

# VERSION HISTORY

Revision	Description	Date	Drawn	Checked	Approved
Ver1.0	Release	2013-02-01			
Ver1.01	a31s_phablet_changelist1_01.txt	2013-02-17			
Ver1.02	a31s_phablet_changelist1_02.txt	2013-02-21			
Ver1.03	a31s_phablet_changelist1_03.txt	2013-02-25			

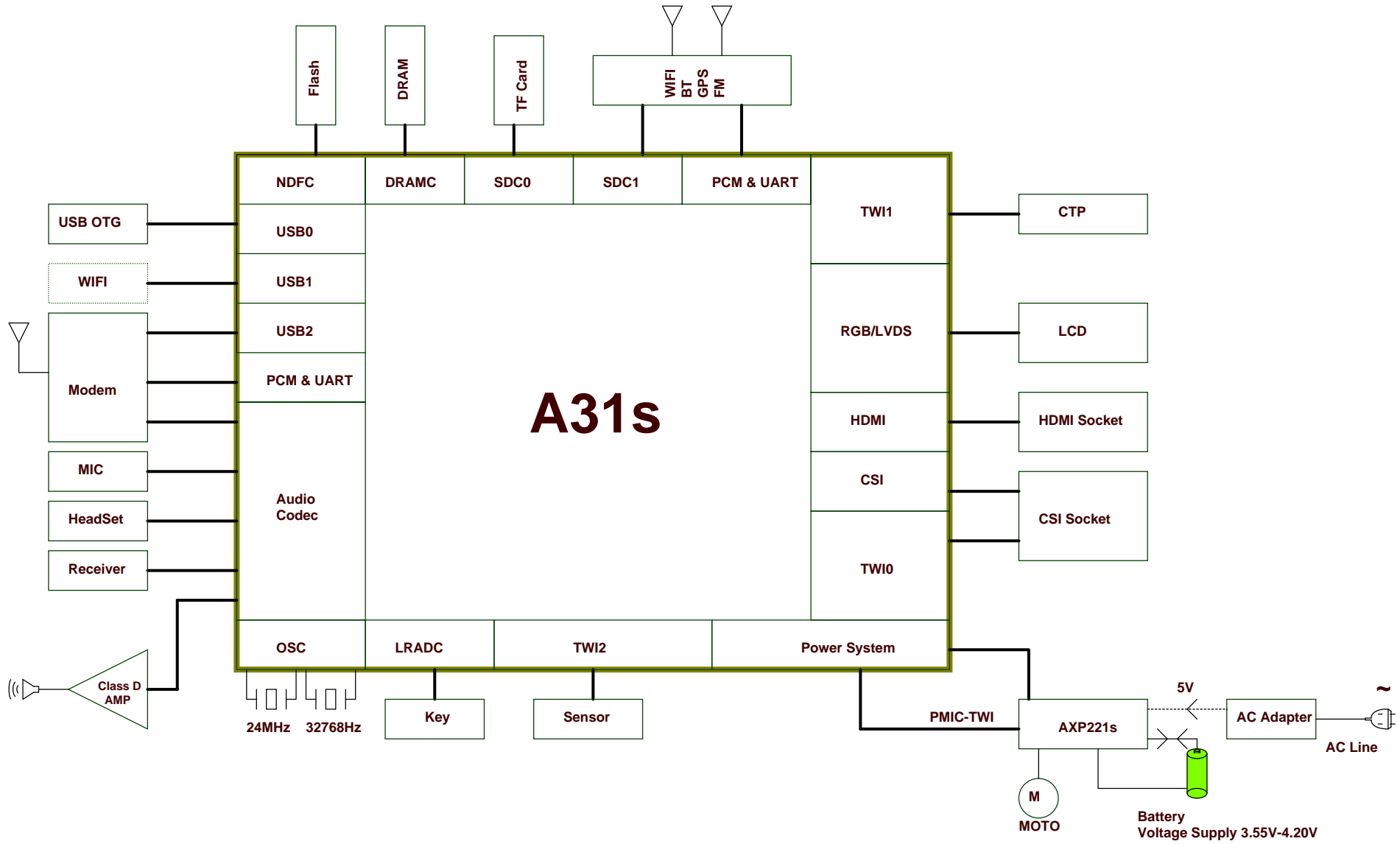
## Index:

P01: VERSION HISTORY  
P02: BLOCK DIAGRAM  
P03: POWER TREE  
P04: GPIO ASSIGNMENT  
P05: DRAM DDR3 2X16  
P06: CPU  
P07: POWER  
P08: NAND  
P09: LCD TP  
P10: CAMERA  
P11: MODEM  
P12: WIFI 4IN1  
P13: AUDIO  
P14: CARD USB HDMI KEY  
P15: SENSOR

OPTION:  
MODEM G3  
MODEM WM5608  
WIFI 4IN1 BC

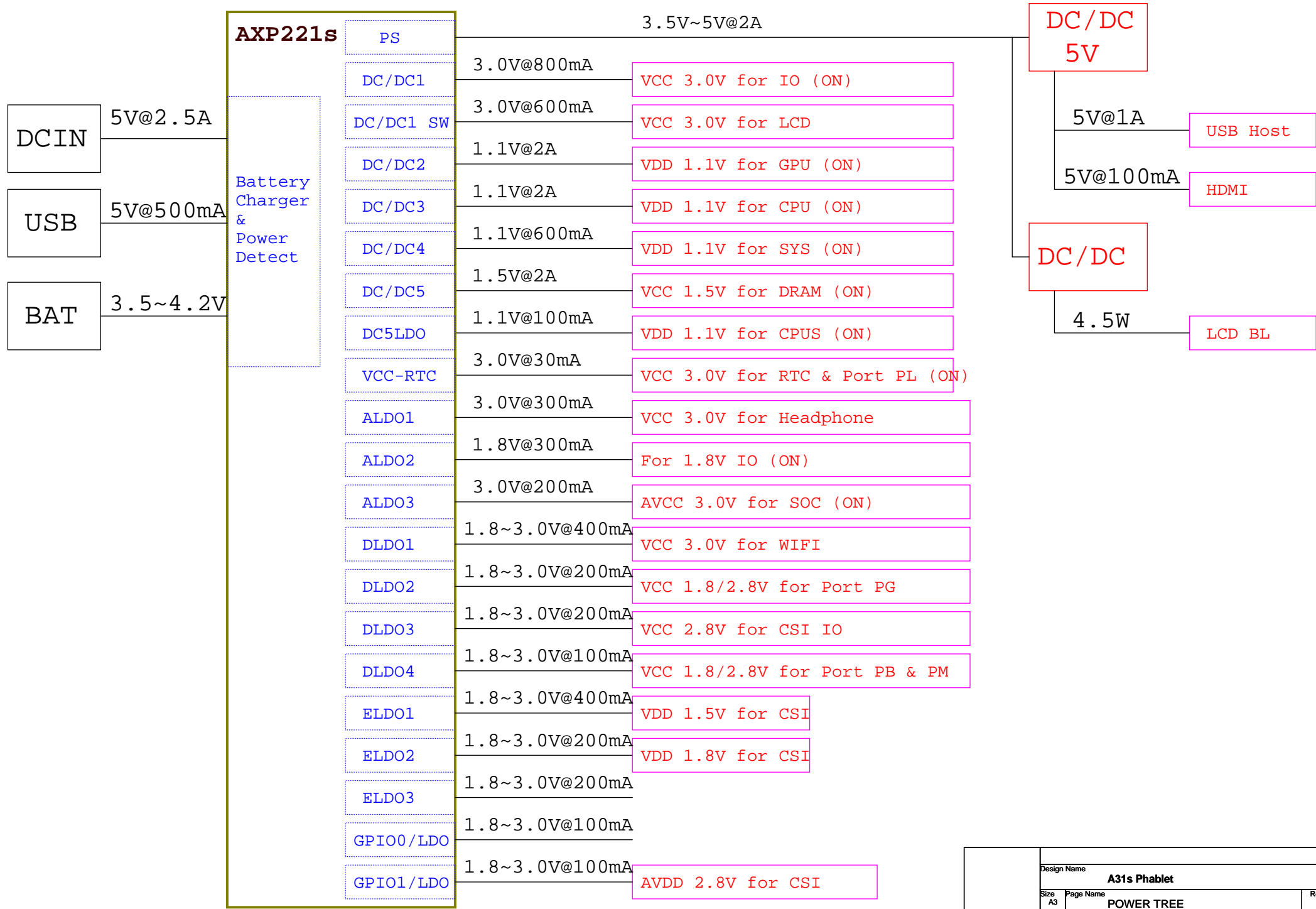
Design Name		<b>A31s Phablet</b>	
Size	Page Name	Rev	
A3	VERSION HISTORY		
Date:	Sunday, February 24, 2013	Sheet	1 of 18

# BLOCK DIAGRAM



Design Name		<b>A31s Phablet</b>	
Size	Page Name	Rev	
A3	BLOCK DIAGRAM		
Date:	Sunday, February 24, 2013	Sheet	2 of 18

