

# COMPAL CONFIDENTIAL

**PCB NO :** *LA-1591*

**Revision :** *2.0*

**DATE :**

## LA-1591 Schematics Document

### uFCBGA/uFCPGA Northwood

**2002-12-2**

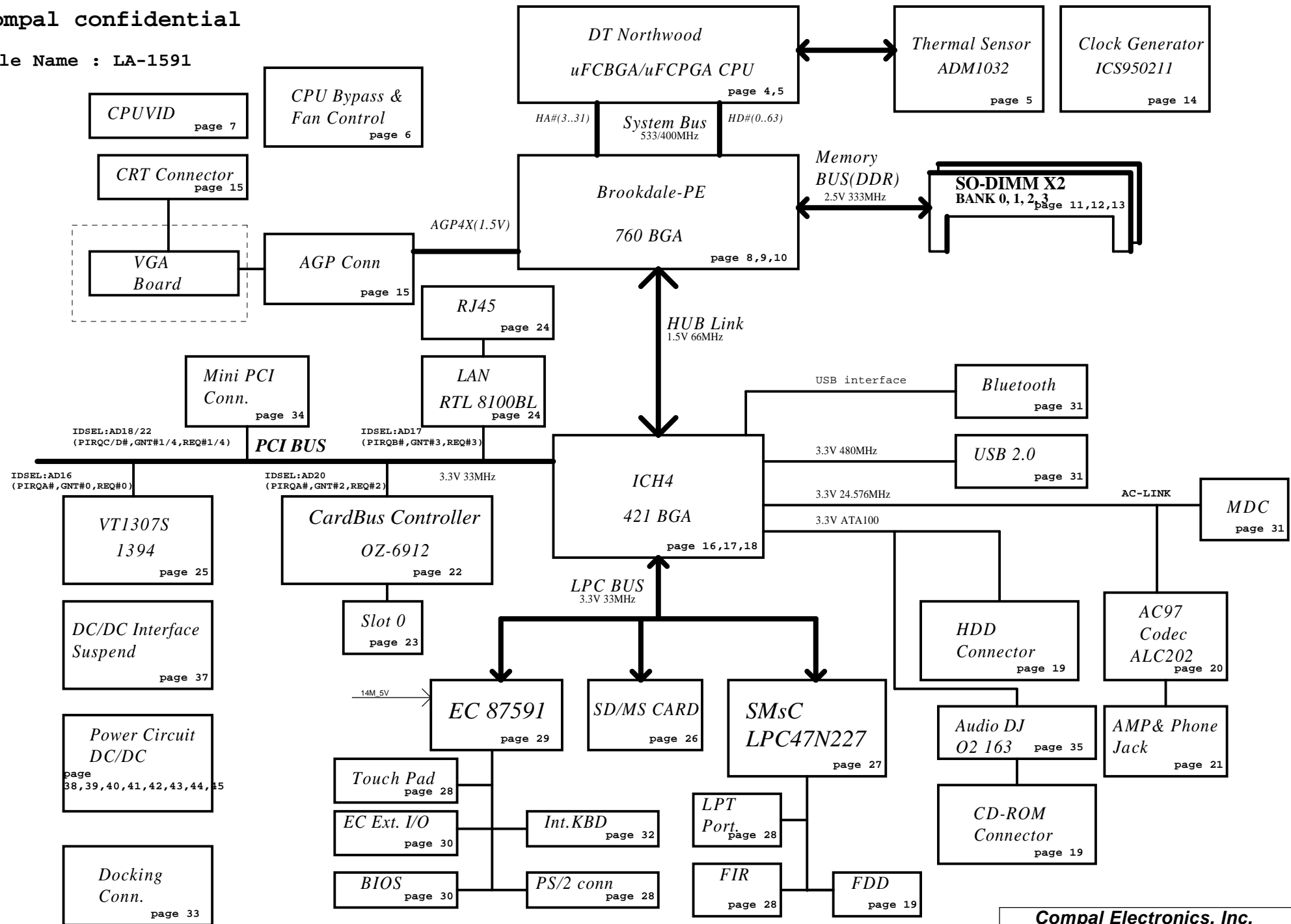
**REV: 2.0**

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

<b>Compal Electronics, Inc.</b>		
Title		
<b>SCHEMATIC, M/B LA-1591</b>		
Size	Document Number	Rev
	<b>401235</b>	2B
Date:	~P期五, 五月 16, 2003	Sheet 1 of 47

Compal confidential

File Name : LA-1591



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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

<b>Compal Electronics, Inc.</b>		
Title	SCHEMATIC, M/BLA-1591	
Size	Document Number	Rev
	401235	2B
Custom	Date	Sheet
	- 印刷五, 五月 16, 2003	2 of 47

**SCHEMATICS VERSION LIST**

VERSION	ISSUE DATE	REMARK
0.00		FIRST PREVIEW
0.01		
0.02		

**Power Managment table**

Signal \ State	+3VALW +5VALW +12VALW	+3V +5V +2.5V	+3VS +5VS +1.5VS +1.2VP +CPU_CORE +1.25VS
S0	ON	ON	ON
S1	ON	ON	ON
S3	ON	ON	OFF
S5 S4/AC	ON	OFF	OFF
S5 S4/AC don't exist	OFF	OFF	OFF

	PCB Rev	CHIPS Rev
SST-Build	0.1	
PT-Build		
ST-Build		
QT-Build		

**Ceramic Capacitor Spec Guide:**

**Temperature Characteristics:**

Symbol	0	1	2	3	4	5	6	7
CODE	Z5U	Z5V	Z5P	Y5U	Y5V	Y5P	X5R	X7R

8	9	A	B	C	D	E	F	G
NP0	C0G		BJ	CH	CJ	CK	SH	SJ

H	I	J	
UJ	UK	SL	

**Tolerance:**

Symbol	A	B	C	D	F	G	H	J
CODE	+/-0.05PF	+/-0.1PF	+/-0.25PF	+/-0.5PF	+/-1PF	+/-2%	+/-3%	+/-5%

K	M	N	P	Q	v	X	Z	
+/-10%	+/-20%	+/-30%	+100,-0%	+30,-10%	+20,-10%	+40,-20%	+80,-20%	

**SMBUS Control Table**

	SOURCE	INVERTER	BATT	SERIAL EEPROM	THERMAL SENSOR (U43)	THERMAL SENSOR (U91)	SODIMM	CLK CHIP	MINI PCI
SMB_EC_CK1 SMB_EC_DA1	NS 87591	✓	✓	✓ (1010)	✗	✗	✗	✗	✗
SMB_EC_CK2 SMB_EC_DA2	NS 87591	✗	✗	✗	✓	✓	✗	✗	✗
SMB_CLK SMB_DATA	ICH4	✗	✗	✗	✗	✗	✓	✓	✓

**NOTE1:**

**@XX : Depop component**

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 CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

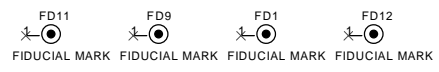
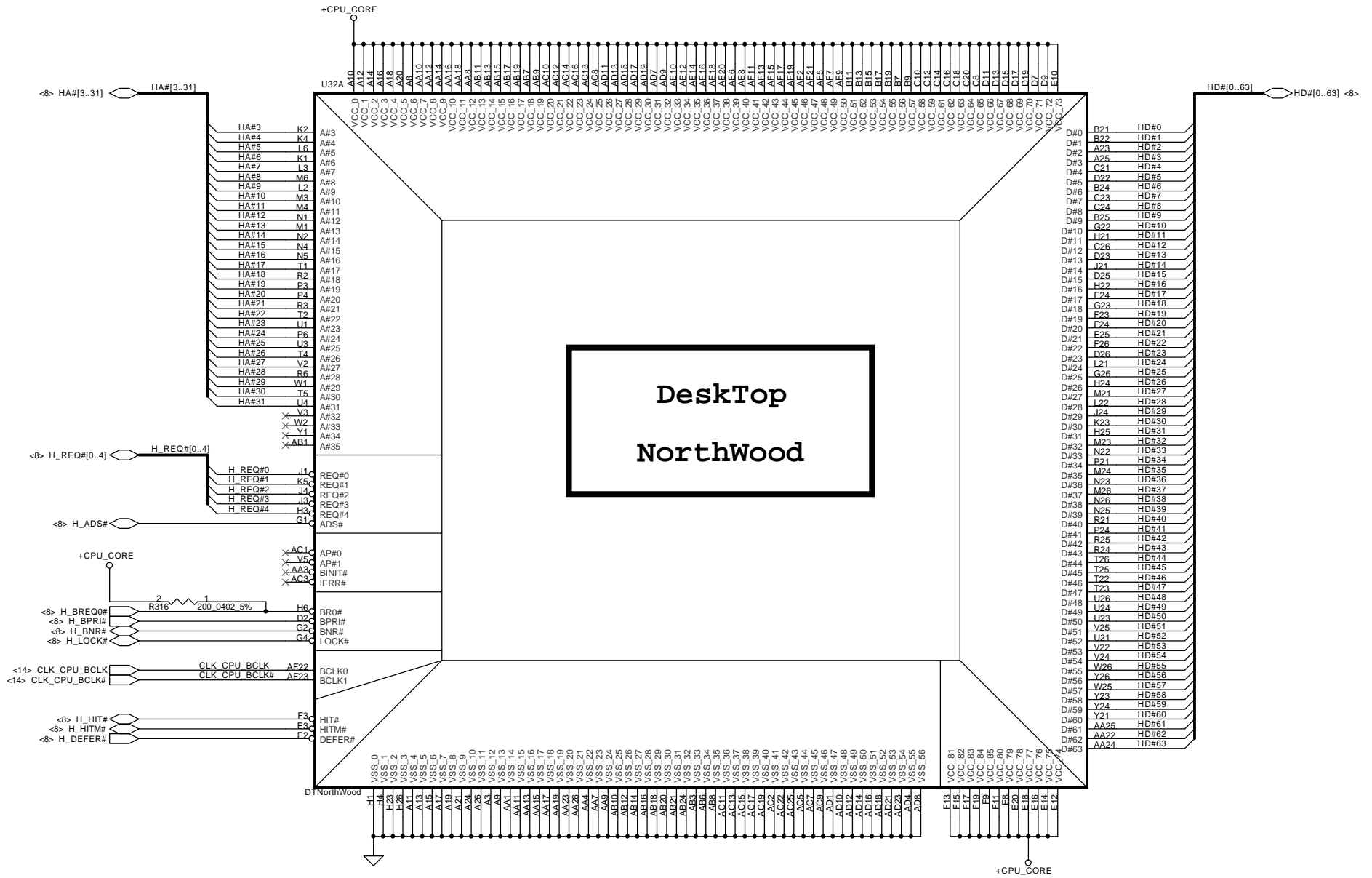
**Compal Electronics, Inc.**

Title: **SCHEMATIC, M/B LA-1591**

Size	Document Number	Rev
	<b>401235</b>	2B

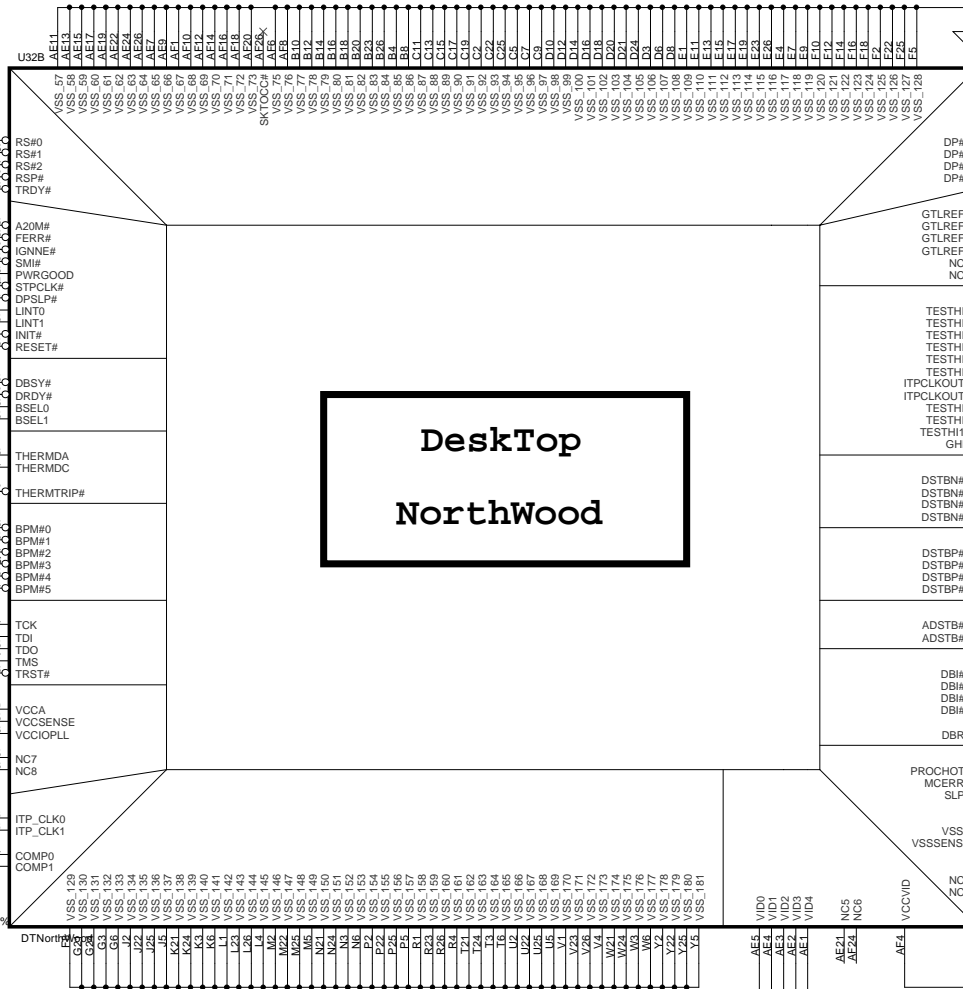
Date: ~P期五, 五月 16, 2003 Sheet 3 of 47

# DeskTop NorthWood

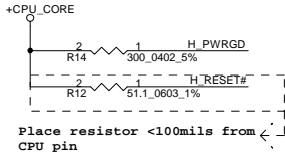


THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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

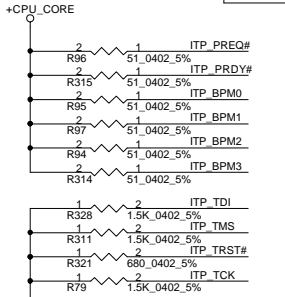
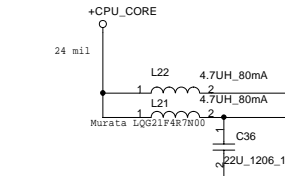
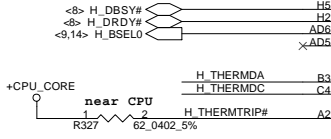
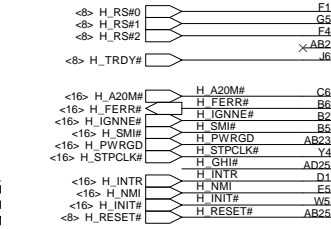
<b>Compal Electronics, Inc.</b>		
Title	SCHEMATIC, M/BLA-1591	
Size	Document Number	Rev
	401235	2B
Date:	-P期五, 五月 16, 2003	Sheet 4 of 47



# DeskTop NorthWood



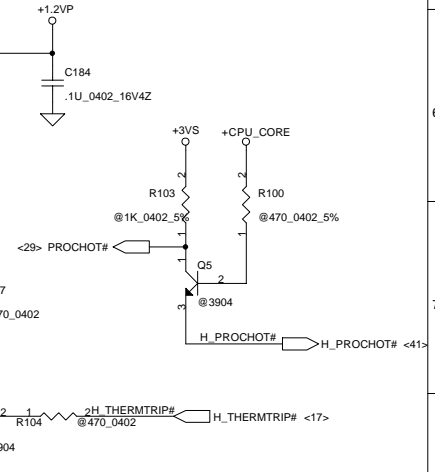
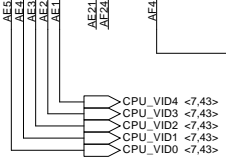
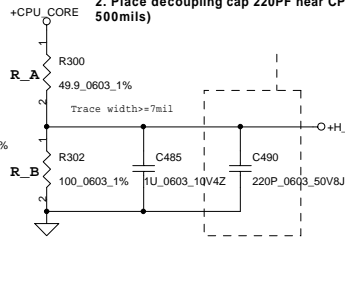
Place resistor <100mils from CPU pin



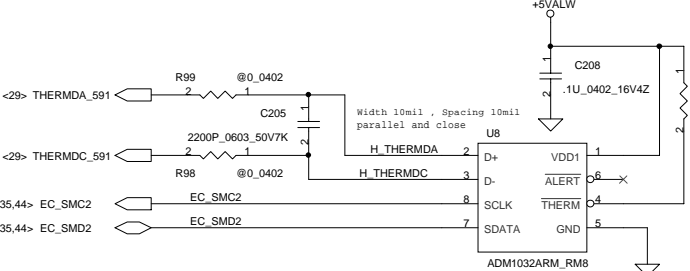
If used ITP port must depop

### GTL Reference Voltage

- Layout note :
- Place R\_A and R\_B near CPU (Within 1.5")
  - Place decoupling cap 220PF near CPU.(Within 500mils)



### CPU Temperature Sensor



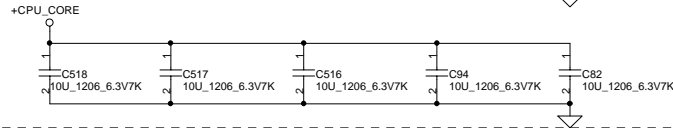
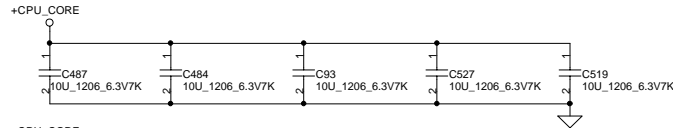
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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

<b>Compal Electronics, Inc.</b>		
Title	SCHEMATIC, MB LA-1591	
Size	Document Number	Rev
	401235	2B
Custom	Date	Sheet
	2003.05.16	5 of 47

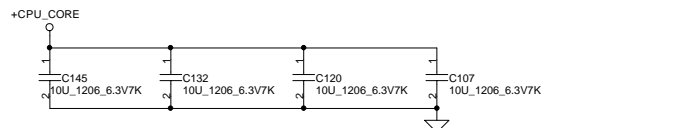
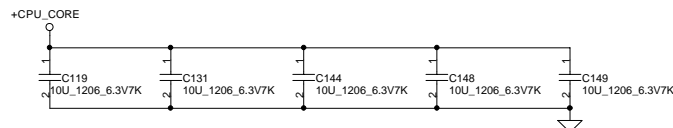
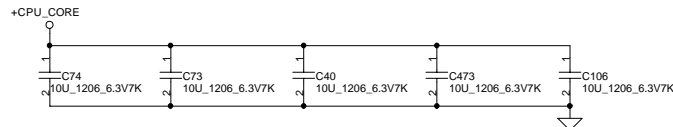
**Layout note :**

Place close to CPU, Use 2-3 vias per PAD.  
Place .22uF caps underneath balls on solder side.  
Place 10uF caps on the peripheral near balls.  
Use 2-3 vias per PAD.

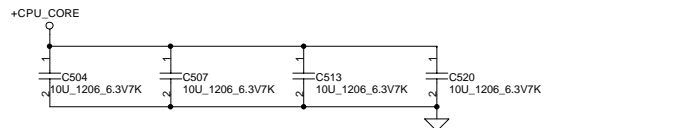
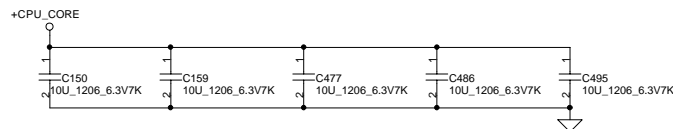
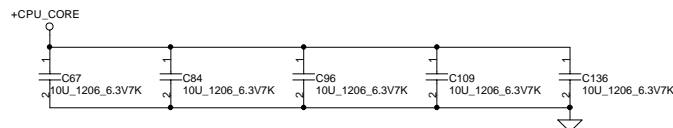
Please place these cap in the socket cavity area



Please place these cap on the socket north side



Please place these cap on the socket south side



**Layout note :**

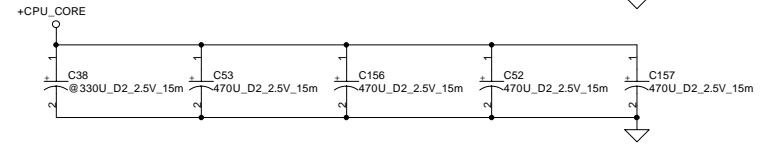
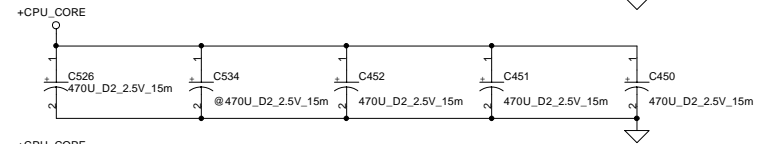
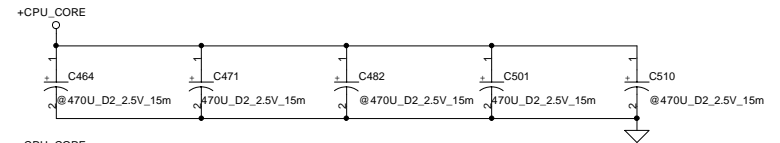
Place close to CPU power and ground pin as possible (<1inch)

**For Desktop's CPU:**

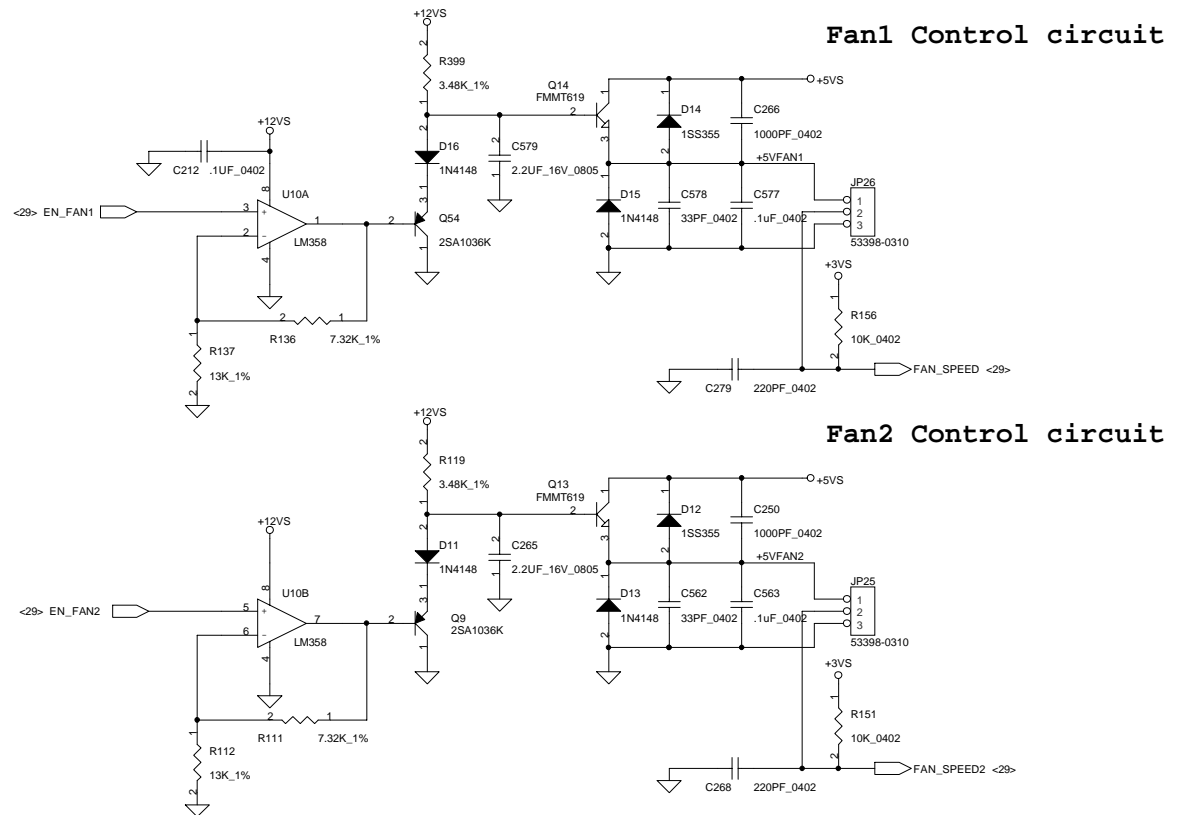
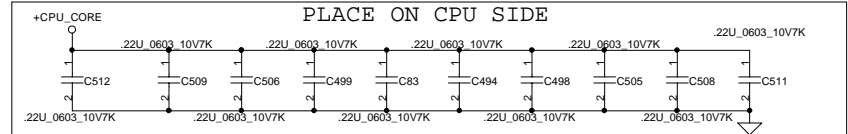
ESR total=0.75m ohm  
C total=6350uF

**For Mobile's CPU:**

ESR total=1.875m ohm  
C total=2590uF



**PLACE ON CPU SIDE**

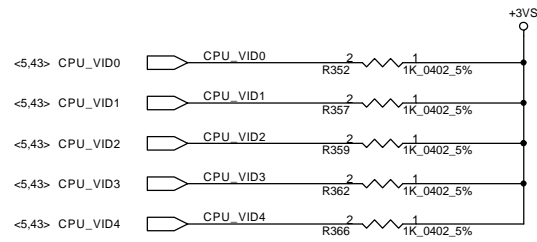


**Fan1 Control circuit**

**Fan2 Control circuit**

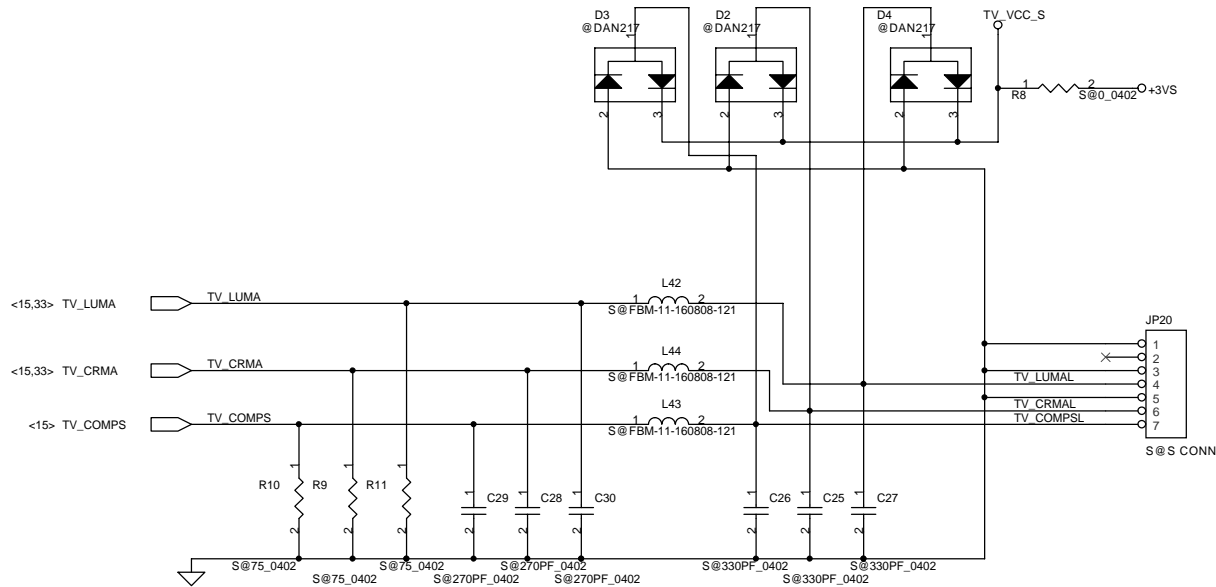
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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

<b>Compal Electronics, Inc.</b>		
Title	SCHEMATIC, MB LA-1591	
Size	Document Number	Rev
401235		2B
Custom	Date: 星期五, 五月 16, 2003	
	Sheet	6 of 47



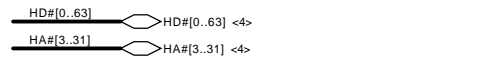
MO/DT_CPU	Mobile CPU					Desktop CPU				
	1					0				
VID	4	3	2	1	0	4	3	2	1	0
VCC										
1.750V	0	0	0	0	0	0	0	1	0	0
1.700V	0	0	0	0	1	0	0	1	1	0
1.650V	0	0	0	1	0	0	1	0	0	0
1.600V	0	0	0	1	1	0	1	0	1	0
1.550V	0	0	1	0	0	0	1	1	0	0
1.500V	0	0	1	0	1	0	1	1	1	0
1.450V	0	0	1	1	0	1	0	0	0	0
1.400V	0	0	1	1	1	1	0	0	1	0
1.350V	0	1	0	0	0	1	0	1	0	0
1.300V	0	1	0	0	1	1	0	1	1	0
1.250V	0	1	0	1	0	1	1	0	0	0
1.200V	0	1	0	1	1	1	1	0	1	0
1.150V	0	1	1	0	0	1	1	1	0	0
1.100V	0	1	1	0	1	1	1	1	1	0
1.050V	0	1	1	1	0	X	X	X	X	X
1.000V	0	1	1	1	1	X	X	X	X	X
0.975V	1	0	0	0	0	X	X	X	X	X
0.950V	1	0	0	0	1	X	X	X	X	X
0.925V	1	0	0	1	0	X	X	X	X	X
0.900V	1	0	0	1	1	X	X	X	X	X
0.875V	1	0	1	0	0	X	X	X	X	X
0.850V	1	0	1	0	1	X	X	X	X	X
0.825V	1	0	1	1	0	X	X	X	X	X
0.800V	1	0	1	1	1	X	X	X	X	X
0.775V	1	1	0	0	0	X	X	X	X	X
0.750V	1	1	0	0	1	X	X	X	X	X
0.725V	1	1	0	1	0	X	X	X	X	X
0.700V	1	1	0	1	1	X	X	X	X	X
0.675V	1	1	1	0	0	X	X	X	X	X
0.650V	1	1	1	0	1	X	X	X	X	X
0.625V	1	1	1	1	0	X	X	X	X	X
0.600V	1	1	1	1	1	X	X	X	X	X
VRM output off						1	1	1	1	1

