

**32N101 LA-1012 Rev0.1 Schematics Doc.
uFCBGA/uFCPGA Coppermine-T or Tualatin CPU
with Almador-M chipset
(Defeature)**

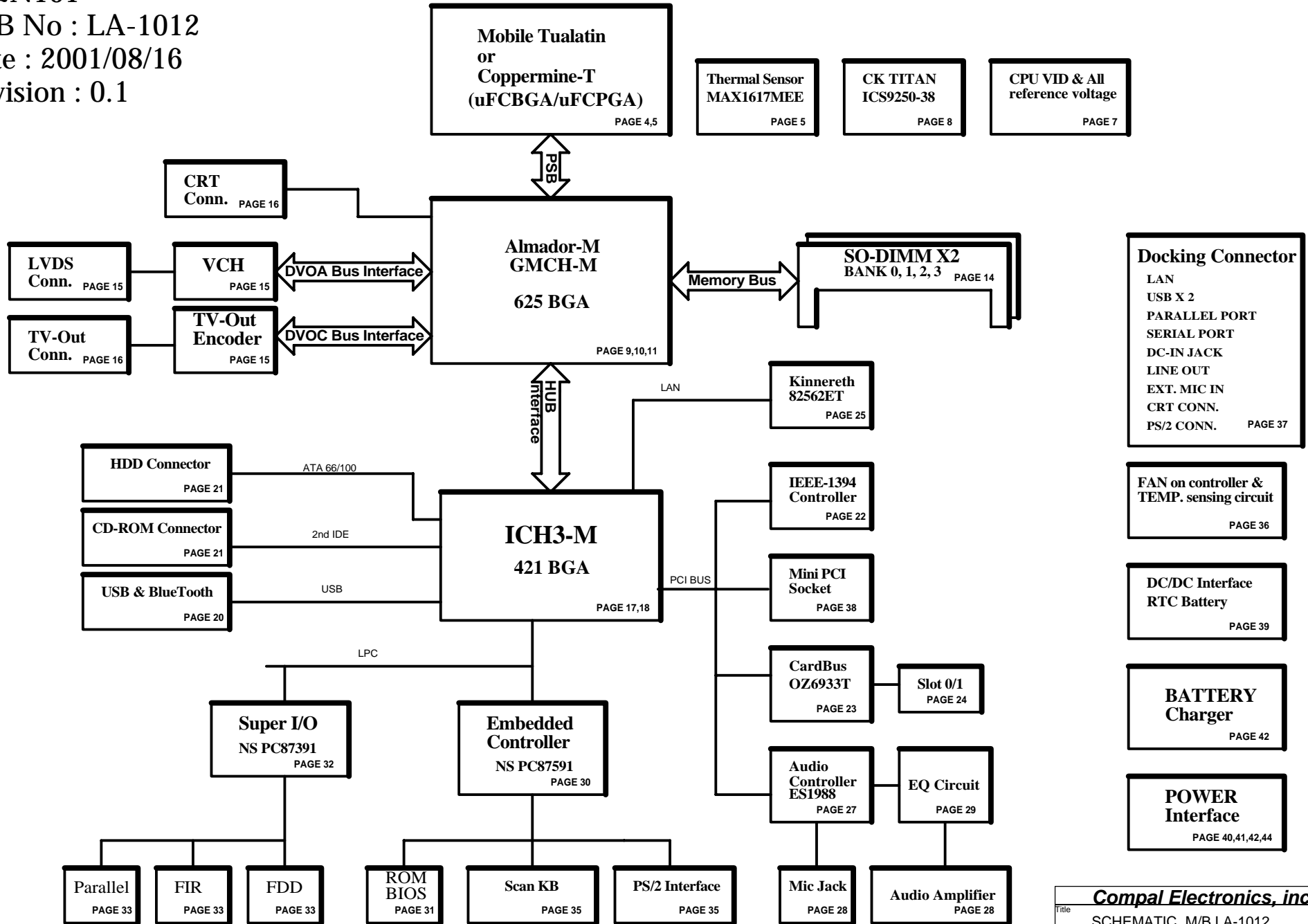
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Model Name :
 N32N101
 PCB No : LA-1012
 Date : 2001/08/16
 Revision : 0.1

BLOCK DIAGRAM

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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
+VCC_H_CORE	Core voltage for CPU	ON	OFF	OFF
+VTT	1.2V switched power rail for CPU AGTL Bus	ON	OFF	OFF
+1.5V_ALW	1.5V always on power rail	ON	ON	ON*
+1.5V_SW	AGP 4X	ON	OFF	OFF
+1.8V_ALW	1.8V always on power rail	ON	ON	ON*
+1.8V_SW	1.8V switched power rail	ON	OFF	OFF
+2.5V	2.5V power rail	ON	ON	OFF
+2.5V_MRIMM	2.5V switched power rail	ON	OFF	OFF
+3V_ALW	3.3V always on power rail	ON	ON	ON*
+3V	3.3V power rail	ON	ON	OFF
+3V_SW	3.3V switched power rail	ON	OFF	OFF
+5V_ALW	5V always on power rail	ON	ON	ON*
+5V	5V power rail	ON	ON	OFF
+5V_SW	5V switched power rail	ON	OFF	OFF
+12V_ALW	12V always on power rail	ON	ON	ON*
+12V_SW	12V switched power rail	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
LAN	(AD24 internal)		
CardBus	AD20	2	PIRQA/PIRQB
Audio Controller	AD19	3	PIRQD
Mini-PCI	AD18	1	PIRQC
Mini-PCI(LAN)	AD22	4	PIRQD
IEEE-1394 Controller	AD16	0	PIRQA

EC SM Bus1 address

Device	Address
Smart Battery	0001 011X b
EEPROM	1010 000X b

EC SM Bus2 address

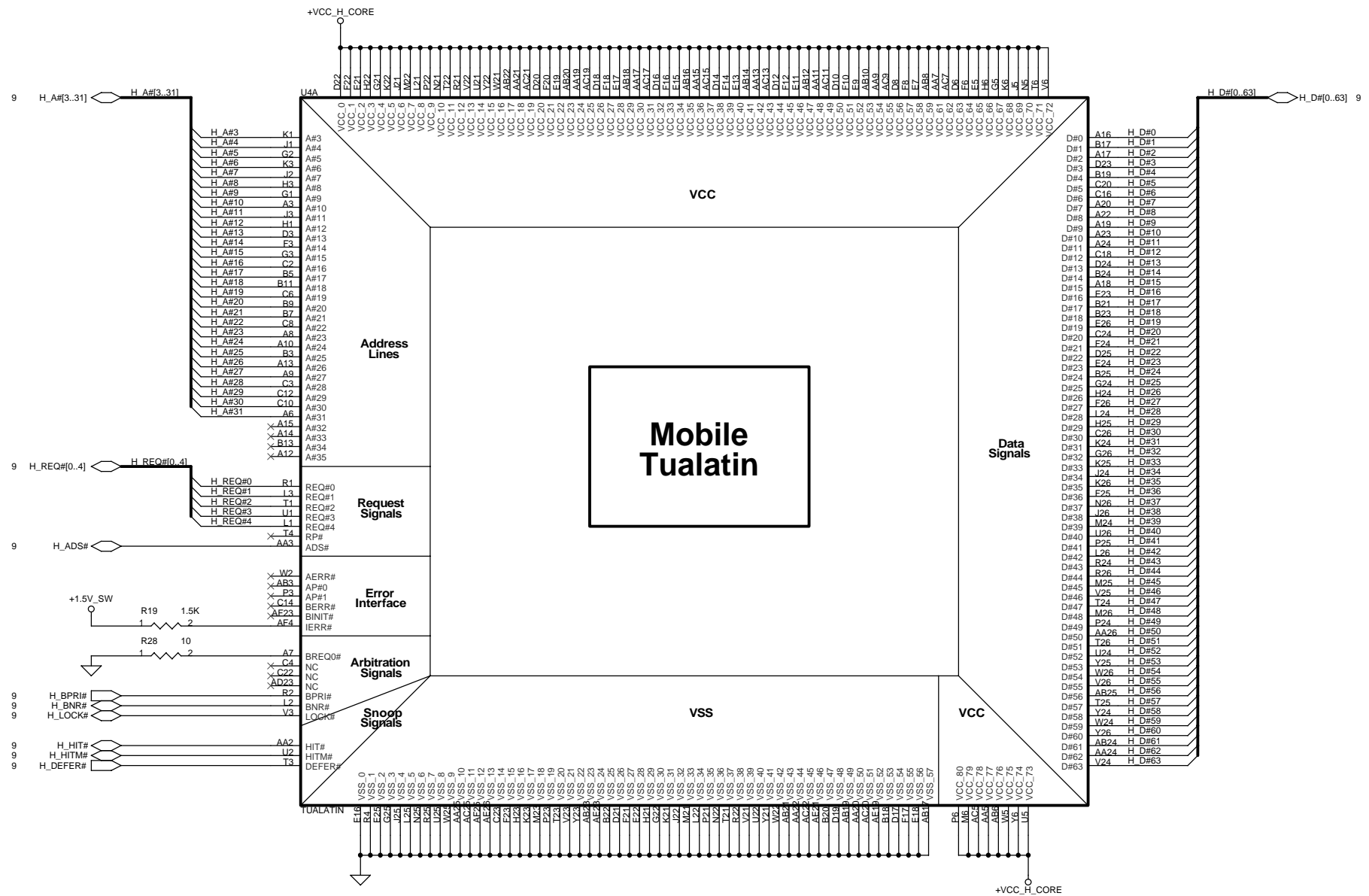
Device	Address
MAX1617MEE	1001 110X b
OZ163	0011 0100 b
Docking	0011 011X b
DOT Board	XXXX XXXXb

ICH3 SM Bus address

Device	Address
SODIMM	1010 000X b
Clock Gen.	1101 001X b

P.S:Default Resistor & Capacitor's package are 0402.
Default 8P4R package is 0402.

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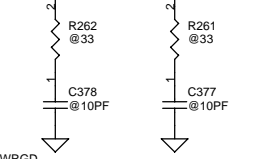
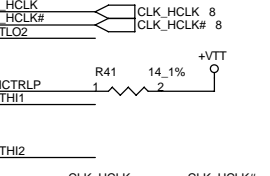
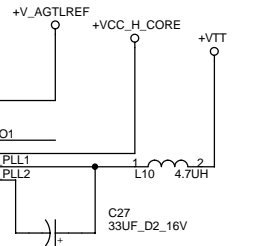
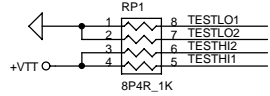
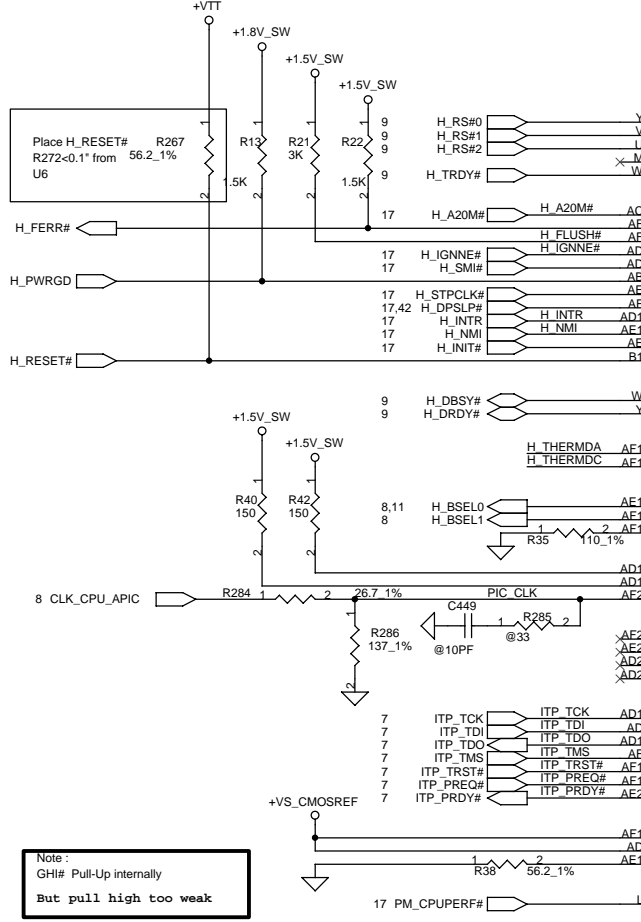
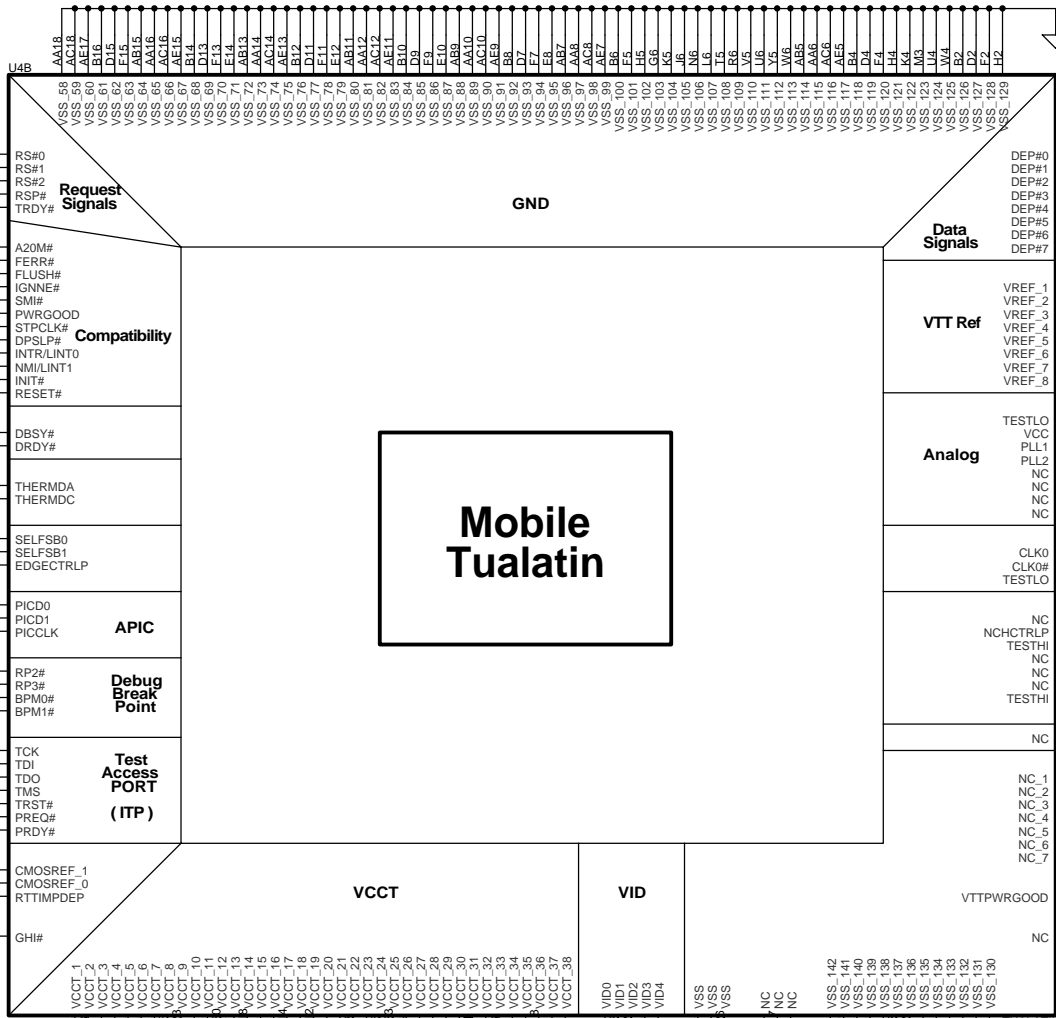
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Mobile Tualatin

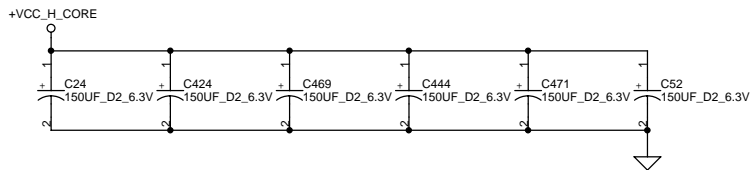
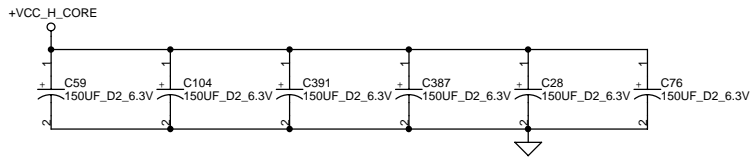
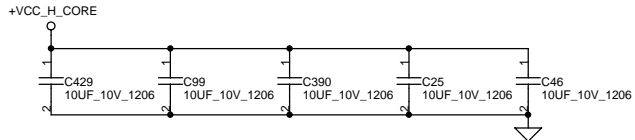
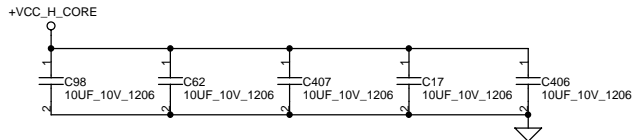
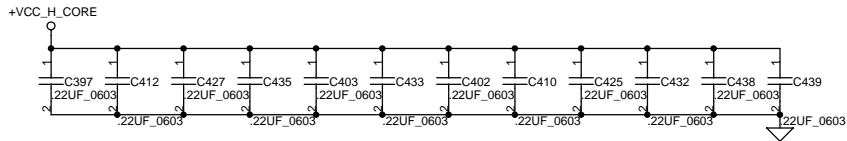
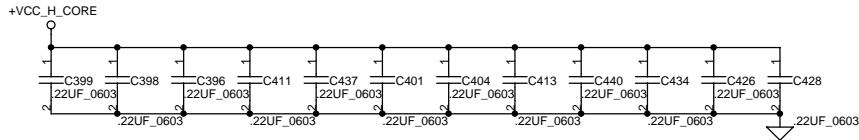


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From 87591

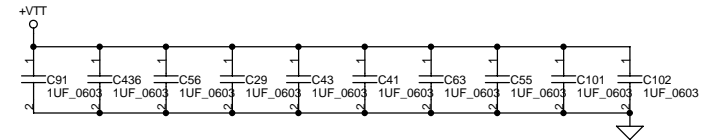
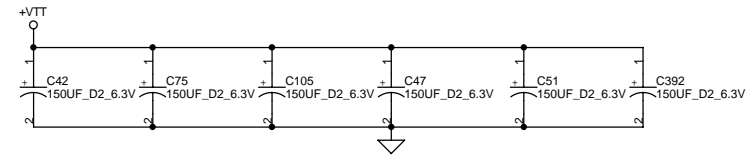
Layout note :

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.



Tualatin

D4	D3	D2	D1	D0	CPU_Core(V)	QS(MP)
0	1	0	0	1	1.40V	
0	1	1	0	0	1.15V	

Coppermine-T

D4	D3	D2	D1	D0	CPU_Core(V)	ES(before MP)
0	0	0	0	1	1.70V	
0	1	0	0	0	1.35V	

D4	D3	D2	D1	D0	CPU_Core(V)	QS(MP)
0	0	0	0	1	1.70V	
0	1	0	0	0	1.35V	

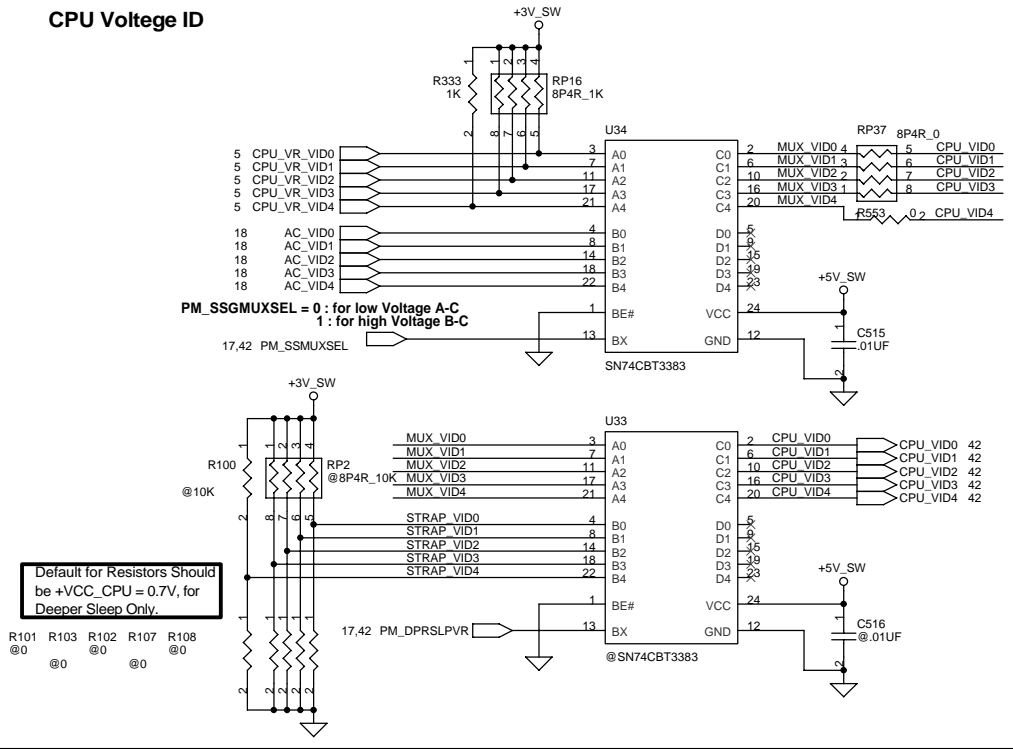
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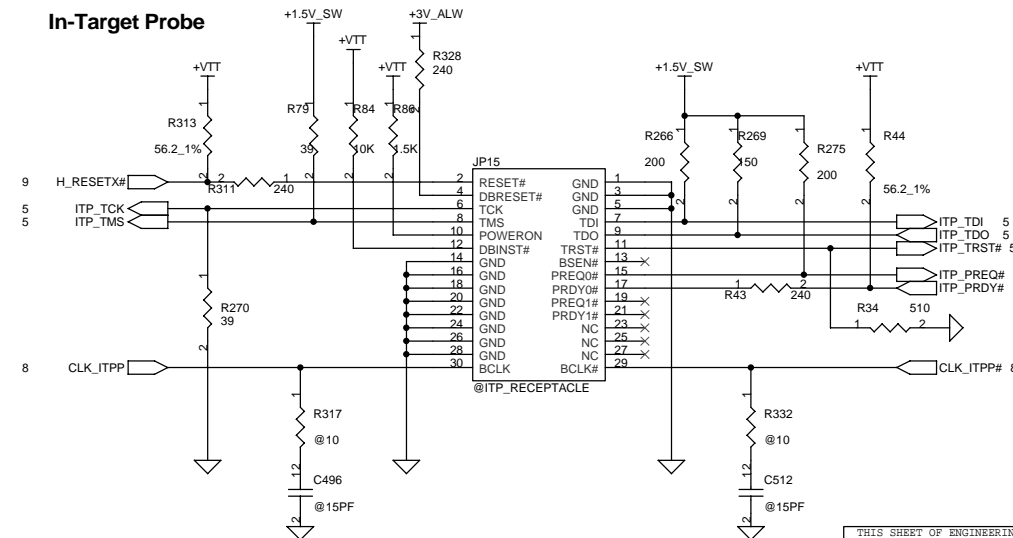
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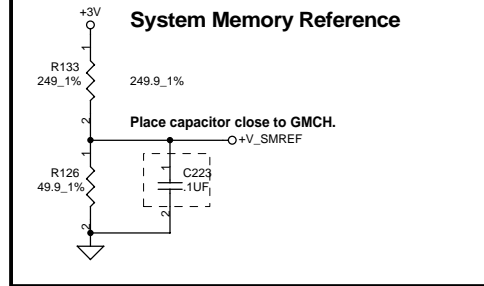
CPU Voltage ID



