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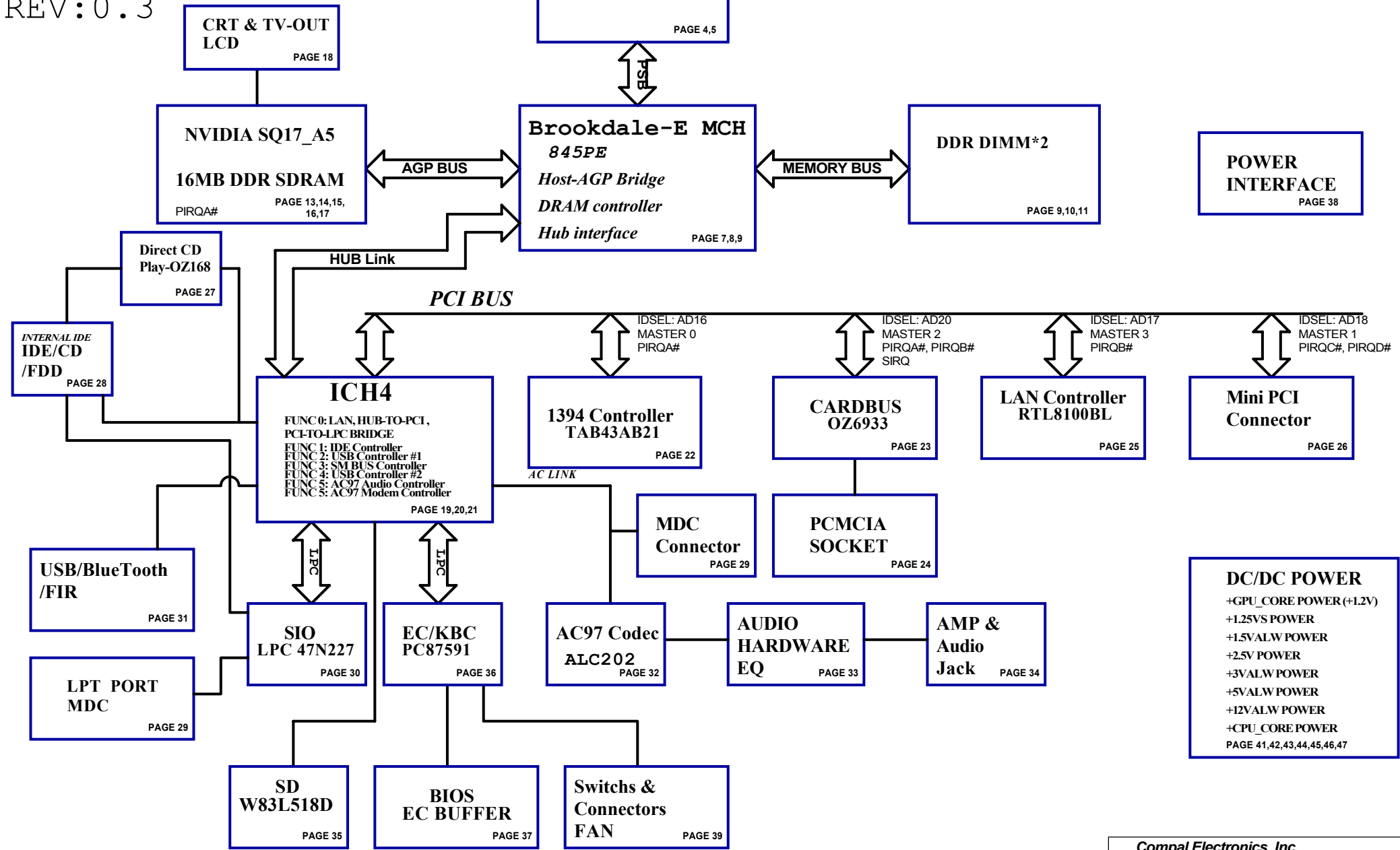
# ***BTS88 LA-1541 REV0.3 Schematics Document***

**Intel Pentium 4 Processor in the 478-pin Package  
with 845PE / ICH4 / NVIDIA SQ17 chipset**

**2002-10-26-A For B2-Test**

<b>Compal Electronics, Ltd.</b>			
Title			
<b>BTS88 Cover Sheet</b>			
Size B	Document Number <b>LA1541</b>		Rev 0.3
Date:	星期二, 十月 29, 2002	Sheet 1 of 48	

MODEL NAME :BTS88  
REV:0.3



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Title			
BTS88 BLOCK DIAGRAM			
Size	Document Number	Rev	
B	LA1541	0.3	
Date:	星期二, 十月 29, 2002	Sheet	2 of 48

## 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_CORE	Core voltage for CPU	ON	OFF	OFF
+1.2VP	1.2V switched power rail for CPU AGTL Bus	ON	OFF	OFF
+1.25VS	1.25V switched power rail	ON	OFF	OFF
+1.5VS	AGP 4X	ON	OFF	OFF
+1.5VALW	1.5V always on power rail	ON	ON	ON*
+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
VGA			PIRQA
CardBus	AD20	2	PIRQA/PIRQB
LAN	AD17	3	PIRQB
Mini-PCI	AD18	1/4	PIRQC/PIRQD
1394	AD16	0	PIRQA

## EC SM Bus1 address

Device	Address	Device	Address
Smart Battery	0001 011X b	MAX1617MEE	1001 110X b
EEPROM(24C16/02)	1010 000X b	OZ168	0011 0100 b
(24C04)	1011 000Xb	Smart Battery	0001 011X b
		Docking	0011 011X b
		DOT Board	XXXX XXXXb

## ICH4 SM Bus address

Device	Address
Clock Generator ( ICS950810)	1101 001Xb
DDR DIMM0	1001 000Xb
DDR DIMM1	1001 001Xb

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

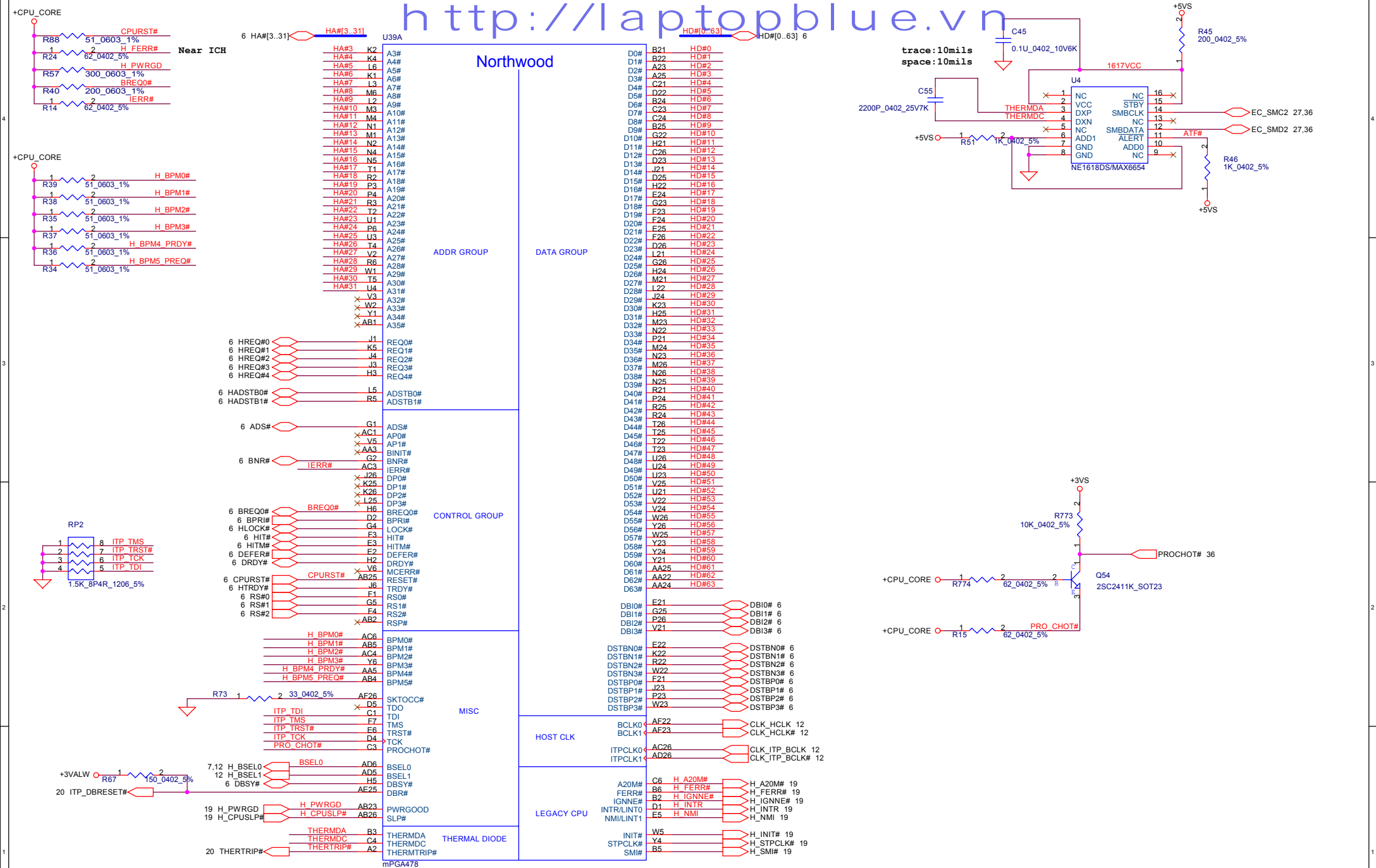
## Board ID Table for AD channel

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

Board ID	PCB Revision
0	0.1
1	0.2
2	0.3
3	
4	
5	
6	
7	

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BTS88 Notes		
Size B	Document Number	Rev
	LA1541	0.3
Date:	星期二, 十月 29, 2002	Sheet 3 of 48
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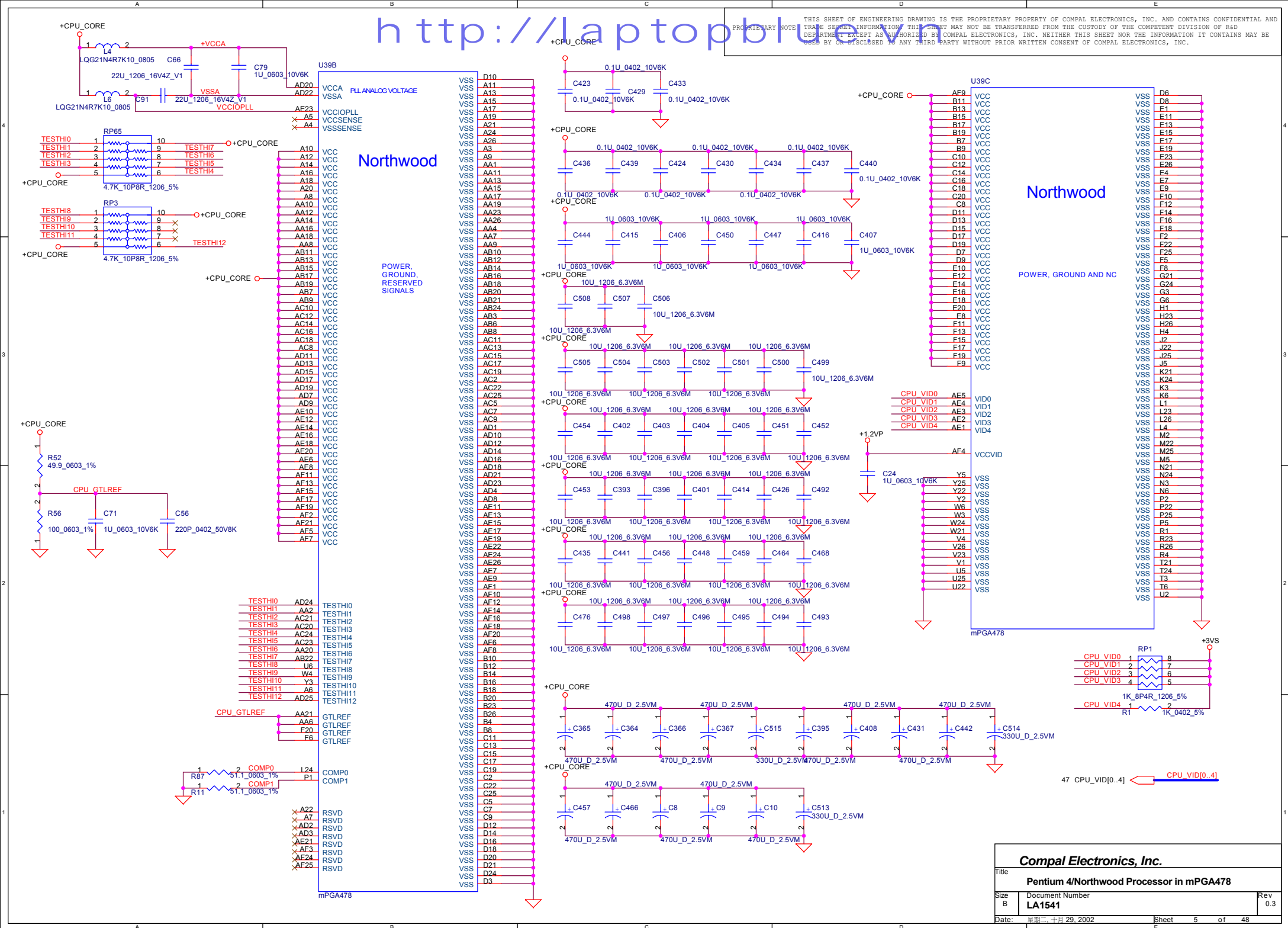
BSEL1	BSEL0	SYSTEM BUS FREQUENCY
L	L	100MHz
L	H	133MHz
H	L	RESERVED
H	H	RESERVED

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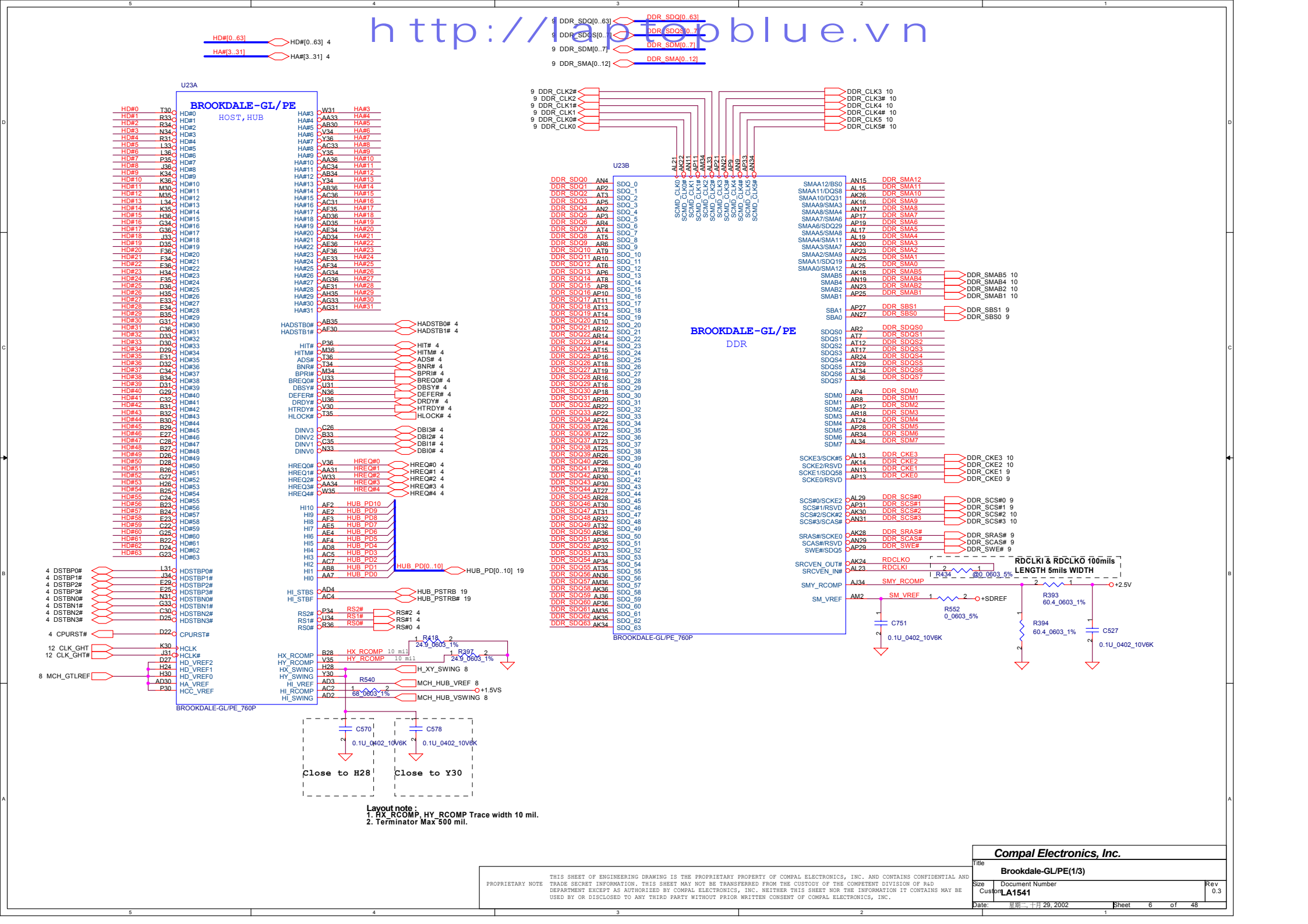
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Pentium 4/Northwood Processor in mPGA478

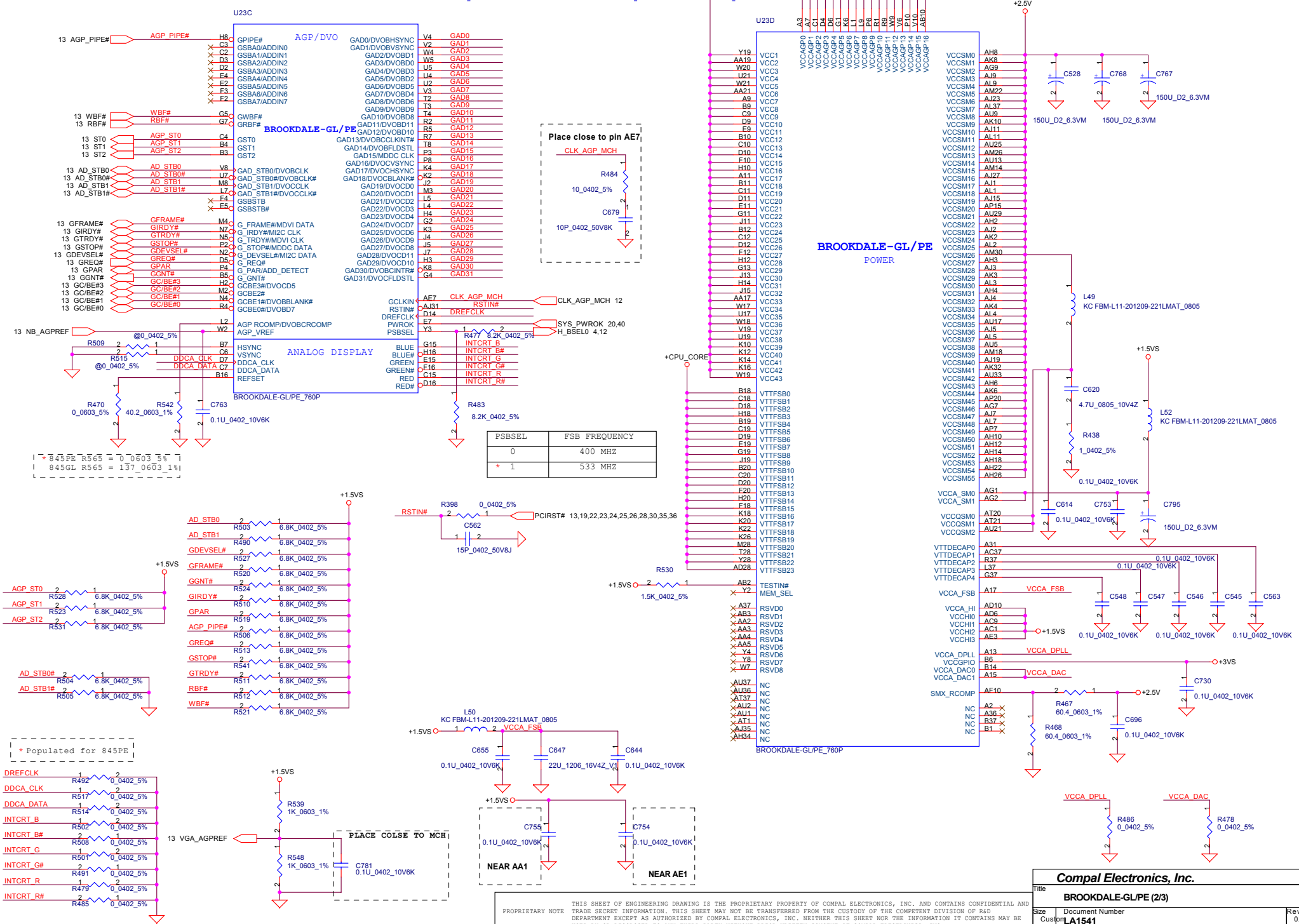
Document Number <b>LA1541</b>	Rev 0.3
Date: 星期二, 十月 29, 2002	Sheet 4 of 48