# POWER TREE



# GPIO ASSIGNMENT

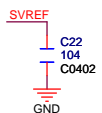
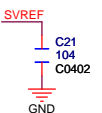
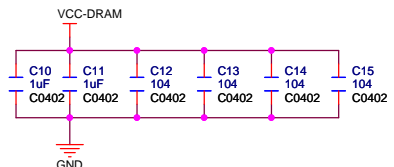
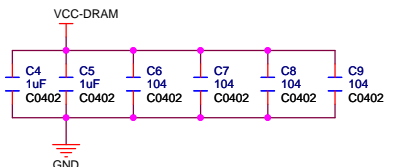
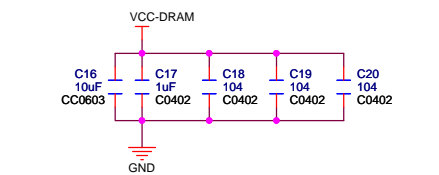
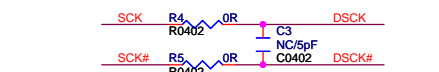
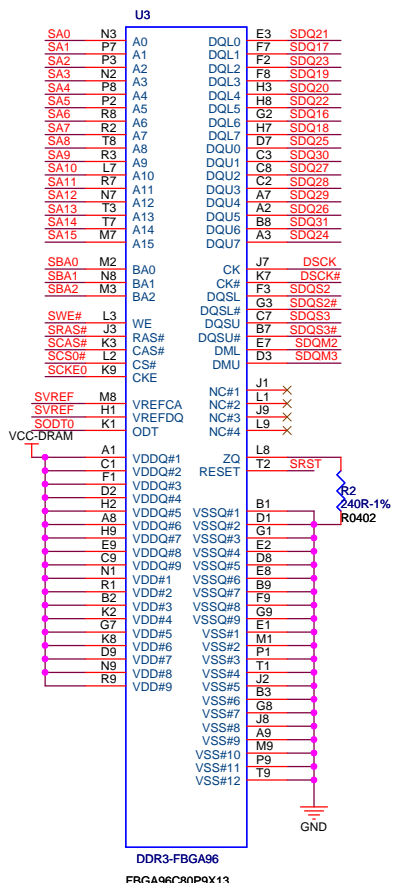
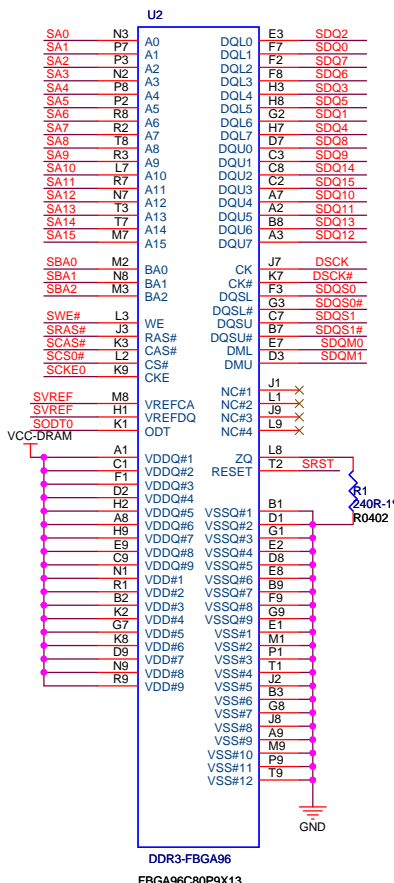
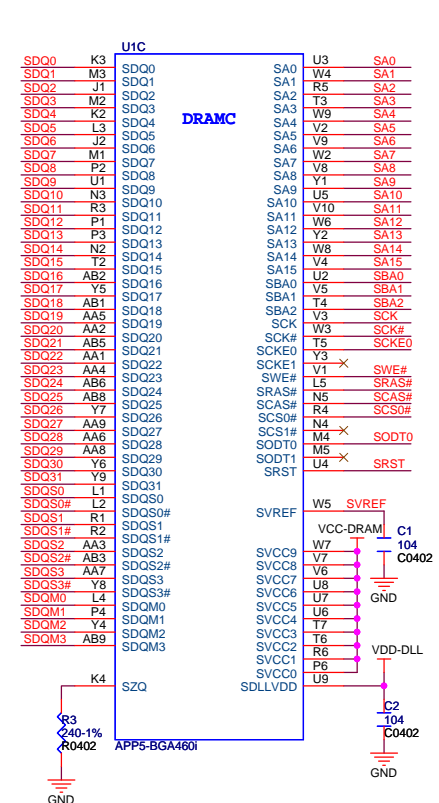
PIN	Name	Function
PA0		
PA1		
PA2	CTP-WAKE	CTP
PA3	CTP-INT	
PA4		
PA5		
PA6		
PA7		
PA8	SDC0-DET	TF CARD
PA9	GS-INT	SENSOR
PA10	GY-INT	
PA11	CP-INT	
PA12		
PA13		
PA14	USB0-VBDET	USB
PA15	USB0-IDDET	
PA16		
PA17		
PA18		
PA19		
PA20		
PA21	RESET	CSI
PA22	PWDN	
PA23		
PA24		
PA25	LCD-BL-EN	LCD
PA26		
PA27		

PIN	Name	Function
PL0	PMU-SCK	PMIC
PL1	PMU-SDA	
PL2	SUART-TX	DEBUG
PL3	SUART-RX	
PL4	PA-SHDN	SPEAKER
PL5	WL-PMU-EN	WIFI
PL6	WL-WAKE-HOST	
PL7	BT-WAKE-HOST	
PL8	WL-SYSRST-N	

PIN	Name	Function
PM0	BB-HOST-WAKE	Modem
PM1	BB-PWRON	
PM2	BB-WAKE	
PM3	BB-RST-N	
PM4		
PM5		
PM6		
PM7	AP-CLK32K	WIFI

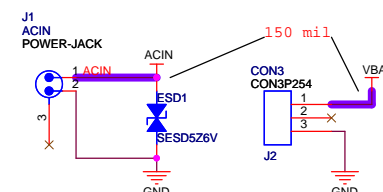
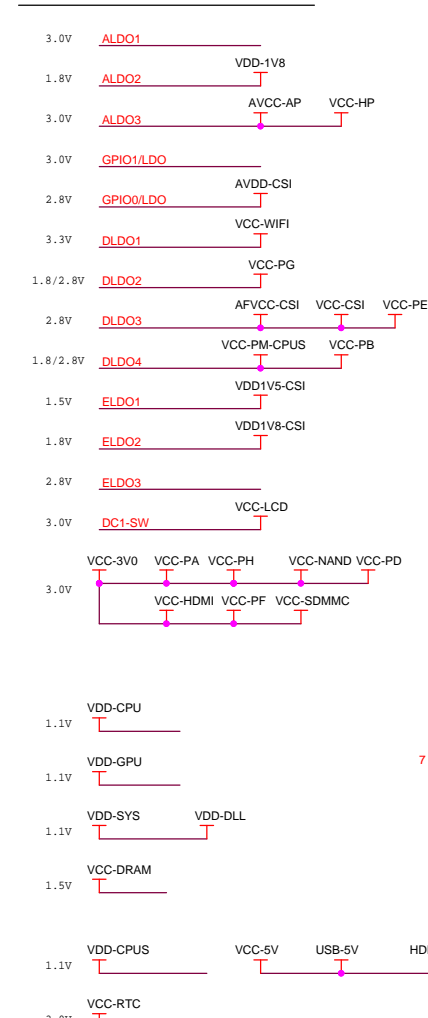
# DRAM DDR3 2X16

Please copy DRAM PCB template and follow PCB layout guide. The circuit is only for single-side PCB layout.



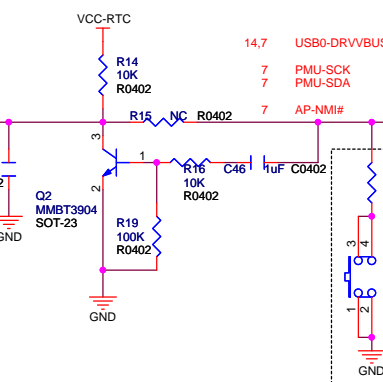
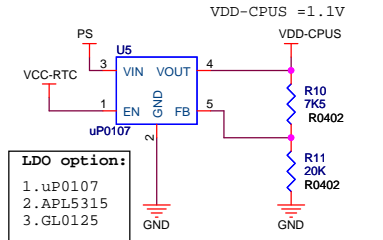
Design Name		A31s Phablet	
Size	Page Name	Rev	
A3	DRAM DDR3 2X16		
Date:	Saturday, February 02, 2013	Sheet	5 of 18

# POWER

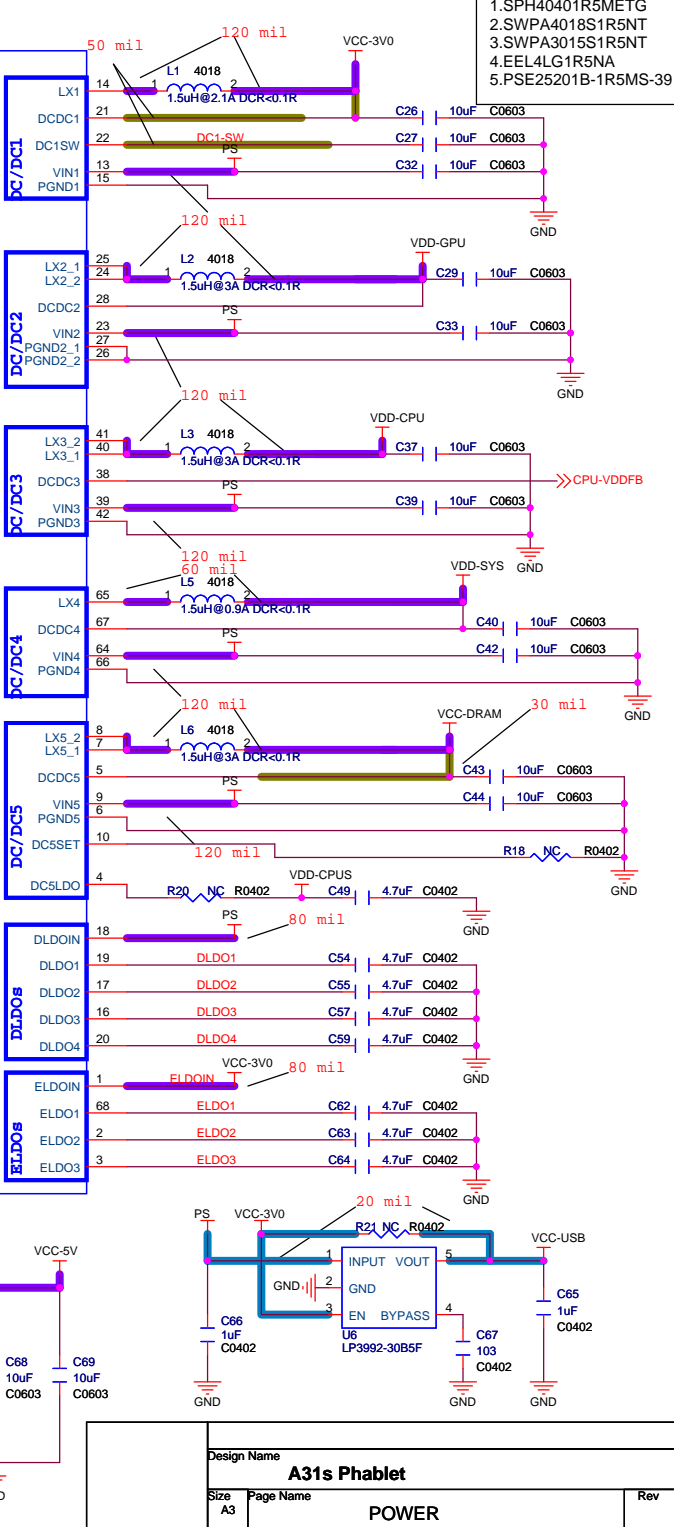
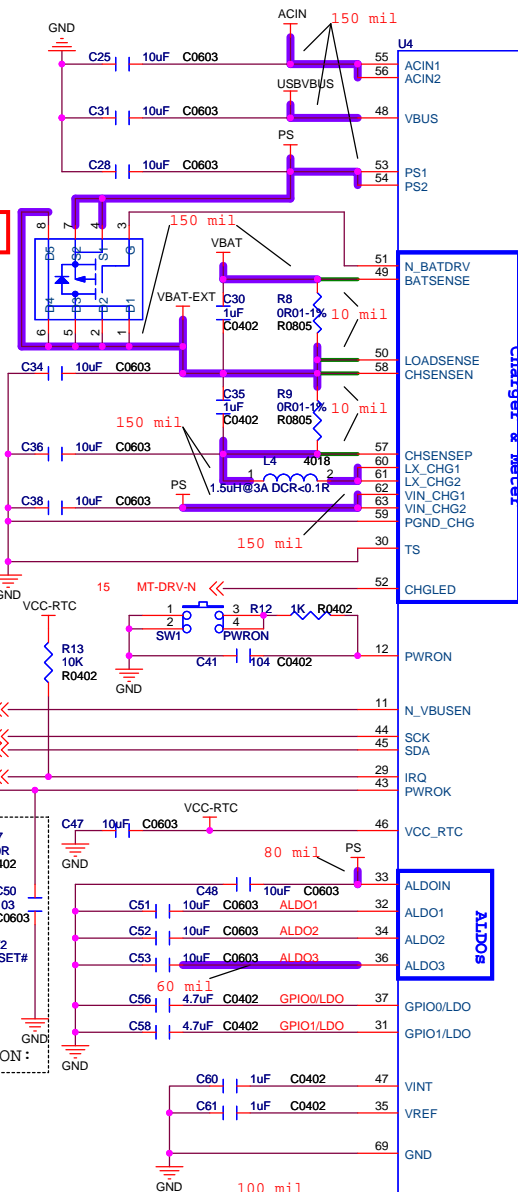