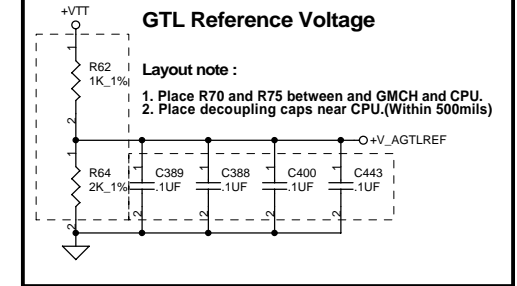
In-Target Probe



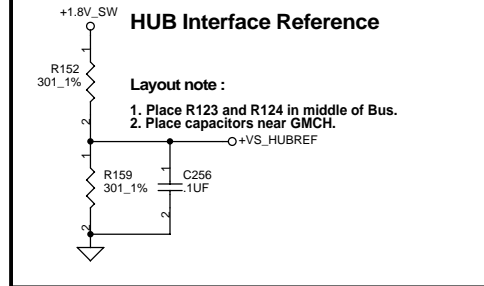
System Memory Reference



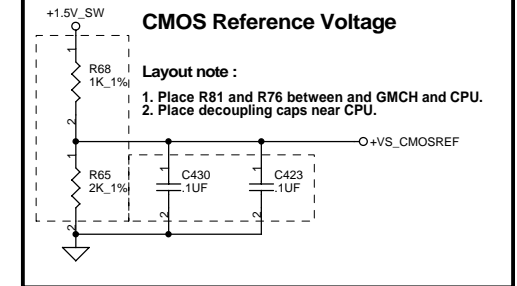
GTL Reference Voltage



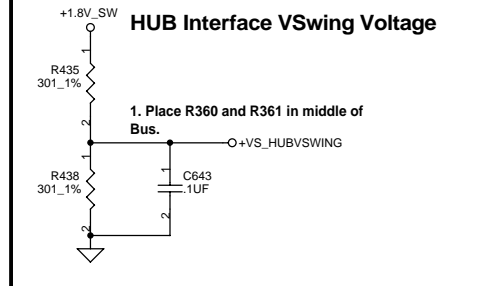
HUB Interface Reference



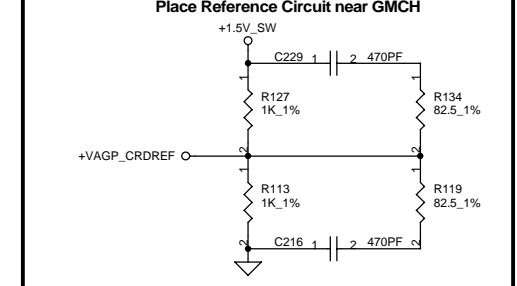
CMOS Reference Voltage



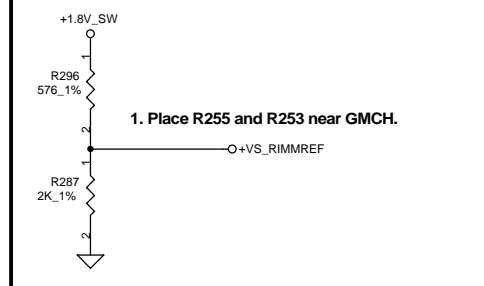
HUB Interface VSwing Voltage



Place Reference Circuit near GMCH



System Memory Reference

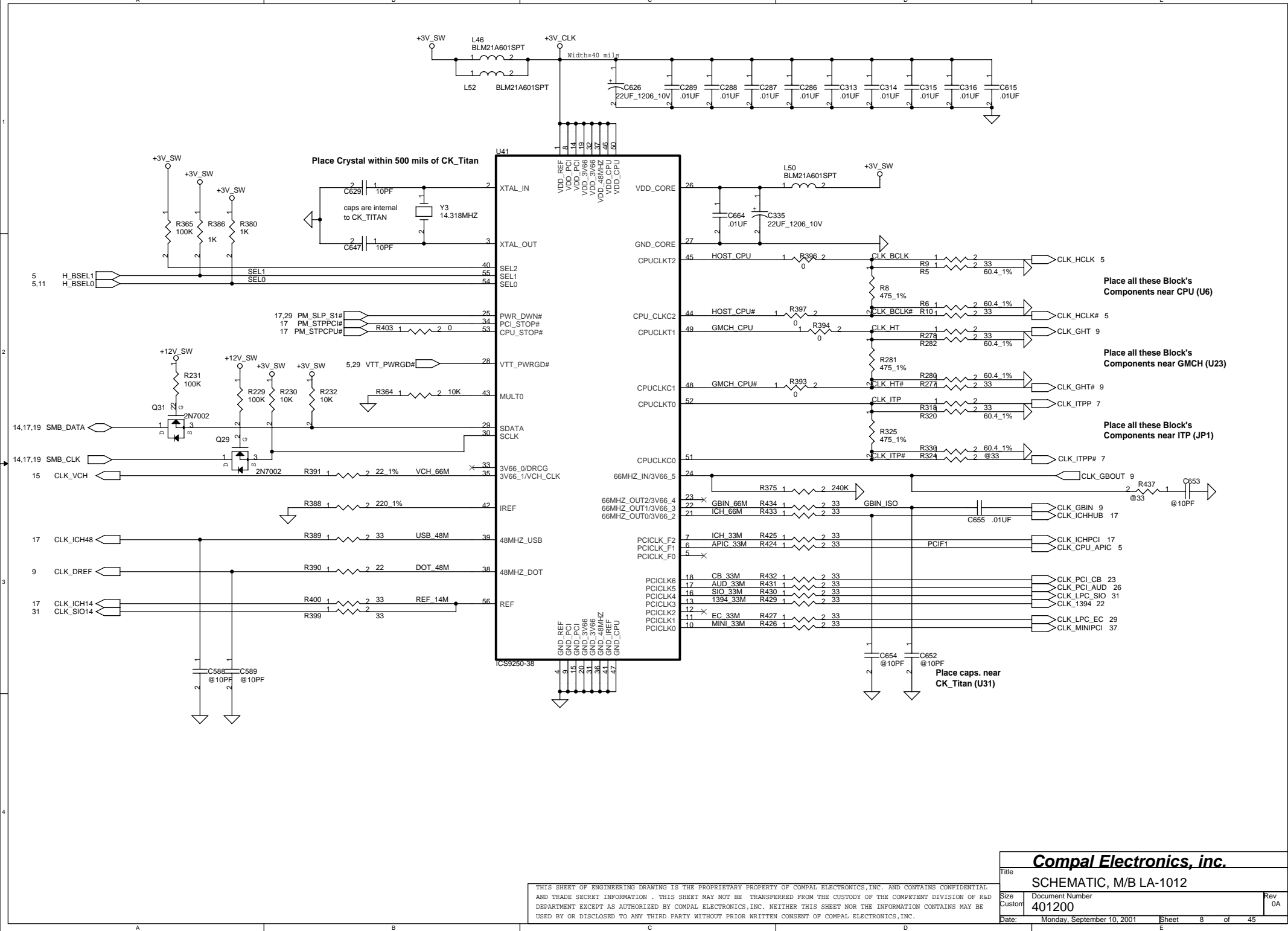


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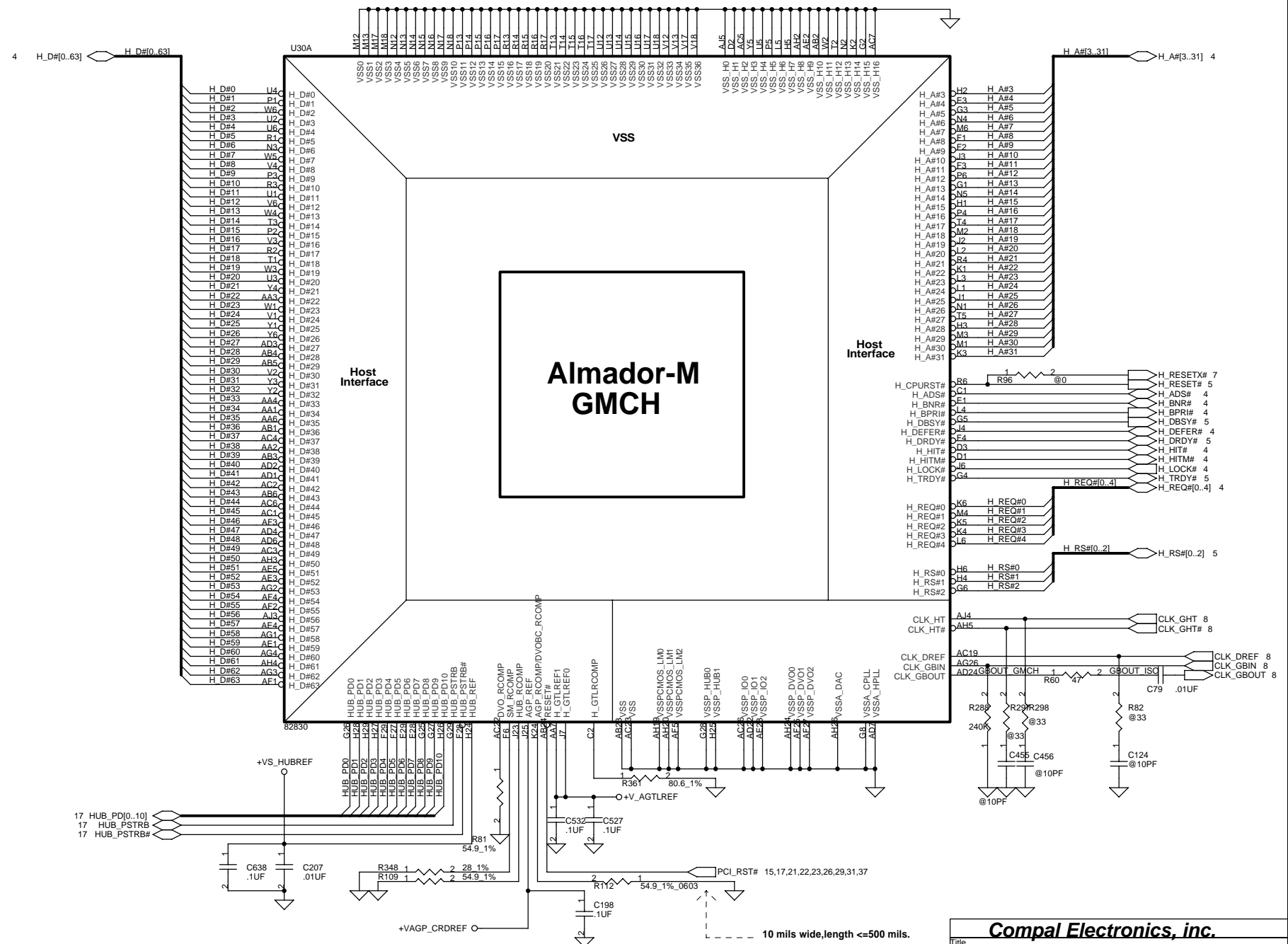


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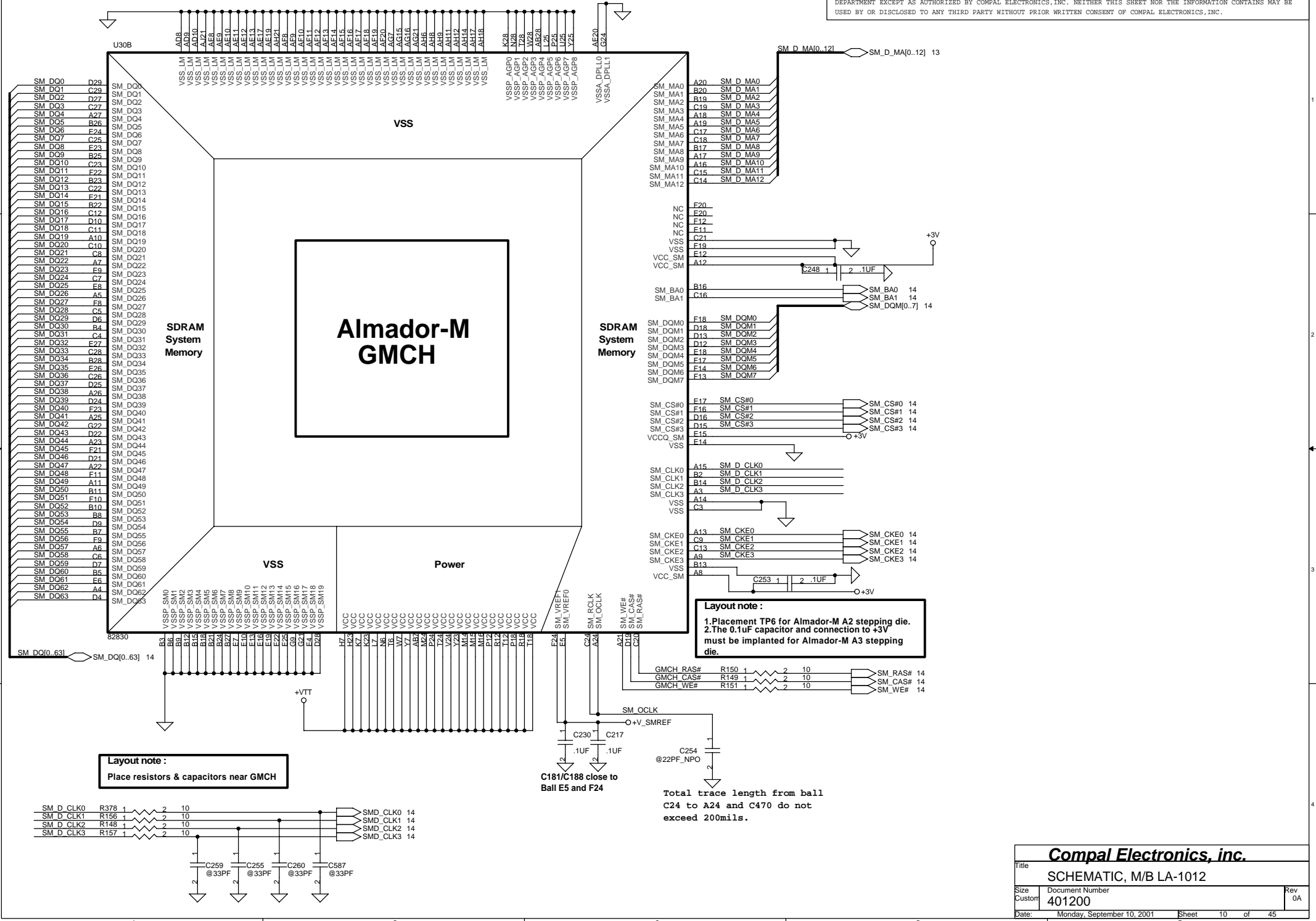
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Almador-M GMCH

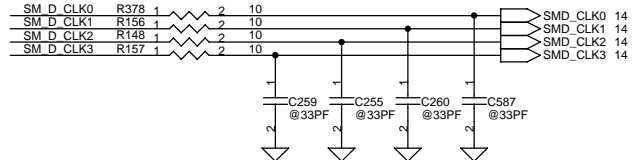
**SDRAM
System
Memory**

**SDRAM
System
Memory**

VSS **Power**

Layout note :
Place resistors & capacitors near GMCH

Layout note :
1. Placement TP6 for Almador-M A2 stepping die.
2. The 0.1uF capacitor and connection to +3V must be implanted for Almador-M A3 stepping die.



C181/C188 close to Ball E5 and F24

Total trace length from ball
C24 to A24 and C470 do not exceed 200mils.

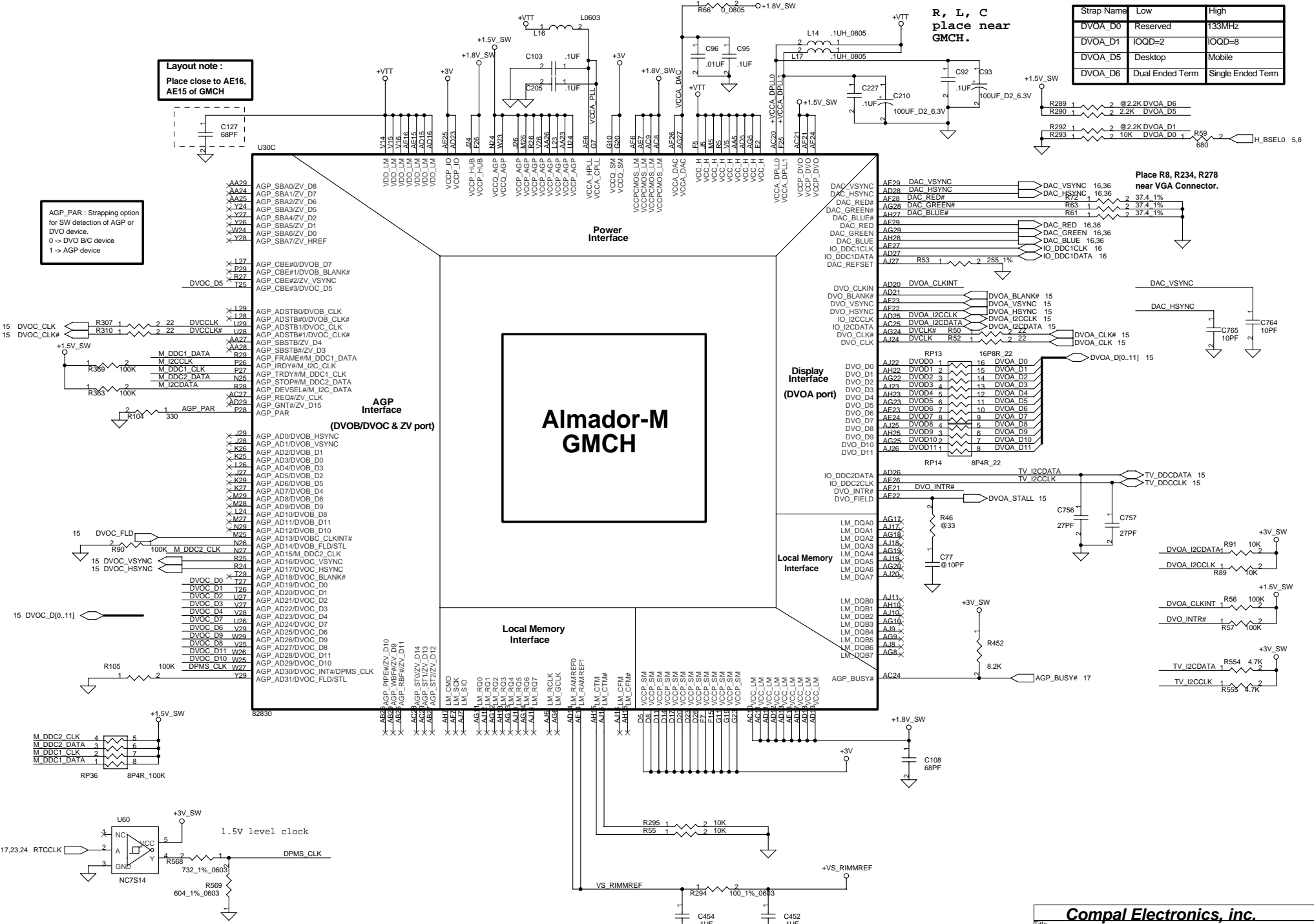
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Layout note:
Place close to AE16, AE15 of GMCH

Strap Name	Low	High
DVOA_D0	Reserved	133MHz
DVOA_D1	IOQD=2	IOQD=8
DVOA_D5	Desktop	Mobile
DVOA_D6	Dual Ended Term	Single Ended Term

AGP_PAR : Strapping option for SW detection of AGP or DVO device.
0 -> DVO B/C device
1 -> AGP device

Almador-M GMCH



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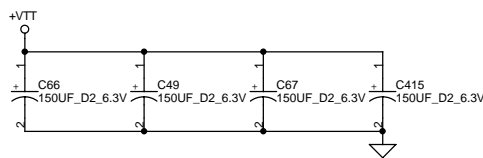
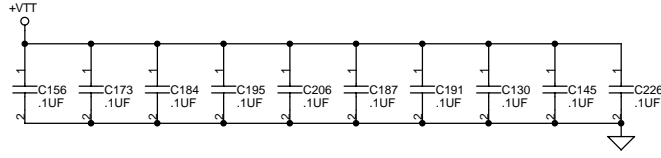
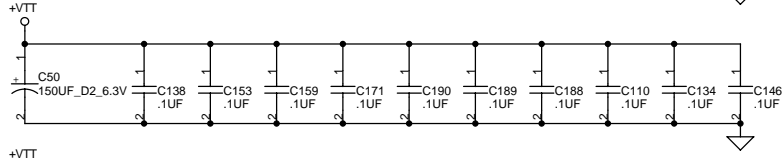
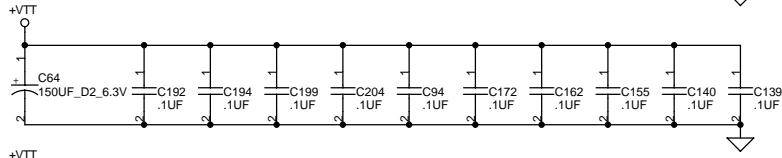
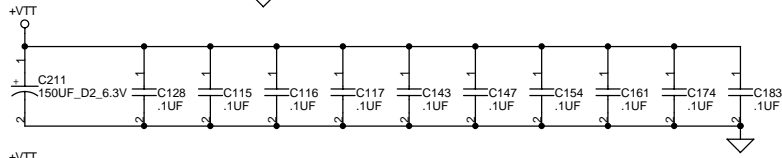
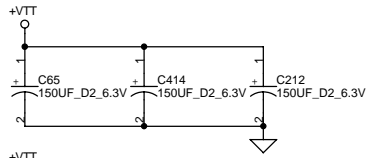
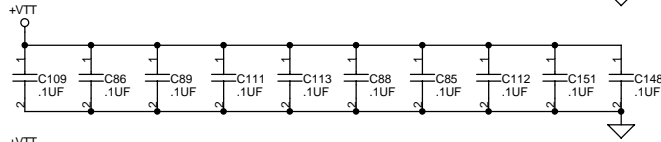
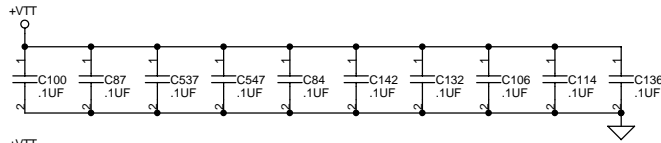
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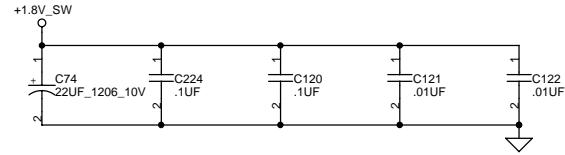
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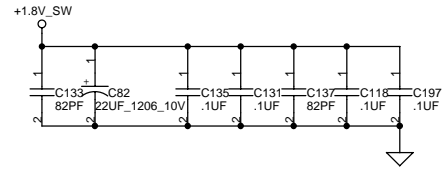
Layout note :
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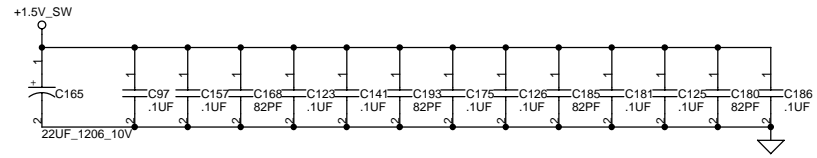
Layout note :
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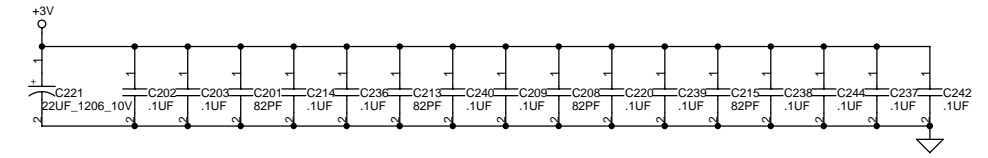
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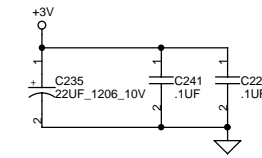
Layout note :
Distribute as close as possible
to GMCH AGP/DVO Quadrant .



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

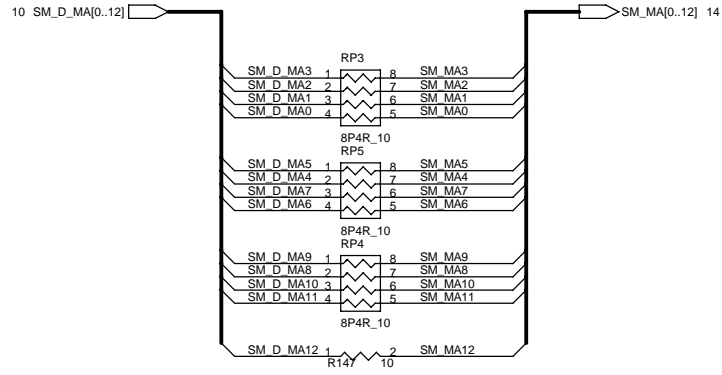


Layout note :
Distribute as close as possible
to IO Quadrant .