### TV\_OUT CONNECTOR

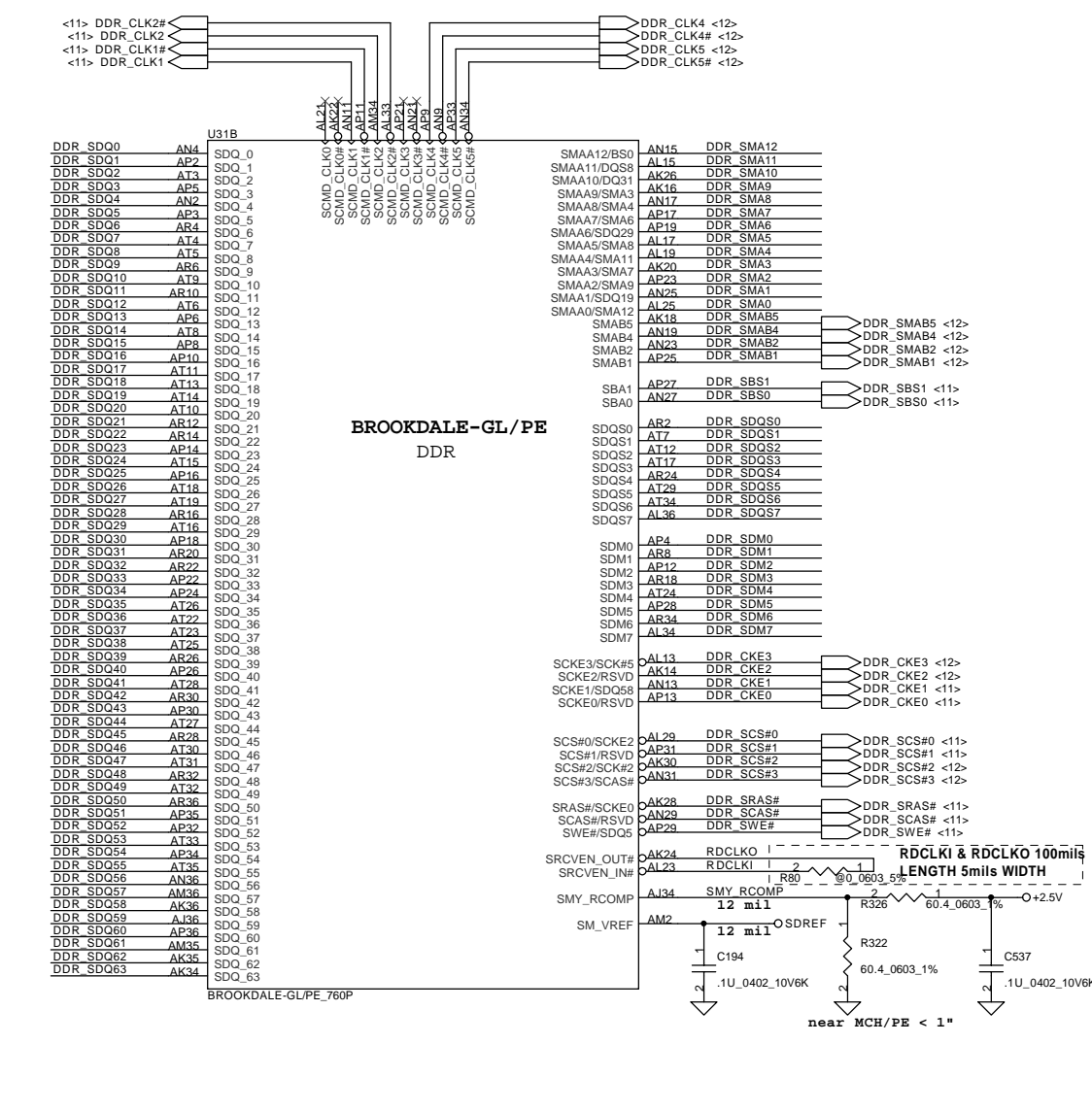
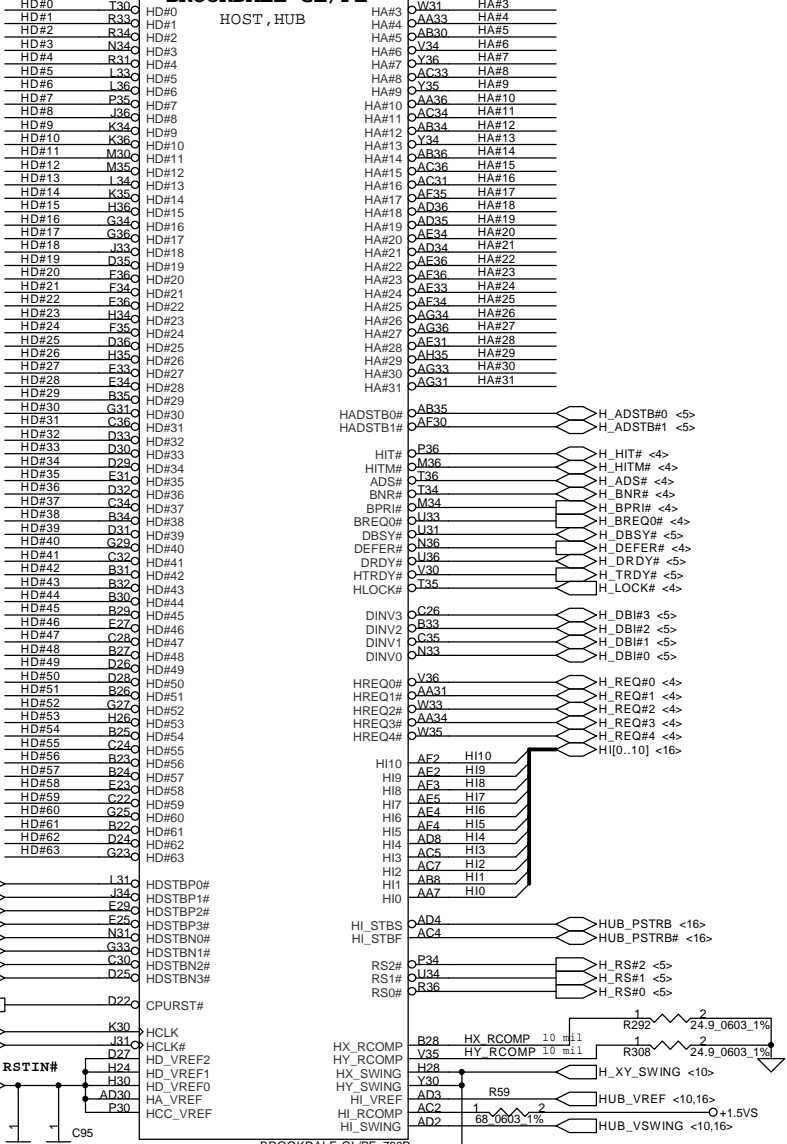


THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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

**Compal Electronics, Inc.**  
 Title: **SCHEMATIC, M/B LA-1591**  
 Size: Document Number **401235** Rev **2B**  
 Date: -P期五, 五月 16, 2003 Sheet **7** of **47**



**BROOKDALE-GL/PE**  
HOST, HUB



- Layout note :**
- HX\_RCOMP, HY\_RCOMP Trace width 10 mil.
  - Terminator Max 500 mil.

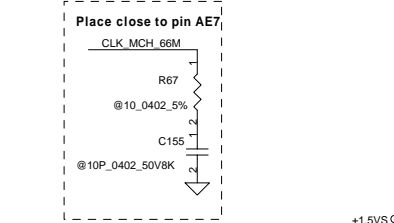
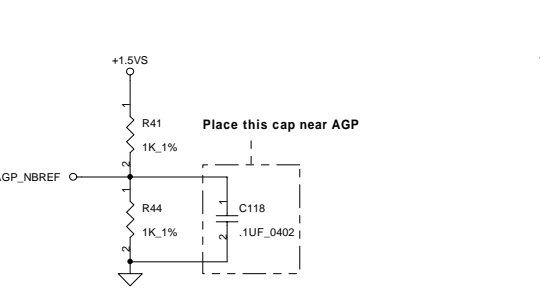
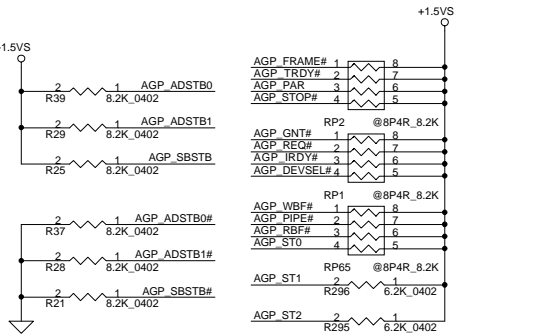
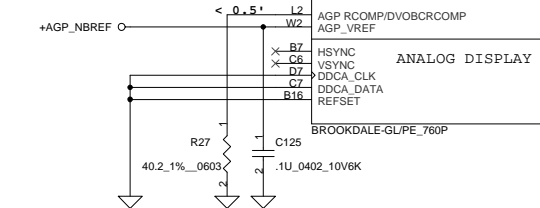
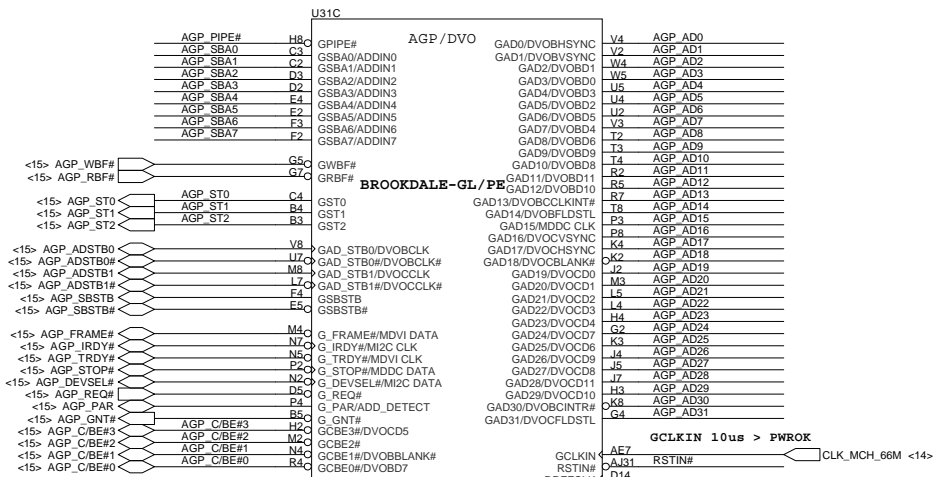
Close to H28      Close to Y30

<b>Compal Electronics, Inc.</b>		
Title <b>SCHEMATIC, M/B LA-1591</b>		
Size	Document Number <b>401235</b>	Rev <b>28</b>
Date:	~P 期五, 五月 16, 2003	Sheet 8 of 47

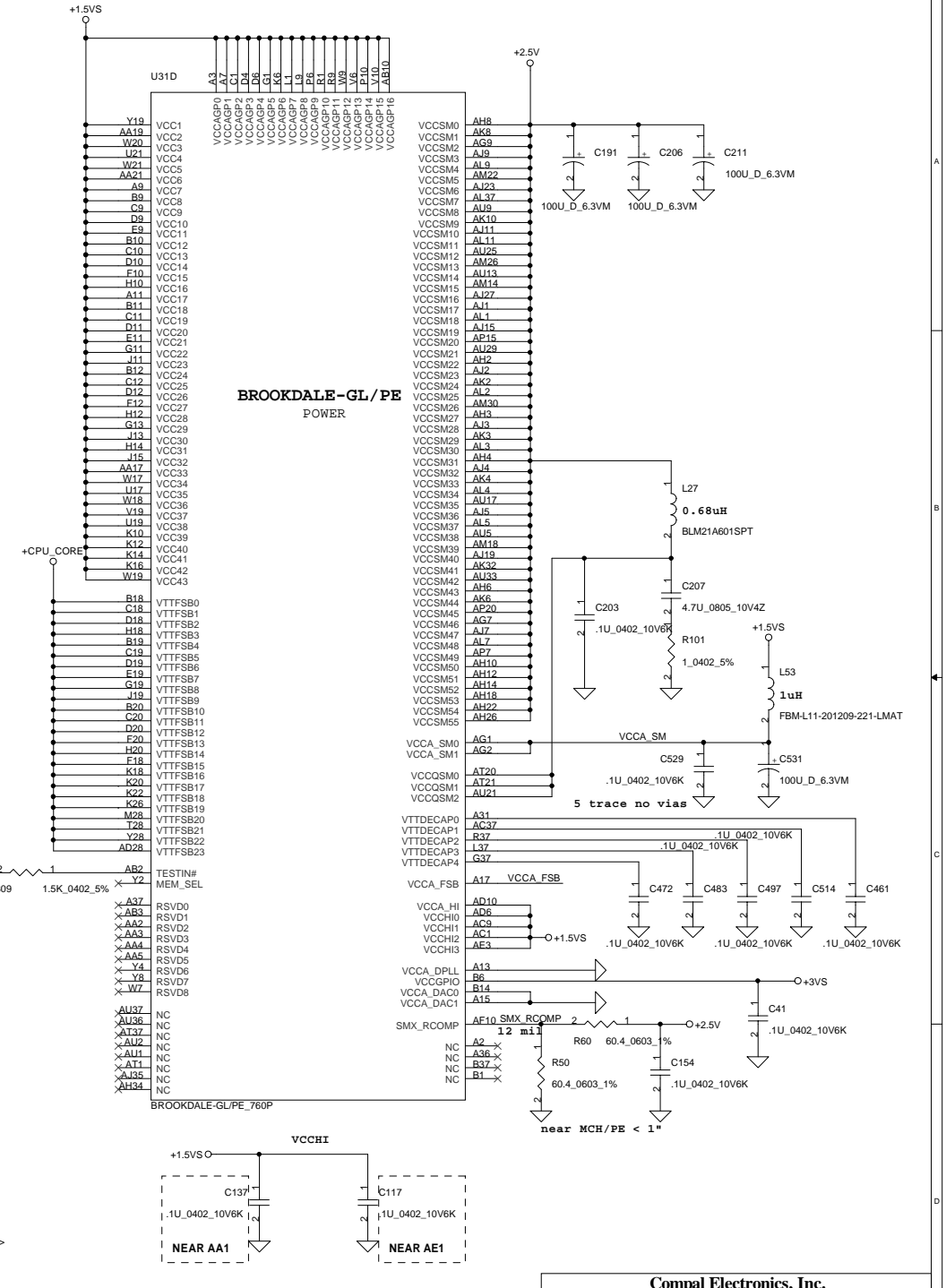
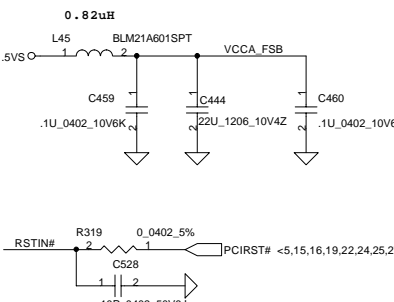
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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



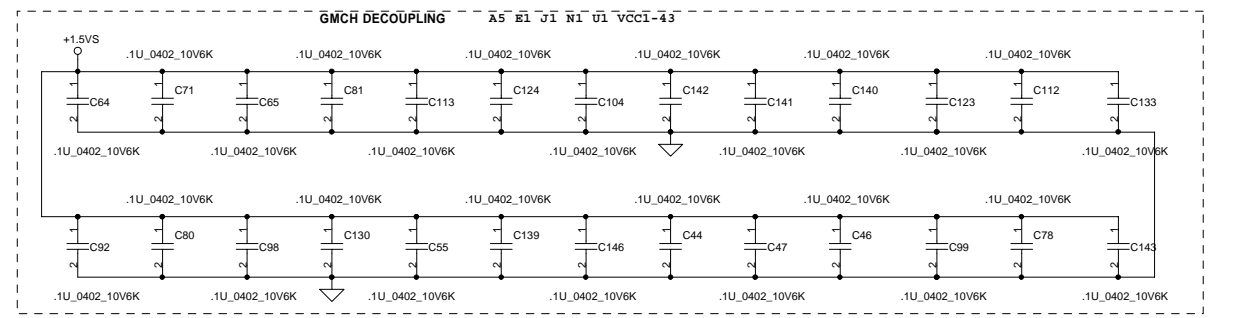
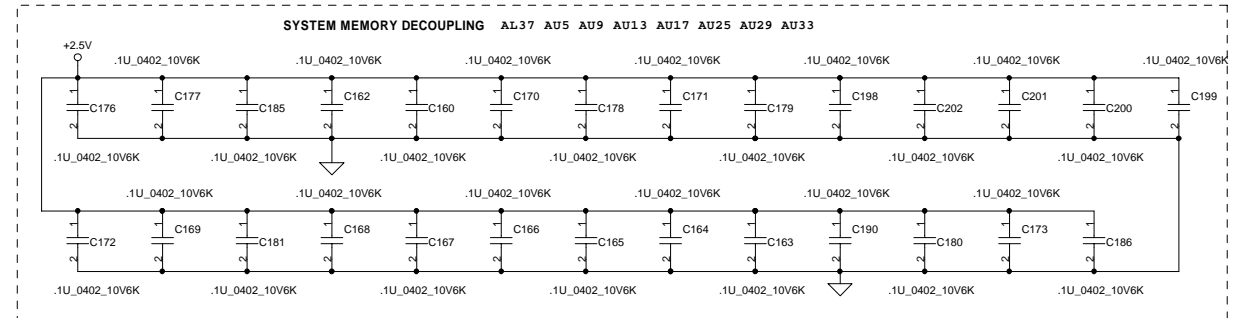
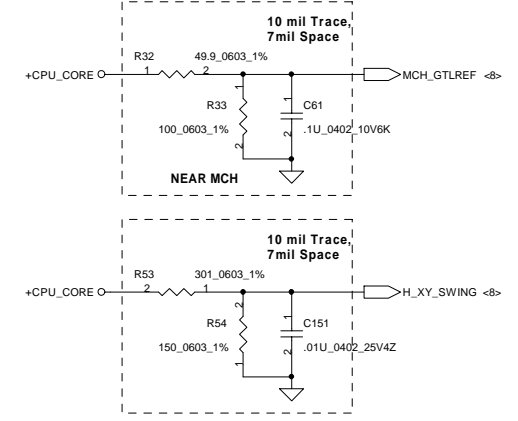
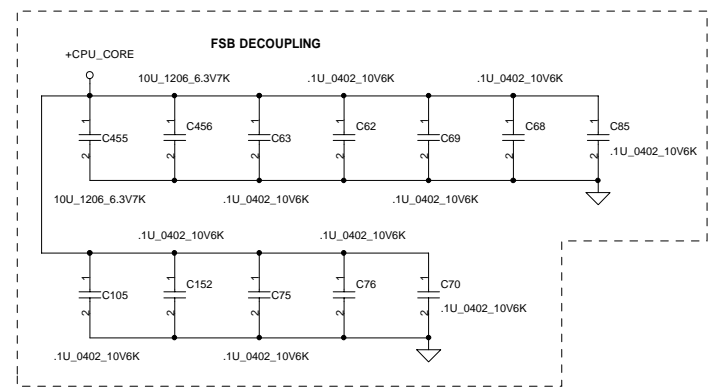
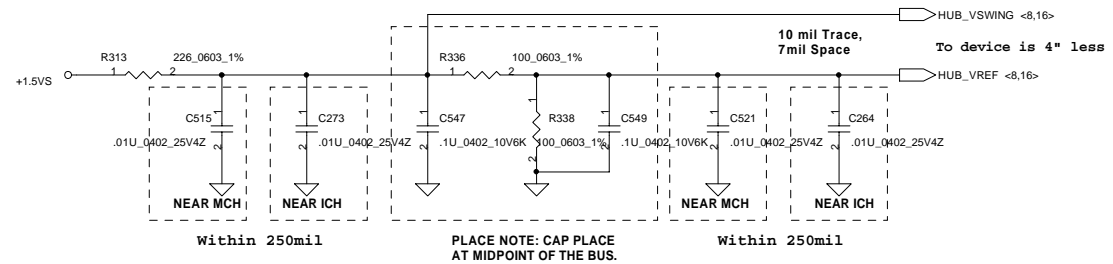
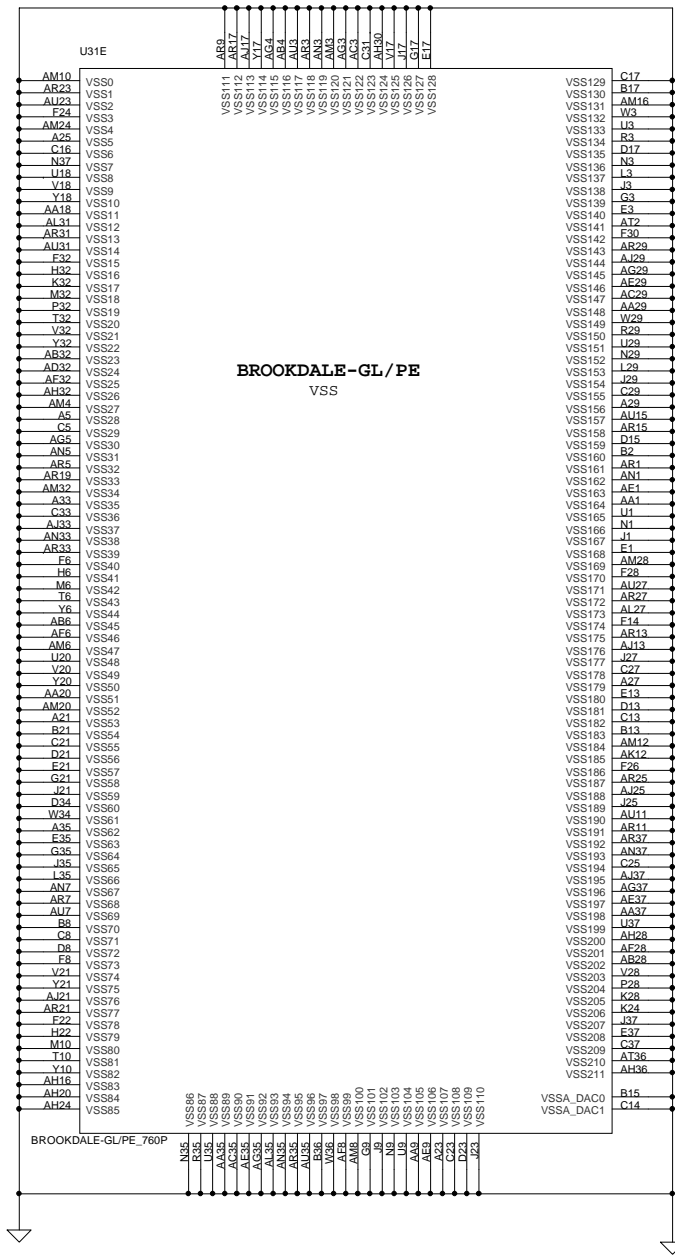
<15> AGP\_AD[0..31] AGP\_AD[0..31]  
 <15> AGP\_SBA[0..7] AGP\_SBA[0..7]



PSBSEL	FSB FREQUENCY
0	400 MHZ
1	533 MHZ

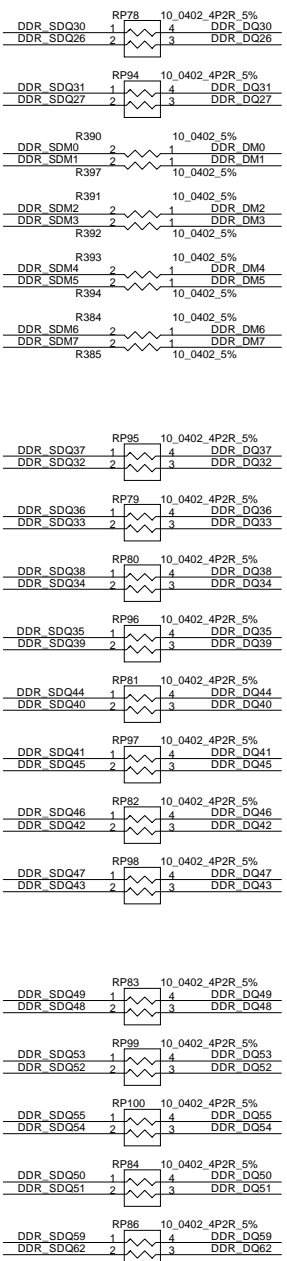
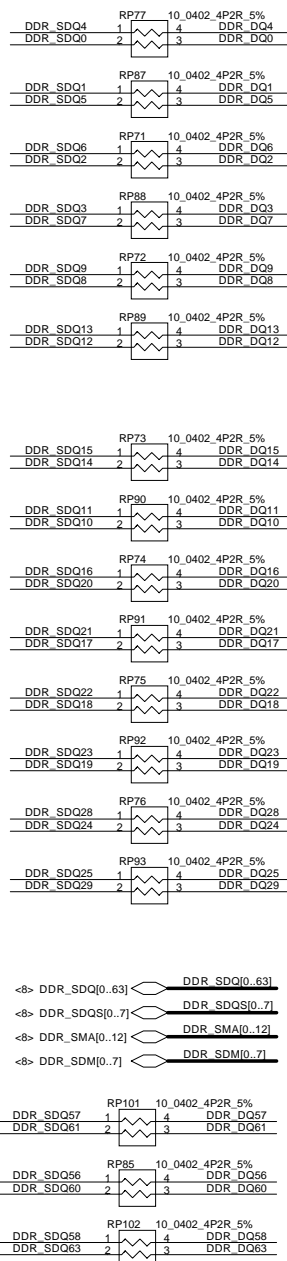


THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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



<b>Compal Electronics, Inc.</b>		
Title <b>SCHEMATIC, M/B LA-1591</b>		
Size	Document Number <b>401235</b>	Rev <b>2B</b>
Date: 星期日, 五月 16, 2003	Sheet 10	of 47

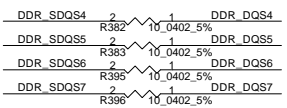
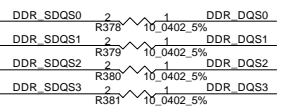
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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



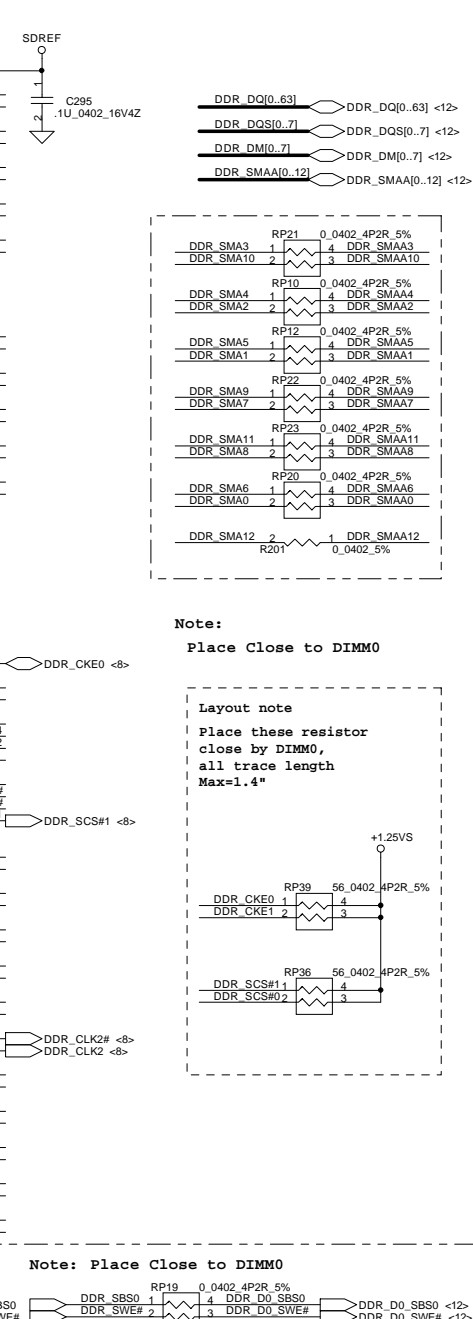
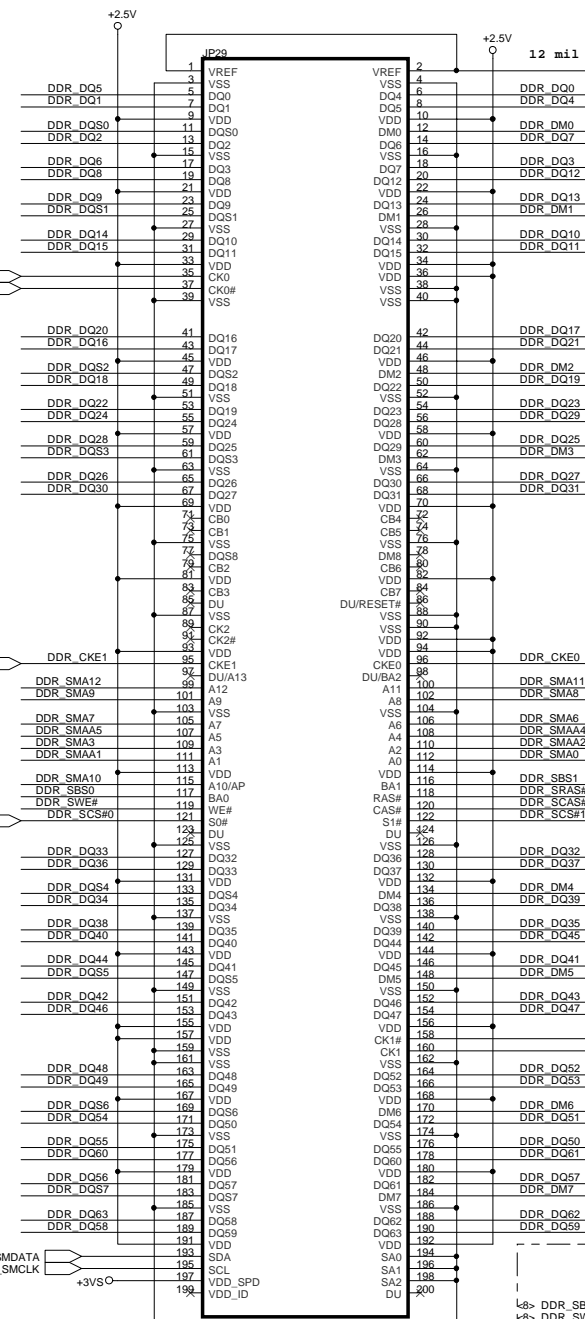
<8> DDR\_CLK1  
<8> DDR\_CLK1#