NOTE:  
 Q1 vth <1.5V & R <30mohm@vgs=4.5V

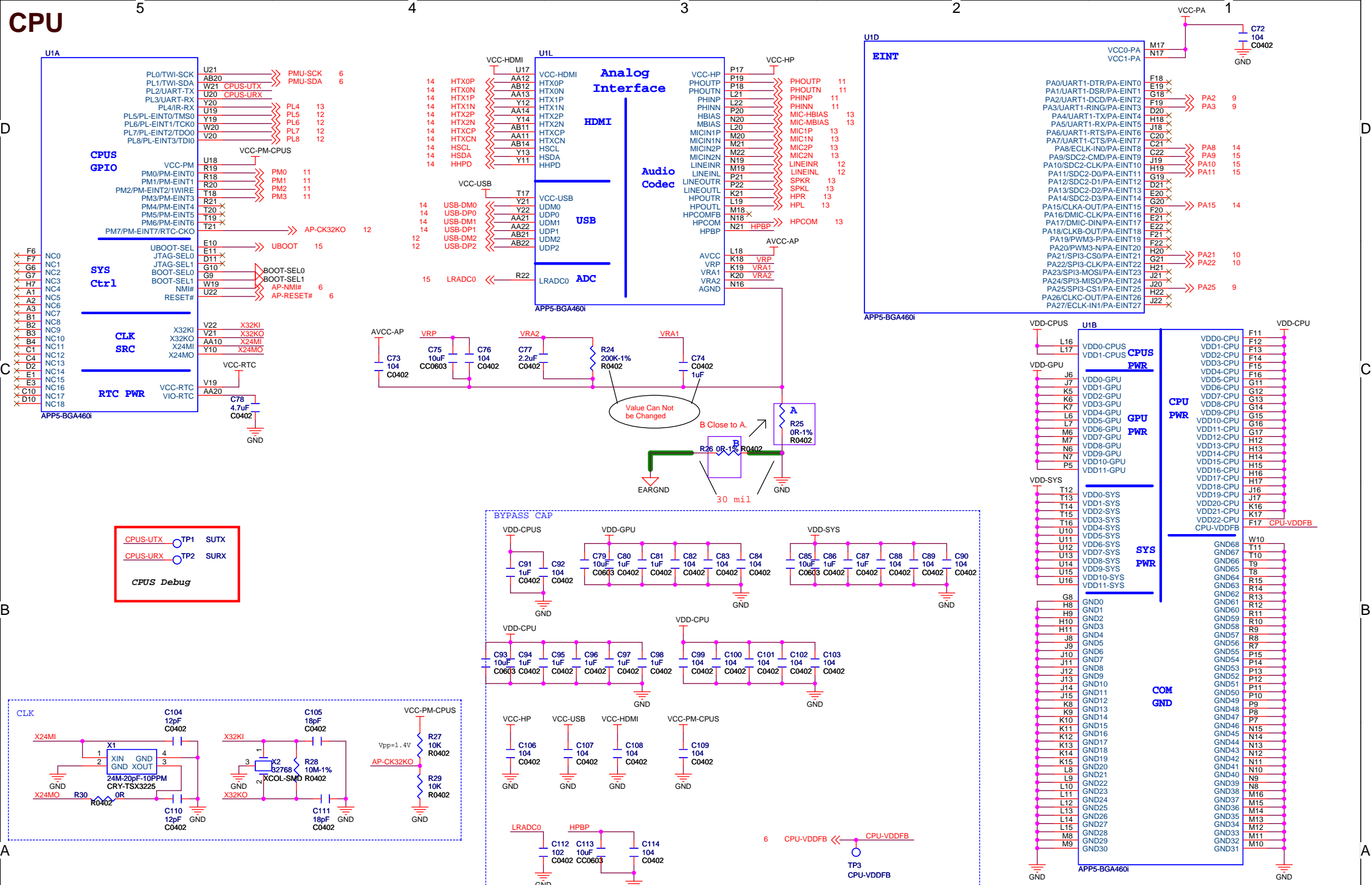
P-MOSFET option:  
 1.TCS1905  
 2.KD1221  
 3.WPM1481  
 4.WPM1485



Name	Default Voltage	Maximum Current	Comment	Name	Default Voltage	Maximum Current	Comment
DCDC1	3.0V	1A	For GPIO Default ON	DLDO1	0V	400mA	Default OFF
DCDC2	1.1V	2A	For GPU Default ON	DLDO2	0V	200mA	Default OFF
DCDC3	1.1V	2A	For CPU Default ON	DLDO3	0V	200mA	Default OFF
DCDC4	1.1V	600mA	For System Default ON	DLDO4	0V	100mA	Default OFF
DCDC5	1.2V	2A	For DRAM Default ON	ELDO1	0V	400mA	Default OFF
ALDO1	0V	300mA	Default OFF	ELDO2	0V	200mA	Default OFF
ALDO2	1.8V	300mA	For 1.8V IO/LPDDR2 Default ON	ELDO3	0V	200mA	Default OFF
ALDO3	3V	200mA	For SOC Analog Default ON	DC5LDO	1.1V	200mA	For CPUS, From DC/DC5 Default ON
GPIO0	0V	100mA	Default OFF	DC1SW	3.0V	0.1ohm	For LCD, From DC/DC1 Default OFF
GPIO1	0V	100mA	Default OFF	RTC-VCC	3V	30mA	For RTC Always On

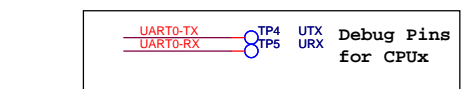
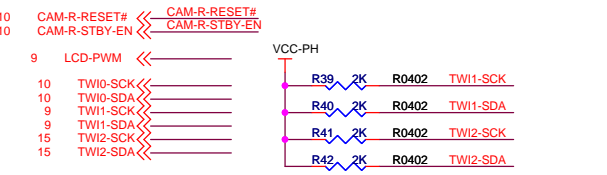
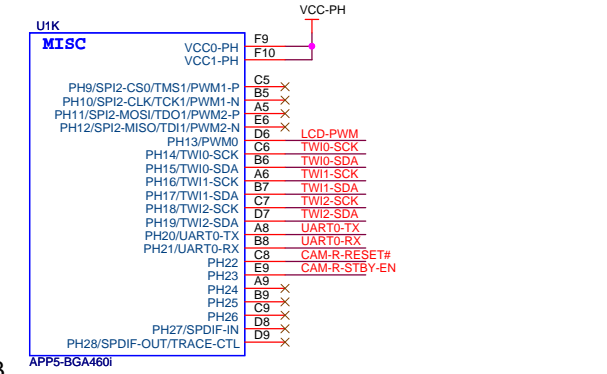
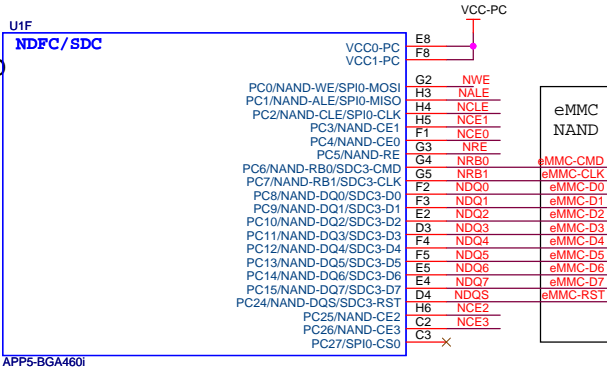


- Inductor option:  
 1.SPH40401R5METG  
 2.SWPA4018S1R5NT  
 3.SWPA3015S1R5NT  
 4.EEL4LGR5NA  
 5.PSE25201B-1R5MS-39

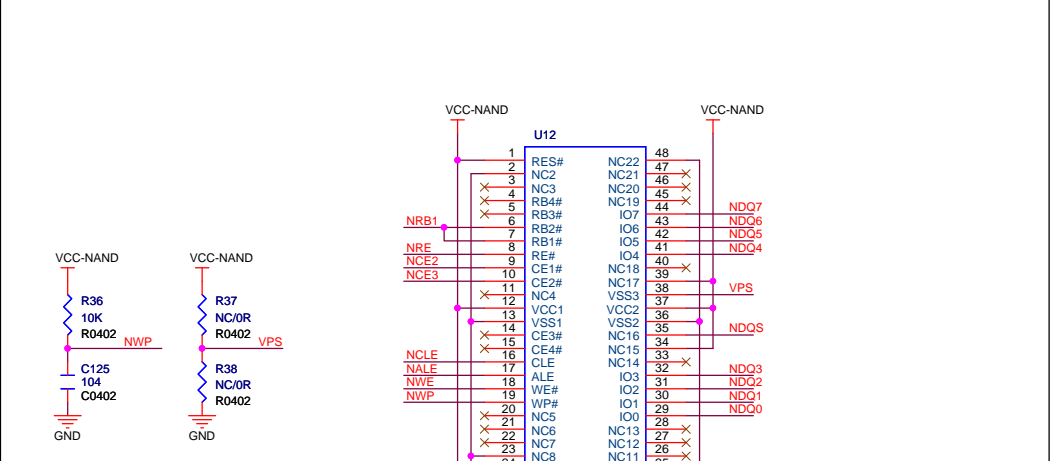
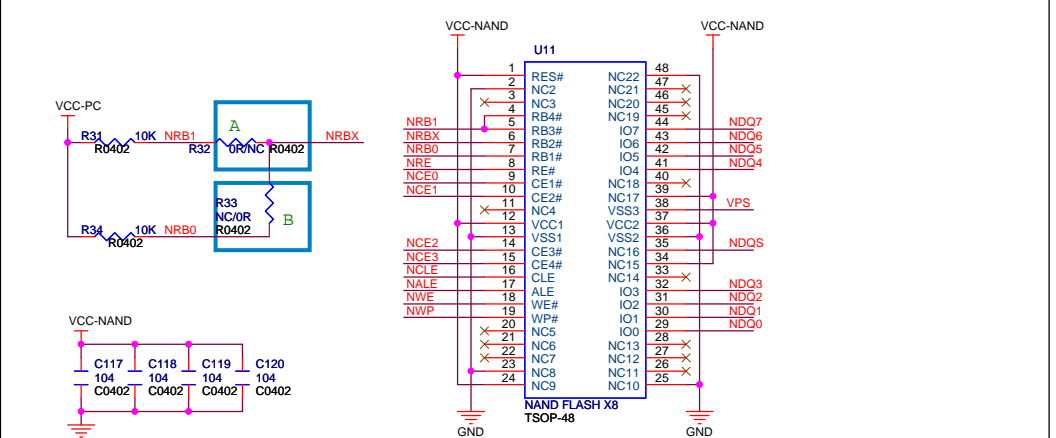
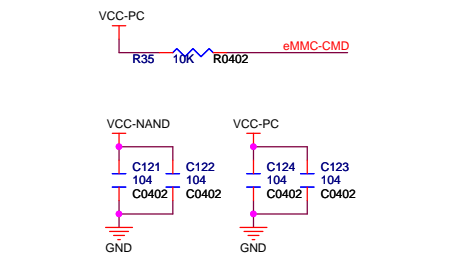
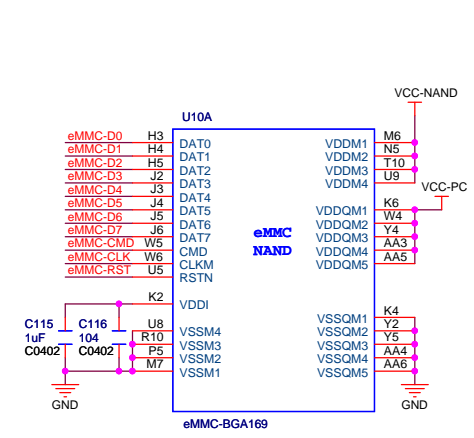


