

# Tianjin

CPU : Intel Penryn-6M (1067/800) MHz  
Chip Set : Intel Cantiga & ICH9M  
Remarks : Montevina Platform

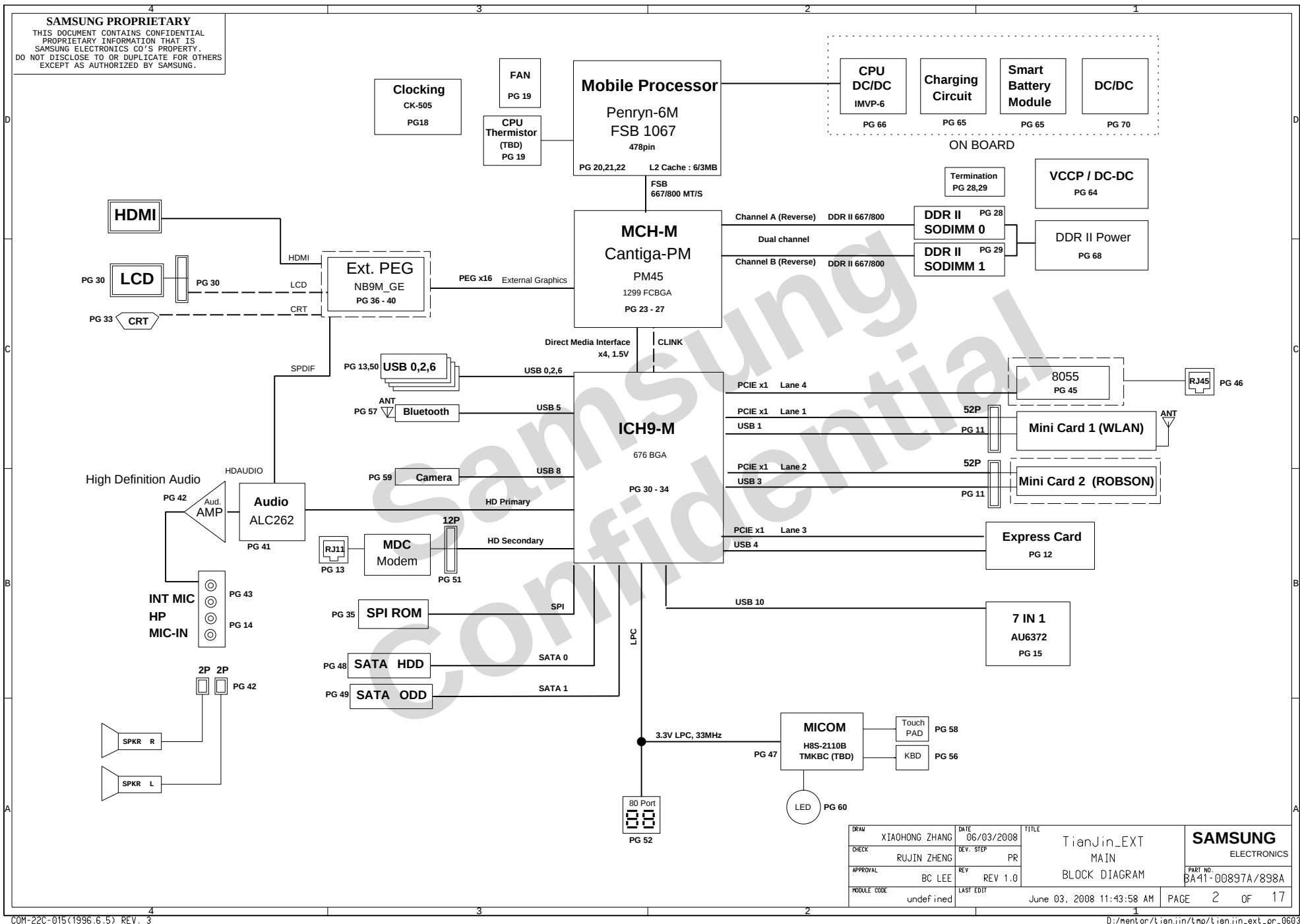
Model Name : TIANJIN\_EXT  
PBA Name : MAIN  
PCB Code : BA41-00897A/898A  
Dev. Step : PR  
Revision : 1.0  
T.R. Date : 2008.06.03

| Design         | CHECK       | APPROVAL |
|----------------|-------------|----------|
| XIAOHONG ZHANG | RUJIN ZHENG | BC LEE   |
|                |             |          |

Owner : SESC Mobile R & D      Signature :      X

## BLOCK DESIGN

|             |                |           |                           |       |             |                                                        |
|-------------|----------------|-----------|---------------------------|-------|-------------|--------------------------------------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT | SAMSUNG<br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        | MAIN  |             |                                                        |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   | COVER |             |                                                        |
| MODULE CODE |                | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 1 OF 17     |                                                        |



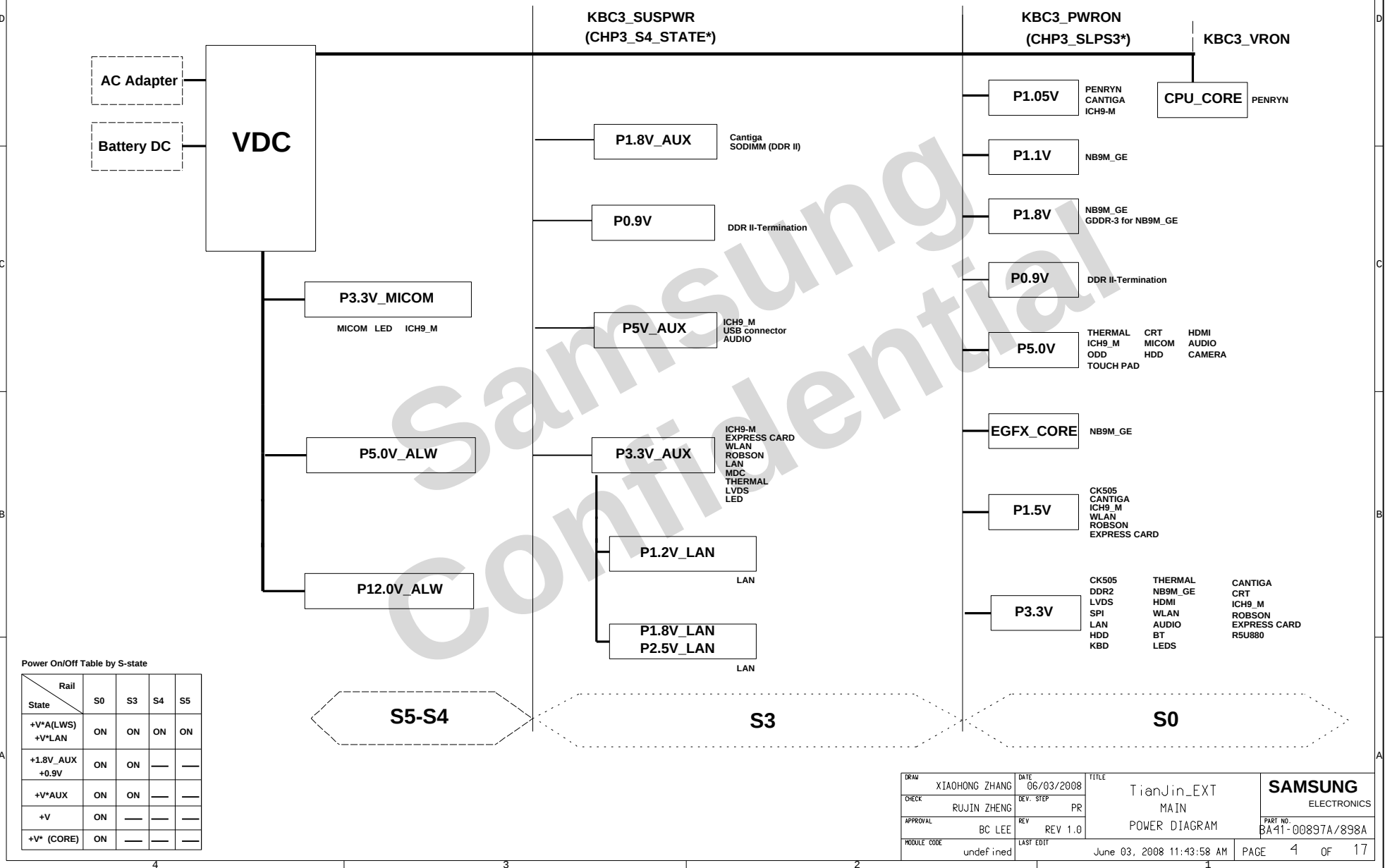
|             |                |           |                           |       |                                      |                              |
|-------------|----------------|-----------|---------------------------|-------|--------------------------------------|------------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT<br>MAIN<br>BLOCK DIAGRAM | SAMSUNG<br>ELECTRONICS       |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       |                                      | PART NO.<br>BA41-00897A/898A |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       |                                      |                              |
| MODULE CODE | undefined      | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 2                                    | OF 17                        |



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# POWER DIAGRAM

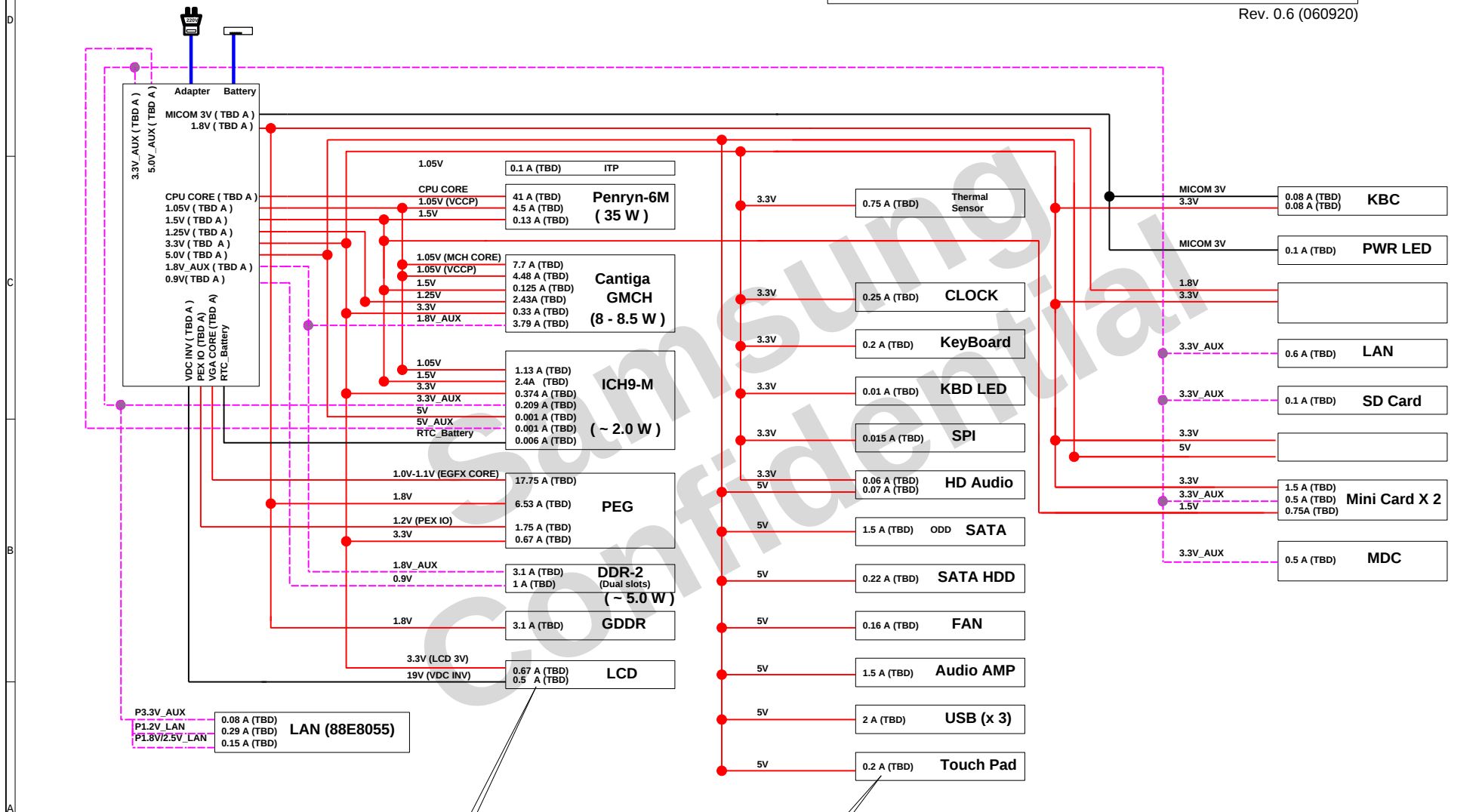
Rev 0.1



|             |                |           |                           |       |                                      |                              |
|-------------|----------------|-----------|---------------------------|-------|--------------------------------------|------------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT<br>MAIN<br>POWER DIAGRAM | SAMSUNG<br>ELECTRONICS       |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       |                                      | PART NO.<br>BA41-00897A/898A |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       |                                      |                              |
| MODULE CODE | undefined      | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 4                                    | OF 17                        |

# POWER RAILS ANALYSIS

Rev. 0.6 (060920)



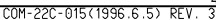
Value by Datasheet/Application notes (Value by measurement)

|             |                |           |                           |       |             |                        |
|-------------|----------------|-----------|---------------------------|-------|-------------|------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT | SAMSUNG<br>ELECTRONICS |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       | MAIN        |                        |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       | POWER RAILS |                        |
| MODULE CODE | undefined      | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 5           | OF 17                  |

Host S5 / ME Boot  
(SLPS4\* = SLPM\*) > S4\_STATE\* > SLPS3\*

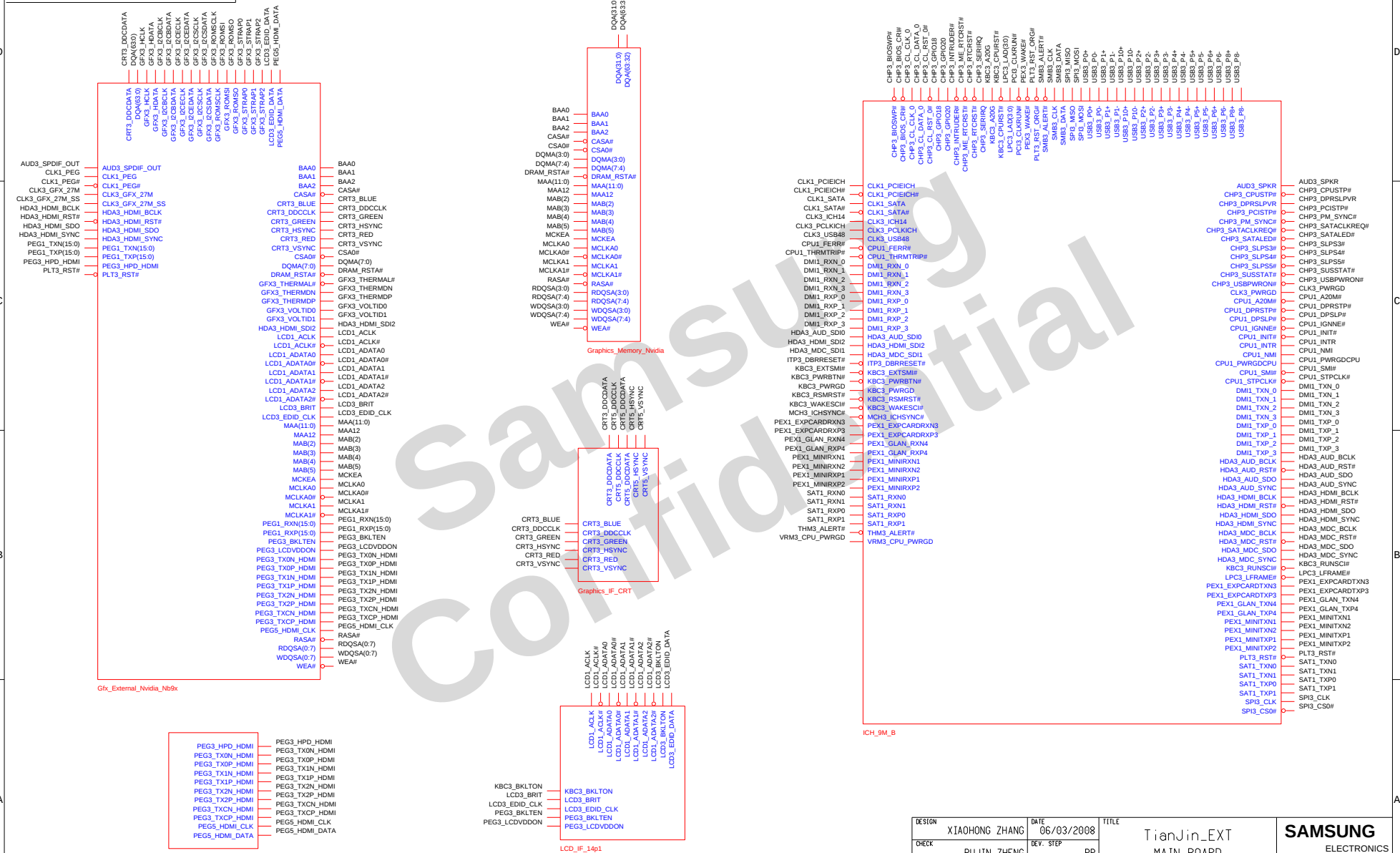
COM-22C-015(1996.6.5) REV. 3





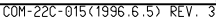
D:/mentor/tianjin/tmp/tianjin\_ext\_pr\_0603  
SRP Sheet Number: 8 of 70

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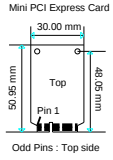
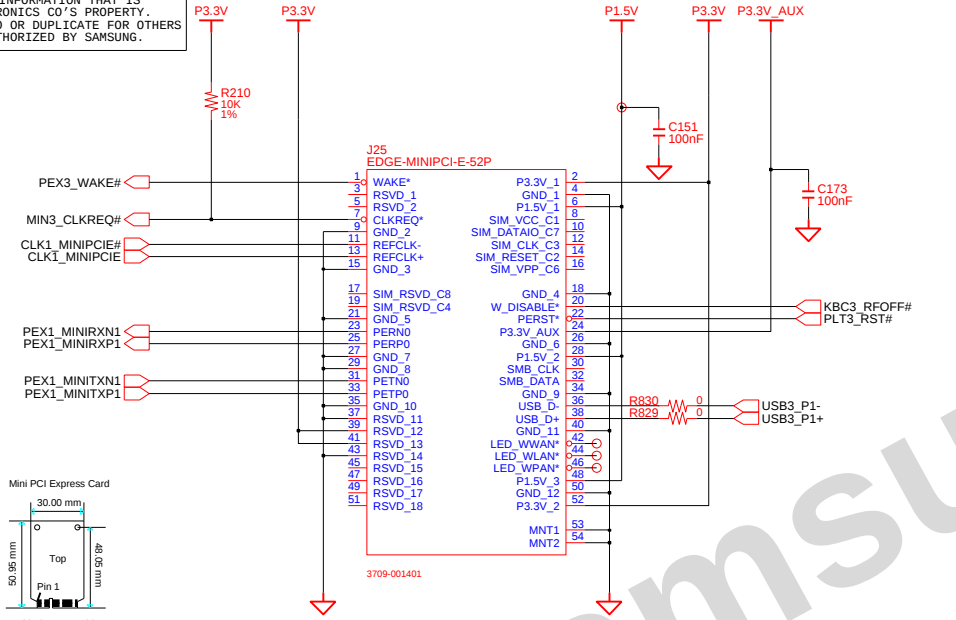
|             |                |           |                           |       |                                    |                                                               |
|-------------|----------------|-----------|---------------------------|-------|------------------------------------|---------------------------------------------------------------|
| DESIGN      | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT<br>MAIN BOARD<br>BLOCK | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       |                                    |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       |                                    |                                                               |
| MODULE CODE |                | LAST EDIT |                           |       |                                    |                                                               |
|             |                |           | June 03, 2008 11:43:58 AM | PAGE  | 9 OF 17                            |                                                               |

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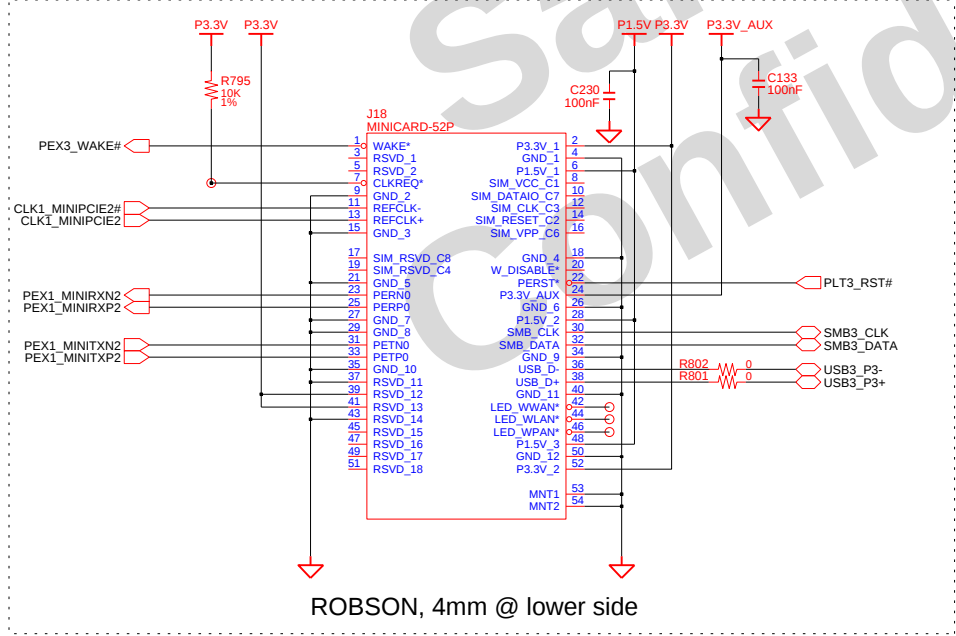


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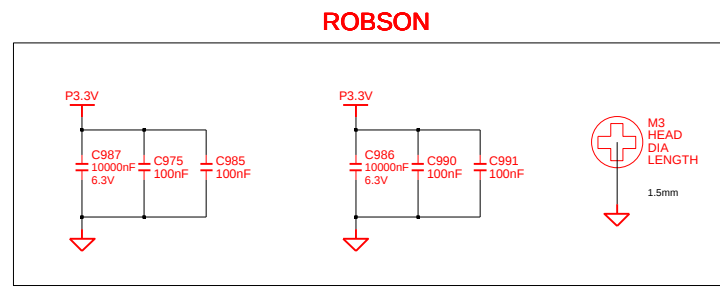
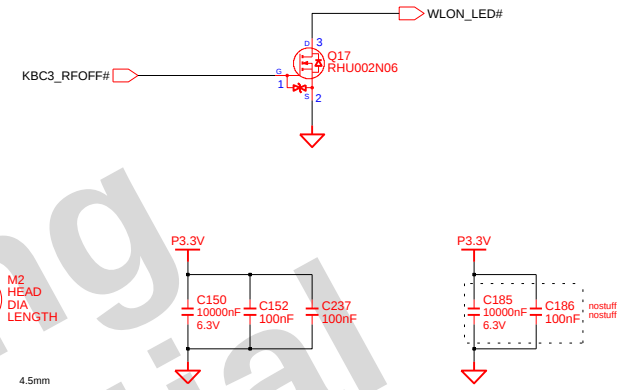
# WLAN, 7mm @ Upper side