<8> DDR\_CKE1  
DDR\_CKE1

<8> DDR\_SCS#0  
DDR\_SCS#0

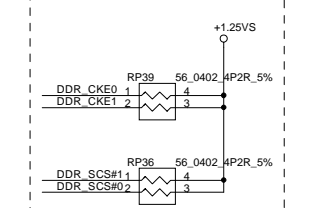


Layout note  
Place these resistors  
close to DIMM0,  
all trace length<500 mil

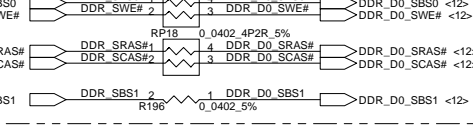


Note:  
Place Close to DIMM0

Layout note  
Place these resistor  
close to DIMM0,  
all trace length  
Max=1.4"



Note: Place Close to DIMM0



<8> DDR\_SBS0  
<8> DDR\_SWE#

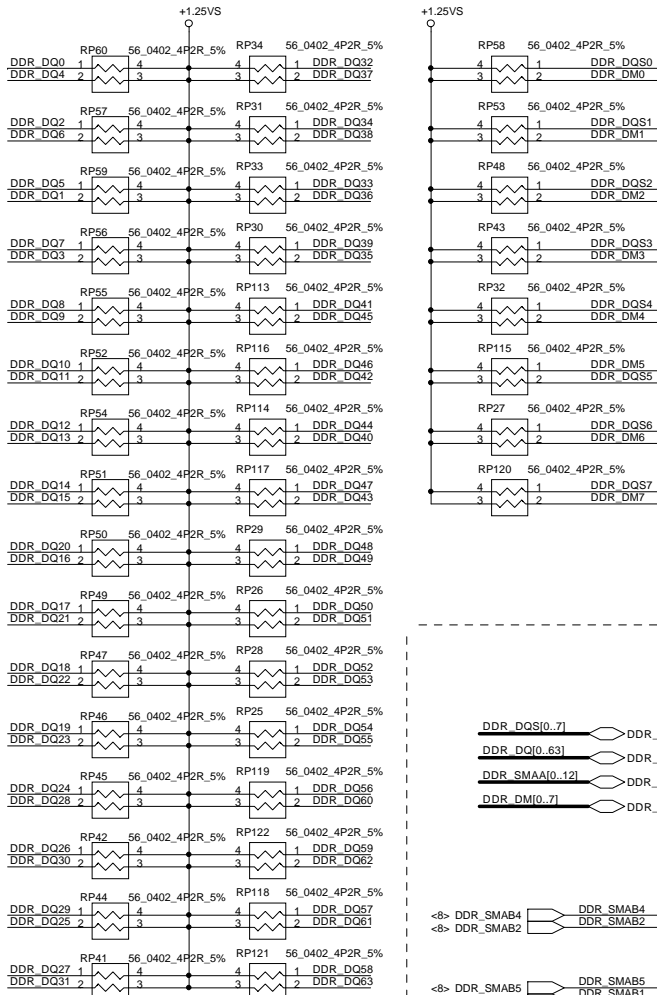
<8> DDR\_SRAS#  
<8> DDR\_SCAS#

<8> DDR\_SBS1

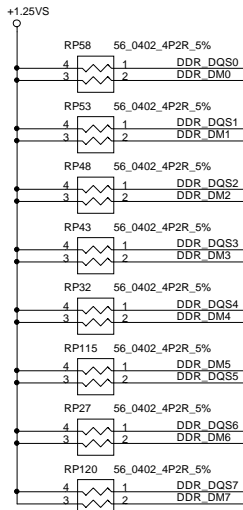
Compal Electronics, Inc.  
SCHEMATIC, M/B LA-1591  
Date: 2003.05.16 Sheet 11 of 47

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

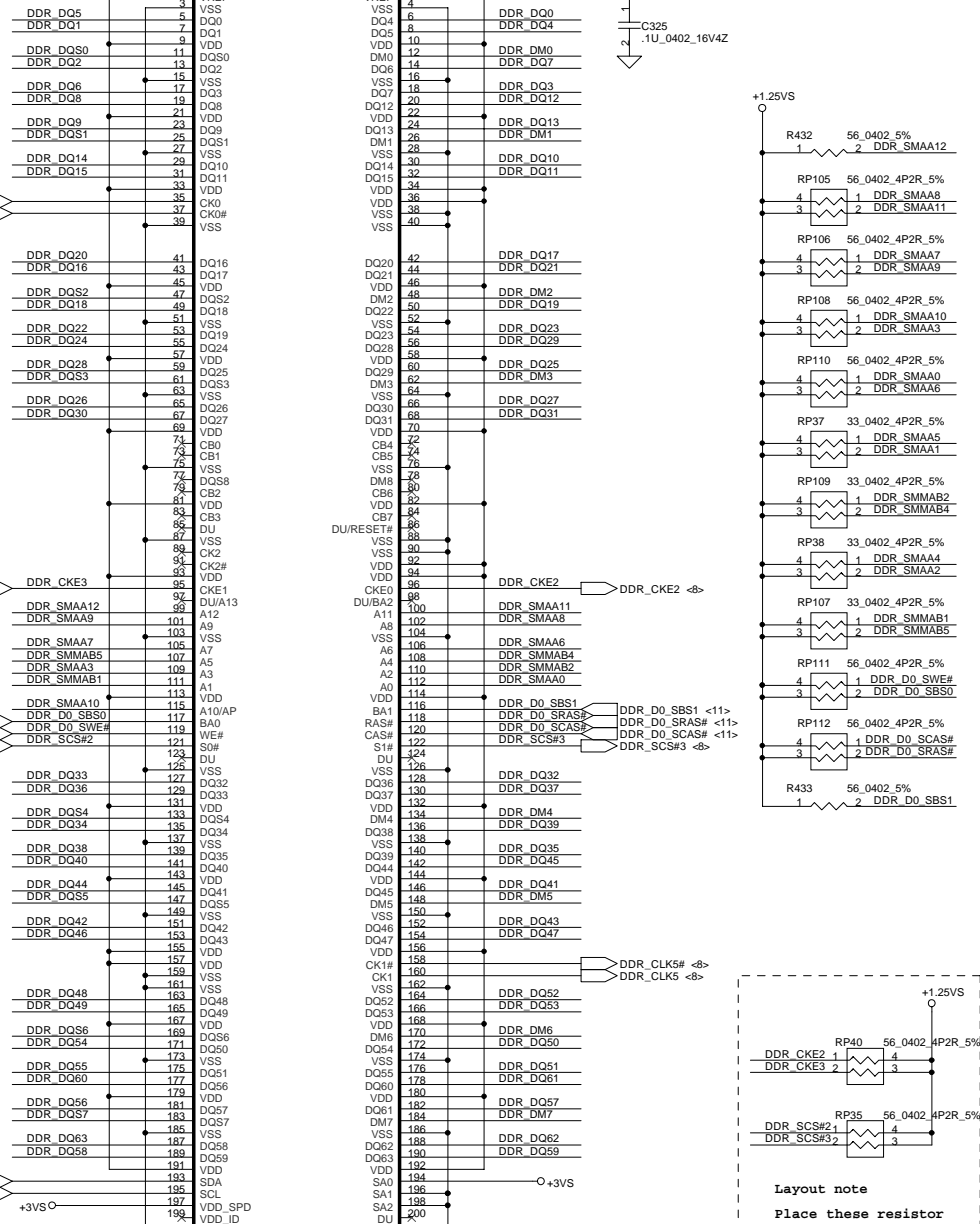
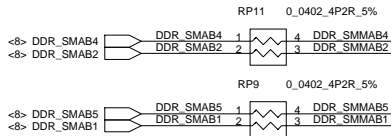
DIMM0  
Front side / H=5.2mm



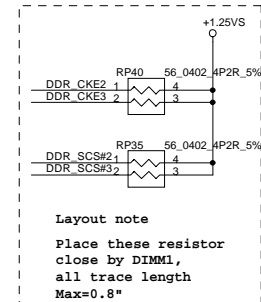
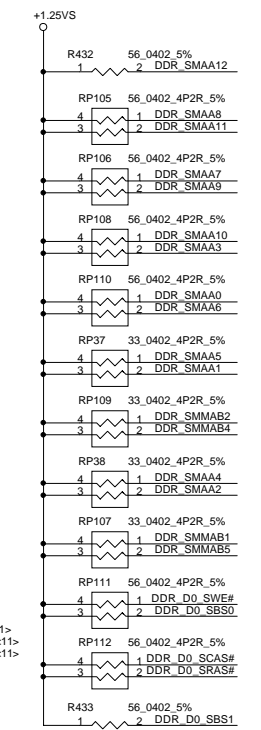
**Layout note**  
Place these resistor closely DIMM1, all trace length<=800umil



$\llcorner \gg$  DDR\_DQS[0..7]      $\llcorner \gg$  DDR\_DQS[0..7] <11>  
 $\llcorner \gg$  DDR\_DQ[0..63]      $\llcorner \gg$  DDR\_DQ[0..63] <11>  
 $\llcorner \gg$  DDR\_SMAA[0..12]      $\llcorner \gg$  DDR\_SMAA[0..12] <11>  
 $\llcorner \gg$  DDR\_DM[0..7]      $\llcorner \gg$  DDR\_DM[0..7] <11>



**DIMM1**  
Back side / H=9.2mm



**Layout note**  
Place these resistor close by DIMM1, all trace length Max=0.8"

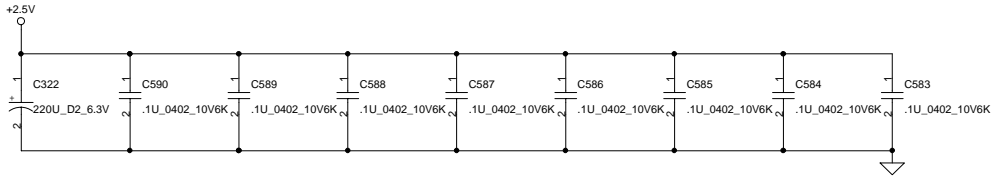
**Compal Electronics, Inc.**

Title: **SCHEMATIC, M/B LA-1591**

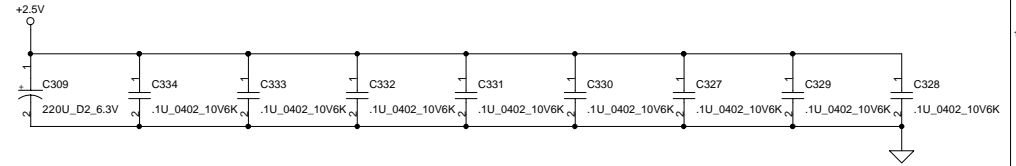
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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

Size	Document Number	Rev
	<b>401235</b>	<b>2B</b>
Date:	日期: 五月 16, 2003	Sheet 12 of 47

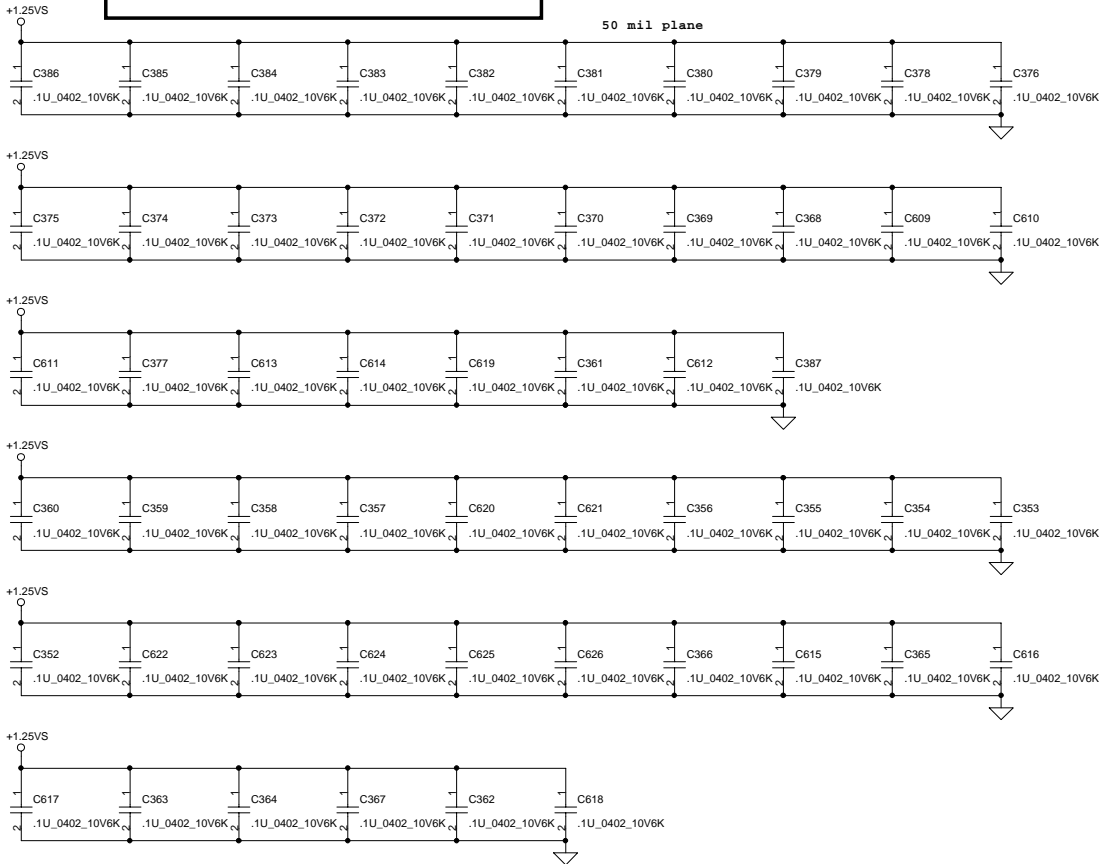
**Layout note :**  
Distribute as close as possible to DDR-SODIMM0.



**Layout note :**  
Distribute as close as possible to DDR-SODIMM1.



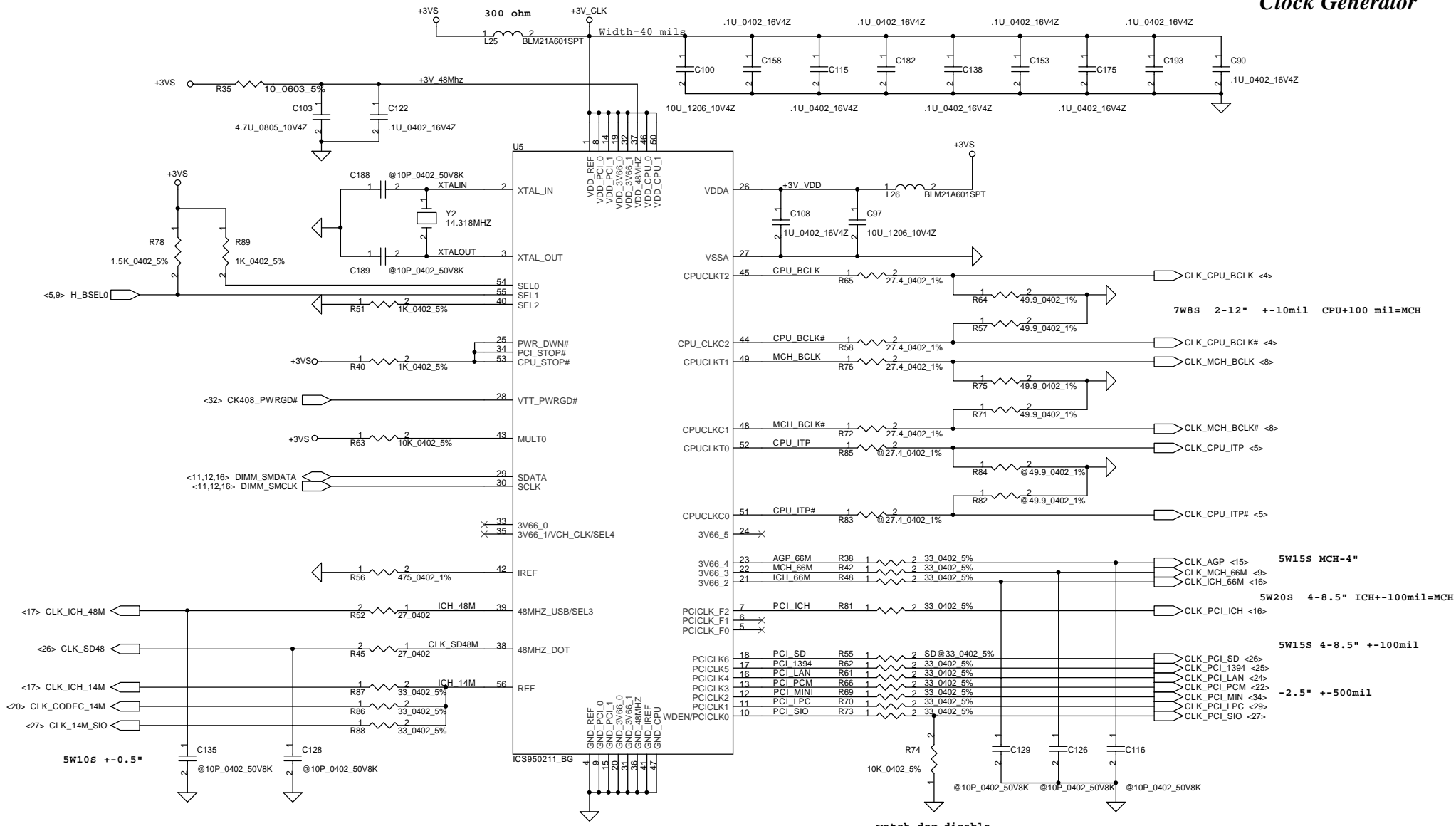
**Layout note :**  
Place one cap close to every 2 pull up resistors termination to +1.25VS



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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

<b>Compal Electronics, Inc.</b>		
Title		
<b>SCHEMATIC, M/B LA-1591</b>		
Size	Document Number	Rev
	<b>401235</b>	<b>2B</b>
Date:	星期五, 五月 16, 2003	Sheet 13 of 47

# Clock Generator



**CPU Frequency Select Table**

SEL[2:0]	CK-408 Speed
001	100 MHZ
011	133 MHZ

ground plane inside the part pads  
one power plane inside the part pads

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

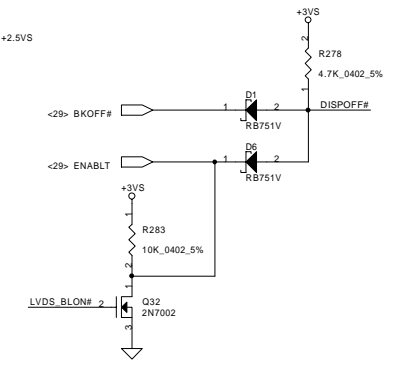
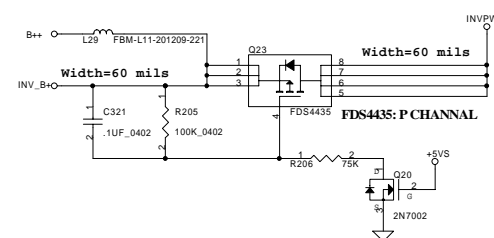
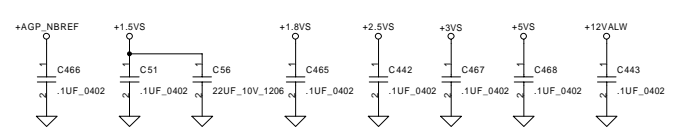
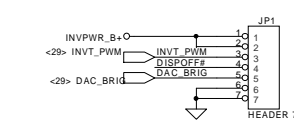
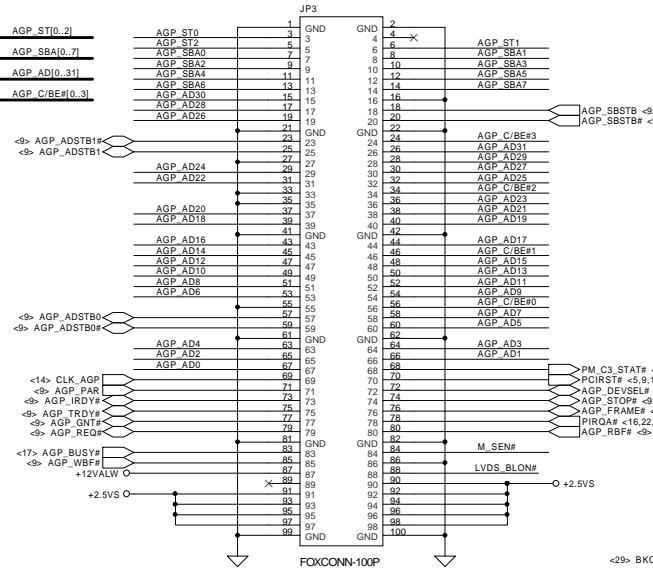
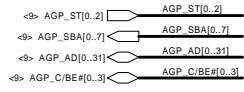
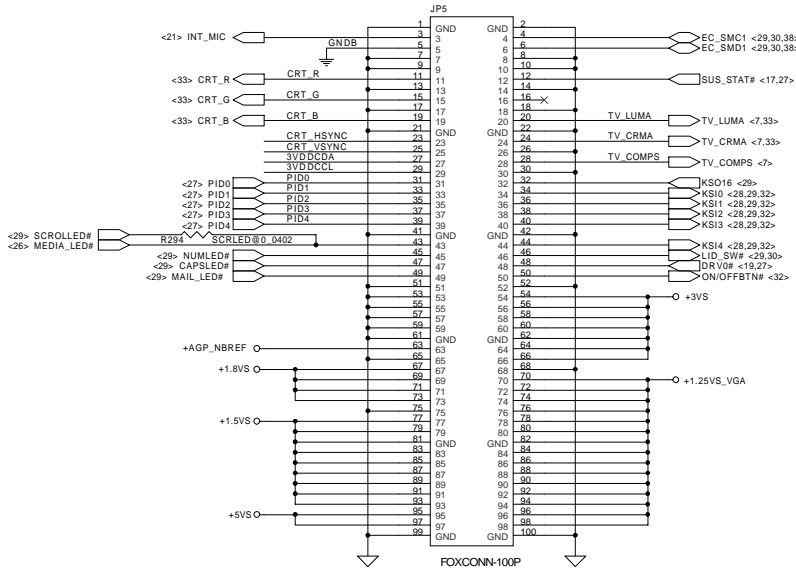
**Compal Electronics, Inc.**

Title: **SCHEMATIC, M/BLA-1591**

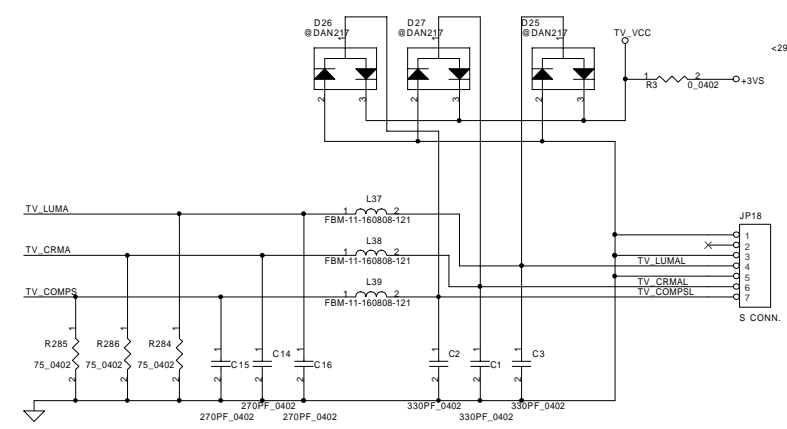
Size: Document Number **401235** Rev: 28

Date: ~P期五, 五月 16, 2003 Sheet 14 of 47

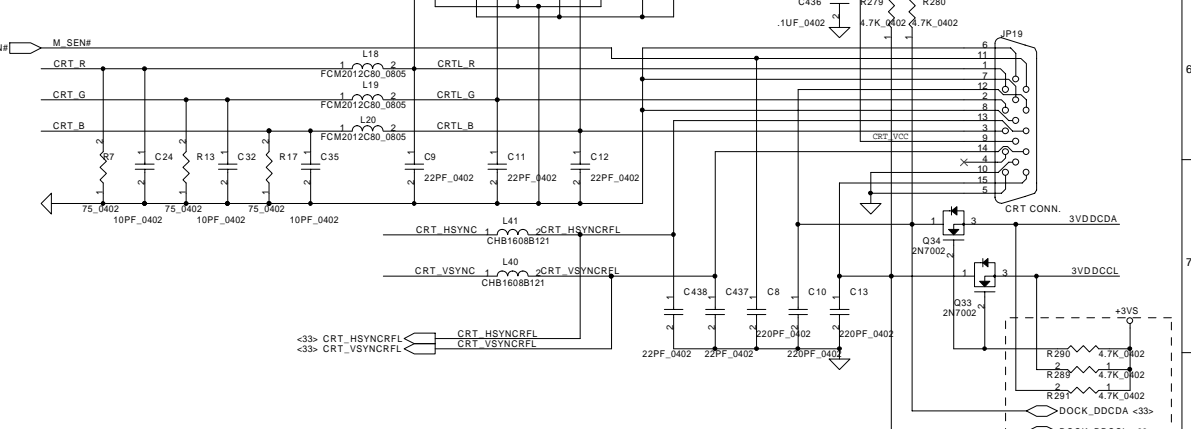
# AGP 100X2 Pin connector



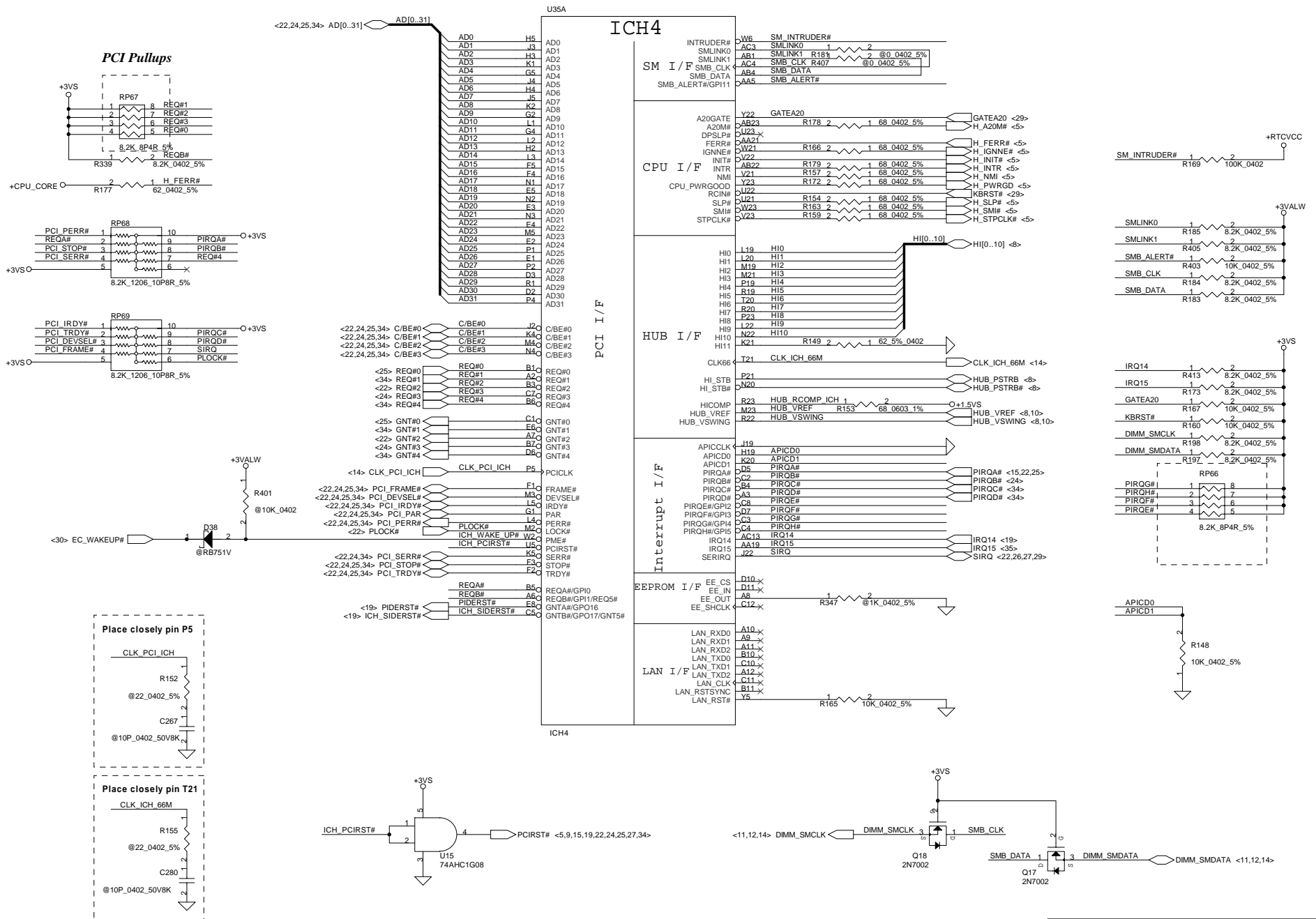
## TV\_OUT CONNECTOR



## CRT CONNECTOR



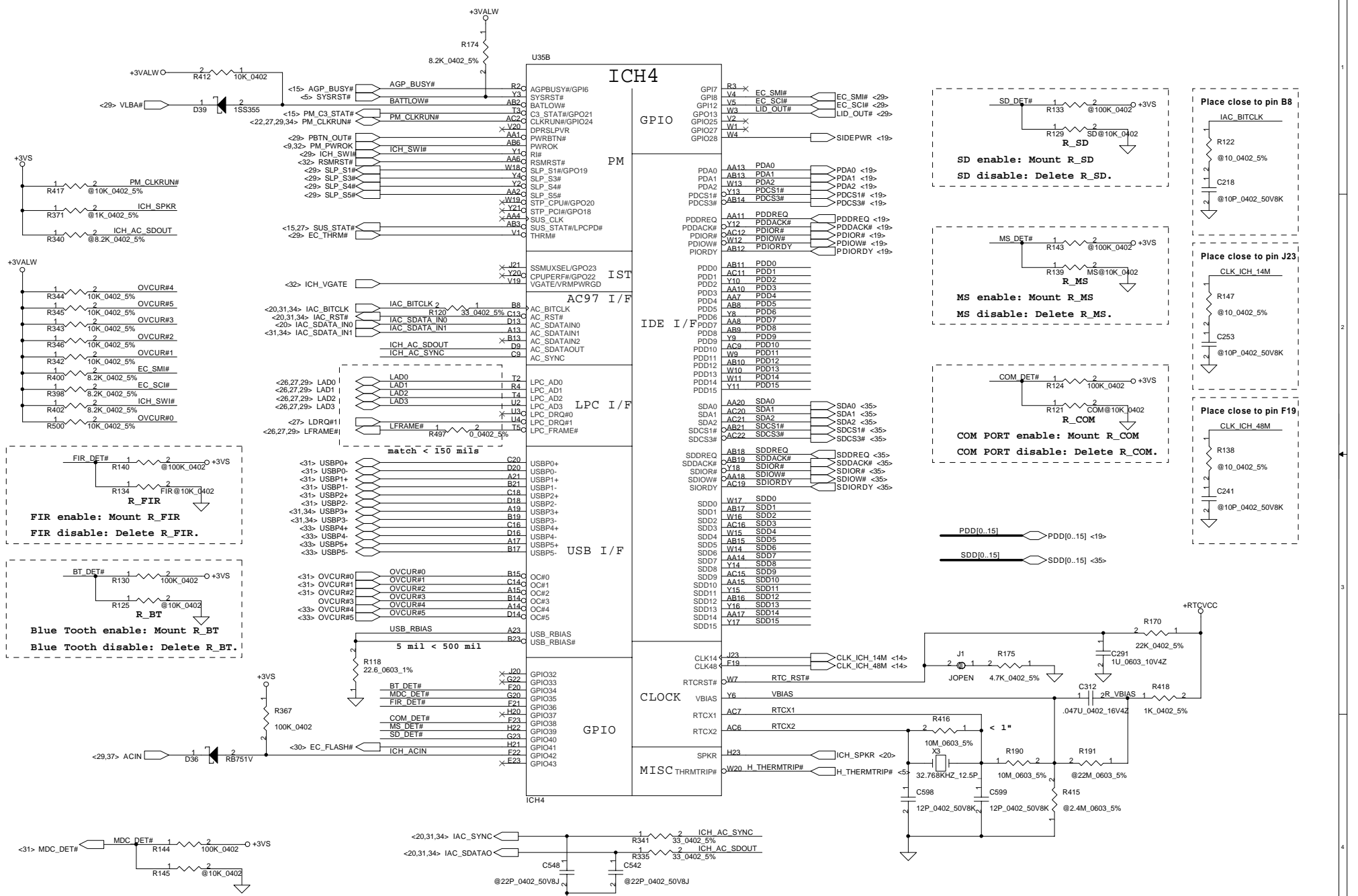
THIS SHEET OF ENGINEERING DRAWINGS IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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



