

# ***BTQ00 Rev0.1 Schematics Document***

**Intel Prescott uFCPGA-478 / P4 Northwood**

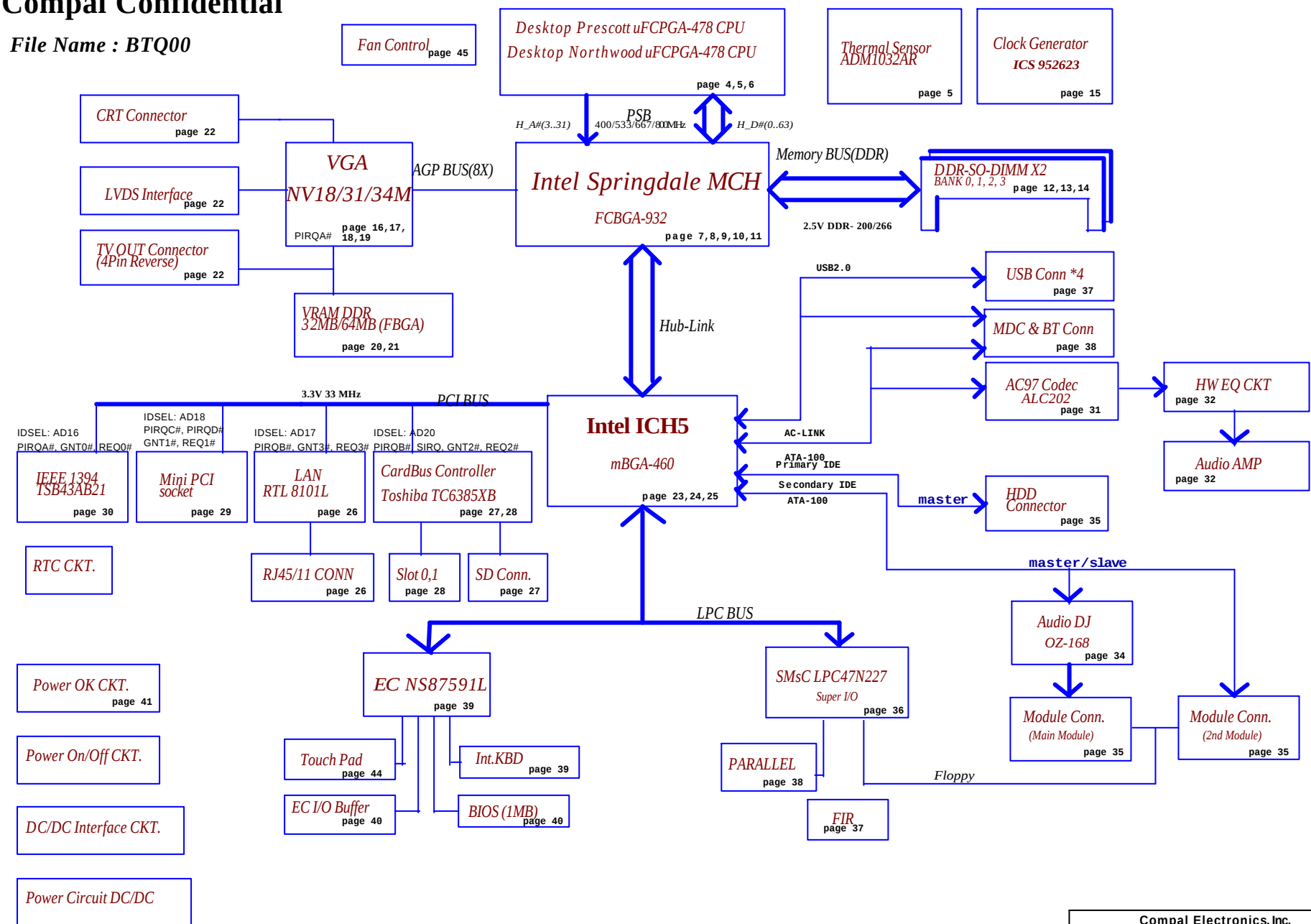
**with Springdale / ICH5 / nVIDIA NV18/34/31M chipset**

**2003/02/20**

|                          |                             |  |               |
|--------------------------|-----------------------------|--|---------------|
| Compal Electronics, Inc. |                             |  |               |
| Title                    |                             |  |               |
| Cover Sheet              |                             |  |               |
| Size<br>B                | Document Number<br>LA-1841  |  | Rev<br>0.1    |
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# Compal Confidential

File Name : BTQ00



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|-------------------------------------------|-----------------|-----|--|
| Block Diagram                             |                 |     |  |
| Title                                     | Document Number | Rev |  |
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Voltage Rails

| Power Plane | Description                               | S1  | S3  | S5  |
|-------------|-------------------------------------------|-----|-----|-----|
| VIN         | Adapter powersupply(19V)                  | N/A | N/A | N/A |
| B+          | AC or battery power rail for powercircuit | N/A | N/A | N/A |
| +CPU_CORE   | Core voltageforCPU                        | ON  | OFF | OFF |
| +CPU_VID    | 1.2V switched power railforCPUAGTLBus     | ON  | OFF | OFF |
| +VTT_GMCH   | +1.225V (Prescott) / +1.45V (Northwood)   | ON  | OFF | OFF |
| +VGA_CORE   | 1.2V switched power railforVGAchip        | ON  | OFF | OFF |
| +1.25VS     | 1.25V switched powerrail                  | ON  | OFF | OFF |
| +1.5VS      | AGP 4X/8X                                 | ON  | OFF | OFF |
| +2.5V       | 2.5V power rail                           | ON  | ON  | OFF |
| +2.5VS      | 2.5V switched powerrail                   | ON  | OFF | OFF |
| +3VALW      | 3.3V always on powerrail                  | ON  | ON  | ON* |
| +3V         | 3.3V power rail                           | ON  | ON  | OFF |
| +3VS        | 3.3V switched powerrail                   | ON  | OFF | OFF |
| +5VALW      | 5V always on powerrail                    | ON  | ON  | ON* |
| +5V         | 5V power rail                             | ON  | ON  | OFF |
| +5VS        | 5V switched powerrail                     | ON  | OFF | OFF |
| +12VALW     | 12V always on powerrail                   | ON  | ON  | ON* |
| +RTCVCC     | RTC power                                 | ON  | ON  | ON  |
|             |                                           |     |     |     |

Note : ON\* means that this power plane is ON only withACpoweravailable,otherwiseitisOFF.

External PCI Devices

| Device   | IDSEL# | REQ#GNT# | Interrupts  |
|----------|--------|----------|-------------|
| VGA      |        |          | PIRQA       |
| CardBus  | AD20   | 2        | PIRQA/PIRQB |
| LAN      | AD17   | 3        | PIRQB       |
| Mini-PCI | AD18   | 1/4      | PIRQC/PIRQD |
| 1394     | AD16   | 0        | PIRQA       |
| SD       | AD22   |          |             |

EC SM Bus1 address

| Device          | Address     | Device  | Address     |
|-----------------|-------------|---------|-------------|
| Smart Battery   | 0001 011X b | ADM1032 | 1001 110X b |
| EEPROM(24C1602) | 1010 000X b | OZ168   | 0011 0100 b |
| (24C84)         | 1011 000Xb  |         |             |

ICH4 SM Bus address

| Device                           | Address    |
|----------------------------------|------------|
| Clock Generator<br>( ICS 952623) | 1101 001Xb |
| DDR DIMM0                        | 1001 000Xb |
| DDR DIMM1                        | 1001 001Xb |

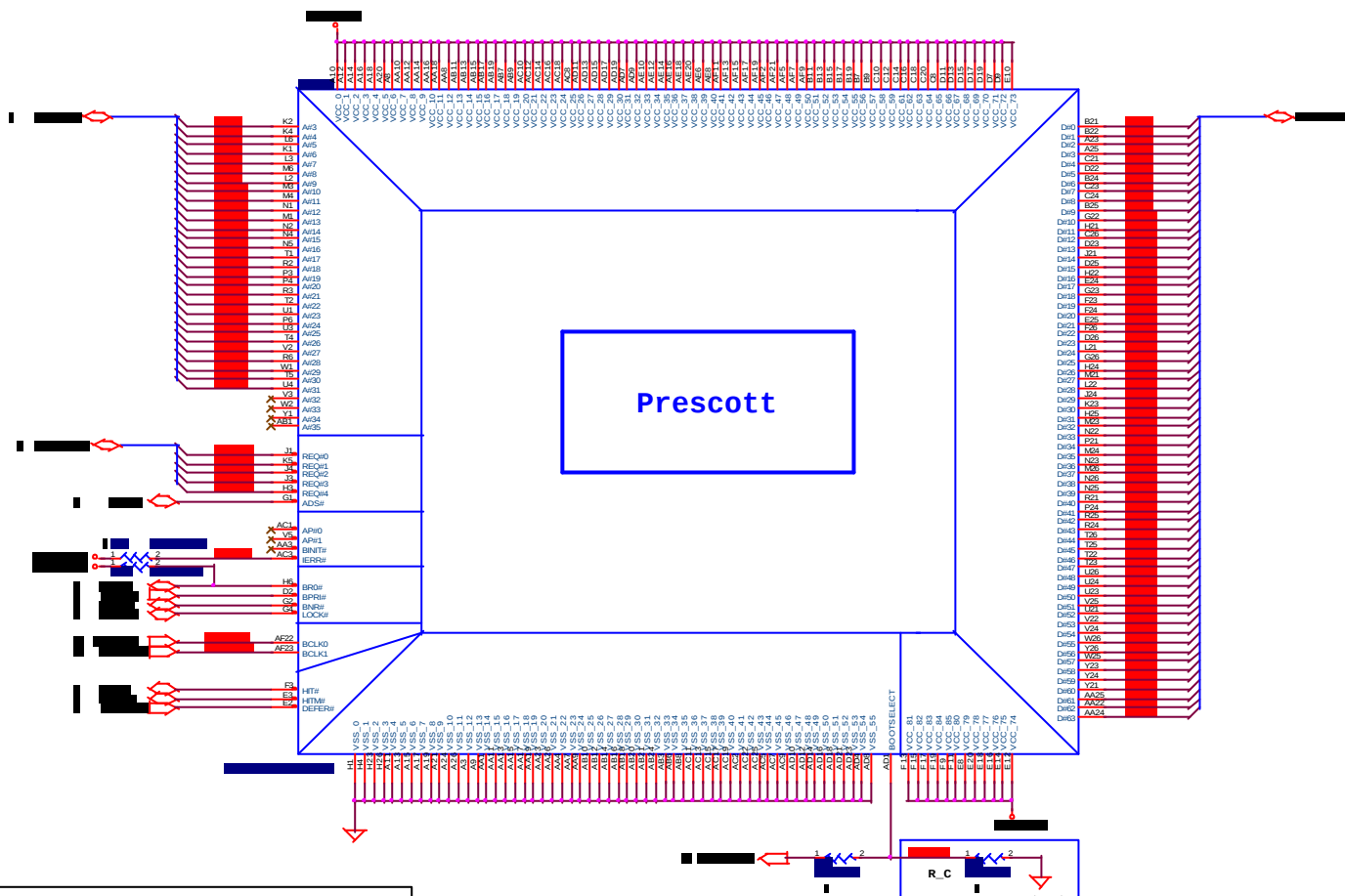
| STATE \ SIGNAL       | SLP_S1# | SLP_S3# | SLP_S4# | SLP_S5# | +VALW | +V  | +VS | Clock |
|----------------------|---------|---------|---------|---------|-------|-----|-----|-------|
| Full ON              | HIGH    | HIGH    | HIGH    | HIGH    | ON    | ON  | ON  | ON    |
| S1(Power On Suspend) | LOW     | HIGH    | HIGH    | HIGH    | ON    | ON  | ON  | LOW   |
| S3 (Suspend to RAM)  | LOW     | LOW     | HIGH    | HIGH    | ON    | ON  | OFF | OFF   |
| S4 (Suspend to Disk) | LOW     | LOW     | LOW     | HIGH    | ON    | OFF | OFF | OFF   |
| S5 (Soft OFF)        | LOW     | LOW     | LOW     | LOW     | ON    | OFF | OFF | OFF   |

Board ID Table for AD channel

|          |             |             |             |             |
|----------|-------------|-------------|-------------|-------------|
| Vcc      | 3.3V +/- 5% |             |             |             |
| Ra       | 100K +/- 5% |             |             |             |
| Board ID | Rb          | VAD_BID min | VAD_BID typ | VAD_BID max |
| 0        | 0           | 0 V         | 0 V         | 0 V         |
| 1        | 8.2K +/- 5% | 0.216 V     | 0.250 V     | 0.289 V     |
| 2        | 18K +/- 5%  | 0.436 V     | 0.503 V     | 0.538 V     |
| 3        | 33K +/- 5%  | 0.712 V     | 0.819 V     | 0.875 V     |
| 4        | 56K +/- 5%  | 1.036 V     | 1.185 V     | 1.264 V     |
| 5        | 100K +/- 5% | 1.453 V     | 1.650 V     | 1.759 V     |
| 6        | 200K +/- 5% | 1.935 V     | 2.200 V     | 2.341 V     |
| 7        | NC          | 2.500 V     | 3.300 V     | 3.300 V     |

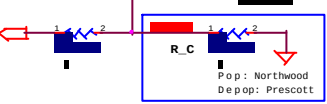
| Board ID | PCB Revision |
|----------|--------------|
| 0        | 0.1          |
| 1        |              |
| 2        |              |
| 3        |              |
| 4        |              |
| 5        |              |
| 6        |              |
| 7        |              |

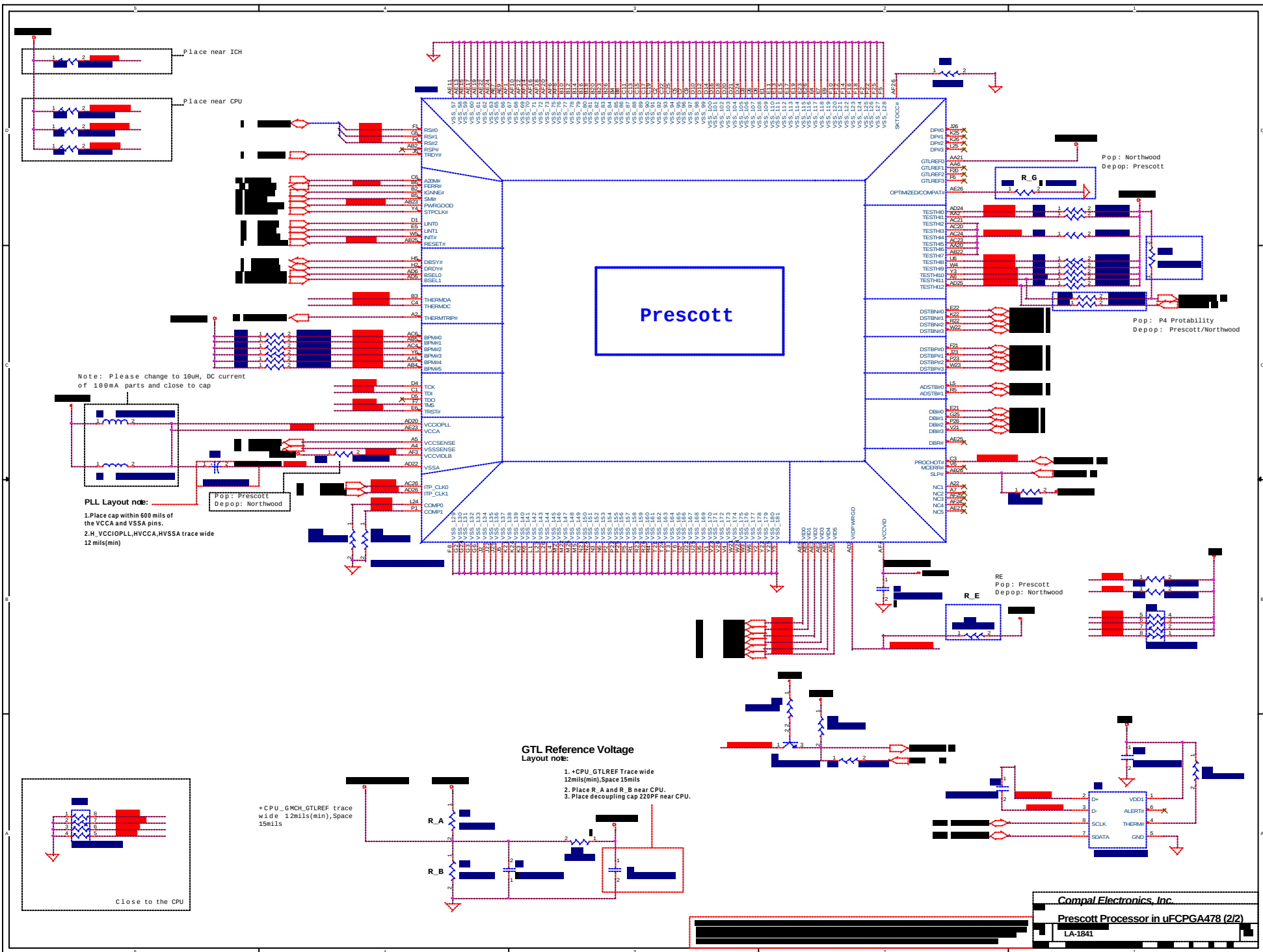
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|--------------------------|-----------------------------|---------------|---------|
| Title                    |                             |               |         |
| Notes                    |                             |               |         |
| Size B                   | Document Number             |               | Rev 0.1 |
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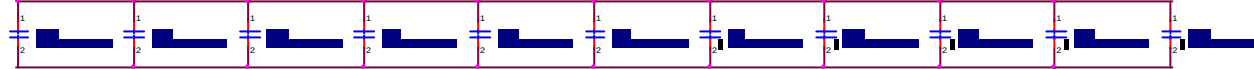
Reference Intel document  
 Desktop P4 Spec.: 19988 P4 0.13u 512KB L2 EMTS Rev.2.0  
 Desktop Prescott Spec.: 19910 Prescott EMTS Rev.0.5

| Pin number | Northwood Pin name | Comment                    | Prescott Pin name | Comment                                    | Northwood | Prescott |
|------------|--------------------|----------------------------|-------------------|--------------------------------------------|-----------|----------|
| B6         | FERR#              | Pull-up 620hm to +VCC_CORE | FERR#/PBE#        | Pull-up 620hm to +VCC_CORE                 | Pop       | Pop      |
| AA20       | ITPCLKOUTB         | Pull-up 560hm to +VCC_CORE | YESYH6            | Pull-up 620hm to +VCC_CORE                 | Pop       | Pop      |
| AB22       | ITPCLKOUT1         | Pull-up 560hm to +VCC_CORE | YESYH7            | Pull-up 620hm to +VCC_CORE                 | Pop       | Pop      |
| AD2        | NC                 | Float                      | VIDPWRGD          | Pull-up 8.2kohm to +VCCVID                 | Depop     | Pop      |
| AD3        | NC                 | Float                      | VID5              | Pull-up 1kohm to +3VRUN & connect to PWRIC | Depop     | Pop      |
| AF3        | NC                 | Float                      | VCCVIDLB          | Connect to +VCCVID                         | Depop     | Pop      |
| AD20       | VCCA               | Connect to CPU Filter      | VCCIOPLL          | Connect to CPU Filter                      |           |          |
| AF23       | VCCIOPLL           | Connect to CPU Filter      | VCCA              | Connect to CPU Filter                      |           |          |
| AD1        | VSS                | Connect to GND             | BOOTSELECT        | CPU determine                              | Pop       | Depop    |
| AE20       | VSS                | Connect to GND             | OPTIMIZED/COMPAT# | Float                                      | Pop       | Depop    |



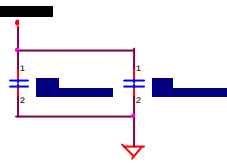
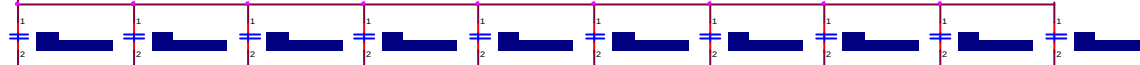


Place 11 North of Socket(Stuff 8)

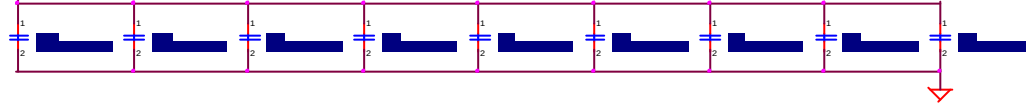


22uF depop reference  
Springdale Customer Schematic R1.2 page82

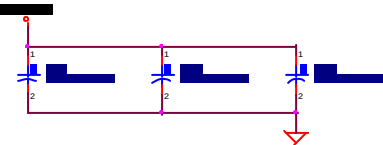
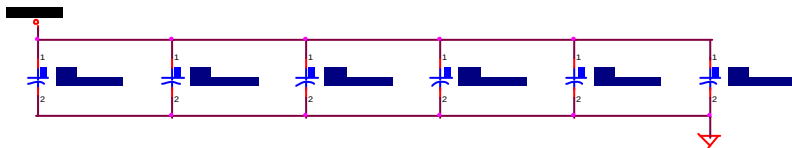
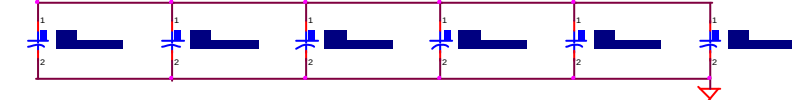
Place 12 Inside Socket(Stuff all)



Place 9 South of Socket(Unstuff all)



470uF \_ERS10m ohm\* 15, ESR=0.5m ohm



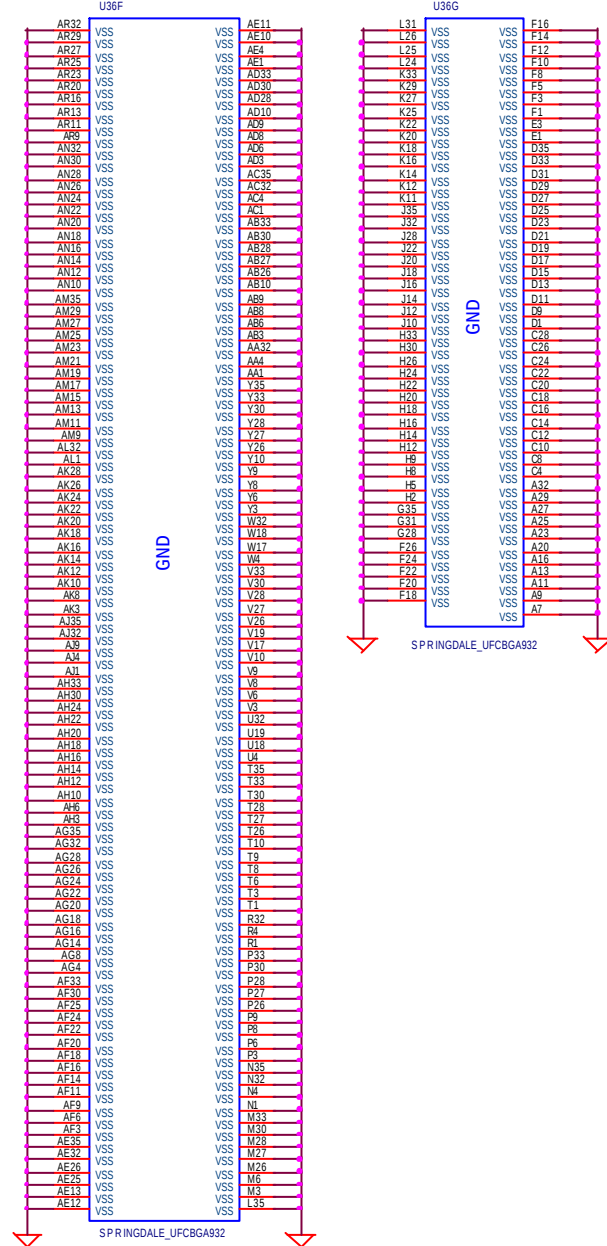
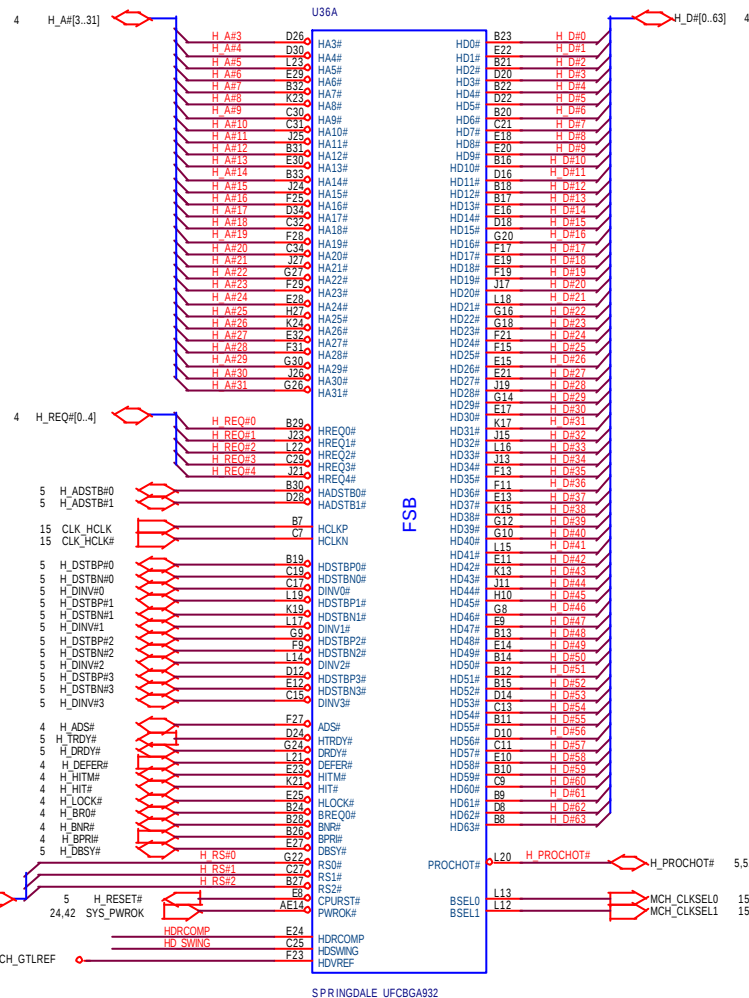
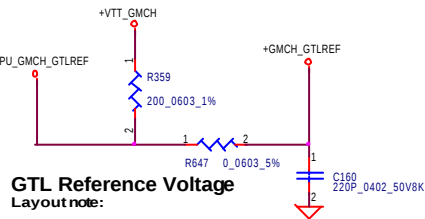
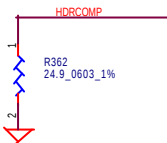
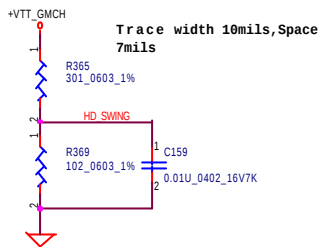
Decoupling Reference Document:  
Springdale Chipset Platform Design guide Rev1.11  
(12474)page239

