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SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

PCI Devices

| Devices | IDSEL# | REQ/GNT# | Interrupts |
|---------------------------|----------------|----------|---|
| Cardbus | AD25 | 0 | E,F,G |
| LAN | AD21 | 1 | G |
| USB | AD29(internal) | - | USB2.0 #0 : A USB2.0 #1 : D USB2.0 #2 : C |
| Hub to PCI | AD30(internal) | - | |
| LPC bridge/IDE/AC97/SMBUS | AD31(internal) | - | B |
| Internal MAC | AD24(internal) | - | E |
| AC Link | - | - | B |

Voltage Rails

| | |
|------------|---|
| VDC | Primary DC system power supply (7 to 21V) |
| VCC_CORE | Core voltage for DOTHAN (1.308-1.068V) |
| VTT | DOTHAN/ALVISO Processor System Bus(PSB) Termination (1.05V) MCH-M Core Voltage |
| P0.9V | 0.9V switched power rail (off in S3-S5) |
| P1.2V | 1.2V switched power rail (off in S3-S5) |
| P1.5V | 1.5V switched power rail (off in S3-S5) |
| P1.5V_AUX | 1.5V power rail (off in S4-S5) |
| P1.8V | 1.8V switched power rail (off in S3-S5) |
| P1.8V_AUX | 1.8V power rail(off in S4-S5) |
| P2.5V | 2.5V switched power rail (off in S3-S5) |
| MICOM_P3V | 3.3V always on power rail for MICOM |
| P3.3V | 3.3V switched power rail (off in S3-S5) |
| P3.3V_AUX | 3.3V power rail (off in S4-S5) |
| P3.3V_DTV | 3.3V power rail (off in S4-S5) |
| P5V | 5.0V switched power rail (off in S3-S5) |
| P5V_AUX | 5.0V power rail (off in S4-S5) |
| P3.3V_ALWS | 3.3V power rail (Always On) |
| P2.5V_ALWS | 2.5V power rail (Always On) |
| P1.2V_ALWS | 1.2V power rail (Always On) |

I C / SMB Address

| Devices | Address | Hex | Bus |
|------------------------------|-----------|-----|------------------------------------|
| ICH7 | Master | - | SMBUS Master |
| EMC6N300(CPU Thermal Sensor) | 1001 110X | 9Ch | Thermal Sensor |
| SODIMM0 | 1010 0000 | A0h | - |
| SODIMM1 | 1010 001X | A4h | - |
| CK-408 (Clock Generator) | 1101 001x | D2h | Clock, Unused Clock Output Disable |

USB PORT Assign

| PORT NUMBER | ASSIGNED TO |
|-------------|------------------------|
| 0,1 | SYSTEM PORT A, B |
| 2 | SYSTEM PORT C |
| 3 | DMB |
| 4 | BLUETOOTH |
| 5 | DOCKING STATION |
| 6 | MINI PCIE EXPRESS CARD |
| 7 | EXPRESS CARD |

System Power States

- CHP3_SLPS1* S1, Powered-On-Suspend(POS) : In this state, all clocks(except the 32.768KHz clock) are stopped. The system context is maintained in system DRAM. Power is maintained to PCI, the CPU, memory controller, memory, and all other critical subsystems. Note that this state does not preclude power being removed from non-essential devices, such as disk drives. During this state, CPU can be selected for either Deep Sleep or Deeper Sleep.
- CHP3_SLPS3* S3, Suspend-To-RAM(STR) : The system context is maintained in system DRAM, but power is shut off to non-critical circuits. Memory is retained, and refreshes continue. All clocks stop except RTC clock.
- CHP3_SLPS4* S4, Suspend-To-Disk(STD) : The Context of the system is maintained on the disk. All power is then shut off to the system except for the logic required to resume. Externally appears same as S5, but may have different wake events.
- CHP3_SLPS5* S5, Soft Off(SOFF) : System context is not maintained. All power is shut off except for the logic required to restart. A full boot is required when waking.

Crystal / Oscillator

| TYPE | FREQUENCY | DEVICE | USAGE |
|---------|-----------|--------------------|-----------------|
| Crystal | 32.768KHz | ICH7-M | Real Time Clock |
| Crystal | 10MHz | MICOM | HD64F2169/2160 |
| Crystal | 14.318MHz | CLOCK-Generator | CK-410M |
| Crystal | 24.576MHz | Cardbus Controller | 1394 |
| Crystal | 25MHz | LAN | Intel LAN |

CPU Core Voltage Table IMVP-6

| Active Mode | | Active/Deeper Sleep | | Deeper Sleep/Extended Deeper Sleep | |
|---------------|----------|---------------------|----------|------------------------------------|----------|
| 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 0 1 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 0 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 0 0 | 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 0 1 | 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 0 1 1 1 | 0.8125 V | 1 1 0 0 0 0 0 | 0.3000 V |
| 0 0 0 1 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 1 0 | 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 1 | 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 0 1 1 1 | 1.2125 V | 0 1 1 1 1 1 1 | 0.7125 V | 1 1 0 1 0 0 0 | 0.2000 V |
| 0 0 1 1 0 0 0 | 1.2000 V | 1 0 0 0 0 0 0 | 0.7000 V | 1 1 0 1 0 0 1 | 0.1875 V |
| 0 0 1 1 0 0 1 | 1.1875 V | 1 0 0 0 0 0 1 | 0.6875 V | 1 1 0 1 0 1 0 | 0.1750 V |
| 0 0 1 1 0 1 0 | 1.1750 V | 1 0 0 0 0 1 0 | 0.6750 V | 1 1 0 1 0 1 1 | 0.1625 V |
| 0 0 1 1 0 1 1 | 1.1625 V | 1 0 0 0 0 1 1 | 0.6625 V | 1 1 0 1 1 0 0 | 0.1500 V |
| 0 0 1 1 1 0 0 | 1.1500 V | 1 0 0 0 1 0 0 | 0.6500 V | 1 1 0 1 1 0 1 | 0.1375 V |
| 0 0 1 1 1 0 1 | 1.1375 V | 1 0 0 0 1 0 1 | 0.6375 V | 1 1 0 1 1 1 0 | 0.1250 V |
| 0 0 1 1 1 1 0 | 1.1250 V | 1 0 0 0 1 1 0 | 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 1 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 1 0 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 1 0 0 1 | 0.5875 V | 1 1 1 0 0 1 0 | 0.0750 V |
| 0 1 0 0 0 1 0 | 1.0750 V | 1 0 0 1 0 1 0 | 0.5750 V | 1 1 1 0 0 1 1 | 0.0625 V |
| 0 1 0 0 0 1 1 | 1.0625 V | 1 0 0 1 0 1 1 | 0.5625 V | 1 1 1 0 1 0 0 | 0.0500 V |
| 0 1 0 0 1 0 0 | 1.0500 V | 1 0 0 1 1 0 0 | 0.5500 V | 1 1 1 0 1 0 1 | 0.0375 V |
| 0 1 0 0 1 0 1 | 1.0375 V | 1 0 0 1 1 0 1 | 0.5375 V | 1 1 1 0 1 1 0 | 0.0250 V |
| 0 1 0 0 1 1 0 | 1.0250 V | 1 0 0 1 1 1 0 | 0.5250 V | 1 1 1 0 1 1 1 | 0.0125 V |
| 0 1 0 0 1 1 1 | 1.0125 V | 1 0 0 1 1 1 1 | 0.5125 V | 1 1 1 1 0 0 0 | 0.0000 V |
| 1 0 1 0 0 0 0 | 1.0000 V | 1 0 1 0 0 0 0 | 0.5000 V | 1 1 1 1 0 0 1 | 0.0000 V |
| | | | | 1 1 1 1 0 1 0 | 0.0000 V |
| | | | | 1 1 1 1 0 1 1 | 0.0000 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 1 0 | 0.0000 V |
| | | | | 1 1 1 1 1 1 1 | 0.0000 V |
| | | | | 1 1 1 1 1 1 1 | 0.0000 V |

Active: DPRSLPVR 0, DPRSTP* 1, PSI2* 0 or 1
 Deeper Slip: DPRSLPVR 1, DPRSTP* 0, PSI2* 0 or 1

11111111 : 0V power good asserted.

*Yonah Processor (2.33 GHz / 800 MHz : TBD)

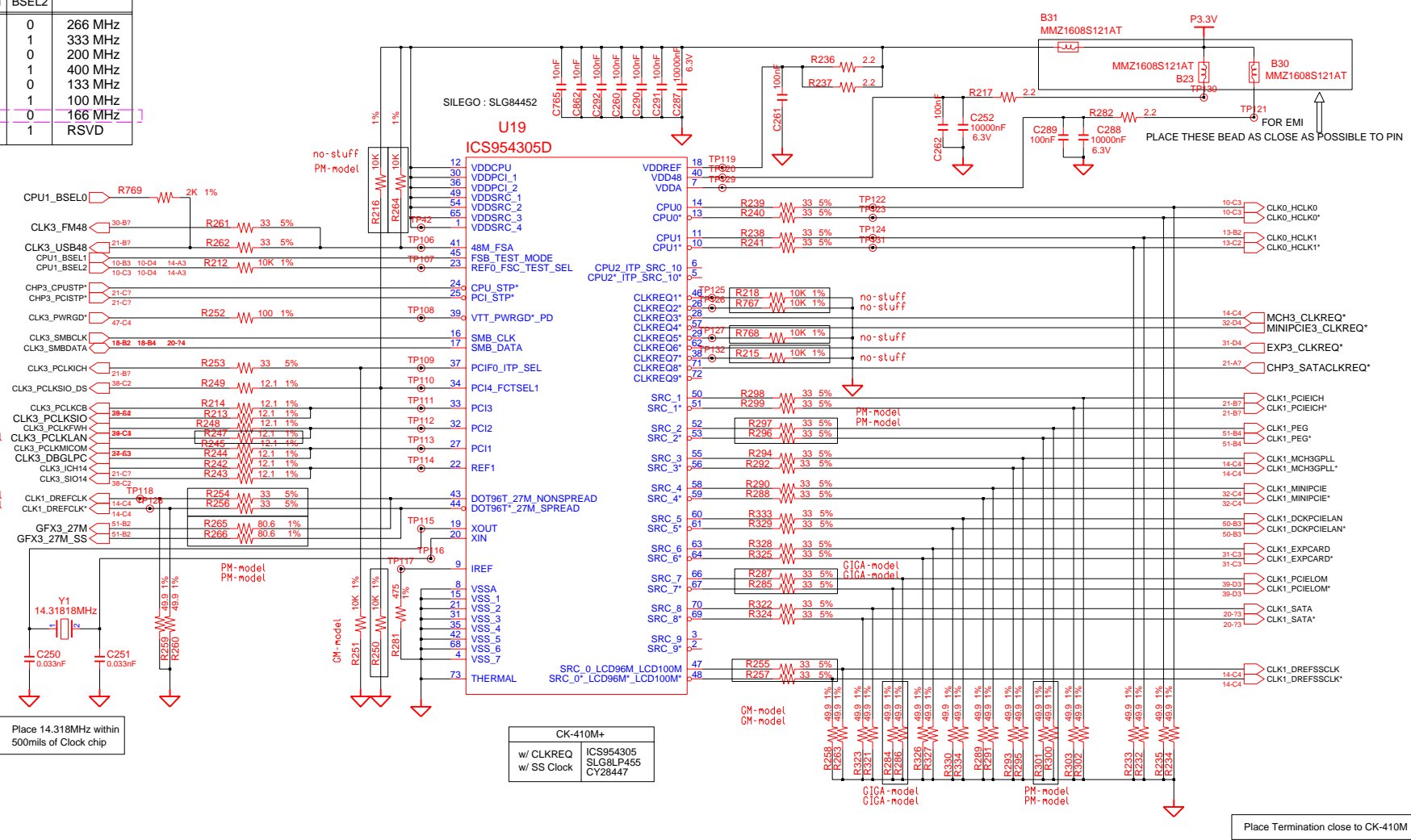
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|-------------|---------|-----------|--------------------------|-------|-------------------|------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | | MAIN | |
| APPROVAL | KK BIN | REV | 1.0 | | BOARD INFORMATION | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 7 | OF 55 |

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| PCI4_FCTSEL1(PIN34) | PIN 43, 44 | PIN 47, 48 |
|---------------------|------------|------------|
| 0 | DOT96 | LCD96/100 |
| 1 | 27MHZ | SRC0 |

| 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 |



Place 14.318MHz within 500mils of Clock chip

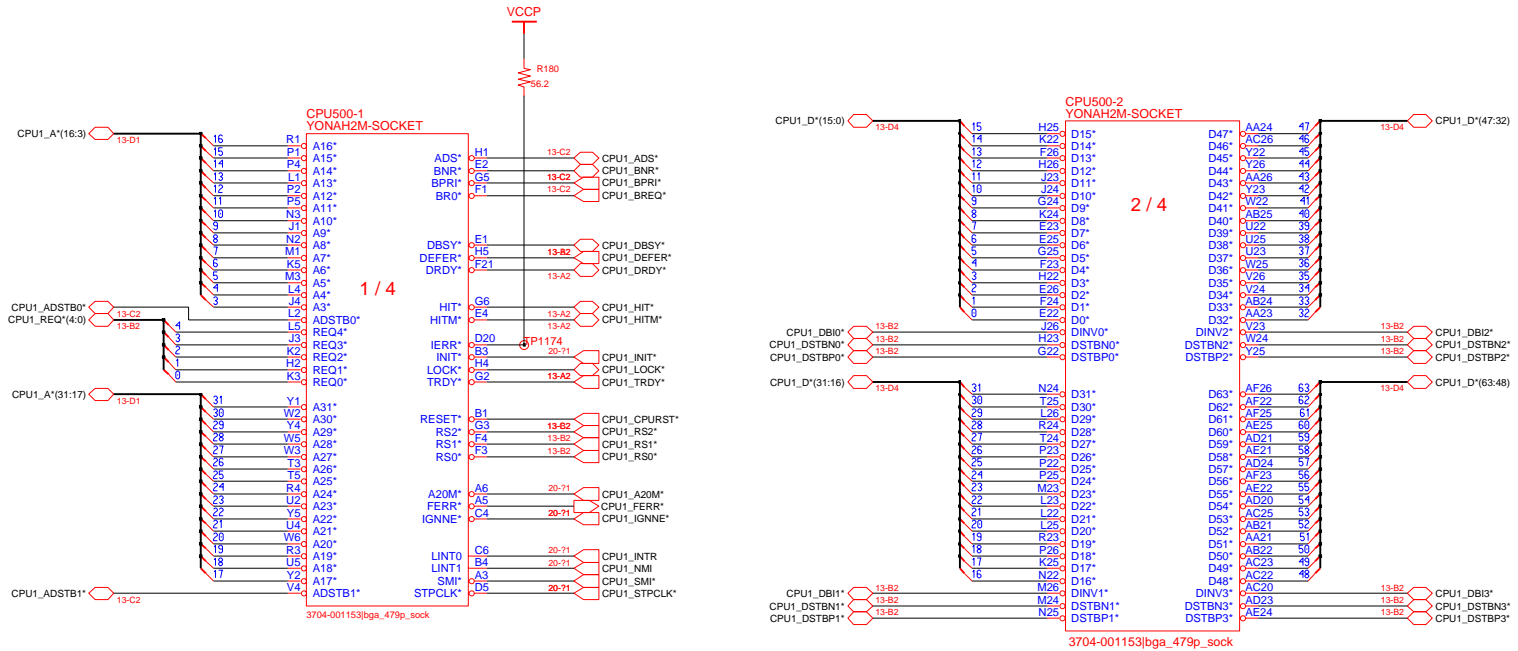
CK-410M+
w/ CLKREQ ICS954305
w/ SS Clock SLG84452
CY28447

Place Termination close to CK-410M

| | | | | | | |
|----------|---------|-----------|--------------------------|-------|-----------------------------------|---|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN MAIN CLOCK GENERATOR | SAMSUNG ELECTRONICS PART NO. BA41-*****A |
| CHECK | SS BAIK | DEV. STEP | DV | REV | 1.0 | |
| APPROVAL | KK BIN | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 8 | OF 55 |

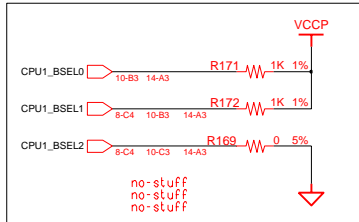
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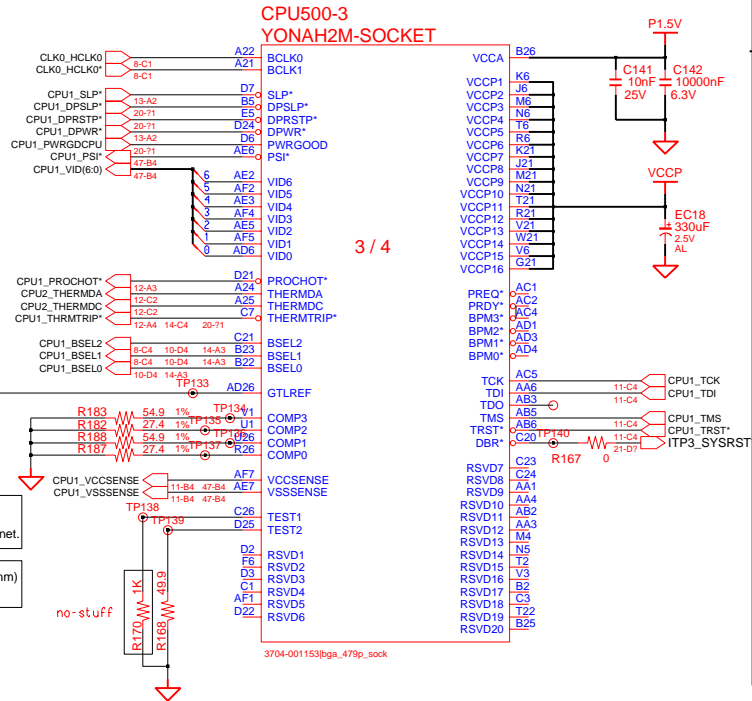


| | | | | | | |
|-------------|---------|-----------|--------------------------|-----------------|----------|------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | MAIN | | |
| APPROVAL | KK BIN | REV | 1.0 | YONAH CPU (1/3) | PART NO. | BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 9 | OF 55 |

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| | | |
|-------------|--------------|-----------------------|
| FSB 533 MHz | Pull-up | Pull-down |
| FSB 667 MHz | BSEL0, BSEL1 | BSEL1, BSEL2 BSEL2 |



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 | 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 0 1 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 0 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 0 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 0 1 | 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 1 0 | 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 1 0 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 0 1 1 1 | 1.2125 V | 0 1 1 1 1 1 1 | 0.7125 V | 1 1 0 1 0 0 0 | 0.2000 V |
| 0 0 1 1 0 0 0 | 1.2000 V | 1 0 0 0 0 0 0 | 0.7000 V | 1 1 0 1 0 0 1 | 0.1875 V |
| 0 0 1 1 0 0 1 | 1.1875 V | 1 0 0 0 0 0 1 | 0.6875 V | 1 1 0 1 0 1 0 | 0.1750 V |
| 0 0 1 1 0 1 0 | 1.1750 V | 1 0 0 0 0 1 0 | 0.6750 V | 1 1 0 1 0 1 1 | 0.1625 V |
| 0 0 1 1 0 1 1 | 1.1625 V | 1 0 0 0 0 1 1 | 0.6625 V | 1 1 0 1 1 0 0 | 0.1500 V |
| 0 0 1 1 1 0 0 | 1.1500 V | 1 0 0 0 1 0 0 | 0.6500 V | 1 1 0 1 1 0 1 | 0.1375 V |
| 0 0 1 1 1 0 1 | 1.1375 V | 1 0 0 0 1 0 1 | 0.6375 V | 1 1 0 1 1 1 0 | 0.1250 V |
| 0 0 1 1 1 1 0 | 1.1250 V | 1 0 0 0 1 1 0 | 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 1 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 1 0 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 1 0 0 1 | 0.5875 V | 1 1 1 0 0 1 0 | 0.0750 V |
| 0 1 0 0 0 1 0 | 1.0750 V | 1 0 0 1 0 1 0 | 0.5750 V | 1 1 1 0 0 1 1 | 0.0625 V |
| 0 1 0 0 0 1 1 | 1.0625 V | 1 0 0 1 0 1 1 | 0.5625 V | 1 1 1 0 1 0 0 | 0.0500 V |
| 0 1 0 0 1 0 0 | 1.0500 V | 1 0 0 1 1 0 0 | 0.5500 V | 1 1 1 0 1 0 1 | 0.0375 V |
| 0 1 0 0 1 0 1 | 1.0375 V | 1 0 0 1 1 0 1 | 0.5375 V | 1 1 1 0 1 0 1 | 0.0250 V |
| 0 1 0 0 1 1 0 | 1.0250 V | 1 0 0 1 1 1 0 | 0.5250 V | 1 1 1 0 1 1 0 | 0.0125 V |
| 0 1 0 0 1 1 1 | 1.0125 V | 1 0 0 1 1 1 1 | 0.5125 V | 1 1 1 1 0 0 0 | 0.0000 V |
| | | 1 0 0 1 1 1 1 | 0.5000 V | 1 1 1 1 0 0 1 | 0.0000 V |
| | | | | 1 1 1 1 0 1 0 | 0.0000 V |
| | | | | 1 1 1 1 0 1 1 | 0.0000 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 1 0 | 0.0000 V |
| | | | | 1 1 1 1 1 1 1 | 0.0000 V |
| | | | | ***1111111*** : 0V power good asserted. | |

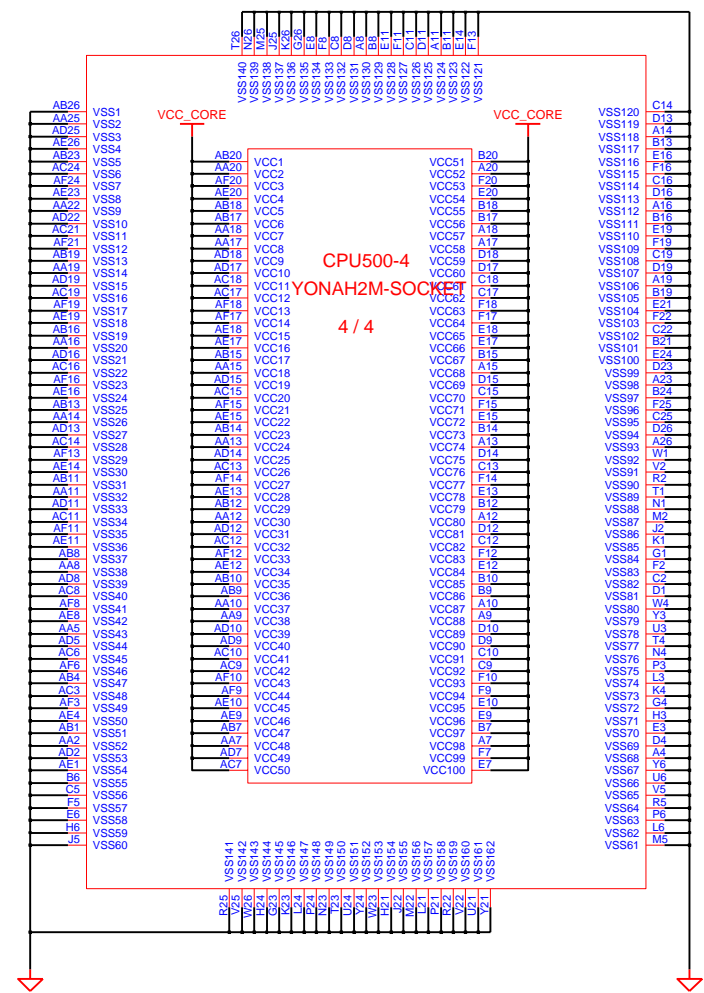
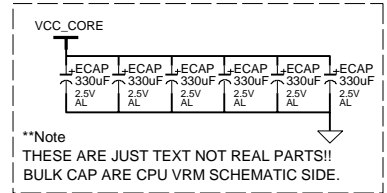
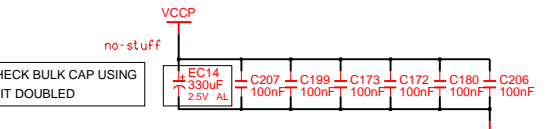
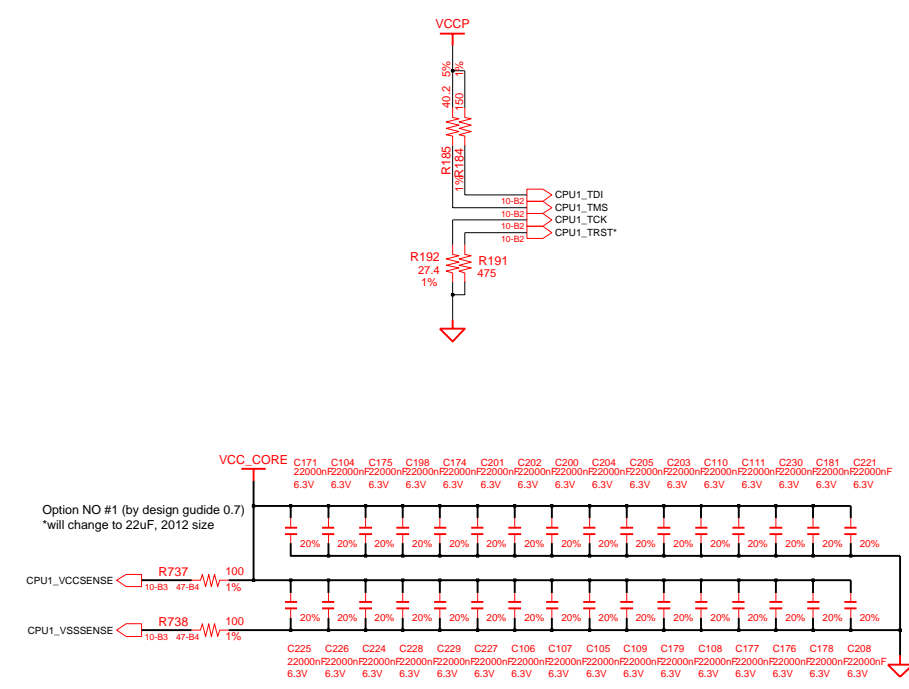
*Yonah Processor (2.33 GHz / 800 MHz : TBD)

GTLREF : Keep the Voltage divider within 0.5° of the first GTLREF0 pin with Zo=55ohm trace. Minimize coupling of any switching signals to this net.