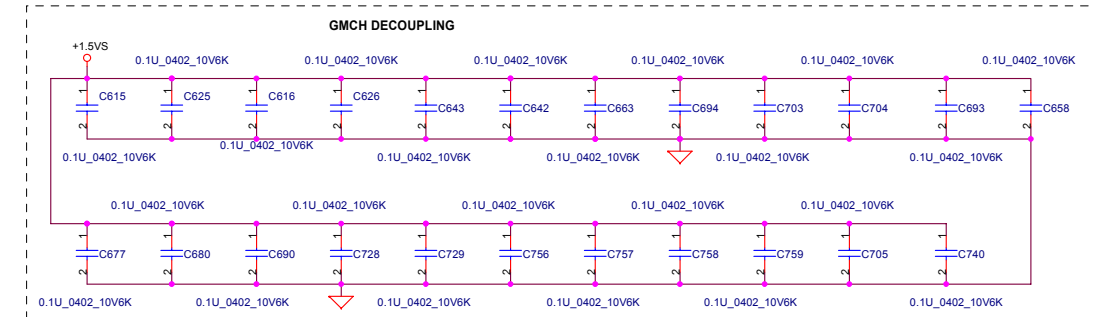
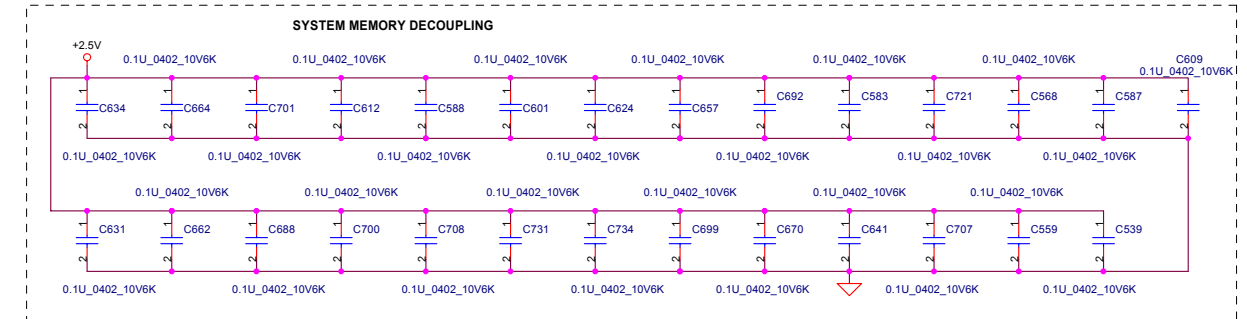
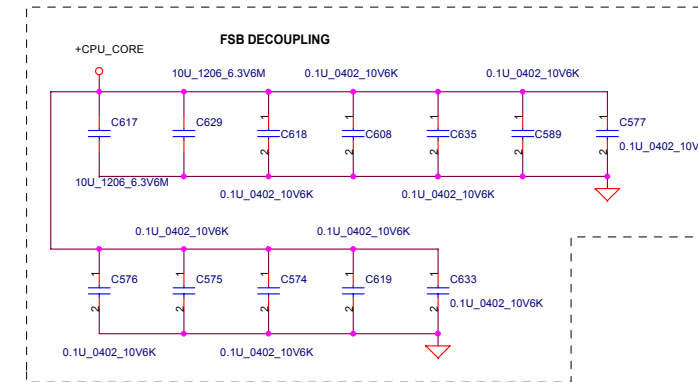
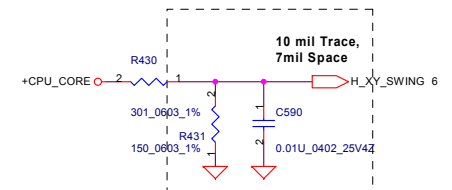
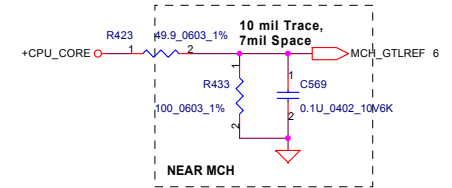
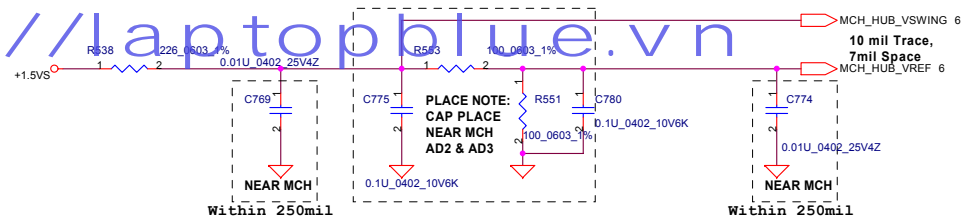


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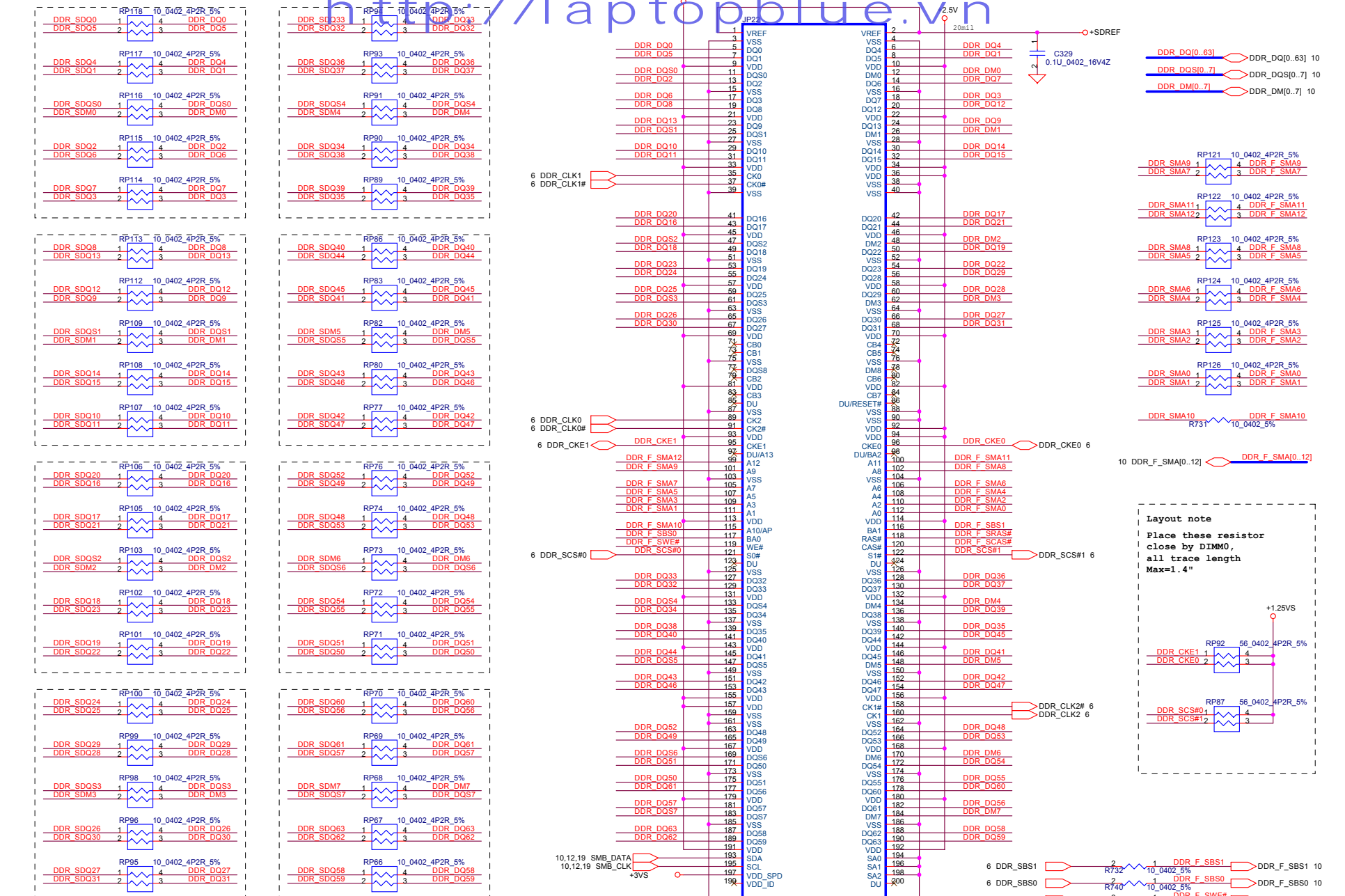










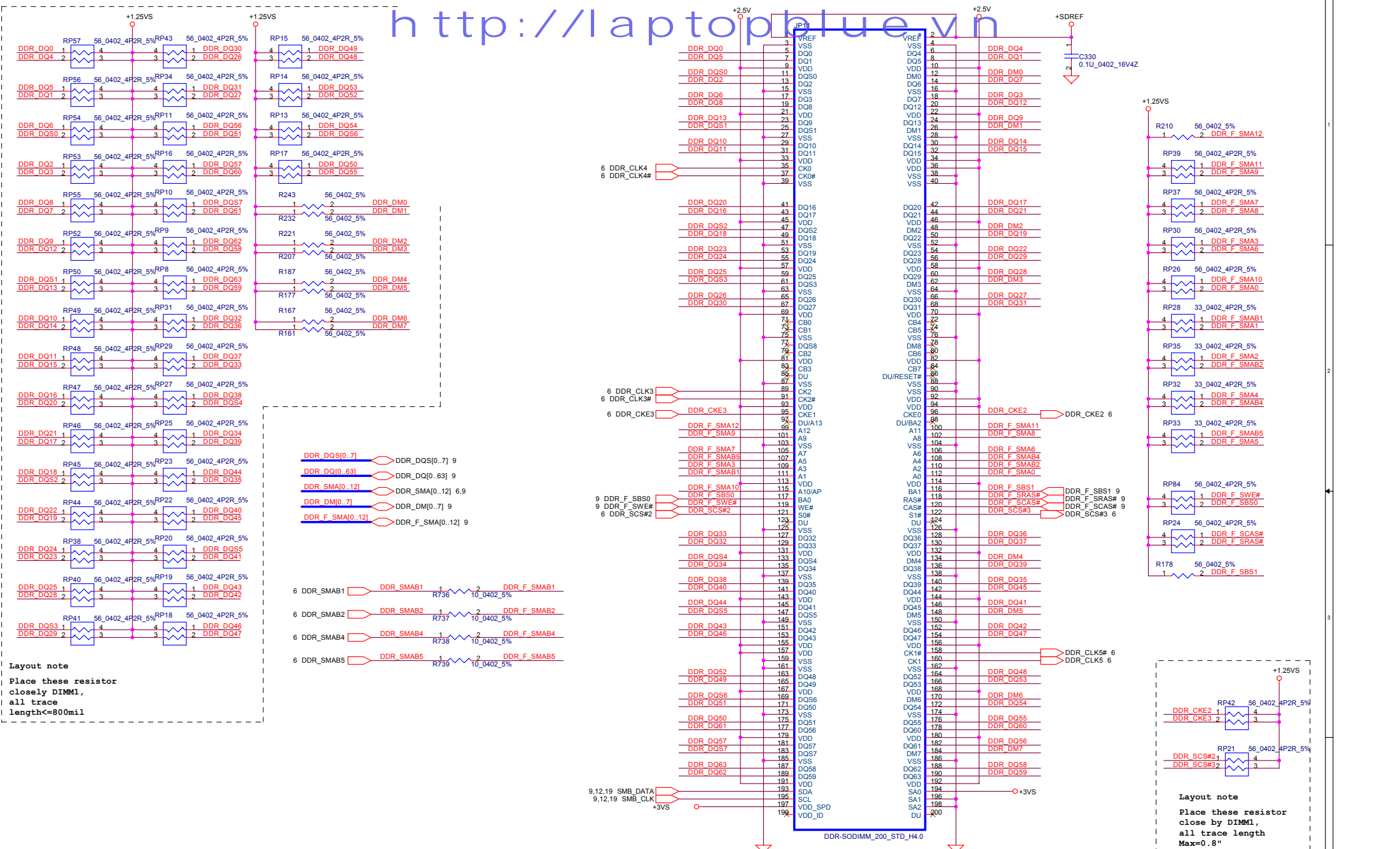


- 6 DDR\_SDQ[0..63] DDR\_SDQ[0..63]
  - 6 DDR\_DSQ[0..7] DDR\_DSQ[0..7]
  - 6 DDR\_SMA[0..12] DDR\_SMA[0..12]
  - 6 DDR\_SDM[0..7] DDR\_SDM[0..7]
- 6 DDR\_CLK1 6 DDR\_CLK1#
- 6 DDR\_CLK0 6 DDR\_CLK0#
- 6 DDR\_CKE1 DDR\_CKE1
- 6 DDR\_SCs#0 DDR\_SCs#0
- 6 DDR\_CLK2# 6 DDR\_CLK2
- 6 DDR\_SBS1 R732 10\_0402 5% DDR\_F\_SBS1 10
- 6 DDR\_SBS0 R740 10\_0402 5% DDR\_F\_SBS0 10
- 6 DDR\_SWE# R733 10\_0402 5% DDR\_F\_SWE# 10
- 6 DDR\_SCAS# R734 10\_0402 5% DDR\_F\_SCAS# 10
- 6 DDR\_SRAS# R735 10\_0402 5% DDR\_F\_SRAS# 10

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DDR-SODIMM SLOT0			
Size	Document Number	Rev	
B	LA1541	0.3	
Date:	星期二, 十月 29, 2002	Sheet	9 of 48

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Bottom-2

DIMM1

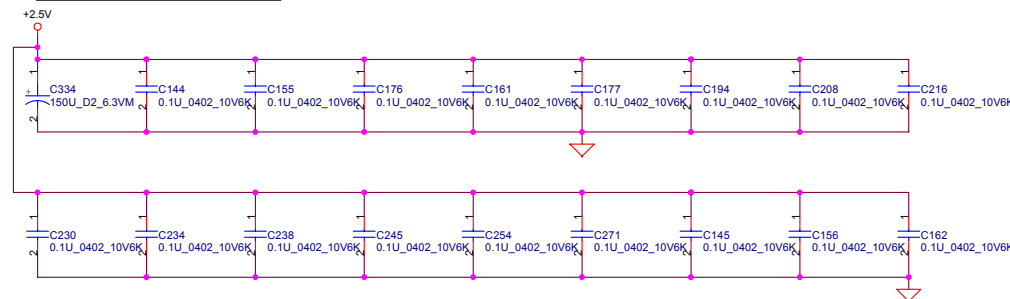
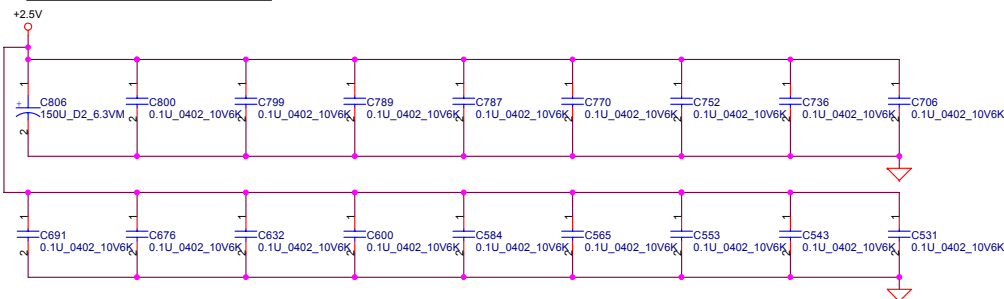
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Title			
DDR-SODIMM SLOT1			
Size	Document Number	Rev	
B	LA1541	0.3	
Date:	星期二, 十月 29, 2002	Sheet	10 of 48

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

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



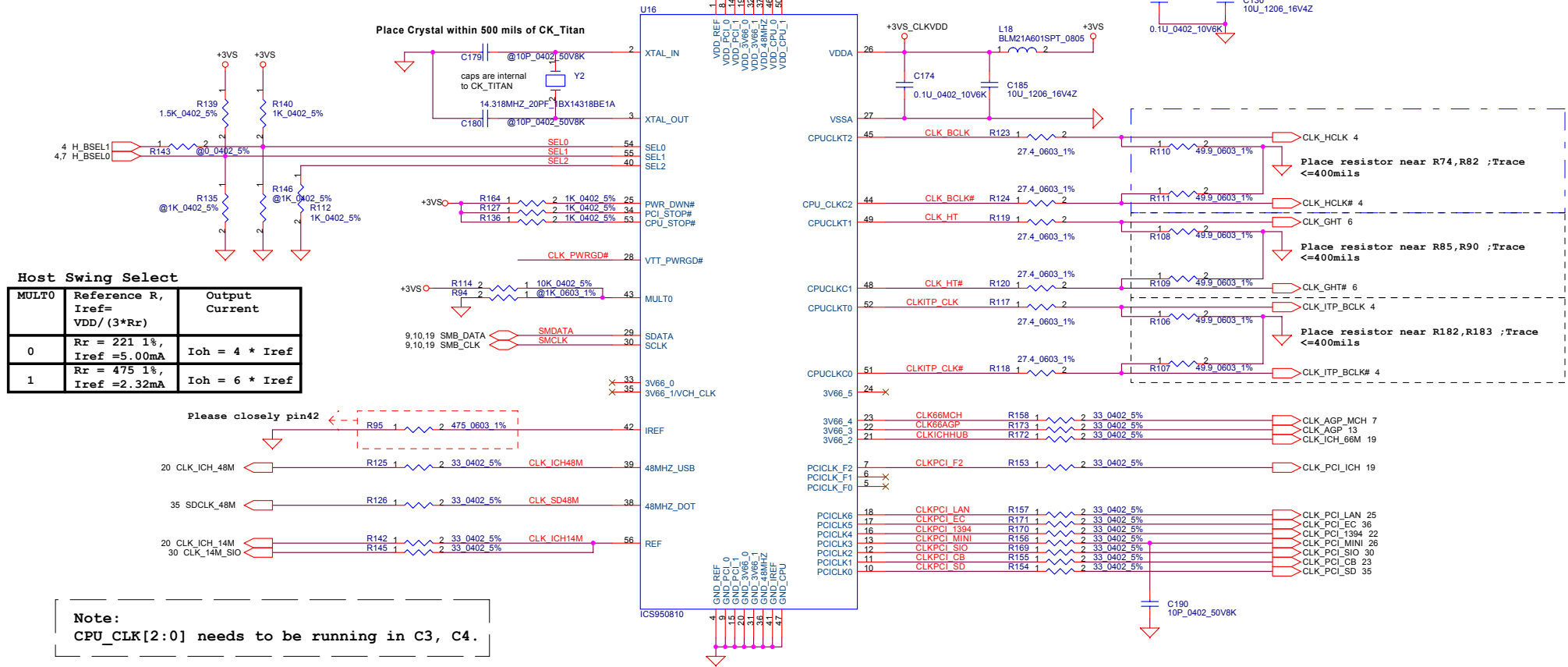
Layout note :  
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+1.25VS



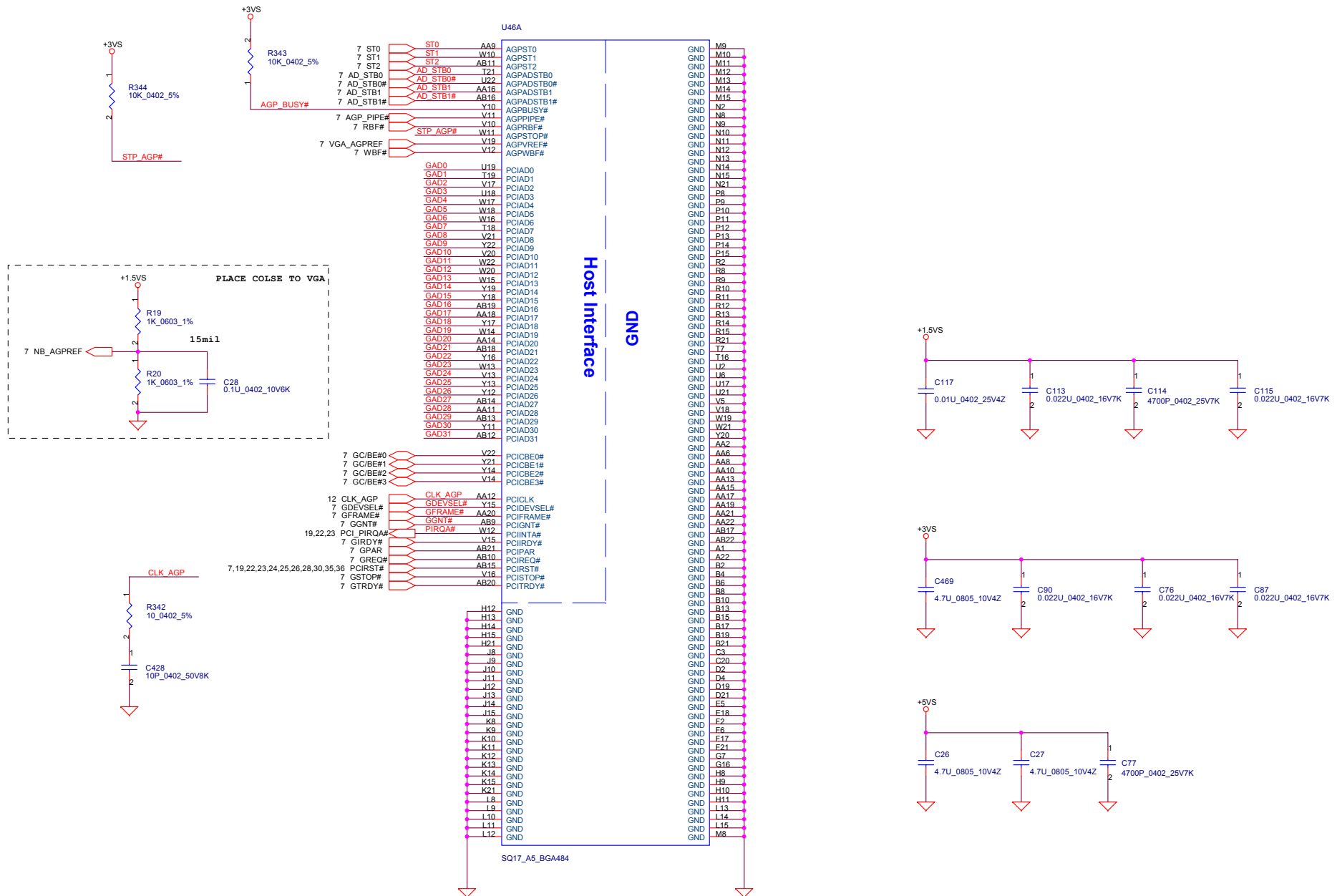
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Title		
DDR SODIMM Decoupling		
Size B	Document Number	Rev
	LA1541	0.3
Date:	星期二, 十月 29, 2002	Sheet 11 of 48

