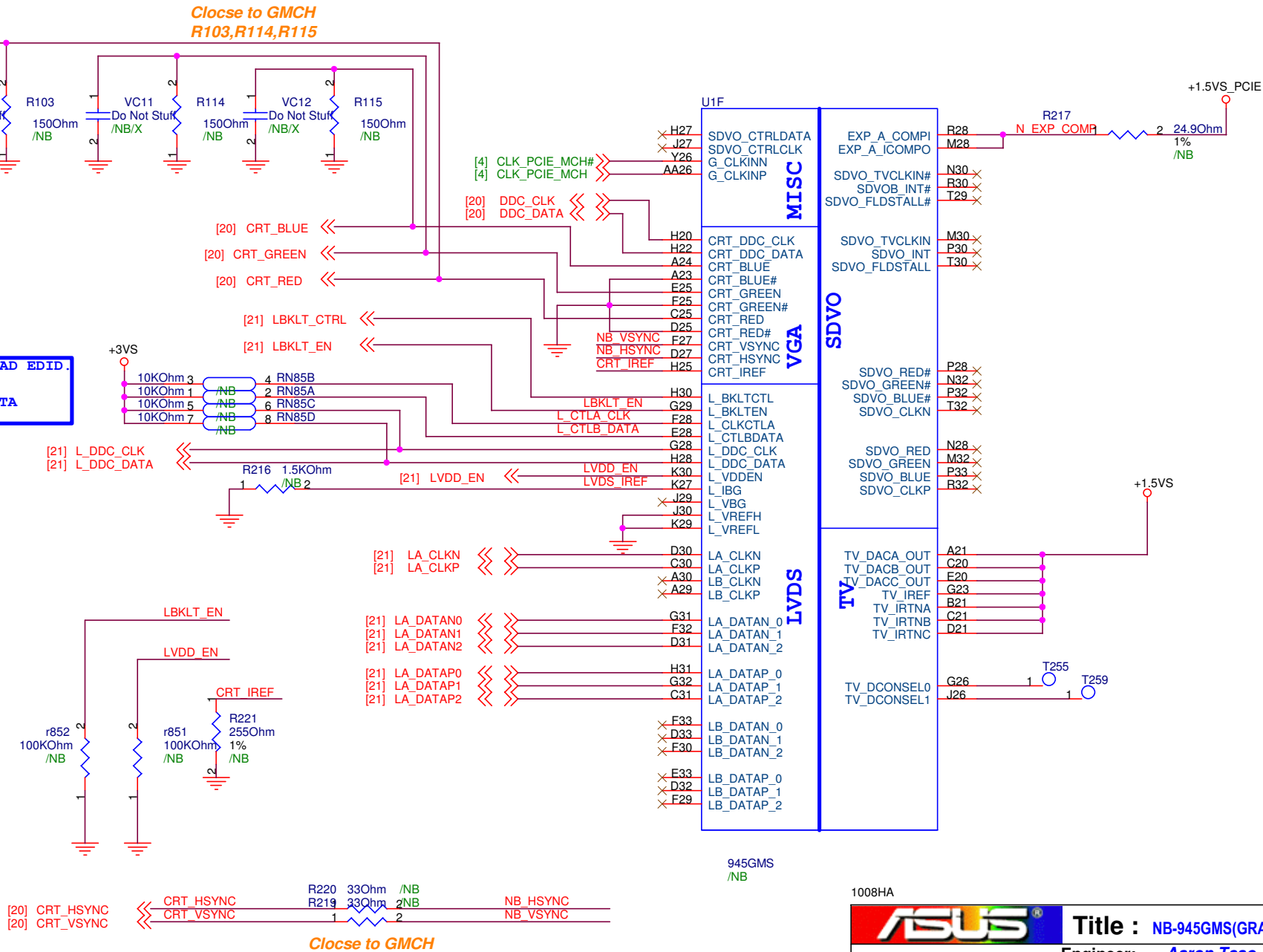
BCLK	FSB	BSEL2	BSEL1	BSEL0
133	533	L	L	H
166	667	L	H	H



1008HA

ASUS		Title : NB-945GMS(DMI & CFG)	
ASUSTeK COMPUTER INC.		Engineer: Aaron Tsao	
Size A3	Project Name 1008HA	Rev 1.3G	
Date: Friday, March 27, 2009		Sheet 8 of 49	

IF USE NB READ EDID.
MUST CONNECT
L_DDC_CLK&DATA



945GMS /NB

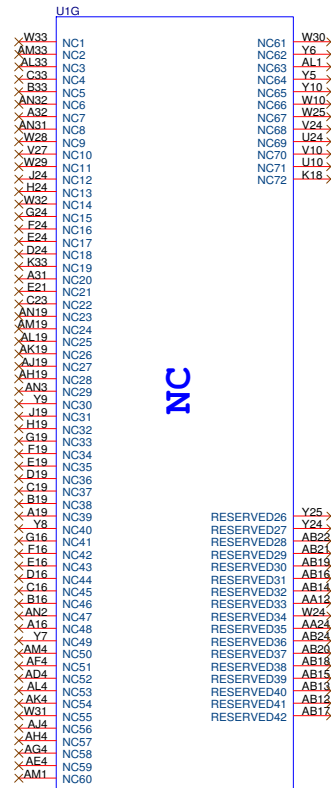
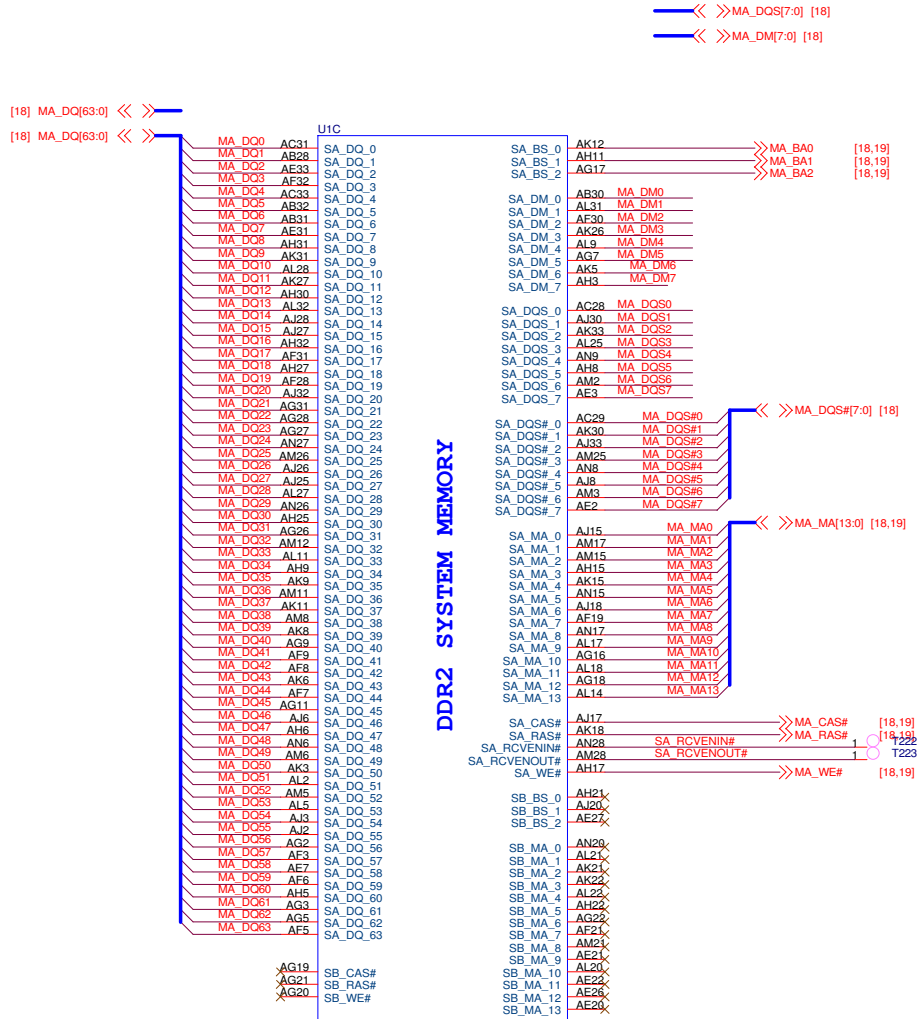
1008HA

ASUS Title : NB-945GMS(GRAPHIC)

ASUSTeK COMPUTER INC. Engineer: Aaron Tsao

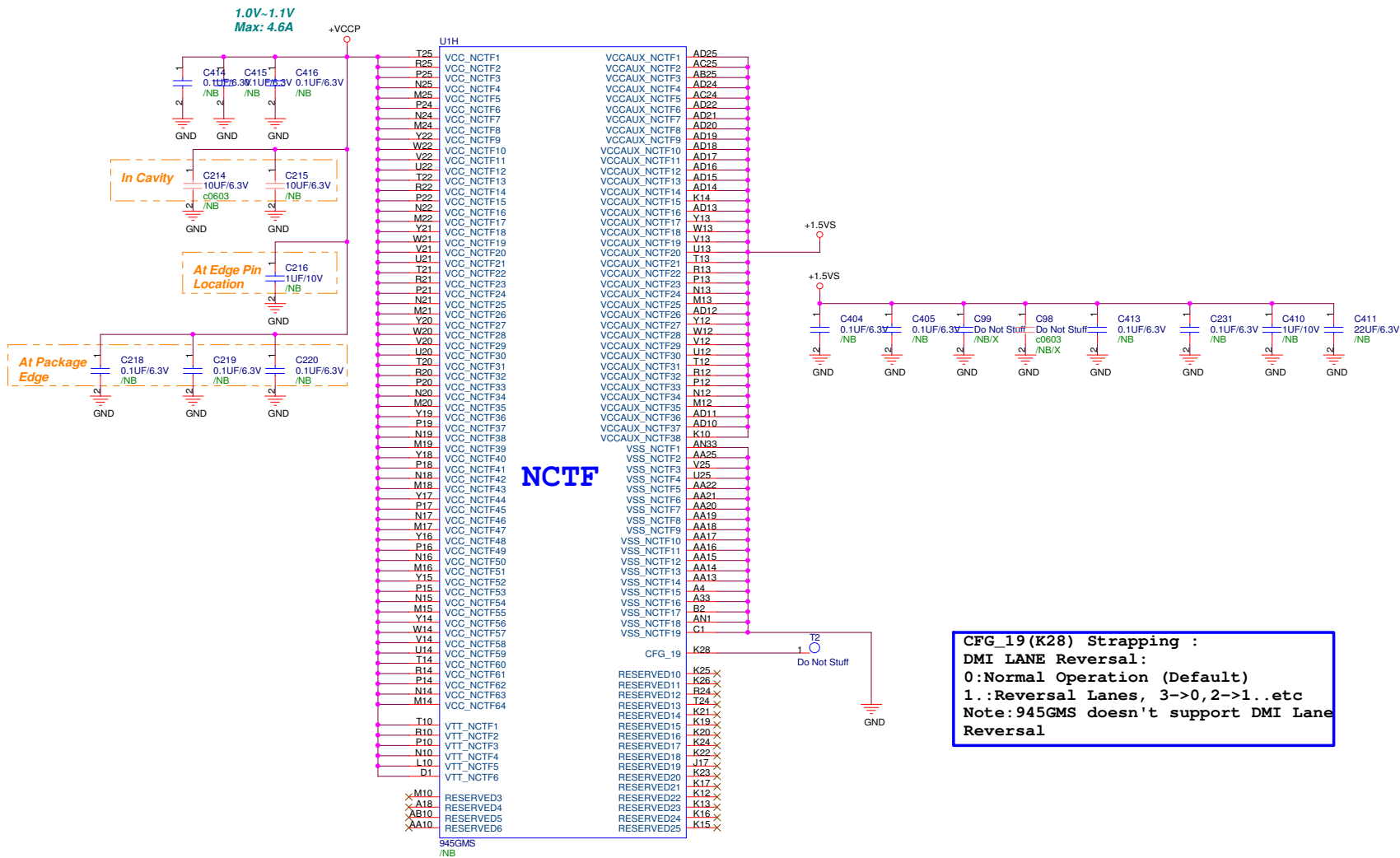
Size A4	Project Name 1008HA	Rev 1.3G
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Date: Friday, March 27, 2009 Sheet 9 of 49