COMP0.2(COMP1.3) should be connected with Zo=27.4ohm(55ohm) trace shorter than 1/2" to their respective Banias socket pins.

| | | | | | | |
|-------------|---------|-----------|--------------------------|-------|----------------|-------------------------|
| DRAW | K1 IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | | MAIN | |
| APPROVAL | KK BIN | REV | 1.0 | | YONAH CPU(2/3) | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 10 | OF 55 |

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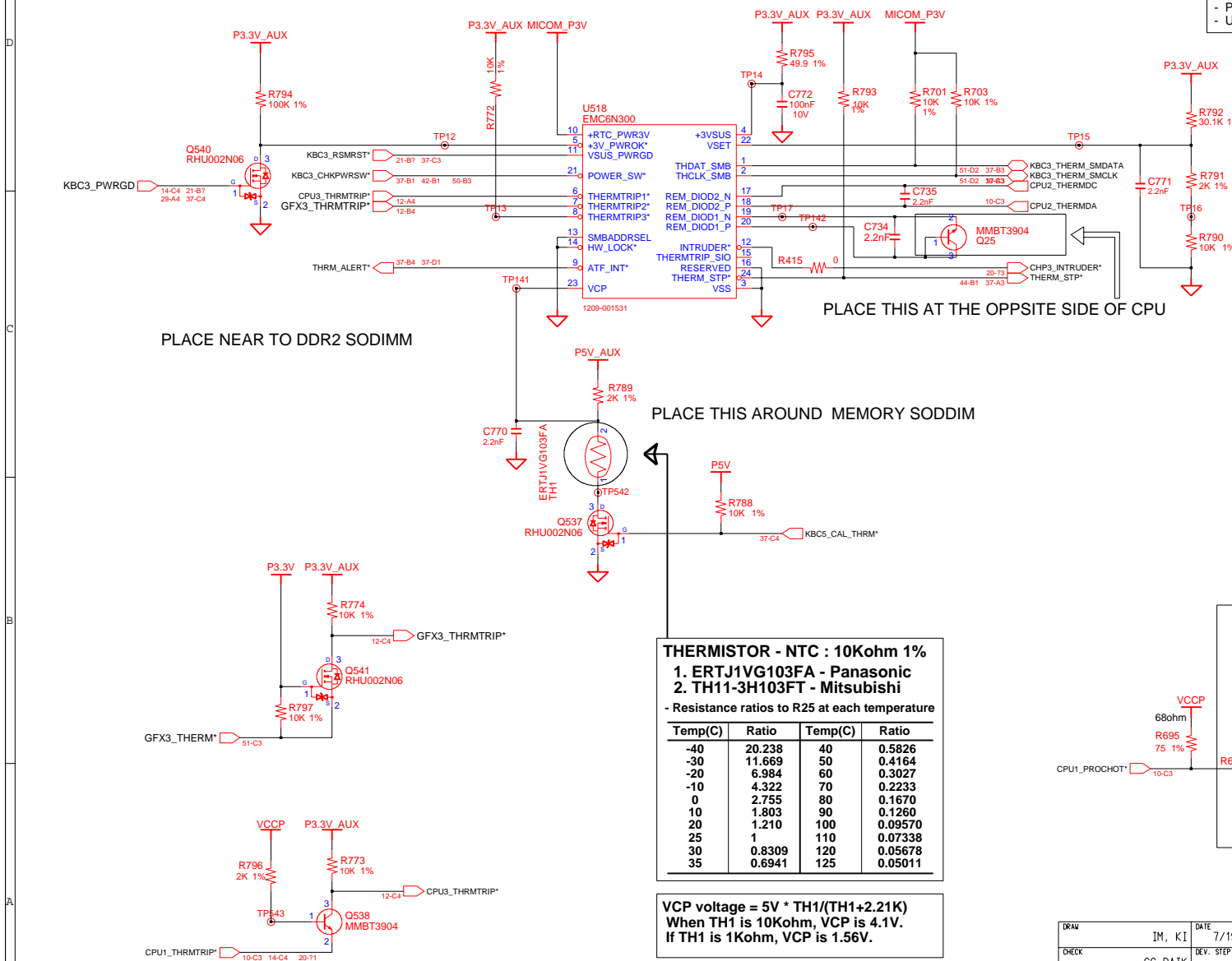


| | | | | | | |
|-------------|---------|-----------|--------------------------|----------------|--------|-------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | MAIN | | |
| APPROVAL | KK BIN | REV | 1.0 | YONAH CPU(3/3) | | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 11 | OF 55 |

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CPU / DDR2 Thermal Sensor

- 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



Place the middle of CPU & GMCH

Vset=(Tp-75) / 16
Guardian Temp-tolerance = +/- 3° C

1) Tp=88C, => Vset=0.9375

$$\frac{0.9375}{3.3} = \frac{x}{x+y} \quad x : y = 1 : 2.52$$
 when y=30Kohm, => x=11.91Kohm

2) x=12Kohm, y=30.1Kohm

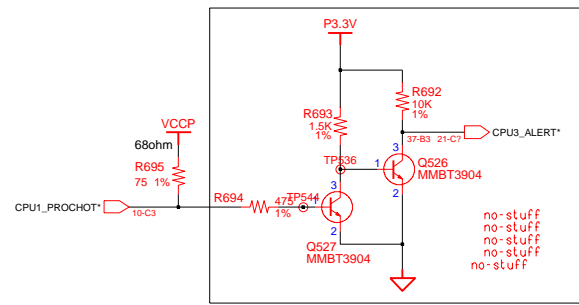
$$Vset = 3.3 \times \frac{12.0}{12.0 + 30.1}$$
 Tp = Vset X 16 + 75 = 90.0496° C +/- 3
Guardian Temp-tolerance = +/- 3° C

THERMISTOR - NTC : 10Kohm 1%
 1. ERTJ1VG103FA - Panasonic
 2. TH11-3H103FT - Mitsubishi

- Resistance ratios to R25 at each temperature

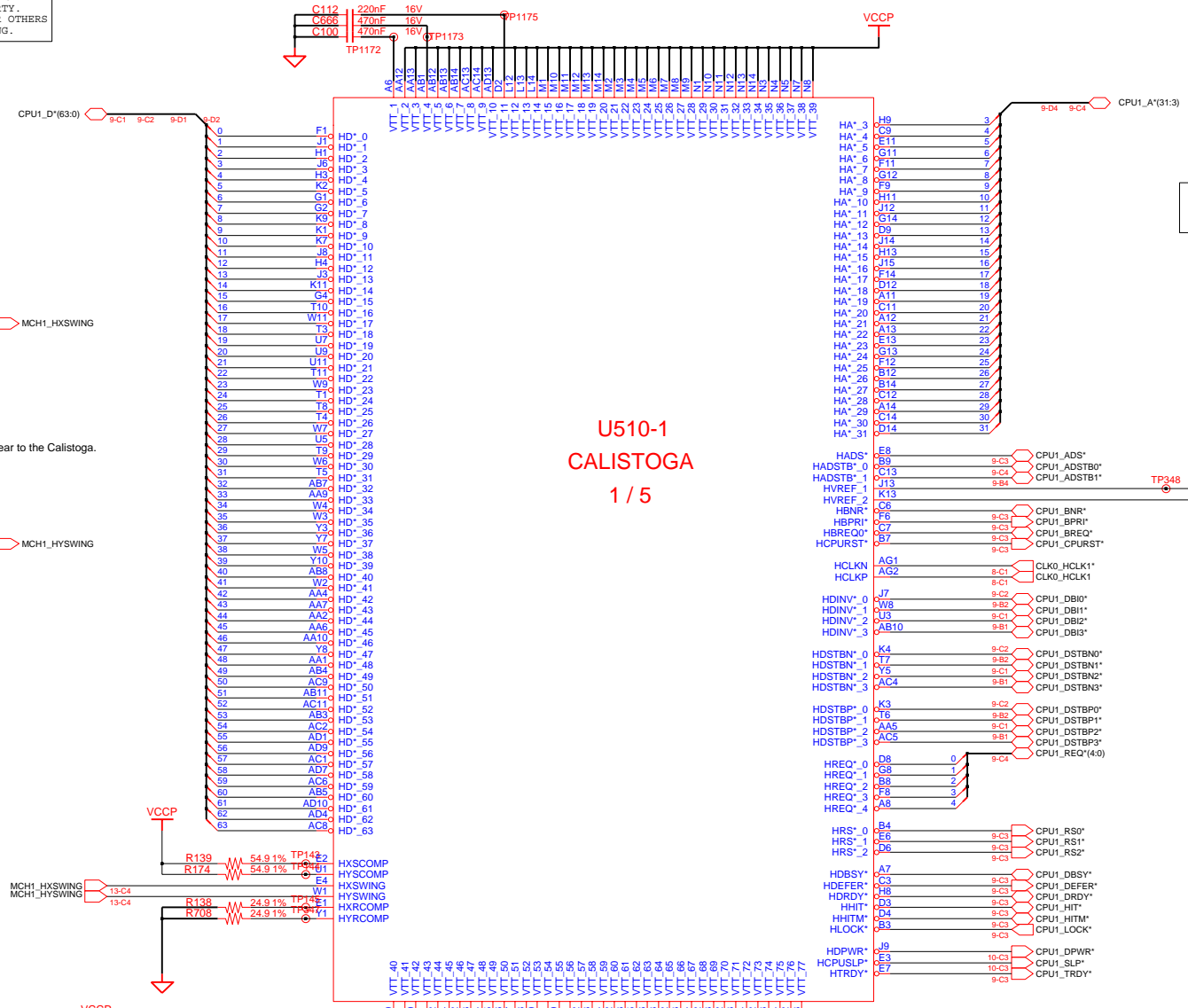
| Temp(C) | Ratio | Temp(C) | Ratio |
|---------|--------|---------|---------|
| -40 | 20.238 | 40 | 0.5826 |
| -30 | 11.669 | 50 | 0.4164 |
| -20 | 6.984 | 60 | 0.3027 |
| -10 | 4.322 | 70 | 0.2233 |
| 0 | 2.755 | 80 | 0.1670 |
| 10 | 1.803 | 90 | 0.1260 |
| 20 | 1.210 | 100 | 0.09570 |
| 25 | 1 | 110 | 0.07338 |
| 30 | 0.8309 | 120 | 0.05678 |
| 35 | 0.6941 | 125 | 0.05011 |

VCP voltage = 5V * TH1/(TH1+2.21K)
 When TH1 is 10Kohm, VCP is 4.1V.
 If TH1 is 1Kohm, VCP is 1.56V.



| | | | | | | |
|-------------|---------|-----------|--------------------------|----------------|----------|-------------------------------|
| DRAW | IM, KI | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | MAIN | | |
| APPROVAL | BIN, KK | REV | 1.0 | THERMAL SENSOR | PART NO. | BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 12 | OF 12 |

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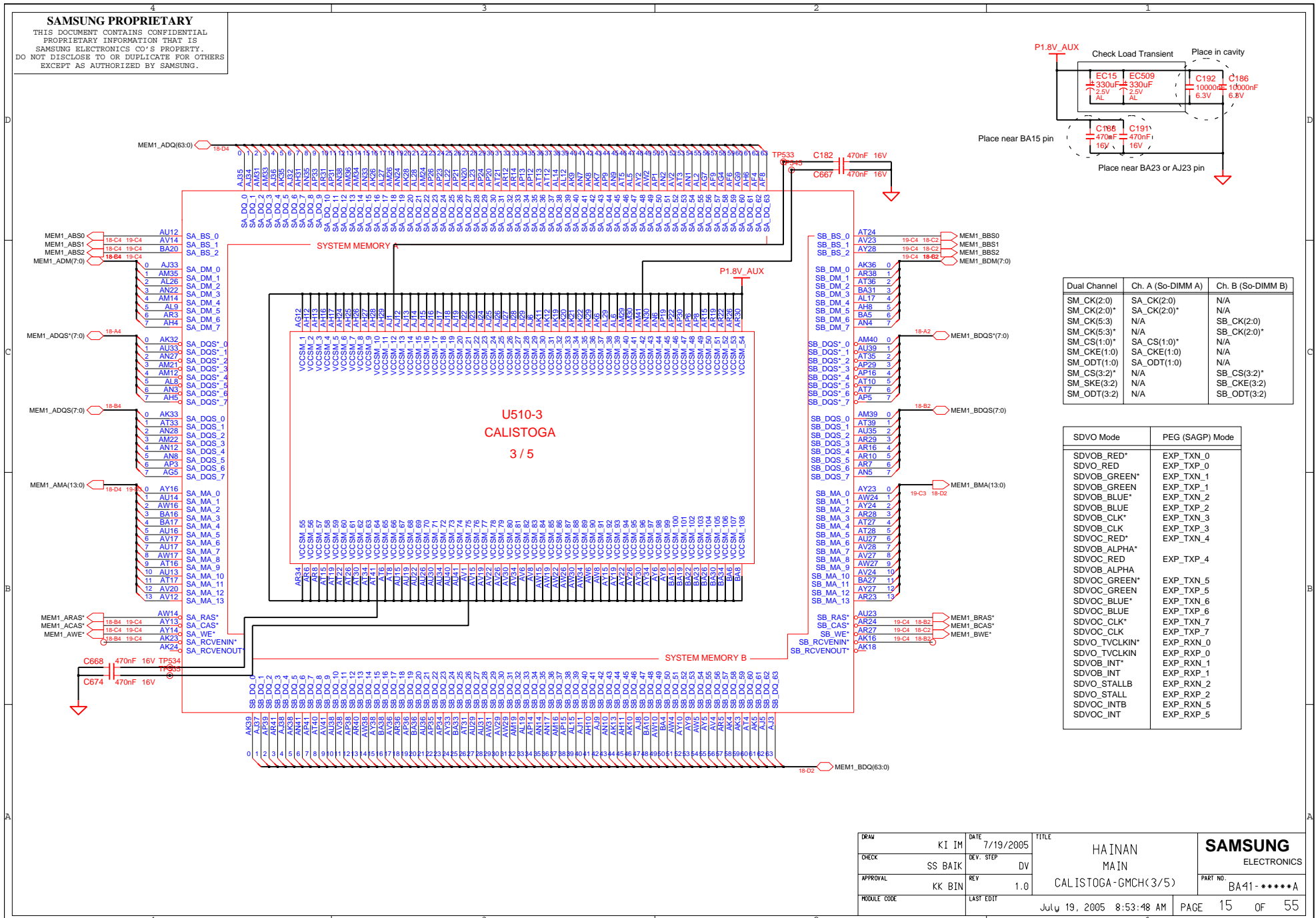


External GFx model : PM
 Internal GFx model : GM

**U510-1
 CALISTOGA
 1 / 5**

| | | | | | | |
|-------------|---------|-----------|--------------------------|-------|---------------------|-------------------------------|
| DRAW | K1 IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | | MAIN | |
| APPROVAL | KK BIN | REV | 1.0 | | CALISTOGA-GMCH(1/5) | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 13 | OF 55 |

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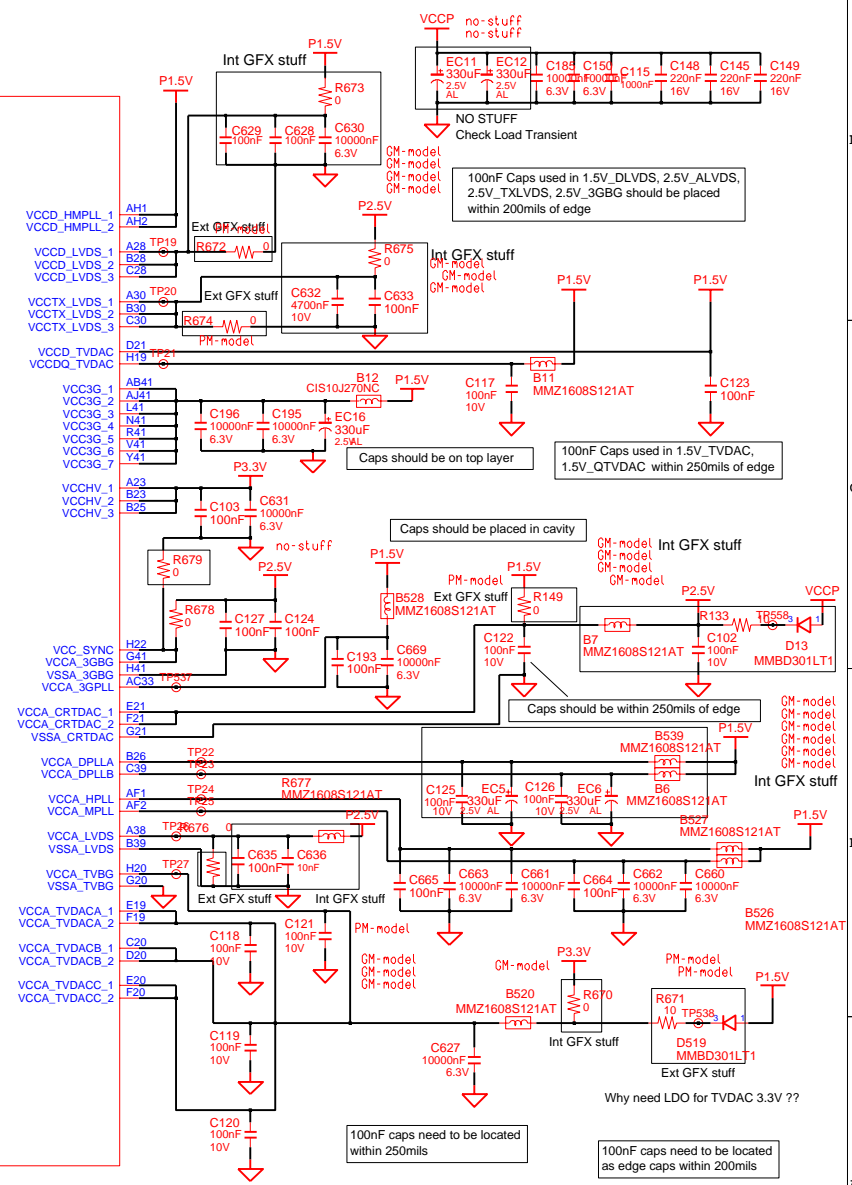
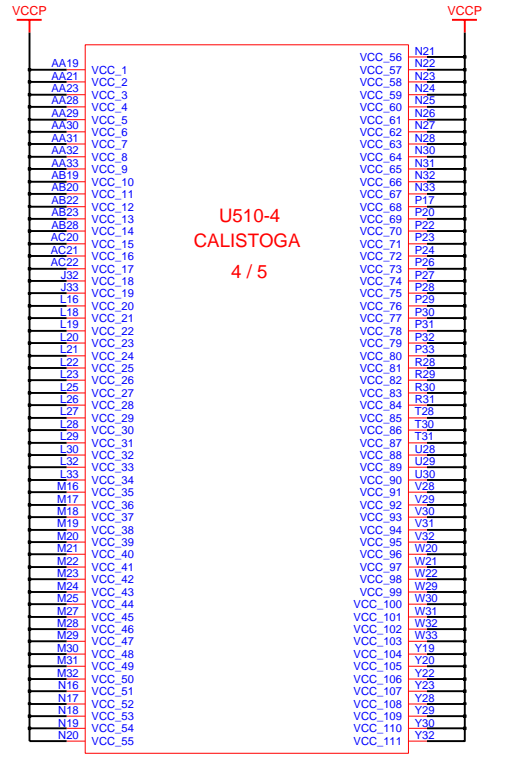
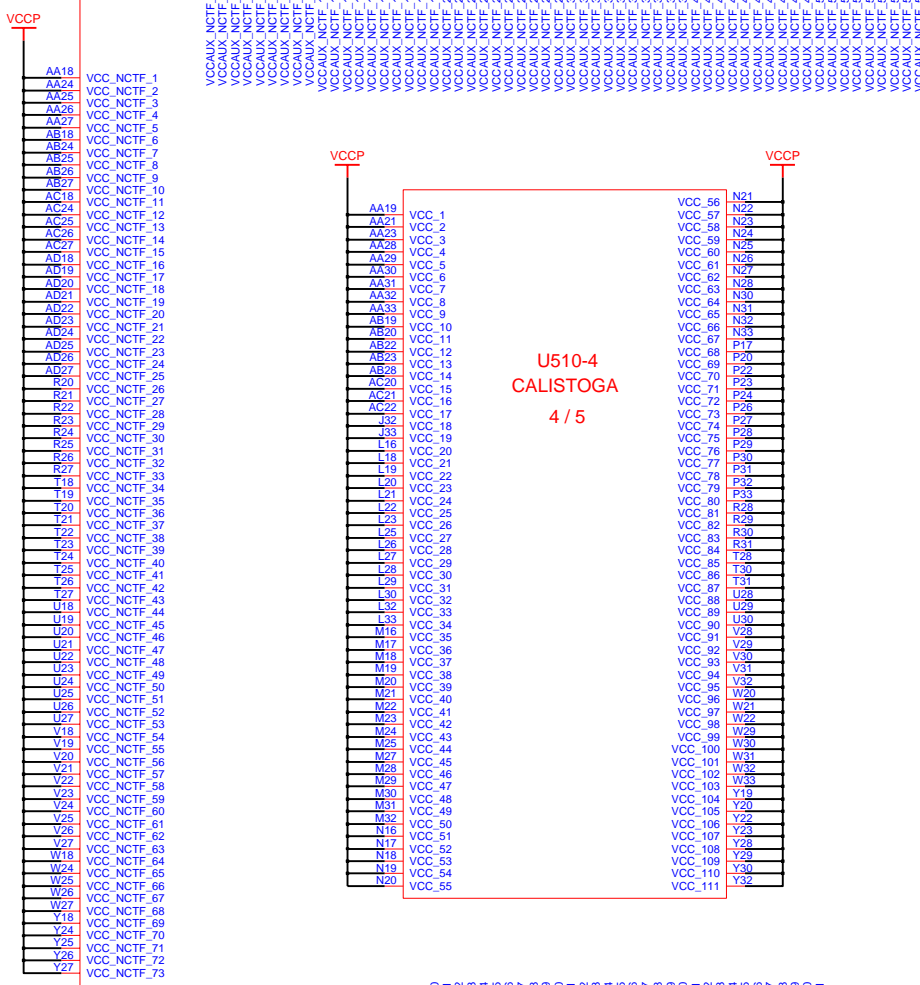


| Dual Channel | Ch. A (So-Dimm A) | Ch. B (So-Dimm B) |
|--------------|-------------------|-------------------|
| SM_CK(2:0) | SA_CK(2:0) | N/A |
| SM_CK(2:0)* | SA_CK(2:0)* | N/A |
| SM_CK(5:3) | N/A | SB_CK(2:0) |
| SM_CK(5:3)* | N/A | SB_CK(2:0)* |
| SM_CS(1:0) | SA_CS(1:0)* | N/A |
| SM_CKE(1:0) | SA_CKE(1:0) | N/A |
| SM_ODT(1:0) | SA_ODT(1:0) | N/A |
| SM_CS(3:2) | N/A | SB_CS(3:2)* |
| SM_SKE(3:2) | N/A | SB_CKE(3:2) |
| SM_ODT(3:2) | N/A | SB_ODT(3:2) |

| SDVO Mode | PEG (SAGP) Mode |
|---------------|-----------------|
| SDVOB_RED* | EXP_TXN_0 |
| SDVO_RED | EXP_TXP_0 |
| SDVOB_GREEN* | EXP_TXN_1 |
| SDVOB_GREEN | EXP_TXP_1 |
| SDVOB_BLUE* | EXP_TXN_2 |
| SDVOB_BLUE | EXP_TXP_2 |
| SDVOB_CLK* | EXP_TXN_3 |
| SDVOB_CLK | EXP_TXP_3 |
| SDVOC_RED* | EXP_TXN_4 |
| SDVOB_ALPHA* | EXP_TXN_5 |
| SDVOC_RED | EXP_TXP_4 |
| SDVOB_ALPHA | EXP_TXN_6 |
| SDVOC_GREEN* | EXP_TXN_5 |
| SDVOC_GREEN | EXP_TXP_5 |
| SDVOC_BLUE* | EXP_TXN_6 |
| SDVOC_BLUE | EXP_TXP_6 |
| SDVOC_CLK* | EXP_TXN_7 |
| SDVOC_CLK | EXP_TXP_7 |
| SDVO_TVCLKIN* | EXP_RXN_0 |
| SDVO_TVCLKIN | EXP_RXP_0 |
| SDVOB_INT* | EXP_RXN_1 |
| SDVOB_INT | EXP_RXP_1 |
| SDVO_STALLB | EXP_RXN_2 |
| SDVO_STALL | EXP_RXP_2 |
| SDVOC_INTB | EXP_RXN_5 |
| SDVOC_INT | EXP_RXP_5 |

| | | | | | | |
|-------------|---------|-----------|--------------------------|---------------------|----------|---|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS PART NO. BA41-*****A |
| CHECK | SS BAIK | DEV. STEP | DV | HAINAN MAIN | | |
| APPROVAL | KK BIN | REV | 1.0 | CALISTOGA-GMCH(3/5) | | |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 15 OF 55 | |
| | | | | | | |

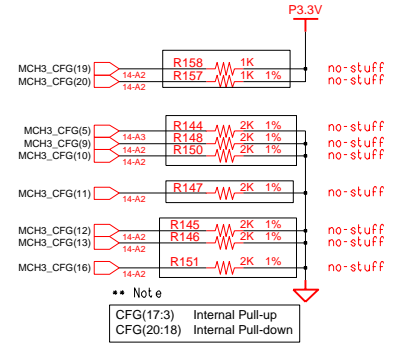
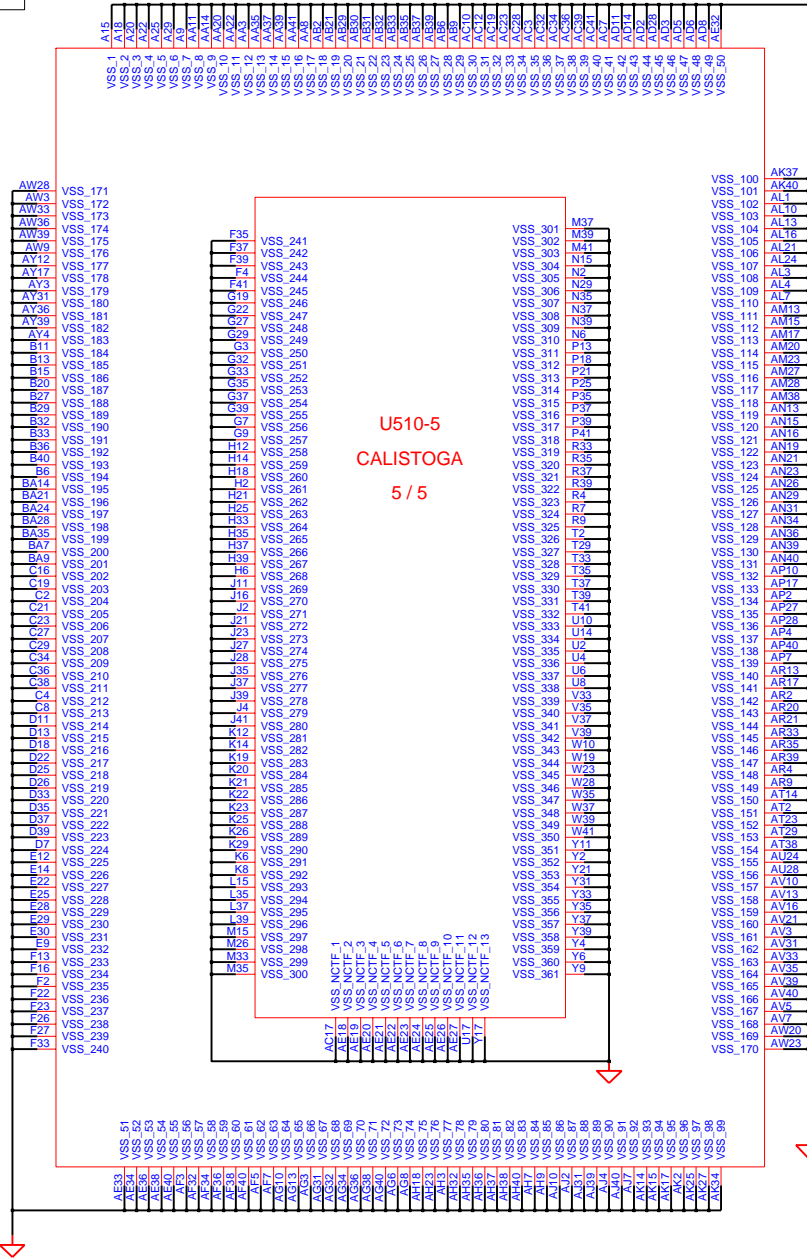
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|-------------|---------|-----------|--------------------------|---------------------|----------|-------------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | MAIN | | |
| APPROVAL | KK BIN | REV | 1.0 | CALISTOGA-GMCH(4/5) | PART NO. | BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 16 | OF 55 |

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**** Note**
 CFG(17:3) Internal Pull-up
 CFG(20:18) Internal Pull-down

When CFG13:12 are pulled down to '00', certain clocks within Calistoga will become free-running clocks. This will lead to a rise in avg. power, but eliminates any possible clock-timing marginalities involved in clockpower-up/power-down. Intel strongly recommends leaving CFG13:12=NC (Internal PU to '11') to ensure low avg.

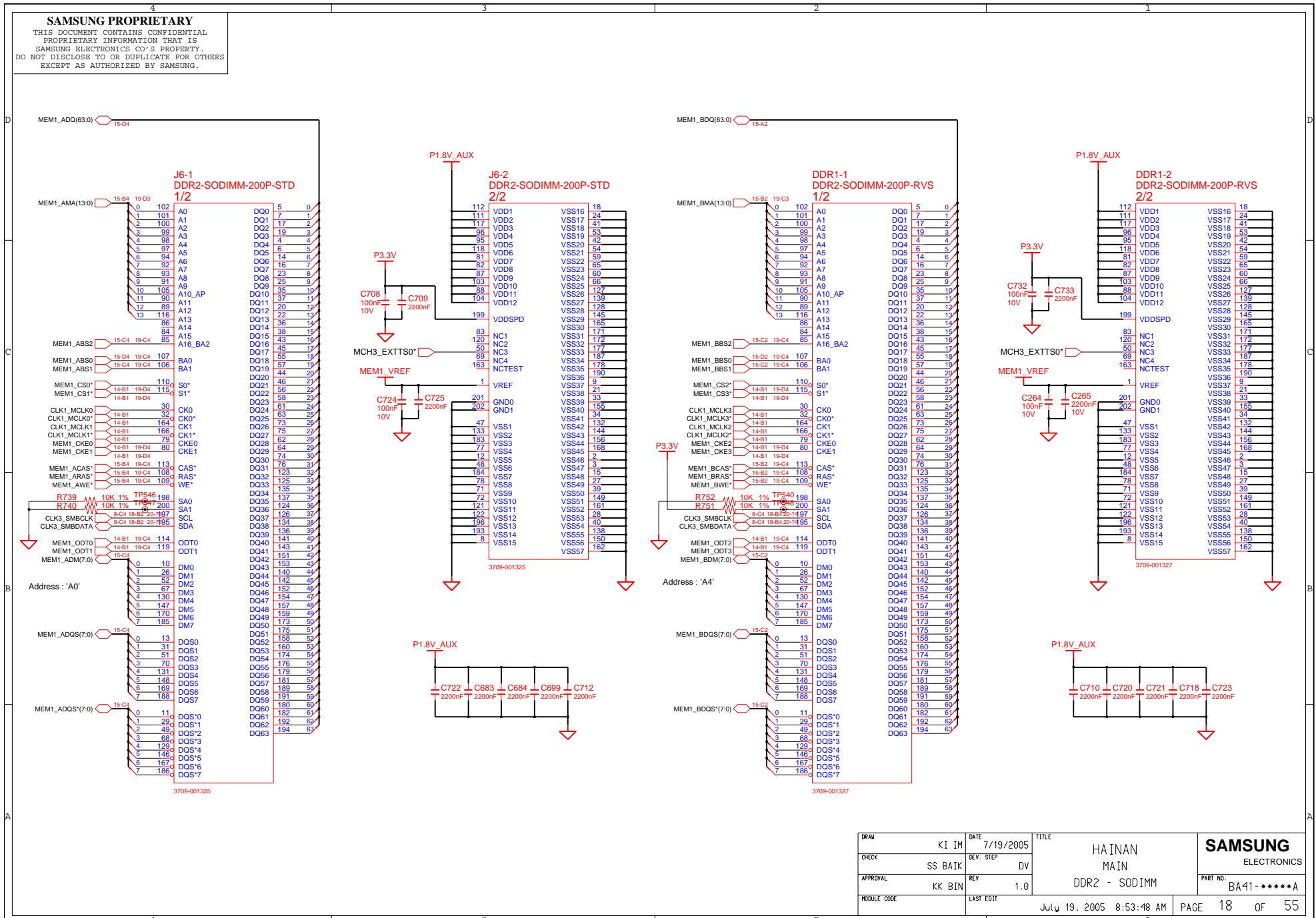
**** Note** *POCAFEB-10 Only (Remove in MP Model)

| CFG# | Current Setting (def.: default Option) | |
|---------|--|---------------------------------|
| | Low | High |
| CFG(5) | DMIX2 | DMIX4 (def.) |
| CFG(6) | Reserved | DDR-II (def.) |
| CFG(7) | DT/Transportable | Mobile CPU (def.) |
| CFG(9) | PEG Reversal | Normal |
| CFG(16) | Dynamic ODT Disabled | Dynamic ODT Enabled (def.) |
| CFG(18) | VCC 1.05V (def.) | VCC 1.5V |
| CFG(19) | DMI Lane Normal | DMI Lane Reversal |
| CFG(20) | SDVO or PCIE X1 Only(def.) | SDVO and PCIE X1 Simultaneously |

| | | | | | | |
|-------------|---------|-----------|-----------|--------------------------|-------------|---|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN MAIN | SAMSUNG ELECTRONICS PART NO. BA41-*****A |
| CHECK | SS BAIK | DEV. STEP | DV | CALISTOGA-GMCH(5/5) | | |
| APPROVAL | KK BIN | REV | 1.0 | July 19, 2005 8:53:48 AM | | PAGE 17 OF 55 |
| MODULE CODE | | LAST EDIT | | | | |

