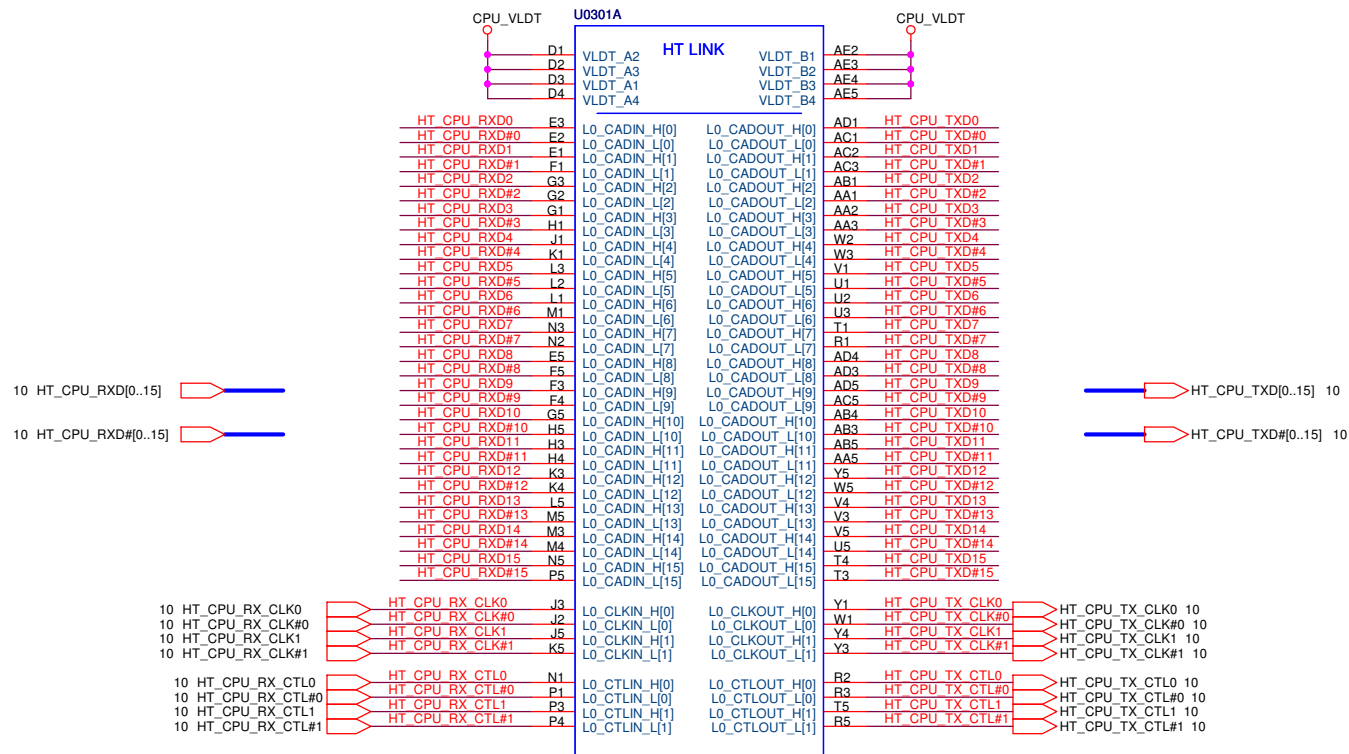


1.5A

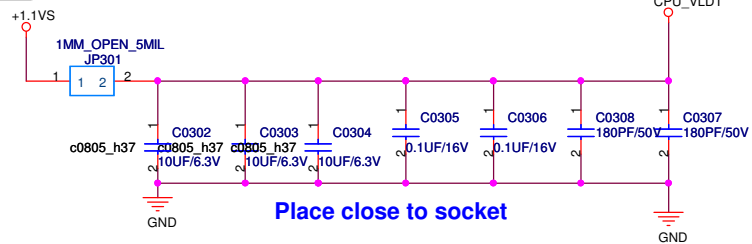


SOCKET638

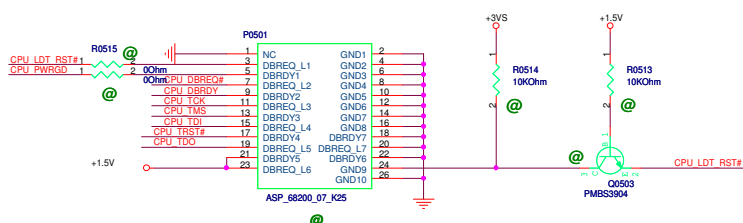
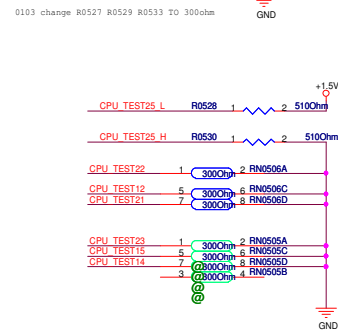
Change P/N to 12G011306380

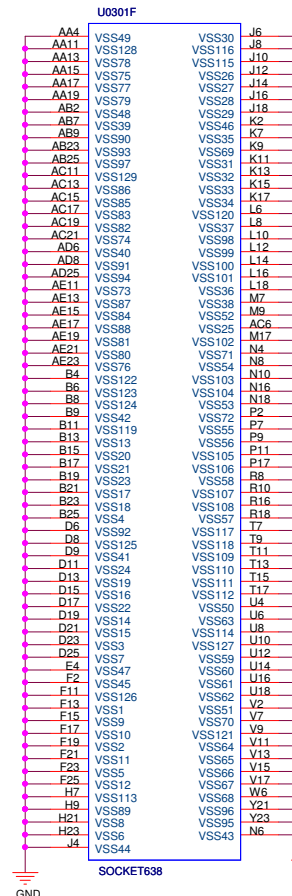
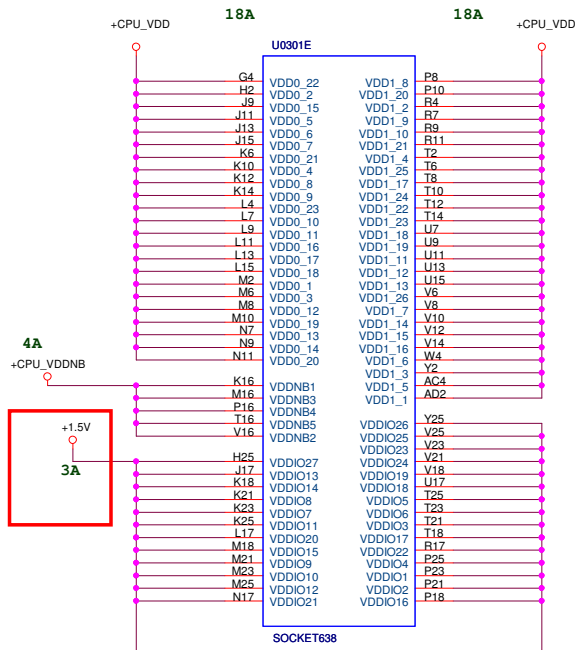
071113

Do not cross plane.

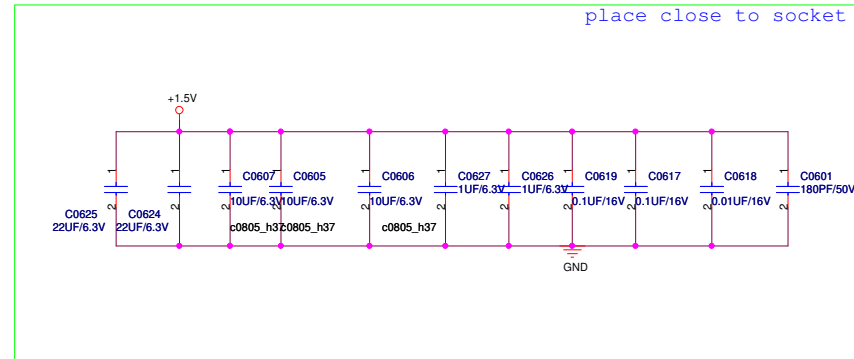
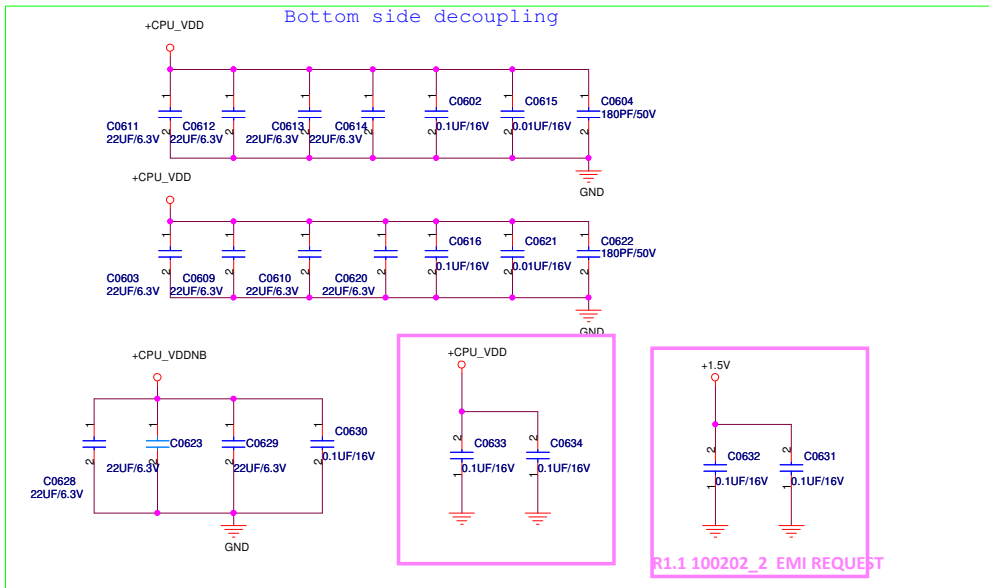


* If VLDT is connected only on one side,
one 4.7uF cap should be added to
the island side



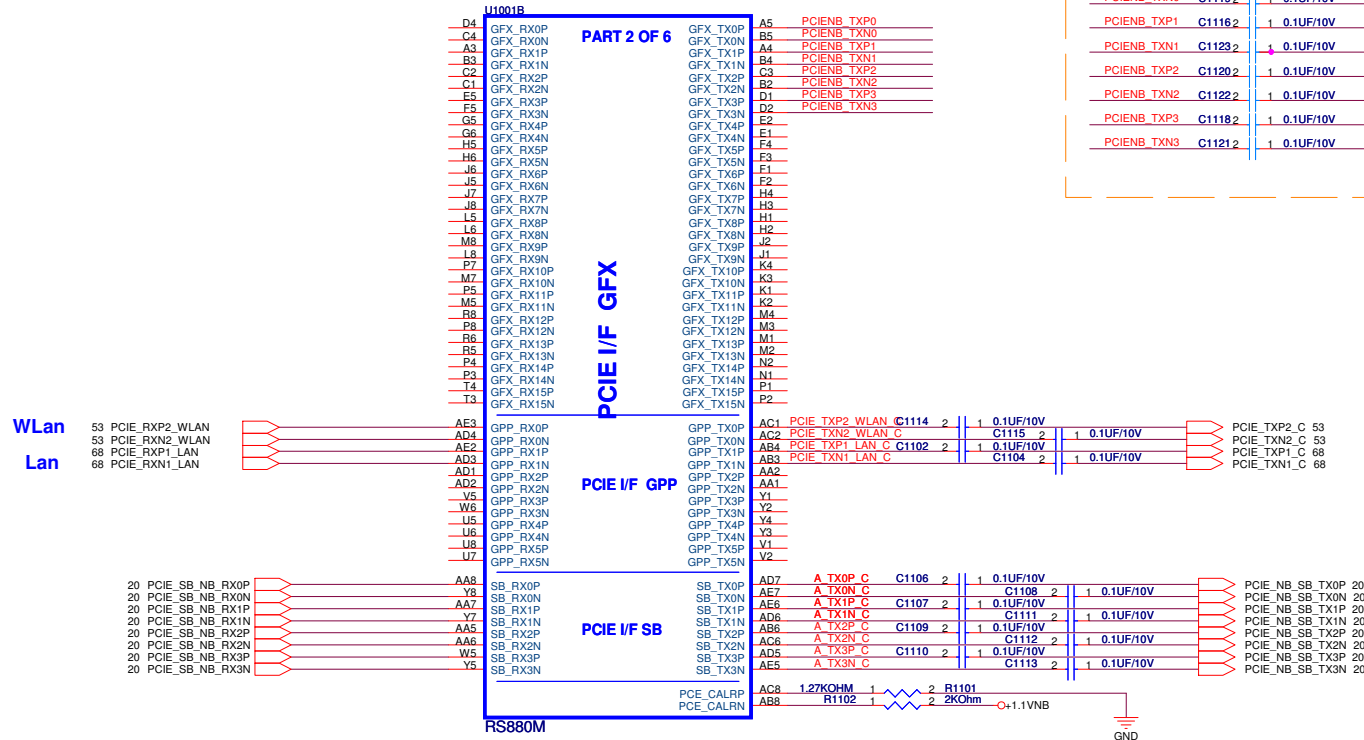


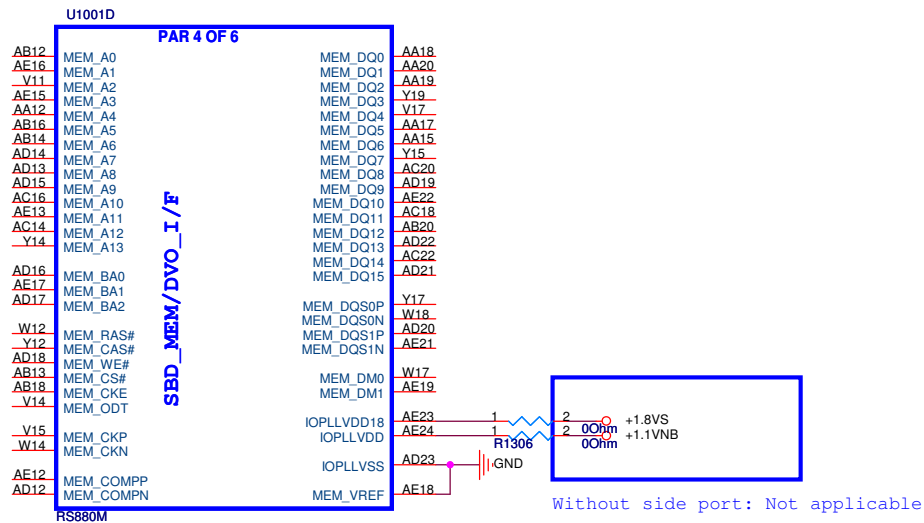
Decoupling between Processor and DIMMs, Place close to Porcessor as possible



PCI-E:
0-3 HDMI@ RS780M
4~7 NC
8~15 VGA8x

HDMI





DFT_GPIO1: LOAD_EEPROM_STRAPS

Selects Loading of STRAPS from EPROM

1 : Bypass the loading of EEPROM straps and use Hardware Default Values
0 : I2C Master can load strap values from EEPROM if connected, or use default values if not connected
RS780:SUS_STAT

STRAP_DEBUG_BUS_PCIE_ENABLE

Enables the Test Debug Bus using PCIE bus:
1 : Disable (Can still be enabled using nbcfg register access)
0 : Enable

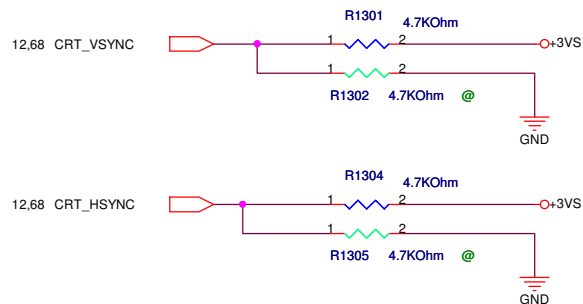
RS780: configurable thru register setting only

RS740/RS780: Enables Side port memory

RS780:HSYNC#

Selects if Memory SIDE PORT is available or not
1 = Memory Side port Not available
0 = Memory Side port available
Register Readback of strap: NB_CLKCFG:CLK_TOP_SPARE_D[1]

080118
Disable Side Port Memory
R1.1



ASUS		Title : RS880M-SPMEM/STRAPS	
ASUSTeK COMPUTER INC. NB1		Engineer: Vincent_Chiang	
Size B	Project Name K52N	Rev 1.0	
Date: Monday, February 08, 2010		Sheet 13 of 93	