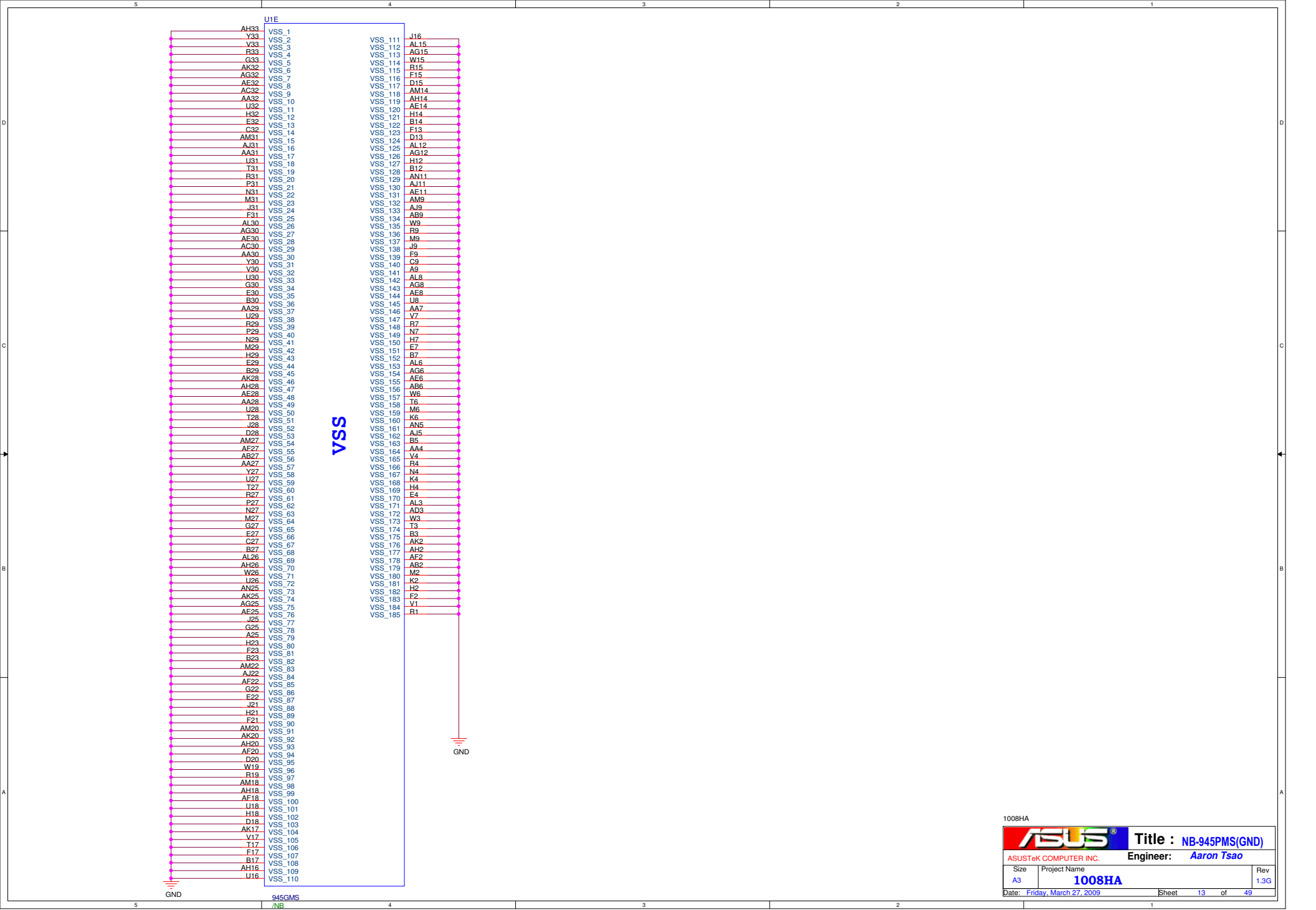


1008HA

ASUS		Title : NB-945GMS(DDR2)	
ASUSTeK COMPUTER INC.		Engineer: Aaron Tsao	
Size	Project Name	Rev	
A3	1008HA	1.3G	
Date: Friday, March 27, 2009	Sheet 10 of 49		



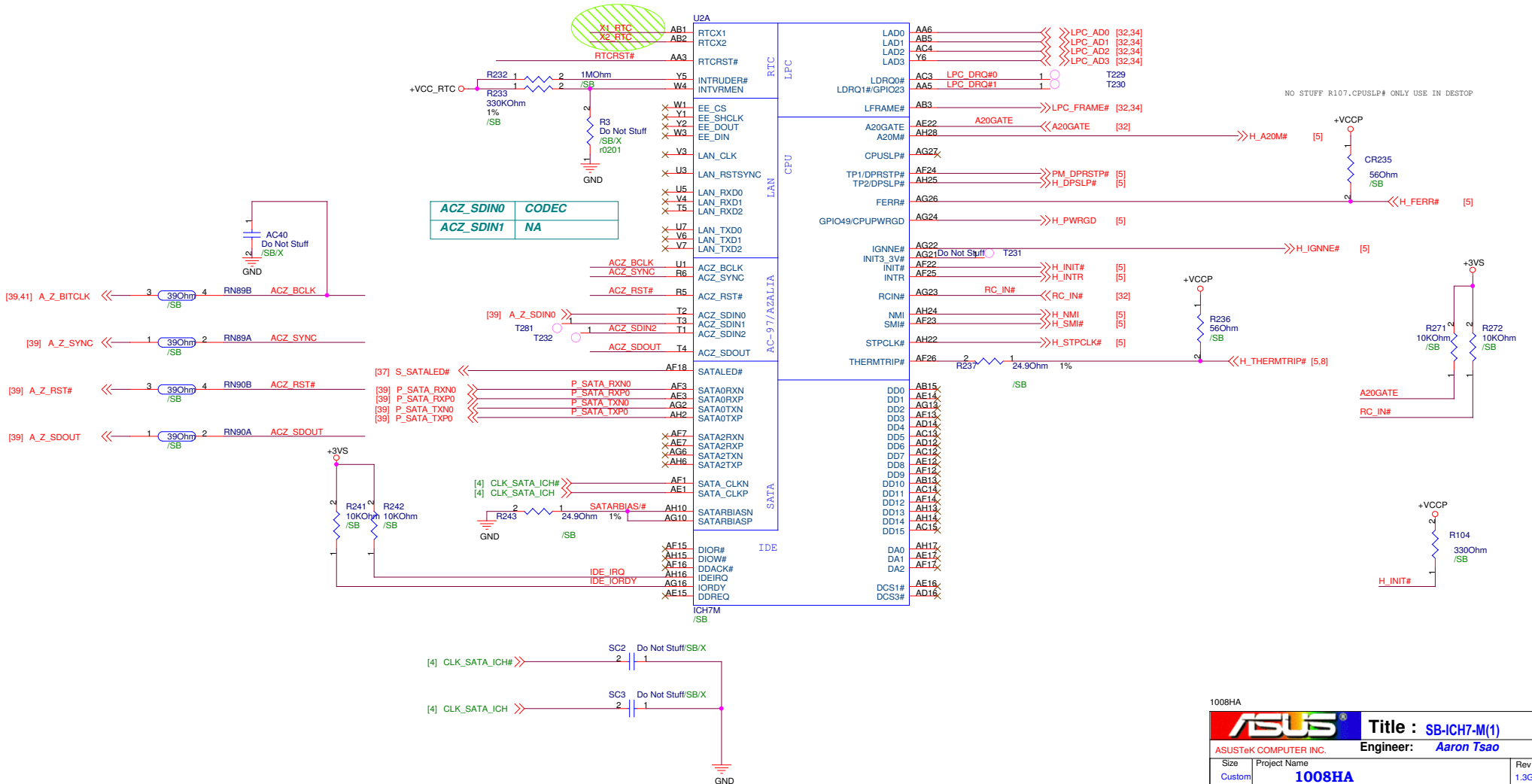
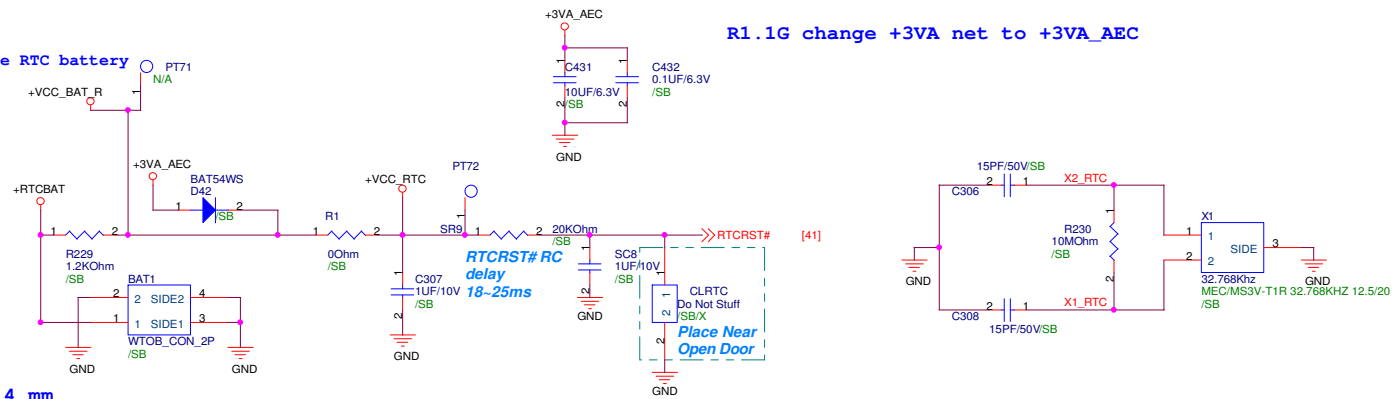
1008HA





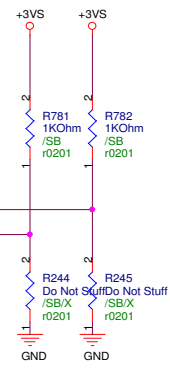
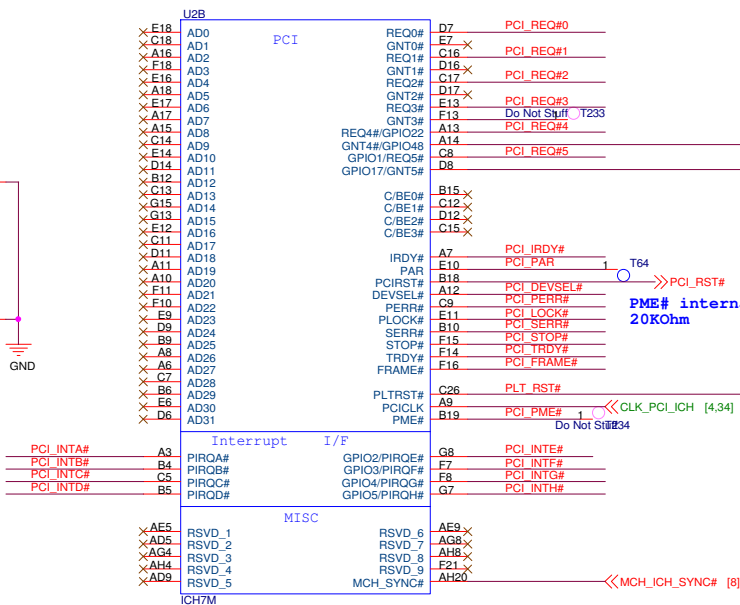
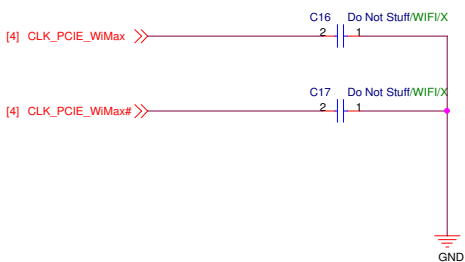
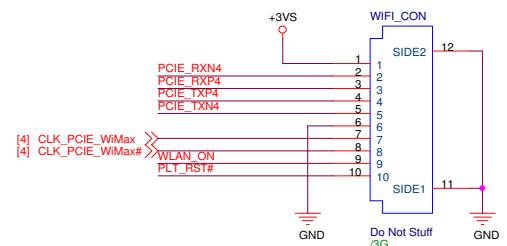
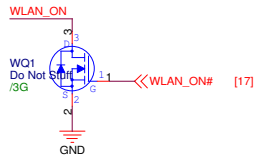
Height : 3.4 mm

R1.1G change +3VA net to +3VA_AEC



1008HA

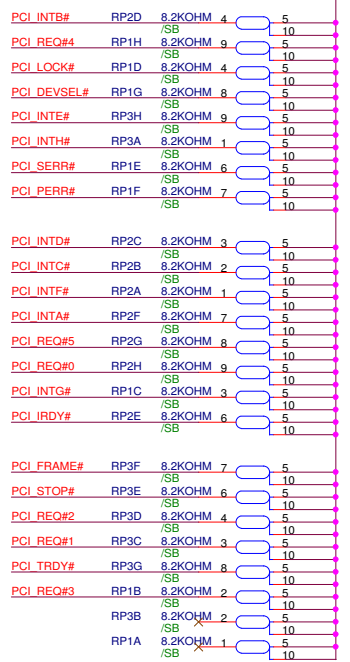




ICH7 Boot BIOS Select

	GNT#5	GNT#4
LPC	H	H
PCI	H	L
SPI	L	H

Buffer to Reduce Loading on PLT_RST#

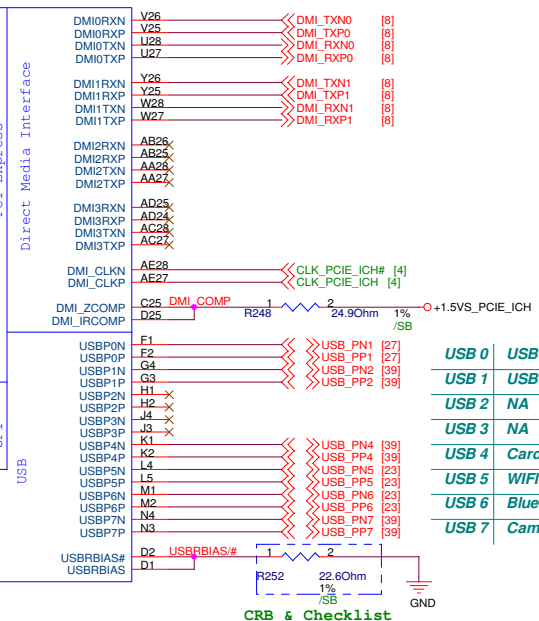
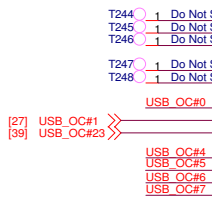
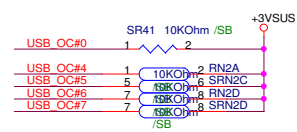


LAN AR8113 IC

WIFI PCIExpress Card

PCIe Interface for Wimax

2008-09-21



USB	Conn
USB 0	USB Conn
USB 1	USB Conn
USB 2	NA
USB 3	NA
USB 4	Card Reader
USB 5	WIFI
USB 6	Bluetooth
USB 7	Camera

CRB & Checklist



[8] PM_BMBUSY#

[4] STP_PC#
[4] STP_CPU#

[39] CARD_READER_EN#

Isolate alert# signal from thermal IC

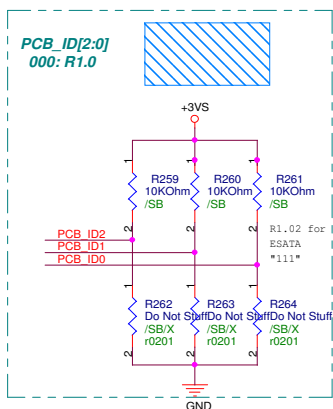
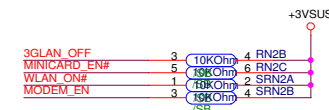
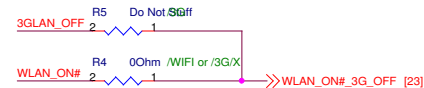
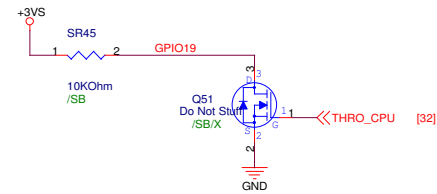
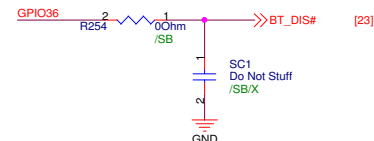


05/12/30, refer 296J R1.01 to delete and change net name from VRMPWRGD to VRM_PWRGD.