<b>Compal Electronics, Inc.</b>		
Title <b>SCHEMATIC, M/BLA-1591</b>		
Size	Document Number <b>401235</b>	Rev <b>2B</b>
Date	星期五, 五月 16, 2003	Sheet 16 of 47

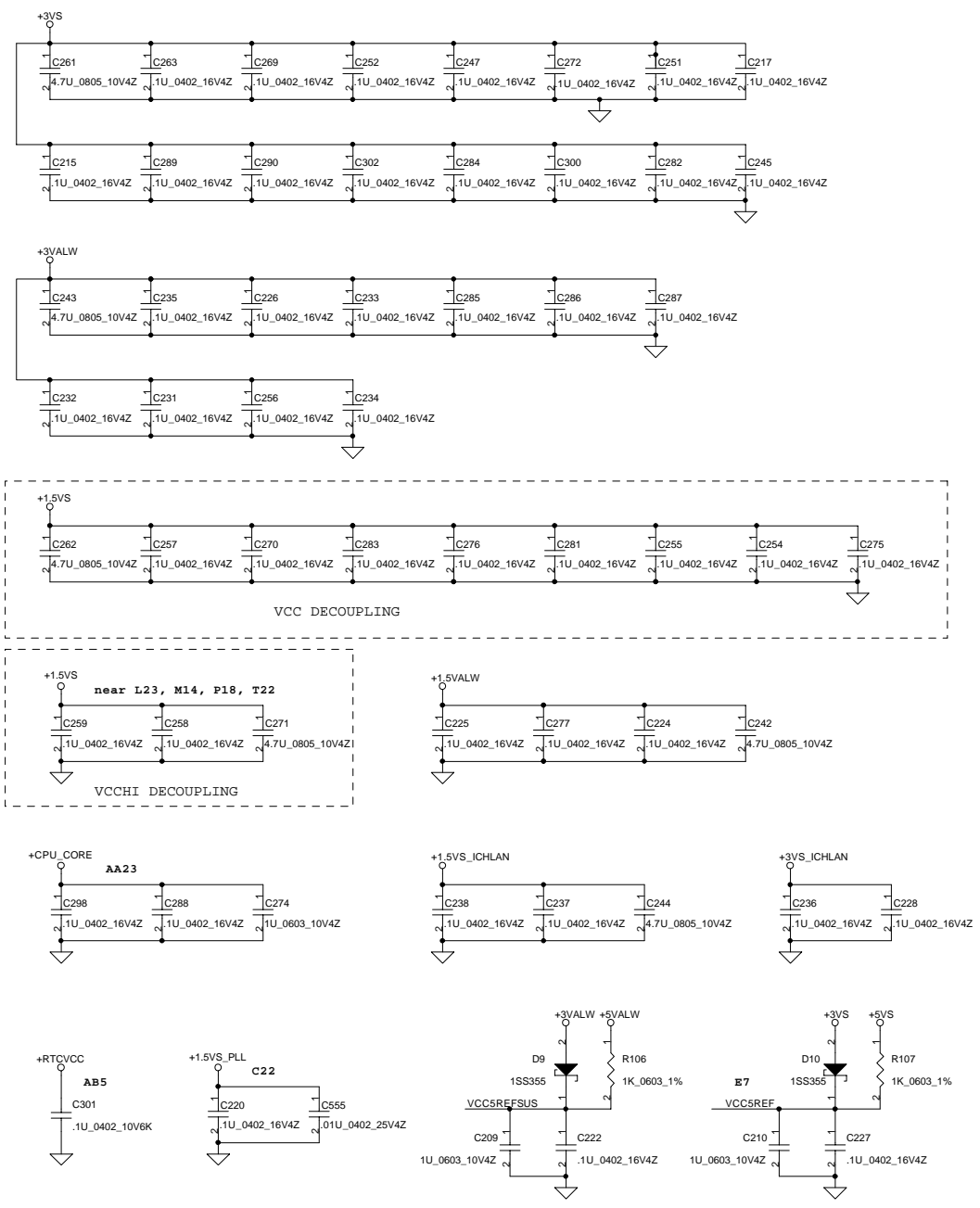
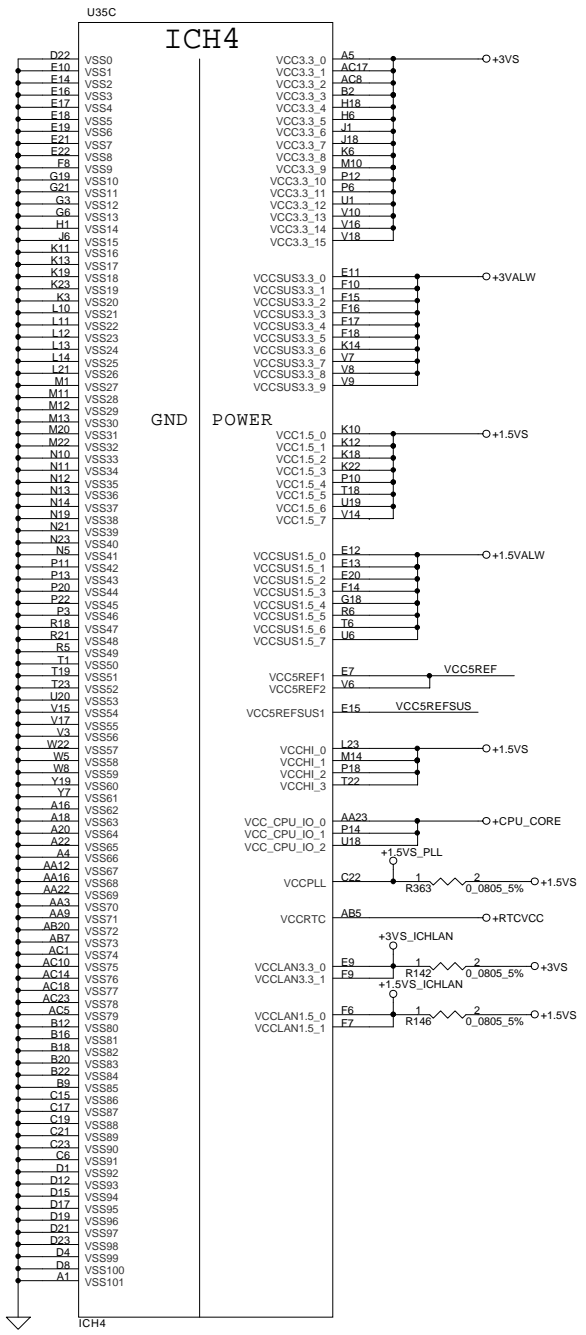
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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





Compal Electronics, Inc.		
Title		
SCHEMATIC, M/B LA-1591		
Size	Document Number	Rev
	401235	2B
Date:	星期五, 五月 16, 2003	Sheet 17 of 47

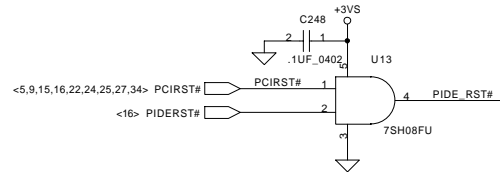
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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



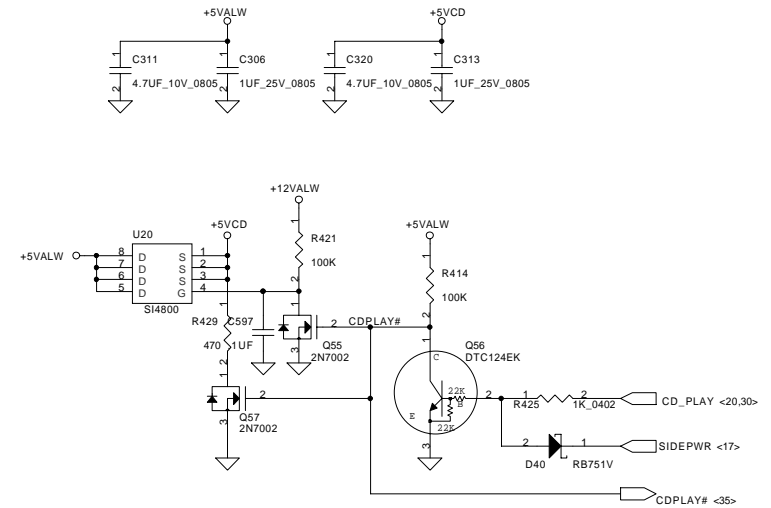
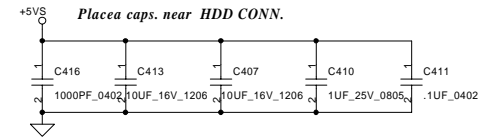
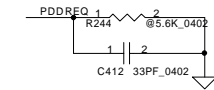
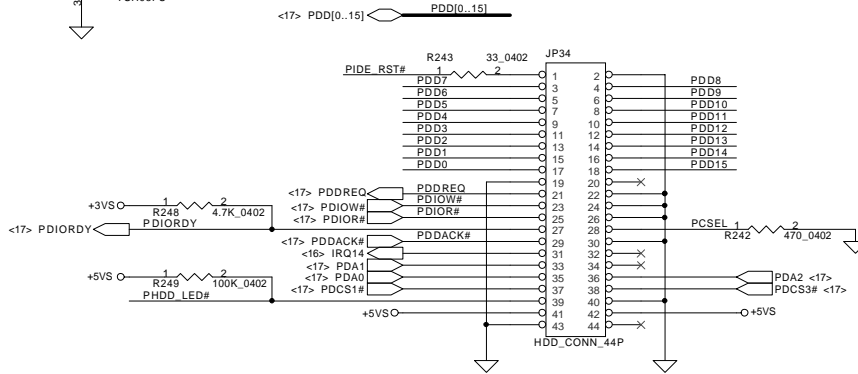
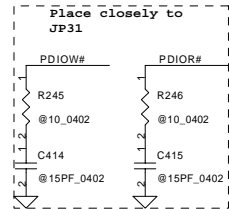
A4 A1 H1 T1 AC10 AC18 A22 AC5 K23 C23 A16 AC1 A16 T23 N23

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

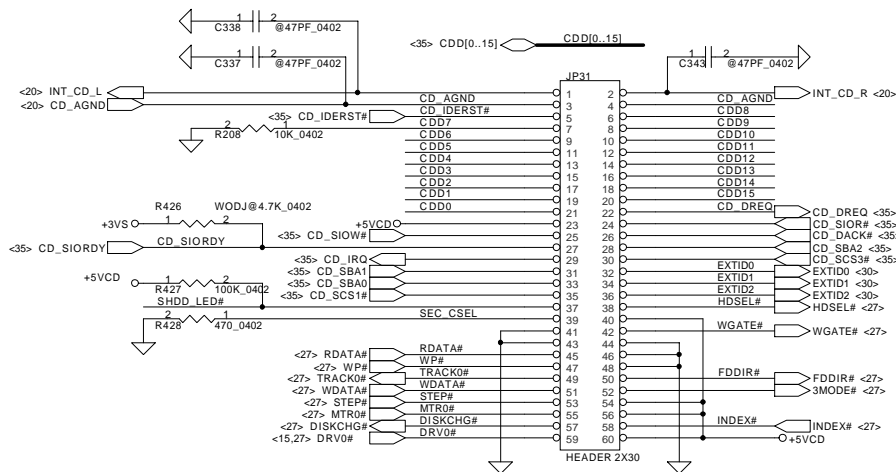
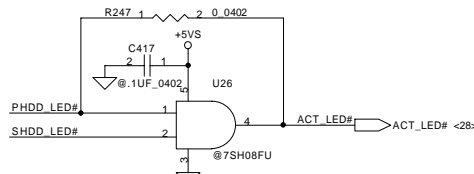
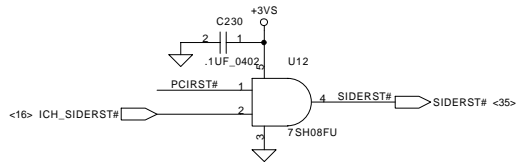
<b>Compal Electronics, Inc.</b>		
Title <b>SCHEMATIC, M/B LA-1591</b>		
Size	Document Number <b>401235</b>	Rev <b>2B</b>
Date: 星期五, 五月 16, 2003	Sheet 18	of 47



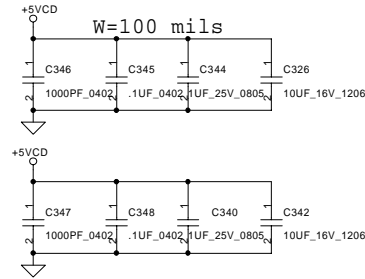
### HDD Connector



### CD-ROM Connector



### Capacitor placement near CDROM CONN.



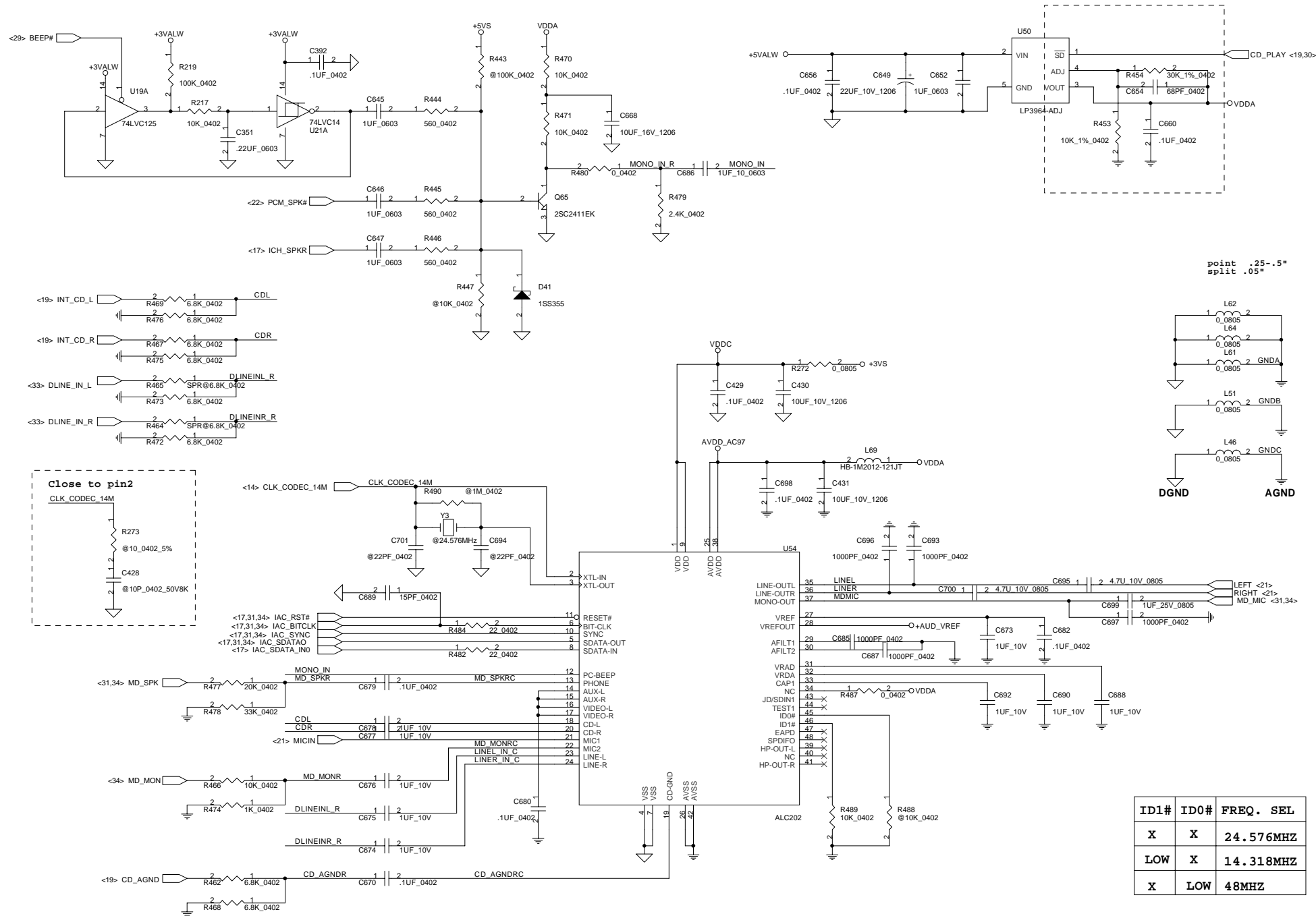
### Extend Module ID list

DEVICE	EXTID2	EXTID1	EXTID0
FDD	0	0	0
CD-ROM	0	0	1
LS-120	0	1	0
2'nd HDD	0	1	1
NONE	1	1	1

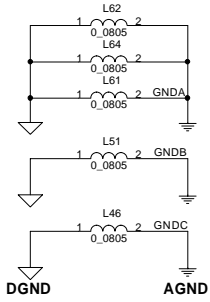
### Compal Electronics, Inc.

Title			SCHEMATIC, MBLA-1591		
Size	Document Number		Rev		2B
Customer	401235		Date		2003.05.16
Date	2003.05.16	Sheet	19	of	47

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.



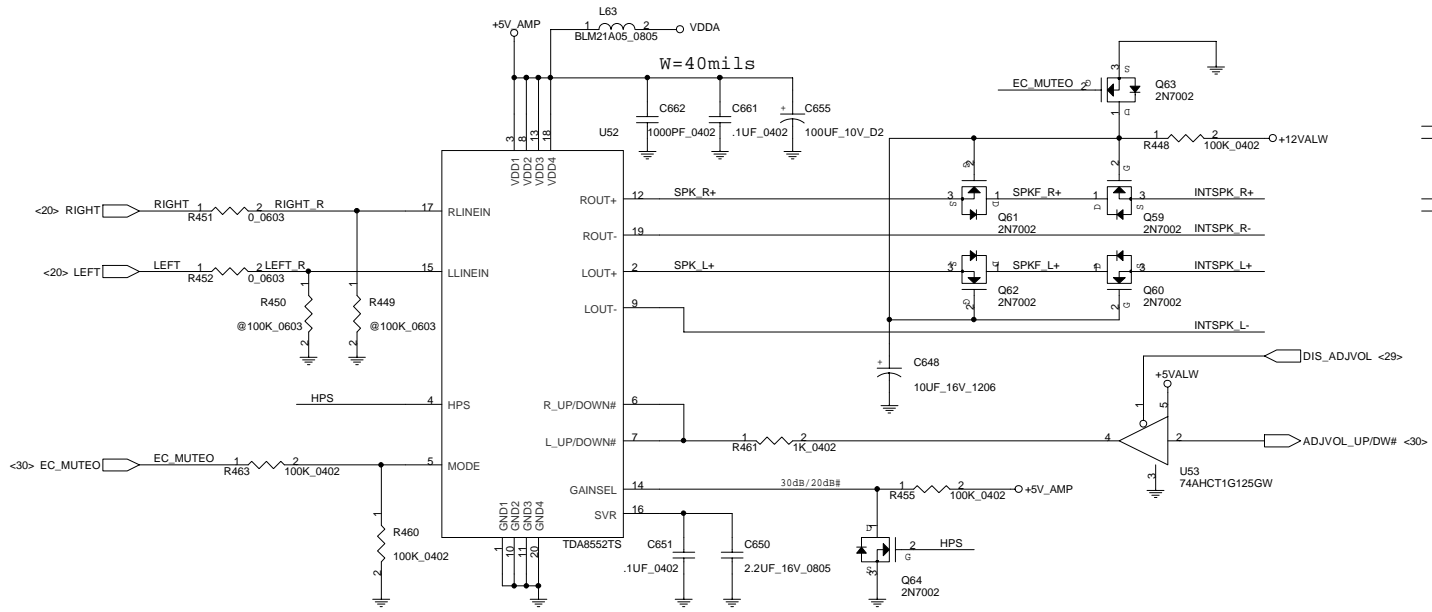
point .25-.5"  
split .05"



ID1#	ID0#	FREQ. SEL
X	X	24.576MHZ
LOW	X	14.318MHZ
X	LOW	48MHZ

**Compal Electronics, Inc.**  
 Title: SCHEMATIC, MB LA-1591  
 Size: Document Number 401235  
 Date: 五月 16, 2003 Sheet 20 of 47  
 Rev 2B

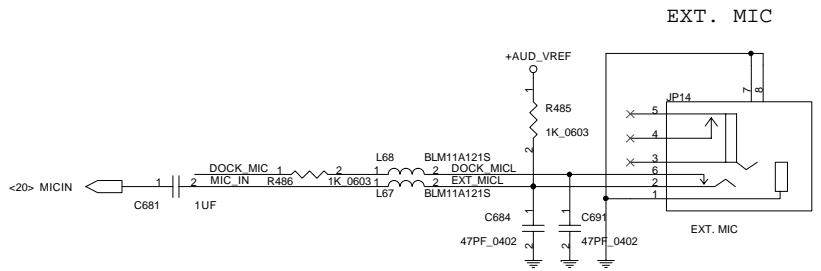
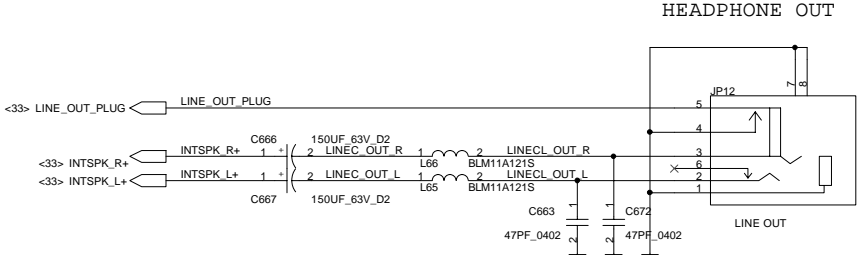
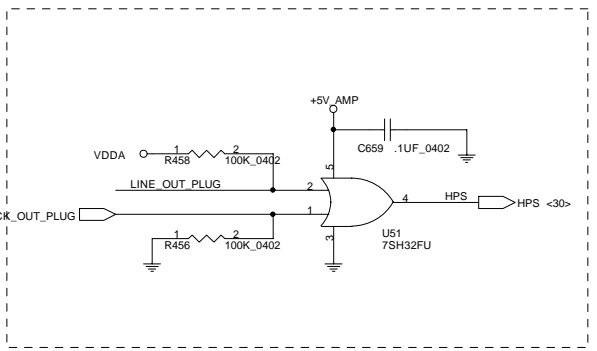
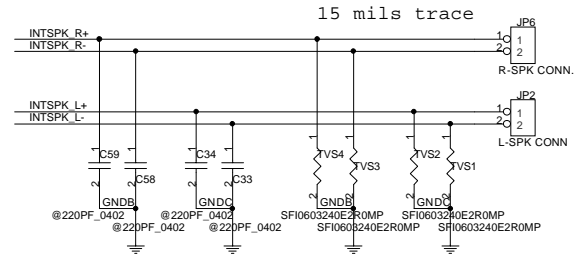
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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



**Layout note:**

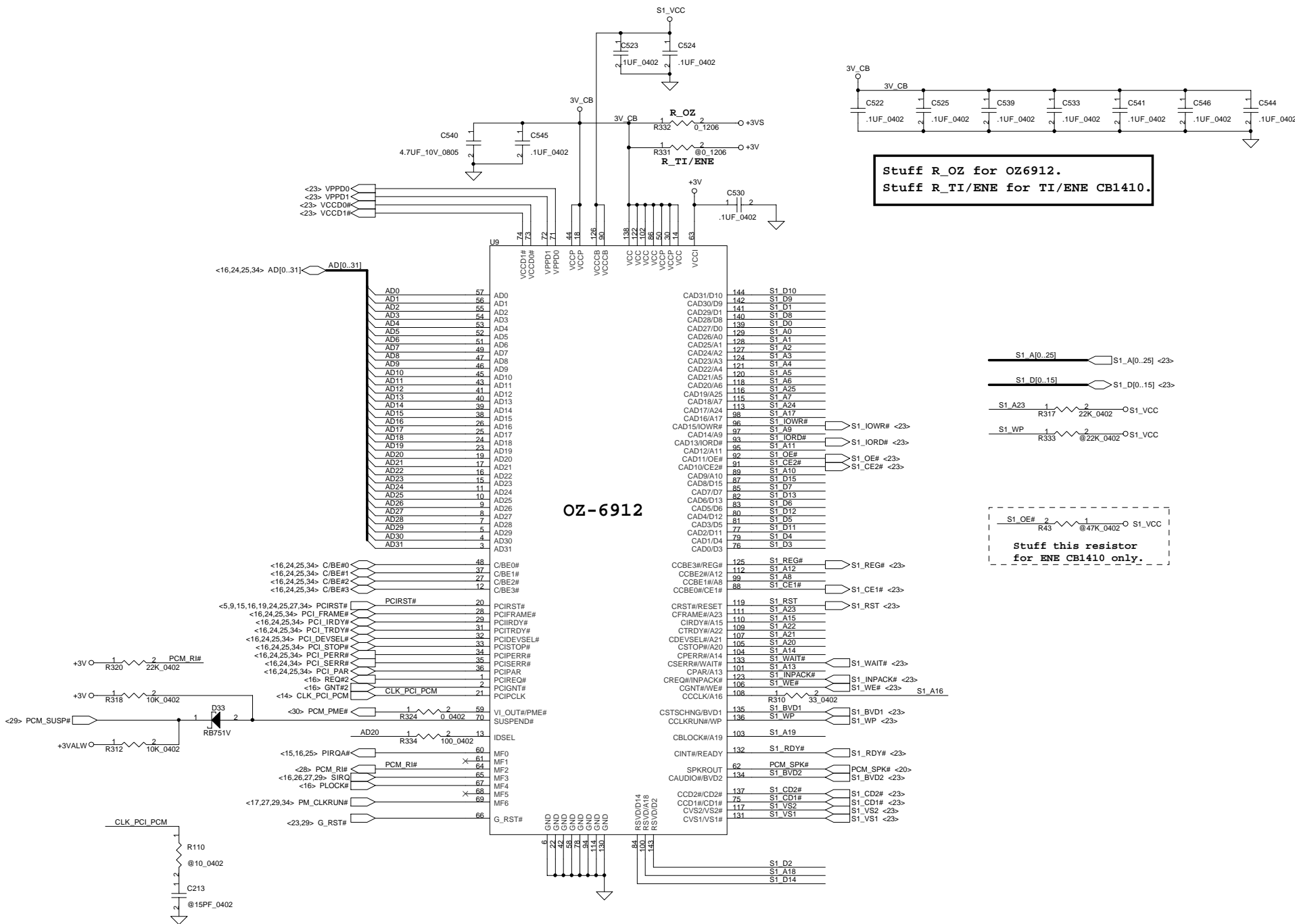
Trace width=15 mils.