R1.1 100127_2 Modify +1.1V_NB to +1.1VNB

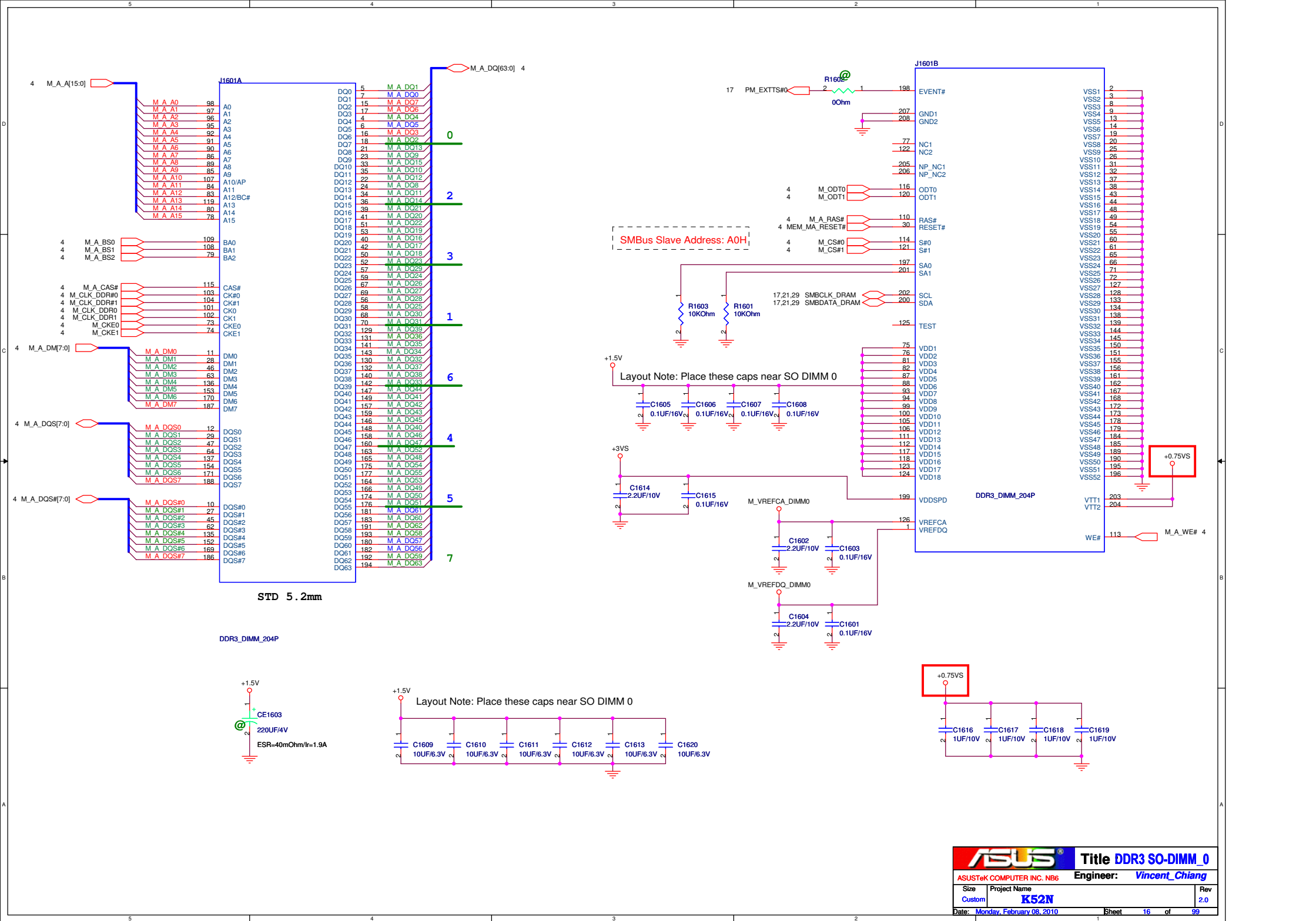
2 x 4.7uF
4 x 0.1uF

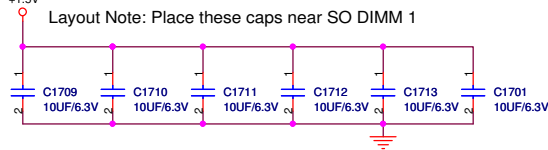
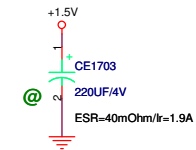
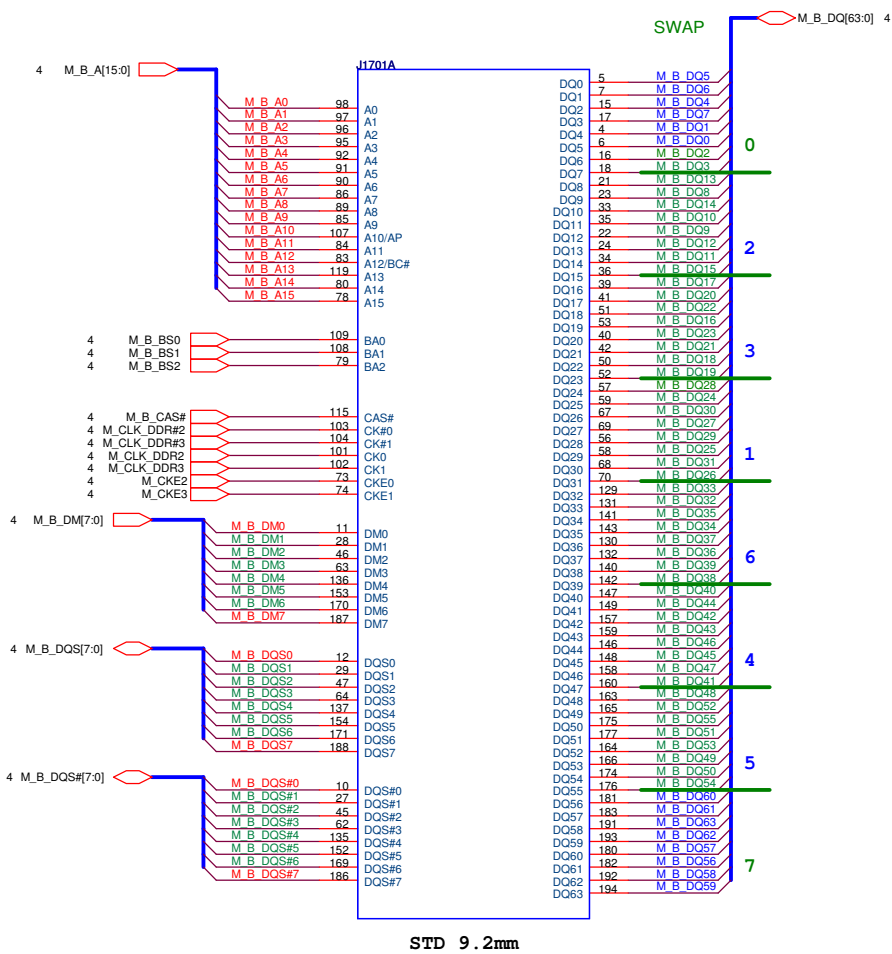
AMD recommended:
side port not used, connect to GND

AMD recommended:
side port not used, connect to GND

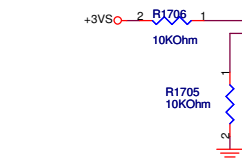
RS880M POWER TABLE

PIN NAME	RS880M	PIN NAME	RS880M
VDDHT	+1.1V	IOPLLVD	+1.1V
VDDHTRX	+1.1V	AVDD	+3.3V
VDDHTTX	+1.2V	AVDDDI	+1.8V
VDDA18PCIE	+1.8V	AVDDQ	+1.8V
VDDG18	+1.8V	PLLVD	+1.1V
VDD18_MEM	+1.8V	PLLVD18	+1.8V
VDDPCIE	+1.1V	VDDA18PCIEPLL	+1.8V
VDDC	+1.1V	VDDA18HTPLL	+1.8V
VDD_MEM	+1.8V/1.5V	VDDLTP18	+1.8V
VDDG33	+3.3V	VDDL18	+1.8V
IOPLLVD18	+1.8V	VDDL13	NC

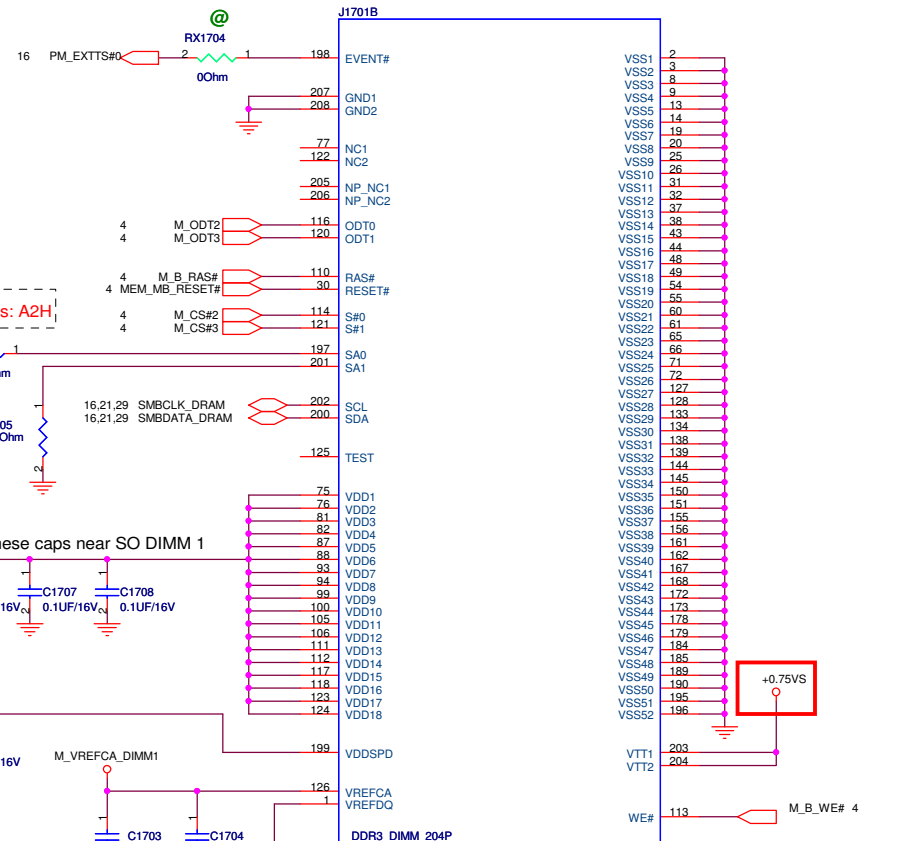
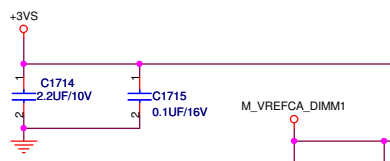




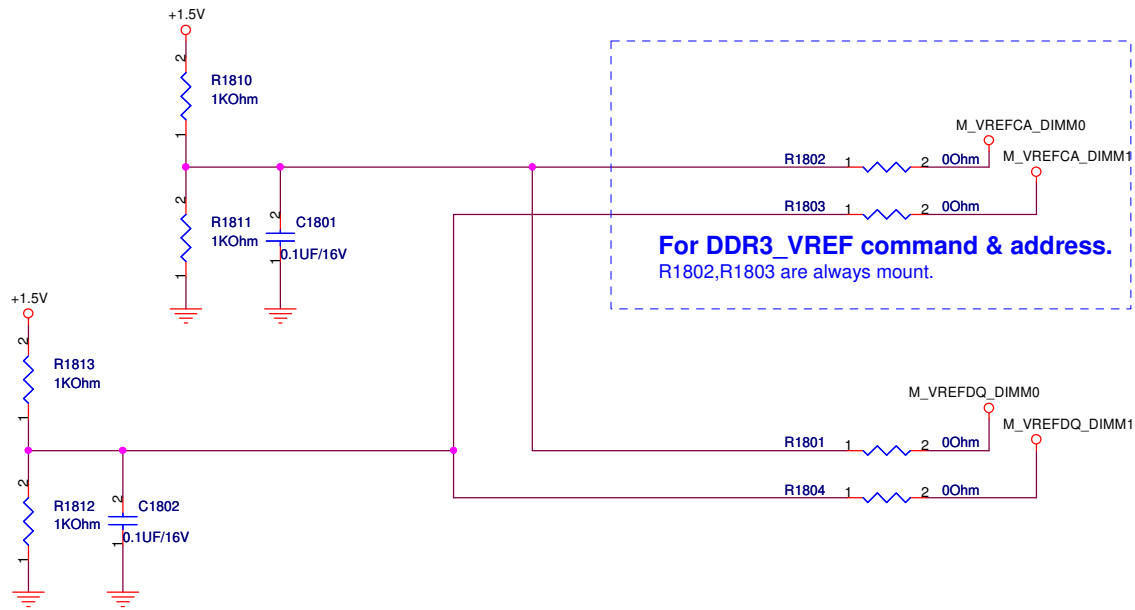
SMBus Slave Address: A2H

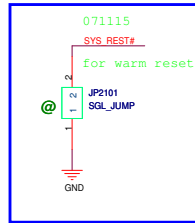


Layout Note: Place these caps near SO DIMM 1



DDR3 Vref





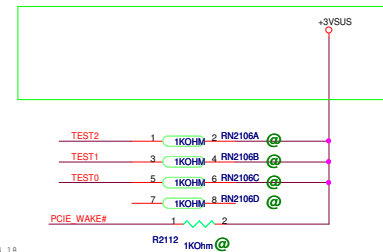
S0 power

SUS_STAT# R2105 2 1 4.7KOhm

SMBCLK_DRAM 1 1KOhm 2 RN2105A

SMBDATA_DRAM 3 1KOhm 4 RN2105B

+3V5



		Title : SB700_GPI0/USB/H0/ACP1	
ASUSTeK Computer, INC		Engineer: Vincent_Chiang	
Size C	Project Name K52N	Rev 1.0	
Date: Monday, February 08, 2010		Sheet 21 of 93	

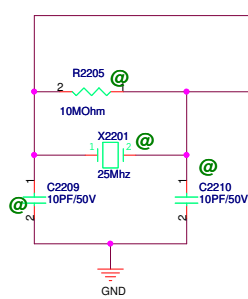
for SATA HDD

for SATA ODD

51 SATA_TXP0
51 SATA_TXN0
51 SATA_RXN0
51 SATA_RXP0
51 SATA_TXP1
51 SATA_TXN1
51 SATA_RXN1
51 SATA_RXP1

Place SATA_CAL
RES very close
to ball of SB700

AVDD_SATA
56 SATA_LED#
GND
R2201 1kOhm
R2219 9310hm
SATA_CALRP
SATA_CALRN



U2001B

SB820M

Part 2 of 5

SERIAL ATA

HW MONITOR

SPI ROM

SATA_TX0P
SATA_TX0N
SATA_RX0N
SATA_RX0P
SATA_TX1P
SATA_TX1N
SATA_RX1N
SATA_RX1P
SATA_TX2P
SATA_TX2N
SATA_RX2N
SATA_RX2P
SATA_TX3P
SATA_TX3N
SATA_RX3N
SATA_RX3P
SATA_TX4P
SATA_TX4N
SATA_RX4N
SATA_RX4P
SATA_TX5P
SATA_TX5N
SATA_RX5N
SATA_RX5P
SATA_CALRP
SATA_CALRN
SATA_ACT#/GPIO67
SATA_X1
SATA_X2
SPL_DI#/GPIO164
SPL_DO#/GPIO163
SPL_CLK#/GPIO162
SPL_CS1#/GPIO165
ROM_RST#/GPIO161

FLASH

FC_CLK
FC_FBCLKOUT
FC_FBCLKIN
FC_OE#/GPIO145
FC_AVD#/GPIO146
FC_WE#/GPIO148
FC_CE1#/GPIO149
FC_CE2#/GPIO150
FC_INT1/GPIO144
FC_INT2/GPIO147
FC_ADO0/GPIO128
FC_ADO1/GPIO129
FC_ADO2/GPIO130
FC_ADO3/GPIO131
FC_ADO4/GPIO132
FC_ADO5/GPIO133
FC_ADO6/GPIO134
FC_ADO7/GPIO135
FC_ADO8/GPIO136
FC_ADO9/GPIO137
FC_ADO10/GPIO138
FC_ADO11/GPIO139
FC_ADO12/GPIO140
FC_ADO13/GPIO141
FC_ADO14/GPIO142
FC_ADO15/GPIO143

