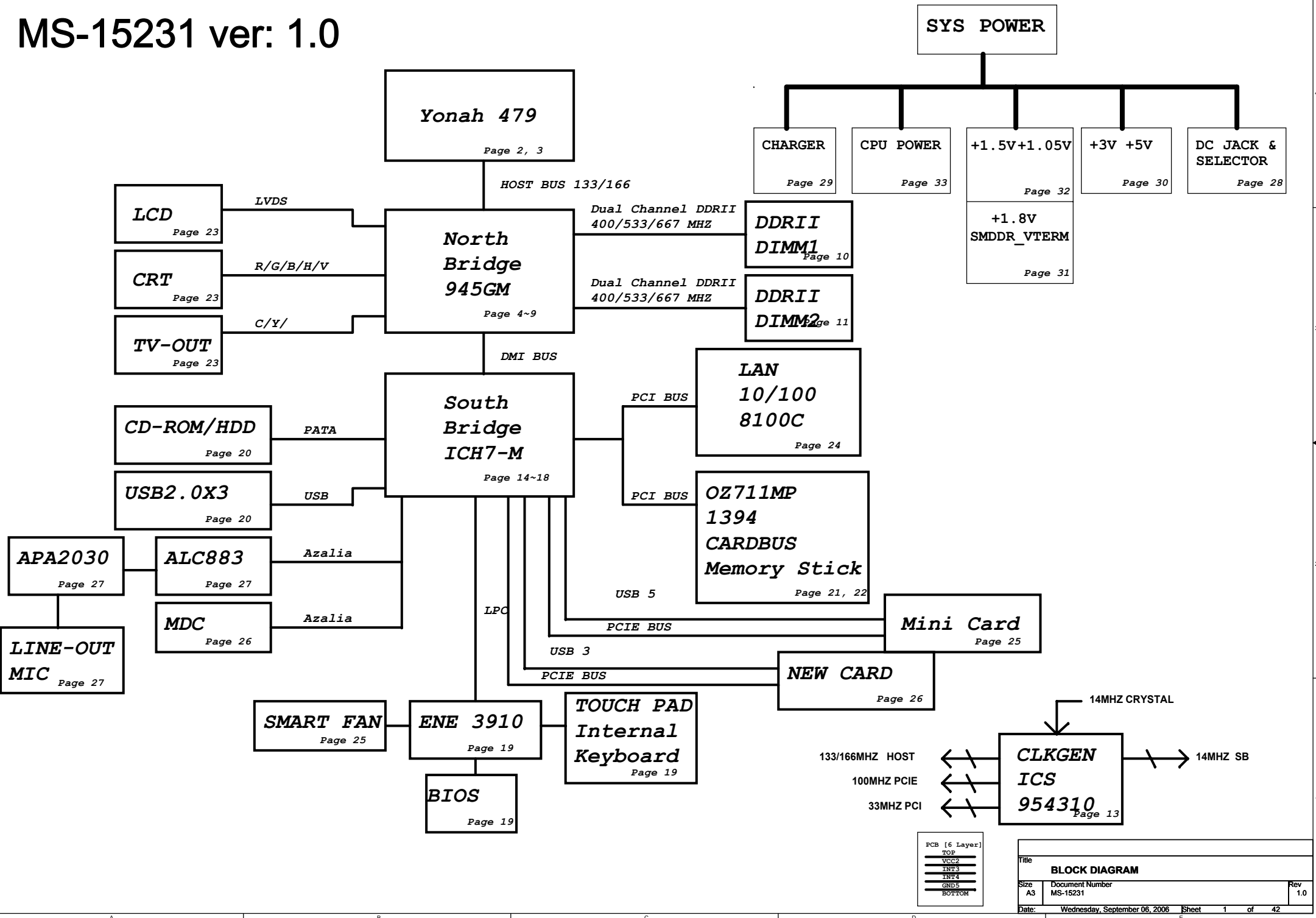
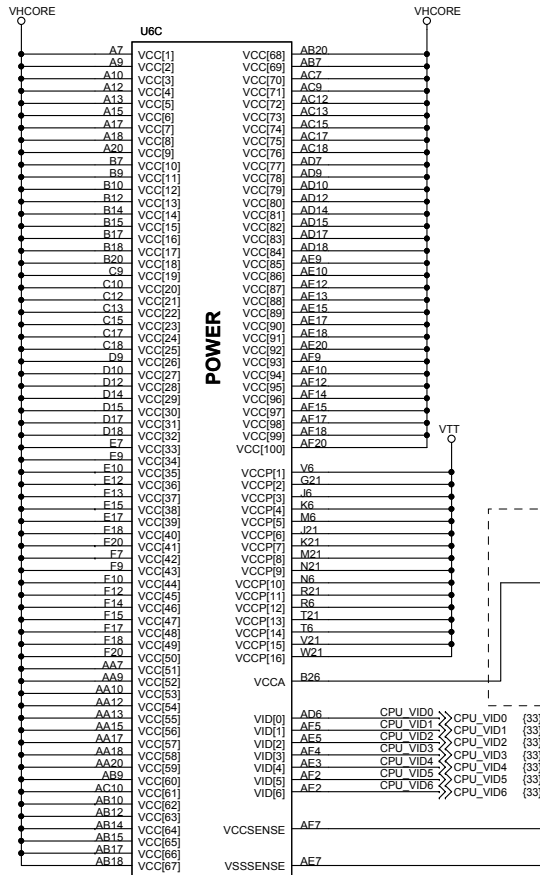
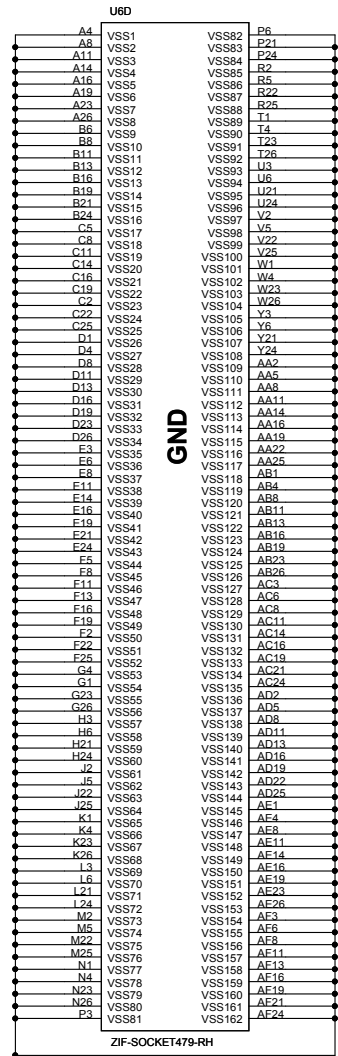
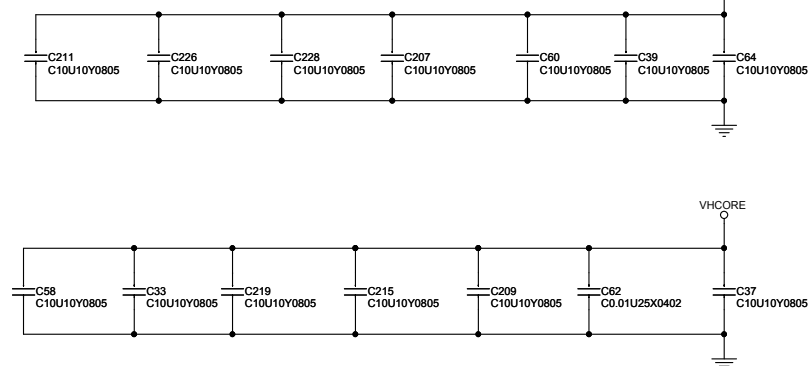
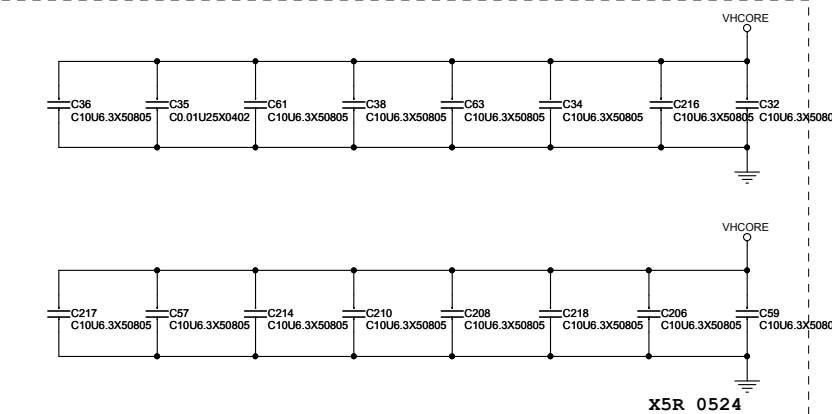
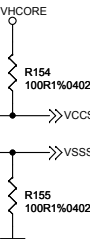
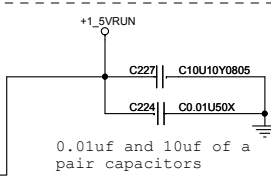


MS-15231 ver: 1.0

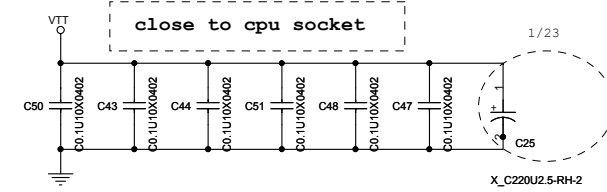




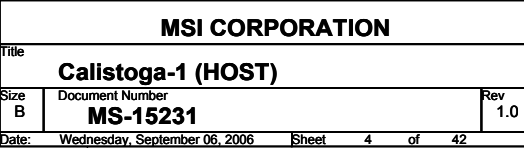
LAYOUT NOTE:
Route VCCSENSE and VSSSENSE
traces at 27.4ohms with 50
mil spacing.
Place PU and PD within 1
inch of CPU.



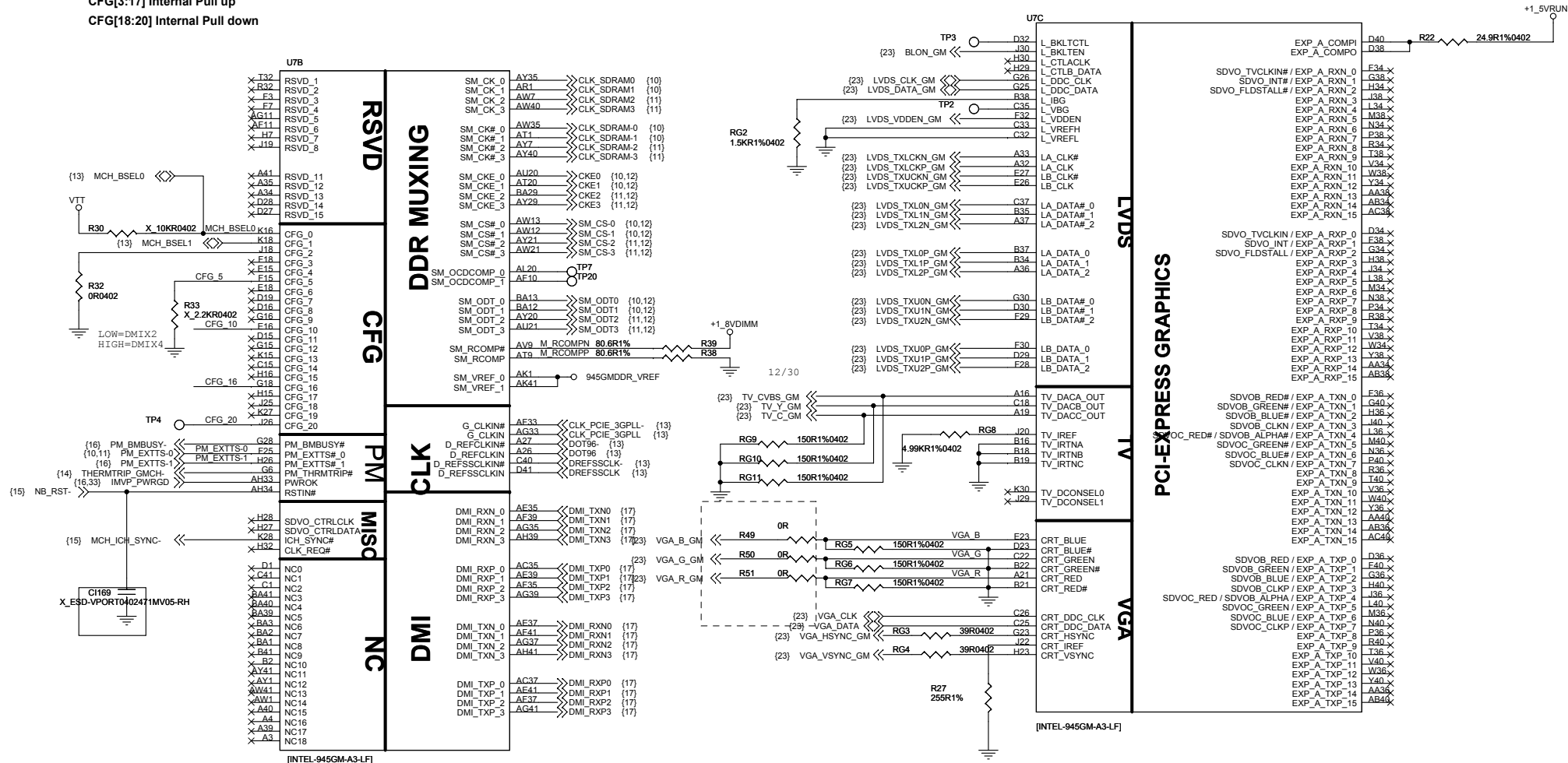
電容要放對稱



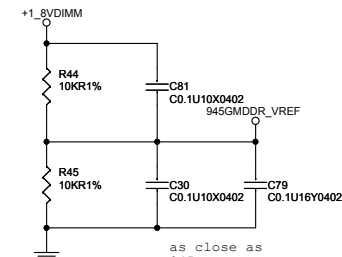
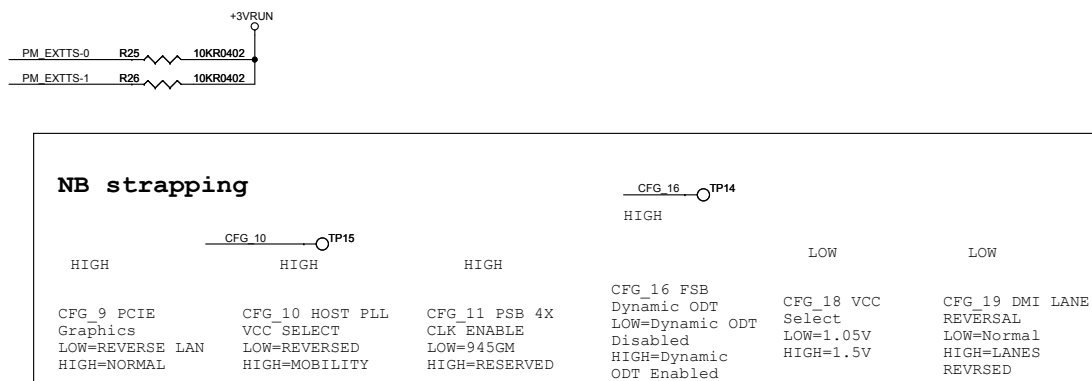
| | | |
|--------|-------------------------------|---------------|
| Title | | |
| CPU-2 | | |
| Size | Document Number | Rev |
| Custom | M5-15231 | 1.0 |
| Date: | Wednesday, September 06, 2006 | Sheet 3 of 42 |