- 1.SPK\_R+,SPK\_L+,SPKF\_R+,SPKF\_L+
- 2.INTSPK\_R+/-,INTSPK\_L+/-
- 3.LINEOUT\_L,LINEOUT\_R



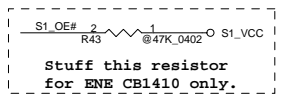
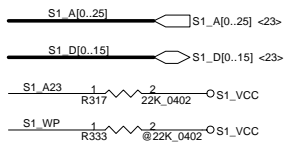
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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

<b>Compal Electronics, Inc.</b>		
Title	<b>SCHEMATIC, MB LA-1591</b>	
Size	Document Number	Rev
Custom	<b>401235</b>	2B
Date:	星期五, 五月 16, 2003	Sheet 21 of 47



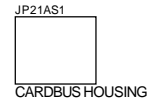
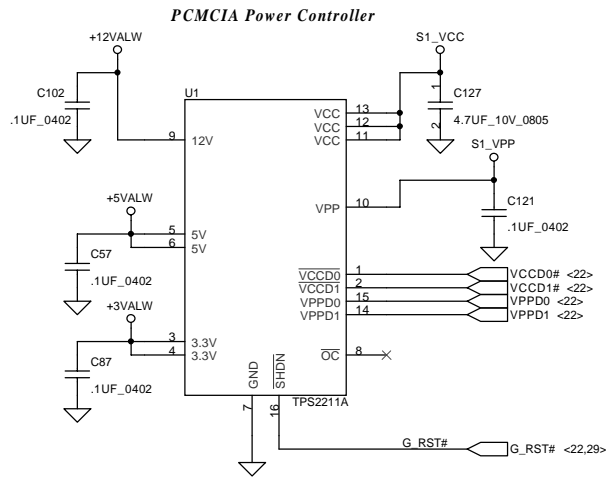
**OZ-6912**

**Stuff R\_OZ for OZ6912.  
Stuff R\_TI/ENE for TI/ENE CB1410.**

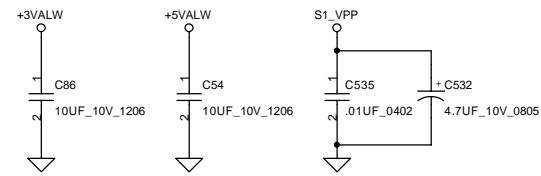
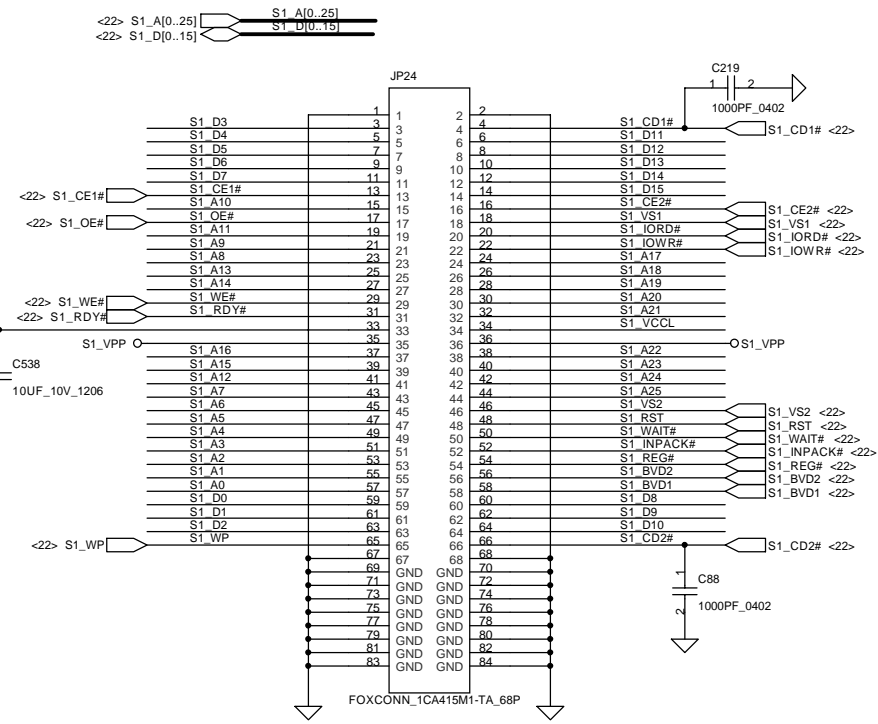


<b>Compal Electronics, Inc.</b>		
Title	SCHEMATIC, MB LA-1591	
Size	Document Number	Rev
	401235	2B
Custom		
Date:	星期五, 五月 16, 2003	Sheet 22 of 47

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINED HEREIN MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

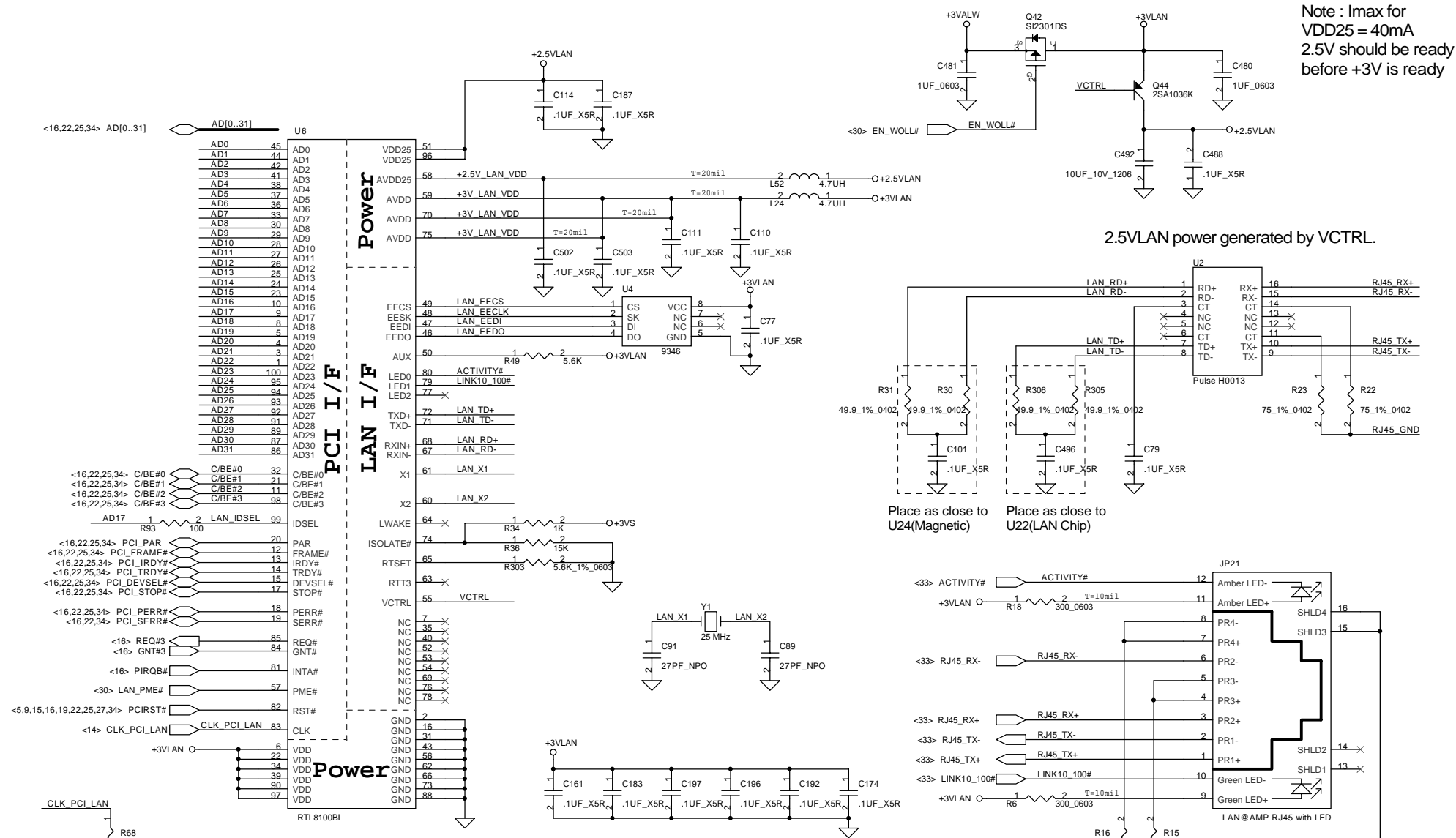


### CardBus Socket



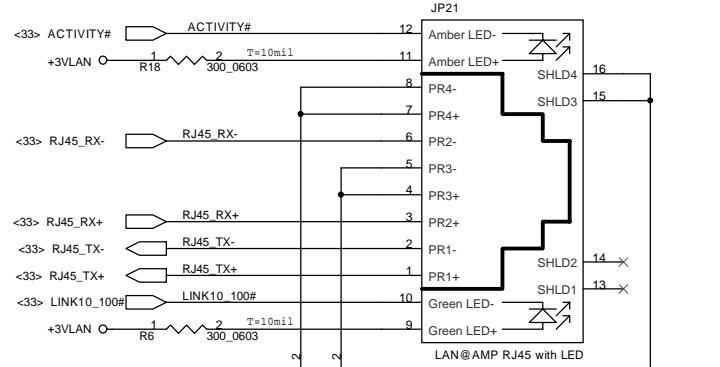
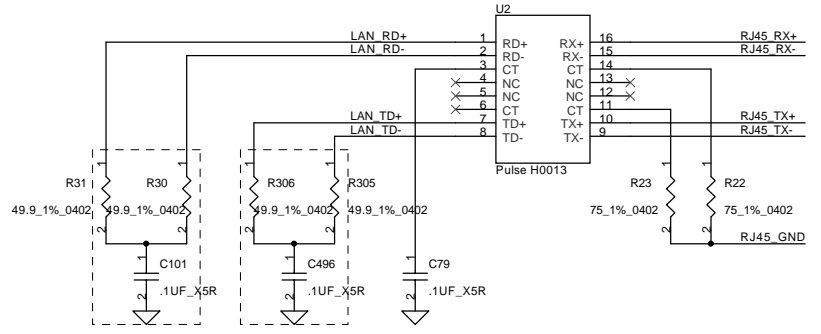
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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

<b>Compal Electronics, Inc.</b>		
Title	SCHEMATIC, M/BLA-1591	
Size	Document Number	Rev
	401235	2B
Custom		
Date	-P期五, 五月 16, 2003	Sheet 23 of 47



Note : I<sub>max</sub> for VDD25 = 40mA  
2.5V should be ready before +3V is ready

2.5VLAN power generated by VCTRL.



Layout Recommend :

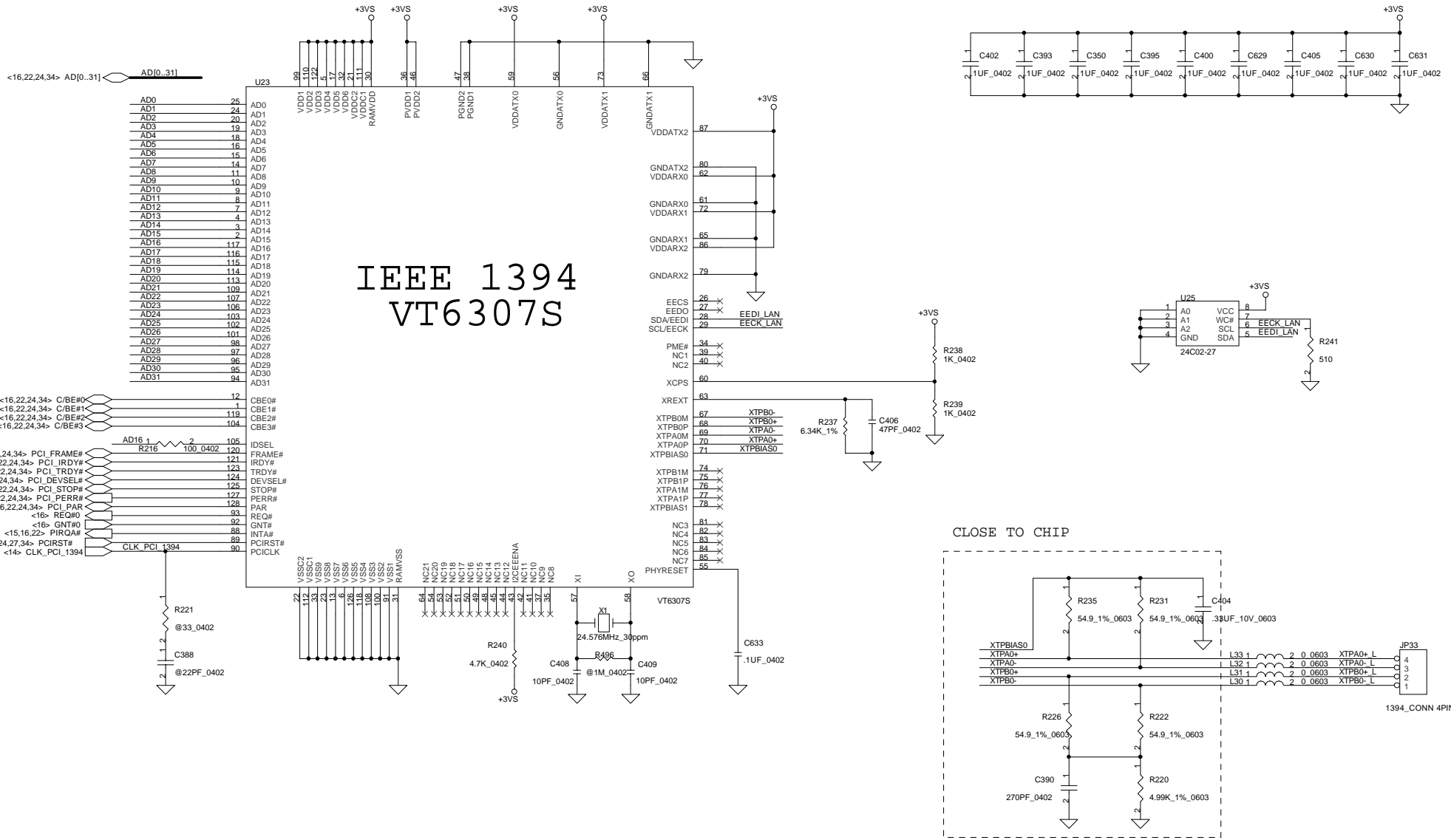
1. LAN\_RD+, LAN\_RD- should be equal length as possible
2. LAN\_TD+, LAN\_TD- should be equal length as possible
3. The Maximum trace length between LAN chip(U22) and Magnetic(U24) is 12cm(4.7")
4. The distance between RJ45(Conn.) and Magnetic(U24) should be as short as possible

Termination plane should be copied to chassis ground and also depends on safety concern

<b>Compal Electronics, Inc.</b>		
<b>SCHEMATIC, M/B LA-1591</b>		
Size B	Document Number <b>401235</b>	Rev 28
Date: 二期五, 五月 16, 2003	Sheet 24	of 47

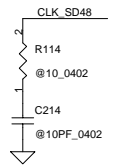
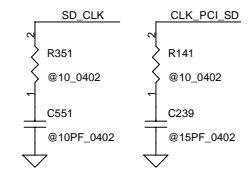
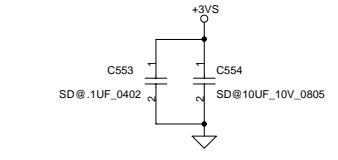
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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





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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

<b>Compal Electronics, Inc.</b>		
Title <b>SCHEMATIC, M/B LA-1591</b>		
Size	Document Number <b>401235</b>	Rev <b>2B</b>
Date	星期五, 五月 16, 2003	Sheet 25 of 47



<17,27,29> LAD[0..3]

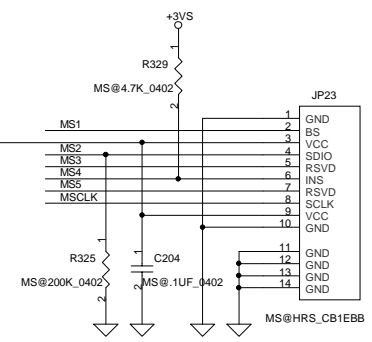
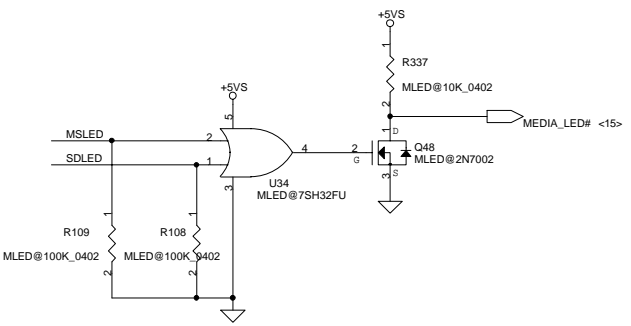
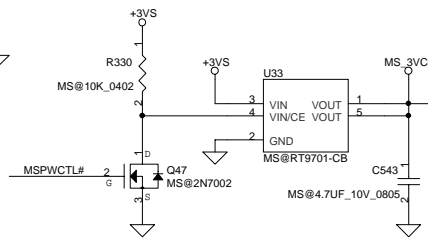
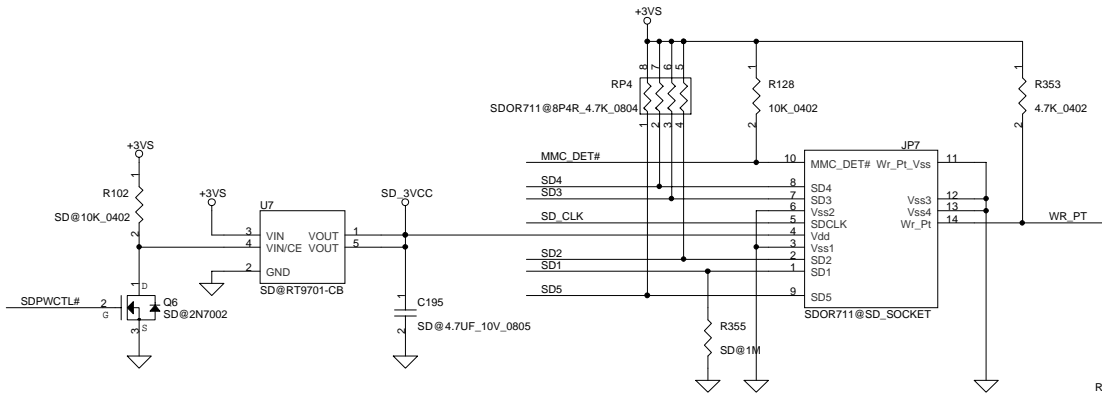
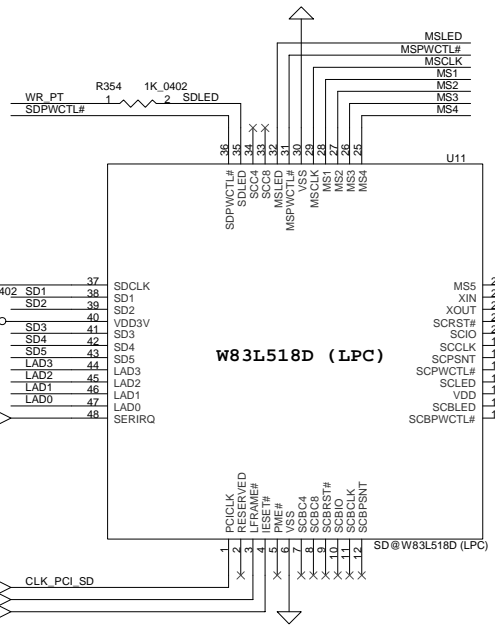
SD\_CLK 1 2 R349 10\_0402 SD1 37 SDCLK SD1 38 SD2 39 SD2 40 +3VS O SD3 41 SD4 42 SD5 43 LAD3 44 LAD2 45 LAD1 46 LAD0 47 48

<16,22,27,29> SIRQ

<14> CLK\_PCI\_SD

<17,27,29> LFRAME#

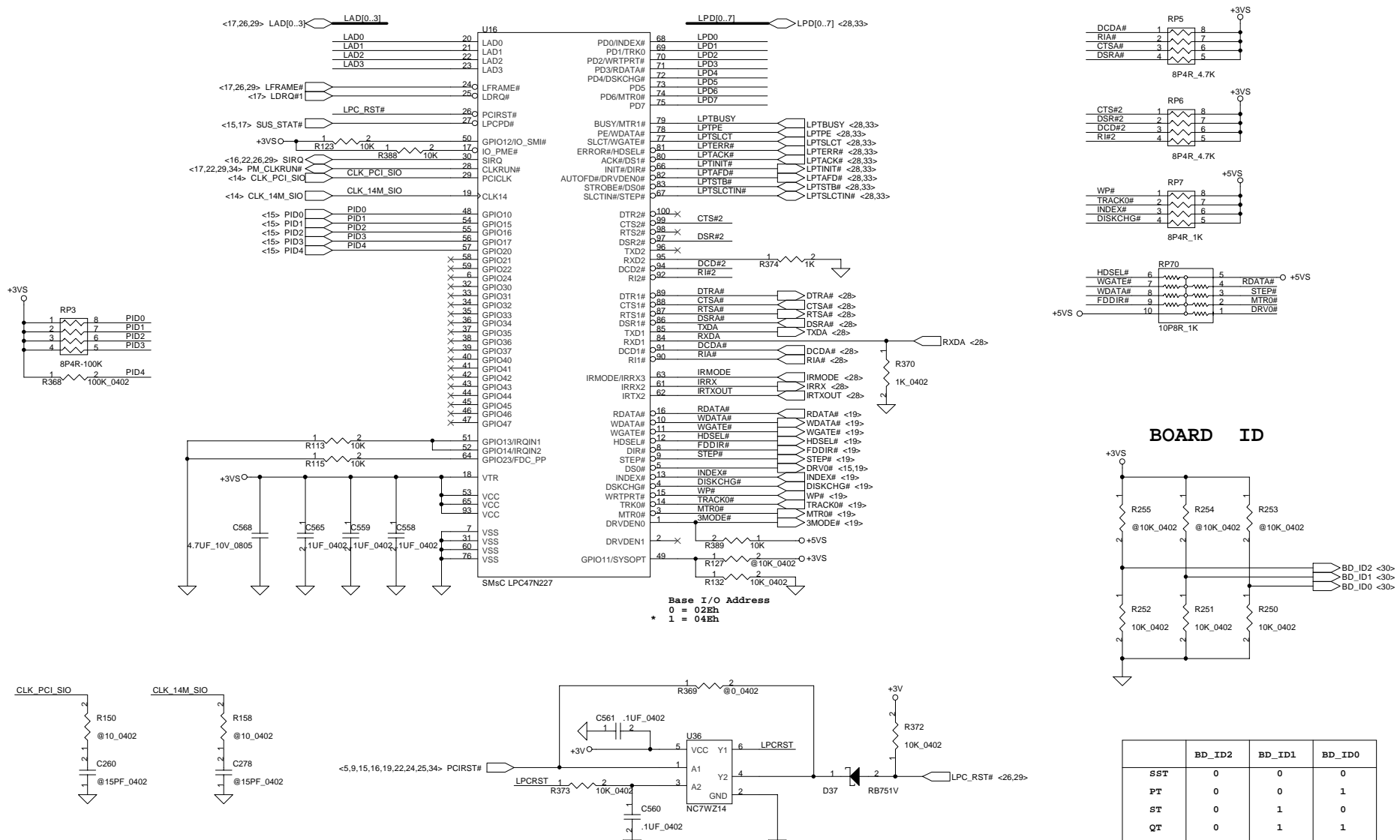
<27,29> LPC\_RST#



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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

<b>Compal Electronics, Inc.</b>		
Title <b>SCHEMATIC, M/B LA-1591</b>		
Size	Document Number	Rev
401235	401235	2B
Custom	Date: 星期五, 五月 16, 2003	Sheet 26 of 47

# SUPER I/O SMsC FDC47N227



	BD_ID2	BD_ID1	BD_ID0
SST	0	0	0
PT	0	0	1
ST	0	1	0
QT	0	1	1

**Compal Electronics, Inc.**

Title: SCHEMATIC, MB LA-1591

Size: Document Number 401235

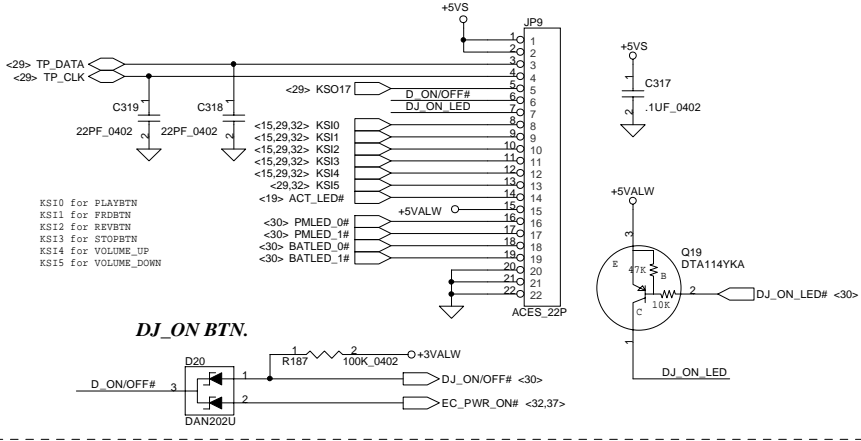
Rev: 28

Custom: 日期: 五月 16, 2003

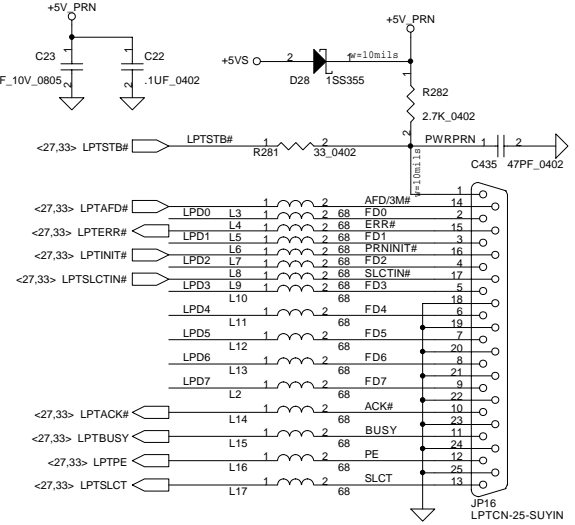
Date: Sheet 27 of 47

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINED HEREIN MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

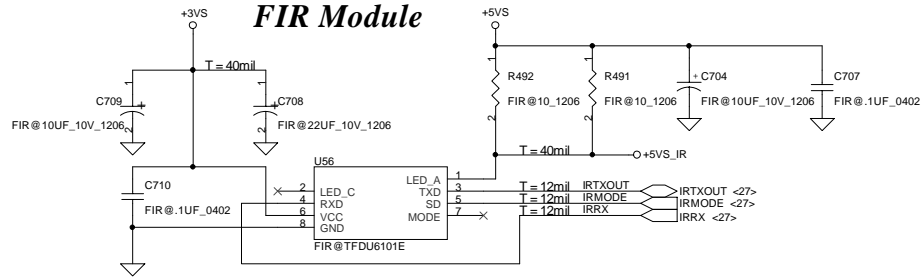
# Touch Pad & Status LED Conn.



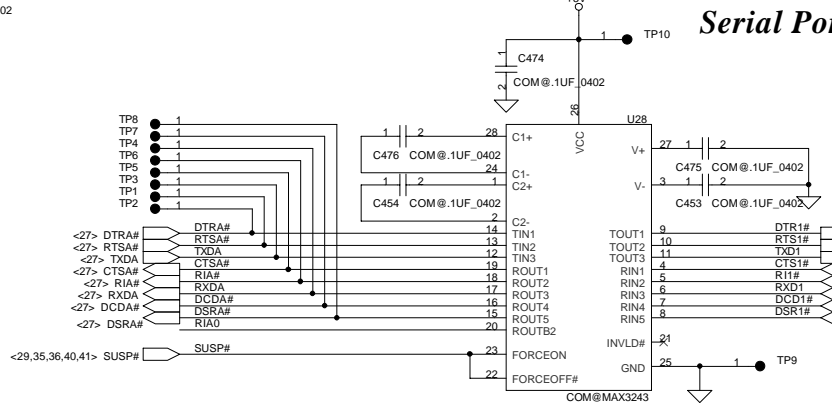
# Parallel Port



# FIR Module

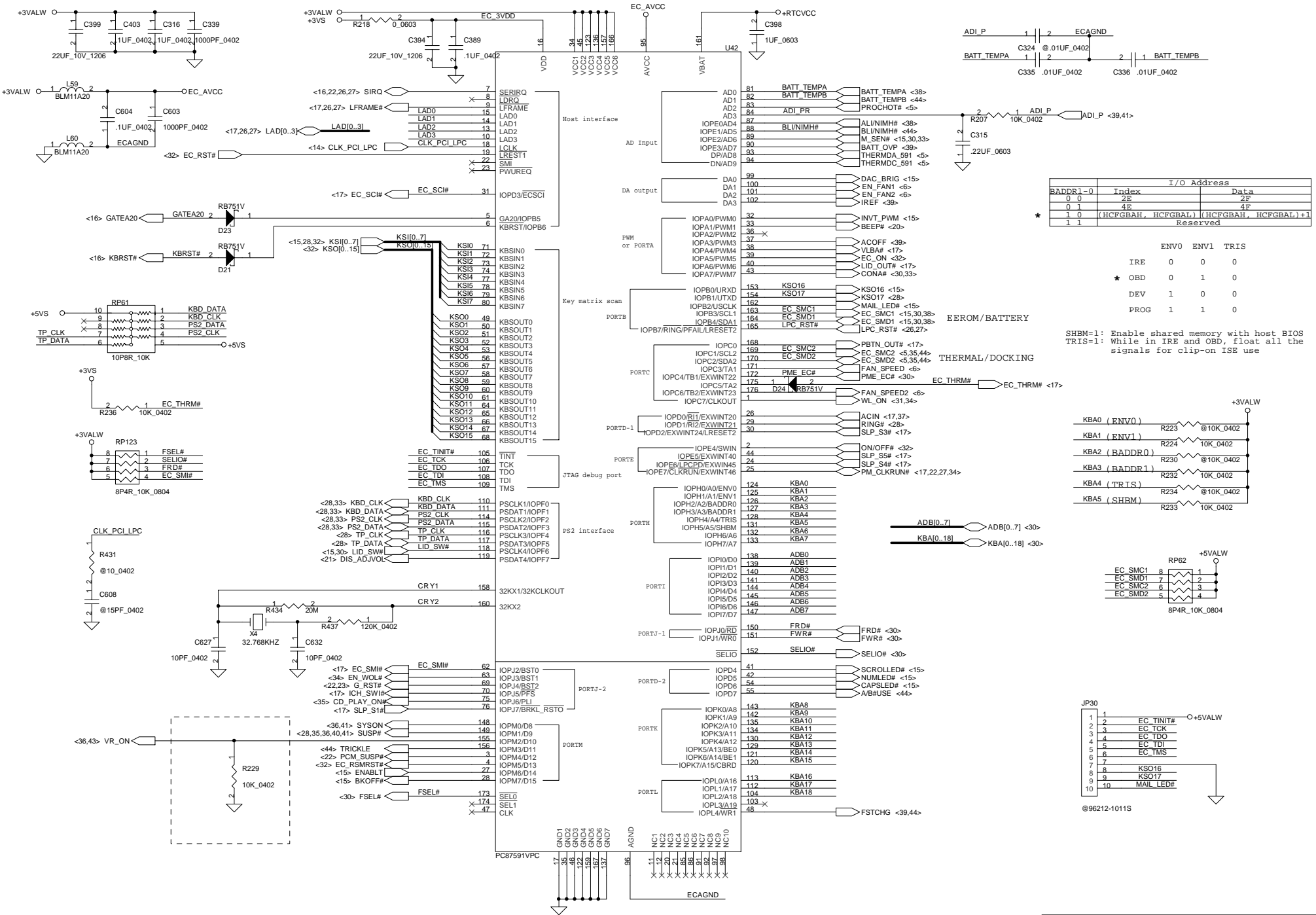


# Serial Port



<b>Compal Electronics, Inc.</b>		
Title	SCHEMATIC, MB LA-1591	
Size	Document Number	Rev
	401235	28
Custom		
Date:	星期五, 五月 16, 2003	Sheet 28 of 47