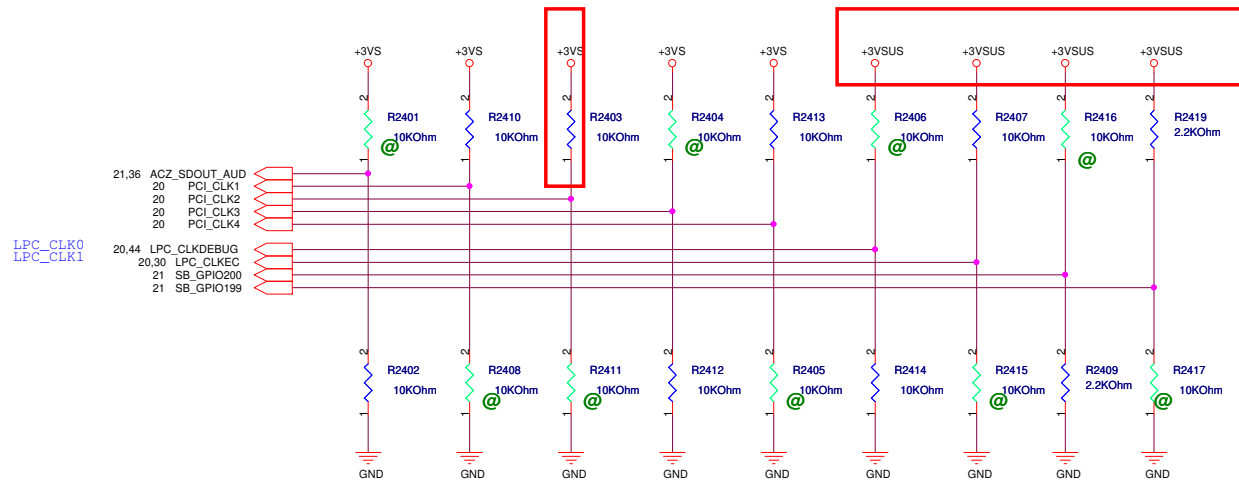
FANOUT0/GPIO52
FANOUT1/GPIO53
FANOUT2/GPIO54
FANIN0/GPIO56
FANIN1/GPIO57
FANIN2/GPIO58
TEMPIN0/GPIO171
TEMPIN1/GPIO172
TEMPIN2/GPIO173
TEMPIN3/TALERT#/GPIO174
TEMP_COMM
VIN0/GPIO175
VIN1/GPIO176
VIN2/GPIO177
VIN3/GPIO178
VIN4/GPIO179
VIN5/GPIO180
VIN6/GBE_STAT3/GPIO181
VIN7/GBE_LED3/GPIO182

AH28
AG28
AF26
AF28
AG28
AG28
AF27
AE29
AF29
AH27
AJ27
AJ26
AH25
AH24
AG23
AH23
AJ22
AG21
AF21
AH22
AJ23
AF23
AJ24
AJ25
AG25
AH26

W5
W6
Y9
W7
V9
W8
B6
A6
A5
B5
C7
A3
B4
A4
C5
A7
B7
B8
A8
NC1
NC2
G27
Y2

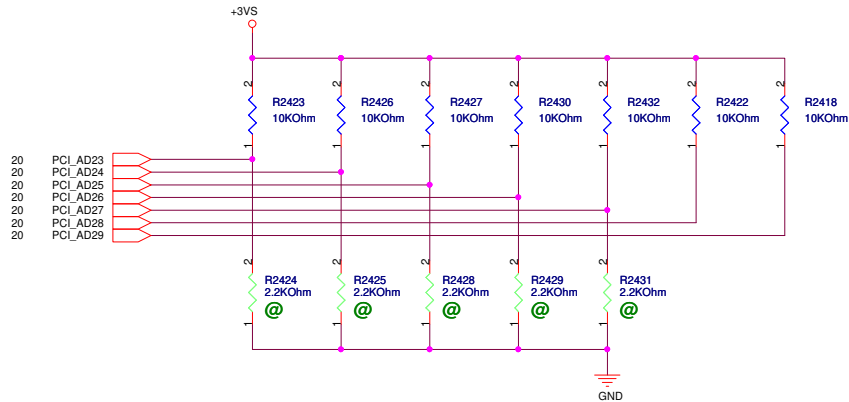
PCB_ID0 21
PCB_ID1 21
PCB_ID2 21

T2228 TPC28T
T2229 TPC28T
R2218
T2230
T2230 TPC28T
OS#_OC 32

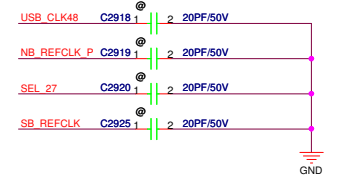
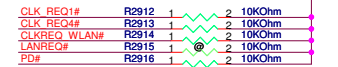
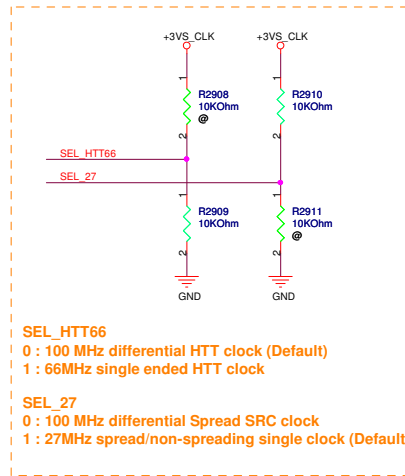
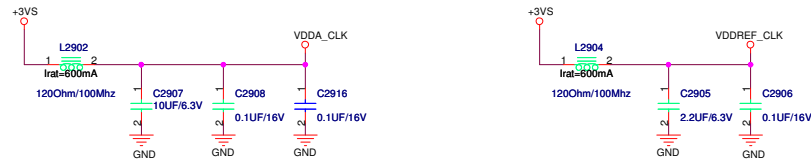
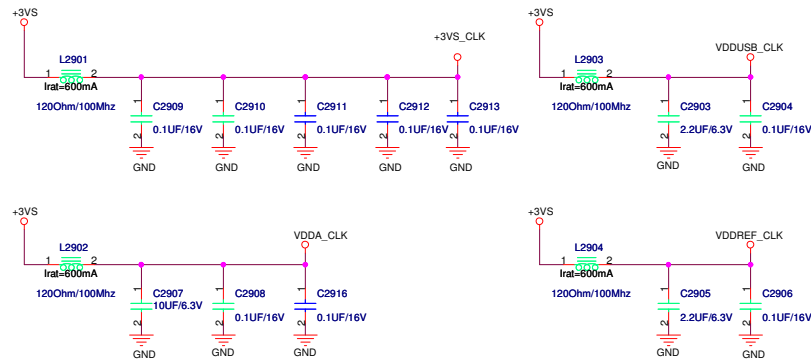
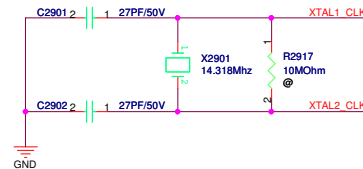
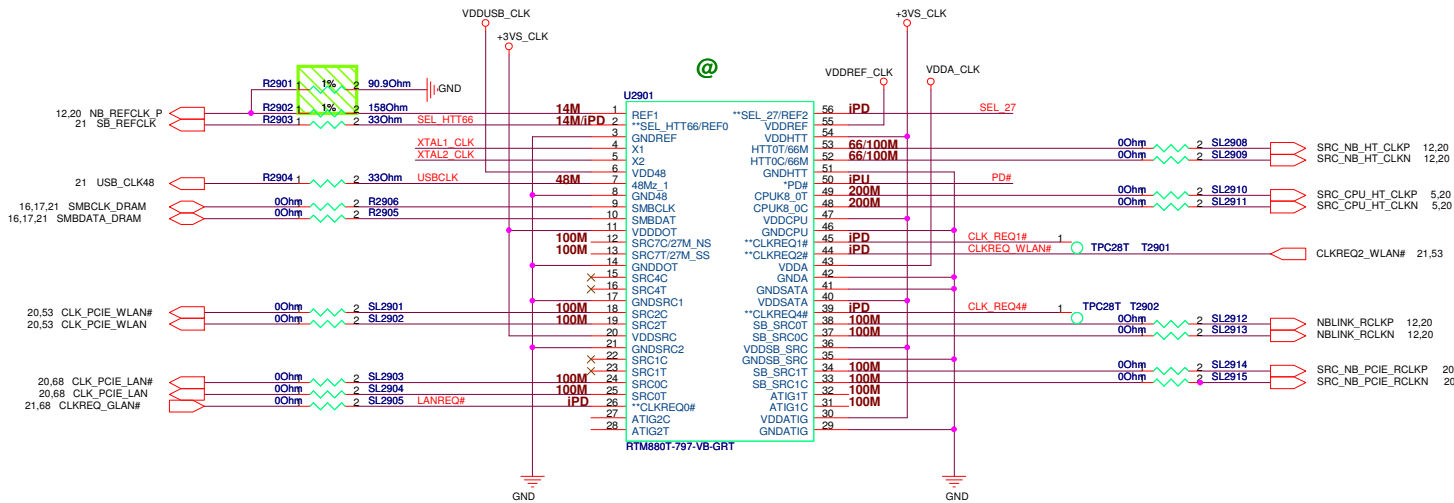


REQUIRED STRAPS

	AZ_SDOUT	PCI_CLK1	PCI_CLK2	PCI_CLK3	PCI_CLK4	LPC_CLK0	LPC_CLK1	GPIO200	GPIO199
PULL HIGH	LOW POWER MODE	ALLOW PCIE Gen2 DEFAULT	Watchdog Timer Enabled Modify	USE DEBUG STRAP	non_Fusion CLOCK MODE DEFAULT	EC ENABLED	CLKGEN ENABLED DEFAULT	H,H = Reserved H,L = SPI ROM	
PULL LOW	PERFORMANCE MODE DEFAULT	FORCE PCIE Gen1	Watchdog Timer Disabled	IGNORE DEBUG STRAP DEFAULT	FUSION CLOCK MODE	EC DISABLED DEFAULT	CLKGEN DISABLED	L,H = LPC ROM (Default) L,L = FWH ROM	

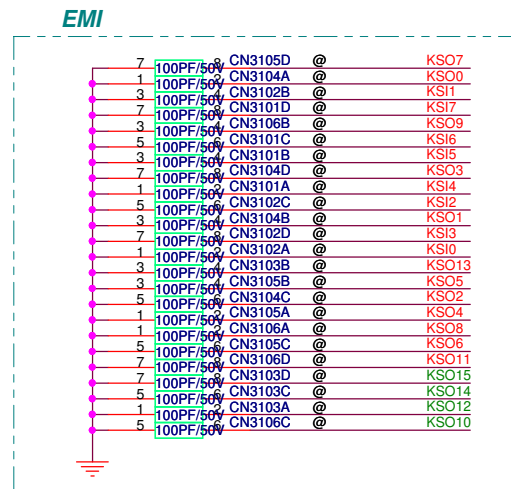
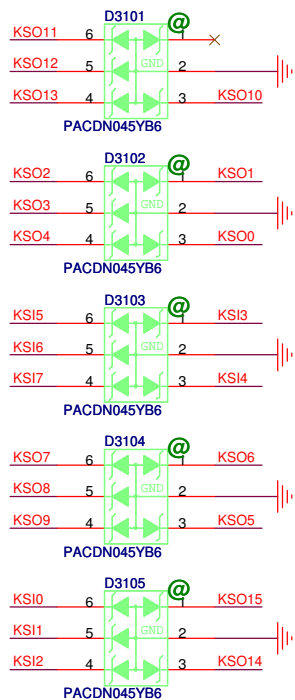


	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	USE PCI PLL DEFAULT	DISABLE ILA AUTORUN DEFAULT	USE FC PLL DEFAULT	USE DEFAULT PCIE STRAPS DEFAULT	DISABLE PCI MEM BOOT DEFAULT
PULL LOW	BYPASS PCI PLL	ENABLE ILA AUTORUN	BYPASS FC PLL	USE EEPROM PCIE STRAPS	ENABLE PCI MEM BOOT

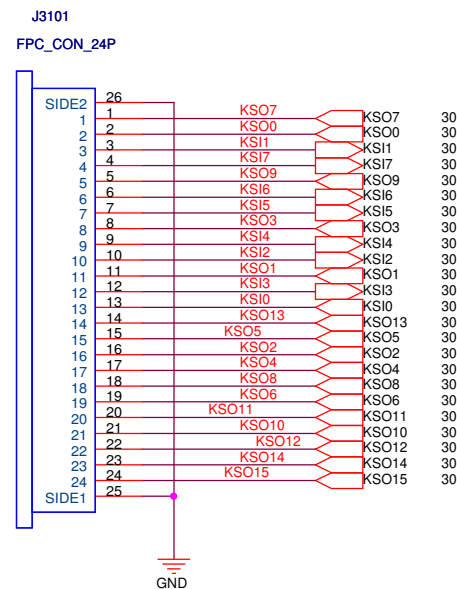


SEL_HTT66
0 : 100 MHz differential HTT clock (Default)
1 : 66MHz single ended HTT clock

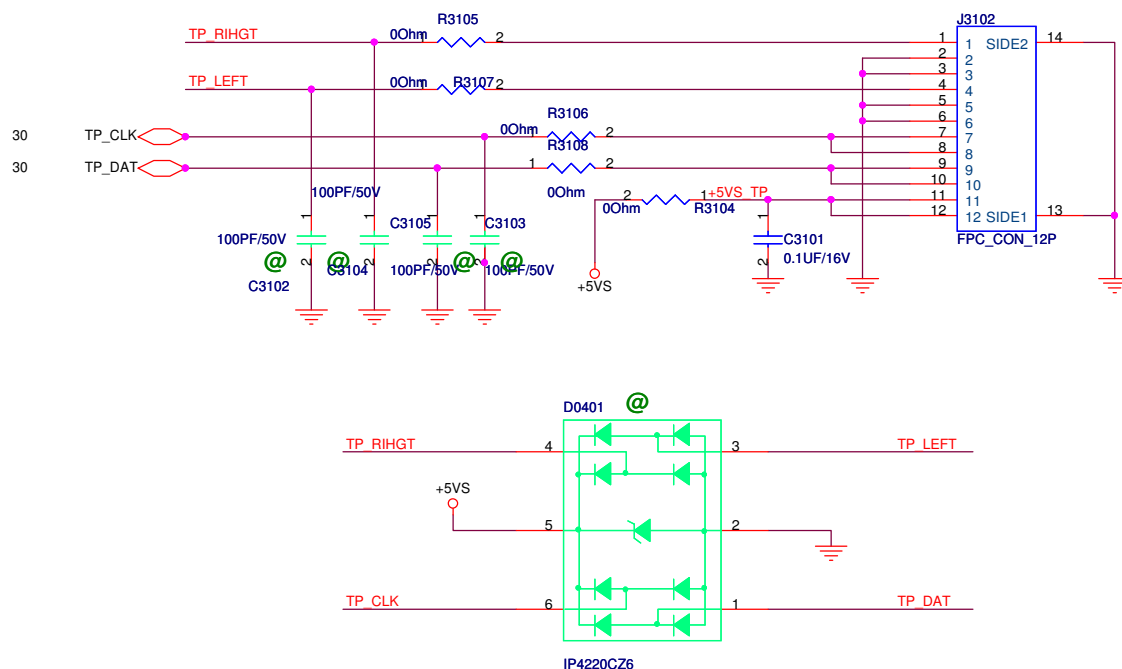
SEL_27
0 : 100 MHz differential Spread SRC clock
1 : 27MHz spread/non-spreading single clock (Default)