CFG[3:17] Internal Pull up
CFG[18:20] Internal Pull down

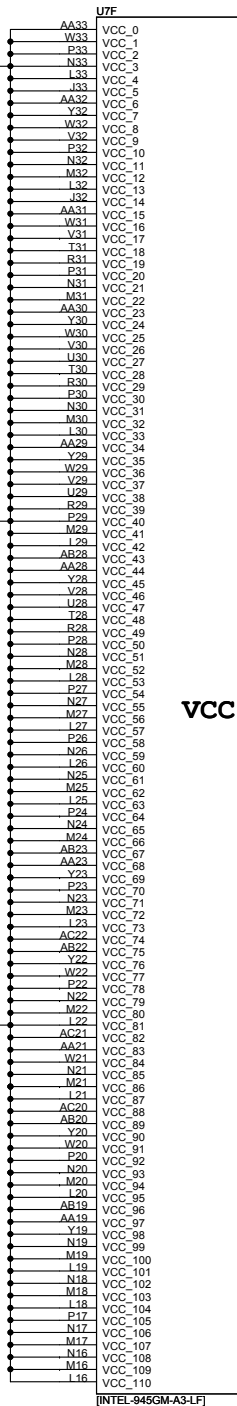
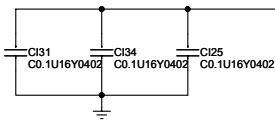
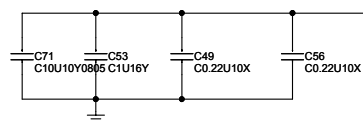
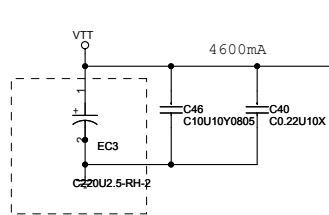


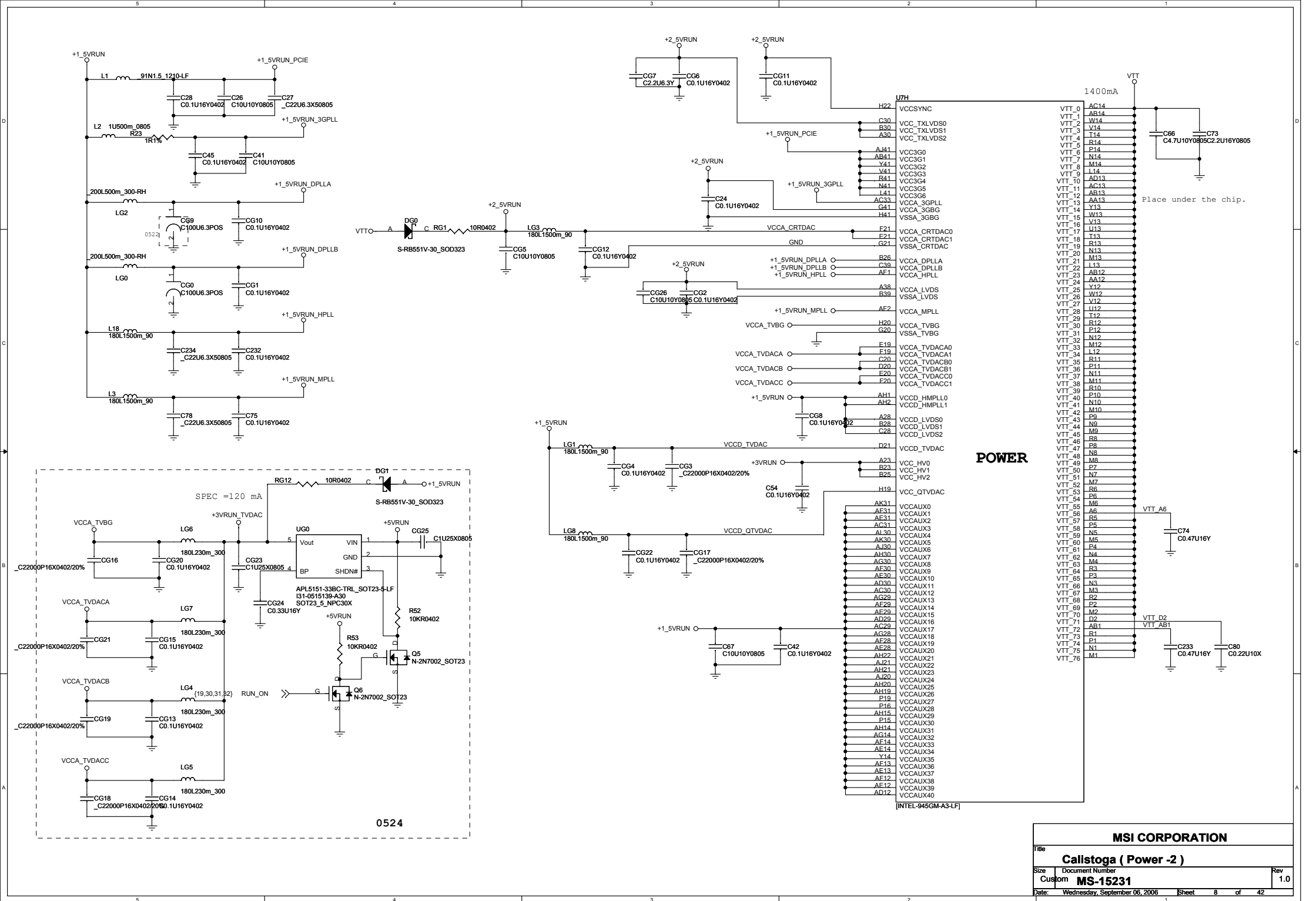
Reserved for EMI 2006.5.10

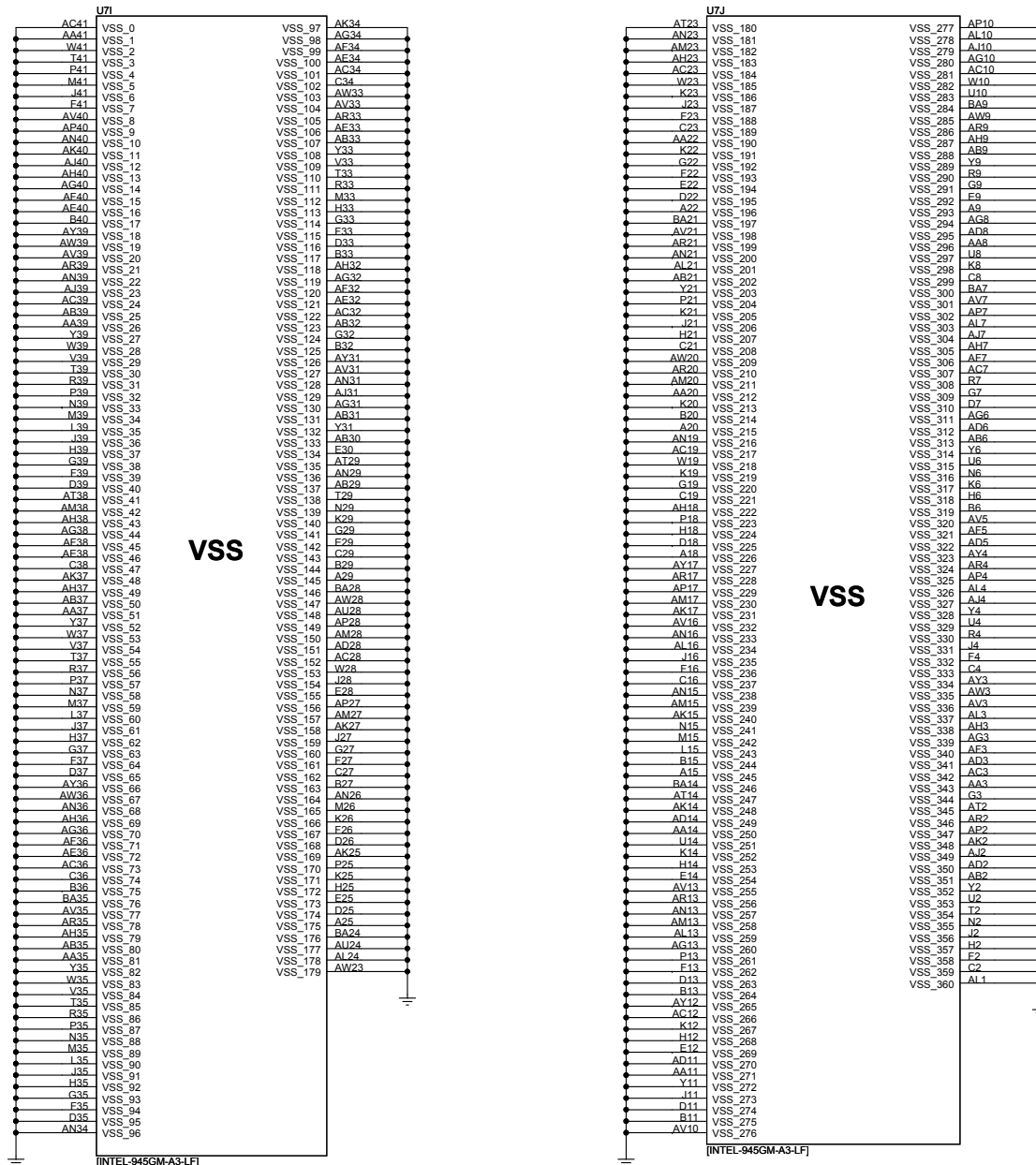
**MSI CORPORATION**

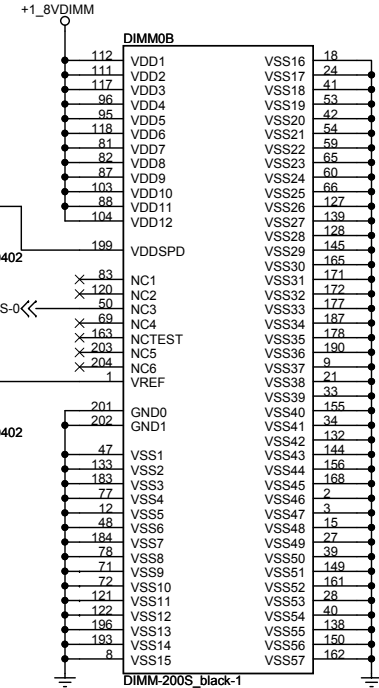
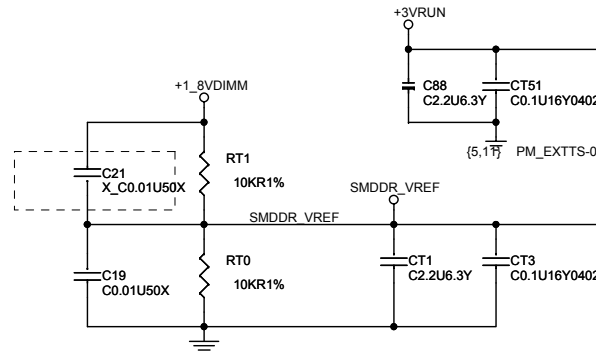
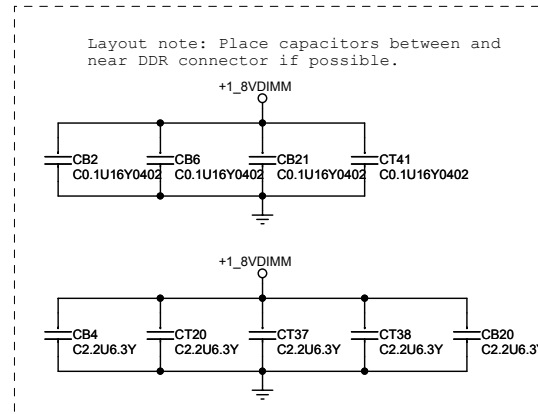
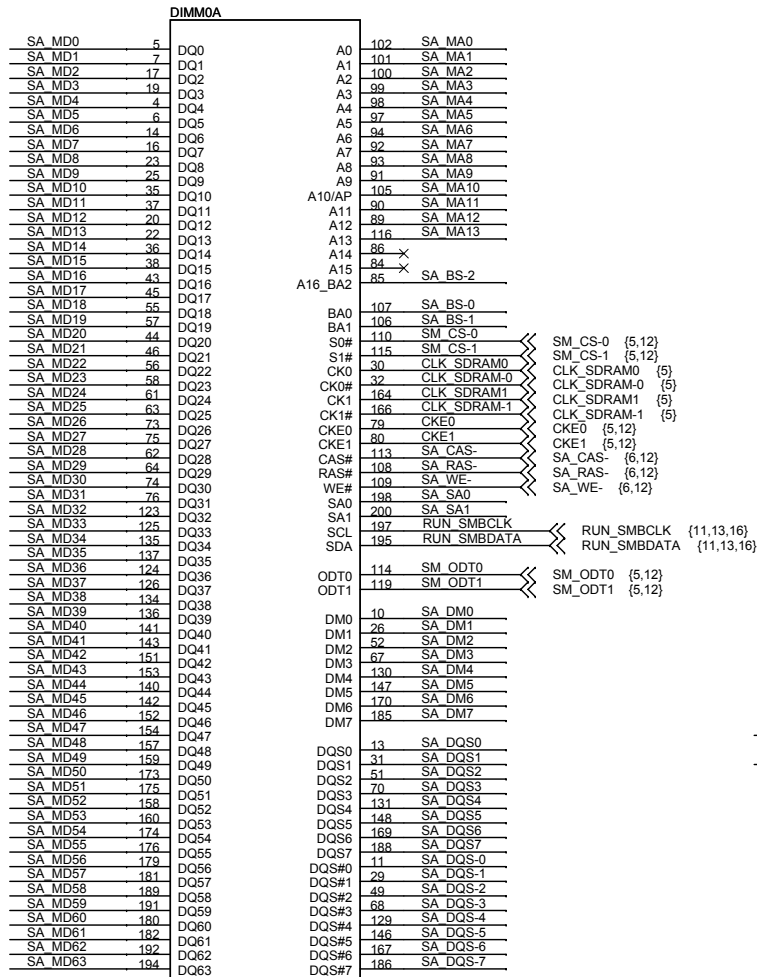
| | |
|-------|------------------------------|
| Title | Calistoga-2 (DMI/VGA) |
|-------|------------------------------|

| | | |
|--------|-------------------------------|---------------|
| Size | Document Number | Rev |
| Custom | MS-15231 | 1.0 |
| Date: | Wednesday, September 06, 2006 | Sheet 5 of 42 |