Design Name			<b>A31s Phablet</b>		
Size	Page Name	Rev			
A3	CPU				
Date:	Thursday, February 21, 2013	Sheet	7	of	18

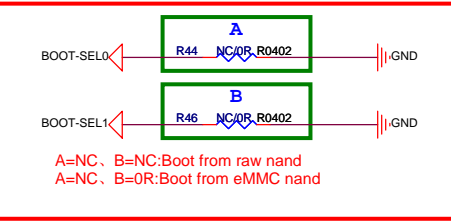
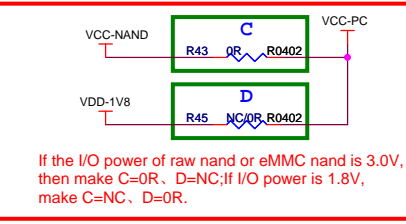
# NAND



## Both eMMC NAND and TSOP NAND layout together

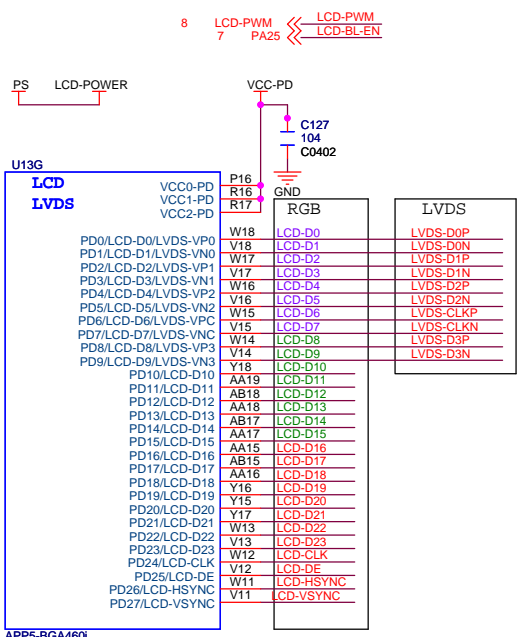


- (1) One NAND with 1 CE or 2 CE, A=0R, B=NC
- (2) One NAND with 4 CE, A=NC, B=0R
- (3) Two NAND with 1 CE or Two NAND with 2 CE, A=NC, B=0R
- (4) VPS refer to NAND AVL table

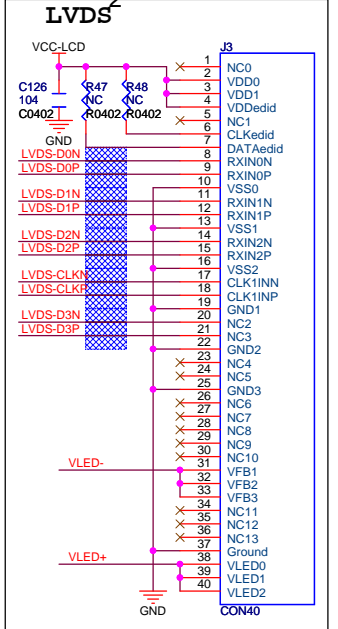
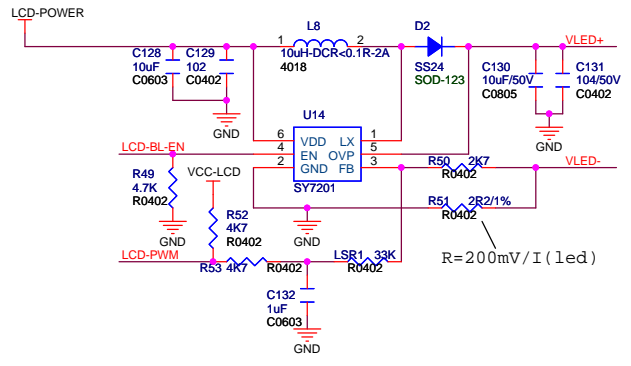


Design Name		
<b>A31s Phablet</b>		
Size	Page Name	Rev
A3	NAND	
Date:	Thursday, February 21, 2013	Sheet 8 of 18



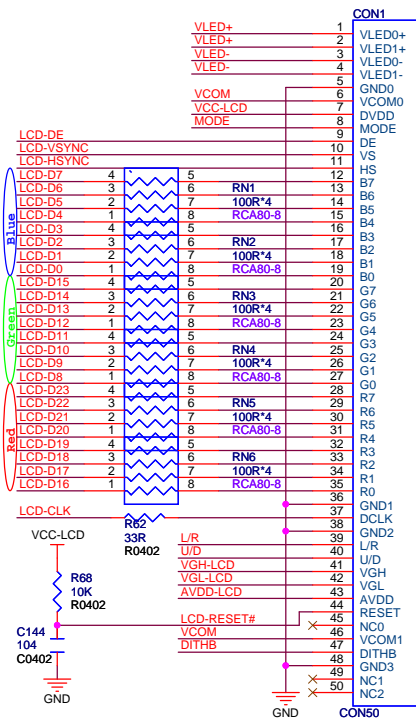
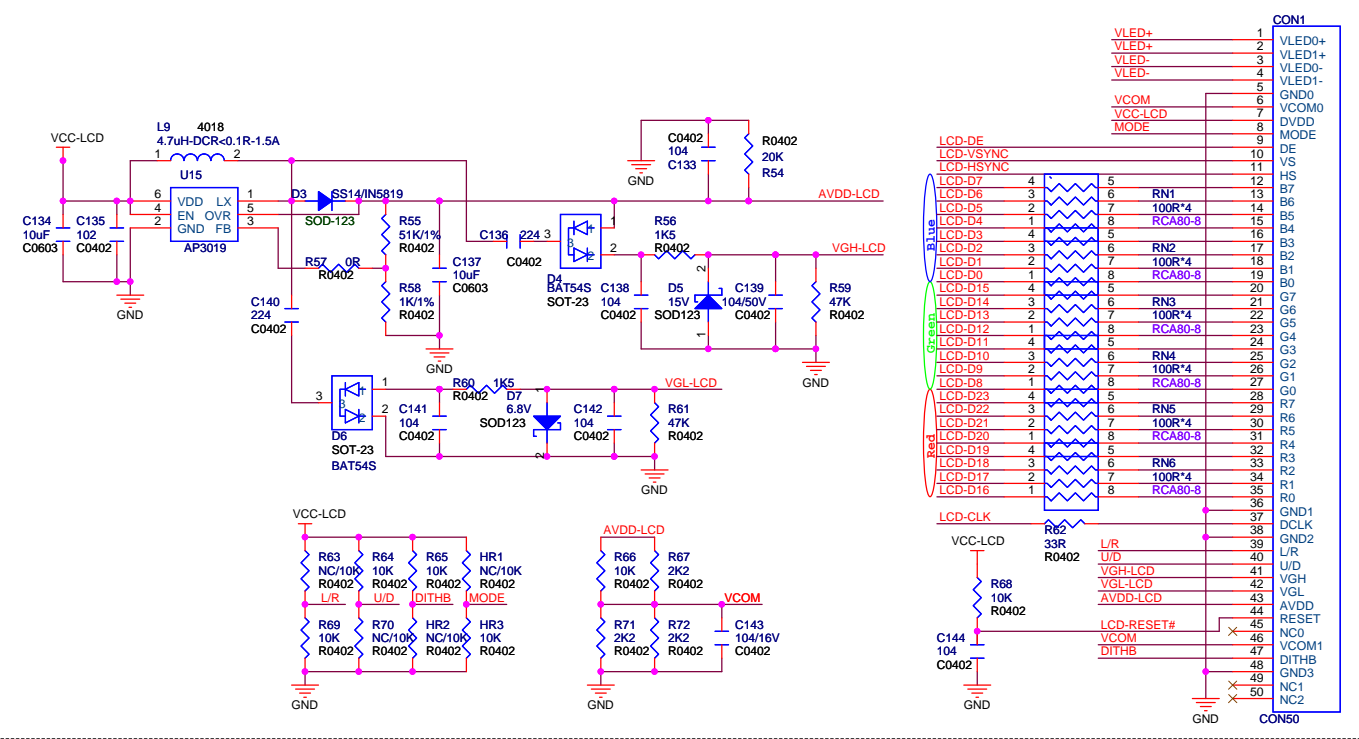