## ROBSON

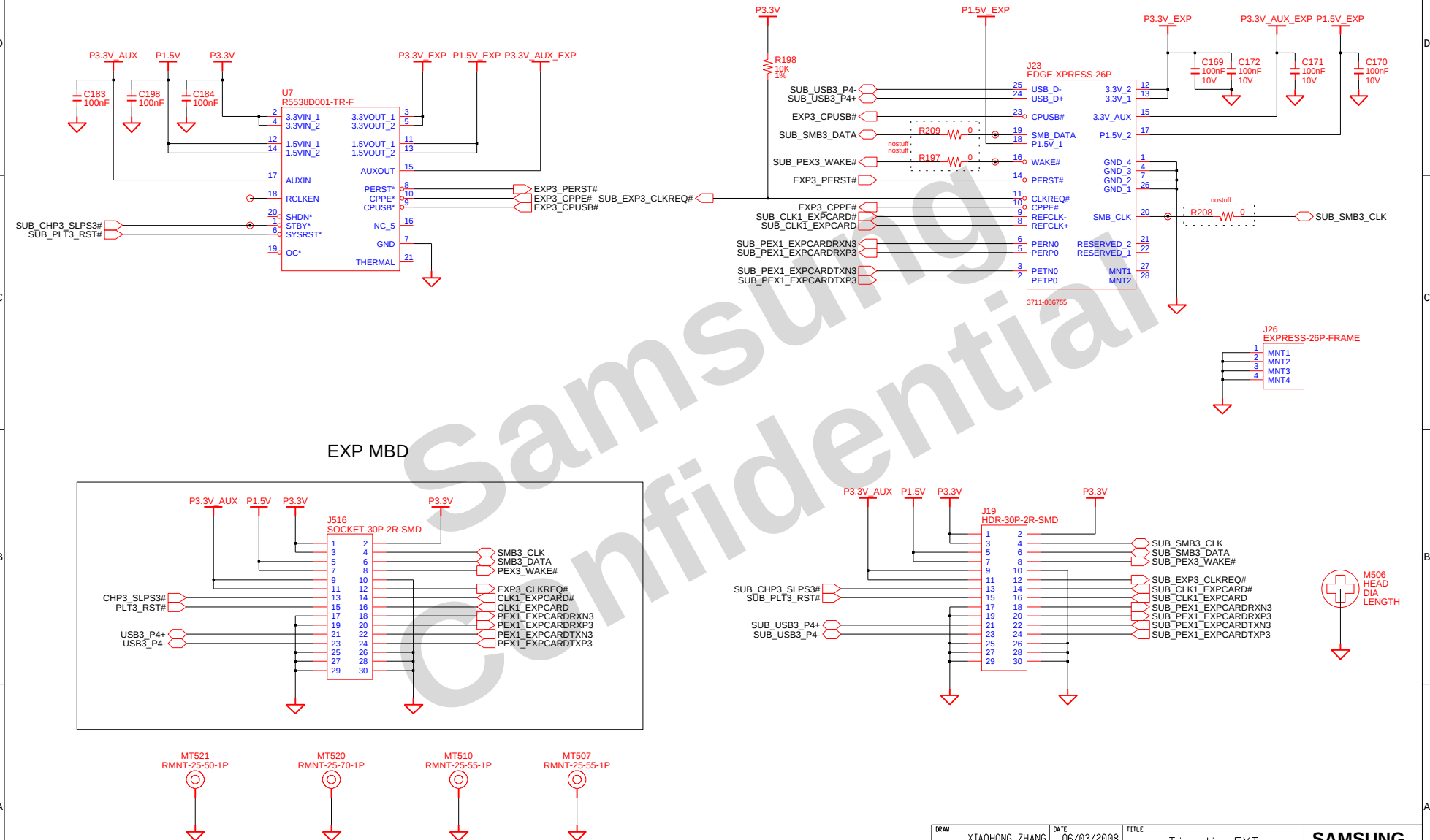


## ROBSON, 4mm @ lower side



|             |                |           |            |                           |               |                              |
|-------------|----------------|-----------|------------|---------------------------|---------------|------------------------------|
| DESIGN      | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE                     | TianJin_EXT   | SAMSUNG<br>ELECTRONICS       |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR         |                           | MAIN BOARD    |                              |
| APPROVAL    | BC LEE         | REV       | REV 1.0    |                           | BLOCK         |                              |
| MODULE CODE |                | LAST EDIT |            |                           |               |                              |
|             |                |           |            | June 03, 2008 11:43:58 AM | PAGE 11 OF 17 | PART NO.<br>BA41-00897A/898A |

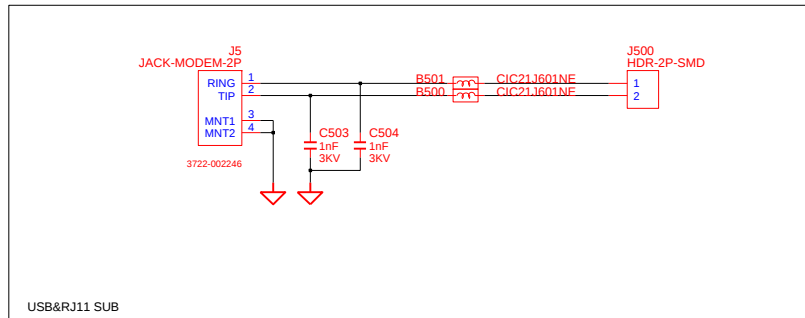
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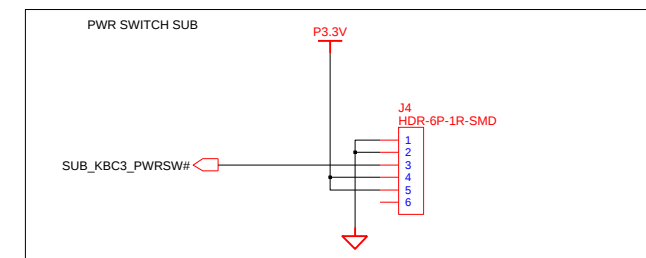
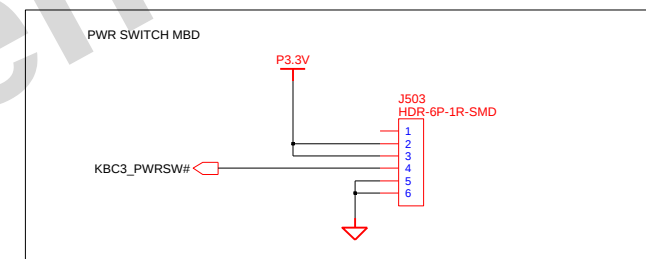
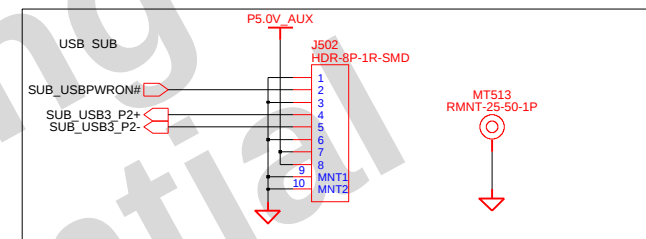
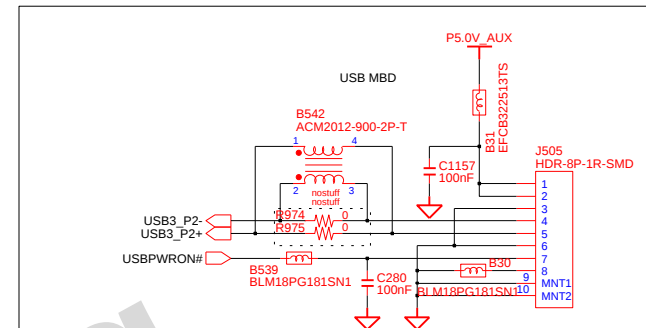
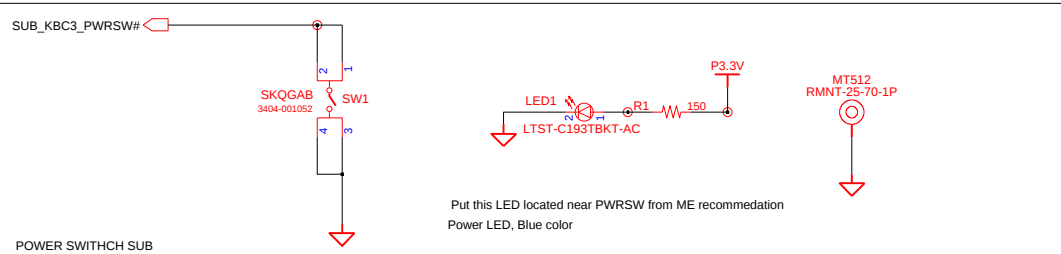
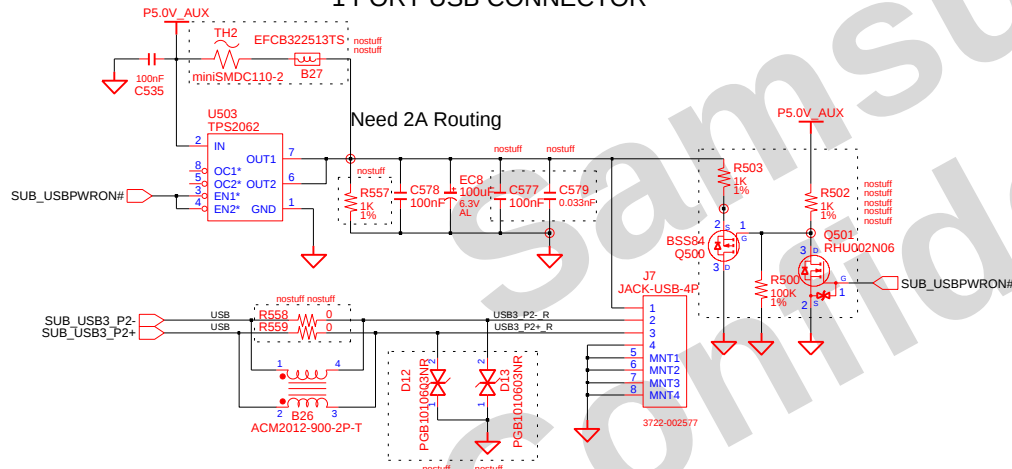
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|---------------------------|----------------|-----------|------------|-------|--------------------------|---------------------------------------------------------------|
| DRAW                      | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE | TianJin_EXT EXPRESS CARD | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK                     | RUJIN ZHENG    | DEV. STEP | PR         |       |                          |                                                               |
| APPROVAL                  | BC LEE         | REV       | REV 1.0    |       |                          |                                                               |
| MODULE CODE               |                | LAST EDIT |            |       |                          |                                                               |
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## MDC



## 1 PORT USB CONNECTOR



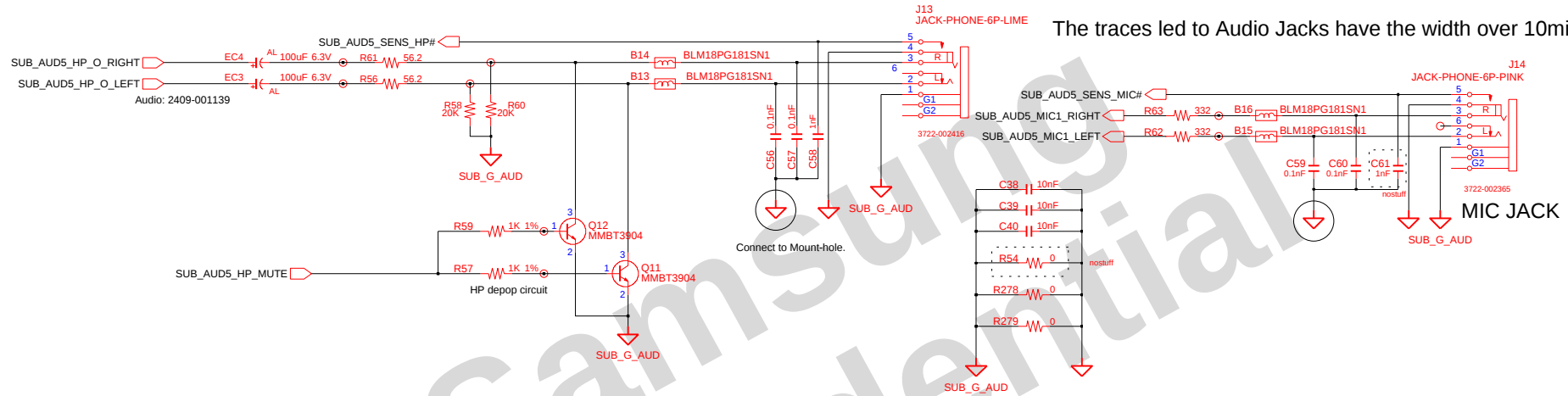
|             |                |           |            |                                       |               |                                                                   |
|-------------|----------------|-----------|------------|---------------------------------------|---------------|-------------------------------------------------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE                                 |               | <b>SAMSUNG</b><br>ELECTRONICS<br><br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR         | TianJin_EXT<br>MDC & USB1 & PWRSW SUB |               |                                                                   |
| APPROVAL    | BC LEE         | REV       | REV 1.0    |                                       |               |                                                                   |
| MODULE CODE |                | LAST EDIT |            | June 03, 2008 11:43:58 AM             | PAGE 13 OF 17 |                                                                   |

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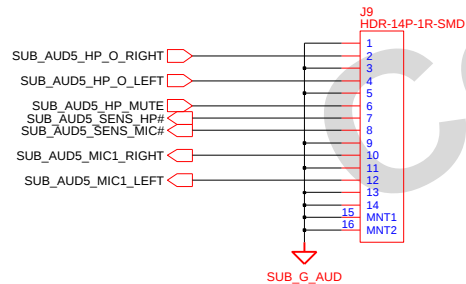
## AUD\_SUB

## HEADPHONE

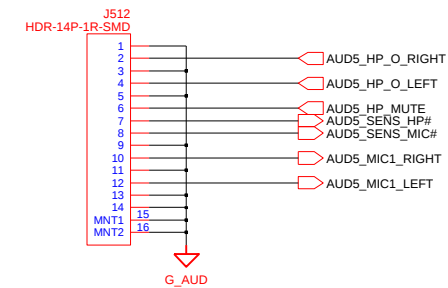
The traces led to Audio Jacks have the width over 10mil



## AUD\_SUB



## AUD\_MBD

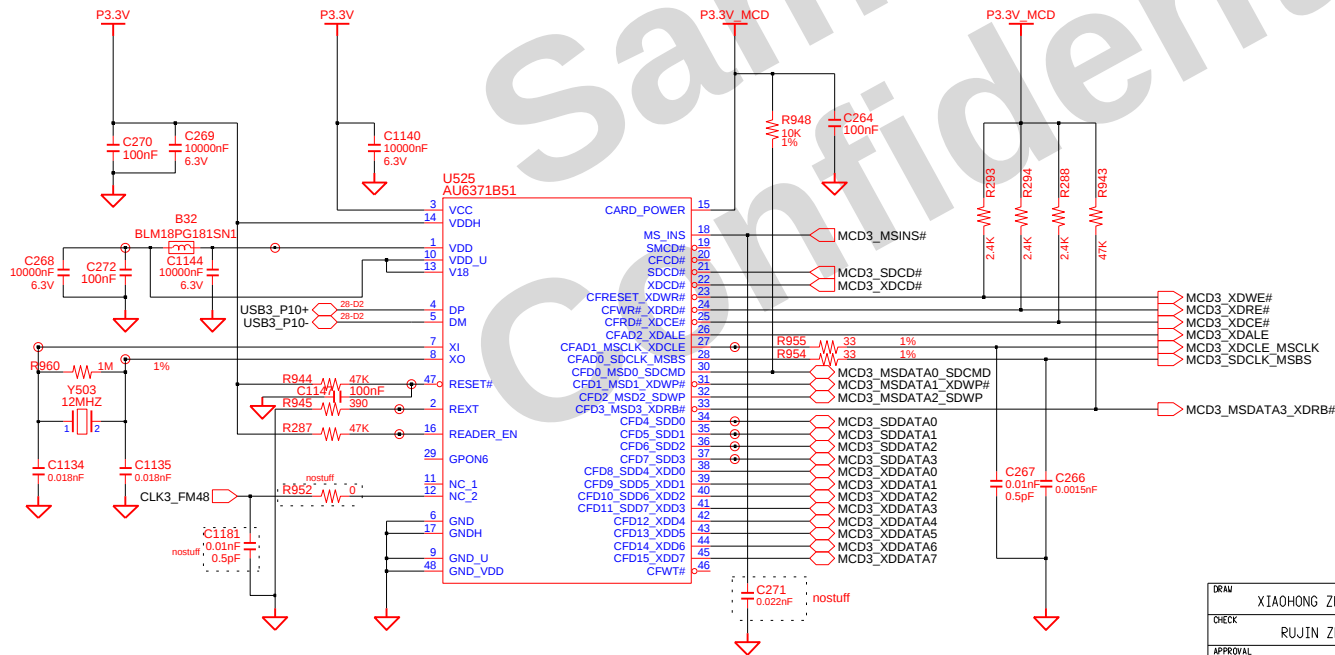


|                           |                |           |            |       |                   |                                                               |
|---------------------------|----------------|-----------|------------|-------|-------------------|---------------------------------------------------------------|
| DRAW                      | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE | TianJin_EXT AUDIO | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK                     | RUJIN ZHENG    | DEV. STEP | PR         |       |                   |                                                               |
| APPROVAL                  | BC LEE         | REV       | REV 1.0    |       |                   |                                                               |
| MODULE CODE               |                | LAST EDIT |            |       |                   |                                                               |
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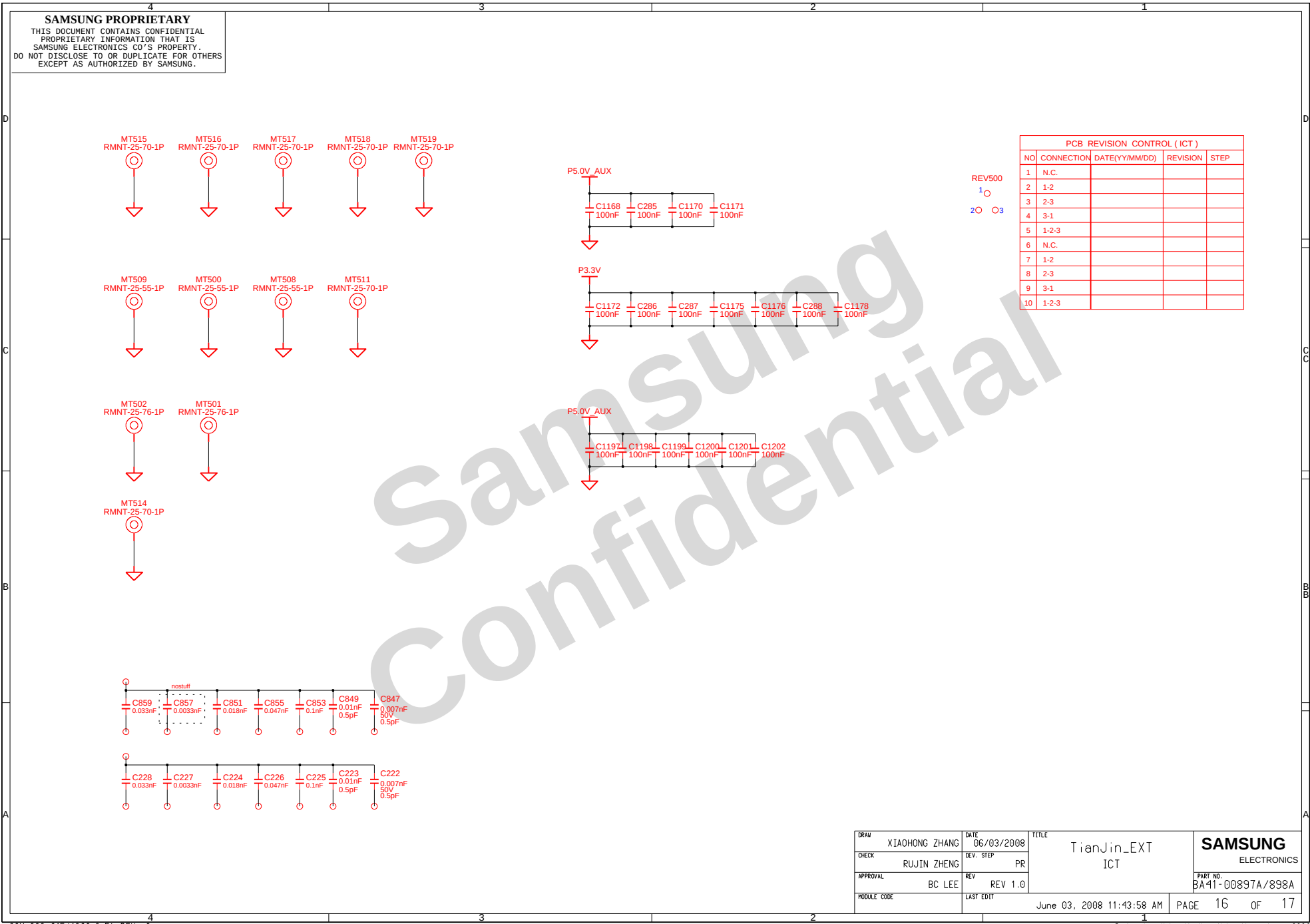
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[illegible]

|                  |                           |
|------------------|---------------------------|
| MSEL5            | SD Write Protec Selection |
| Connected to VCC | High Enable               |
| Connected to GND | Low Enable                |
|                  |                           |
| MSEL7            | PLL BASE CLOCK SELECTION  |
| Connected to VCC | 12MHz                     |
| Connected to GND | 48MHz                     |



|             |                |           |                           |                              |                       |                               |
|-------------|----------------|-----------|---------------------------|------------------------------|-----------------------|-------------------------------|
| DRAM        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE                        | TianJin_EXT<br>7 IN 1 | <b>SAMSUNG</b><br>ELECTRONICS |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |                              |                       |                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |                              |                       |                               |
| MODULE CODE | LAST EDIT      |           | June 03, 2008 11:43:58 AM |                              |                       |                               |
|             |                |           |                           | PART NO.<br>BA41-00897A/898A |                       |                               |



|             |                |           |            |                           |                    |                                                               |
|-------------|----------------|-----------|------------|---------------------------|--------------------|---------------------------------------------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE                     | TianJin_EXT<br>ICT | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR         |                           |                    |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0    |                           |                    |                                                               |
| MODULE CODE |                | LAST EDIT |            | June 03, 2008 11:43:58 AM | PAGE 16 OF 17      |                                                               |

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TP19744○ADT3\_SEL#  
TP19745○AUD3\_BEEP  
TP19746○AUD3\_GPRO#  
TP19747○AUD3\_GPIO#  
TP19748○AUD3\_SHDN#  
TP19749○AUD3\_SPDIF\_OUT  
TP19750○AUD3\_SPPR  
TP19751○AUD5\_HP\_MUTE  
TP19752○AUD5\_HP\_O\_LEFT  
TP19753○AUD5\_HP\_O\_RIGHT  
TP19754○AUD5\_LINE\_O\_LEFT  
TP19755○AUD5\_LINE\_O\_RIGHT  
TP19756○AUD5\_MIC1\_LEFT  
TP19757○AUD5\_MIC1\_RIGHT  
TP19758○AUD5\_MIC1\_VREF\_LEFT  
TP19759○AUD5\_MIC1\_VREF\_RIGHT  
TP19760○AUD5\_MIC2\_LEFT  
TP19761○AUD5\_MIC2\_RIGHT  
TP19762○AUD5\_MIC2\_VREF  
TP19763○AUD5\_SENS\_A  
TP19764○AUD5\_SENS\_HP#  
TP19765○AUD5\_SENS\_MIC#  
TP19766○BAT3\_DETECT#  
TP19767○BAT3\_SMCLK#  
TP19768○BAT3\_SMDATA#  
TP19769○CAS#  
TP19770○CHP3\_BIOSWP#  
TP19771○CHP3\_BIOS\_CR#  
TP19772○CHP3\_CL\_CLK\_0  
TP19773○CHP3\_CL\_DATA\_0  
TP19774○CHP3\_CL\_RST\_0#  
TP19775○CHP3\_CPUSTP#  
TP19776○CHP3\_DPRSLPVR  
TP19777○CHP3\_GPRO18  
TP19778○CHP3\_GPRO20  
TP19779○CHP3\_INTRUDER#  
TP19780○CHP3\_ME\_RTCRST#  
TP19781○CHP3\_PCISTP#  
TP19782○CHP3\_PM\_SYNC#

TP19736○CHP3\_SATACLKREQ#  
TP19737○CHP3\_SATALED#  
TP19738○CHP3\_SERRQ  
TP19739○CHP3\_SLP3#  
TP19740○CHP3\_SLP4#  
TP19741○CHP3\_SLP5#  
TP19742○CHP3\_SUSSTAT#  
TP19743○CHP3\_USBPWRON#  
TP19744○CLK3\_DBG\_LPC  
TP19745○CLK3\_FMA8  
TP19746○CLK3\_GFX\_27M  
TP19747○CLK3\_GFX\_27M\_SS  
TP19748○CLK3\_ICH14  
TP19749○CLK3\_PCLKICH  
TP19750○CLK3\_PCLKMICOM  
TP19751○CLK3\_USB48

TP19702○CPU1\_VCCSENSE  
TP19703○CPU1\_VID(0)  
TP19704○CPU1\_VID(1)  
TP19705○CPU1\_VID(2)  
TP19706○CPU1\_VID(3)  
TP19707○CPU1\_VID(4)  
TP19708○CPU1\_VID(5)  
TP19709○CPU1\_VID(6)  
TP19710○CPU1\_VSSSENSE  
TP19711○CPU2\_THERMDA  
TP19712○CPU2\_THERMDC  
TP19713○CPU3\_THERMTRIP#  
TP19714○EXP3\_CLKREQ#  
TP19715○EXP3\_CPPE#  
TP19716○EXP3\_CPUSB#  
TP19717○EXP3\_PERST#  
TP19718○FAN3\_FDBACK#  
TP19719○FAN5\_VDD  
TP19720○GCORE3\_PWRGD  
TP19721○EXP3\_CLKREQ#  
TP19722○SUB○EXP3\_CPPE#  
TP19723○SUB○EXP3\_CPUSB#  
TP19724○SUB○EXP3\_PERST#

TP19701○FAN3\_FDBACK#  
TP19665○FAN5\_VDD  
TP19666○GCORE3\_PWRGD  
TP19667○GFX3\_HCLK  
TP19668○GFX3\_HDATA

TP19673○GFX3\_I2CSCLK  
TP19674○GFX3\_I2CSDATA  
TP19675○GFX3\_ROMSCLK  
TP19676○GFX3\_ROMSI  
TP19677○GFX3\_ROMSO  
TP19678○GFX3\_STRAP0

TP19680○GFX3\_STRAP2  
TP19681○GFX3\_THERMAL#  
TP19682○GFX3\_THERMDN  
TP19683○GFX3\_THERMDP  
TP19684○GFX3\_VOLDIO  
TP19685○GFX3\_VOLDI0  
TP19686○HDA3\_AUD\_BCLK  
TP19687○HDA3\_AUD\_RST#  
TP19688○HDA3\_AUD\_SDO  
TP19689○HDA3\_AUD\_SDO  
TP19690○HDA3\_AUD\_SYNC  
TP19691○HDA3\_HDMI\_BCLK  
TP19692○HDA3\_HDMI\_RST#  
TP19693○HDA3\_HDMI\_SDO  
TP19694○HDA3\_HDMI\_SDO  
TP19695○HDA3\_HDMI\_SYNC  
TP19696○HDA3\_HDMI\_BCLK  
TP19697○HDA3\_MDC\_RST#  
TP19698○HDA3\_MDC\_SDO  
TP19699○HDA3\_MDC\_SDO  
TP19700○HDA3\_MDC\_SYNC