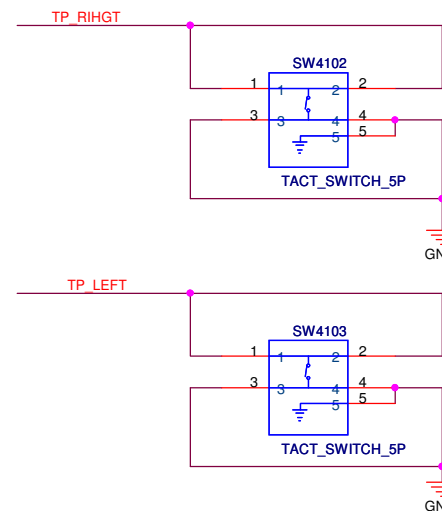
Keyboard



Touchpad

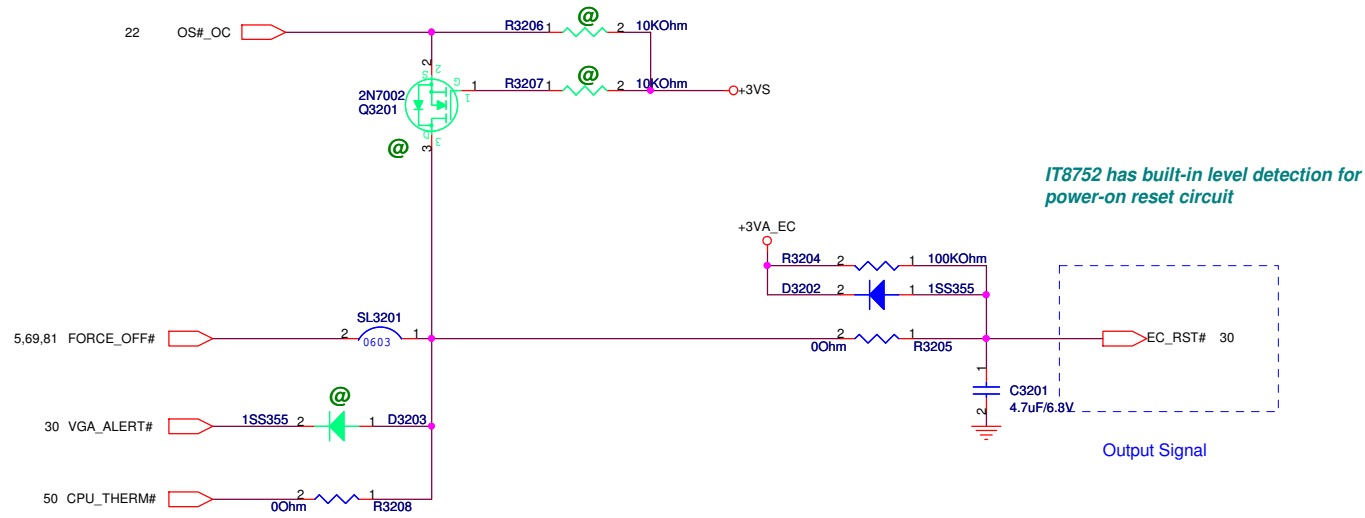


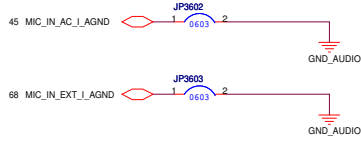
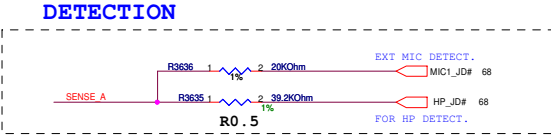
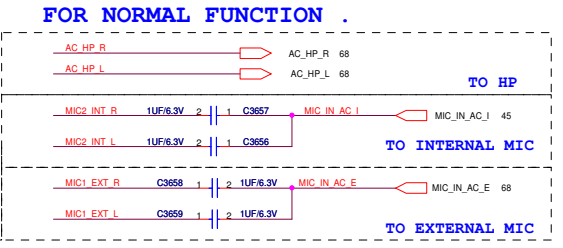
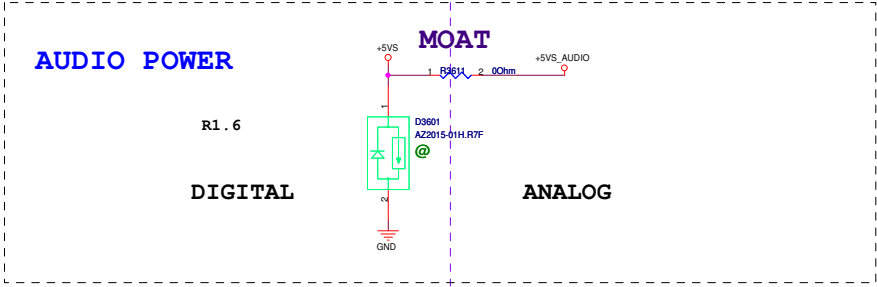
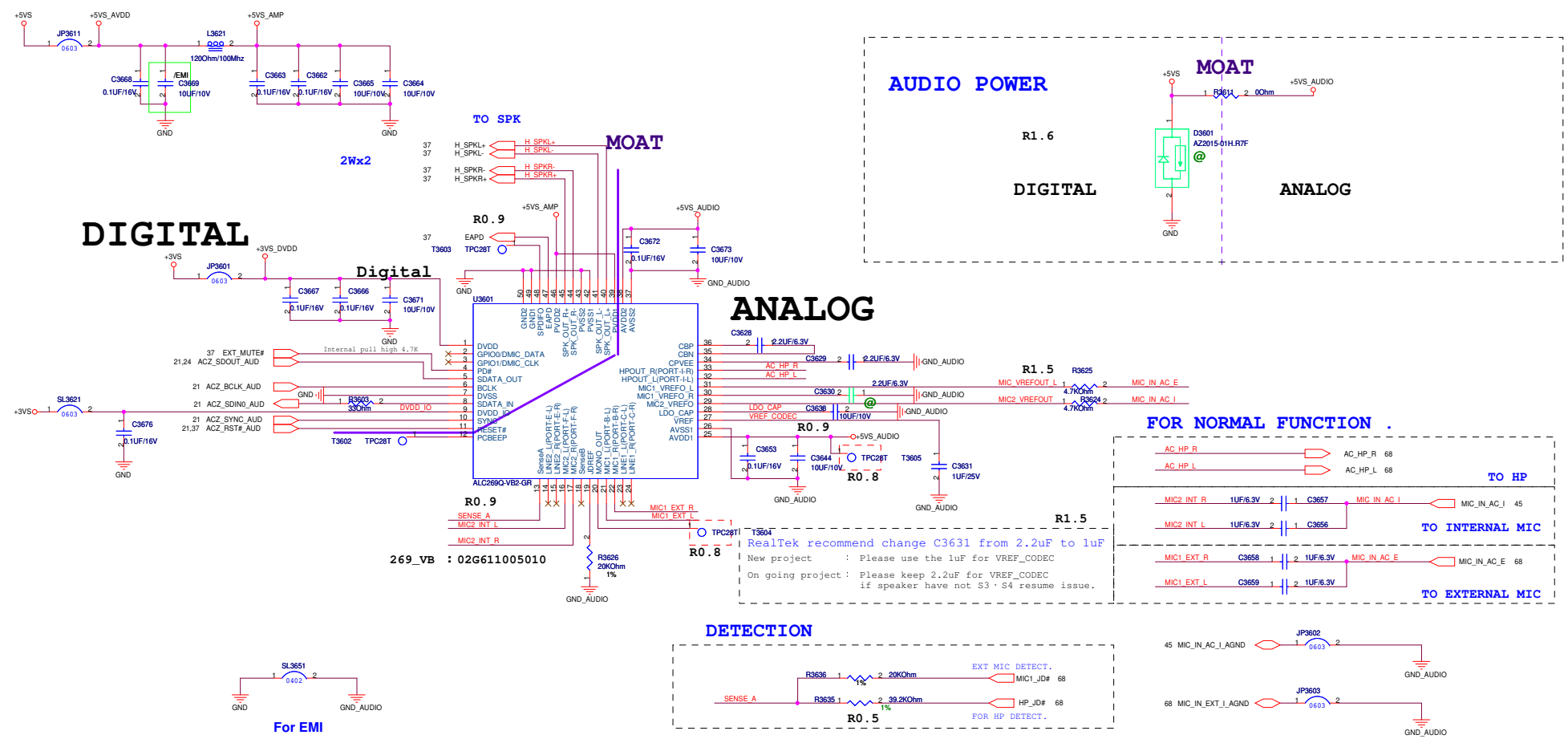
SW4102, SW4103 use PCB footprint of 12G091030050

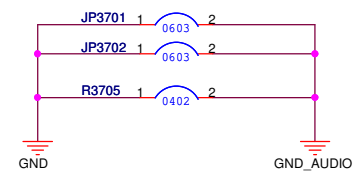
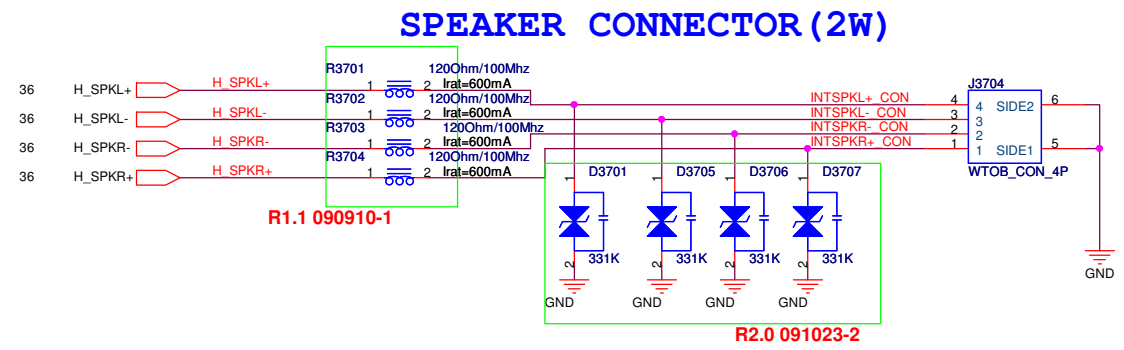
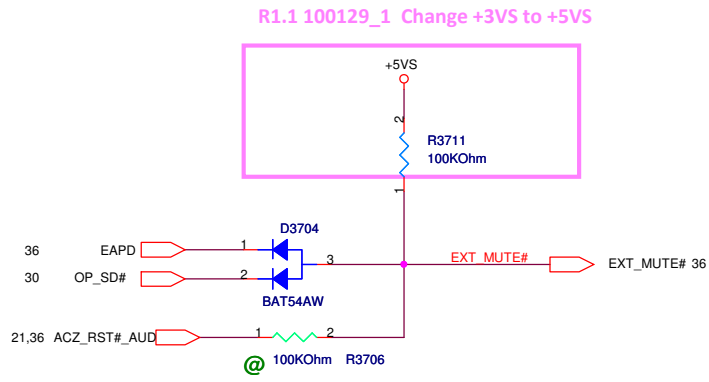


Thermal Policy

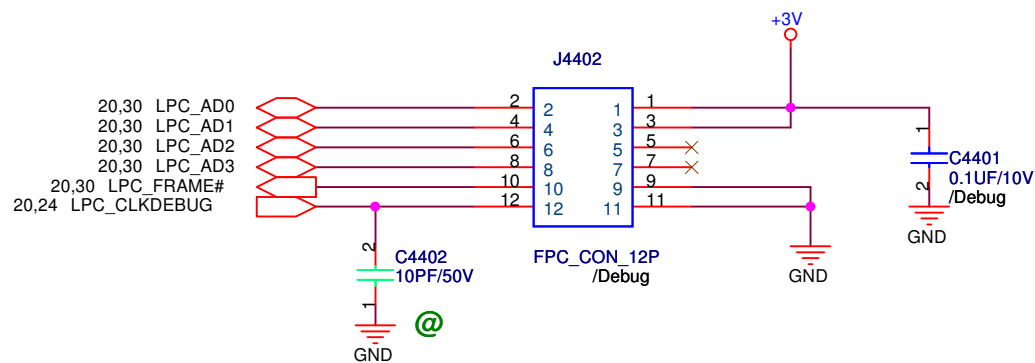
Main Board

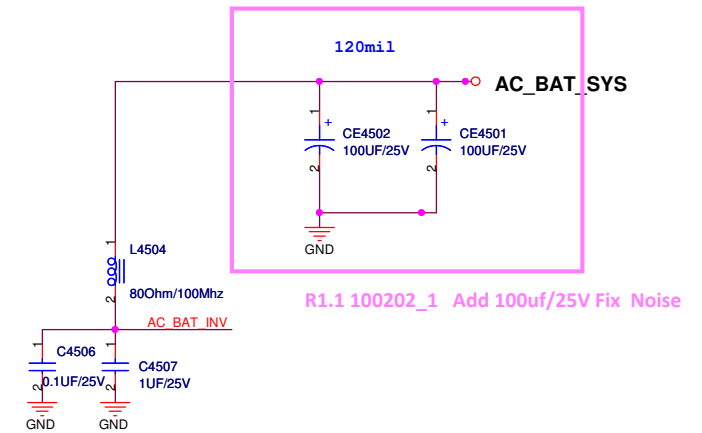
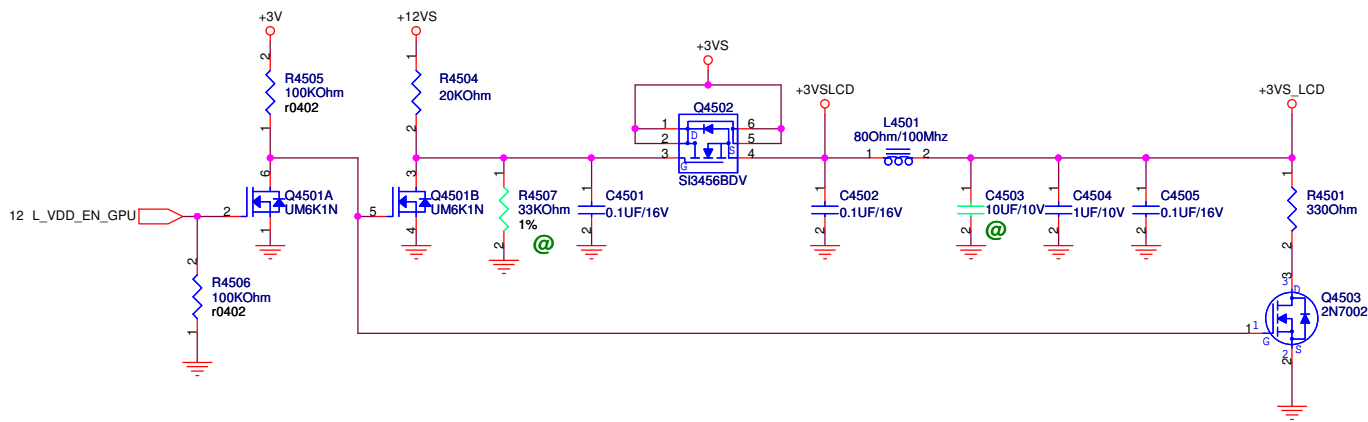




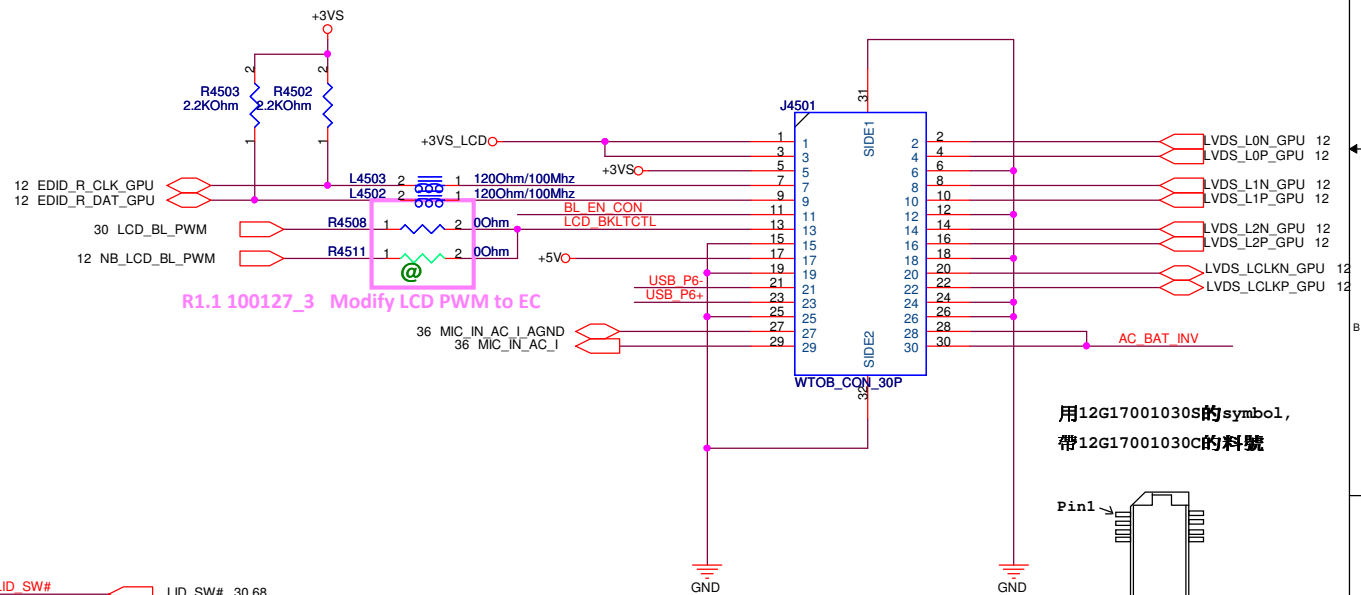
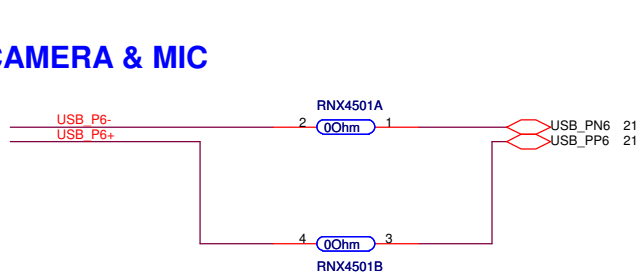