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SEL2	SEL1	SEL0	Function
0	0	1	100Mhz Host CLK
0	1	0	200Mhz Host CLK
0	1	1	133Mhz Host CLK



7 GAD[0..31]  GAD[0..31]

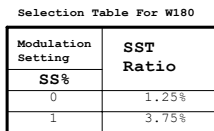


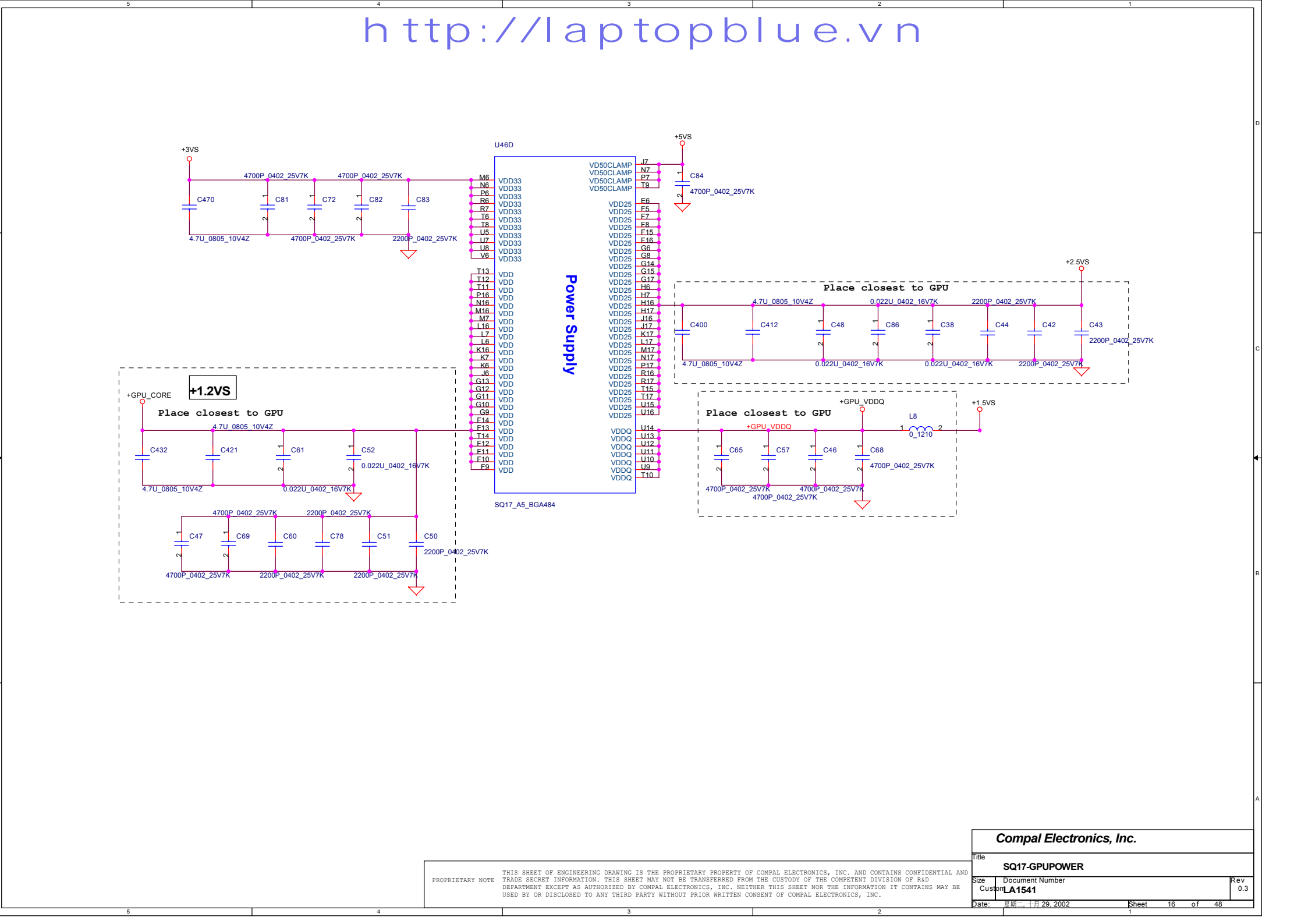
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SQ17-AGP I/F		
Size	Document Number	Rev
Customer	LA1541	0.3
Date:	星期二, 十月 29, 2002	Sheet 13 of 48



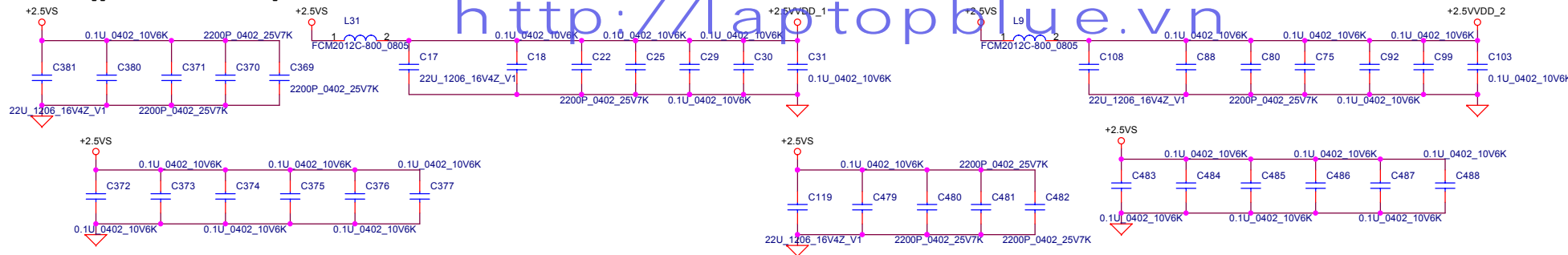




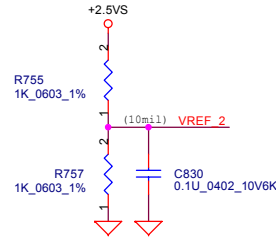
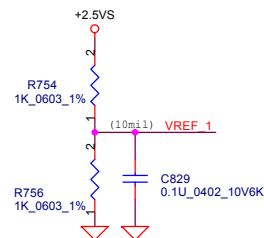
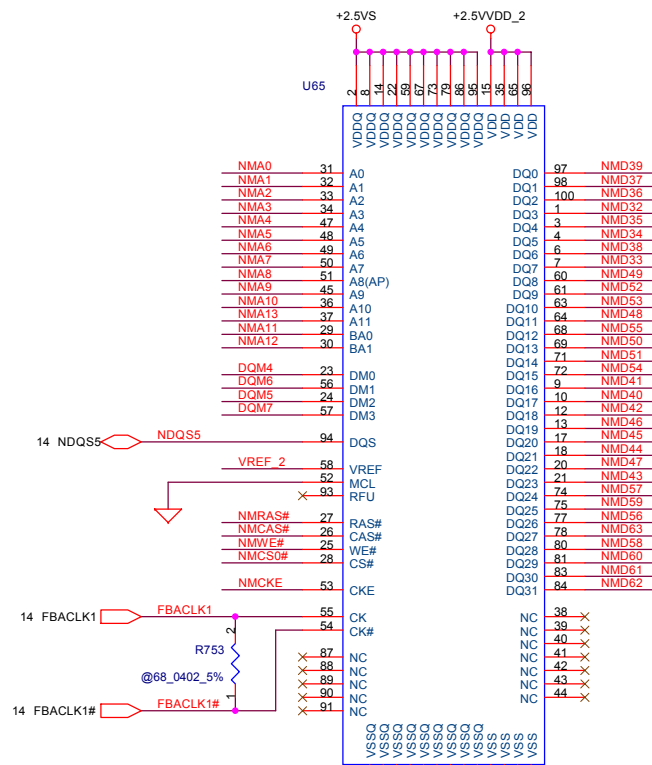
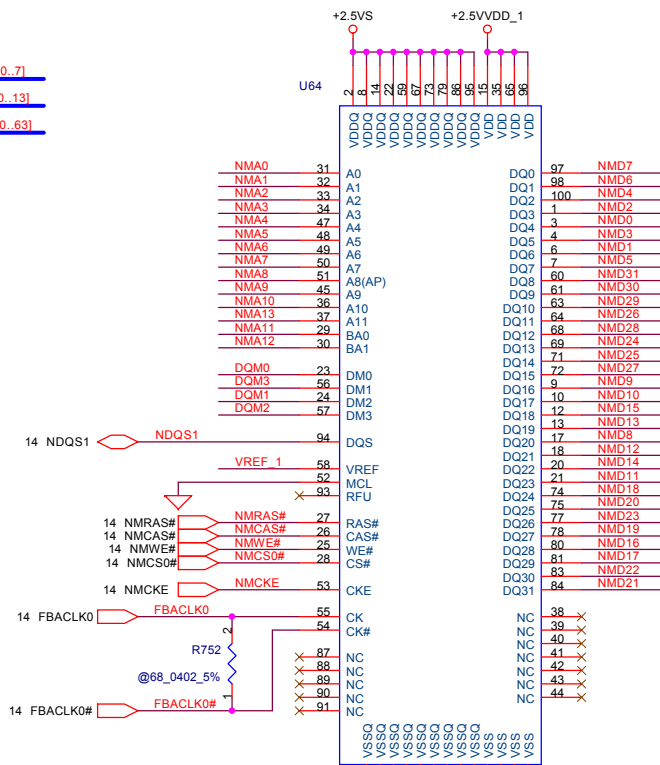


As close as possible to related pin

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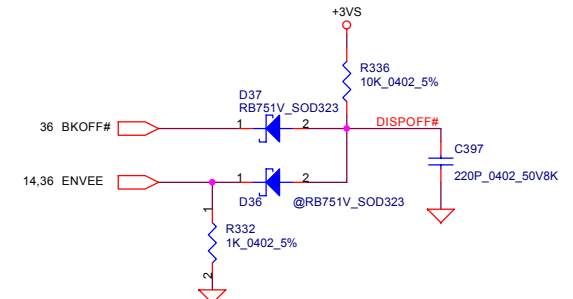
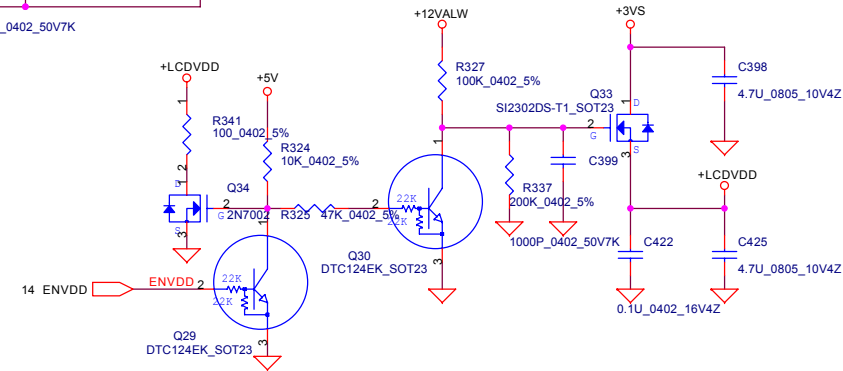
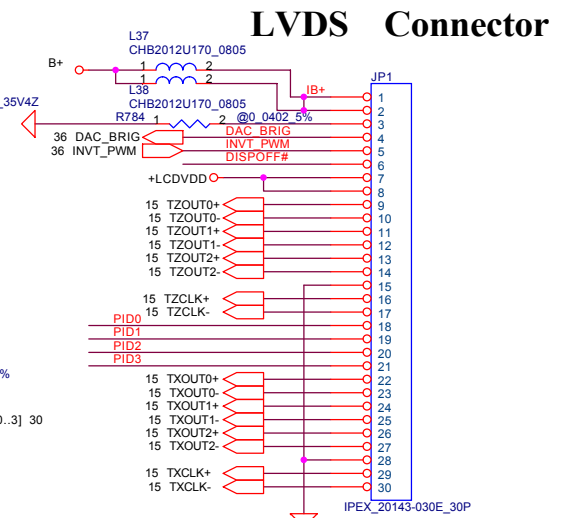
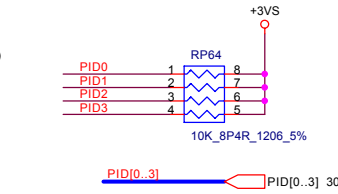
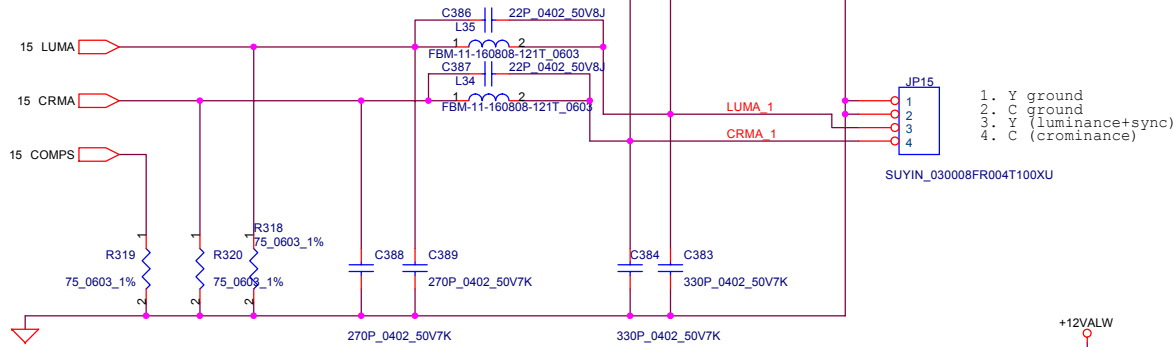
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14 NMA[0..13] NMA[0..13]  
14 NMD[0..63] NMD[0..63]



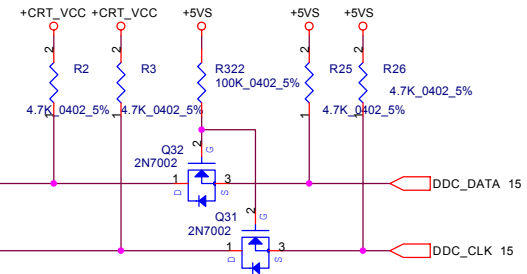
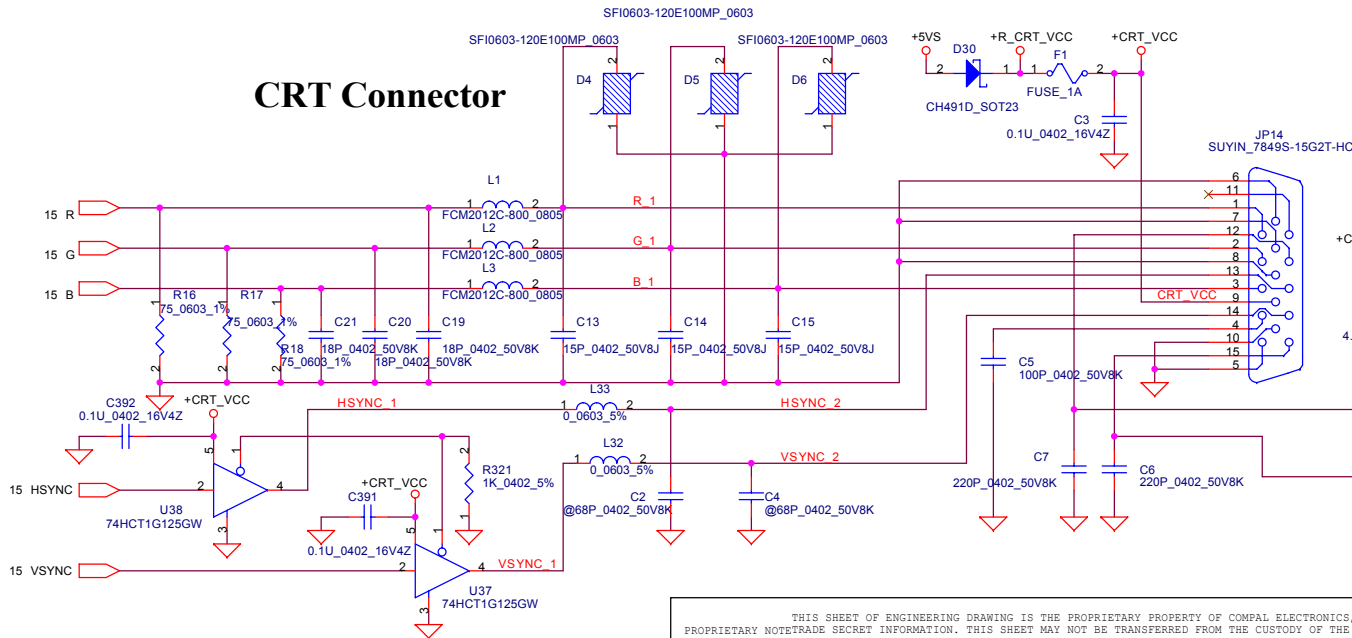
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Title			
NVIDIA SQ17 A CHANNEL DDR			
Size B	Document Number		Rev 0.3
	LA1541		
Date:	星期二, 十月 29, 2002	Sheet	17 of 48

### TV-OUT CONNECTOR



## CRT Connector



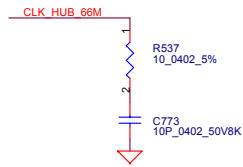
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Title	CRT&TV-OUT Connector
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Size B	Document Number <b>LA1541</b>	Rev 0.3
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Date: 星期二, 十月 29, 2002 Sheet 18 of 48

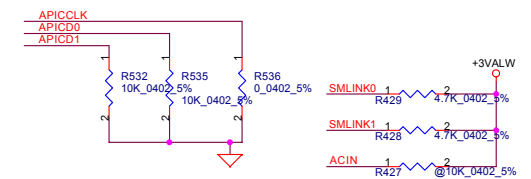
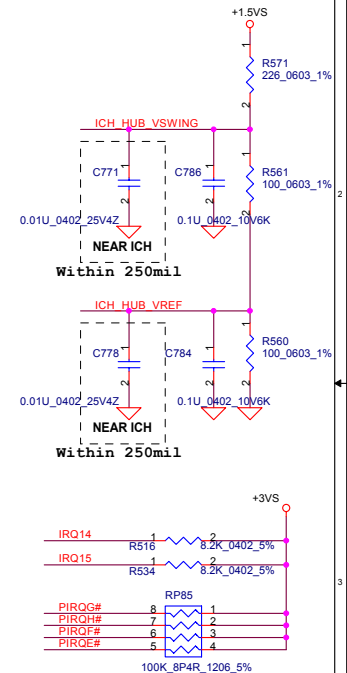
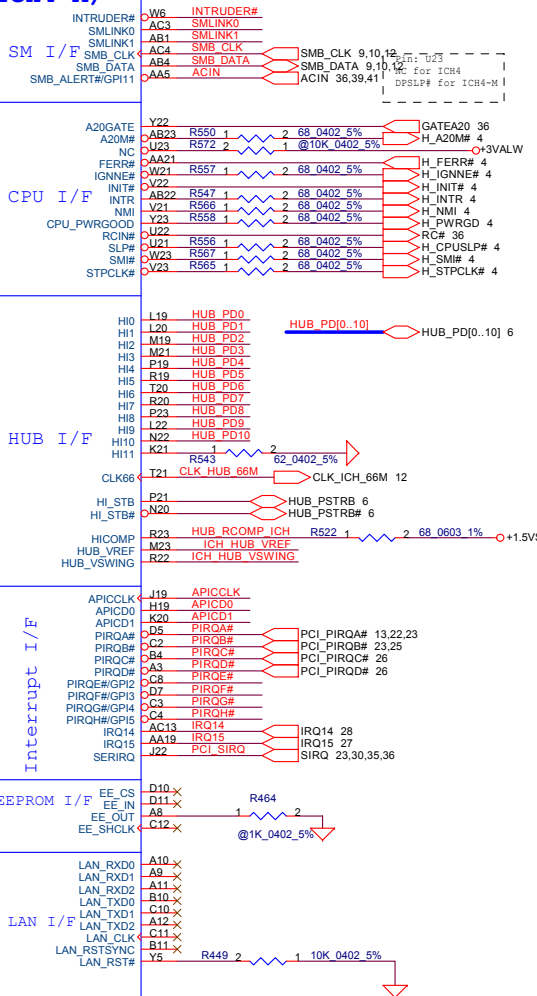
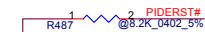
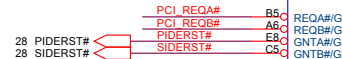
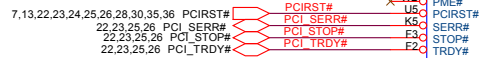
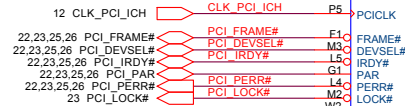
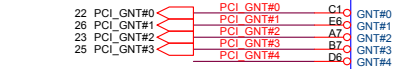
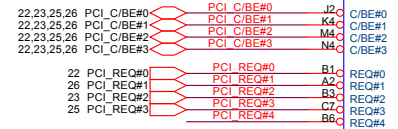
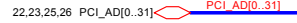
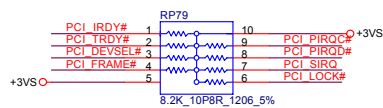


