

# ***LA-1421 Schematics Document Ver1.0***

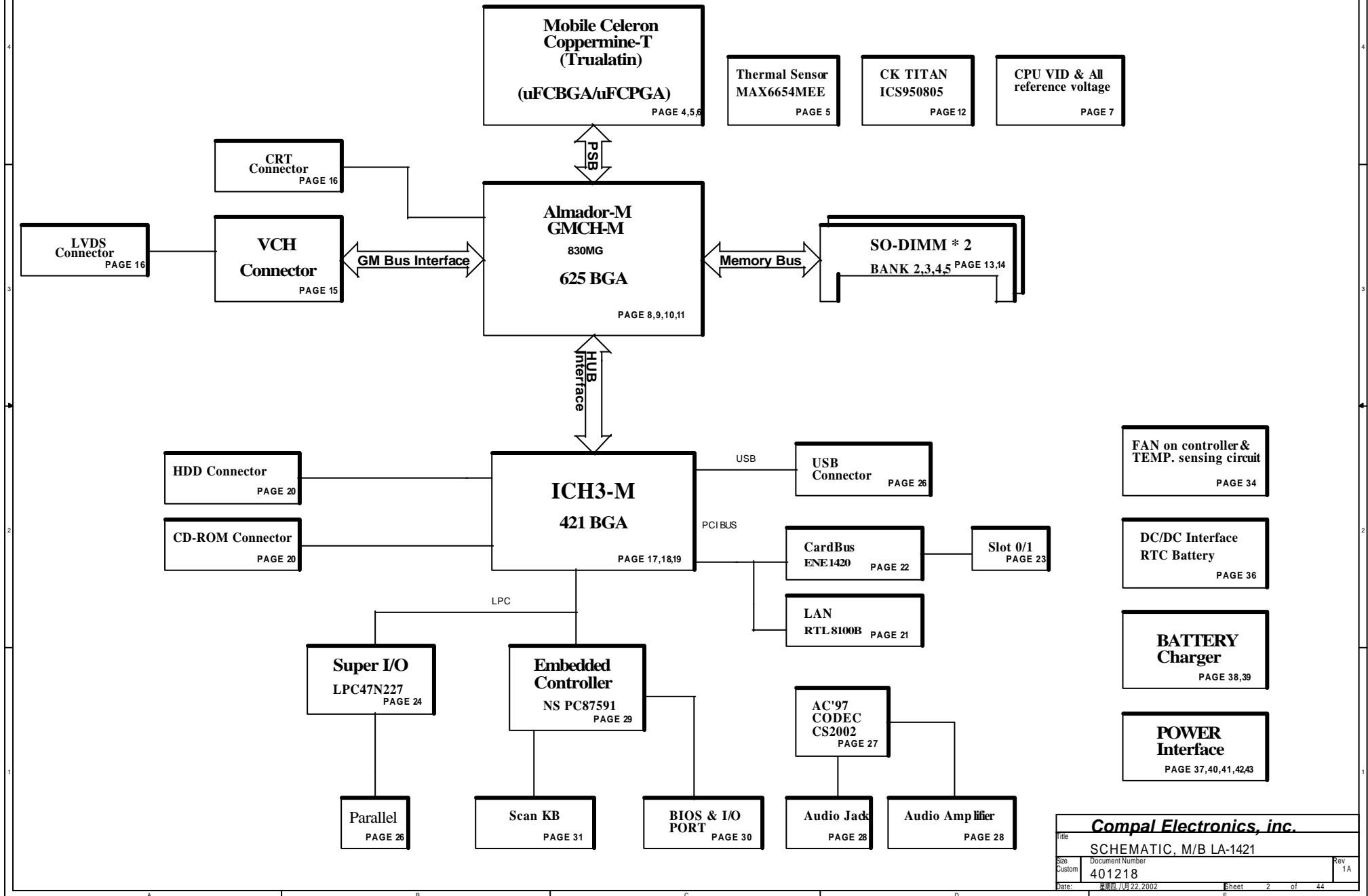
**uFCBGA/uFCPGA for Celeron/ Coppermine-T and Tualatin CPU  
Almador-M(830-MG) + ICH3 + VCH**

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# BLOCK DIAGRAM

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## Voltage Rails

Power Plane	Description	S1	S3	S5
VIN	Adapter powersupply(19V)	N/A	N/A	N/A
B+	AC or battery power rail for powercircuit.	N/A	N/A	N/A
+VCC_H_CORE	Core voltageforCPU	ON	OFF	OFF
+VTT	1.2V switched power railforCPUAGTLBus	ON	OFF	OFF
+1.5V	1.5V power rail	ON	ON	OFF
+1.5VS	AGP4X	ON	OFF	OFF
+1.8V	1.8V power rail	ON	ON	OFF
+1.8VS	1.8V switched powerrail	ON	OFF	OFF
+3VALW	3.3V always on powerrail	ON	ON	ON*
+3V	3.3V power rail	ON	ON	OFF
+3VS	3.3V switched powerrail	ON	OFF	OFF
+5VALW	5V always on powerrail	ON	ON	ON*
+5V	5V power rail	ON	ON	OFF
+5VS	5V switched powerrail	ON	OFF	OFF
+12VALW	12V always on powerrail	ON	ON	ON*
+12VS	12V switched powerrail	ON	OFF	OFF
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
On Board LAN	AD17	3	PIRQB

## EC SM Bus1 address

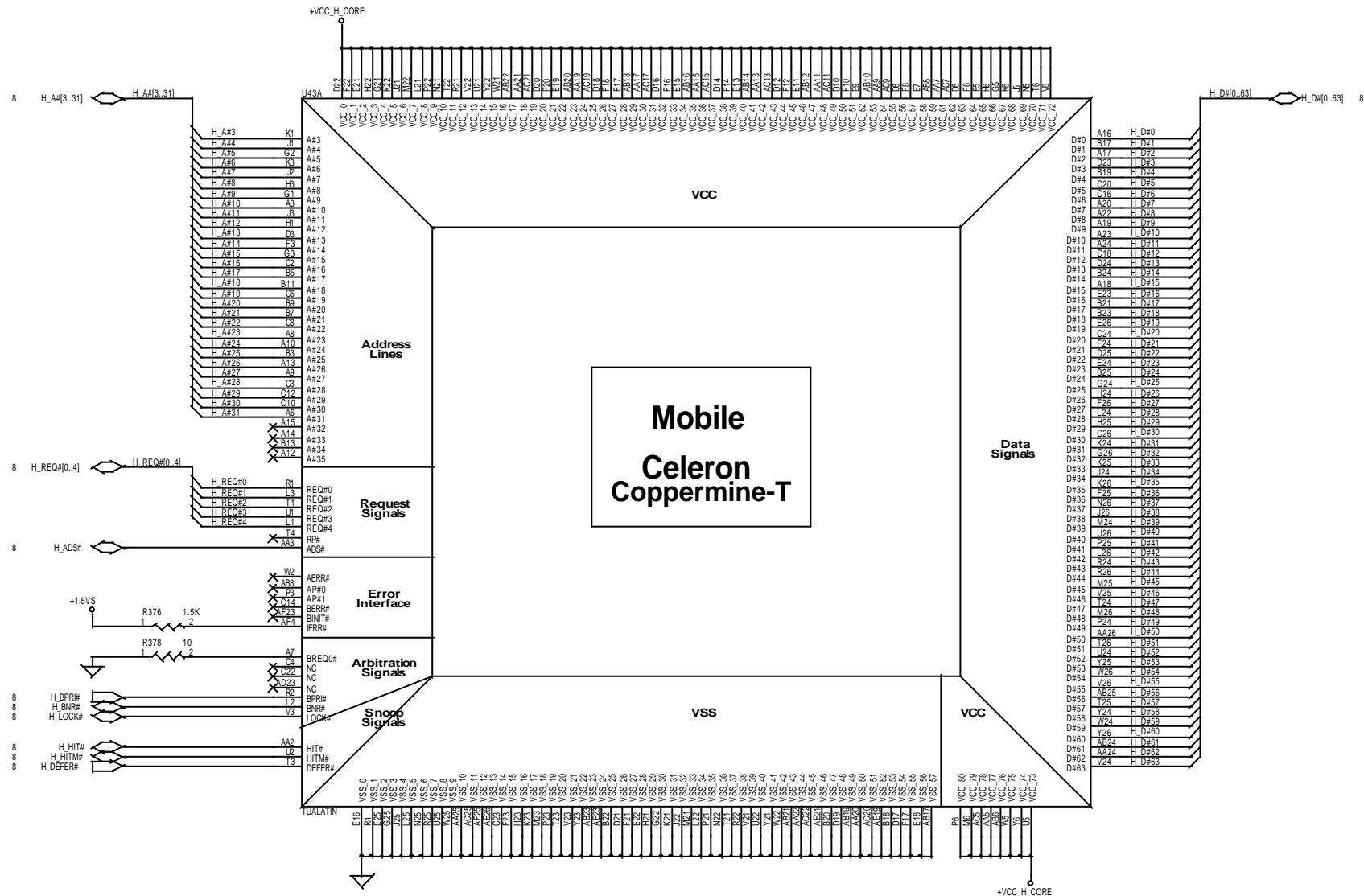
Device	Address	Device	Address
Smart Battery	0001 011X b	MAX1617MEE	1001 110X b
EEPROM(24C1602)	1010 000X b	Smart Battery	0001 011X b
(24C04)	1011 000Xb	Docking	0011 011X b
		DOT Board	XXXX X XXXb

## EC SM Bus2 address

## ICH3-M SM Bus address

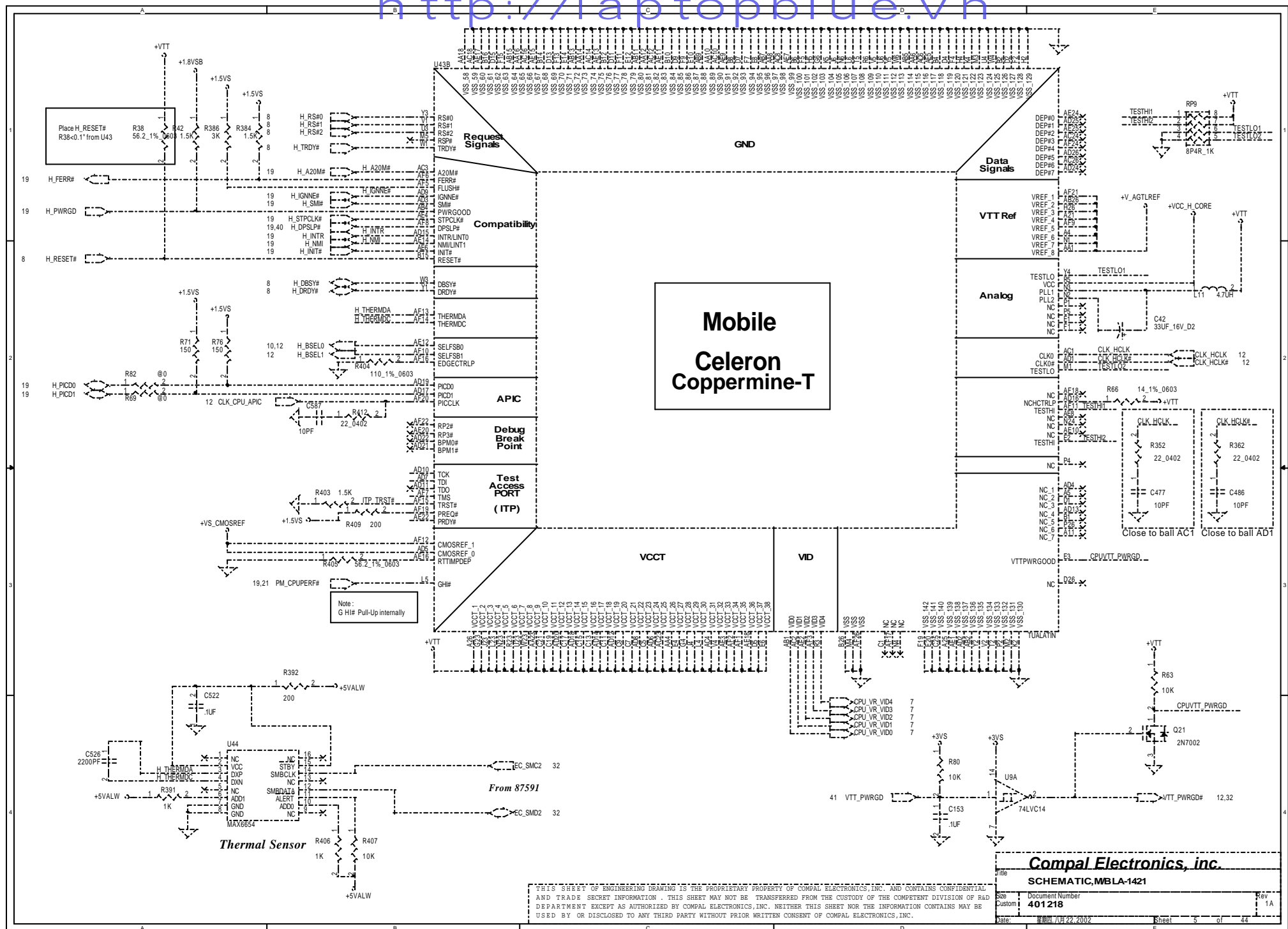
Device	Address
Clock Generator (ICS9238-50)	1101 0000
SDRAM Select (74HC4052)	1010 0000
CPU Voltage VID select (F3565)	0110 111Xb

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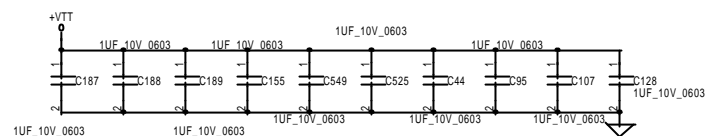
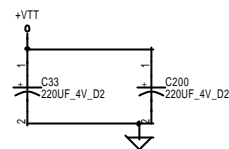
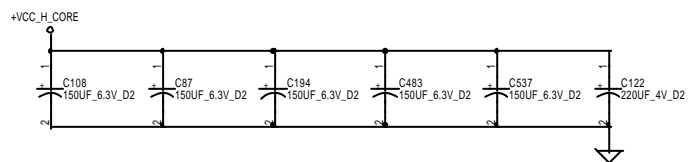
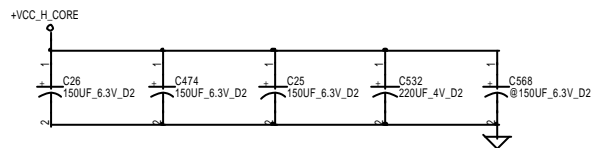
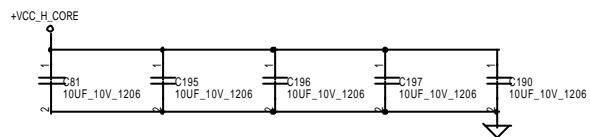
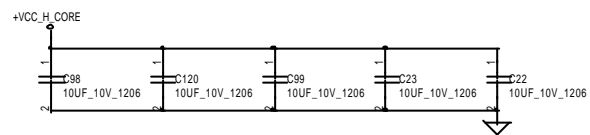
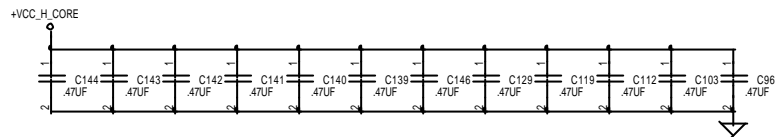
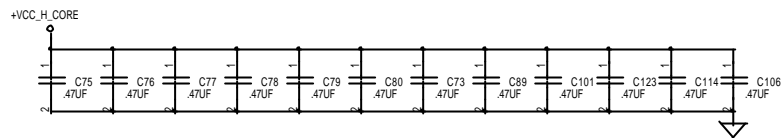


**Layout note:**

Place close to CPU. Use 2~3 vias per PAD.  
Place .47uF caps underneath balls on solder side.  
Place 10uF caps on the peripheral near balls.  
Use 2~3 vias per PAD.

**Layout note:**

Place close to CPU.  
Use 2 vias per PAD.



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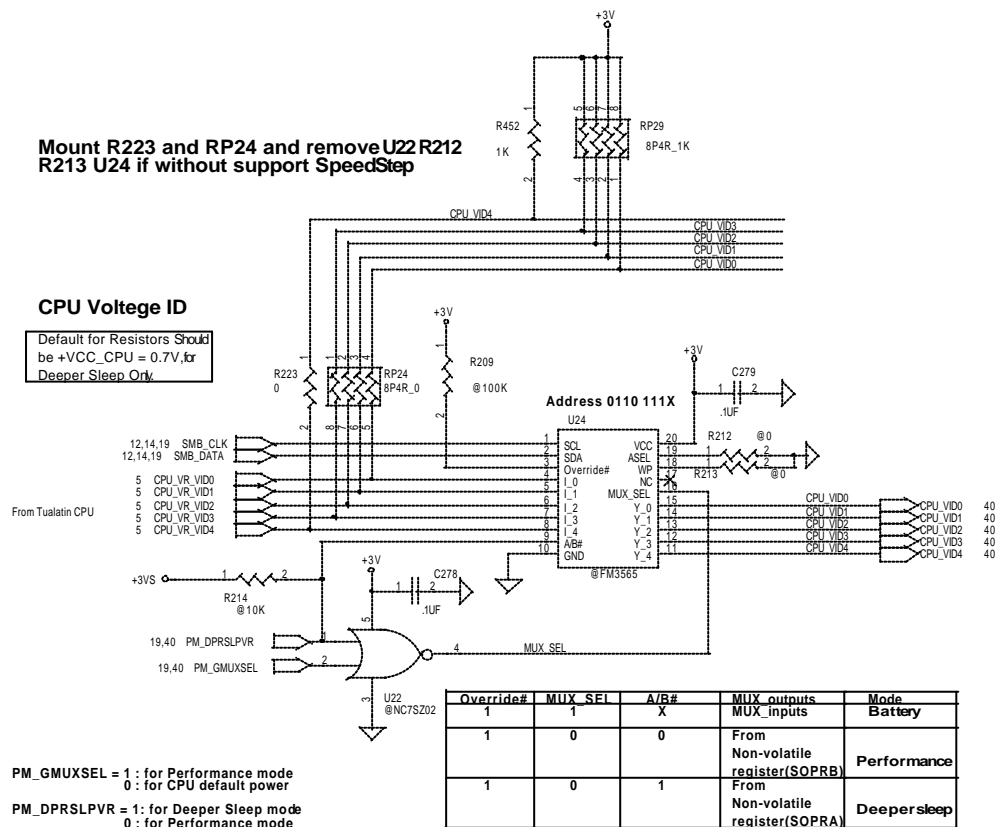
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**Mount R223 and RP24 and remove U22 R212  
R213 U24 if without support SpeedStep**

### CPU Voltege ID

Default for Resistors Should  
be +VCC\_CPU = 0.7V, for  
Deeper Sleep Only.