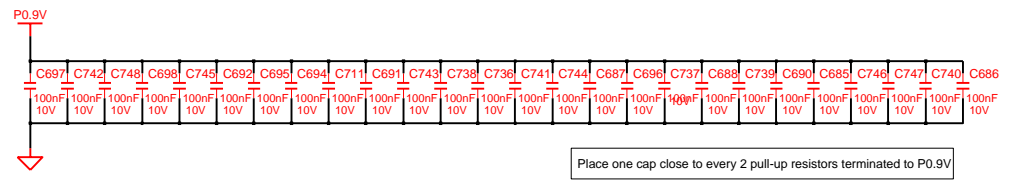
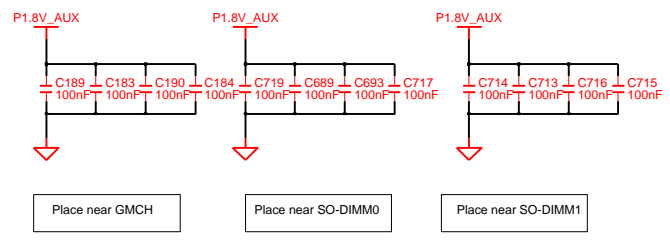
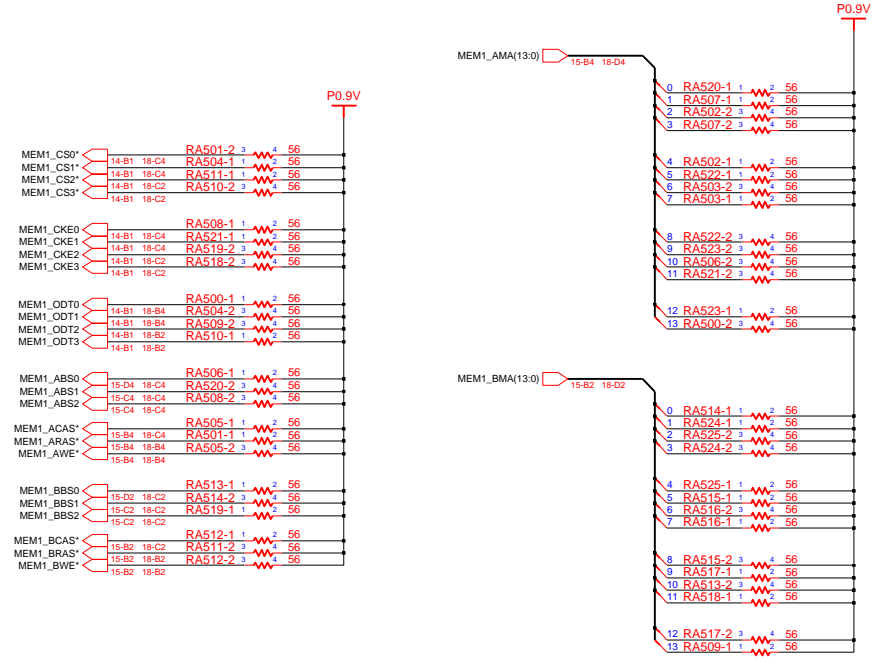
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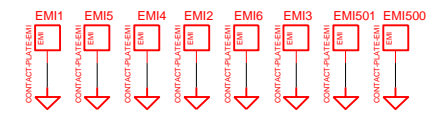
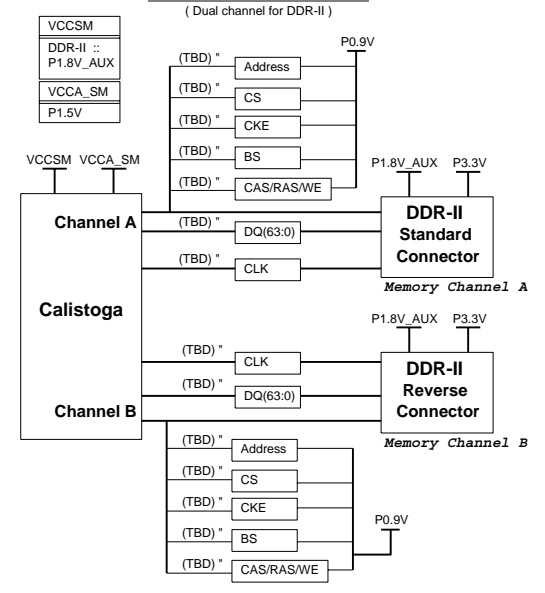


| | | | | | | |
|-------------|---------|-----------|--------------------------|---------------|--------|-------------------------|
| DRAW | K1 IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | MAIN | | |
| APPROVAL | KK BIN | REV | 1.0 | DDR2 - SODIMM | | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 18 | OF 55 |

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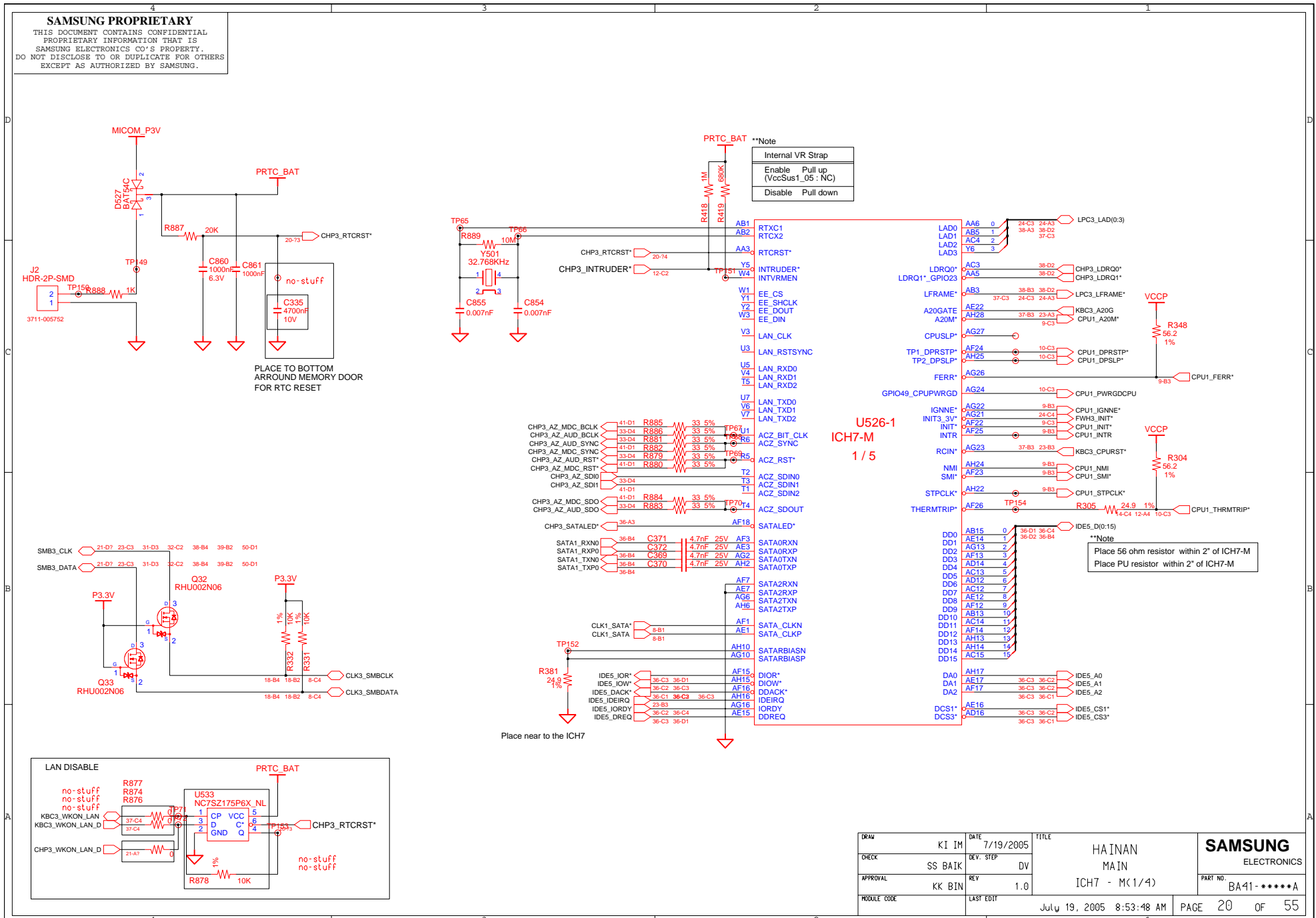
Memory Topology



| | | | | | | |
|-------------|---------|-----------|-----------|-------|--------------------------|------------------------|
| DRAW | K1 IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | | MAIN | |
| APPROVAL | KK BIN | REV | 1.0 | | DDR2 - TERMINATION | PART NO. BA41 - *****A |
| MODULE CODE | | LAST EDIT | | | July 19, 2005 8:53:48 AM | PAGE 19 OF 55 |

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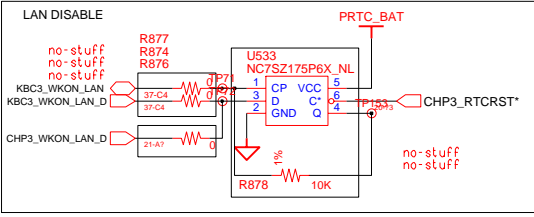
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****Note**
Internal VR Strap
Enable Pull up (VccSus1_05 : NC)
Disable Pull down

****Note**
Place 56 ohm resistor within 2" of ICH7-M
Place PU resistor within 2" of ICH7-M

U526-1
ICH7-M
1 / 5

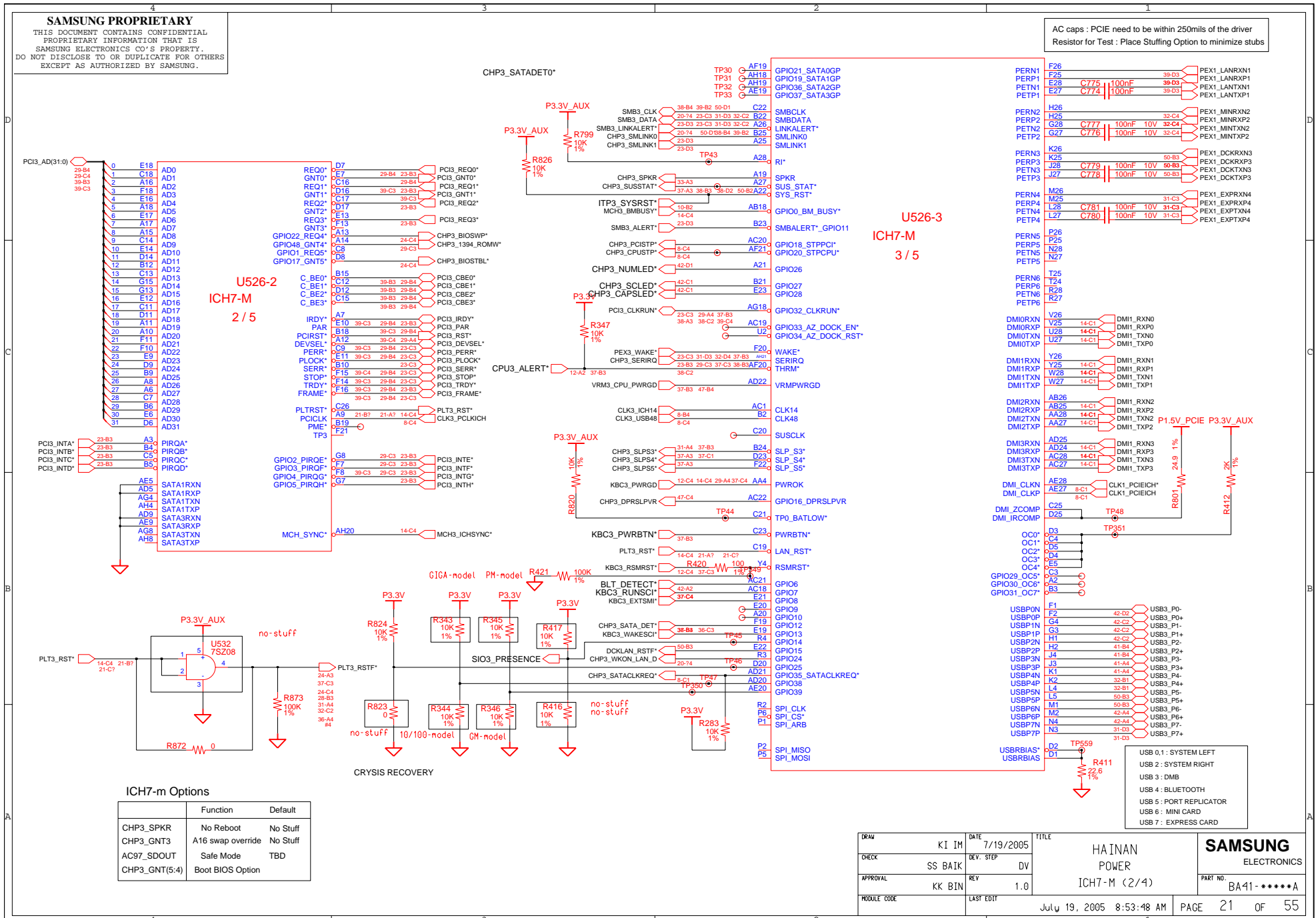


| | | | | | | |
|-------------|---------|-----------|--------------------------|---------------|--------|-------------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | MAIN | | |
| APPROVAL | KK BIN | REV | 1.0 | ICH7 - M(1/4) | | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 20 | OF 55 |

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



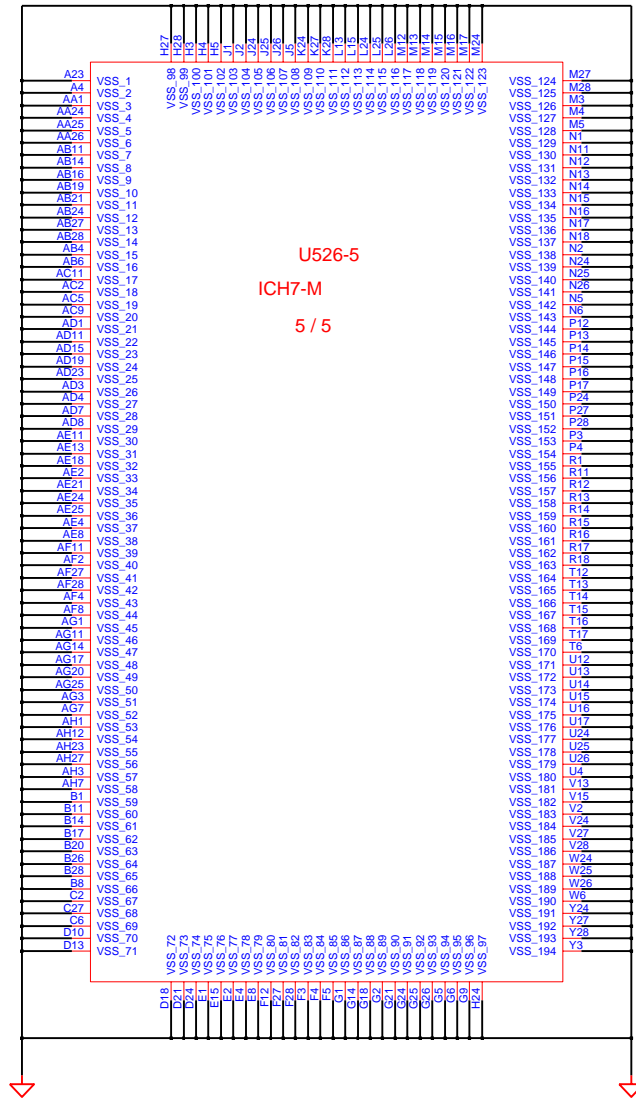
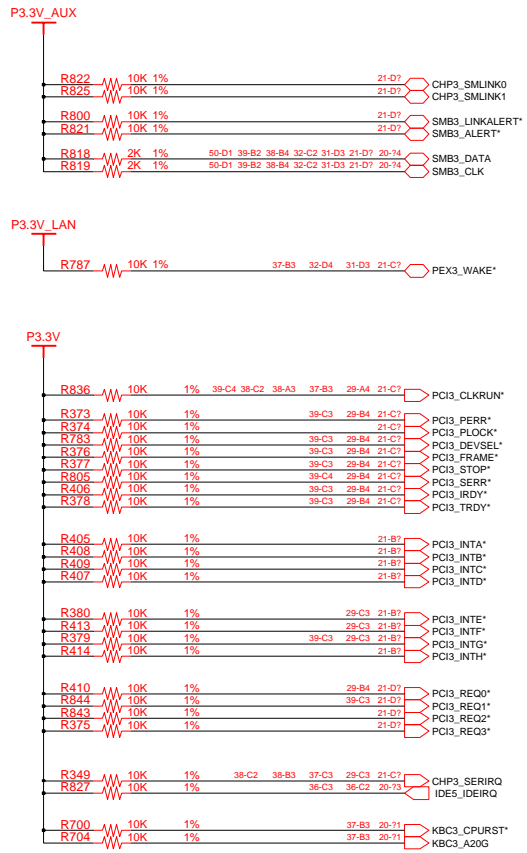
ICH7-m Options

| Option | Function | Default |
|---------------|-------------------|----------|
| CHP3_SPKR | No Reboot | No Stuff |
| CHP3_GNT3 | A16 swap override | No Stuff |
| AC97_SDOUT | Safe Mode | TBD |
| CHP3_GNT(5:4) | Boot BIOS Option | |

- USB 01 : SYSTEM LEFT
- USB 2 : SYSTEM RIGHT
- USB 3 : DMB
- USB 4 : BLUETOOTH
- USB 5 : PORT REPLICATOR
- USB 6 : MINI CARD
- USB 7 : EXPRESS CARD

| | | | | | | |
|-------------|---------|-----------|--------------------------|-------|---------------------------|---|
| DRAW | K1 IM | DATE | 7/19/2005 | TITLE | HAINAN POWER ICH7-M (2/4) | <p>SAMSUNG ELECTRONICS</p> <p>PART NO. BA41-*****A</p> |
| CHECK | SS BAIK | DEV. STEP | DV | | | |
| APPROVAL | KK BIN | REV | 1.0 | | | |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 21 OF 55 | |
| | | | | | | |

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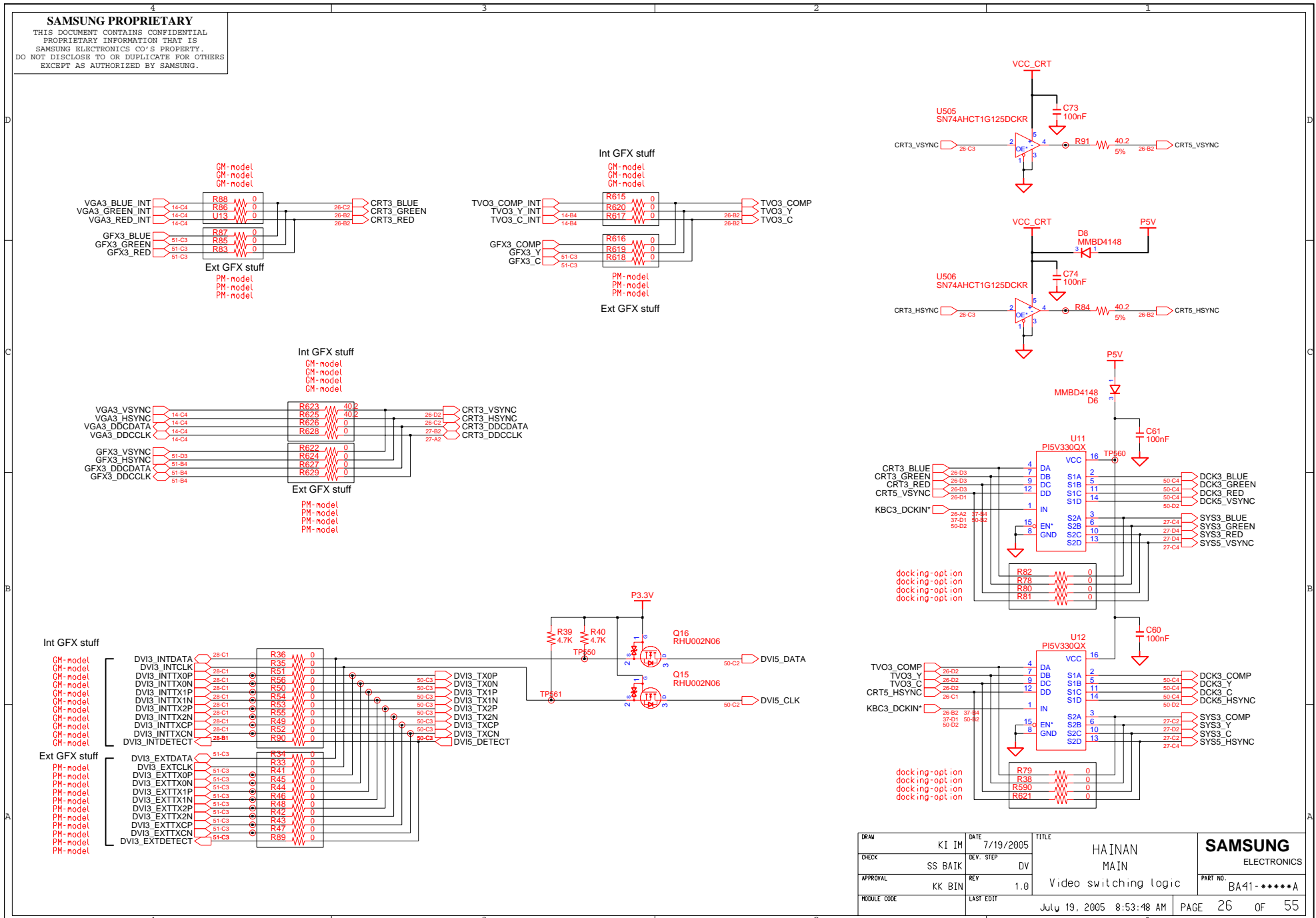


U526-5
 ICH7-M
 5 / 5

| | | | | | | |
|-------------|---------|-----------|--------------------------|---------------|----------|------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | MAIN | | |
| APPROVAL | KK BIN | REV | 1.0 | ICH7 - M(4/4) | PART NO. | BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 23 | OF 55 |

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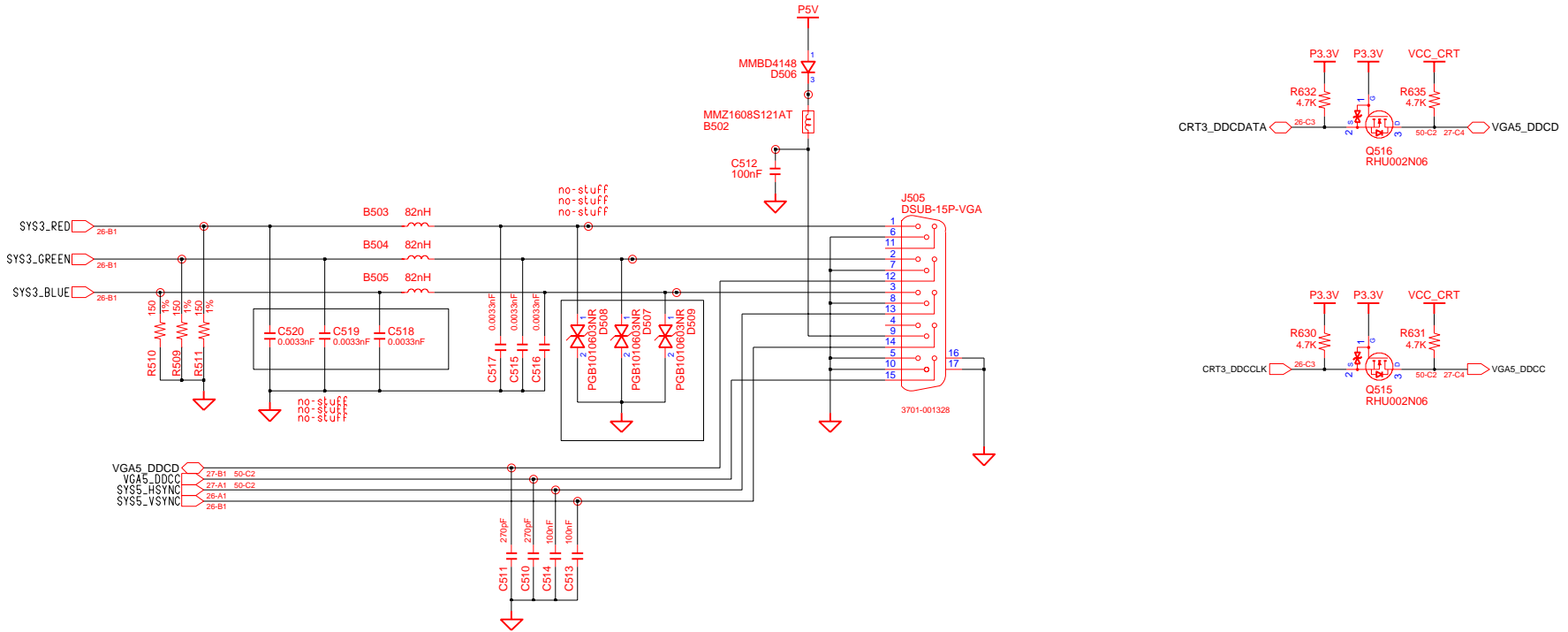
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| | | | | | | |
|-------------|---------|-----------|-----------|--------------------------|-------------|----------------------|
| DRAW | K1 IM | DATE | 7/19/2005 | TITLE | HAINAN MAIN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | Video switching logic | | |
| APPROVAL | KK BIN | REV | 1.0 | July 19, 2005 8:53:48 AM | | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | | PAGE 26 OF 55 | | |

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CRT CONNECTOR

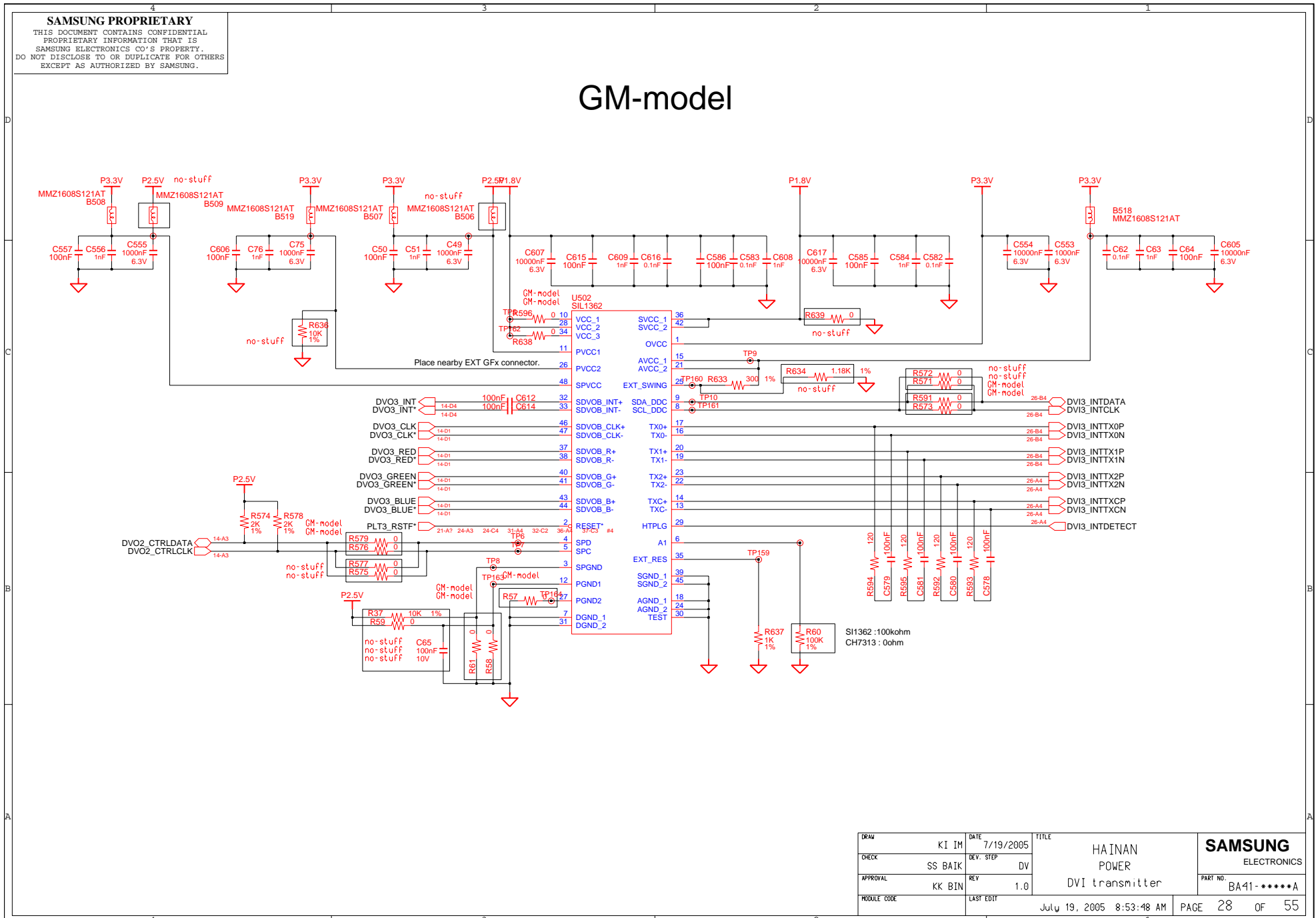


VGA5_DDCCD 27-B1 50-C2
 VGA5_DDCC 27-A1 50-C2
 SYS5_HSYNC 26-A1
 SYS5_VSYNC 26-B1

| | | | | | | |
|-------------|----------|-----------|---------------------------|-------|----------------------------------|---|
| DRAW | IM, KI | DATE | 7/19/2005 | TITLE | HAINAN POWER CRT connector | SAMSUNG ELECTRONICS PART NO. BA41-*****A |
| CHECK | BAIK, SS | DEV. STEP | DV | | | |
| APPROVAL | BIN, KK | REV | 1.0 | | | |
| MODULE CODE | | LAST EDIT | July, 19, 2005 8:59:59 AM | PAGE | 27 OF 27 | |