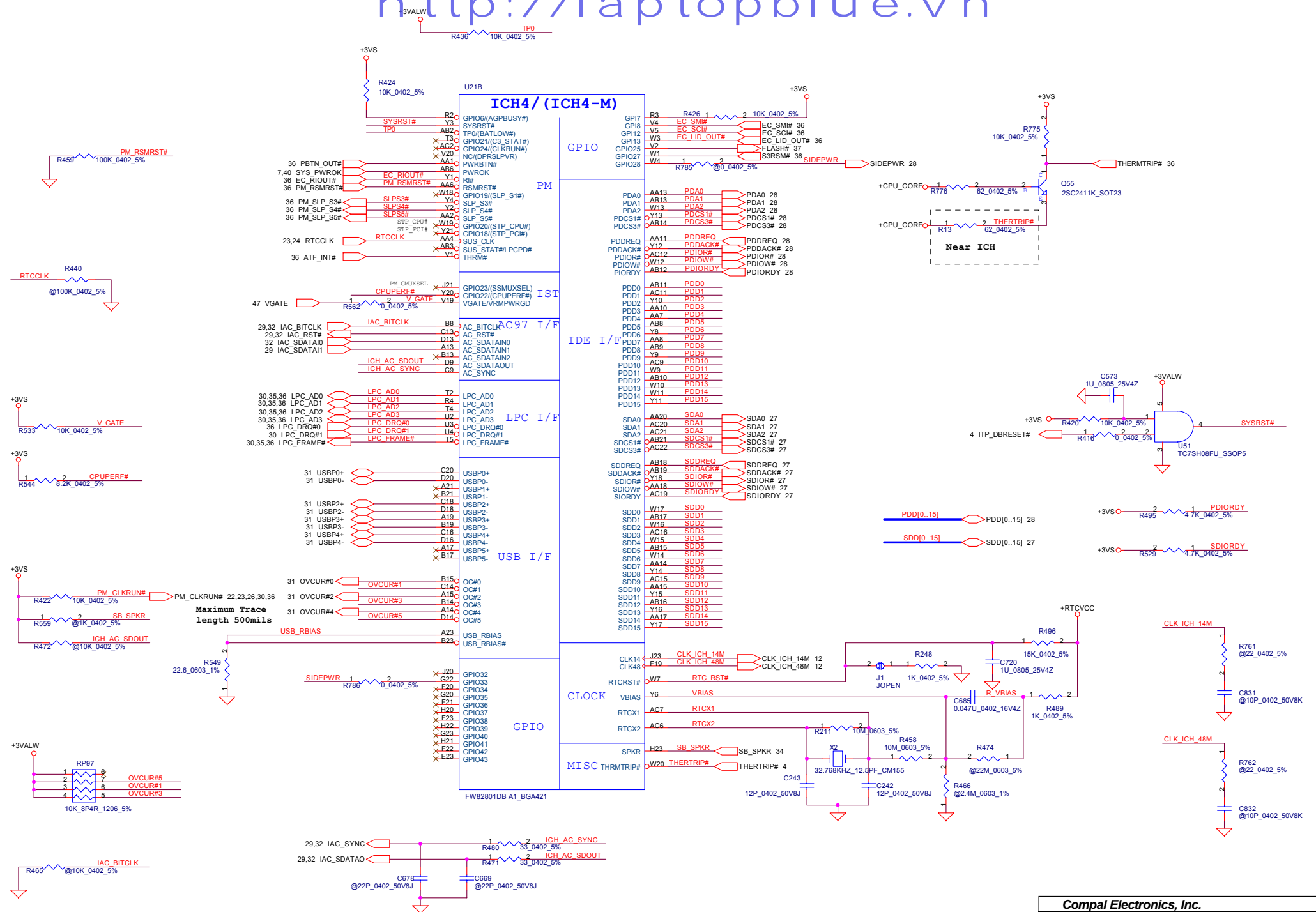
RP78

1 PCI\_PERR# 2 PCI\_REOA# 3 PCI\_STOP# 4 PCI\_SERR# 5 +3VS

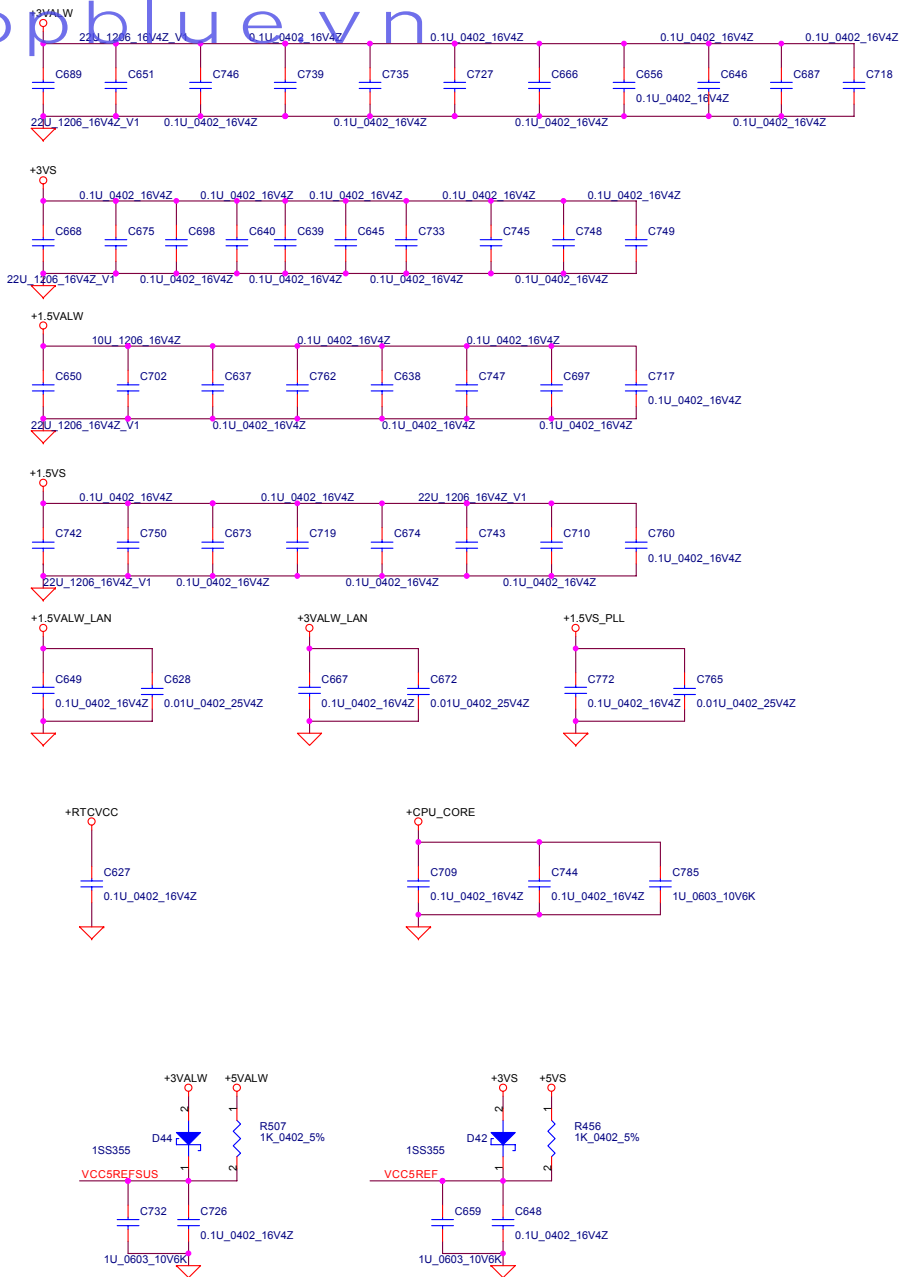
10 PCI\_PIROA# 9 PCI\_PIROB# 8 7 6

8.2K 108P 1206\_5%

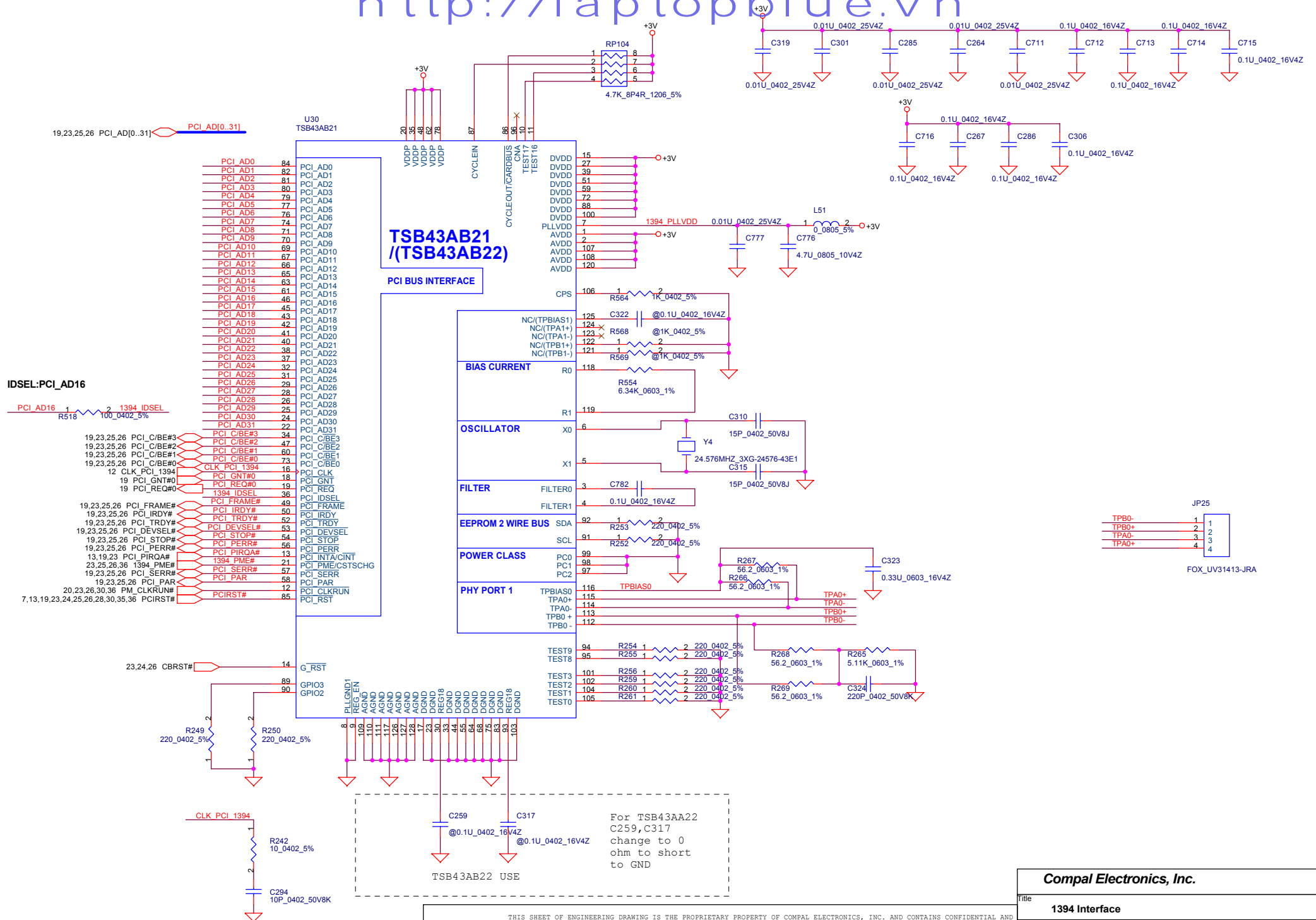








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Title
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## 1394 Interface

ND	Size
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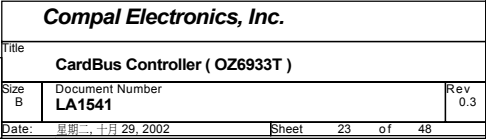
Document Number
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Rev	
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Date:

星期二, 十月 29, 2002

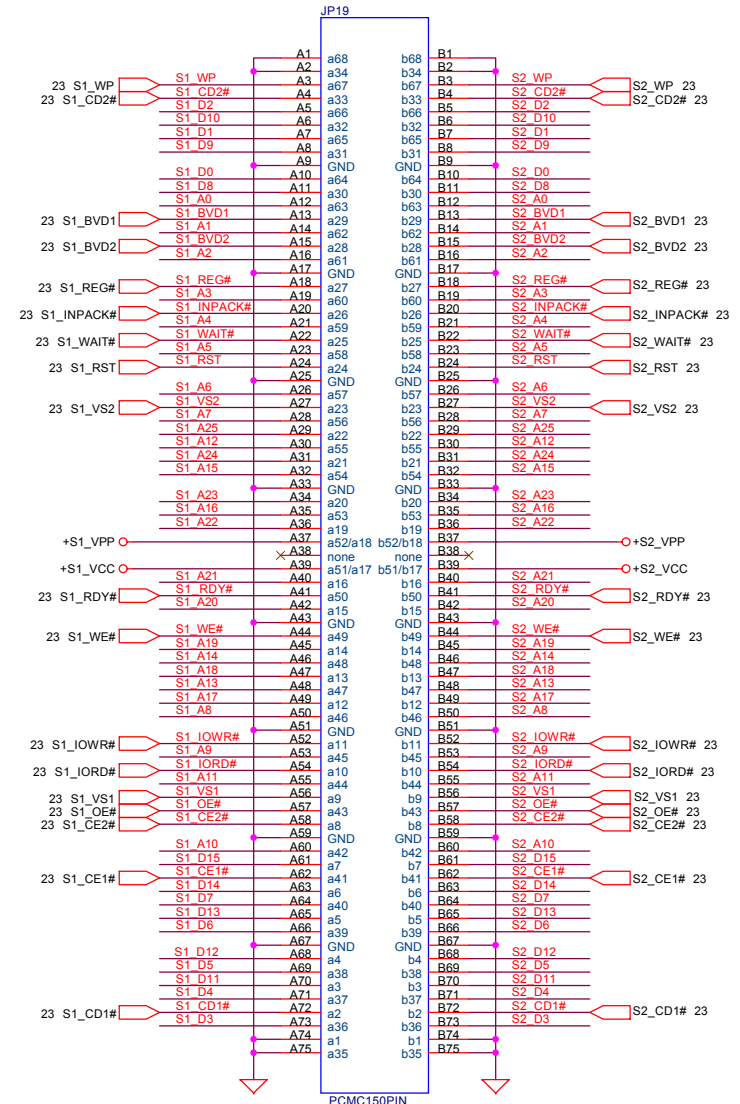
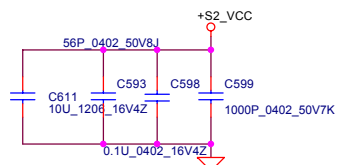
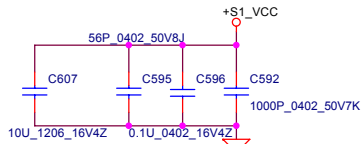
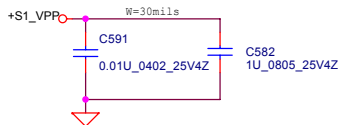
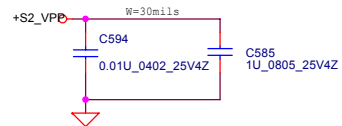
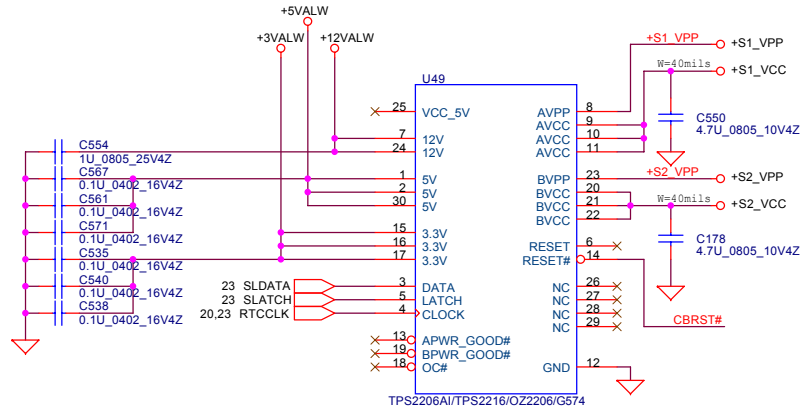
Sheet 22 of 48



# PCMCIA POWER CTRL.

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# CARDBUS SOCKET

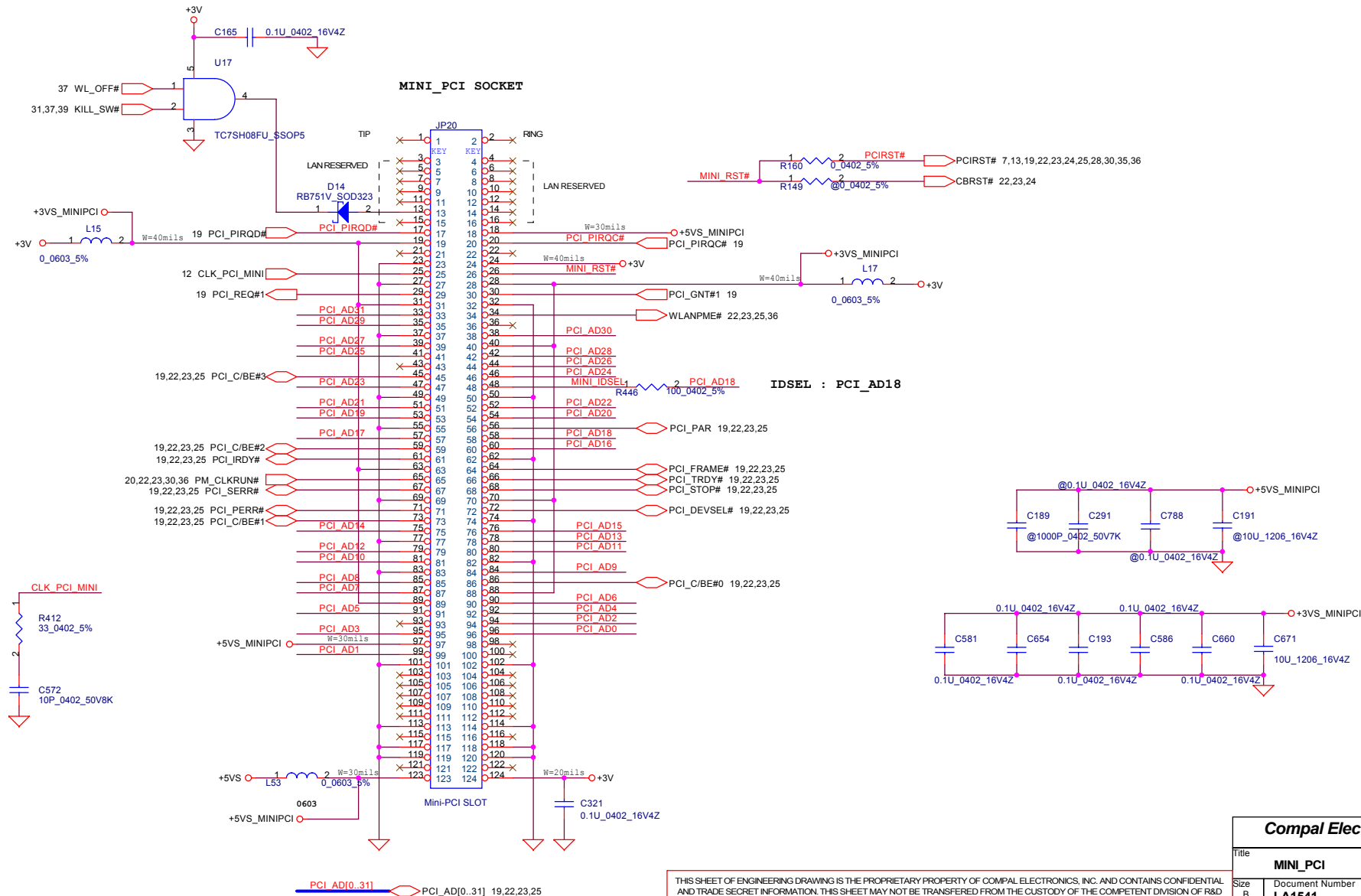


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Compal Electronics, Inc.