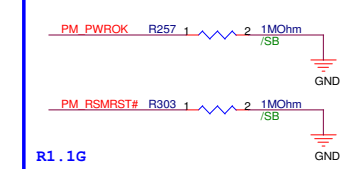
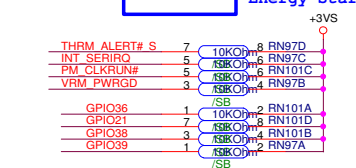
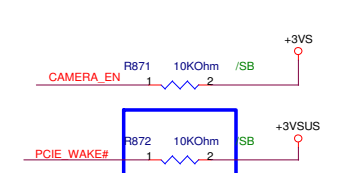
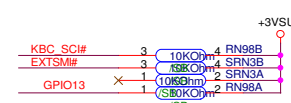
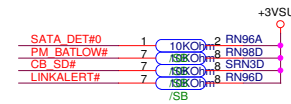
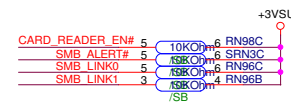
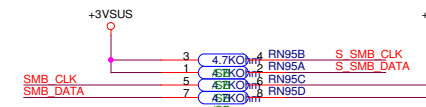
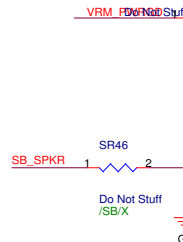
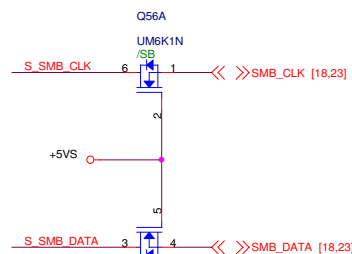
S SMB_CLK <<>> S SMB_CLK [4]
S SMB_DATA <<>> S SMB_DATA [4]

WLAN_LED	WLAN	BT
High	v	v
High	v	x
High	x	v
Low	x	x

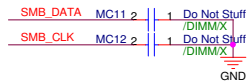
GPIO25 Internal PU 20K
For +1.5V DIMM Power



PCB_VID3 : PROJECT CODE



R1.1G



<< >>MA_DQ[63:0] [10]
<< >>MA_DQS[7:0] [10]
<< >>MA_DQS#[7:0] [10]
<< >>MA_DM[7:0] [10]
<< >>MA_MA[13:0] [10,19]
<< >>MA_BA[2:0] [10,19]

STD Type

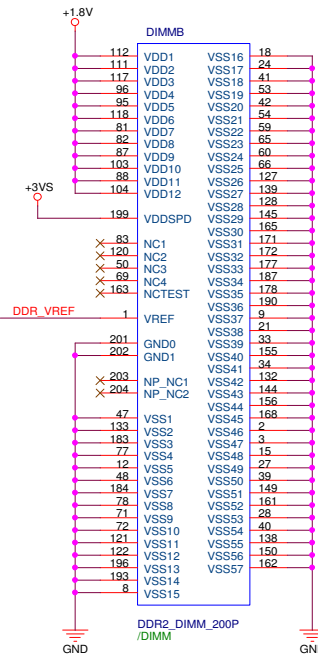
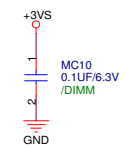
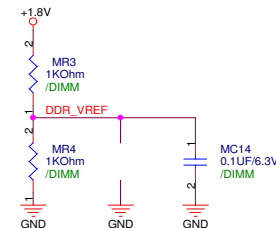
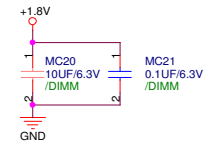
DDR2 Conn. Height=4.0mm

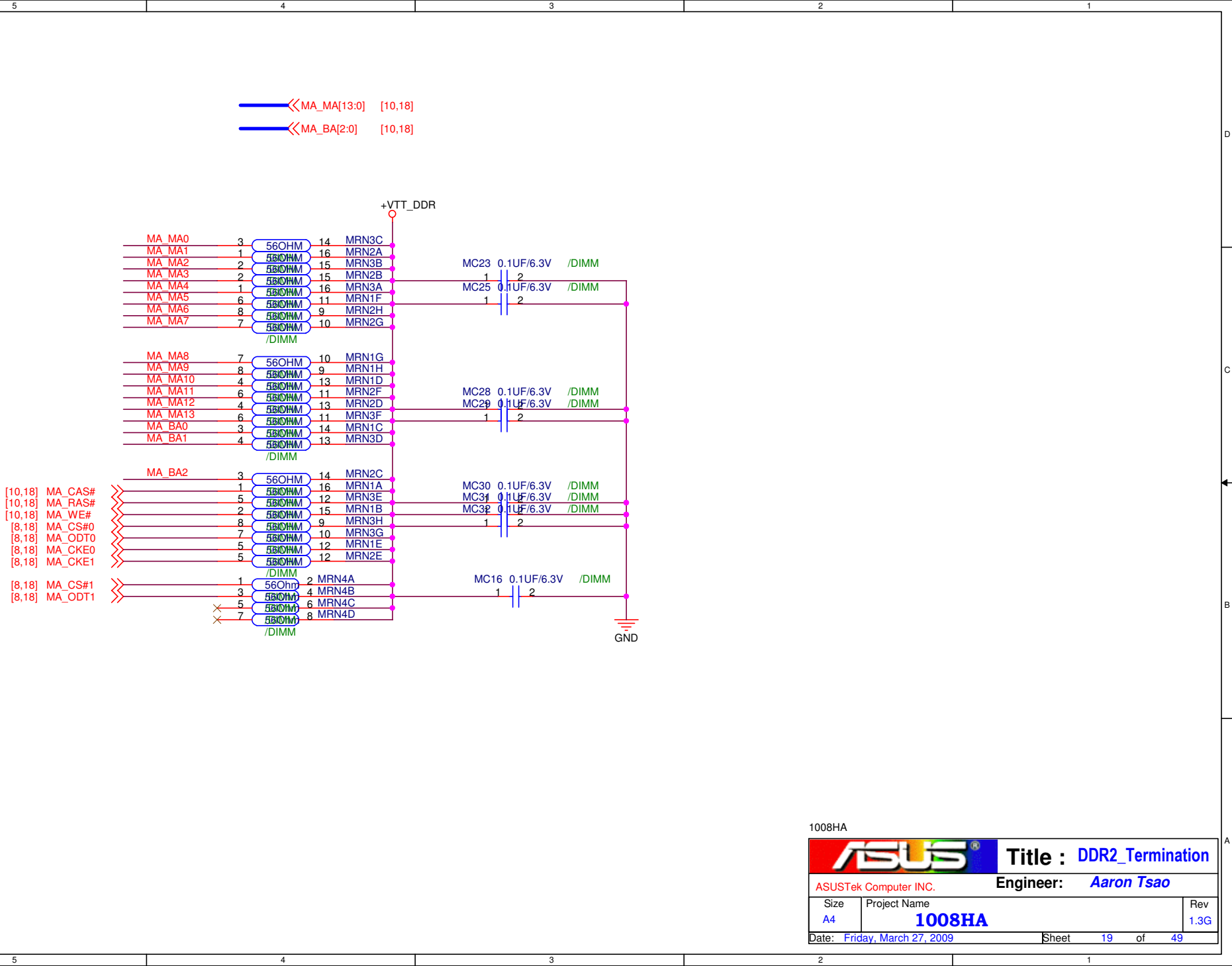
GROUP1
GROUP2
SWAP

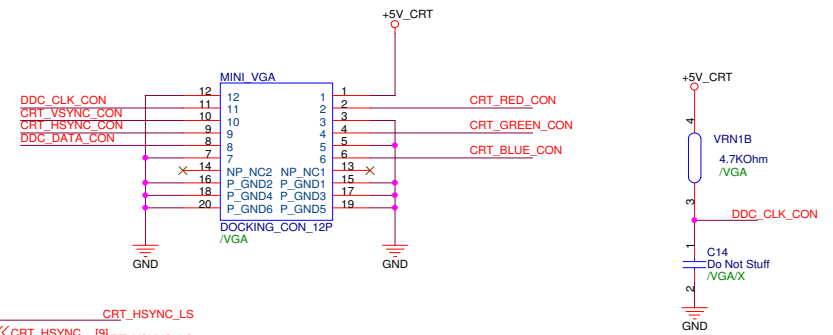
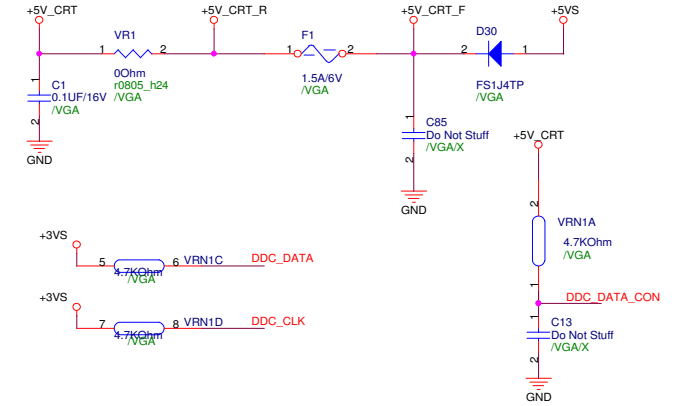
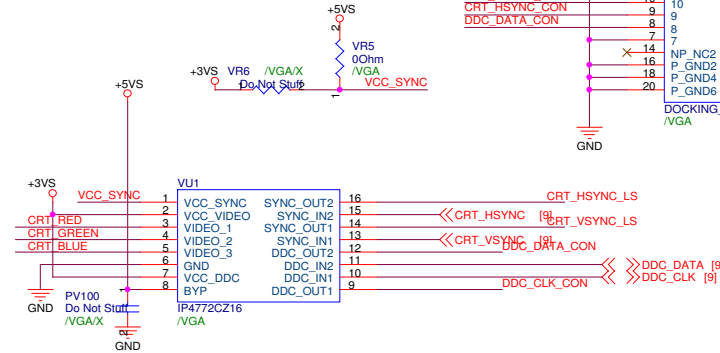
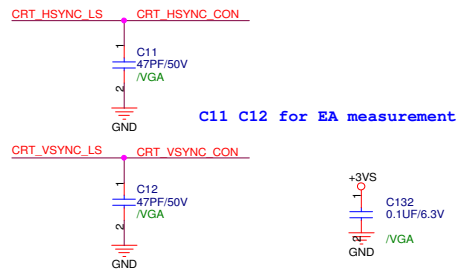
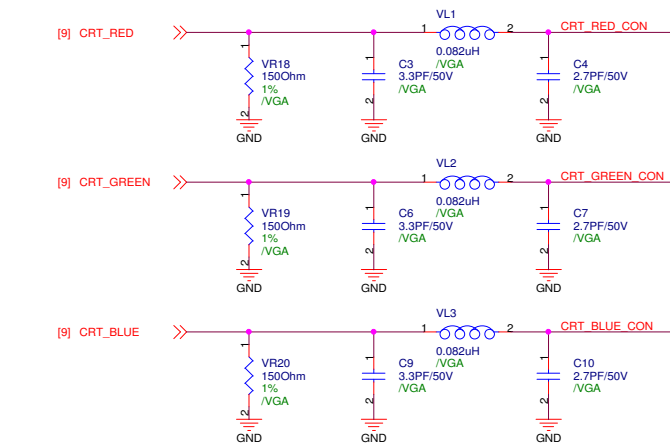
DIMMA			
MA_MA0	102	A0	DQ0
MA_MA1	101	A1	DQ1
MA_MA2	100	A2	DQ2
MA_MA3	99	A3	DQ3
MA_MA4	98	A4	DQ4
MA_MA5	97	A5	DQ5
MA_MA6	94	A6	DQ6
MA_MA7	92	A7	DQ7
MA_MA8	91	A8	DQ8
MA_MA9	91	A9	DQ9
MA_MA10	105	A10/AP	DQ10
MA_MA11	90	A11	DQ11
MA_MA12	89	A12	DQ12
MA_MA13	116	A13	DQ13
	86	A14	DQ14
	84	A15	DQ15
MA_BA2	85	A16_BA2	DQ16
MA_BA0	107	BA0	DQ17
MA_BA1	106	BA1	DQ18
	110	SA0	DQ19
[8,19] MA_CS#0		S1#	DQ20
[8,19] MA_CS#1		S1#	DQ21
	30	CK0	DQ22
[8] MCLK_DDR0		CK1#	DQ23
[8] MCLK_DDR0#		CK1#	DQ24
[8] MCLK_DDR1		CK1#	DQ25
[8] MCLK_DDR1#		CK1#	DQ26
[8,19] MA_CKE0		CKE0	DQ27
[8,19] MA_CKE1		CKE1	DQ28
[10,19] MA_CAS#		CAS#	DQ29
[10,19] MA_RAS#		RAS#	DQ30
[10,19] MA_WE#		WE#	DQ31
	198	SA0	DQ32
	200	SA1	DQ33
[17,23] SMB_CLK		SCL	DQ34
[17,23] SMB_DATA		SDA	DQ35
	114	ODT0	DQ36
[8,19] MA_ODT0		ODT1	DQ37
[8,19] MA_ODT1		ODT1	DQ38
	10	DM0	DQ39
MA_DM0	10	DM1	DQ40
MA_DM1	26	DM2	DQ41
MA_DM2	52	DM3	DQ42
MA_DM3	67	DM4	DQ43
MA_DM4	130	DM5	DQ44
MA_DM5	147	DM6	DQ45
MA_DM6	170	DM7	DQ46
MA_DM7	185	DM7	DQ47
	13	DQS0	DQ48
MA_DQS0	13	DQS1	DQ49
MA_DQS1	31	DQS2	DQ50
MA_DQS2	51	DQS3	DQ51
MA_DQS3	70	DQS4	DQ52
MA_DQS4	131	DQS5	DQ53
MA_DQS5	148	DQS6	DQ54
MA_DQS6	169	DQS7	DQ55
MA_DQS7	188	DQS8	DQ56
MA_DQS8	11	DQS9	DQ57
MA_DQS9	29	DQS10	DQ58
MA_DQS10	49	DQS11	DQ59
MA_DQS11	68	DQS12	DQ60
MA_DQS12	129	DQS13	DQ61
MA_DQS13	146	DQS14	DQ62
MA_DQS14	167	DQS15	DQ63
MA_DQS15	186	DQS16	DQ64

DDR2_DIMM_200P
/DIMM

R1.1G MC3 MC4 change to 0603 1uF







1008HA

3.5G Module & External Antenna



Title :

ASUSTek Computer INC.