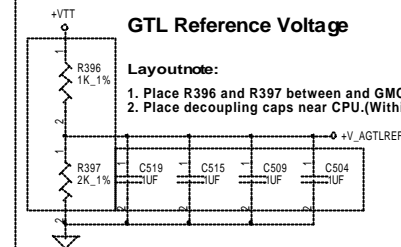
**PM\_GMUXSEL = 1** : for Performance mode  
**0** : for CPU default power

**PM\_DPRSLPVR = 1:** for Deeper Sleep mode  
**0 :** for Performance mode

### GTL Reference Voltage

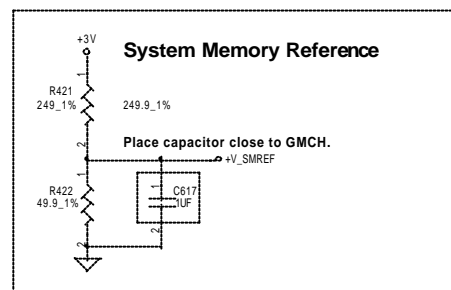
**Layoutnote:**

1. Place R396 and R397 between and GMCH and CPU
2. Place decoupling caps near CPU.(Within 500mils)



### System Memory Reference

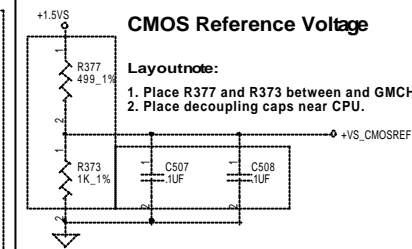
**Place capacitor close to GMCH.**



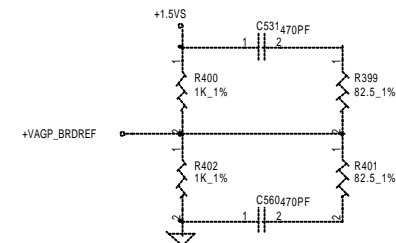
### CMOS Reference Voltage

**Layoutnote:**

1. Place R377 and R373 between and GMCH and CPU
2. Place decoupling caps near CPU.



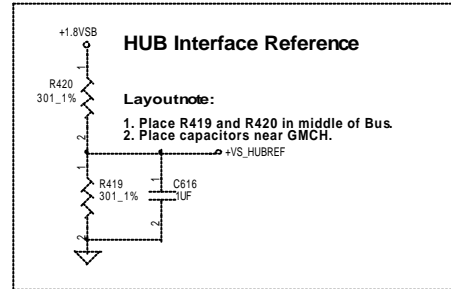
**Place Reference Circuit near GMCH**



## HUB Interface Reference

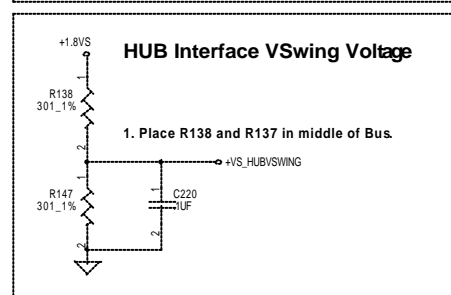
**Layoutnote:**

1. Place R419 and R420 in middle of Bus.
2. Place capacitors near GMCH.



### HUB Interface VSwing Voltage

1. Place R138 and R137 in middle of Bus.



1. Place R393 and R394 near GMCH.



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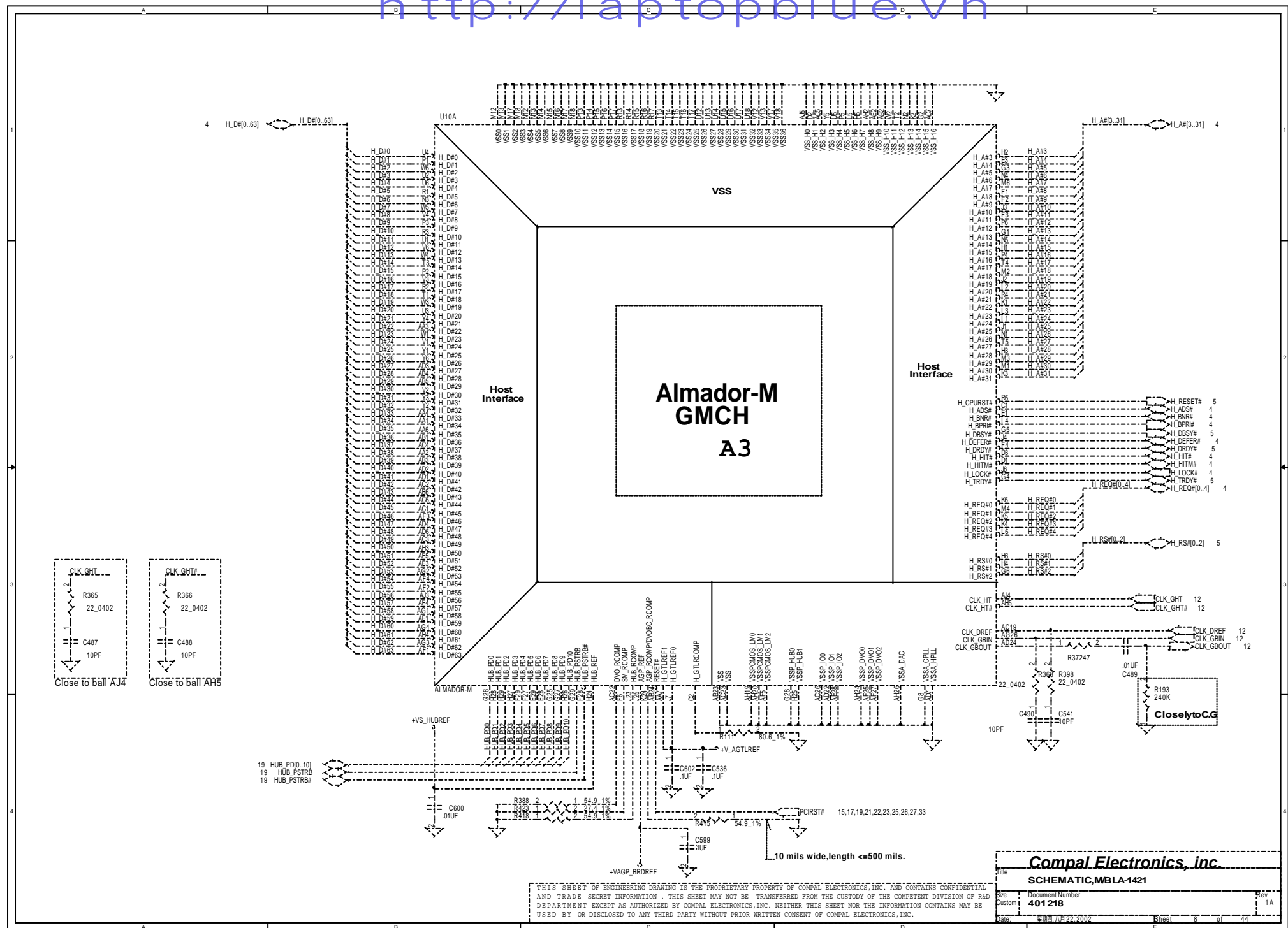
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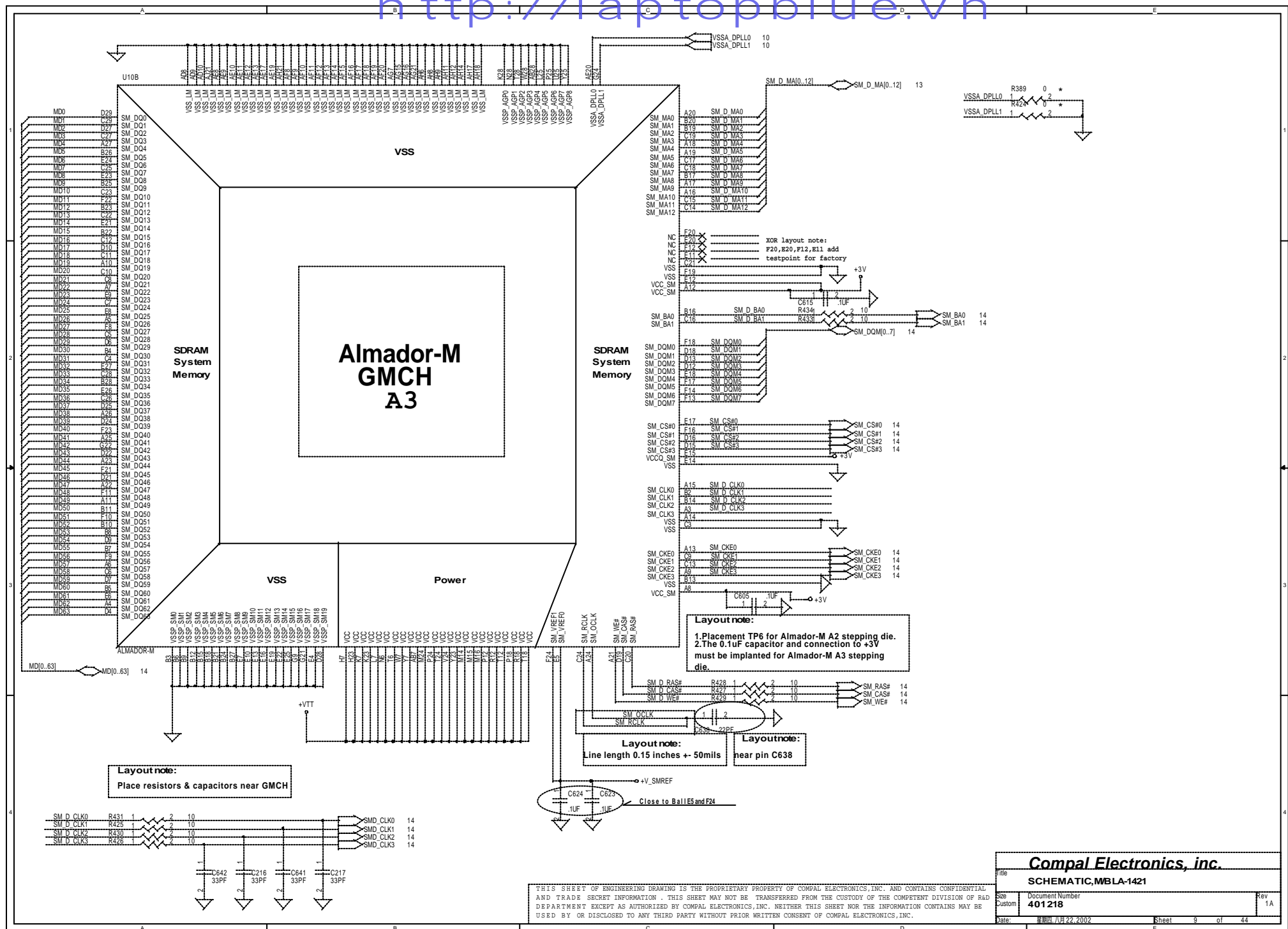
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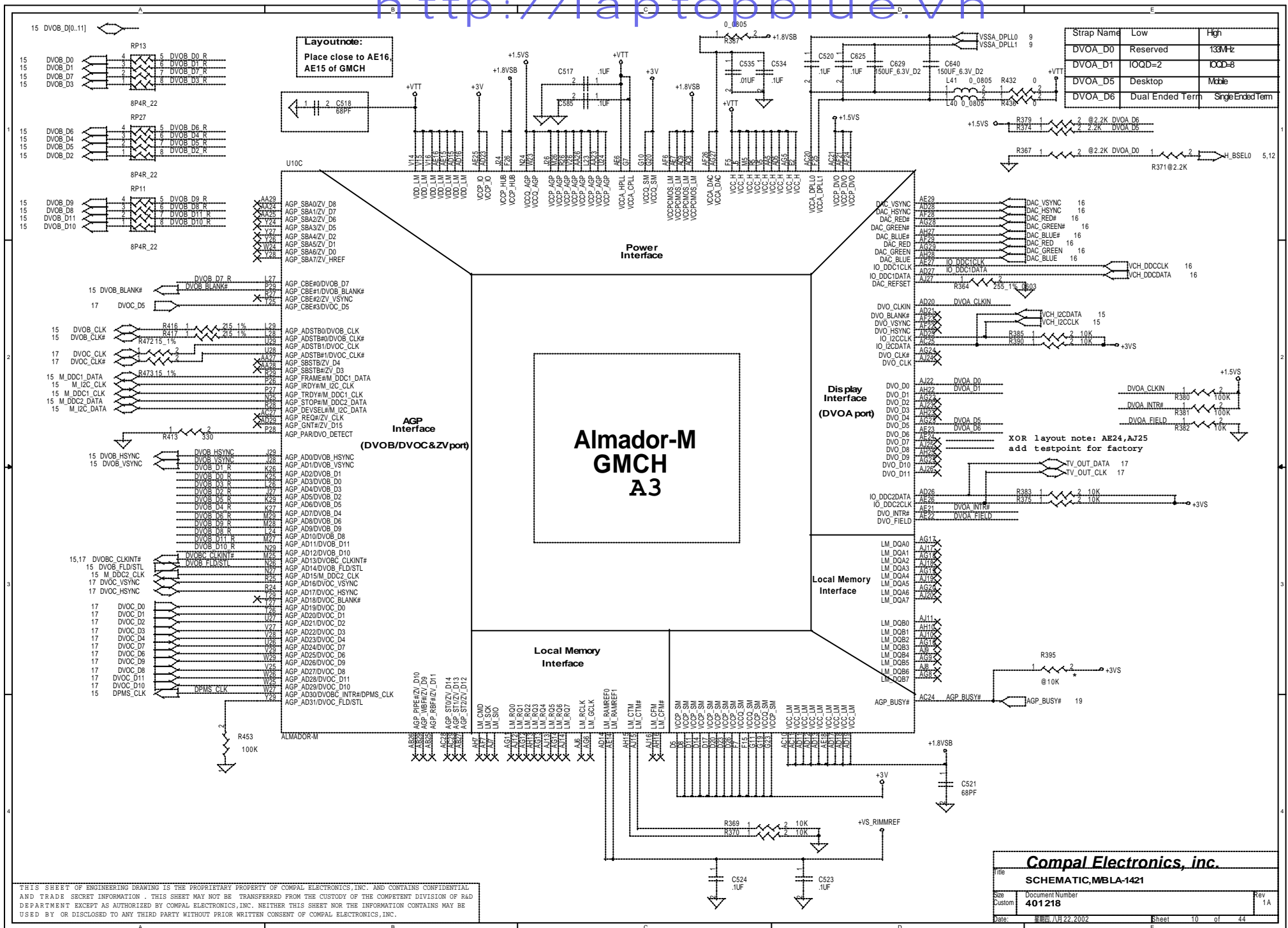
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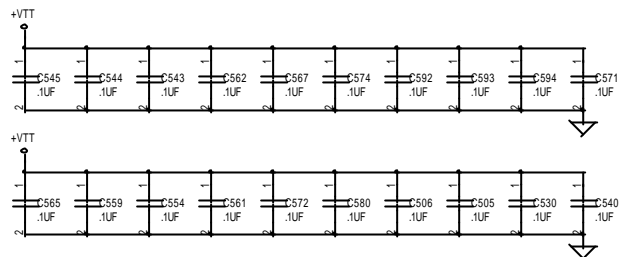




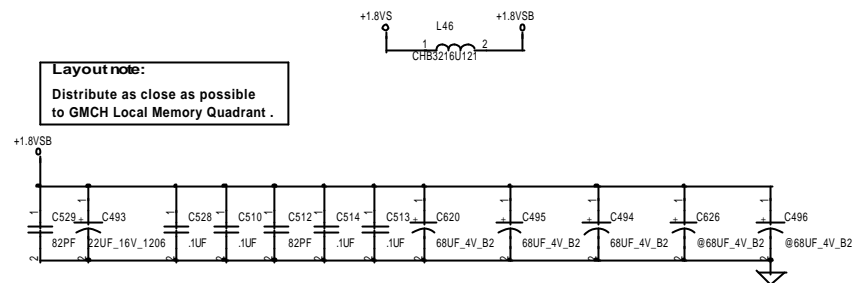




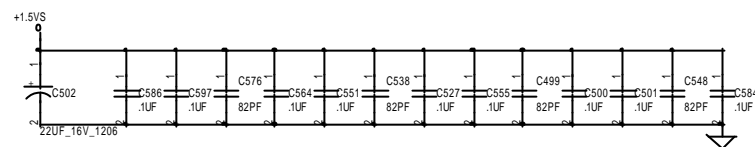
**Layout note:**  
Distribute as close as possible  
to GMCH Processor Quadrant .



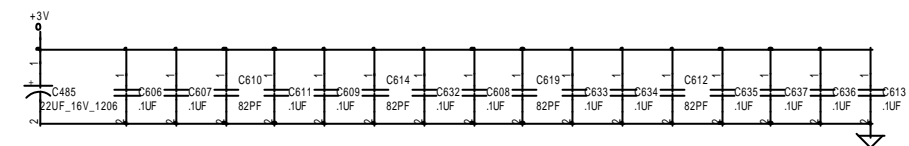
**Layout note:**  
Distribute as close as possible  
to GMCH Local Memory Quadrant .



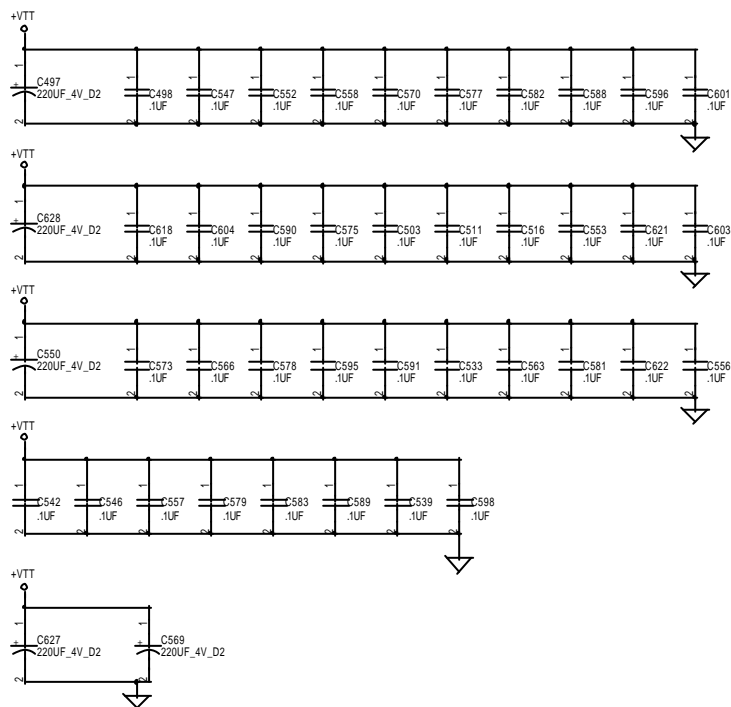
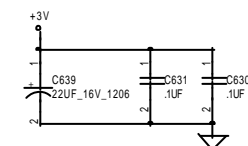
**Layout note:**  
Distribute as close as possible  
to GMCH AGP/DVO Quadrant .



