

FIRENZE2-R

CPU : Intel Yonah/Merom (533/667MHz)
Chip Set : RS600ME & SB600
Remarks : Mobility Platform

Model Name : FIRENZE II R
PBA Name : MAIN
PCB Code : TPT : BA41-00714A
GCE : BA41-00715A
Dev. Step : MP (6-Layer)
Revision : 1.0
T.R. Date : 2006.01.11

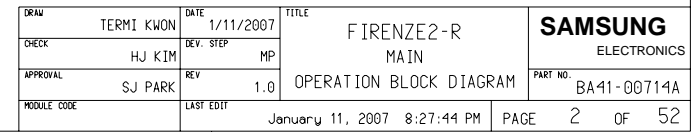
| | | |
|-------|--------|----------|
| DRAW | CHECK | APPROVAL |
| TERMI | HJ KIM | SJ PARK |
| | | |

Owner : SEC Mobile R & D Signature : X

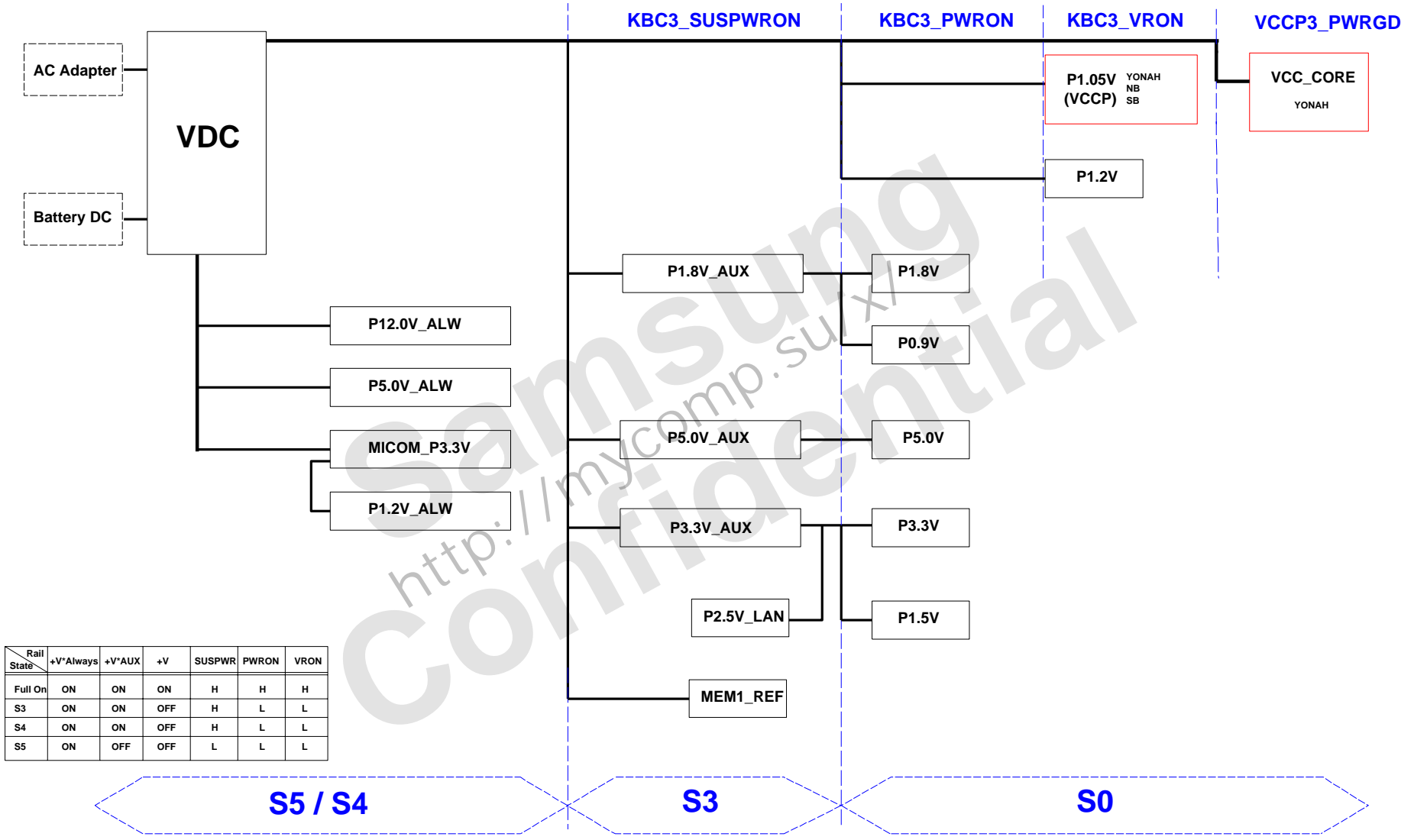
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| | | | | | | |
|-------------|------------|-----------|-----------------------------|-------|------------|-------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | COVER | |
| APPROVAL | SJ PARK | REV | 1.0 | | | PART NO. BA41-00714A |
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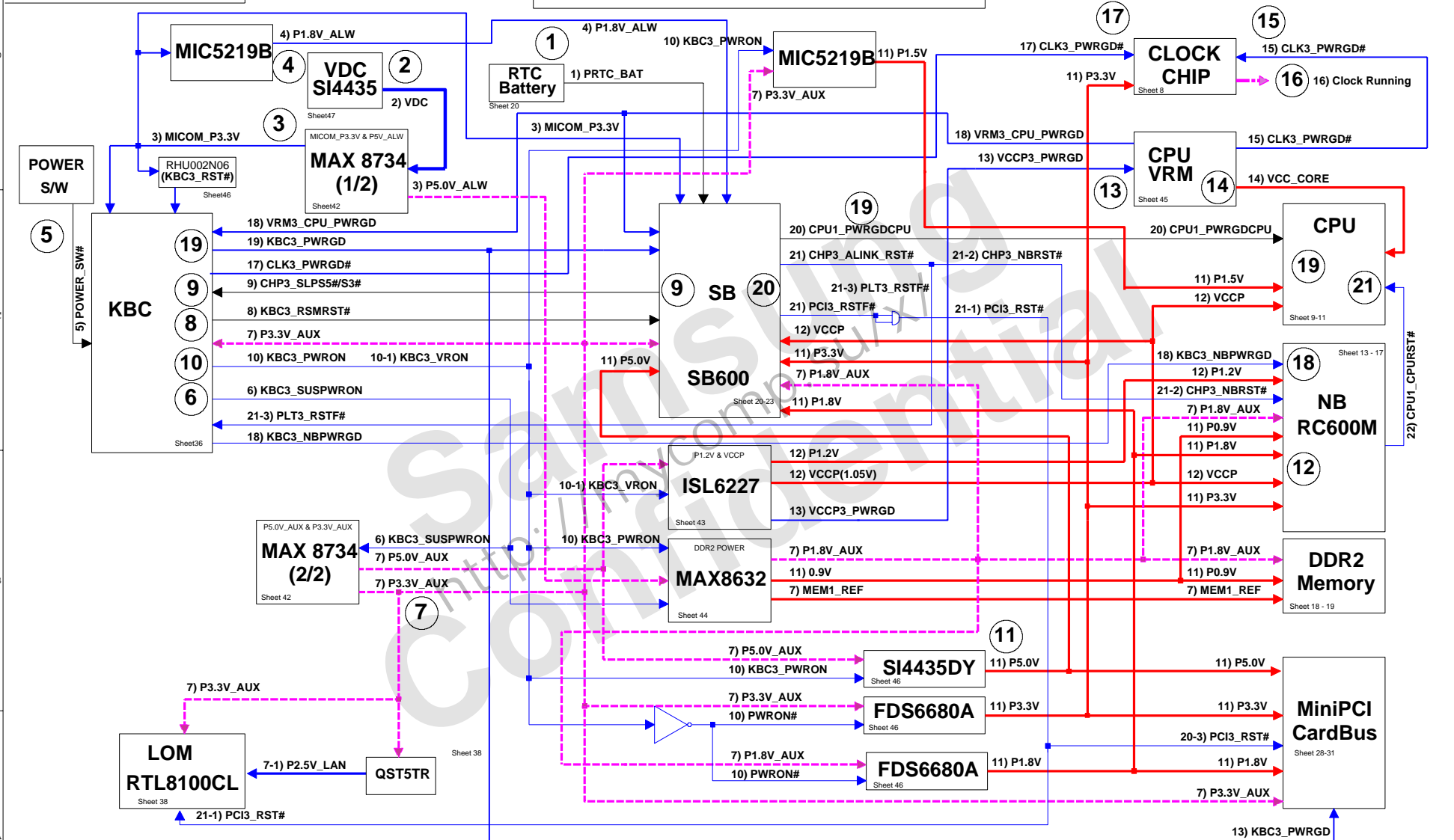


Power Diagram

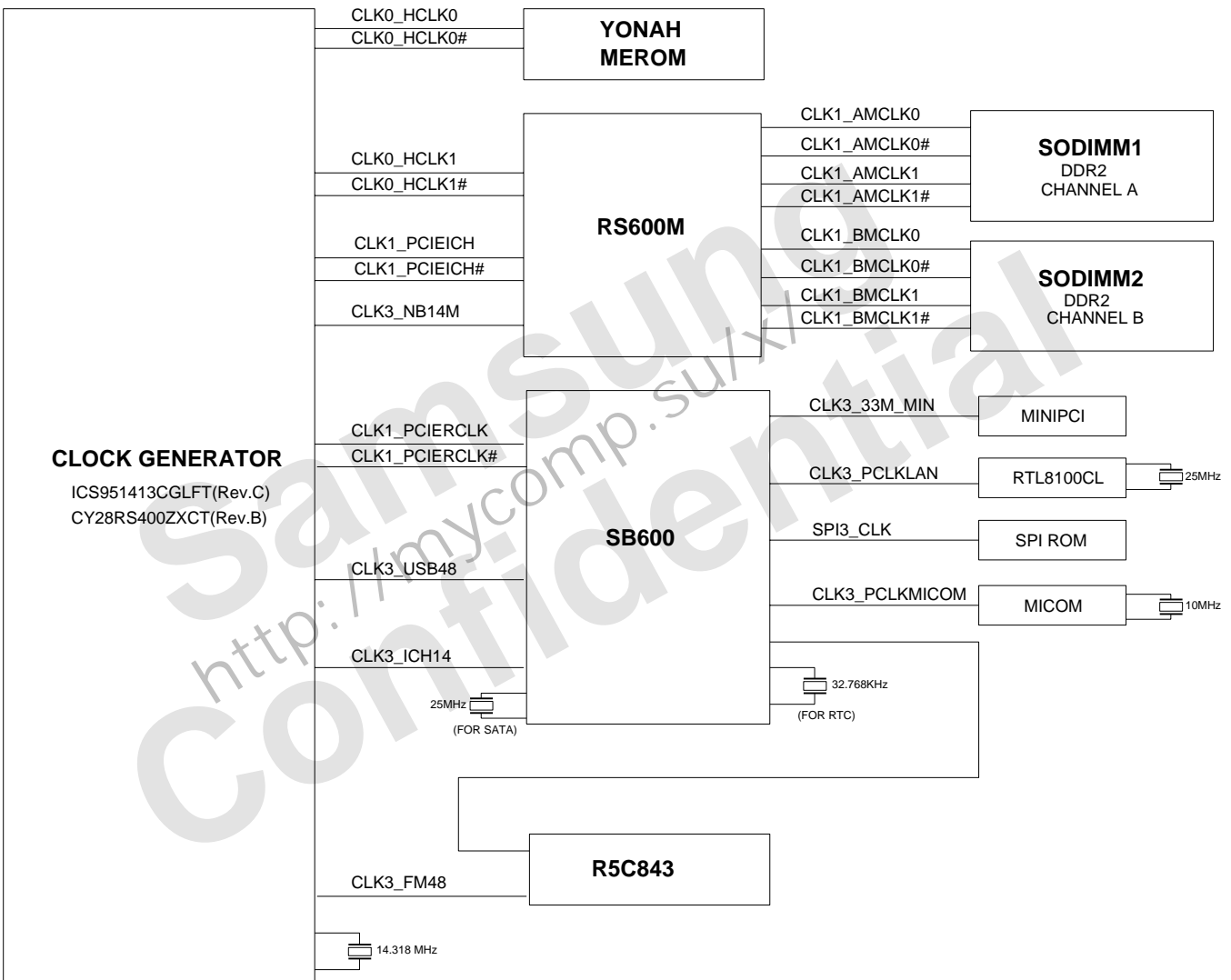


| Rail State | +V*Always | +V*AUX | +V | SUSPWR | PWRON | VRON |
|------------|-----------|--------|-----|--------|-------|------|
| Full On | ON | ON | ON | H | H | H |
| S3 | ON | ON | OFF | H | L | L |
| S4 | ON | ON | OFF | H | L | L |
| S5 | ON | OFF | OFF | L | L | L |

POWER SEQUENCE Rev. 0.1



| | | | | | | |
|-------------|------------|-----------|-----------------------------|-------|----------------|----------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG |
| CHECK | HJ KIM | DEV. STEP | MP | | | ELECTRONICS |
| APPROVAL | SJ PARK | REV | 1.0 | | POWER SEQUENCE | PART NO. BA41-00714A |
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|-------------|------------|-----------|-----------------------------|-------|-----------------------------|-------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R CLOCK DIAGRAM | SAMSUNG ELECTRONICS |
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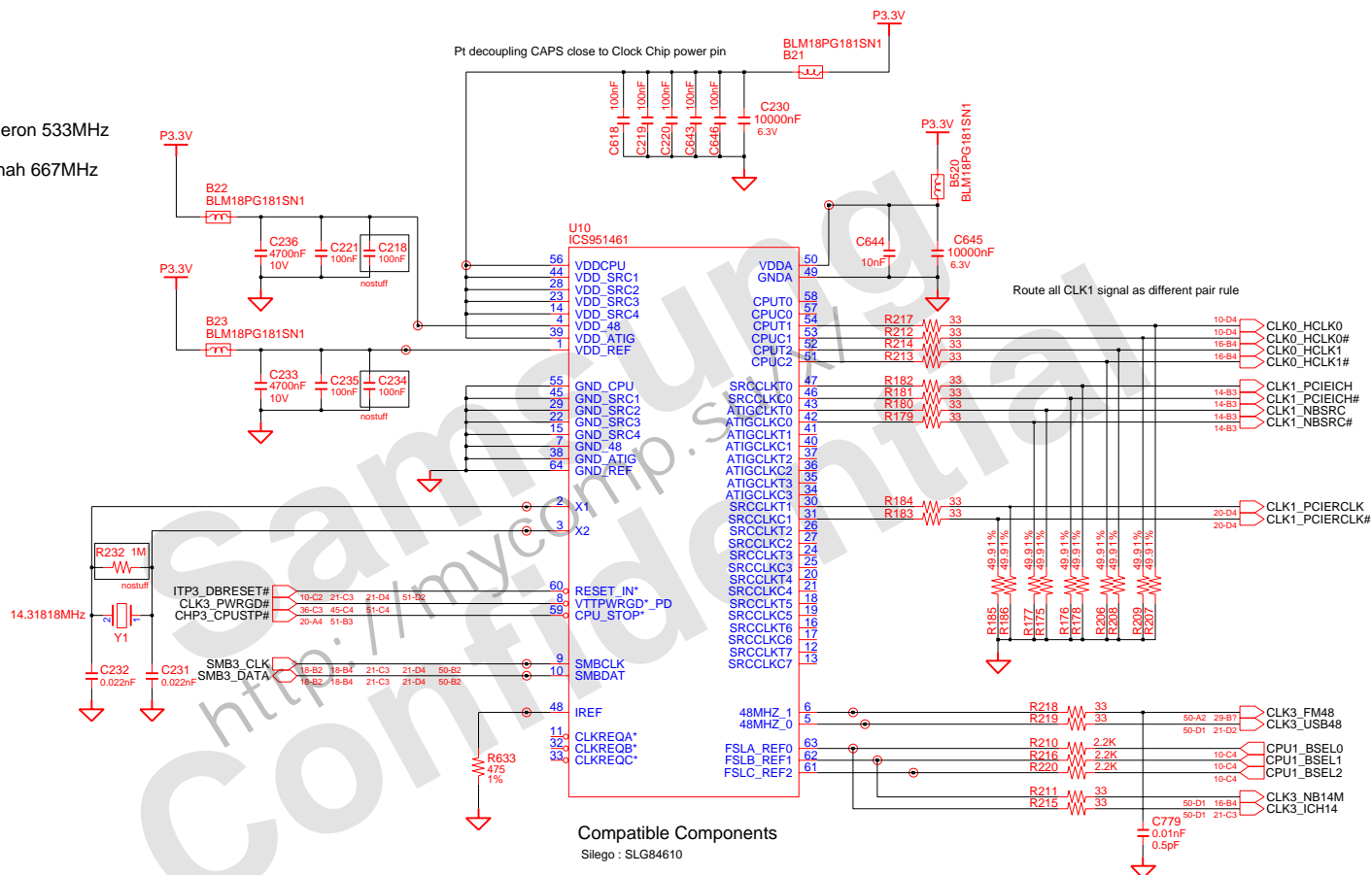
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| CHECK | HJ KIM | DEV. STEP | MP | | | ELECTRONICS | |
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| CPU | FSA | FSB | FSC | HOST CLK |
|-----|-------|-------|-------|----------|
| | BSEL0 | BSEL1 | BSEL2 | |
| | 0 | 0 | 0 | 266 MHz |
| | 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 |

Yonah 667MHz



Compatible Components
Silego : SLG84610

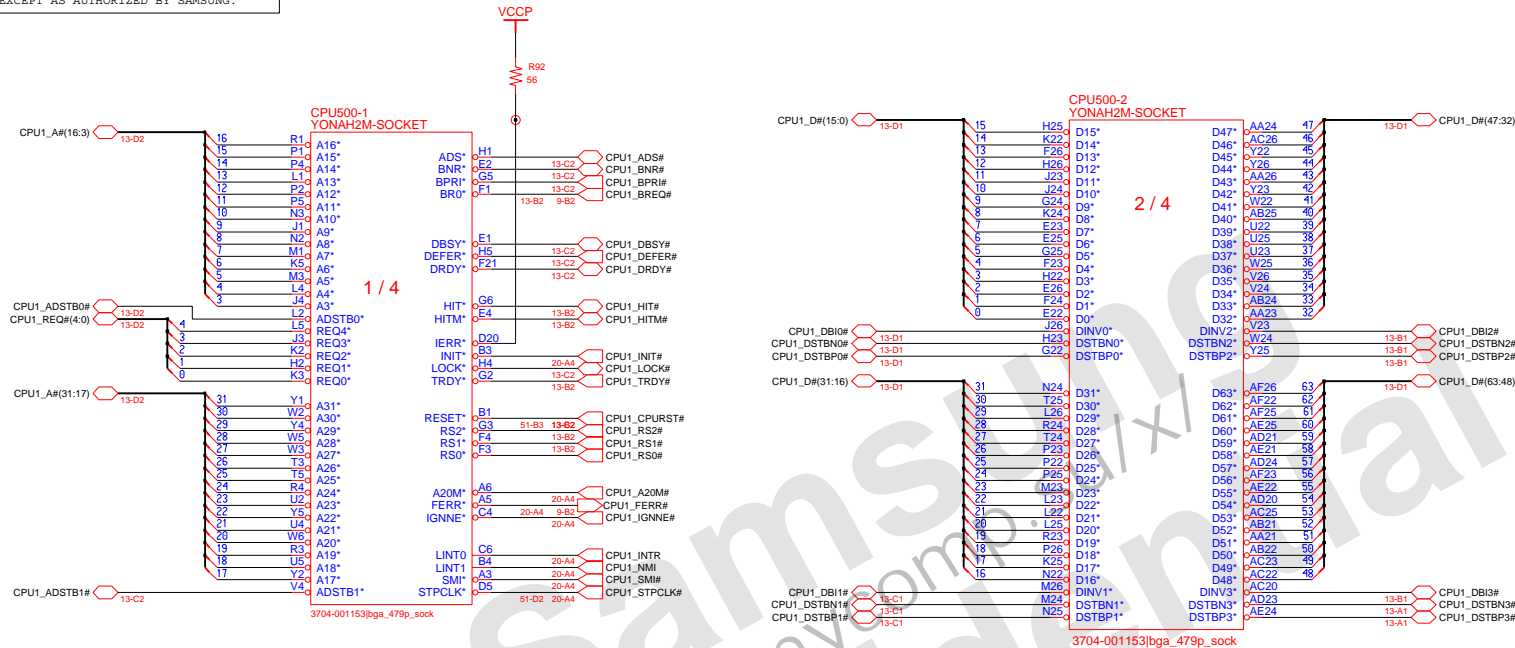
Place all the series termination resistor as close as Clock Chip as possible