Engineer: *Aaron Tsao*

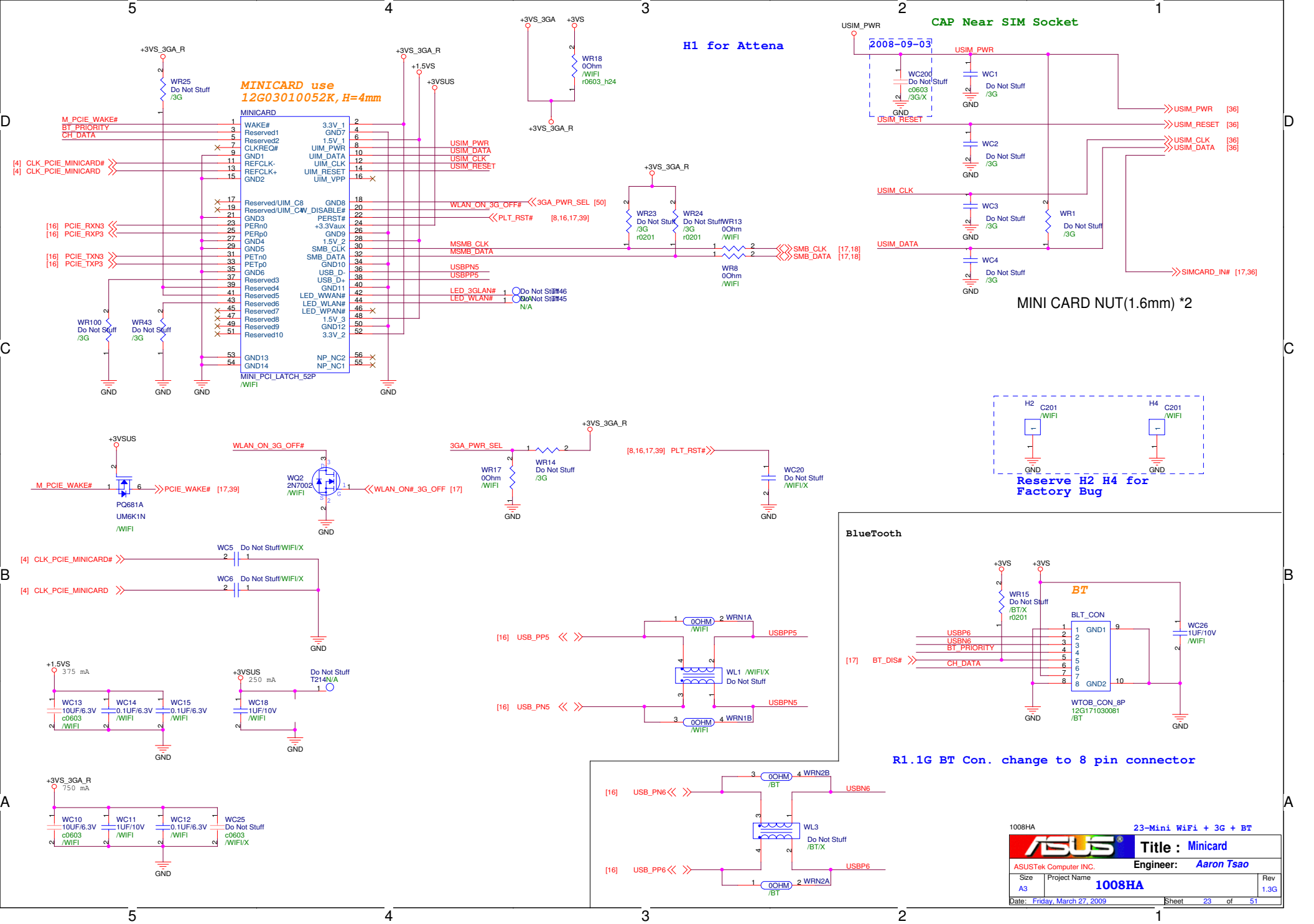
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A3

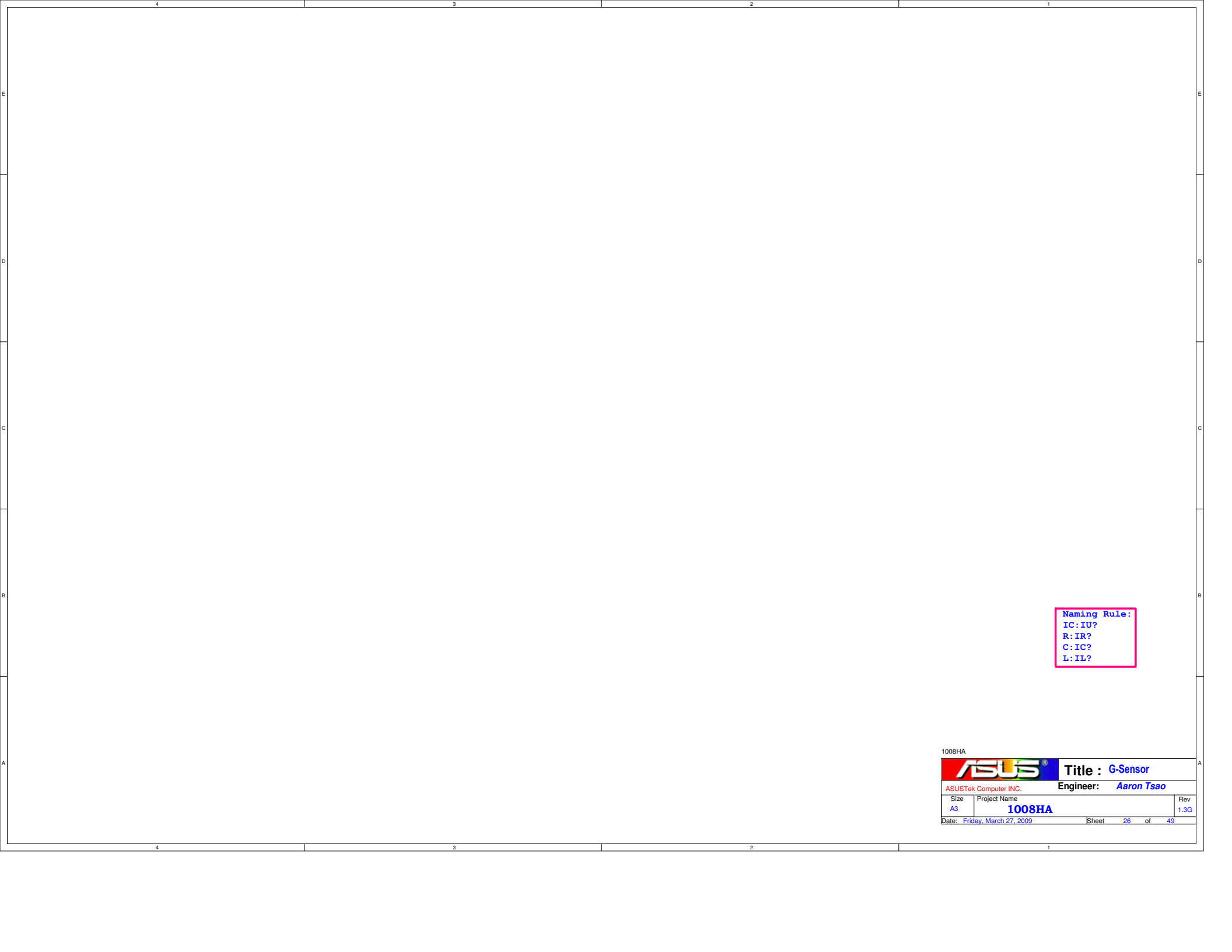
Project Name	100
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Rev
1.3G

Date: Friday, March 27, 2009

Sheet 22 of 49

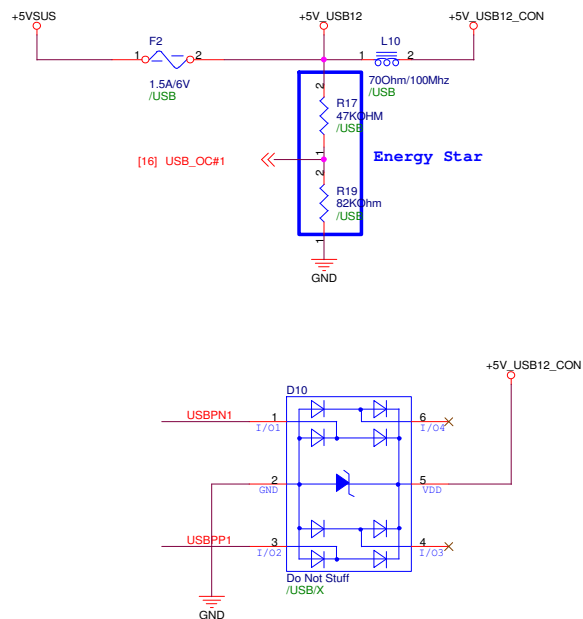
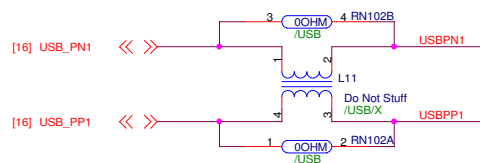




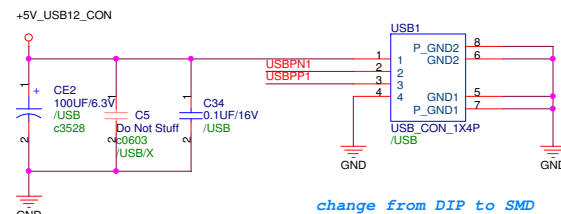
Naming Rule:
IC: IU?
R: IR?
C: IC?
L: IL?

1008HA

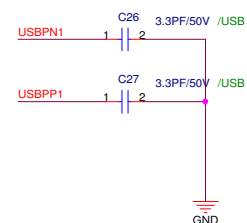
		Title : G-Sensor	
ASUSTek Computer INC.		Engineer: Aaron Tsao	
Size	Project Name	Rev	
A3	1008HA	1.3G	
Date: Friday, March 27, 2009		Sheet 26 of 49	



1.1G change USB con. to 12G131030042



1.1G change CE2 CE3 CE4 to POSCAP, 100uF/6.3V



1008HA

ASUS		Title : USB Port	
ASUSTek Computer INC.		Engineer: Aaron Tsao	
Size	Project Name		Rev
A3	1008HA		1.3G
Date: Friday, March 27, 2009	Sheet 27 of 49		

	5	4	3	2	1
D					
C					
B					
A					
	5	4	3	2	1

1008HA

		Title : Camera Power	
ASUSTek Computer INC.		Engineer: Aaron Tsao	
Size A4	Project Name 1008HA		Rev 1.3G
Date: Friday, March 27, 2009		Sheet 28 of 49	

1.1G add PWR LED and Charge LED
DMIC Cable length should be less 30cm
Change R291 R292 R293 to 510 Ohm