**Layout note:**  
Distribute as close as possible  
to GMCH System Memory Quadrant .

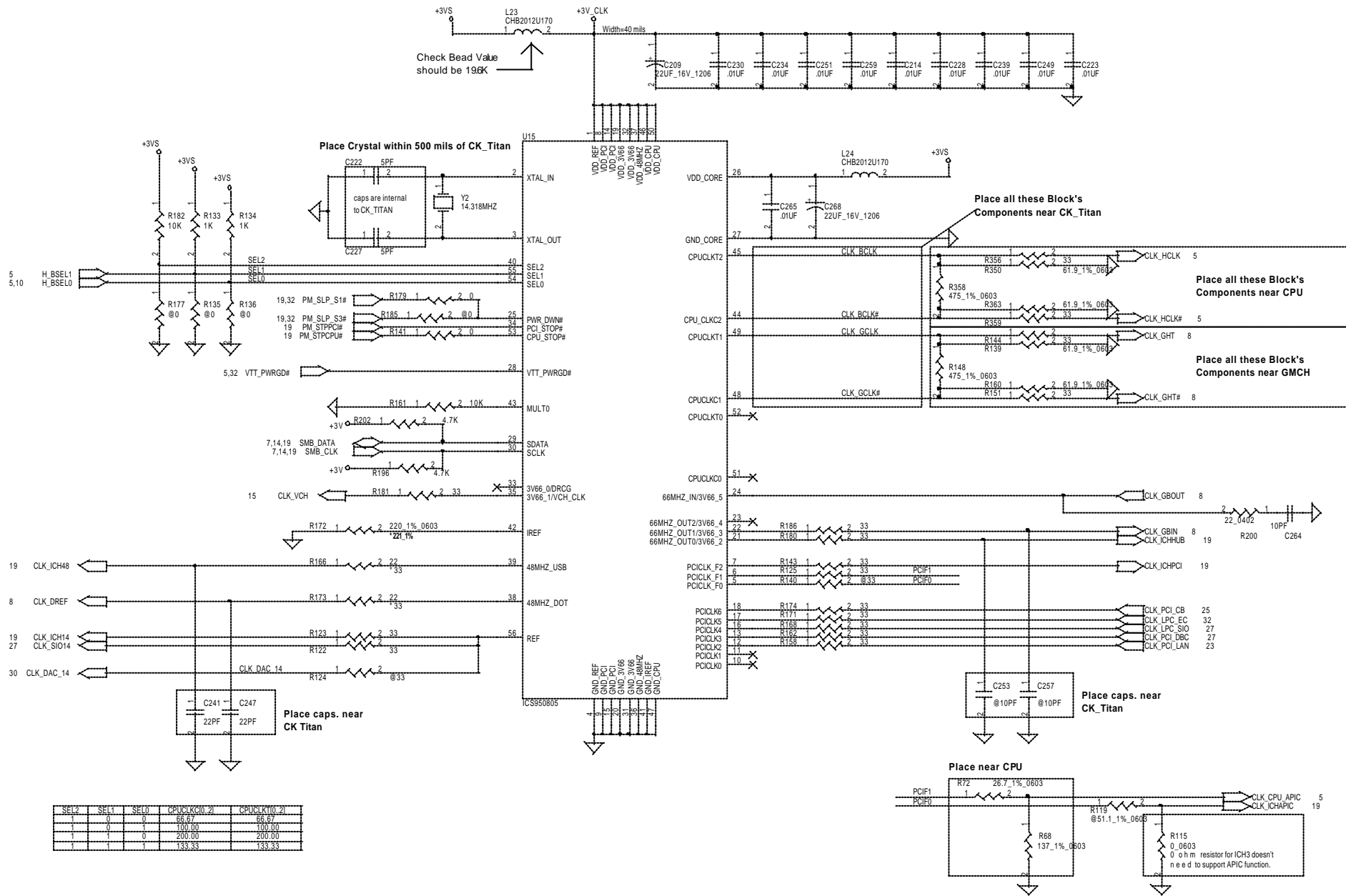


**Layout note:**  
Distribute as close as possible  
to IO Quadrant .



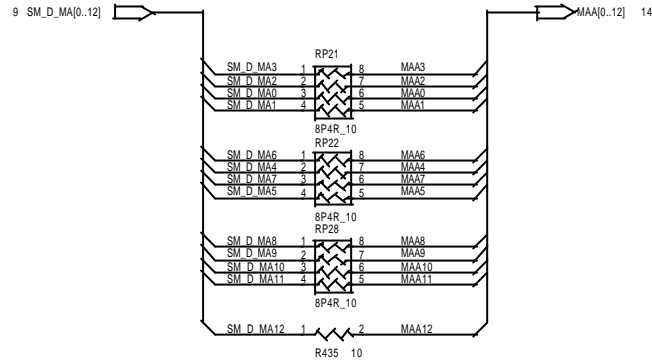
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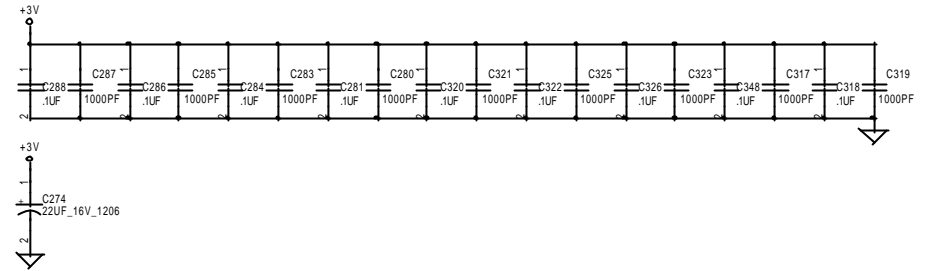


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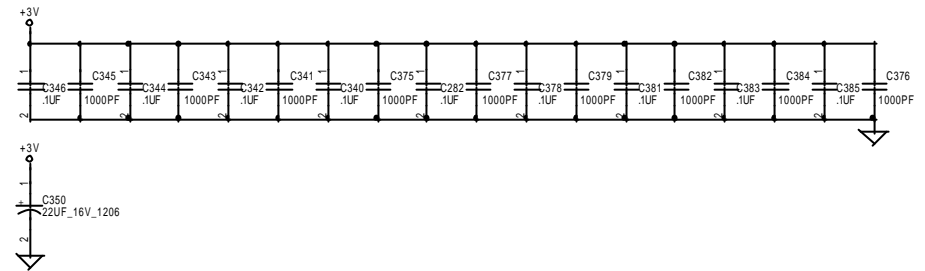
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**Layout note:**  
One .1uF cap per power pin .  
Place each cap close to SODIMM(DIMM 0) pin .



**Layout note:**  
One .1uF cap per power pin .  
Place each cap close to SODIMM(DIMM 1) pin .



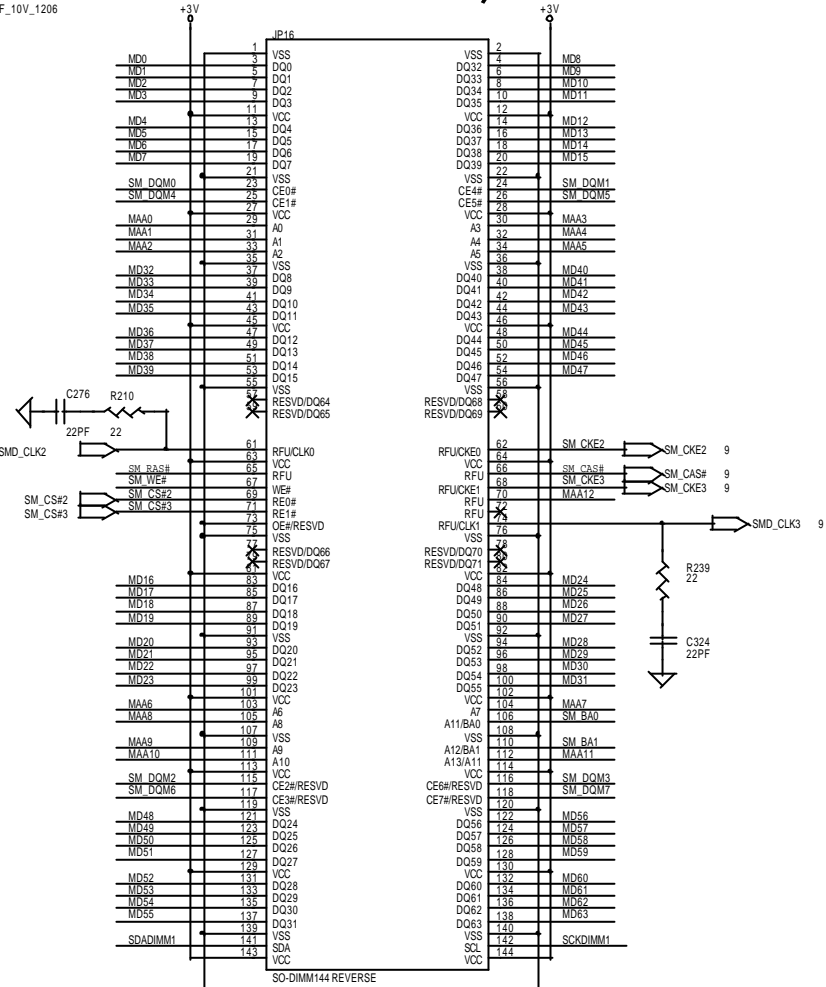
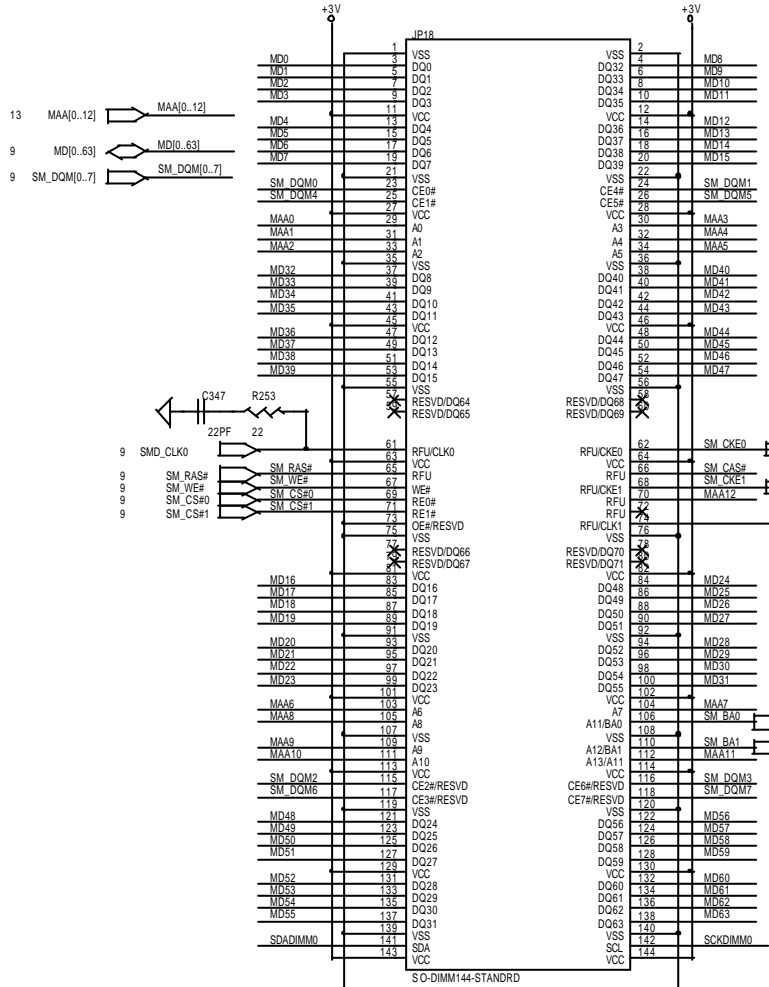
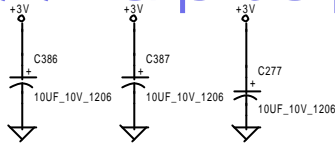
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SO-DIM 144 PINS  
RAM MODULE CONN.

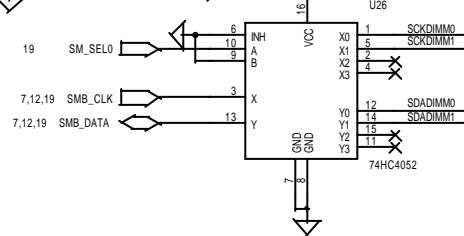
BANK 0/1

BANK 2/3



DIMM0

DIMM1



SM_SEL0	XY
0	SCDIMM0
1	SCDIMM1

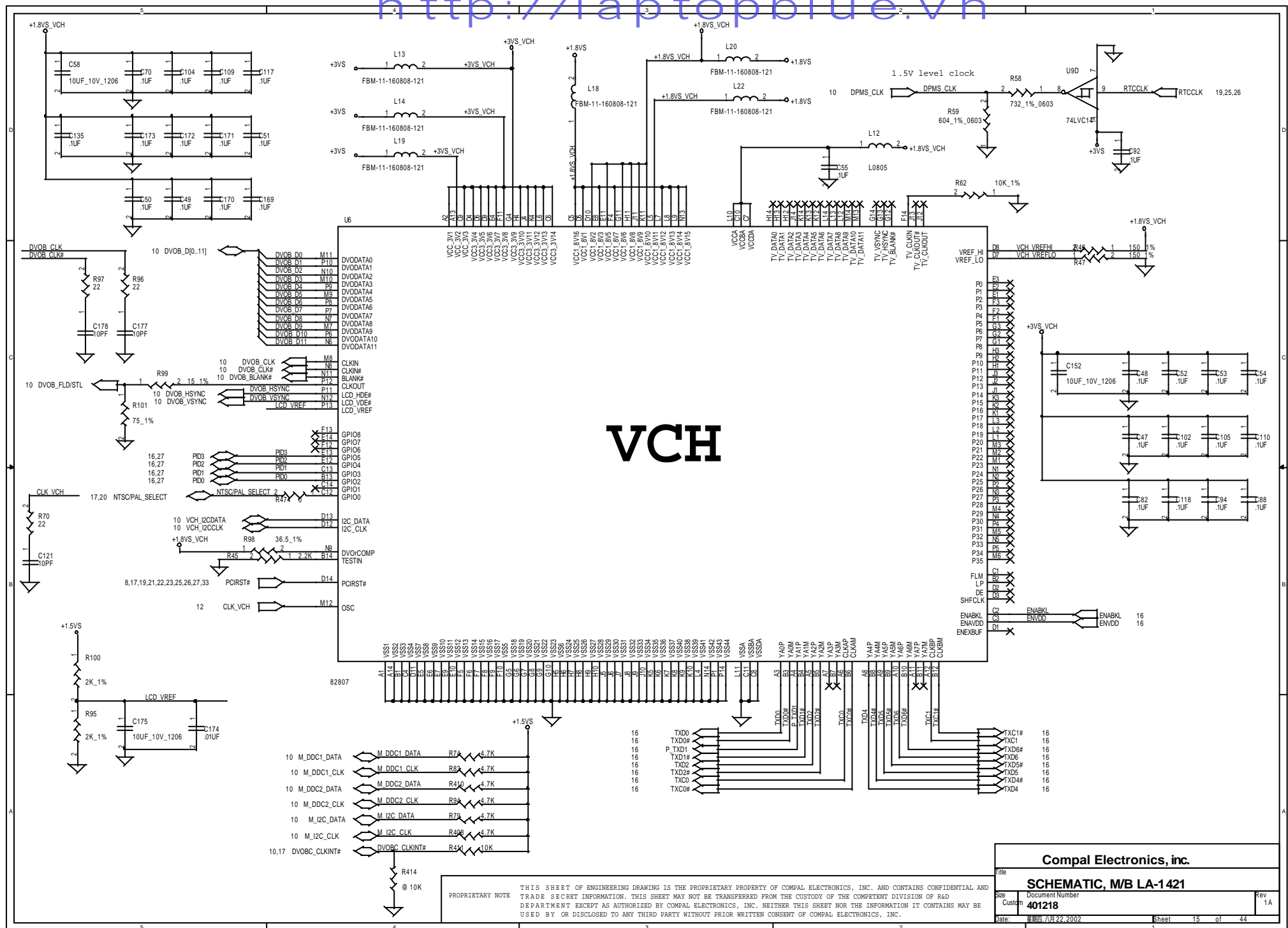
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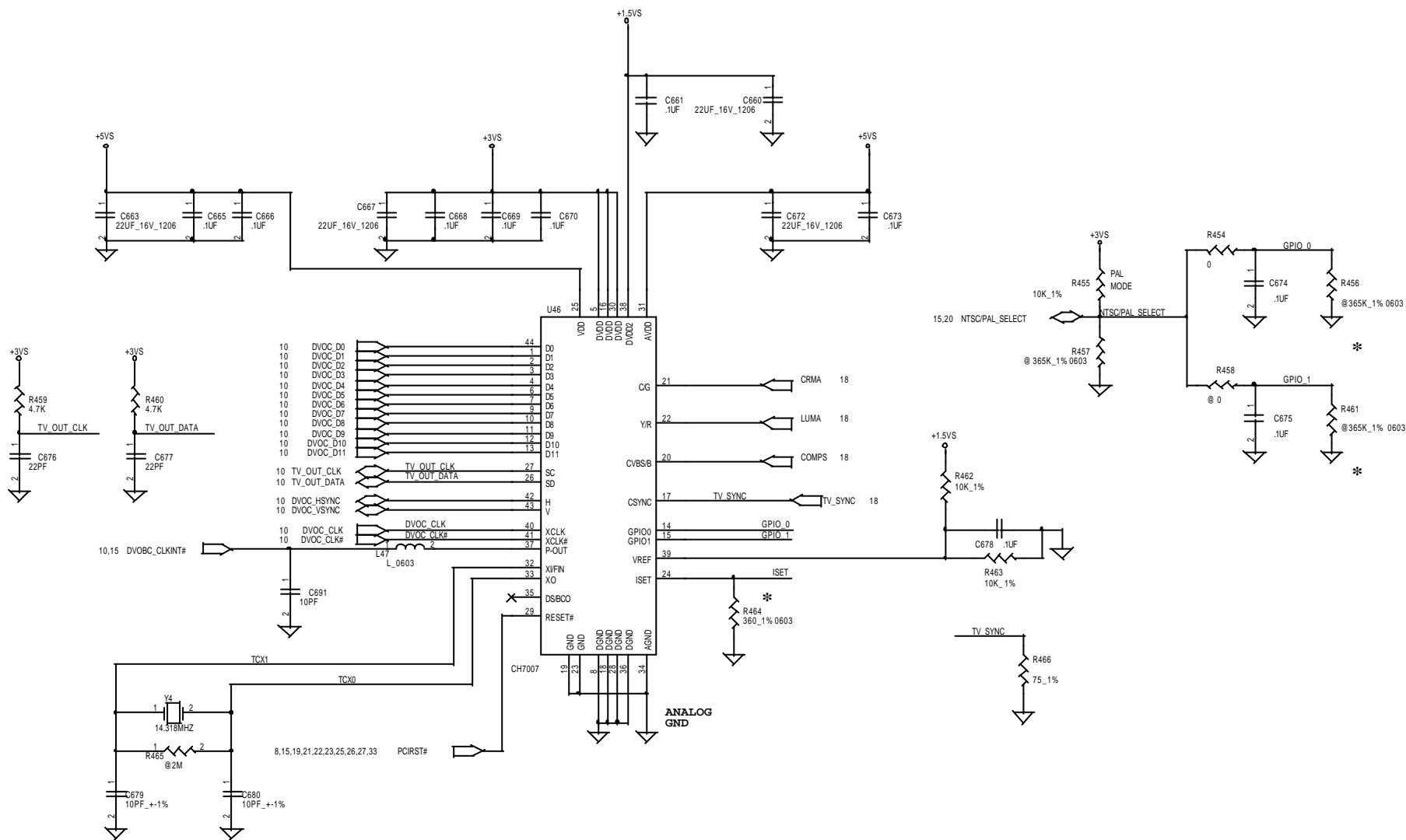
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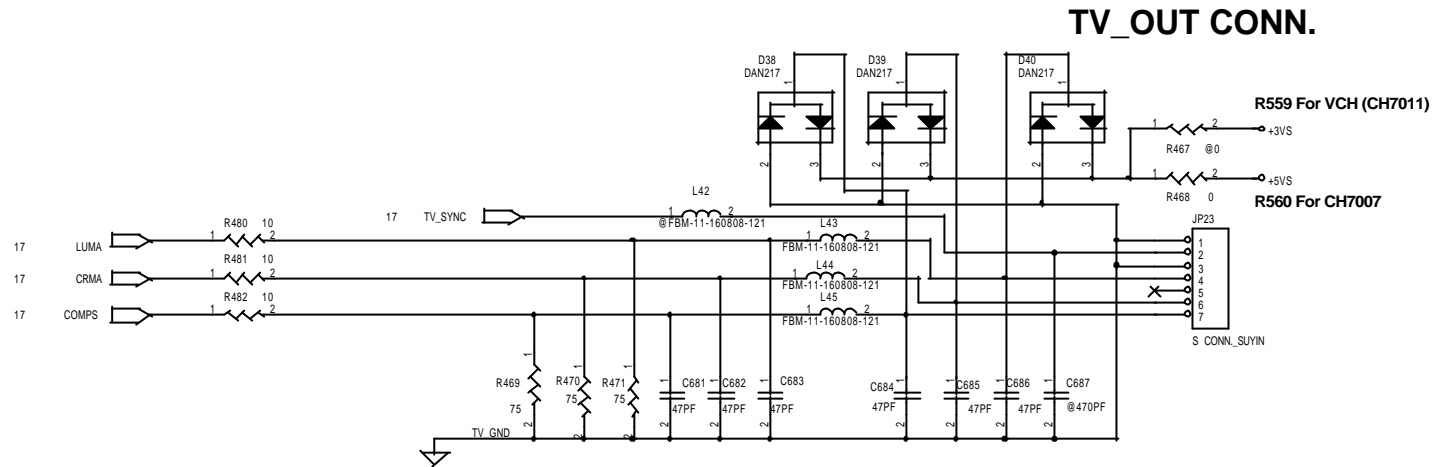