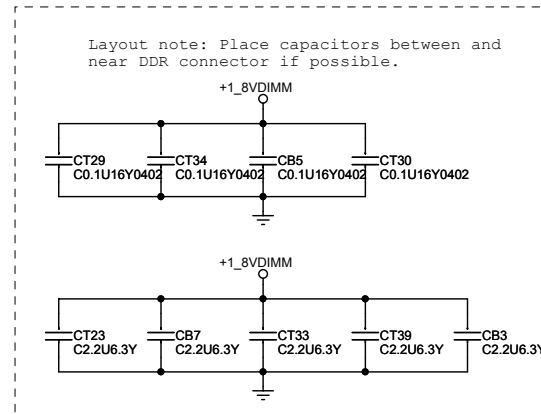
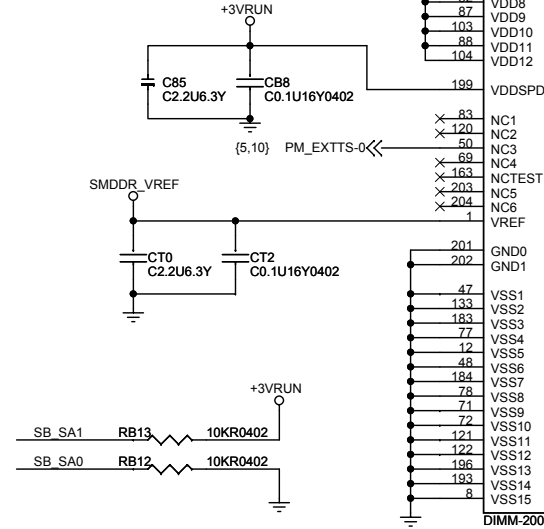
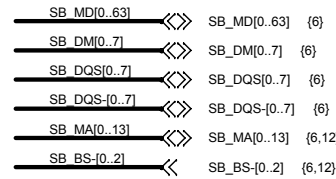
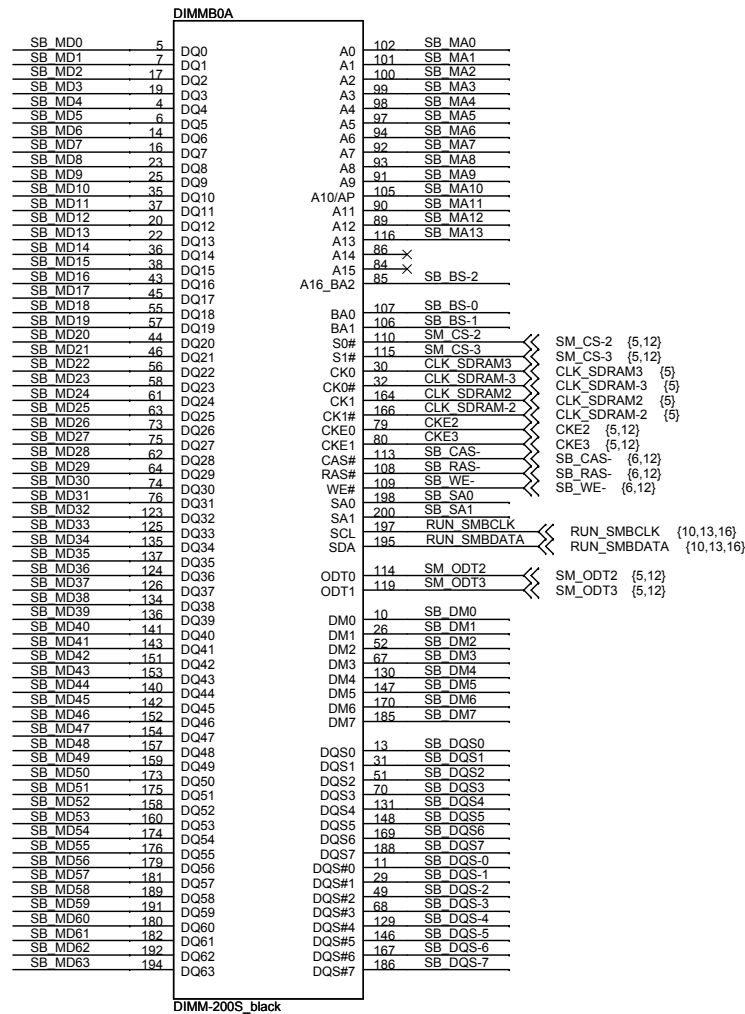




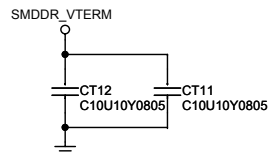
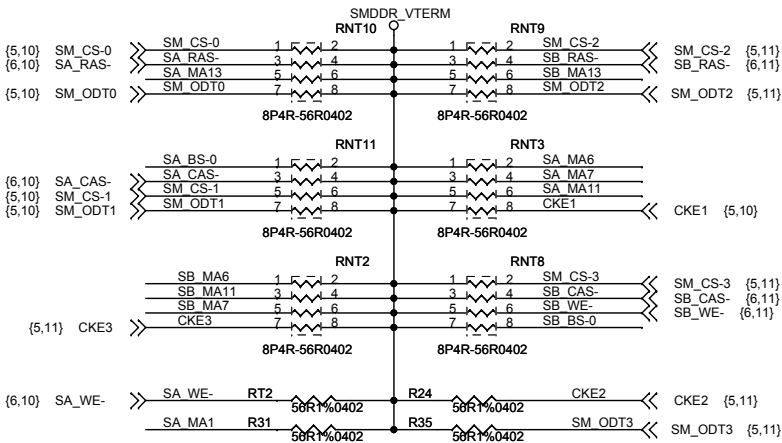


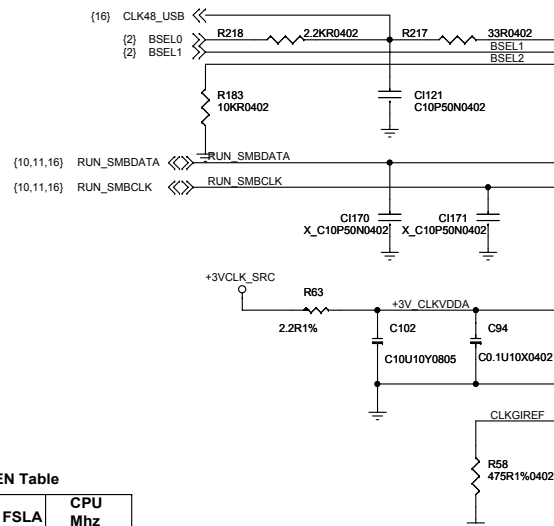
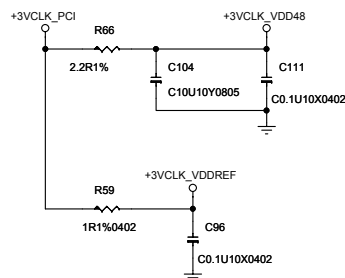
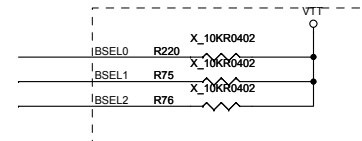
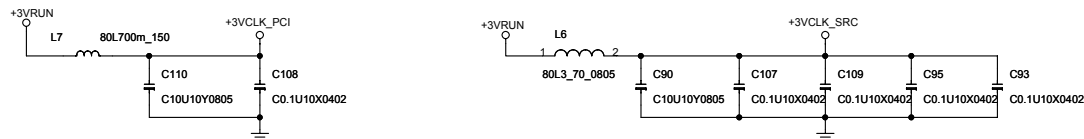
| MSI CORPORATION | | | |
|---------------------------|-------------------------------|-------|----------|
| Title | | | |
| DDR2-SODIMM-0 (Channel A) | | | |
| Size | Document Number | | Rev |
| B | MS-15231 | | 1.0 |
| Date: | Wednesday, September 06, 2006 | Sheet | 10 of 42 |

as close as
SO-DIMM



| MSI CORPORATION | | | |
|---------------------------|-------------------------------|-------|----------|
| Title | | | |
| DDR2-SODIMM-1 (Channel B) | | | |
| Size | Document Number | Rev | |
| B | MS-15231 | 1.0 | |
| Date: | Wednesday, September 06, 2006 | Sheet | 11 of 42 |





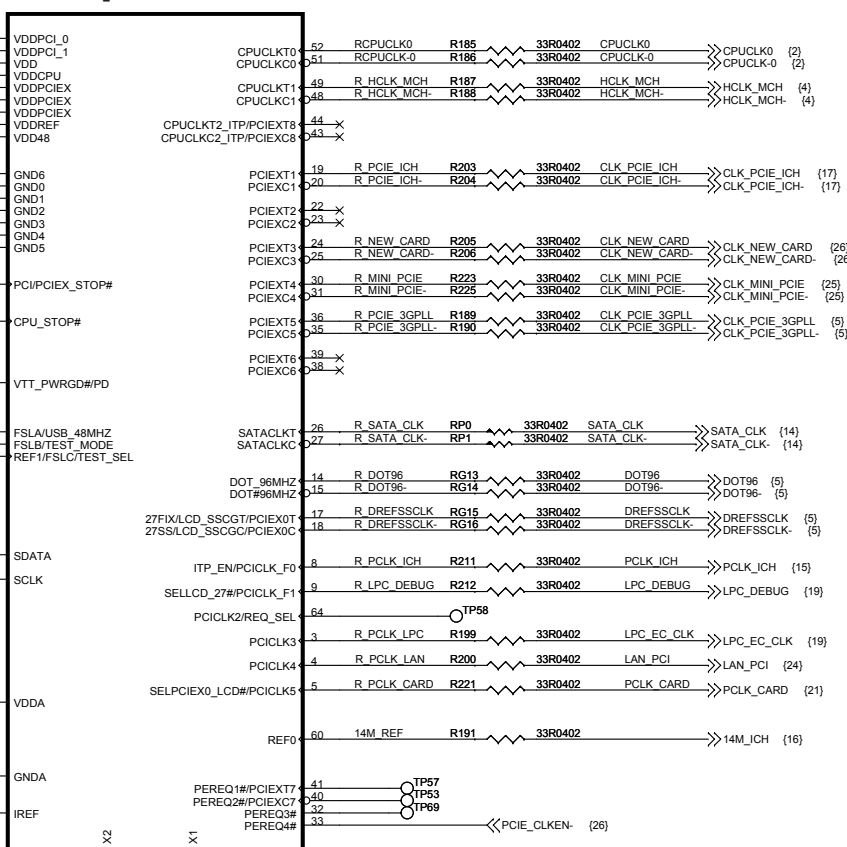
CLOCK GEN Table

| FSLC | FSLB | FSLA | CPU Mhz |
|------|------|------|---------|
| 0 | 0 | 0 | 266.66 |
| 0 | 0 | 1 | 133.33 |
| 0 | 1 | 0 | 200.00 |
| 0 | 1 | 1 | 166.66 |
| 1 | 0 | 0 | 333.33 |
| 1 | 0 | 1 | 100.00 |
| 1 | 1 | 0 | 400.00 |
| 1 | 1 | 1 | 200.00 |

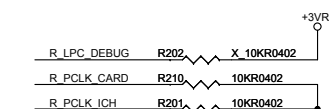
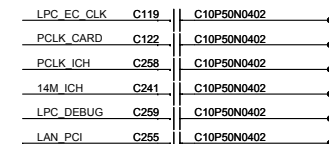
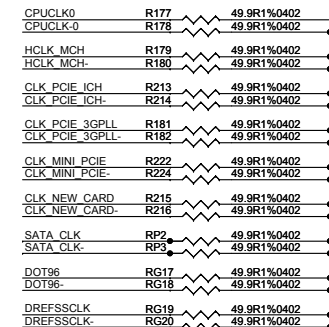
CPU Table

| BSEL[2] | BSEL[1] | BSEL[0] | BCLK |
|---------|---------|---------|----------|
| L | L | L | RESERVED |
| L | L | H | 133MHZ |
| L | H | L | RESERVED |
| L | H | H | 166MHZ |

CLK0
ICS954310CLGF_TSSOP64-RH



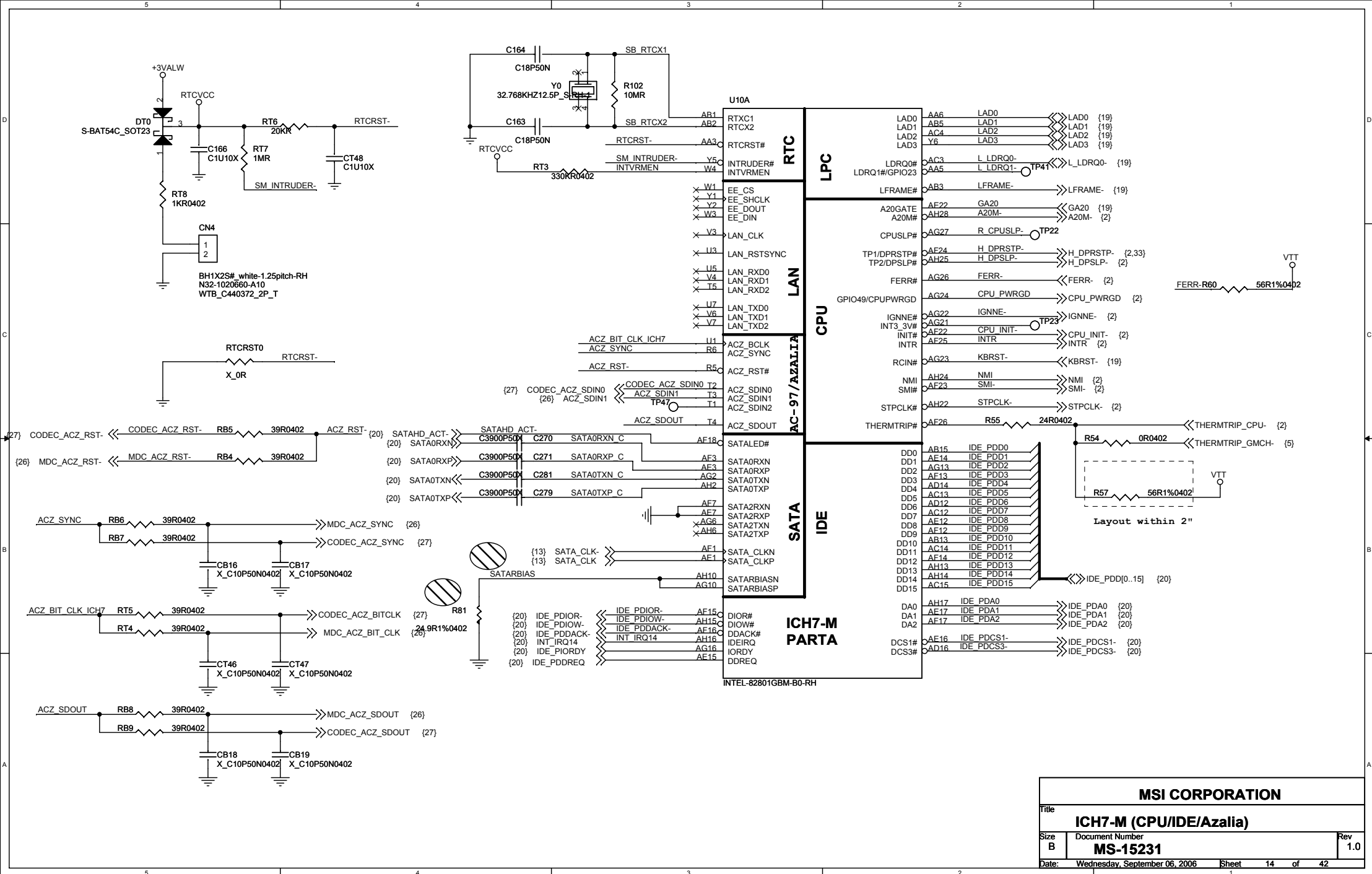
By-Pass Capacitors
Place near to the Clock Outputs