1008HA



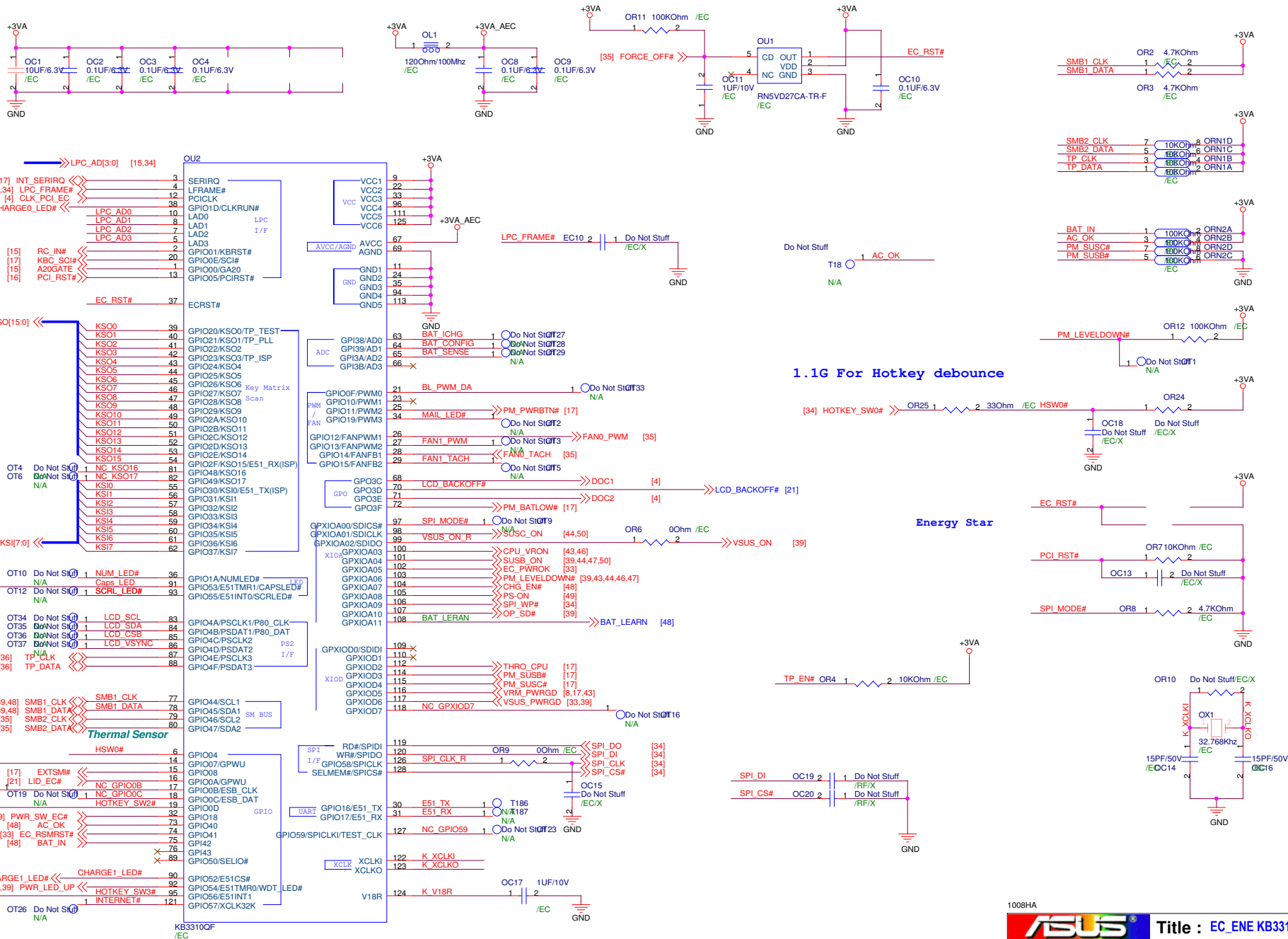
Title : **ALC269-2**

ASUSTek Computer Inc.

Engineer: **Aaron Tsao**

Size	Project Name	Rev
A3	1008HA	1.3G

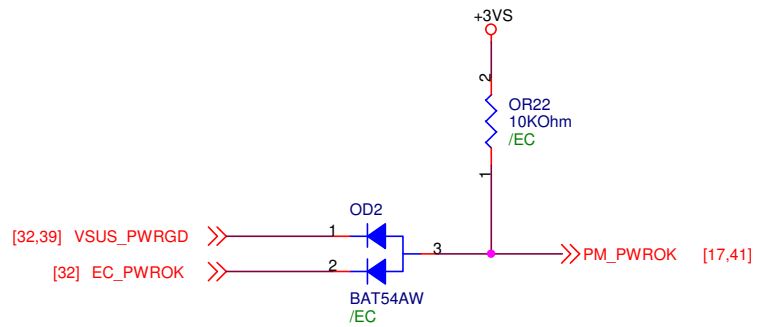
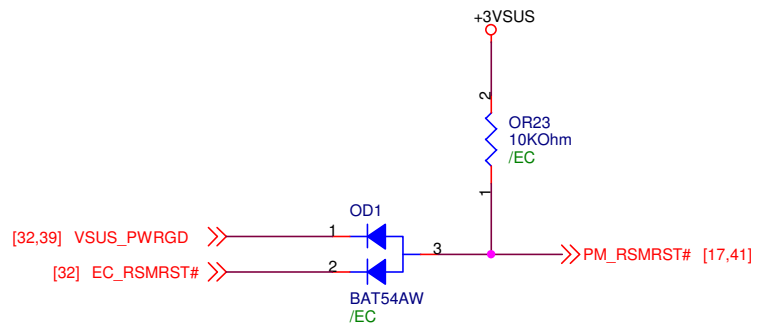
Date: Friday, March 27, 2009 Sheet 31 of 49



OR25 1.1G For Hotkey debounce
HOTKEY_SW0# - HOTKEY_SW3# internal PU

1.1G For Hotkey debounce

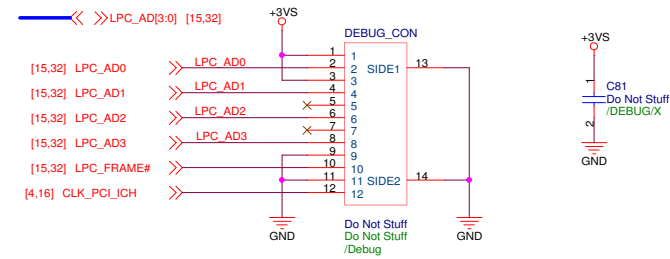
Energy Star



1008HA

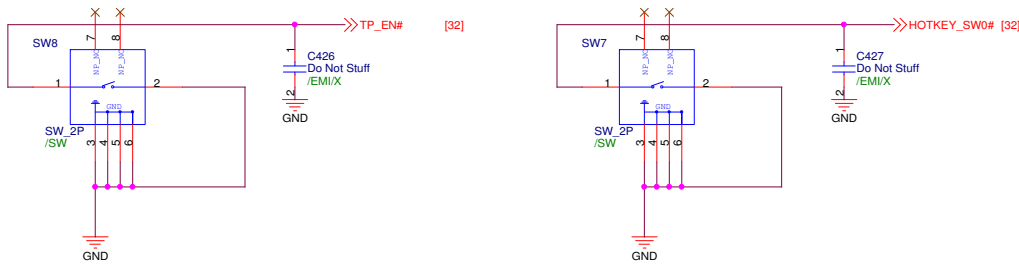
		Title : EC	
ASUSTek Computer INC.		Engineer: Aaron Tsao	
Size A4	Project Name 1008HA		Rev 1.3G
Date: Friday, March 27, 2009		Sheet 33 of 49	

For Debug

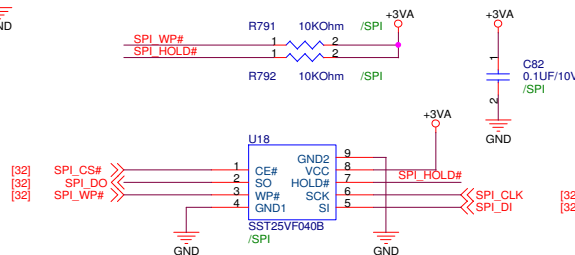
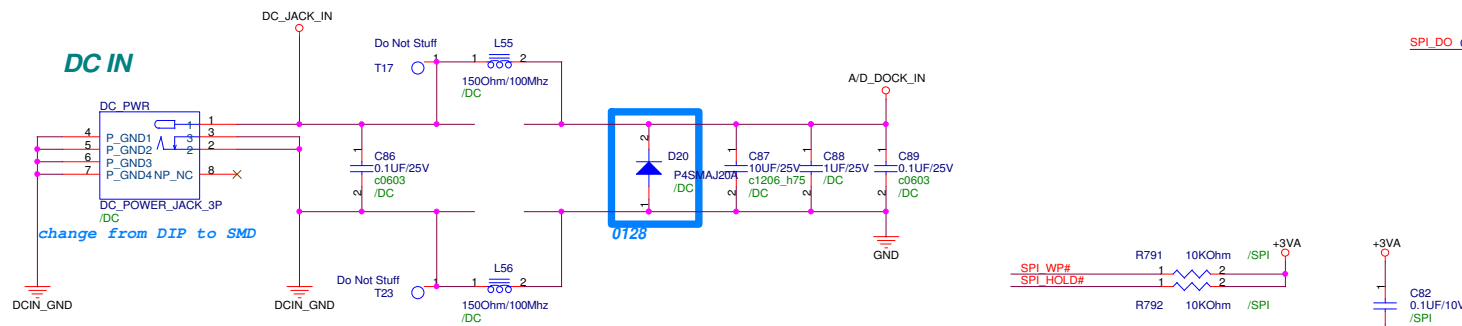


Debug Card cable use Z96 Touch Pad cable, P/N:
14G124110126, 14G124110120, 14G124110121
14G124110124, 14G124110125

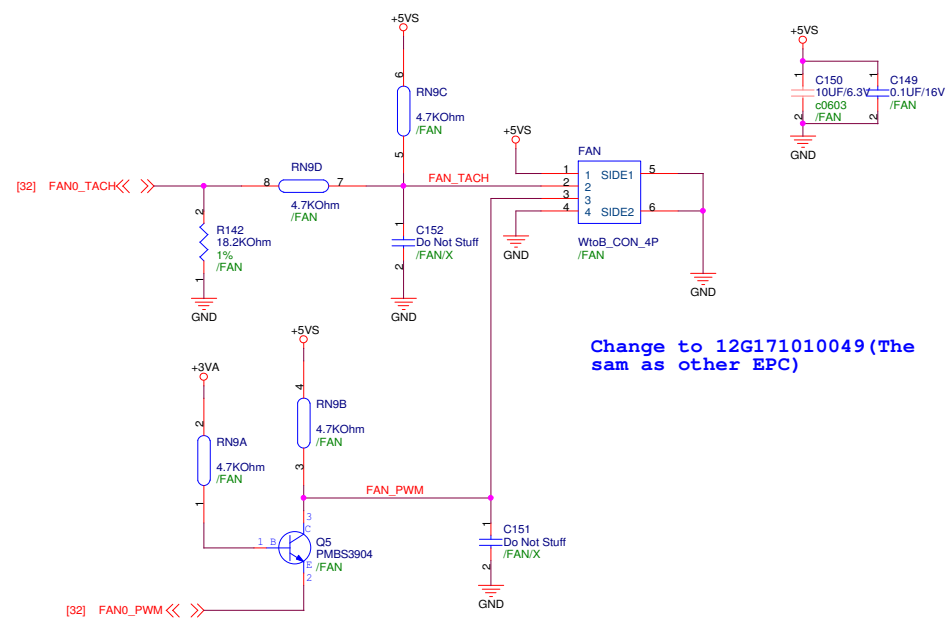
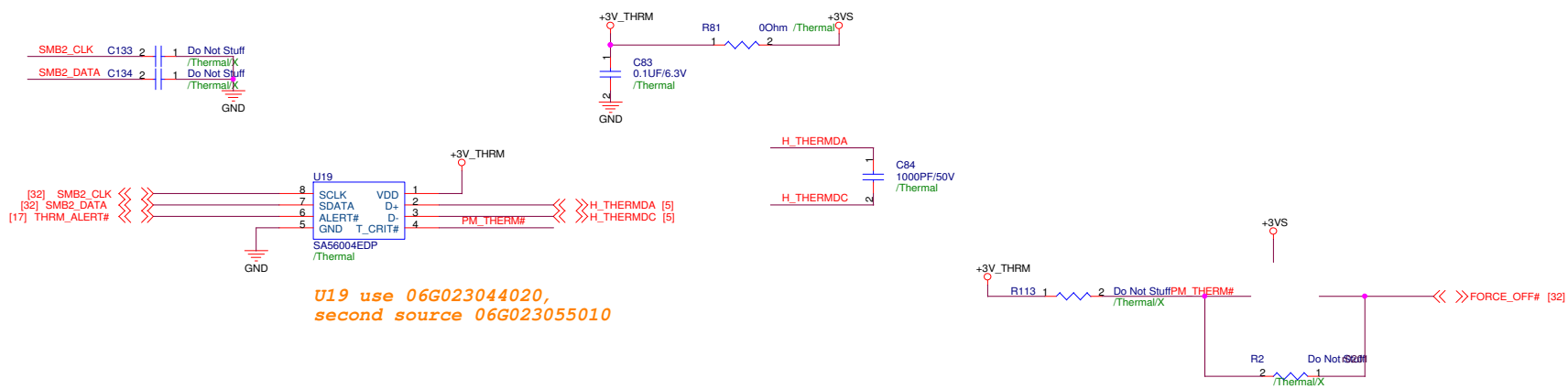
prevent system power on when LCD close



DC IN



1008HA		Title : 34_Switch_SPI_ITP_Debug	
ASUSTek Computer INC.		Engineer: Aaron Tsao	
Size	Project Name		Rev
A3	1008HA		1.3G
Date: Friday, March 27, 2009		Sheet	34 of 49