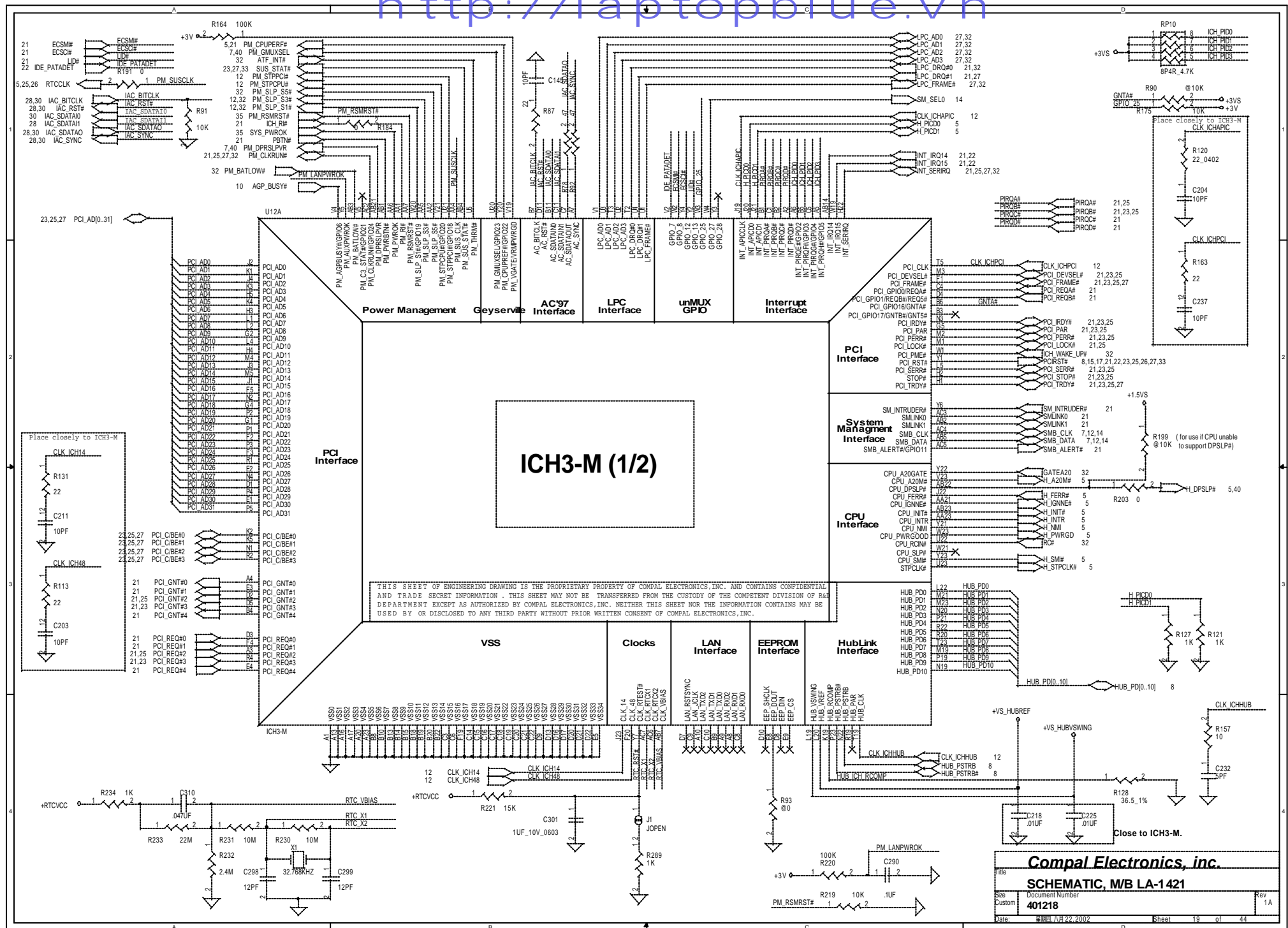
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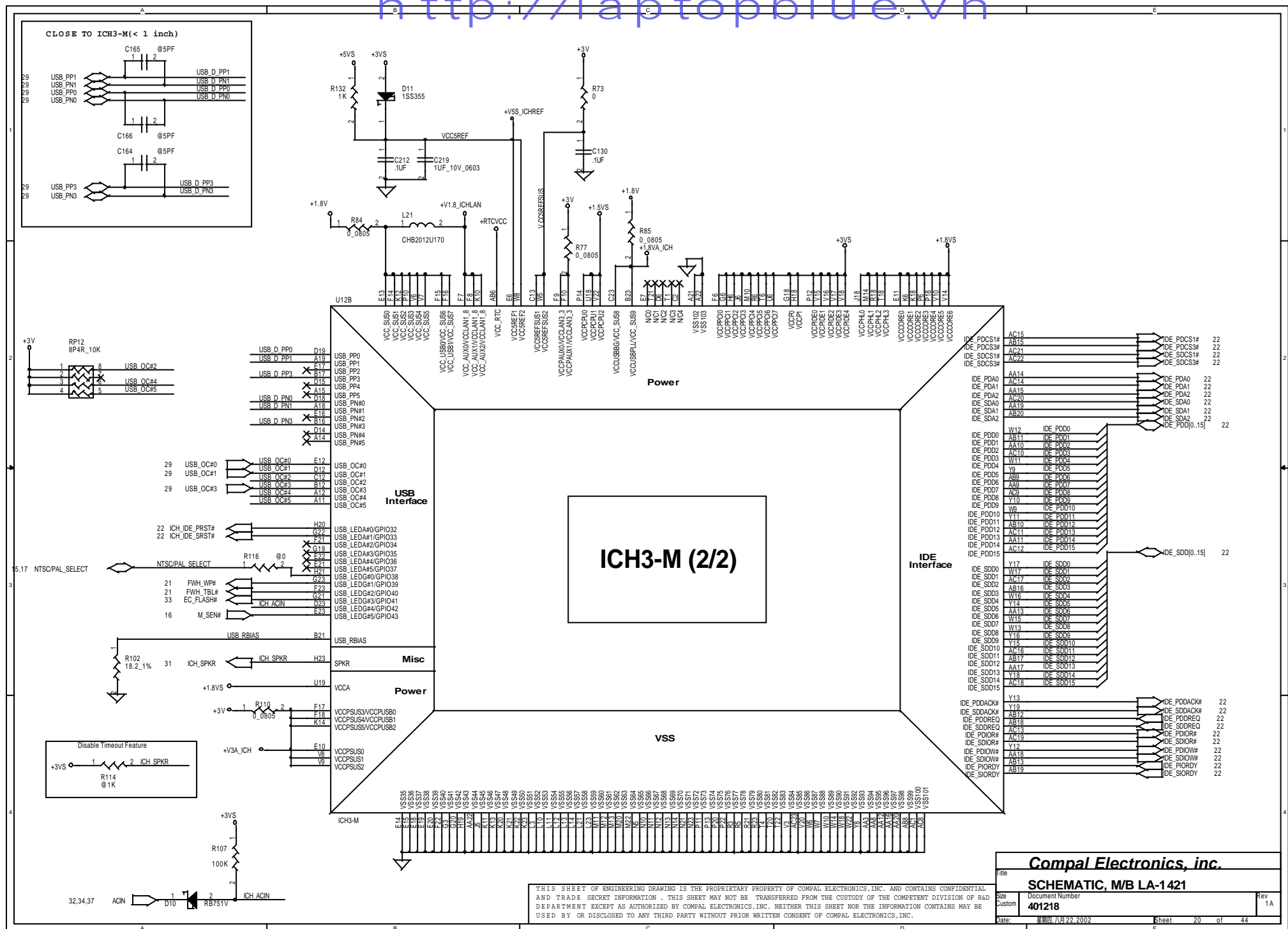
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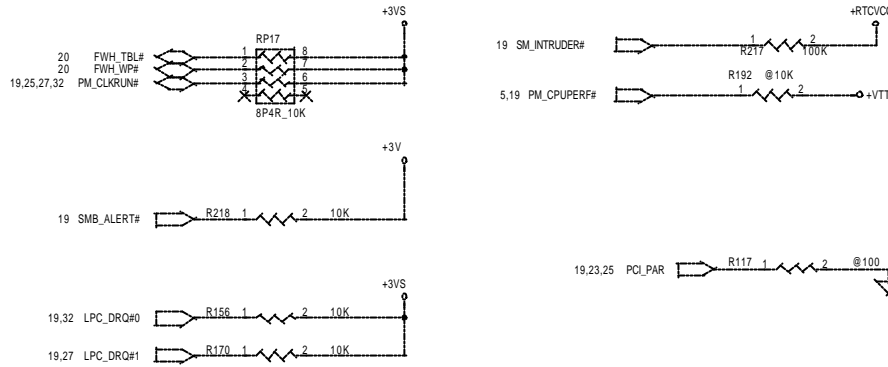
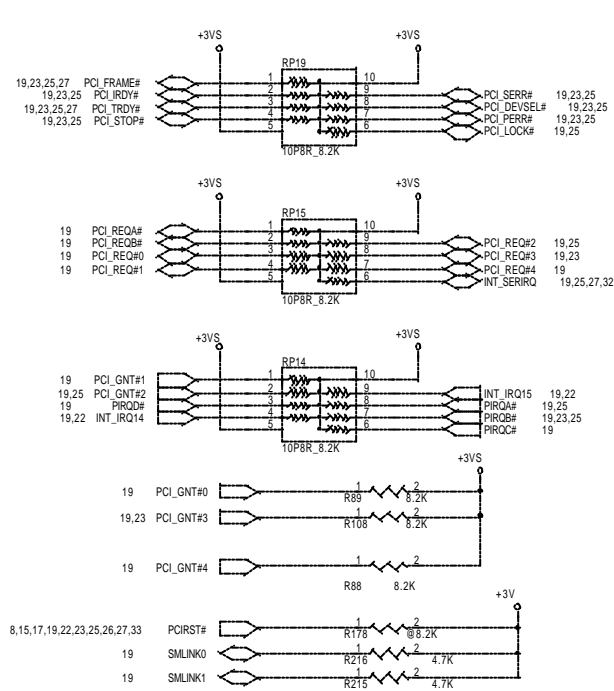
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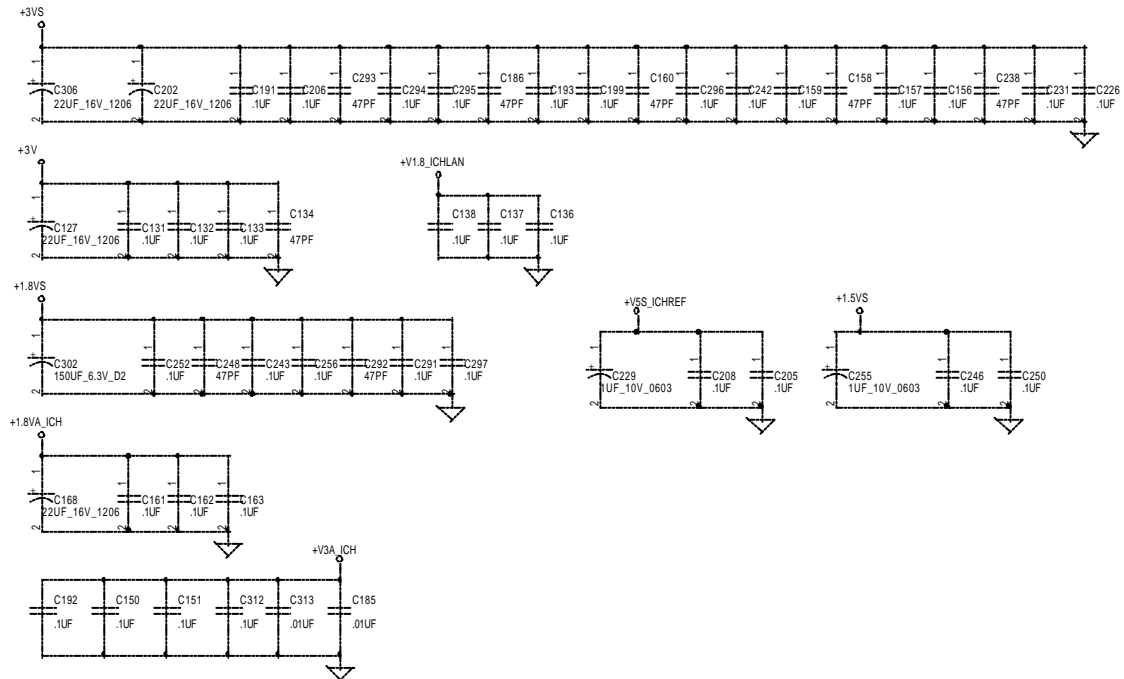




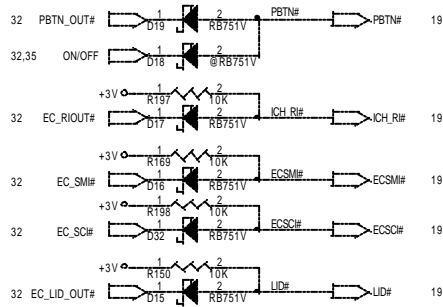
## ICH3-M PullUp Resistor



## ICH3-M Decoupling Capacitor



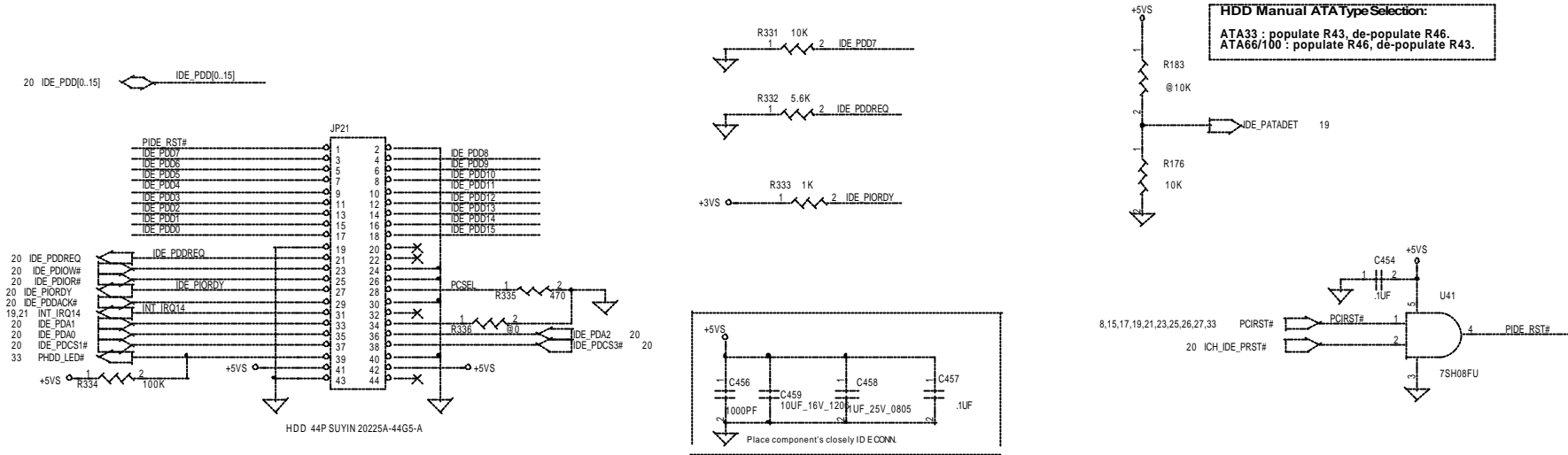
## Break Event Between ICH3-M and EC591



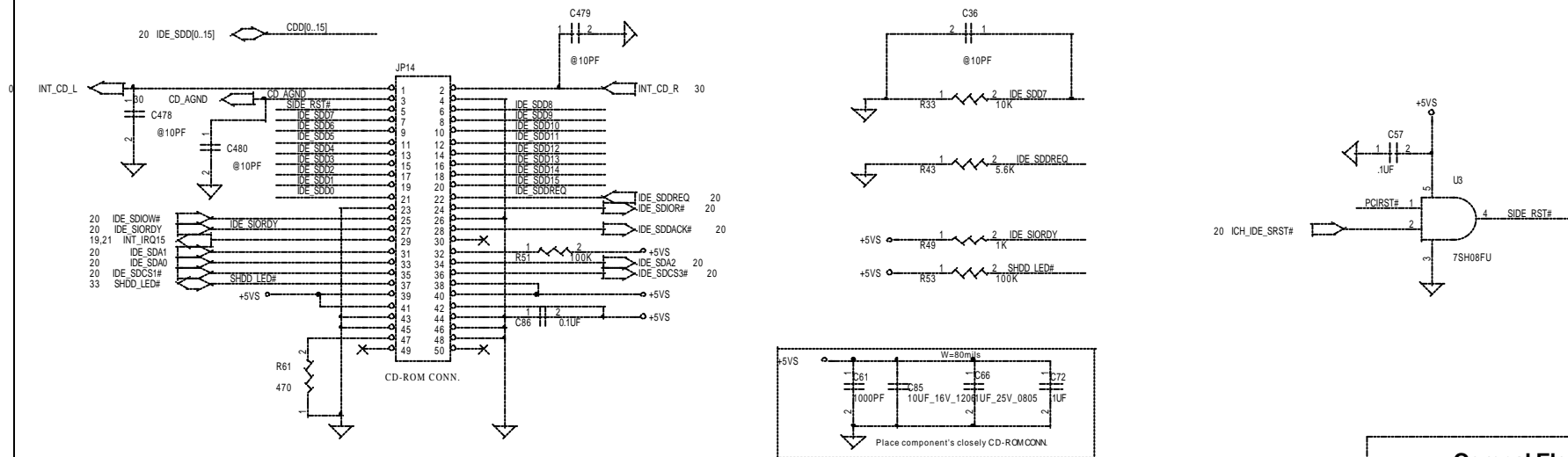
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## IDE Module CONN.