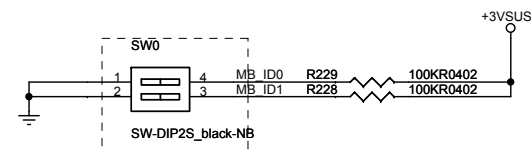
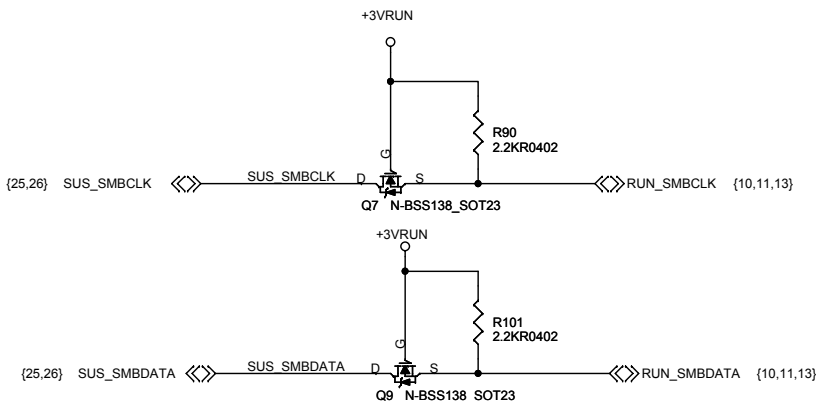
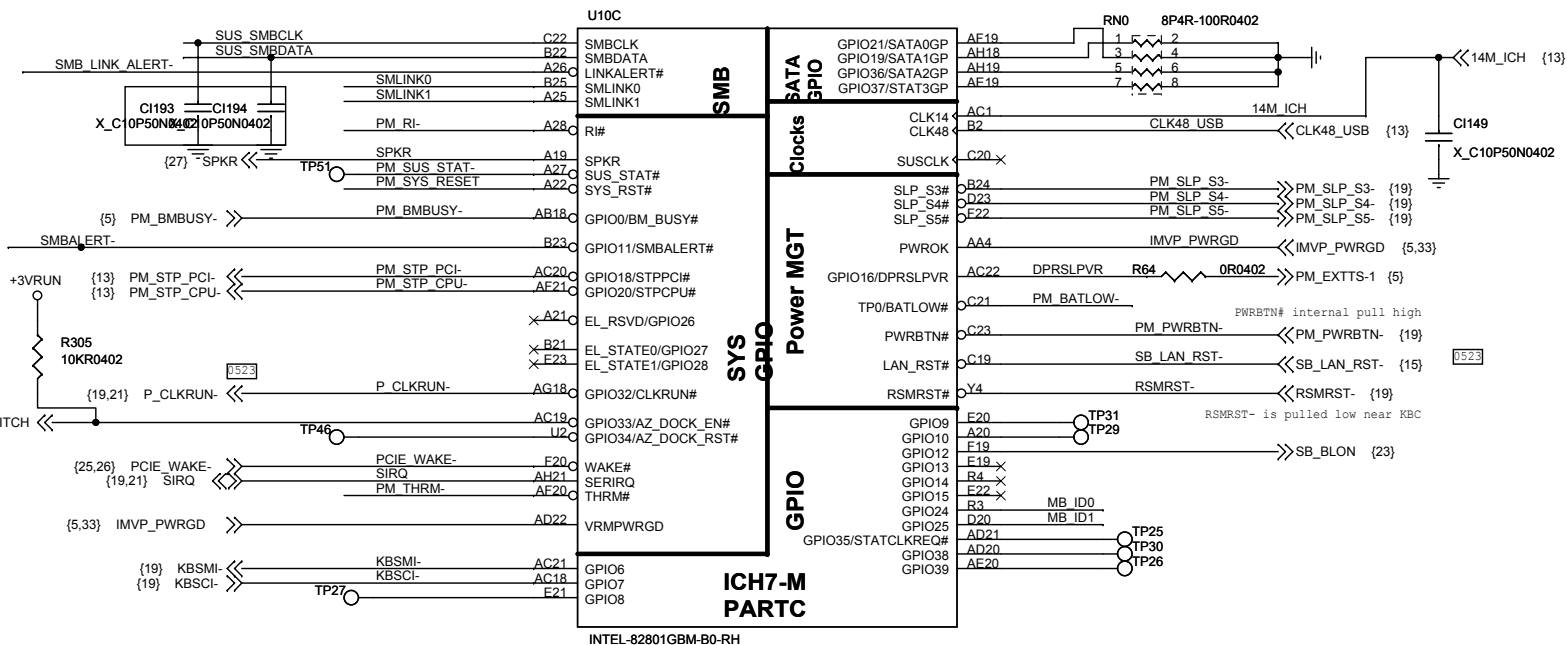
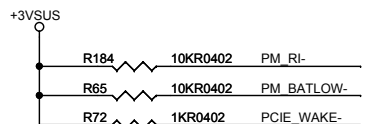
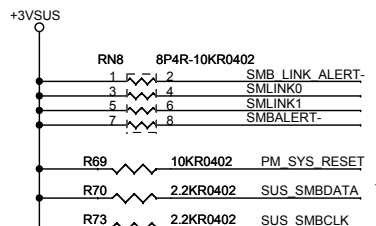
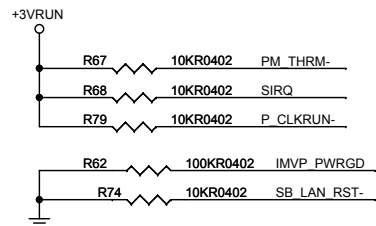
S/W Register:
PEREQ1#(4 bit) : Control PCIE0, 2, 4, 6
PEREQ2#(4 bit) : Control PCIE1, 3, 5, 8
PEREQ3#(4 bit) : Control PCIE2, 4, 6, 8
PEREQ4#(4 bit) : Control PCIE1, 3, 5, 7

PIN 5,9,32,33 : Internal Pull-Up Resistor
PIN 64 : Internal Pull-Down Resistor

| MSI CORPORATION | | |
|-----------------|-------------------------------|----------------|
| Title | CLOCK Generator (ICS954310) | |
| Size | Document Number | Rev |
| Custom | MS-15231 | 1.0 |
| Date: | Wednesday, September 06, 2006 | Sheet 13 of 42 |



PIN AC20,AF21 : Internal Pull-Up Resistor

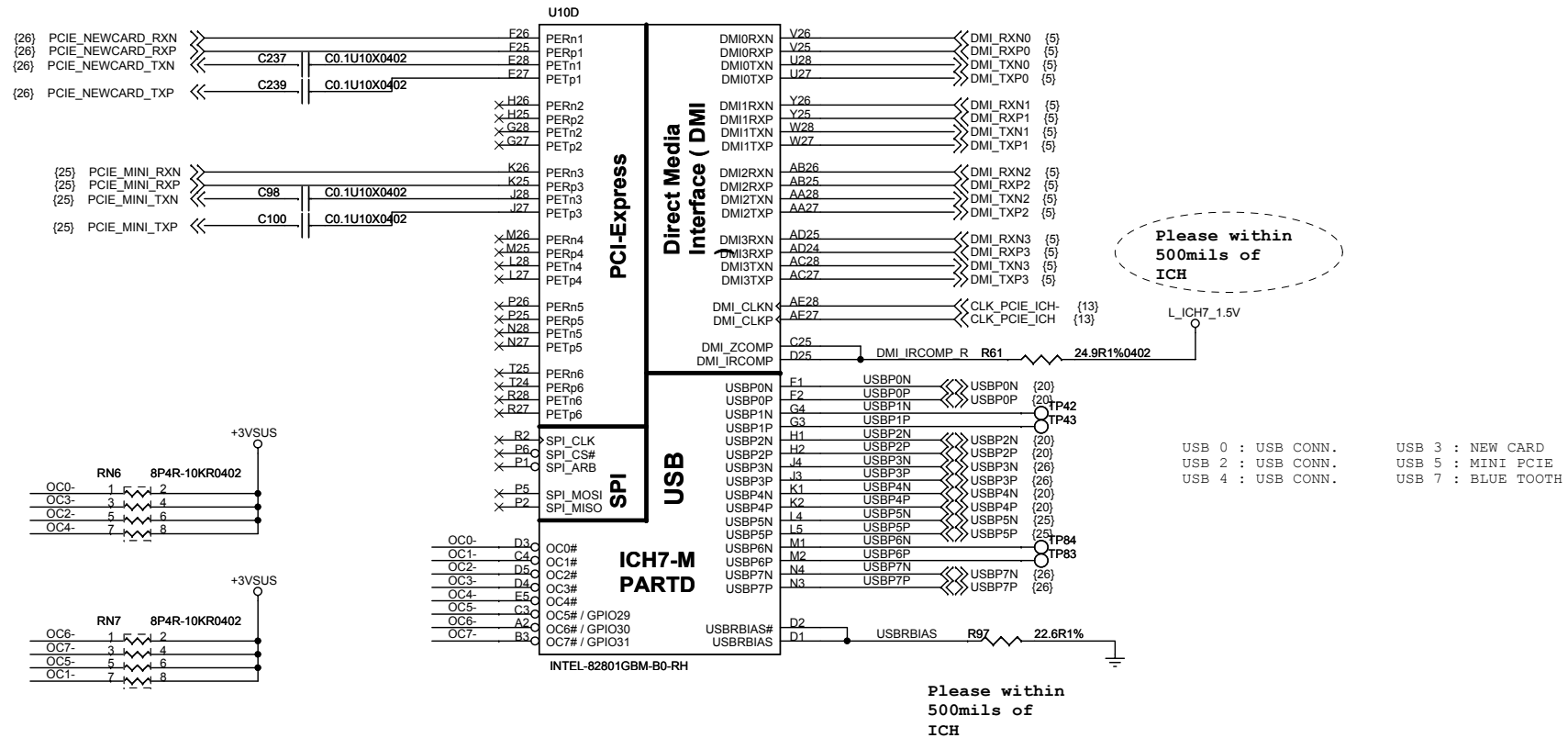


MP NOT STUFF

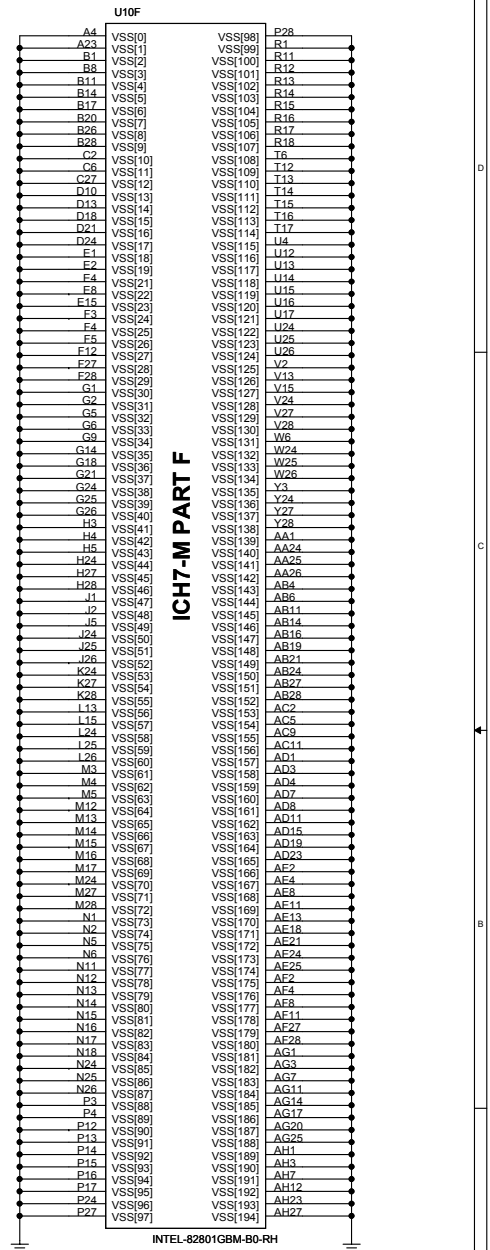
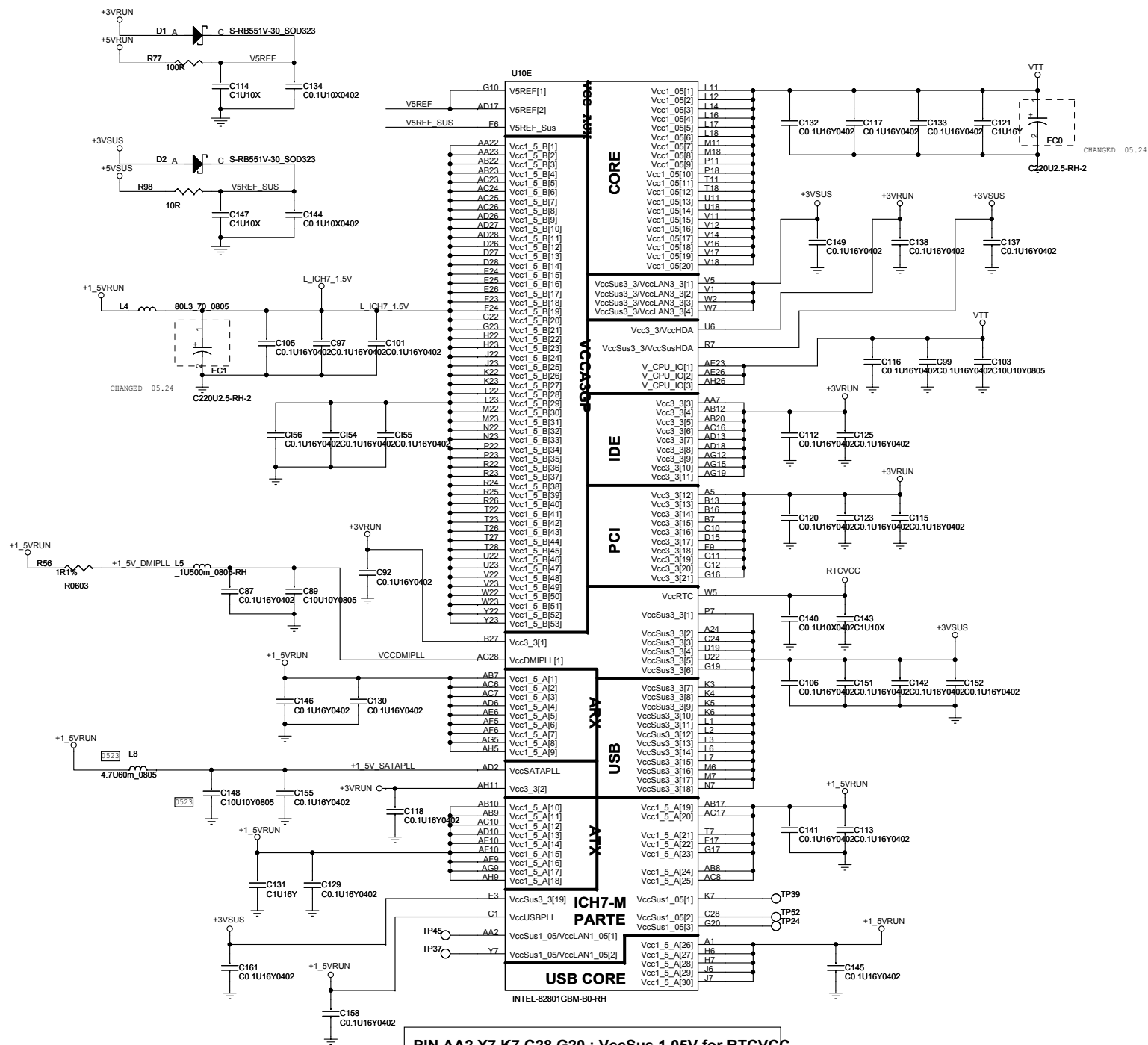
| GPIO | Power Plane | Default |
|--------|-------------|---------|
| 6, 7 | Core | GPI |
| 8~10 | Resume | GPI |
| 12~15 | Resume | GPI |
| 24, 25 | Resume | GPO |
| 38, 39 | Core | GPI |

