

SAPPORO M (BTW20)

LA-1691 REV0.4 Schematic Document

Intel Mobile P4 uFCBGA/uFCPGA Northwood Celeron

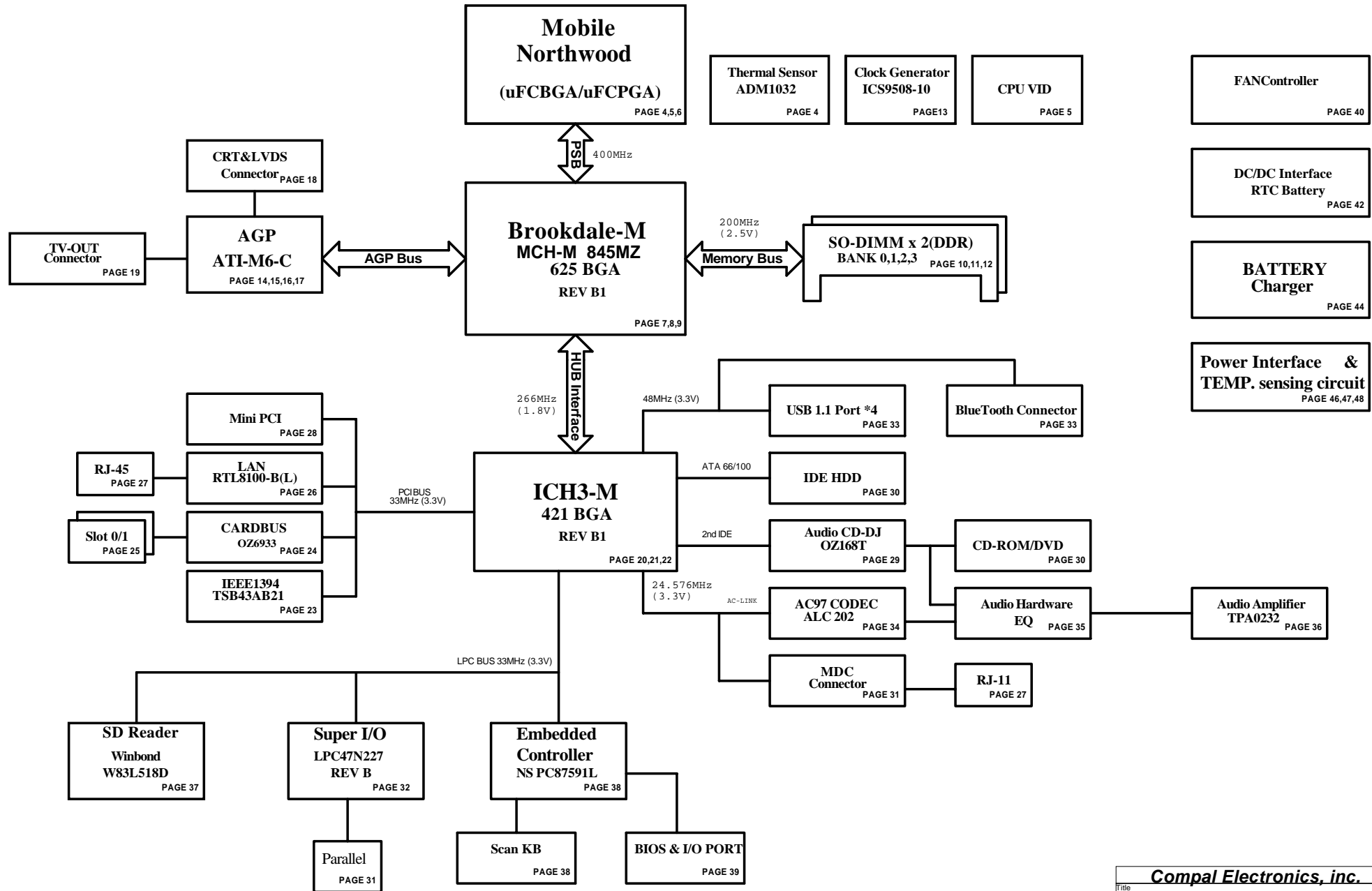
MCH-M(845MZ)+ICH3-M+M6-C(16MB VRAM)

2002-12-12

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Size	Document Number	Rev
Custom	401241	1A
Date:	星期二, 一月 07, 2003	Sheet 1 of 53

BTW20 LA-1691 BLOCK DIAGRAM



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Size	Document Number	Rev
Custom	401241	1A
Date:	星期二, 一月 07, 2003	Sheet 2 of 53

Voltage Rails

Power Plane	Description	S1	S3	S5
VIN	Adapter power supply (19V)	N/A	N/A	N/A
B+	AC or battery power rail for power circuit.	N/A	N/A	N/A
+CPU_VCC	Core voltage for CPU	ON	OFF	OFF
+1.2VP	1.2V switched power rail for CPU AGTL Bus	ON	OFF	OFF
+1.2VS	1.2V switched power rail for Montara core	ON	OFF	OFF
+1.25VS	1.25V switched power rail	ON	OFF	OFF
+1.5VS	AGP 4X	ON	OFF	OFF
** +1.8VALW	1.8V always power rail	ON	ON	ON*
** +1.8VS	1.8V switched power rail	ON	OFF	OFF
+2.5V	2.5V power rail	ON	ON	OFF
+2.5VS	2.5V switched power rail	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	ON*
+3V	3.3V power rail	ON	ON	OFF
+3VS	3.3V switched power rail	ON	OFF	OFF
+5VALW	5V always on power rail	ON	ON	ON*
+5V	5V power rail	ON	ON	OFF
+5VS	5V switched power rail	ON	OFF	OFF
+12VALW	12V always on power rail	ON	ON	ON*
RTCVCC	RTC power	ON	ON	ON

Note : ON* means that this power plane is ON only with AC power available, otherwise it is OFF.

External PCI Devices

Device	IDSEL#	REQ#/GNT#	Interrupts
CardBus	AD20	2	PIRQA/PIRQB(PIRQE/PIRQF)
LAN	AD17	3	PIRQB(PIRQD)
Mini-PCI	AD18	1/4	PIRQC/PIRQD(PIRQG/PIRQH)
1394	AD16	0	PIRQA

EC SM Bus1 address

Device	Address
Smart Battery	0001 011X b
EEPROM(24C16/02)	1010 000X b
(24C04)	1011 000Xb

EC SM Bus2 address

Device	Address
ADM1032	1001 110X b
OZ168	0011 0100 b
Smart Battery	0001 011X b
Docking	0011 011X b
DOT Board	XXXX XXXXb

ICH3 SM Bus address

Device	Address
Clock Generator (ICS-950810)	1101 001X

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

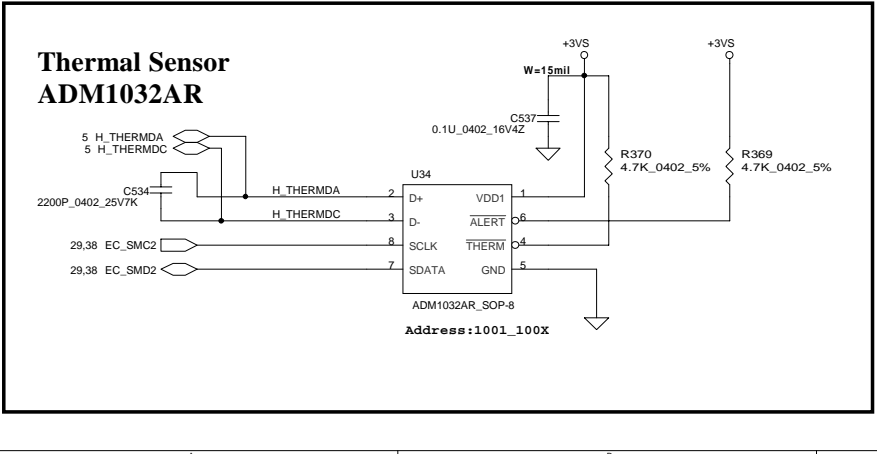
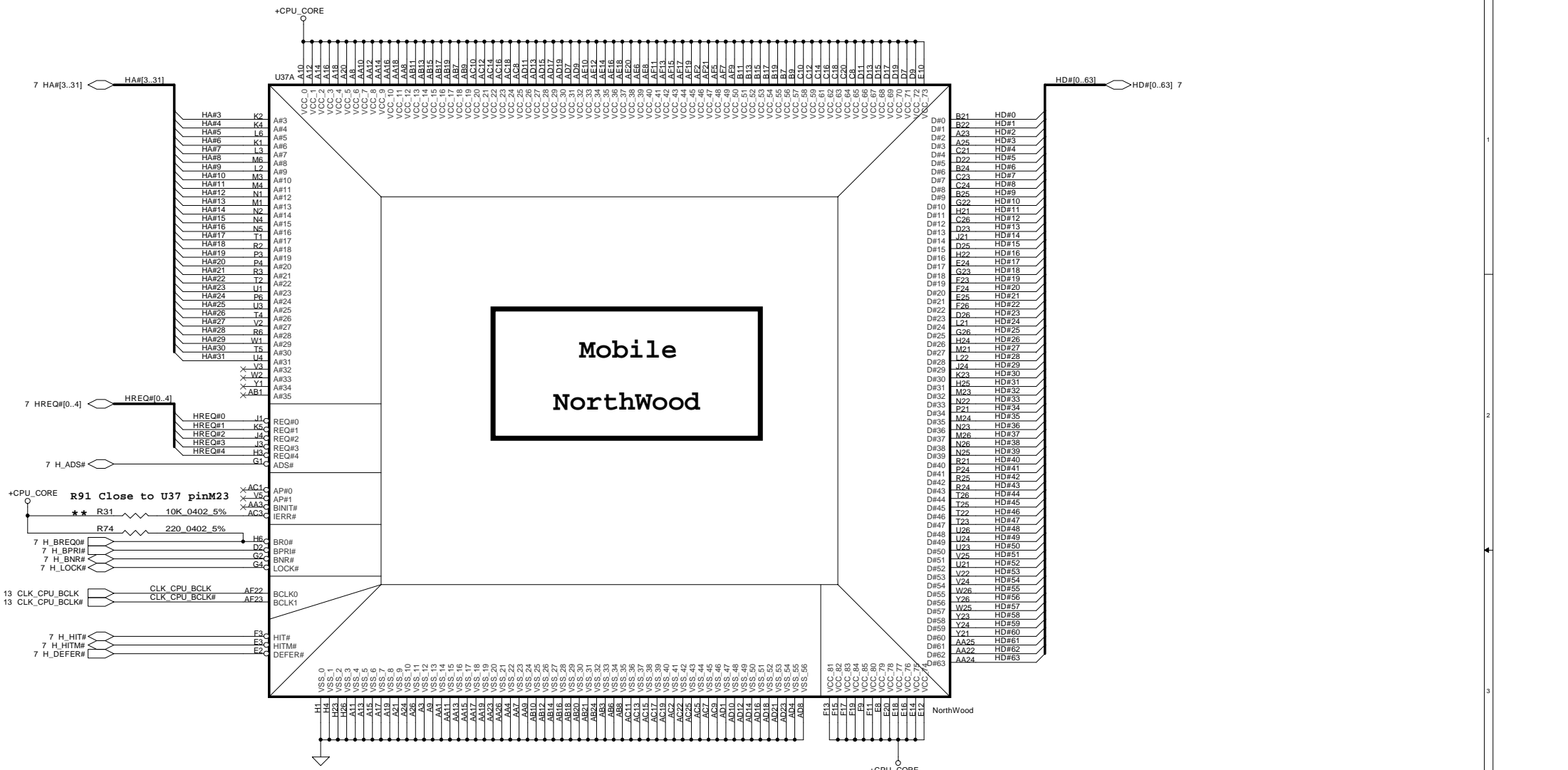
Vcc	3.3V +/- 5%			
Ra	100K +/- 5%			
Board ID	Rb	V _{AD_BID min}	V _{AD_BID typ}	V _{AD_BID max}
0	0	0 V	0 V	0 V
1	8.2K +/- 5%	0.216 V	0.250 V	0.289 V
2	18K +/- 5%	0.436 V	0.503 V	0.538 V
3	33K +/- 5%	0.712 V	0.819 V	0.875 V
4	56K +/- 5%	1.036 V	1.185 V	1.264 V
5	100K +/- 5%	1.453 V	1.650 V	1.759 V
6	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, 0.2
1	0.3
2	NO DIRECT CD PLAY
3	
4	
5	
6	
7	

	Topology Mount R458 RP122 Unmount R474 RP125 R533
1394	Trace: PIRQA#_1394 Use IRQA
CardBus	Trace:PIRQA#/E# PIRQB#/F#/D# Use IRQA IRQB
LAN	Trace:PIRQB#/F#/D# Use IRQB
MINIPCI	Trace:PIRQC#/G# PIRQD#/H# Use IRQC IRQD

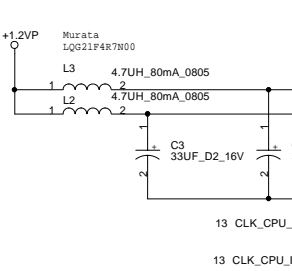
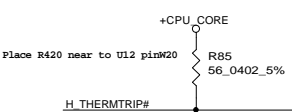
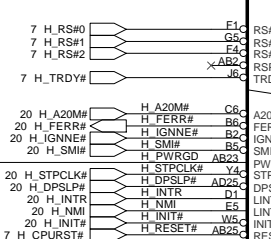
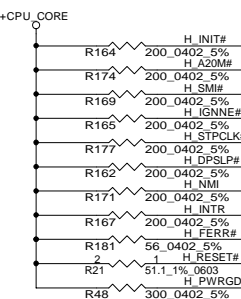
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Date:	星期二, 一月 07, 2003	Sheet 3 of 53

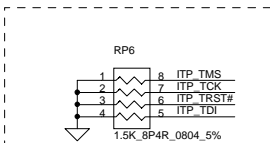


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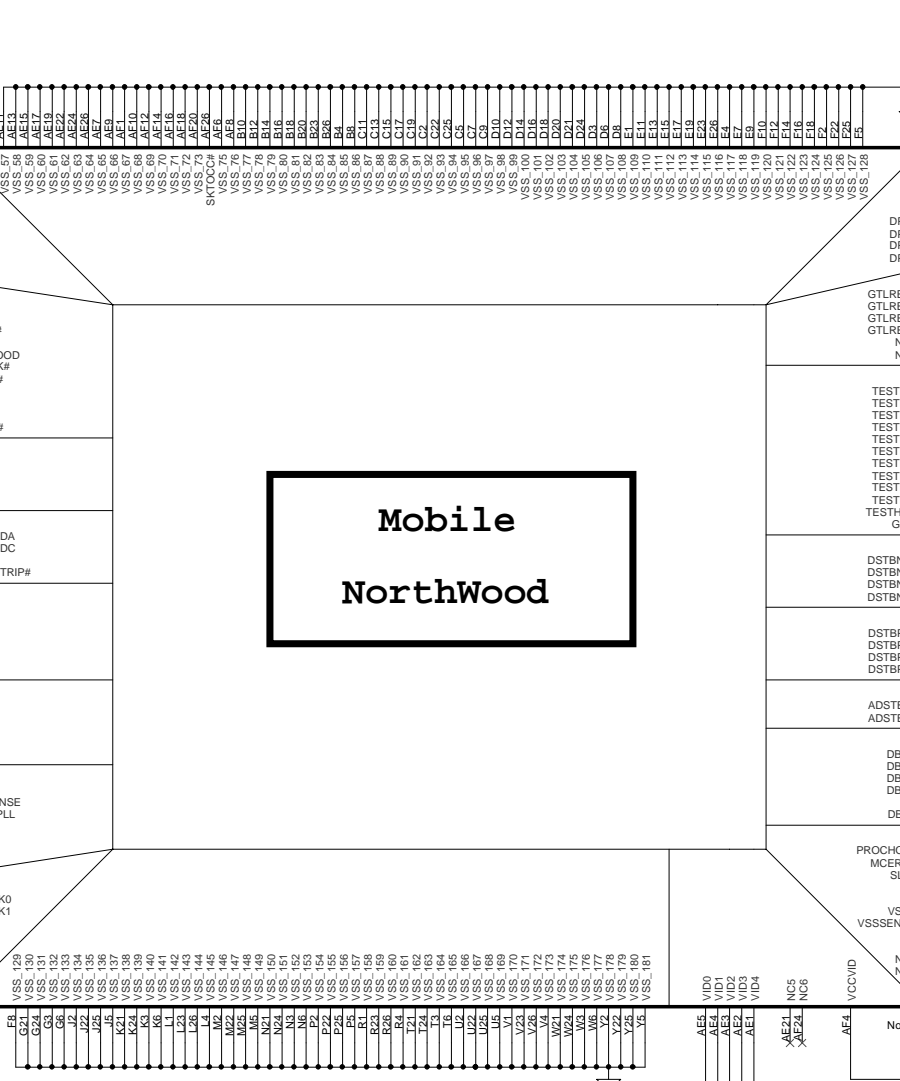
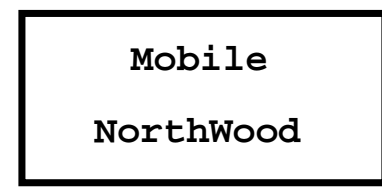
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Date:	星期二, 一月 07, 2003	Sheet 4 of 53



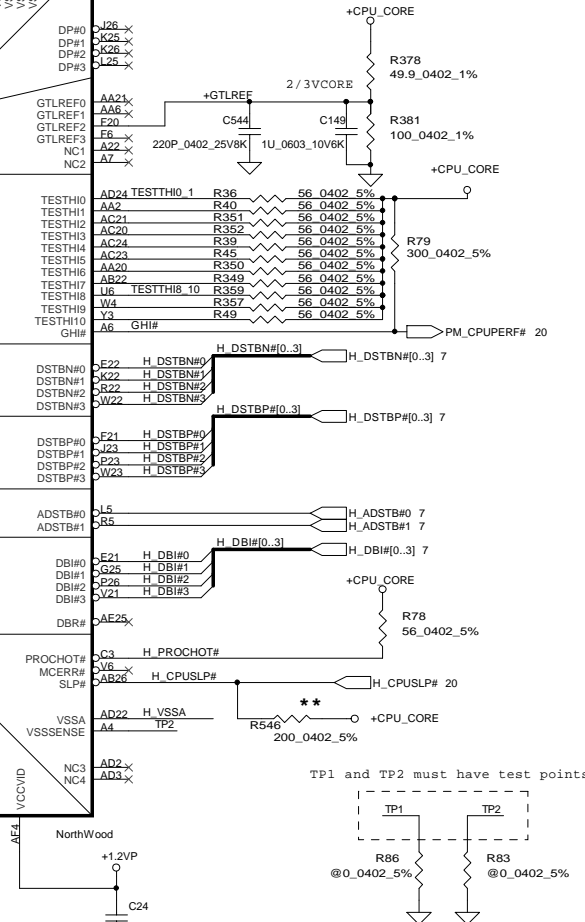
R84 R87 placed with in 0.5" of processor, and at least 25mils away from other signals



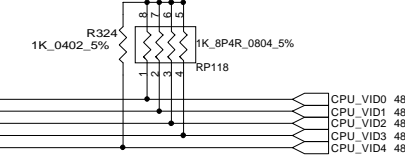
Place pull up resistors near processor



Layout note:
 1. Place R381 and R382 within 0.5" of processor pin F20
 2. Place decoupling cap 220PF near CPU. (Within 500mils)
 3. GTLREF trace width 7 mils, and keep 10mils separated from other signals



CPU Voltage ID



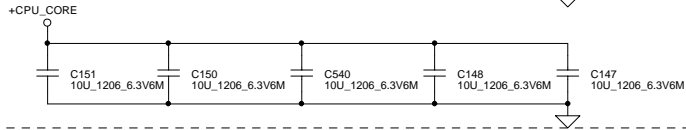
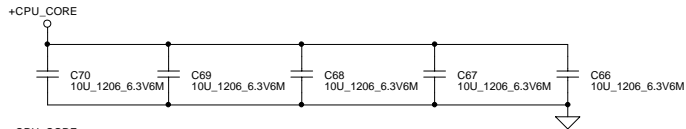
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Date:	星期二, 一月 07, 2003	Sheet	5 of 53

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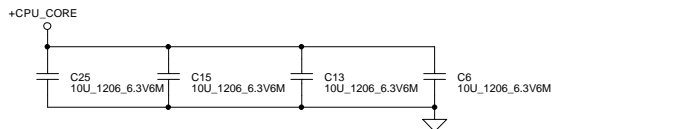
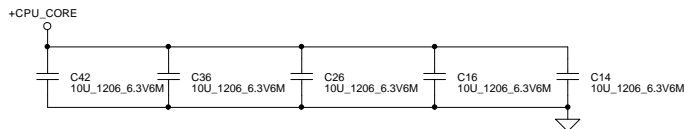
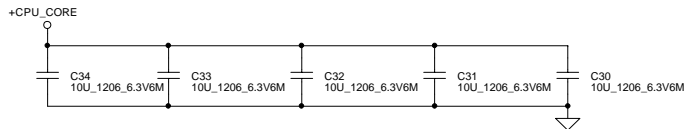
Layout note :

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.

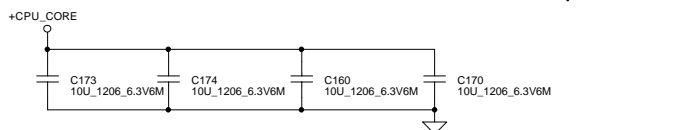
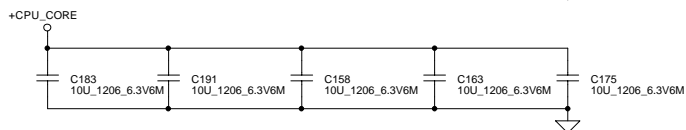
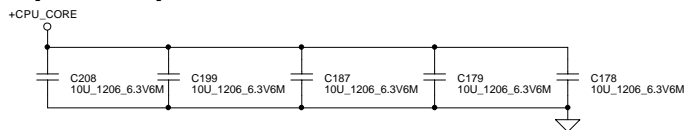
Please place these cap in the socket cavity area



Please place these cap on the socket north side



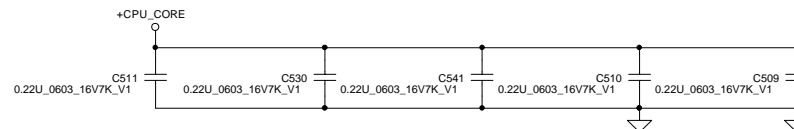
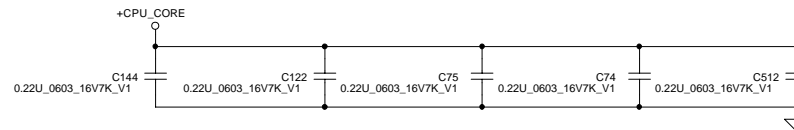
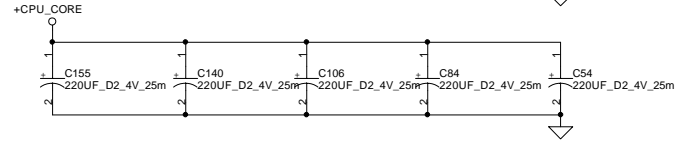
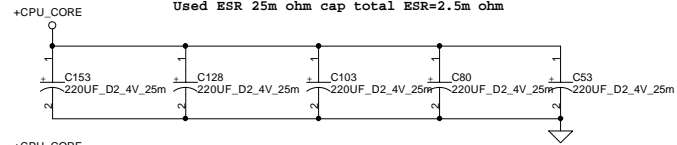
Please place these cap on the socket south side



Layout note :

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

Used ESR 25m ohm cap total ESR=2.5m ohm

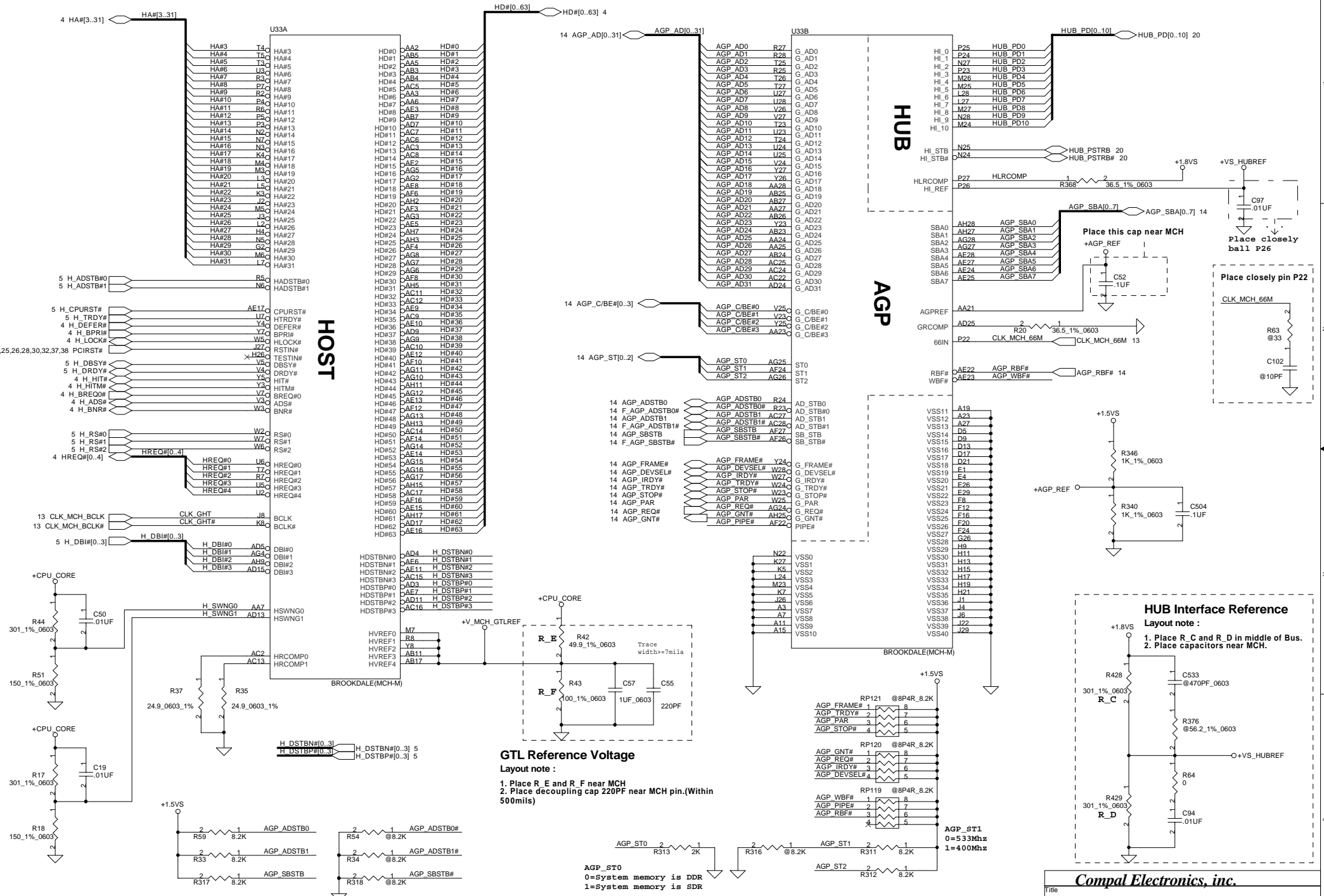


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Title	SCHEMATIC, M/B LA-1691	
Size	Document Number	Rev
Custom	401241	1A
Date:	星期二, 一月 07, 2003	Sheet 6 of 53



HOST

HUB

AGP

GTL Reference Voltage

- Layout note :
1. Place R_E and R_F near MCH
 2. Place decoupling cap 220PF near MCH pin.(Within 500mils)

HUB Interface Reference

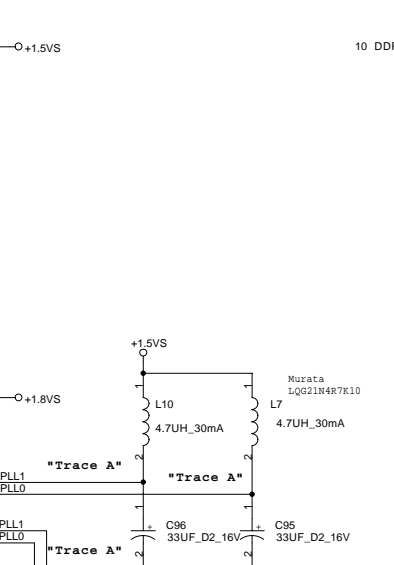
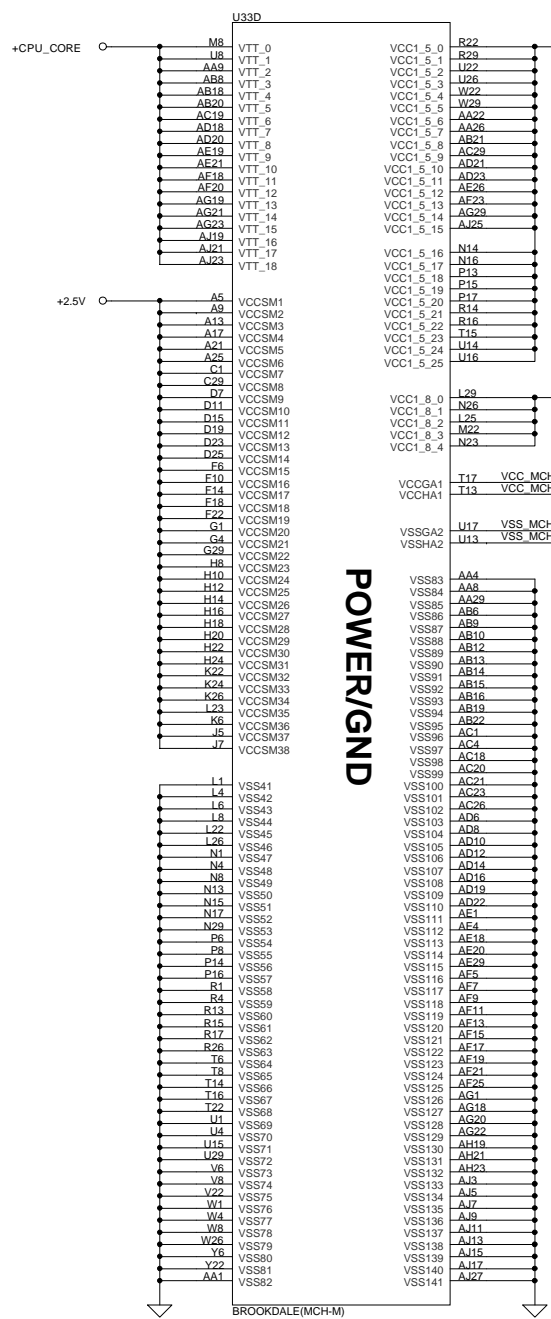
- Layout note :
1. Place R_C and R_D in middle of Bus.
 2. Place capacitors near MCH.