Decoupling Reference Requirement:  
560uF Polymer, ESR:5m ohm(each) \* 10  
22uF X5R \* 32

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CPU Decoupling

LA-1841



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| Springdale-Host/GND (1/4) |                             |               |
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12.14 DDRA\_SMA[0..12]

DDRA\_SMA[0..12]

U36B

12.14 DDRA\_SWE#  
12.14 DDRA\_SCAS#  
12.14 DDRA\_SRAS#12.14 DDRA\_SBS0  
12.14 DDRA\_SBS112.14 DDRA\_SCSE0  
12.14 DDRA\_SCSE112.14 DDRA\_CKE0  
12.14 DDRA\_CKE112 DDRA\_CLK1  
12 DDRA\_CLK1#  
12 DDRA\_CLK2  
12 DDRA\_CLK2#+SM\_VREF\_A  
+SM\_VREF\_A trace width of 12mils and space  
12mils(min)

Close to GMCH(E34)

Trace width of 12mils and space  
10mils(min)

Change to 42.2 1%

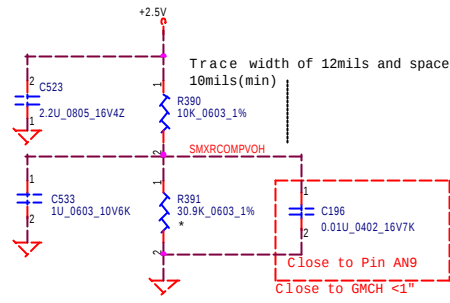
Place resistors within  
1.0 inch of GMCH (AK9)  
Change to 42.2 1%

DDR Channel A

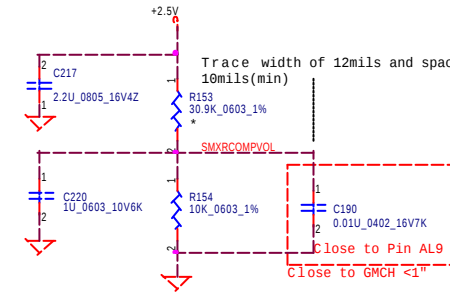
SPRINGDALE\_UFCBGAS32



DDRA\_SDQ[0..63]



\* Change to 31.12K

Follow Intel design guide  
R1.11(12474) page124,125

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Springdale-DDR Interface-A(2/5)

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Trace width of 12mils and space 10mils(min)

C541  
2.2U\_0805\_16V4Z

R394  
10K\_0603\_1%

SMYRCOMPVOH

C546  
1U\_0603\_10V6K

R398  
30.9K\_0603\_1%

C213  
0.01U\_0402\_50V7K

Close to Pin R14

Close to GND <1"

2.5V

Trace width of 12mils and space 10mils(min)

C219  
2.2U\_0805\_16V4Z

R163  
30.9K\_0603\_1%

SMYRCOMPVOL

C223  
1U\_0603\_10V6K

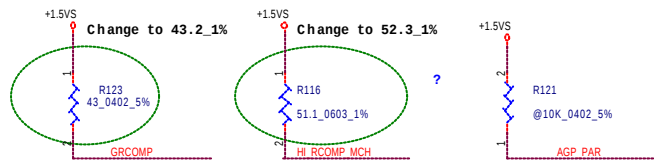
R164  
10K\_0603\_1%

C211  
0.01U\_0402\_50V7K

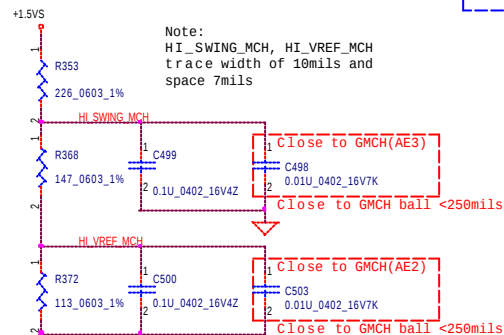
Close to Pin R33

Close to GNDMCH <1"

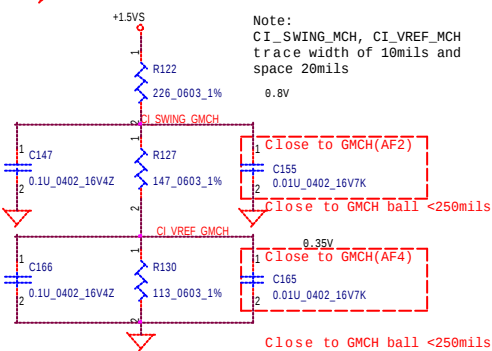
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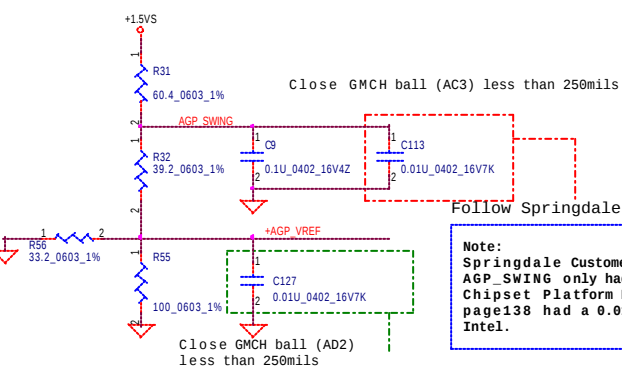
1: External AGP  
0: Internal Graphics



Note:  
HI\_SWING\_MCH, HI\_VREF\_MCH  
trace width of 10mils and  
space 7mils



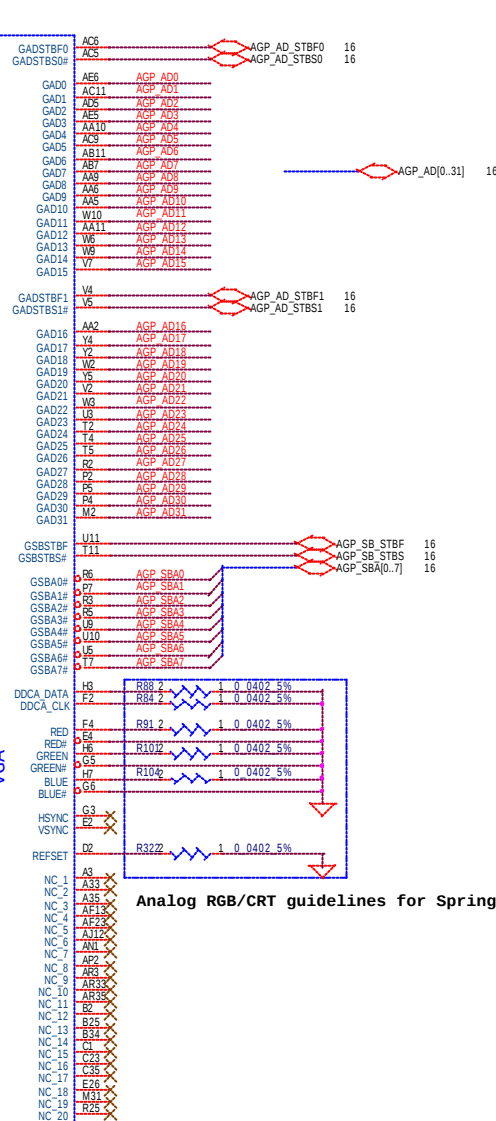
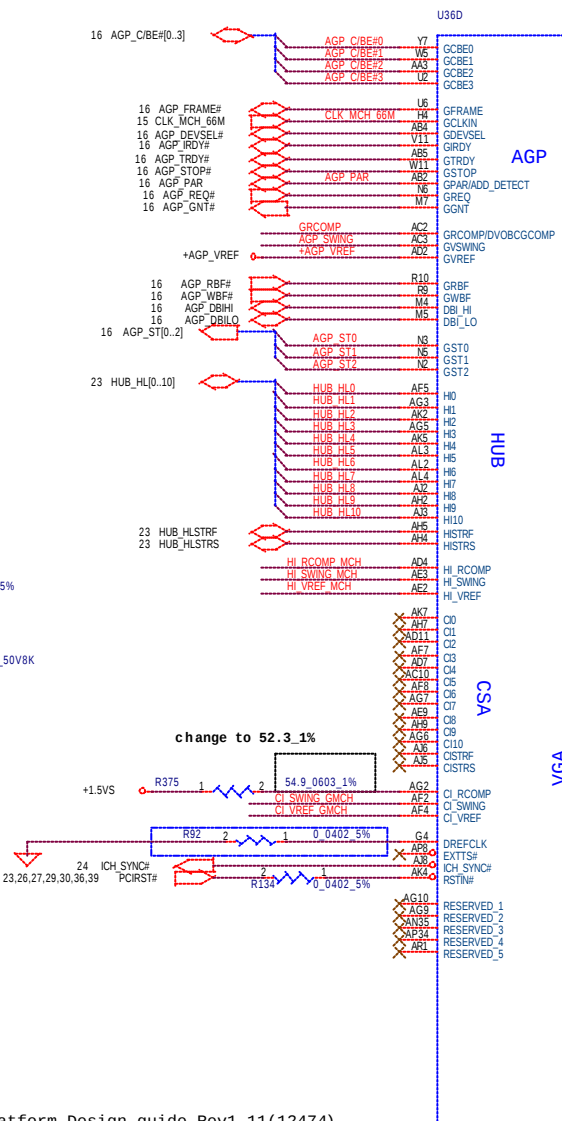
Note:  
CI\_SWING\_MCH, CI\_VREF\_MCH  
trace width of 10mils and  
space 20mils



Close GMCH ball (AC3) less than 250mils

Follow Springdale Chipset Platform Design guide Rev1.11(12474)

Note:  
Springdale Customer Schematic R1.2 page18  
AGP\_SWING only had 0.1u cap ; But Springdale  
Chipset Platform Design guide Rev1.11(12474)  
page138 had a 0.01uf cap. need confirm with  
Intel.

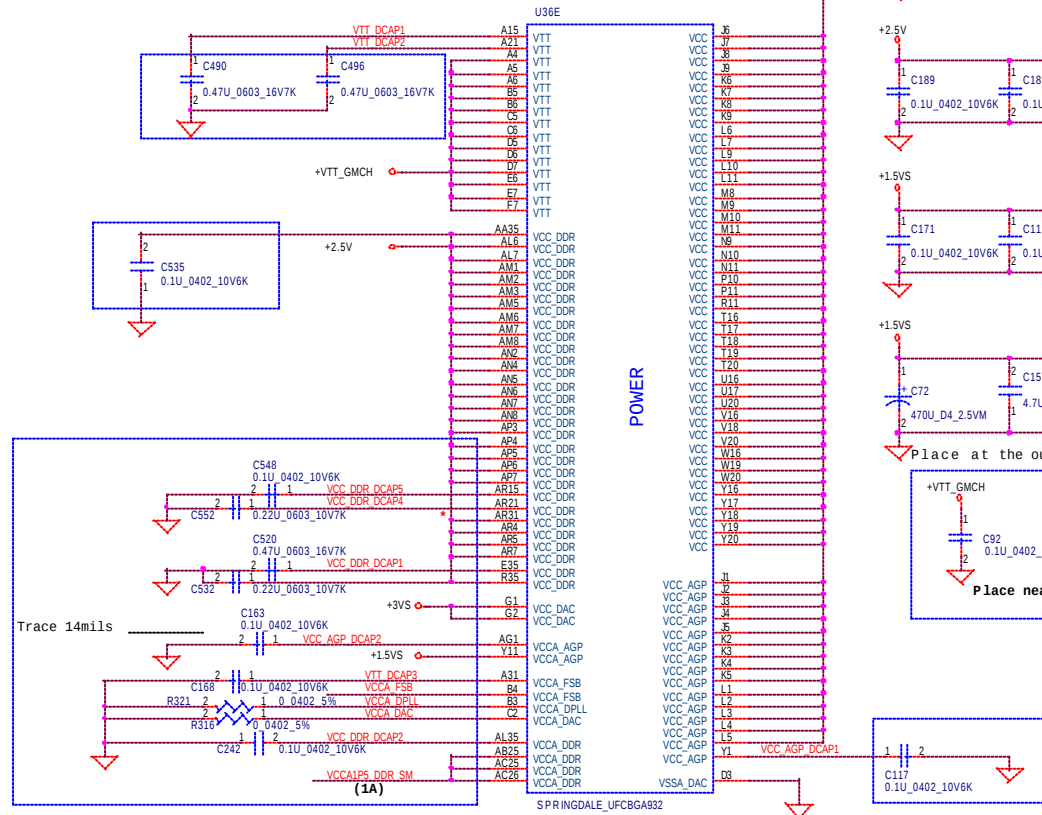


Analog RGB/CRT guidelines for Springdale-P

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| Title                            |                             |                |
| Springdale-AGP/HUB/VGA/CSA (4/5) |                             |                |
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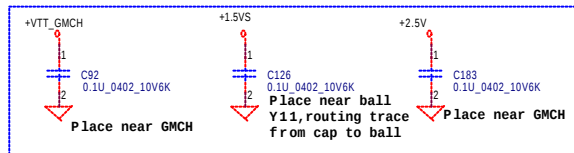
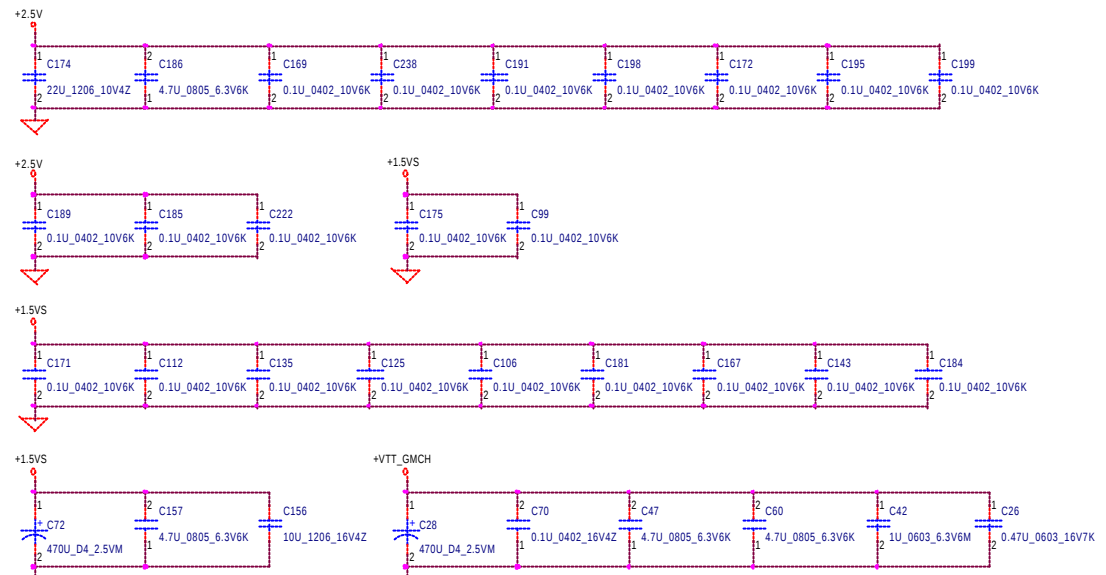
Note:  
Placed less than 100 mils from ball  
Route to GMCH ball without via



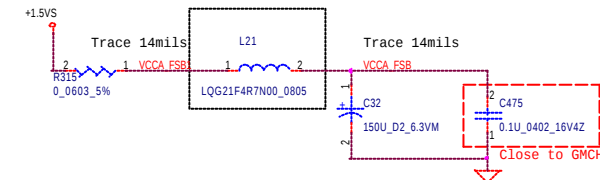
Note:  
Placed less than 100 mils from ball  
Route to GMCH ball without via

Decoupling Reference Document:  
Springdale Chipset Platform Design guide Rev1.11  
(12474)page246,248

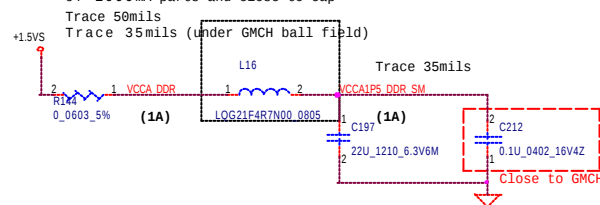
Decoupling Reference Document:  
Springdale Customer Schematic R1.2 page84



Note: Please change to 0.82uH, DC current  
of 30mA parts and close to cap

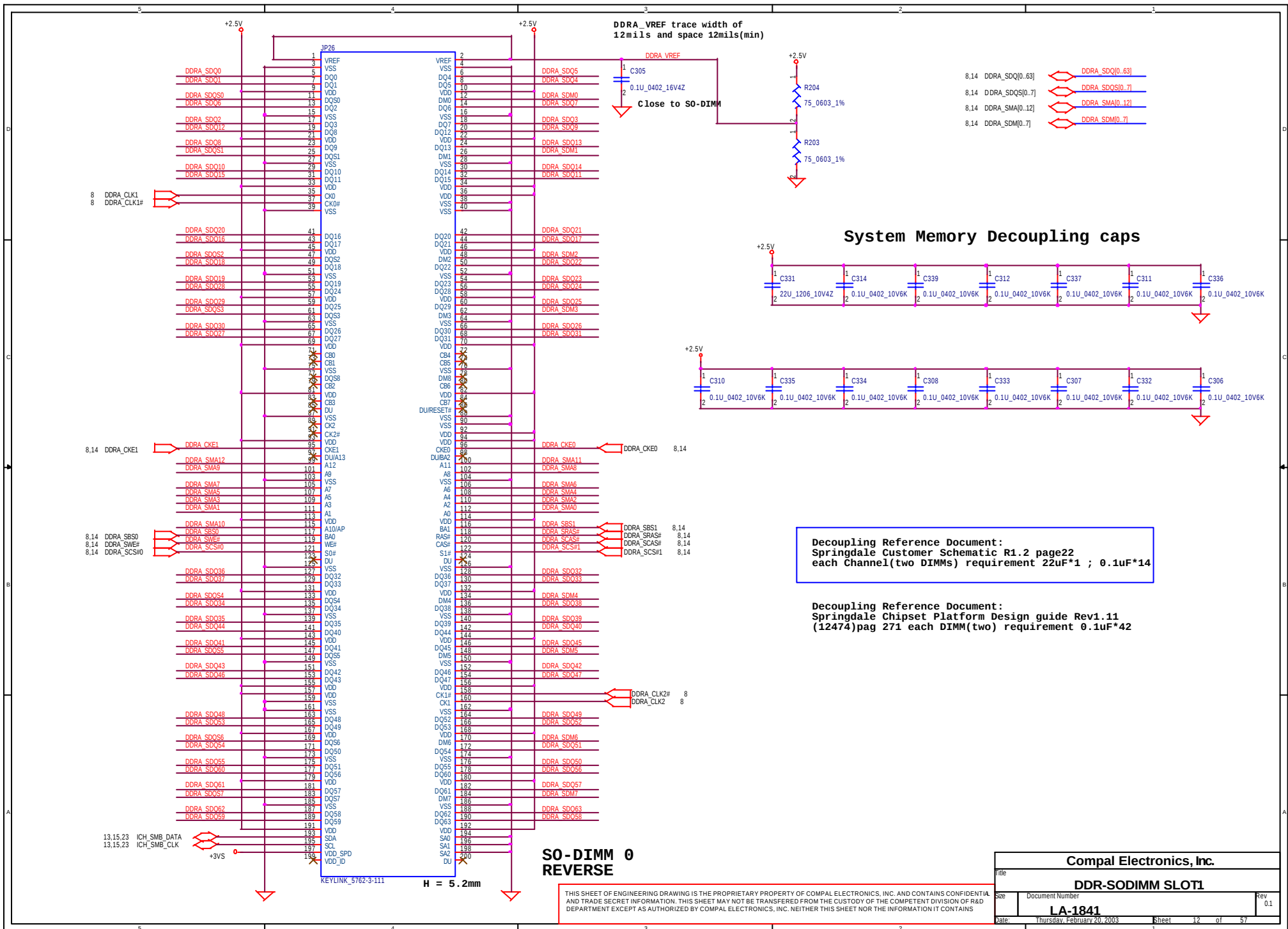


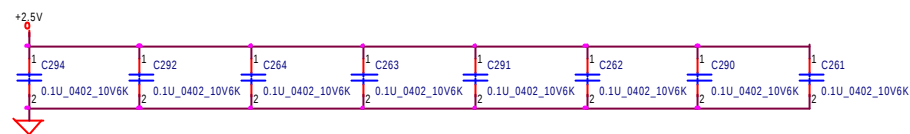
Note: Please change to 1uH(0.54uH-D-IN), DC current  
of 1000mA parts and close to cap