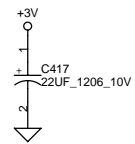
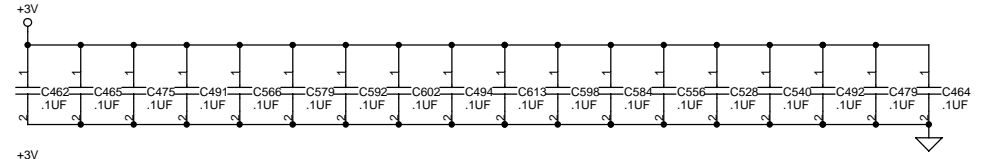


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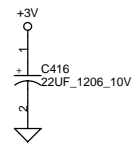
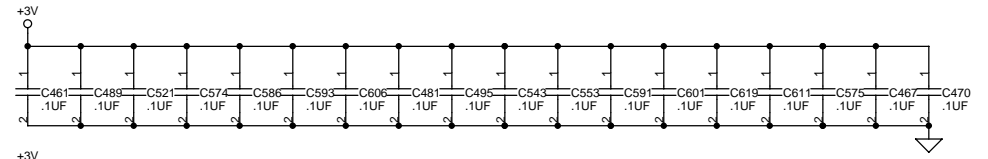
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Layout note :
 One .1uF cap per power pin .
 Place each cap close to SODIMM(DIMM 0) pin .



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



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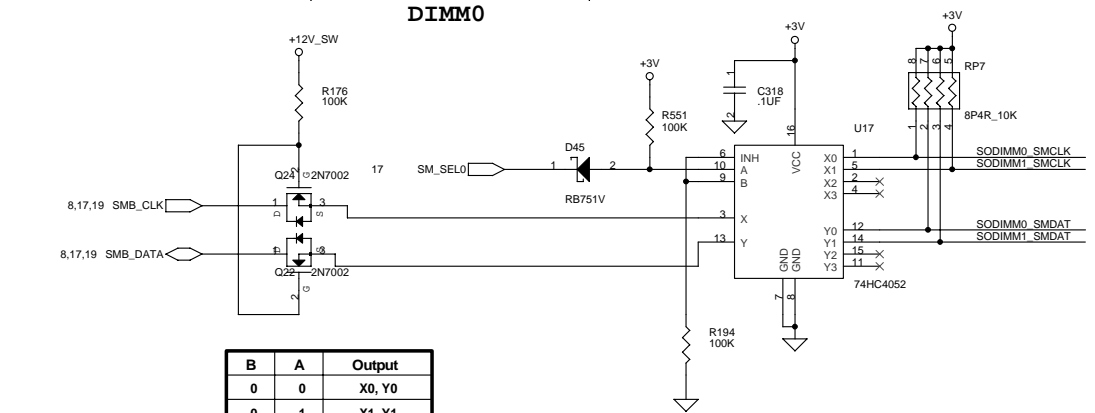
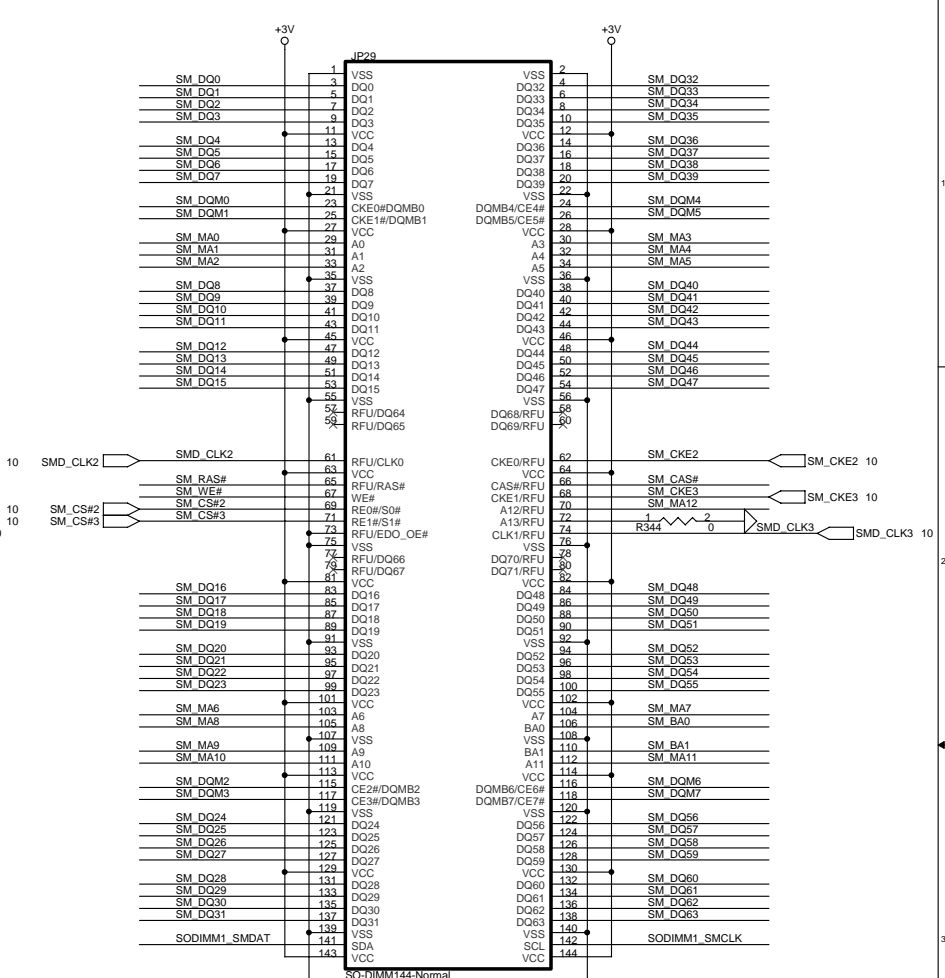
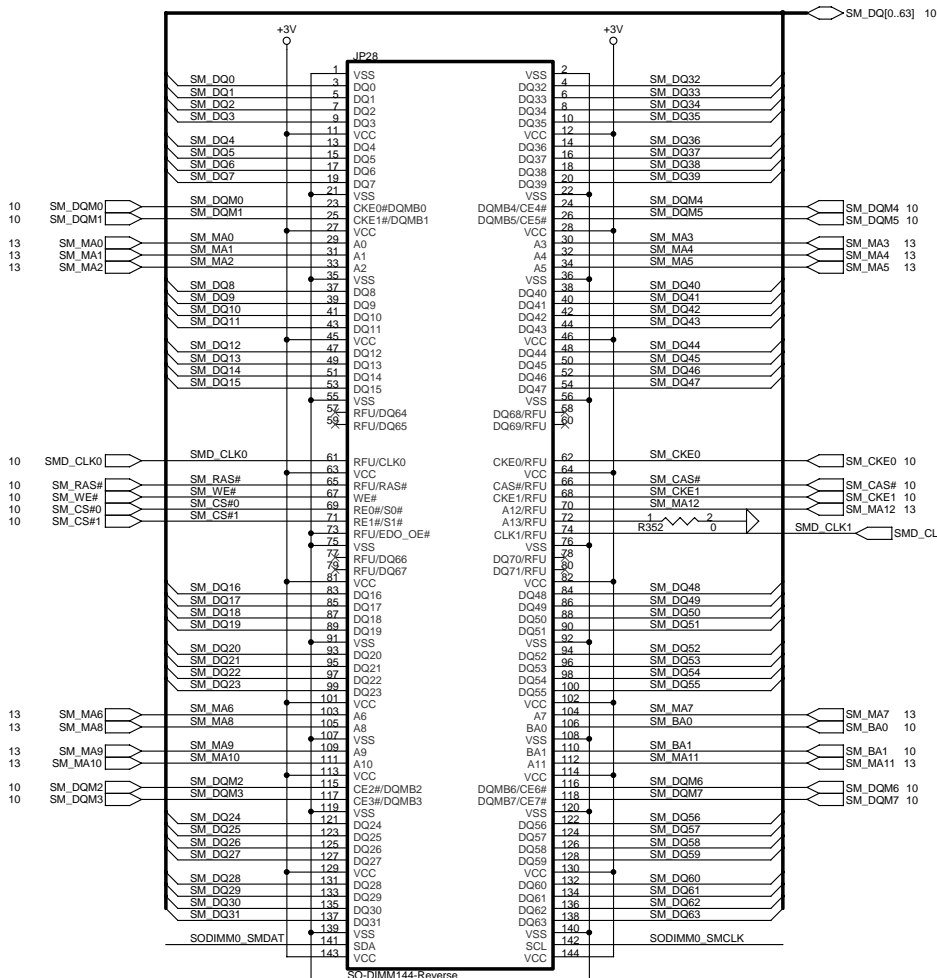
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Rev 0A

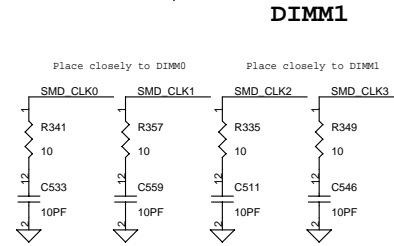
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B	A	Output
0	0	X0, Y0
0	1	X1, Y1
1	0	X2, Y2
1	1	X3, Y3

System SMBus Selector



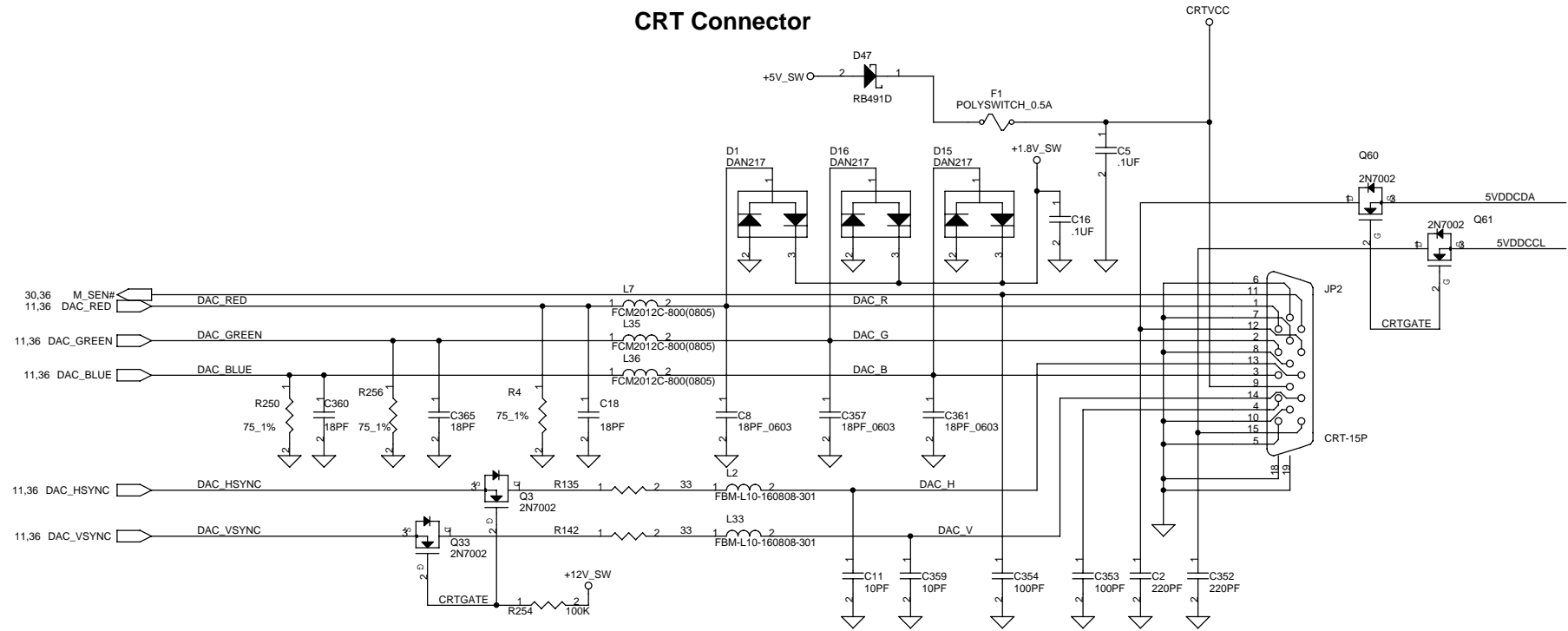
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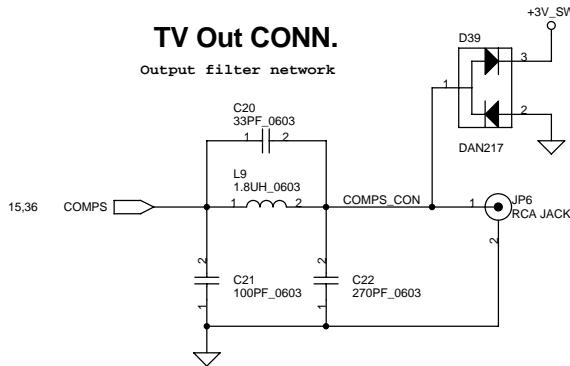
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 Custom: 401200
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CRT Connector

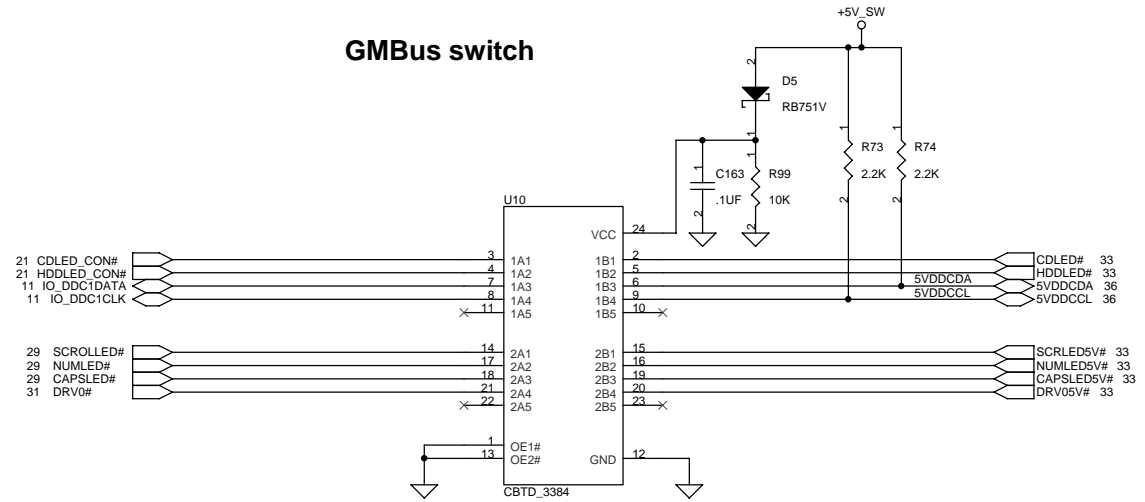


TV Out CONN.

Output filter network



GMBus switch

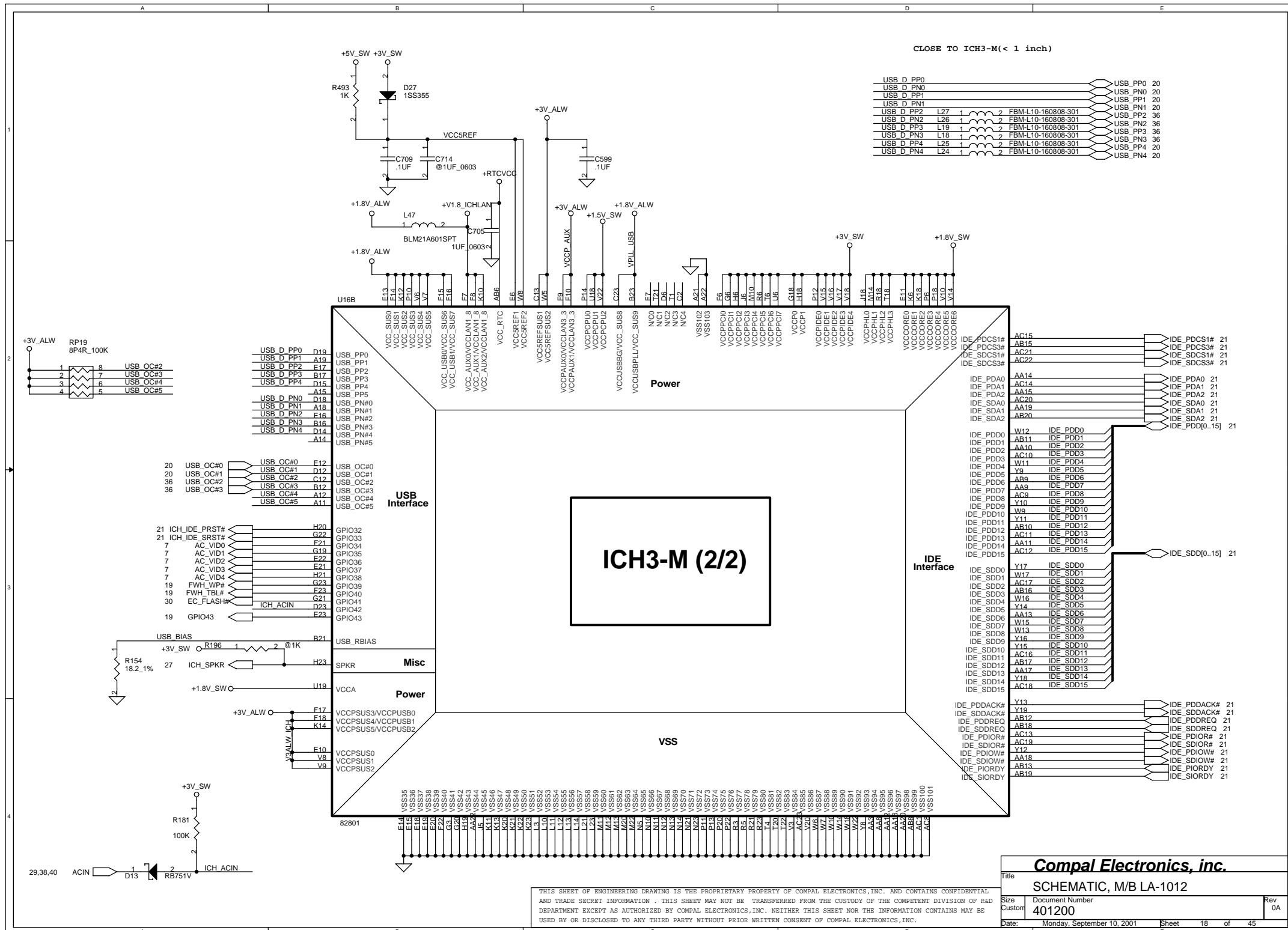


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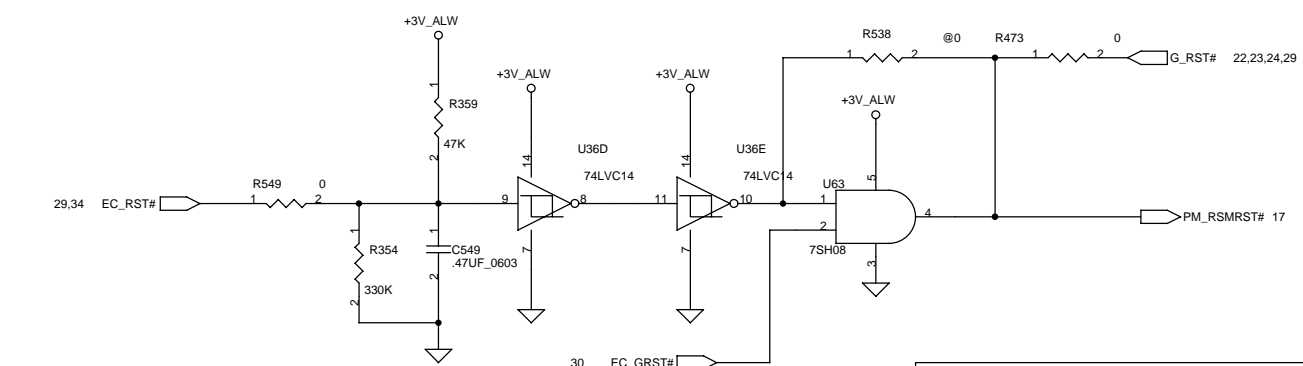
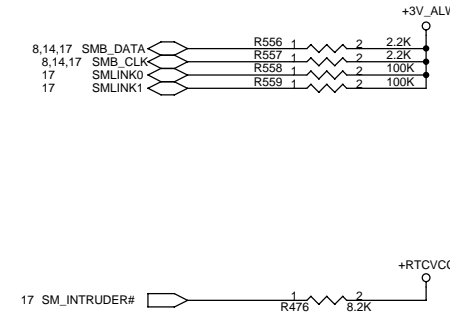
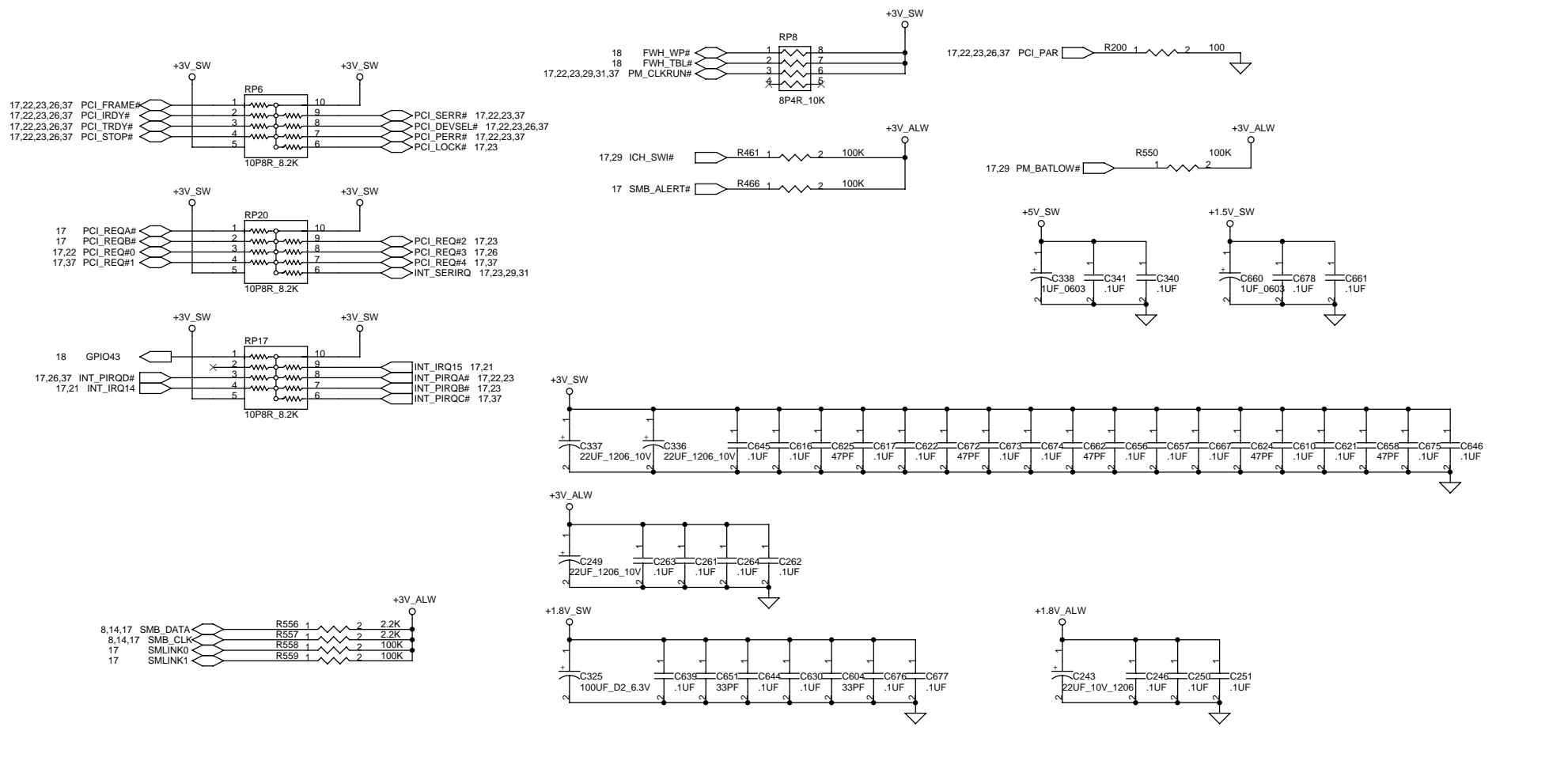