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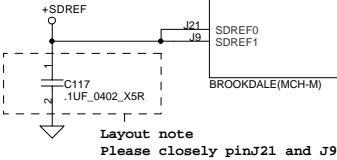
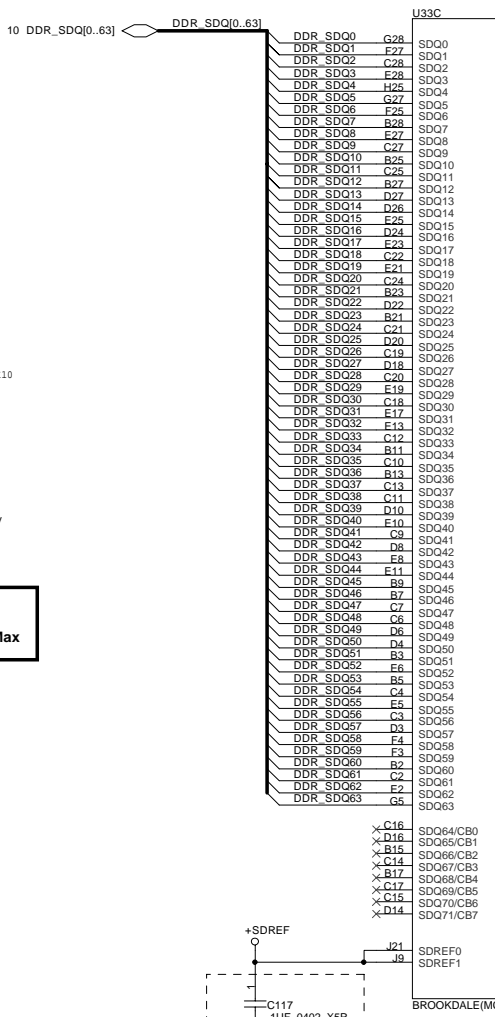
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Title		Rev	
SCHEMATIC, M/B LA-1691		1A	
Size	Document Number	Date	Sheet
	401241	日期: 二月 07, 2003	7 of 53

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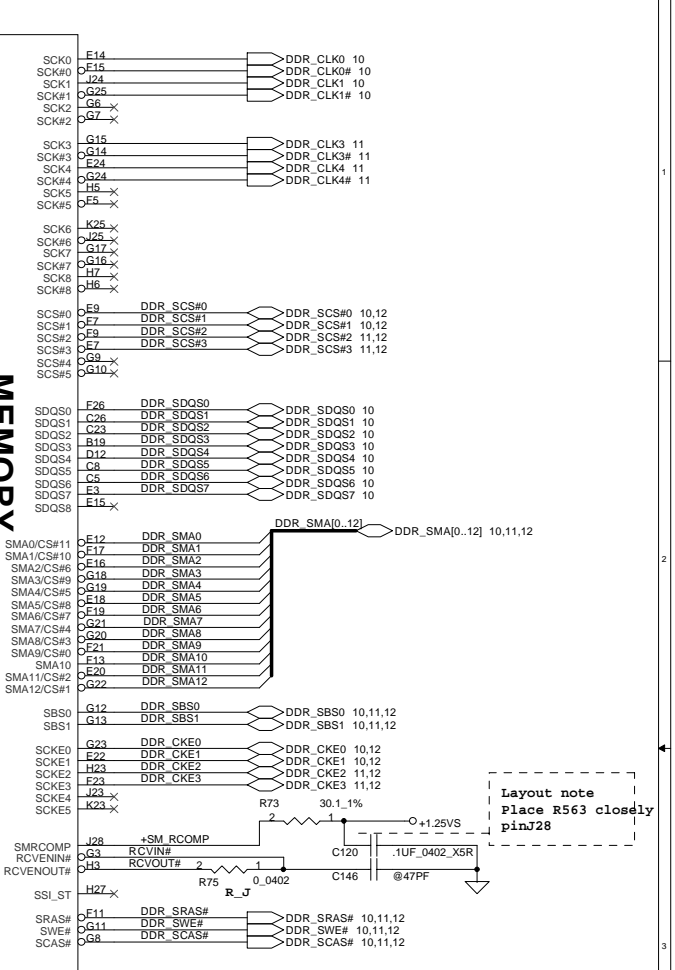


Layout note :
 Trace width 5mil ; Spacing 10mil
 Trace A to ball U7/T7 or U7/T7 =1.5" Max



Layout note
 Please closely pinJ21 and J9

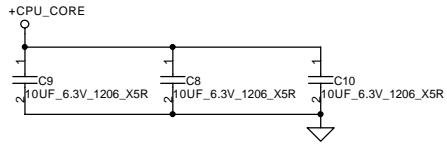
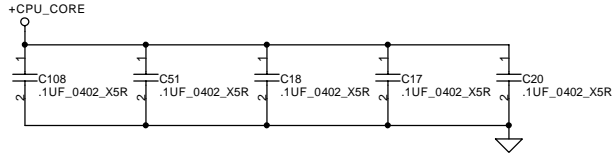
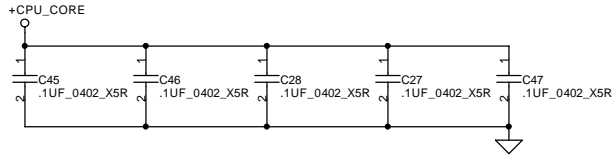
MEMORY



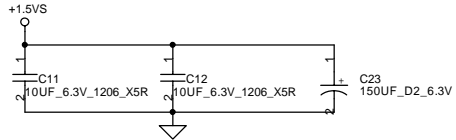
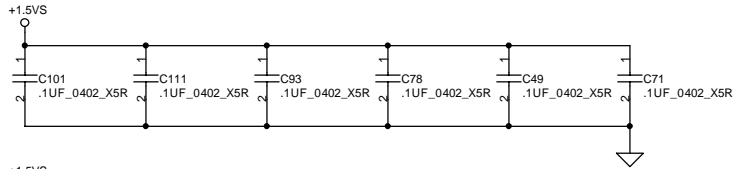
Layout note
 Place R563 closely pinJ28

Layout note
 Place R_J closely Ball H3<40mil, Ball H3 to G3 trace must routing 1"

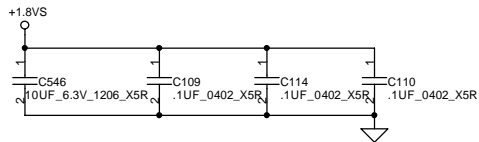
Layout note : Processor system bus
 Distribute as close as possible
 to MCH Processor Quadrant.(between VTTFSB and VSS pin)



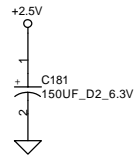
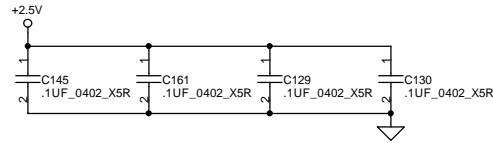
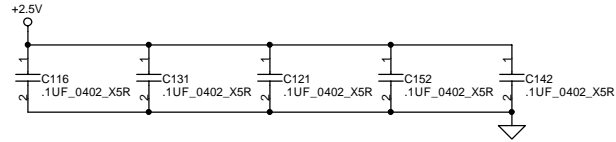
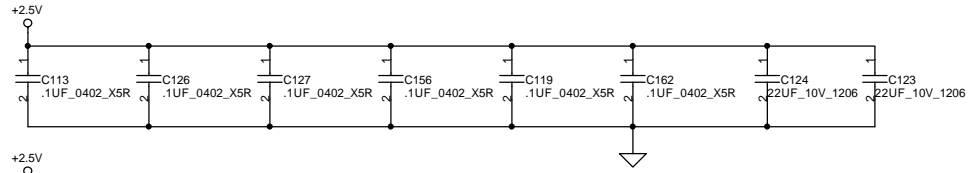
Layout note : AGP/CORE
 Distribute as close as possible
 to MCH Processor Quadrant.(between VCCAGP/VCCCORE
 and VSS pin)



Layout note : Hub-Link
 Distribute as close as possible
 to MCH Processor Quadrant.(between VCCHL and VSS pin)



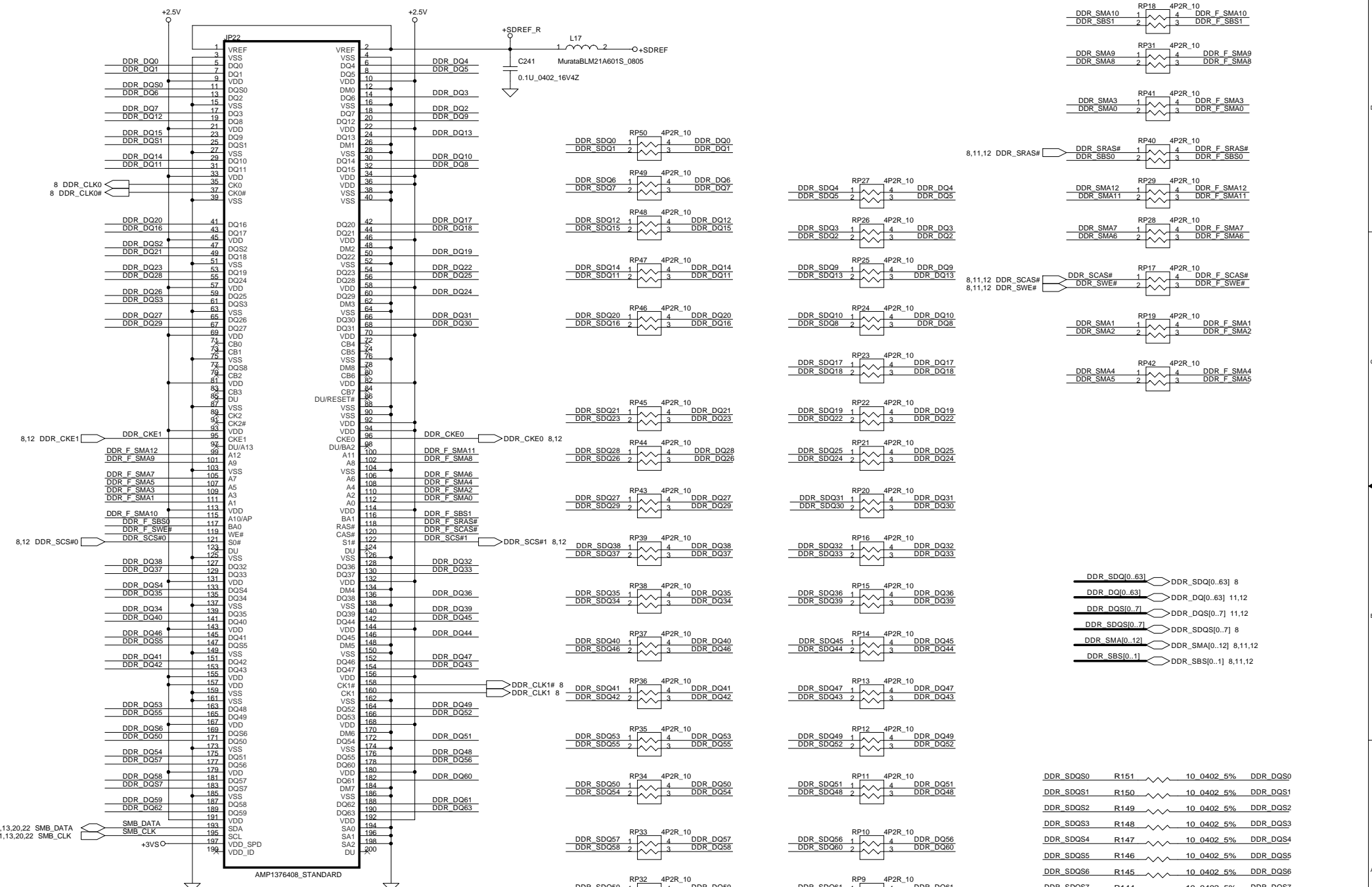
Layout note : DDR Memory interface
 Distribute as close as possible
 to MCH Processor Quadrant.(between VCCSM and VSS pin)



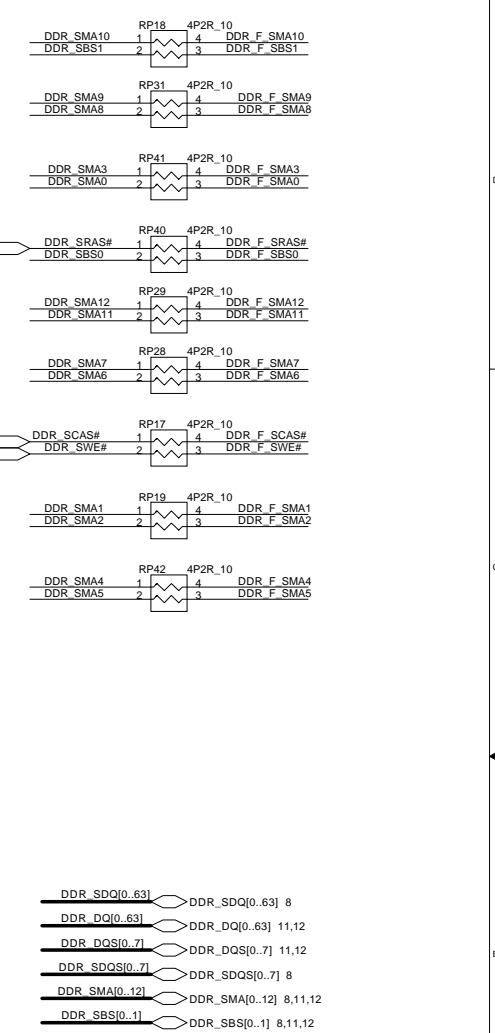
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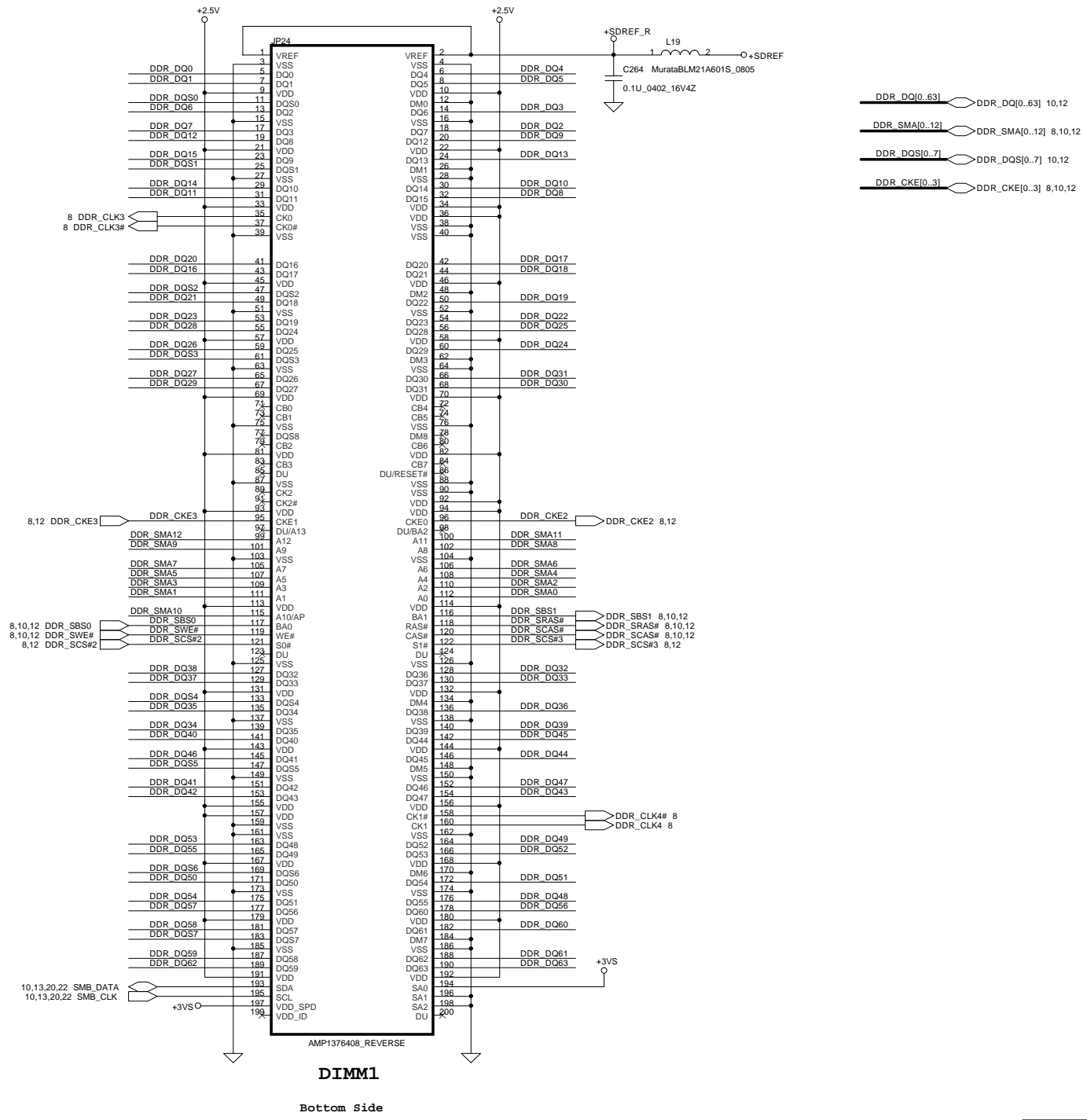


DIMMO
Bottom Side



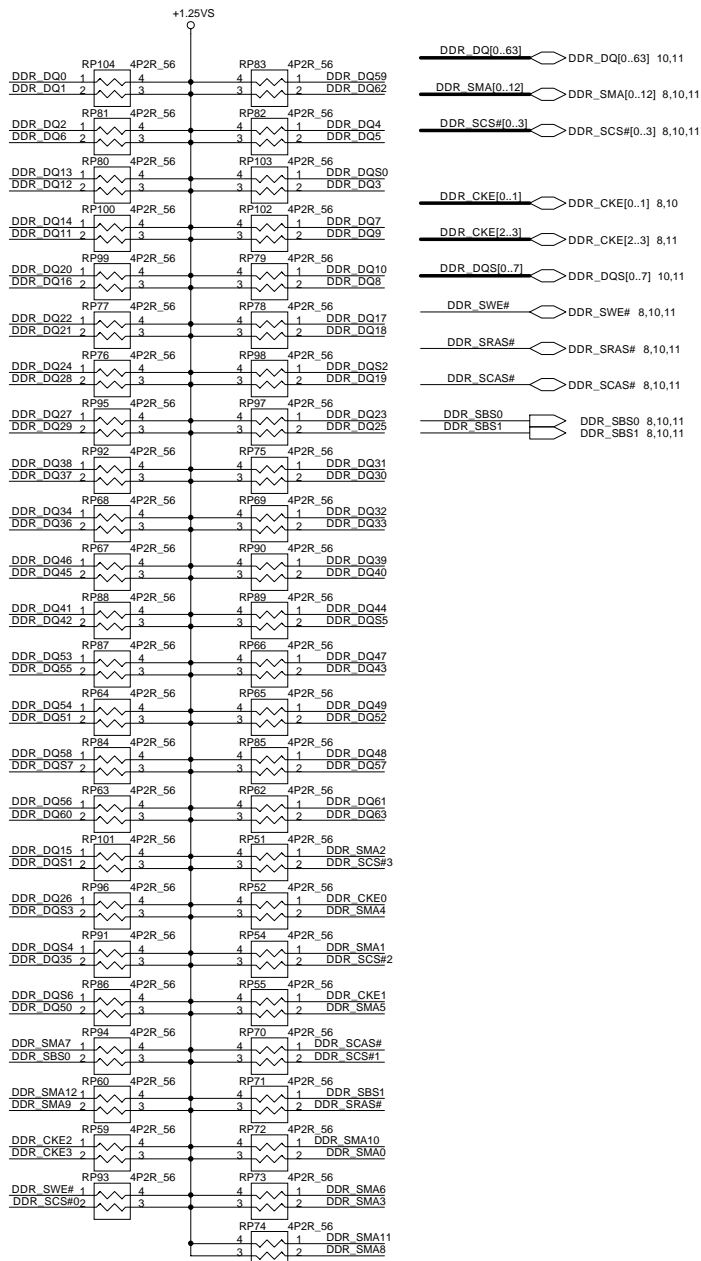
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DDR_DQ0{.63}	R150	10_0402_5%	DDR_DQ0{.63}	11,12
DDR_DQS0{.71}	R149	10_0402_5%	DDR_DQS0{.71}	11,12
DDR_SQS0{.71}	R148	10_0402_5%	DDR_SQS0{.71}	8
DDR_SMA0{.12}	R147	10_0402_5%	DDR_SMA0{.12}	8,11,12
DDR_SBS0{.11}	R146	10_0402_5%	DDR_SBS0{.11}	8,11,12
DDR_SQS7	R145	10_0402_5%	DDR_DQS7	
DDR_SQS6	R144	10_0402_5%	DDR_DQS6	
DDR_SQS5	R143	10_0402_5%	DDR_DQS5	
DDR_SQS4	R142	10_0402_5%	DDR_DQS4	
DDR_SQS3	R141	10_0402_5%	DDR_DQS3	
DDR_SQS2	R140	10_0402_5%	DDR_DQS2	
DDR_SQS1	R139	10_0402_5%	DDR_DQS1	
DDR_SQS0	R138	10_0402_5%	DDR_DQS0	

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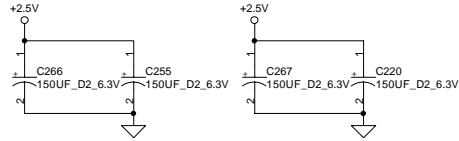
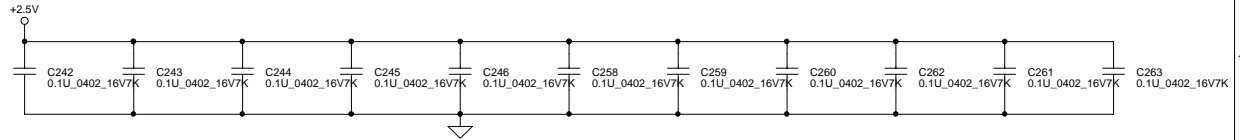


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Size	Document Number	Rev
Custom	401241	1A
Date:	星期二, 一月 07, 2003	Sheet 11 of 53

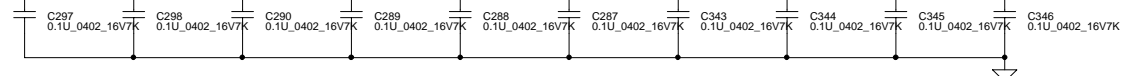
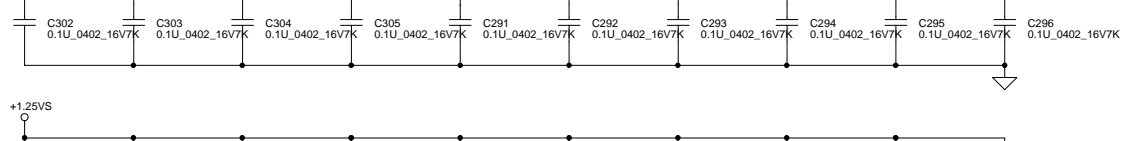
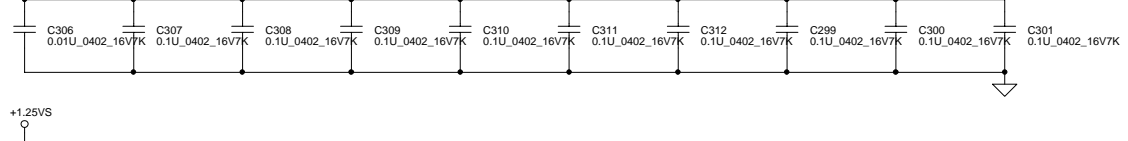
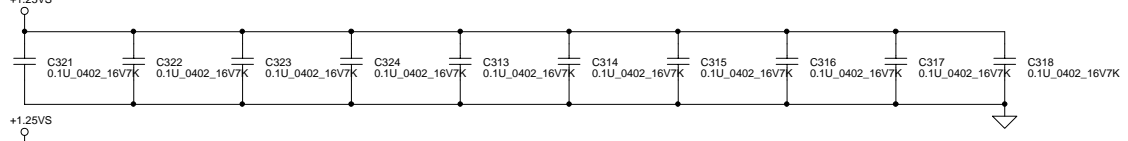
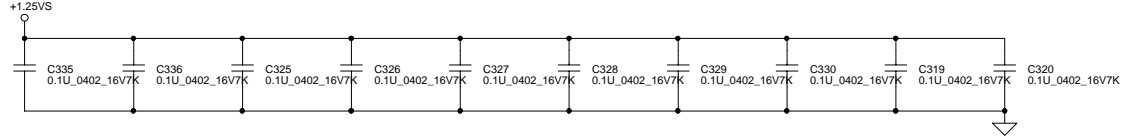
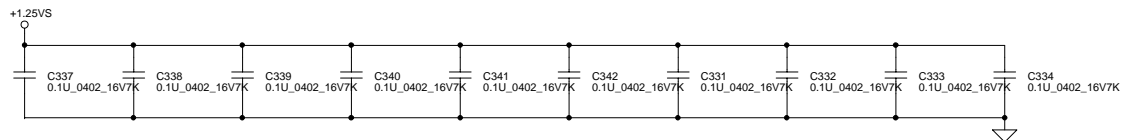
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Layout note :
Distribute as close as possible to DDR-SODIMM.



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



Compal Electronics, inc.

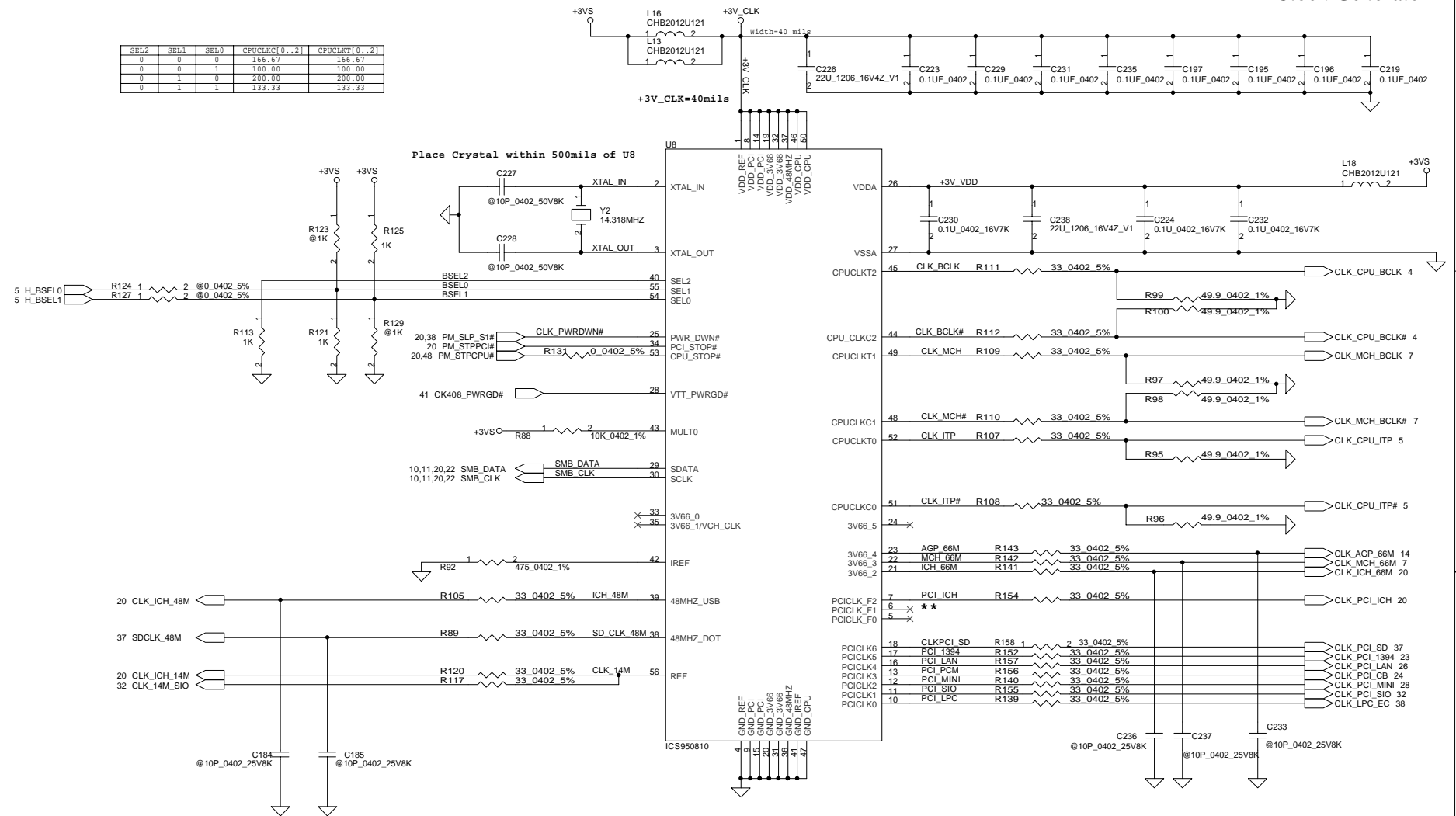
Title: SCHEMATIC, M/B LA-1691

Size	Document Number	Rev
Custom	401241	1A
Date:	星期二, 一月 07, 2003	Sheet 12 of 53

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Clock Generator

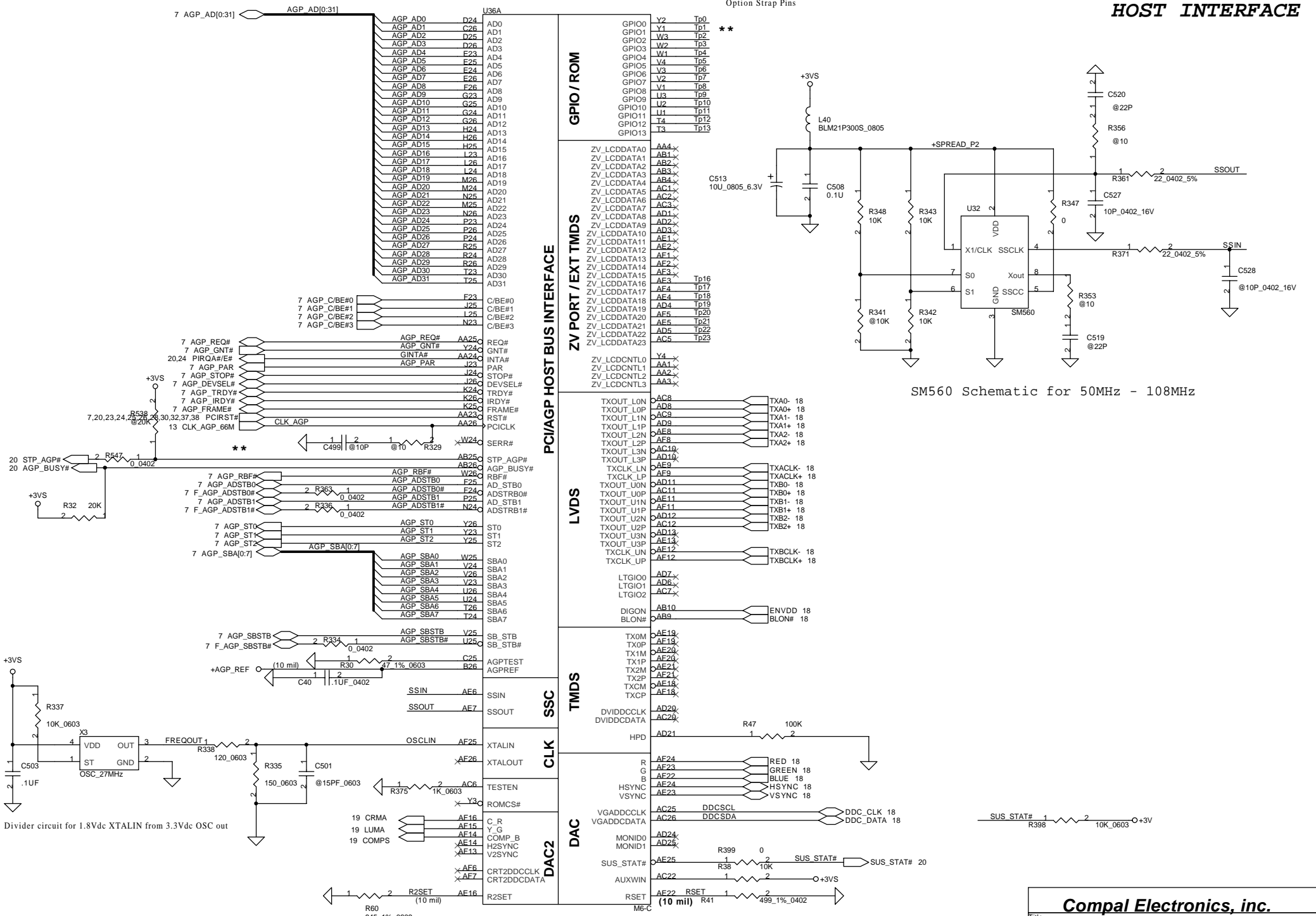
SEL2	SEL1	SEL0	CPUCLK[0..2]	CPUCLKT[0..2]
0	0	0	156.67	156.67
0	0	1	100.00	100.00
0	1	0	200.00	200.00
0	1	1	133.33	133.33