TP19638○KBC3\_A20C  
TP19639○KBC3\_BKLTON  
TP19640○KBC3\_BLACKPWRSW#

TP19642○KBC3\_CHGEN  
TP19643○KBC3\_CHKPWRSW#  
TP19644○KBC3\_CPURST#  
TP19645○KBC3\_EXTSMIF#  
TP19646○KBC3\_LED\_ACIN#

TP19651○KBC3\_LED\_CHARGE#

TP19653○KBC3\_LED\_POWER#

TP19657○KBC3\_PRECHG  
TP19658○KBC3\_PWRBTN#  
TP19659○KBC3\_PWRGD  
TP19660○KBC3\_PWRON  
TP19661○KBC3\_PWRON\_INV#  
TP19662○KBC3\_PWRSW#  
TP19663○KBC3\_RSMRST#  
TP19664○KBC3\_RST#  
TP19665○KBC3\_RUNSCIF#

TP19626○KBC3\_SMCLK#  
TP19627○KBC3\_SMDATA#  
TP19628○KBC3\_SSPWR  
TP19629○KBC3\_THERM\_SMCLK  
TP19630○KBC3\_THERM\_SMDATA  
TP19631○KBC3\_VRON  
TP19632○KBC3\_WAKESCIF#  
TP19798○KBC5\_KSI(0)  
TP19799○KBC5\_KSI(1)  
TP19800○KBC5\_KSI(2)  
TP19801○KBC5\_KSI(3)  
TP19802○KBC5\_KSI(4)  
TP19803○KBC5\_KSI(5)  
TP19804○KBC5\_KSI(6)  
TP19805○KBC5\_KSI(7)

TP19780○KBC5\_KSO(0)  
TP19781○KBC5\_KSO(1)  
TP19782○KBC5\_KSO(10)  
TP19783○KBC5\_KSO(11)  
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TP19785○KBC5\_KSO(13)  
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TP19793○KBC5\_KSO(7)  
TP19794○KBC5\_KSO(8)  
TP19795○KBC5\_KSO(9)  
TP19796○KBC5\_TCLK  
TP19797○KBC5\_TDATA  
TP19611○LAN3\_ACTLED#

TP19612○LAN3\_LINK1000#  
TP19613○LAN3\_LINK1000#  
TP19614○LAN3\_VPDCLK  
TP19615○LAN3\_VPDCLK  
TP19616○LCD3\_BKLTON  
TP19617○LCD3\_BRIT  
TP19618○LCD3\_EDID\_CLK  
TP19619○LCD3\_EDID\_DATA  
TP19620○LID3\_SWITCH#  
TP19621○LOM3\_CLKREQ#  
TP19622○LPC3\_LAD(0)  
TP19623○LPC3\_LAD(1)  
TP19624○LPC3\_LAD(2)  
TP19625○LPC3\_LAD(3)  
TP19626○LPC3\_LFRAME#

TP19607○MCD3\_MSINS#

TP19592○MCD3\_XDC#  
TP19593○MCD3\_XDC#

TP19595○MCH1\_HVREF  
TP19596○MCH1\_HXSWING  
TP19597○MCH3\_CLKREQ#  
TP19598○MCH3\_EXTTSS#  
TP19599○MCH3\_EXTTSS#  
TP19600○MCH3\_IHSYNCR#  
TP19601○MCKEA  
TP20043○MIN3\_CLKREQ#  
TP20044○PCB\_CLKRUN#  
TP20045○PEG3\_BKLTEN  
TP20046○PEG3\_HPD\_HDMI  
TP20047○PEG3\_LCDVDDON  
TP20048○PEG5\_HDMI\_CLK  
TP20049○PEG5\_HDMI\_DATA  
TP20050○PEX3\_WAKE#  
TP20051○PLT3\_RST\_ORG#  
TP20021○RASA#  
TP20022○SMB3\_ALERT#  
TP20023○SMB3\_CLK  
TP20024○SMB3\_DATA  
TP20025○SPI3\_CLK  
TP20026○SPI3\_CS0#  
TP20027○SPI3\_MISO  
TP20028○SPI3\_MOSI

TP20029○SUB○SUB\_AUD5\_HP\_MUTE  
TP20030○SUB○SUB\_AUD5\_HP\_O\_LEFT  
TP20031○SUB○SUB\_AUD5\_HP\_O\_RIGHT  
TP20032○SUB○SUB\_AUD5\_MIC1\_LEFT  
TP20033○SUB○SUB\_AUD5\_MIC1\_RIGHT  
TP20034○SUB○SUB\_AUD5\_SENS\_HP#  
TP20035○SUB○SUB\_AUD5\_SENS\_MIC#

TP20037○SUB○SUB\_EXP3\_CLKREQ#

TP20039○SUB○SUB\_PEX3\_WAKE#  
TP20040○SUB○SUB\_PLT3\_RST#  
TP20041○SUB○SUB\_SMB3\_CLK  
TP20042○SUB○SUB\_SMB3\_DATA

TP19806○THM3\_ALERT#  
TP19807○T\_L\_BUTTON#  
TP19808○T\_R\_BUTTON#  
TP19809○VCCP3\_PWRGD  
TP19810○VRM3\_CPU\_PWRGD  
TP19811○VRM3\_ISEN1  
TP19812○VRM3\_ISEN2  
TP19813○VRM3\_VCC\_PRM

TP19994○WEA#  
TP19995○WILON\_LED#

TP19961○SUB○P15V

TP19902○SUB○P15V\_EXP  
TP19903○SUB○P15V\_EXP

TP20016○G\_AU0  
TP20017○G\_AU0

TP19850○P5.0V\_AUX  
TP19851○P5.0V\_AUX

TP19823○SUB○SUB\_G\_AU0

TP19826○SUB○SUB\_G\_AU0

TP19870○P3.3V

TP19874○SUB○P3.3V\_AUX  
TP19875○SUB○P3.3V\_AUX

TP19878○SUB○P3.3V\_AUX\_EXP  
TP19879○SUB○P3.3V\_AUX\_EXP

TP19886○SUB○P3.3V\_EXP

TP19890○P3.3V\_MCD

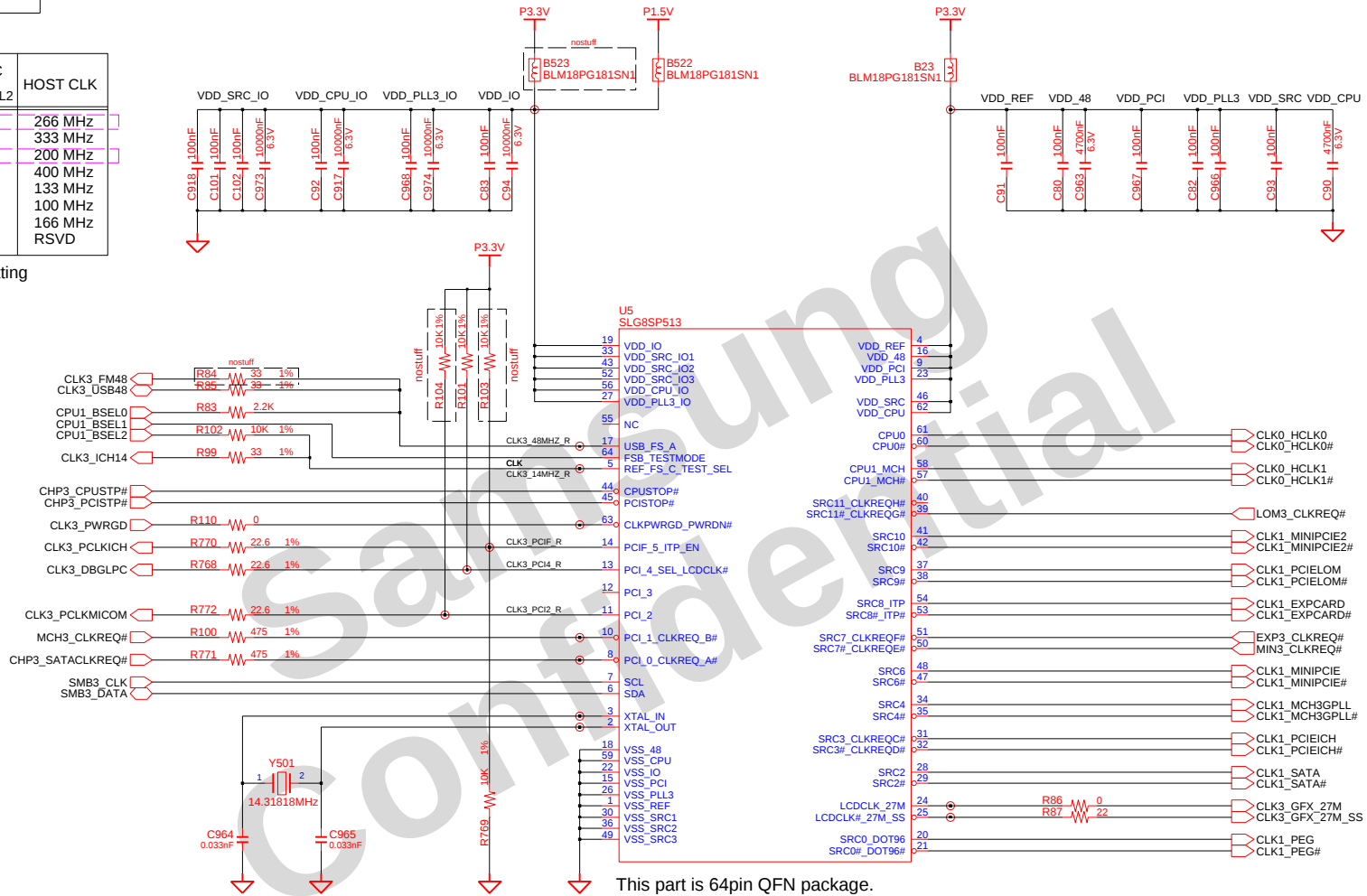
TP19893○P3.3V\_MCD

|             |                |           |                           |       |                   |                                                               |
|-------------|----------------|-----------|---------------------------|-------|-------------------|---------------------------------------------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT<br>TP | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       |                   |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       |                   |                                                               |
| MODULE CODE |                | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 17 OF 17          |                                                               |

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| FSA   | FSB   | FSC   | HOST CLK |
|-------|-------|-------|----------|
| BSEL0 | BSEL1 | BSEL2 |          |
| 0     | 0     | 0     | 266 MHz  |
| 0     | 0     | 1     | 333 MHz  |
| 0     | 1     | 0     | 200 MHz  |
| 0     | 1     | 1     | 400 MHz  |
| 1     | 0     | 0     | 133 MHz  |
| 1     | 0     | 1     | 100 MHz  |
| 1     | 1     | 0     | 166 MHz  |
| 1     | 1     | 1     | RSVD     |

Use the default setting

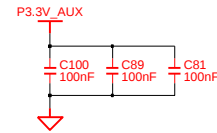


This part is 64pin QFN package.

| CLK REQ   | DEVICE       | SRC PORT |
|-----------|--------------|----------|
| CLK REQ A | SATA         | SRC2     |
| CLK REQ B | GMCH         | SRC4     |
| CLK REQ E | MINI CARD    | SRC6     |
| CLK REQ F | EXP3_CLKREQ# | SRC8     |
| CLK REQ G | LOM3_CLKREQ# | SRC9     |

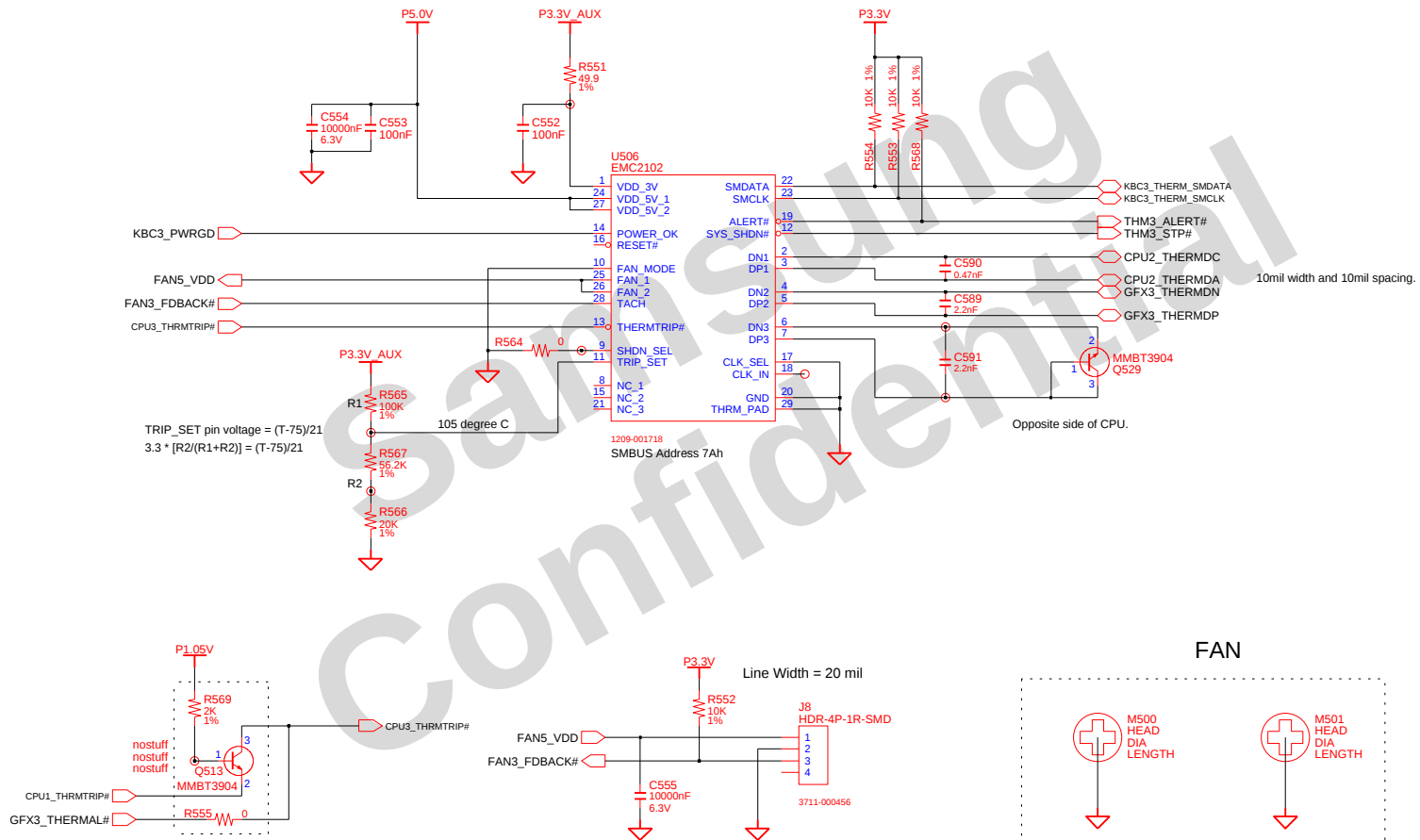
| SEL_LCDCLK* | Pin 20/21      | Pin 24/25        |
|-------------|----------------|------------------|
| LOW         | DOT_96/DOT_96# | PEG_CLK/PEG_CLK# |
| HIGH        | SRC_0/SRC_0#   | 27M & 27M_SS     |

Place 14.318MHz within  
500mils of CK-505

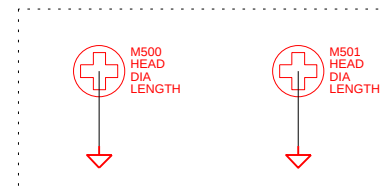


|             |                |           |                           |       |                    |                                                               |
|-------------|----------------|-----------|---------------------------|-------|--------------------|---------------------------------------------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT        | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       | Main_Clock_Circuit |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       | CK_Clock_505M      |                                                               |
| MODULE CODE | undefined      | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 1 OF 1             |                                                               |

# THERMAL SENSOR & FAN CONTROL

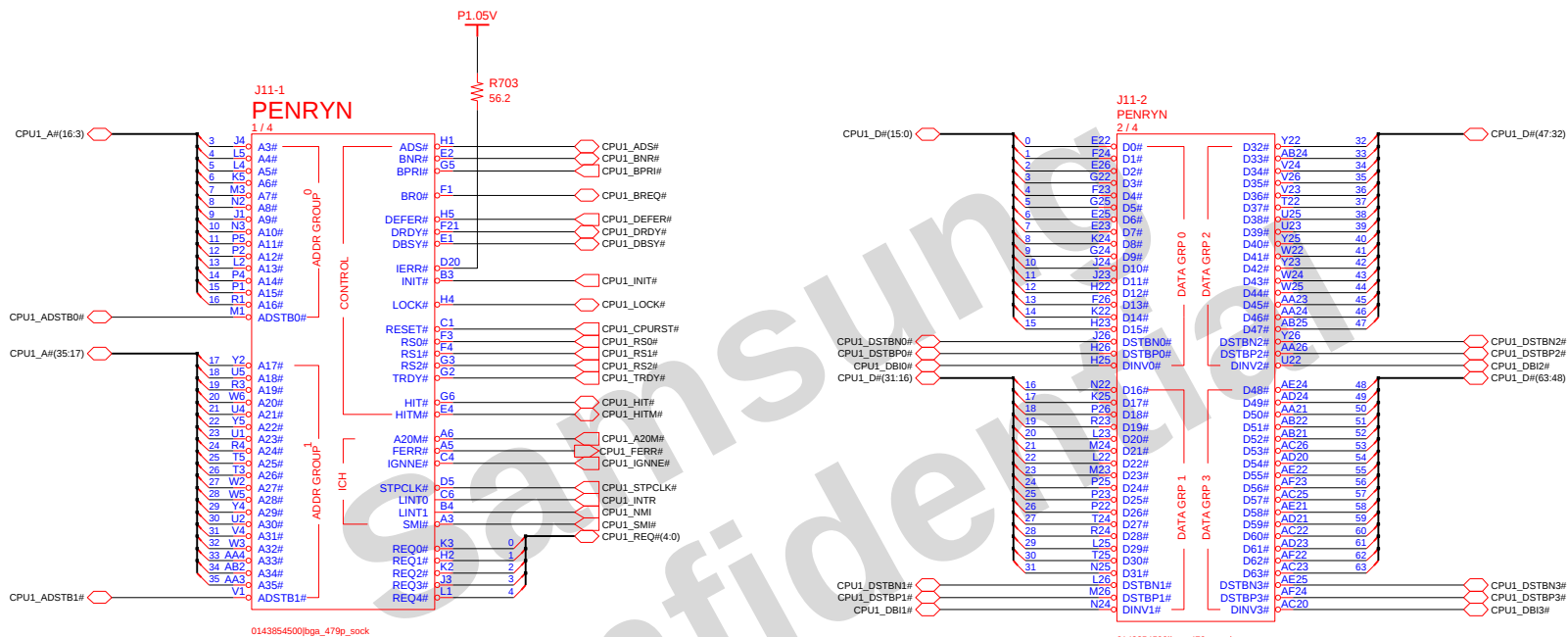


## FAN



|             |                |           |                           |                             |             |                  |
|-------------|----------------|-----------|---------------------------|-----------------------------|-------------|------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE                       | TianJin_EXT | SAMSUNG          |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        | Thermal_Sensor_SMSC_Emc2102 |             | ELECTRONICS      |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   | Thermal_Sensor_SMSC_Emc2102 | PART NO.    | BA41-00897A/898A |
| MODULE CODE |                | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE                        | 1           | OF 1             |

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|-------------|----------------|-----------|---------------------------|-------|------------------------------------|---------------------------------------------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT<br>CPU<br>PENRYN (1/3) | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       |                                    |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       |                                    |                                                               |
| MODULE CODE | undefined      | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 1 OF 3                             |                                                               |

| Active Mode   |          | Active/Deeper Sleep<br>Dual Mode Region |          | Deeper Sleep/Extended Deeper Sleep<br>Dual Mode Region |          |
|---------------|----------|-----------------------------------------|----------|--------------------------------------------------------|----------|
| VID(6:0)      | Voltage  | VID(6:0)                                | Voltage  | VID(6:0)                                               | Voltage  |
| 0 0 0 0 0 0 0 | 1.5000 V | 0 1 0 1 0 0 0                           | 1.0000 V | 1 0 1 0 0 0 1                                          | 0.4875 V |
| 0 0 0 0 0 0 1 | 1.4875 V | 0 1 0 1 0 0 1                           | 0.9875 V | 1 0 1 0 0 1 0                                          | 0.4750 V |
| 0 0 0 0 0 1 0 | 1.4750 V | 0 1 0 1 0 1 0                           | 0.9750 V | 1 0 1 0 1 0 1                                          | 0.4625 V |
| 0 0 0 0 0 1 1 | 1.4625 V | 0 1 0 1 0 1 1                           | 0.9625 V | 1 0 1 0 1 1 0                                          | 0.4500 V |
| 0 0 0 0 1 0 0 | 1.4500 V | 0 1 0 1 1 0 0                           | 0.9500 V | 1 0 1 0 1 1 1                                          | 0.4375 V |
| 0 0 0 0 1 0 1 | 1.4375 V | 0 1 0 1 1 0 1                           | 0.9375 V | 1 0 1 0 1 1 0                                          | 0.4250 V |
| 0 0 0 0 1 1 0 | 1.4250 V | 0 1 0 1 1 1 0                           | 0.9250 V | 1 0 1 0 1 1 1                                          | 0.4125 V |
| 0 0 0 0 1 1 1 | 1.4125 V | 0 1 0 1 1 1 1                           | 0.9125 V | 1 0 1 1 0 0 0                                          | 0.4000 V |
| 0 0 0 1 0 0 0 | 1.4000 V | 0 1 1 0 0 0 0                           | 0.9000 V | 1 0 1 1 0 0 1                                          | 0.3875 V |
| 0 0 0 1 0 0 1 | 1.3875 V | 0 1 1 0 0 0 1                           | 0.8875 V | 1 0 1 1 0 1 0                                          | 0.3750 V |
| 0 0 0 1 0 1 0 | 1.3750 V | 0 1 1 0 0 1 0                           | 0.8750 V | 1 0 1 1 0 1 1                                          | 0.3625 V |
| 0 0 0 1 0 1 1 | 1.3625 V | 0 1 1 0 0 1 1                           | 0.8625 V | 1 0 1 1 1 0 0                                          | 0.3500 V |
| 0 0 0 1 1 0 0 | 1.3500 V | 0 1 1 0 1 0 0                           | 0.8500 V | 1 0 1 1 1 0 1                                          | 0.3375 V |
| 0 0 0 1 1 0 1 | 1.3375 V | 0 1 1 0 1 0 1                           | 0.8375 V | 1 0 1 1 1 1 0                                          | 0.3250 V |
| 0 0 0 1 1 1 0 | 1.3250 V | 0 1 1 0 1 1 0                           | 0.8250 V | 1 0 1 1 1 1 1                                          | 0.3125 V |
| 0 0 0 1 1 1 1 | 1.3125 V | 0 1 1 1 0 0 0                           | 0.8125 V | 1 1 0 0 0 0 0                                          | 0.3000 V |
| 0 0 1 0 0 0 0 | 1.3000 V | 0 1 1 1 0 0 0                           | 0.8000 V | 1 1 0 0 0 0 1                                          | 0.2875 V |
| 0 0 1 0 0 0 1 | 1.2875 V | 0 1 1 1 0 0 1                           | 0.7875 V | 1 1 0 0 0 1 0                                          | 0.2750 V |
| 0 0 1 0 0 1 0 | 1.2750 V | 0 1 1 1 0 0 1                           | 0.7750 V | 1 1 0 0 0 1 1                                          | 0.2625 V |
| 0 0 1 0 0 1 1 | 1.2625 V | 0 1 1 1 0 1 0                           | 0.7625 V | 1 1 0 0 1 0 0                                          | 0.2500 V |
| 0 0 1 0 1 0 0 | 1.2500 V | 0 1 1 1 1 0 0                           | 0.7500 V | 1 1 0 0 1 0 1                                          | 0.2375 V |
| 0 0 1 0 1 0 1 | 1.2375 V | 0 1 1 1 1 0 1                           | 0.7375 V | 1 1 0 0 1 1 0                                          | 0.2250 V |
| 0 0 1 0 1 1 0 | 1.2250 V | 0 1 1 1 1 1 0                           | 0.7250 V | 1 1 0 0 1 1 1                                          | 0.2125 V |
| 0 0 1 1 0 0 0 | 1.2125 V | 1 0 0 0 0 0 0                           | 0.7125 V | 1 1 0 0 1 1 0                                          | 0.2000 V |
| 0 0 1 1 0 0 1 | 1.2000 V | 1 0 0 0 0 0 0                           | 0.7000 V | 1 1 0 1 0 0 0                                          | 0.1875 V |
| 0 0 1 1 0 1 0 | 1.1875 V | 1 0 0 0 0 0 0                           | 0.6875 V | 1 1 0 1 0 1 0                                          | 0.1750 V |
| 0 0 1 1 0 1 1 | 1.1750 V | 1 0 0 0 0 0 1                           | 0.6750 V | 1 1 0 1 0 1 1                                          | 0.1625 V |
| 0 0 1 1 1 0 0 | 1.1625 V | 1 0 0 0 0 1 0                           | 0.6625 V | 1 1 0 1 0 1 0                                          | 0.1500 V |
| 0 0 1 1 1 0 1 | 1.1500 V | 1 0 0 0 0 1 0                           | 0.6500 V | 1 1 0 1 1 0 0                                          | 0.1375 V |
| 0 0 1 1 1 1 0 | 1.1375 V | 1 0 0 0 0 1 0                           | 0.6375 V | 1 1 0 1 1 1 0                                          | 0.1250 V |
| 0 0 1 1 1 1 1 | 1.1250 V | 1 0 0 0 0 1 1                           | 0.6250 V | 1 1 0 1 1 1 1                                          | 0.1125 V |
| 0 0 1 1 1 1 1 | 1.1125 V | 1 0 0 0 0 1 1                           | 0.6125 V | 1 1 1 0 0 0 0                                          | 0.1000 V |
| 0 1 0 0 0 0 0 | 1.1000 V | 1 0 0 0 1 0 0                           | 0.6000 V | 1 1 1 0 0 0 1                                          | 0.0875 V |
| 0 1 0 0 0 0 1 | 1.0875 V | 1 0 0 0 1 0 0                           | 0.5875 V | 1 1 1 1 0 0 0                                          | 0.0750 V |
| 0 1 0 0 0 1 0 | 1.0750 V | 1 0 0 0 1 0 1                           | 0.5750 V | 1 1 1 1 0 0 1                                          | 0.0625 V |
| 0 1 0 0 0 1 1 | 1.0625 V | 1 0 0 0 1 0 1                           | 0.5625 V | 1 1 1 1 0 1 0                                          | 0.0500 V |
| 0 1 0 0 1 0 0 | 1.0500 V | 1 0 0 0 1 1 0                           | 0.5500 V | 1 1 1 1 0 1 1                                          | 0.0375 V |
| 0 1 0 0 1 0 1 | 1.0375 V | 1 0 0 0 1 1 0                           | 0.5375 V | 1 1 1 1 0 1 1                                          | 0.0250 V |
| 0 1 0 0 1 1 0 | 1.0250 V | 1 0 0 0 1 1 1                           | 0.5250 V | 1 1 1 1 0 1 1                                          | 0.0125 V |
| 0 1 0 0 1 1 1 | 1.0125 V | 1 0 0 0 1 1 1                           | 0.5125 V | 1 1 1 1 1 0 0                                          | 0.0000 V |
|               |          | 1 0 0 1 0 0 0                           | 0.5000 V | 1 1 1 1 1 0 0                                          | 0.0000 V |
|               |          |                                         |          | 1 1 1 1 1 0 1                                          | 0.0000 V |
|               |          |                                         |          | 1 1 1 1 1 0 1                                          |          |

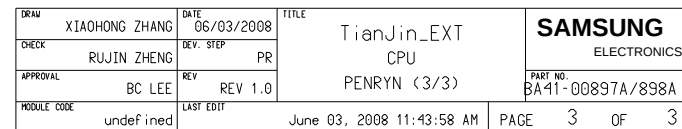
**GTLREF :** Keep the Voltage divider within 0.5" of the first GTLREF0 pin with  $Z_0=55\Omega$  trace. Minimize coupling of any switching signals to this net

COMP0,2(COMP1,3) should be connected with  $Z_0=27.4\text{ohm}(55\text{ohm})$  trace shorter than  $1/2''$  to their respective Banias socket pins.