Title			
Foxconn PCMCIA SOCKET			
Size	Document Number	Rev	
B	LA1541	0.3	
Date:	星期二, 十月 29, 2002	Sheet	24 of 48

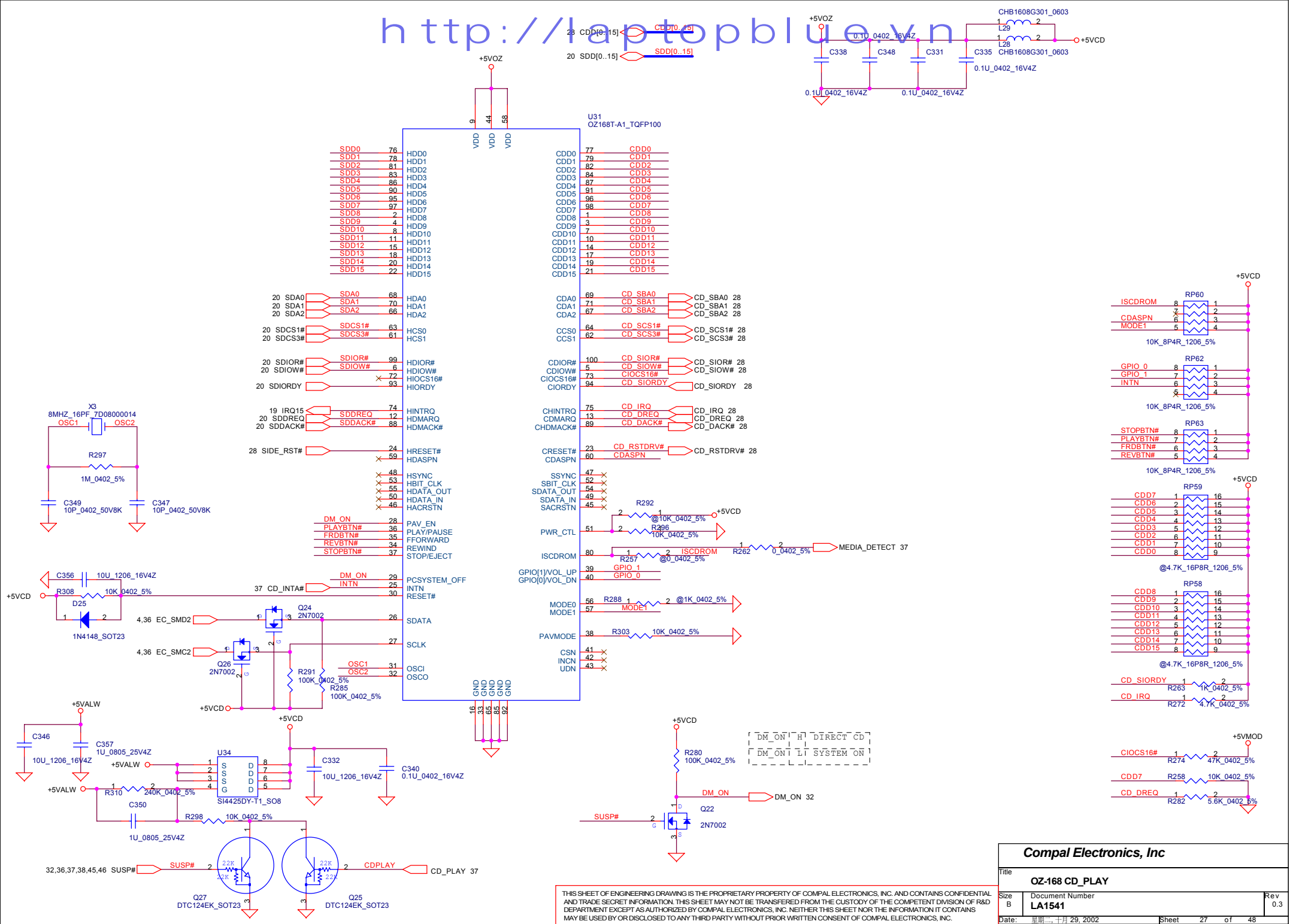




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Size	Document Number	Rev	
B	LA1541	0.3	
Date:	星期三, 十月 29, 2002	Sheet	26 of 48

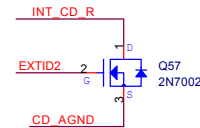




Compal Electronics, Inc

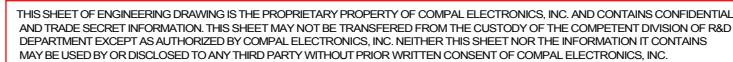
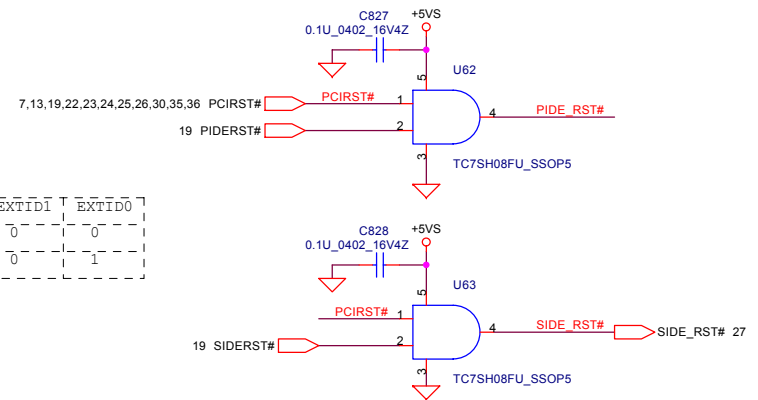
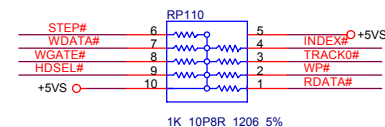
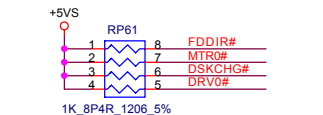
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Size	Document Number	Rev	
B	LA1541	0.3	
Date:	Sheet	of	
星期二, 十月 29, 2002	27	48	

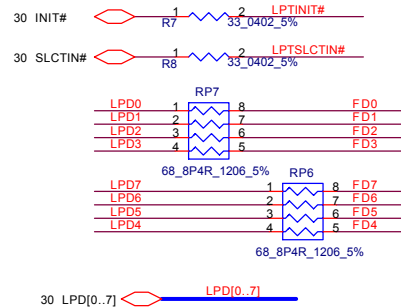
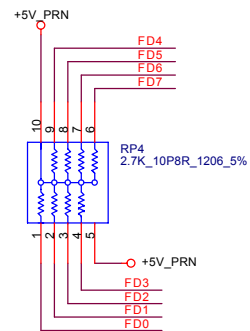
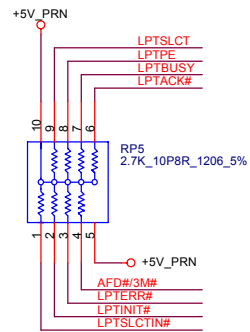
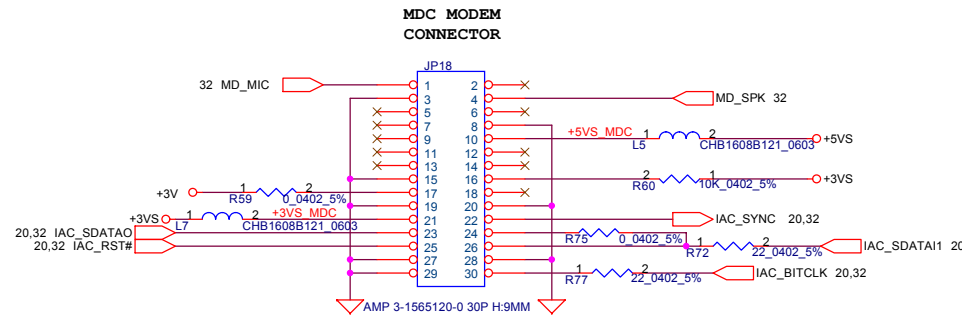
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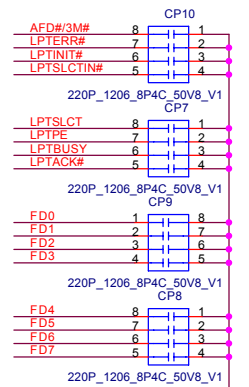
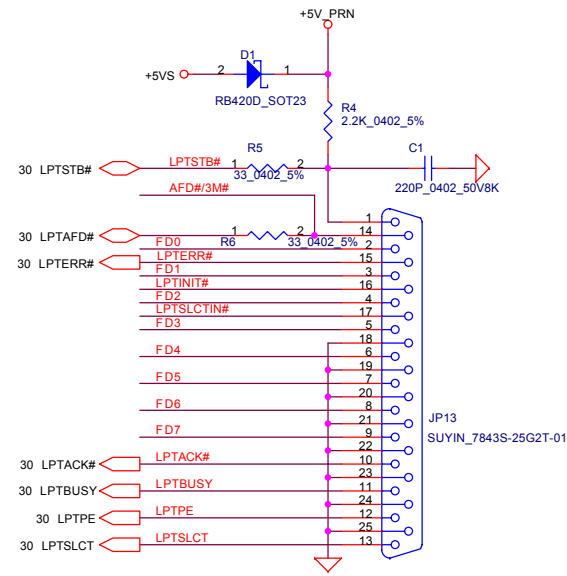
Pin-to-pin connection diagram

HRS\_FX5-60P-SH3-N\_60P





## PARALLEL PORT

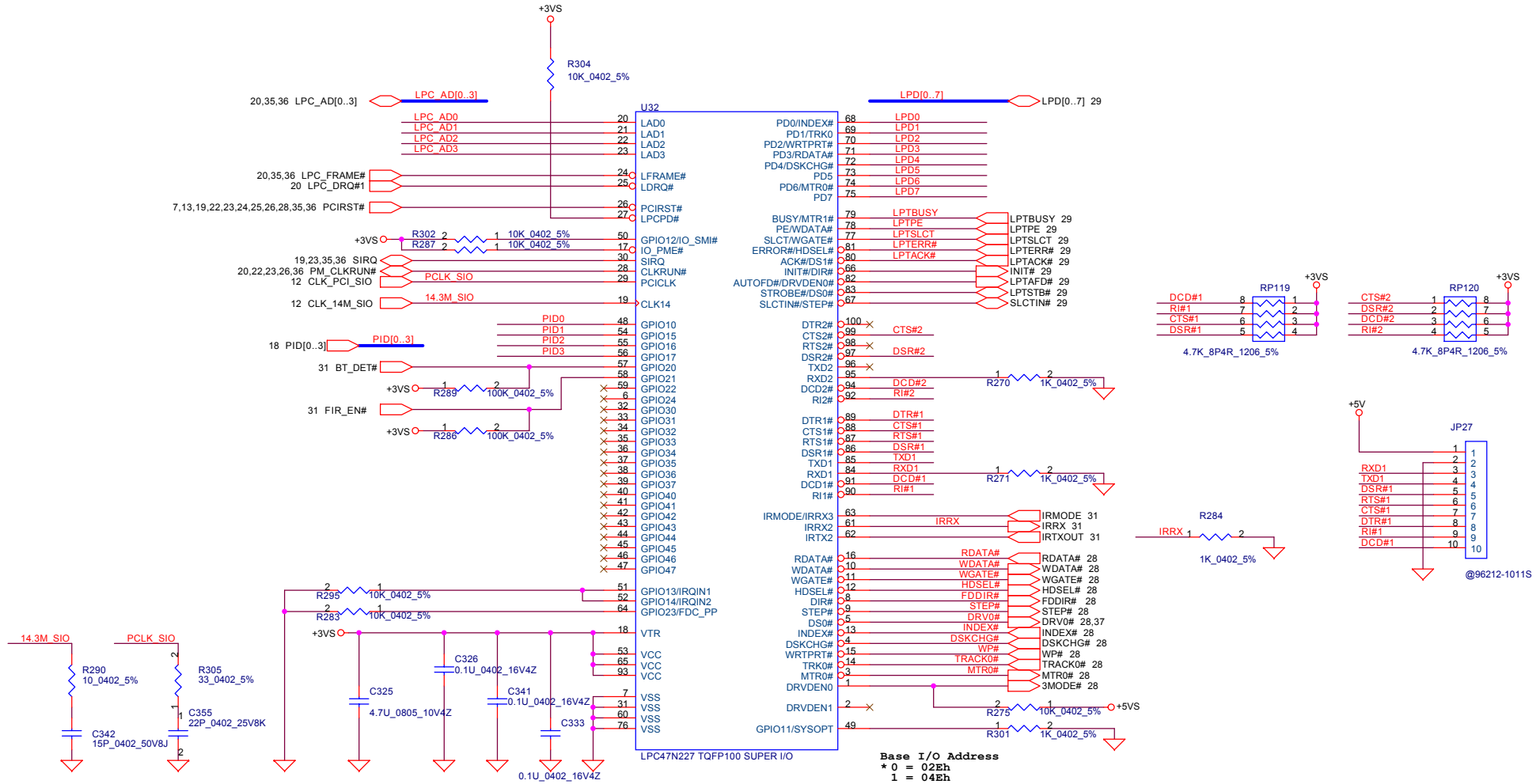


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PARALLEL/MDC PORT			
Size	Document Number	Rev	
	LA1541	0.3	
Date:	星期三, 十月 29, 2002	Sheet	29 of 48

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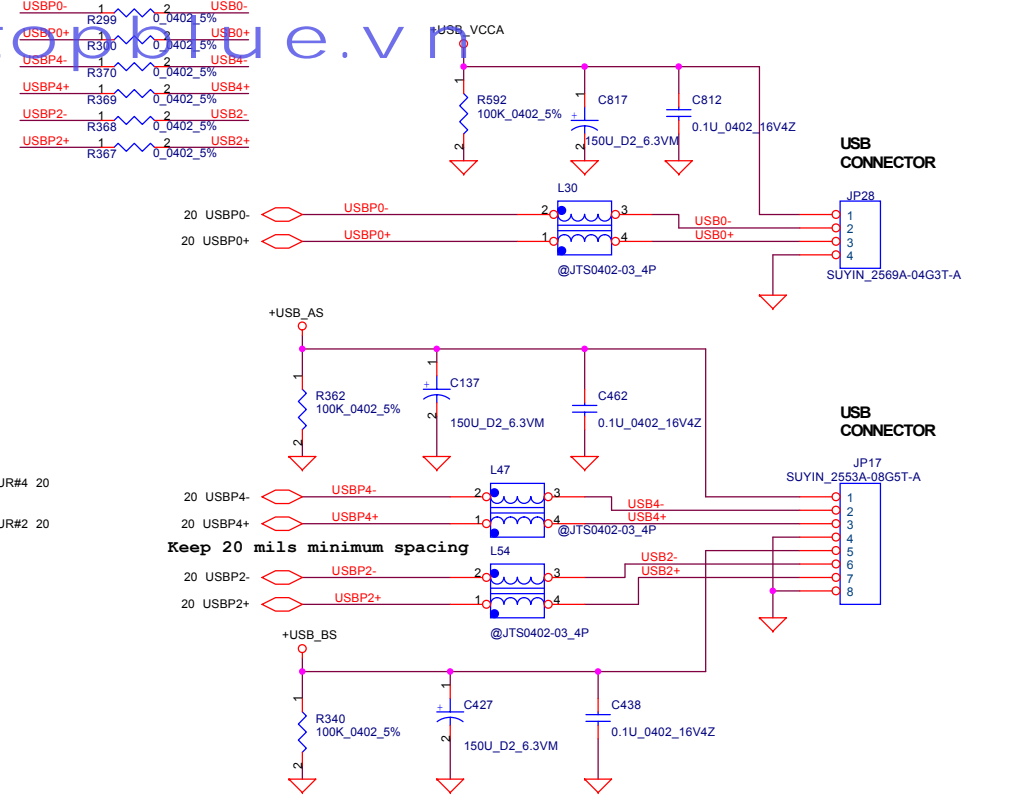
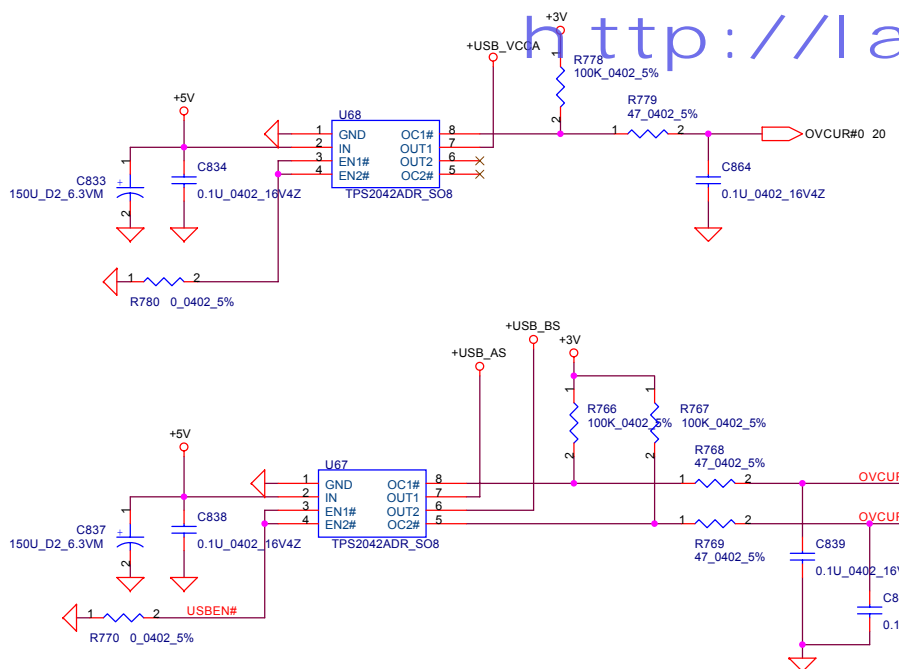
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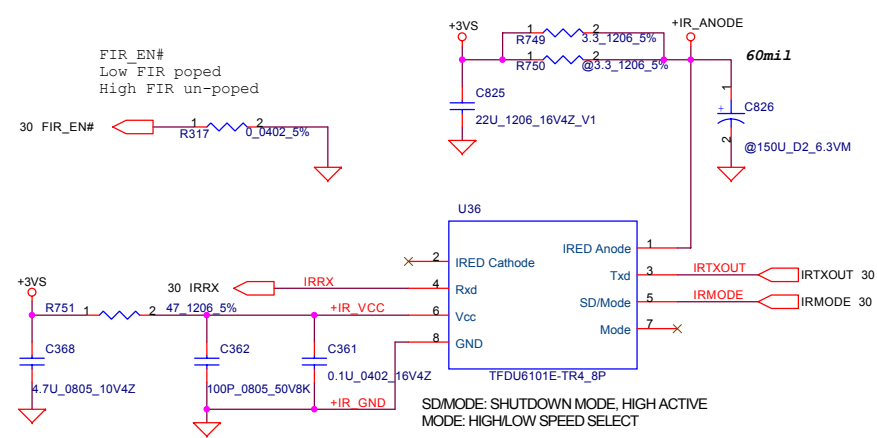
Compal Electronics, Inc.