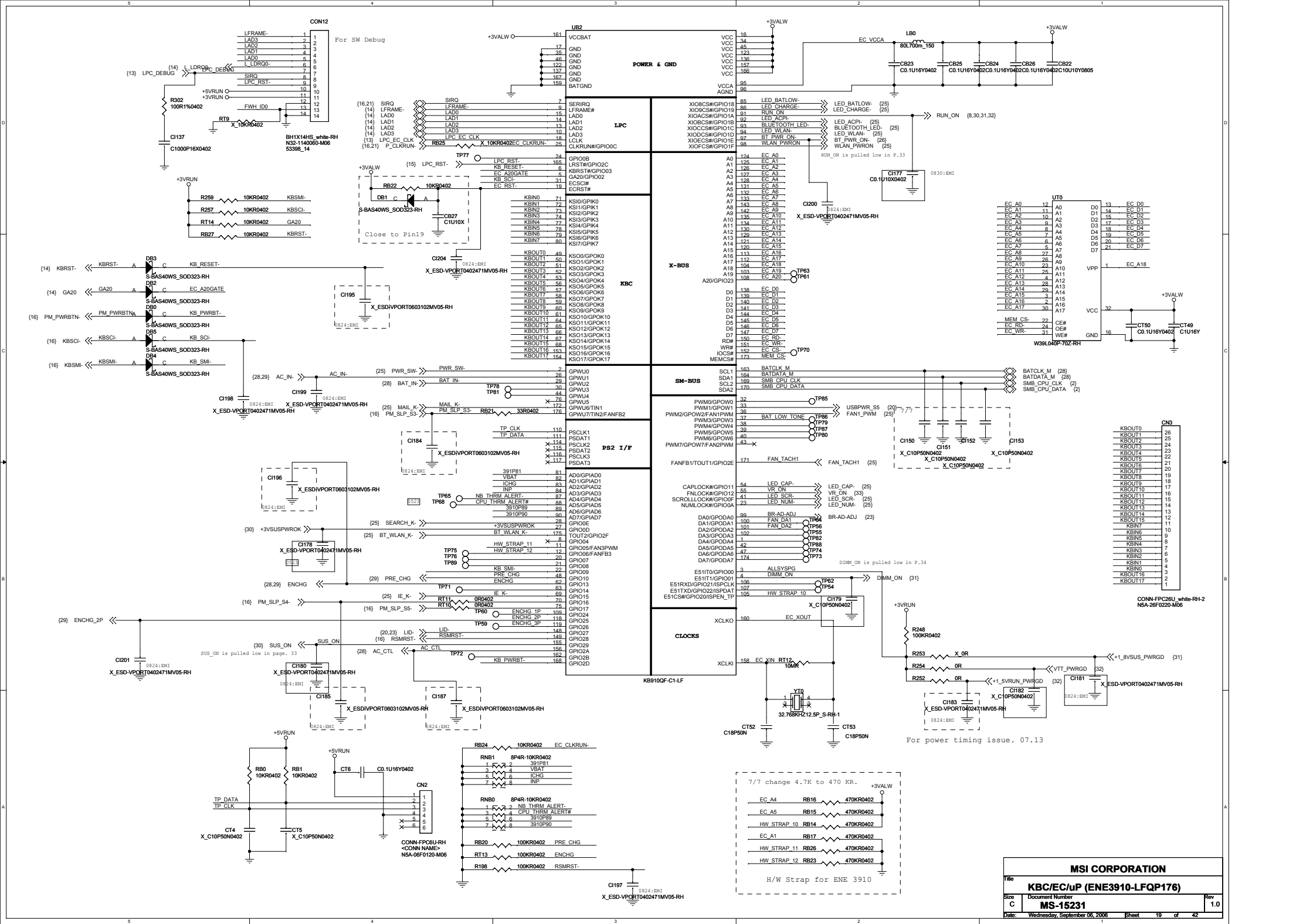
MSI CORPORATION

| Title | | |
|----------------------|-------------------------------|----------------|
| ICH7-M (SM BUS/GPIO) | | |
| Size | Document Number | Rev |
| B | MS-15231 | 1.0 |
| Date: | Wednesday, September 06, 2006 | Sheet 16 of 42 |

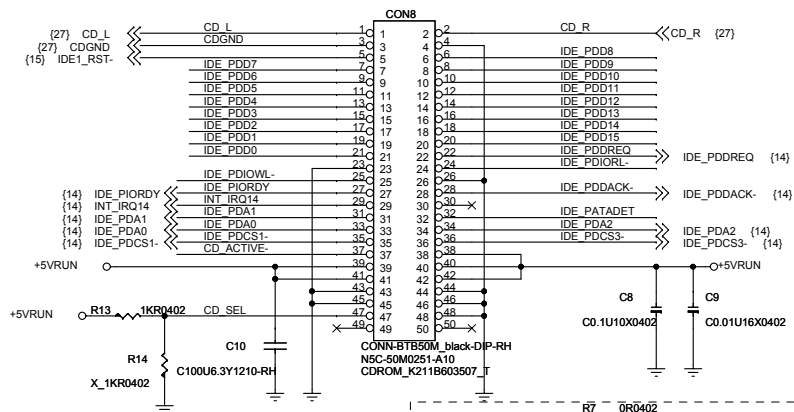
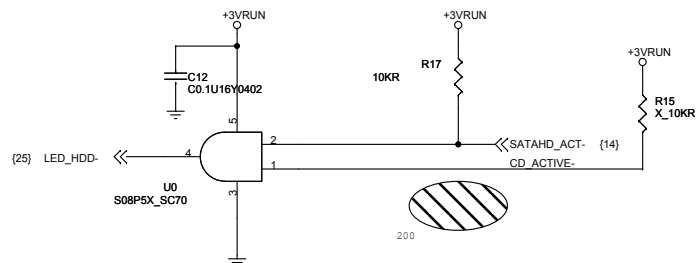
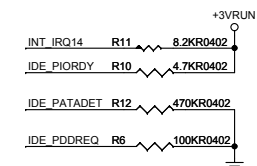


| MSI CORPORATION | | | |
|-----------------------|-------------------------------|-------|----------|
| Title | | | |
| ICH7-M (USB/PCIE/DMI) | | | |
| Size B | Document Number | | Rev |
| | MS-15231 | | 1.0 |
| Date: | Wednesday, September 06, 2006 | Sheet | 17 of 42 |

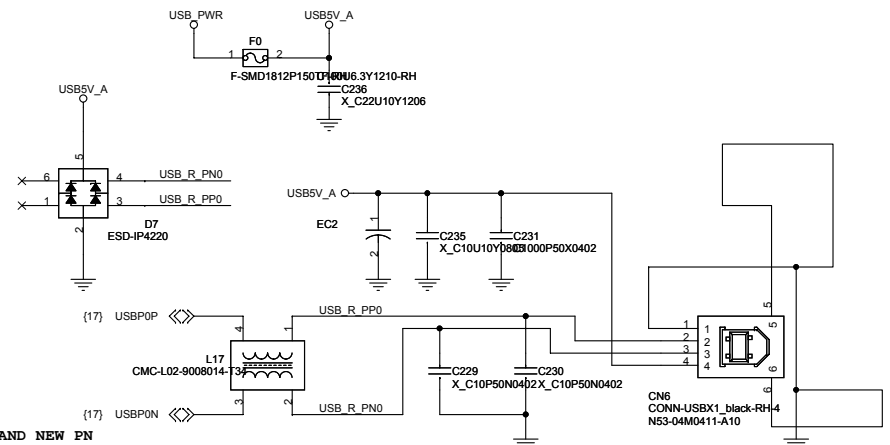
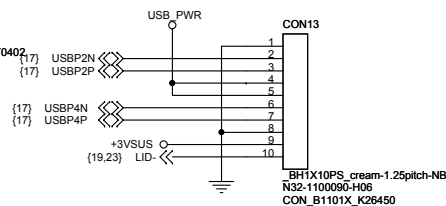
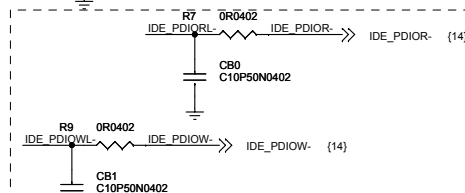




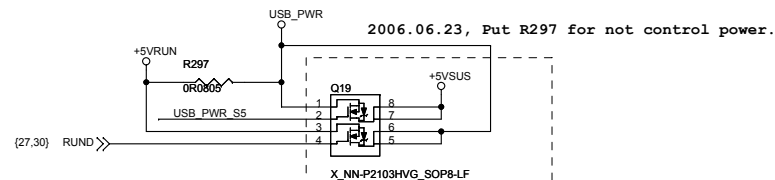
| CON15 | |
|---------------|-------------|
| A+ | GND_2M_S_1 |
| A- | GND_2M_S_4 |
| B- | GND_2M_S_7 |
| B+ | |
| 3.3V_1 | GND_1M_P_4 |
| 3.3V_2 | GND_2M_P_5 |
| 3.3V_3_PC | GND_2M_P_6 |
| 5V_7_PC | |
| 5V_8 | |
| 5V_9 | GND_2M_P_10 |
| P_Reserver_11 | |
| V_12_13_PC | |
| V_12_14 | GND_1M_P_12 |
| V_12_15 | |
| | GND1 |
| | GND2 |
| | GND3 |
| | GND4 |



```
PIN32:PDIAG
PIN37:PASP
PIN47:CABLE SELECT
      Low:Master
      NC or High:Slave
```



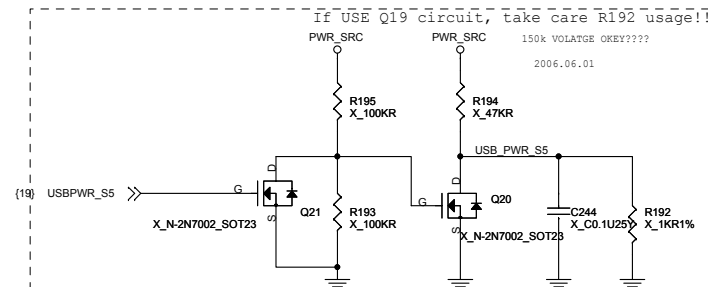
CHECK CONFIG AND NEW PN



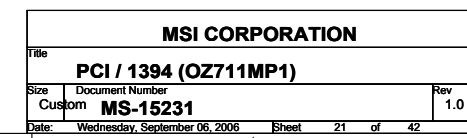
```
- If USE Q19 circuit, take care R192 usage!!!
```

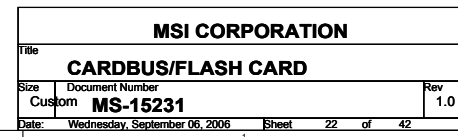
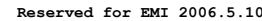
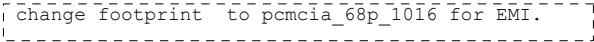
150k VOLATGE OKEY????

2006.06.01



| | | | |
|-----------------------------|-------------------------------|-------|----------|
| Title | | | |
| HDD & CDROM CONN | | | |
| Size | Document Number | Rev | |
| Custom | MS-15231 | 1.0 | |
| Date: | Wednesday, September 06, 2006 | Sheet | 20 of 42 |





PCI LAN RTL8110S/8100C

LAN EEPROM

RTL8110S-LF-RH

RTL8110C

IDESEL = A

MASTER

INT:F

{15,21} P

Diagram illustrating the power supply section for the X_P-BCP69_SOT223. The circuit includes a MOSFET (Q24, X_P-BCP69_SOT223) driven by CTRL25_1, connected to the +3VSUS supply. The supply is connected to pins 3, 7, 16, 20, 26, 41, 56, 71, 84, 94, and 107. The circuit also includes capacitors (C296, C274, C273, C272, C275, C139, C127) and resistors (R256, R87) for decoupling and filtering. The supply is connected to AVDDL, AVDDH, and X_OR pins.