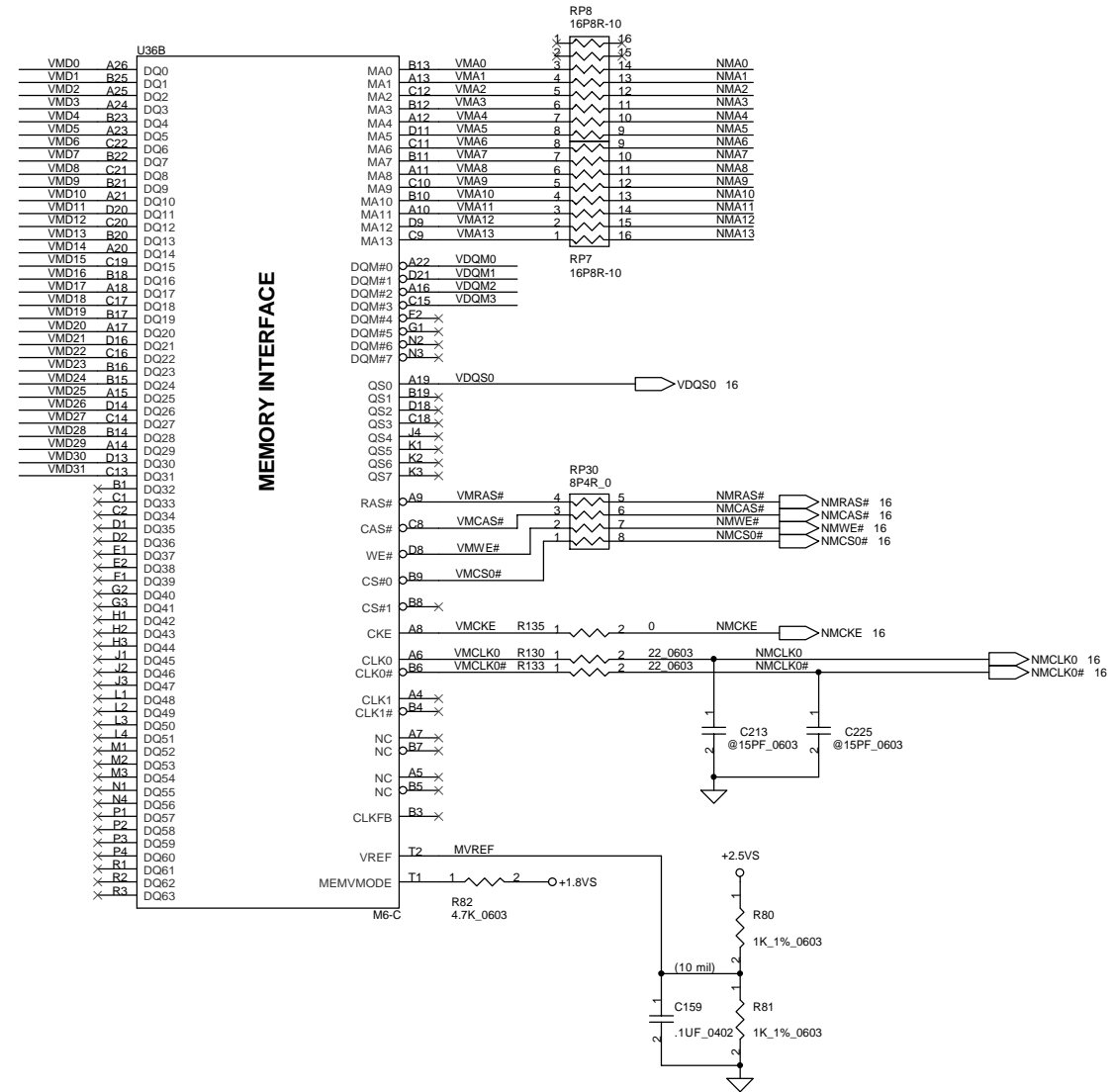
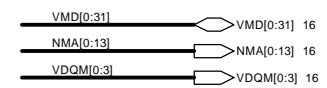
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SCHEMATIC, M/B LA-1691			
Title			
Size	Document Number	Rev	
Custom	401241	1A	
Date:	星期二, 一月 07, 2003	Sheet	13 of 53

HOST INTERFACE



MEMORY INTERFACE

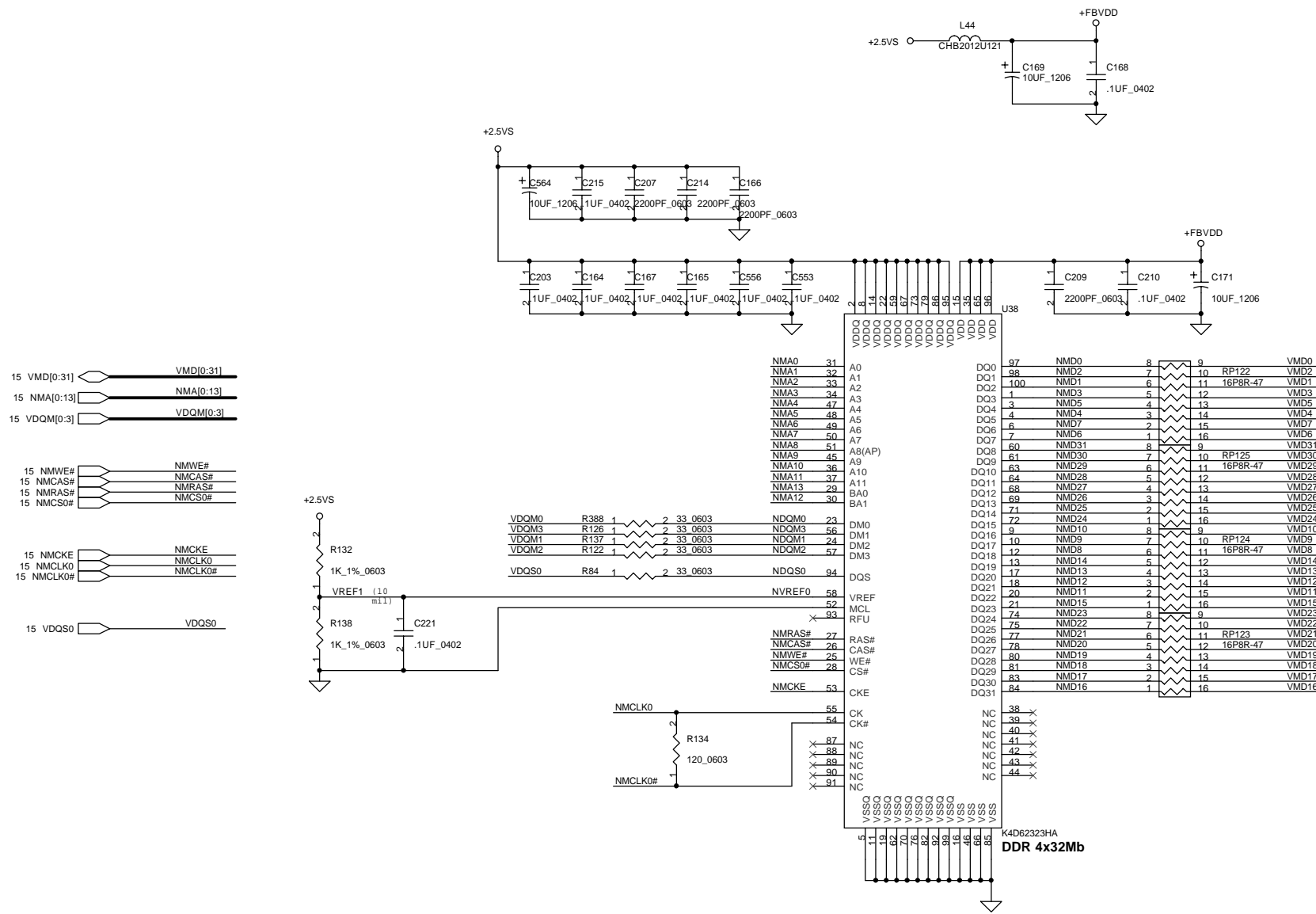


MEMORY INTERFACE

Compal Electronics, inc.	
Title	SCHEMATIC, M/B LA-1691
Size	Document Number
Custom	401241
Date	Rev 1A
Date	Rev
星期二, 一月 07, 2003	15 of 53

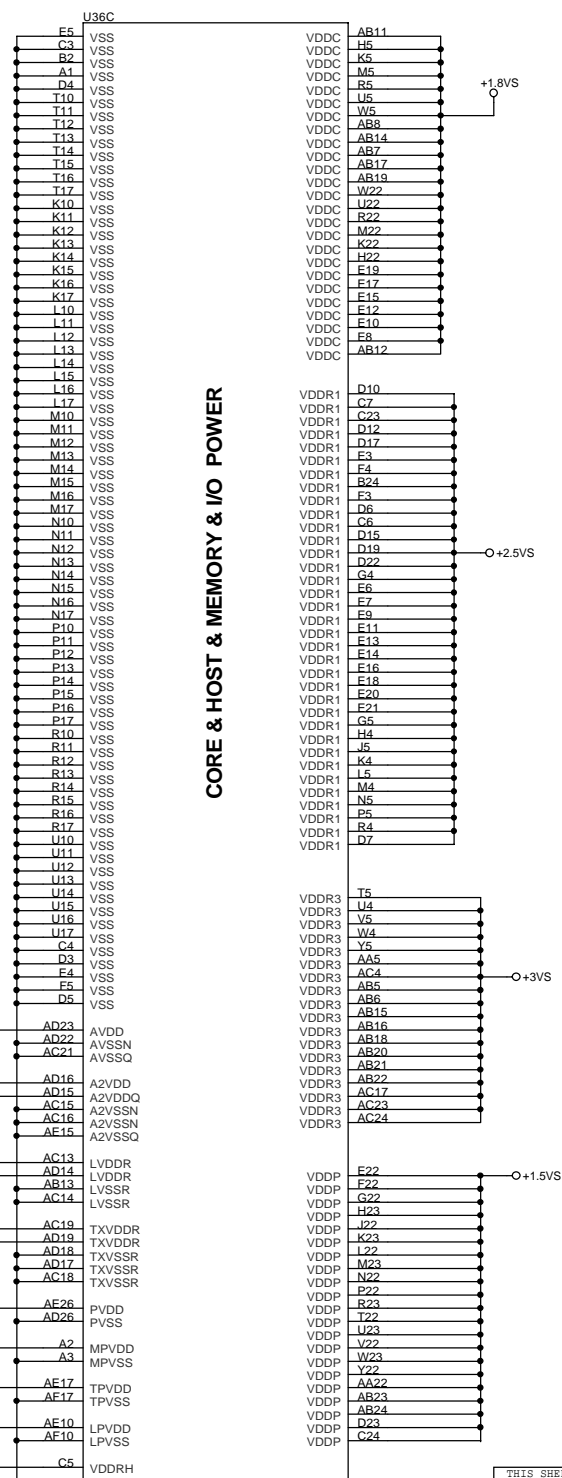
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DDR SDRAM 4X32Mb



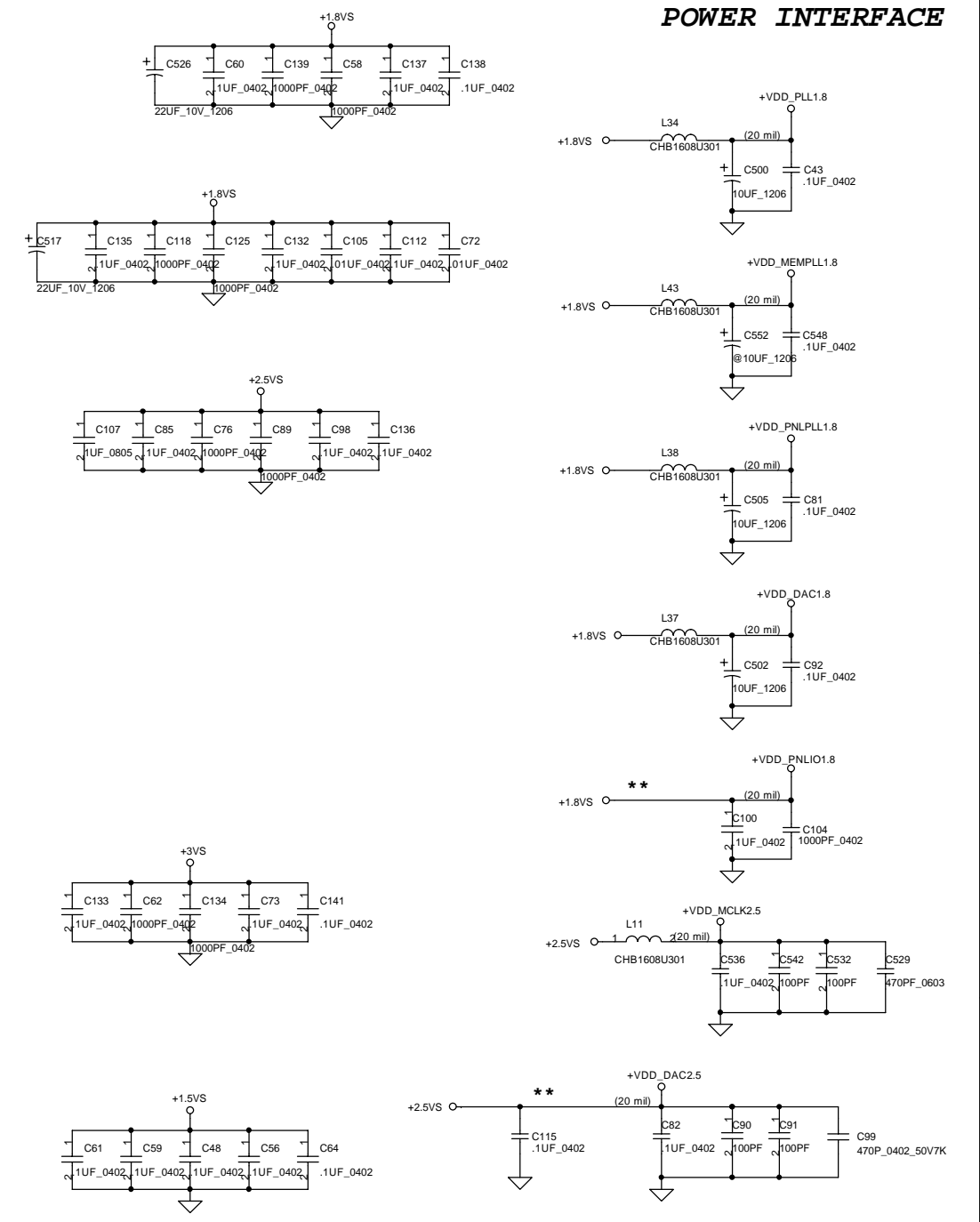
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Size	Document Number	Rev
Custom	401241	1A
Date:	星期二, 一月 07, 2003	Sheet 16 of 53



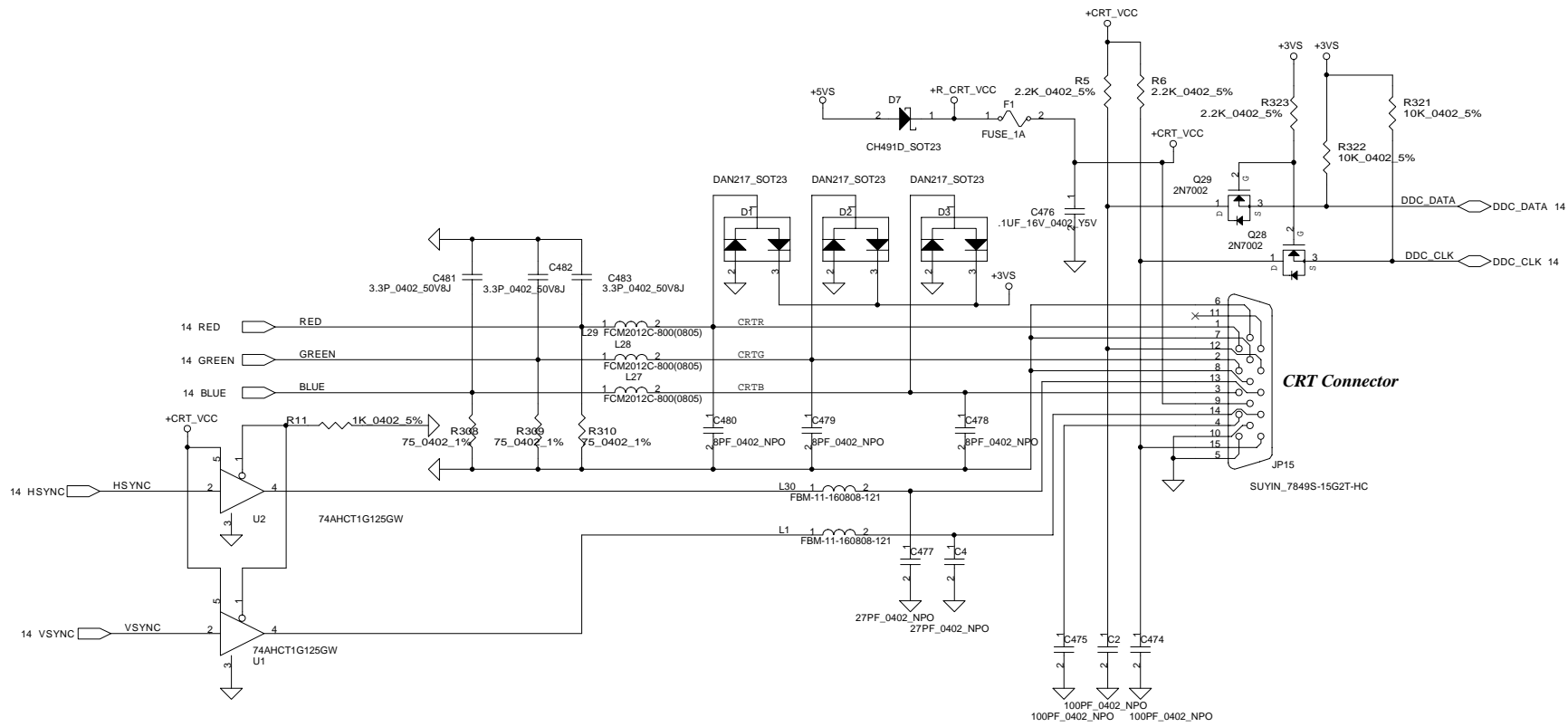
CORE & HOST & MEMORY & IO POWER

POWER INTERFACE

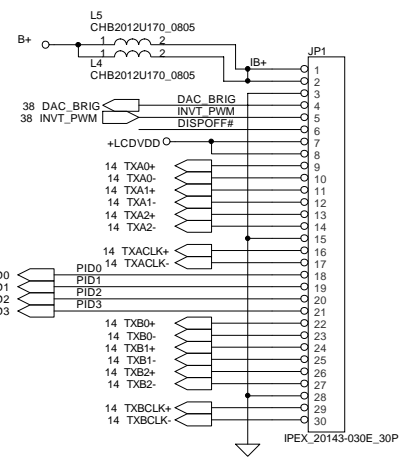
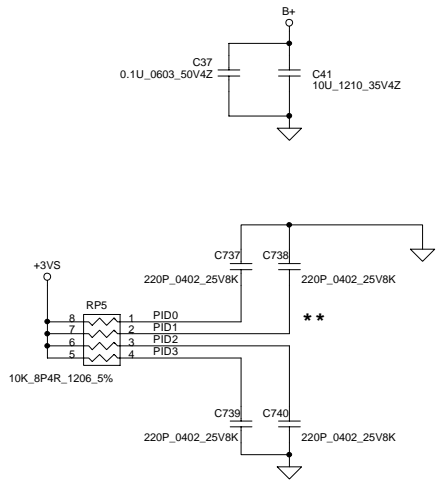
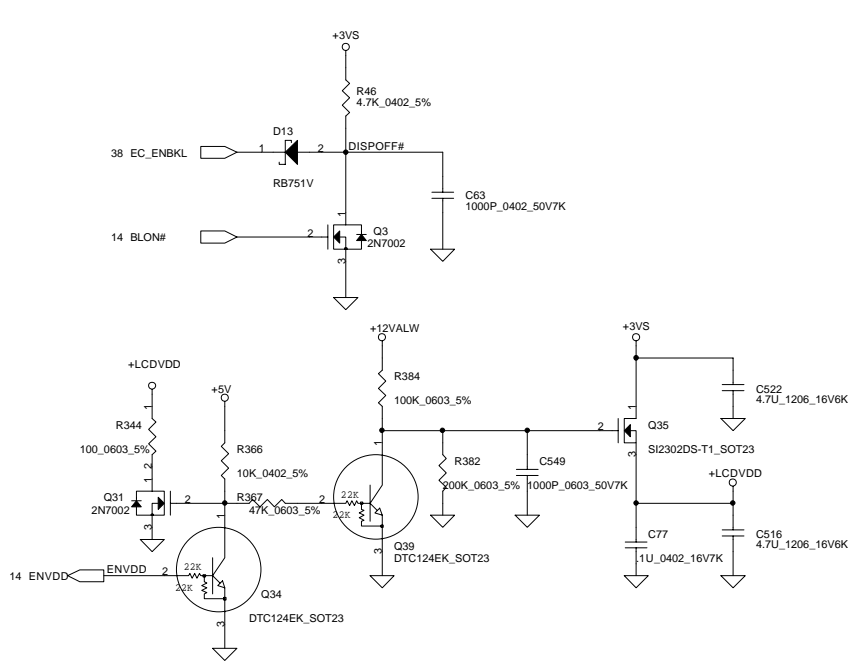
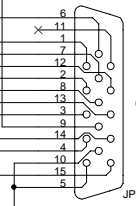


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Title	SCHEMATIC, M/B LA-1691	
Size	Document Number	Rev
Custom	401241	1A
Date:	星期二, 一月 07, 2003	Sheet 17 of 53



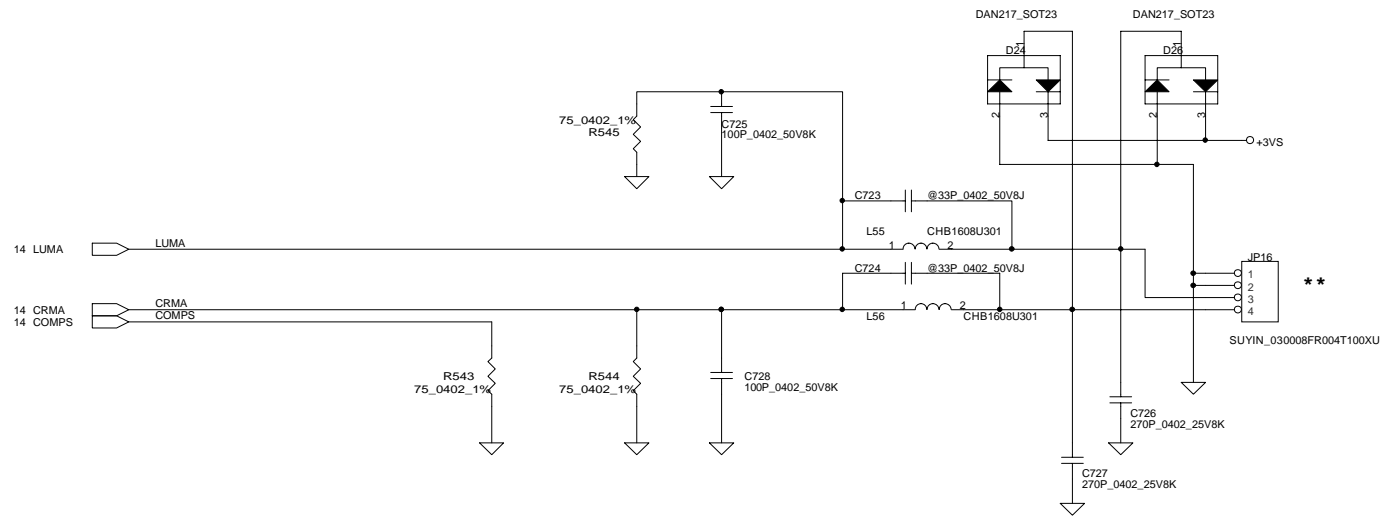
CRT Connector



Compal Electronics, inc.		
Title SCHEMATIC, M/B LA-1691		
Size Custom	Document Number 401241	Rev 1A
Date: 星期二, 一月 07, 2003	Sheet 18 of 53	

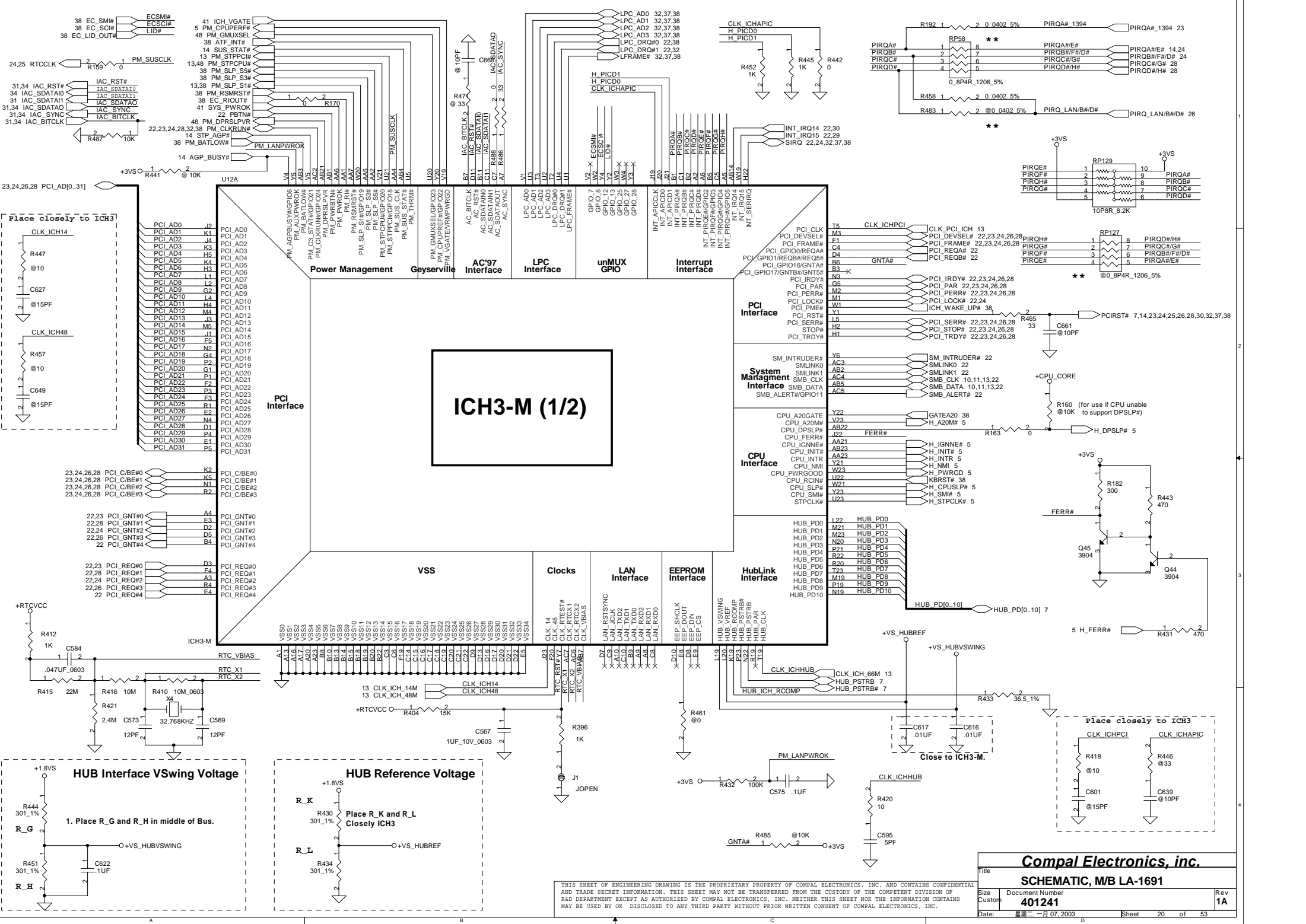
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TV-OUT CONN.