FSA, FSB, FSC of Clock chip are low threshold inputs
 $V_{ih_fs_min} = 0.7V$
 $V_{il_fs_max} = 0.35V$

| | | | | | |
|-----------------------------|------------|-----------|-----------|---------------------------------------|-------------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | FIRENZE2-R MAIN CLOCK GENERATOR | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | |
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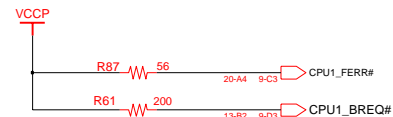
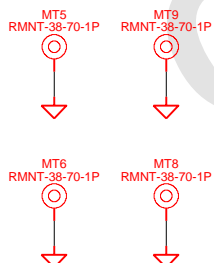
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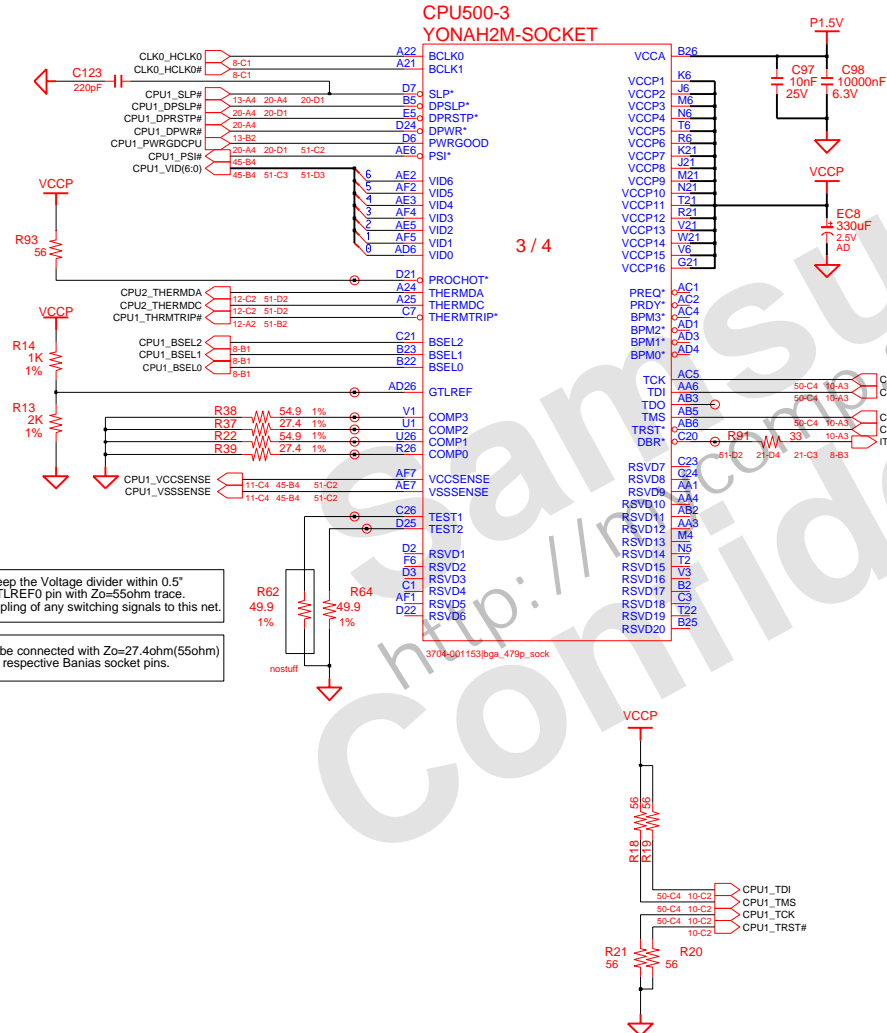
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**NOTE

RHE SUPPORTER



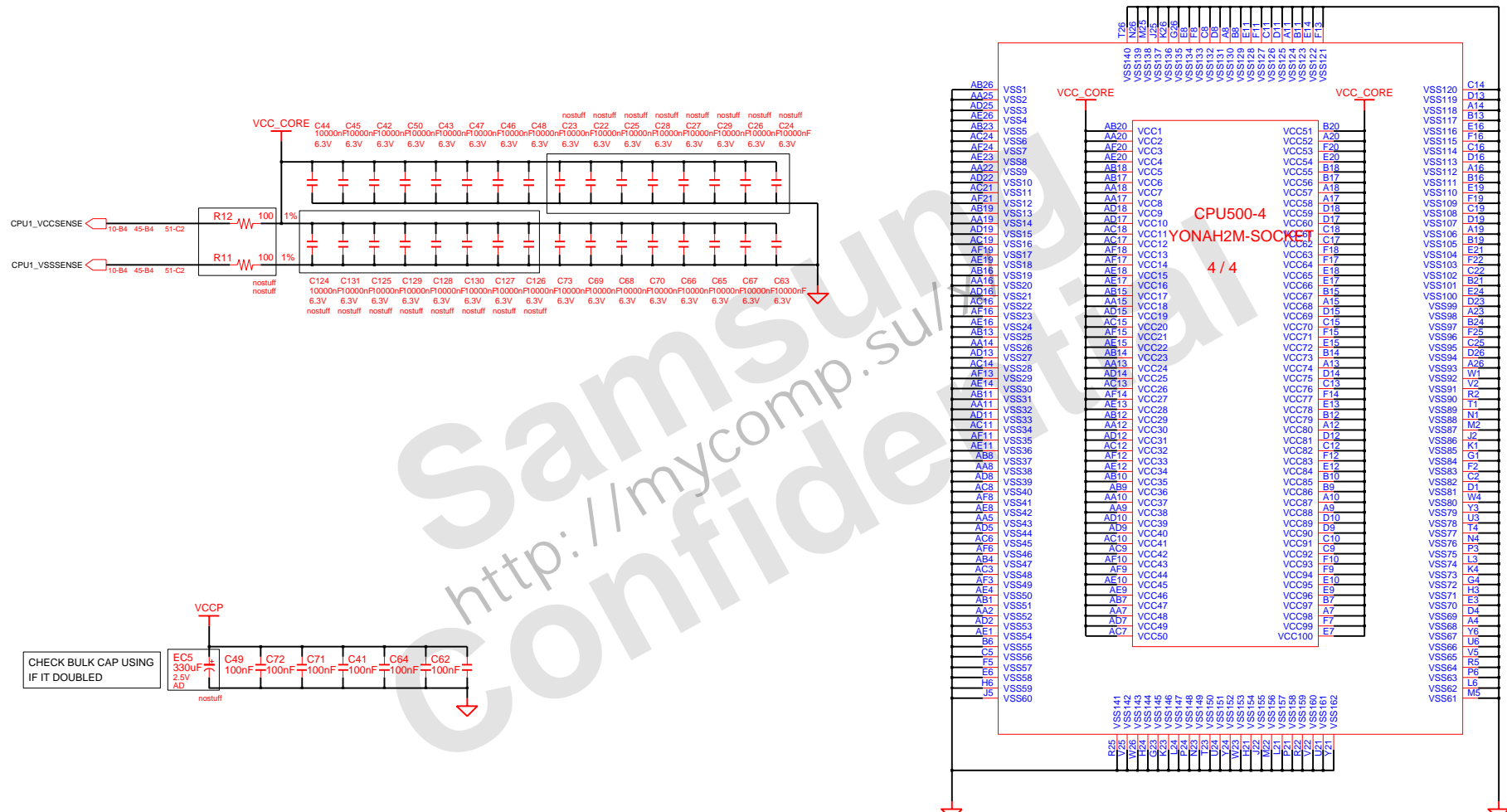
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|----------|------------|-----------|-----------------------------|-------|---------------------------------------|--|
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| CHECK | HJ KIM | DEV. STEP | MP | REV | 1.0 | |
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CPU Core Voltage Table IMVP-6

| Active Mode | | | Active/Deeper Sleep Dual Mode Region | | | Deeper Sleep/Extended Deeper Sleep Dual Mode Region | | |
|-----------------|----------|--|--------------------------------------|----------|--|---|----------|--|
| VID(6.0) | Voltage | | VID(6.0) | Voltage | | VID(6.0) | Voltage | |
| 0 0 0 0 0 0 0 0 | 1.5000 V | | 0 1 0 1 0 0 0 0 | 1.0000 V | | 1 0 1 0 0 0 0 1 | 0.4875 V | |
| 0 0 0 0 0 0 0 0 | 1.4875 V | | 0 1 0 1 0 0 0 1 | 0.9875 V | | 1 0 1 0 0 0 1 0 | 0.4750 V | |
| 0 0 0 0 0 0 0 1 | 1.4750 V | | 0 1 0 1 0 1 0 1 | 0.9750 V | | 1 0 1 0 0 1 0 1 | 0.4625 V | |
| 0 0 0 0 0 0 1 1 | 1.4625 V | | 0 1 0 1 0 1 0 1 | 0.9625 V | | 1 0 1 0 1 0 1 0 | 0.4500 V | |
| 0 0 0 0 0 0 1 0 | 1.4500 V | | 0 1 0 1 1 0 0 0 | 0.9500 V | | 1 0 1 0 1 0 1 0 | 0.4375 V | |
| 0 0 0 0 0 1 0 1 | 1.4375 V | | 0 1 0 1 0 1 0 1 | 0.9375 V | | 1 0 1 0 1 1 0 1 | 0.4250 V | |
| 0 0 0 0 0 1 1 0 | 1.4250 V | | 0 1 0 1 0 1 1 0 | 0.9250 V | | 1 0 1 0 1 1 0 1 | 0.4125 V | |
| 0 0 0 0 0 1 1 1 | 1.4125 V | | 0 1 0 1 1 1 1 1 | 0.9125 V | | 1 0 1 1 1 0 0 0 | 0.4000 V | |
| 0 0 0 0 1 0 0 0 | 1.4000 V | | 0 1 1 0 0 0 0 0 | 0.9000 V | | 1 0 1 1 1 0 0 0 | 0.3875 V | |
| 0 0 0 0 1 0 0 1 | 1.3875 V | | 0 1 1 0 0 0 0 1 | 0.8875 V | | 1 0 1 1 1 0 0 1 | 0.3750 V | |
| 0 0 0 0 1 0 1 0 | 1.3750 V | | 0 1 1 0 0 0 1 0 | 0.8750 V | | 1 0 1 1 1 0 1 0 | 0.3625 V | |
| 0 0 0 0 1 0 1 1 | 1.3625 V | | 0 1 1 0 0 0 1 1 | 0.8625 V | | 1 0 1 1 1 0 1 1 | 0.3500 V | |
| 0 0 0 0 1 1 0 0 | 1.3500 V | | 0 1 1 0 1 0 0 0 | 0.8500 V | | 1 0 1 1 1 1 0 0 | 0.3375 V | |
| 0 0 0 0 1 1 0 1 | 1.3375 V | | 0 1 1 0 1 0 0 1 | 0.8375 V | | 1 0 1 1 1 1 0 1 | 0.3250 V | |
| 0 0 0 0 1 1 1 0 | 1.3250 V | | 0 1 1 0 1 0 1 0 | 0.8250 V | | 1 0 1 1 1 1 0 1 | 0.3125 V | |
| 0 0 0 0 1 1 1 1 | 1.3125 V | | 0 1 1 0 1 0 1 1 | 0.8125 V | | 1 1 0 0 0 0 0 0 | 0.3000 V | |
| 0 0 0 1 0 0 0 0 | 1.3000 V | | 0 1 1 1 0 0 0 0 | 0.8000 V | | 1 1 0 0 0 0 0 1 | 0.2875 V | |
| 0 0 0 1 0 0 0 1 | 1.2875 V | | 0 1 1 1 0 0 0 1 | 0.7875 V | | 1 1 0 0 0 0 1 0 | 0.2750 V | |
| 0 0 0 1 0 0 1 0 | 1.2750 V | | 0 1 1 1 0 0 1 0 | 0.7750 V | | 1 1 0 0 0 0 1 1 | 0.2625 V | |
| 0 0 0 1 0 0 1 1 | 1.2625 V | | 0 1 1 1 0 0 1 1 | 0.7625 V | | 1 1 0 0 0 1 0 0 | 0.2500 V | |
| 0 0 0 1 0 1 0 0 | 1.2500 V | | 0 1 1 1 1 0 0 0 | 0.7500 V | | 1 1 0 0 0 1 0 1 | 0.2375 V | |
| 0 0 0 1 0 1 0 1 | 1.2375 V | | 0 1 1 1 1 0 0 1 | 0.7375 V | | 1 1 0 0 0 1 1 0 | 0.2250 V | |
| 0 0 0 1 0 1 1 0 | 1.2250 V | | 0 1 1 1 1 0 0 1 | 0.7250 V | | 1 1 0 0 1 0 1 1 | 0.2125 V | |
| 0 0 0 1 0 1 1 1 | 1.2125 V | | 0 1 1 1 1 1 0 1 | 0.7125 V | | 1 1 0 0 1 0 1 1 | 0.2000 V | |
| 0 0 0 1 1 0 0 0 | 1.2000 V | | 1 0 0 0 0 0 0 0 | 0.7000 V | | 1 1 0 0 1 0 1 0 | 0.1875 V | |
| 0 0 0 1 1 0 0 1 | 1.1875 V | | 1 0 0 0 0 0 0 1 | 0.6875 V | | 1 1 0 0 1 0 1 0 | 0.1750 V | |
| 0 0 0 1 1 0 1 0 | 1.1750 V | | 1 0 0 0 0 0 1 0 | 0.6750 V | | 1 1 0 0 1 0 1 1 | 0.1625 V | |
| 0 0 0 1 1 0 1 1 | 1.1625 V | | 1 0 0 0 0 0 1 1 | 0.6625 V | | 1 1 0 0 1 0 1 1 | 0.1500 V | |
| 0 0 0 1 1 1 0 0 | 1.1500 V | | 1 0 0 0 0 0 1 0 | 0.6500 V | | 1 1 0 0 1 1 0 0 | 0.1375 V | |
| 0 0 0 1 1 1 0 1 | 1.1375 V | | 1 0 0 0 0 0 1 1 | 0.6375 V | | 1 1 0 0 1 1 0 1 | 0.1250 V | |
| 0 0 0 1 1 1 1 0 | 1.1250 V | | 1 0 0 0 0 0 1 1 | 0.6250 V | | 1 1 0 0 1 1 1 1 | 0.1125 V | |
| 0 0 0 1 1 1 1 1 | 1.1125 V | | 1 0 0 0 0 1 0 0 | 0.6125 V | | 1 1 0 0 1 1 1 0 | 0.1000 V | |
| 0 0 1 0 0 0 0 0 | 1.1000 V | | 1 0 0 0 0 1 0 0 | 0.6000 V | | 1 1 0 0 1 1 0 0 | 0.0875 V | |
| 0 0 1 0 0 0 0 1 | 1.0875 V | | 1 0 0 0 0 1 0 1 | 0.5875 V | | 1 1 0 0 1 1 0 1 | 0.0750 V | |
| 0 0 1 0 0 0 1 0 | 1.0750 V | | 1 0 0 0 0 1 0 1 | 0.5750 V | | 1 1 0 0 1 1 0 1 | 0.0625 V | |
| 0 0 1 0 0 0 1 1 | 1.0625 V | | 1 0 0 0 0 1 0 1 | 0.5625 V | | 1 1 0 0 1 1 0 0 | 0.0500 V | |
| 0 0 1 0 0 1 0 0 | 1.0500 V | | 1 0 0 0 0 1 0 1 | 0.5500 V | | 1 1 0 0 1 1 0 0 | 0.0375 V | |
| 0 0 1 0 0 1 0 1 | 1.0375 V | | 1 0 0 0 1 0 0 1 | 0.5375 V | | 1 1 0 0 1 1 0 0 | 0.0250 V | |
| 0 0 1 0 0 1 1 0 | 1.0250 V | | 1 0 0 0 1 0 1 0 | 0.5250 V | | 1 1 0 0 1 1 0 1 | 0.0125 V | |
| 0 0 1 0 0 1 1 1 | 1.0125 V | | 1 0 0 0 1 1 1 1 | 0.5125 V | | 1 1 1 1 1 0 0 0 | 0.0000 V | |
| | | | 1 0 0 1 0 0 0 0 | 0.5000 V | | 1 1 1 1 1 0 0 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 0 1 0 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 0 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 0 0 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 0 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 0 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
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| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
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| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
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| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
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| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
| | | | | | | 1 1 1 1 1 1 1 1 | 0.0000 V | |
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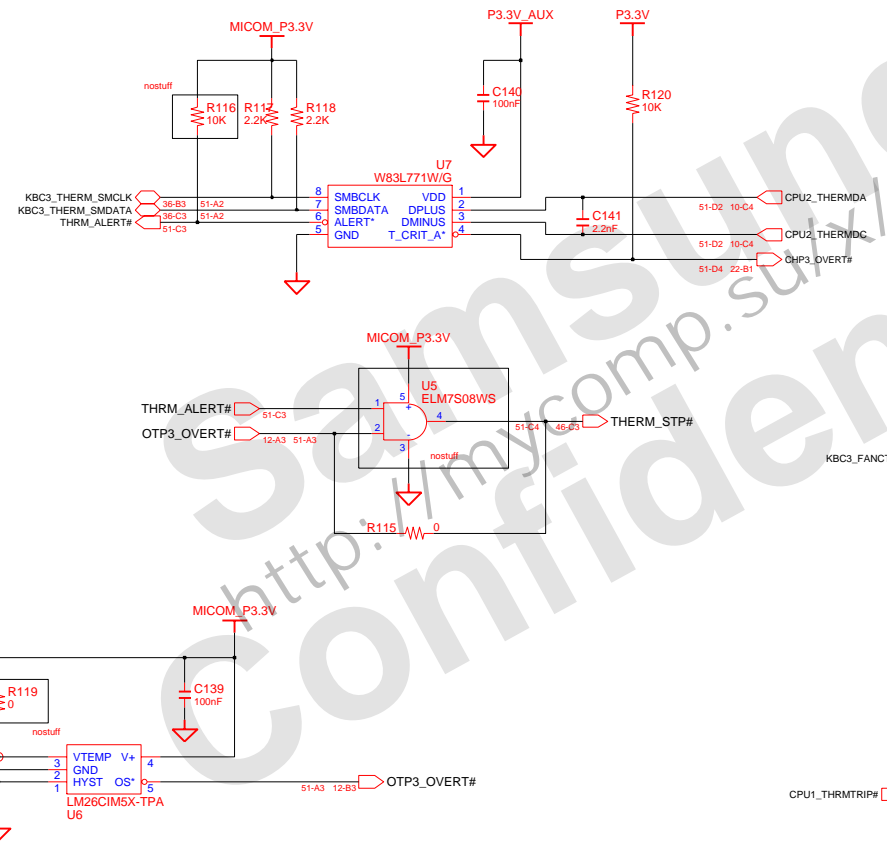
*Yonah Processor (2.33 GHz / 800 MHz : TBD)