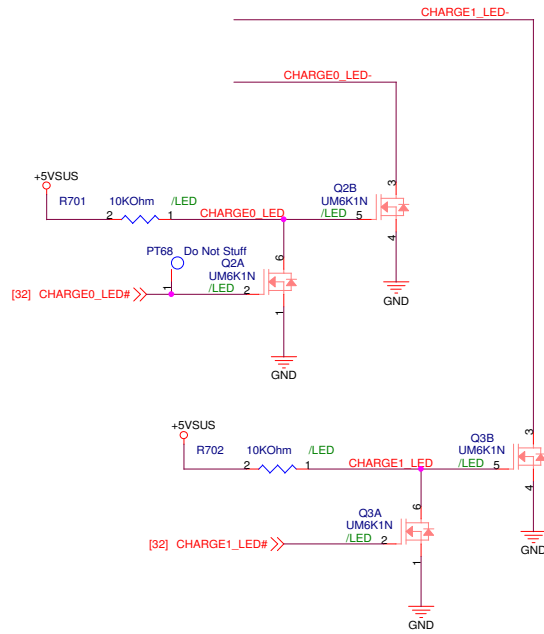


1.1G change to EVERLIGHT

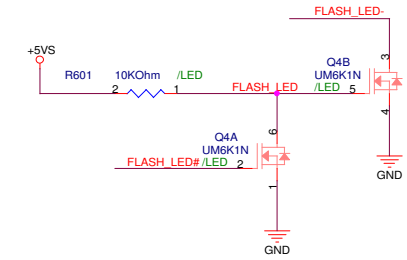
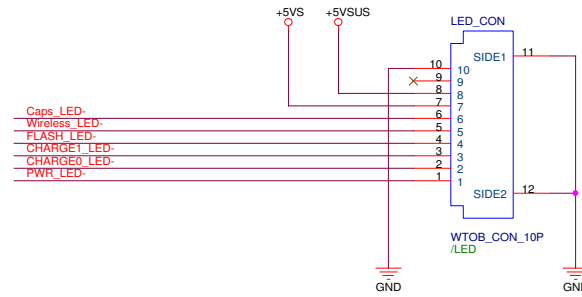
for CHARGE LED
Height : 0.55mm

for POWER LED
White

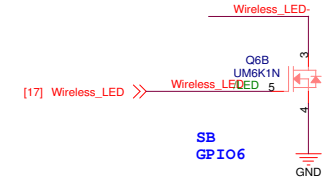
for FLASH LED
White



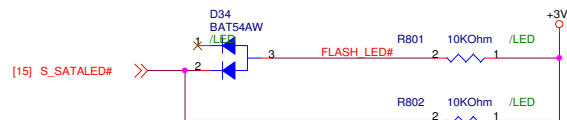
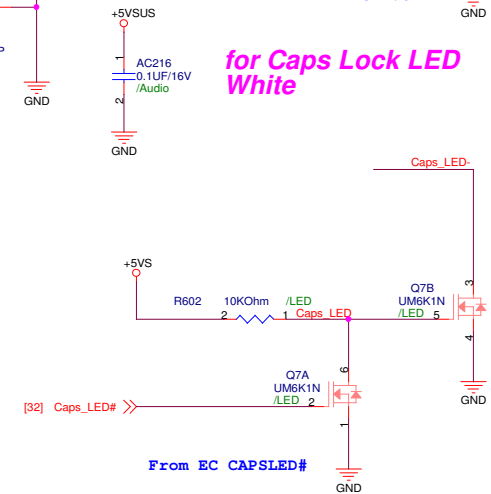
Change LED resistor to 510 Ohm, about 4mA



for WIFI/BlueTooth LED
White

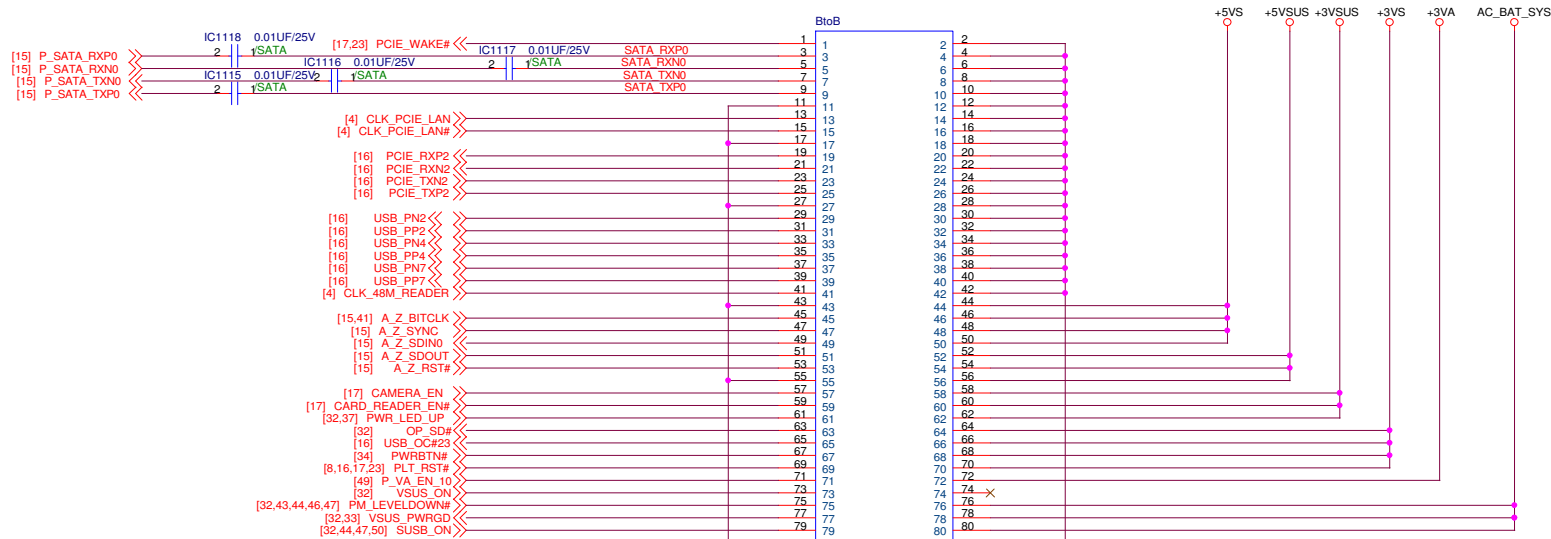


for Caps Lock LED
White



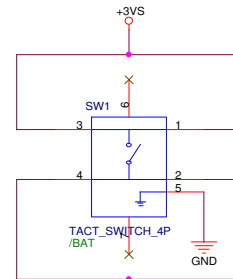
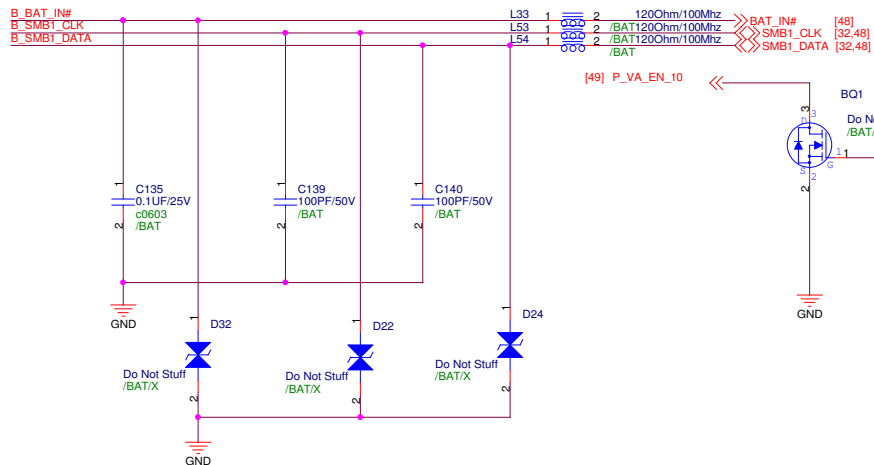
1008HA		ASUS®		Title : LED	
ASUSTek Computer INC.		Engineer: Kenneth Hung			
Size	A3	Project Name	1008HA	Rev	1.3G
Date:	Friday, March 27, 2009	Sheet	37	of	50

PWR Board/SATA/LAN/USB Connector

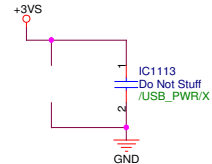
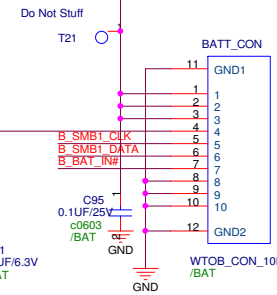


Do Not Stuff
T24

L57 only for S101 2S1P and 2S2P



BAT IN



1008HA

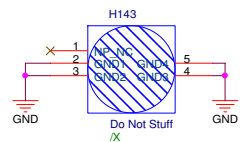
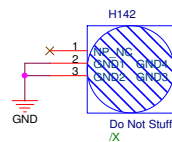
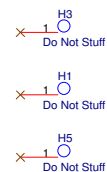
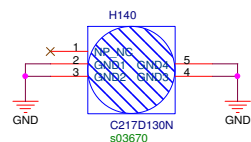
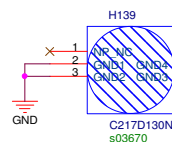
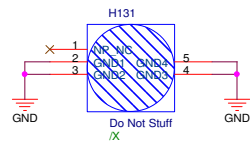
ASUS 39 PWR Board/SATA/LAN/USB Connector

Title : **Aaron Tsao**

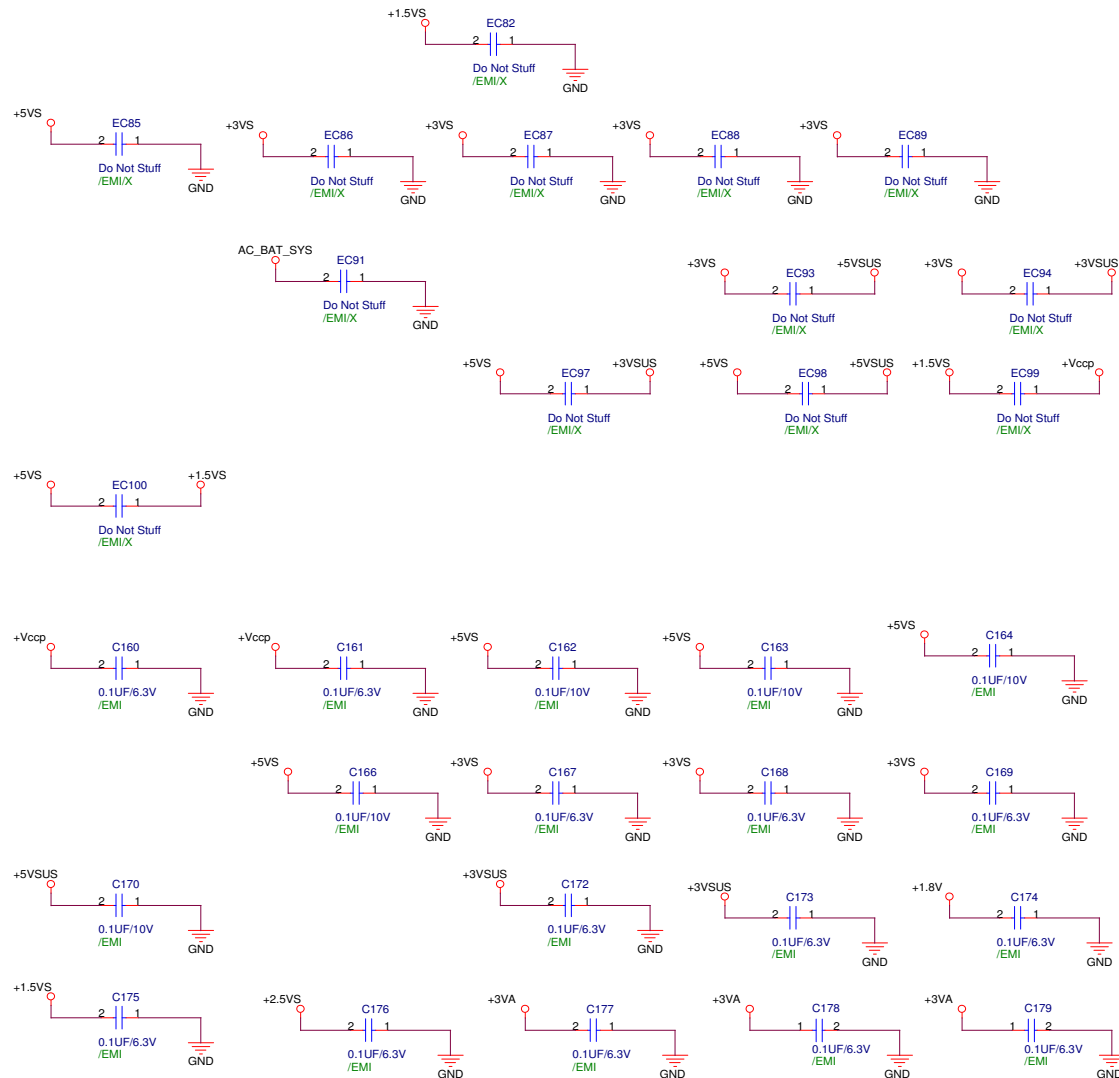
ASUSTek Computer INC. Engineer: **Aaron Tsao**