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| Springdale-Decoupling (5/5) |                             |       |          |
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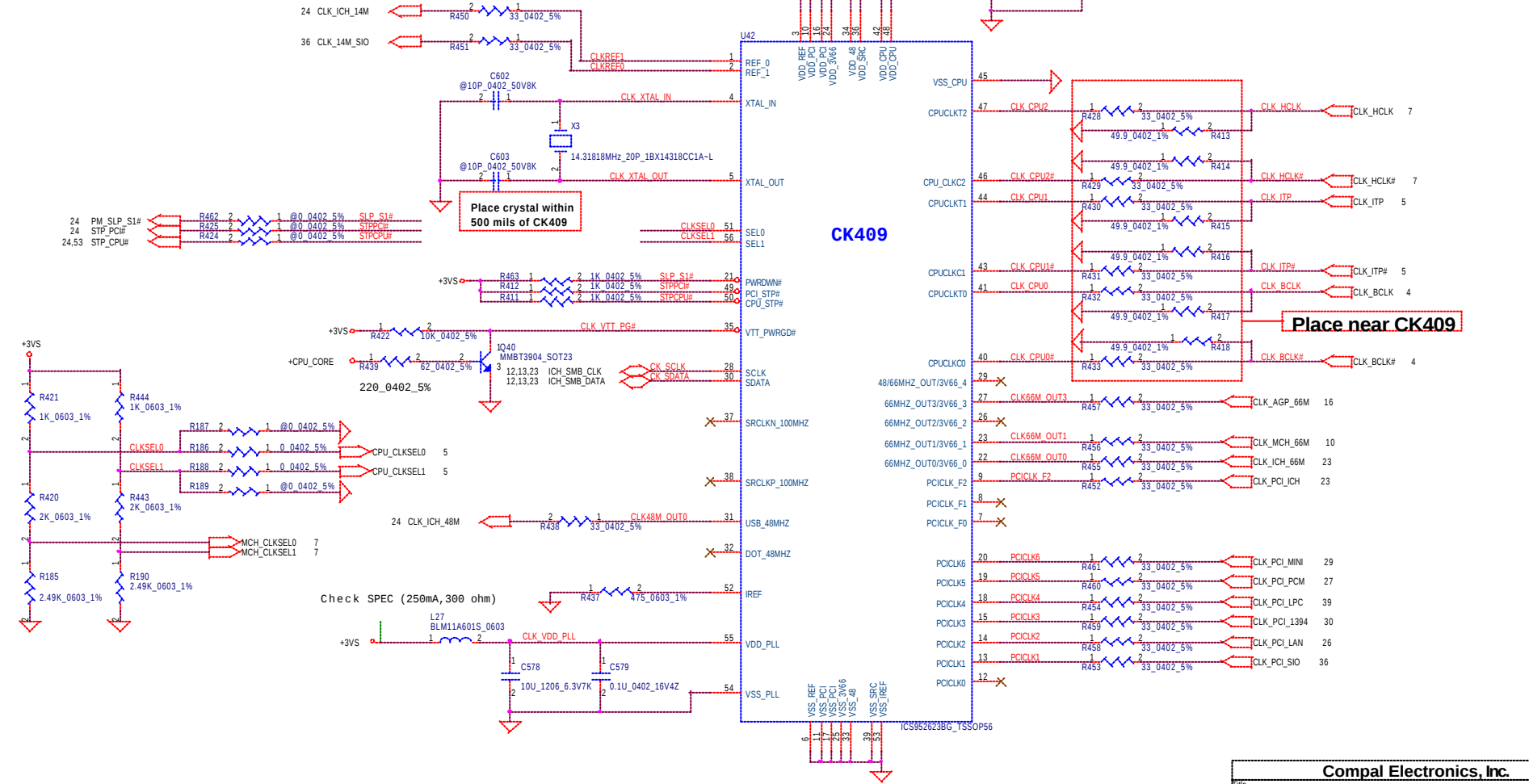
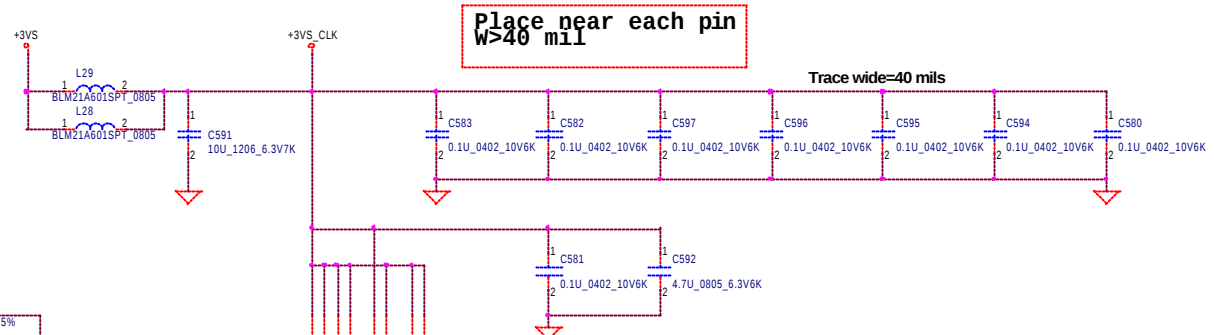
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| Title                    |                             |  |       |          |
| DDR-SODIMM SLOT2         |                             |  |       |          |
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|                                  |                             |       |          |
|----------------------------------|-----------------------------|-------|----------|
| Title                            |                             |       |          |
| <b>DDR Termination Resistors</b> |                             |       |          |
| Size                             | Document Number             |       | Rev      |
| B                                | <b>LA-1841</b>              |       | 0.1      |
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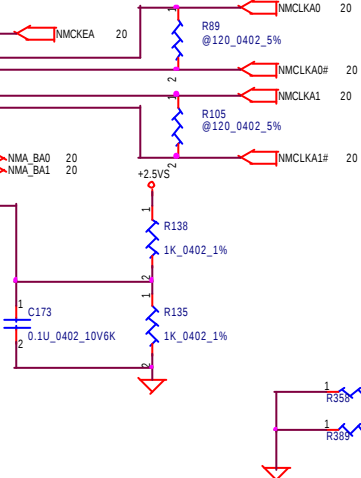
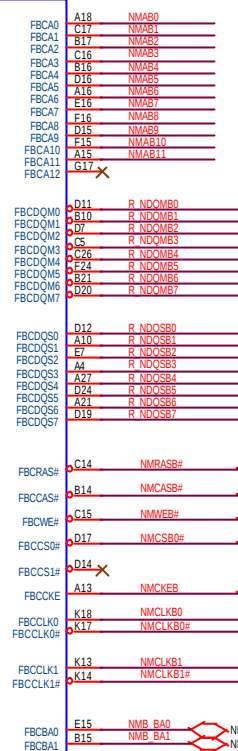
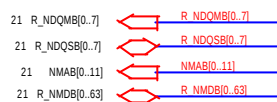
| SEL0 | SEL1 | CPU  | V66[0..3] | REF0 | REF1 | SRC     | USB/Dot |
|------|------|------|-----------|------|------|---------|---------|
| 0    | 0    | 100  | 66        | 14.3 | 14.3 | 100/200 | 48      |
| 0    | MID  | REF  | REF       | REF  | REF  | REF     | REF     |
| 0    | 1    | 200  | 66        | 14.3 | 14.3 | 100/200 | 48      |
| 1    | 0    | 133  | 66        | 14.3 | 14.3 | 100/200 | 48      |
| 1    | 1    | 166  | 66        | 14.3 | 14.3 | 100/200 | 48      |
| 1    | MID  | Hi-Z | Hi-Z      | Hi-Z | Hi-Z | Hi-Z    | Hi-Z    |



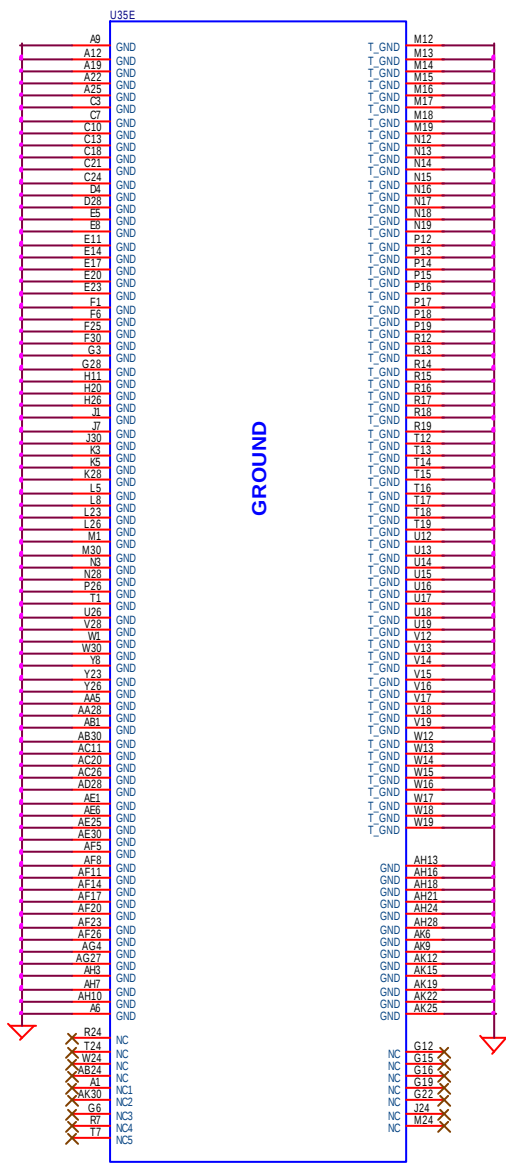
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|--------------------------|-----------------------------|-------|----------|
| Clock Generator          |                             |       |          |
| Title                    | Document Number             | Rev   |          |
|                          | LA-1841                     | 0.1   |          |
| Date                     | Thursday, February 20, 2003 | Sheet | 15 of 57 |

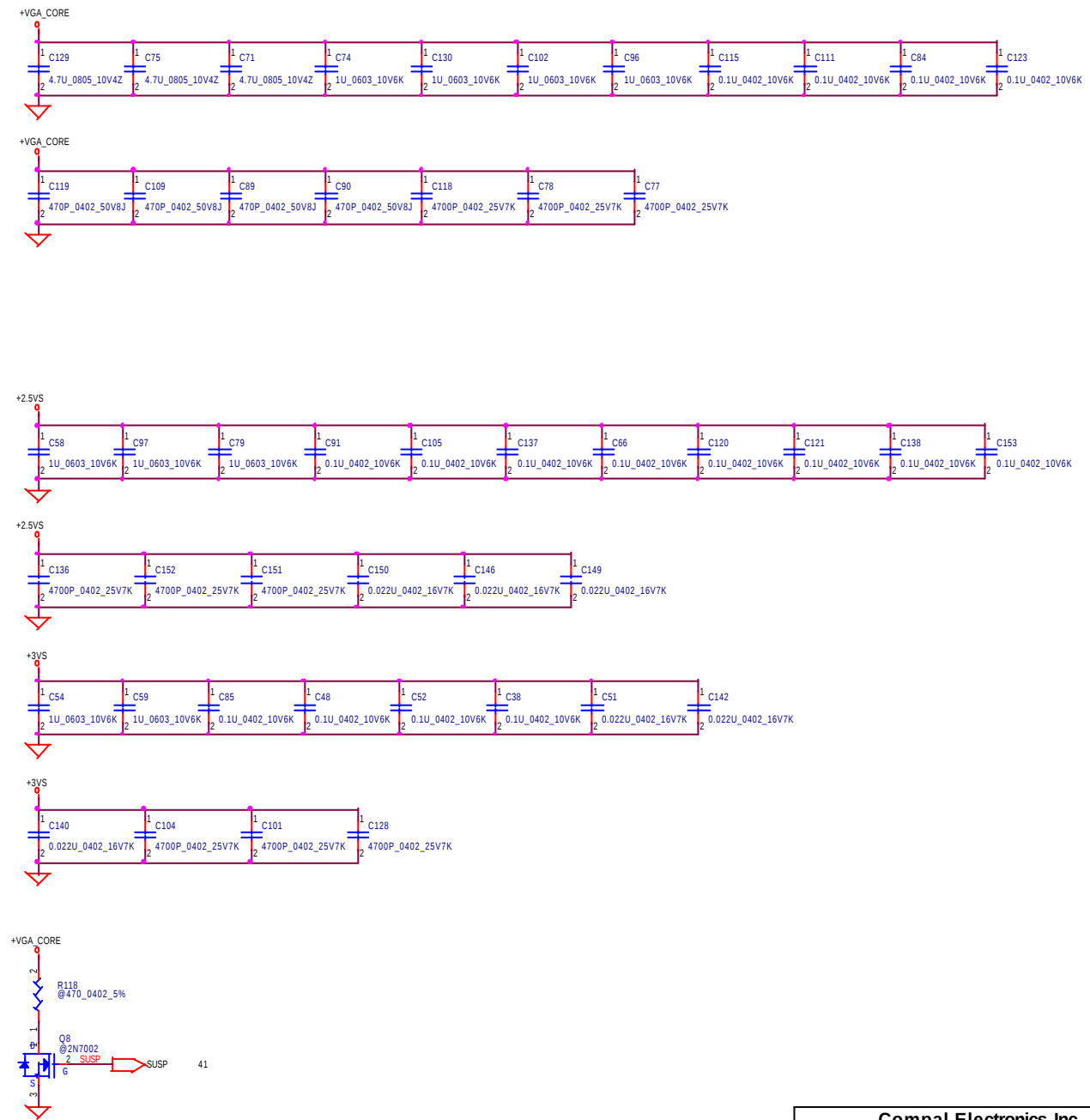








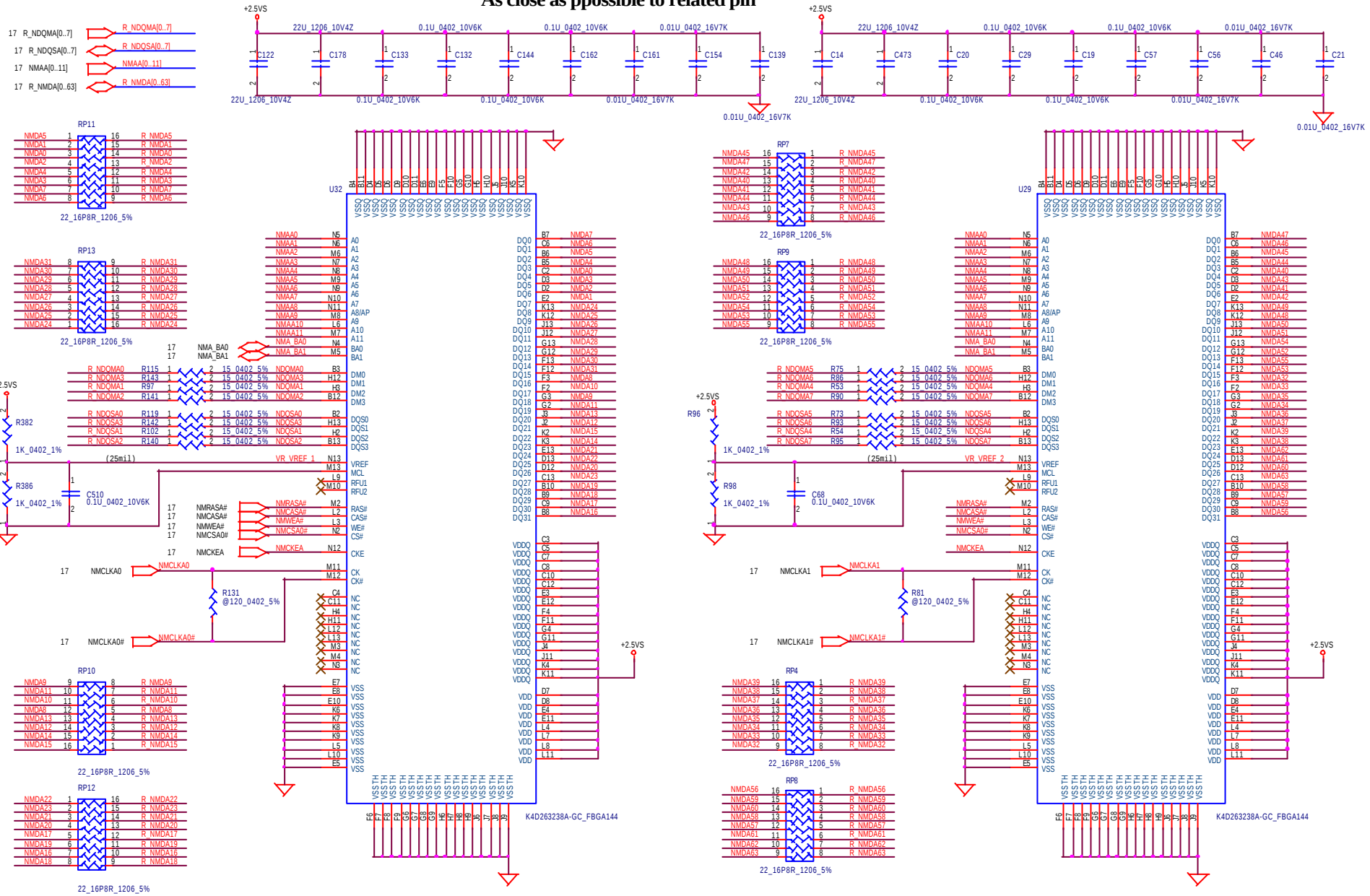
NV34M\_EPBGA701



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|-------------------------------|-----------------------------|-------|----------|
| Title                         |                             |       |          |
| nVIDIA NV31M (DECOUPLING CAP) |                             |       |          |
| Size                          | Document Number             | Rev   |          |
|                               | LA-1841                     | 0.1   |          |
| Date:                         | Thursday, February 20, 2003 | Sheet | 19 of 57 |

As close as possible to related pin



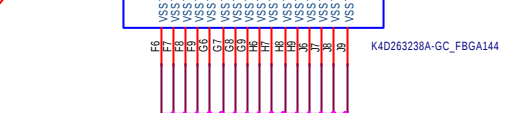
Compal Electronics, Inc.

VGA DDR FOR CHANNEL A

|         |                             |                |
|---------|-----------------------------|----------------|
| Size    | Document Number             | Rev            |
| LA-1841 |                             | 01             |
| Date    | Thursday, February 20, 2003 | Sheet 20 of 57 |

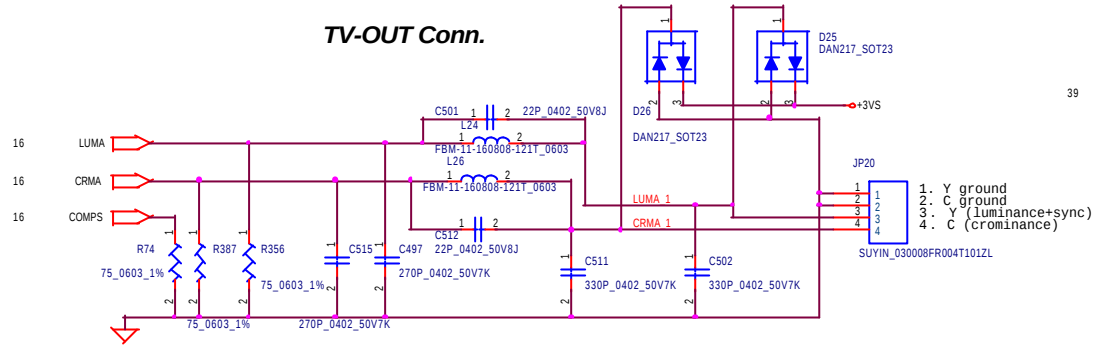
**As close as possible to related pin**

Two circuit diagrams illustrating the placement of capacitors relative to a +2.5VS supply and a ground plane. The left diagram shows capacitors C246, C559, C226, C240, C237, C236, C232, C227, and C225. The right diagram shows capacitors C221, C560, C229, C235, C228, C234, C241, C224, and C239. Both diagrams include a +2.5VS supply, a ground plane, and a 0.01uF 0402 16V7K capacitor connected to the ground plane.

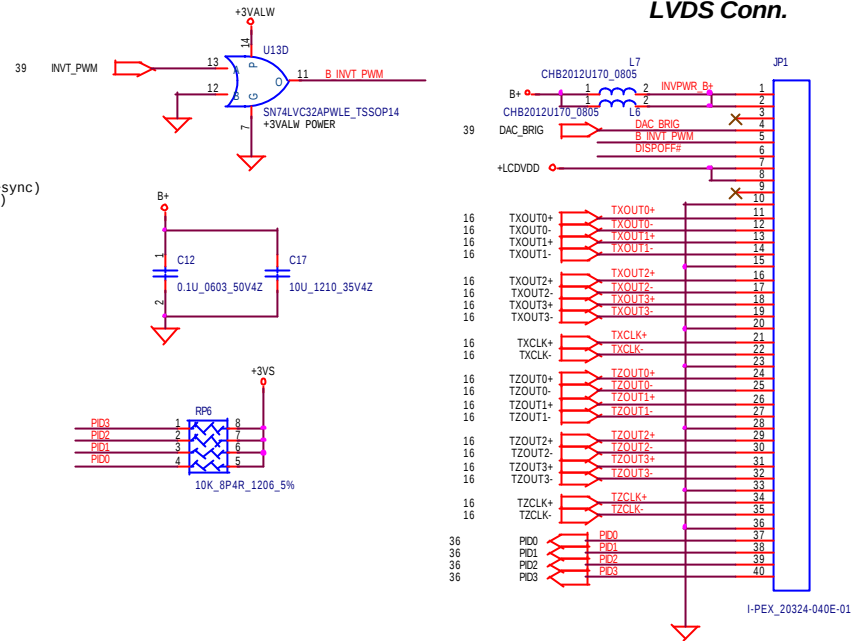


# CRT, TV-OUT & LVDS CONNECTOR

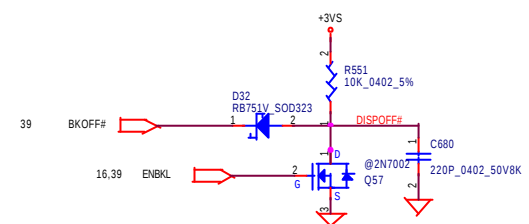
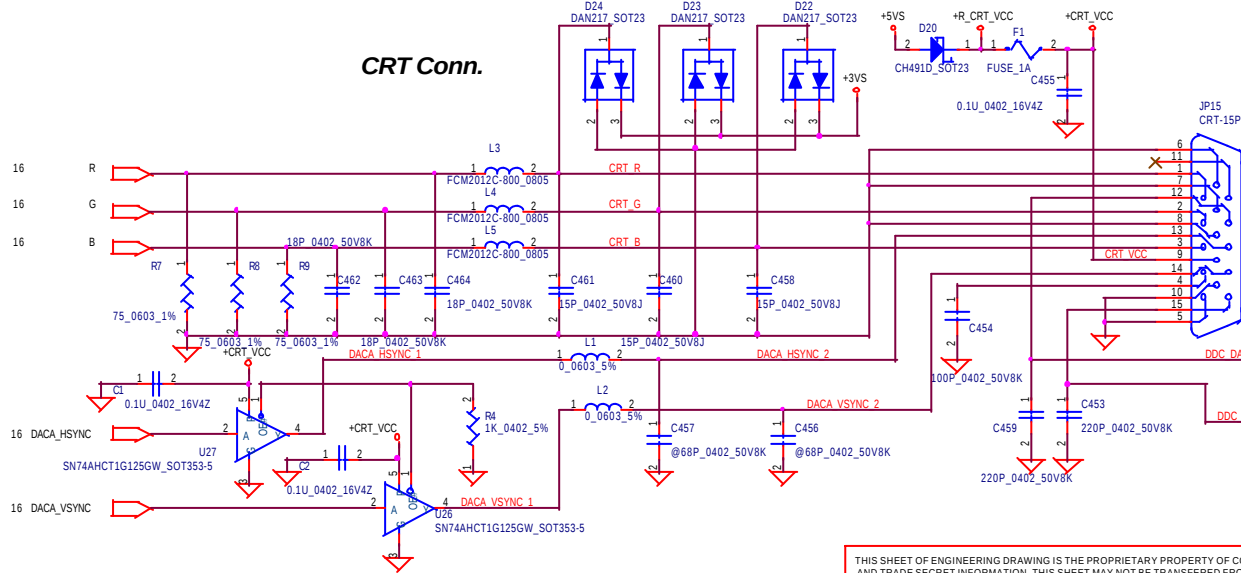
## TV-OUT Conn.