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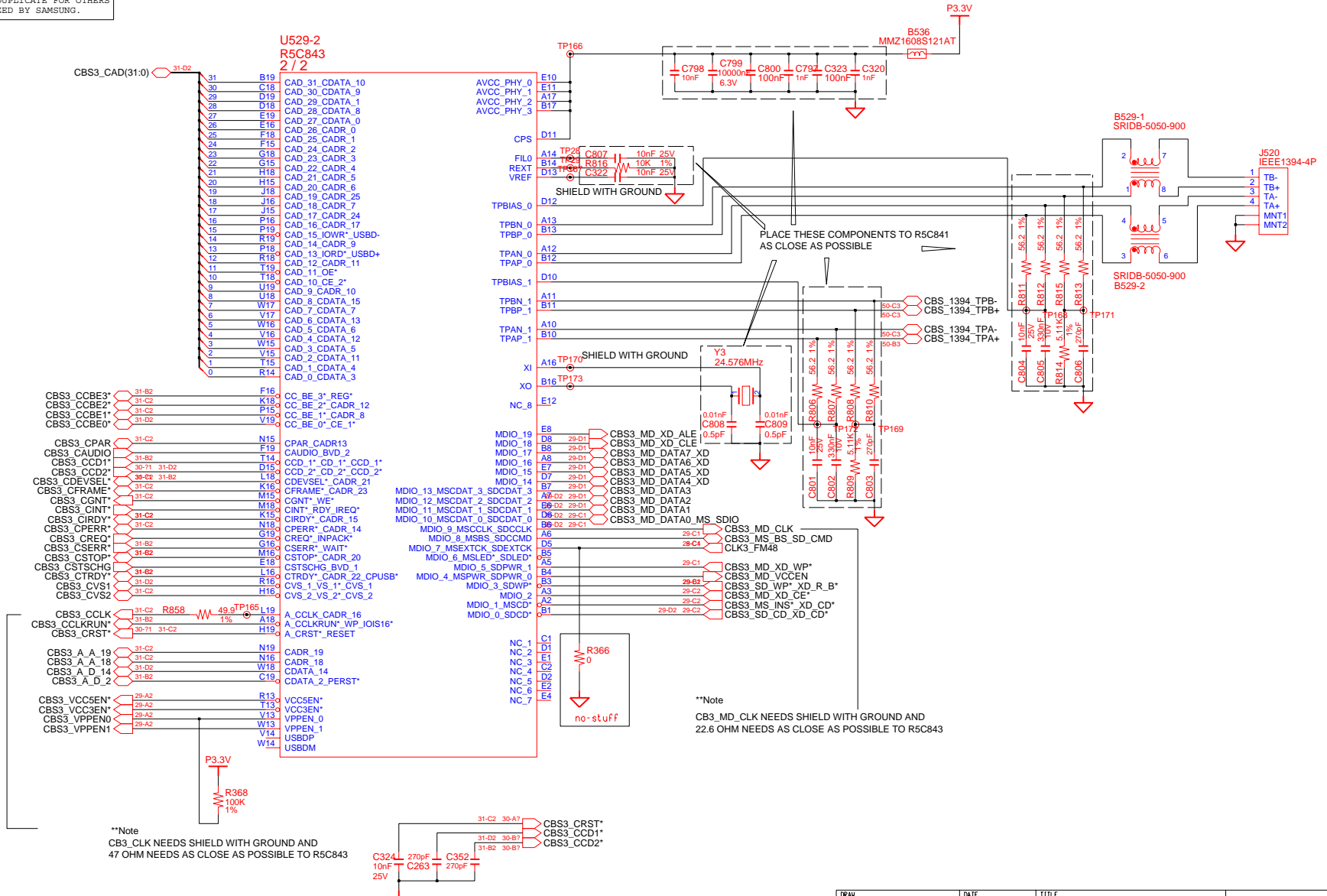
GM-model



| | | | | | | |
|-------------|---------|-----------|--------------------------|-------|------------------------------------|---|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN POWER DVI transmitter | SAMSUNG ELECTRONICS PART NO. BA41-*****A |
| CHECK | SS BAIK | DEV. STEP | DV | | | |
| APPROVAL | KK BIN | REV | 1.0 | | | |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 28 OF 55 | |

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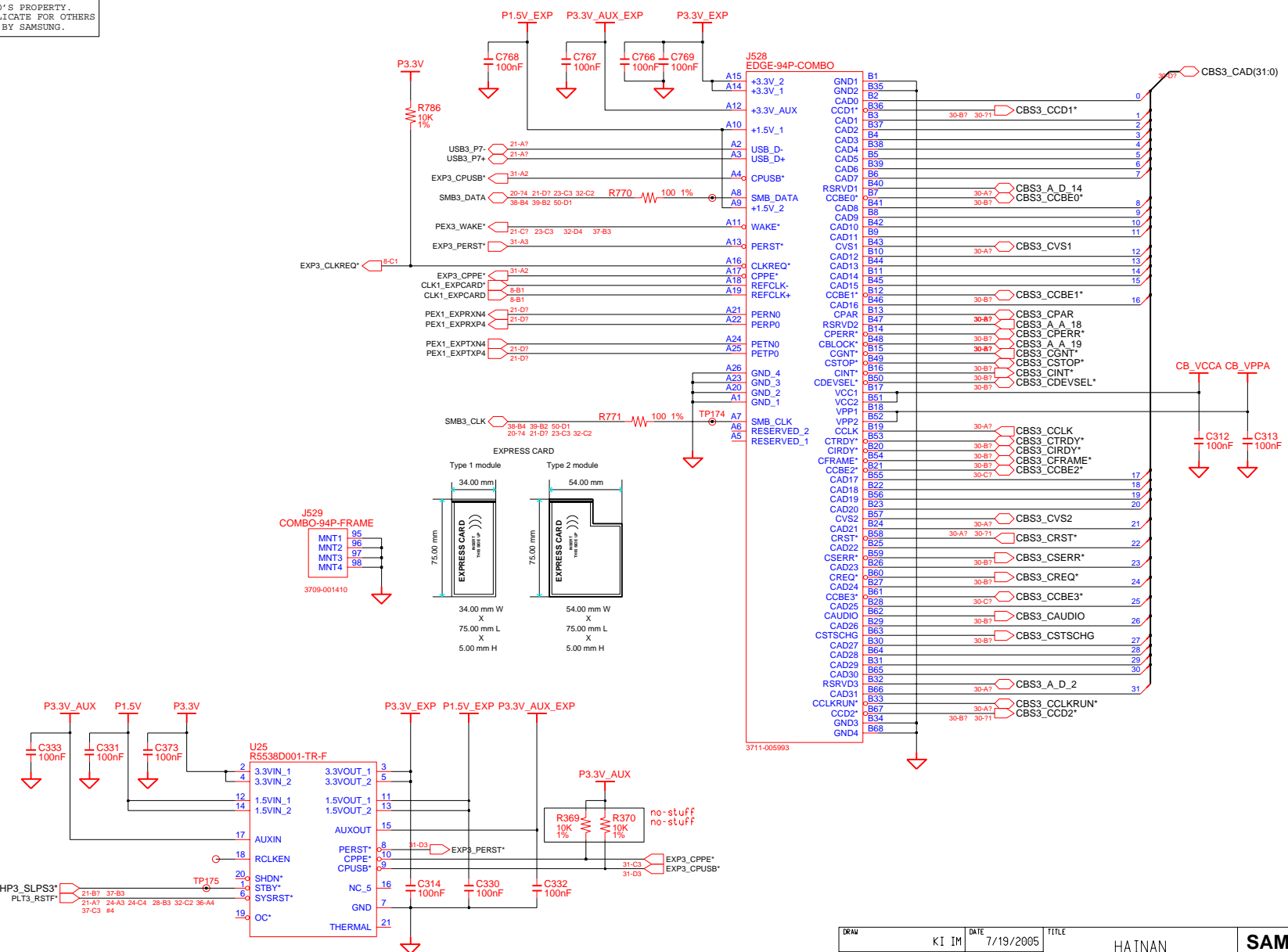


**Note
CB3_CLK NEEDS SHIELD WITH GROUND AND
47 OHM NEEDS AS CLOSE AS POSSIBLE TO R5C843

**Note
CB3_MD_CLK NEEDS SHIELD WITH GROUND AND
22.6 OHM NEEDS AS CLOSE AS POSSIBLE TO R5C843

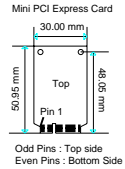
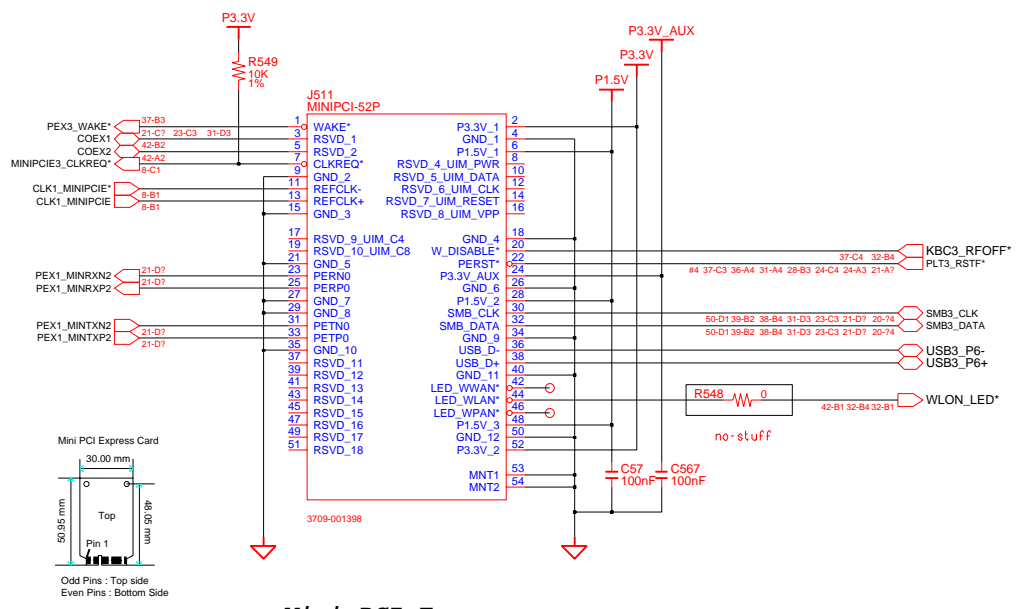
| | | | | | | |
|----------|---------|-----------|--------------------------|-------|---|---|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN POWER CardBus & 1394 (2/2) | SAMSUNG ELECTRONICS PART NO. BA41-*****A |
| CHECK | SS BAIK | DEV. STEP | DV | REV | 1.0 | |
| APPROVAL | KK BIN | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 30 | OF 55 |

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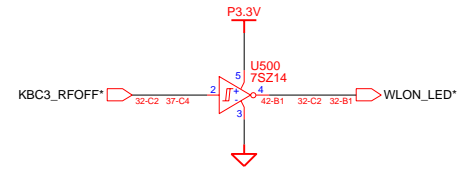
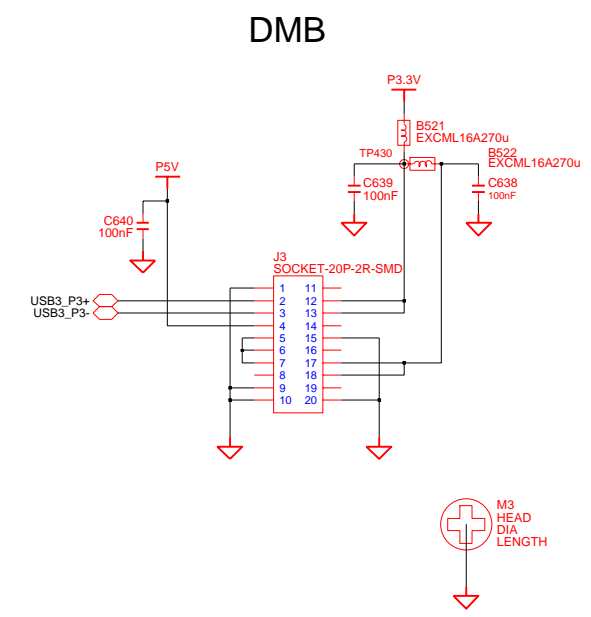
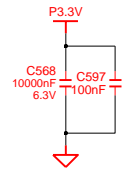
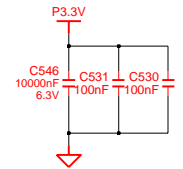
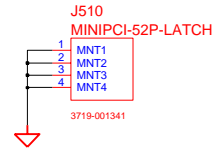


| | | | | | | |
|-------------|---------|-----------|--------------------------|-----------------------|--------|-------------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | | | |
| APPROVAL | KK BIN | REV | 1.0 | EXPRESS CARD & PCMCIA | | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 31 | OF 55 |

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Mini PCI Express
 PCI Express Mini Card ElectroMechanical Spec. 1.0



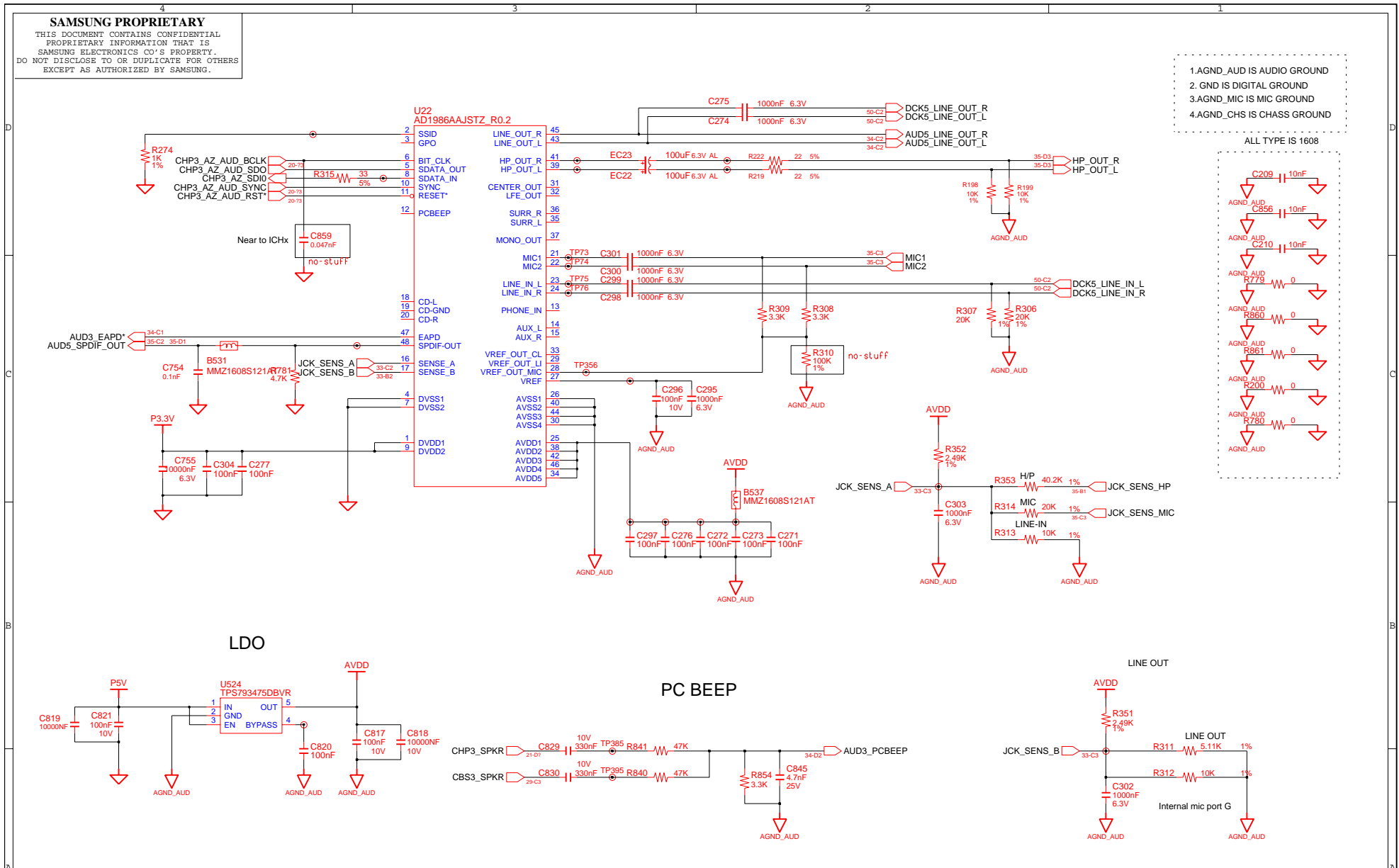
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|-------------|----------|-----------|-----------|-------------------------|----------------|-------------------------------|
| DRAW | IM, KI | DATE | 7/19/2005 | TITLE | HAINAN MAIN | SAMSUNG ELECTRONICS |
| CHECK | BAIK, SS | DEV. STEP | DV | MINI PCIEX & DMB & IR | | |
| APPROVAL | BIN, KK | REV | 1.0 | Jul 19, 2005 9:01:07 AM | | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | | PAGE 32 OF 32 | | |

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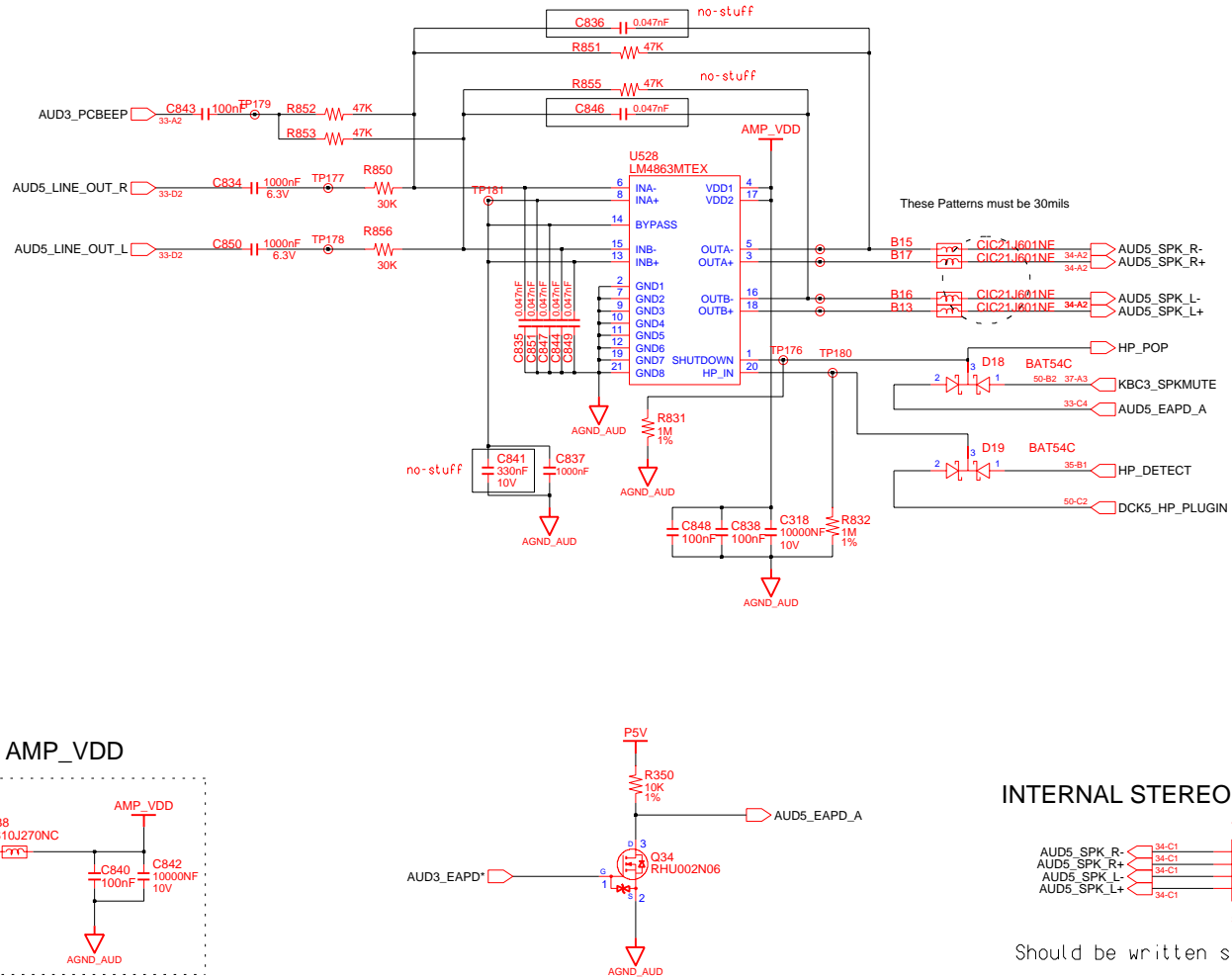
- 1.AGND_AUD IS AUDIO GROUND
- 2. GND IS DIGITAL GROUND
- 3.AGND_MIC IS MIC GROUND
- 4.AGND_CHS IS CHASSIS GROUND

ALL TYPE IS 1608

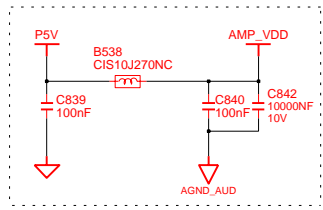


| | | | | | | |
|-------------|-----------|-----------|--------------------------|-------|-------------------------|---|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN MAIN AUDIO CODEC | SAMSUNG ELECTRONICS PART NO. BA41-*****A |
| CHECK | SS BAIK | DEV. STEP | DV | | | |
| APPROVAL | KK BIN | REV | 1.0 | | | |
| MODULE CODE | undefined | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 33 OF 55 | |

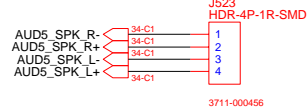
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AMP_VDD



INTERNAL STEREO SPEAKERS

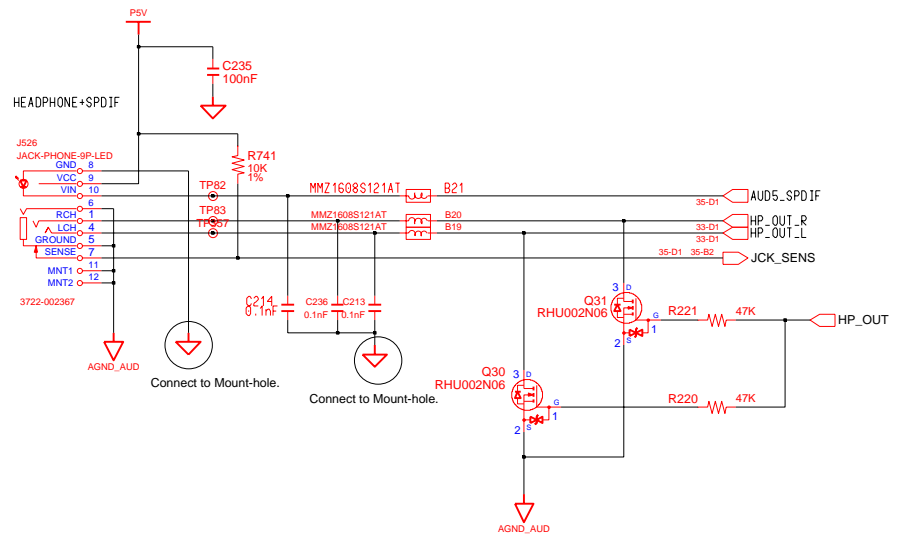


Should be written sign "L","R" on the PCB

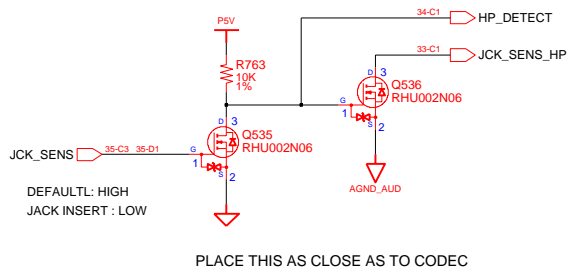
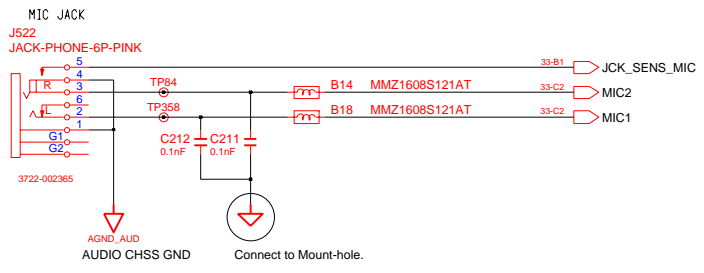
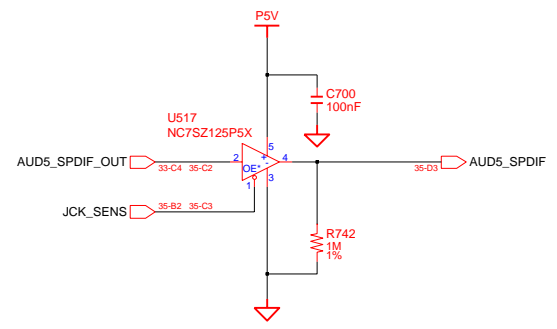
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|-------------|-----------|-----------|--------------------------|-------|---------------------------------|---|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN MAIN LIMITER & AMP | SAMSUNG ELECTRONICS PART NO. BA41-*****A |
| CHECK | SS BAIK | DEV. STEP | DV | | | |
| APPROVAL | KK BIN | REV | 1.0 | | | |
| MODULE CODE | undefined | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 34 OF 55 | |

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Default: 5-7-6 open
 STEREO JACK: 5-7-6 SHORT
 S/PDIF 5-7 SHORT



SPDIF DETECT

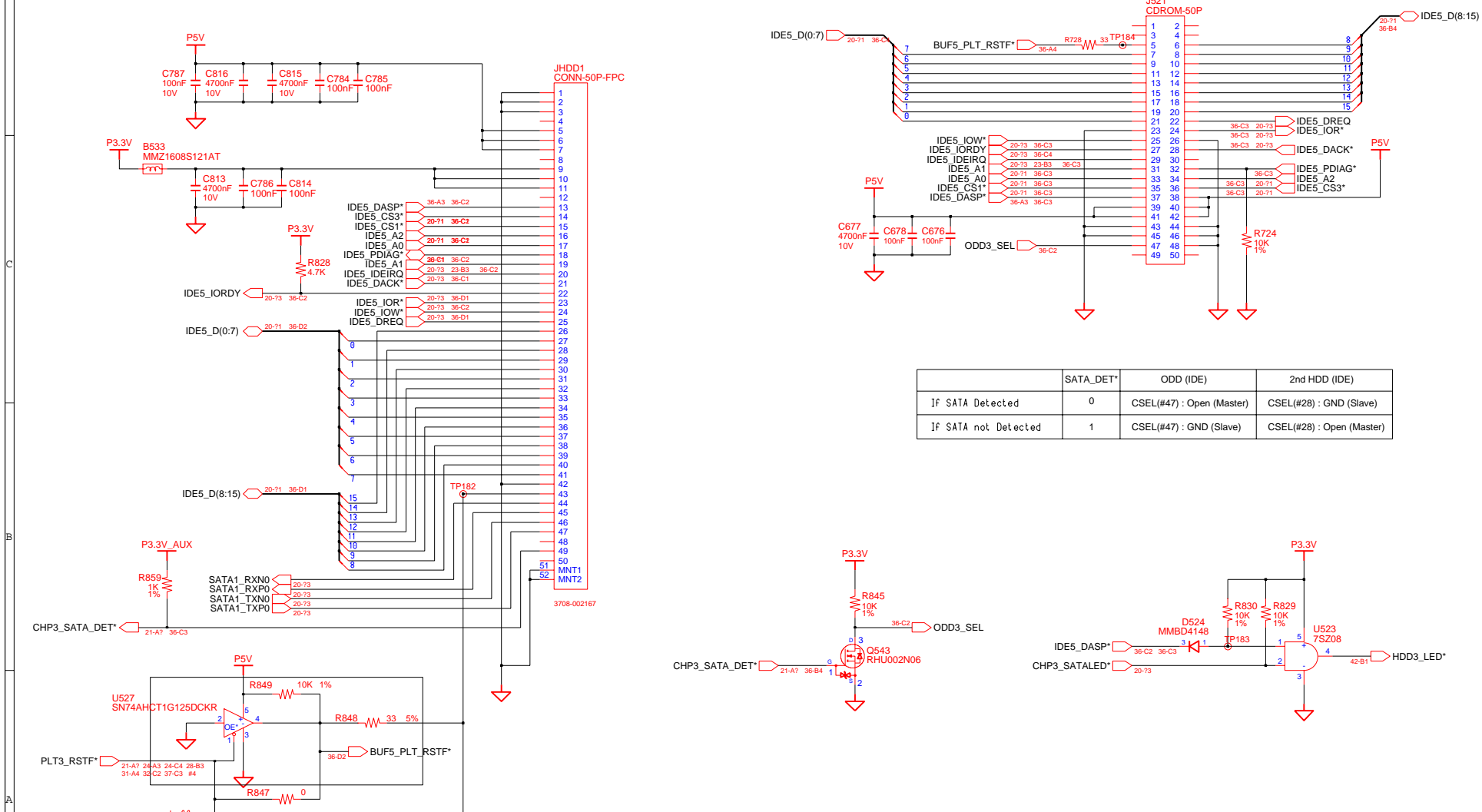


| | | | | | | |
|-------------|---------|-----------|--------------------------|----------------------|--------|-------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | | MAIN | |
| APPROVAL | KK BIN | REV | 1.0 | Headphone & MIC jack | | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 35 | OF 55 |