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Customer		of	
Date:	Monday, September 10, 2001	Sheet	18 of 45

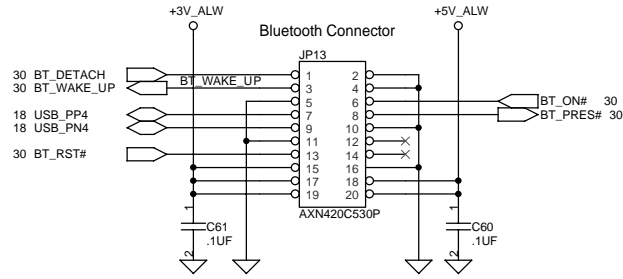
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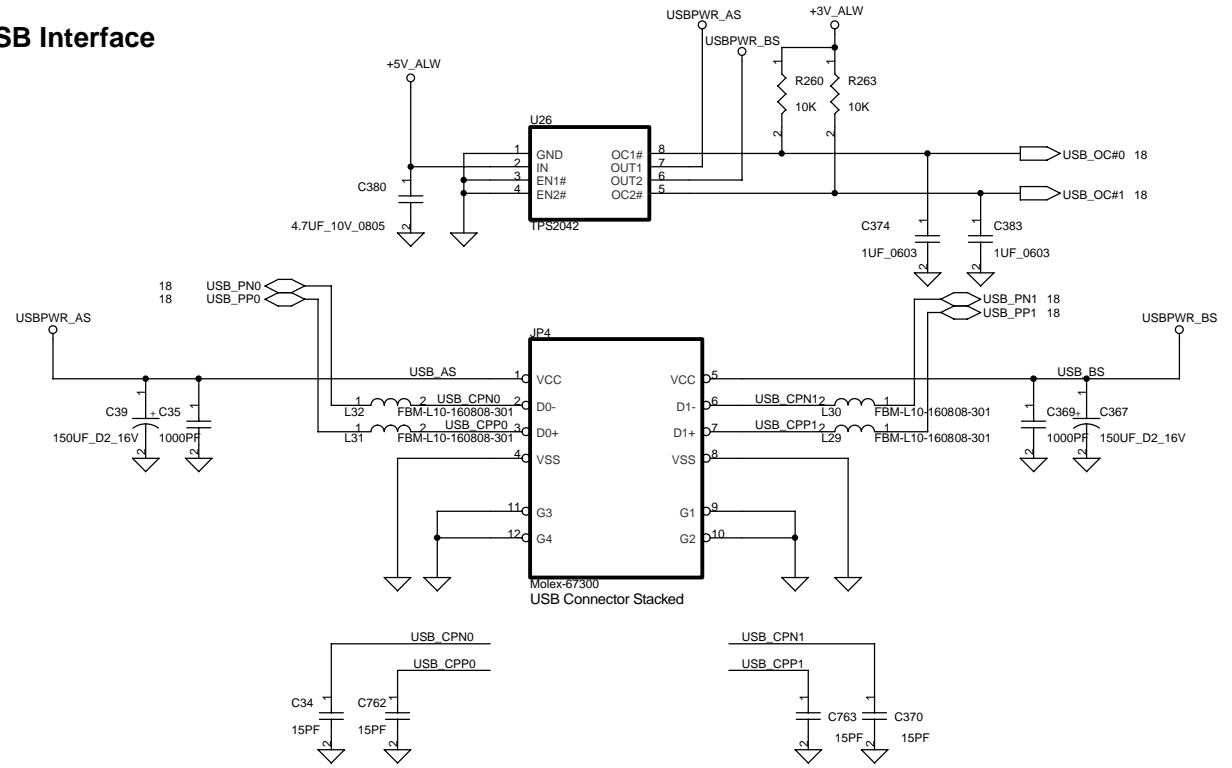
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BlueTooth Interface



USB Interface

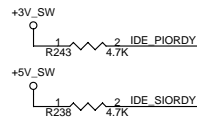
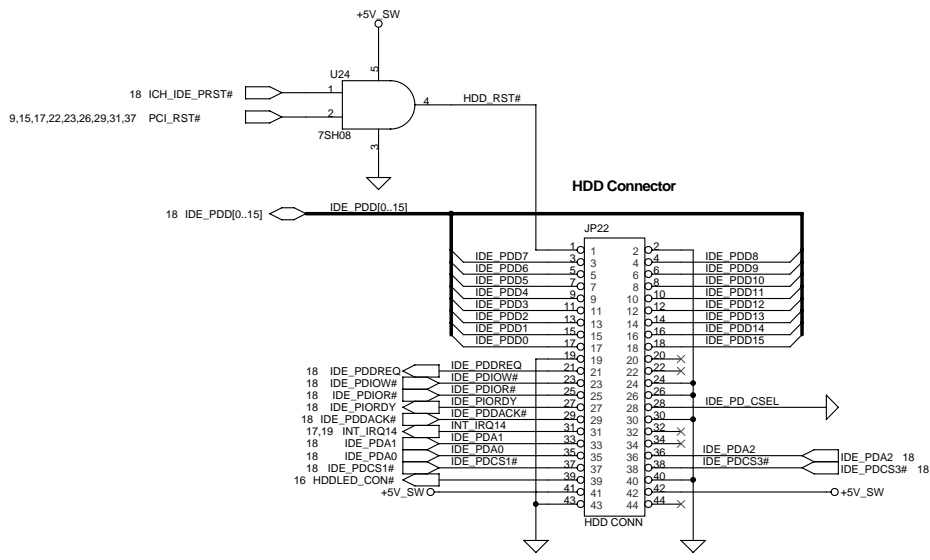


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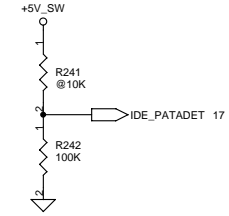
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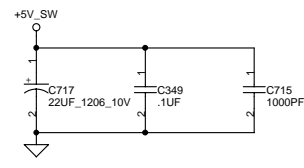
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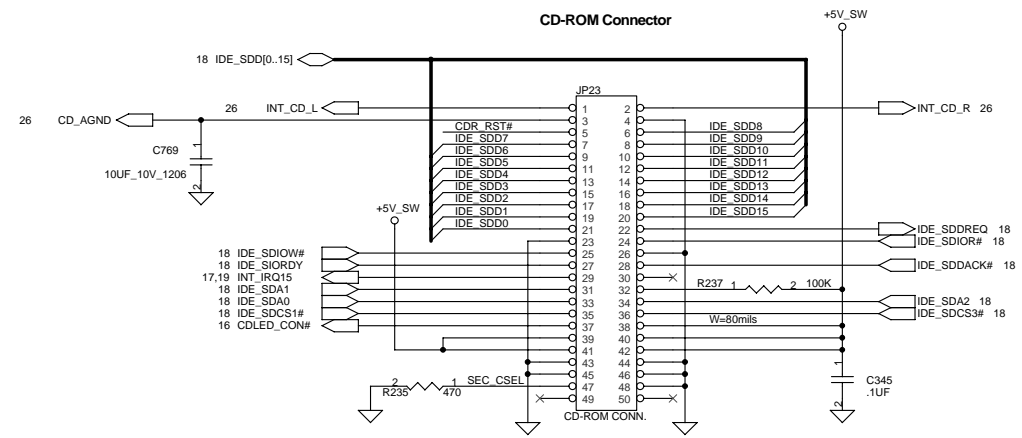
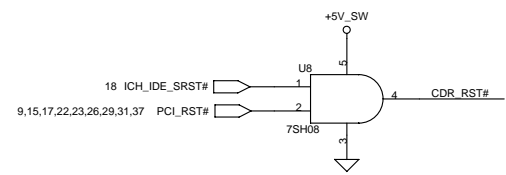
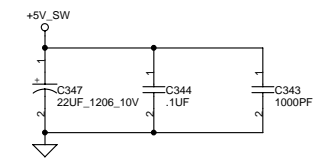
HDD Manual ATA Type Selection:
 ATA33 : populate R224, de-populate R225.
 ATA66/100 : populate R225, de-populate R224.



Layout note :
 Place capacitors near HDD connector .

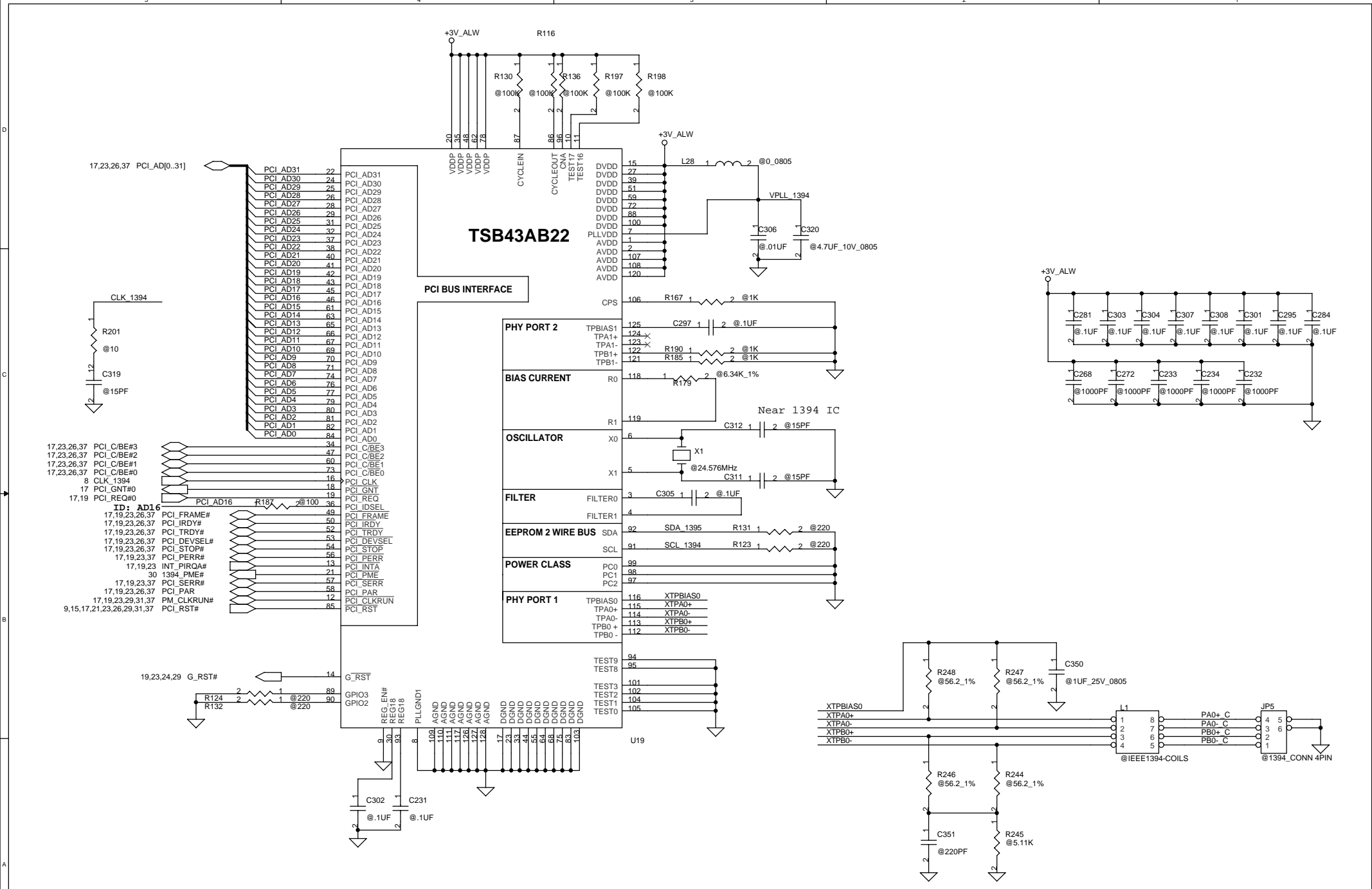


Layout note :
 Place capacitors near CD-ROM connector .



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File	Document Number	Rev
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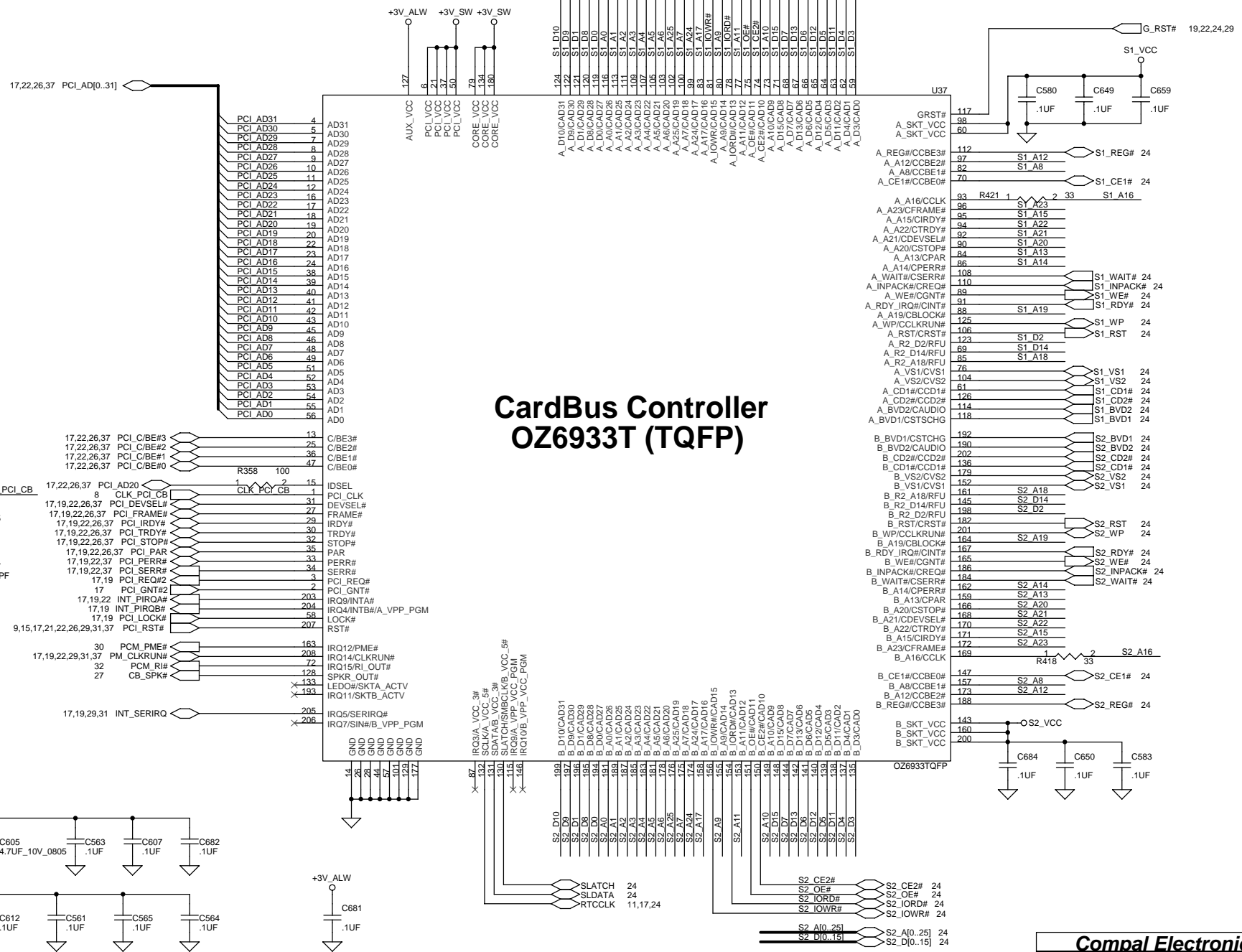


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S1_IOWR# S1_IOWR# 24
 S1_IORD# S1_IORD# 24
 S1_OE# S1_OE# 24
 S1_CE2# S1_CE2# 24

S1_A[0..25] S1_A[0..25] 24
 S1_D[0..15] S1_D[0..15] 24

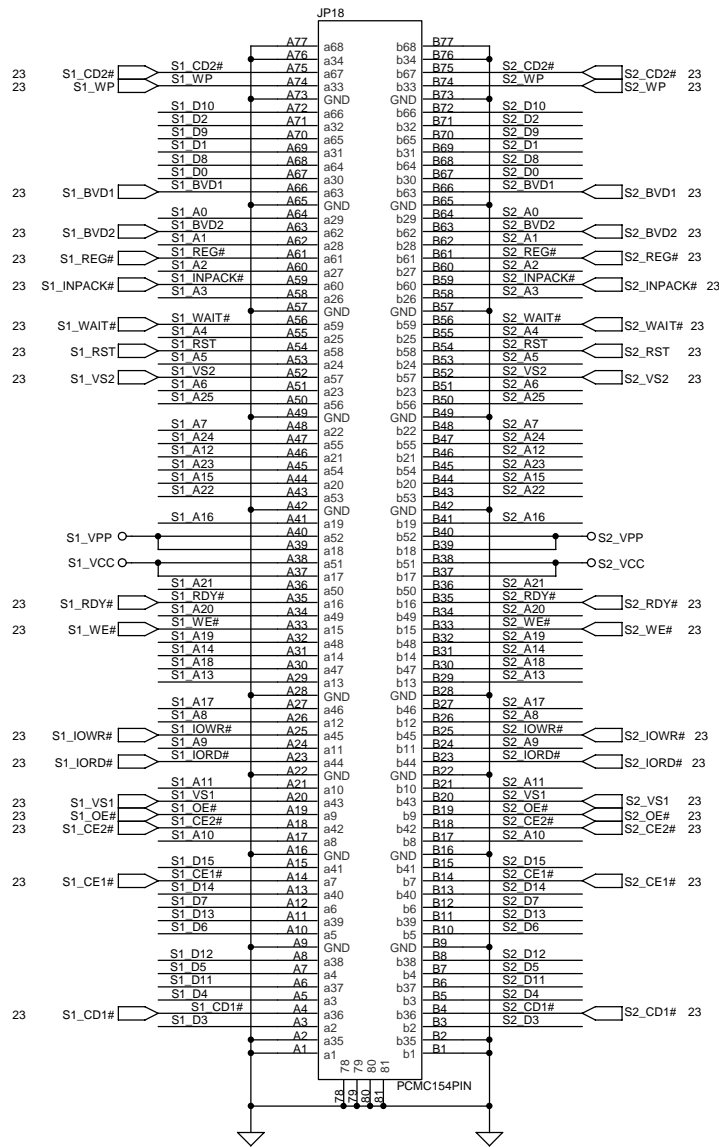
CardBus Controller OZ6933T (TQFP)



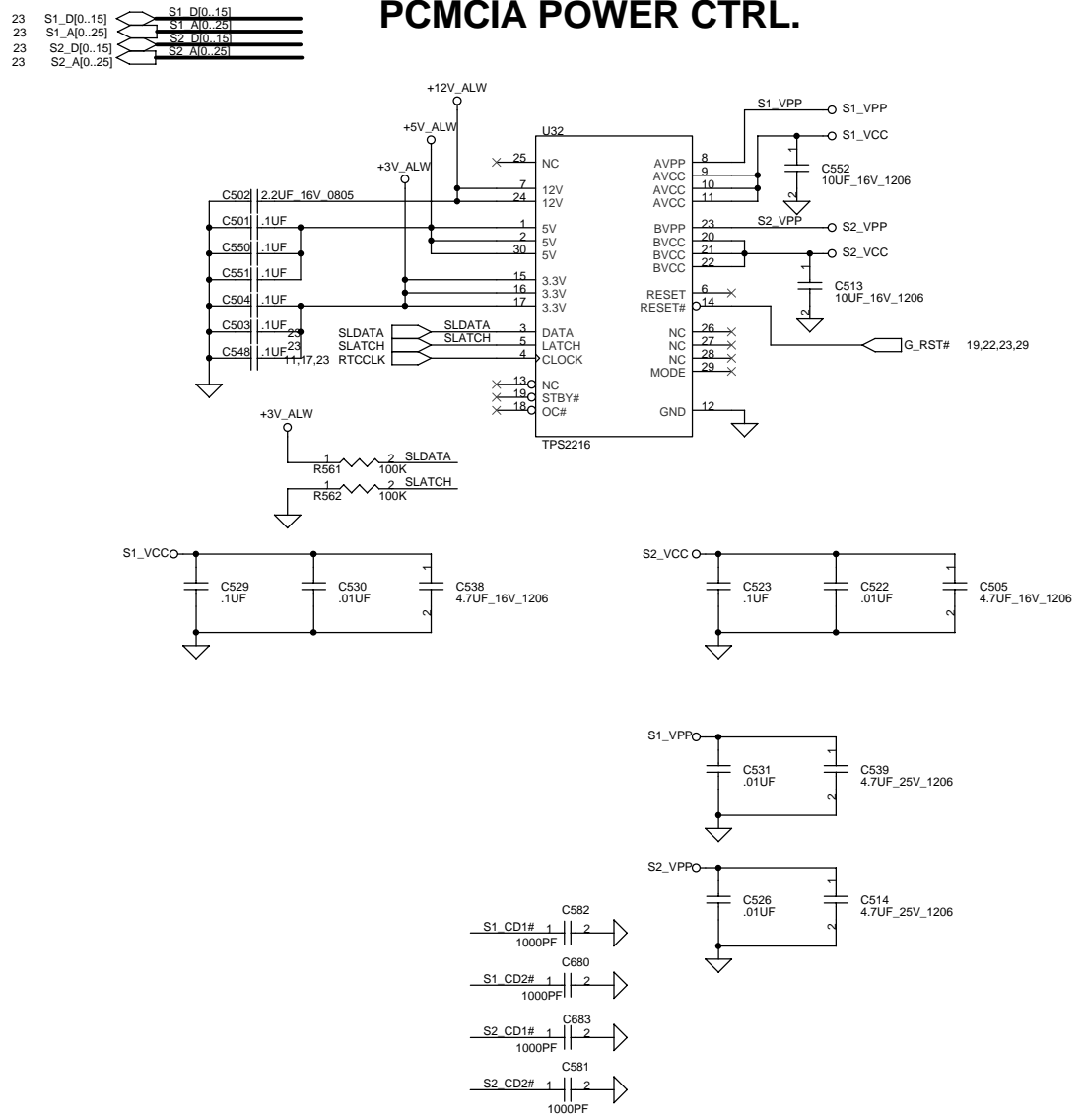
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CARDBUS SOCKET



PCMCIA POWER CTRL.