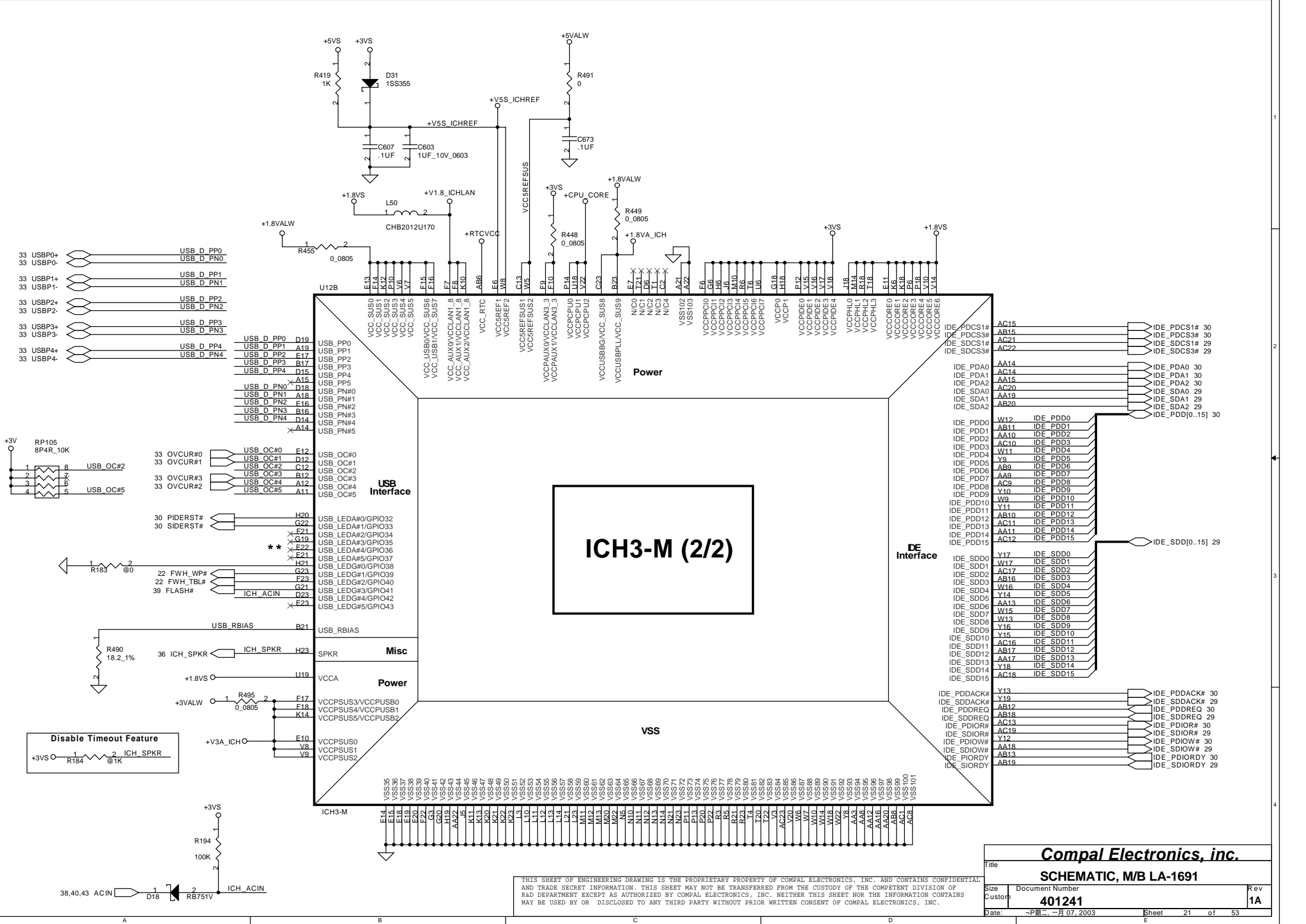


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Size Custom	Document Number 401241	Rev 1A
Date: 星期二, 一月 07, 2003	Sheet 19	of 53



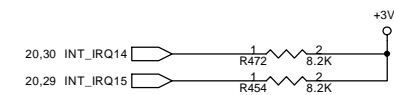
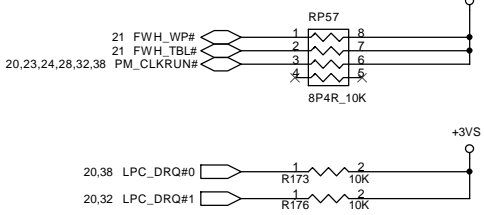
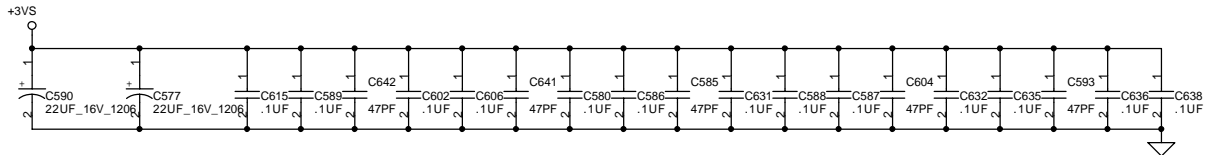
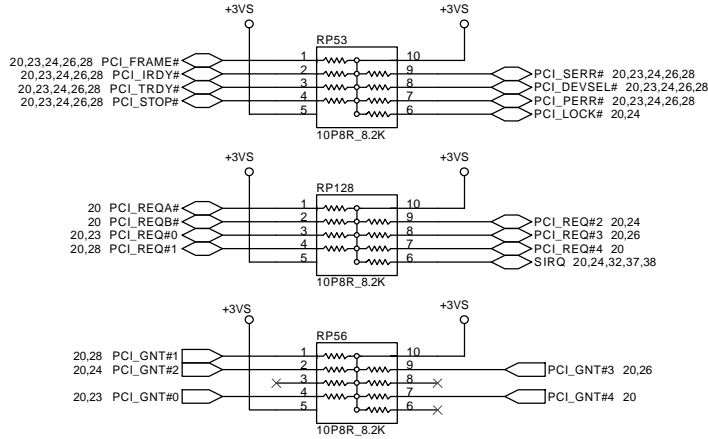
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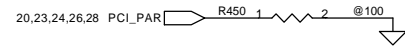
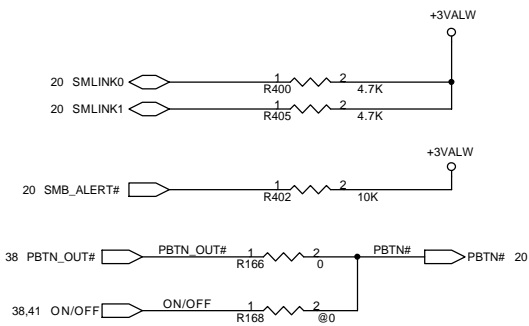
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SCHEMATIC, M/B LA-1691		
Title	Document Number	Rev
	401241	1A
Size	Date	Sheet
Custom	~P 周二, 一月 07, 2003	21 of 53

+3VS PULL-UP/BY-PASS



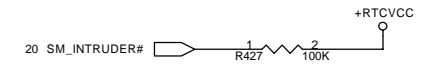
+3VALW PULL-UP



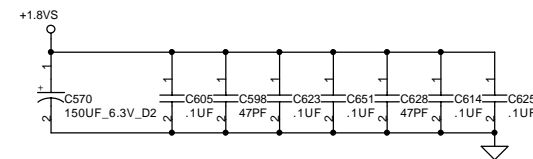
+3V PULL-UP/BY-PASS



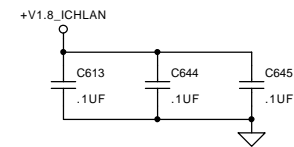
+RTC VCC PULL-UP



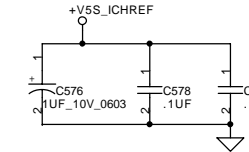
+1.8SV BY-PASS



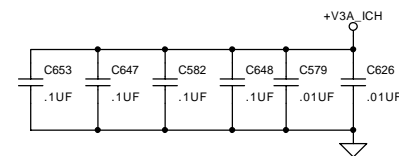
+V1.8V_ICHLAN BY-PASS



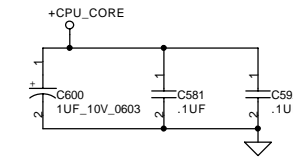
+V5S_ICHREF BY-PASS



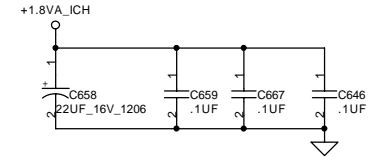
+V3A_ICH BY-PASS



+CPU_CORE BY-PASS

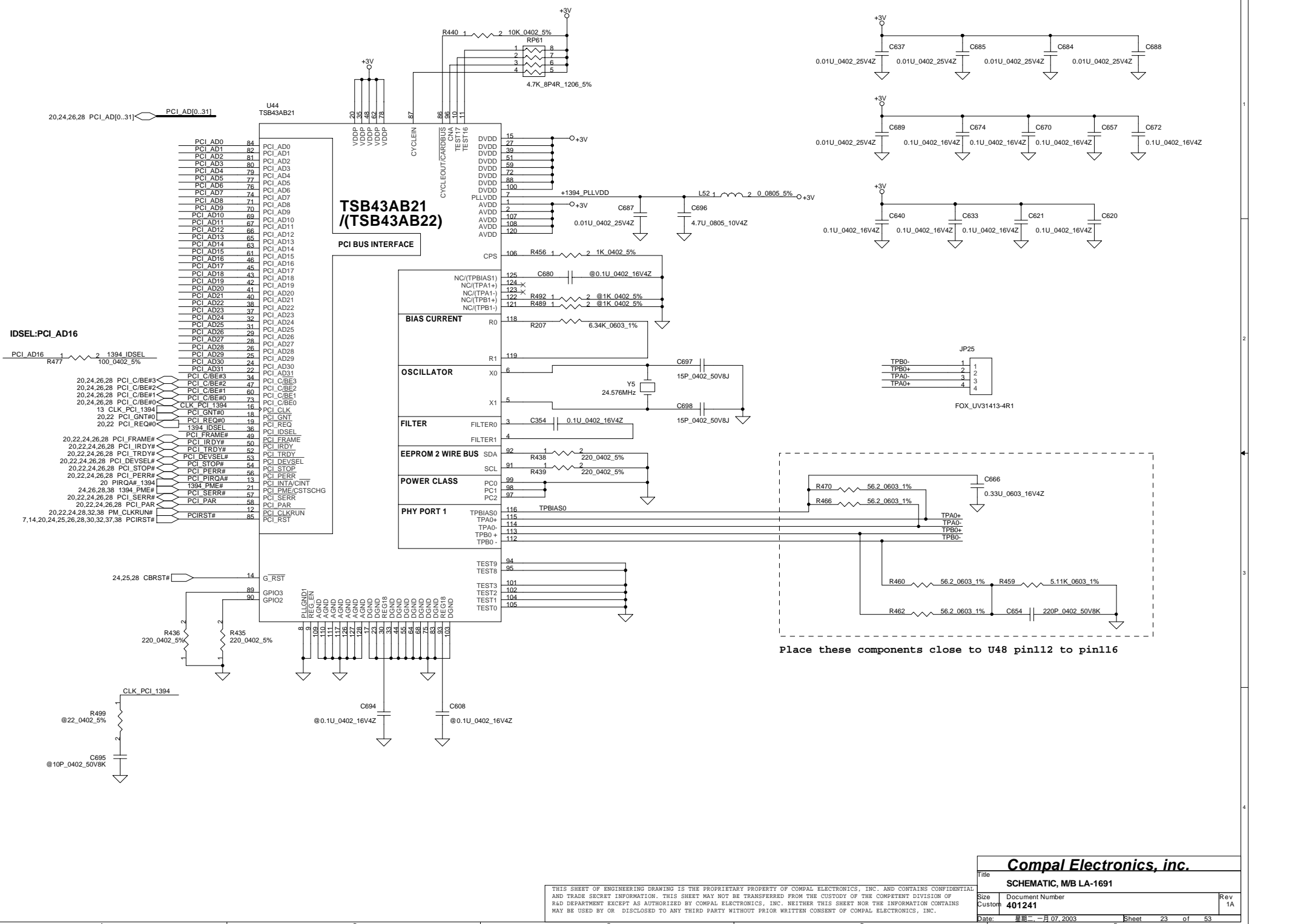


+1.8VA_ICH BY-PASS



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SCHEMATIC, M/B LA-1691			
Size	Document Number	Rev	
Custom	401241	1A	
Date:	~P星期二, 一月 07, 2003	Sheet	22 of 53



20,24,26,28 PCI_AD[0..31] PCI_AD[0..31]

IDSEL-PCI_AD16
 PCI_AD16 1 1394 IDSEL
 R477 100_0402_5%

20,24,26,28 PCI_C/BE#3
 20,24,26,28 PCI_C/BE#2
 20,24,26,28 PCI_C/BE#1
 20,24,26,28 PCI_C/BE#0
 13 CLK PCI_1394
 20,22 PCI_GNT#0
 20,22 PCI_REQ#0
 20,22,24,26,28 PCI_FRAME#
 20,22,24,26,28 PCI_IRDY#
 20,22,24,26,28 PCI_TRDY#
 20,22,24,26,28 PCI_DEVSEL#
 20,22,24,26,28 PCI_STOP#
 20,22,24,26,28 PCI_PERR#
 20 PIRQA# 1394
 24,26,28,38 1394 PME#
 20,22,24,26,28 PCI_SERR#
 20,22,24,26,28 PCI_PAR#
 7,14,20,24,25,26,28,30,32,37,38 PCIRST#

24,25,28 CBRST# 14
 G_RST
 GPIO3 89
 GPIO2 90
 R436 220_0402_5%
 R435 220_0402_5%

CLK PCI_1394
 R499 @22_0402_5%
 C695 @10P_0402_50V8K

TSB43AB21 (TSB43AB22)

PCI BUS INTERFACE

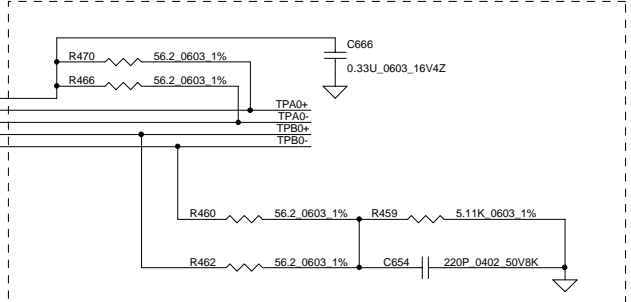
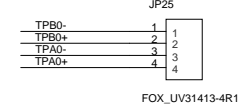
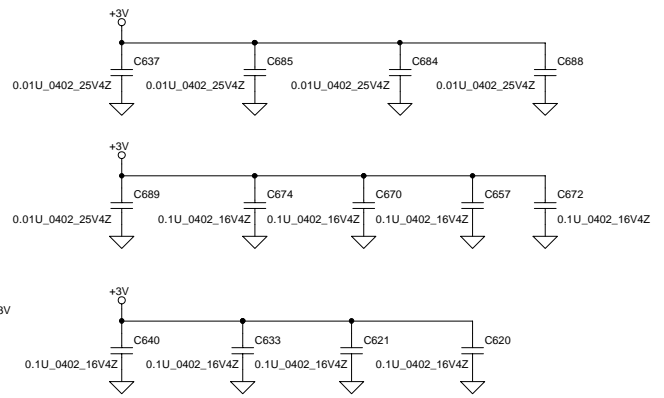
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PCI_AD1	82	PCI_AD1	27
PCI_AD2	81	PCI_AD2	39
PCI_AD3	80	PCI_AD3	51
PCI_AD4	79	PCI_AD4	59
PCI_AD5	77	PCI_AD5	72
PCI_AD6	76	PCI_AD6	88
PCI_AD7	74	PCI_AD7	100
PCI_AD8	71	PCI_AD8	7
PCI_AD9	70	PCI_AD9	1
PCI_AD10	67	PCI_AD10	2
PCI_AD11	67	PCI_AD11	107
PCI_AD12	66	PCI_AD12	108
PCI_AD13	65	PCI_AD13	120
PCI_AD14	63	PCI_AD14	
PCI_AD15	61	PCI_AD15	
PCI_AD16	46	PCI_AD16	
PCI_AD17	43	PCI_AD17	
PCI_AD18	43	PCI_AD18	
PCI_AD19	42	PCI_AD19	
PCI_AD20	41	PCI_AD20	
PCI_AD21	40	PCI_AD21	
PCI_AD22	38	PCI_AD22	
PCI_AD23	37	PCI_AD23	
PCI_AD24	32	PCI_AD24	
PCI_AD25	31	PCI_AD25	
PCI_AD26	29	PCI_AD26	
PCI_AD27	28	PCI_AD27	
PCI_AD28	26	PCI_AD28	
PCI_AD29	25	PCI_AD29	
PCI_AD30	24	PCI_AD30	
PCI_AD31	22	PCI_AD31	
PCI_C/BE#3	34	PCI_C/BE3	
PCI_C/BE#2	47	PCI_C/BE2	
PCI_C/BE#1	60	PCI_C/BE1	
PCI_C/BE#0	73	PCI_C/BE0	
CLK PCI_1394	16	PCI_CLK	
PCI_GNT#0	18	PCI_GNT	
PCI_REQ#0	19	PCI_REQ	
1394 IDSEL	36	PCI_IDSEL	
PCI_FRAME#	49	PCI_FRAME	
PCI_IRDY#	50	PCI_IRDY	
PCI_TRDY#	52	PCI_TRDY	
PCI_DEVSEL#	53	PCI_DEVSEL	
PCI_STOP#	54	PCI_STOP	
PCI_PERR#	56	PCI_PERR	
PCI_PIRQA#	13	PCI_INTA/CINT	
1394 PME#	21	PCI_PME/CSTSCHG	
PCI_SERR#	57	PCI_SERR	
PCI_PAR#	58	PCI_PAR	
PCI_CLKRUN#	12	PCI_CLKRUN	
PCIRST#	85	PCI_RST	

PHY PORT 1

TPBIAS0	116
TPA0+	115
TPA0-	114
TPB0+	113
TPB0-	112
TEST9	94
TEST8	95
TEST3	101
TEST2	102
TEST1	104
TEST0	105

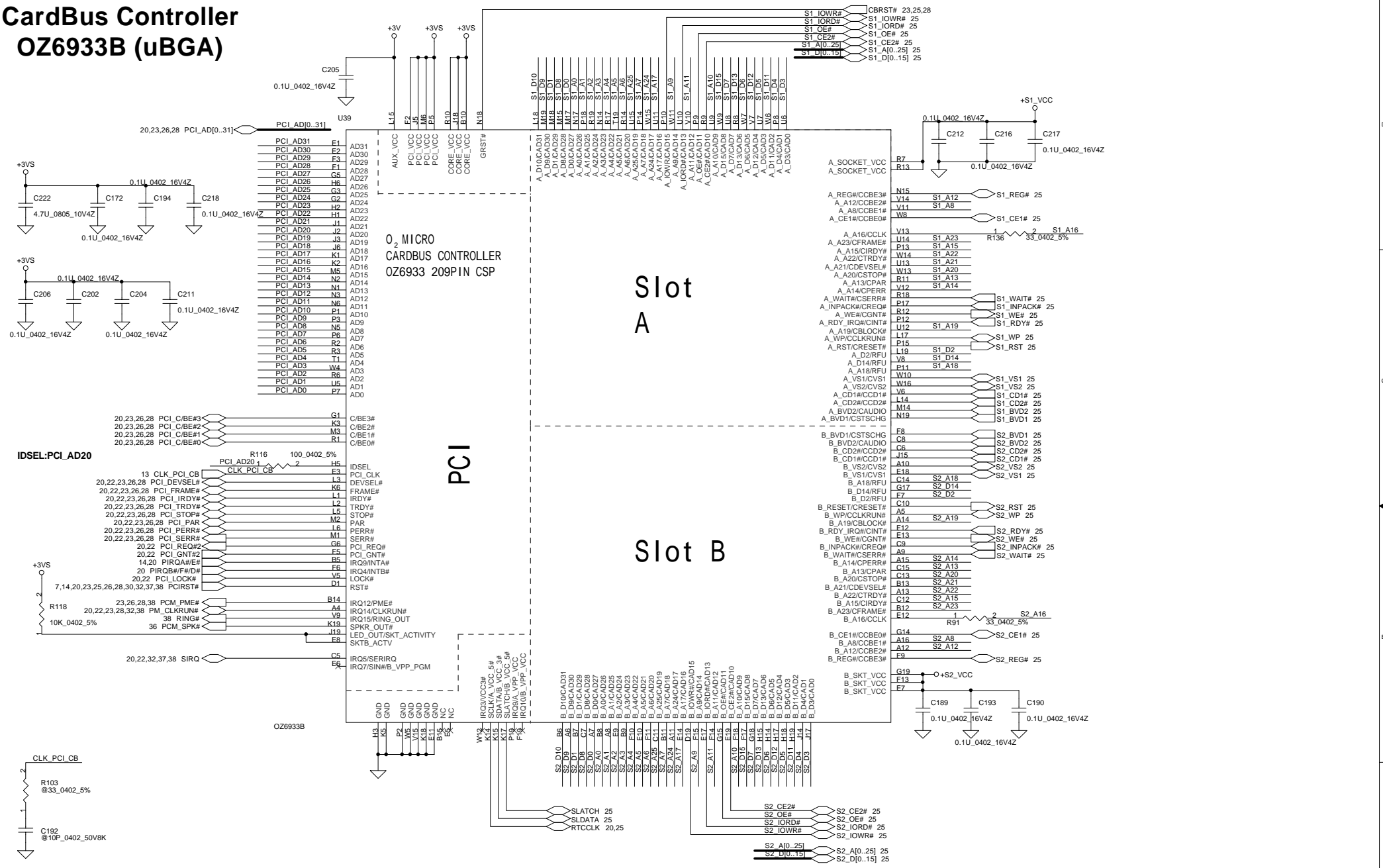
REG EN 100
 AGND 110
 AGND 111
 AGND 112
 AGND 117
 AGND 127
 AGND 128
 AGND 129
 DGND 30
 DGND 33
 DGND 44
 DGND 49
 DGND 68
 DGND 72
 DGND 75
 DGND 88
 DGND 103

C694 @0.1U_0402_16V4Z
 C608 @0.1U_0402_16V4Z



Place these components close to U48 pin112 to pin116

CardBus Controller OZ6933B (uBGA)

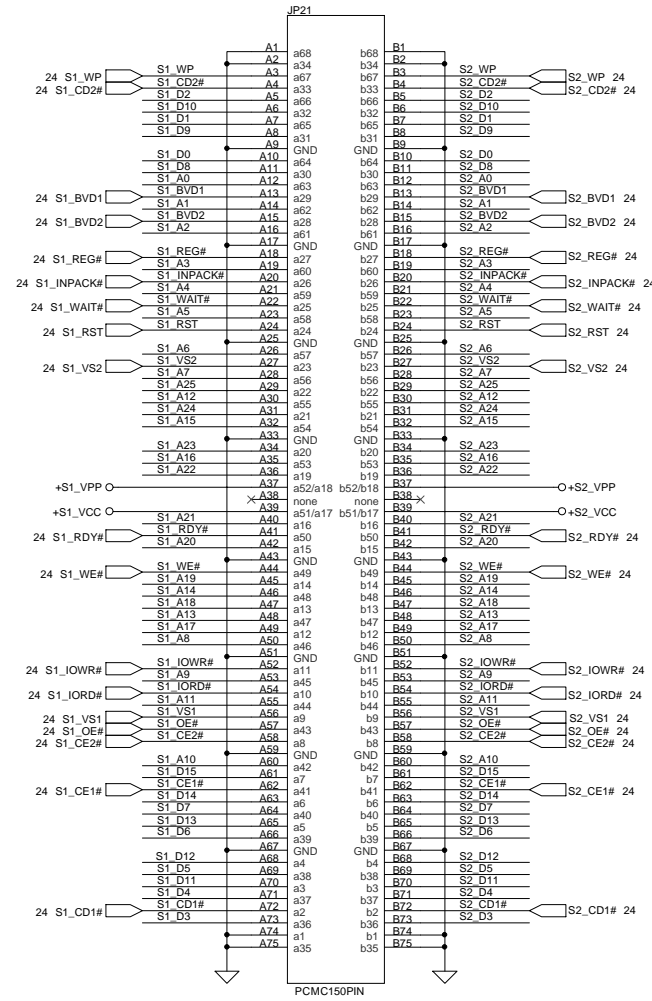
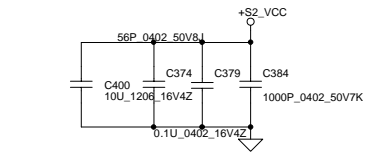
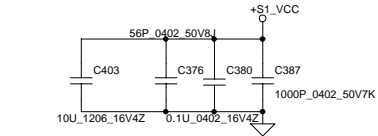
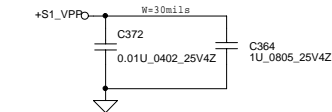
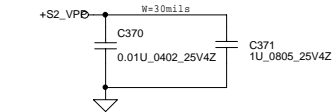
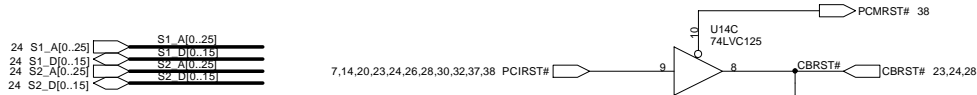
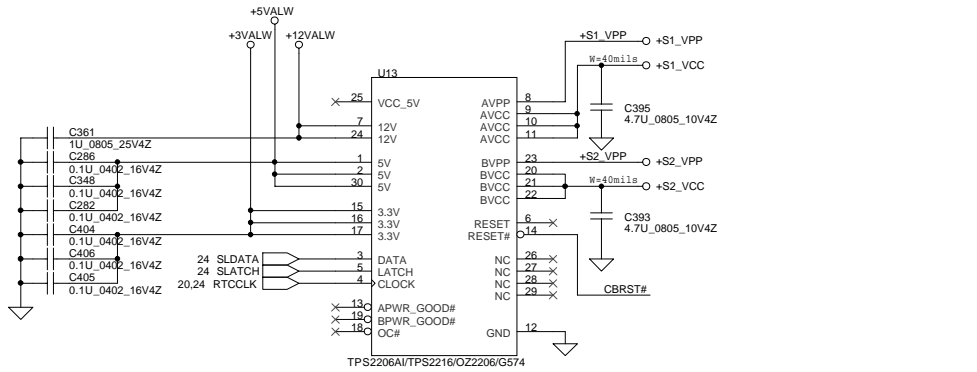


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Title			
Size	Document Number	Rev	
Custom	401241	1A	
Date	星期二, 一月 07, 2003	Sheet	24 of 53

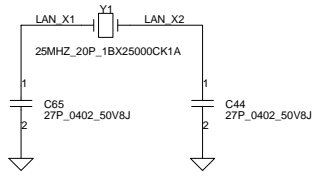
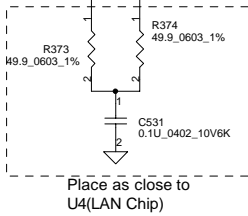
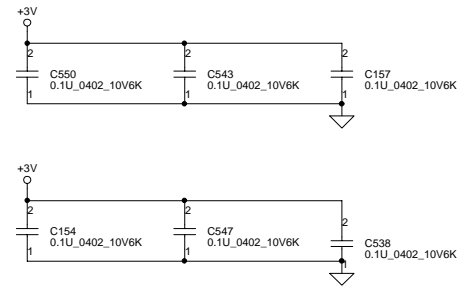
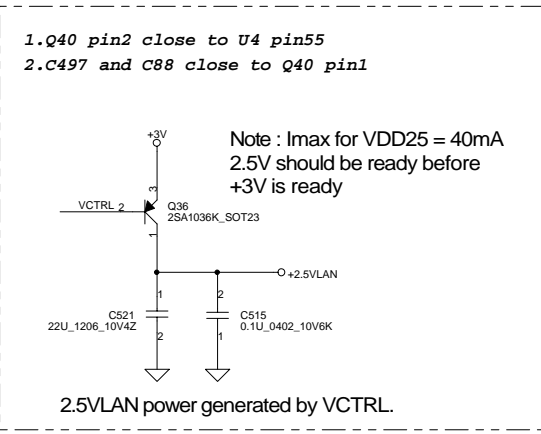
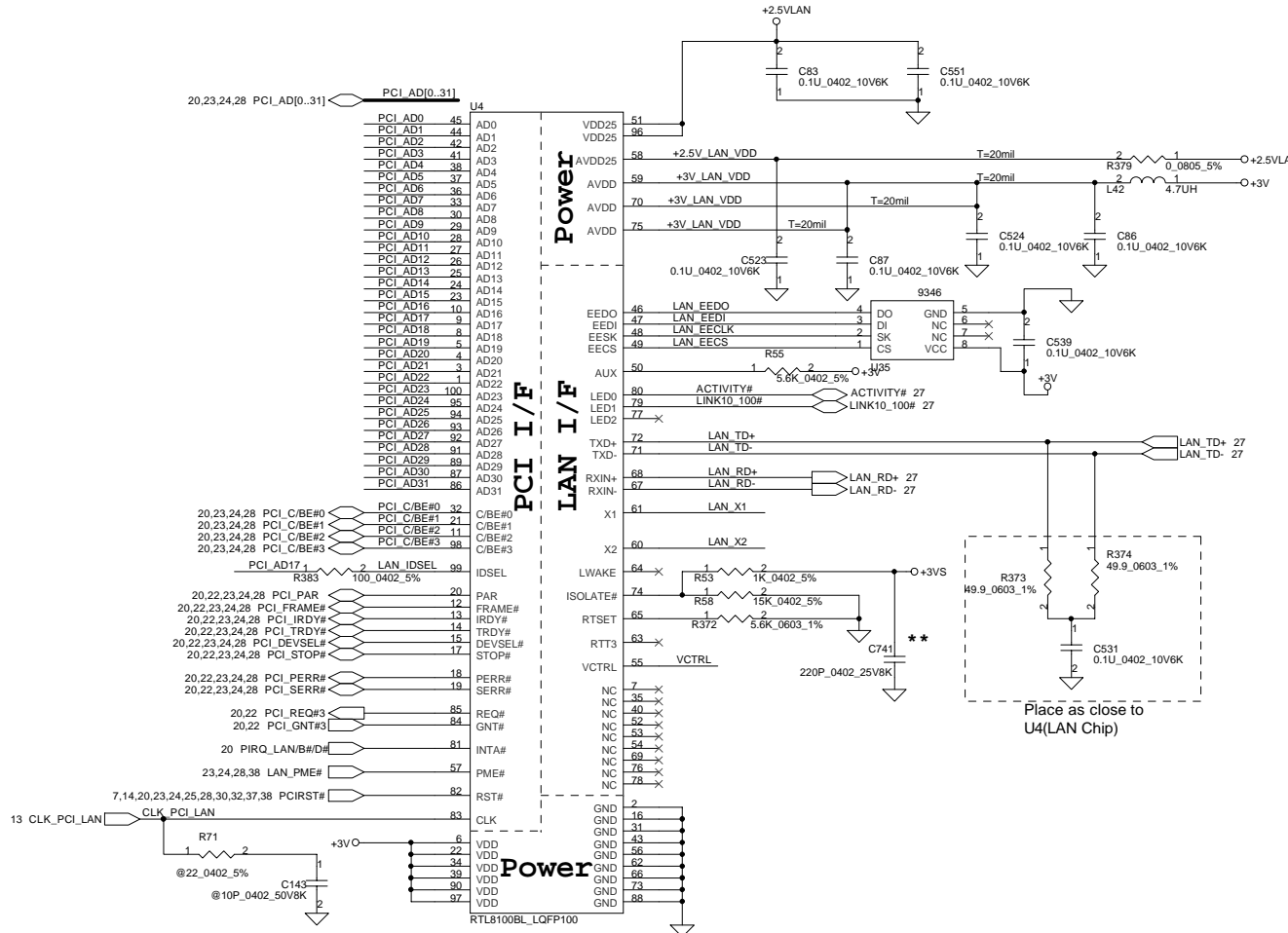
PCMCIA POWER CTRL.