{15,21} P_AD[0..31] <<>

| | DVDD | DVDDA | AVDDL | AVDDH | V-12 |
|-------|------|-------|-------|-------|------|
| 8100C | 2.5V | 2.5V | 3.3V | X | 2.5V |
| 8110S | 1.8V | 1.8V | 2.5V | 3.3V | X |

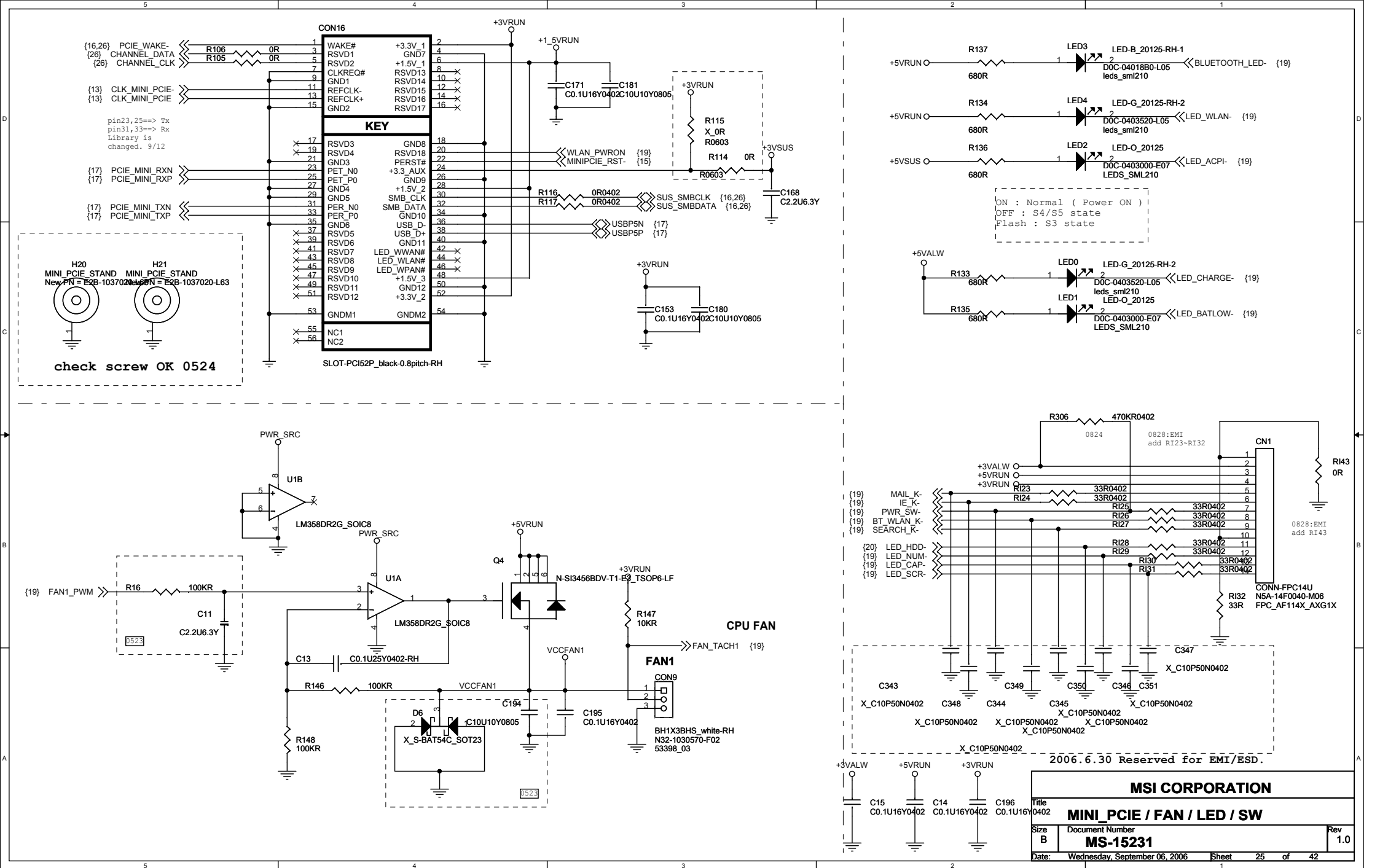
```
Part Value Selection:
GbE: 8110S LAN(1000M)
TE: 8100C LAN(10/100M)
L: With LAN option
X: No Stuff
```

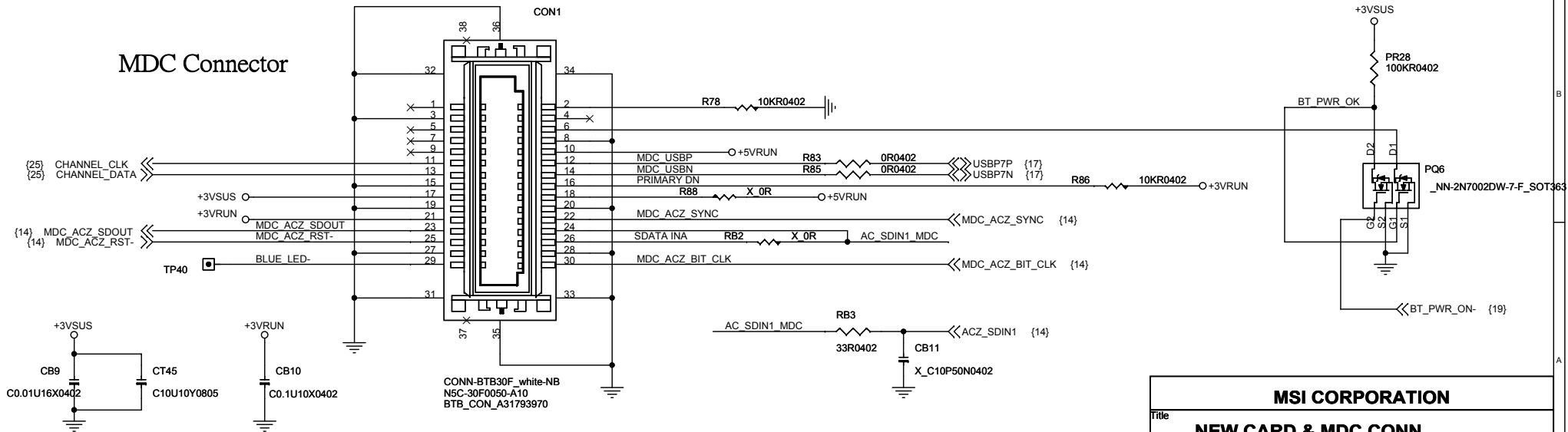
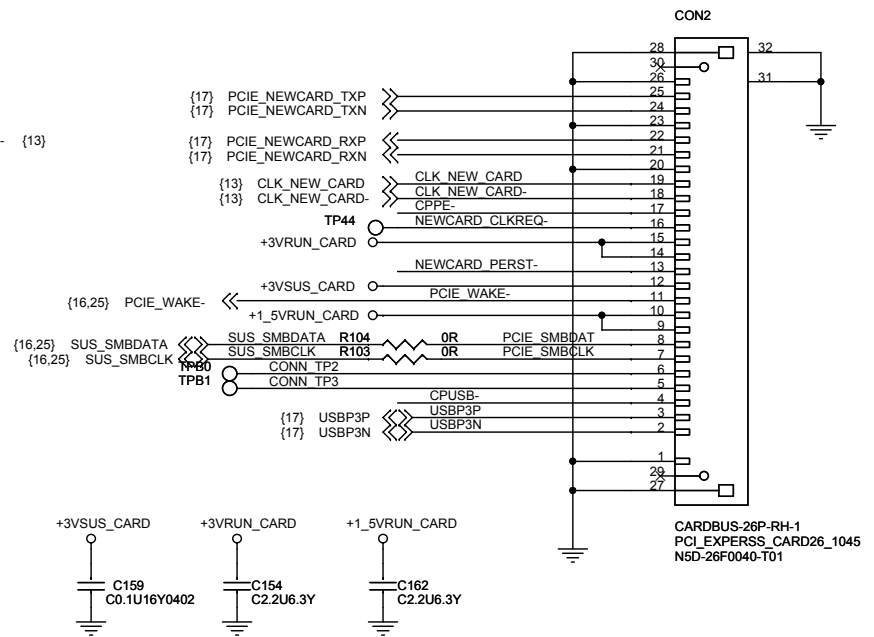
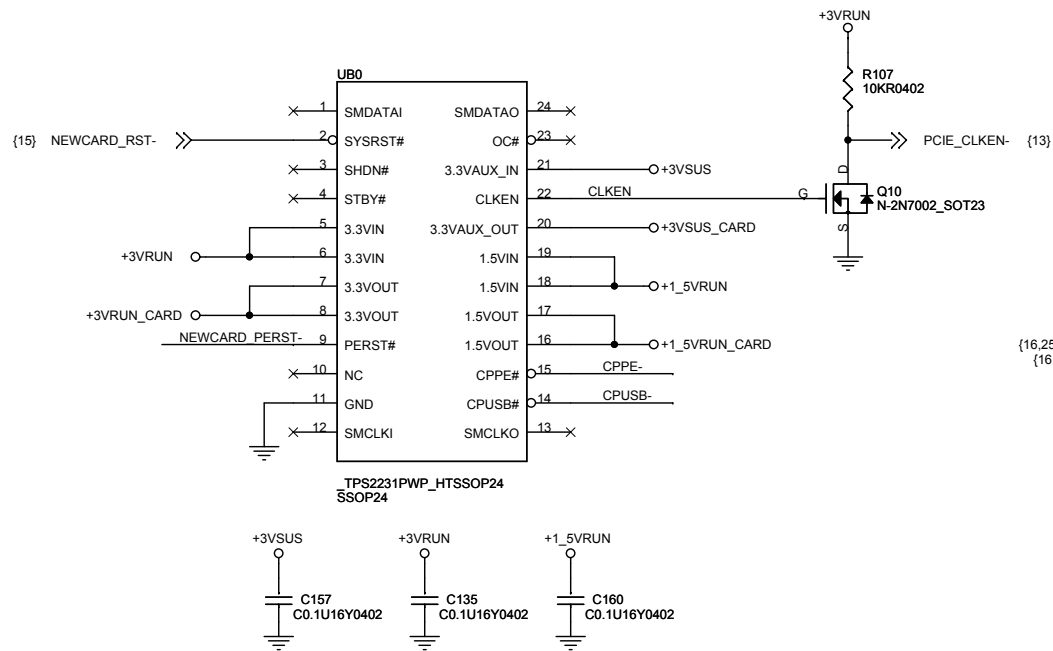
| | |
|-------------|------------------------|
| | BCM4401 |
| NOT INSTALL | C175,C178 R500,R501 |
| Transformer | H1267 |

The schematic diagram illustrates the LAN MAGNETICS circuit. It features a transformer (R250) with a primary winding connected to a 2.5VDCAC source (R251) and a secondary winding connected to a LAN controller (U14). The LAN controller (U14) is a LFE8613-RH, L05-0100300-D04 TRANS_H500X. The controller has multiple pins connected to a network switch (R249) and a network switch (R250). The network switch (R249) is a LFE8613-RH, L05-0100300-D04 TRANS_H500X. The network switch (R250) is a LFE8613-RH, L05-0100300-D04 TRANS_H500X. The network switch (R250) is a LFE8613-RH, L05-0100300-D04 TRANS_H500X.

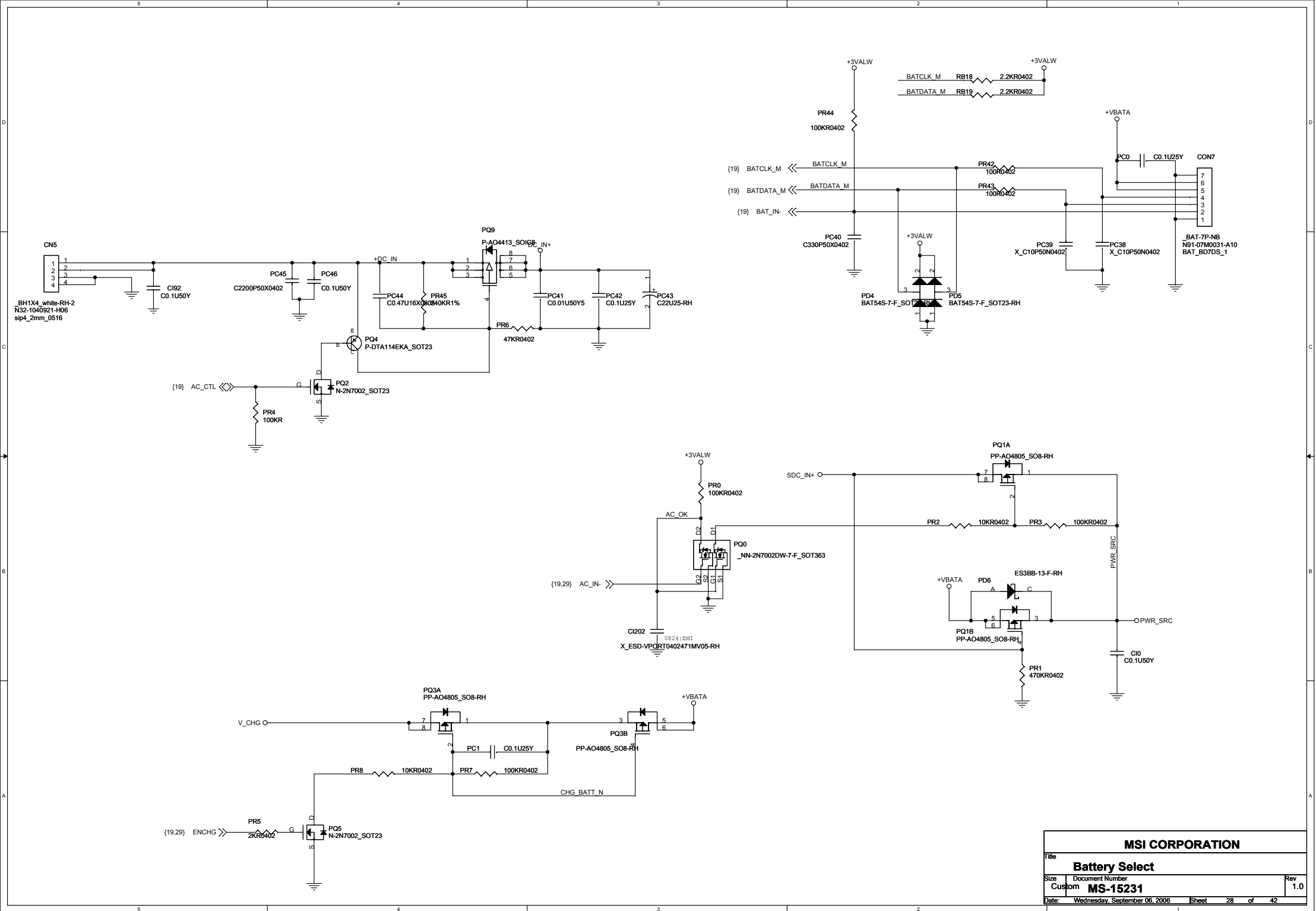
| | CON17 |
|-------|-------|
| TRD0+ | 1 |
| TRD0- | 2 |
| TRD1+ | 3 |
| TRD1- | 4 |
| TRD2+ | 5 |
| TRD2- | 6 |
| TRD3+ | 7 |
| TRD3- | 8 |