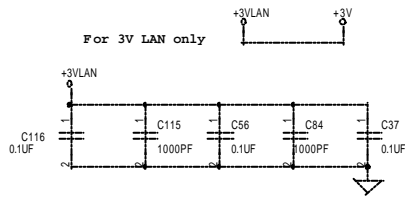
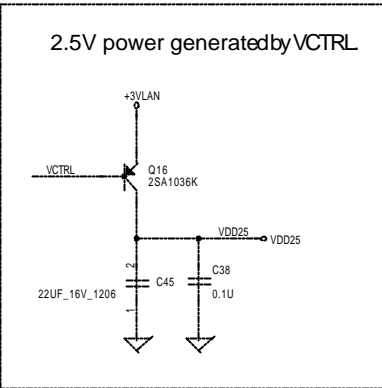
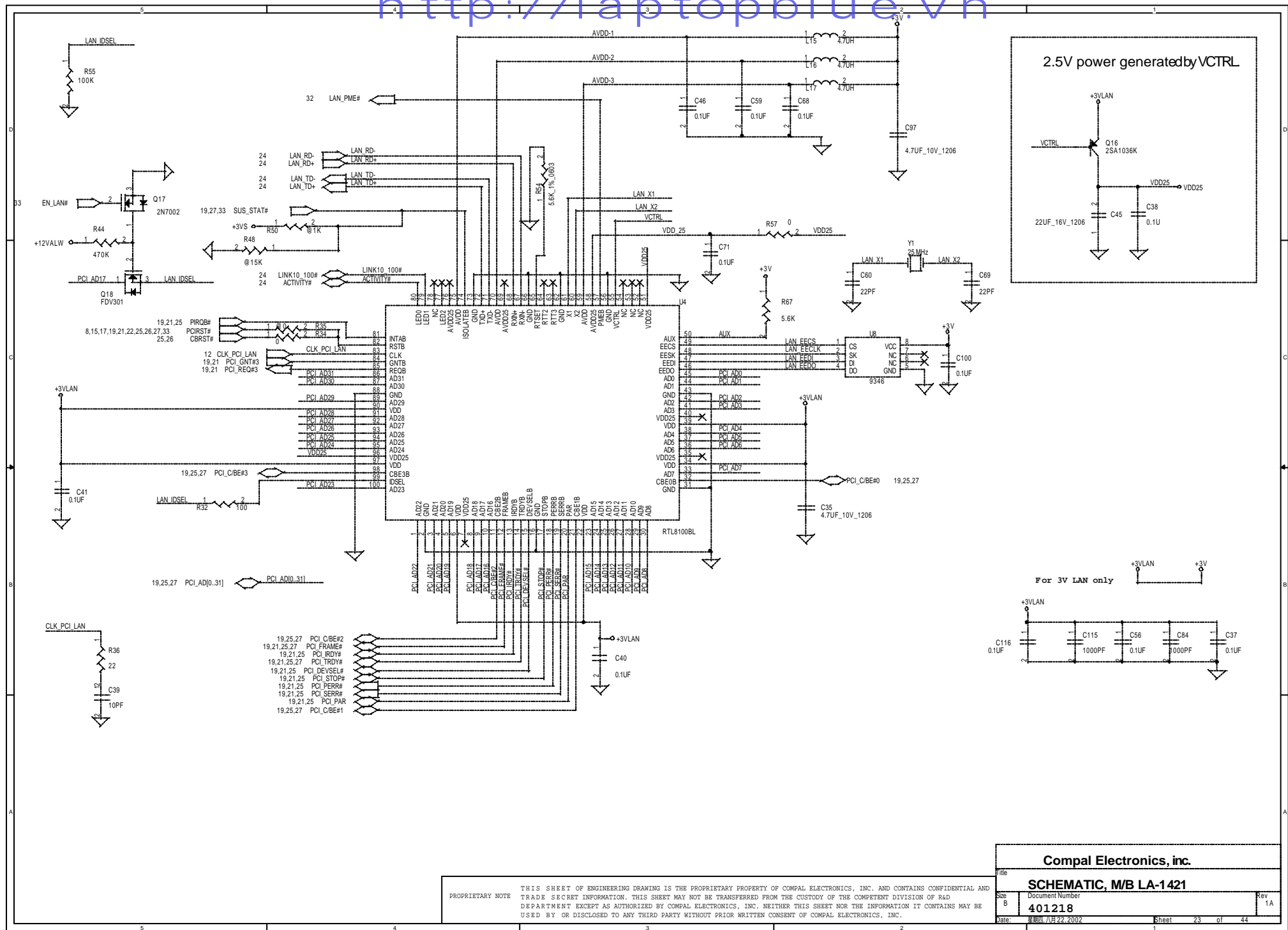


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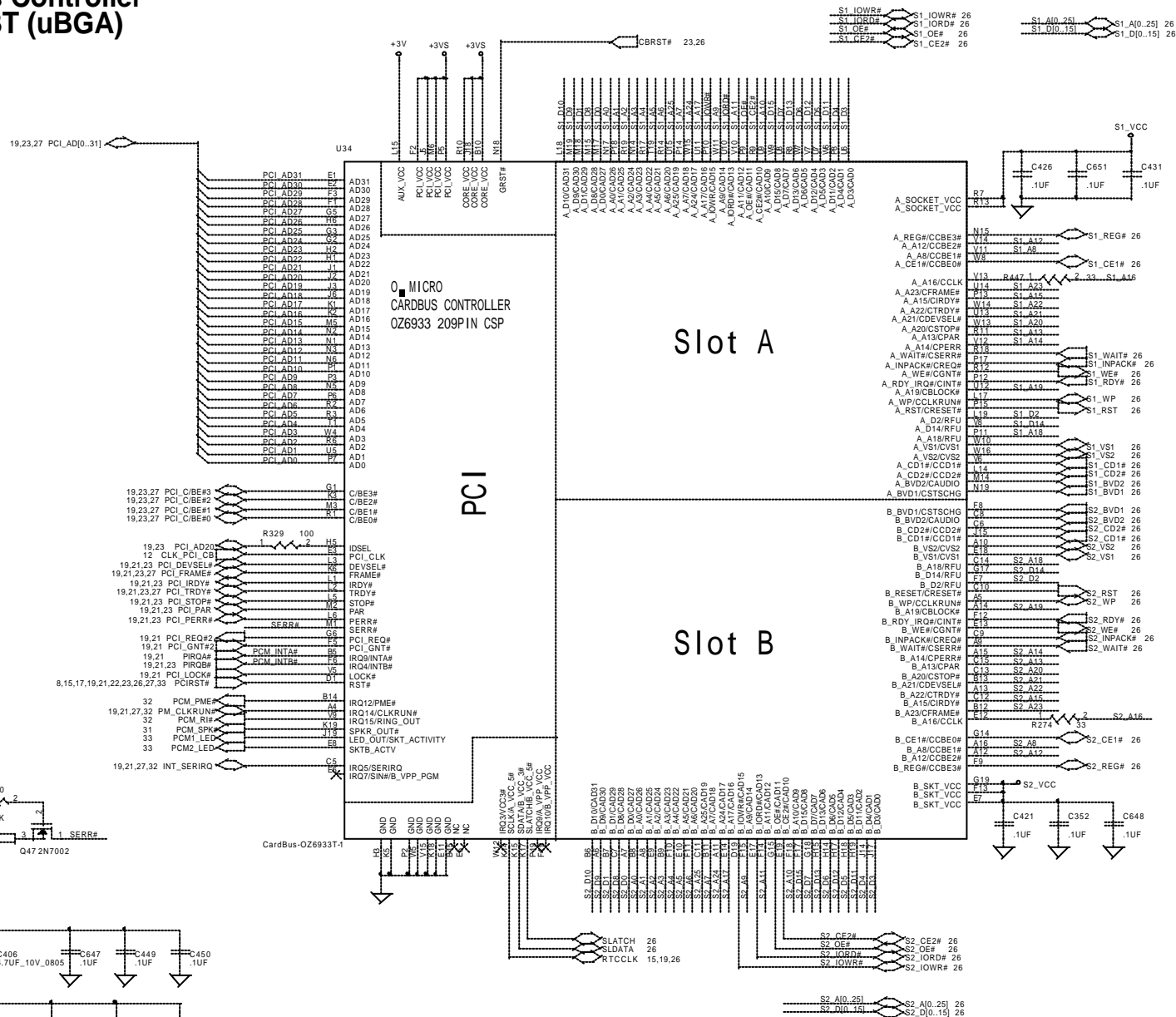


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# CardBus Controller OZ6933T (uBGA)



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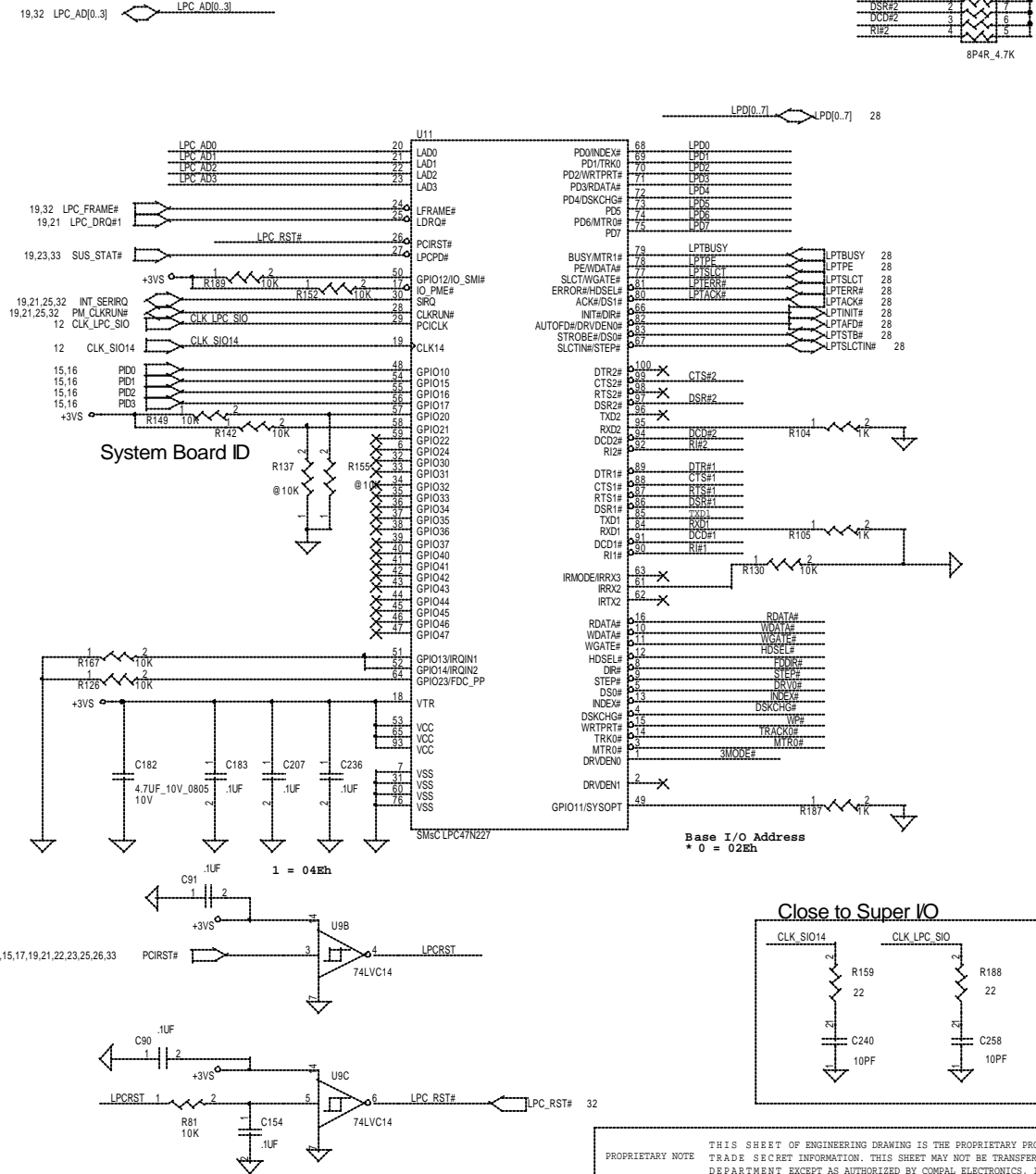
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SCHEMATIC, M/B LA-1421

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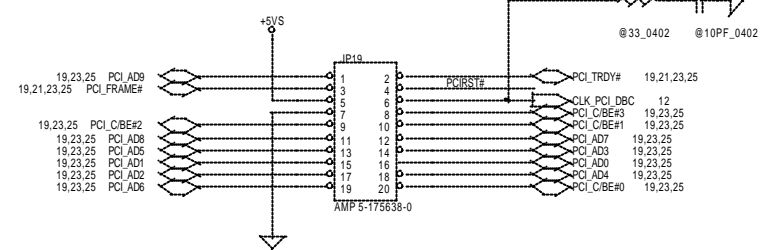
# SUPER I/O SMsC FDC47N227



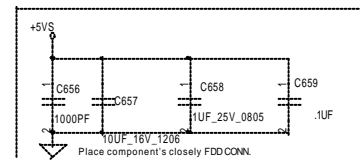
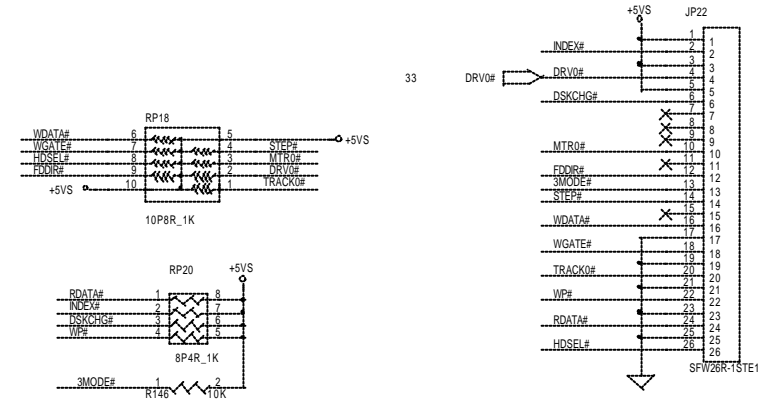
## ACPI Debug Connector



## Port 80 Debug Card Connector



## Floppy Connector



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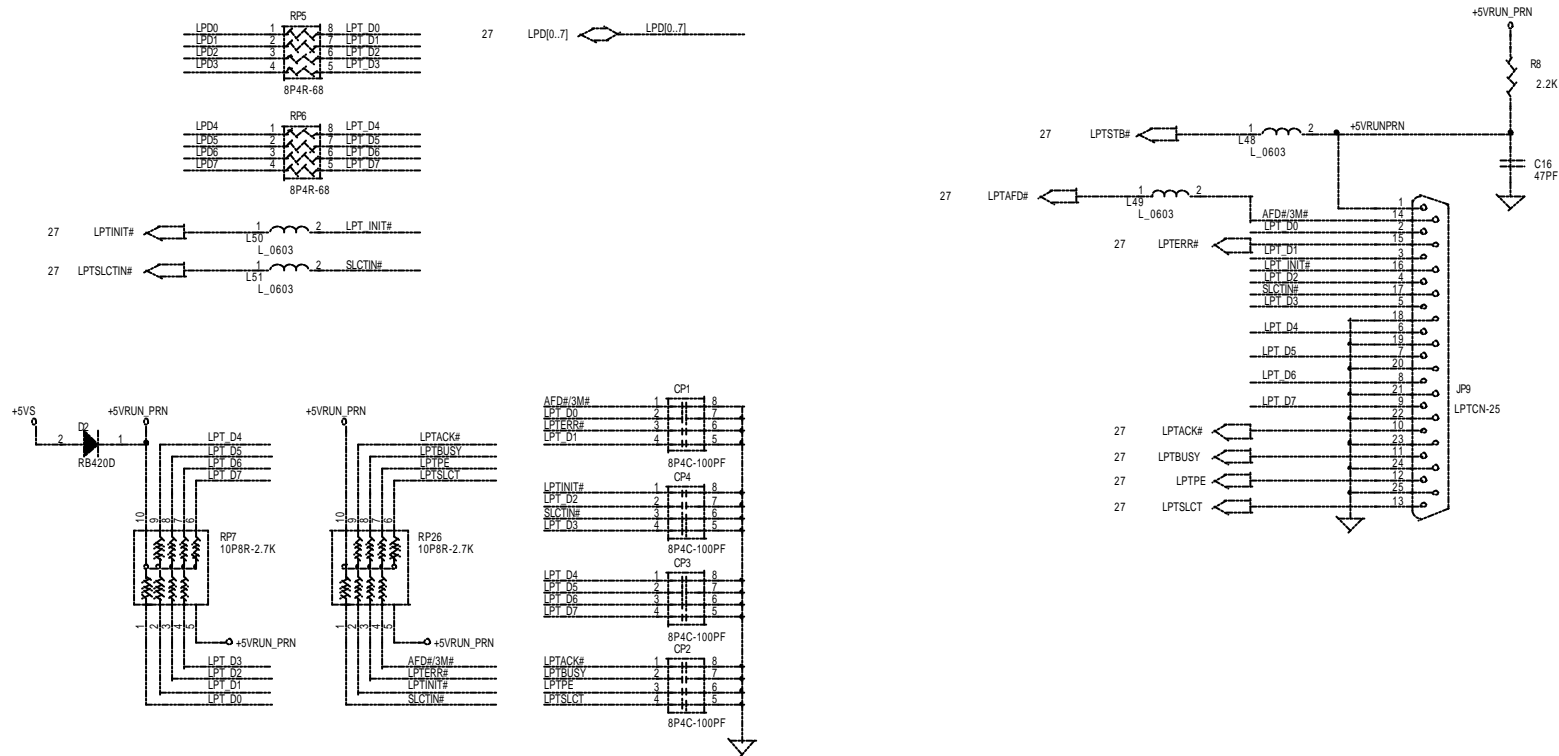
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401218

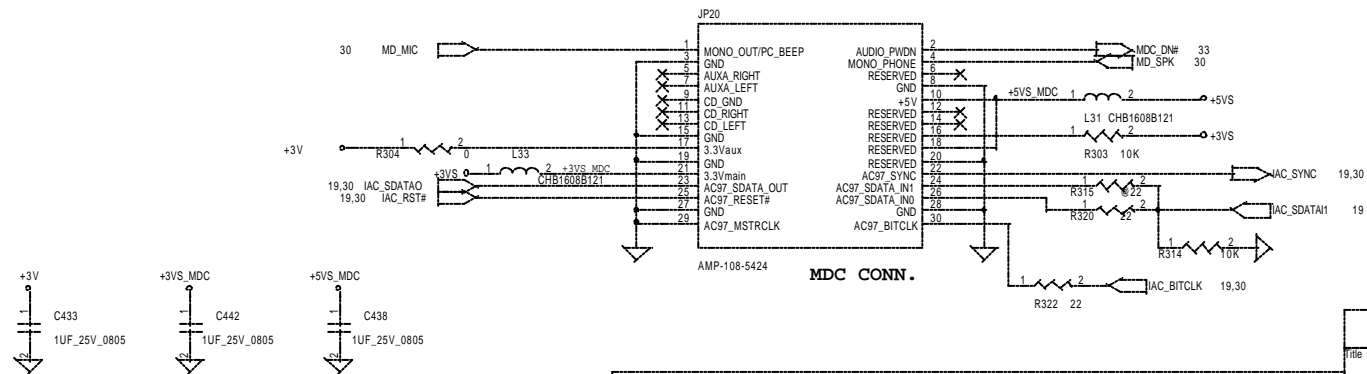
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## Parallel Port