CARDBUS SOCKET



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Title SCHEMATIC, W/B LA-1691			
Size	Document Number	Rev	
Custom	401241	1A	
Date:	日期: 二月 07, 2003	Sheet	25 of 53

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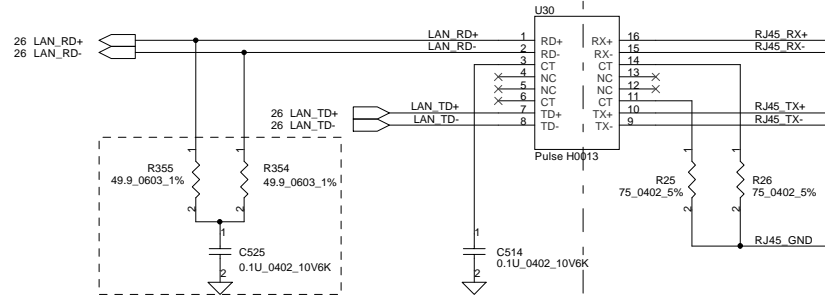
Note : Please inform the PCI_GNT, PCI_REQ, PIRQ(INT) and IDSEL number with BIOS team

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(U4) and Magnetic(U30) is 12cm(4.7")
4. The distance between Connector(JP17) and Magnetic(U34) should be as short as possible
5. The Magnetic(U34) have differnt pin out if you select others parts(like H0022), and it is needed to check the high limit with ME team

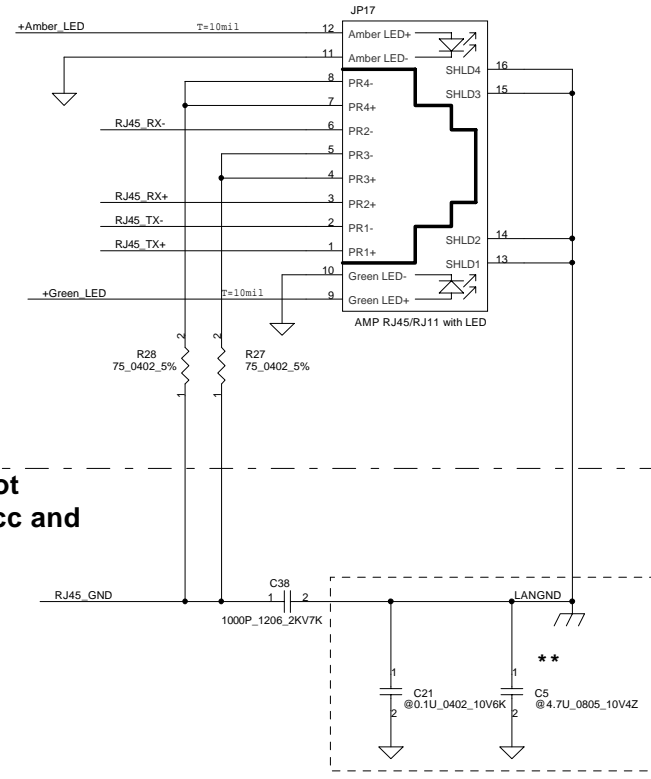
Keep Out 40mil

Layout Note
H0013 pls close to conn.

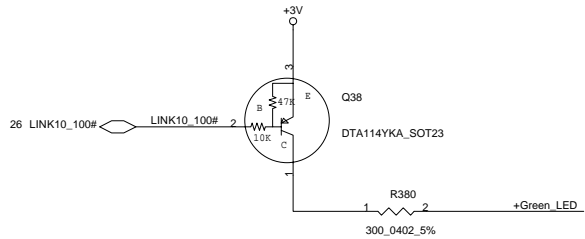
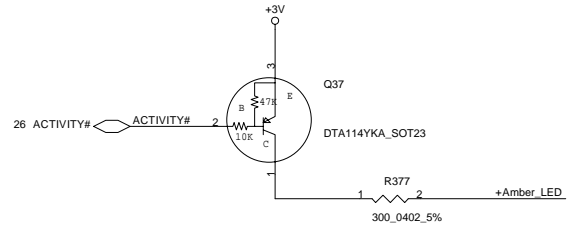


Place as close to Magnetic (U3)

LAYOUT NOTICE: This area do not connect to power plan include Vcc and GND in any layer

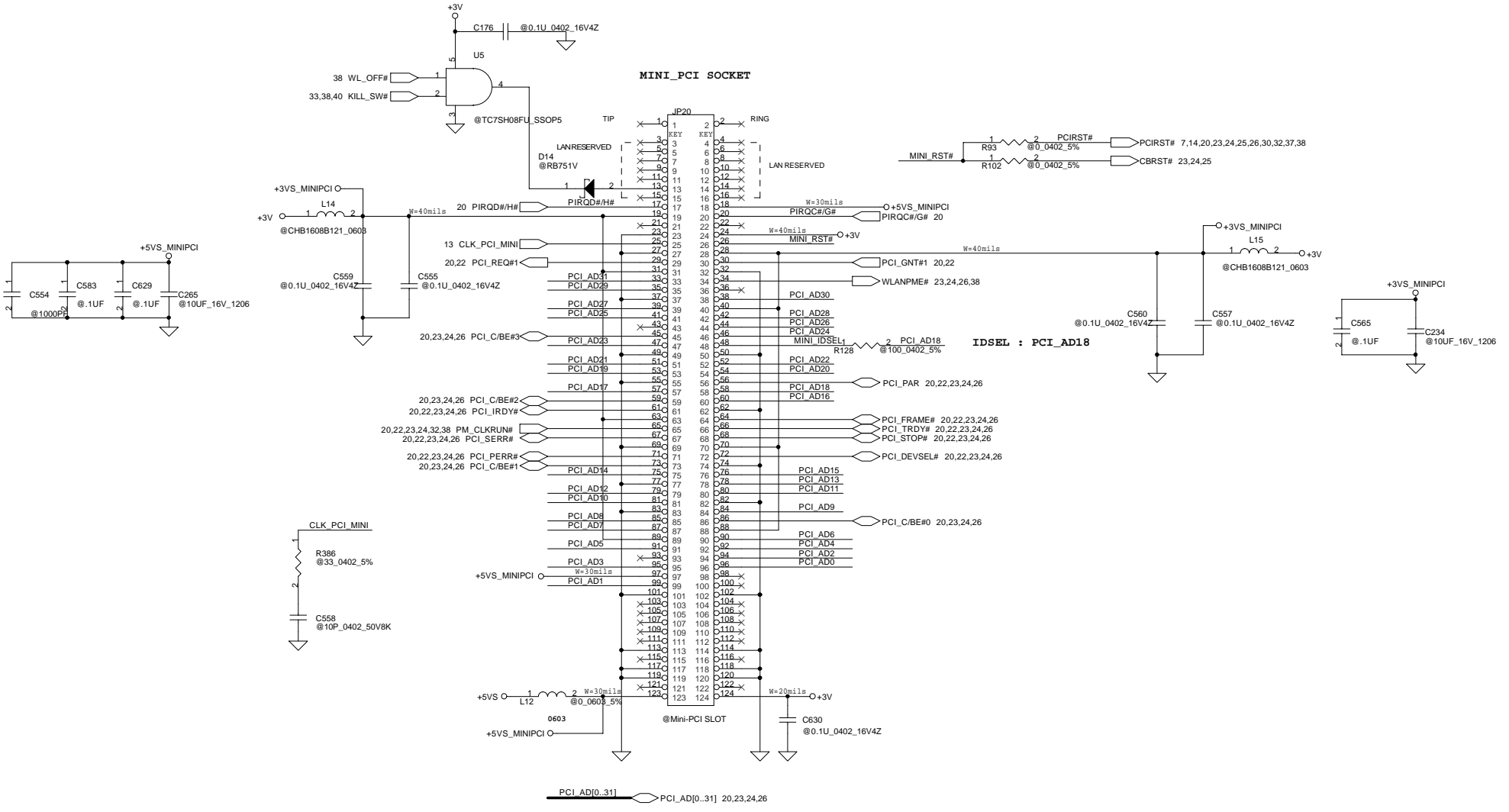


Termination plane should be copled to chassis ground and also depends on safety concern



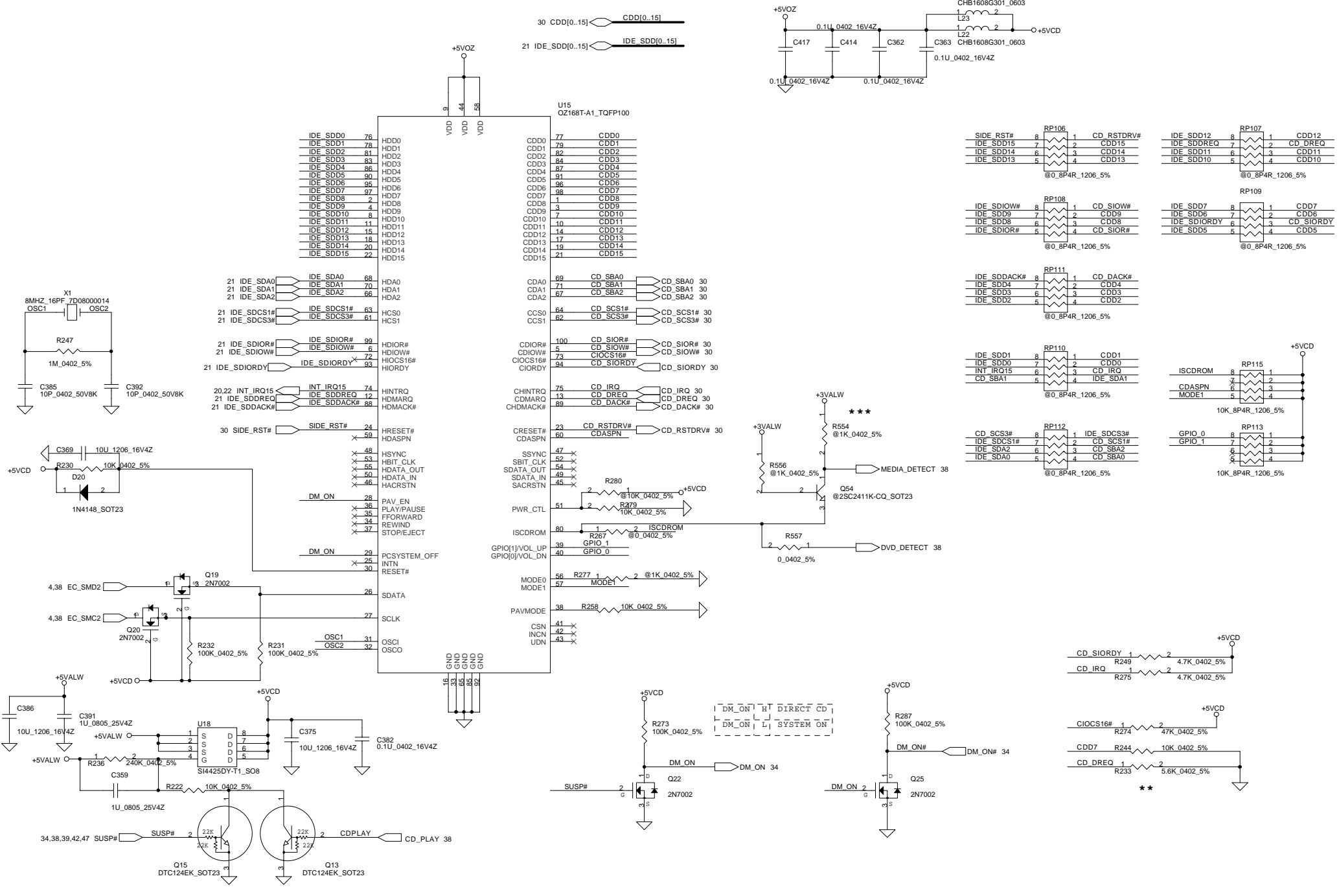
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Size Custom	Document Number 401241	Rev 1A
Date: 星期二, 一月 07, 2003	Sheet 27	of 53



Compal Electronics, inc.			
Title	SCHEMATIC, M/B LA-1691		
Size	Document Number		
Custom	401241	Rev	1A
Date:	星期二, 一月 07, 2003	Sheet	28 of 53

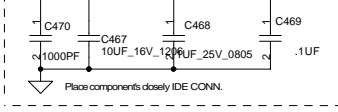
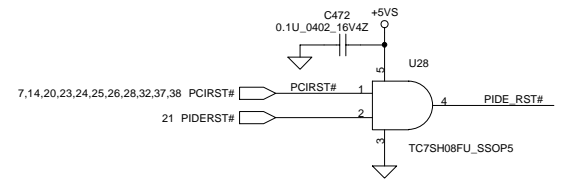
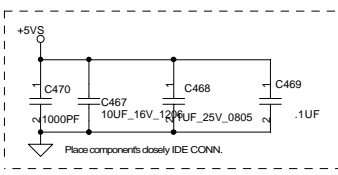
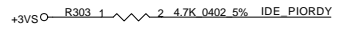
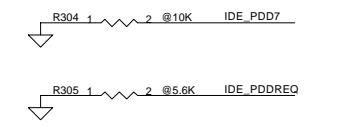
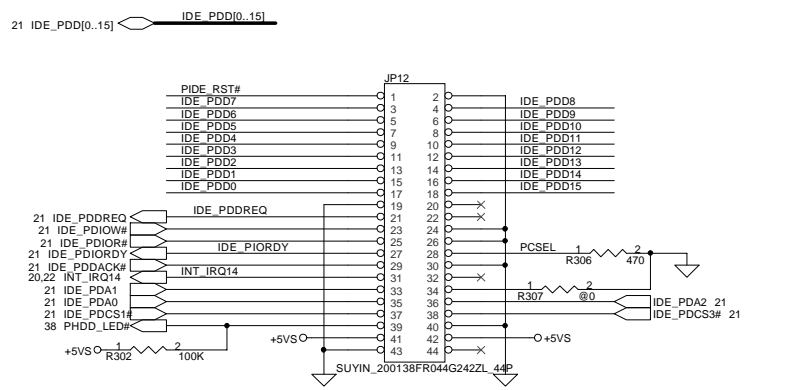
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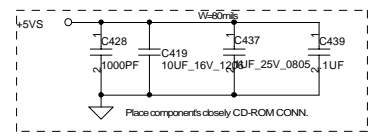
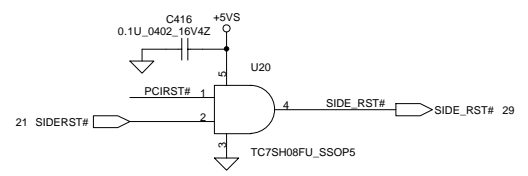
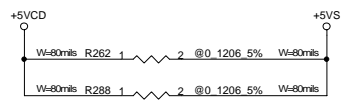
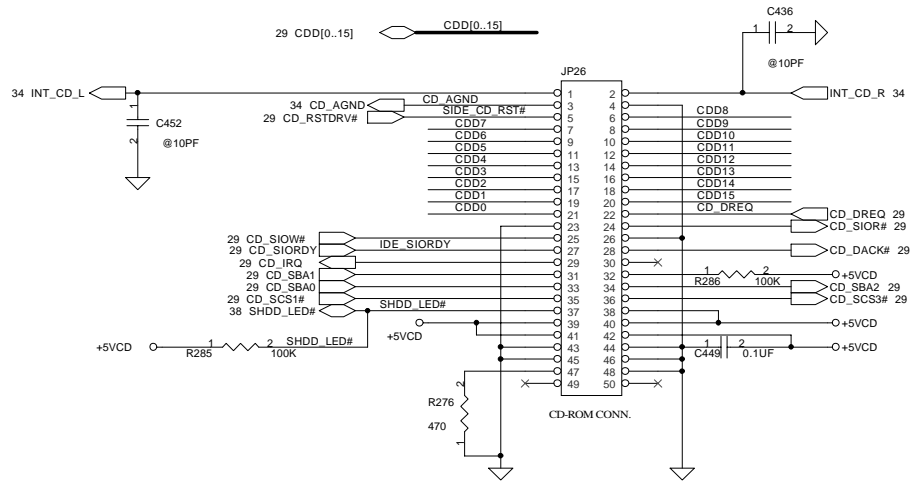
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Title			
SCHEMATIC, W/B LA-1691			
Size	Document Number	Rev	
Custom	401241	1A	
Date:	日期:	二月 07, 2003	Sheet 29 of 53

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IDE Module CONN.



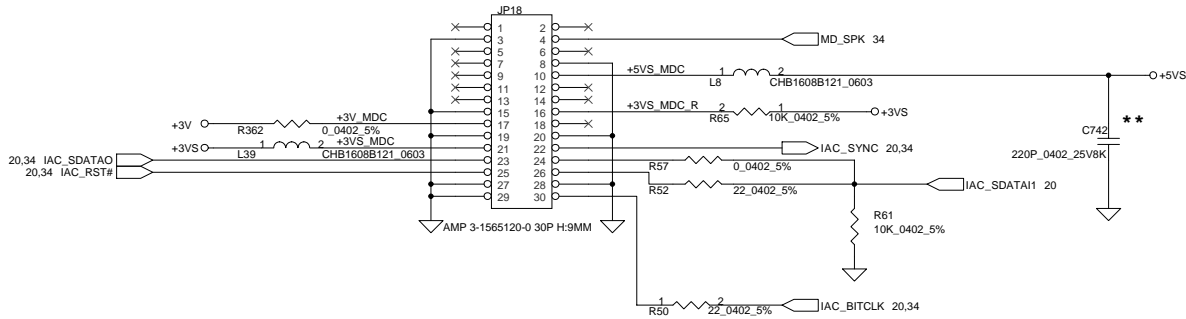
CD-ROM Module CONN.



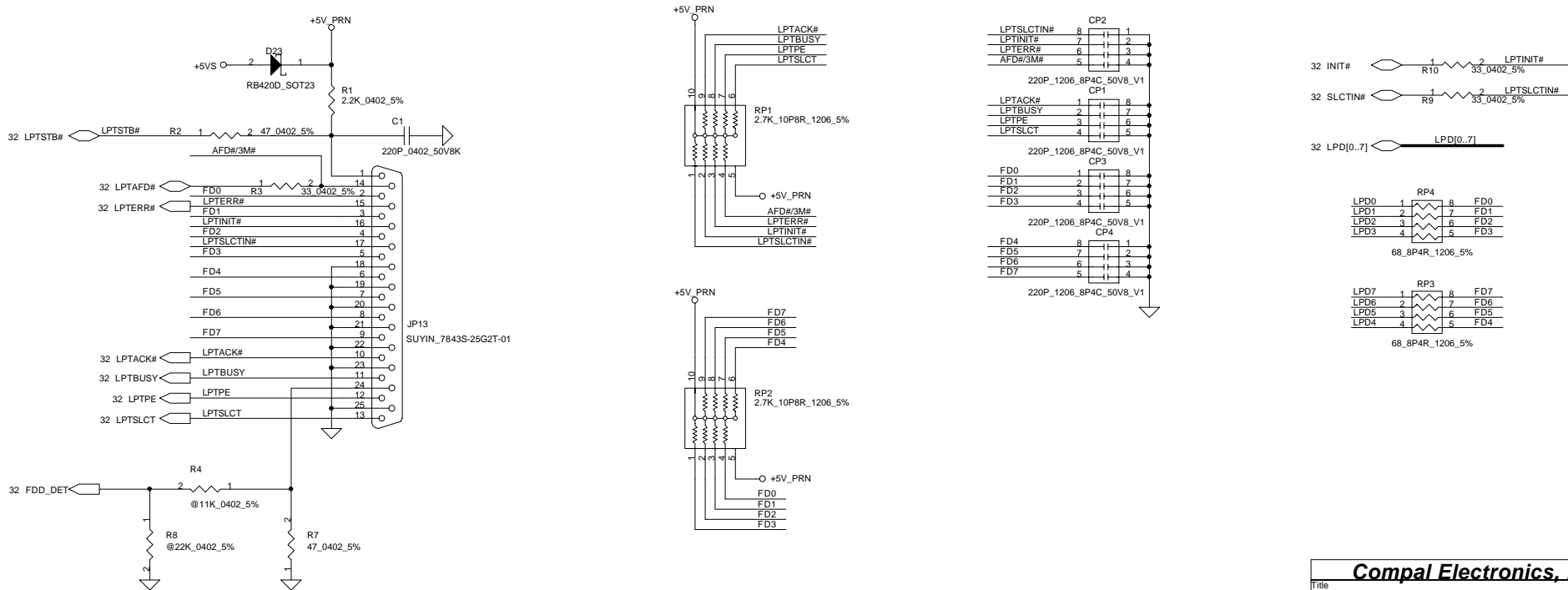
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Title	SCHEMATIC, M/B LA-1691		
Size	Document Number	Rev	
Custom	401241	1A	
Date:	星期二, 一月 07, 2003	Sheet	30 of 53

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MDC Connector



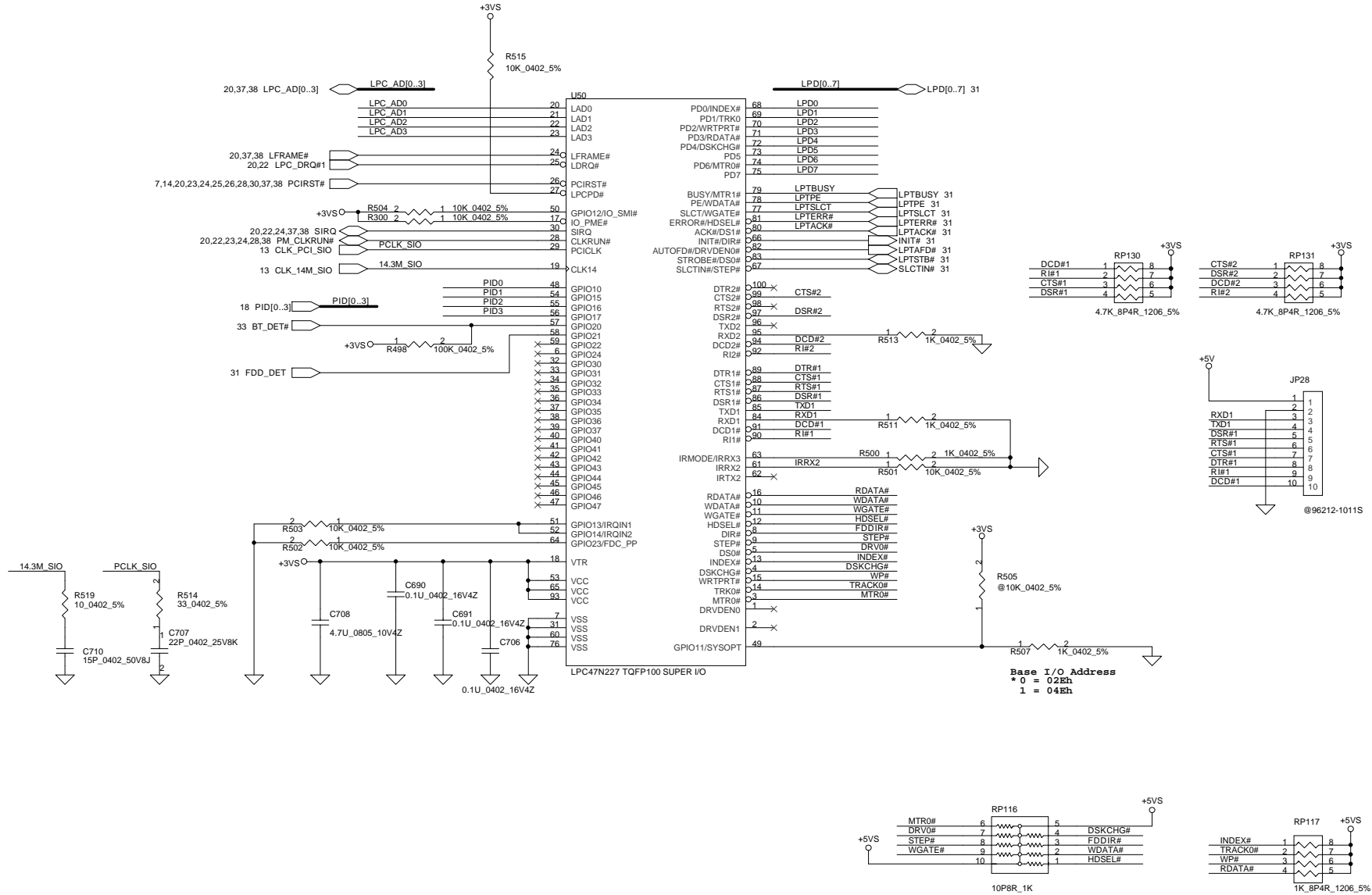
Parallel Port



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Compal Electronics, inc.		
Title	SCHEMATIC, M/B LA-1691	
Size	Document Number	Rev
Custom	401241	1A
Date:	星期二, 一月 07, 2003	Sheet 31 of 53

SUPER I/O SMsC FDC47N227

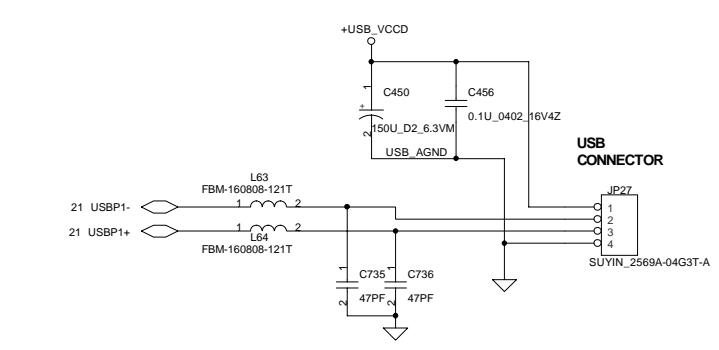
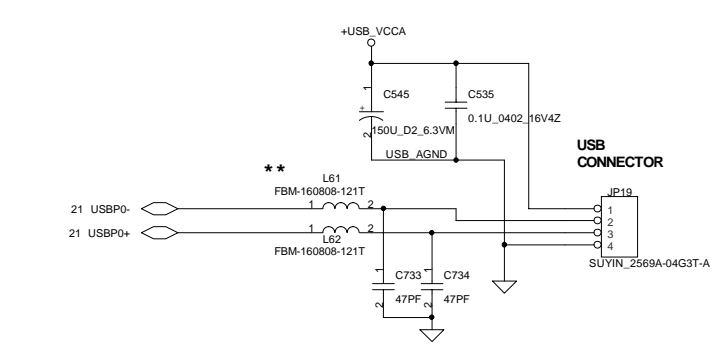
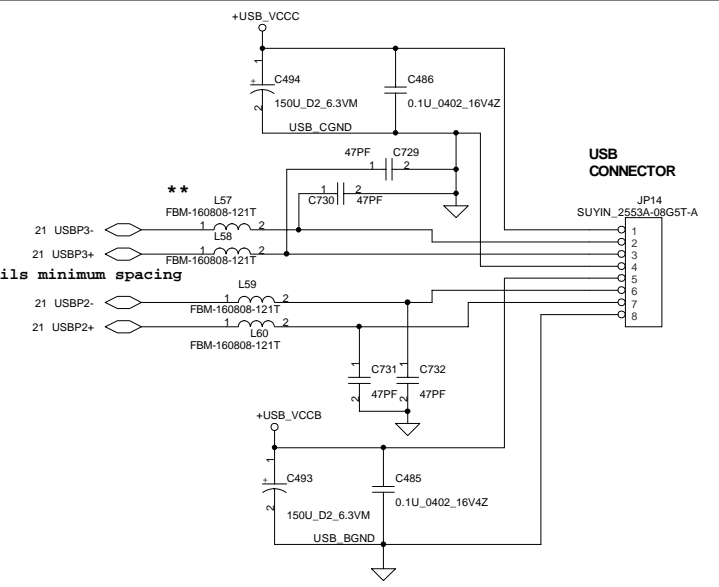
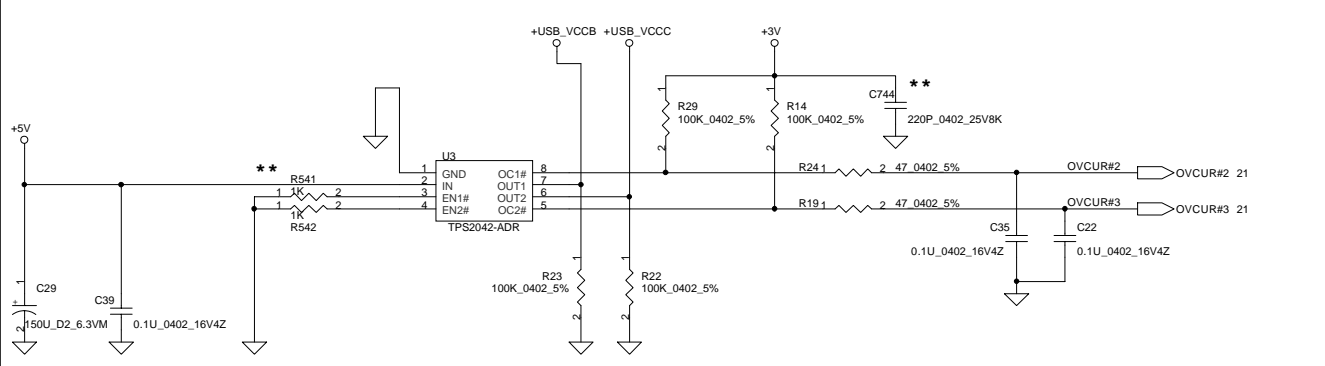
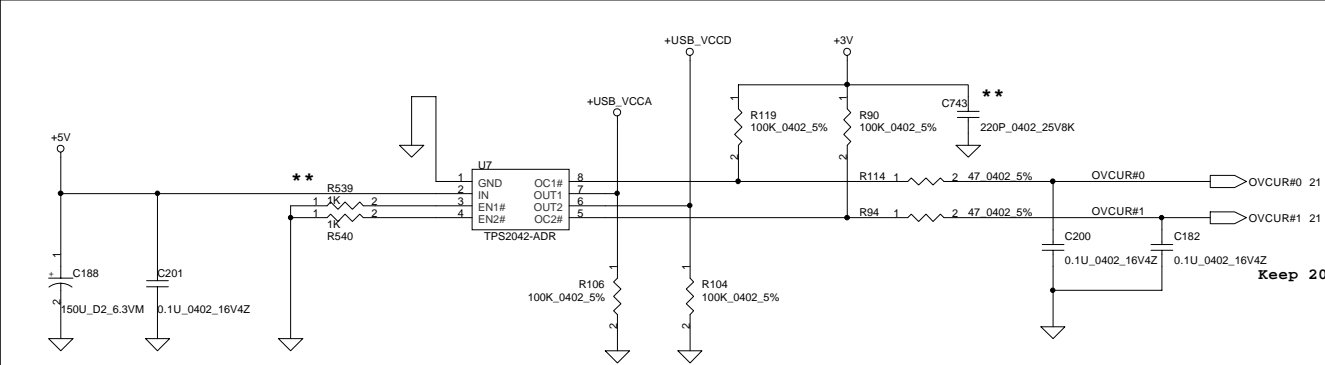