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Main to Swap B'd

Main to HDD

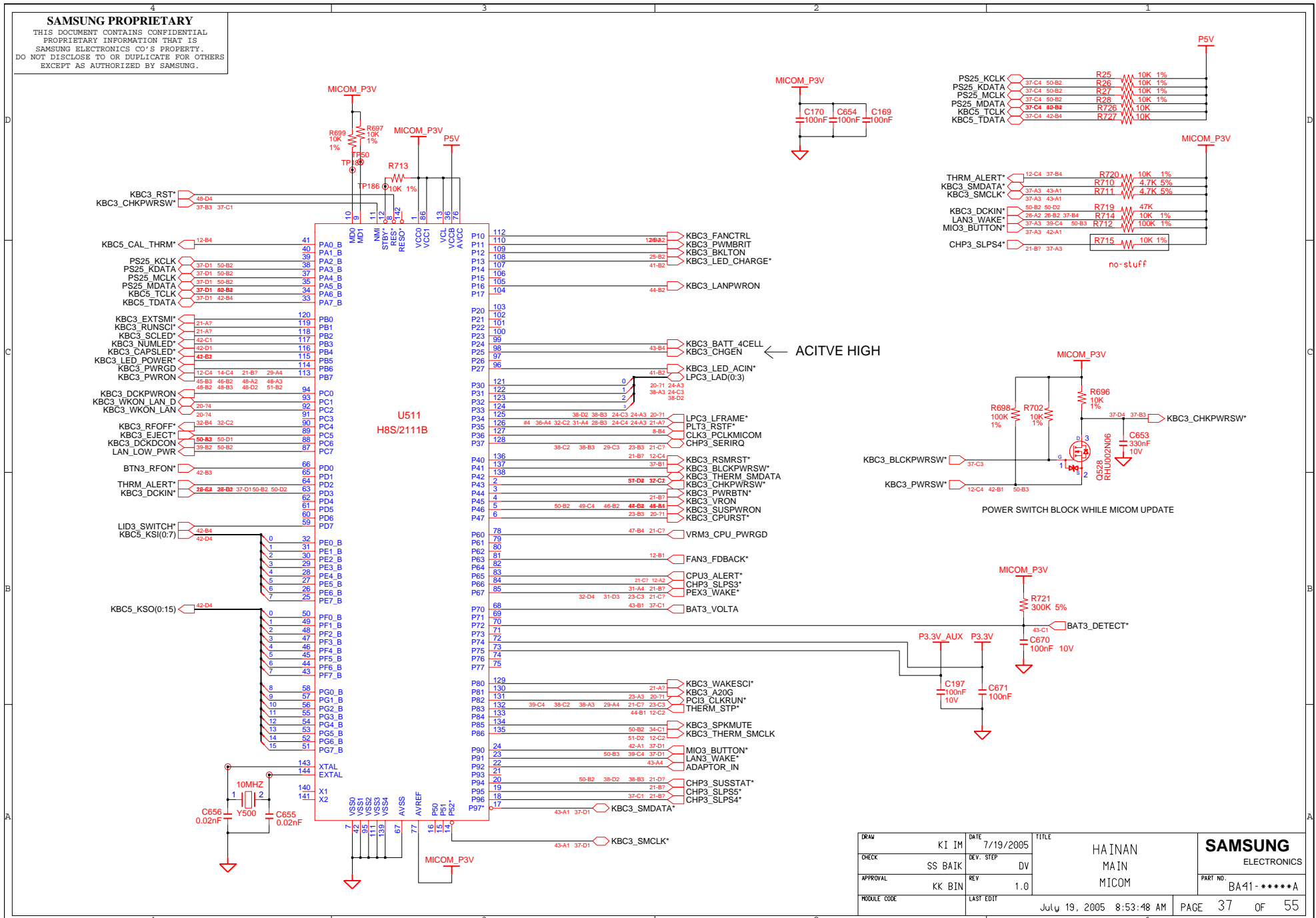


| | SATA_DET* | ODD (IDE) | 2nd HDD (IDE) |
|----------------------|-----------|---------------------------|---------------------------|
| If SATA Detected | 0 | CSEL(#47) : Open (Master) | CSEL(#28) : GND (Slave) |
| If SATA not Detected | 1 | CSEL(#47) : GND (Slave) | CSEL(#28) : Open (Master) |

| | | | | | | |
|-------------|---------|-----------|--------------------------|-------------------|--------|-------------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | MAIN | | |
| APPROVAL | KK BIN | REV | 1.0 | HDD ODD CONNECTOR | | PART NO. BA41 - *****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | | PAGE | 36 OF 55 |

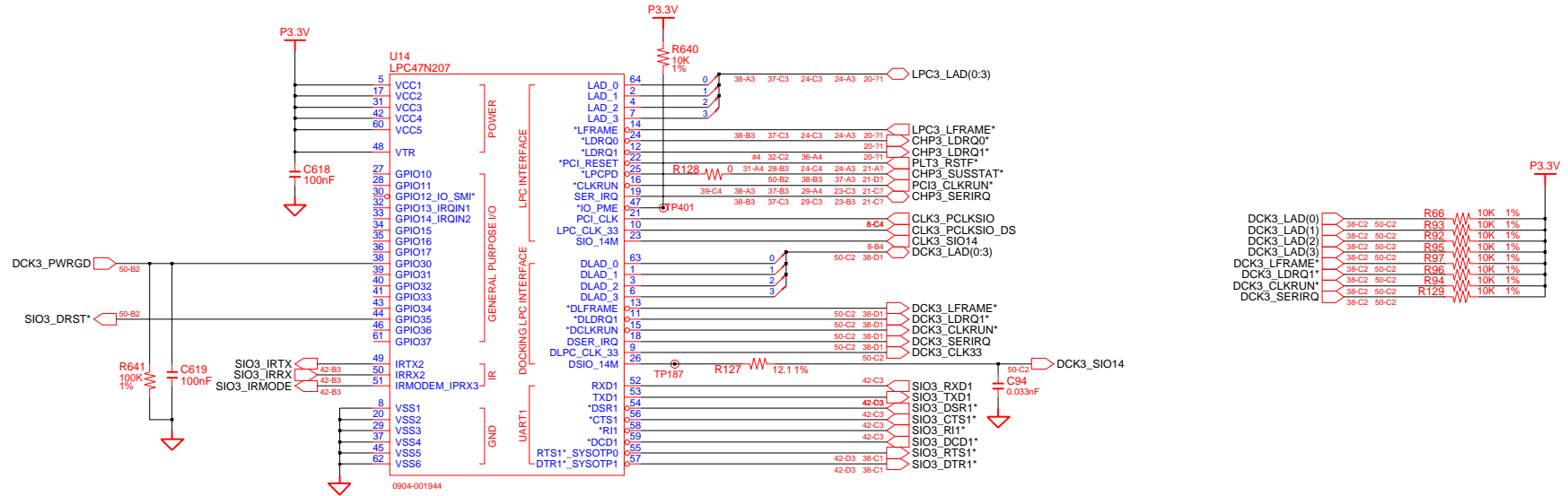
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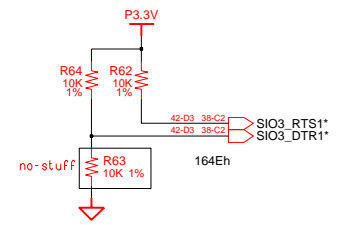
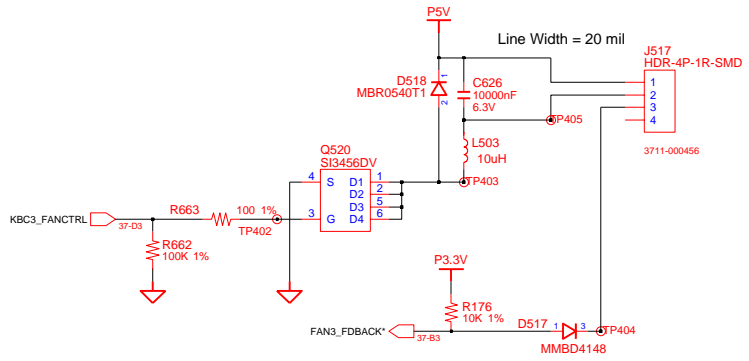


| | | | | | | |
|-------------|---------|-----------|--------------------------|-------|--------|-------------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | MAIN | MICOM | |
| APPROVAL | KK BIN | REV | 1.0 | | | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 37 | OF 55 |

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FAN Control Logic

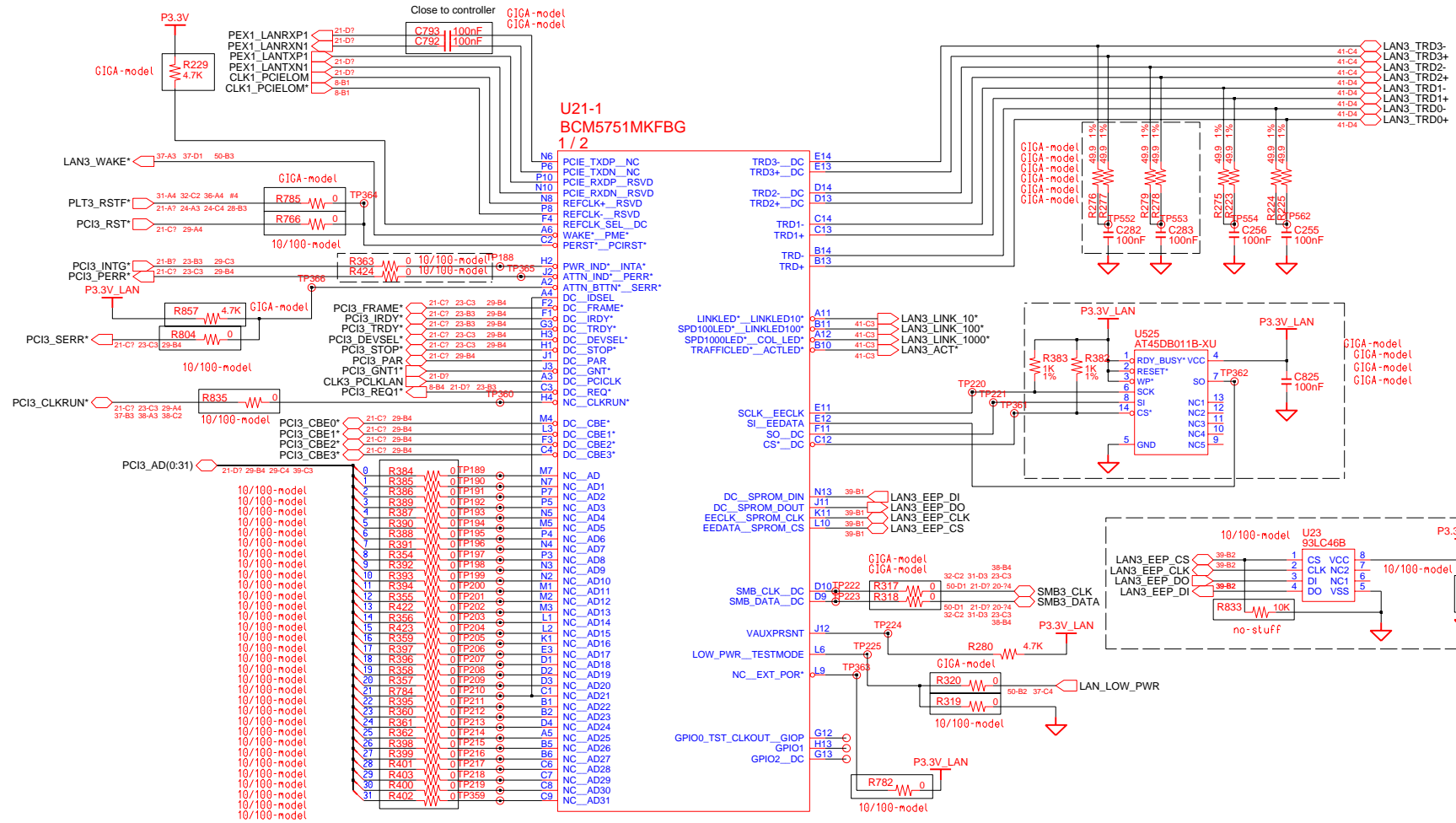


Changed to Control Methode(EBL)

| | | | | | | |
|-------------|----------|-----------|--------------------------|---------------------------|----------|-------------------------------|
| DRAW | IM, KI | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | BAIK, SS | DEV. STEP | DV | MAIN | | |
| APPROVAL | BIN, KK | REV | 1.0 | SUPER IO & FAN CONTROLLER | PART NO. | BA41-*****A |
| MODULE CODE | | LAST EDIT | Jul, 19, 2005 9:02:46 AM | PAGE | 38 | OF 38 |

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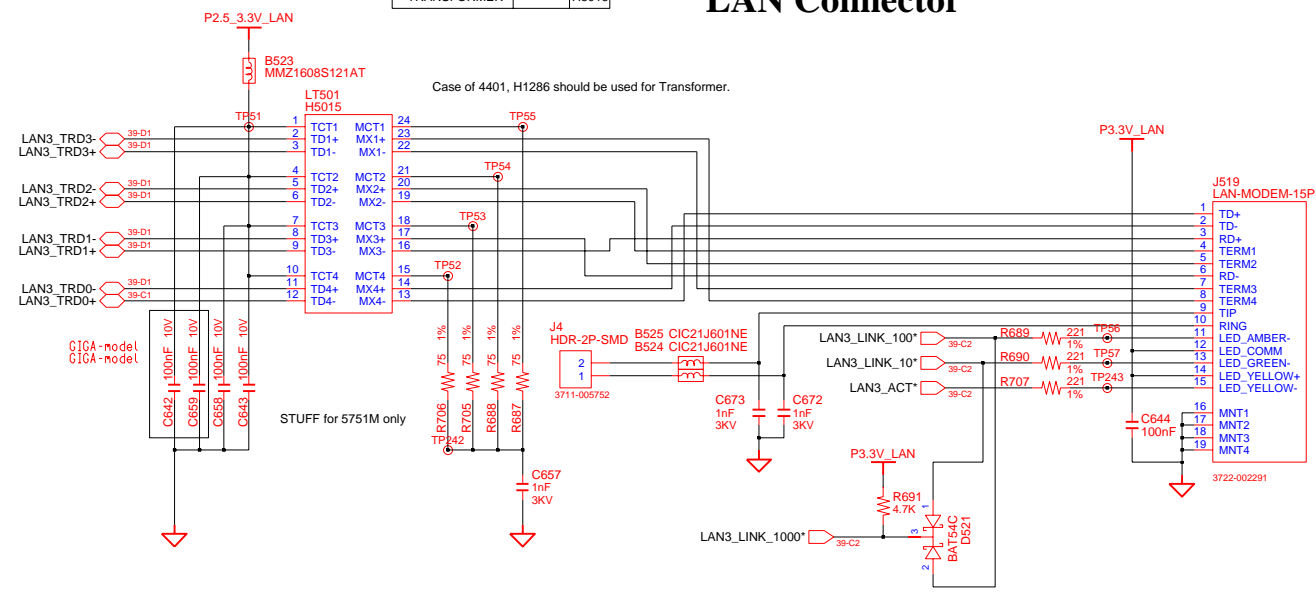


| | | | | | | |
|-------------|------------|-----------|--------------------------|---------------------|--------|-------------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | MAIN | | |
| APPROVAL | KK BIN | REV | 1.0 | BCM 5751/4401 (1/2) | | PART NO. BA41-*****A |
| MODULE CODE | undef ined | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 39 | OF 55 |

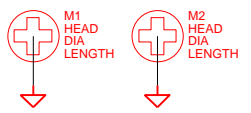
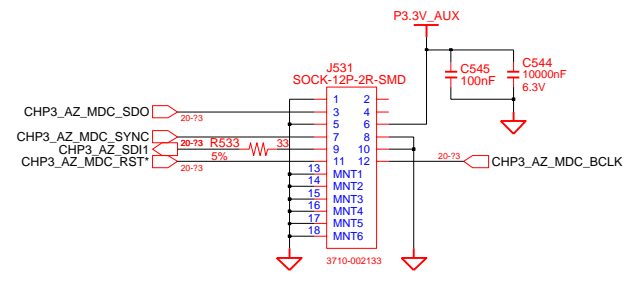
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| | | |
|----------------|---------|-------|
| LAN CONTROLLER | 4401E | 5751 |
| TRANSFORMER | H1321NL | H5015 |

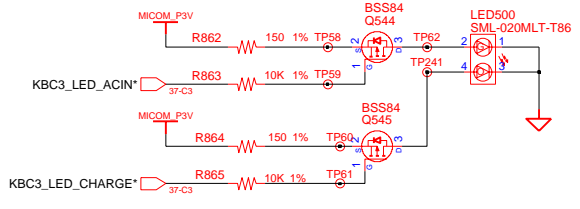
LAN Connector



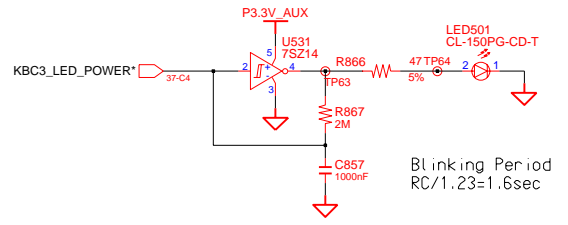
MDC Connector



ADAPTERIN/CHARGING LED



POWER_ON / LB LED

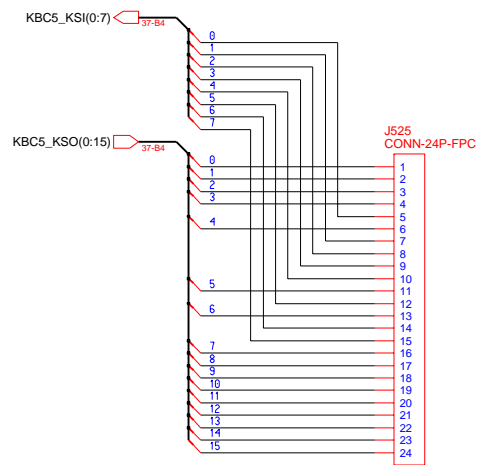


Blinking Period
 $RC/1.23=1.6\text{sec}$

| | | | | | | |
|-------------|-----------|-----------|--------------------------|-----------------------|-------------|-------------------------------|
| DRAW | IM, KI | DATE | 7/19/2005 | TITLE | HAINAN MAIN | SAMSUNG ELECTRONICS |
| CHECK | BAIK, SS | DEV. STEP | DV | LAN MODEM Conn & LED. | | |
| APPROVAL | BIN, KK | REV | 1.0 | PART NO. BA41-*****A | | PAGE 41 OF 41 |
| MODULE CODE | LAST EDIT | | Jul, 19, 2005 9:04:06 AM | | | |

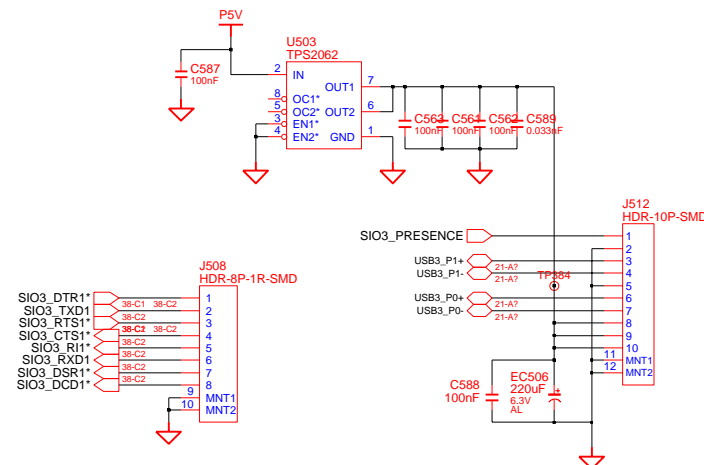
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KEYBOARD

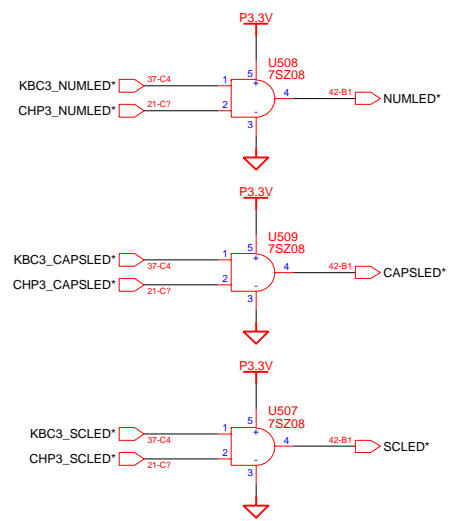


3708-001282

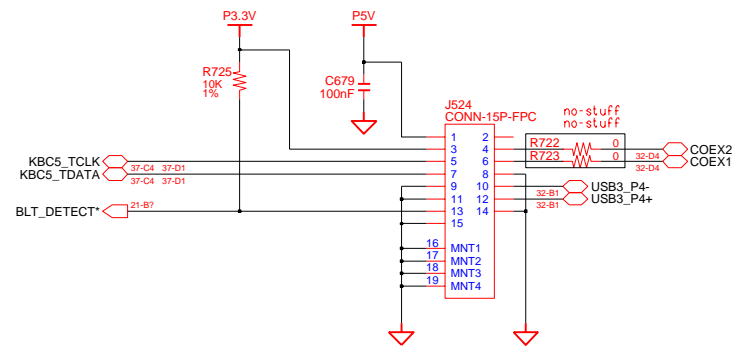
USB_SIO BOARD



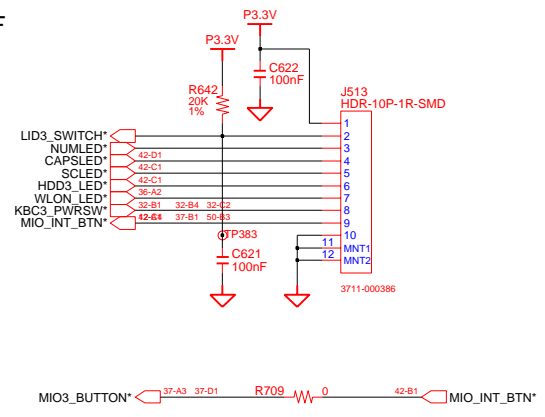
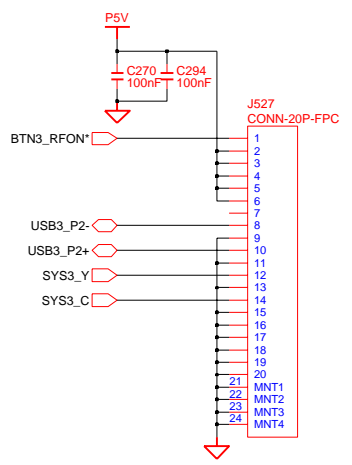
LED BOARD



TOUCHPAD BLUETOOTH I/F



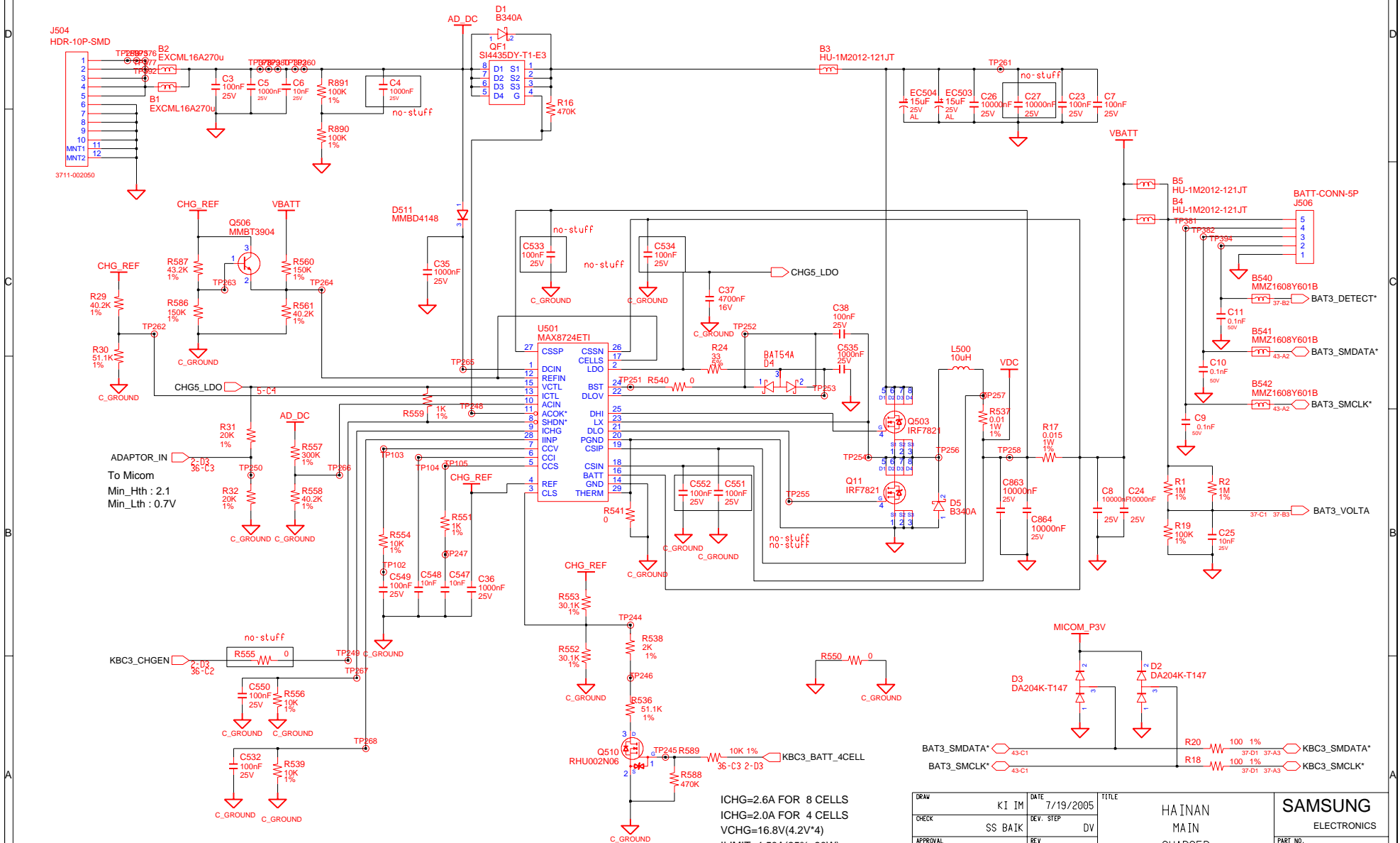
USB_SVHS_RF OFF SWITCH I/F



| | | | | | | |
|-------------|---------|-----------|--------------------------|-------|-------------------------------|----------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN MAIN SUB B'D CONNECTOR | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | | | |
| APPROVAL | KK BIN | REV | 1.0 | | | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 42 OF 55 | |

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CHARGER & POWER MANAGEMENT



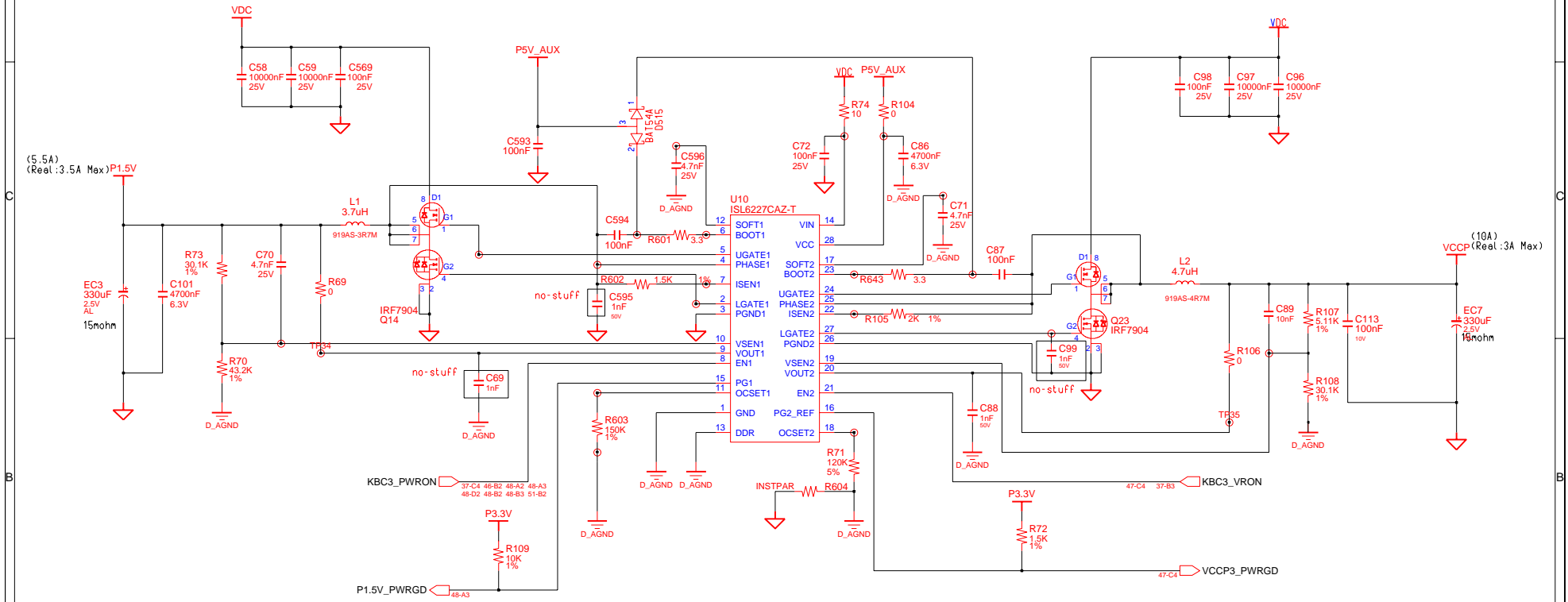
ADAPTOR_IN
 To Micom
 Min_Hth : 2.1
 Min_Lth : 0.7V

ICHG=2.6A FOR 8 CELLS
 ICHG=2.0A FOR 4 CELLS
 VCHG=16.8V(4.2V*4)
 ILIMIT=4.50A(85%*90W)

| | | | | | | |
|-------------|---------|-----------|--------------------------|-------|---------------------------|---|
| DRAW | K1 IM | DATE | 7/19/2005 | TITLE | HAINAN MAIN CHARGER | SAMSUNG ELECTRONICS PART NO. BA41-*****A |
| CHECK | SS BAIK | DEV. STEP | DV | | | |
| APPROVAL | KK BIN | REV | 1.0 | | | |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 43 OF 55 | |