## LVDS Conn.

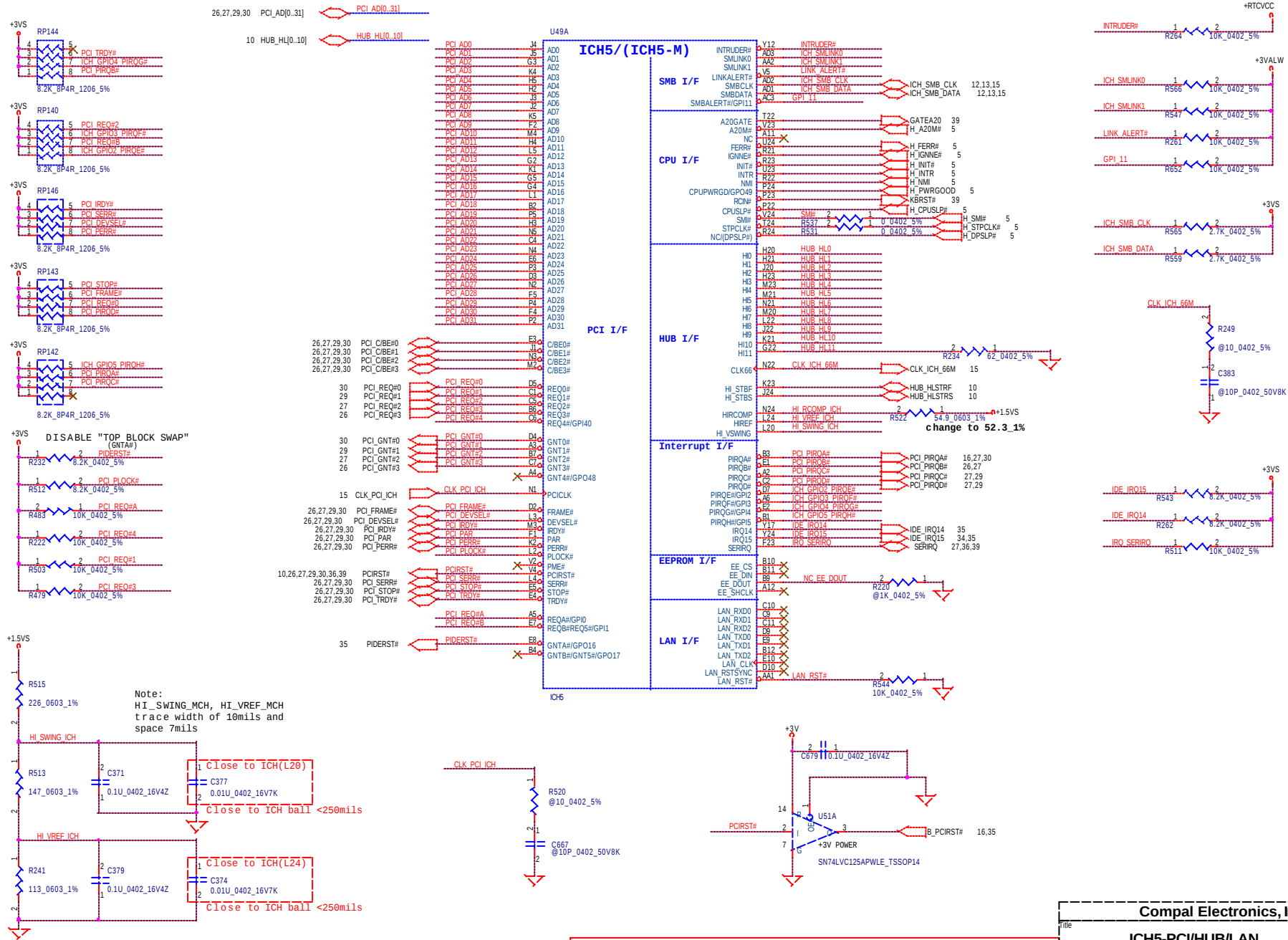


## CRT Conn.



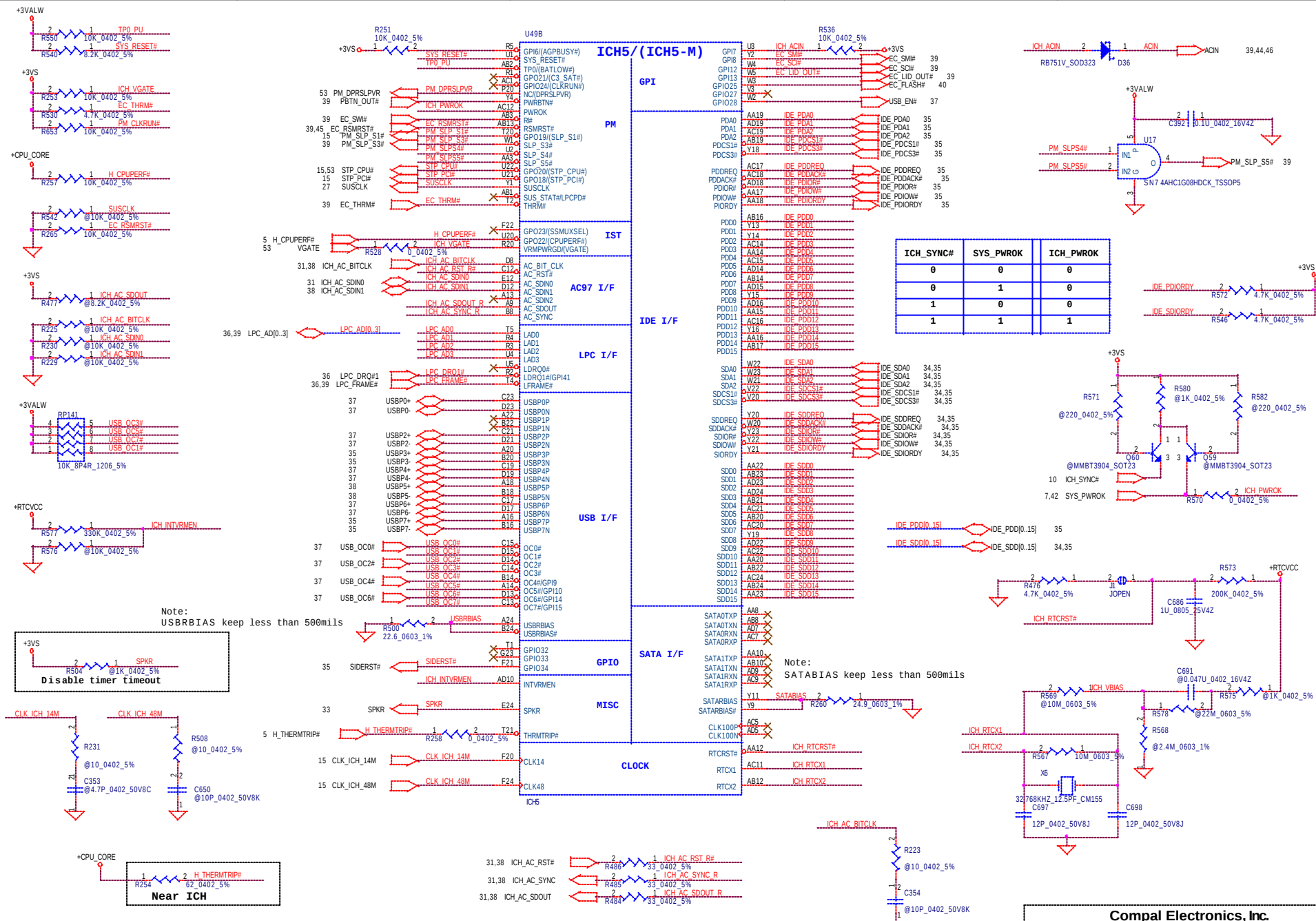
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|----------------------------|-----------------------------|-------|----------|
| Title                      |                             |       |          |
| CRT,TV-OUT & LVDSConnector |                             |       |          |
| Size                       | Document Number             | Rev   |          |
| B                          | LA-1841                     | 0.1   |          |
| Date                       | Thursday, February 20, 2003 | Sheet | 22 of 57 |



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|--------------------------|-----------------------------|-------|----------|
| Title                    |                             |       |          |
| ICH5-PCI/HUB/LAN         |                             |       |          |
| Size                     | Document Number             | Rev   |          |
|                          | LA-1841                     | 01    |          |
| Date:                    | Thursday, February 20, 2003 | Sheet | 23 of 57 |



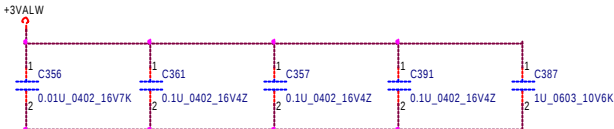
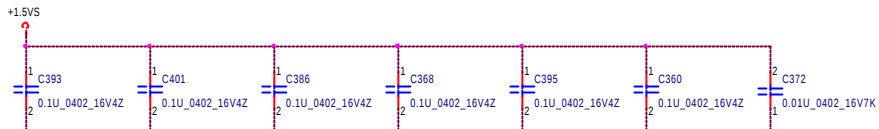
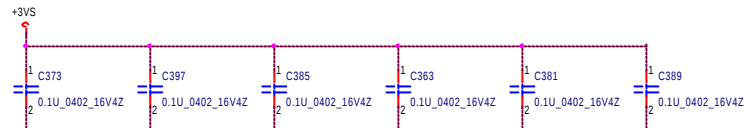
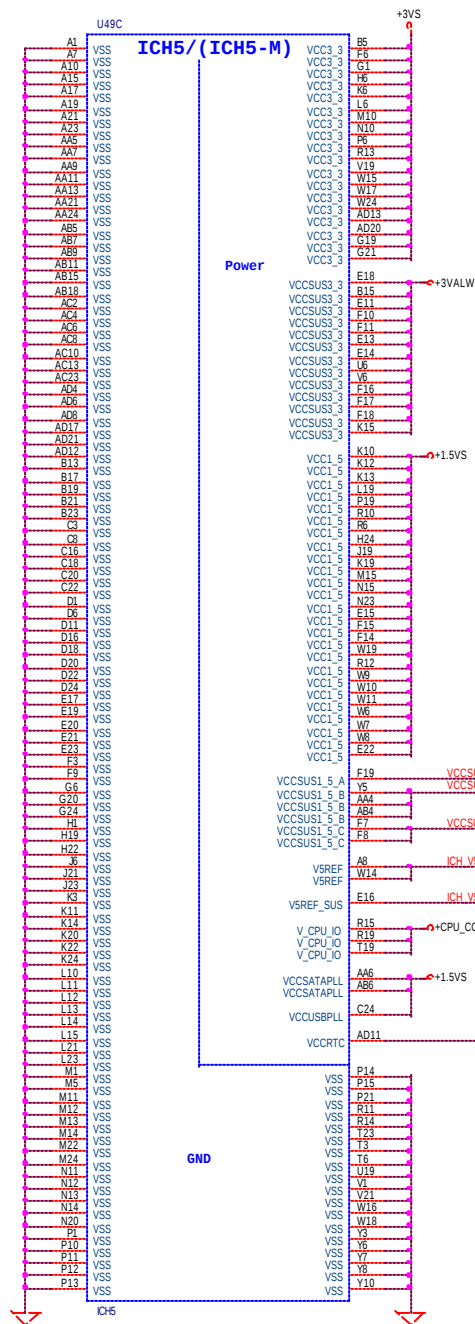
| ICH_SYNC# | SYS_PWROK | ICH_PWROK |
|-----------|-----------|-----------|
| 0         | 0         | 0         |
| 0         | 1         | 0         |
| 1         | 0         | 0         |
| 1         | 1         | 1         |

Note:  
USBRBIAS keep less than 500mills

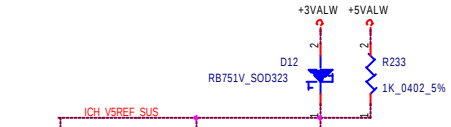
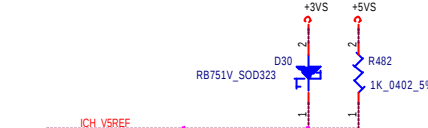
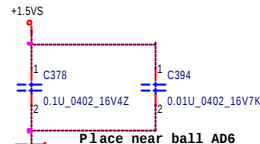
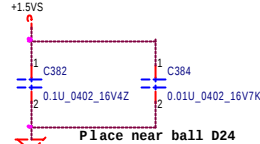
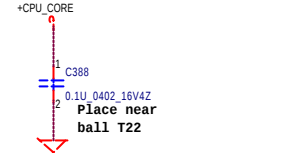
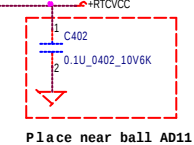
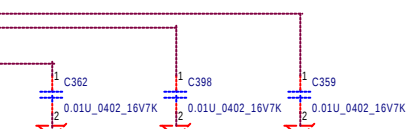
Disable timer timeout

Note:  
SATABIAS keep less than 500mills

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**Decoupling Reference Document:  
Springdale Chipset Platform Design guide Rev1.11  
(12474)page278**



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|--------------------------|-----------------------------|--------|----------|
| Title                    | ICH5 Power & Decoupling     |        |          |
| Size                     | Document Number             | Rev 01 |          |
| Date                     | Thursday, February 20, 2003 | Sheet  | 25 of 57 |

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# LAN Realtek RT8101L

23.27,29,30 PCI\_AD[0..31] PCI AD[0..31]

|          |    |     |
|----------|----|-----|
| PCI AD0  | 47 | A00 |
| PCI AD1  | 46 | A01 |
| PCI AD2  | 45 | A02 |
| PCI AD3  | 44 | A03 |
| PCI AD4  | 43 | A04 |
| PCI AD5  | 42 | A05 |
| PCI AD6  | 41 | A06 |
| PCI AD7  | 40 | A07 |
| PCI AD8  | 39 | A08 |
| PCI AD9  | 38 | A09 |
| PCI AD10 | 37 | A10 |
| PCI AD11 | 36 | A11 |
| PCI AD12 | 35 | A12 |
| PCI AD13 | 34 | A13 |
| PCI AD14 | 33 | A14 |
| PCI AD15 | 32 | A15 |
| PCI AD16 | 31 | A16 |
| PCI AD17 | 30 | A17 |
| PCI AD18 | 29 | A18 |
| PCI AD19 | 28 | A19 |
| PCI AD20 | 27 | A20 |
| PCI AD21 | 26 | A21 |
| PCI AD22 | 25 | A22 |
| PCI AD23 | 24 | A23 |
| PCI AD24 | 23 | A24 |
| PCI AD25 | 22 | A25 |
| PCI AD26 | 21 | A26 |
| PCI AD27 | 20 | A27 |
| PCI AD28 | 19 | A28 |
| PCI AD29 | 18 | A29 |
| PCI AD30 | 17 | A30 |
| PCI AD31 | 16 | A31 |

IDSEL-PCI\_AD17

|             |           |    |       |
|-------------|-----------|----|-------|
| 23.27,29,30 | PCI_CBE#0 | 38 | CBE#0 |
| 23.27,29,30 | PCI_CBE#1 | 37 | CBE#1 |
| 23.27,29,30 | PCI_CBE#2 | 36 | CBE#2 |
| 23.27,29,30 | PCI_CBE#3 | 35 | CBE#3 |

|             |             |    |         |
|-------------|-------------|----|---------|
| 23.27,29,30 | PCI_PAR     | 24 | PAR     |
| 23.27,29,30 | PCI_FRAME#  | 19 | FRAME#  |
| 23.27,29,30 | PCI_IRDY#   | 20 | IRDY#   |
| 23.27,29,30 | PCI_TRDY#   | 21 | TRDY#   |
| 23.27,29,30 | PCI_DEVSEL# | 23 | DEVSEL# |
| 23.27,29,30 | PCI_STOP#   | 25 | STOP#   |

|             |           |    |       |
|-------------|-----------|----|-------|
| 23.27,29,30 | PCI_PERR# | 26 | PERR# |
| 23.27,29,30 | PCI_SERR# | 27 | SERR# |
| 23          | PCI_REQ#3 | 83 | REQ#  |
| 23          | PCI_GNT#3 | 82 | GNT#  |

|                      |             |    |         |
|----------------------|-------------|----|---------|
| 23.27                | PCI_PIRQB#  | 79 | PIRQB#  |
| 27,29,30,39          | LAN_PME#    | 57 | PME#    |
| 10,23,27,29,30,36,39 | PCIRST#     | 81 | RST#    |
| 15                   | CLK_PCI_LAN | 97 | CLKCLK  |
| 24,27,29,30,36,39    | PM_CLKRUN#  | 50 | CLKRUN# |

|             |         |    |        |
|-------------|---------|----|--------|
| 23.27,29,30 | PCI_CLK | 97 | CLKCLK |
| 23.27,29,30 | PCI_LAN | 97 | CLKCLK |

|             |         |    |        |
|-------------|---------|----|--------|
| 23.27,29,30 | PCI_CLK | 97 | CLKCLK |
| 23.27,29,30 | PCI_LAN | 97 | CLKCLK |

|             |         |    |        |
|-------------|---------|----|--------|
| 23.27,29,30 | PCI_CLK | 97 | CLKCLK |
| 23.27,29,30 | PCI_LAN | 97 | CLKCLK |

|             |         |    |        |
|-------------|---------|----|--------|
| 23.27,29,30 | PCI_CLK | 97 | CLKCLK |
| 23.27,29,30 | PCI_LAN | 97 | CLKCLK |

|             |         |    |        |
|-------------|---------|----|--------|
| 23.27,29,30 | PCI_CLK | 97 | CLKCLK |
| 23.27,29,30 | PCI_LAN | 97 | CLKCLK |

|             |         |    |        |
|-------------|---------|----|--------|
| 23.27,29,30 | PCI_CLK | 97 | CLKCLK |
| 23.27,29,30 | PCI_LAN | 97 | CLKCLK |

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|-------------|---------|----|--------|
| 23.27,29,30 | PCI_CLK | 97 | CLKCLK |
| 23.27,29,30 | PCI_LAN | 97 | CLKCLK |

|             |         |    |        |
|-------------|---------|----|--------|
| 23.27,29,30 | PCI_CLK | 97 | CLKCLK |
| 23.27,29,30 | PCI_LAN | 97 | CLKCLK |

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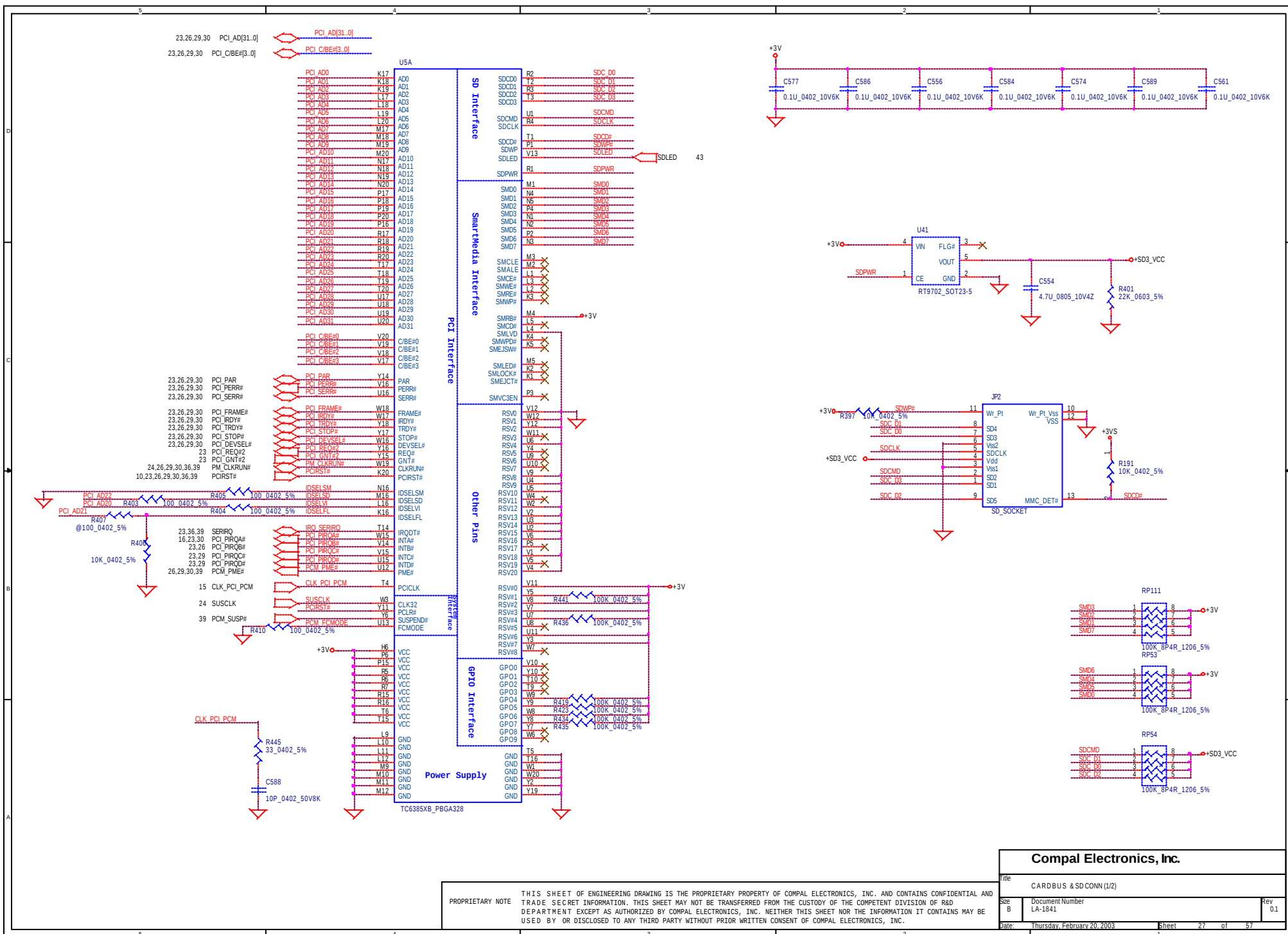
Power  
LAN I/F  
AC-Link

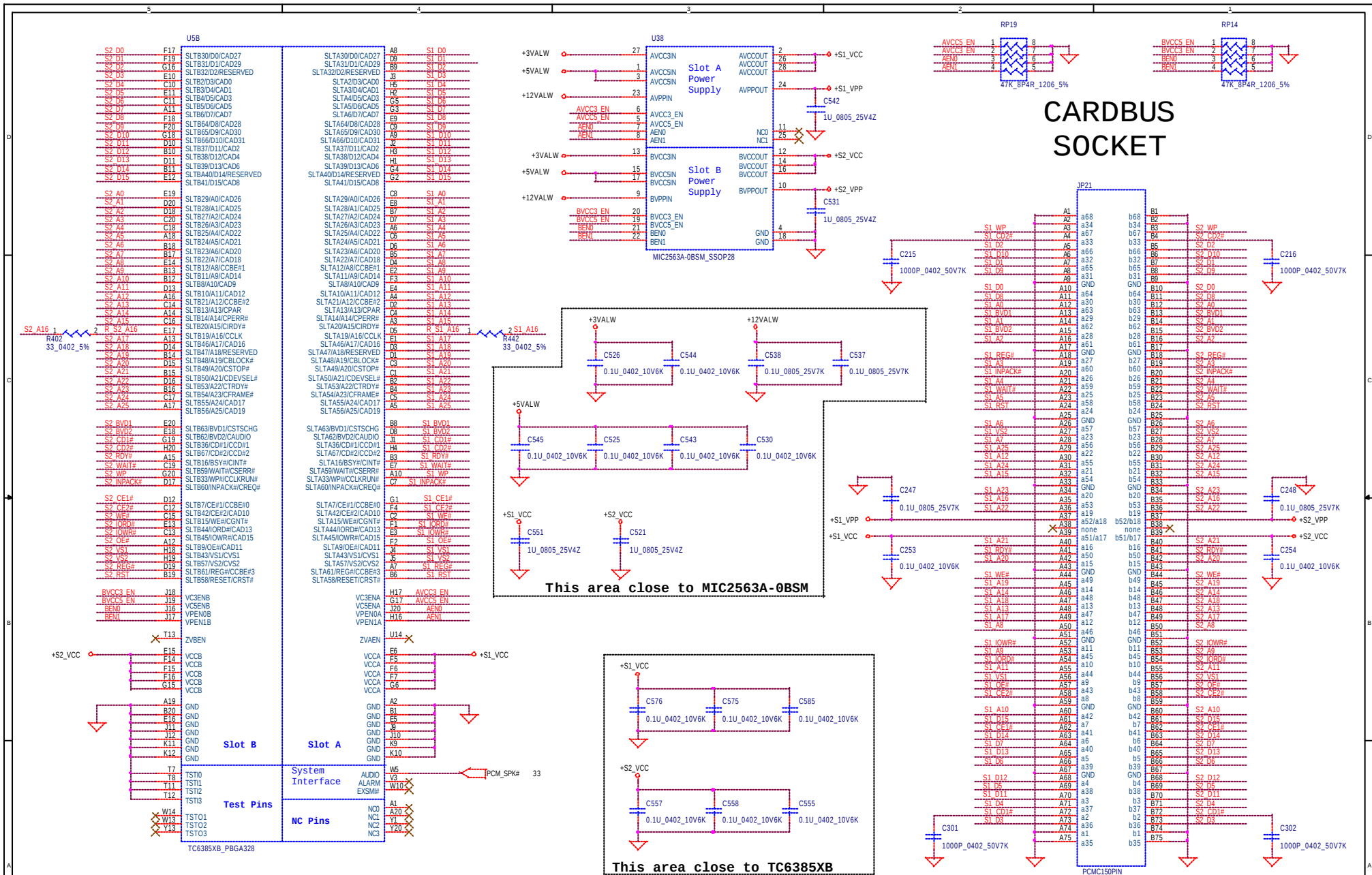
Power  
LAN I/F  
AC-Link

Power  
LAN I/F  
AC-Link

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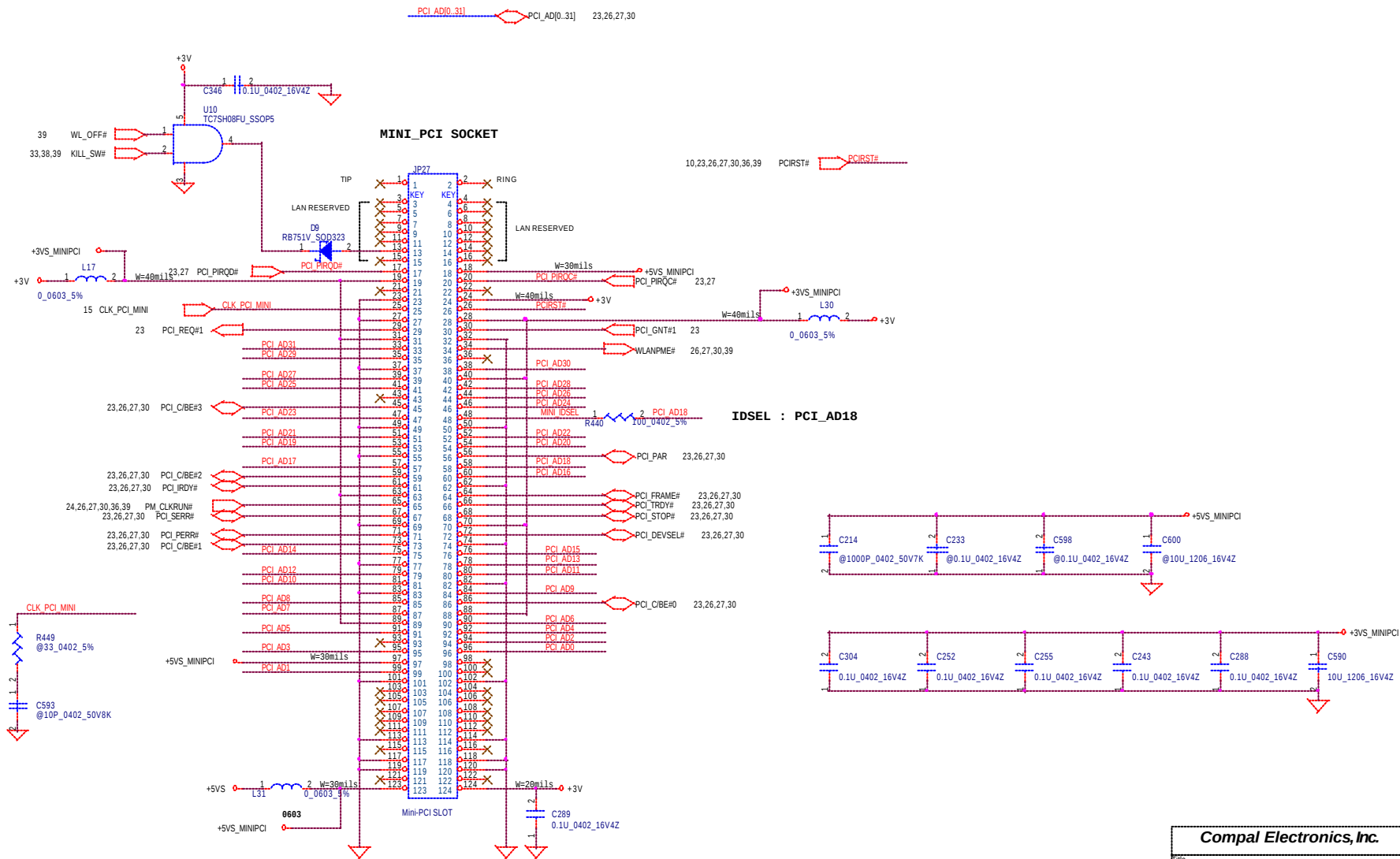
|                          |                             |                |
|--------------------------|-----------------------------|----------------|
| Compal Electronics, Inc. |                             |                |
| LAN REALTEKRTL8101L      |                             |                |
| Size                     | Document Number             | Rev            |
|                          | LA-1841                     | 01             |
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|-----------------------------------|-------------------------|--------|--|
| Title CARDBUS & PCMCIA (2/2)      |                         |        |  |
| Size B                            | Document Number LA-1841 | Rev 01 |  |
| Date: Thursday, February 20, 2003 | Sheet 28                | of 57  |  |