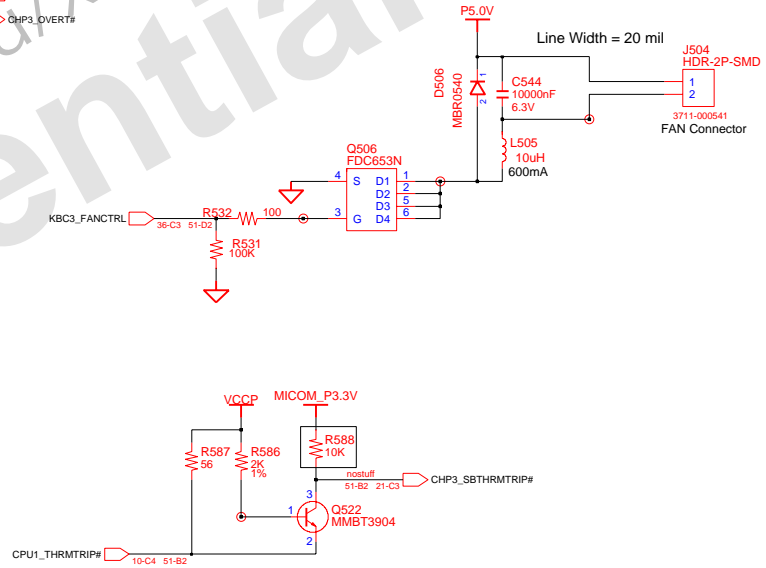
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| DRAM | TERM1 KWON | DATE | 1/11/2007 | TITLE | | FIRENZE2-R MAIN YONAH CPU(3/3) | | SAMSUNG ELECTRONICS | |
| CHECK | HJ KIM | DEV. STEP | MP | | | | | | |
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- Refer To Thermal Sensor Layout Guidelines.
- Place the Thermal Sensor close to a remote diode.
 - Keep traces away from high voltage (+12V bus)
 - Keep traces away from fast data buses and CRT signal.
 - Use recommended trace widths and spacings (10mil)
 - Place a ground plane under the traces.
 - Use guard traces flanking DXP and DXN and connecting to GND

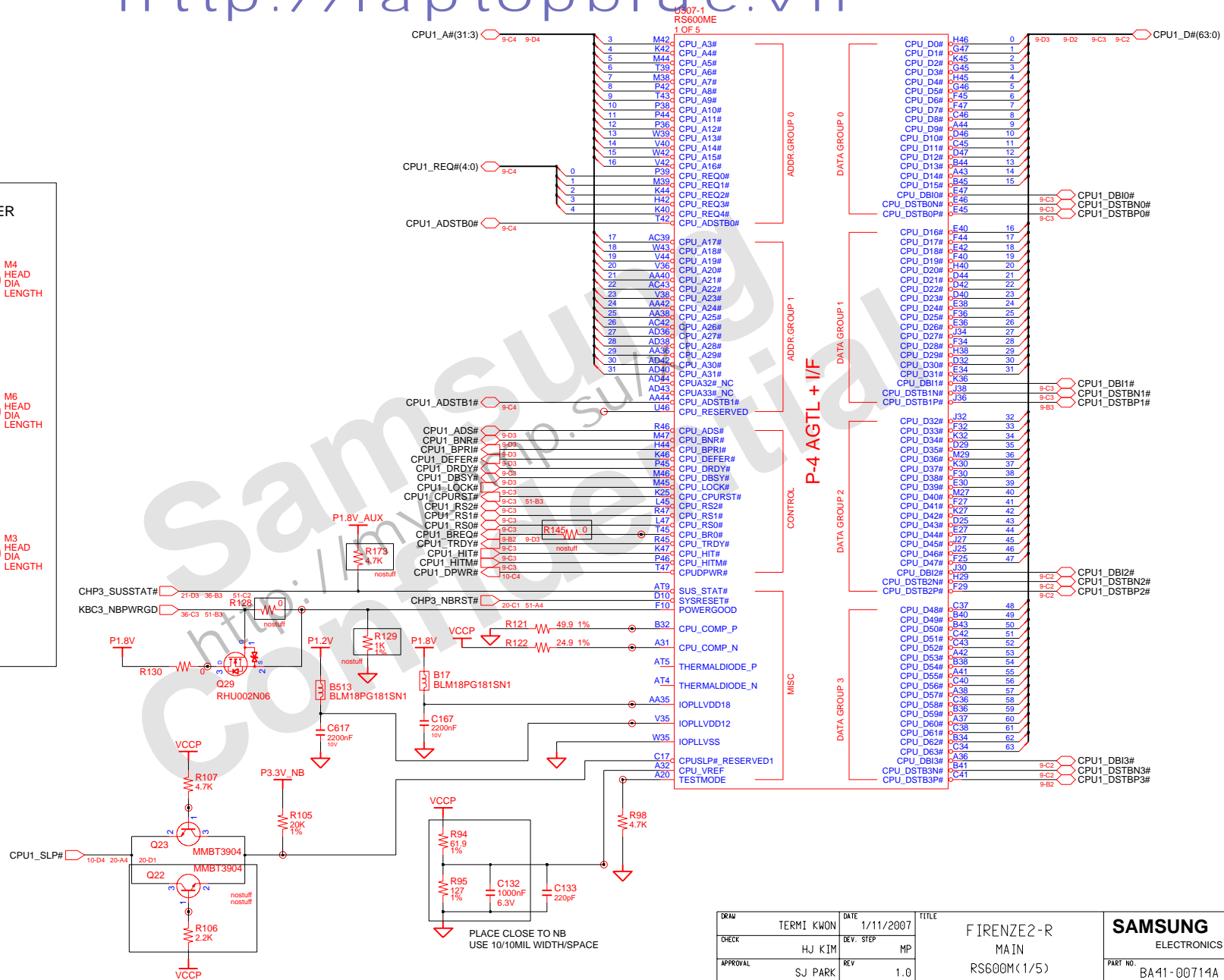
CPU Thermal Sensor



FAN Control Logic

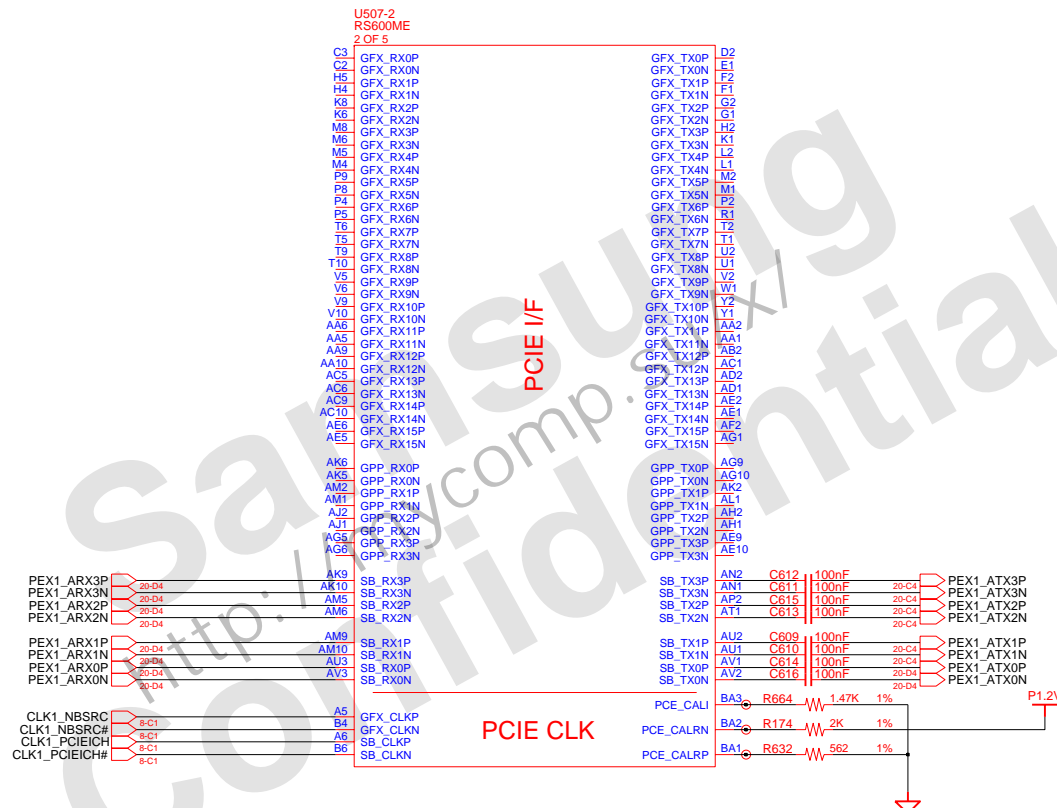


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| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | MAIN | | |
| APPROVAL | SJ PARK | REV | 1.0 | THERMAL SENSOR/FAN CONTRL | PART NO. | BA41-00714A |
| MODULE CODE | | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 12 | OF 52 |



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|-------------|------------|-----------|-----------------------------|----------|-----------------------------------|-------------------------------|
| DRAM | TERM1 KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R MAIN RS600M(1/5) | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | | |
| APPROVAL | SJ PARK | REV | 1.0 | | | |
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| | | | | PART NO. | BA41-00711A | |

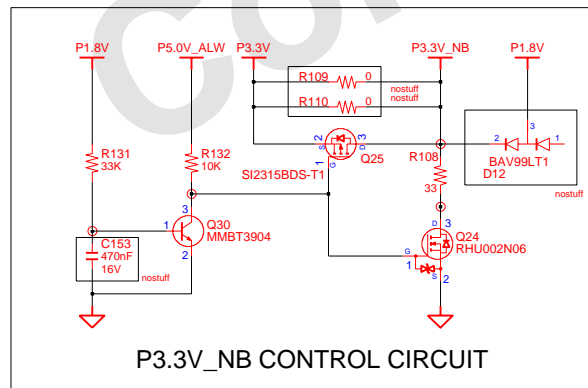
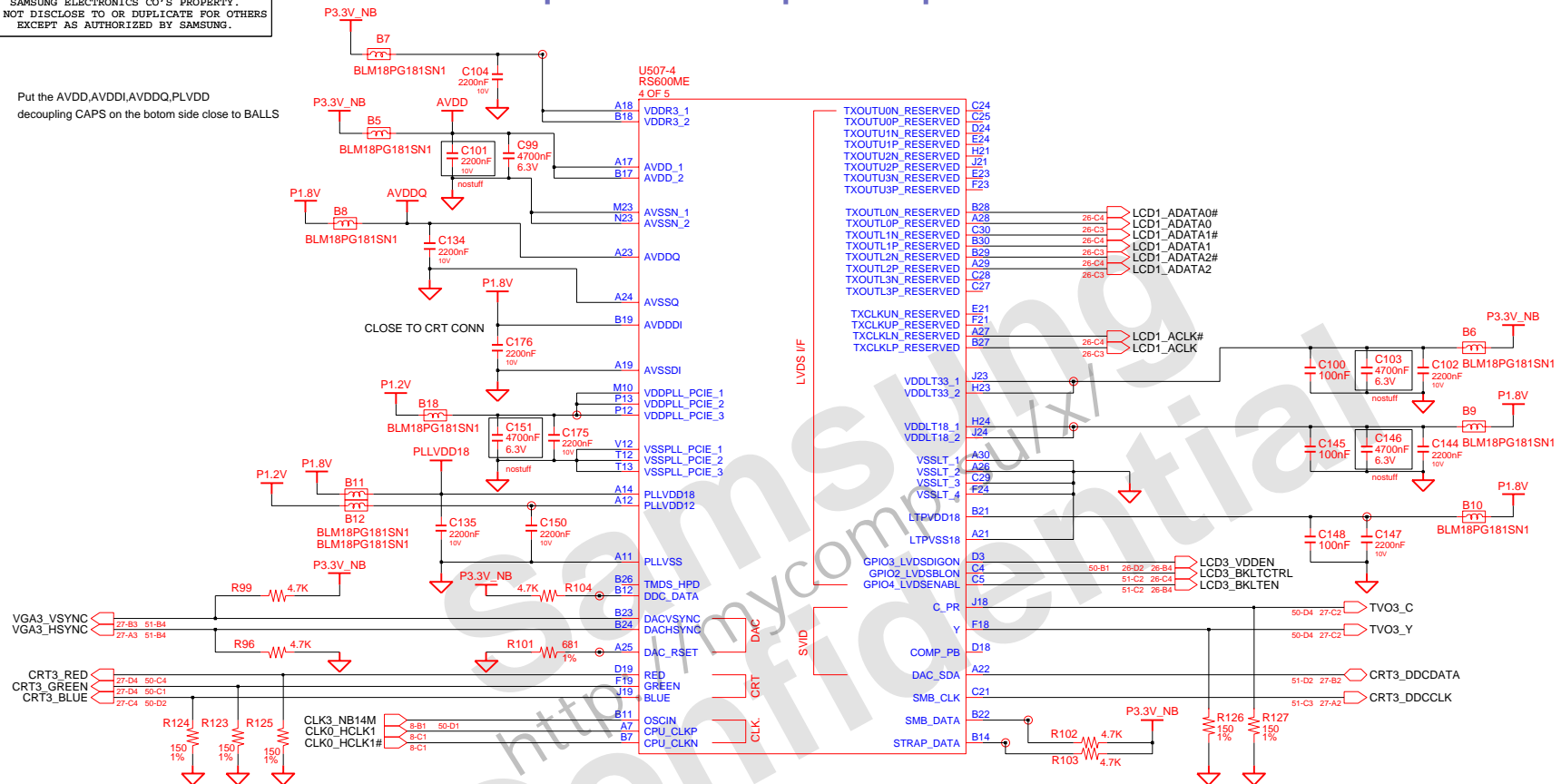
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| CHECK | HJ KIM | DEV. STEP | MP | | | PART NO. |
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| MODULE CODE | | LAST EDIT | | January 11, 2007 8:27:44 PM | PAGE | 14 OF 52 |

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Put the AVDD,AVDDI,AVDDQ,PLVDD
decoupling CAPS on the botom side close to BALLS

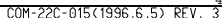


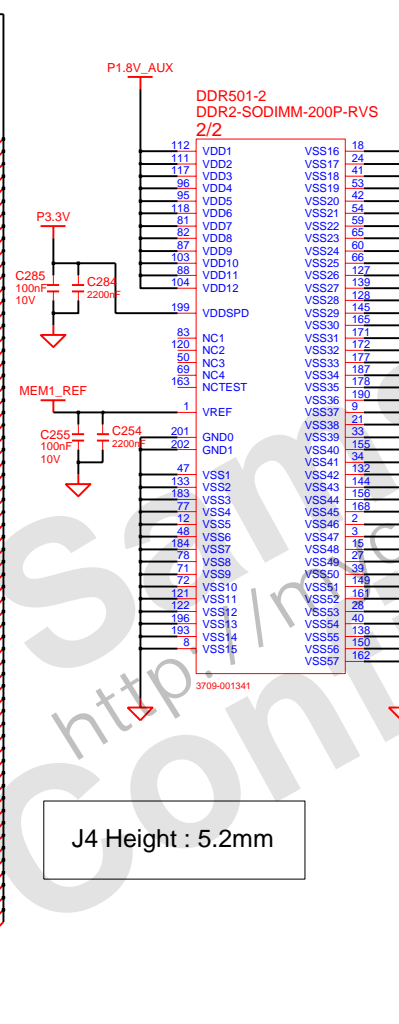
P3.3V NB CONTROL CIRCUIT

STRAP DEFINITIONS FOR THE RS600M

| STRAP PIN | DESCRIPTION |
|-----------|---|
| DACHSYNC | Enable/Disable integrated graphics. 0 : Enable integrated graphics 1 : Disable integrated graphics |
| STRP_DATA | Debug strap configuration. This strap should not be set to "0" on production boards. 0 : Select Memory Channel A to be a debug bus 1 : Read debug straps from an external EEPROM, or disable debug mode when an EEPROM is absent. |
| DACVSYNC | Select configuration of the integrated graphics engine. 0 : Reserved 1 : Required setting for the RS600M |
| DDC_DATA | Select DDR2 or DDR3 signalling level for the memory interface. 0 : DDR3. On DDR3, it is necessary to put an isolation FET in series with the pull-up resistor on this strap to separate it from the I2C circuit during an NB reset 1 : DDR2 |

| | | | | | | | | |
|-------------|------------|-----------|-----------|-----------------------------|--|-----------------------------------|-------------------------------|-------|
| DRAM | TERMI KWON | DATE | 1/11/2007 | TITLE | | FIRENZE2-R MAIN RS600M(4/5) | SAMSUNG ELECTRONICS | |
| CHECK | HJ KIM | DEV. STEP | MP | | | | | |
| APPROVAL | SJ PARK | REV | 1.0 | | | | | |
| MODULE CODE | | LAST EDIT | | January 11, 2007 8:27:44 PM | | PAGE | 16 | OF 52 |