GND test points within 100mil of the VCC/VSSense at the end of the line. Route the VCC/VSSense as a Zo=55ohm traces with equal length. Observe 3:1 spacing b/w VCC/VSSense lines and 25mil away (preferred 50mil) from any other signal. And GND via 100mil away from each of the VCC/VSS test point vias.

|             |                |           |                           |              |                    |                        |
|-------------|----------------|-----------|---------------------------|--------------|--------------------|------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE        | TianJin_EXT<br>CPU | SAMSUNG<br>ELECTRONICS |
| CHECK       | RUIJIN ZHENG   | DEV. STEP | PR                        | PENRYN (2/3) | PART NO.           | BA11-00897A/898A       |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |              |                    |                        |
| MODULE CODE | undefined      | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE         | 2                  | OF 3                   |

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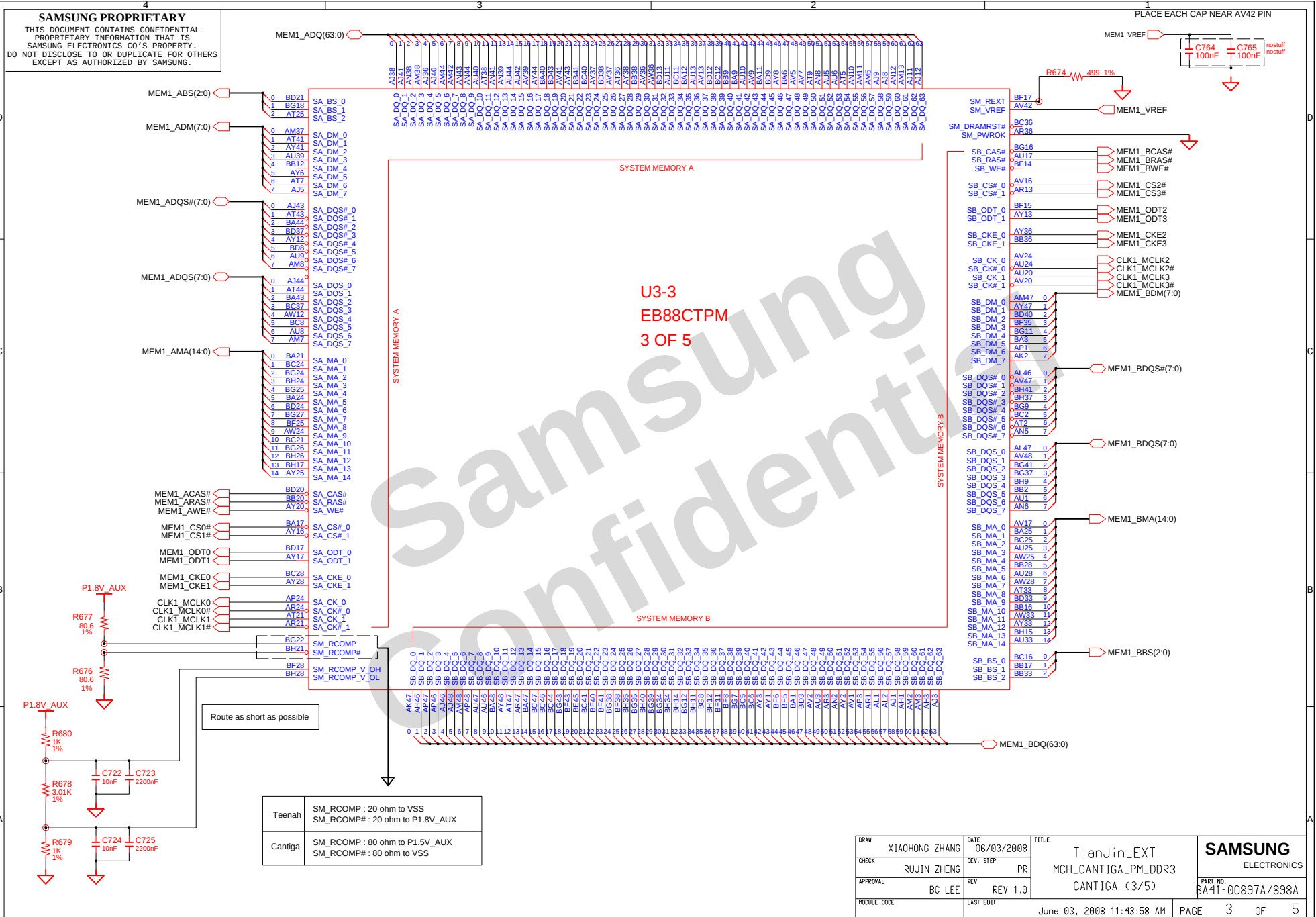




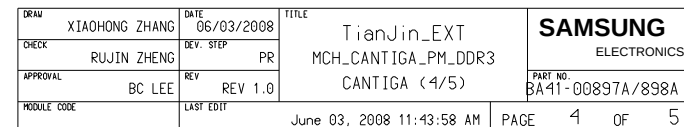


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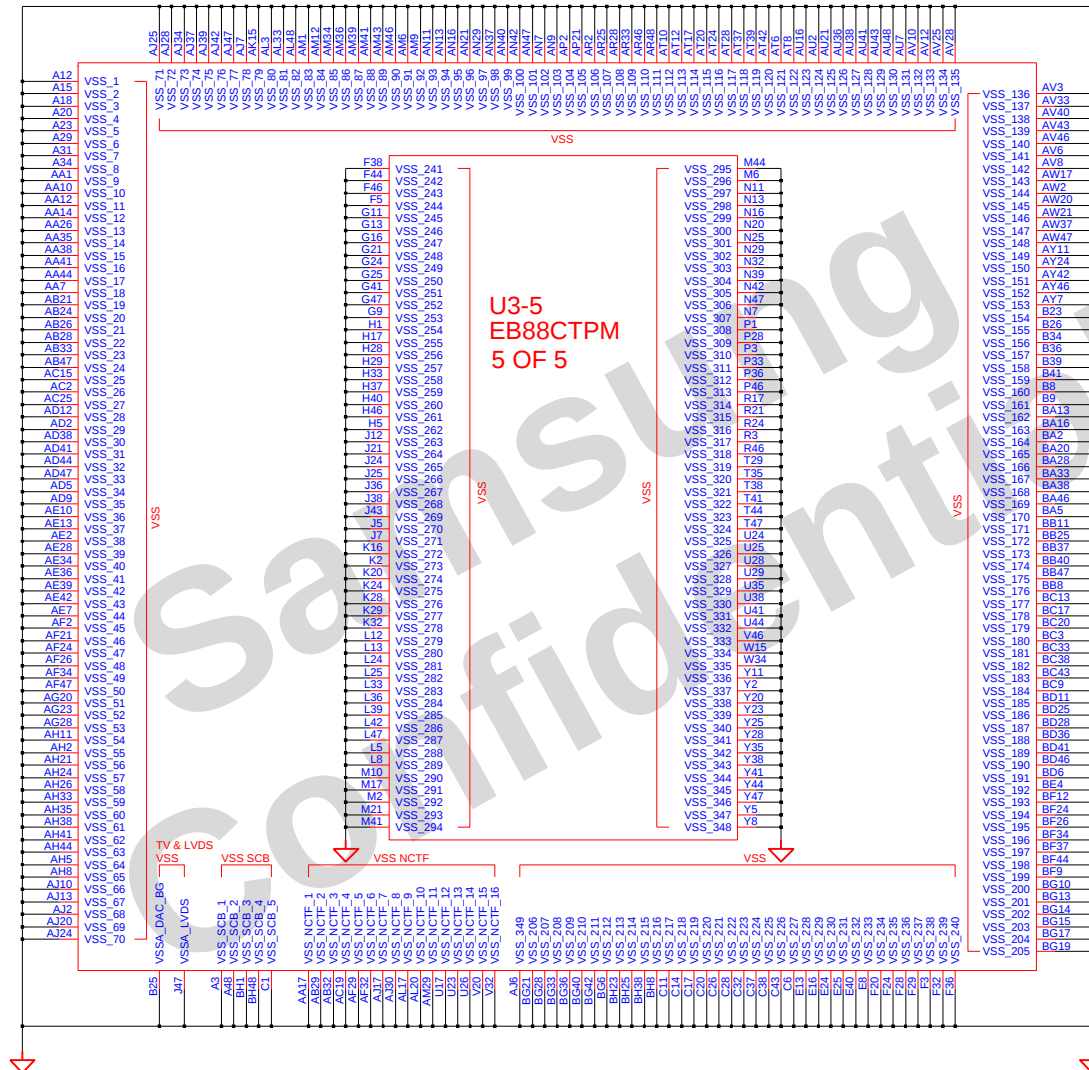
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|---------------------------|----------------|--|-----------|------------|--|---------------------|---------------------------------------------------------------|---|----|---|
| DRAW                      | XIAOHONG ZHANG |  | DATE      | 06/03/2008 |  | TITLE               | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |   |    |   |
| CHECK                     | RUJIN ZHENG    |  | DEV. STEP | PR         |  | MCH_CANTIGA_PM_DDR3 |                                                               |   |    |   |
| APPROVAL                  | BC LEE         |  | REV       | REV 1.0    |  | CANTIGA (3/5)       |                                                               |   |    |   |
| MODULE CODE               |                |  | LAST EDIT |            |  |                     |                                                               |   |    |   |
| June 03, 2008 11:43:58 AM |                |  |           |            |  |                     | PAGE                                                          | 3 | OF | 5 |



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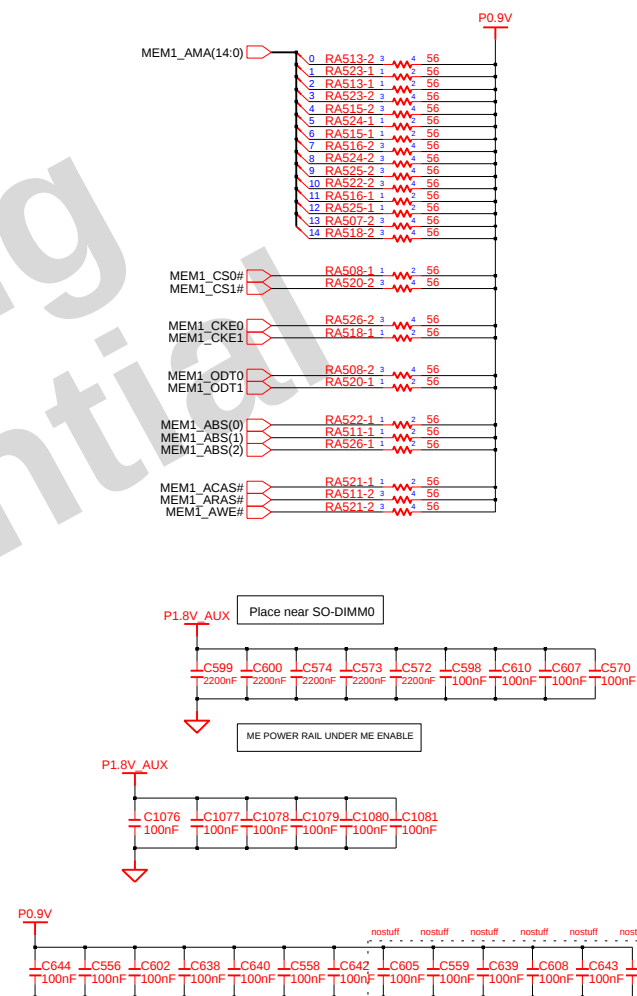
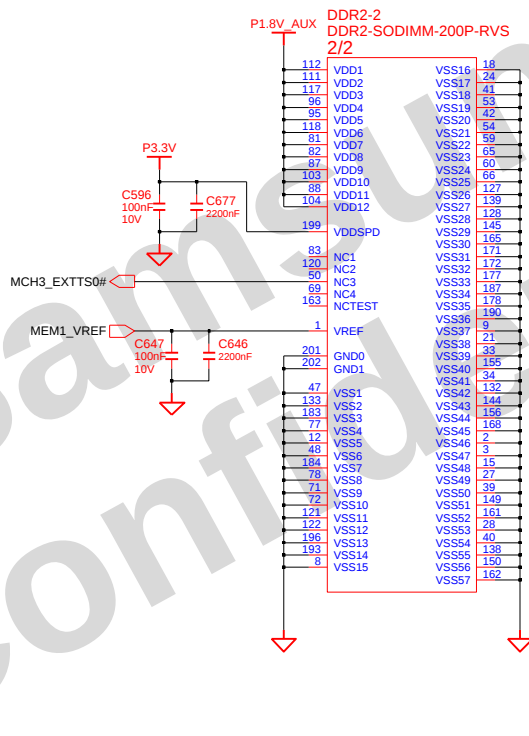
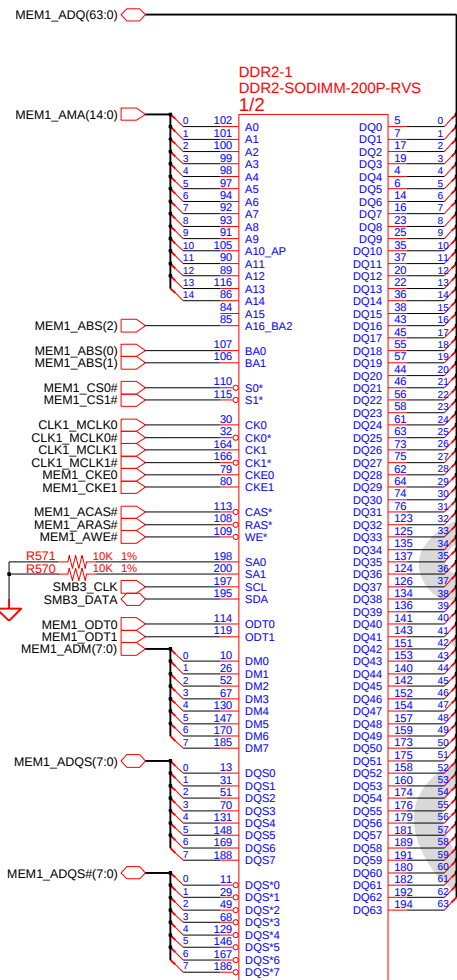


|             |                |           |            |                           |                     |                                                                |
|-------------|----------------|-----------|------------|---------------------------|---------------------|----------------------------------------------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE                     | TianJin_EXT         | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-000897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR         |                           | MCH_CANTIGA_PM_DDR3 |                                                                |
| APPROVAL    | BC LEE         | REV       | REV 1.0    |                           | CANTIGA (5/5)       |                                                                |
| MODULE CODE |                | LAST EDIT |            | June 03, 2008 11:43:58 AM | PAGE 5 OF 5         |                                                                |

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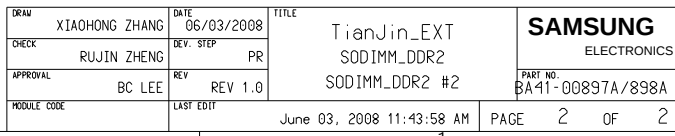
## DDR SO-DIMM #0

Height : 5.2mm (Reverse)



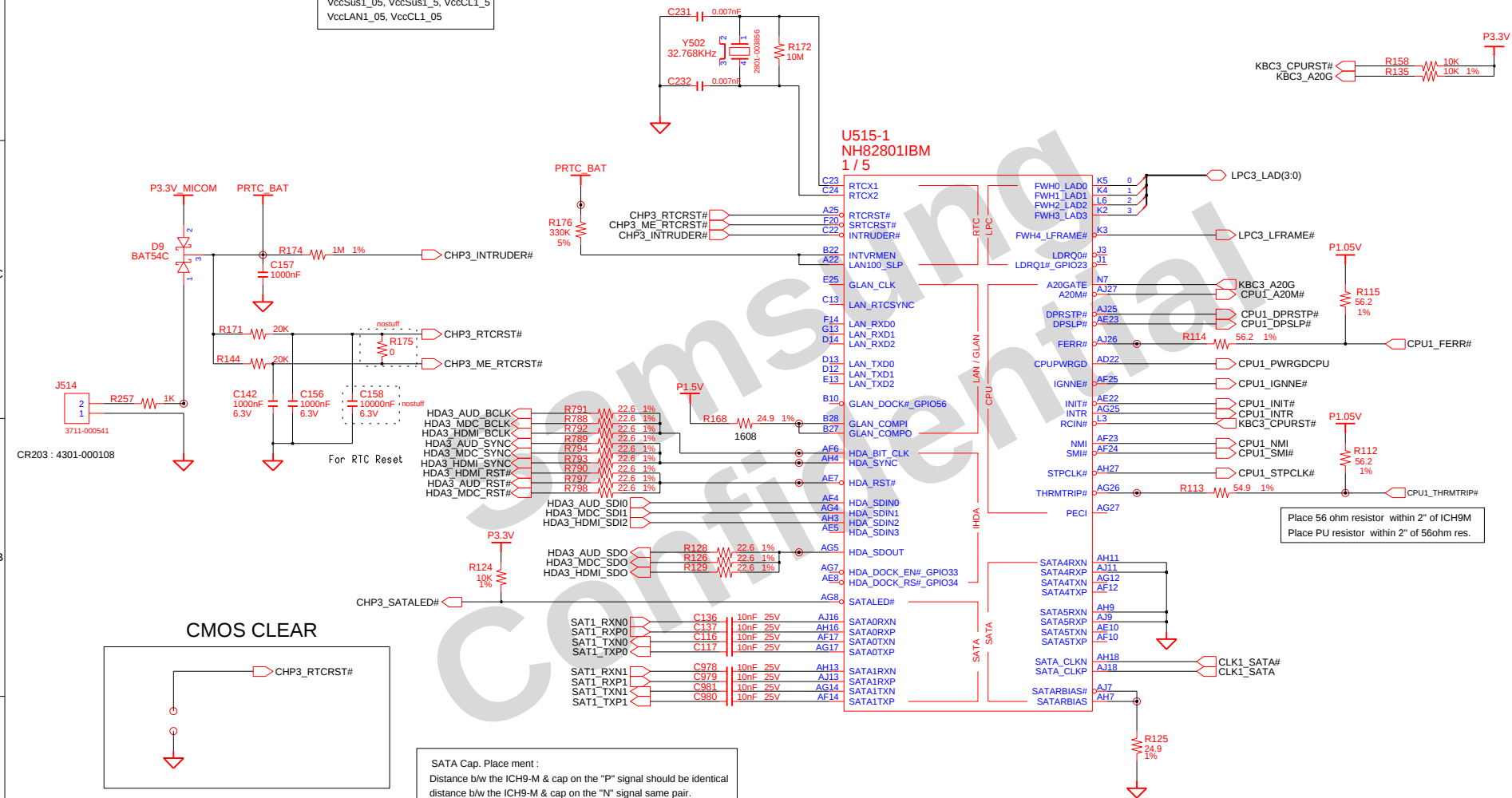
|                |             |            |                           |                                                               |
|----------------|-------------|------------|---------------------------|---------------------------------------------------------------|
| DRAW           |             | DATE       | TITLE                     | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| XIAOHONG ZHANG |             | 06/03/2008 | TianJin_EXT               |                                                               |
| CHECK          | RUJIN ZHENG | DEV. STEP  | PR                        |                                                               |
| APPROVAL       | BC LEE      | REV        | REV 1.0                   |                                                               |
| MODULE CODE    | LAST EDIT   |            | June 03, 2008 11:43:58 AM | PAGE 1 OF 2                                                   |

**DDR SO-DIMM #1**  
Height : 9.2mm (Reverse)



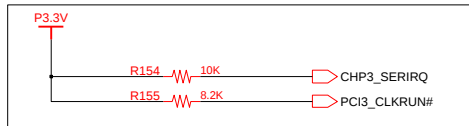
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| Internal VR Strap               |         |
|---------------------------------|---------|
| INTVRMEN                        | Pull up |
| VccSus1_05, VccSus1_5, VccCL1_5 |         |
| VccLAN1_05, VccCL1_05           |         |

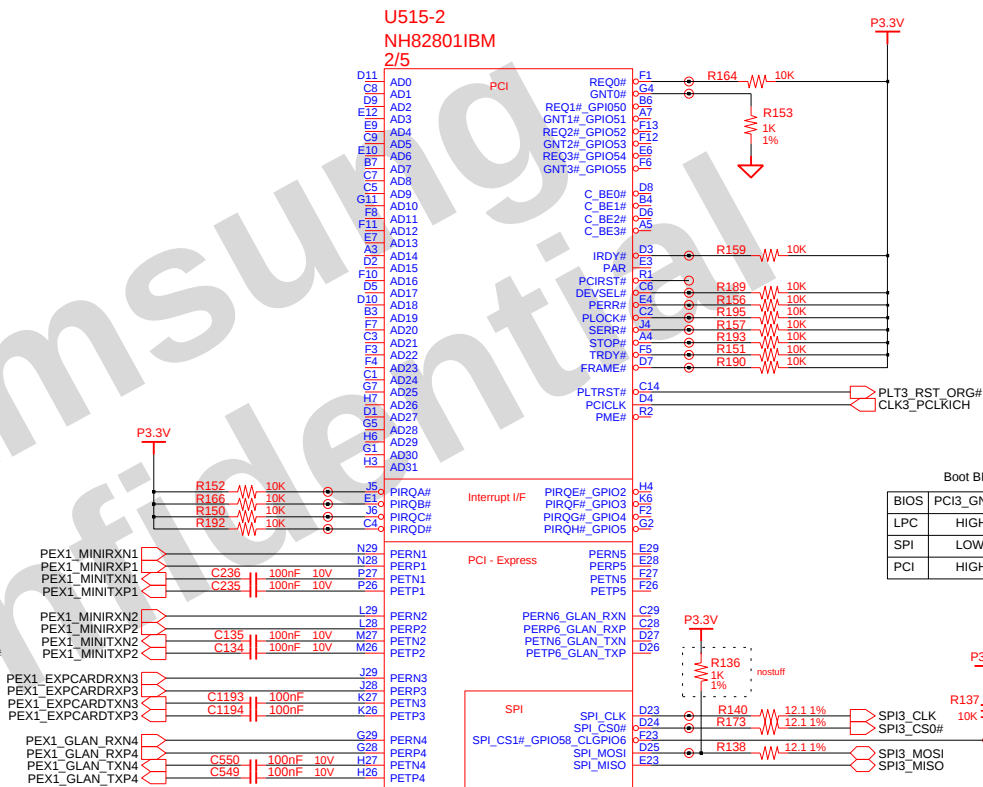
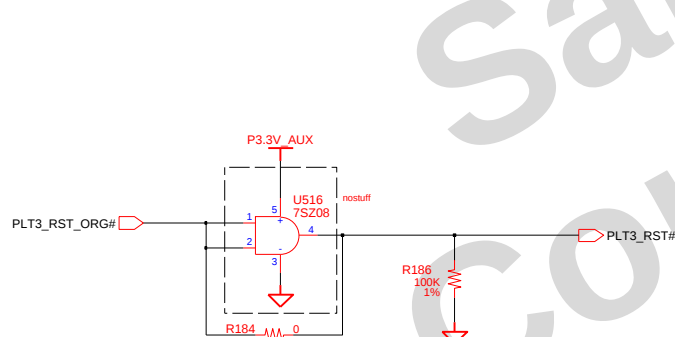


|                           |                |           |            |       |              |                                                               |
|---------------------------|----------------|-----------|------------|-------|--------------|---------------------------------------------------------------|
| DRAW                      | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE | TianJin_EXT  | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK                     | RUJIN ZHENG    | DEV. STEP | PR         |       | ICH9M_B      |                                                               |
| APPROVAL                  | BC LEE         | REV       | REV 1.0    |       | ICH9-M (1/5) |                                                               |
| MODULE CODE               |                | LAST EDIT |            |       |              |                                                               |
| June 03, 2008 11:43:58 AM |                |           |            |       |              | PAGE 1 OF 5                                                   |