Size Project Name **1008HA** Rev 1.3G

Date: Friday, March 27, 2009 Sheet 39 of 49

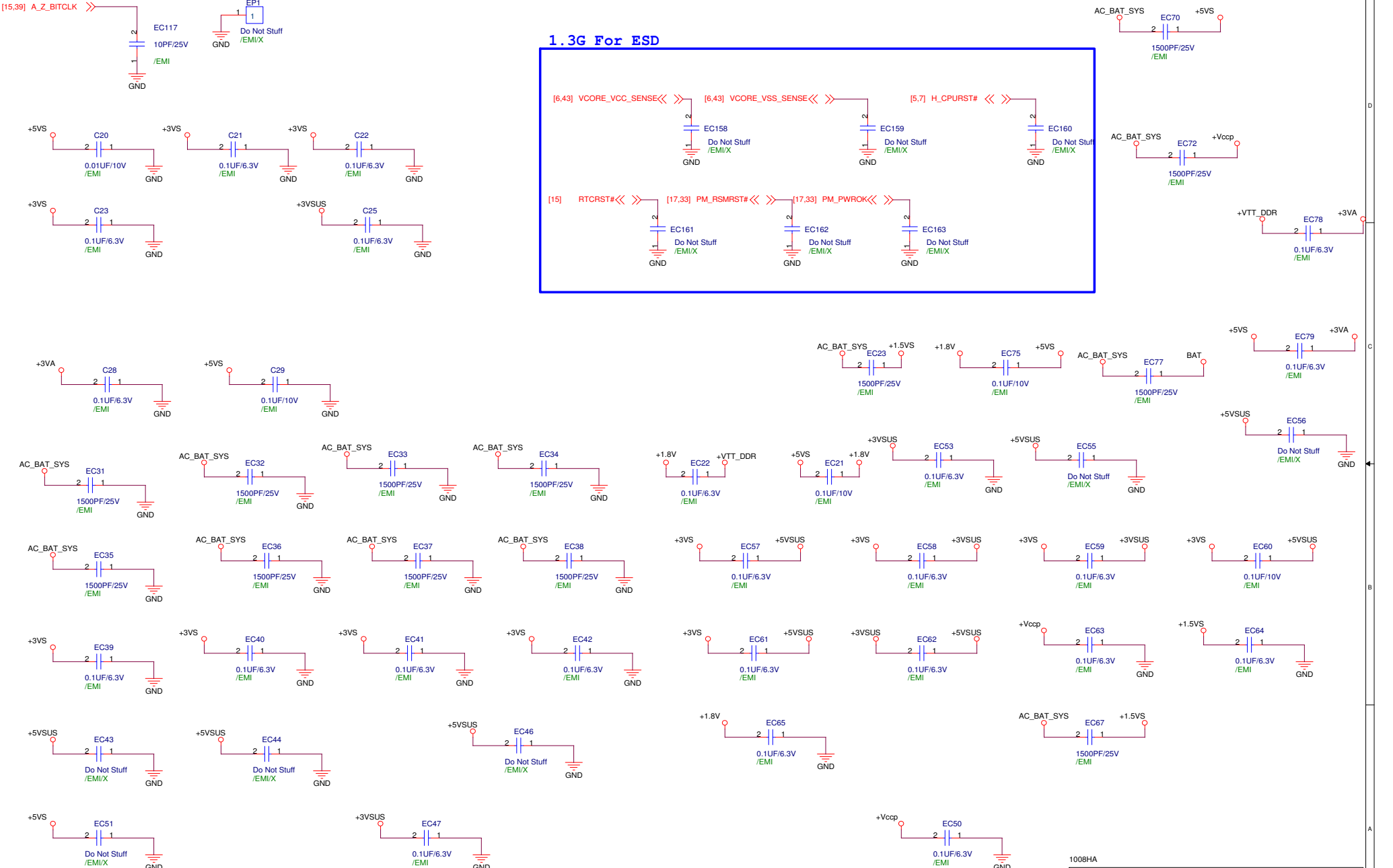


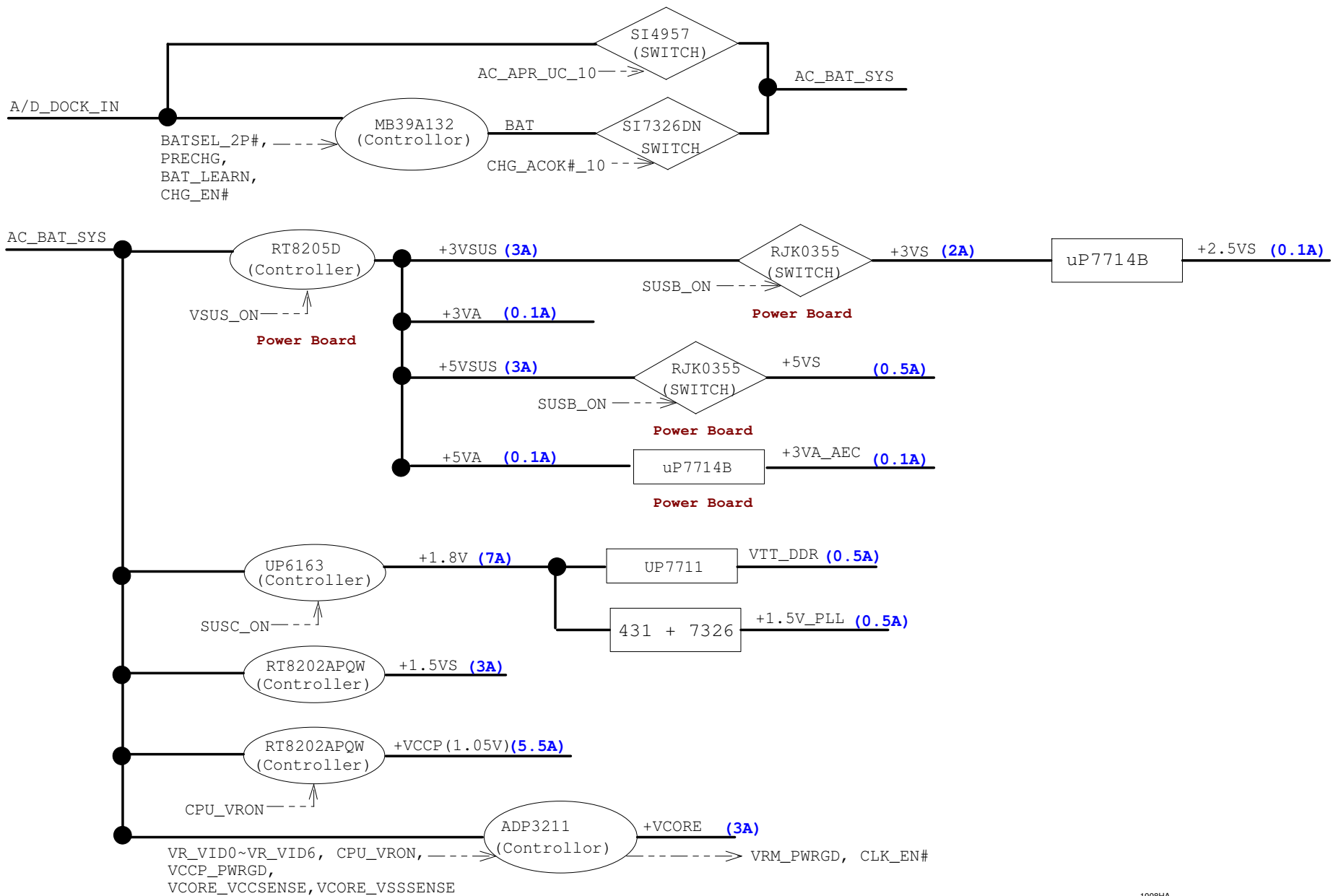
R1.1G Change



1008HA

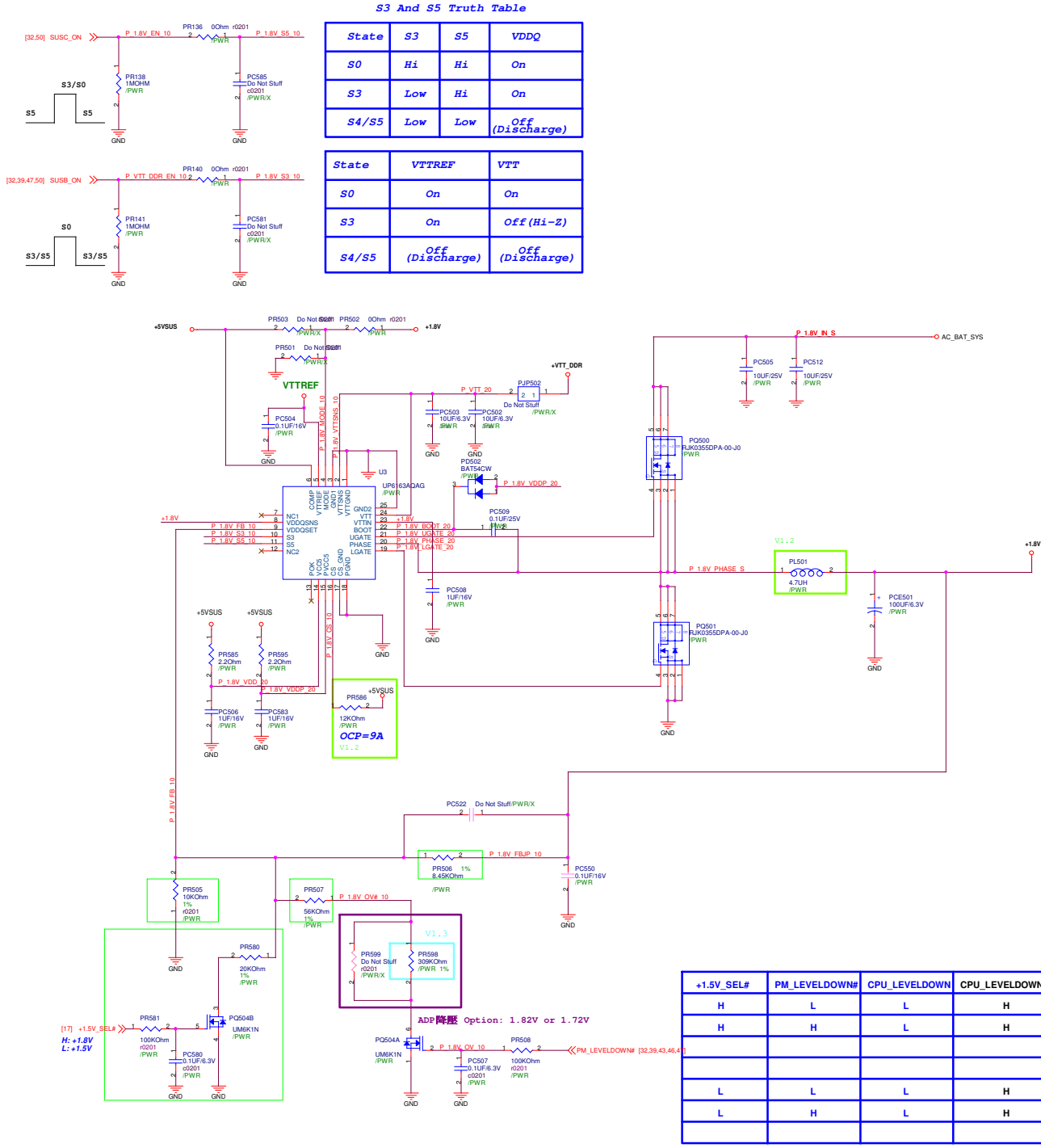
ASUS		Title : Srew Hole	
ASUSTek Computer INC.		Engineer: Aaron Tsao	
Size	Project Name		Rev
A3	1008HA		1.3G
Date: Friday, March 27, 2009		Sheet	40 of 49





1008HA

ASUS		Title : Power Flow	
ASUSTek Computer INC.		Engineer: Aaron Tsao	
Size A3	Project Name 1008HA		Rev 1.3G
Date: Friday, March 27, 2009	Sheet	42 of 49	



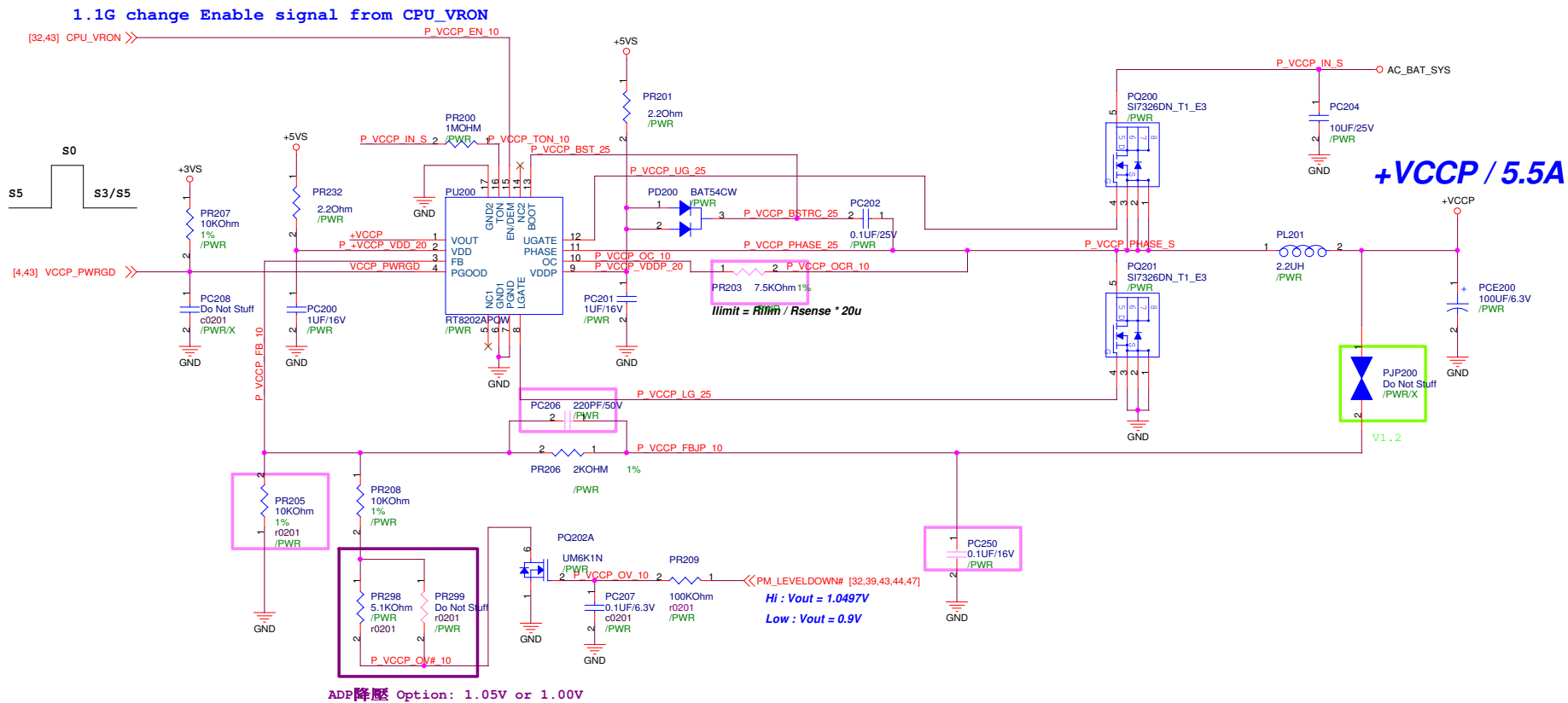
S3 And S5 Truth Table			
State	S3	S5	VDDQ
S0	Hi	Hi	On
S3	Low	Hi	On
S4/S5	Low	Low	(Off (Discharge))

State	VTTREF	VTT
S0	On	On
S3	On	Off (Hi-Z)
S4/S5	(Off (Discharge))	(Off (Discharge))