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Size	Document Number	Rev	
B	LA1541	0.3	
Date:	星期二, 十月 29, 2002	Sheet	30 of 48

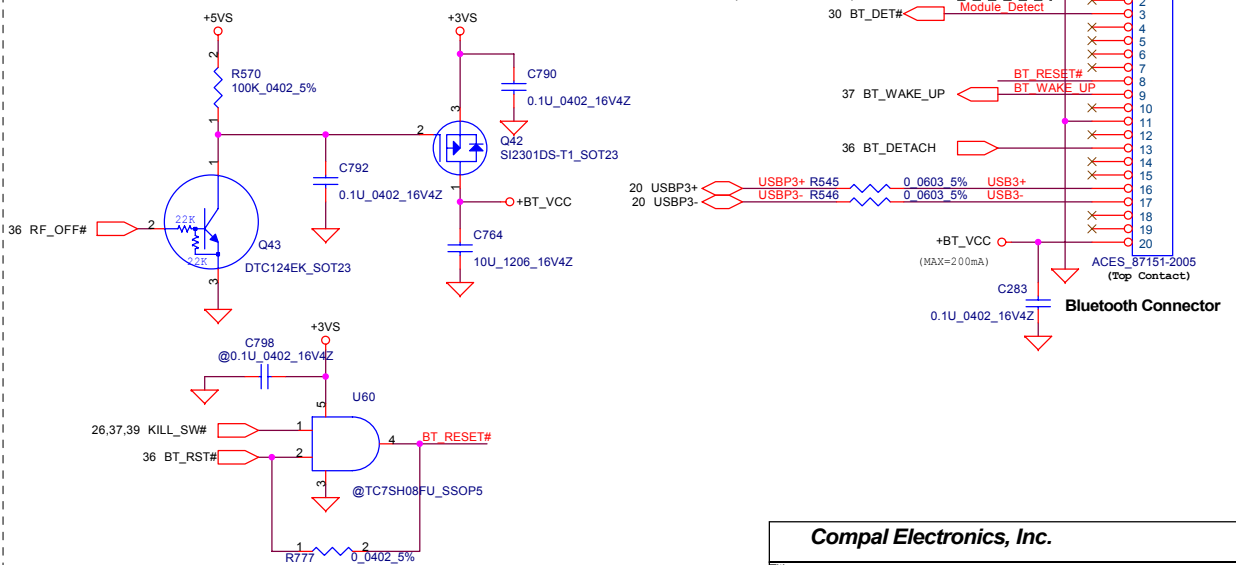
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## FIR Module

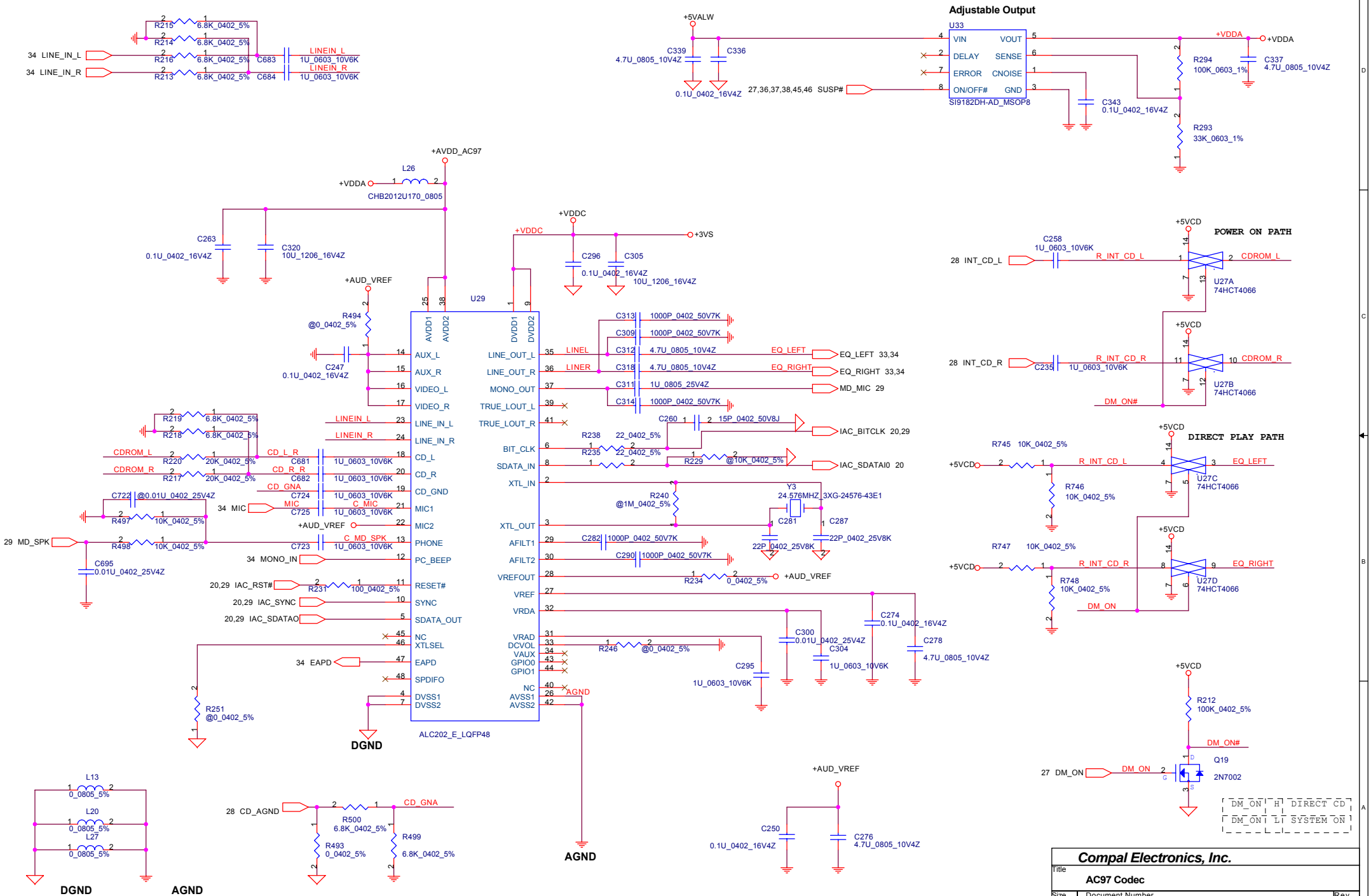


## BlueTooth Interface



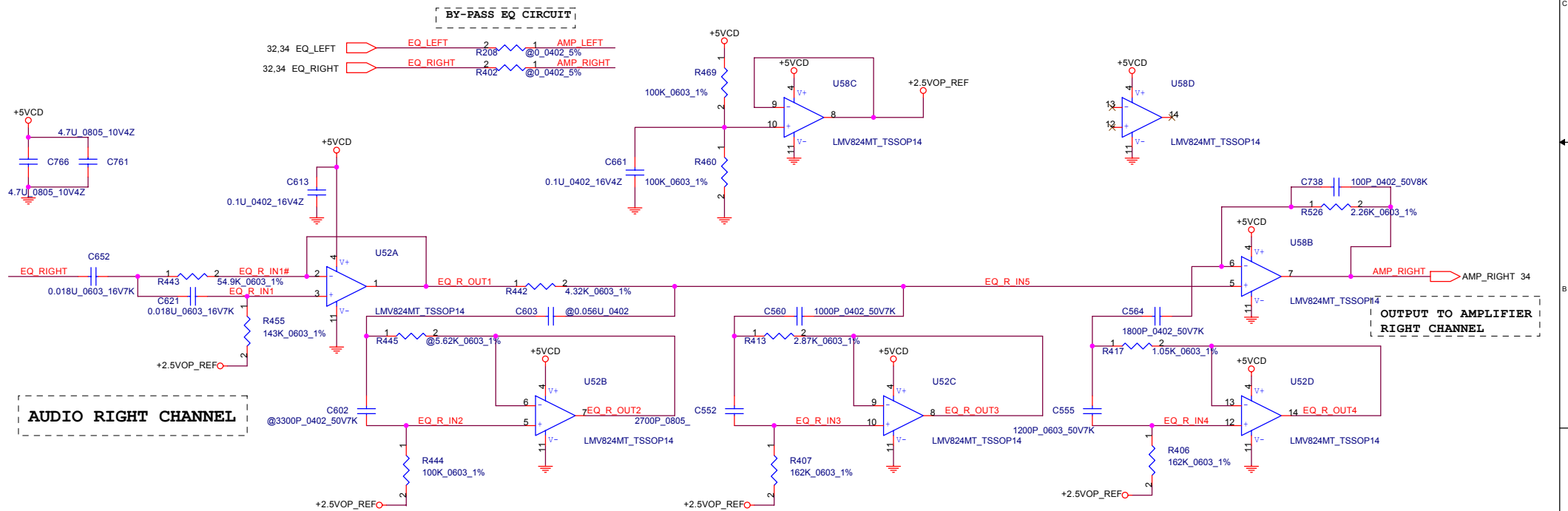
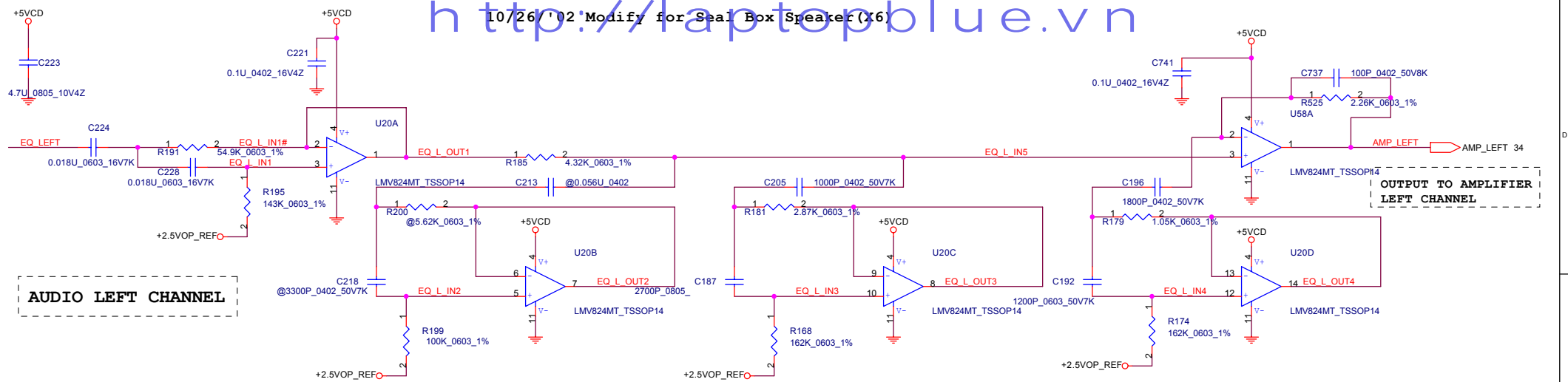
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Compal Electronics, Inc.			
Title			
USB/Bluetooth/FIR			
Size	Document Number	Rev	
B	LA1541	0.3	
Date:	星期二, 十月 29, 2002	Sheet	31 of 48





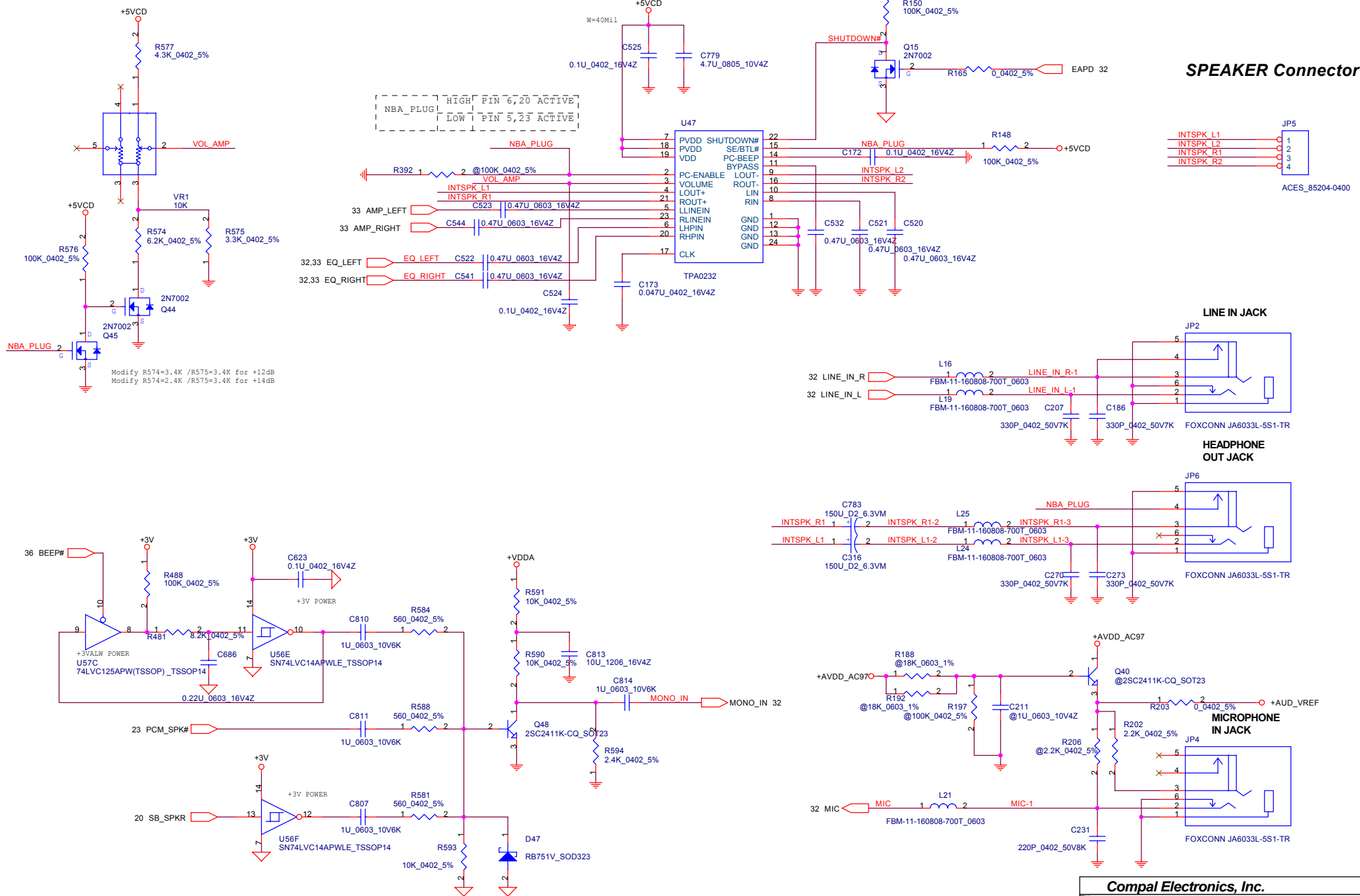
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**Compal Electronics, Inc.**

Title			
HAREWARE EQ			
Size B	Document Number LA1541	Rev 0.3	
Date:	星期二, 十月 29, 2002	Sheet	33 of 48



**Compal Electronics, Inc.**

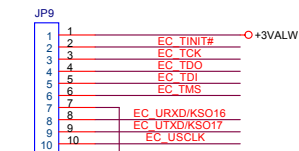
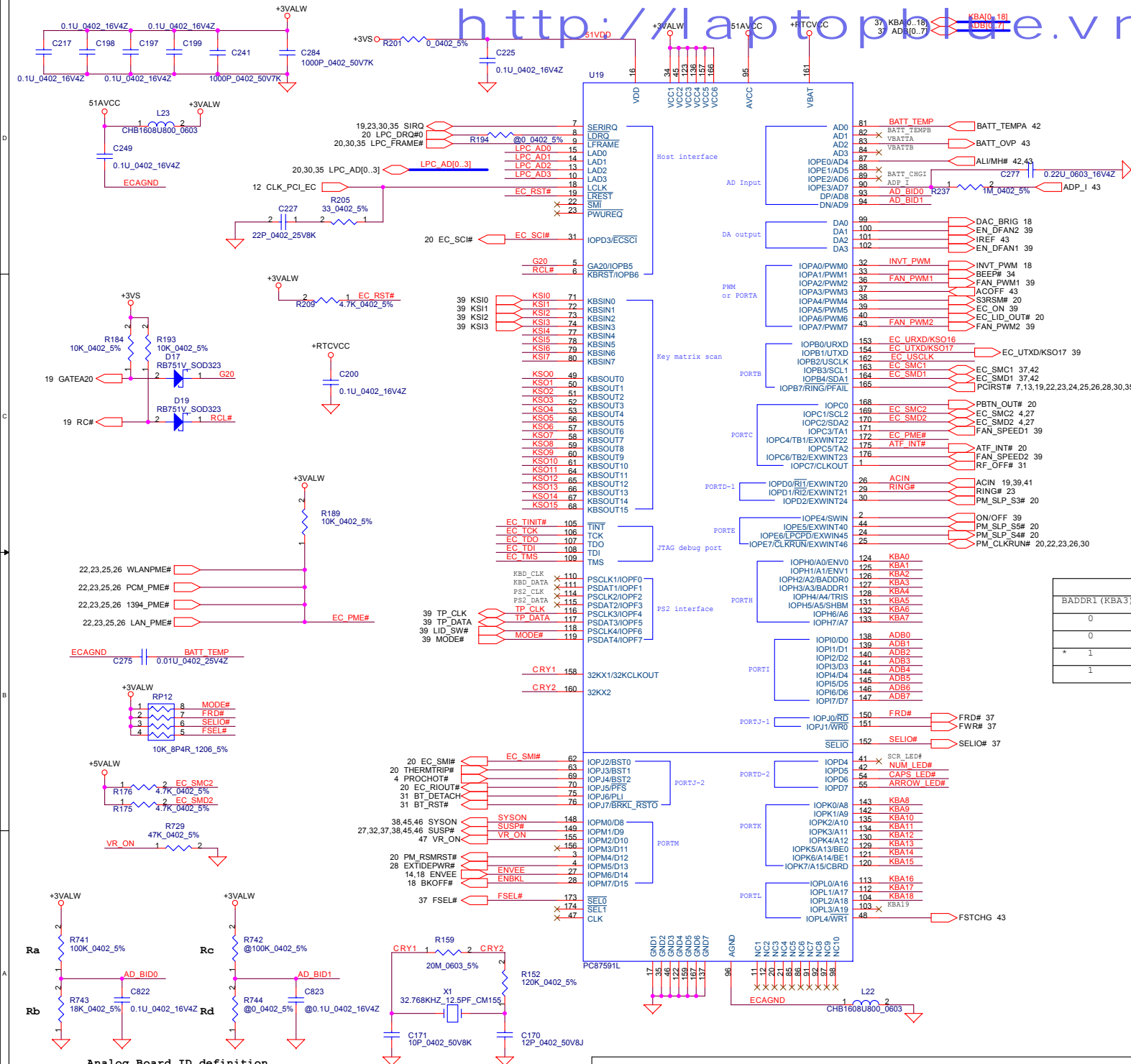
### AMP & Audio Jack

Size B	Document Number <b>LA1541</b>	Rev 0.3
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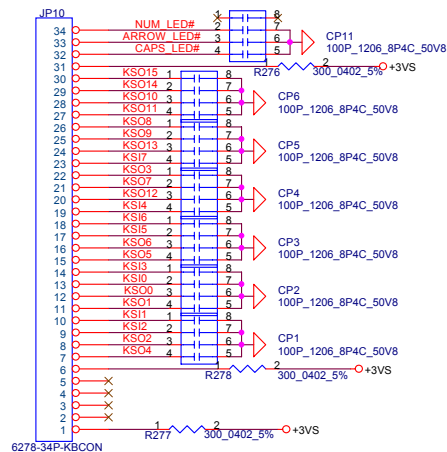
Date: 星期二, 十月 29, 2002 Sheet 34 of 48

PROPRIETARY NOTE THIS SHEET OF MECHANICAL 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 IT 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>SD CARD Controller/Socket</b>			
Size B	Document Number <b>LA1541</b>		Rev 0.3
Date:	星期三, 十月 29, 2002	Sheet 35 of 48	



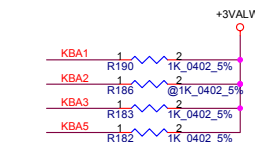
KEYBOARD CONN.



		I/O Address	
BADDRI (KBA3)	BADDR0 (KBA2)	Index	Data
0	0	2E	2F
0	1	4E	4F
* 1	0	(HCFGBAH, HCFGBAL) (HCFGBAH, HCFGBAL)	
1	1	Reserved	

	ENVO (KBA0)	ENV1 (KBA1)	TRIS (KBA4)
IRE	0	0	0
* OBD	0	1	0
DEV	1	0	0
PROG	1	1	0

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

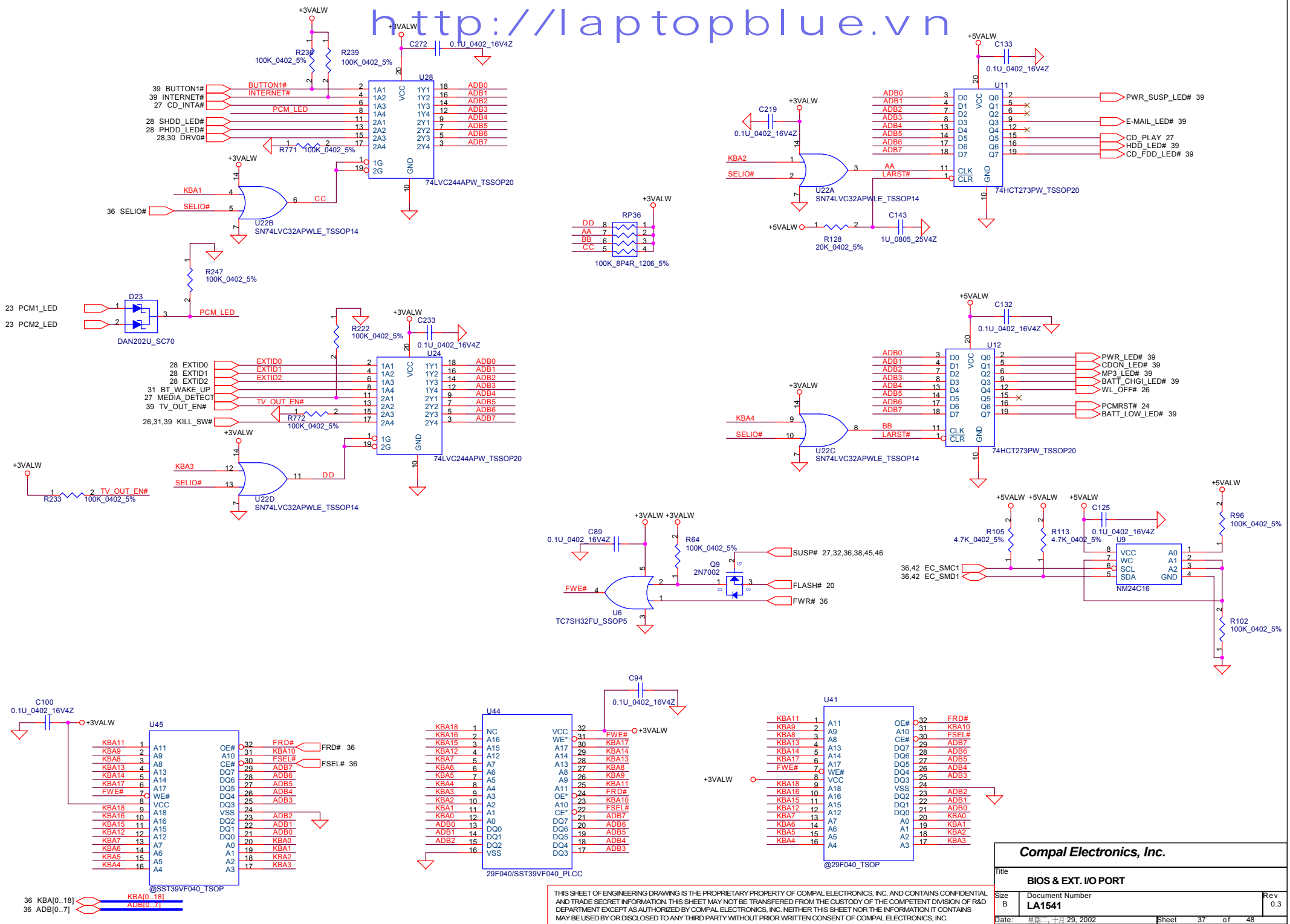


Analog Board ID definition,  
Please see page 3.