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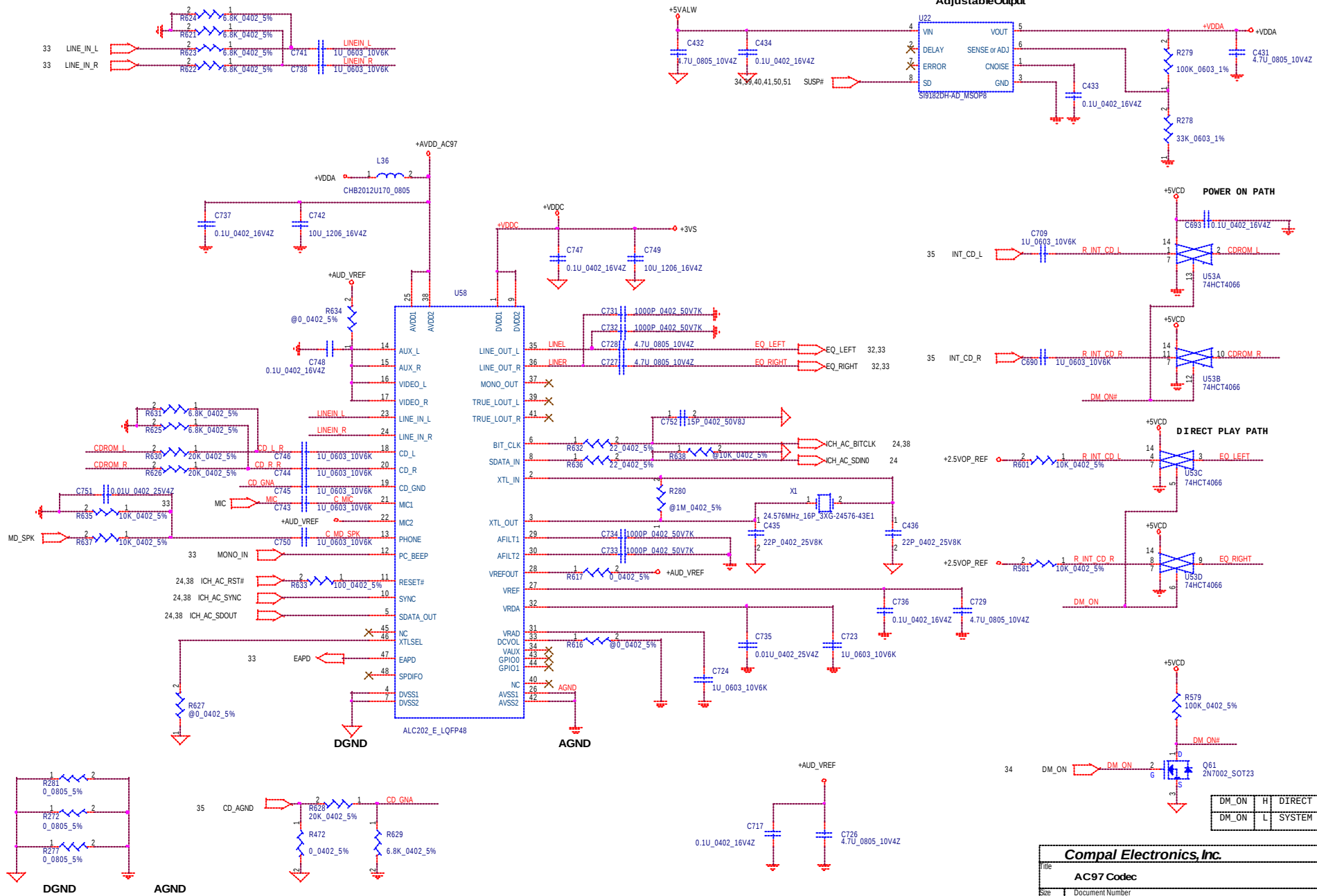
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|                          |                 |                             |                |
|--------------------------|-----------------|-----------------------------|----------------|
| Compal Electronics, Inc. |                 |                             |                |
| Title                    |                 |                             |                |
| MINI_PCI                 |                 |                             |                |
| Size                     | Document Number | Rev                         |                |
| B                        | LA-1841         | 0.1                         |                |
| Date                     |                 | Thursday, February 20, 2003 | Sheet 29 of 57 |



# AC97 Codec

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|       |   |           |
|-------|---|-----------|
| DM_ON | H | DIRECT CD |
| DM_ON | L | SYSTEM ON |

| Compal Electronics, Inc. |                             |       |          |
|--------------------------|-----------------------------|-------|----------|
| AC97 Codec               |                             |       |          |
| Size                     | Document Number             | Rev   |          |
| B                        | LA-1841                     | 0.1   |          |
| Date                     | Thursday, February 20, 2003 | Sheet | 31 of 57 |

# BTQ00 EQ Circuit

## AUDIO LEFT CHANNEL

## OUTPUT TO AMPLIFIER LEFT CHANNEL

## BY-PASS EQ CIRCUIT

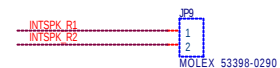
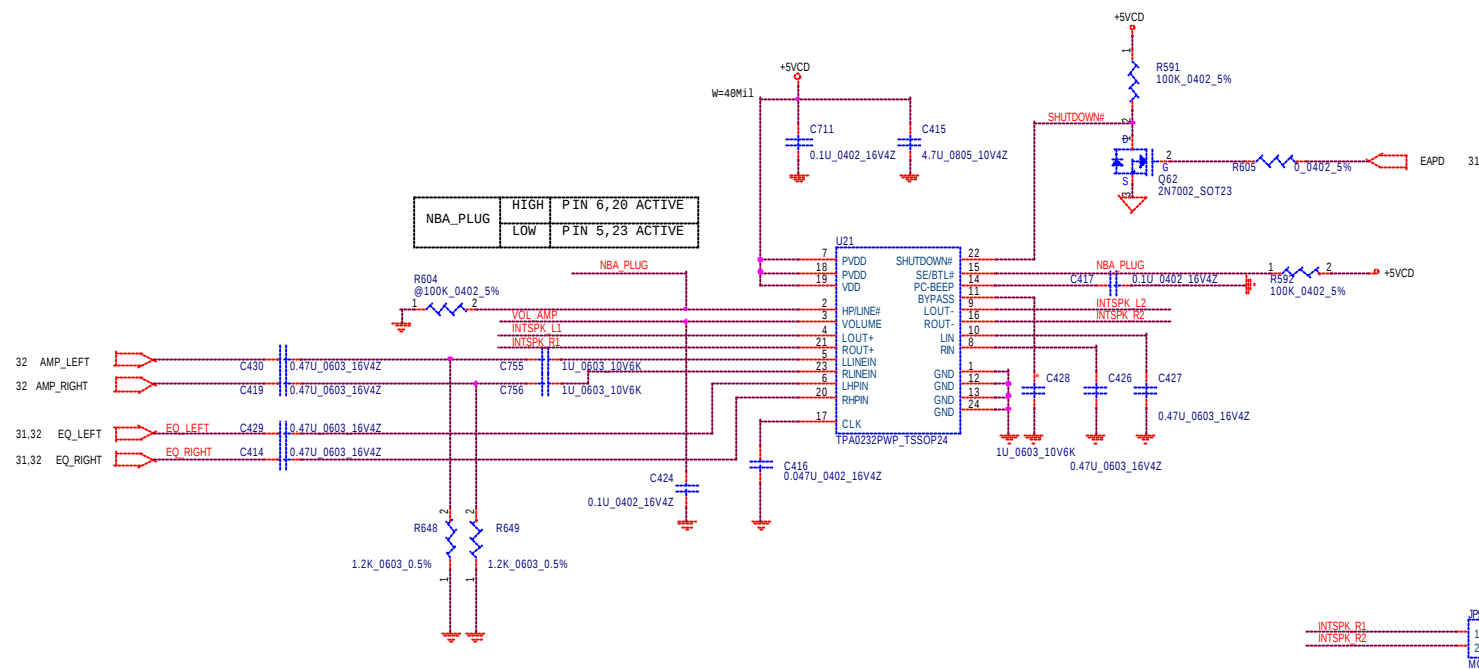
## AUDIO RIGHT CHANNEL

## OUTPUT TO AMPLIFIER RIGHT CHANNEL

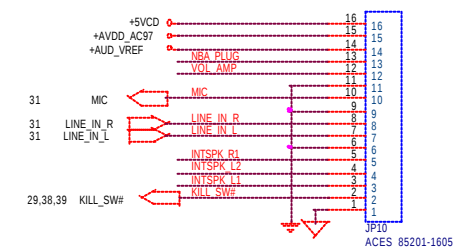
PROPRIETARY NOTE THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF RAD DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

| Compal Electronics, Inc. |                             |                |
|--------------------------|-----------------------------|----------------|
| Title                    |                             |                |
| HAREWAREEQ               |                             |                |
| Size                     | Document Number             | Rev            |
| B                        | LA-1841                     | 0.1            |
| Date:                    | Thursday, February 20, 2003 | Sheet 32 of 57 |

# Audio AMP



## AUDIO Board Conn.



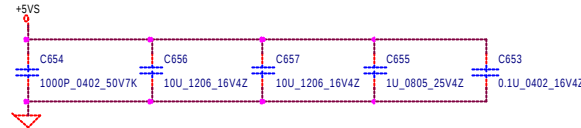
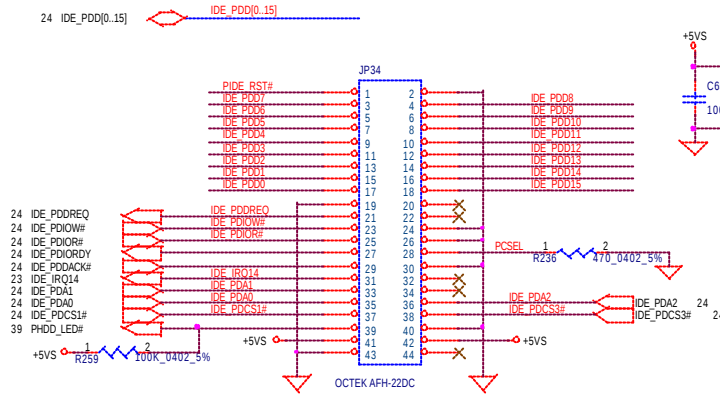
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|--------------------------|-----------------------------|-------|----------|
| Title                    |                             |       |          |
| AMP & Audio Jack         |                             |       |          |
| Size                     | Document Number             | Rev   |          |
| B                        | LA-1841                     | 0.1   |          |
| Date                     | Thursday, February 20, 2003 | Sheet | 33 of 57 |



## HDD CONNECTOR

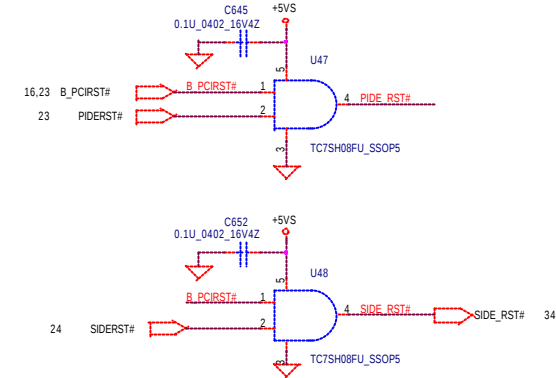
Place caps. near HDD  
CONN.



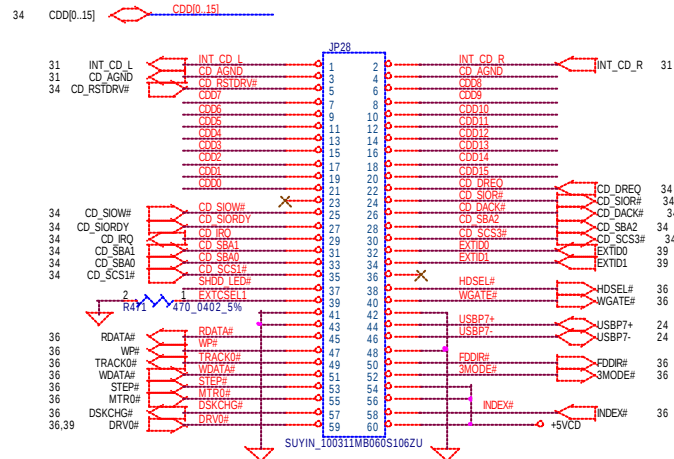
| EXTID1 | EXTID0 | Module             |
|--------|--------|--------------------|
| 0      | 0      | CDROM              |
| 0      | 1      | FDD                |
| 1      | 0      | HDD                |
| 1      | 1      | TV Tuner/No Module |

| EXTID3 | EXTID2 | Module             |
|--------|--------|--------------------|
| 0      | 0      | CDROM              |
| 0      | 1      | FDD                |
| 1      | 0      | HDD                |
| 1      | 1      | TV Tuner/No Module |

## IDE,CD-ROM Module CONN.

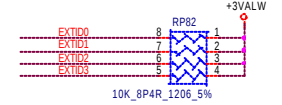
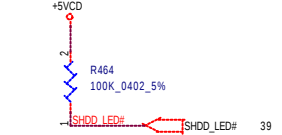
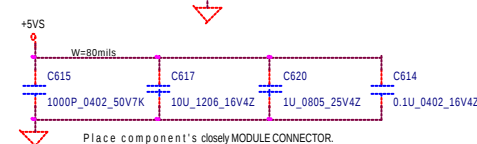
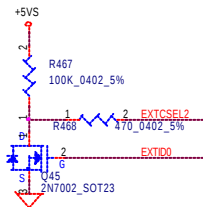
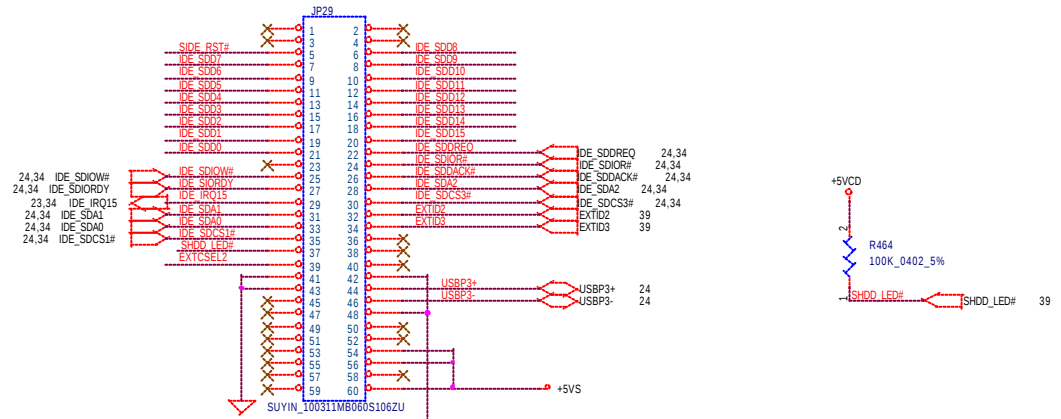


## Main Module Conn. (Master)



24,34 IDE\_SDD[0..15] IDE\_SDDIO\_151

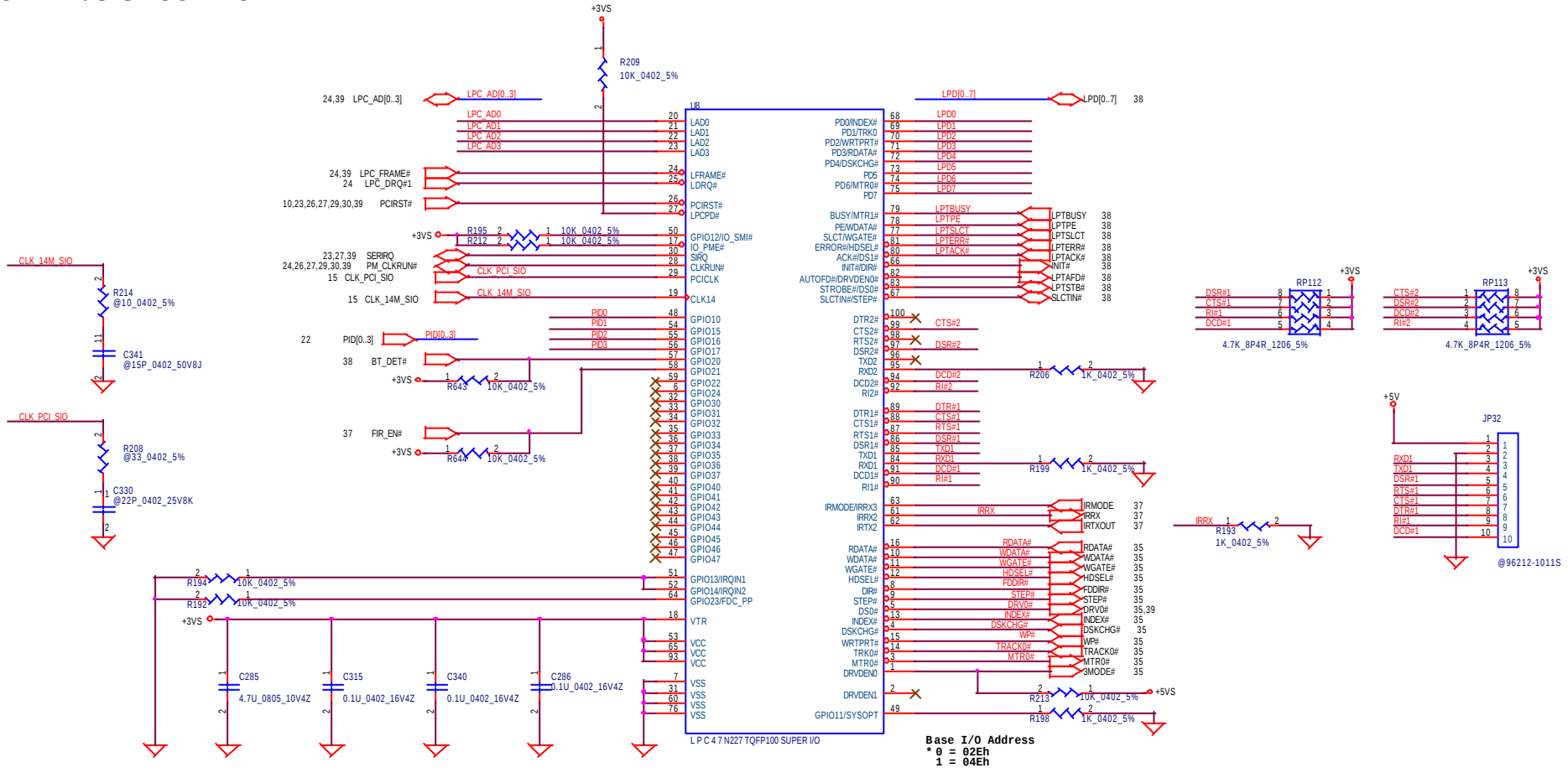
## 2nd Module Conn. (Slave)



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|                                   |                 |
|-----------------------------------|-----------------|
| <b>Compal Electronics, Inc.</b>   |                 |
| Title: IDE/ FDDMODULECONN.        |                 |
| Doc. Number: LA-1841              | Rev: 0.1        |
| Date: Thursday, February 20, 2003 | Sheet: 35 of 57 |

# SUPER I/O SMsC FDC47N227



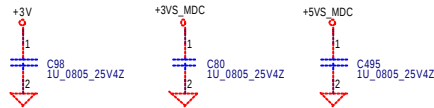
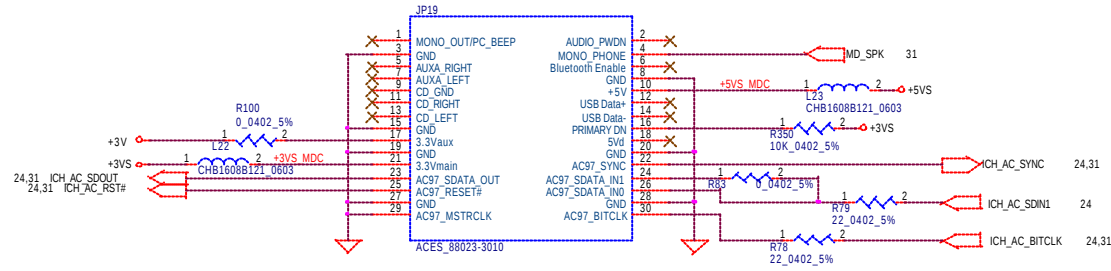
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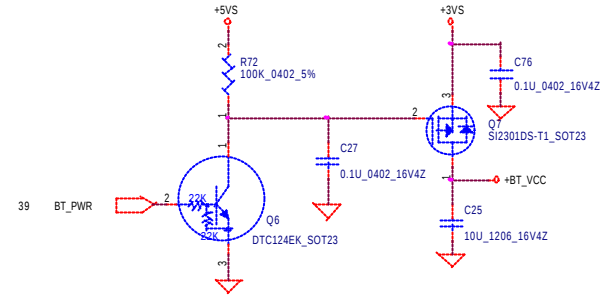
|         |                             |       |          |
|---------|-----------------------------|-------|----------|
| Title   |                             |       |          |
| SUPERIO |                             |       |          |
| Size    | Document Number             | Rev   |          |
| B       | LA-1841                     | 01    |          |
| Date:   | Thursday, February 20, 2003 | Sheet | 36 of 57 |



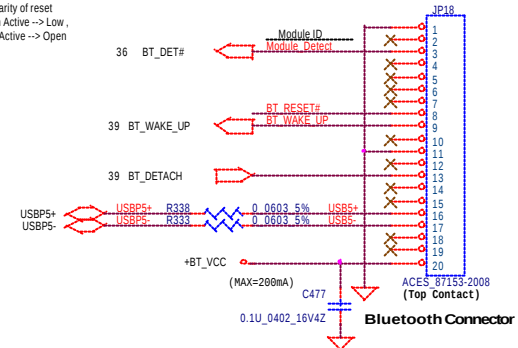
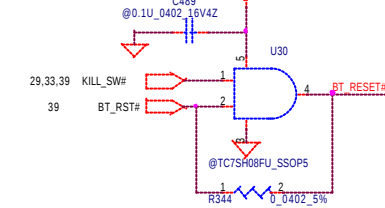
## MDC CONN.