MEM1_BDQ(83:0) 15-74

DDR500-1
DDR2-SODIMM-200P-STD
1/2

MEM1_BMA(14:0) 15-D7 19-C3

MEM1_BBS2 15-D7 19-C3

MEM1_BBS0 15-D7 19-C3

MEM1_BBS1 15-D7 19-C3

MEM1_BCS0# 15-A2 19-A3

MEM1_BCS1# 15-A2 19-A3

CLK1_BMCLK1# 15-B7

CLK1_BMCLK1# 15-B7

CLK1_BMCLK2# 15-B7

MEM1_BCKE0 15-B7 19-D3

MEM1_BCKE1 15-B7 19-D3

MEM1_BCAS# 15-A7 19-C3

MEM1_BRAS# 15-A7 19-C3

MEM1_BWE# 15-A7 19-C3

P3.3V

R237 10K

SMB3_CLK 8-B3 18-B4 21-C3 21-D4 50-B2 195

SMB3_DATA 8-B3 18-B4 21-C3 21-D4 50-B2 194

MEM1_BODT0 15-A7 19-D3

MEM1_BODT1 15-A7 19-D3

MEM1_BDM(7:0) 15-D7

MEM1_BDOS(7:0) 15-C7

MEM1_BDOS#(7:0) 15-C7

0 102 A0 DQ0 5 0

1 101 A1 DQ1 7 1

2 100 A2 DQ2 17 2

3 99 A3 DQ3 19 3

4 98 A4 DQ4 4 4

5 97 A5 DQ5 14 6

6 94 A6 DQ6 16 7

7 92 A7 DQ7 23 8

8 91 A8 DQ8 25 9

9 100 A9 DQ9 35 10

10 105 A10 AP DQ10 37 11

11 90 A11 DQ11 20 12

12 89 A12 DQ12 20 13

13 116 A13 DQ13 22 13

14 86 A14 DQ14 35 14

15 84 A15 DQ15 38 15

16 85 A16 BA2 DQ16 43 16

17 85 A16 BA2 DQ17 45 17

18 107 BA0 DQ18 57 19

19 106 BA1 DQ19 44 20

20 110 S0* DQ21 46 21

21 115 S1* DQ22 56 22

22 58 DQ23 61 24

23 CK0 DQ24 63 25

24 CK0* DQ25 63 25

25 CK1 DQ26 73 26

26 CK1* DQ27 62 27

27 KE0 DQ28 64 29

28 KE1 DQ29 74 30

29 DQ30 74 30

30 DQ31 76 31

31 CAS* DQ32 124 39

32 RAS* DQ33 125 39

33 WE* DQ34 135 34

34 SA0 DQ35 137 35

35 SA1 DQ36 126 37

36 SCL DQ37 134 38

37 SDA DQ38 136 39

38 DQ39 136 39

39 DQ40 141 40

40 DQ41 143 41

41 DQ42 151 42

42 DM0 DQ43 153 43

43 DM1 DQ44 140 44

44 DM2 DQ45 142 45

45 DM3 DQ46 152 46

46 DM4 DQ47 154 47

47 DM5 DQ48 157 48

48 DM6 DQ49 159 49

49 DM7 DQ50 173 50

50 DQ51 175 51

51 DQ52 158 52

52 DQ53 160 53

53 DQ54 174 54

54 DQ55 176 55

55 DQ56 179 56

56 DQ57 181 57

57 DQ58 189 59

58 DQ59 191 59

59 DQ60 180 60

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96 DQ97 228 63

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99 DQ100 231 63

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132 DQ133 264 63

133 DQ134 265 63

134 DQ135 266 63

135 DQ136 267 63

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141 DQ142 273 63

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147 DQ148 279 63

148 DQ149 280 63

149 DQ150 281 63

150 DQ151 282 63

151 DQ152 283 63

152 DQ153 284 63

153 DQ154 285 63

154 DQ155 286 63

155 DQ156 287 63

156 DQ157 288 63

157 DQ158 289 63

158 DQ159 290 63

159 DQ160 291 63

160 DQ161 292 63

161 DQ162 293 63

162 DQ163 294 63

163 DQ164 295 63

164 DQ165 296 63

165 DQ166 297 63

166 DQ167 298 63

167 DQ168 299 63

168 DQ169 300 63

169 DQ170 301 63

170 DQ171 302 63

171 DQ172 303 63

172 DQ173 304 63

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177 DQ178 309 63

178 DQ179 310 63

179 DQ180 311 63

180 DQ181 312 63

181 DQ182 313 63

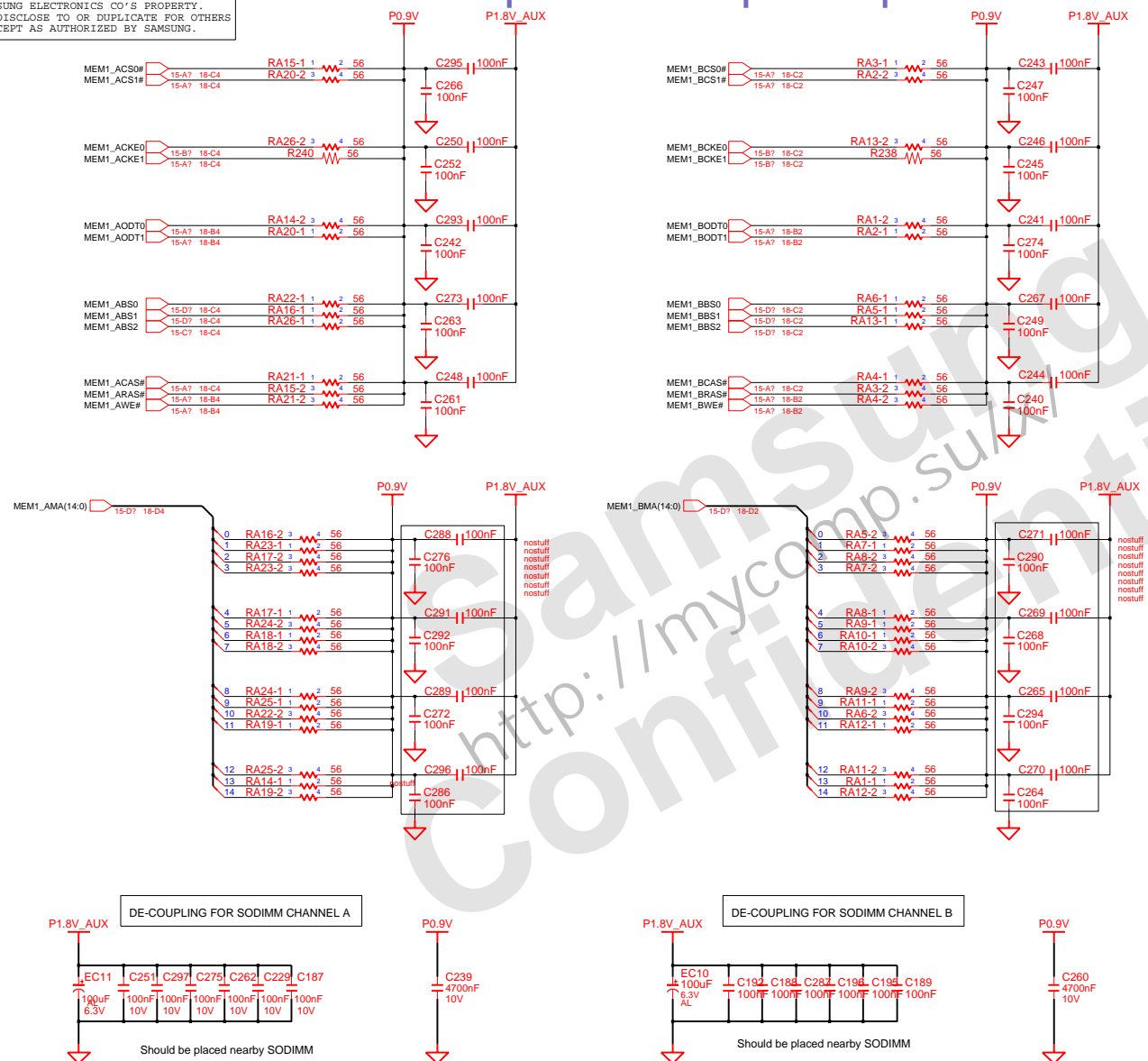
182 DQ18

DDR1 Height : 9.2mm

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

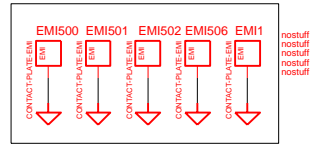
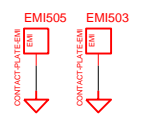
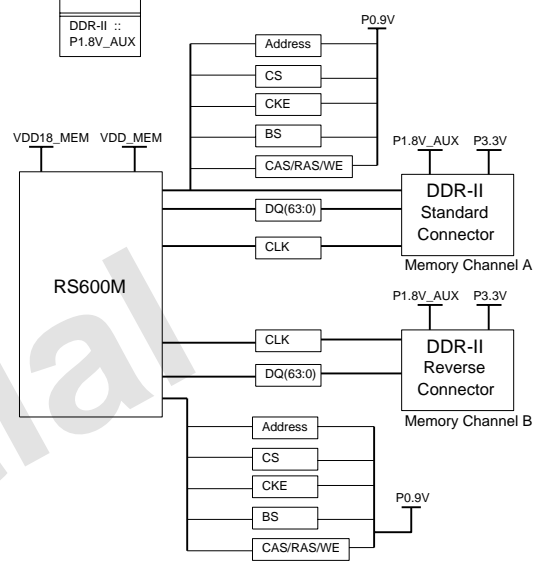
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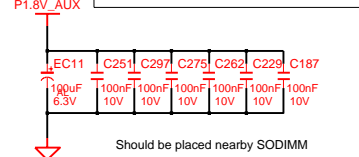


Memory Topology

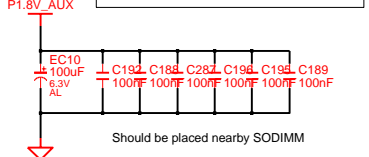
(Dual channel for DDR-II)



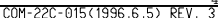
DE-COUPLING FOR SODIMM CHANNEL A



DE-COUPLING FOR SODIMM CHANNEL B

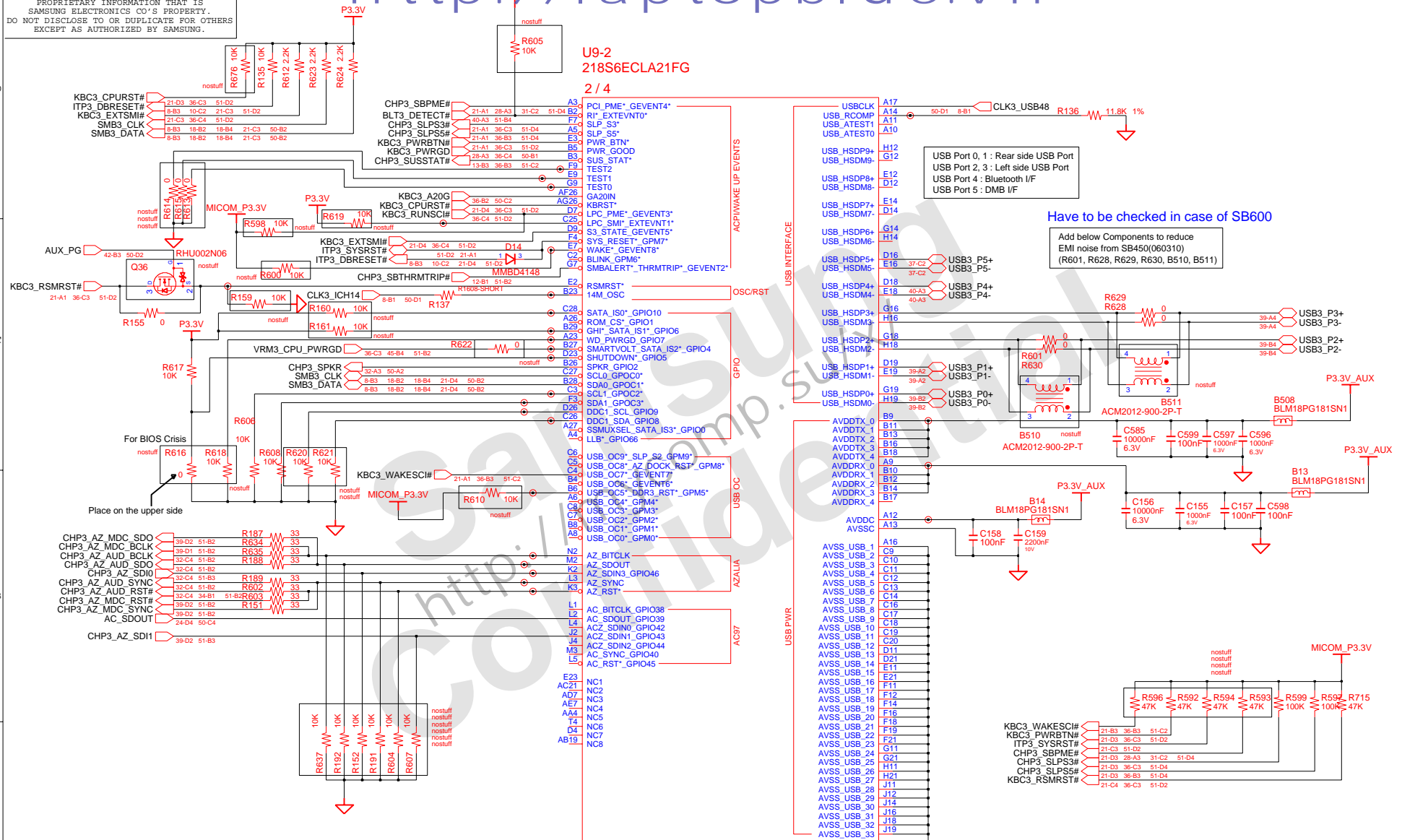


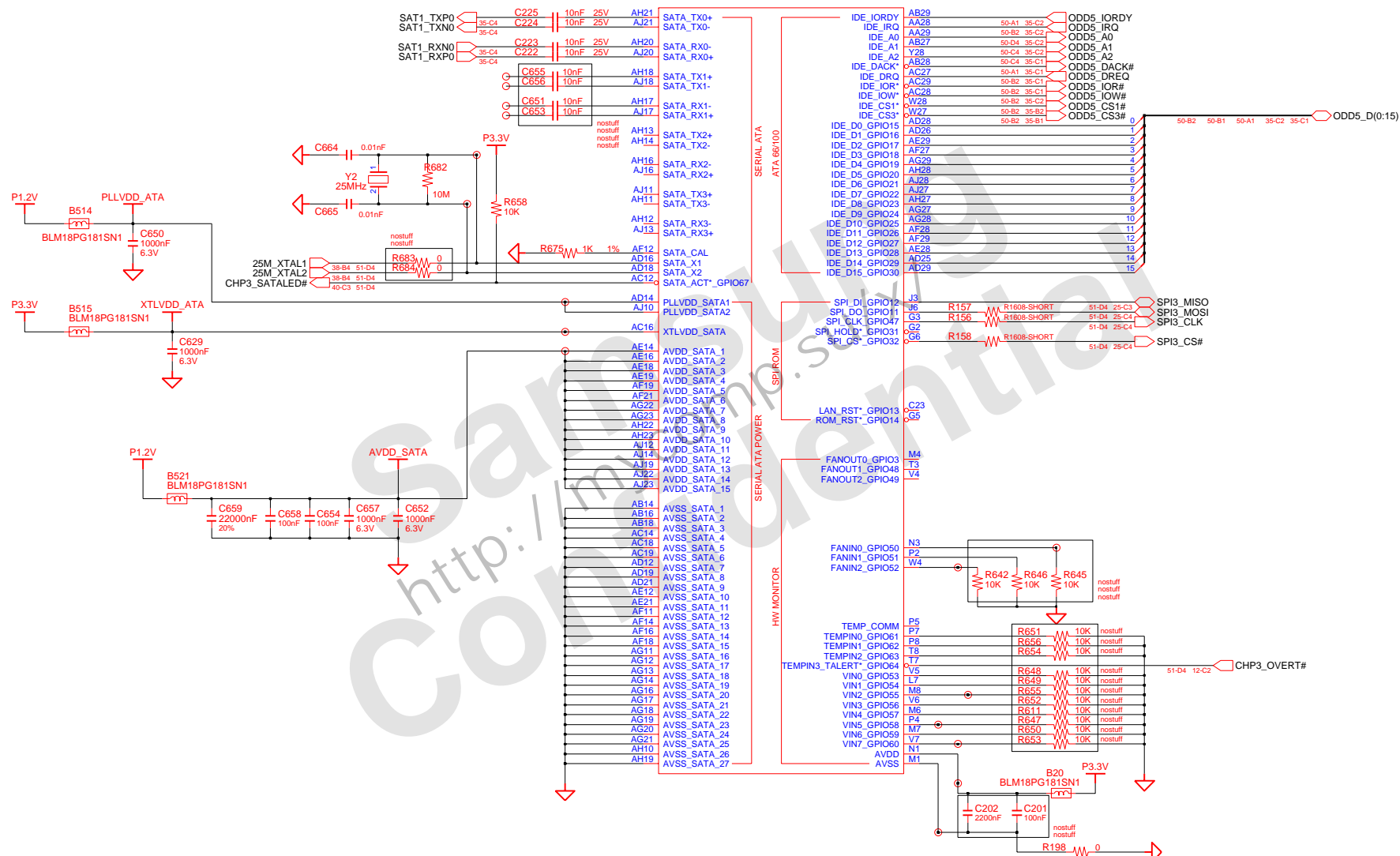
| | | | | | | |
|-------------|------------|-----------|-----------------------------|--------------------|------------|------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | MAIN | | |
| APPROVAL | SJ PARK | REV | 1.0 | DDR2 - TERMINATION | PART NO. | BA41-00714A |
| MODULE CODE | | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 19 | OF 52 |



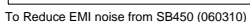
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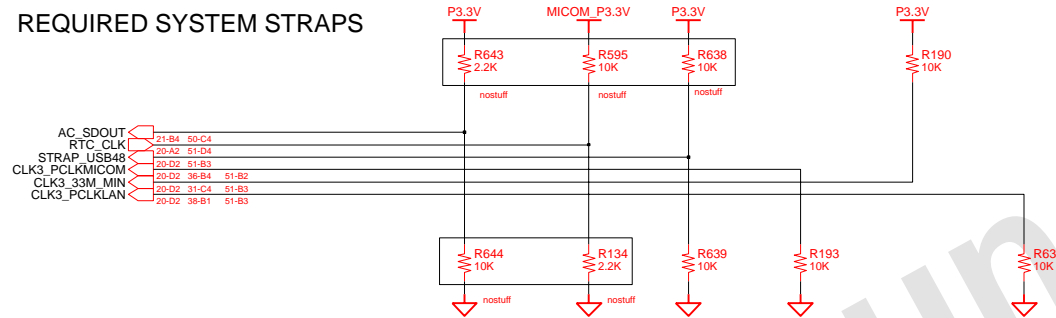


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|-------------|------------|-----------|-----------------------------|-------|----------------------------------|-------------------------------|
| DRAM | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R MAIN SB600(3/4) | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | | |
| APPROVAL | SJ PARK | REV | 1.0 | | | |
| MODULE CODE | LAST EDIT | | January 11, 2007 8:27:44 PM | | | |
| | | | | | PART NO. | BA41-00711A |

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

SB600 HAS AN INTERNAL PD FOR AC_SDOUT
SB600 HAS AN INTERNAL PU FOR RTC_CLK

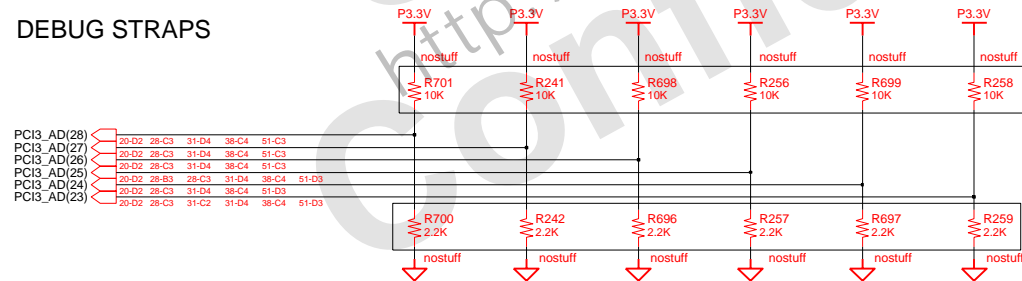
REQUIRED SYSTEM STRAPS



| | AC_SDOUT | RTC_CLK | PCI3_CLK4 | PCI3_CLK6 | PCI3_CLK0 | PCI3_CLK1 |
|------------|---------------------|--|--------------------|--------------|--|-----------|
| STRAP HIGH | USE DEBUG STRAPS | INTERNAL RTC | USE INTERNAL PLL48 | CPU I/F = K8 | ROM TYPE H, H = PCI ROM H, L = SPI ROM L, H = LPC ROM L, L = FWH ROM | |
| STRAP LOW | IGNORE DEBUG STRAPS | EXRERNAL RTC (PD on X1, Apply 32KHz to RTC_CLK) | USE EXTERNAL 48MHz | CPU I/F = P4 | | |

SB600 HAS 15K INTERNAL PU FOR PCI_AD[28:23]

DEBUG STRAPS



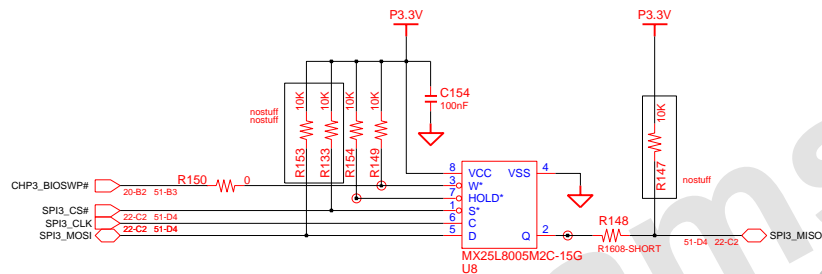
| | PCI3_AD(28) | PCI3_AD(27) | PCI3_AD(26) | PCI3_AD(25) | PCI3_AD(24) | PCI3_AD(23) |
|------------|-----------------|----------------|------------------|----------------|-------------------------|------------------------|
| STRAP HIGH | USE LONG RESET | USE PCI PLL | USE ACPI BCLK | USE IDE PLL | USE DEFAULT PCIE STRAPS | BOOTFAILTIMER DISABLED |
| STRAP LOW | USE SHORT RESET | BYPASS PCI PLL | BYPASS ACPI BCLK | BYPASS IDE PLL | USE EEPROM PCIE STRAPS | BOOTFAILTIMER ENABLED |

| | | | | | | |
|-------------|------------|-----------|-----------------------------|--------|------------|------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | | |
| APPROVAL | SJ PARK | REV | 1.0 | STRAPS | | PART NO. BA41-00714A |
| MODULE CODE | | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 24 | OF 52 |

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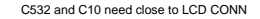
SPI3_CS#

SB600 prior to A21 : Pulled up to P3.3V_ALW with 1Kohm resistor.
SB600 A21 and newer : No external pull-up resistor required.