BH1X8#S_white-RH
N32-1080300-A10
WTB C440372 8P



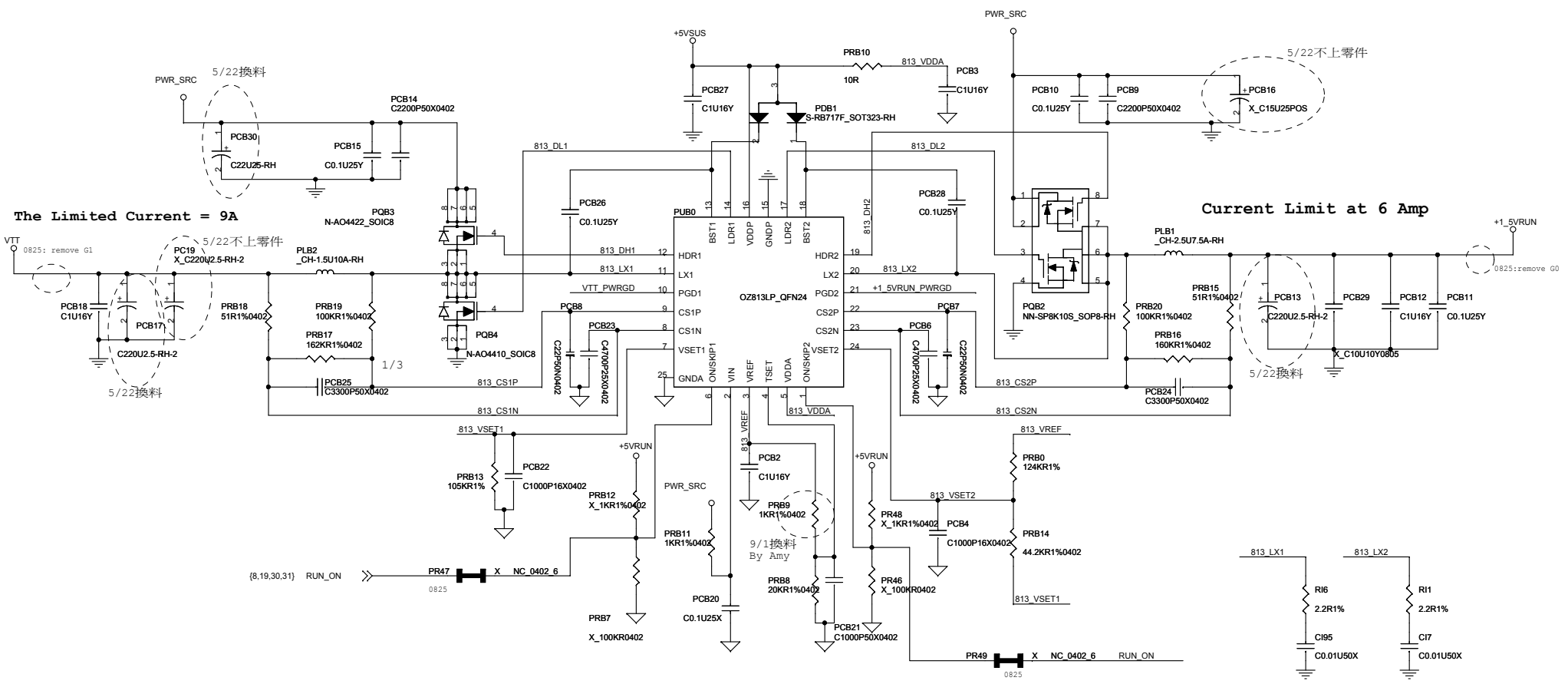


| MSI CORPORATION | | | |
|---------------------|-------------------------------|--|----------------|
| Title | | | |
| NEW CARD & MDC CONN | | | |
| Size | Document Number | | Rev |
| B | MS-15231 | | 1.0 |
| Date: | Wednesday, September 06, 2006 | | Sheet 26 of 42 |

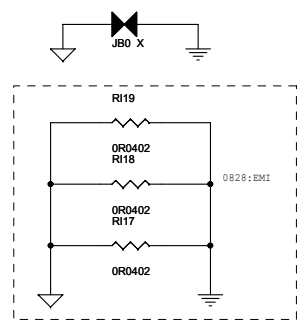


The Limited Current = 9A

Current Limit at 6 Amp

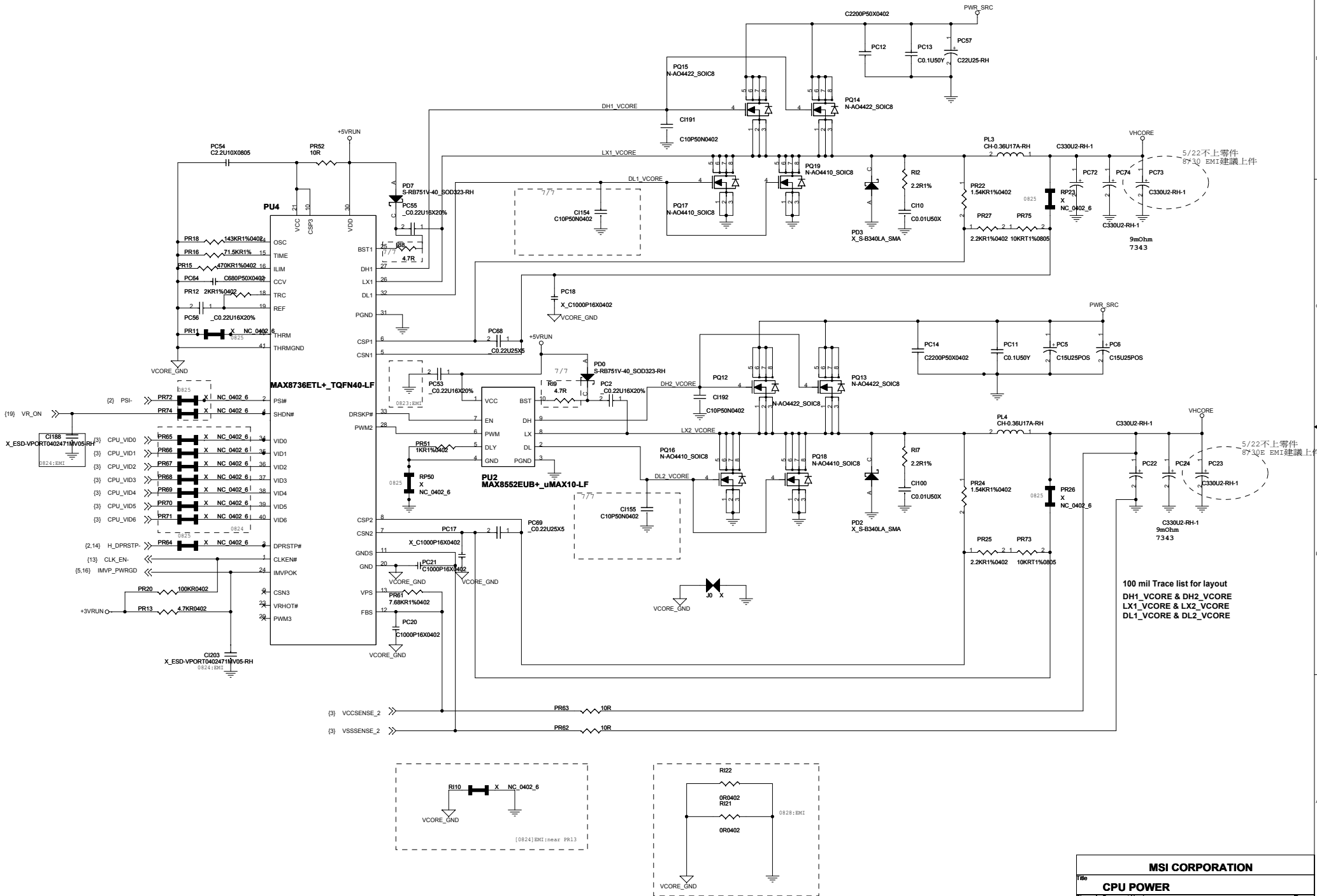


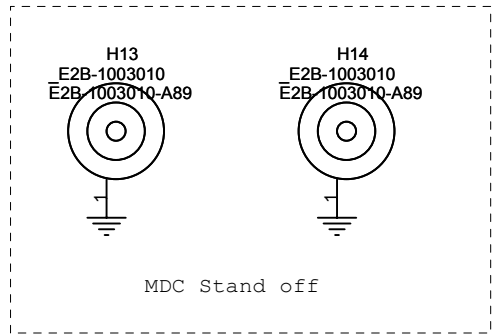
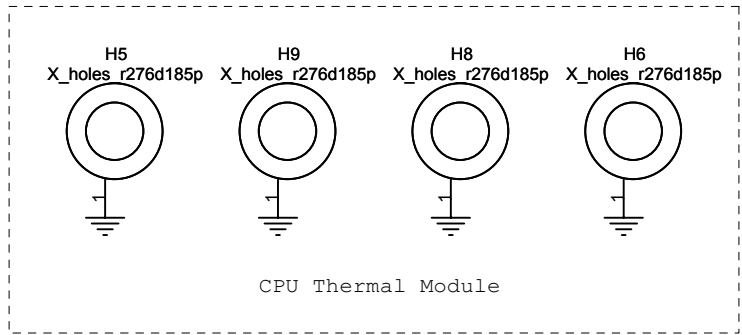
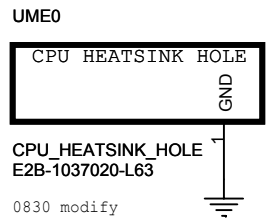
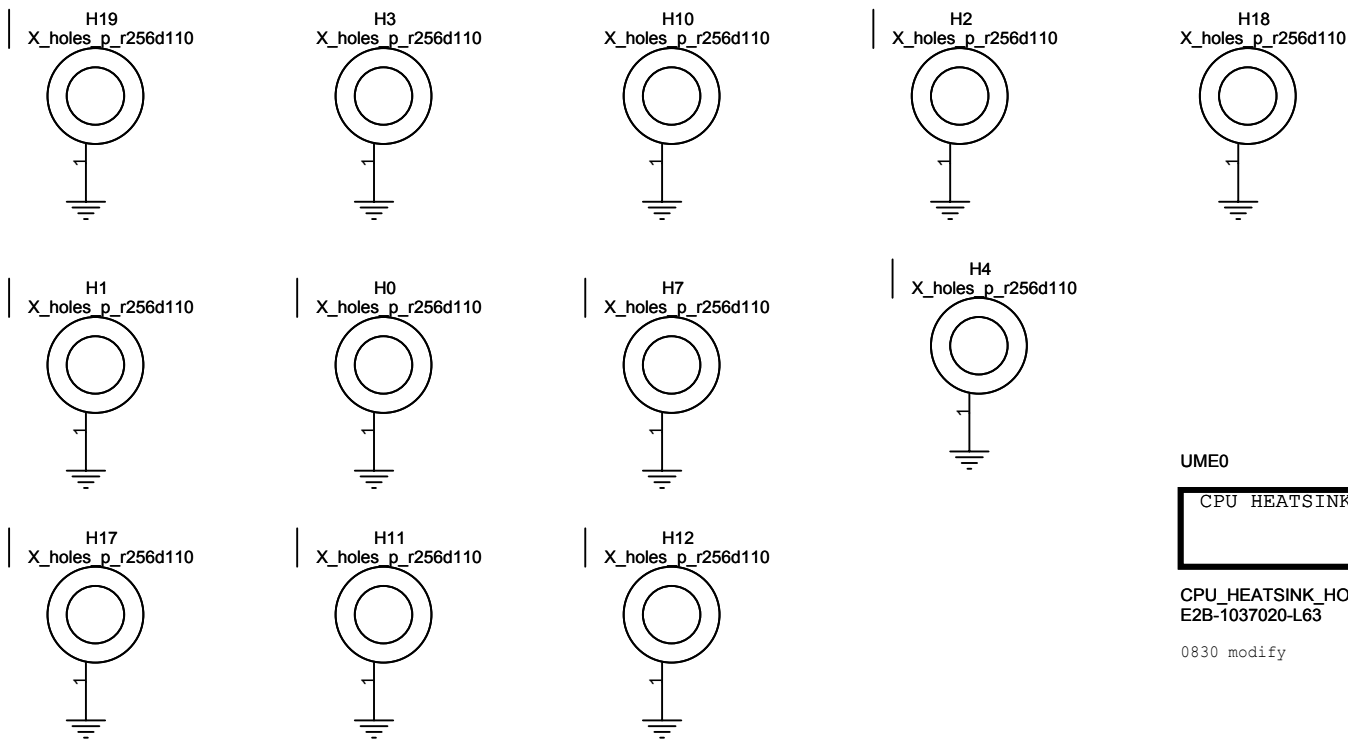
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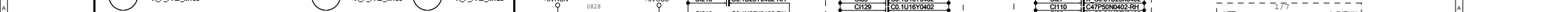
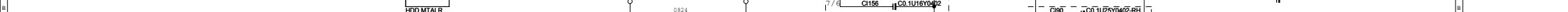
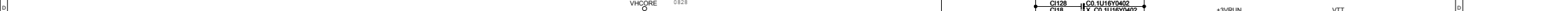
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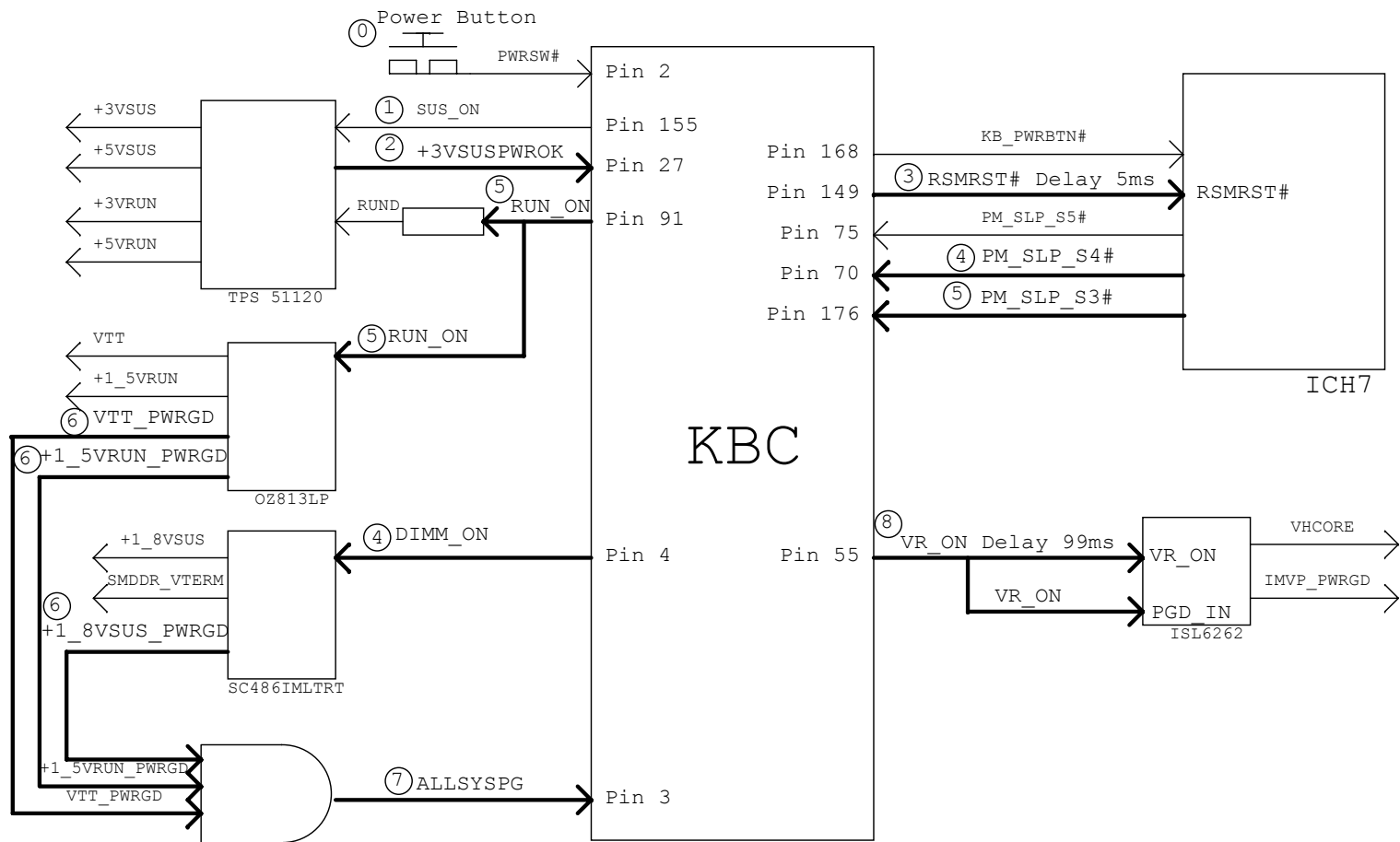
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| Size Custom | Document Number MS-15231 | | Rev 1.0 |
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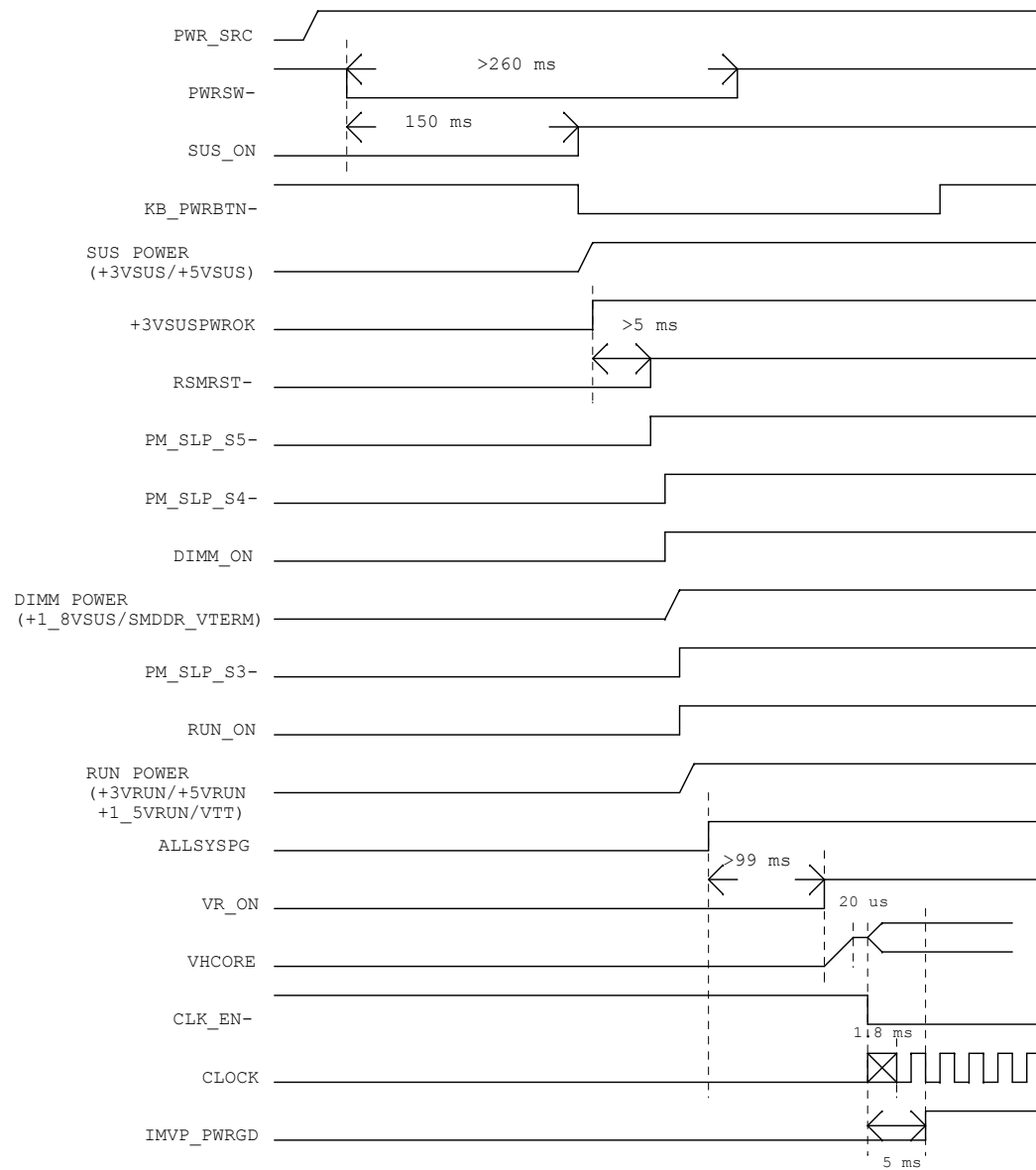
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| A4 | MS-15231 | | | | 1.0 |
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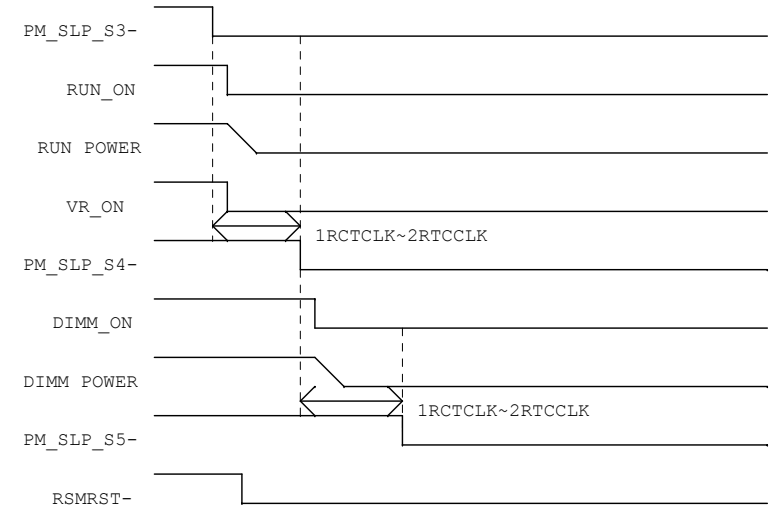