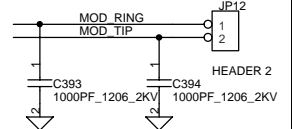
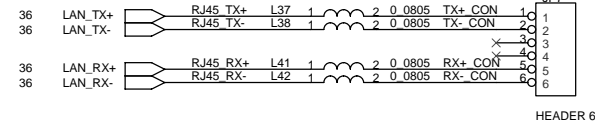
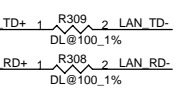
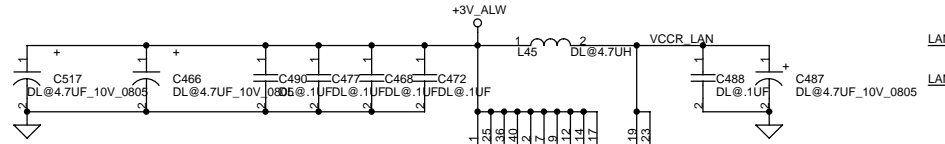
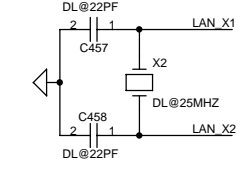
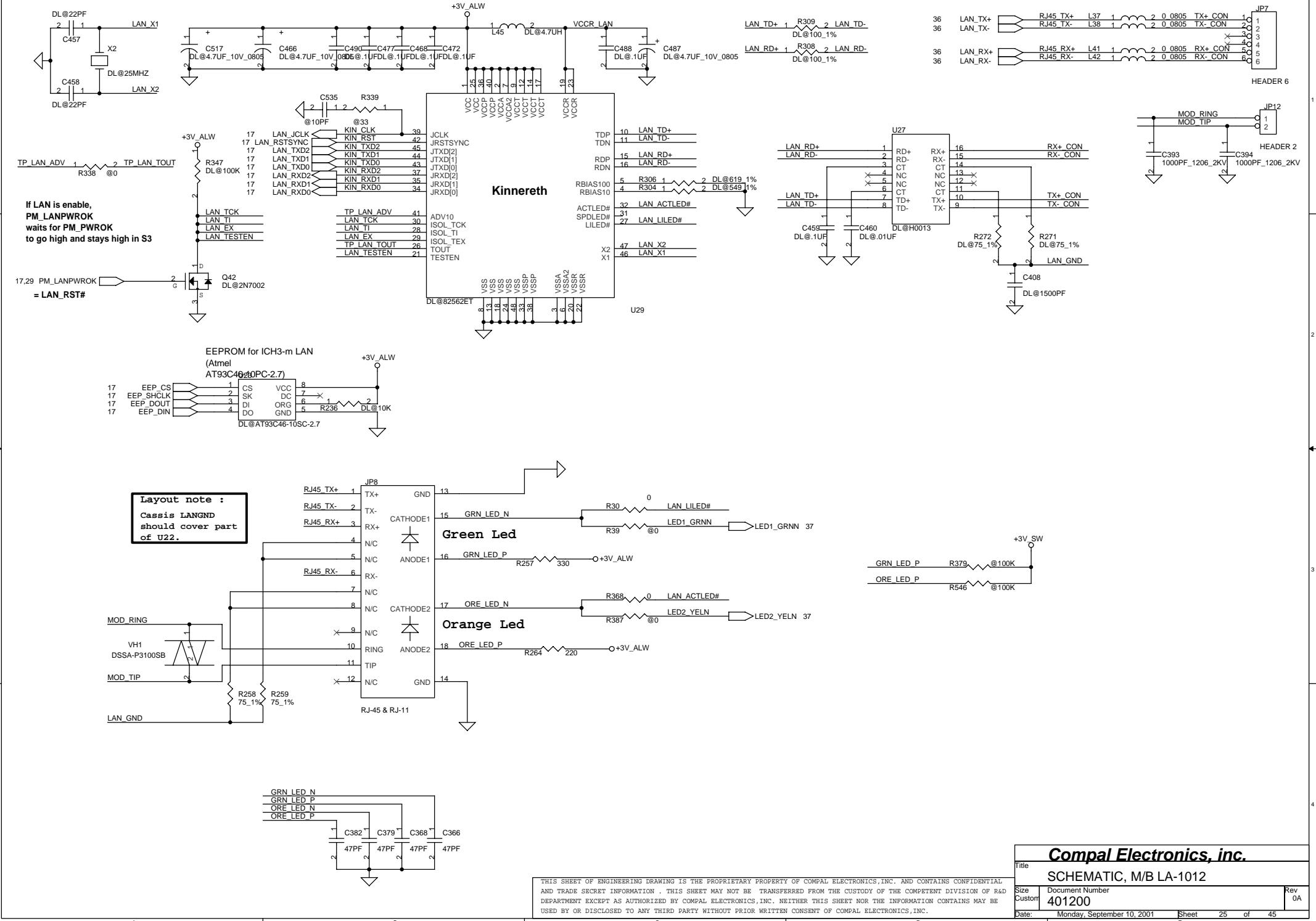


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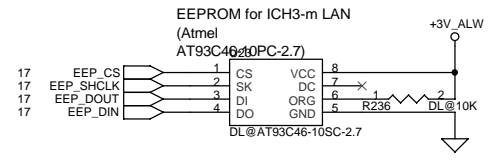
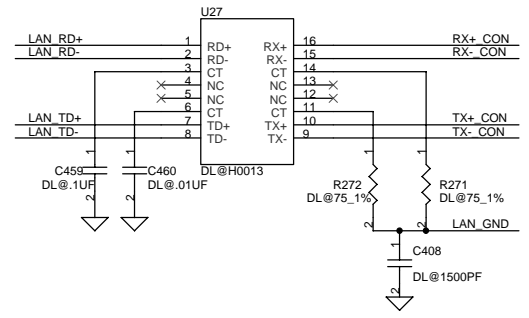
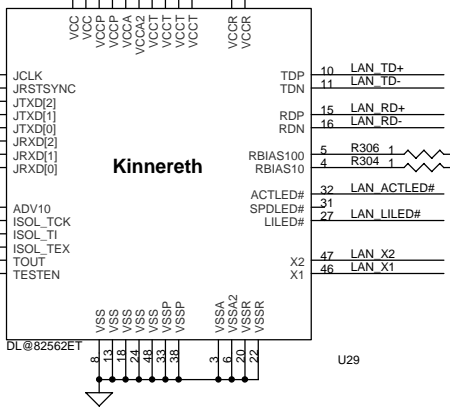
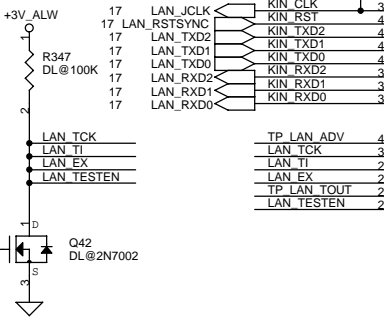
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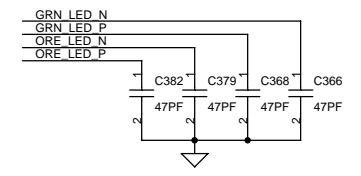
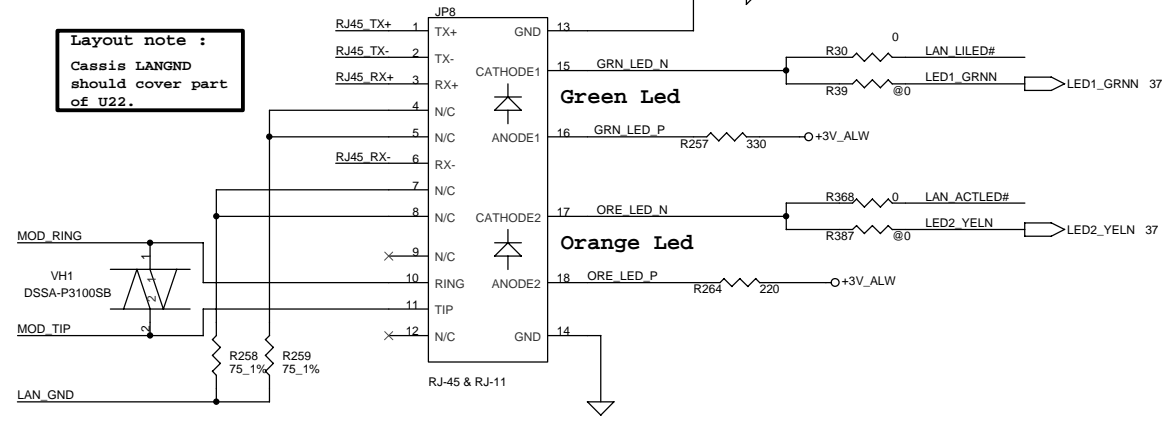


If LAN is enable,
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 waits for **PM_PWROK**
 to go high and stays high in S3

17.29 PM_LANPWROK
 = LAN_RST#

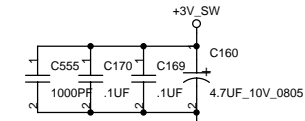


Layout note :
 Cassis LANGND
 should cover part
 of U22.

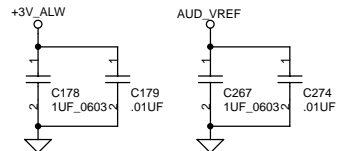
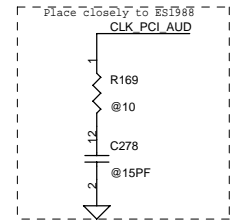
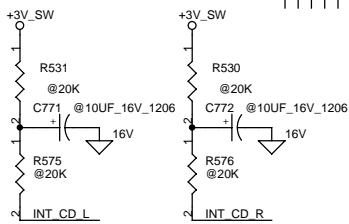
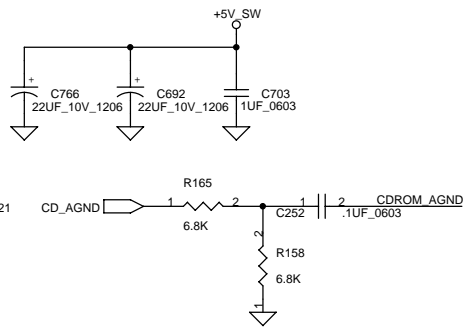
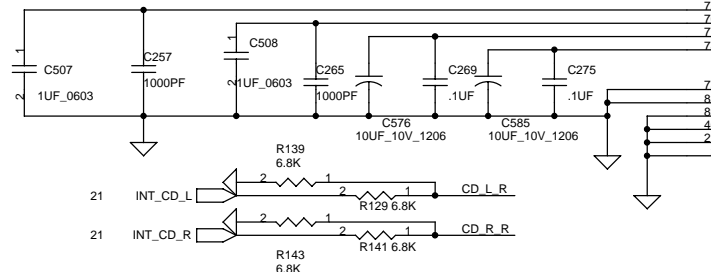
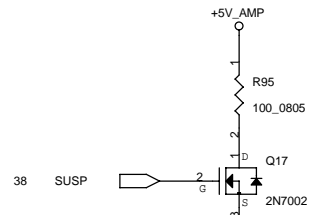
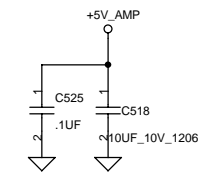
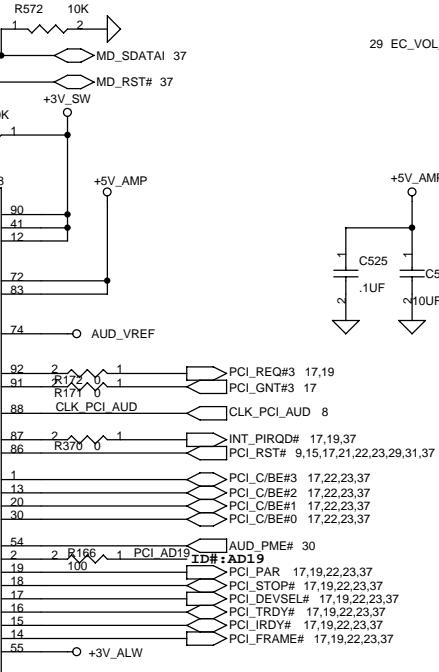
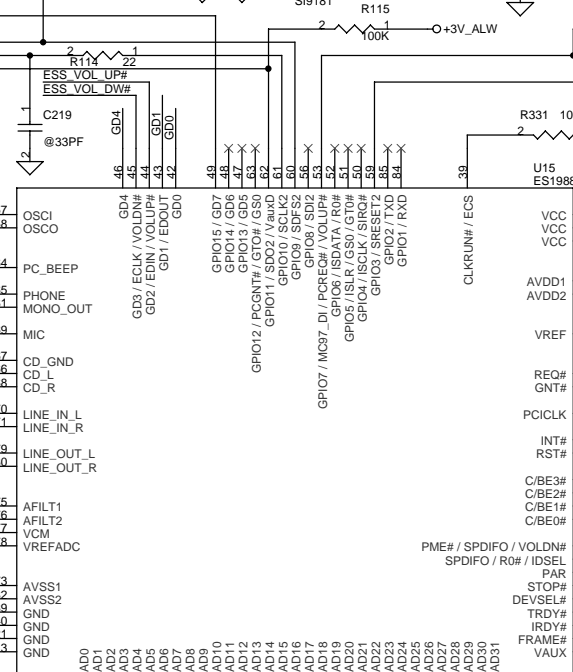
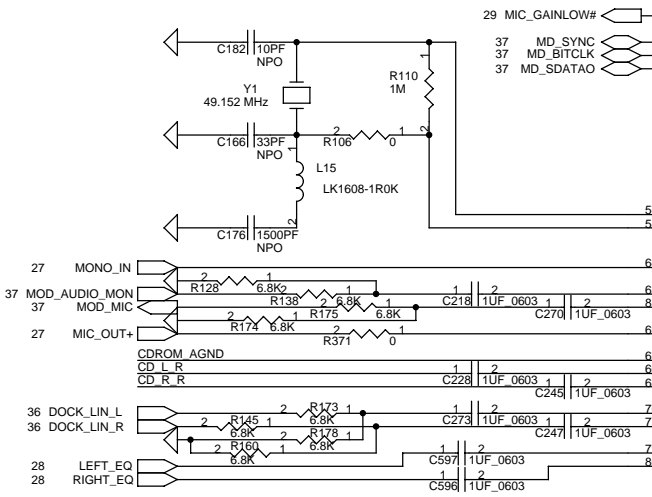
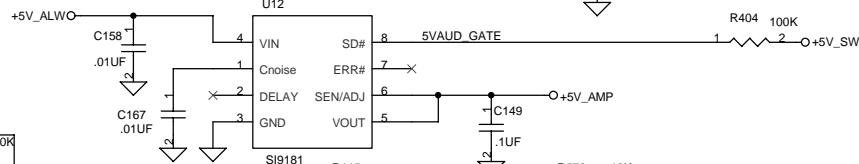
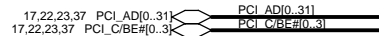
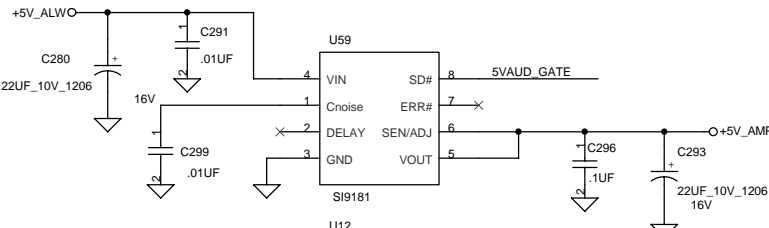
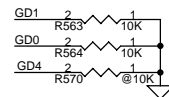


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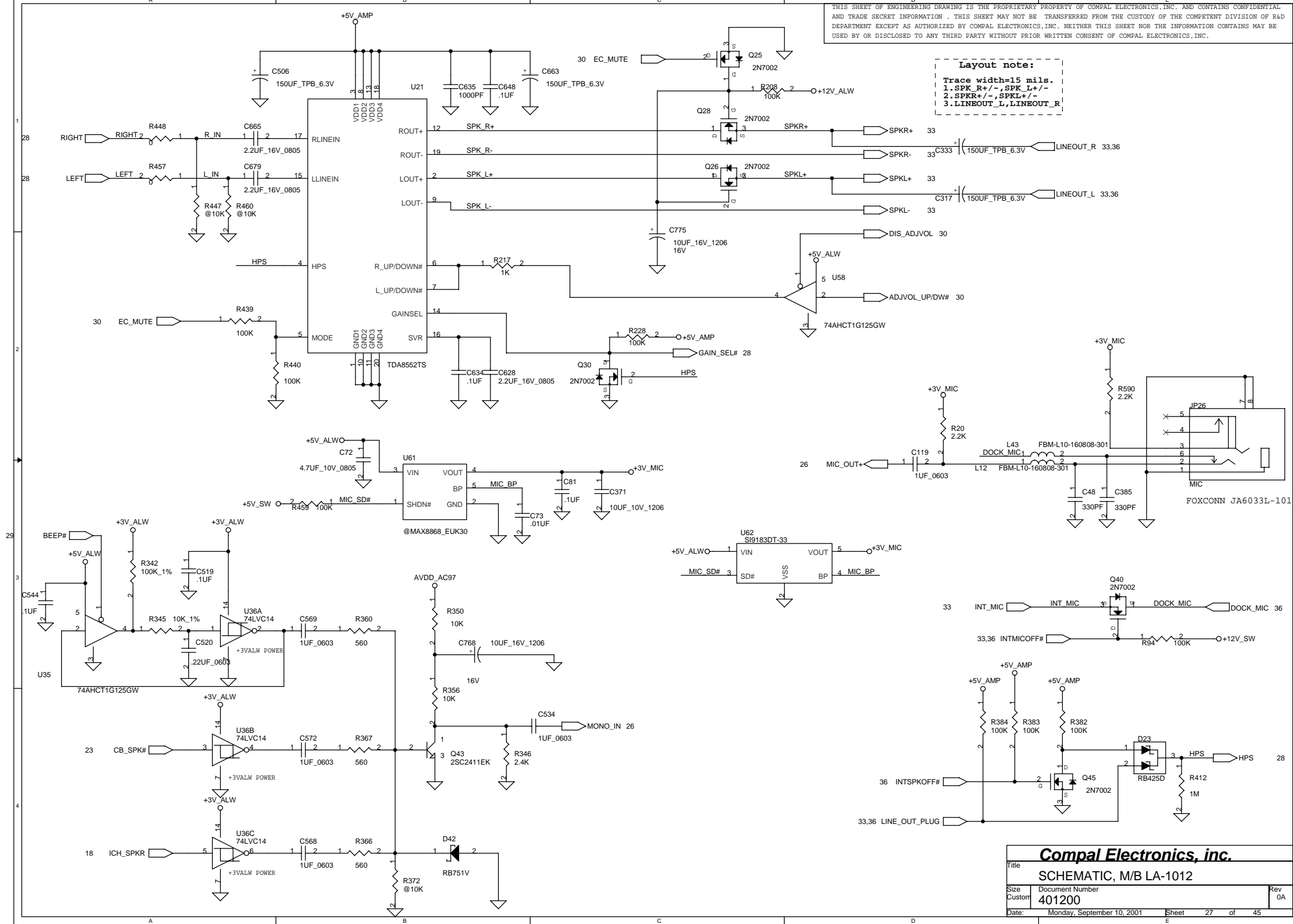
Place component's to ES1988



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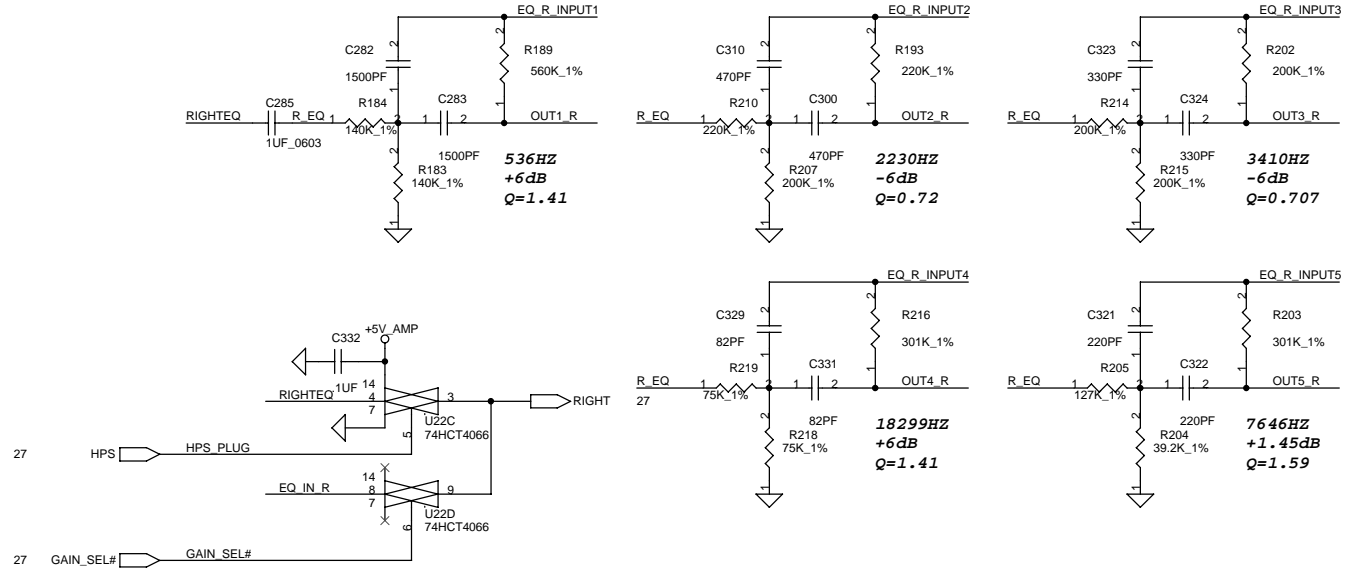
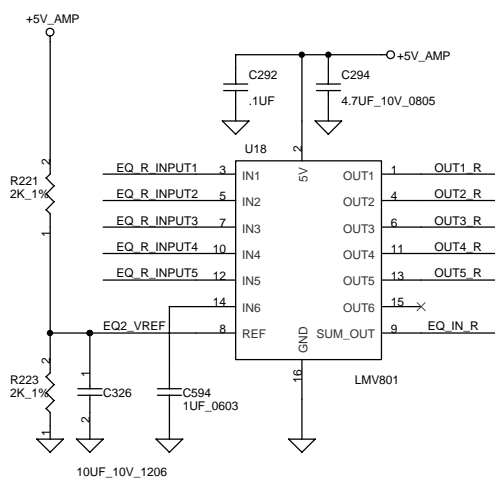
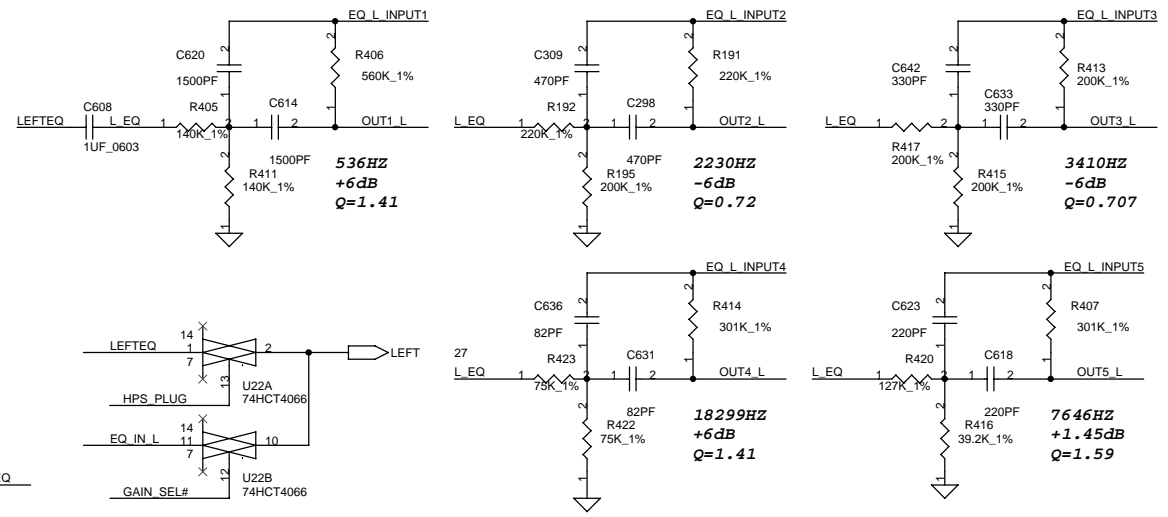
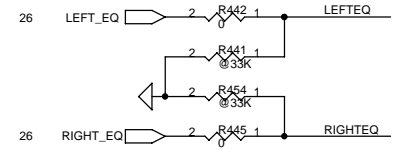
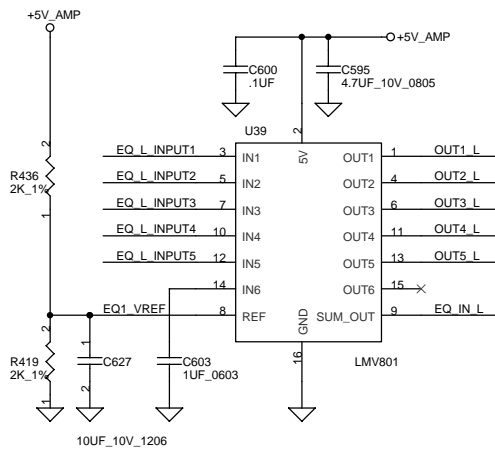
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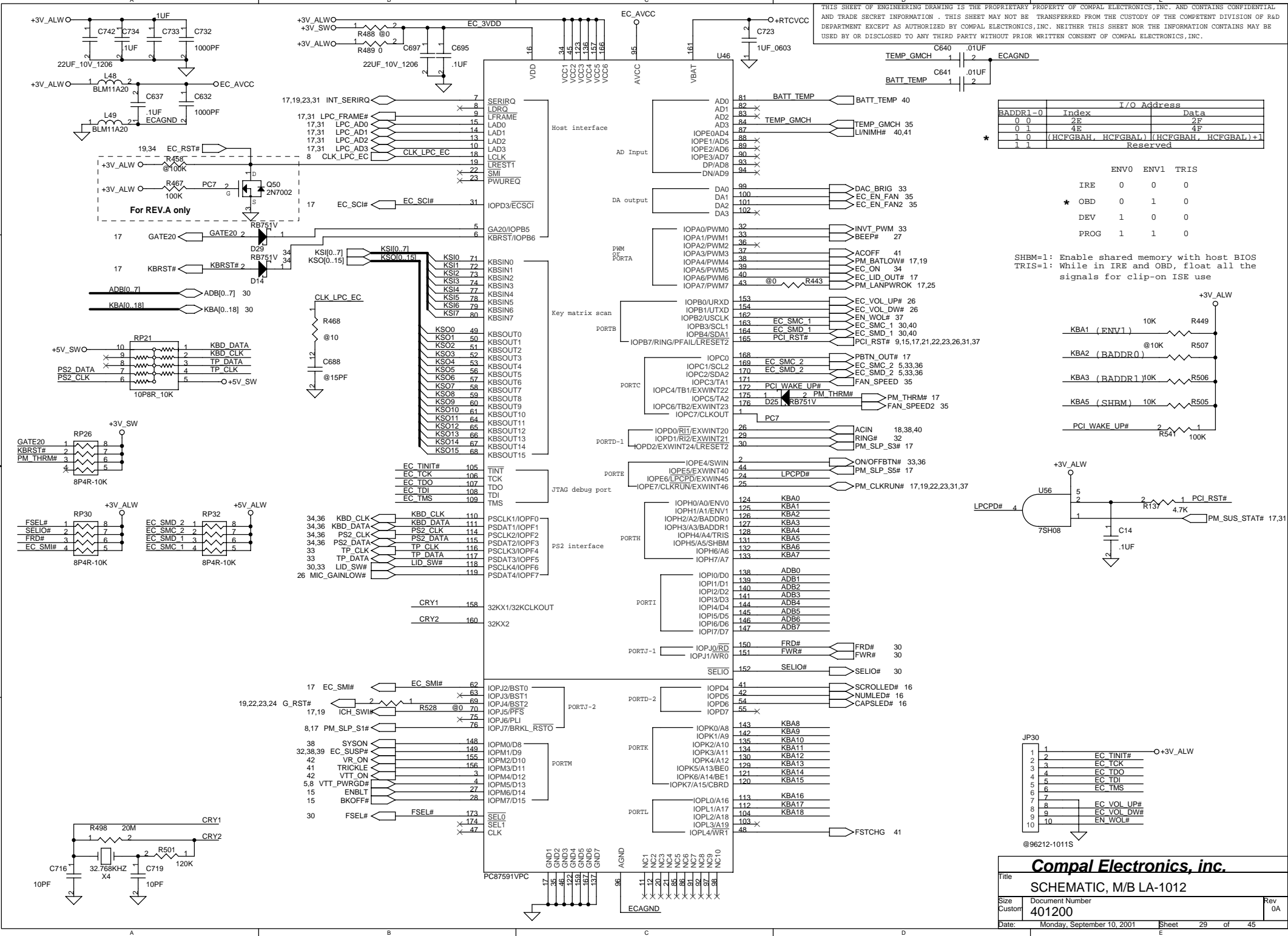
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 2. SPKR+/-, SPKL+/-
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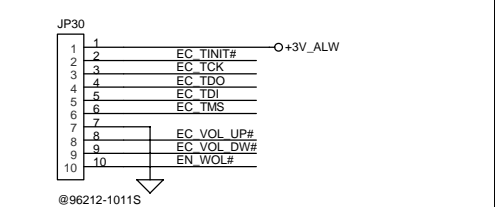
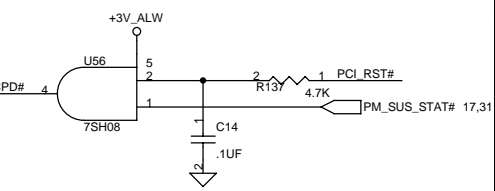
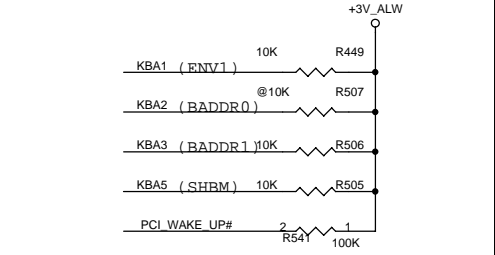
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1 0	(HCFGBAH, HCFGBAL)	(HCFGBAH, HCFGBAL)+1	
1 1		Reserved	