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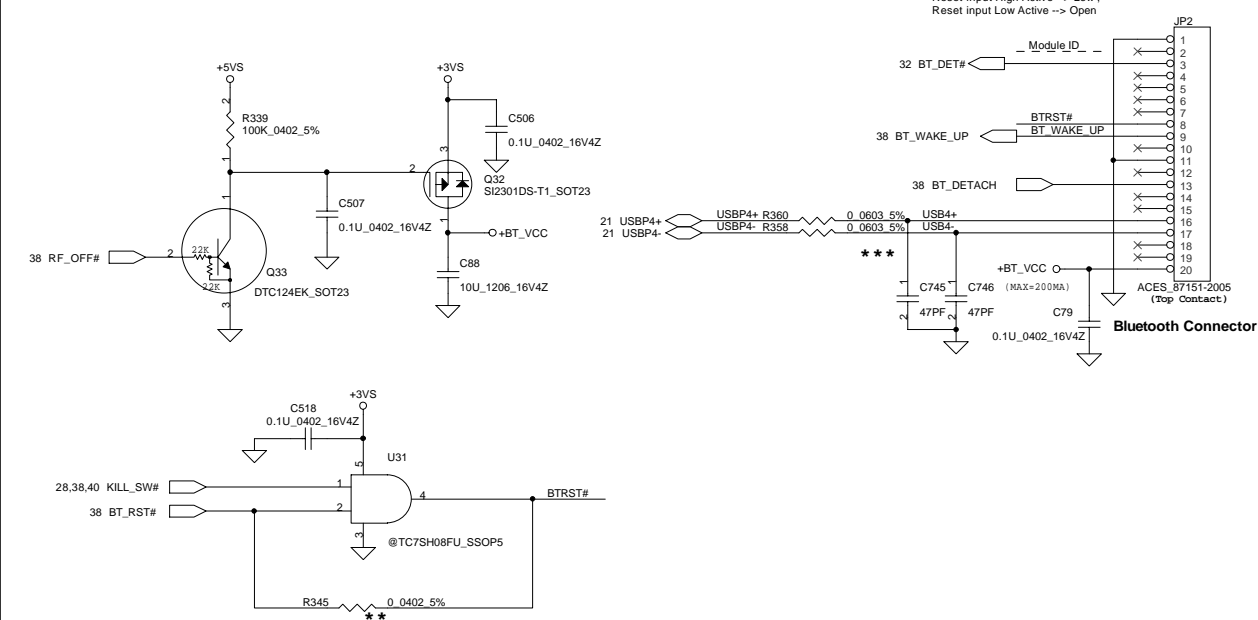
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Title	SCHEMATIC, M/B LA-1691		Rev	1A
Size	Document Number			
Custom	401241			
Date:	星期三, 一月 07, 2003	Sheet	32	of 53



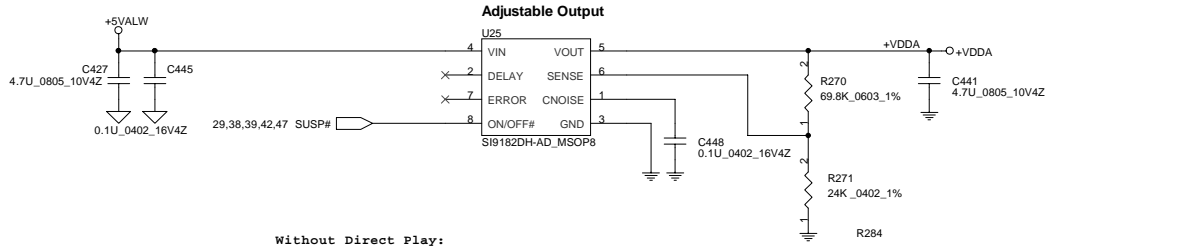
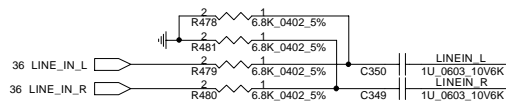
BlueTooth Interface



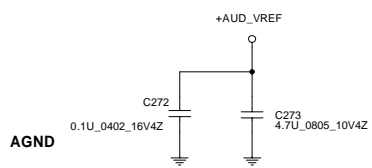
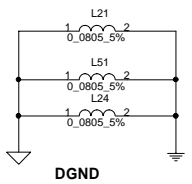
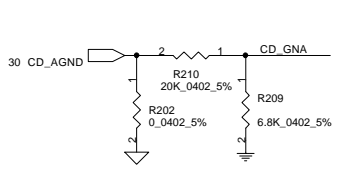
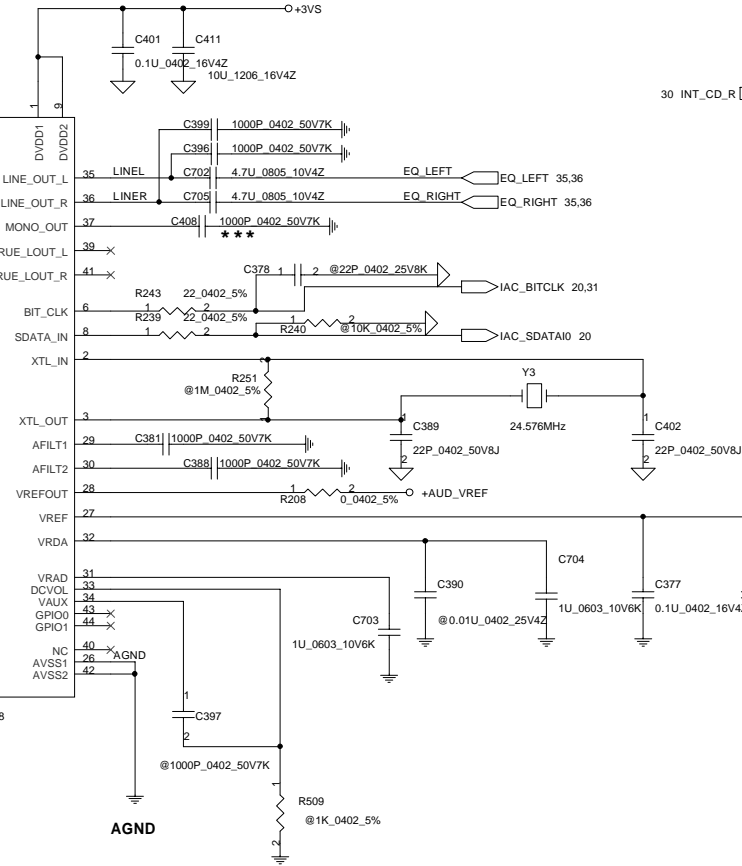
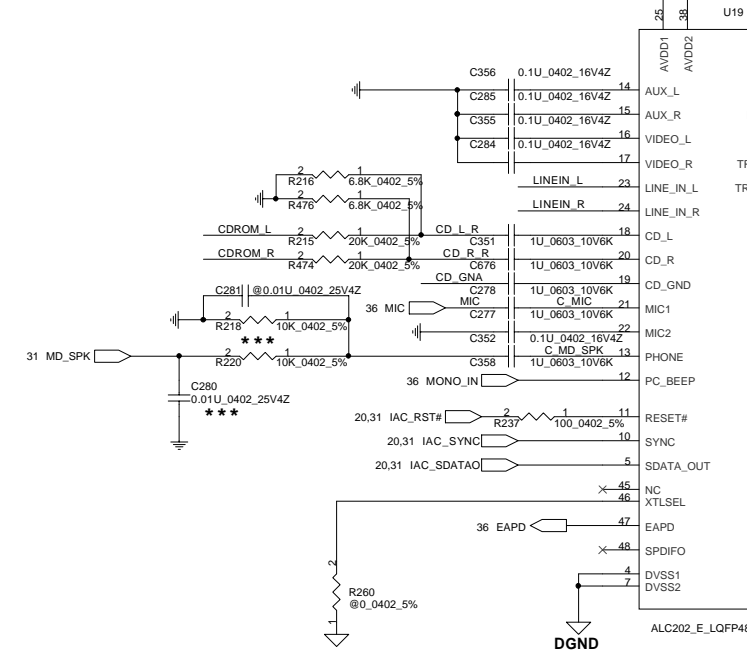
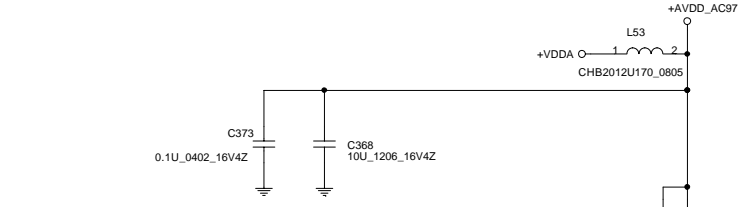
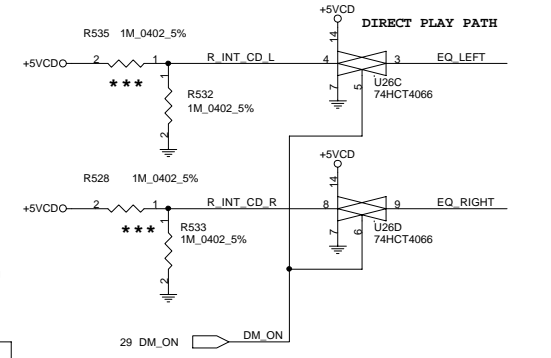
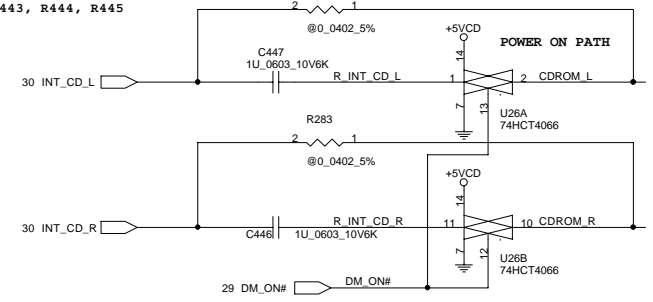
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Title	SCHEMATIC, /WB LA-1691		
Size	Document Number	Rev	
Custom	401241	1A	
Date:	星期二, 一月 07, 2003	Sheet	33 of 53

AC97 Codec

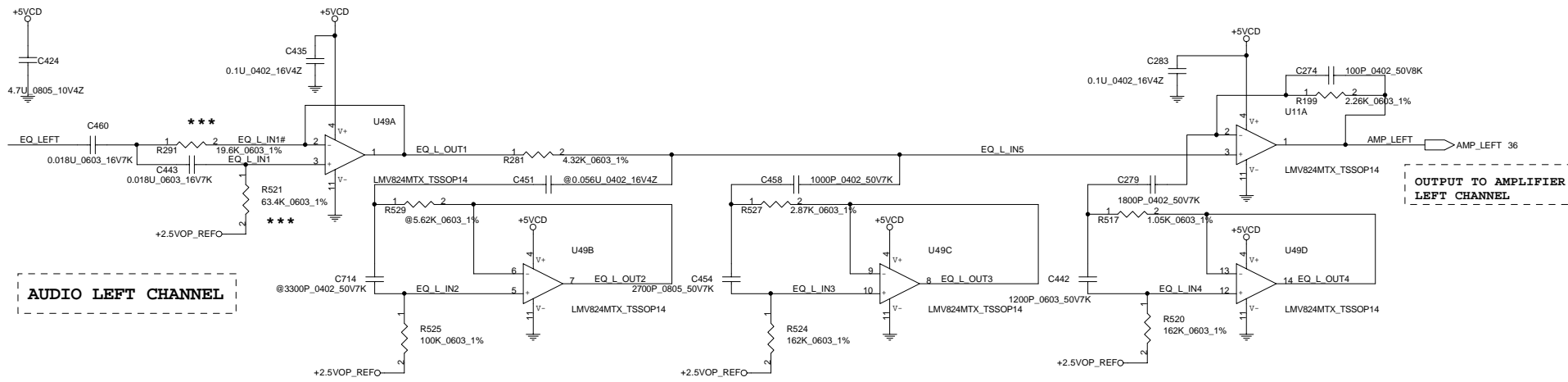


Without Direct Play:
Unmount U45, C612, C613, R442, R443, R444, R445
Mount R477, R478



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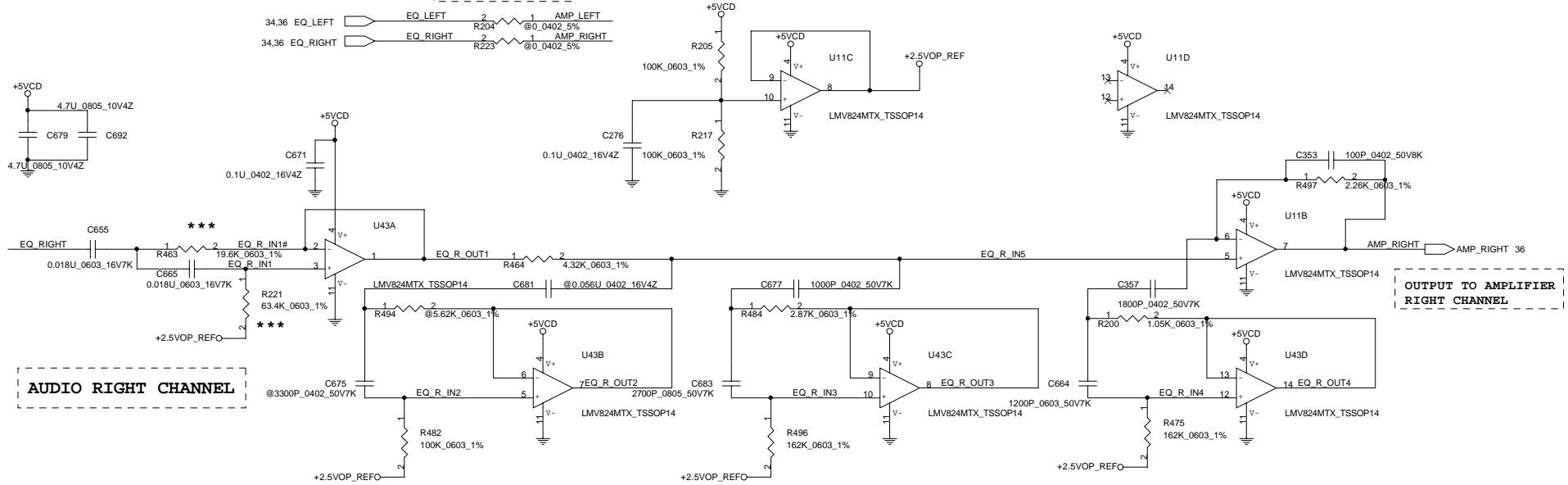
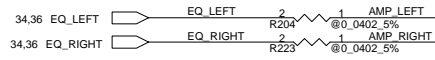
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Title SCHEMATIC, M/B LA-1691		
Size Custom	Document Number 401241	Rev 1A
Date: 星期二, 一月 07, 2003	Sheet 34 of 53	



AUDIO LEFT CHANNEL

OUTPUT TO AMPLIFIER LEFT CHANNEL

BY-PASS EQ CIRCUIT



AUDIO RIGHT CHANNEL

OUTPUT TO AMPLIFIER RIGHT CHANNEL

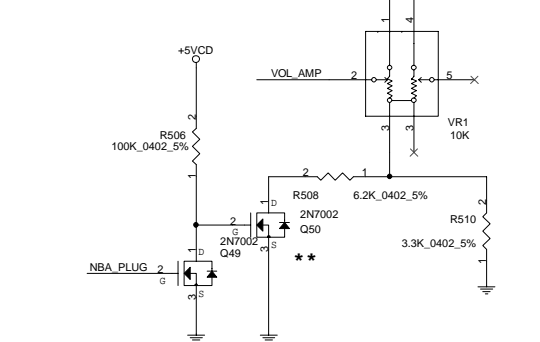
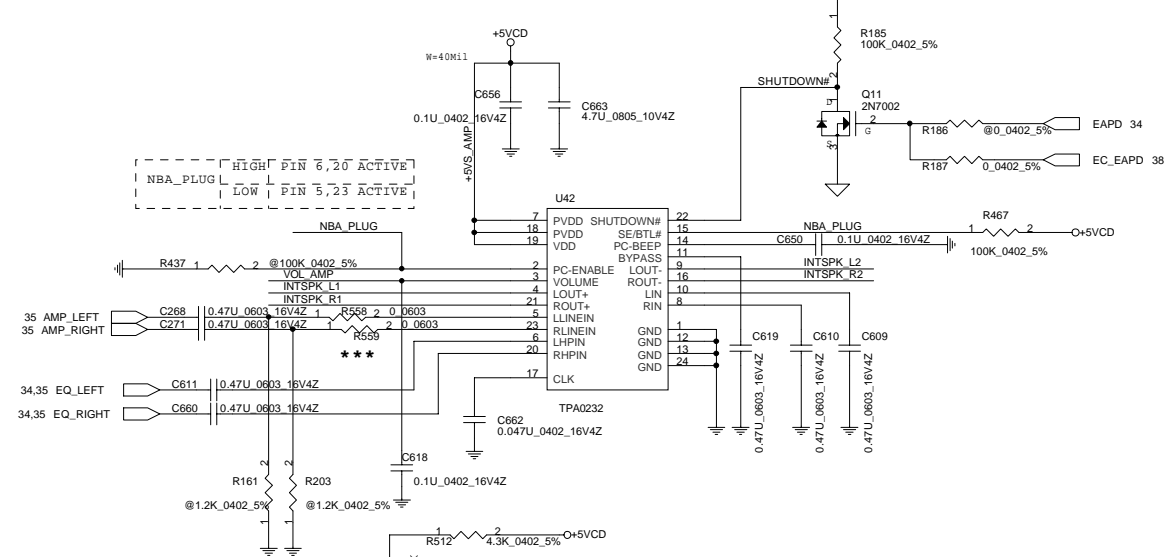
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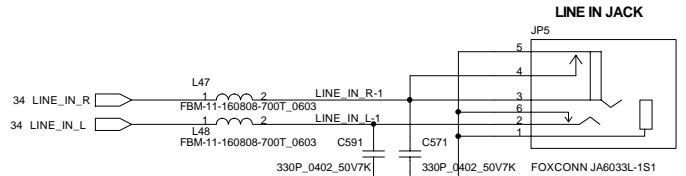
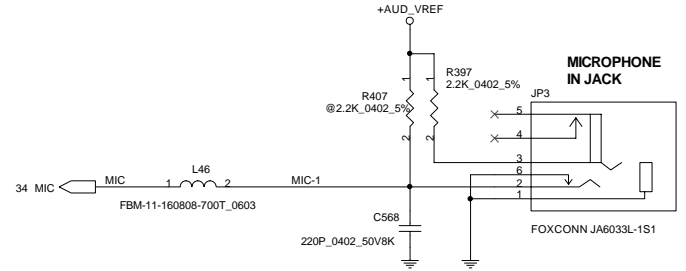
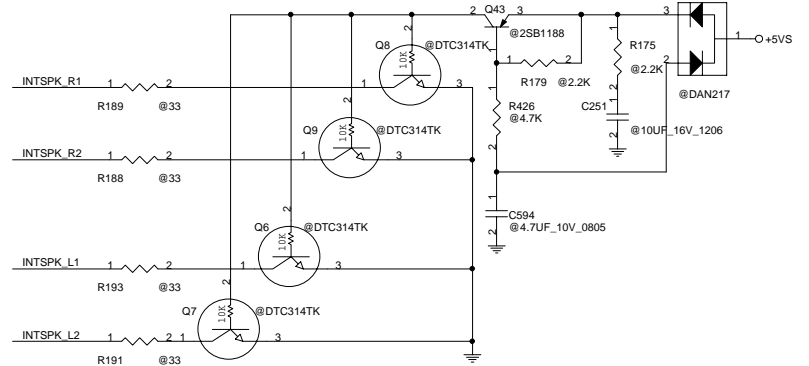
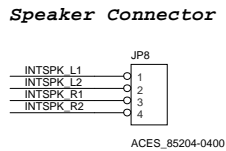
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Size	Document Number	Rev
Custom	401241	1A
Date:	星期二, 一月 07, 2003	Sheet 35 of 53

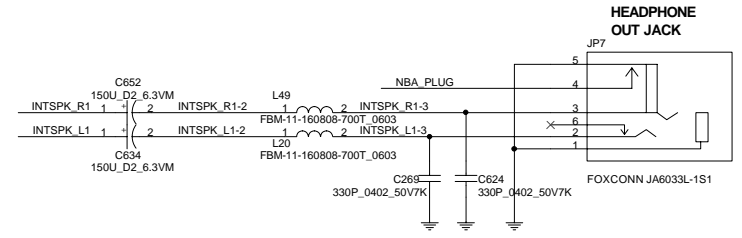
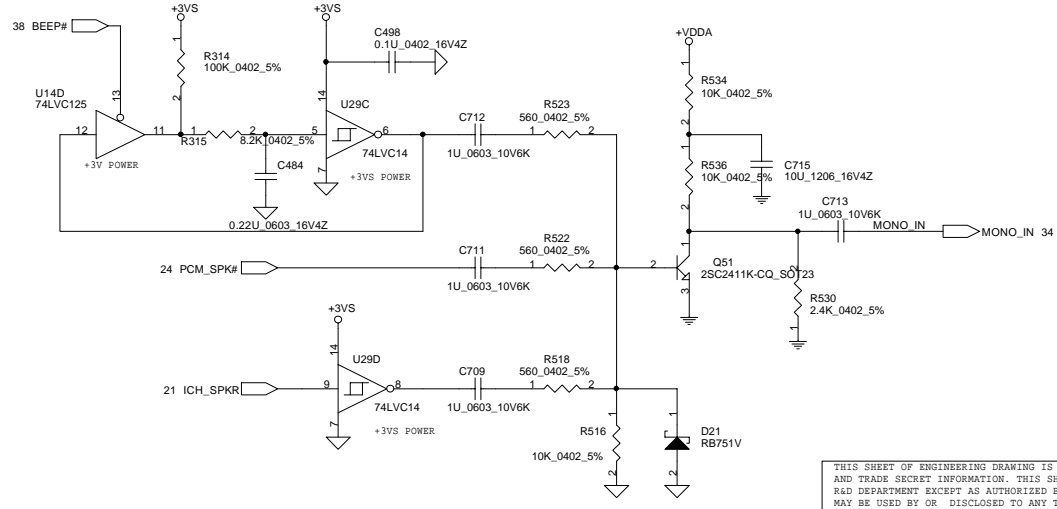
Audio AMP



NOTE:
 1. EQ: R512=4.3K , R510=3.3K
 Modify R558,R559 TO "0 Ohm"
 UNMOUNT R161,R203
 2. NO EQ: R512=3.9K, R510=4.7K, R508=2K
 Modify R558,R559 TO "1u_0603 10V6k"
 MOUNT R161,R203



System Sound



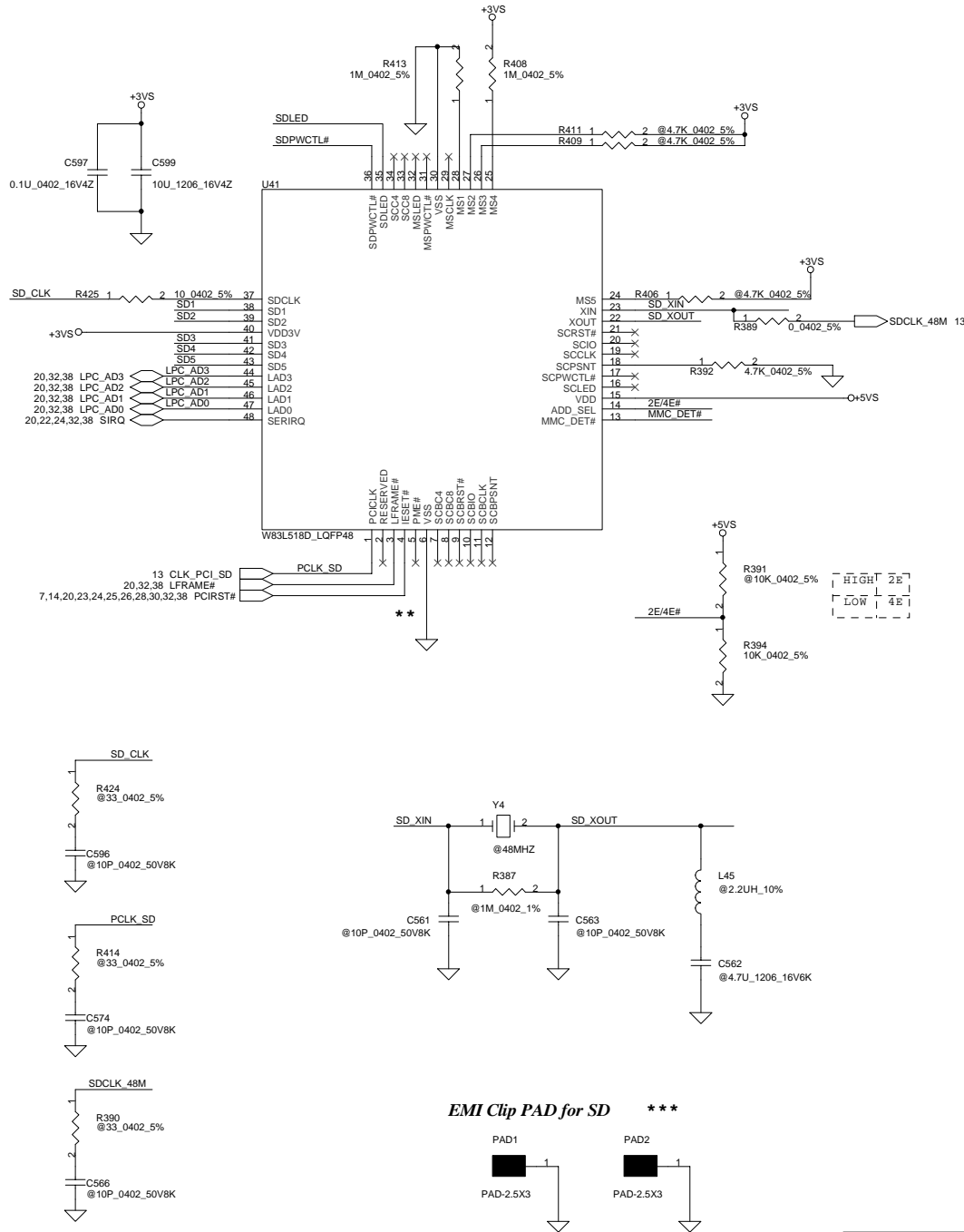
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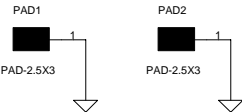
Size	Document Number	Rev
Custom	401241	1A
Date:	星期二, 一月 07, 2003	Sheet 36 of 53

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SD Card Reader

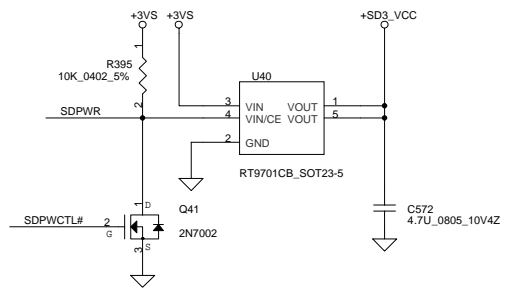


EMI Clip PAD for SD ***

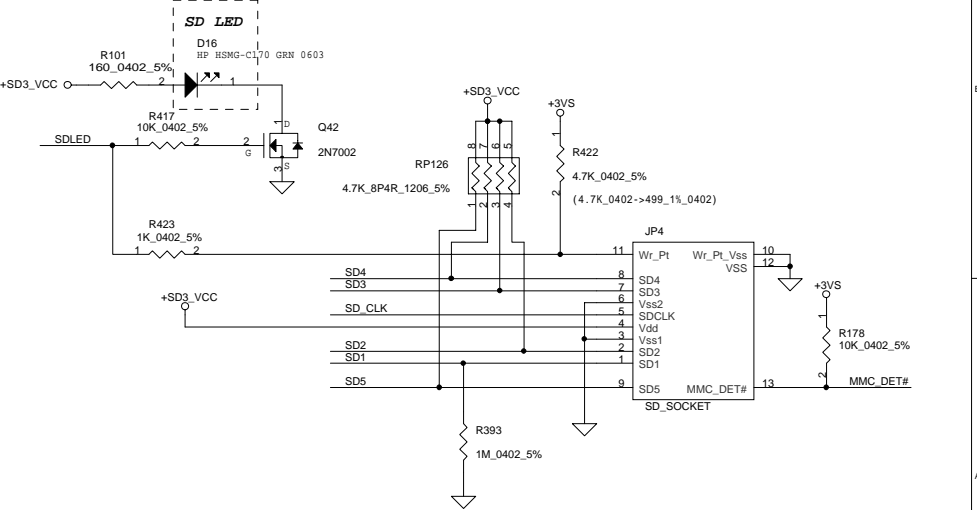


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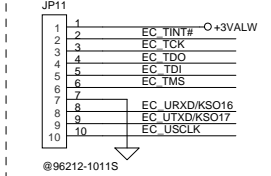
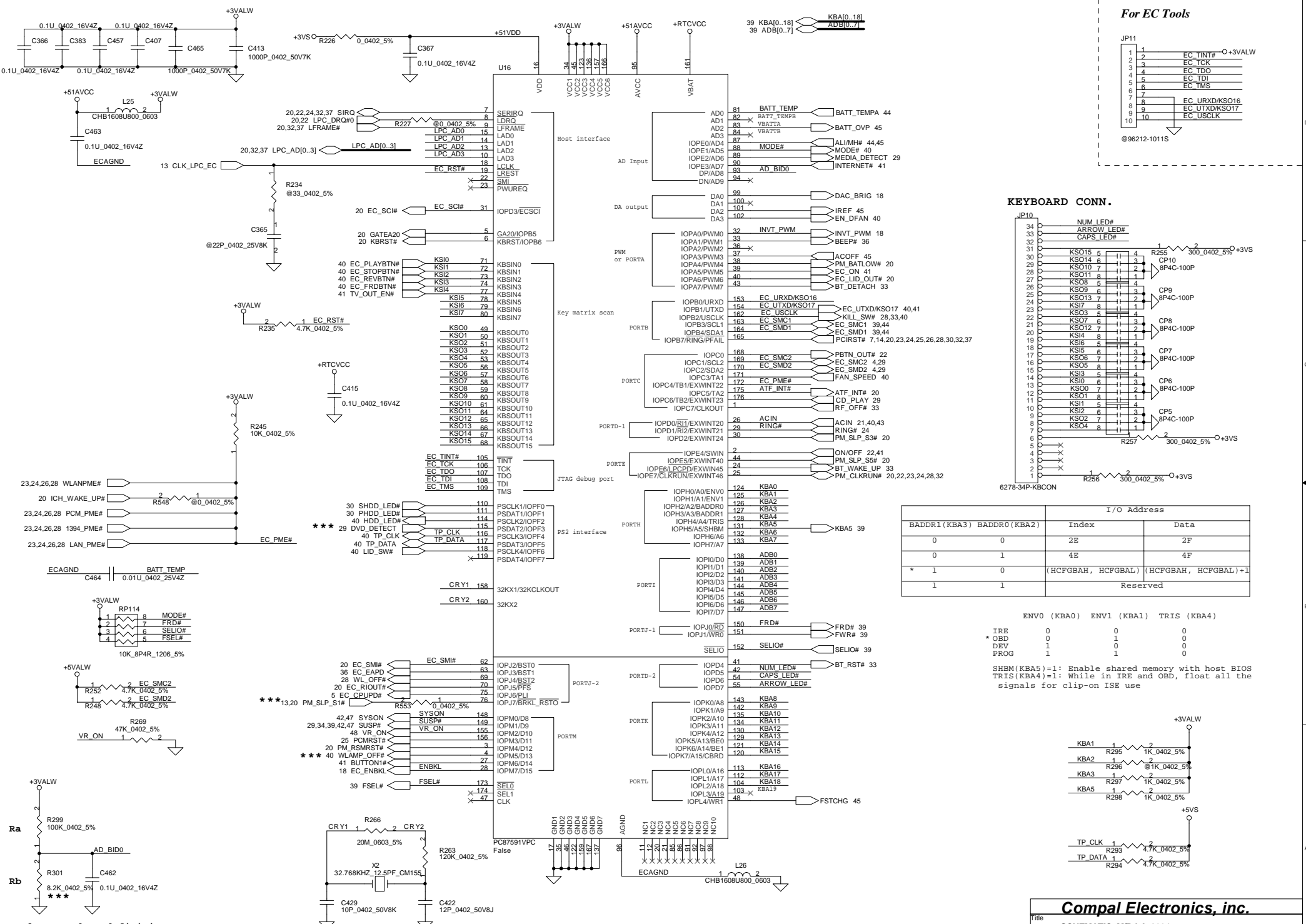
SD Power Switch



SD SOCKET



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Title SCHEMATIC, M/B LA-1691		
Size Custom	Document Number 401241	Rev 1A
Date:	星期二, 一月 07, 2003	Sheet 37 of 53



KEYBOARD CONN.