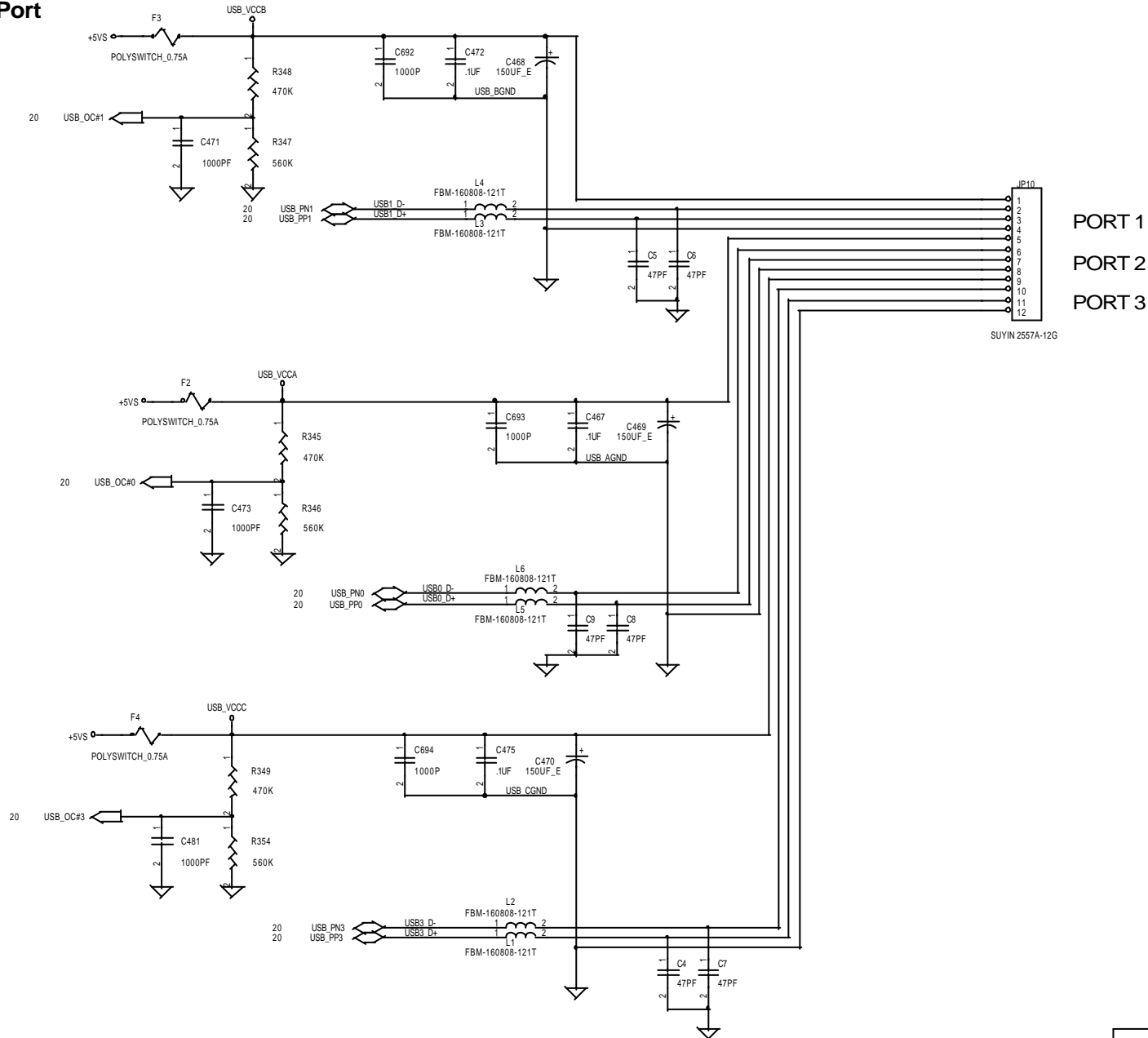
## MDC Connector



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# USB Port

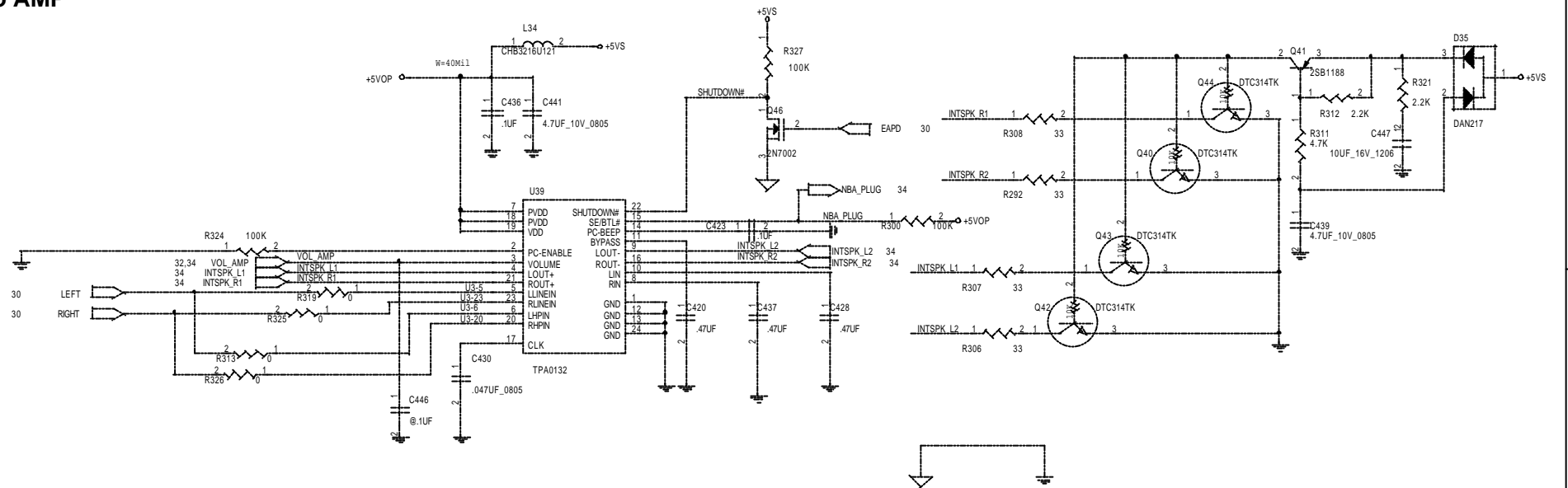


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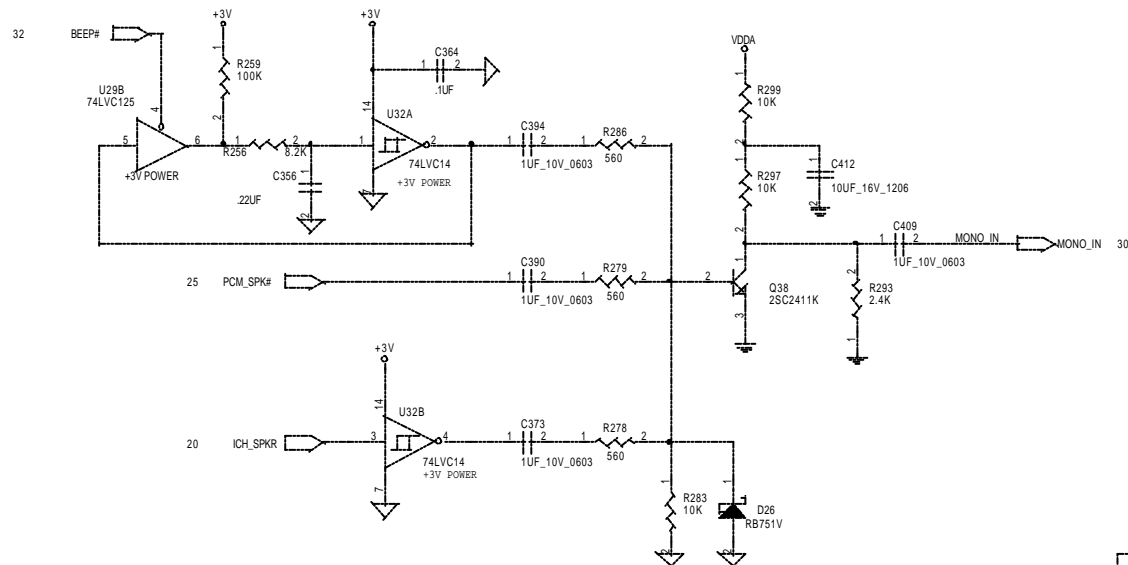
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File			
SCHEMATIC, M/B LA-1421			
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## Audio AMP

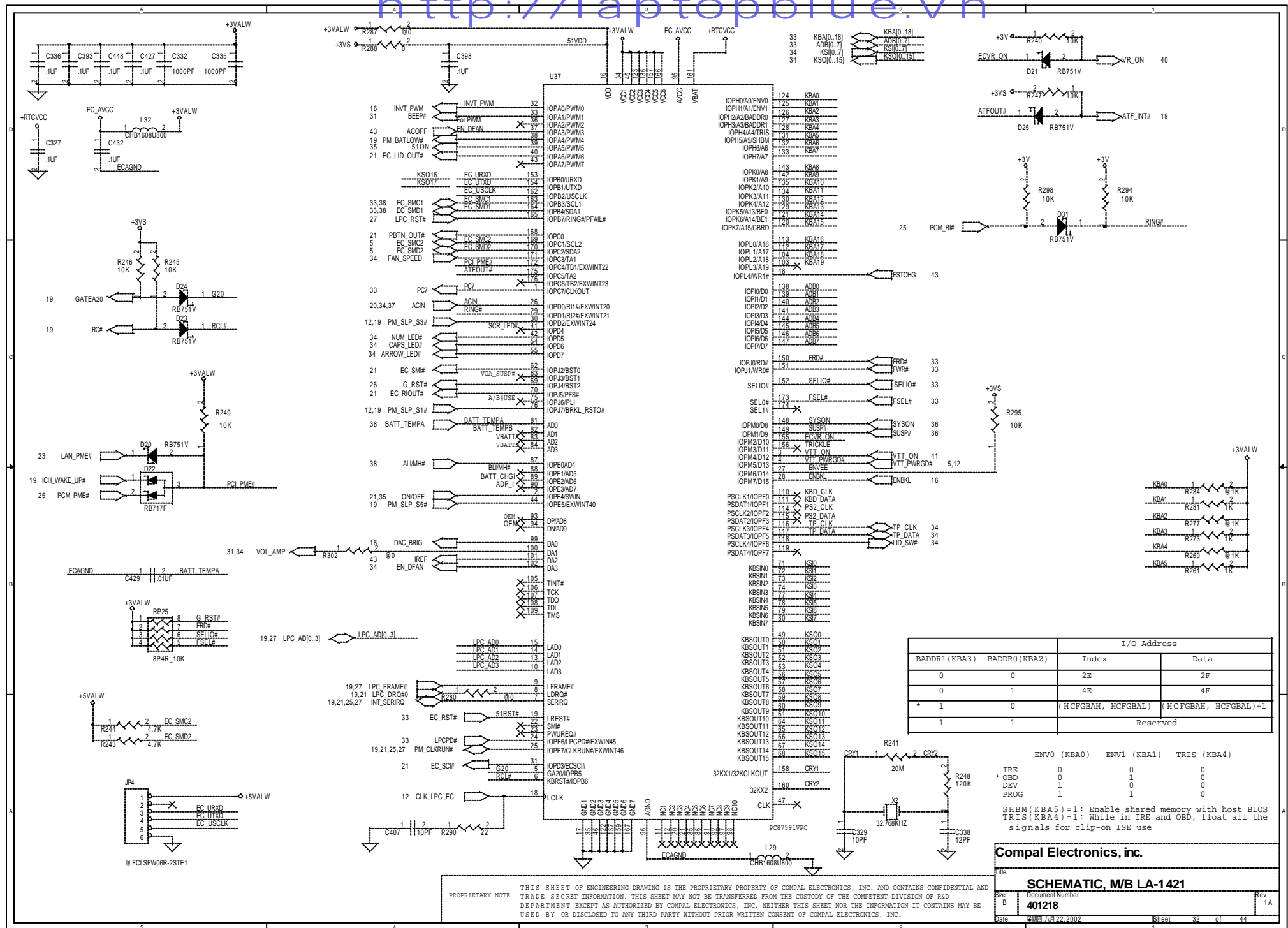


## System Sound



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		I/O Address	
BADDR1(KBA3)	BADDR0(KBA2)	Index	Data
0	0	2E	2F
0	1	4E	4F
*	0	(HCFGBAH, HCFGBAL) (HCFGBAH, HCFGBAL)+1	
1	1	Reserved	

	ENV0 (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

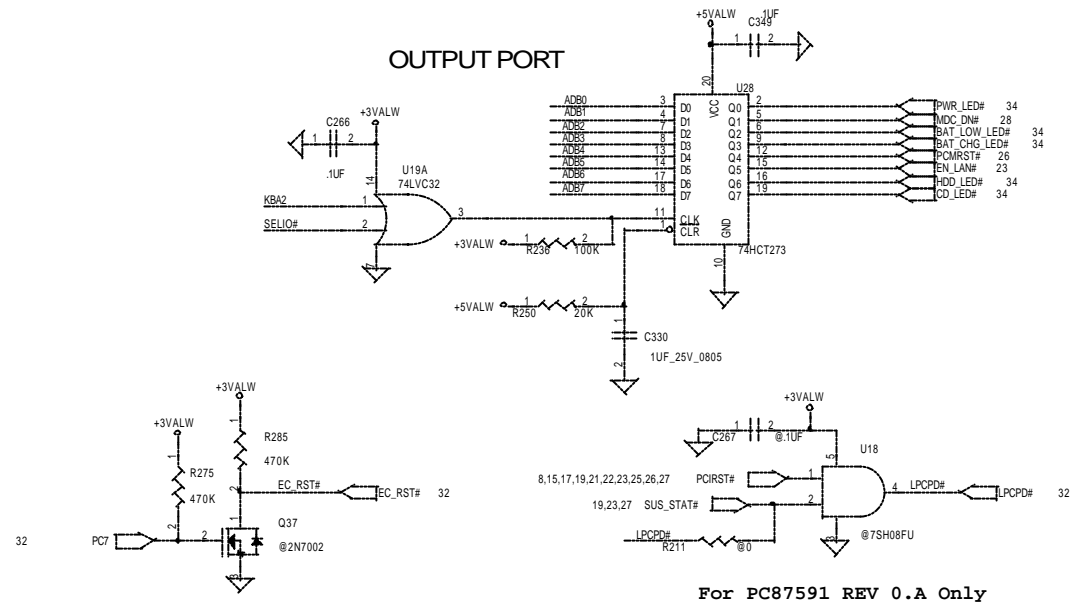
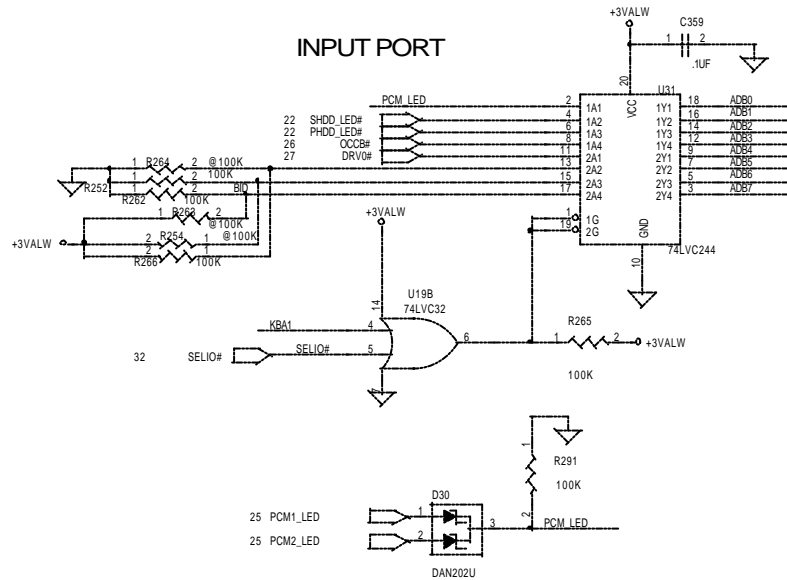
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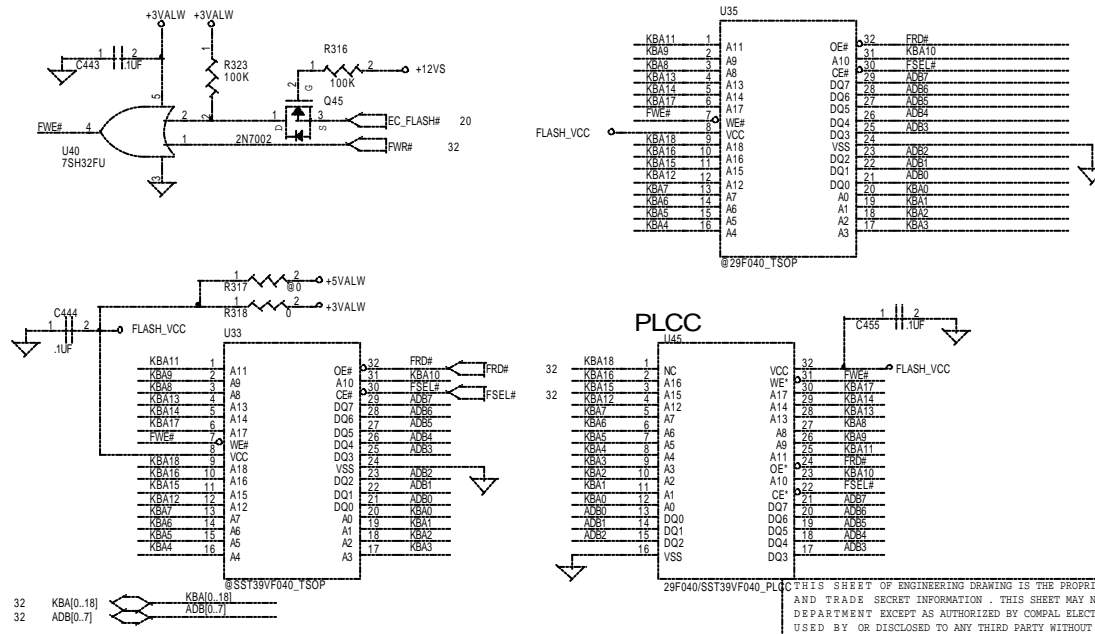