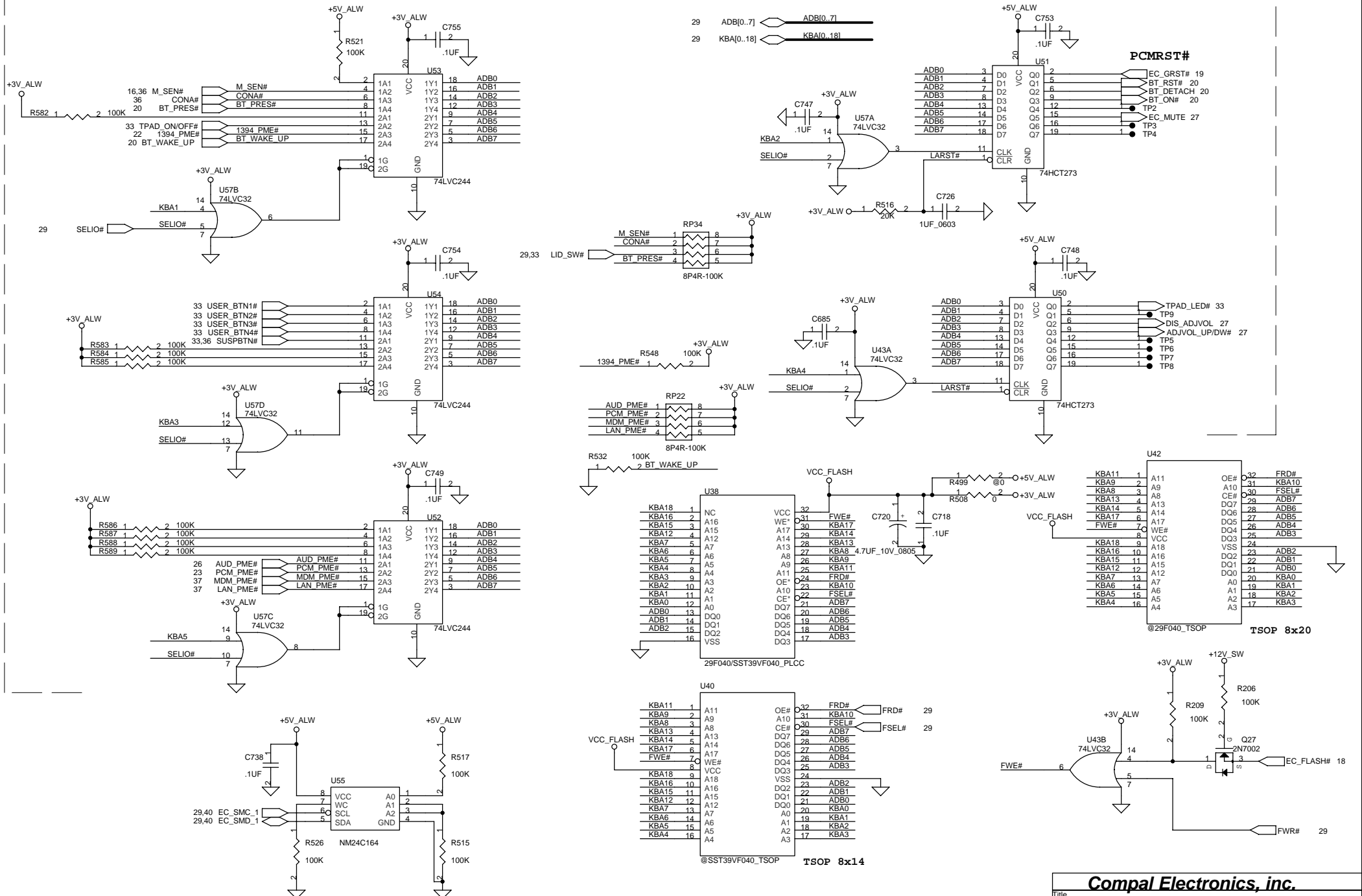
ENVO	ENV1	TRIS
IRE	0	0
OBD	0	0
DEV	1	0
PROG	1	0

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



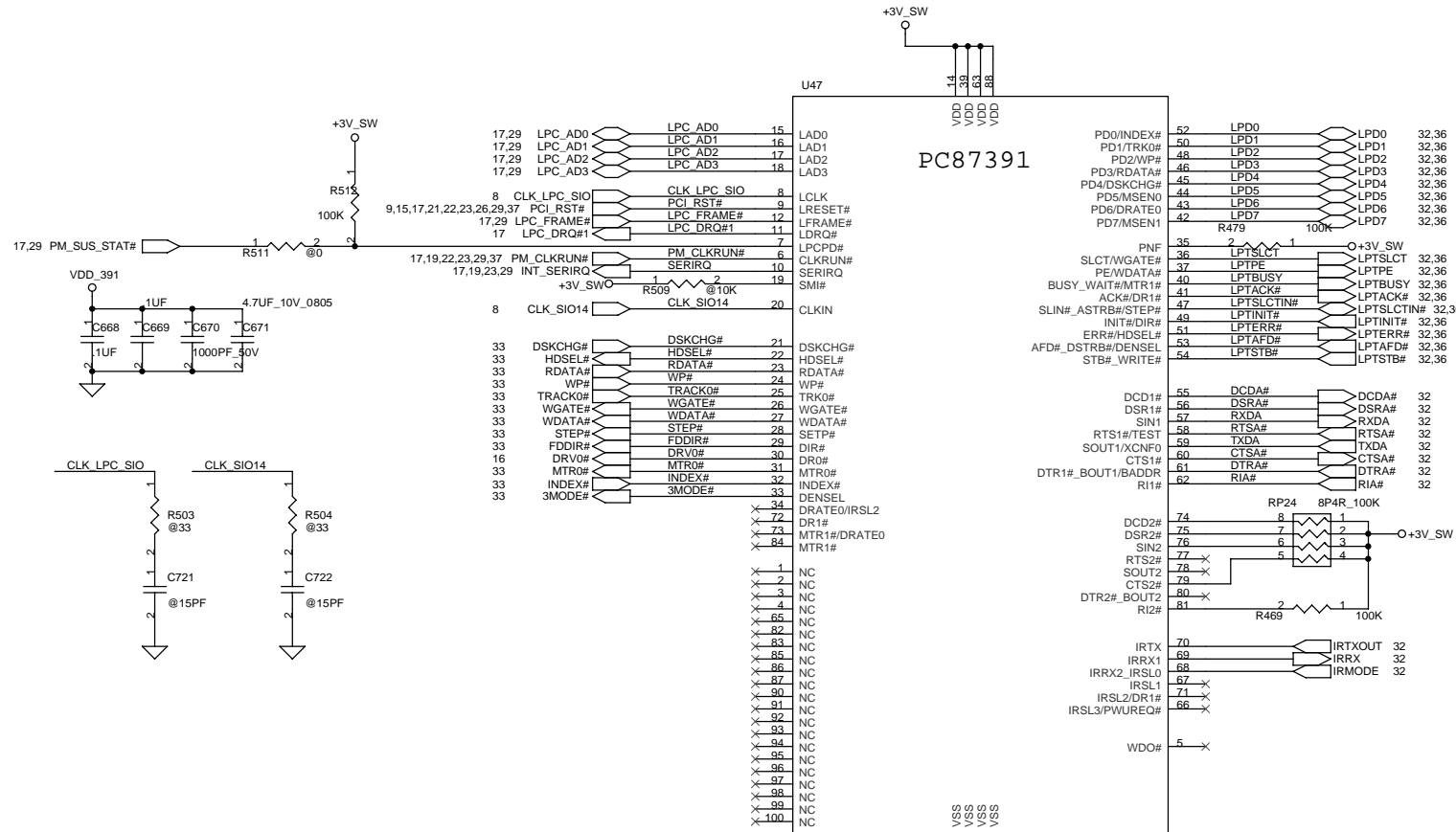
INPUT

OUTPUT



Compal Electronics, inc.

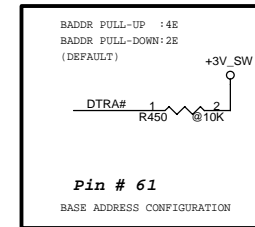
SCHEMATIC, M/B LA-1012



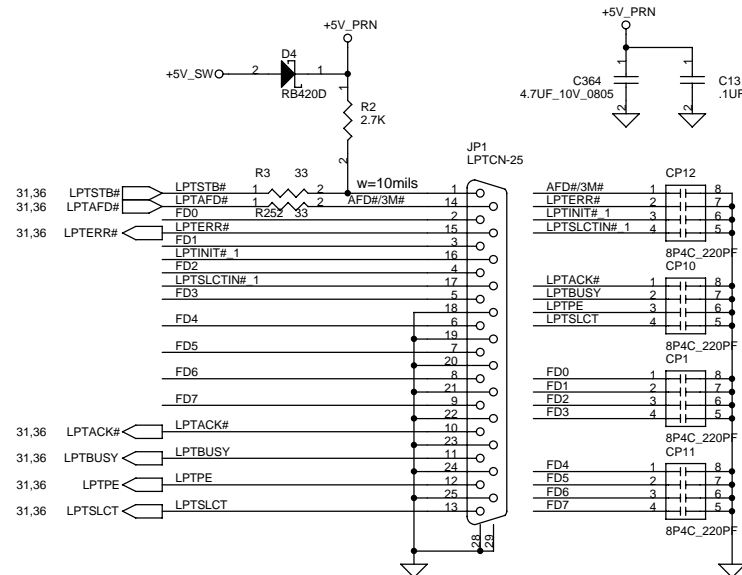
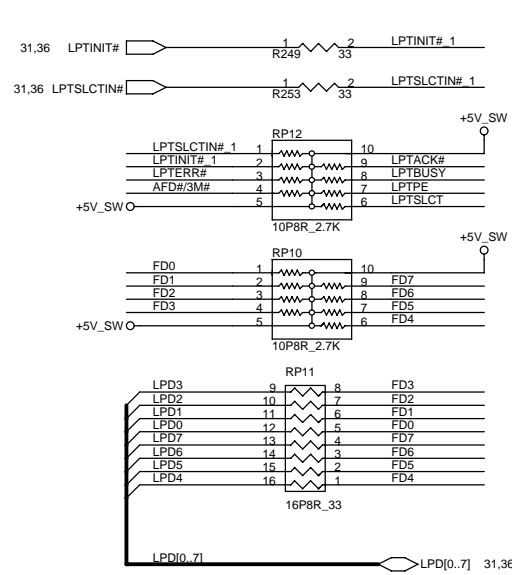
Signal	Pin #	Description
BADDR	61	BASE Address Selection "0": 2E~2F (Default) "1": 4E~4F
TEST	58	"0": Normal (Default) "1": Test Mode
XCNF[2:0]	90, 4, 59	2 1 0 Function
		x 0 0 No BIOS
		x 0 1 Normal Mode. XRDY disabled
		0 1 0 Latch Mode. XA12-19, XRDY enabled
		1 1 0 Latch Mode. GPIO10-17, XRDY enabled
		0 1 1 Latch Mode. XA12-19, XRDY disabled
		1 1 1 Latch Mode. GPIO10-17, XRDY disabled

*1.ROM SOLUTION for PC87391

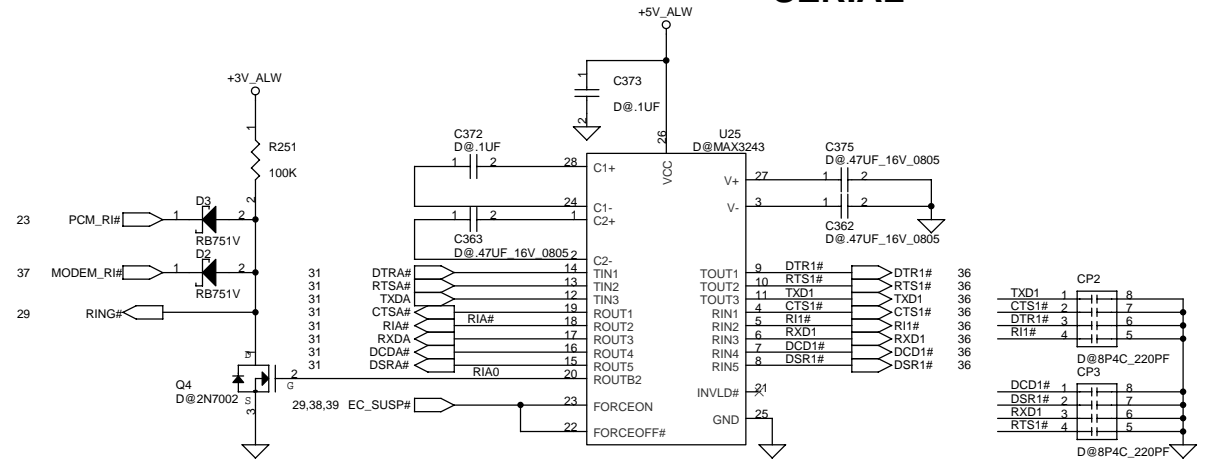
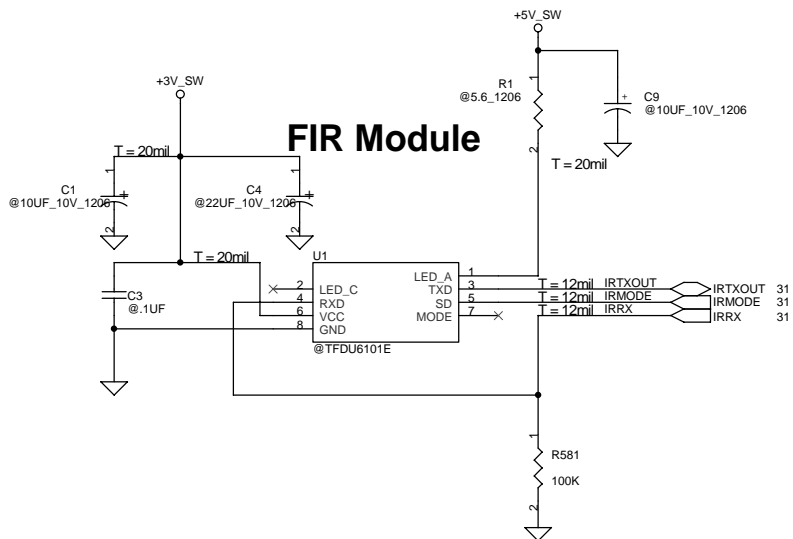
*2.ROM SOLUTION for PC87393



PARALLEL



SERIAL

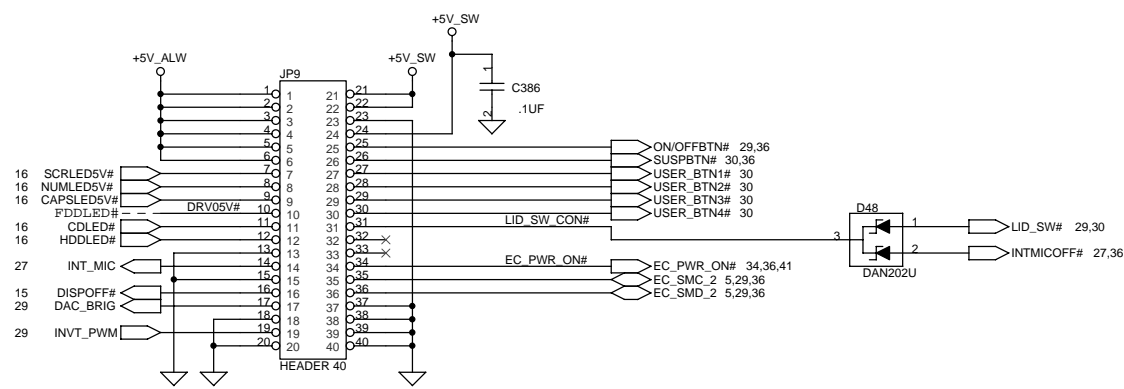
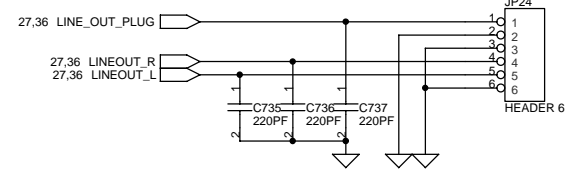
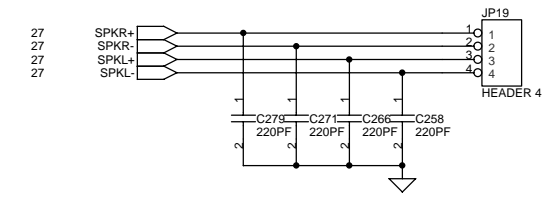
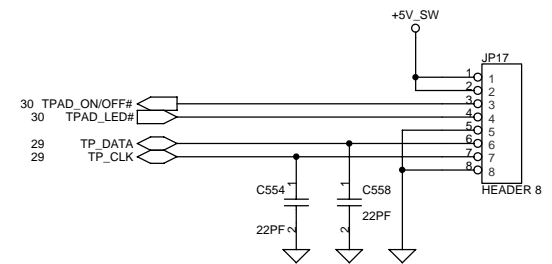
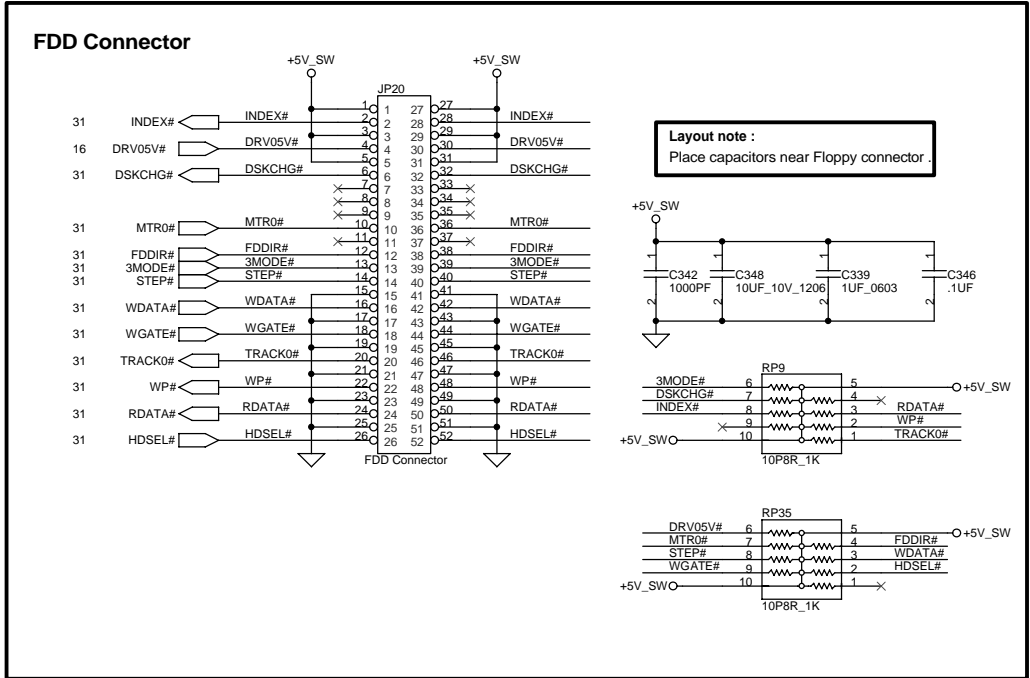