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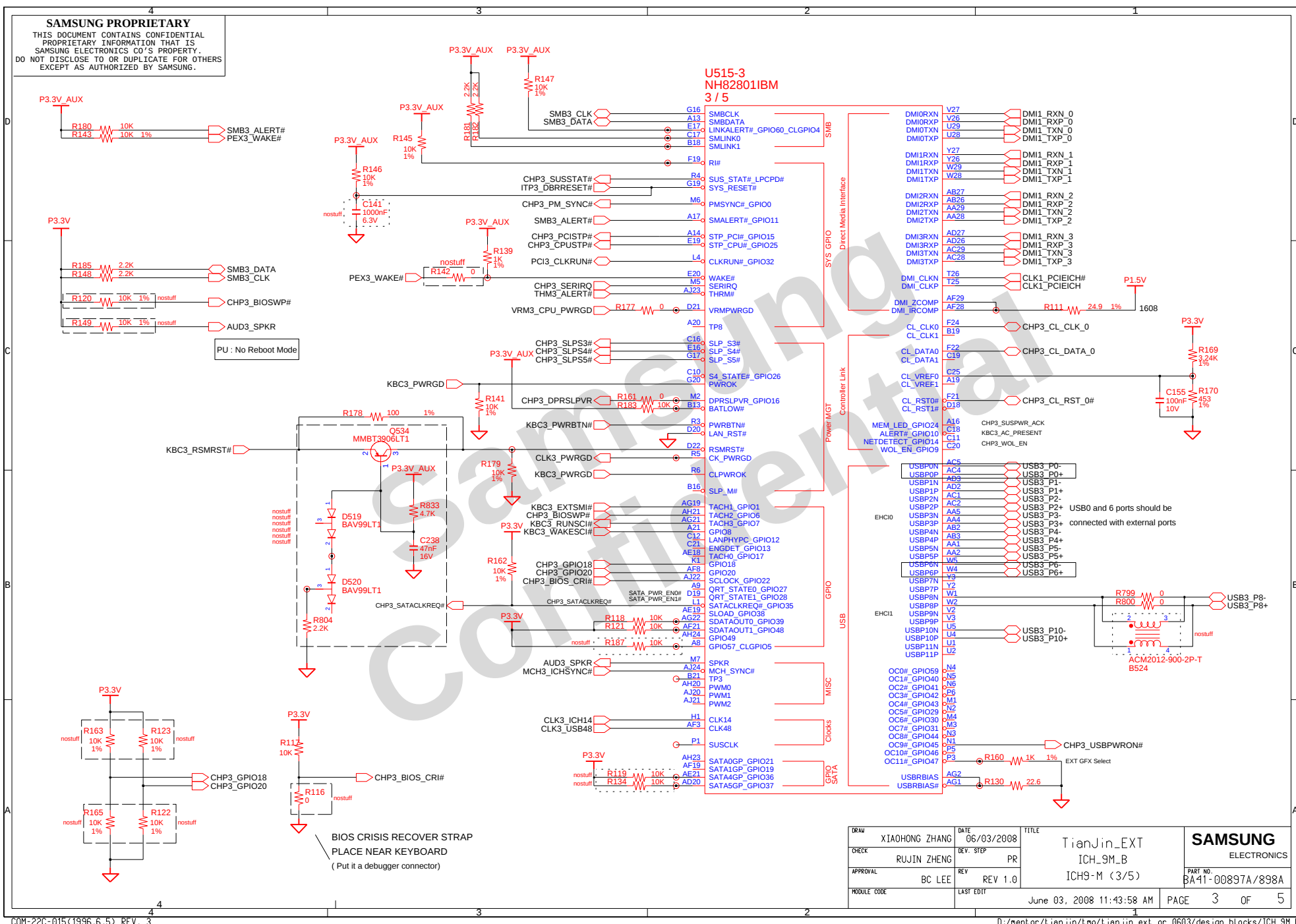
LPC option ; These are used with LPC



AC caps : PCIE need to be within 250mils of the driver  
Resistor for Test : Place Stuffing Option to minimize stubs

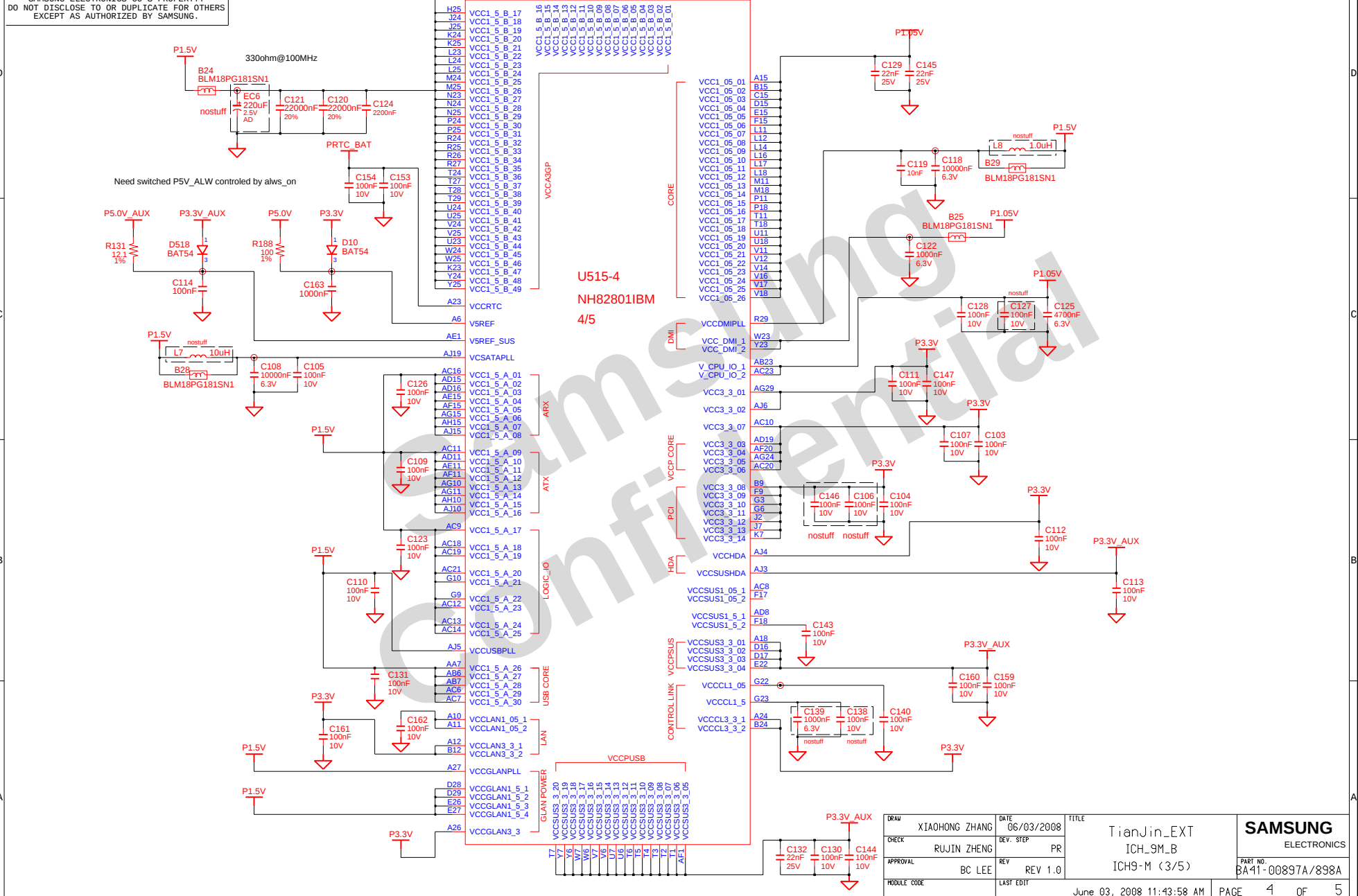
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| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT<br>ICH_9M_B<br>ICH9-M (2/5) | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       |                                         |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       |                                         |                                                               |
| MODULE CODE | undefined      | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 2 OF 5                                  |                                                               |

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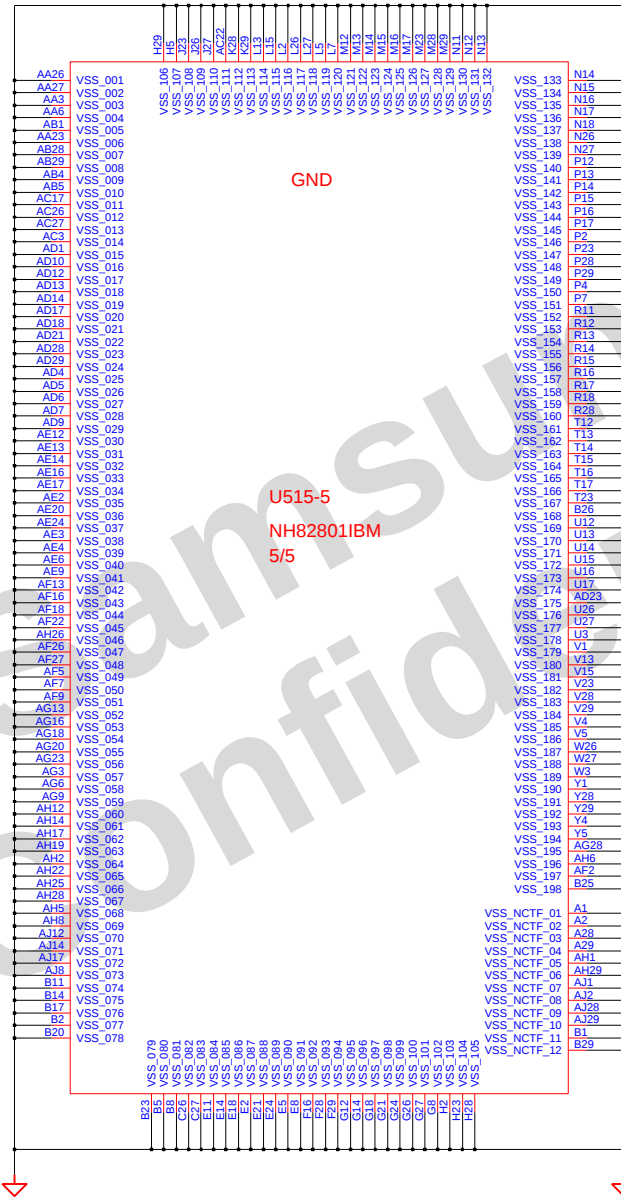
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| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT<br>ICH9M.B<br>ICH9-M (3/5) |  |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       |                                        |                                                                                       |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       |                                        |                                                                                       |
| MODULE CODE |                | LAST EDIT | June 03, 2008 11:43:58 AM |       | PAGE                                   | 3 OF 5                                                                                |

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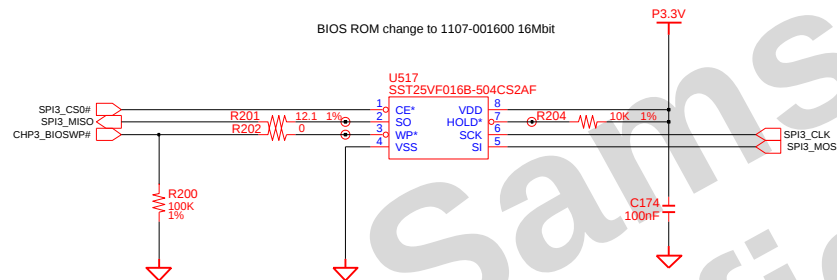
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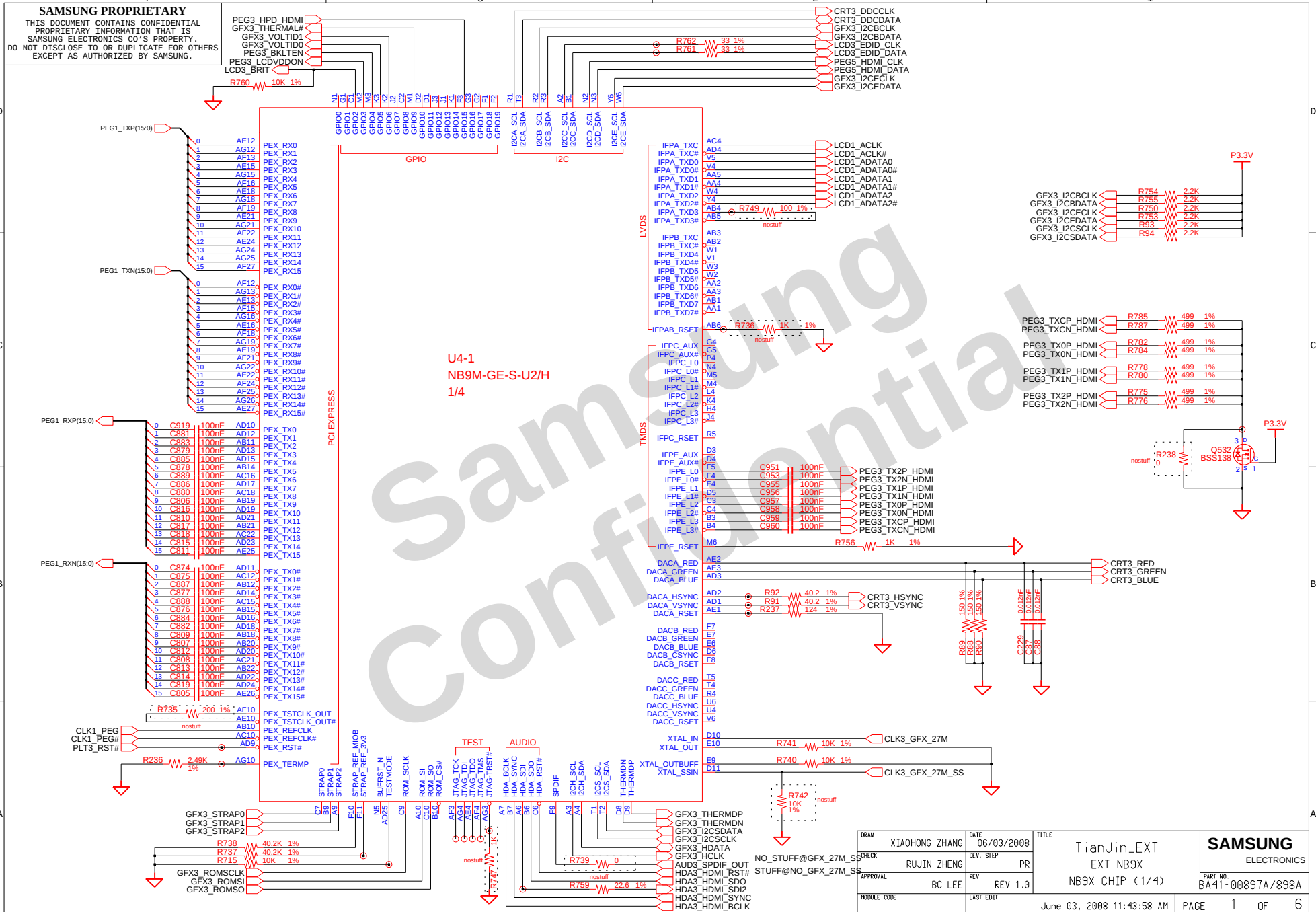
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| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE                     | TianJin_EXT  | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR         |                           | ICH_9M_B     |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0    |                           | ICH9-M (5/5) |                                                               |
| MODULE CODE |                | LAST EDIT |            | June 03, 2008 11:43:58 AM | PAGE 5 OF 5  |                                                               |

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- |    |                                                 |    |                                 |
|----|-------------------------------------------------|----|---------------------------------|
| 02 | VERIFY REAL MODE                                | 66 | CONFIGURE ADVANCE CACHE REG.    |
| 03 | DISABLE NMI                                     | 6A | DISPLAY EXTERNAL CACHE SIZE     |
| 04 | GET CPU TYPE                                    | 6C | DISPLAY SHADOW MESSAGE          |
| 06 | INIT. SYSTEM H/W                                | 6E | DISPLAY NON-DISPOSABLE SEGMENT  |
| 08 | INIT. CHIPSET REG.                              | 70 | DISPLAY ERROR MESSAGE           |
| 09 | SET IN POST FLAG                                | 72 | CHECK FOR CONFIGURATION ERROR   |
| 0A | INIT CPU.REG                                    | 74 | TEST REAL-TIME CLOCK            |
| 0B | CPU CACHE ON                                    | 76 | CHECK FOR KEYBOARD ERROR        |
| 0C | INIT.CACHE TO POST                              | 7C | SETUP HARDWARE INTERRUPT VECTOR |
| 0E | INIT. I/O VALUE                                 | 7E | TEST COPROCESSOR IF PRESENT     |
| 0F | ENABLE THE L-BUS IDE                            | 80 | DISABLE ON-BOARD I/O PORT       |
| 10 | INIT. POWER MANAGER                             | 82 | DETECT AND INSTALL EXT.RS232C   |
| 11 | LOAD ALTERNATE REG.                             | 84 | DETECT AND INSTALL EXT.PARALLEL |
| 13 | PCI BUS MASTER RESET<br>WITH INITIAL POST VALUE | 86 | RE-INIT. ON-BOARD I/O PORT      |
| 14 | INIT. KEYBOARD CONTROLLER                       | 88 | INIT. BIOS DATA ROM             |
| 16 | CHECK CHECKSUM                                  | 8A | INIT.EXTENDED BIOS DATA AREA    |
| 18 | 8254 TIMER INIT.                                | 8C | INIT. FDD CONTROLLER            |
| 1A | 8237 DMA CONTROLLER INIT.                       | 9A | SHADOW OPTION ROMS              |
| 1C | RESET INTERRUPT CONTROLLER                      | 9C | SETUP POWER MANAGEMENT          |
| 20 | TEST DRAM REFRESH                               | 9E | ENABLE HW INTERRUPT             |
| 22 | TEST 8742 KEYBOARD CONTROLLER                   | A0 | SET TIME OF DAY                 |
| 24 | SET ES SEGMENT REG. TO 4GB                      | A4 | INIT. TYPEMATIC RATE            |
| 26 | ENABLE A20                                      | A8 | ERASE F2 PROMPT                 |
| 28 | AUTO SIZING DRAM                                | AA | SCAN FOR F2 KEY STROKE          |
| 32 | COMPUTE THE CPU SPEED                           | AC | ENTER SETUP                     |
| 34 | TESET CMOS RAM                                  | AE | CLEAR IN POST FLAG              |
| 38 | SHADOW SYSTEM BIOS ROM                          | B0 | CHECK FOR ERRORS                |
| 3A | AUTO SIZING CACHE                               | B2 | POST DONE-PREPARE TO BOOT O/S   |
| 3C | CONFIGURE ADVANCED CHIPSET REG.                 | B4 | ONE BEEP                        |
| 3D | LOAD ALTER REG. WITH CMOS VALUE                 | B6 | CHECK PASSWORD (OPTION)         |
| 42 | INIT. INTERRUPT VECTOR                          | B7 | ACPI INIT                       |
| 44 | INIT. BIOS INTERRUPT                            | BA | DMI INIT                        |
| 46 | CHECK ROM COPYRIGHT NOTICE                      | BE | CLEAR SCREEN                    |
| 47 | INIT. I20 SUPPORT IF INSTALLED                  | C0 | TRY BOOT WITH INT19             |
| 48 | CHECK VIDEO CONFIGURE AGAINST CMOS              | D0 | INTERRUPT HANDLER ERROR         |
| 49 | INIT. PCI BUS AND DEVICE                        | D2 | UNKNOWN INTERRUPT ERROR         |
| 4A | INIT. ALL VIDEO BIOS ROM                        | D4 | PENDING INTERRUPT ERROR         |
| 4C | SHADOW VIDEO BIOS ROM                           | D6 | SHUTDOWN 5                      |
| 50 | DISPLAY CPU TYPE AND SPEED                      | D8 | SHUTDOWN ERROR                  |
| 52 | TEST KEYBOARD                                   | DA | EXTENDED BLOCK MOVE             |
| 54 | SET KEYCLICK IF ENABLED                         | DC | SHUTDOWN 10                     |
| 56 | ENABLE KEYBOARD                                 | 89 | ENABLE NMI                      |
| 58 | TEST FOR UNEXPECTED INTERRUPTS                  | 90 | INIT. HDD CONTROLLER            |
| 5A | DISPLAY " PRESS ..... SETUP"                    | 91 | INIT. LOCAL BUS HDD CONTROLLER  |
| 5C | TEST RAM BETWEEN 512K AND 640K                  | 92 | JUMP TO USER PATCH 2            |
| 60 | TEST EXTENDED MEMORY                            | 94 | DISABLE A20 ADDRESS LINE        |
| 62 | TEST EXTENDED MEMORY ADDRESS LINE               | 96 | CLEAR HUGE ES SEGMENT REG.      |
| 64 | JUMP TO USER PATCH 1                            | 98 | SEARCH FOR OPTION ROMS          |

|                           |                |           |            |       |              |                              |
|---------------------------|----------------|-----------|------------|-------|--------------|------------------------------|
| DRAW                      | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE | TianJin_EXT  | SAMSUNG<br>ELECTRONICS       |
| CHECK                     | RUJIN ZHENG    | DEV. STEP | PR         |       | SPI.BIOS_ROM |                              |
| APPROVAL                  | BC LEE         | REV       | REV 1.0    |       | SPI.BIOS_ROM |                              |
| MODULE CODE               |                | LAST EDIT |            |       |              |                              |
| June 03, 2008 11:43:58 AM |                |           |            |       |              | PART NO.<br>BA41-00897A/898A |
| PAGE 1 OF 1               |                |           |            |       |              |                              |



A



D:/mentor/tianjin/tmp/tianjin\_ext\_pr\_0603/design\_blocks/Gfx\_External\_Nvidia.Nb9x  
SRP Sheet Number: 37 of 70