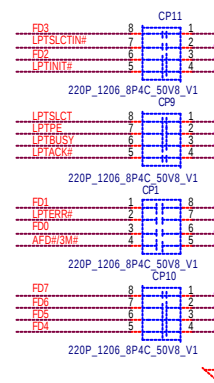
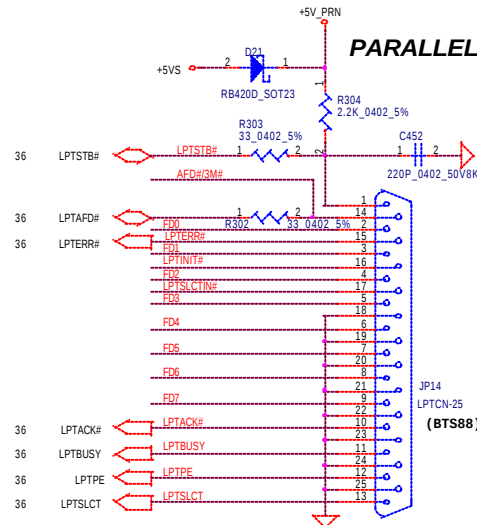
## BlueTooth Interface



Module ID  
Indication for polarity of reset  
Reset input High Active --> Low,  
Reset input Low Active --> Open



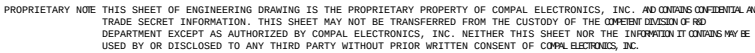
## PARALLEL PORT

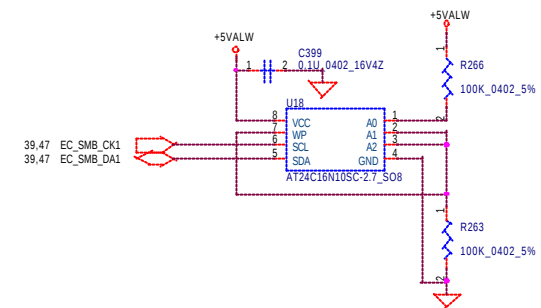
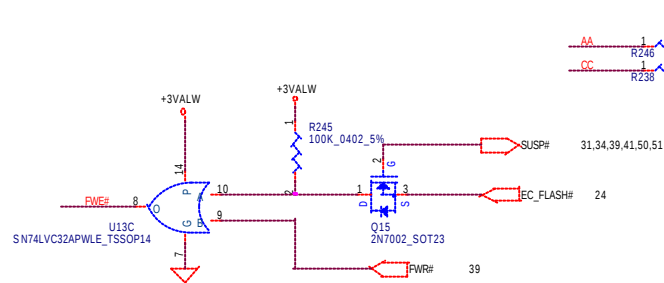
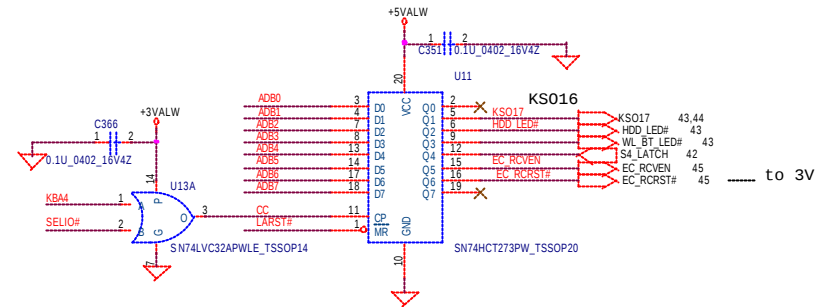
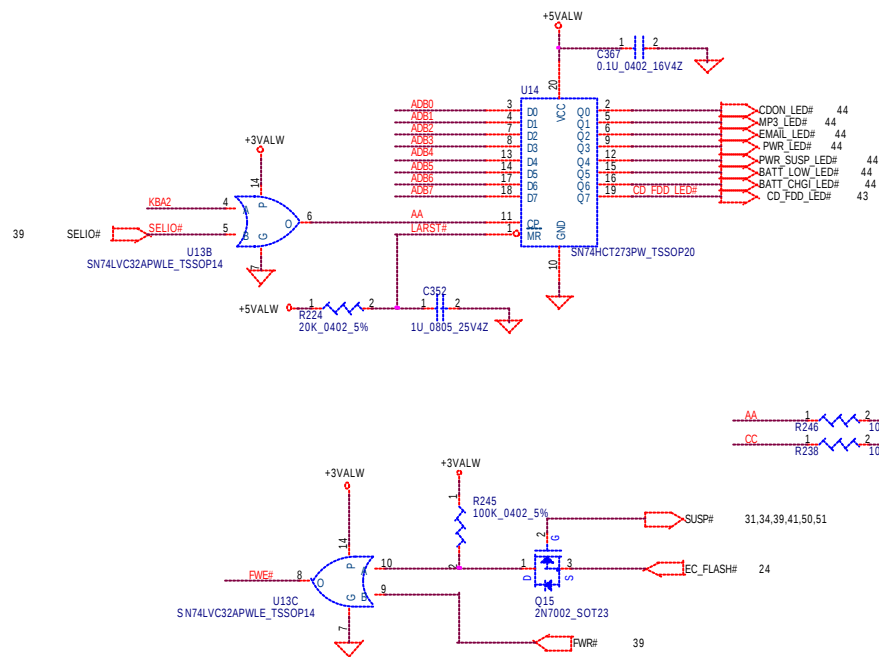


Compal Electronics, Inc.

|       |                             |       |                   |
|-------|-----------------------------|-------|-------------------|
| Title |                             |       | PARALLEL MDC PORT |
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| Date  | Thursday, February 20, 2003 | Sheet | 38 of 57          |

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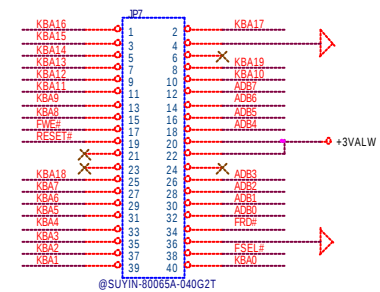
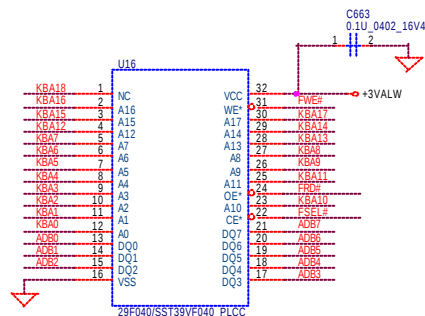
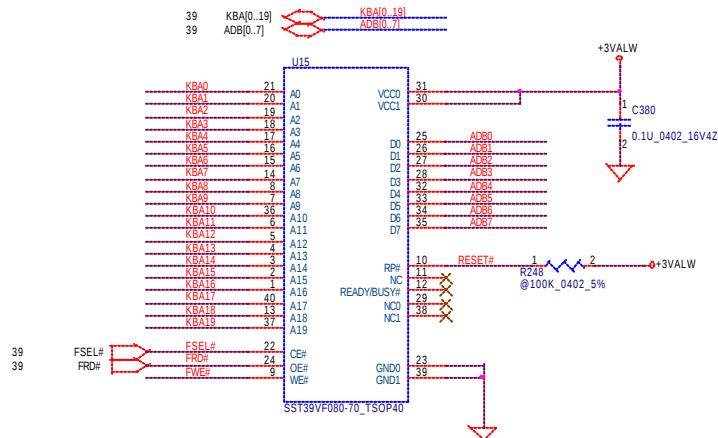




## 1MB Flash ROM

## 512KB Flash ROM

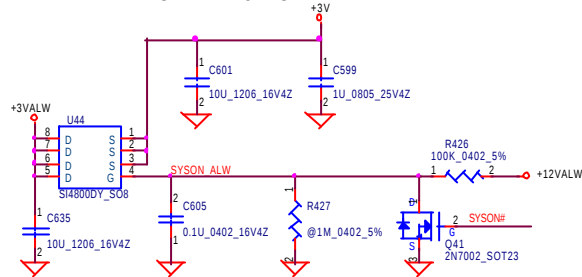
## Flash ROM Socket Conn.



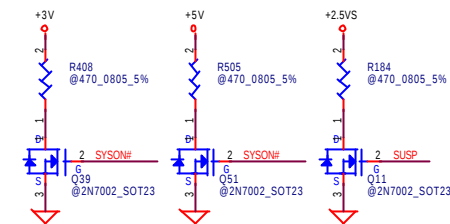
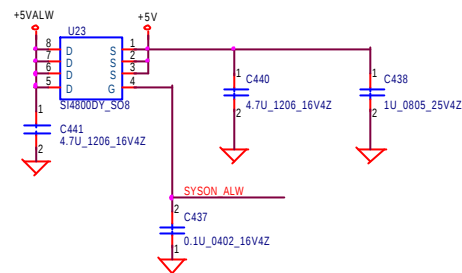
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|--------------------------|-----------------------------|-------|----------|
| Title                    |                             |       |          |
| BIOS & EXT.I/O PORT      |                             |       |          |
| Size                     | Document Number             | Rev   |          |
| B                        | LA-1841                     | 0.1   |          |
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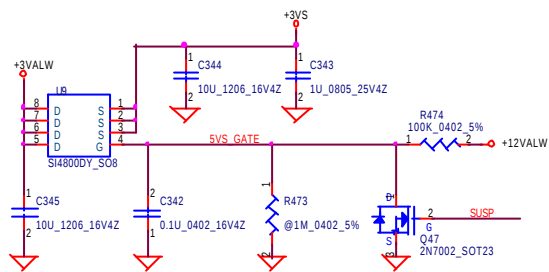
### +3VALW TO +3V



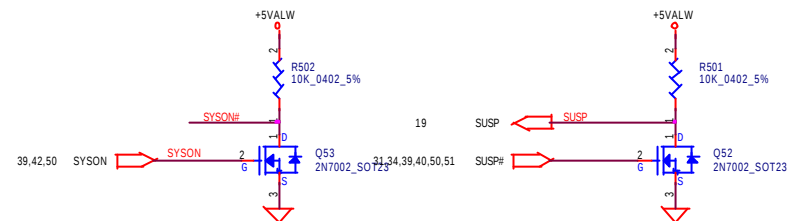
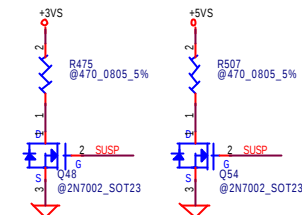
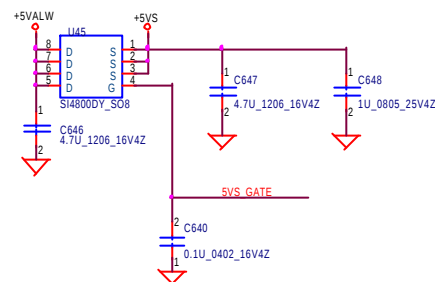
### +5VALW TO +5V



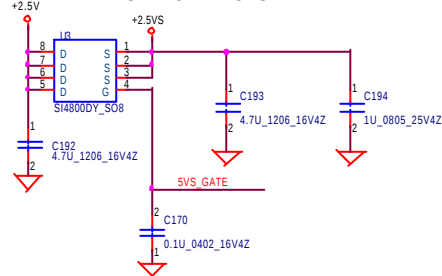
### +3VALW TO +3VS



### +5VALW TO +5VS



### +2.5V TO +2.5VS



Compal Electronics, Inc.

POWER CONTROL CKT

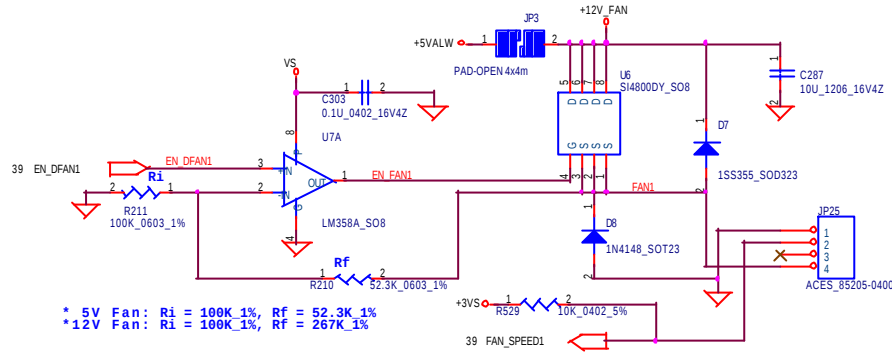
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|      |                             |                |
|------|-----------------------------|----------------|
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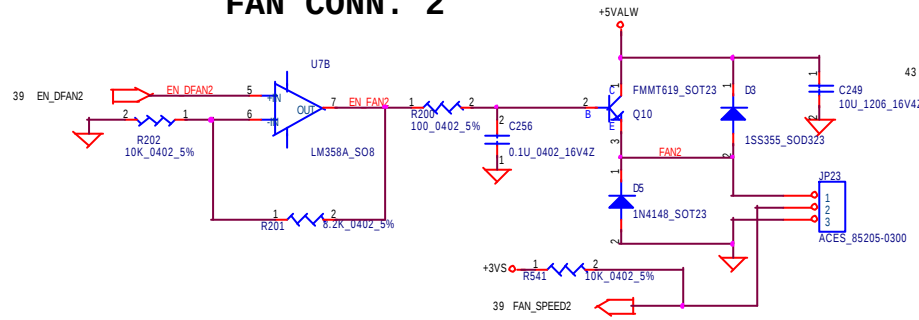
# Power ON Circuit

# RTC Battery

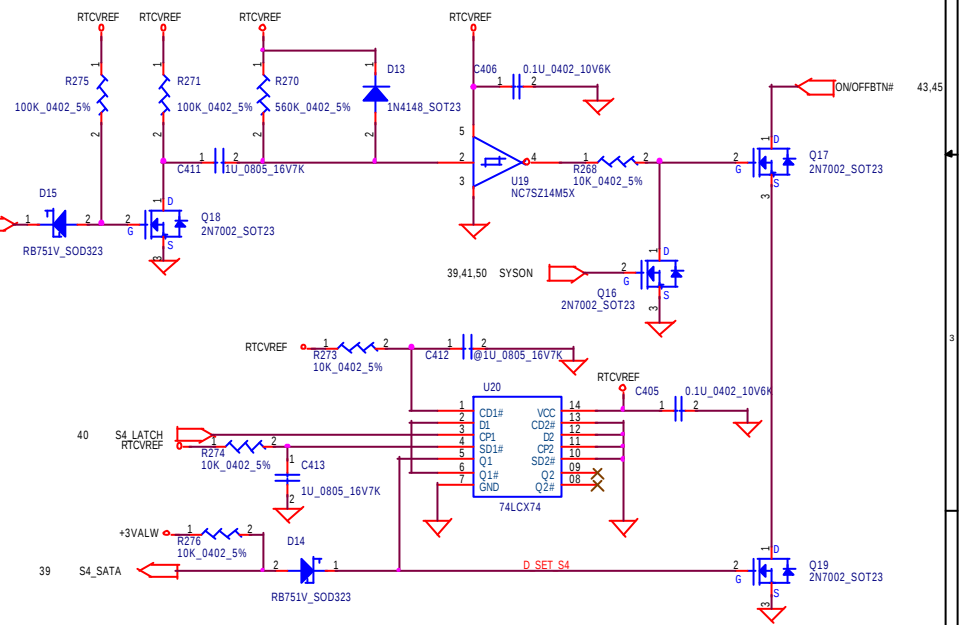
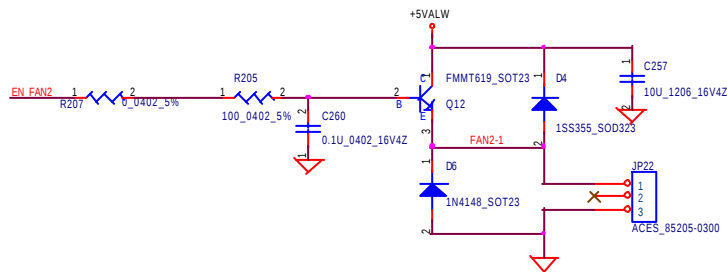
## FAN CONN. 1



## FAN CONN. 2

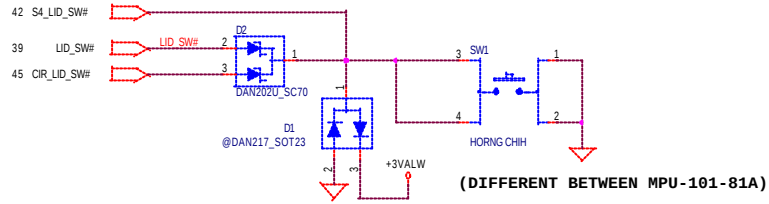


## FAN CONN. 3

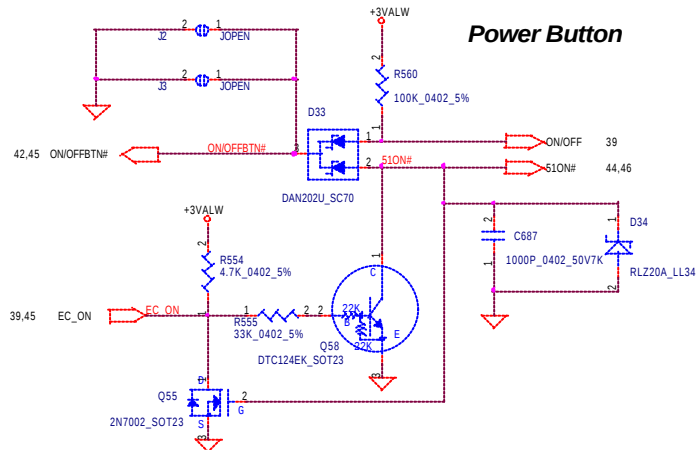


| Compal Electronics, Inc.                             |                             |         |          |
|------------------------------------------------------|-----------------------------|---------|----------|
| Title: Power OK/Reset/RTC battery/Lid Switch/Int. KB |                             |         |          |
| Size:                                                | Document Number             | LA-1841 | Rev 0.1  |
| Date:                                                | Thursday, February 20, 2003 | Sheet   | 42 of 57 |

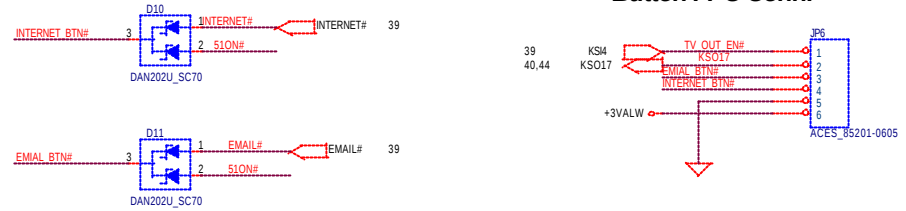
## LID Switch



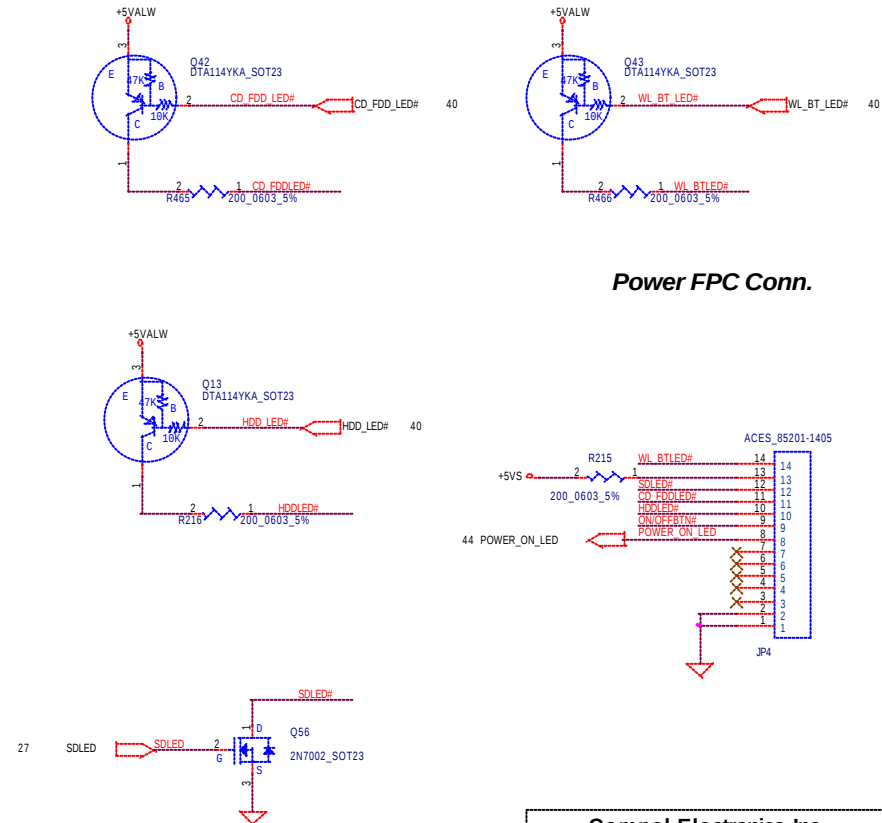
## Power Button



## Button FPC Conn.

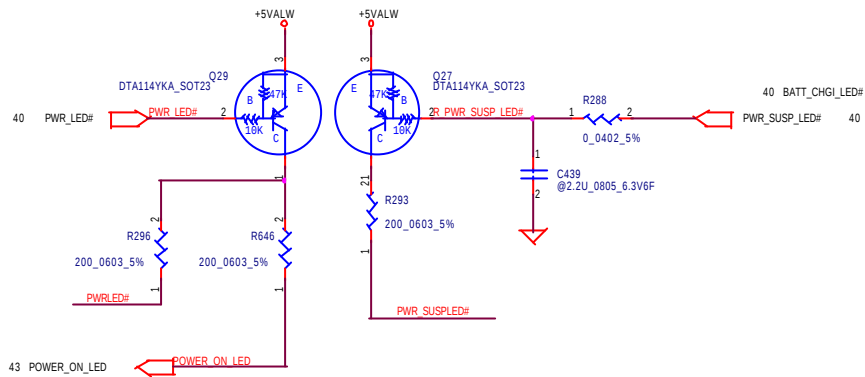


## Power FPC Conn.

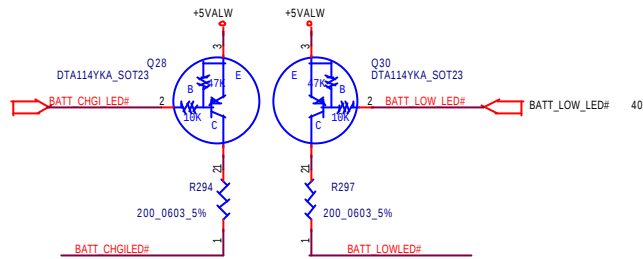


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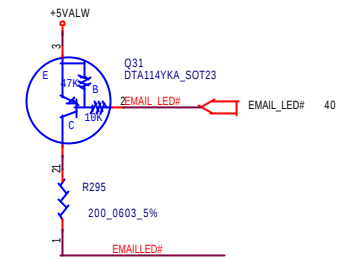
| Compal Electronics, Inc. |                             |       |          |
|--------------------------|-----------------------------|-------|----------|
| Switches & Connectors    |                             |       |          |
| Size                     | Document Number             | Rev   |          |
| B                        | LA-1841                     | 0.1   |          |
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**POWER/SUSP LED**

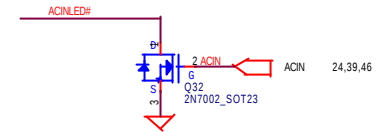
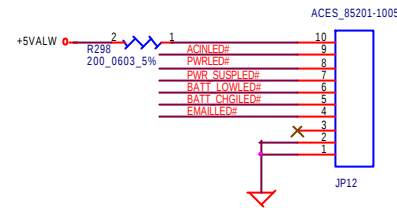


**BATTERY CHGI/LOW LED**

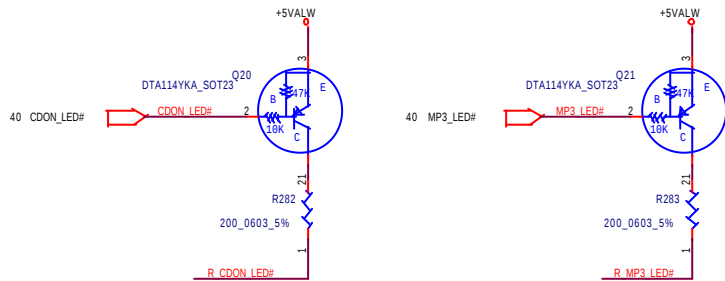


**EMAIL LED**

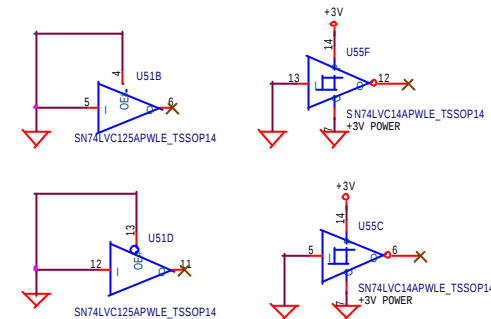
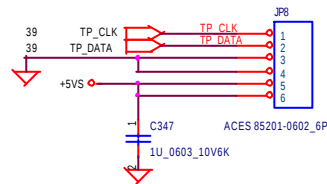
### LED FPC Conn.