- | | | | |
|----|---|----|---------------------------------|
| 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 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 H/W 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 | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | MAIN | |
| APPROVAL | SJ PARK | REV | 1.0 | | FIRMWARE HUB | |
| MODULE CODE | | LAST EDIT | January 11, 2007 8:27:44 PM | | PAGE 25 OF 52 | |

PART NO. BA41-00714A



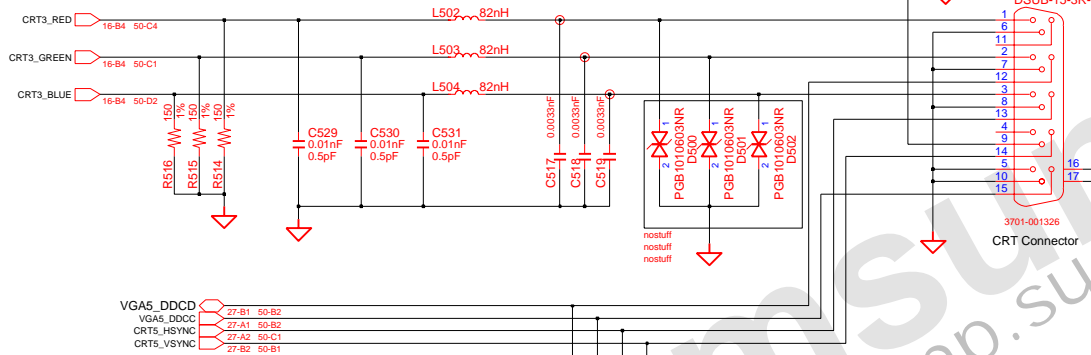
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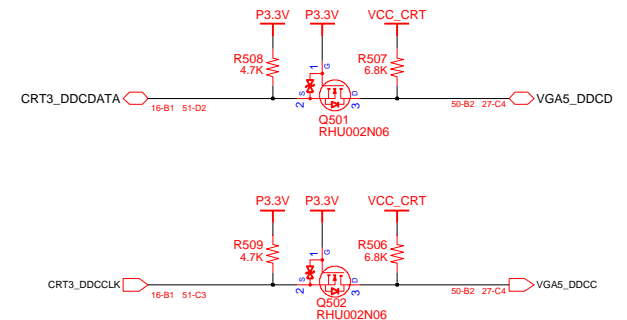
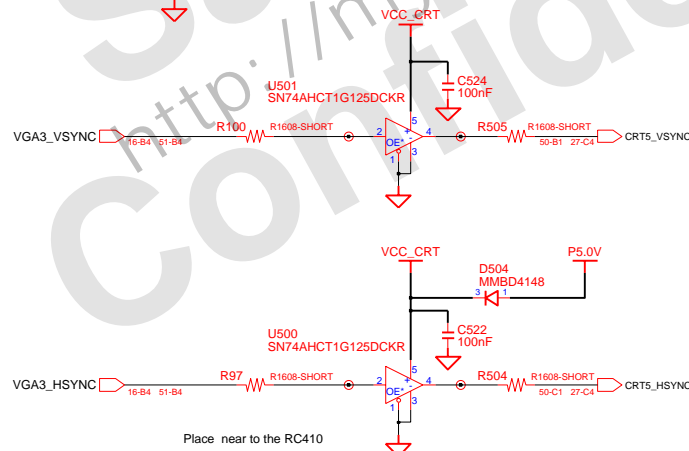
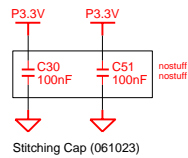
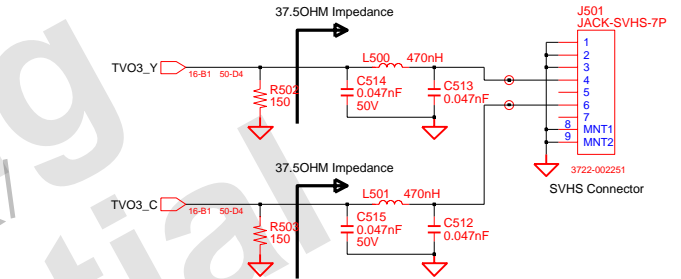
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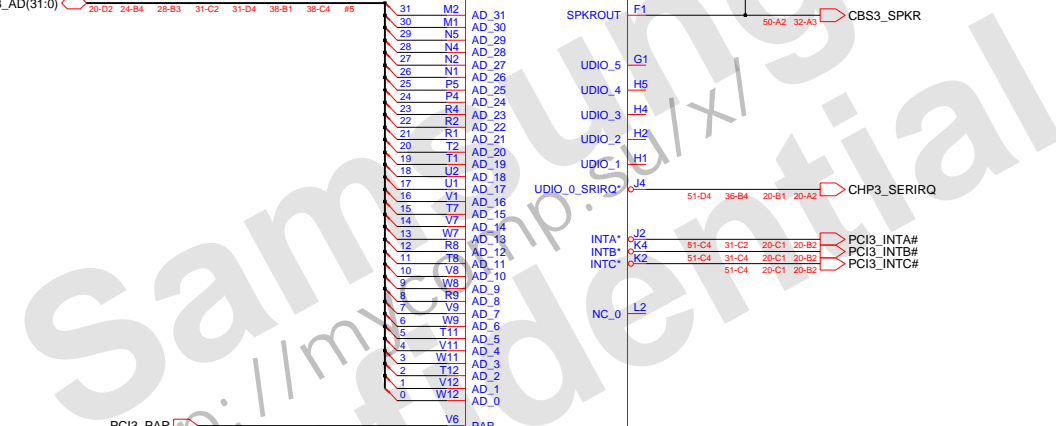
CRT CONNECTOR



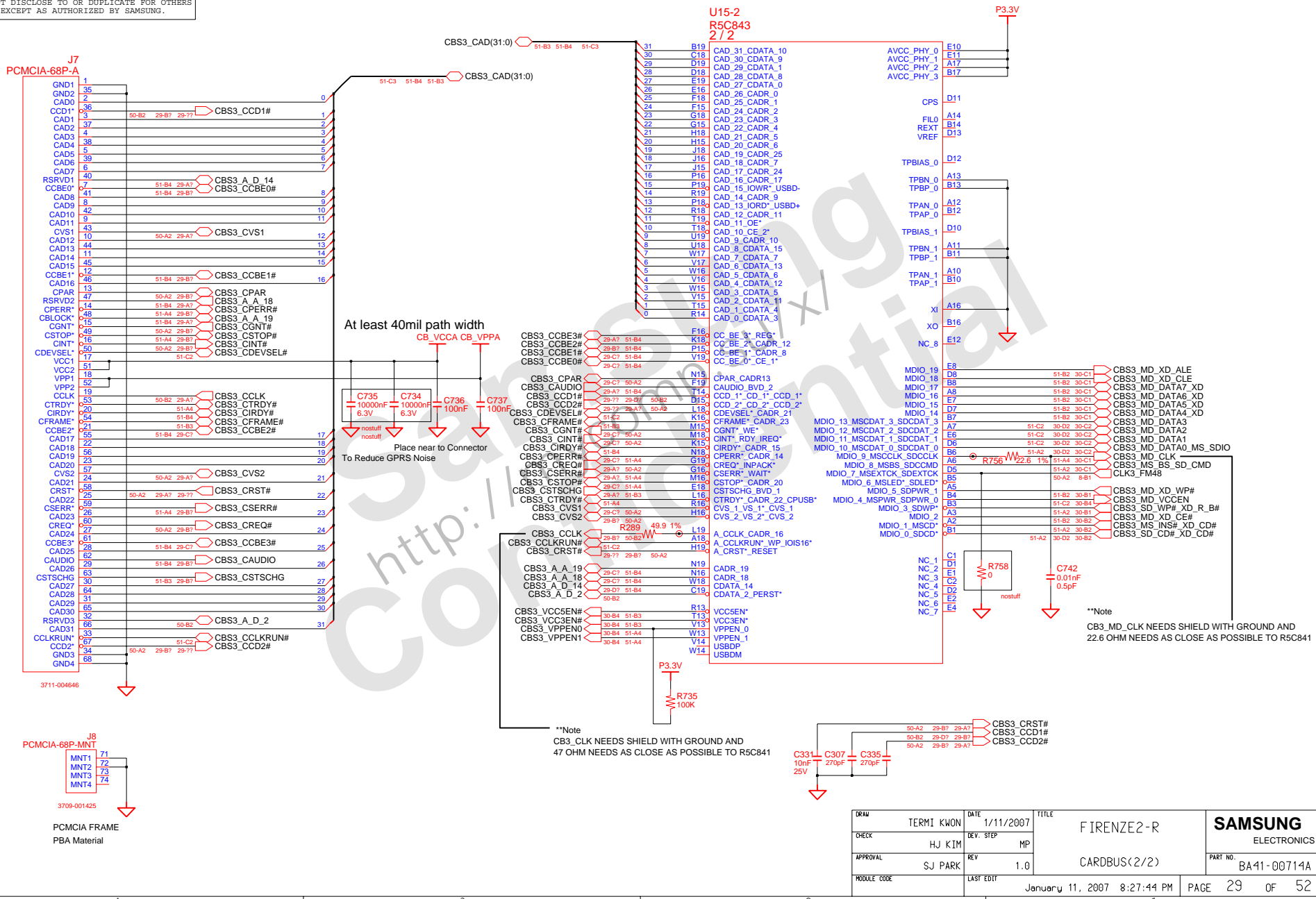
TV-OUT(S-VHS,COMPOSIT)



| | | | | | | |
|-------------|------------|-----------|-----------------------------|-------|----------------|--|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG ELECTRONICS PART NO. BA41-00714A |
| CHECK | HJ KIM | DEV. STEP | MP | | | |
| APPROVAL | SJ PARK | REV | 1.0 | | CRT AND TV-OUT | |
| MODULE CODE | | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 27 OF 52 | |

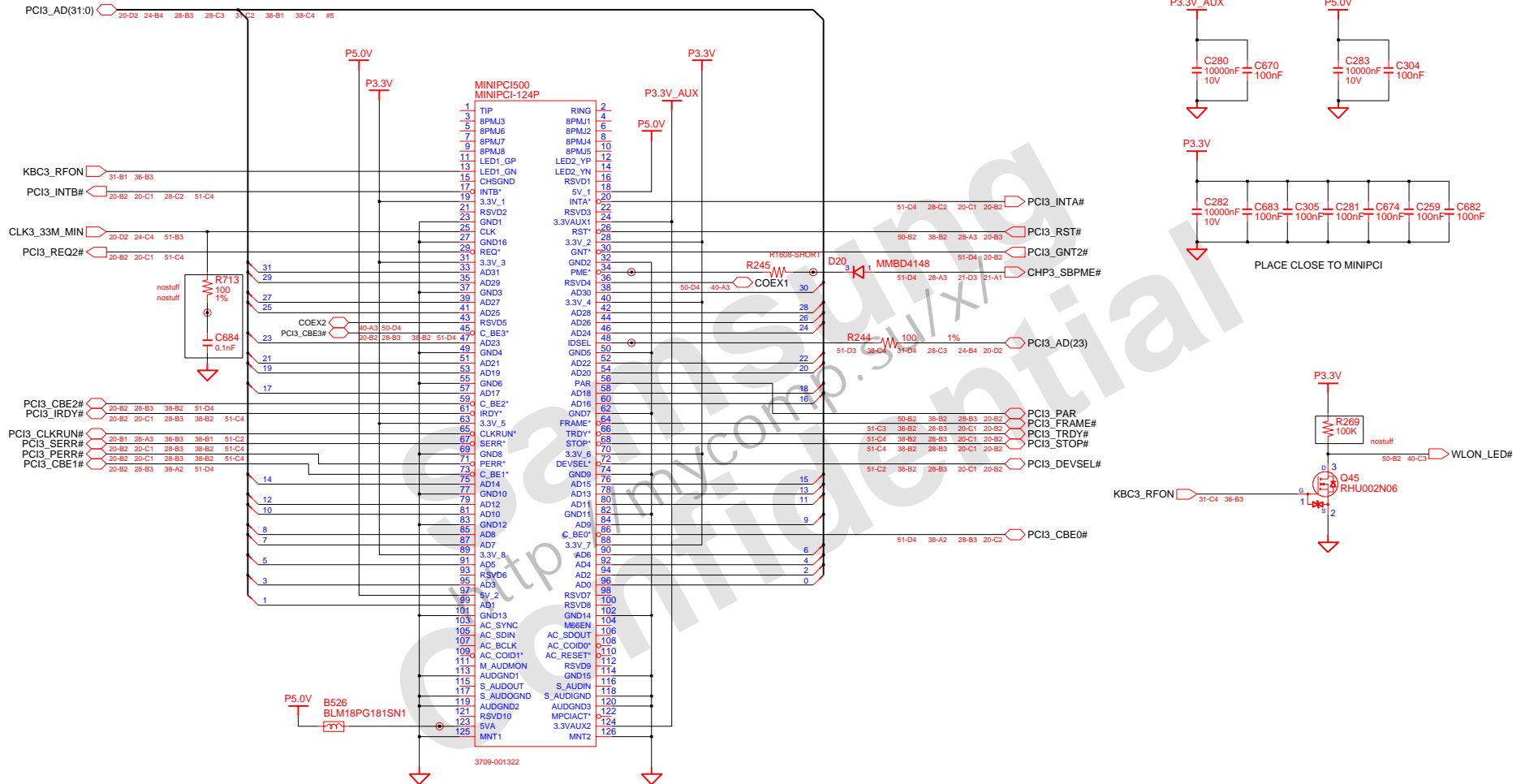


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|-------------|------------|-----------|-----------------------------|--------------|------------|------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | | |
| APPROVAL | SJ PARK | REV | 1.0 | CARDBUS(1/2) | PART NO. | BA41-00711A |
| MODULE CODE | | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 28 | OF 52 |





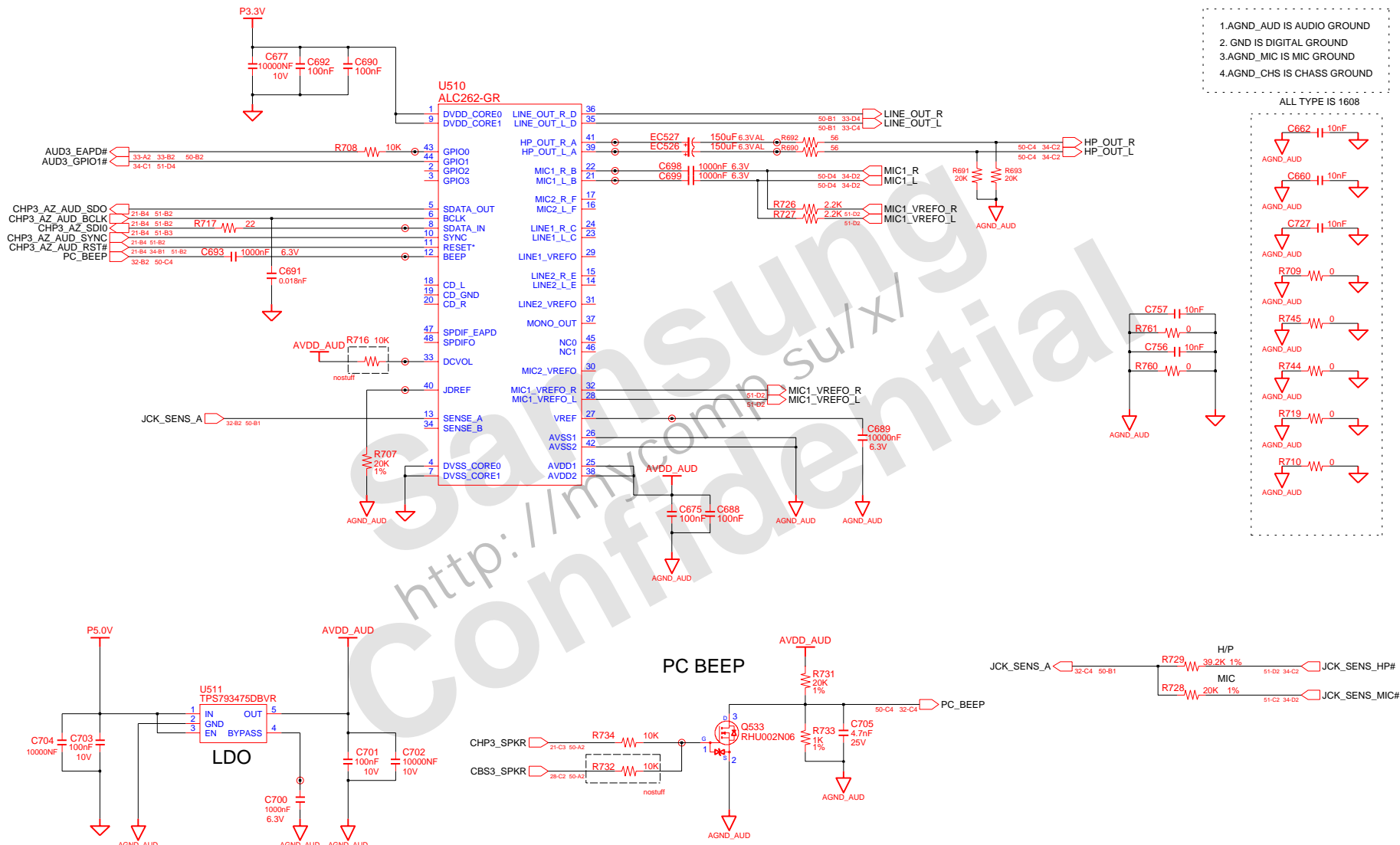
COM-22C-015(1996.6.5) REV. 3



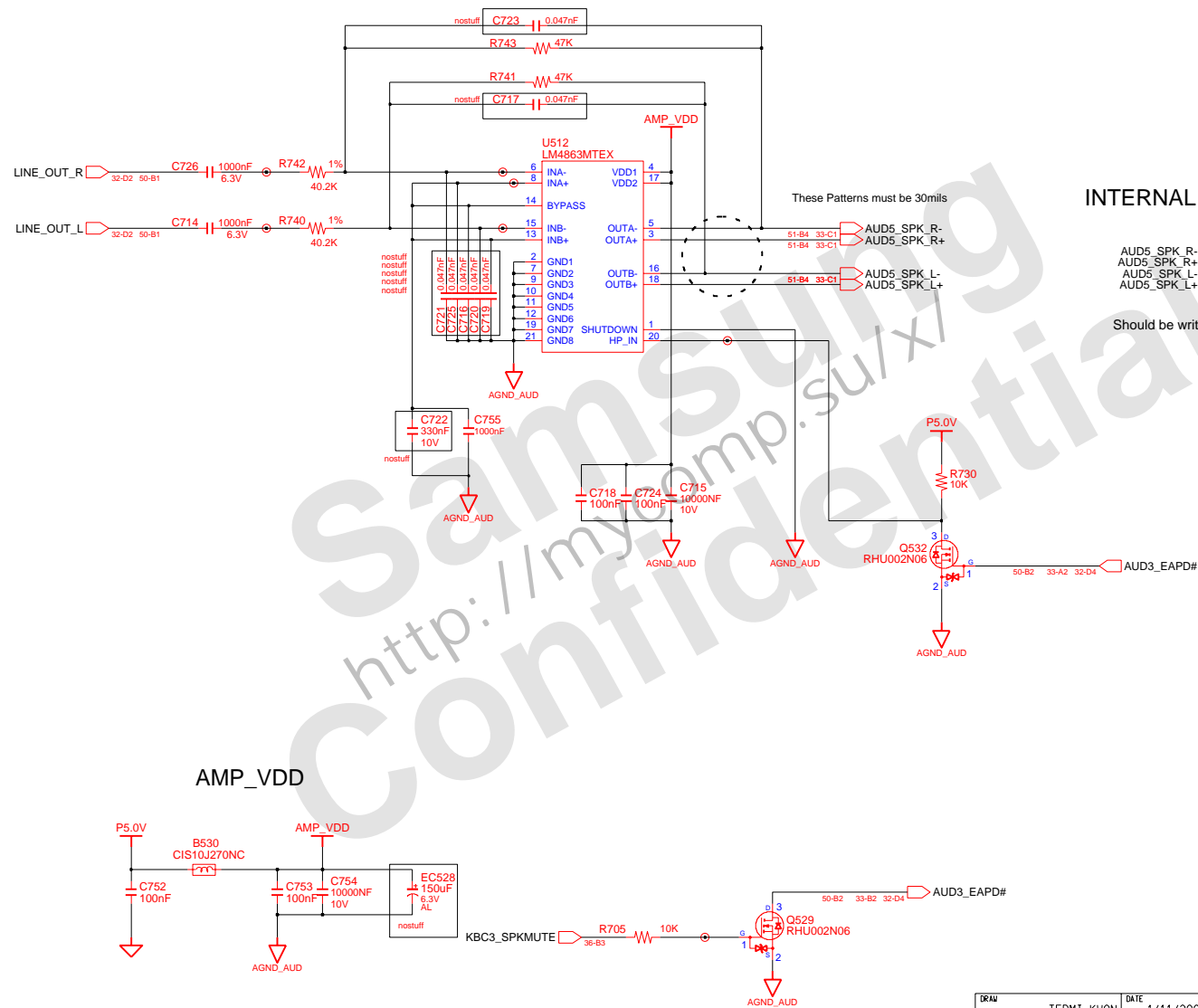
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| CHECK | HJ KIM | DEV. STEP | MP | | | PART NO. BA41-00714A |
| APPROVAL | SJ PARK | REV | 1.0 | | | |
| MODULE CODE | undefi ned | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 31 | OF 52 |