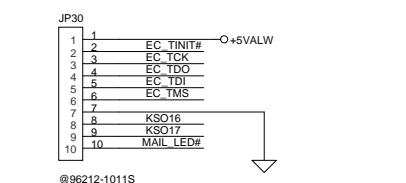
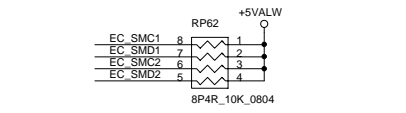
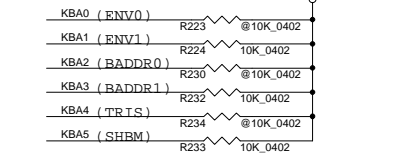
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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



I/O Address			
BADDR1-0	Index	Data	
0 0	2E	2F	
0 1	4E	4F	
1 0	(HCFGBAH, HCFGBAL)	(HCFGBAH, HCFGBAL)+1	
1 1	Reserved		

	ENV0	ENV1	TRIS
IRE	0	0	0
OBD	0	1	0
DEV	1	0	0
PROG	1	1	0

SHBM=1: Enable shared memory with host BIOS  
 TRIS=1: While in IRE and OBD, float all the signals for clip-on ISE use



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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

**Compal Electronics, Inc.**

Title: **SCHEMATIC, M/B LA-1591**

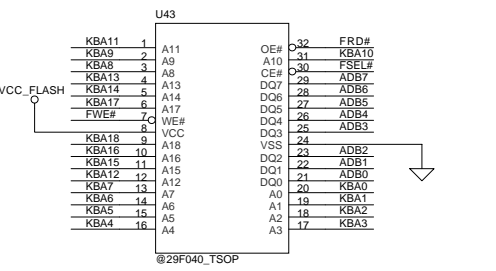
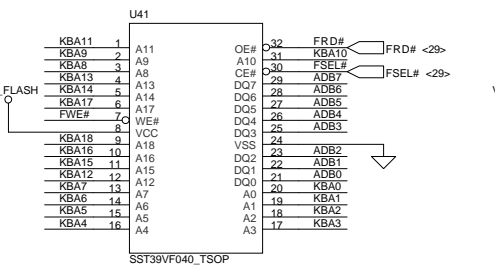
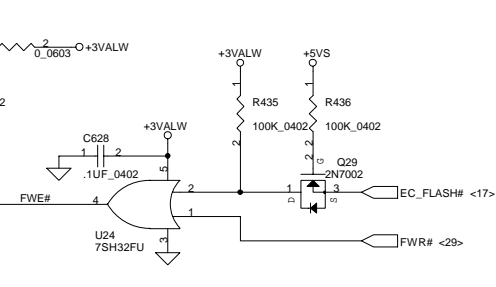
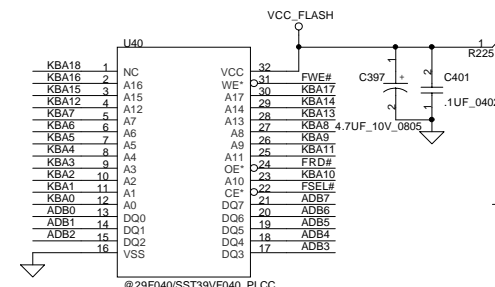
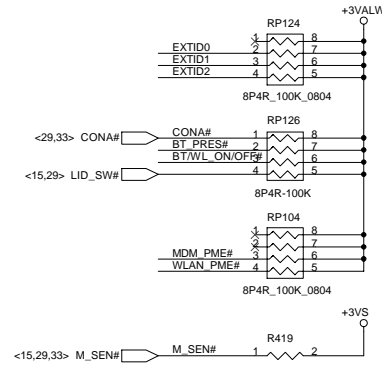
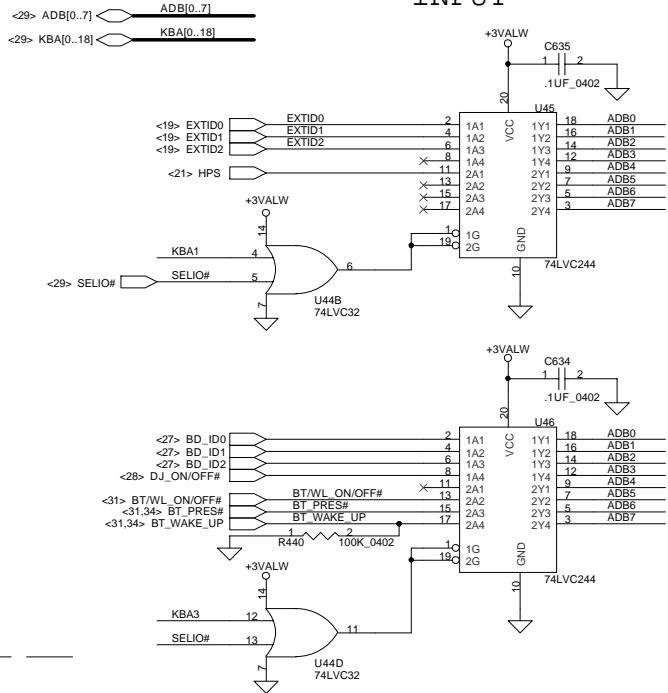
Size: Document Number  
**401235**

Customer: 日期五, 五月 16, 2003

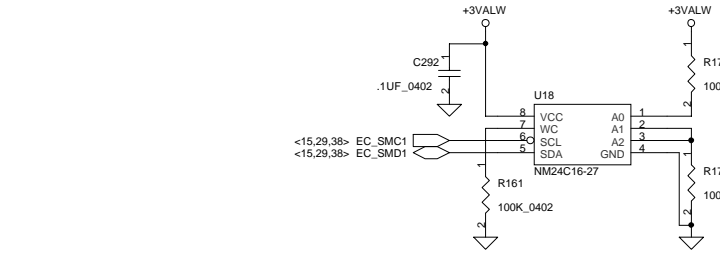
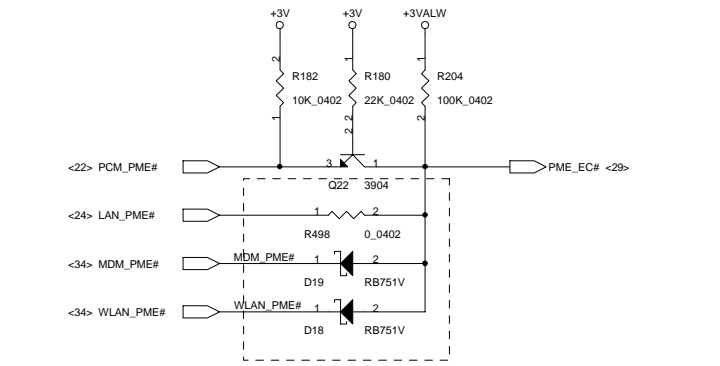
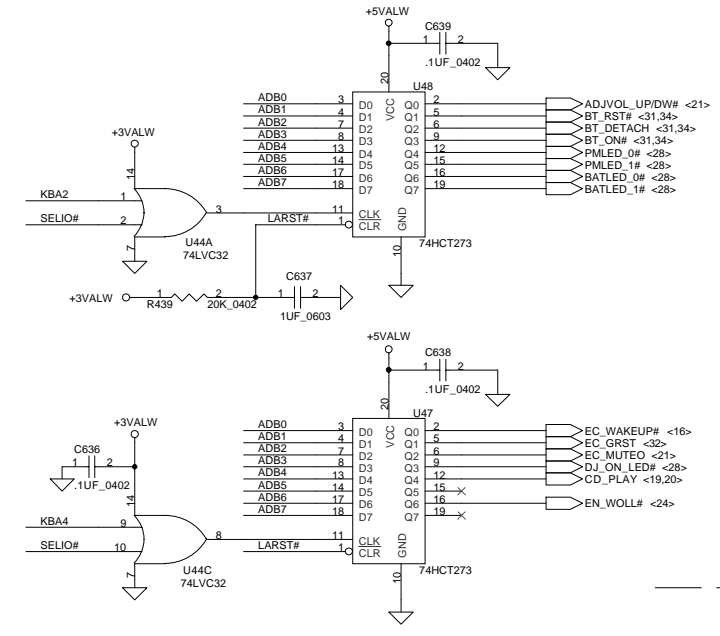
Rev: 2B

Sheet: 29 of 47

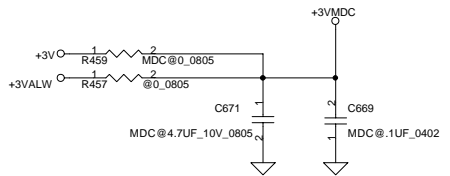
# INPUT



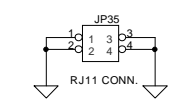
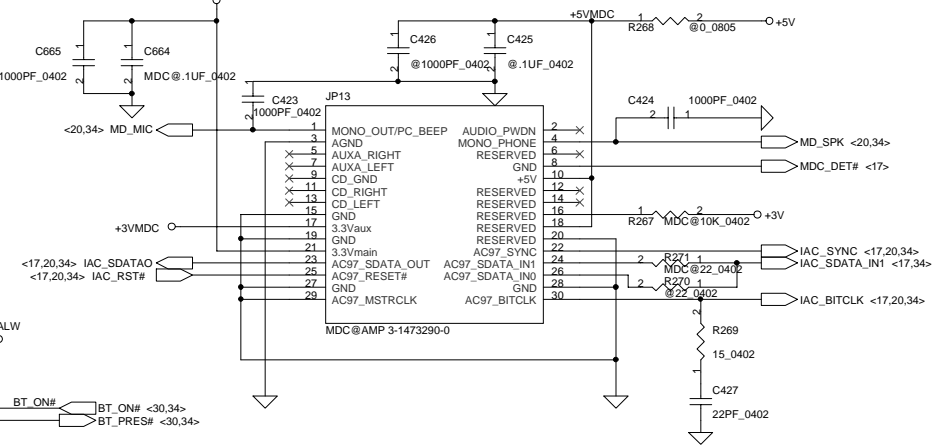
# OUTPUT



**MDC Note**  
 Pin 1 is NC for Pctel and connexant MDC modem  
 Pin 2 is NC for Pctel and connexant MDC modem

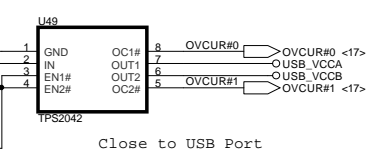
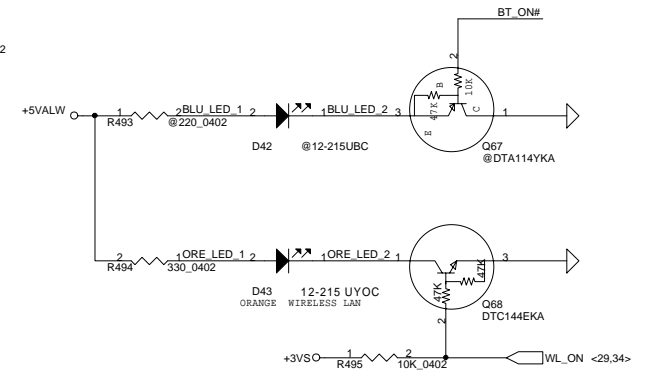
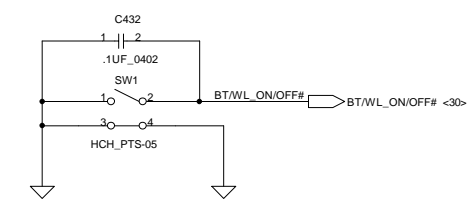
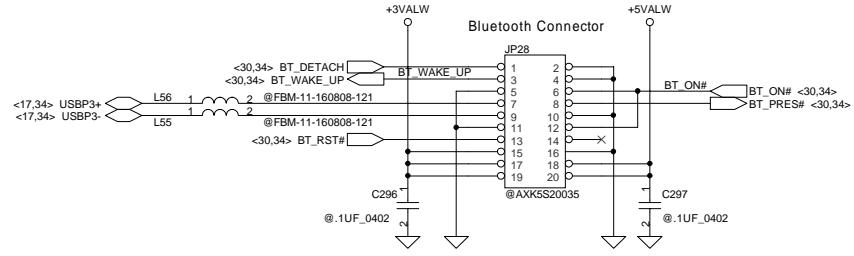


**MDC Conn.**

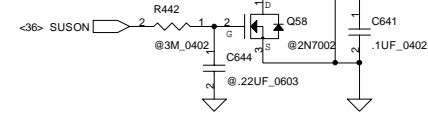


0: Have primary CODEC on mother board

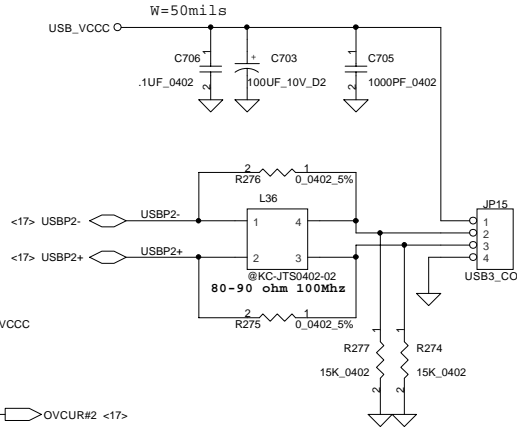
**BlueTooth Interface**



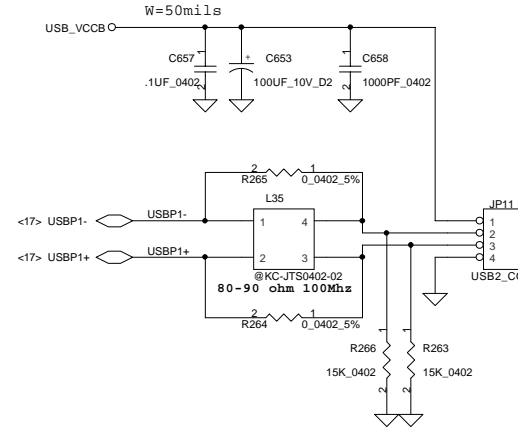
Close to USB Port



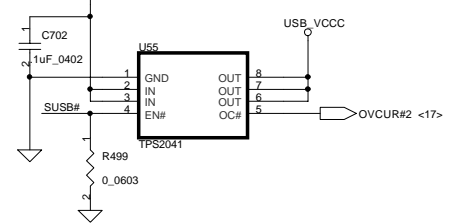
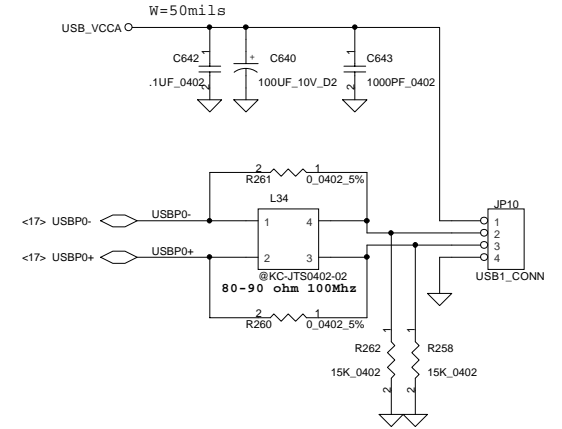
**USB CONNECTOR 3**



**USB CONNECTOR 2**



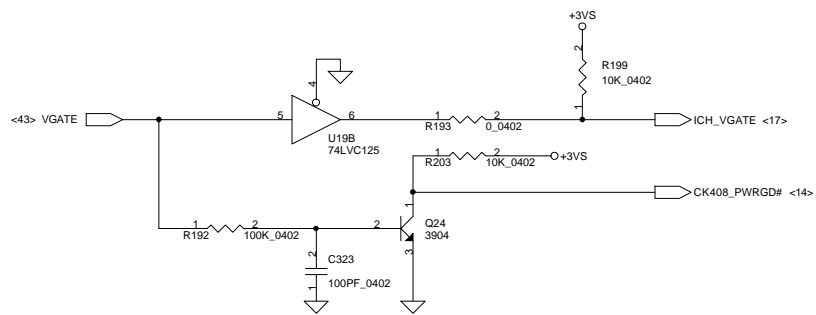
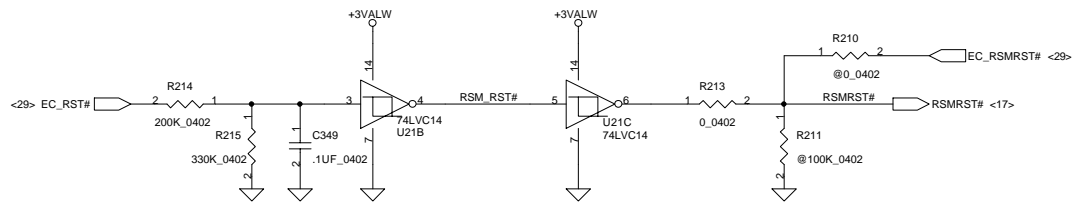
**USB CONNECTOR 1**



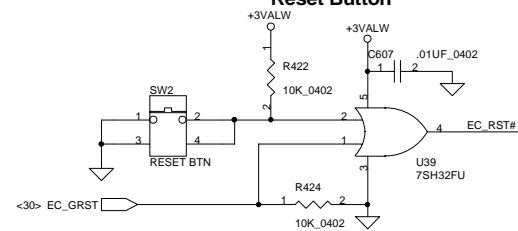
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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

<b>Compal Electronics, Inc.</b>		
Title	SCHEMATIC, MB LA-1591	
Size	Document Number	Rev
	401235	2B
Custom	Date: 星期五, 五月 16, 2003	Sheet 31 of 47

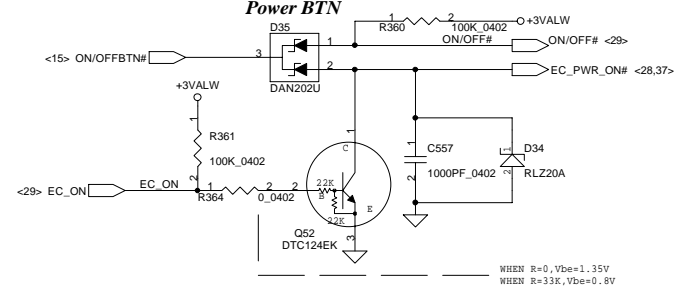
**Power ON Circuit**



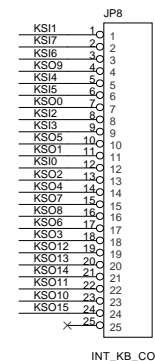
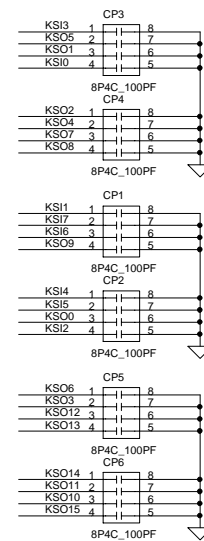
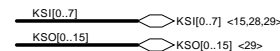
**Reset Button**



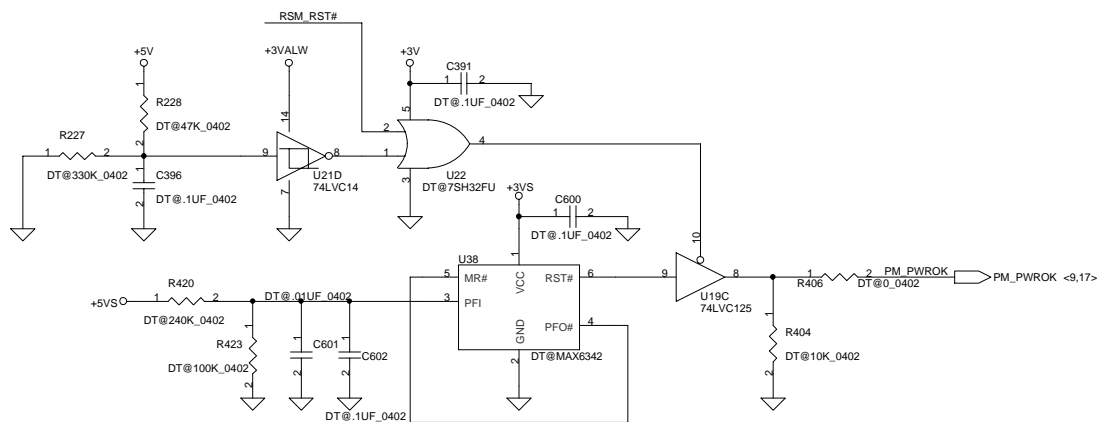
**Power BTN**



**INT\_KBD CONN.**



DT : INSTALL

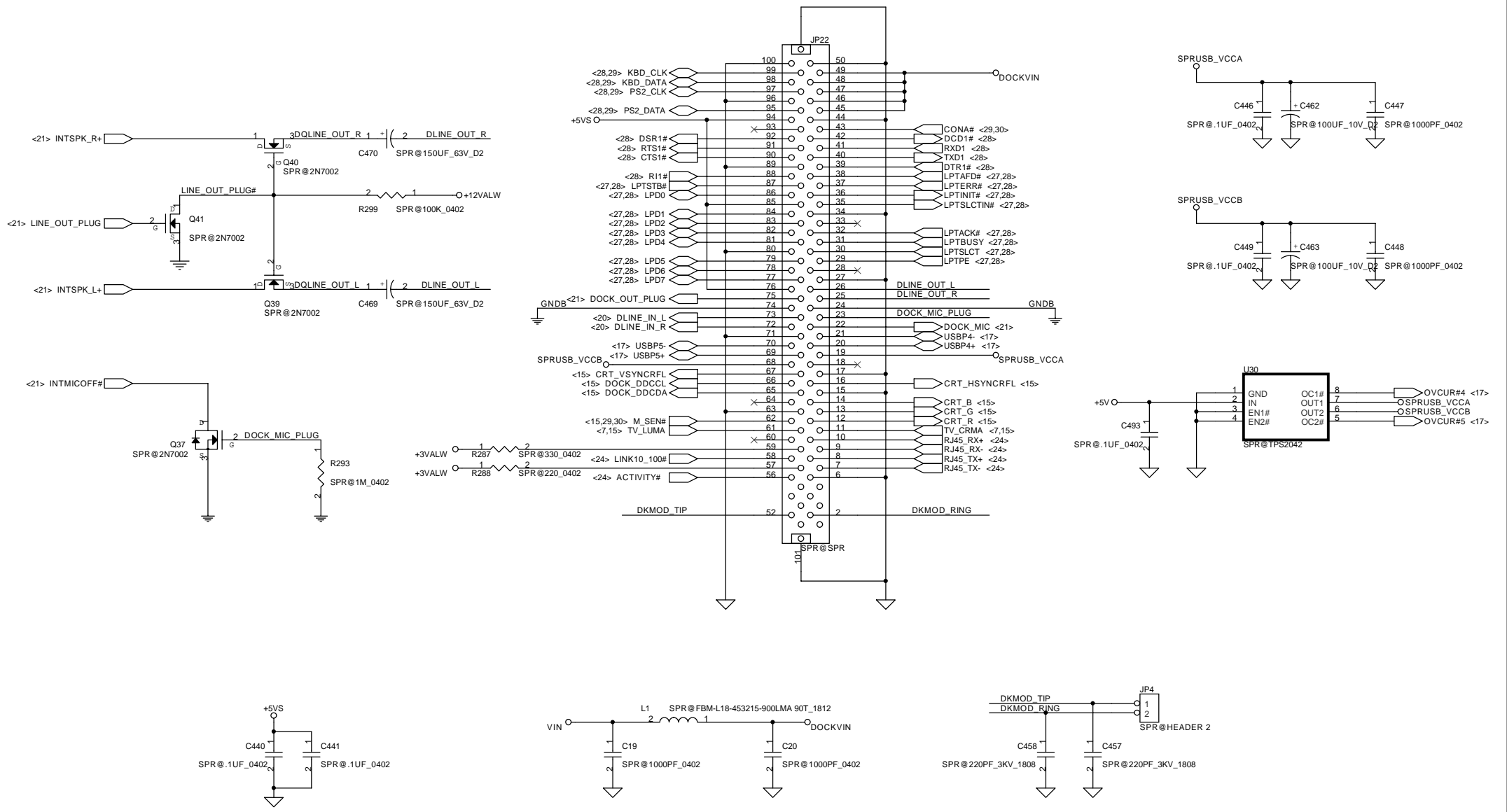


THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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

<b>Compal Electronics, Inc.</b>		
Title <b>SCHEMATIC, MB LA-1591</b>		
Size	Document Number	Rev
Custom	<b>401235</b>	2B
Date:	星期五, 五月 16, 2003	Sheet 32 of 47



# DOCKING 204 PIN

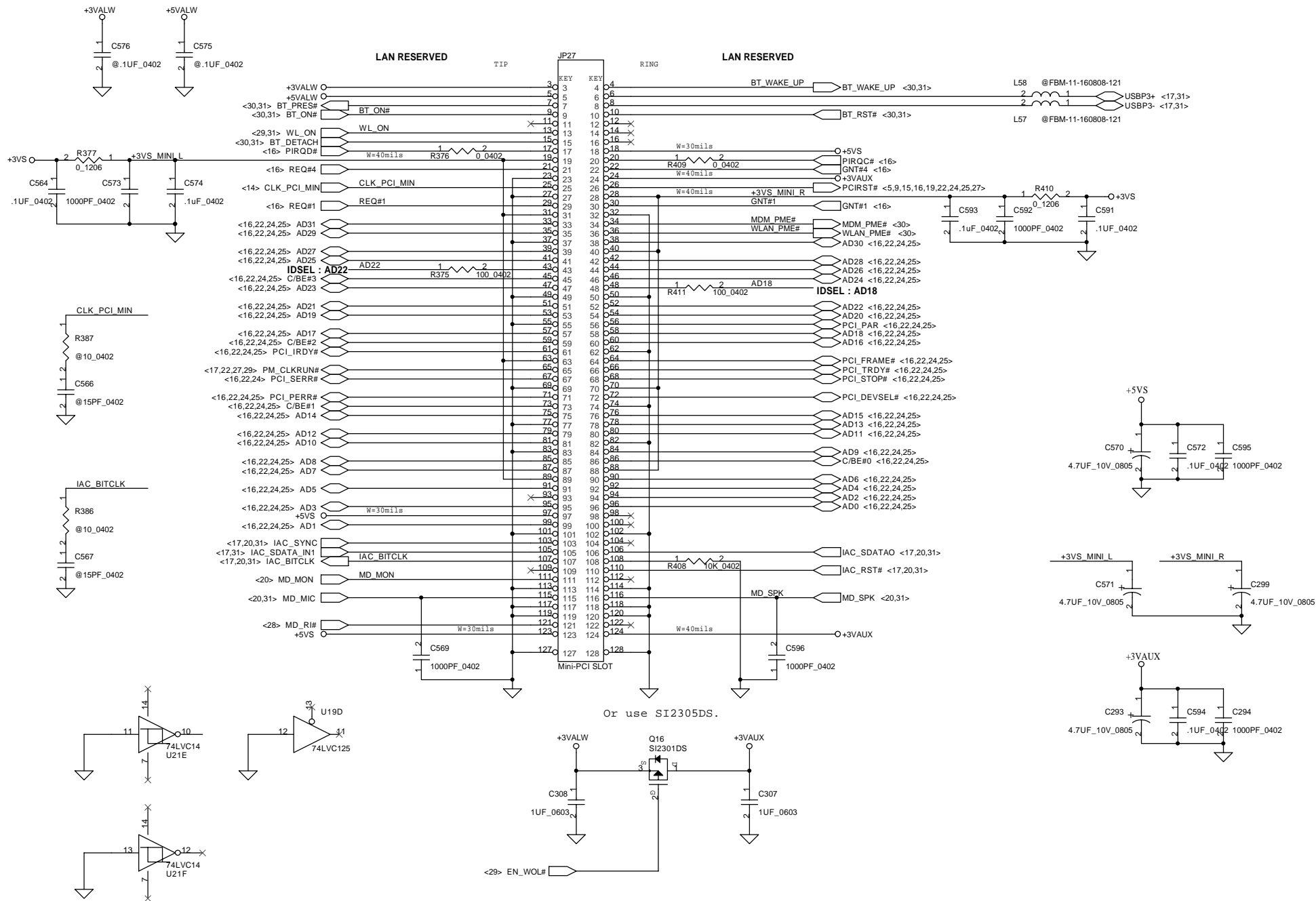


**Compal Electronics, Inc.**

Title: SCHEMATIC, M/B LA-1591

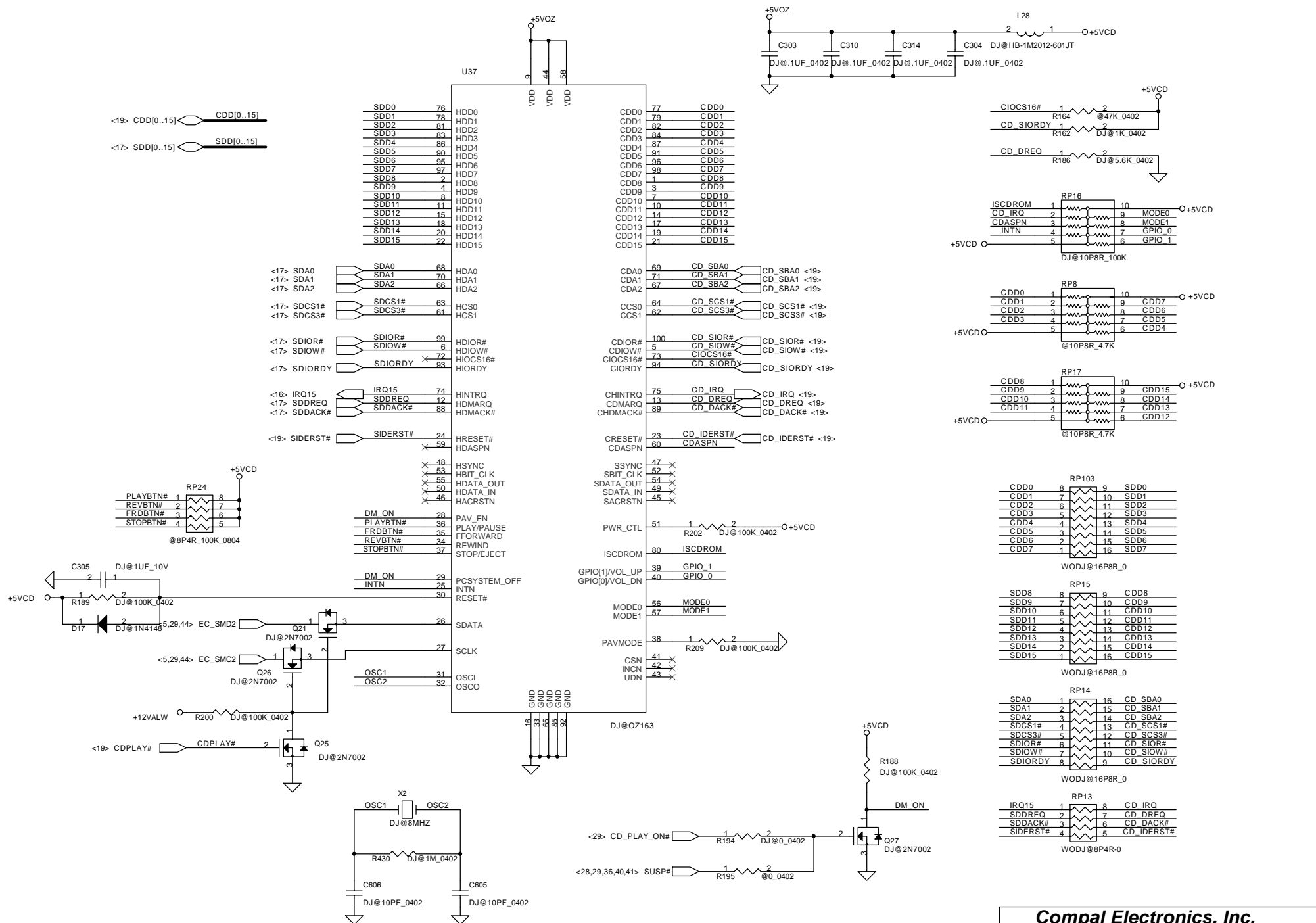
Size	Document Number	Rev
Custom	<b>401235</b>	2B
Date:	~P期五, 五月 16, 2003	Sheet 33 of 47

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.