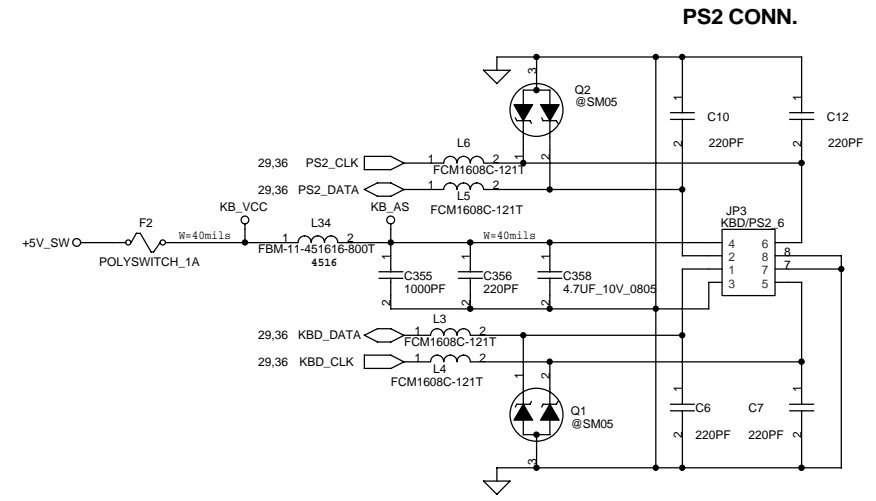
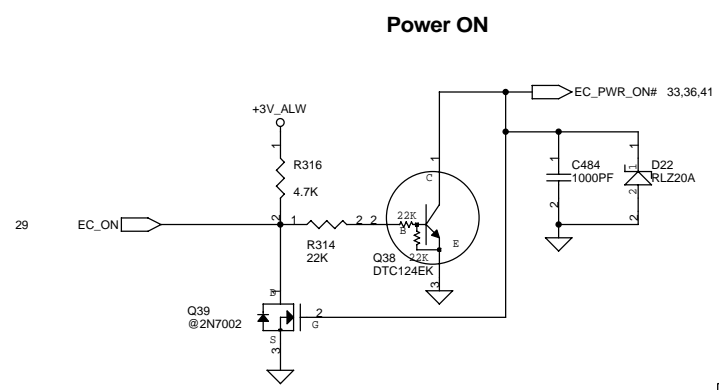
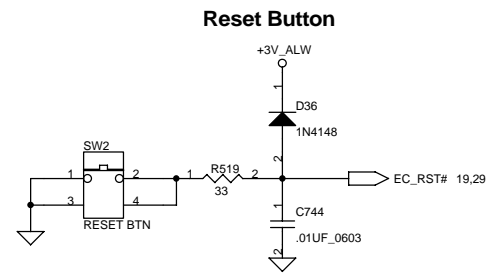
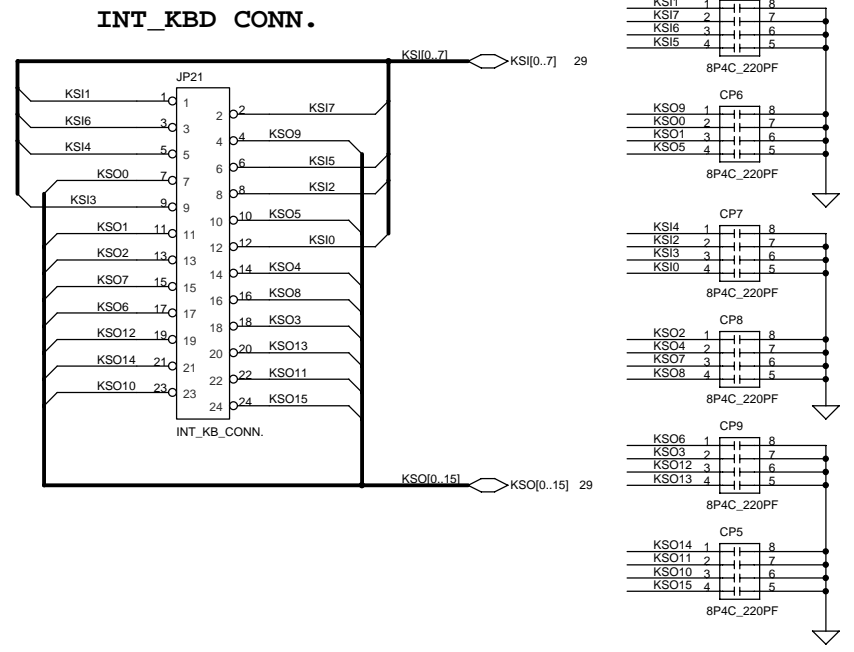
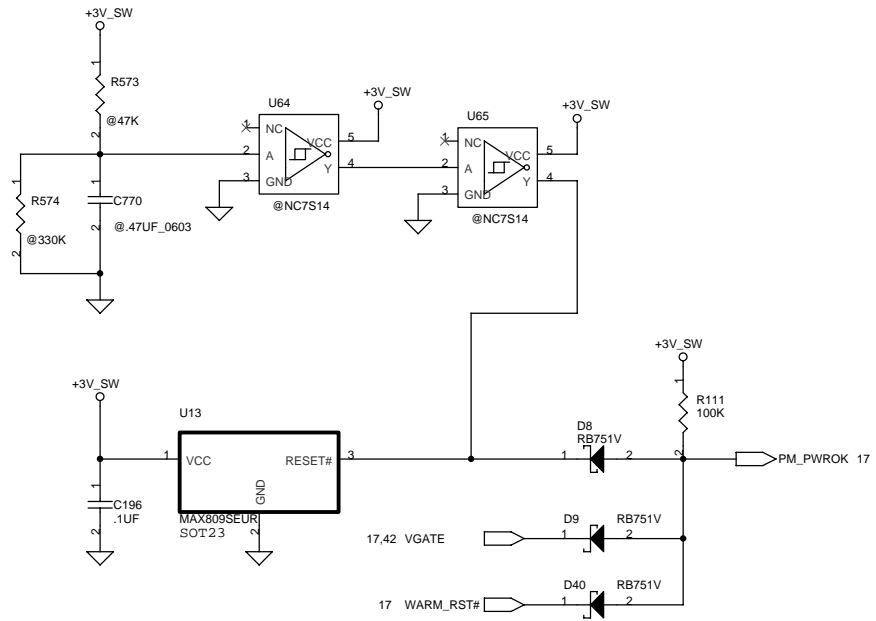
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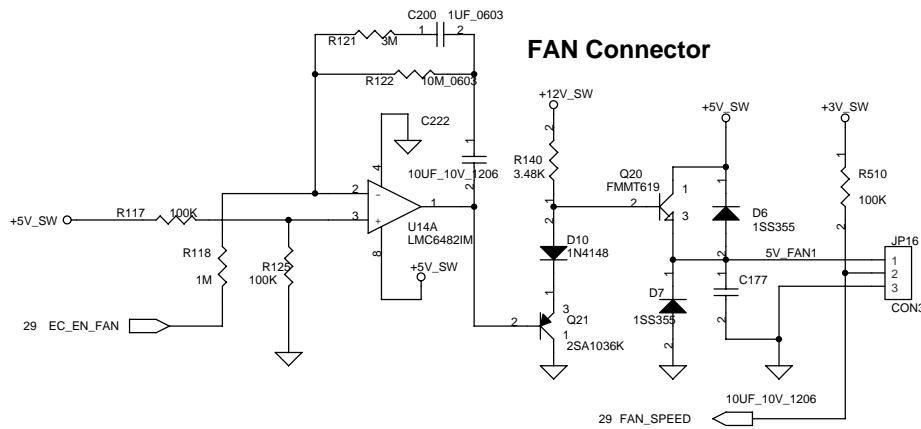


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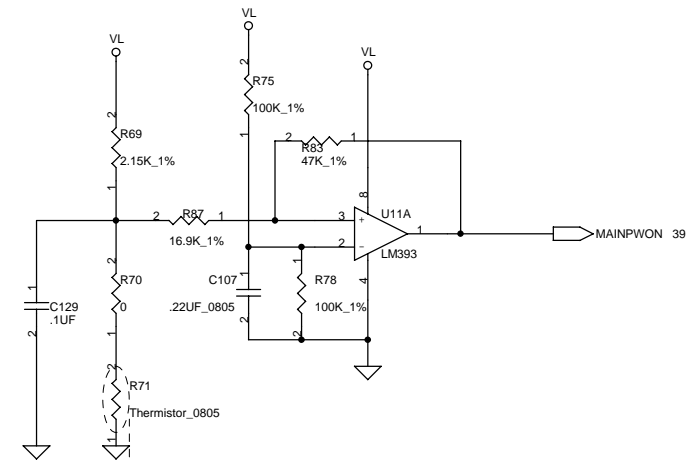
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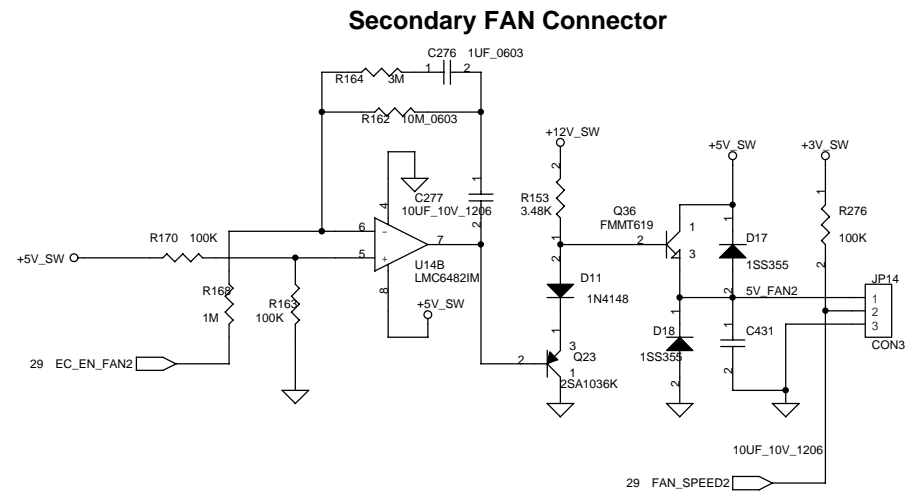
FAN Connector

The temperature sensing and Over-Hot shutdown circuit.

Place this block circuit close to CPU.

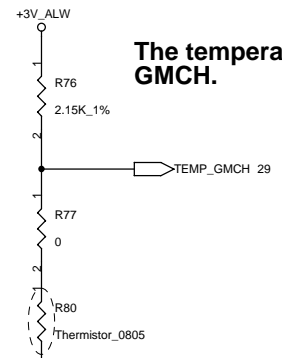


Layout note :
Place a copper ground plan from CPU and place the Thermistor upper this ground plan.



Secondary FAN Connector

The temperature sensing for GMCH.

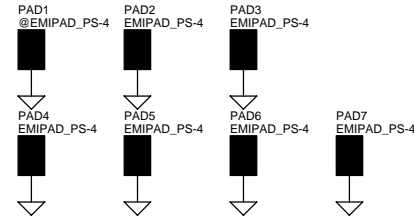


Layout note :
Place a copper ground plan from GMCH and place the Thermistor upper this ground plan.

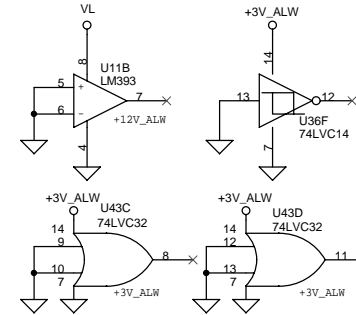
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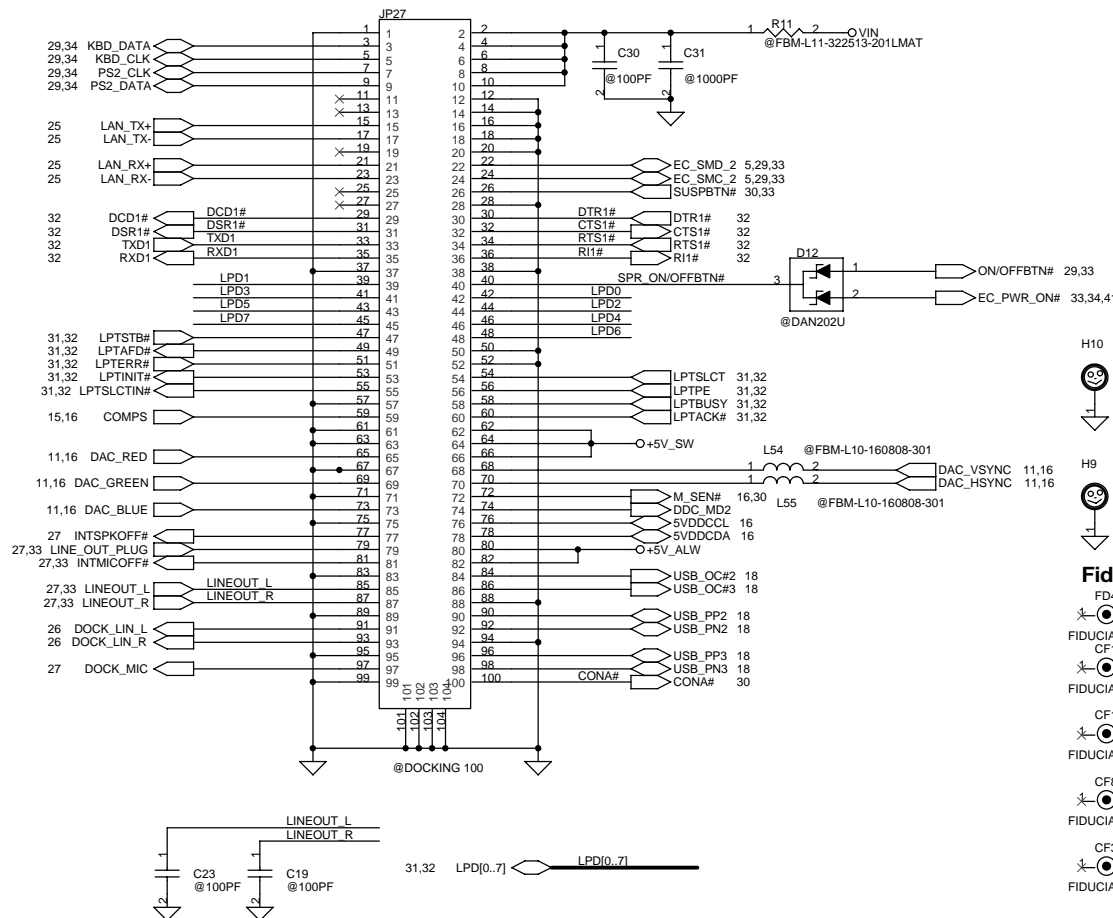
EMI Finger



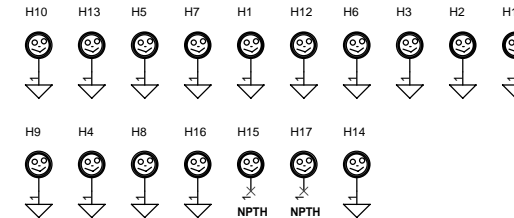
Unused IC parts.



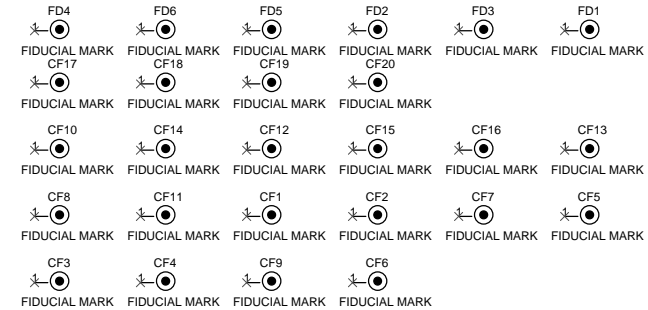
DOCKING 100 PIN



Screw Hole



Fiducial Mark

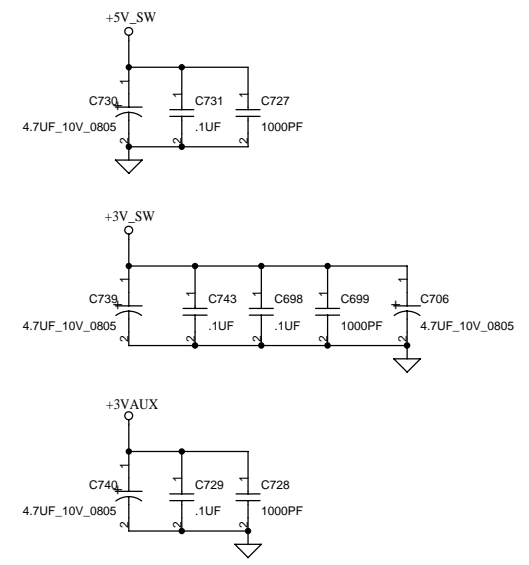
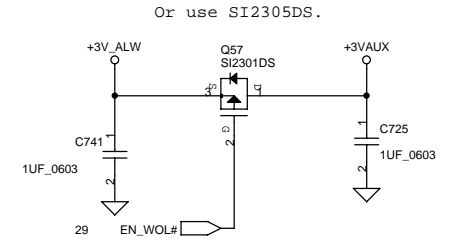
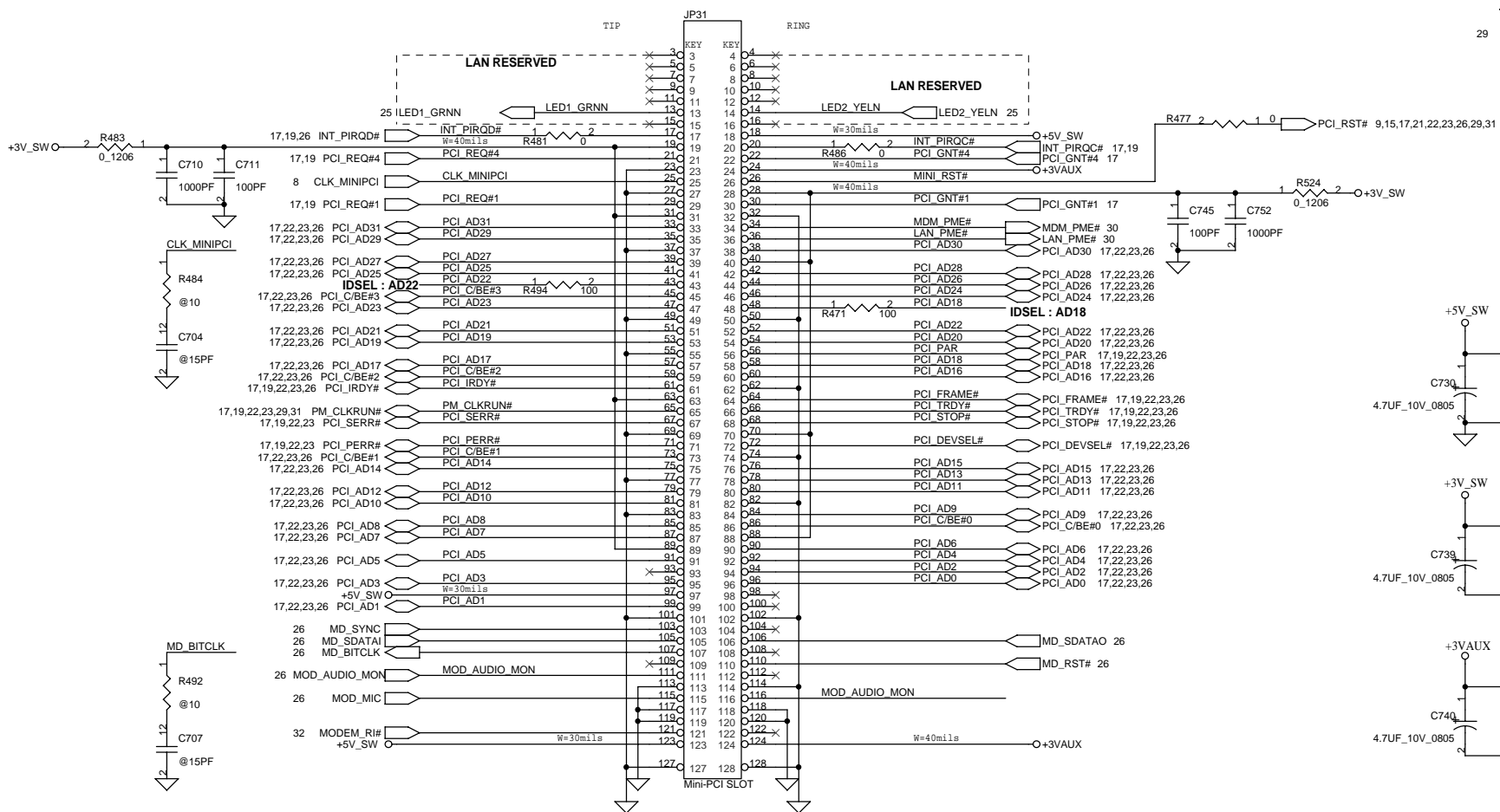


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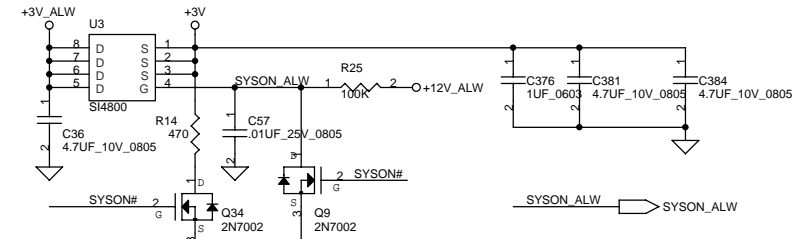
Compal Electronics, inc.

SCHMATIC, M/B LA-1012

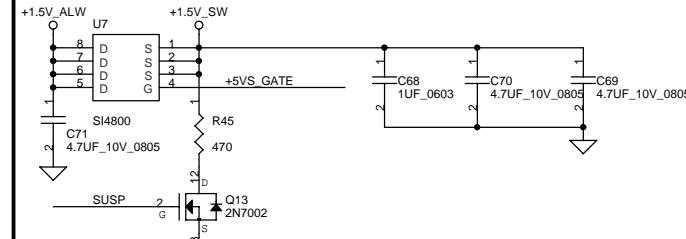
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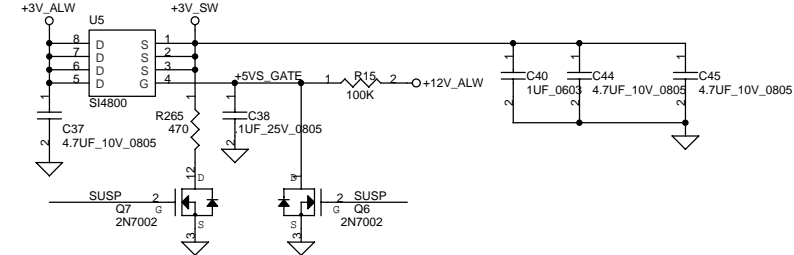
+3V_ALW TO +3V Transfer



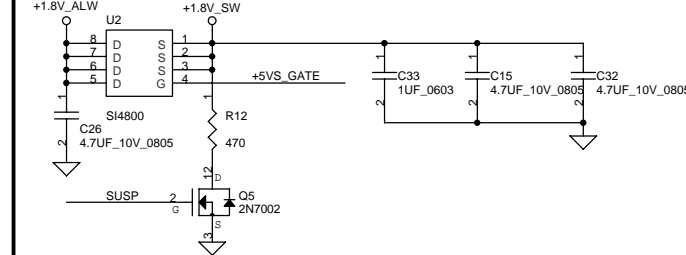
+1.5V TO +1.5V_SW Transfer



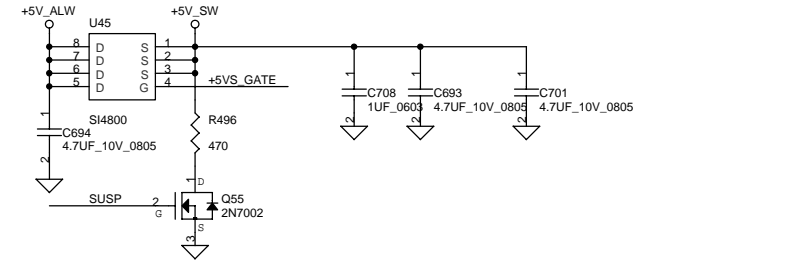
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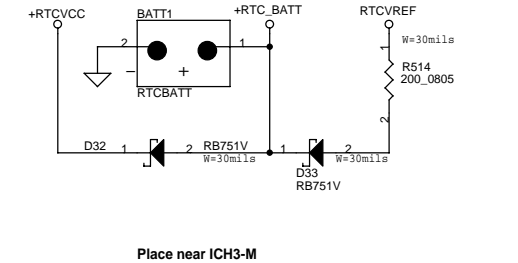
+1.8V_ALW TO +1.8V_SW Transfer



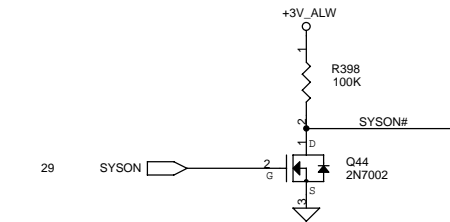
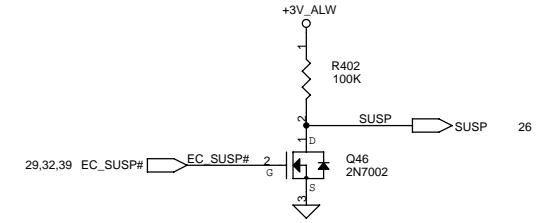
+5V_ALW TO +5V_SW Transfer