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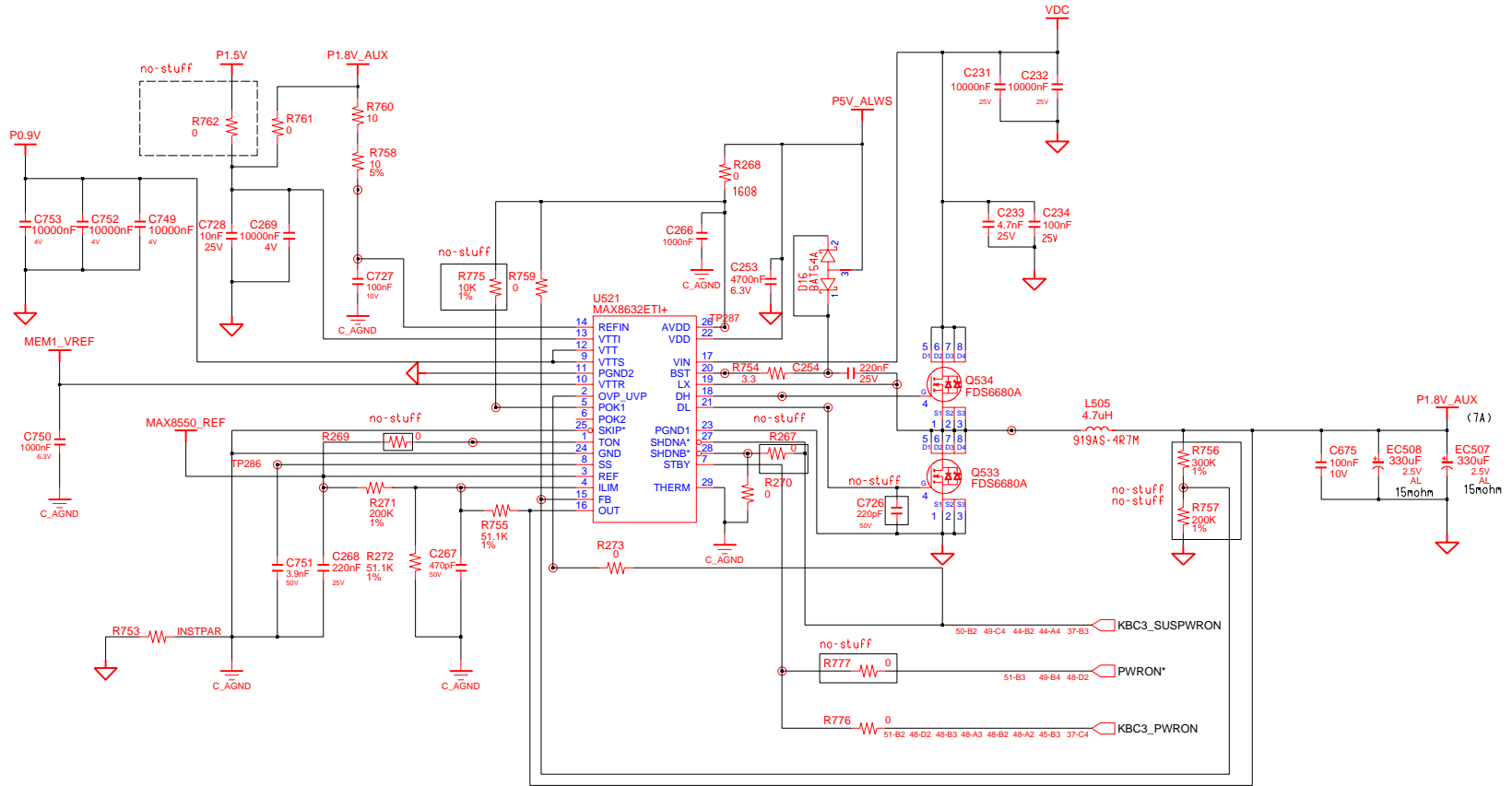
P1.5V & VCCP (1.05V)



| | | | | | | |
|-------------|---------|-----------|--------------------------|-------|---------------------------------|-------------------------|
| DRAW | K1 IM | DATE | 7/19/2005 | TITLE | HAINAN POWER P1.5V & VCCP | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | | | PART NO. BA41-*****A |
| APPROVAL | KK BIN | REV | 1.0 | | | |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 45 | OF 55 |

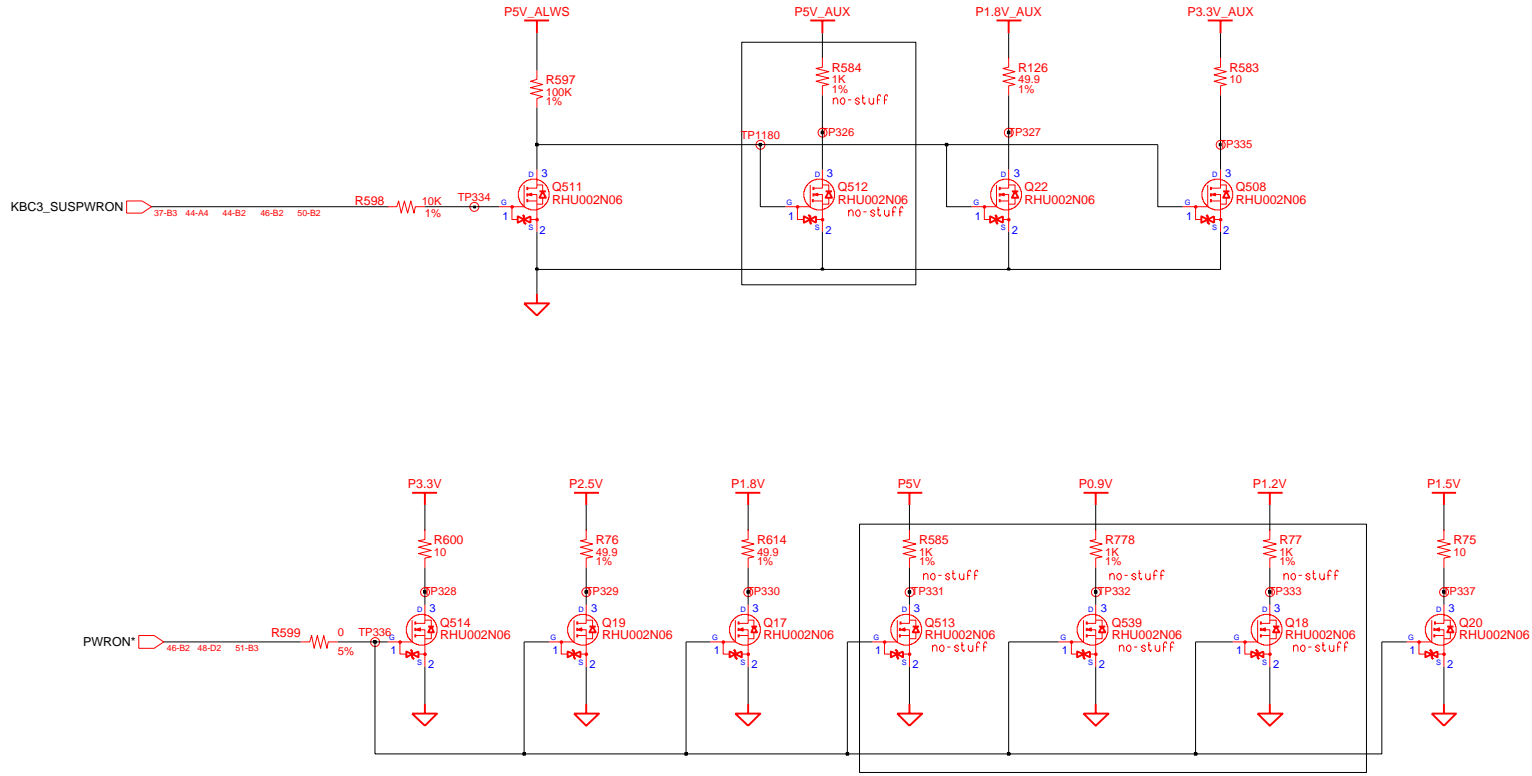
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DDR2 Power



| | | | | | | |
|-------------|---------|-----------|--------------------------|-------|------------------------------|-------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN MAIN DDR2 POWER | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | | | PART NO. BA41-*****A |
| APPROVAL | KK BIN | REV | 1.0 | | | |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 46 | OF 55 |

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| | | | | | | |
|-------------|---------|-----------|--------------------------|-------------------|--------|-------------------------|
| DRW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | GFX POWER | | |
| APPROVAL | KK BIN | REV | 1.0 | Discharging Logic | | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 49 | OF 55 |

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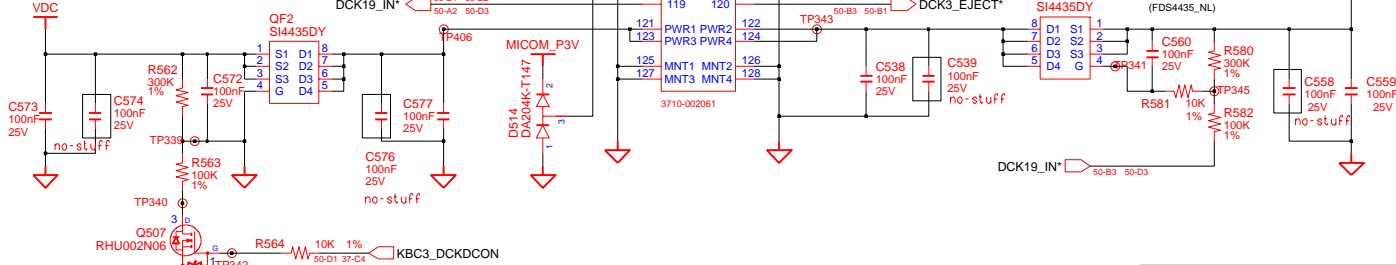
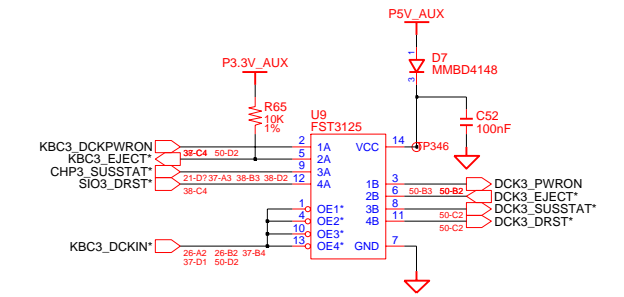
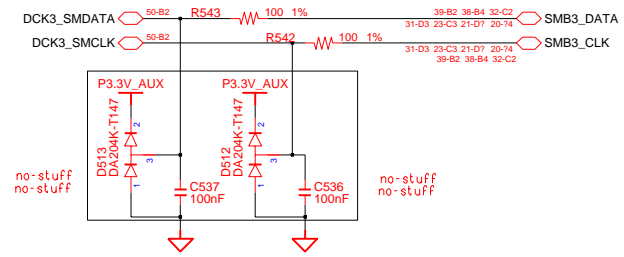
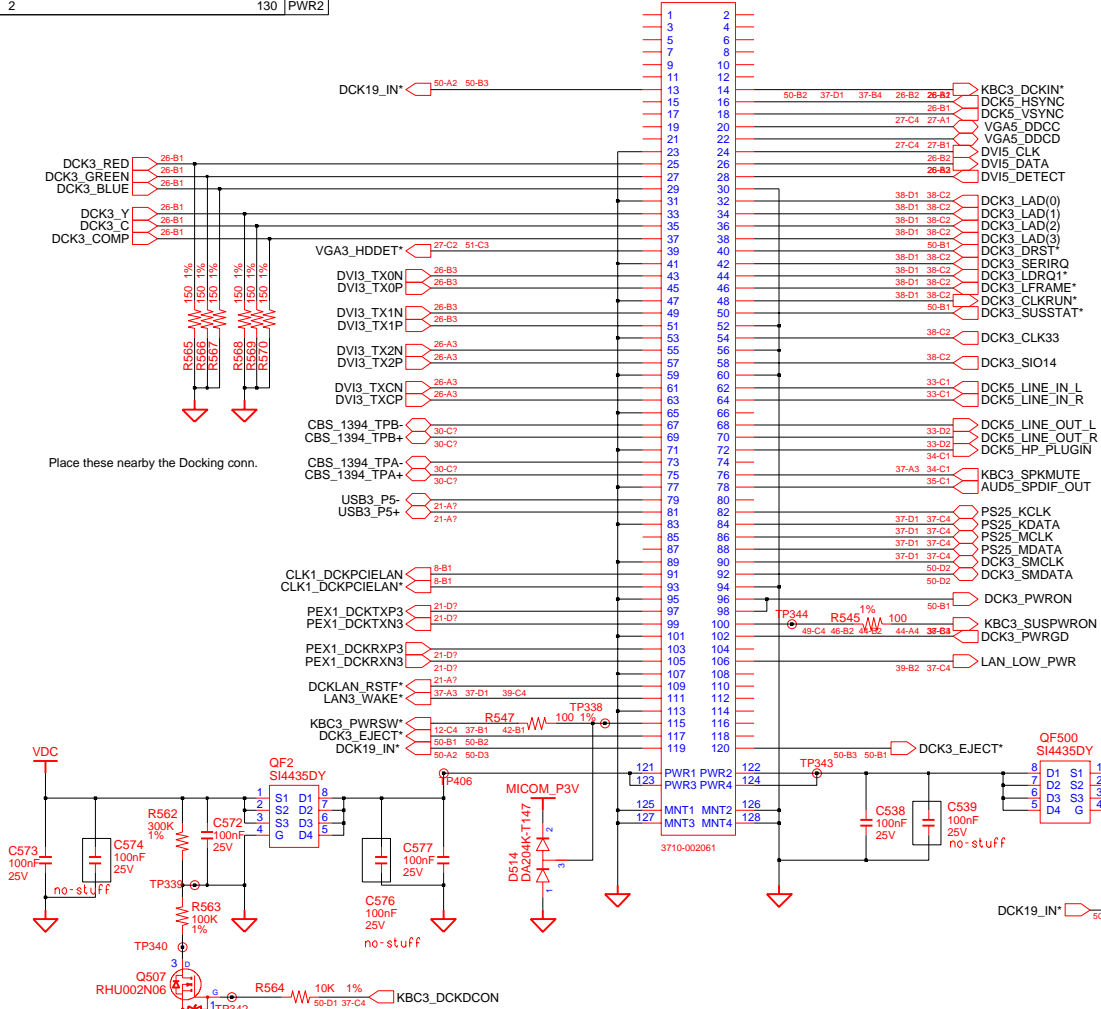
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DOCKING CONNECTOR (130PIN)

Docking Placement



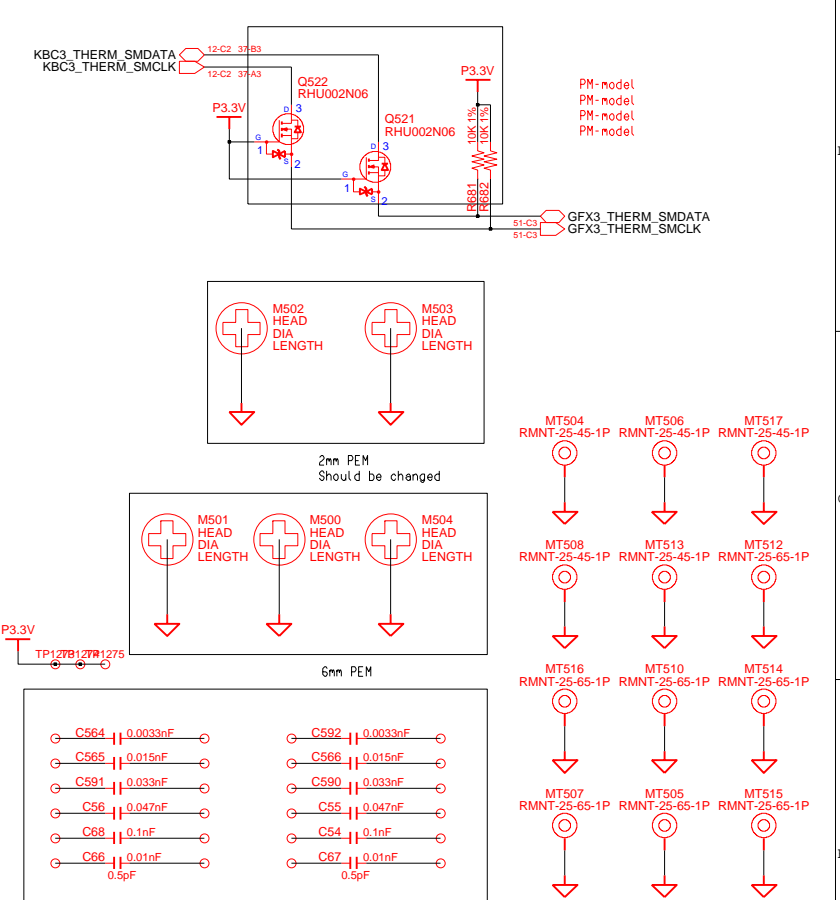
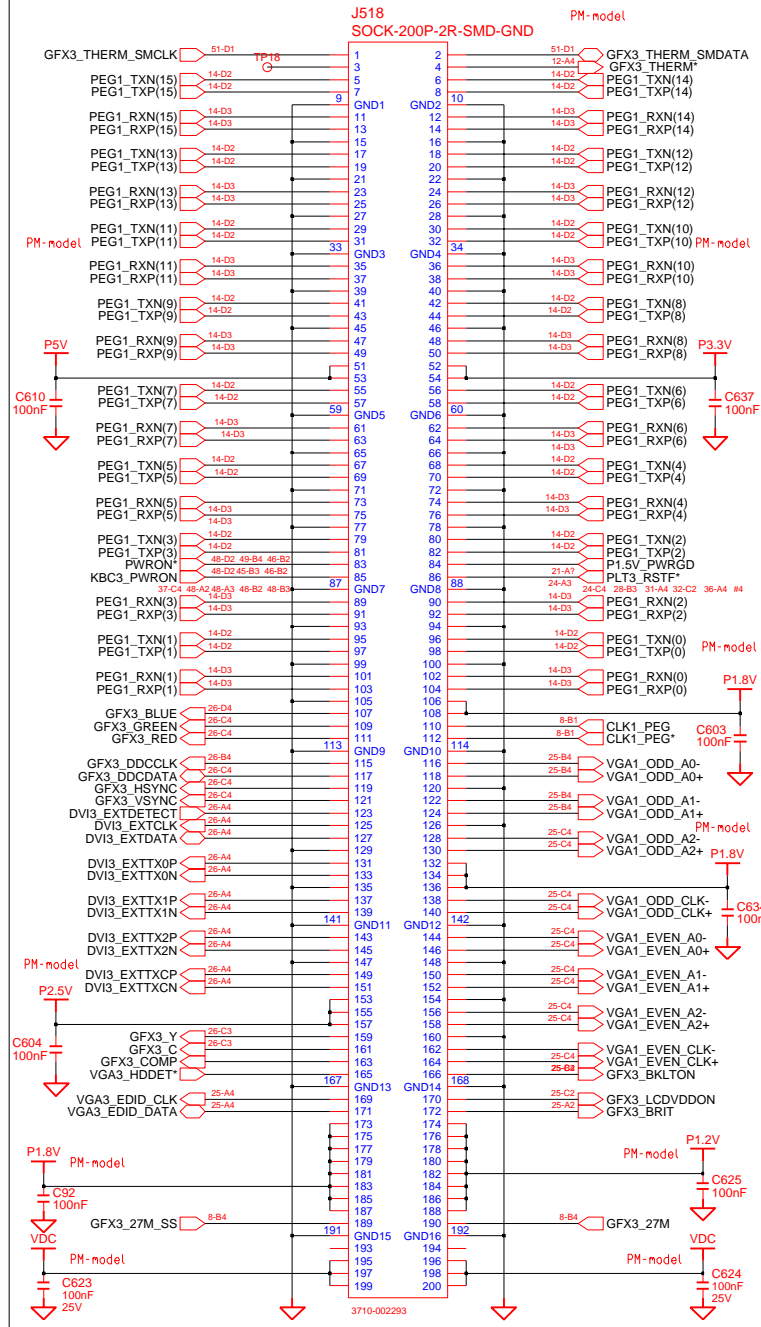
DOCK1 SOCK-DOCKING-120P



| | | | | | | |
|-------------|---------|-----------|--------------------------|-------|---------------------------------------|---|
| DRAW | K1 IM | DATE | 7/19/2005 | TITLE | HAINAN MAINBD Docking connector | SAMSUNG ELECTRONICS PART NO. BA41-*****A |
| CHECK | SS BAIK | DEV. STEP | DV | | | |
| APPROVAL | KK BIN | REV | 1.0 | | | |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 50 OF 55 | |
| | | | | | | |

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These are for ICT using.

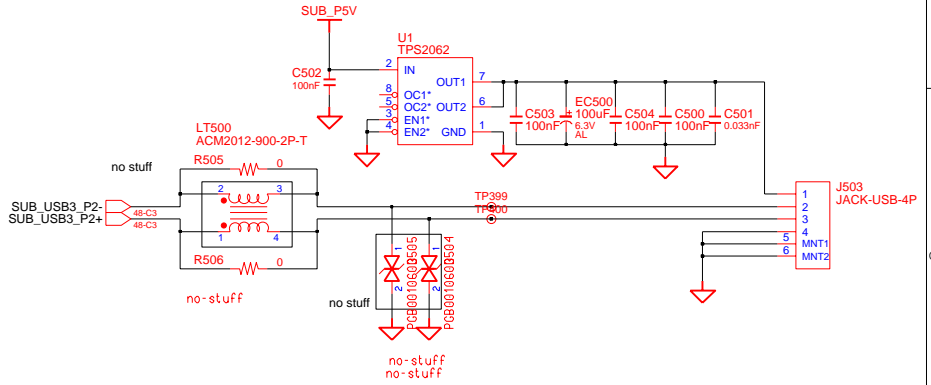
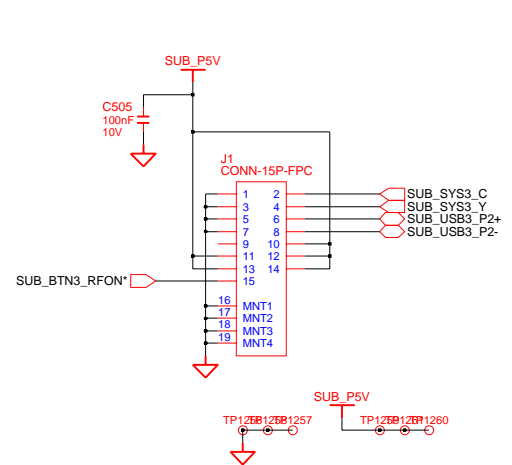
| PCB REVISION CONTROL (ICT) | | | | |
|----------------------------|------------|---------------|----------|------|
| NO | CONNECTION | DATE(Y/MM/DD) | REVISION | STEP |
| 1 | N.C. | | | |
| 2 | 1-2 | | | |
| 3 | 2-3 | | | |
| 4 | 3-1 | | | |
| 5 | 1-2-3 | | | |
| 6 | N.C. | | | |
| 7 | 1-2 | | | |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

| | | | | | | |
|-------------|---------|-----------|--------------------------|-------|-------------------|-------------------------|
| DRAW | K1 IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | MAIN | Ext Gfx connector | |
| APPROVAL | KK BIN | REV | 1.0 | | | PART NO. BA41-*****A |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 51 | OF 55 |

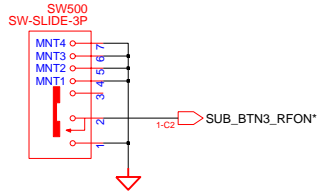
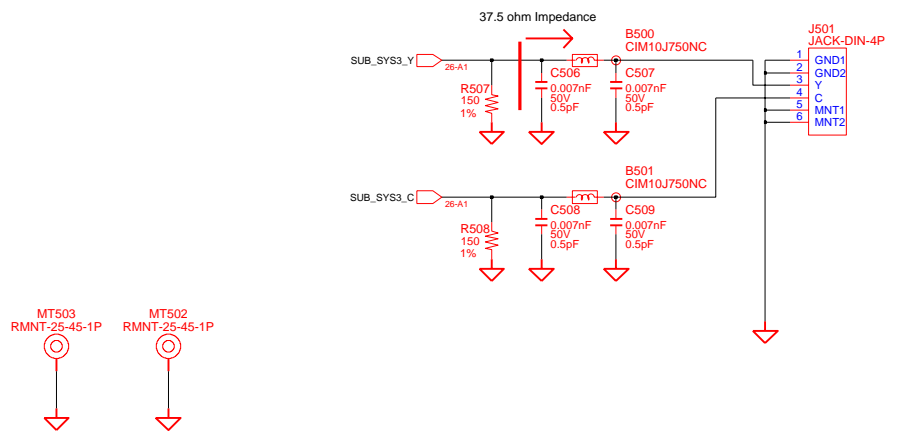
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USB Connector

USB_SVHS_SLIDE SWITCH BOARD



TV-OUT(S-VHS,COMPONENT)

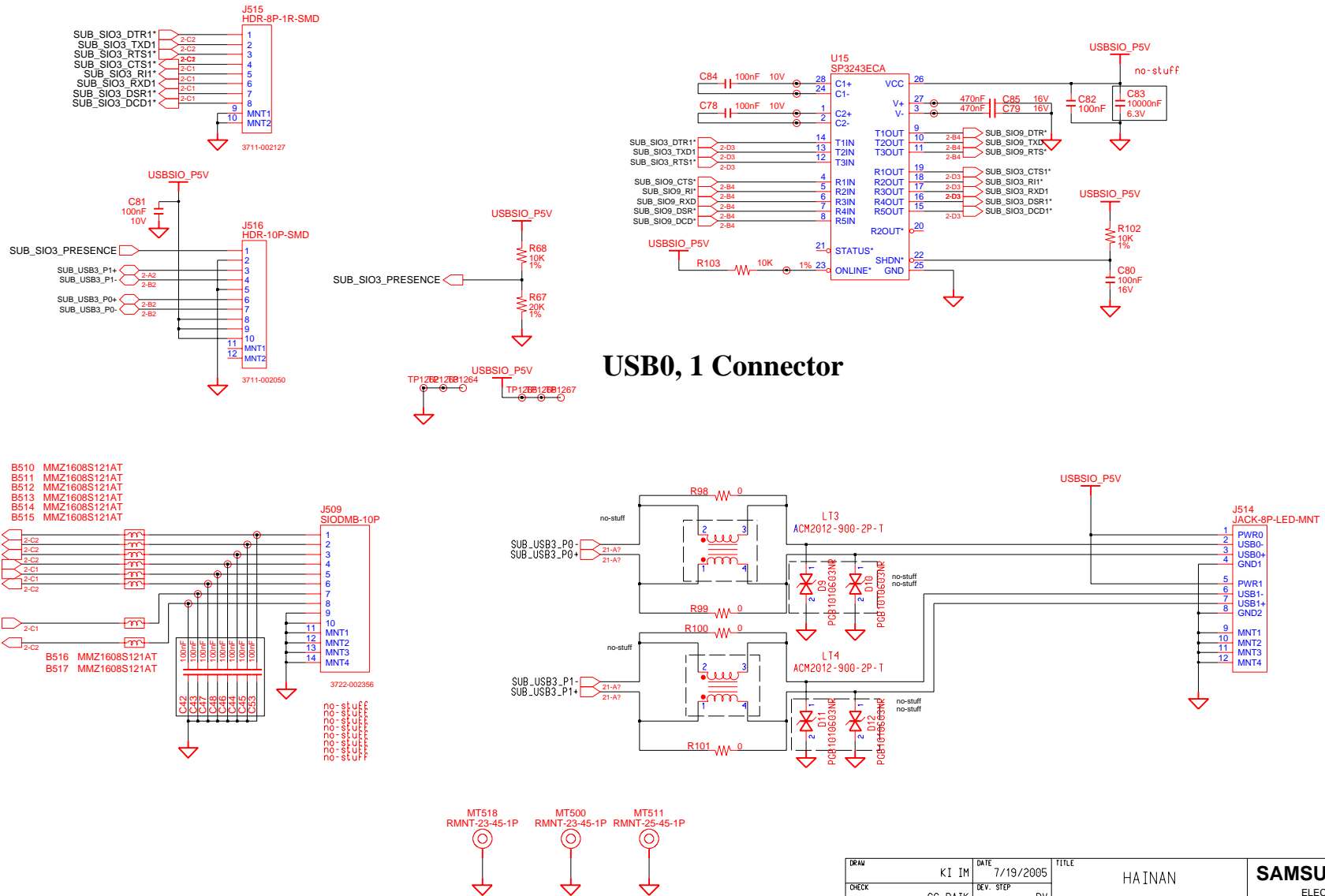


| | | | | | | |
|-------------|-----------|-----------|--------------------------|-------|----------------------------------|---|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN POWER Audio Sub B'd | SAMSUNG ELECTRONICS PART NO. BA41-*****A |
| CHECK | SS BAIK | DEV. STEP | DV | | | |
| APPROVAL | KK BIN | REV | 1.0 | | | |
| MODULE CODE | undefined | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 52 OF 55 | |

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USB_SIO BOARD



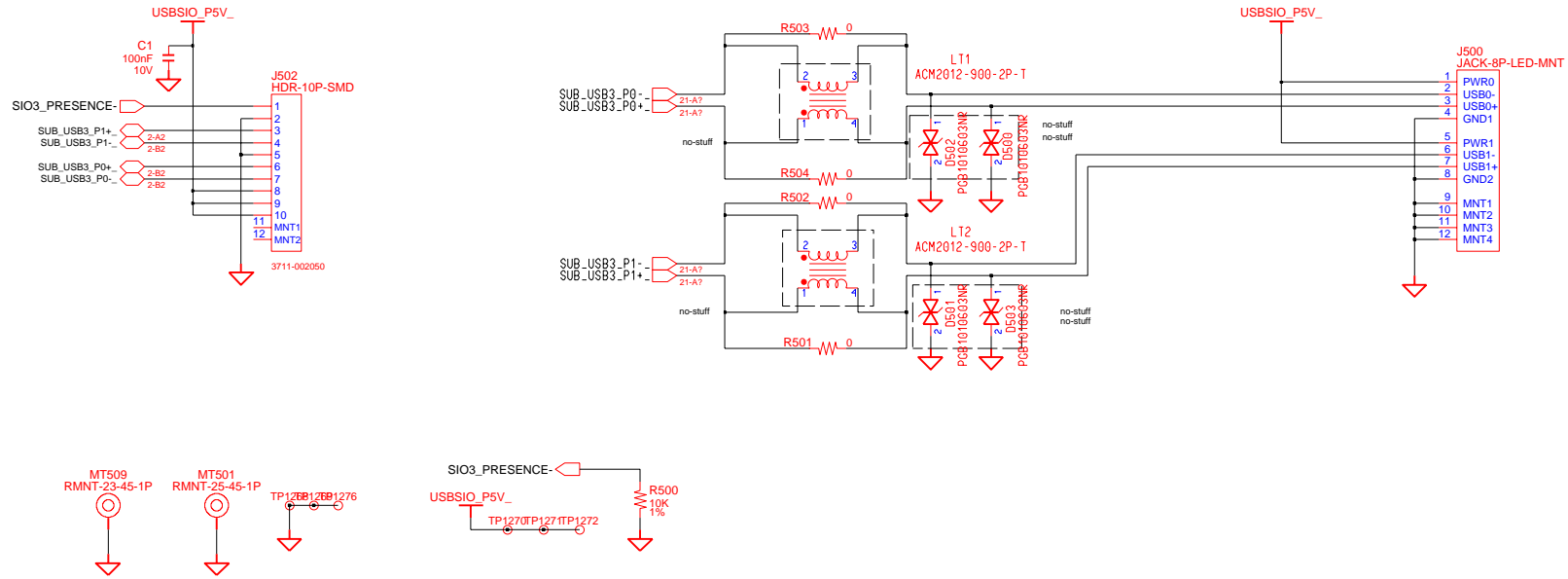
USB0, 1 Connector

| | | | | | | |
|-------------|---------|-----------|-----------|--------------------------|--------|-------------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | REVISION HISTORY | | |
| APPROVAL | KK BIN | REV | 1.0 | July 19, 2005 8:53:48 AM | | PAGE 53 OF 55 |
| MODULE CODE | | LAST EDIT | | | | PART NO. BA41-*****A |

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 EXCEPT AS AUTHORIZED BY SAMSUNG.