LPC Debug Port

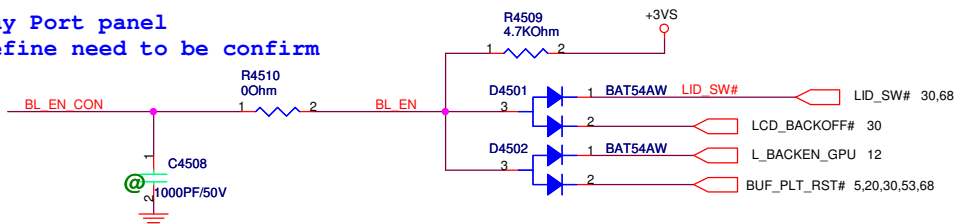




CAMERA & MIC

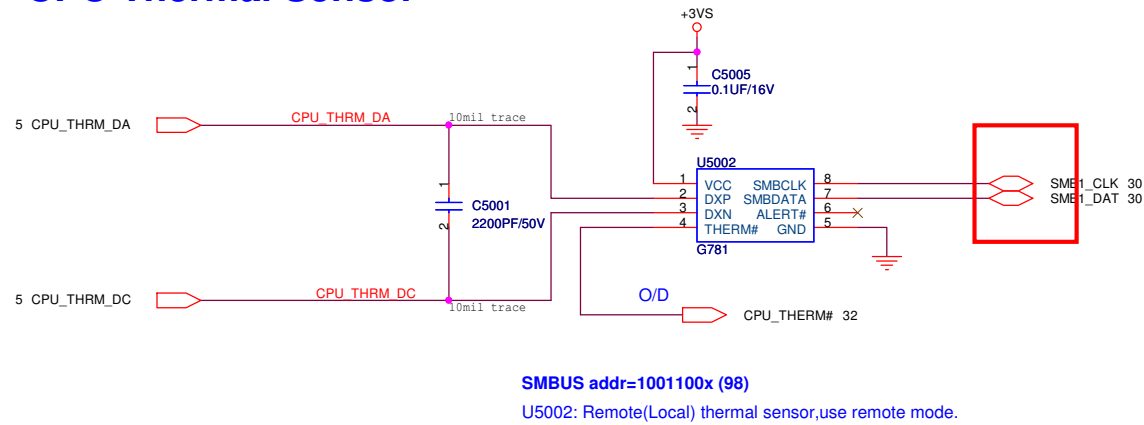


Display Port panel pin define need to be confirm

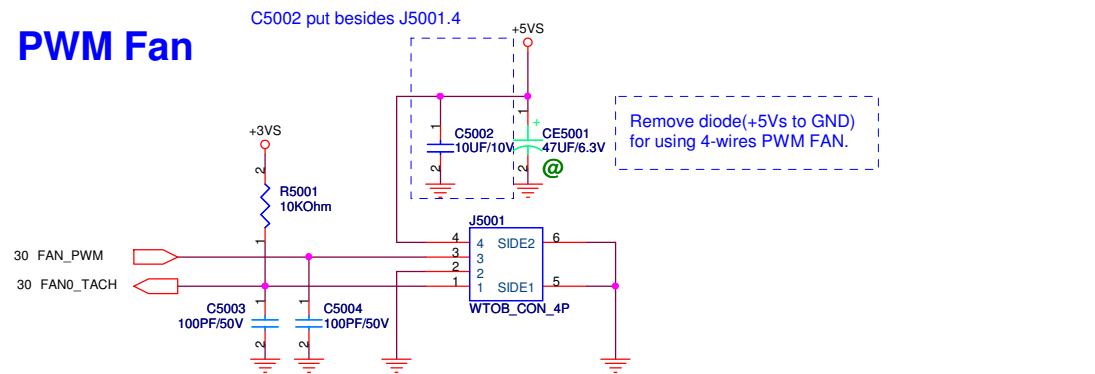


ASUS		Title : CRT_LCD Panel	
ASUSTeK COMPUTER INC. NB4		Engineer: Vincent_Chiang	
Size B	Project Name K52N	Rev 1.0	
Date: Monday, February 08, 2010		Sheet 45 of 99	

CPU Thermal Sensor



PWM Fan

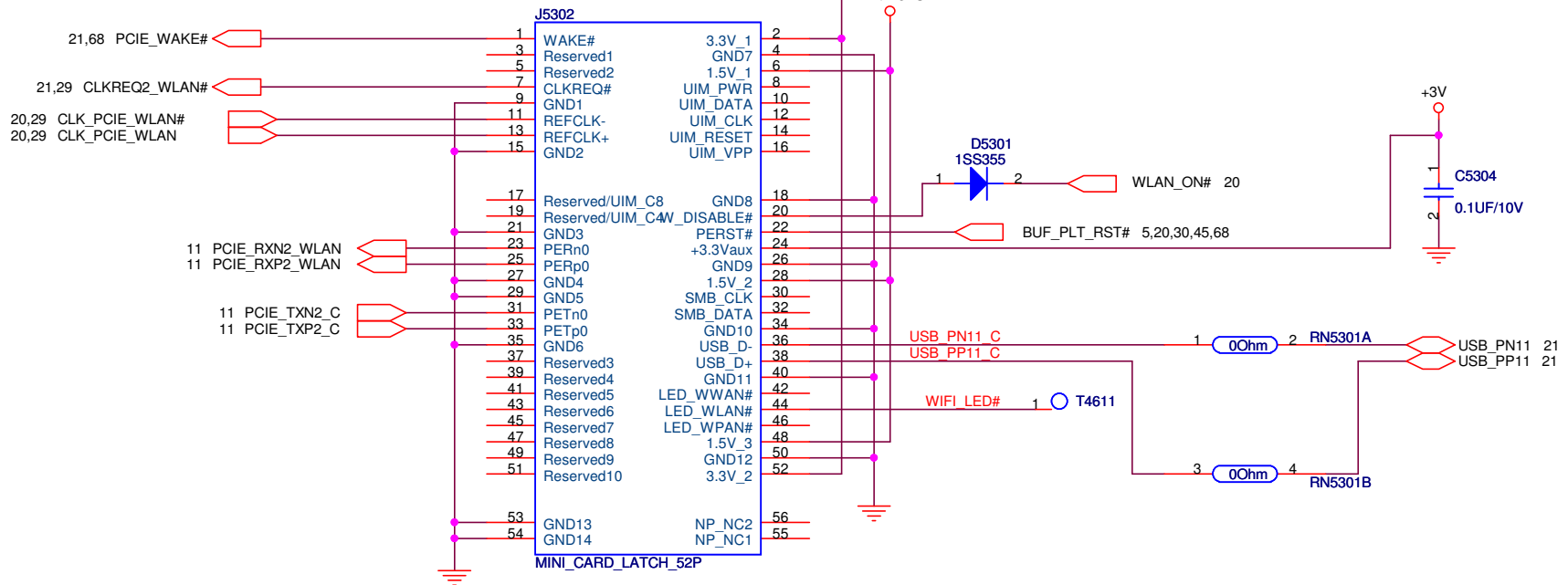


Main Board



Support wake from S3 only

使用12G03010052F symbol

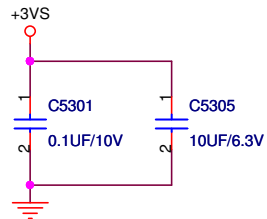


WLAN

WLAN +3VAUX bypass capacitor:

Place 0.1UF near pin 2,24,52,39 41.

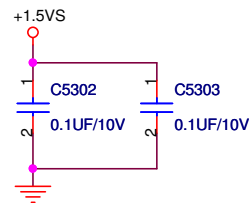
Place 10UF near +3VAUX_WLAN source side.



WLAN +1.5VS bypass capacitor:

Place 0.1UF near pin 6,28,48.

Place 10UF near +1.5VS source side.

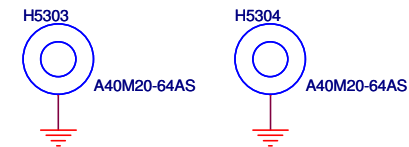


WLAN nuts:

Minicard spec R1.2:

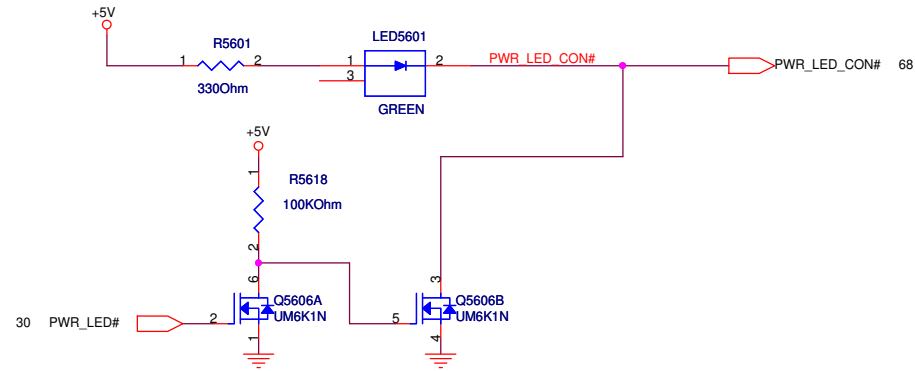
Full size card= 2pcs.

Half size card= 2pcs.

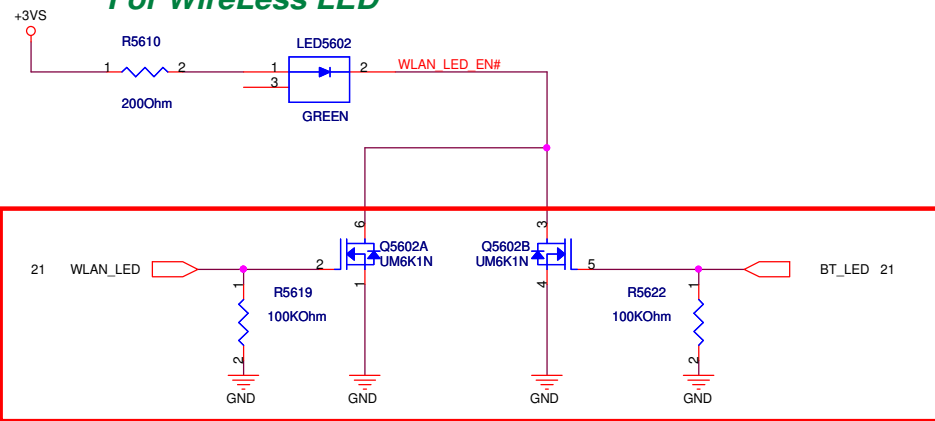


ASUS		Title : MINICARD(WLAN)	
ASUSTeK COMPUTER INC. NB6		Engineer: Vincent_Chiang	
Size	Project Name	K52N	Rev 1.0
Custom			
Date: Monday, February 08, 2010		Sheet	53 of 99