## EXT I/O PORT

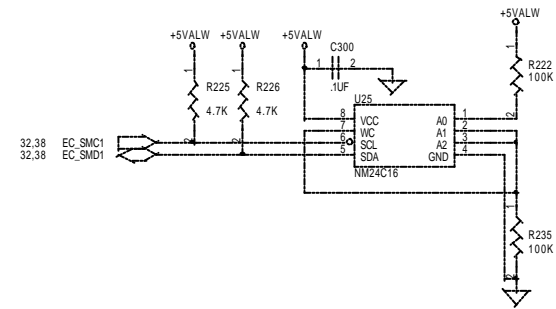


For PC87591 REV 0.A Only

## SYSTEM BIOS



## SMBus EEPROM



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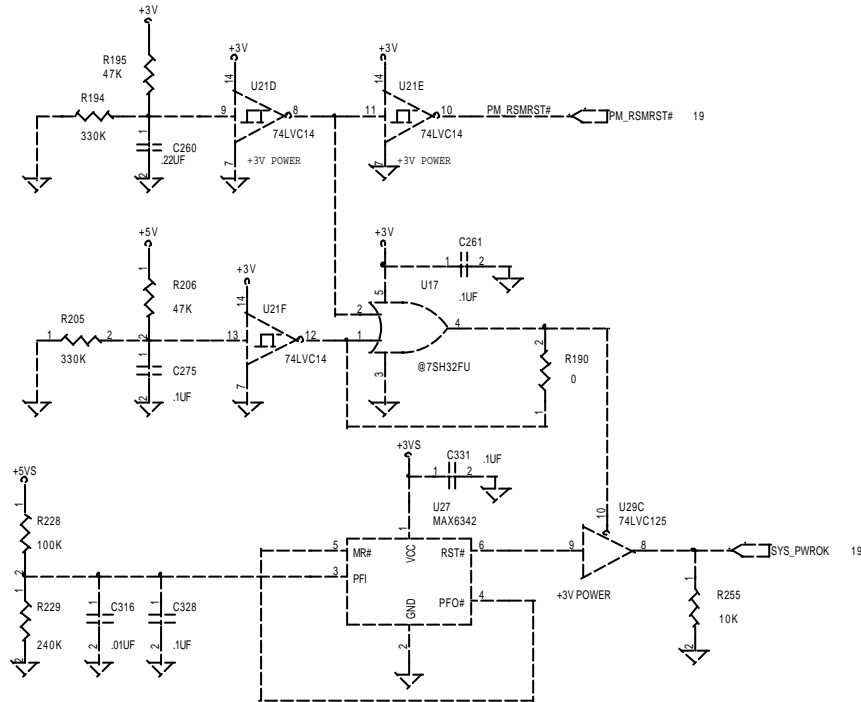
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Date: 星期四, 八月 22, 2002

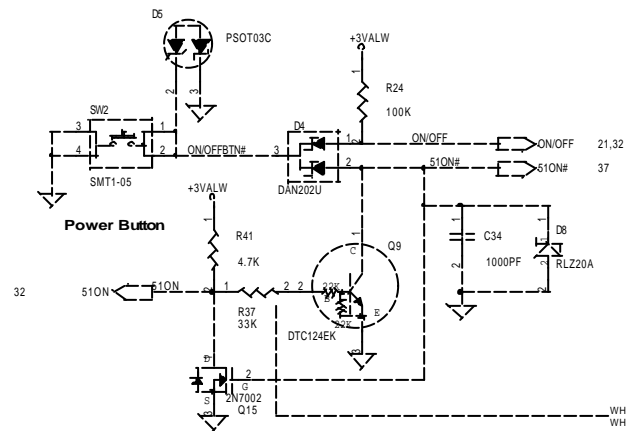
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## South Bridge Power Good Circuit



## Switch for Power Button

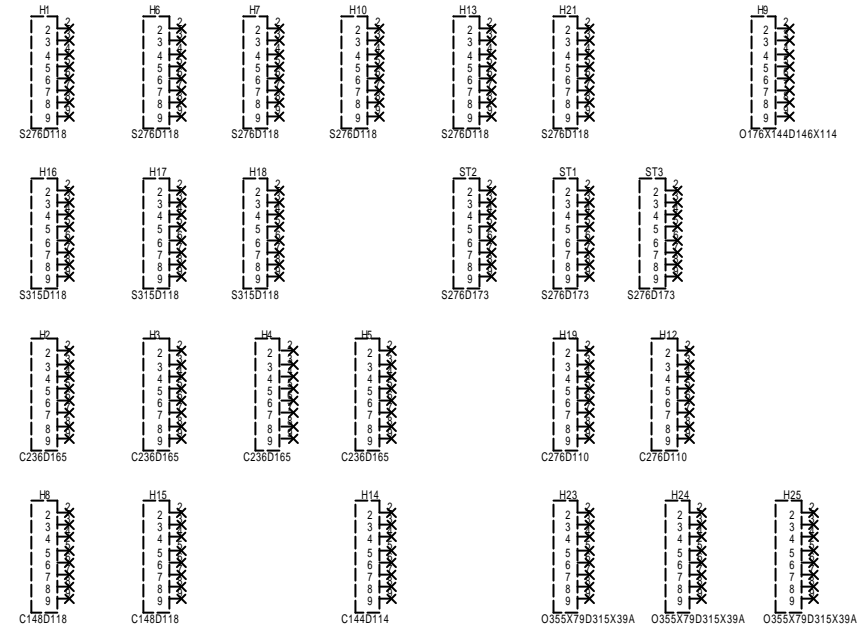


WHEN R=0 Vbe=1.3V  
WHEN R=33K Vbe=0.8V

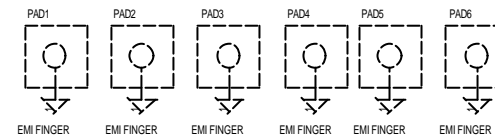
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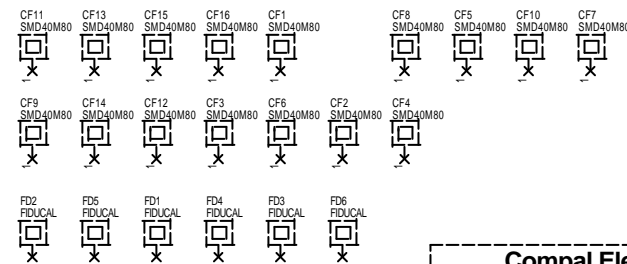
## Screw Hole



## EMI Finger



## Fiducial Mark

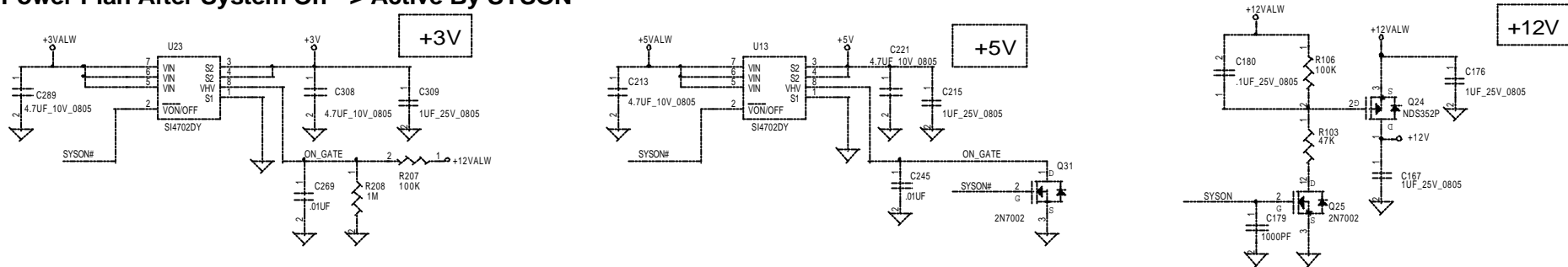


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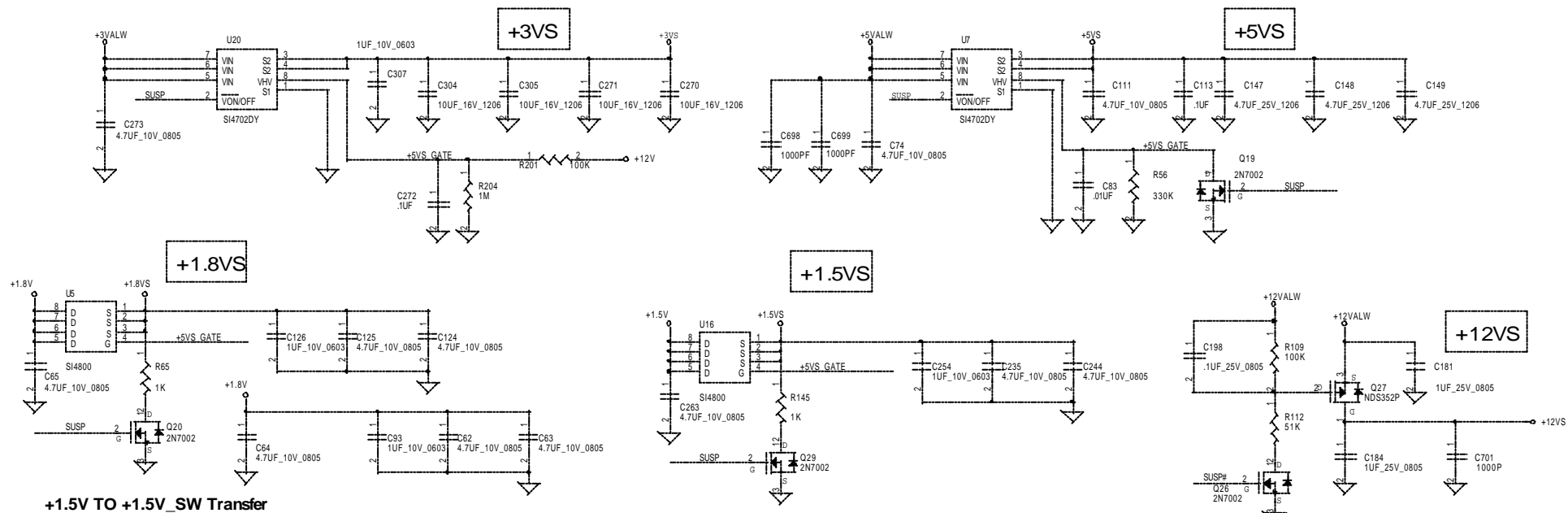
SCHEMATIC, M/B LA-1421

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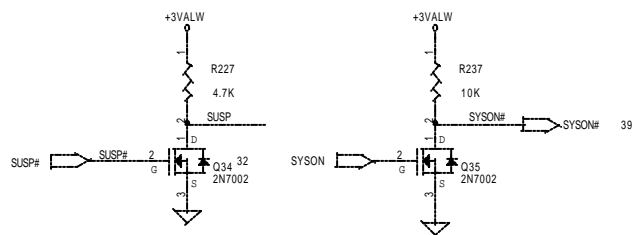
## Power Plan After System On --> Active By SYSON



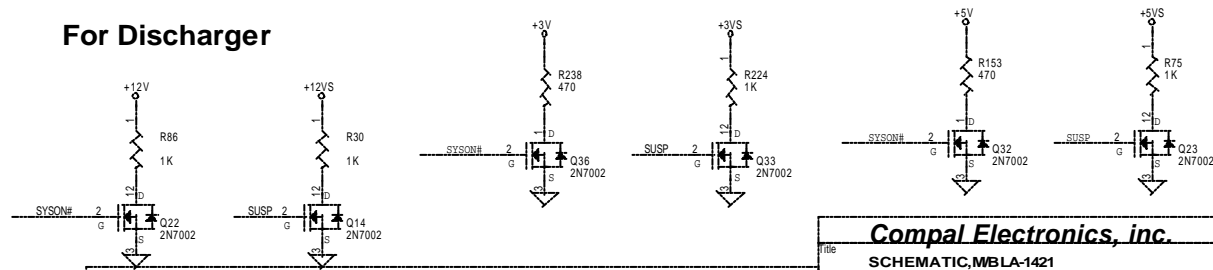
## Power Off During System Suspend(S3) --> Active By SUSP



## Signal Inverter



## For Discharger

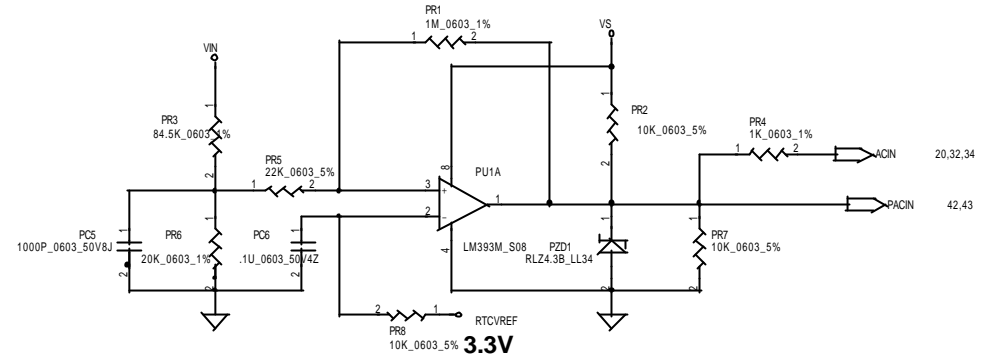
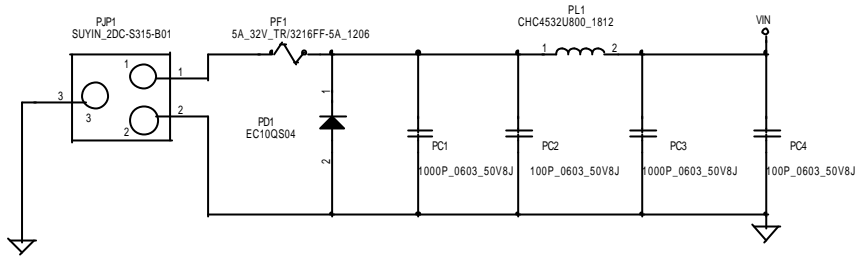


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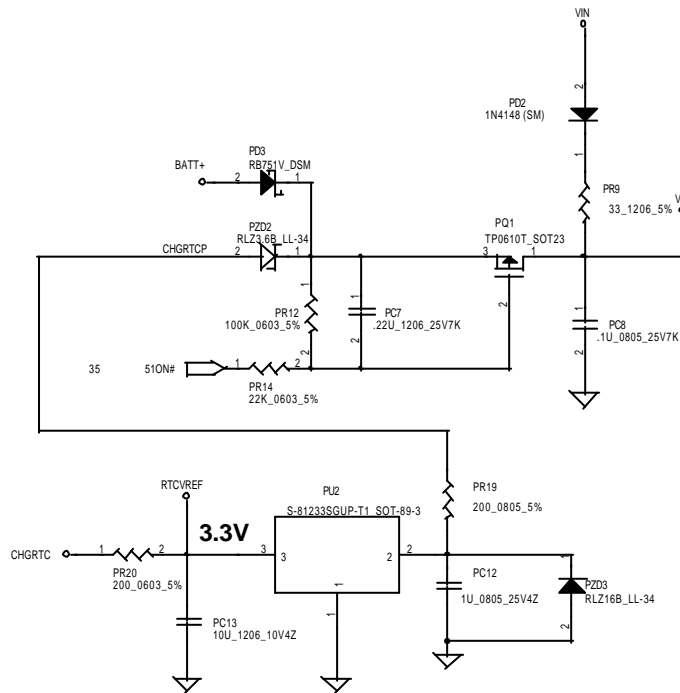
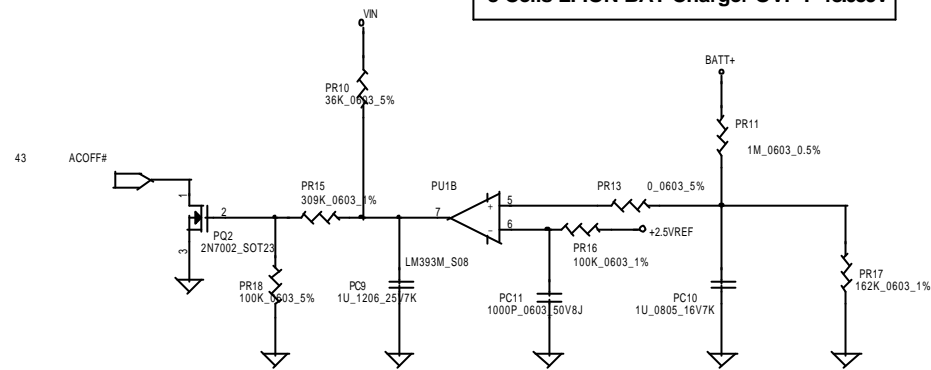
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# Vin Detector

High 18.764 17.901 17.063  
Low 17.745 16.903 16.038



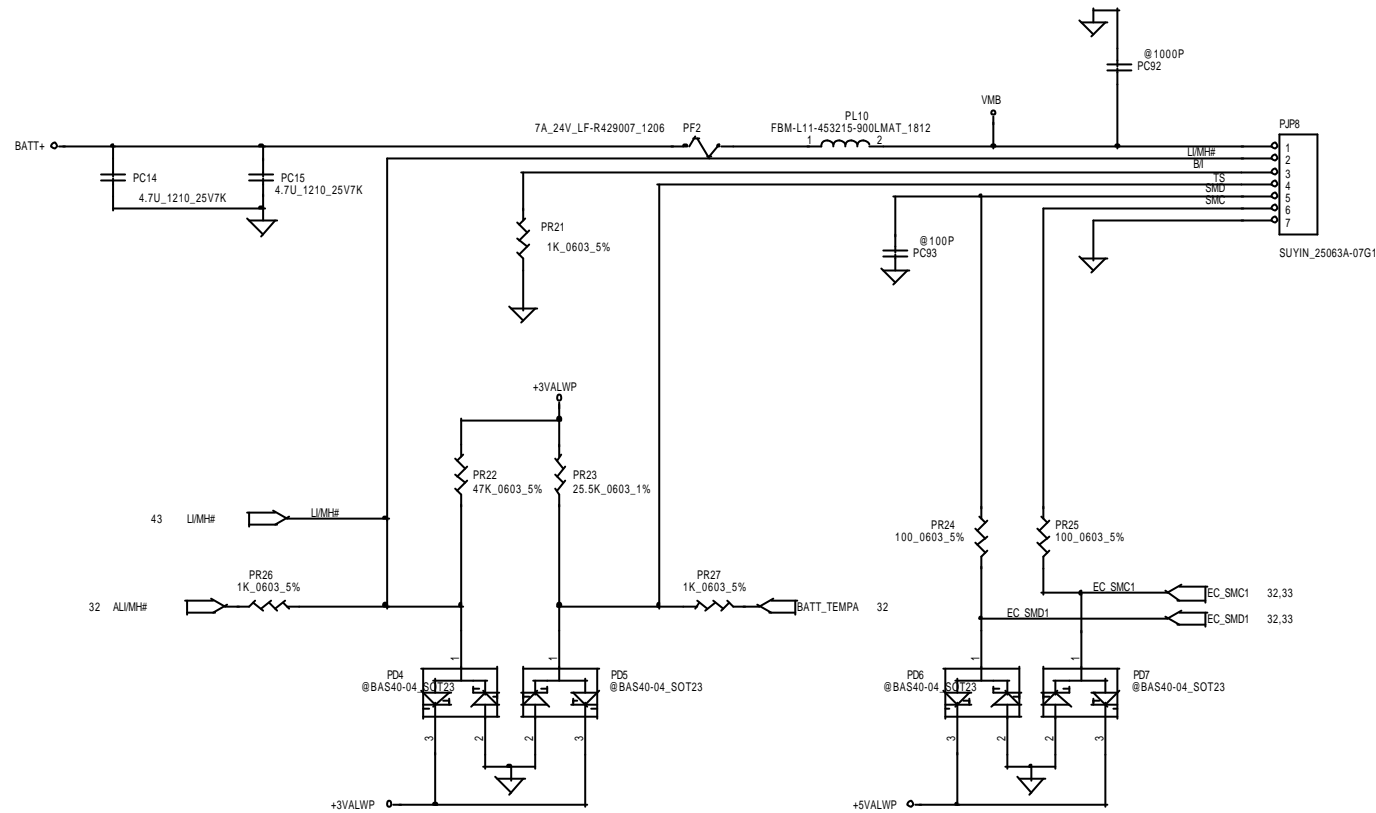
## 8 Cells LI-ION BAT Charger OVP : 18.059V