USB & DMB SUBBOARD

USB0, 1 Connector



| | | | | | | |
|-------------|---------|-----------|--------------------------|---------------|-------------|-------------------------------|
| DRAW | KI IM | DATE | 7/19/2005 | TITLE | HAINAN | SAMSUNG ELECTRONICS |
| CHECK | SS BAIK | DEV. STEP | DV | POWER | PART NO. | |
| APPROVAL | KK BIN | REV | 1.0 | AUDIO SUB B'D | BA41-*****A | |
| MODULE CODE | | LAST EDIT | July 19, 2005 8:53:48 AM | PAGE | 54 | OF 55 |

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| | | | | | |
|---|--|---|--|--|--|
| | 4 | 3 | 2 | 1 | |
| D | <p>TP775OCPU1_VSSSENSE TP776OCPU2_THERMDA TP777OCPU2_THERMDC TP778OCPU3_ALERT1* TP779OCPU3_THRTRIP* TP780OCR13_BLUE TP781OCR13_DDCCLK TP782OCR13_DDCDATA TP783OCR13_GREEN TP784OCR13_HSYNCK TP785OCR13_RED TP786OCR13_VSYNCK TP787OCR15_HSYNCK TP788OCR15_VSYNCK TP789OCDC19_IN* TP790OCDC3_BLUE TP745OCDC3_C TP746OCDC3_CLK33 TP747OCDC3_CLKRUN* TP748OCDC3_COMP TP749OCDC3_DRST* TP750OCDC3_EJECT* TP751OCDC3_GREEN TP752OCDC3_LAD(0) TP753OCDC3_LAD(1) TP754OCDC3_LAD(2) TP755OCDC3_LAD(3) TP756OCDC3_LDR0* TP757OCDC3_LFRAME* TP758OCDC3_PWRGD TP759OCDC3_PWRON TP760OCDC3_REFRM* TP761OCDC3_SERIRQ TP762OCDC3_S1014 TP763OCDC3_SMCLK TP764OCDC3_SMDATA TP765OCDC3_SUSSTAT* TP766OCDC3_Y TP767OCDC5_HP_PLUGIN TP768OCDC5_HSYNCK TP769OCDC5_EXTSW1* TP770OCDC5_LINE_IN_LR TP771OCDC5_LINE_OUT_LR TP772OCDC5_LINE_OUT_R TP773OCDC5_VSYNCK TP774OCDC3_BRT1* TP739ODV13_EXTCLK TP740ODV13_EXTDATA TP741ODV13_EXTDETECT TP742ODV13_INTDATA TP743ODV13_INTDATA TP744ODV13_INTDETECT TP729ODV15_CLK TP730ODV15_DATA TP731ODV15_DETECT TP732ODV02_CTRLCLK TP733ODV02_CTRLDATA TP734OEXP3_CLKREQ* TP735OEXP3_CPUSB* TP736OEXP3_CPUSB* TP737OEXP3_PERST* TP738OEXP3_PFBACK* TP897OEXP3_INIT* TP868OEXP3_27M_SS TP869OEXP3_27M_SS TP700OEXP3_BKLTON TP701OEXP3_BLUE TP702OEXP3_BRT1* TP703OEXP3_C TP704OEXP3_COMP TP705OEXP3_DDCCLK TP706OEXP3_DDCDATA TP707OEXP3_DDCDATA TP708OEXP3_HSYNCK TP709OEXP3_LCVDVDDON TP710OEXP3_RED TP711OEXP3_THERM* TP712OEXP3_THERM_SMCLK TP713OEXP3_THERM_SMDATA TP714OEXP3_THRTRIP* TP715OEXP3_VSYNCK TP716OEXP3_Y TP717OHDD3_LED* TP718OHMP_DETECT TP719OHMP_OUT_LR TP720OHMP_OUT_LR TP721OIDE5_A0 TP722OIDE5_A1 TP723OIDE5_A2 TP724OIDE5_A3* TP725OIDE5_C3* TP726OIDE5_D(0) TP727OIDE5_D(1) TP728OIDE5_D(10)</p> | <p>TP665OIDE5_D(11) TP666OIDE5_D(12) TP667OIDE5_D(13) TP668OIDE5_D(14) TP669OIDE5_D(15) TP670OIDE5_D(2) TP671OIDE5_D(3) TP672OIDE5_D(4) TP673OIDE5_D(5) TP674OIDE5_D(6) TP675OIDE5_D(7) TP676OIDE5_D(8) TP677OIDE5_D(9) TP678OIDE5_DACK* TP679OIDE5_DASP* TP680OIDE5_DREQ TP681OIDE5_IDEIRQ TP682OIDE5_IDEIRQ* TP683OIDE5_JORDY TP684OIDE5_LOW* TP685OIDE5_PDIAG* TP686OILIMS TP687OILIMS TP688OITP3_SYSRST* TP689OJCK_SENS TP690OJCK_SENS_HP TP691OJCK_SENS_MIC TP692OKBC3_A20G TP693OKBC3_BATT_4CELL TP694OKBC3_BKLTON TP695OKBC3_BLKPURSW* TP696OKBC3_CAPSLED* TP697OKBC3_CHGEN TP698OKBC3_CHKPURSW* TP699OKBC3_CPG1* TP700OKBC3_DCKBDON TP638OKBC3_DCKIN* TP639OKBC3_DCKPWRON TP640OKBC3_EJECT* TP641OKBC3_EXTSW1* TP642OKBC3_FANCTRL TP643OKBC3_LANPWRON TP644OKBC3_LED_AN* TP645OKBC3_LED_CHARGE* TP646OKBC3_LED_POWER* TP647OKBC3_NUMLED* TP648OKBC3_PWBRT1* TP649OKBC3_PWRON* TP650OKBC3_PWRGD TP651OKBC3_PWRON* TP652OKBC3_PWRSW* TP653OKBC3_RFQFT* TP654OKBC3_RSRMST* TP655OKBC3_RST* TP656OKBC3_RUNSCI* TP657OKBC3_SCLEDD* TP658OKBC3_SMLCK* TP659OKBC3_SMDATA* TP660OKBC3_SPKMUTE TP661OKBC3_SUSPWRON TP662OKBC3_THERM_SMCLK TP663OKBC3_THERM_SMDATA TP664OKBC3_VRON TP602OKBC3_WAKESCI* TP603OKBC3_WKON_LAN TP604OKBC3_WKON_LAN_D TP605OKBC3_CAL_THRM* TP606OKBC5_KSI(0) TP607OKBC5_KSI(1) TP608OKBC5_KSI(2) TP609OKBC5_KSI(3) TP610OKBC5_KSI(4) TP611OKBC5_KSI(5) TP612OKBC5_KSI(6) TP613OKBC5_KSI(7) TP614OKBC5_KSI(8) TP615OKBC5_KSI(9) TP616OKBC5_KSI(10) TP617OKBC5_KSI(11) TP618OKBC5_KSI(12) TP619OKBC5_KSI(13) TP620OKBC5_KSI(14) TP621OKBC5_KSI(15) TP622OKBC5_KSI(2) TP623OKBC5_KSI(3) TP624OKBC5_KSI(4) TP625OKBC5_KSI(5) TP626OKBC5_KSI(6) TP627OKBC5_KSI(7) TP628OKBC5_KSI(8) TP629OKBC5_KSI(9) TP630OKBC5_TCLK</p> | <p>TP631OKBC5_TDATA TP632OLAN3_ACT* TP633OLAN3_EEP_CLK TP634OLAN3_EEP_CS TP635OLAN3_EEP_D1 TP636OLAN3_EEP_D2 TP637OLAN3_LINK_10* TP638OLAN3_LINK_100* TP639OLAN3_LINK_1000* TP600OLAN3_WAKE* TP601OLAN_LOW_PWR TP656OLCD3_BKLTCTRL TP657OLCD3_BKLTEN TP658OLCD3_BKLTION TP659OLCD3_BRTI TP660OLCD3_BRIT TP661OLCD3_EDID_C TP662OLCD3_EDID_CLK TP663OLCD3_EDID_D TP664OLCD3_EDID_DATA TP665OLCD3_VDDEN TP666OLCD3_SWITCH* TP667OLCD3_LAD(0) TP668OLCD3_LAD(1) TP669OLCD3_LAD(2) TP670OLCD3_LAD(3) TP671OLCD3_LFRAME* TP672OLCD3_LFRMNG TP673OLCD3_LFRMNG* TP674OLCD3_MCH3_BMBUSY* TP675OLCD3_MCH3_CFG(10) TP676OLCD3_MCH3_CFG(11) TP677OLCD3_MCH3_CFG(12) TP678OLCD3_MCH3_CFG(13) TP679OLCD3_MCH3_CFG(16) TP680OLCD3_MCH3_CFG(19) TP681OLCD3_MCH3_CFG(20) TP682OLCD3_MCH3_CFG(9) TP683OLCD3_MCH3_CLKREQ* TP684OLCD3_DEVSEL* TP685OLCD3_IHSYNCK* TP686OLCD3_GNTO* TP687OLCD3_GNTP* TP688OLCD3_INITA TP689OLCD3_INITB TP690OLCD3_INITC TP691OLCD3_INITD TP692OLCD3_INITF TP693OLCD3_INITG TP694OLCD3_INITH TP695OLCD3_IROY* TP696OLCD3_IPAR TP697OLCD3_IPERR* TP698OLCD3_PLCKO* TP699OLCD3_REO0* TP700OLCD3_REO1* TP701OLCD3_REO2* TP702OLCD3_REO3* TP703OLCD3_RST* TP704OLCD3_SERR* TP705OLCD3_STOP* TP706OLCD3_TRDY* TP947OEXP3_WAKE* TP948OPL13_RST* TP949OPL13_RST* TP950OEXP3_KOIF* TP951OEXP3_KOIF* TP952OEXP3_KOIF* TP953OEXP3_MCLK TP954OEXP3_MDATA TP955OEXP3_MDATA TP956OEXP3_MDATA TP957OEXP3_MDATA TP958OEXP3_MDATA TP959OEXP3_MDATA TP959OSCLD* TP960OS103_C1S1* TP961OS103_DCD1* TP962OS103_DRST*</p> | <p>TP1156ONUMLED* TP1157O00D3_SEL TP1158OP1_5V_PWRGD TP1159OP13_AD(0) TP1160OP13_AD(1) TP1161OP13_AD(10) TP1162OP13_AD(11) TP1163OP13_AD(12) TP1164OP13_AD(13) TP1165OP13_AD(14) TP1166OP13_AD(15) TP1167OP13_AD(16) TP1168OP13_AD(17) TP1169OP13_AD(18) TP1170OP13_AD(19) TP1171OP13_AD(2) TP1172OP13_AD(20) TP1173OP13_AD(21) TP1174OP13_AD(22) TP1175OP13_AD(23) TP1176OP13_AD(24) TP1177OP13_AD(25) TP1178OP13_AD(26) TP1179OP13_AD(27) TP1180OP13_AD(28) TP1181OP13_AD(29) TP1182OP13_AD(3) TP1183OP13_AD(31) TP1184OP13_AD(4) TP1185OP13_AD(5) TP1186OP13_AD(6) TP1187OP13_AD(7) TP1188OP13_AD(8) TP1189OP13_AD(9) TP1190OP13_CBE0* TP1191OP13_CBE1* TP1192OP13_CBE2* TP1193OP13_CBE3* TP1194OP13_CLKRUN* TP1195OP13_DEVSEL* TP1196OP13_FRMSEL* TP1197OP13_GNTO* TP1198OP13_GNTP* TP1199OP13_INITA TP1200OP13_INITB TP1201OP13_INITC TP1202OP13_INITD TP1203OP13_INITF TP1204OP13_INITG TP1205OP13_IROY* TP1206OP13_IPAR TP1207OP13_IPERR* TP1208OP13_PLCKO* TP1209OP13_REO0* TP1210OP13_REO1* TP1211OP13_REO2* TP1212OP13_REO3* TP1213OP13_RST* TP1214OP13_SERR* TP1215OP13_STOP* TP1216OP13_TRDY* TP959OSCLD* TP960OS103_C1S1* TP961OS103_DCD1* TP962OS103_DRST*</p> | <p>TP963OS103_DSRI* TP964OS103_DTR1* TP965OS103_IRMODE TP966OS103_IRRX* TP967OS103_IRTX* TP968OS103_E11* TP969OS103_R1S1* TP970OS103_RXD1 TP971OS103_TXD1 TP972OSMB3_ALERT* TP973OSMB3_CLK TP974OSMB3_DATA TP975OSMB3_LINKALERT* TP976OSYS3_C TP977OSYS3_C TP978OSYS3_C TP979OSYS3_C TP980OSYS3_C TP981OSYS3_C TP982OSYS3_C TP983OSYS3_C TP984OSYS3_C TP985OSYS3_C TP986OSYS3_C TP987OSYS3_C TP988OSYS3_C TP989OSYS3_C TP990OSYS3_C TP991OSYS3_C TP992OSYS3_C TP993OSYS3_C TP994OSYS3_C TP995OSYS3_C TP996OSYS3_C TP997OSYS3_C TP998OSYS3_C TP999OSYS3_C TP1000OP0_9V TP995OP0_9V TP996OP1_2V TP997OP1_2V TP998OP1_2V TP999OP1_2V TP1000OP1_2V TP1001OP1_2V TP1002OP1_2V TP1003OP1_2V TP1004OP1_2V TP1005OP1_2V TP1006OP1_2V TP1007OP1_2V TP1008OP1_2V TP1009OP1_2V TP1010OP1_2V TP1011OP1_2V TP1012OP1_2V TP1013OP1_2V TP1014OP1_2V TP1015OP1_2V TP1016OP1_2V TP1017OP1_2V TP1018OP1_2V TP1019OP1_2V TP1020OP1_2V TP1021OP1_2V TP1022OP1_2V TP1023OP1_2V TP1024OP1_2V TP1025OP1_2V TP1026OP1_2V TP1027OP1_2V TP1028OP1_2V TP1029OP1_2V TP1030OP1_2V TP1031OP1_2V TP1032OP1_2V TP1033OP1_2V TP1034OP1_2V TP1035OP1_2V TP1036OP1_2V TP1037OP1_2V TP1038OP1_2V TP1039OP1_2V TP1040OP1_2V TP1041OP1_2V TP1042OP1_2V TP1043OP1_2V TP1044OP1_2V TP1045OP1_2V TP1046OP1_2V TP1047OP1_2V TP1048OP1_2V TP1049OP1_2V TP1050OP1_2V TP1051OP1_2V TP1052OP1_2V TP1053OP1_2V TP1054OP1_2V TP1055OP1_2V TP1056OP1_2V TP1057OP1_2V TP1058OP1_2V TP1059OP1_2V TP1060OP1_2V TP1061OP1_2V TP1062OP1_2V TP1063OP1_2V TP1064OP1_2V TP1065OP1_2V TP1066OP1_2V TP1067OP1_2V TP1068OP1_2V TP1069OP1_2V TP1070OP1_2V TP1071OP1_2V TP1072OP1_2V TP1073OP1_2V TP1074OP1_2V TP1075OP1_2V TP1076OP1_2V TP1077OP1_2V TP1078OP1_2V TP1079OP1_2V TP1080OP1_2V TP1081OP1_2V TP1082OP1_2V TP1083OP1_2V TP1084OP1_2V TP1085OP1_2V TP1086OP1_2V TP1087OP1_2V TP1088OP1_2V TP1089OP1_2V TP1090OP1_2V TP1091OP1_2V TP1092OP1_2V TP1093OP1_2V TP1094OP1_2V TP1095OP1_2V TP1096OP1_2V TP1097OP1_2V TP1098OP1_2V TP1099OP1_2V TP1100OP1_2V TP1101OP1_2V TP1102OP1_2V TP1103OP1_2V TP1104OP1_2V TP1105OP1_2V TP1106OP1_2V TP1107OP1_2V TP1108OP1_2V TP1109OP1_2V TP1110OP1_2V TP1111OP1_2V TP1112OP1_2V TP1113OP1_2V TP1114OP1_2V TP1115OP1_2V TP1116OP1_2V TP1117OP1_2V TP1118OP1_2V TP1119OP1_2V TP1120OP1_2V TP1121OP1_2V TP1122OP1_2V TP1123OP1_2V TP1124OP1_2V TP1125OP1_2V TP1126OP1_2V TP1127OP1_2V TP1128OP1_2V TP1129OP1_2V TP1130OP1_2V TP1131OP1_2V TP1132OP1_2V TP1133OP1_2V TP1134OP1_2V TP1135OP1_2V TP1136OP1_2V TP1137OP1_2V TP1138OP1_2V TP1139OP1_2V TP1140OP1_2V TP1141OP1_2V TP1142OP1_2V TP1143OP1_2V TP1144OP1_2V TP1145OP1_2V TP1146OP1_2V TP1147OP1_2V TP1148OP1_2V TP1149OP1_2V TP1150OP1_2V TP1151OP1_2V TP1152OP1_2V TP1153OP1_2V TP1154OP1_2V TP1155OP1_2V TP1156OP1_2V TP1157OP1_2V TP1158OP1_2V TP1159OP1_2V TP1160OP1_2V TP1161OP1_2V TP1162OP1_2V TP1163OP1_2V TP1164OP1_2V TP1165OP1_2V TP1166OP1_2V TP1167OP1_2V TP1168OP1_2V TP1169OP1_2V TP1170OP1_2V TP1171OP1_2V TP1172OP1_2V TP1173OP1_2V TP1174OP1_2V TP1175OP1_2V TP1176OP1_2V TP1177OP1_2V TP1178OP1_2V TP1179OP1_2V TP1180OP1_2V TP1181OP1_2V TP1182OP1_2V TP1183OP1_2V 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TP1261OP1_2V TP1262OP1_2V TP1263OP1_2V TP1264OP1_2V TP1265OP1_2V TP1266OP1_2V TP1267OP1_2V TP1268OP1_2V TP1269OP1_2V TP1270OP1_2V TP1271OP1_2V TP1272OP1_2V TP1273OP1_2V TP1274OP1_2V TP1275OP1_2V TP1276OP1_2V TP1277OP1_2V TP1278OP1_2V TP1279OP1_2V TP1280OP1_2V TP1281OP1_2V TP1282OP1_2V TP1283OP1_2V TP1284OP1_2V TP1285OP1_2V TP1286OP1_2V TP1287OP1_2V TP1288OP1_2V TP1289OP1_2V TP1290OP1_2V TP1291OP1_2V TP1292OP1_2V TP1293OP1_2V TP1294OP1_2V TP1295OP1_2V TP1296OP1_2V TP1297OP1_2V TP1298OP1_2V TP1299OP1_2V TP1300OP1_2V TP1301OP1_2V TP1302OP1_2V TP1303OP1_2V TP1304OP1_2V TP1305OP1_2V TP1306OP1_2V TP1307OP1_2V TP1308OP1_2V TP1309OP1_2V TP1310OP1_2V TP1311OP1_2V TP1312OP1_2V TP1313OP1_2V TP1314OP1_2V TP1315OP1_2V TP1316OP1_2V TP1317OP1_2V TP1318OP1_2V TP1319OP1_2V TP1320OP1_2V TP1321OP1_2V TP1322OP1_2V TP1323OP1_2V TP1324OP1_2V TP1325OP1_2V TP1326OP1_2V TP1327OP1_2V TP1328OP1_2V TP1329OP1_2V TP1330OP1_2V TP1331OP1_2V TP1332OP1_2V TP1333OP1_2V TP1334OP1_2V TP1335OP1_2V TP1336OP1_2V TP1337OP1_2V TP1338OP1_2V TP1339OP1_2V TP1340OP1_2V TP1341OP1_2V TP1342OP1_2V TP1343OP1_2V TP1344OP1_2V TP1345OP1_2V TP1346OP1_2V TP1347OP1_2V TP1348OP1_2V TP1349OP1_2V TP1350OP1_2V TP1351OP1_2V TP1352OP1_2V TP1353OP1_2V TP1354OP1_2V TP1355OP1_2V TP1356OP1_2V TP1357OP1_2V TP1358OP1_2V TP1359OP1_2V TP1360OP1_2V TP1361OP1_2V TP1362OP1_2V TP1363OP1_2V TP1364OP1_2V TP1365OP1_2V TP1366OP1_2V TP1367OP1_2V TP1368OP1_2V TP1369OP1_2V TP1370OP1_2V TP1371OP1_2V TP1372OP1_2V TP1373OP1_2V TP1374OP1_2V TP1375OP1_2V TP1376OP1_2V TP1377OP1_2V TP1378OP1_2V TP1379OP1_2V TP1380OP1_2V TP1381OP1_2V TP1382OP1_2V TP1383OP1_2V TP1384OP1_2V TP1385OP1_2V TP1386OP1_2V TP1387OP1_2V TP1388OP1_2V TP1389OP1_2V TP1390OP1_2V TP1391OP1_2V TP1392OP1_2V TP1393OP1_2V TP1394OP1_2V TP1395OP1_2V TP1396OP1_2V TP1397OP1_2V TP1398OP1_2V TP1399OP1_2V TP1400OP1_2V TP1401OP1_2V TP1402OP1_2V TP1403OP1_2V TP1404OP1_2V TP1405OP1_2V TP1406OP1_2V TP1407OP1_2V TP1408OP1_2V TP1409OP1_2V TP1410OP1_2V TP1411OP1_2V TP1412OP1_2V TP1413OP1_2V TP1414OP1_2V 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TP1569OP1_2V TP1570OP1_2V TP1571OP1_2V TP1572OP1_2V TP1573OP1_2V TP1574OP1_2V TP1575OP1_2V TP1576OP1_2V TP1577OP1_2V TP1578OP1_2V TP1579OP1_2V TP1580OP1_2V TP1581OP1_2V TP1582OP1_2V TP1583OP1_2V TP1584OP1_2V TP1585OP1_2V TP1586OP1_2V TP1587OP1_2V TP1588OP1_2V TP1589OP1_2V TP1590OP1_2V TP1591OP1_2V TP1592OP1_2V TP1593OP1_2V TP1594OP1_2V TP1595OP1_2V TP1596OP1_2V TP1597OP1_2V TP1598OP1_2V TP1599OP1_2V TP1600OP1_2V TP1601OP1_2V TP1602OP1_2V TP1603OP1_2V TP1604OP1_</p> |

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EXT GFx

CPU :
Chip Set : NVIDIA 7X series
Remarks :

Model Name : HABANA EXT GFx
PBA Name :
PCB Code :
Dev. Step : MP
Revision : 1.0
T.R. Date : 2005.11.14

Sheet 1. COVER
Sheet 2. GFX CONNECTOR
Sheet 3~6. GFX CHIP (G73M)
Sheet 7. GFX STRAP OPTION
Sheet 8~9. GDDR3 MEMORY
Sheet 10. GDDR3 TERMINATION, THERMAL SENSOR, HDCP ROM
Sheet 11. GFX CORE REGULATOR

| DRAW | CHECK | APPROVAL |
|--------|--------|----------|
| SE LEE | ES CHO | BL LEE |
| | | |

| | | | | | | | |
|-------------|---------|-----------|-------------------------------|----------|----------------------------|-------------------------------|-------------|
| DRAW | LEE, SE | DATE | 11/14/2005 | TITLE | HABANA EXT GFX COVER | SAMSUNG ELECTRONICS | |
| CHECK | CHO, ES | DEV. STEP | MP | PART NO. | | | BA41-00545A |
| APPROVAL | LEE, BL | REV | 1.0 | | | | |
| MODULE CODE | | LAST EDIT | November 14, 2005 10:24:53 PM | PAGE | 1 | OF 12 | |

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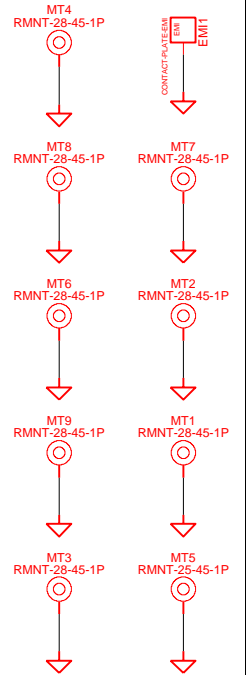
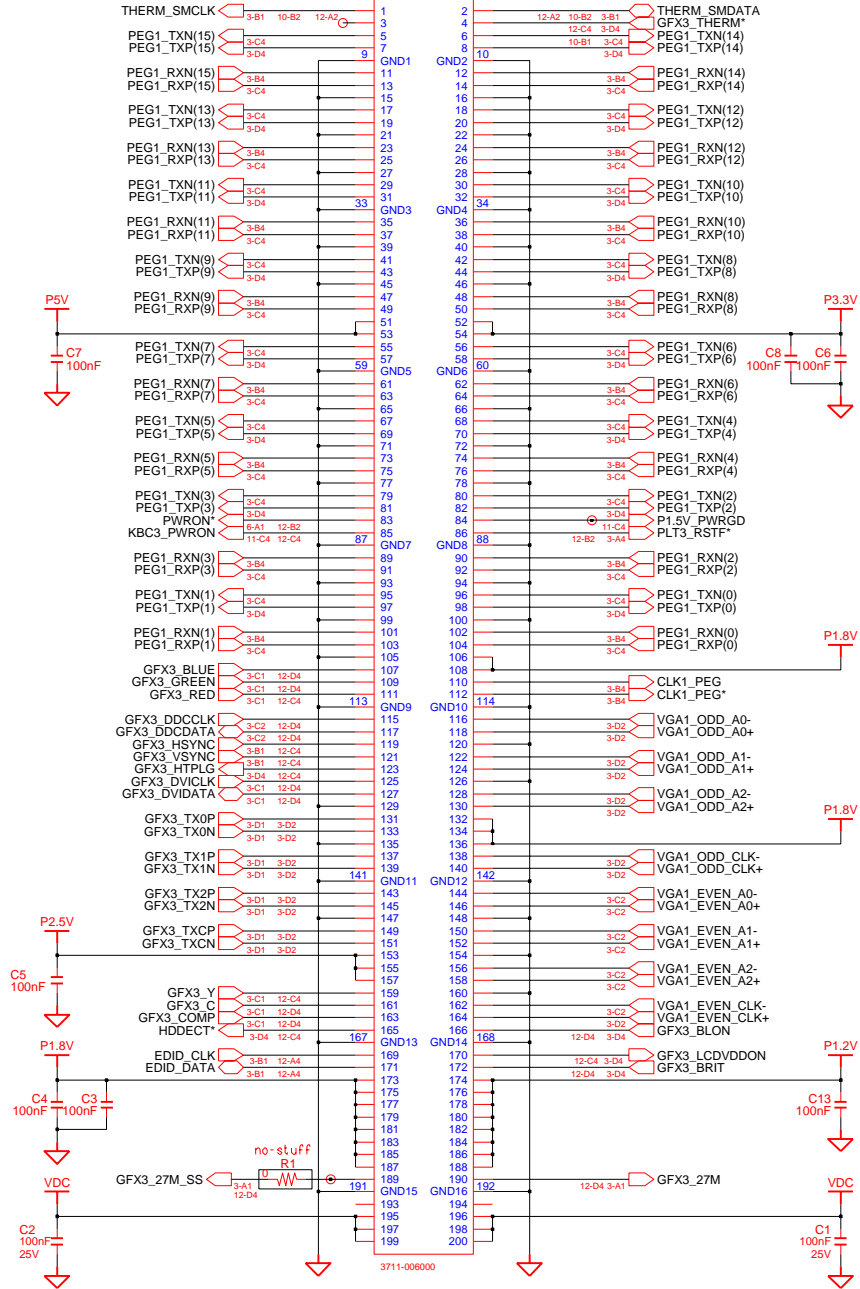
D