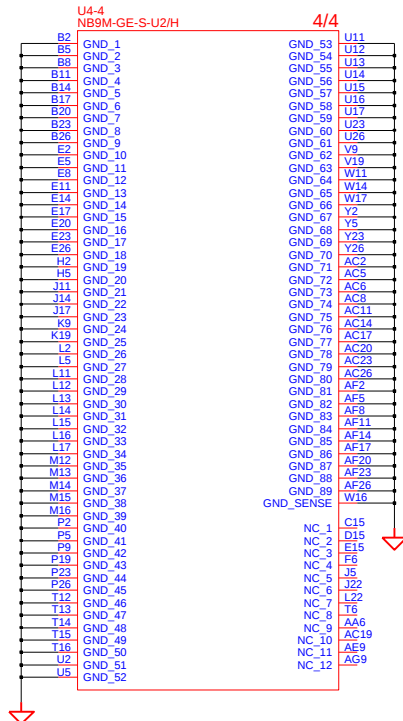
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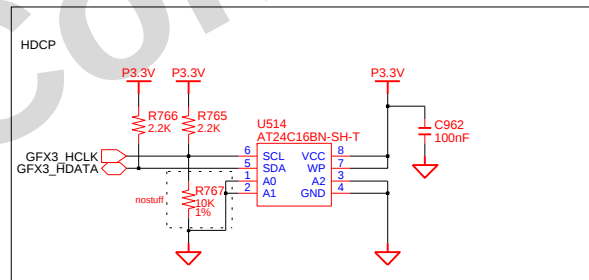
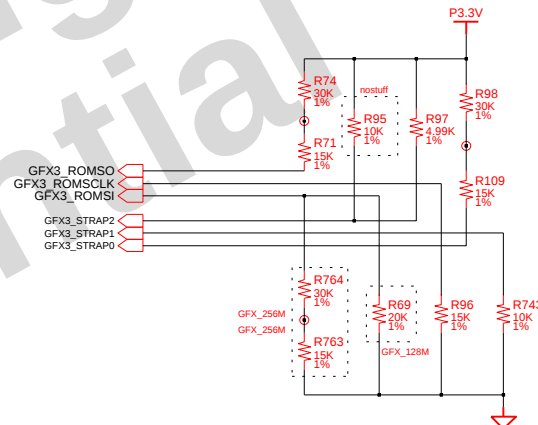
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| Pin      | Description            | Activate                |
|----------|------------------------|-------------------------|
| GPIO(0)  | DVI detect             | High                    |
| GPIO(1)  | TV detect              | Low                     |
| GPIO(2)  | PWM Brightness control | High                    |
| GPIO(3)  | LCD VDD on enable      | High                    |
| GPIO(4)  | Backlight on/off       | High                    |
| GPIO(5)  | GPU VID0               | High = 1.0V, Low = 1.1V |
| GPIO(6)  | GPU VID1               | NC                      |
| GPIO(7)  | GPU VID2 or Mem VID    | NC                      |
| GPIO(8)  | Thermal diode Alert    | LOW                     |
| GPIO(9)  | Fan control            | NC                      |
| GPIO(10) | Memory VREF switch     | NC                      |
| GPIO(11) | SLI Rater sync         | HIGH                    |
| GPIO(12) | AC Power dection input | NC                      |
| GPIO(13) | Power supply control   | NC                      |
| GPIO(14) | Power supply control   | NC                      |
| GPIO(15) | HDMI Detect            | High                    |
| GPIO(16) | DP Detect              | High                    |

| Strap option   | Bit 3     | Bit 2     | Bit 1                     | Bit 0     |
|----------------|-----------|-----------|---------------------------|-----------|
| ROM_SO         | XCLK_27   | TVMODE[2] | TVMODE[1]                 | TVMODE[0] |
| ROM_SCLK       | DEVID[4]  | VENID     | CLK_CFG                   | PLL_TERM  |
| ROM_SI         | RAMCFG[3] | RAMCFG[2] | RAMCFG[1]                 | RAMCFG[0] |
| STRAP2         | DEVID[3]  | DEVID[2]  | DEVID[1]                  | DEVID[0]  |
| STRAP1         | PADCFG[3] | PADCFG[2] | PADCFG[1]                 | PADCFG[0] |
| STRAP0         | USER[3]   | USER[2]   | USER[1]                   | USER[0]   |
| Resistor value | PU to VDD | PD to GND | XCLK27 = 1.27MHz          |           |
| 5K ohm         | 1000      | 0000      | RAM CFG (SEC)             |           |
| 10 Kohm        | 1001      | 0001      | 0011 512Mbit 0111 256Mbit |           |
| 15K ohm        | 1010      | 0010      | USER[3:0]=1111 for EDID   |           |
| 20K ohm        | 1011      | 0011      | PADCFG[3:0]=0001 of NP    |           |
| 25K ohm        | 1100      | 0100      | NB9M-GS:0x06E9 (01001)    |           |
| 30K ohm        | 1101      | 0101      | NB9M-GE:0x06E8 (01000)    |           |
| 35K ohm        | 1110      | 0110      | NB9P-GS:0x06A9 (01001)    |           |
| 45K ohm        | 1111      | 0111      | NB9P-GE:0x0406 (00110)    |           |
|                |           |           | NB9P-GE2:0x07?? (0?????)  |           |



|        | Bit3 | Bit2 | Bit1 | Bit0 |
|--------|------|------|------|------|
| ROMSO  | 1    | 1    | 1    | 1    |
| SCLK   | 0    | 0    | 1    | 0    |
| SI     | 0    | 0    | 0    | 1    |
| Strap2 | 1    | 0    | 0    | 1    |
| Strap1 | 0    | 0    | 0    | 1    |
| Strap0 | 1    | 1    | 1    | 1    |

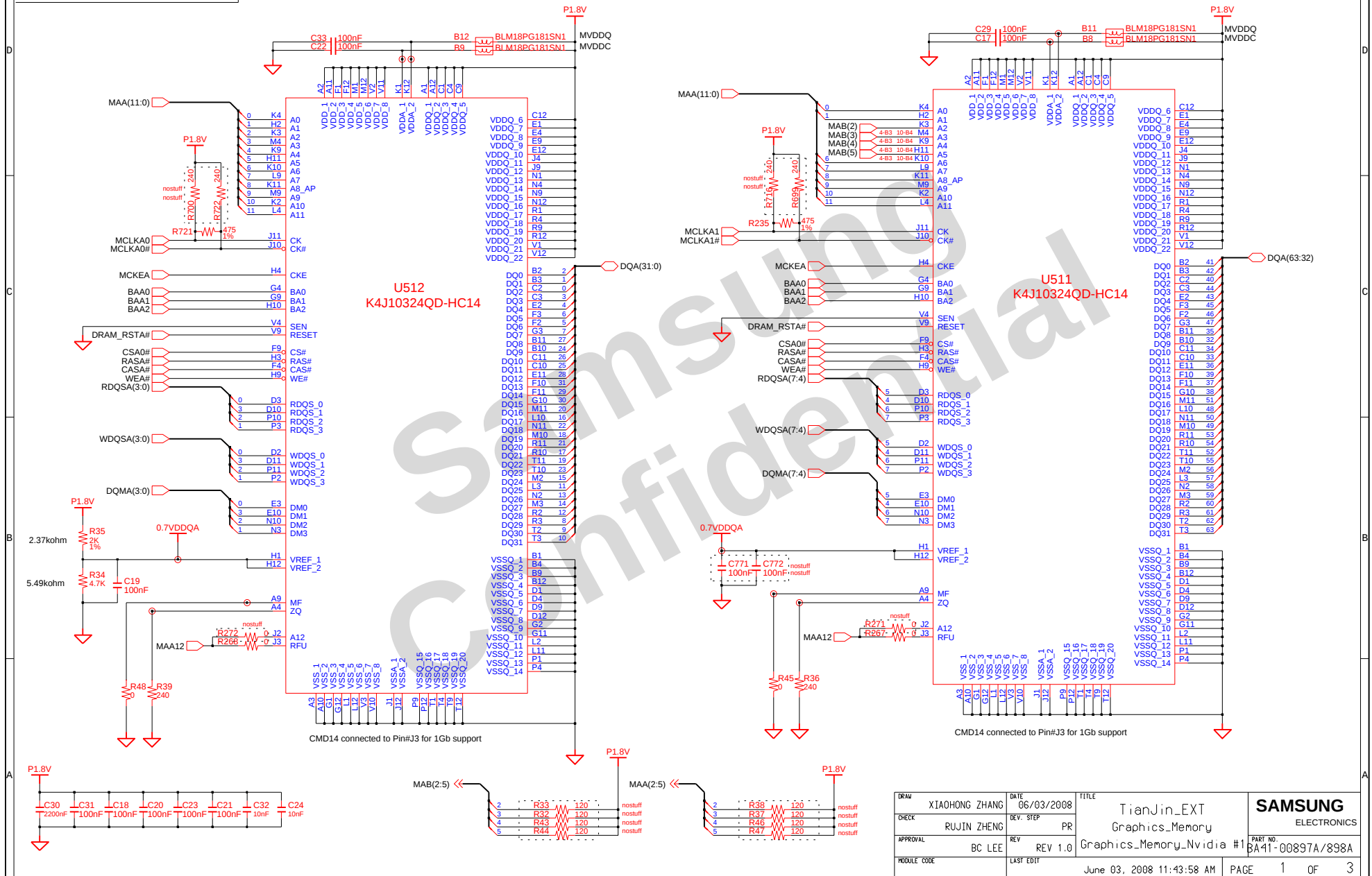


PU is for I2C ROM (AT24C16B, A0-A2 = 000)  
PD is for Crypto ROM

|                           |                |           |            |       |                 |                              |
|---------------------------|----------------|-----------|------------|-------|-----------------|------------------------------|
| DRAW                      | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE | TianJin_EXT     | SAMSUNG<br>ELECTRONICS       |
| CHECK                     | RUJIN ZHENG    | DEV. STEP | PR         |       | EXT NB9X        |                              |
| APPROVAL                  | BC LEE         | REV       | REV 1.0    |       | NB9X CHIP (4/4) |                              |
| MODULE CODE               |                | LAST EDIT |            |       |                 |                              |
| June 03, 2008 11:43:58 AM |                |           |            |       |                 | PART NO.<br>BA41-00897A/898A |
| PAGE 4 OF 6               |                |           |            |       |                 |                              |

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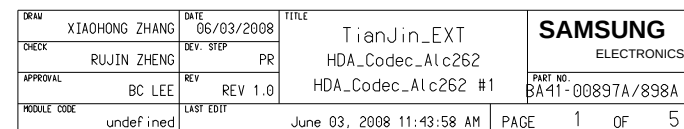
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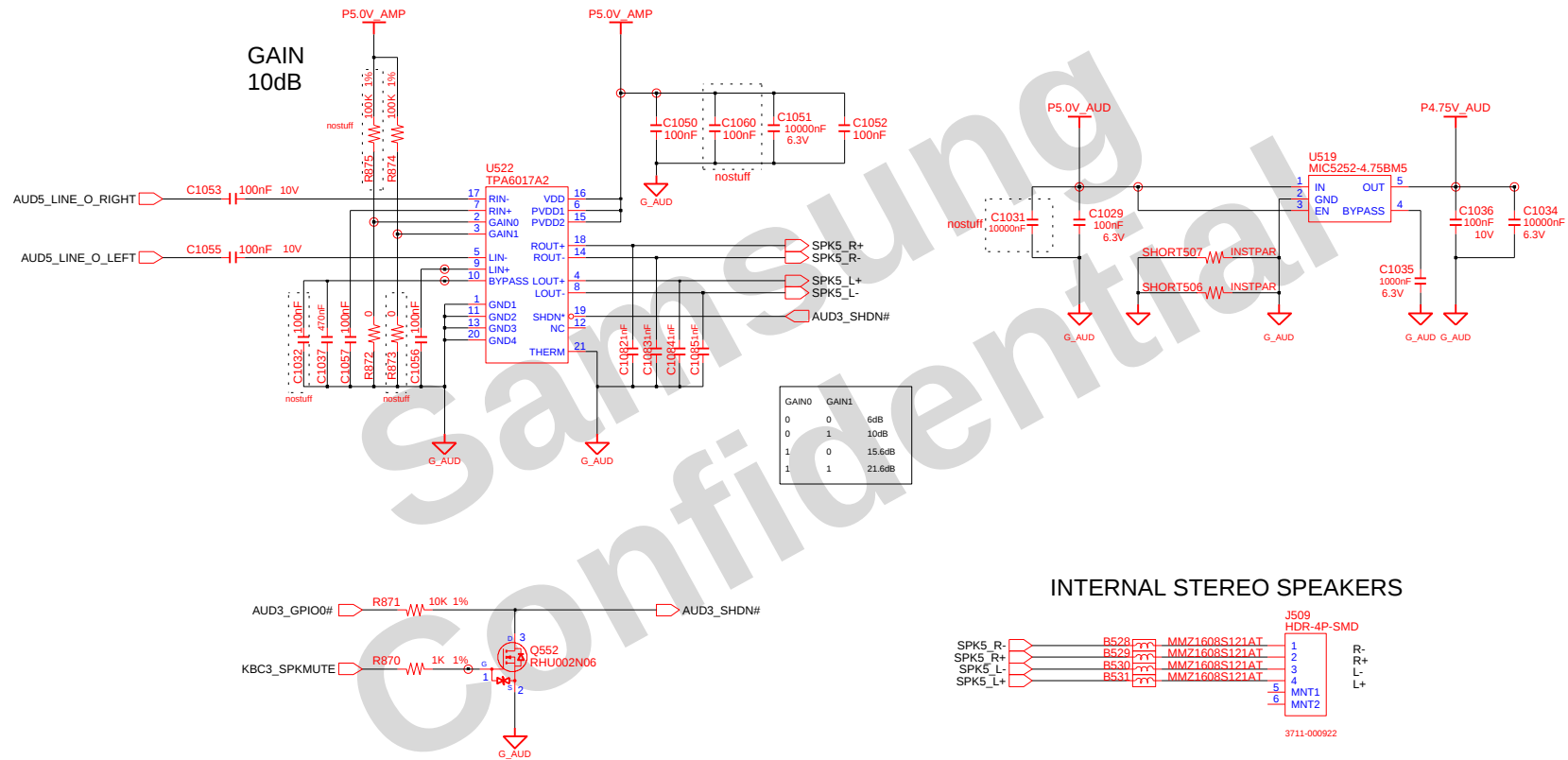
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| DATE        | 06/03/2008  | TITLE     | TianJin_EXT               | <b>SAMSUNG</b><br>ELECTRONICS |
| CHECK       | RUJIN ZHENG | DEV. STEP | PR                        |                               |
| APPROVAL    | BC LEE      | REV       | REV 1.0                   |                               |
| MODULE CODE |             | LAST EDIT | June 03, 2008 11:43:58 AM |                               |
|             |             |           | PAGE 1 OF 3               |                               |

Part No. BA41-00897A/898A

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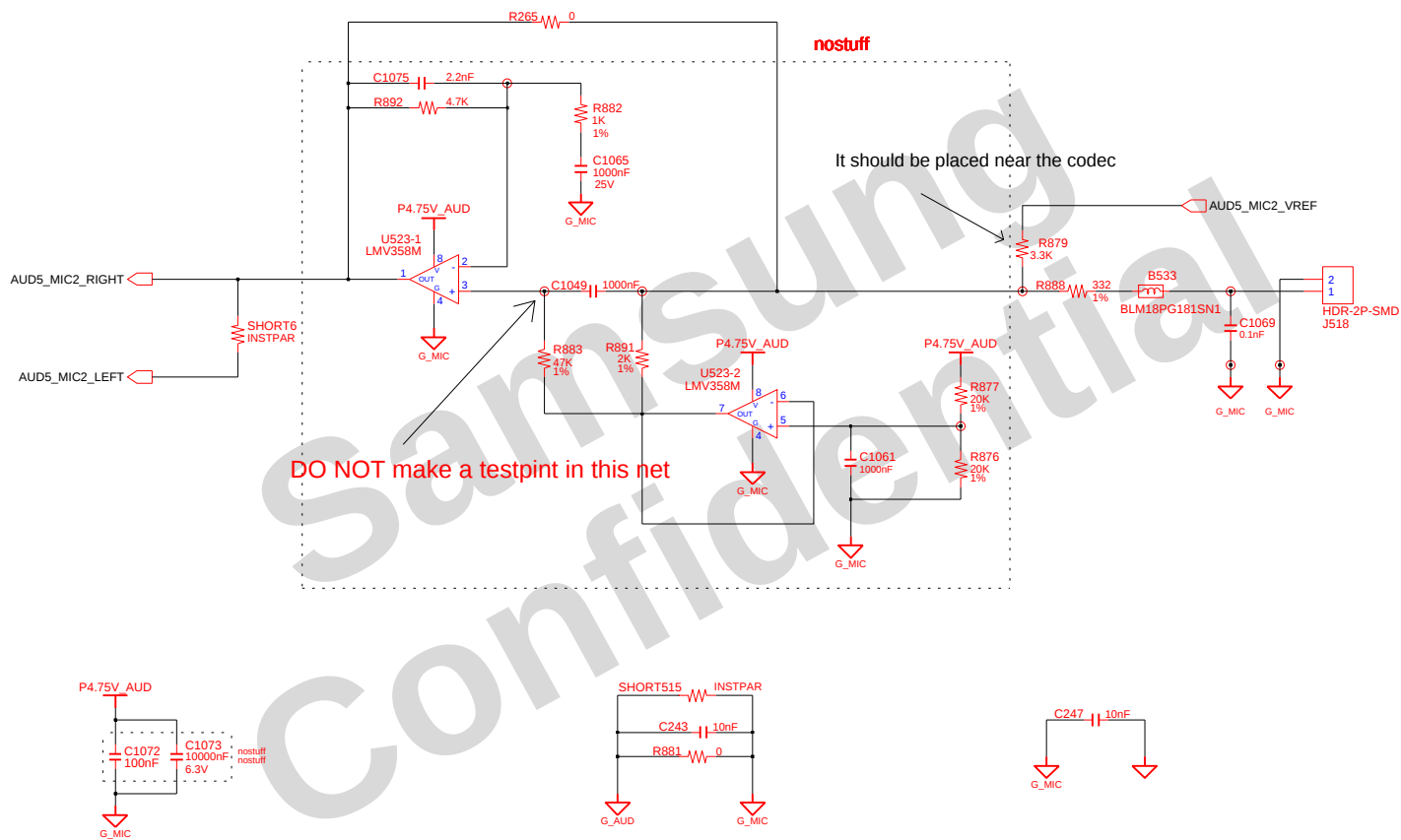


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|---------------------------|----------------|-----------|------------|-------|---------------------|-------------------------------|
| DRAW                      | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE | TianJin_EXT         | <b>SAMSUNG</b><br>ELECTRONICS |
| CHECK                     | RUJIN ZHENG    | DEV. STEP | PR         |       | HDA_Codec_Alc262    |                               |
| APPROVAL                  | BC LEE         | REV       | REV 1.0    |       | HDA_Codec_Alc262 #2 |                               |
| MODULE CODE               |                | LAST EDIT |            |       |                     |                               |
| June 03, 2008 11:43:58 AM |                |           |            |       |                     | PAGE 2 OF 5                   |

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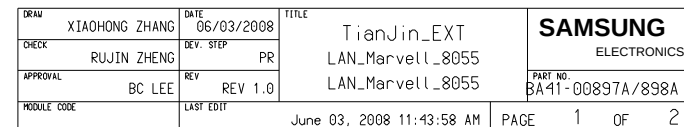


|             |                |           |                           |       |                     |                                                               |
|-------------|----------------|-----------|---------------------------|-------|---------------------|---------------------------------------------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT         | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       | HDA_Codec_Alc262    |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       | HDA_Codec_Alc262 #3 |                                                               |
| MODULE CODE | undefined      | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 3 OF 5              |                                                               |

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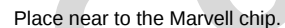
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| DRAW<br>XIAOHONG ZHANG   | DATE<br>06/03/2008 | TITLE<br>TianJin_EXT                   |  | <b>SAMSUNG</b><br>ELECTRONICS |
| CHECK<br>RUJIN ZHENG     | DEV. STEP<br>PR    | HDA_Codec_Alc262                       |  |                               |
| APPROVAL<br>BC LEE       | REV<br>REV 1.0     | HDA_Codec_Alc262 #5                    |  |                               |
| MODULE CODE<br>undefined |                    | LAST EDIT<br>June 03, 2008 11:43:58 AM |  | PART NO.<br>BA41-00897A/898A  |
|                          |                    | PAGE 5 OF 5                            |  |                               |



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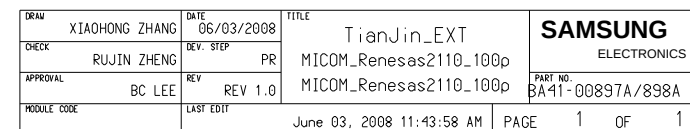
P1.8V\_P2.5V\_LAN



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SRP Sheet Number: 46 of 70

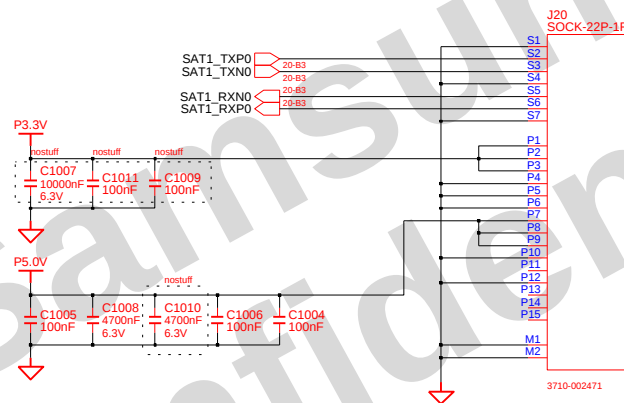
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## KBC3\_RST#



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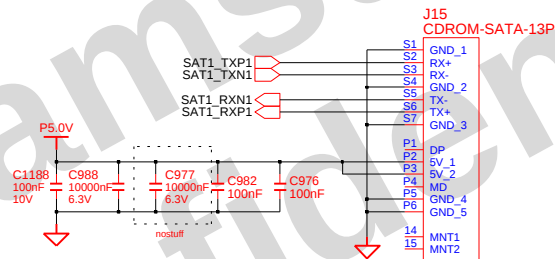
Main to HDD



|             |                |           |            |                           |             |                                                        |
|-------------|----------------|-----------|------------|---------------------------|-------------|--------------------------------------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE                     | TianJin_EXT | SAMSUNG<br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR         |                           | HDD_IF_Conn |                                                        |
| APPROVAL    | BC LEE         | REV       | REV 1.0    |                           | HDD_IF_Conn |                                                        |
| MODULE CODE |                | LAST EDIT |            |                           |             |                                                        |
|             |                |           |            | June 03, 2008 11:43:58 AM | PAGE        | 1 OF 1                                                 |

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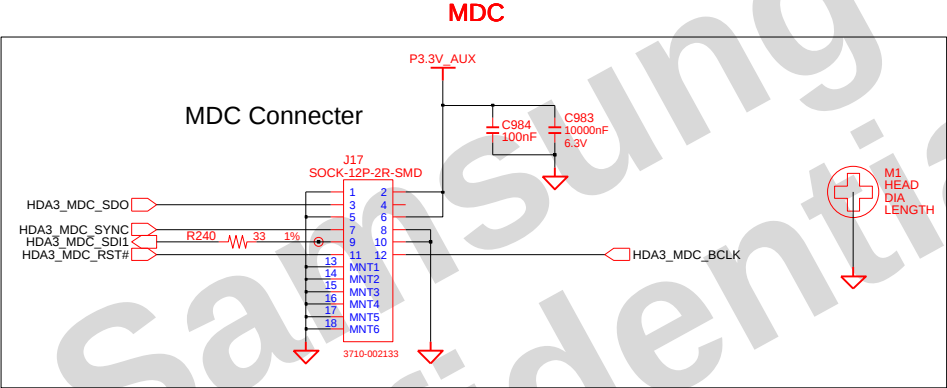
SATA ODD



|             |                |           |            |                           |             |                                                               |
|-------------|----------------|-----------|------------|---------------------------|-------------|---------------------------------------------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE                     | TianJin_EXT | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR         |                           | ODD_IF_Conn |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0    |                           | ODD_IF_Conn |                                                               |
| MODULE CODE |                | LAST EDIT |            | June 03, 2008 11:43:58 AM | PAGE 1 OF 1 |                                                               |

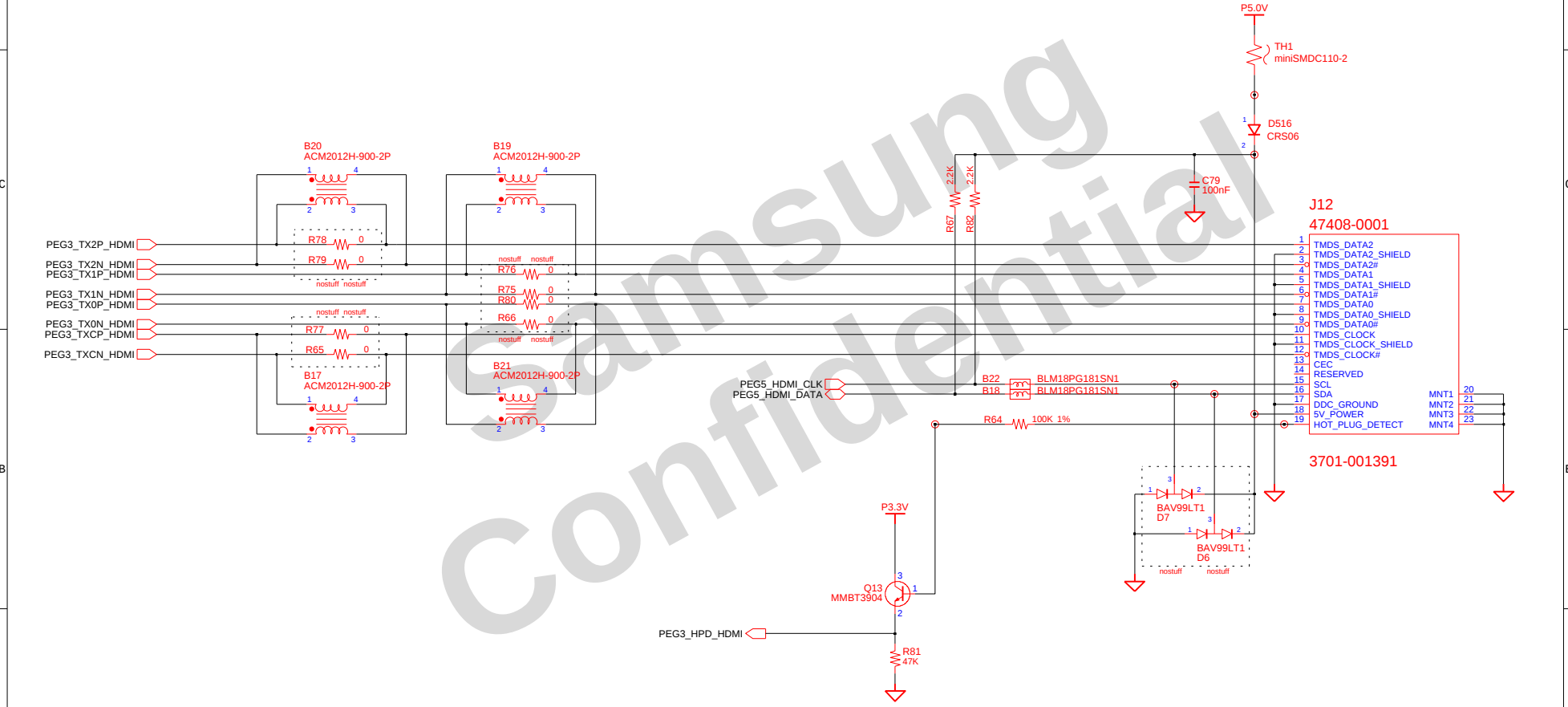


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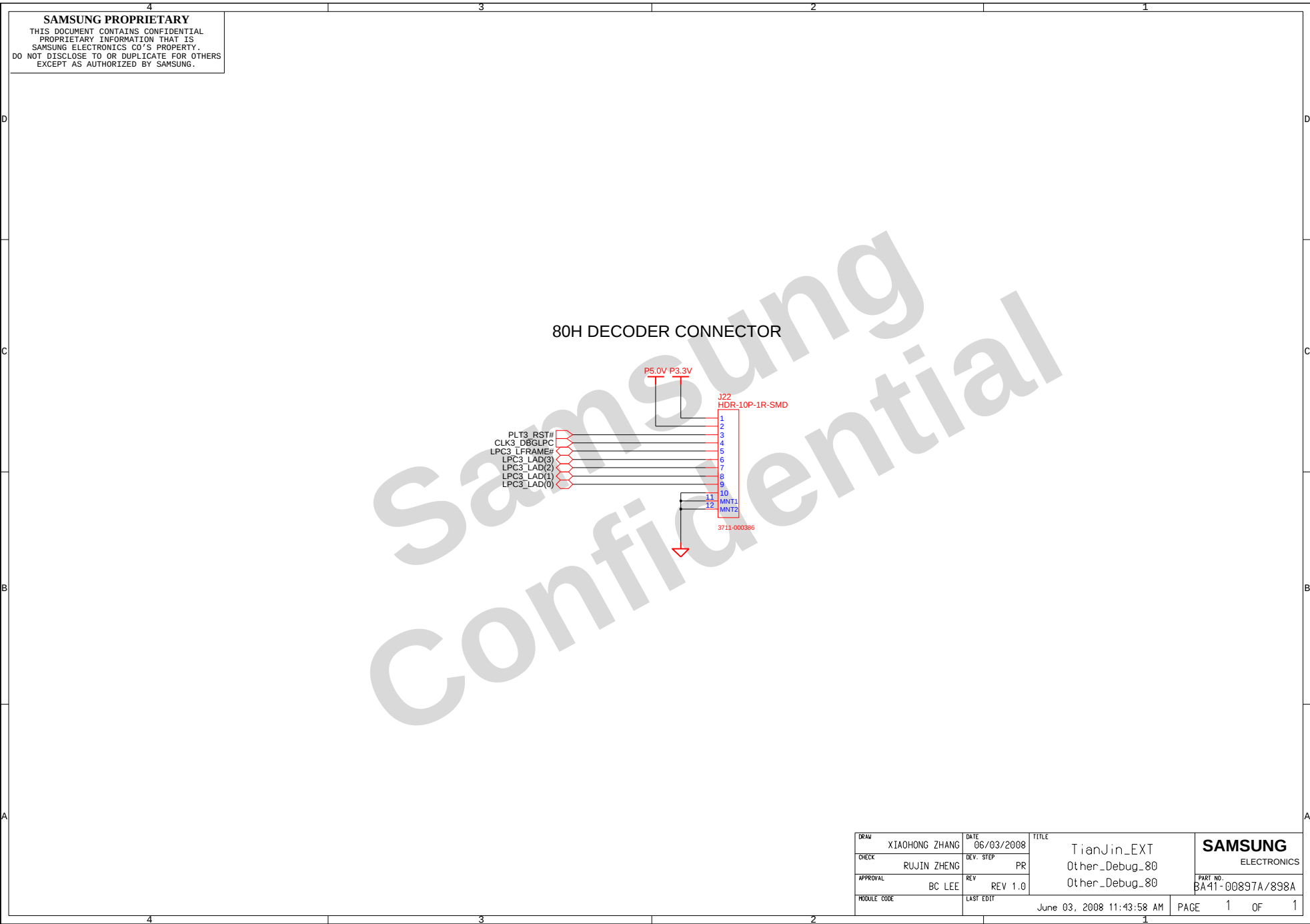