Backlight

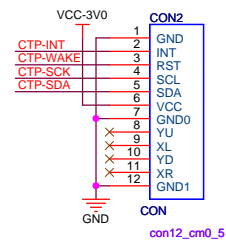


Differential pairs  
Z0= 100 ohm

7 PA2 CTP-WAKE  
7 PA3 CTP-INT  
8 TW11-SCK CTP-SCK  
8 TW11-SDA CTP-SDA

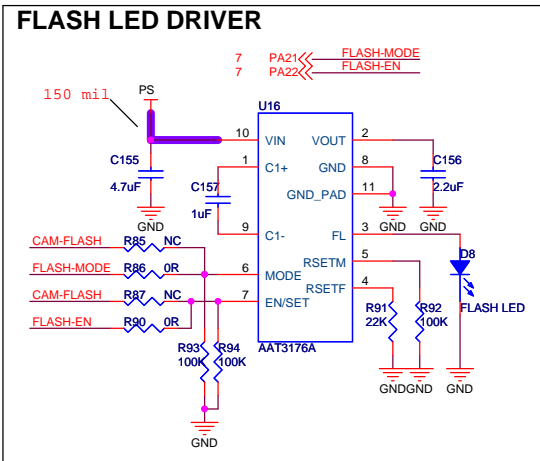
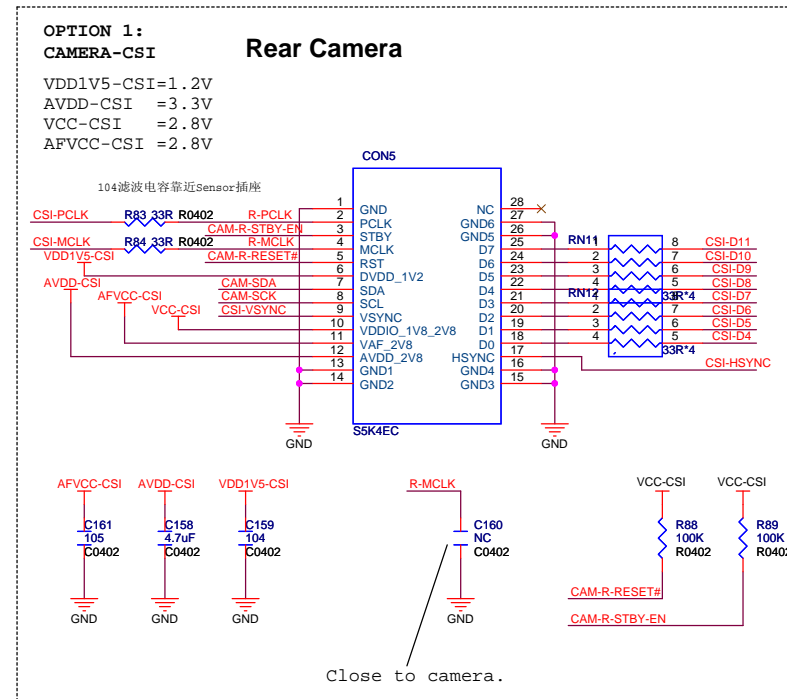
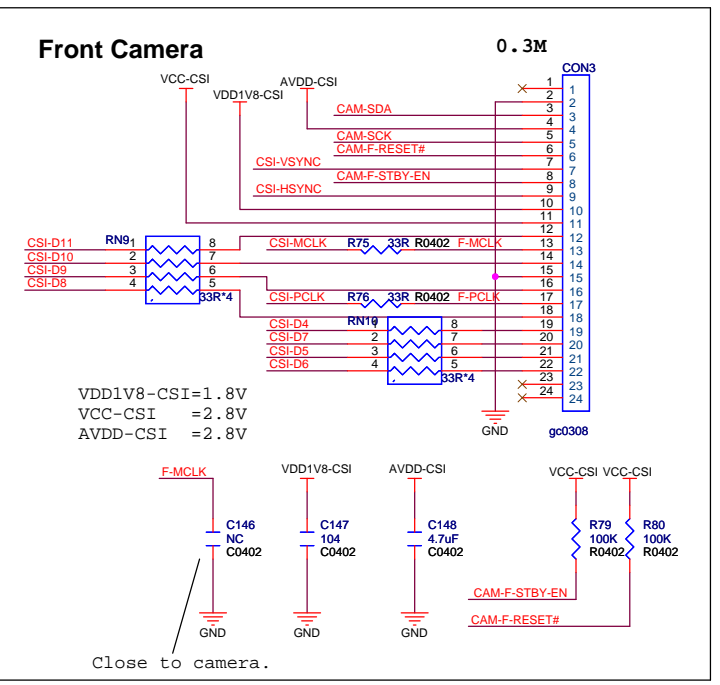
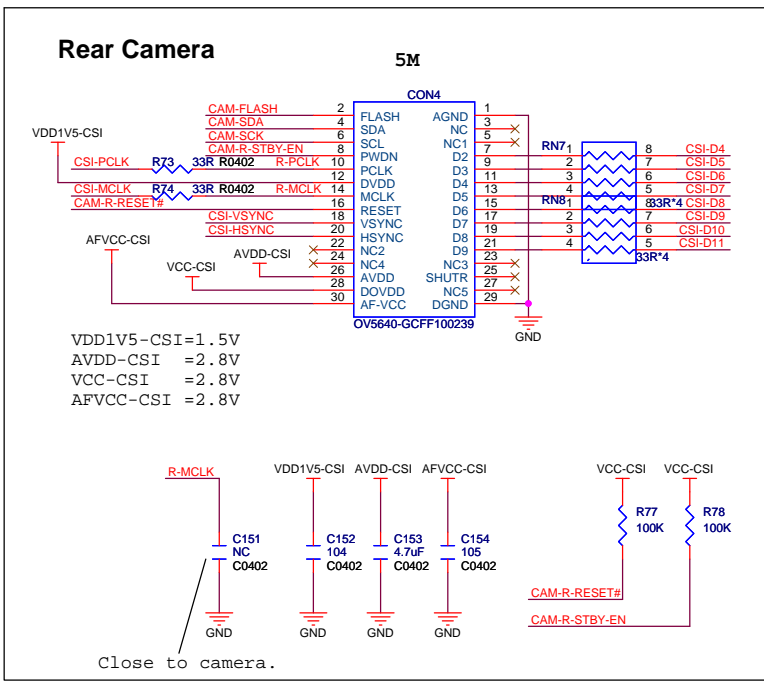
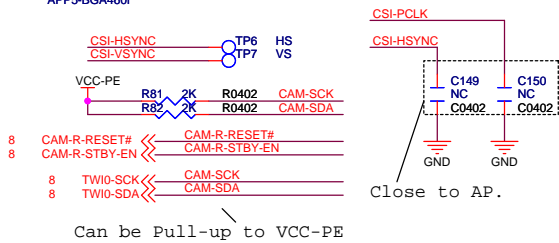
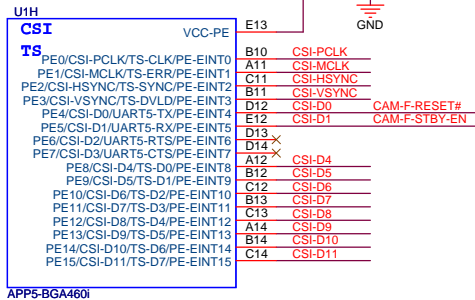


CTP



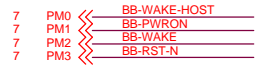
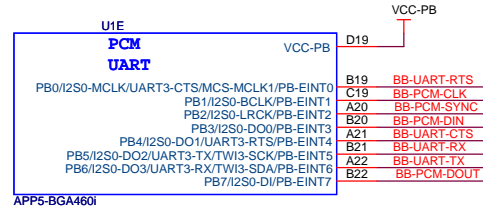
Design Name		
A31s Phablet		
Size	Page Name	Rev
A3	LCD TP	
Date:	Saturday, February 02, 2013	Sheet 9 of 18

# CAMERA

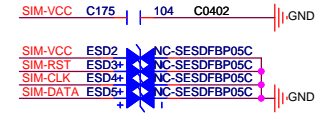
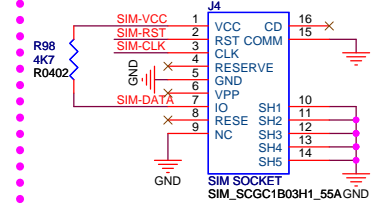
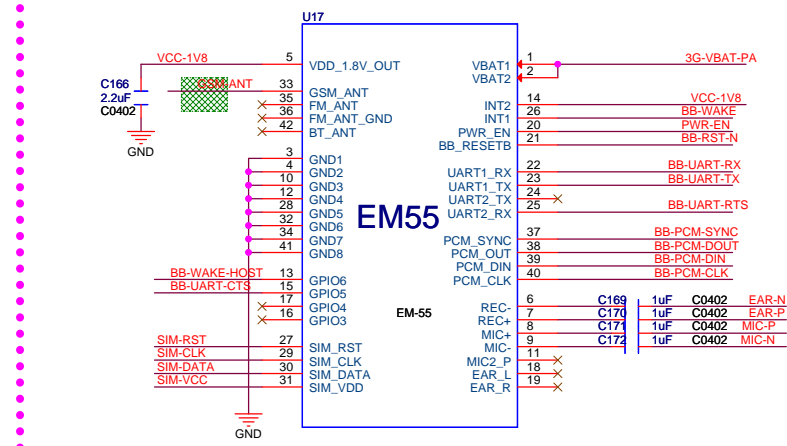


Design Name		
A31s Phablet		
Size	Page Name	Rev
A3	CAMERA	
Date:	Saturday, February 02, 2013	Sheet 10 of 18

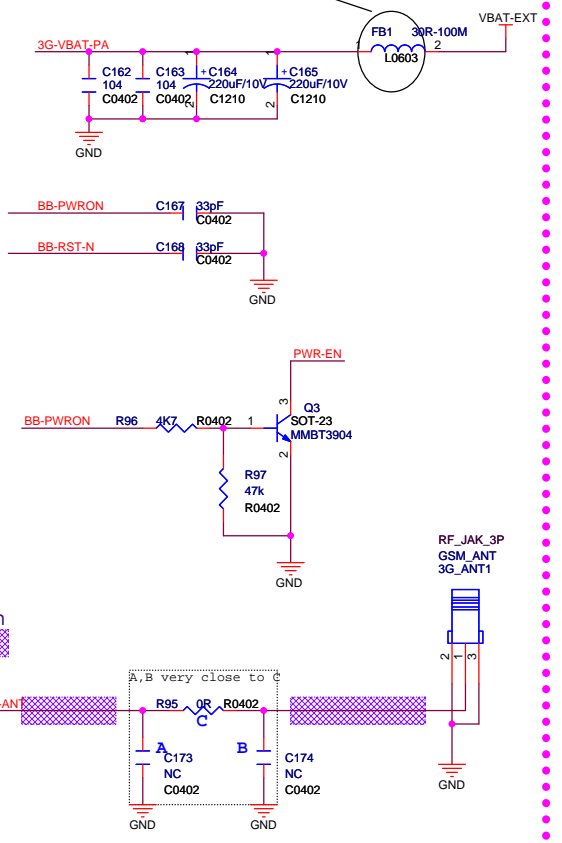
# MODEM



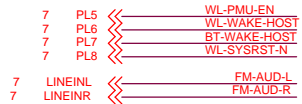
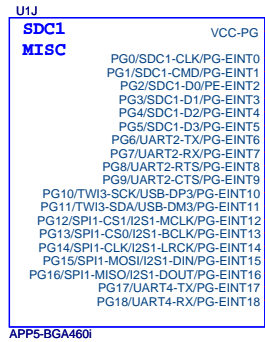
If modem is not be use, this block should be removed, and the connection between this block and other block should also be removed. But VCC-PB connection should be kept.



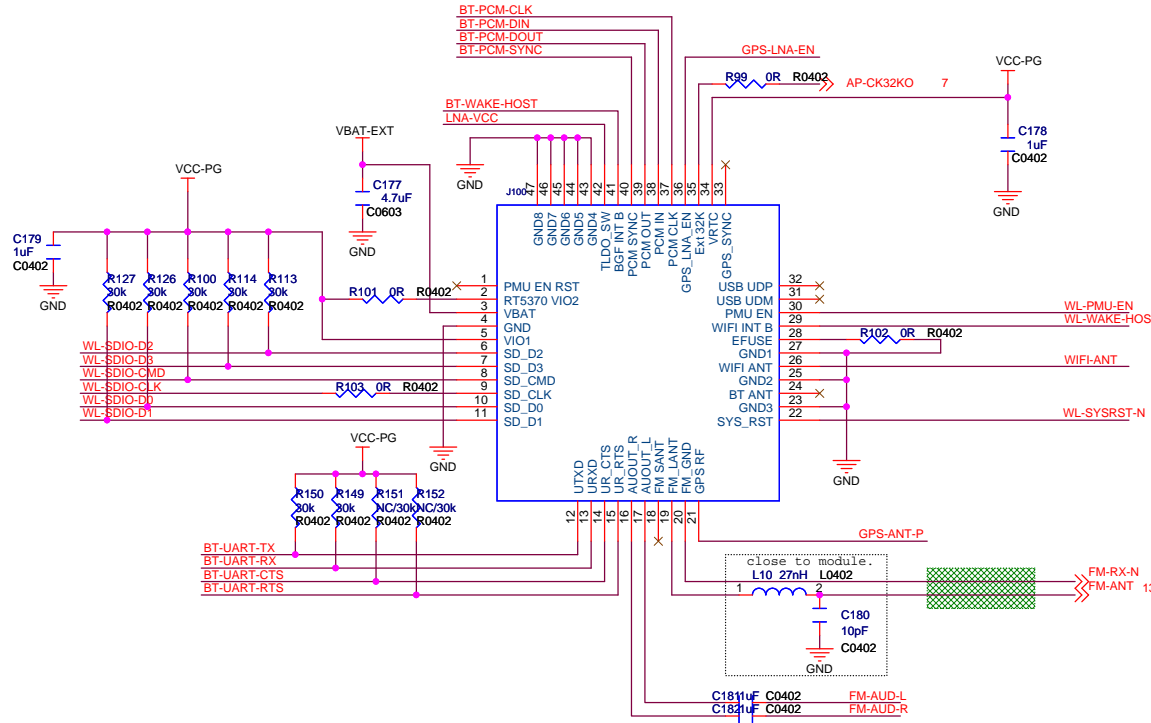
FBMJ1608HS280NT by TAIYO YUDEN or MPZ1608S300ATAH0 by TDK is recommended.