C

B

A

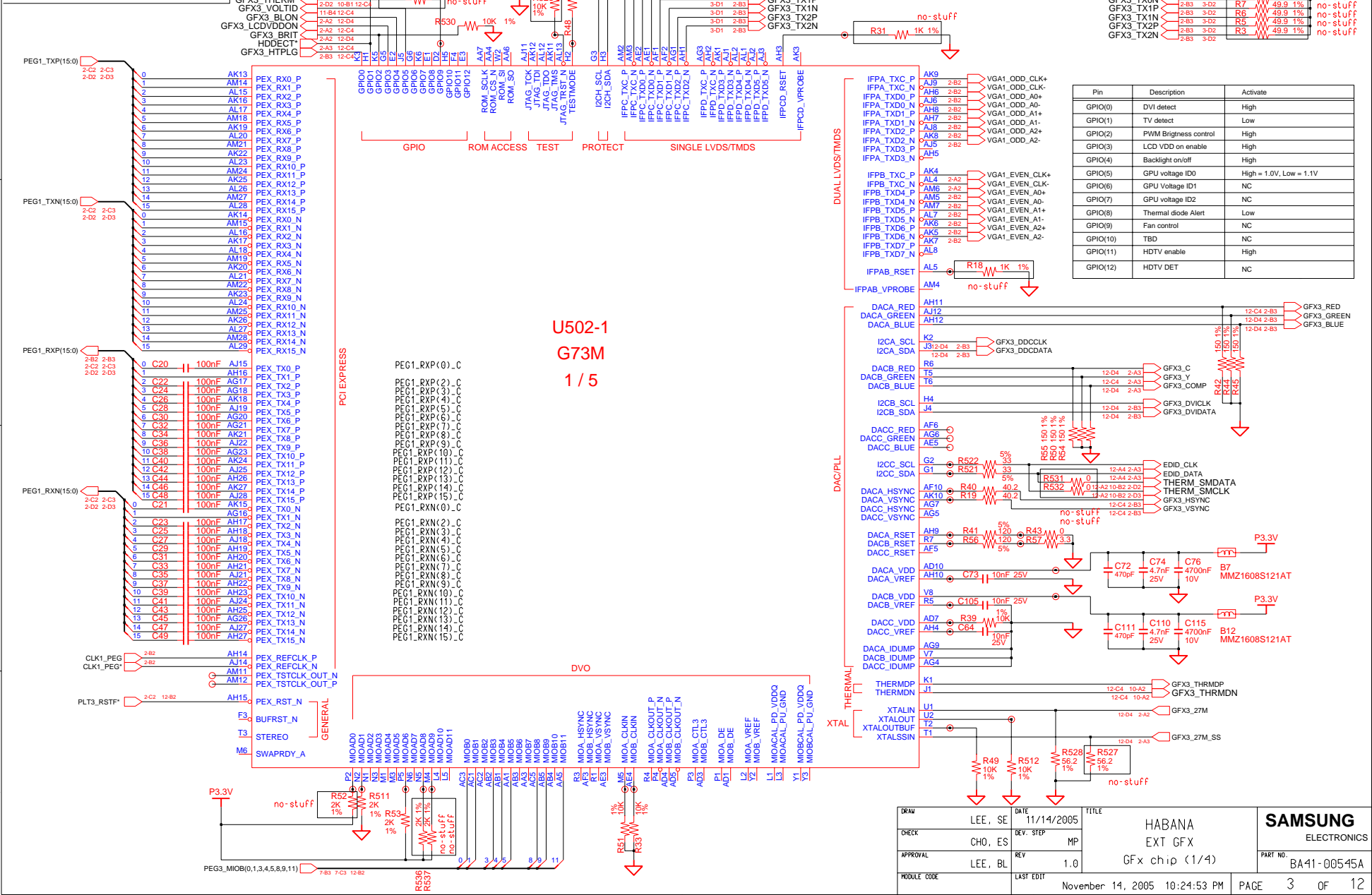
J501 HEAD-200P-2R-SMD-GND



| | | | | | | |
|-------------|---------|-----------|-------------------------------|-------|----------------|-------------------------------|
| DRAW | LEE, SE | DATE | 11/14/2005 | TITLE | HABANA EXT GFX | SAMSUNG ELECTRONICS |
| CHECK | CHO, ES | DEV. STEP | MP | | | |
| APPROVAL | LEE, BL | REV | 1.0 | | Gfx connector | PART NO. BA41-00545A |
| MODULE CODE | | LAST EDIT | November 14, 2005 10:24:53 PM | PAGE | 2 | OF 12 |

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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 voltage ID0 | High = 1.0V, Low = 1.1V |
| GPIO(6) | GPU Voltage ID1 | NC |
| GPIO(7) | GPU voltage ID2 | NC |
| GPIO(8) | Thermal diode Alert | Low |
| GPIO(9) | Fan control | NC |
| GPIO(10) | TBD | NC |
| GPIO(11) | HDTV enable | High |
| GPIO(12) | HDTV DET | NC |

| 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 voltage ID0 | High = 1.0V, Low = 1.1V |
| GPIO(6) | GPU Voltage ID1 | NC |
| GPIO(7) | GPU voltage ID2 | NC |
| GPIO(8) | Thermal diode Alert | Low |
| GPIO(9) | Fan control | NC |
| GPIO(10) | TBD | NC |
| GPIO(11) | HDTV enable | High |
| GPIO(12) | HDTV DET | NC |

U502-1
G73M
1 / 5

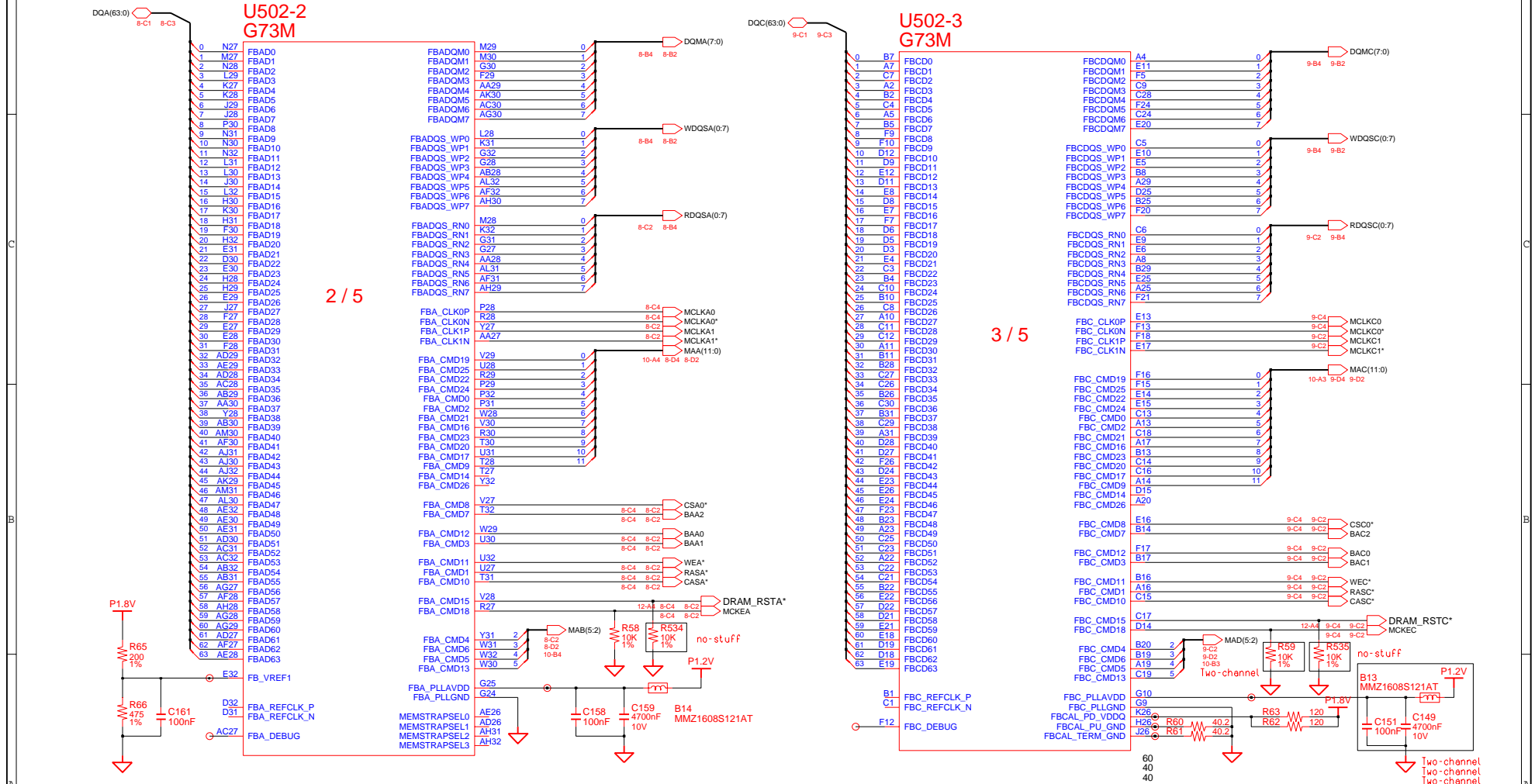
| | | | | | | |
|----------|---------|-----------|-------------------------------|-------|-------------------|-------------------------|
| DRAW | LEE, SE | DATE | 11/14/2005 | TITLE | HABANA EXT GFX | |
| CHECK | CHO, ES | DEV. STEP | MP | REV | 1.0 | |
| APPROVAL | LEE, BL | LAST EDIT | November 14, 2005 10:24:53 PM | PAGE | 3 OF 12 | PART NO. BA41-00545A |

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Graphic Memory I/F (Using FBA Channel)

Graphic Memory I/F (Using FBC Channel)



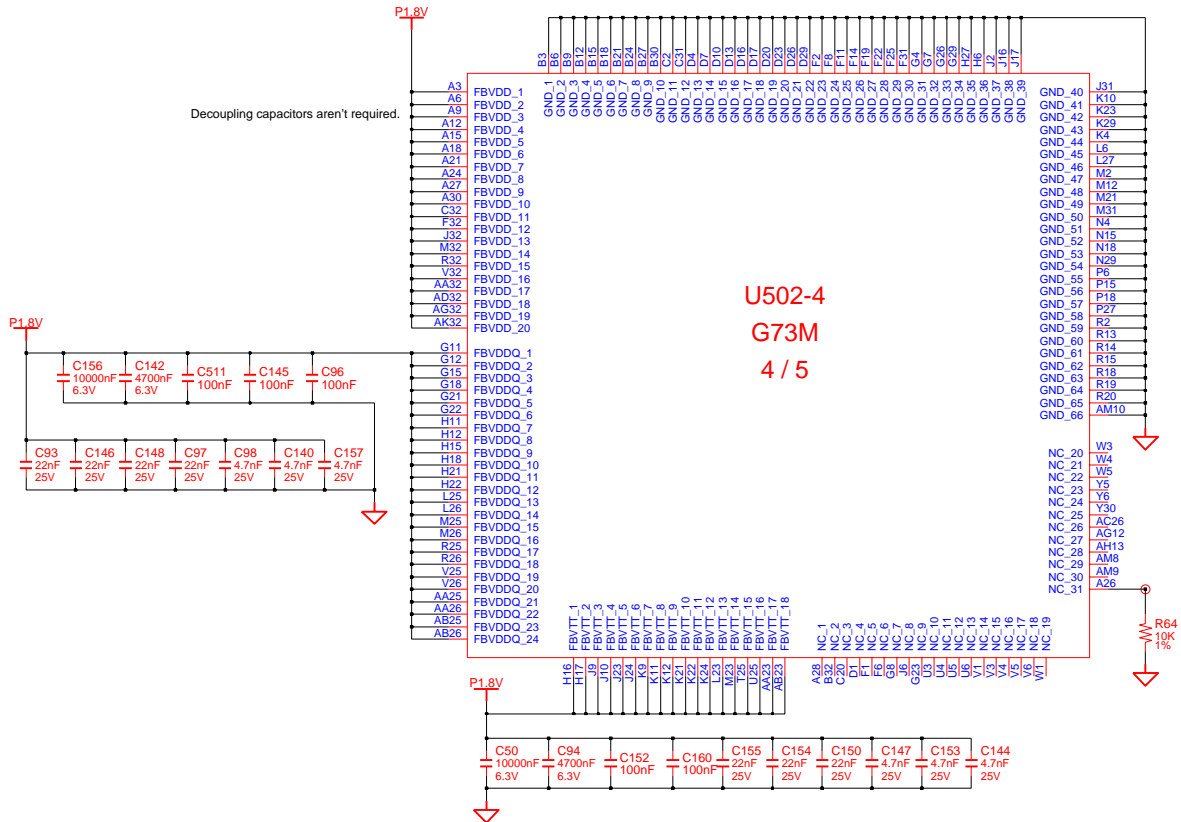
3/5

2/5

| | | | | |
|-----------|------------|-----------|-------------------------------|-------------------------|
| DATE | 11/14/2005 | TITLE | HABANA EXT GFX | SAMSUNG ELECTRONICS |
| DEV. STEP | MP | REV | Gfx chip (2/4) | |
| DESIGNER | LEE, SE | APPROVAL | LEE, BL | PART NO. BA41-00545A |
| CHECK | CHO, ES | LAST EDIT | November 14, 2005 10:24:53 PM | PAGE 4 OF 12 |

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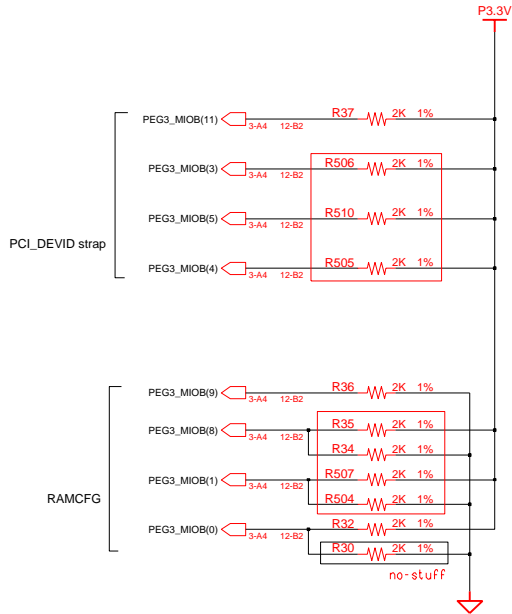


| | | | | | | |
|-------------|-----------|-----------|-------------------------------|----------------|-------------------|-------------------------|
| DRAW | LEE, SE | DATE | 11/14/2005 | TITLE | HABANA EXT GFX | |
| CHECK | CHO, ES | DEV. STEP | MP | GFx chip (3/4) | | |
| APPROVAL | LEE, BL | REV | 1.0 | | | PART NO. BA41-00545A |
| MODULE CODE | LAST EDIT | | November 14, 2005 10:24:53 PM | | PAGE | 5 OF 12 |

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| | R37 | R506 | R510 | R505 |
|-------|----------|----------|----------|----------|
| 72M-V | no-stuff | stuff | stuff | stuff |
| 72M | stuff | no-stuff | no-stuff | no-stuff |
| 73M | stuff | no-stuff | no-stuff | no-stuff |



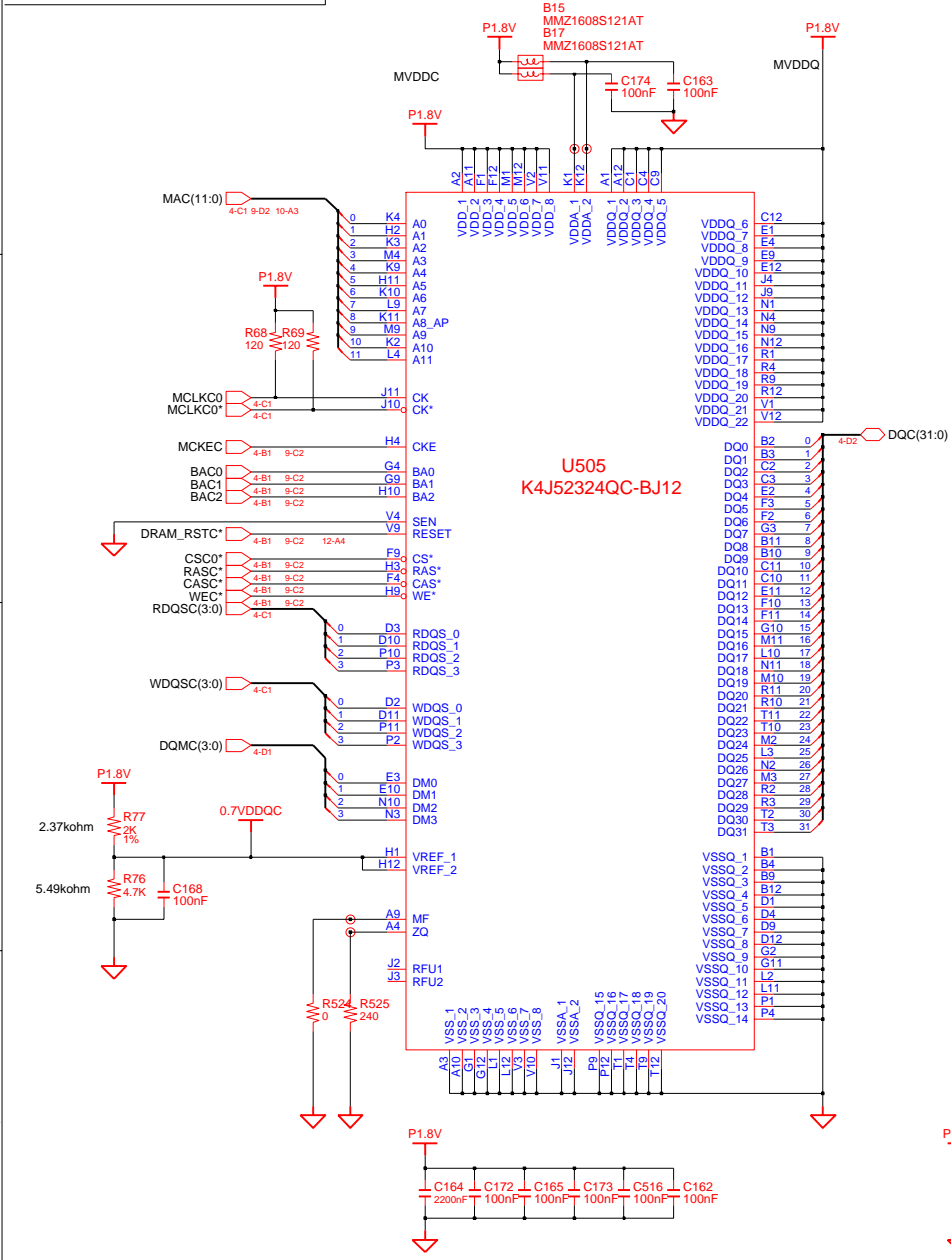
| | R35 | R34 | R507 | R504 |
|-----------|----------|----------|----------|----------|
| SS 256Mb | stuff | no-stuff | stuff | no-stuff |
| INF 256Mb | stuff | no-stuff | no-stuff | stuff |
| SS 512Mb | no-stuff | stuff | stuff | no-stuff |
| INF 512Mb | no-stuff | stuff | no-stuff | stuff |

| Straps | Pin # (Rev.A02) | Descriptions |
|------------------------------|---|--|
| SUB_VENDOR | MIOAD(1) | 0 : No BIOS 1 : Read from BIOS(Default) |
| RAMCFG(3:0) [9,8,1,0] | MIOB(9) MIOB(8) MIOB(1) MIOB(0) | 0111 : samsung GDDR3 256Mbit 0101 : infineon GDDR3 256Mbit 0011 : samsung GDDR3 512Mbit 0001 : infineon GDDR3 512Mbit |
| CRYSTAL(1:0) | MIOB(2) MIOB(6) | 01 : 14.318 MHz 10 : 27 MHz (Default) 11 : Unknown 00 : 13.5 MHz |
| TV_MODE(1:0) | MIOAD(7) MIOAD(10) | 00 : SECAM 01 : NTSC (Default) 10 : PAL 11 : CRT |
| PCI_DEVID(3:0) [11,3,5,4] | MIOB(11) MIOB(3) MIOB(5) MIOB(4) | 72M : 0X01D8 72M-V : 0X01D7 73M : 0X0398 |
| ROM_TYPE(1:0) | MIOB(10) MIOBVSYN | No ROM (NC) |
| USER STRAP | MIOAD(2:5) | EDID |

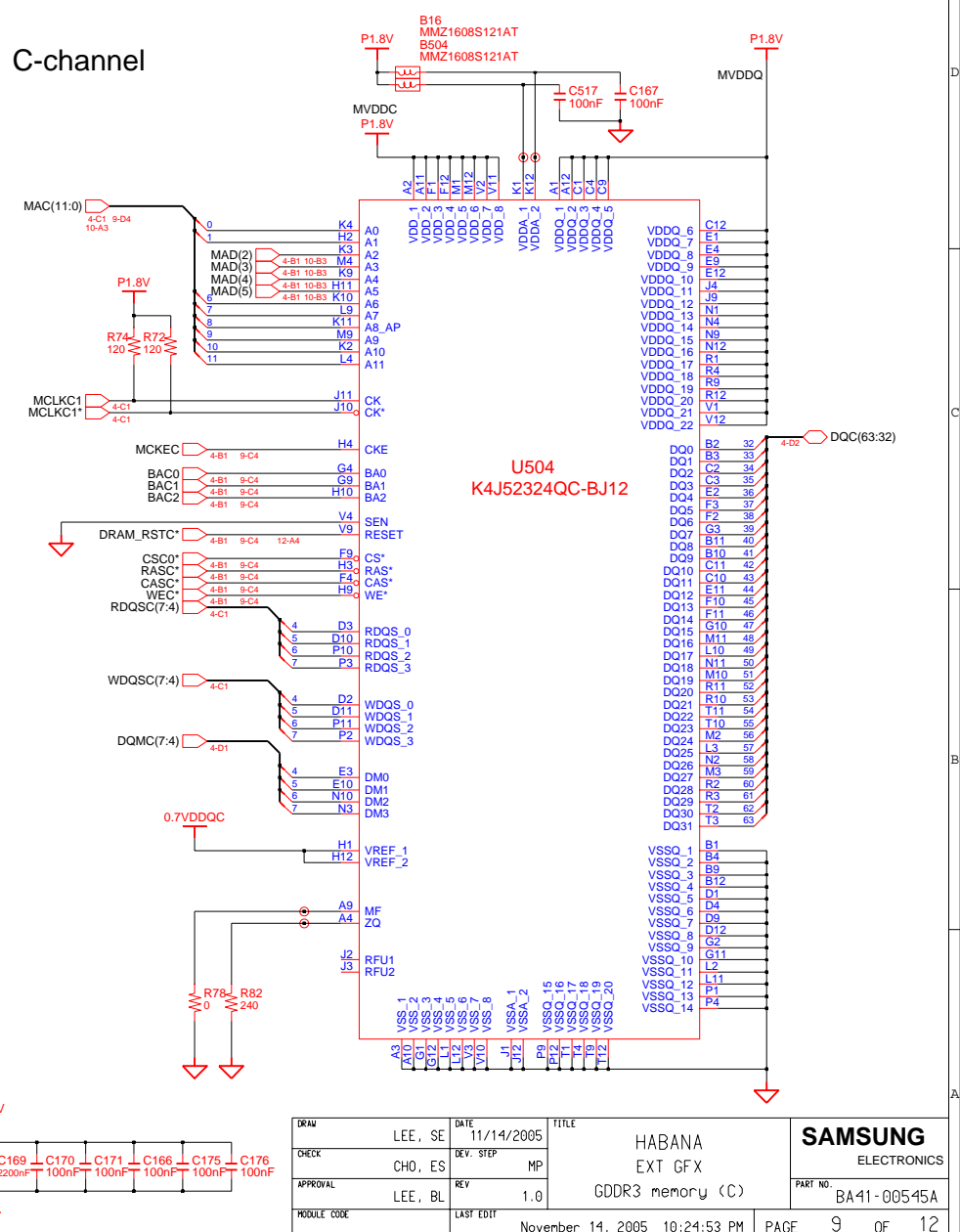
| | | | | | | |
|-------------|---------|-----------|-------------------------------|------------------|-------------------|-------------------------------|
| DRAW | LEE, SE | DATE | 11/14/2005 | TITLE | HABANA EXT GFX | SAMSUNG ELECTRONICS |
| CHECK | CHO, ES | DEV. STEP | MP | | | |
| APPROVAL | LEE, BL | REV | 1.0 | Gfx strap option | | PART NO. BA41-00545A |
| MODULE CODE | | LAST EDIT | November 14, 2005 10:24:53 PM | PAGE | 7 | OF 12 |

This page is for "2channel-model".

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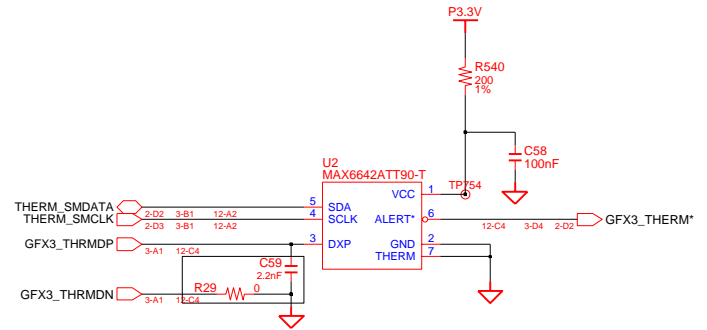
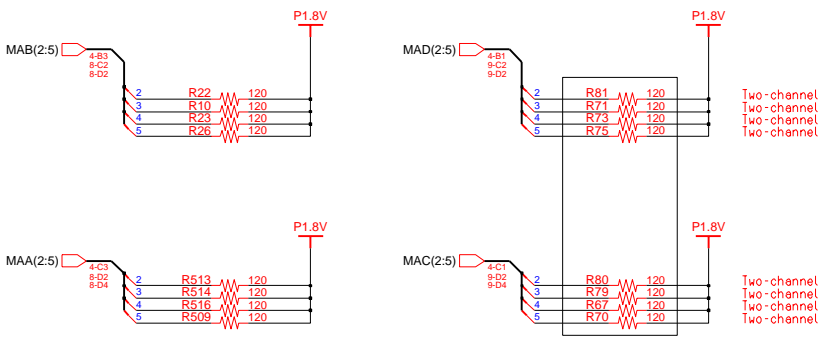
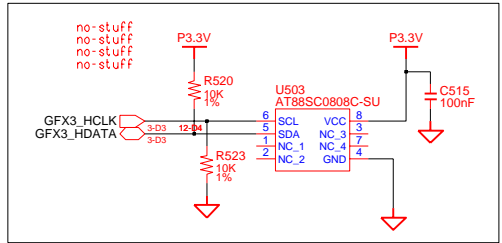
C-channel



| | | | | | | |
|-------------|-----------|-----------|------------|-------------------------------|-------------------|-------------------------------|
| DRAW | LEE, SE | DATE | 11/14/2005 | TITLE | HABANA EXT GFX | SAMSUNG ELECTRONICS |
| CHECK | CHO, ES | DEV. STEP | MP | GDDR3 memory (C) | | |
| APPROVAL | LEE, BL | REV | 1.0 | November 14, 2005 10:24:53 PM | | PART NO. BA41-00545A |
| MODULE CODE | LAST EDIT | | PAGE | | 9 | OF 12 |

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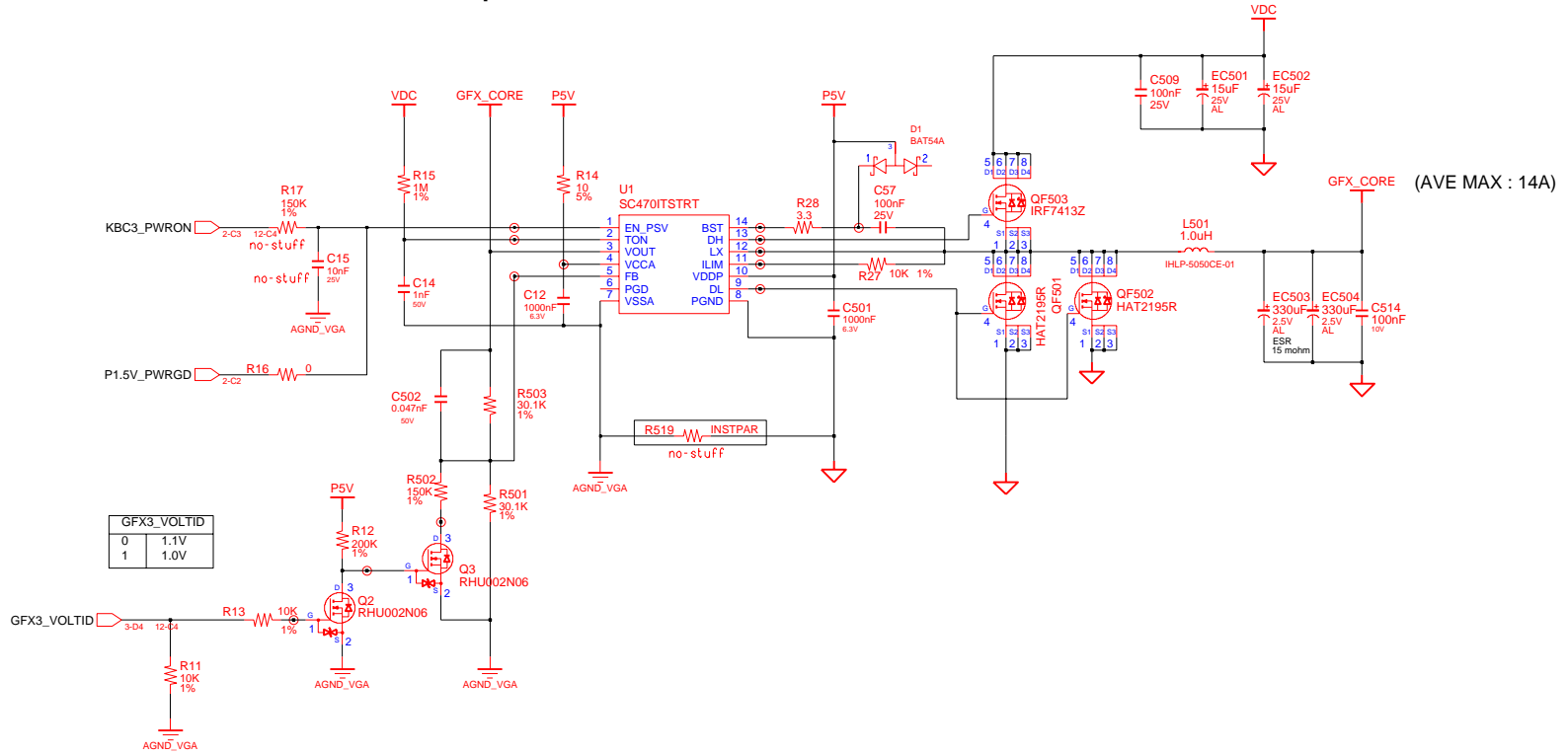
Place near to the MAX6642. SMBus address : 1001000x

| | | | | | | |
|-------------|---------|-----------|-------------------------------|----------------------------|-------------------|---|
| DRAW | LEE, SE | DATE | 11/14/2005 | TITLE | HABANA EXT GFX | SAMSUNG ELECTRONICS PART NO. BA41-00545A |
| CHECK | CHO, ES | DEV. STEP | MP | | | |
| APPROVAL | LEE, BL | REV | 1.0 | GDDR3 Term. Thermal sensor | | |
| MODULE CODE | | LAST EDIT | November 14, 2005 10:24:53 PM | PAGE | 10 | OF 12 |

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Graphic Core Power



| | | | | | | |
|-------------|-----------|-----------|-------------------------------|--------------------|-------------------|-------------------------------|
| DRAW | LEE, SE | DATE | 11/14/2005 | TITLE | HABANA EXT GFX | SAMSUNG ELECTRONICS |
| CHECK | CHO, ES | DEV. STEP | MP | Gfx core Regulator | | |
| APPROVAL | LEE, BL | REV | 1.0 | | | PART NO. BA41-00545A |
| MODULE CODE | LAST EDIT | | November 14, 2005 10:24:53 PM | | PAGE | 11 OF 12 |