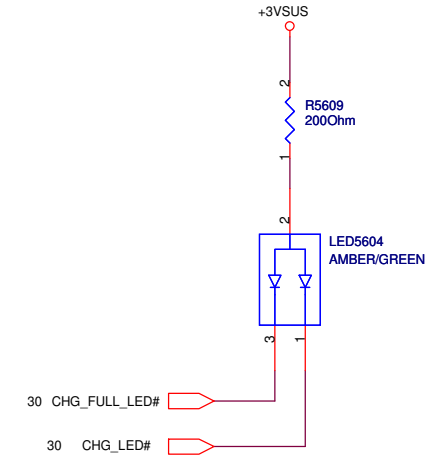
For POWER LED



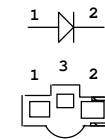
For WireLess LED



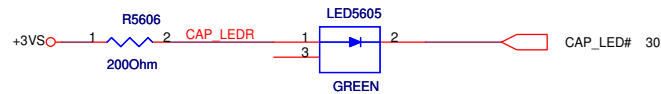
Charge LED



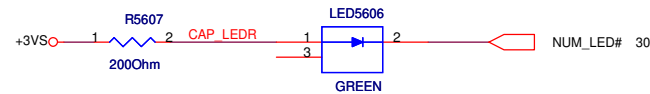
Side Light LED symbol



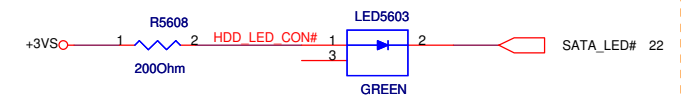
Cap. Lock LED



for Num Lock

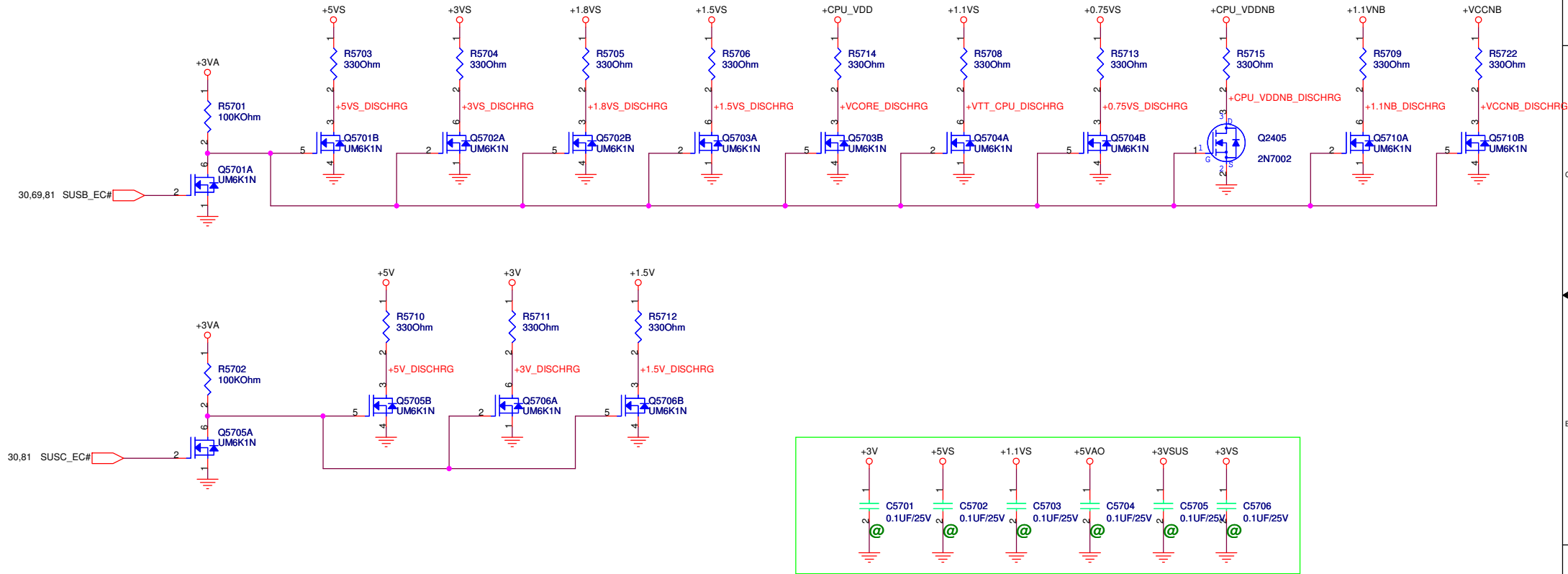


HDD LED

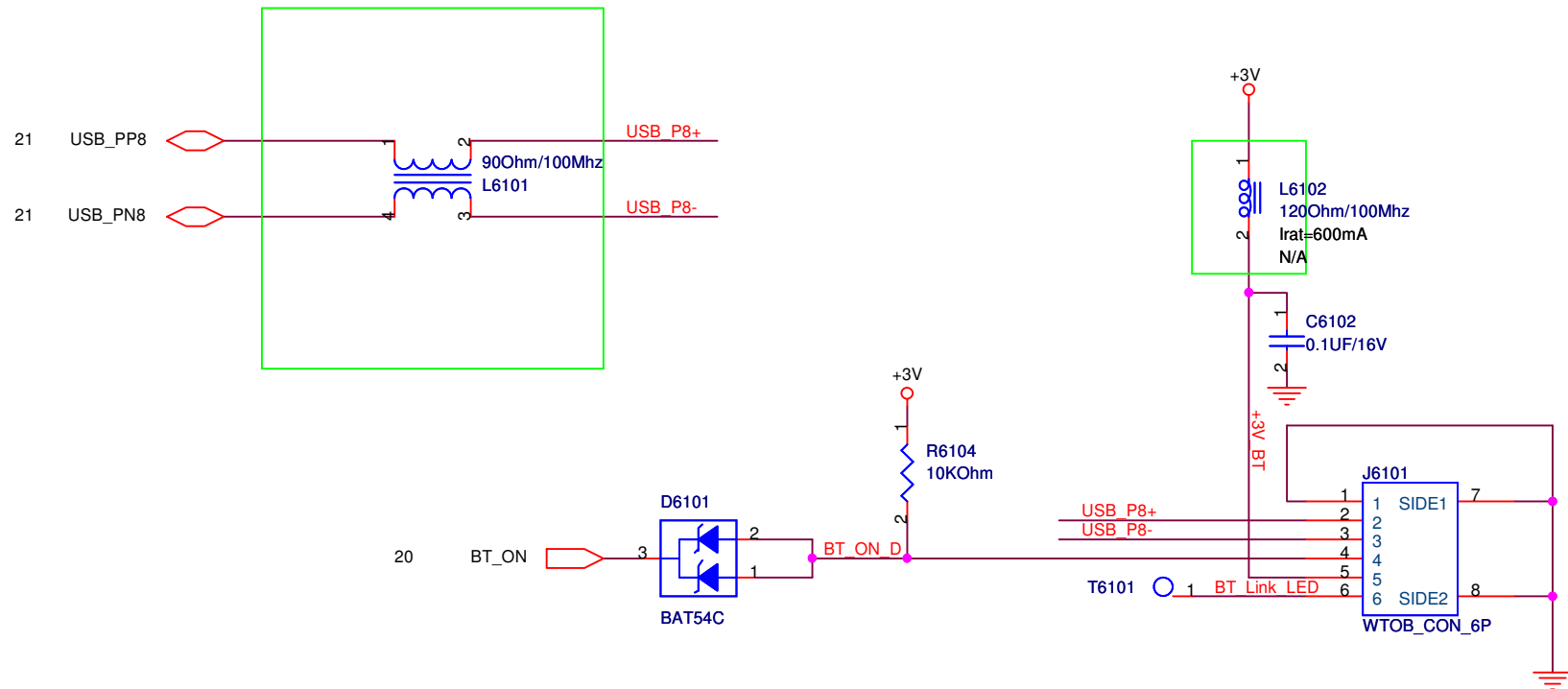


Main Board

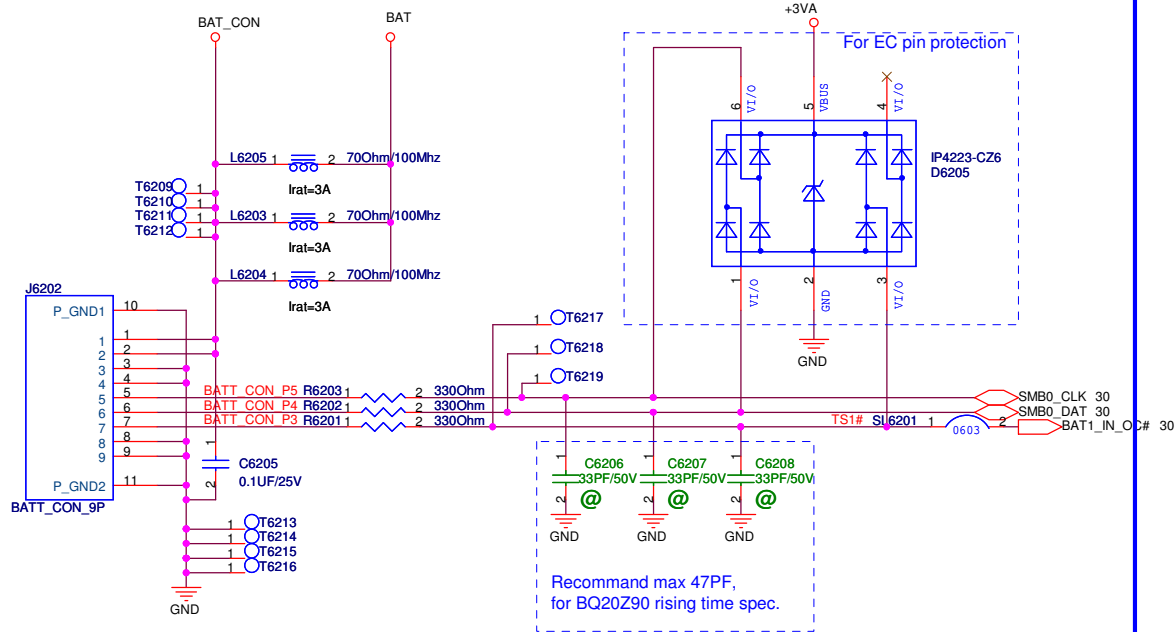
Remove +2.5Vs is for ATI GFX



BLUETOOTH



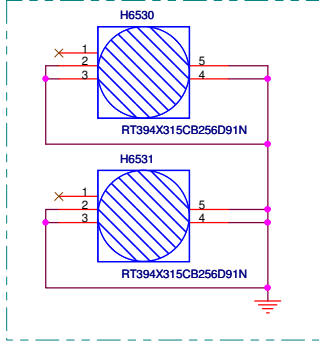
Battery Connector



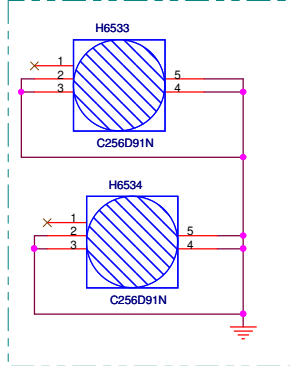
Total count: 11 pcs

Main Board

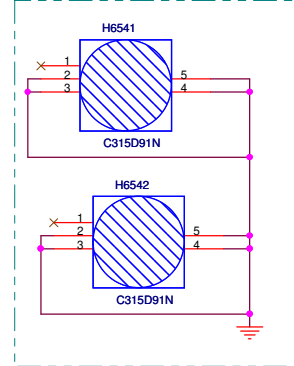
Screw Hole A



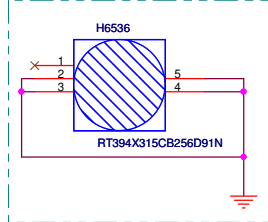
Screw Hole B



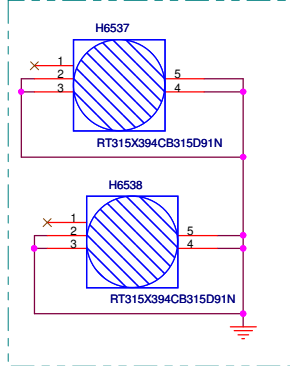
Screw Hole I



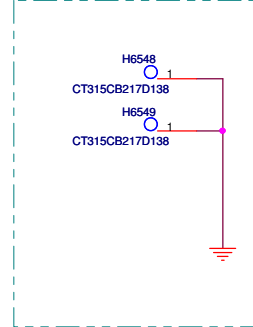
Screw Hole C



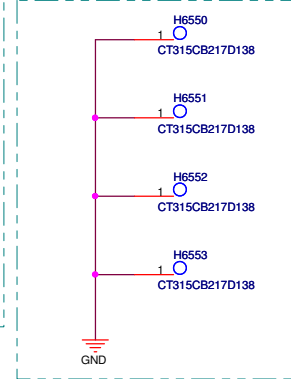
Screw Hole F



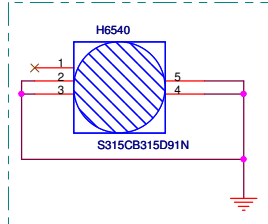
Screw Hole E



Screw from k52JR



Screw Hole H



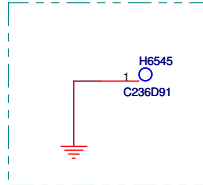
Tooling Hole K

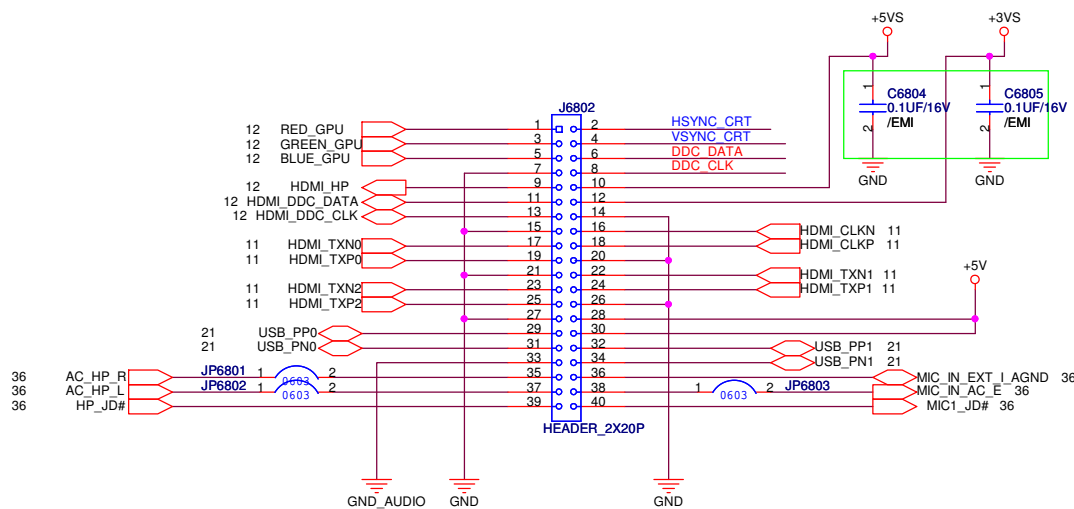
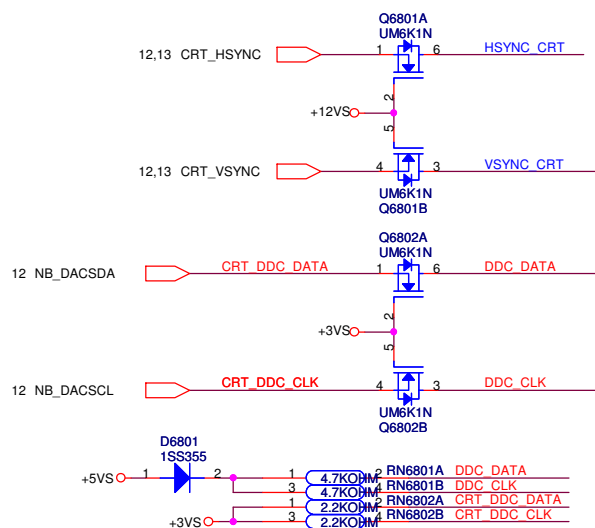
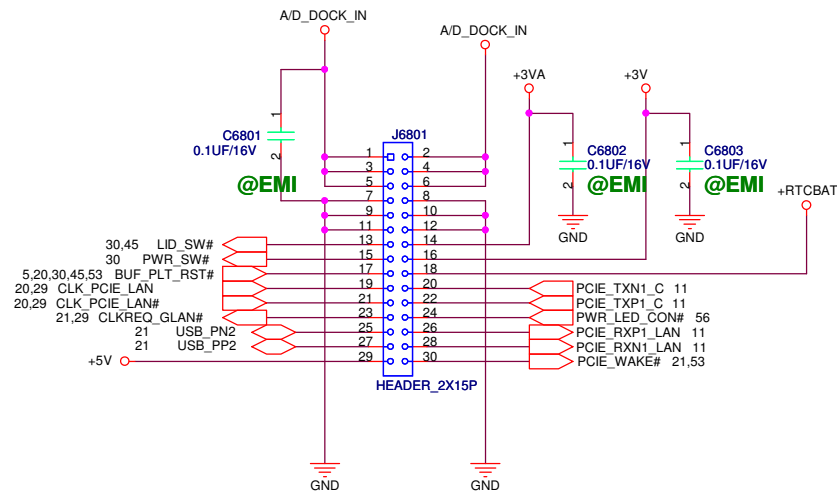