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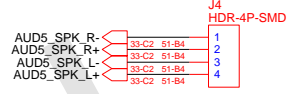
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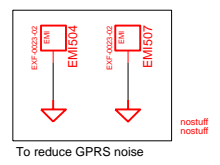
| | | | | | | |
|-------------|------------|-----------|-----------------------------|-------|-----------------------------------|------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R MAIN AUDIO CODEC | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | | PART NO. BA41-00714A |
| APPROVAL | SJ PARK | REV | 1.0 | | | |
| MODULE CODE | undefined | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 32 OF 52 | |



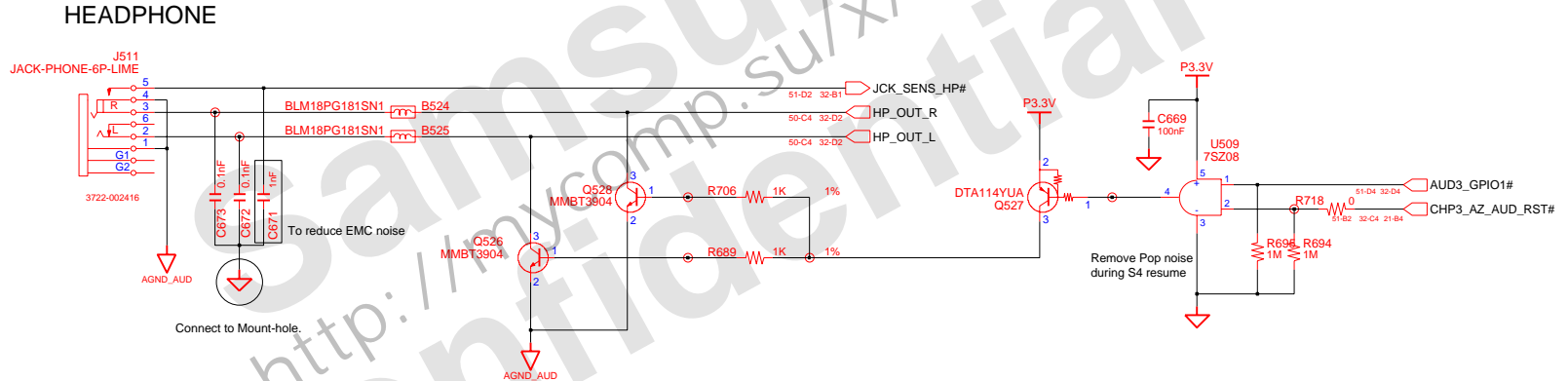
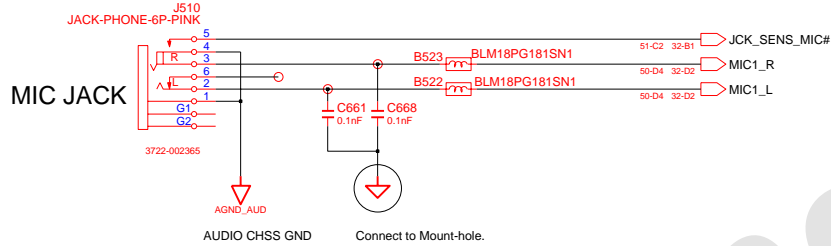
INTERNAL STEREO SPEAKERS



Should be written sign "L", "R" on the PCB



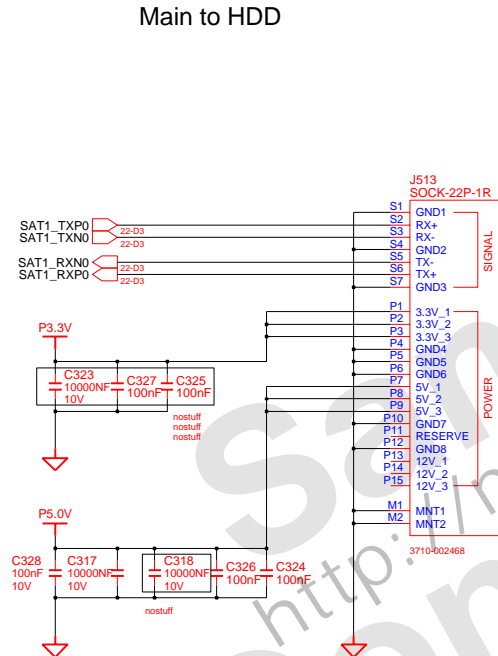
| | | | | | | |
|-------------|------------|-----------|-----------------------------|-------|-------------------------------------|-------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R MAIN LIMITER & AMP | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | | PART NO. BA41-00714A |
| APPROVAL | SJ PARK | REV | 1.0 | | | |
| MODULE CODE | undefined | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 33 OF 52 | |



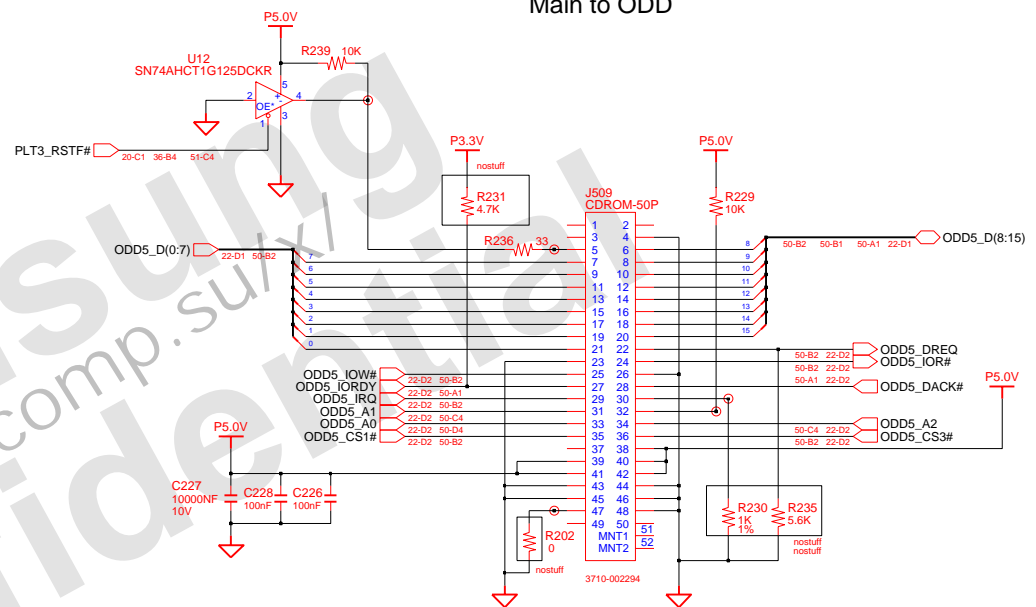
The traces led to Audio Jacks have the width over 10mil

| | | | | | | |
|-------------|------------|-----------|-----------------------------|-------|--|--|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R MAIN UPPER & AUDIO CONN | SAMSUNG ELECTRONICS PART NO. BA41-00714A |
| CHECK | HJ KIM | DEV. STEP | MP | | | |
| APPROVAL | SJ PARK | REV | 1.0 | | | |
| MODULE CODE | undefined | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 34 OF 52 | |

Main to HDD



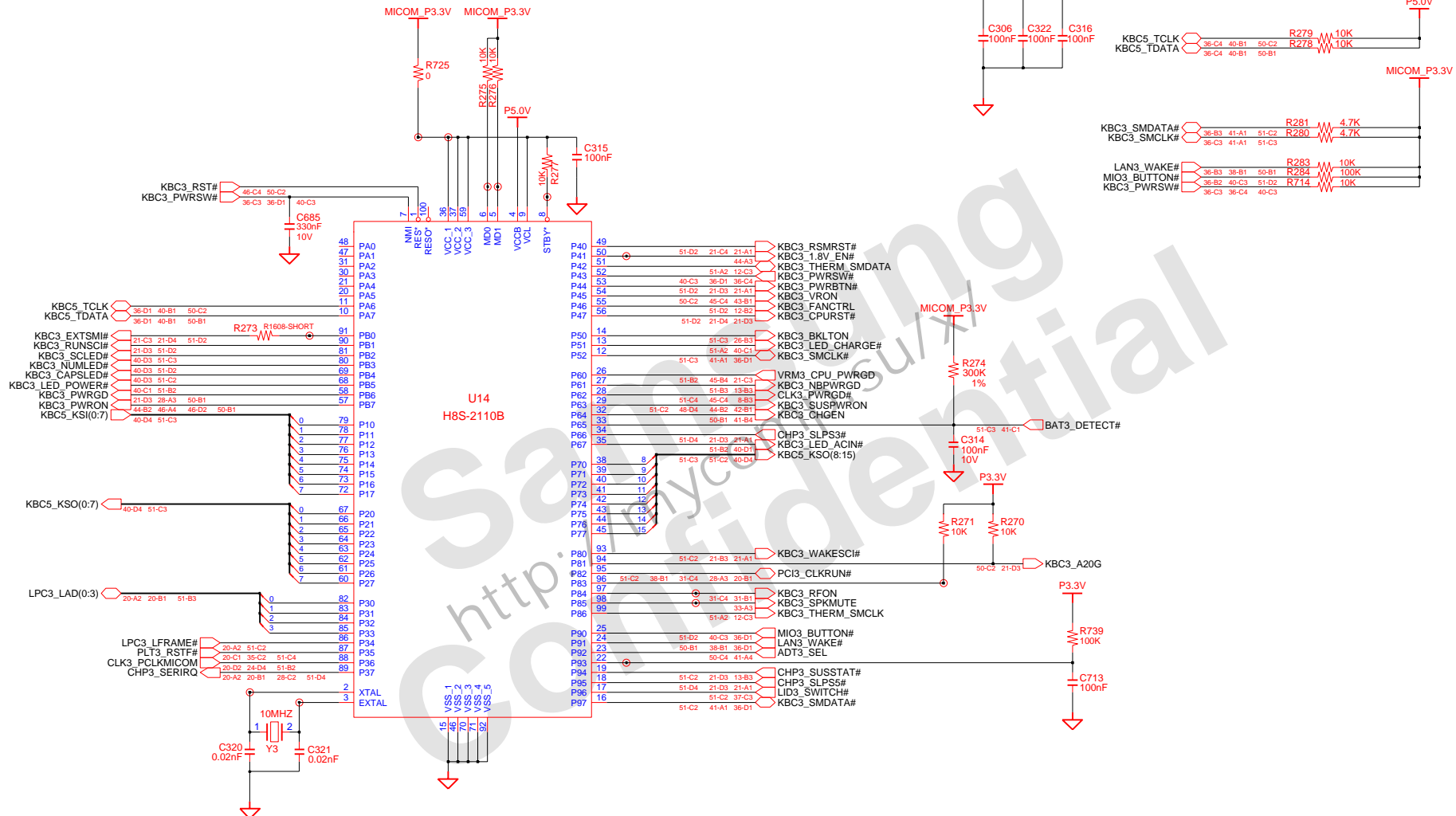
Main to ODD



| | | | | | | |
|-------------|------------|-----------|-----------------------------|-------|----------------------------------|-------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R POWER HDD & ODD | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | | |
| APPROVAL | SJ PARK | REV | 1.0 | | | PART NO. BA41-00714A |
| MODULE CODE | undefined | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 35 | OF 52 |

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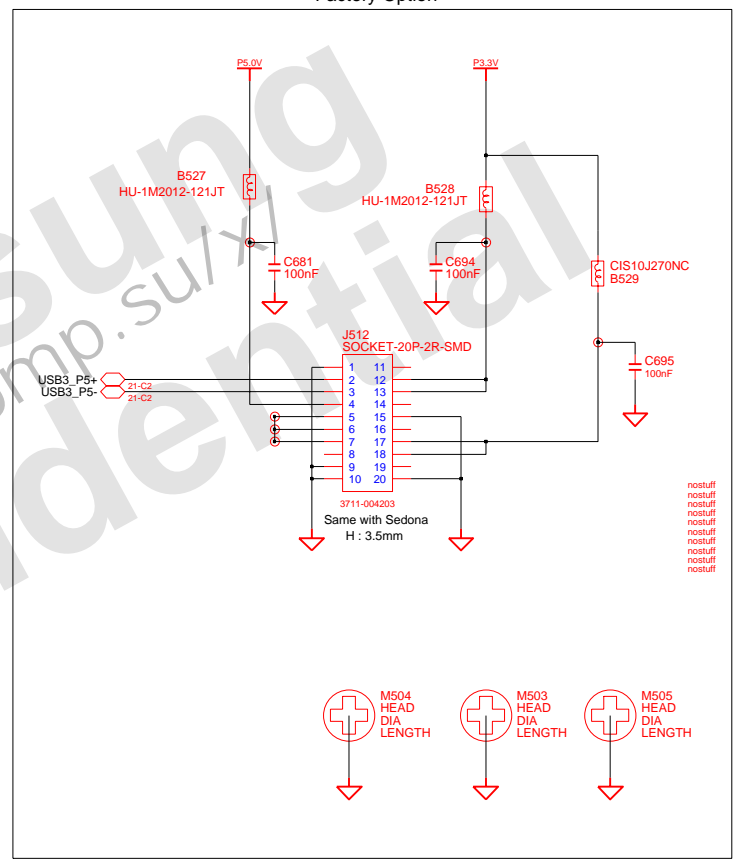
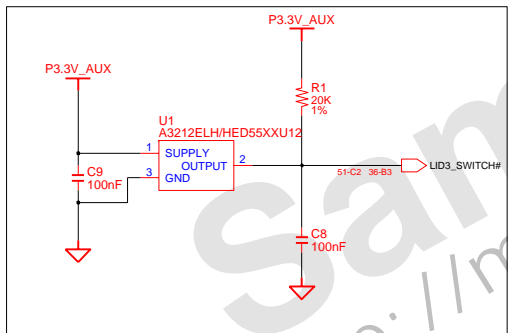
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| | | | | | | |
|-------------|------------|-----------|-----------------------------|-------|------------|------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | POWER | |
| APPROVAL | SJ PARK | REV | 1.0 | | MICOM | PART NO. BA41-00714A |
| MODULE CODE | undefi ned | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 36 | OF 52 |

DMB (nostuff)
Factory Option

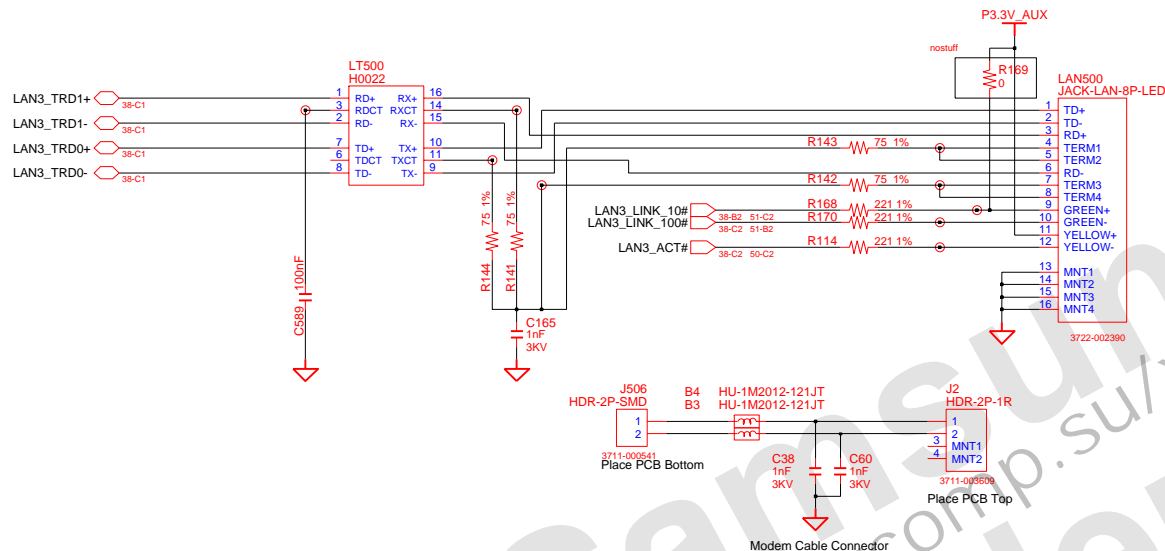
LID SWITCH



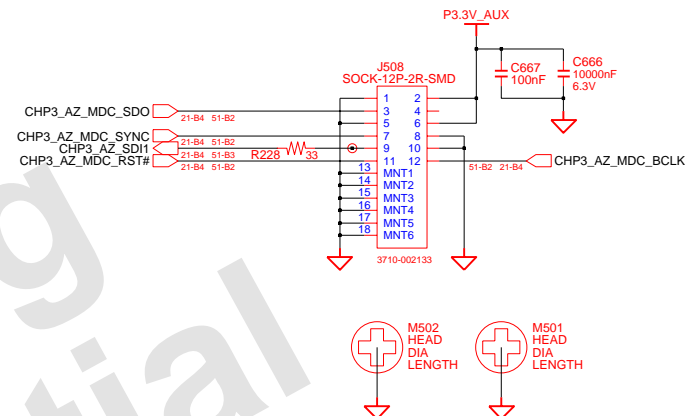
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| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | MAIN | |
| APPROVAL | SJ PARK | REV | 1.0 | | LPC | PART NO. |
| MODULE CODE | undefined | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 37 | OF 52 |

| | | | | | | | |
|-------------|------------|-----------|-----------------------------|-------|------------|----------------|-------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG | |
| CHECK | HJ KIM | DEV. STEP | MP | MAIN | | ELECTRONICS | |
| APPROVAL | SJ PARK | REV | 1.0 | LAN | | PART NO. | BA41-00711A |
| MIDDLE CODE | undefined | LAST EDIT | January 11, 2007 8:27:44 PM | | | PAGE | 38 OF 52 |