Controller	
1. Voltage & Current: +1.8V@3A	5. UVP: Vout*70%
2. Frequency: PR127=1Mohm Fosc=250KHz	6. OVP: Vout*115%
3. OCP: PR181=22Kohm ->10A	7. Enable Voltage: V rising = 2 V V falling = 0.8V
4. POR: POR Hysteresis =20mV V on =3.9-4.5V	8. Soft start time: Tss=512us
	9. Phase selection: /X
	10. Inrush Current: C total = 110 uF I inrush= 0.39 A

Power stage	
1. I/P Current: $I_{in} = V_o * I_o / (0.8 * V_{in}) = 0.94A$	5. MOSFET Spec: H-side MOSFET: AP4800AGM Rds(ON)= 21 mohm (Vgs=4.5 V) I cont = 9.6 A (T =25 °C) I peak = 40 A
2. Ripple Current: $I_{rip} = 1.78A$ $I_{spec} = 2A \times 1 \text{ pcs}$	L-side MOSFET: RAP4800AGM Rds(ON)= 21 mohm (Vgs=4.5 V) I cont = 9.6 A (T =25 °C) I peak = 40 A
3. Dynamic: $I_{peak} = 5 A$ ESR =18 mohm $\Delta V = 90mV$	
4. Inductor Spec: $I_{sat} = 10 A$ $I_{dc} = 5.5 A$ DCR=37 mohm	

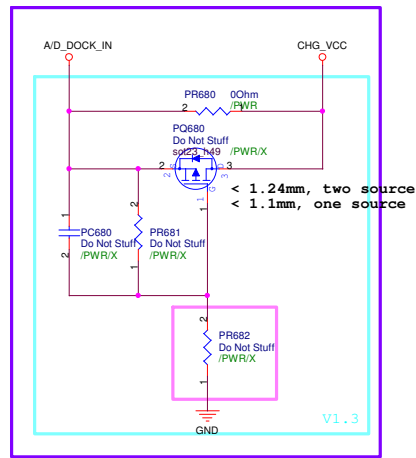
+1.5V_SEL#	PM_LEVELDOWN#	CPU_LEVELDOWN	CPU_LEVELDOWN#	Voltage	Status
H	L	L	H	1.72V	Power Saving
H	H	L	H	1.82V	Normal
L	L	L	H	1.4V	Power Saving
L	H	L	H	1.5V	Normal



PM_LEVELDOWN#	CPU_LEVELDOWN	CPU_LEVELDOWN#	Voltage	Status
L	L	H	0.9V	Power Saving
H	L	H	1.05V	Normal

1008HA

ASUS		Title : VCCP	
ASUSTek Computer INC.		Engineer: Aaron Tsao	
Size A3	Project Name 1008HA	Rev 1.3G	
Date: Friday, March 27, 2009		Sheet 46 of 51	



VREF = 5.0V
 $f_{osc}(KHz) = 17000 / RT (Kohm)$
 Soft start: $ts(s) = 0.13 * CS (uF)$
 $VTH \text{ of } -IN1: 5V / 62 * (100+62) = 13.06V$
 $VTH \text{ of } ACIN: 1.25V / 25 * (185+25) = 10.5V$
 Change PR607 and PR608 value

Battery Cell Selection :

BAT_LEARN = 1, Battery discharges
 $BAT_ID = 1, 2 \text{ Cells}; Vadj2 = 0.998V$
 $\Rightarrow I_{charge} = 1.477A$
 $BAT_ID = 0, 4/6 \text{ Cells}; Vadj2 = 1.648V$
 $\Rightarrow I_{charge} = 2.517A$

Pre-Charging Mode :

Precharging current = 150mA
 $Vadj2 = 168.75mV$

Adaptor Max. Current :

$Ilimit = 1.9A; 36.1W (19V/40W)$

ACIN Threshold = 1.25V

Adaptor > 16V, System Powered by Adaptor
 Adaptor < 16V, System Powered by Battery

Battery Charging Voltage :

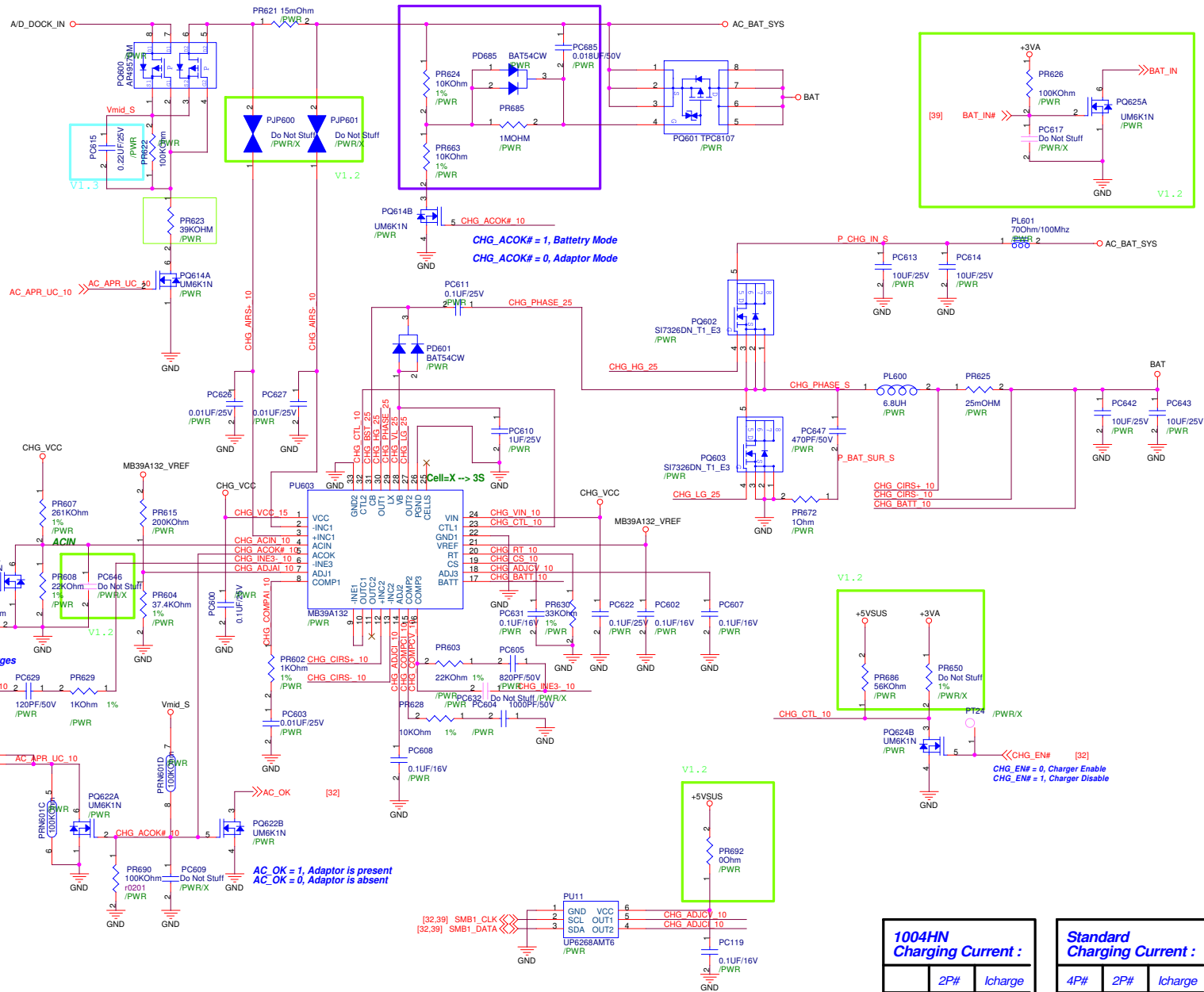
$Vadj3 > 4.1V \Rightarrow Vbat = 4.2V / cell$
 $2.2V > Vadj3 > 1.1V \Rightarrow Vbat = 2 * Vadj3 / cell$

Battery Charging Current :

$4.4V > Vadj2 \geq 0V \Rightarrow$
 $I_{chg} = (Vadj2 - 0.075) / (25 * R_s)$

Input Adaptor Max. Current Limit :

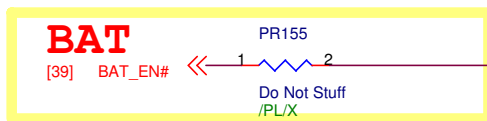
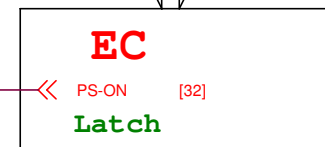
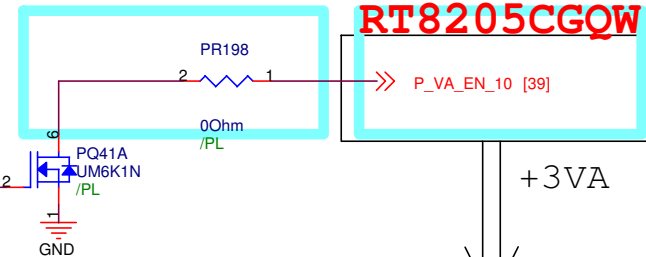
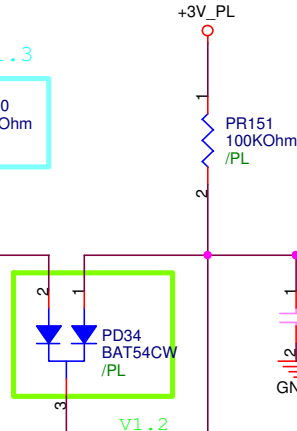
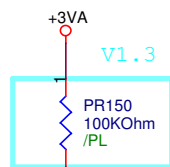
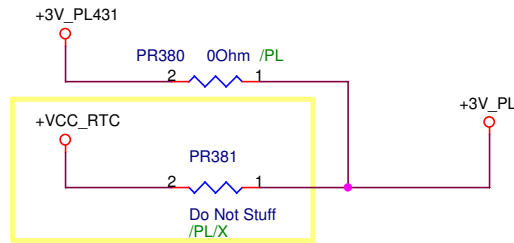
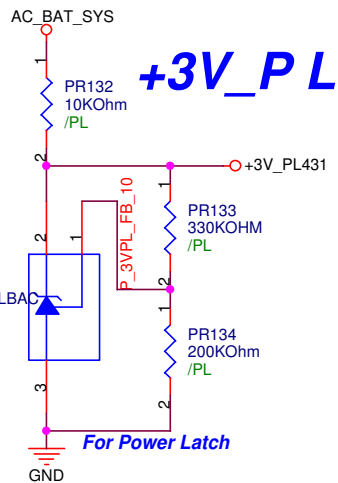
$Ilimit_current = (Vadj1 - 0.075) / (25 * R_s)$



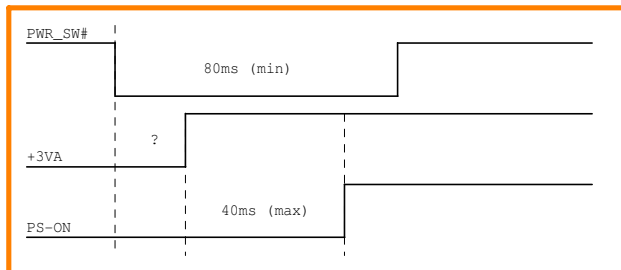
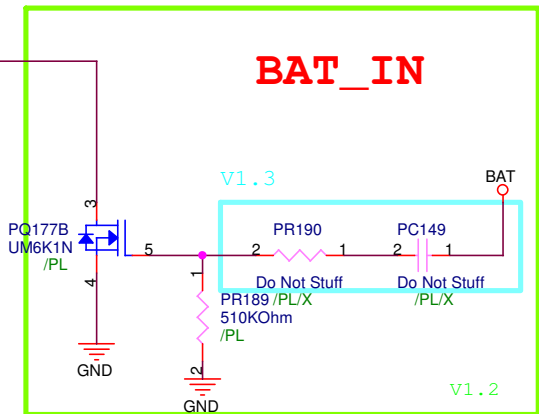
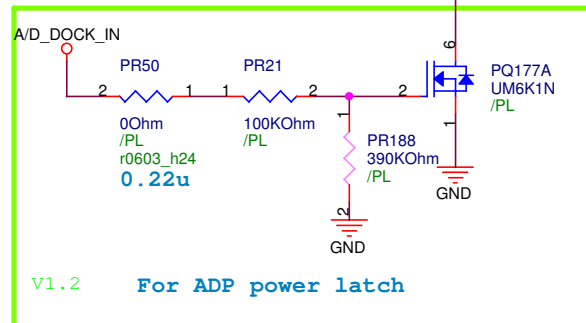
1004HN Charging Current :		
2P#	Icharge	
1	1.49A	
0	2.5A	

Standard Charging Current :		
4P#	2P#	Icharge
1	0	0.557A
0	1	1.598A
0	0	2.768A

1008HA



ADP_IN



Power Latch table :

BAT	A/D_DOCK_IN		Mode
1	X	BAT /X	Latch
0	1	ADP, BAT	Out
0	0	ADP /X	Latch

Rev0.7	Initial release	2008/10/22
Rev0.71	Remove hotkey switch(R2, C427, SW6, OR25)	2008/10/22
	Remove White LED (LED4, R86, Q17, SB_GPIO7)	
	Add 40 pin FPC connector	
	Change netname from BT_LED to Wireless_LED	
	Change NMOS from 2N7002 to UM6K1N(Q25, 23, Q18, Q15, Q58, Q19, Q16, Q19)	
	Change 3G power name to +3VS_3GA	
	Add dual-core support (not ready)	
Rev0.72	Change the part for LAN connector	2008/10/23
	Change the SPEAKER connector (same as FAN)	
Rev0.73	Remove CC36-40, CC45, CC24-25, CC16-17 for layout space	2008/10/27
	Remove HC32, 33 for Layout space	
	Remove HC14-16, HC125 (stuff HC126) for Layout space	
	Remove C422, 212, 232 (stuff C223) for Layout space	
	Remove C436, 292, 305 for Layout space	
	Change U47 to /X and sutff R265	
	Remove MC5, 6, 7, 9, 15, 17, 22, 24, 26, 27, 33 for Layout space	
	Remove WIFI & 3G RSV component	