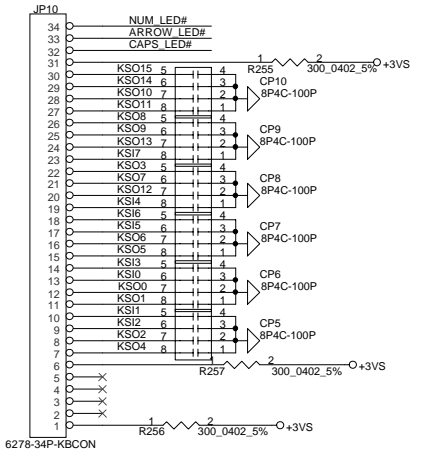


Table with I/O Address and Index/Address/Data columns. It lists addresses for BADDR1 (KBA3), BADDR0 (KBA2), and various I/O signals like EC TINT#, EC TCK, etc.

Table with ENVO (KBA0), ENV1 (KBA1), and TRIS (KBA4) columns. It lists values for IRE, OBD, DEV, and PROG.

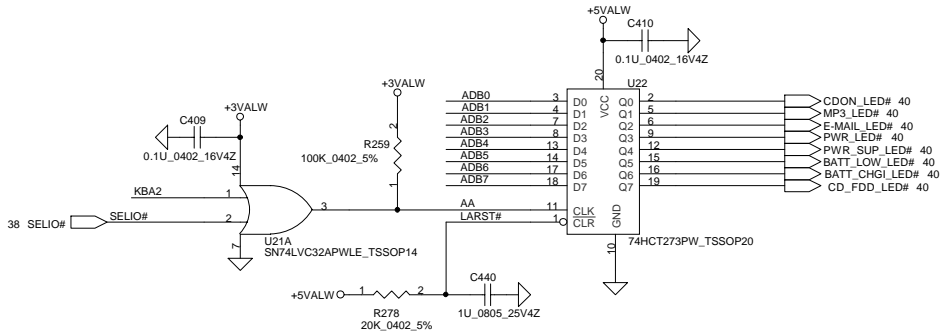
SHBM(KBA5)=1: Enable shared memory with host BIOS. TRIS(KBA4)=1: While in IRX and OBD, float all the signals for clip-on ISE use.

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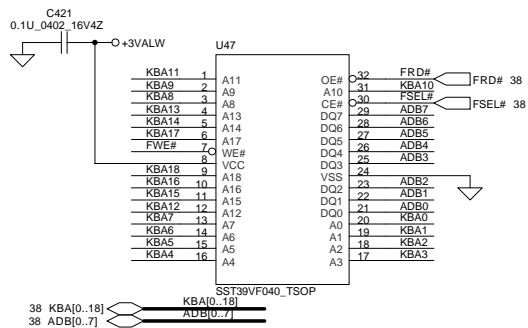
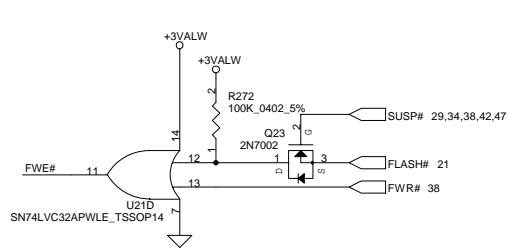
SCHEMATIC, M/B LA-1691

Analog Board ID definition, Please see page 3.

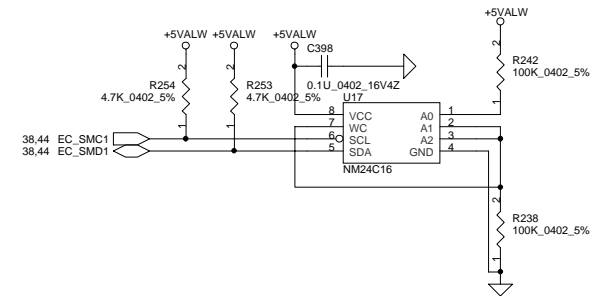
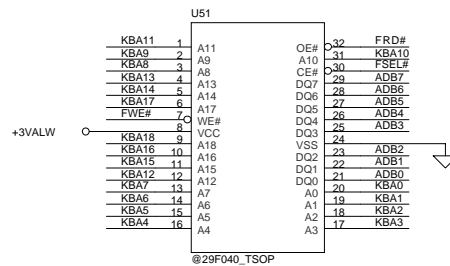
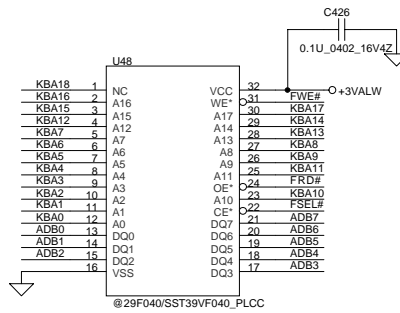
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System BIOS



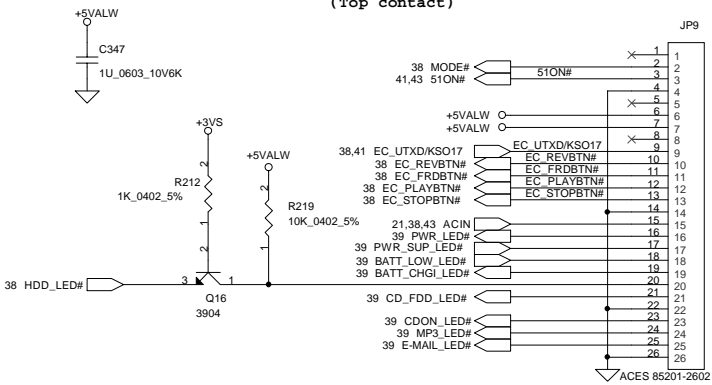
SMBus EEPROM



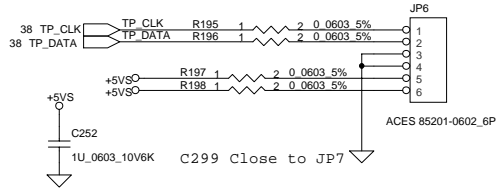
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Title SCHEMATIC, M/B LA-1691			
Size	Document Number		Rev
Custom	401241		1A
Date:	星期二, 一月 07, 2003	Sheet	39 of 53

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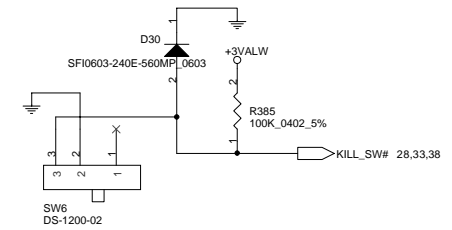
SW BOARD
(Top contact)



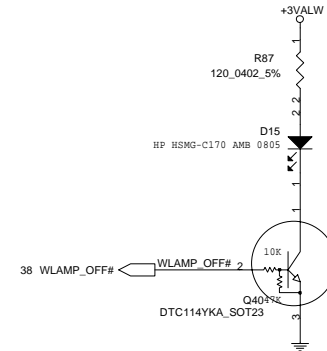
Touch Pad Connector



Kill SWITCH



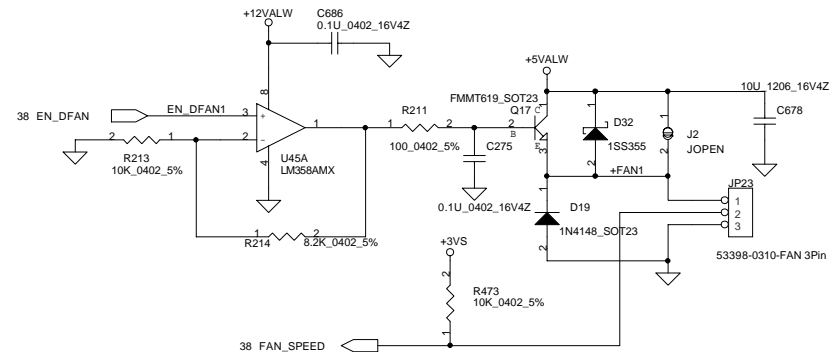
WIRELESS ACTIVE AMB LED



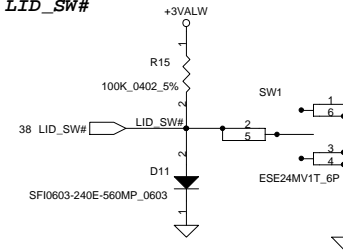
FAN CONN

FAN CONTROL TYPE

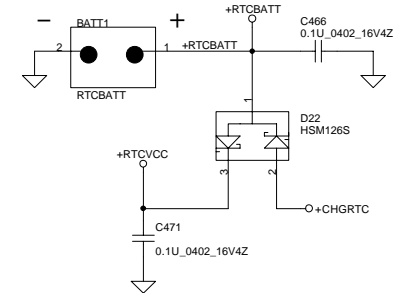
PWM Poped R758, R759 & others de-poped
RPM De-poped R758, R759 & others popped



LID_SW#



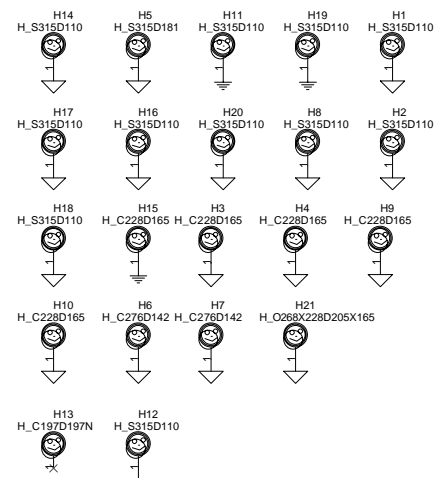
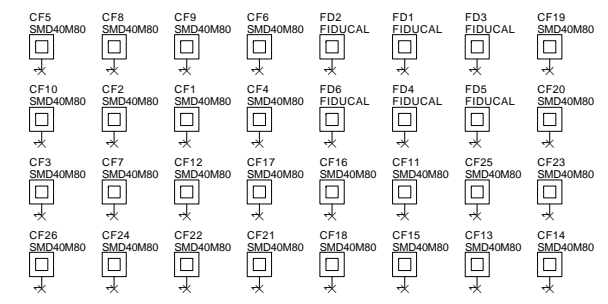
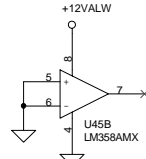
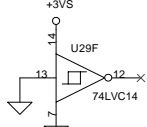
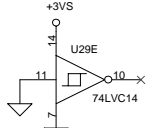
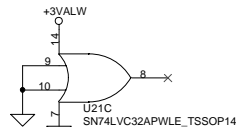
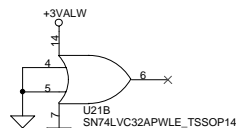
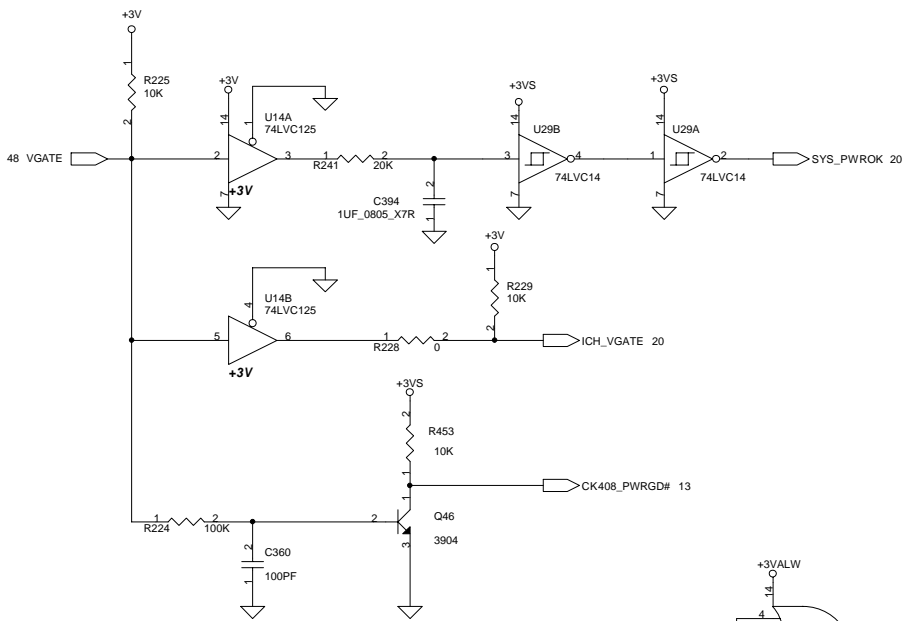
RTC BATT



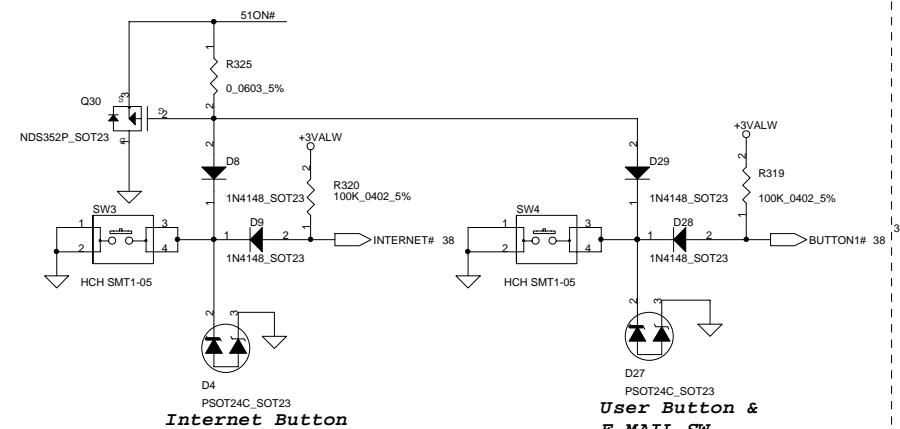
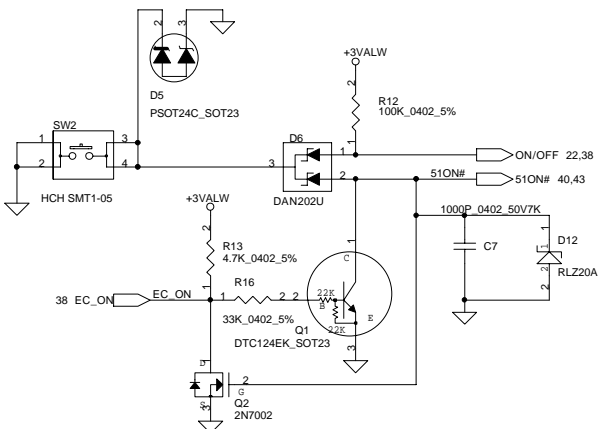
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Title SCHEMATIC, M/B LA-1691		
Size Custom	Document Number 401241	Rev 1A
Date: 星期二, 一月 07, 2003	Sheet 40	of 53

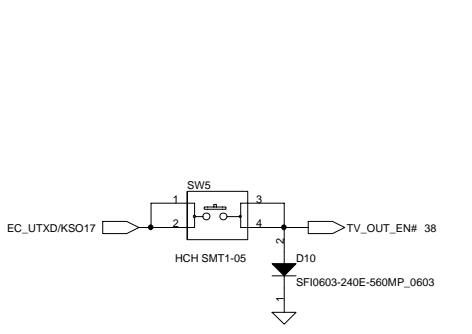
Power Good Circuit



Power Button



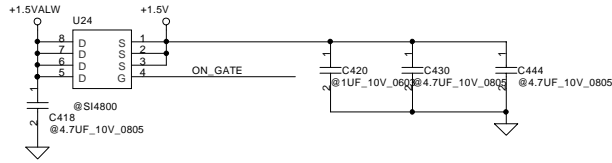
TV-OUT BUTTON



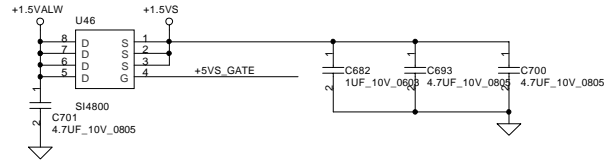
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SCHEMATIC, M/B LA-1691		
Title	Document Number	Rev
	401241	1A
Date:	星期二, 一月 07, 2003	Sheet 41 of 53

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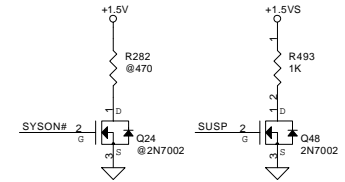
+1.5VALW To +1.5V Transfer



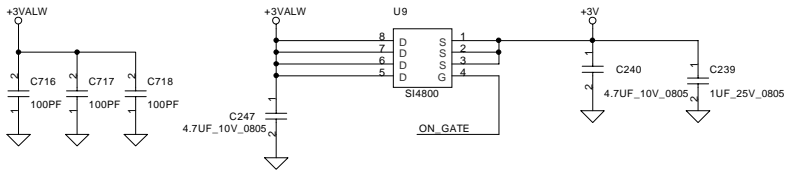
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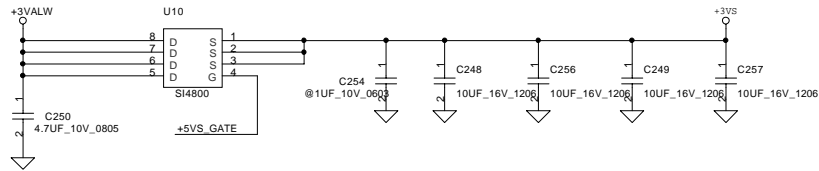
+1.5V & +1.5VS Discharge



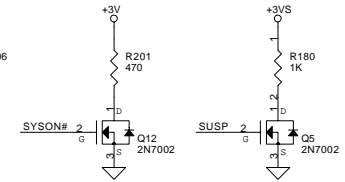
+3VALW To +3V Transfer



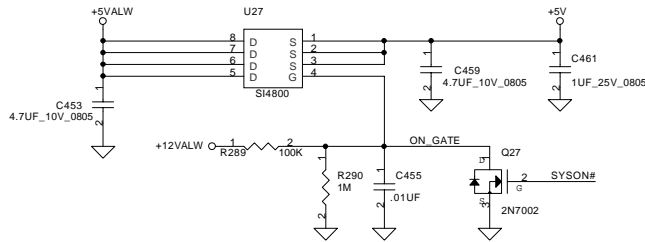
+3VALW To +3VS Transfer



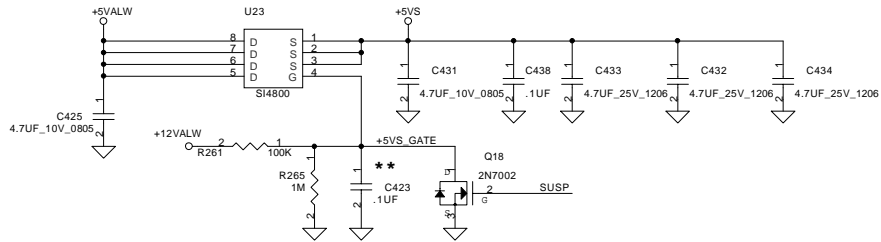
+3V & +3VS Discharge



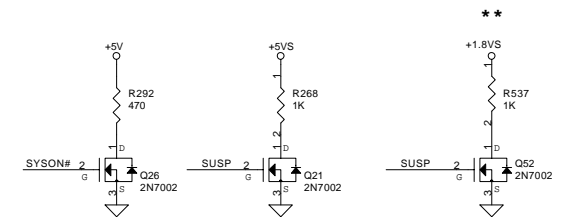
+5VALW To +5V Transfer



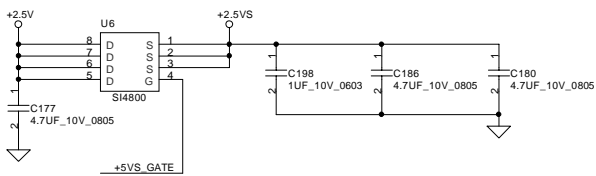
+5VALW To +5VS Transfer



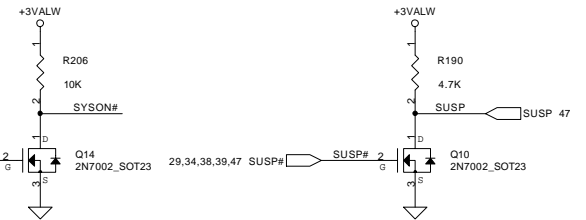
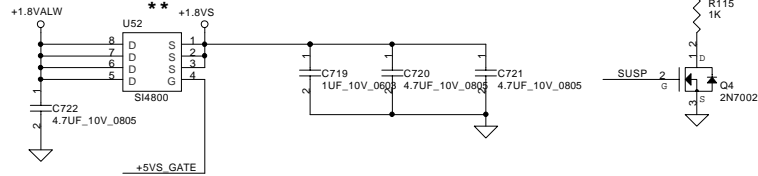
+5V & +5VS Discharge



+2.5V To +2.5VS Transfer

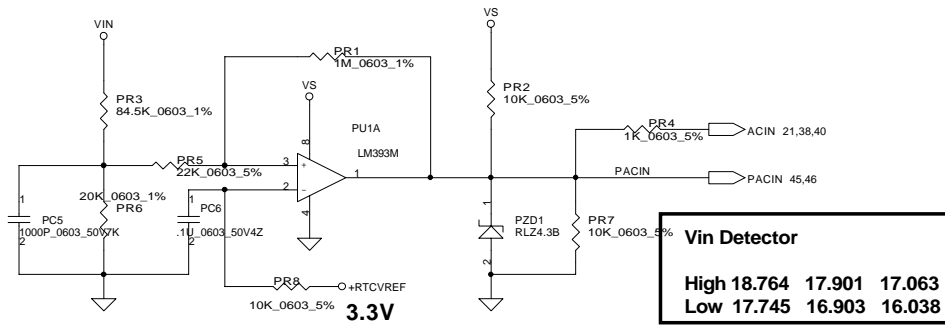
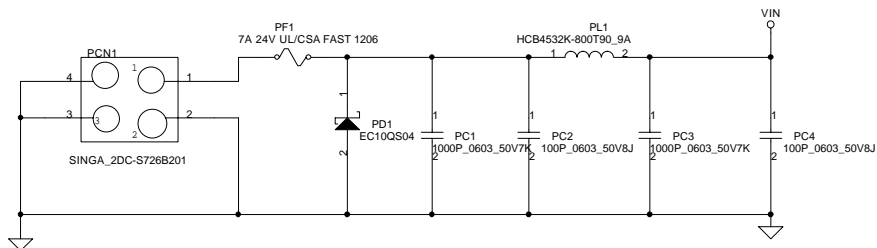


+1.8VALW To +1.8VS Transfer

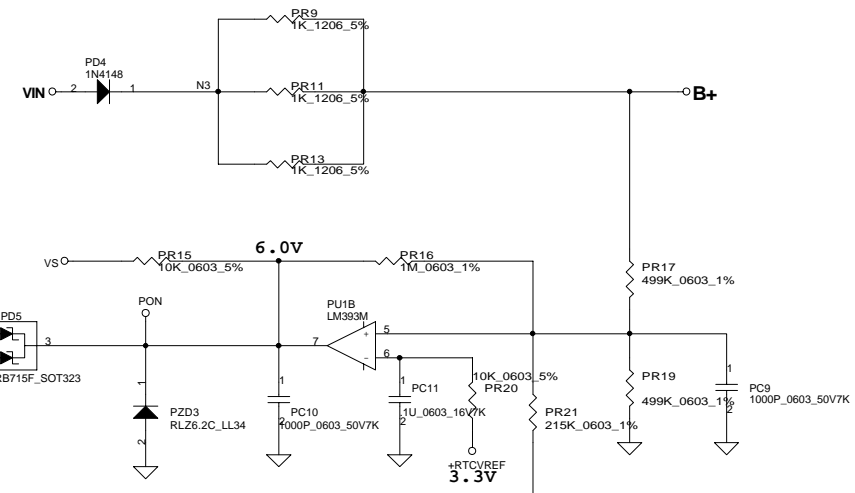
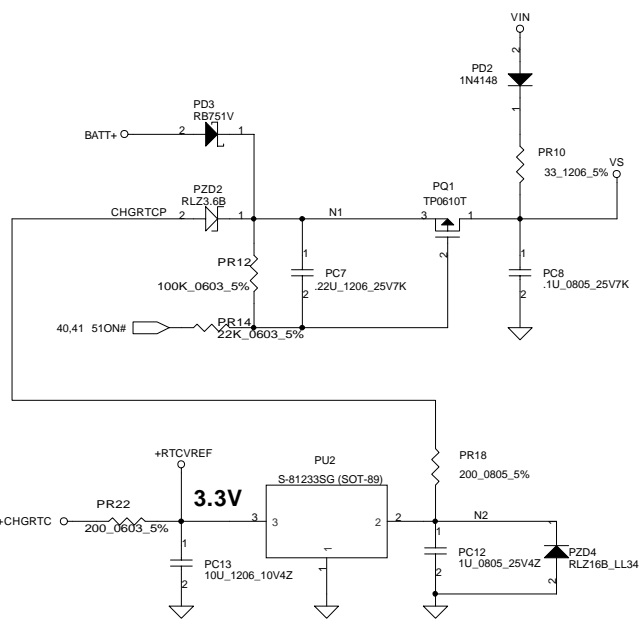


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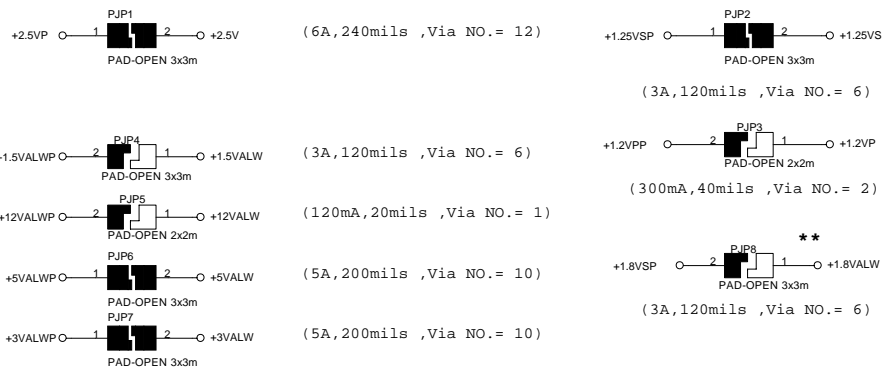
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Title	SCHEMATIC, M/B LA-1691	
Size	Document Number	Rev
Custom	401241	1A
Date:	星期二, 一月 07, 2003	Sheet 42 of 53



Vin Detector		
High	18.764	17.901 17.063
Low	17.745	16.903 16.038



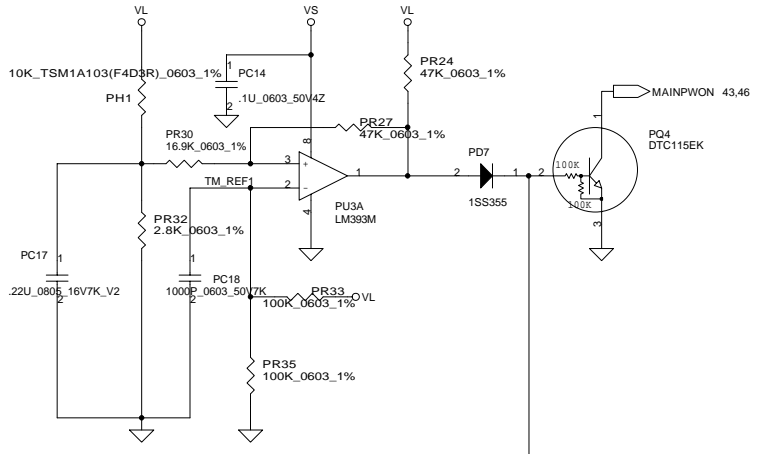
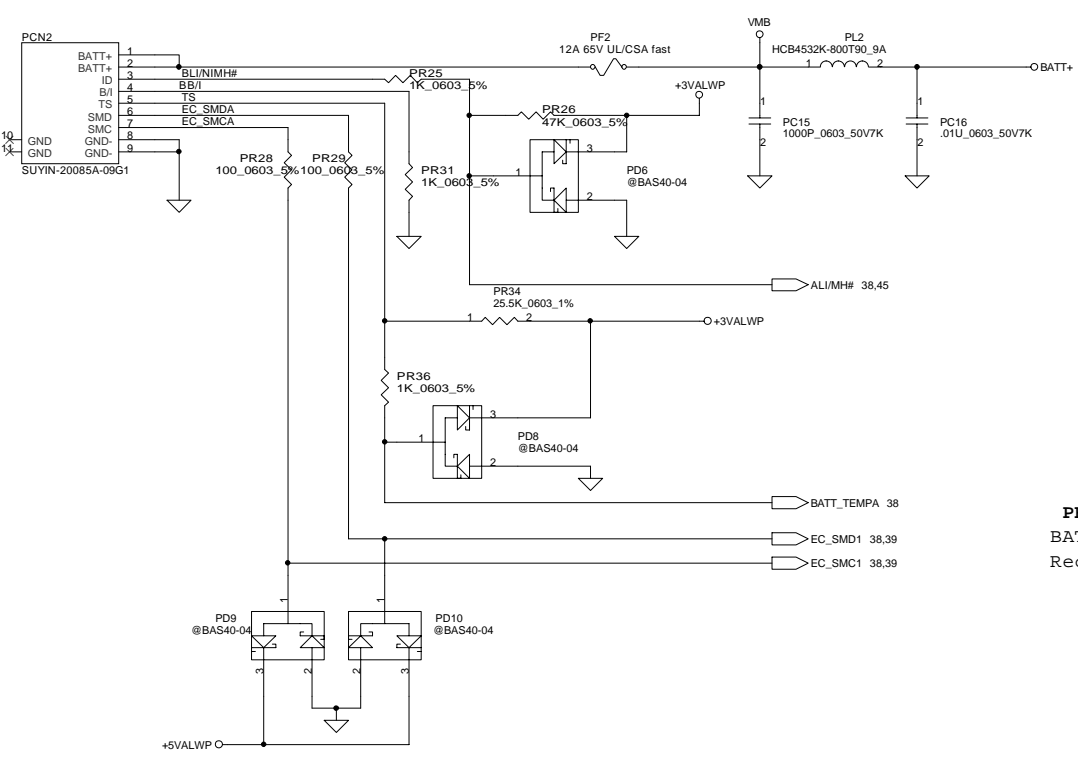
Precharge detector			
15.34	15.90	16.48	
13.13	13.71	14.20	