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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

<b>Compal Electronics, Inc.</b>		
Title	<b>SCHEMATIC, M/B LA-1591</b>	
Size	Document Number	Rev
	<b>401235</b>	<b>2B</b>
Date	-P期五, 五月 16, 2003	Sheet 34 of 47

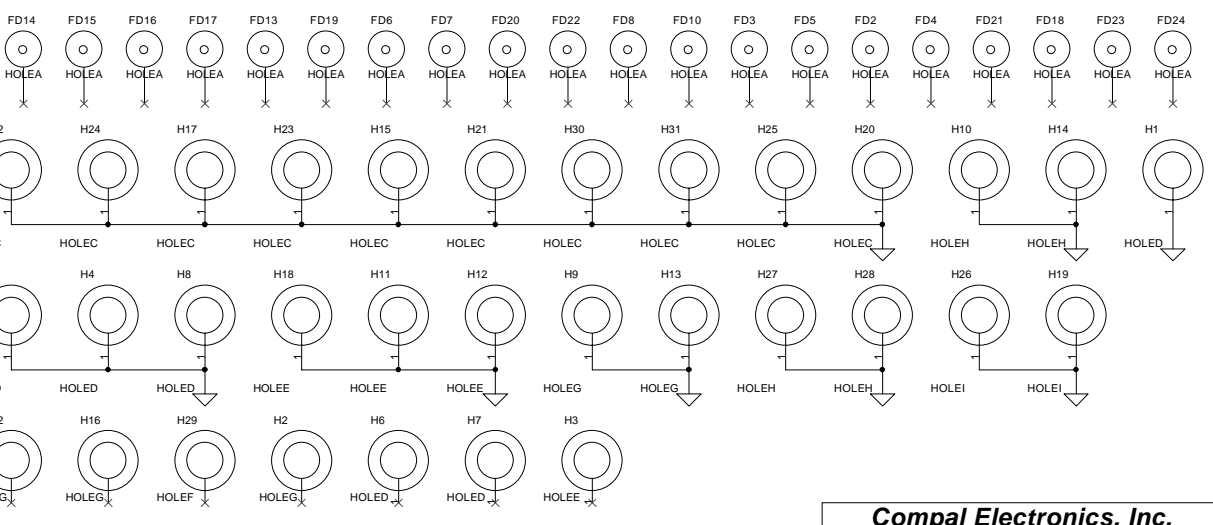
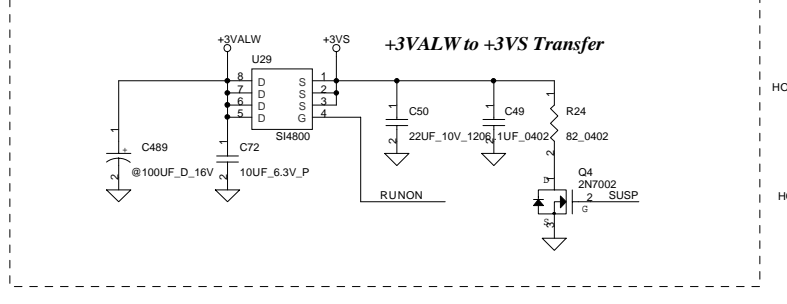
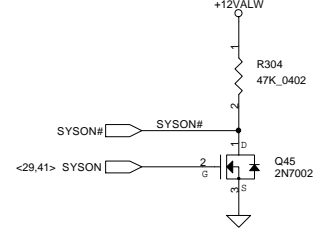
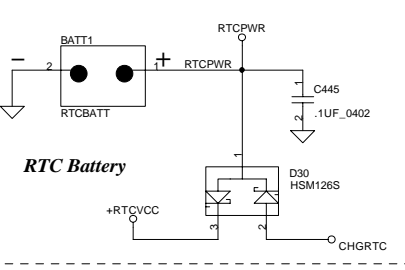
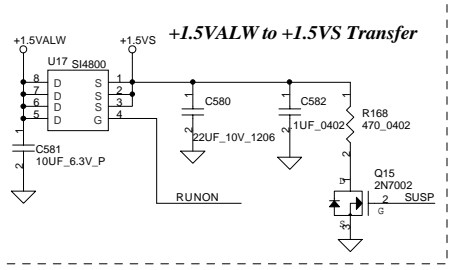
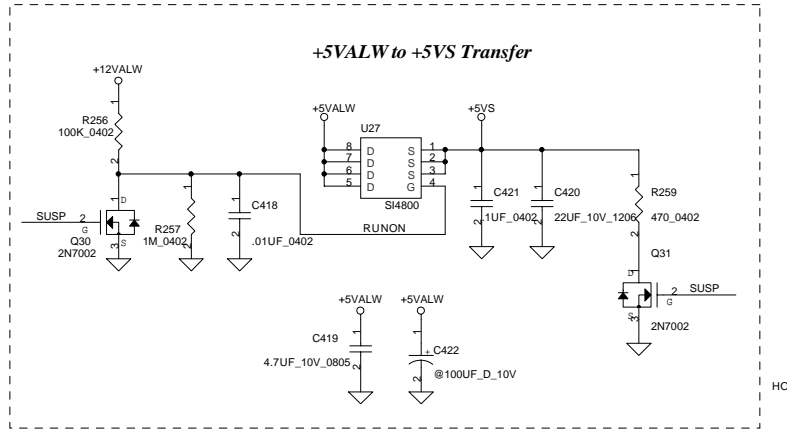
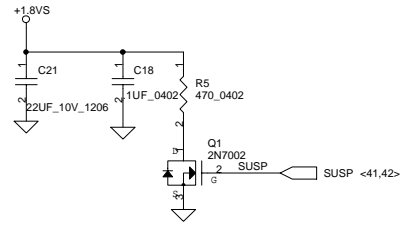
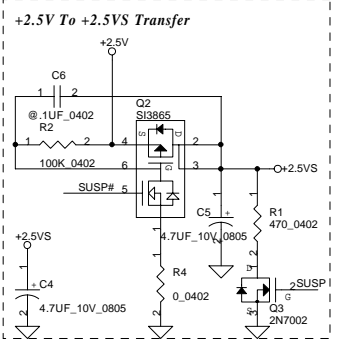
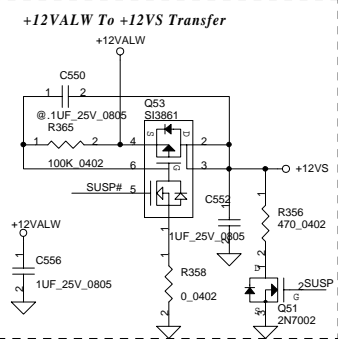
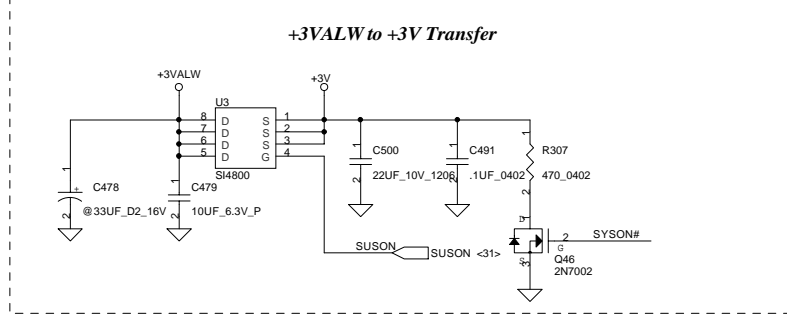
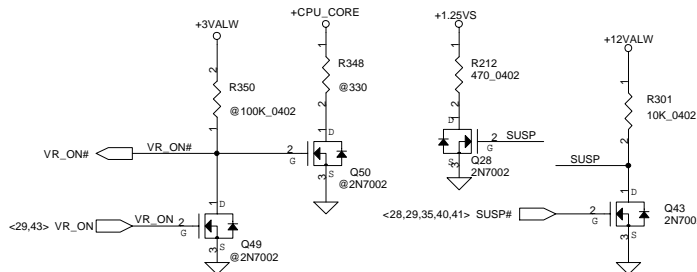
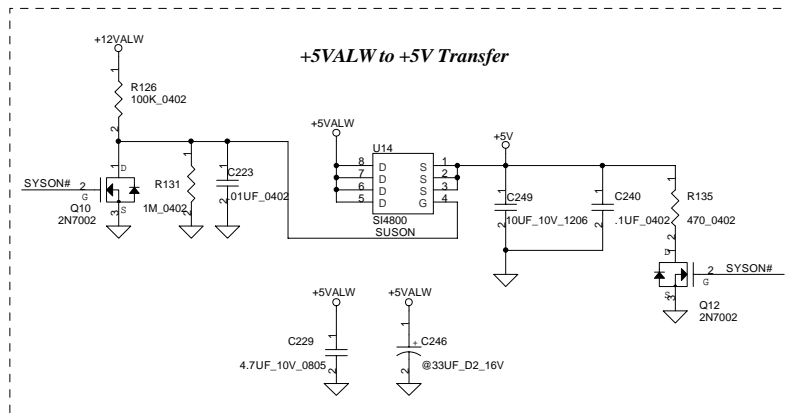


**Compal Electronics, Inc.**

Title: **SCHEMATIC, M/B LA-1591**

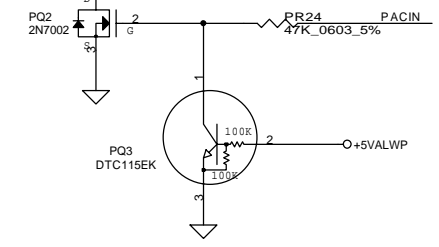
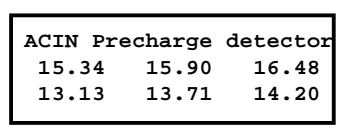
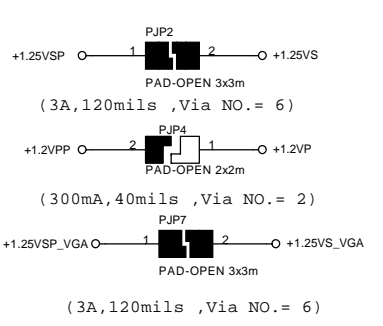
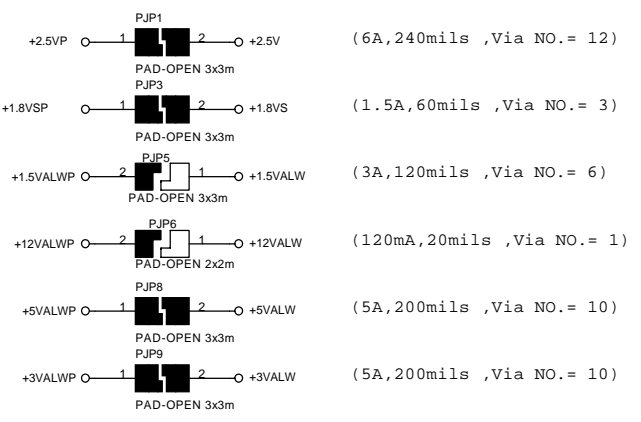
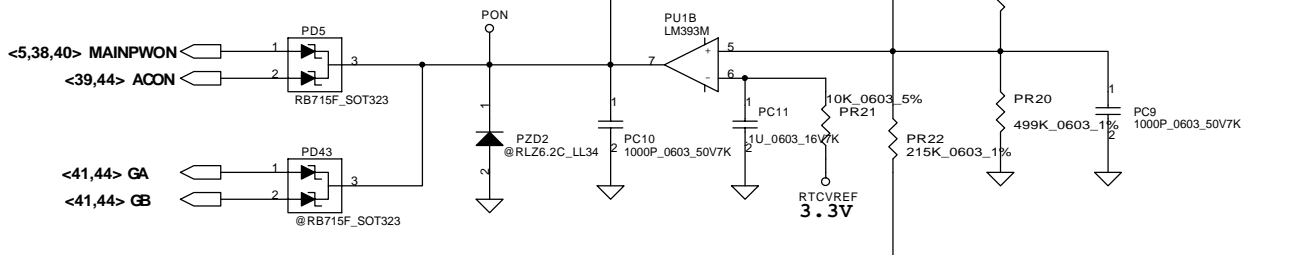
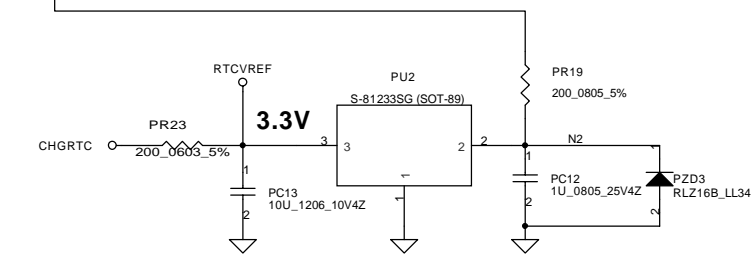
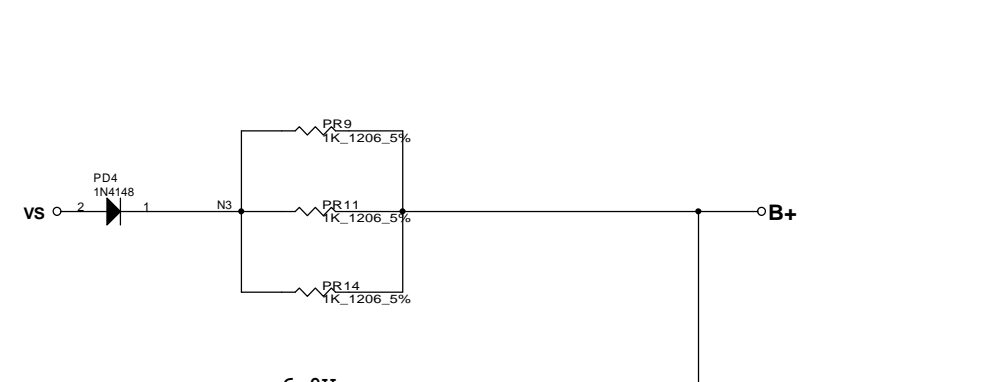
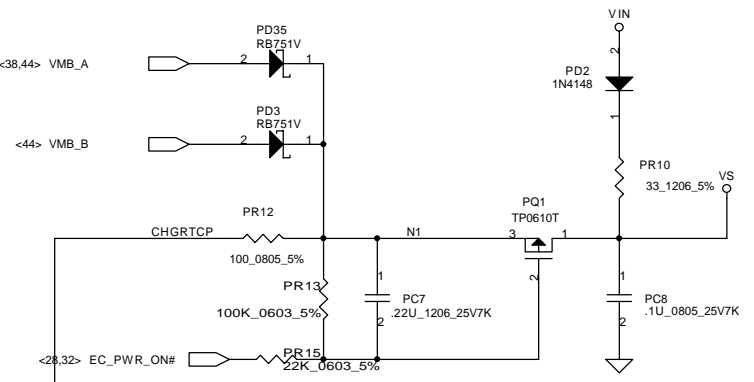
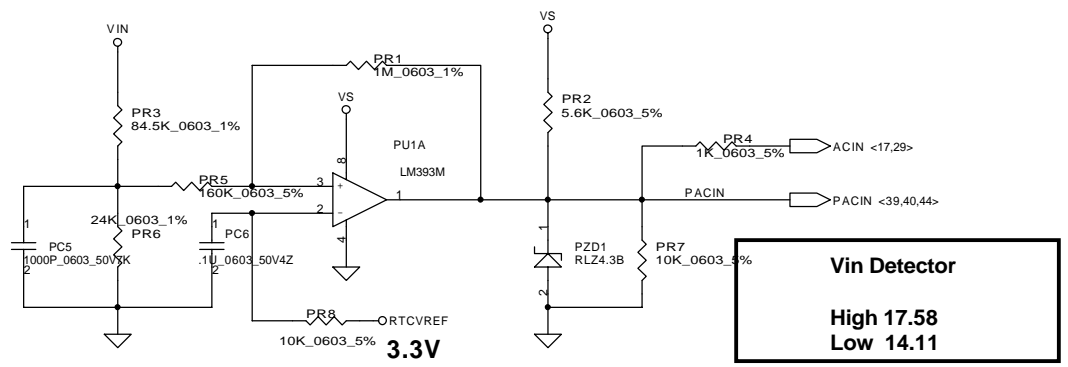
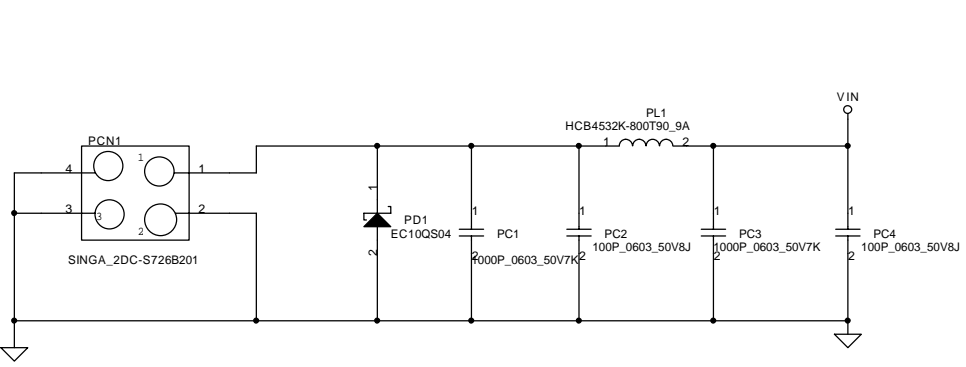
Size: B	Document Number: 401235	Rev: 2B
Date: -P期五, 五月 16, 2003	Sheet 35 of 47	

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

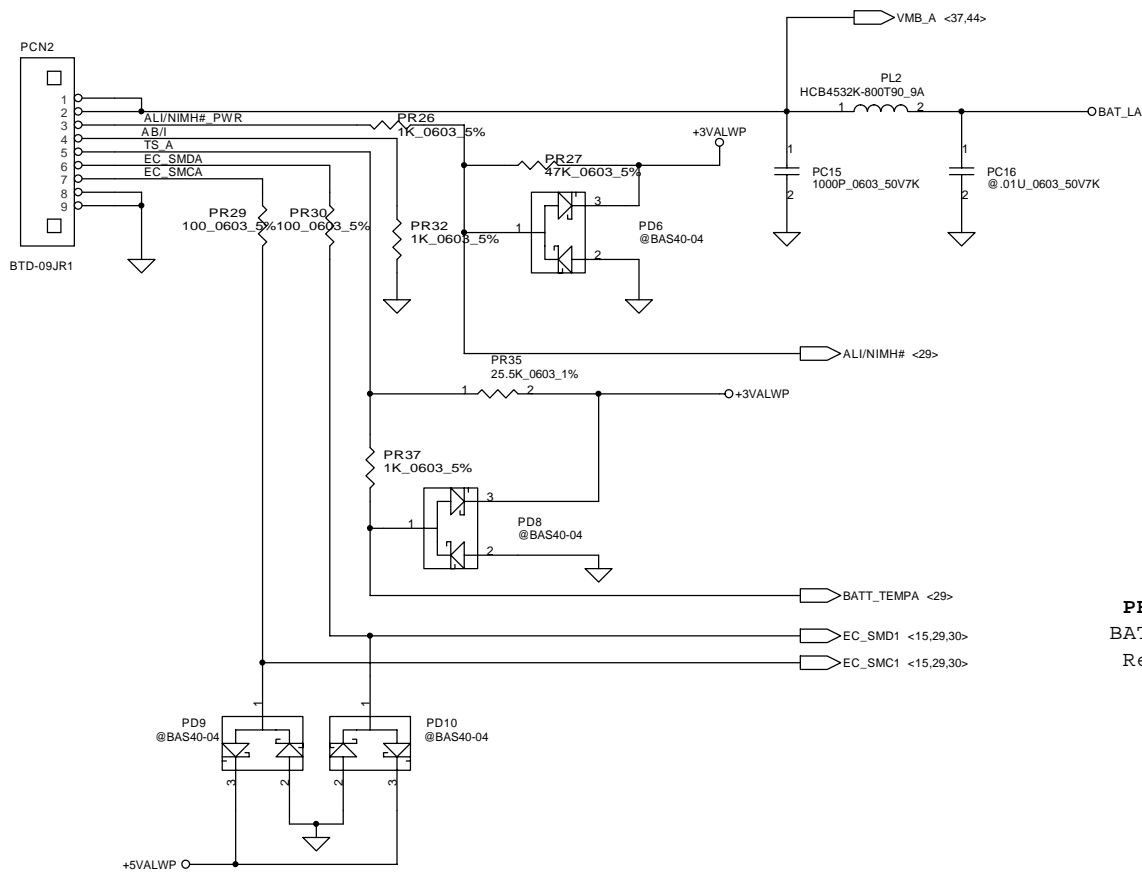


THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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

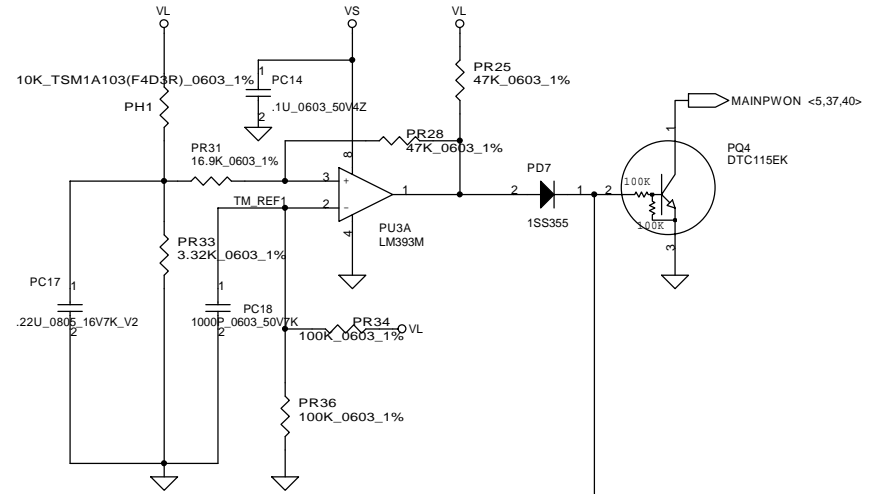
<b>Compal Electronics, Inc.</b>		
Title	<b>SCHEMATIC, MB LA-1591</b>	
Size	Document Number	Rev
Custom	<b>401235</b>	2B
Date:	星期五, 五月 16, 2003	Sheet 36 of 47



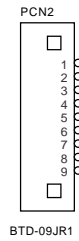
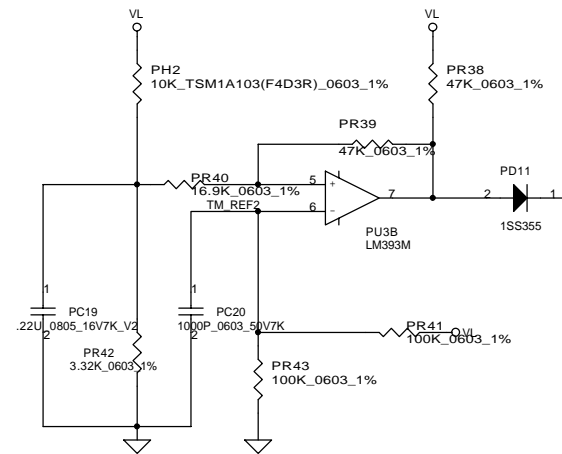
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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



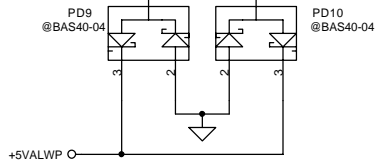
**PH1 under CPU bottom side :**  
 CPU thermal protection at 84 degree C  
 Recovery at 45 degree C



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

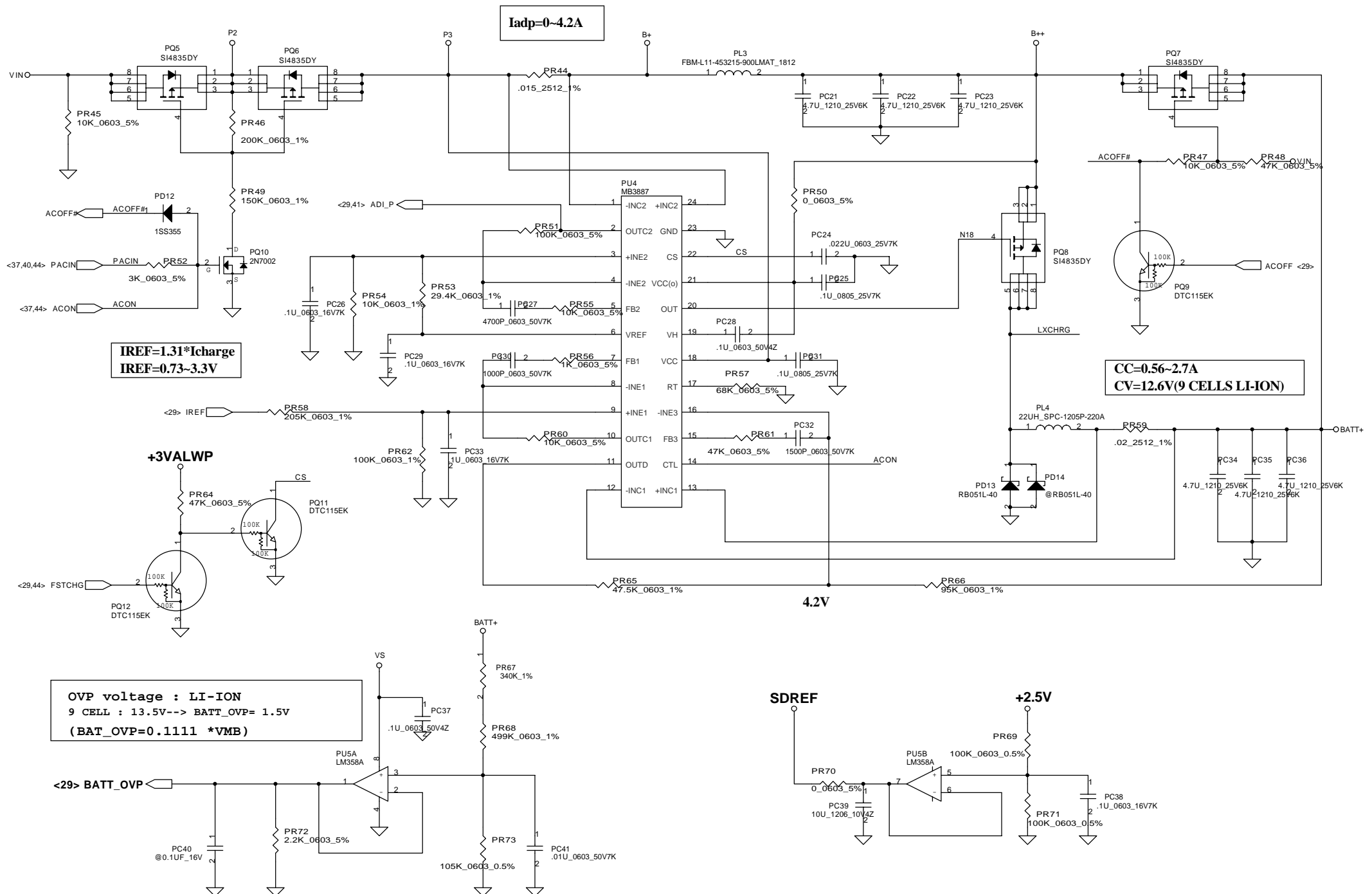


BTD-09JR1



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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

<b>Compal Electronics, Inc.</b>			
Title		<b>SCHEMATIC, M/B LA-1591</b>	
Size	Document Number	Rev	
B	<b>401235</b>	<b>2B</b>	
Date: -P期五, 五月 16, 2003		Sheet	38 of 47



**Iadp=0-4.2A**

**IREF=1.31\*Icharge  
IREF=0.73~3.3V**

**CC=0.56~2.7A  
CV=12.6V(9 CELLS LI-ION)**

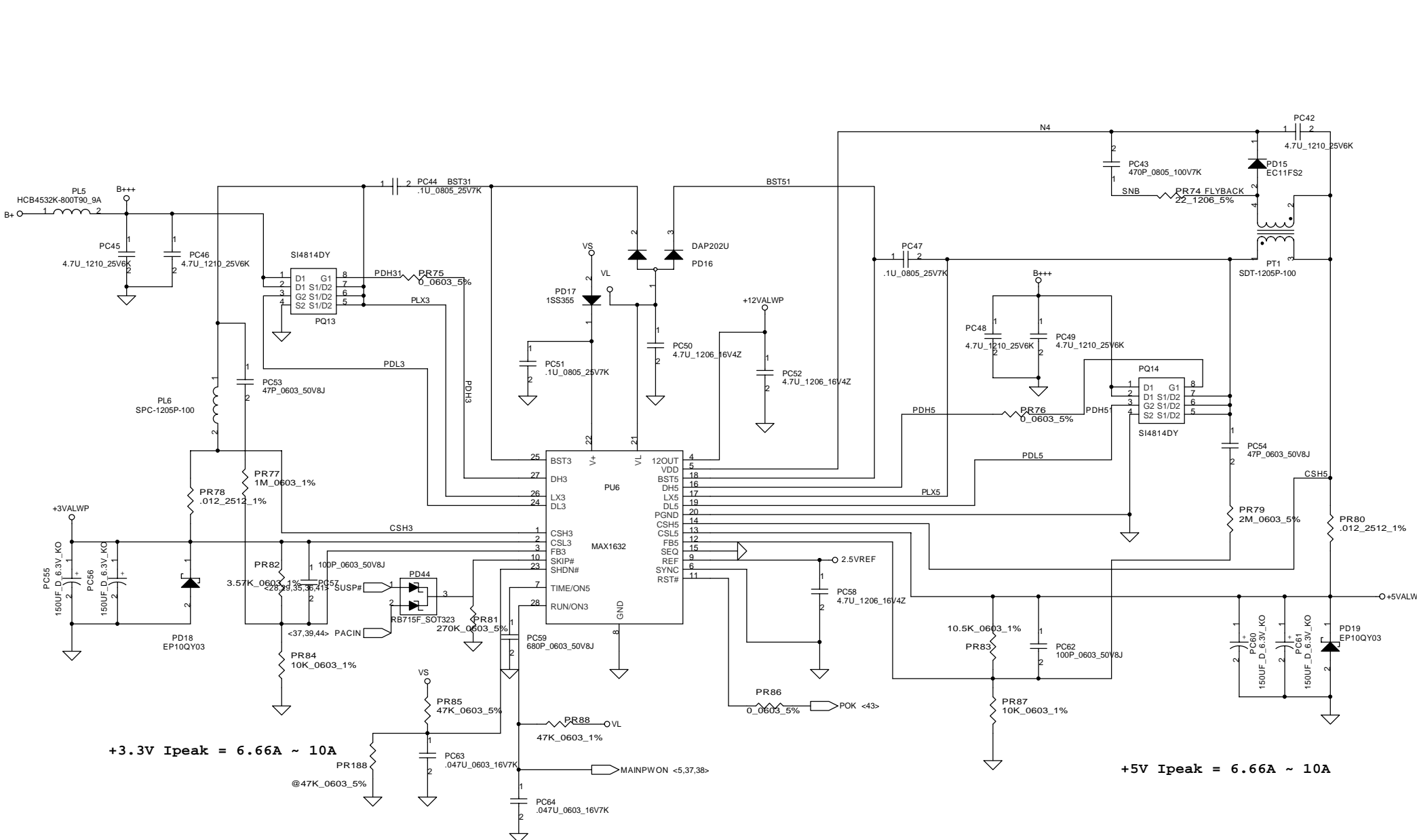
**OVP voltage : LI-ION  
9 CELL : 13.5V--> BATT\_OVP= 1.5V  
(BAT\_OVP=0.1111 \*VMB)**

**+2.5V**

**4.2V**

<b>Compal Electronics, Inc.</b>			
Title			
<b>SCHEMATIC, M/B LA-1591</b>			
Size	Document Number		R ev
B	<b>401235</b>		<b>2B</b>
Date:	-P期五, 五月 16, 2003	Sheet	39 of 47

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.