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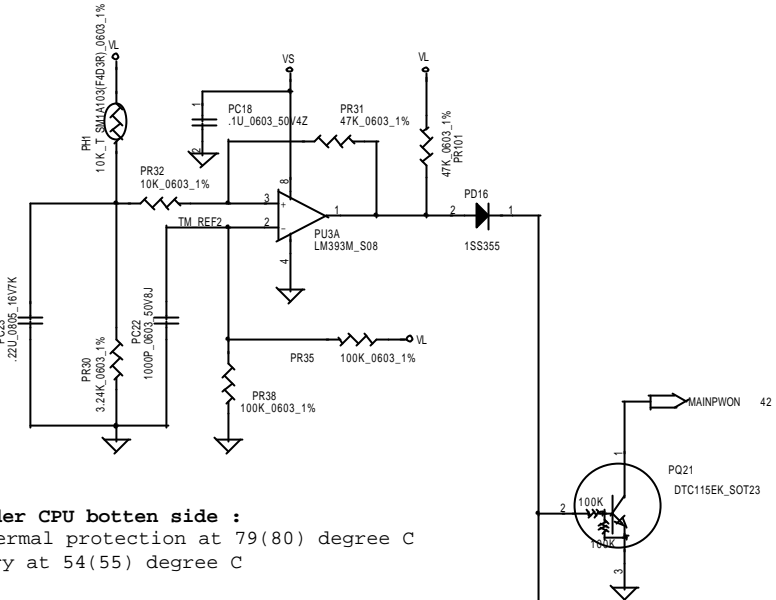
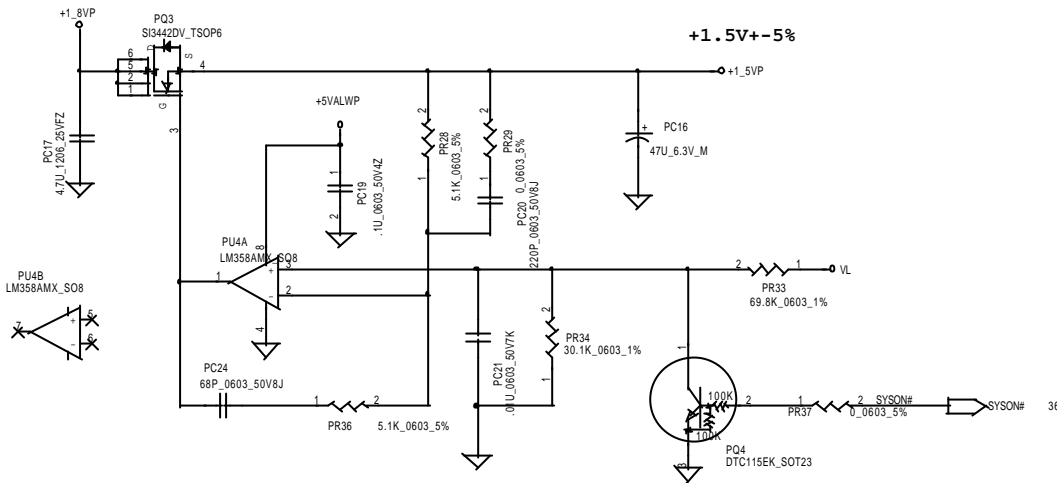
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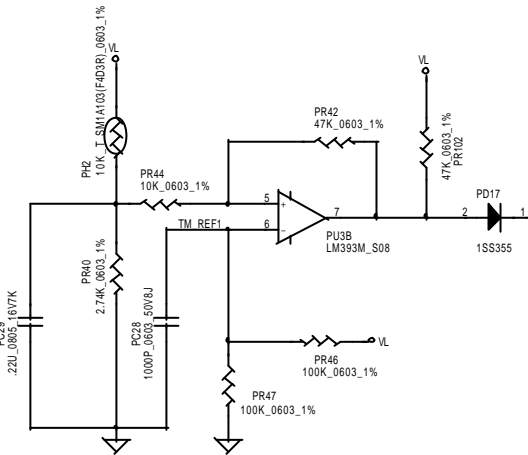
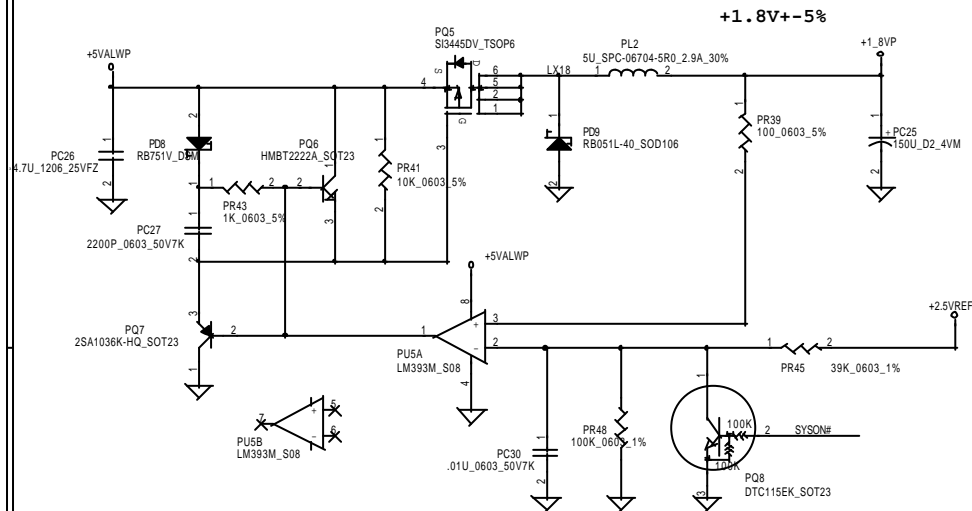
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**PH2 near main Battery CONN :**  
 BAT. thermal protection at 73(74) degree C  
 Recovery at 50(51) degree C



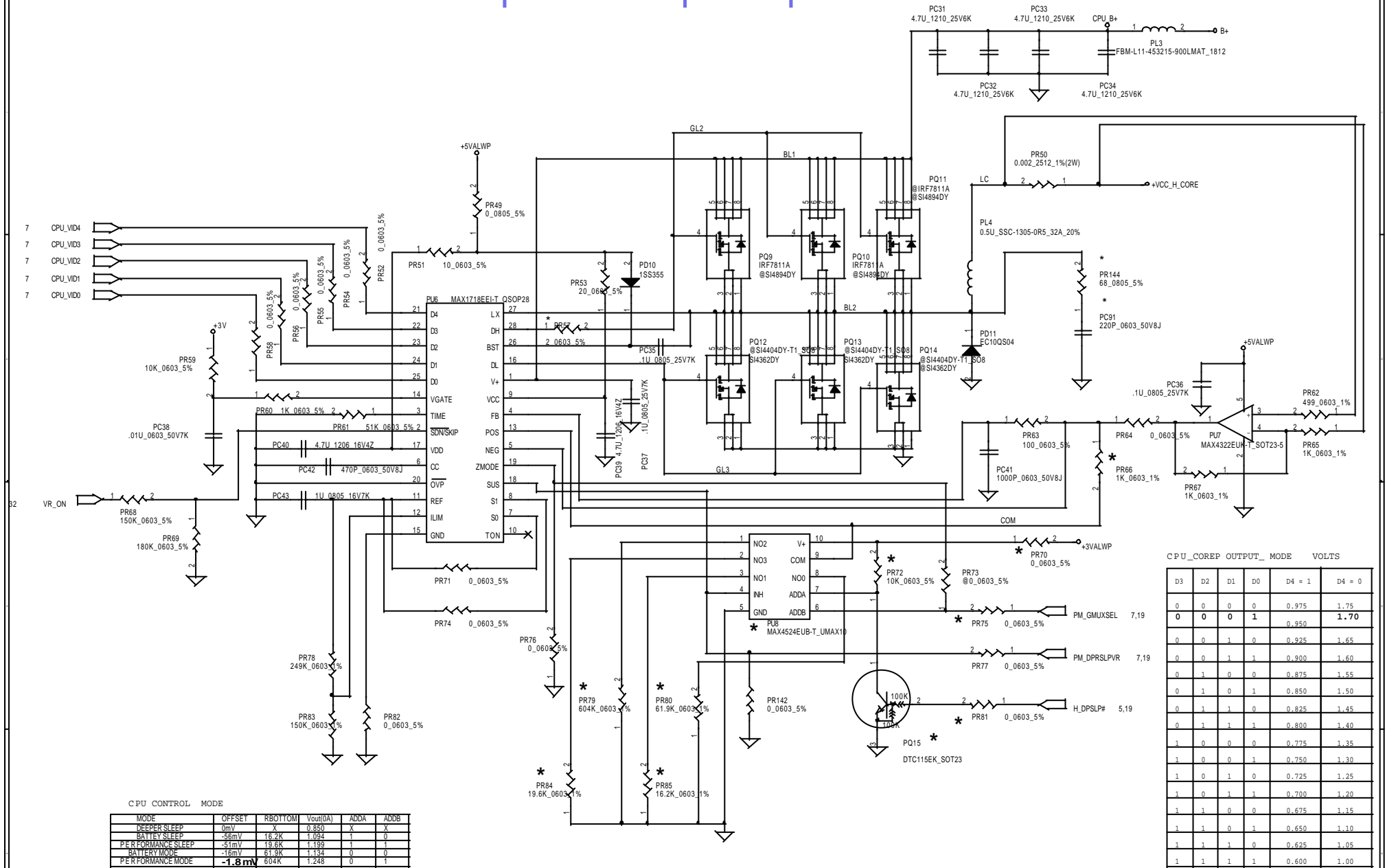
**PH1 under CPU bottom side :**  
 CPU thermal protection at 79(80) degree C  
 Recovery at 54(55) degree C



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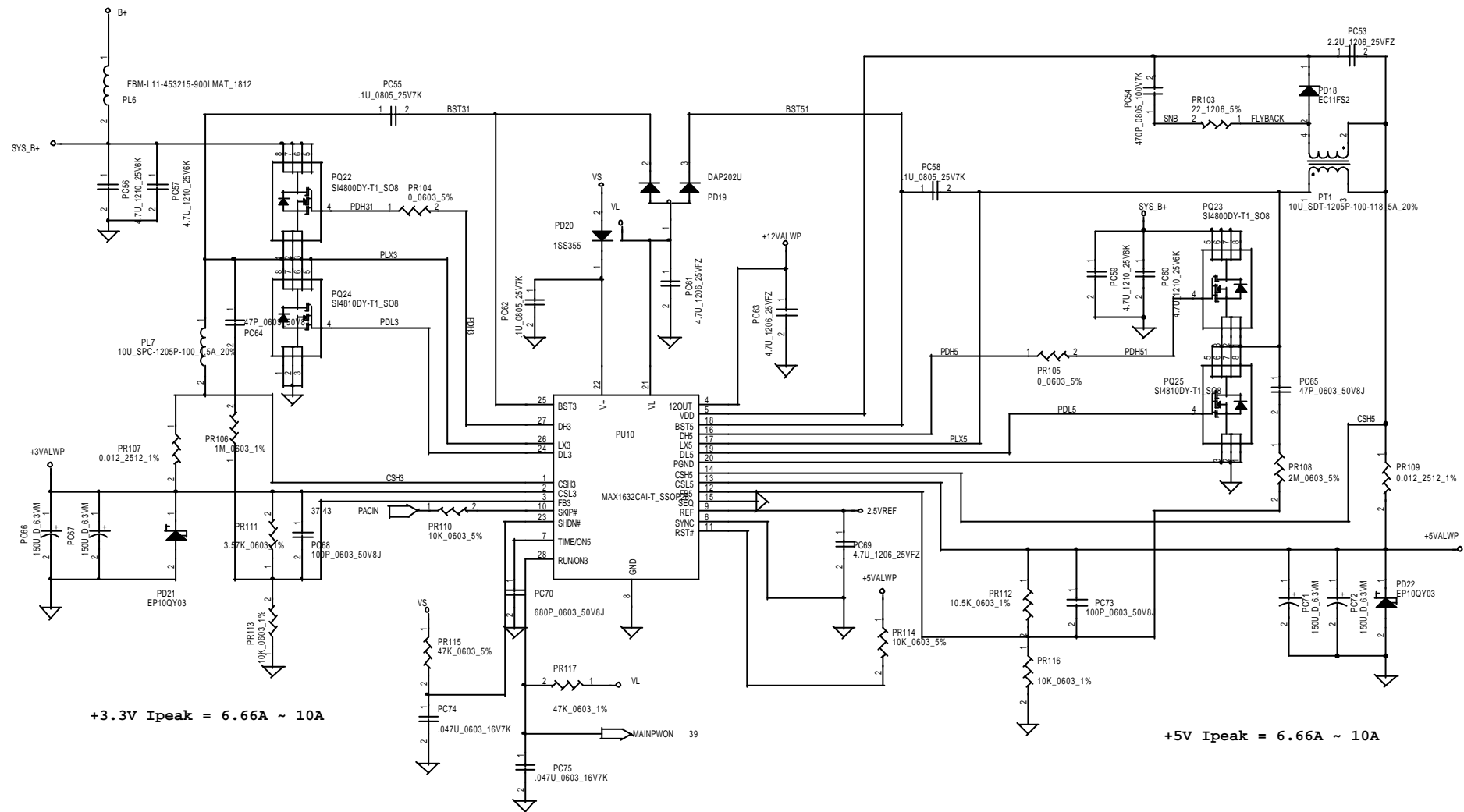
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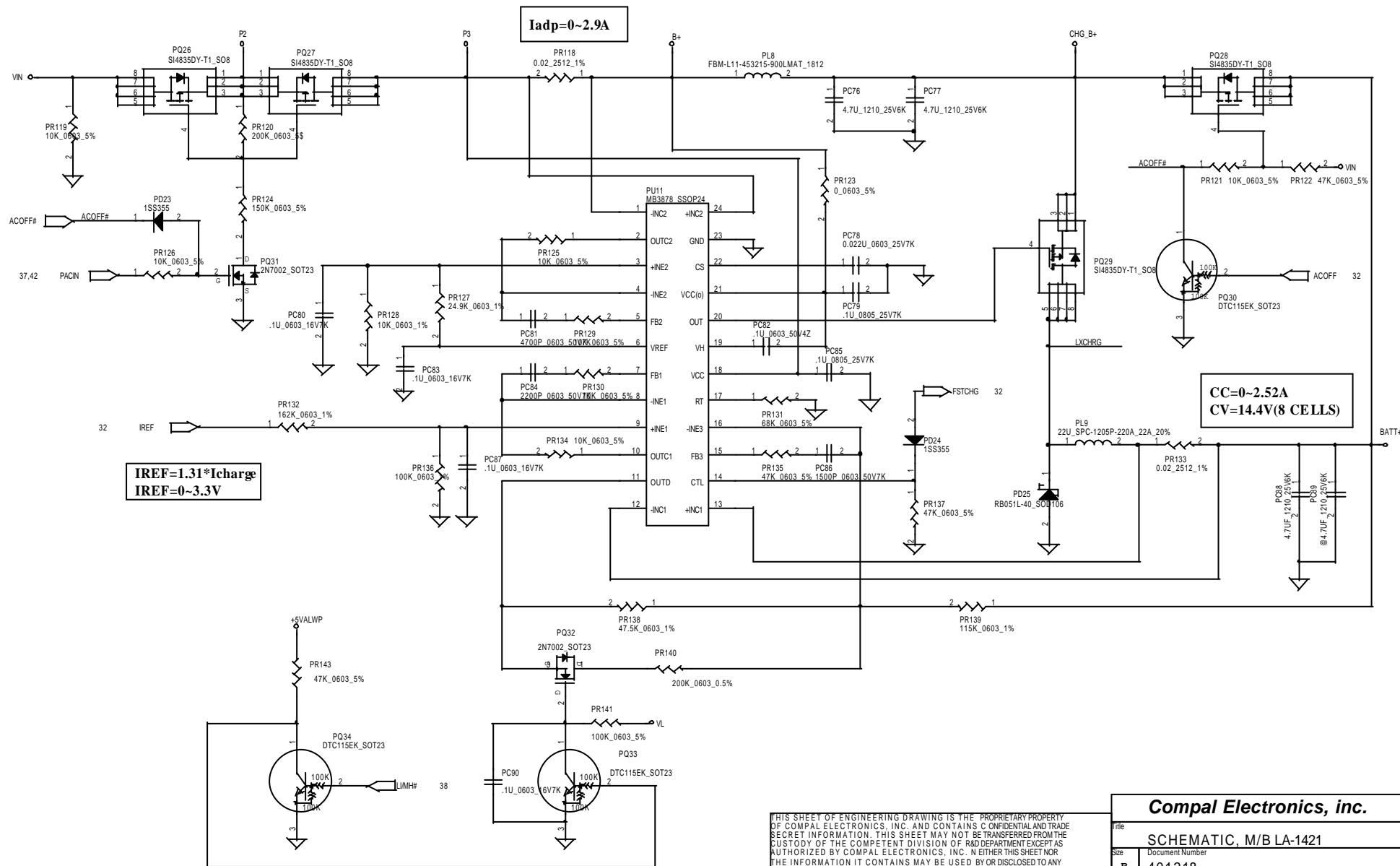
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Change L35 and L8 size from 0603 to 0805

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PIR

REV 0.2

Date	Page	Description
3/29	25	Del R305, R309, D33, D34
	27	Del R64, D9
	33	Q37 added @
	38	Batt SMBus change to EC_SMC1, EC_SMD1
	40	Added PR141
43	Added PR43, PQ34 and PQ32 change to 2N7002	
4/1	24	Del C1, C2, Added C688, C689
4/2	6	C568 added @, C532, C122 change to 220uf Del CF17, CF18, CF19

REV 0.3

Date	Page	Description
4/25	10	C629 C640 change footprint from CAP-A_B_1206_1210_TAN to CAP-D_E_TAN
	28	RP5 RP6 change footprint from 8P4R-0402-NEW to 8P4R
	27&33	Connect DRV0# between JP22 Pin4 and U31 Pin11
4/29	23	Delete R60 Let +3VLAN connect with +3V directly.
	16	Add C690 1000P on net INVT_PWM
	17	Add C691 10P and L47 on net DVOBC_C_LKINT#
4/30	28	Delete R17 R451 R9 R450, Change to L50 L51 L48 L49
	29	Delete L37 C466 L39 C465 L38 C464 Add C692 C693 C694
	34	Add CP11 C695 C696 C697
	16	Change L35 L8 size from 0603 to 0805
5/5	36	Add C698 C699
	33	Change Board ID from 000 to 001
	28	Change RP5 RP6 Size from 0804 to 1206
16	Change R339 and R13 from 100hm to 00hm	

REV 1.0

Date	Page	Description
5/30		Update revision code from 0.3 to 1.0 directly

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File

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Size

Custom

Document Number

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