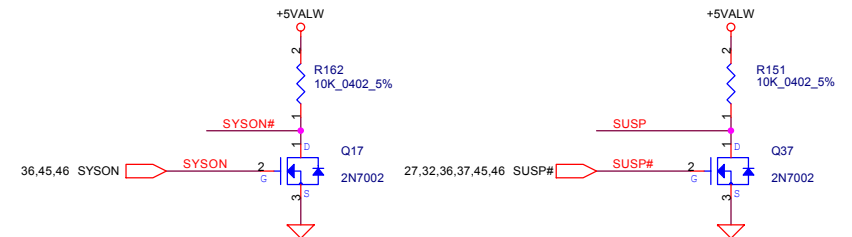
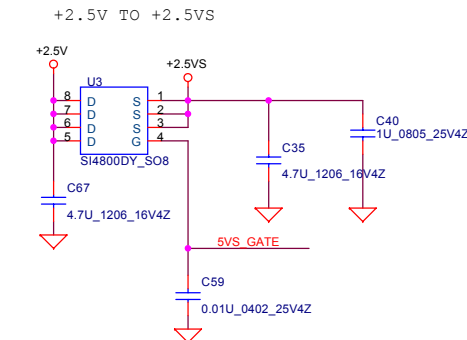
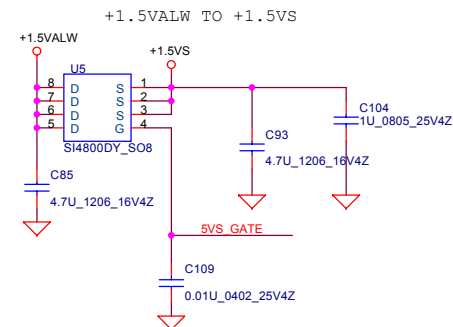
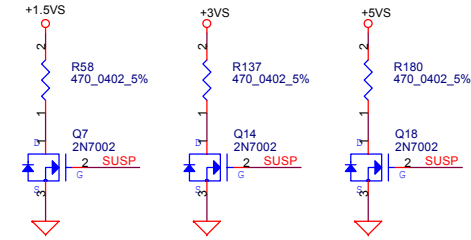
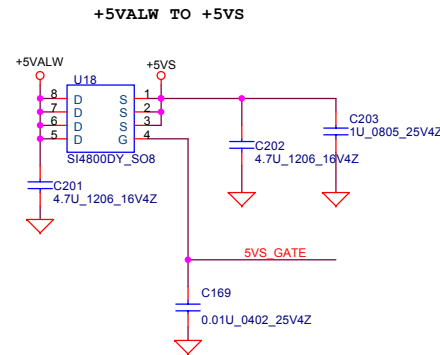
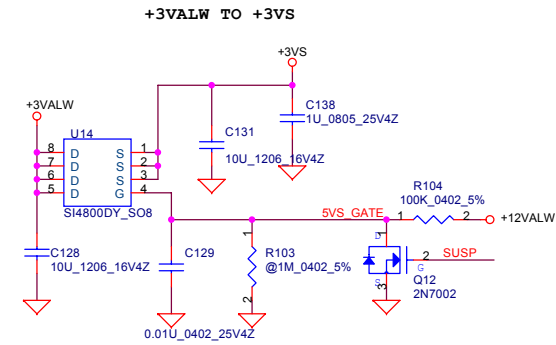
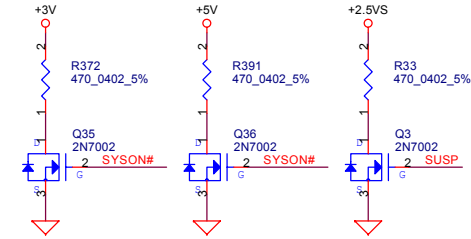
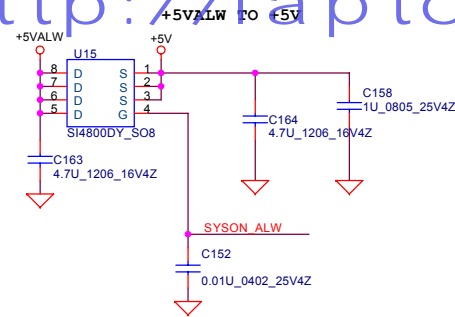
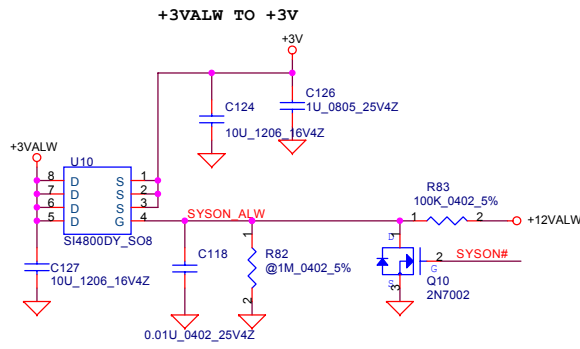
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Title			
EC PC87591			
Size	Document Number		Rev
Custom	LA1541		0.3
Date:	星期日 十月 29, 2002	Sheet	36 of 48



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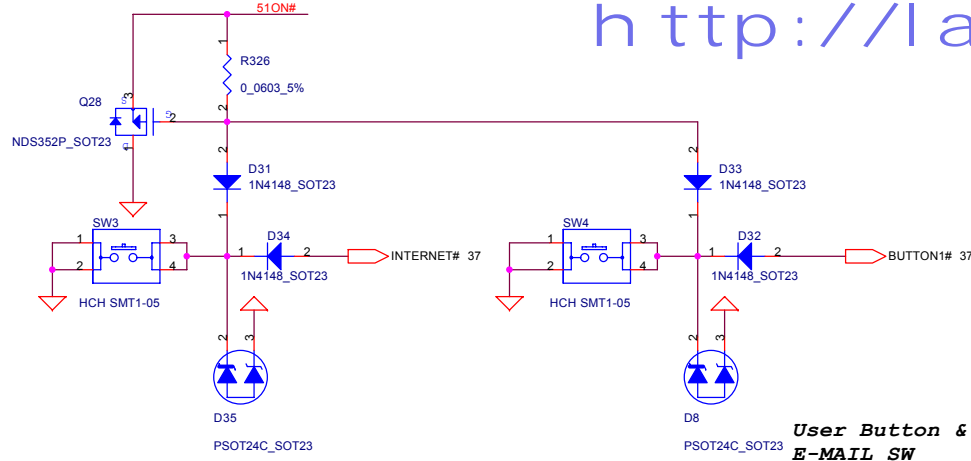
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**Compal Electronics, Inc.**

Title  
**POWER CONTROL CKT**

Size B Document Number **LA1541** Rev 0.3

Date: 星期二, 十月 29, 2002 Sheet 38 of 48

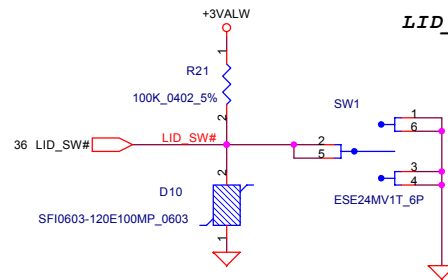
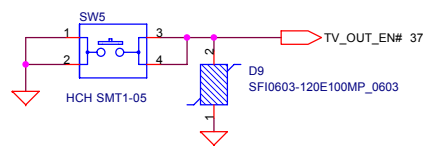


Internet Button

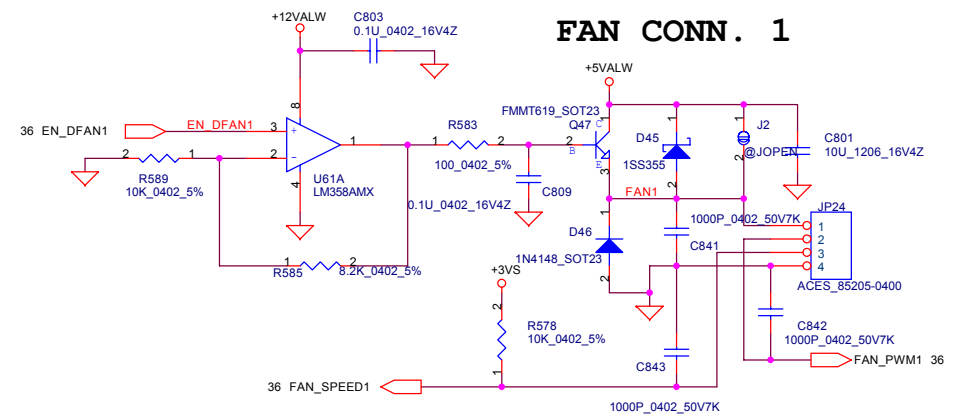
User Button & E-MAIL SW

TV-OUT BUTTON

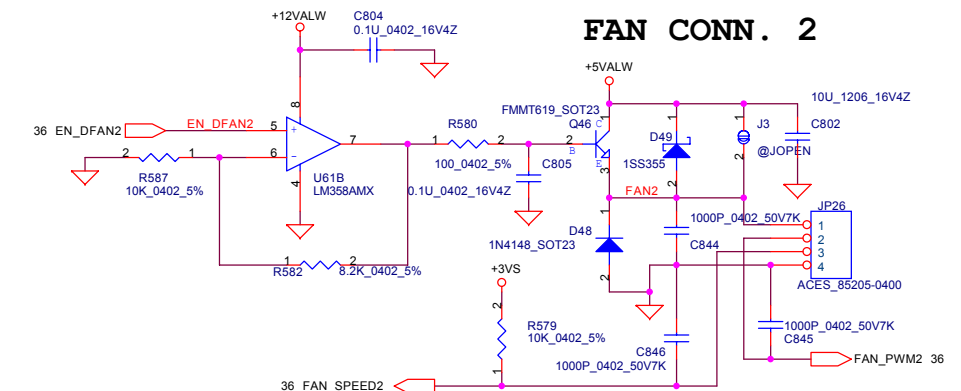
LID\_SW#



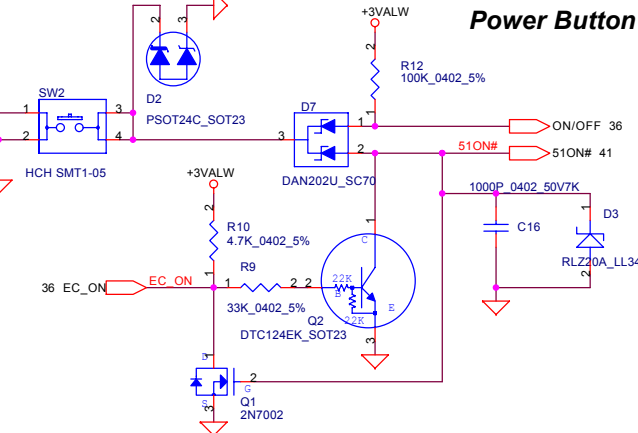
FAN CONTROL TYPE  
PWM Short J2, J3 & others de-poped  
\*RPM De-poped J2, J3 & Others popped



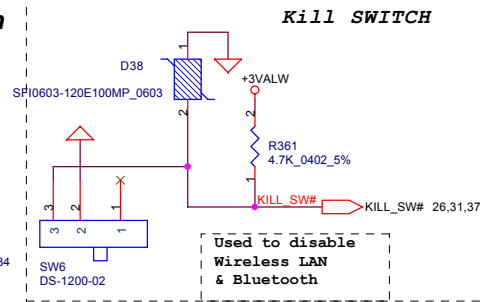
FAN CONN. 1



FAN CONN. 2



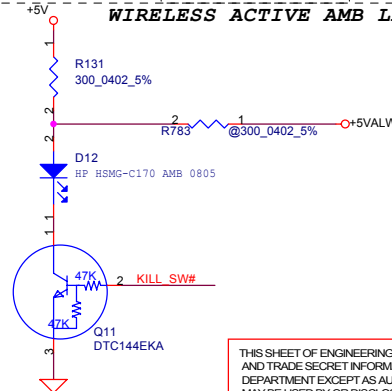
Power Button



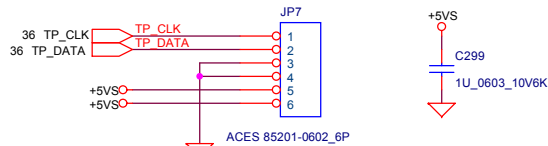
Kill SWITCH

Used to disable Wireless LAN & Bluetooth

WIRELESS ACTIVE AMB LED



Touch Pad Connector



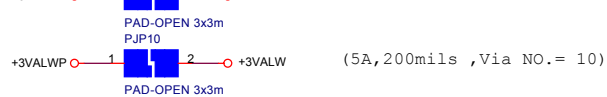
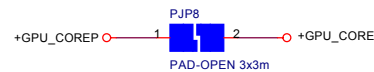
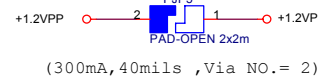
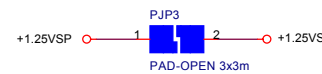
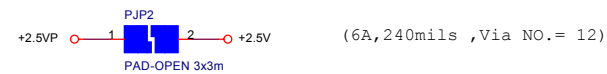
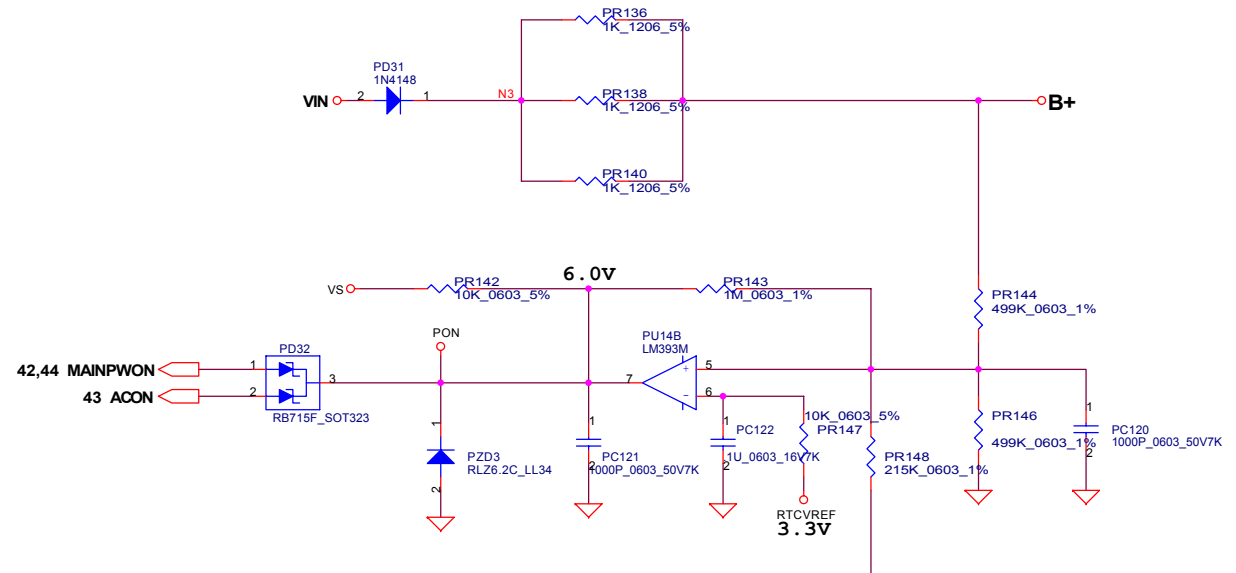
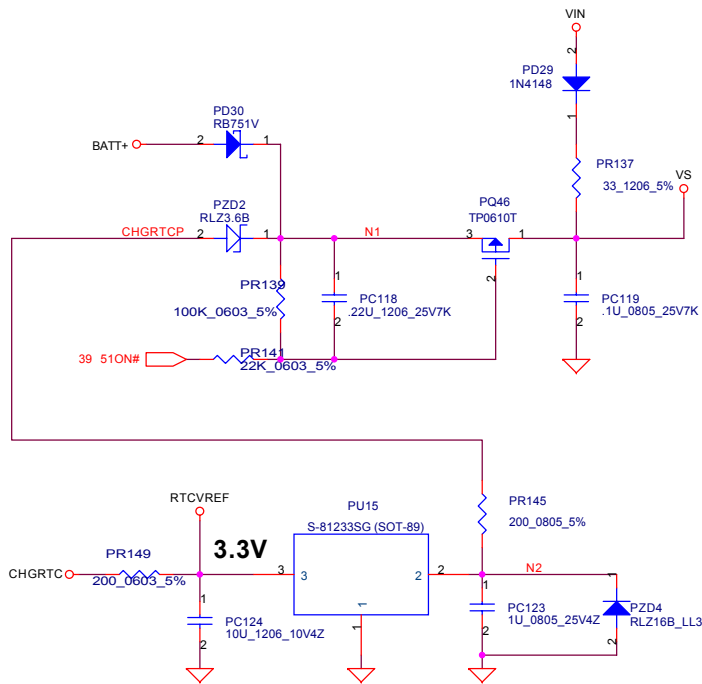
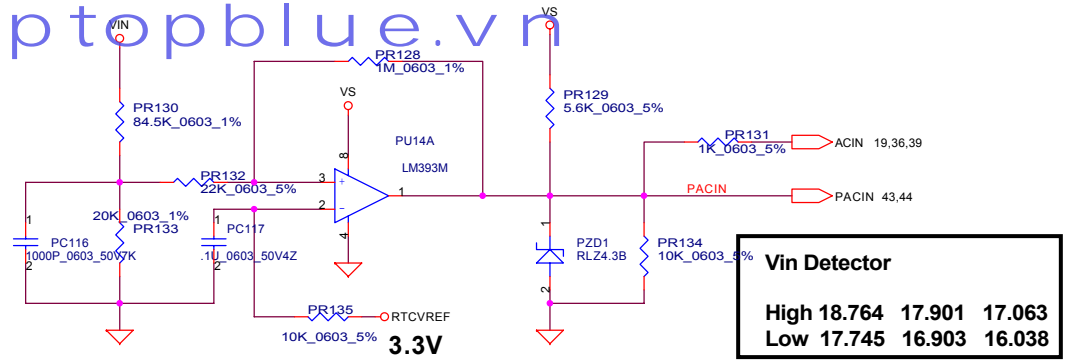
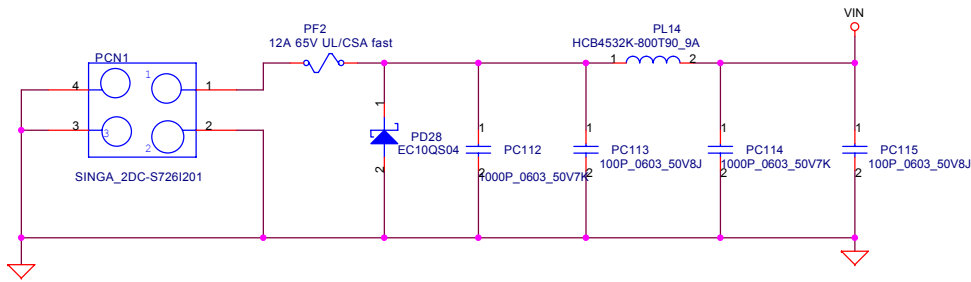
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Compal Electronics, Inc.