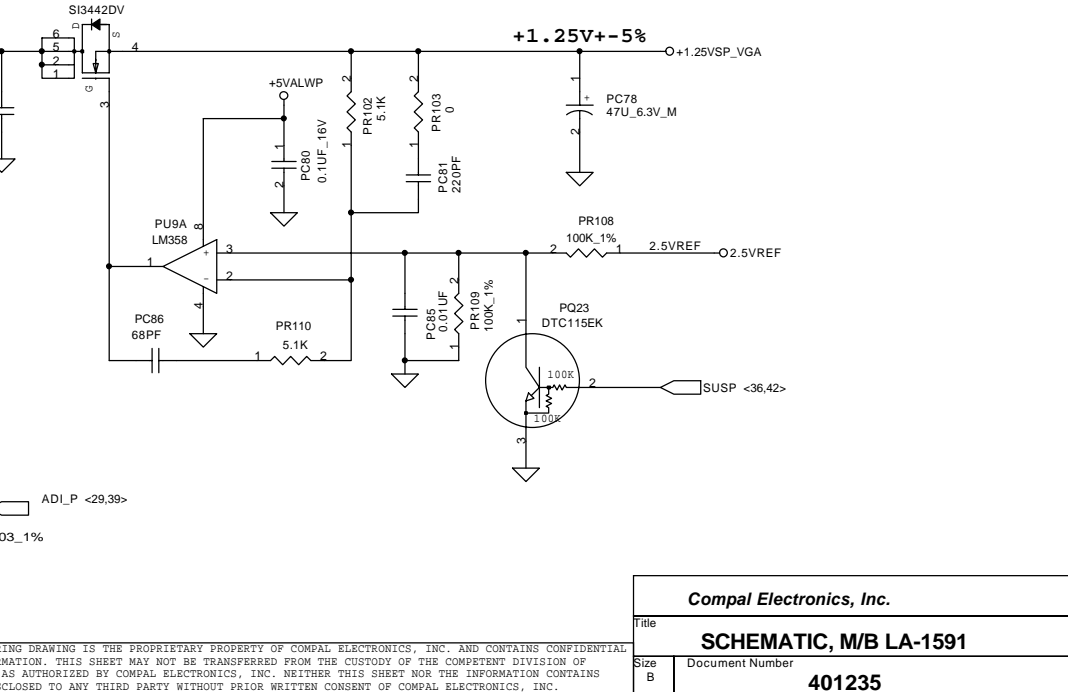
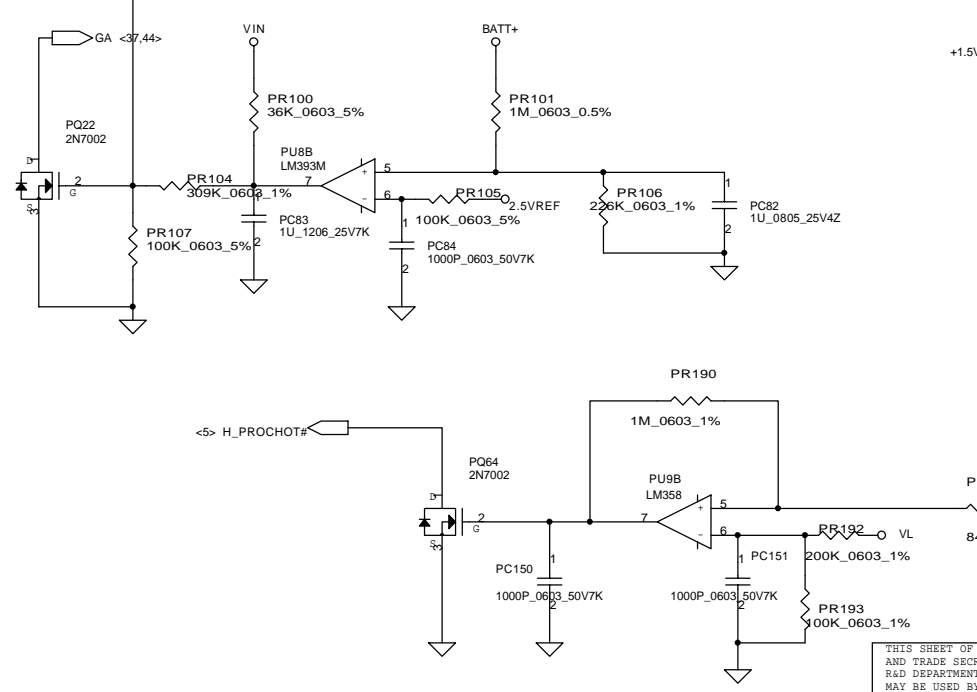
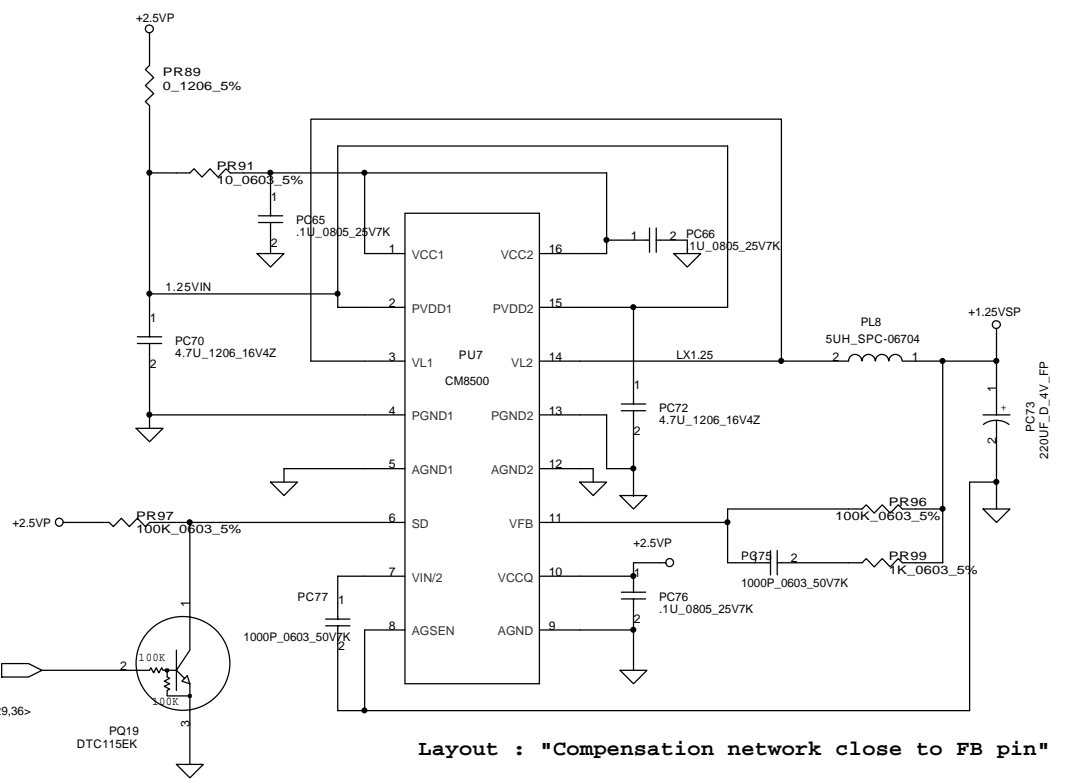
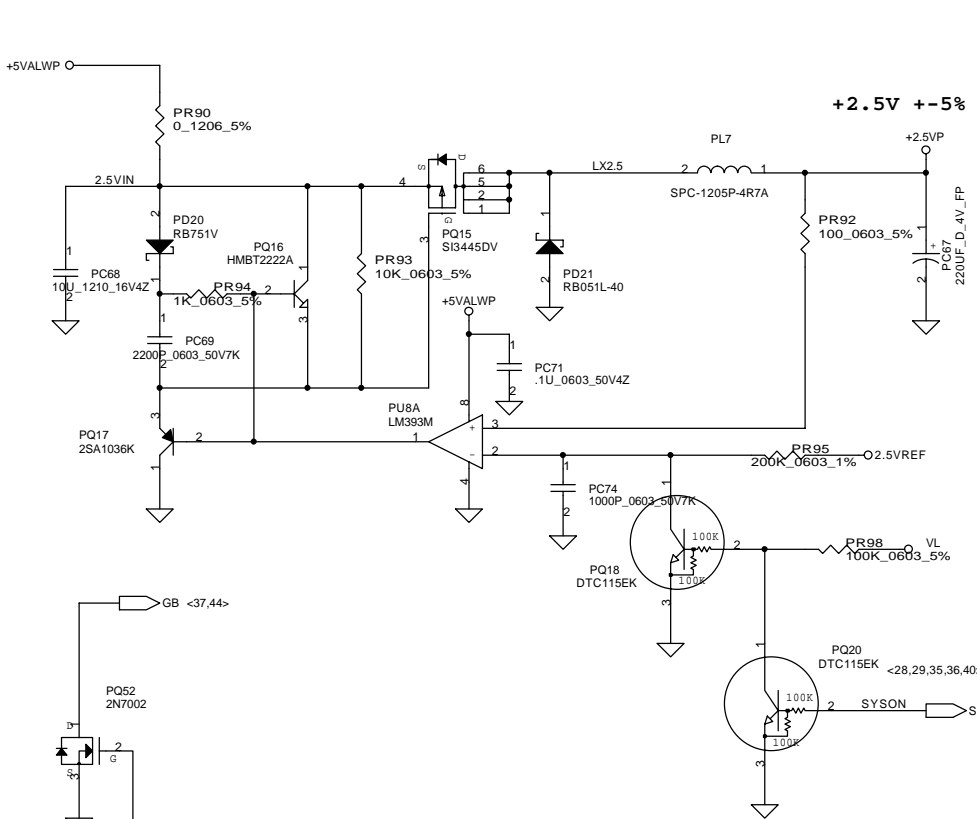
**+3.3V Ipeak = 6.66A ~ 10A**

**+5V Ipeak = 6.66A ~ 10A**

<b>Compal Electronics, Inc.</b>			
Title			
<b>SCHEMATIC, M/B LA-1591</b>			
Size	Document Number		Rev
B	<b>401235</b>		<b>2B</b>
Date:	-P期五, 五月 16, 2003		Sheet 40 of 47

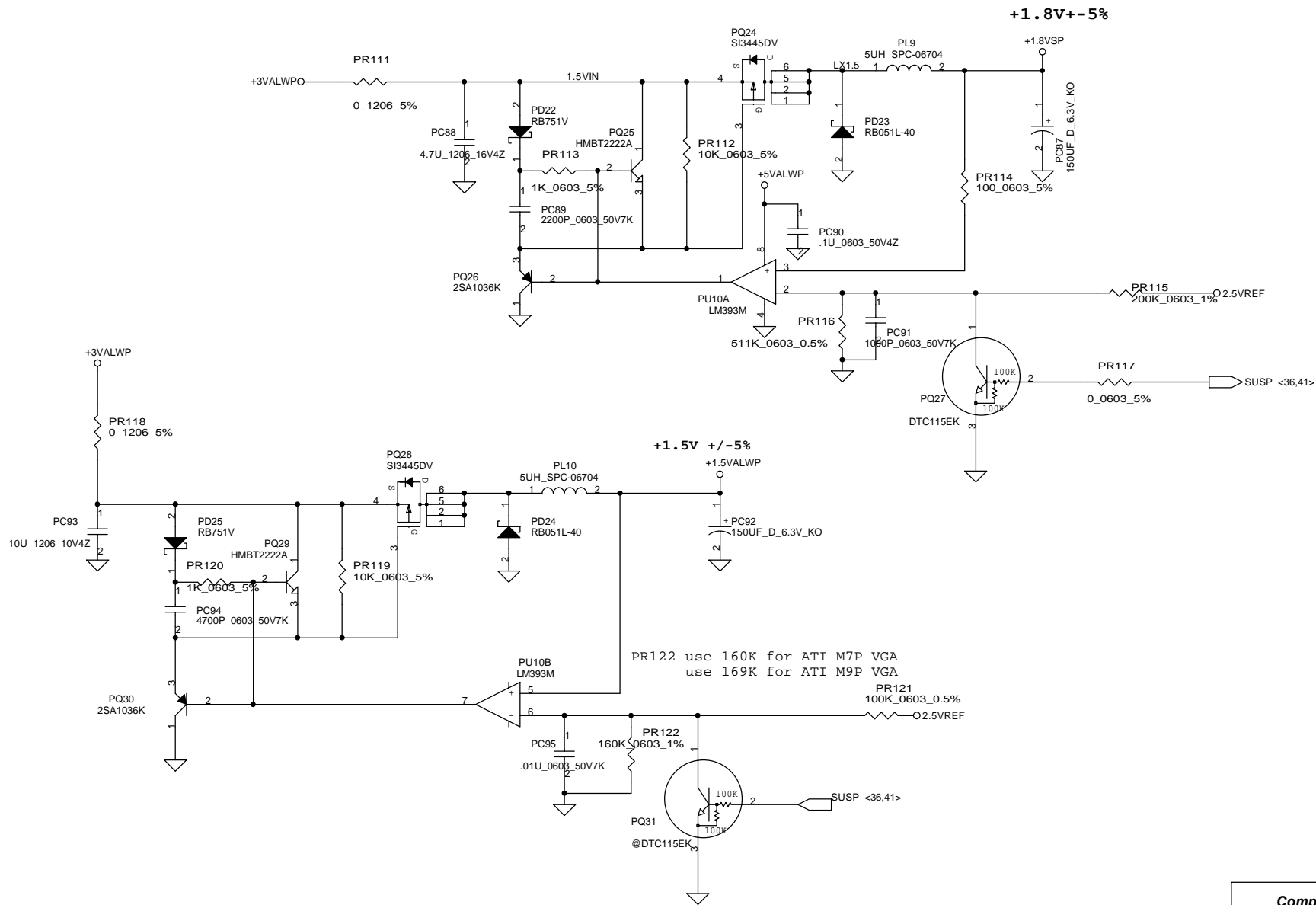
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS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





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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

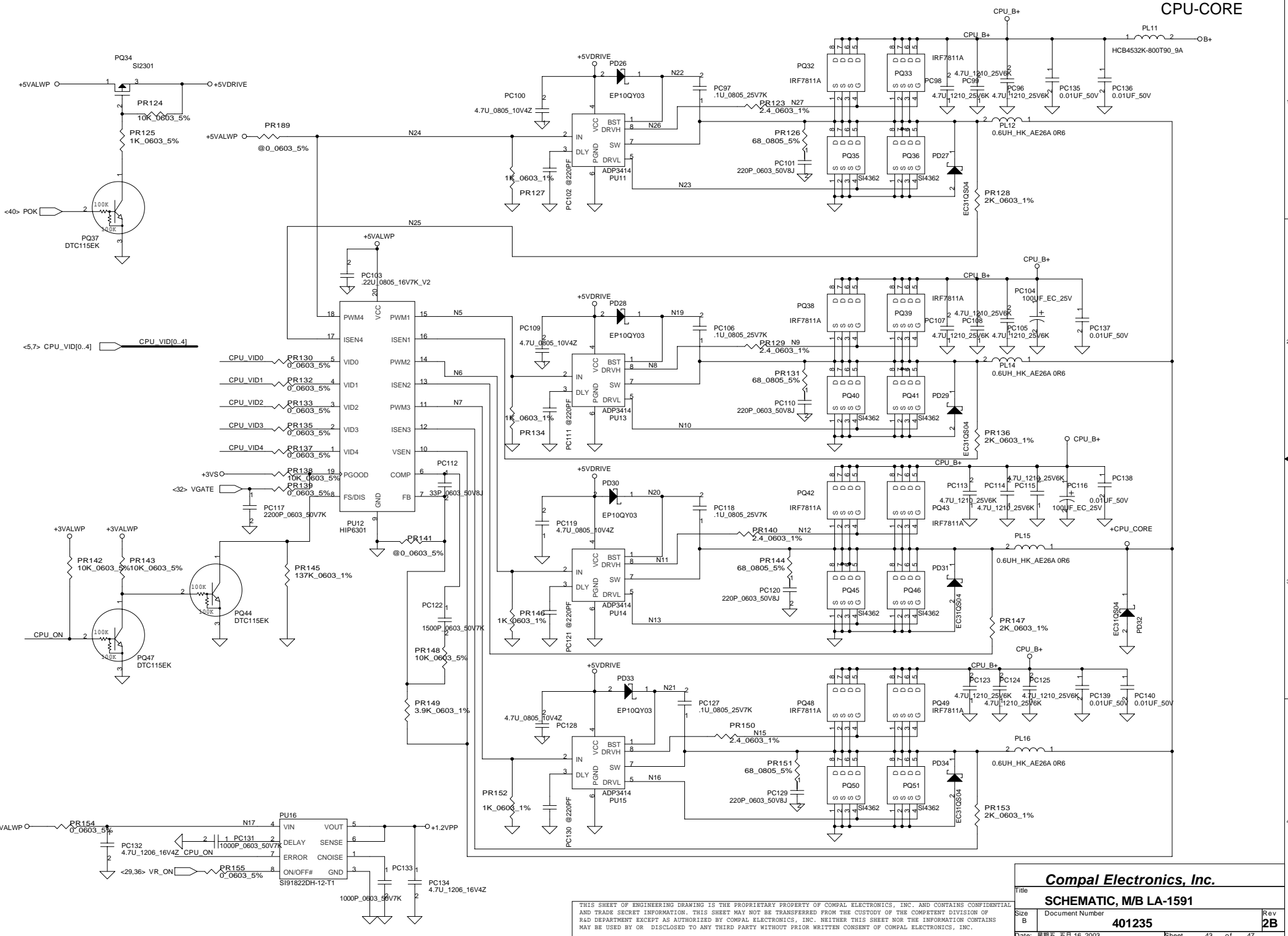
<b>Compal Electronics, Inc.</b>			
Title <b>SCHEMATIC, M/B LA-1591</b>			
Size	Document Number	Rev	
B	<b>401235</b>	<b>2B</b>	
Date: -P期五, 五月 16, 2003		Sheet	41 of 47



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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

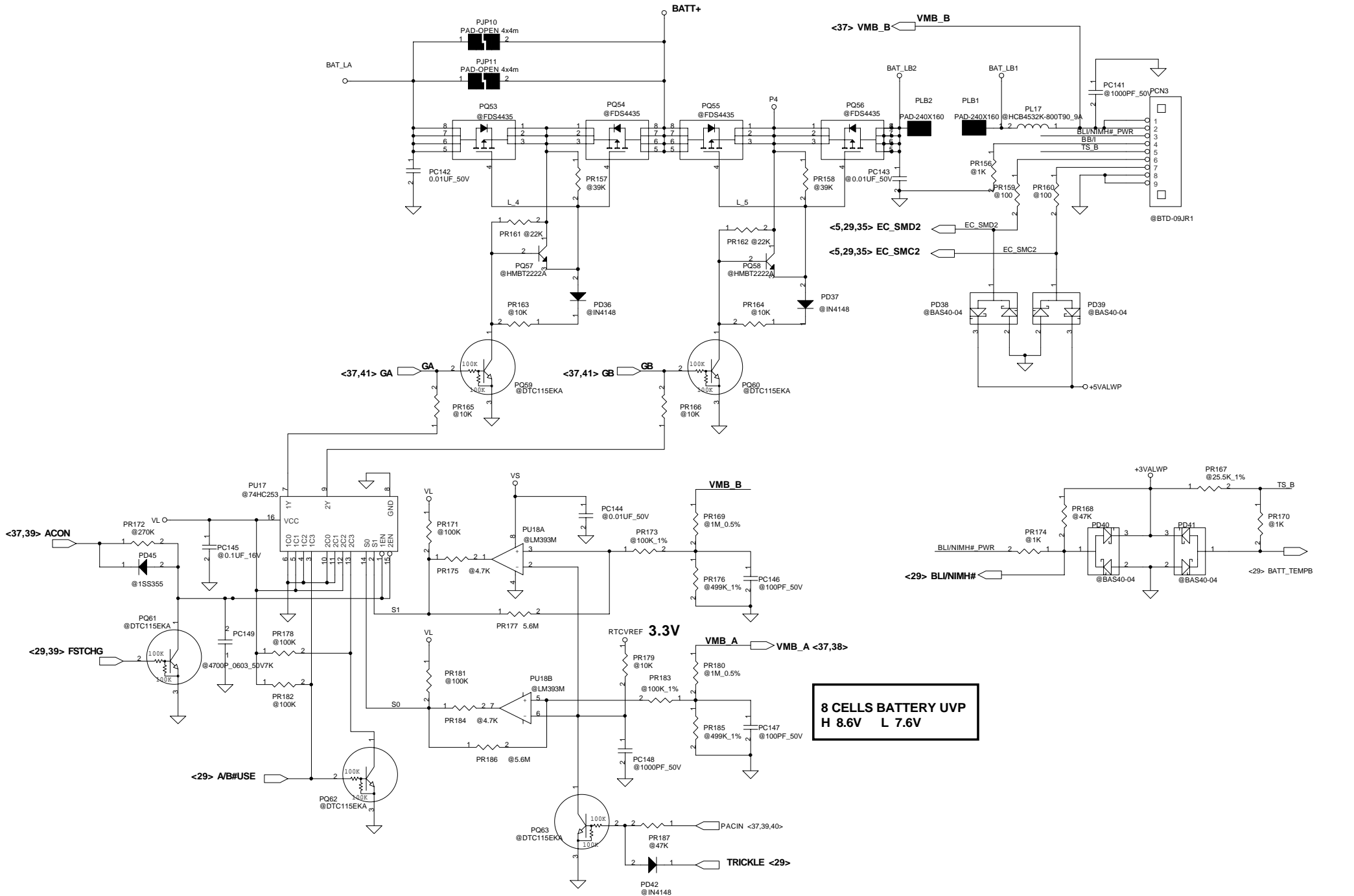
<b>Compal Electronics, Inc.</b>		
Title		
<b>SCHEMATIC, M/B LA-1591</b>		
Size	Document Number	Rev
B	<b>401235</b>	<b>2B</b>
Date:	星期五, 五月 16, 2003	Sheet 42 of 47

# CPU-CORE



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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

<b>Compal Electronics, Inc.</b>	
<b>SCHEMATIC, M/B LA-1591</b>	
Title	
Size B	Document Number
<b>401235</b>	
Date: 星期五, 五月 16, 2003	Sheet 43 of 47
<b>Rev 2B</b>	



**8 CELLS BATTERY UVP  
H 8.6V L 7.6V**

<b>Compal Electronics, Inc.</b>	
<b>SCHEMATIC, M/B LA-1591</b>	
File	Document Number
Size	<b>401235</b>
Date: 星期三, 五月 16, 2003	Sheet 44 of 47
	Rev <b>2B</b>

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

Version change list (P.I.R. List)

Item	Fixed Issue	Reason for change	PAGE	Modify List	M.B Ver.
1		When battery charge system has noise	39	change PR51 from 10K to 100K	0.2
			40	change PR55 from 4.7K to 10K	0.2
				Add PD44 (RB715F)	0.2
				change P81 from 10K to 270K	0.2
2	When battery only system can't power on	37	Add PD43 (RB715F)	0.2	
			Delete PZD2	0.2	
3	Unplugged AC,system don't have backlight with LCD	44	Add PC149 (4700PF_0603)	0.2	
4	Change thermal protection point	38	change PR33 from 3.6K to 3.32K	0.2	
			change PR42 from 1.96K to 3.32K	0.2	
			change PR40 from 10K to 16.9K	0.2	
5	Change detector circuit	37	change PR2 from 10K to 5.6K	0.2	
		39	change PR52 from 10K to 3K	0.2	
1	Change Vin detector voltage"L" from 16.9V to 14.11V ("H" from 17.9V to 17.58V)	37	change PR5 from 22K to 160K	0.3	
			change PR6 from 20K to 24K	0.3	
2	system heavy loading with plugging out AC ( battery capacity is full )will cause system shut down	44	Add PD45 (1SS355)	0.3	
3	regulated 1.5VALWP to 1.538V for H.W require	42	change PR122 from 150K to 160K	0.3	
4	improve CPU core voltage drop	43	change PR149 from 3K to 3.9K	0.3	

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

<b>Compal Electronics, Inc.</b>		
Title		
<b>SCHEMATIC, M/B LA-1591</b>		
Size	Document Number	Rev
	<b>401235</b>	2B
Custom		
Date:	星期三, 五月 16, 2003	Sheet 45 of 47

Version change list (P.I.R. List)

Item	Fixed Issue	Reason for change	PAGE	Modify List	M.B. Ver.
1		Footprint error	16	Change RP66 footprint to 8P4R-0402-NEW Change RP67 footprint to 8P4R-0402-NEW	0.1
2		Voltage level shift	15	Change R290.1 connect from +12VS to +3VS	0.1
3		Design error	20	R453.1 short with R454.1, C654.2 and U50.4 only ( Don't connect to U50.3 and C660.1 )	0.1
			21	Change R458.1 from +5VALW to VDDA Change U51.5 from +5VALW to +5V_AMP	
4		VIA's data sheet modification	25	U23 pin definition shift	0.1
5		Add second source for SD socket	26	Add JP36	0.1
6		Net conflict	22	Add R498	0.1
7		Solve for audio background noise	17	Add R497	0.1
8		No design requirement	17	Delecte R125 & R145	0.1
9		Solve for power charger issue	29	Delete C324	0.1
10		Solve for resume fail from press reset button	29	Delete D22, and fix R229 to ground.	0.1
11		Solve for volume too loud from headphone	30	Connect HPS signal to U45.11	0.1
12		Footprint error	24	Change Y1 footprint to CS-10	0.2
13		No need to control SUSB#, always fix to GND	31	Add R499 to GND	0.2
14		Prevent floating	34	Fix U21.11, U21.13, and U19.12 to GND	0.2
15		Intel recommend	9	L53 change to low DCR	0.2
16		Unnecessary external pull-up	35	Delete RP8, RP17, RP24 and R164	0.2
17		Cost down	6	Delete C464, C482, C510, C534, and C38 Change C53, C156, C52, and C157 to 470U_D2_2.5v_15m	0.2
18		Solve for USB fail issue	17	Add R500	2.0

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

<b>Compal Electronics, Inc.</b>		
Title	SCHEMATIC, M/B LA-1591	
Size	Document Number	Rev
Custom	401235	2B
Date	星期五, 五月 16, 2003	Sheet 46 of 47

10 9 8 7 6 5 4 3 2 1

**Version change list (P.I.R. List)**

Item	Fixed Issue	Reason for change	PAGE	Modify List	M.B. Ver.
------	-------------	-------------------	------	-------------	-----------

H  
G  
F  
E  
D  
C  
B  
A

H  
G  
F  
E  
D  
C  
B  
A

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 R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

<b>Compal Electronics, Inc.</b>		
Title	SCHEMATIC, M/B LA-1591	
Size	Document Number	Rev
Custom	401235	2B
Date:	星期五, 五月 16, 2003	Sheet 47 of 47

10 9 8 7 6 5 4 3 2 1