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| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT | SAMSUNG<br>ELECTRONICS       |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       | HDA_Modem   |                              |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       | HDA_Modem   |                              |
| MODULE CODE |                | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 1 OF 1      | PART NO.<br>BA41-00897A/898A |

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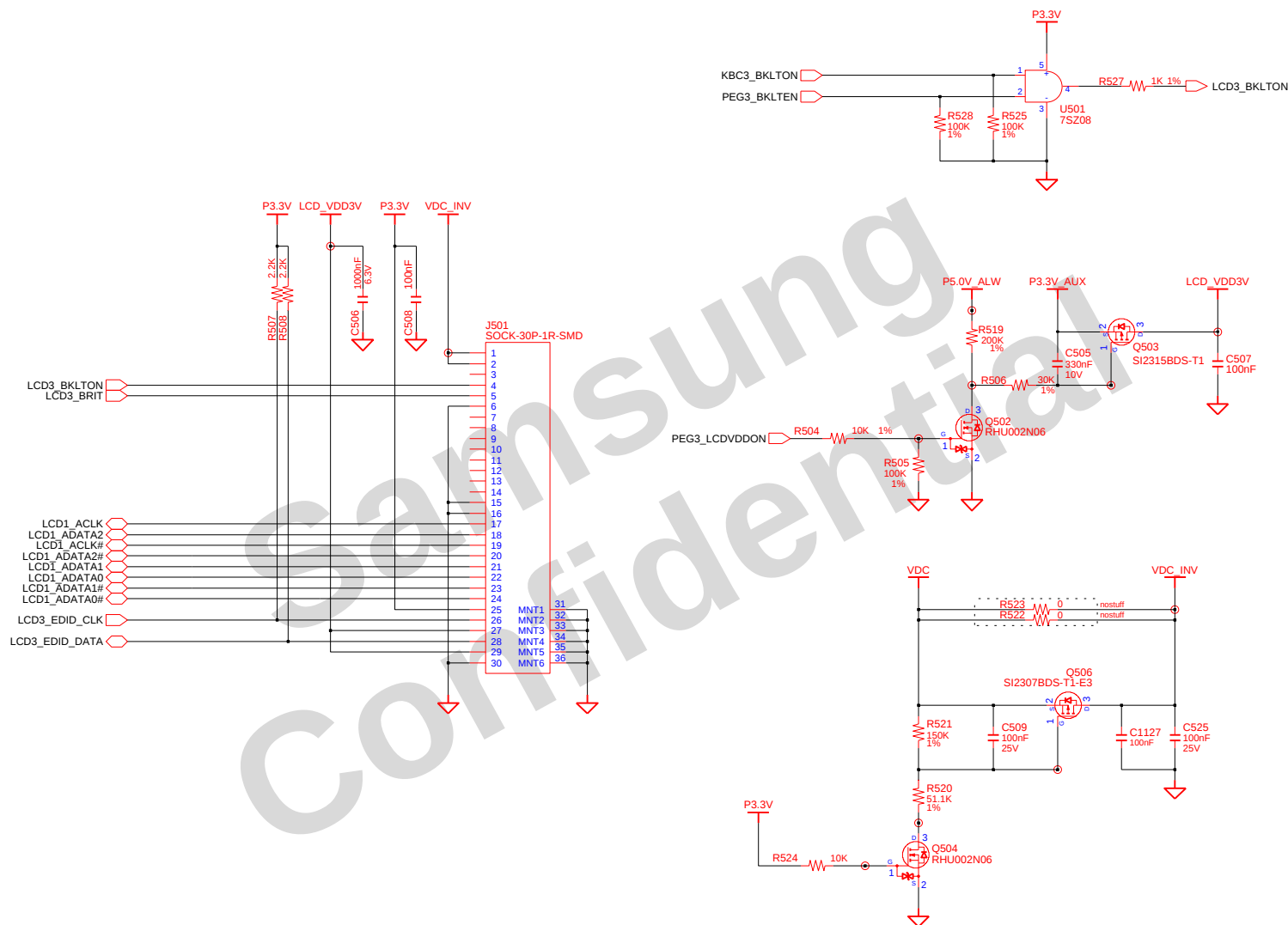


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| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE                     | TianJin_EXT | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR         |                           | DMB_IF_Conn |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0    |                           | DMB_IF_Conn |                                                               |
| MODULE CODE |                | LAST EDIT |            | June 03, 2008 11:43:58 AM | PAGE 1 OF 1 |                                                               |



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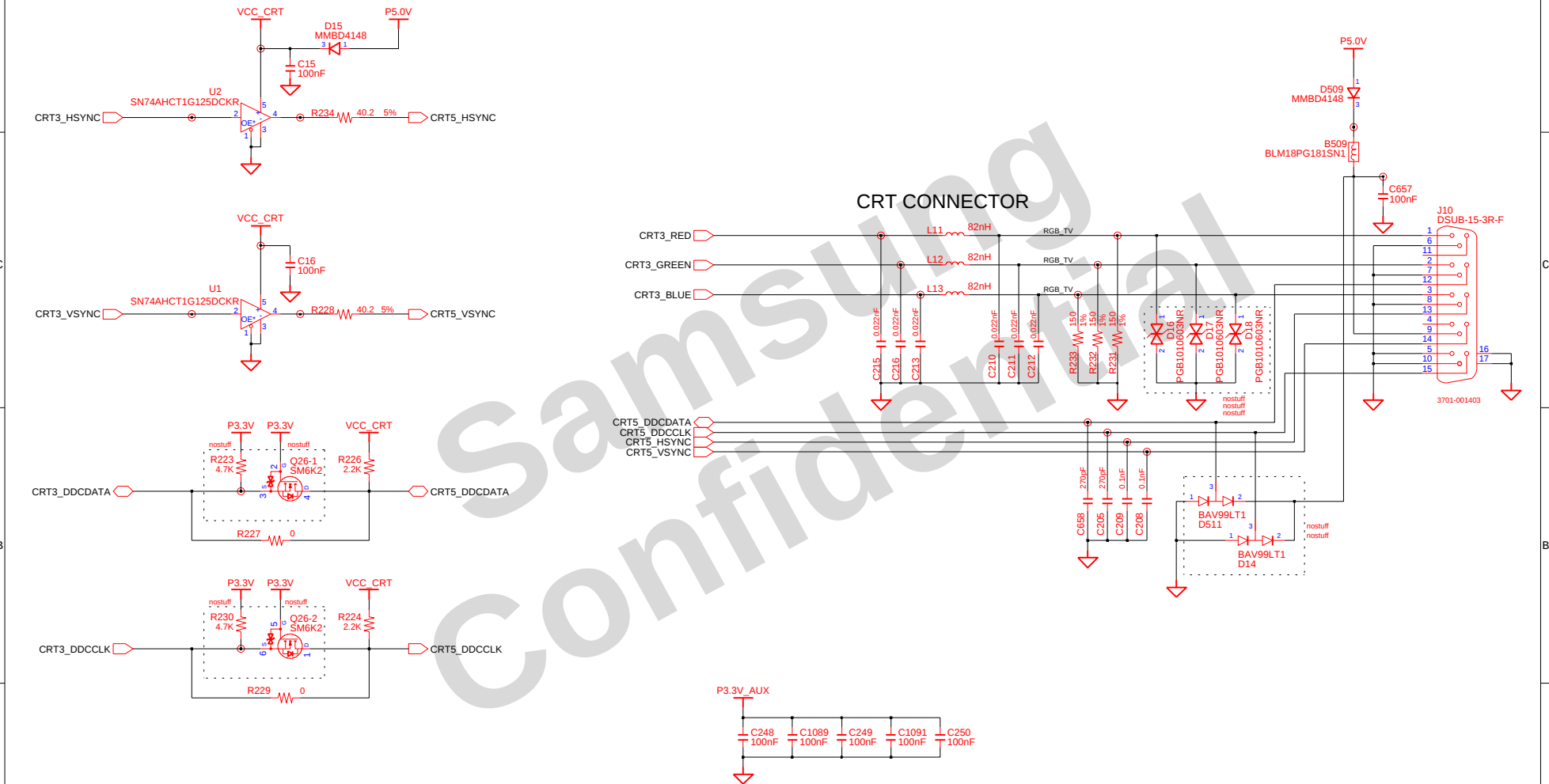
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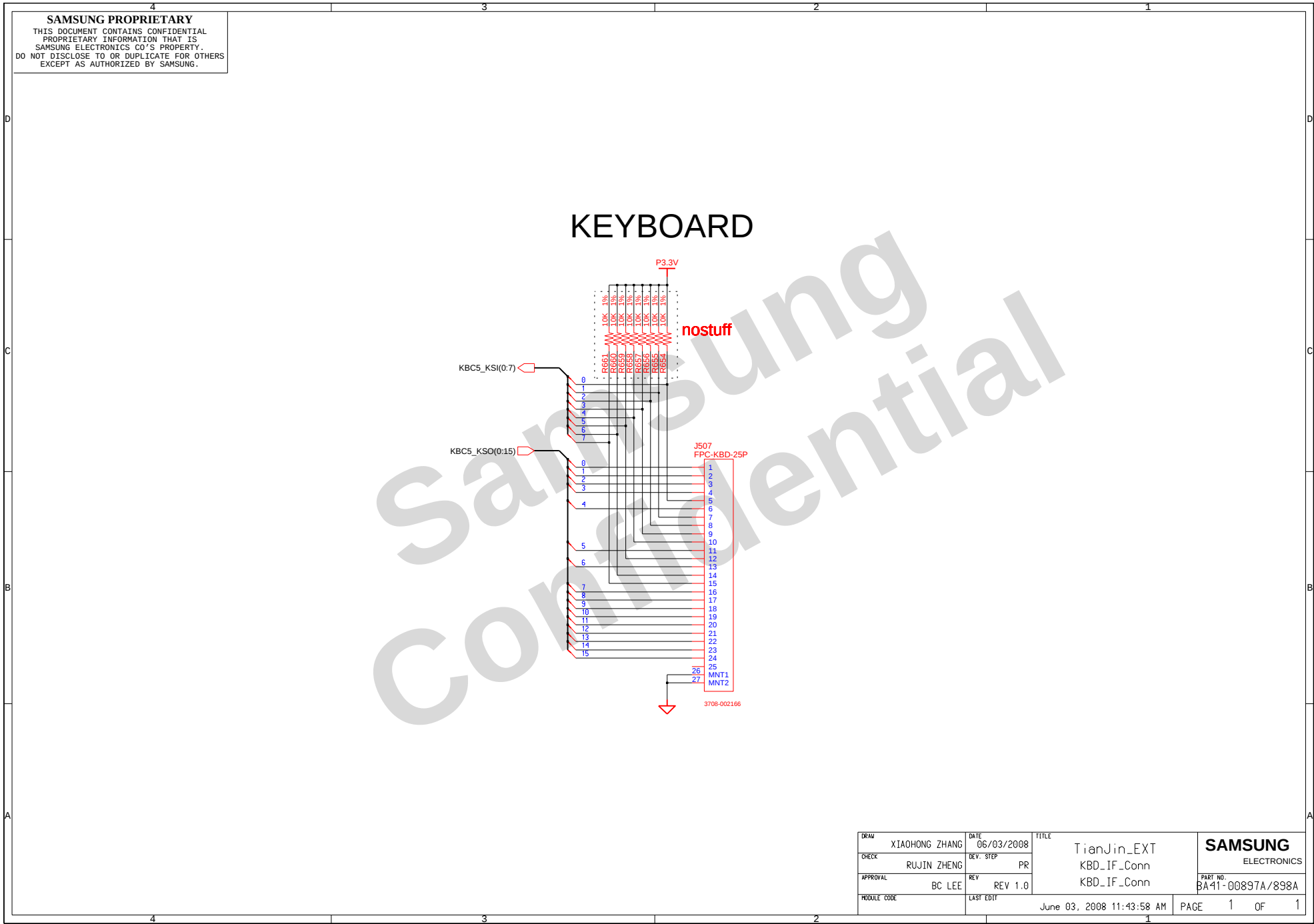
COM-22C-015(1996.6.5) REV. 3

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| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       | LCD_IF_14p1 |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       | LCD_IF_14p1 |                                                               |
| MODULE CODE | undefined      | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 1 OF 1      |                                                               |

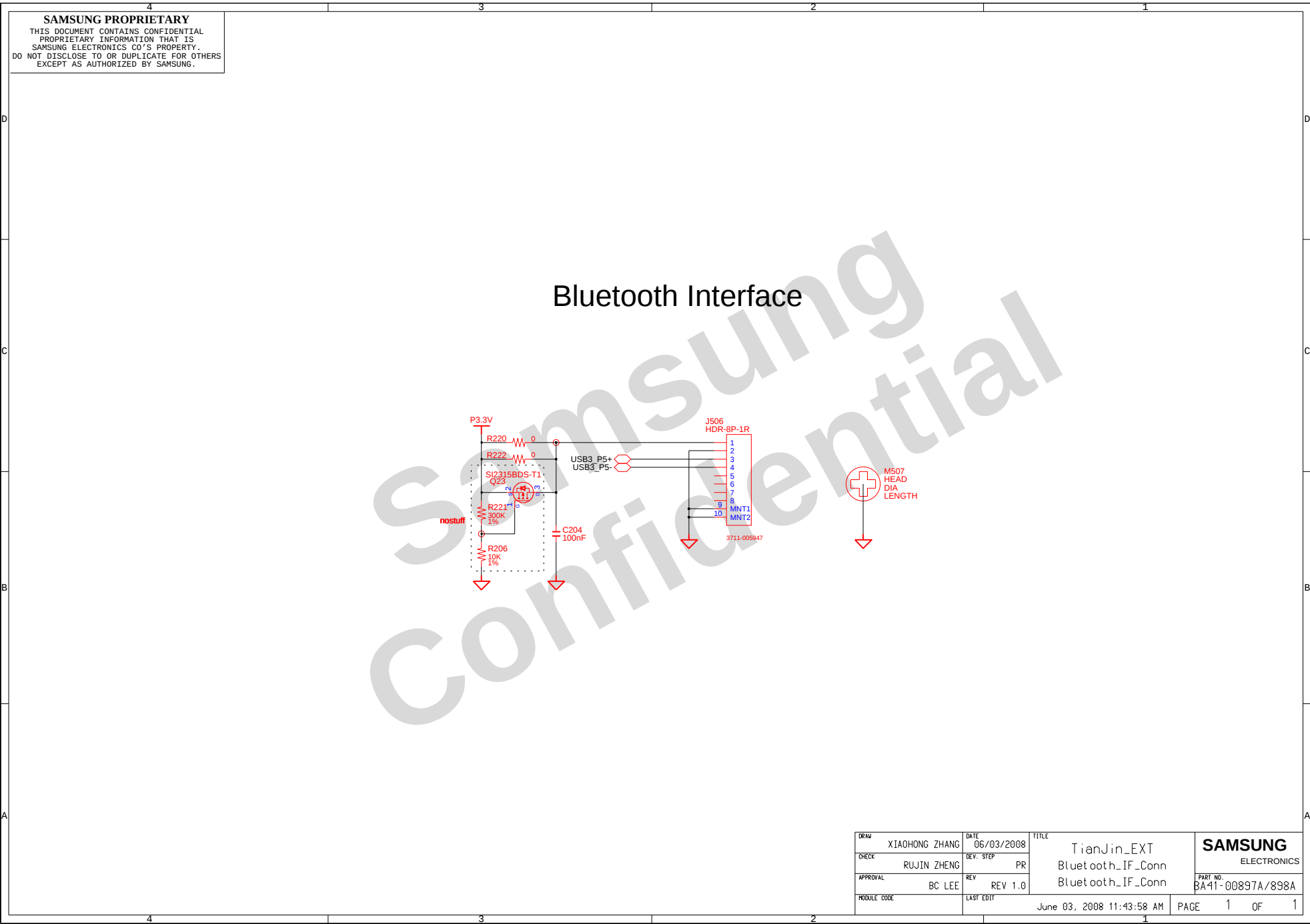
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| DRAW                      | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE | TianJin_EXT<br>Interface_Circuit<br>Graphics_IF_CRT | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK                     | RUJIN ZHENG    | DEV. STEP | PR         |       |                                                     |                                                               |
| APPROVAL                  | BC LEE         | REV       | REV 1.0    |       |                                                     |                                                               |
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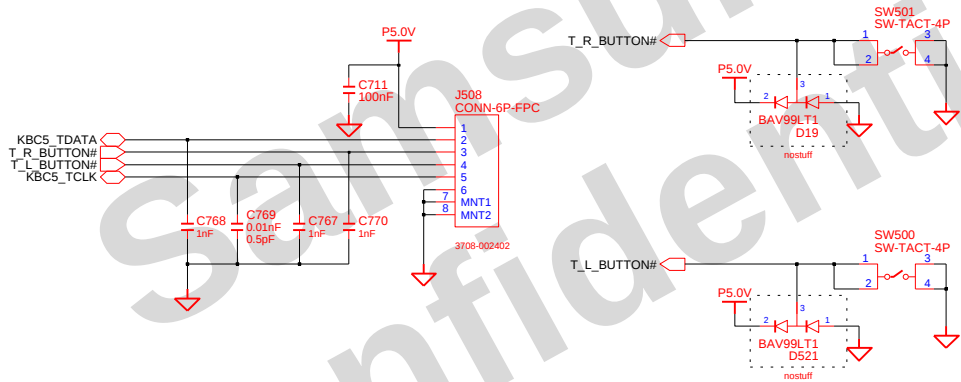
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| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE                     | TianJin_EXT | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR         |                           | KBD_IF_Conn |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0    |                           | KBD_IF_Conn |                                                               |
| MODULE CODE |                | LAST EDIT |            | June 03, 2008 11:43:58 AM | PAGE 1 OF 1 |                                                               |



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| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT<br>Bluetooth_IF_Conn<br>Bluetooth_IF_Conn | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       |                                                       |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       |                                                       |                                                               |
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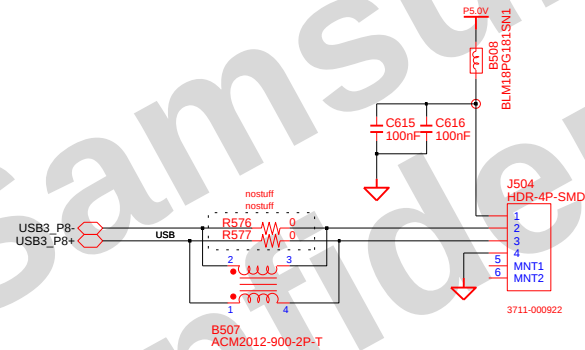
TOUCHPAD



|             |                |           |                           |       |                                                     |                                                        |
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| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT<br>Touchpad_IF_Conn<br>Touchpad_IF_Conn | SAMSUNG<br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       |                                                     |                                                        |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       |                                                     |                                                        |
| MODULE CODE |                | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 1 OF 1                                              |                                                        |

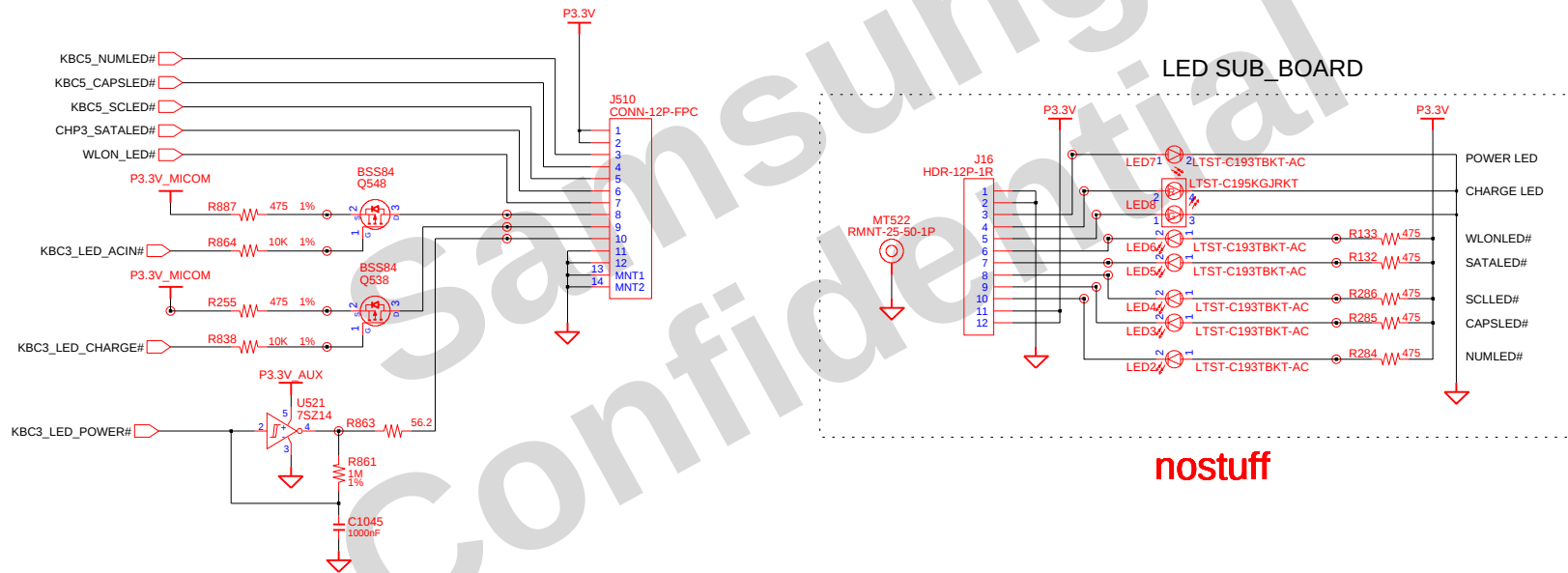
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CAMERA