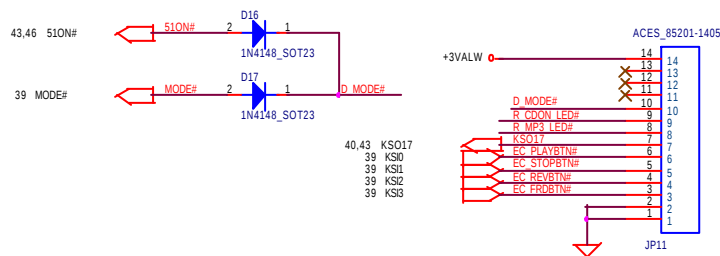
**ACIN LED**



### Touch Pad Connector

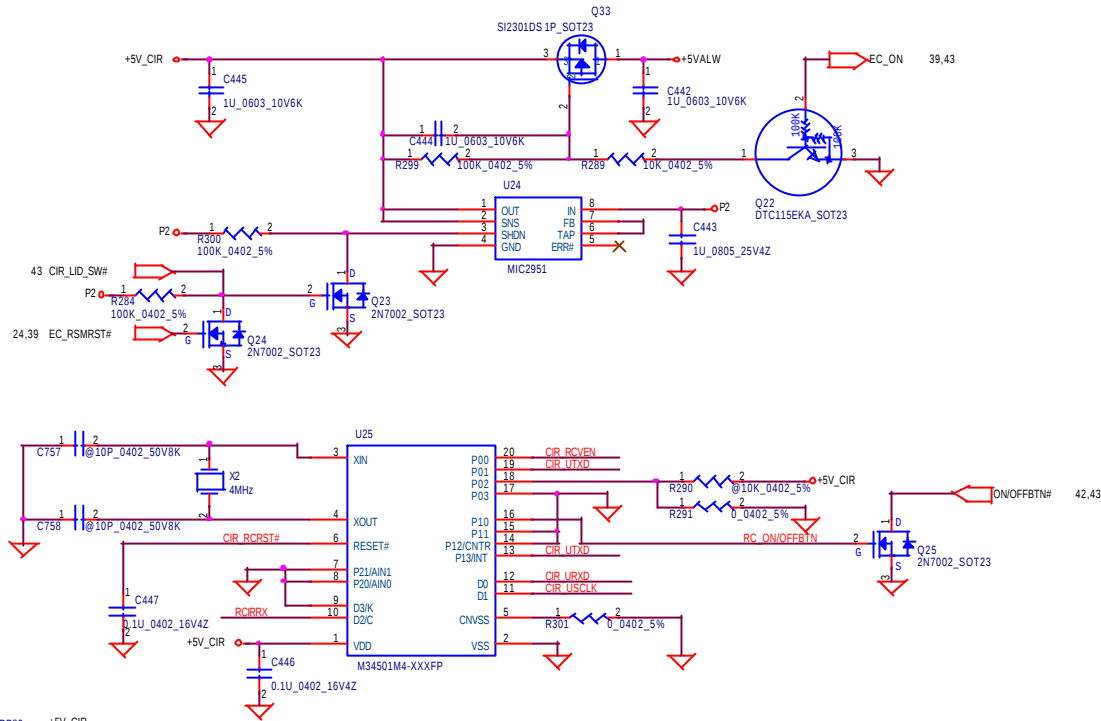
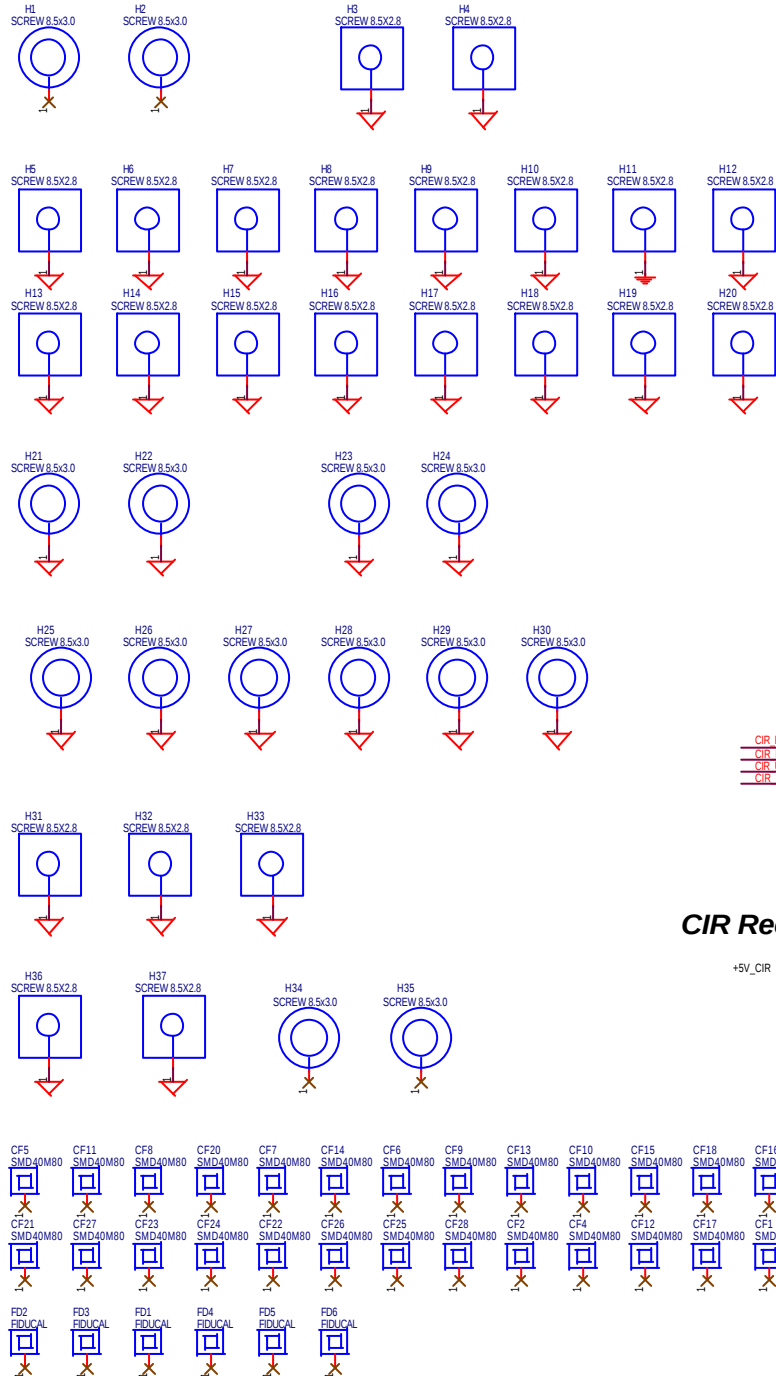


### CDPLAY Board Conn.

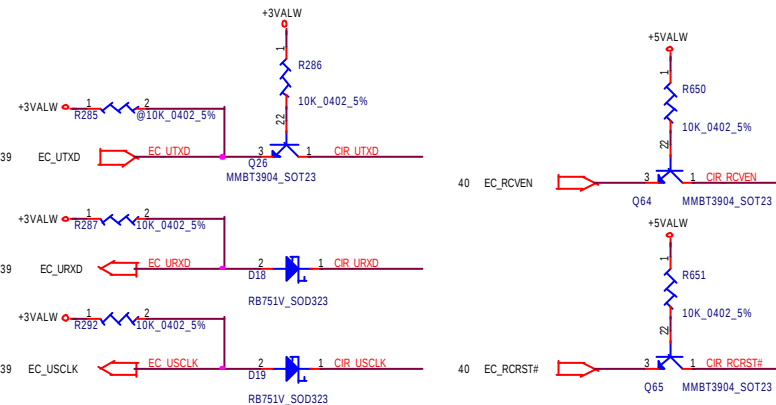
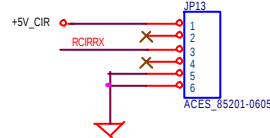


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|--------------------------|-----------------------------|----------------|
| Title                    |                             |                |
| Switches & Connectors    |                             |                |
| Size                     | Document Number             | Rev            |
| B                        | LA-1841                     | 0.1            |
| Date                     | Thursday, February 20, 2003 | Sheet 44 of 57 |



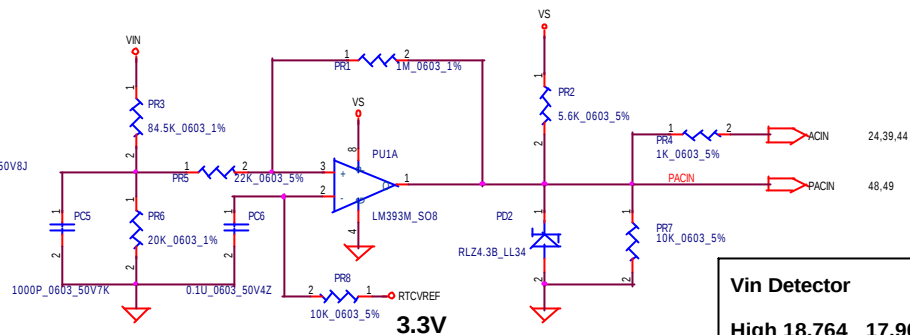
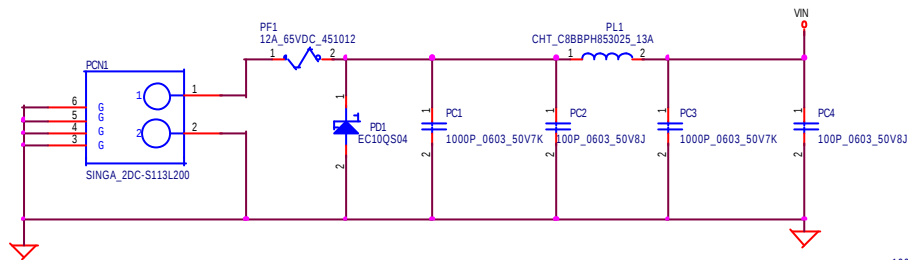
### CIR Reciever Board Conn.



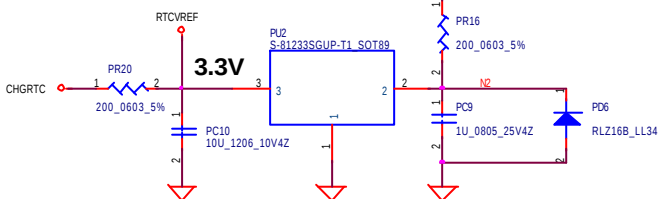
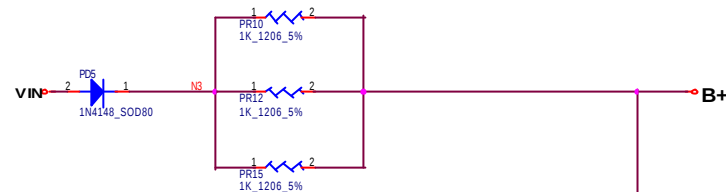
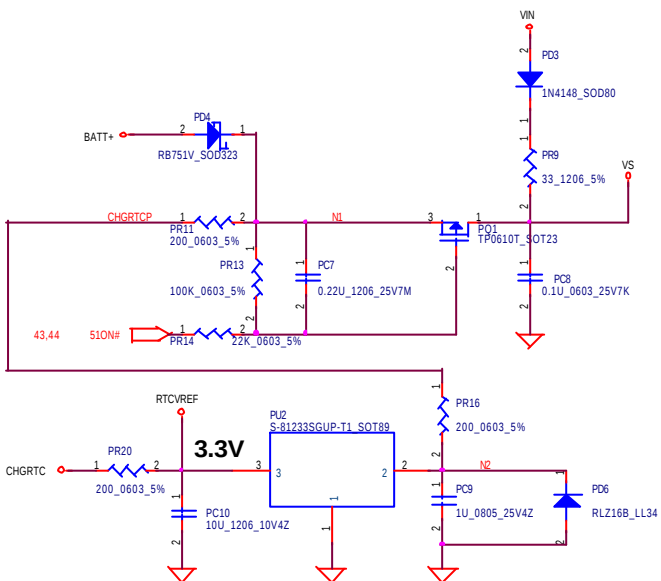
### Compal Electronics, Inc.

|       |                             |       |              |
|-------|-----------------------------|-------|--------------|
| Title |                             |       | CIR & Screws |
| Size  | Document Number             | Rev   |              |
| B     | LA-1841                     | 0.1   |              |
| Date: | Thursday, February 20, 2003 | Sheet | 45 of 57     |

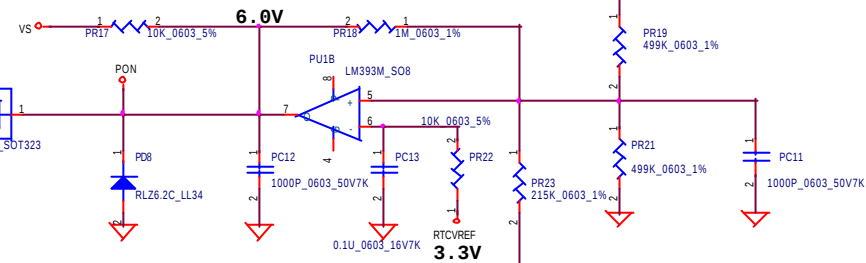
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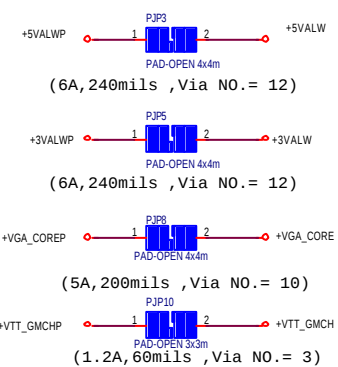
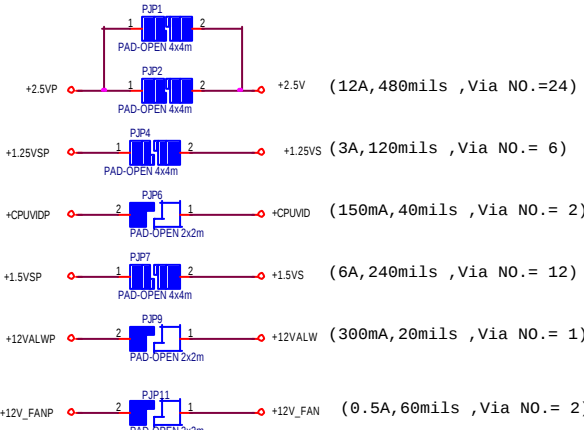
**Vin Detector**  
**High 18.764 17.901 17.063**  
**Low 17.745 16.903 16.038**



**47.49MAINPWON**  
**48 ACON**



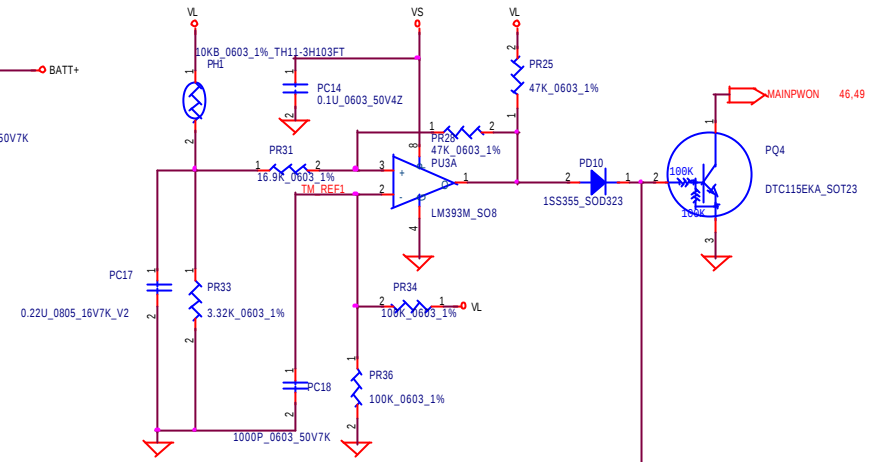
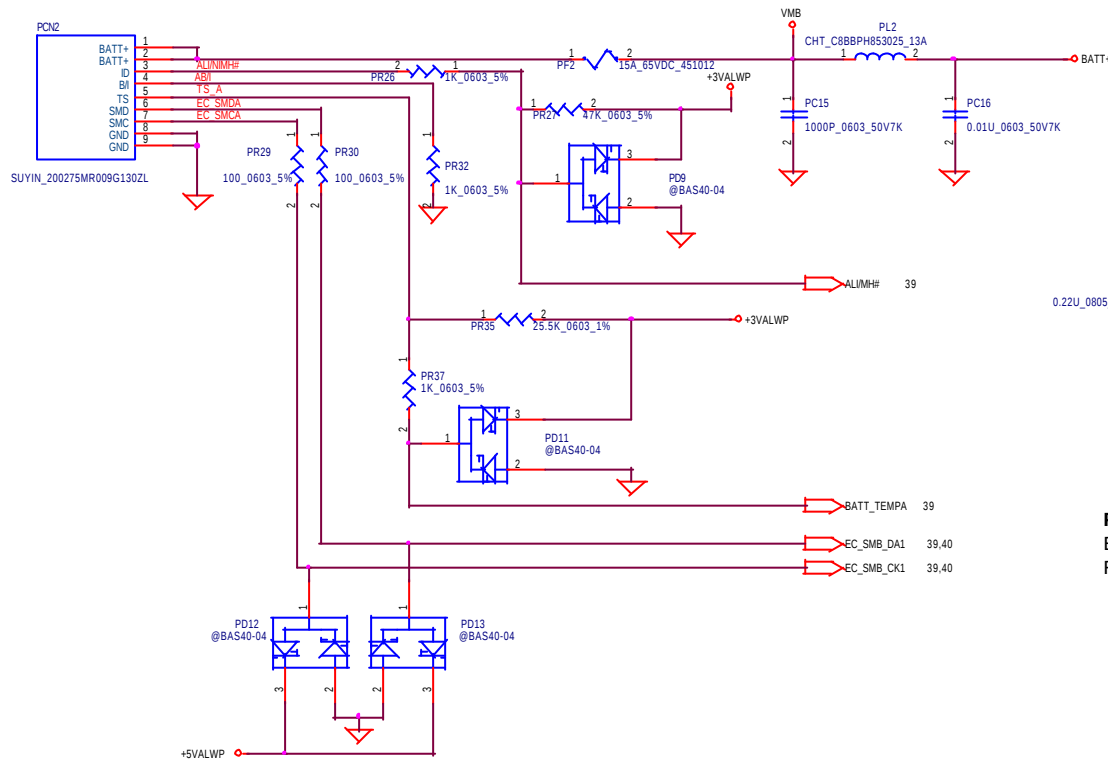
**Precharge detector**  
**15.34 15.90 16.48**  
**13.13 13.71 14.20**



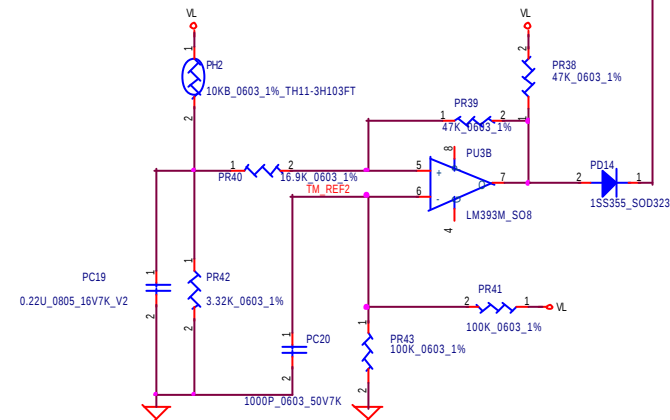
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|--------------------------|-----------------------------|-------|----------|
| DCIN&DETECTOR            |                             |       |          |
| File                     | Document Number             | Rev   |          |
|                          | L.A-1841                    | 0.1   |          |
| Date                     | Thursday, February 20, 2003 | Sheet | 46 of 57 |

**PH1 under CPU botten side :**  
CPU thermal protection at 84 degree C  
Recovery at 45 degree C



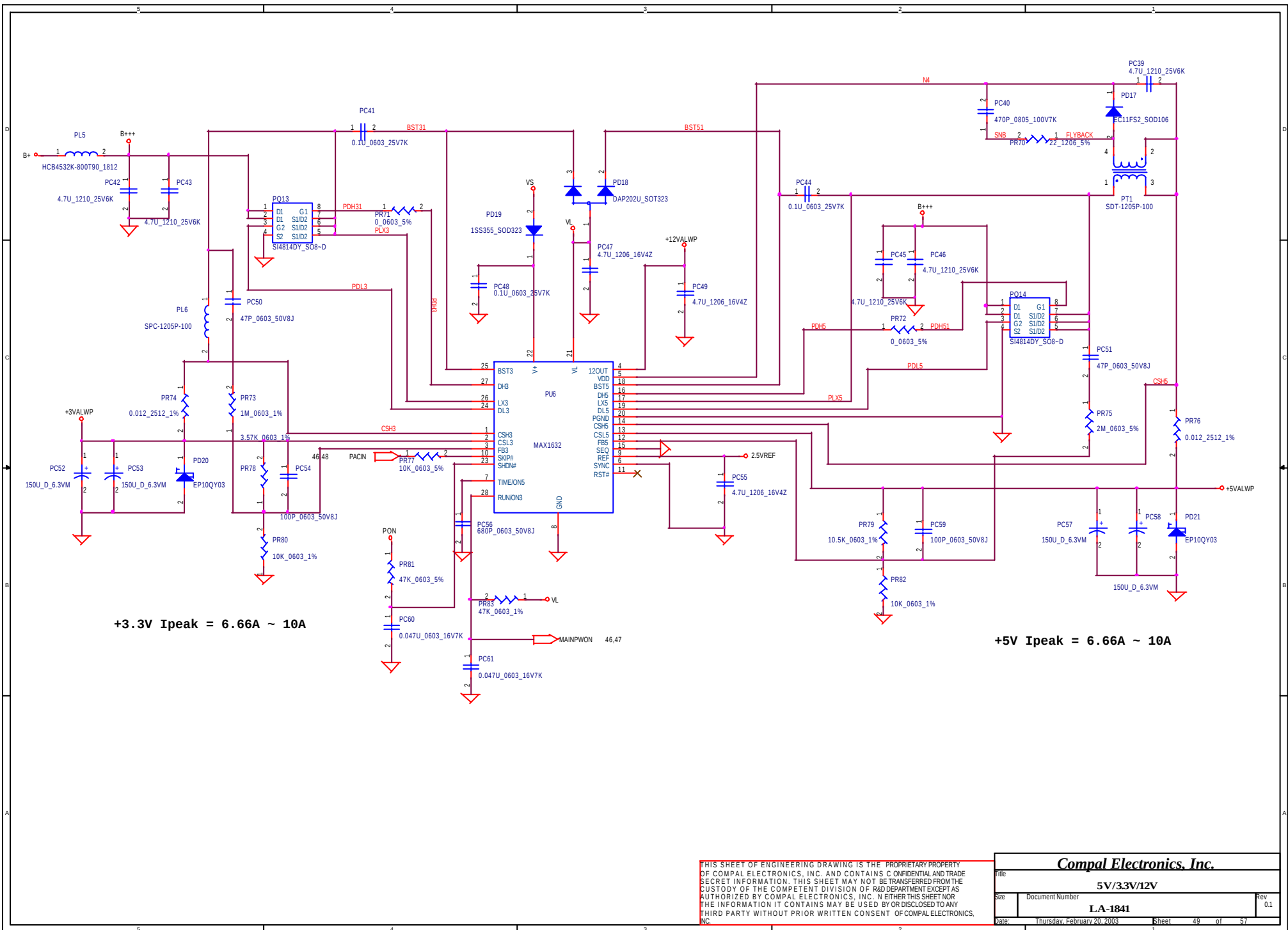
**PH2 near main Battery CONN :**  
BAT. thermal protection at 84 degree C  
Recovery at 45 degree C