Title		
Switches & Connectors		
Size B	Document Number	Rev
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Date:	星期二, 十月 29, 2002	Sheet 39 of 48





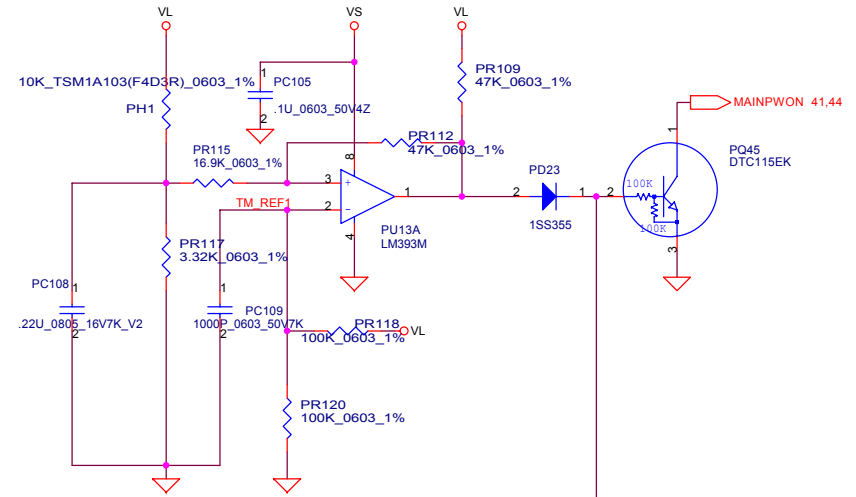


Precharge detector			
15.34	15.90	16.48	
13.13	13.71	14.20	

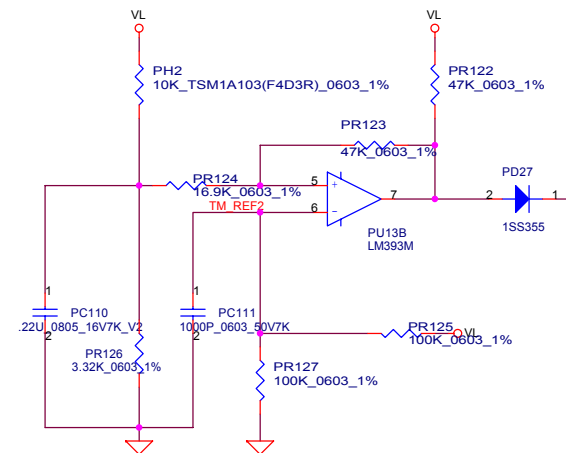
Compal Electronics, Inc.

DCIN & DETECTOR

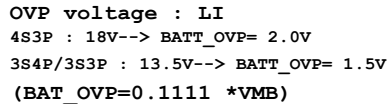
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## Recovery at 44 (45) degree C

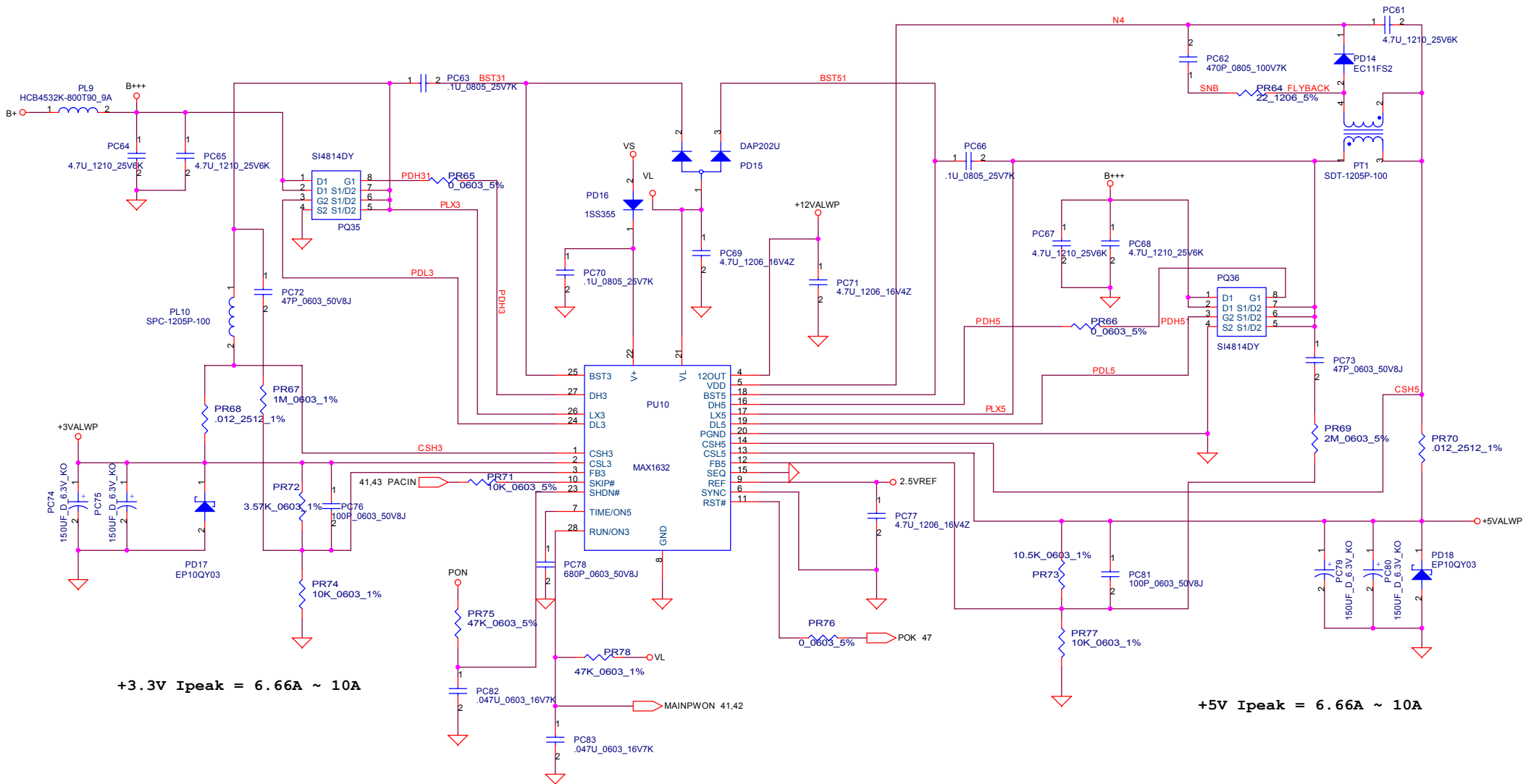


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Size B	Document Number		Rev
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Date: 星期三, 十月 29, 2002	Sheet	42	of 48



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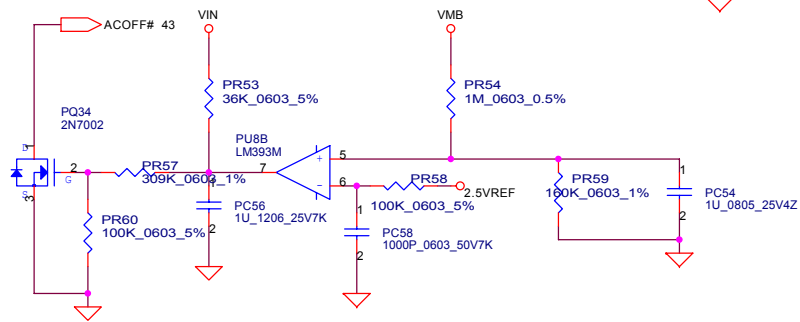
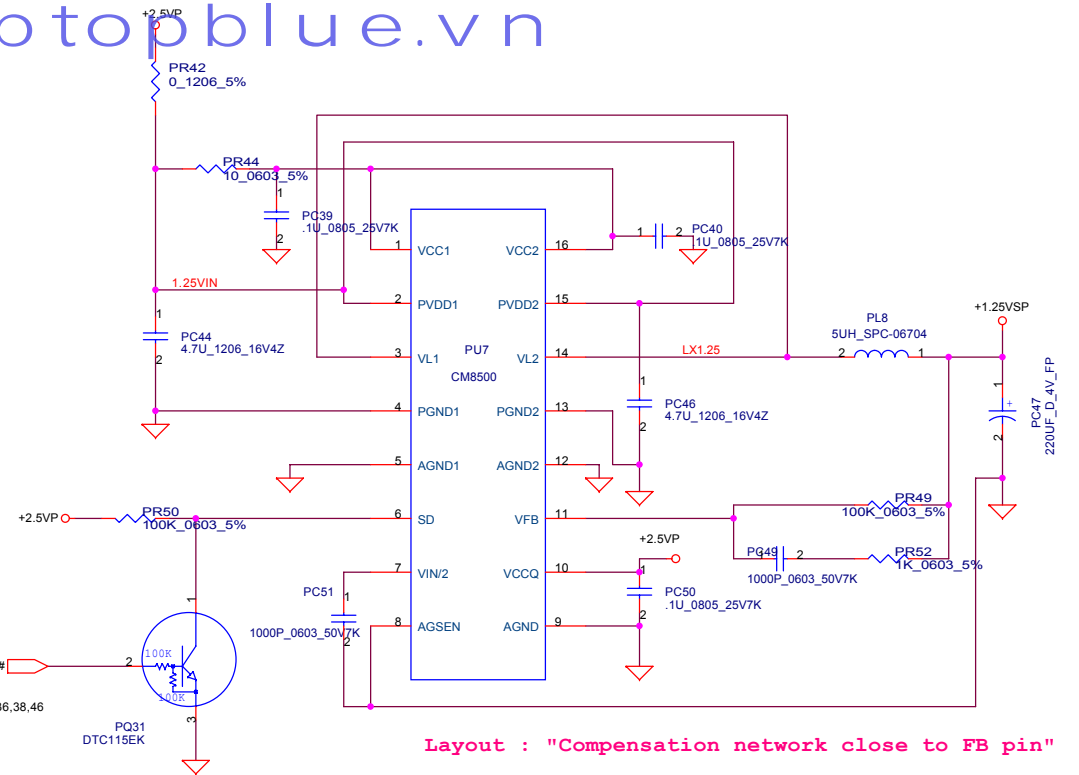
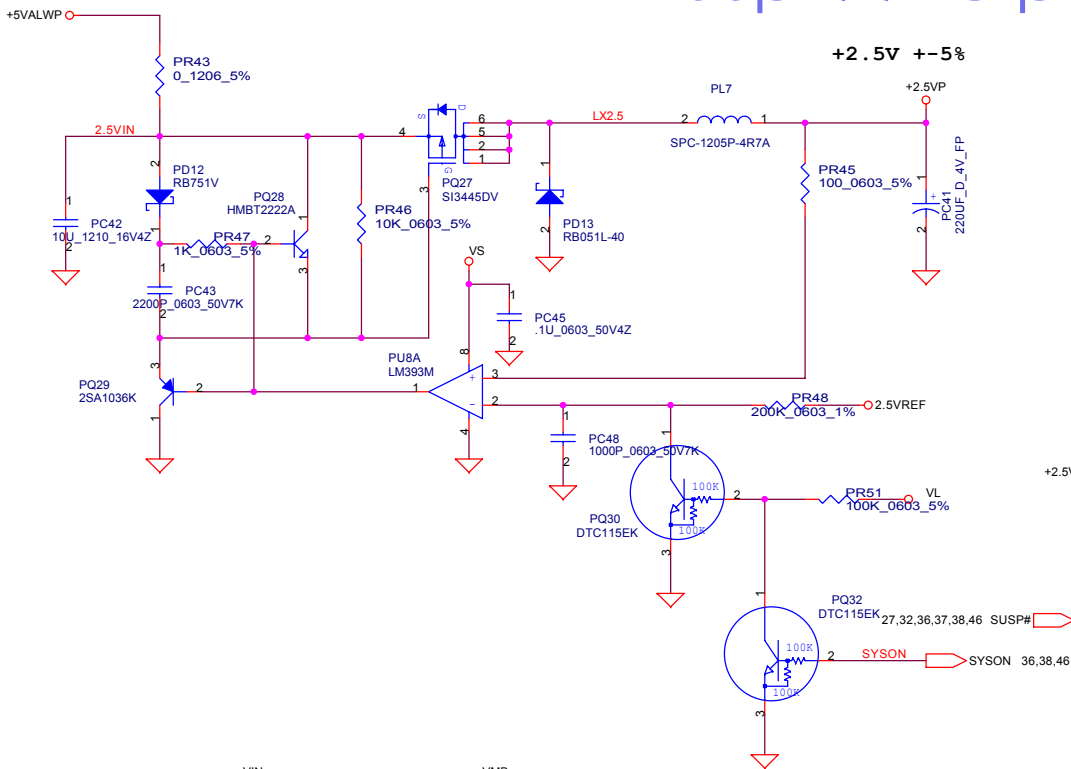
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<b>CHARGER</b>			
Size B	Document Number		Rev
	<b>LA1541</b>		<b>0.3</b>
Date:	星期三 十月 29, 2002	Sheet	43 of 48



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Title		5V/3.3V/12V	
Size		Document Number	
B		LA1541	
Date: 星期二, 十月 29, 2002		Sheet 44 of 48	
		Rev 0.3	



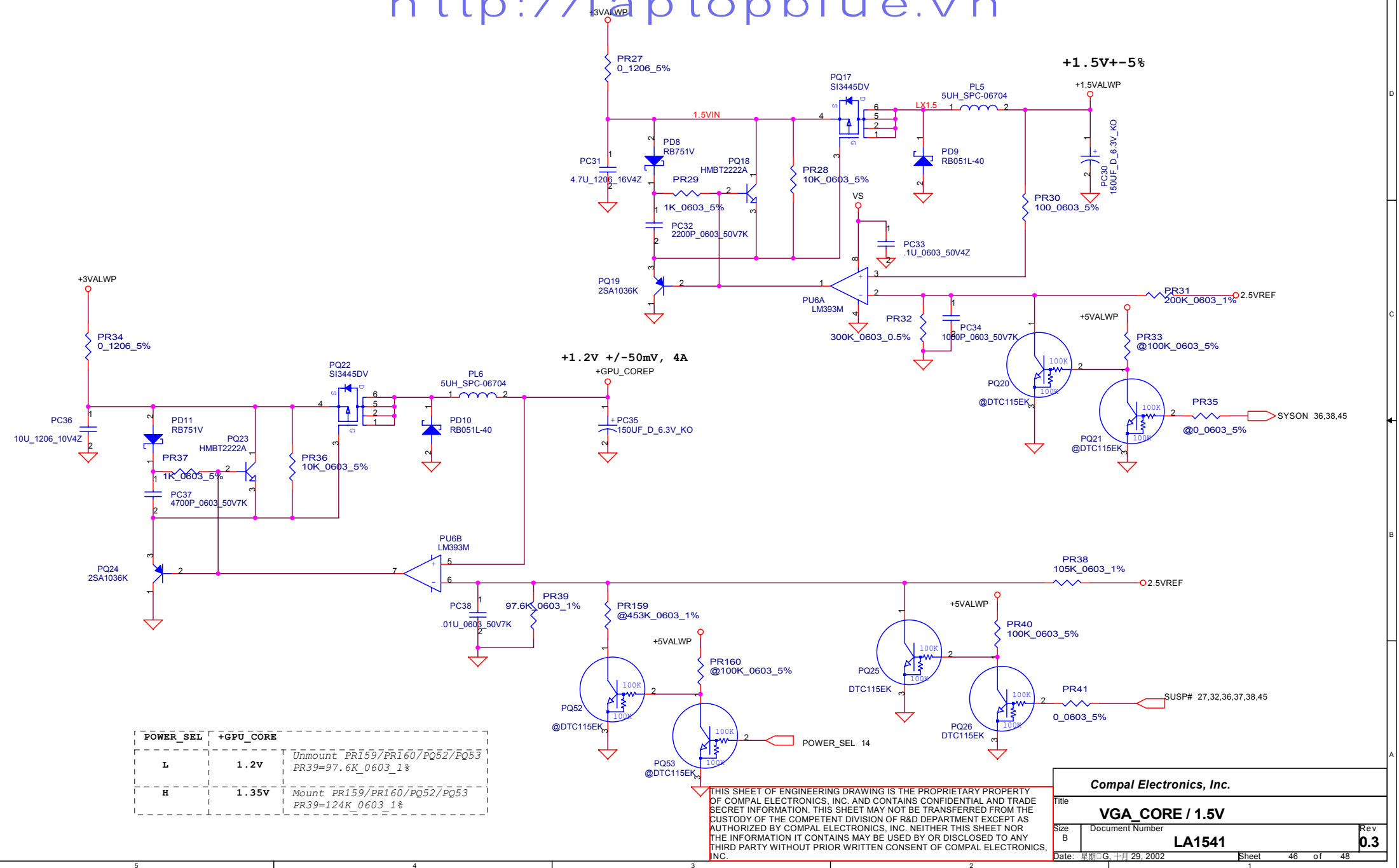
POWER_SEL	+GPU_CORE
L	1.2V
H	1.35V

Unmount PR159/PR160/PQ52/PQ53  
PR39=97.6K\_0603\_1%

Mount PR159/PR160/PQ52/PQ53  
PR39=124K\_0603\_1%

+1.2V +/-50mV, 4A

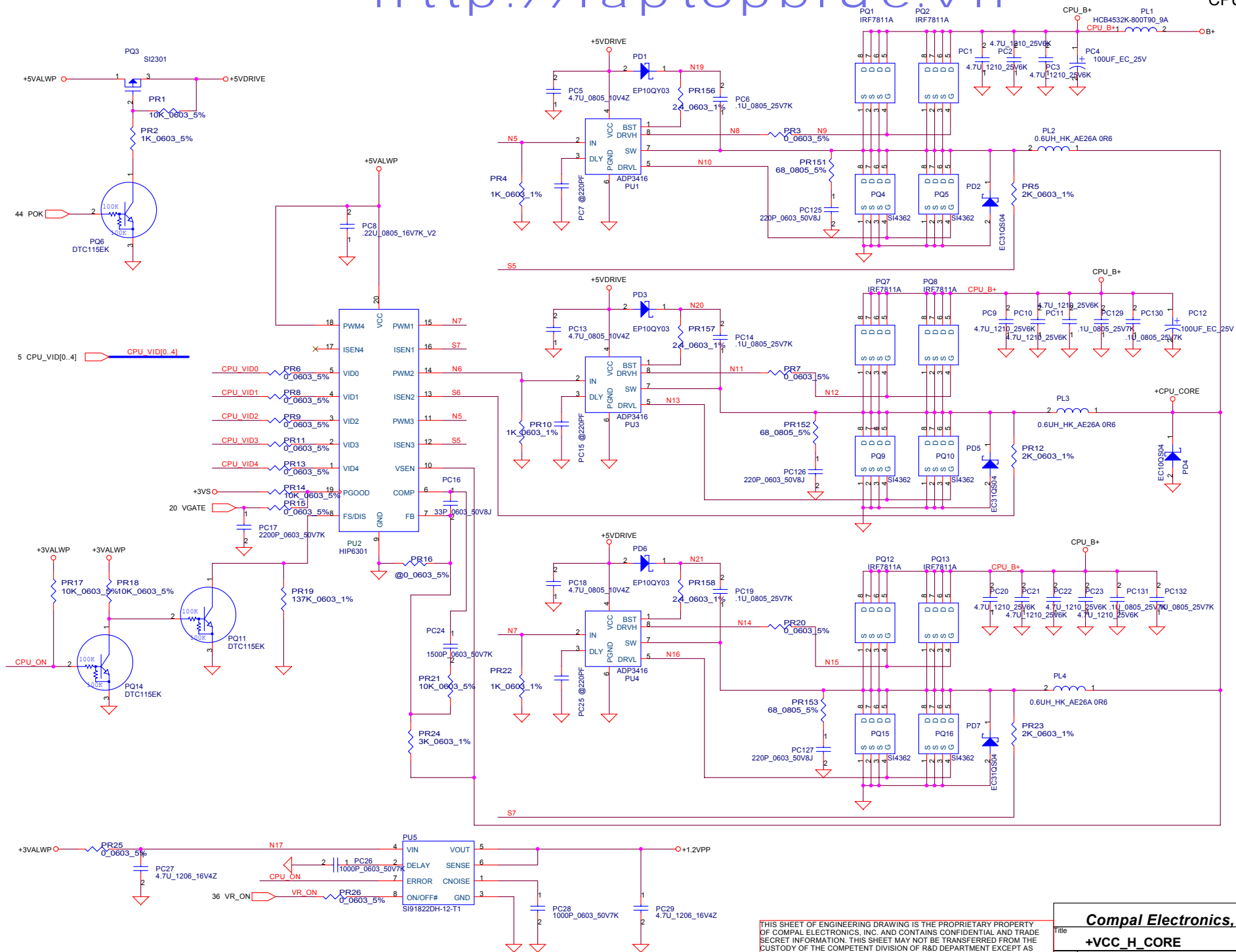
+1.5V+-5%



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Title		VGA_CORE / 1.5V	
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B	LA1541	0.3	
Date: 星期二, 十月 29, 2002	Sheet 46 of 48		





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Title		<b>+VCC_H CORE</b>	
Size	Document Number	Rev	
B	LA1541	<b>0.3</b>	
Date:	星期二, 十月 29, 2002	Sheet	47 of 48

HW PIR LIST

10/29 Modified R577 to 4.3K\_0402\_5%  
R575 to 3.3K\_0402\_5%  
R574 to 6.2K\_0402\_5% for +10dB audio gain

10/29 Modified ESD diode symbol

PWR PIR LIST

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Compal Electronics, Inc.		
Title		
BTS88 PIR LIST		
Size	Document Number	Rev
Custom	LA1541	0.3
Date:	星期二, 十月 29, 2002	Sheet 48 of 48