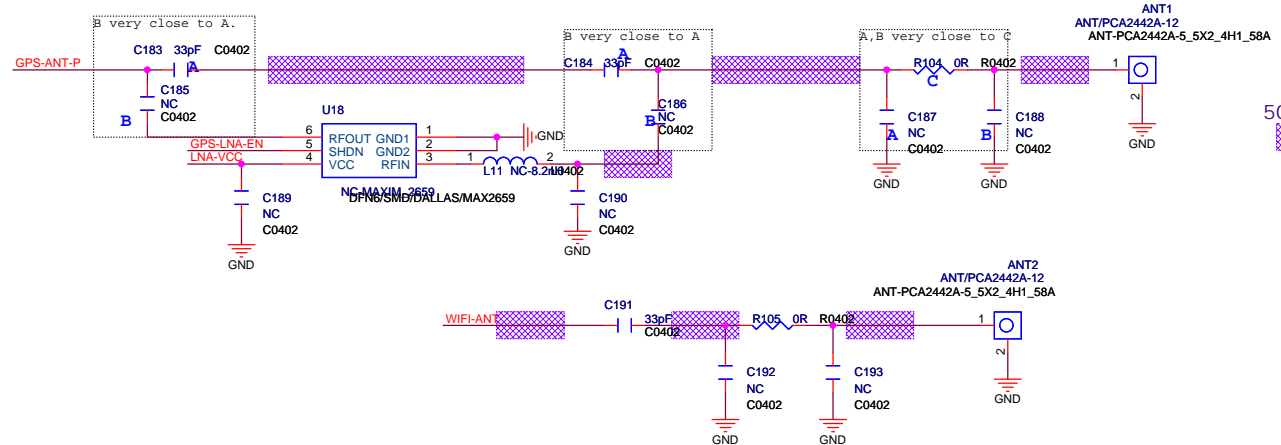
# WIFI 4IN1



If this WIFI module is not be use, this block should be removed, and the connection between this block and other block should also be removed. But VCC-PG connection should be kept.



Differential pairs



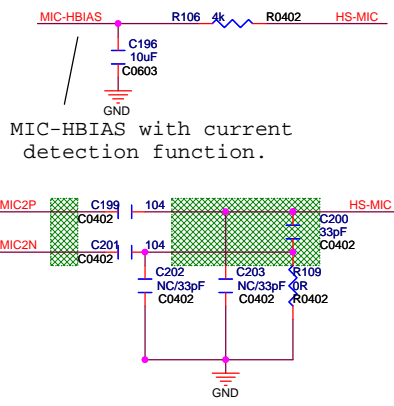
50 ohm

Design Name		A31s Phablet	
Size	Page Name	WIFI 4IN1	
Date:	Sunday, February 24, 2013	Sheet	12 of 18

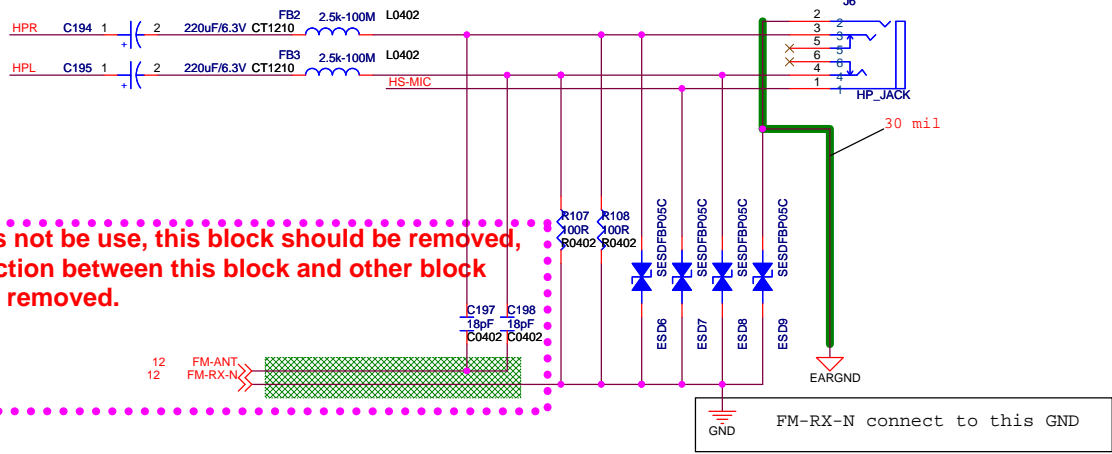
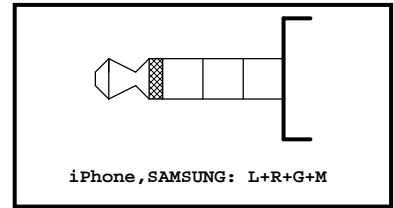
# AUDIO

## Head Phone

- 7 MIC-HBIAS << MIC-HBIAS
- 7 MIC-MBIAS << MIC-MBIAS
- 7 MIC1P << MIC1P
- 7 MIC1N << MIC1N
- 7 MIC2P << MIC2P
- 7 MIC2N << MIC2N
  
- 7 SPKR << SPKR
- 7 SPKL << SPKL
- 7 HPR << HPR
- 7 HPL << HPL
  
- 7 HPCOM << HPCOM
  
- 7 PL4 << PA-SHDN

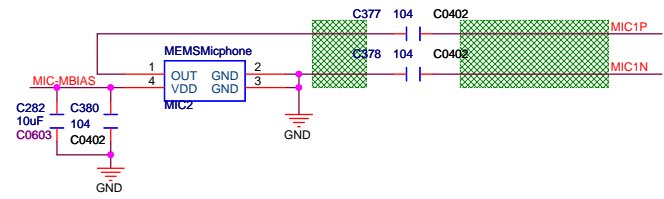


Differential pairs

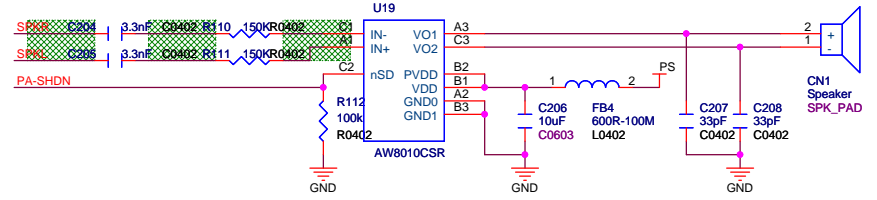


FM-RX-N connect to this GND

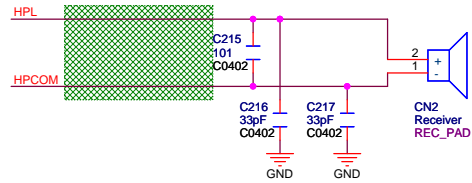
## Analog Microphone



## Speaker



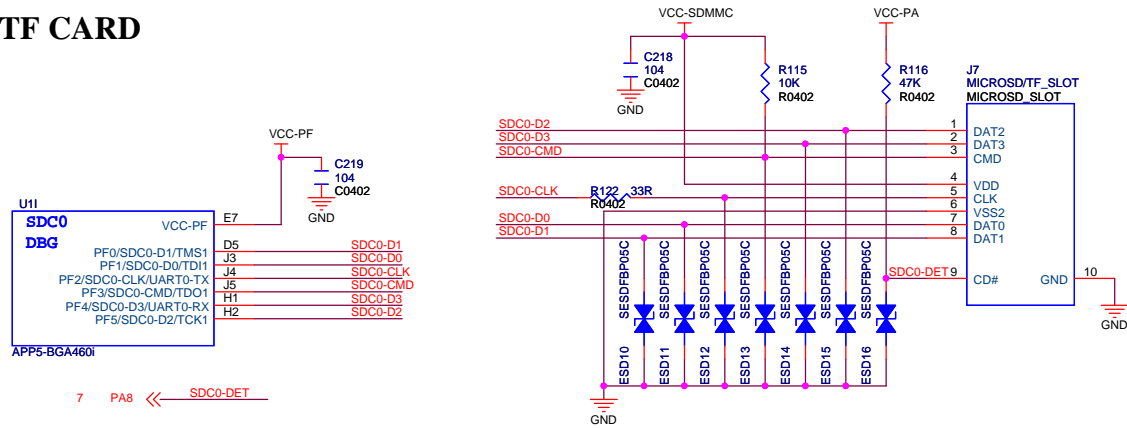
## Receiver



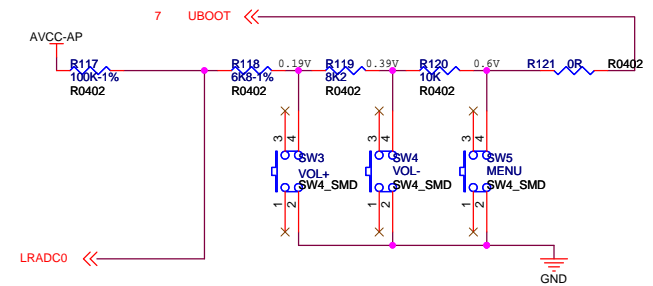
Design Name		A31s Phablet	
Size	Page Name	AUDIO	
A3		Date:	Wednesday, February 20, 2013
		Sheet	13 of 18