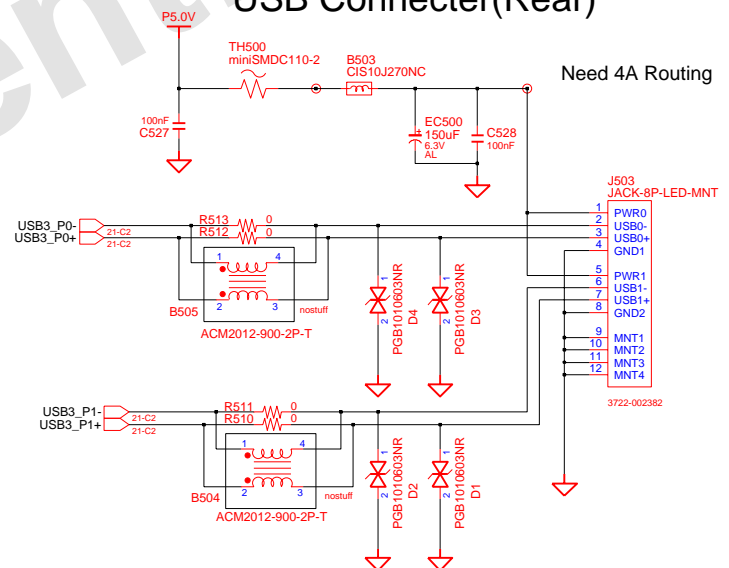
LAN Connector



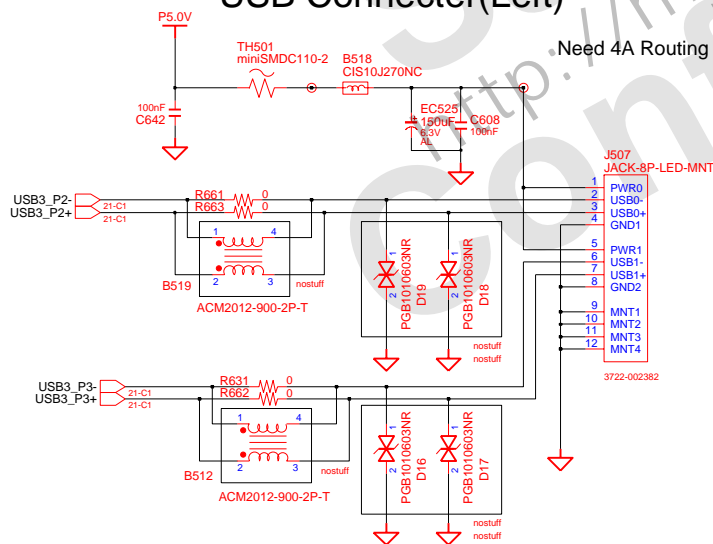
MDC Connector




USB Connector(Rear)



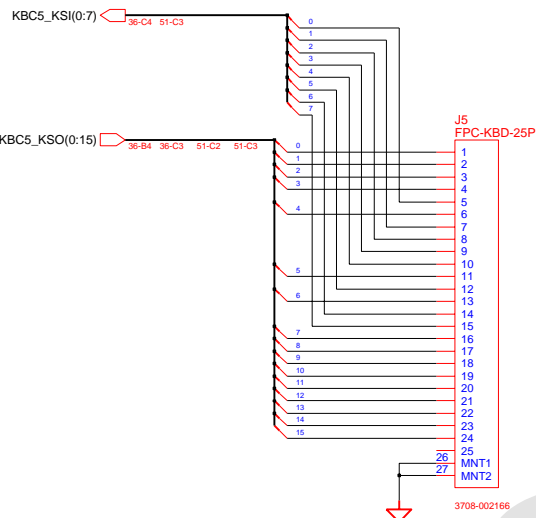
USB Connector(Left)



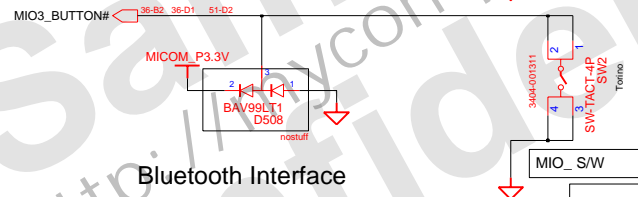
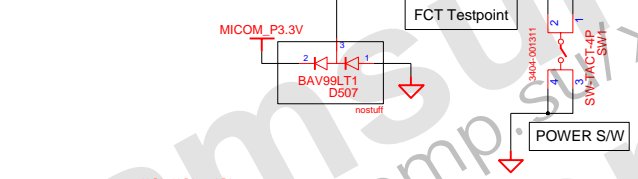
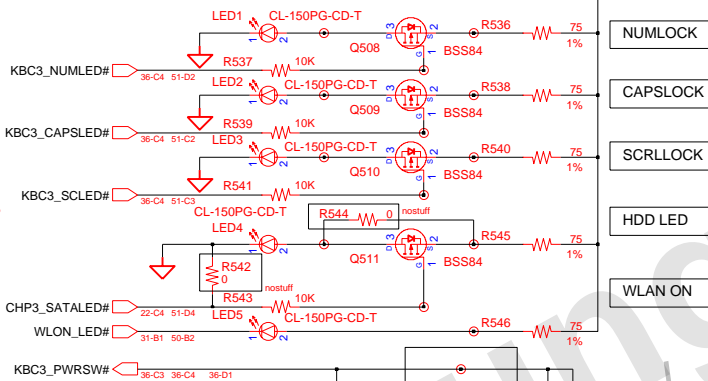
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| NAME | TERMI KWON | DATE | 1/11/2007 | TITLE | |  |
| CHECK | HJ KIM | DEV. STEP | MP | | | |
| APPROVAL | SJ PARK | REV | 1.0 | LAN & USB0 & MODEM Conn. | | PART NO. BA41-00714A |
| MODULE CODE | undefined | LAST EDIT | | January 11, 2007 8:27:44 PM | PAGE | 39 OF 52 |

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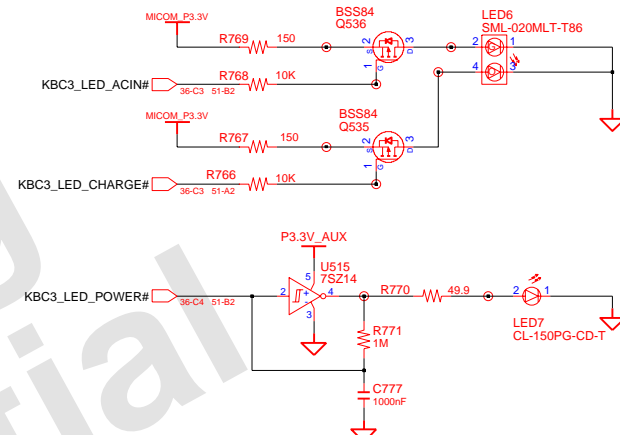
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KEYBOARD
Same connector with Sedona

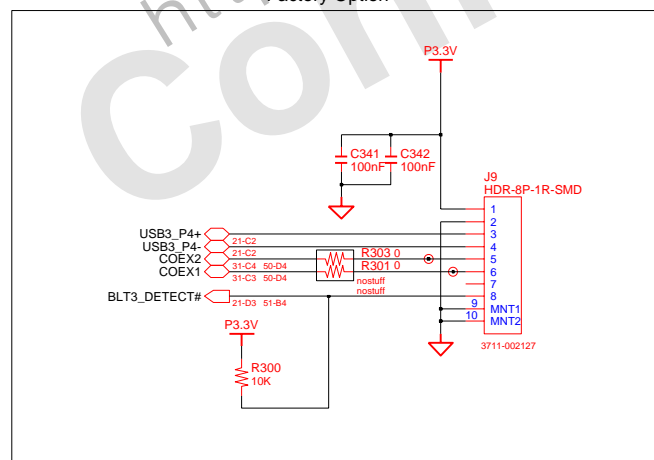
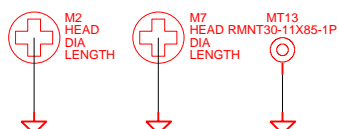
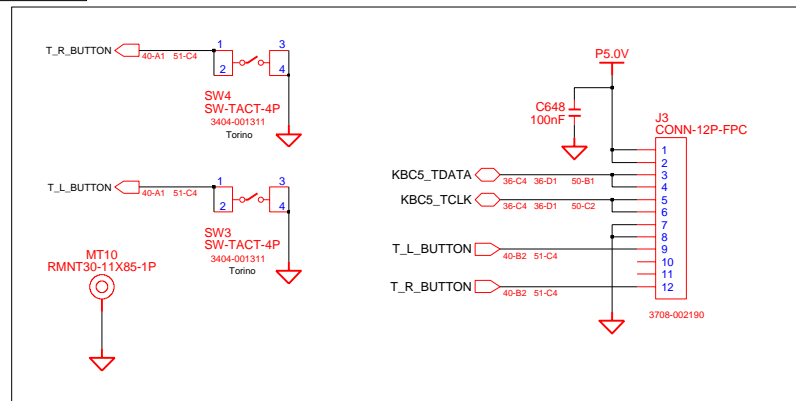
0801-002195



ADAPTERIN/CHARGING LED



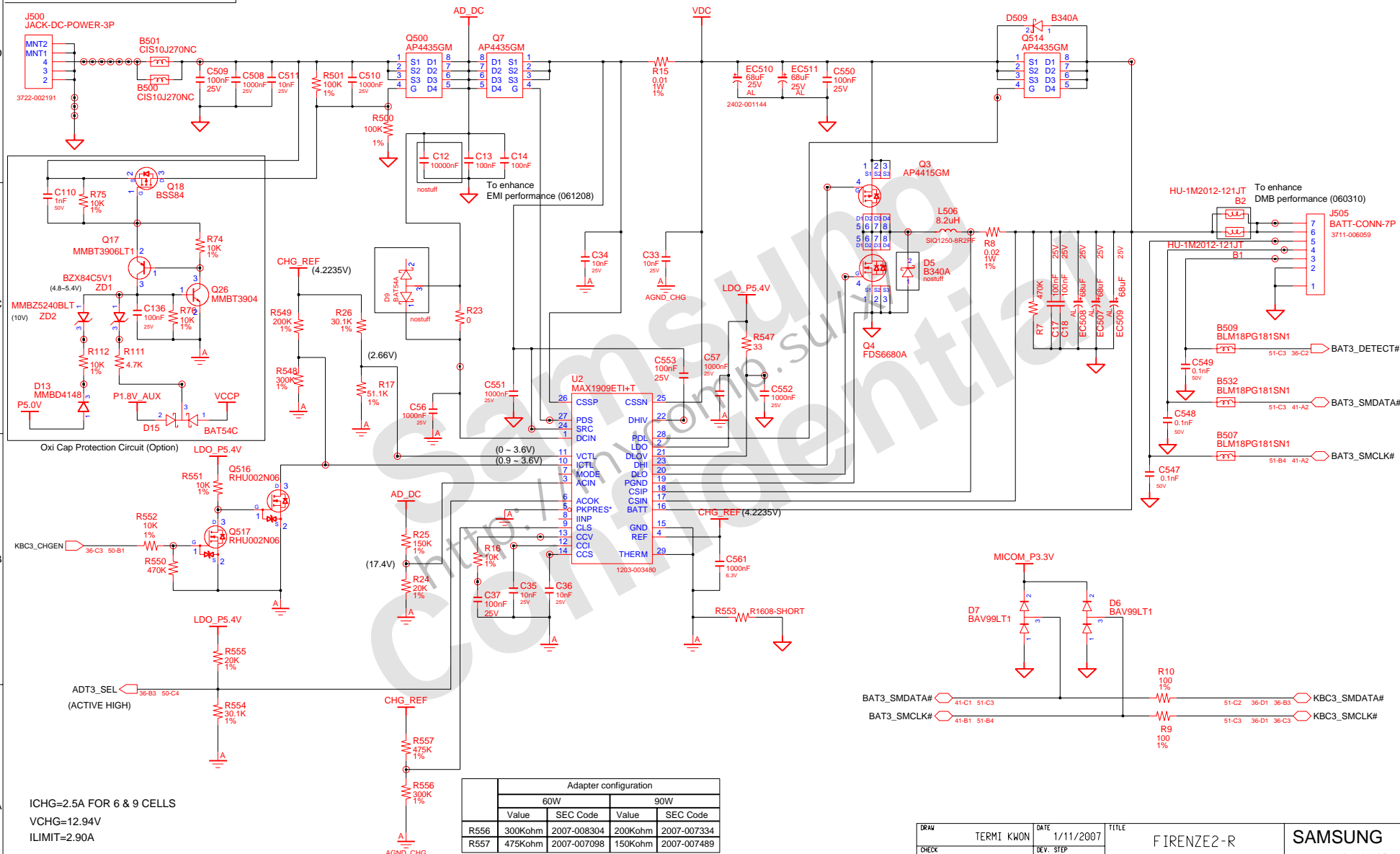
TOUCHPAD



| | | | | | | |
|-------------|------------|-----------|-----------------------------|-------|----------------------|------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R MAIN | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | | |
| APPROVAL | SJ PARK | REV | 1.0 | | B'D TO B'D CONNECTOR | PART NO. BA41-00714A |
| MODULE CODE | undefined | LAST EDIT | January 11, 2007 8:27:44 PM | | | PAGE 40 OF 52 |

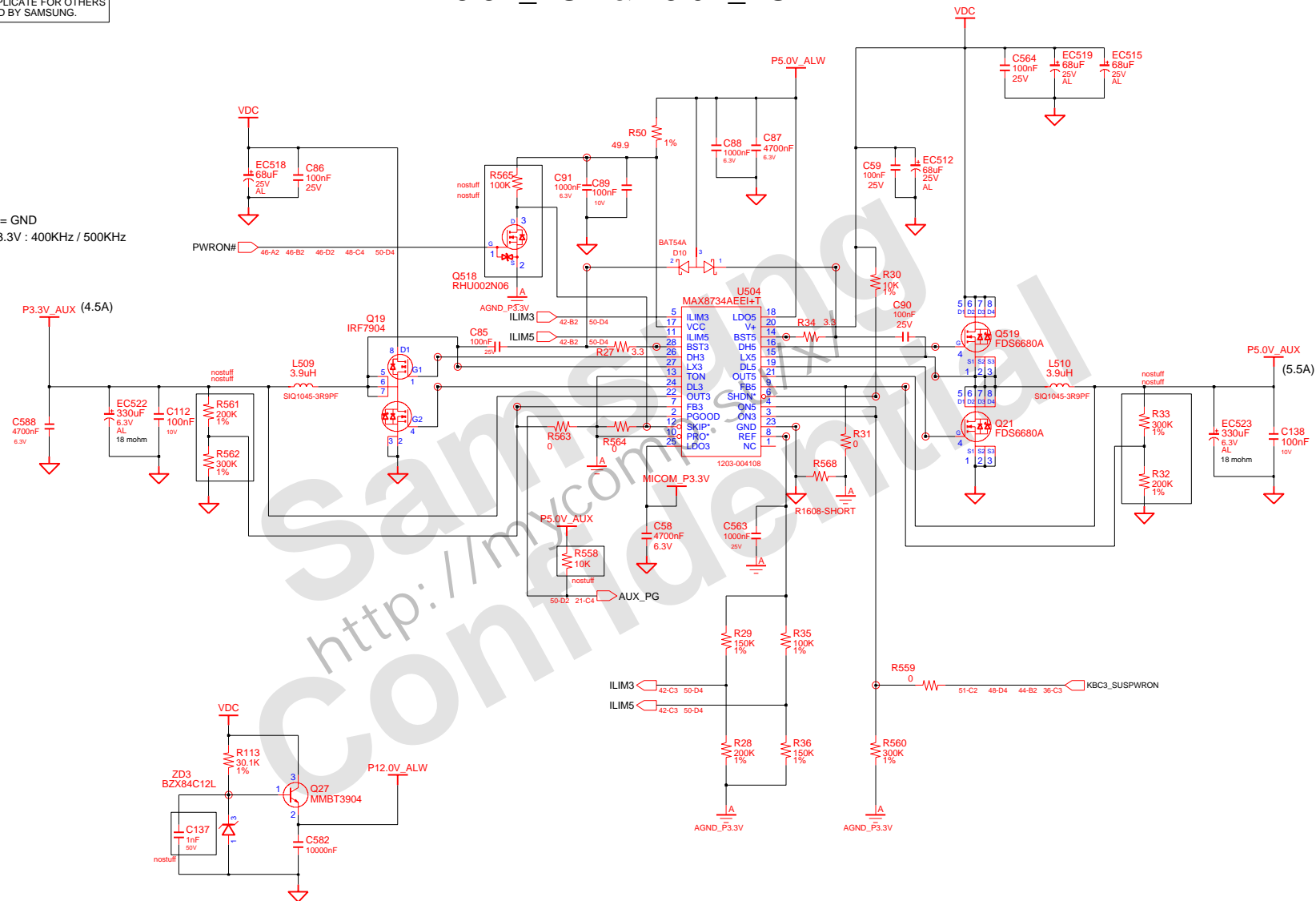
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CHARGER & POWER MANAGEMENT



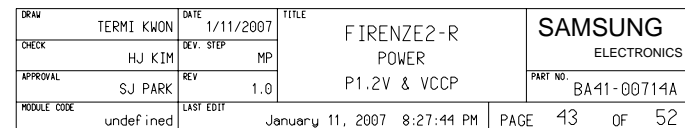
P3.3V_AUX & P5.0V_AUX

V_{ton} = GND
5V / 3.3V : 400KHz / 500KHz



| | | | | | | |
|-------------|------------|-----------|-----------------------------|-------|---------------------|------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R POWER | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | | |
| APPROVAL | SJ PARK | REV | 1.0 | | | |
| MODULE CODE | undefined | LAST EDIT | January 11, 2007 8:27:44 PM | | | |
| | | | | PAGE | 42 | OF 52 |

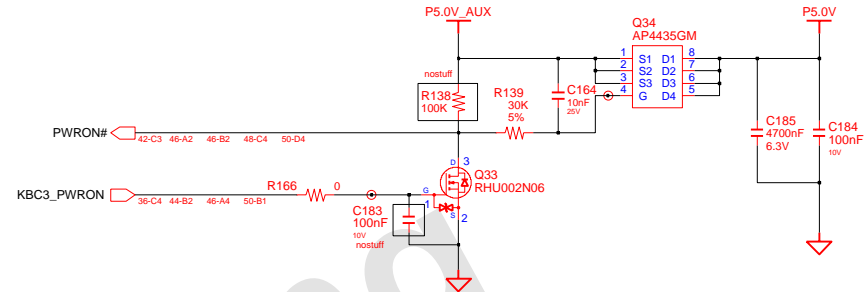
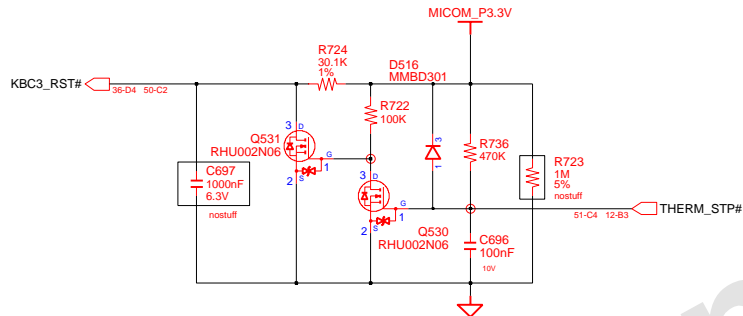
P1.2V(VCC_NB) & VCCP (1.05V)