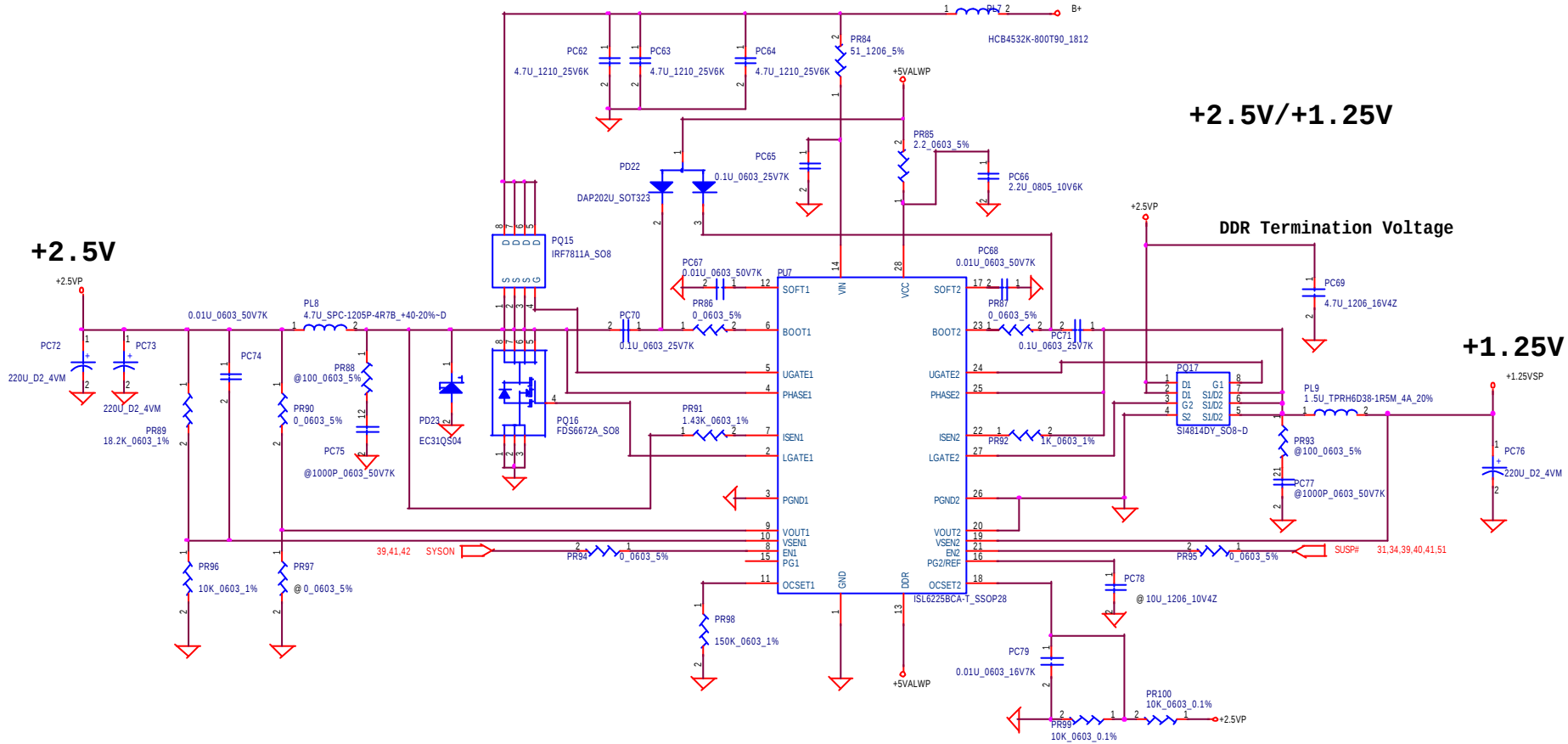


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|----------------------------------------|-----------------------------|-------|------------|
| <b><i>Compal Electronics, Inc.</i></b> |                             |       |            |
| Title                                  |                             |       |            |
| <b>BATTERY CONN/OTP</b>                |                             |       |            |
| Size                                   | Document Number             |       | Rev        |
|                                        | <b>LA-1841</b>              |       | <b>0.1</b> |
| Date:                                  | Thursday, February 20, 2003 | Sheet | 47 of 57   |



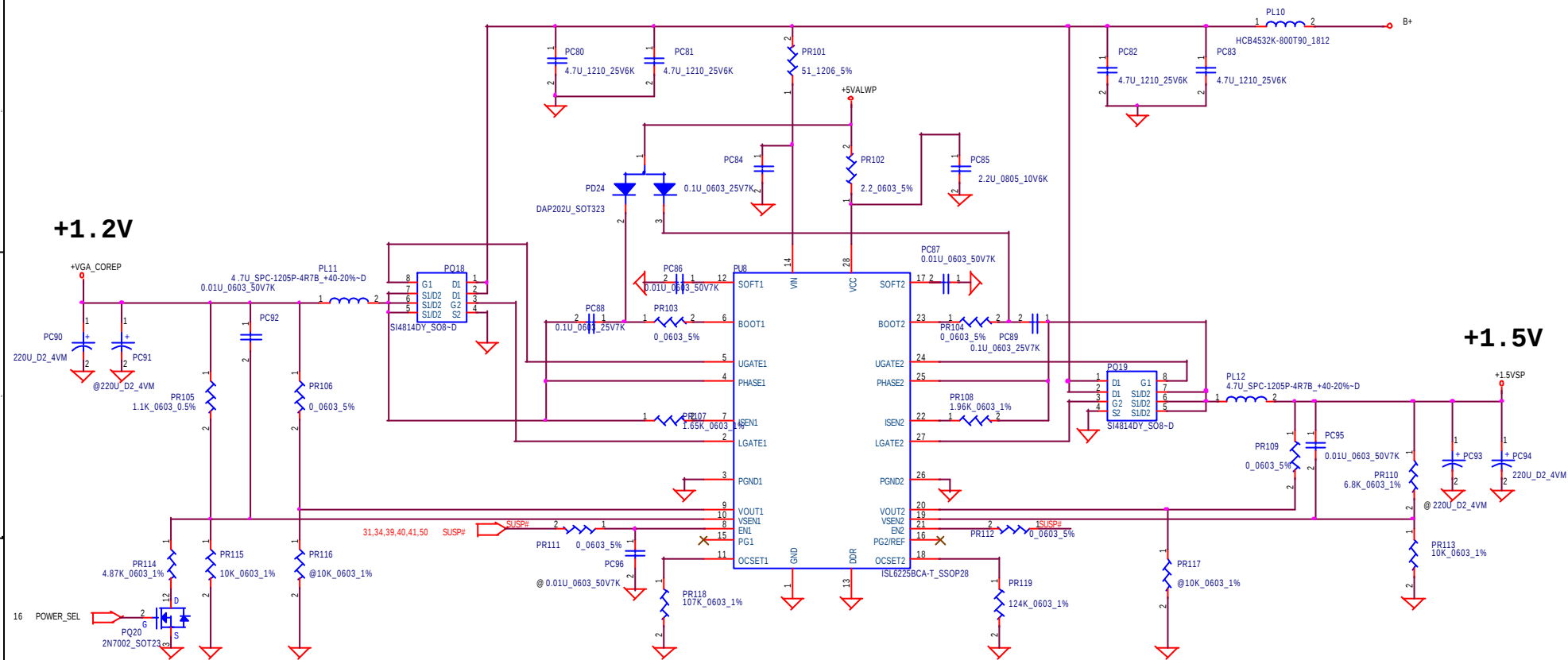




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|--------------------------|-----------------------------|----------------|----------|
| Title                    |                             | DDR/2.5V/1.25V |          |
| Size                     | Document Number             | Rev            |          |
|                          |                             | 0.1            |          |
| Date                     | Thursday, February 20, 2003 | Sheet          | 50 of 57 |

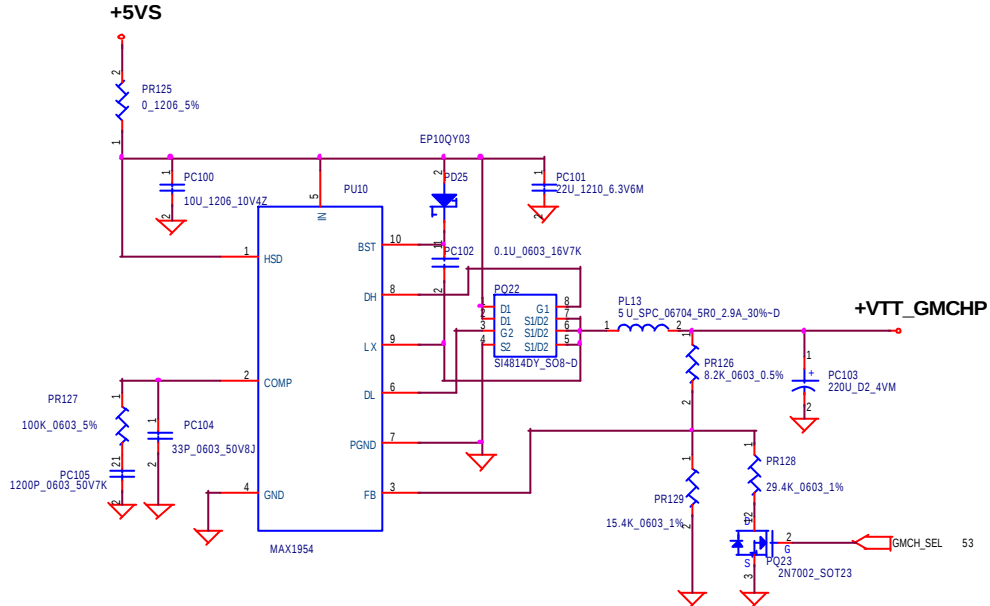
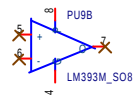
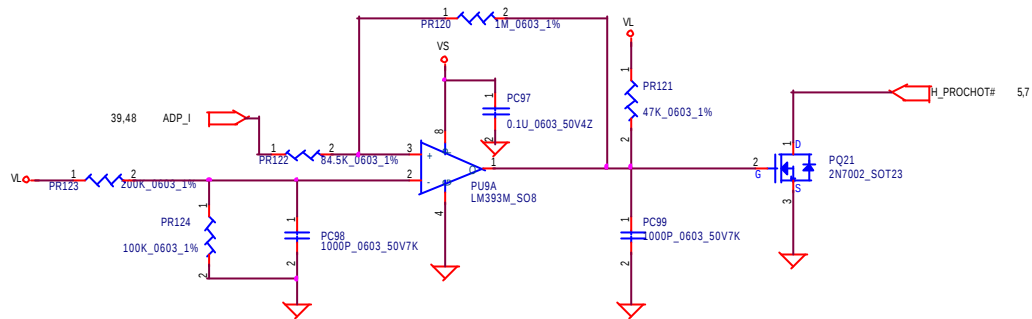
L.A-1841



|                    | NV18/NV34                                      | NV31                                            |
|--------------------|------------------------------------------------|-------------------------------------------------|
| FIX 1.2V           | POWER_SEL=1 VOUT=1.2V<br>POWER_SEL=0 VOUT=1.0V | POWER_SEL=1 VOUT=1.0V<br>POWER_SEL=0 VOUT=0.95V |
| PR105=3.4K_0603_1% | PR105=1.1K_0603_0.5%                           | PR105=1.1K_0603_0.5%                            |
| PR115=10K_0603_1%  | PR114=4.87K_0603_1%                            | PR114=20.5K_0603_1%                             |
| UNPOP PR114        | PR115=10K_0603_1%                              | PR115=19.6K_0603_1%                             |
| UNPOP PQ20         | POP PQ20                                       | POP PQ20                                        |

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|--------------------------|-----------------------------|---------------|----------|
| Title                    |                             | VGA_CORE/1.5V |          |
| Size                     | Document Number             | Rev           |          |
|                          |                             | 0.1           |          |
| Date:                    | Thursday, February 20, 2003 | Sheet         | 51 of 57 |



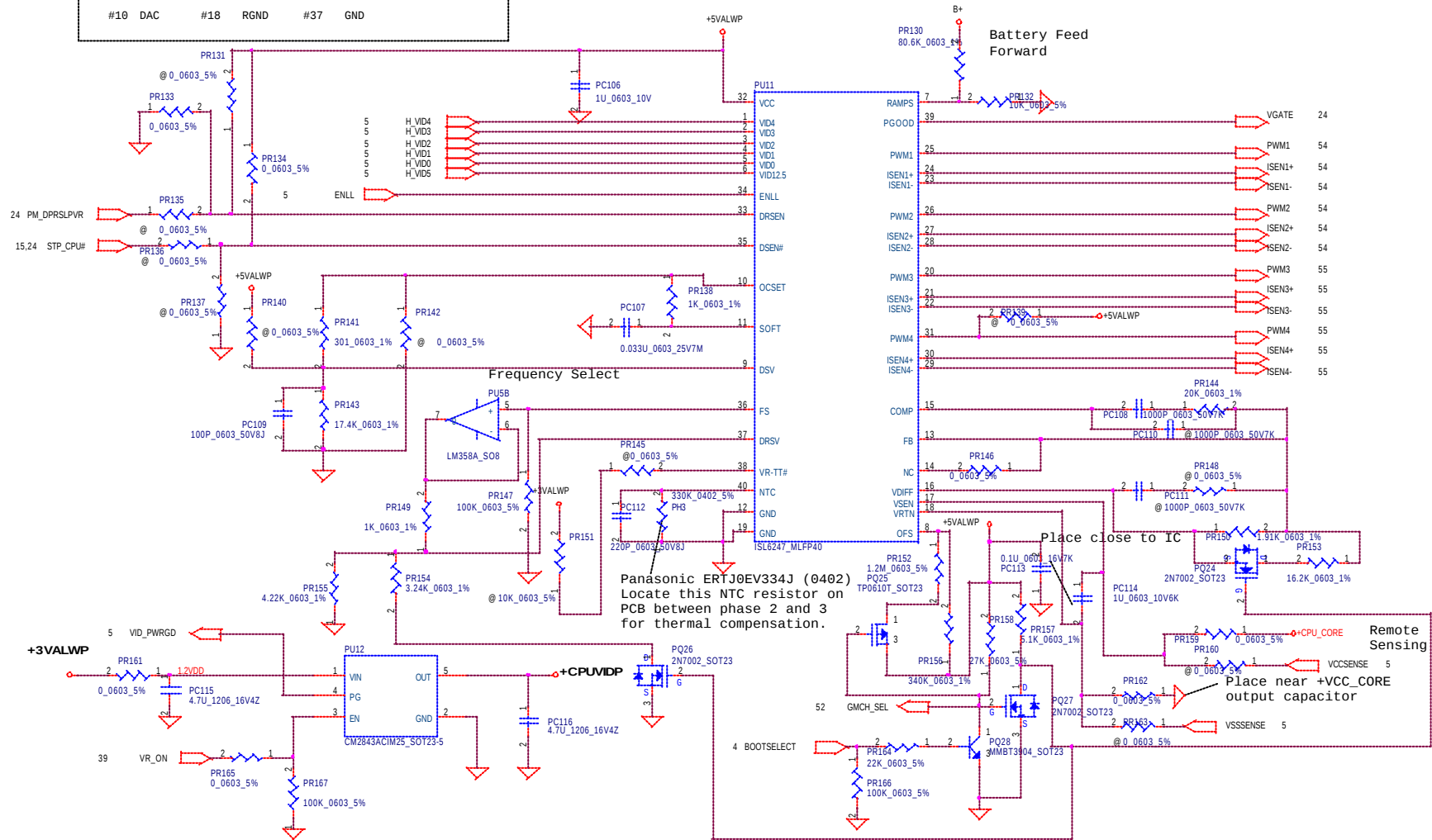
|            |                          |
|------------|--------------------------|
| GMCH_SEL=1 | VOUT=1.225V FOR PRESCOTT |
| GMCH_SEL=0 | VOUT=1.45V FOR NORTHWOOD |

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|---------------------------------|-----------------------------|----------------|
| Compal Electronics, Inc.        |                             |                |
| Title VTT_GMCH/CLOCK/THROTTLING |                             |                |
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Different Pin Definition for ISL6561 in PU9

|          |            |         |         |
|----------|------------|---------|---------|
| #7 GND   | #11 REF    | #33 EN  | #38 OVP |
| #9 TCOMP | #14 IDR00P | #35 GND | #40 GND |
| #10 DAC  | #18 RGND   | #37 GND |         |



1. When mode control signal is high/ low, the VR will operate to Northwood/ Prescott load line.
2. VID5(12.5) should be pulled high, when the VR operates to Northwood load line.

BOOTSELECT=1 PRESCOTT

BOOTSELECT=0 NORTHWOOD

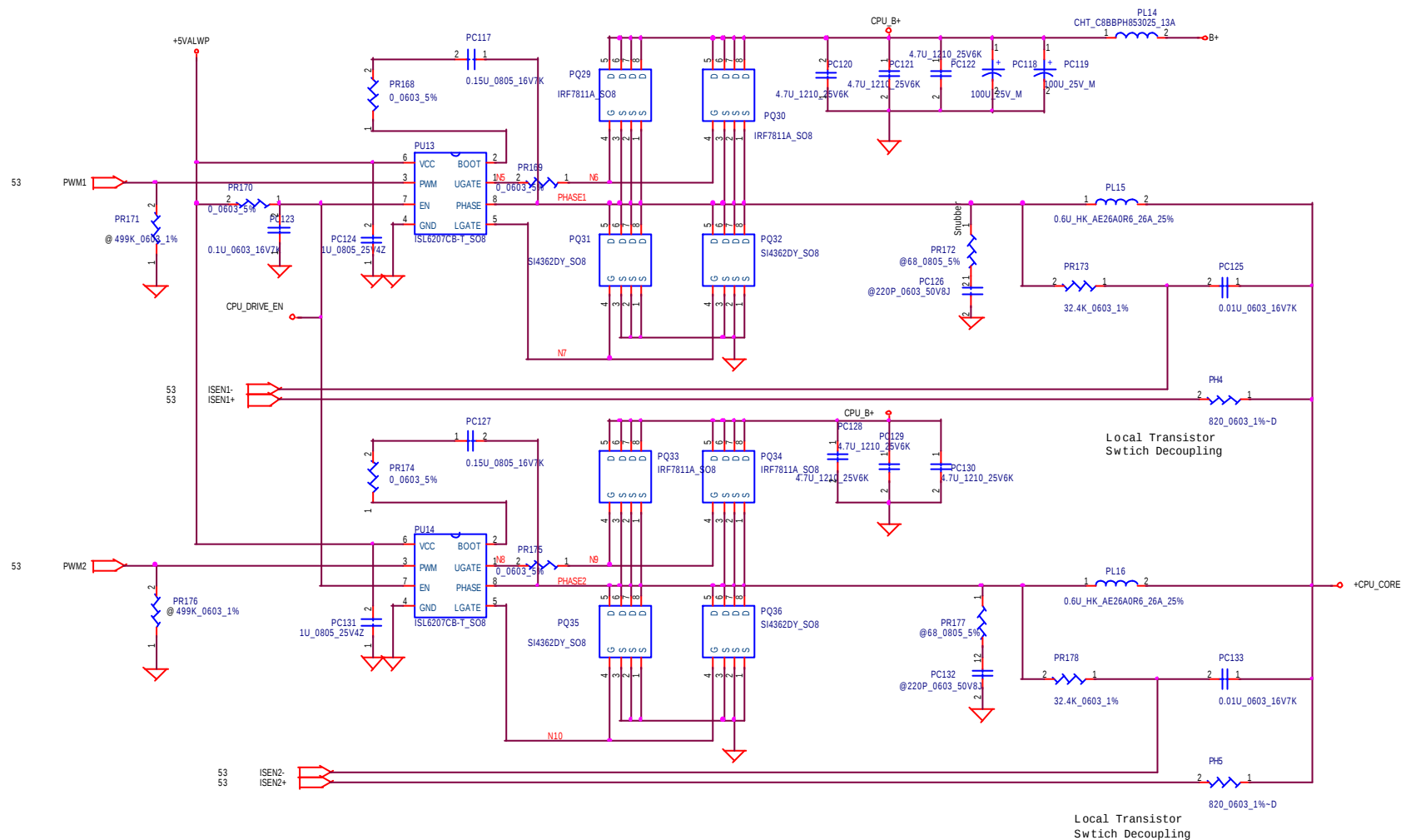
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Compal Electronics, Inc.

CPU CORE Controller

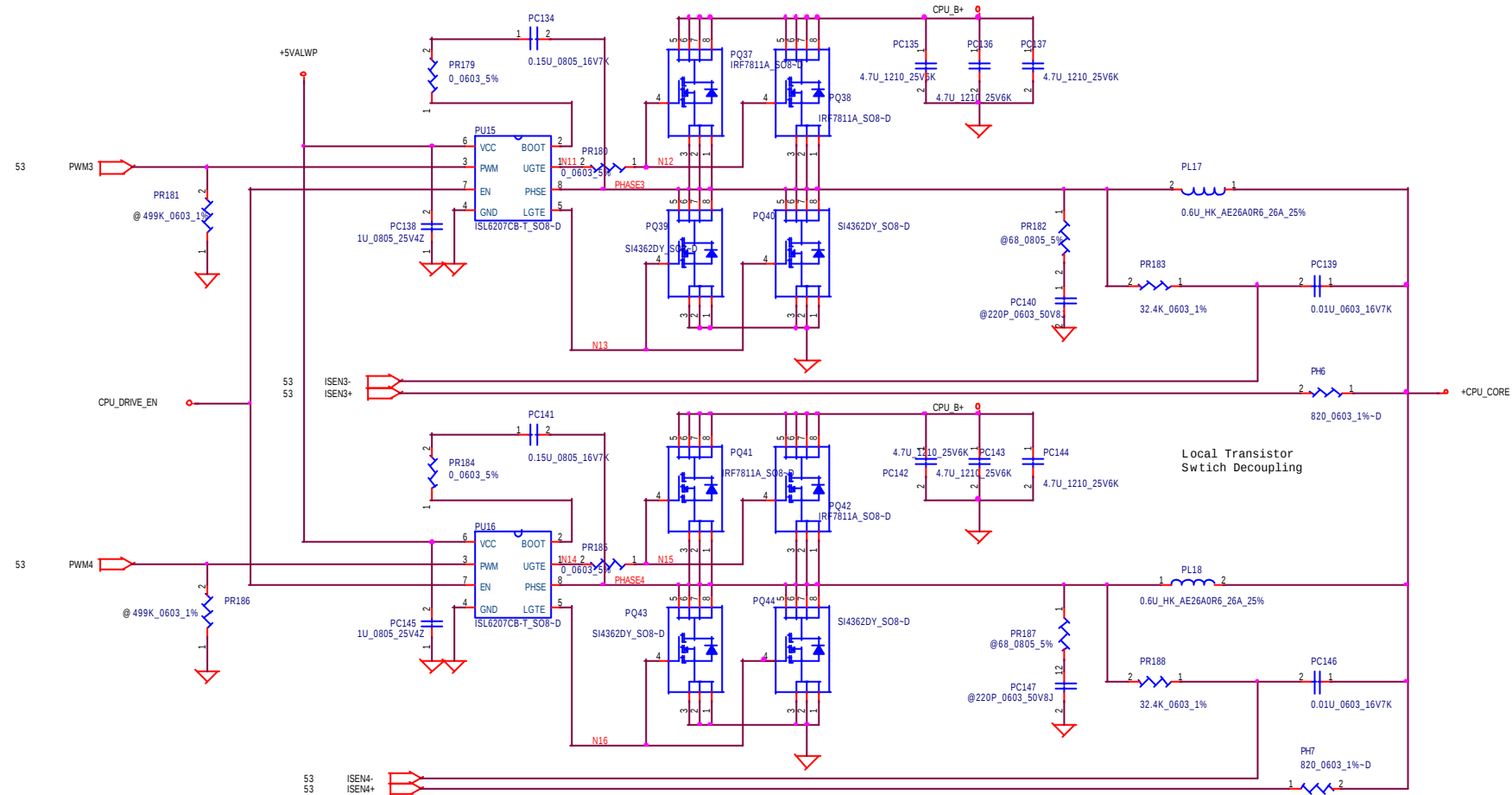
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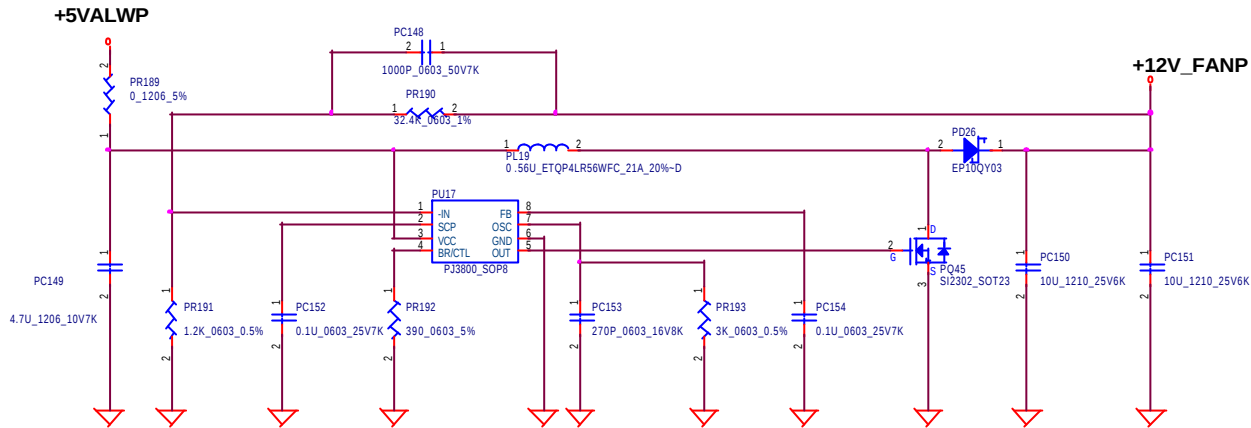
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|                                 |                             |                |        |
|---------------------------------|-----------------------------|----------------|--------|
| <b>Compal Electronics, Inc.</b> |                             |                |        |
| Title CPU_CORE_Powerstage1      |                             |                |        |
| Size                            | Document Number             |                | Rev 0. |
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| Date:                           | Thursday, February 20, 2003 | Sheet 54 of 57 |        |



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|--------------------------|-----------------------------|-------|----------|
| CPU_CORE Powerstage2     |                             |       |          |
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| L.A-1841                 |                             | 0.1   |          |
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|--------------------------|-----------------------------|----------------|---------|
| Title                    |                             | 12V_FAN        |         |
| Size                     | Document Number             | LA-1841        | Rev 0.1 |
| Date:                    | Thursday, February 20, 2003 | Sheet 56 of 57 |         |

# BTQ00 PIR LIST

\*\*\*\*\* Rev0.1 PIR List \*\*\*\*\*

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|                          |                             |                |
|--------------------------|-----------------------------|----------------|
| Compal Electronics, Inc. |                             |                |
| Title                    |                             |                |
| BTQ00 PIR LIST           |                             |                |
| Size                     | Document Number             | Rev            |
| B                        | LA-1841                     | 0.1            |
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