# USB HDMI CARD KEY

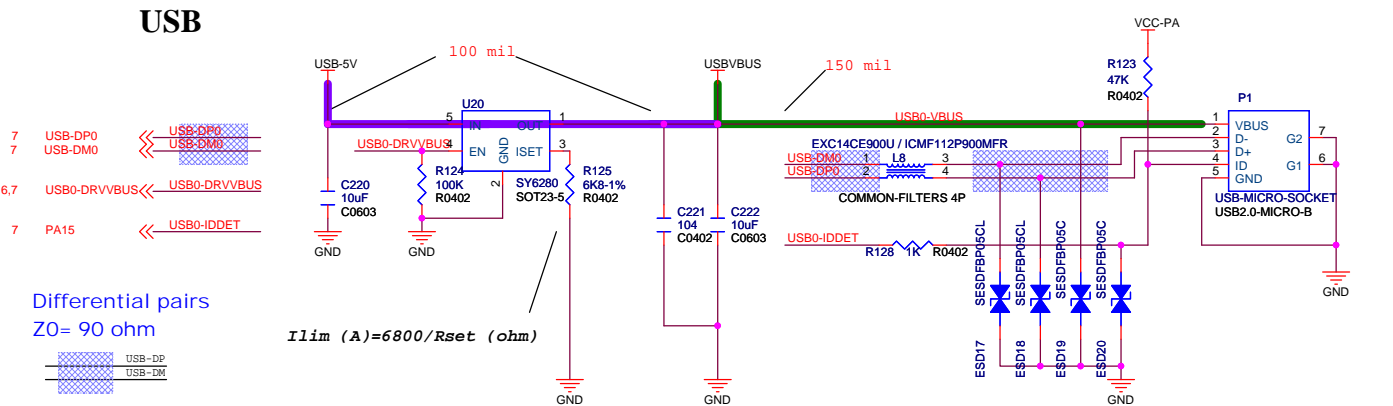
## TF CARD



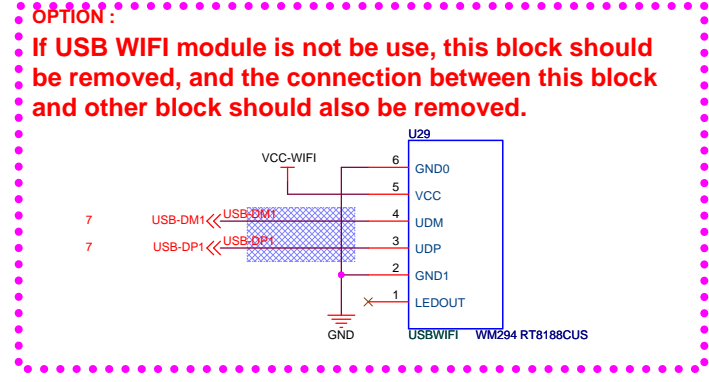
## KEY



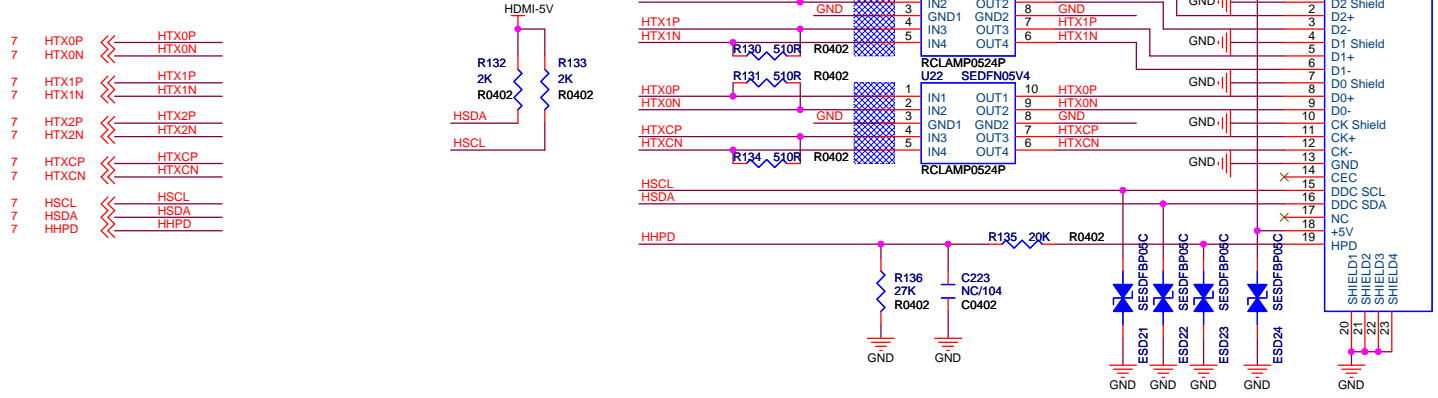
## USB



## USB WIFI



## HDMI



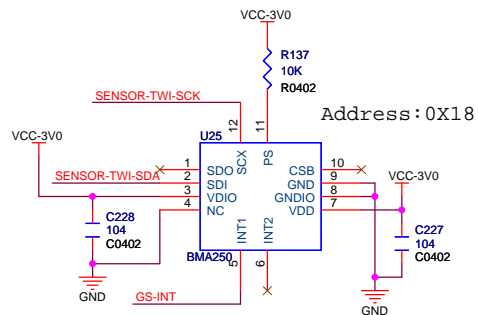
Design Name		
A31s Phablet		
Size	Page Name	Rev
A3	USB HDMI CARD KEY	
Date:	Wednesday, February 20, 2013	Sheet 14 of 18

# SENSOR

8 TWI2-SCK << SENSOR-TWI-SCK  
8 TWI2-SDA << SENSOR-TWI-SDA

7 PA9 << GS-INT  
7 PA10 << GY-INT  
7 PA11 << CP-INT  
12 PG12 << LS-INT

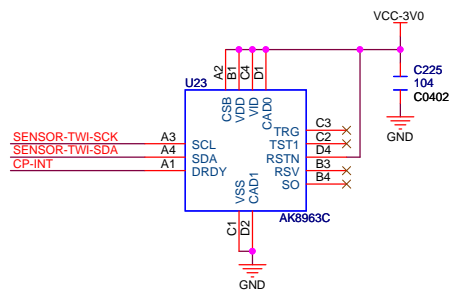
## 3D G-Sensor



- 1、 The first pin paced on the left lower corner of product on top view.

## Magnetic Sensor

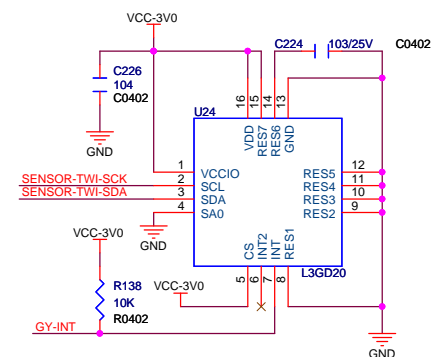
Address: 0X0D



- 1、 The first pin paced on the left lower corner of product on top view.
- 2、 Not close to the metal.

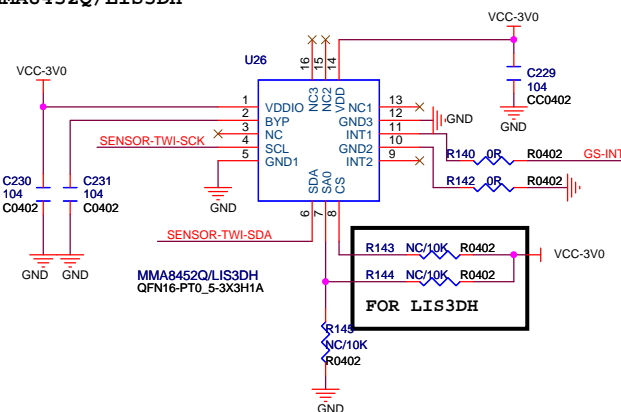
## 3-Axis Gyroscope

Address: 0X6A



- 1、 The first pin paced on the left lower corner of product on top view.

## MMA8452Q/LIS3DH

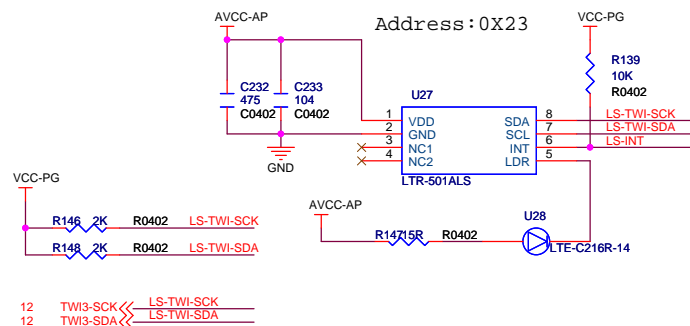


### OPTION :

- 1、 MMA8452Q: 3x3x1mm  
pin 7: NC pull down resistor and pull up resistor;  
pin 8: NC pull up resistor.
- 2、 LIS3DH:  
pin 2: NC pull down capacitance ;  
pin 7: NC pull down resistor , pull up resistor=10K;  
pin 8: pull up resistor=10K.

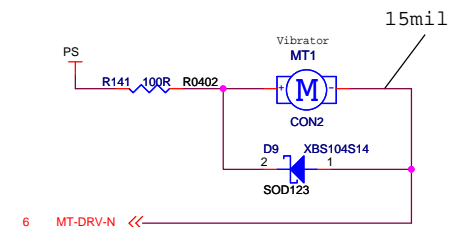
## ALS Sensor

Address: 0X23



2-in-1 Light Sensor and Proximity Sensor

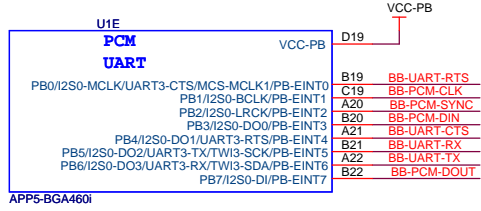
## Motor



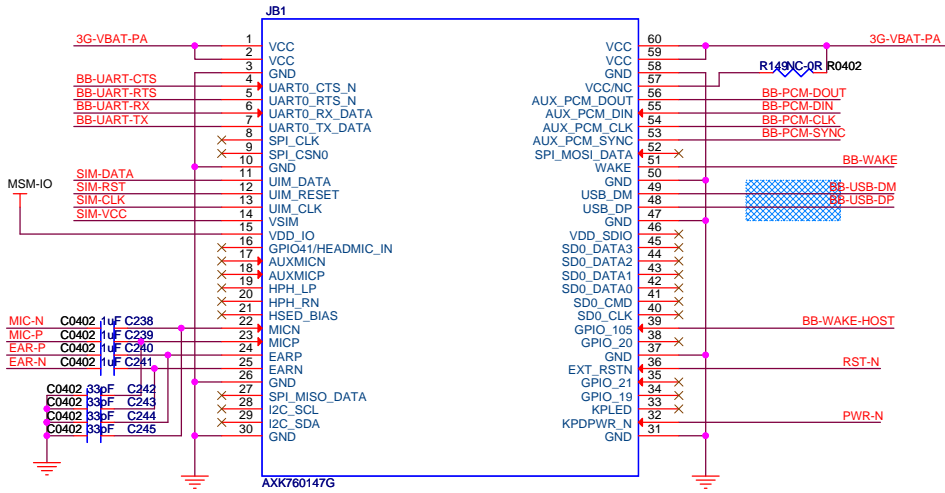
6 MT-DRV-N <<

Design Name		
A31s Phablet		
Size	Page Name	Rev
A3	SENSOR	
Date:	Thursday, February 21, 2013	Sheet 15 of 18

# MODEM G3

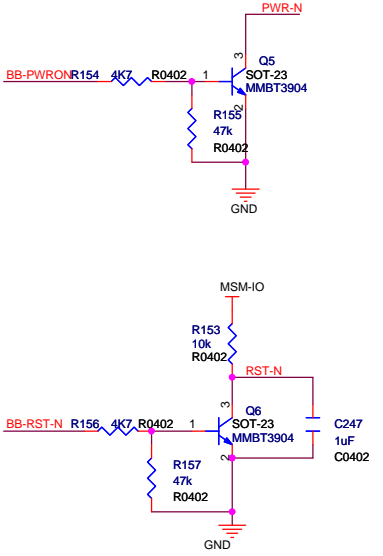


If modem is not be use, this block should be removed, and the connection between this block and other block should also be removed. But VCC-PB connection should be kept.



FBMJ1608HS280NT by TAIYO YUDEN or MPZ1608S300ATAH0 by TDK is recommended.