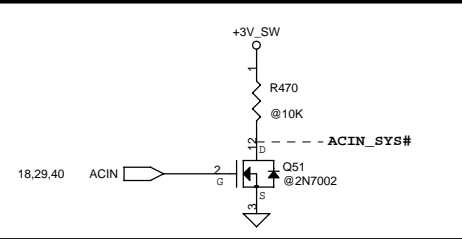
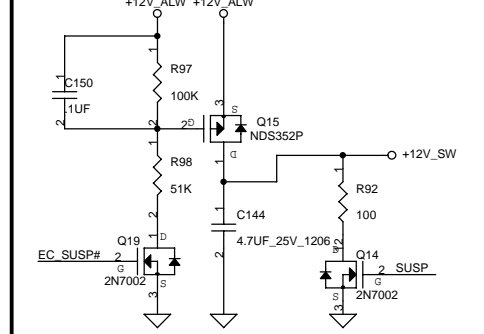
RTC Batt. Connector



Place near ICH3-M



+12V_ALW TO +12V_SW Transfer

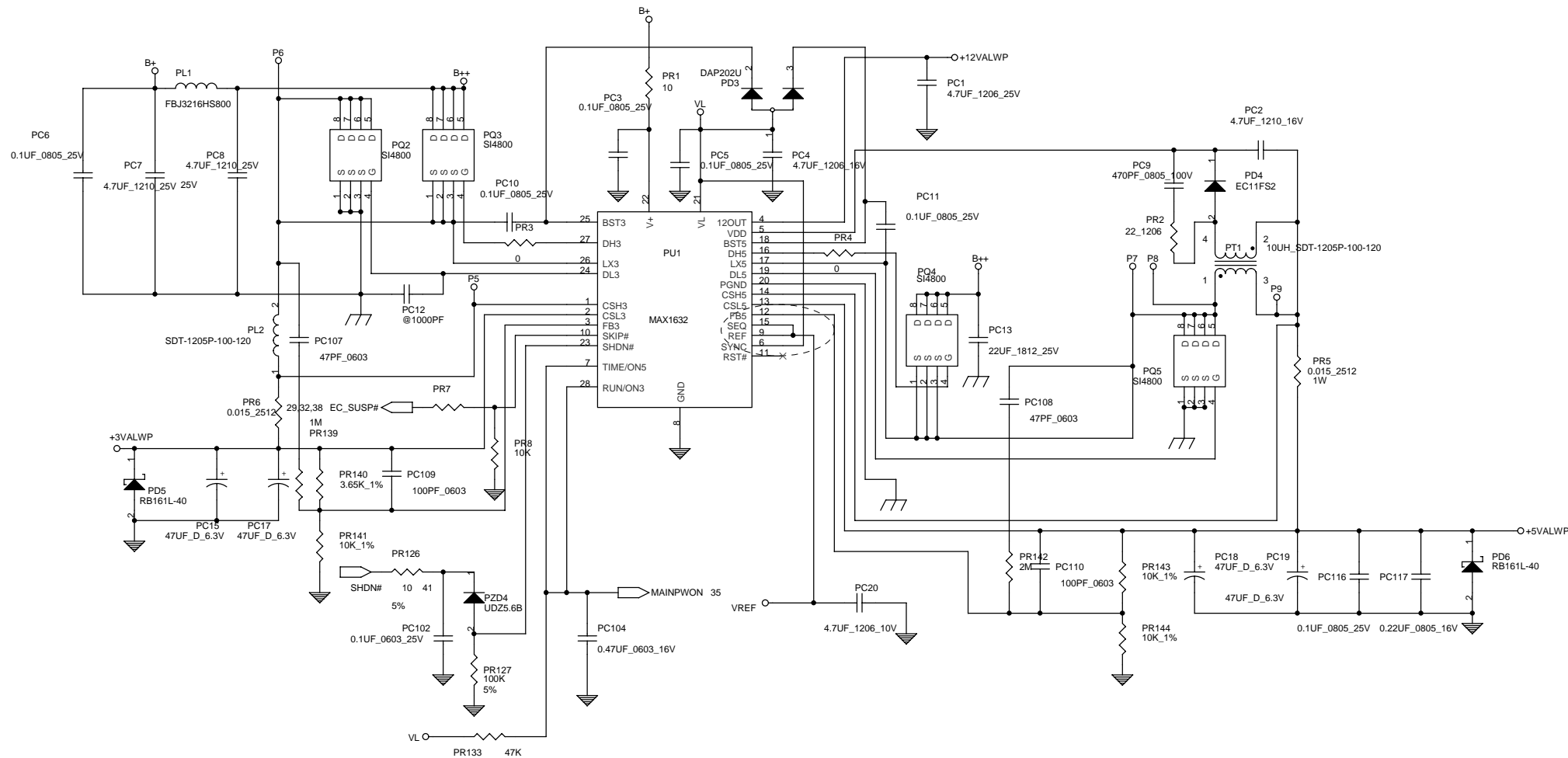


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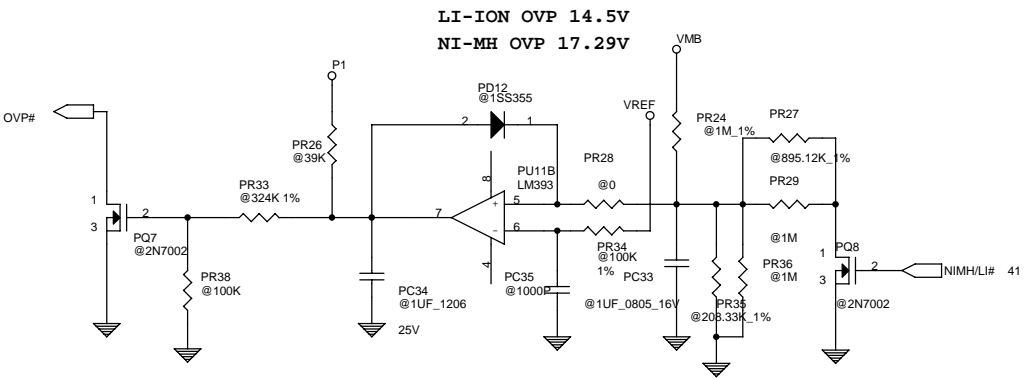
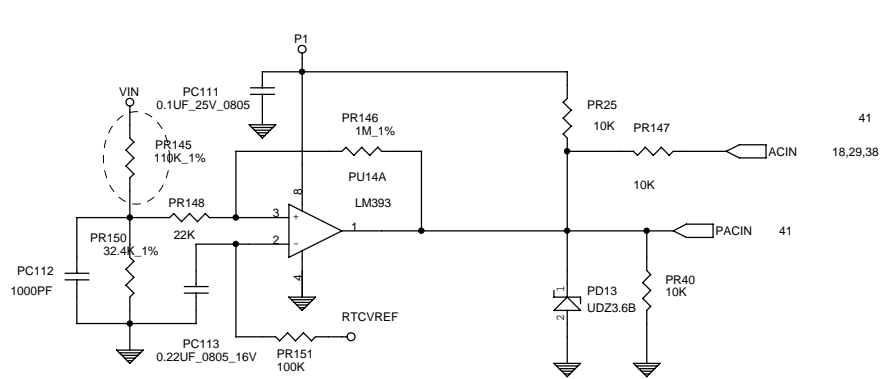
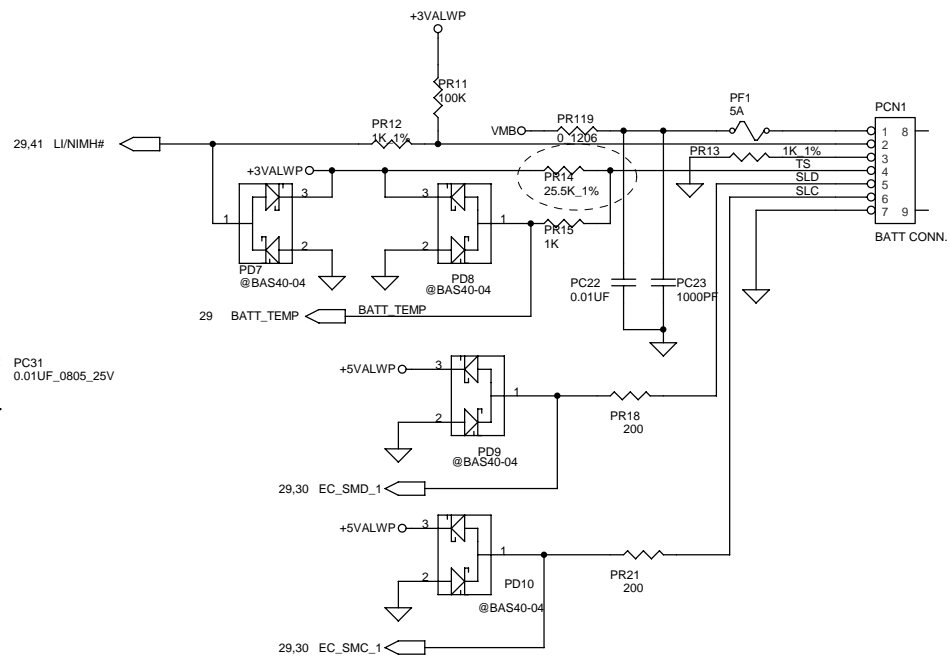
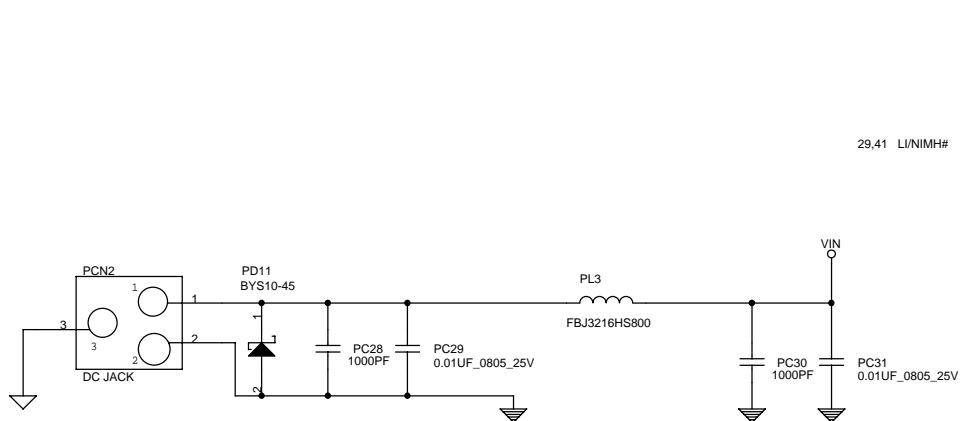


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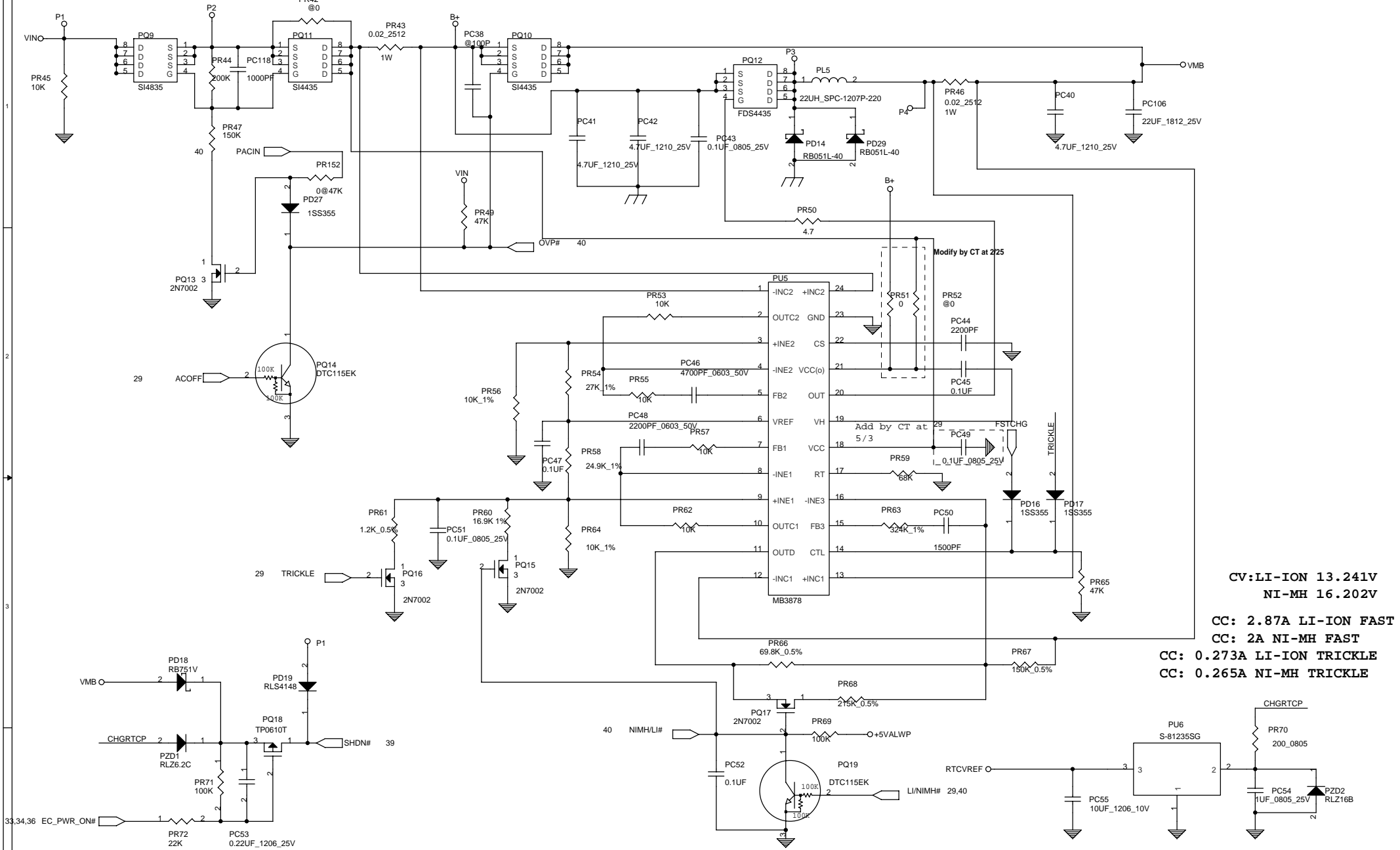


LI-ION OVP 14.5V
NI-MH OVP 17.29V

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ADAPTER CURRENT 2.9A



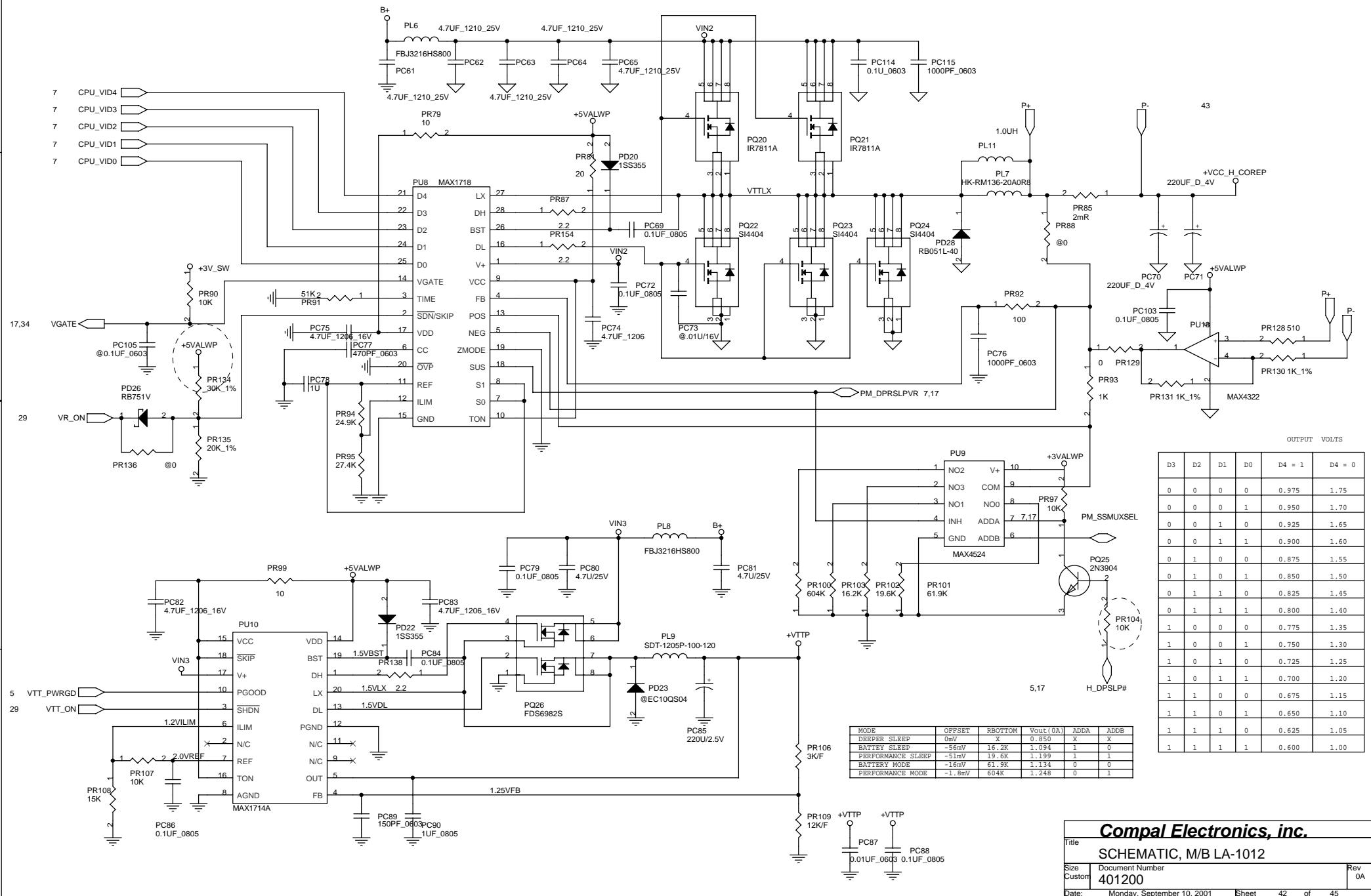
CV: LI-ION 13.241V
 NI-MH 16.202V
 CC: 2.87A LI-ION FAST
 CC: 2A NI-MH FAST
 CC: 0.273A LI-ION TRICKLE
 CC: 0.265A NI-MH TRICKLE

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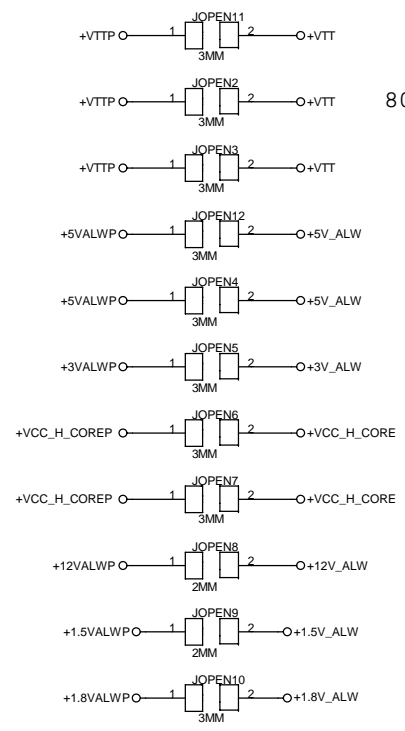
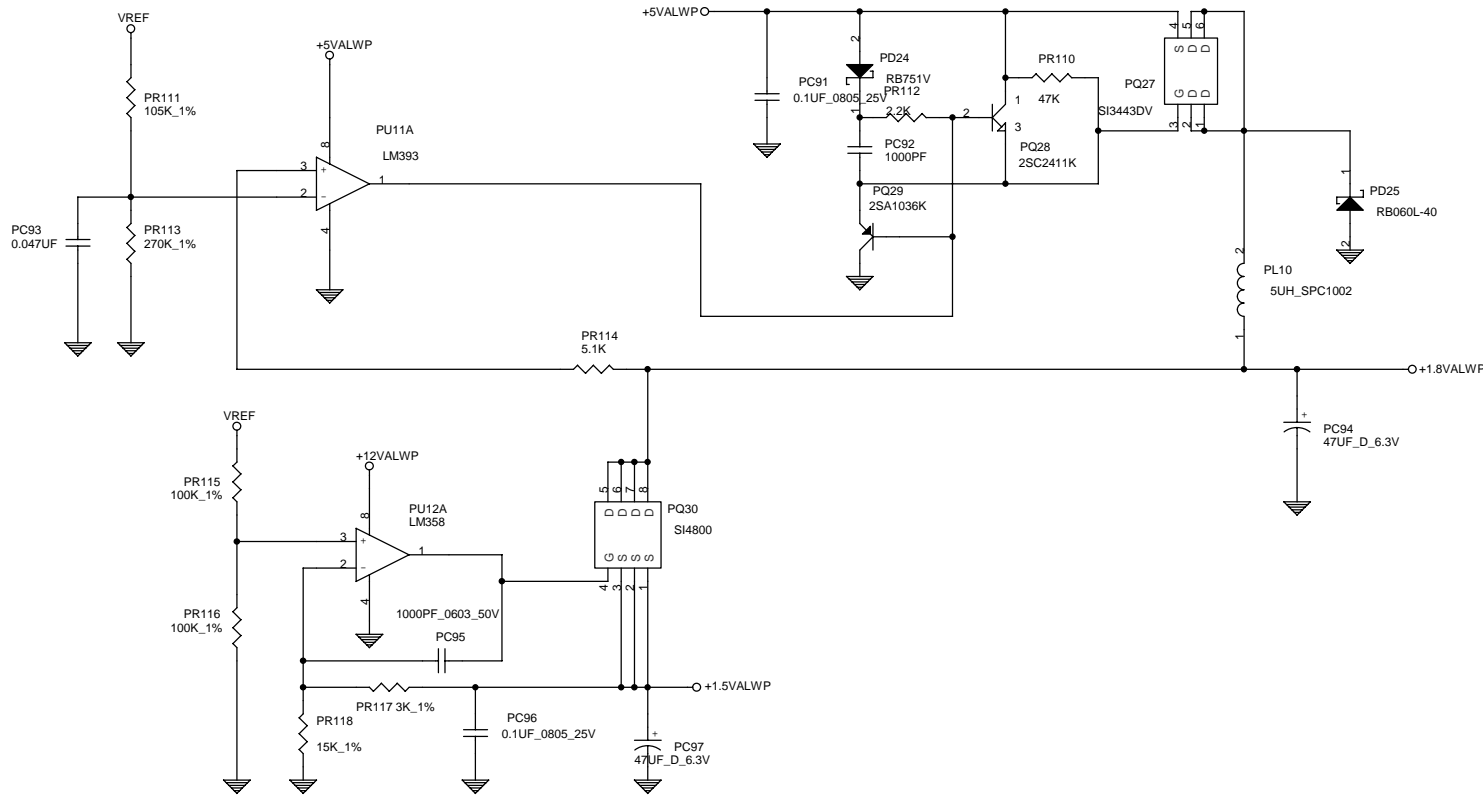
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MODE	OFFSET	RBOTTOM	Vout (0A)	ADDA	ADDB
DEEPER SLEEP	0mV	X	0.850	X	X
BATTERY SLEEP	-56mV	16.2K	1.094	1	0
PERFORMANCE SLEEP	-51mV	19.6K	1.199	1	1
BATTERY WAKE	-16mV	61.9K	1.134	0	0
PERFORMANCE WAKE	-1.8mV	604K	1.248	0	1

OUTPUT VOLTS

D3	D2	D1	D0	D4 = 1	D4 = 0
0	0	0	0	0.975	1.75
0	0	0	1	0.950	1.70
0	0	1	0	0.925	1.65
0	0	1	1	0.900	1.60
0	1	0	0	0.875	1.55
0	1	0	1	0.850	1.50
0	1	1	0	0.825	1.45
0	1	1	1	0.800	1.40
1	0	0	0	0.775	1.35
1	0	0	1	0.750	1.30
1	0	1	0	0.725	1.25
1	0	1	1	0.700	1.20
1	1	0	0	0.675	1.15
1	1	0	1	0.650	1.10
1	1	1	0	0.625	1.05
1	1	1	1	0.600	1.00



80mil

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Power PIR

Item	Fixed Issue	Reason for change	Page	Modify item	MB_Ver.	Phase

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D
C
B
A

D
C
B
A

5

4

3

2

1

5

4

3

2

1

N32N101 LA-1012 Rev0.1 HISTORY LIST (PIR)

For C-Test 08/16/2001 Rev:0.1

Date	Page	Description
08/16		Schematic based on N32N101 LA-1011 C-Test.

Date	Page	Description

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