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| Size | Document Number | | Rev |
| B | MS-15231 | | 1.0 |
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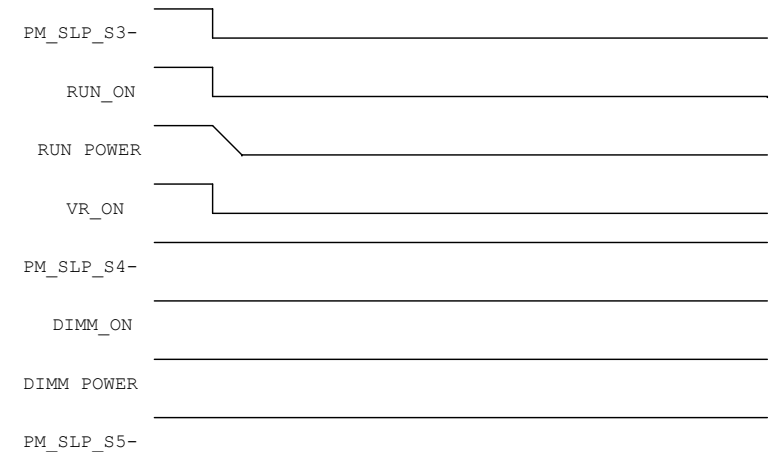
Power Up



Power Down



S3






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| Title | | | |
| POWER SEQUENCE | | | |
| Size | Document Number | | Rev |
| B | MS-15231 | | 1.0 |
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Voltage Rails

| Voltage | Description | Control Signal |
|-------------|---|----------------|
| PWR_SRC | AC ADAPTER OR BATTERY IN | |
| VHCORE | Core Voltage for Processor | VR_ON |
| VTT | 1.05 rail for Processor & 945GM I/O | RUN_ON |
| +1_5VRUN | 1.5V switched power rail(off in S3-S5) | RUN_ON |
| +3VRUN | 3.3V switched power rail(off in S3-S5) | RUND |
| +5VRUN | 5.0V switched power rail(off in S3-S5) | RUND |
| SMDDR_VTERM | 0.9V DDRII Termination voltage (off in S4-S5) | RUN_ON |
| +1_8VSUS | 1.8V power rail DDRII (off in S4-S5) | DIMM_ON |
| +2_5VRUN | 2.5V power rail for 945GM LVDS | +3VRUN |
| +3VSUS | 3.3V power rail (off in S4-S5) | SUS_ON/SUSD |
| +5VSUS | 5.0V power rail (off in S4-S5) | SUS_ON/SUSD |
| +3VALW | 3.3V always on power rail | +5VALW |
| +5VALW | 5.0V always on power rail | ? |
| | | |
| | | |

| Voltage | Description | Control Signal |
|---------|---|----------------|
| ADD5V | 5.0V Power rail Audio codec(off in S3-S5) | RUND |

| | | |
|--|-------------------|--|
|  GND | DIGITAL GROUD | |
|  AGND | AUDIO GND | |
|  | POWER Analogy GND | |

PCI RESOURCE

| DEVICE | IDSEL# | REQ/GNT# | PCI_INT# | CLOCK |
|---------------|--------|----------|------------|-----------|
| LAN RTL 8100C | P_AD19 | P_REQ1- | INT_PIRQF- | |
| CARDREADER | P_AD20 | P_REQ0- | INT_PIRQA- | PCLK_CARD |

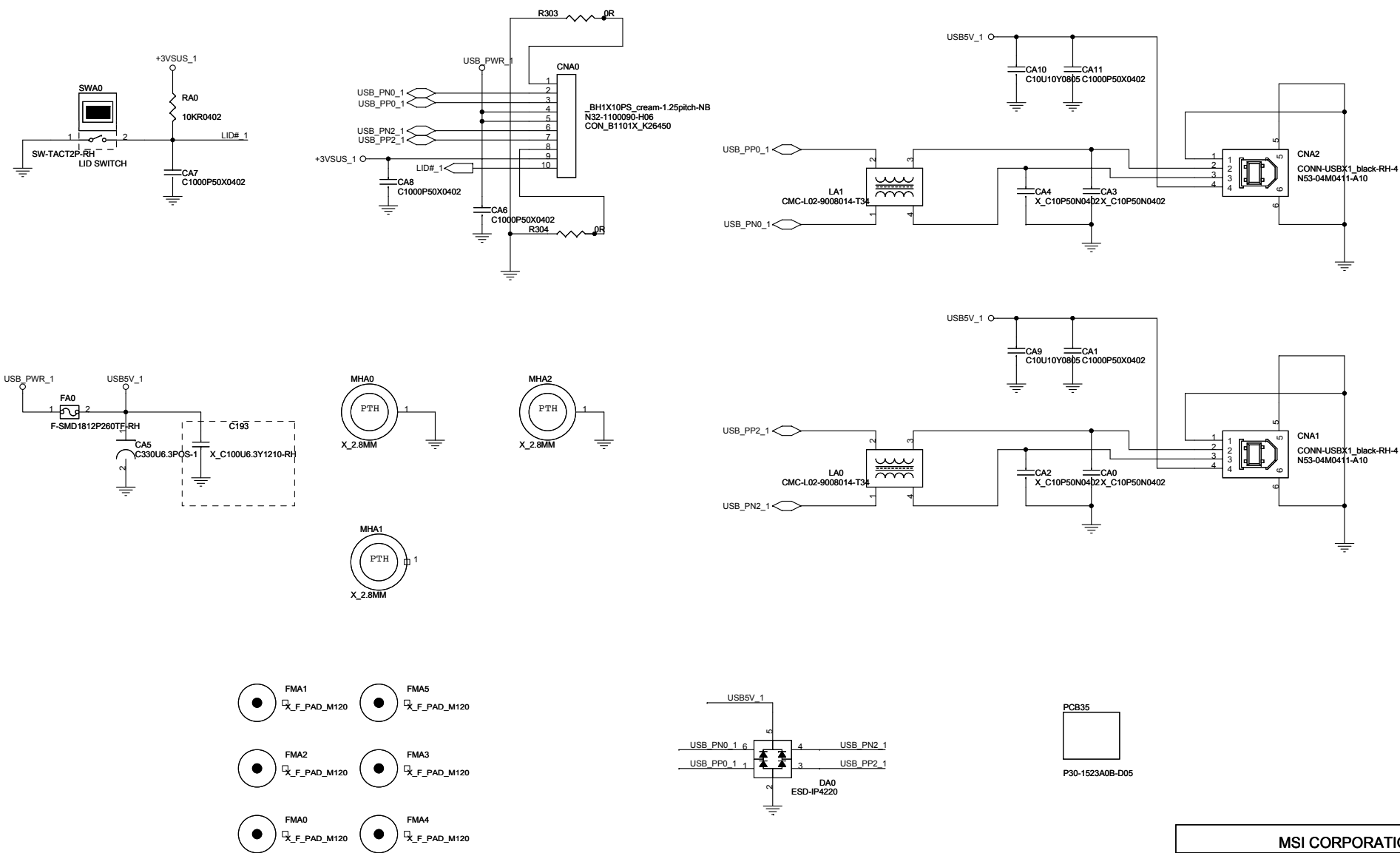
POWER STATES

| STATE \ SIGNAL | SLP_S3# | SLP_S4# | SLP_S5# | +V*ALWAYS | +V*SUS | +V*RUN | Clocks |
|-----------------------|---------|---------|---------|-----------|--------|--------|--------|
| Full ON | HIGH | HIGH | HIGH | ON | ON | ON | ON |
| S1M(Power On Suspend) | HIGH | HIGH | HIGH | ON | ON | ON | LOW |
| S3(Suspend to RAM) | LOW | HIGH | HIGH | ON | ON | OFF | OFF |
| S4(Suspend to Disk) | LOW | LOW | HIGH | ON | OFF | OFF | OFF |
| S5 / Soft OFF | LOW | LOW | LOW | ON | OFF | OFF | OFF |

Note : WHEN AC MODE , System turn on then +V*SUS will always keep high ????

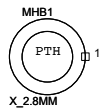
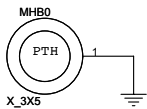
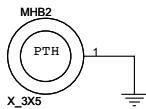
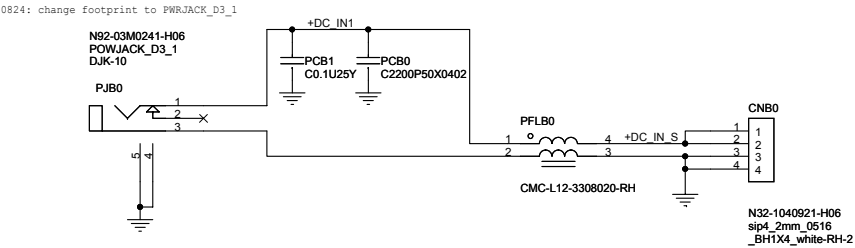
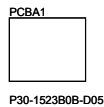
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| Size B | Document Number MS-15231 | | Rev 1.0 |
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|-----------------|-------------------------------|-------|----------|
| Title | | | |
| UAB BOARD | | | |
| Size | Document Number | | Rev |
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| MSI CORPORATION | | | |
|-----------------|-------------------------------|-------|----------|
| Title | | | |
| DC IN BOARD | | | |
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| Custom | MS-15231 | | 1.0 |
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[illegible]

MS-15231 REV. 0A POWER BLOCK DIAGRAM