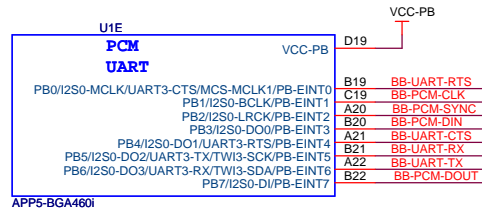
Differential pairs  
 ZO= 90 ohm



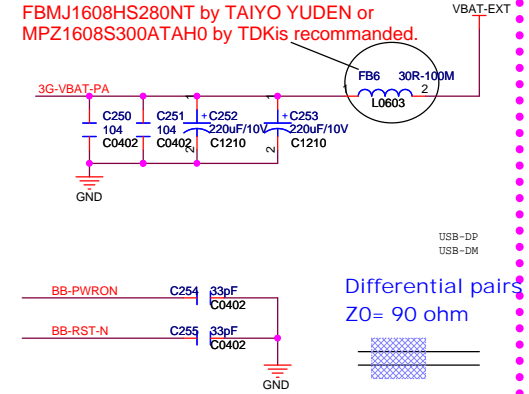
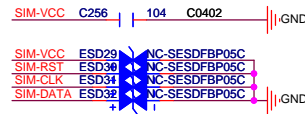
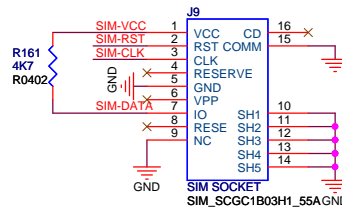
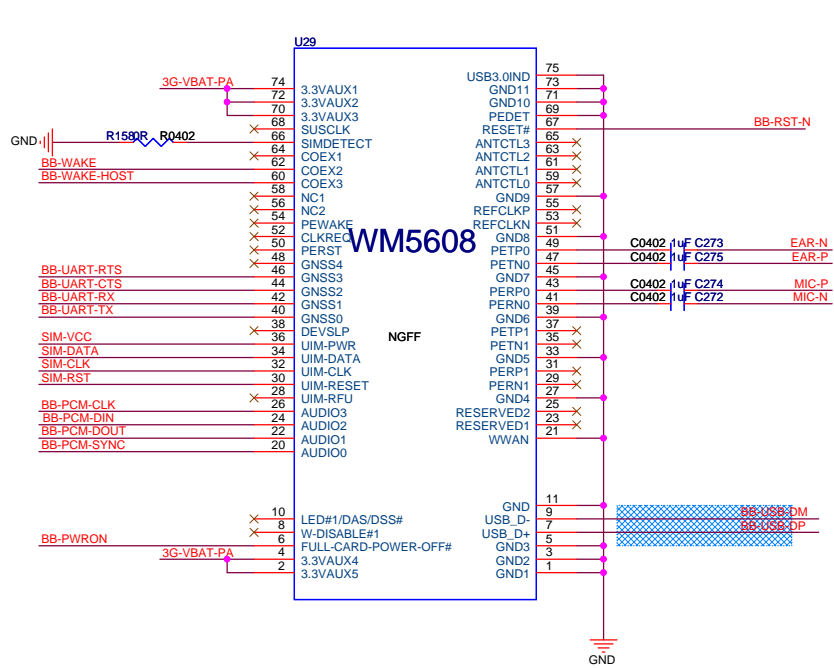
Design Name		
<b>A31s Phablet</b>		
Size	Page Name	Rev
A3	MODEM G3	
Date:	Thursday, February 21, 2013	Sheet 16 of 18



# MODEM WM5608



If modem is not be use, this block should be removed, and the connection between this block and other block should also be removed. But VCC-PB connection should be kept.



Design Name		
A31s Phablet		
Size A3	Page Name	Rev
	MODEM WM5608	
Date:	Wednesday, February 20, 2013	Sheet 17 of 18

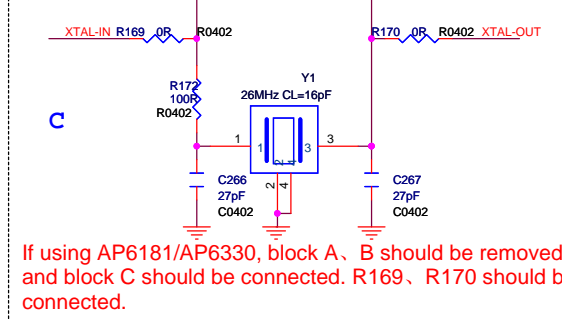
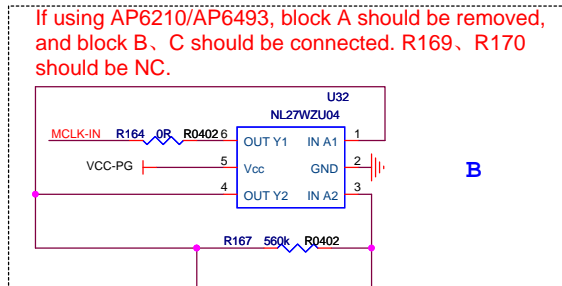
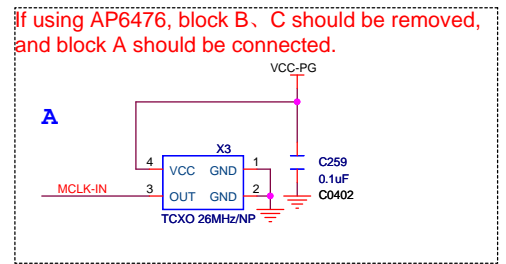
# WIFI 4IN1 BC

**U30J SDC1 MISC**

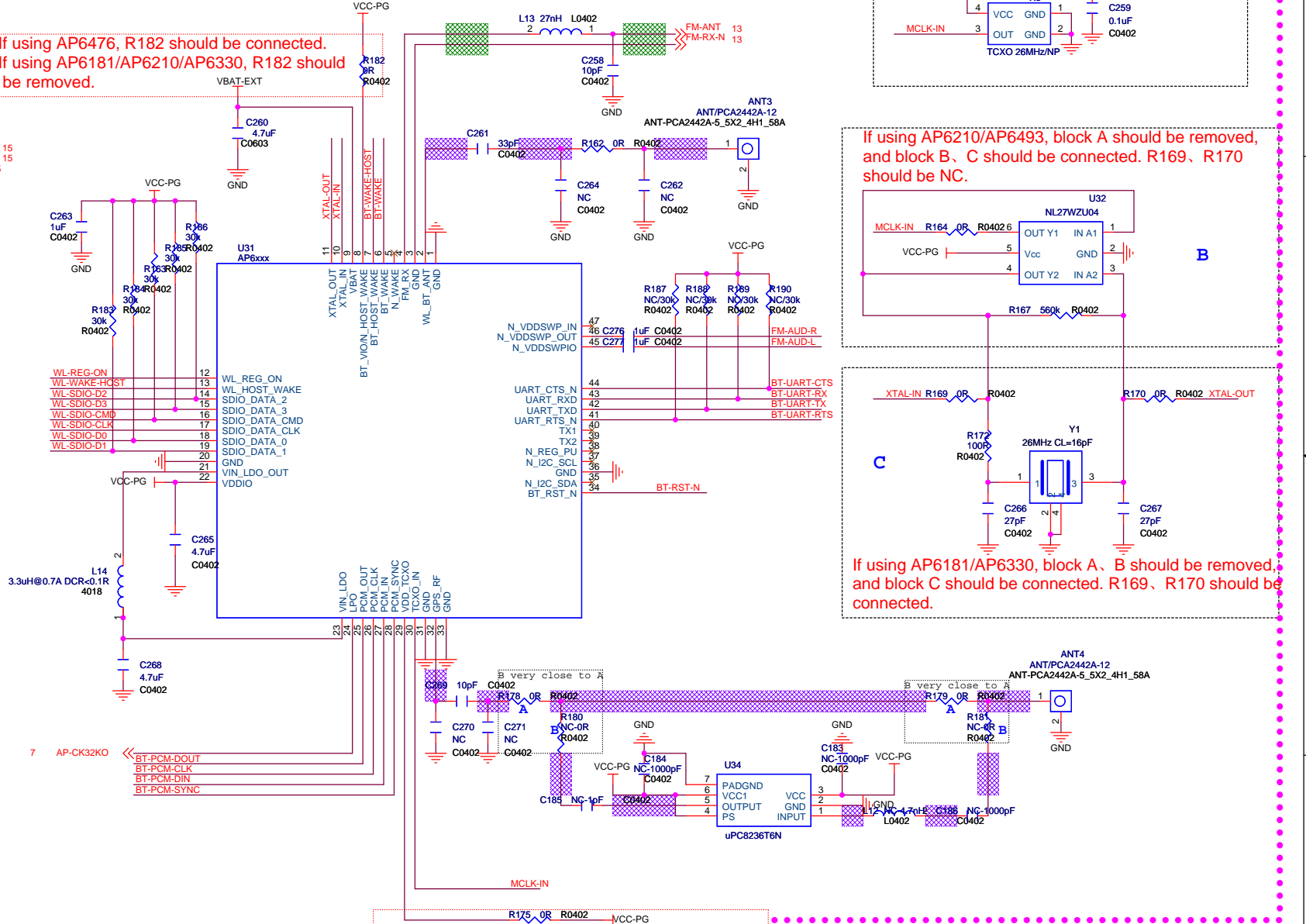
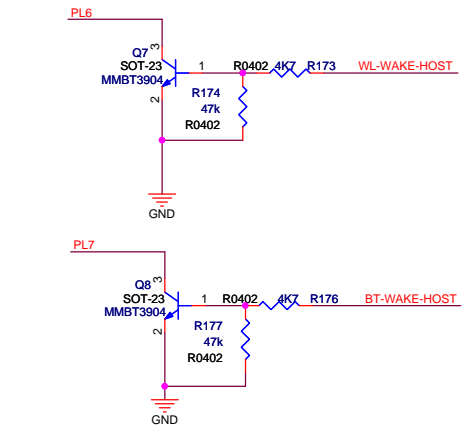
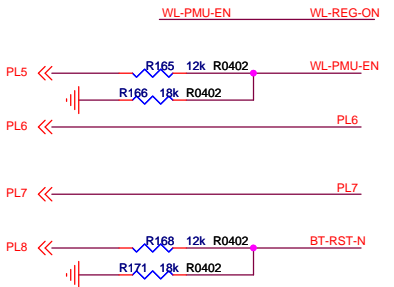
A15	WL-SDIO-CLK
B15	WL-SDIO-CMD
C15	WL-SDIO-D0
B16	WL-SDIO-D1
C16	WL-SDIO-D2
A17	WL-SDIO-D3
D15	BT-UART-RX
E15	BT-UART-TX
D16	BT-UART-CTS
E16	BT-UART-RTS
B17	BT-PCM-CLK
C17	BT-PCM-SYNC
A18	BT-PCM-DOUT
B18	BT-PCM-DIN
D18	BT-WAKE
E18	

If this WIFI module is not be use, this block should be removed, and the connection between this block and other block should also be removed. But VCC-PG connection should be kept.

If using AP6476, R182 should be connected.  
If using AP6181/AP6210/AP6330, R182 should be removed.



If using AP6181/AP6330, R175 should be removed.



Design Name		<b>A31s Phablet</b>	
Size	Page Name	WIFI 4IN1 BC	
A3			
Date:	Sunday, February 24, 2013	Sheet	18 of 18