Tooling Hole L



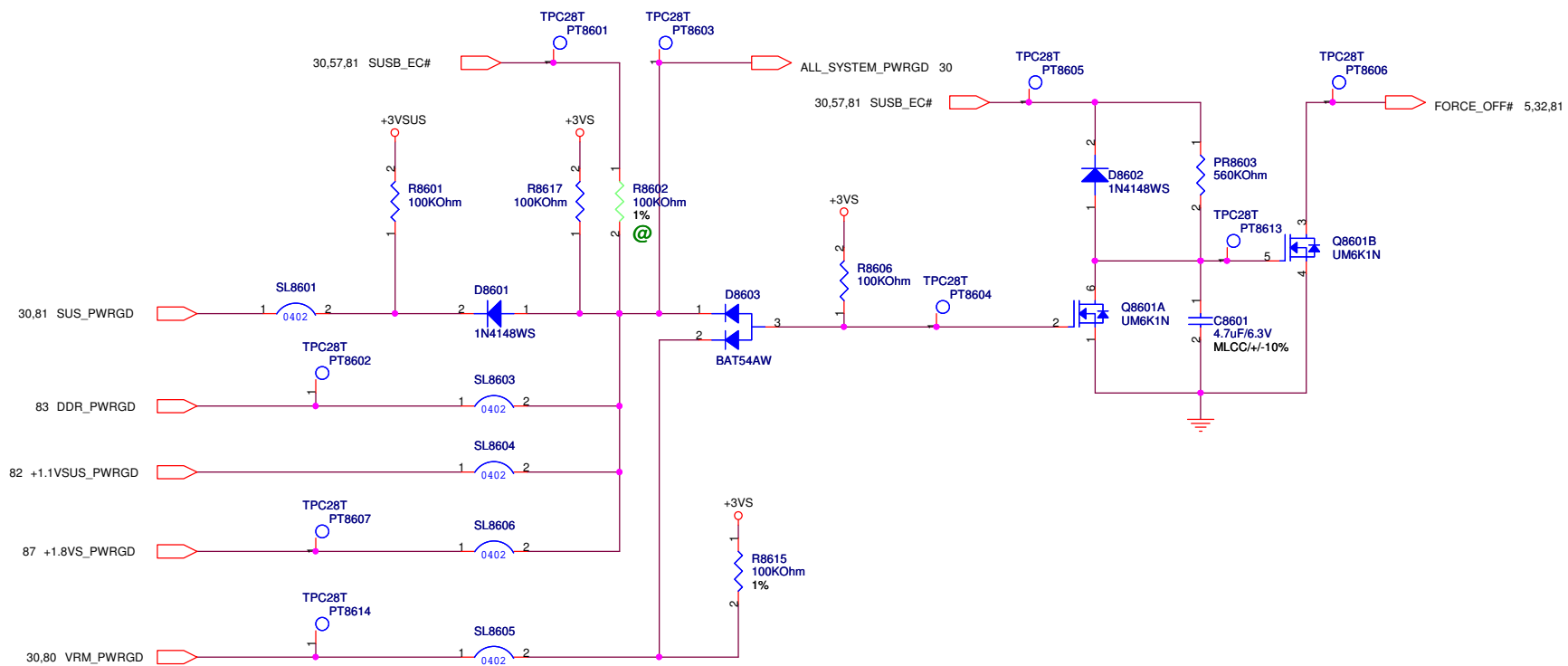
Screw Hole O





J6802 use PCB footprint of 12G061210401

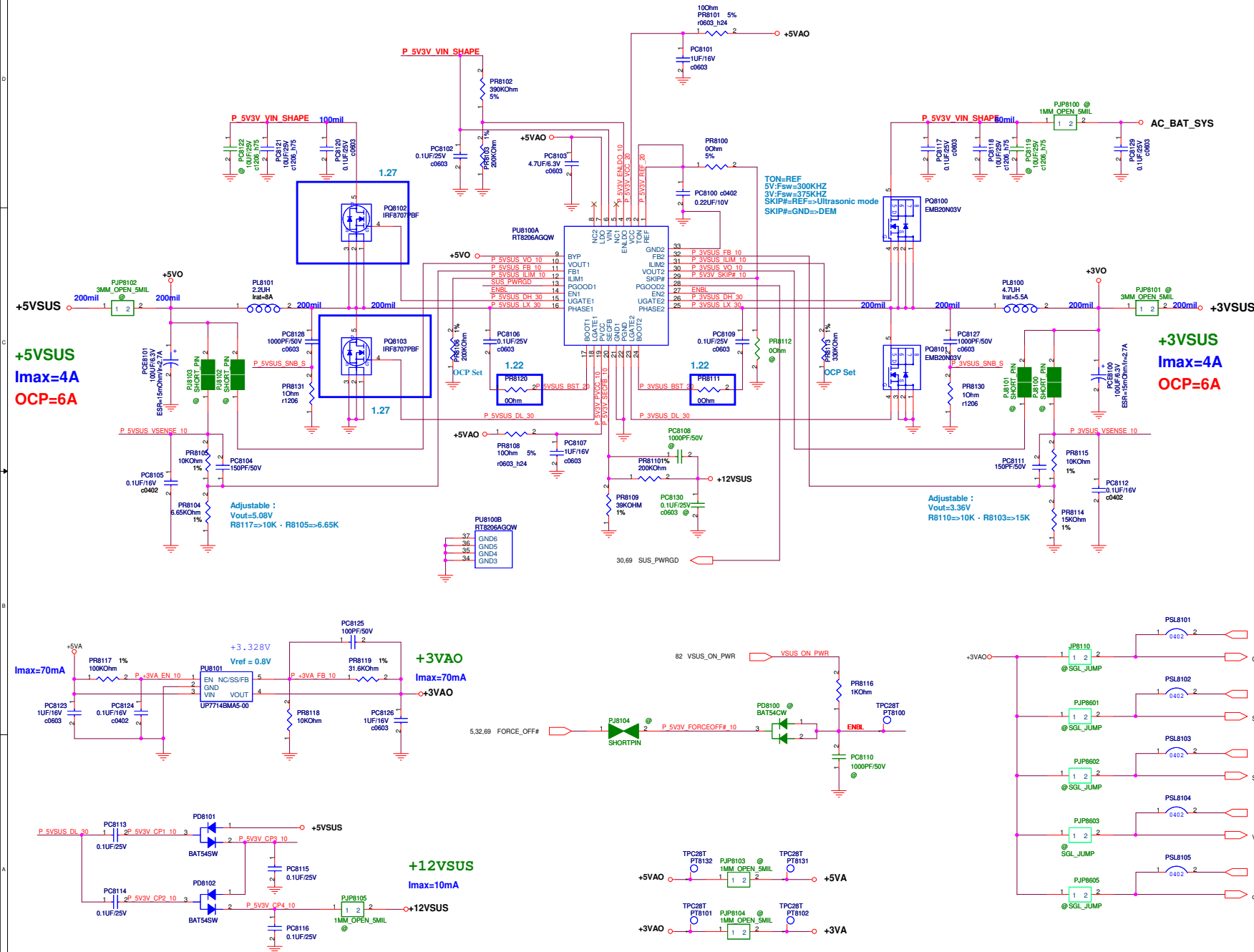
POWER GOOD DETECTOR



<Variant Name>

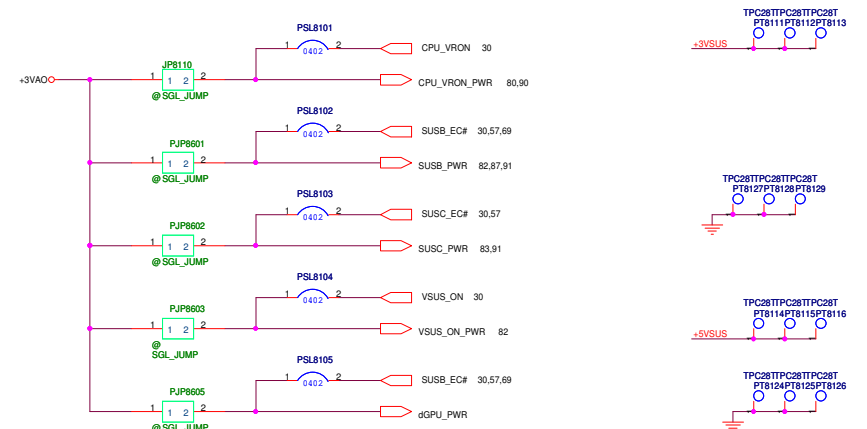
ASUS		Title : GOOD_DETECTOR	
ASUSTeK COMPUTER INC		Engineer: <i>Vincent_Chiang</i>	
Size B	Project Name		Rev 1.0
Date: Monday, February 08, 2010		Sheet 69 of 95	

+5VSUS / +3VSUS POWER SUPPLY

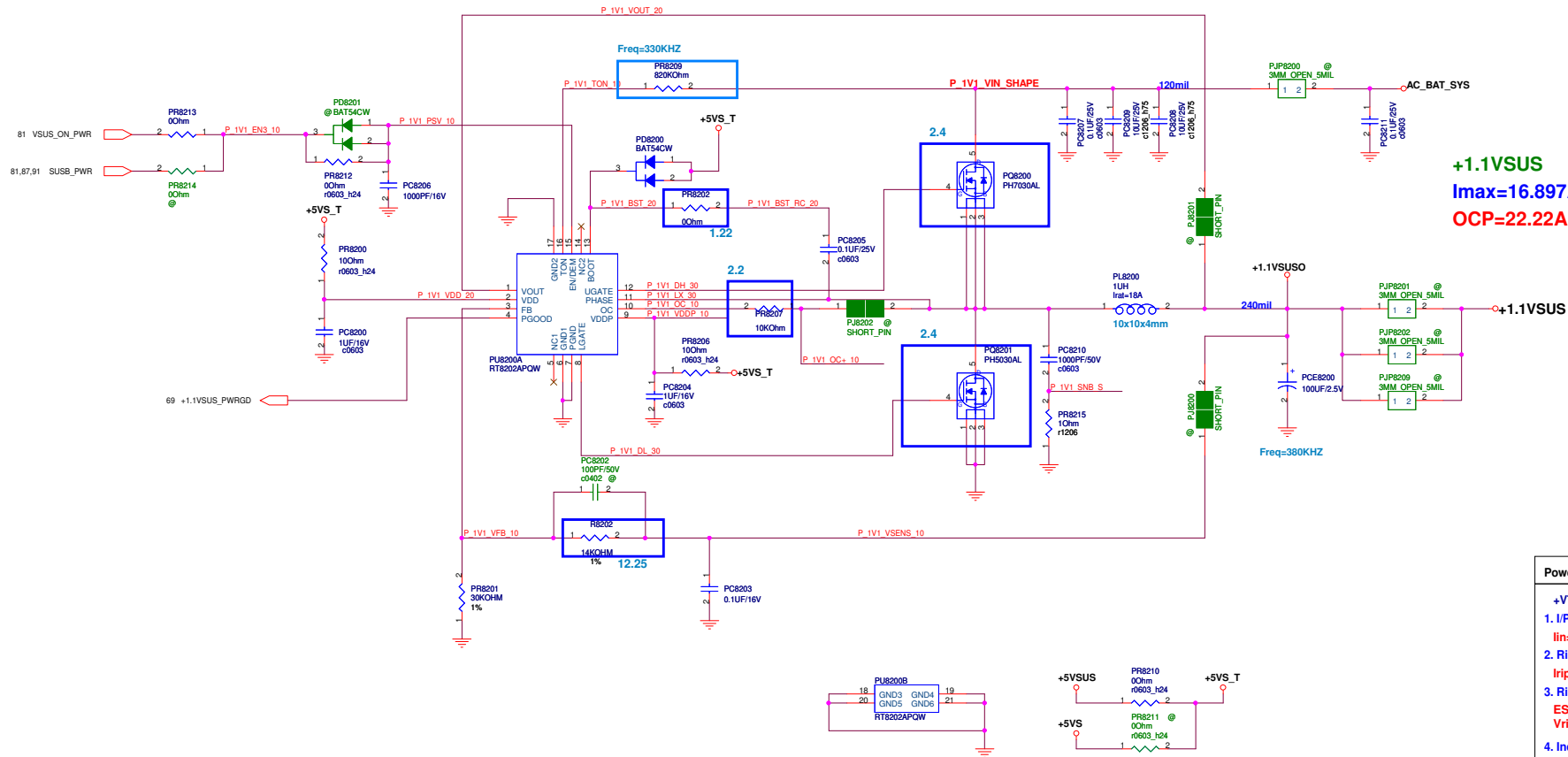


Power stage	
+5VSUS:	+3VSUS:
1. I/P Current: $I_{in} = V_o \cdot I_o / (0.75 \cdot V_{in}) = 2.96A$	1.I/P Current: $I_{in} = V_o \cdot I_o / (0.75 \cdot V_{in}) = 1.96A$
2. Ripple Current: $I_{rip} = 2.61A$	2.Ripple Current: $I_{rip} = 1.55A$
3. Ripple Voltage: $ESR / I_1 = 15mohm$ $V = 39.15mV$	3.Ripple Voltage: $ESR / I_1 = 15mohm$ $V = 23.25mV$
4. Inductor Spec: $I_{sat} = 6.2A$ $I_{dc} = 4.6A$ $DCR = 36mohm$	4.Inductor Spec: $I_{sat} = 6.2A$ $I_{dc} = 4.6A$ $DCR = 36mohm$
5.MOSFET Spec:	
H-side MOSFET: FDMC8884	
$R_{ds}(ON) = 30mohm$	$(V_{gs} = 4.5 V)$
$I_{cont} = 9A$	$(T = 25 ^\circ C)$
$I_{peak} = 15A$	$(Pause = 10 us)$
L-side MOSFET: FDMC8884	
$R_{ds}(ON) = 30mohm$	$(V_{gs} = 4.5 V)$
$I_{cont} = 9A$	$(T = 25 ^\circ C)$
$I_{peak} = 15A$	$(Pause = 10 us)$

Controller	
+5VSUS:	+3.VSUS
1. Voltage & Current: +5VSUS: 5V / 4A	1.Voltage&Current: +3VSUS: 3.3V / 4A
2. Frequency: F=300KHZ	2.Frequency: F=375KHZ
3. OCP:	3.OCP:
Set PR8106=357 Kohm Iocp=5uA*RoCP/10*Rds(on) Iocp=6A	Set PR8113=357KOhm Iocp=5uA*RoCP/10*Rds(on) Iocp=6A
4. Soft start time: The Soft Start duration is 2ms	
5.Inrush Current: C total = 100 uF I Inrush=C*Vout/SS_time I Inrush= 0.25 A	4.Inrush Current: C total = 100 uF I Inrush=C*Vout/SS_time I Inrush= 0.165 A



+1.1VSUS POWER SUPPLY



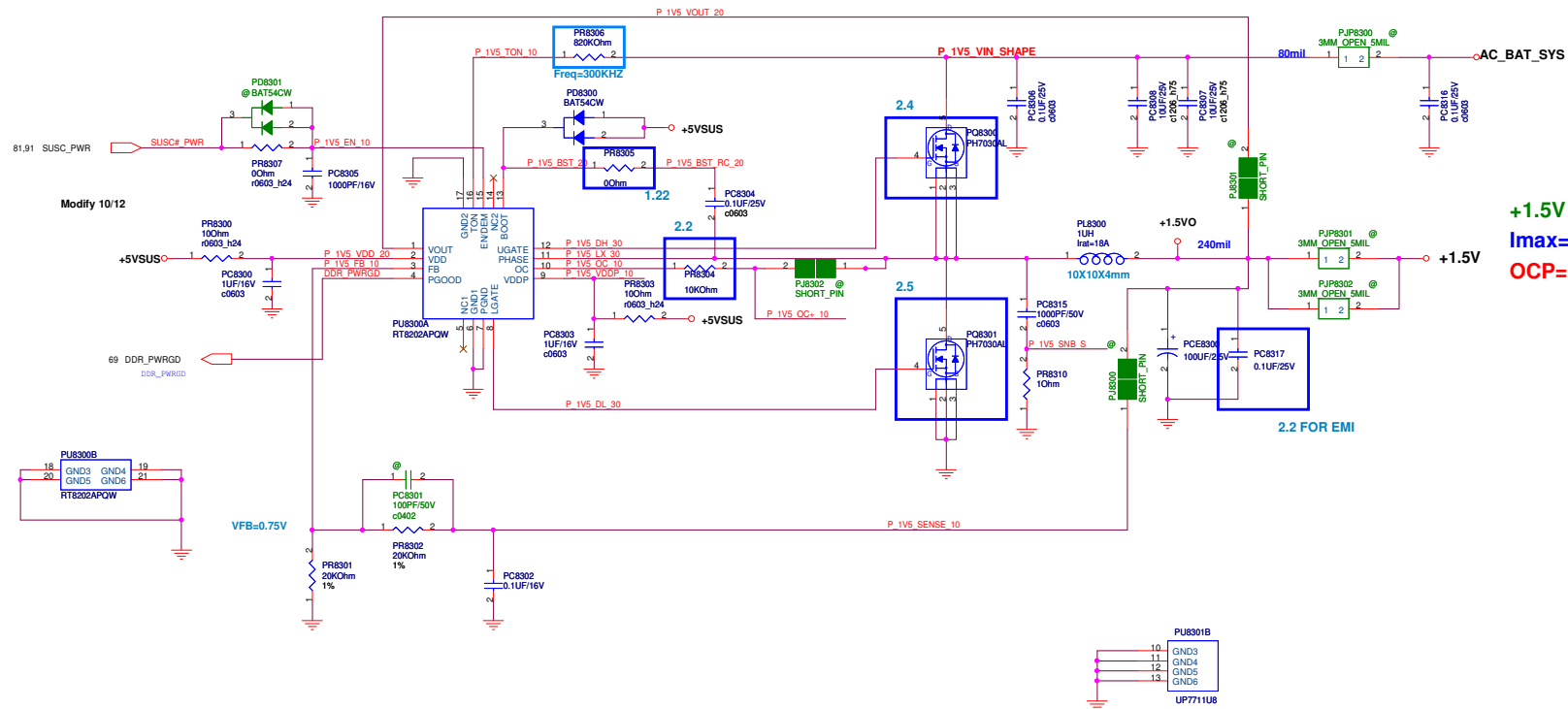
+1.1VSUS
I_{max}=16.897A
OCP=22.22A

- | Controller | |
|--|--|
| +VTT_CPU: | |
| 1. Voltage & Current: | |
| +VTT_CPU: 1.05V / 15A | |
| 2. Frequency: | |
| F=330KHZ | |
| 3. OCP: | |
| Set PR8207=4.99 Kohm | |
| I _{ocp} =R _{ocp} *20uA/R _{ds(on)} | |
| I _{ocp} =26A | |
| 4. Soft start time: | |
| The SS duration is 1.35ms | |
| 5. Inrush Current: | |
| C total = 440 uF | |
| I _{inrush} =C*V _{out} /SS_time | |
| I _{inrush} = 0.342 A | |

- | Power stage | |
|---|--------------------------|
| +VTT_CPU: | |
| 1. I/P Current: | |
| I _{in} =Vo*Io/(0.75*Vin)=2.33A | |
| 2. Ripple Current: | |
| I _{rip} =5.36A | |
| 3. Ripple Voltage: | |
| ESR/2=7.5mohm | |
| V _{ripple} =40.26mV | |
| 4. Inductor Spec: | |
| I _{sat} =40A | |
| I _{dc} =25A | |
| DCR=1.6mohm | |
| 5. MOSFET Spec: | |
| H-side MOSFET: RJK0355DPA | |
| R _{ds(ON)} =16.5mohm | (V _{gs} =4.5 V) |
| I _{cont} = 30A | (T =25 °C) |
| I _{peak} =120 A | (Pause =10 us) |
| L-side MOSFET: RJK0353DPA | |
| R _{ds(ON)} =7.6mohm | (V _{gs} =4.5 V) |
| I _{cont} = 35A | (T =25 °C) |
| I _{peak} =140 A | (Pause =10 us) |