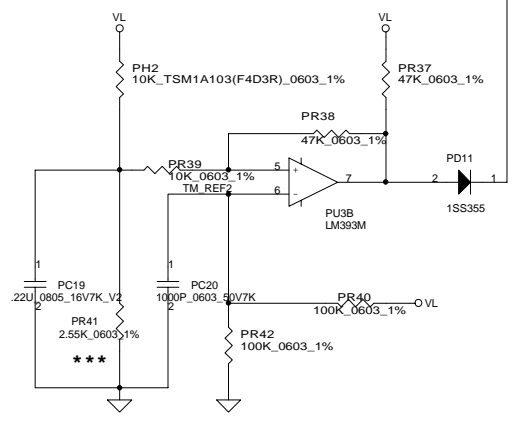
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SCHEMATIC, M/B LA-1691			
Size	Document Number	Rev	
Custom	401241	1A	
Date:	星期二, 一月 07, 2003	Sheet	43 of 53

PH1 under CPU botten side :
 CPU thermal protection at 90(91) degree C
 Recovery at 50 degree C

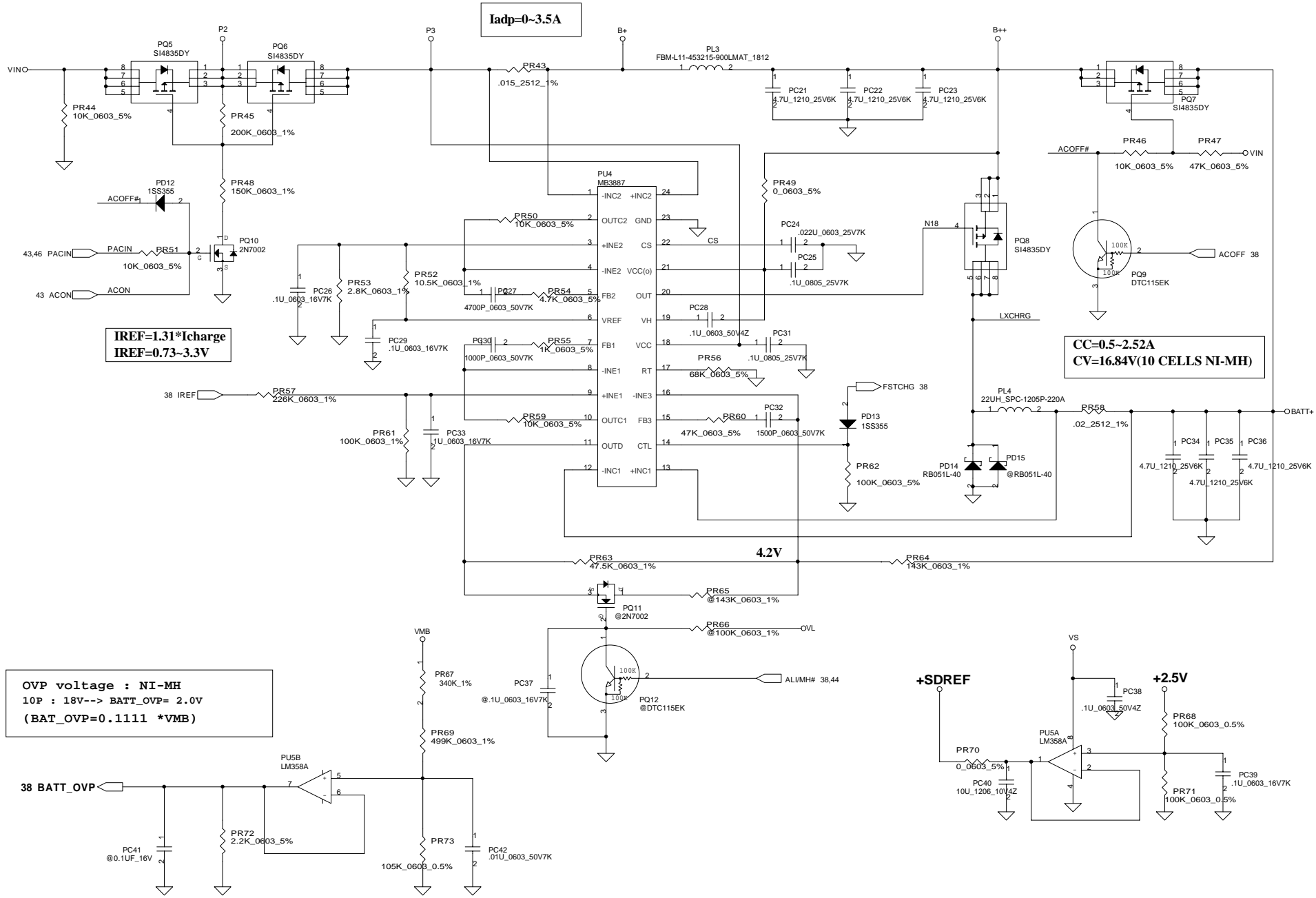


PH2 near main Battery CONN :
 BAT. thermal protection at 85(86) degree C
 Recovery at 60(61) degree C



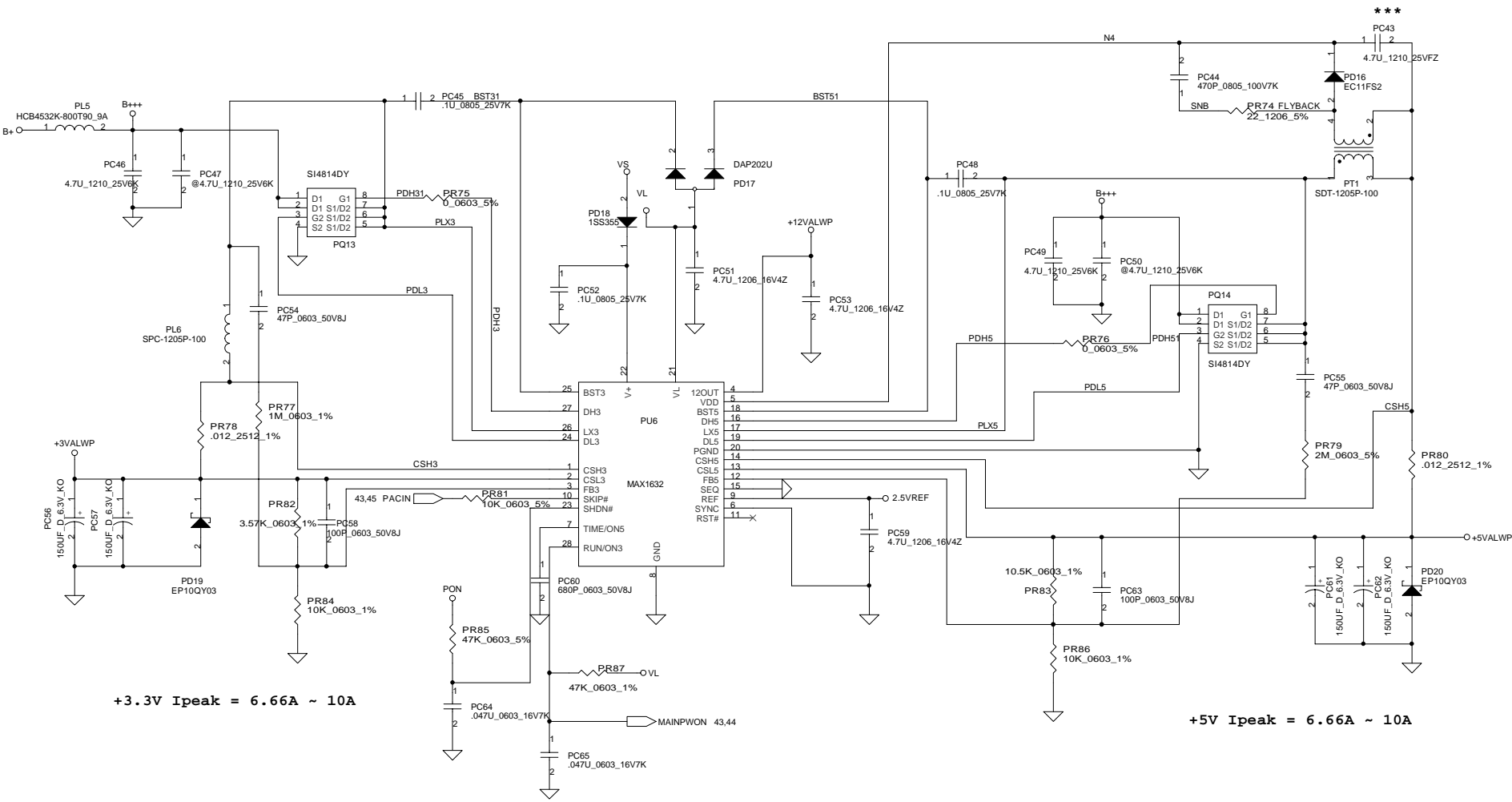
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Size	Document Number	401241	Rev 1A
Date:	星期二, 一月 07, 2003	Sheet	44 of 53



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File	SCHEMATIC, M/B LA-1691		
Size	Document Number	Rev	
Custom	401241	1A	
Date:	星期三, 一月 07, 2003	Sheet	45 of 53

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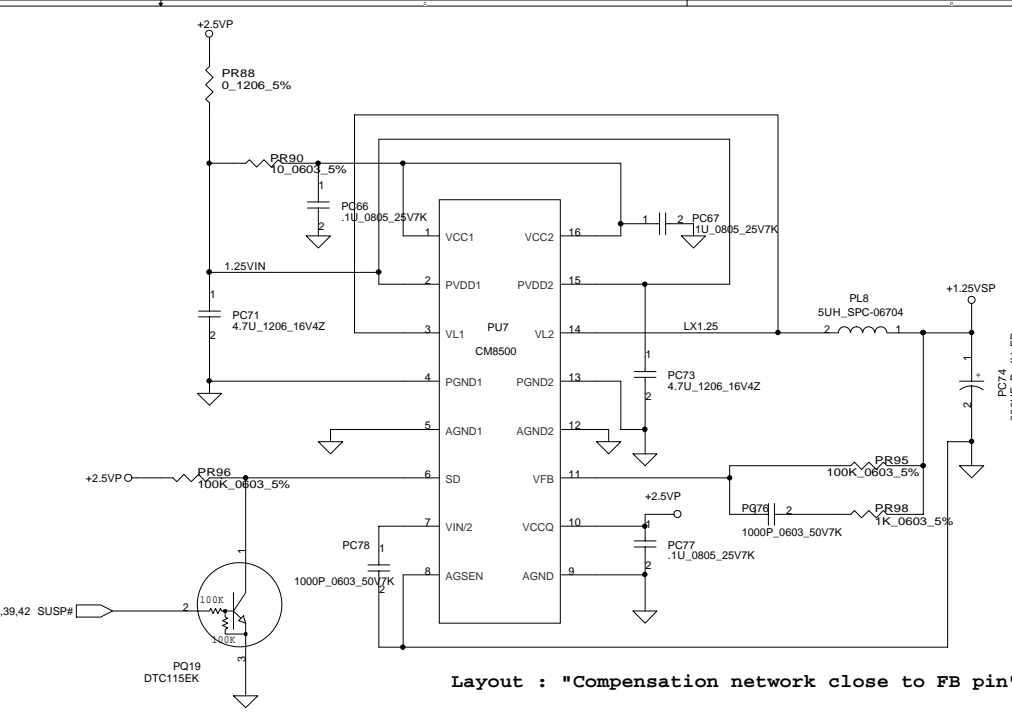
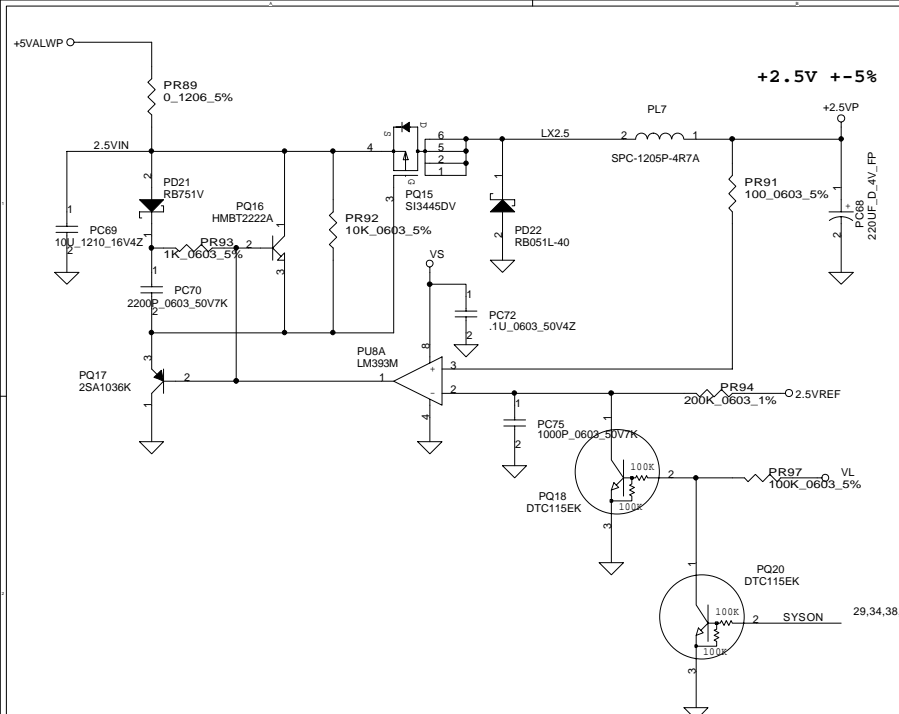


+3.3V Ipeak = 6.66A ~ 10A

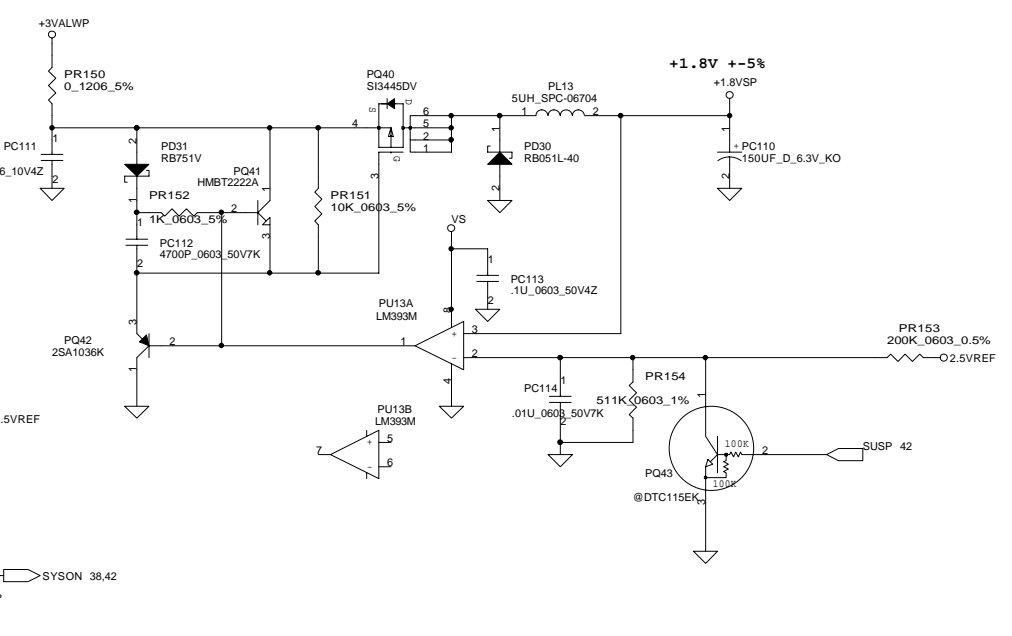
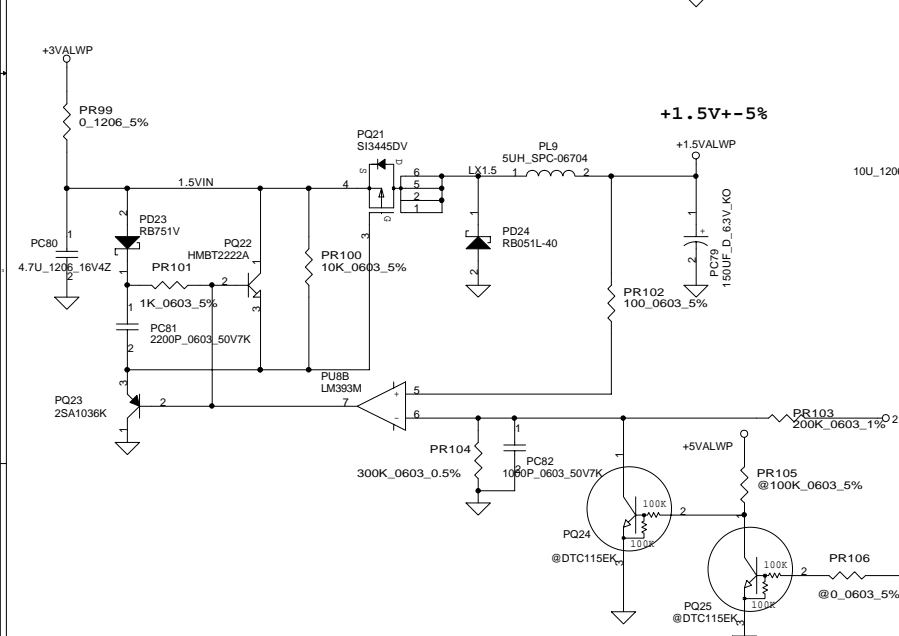
+5V Ipeak = 6.66A ~ 10A

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SCHEMATIC, M/B LA-1691			
Size	Document Number	Rev	
Custom	401241	1A	
Date:	星期三, 一月 07, 2003	Sheet	46 of 53

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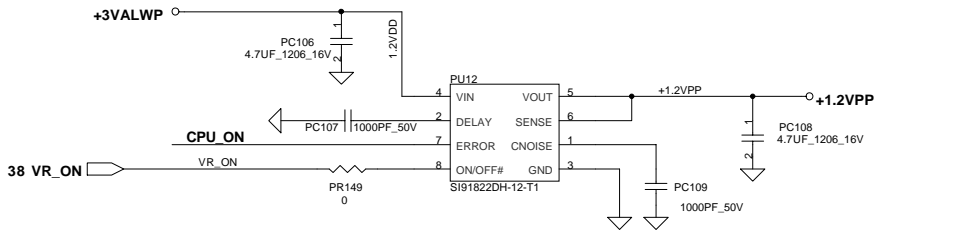
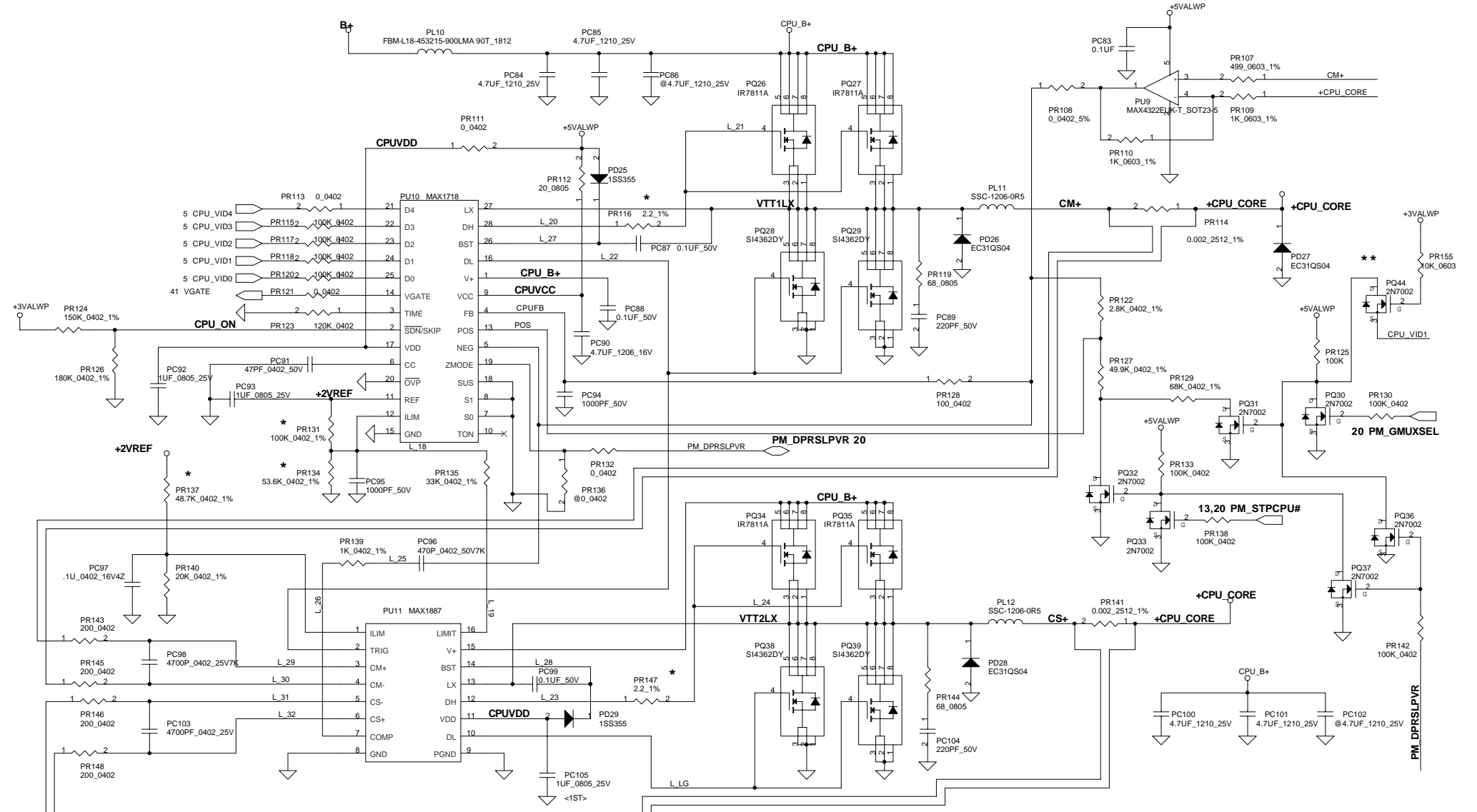


Layout : "Compensation network close to FB pin"



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Title			
SCHEMATIC, M/B LA-1691			
Size	Document Number	Rev	
Custom	401241	1A	
Date:	星期二, 一月 07, 2003	Sheet	47 of 53



	GMUXSEL	STPCPU#	DPRSLPVR	VCORE'	Offset	VCORE
PM	1	1	0	1.30V	0%	1.30V
PM D-S	1	0	0	1.239V	4.62%	1.239V
BM	0	1	0	1.20V	2.0%	1.176V
BM D-S	0	0	0	1.144V	4.62%	1.144V
Deeper	X	0	1	1.0V	0%	1.0V

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Rev 0.2

Page	Location	From	To	Page	Location	From	To
4	Modify R31	56 Ohm	10K	17	Modify C99	470P_0603	470P_0402
5	ADD R551	X	10K	18	ADD C737,C738 C739,C740	X	220P_0402
5	ADD R552	X	470 Ohm	19	Modify JP16	7 PIN	4 PIN
5	ADD Q53	X	NPN	19	DEL D25	DAN217	X
5	ADD R546	X	200 Ohm	19	DEL C487,C488 C489	270P_0402	X
10,11	DEL	LPC_AD0	X	19	ADD C726,C727	X	270P_0402
10,11	DEL	LPC_AD1	X	19	DEL C490,C491 C492	33P_0402	X
10,11	DEL	LPC_AD2	X	19	ADD C723,C724	X	33P_0402
10,11	DEL	LPC_AD3	X	19	DEL L31,L32,L33	CHB1608U301	X
10,11	DEL	LFRAME#	X	19	ADD L55,L56	X	CHB1608U301
10,11	DEL	PCLK_80H	X	19	DEL C495,C496 C497	100P_0402	X
10,11	DEL	KBA5	X	19	ADD C725,C728	X	100P_0402
10,11	DEL	PCIRST#	X	19	DEL R326,R327 R328	75 Ohm	X
11	DEL R172	33 Ohm	X	19	ADD R543,R544 R545	X	75 Ohm
11	DEL C253	10PF	X	20	CHANGE	RP127	RP58
13	DEL R153	33 Ohm	X	20	CHANGE	R483	R458
14	ADD R538	X	20K	21	DEL	USB_EN_0	X
14	ADD R547	X	0 Ohm	21	DEL	USB_EN_1	X
14	Modify R41	499_0603	499_0402	21	DEL	USB_EN_2	X
17	DEL L6,L9	CHB1608U301	X	21	DEL	USB_EN_3	X

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Title		
SCHEMATIC, M/B LA-1691		
Size	Document Number	Rev
Custom	401241	1A
Date: 星期二, 一月 07, 2003	Sheet	49 of 53

Rev 0.2

Page	Location	From	To	Page	Location	From	To
26	ADD C741	X	220P	33	ADD R345	0 Ohm	X
27	DEL C5	4.7U	X	35	Modify R291,R463	8.45K	54.9K
29	ADD R233	X	5.6K	35	Modify R281,R464	2.32K	4.32K
29	ADD R244	X	10K	35	DEL C451,C681	0.1U	X
31	ADD C742	X	220P	35	DEL R529,R494	1.82K	X
33	ADD C743,C744	X	220P	35	DEL C714,C675	3900P	X
33	ADD R539,R540 R541,R542	X	1K	35	Modify C458,C677	3900P	1000P
33	DEL	USB_EN_0	X	35	Modify R527,R484	1.47K	2.87K
33	DEL	USB_EN_1	X	35	Modify C454,C683	1500P	2700P
33	DEL	USB_EN_2	X	35	Modify R524,R496	113K	162K
33	DEL	USB_EN_3	X	35	Modify R517,R200	1.13K	1.05K
33	DEL L35,L36 L41,L54	JTSO402-03_4P	X	36	Modify R512	3.9K	4.3K
33	DEL R364,R365 R330,R331 R332,R333 R531,R526	0 Ohm	X	36	Modify R508	27K	6.2K
33	ADD L57,L58 L59,L60 L61,L62 L63,L64	X	FBM-160808 -121T	36	Modify Q49,Q50	CHANGE 1 AND 3 PIN	
33	ADD C729,C730 C731,C732 C733,C734 C735,C736	X	47P	37	DEL	SD_PME#	X
33	Modify U3,U7	TPS2052	TPS2042-ADR	38	DEL	SD_PME#	X
33	DEL U31	TC7SH08FU	X	38	DEL R246	0 Ohm	X
33				38	ADD R548	X	0 Ohm
33				38	ADD	X	EC_CPUPD#

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SCHEMATIC, M/B LA-1691

Size Custom Document Number **401241** Rev **1A**

Date: 星期二, 一月 07, 2003 Sheet 50 of 53

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Rev 0.2

Page	Location	From	To	Page	Location	From	To
40	Modify JP23	Change 4PIN to 3PIN					
40	DEL	FAN_PWM	X				
41	Modify D4,D5,D27	SFI0603	POST24C				
42	ADD U52	X	SI4800				
42	ADD C720,C721 C722	X	4.7U				
42	ADD C719	X	1U				
42	ADD Q52	X	2N7002				
42	ADD R537		1K				
42	Modify C423	.01u	.1u				
43	Modify PJP8	+1.8VS	+1.8VALW				
48	ADD PQ44	X	2N7002				
48	ADD PR155	X	10K				

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Title			
SCHEMATIC, M/B LA-1691			
Size	Document Number		Rev
Custom	401241		1A
Date:	星期二, 一月 07, 2003	Sheet	51 of 53

Rev 0.3

Page	Location	From	To	Page	Location	From	To
5	ADD Q47,Q53	X	3904	44	CHANGE PR32	3K	2.8K
5	ADD R551	X	10K	44	CHANGE PR41	3.24K	2.32K
5	ADD R469,R552	X	470 Ohm	46	CHANGE PC43	2.2U	4.7U
33	Modify R358 R360	0402	0603				
33	ADD C745,C746	X	47pf				
34	Modify R218	2.4K	10K				
34	ADD C280	X	0.01U				
34	Modify R532,R533 R528,R535	10K	1M				
35	Modify R291,R463	54.9K	19.6K	Rev 0.4			
35	Modify R521,R221	143K	63.4K				
29	ADD R557	X	0 Ohm	31	DEL	MD_MIC	X
29	ADD	DVD_DETECT		34	DEL C412	1u_0805	X
37	ADD PAD1,PAD2	X	2.5*3	34	DEL	MD_MIC	X
38	Modify R301	0 Ohm	8.2K	47	DEL PQ43	DTC115EK	X
38	ADD R553	X	0 Ohm				
38	ADD	DVD_DETECT					
38	ADD	PM_SLP_S1#					
36	DEL C612,C270	1U_0603	X				
36	ADD R558,R559	X	0 Ohm				
36	DEL R161,R203	1.2K	X				

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SCHEMATIC, M/B LA-1691

Size Document Number
Custom

401241

Rev
1A

Date: 星期二, 一月 07, 2003

Sheet 52 of 53

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Rev 1.0

Page	Location	From	To	Page	Location	From	To
14	DEL R538	20K	X				
14	ADD R547	X	0 Ohm				
28	DEL JP20	PCI SLOT	X				
28	DEL U5	TC7SH08FU	X				
28	DEL D14	RB751V	X				
28	DEL C176,C583,C629 C559,C555,C560 C557,C565,C630	0.1u_0402	X				
28	DEL L12,L14,L15	CHB1608B121	X				
28	DEL C234,C265	10u_1206	X				
28	DEL C558	10P_0402	X				
28	DEL C554	1000P_0402	X				
28	DEL R93	0_0402	X				
28	DEL R128	100_0402	X				
28	DEL R386	33_0402	X				
42	DEL U24	SI4800	X				
42	DEL C418,C430 C444	4.7u_0805	X				
42	DEL C420	1u_0603	X				
42	DEL Q24	2N7002	X				
42	DEL R282	470 Ohm	X				
42	Modify PR41	2.32K	2.55K				

NOTE:
 1.EQ: R512=4.3K , R510=3.3K
 Modify R558,R559 TO "0 Ohm"
 UNMOUNT R161,R203
 2.NO EQ: R512=3.9K, R510=4.7K, R508=2K
 Modify R558,R559 TO "1u_0603 10V6k"
 MOUNT R161,R203

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Title			
SCHEMATIC, M/B LA-1691			
Size	Document Number		Rev
Custom	401241		1A
Date:	星期二, 一月 07, 2003	Sheet	53 of 53

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