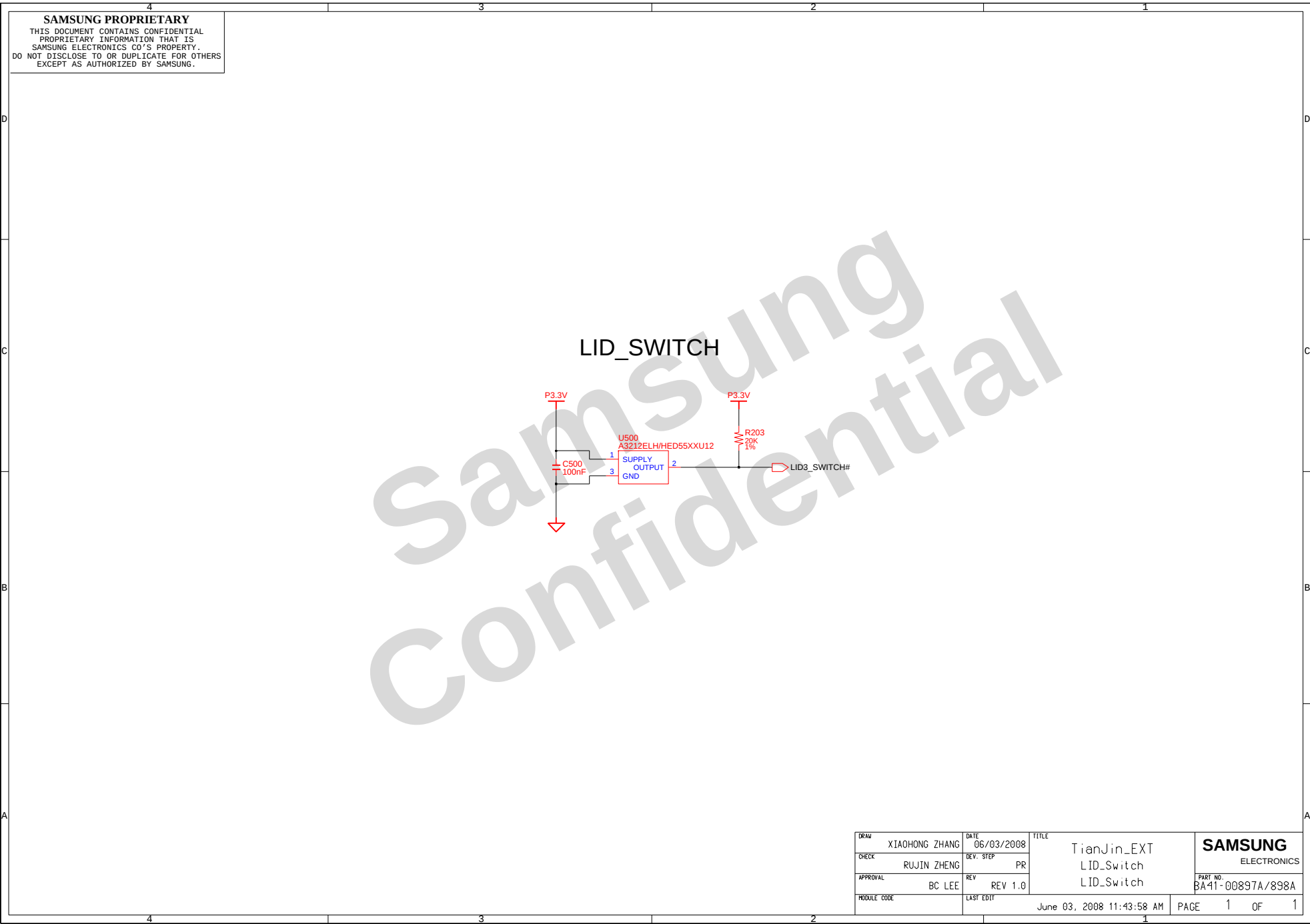


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| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT    | SAMSUNG<br>ELECTRONICS |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       | Camera_IF_Conn |                        |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       | Camera_IF_Conn |                        |
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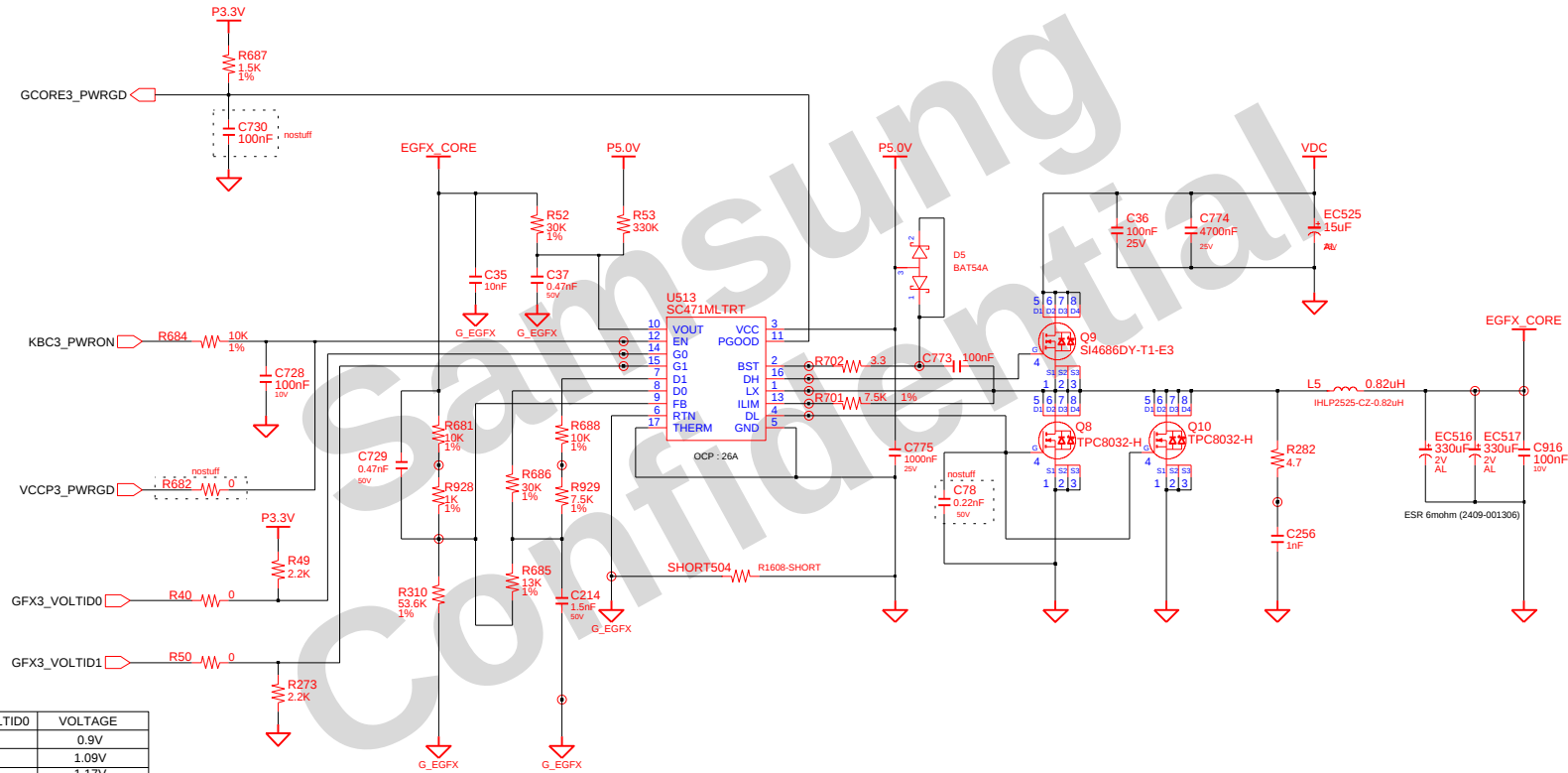
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| CHECK                     | RUJIN ZHENG    | DEV. STEP | PR         |       |                                         |                                                               |
| APPROVAL                  | BC LEE         | REV       | REV 1.0    |       |                                         |                                                               |
| MODULE CODE               |                | LAST EDIT |            |       |                                         |                                                               |
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|             |                |           |            |                           |             |                                                               |
|-------------|----------------|-----------|------------|---------------------------|-------------|---------------------------------------------------------------|
| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008 | TITLE                     | TianJin_EXT | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR         |                           | LID_Switch  |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0    |                           | LID_Switch  |                                                               |
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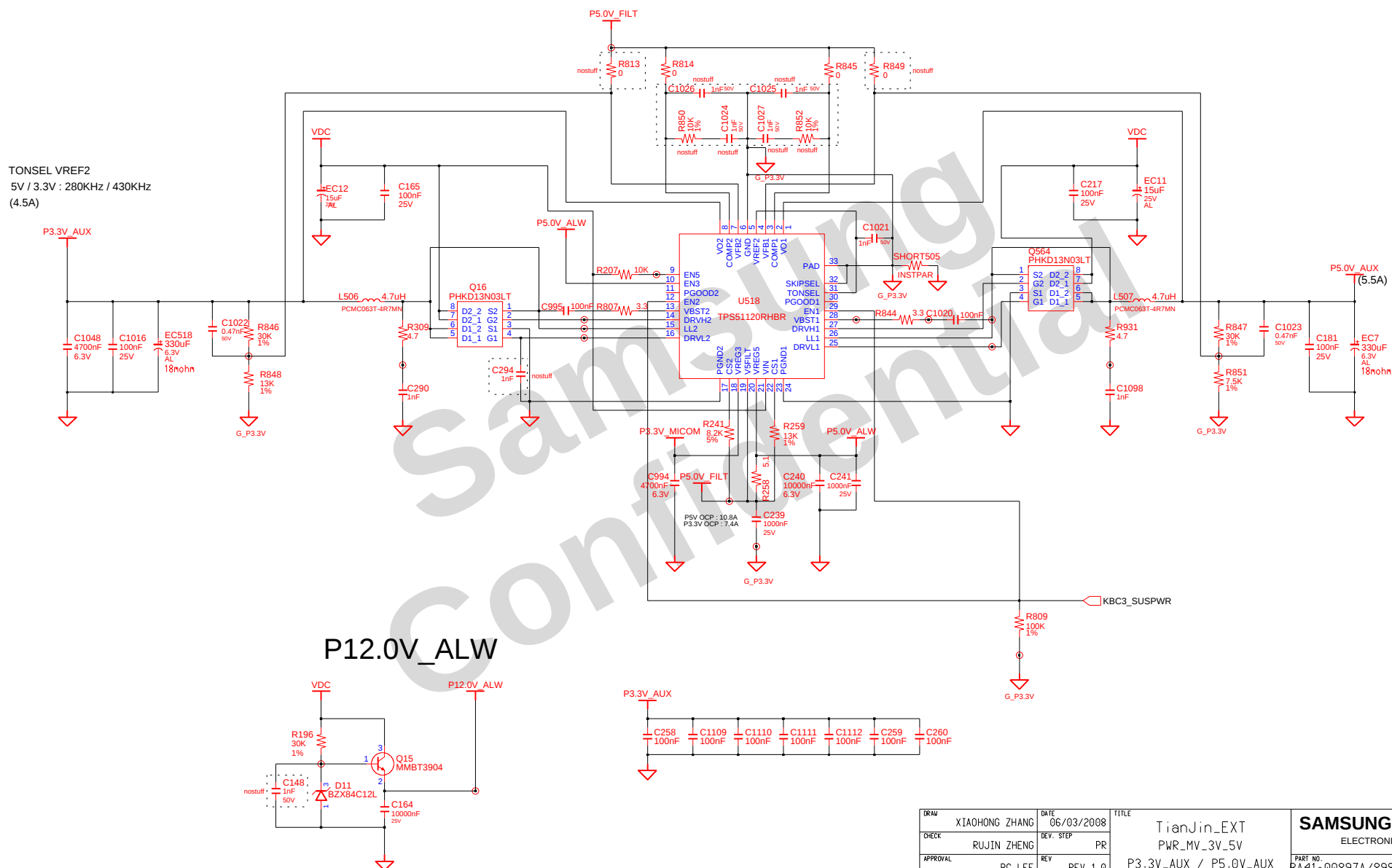
## Graphic Core Power



|             |                |  |           |            |                           |                        |             |          |                               |  |
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| DRAW        | XIAOHONG ZHANG |  | DATE      | 06/03/2008 |                           | TITLE                  | TianJin_EXT |          | <b>SAMSUNG</b><br>ELECTRONICS |  |
| CHECK       | RUJIN ZHENG    |  | DEV. STEP | PR         |                           | PWR_Gf x_MV_Ext        |             |          |                               |  |
| APPROVAL    | BC LEE         |  | REV       | REV 1.0    |                           | Ext Gf x Memory(SC486) |             | PART NO. |                               |  |
| MODULE CODE |                |  | LAST EDIT |            | June 03, 2008 11:43:58 AM |                        | PAGE        | 1        | OF 2                          |  |

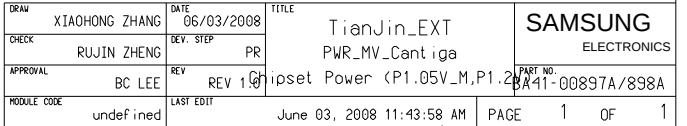
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TONSEL VREF2  
5V / 3.3V : 280KHz / 430KHz  
(4.5A)

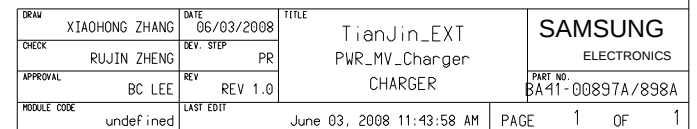


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| DRAW<br>XIAOHONG ZHANG   | DATE<br>06/03/2008                     | TITLE<br>TianJin_EXT  |         | <b>SAMSUNG</b><br>ELECTRONICS |
| CHECK<br>RUJIN ZHENG     | DEV. STEP<br>PR                        | PWR_MV_3V_5V          |         |                               |
| APPROVAL<br>BC LEE       | REV<br>REV 1.0                         | P3.3V_AUX / P5.0V_AUX |         |                               |
| MODULE CODE<br>undefined | LAST EDIT<br>June 03, 2008 11:43:58 AM | PAGE<br>1             | OF<br>1 | PART NO.<br>BA41-000897A/898A |

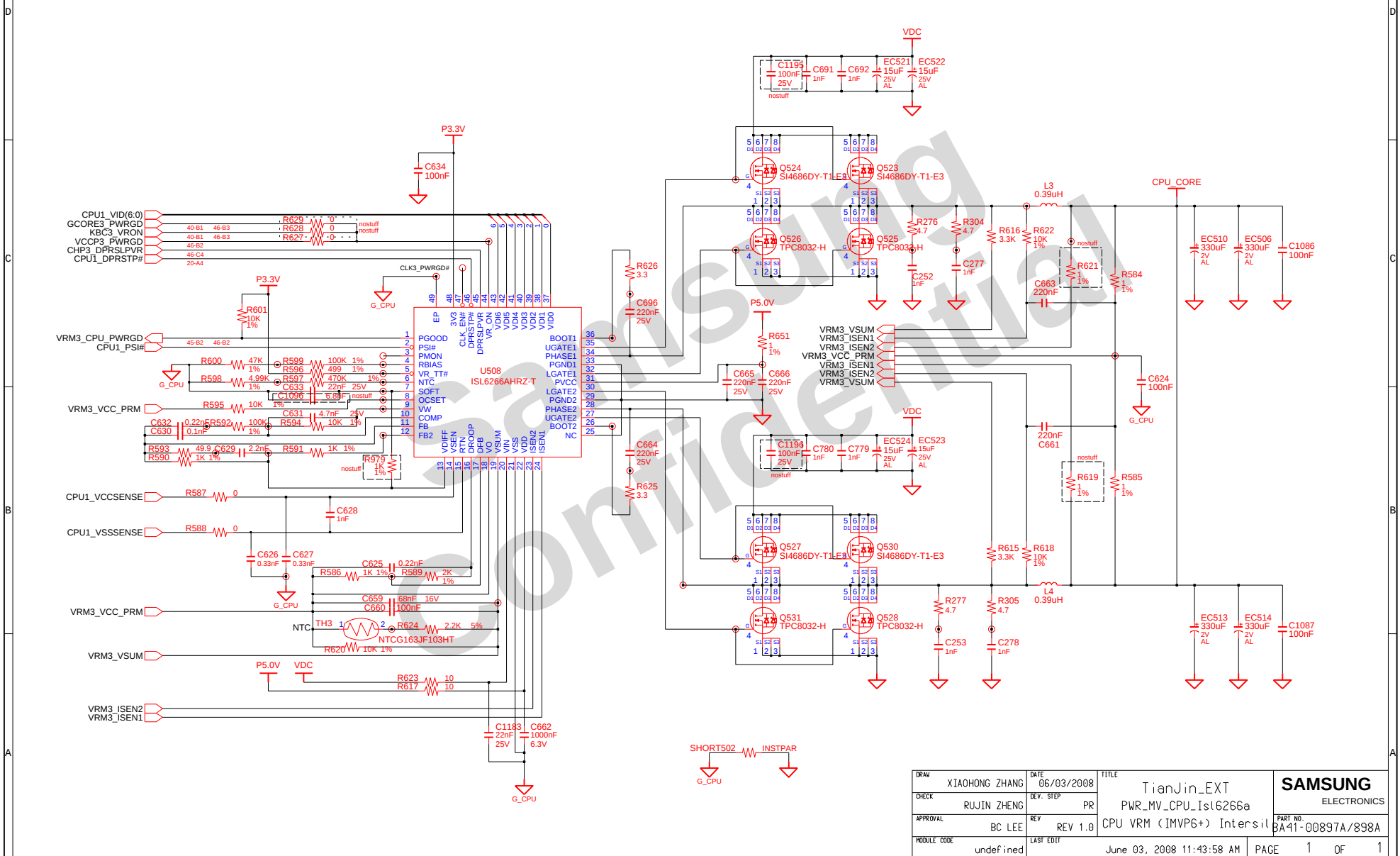
## CHIPSET POWER(P1.05V & P1.1V)



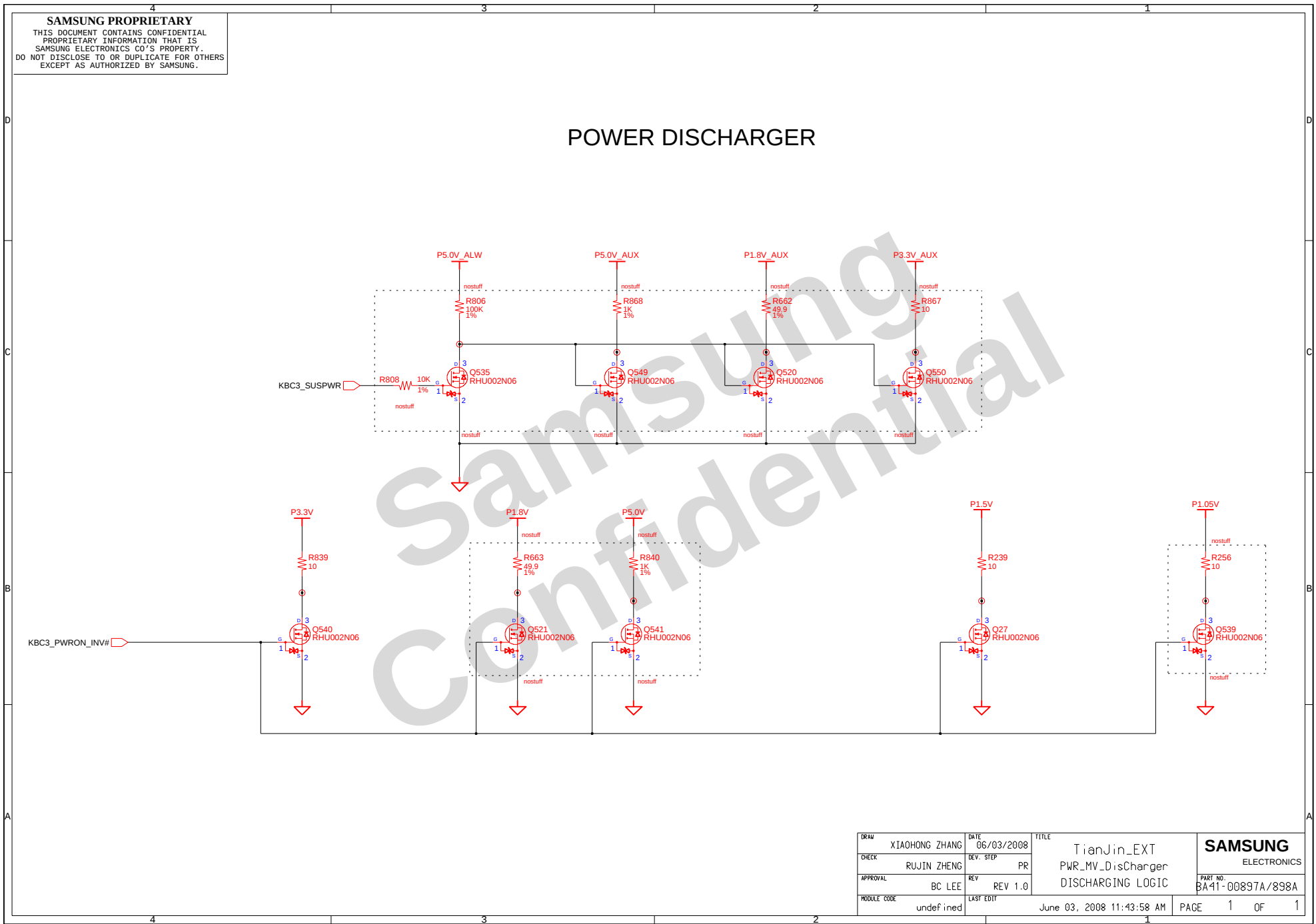
## CHARGER & POWER MANAGEMENT



## CPU VRM [INTERSIL]

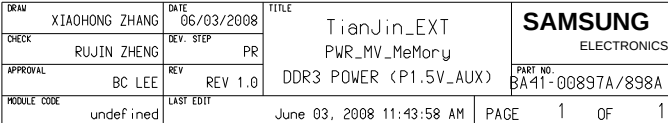


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| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT               | SAMSUNG<br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       | PWR_MV_CPU_Is16266a       |                                                        |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       | CPU VRM (IMVP6+) Intersil |                                                        |
| MODULE CODE | undefined      | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 1 OF 1                    |                                                        |



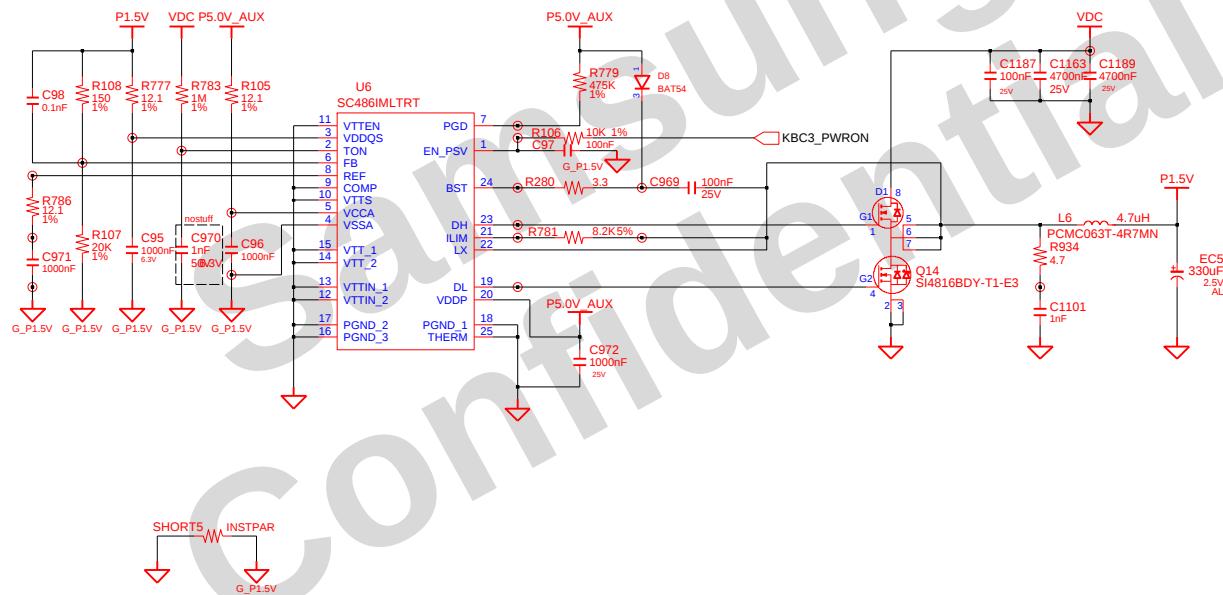
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| DRAW        | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT<br>PWR_MV_DisCharger<br>DISCHARGING LOGIC | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       |                                                       |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       |                                                       |                                                               |
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## DDR2 POWER



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## P1.5V

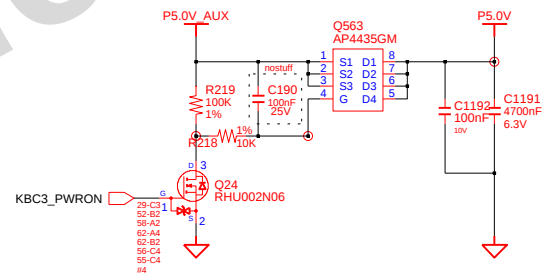


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| DRW         | XIAOHONG ZHANG | DATE      | 06/03/2008                | TITLE | TianJin_EXT<br>PWR_MV_Switched<br>SWITCHED POWER | <b>SAMSUNG</b><br>ELECTRONICS<br>PART NO.<br>BA41-00897A/898A |
| CHECK       | RUJIN ZHENG    | DEV. STEP | PR                        |       |                                                  |                                                               |
| APPROVAL    | BC LEE         | REV       | REV 1.0                   |       |                                                  |                                                               |
| MODULE CODE |                | LAST EDIT | June 03, 2008 11:43:58 AM | PAGE  | 1 OF 2                                           |                                                               |

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### Switched Power On (P5.0V)



D:\mentor\tianjin\tnp\tianjin\_ext\_pr\_0603\design\_blocks\PWR\_MV\_Switched  
SRP Sheet Number: 70 of 70

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