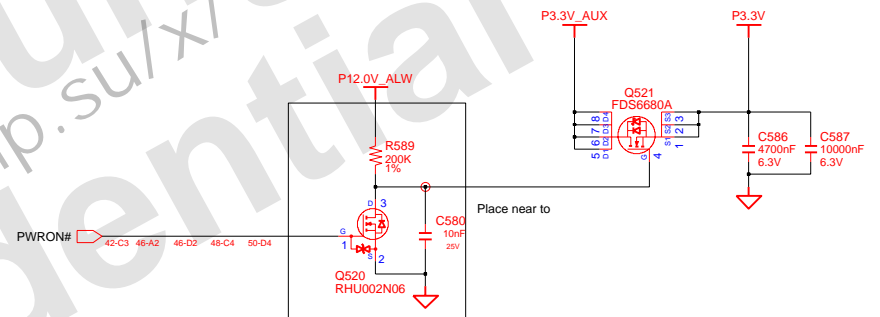


Switched Power On (P5V)

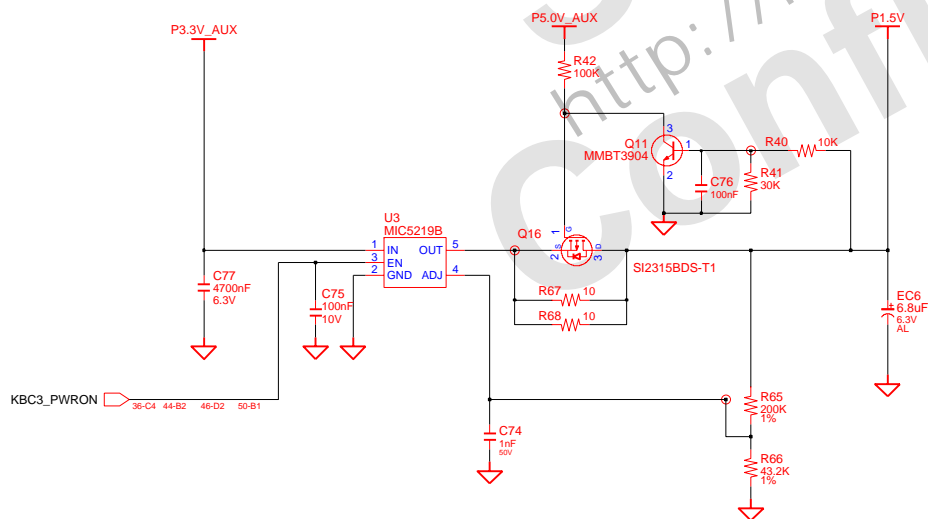
MICOM RESET



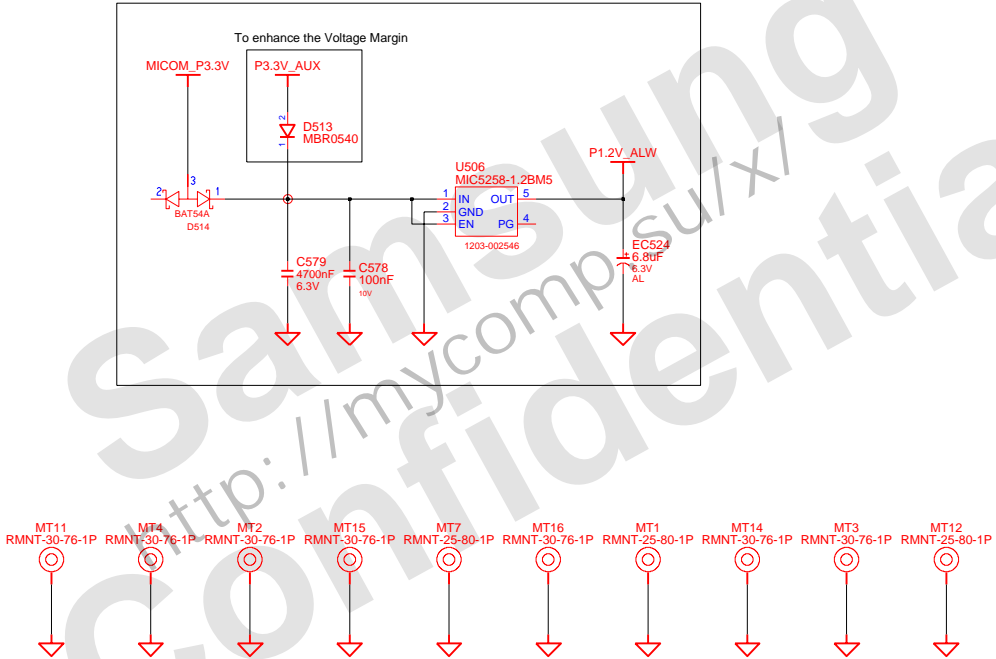
Switched Power On (P3.3V & 1.8V)



P1.5V POWER



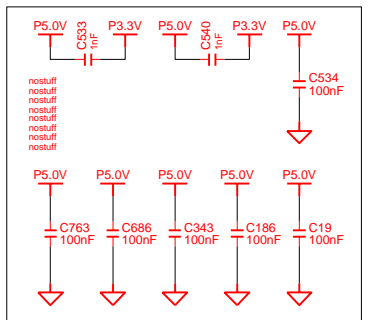
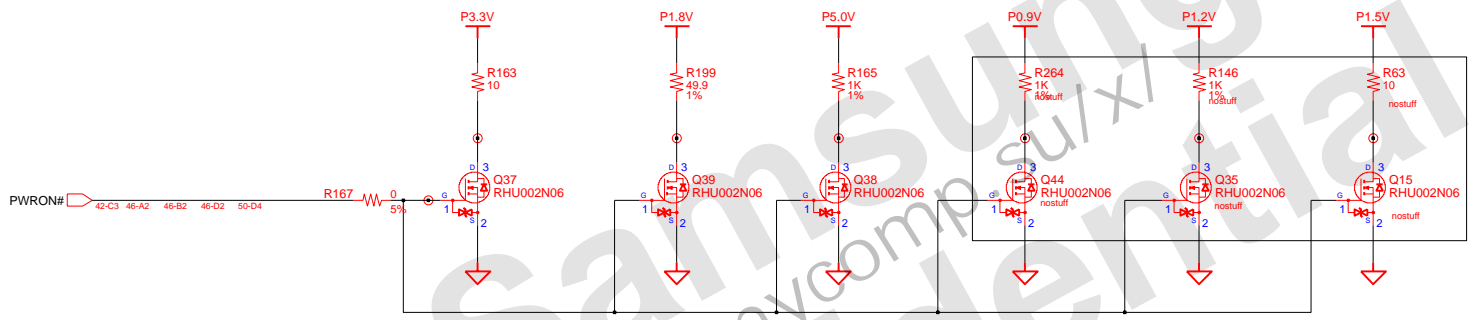
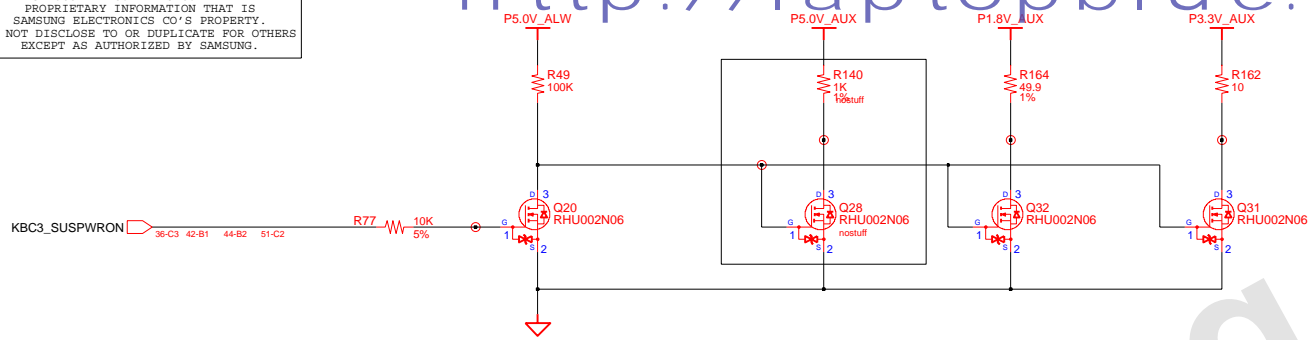
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| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | MAIN | | |
| APPROVAL | SJ PARK | REV | 1.0 | MICOM & SWITCHED POWER | PART NO. | BA41-00714A |
| MODULE CODE | undefined | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 46 | OF 52 |



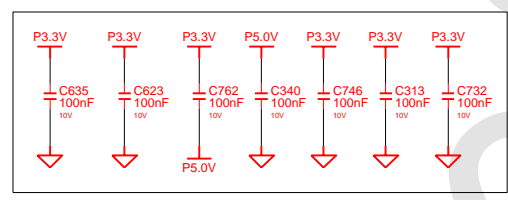
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| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG |
| CHECK | HJ KIM | DEV. STEP | MP | | | ELECTRONICS |
| APPROVAL | SJ PARK | REV | 1.0 | P1.2V & P2.5V AUX POWER | PART NO. | BA41-00714A |
| MODULE CODE | undefined | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 47 | OF 52 |

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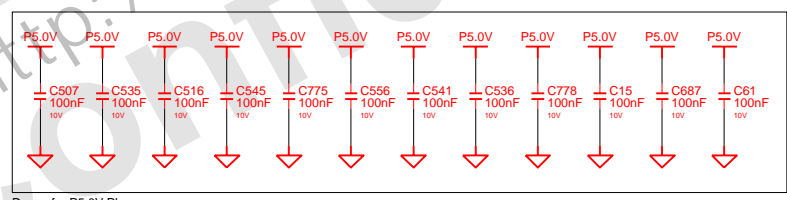
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To enhance DMB performance(060206)

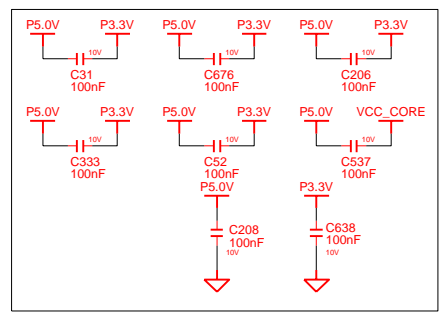


STICHING CAP

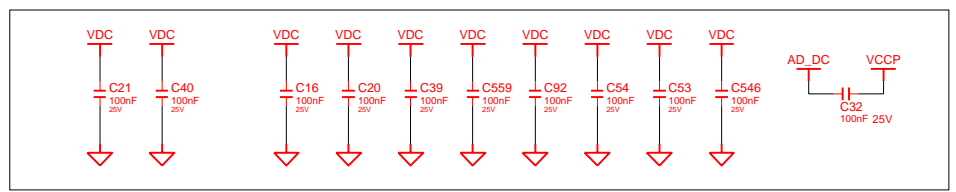


Decap for P5.0V Plane

To reduce BB noise(120 ~ 230MHz) from Power Line (2006/01/24 relate on EMI)



Stiching Cap for Power partition
To reduce BB noise(120 ~ 230MHz) from Power Partition points (2006/01/24 relate on EMI)



Decap for VDC

To reduce BB noise(120 ~ 230MHz) from Power Line (2006/01/24 relate on EMI)

| | | | | | | |
|-------------|------------|-----------|-----------------------------|-------|-------------------------------------|-------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R MAINBD POWER ADAPT | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | | PART NO. BA41-00714A |
| APPROVAL | SJ PARK | REV | 1.0 | | | |
| MODULE CODE | undefi ned | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 48 | OF 52 |

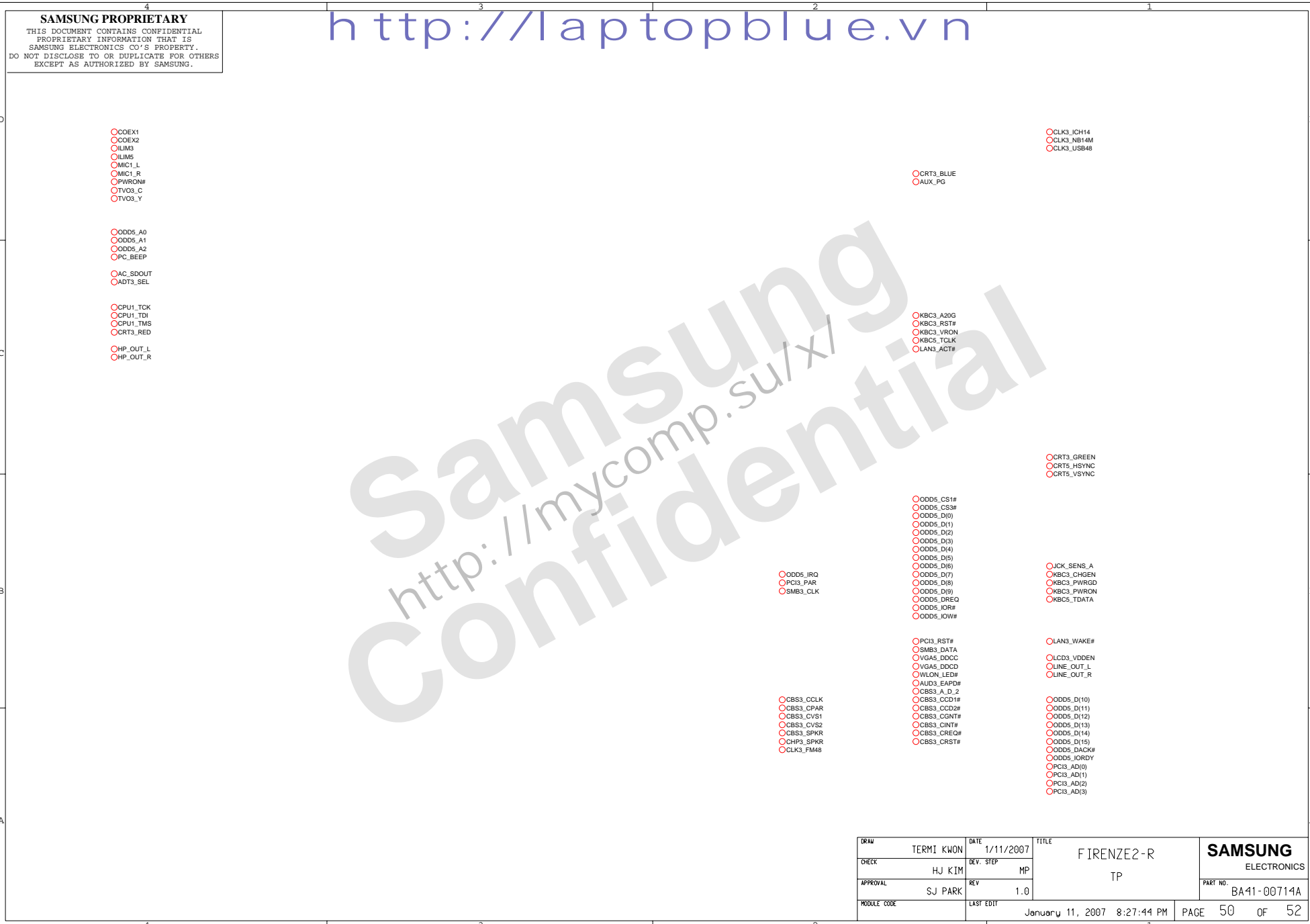
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REV1
1 O
2 O O3

| PCB REVISION CONTROL (ICT) | | | | |
|------------------------------|------------|--------------|----------|------|
| NO | CONNECTION | DATE(Y/M/DD) | REVISION | STEP |
| 1 | N.C. | | | |
| 2 | 1-2 | | | |
| 3 | 2-3 | | | |
| 4 | 3-1 | | | |
| 5 | 1-2-3 | | | |
| 6 | N.C. | | | |
| 7 | 1-2 | | | |
| 8 | 2-3 | | | |
| 9 | 3-1 | | | |
| 10 | 1-2-3 | | | |

| | | | | | | |
|-------------|------------|-----------|-----------|-------|-----------------------------|------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | | |
| APPROVAL | SJ PARK | REV | 1.0 | TP | | PART NO. BA41-00714A |
| MODULE CODE | LAST EDIT | | | | January 11, 2007 8:27:44 PM | PAGE 49 OF 52 |



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|-------------|------------|-----------|-----------------------------|-------|------------|------------------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | TP | |
| APPROVAL | SJ PARK | REV | 1.0 | | | PART NO. BA41-00714A |
| MODULE CODE | | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 50 OF 52 | |

| | | | | | | | | |
|-------------|------------|-----------|-----------------------------|-------|------------|-------------|----------|-------------|
| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | | SAMSUNG | |
| CHECK | HJ KIM | DEV. STEP | MP | TP | | ELECTRONICS | | |
| APPROVAL | SJ PARK | REV | 1.0 | | | | PART NO. | BA41-00711A |
| MODULE CODE | LAST EDIT | | January 11, 2007 8:27:44 PM | | | PAGE | 51 | OF 52 |

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- P3.3V
- P3.3V
- P3.3V
- P3.3V
- P5.0V
- P5.0V
- P5.0V
- P5.0V
- P5.0V
- PLLVD018

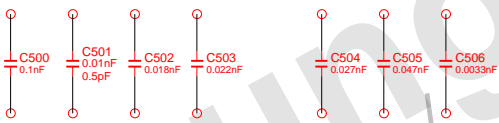
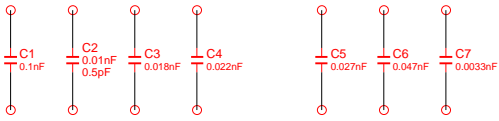
- VCC_CRT
- VCC_CORE
- VCC_CORE
- VCC_CORE
- VCC_CORE
- VCC_CORE

- PRTC_BAT
- P1.2V_ALW

- P1.8V_AUX
- P1.8V_AUX
- P1.8V_AUX
- P1.8V_AUX
- P1.8V_AUX
- P2.5V_LAN
- P2.5V_LAN
- P2.5V_LAN
- P2.5V_LAN
- P2.5V_LAN
- P3.3V_AUX
- P3.3V_AUX
- P3.3V_AUX
- P3.3V_AUX
- P3.3V_AUX
- P5.0V_ALW
- P5.0V_ALW
- P5.0V_ALW
- P5.0V_ALW
- P5.0V_ALW
- P5.0V_AUX
- P5.0V_AUX
- P5.0V_AUX
- P5.0V_AUX
- P5.0V_AUX

- PCIE_VDDR

- P12.0V_ALW
- P12.0V_ALW
- P12.0V_ALW
- P12.0V_ALW
- P12.0V_ALW
- VDC
- VDC
- VDC
- VDC
- VDC
- VDC
- VCCP
- VCCP
- VCCP
- VCCP
- VCCP



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| DRAW | TERMI KWON | DATE | 1/11/2007 | TITLE | FIRENZE2-R | SAMSUNG ELECTRONICS |
| CHECK | HJ KIM | DEV. STEP | MP | | | |
| APPROVAL | SJ PARK | REV | 1.0 | | | PART NO. BA41-00714A |
| MODULE CODE | | LAST EDIT | January 11, 2007 8:27:44 PM | PAGE | 52 OF 52 | |