<Variant Name>

+1.5V & +0.75VS POWER SUPPLY



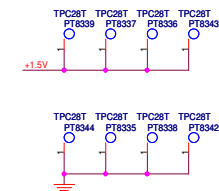
Power stage

- DDR III:
- I/P Current:
 $I_{in} = V_o \cdot I_o / (0.75 \cdot V_{in}) = 2.22A$
 - Ripple Current:
 $I_{rip} = 4.62A$
 - Ripple Voltage:
 $ESR/1 = 15m\Omega$
 $V = 69.3mV$
 - Inductor Spec:
 $I_{sat} = 12.7A$
 $I_{dc} = 9.5A$
 $DCR = 8.5m\Omega$
 - MOSFET Spec:
H-side MOSFET: RJK0355DPA
 $R_{ds(ON)} = 16.5m\Omega$ ($V_{gs} = 4.5V$)
 $I_{cont} = 30A$ ($T = 25^\circ C$)
 $I_{peak} = 120A$ (Pause = 10 us)
L-side MOSFET: RJK0355DPA
 $R_{ds(ON)} = 16.5m\Omega$ ($V_{gs} = 4.5V$)
 $I_{cont} = 30A$ ($T = 25^\circ C$)
 $I_{peak} = 120A$ (Pause = 10 us)

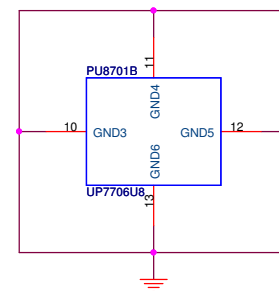
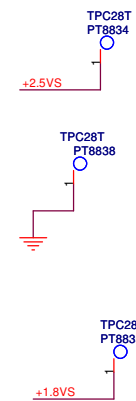
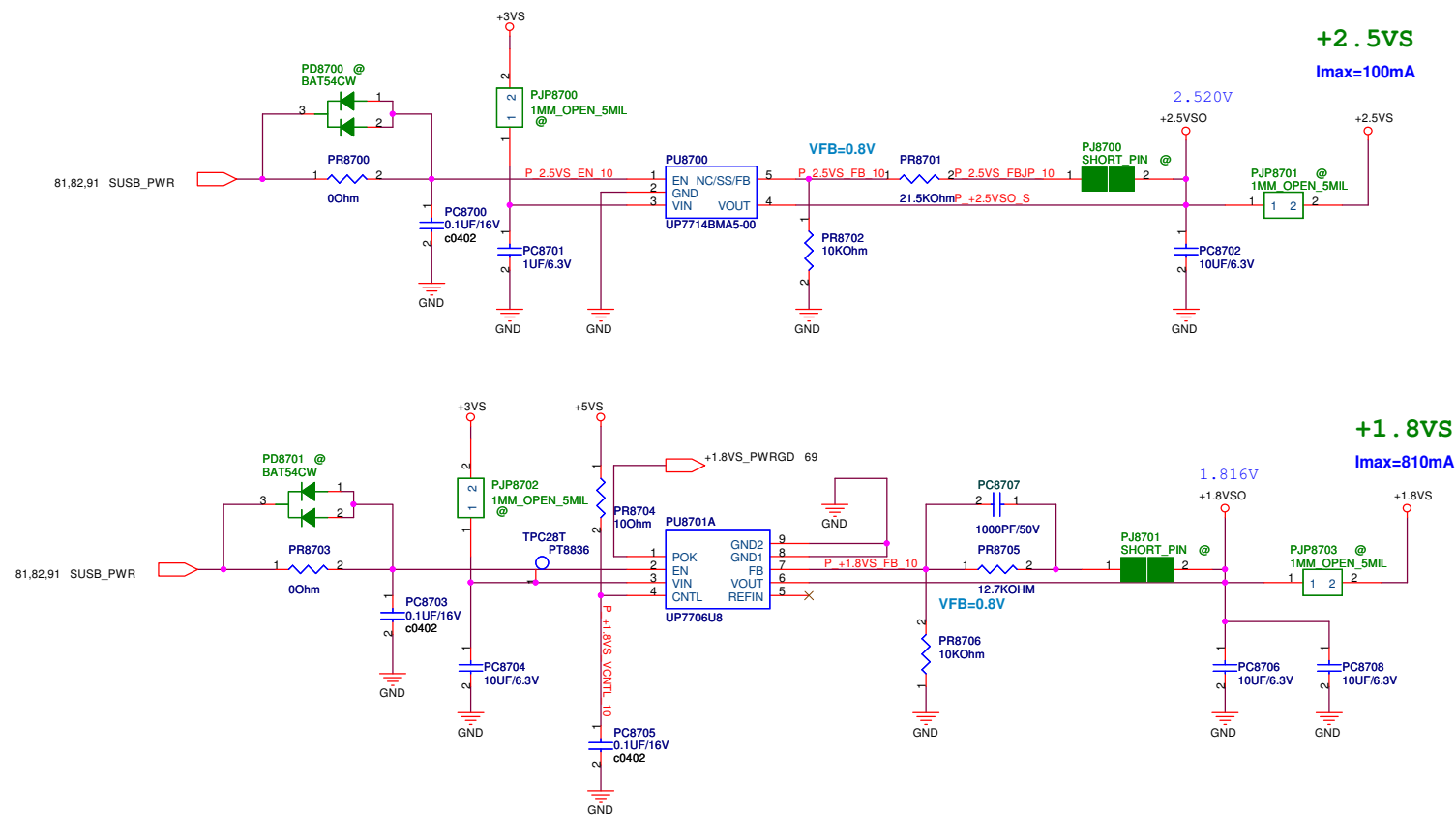
+1.5V
I_{max}=10.5A
OCP=15.38A

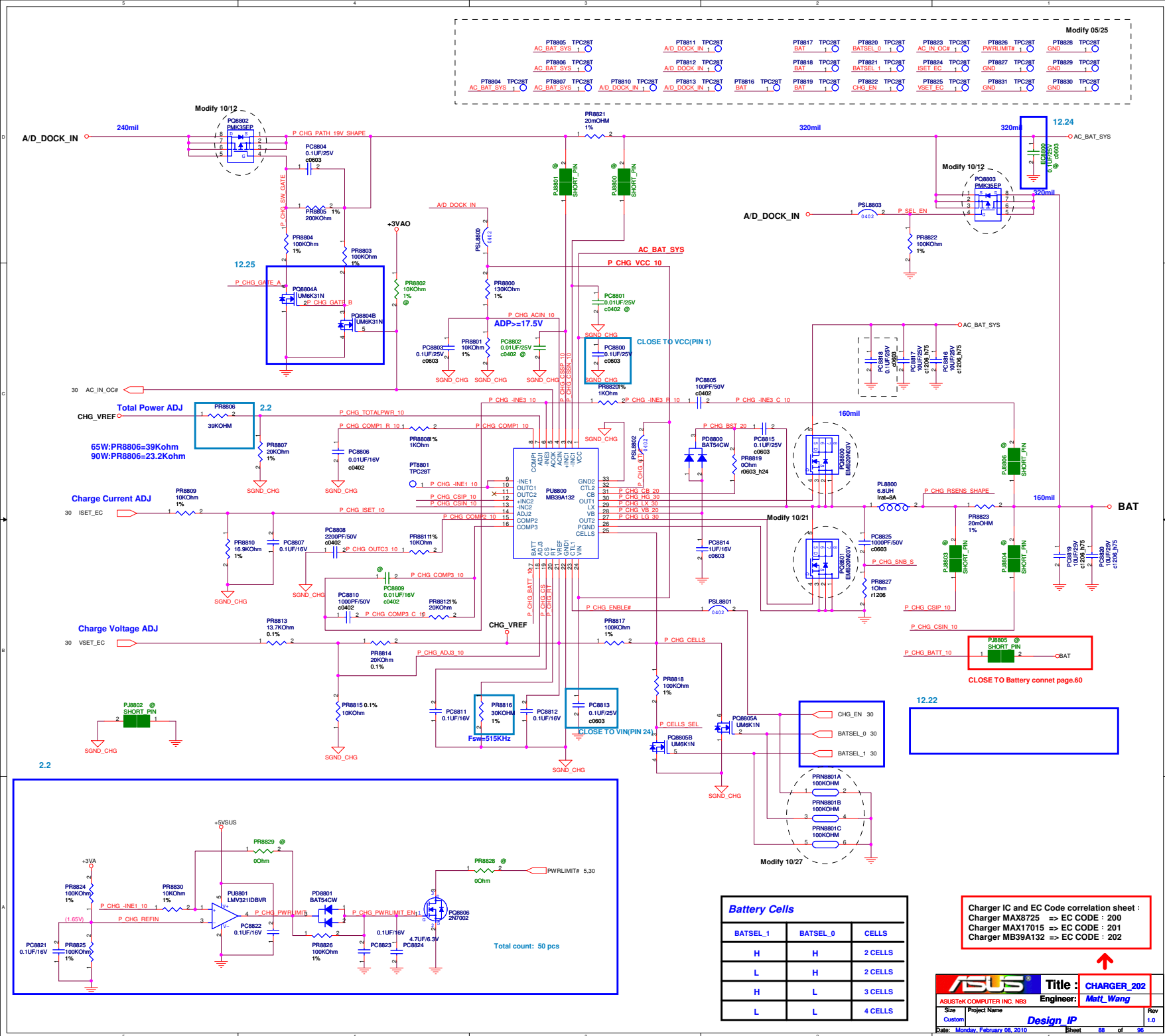
Controller

- DDR III:
- Voltage & Current:
+1.5V: 1.5V / 10A
 - Frequency:
F=300KHZ
 - OCP:
Set R8302=12 Kohm
 $I_{ocp} = R_{ocp} \cdot 20uA / R_{ds(on)}$
 $I_{ocp} = 14.3A$
 - Soft start time:
The Soft Start duration is 1.35ms
 - Inrush Current:
 $C_{total} = 220uF$
 $I_{inrush} = C \cdot V_{out} / SS_time$
 $I_{inrush} = 0.244A$
1. Voltage & Current:
+0.75V: 0.75V / 1A

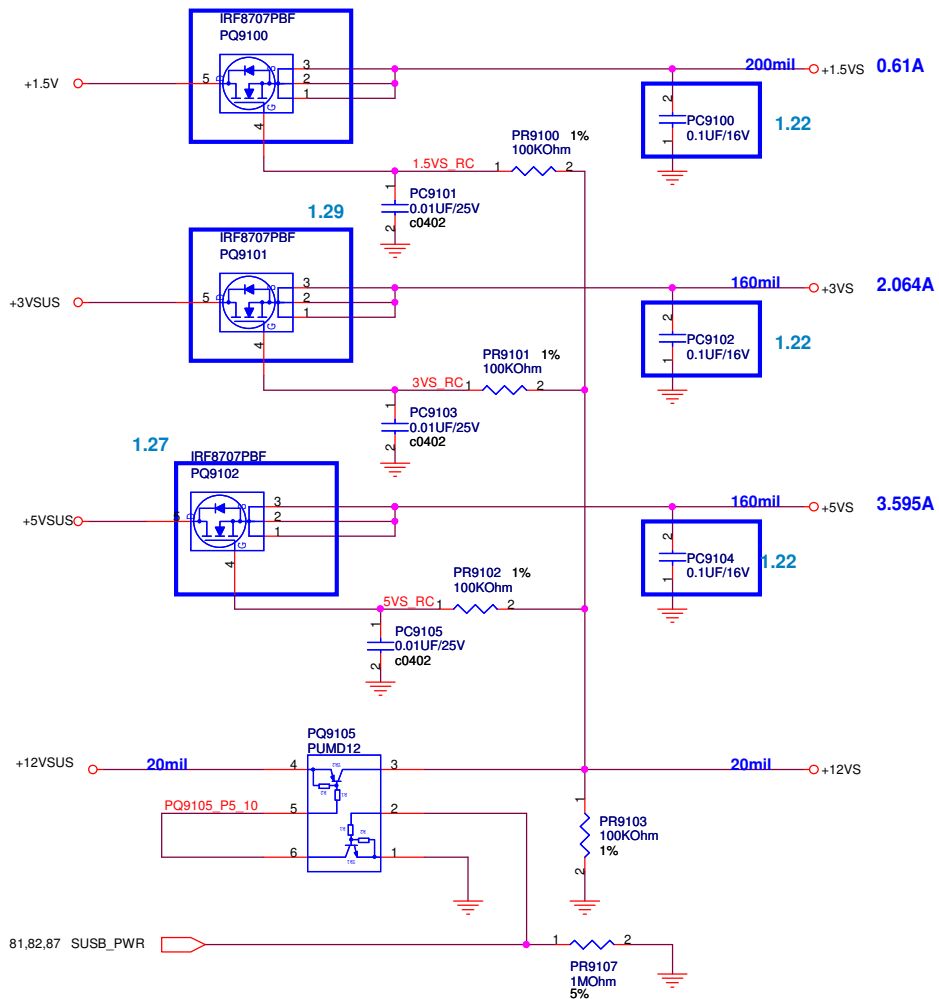


<Variant Name>

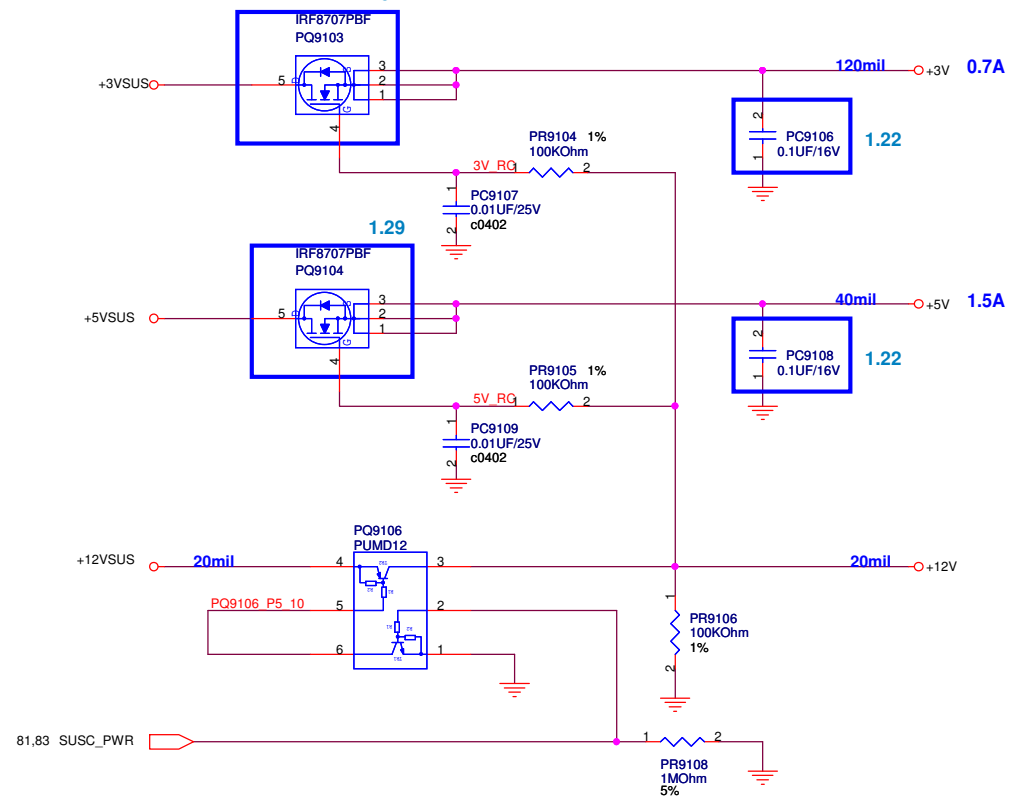




SUSB_PWR POWER 1.29



SUSC_PWR POWER 1.29



<Variant Name>

ASUS		Title :POWER_LOAD SWITCH	
ASUSTeK COMPUTER INC. NB		Engineer: Matt_Wang	
Size B	Project Name Design_IP		Rev 1.0
Date: Monday, February 08, 2010		Sheet 91 of 95	